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JOINT TASK FORCE TWO

JTF-2 REPORT

SC-M-68-694
October 1968

JOINT TASK FORCE TWO
TEST 4.1
RA-5C Aircraft
Data Book (U)

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JOINT TASK FORCE TWO
TEST 4.1
RA-5C AIRCRAFT
DATA BOOK (U)

DEPARTMENT 9210

OCTOBER 1968

Sandia Laboratory, Albuquerque, New Mexico

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FOREWORD

1. Joint Task Force Two (JTF-2) was organized by the Joint Chiefs of Staff to conduct a series of coordinated and integrated tests to determine the capabilities and vulnerabilities of offensive and defensive weapons systems in the low altitude flight regime.

2. Joint Task Force Two Test 4.1 Visual Target Acquisition, the second test in the series, investigated the relationships among aircraft, altitude, speed, environment, and the air-to-ground target acquisition task for representative operational aircraft and aircrew combinations. Additionally, through the incorporation of a low altitude navigation course, corollary objectives of Test 2.1, Penetration-Operational Systems, were investigated.

3. In the conduct of Test 4.1 extensive instrumentation data were collected for the ten participating aircraft types (five tactical strike, A-1E, A-4B, A-6A, F-4C and F-105D; three tactical reconnaissance, RA-5C, RF-4C and RF-101; and two strategic aircraft, B-52 and B-58). Some of these data were not related to the visual target acquisition objectives. A series of books, by aircraft type, have been prepared which present those data which are reliable over a majority of the test sorties and of possible interest to agencies other than those concerned with the target acquisition problem.

4. This book contains the following data for the RA-5C type aircraft: plots of the aircraft position track in the target area and of the aircraft elevations above mean sea level, along with the terrain elevation under the aircraft track; plots of the aircraft altitude above the terrain, normal accelerations, roll angle, pitch angle and slant range from the navigation check points and the targets to the aircraft.

5. A supplemental volume of data summaries lists statistics on aircraft altitude above terrain and on speed; measurements from the six visibility instruments located at each target site; and pilot acquire qualifier, time and ground range for all the sorties flown in Test 4.1 and is titled, Low Altitude Test 4.1, Visual Target Acquisition, All Aircraft, Data Summary Book.

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TABLE OF CONTENTS

SECTION		PAGE
	FOREWORD	iii
	TABLE OF CONTENTS	v
1	INTRODUCTION	1-1
	1. JTF-2 BACKGROUND	1-1
	2. PURPOSE	1-1
	3. TEST 4.1 DESCRIPTION	1-3
	4. DATA PRESENTATION	1-11
	5. HUMAN FACTORS DATA	1-25
	6. ADDITIONAL TEST 4.1 DATA	1-26
2	DATA PLOTS	2-1
	1. INTRODUCTION	2-1
	2. ABNORMAL DATA	2-1
3	DATA PLOTS FOR RA-5C AIRCRAFT BY SORTIE	3-1
	1. SORTIE ORDER	

SORTIE	PAGE NUMBER
510	3-3
512	3-15
514B	3-22
519	3-34
517	3-45
521	3-56
516A	3-67
533	3-78
523	3-90
530	3-101
526	3-112
528A	3-124
532	3-135
536A	3-146

TABLE OF CONTENTS
(continued)

SORTIE	PAGE NUMBER
534	3-158
547	3-170
543	3-182
541	3-194
545	3-205
538B	3-217
550	3-230
552	3-241
558	3-252
551	3-263
549	3-275
557	3-287
565	3-299
566	3-311
568	3-323
569	3-335
561	3-347
562	3-358

APPENDIX		PAGE
A	BIBLIOGRAPHY	A1-1

SECTION I

INTRODUCTION

1.(U) BACKGROUND.

a. Joint Task Force Two Test 4.1, Visual Target Acquisition-Operational Systems, was the second in a series of tests designed to obtain data on low altitude weapons systems operations. Test 1.0 investigated minimum terrain clearance capabilities of tactical and strategic aircraft, and was reported on in JTF-2 Report 001.

b. Test 4.1 was a test of visual target acquisition capabilities of aircraft weapons systems at low altitude over rolling terrain. It investigated the relationships among aircraft, altitude, speed, environment, and the air-to-ground target acquisition task for representative operational aircraft and aircrew combinations. Similarities in tactics between tactical strike and tactical reconnaissance aircraft allowed the investigation of certain corollary objectives of Test 4.4, Target Acquisition-Tactical Reconnaissance. Additionally, through the incorporation of low altitude navigation courses, corollary objectives of Test 2.1, Penetration-Operational Systems, were investigated.

c. The Test 4.1 reporting consists of a series of bound volumes, each addressing a particular facet of the visual target acquisition test. All volumes bear the basic title: Low Altitude Test 4.1, Visual Target Acquisition, Volume ___: (Identifying Subtitle). Table 1-1 is a tabulation of the documentation.

2.(U) PURPOSE.

a. Test 4.1.

(1) Measure and analyze the visual ground target acquisition capabilities of representative aircraft and aircrews under visual flight conditions over rolling terrain.

(2) Investigate the relationship between such variables as aircraft, terrain clearance altitude, aircraft speed, target characteristics and environment, and the target acquisition task.

VOLUME	IDENTIFYING SUBTITLE
1	Controlled Flight Observations
2	Field Test Description
3	Navigation over Flat Terrain (Test 2.1 Penetration-Operational Systems)
4	Tactical Aircraft Performance
5	Strategic Aircraft Performance
6	Human Factors Studies
7	Flight Simulator Studies Basic Validation Briefing Effectiveness Target/Background Parameters and Avionics Aids Pilot Orientation
8	Mathematical Model Calibration Data Books - By Aircraft Type (A-1E, A-4B, A-6A, F-4C, F-105D, RA-5C, RF-4C, RF-101, B-52 and B-58) Data Summaries (All Aircraft Types in One Book)

Table 1-1 (U) Component Documentation for Test 4.1

b. Data Book.

(1) Provide those data collected during Test 4.1 which are considered pertinent in evaluating the participating weapons systems performance in visual target acquisitions and other areas.

(2) Assemble these data, by weapon system type, into volumes which will facilitate data retrieval and application.

3.(U) TEST DESCRIPTION.

a. General.

(1) Ten types of tactical and strategic aircraft were flown. These consisted of tactical strike, tactical reconnaissance and strategic aircraft. The ability of the aircrews to visually acquire tactical targets was measured. With the exception of 32 tactical reconnaissance night flights, all aircraft were flown under daylight visual flight conditions. There were 474 sorties flown by the 232 participating aircrews. Flight operations were conducted from 27 June to 19 September 1966.

(2) The test was designed with two bands of assigned terrain clearance altitude (0-400 feet, 500-900 feet) and five assigned apeeds (175, 270, 360 (350 for B-52), 420 (450 for B-58) and 550 knots). The F-105D and the SAC aircraft were assigned only the higher altitude band. Table 1-2 is a tabulation of the test design assignments in the target area, by aircraft.

(3) The target area consisted of two courses each with four targets. These targets consisted of two surface-to-air missile (SAM) sites, two aircraft control and warning (AC&W) sites, two bridges (one with superstructure) a petroleum oil and lubricants (POL) dump and a tactical airfield. Each course contained a SAM site, an AC&W site and a bridge. The bridges were real and the other targets were constructed to appear realistic. Each of the eight targets was preceded by a final reference point (FRP), a prebriefed, man-made, ground cue intended to assist the aircrew in locating the target. Aircrews of the tactical aircraft used the FRP's but the Strategic Air Command (SAC) selected radar offset aiming points (OAP) (prominent terrain features) as navigation aids for aircrews of the strategic aircraft. The B-52 aircrews were prebriefed on two OAP's per target and the B-58 crews on one OAP per target.

(4) The aircraft and crews for Test 4.1 were provided from operational units of the Air Force, Navy, Navy Reserve, and Marine Corps. Routinely, the aircrews spent at least four days on Test 4.1. This included time for a thorough filmed briefing of their participation in the test, completion of questionnaires and forms for human factors studies, time to fly two sorties, and participation in vision tests for a portion of the aircrews. The

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ALTITUDE		0-400 FEET (DAY)					500-900 FEET (DAY)					500-900 FEET (NIGHT)					TOTAL SORTIES	TOTAL CREWS
SPEED		175K	270K	360K	420K	550K	175K	270K	360K	420K	550K	175K	270K	360K	420K	550K		
AIRCRAFT TYPE	F-4C			12	12	12				12	12						120	60
	A-4B		12	12				12	12								96	48
	A-6A			8					8								32	16
	A-1E	8					8										32	16
	F-105D									8							16	8
	B-52								12**								24	12
	B-58									12**							24	12
	RF-4C				8					8*					8		48	16
	RF-101			8	8					8							48	24
	RA-5C				8										8		32	16
																	472	228

*SAME CREWS FLEW AT NIGHT.

**B-52 AND B-58 AIRCRAFT FLEW 350 AND 450 KNOTS, RESPECTIVELY.

THE ENTRIES IN THE TABLE INDICATE THE NUMBERS OF CREWS UTILIZED FOR EACH ALTITUDE AND SPEED COMBINATION BY TYPE AIRCRAFT. EACH CREW FLEW TWO SORTIES, ONE OVER EACH COURSE.

Table 1-2 (U) Target Acquisition, Sorties, and Aircrews

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aircrewmen were briefed to activate an event button on acquisition of navigation control check points (CCP), final control check points (FCCP), final reference points (FRP) and targets, and again at their estimated closest points of approach to check points, reference points, and targets. The SAC radar navigator was instructed to activate an event button when he had acquired the radar-offset aiming points (OAP) for a target and at the point that the bomb-navigation sytem (BNS) indicated weapon release at the target.

(5) Each aircraft carried an instrumentation pod and each target had a ground based instrumentation system. The two systems provided data for computation of aircraft position in space, recording of event button activation, monitoring aircraft maneuvering, recording visibility conditions, and monitoring instrumentation system performance.

(6) A detailed description of the test, test area, targets, and procedures may be found in items 2, 4, and 10, Appendix A.

b. Test Area.

(1) The test was conducted on a special range located in west central Arkansas and eastern Oklahoma. The ancillary navigation test (Test 2.1) was conducted on two adjacent low altitude navigation courses originating near England AFB, Alexandria, Louisiana, and extending north northwest 190 miles to the southern edge of the target area.

(2) The target area included two courses, each containing four tactical targets. The first two targets on each course were approached from south to north, the second two from north to south. An FCCP terminated each navigation course about 10 to 20 nautical miles prior to the FRP for the first target. Diagrams of the target area and the navigation courses are shown in Figure 1-1. Figure 1-2 is a diagram of the target area showing nominal tactical and strategic aircraft course lines. A detailed description of the targets, final reference points, offset aiming points, and target approaches is contained in items 2, 4, and 10, Appendix A.

(3) Targets selected for the test were typical fixed or semi-fixed types that would normally be scheduled for attack by pre-planned air-strikes as a result of pre-strike intelligence. The targets are listed in Tables 1-3 and 1-4. All target component vehicles, missile launchers, and missiles located at the sites were mock ups. A detailed description of the targets, final reference points, and target approaches is contained in items 2 and 4, Appendix A.

c. Pilot (Aircrew) Test Participation.

(1) Tactical (strike and reconnaissance) and strategic aircraft

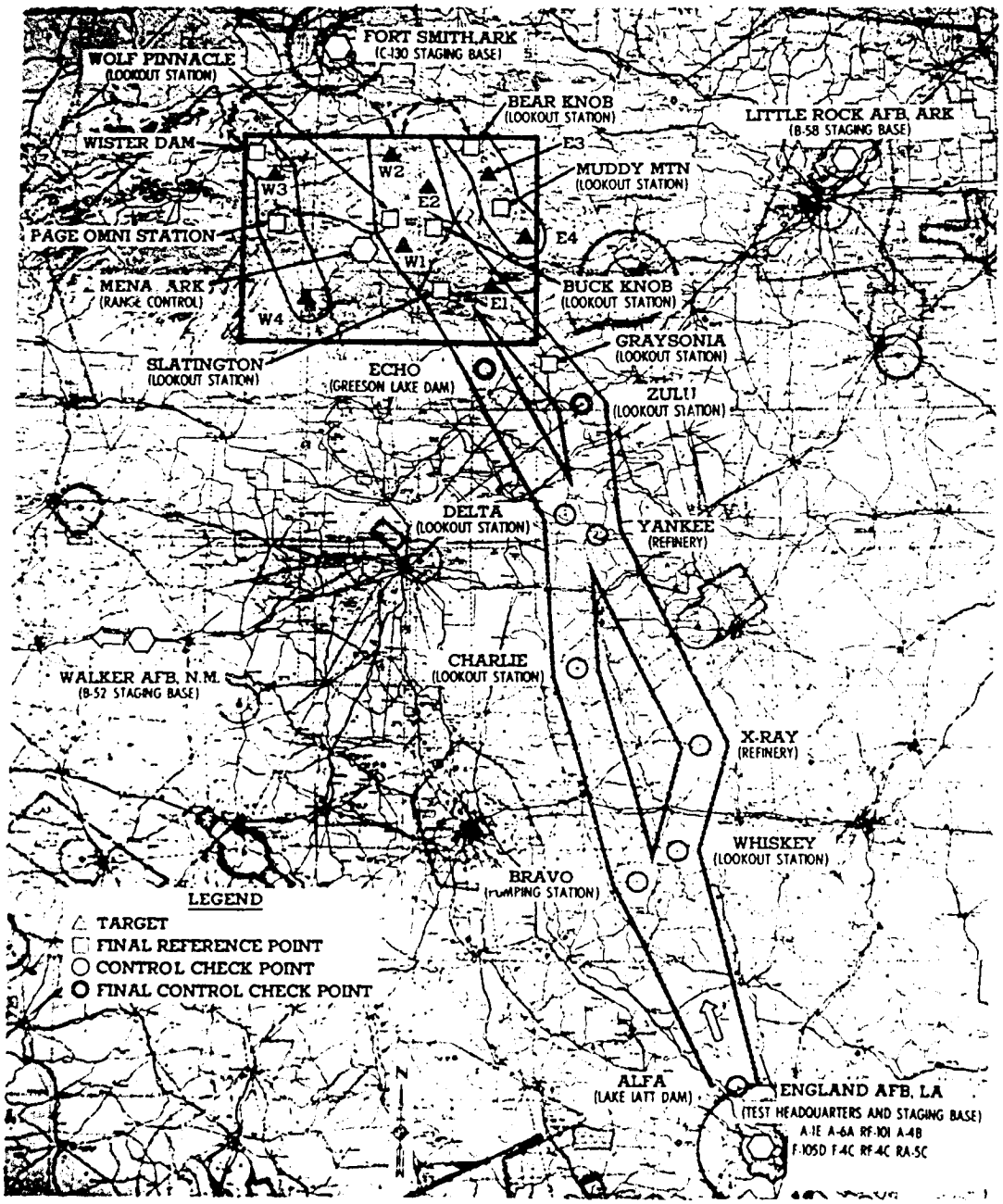

Figure 1-1 (U) 4.1 Test Range, Navigation Courses and Target Area

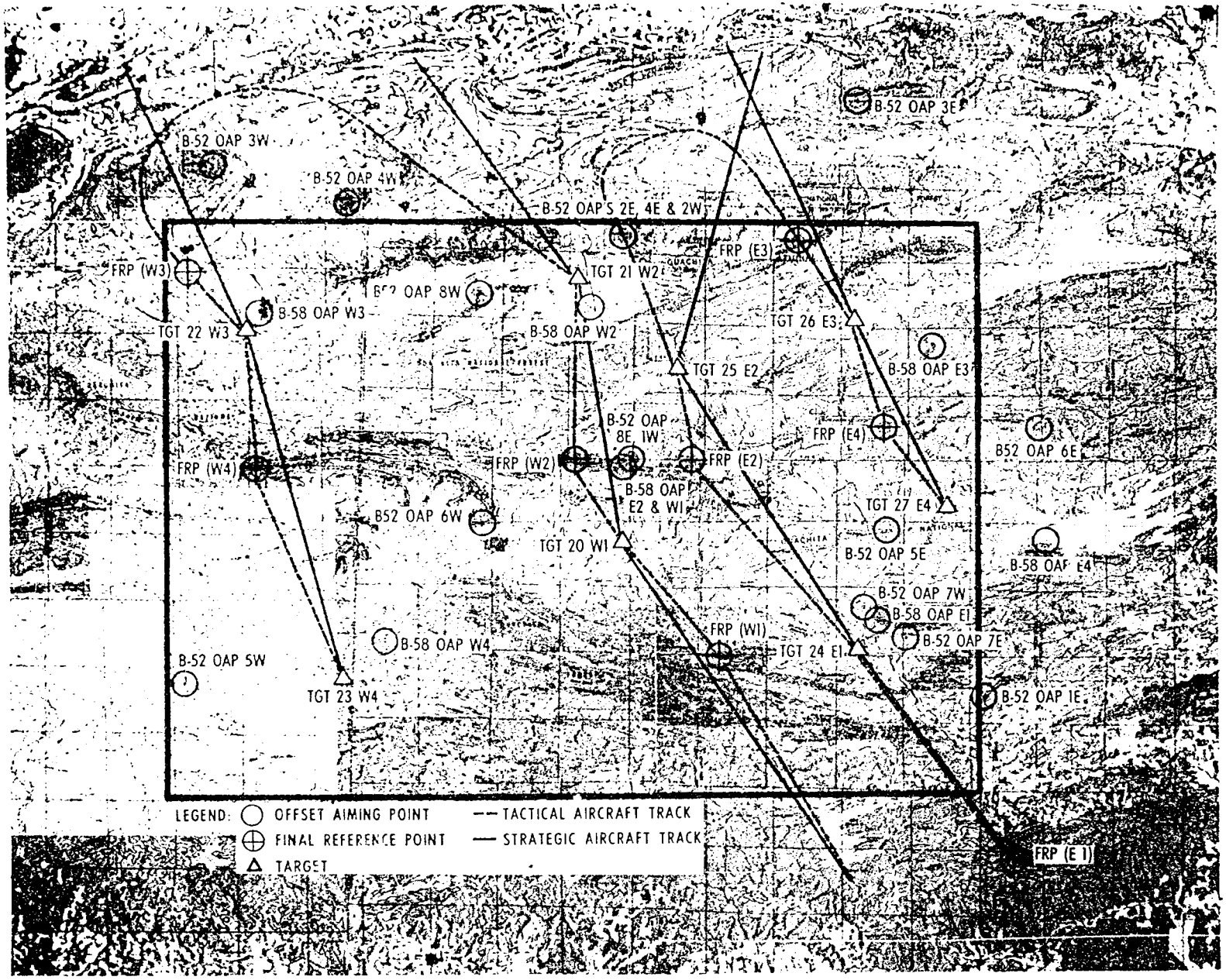

Figure 1-2 (U) 4.1 Target Area

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SITE NUMBER	TARGET DESIGNATOR	TARGET NAME	MAP COORDINATES	REFERENCE GRAPHIC
20	W1	Aircraft Control and Warning (AC&W) Radar Site	343501N/0940306W	USGS Topo. 15 Min. Series Mena, Ark. 1958
21	W2	Petroleum, Oil and Lubricant (POL) Dump	345636N/0940700W	USGS Topo. 15 Min. Series Waldron, Ark. 1939
22	W3	Highway Bridge over Poteau River (with Super-structure)	345129N/0943743W	USGS Topo. 15 Min. Series Heavener, Okla. 1959
23	W4	Surface-to-Air Missile (SAM) Site	342416N/0942854W	USGS Topo. 15 Min. Series Cove, Ark. 1959

Table 1-3 (U) West Course Target Positions

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SITE NUMBER	TARGET DESIGNATOR	TARGET NAME	MAP COORDINATES	REFERENCE GRAPHIC
24	E1	Aircraft Control and Warning (AC&W) Radar Site	342624N/0934114W	USGS Topo. 15 Min. Series Glenwood, Ark. 1942
25	E2	Surface-to-Air Missile (SAM) Site	344829N/0935748W	USGS Topo. 15 Min. Series Parks, Ark. 1960
26	E3	Tactical Airfield	345221N/0934115W	USGS Topo. 15 Min. Series Gravelly, Ark. 1960
27	E4	Highway Bridge Over Ouachita River (Flat Bridge)	343734N/0933249W	USGS Topo. 15 Min. Series Mount Ida, Ark. 1959

Table 1-4 (U) East Course Target Positions

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were flown from the vicinity of England AFB to point Alfa, then along one of the two navigation courses ending at either point Echo or Zulu. They then continued on the corresponding east or west target course. The aircrews attempted to visually acquire each prebriefed target and, as necessary, maneuver the aircraft to fly directly over the target. No attempt was made to simulate delivery techniques for ordnance. Course reversals and second attempts were not permitted. Aircrews were instructed not to alter heading more than 90 degrees for attempted target flyovers. Pilots were provided vectors to succeeding reference points or check points, on request.

(2) The events corresponding to visual acquisition of, and closest point of approach to, each target were recorded by the aircrews by activating an event button which recorded the time of the event. (For this test visual acquisition was defined as the event response by the aircrews following detection and identification of the prebriefed target.) Each aircrew flew two test sorties, one over each of the two test courses. Approximately one-half of the aircrews flew in the order east course-west course; the remainder flew the west course first. Performance was recorded by a special range instrumentation system which involved both surface and airborne components and telemetry. Each test aircraft carried an instrumentation pod which collected test data such as radar altimeter measurements, event button activation, and slant range measurements, and relayed these data to three instrumented aircraft orbiting overhead. Aircraft position during the sortie was calculated from the recorded data.

(3) For the purpose of standardization and consistency, aircrew members were given sound film briefings on general objectives of and procedures for the test and for the specific test course to be flown. Following each permission briefing, each aircrewman completed a written questionnaire to verify understanding of essential phases of the sortie including speed, altitude, course, targets assigned, data transmission procedures, and emergency procedures. All necessary test area maps and charts (annotated to indicate exact location of check points and targets and pinpoint oblique and vertical area photographs of each target) were provided the aircrews. Sufficient time was made available for adequate mission planning. After each sortie was completed, each aircrewman completed a postflight questionnaire. After both sorties were completed each aircrew member was given a confidential debriefing interview. Vision tests were given to a limited number of aircrews.

d. Test Aircraft. Ten aircraft types participated in the test. Five tactical strike aircraft (A-1E, A-4B, A-6A, F-4C, and F-105D) and three tactical reconnaissance aircraft (RA-5C, RF-101, and RF-4C) operated from England AFB, Louisiana. Two strategic aircraft, the B-52 and B-58, staged from

their home bases, Walker AFB, New Mexico and Little Rock AFB, Arkansas, respectively. These aircraft with MA-9 instrumentation pod attached are shown in Figures 1-3 through 1-12. Detailed information on the physical characteristics of these aircraft and their performance may be found in item 7, Appendix A.

4.(U) DATA PRESENTATION.

a. Data Plots.

(1) Aircraft position data.

(a) The aircraft position data plot shows the aircraft x-y location with respect to the Mena plane coordinate system. The Mena plane is a plane passing through a monument in Mena, Arkansas, and perpendicular to a line passing through the monument and the center of the earth. The Mena, Arkansas, monument is the origin of the coordinate system with east being +x and north being +y. The aircraft position data sheets contain a continuous plot of the aircraft track (except between the second and third target on each course) with one data point per second. The data are presented by one overall plot and four expanded plots. The overall plot shows the aircraft track over the whole target area, and each expanded plot shows one target and its associated final reference point (FRP). The target is denoted by an X with the center of the X being the target coordinate. The FRP coordinates are the dot at the bottom of the F. The aircraft track is annotated with time ticks in central standard time, once every minute on the expanded plots and once every five minutes on the overall plot. The point on the expanded plots at which target acquisition occurred is annotated with an A. When the time of acquisition is not known or no acquisition occurred, there will be no annotation. The minimum ground range from the aircraft to the target and associated qualifier is also shown on the expanded plots. Map overlays are provided for the overall plots and each expanded plot. The overlays are in three colors; brown for contours, red for cultural features, and blue for lakes and water-ways. The overlays are also annotated with target numbers on the overall maps. The overlays are numbered one through ten, Table 1-5 lists the overlay numbers and the corresponding position data plot.

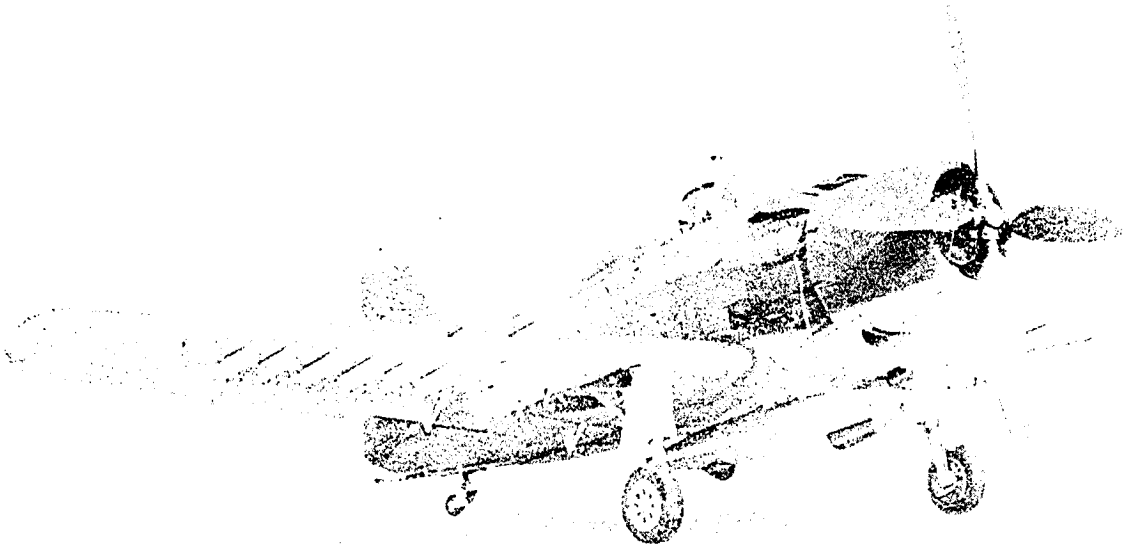

Figure 1-3 (U) A-1E Aircraft with MA-9 Pod

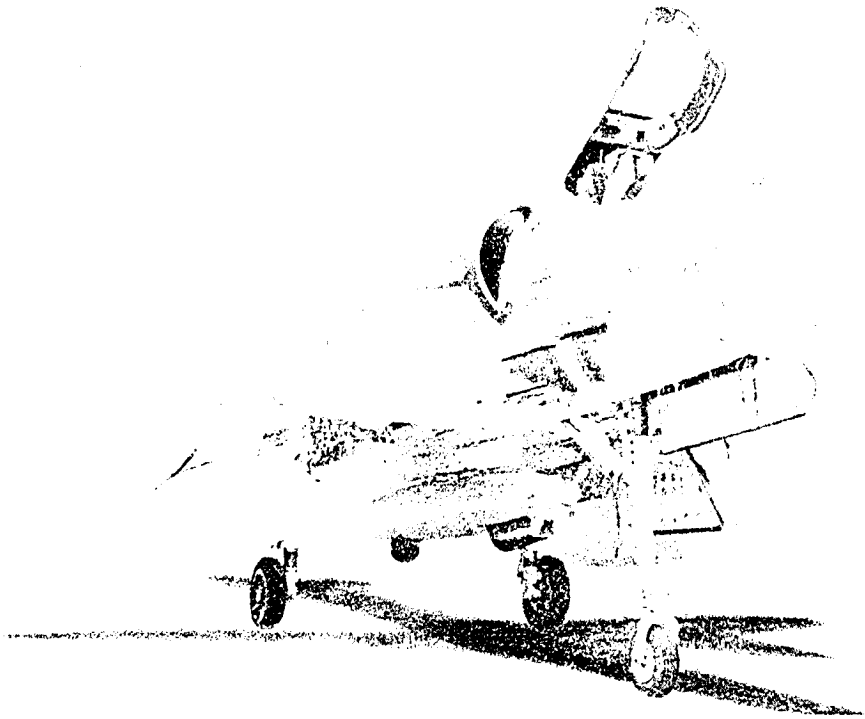

Figure 1-4 (U) A-4B Aircraft with MA-9 Pod

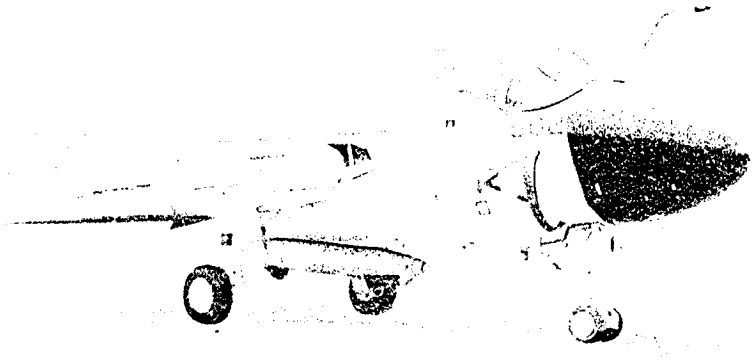

Figure 1-5 (U) A-6A Aircraft with MA-9 Pod

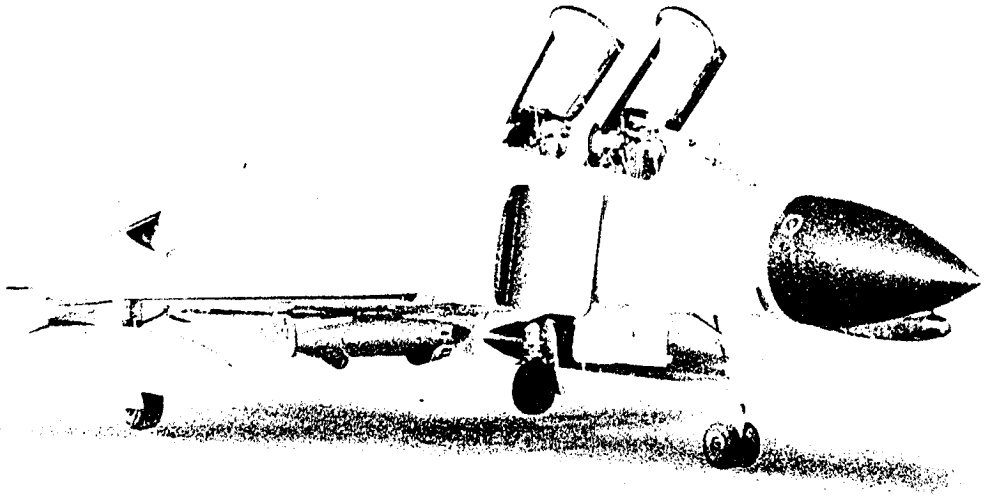

Figure 1-6 (U) F-4C Aircraft with MA-9 Pod

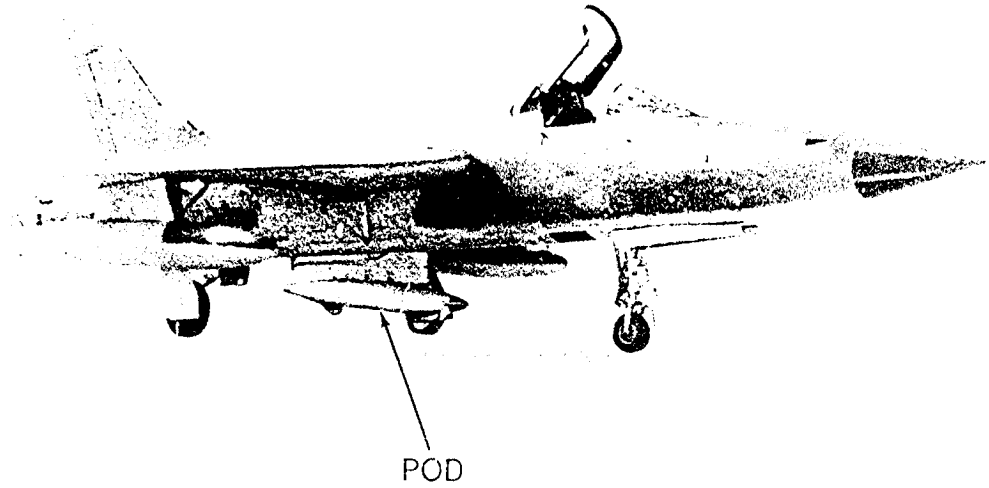

Figure 1-7 (U) F-105D Aircraft with MA-9 Pod

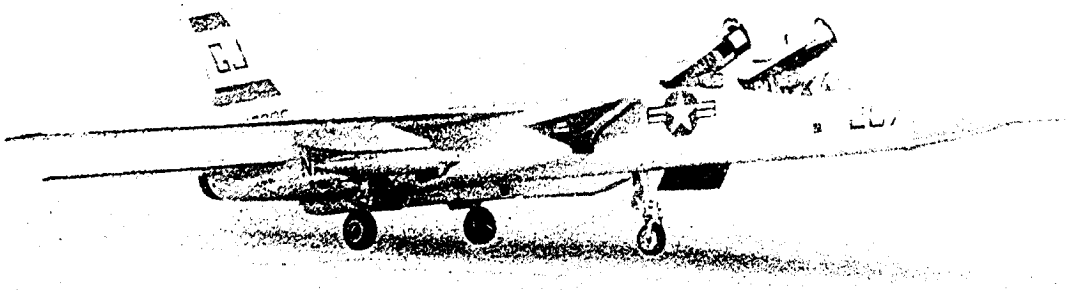

Figure 1-8 (U) RA-5C Aircraft with MA-9 Pod

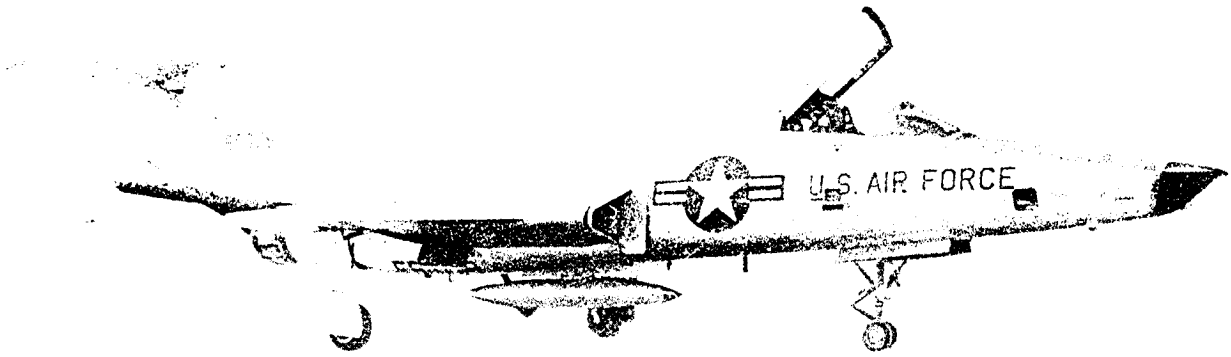

Figure 1-9 (U) RF-101 Aircraft with MA-9 Pod

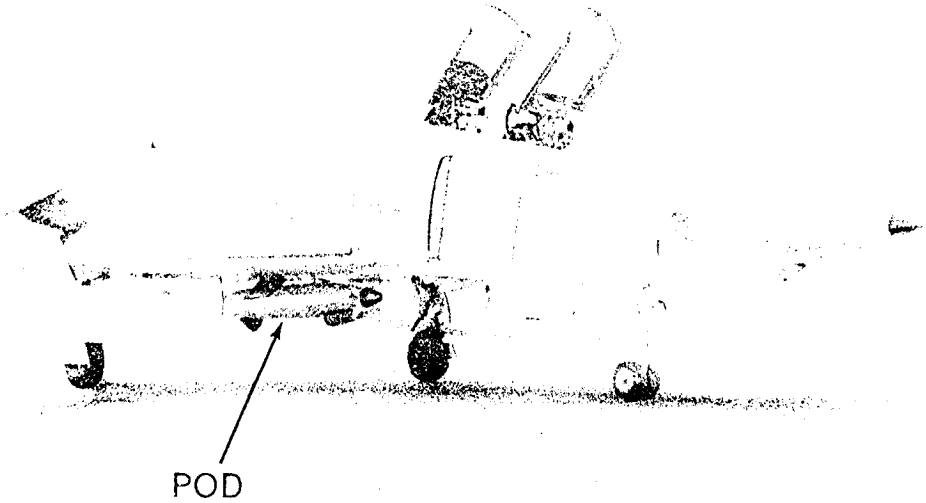

Figure 1-10 (U) RF-4C Aircraft with MA-9 Pod

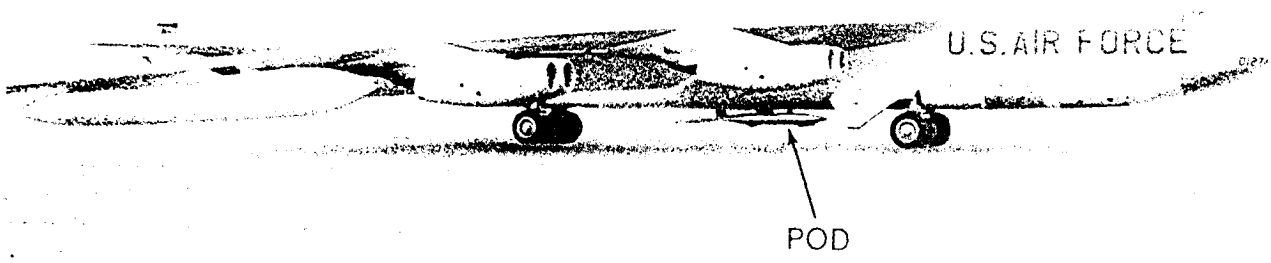

Figure 1-11 (U) B-52 Aircraft with MA-9 Pod

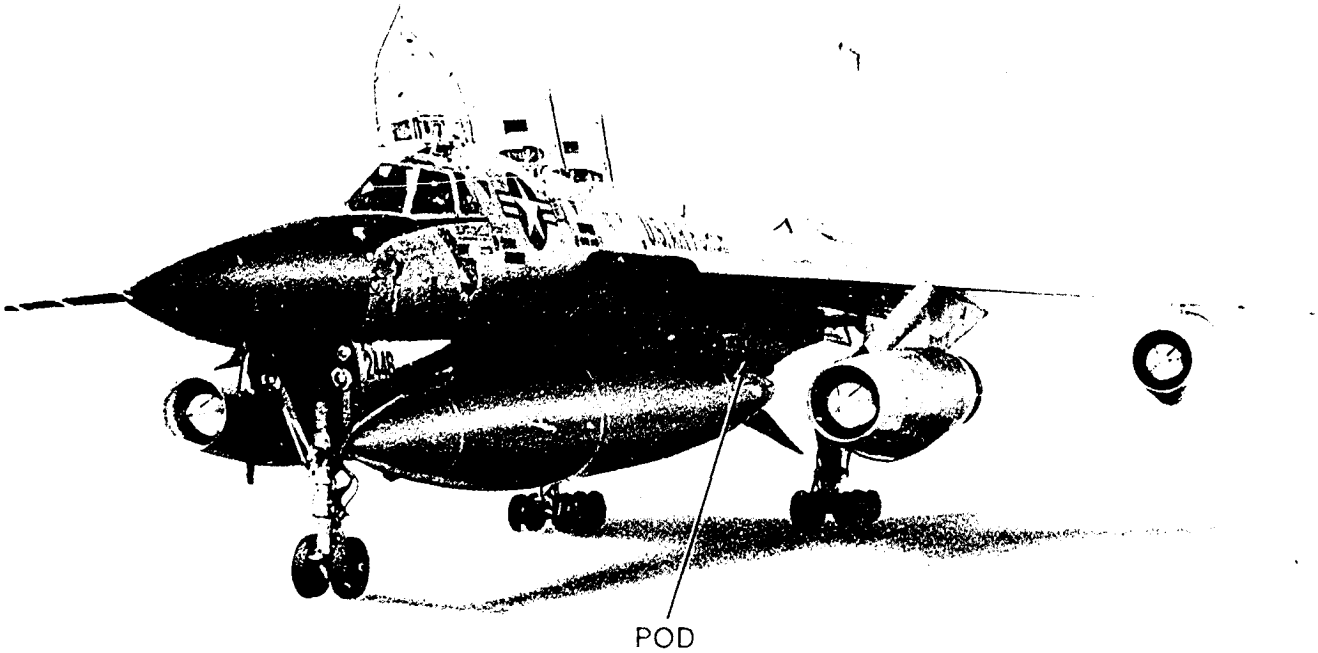

Figure 1-12 (U) B-58 Aircraft with MA-9 Pod

OVERLAY NUMBER	POSITION PLOT
1	WEST COURSE OVERALL
2	TARGET W1
3	TARGET W2
4	TARGET W3
5	TARGET W4
6	EAST COURSE OVERALL
7	TARGET E1
8	TARGET E2
9	TARGET E3
10	TARGET E4

Table 1-5 (U) Overlay Numbers with Corresponding Position Plots

(b) Minimum ground distance. The minimum ground distance, in feet, from the aircraft track to the target and a qualifier which indicates its source are printed underneath each expanded plot. The following qualifiers are used.

Qualifier	Definition
DME	Minimum ground distance was calculated from the x-y position data.
C-band	Minimum ground distance was calculated using C-band slant range and aircraft altitude above the target plane.
Estimated	Minimum ground distance was estimated by extrapolating the x-y position data.

(c) Accuracy.

1 The x-y position plots were obtained from the Test 4.1 distance measuring equipment (DME) system which included an instrumented pod on the aircraft, three C-130 aircraft orbiting the test area and seven DME ground transponder stations. The raw DME data was processed by an electronic computer with considerable quality control by a man in the loop at various stages during the processing to obtain the final smoothed x-y plots presented. A detailed description of the DME instrumentation and data processing system may be found in item 2, Appendix A.

2 The accuracy of the aircraft position plots was determined by comparing the x-y plots to C-band radar slant range (discussed in paragraph 4a(2)(d), page 1-20 of this report) and reconnaissance imagery data collected during Test 4.1 (item 4, Appendix A). A sample of the raw DME data

was also processed through a significantly different data reduction system than used in Test 4.1, and compared to the 4.1 data output to determine the effect of data processing on accuracy. The results of these comparisons indicated that better than 75 per cent of the aircraft position data was within ± 200 feet of the actual position.

(2) Telemetry data (Figure 1-13). There are five telemetry data plots on each page, aircraft terrain clearance, normal acceleration, roll angle, pitch angle, and slant range to the navigation course check points and the targets. The data is plotted generally continuously from the time the aircraft passes point Alfa, the beginning of both navigation courses, to the time the aircraft passes the final target on the appropriate course. Time annotation appears at the top of each page and each vertical grid is equivalent to one minute. The arithmetic mean and standard deviation (sigma) of the data for the terrain clearance, normal acceleration, roll angle and pitch angle is listed on each page over the interval covered by that page. The statistics were calculated using all the data available for that time interval, including portions that were off scale or abnormal. Abnormal data are identified as such on the plots, where appropriate. The series of numbers in the lower right corner of each page refers to the data tape used and has no significance to the data plotted. A detailed description of the Test 4.1 instrumentation system may be found in item 2, Appendix A.

(a) Terrain clearance. The terrain clearance data shown on the telemetry data plots are the aircraft altitude above the terrain versus central standard time. The data were obtained from a radar altimeter located in the aircraft instrumentation pod. The resolution is five feet and nominal accuracy is ± 20 feet. A vertical gyro directed the radar altimeter antenna directly downward. The antenna gimbals had a range of ± 45 degrees so that when the aircraft roll angle exceeded this limit the antenna would range off terrain not directly under the aircraft. Therefore, aircraft roll angle data should be considered when using radar altimeter data.

(b) Normal acceleration. The normal acceleration data shown for the aircraft is the acceleration on the axis perpendicular to the plane of the lateral and longitudinal axis of the aircraft. Positive values indicate increasing velocity upwards. The data were obtained from a standard accelerometer located in the aircraft instrumentation pod. Its resolution is 0.012g and advertised accuracy is ± 0.15g. The measuring instrument was located on a main structure of the pod, which was connected to the aircraft by two mounting lugs generally at the standard bomb attachment station. The effect

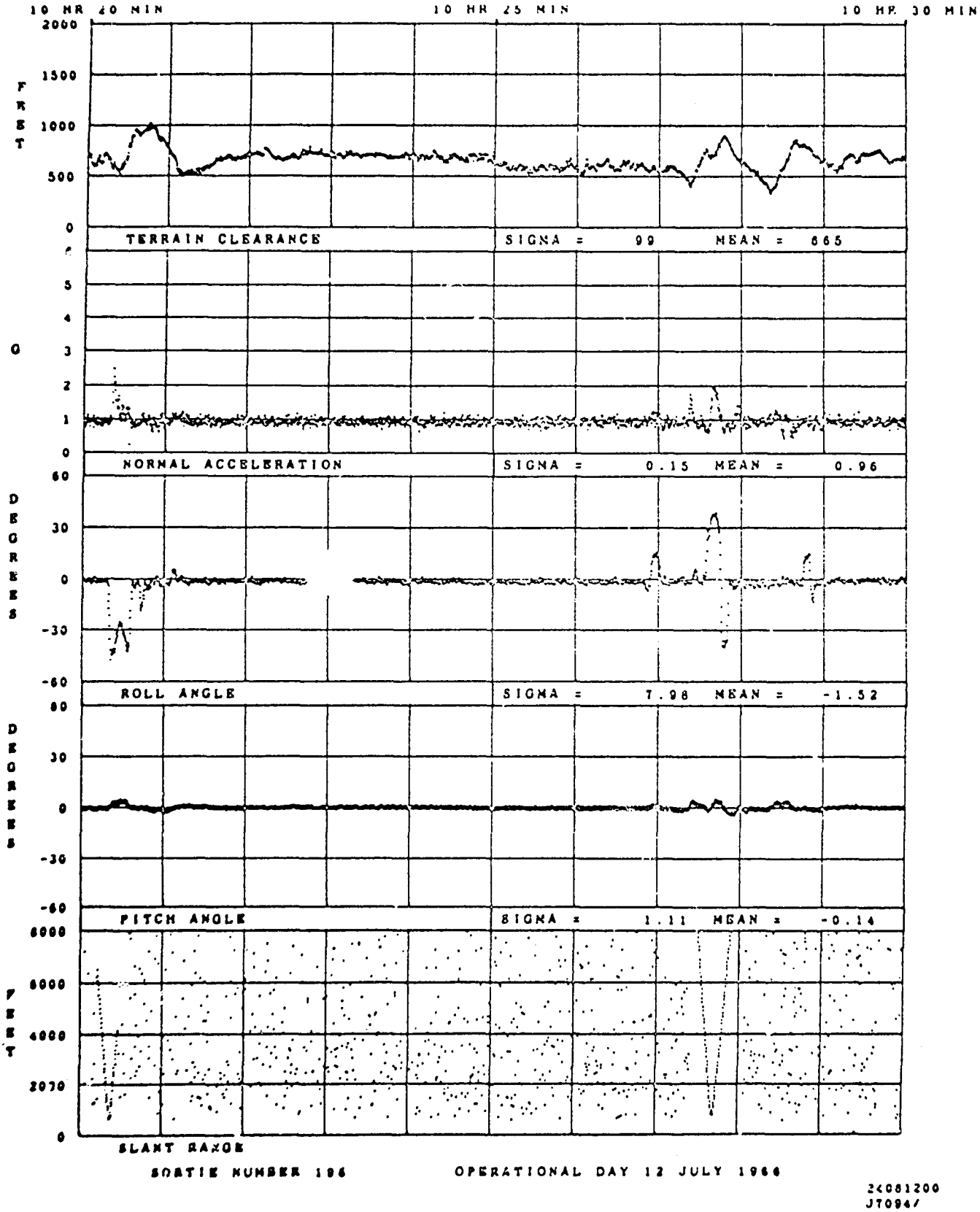

Figure 1-13 (U) Typical Telemetered Data Plots

SECTION 2

DATA PLOTS

1. (U) INTRODUCTION. The data plots present the following data:

a. The aircraft position plots are by sortie within the appropriate target area and are plotted in the Mena plane coordinate system. There is an overall plot showing the entire target area and four expanded plots, one for each target and its final reference point (FRP). The plots are annotated with time ticks in central standard time, an X for each target location, and an FRP. The expanded plots are also annotated with an A at the point of the pilot's target acquisition. The minimum ground distance in feet from the aircraft track to the target and a qualifier which indicates its source are printed underneath each expanded plot.

b. The telemetry plots are: aircraft terrain clearance, normal acceleration, roll angle, pitch angle, and slant range from the navigation control check points (CCP and FCCP) and the target. These plots are versus central standard time and are generally continuous from near the beginning of the navigation course to the end of the target course.

c. The aircraft and terrain altitude profile plots are of the terrain altitude above mean sea level under the aircraft track and the aircraft altitude above mean sea level which is plotted above the terrain. The plots are versus central standard time over the same time interval as the expanded position plots. The terrain profile is annotated with time ticks every five seconds, and CPA indicating the time of aircraft closest point of approach to the target.

d. Night flights are catalogued by the operational day in which the sortie was launched. In instances where the sortie duration extended beyond midnight, the times are continued sequentially and the numerical values indicated are greater than 24 hours.

e. The plots are by sortie and the sorties are ordered by operational day, by course, by speed, and by altitude.

2. (U) ABNORMAL DATA. Those plotted data which were determined to be abnormal during the quality control process are identified on the plots in the appropriate location. Samples of the types of abnormal data which were found

are presented in this paragraph.

a. Terrain Clearance. Figure 2-1 shows an example of poor terrain clearance data. Generally if the terrain clearance data appear very noisy with no significant amount of continuous data, as in this example, they are considered unusable. In this case the malfunction was caused by an erratic vertical gyro, which was used to direct the radar altimeter antenna downward. Figure 2-2, is an example of poor terrain clearance data resulting from a "push to test" failure. This was caused when the "push to test" calibration circuit was activated for testing, indicating a nominal 100 foot reading, and left in the test position. The straight line output shown is an indication of this failure. When the circuit was deactivated the altimeter performed normally as shows in the example.

b. Normal Accelerometer. Figure 2-3 shows an example of biased accelerometer data. The accelerometer output was riding at approximately 0.8g during periods of no maneuvering instead of the normal 1.0g. Figure 2-4 shows an example of poor accelerometer data. The accelerometers used were the type with the output proportional to the displacement of a mass mounted on a wiper that moved across a potentiometer. The abnormal data were caused when windings on the potentiometer shorted together due to excessive vibration and wear. In cases where a small portion of the winding was shorted the data were still considered usable, but biased by a small amount (Figure 2-3). In these instances the instrument still exhibited good response to aircraft maneuvering. In cases where a significant portion of the windings was shorted so that the instrument was biased and had poor response to maneuvering, the data were considered poor (Figure 2-4).

c. Roll Angle and Pitch Angle. The roll angle and pitch angle were measured from the same vertical gyro, but the roll and pitch gimbals had separate erecting motors, therefore, abnormal data in one did not necessarily result in abnormal data in the other.

(1) The most common failures were due to erratic operation (Figure 2-1), the gyro not being up to speed (Figure 2-5), and gimbal lock (Figure 2-6). Erratic operation was characterized by random changes in the roll angle around zero and both pitch and roll angle measurements were considered poor. The gyro not being up to speed was indicated by displacement of the gyro nominal reading from zero and gradually returning to zero, as shown in the roll angle data of Figure 2-5. When the nominal value exceeded 10 degrees the data were considered poor instead of biased as shown in the example. Gyro gimbal lock is characterized by the nominal value of roll or pitch being displaced after a violent maneuver as shown in both the roll and pitch angle

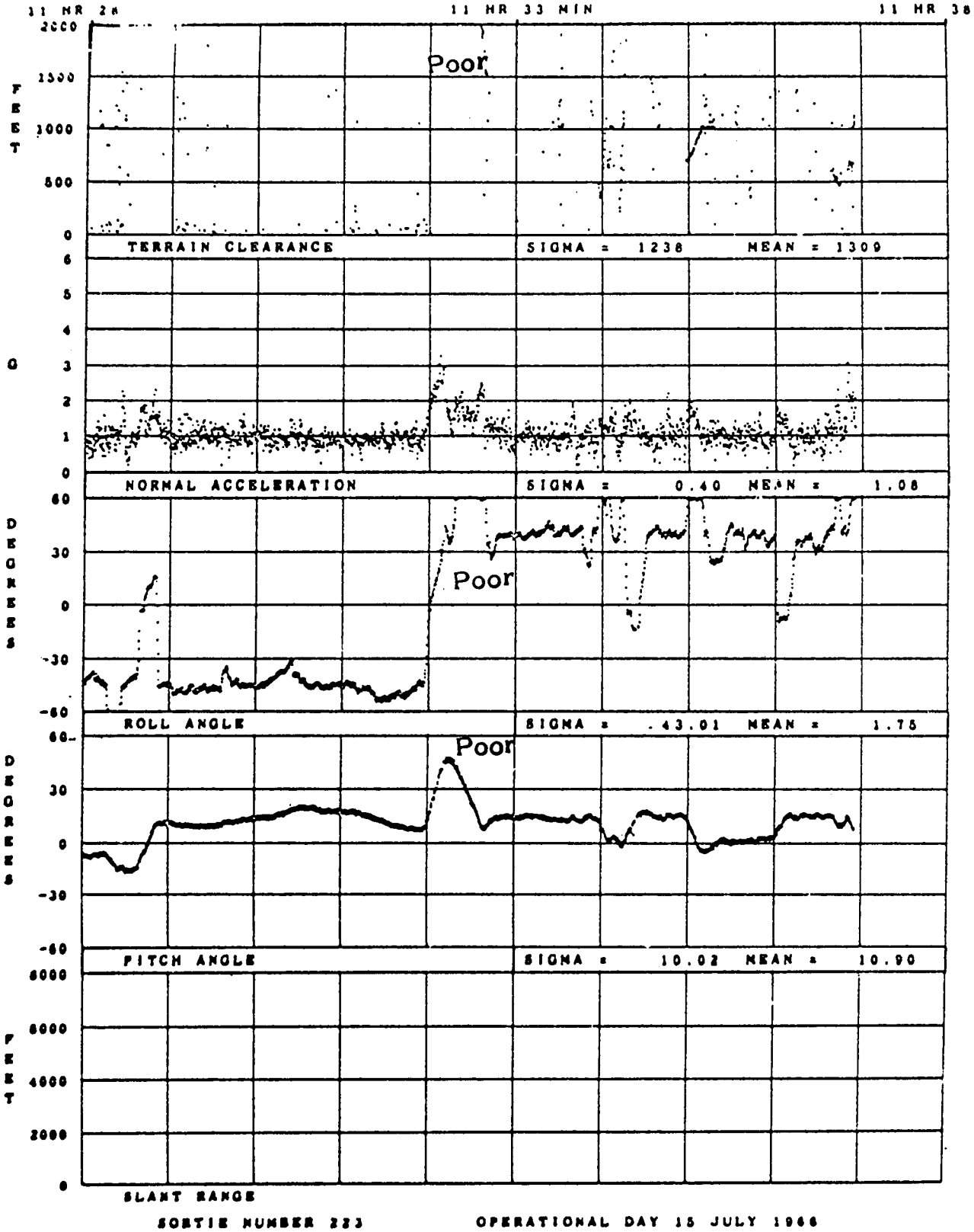

Figure 2-1 (U) Abnormal Terrain Clearance, Roll Angle and Pitch Angle Data

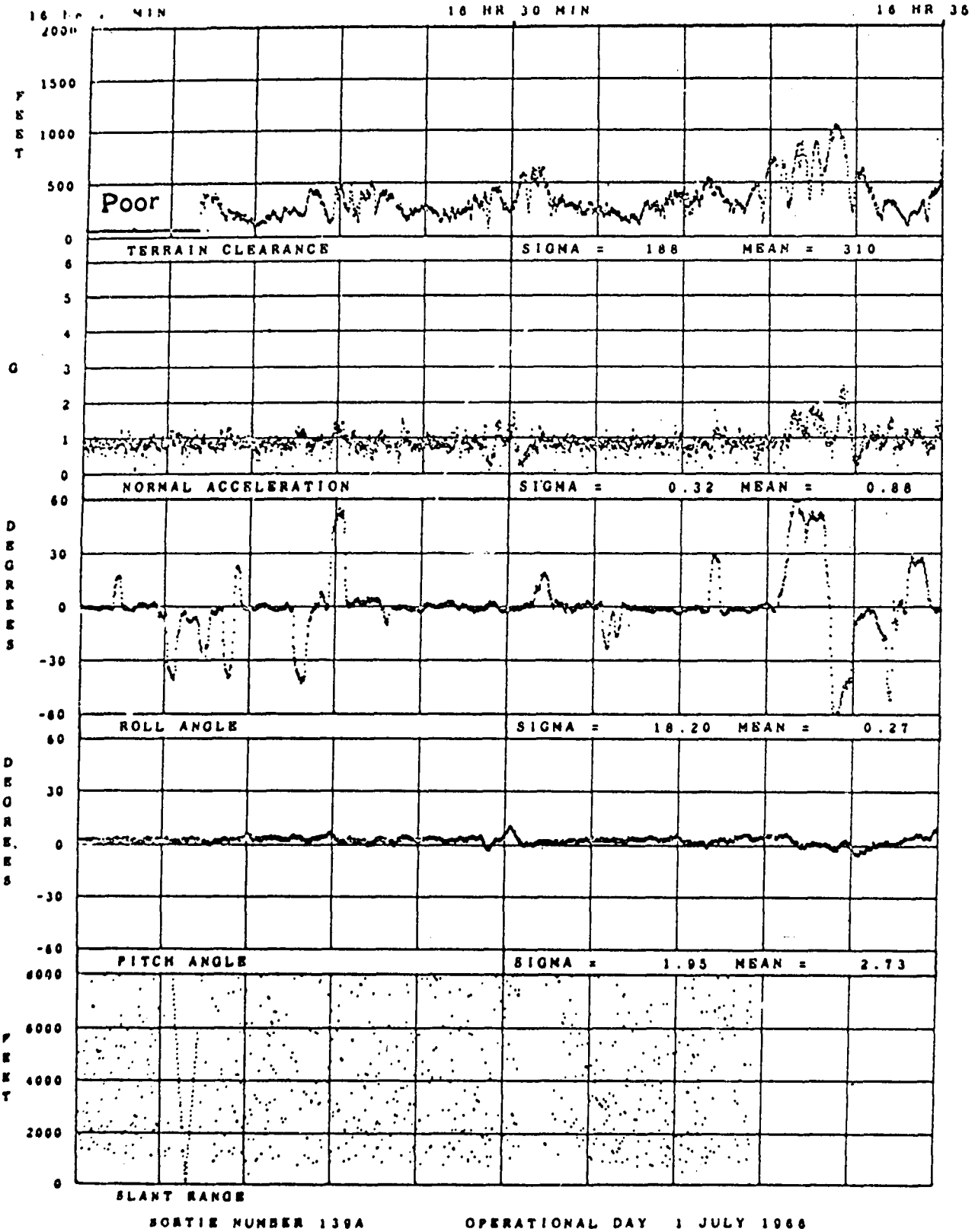

Figure 2-2 (U) Abnormal Terrain Clearance Data

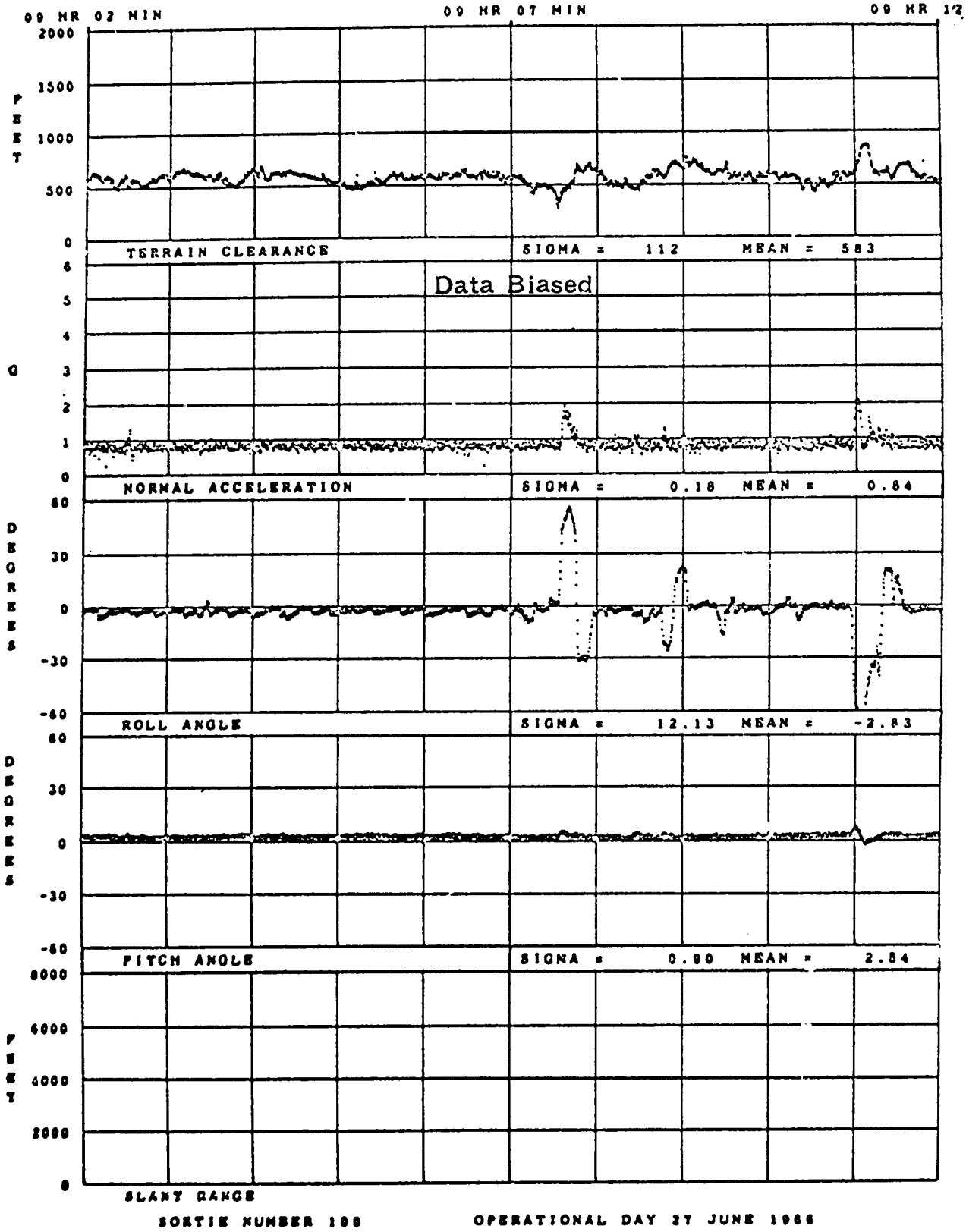

Figure 2-3 (U) Abnormal Accelerometer Data

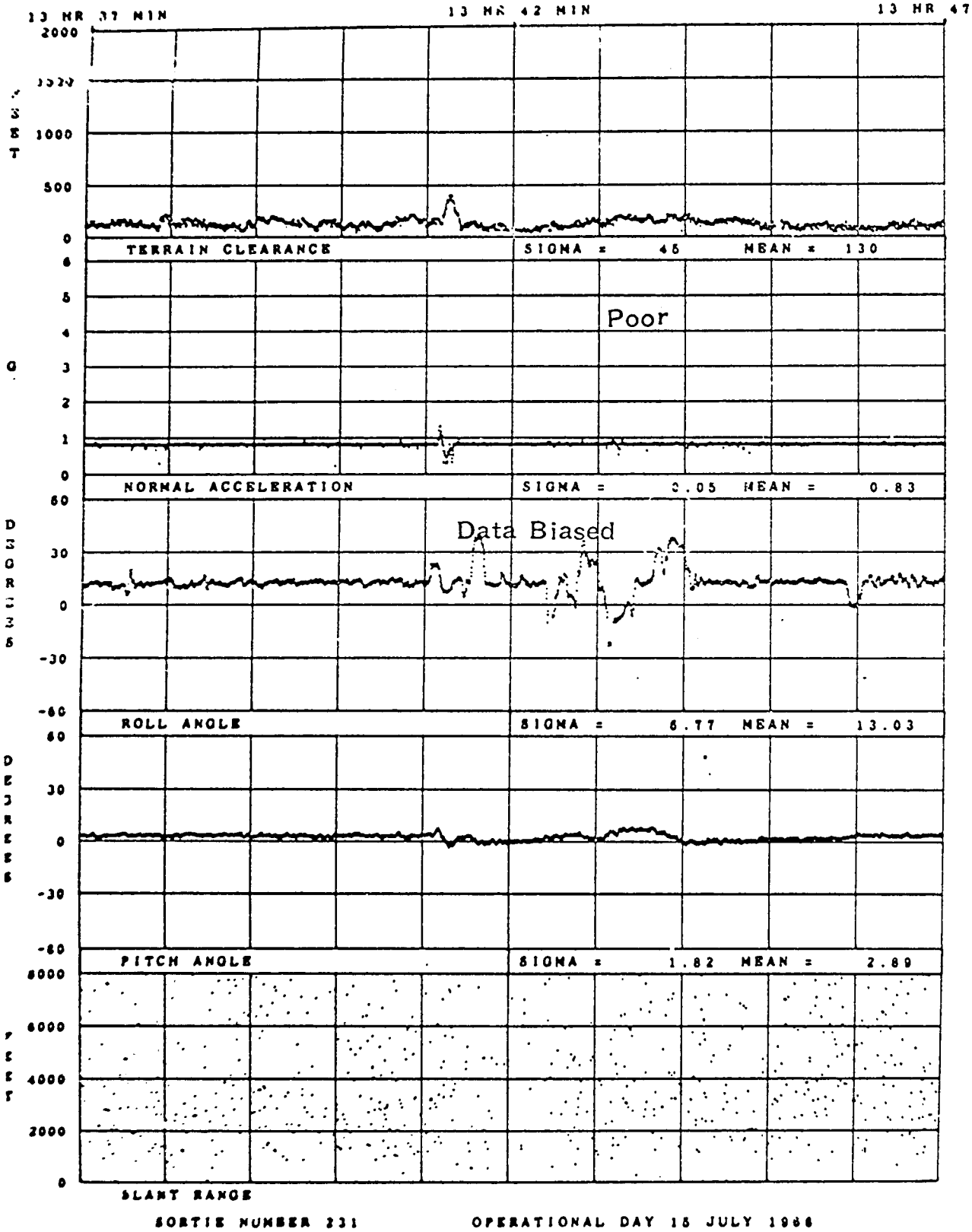

Figure 2-4 (U) Abnormal Accelerometer and Roll Angle Data

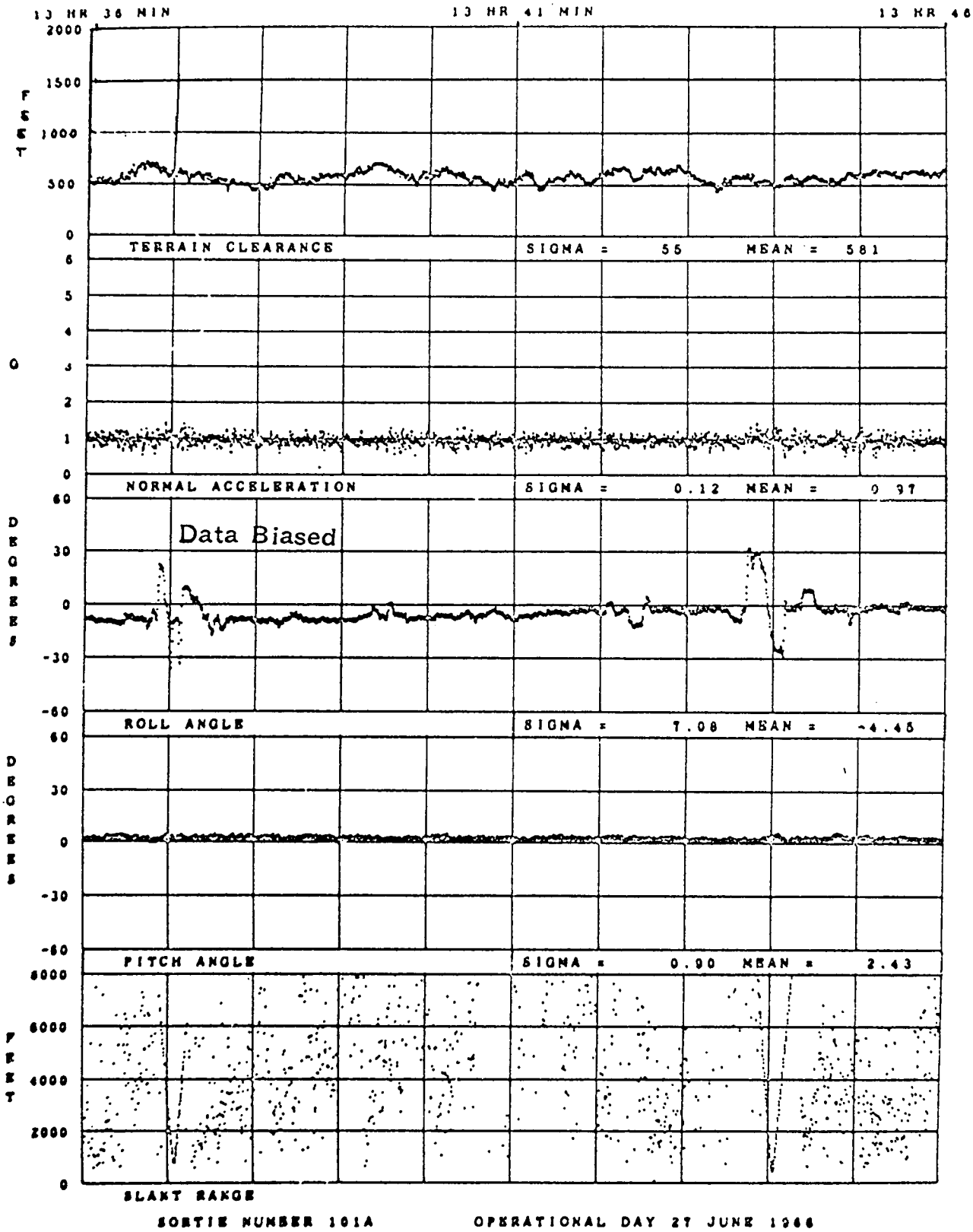

Figure 2-5 (U) Abnormal Roll Angle Data

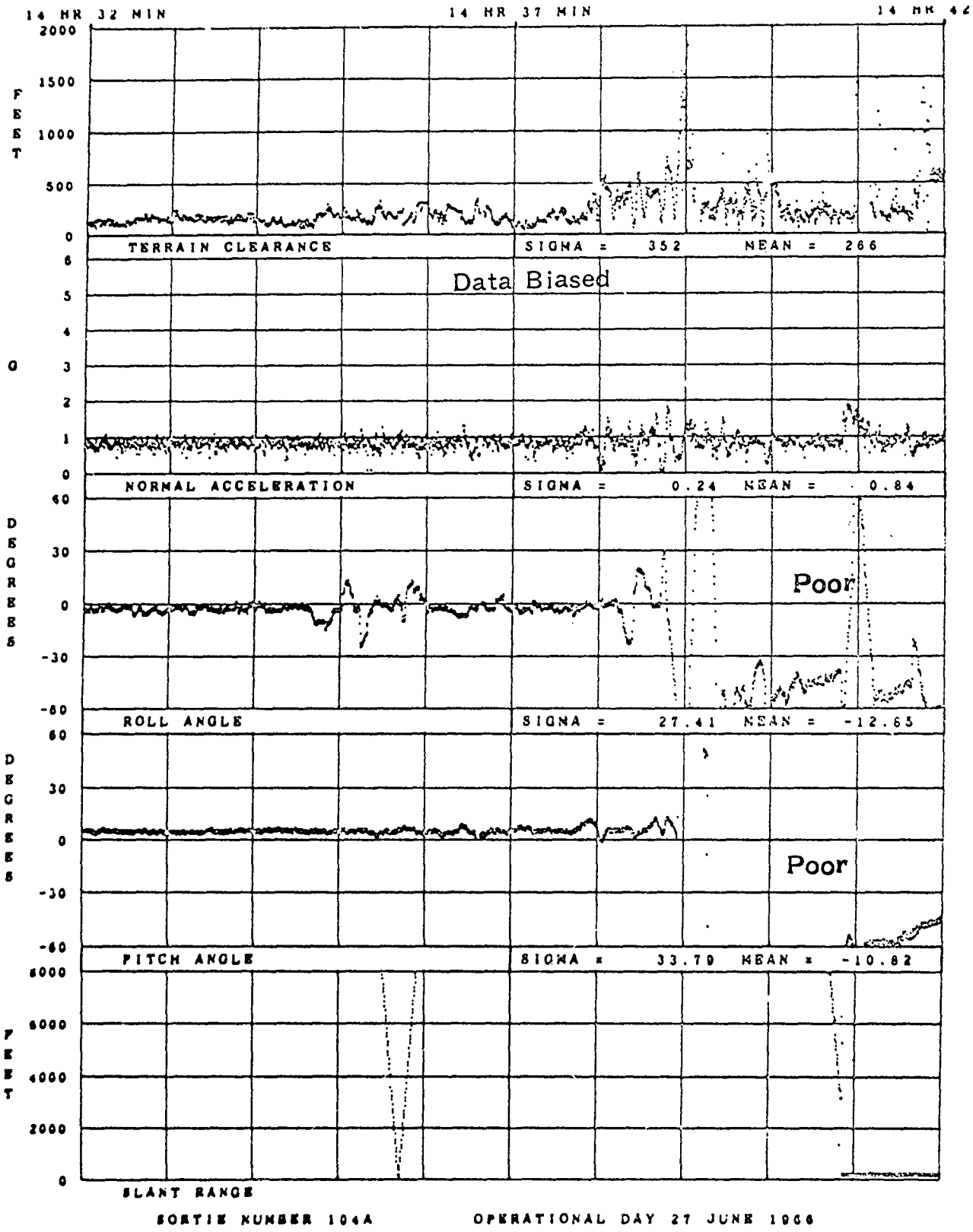

Figure 2-6 (U) Abnormal Accelerometer, Roll Angle and Pitch Angle Data

data of Figure 2-6. The data are considered poor until the nominal returns to its value prior to maneuvering.

(2) Biased data were caused mainly by the mechanical mounting of the instrumented pod to the aircraft and incorrect zero voltages on the gyro transducer circuits. Biased data are characterized by the nominal value for the roll angle being displaced more than 4 degrees and less than 10 degrees, as shown in Figure 2-4. Biased data were generally considered usable when the shift in the nominal value was taken into account. Biasing on the pitch angle was not generally recognizable since its nominal value was dependent upon indeterminant factors such as aircraft angle of attack under various fuel loads and speeds.

d. Slant Range. Figure 2-7 shows an example of abnormal slant range data. The double traces that appear for each of the three C-band encounters were caused by a malfunction in the digital encoder of the telemetry system. The data points in a line outside the V are the biased data and should be disregarded. Those data which form the inner V or portions of this V are considered usable. In the second encounter of the example, the data forming the right hand line are the acceptable data.

e. Off Scale Data. Data that exceeded the vertical scale of the plots and had no indications of being abnormal were identified as "off scale" (Figure 2-8).

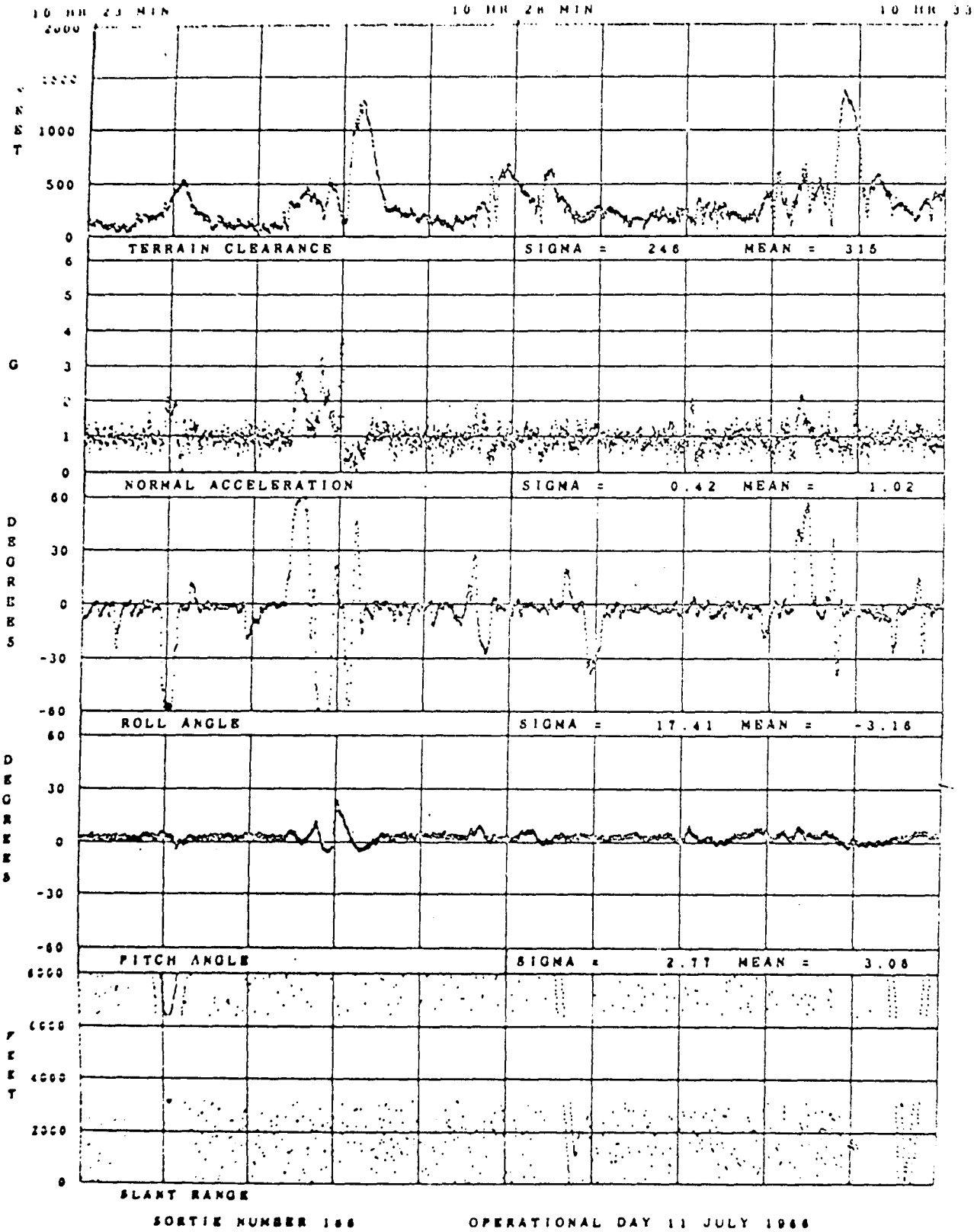

Figure 2-7 (U) Abnormal Slant Range Data

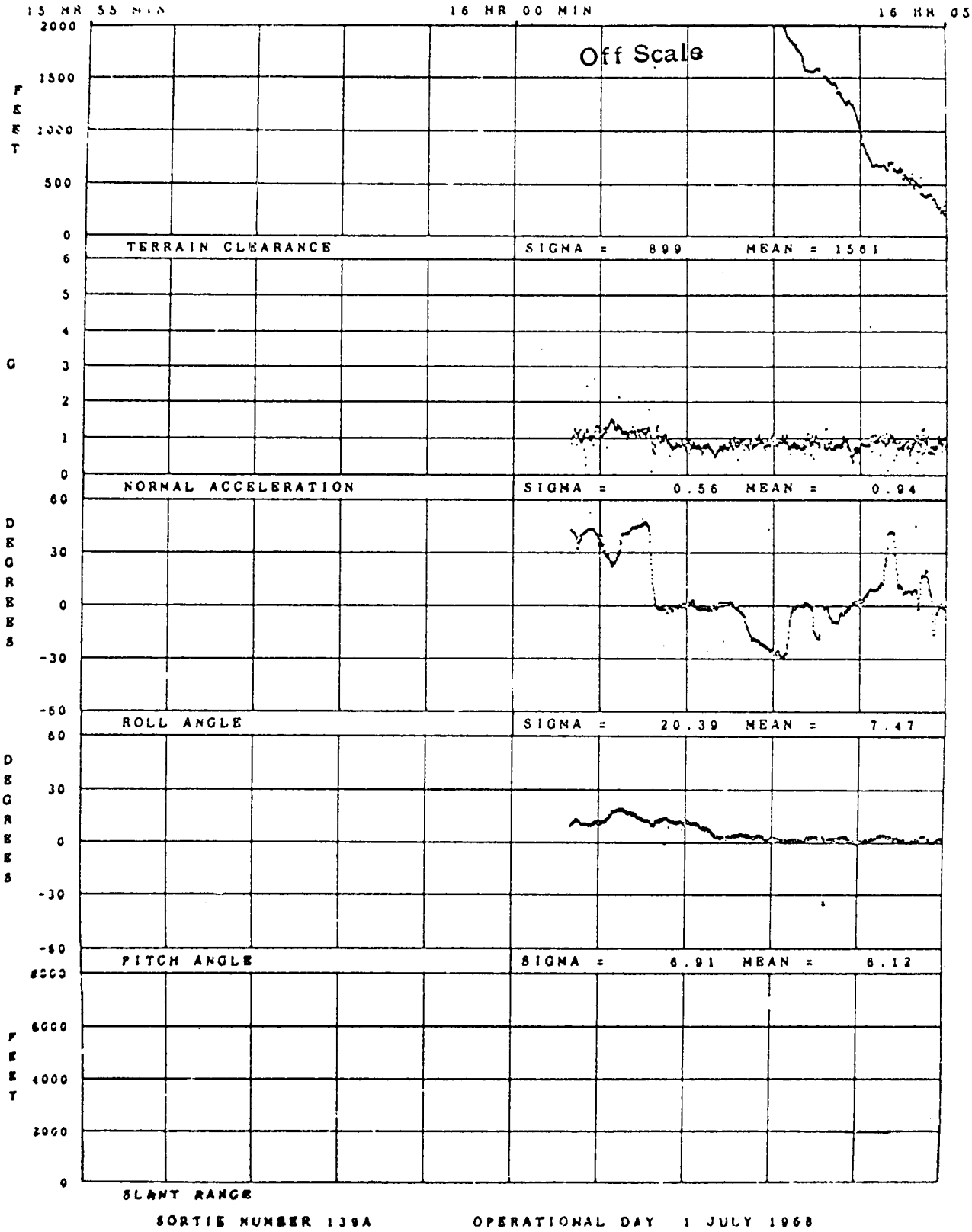

Figure 2-8 (U) Terrain Clearance Off Scale Data

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SECTION 3

DATA PLOTS FOR RA-5C AIRCRAFT BY SORTIE

1. Sortie Order. This section contains plots of aircraft position data, telemetered data and aircraft altitude and terrain profile. The plots are listed by sortie and ordered by operational day. The sorties appear in the following order.

SORTIE	PAGE NUMBER
510	3-3
512	3-15
514B	3-22
519	3-34
517	3-45
521	3-56
516A	3-67
533	3-78
523	3-90
530	3-101
526	3-112
528A	3-124
532	3-135
536A	3-146

SORTIE	PAGE NUMBER
534	3-158
547	3-170
543	3-182
541	3-194
545	3-205
538B	3-217
550	3-230
552	3-241
558	3-252
551	3-263
549	3-275
557	3-287
565	3-299
566	3-311
568	3-323
569	3-335
561	3-347
562	3-358

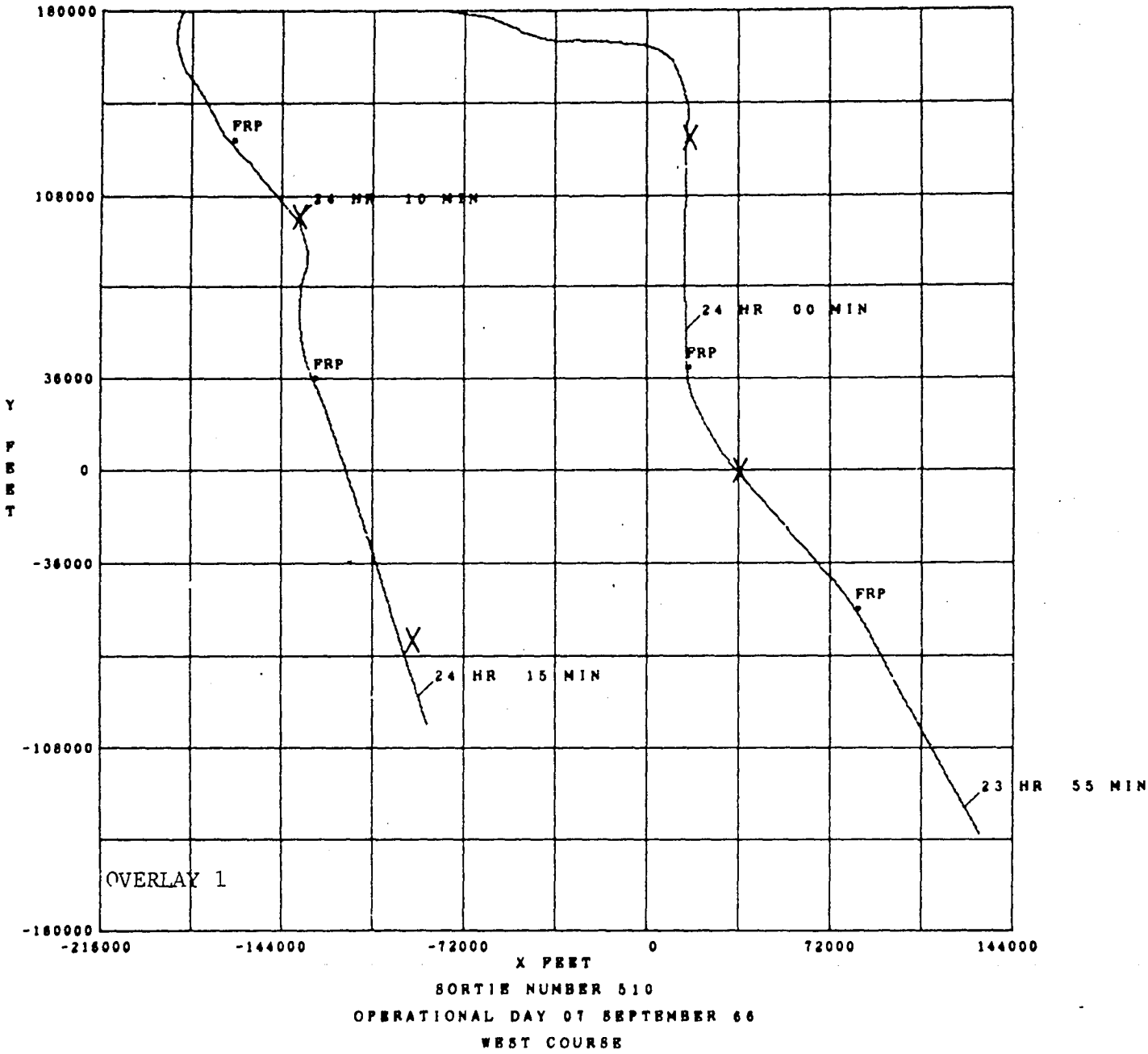
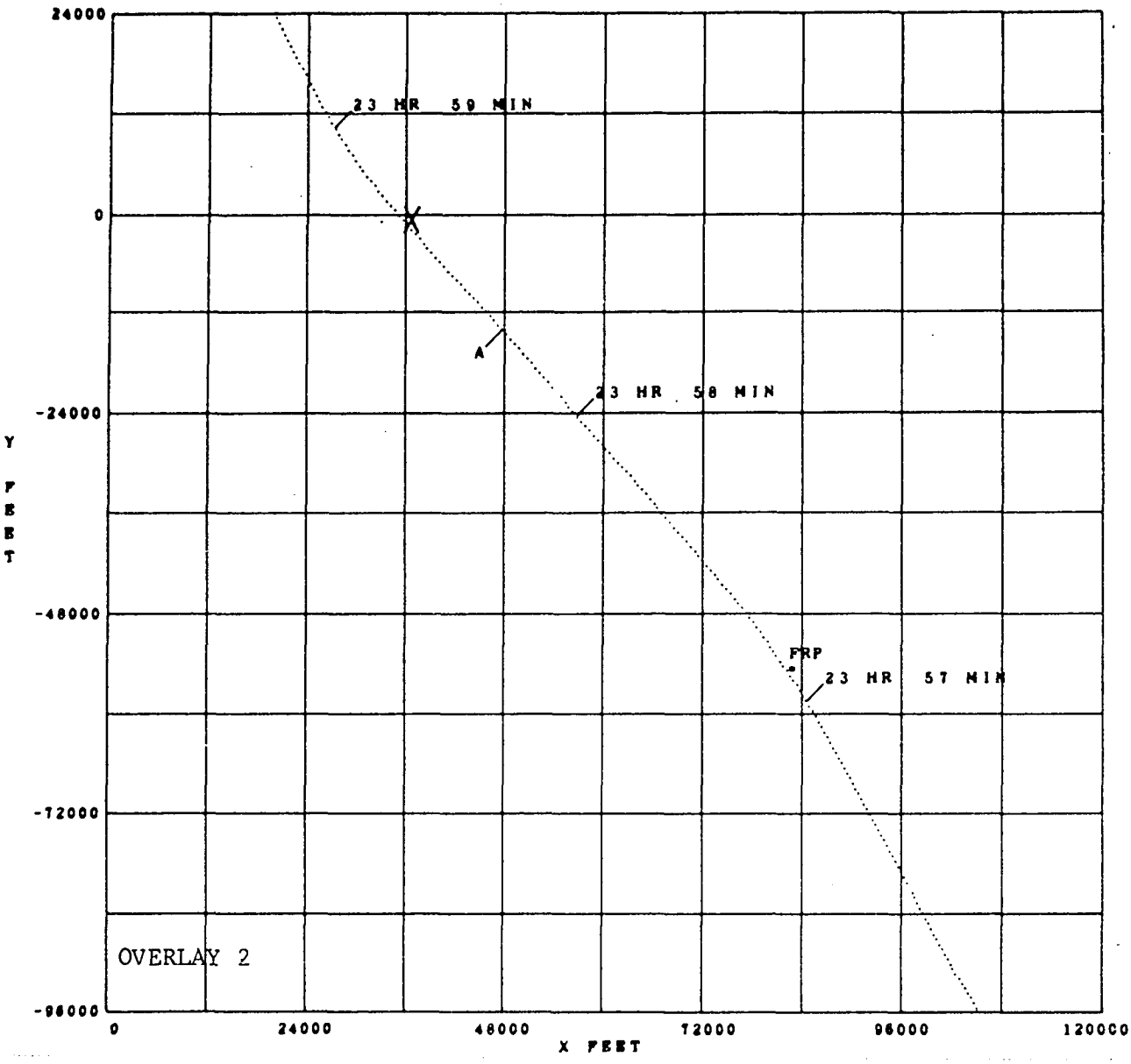


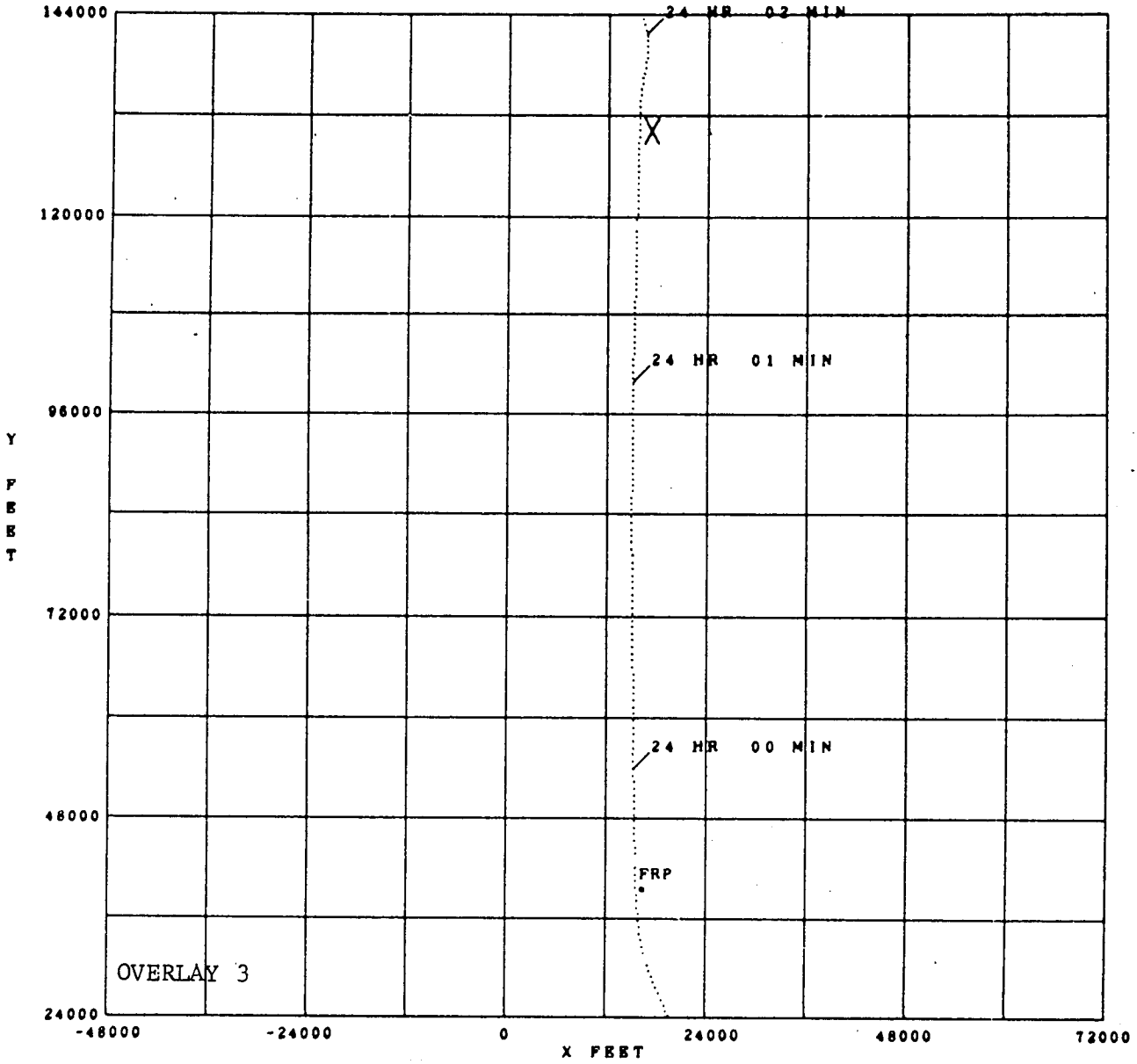
Figure 3-1 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 809 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 510
TARGET WEST 1

04092057
J9175 126

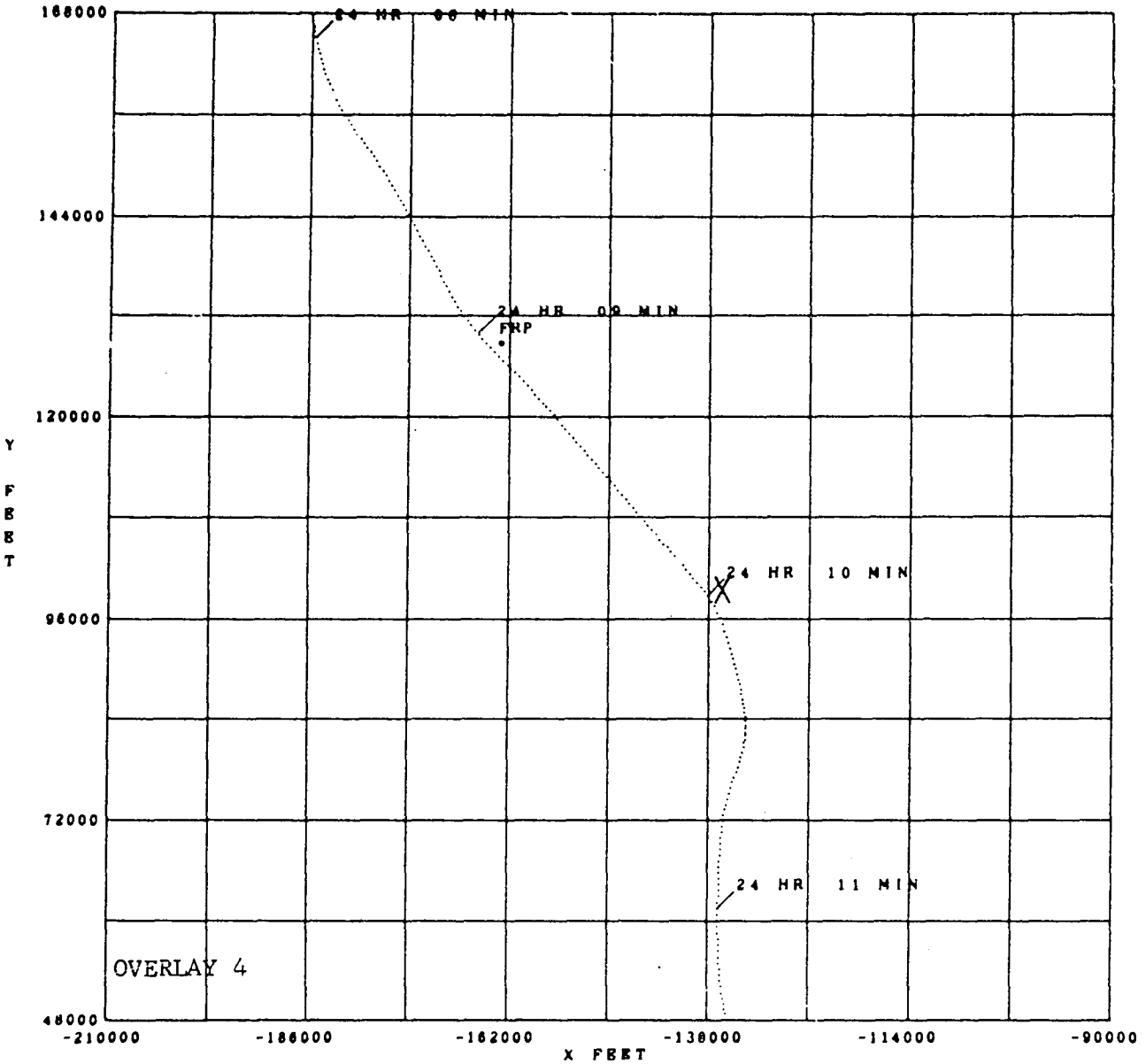
Figure 3-1 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1586 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 510
TARGET WEST 2

04092058
J9175 127

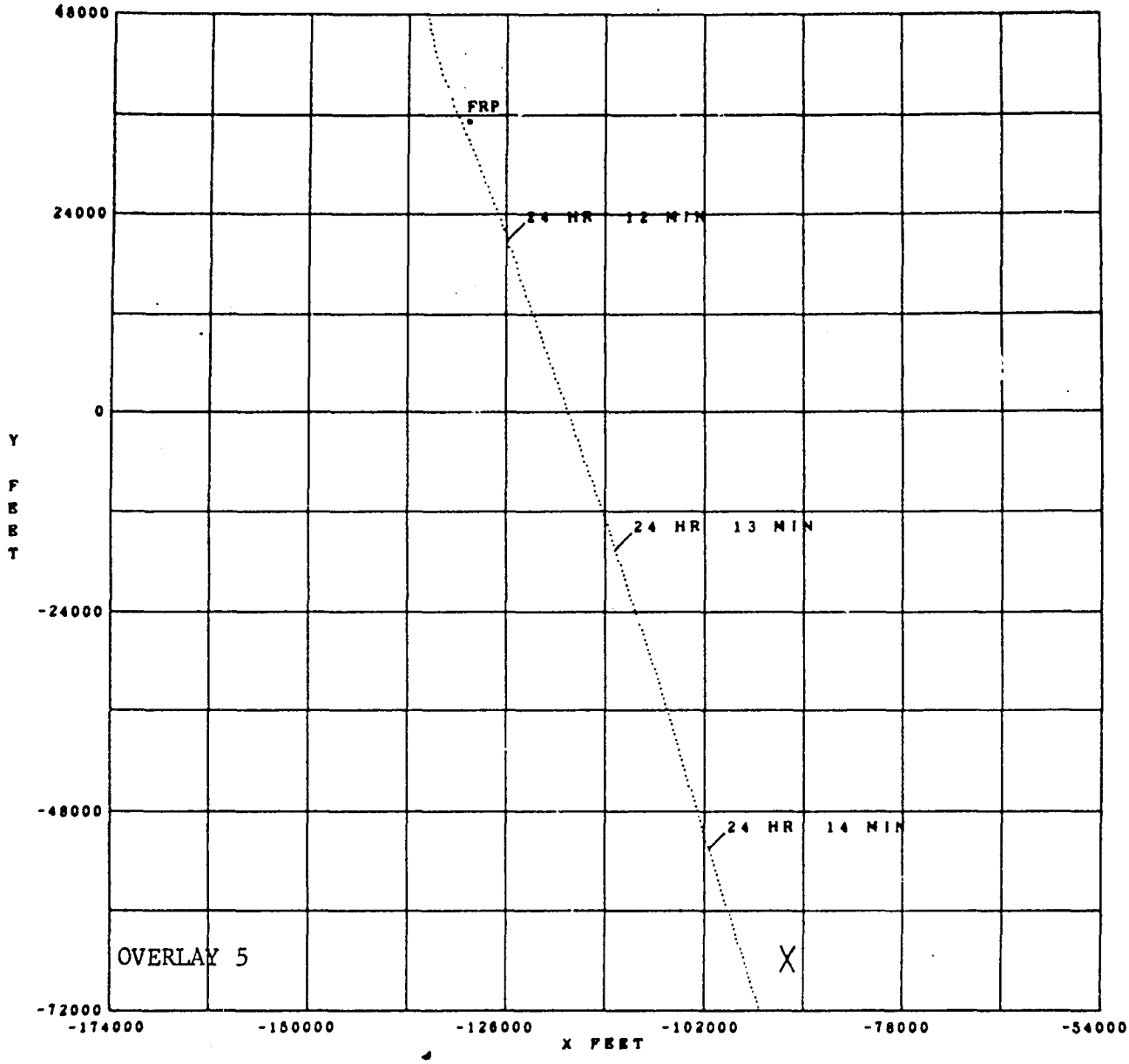
Figure 3-1 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 880 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 510
TARGET WEST 3

04092058
J9175 128

Figure 3-1 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 4800 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 510
TARGET WEST 4

04092058
19175 129

Figure 3-1 (U) Aircraft Position Data (Part 5 of 5)

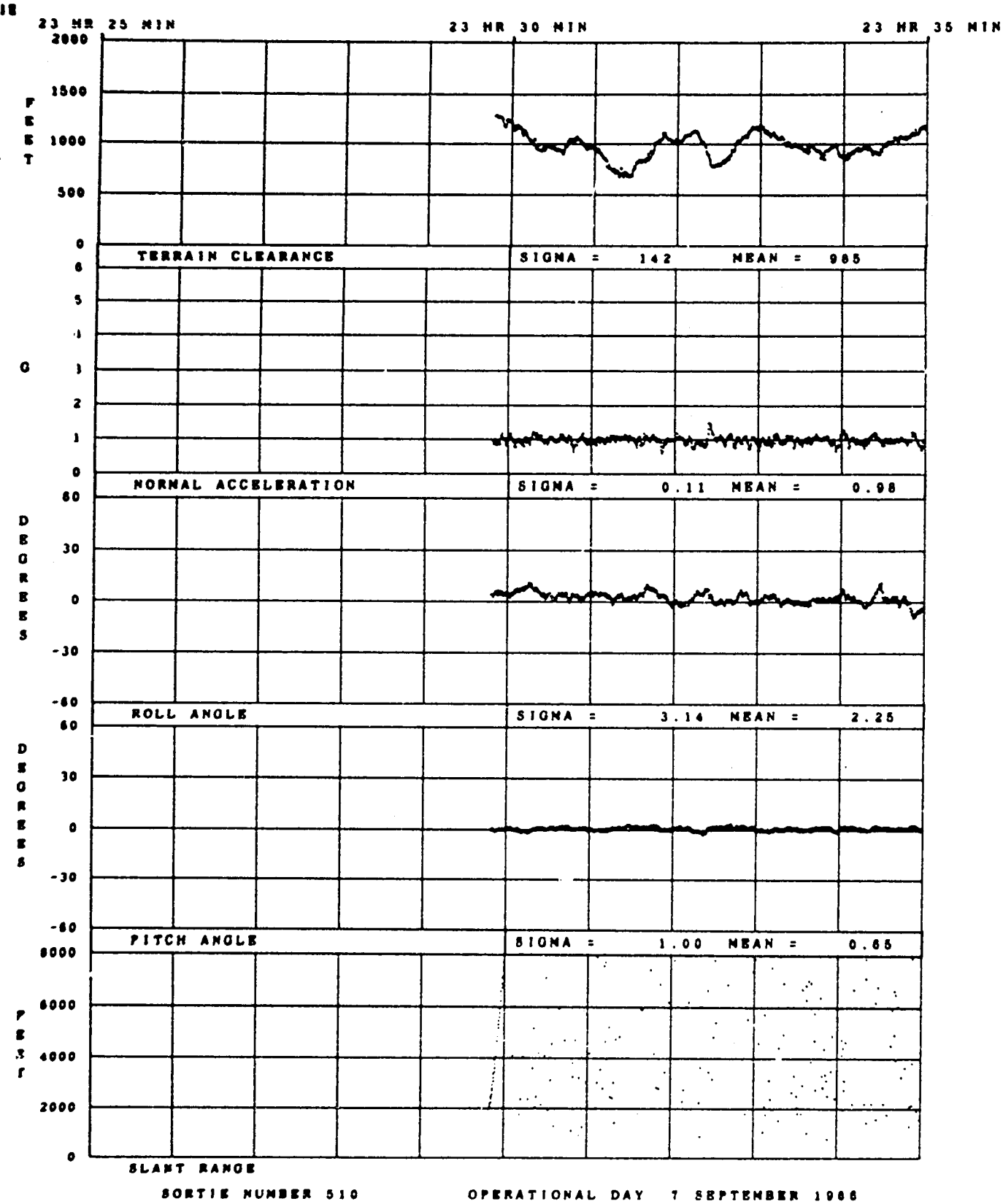


Figure 3-2 (U) Telemetered Data (Part 1 of 5)

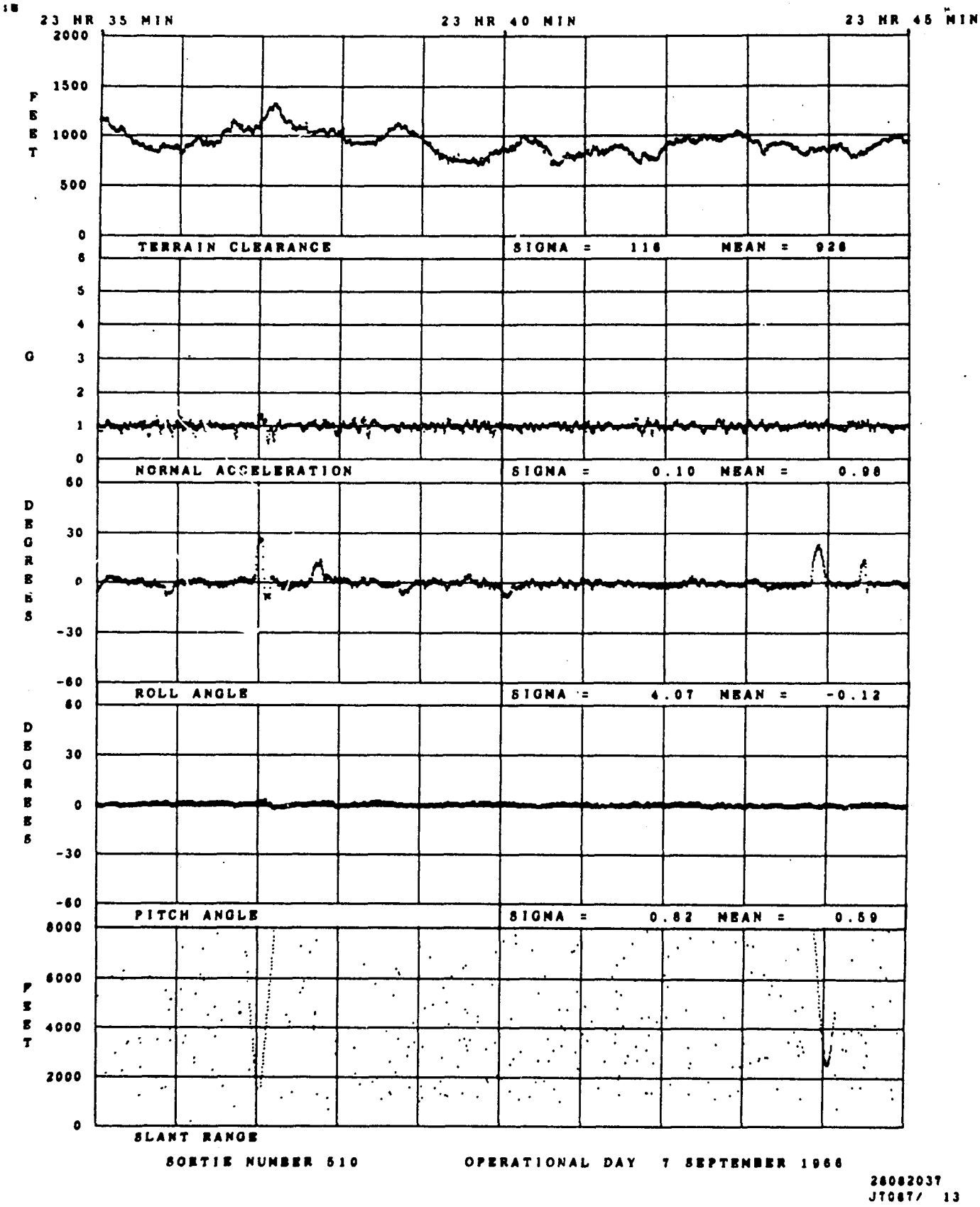


Figure 3-2 (U) Telemetered Data (Part 2 of 5)

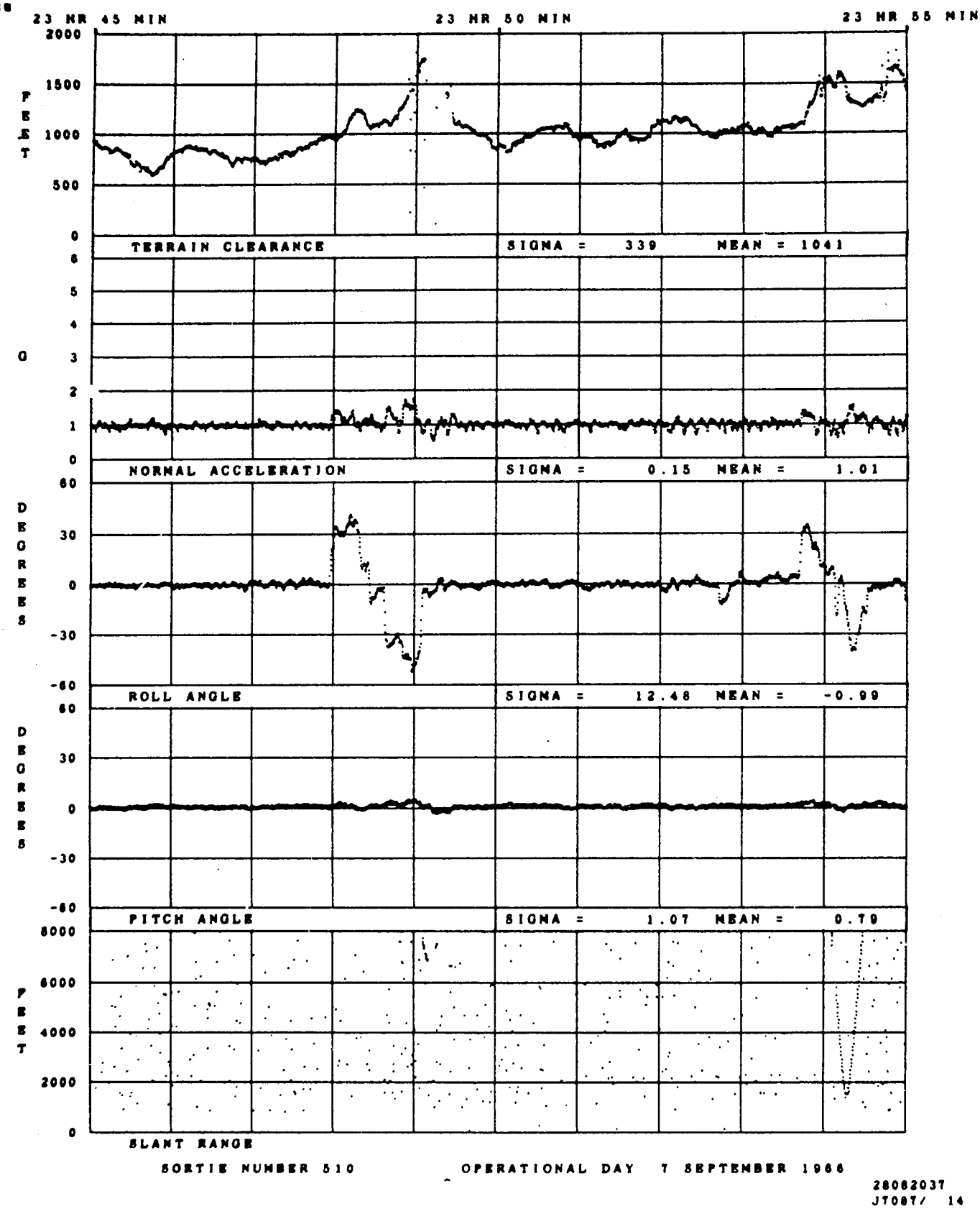


Figure 3-2 (U) Telemetered Data (Part 3 of 5)

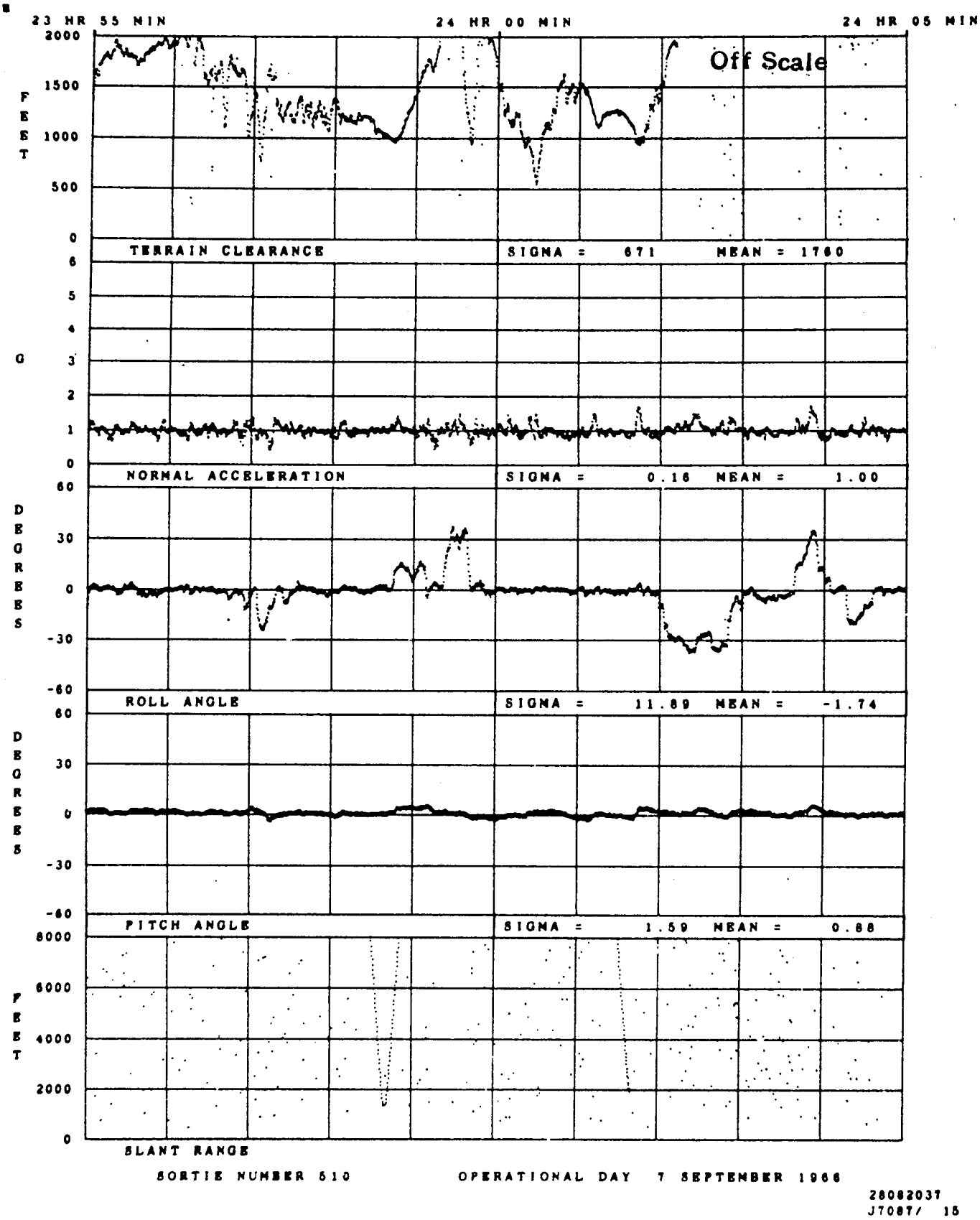


Figure 3-2 (U) Telemetered Data (Part 4 of 5)

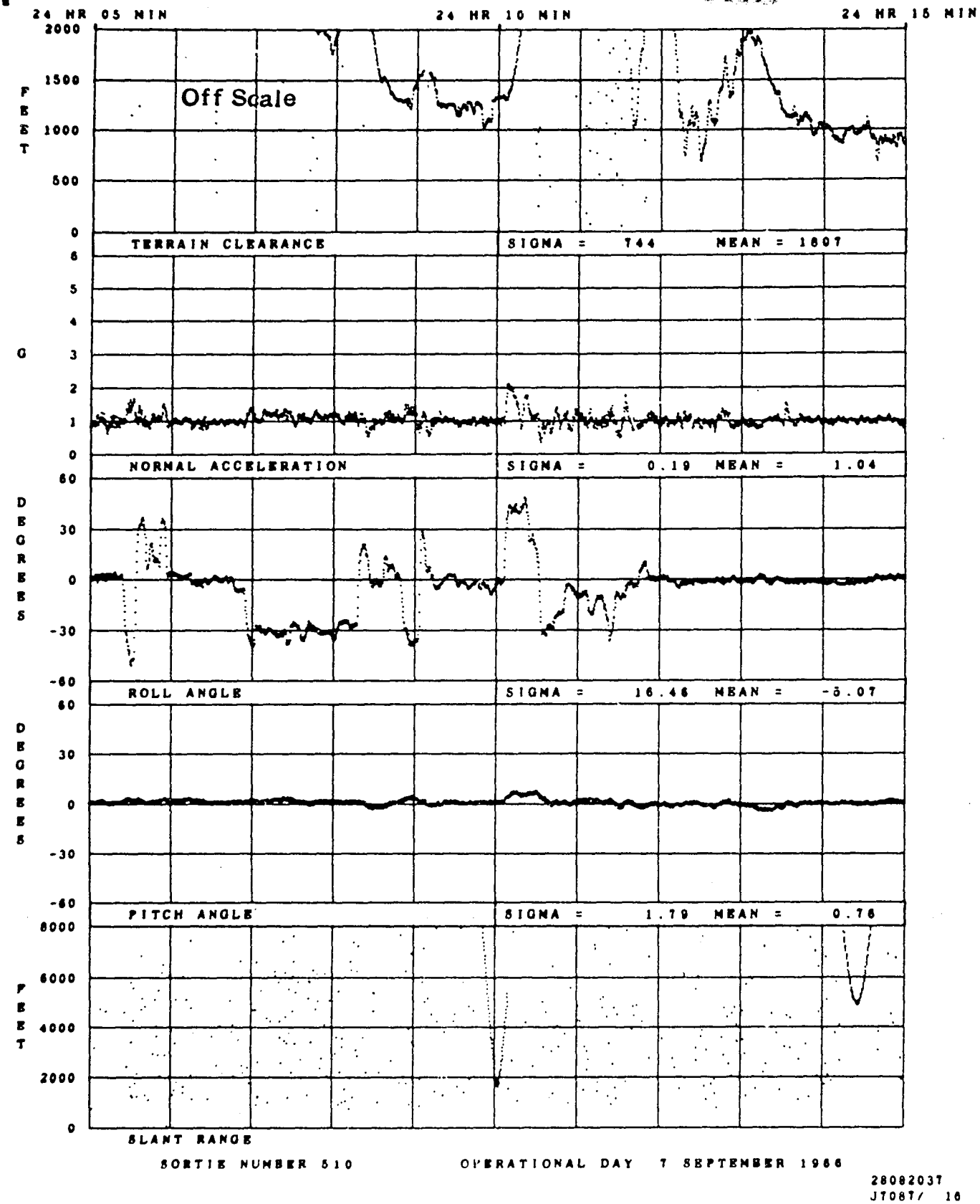
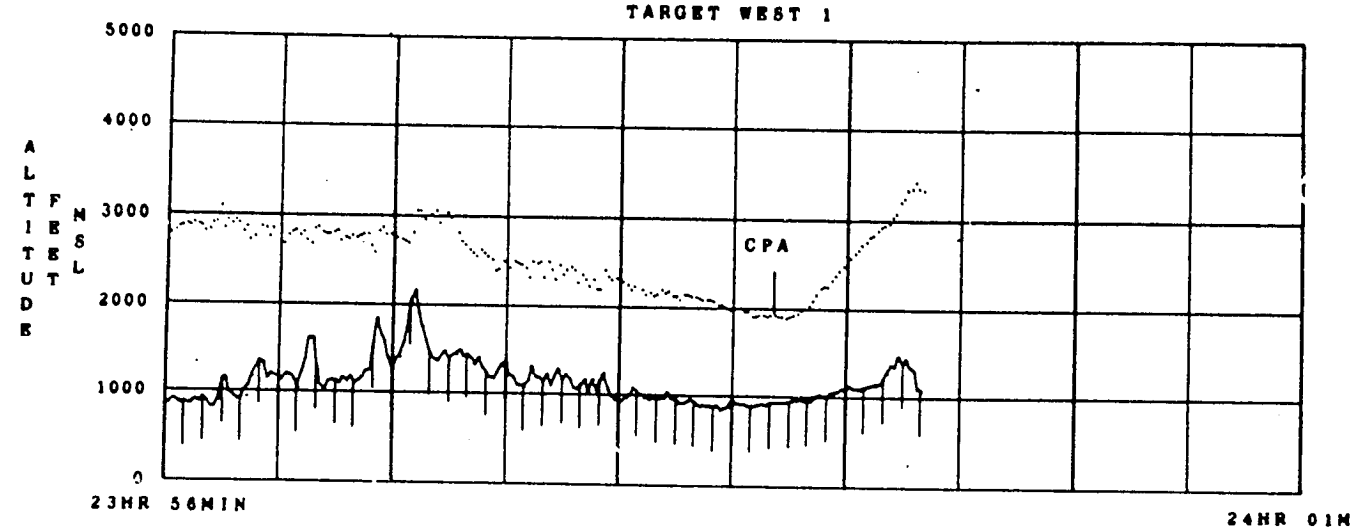
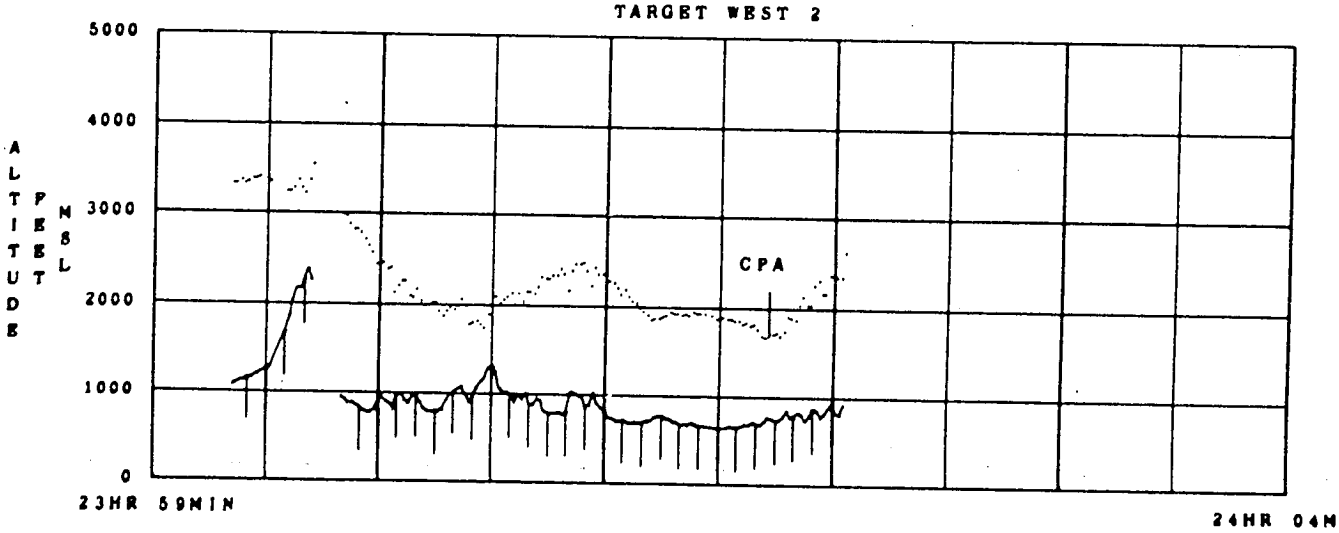


Figure 3-2 (U) Telemetered Data (Part 5 of 5)

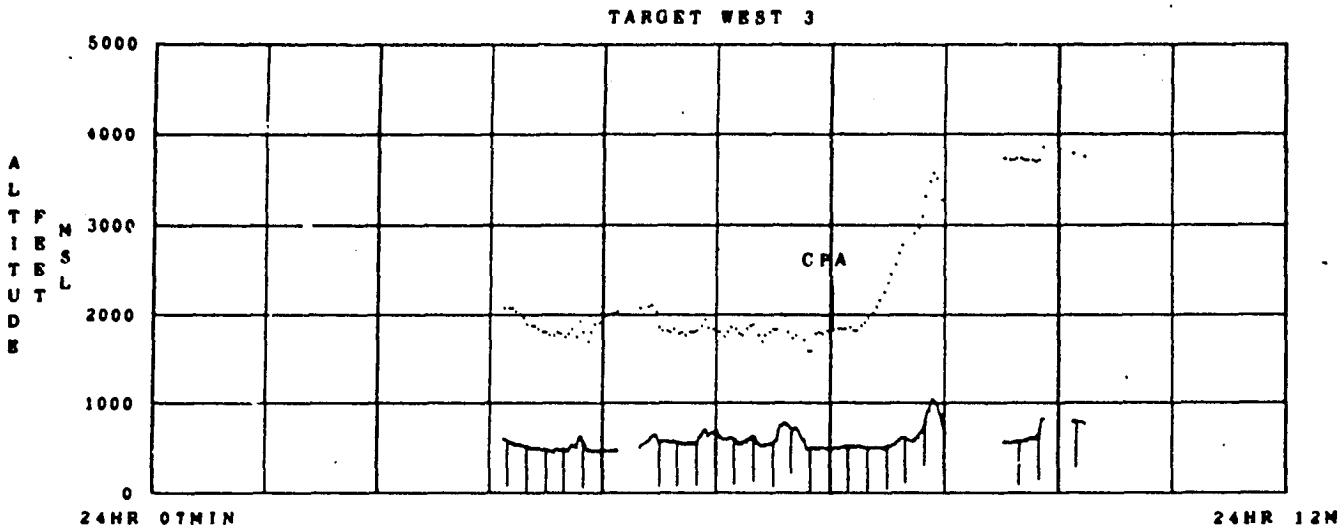


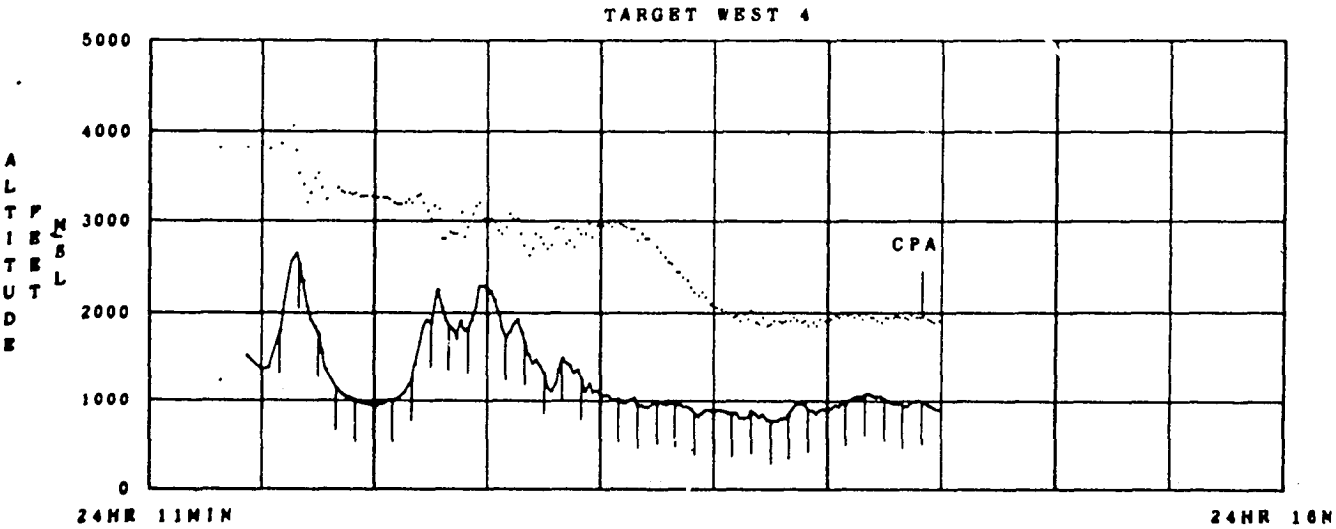


SORTIE NUMBER 510

04092058
J9175

Figure 3-3 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 510

04092058
J9175

Figure 3-3 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

SORTIE NUMBER 512 POSITION DATA ARE MISSING

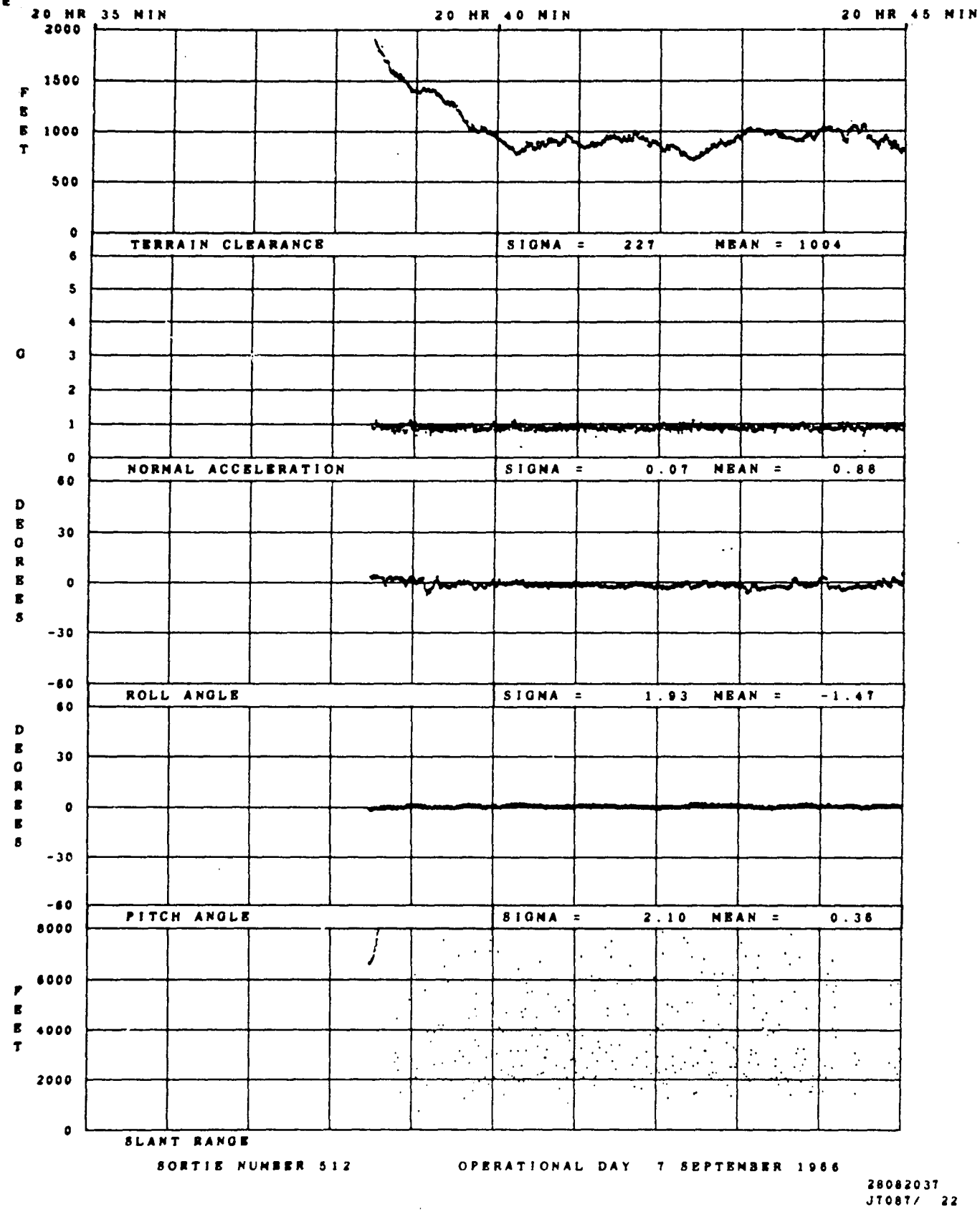


Figure 3-4 (U) Telemetered Data (Part 1 of 5)

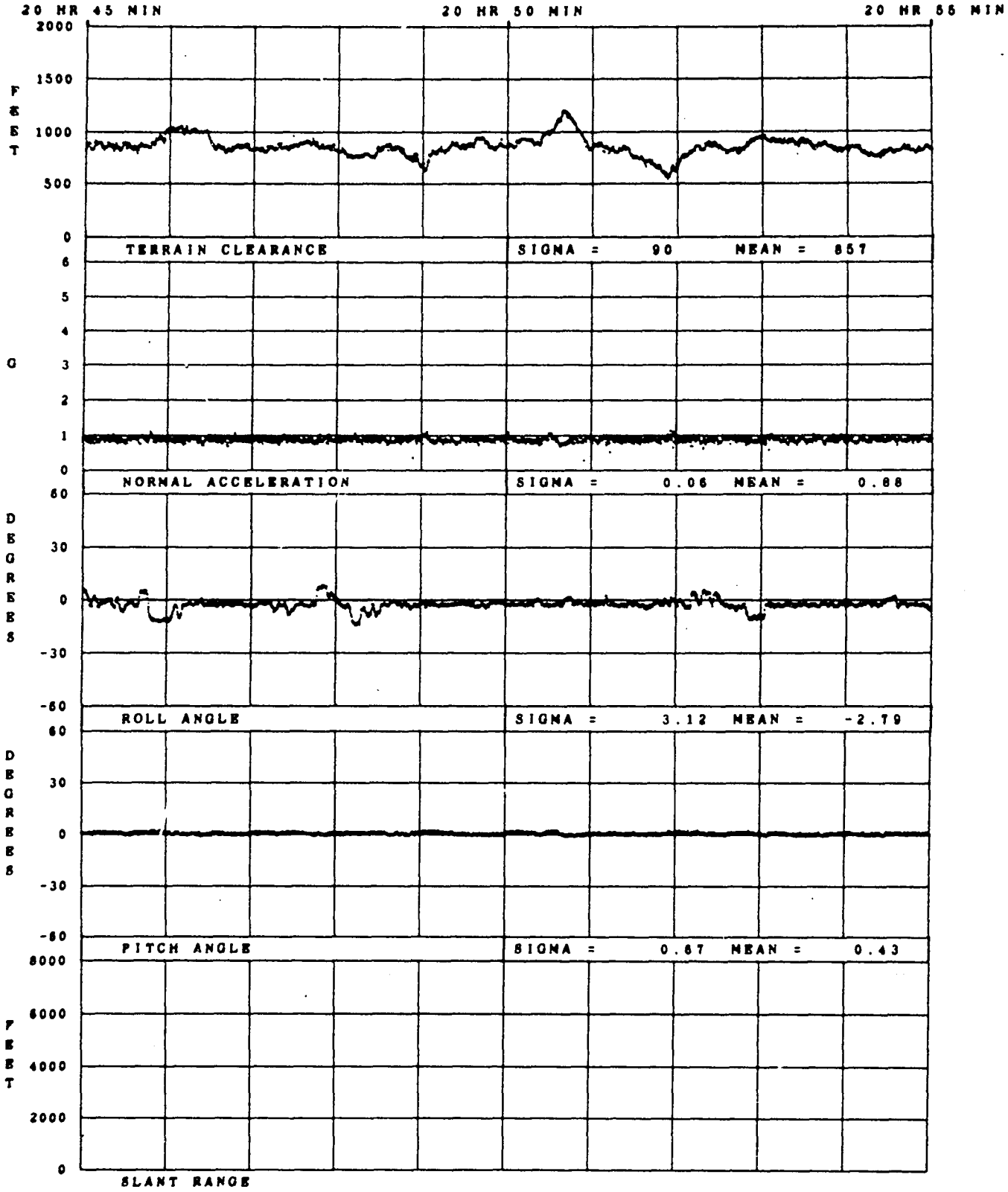


Figure 3-4 (U) Telemetered Data (Part 2 of 5)

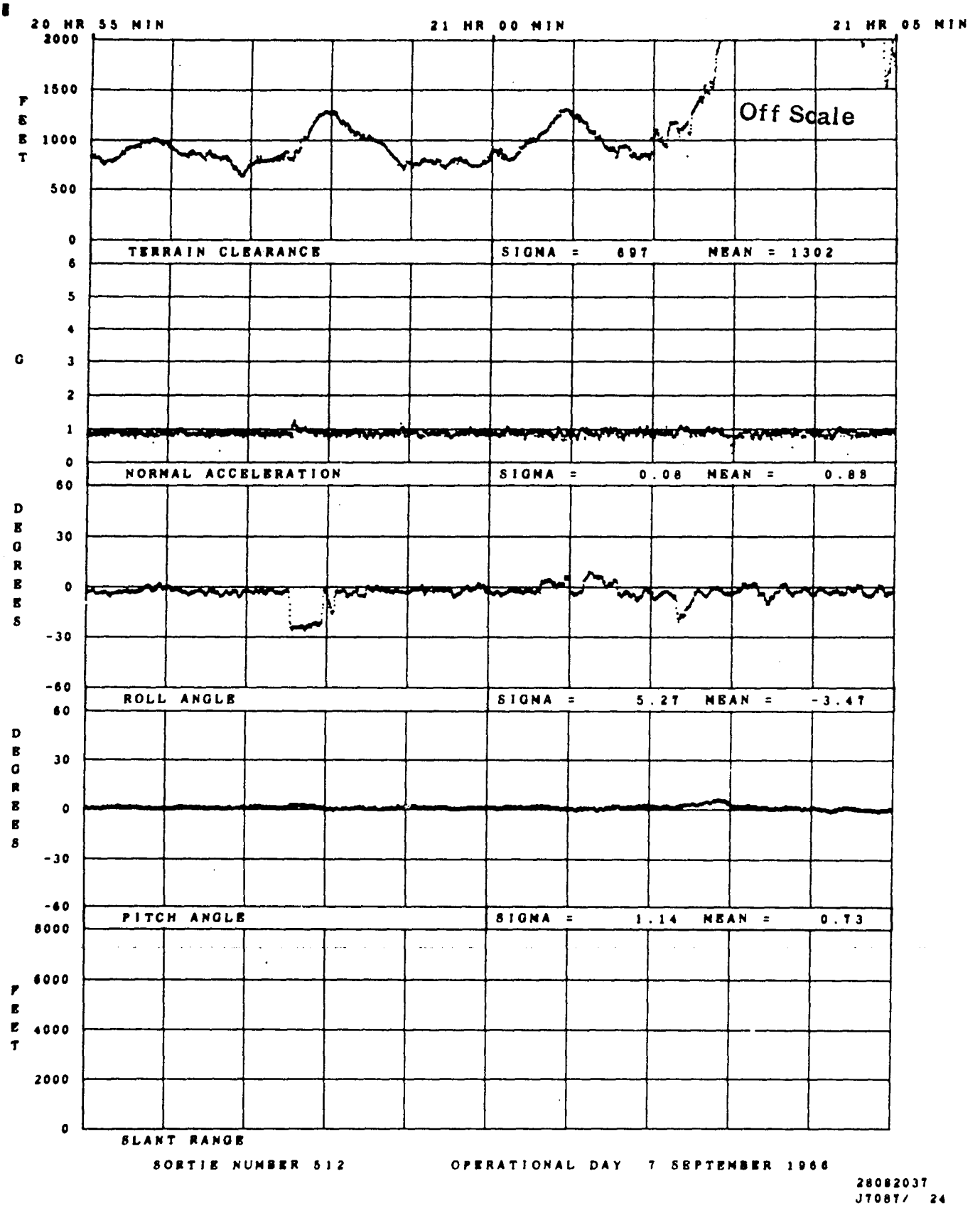


Figure 3-4 (U) Telemetered Data (Part 3 of 5)

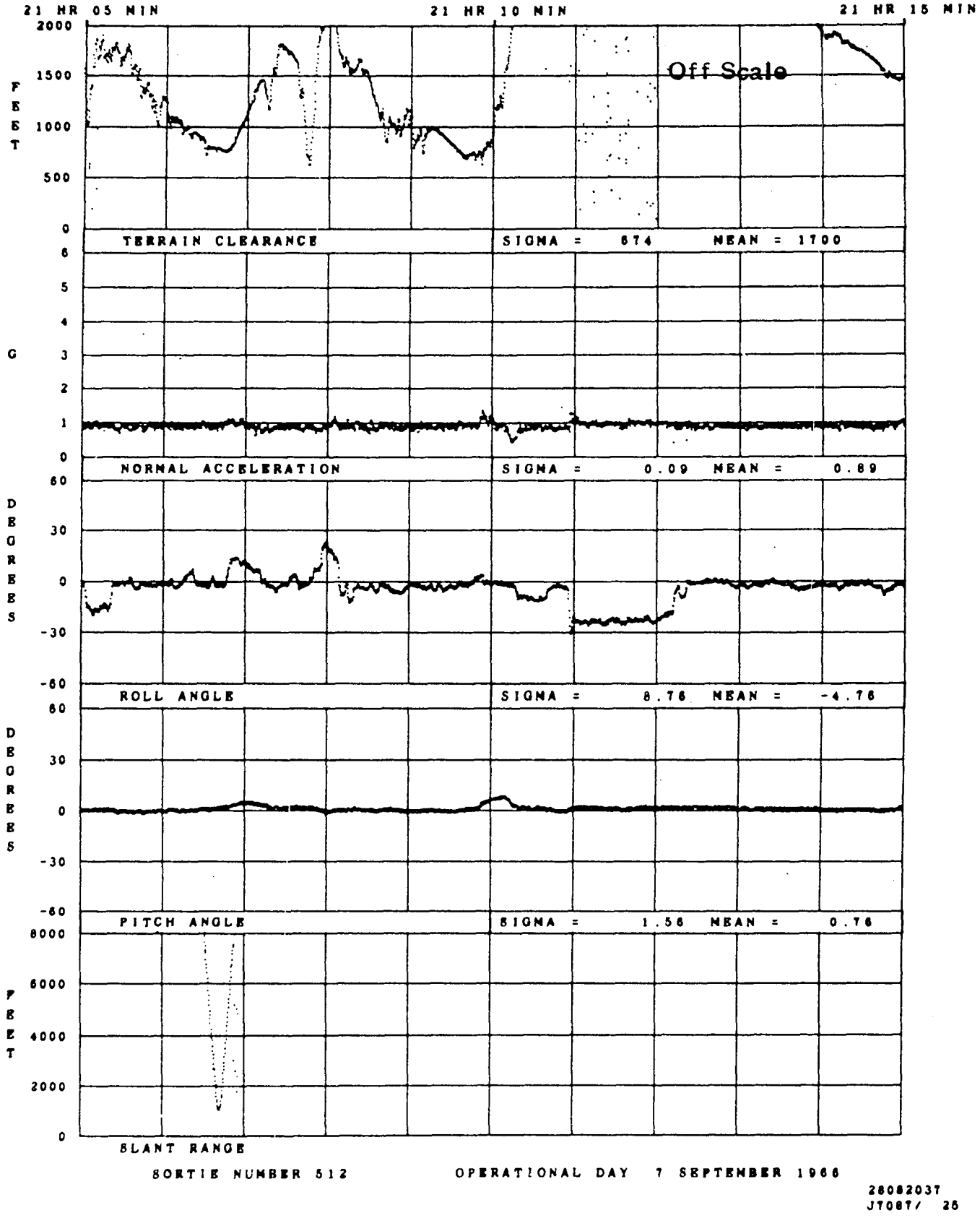


Figure 3-4 (U) Telemetered Data (Part 4 of 5)

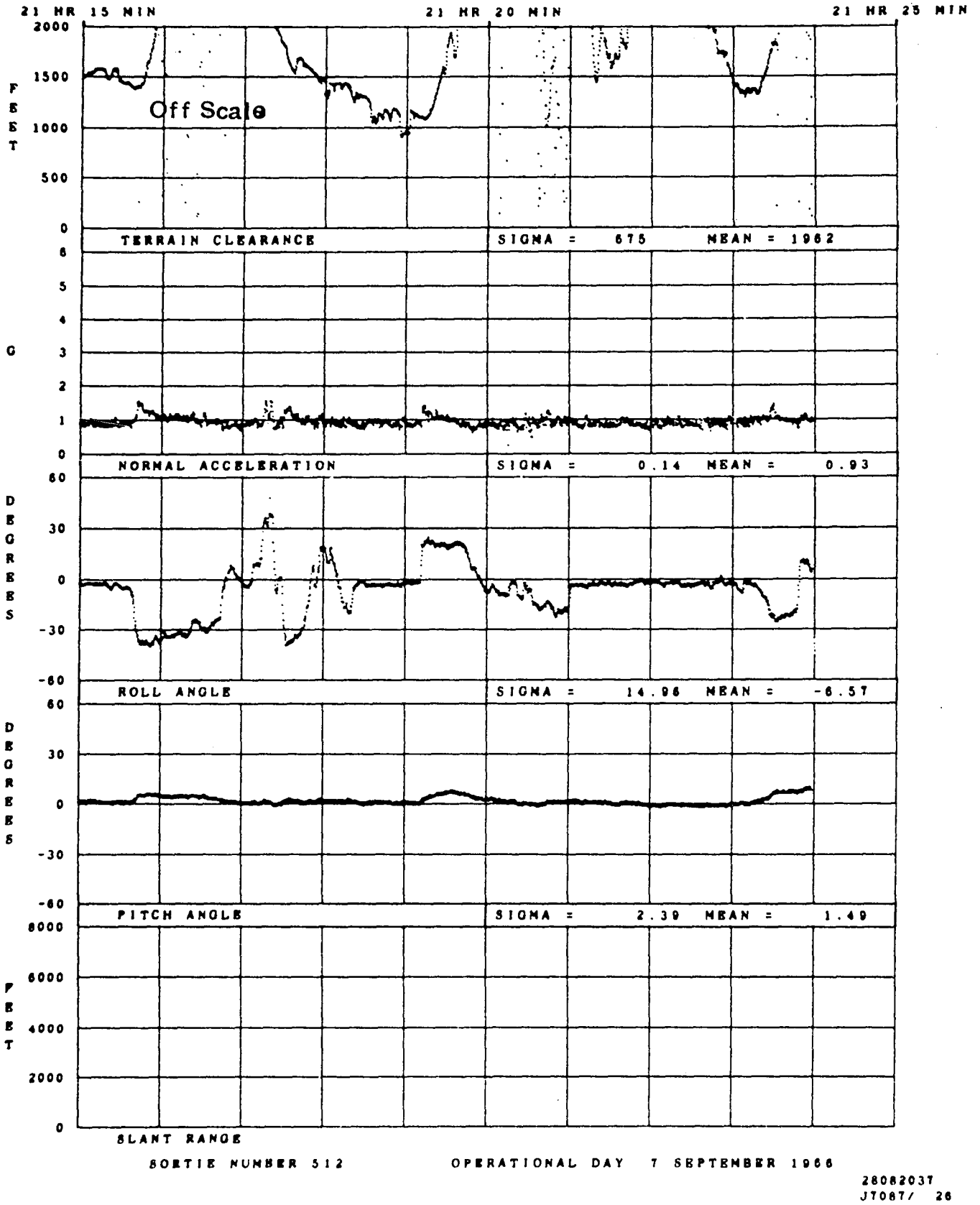


Figure 3-4 (U) Telemetered Data (Part 5 of 5)

ALTITUDE DATA ARE MISSING

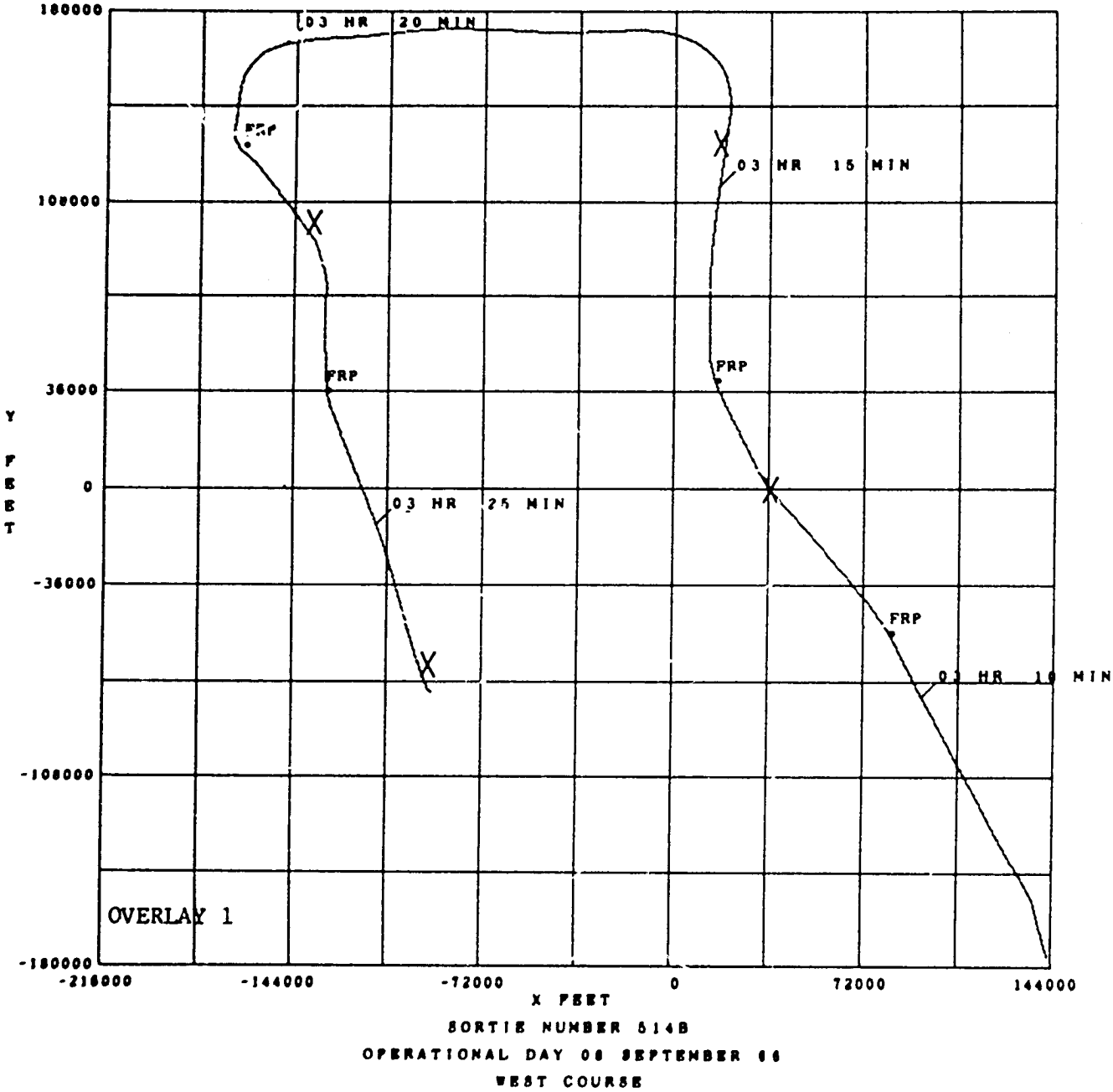
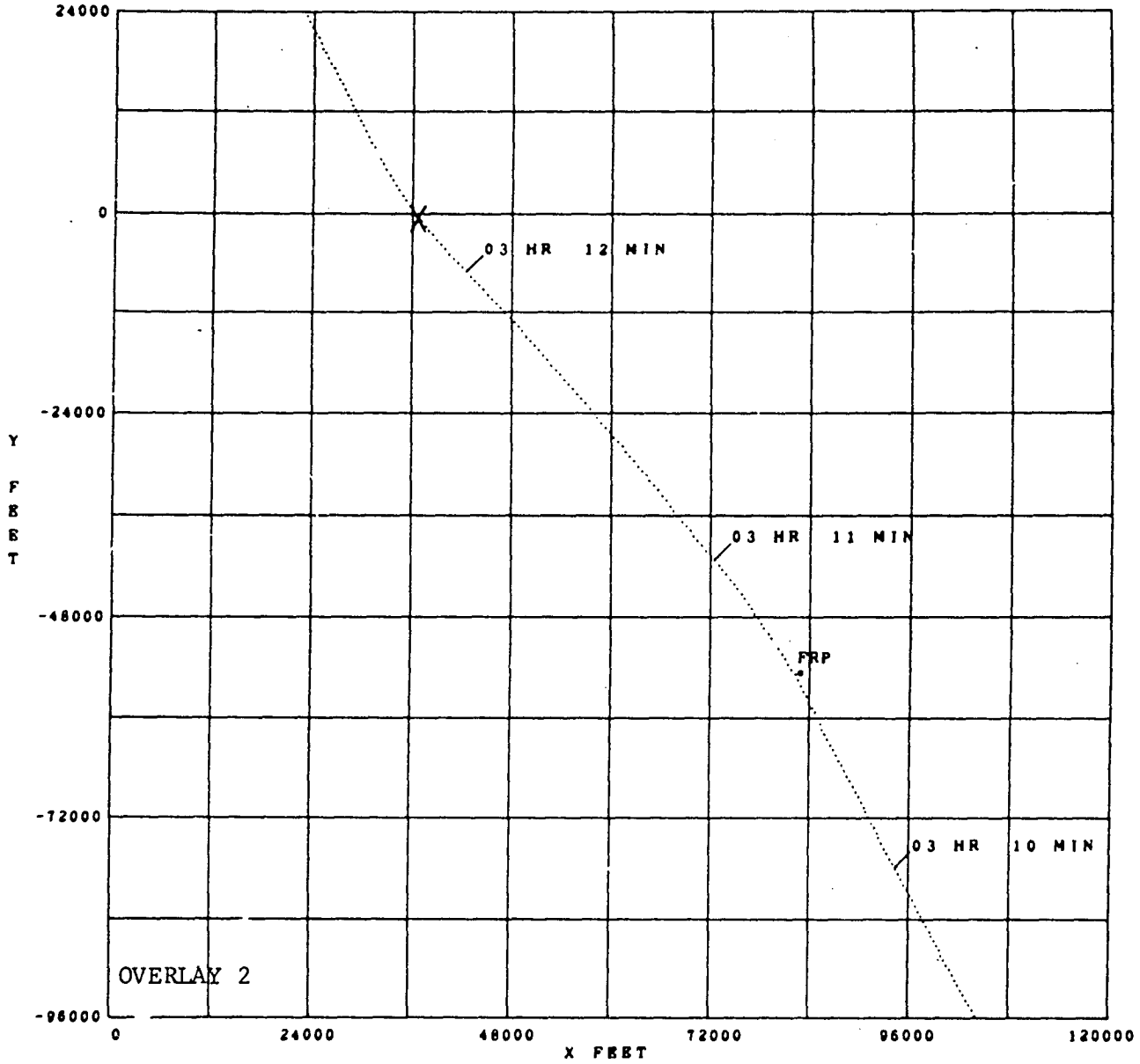


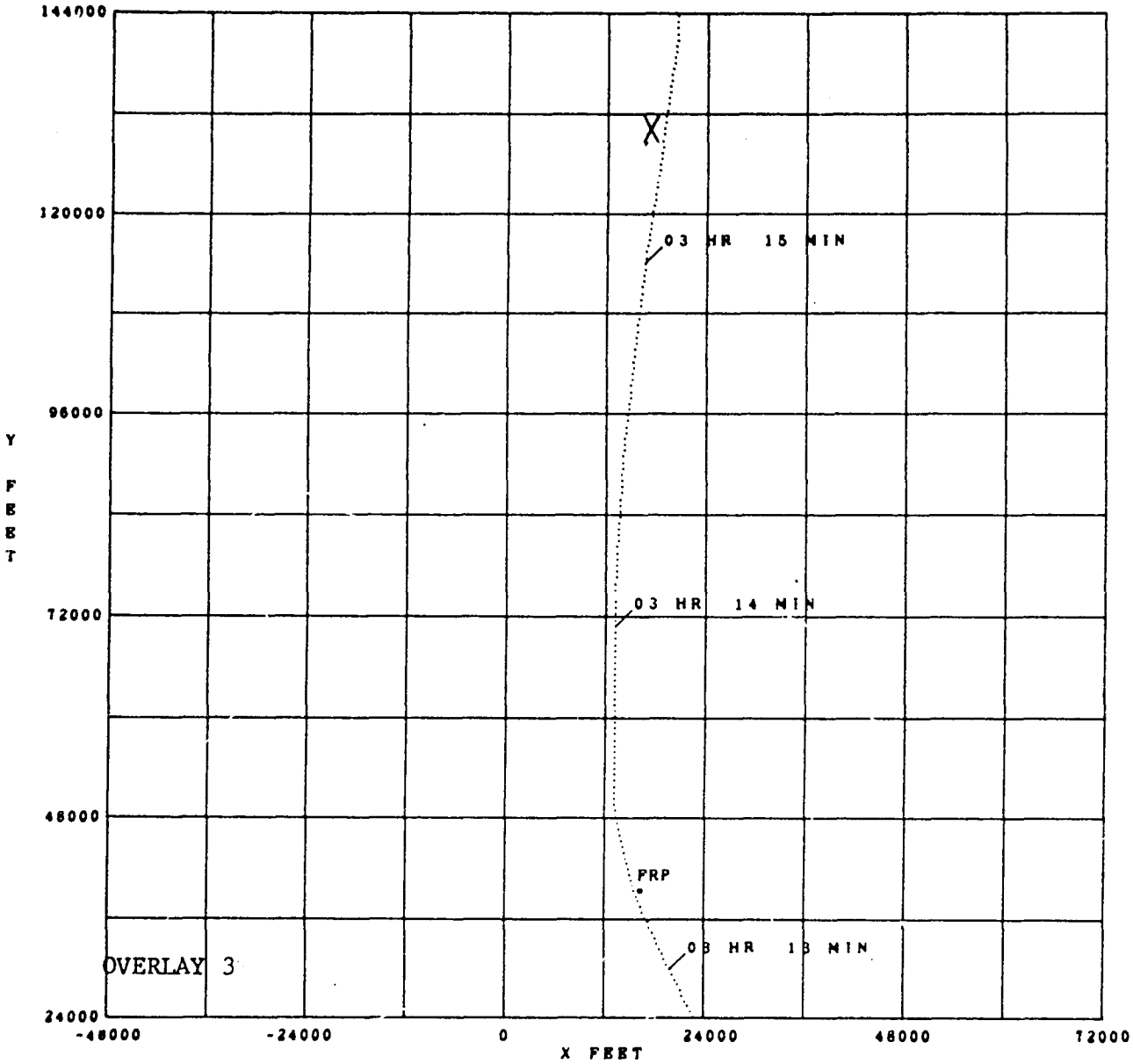
Figure 3-5 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 86 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 5:4B
TARGET WEST 1

04092058 .
J9175 134

Figure 3-5 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1595 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 514B
TARGET WEST 2

0402058
J91/5 135

Figure 3-5 (U) Aircraft Position Data (Part 3 of 5)

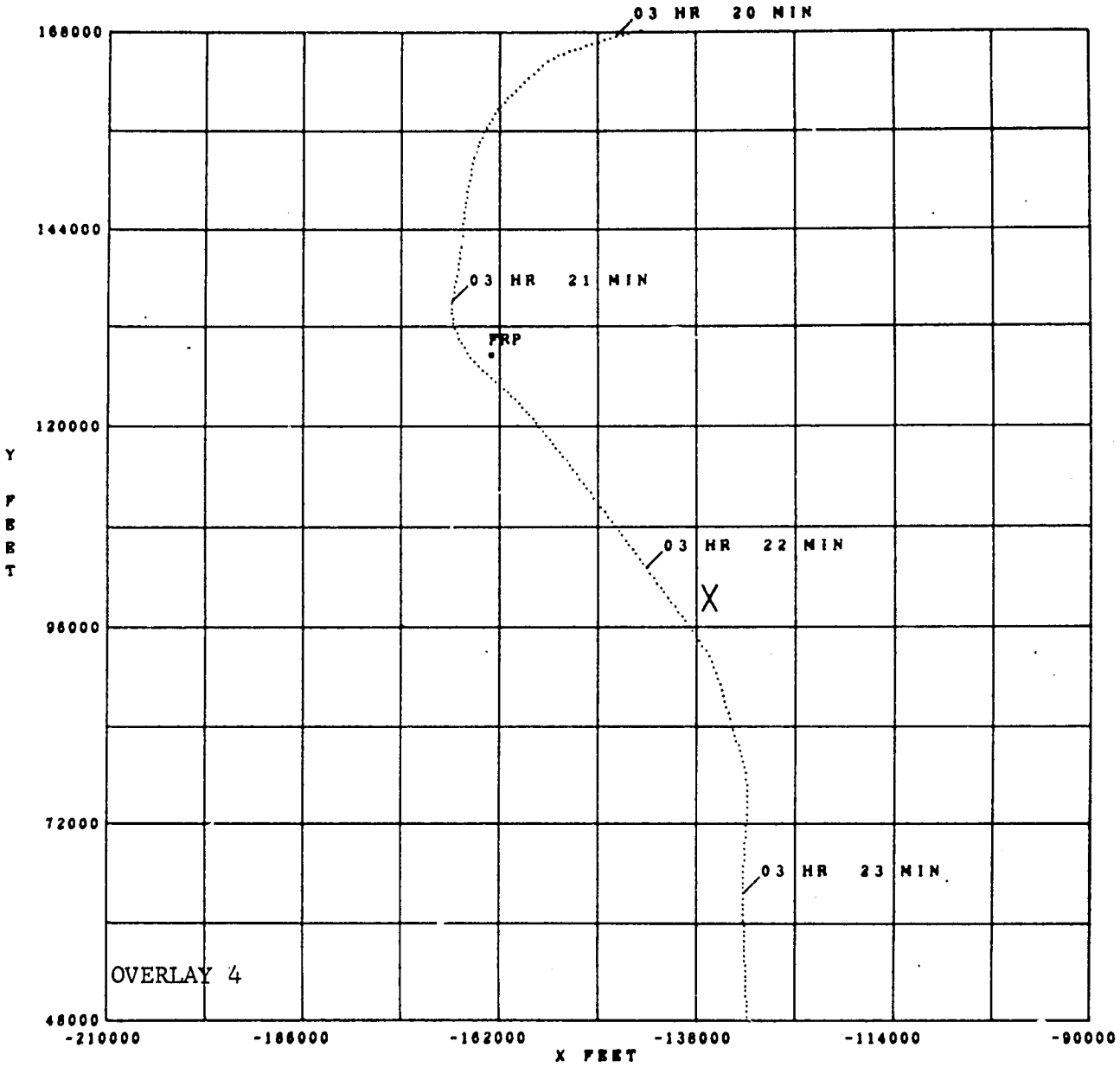
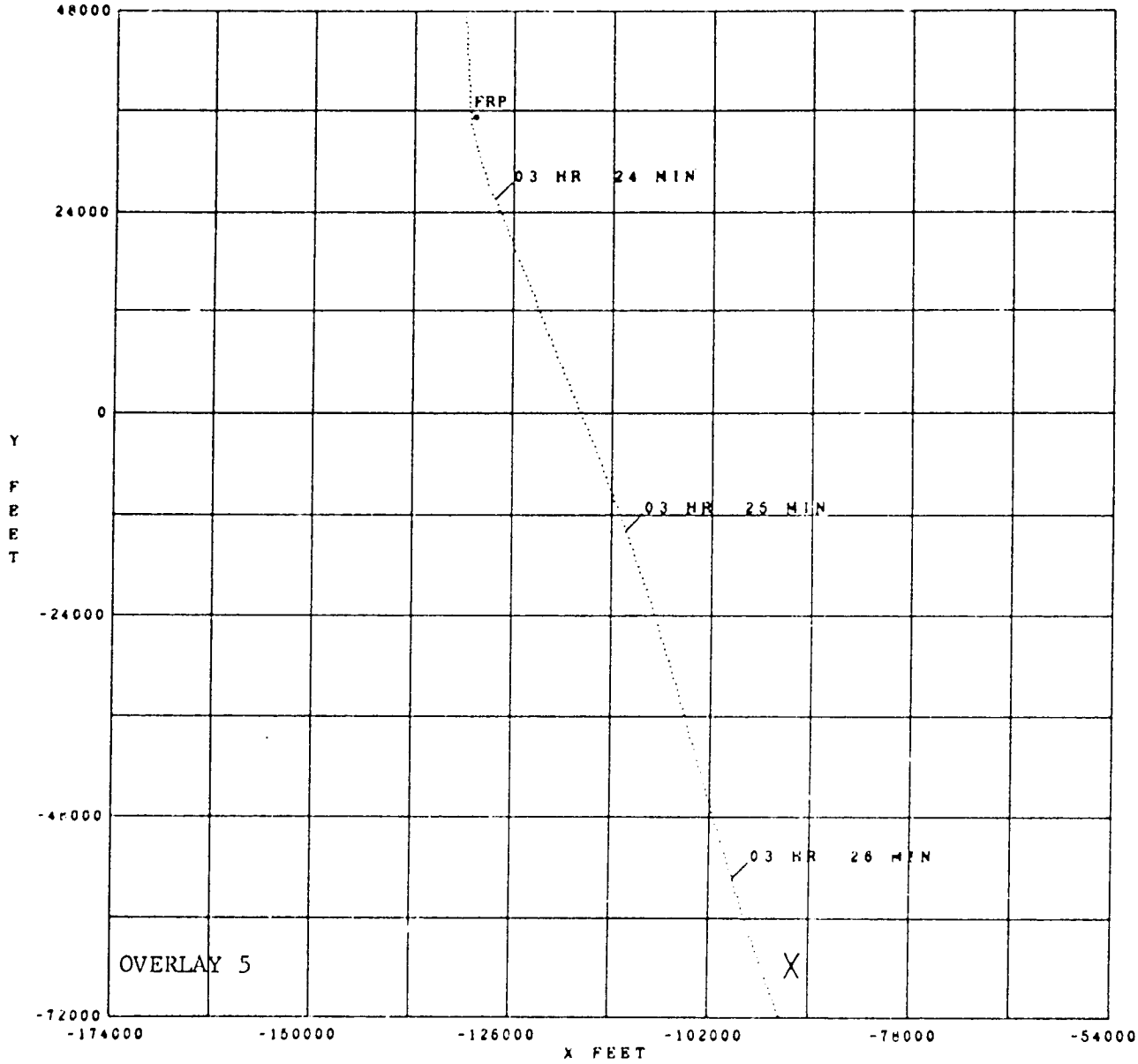


Figure 3-5 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 3200 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 514B
TARGET WEST 4

04092058
J9175 137

Figure 3-5 (U) Aircraft Position Data (Part 5 of 5)

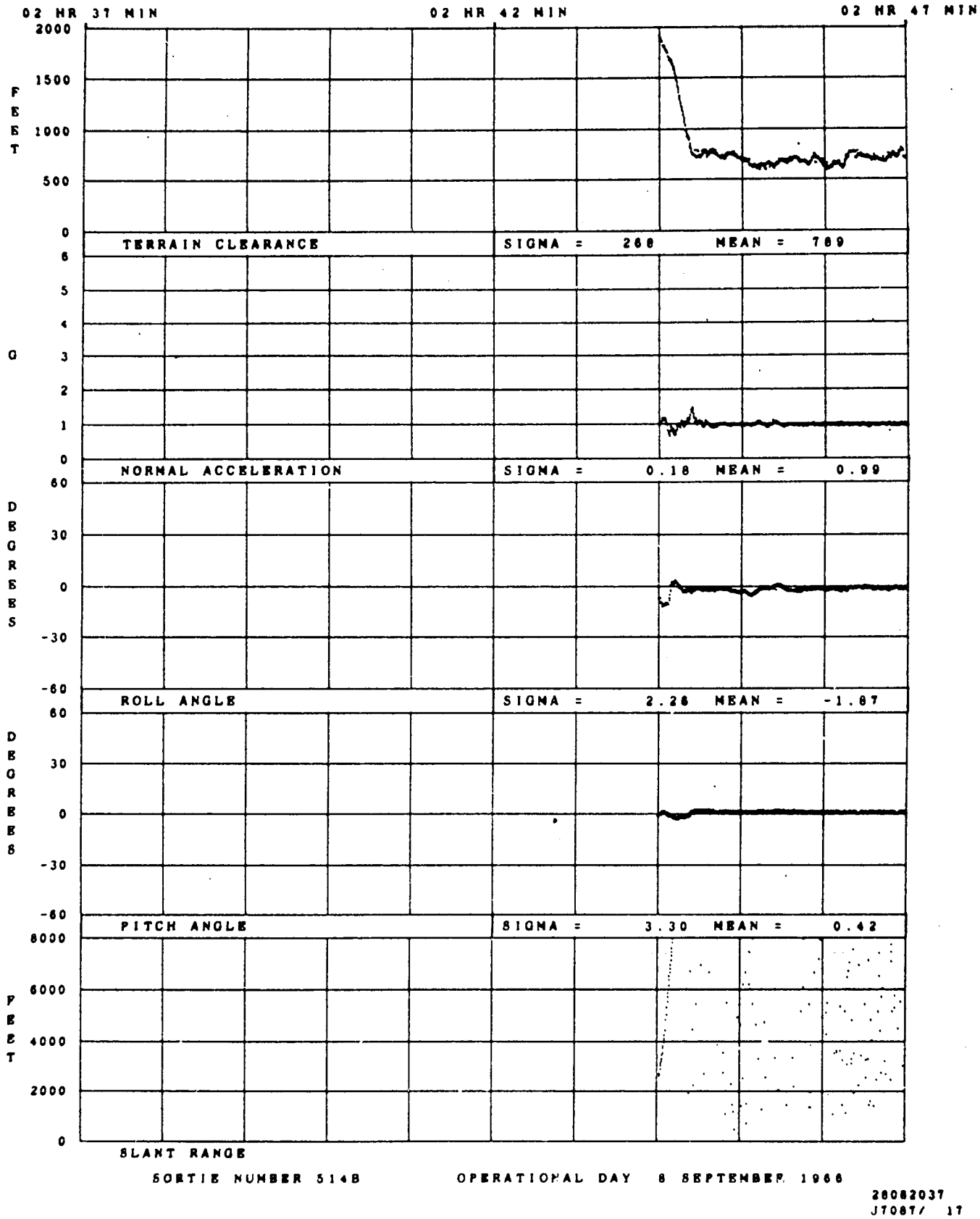


Figure 3-6 (U) Telemetered Data (Part 1 of 5)

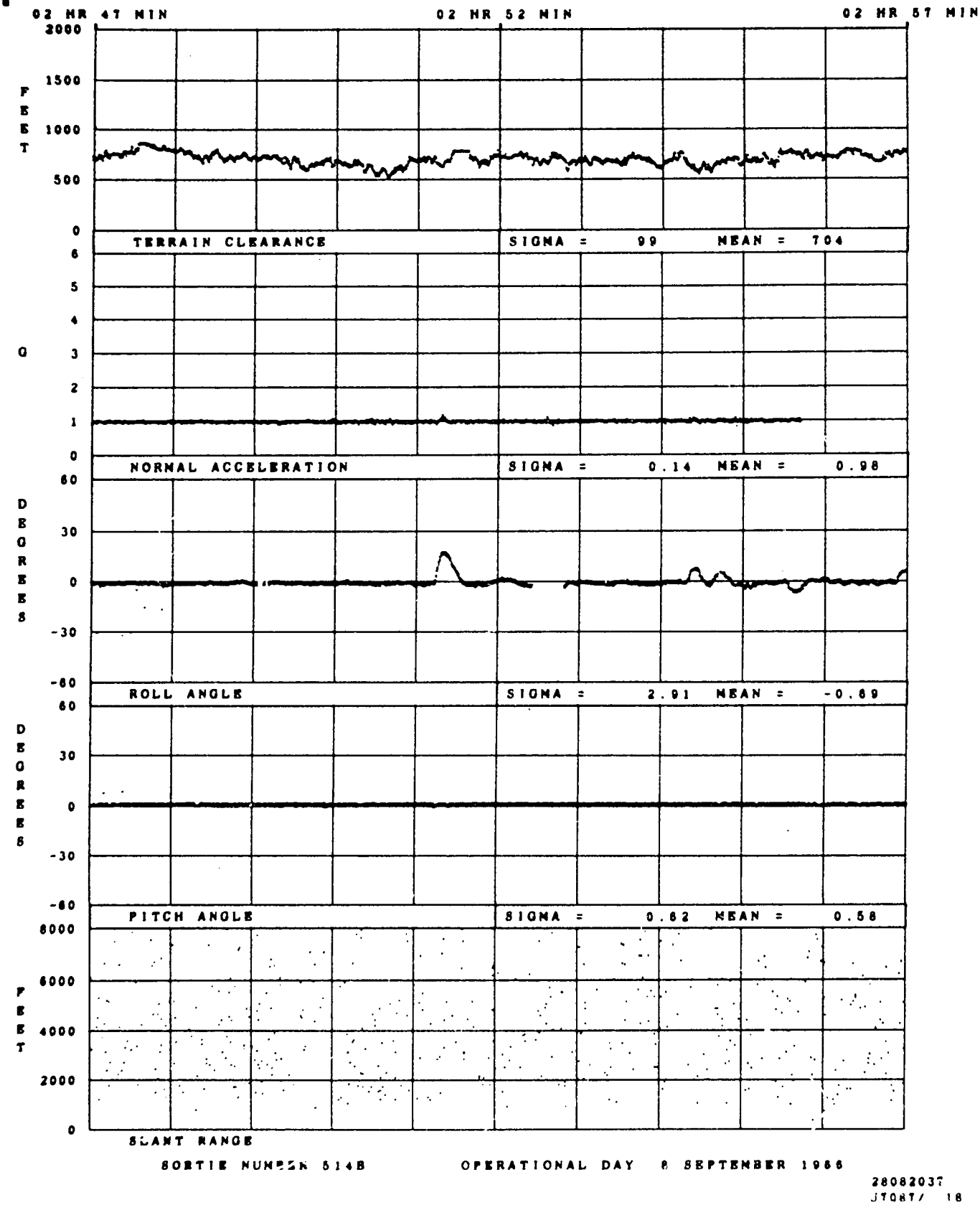


Figure 3-6 (U) Telemetered Data (Part 2 of 5)

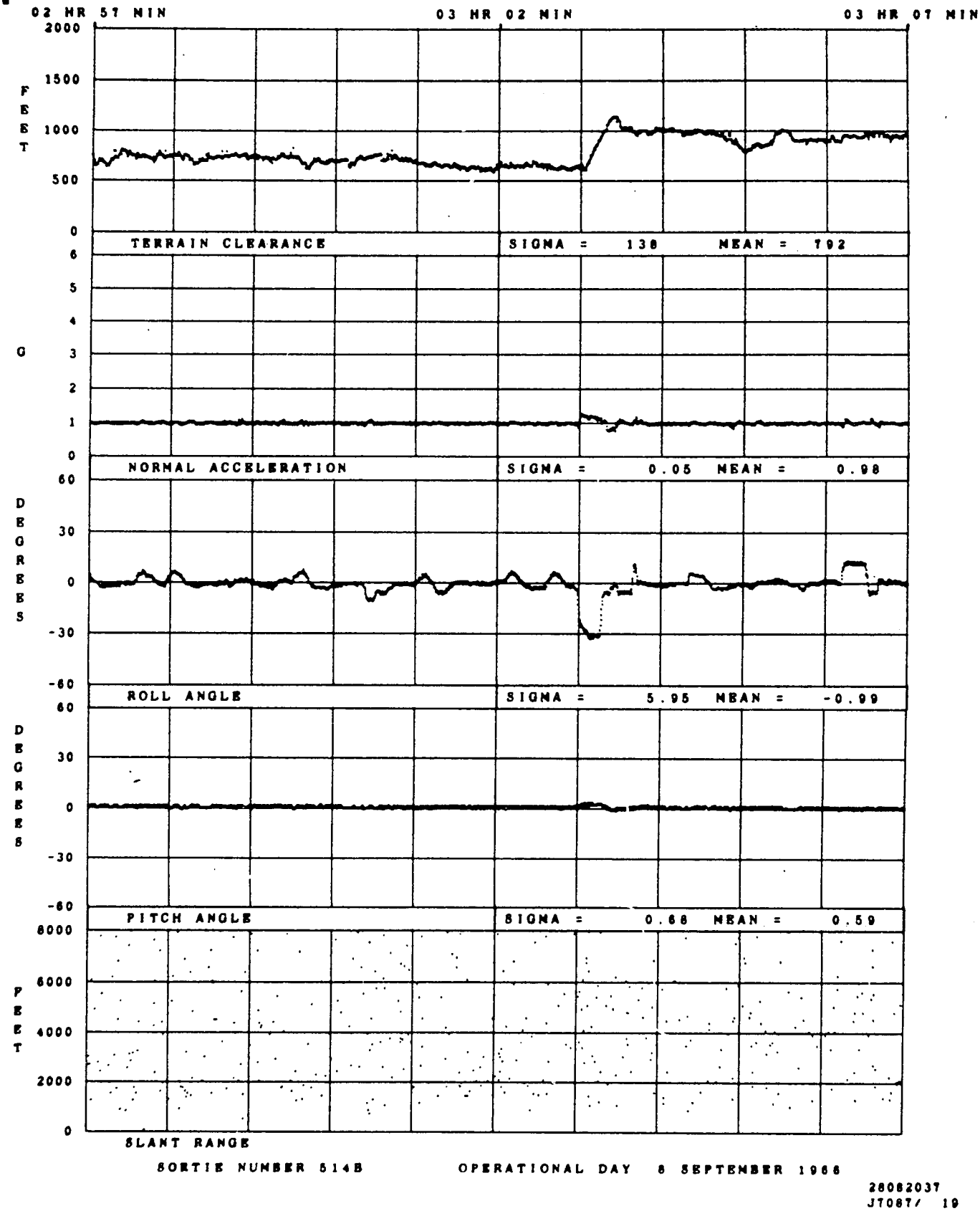


Figure 3-6 (U) Telemetered Data (Part 3 of 5)

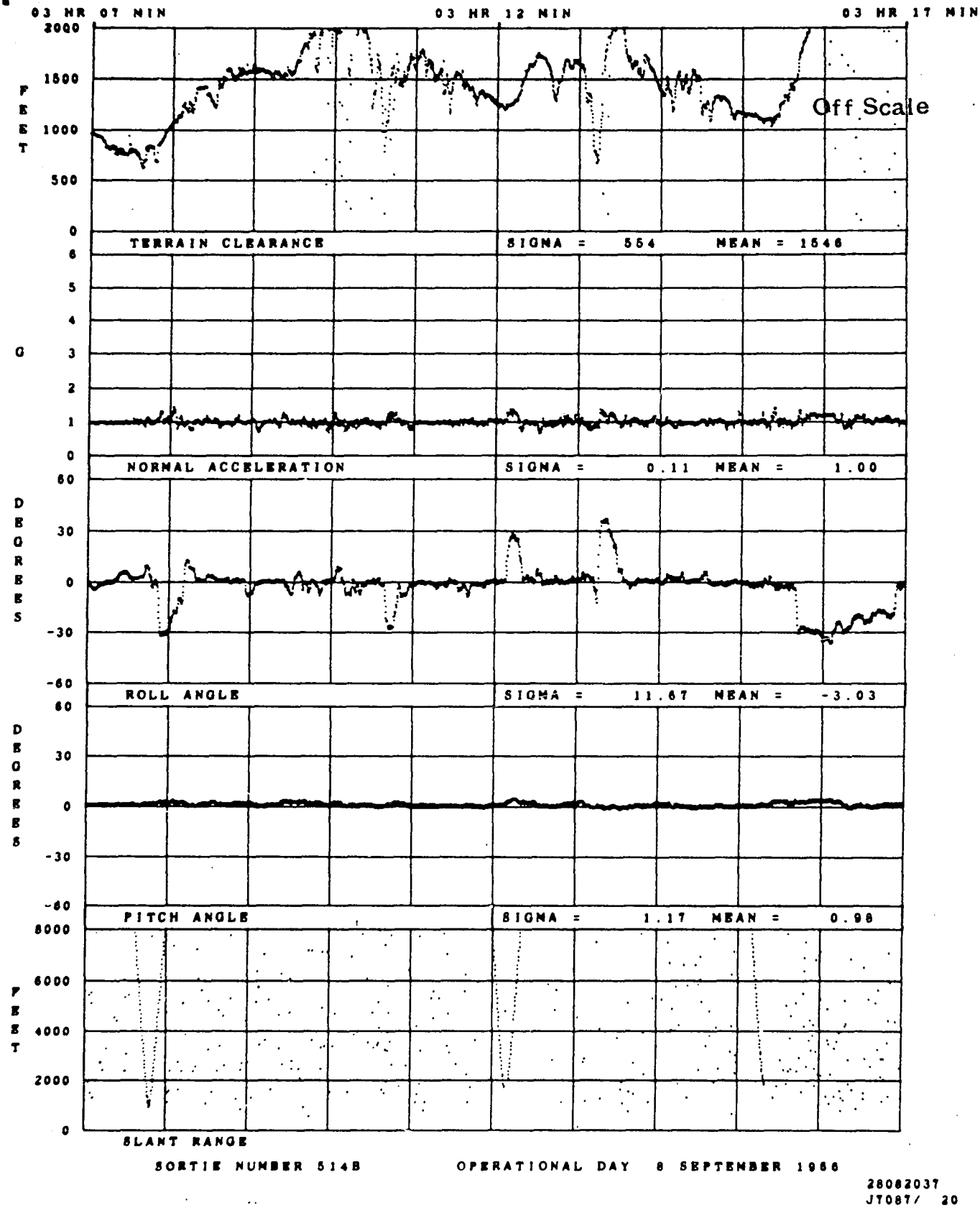


Figure 3-6 (U) Telemetered Data (Part 4 of 5)

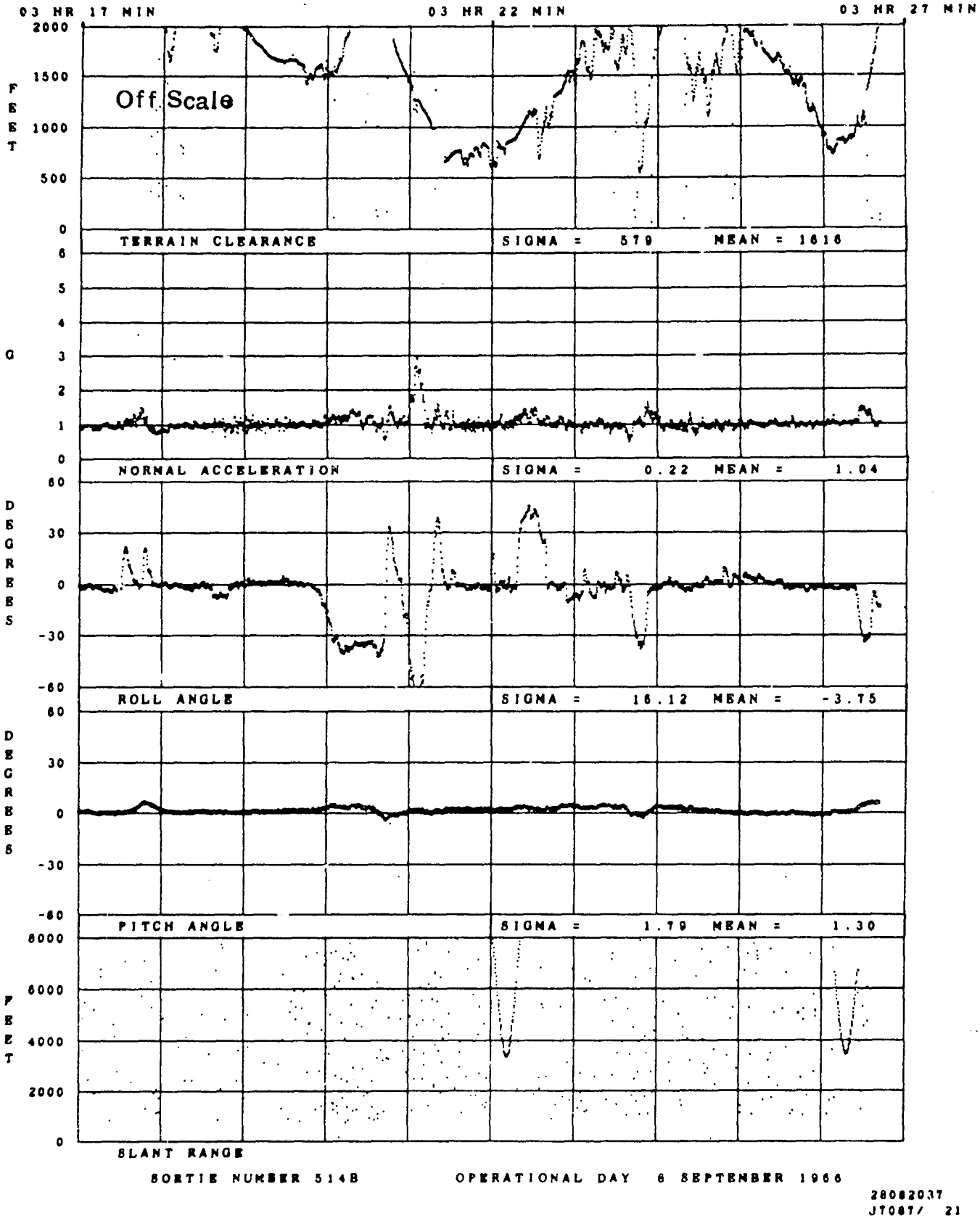


Figure 3-6 (U) Telemetered Data (Part 5 of 5)

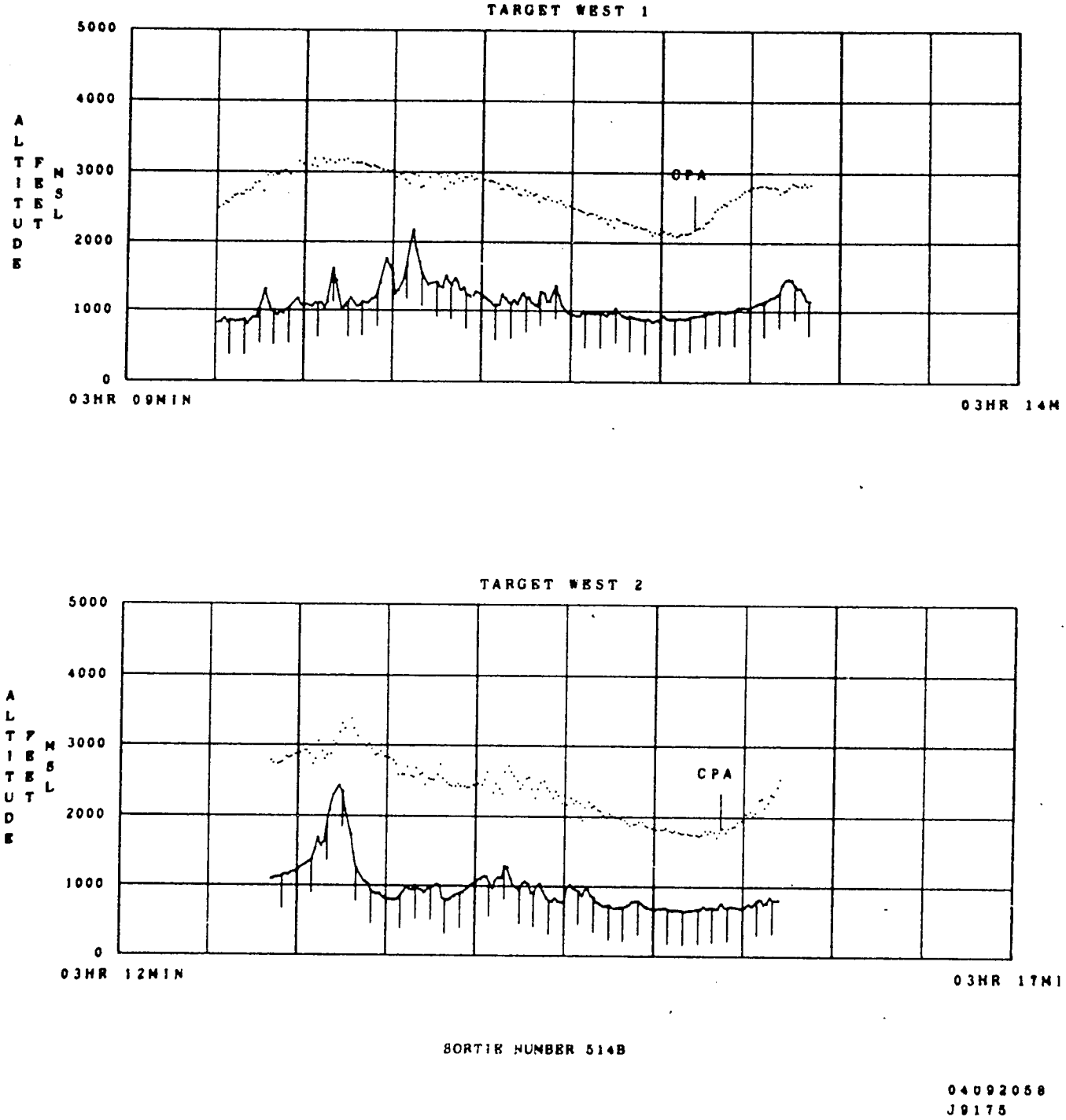
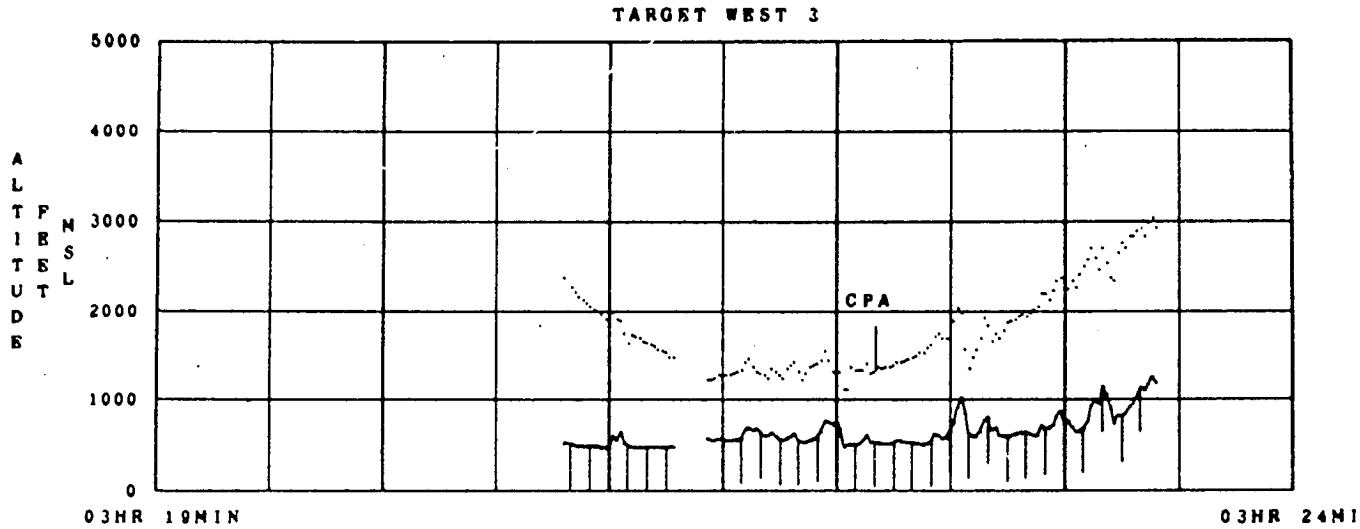
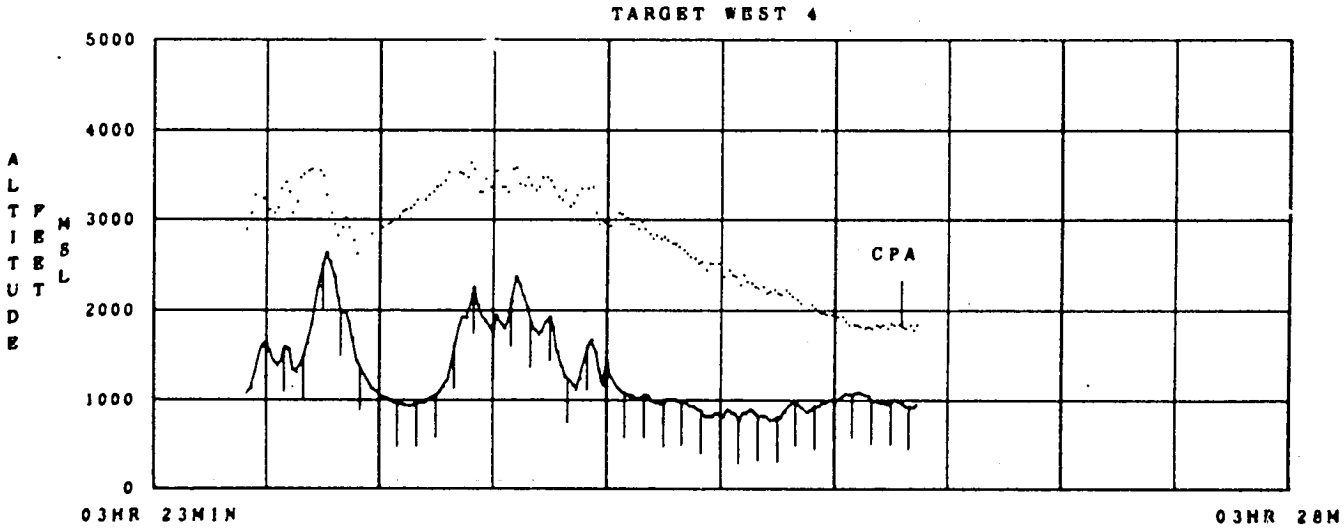


Figure 3-7 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 514B

04092058
J9175

Figure 3-7 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

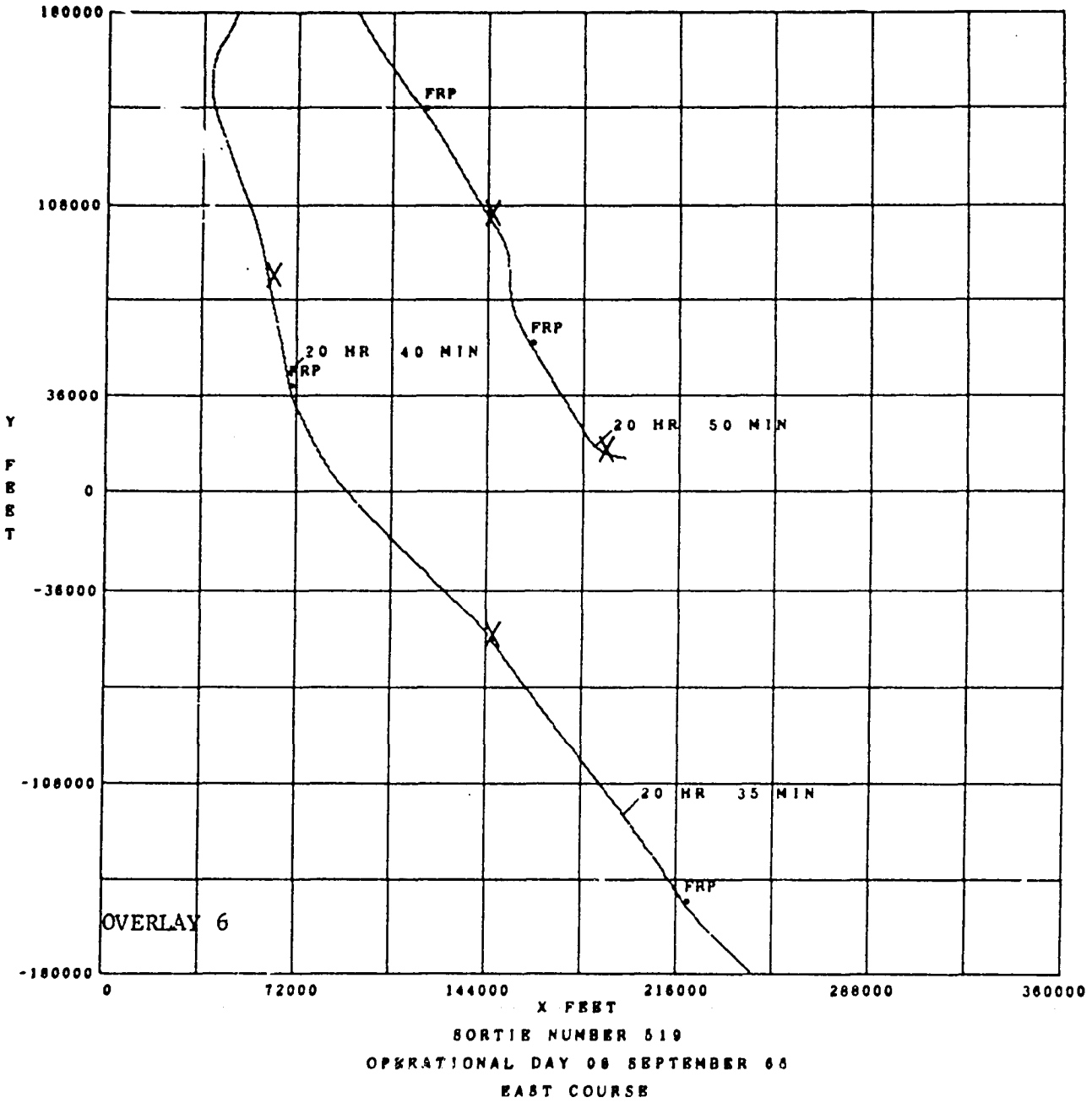
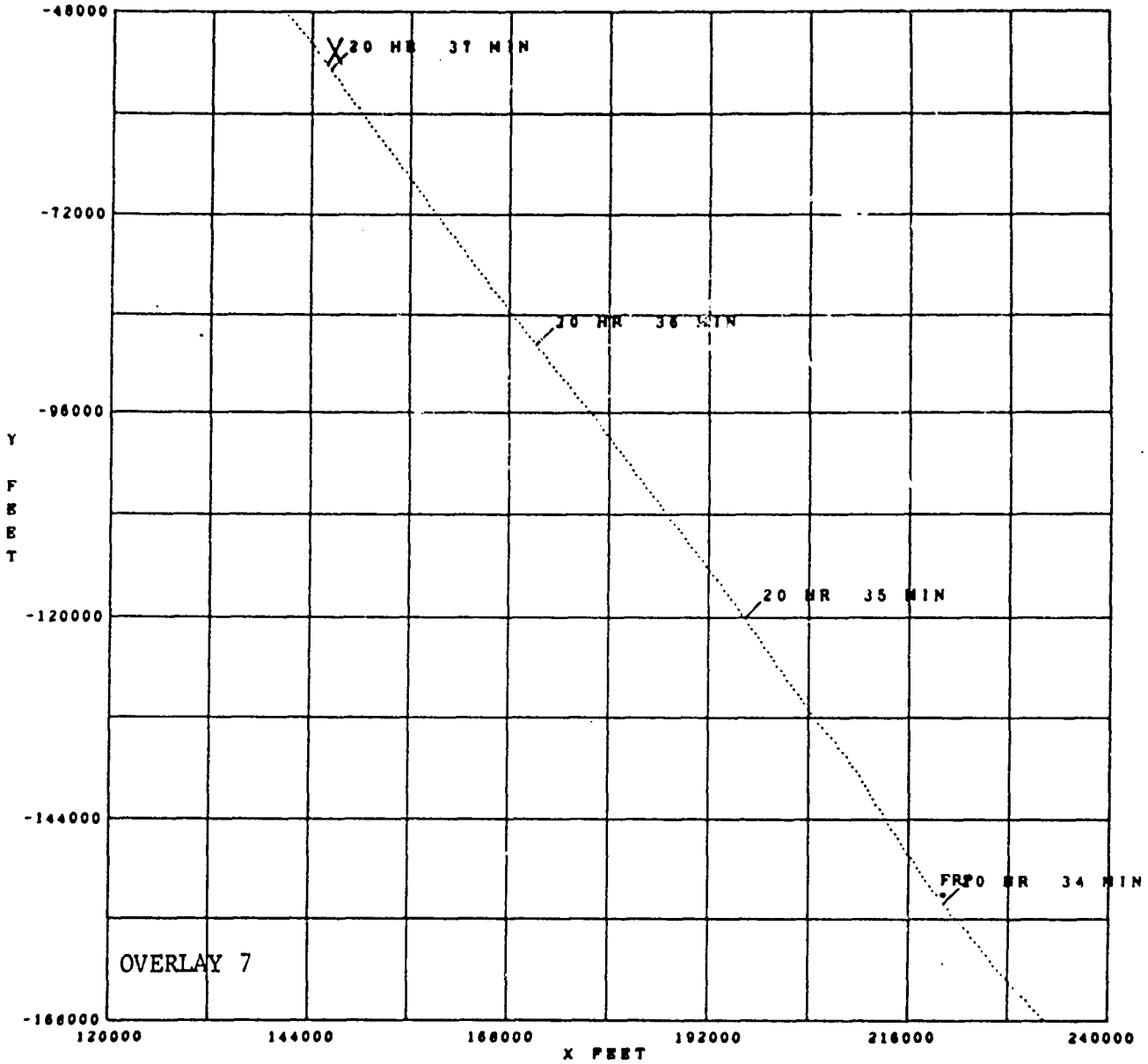


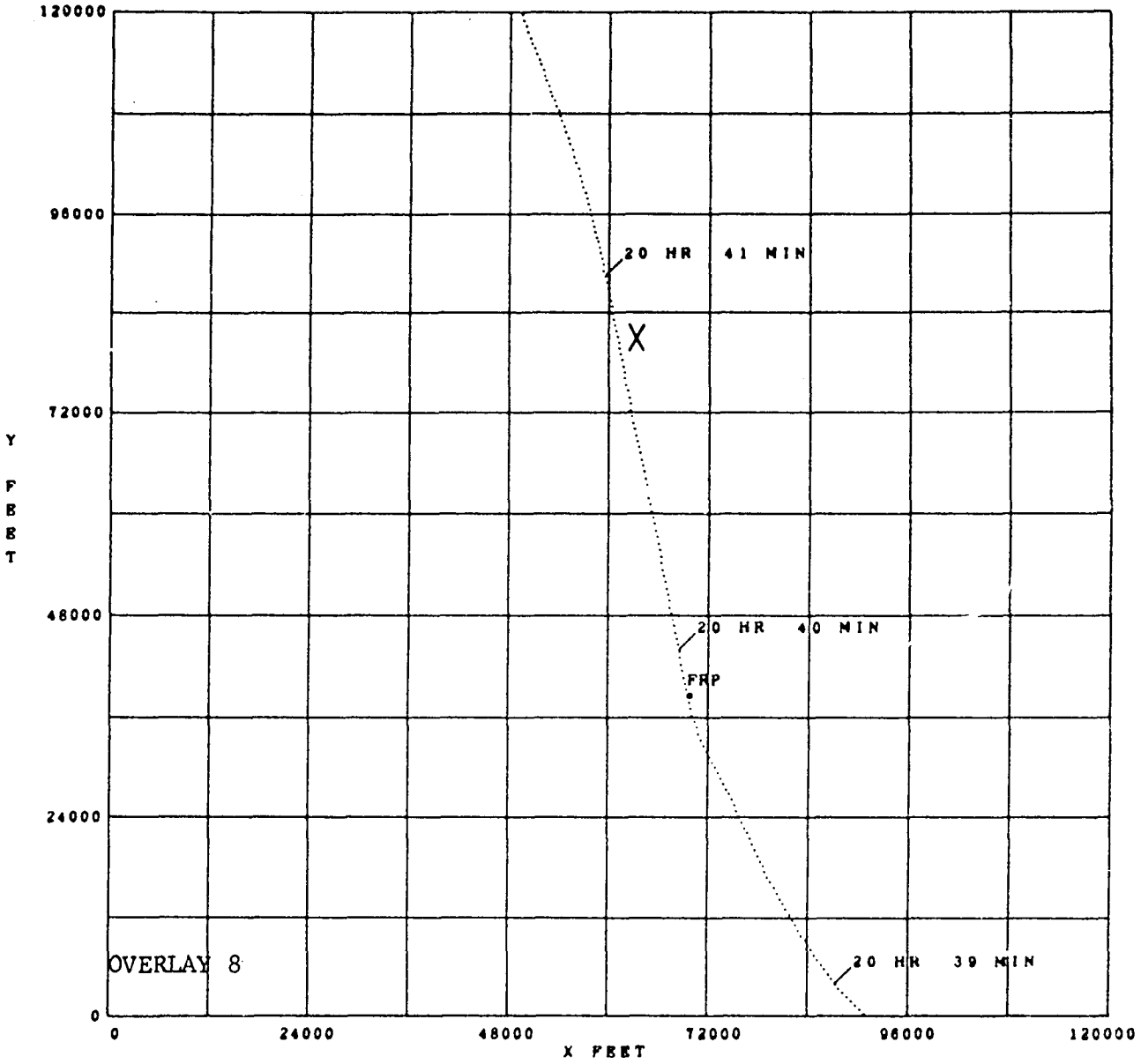
Figure 3-8 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1673 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 519
TARGET EAST 1

04062102
J0178 191

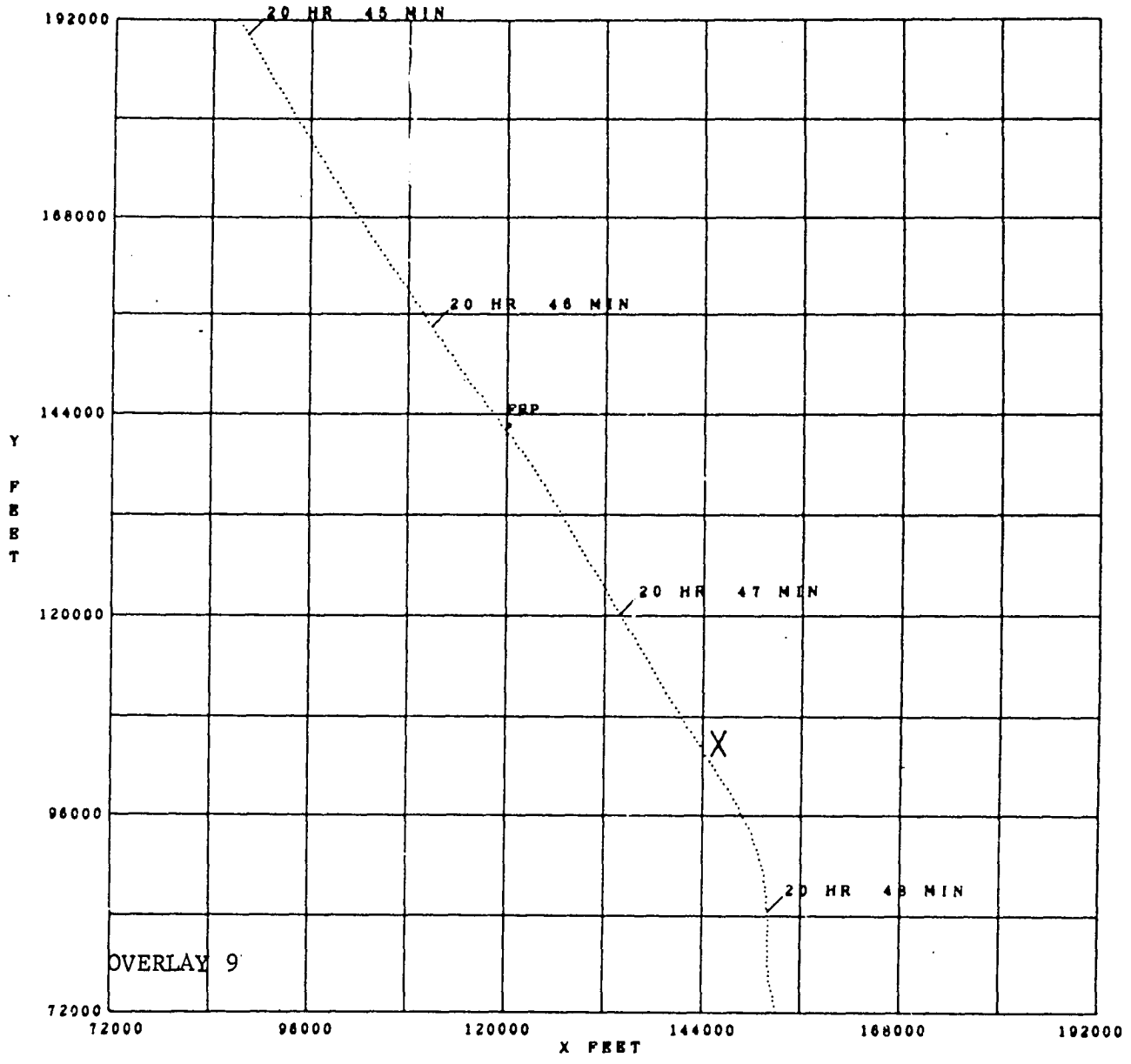
Figure 3-8 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2158 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 519
TARGET EAST 2

04092102
J9175 192

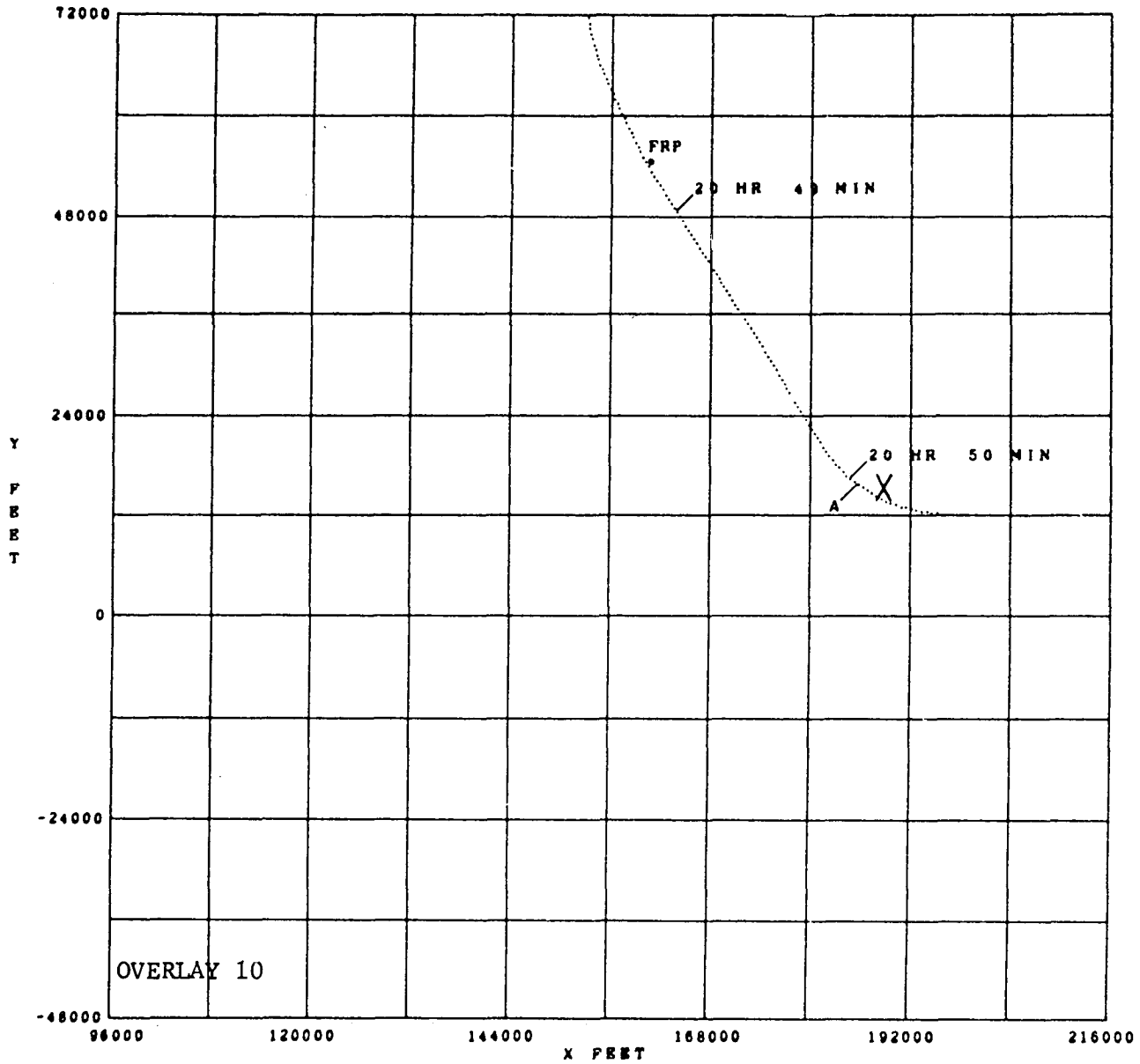
Figure 3-8 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2032 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 519
TARGET EAST 3

04092102
J9175 19:

Figure 3-8 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1249 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 519
TARGET EAST 4

04092102
J9175 194

Figure 3-8 (U) Aircraft Position Data (Part 5 of 5)

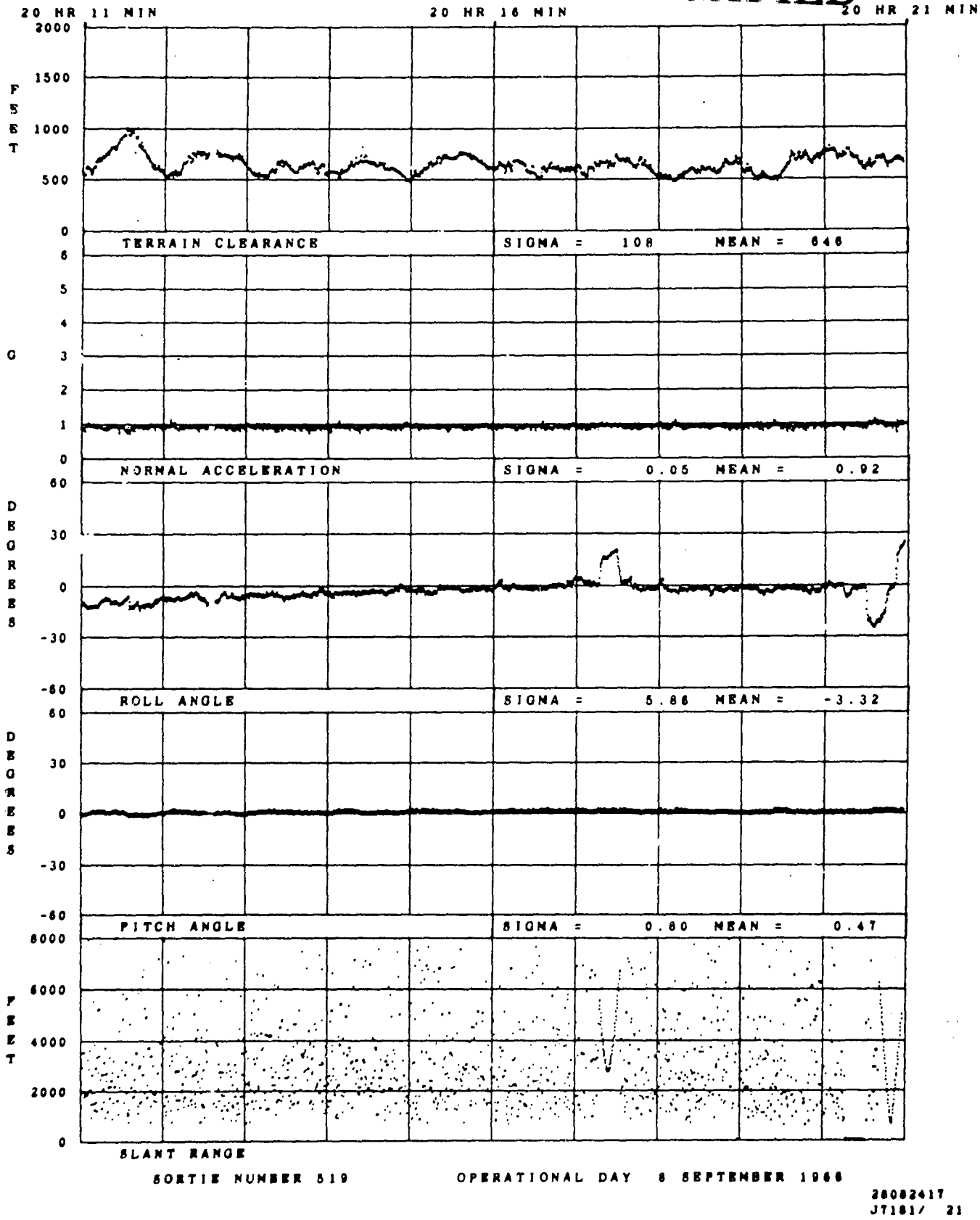


Figure 3-9 (U) Telemetered Data (Part 1 of 4)

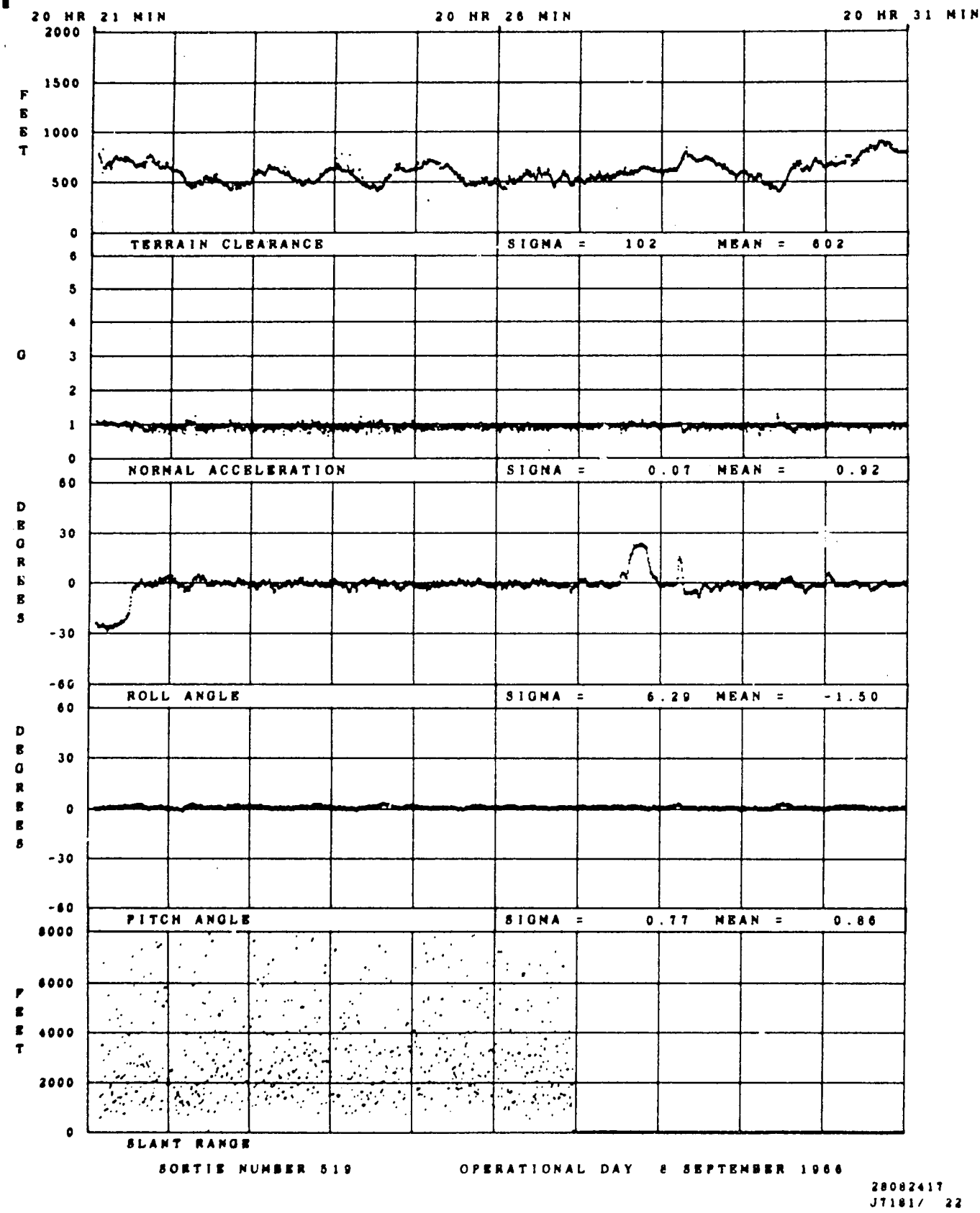


Figure 3-9 (U) Telemetered Data (Part 2 of 4)

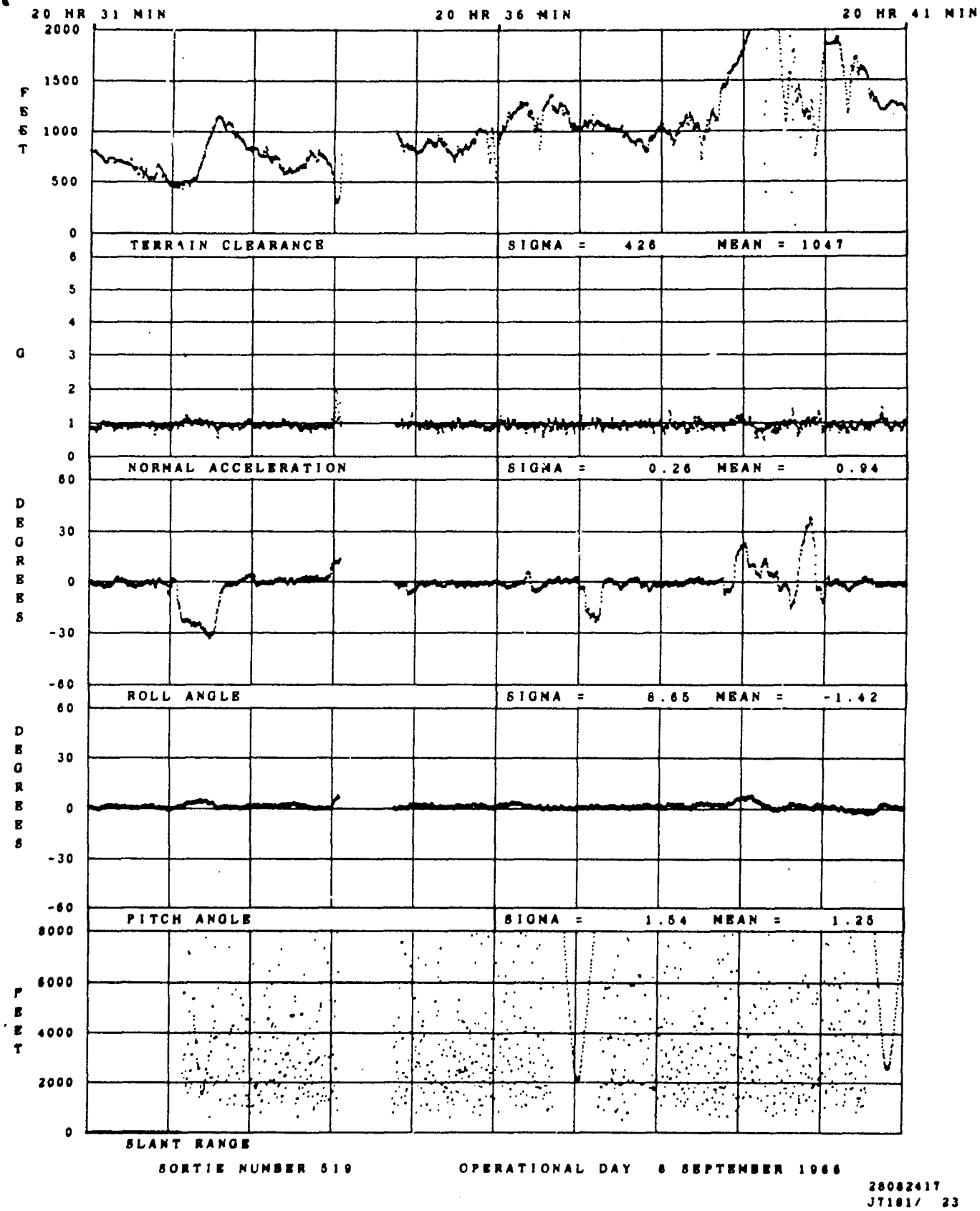


Figure 3-9 (U) Telemetered Data (Part 3 of 4)

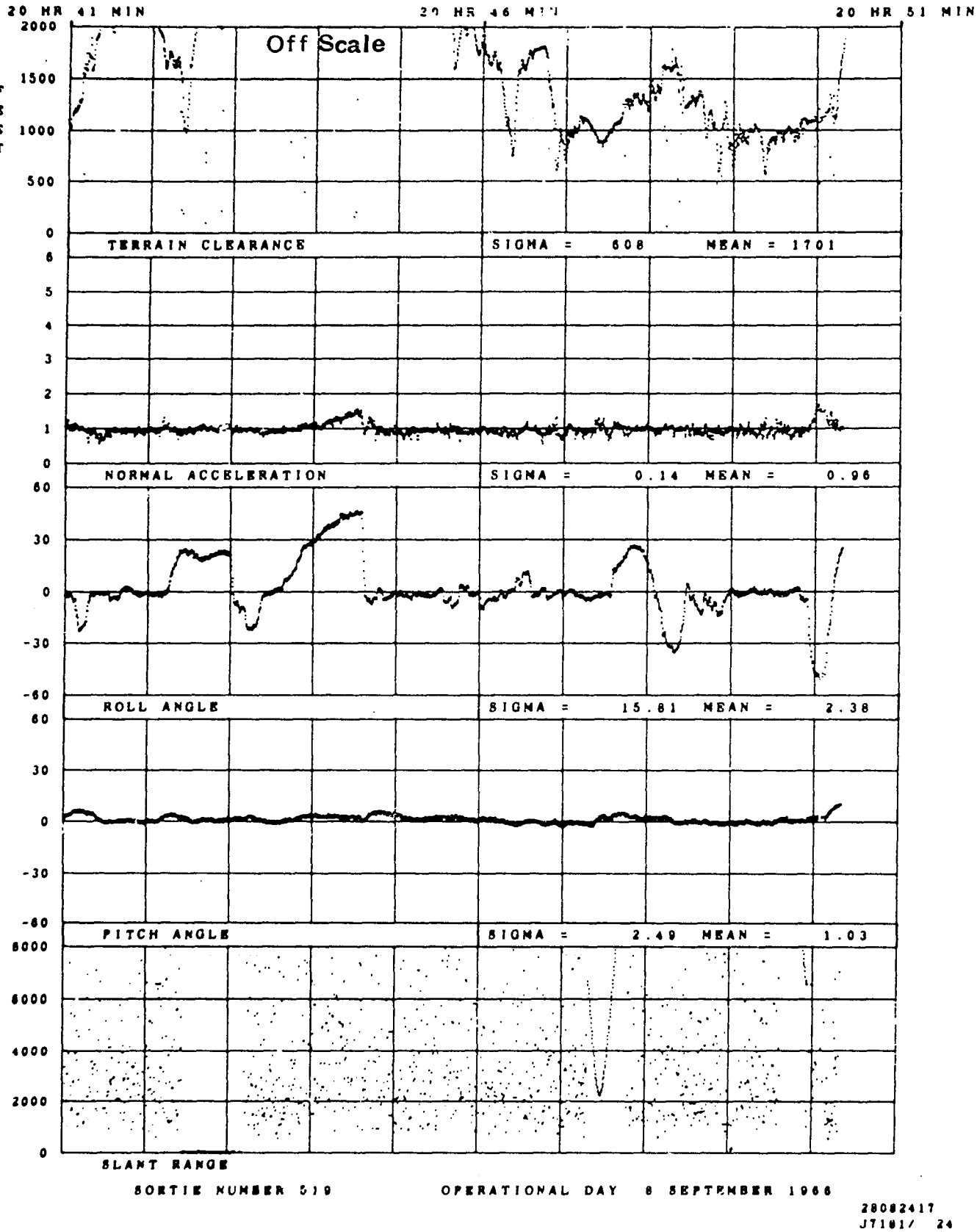
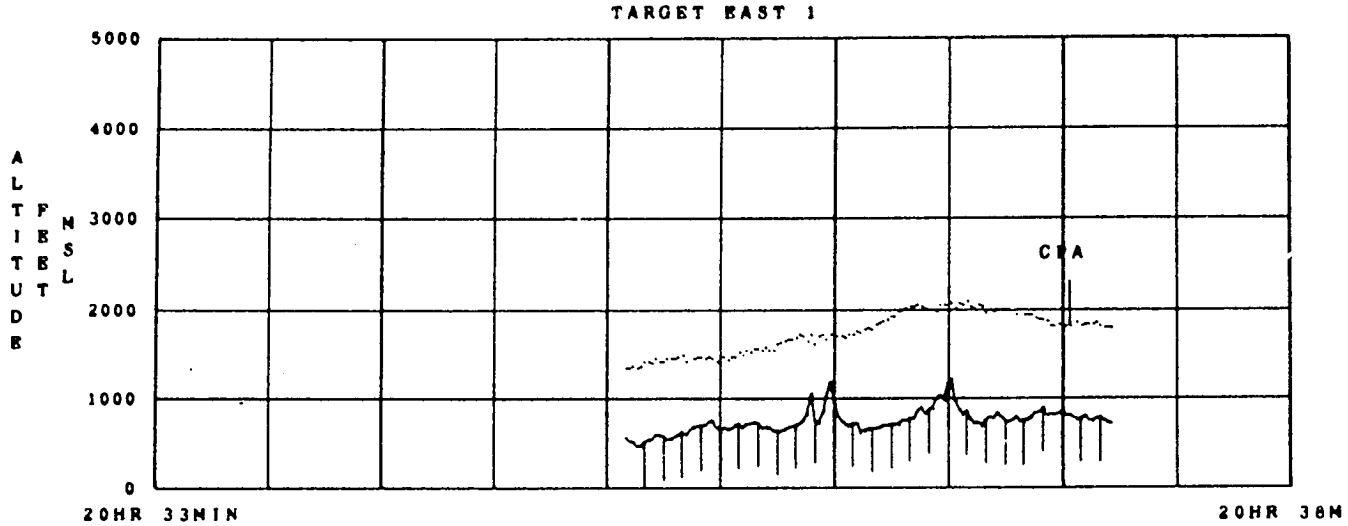
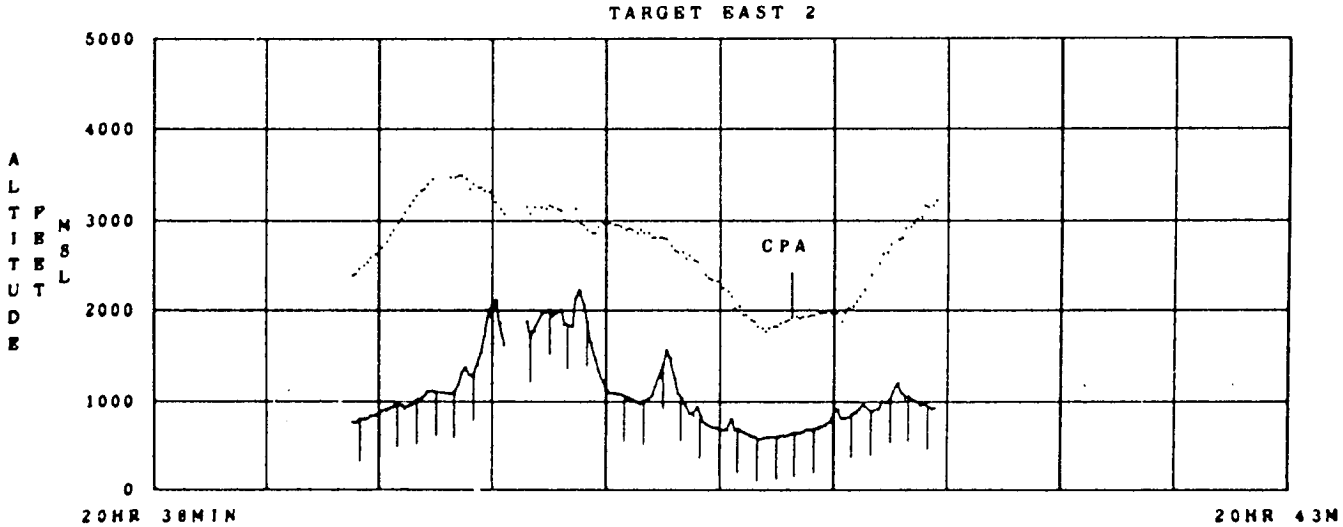


Figure 3-9 (U) Telemetered Data (Part 4 of 4)

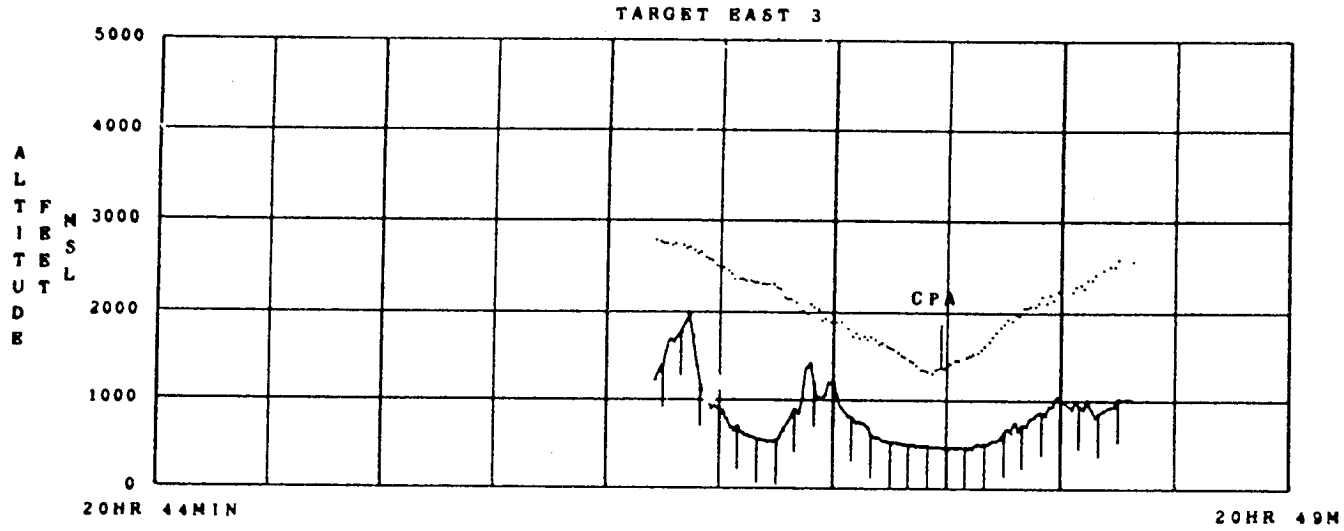


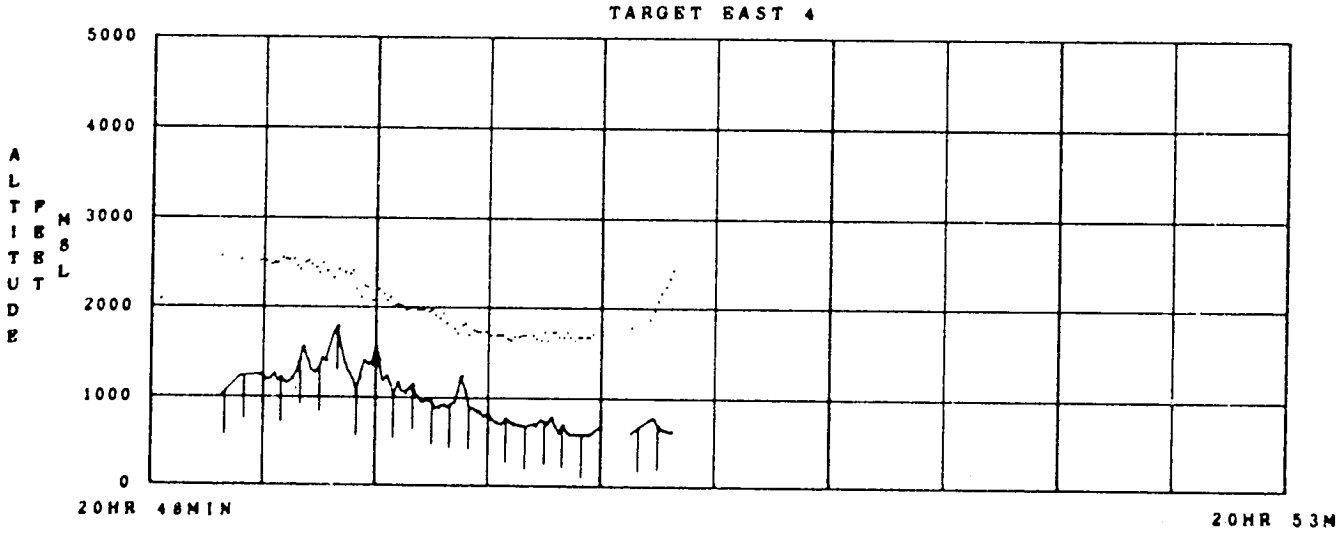


SORTIE NUMBER 519

04092102
J9175

Figure 3-10 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

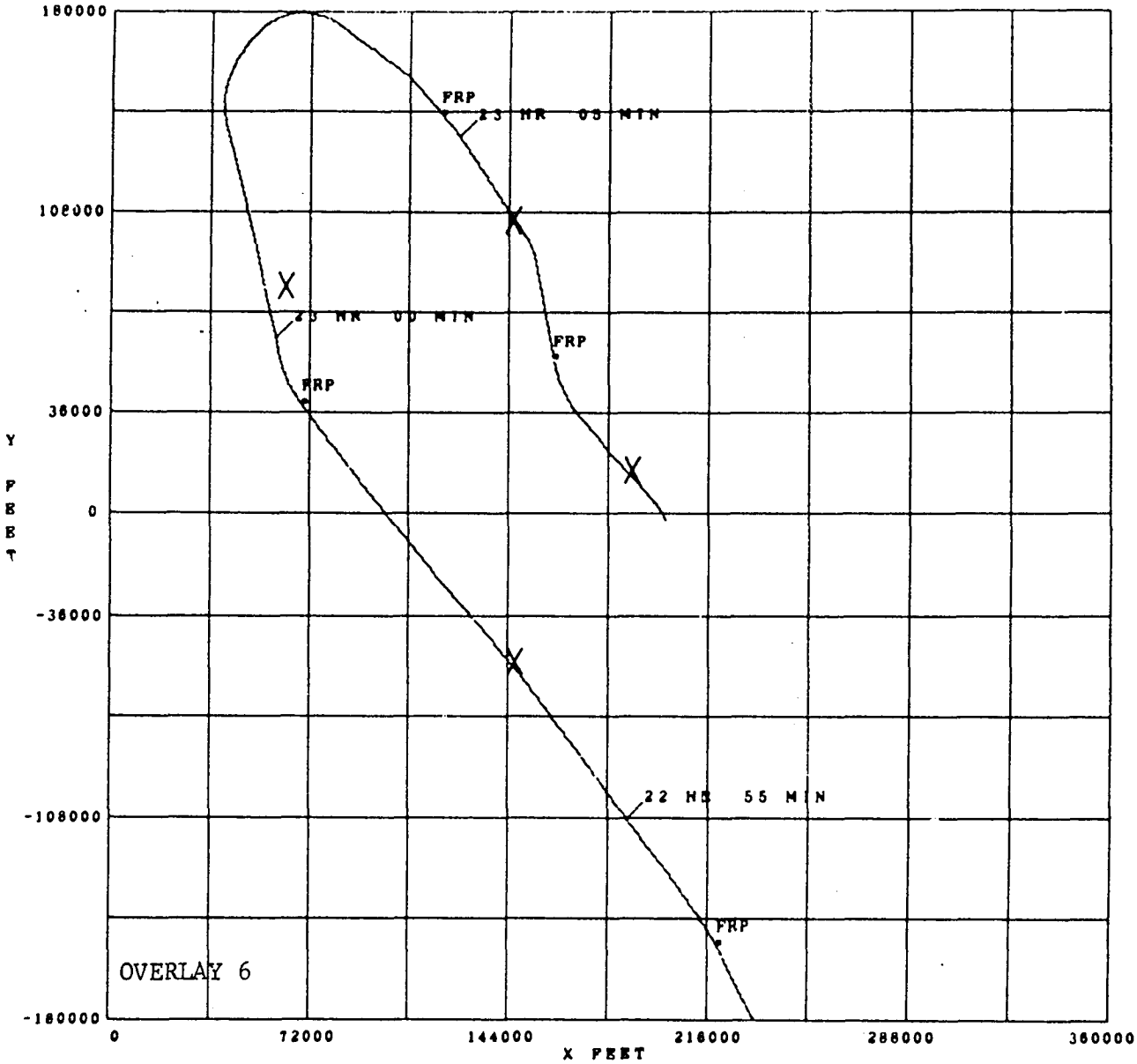




SORTIE NUMBER 519

04092102
J9175

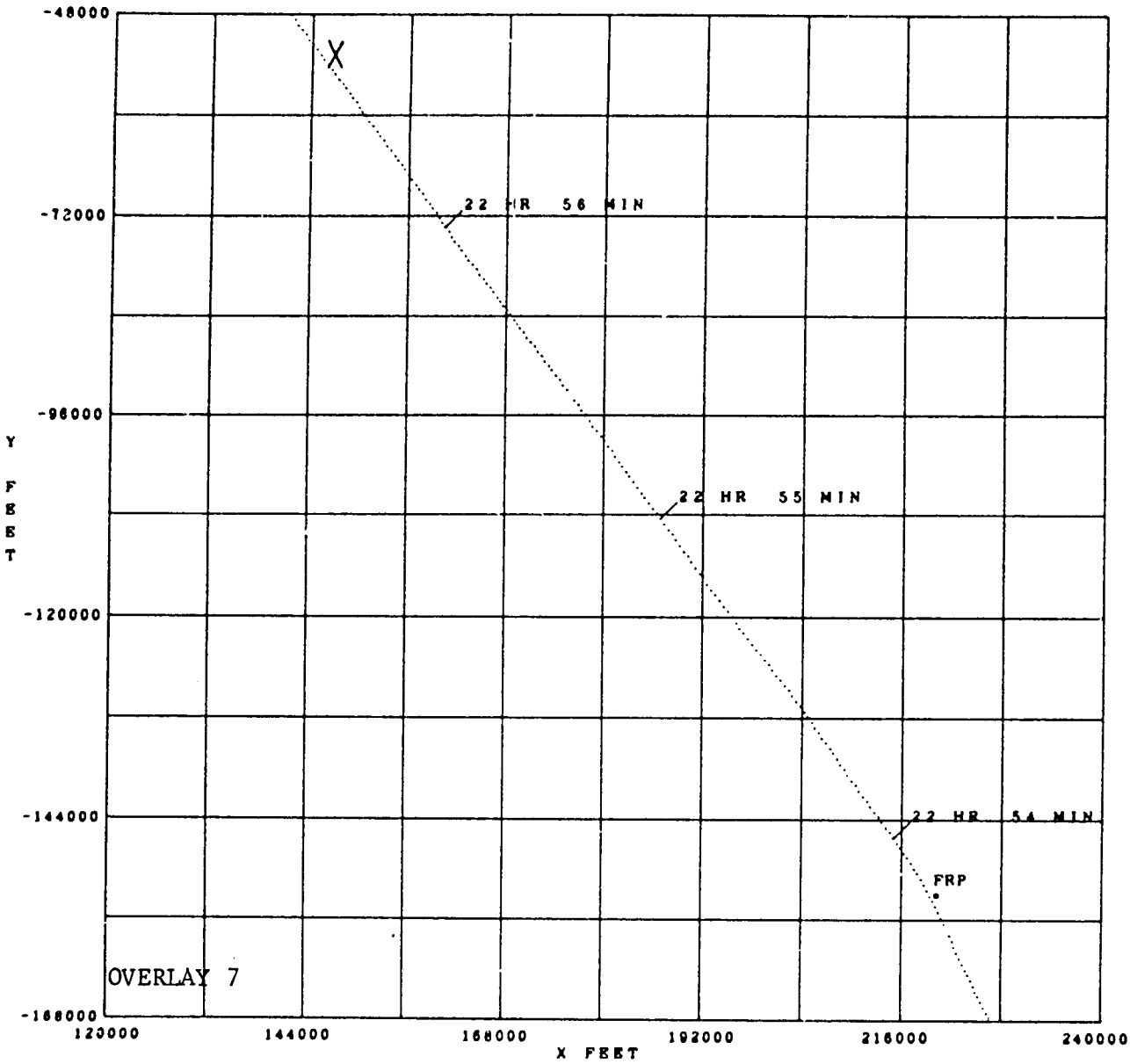
Figure 3-10 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



SORTIE NUMBER 517
OPERATIONAL DAY 08 SEPTEMBER 66
EAST COURSE

04092100
J.9175 158

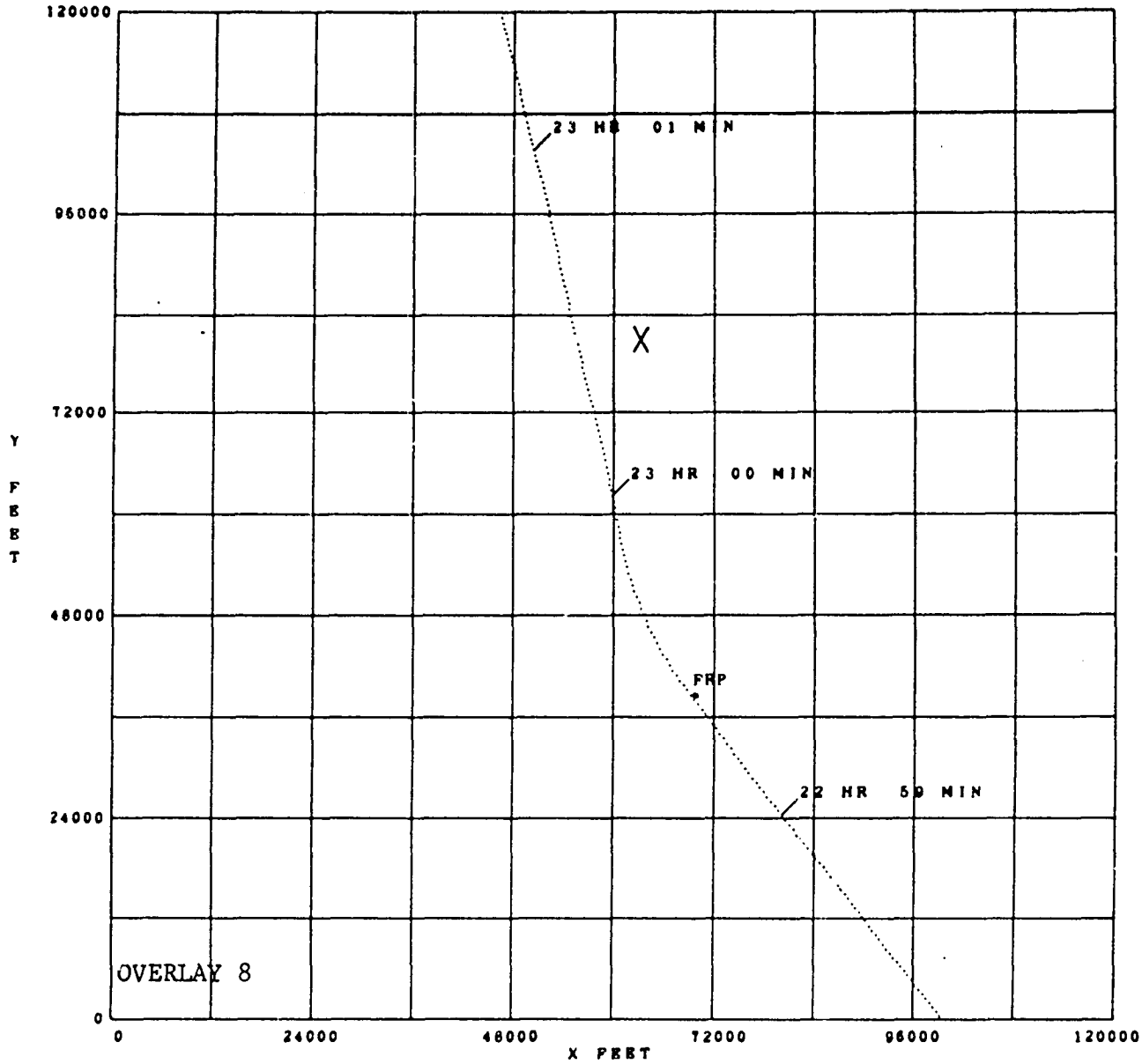
Figure 3-11 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1461 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DNE
SORTIE NUMBER 517
TARGET EAST 1

04092100
J9175 159

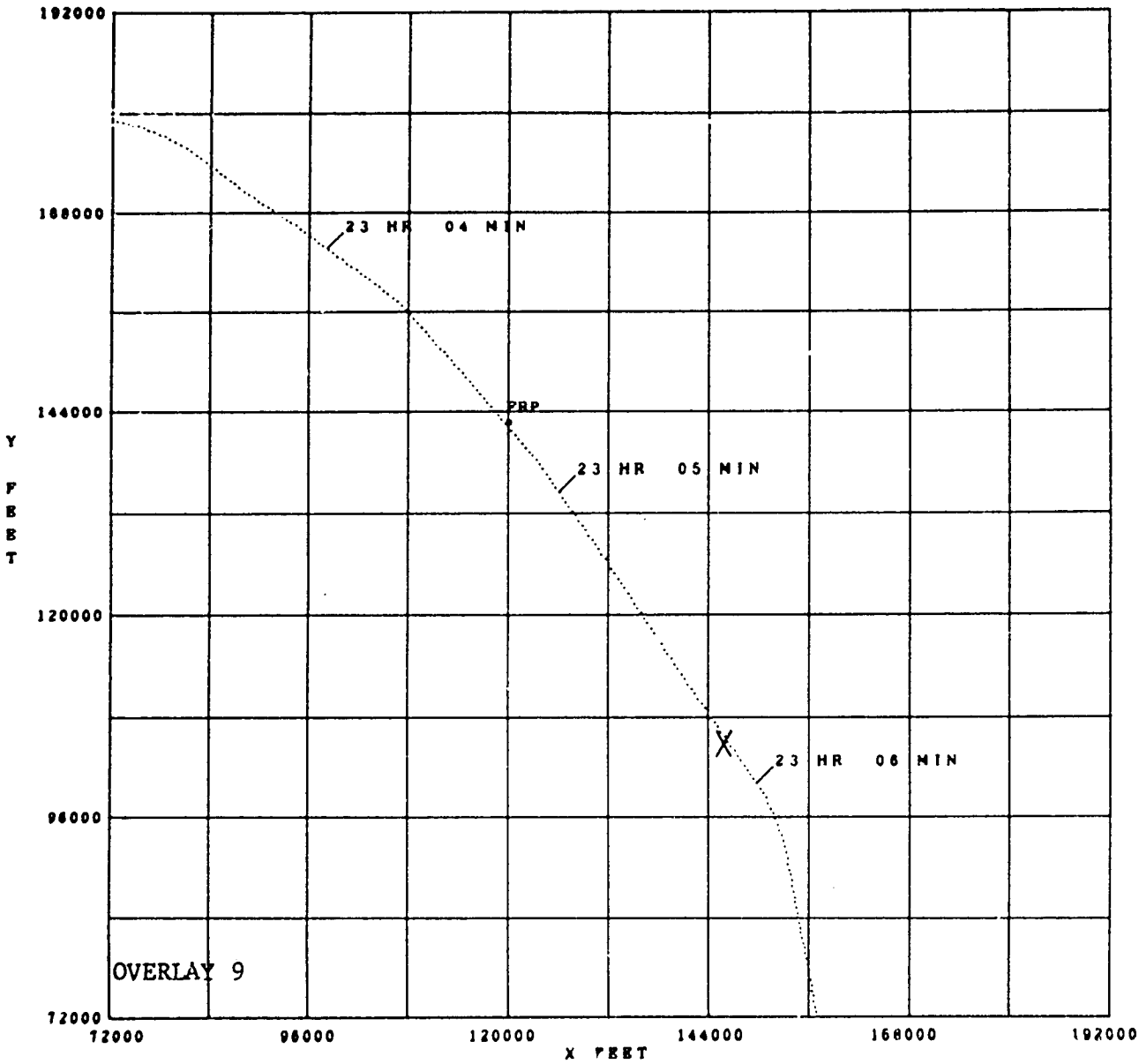
Figure 3-11 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 7512 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 517
TARGET EAST 2

04092100
J9175 .60

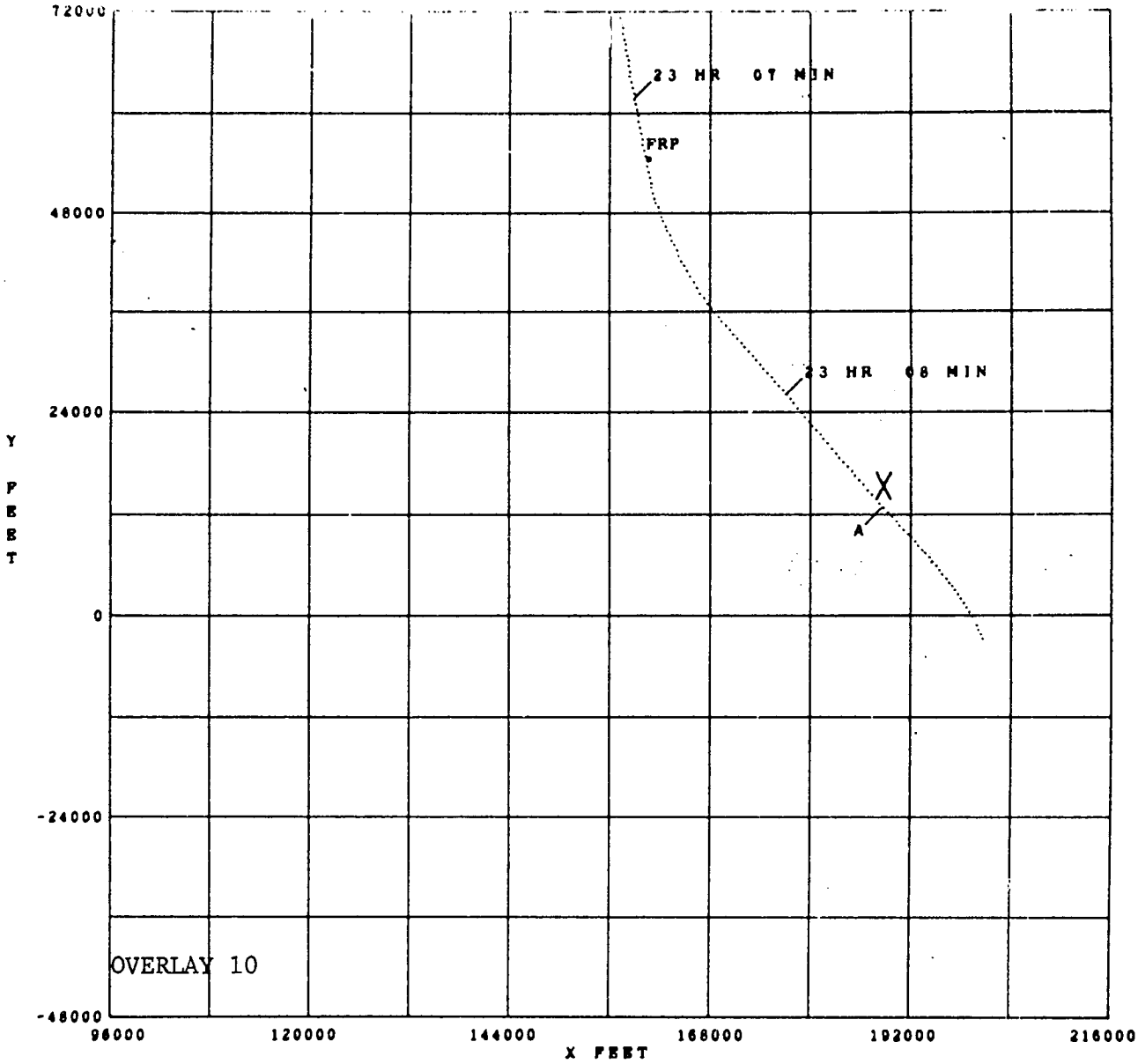
Figure 3-11 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 616 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 517
TARGET EAST 3

04092100
J9175 161

Figure 3-11 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1691 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 517
TARGET EAST 4

04092100
J9175 182

Figure 3-11 (U) Aircraft Position Data (Part 5 of 5)

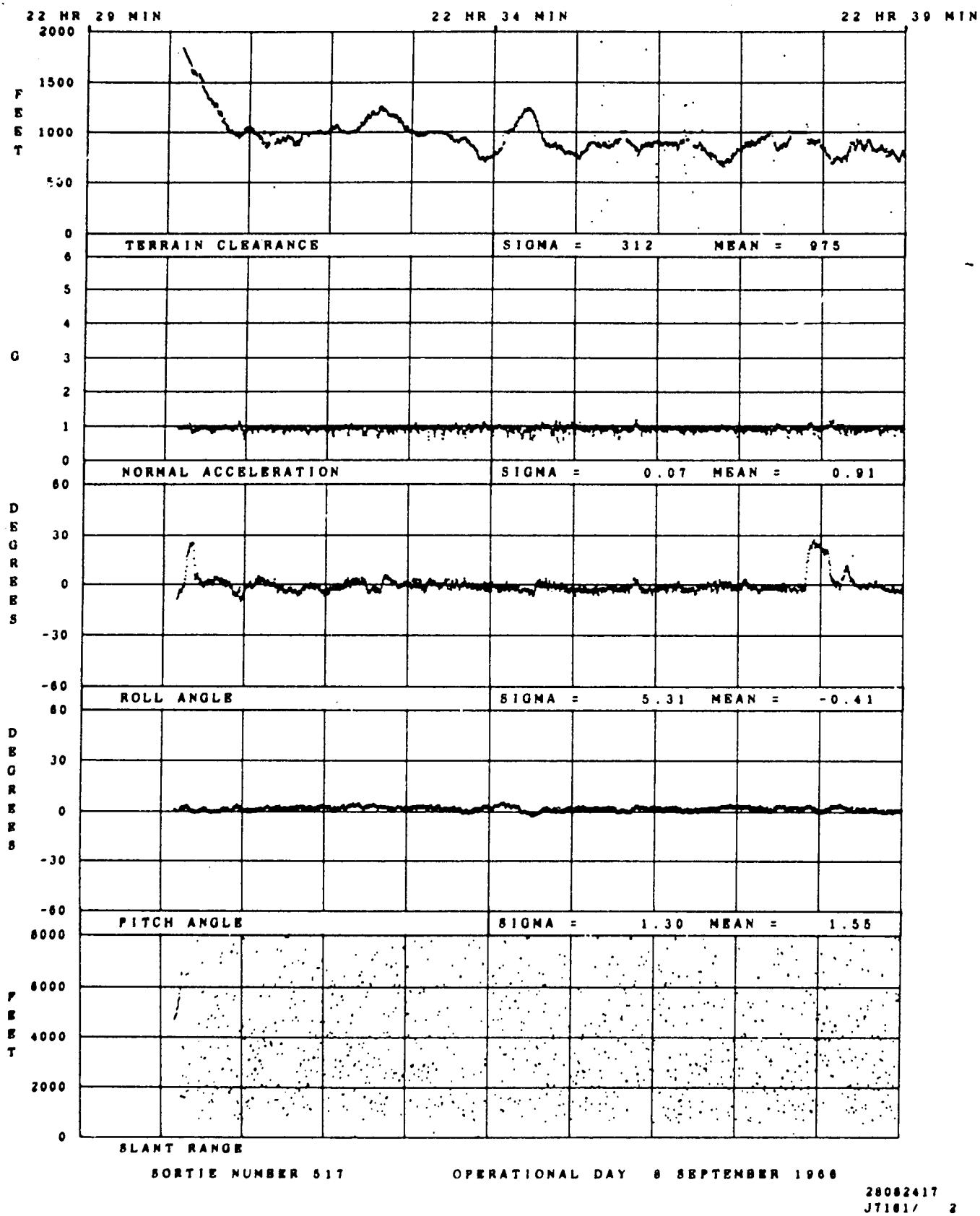


Figure 3-12 (U) Telemetered Data (Part 1 of 4)

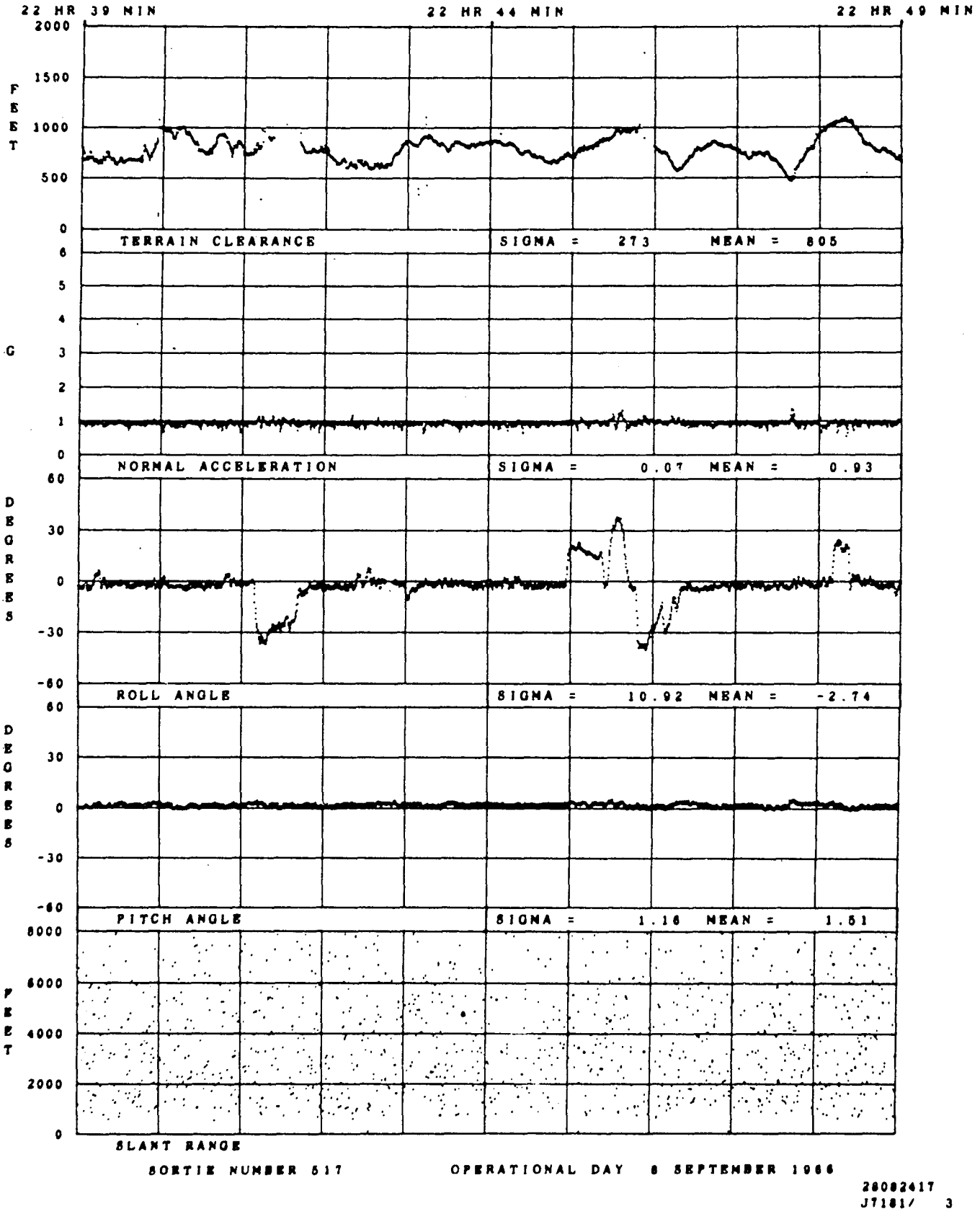


Figure 3-12 (U) Telemetered Data (Part 2 of 4)

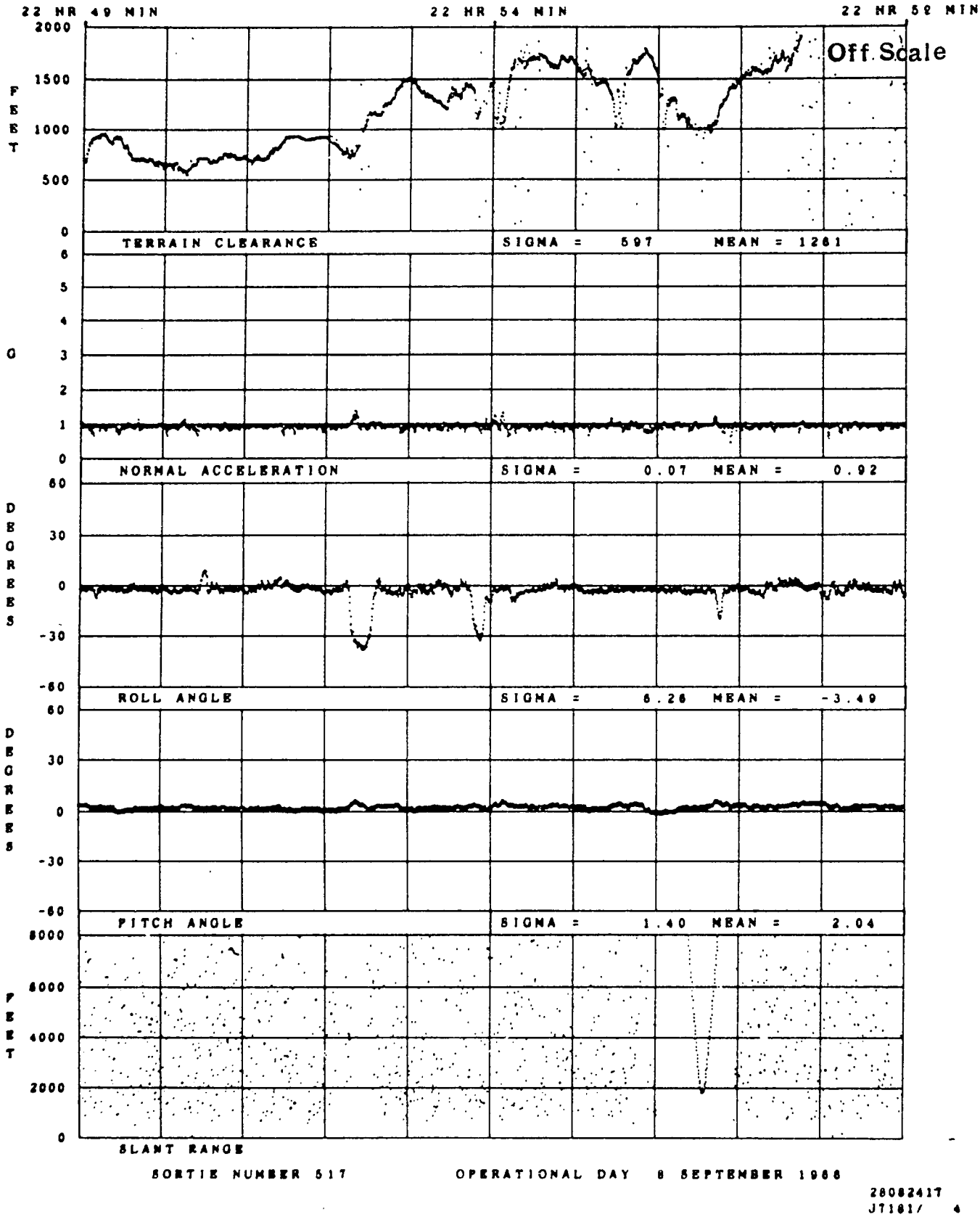


Figure 3-12 (U) Telemetered Data (Part 3 of 4)

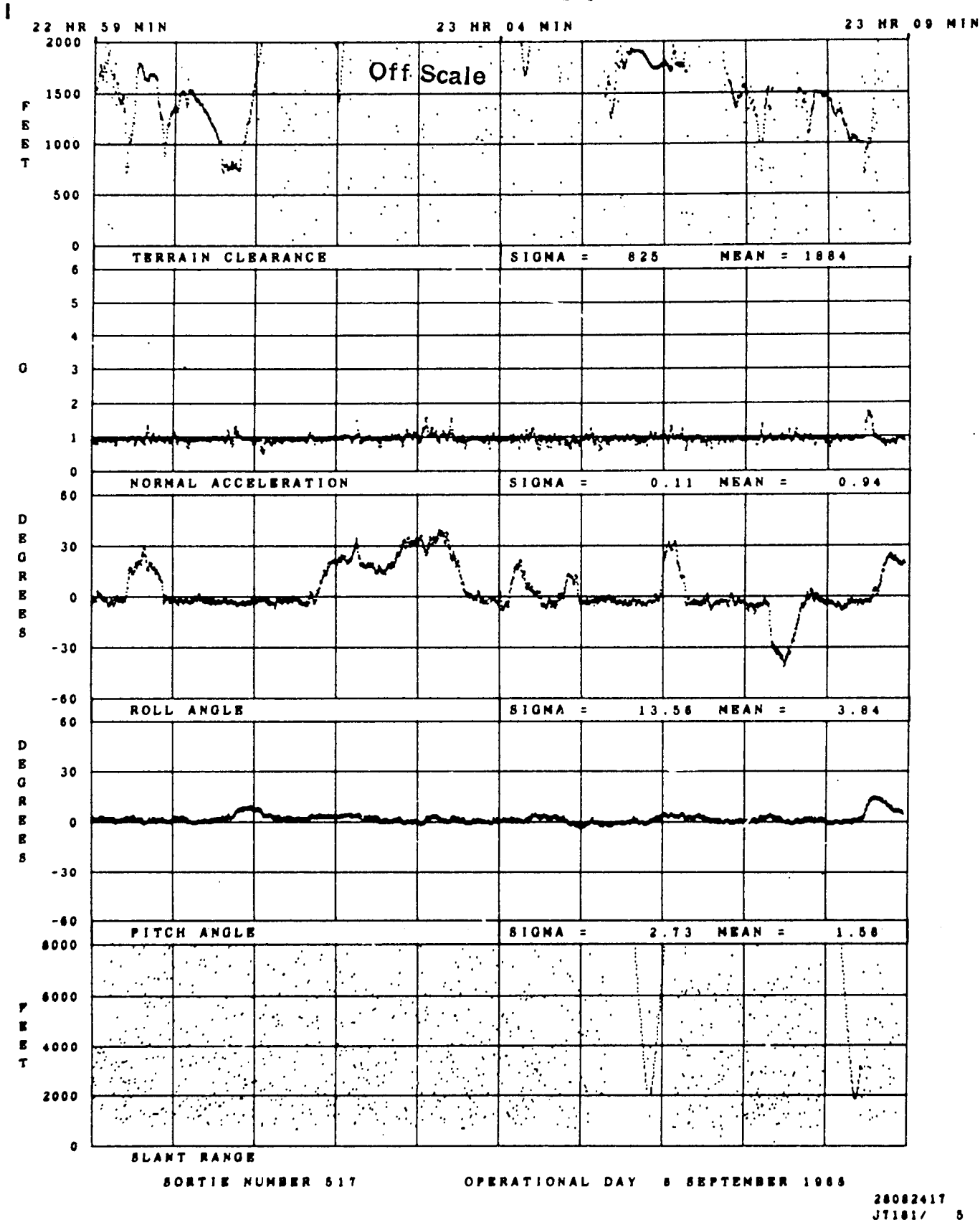
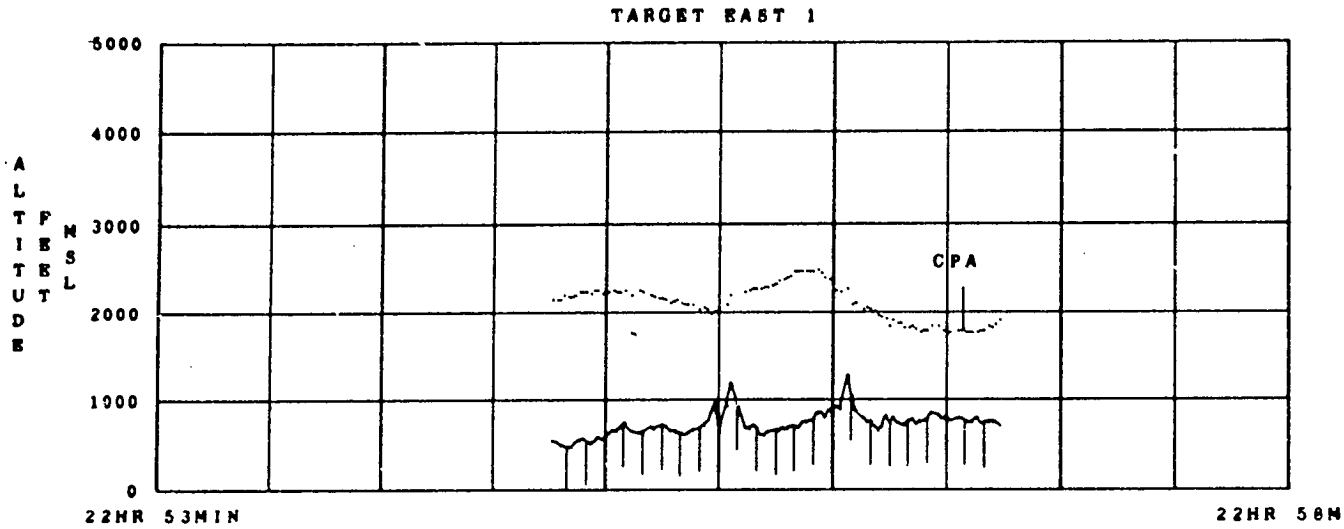
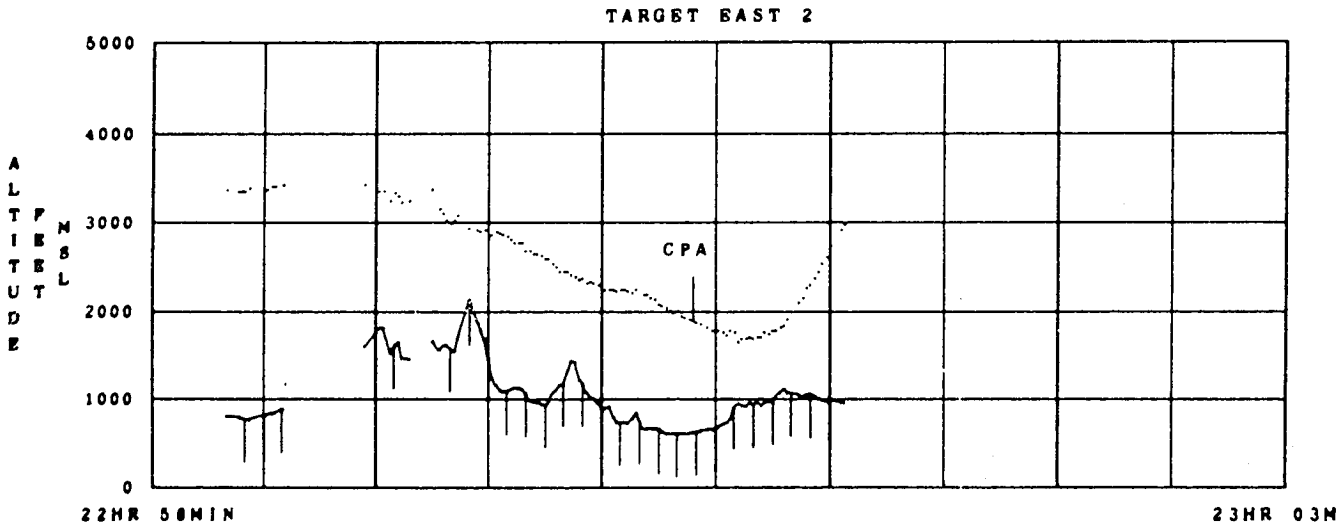


Figure 3-12 (U) Telemetered Data (Part 4 of 4)

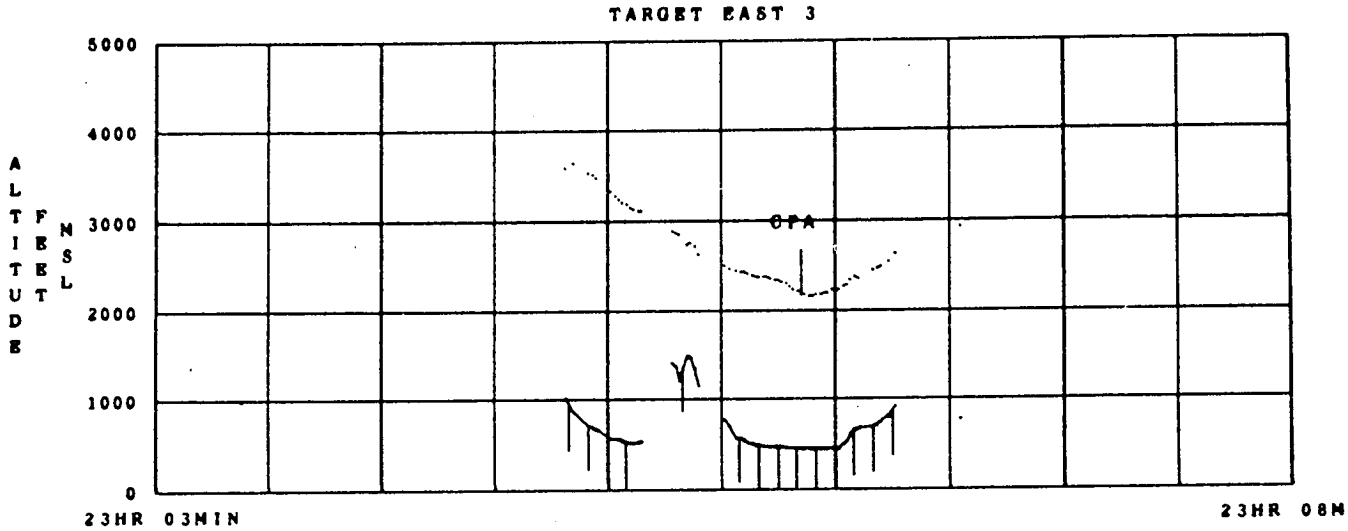


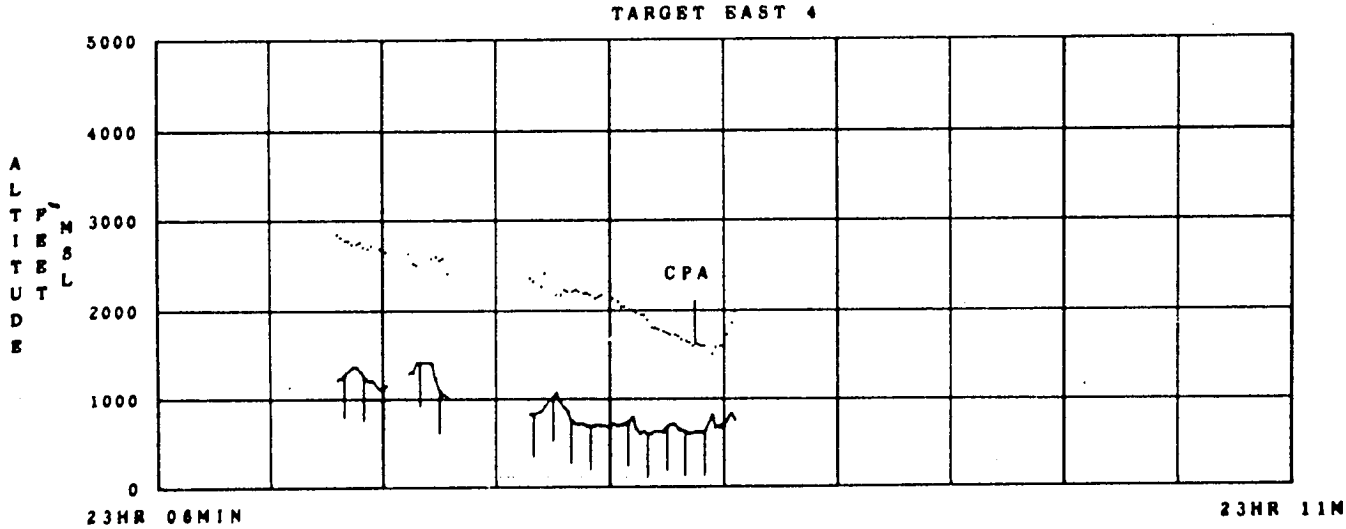


SORTIE NUMBER 517

04092100
J9175

Figure 3-13 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 517

04092100
J9175

Figure 3-13 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

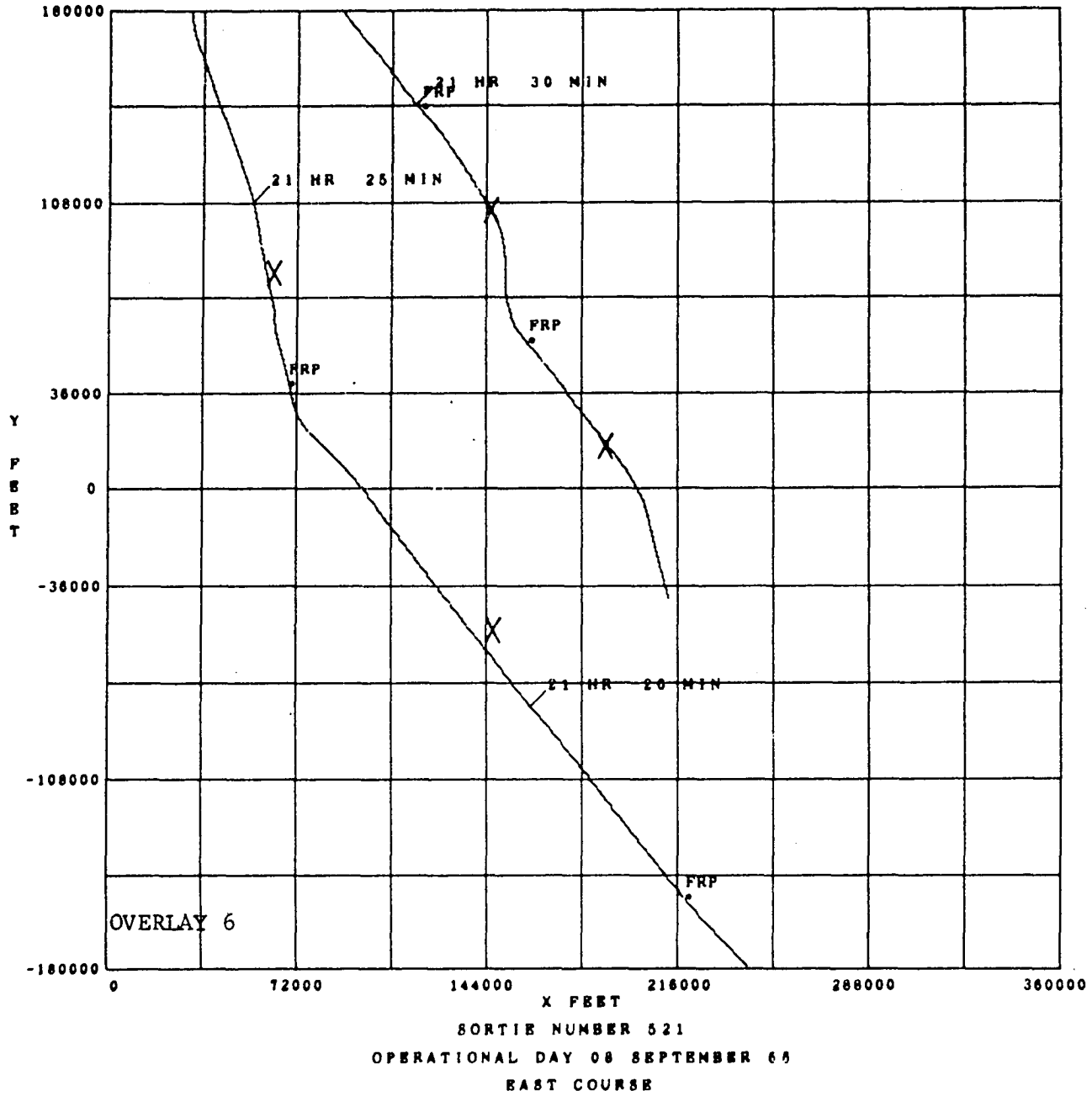
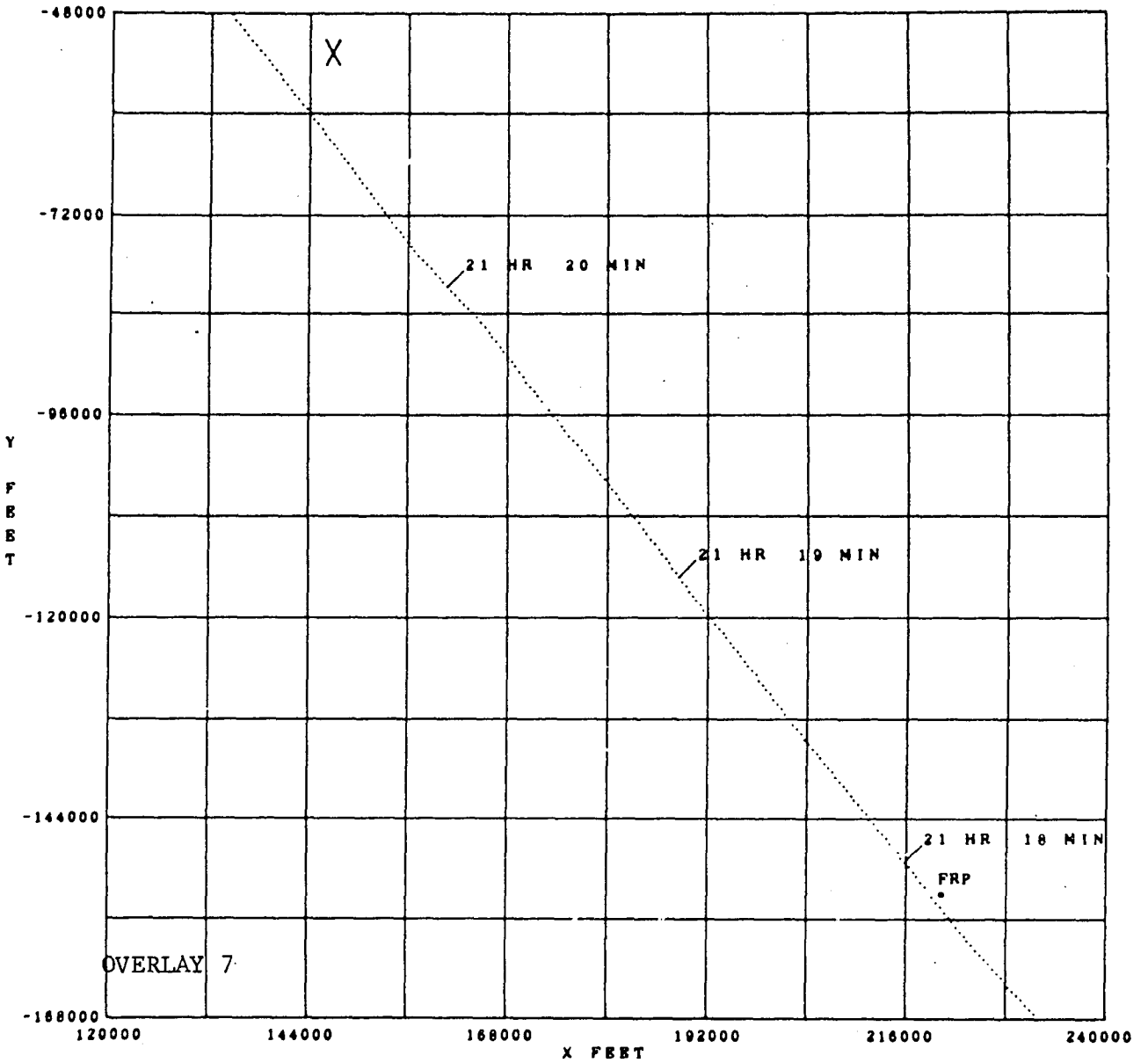


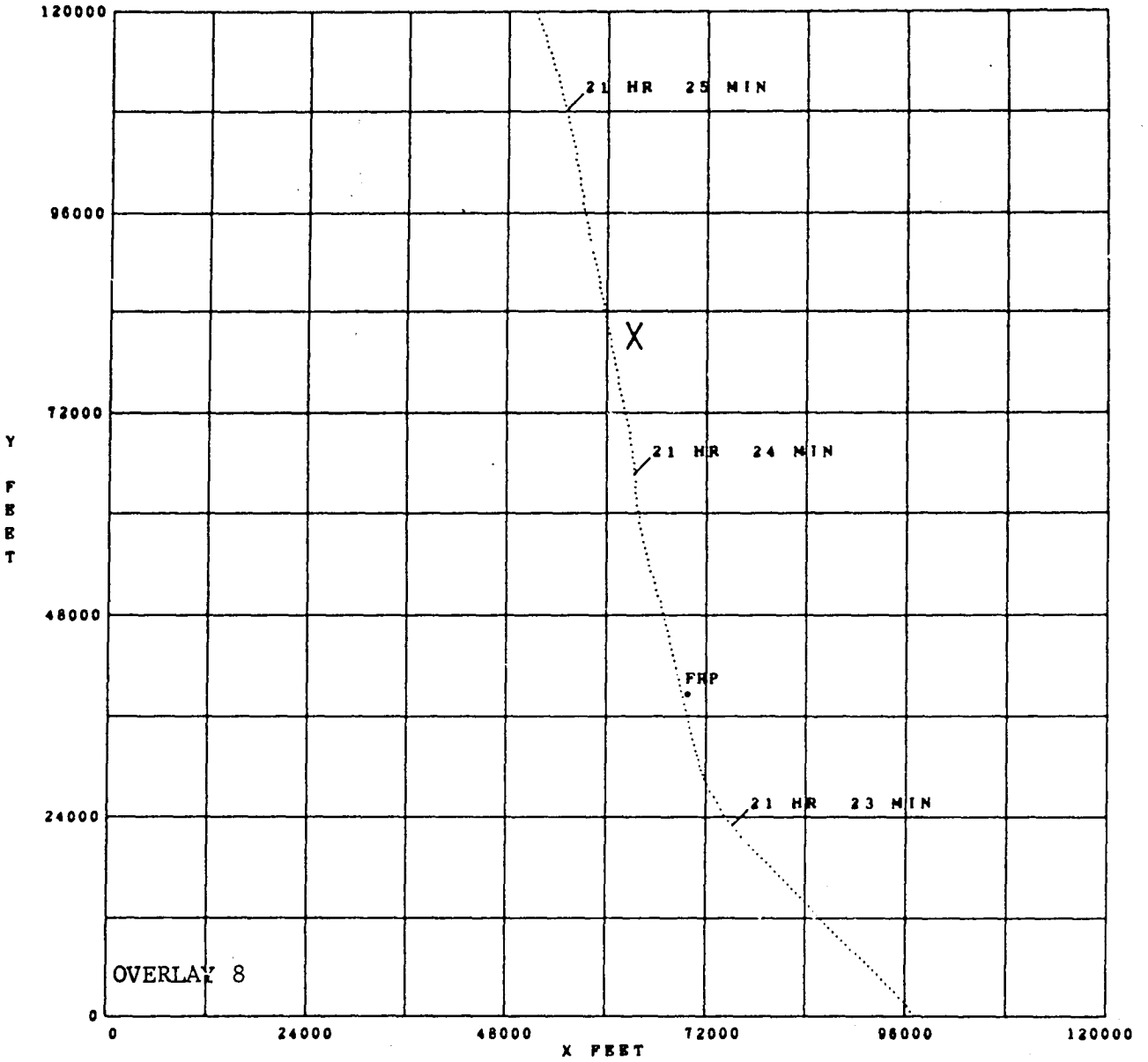
Figure 3-14 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 6751 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 521
TARGET EAST 1

04092100
J9175 161

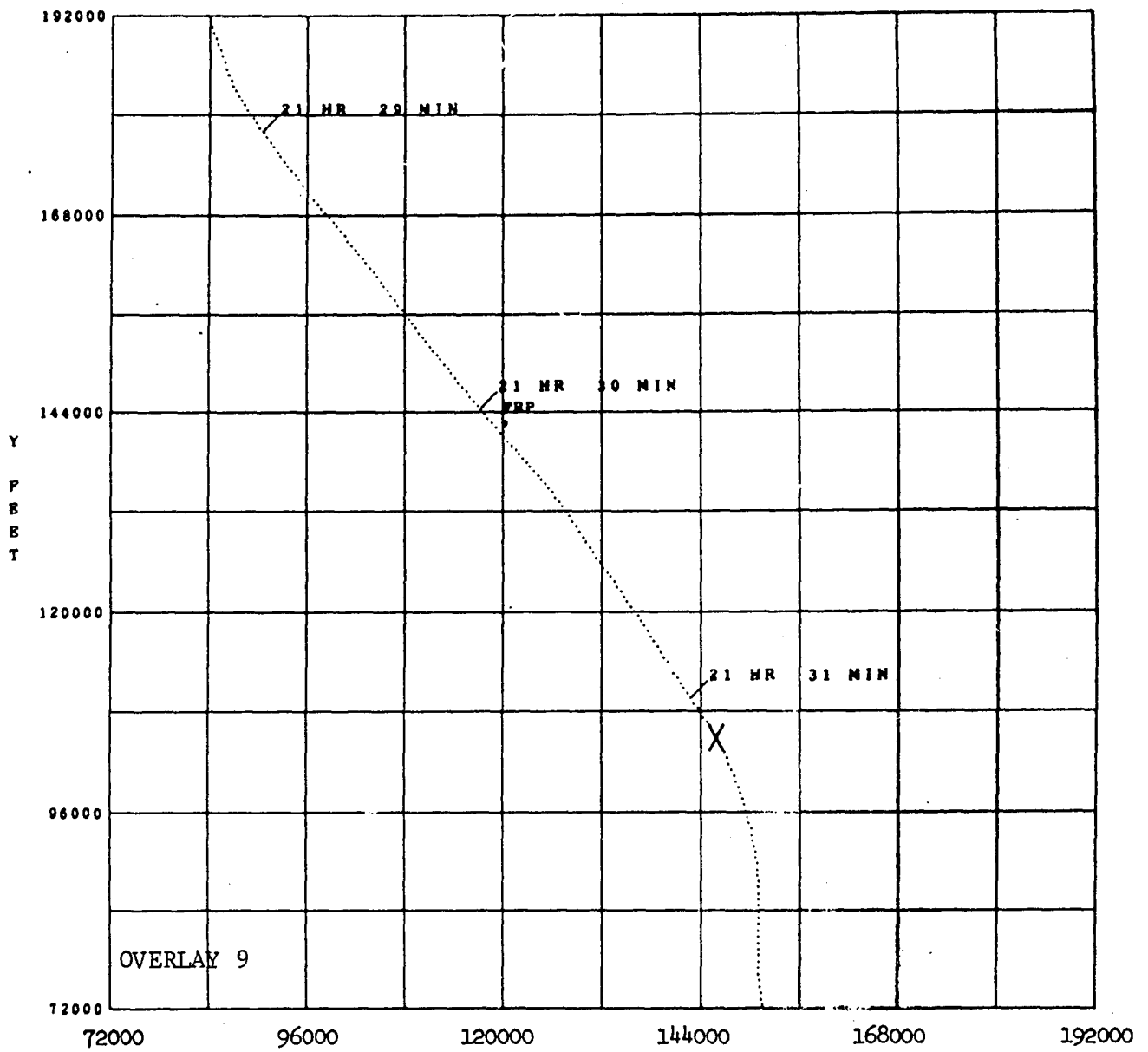
Figure 3-14 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2839 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 521
TARGET EAST 2

04092100
J9175 168

Figure 3-14 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 101 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 521
TARGET EAST 3

Figure 3-14 (U) Aircraft Position Data (Part 4 of 5)

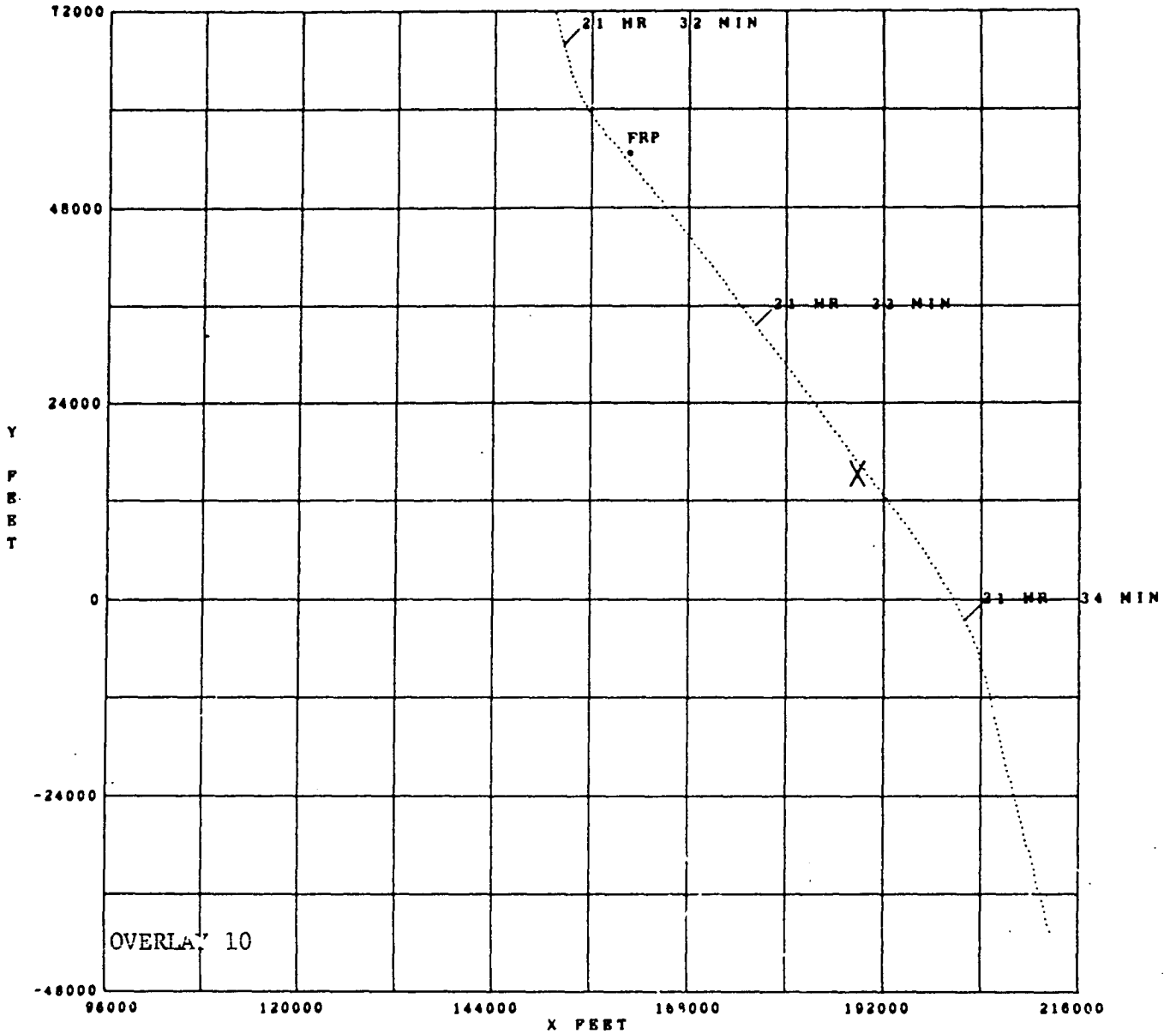


Figure 3-14 (U) Aircraft Position Data (Part 5 of 5)

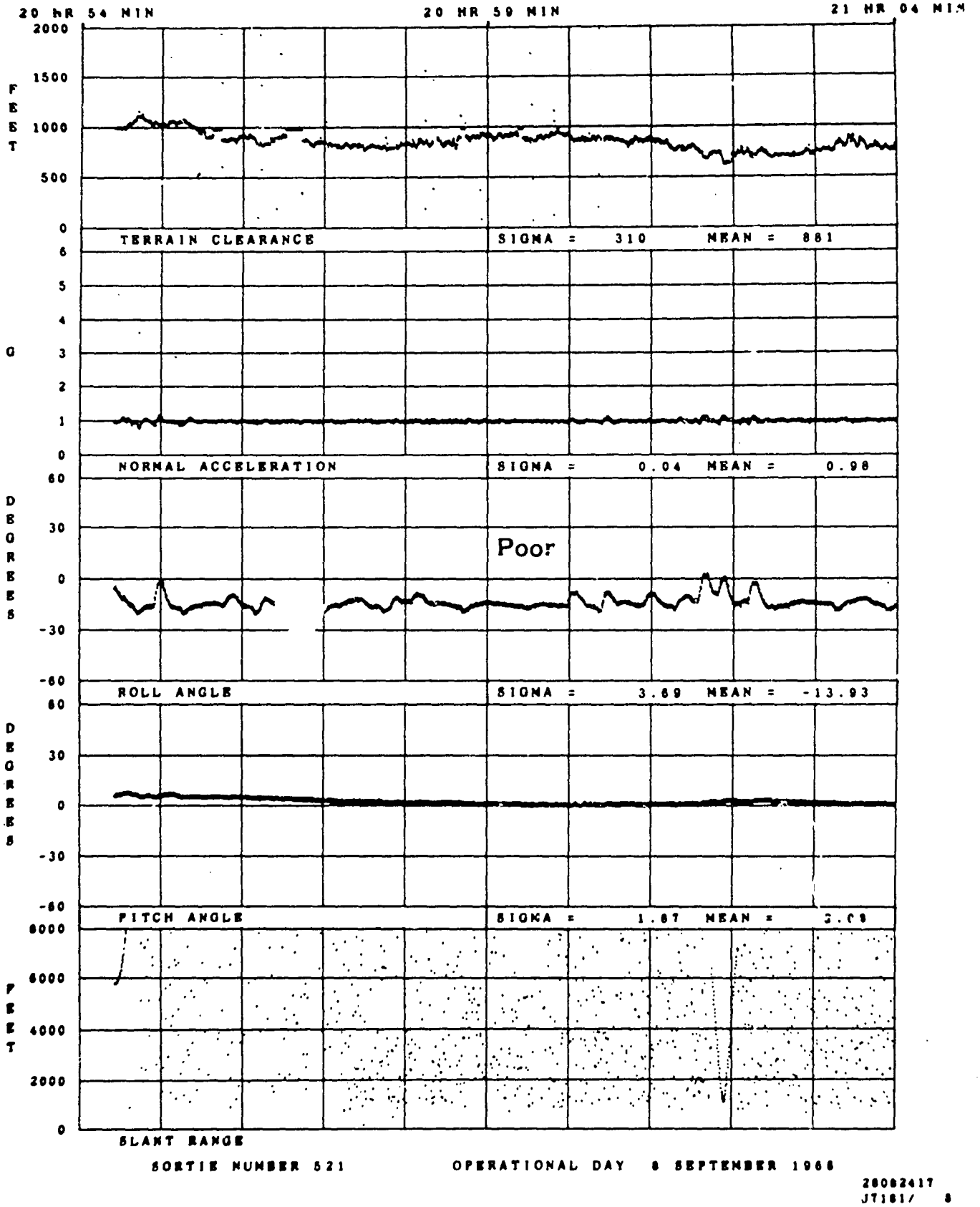


Figure 3-15 (U) Telemetered Data (Part 1 of 4)

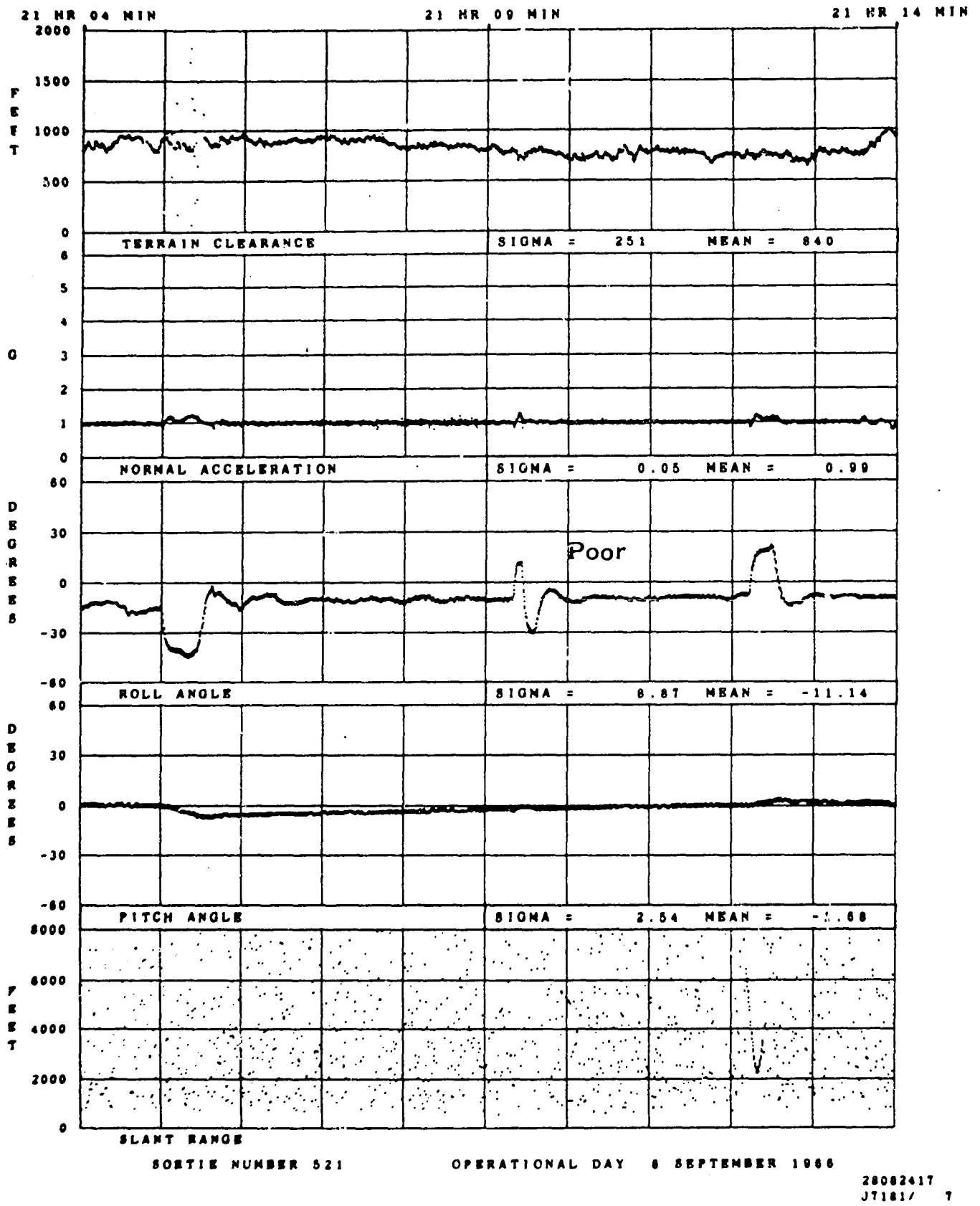


Figure 3-15 (U) Telemetered Data (Part 2 of 4)

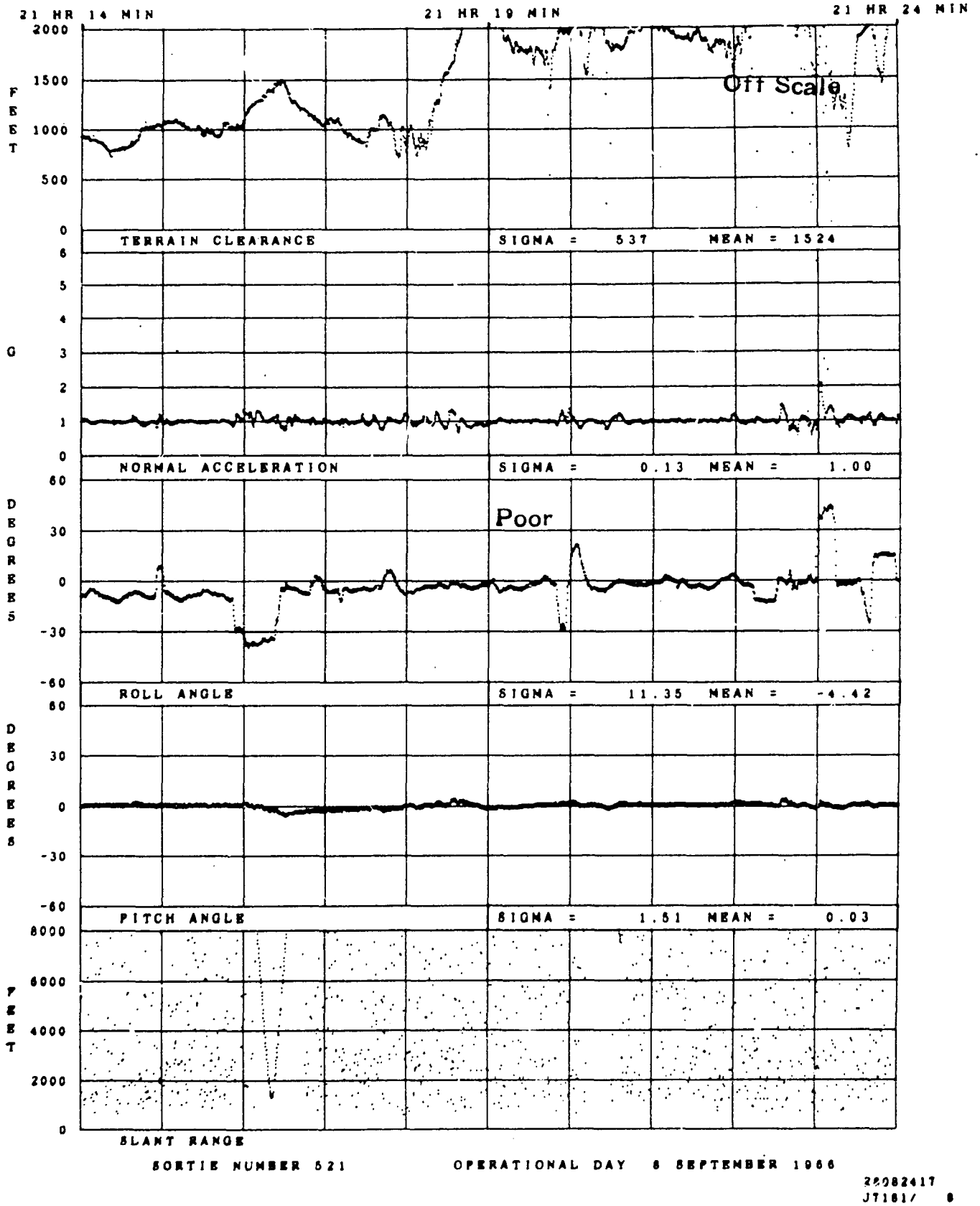


Figure 3-15 (U) Telemetered Data (Part 3 of 4)

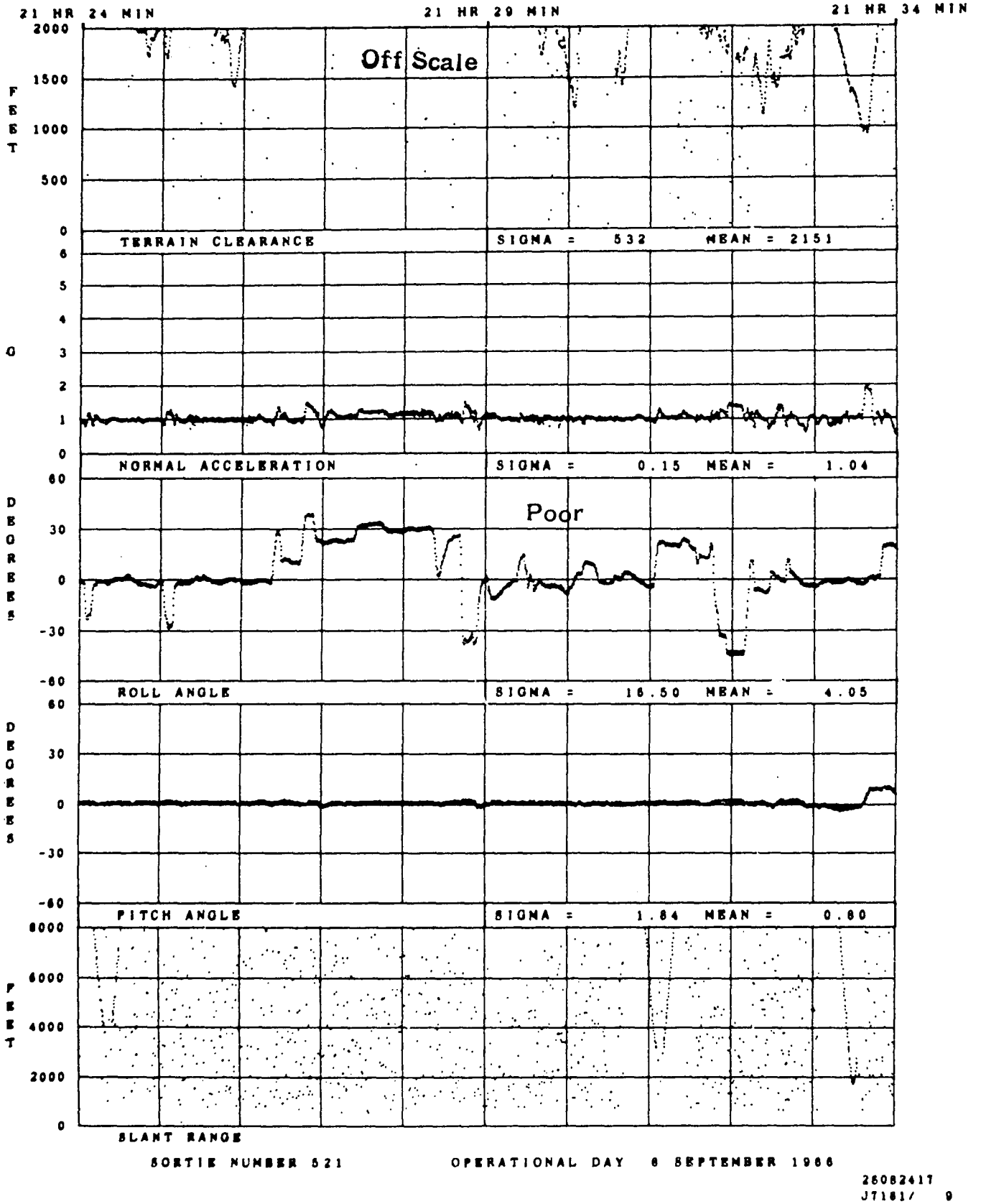
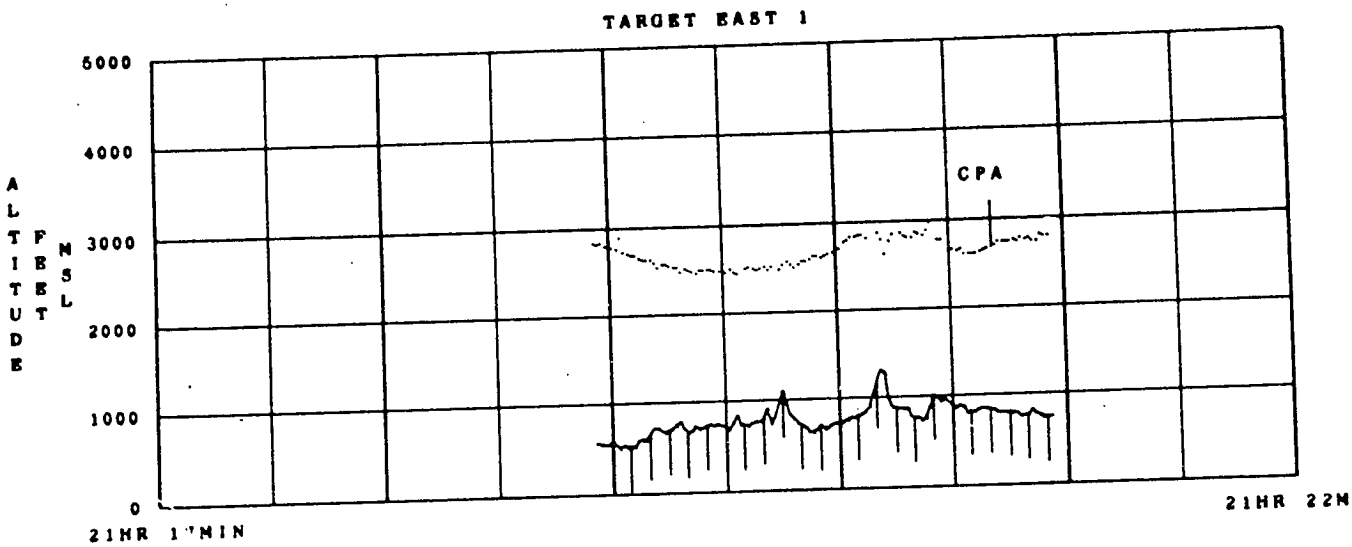
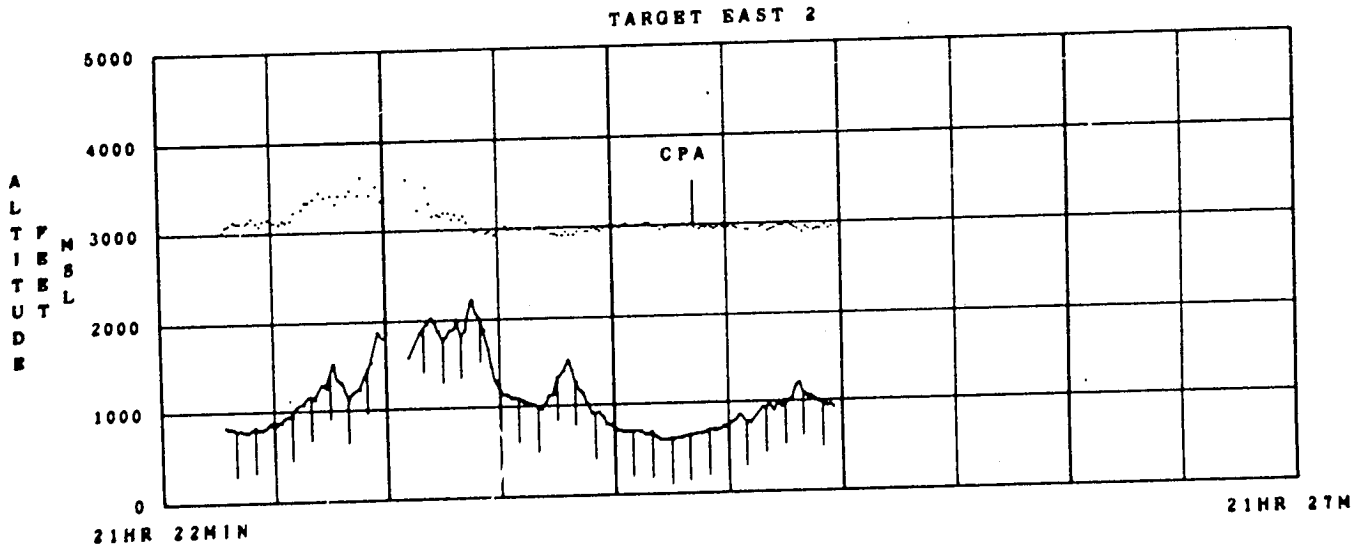


Figure 3-15 (U) Telemetered Data (Part 4 of 4)

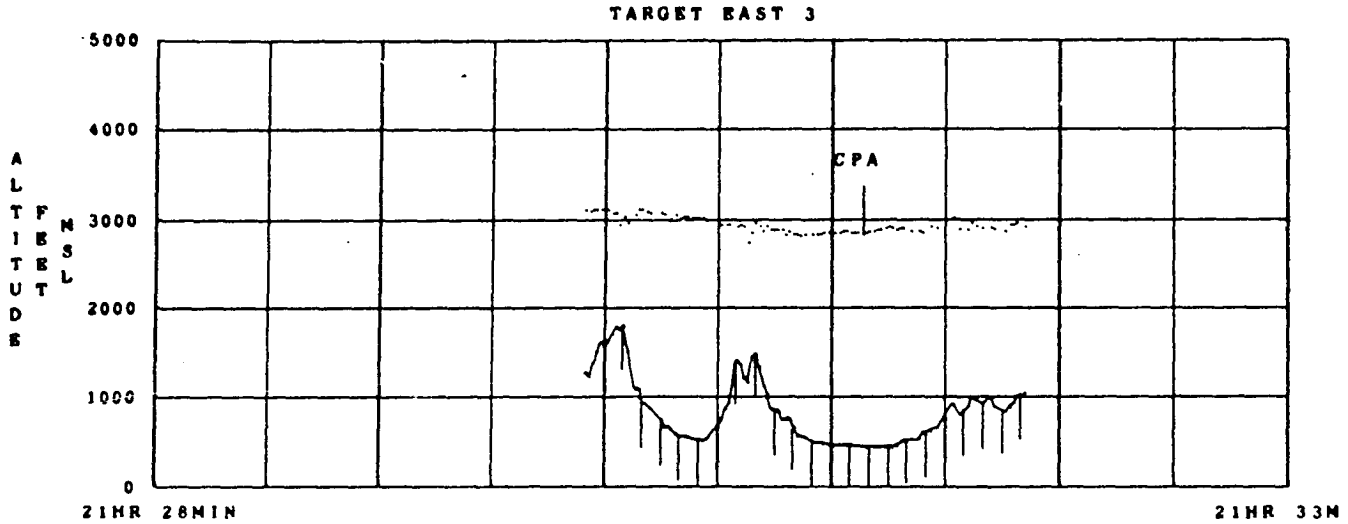


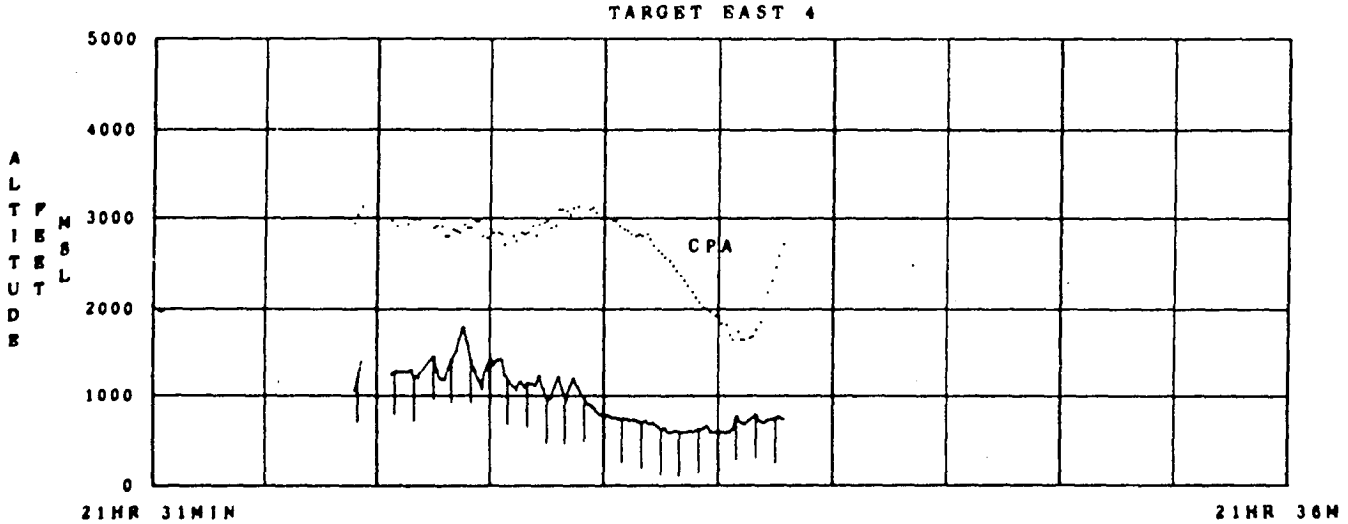


SORTIE NUMBER 521

04092101
J9175

Figure 3-16 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

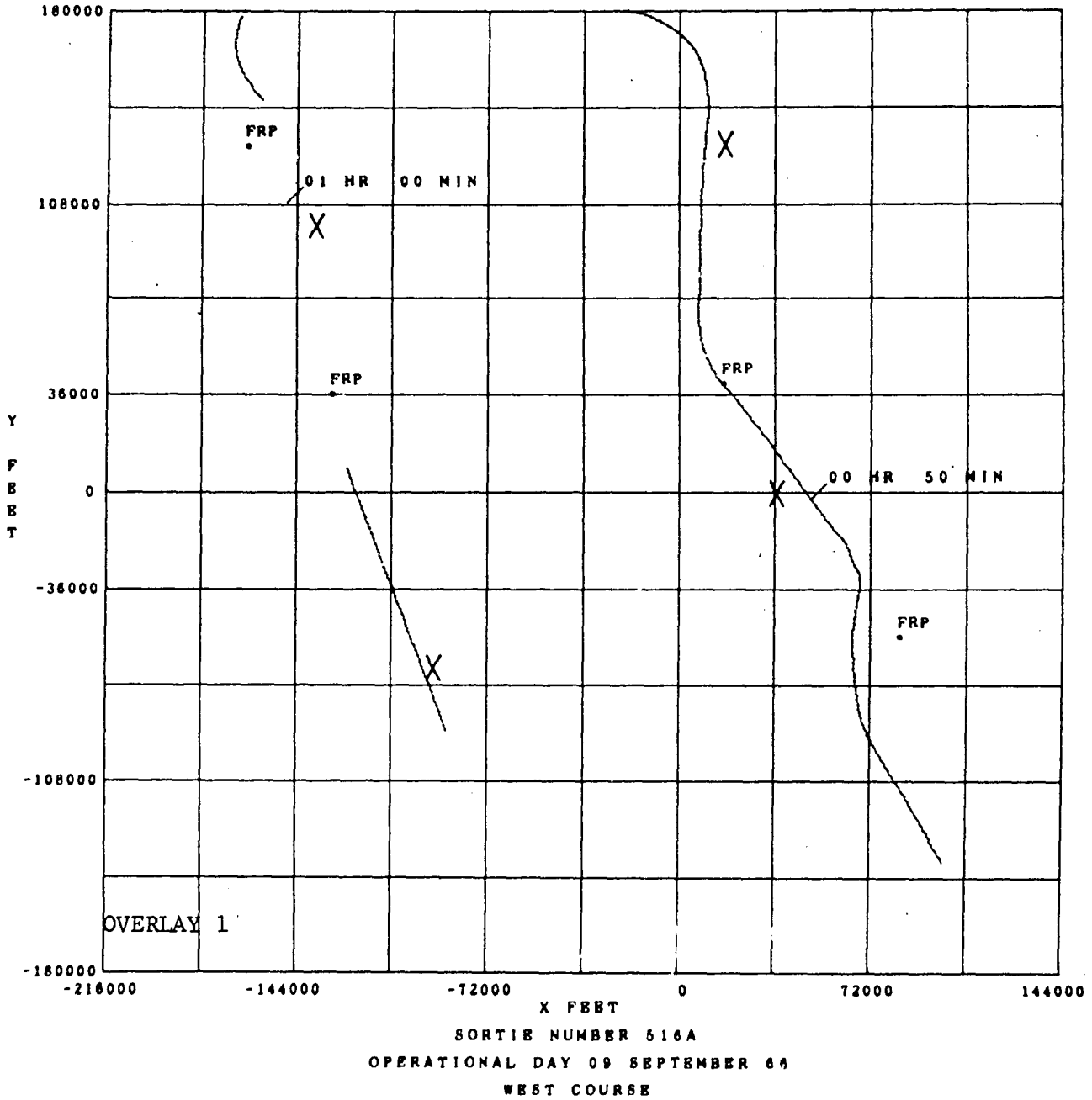




SORTIE NUMBER 521

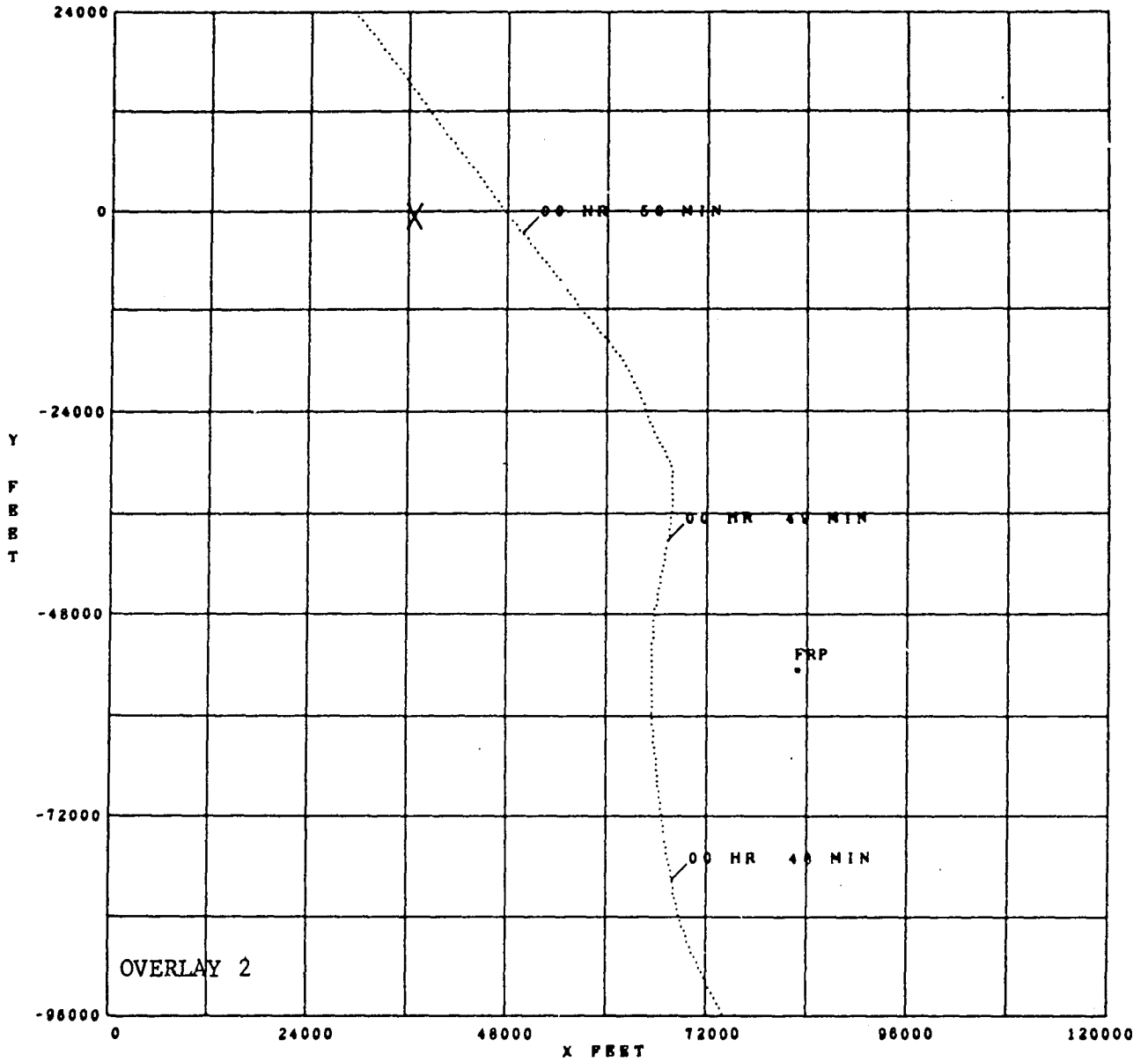
04092101
J9175

Figure 3-16 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092101
J9175 182

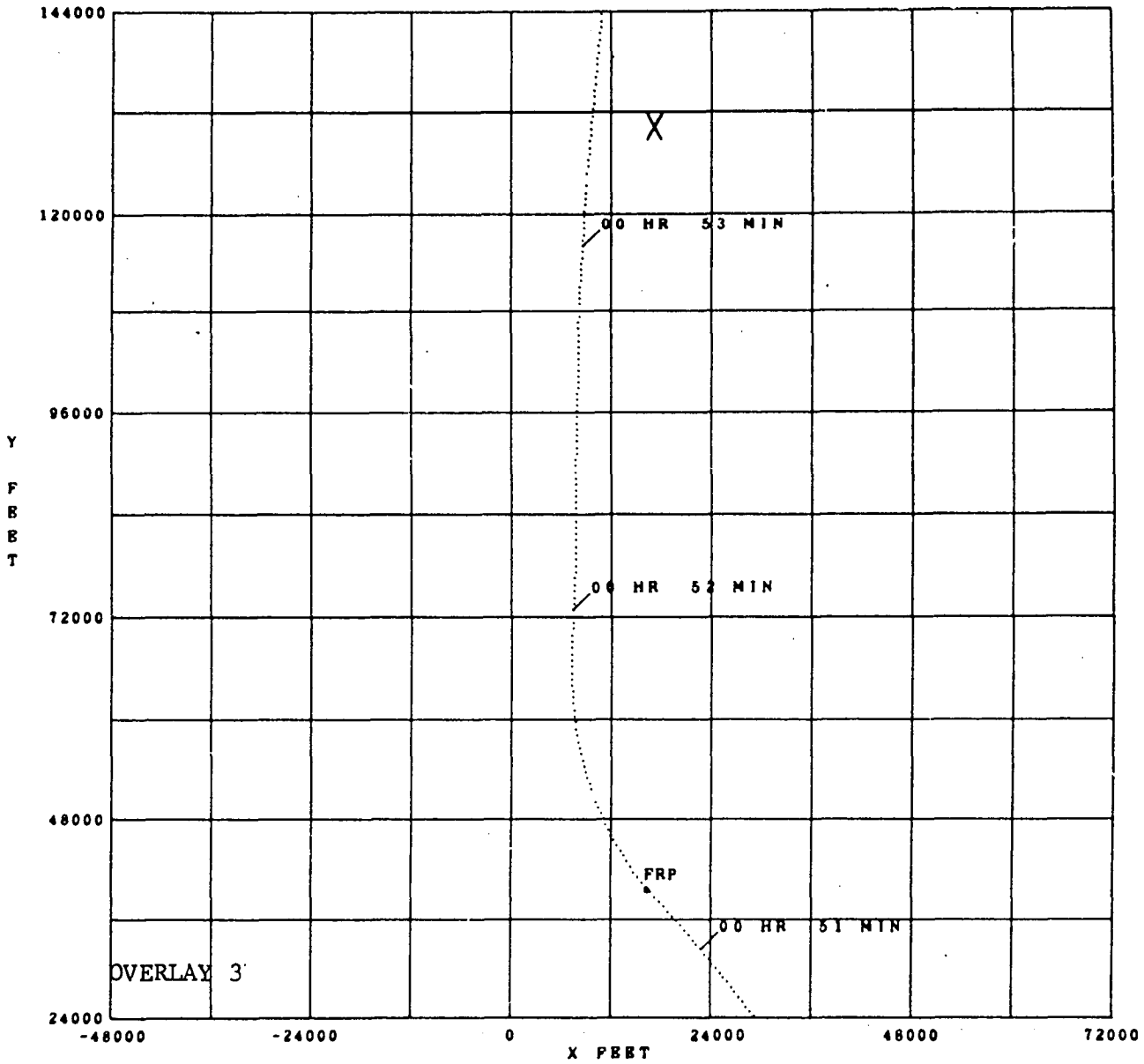
Figure 3-17 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 9203 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 516A
TARGET WEST 1

04092102
J9175 183

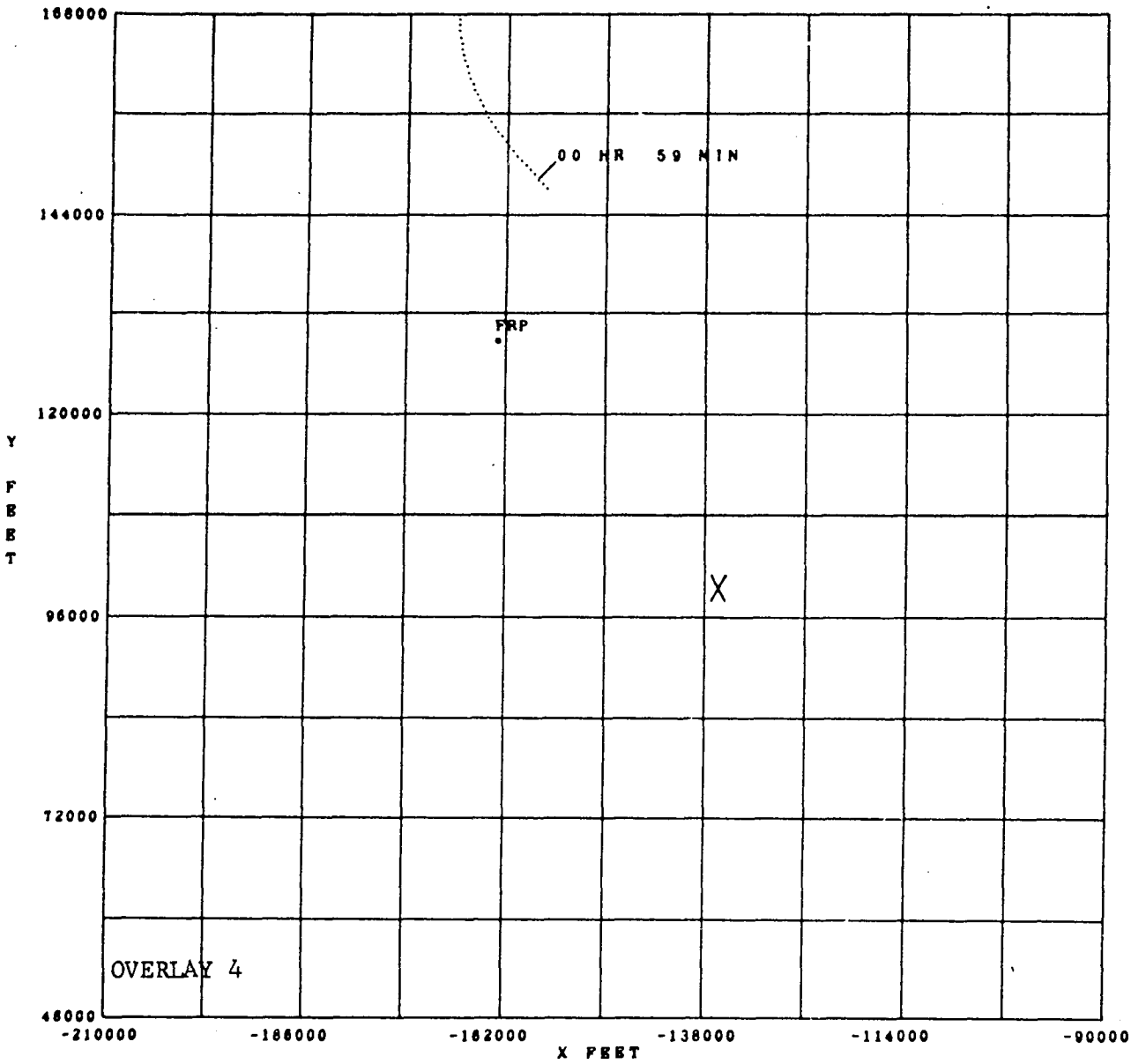
Figure 3-17 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 7660 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 516A
TARGET WEST 2

04092102
J9175 184

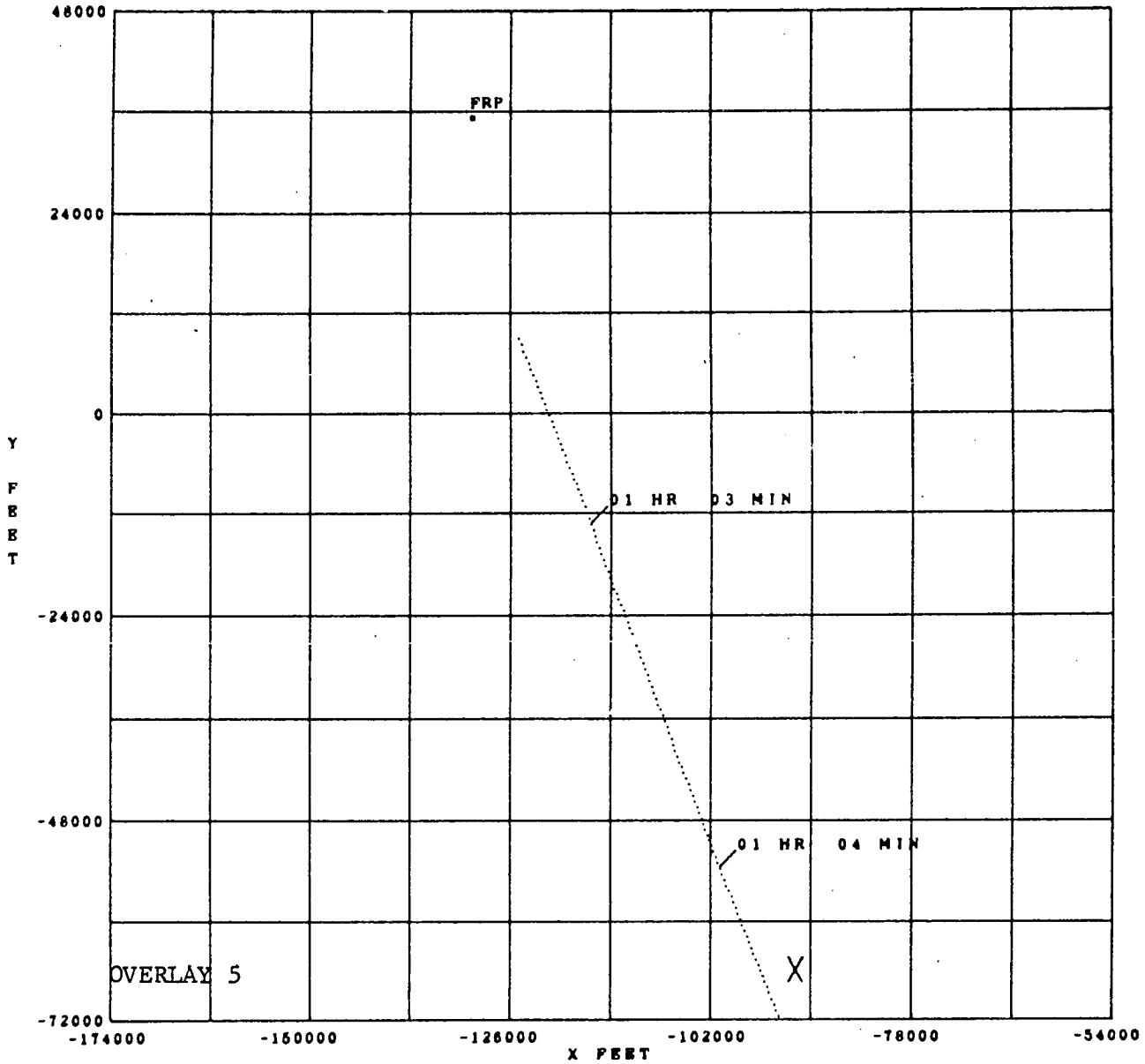
Figure 3-17 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = FEET
MINIMUM GROUND DISTANCE QUALIFIER = MISSINGD
SORTIE NUMBER 516A
TARGET WEST 3

04092102
J9175 185

Figure 3-17 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 3892 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 516A
TARGET WEST 4

04092102
J9173 186

Figure 3-17 (U) Aircraft Position Data (Part 5 of 5)

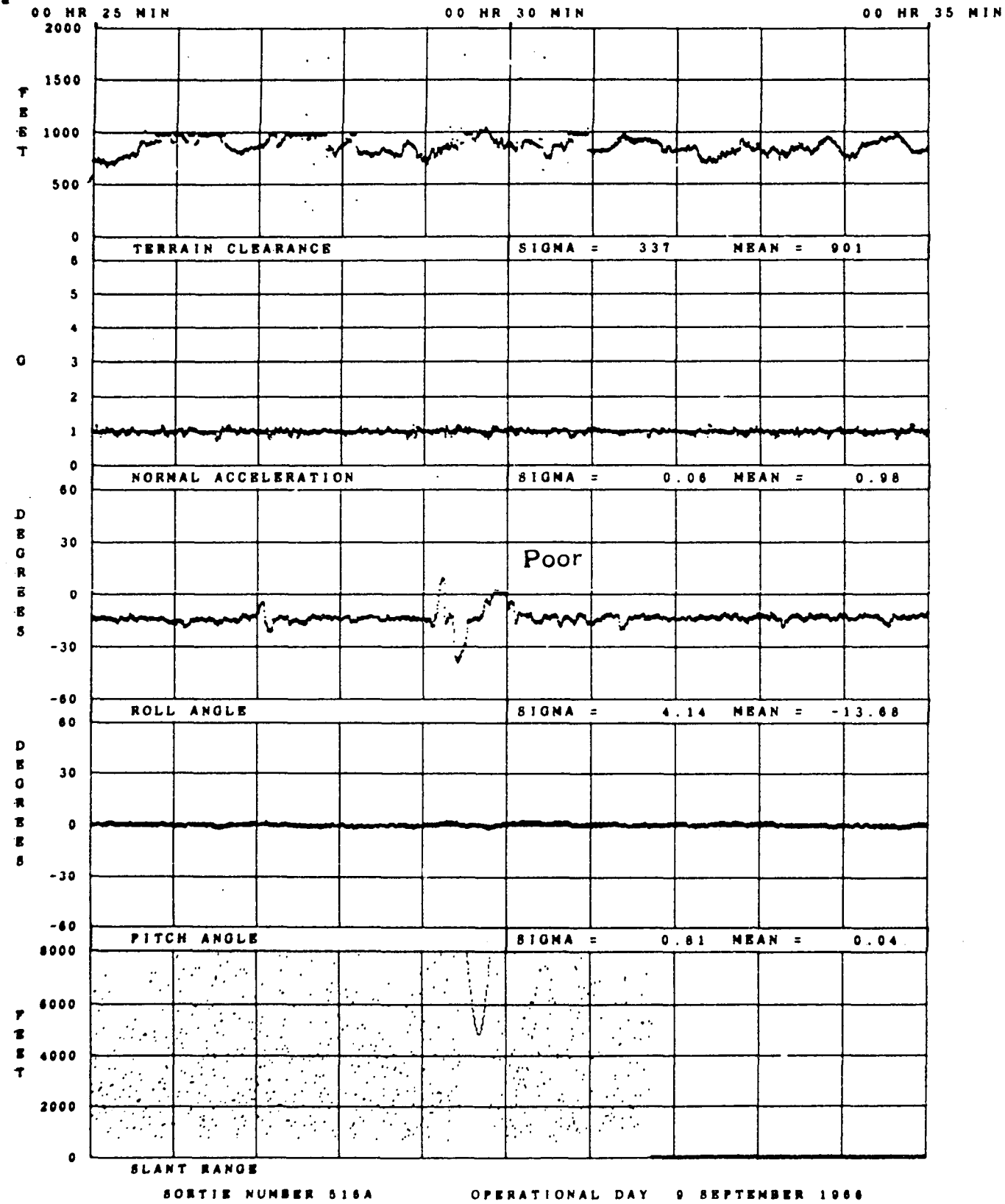


Figure 3-18 (U) Telemetered Data (Part 1 of 4)

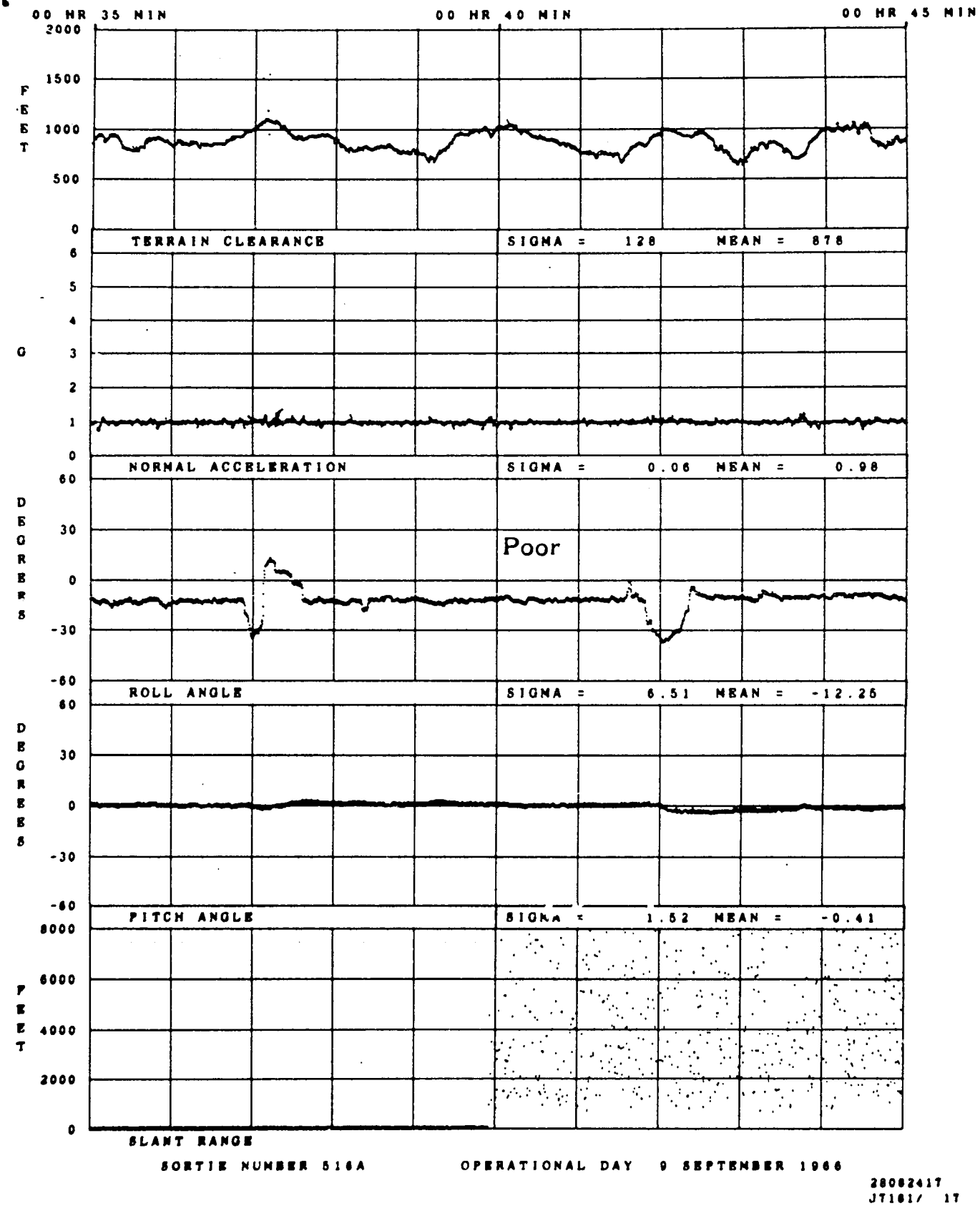


Figure 3-18 (U) Telemetered Data (Part 2 of 4)

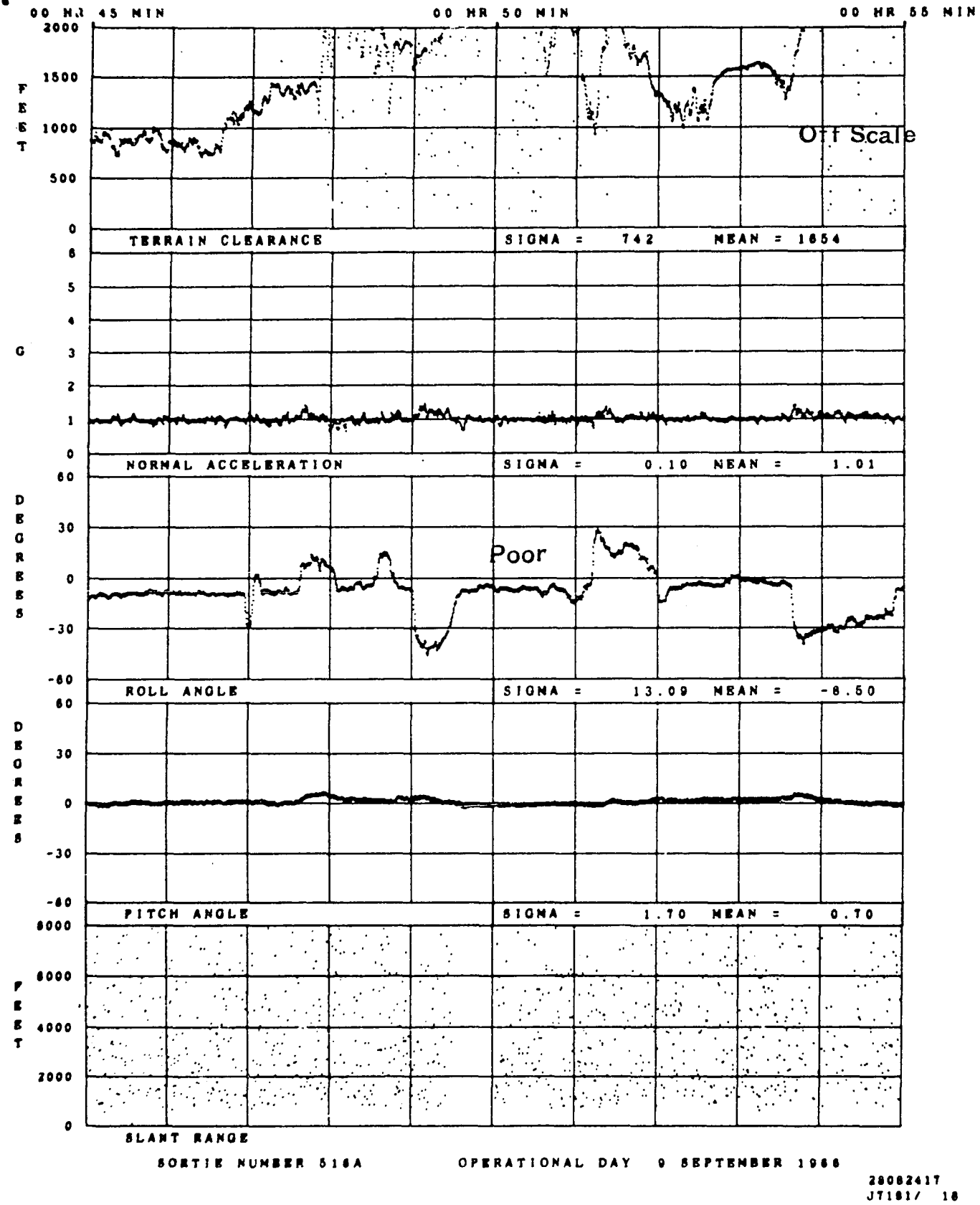


Figure 3-18 (U) Telemetered Data (Part 3 of 4)

UNCLASSIFIED

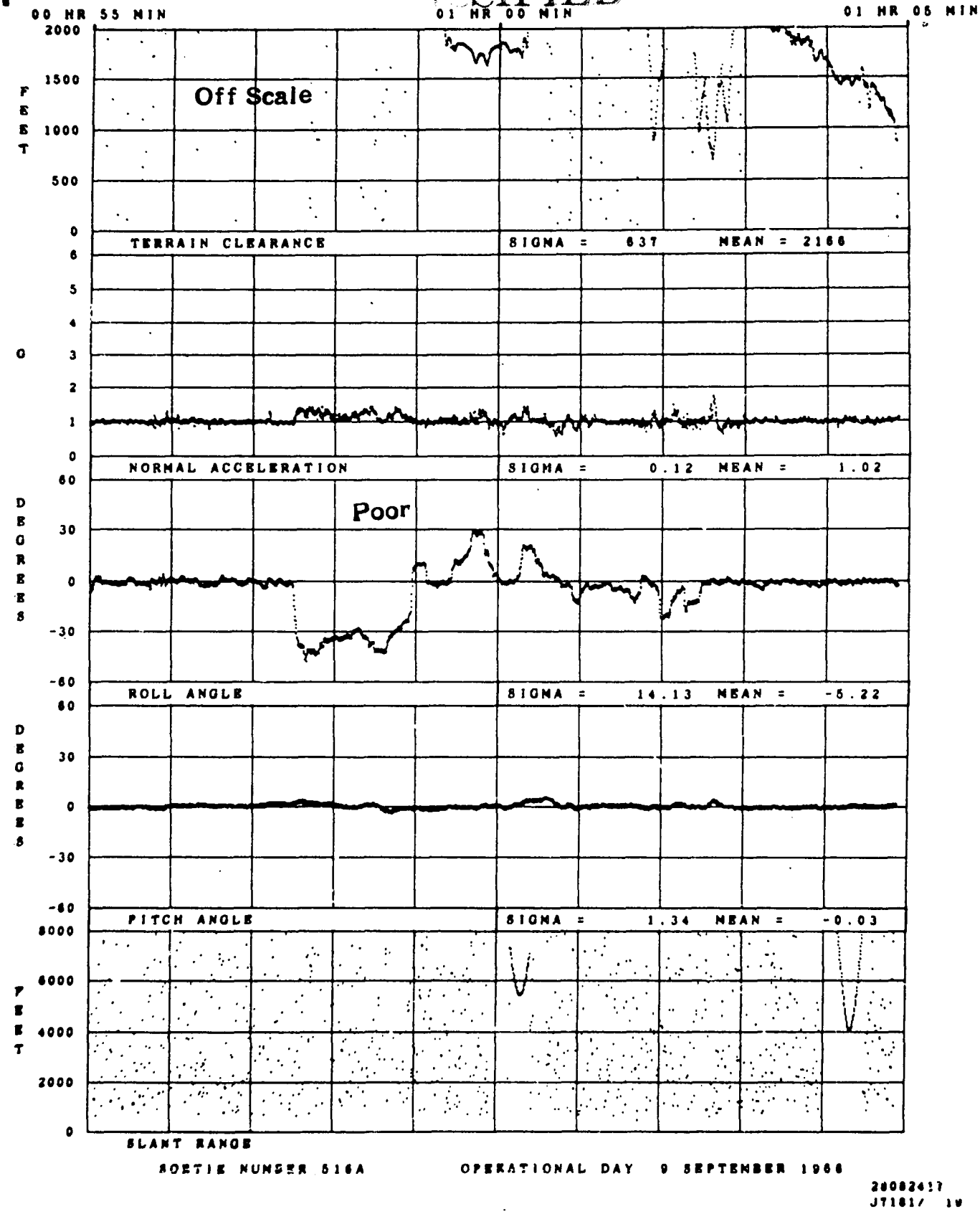
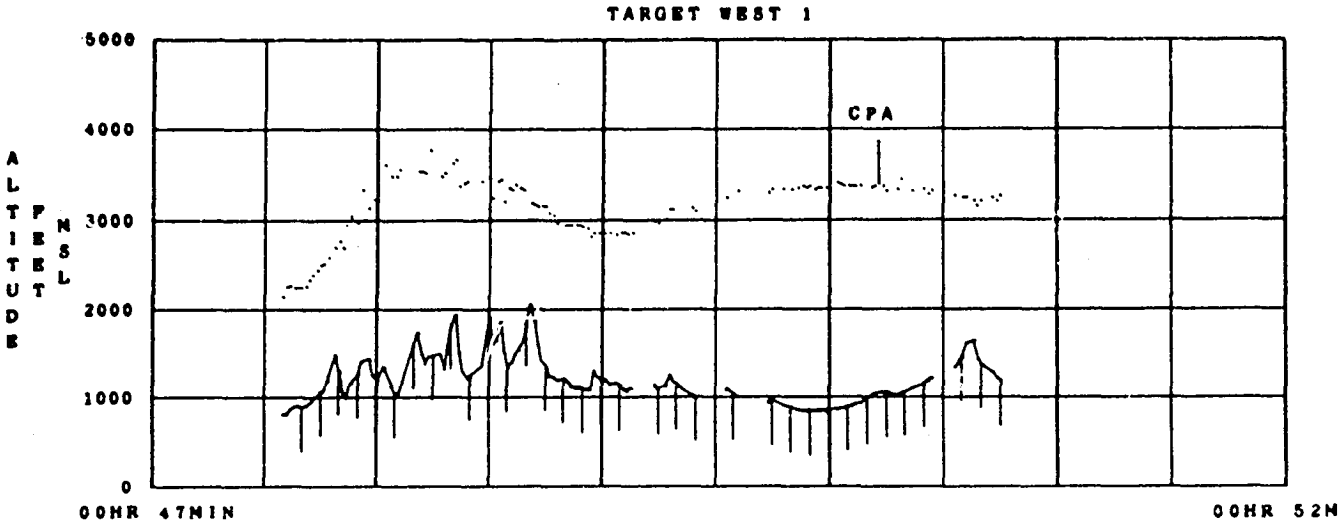
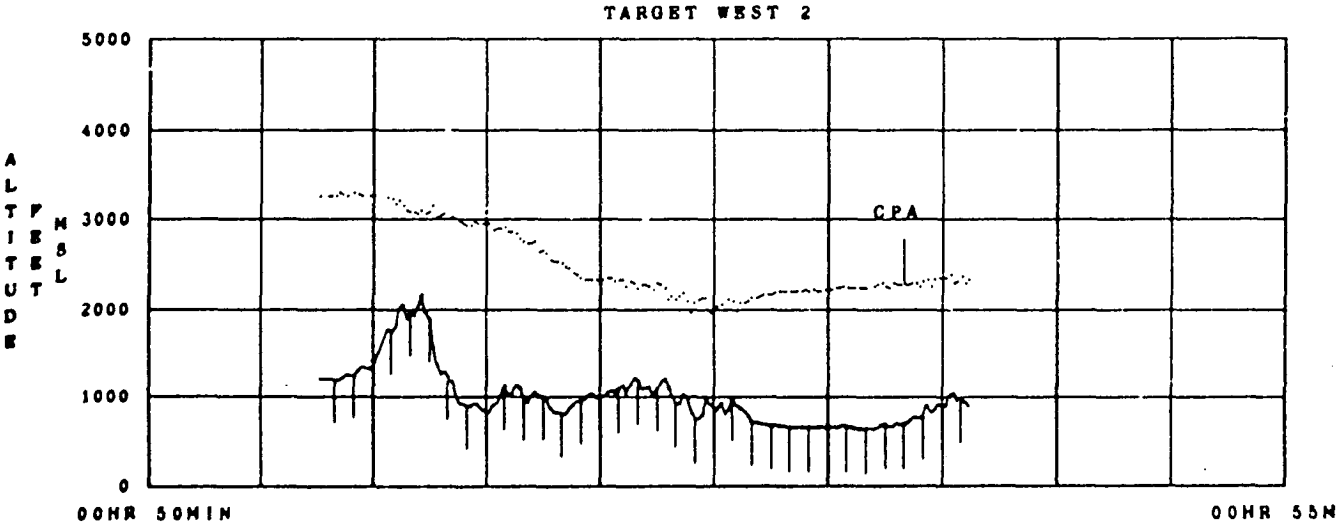


Figure 3-18 (U) Telemetered Data (Part 4 of 4)

UNCLASSIFIED

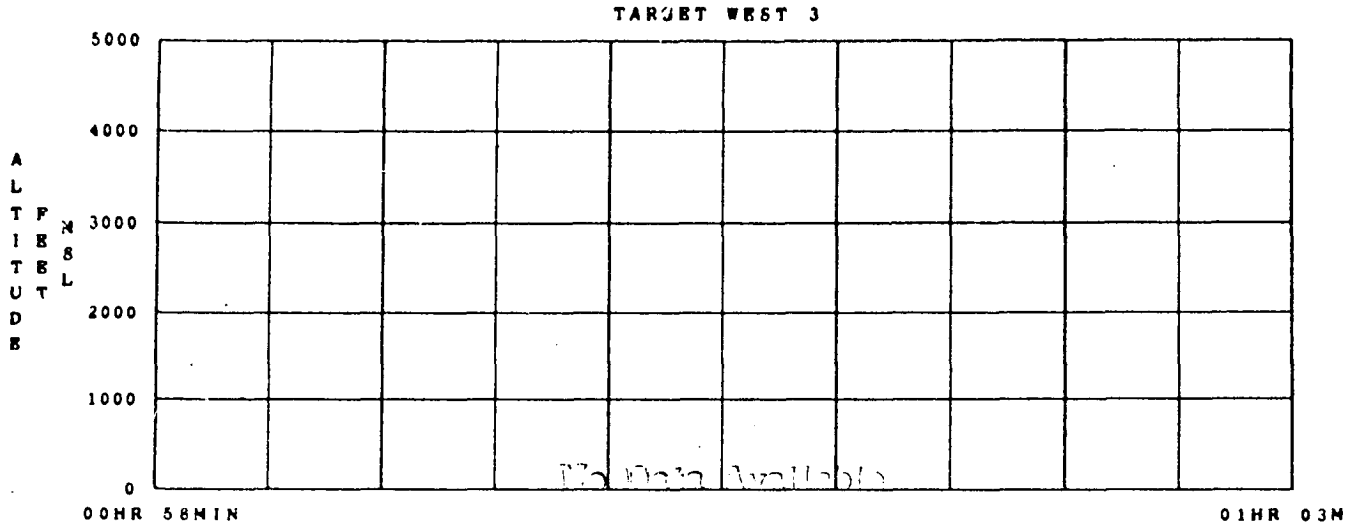


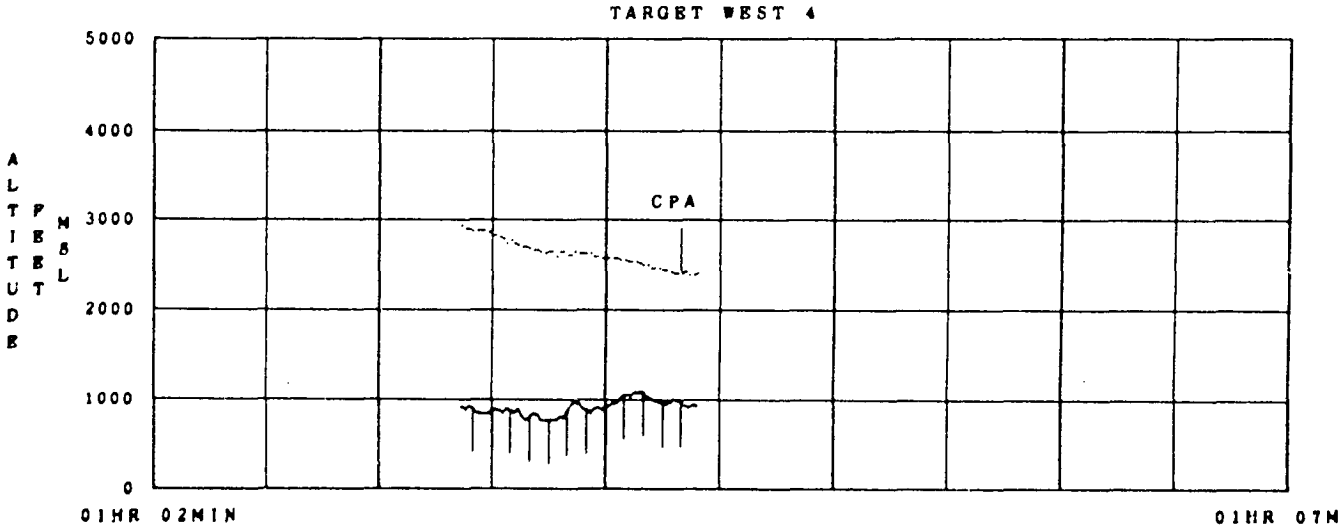


SORTIE NUMBER 516A

04092102
J9175

Figure 3-19 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

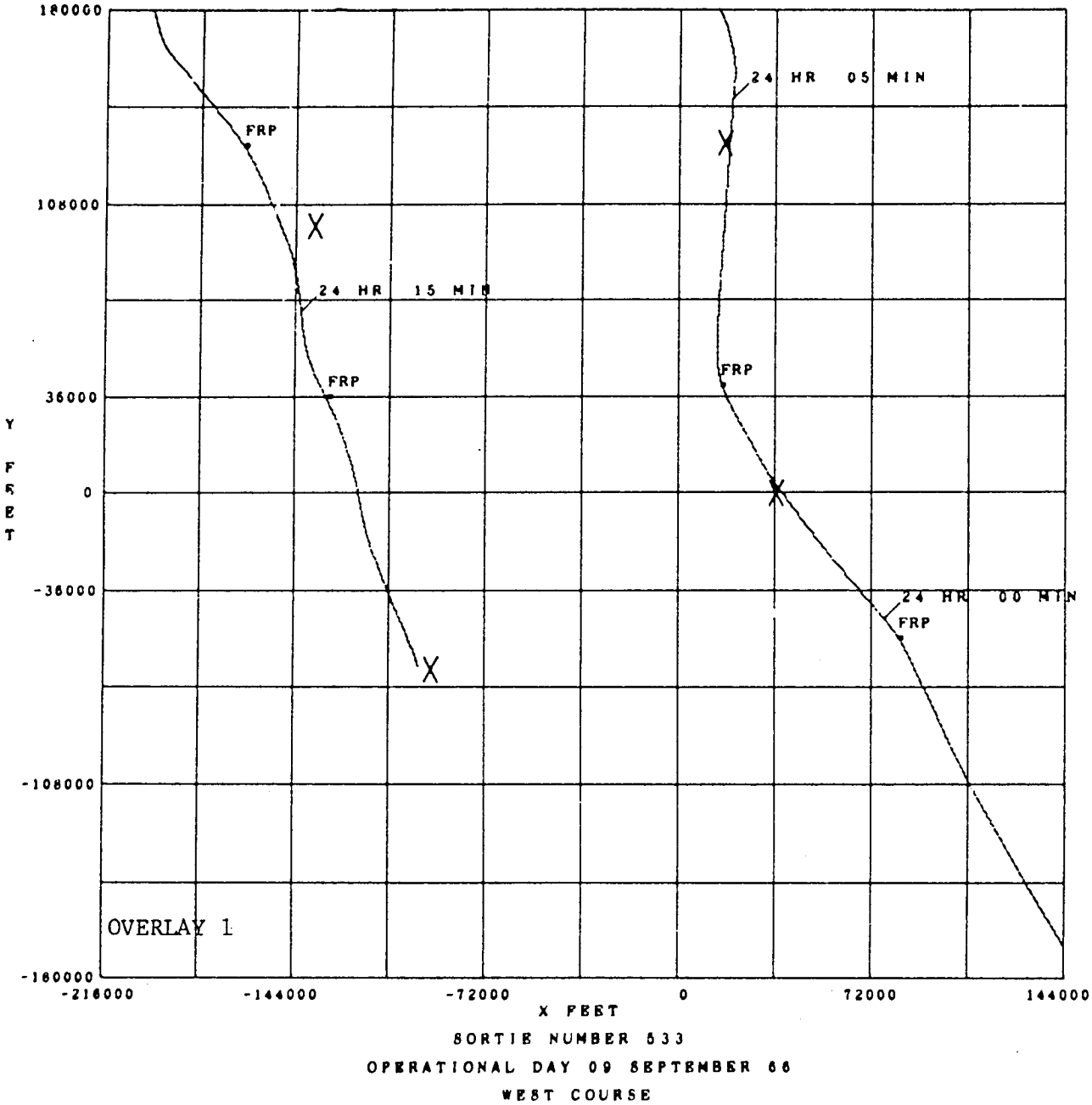




SORTIE NUMBER 516A

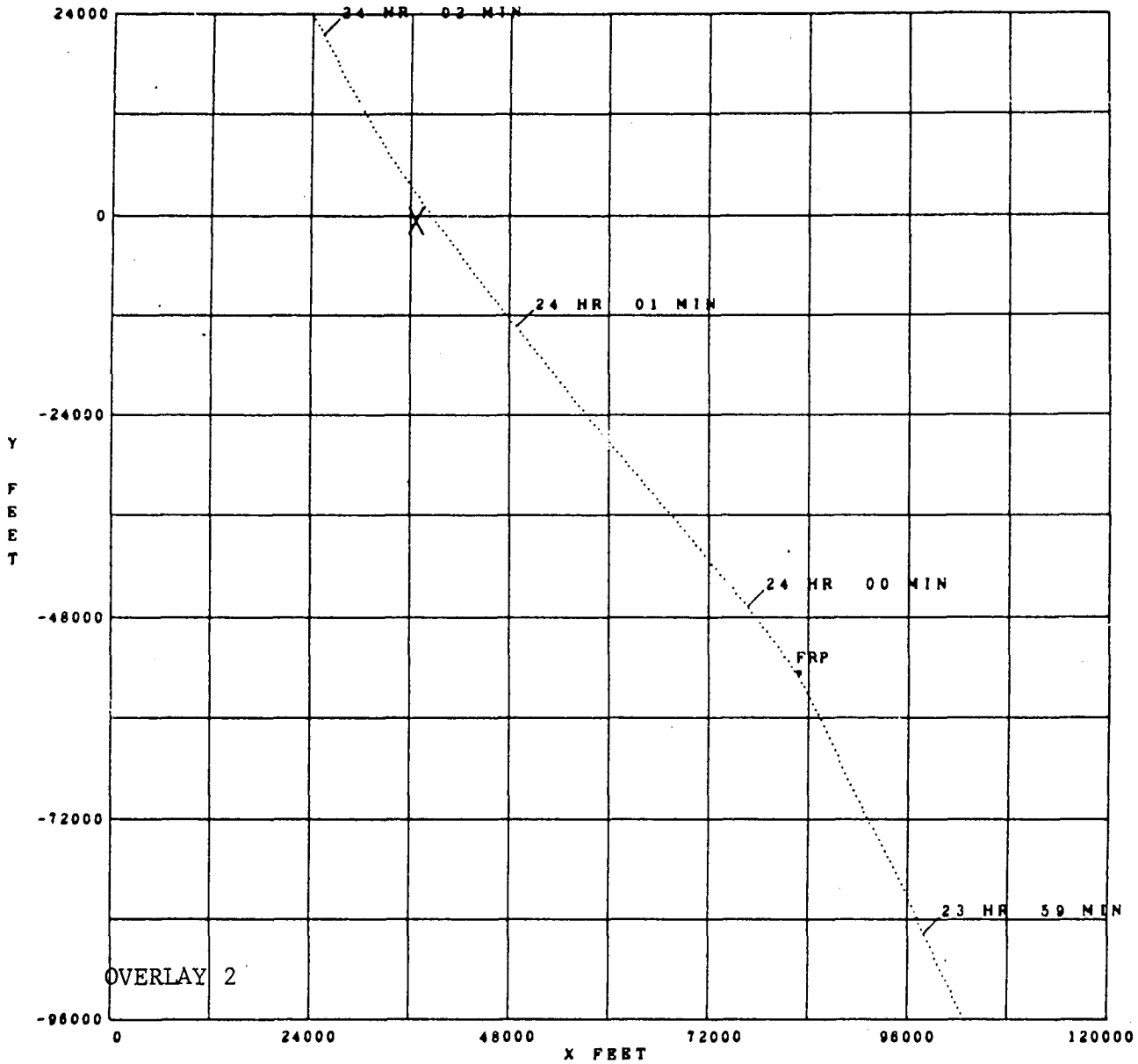
04092102
J9175

Figure 3-19 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092440
J9139 59

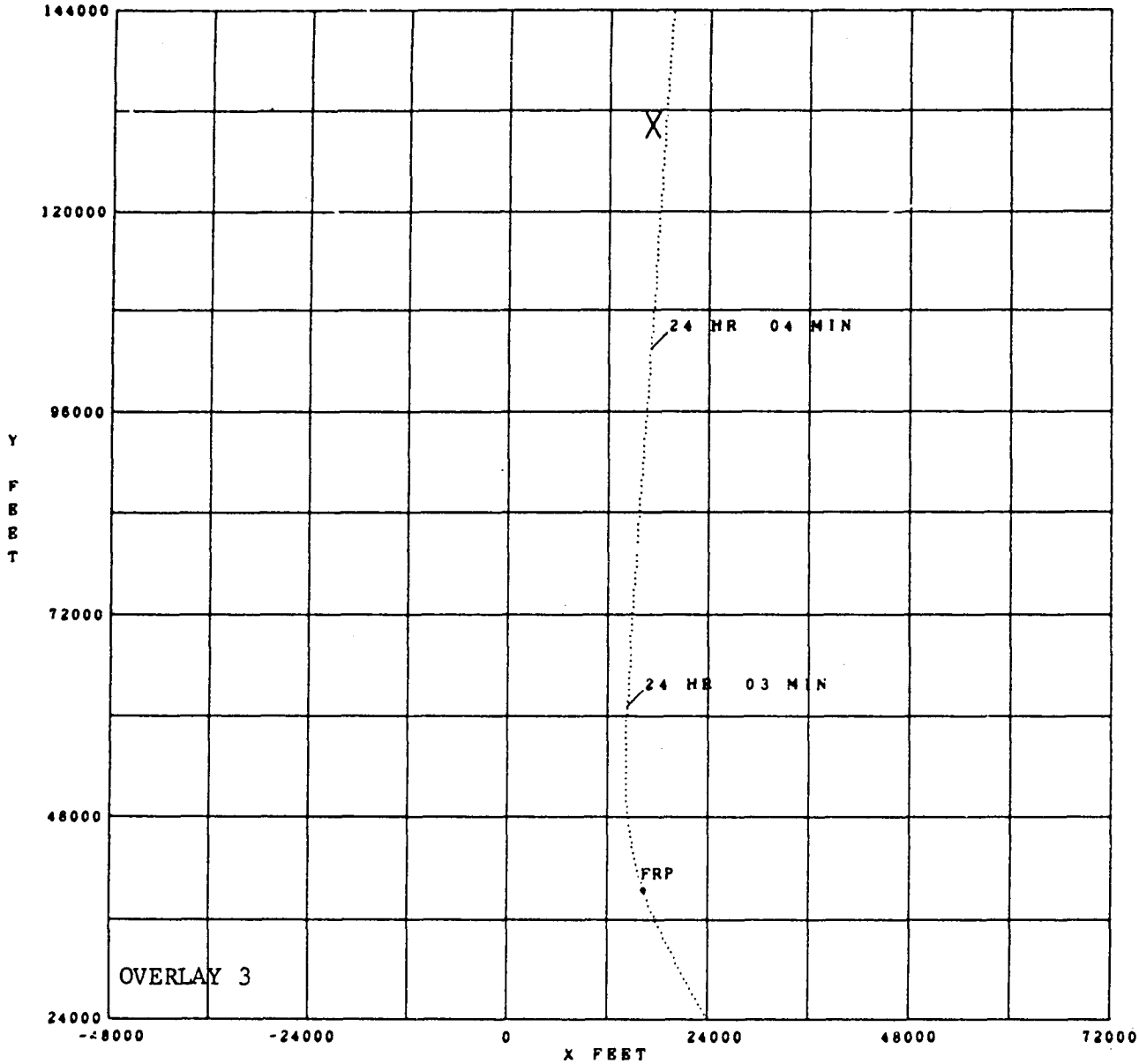
Figure 3-20 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1914 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 533
TARGET WEST 1

04092440
J9139 60

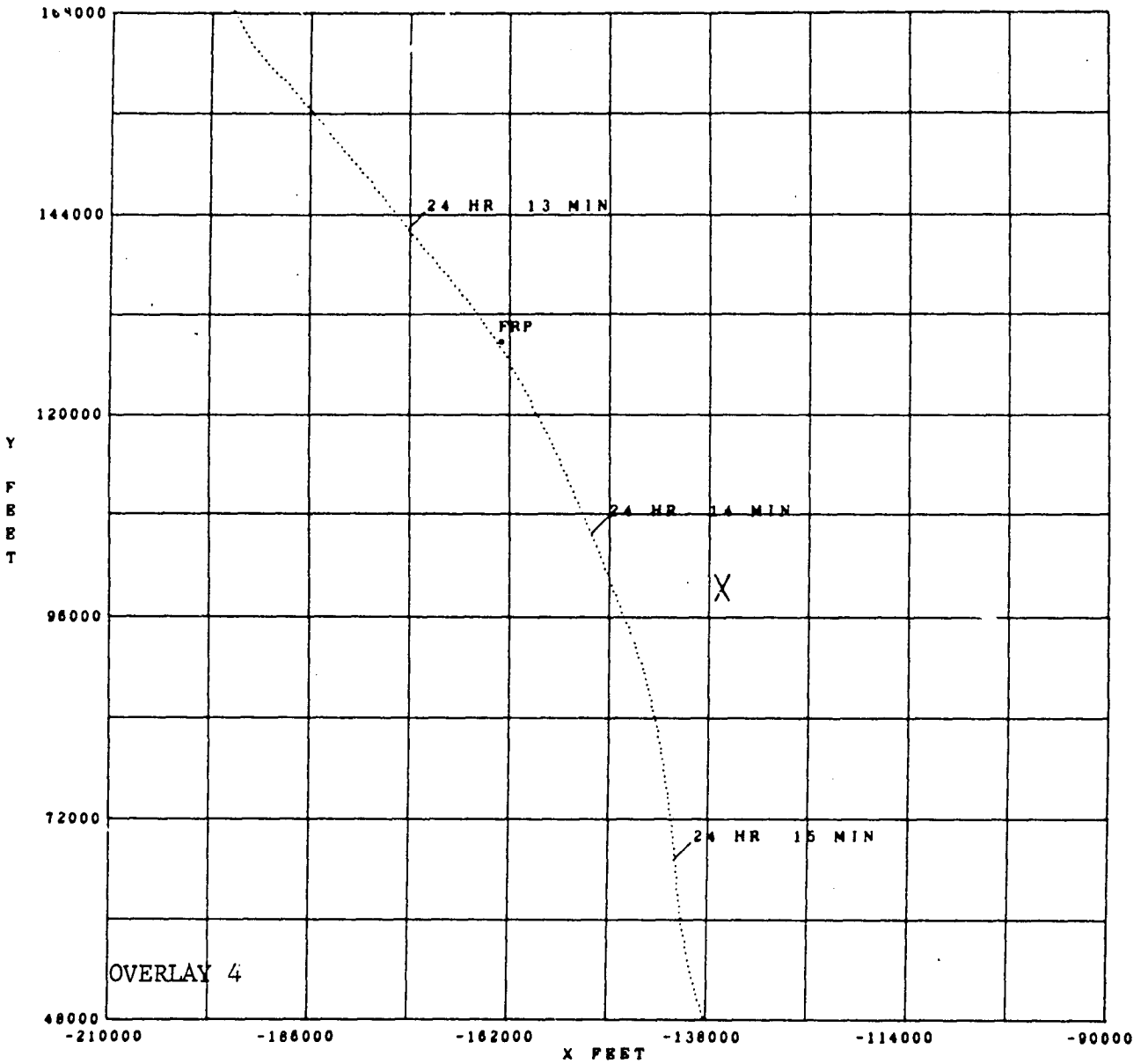
Figure 3-20 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1425 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 533
TARGET WEST 2

04092440
J9139 61

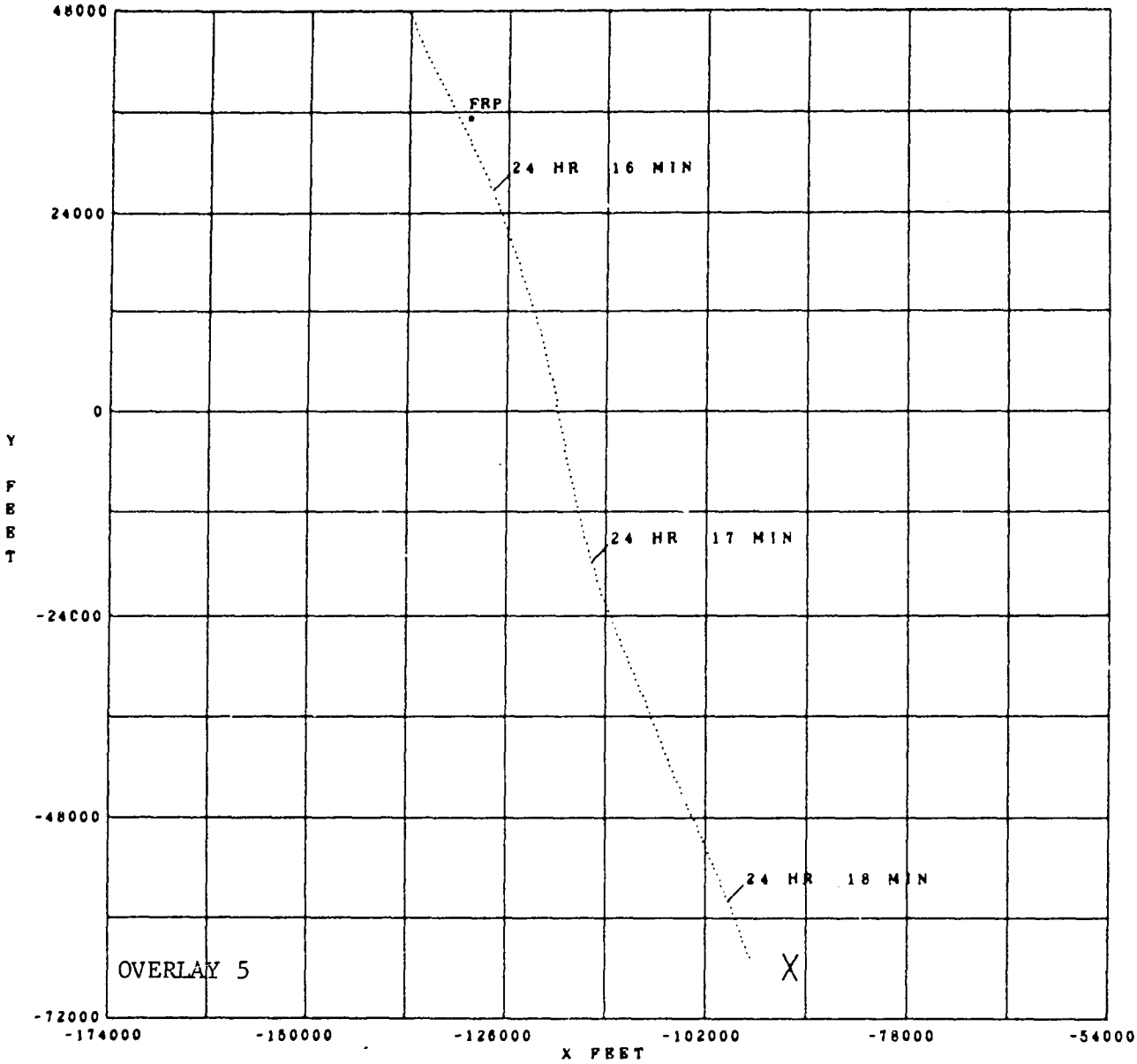
Figure 3-20 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 12167 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 633
TARGET WEST 3

04092440
J9139 82

Figure 3-20 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = FEET
MINIMUM GROUND DISTANCE QUALIFIER = MISSINGD
SORTIE NUMBER 533
TARGET WEST 4

04092440
J9139 63

Figure 3-20 (U) Aircraft Position Data (Part 5 of 5)

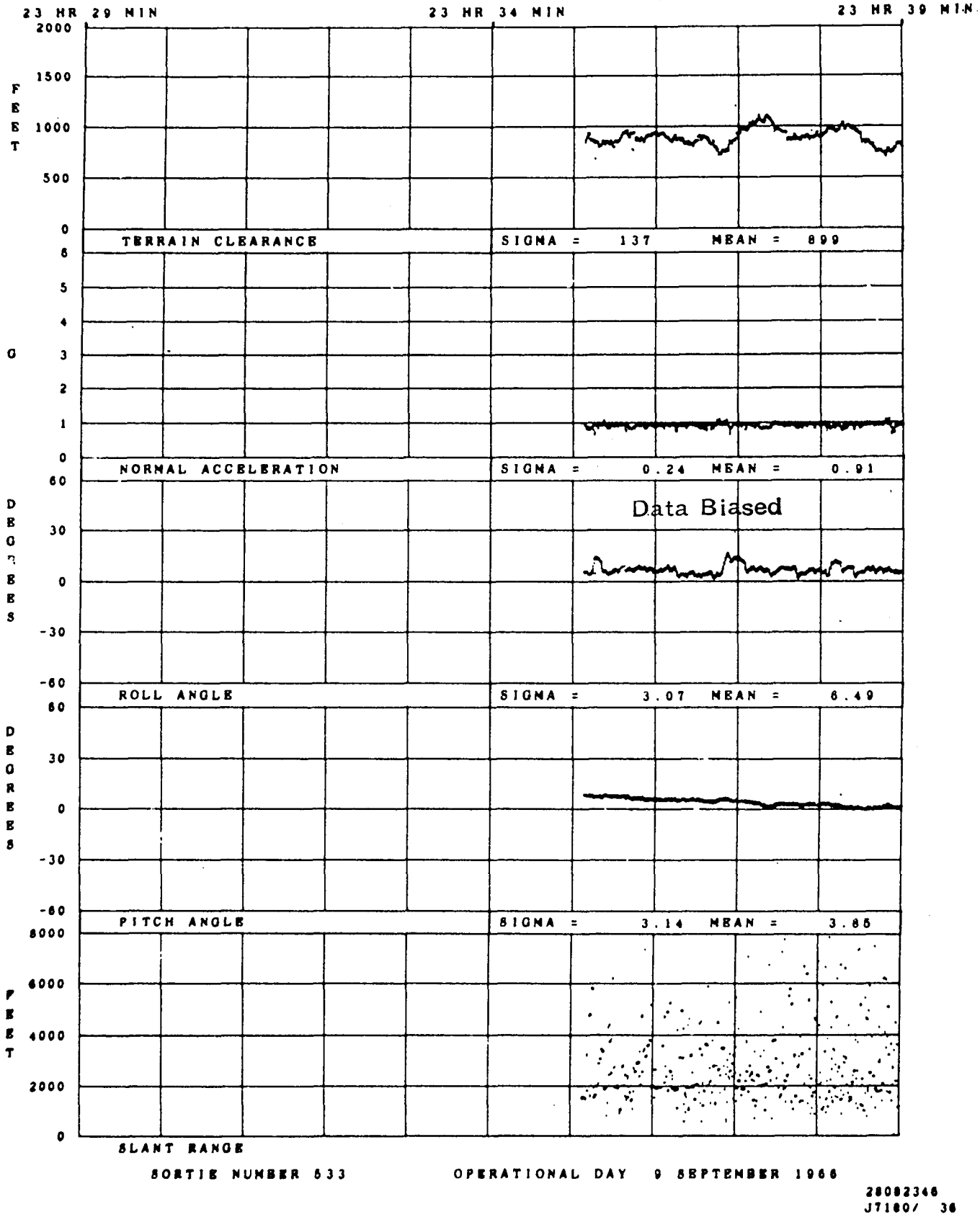


Figure 3-21 (U) Telemetered Data (Part 1 of 5)

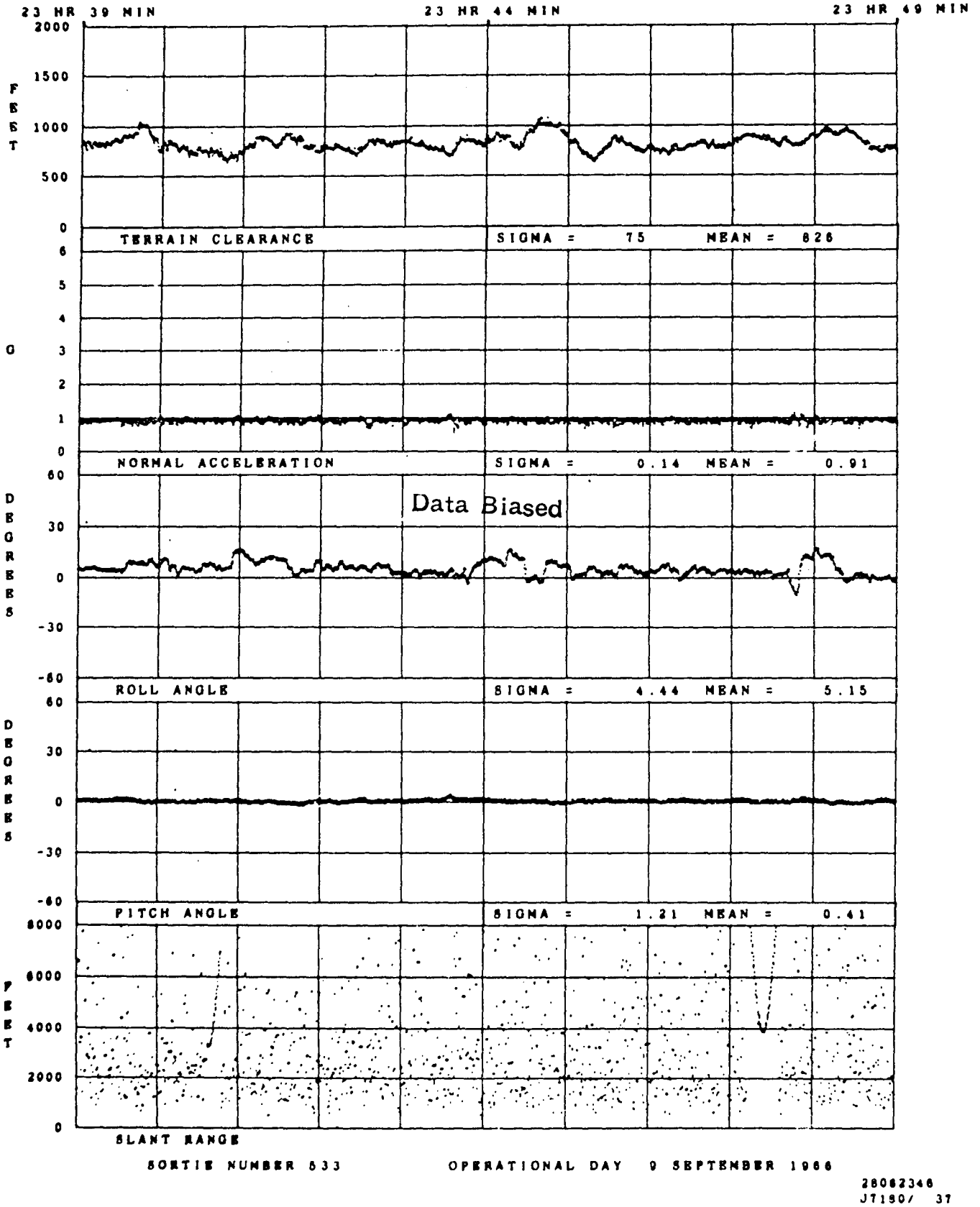


Figure 3-21 (U) Telemetered Data (Part 2 of 5)

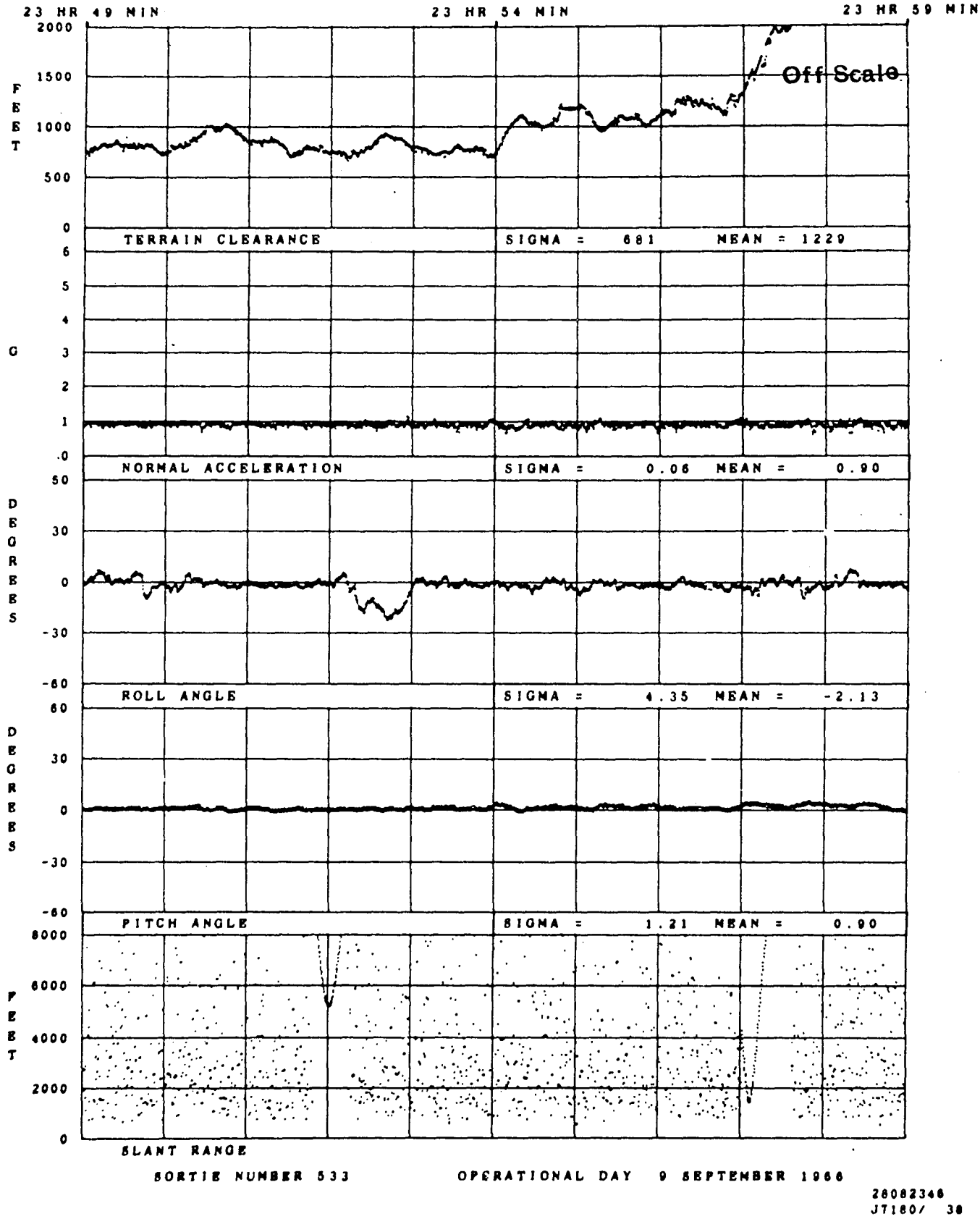


Figure 3-21 (U) Telemetered Data (Part 3 of 5)

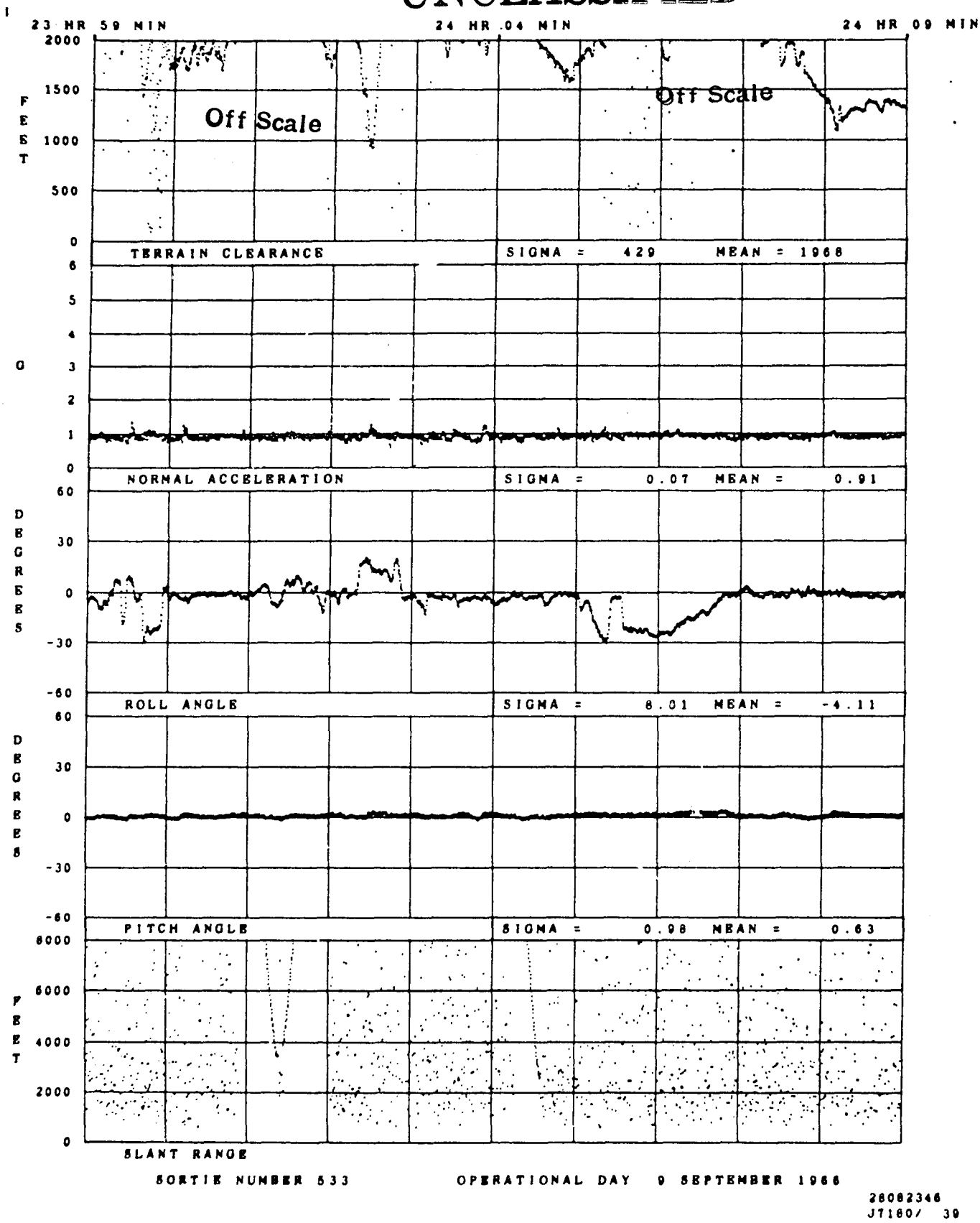


Figure 3-21 (U) Telemetered Data (Part 4 of 5)

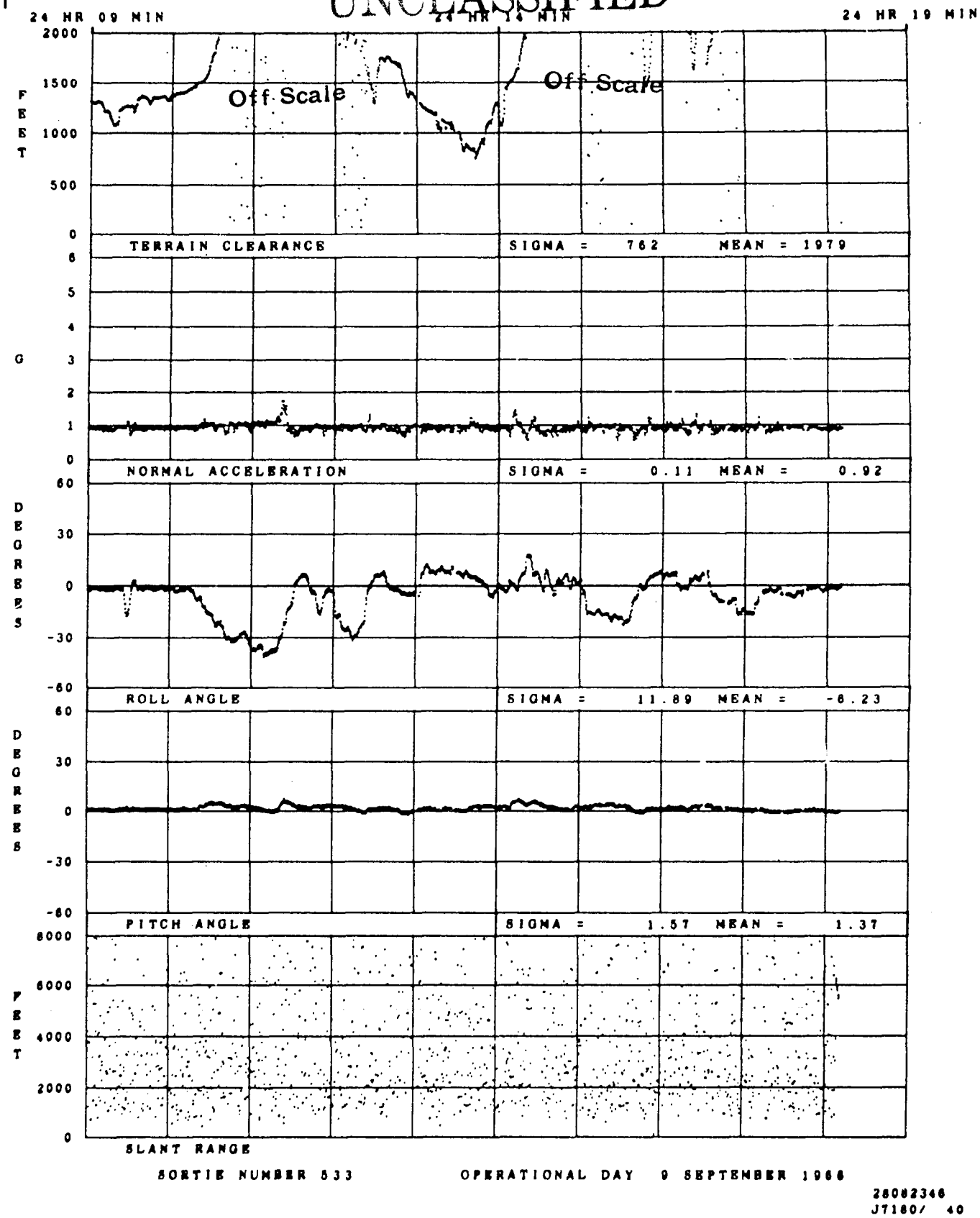
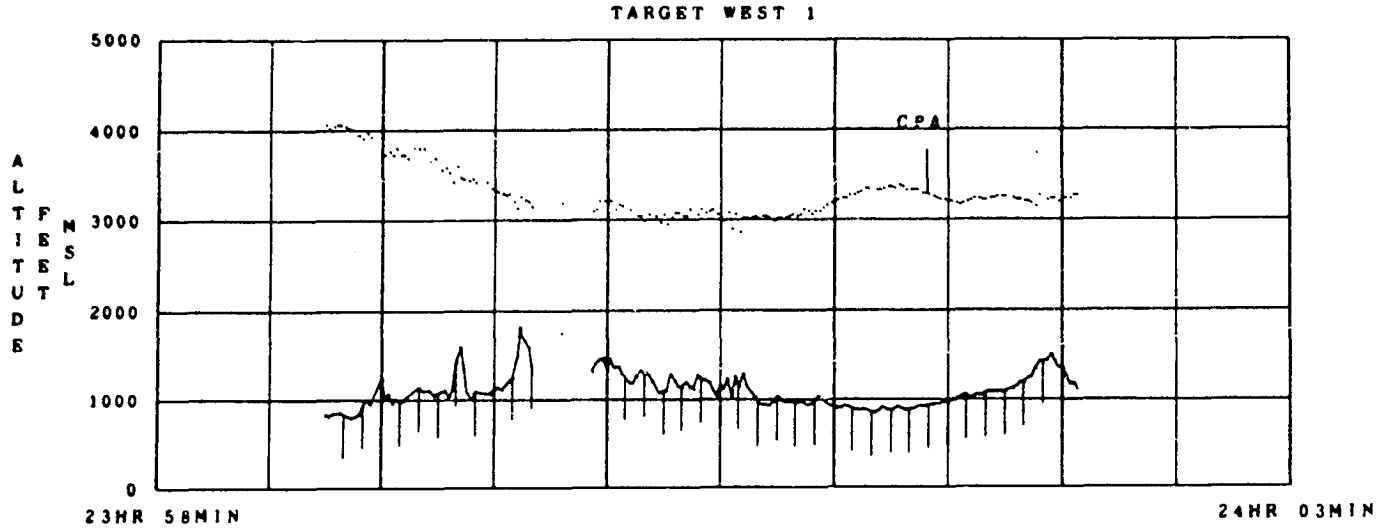
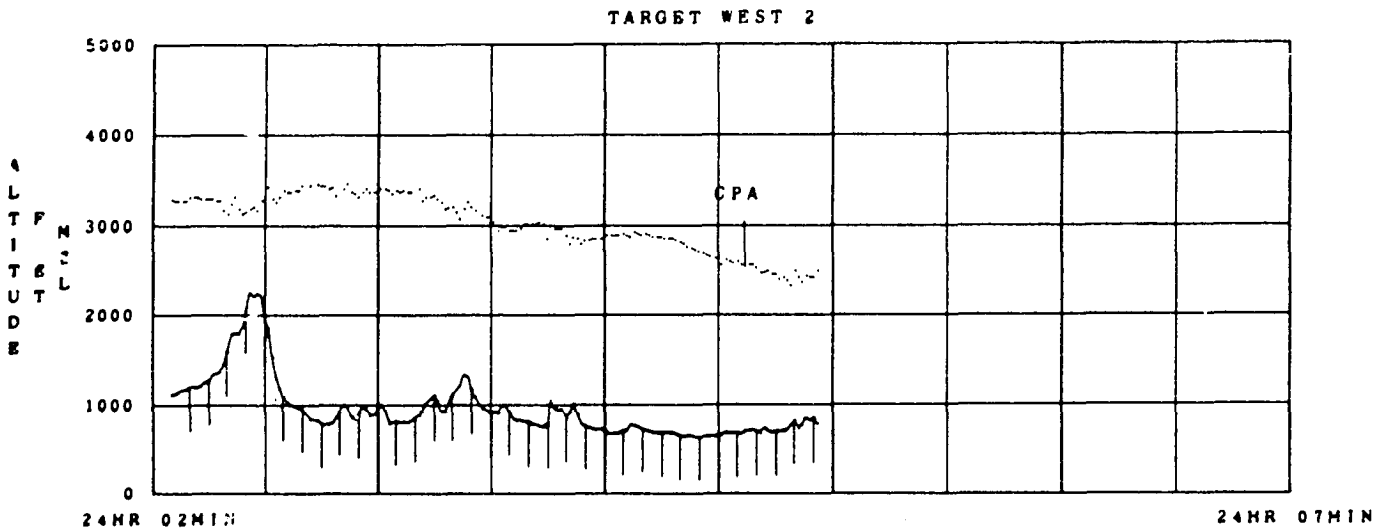


Figure 3-21 (U) Telemetered Data (Part 5 of 5)

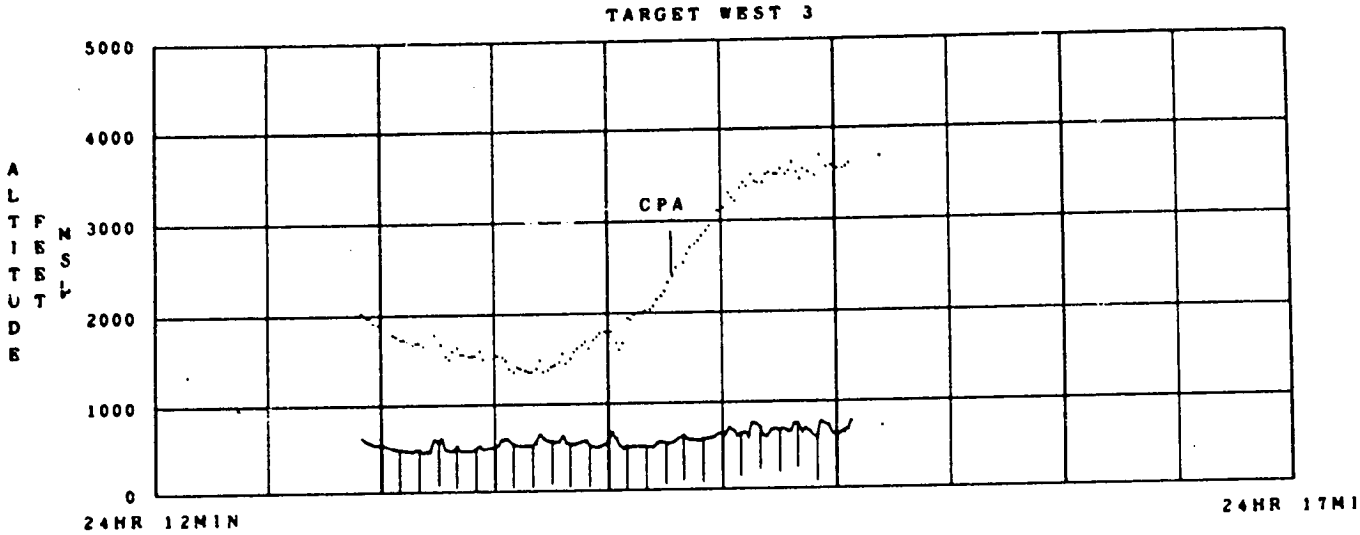


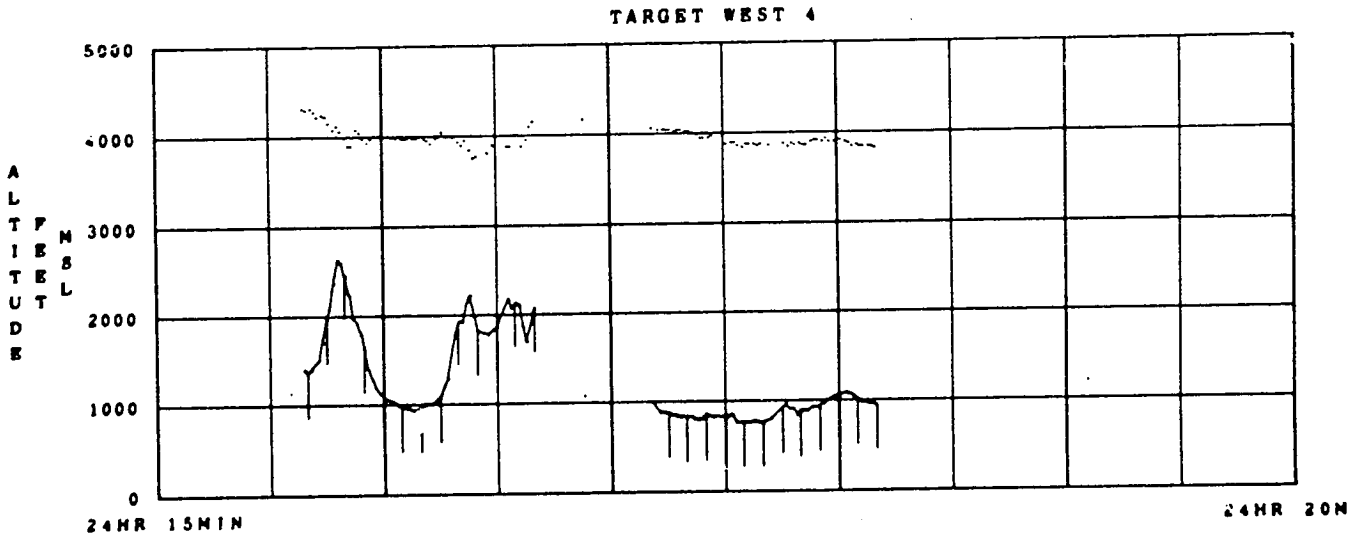


SORTIE NUMBER 533

04092440
J9139 64

Figure 3-22 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

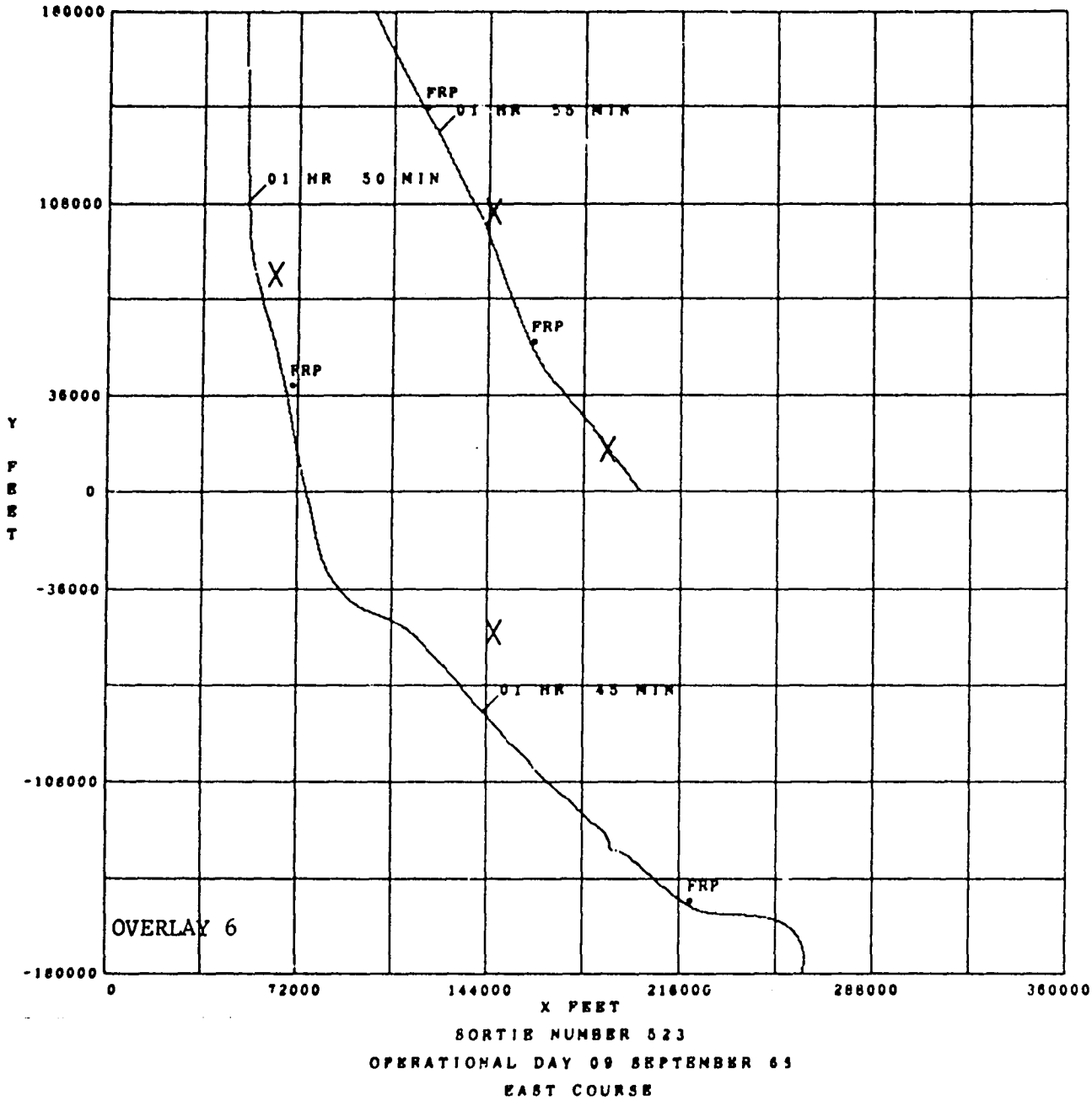




SORTIE NUMBER 33

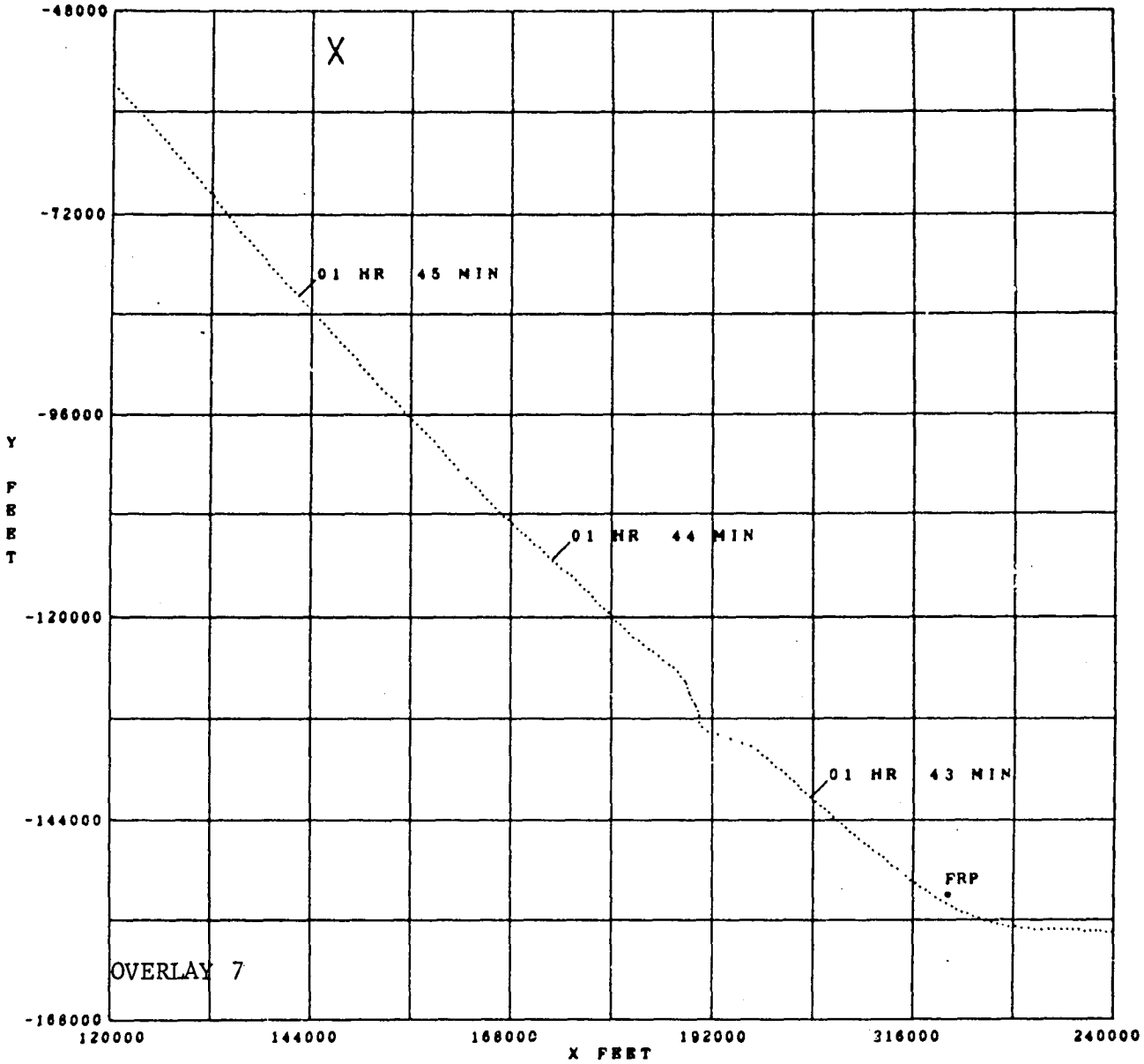
04092440
J9139

Figure 3-22 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



J4092103
J9175 206

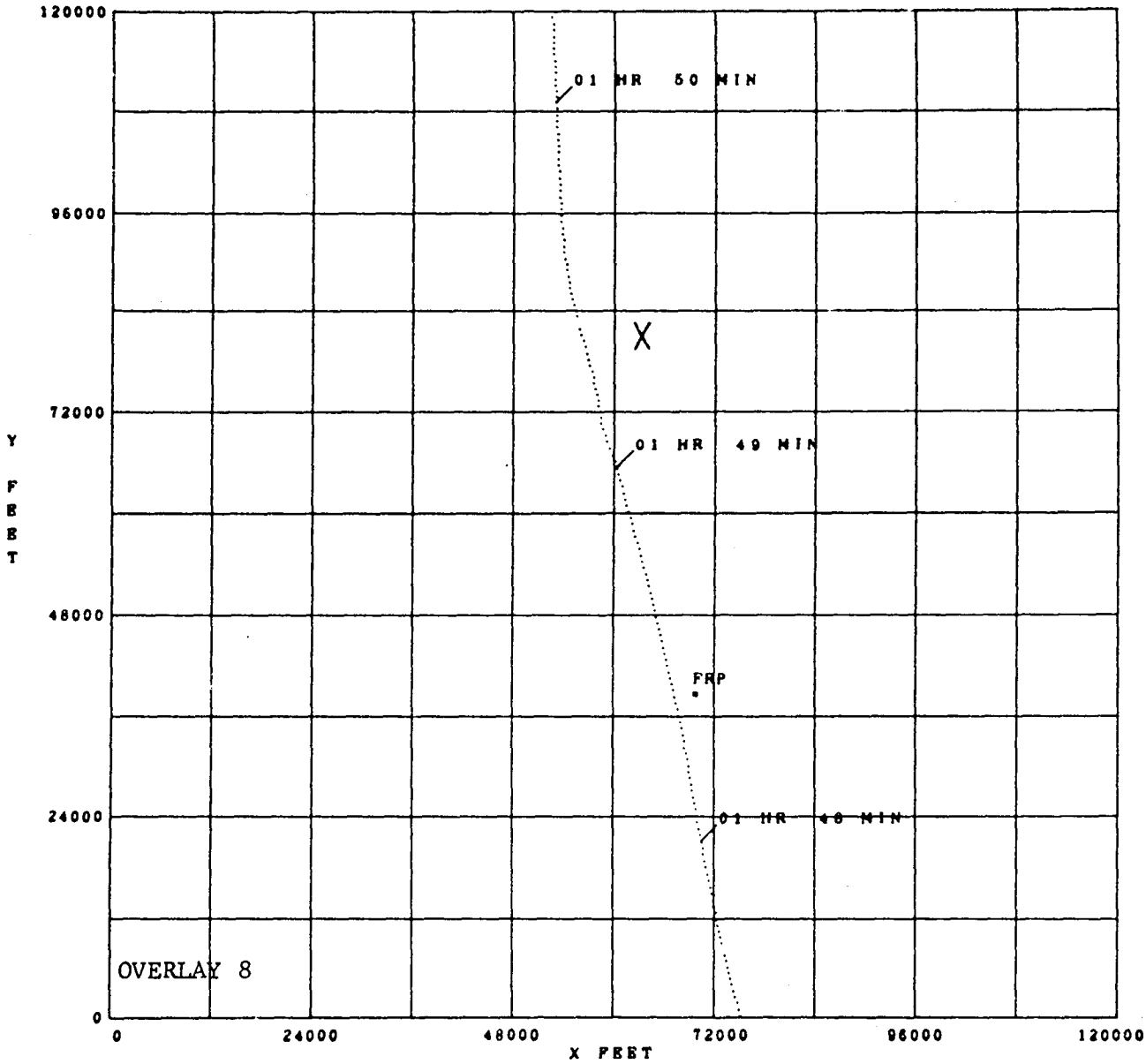
Figure 3-23 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 22426 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 523
TARGET EAST 1

04092103
J9175 207

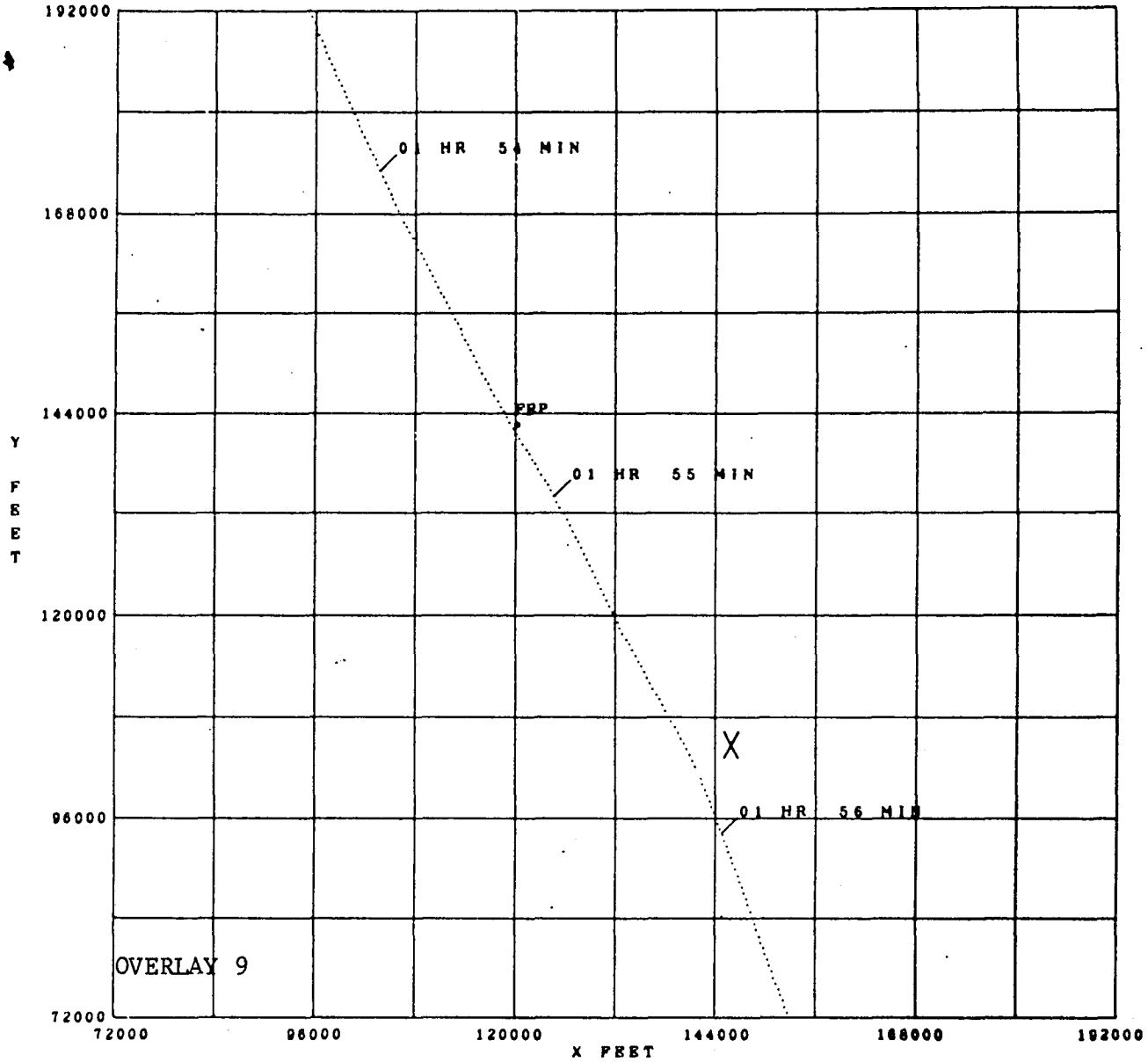
Figure 3-23 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 6774 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 523
TARGET EAST 2

04092103
J9175 208

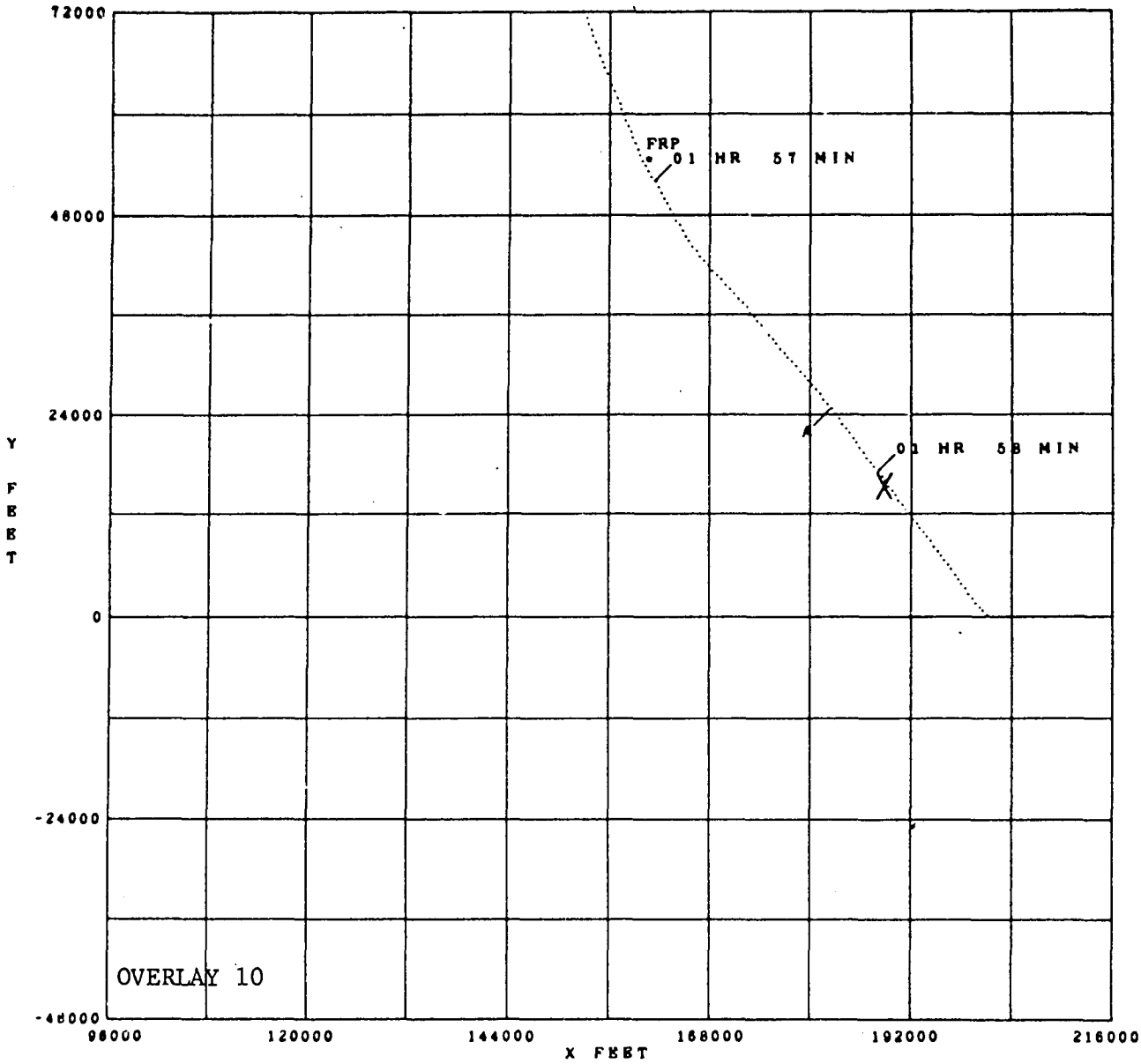
Figure 3-23 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 4941 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 523
TARGET EAST 3

04092103
J9175 20

Figure 3-23 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 513 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 523
TARGET EAST 4

04092103
J9175 210

Figure 3-23 (U) Aircraft Position Data (Part 5 of 5)

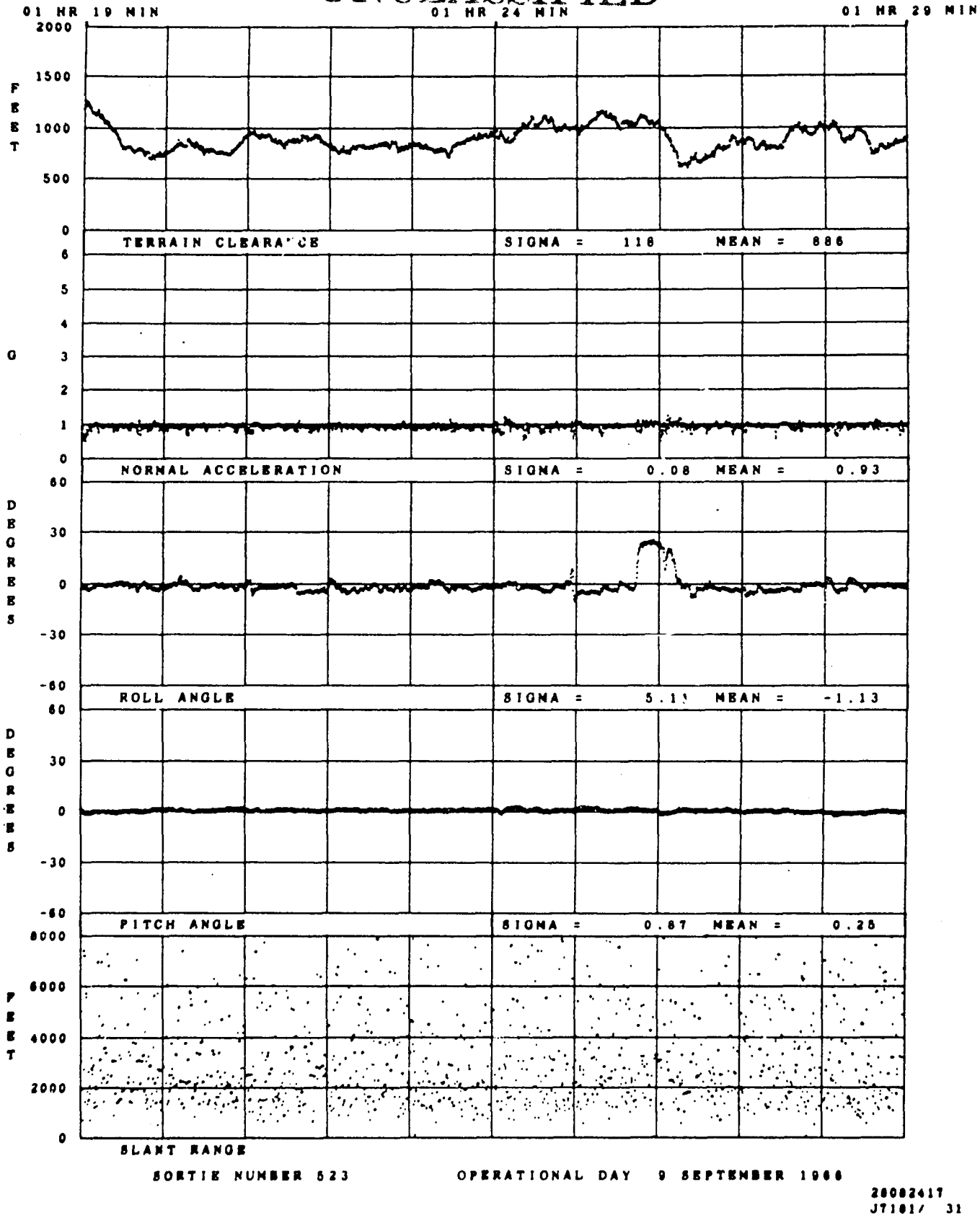


Figure 3-24 (U) Telemetered Data (Part 1 of 4)

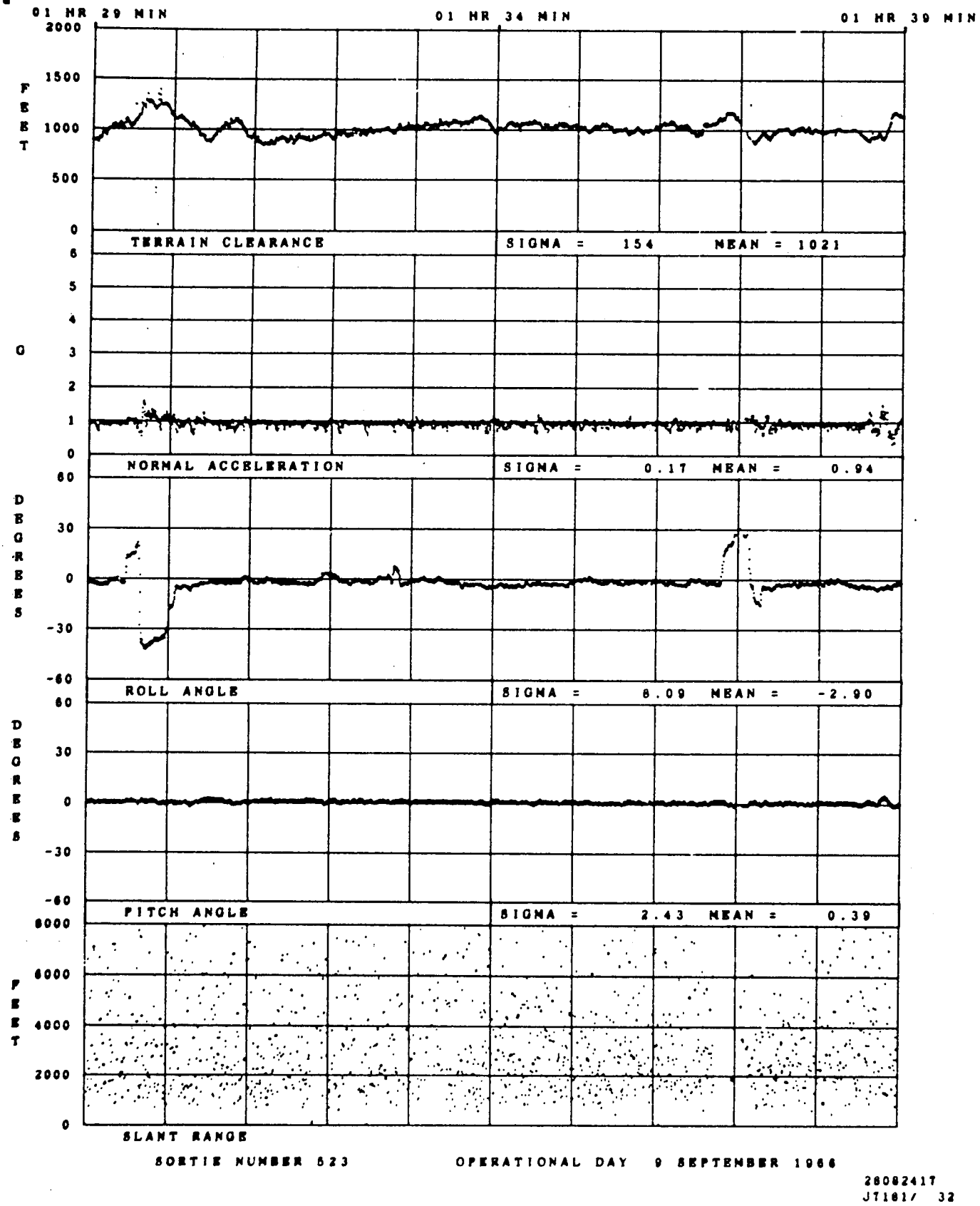


Figure 3-24 (U) Telemetered Data (Part 2 of 4)

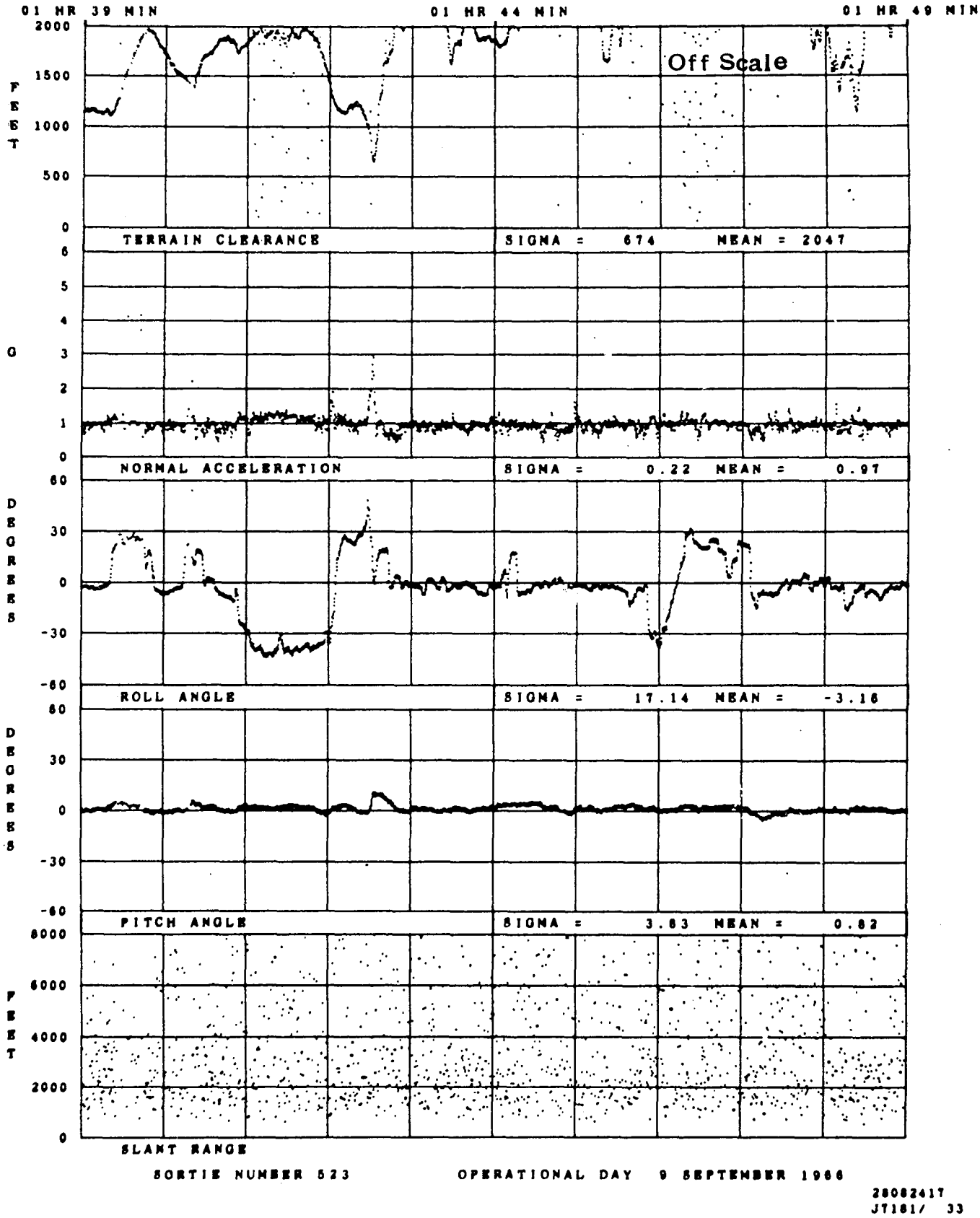


Figure 3-24 (U) Telemetered Data (Part 3 of 4)

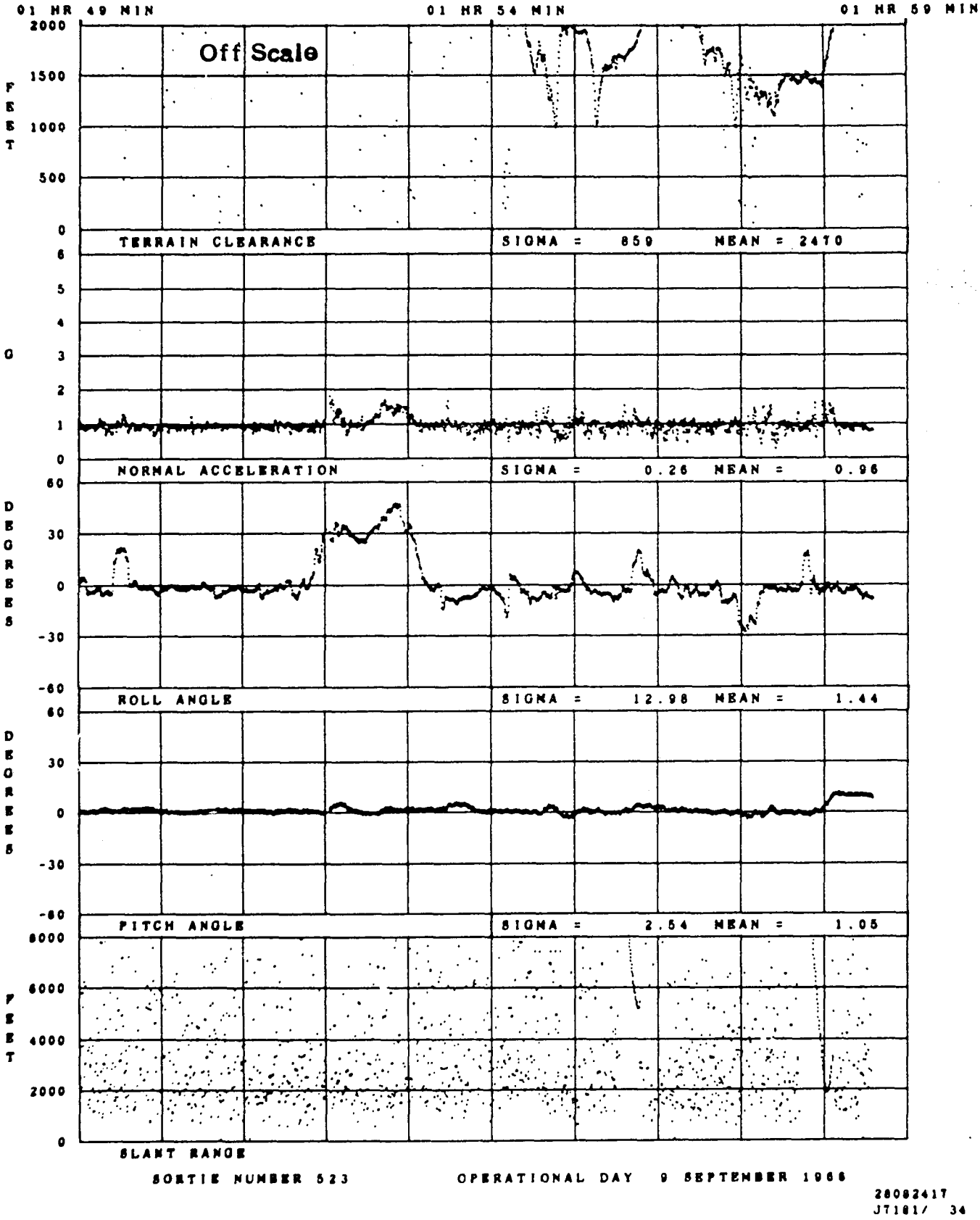
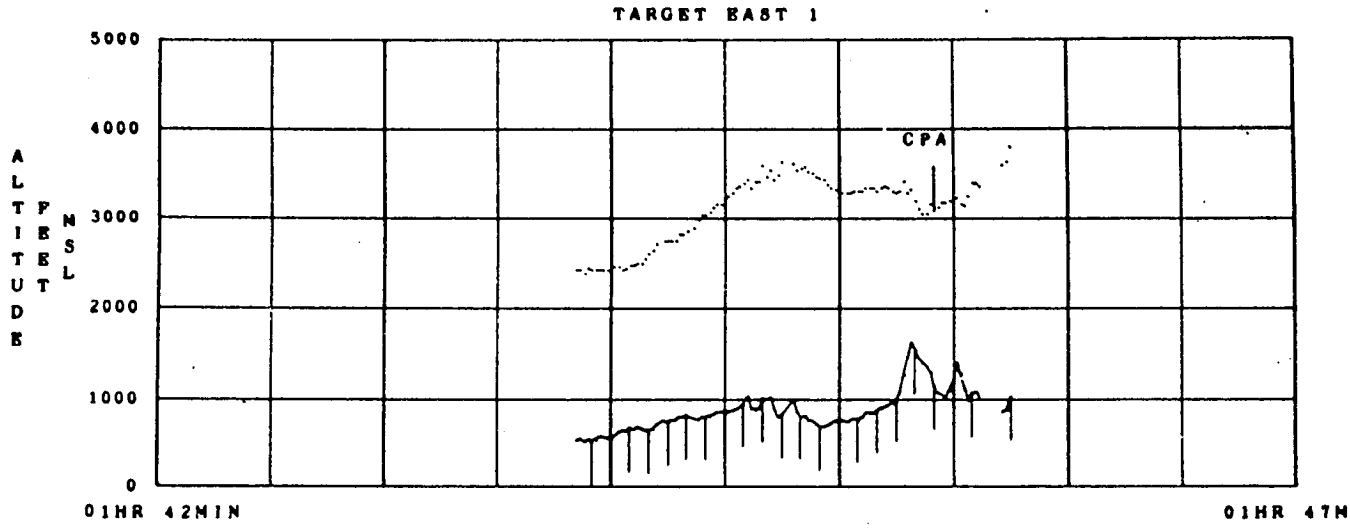
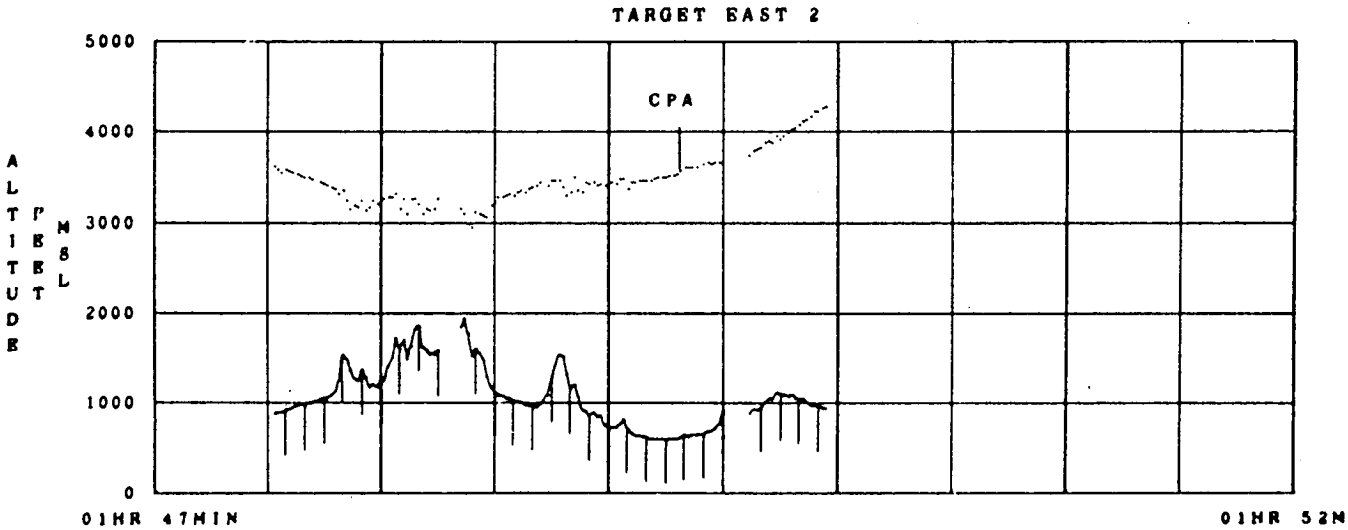


Figure 3-24 (U) Telemetered Data (Part 4 of 4)

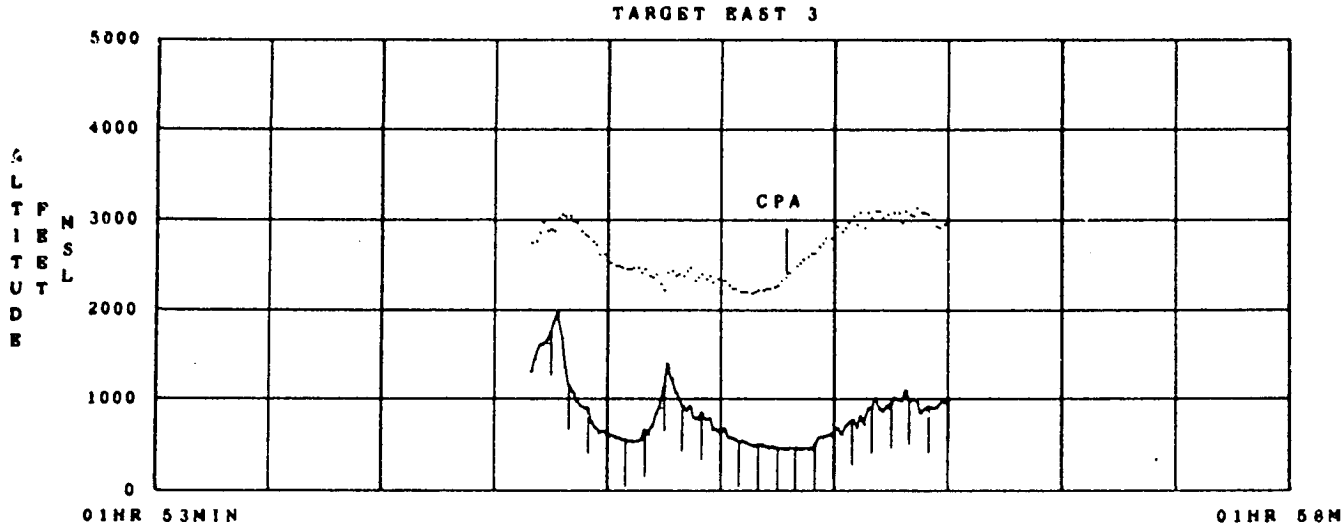


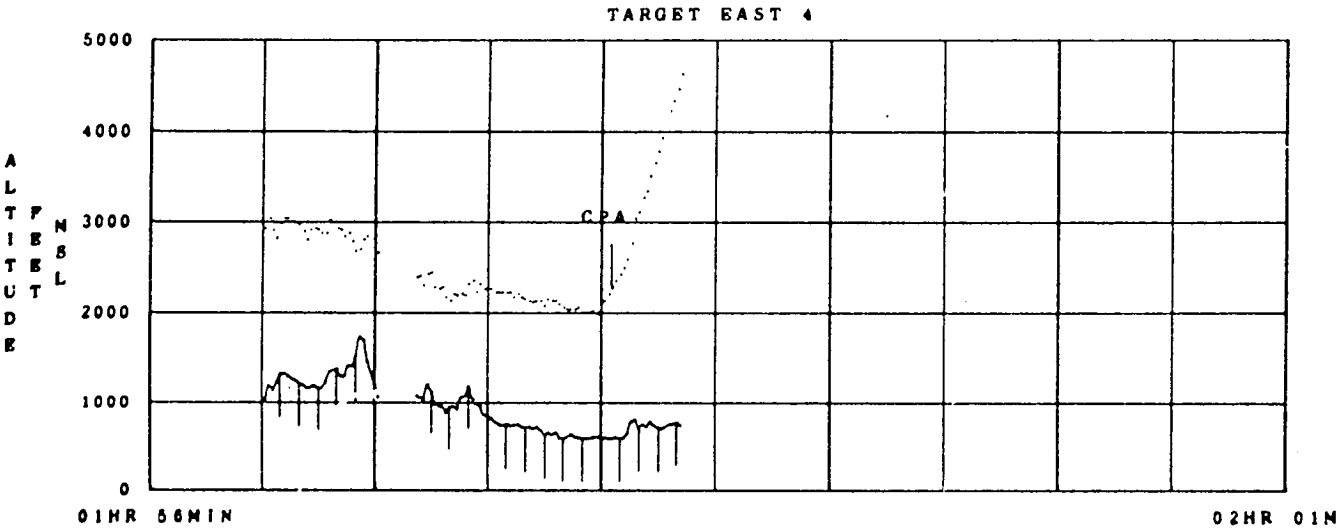


SORTIE NUMBER 523

04092103
J9175

Figure 3-25 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 523

04092103
J9175

Figure 3-25 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

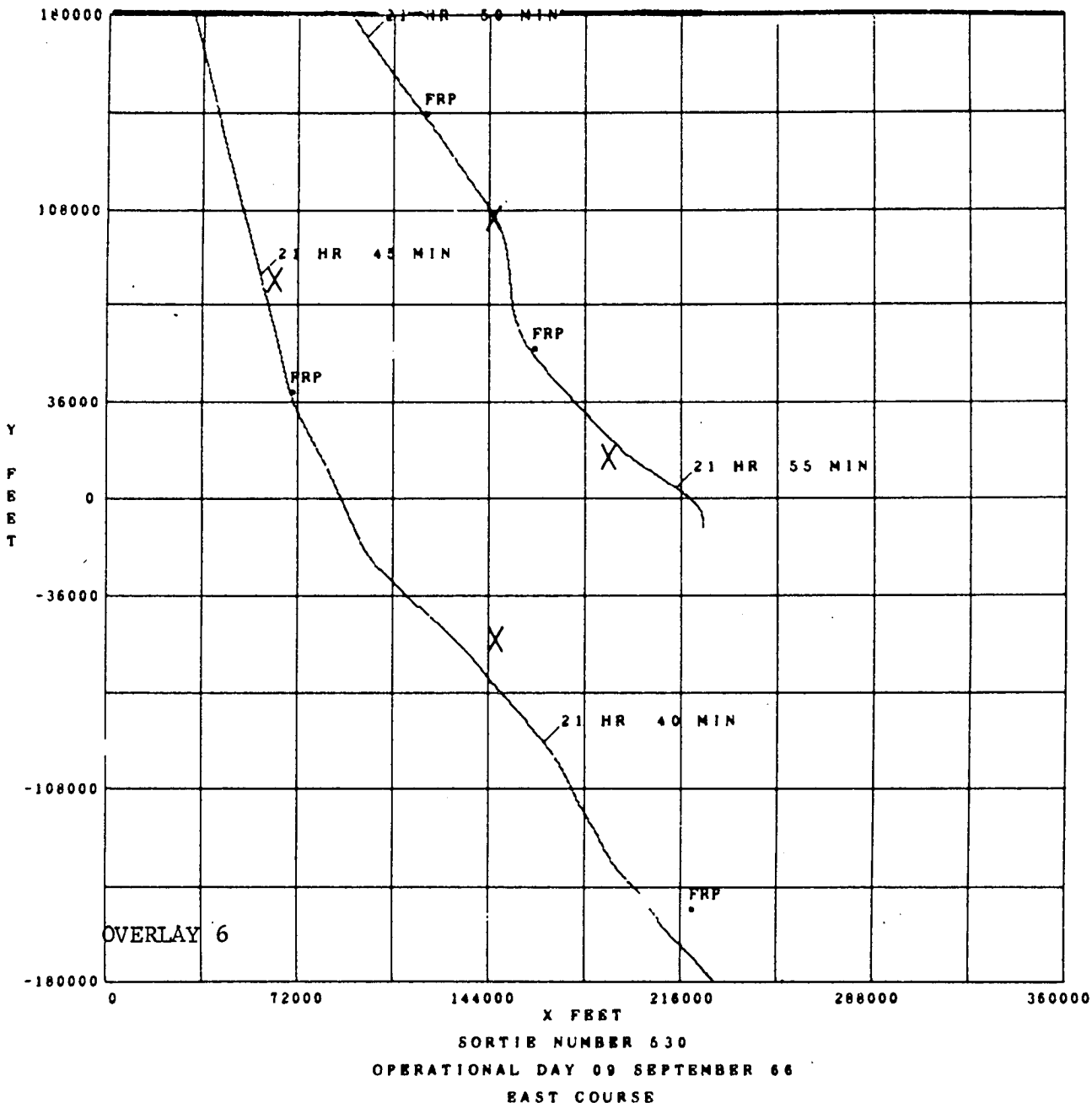
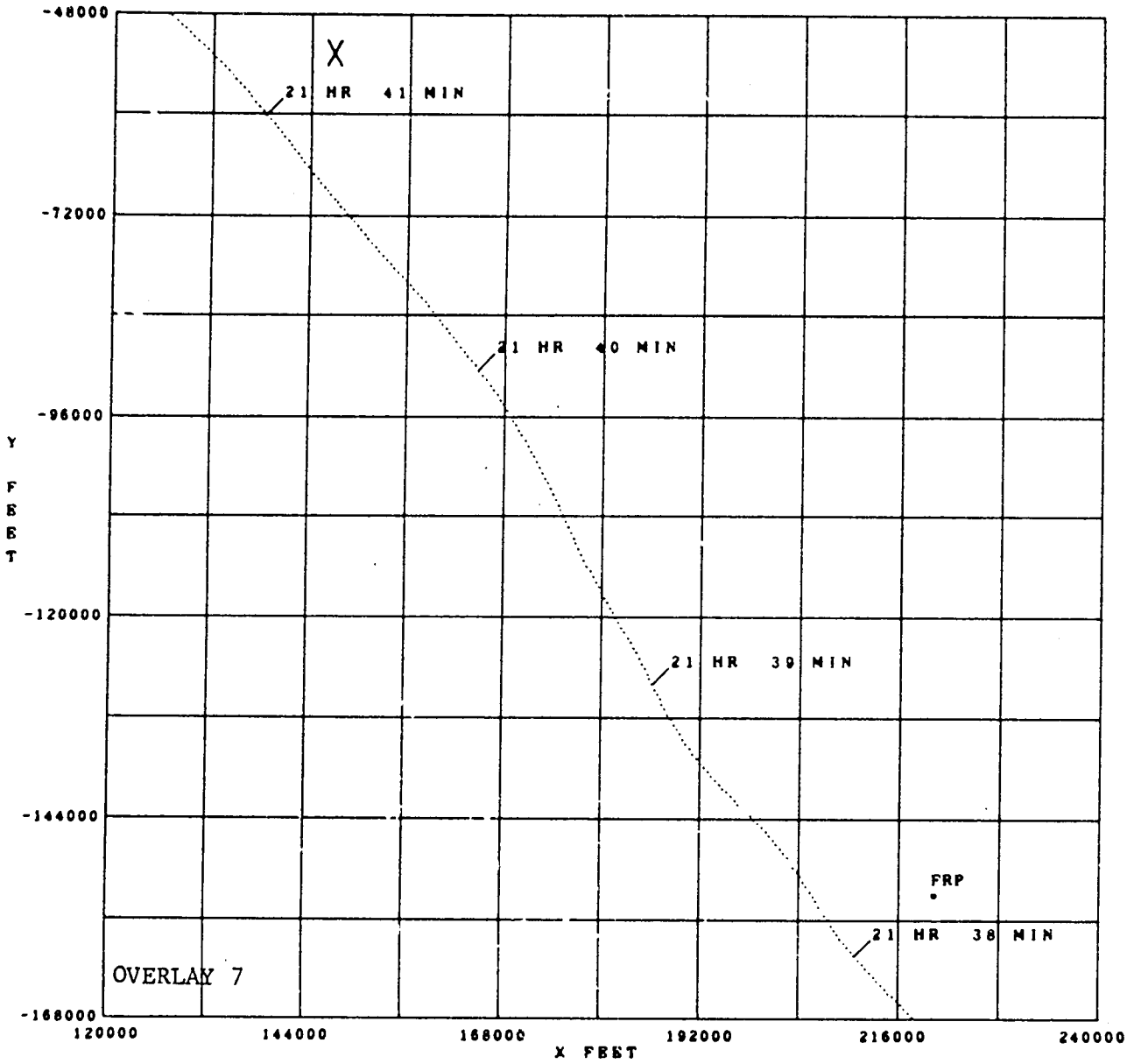


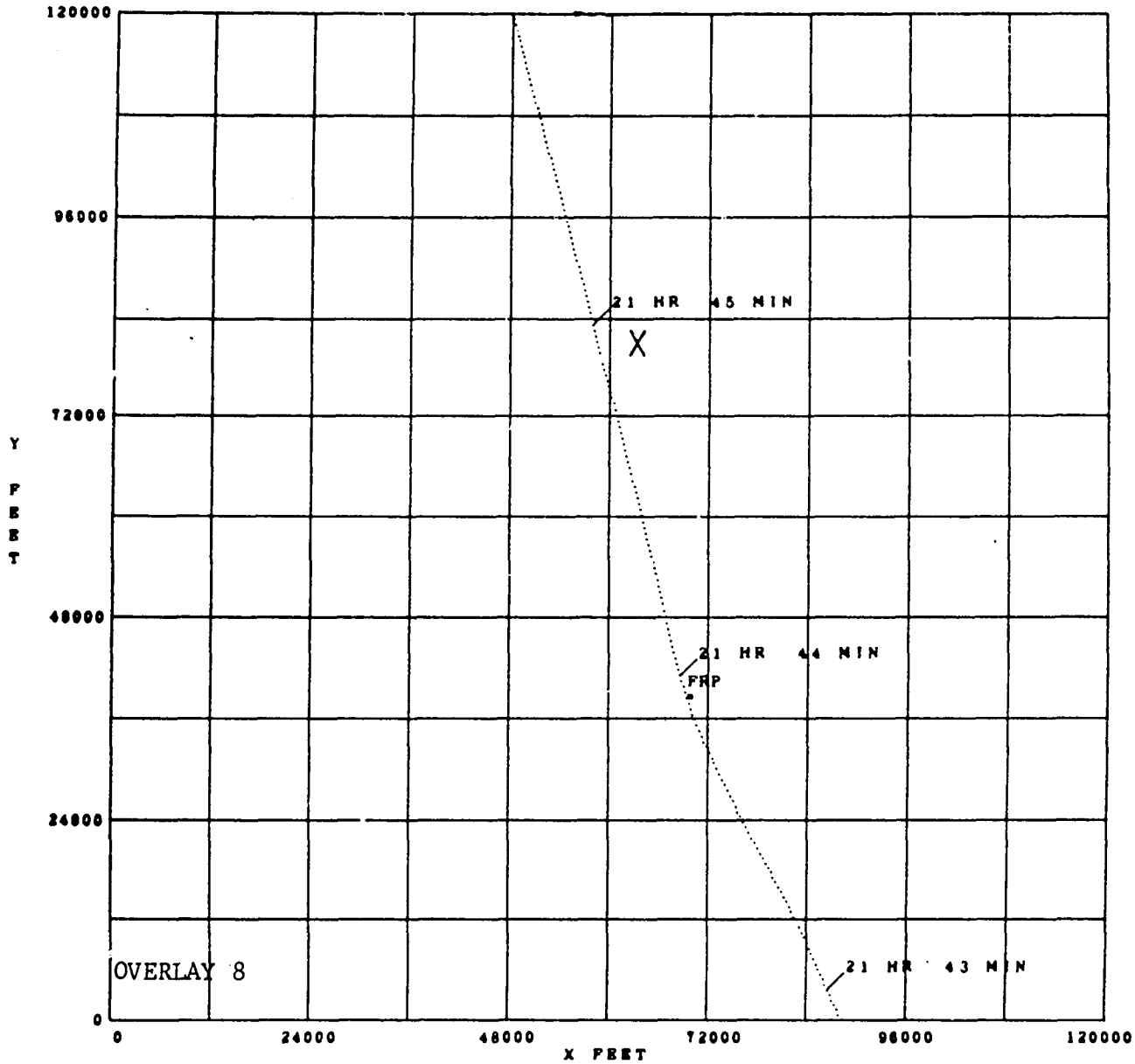
Figure 3-26 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 11099 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 530
TARGET EAST 1

04092436
J9139 12

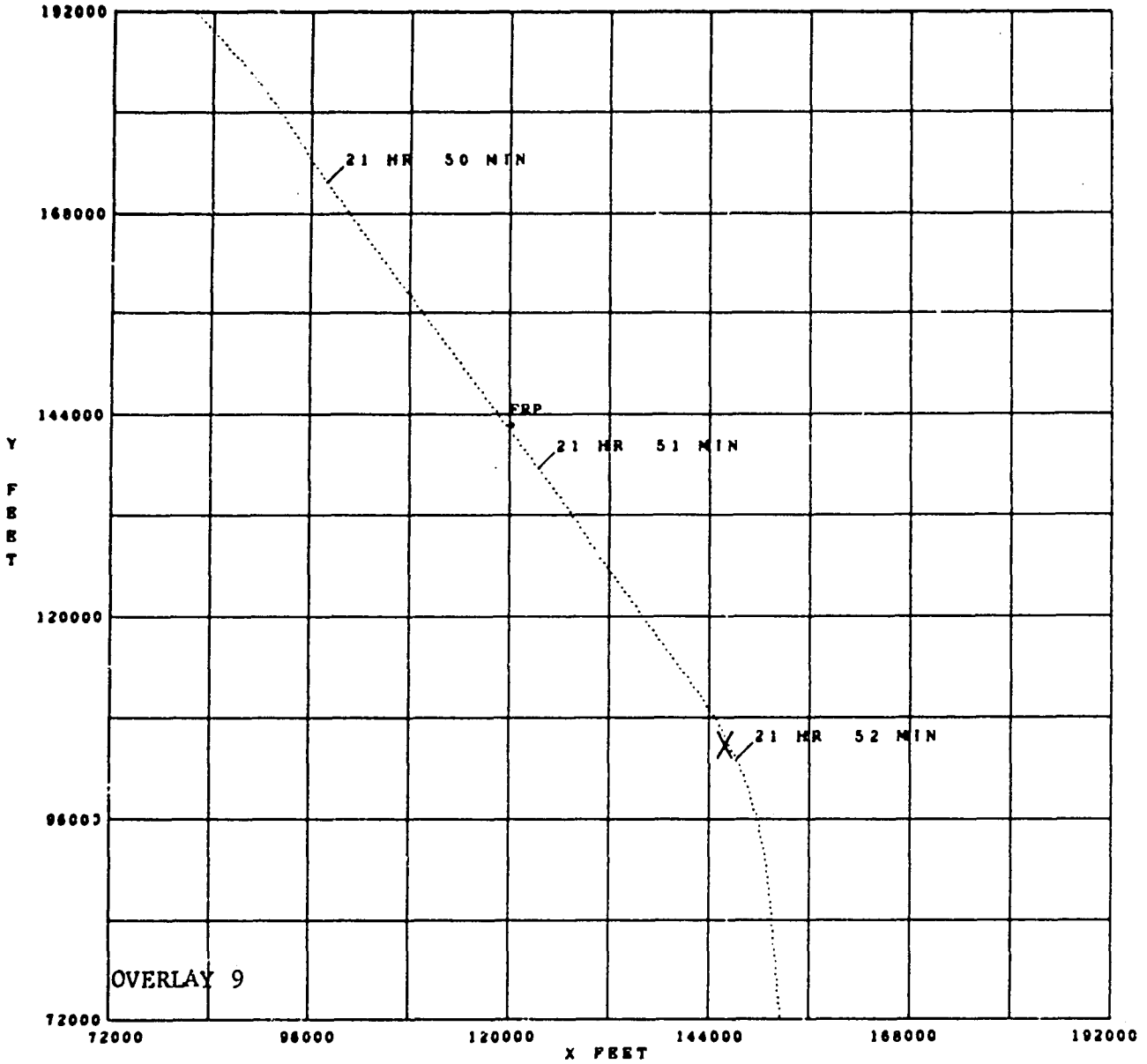
Figure 3-26 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 4554 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 530
TARGET EAST 2

04092436
J9139 13

Figure 3-26 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 524 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 530
TARGET EAST 3

04092436
J9139 14

Figure 3-26 (U) Aircraft Position Data (Part 4 of 5)

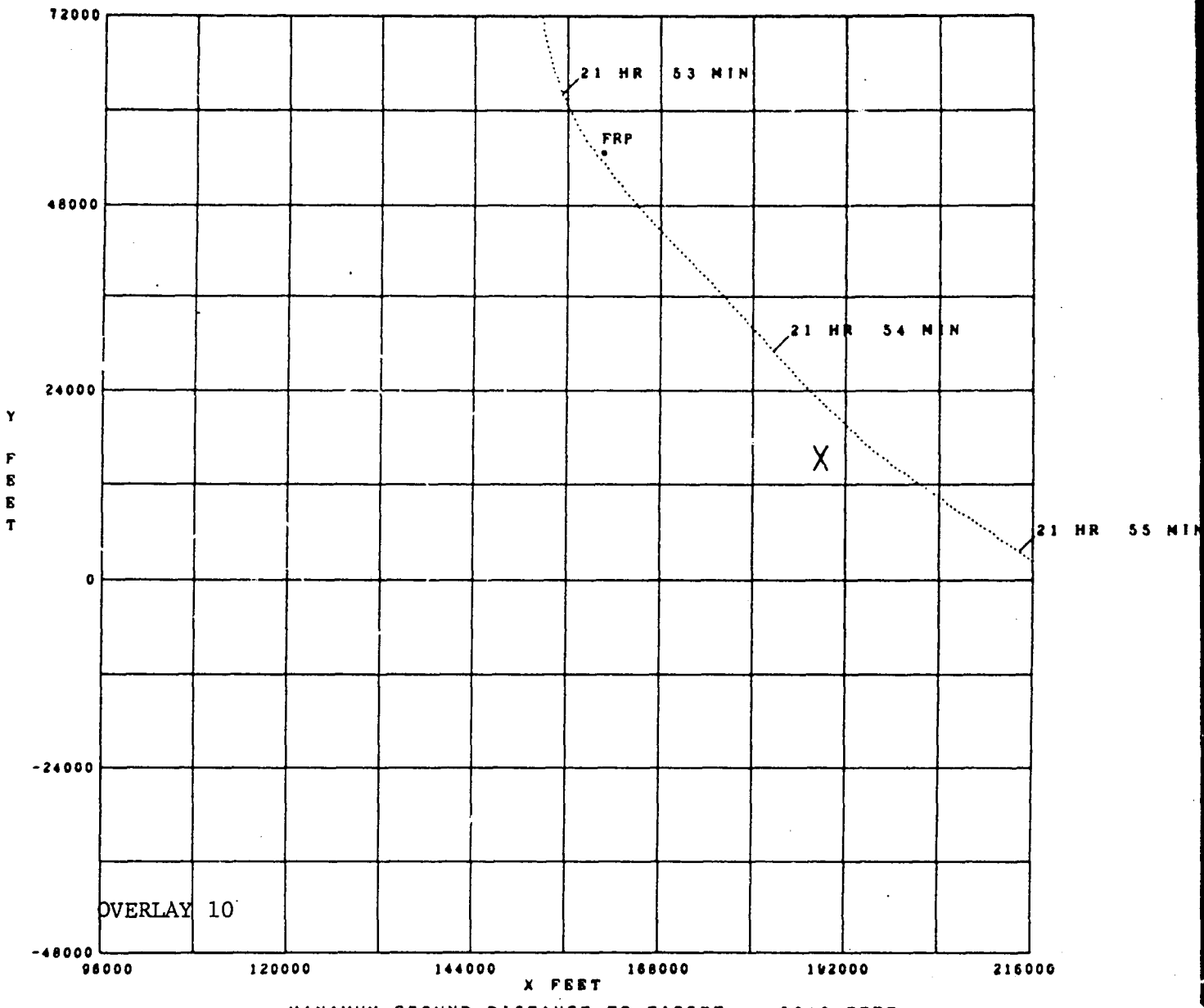


Figure 3-26 (U) Aircraft Position Data (Part 5 of 5)

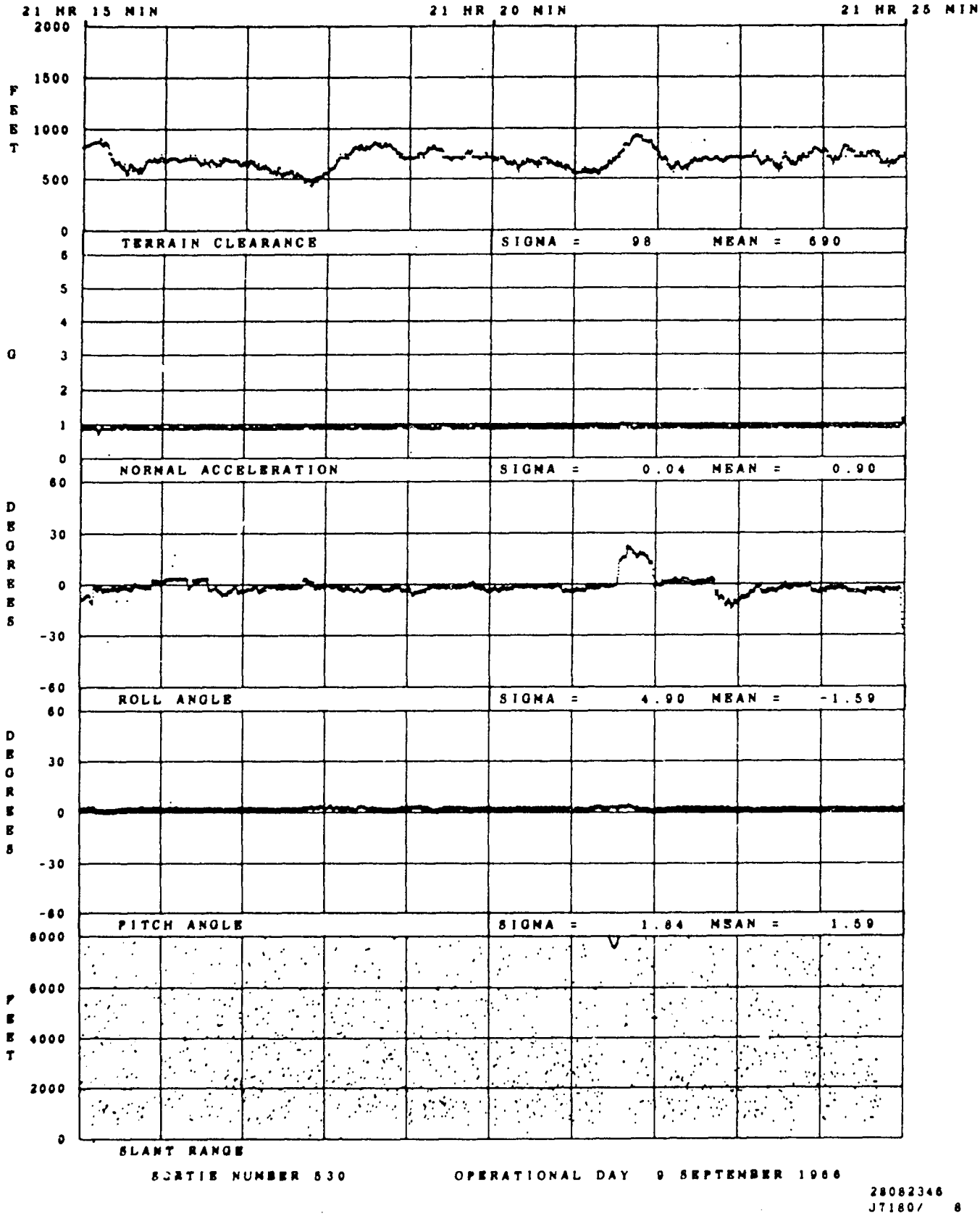


Figure 3-27 (U) Telemetered Data (Part 1 of 4)

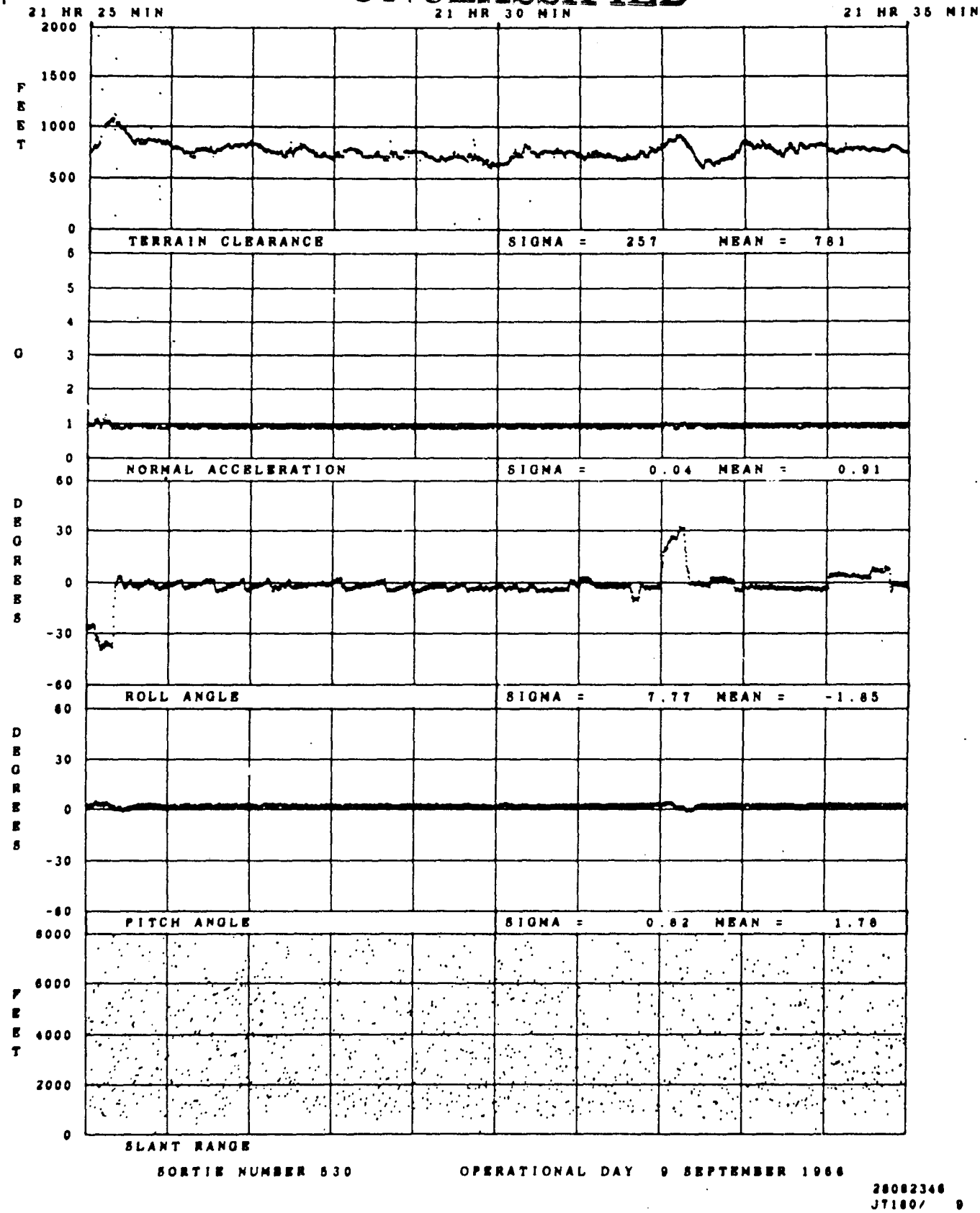


Figure 3-27 (U) Telemetered Data (Part 2 of 4)

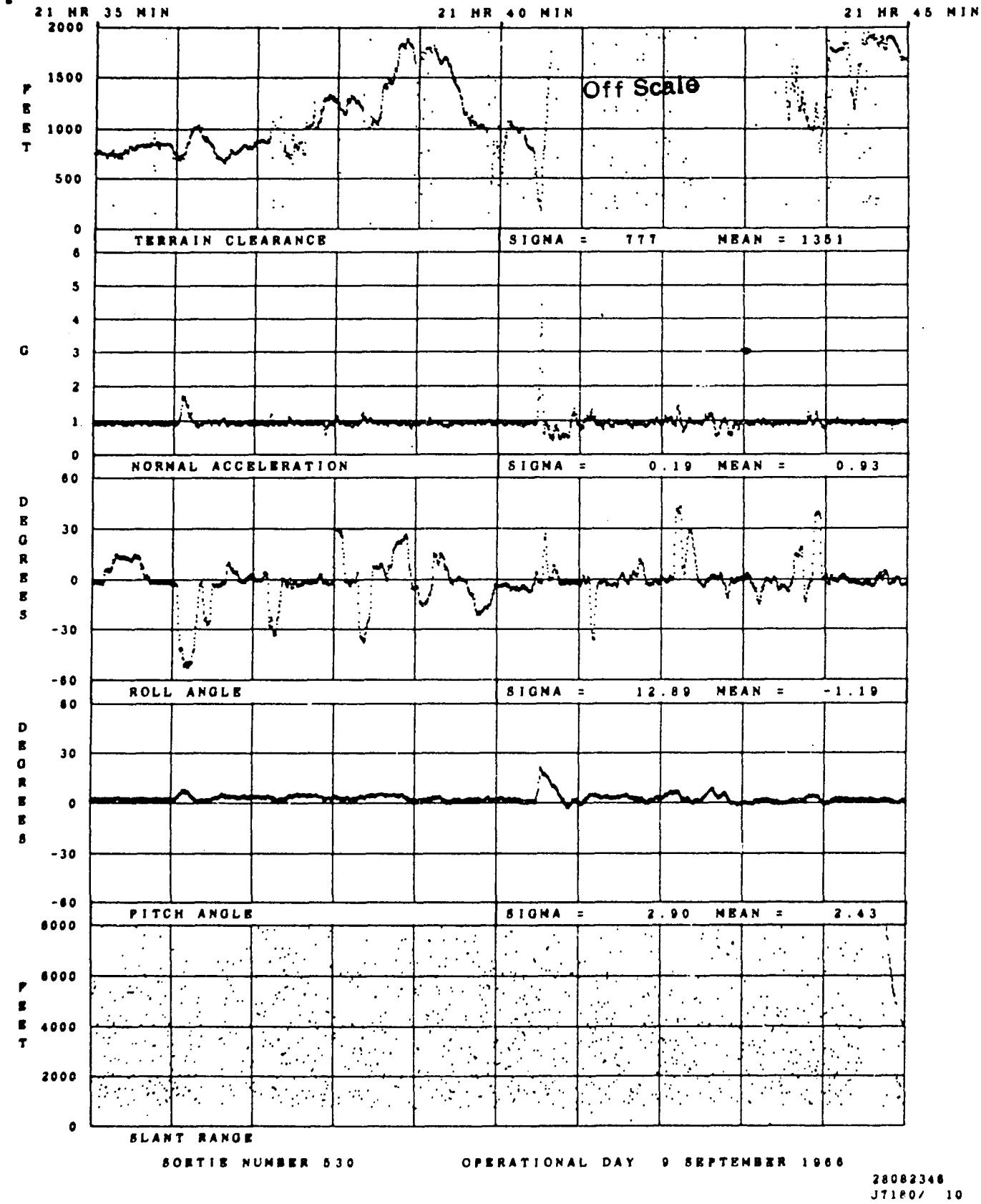


Figure 3-27 (U) Telemetered Data (Part 3 of 4)

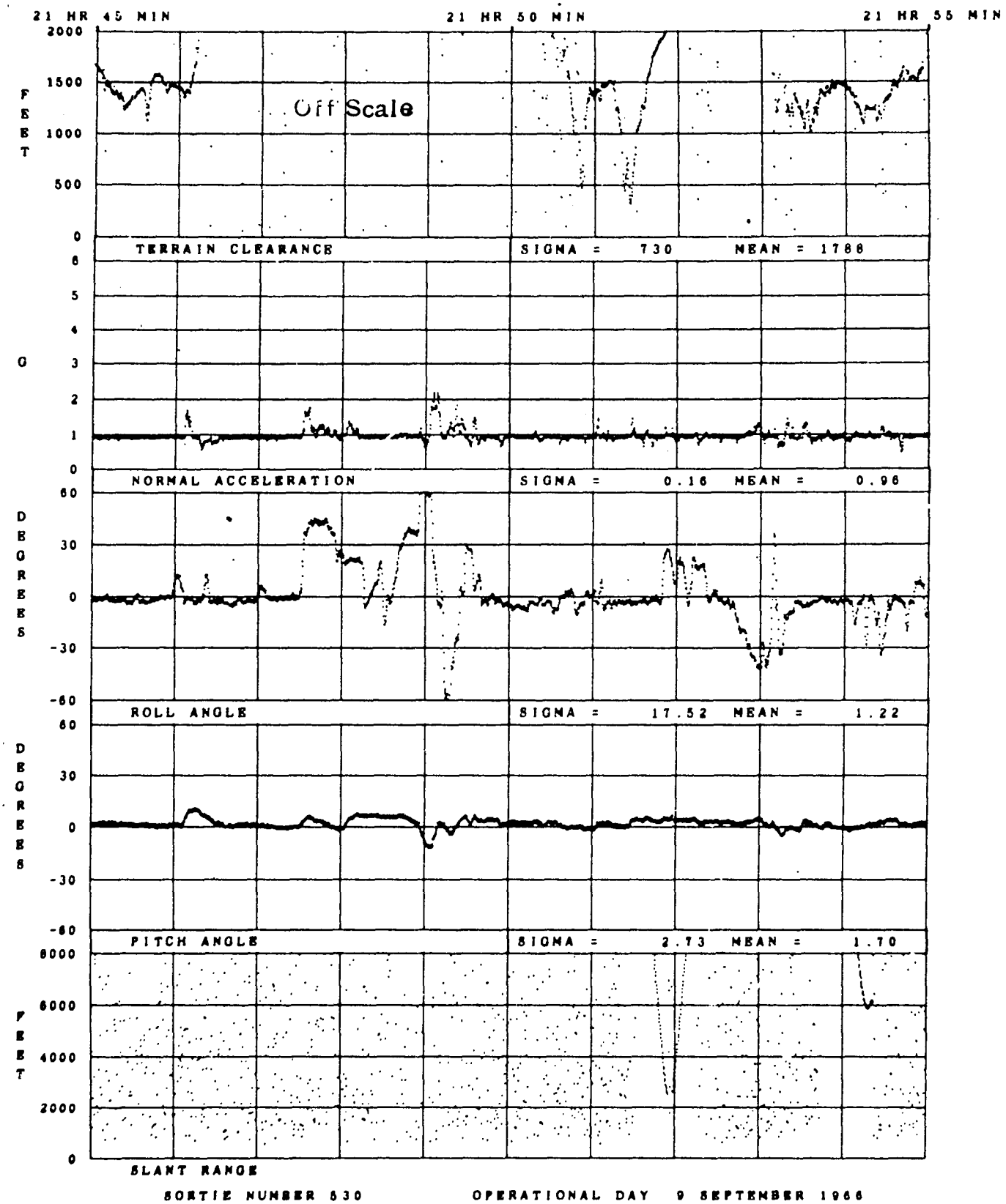
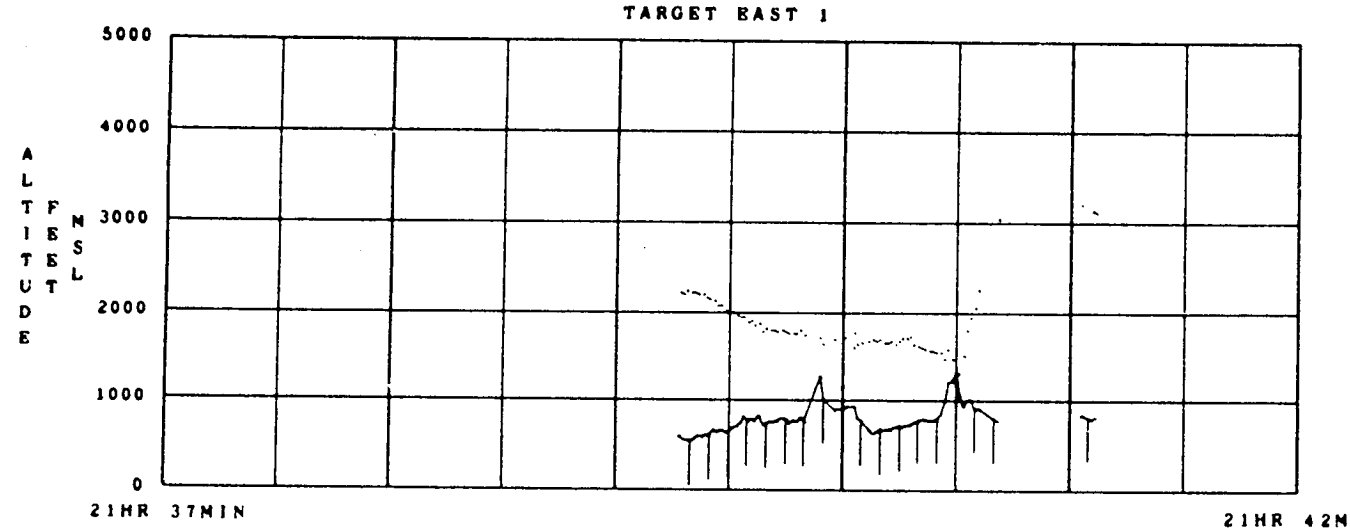
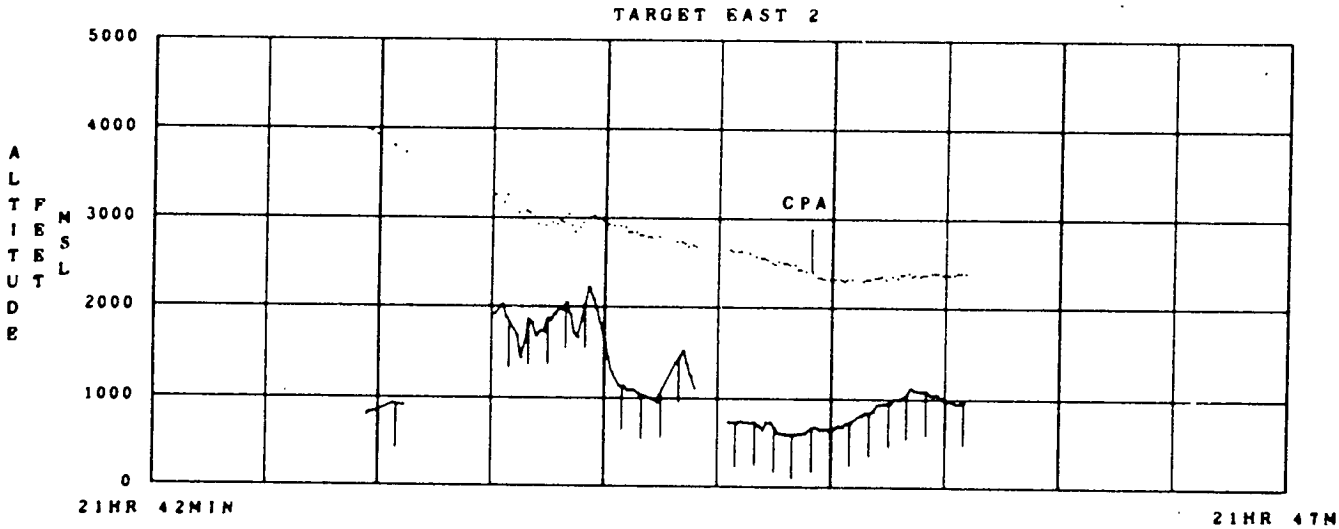


Figure 3-27 (U) Telemetered Data (Part 4 of 4)

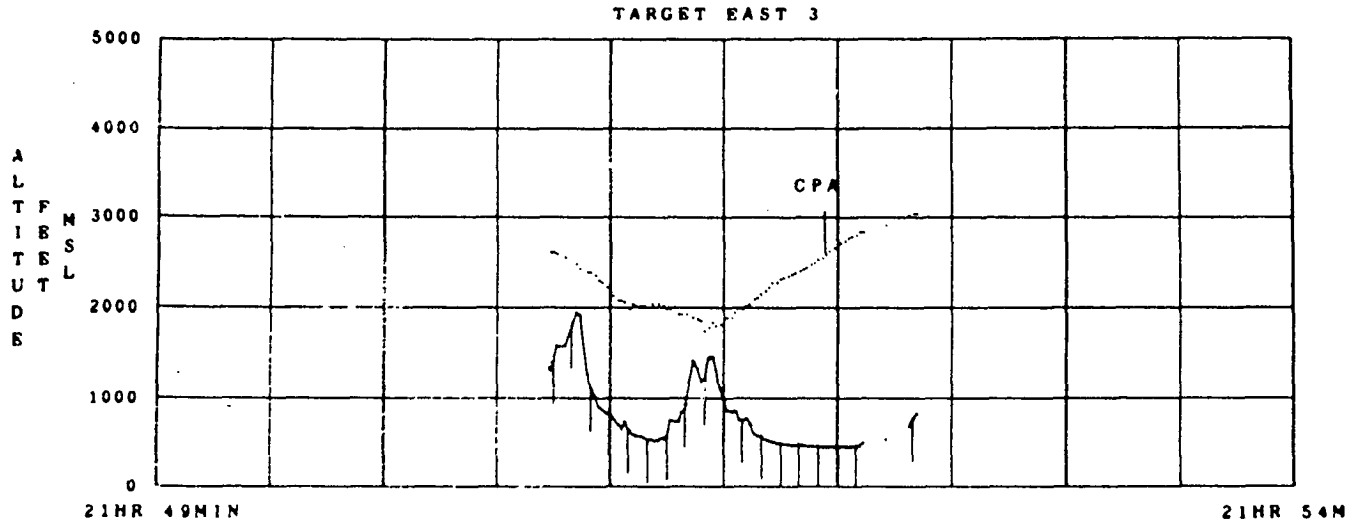


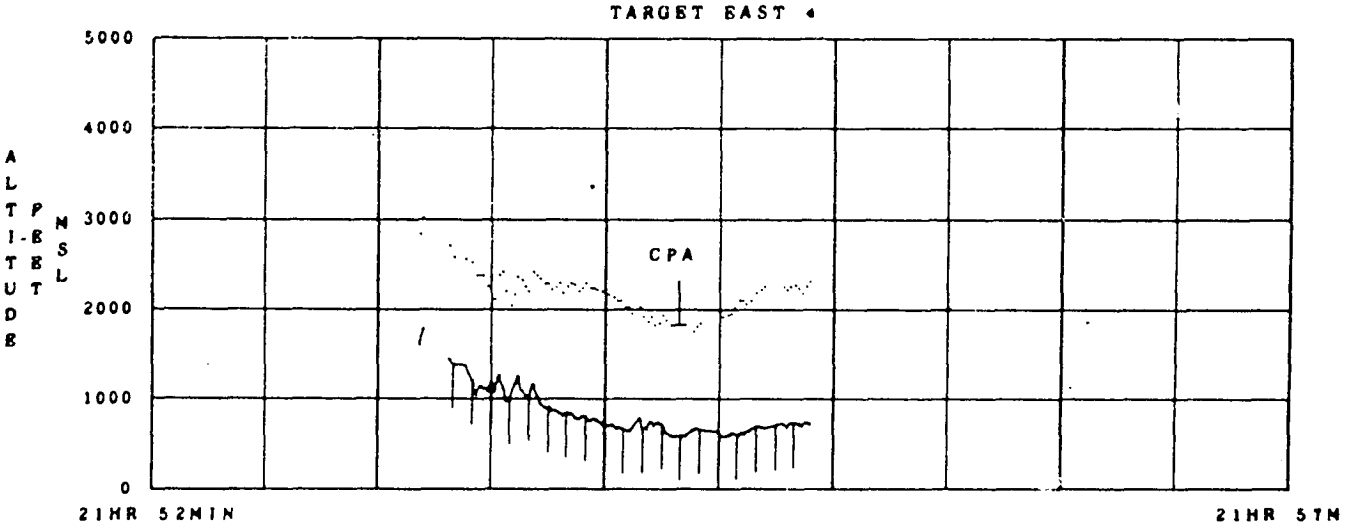


SORTIE NUMBER 530

04092437
J9139

Figure 3-28 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

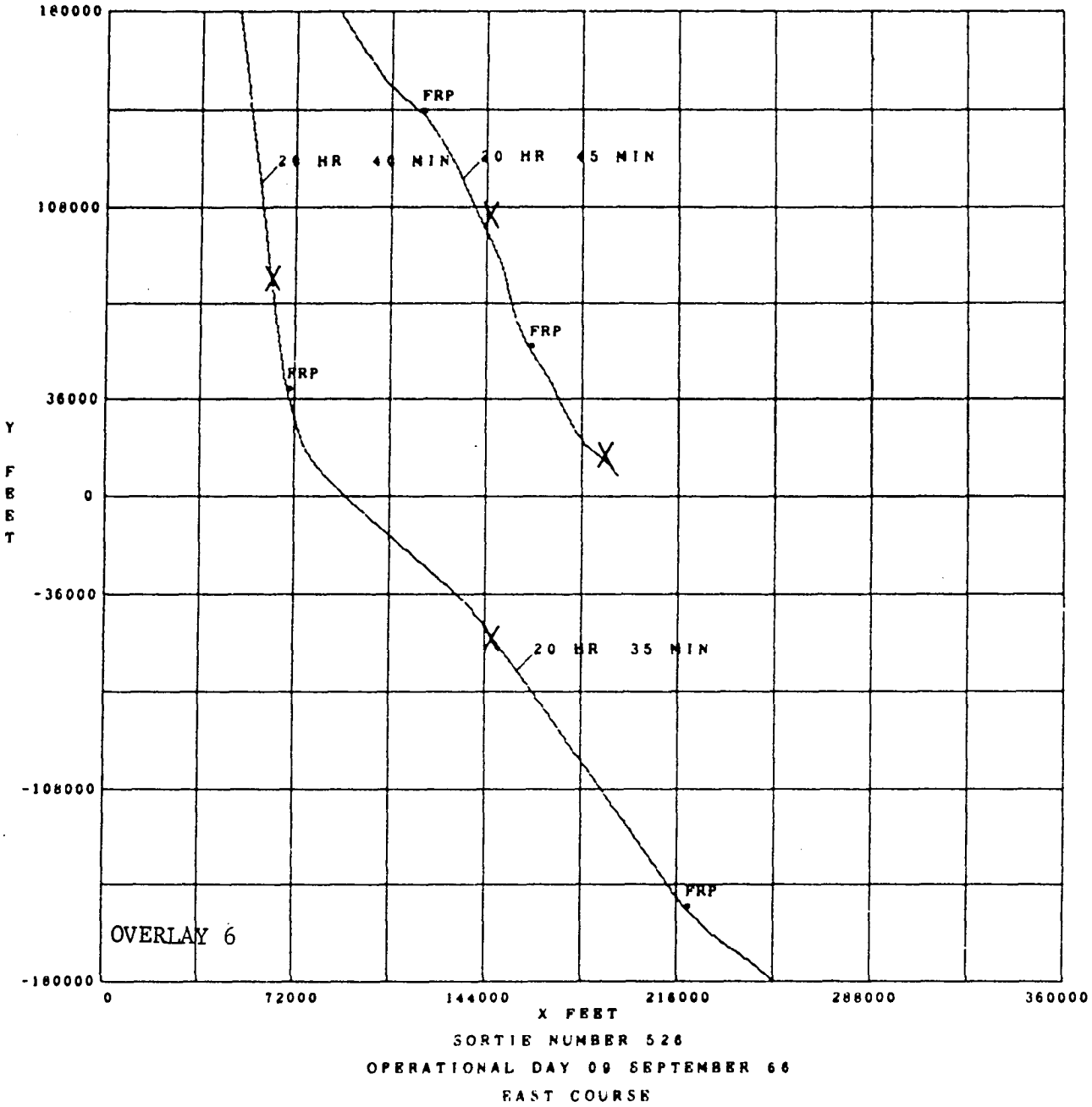




SORTIE NUMBER 530

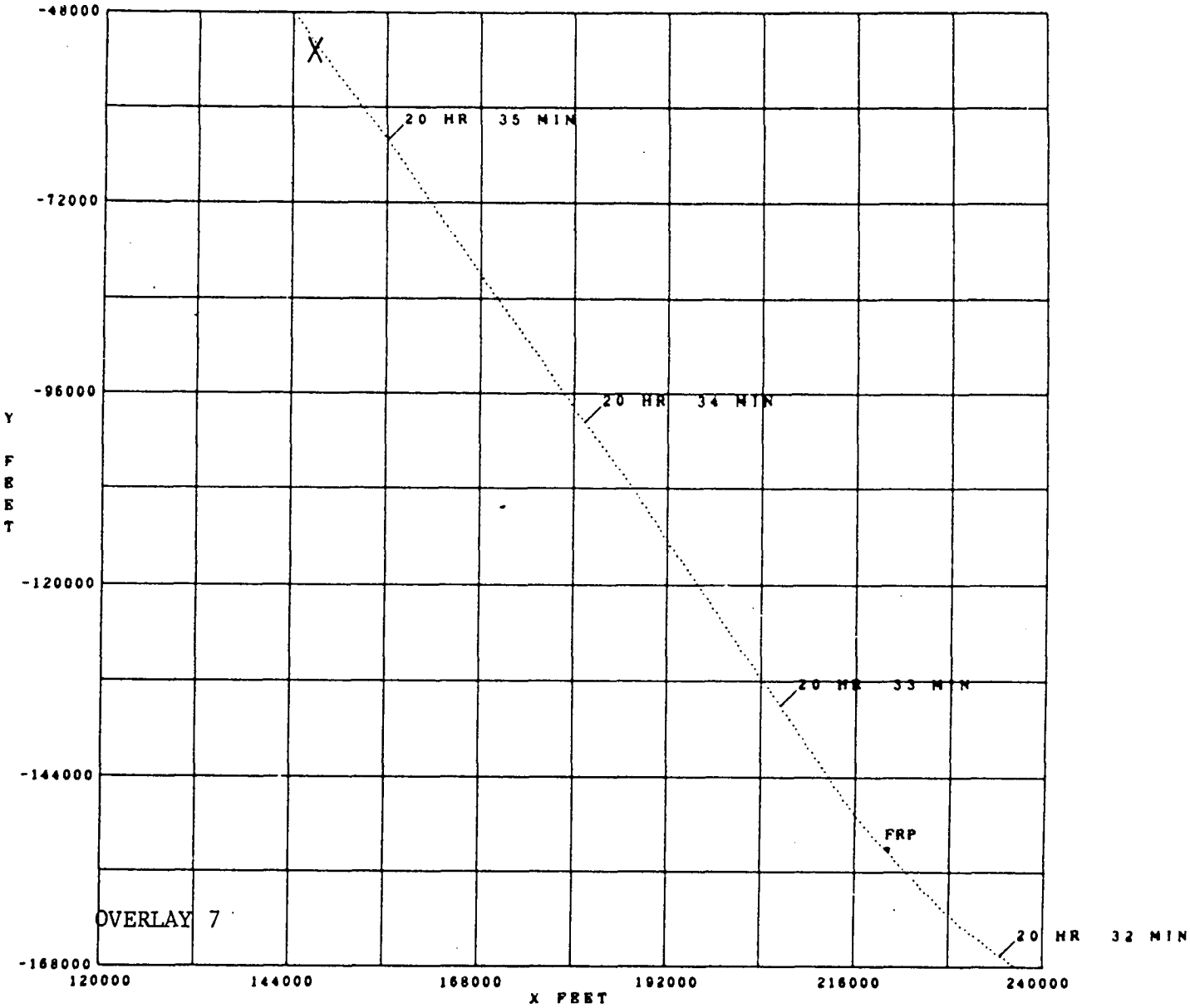
04092437
J9139

Figure 3-28 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092437
J9139 27

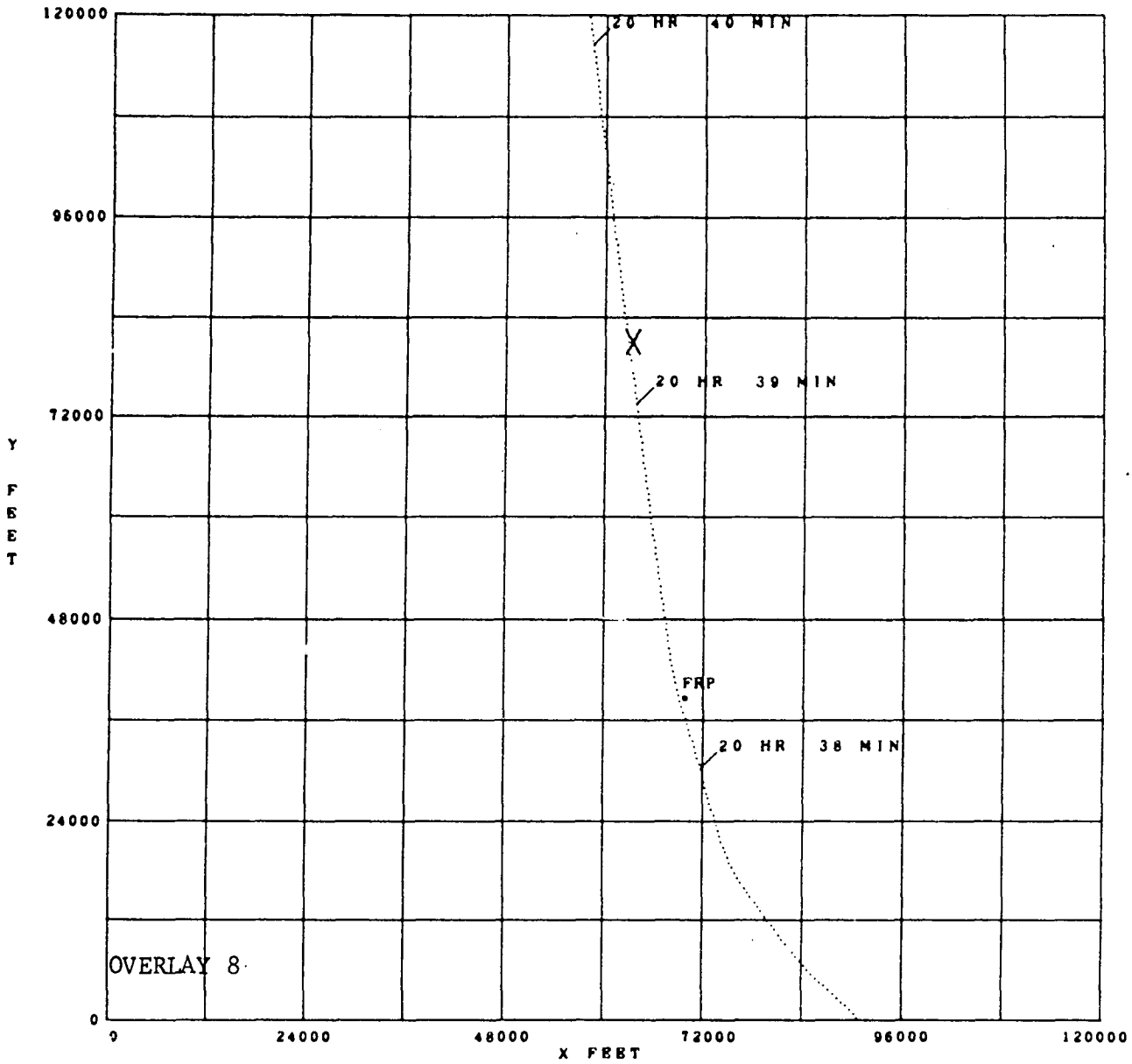
Figure 3-29 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 780 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 526
TARGET EAST 1

04092438
J9139 28

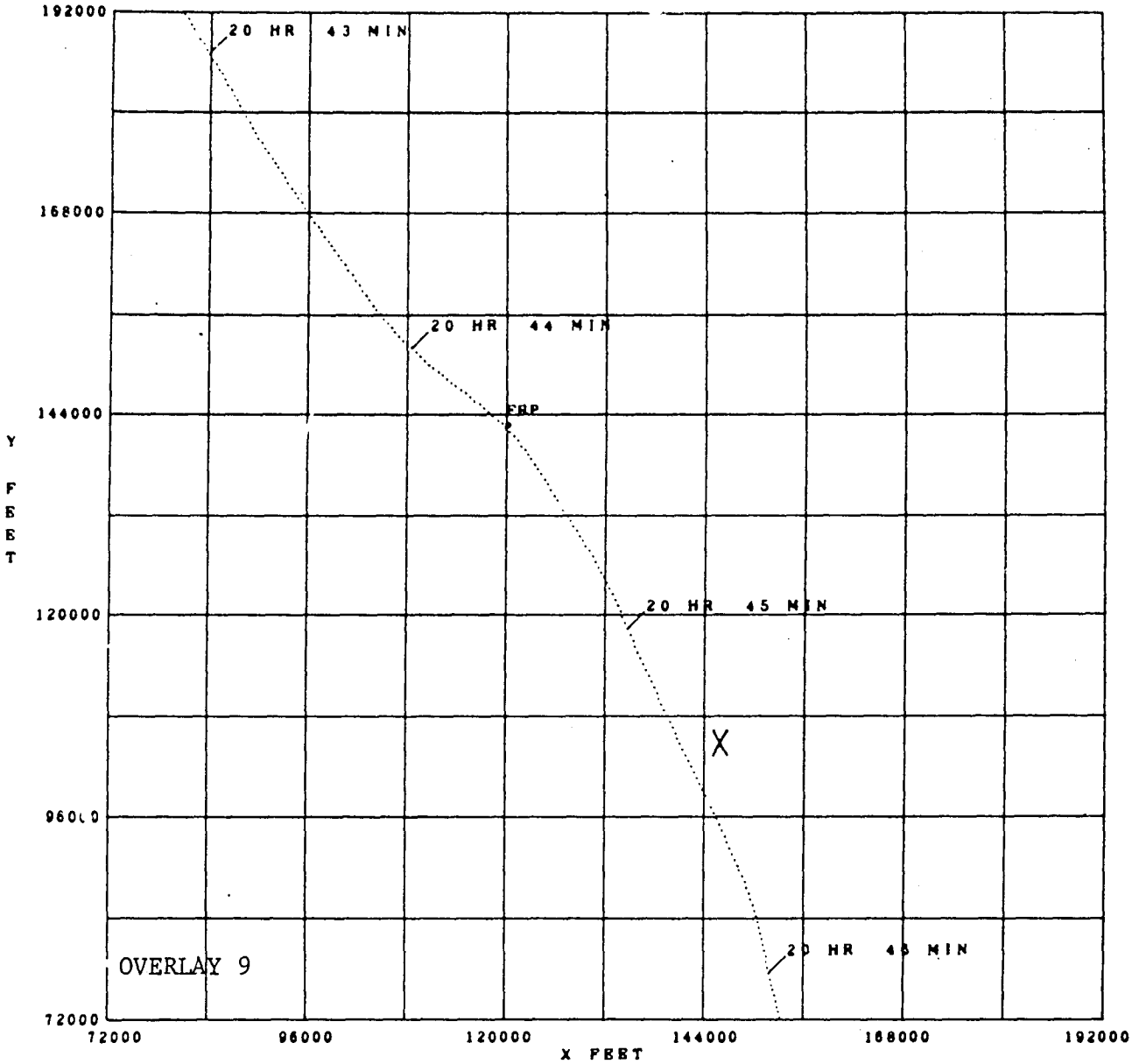
Figure 3-29 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 474 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 526
TARGET EAST 2

04092438
J9139 29

Figure 3-29 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 4268 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 526
TARGET EAST 3

04092438
J9139 30

Figure 3-29 (U) Aircraft Position Data (Part 4 of 5)

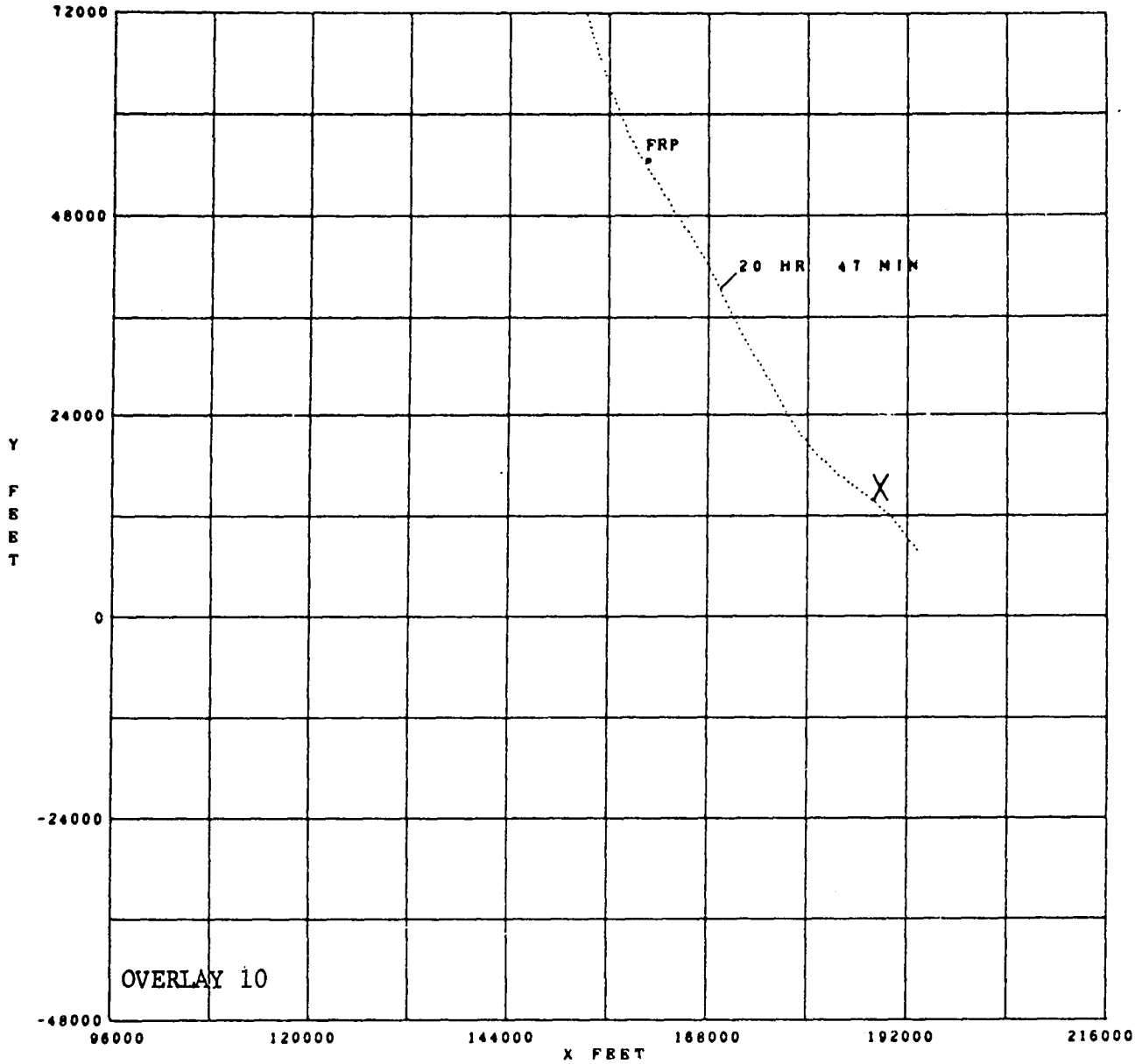


Figure 3-29 (U) Aircraft Position Data (Part 5 of 5)

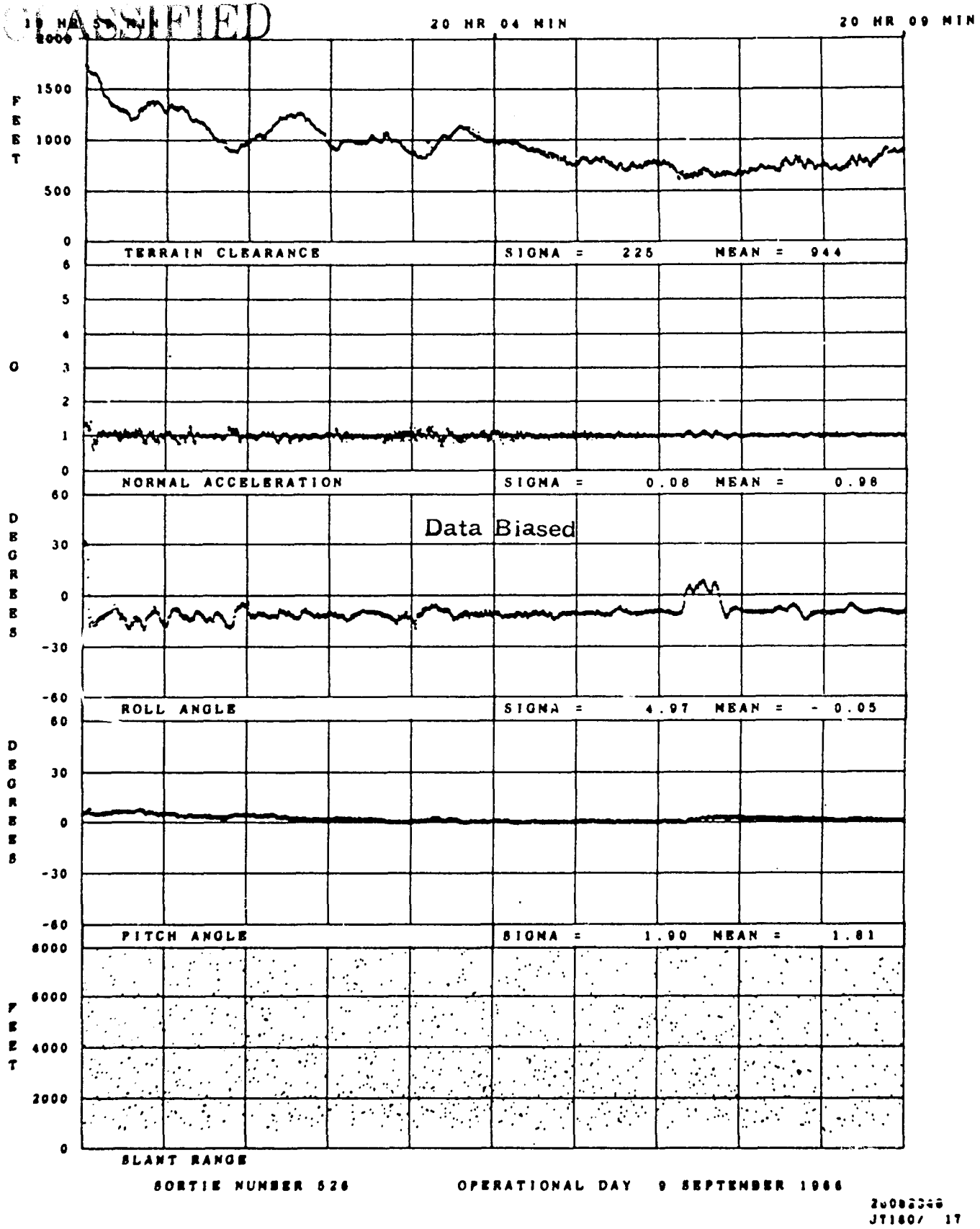


Figure 3-30 (U) Telemetered Data (Part 1 of 5)

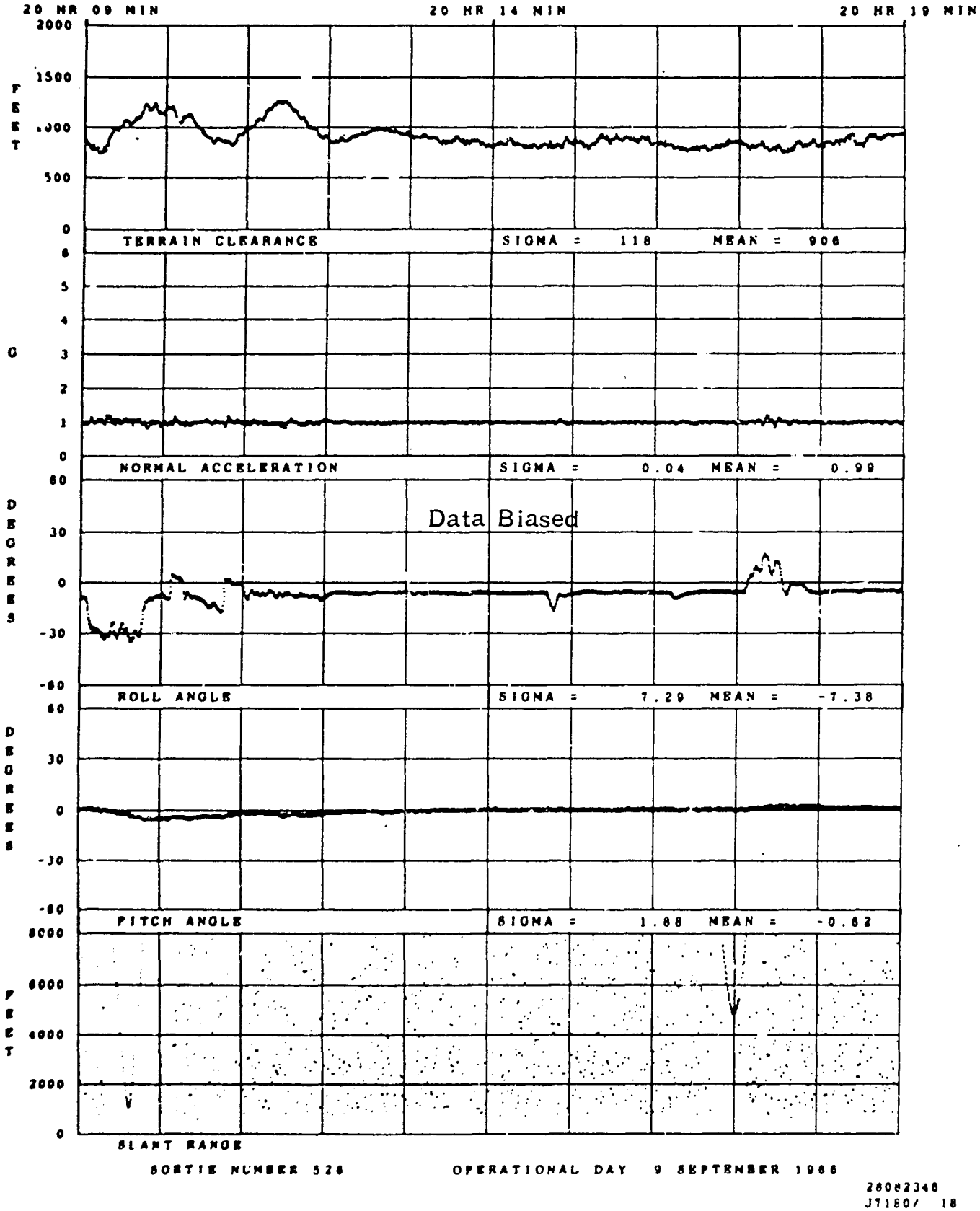


Figure 3-30 (U) Telemetered Data (Part 2 of 5)

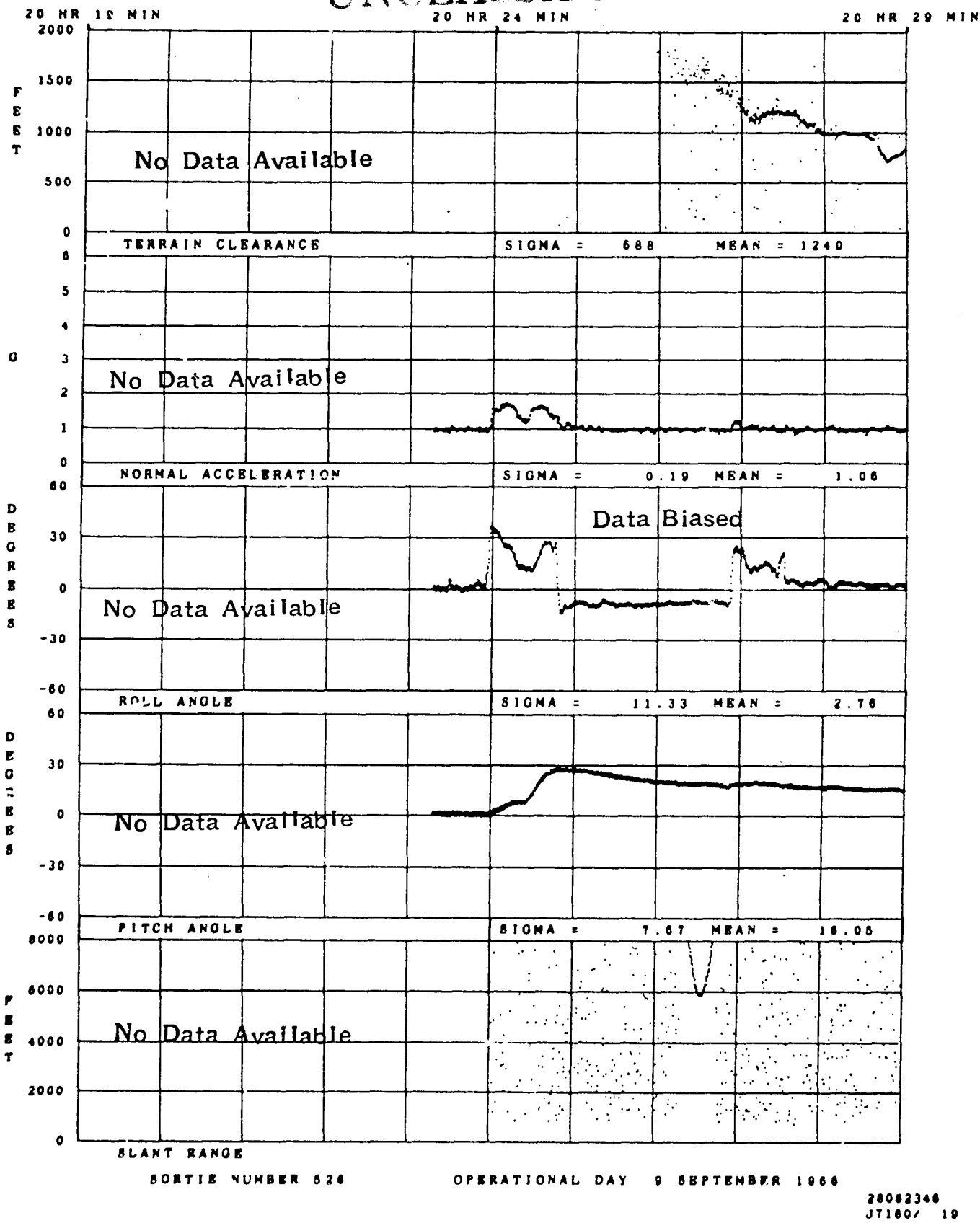


Figure 3-30 (U) Telemetered Data (Part 3 of 5)

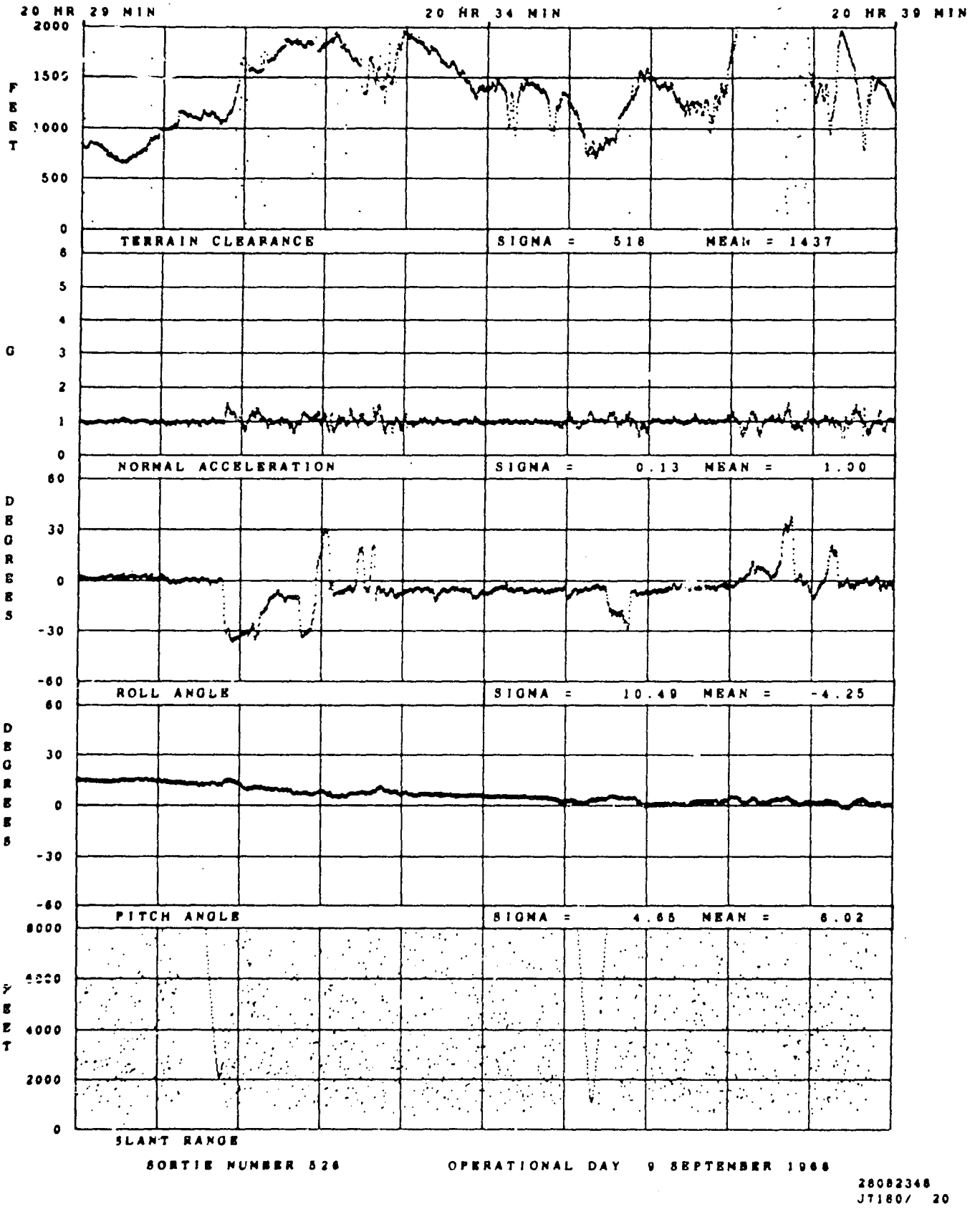


Figure 3-30 (U) Telemetered Data (Part 4 of 5)

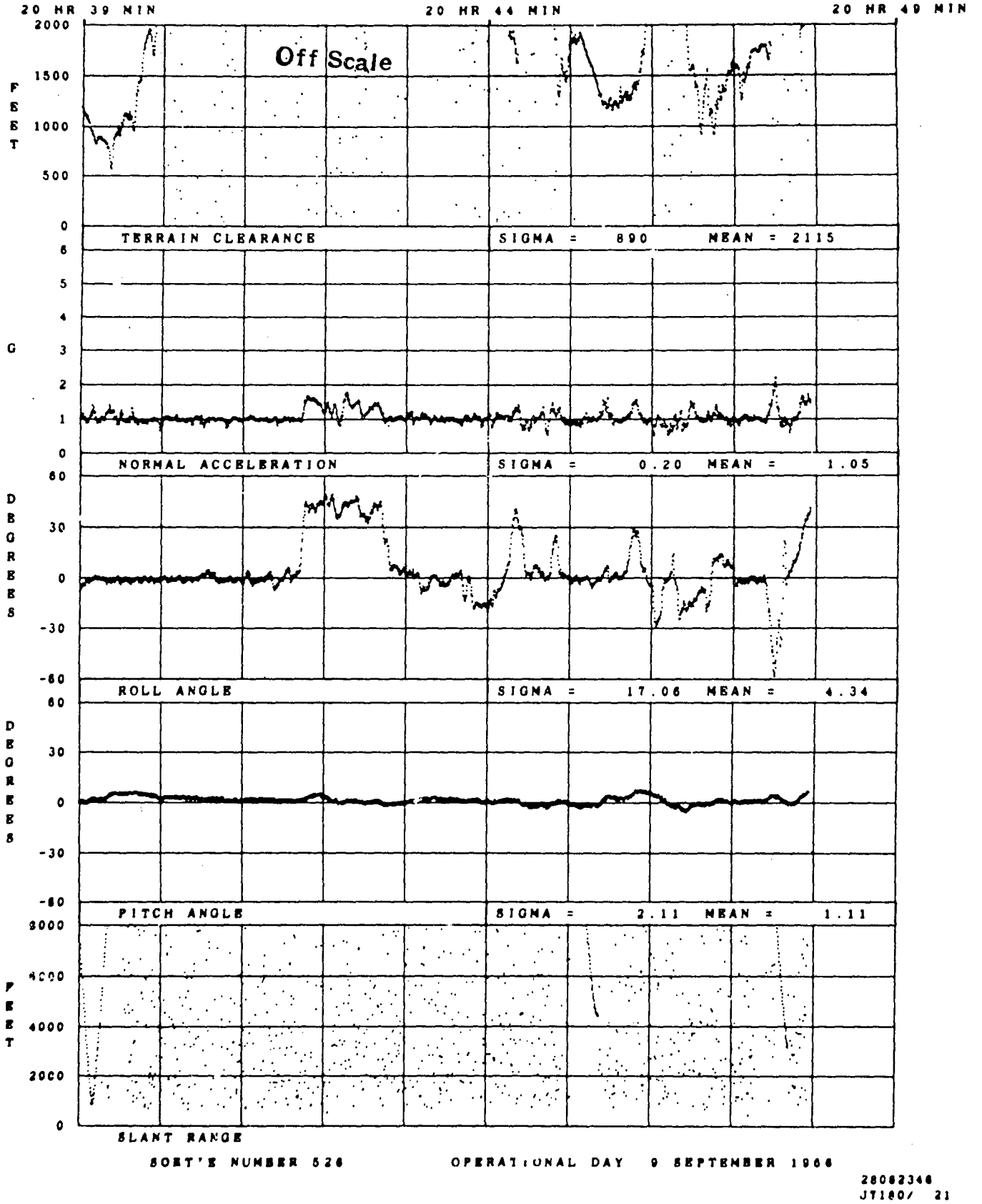
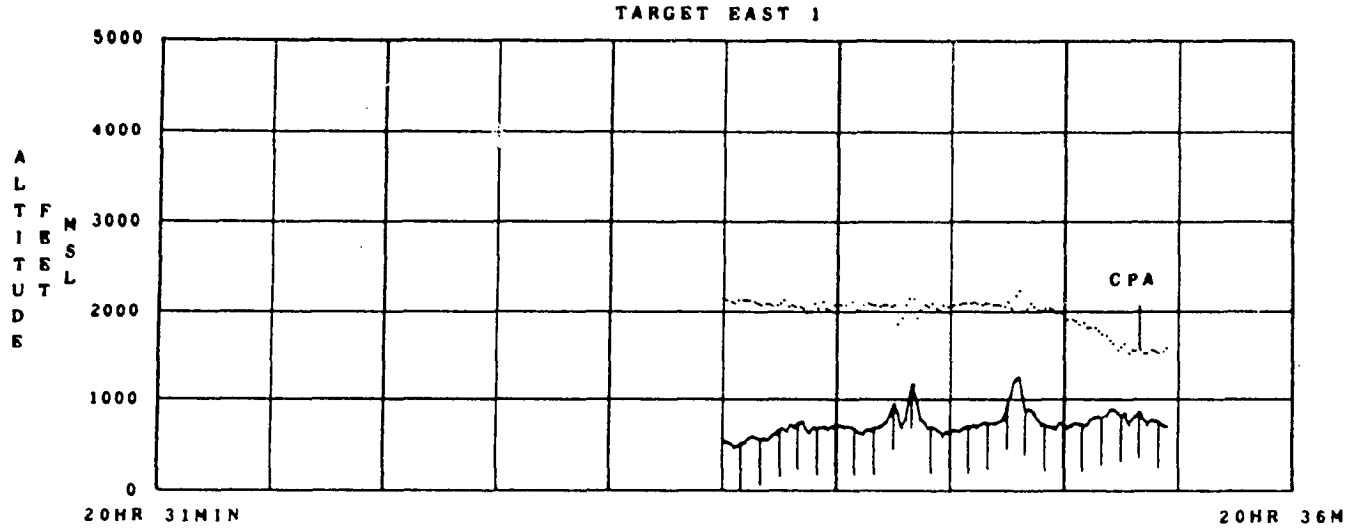
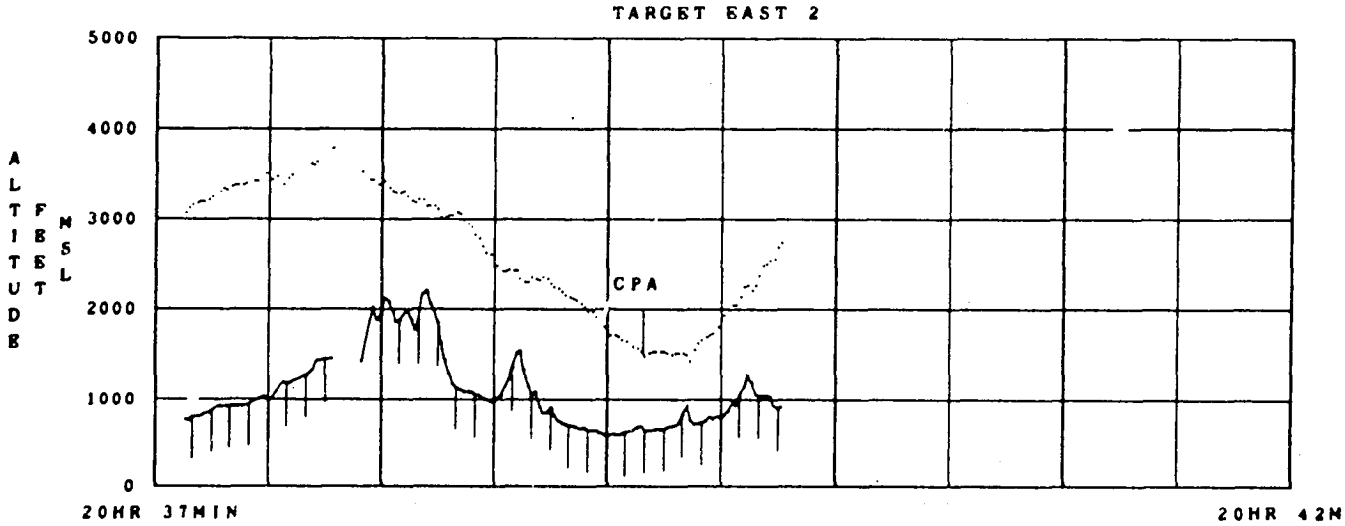


Figure 3-30 (U) Telemetered Data (Part 5 of 5)

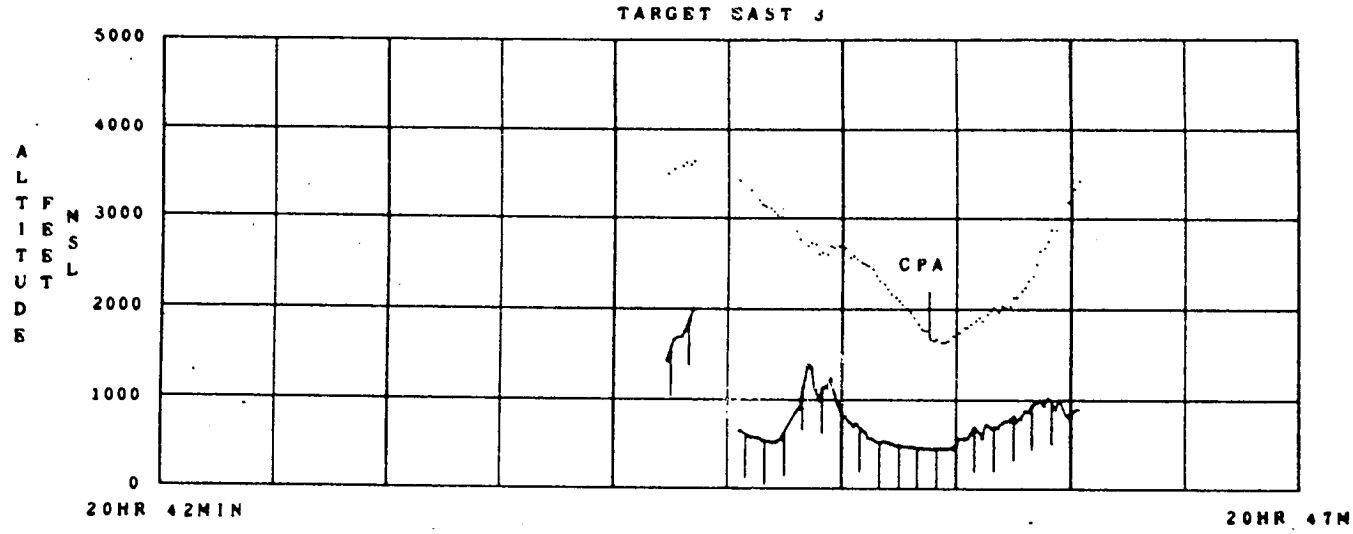


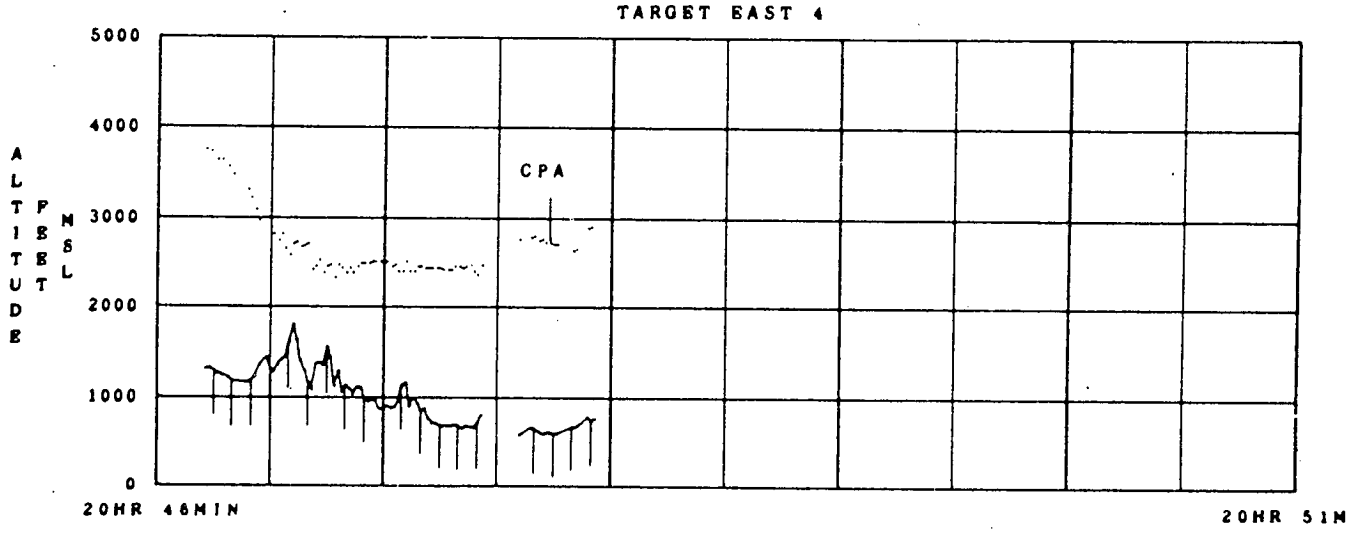


SORTIE NUMBER 526

04092438
J9139

Figure 3-31 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

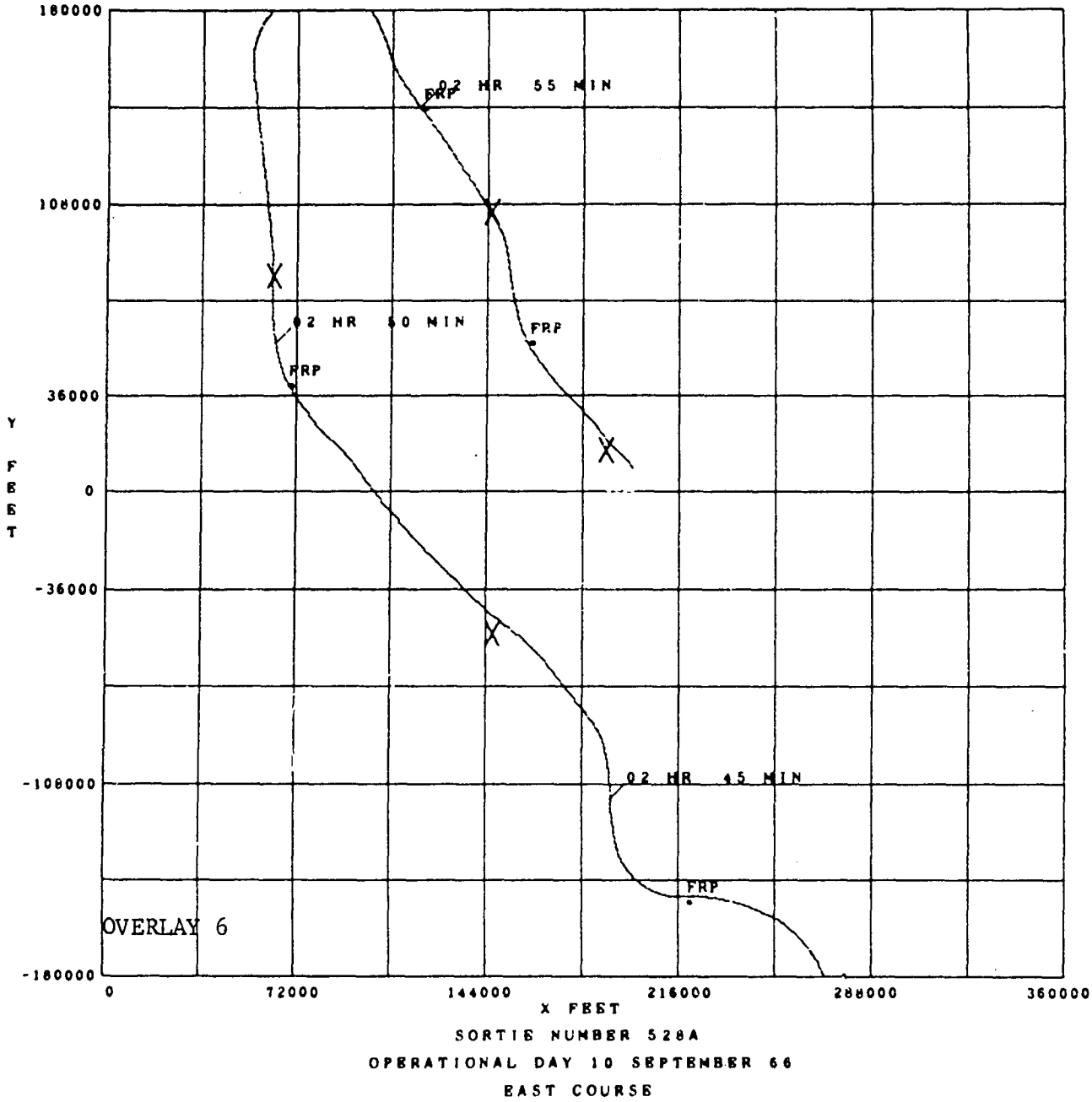




SORTIE NUMBER 526

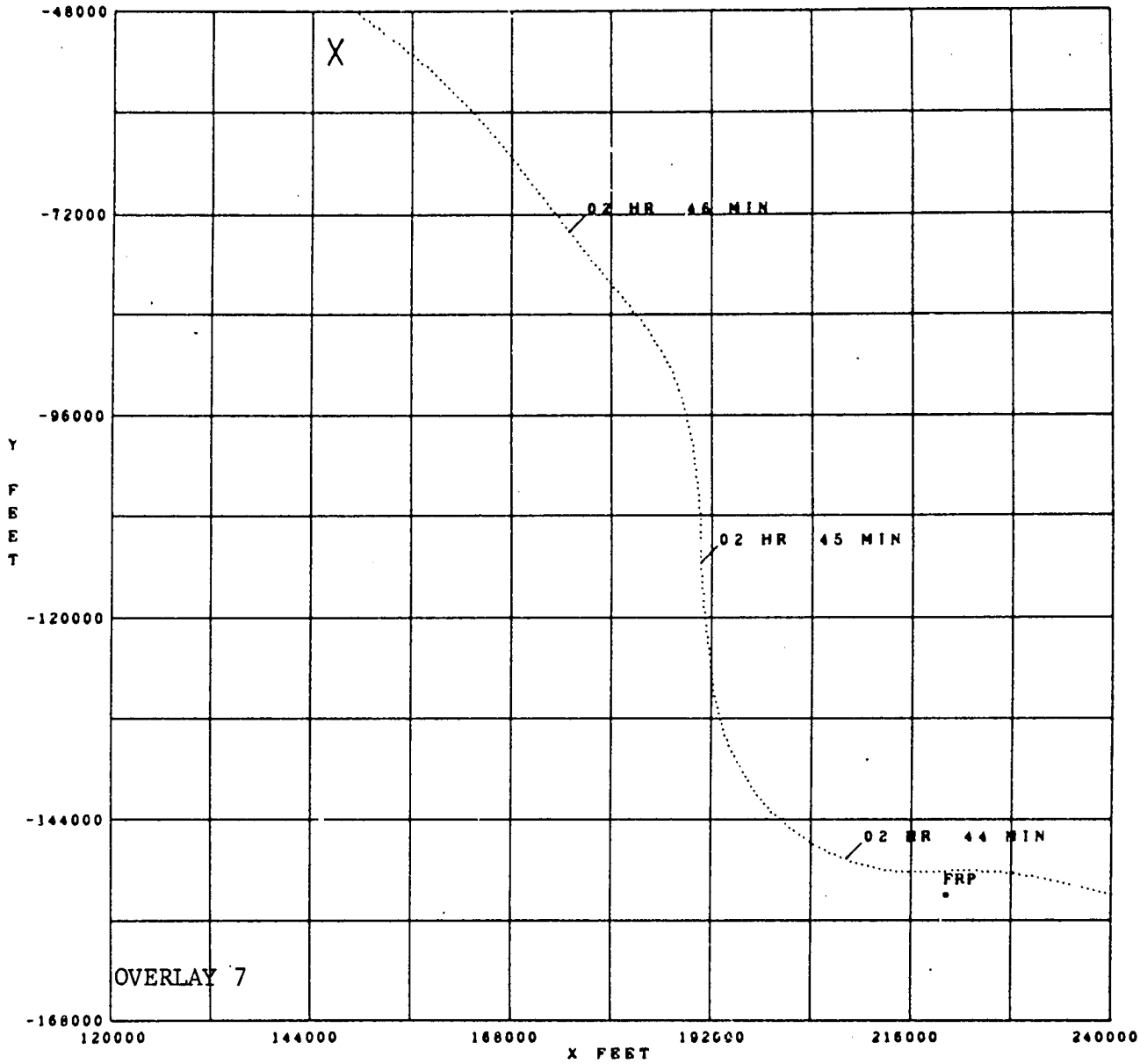
04092438
J9139

Figure 3-31 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092437
J9139 19

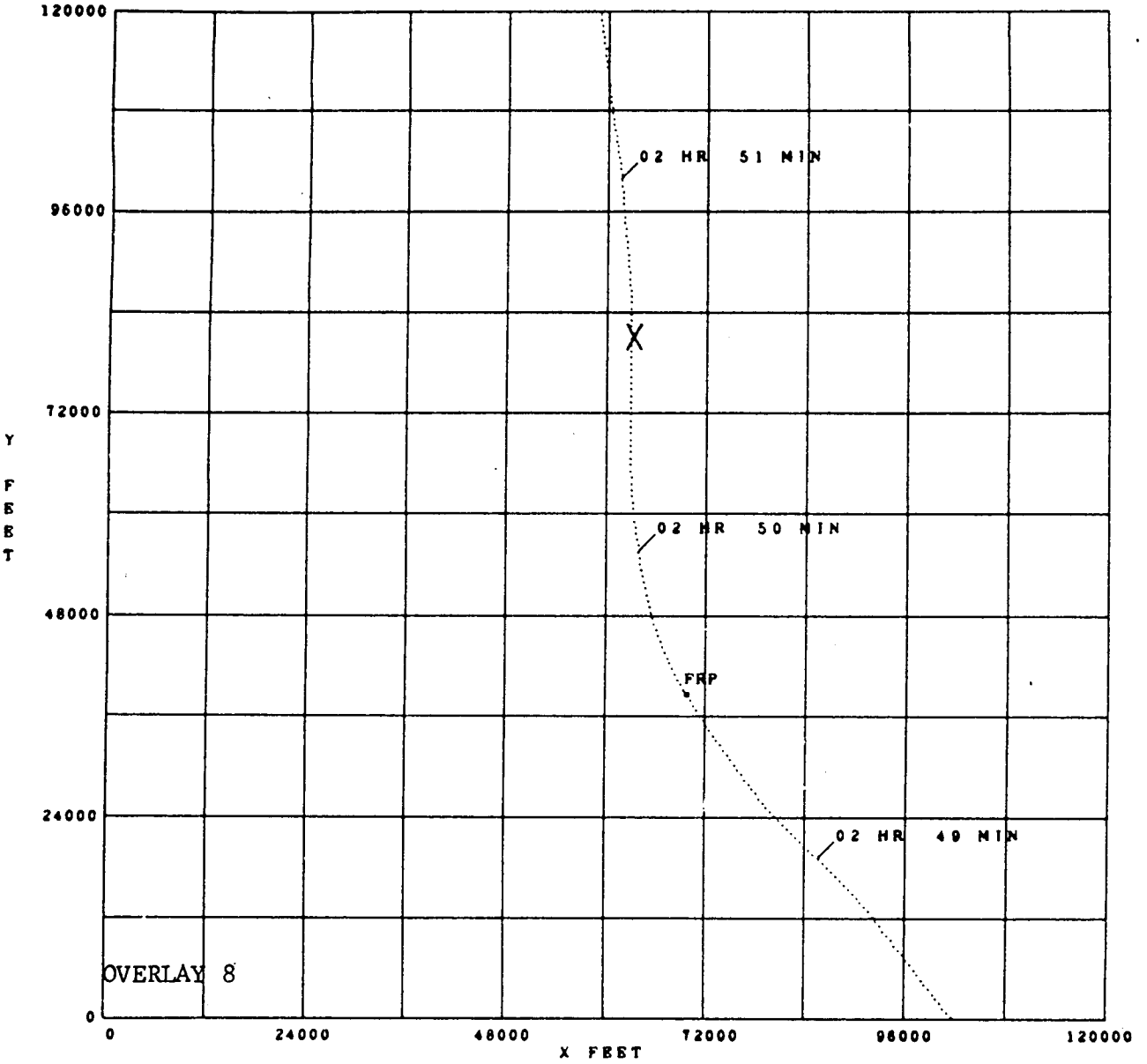
Figure 3-32 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 5100 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 528A
TARGET EAST 1

04092437
J9139 20

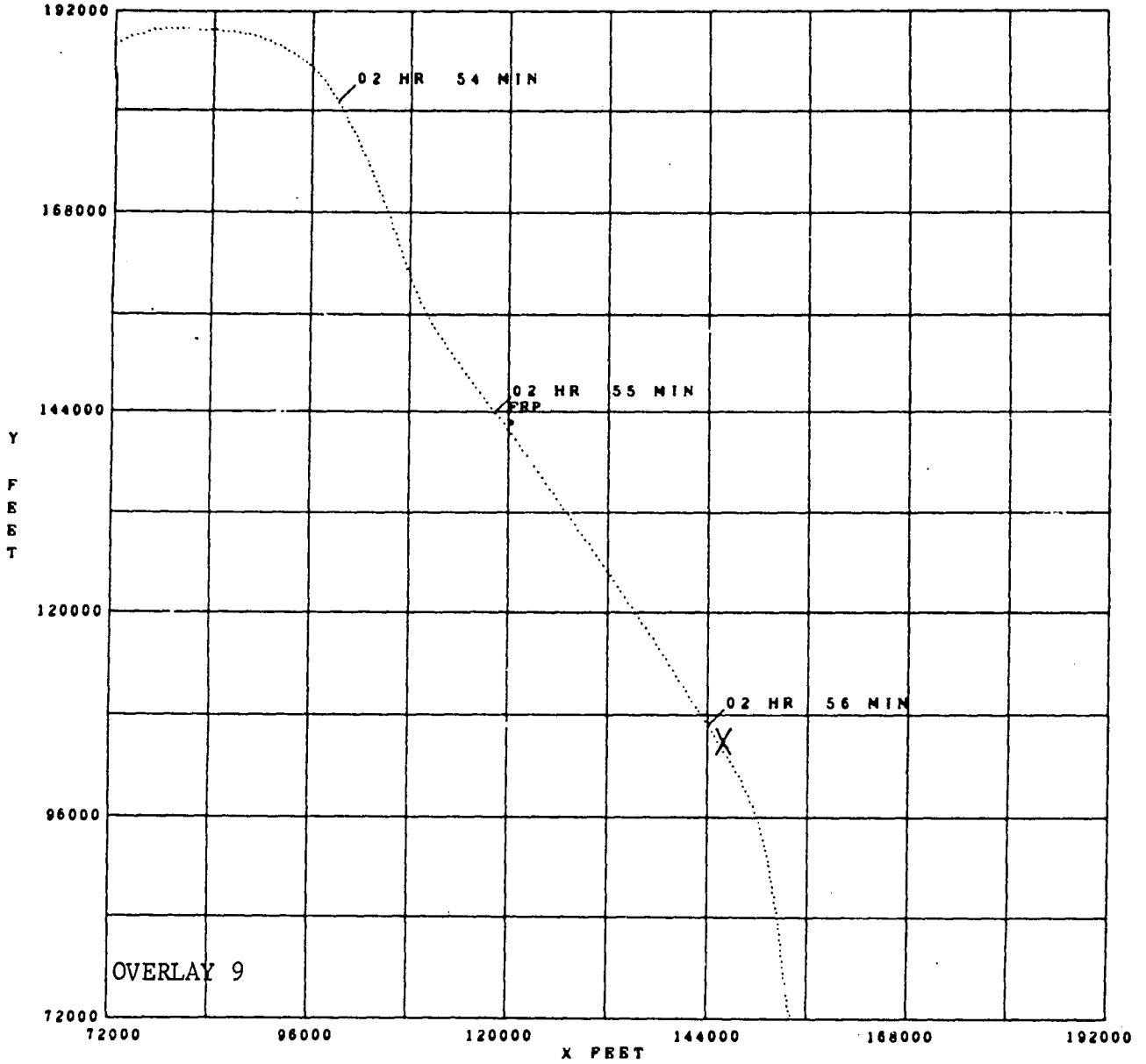
Figure 3-32 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 296 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 528A
TARGET EAST 2

04092437
J9139 21

Figure 3-32 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 528 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 528A
TARGET EAST 3

04092437
J9139 22

Figure 3-32 (U) Aircraft Position Data (Part 4 of 5)

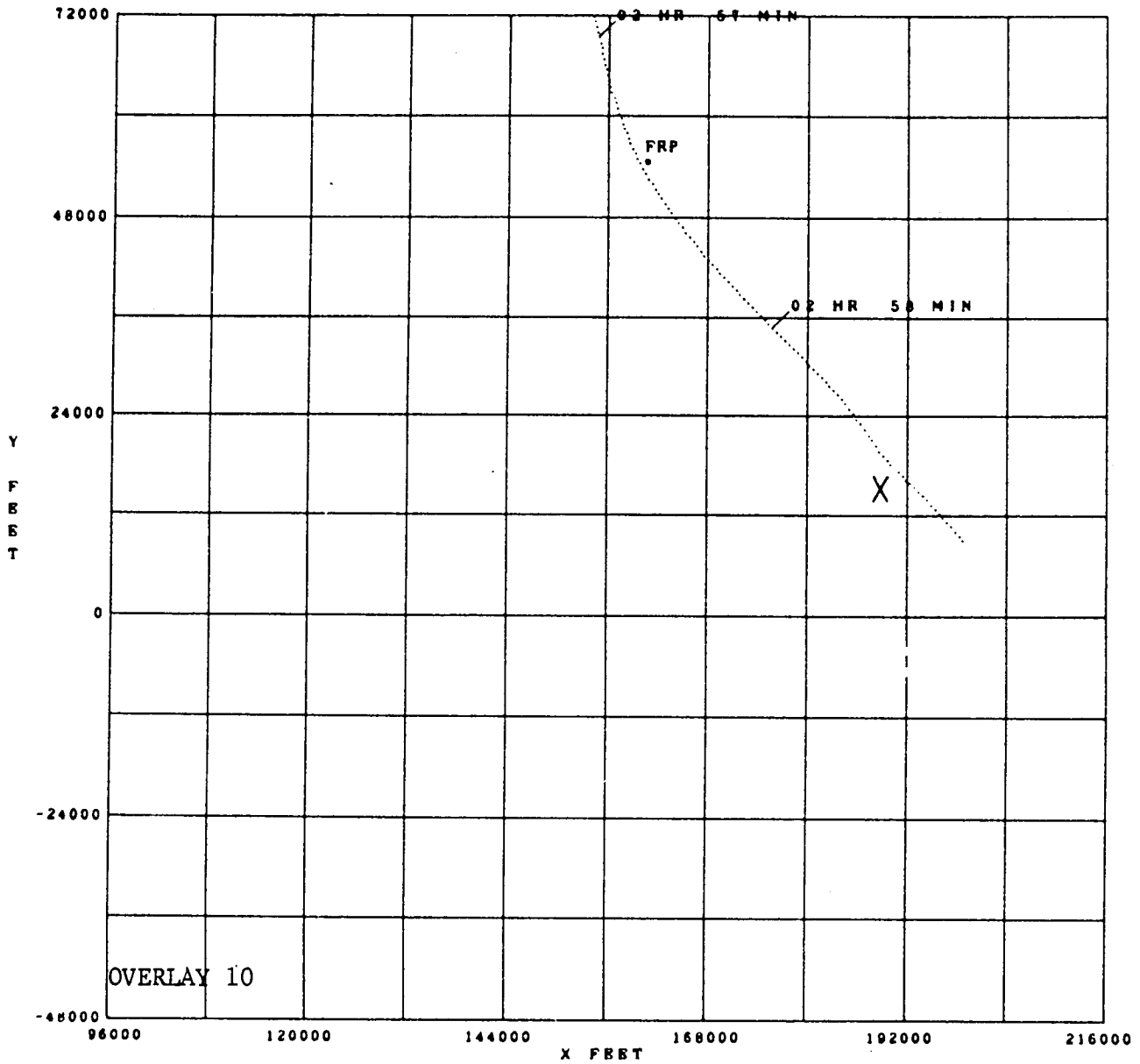


Figure 3-32 (U) Aircraft Position Data (Part 5 of 5)

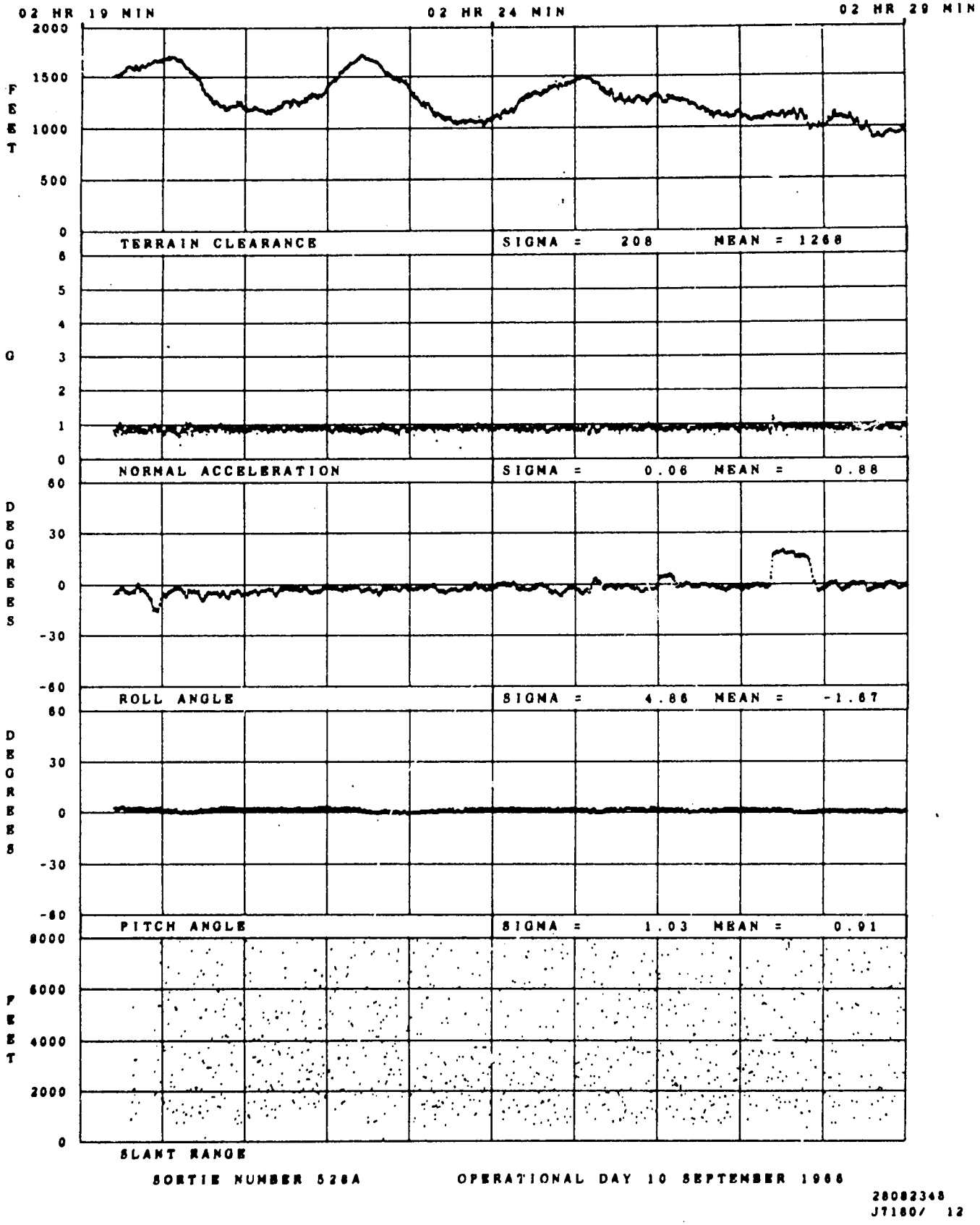


Figure 3-33 (U) Telemetered Data (Part 1 of 4)

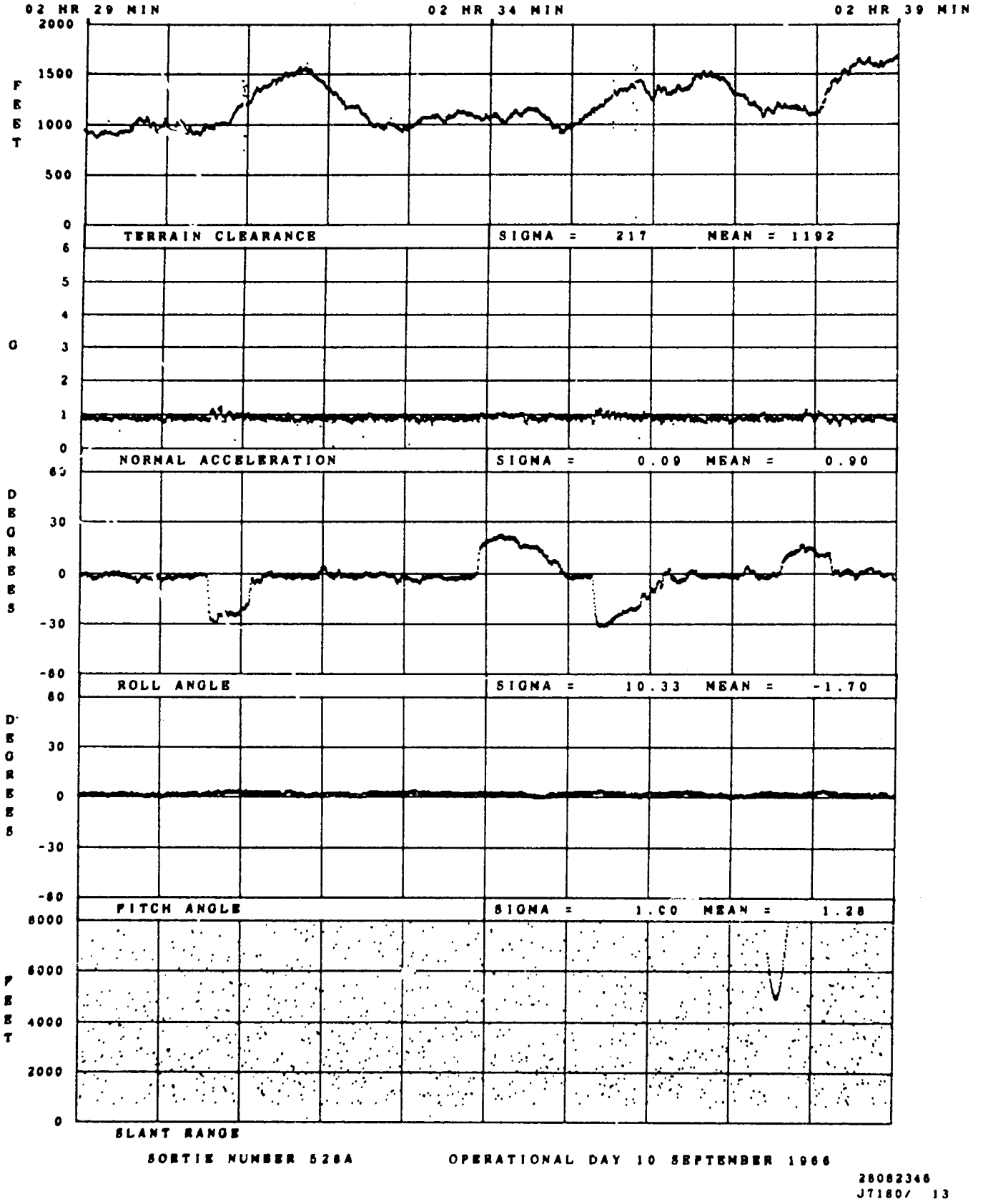


Figure 3-33 (U) Telemetered Data (Part 2 of 4)

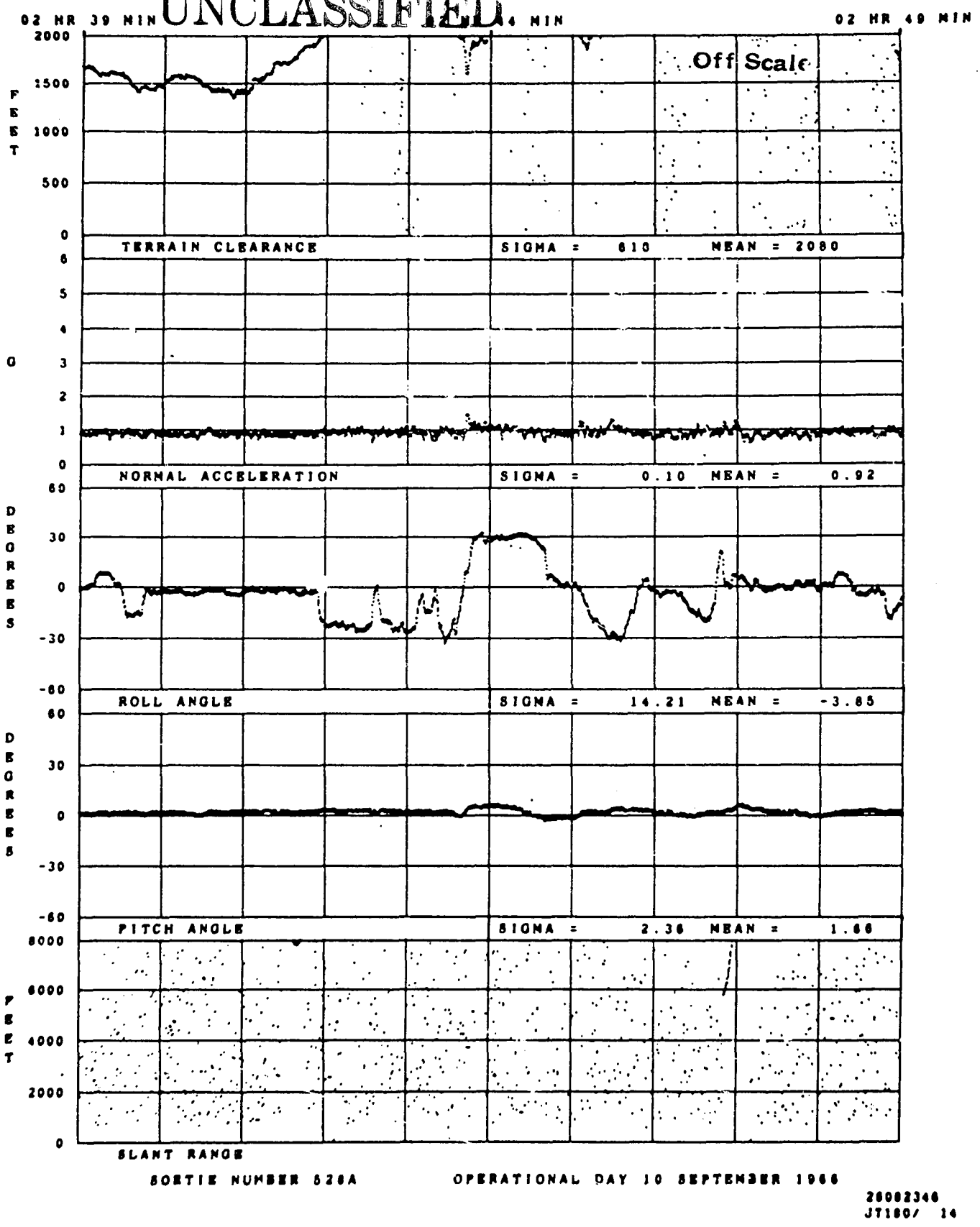


Figure 3-33 (U) Telemetered Data (Part 3 of 4)

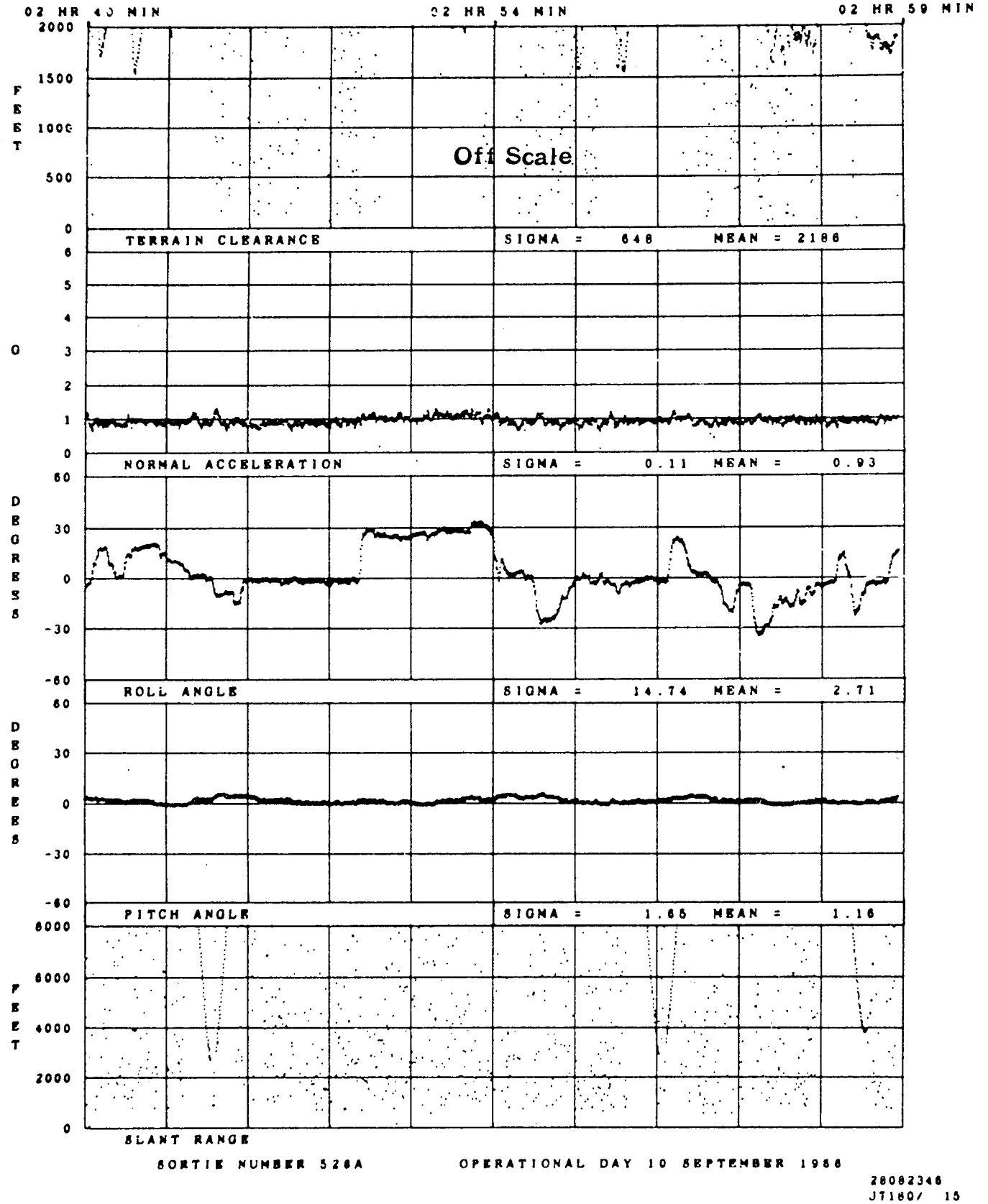
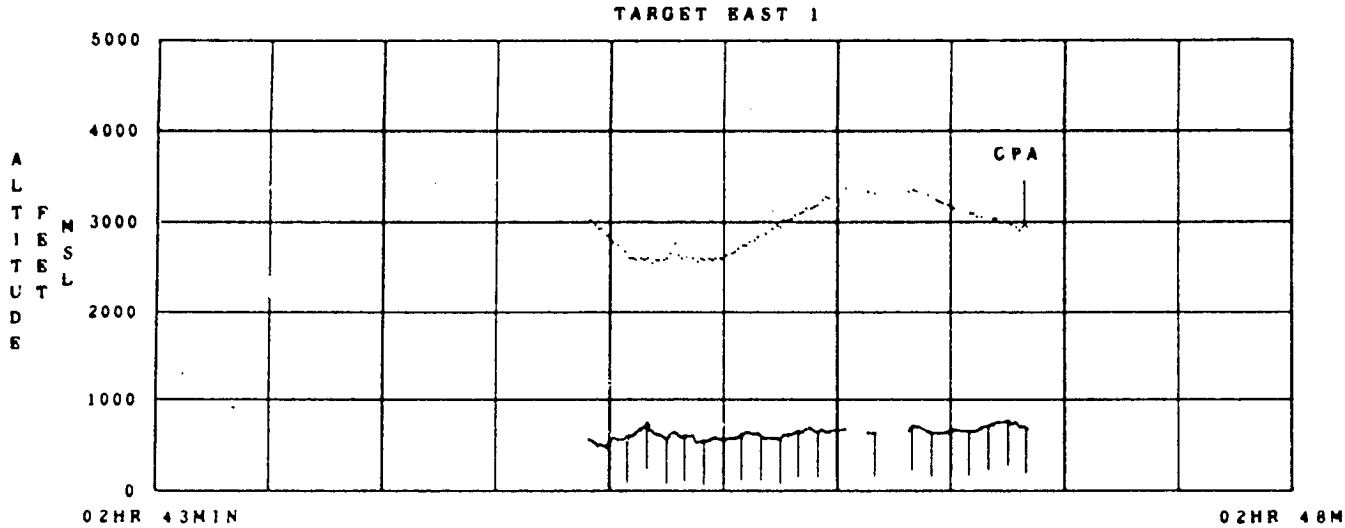
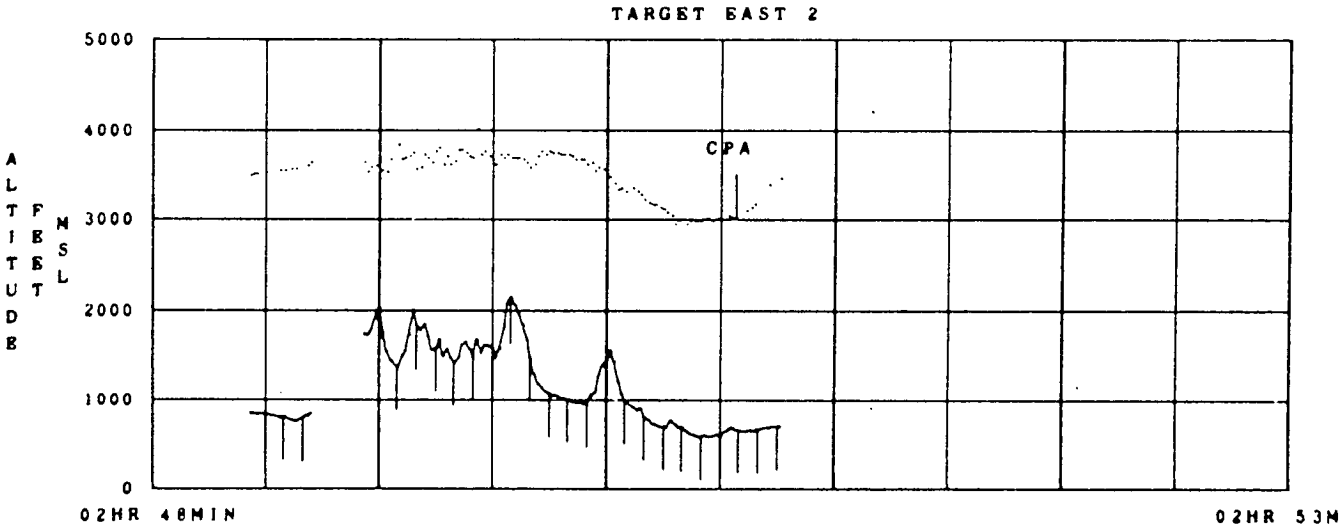


Figure 3-33 (U) Telemetered Data (Part 4 of 4)

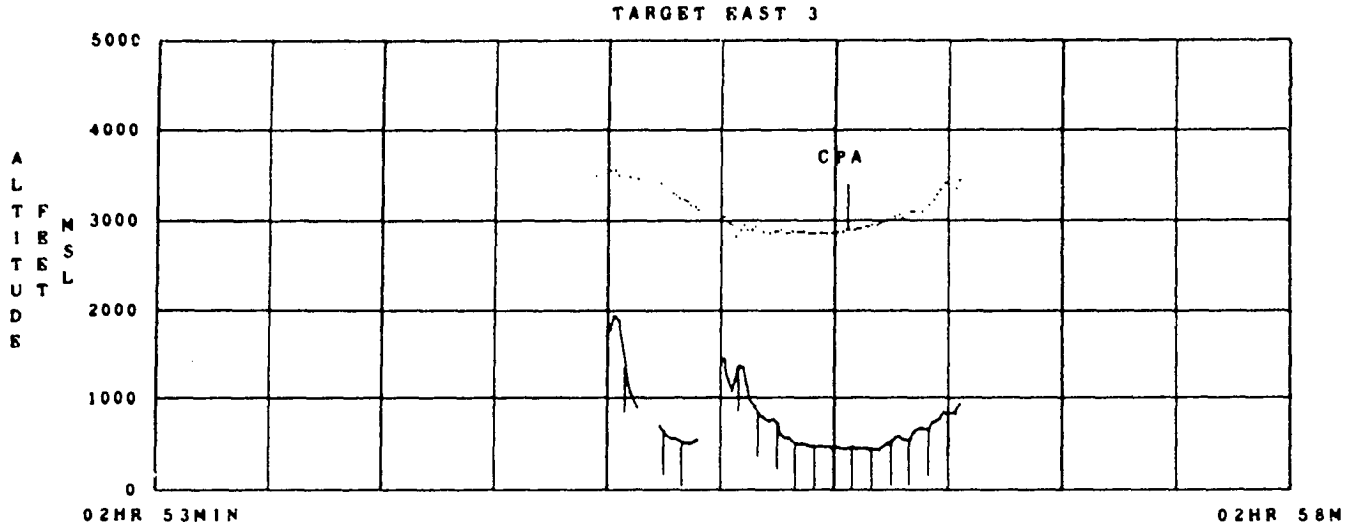


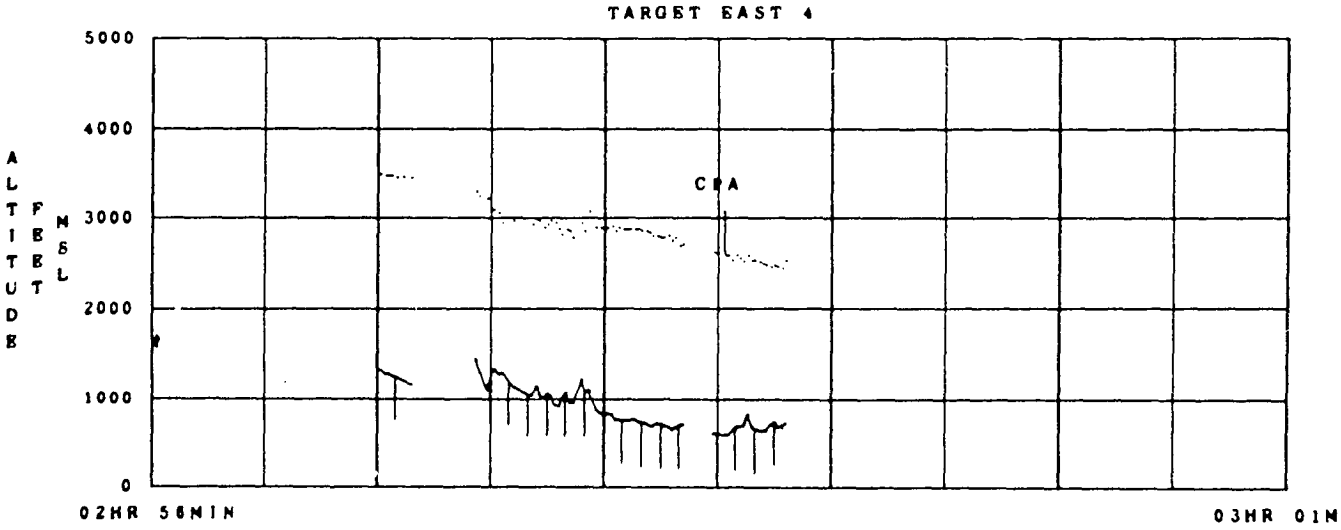


SORTIE NUMBER 528A

04092437
J9139

Figure 3-34 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

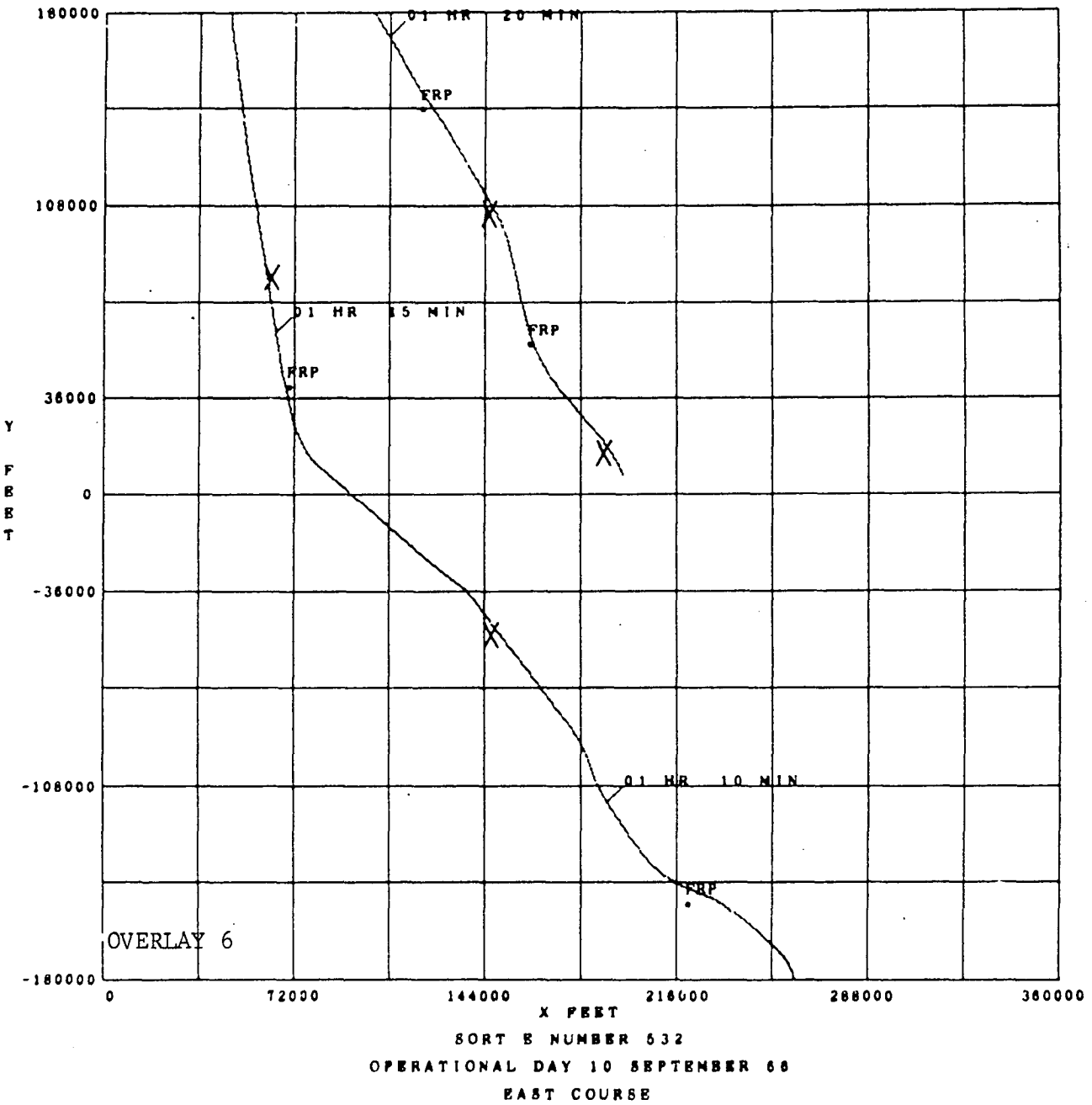




SORTIE NUMBER 528A

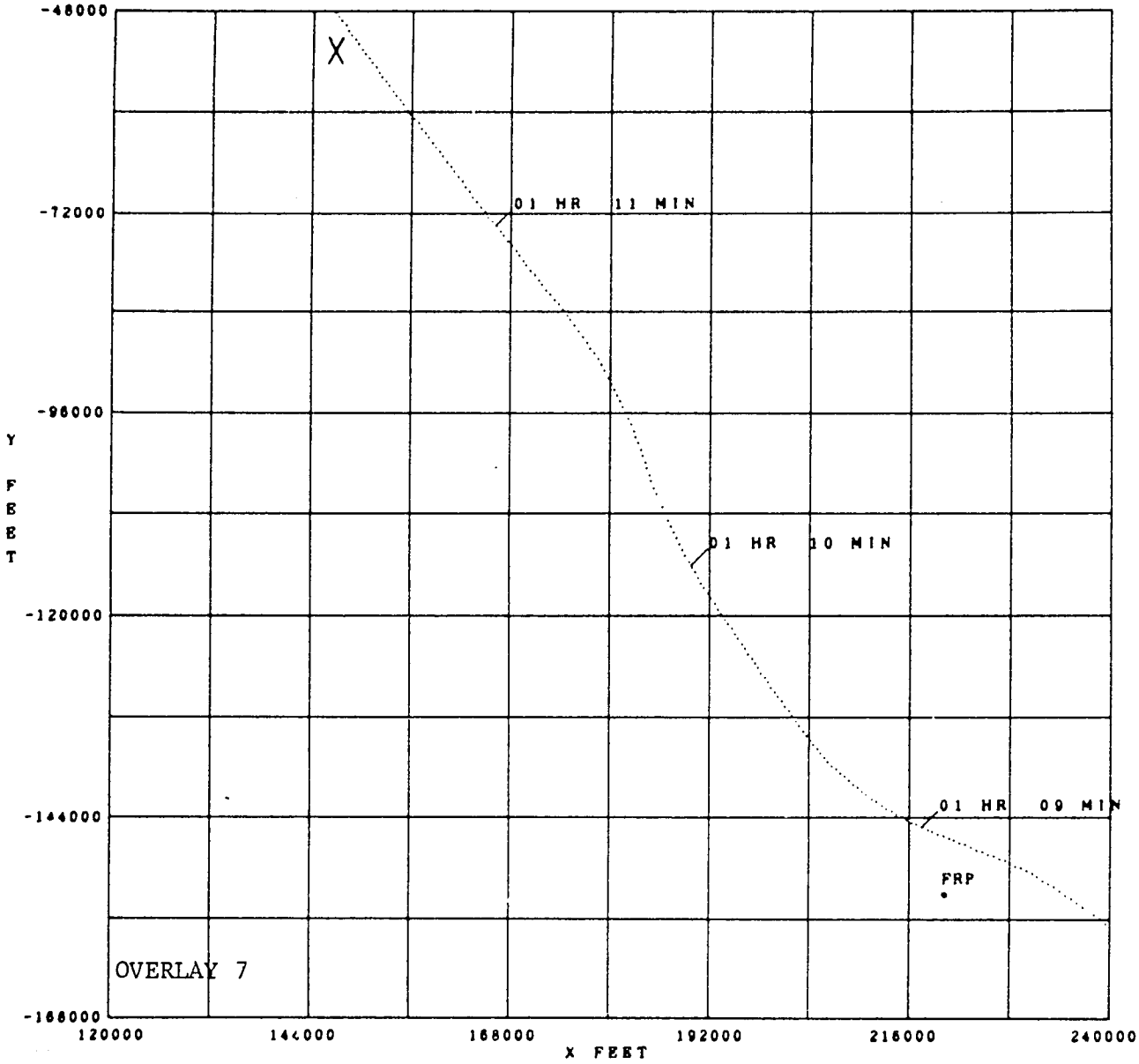
04092437
J9139

Figure 3-34 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092439
J9139 43

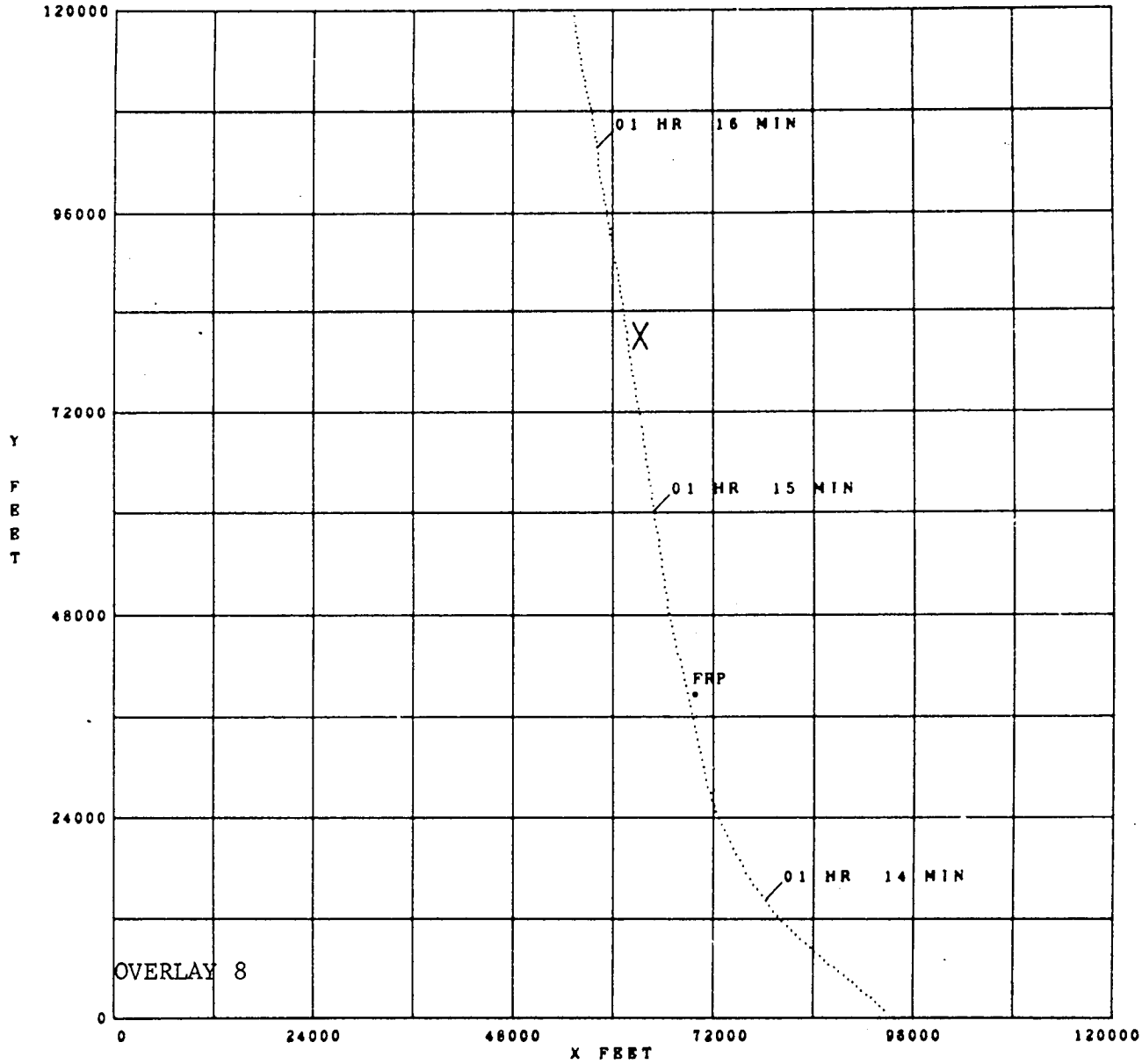
Figure 3-35 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2626 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 532
TARGET EAST 1

04092439
J9139 44

Figure 3-35 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1531 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 532
TARGET EAST 2

04092439
J9139

Figure 3-35 (U) Aircraft Position Data (Part 3 of 5)

UNCLASSIFIED

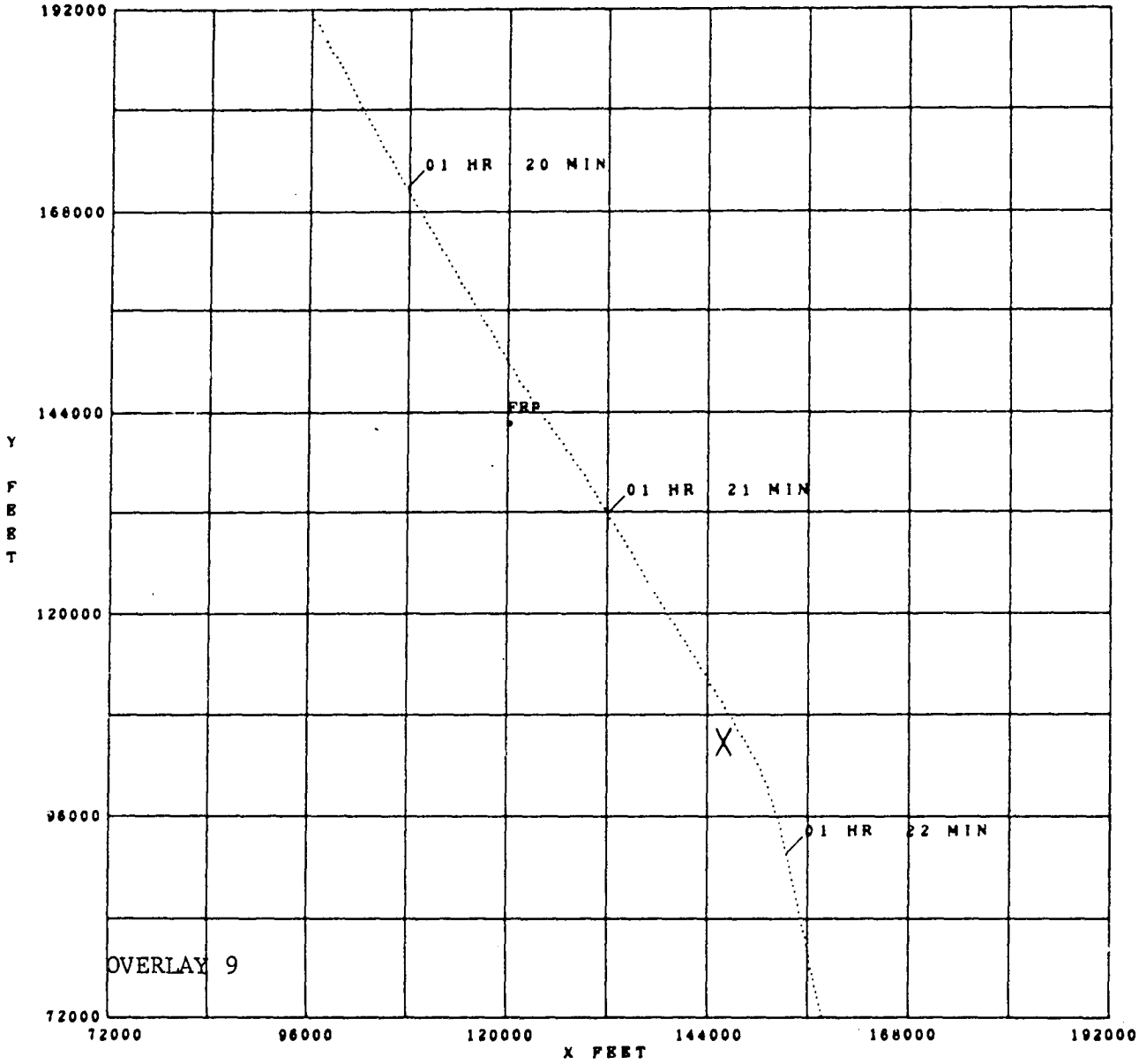
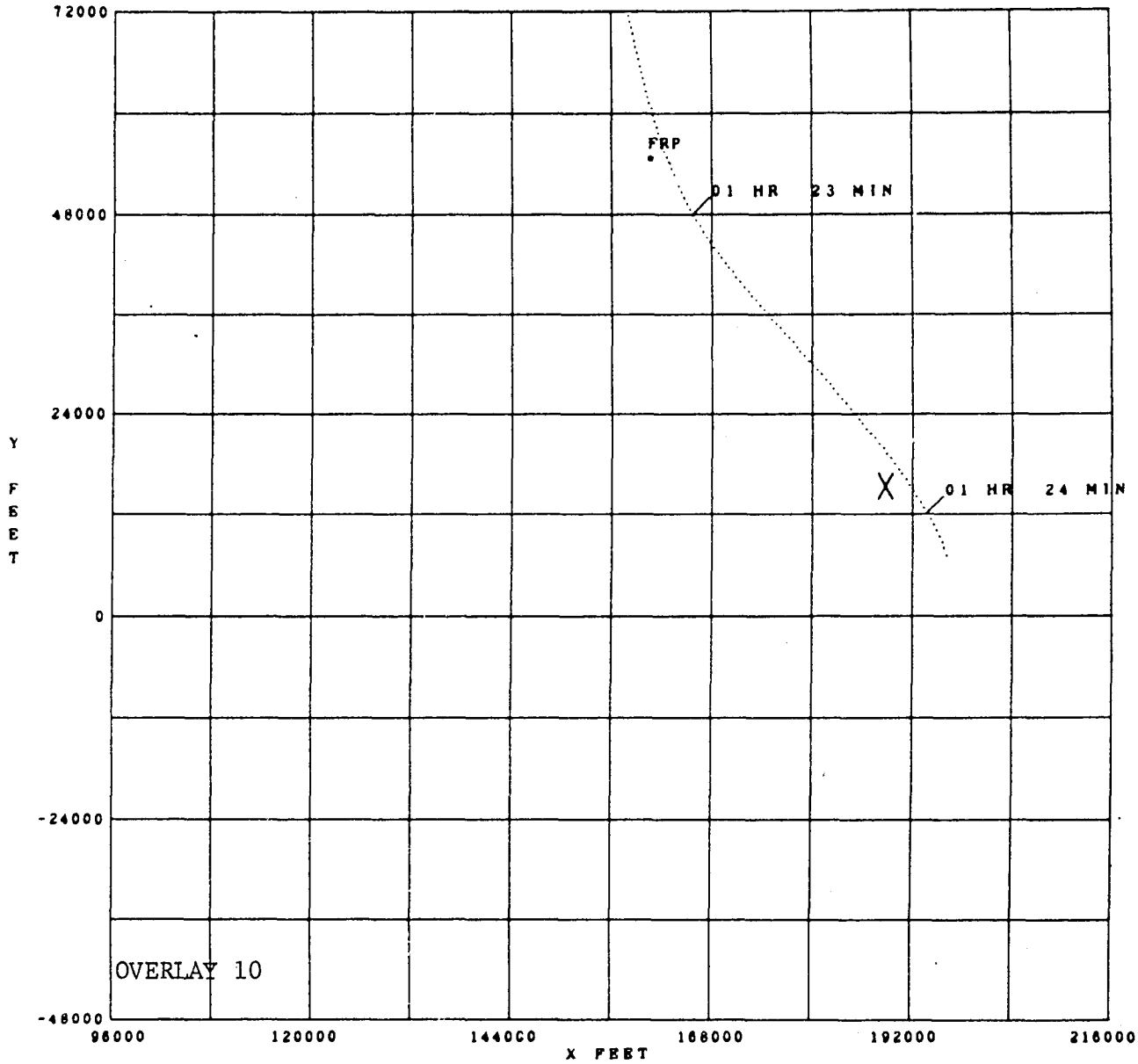


Figure 3-35 (U) Aircraft Position Data (Part 4 of 5)

UNCLASSIFIED



MINIMUM GROUND DISTANCE TO TARGET = 2606 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 532
TARGET EAST 4

04092439
J9139 47

Figure 3-35 (U) Aircraft Position Data (Part 5 of 5)

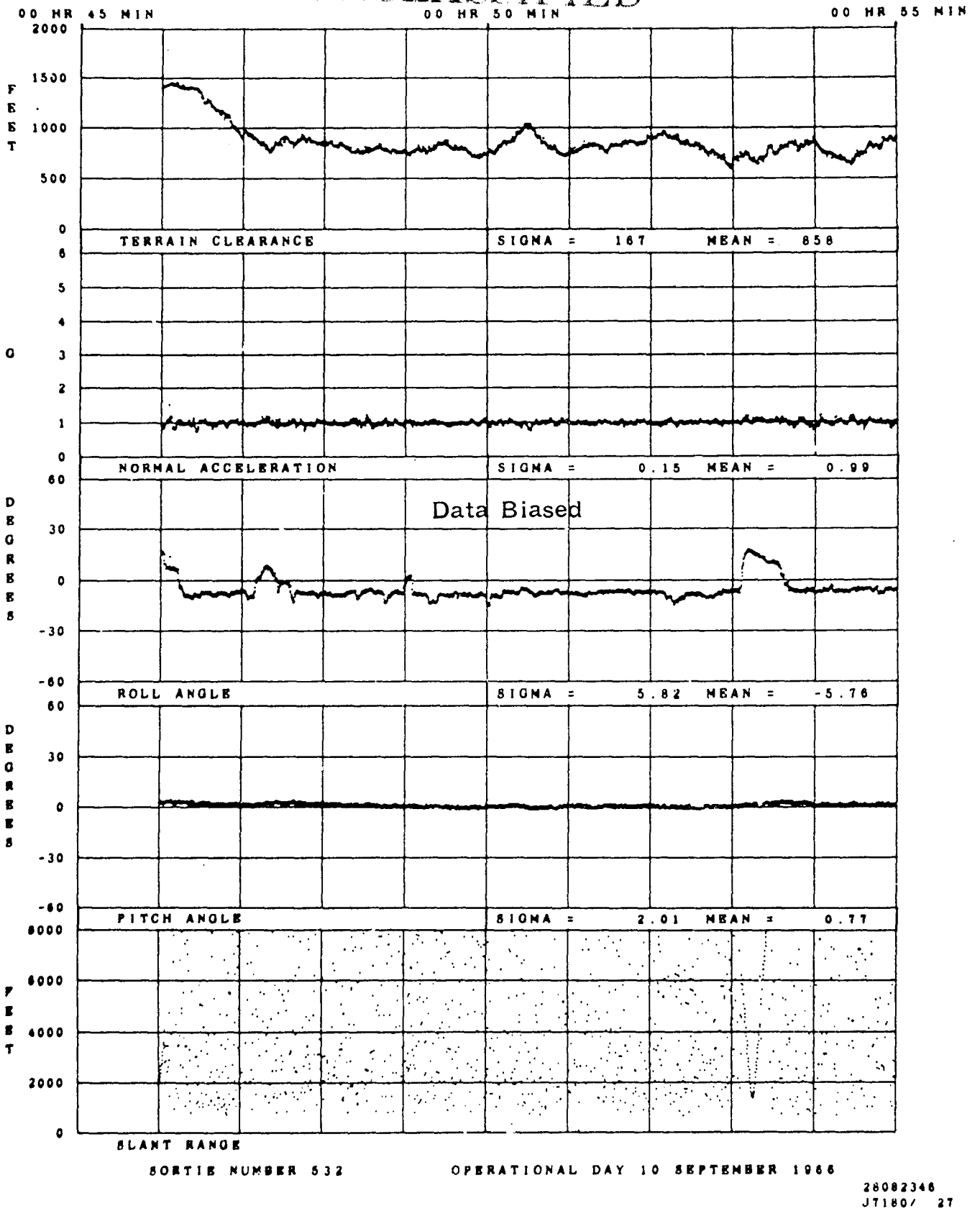


Figure 3-36 (U) Telemetered Data (Part 1 of 4)

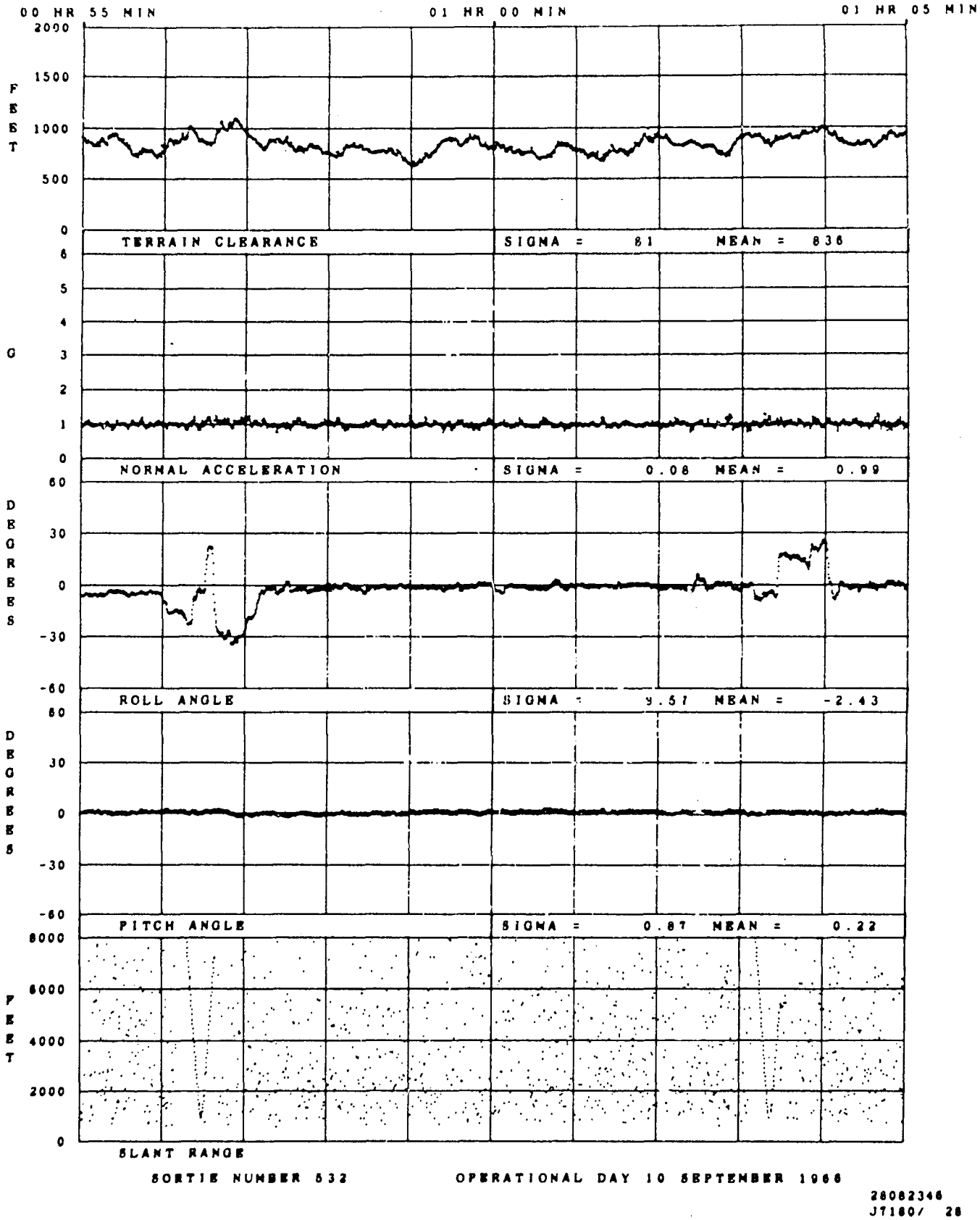


Figure 3-36 (U) Telemetered Data (Part 2 of 4)

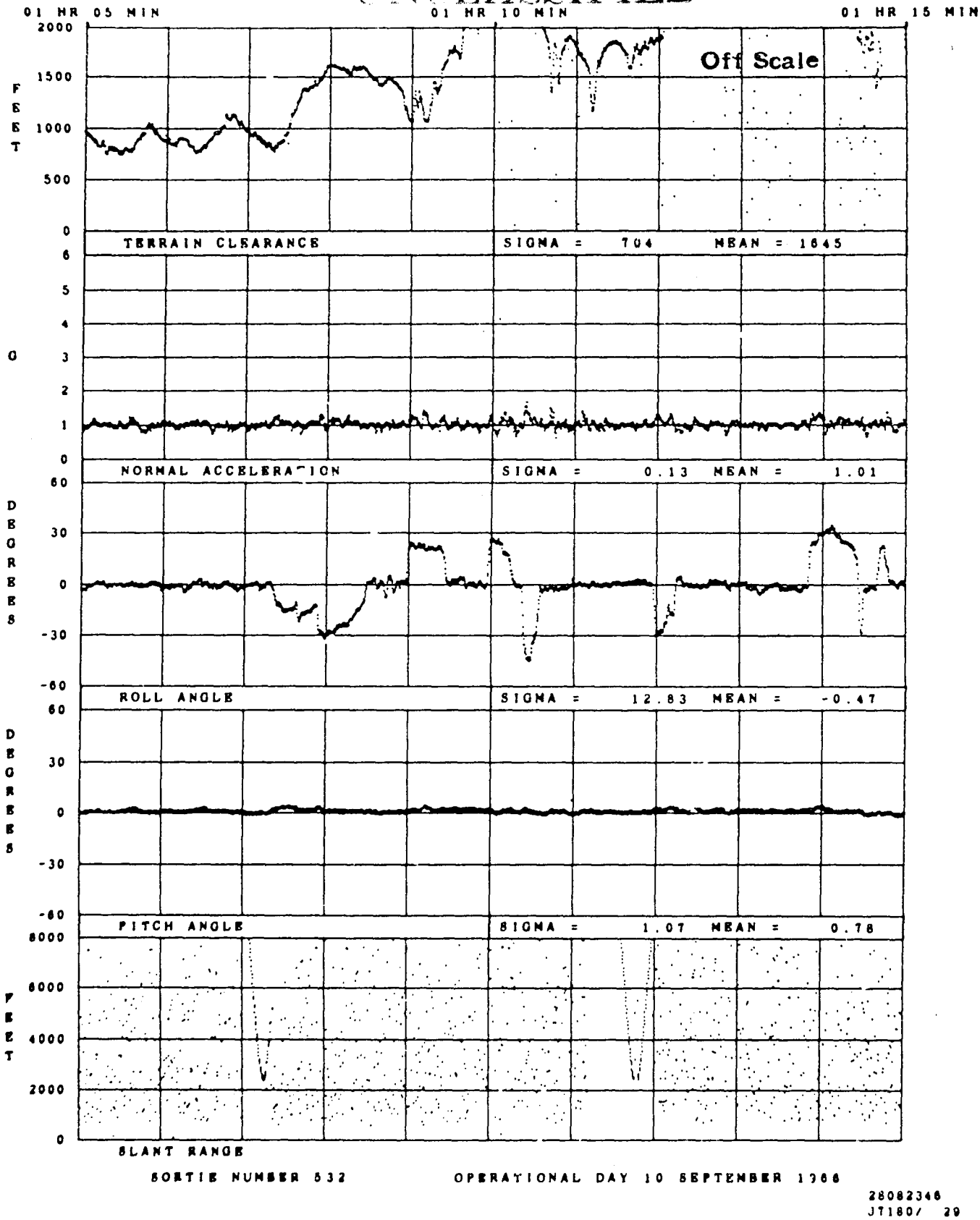


Figure 3-36 (U) Telemetered Data (Part 3 of 4)

UNCLASSIFIED

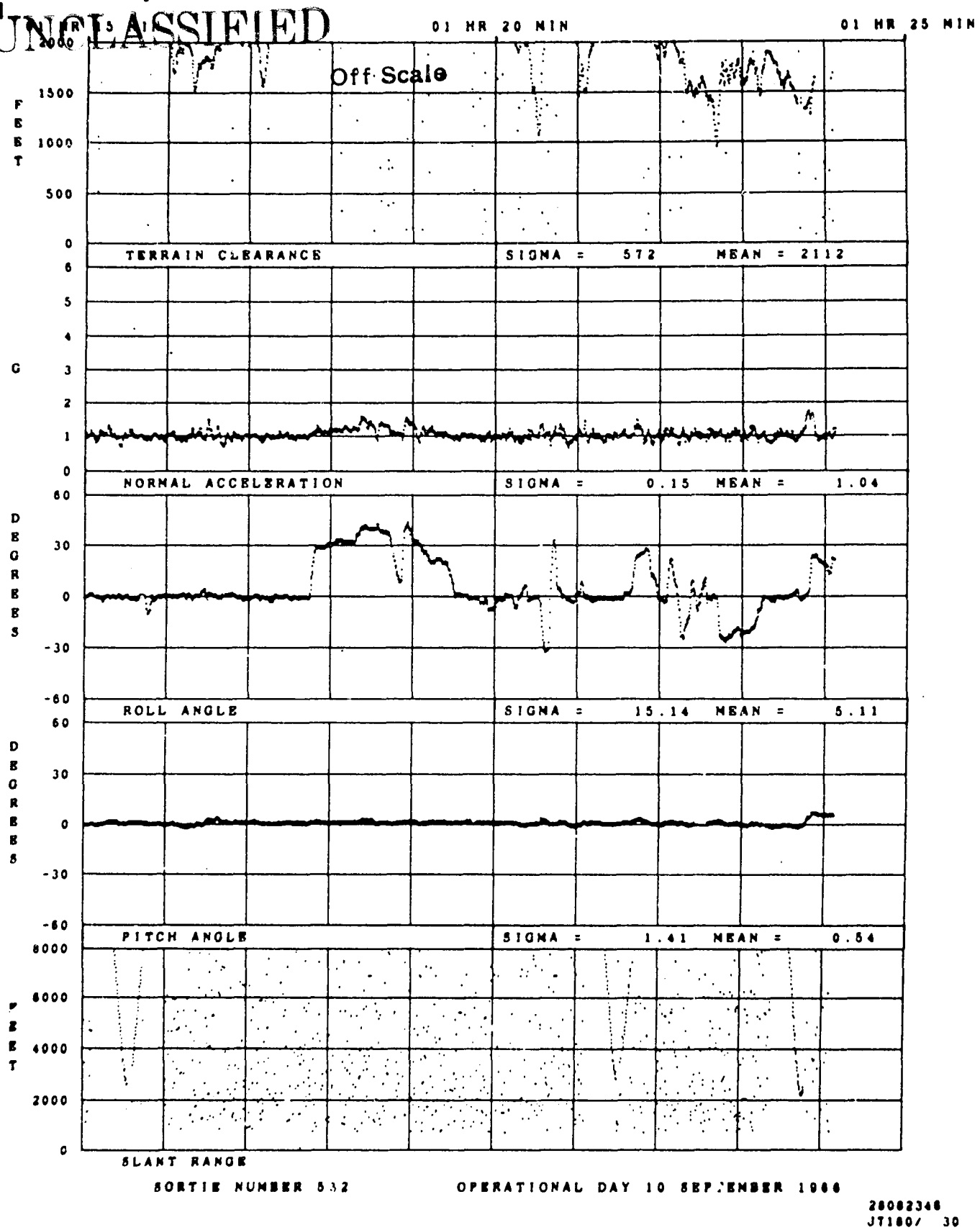
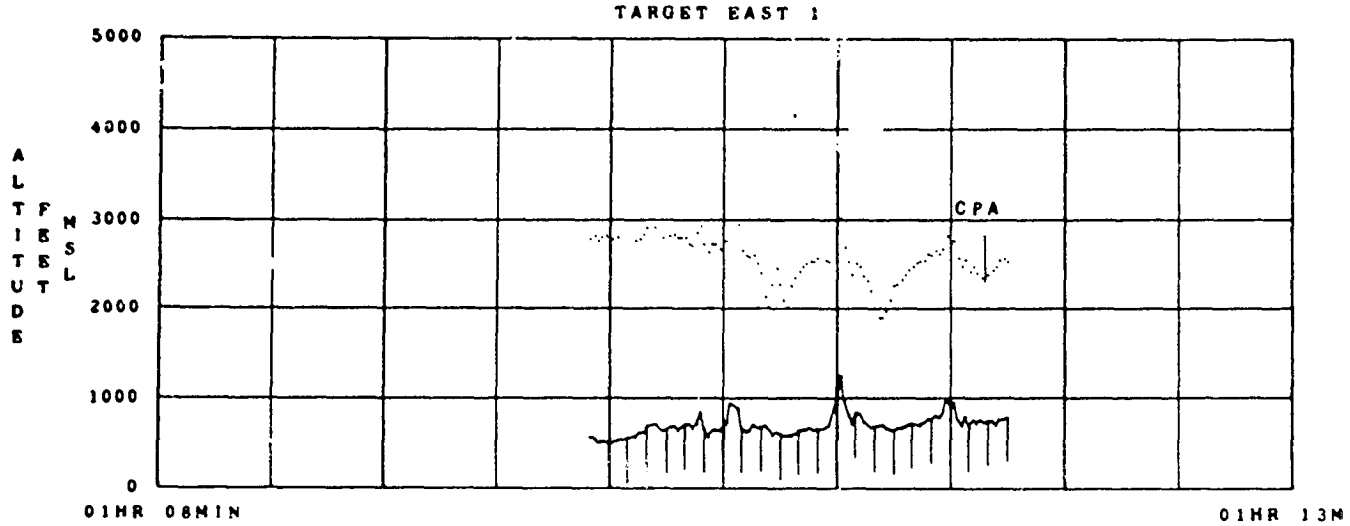
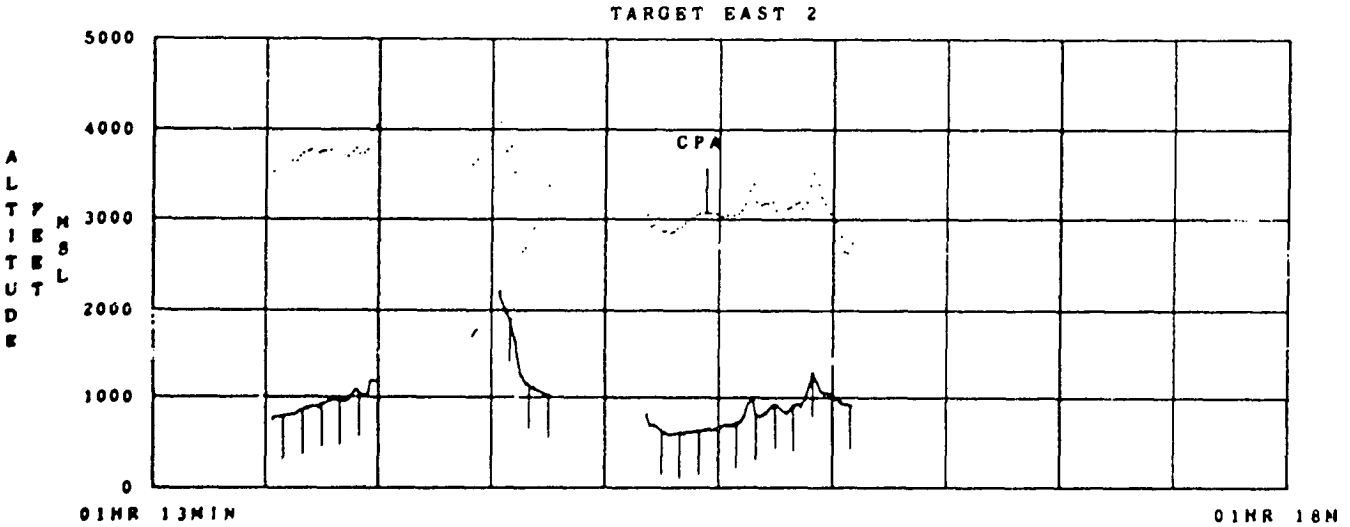


Figure 3-36 (U) Telemetered Data (Part 4 of 4)

UNCLASSIFIED

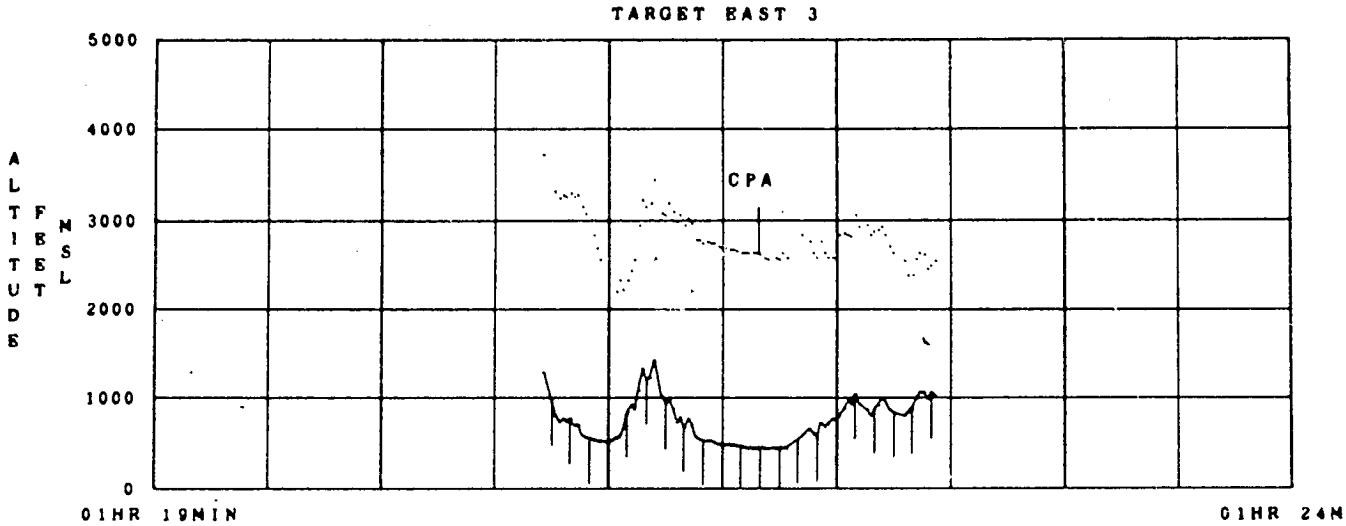


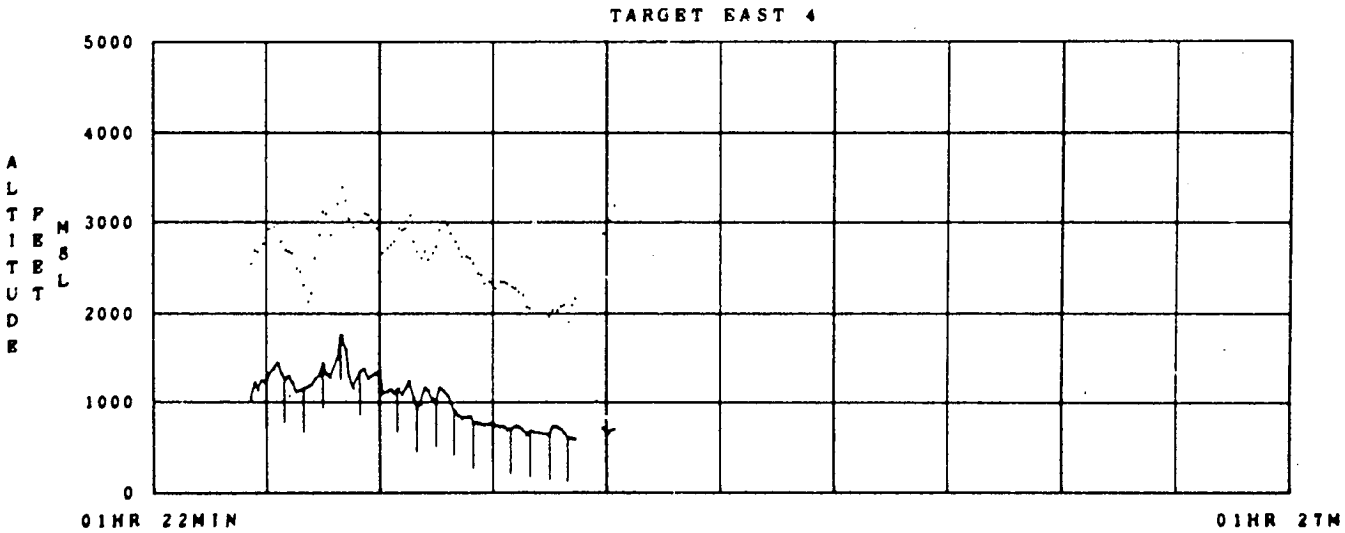


SORTIE NUMBER 532

04092439
J9139

Figure 3-37 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 532

04092439
J9139

Figure 3-37 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

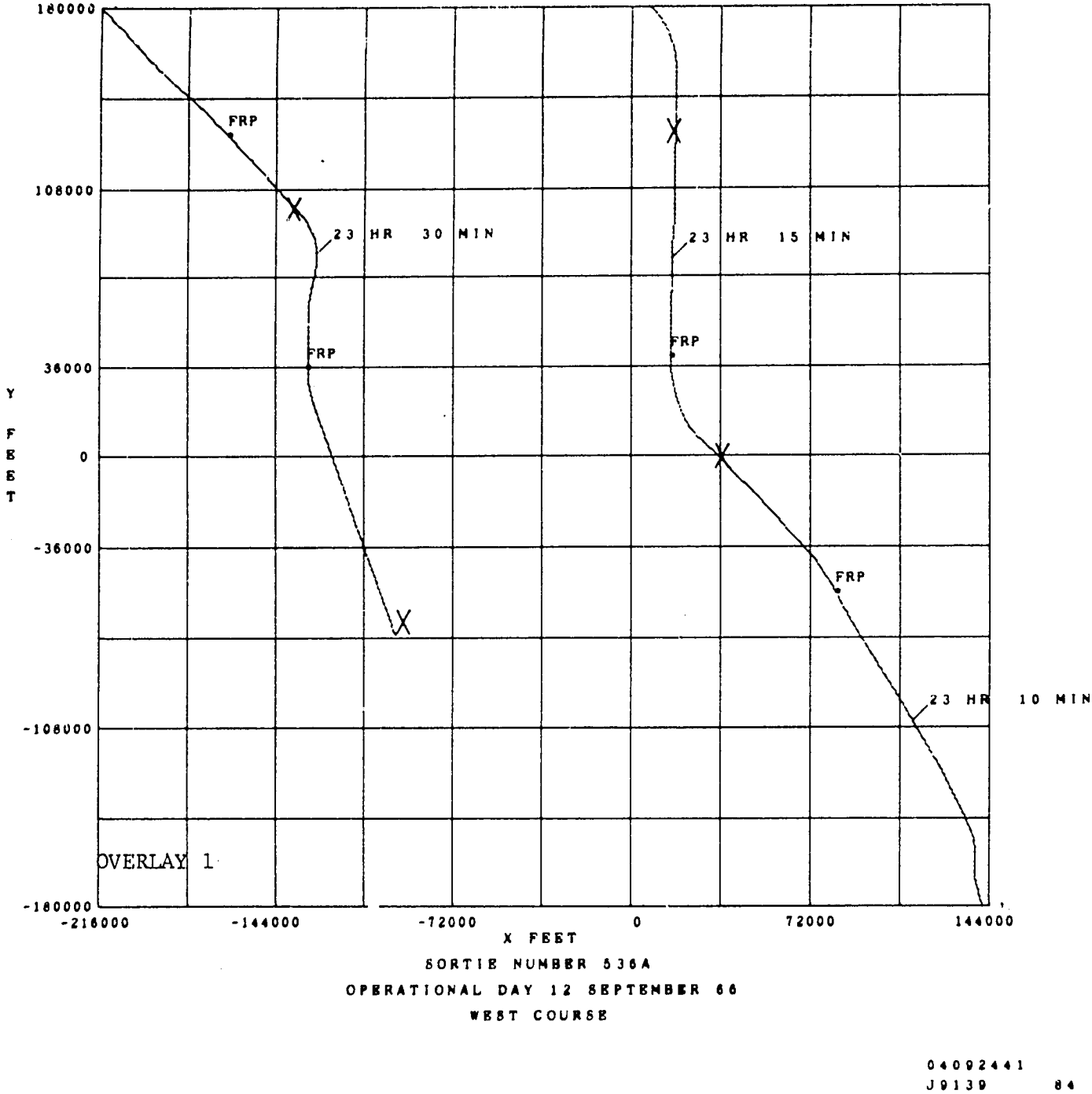
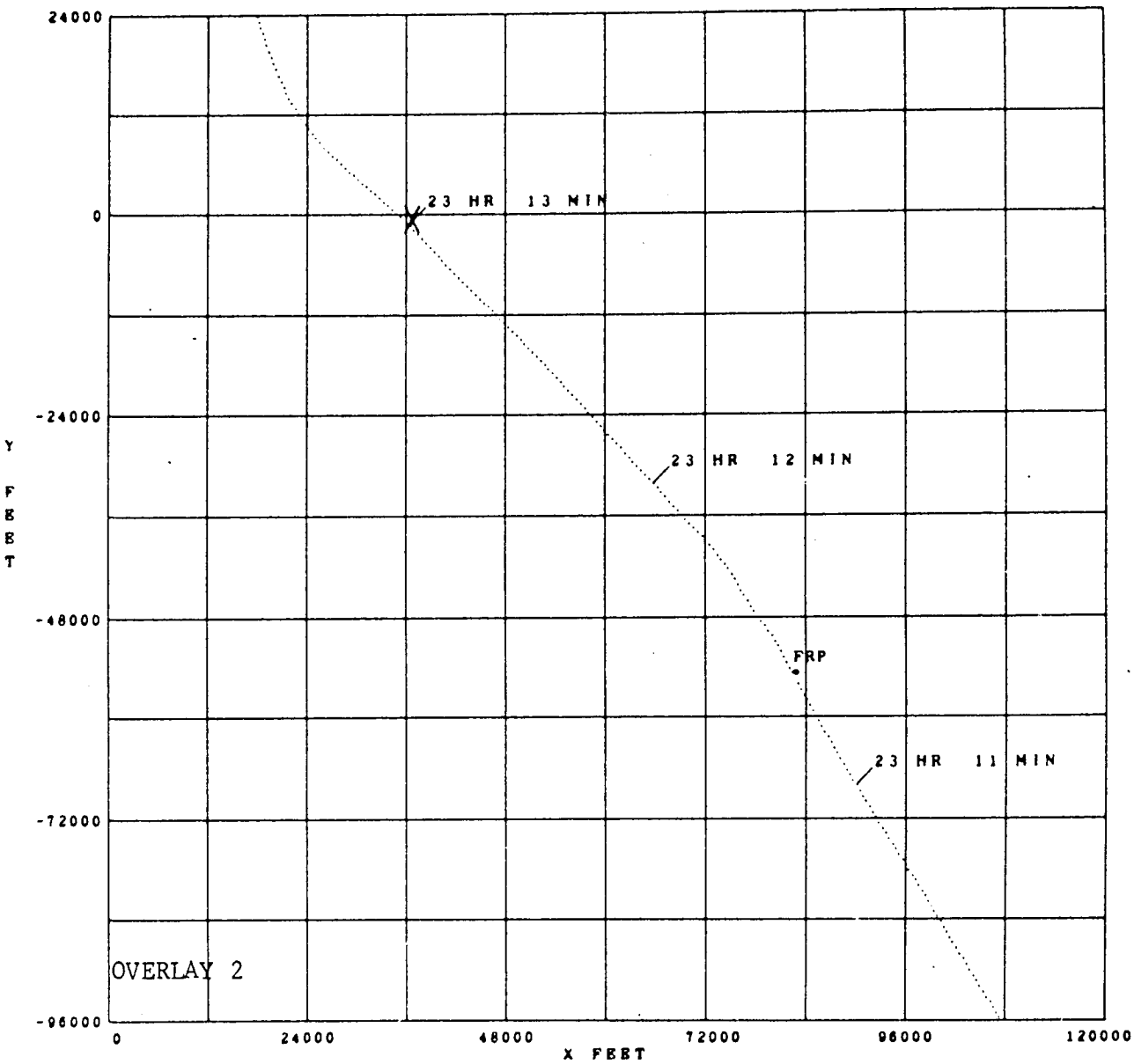


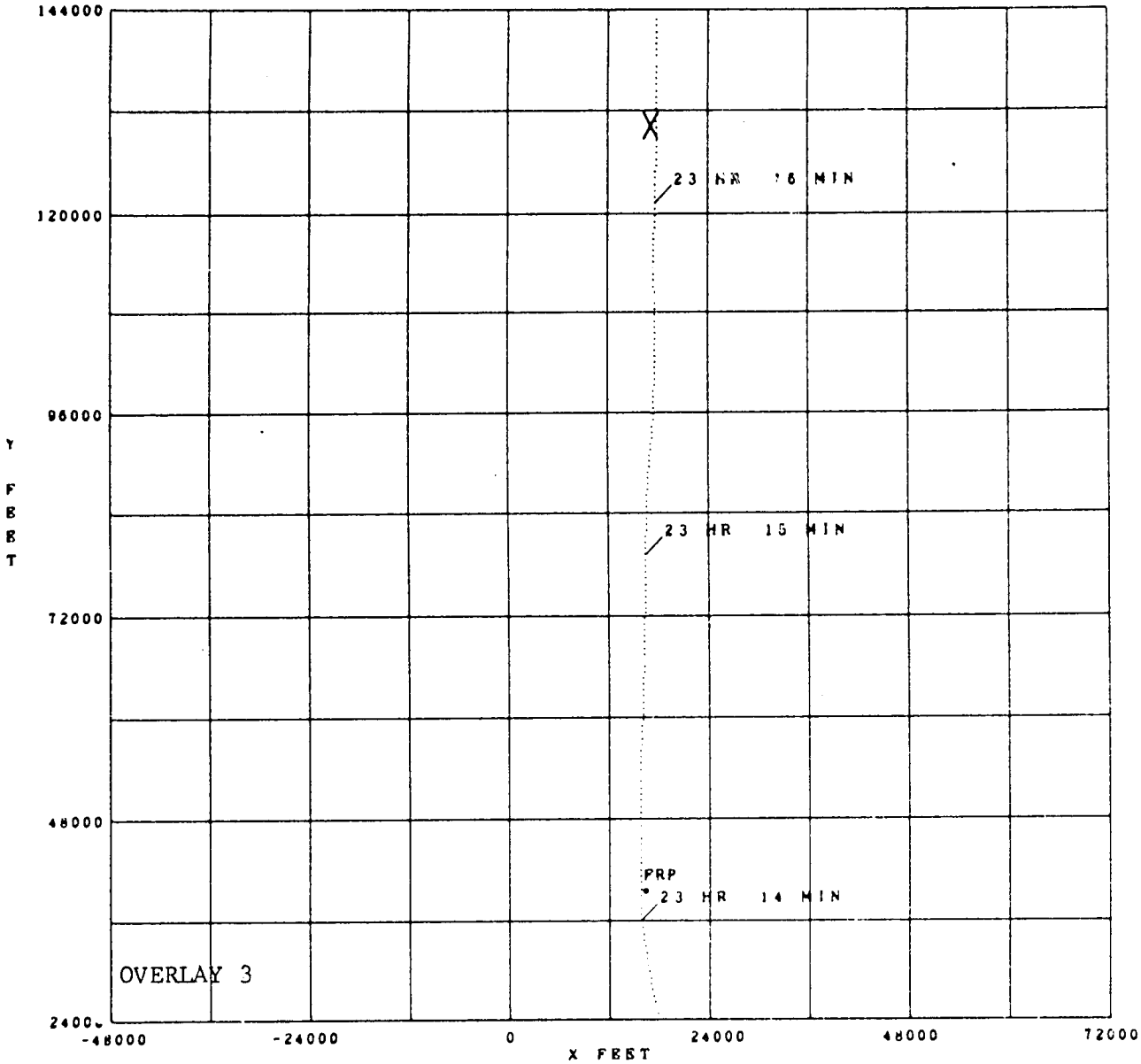
Figure 3-38 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 644 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 536A
TARGET WEST 1

04092442
J9139 85

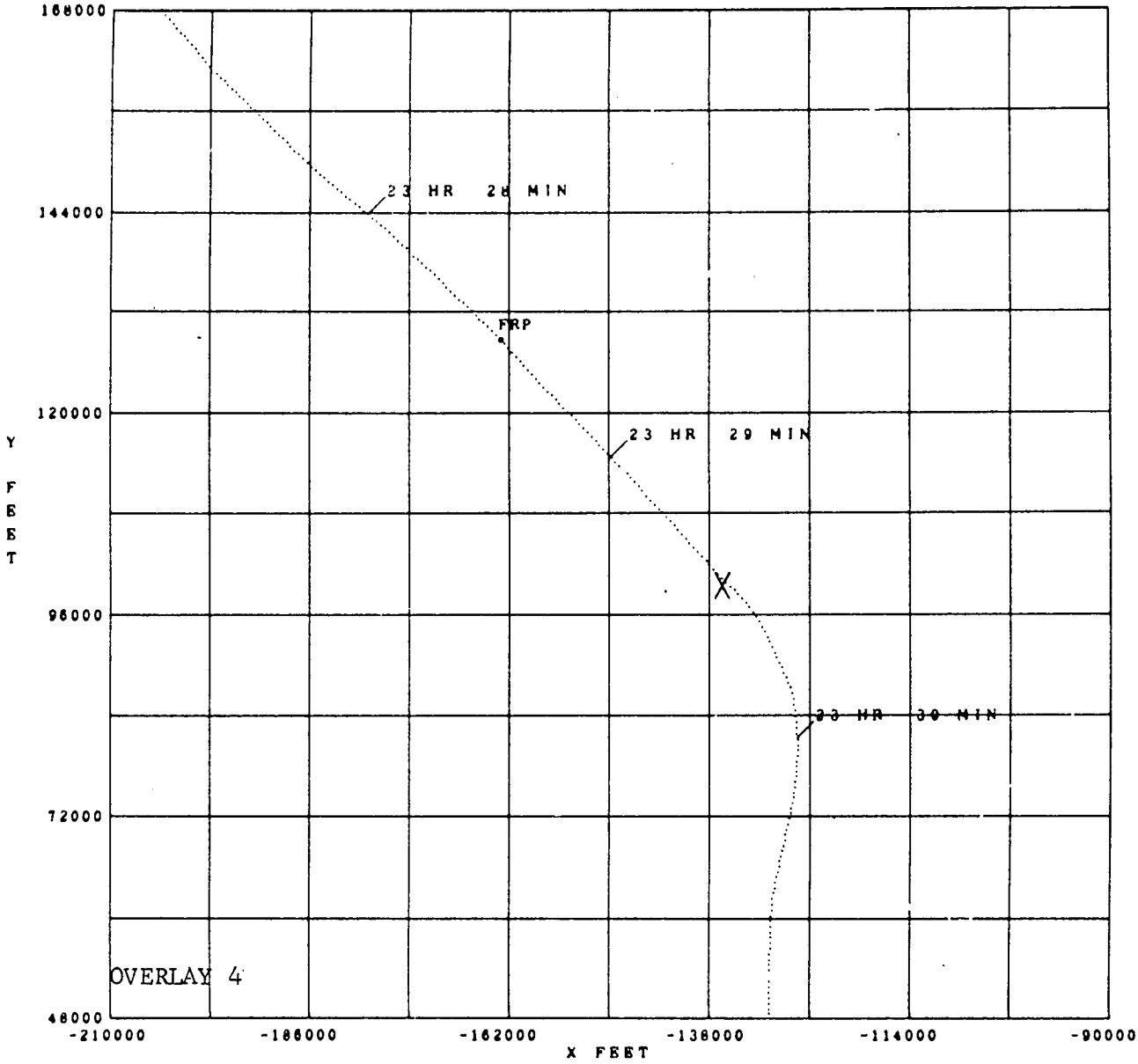
Figure 3-38 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 461 FEET
MINIMUM GROUND DISTANCE QUALIFIER = ONE
SORTIE NUMBER 536A
TARGET WEST 2

04092442
J9139 86

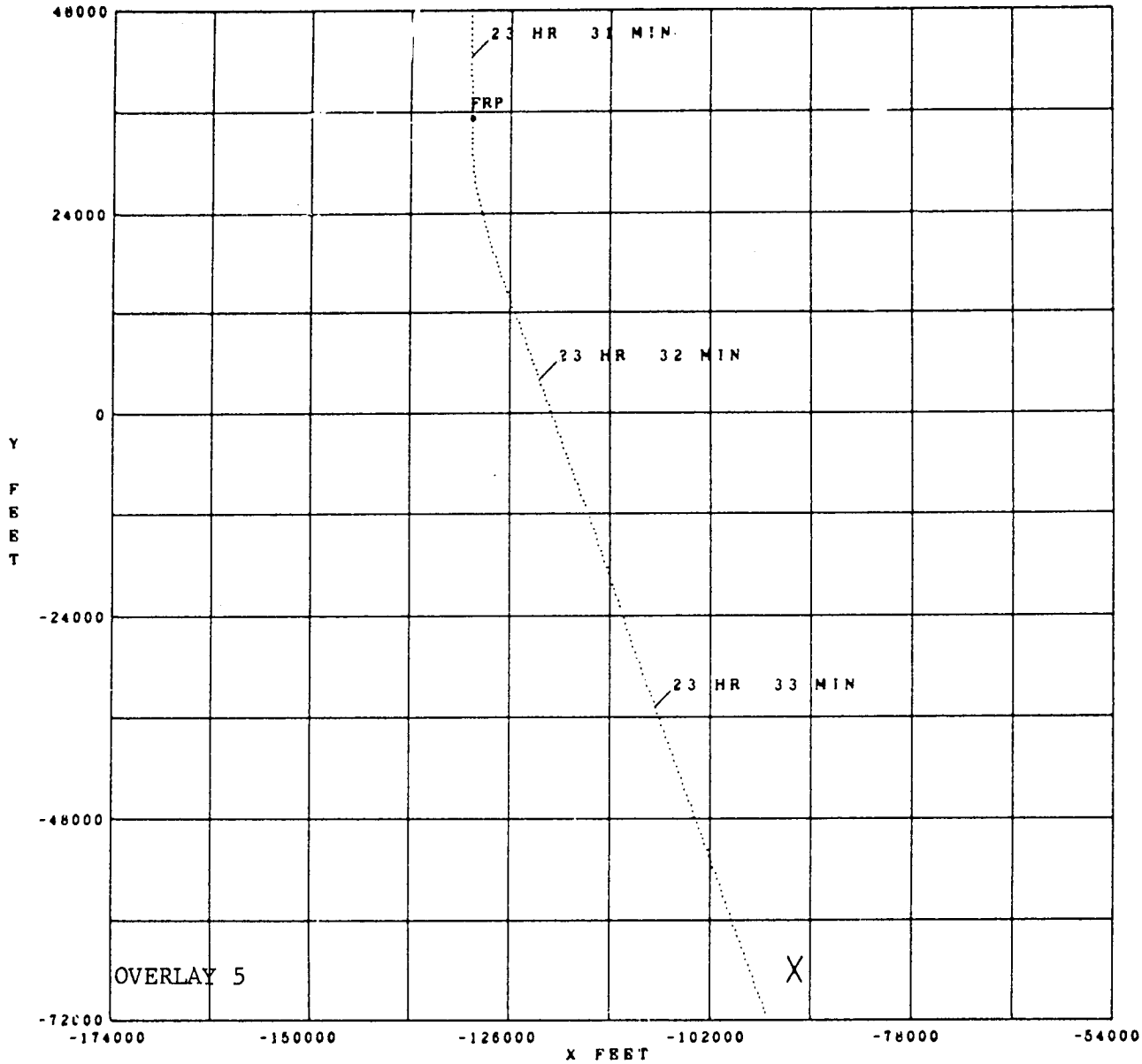
Figure 3-38 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 0 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 536A
TARGET WEST 3

04092442
J9139 87

Figure 3-38 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 5041 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 536A
TARGET WEST 4

04092442
J9139 88

Figure 3-38 (U) Aircraft Position Data (Part 5 of 5)

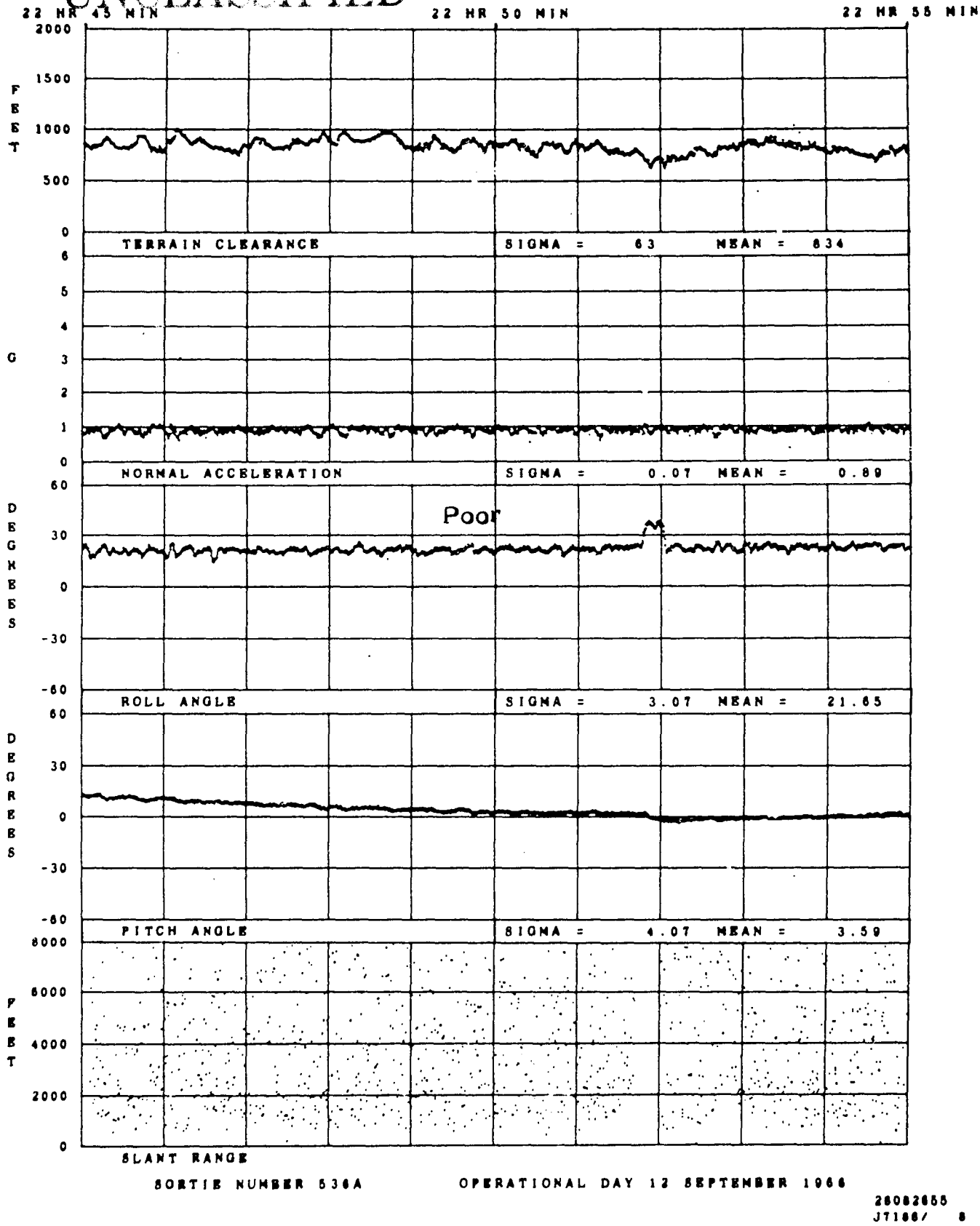


Figure 3-39 (U) Telemetered Data (Part 1 of 5)

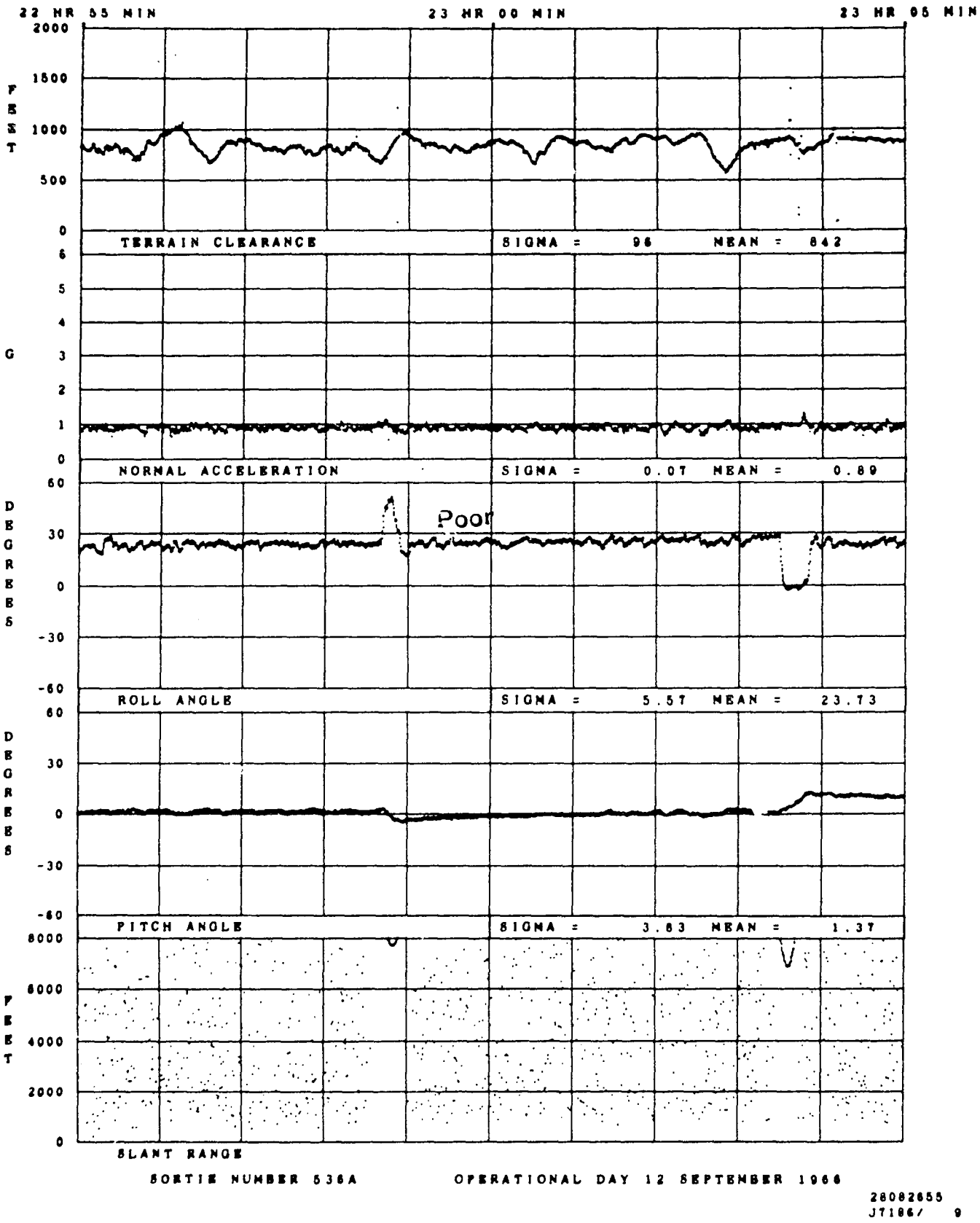


Figure 3-39 (U) Telemetered Data (Part 2 of 5)

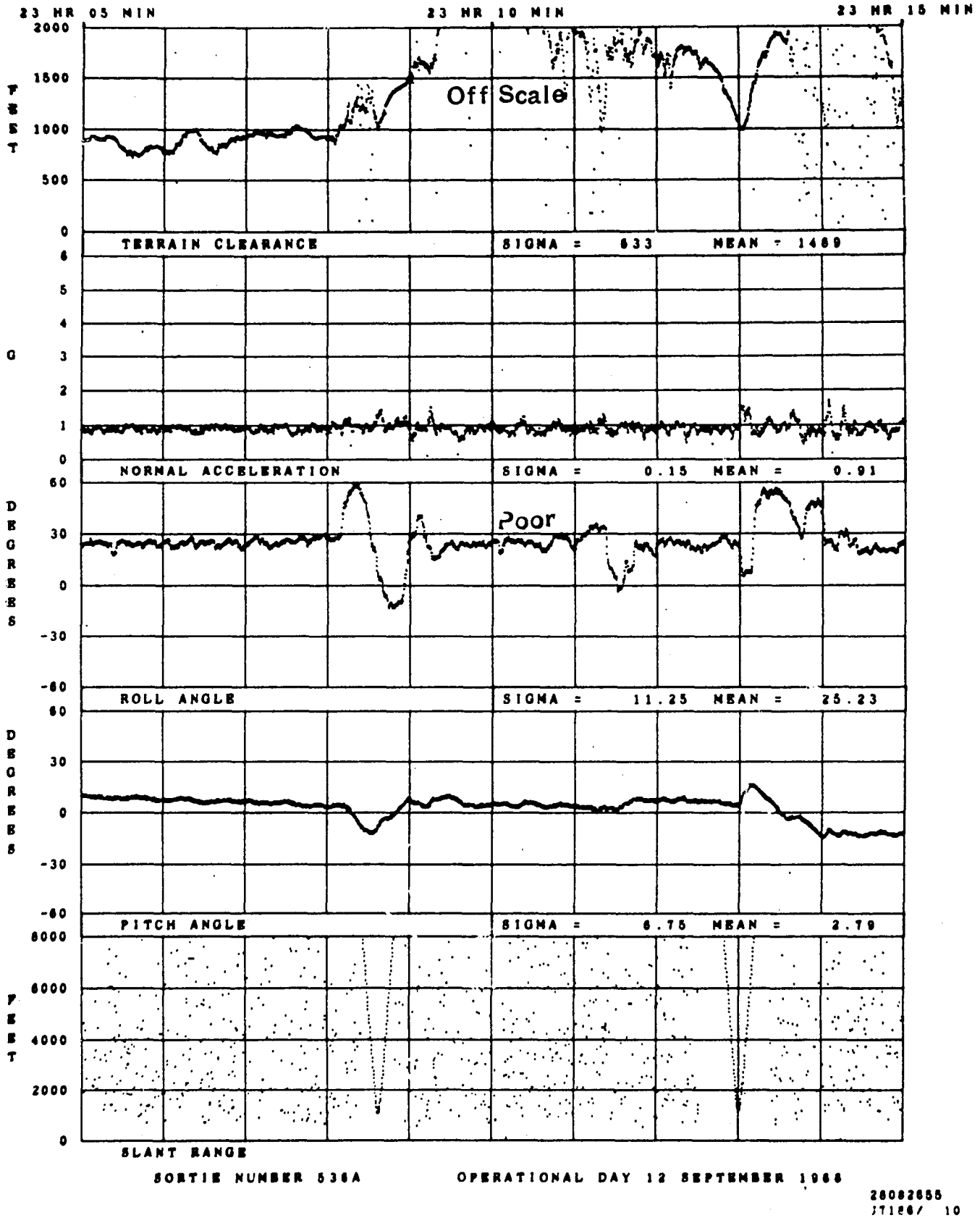


Figure 3-39 (U) Telemetered Data (Part 3 of 5)

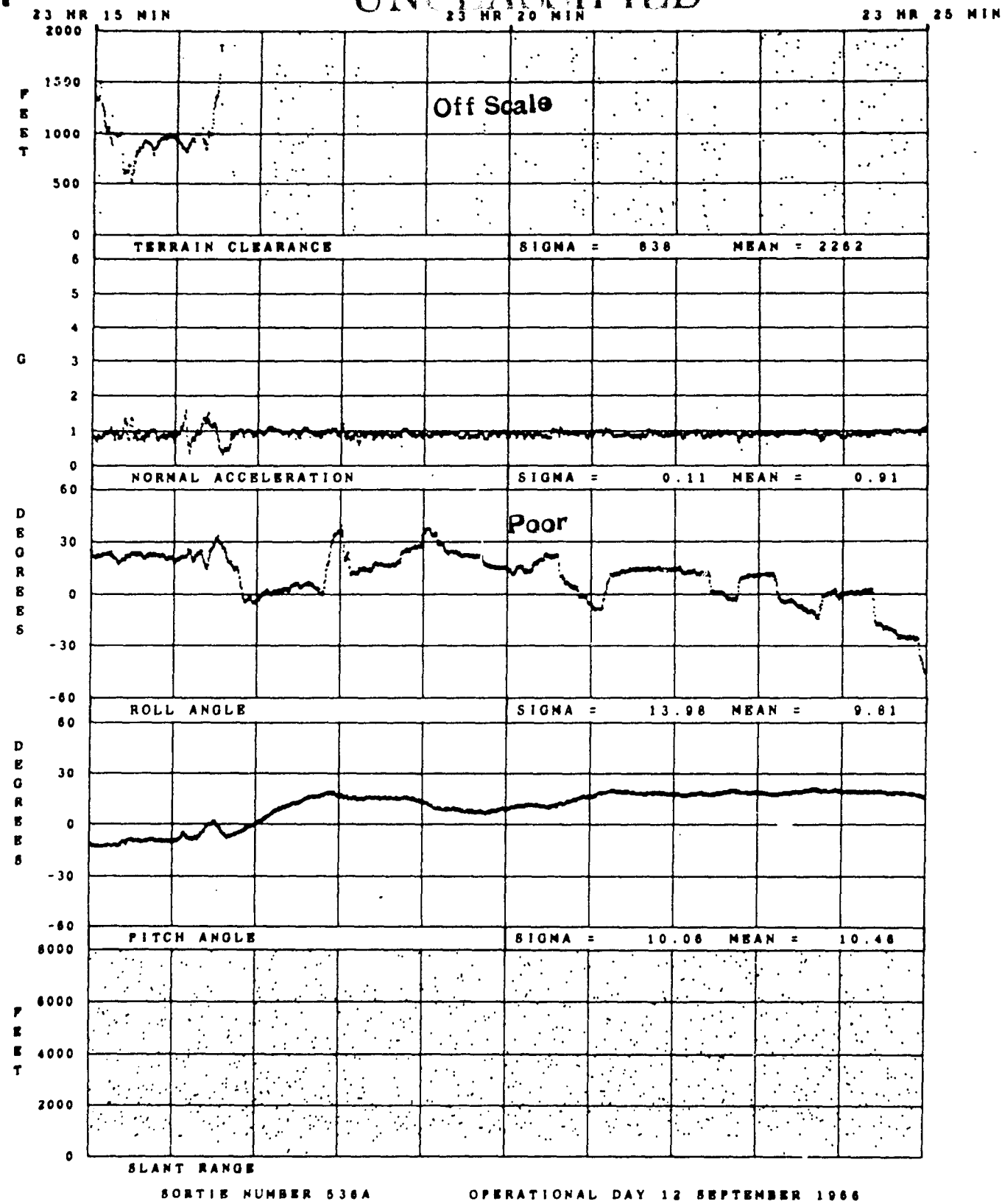


Figure 3-39 (U) Telemetered Data (Part 4 of 5)

UNCLASSIFIED

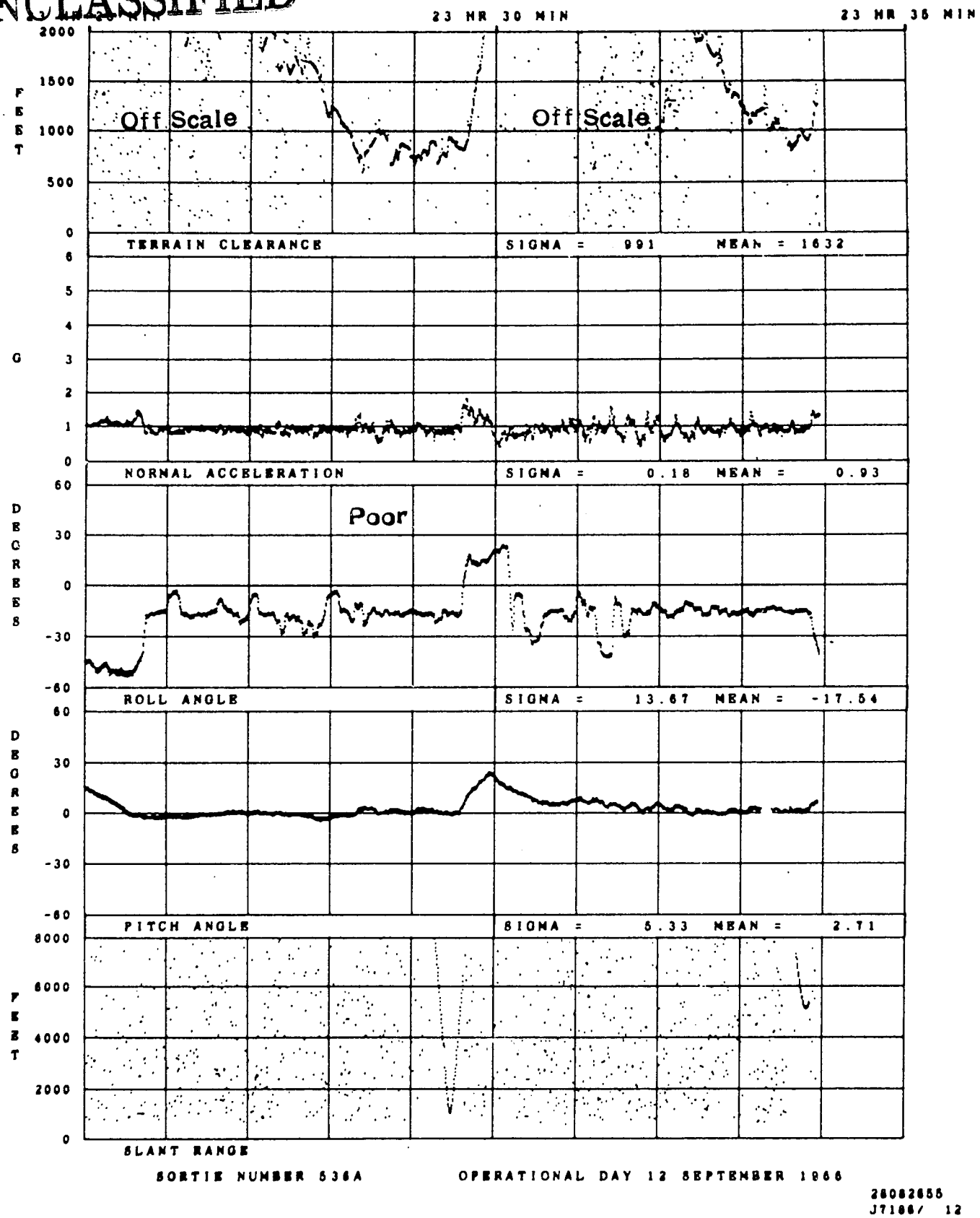
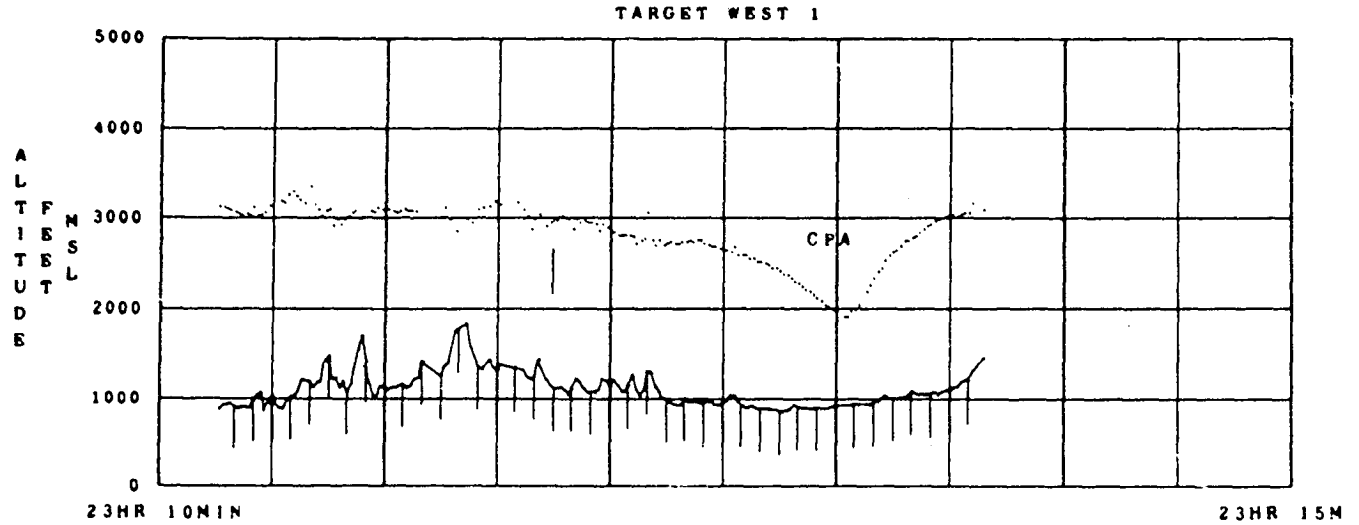
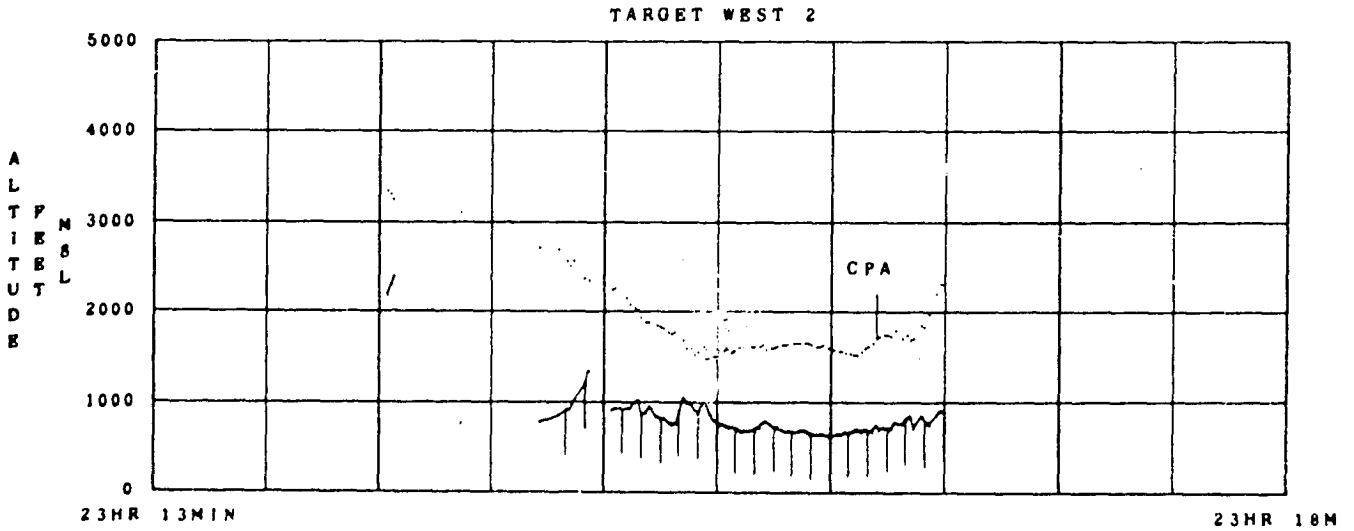


Figure 3-39 (U) Telemetered Data (Part 5 of 5)

UNCLASSIFIED

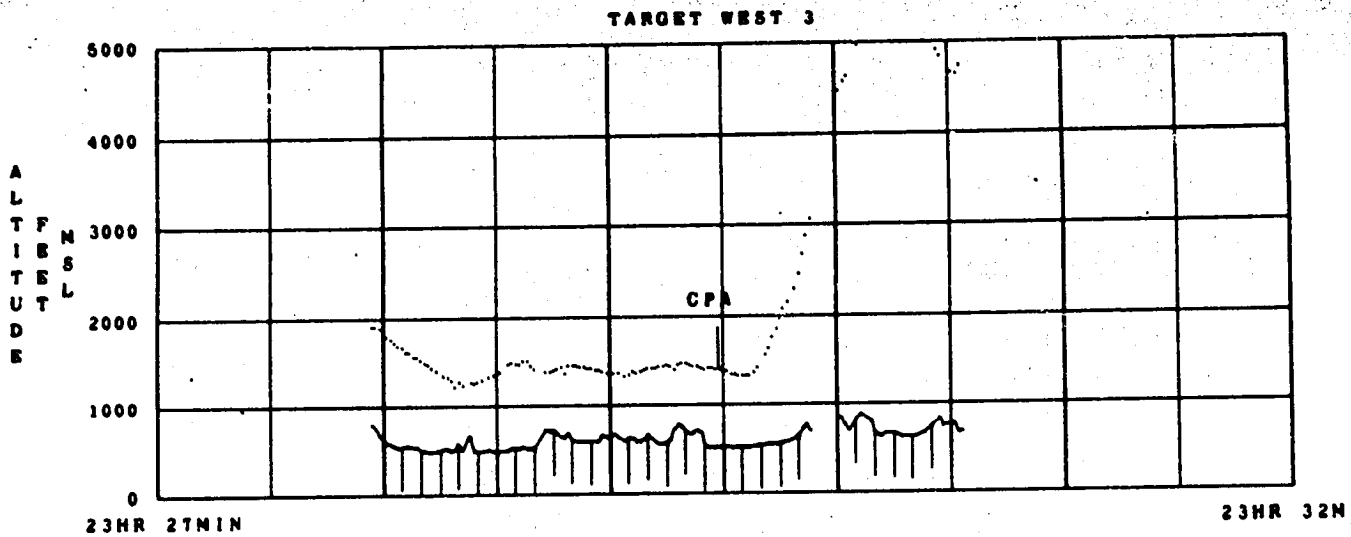


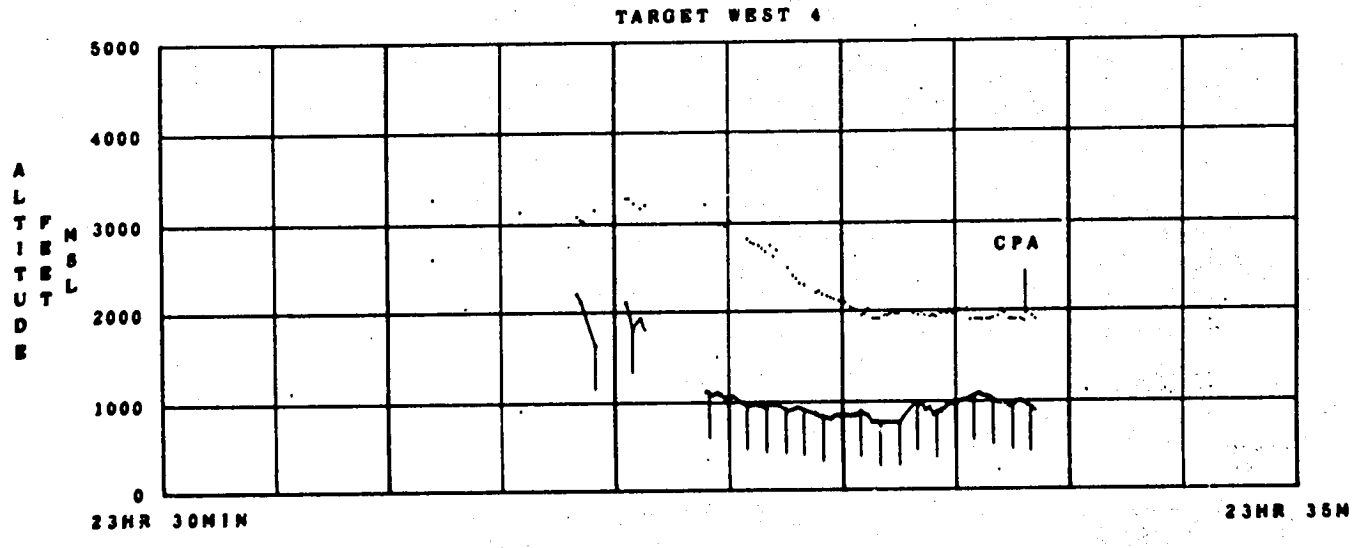


SORTIE NUMBER 536A

04092442
J9139

Figure 3-40 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

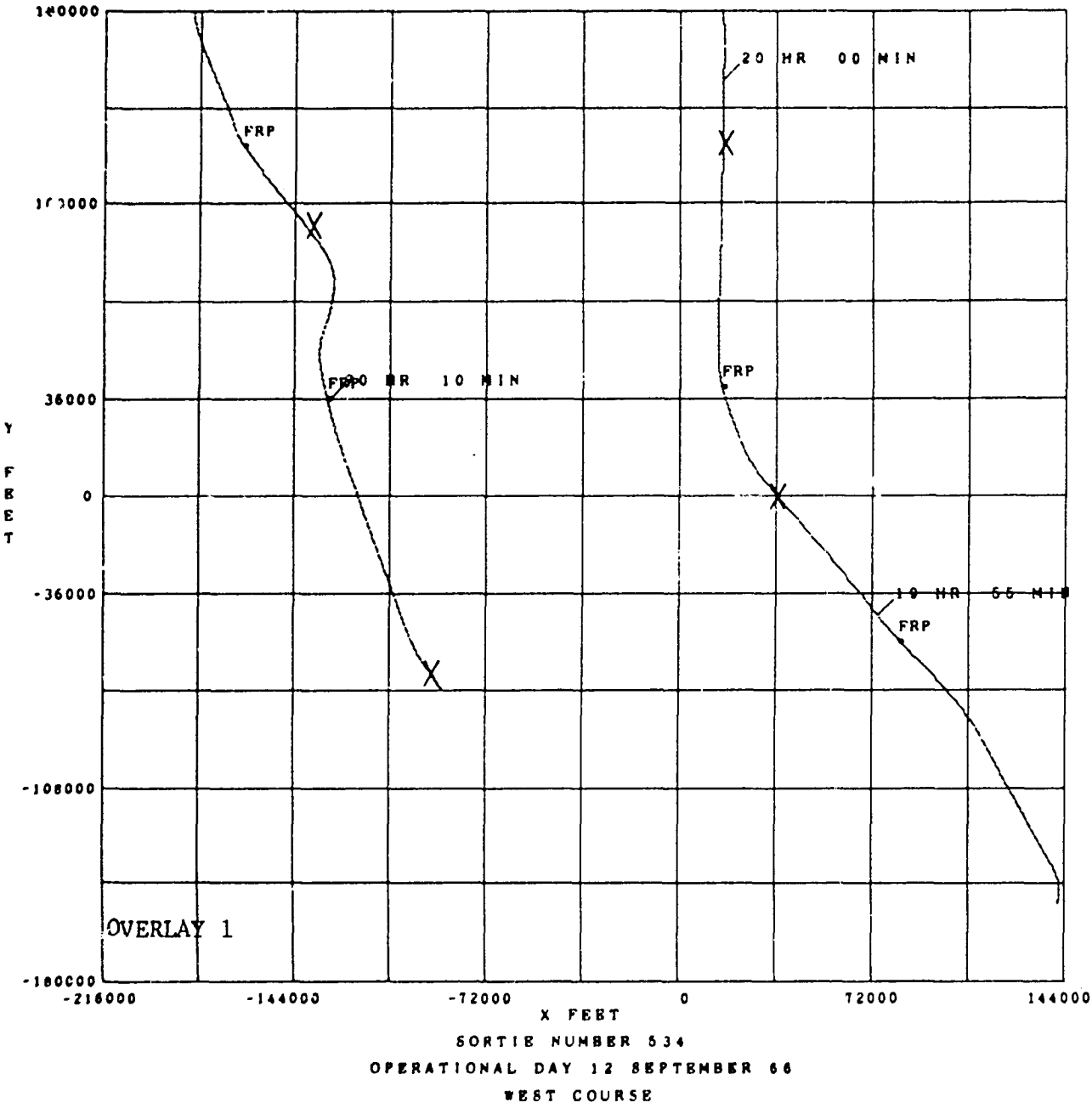




SORTIE NUMBER 536A

04092442
J9139

Figure 3-40 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



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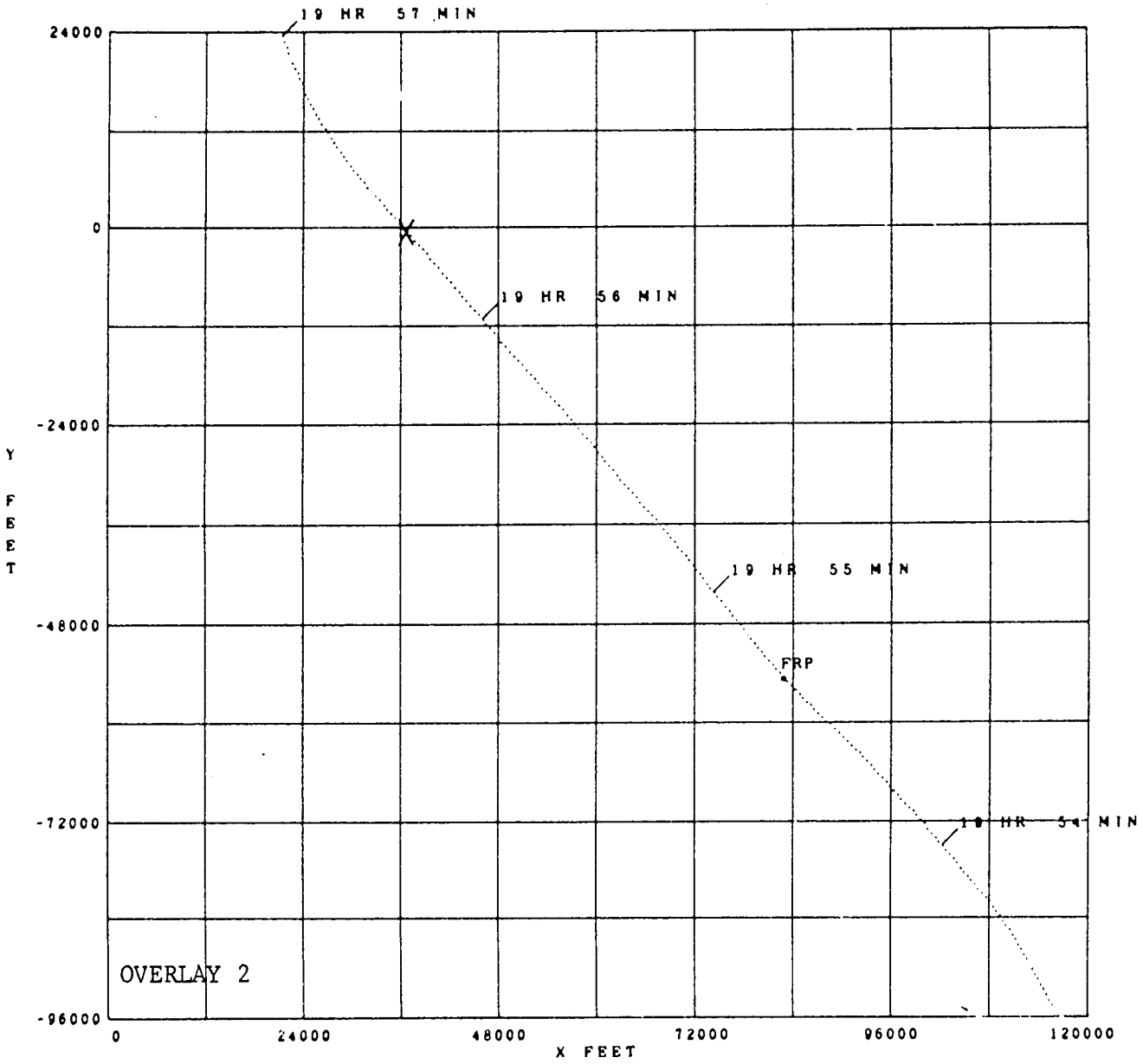
J9139 100

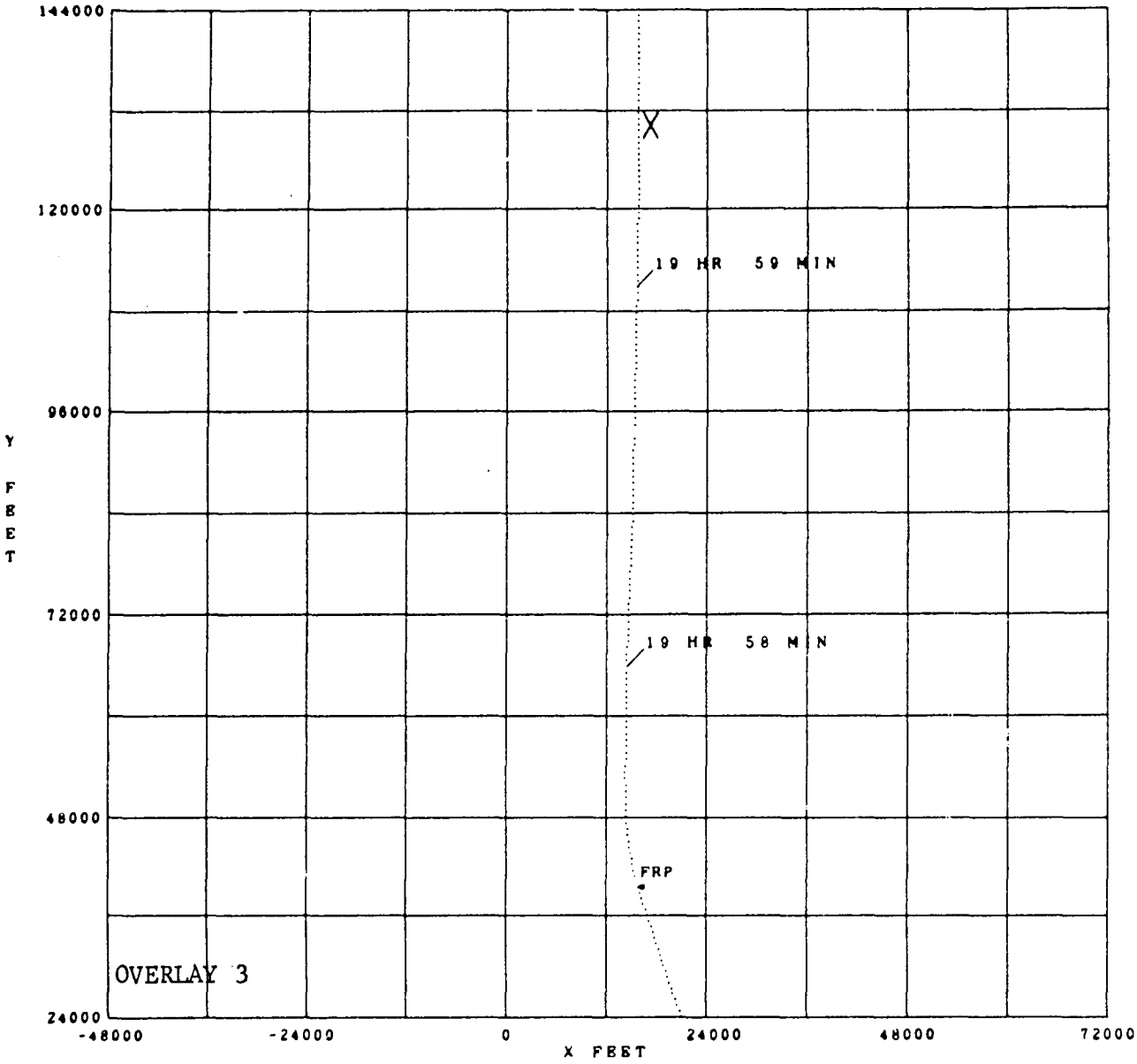
Figure 3-41 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 164 FEET
MINIMUM GROUND DISTANCE QUALIFIER = ONE
SORTIE NUMBER 534
TARGET WEST 1

04092443
J9139 101

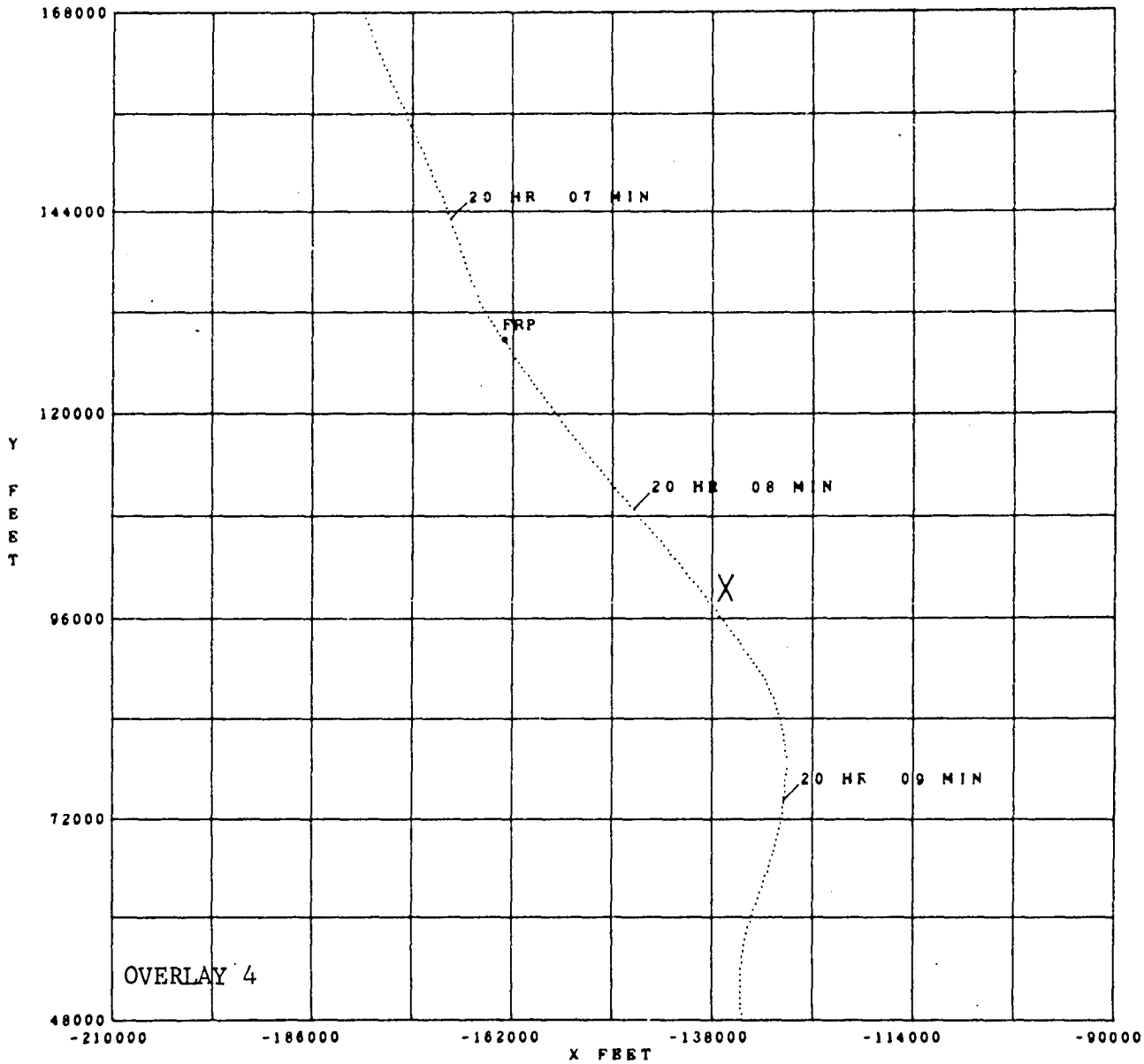
Figure 3-41 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1535 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 534
TARGET WEST 2

04092443
J9139 102

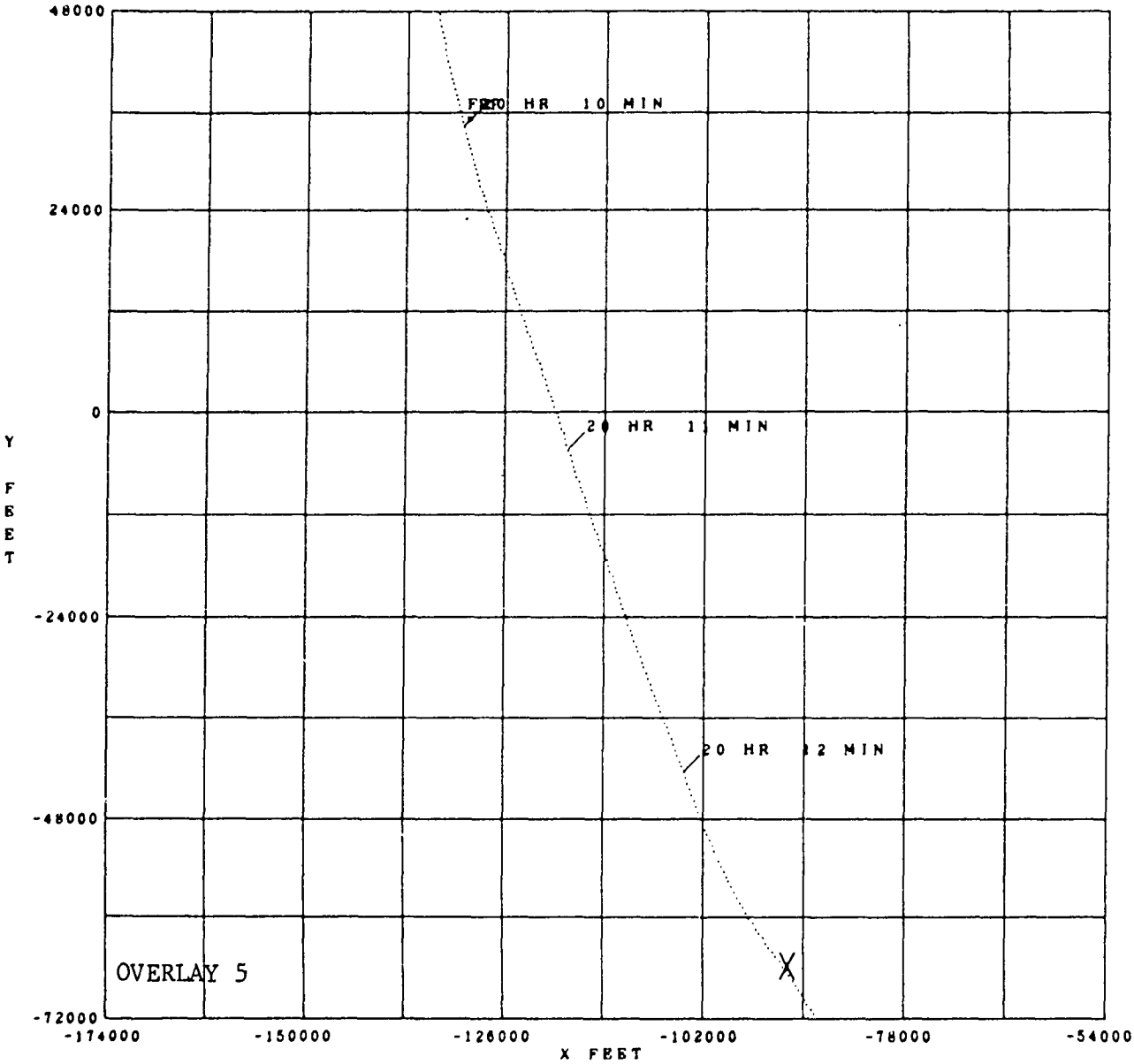
Figure 3-41 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2500 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 534
TARGET WEST 3

04092443
J9139 103

Figure 3-41 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 483 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 534
TARGET WEST 4

04092443
J9139 104

Figure 3-41 (U) Aircraft Position Data (Part 5 of 5)

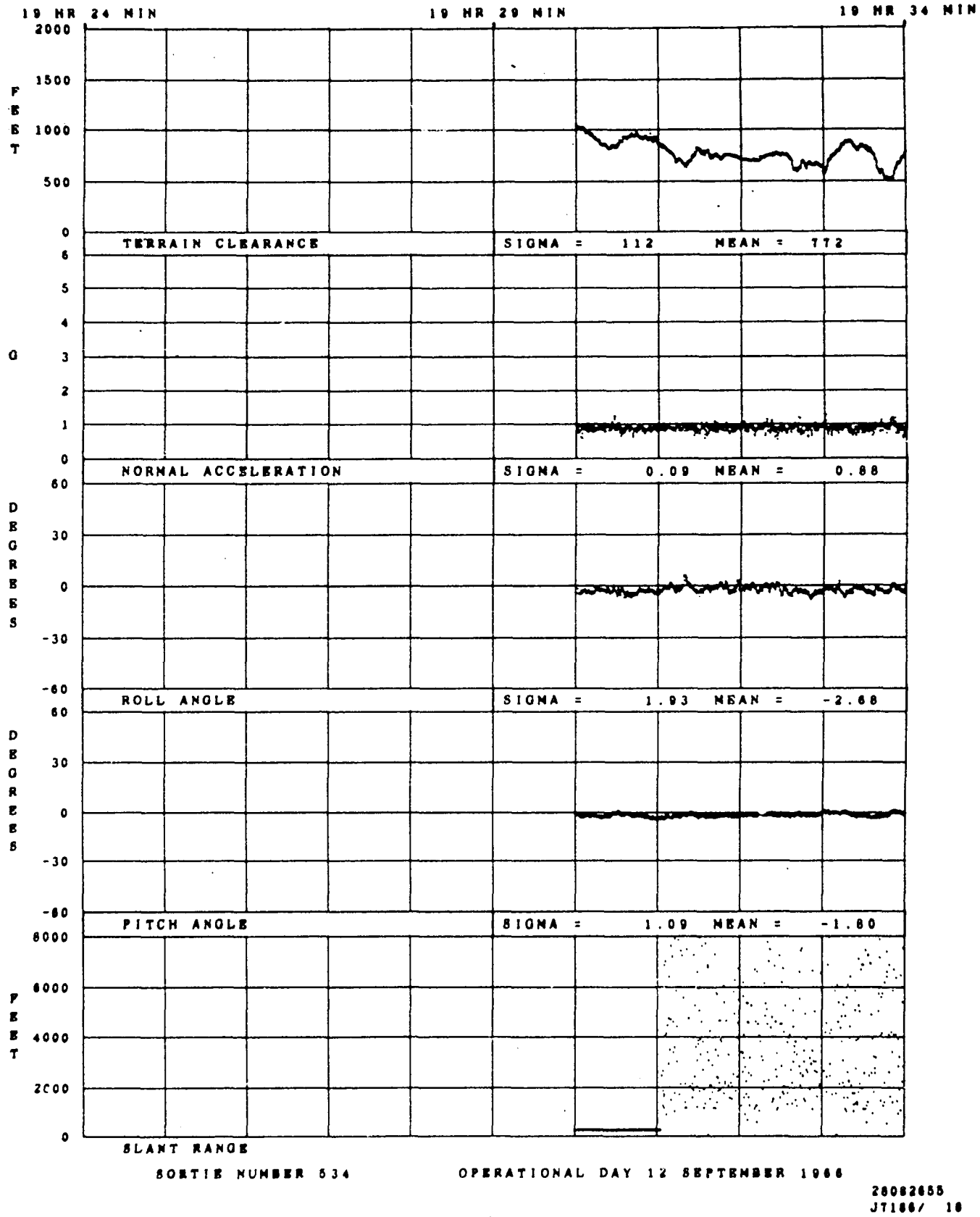


Figure 3-42 (U) Telemetered Data (Part 1 of 5)

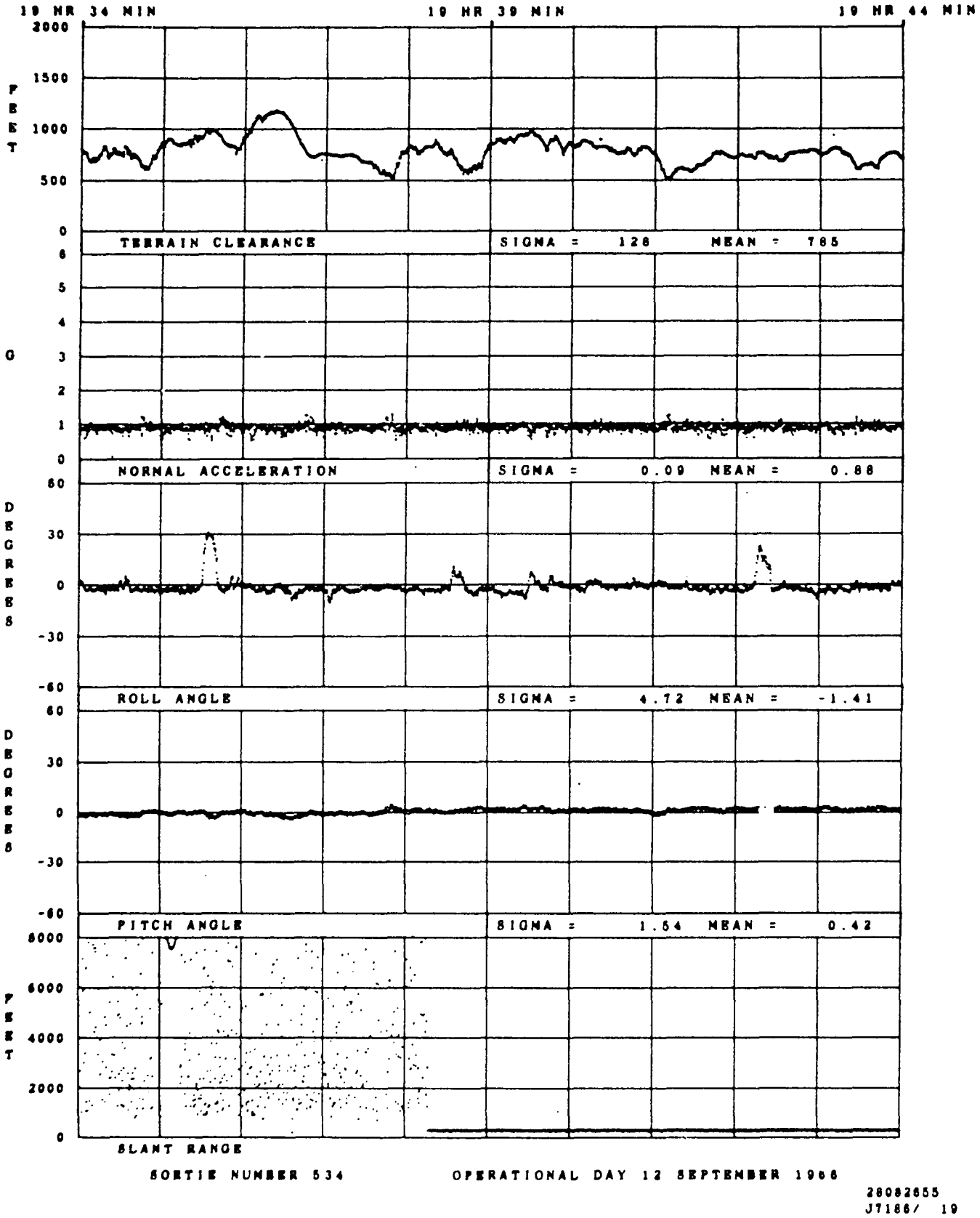


Figure 3-42 (U) Telemetered Data (Part 2 of 5)

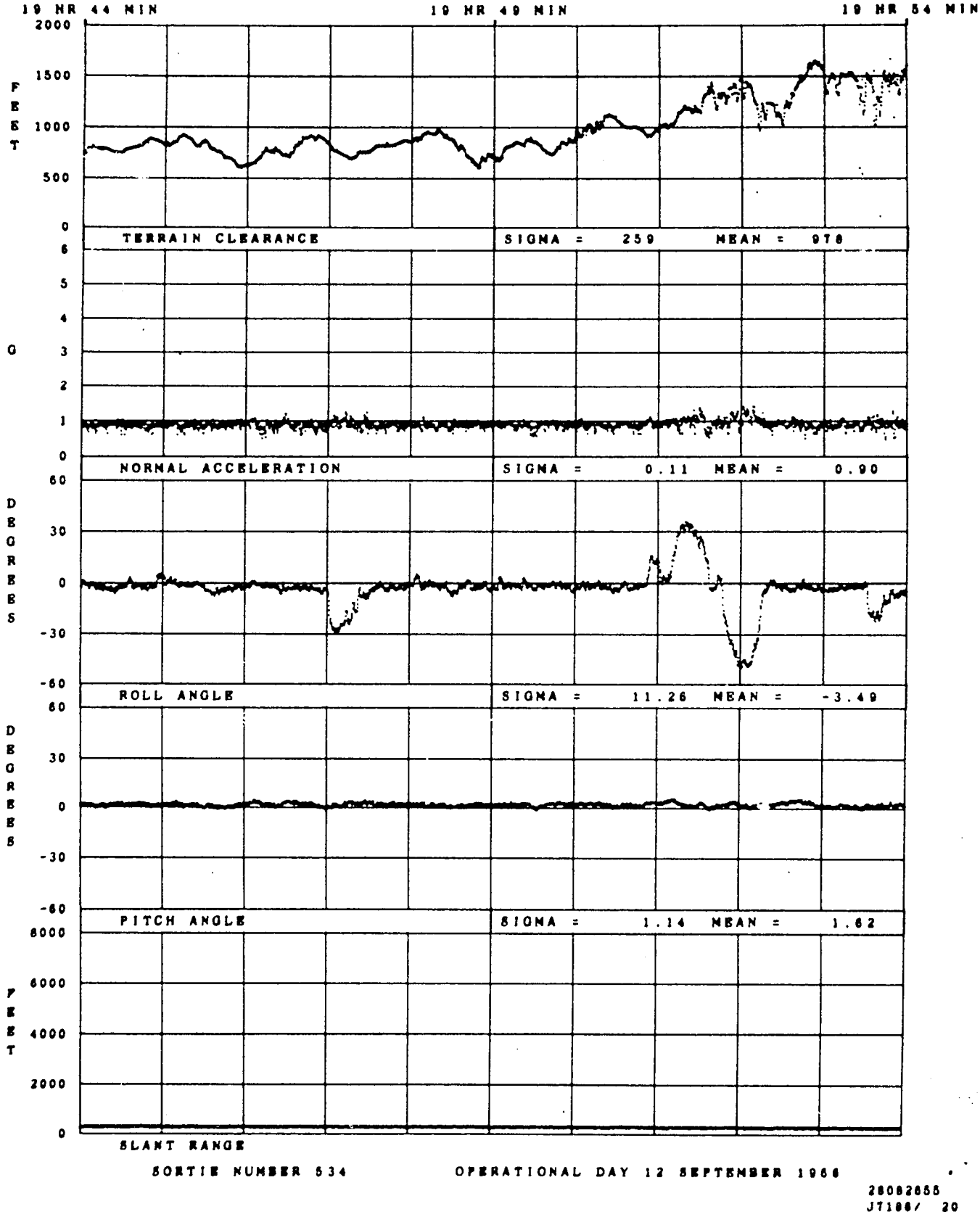


Figure 3-42 (U) Telemetered Data (Part 3 of 5)

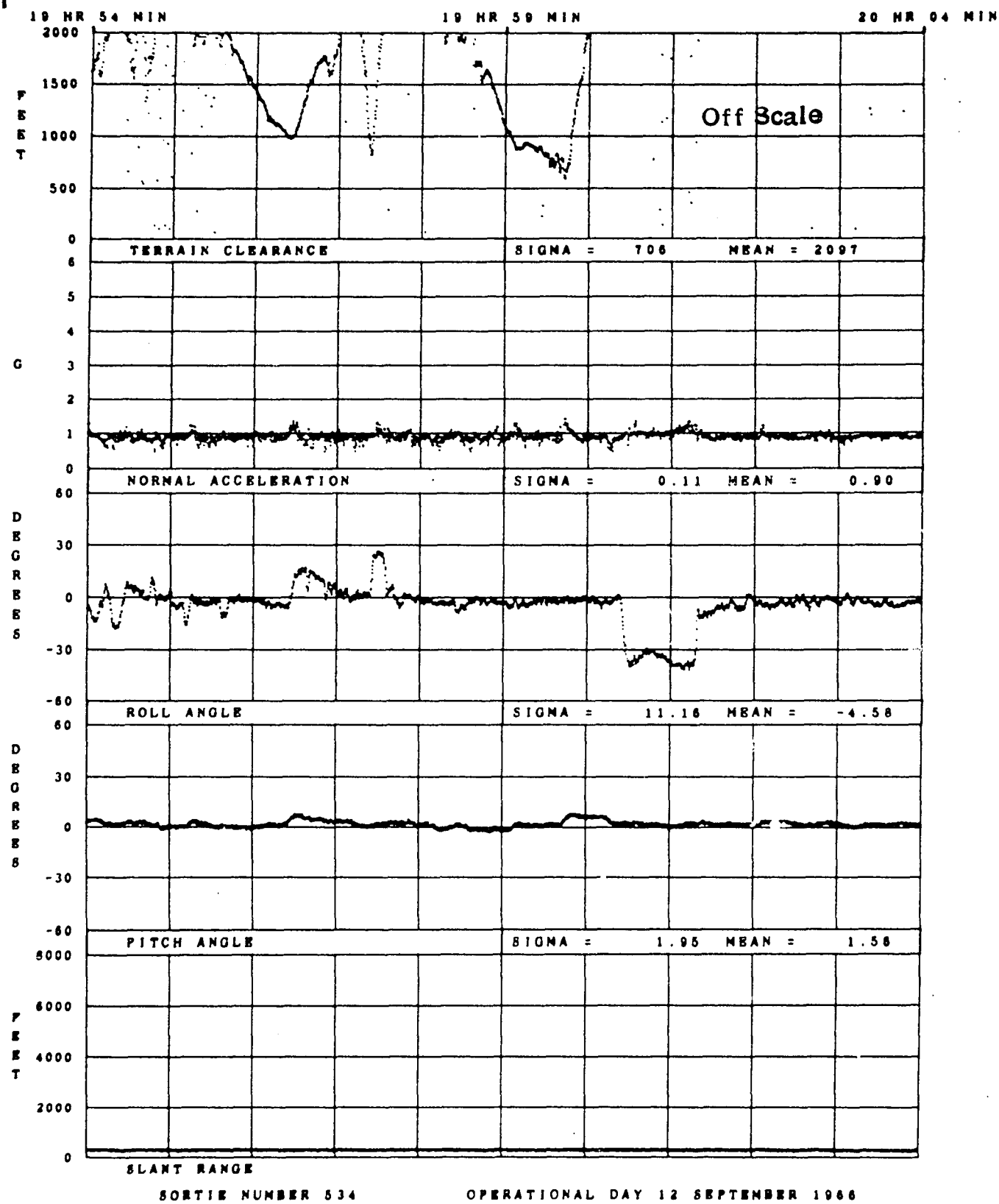


Figure 3-42 (U) Telemetered Data (Part 4 of 5)

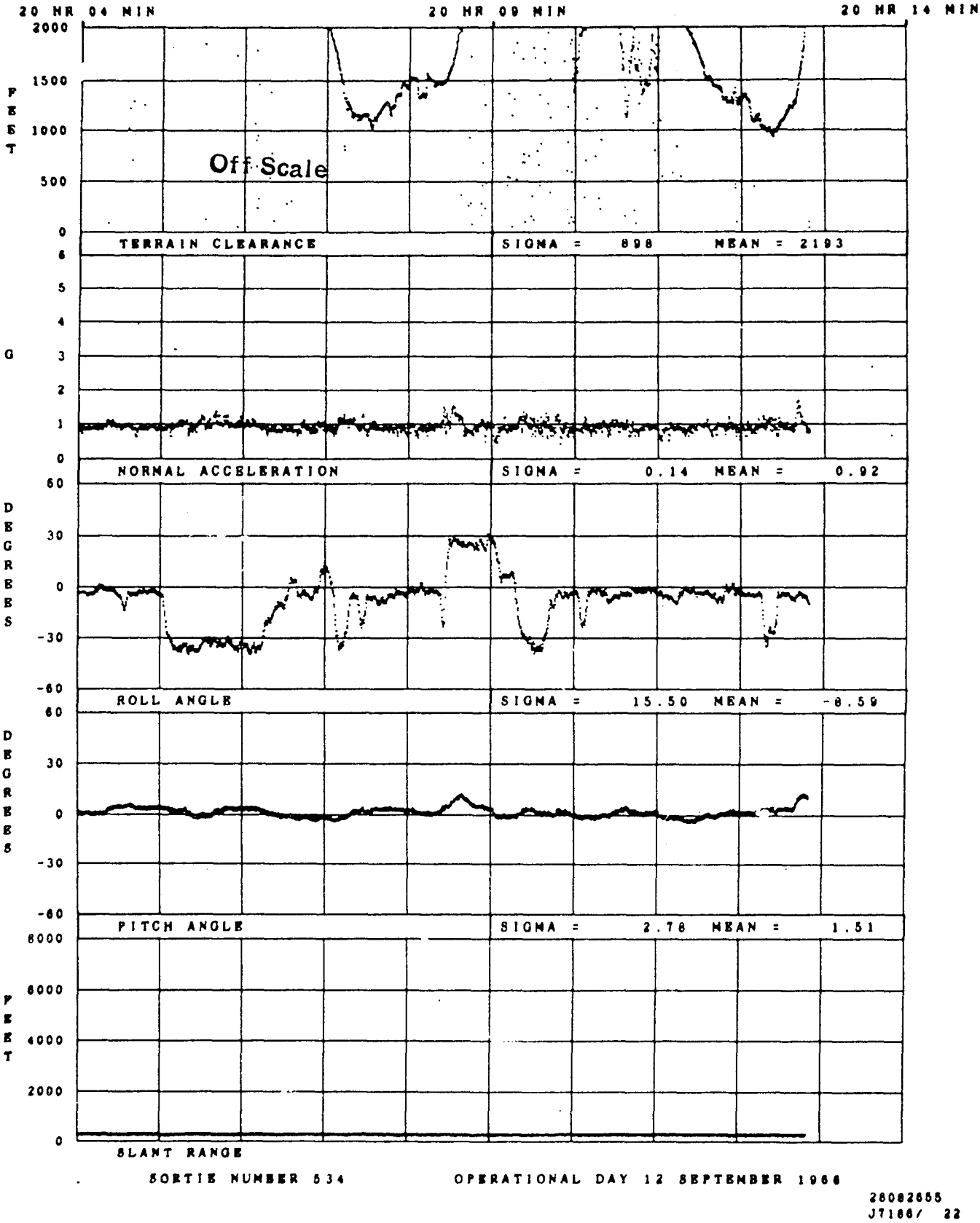
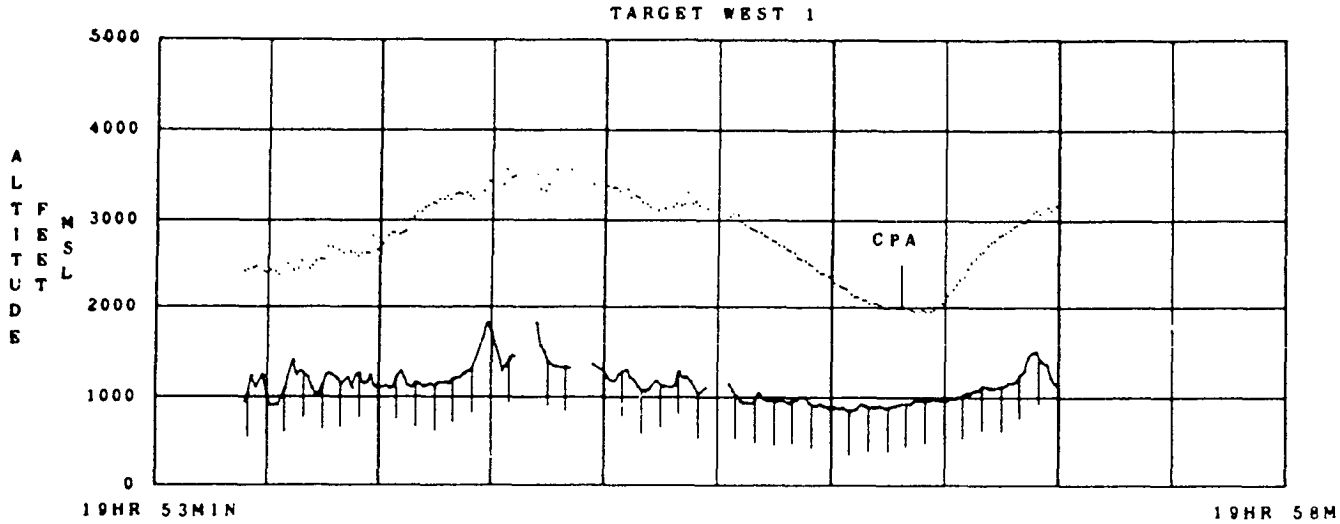
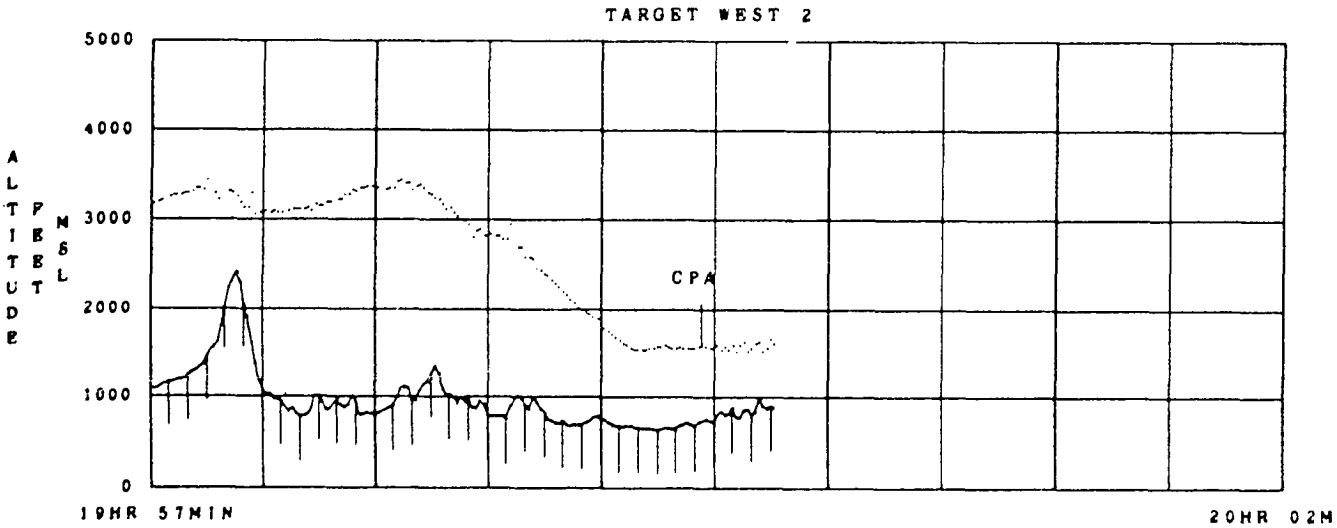


Figure 3-42 (U) Telemetered Data (Part 5 of 5)

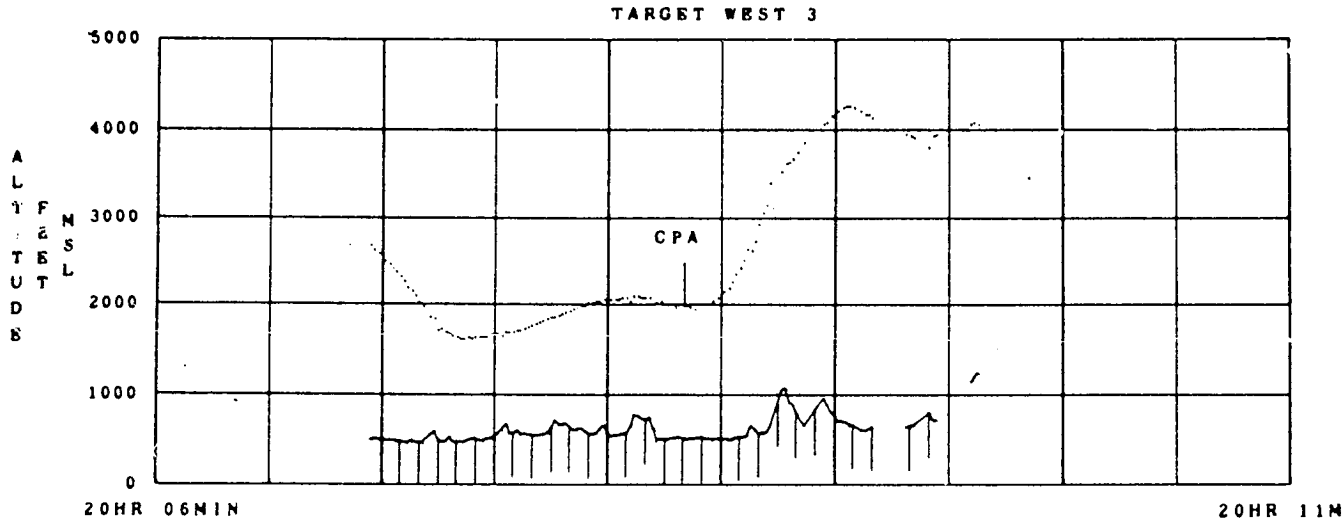


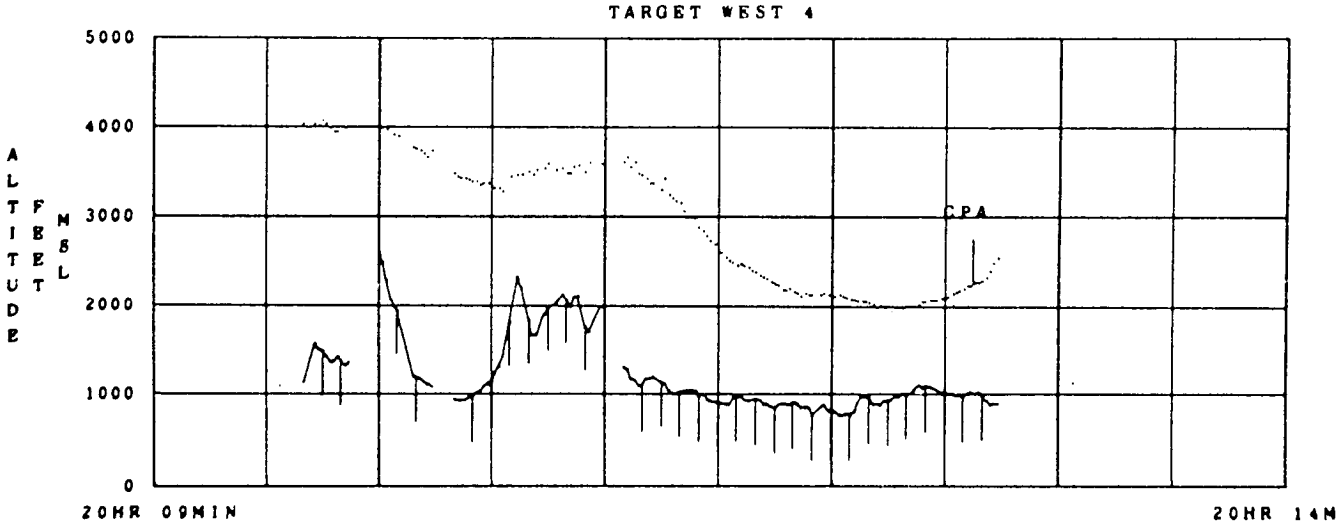


SORTIE NUMBER 534

04092443
J9139

Figure 3-43 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

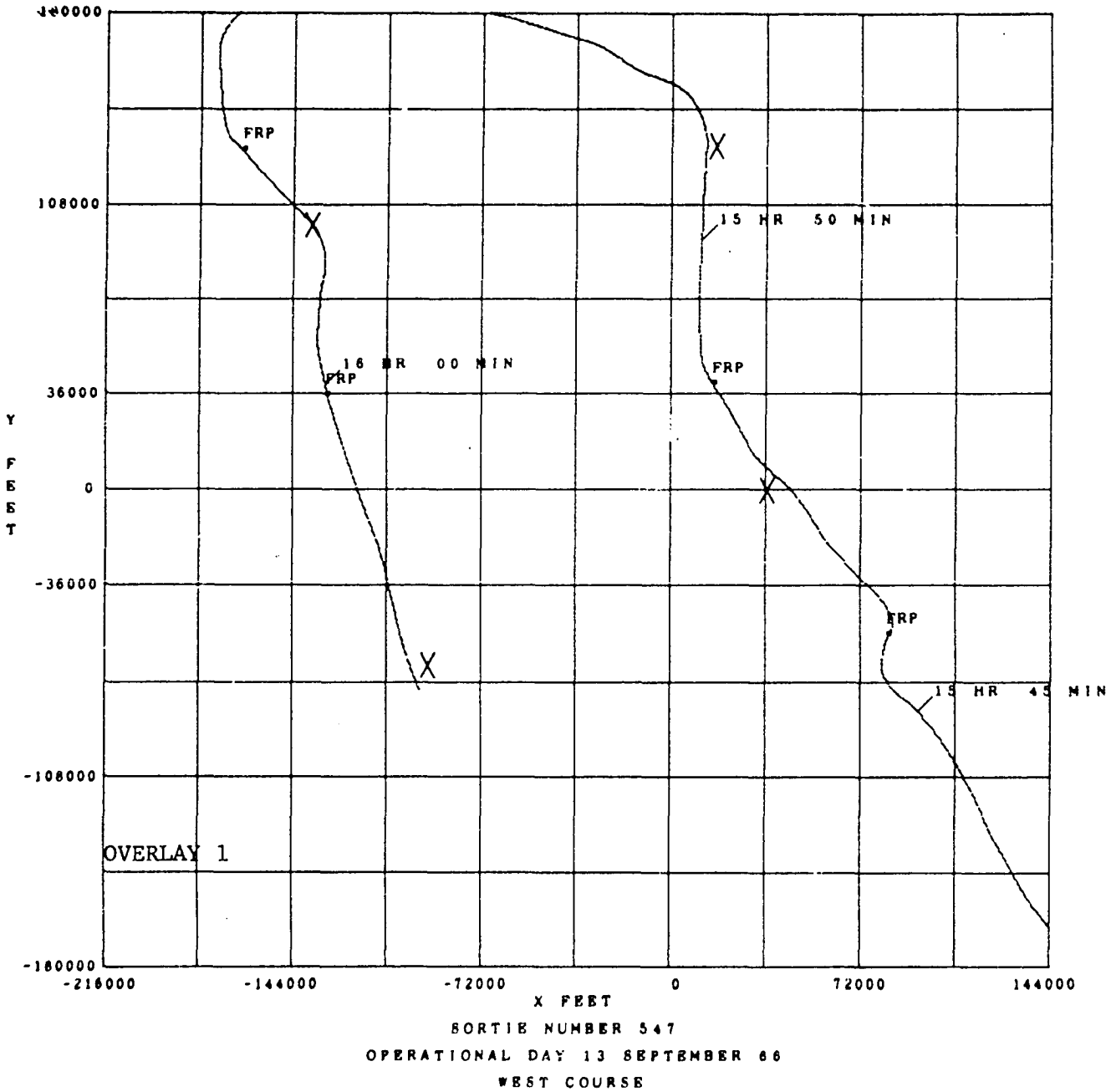




SORTIE NUMBER 534

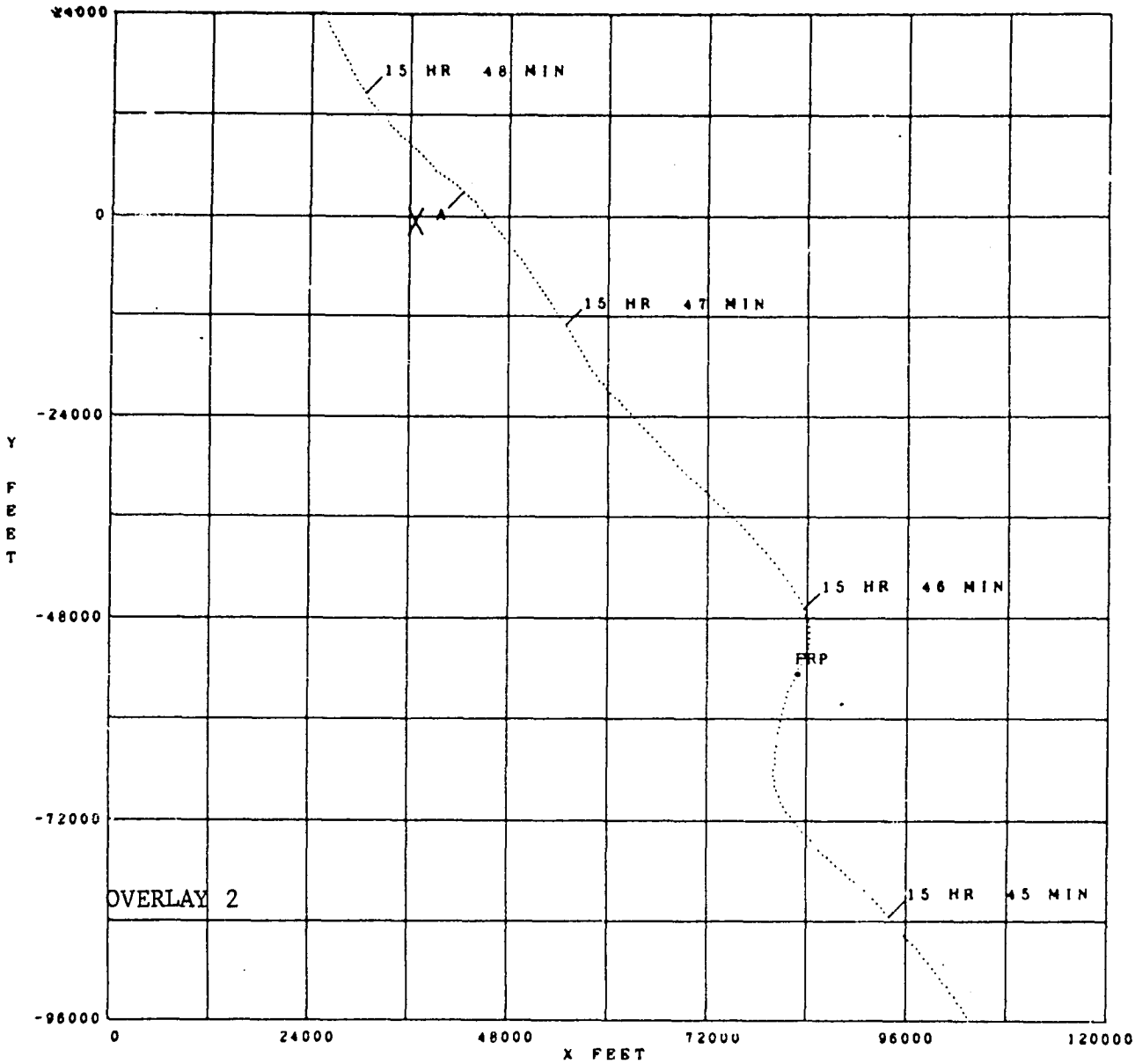
04092443
J9139

Figure 3-43 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092445
J9139 125

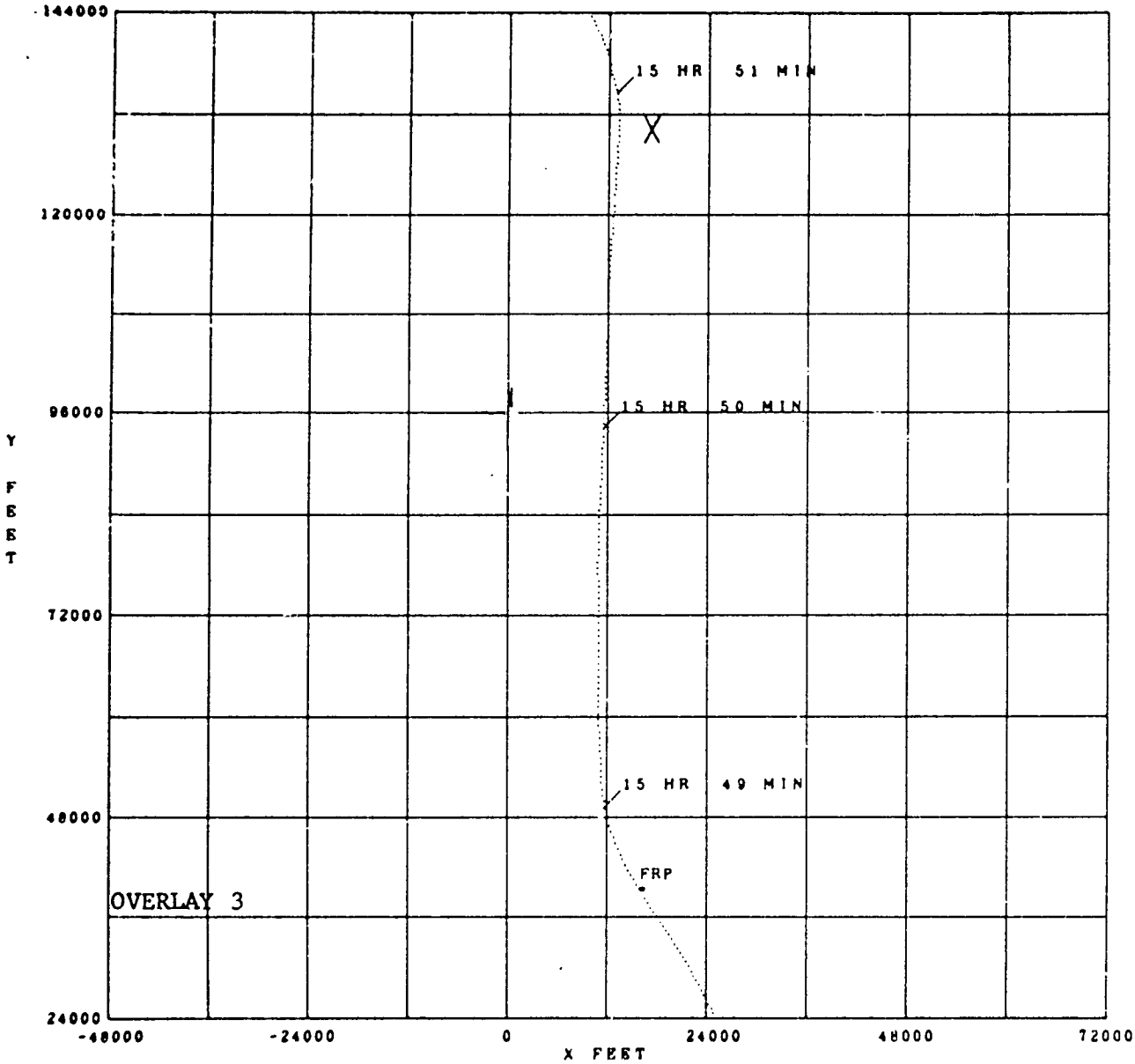
Figure 3-44 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 6330 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 547
TARGET WEST 1

04092445
J9139 126

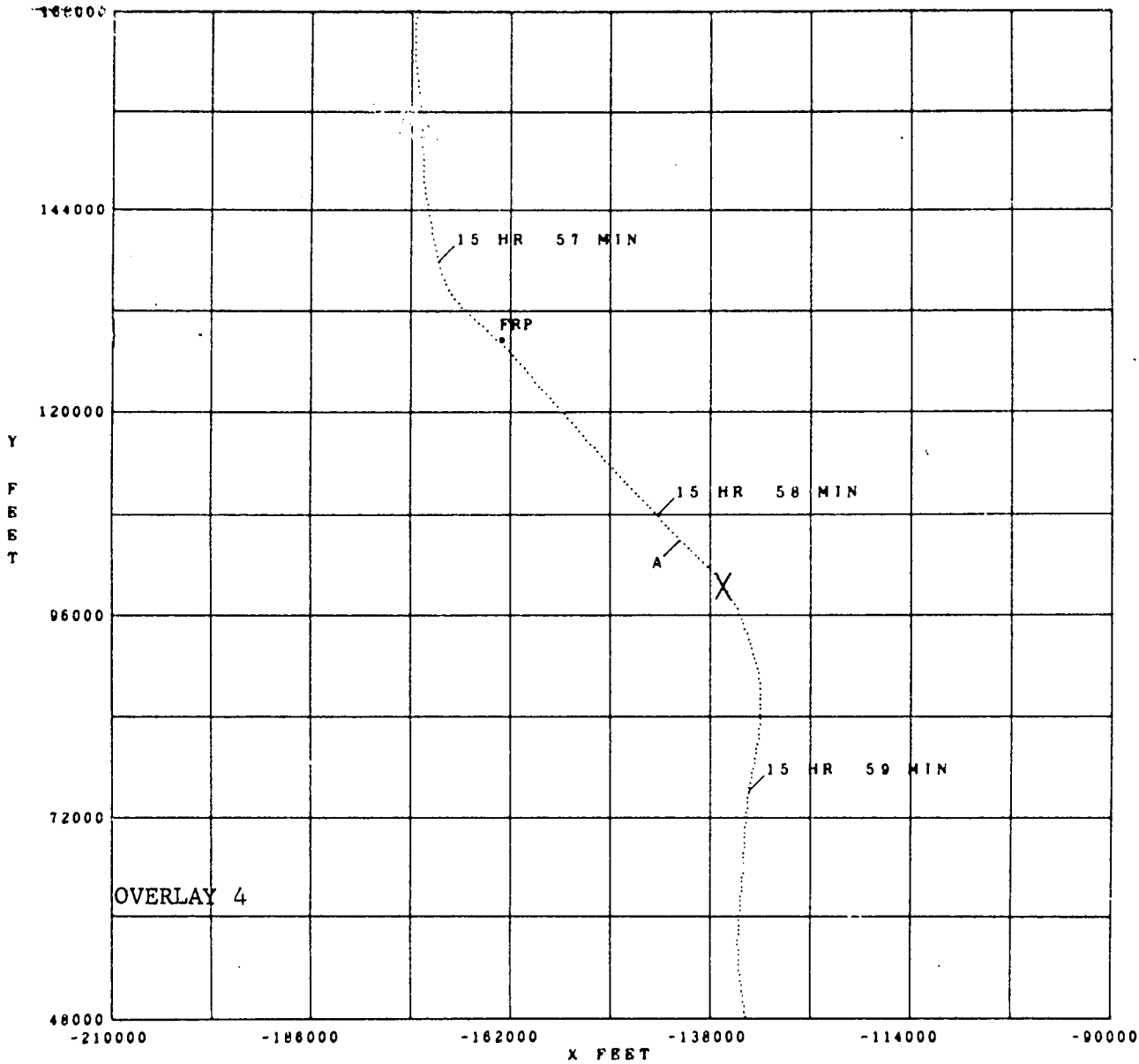
Figure 3-44 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 4085 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 547
TARGET WEST 2

04092445
J9139 127

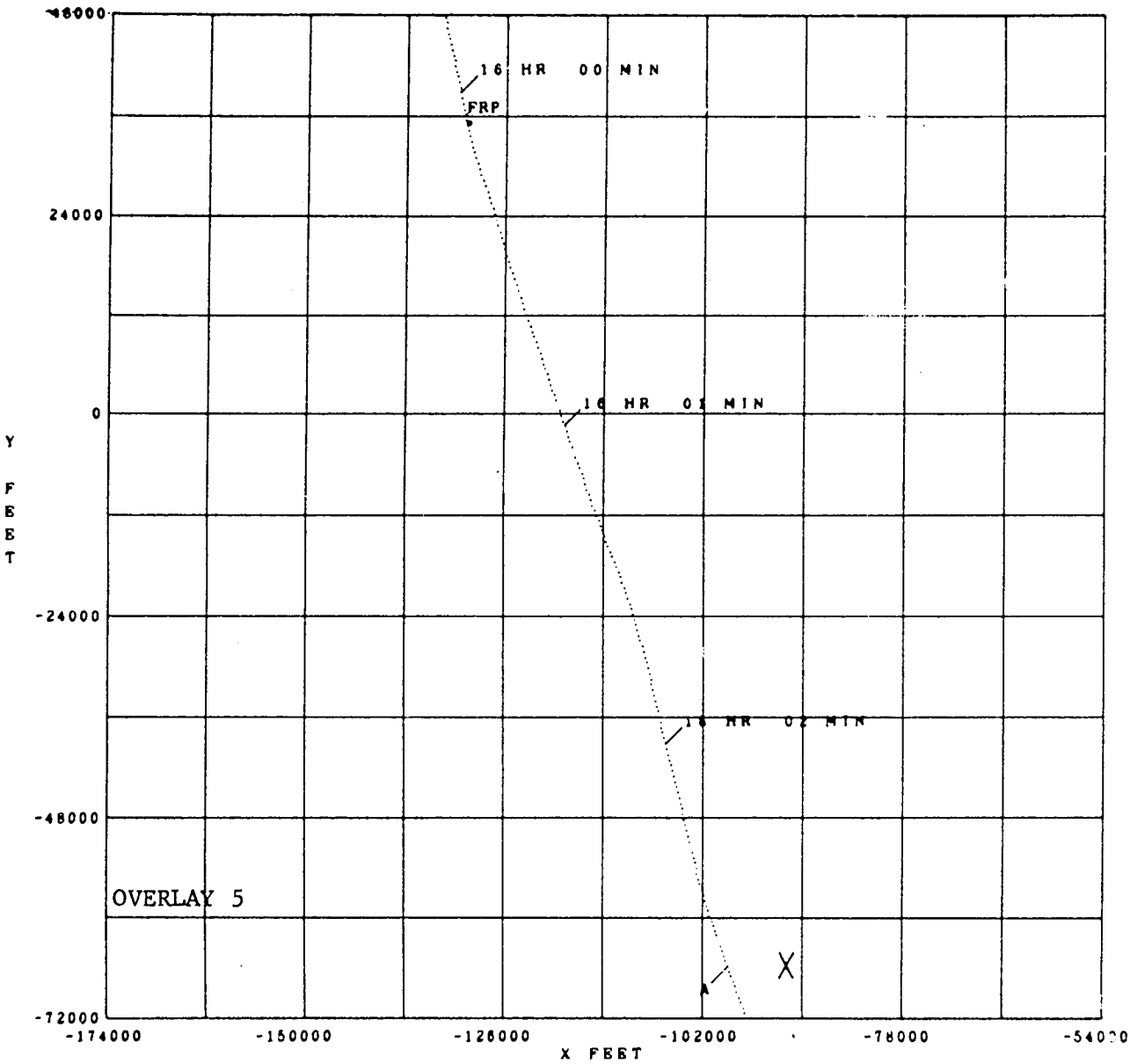
Figure 3-44 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 7 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 547
TARGET WEST 3

04092445
J9139 128

Figure 3-44 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 6725 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 547
TARGET WEST 4

04092445
J9139 129

Figure 3-44 (U) Aircraft Position Data (Part 5 of 5)

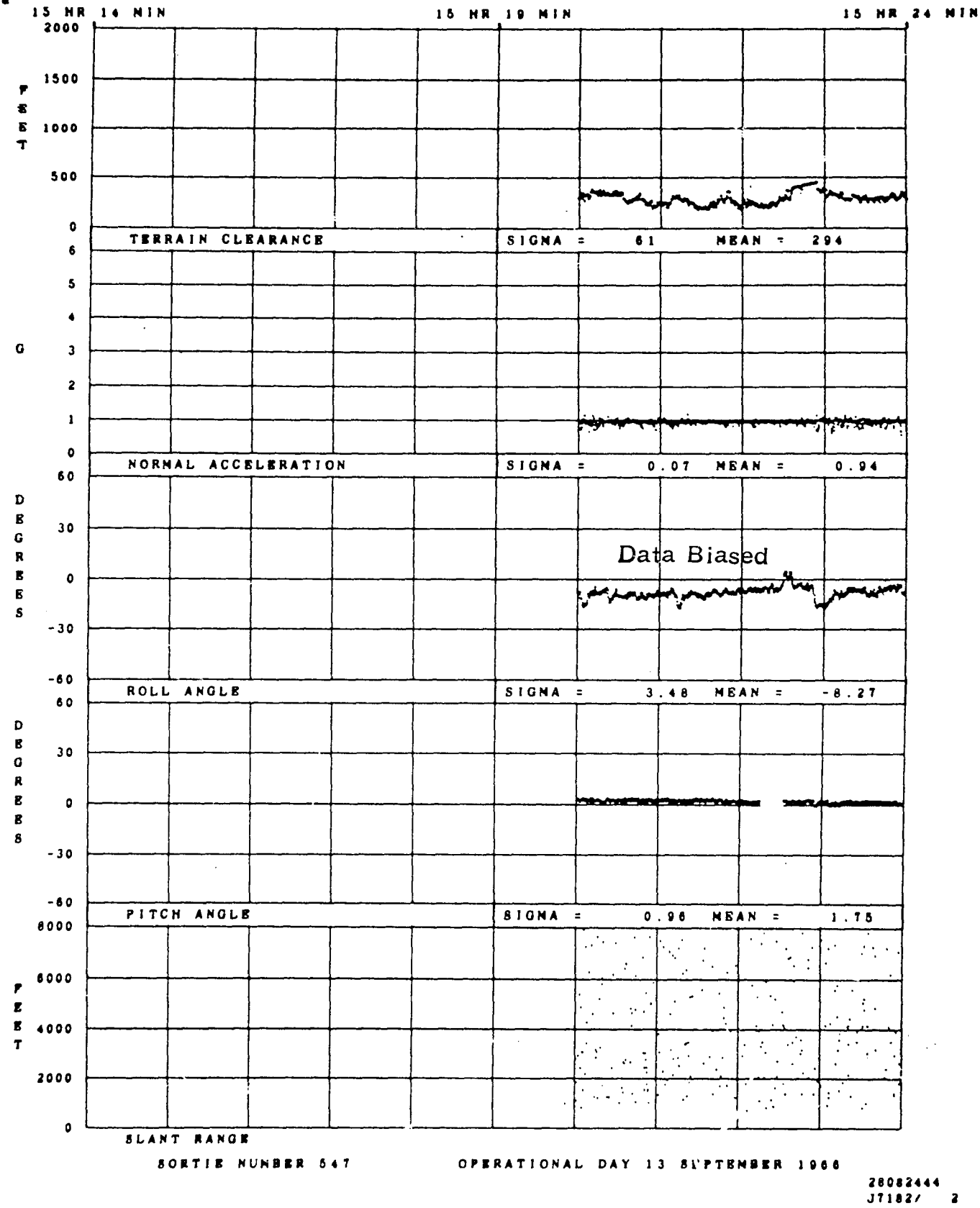


Figure 3-45 (U) Telemetered Data (Part 1 of 5)

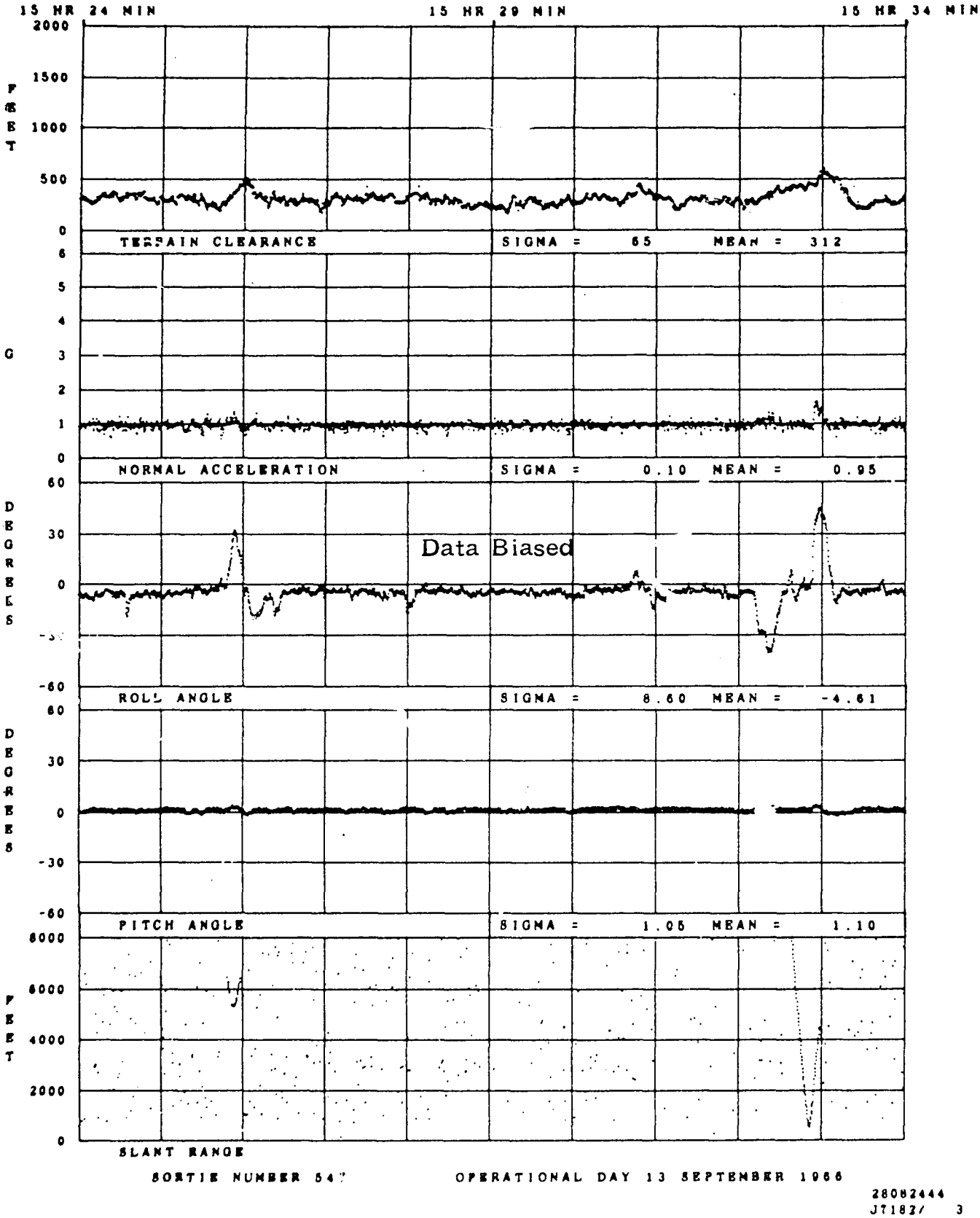


Figure 3-45 (U) Telemetered Data (Part 2 of 5)

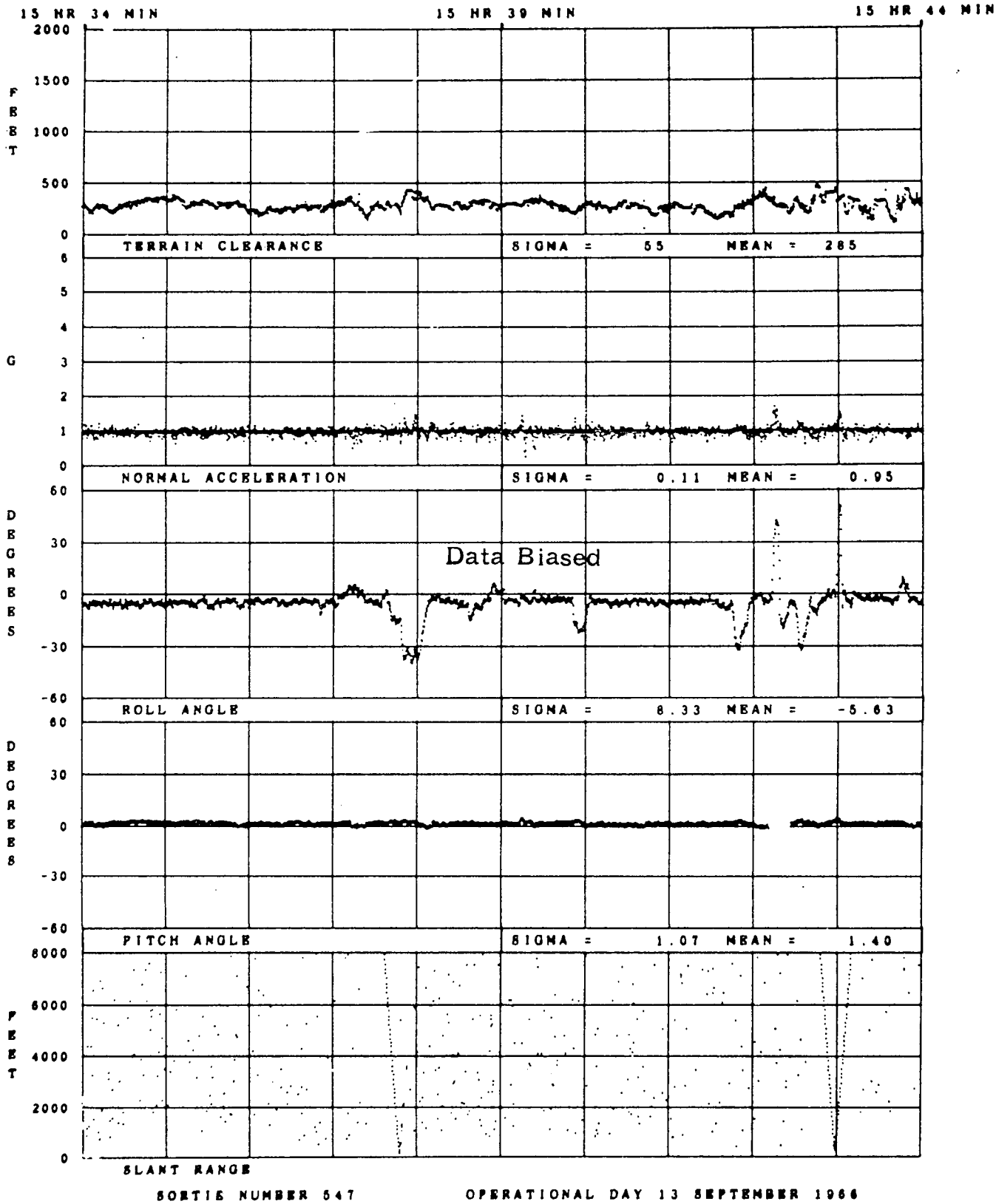


Figure 3-45 (U) Telemetered Data (Part 3 of 5)

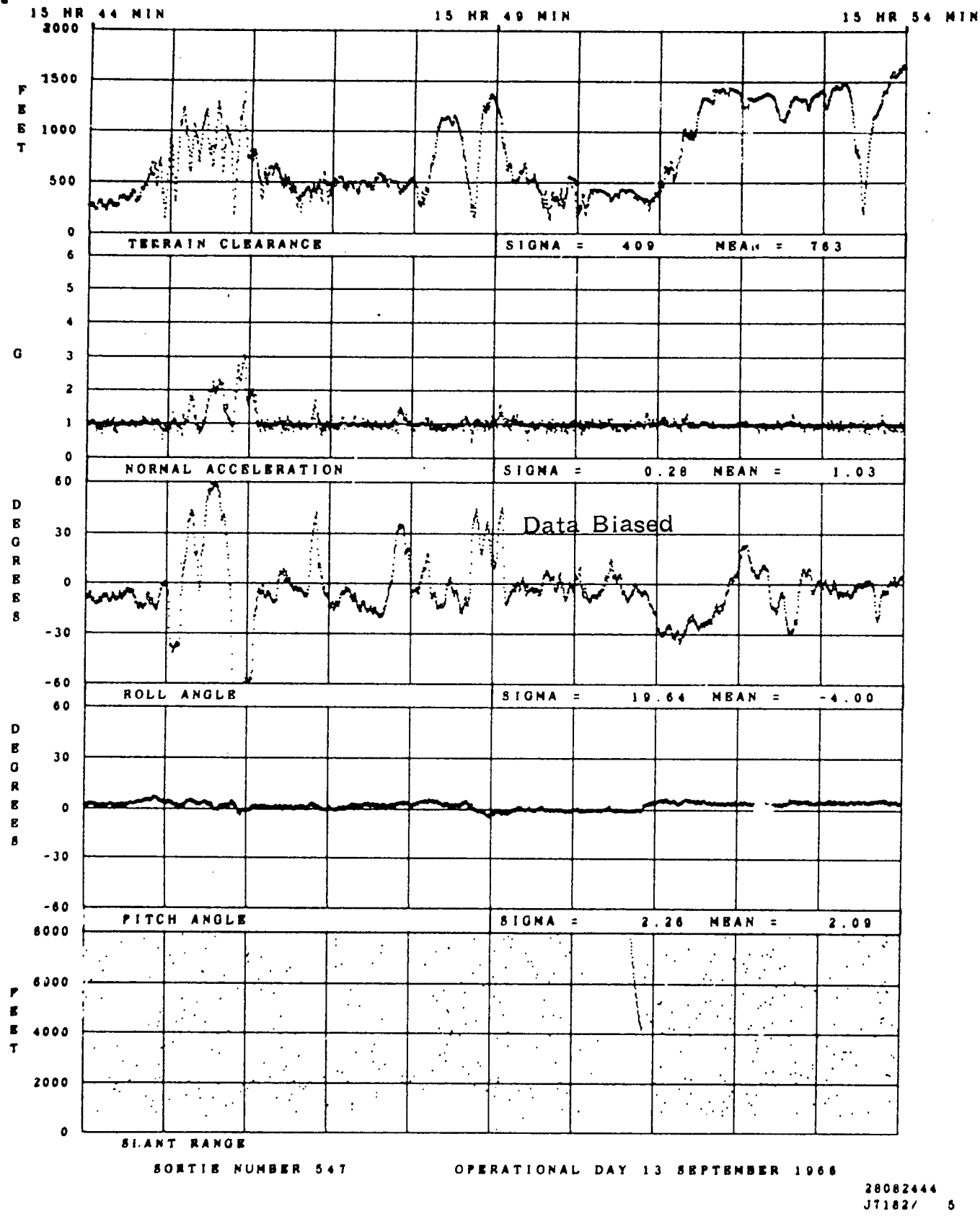


Figure 3-45 (U) Telemetered Data (Part 4 of 5)

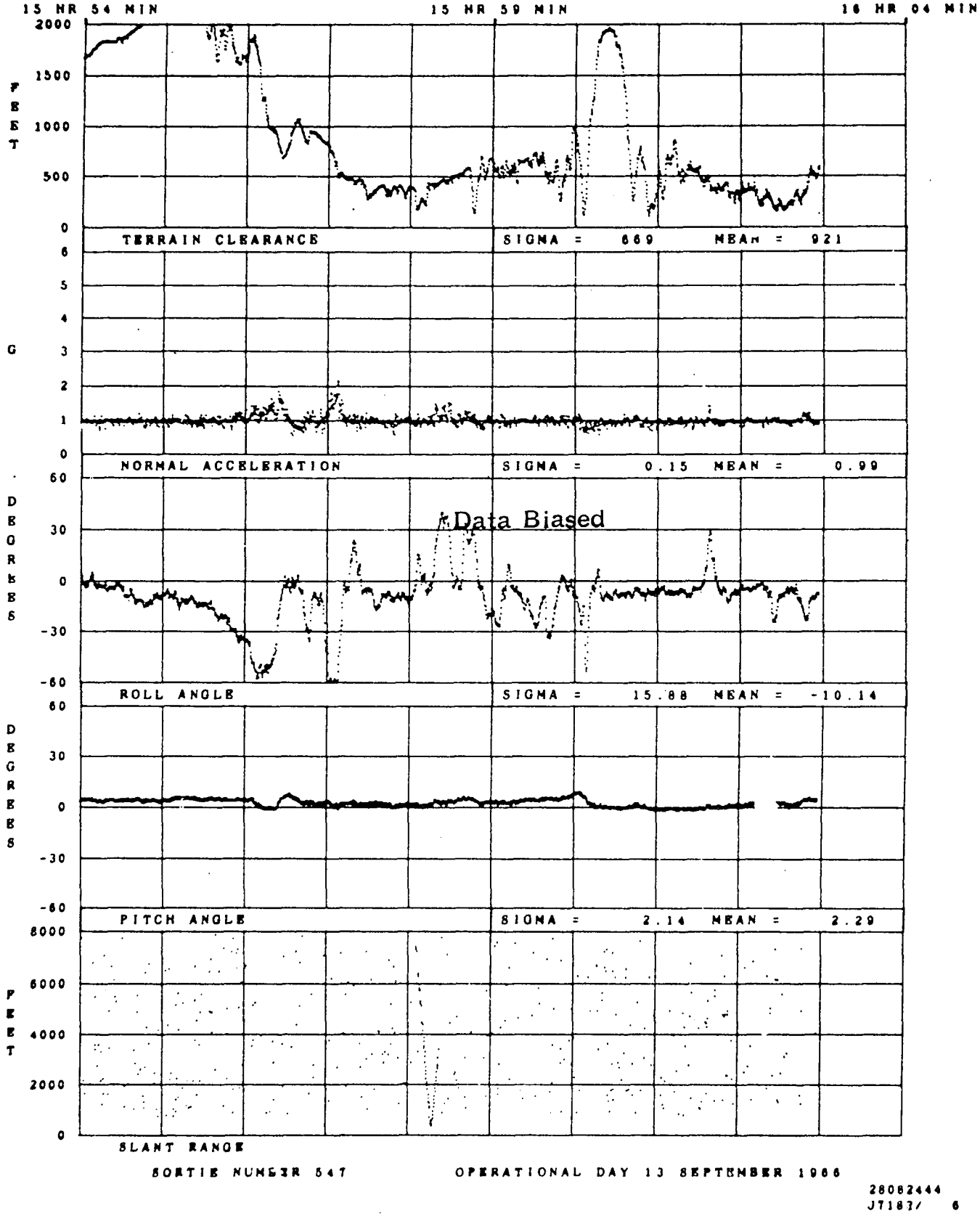
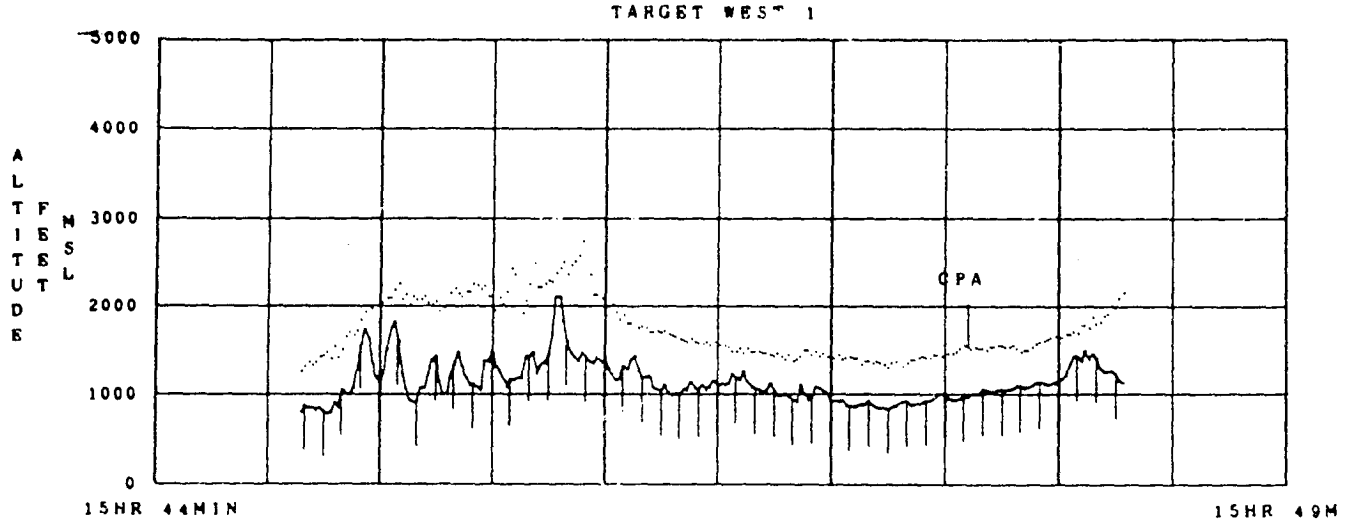
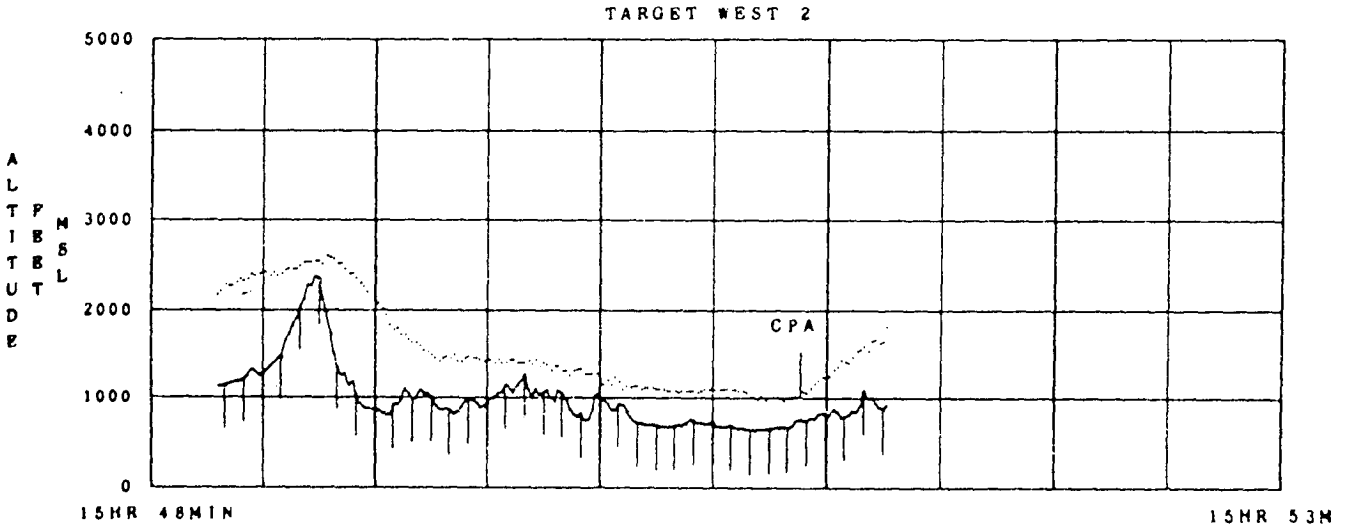


Figure 3-45 (U) Telemetered Data (Part 5 of 5)

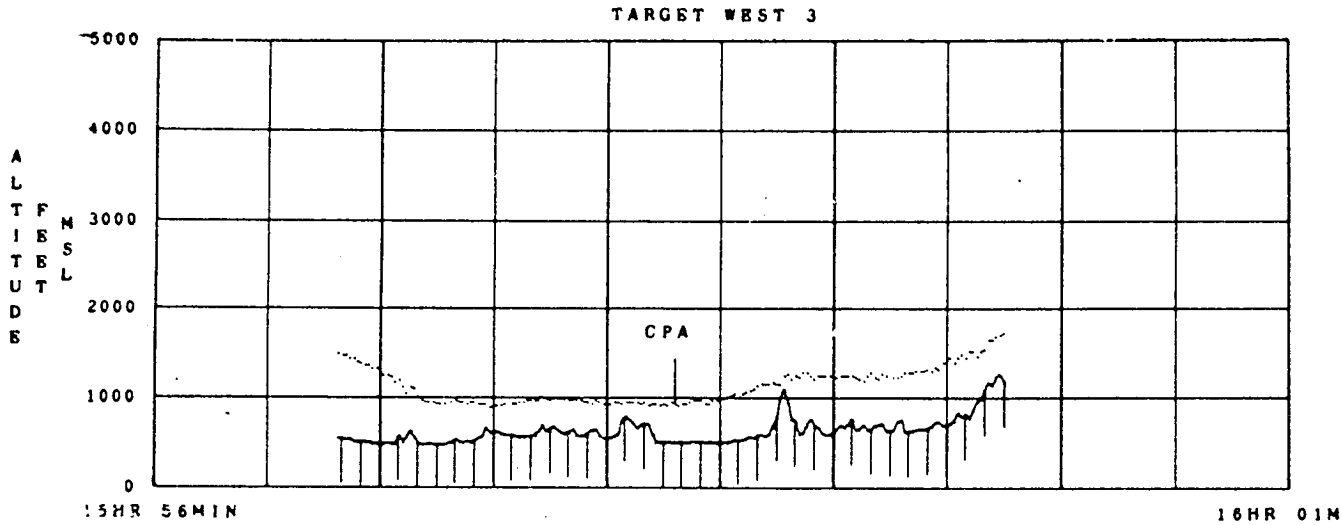


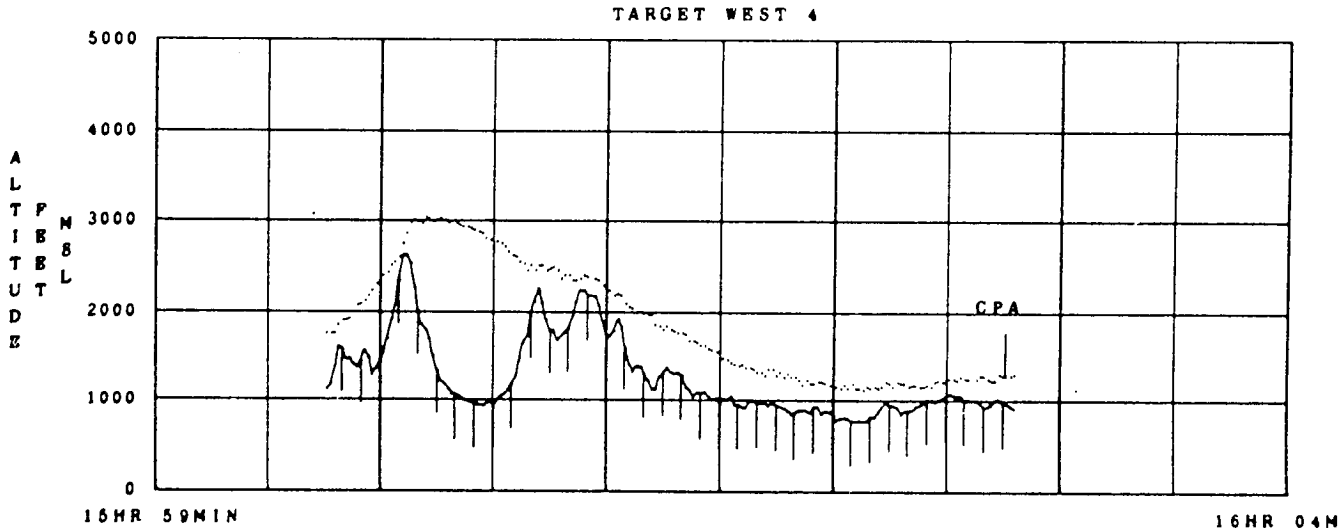


SORTIE NUMBER 547

04092445
J9139

Figure 3-46 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

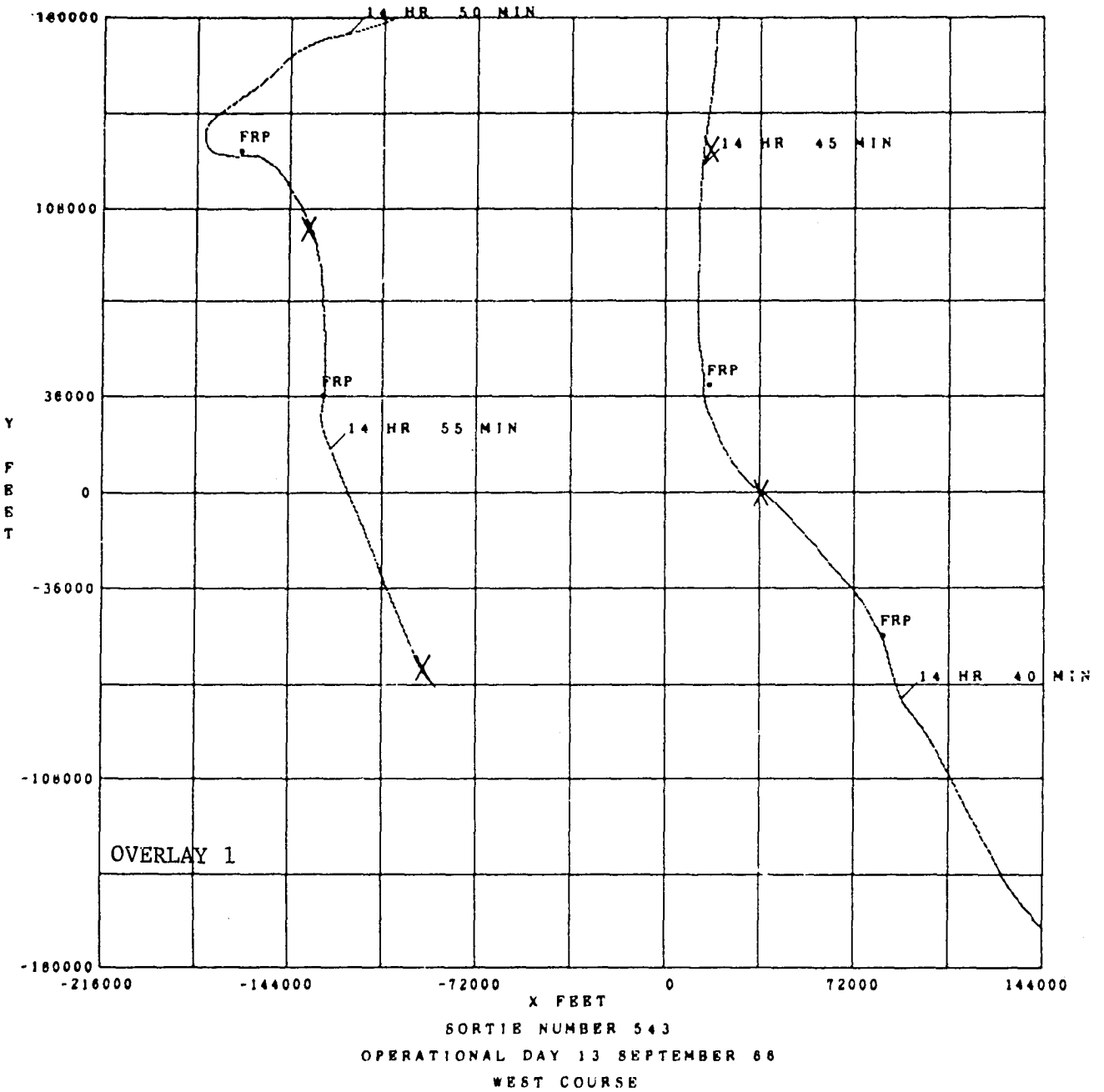




SORTIE NUMBER 547

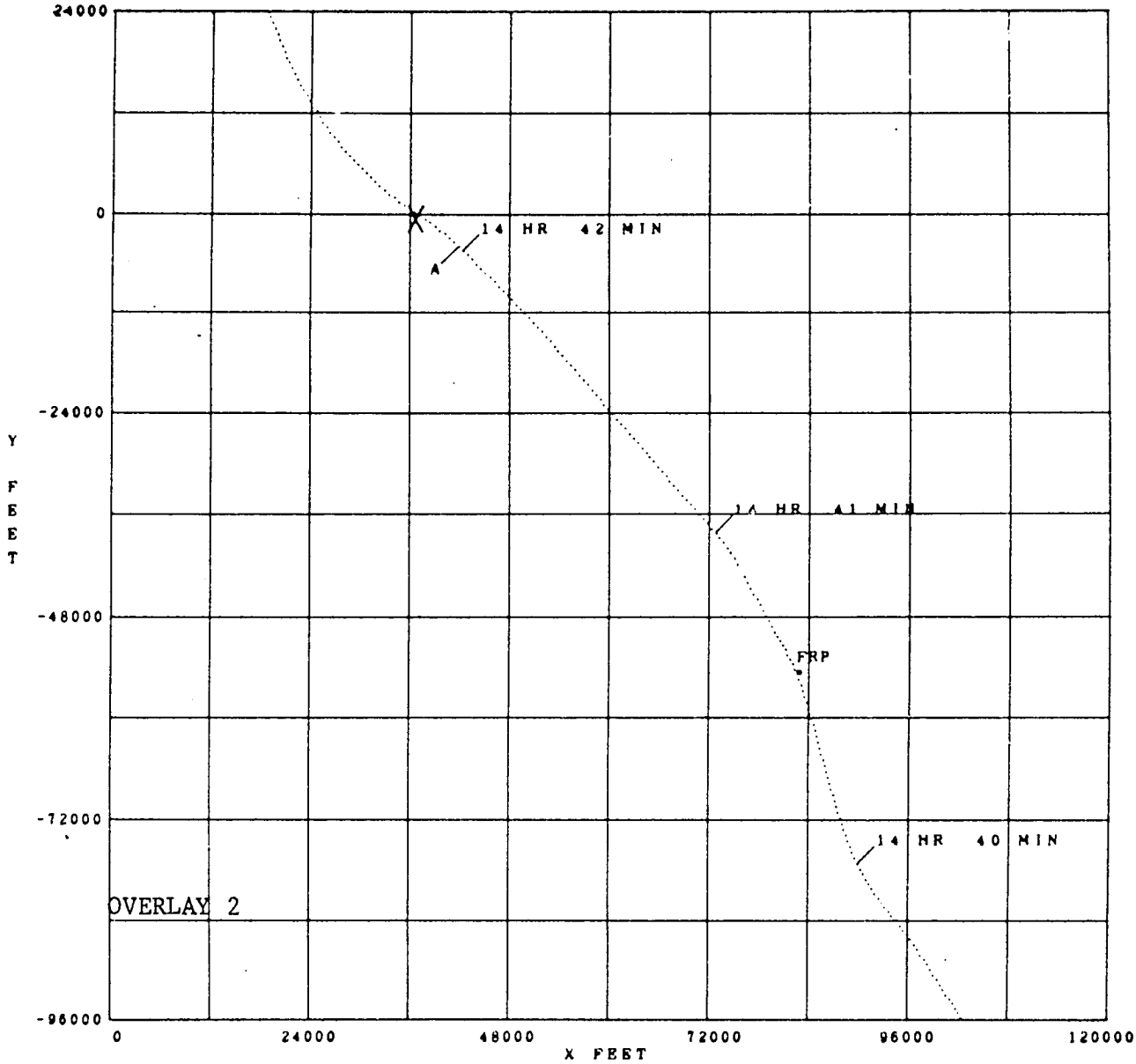
04092445
J9139

Figure 3-46 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092445
J9139 133

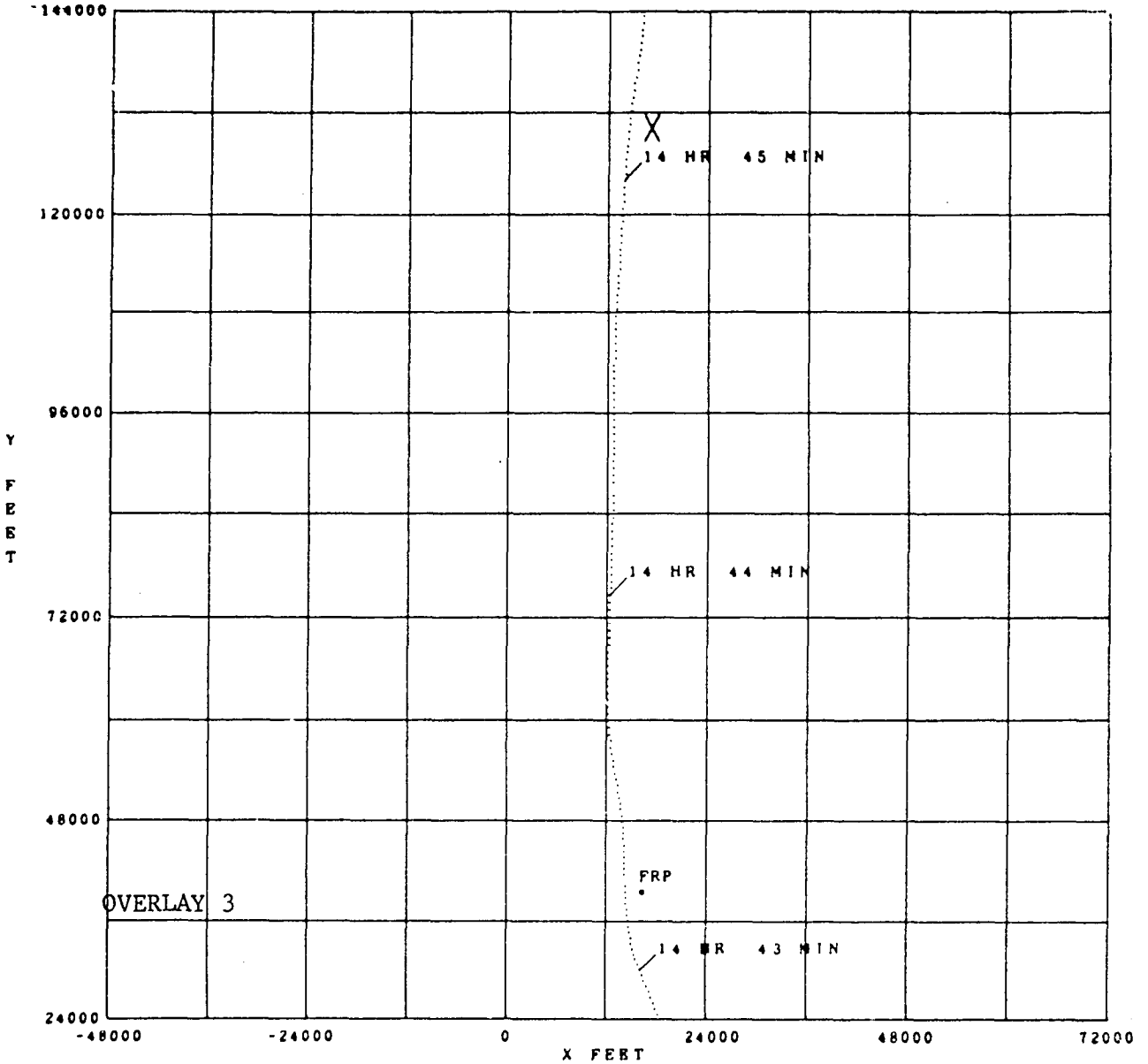
Figure 3-47 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 741 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 543
TARGET WEST 1

04092445
J9139 134

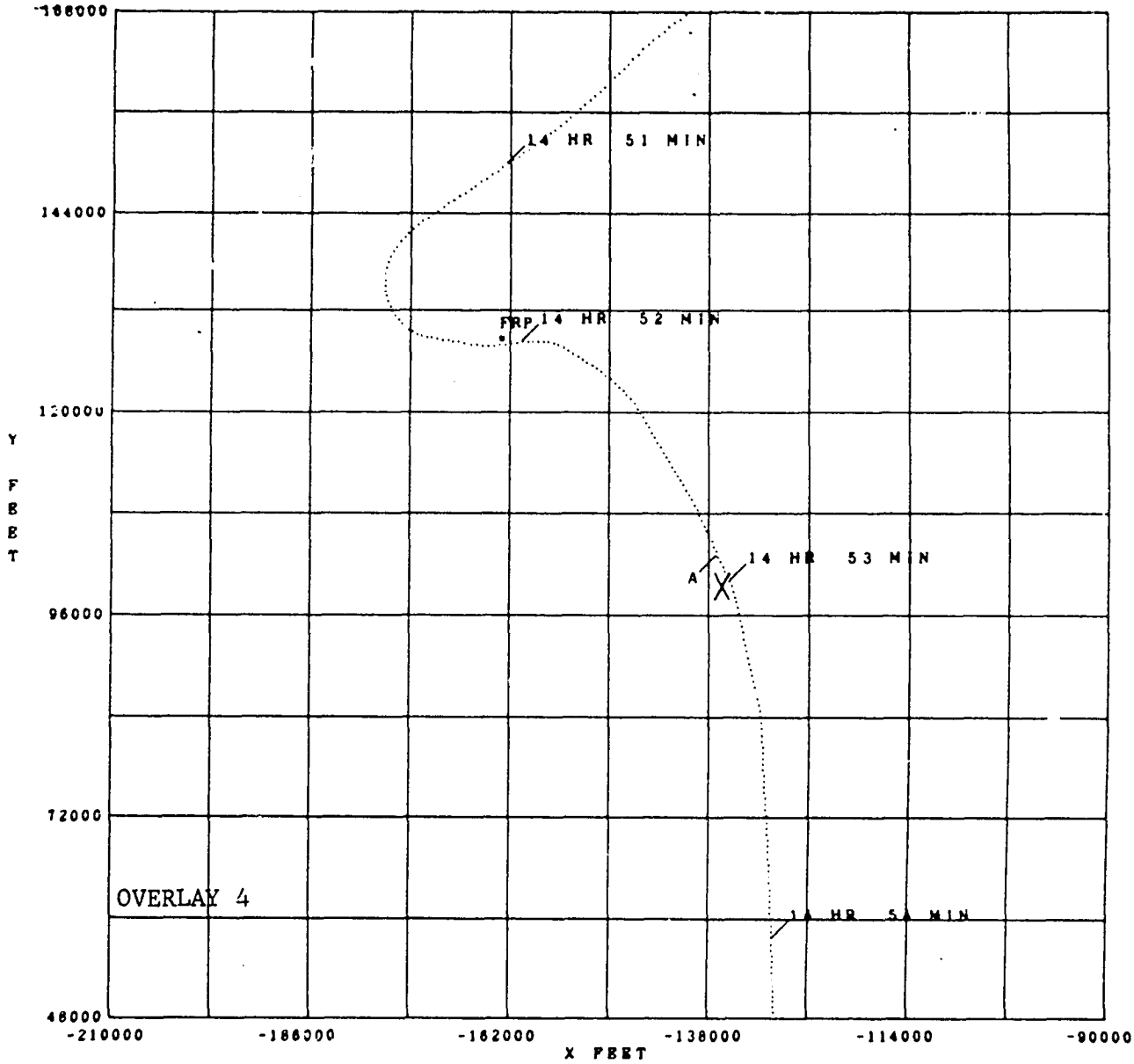
Figure 3-47 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2810 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 543
TARGET WEST 2

04092445
J9139 135

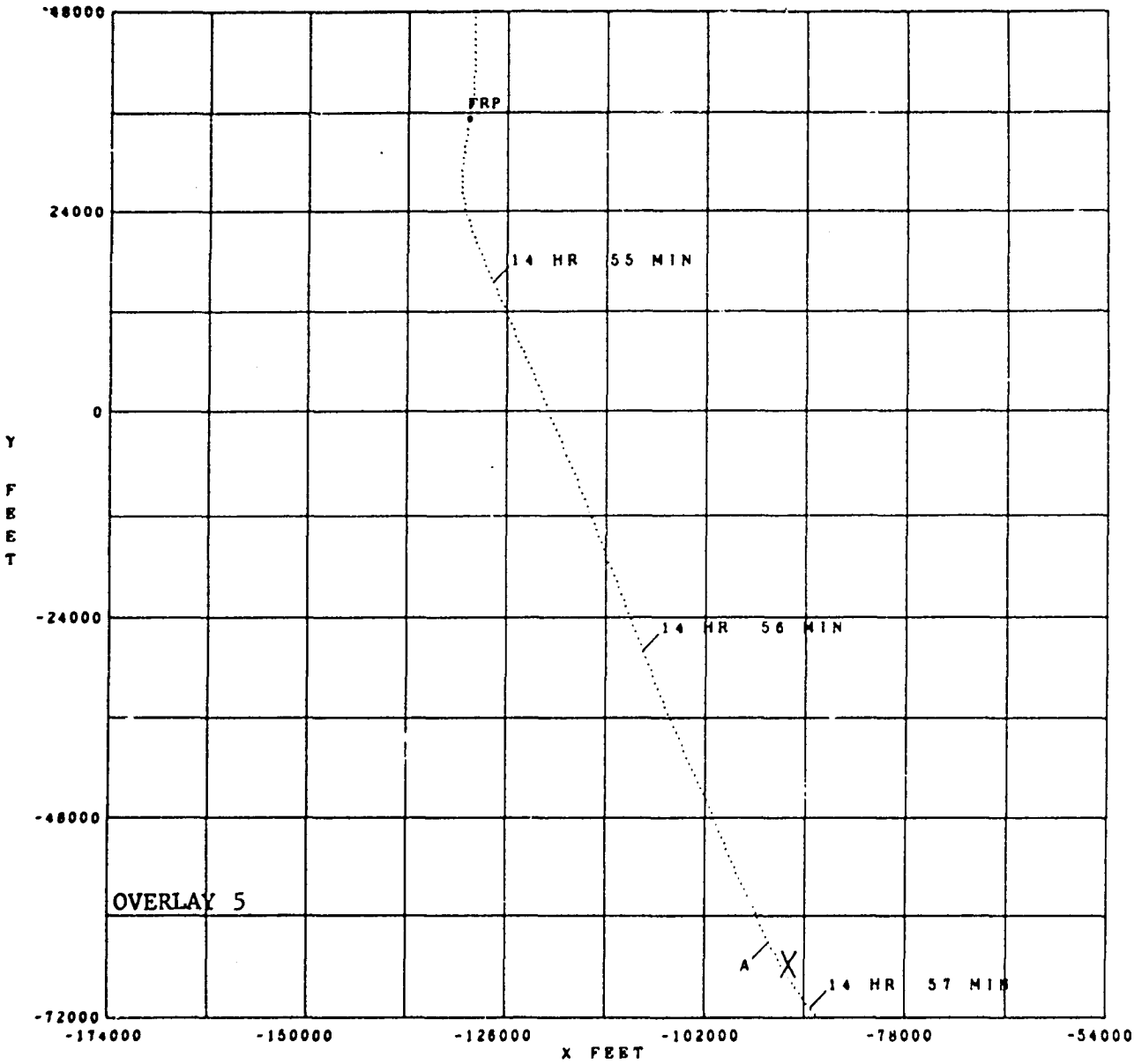
Figure 3-47 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 650 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 543
TARGET WEST 3

04092445
J9139 138

Figure 3-47 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 480 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 543
TARGET WEST 4

04092445
J9139 137

Figure 3-47 (U) Aircraft Position Data (Part 5 of 5)

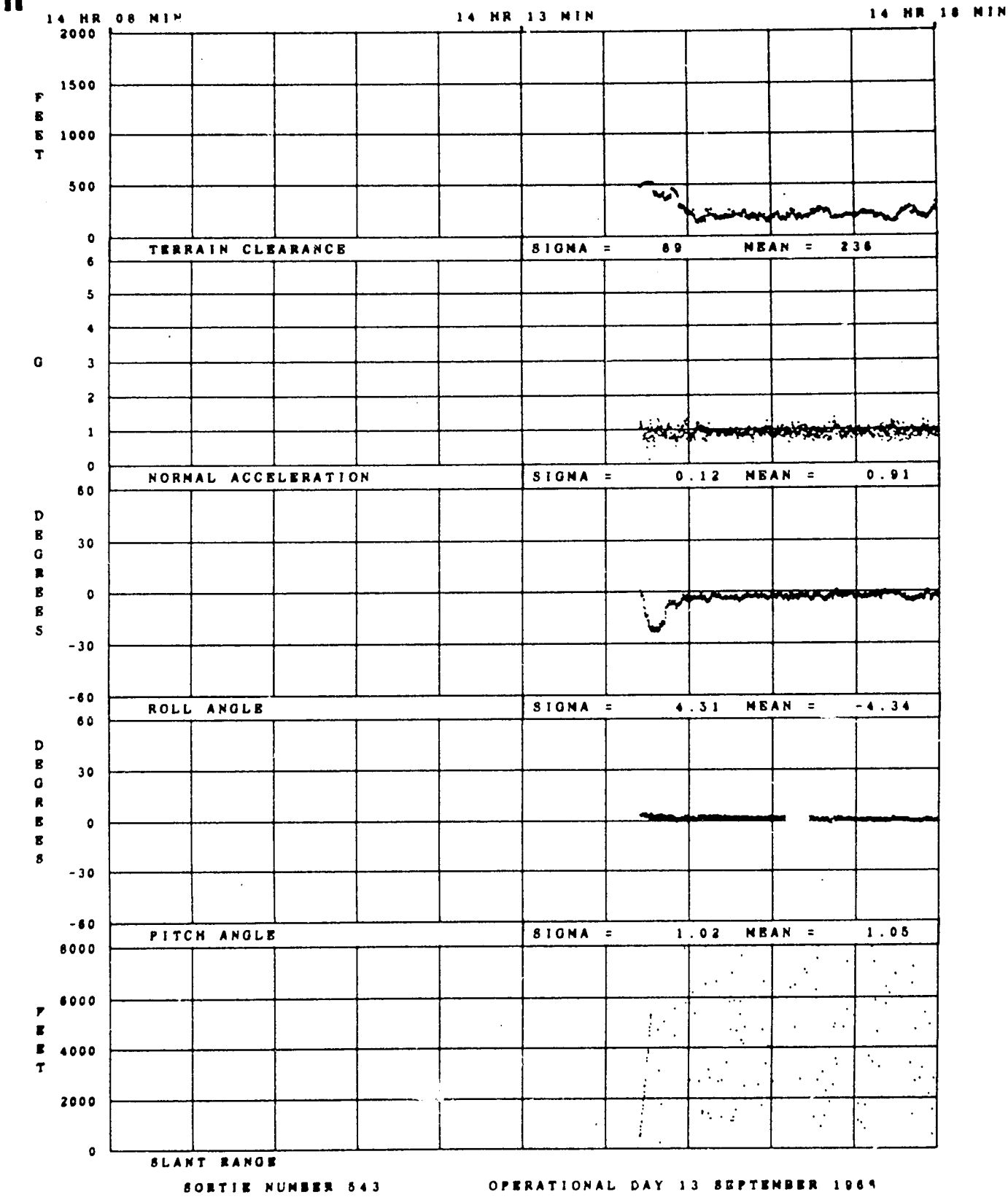


Figure 3-48 (U) Telemetered Data (Part 1 of 5)

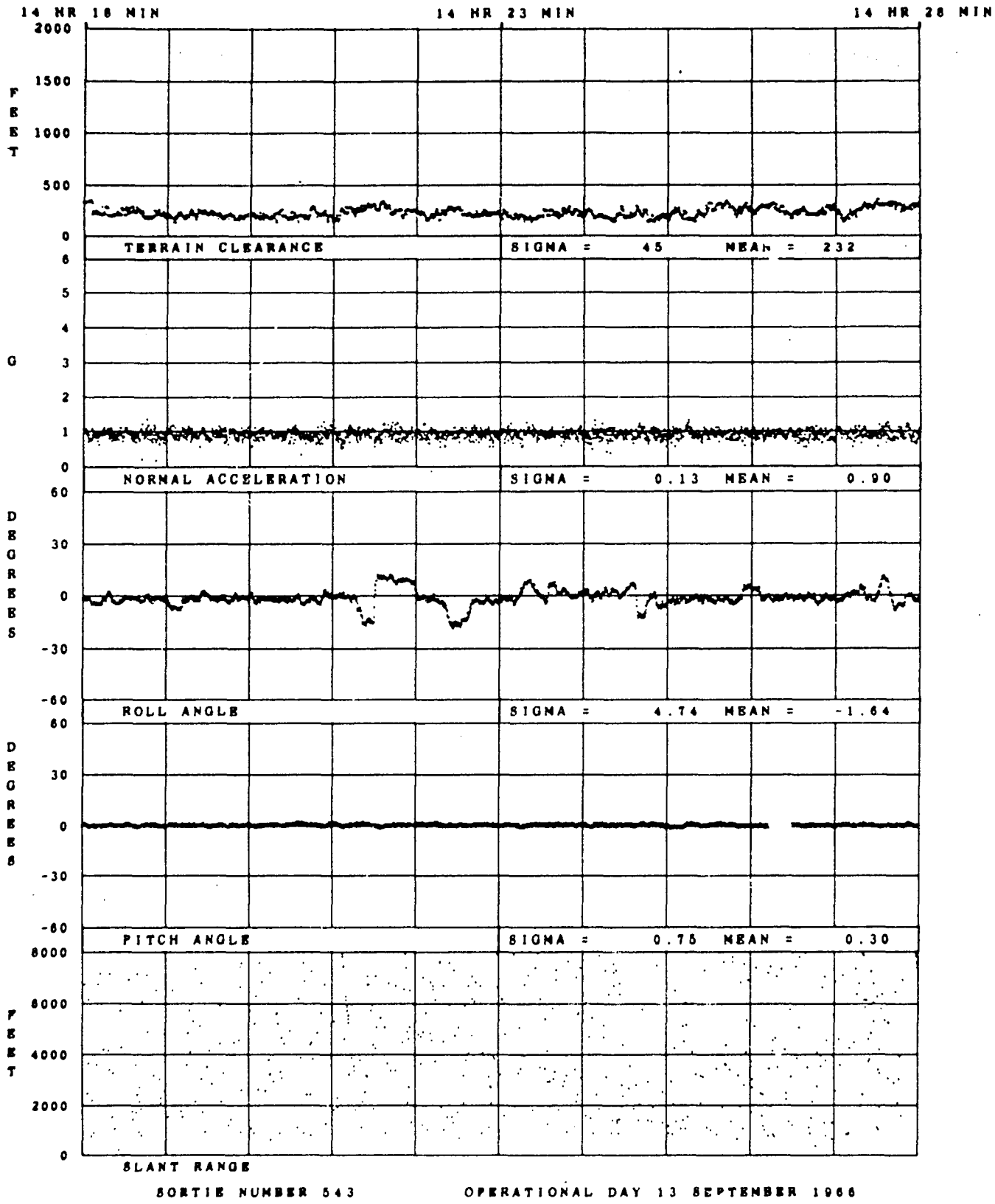


Figure 3-48 (U) Telemetered Data (Part 2 of 5)

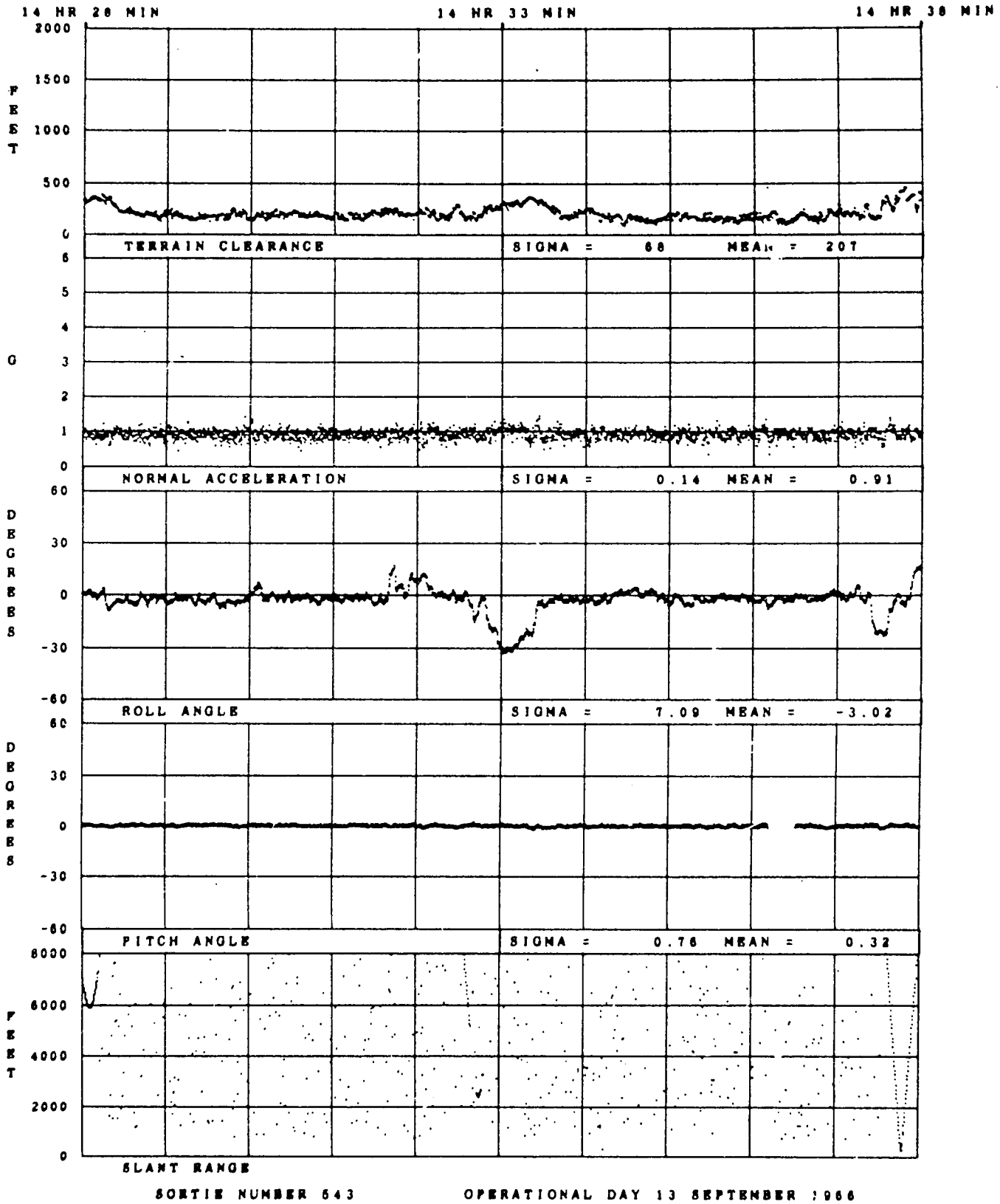


Figure 3-48 (U) Telemetered Data (Part 3 of 5)

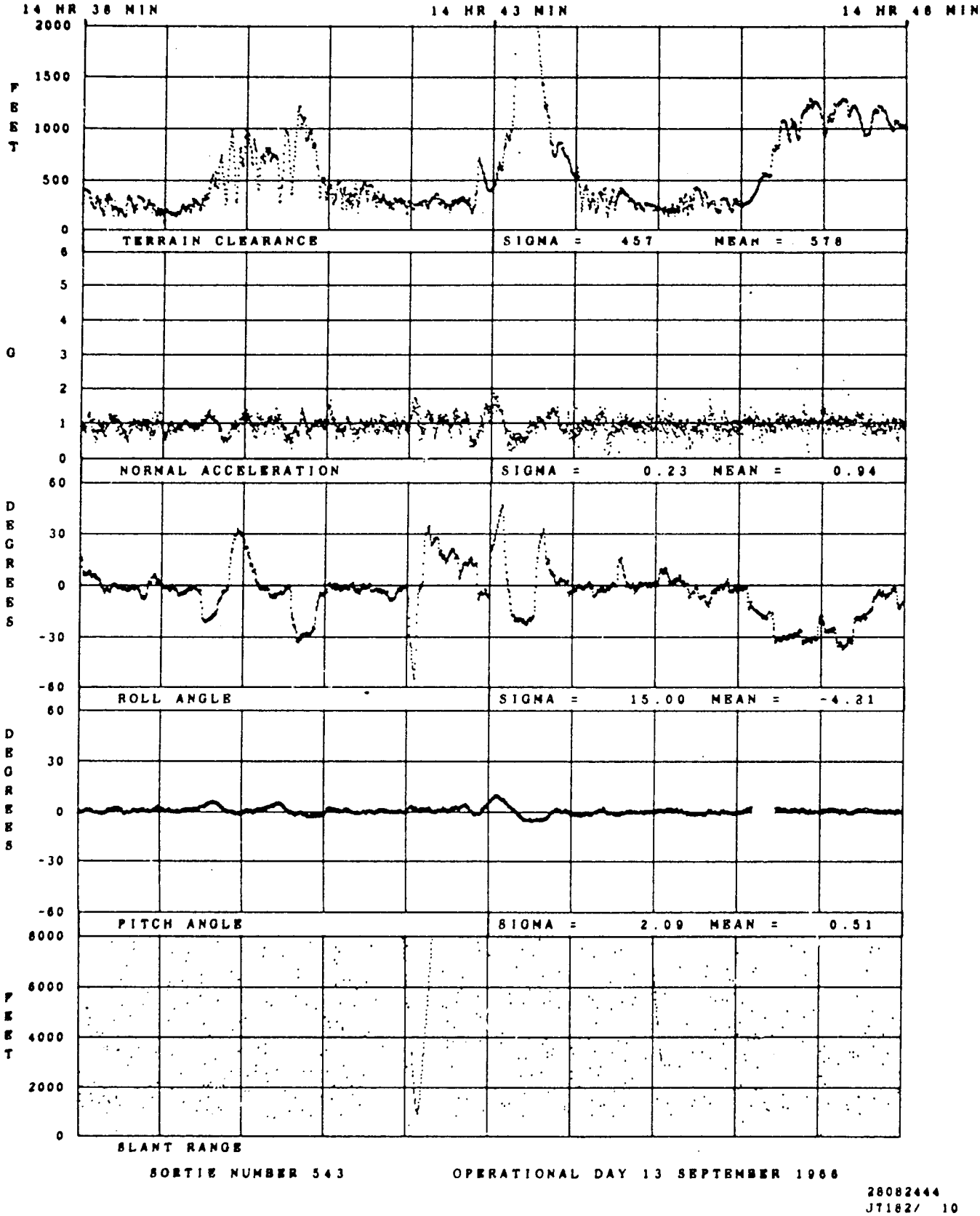


Figure 3-48 (U) Telemetered Data (Part 4 of 5)

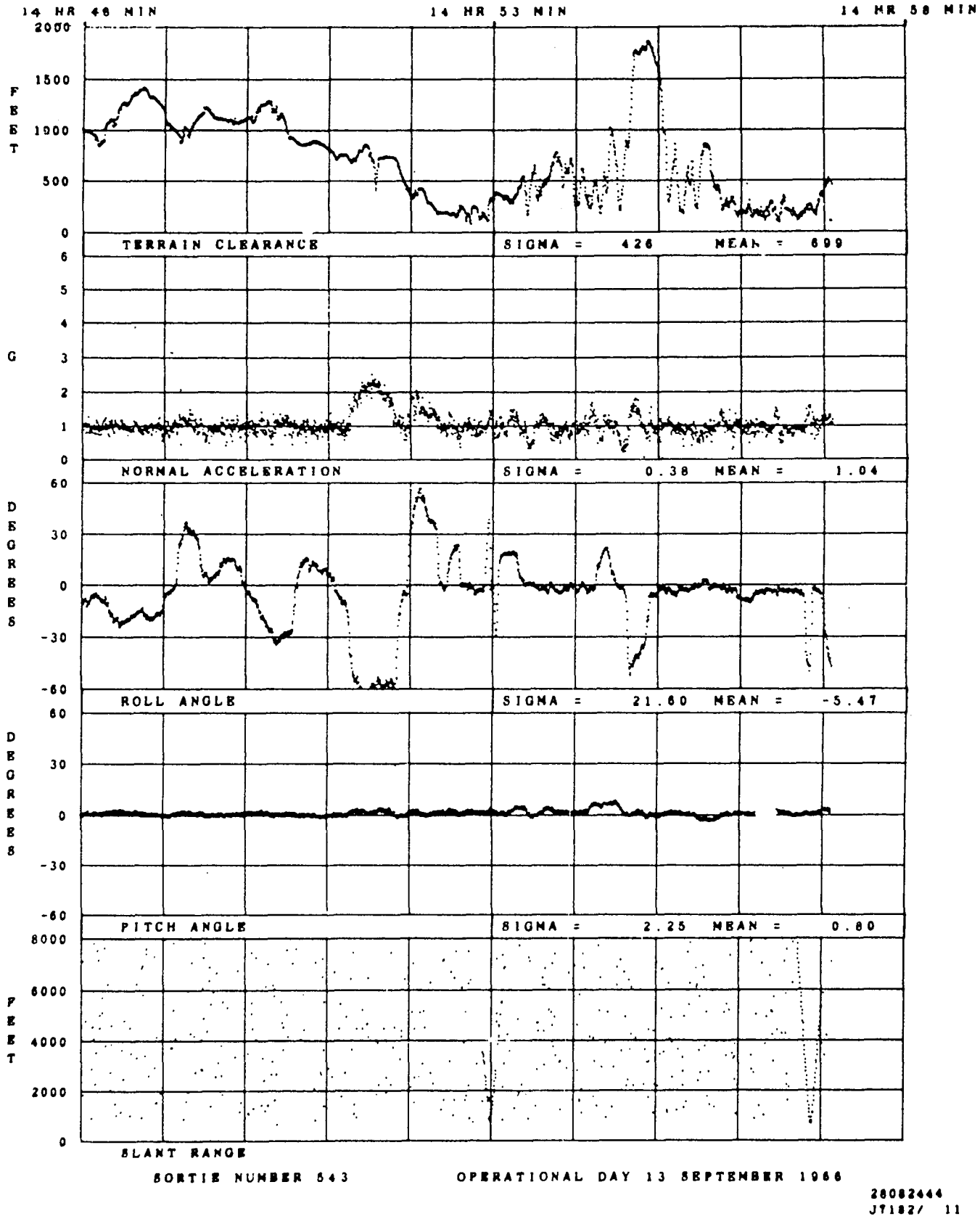
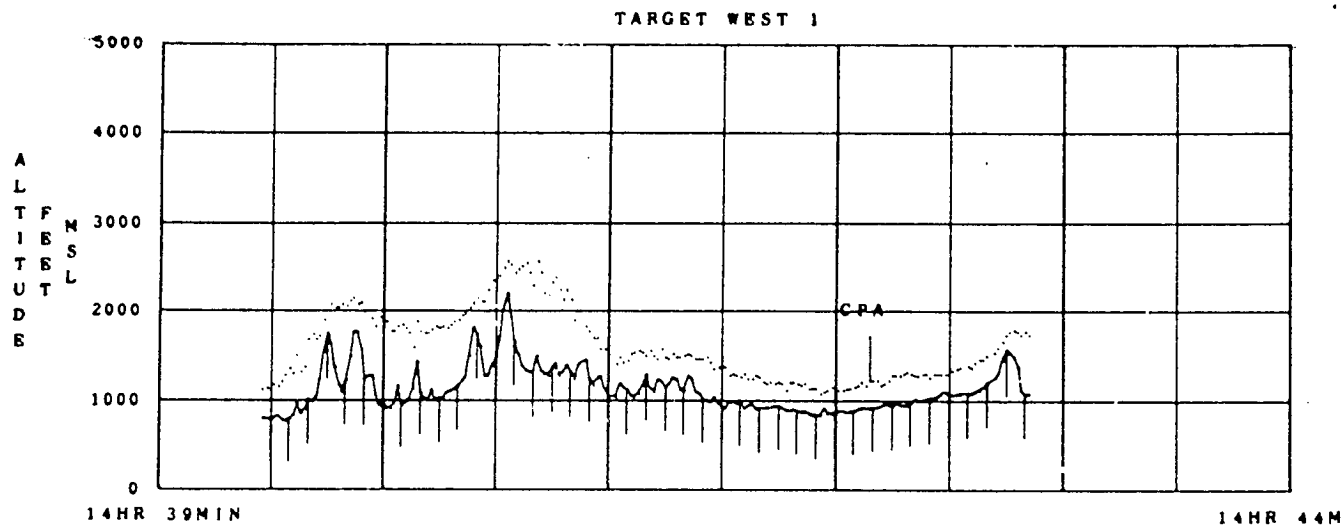
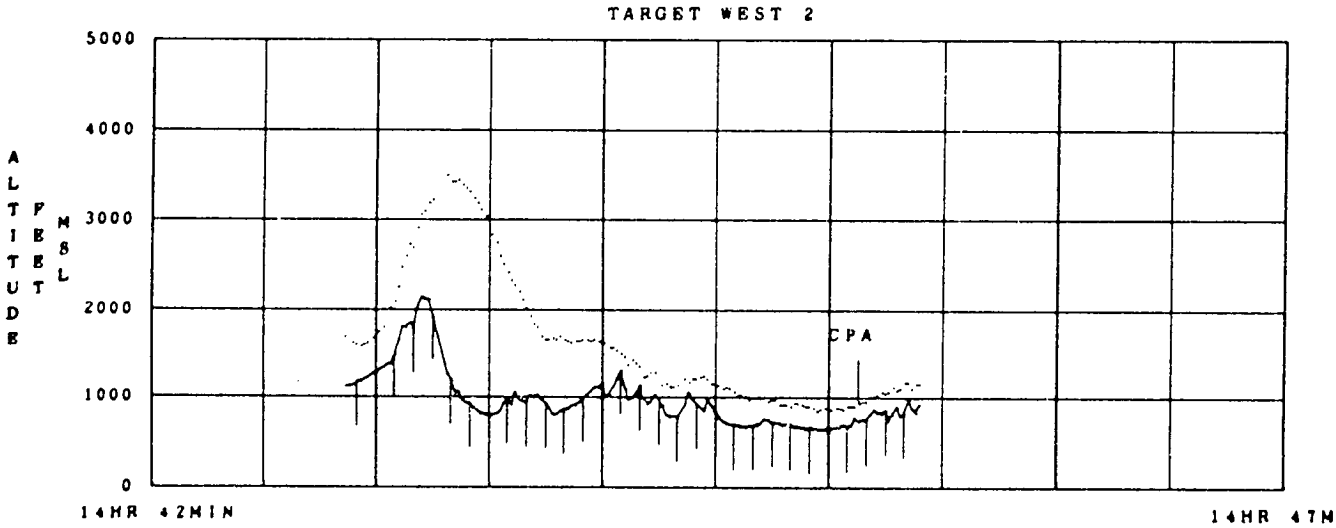


Figure 3-48 (U) Telemetered Data (Part 5 of 5)

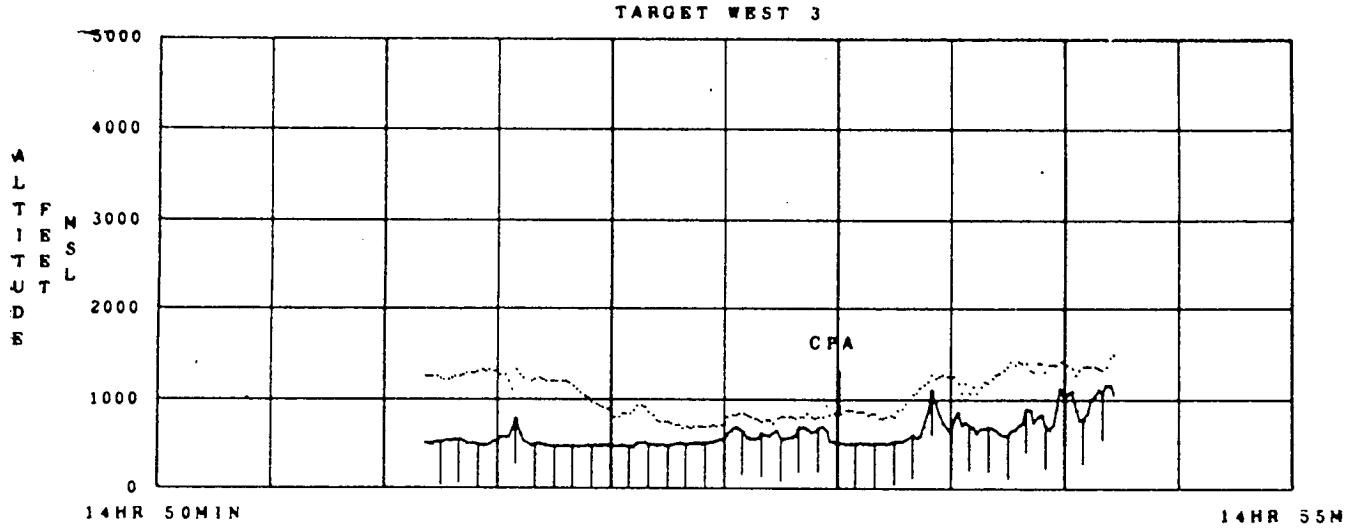


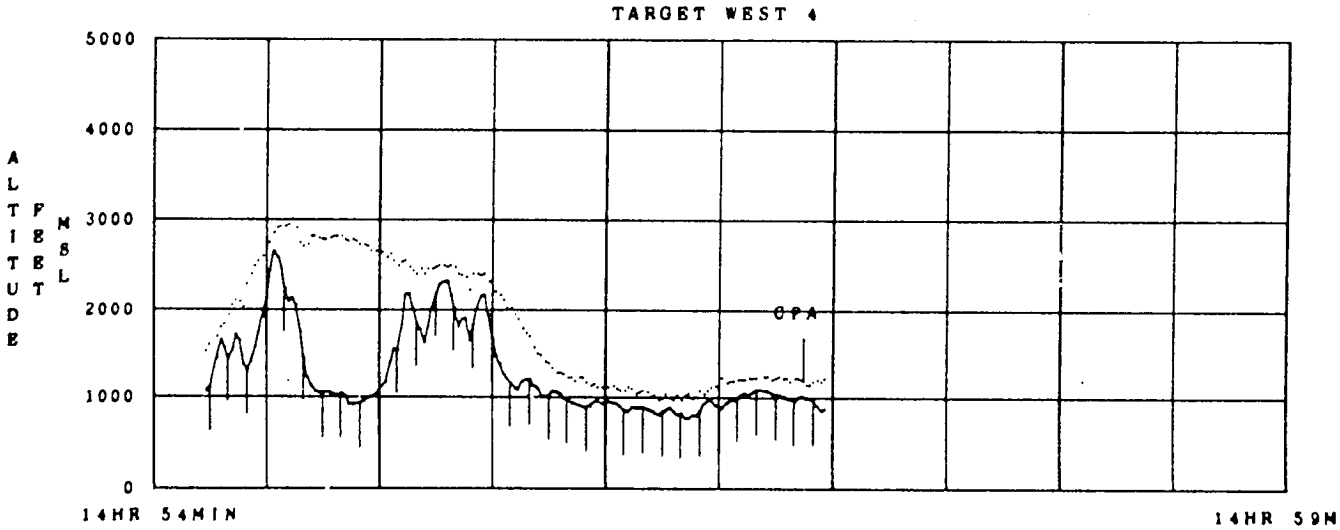


SORTIE NUMBER 543

04092445
J9139

Figure 3-49 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

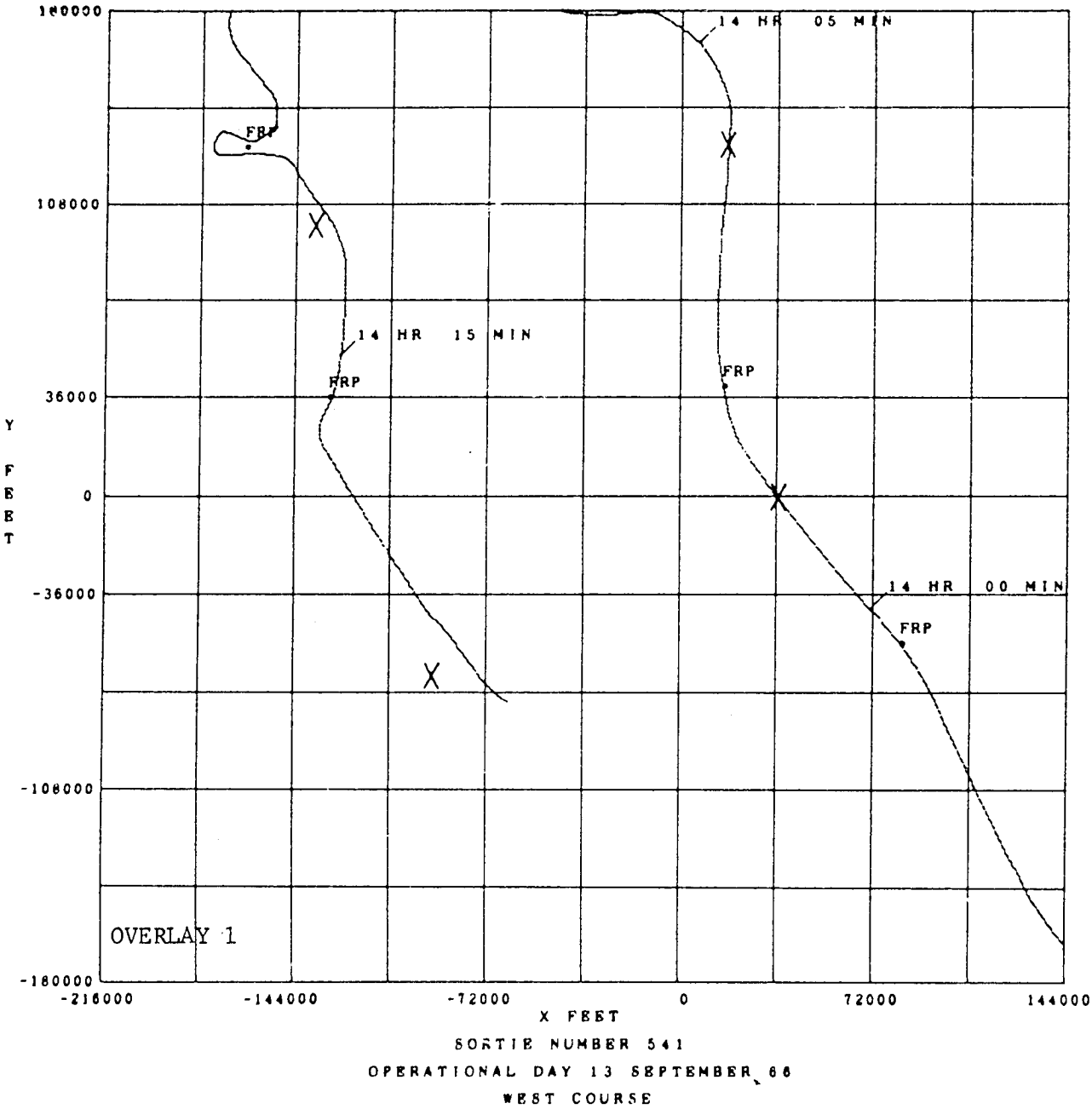




SORTIE NUMBER 543

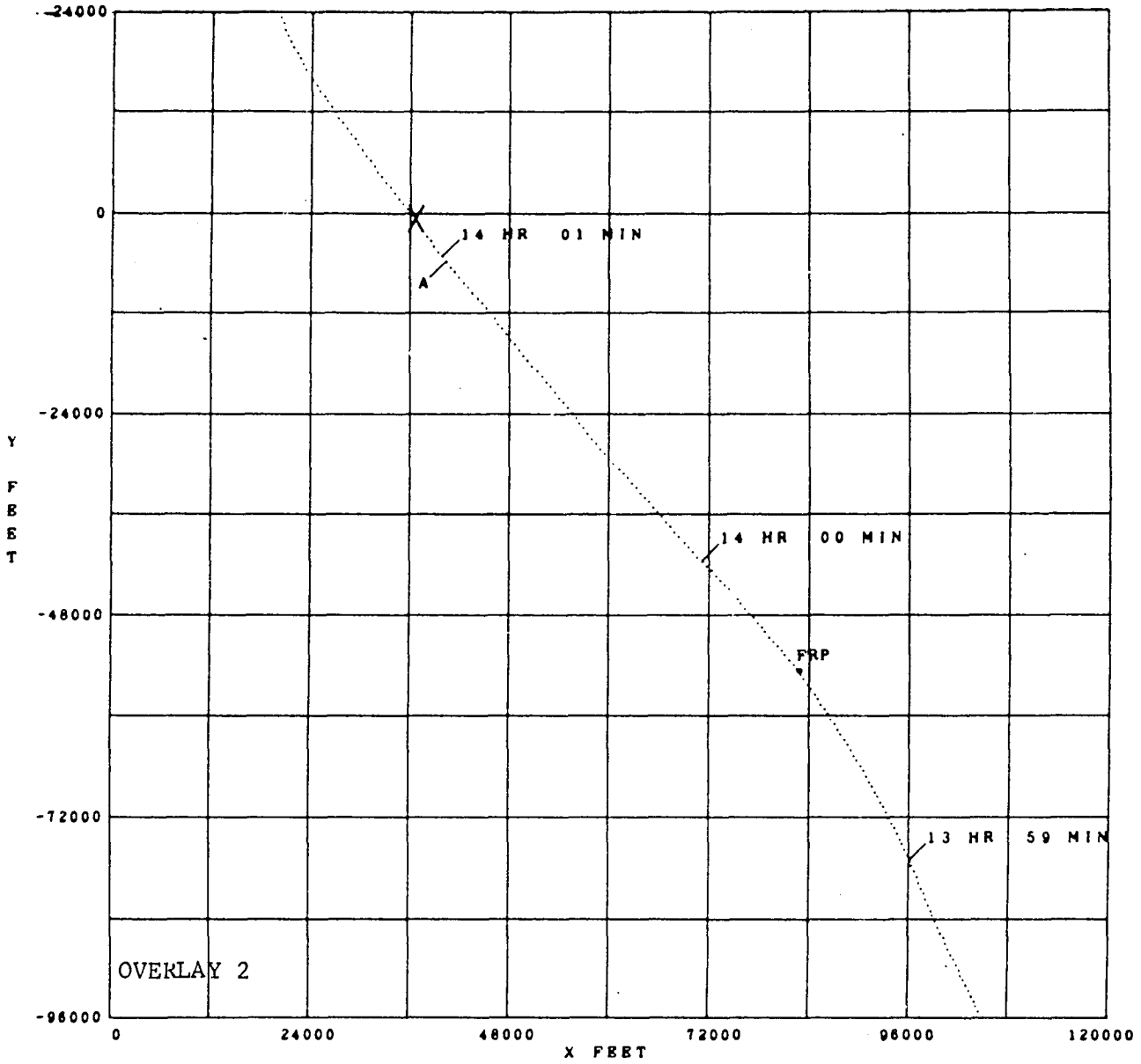
04092445
J9139

Figure 3-49 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092446
J9139 149

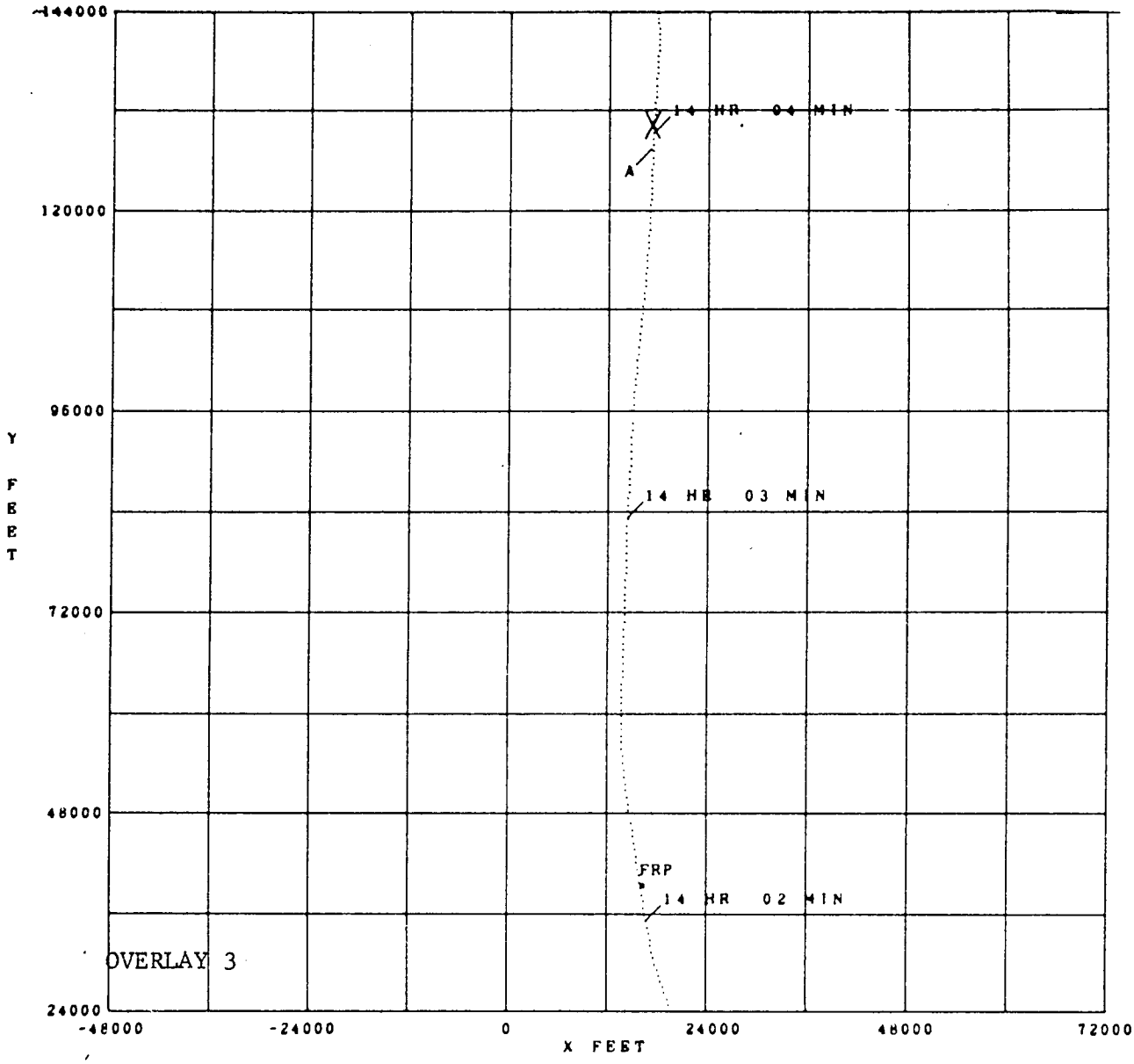
Figure 3-50 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 171 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 541
TARGET WEST 1

04092446
J9139 150

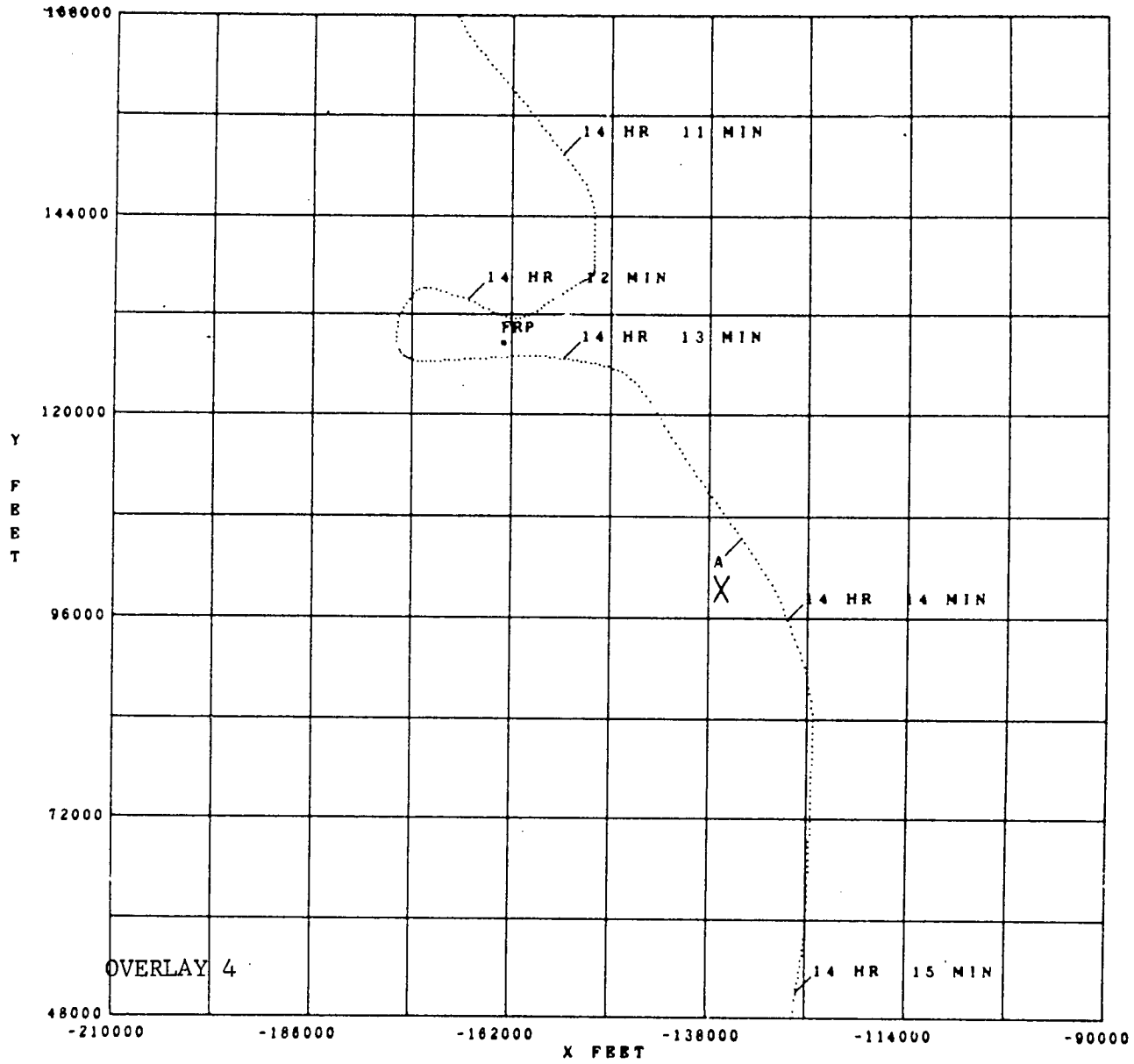
Figure 3-50 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 129 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 541
TARGET WEST 2

04092446
J9139 151

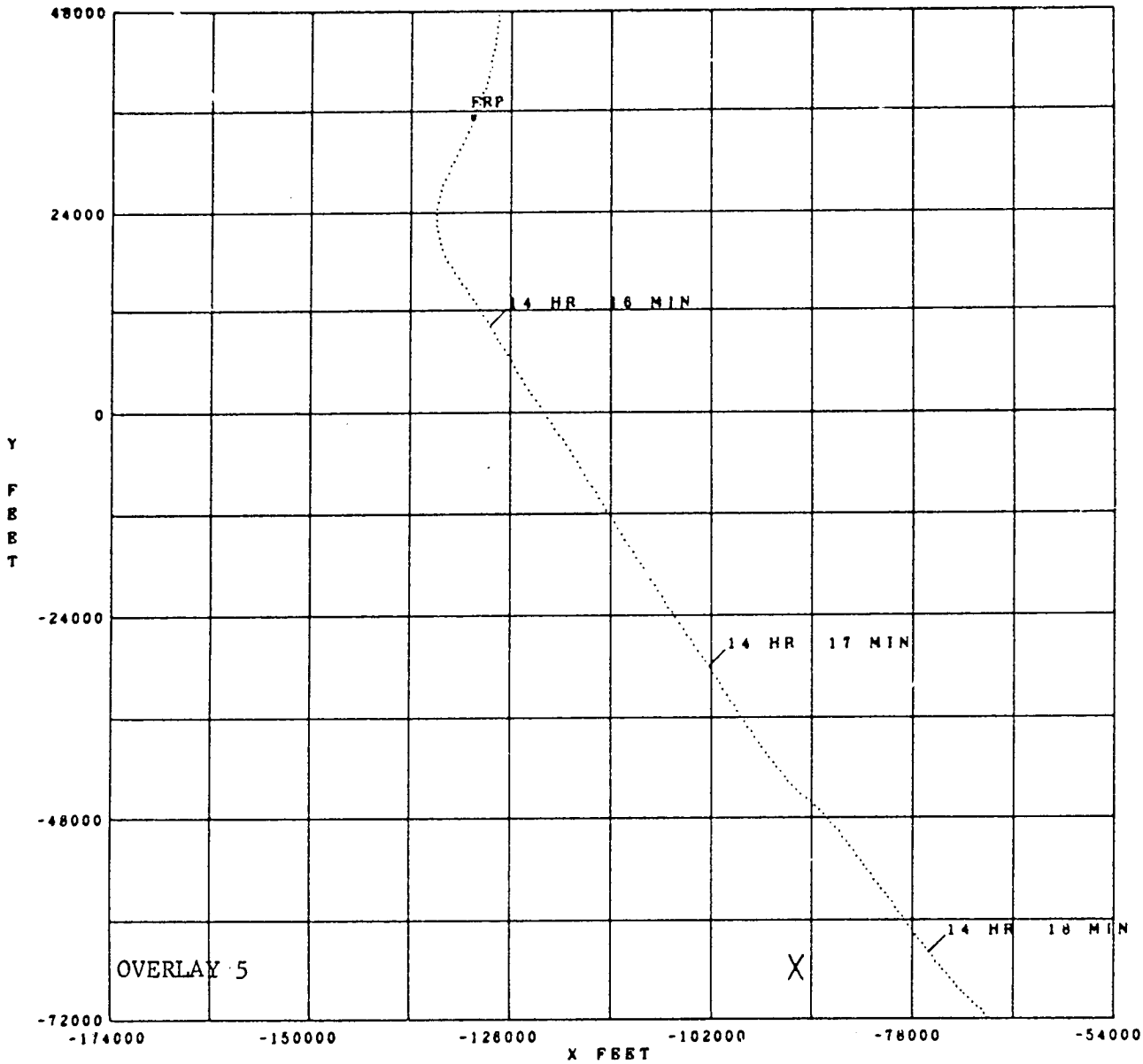
Figure 3-50 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 5360 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 541
TARGET WEST 3

04092447
J9139 152

Figure 3-50 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 13840 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 541
TARGET WEST 4

04092447
J9139 153

Figure 3-50 (U) Aircraft Position Data (Part 5 of 5)

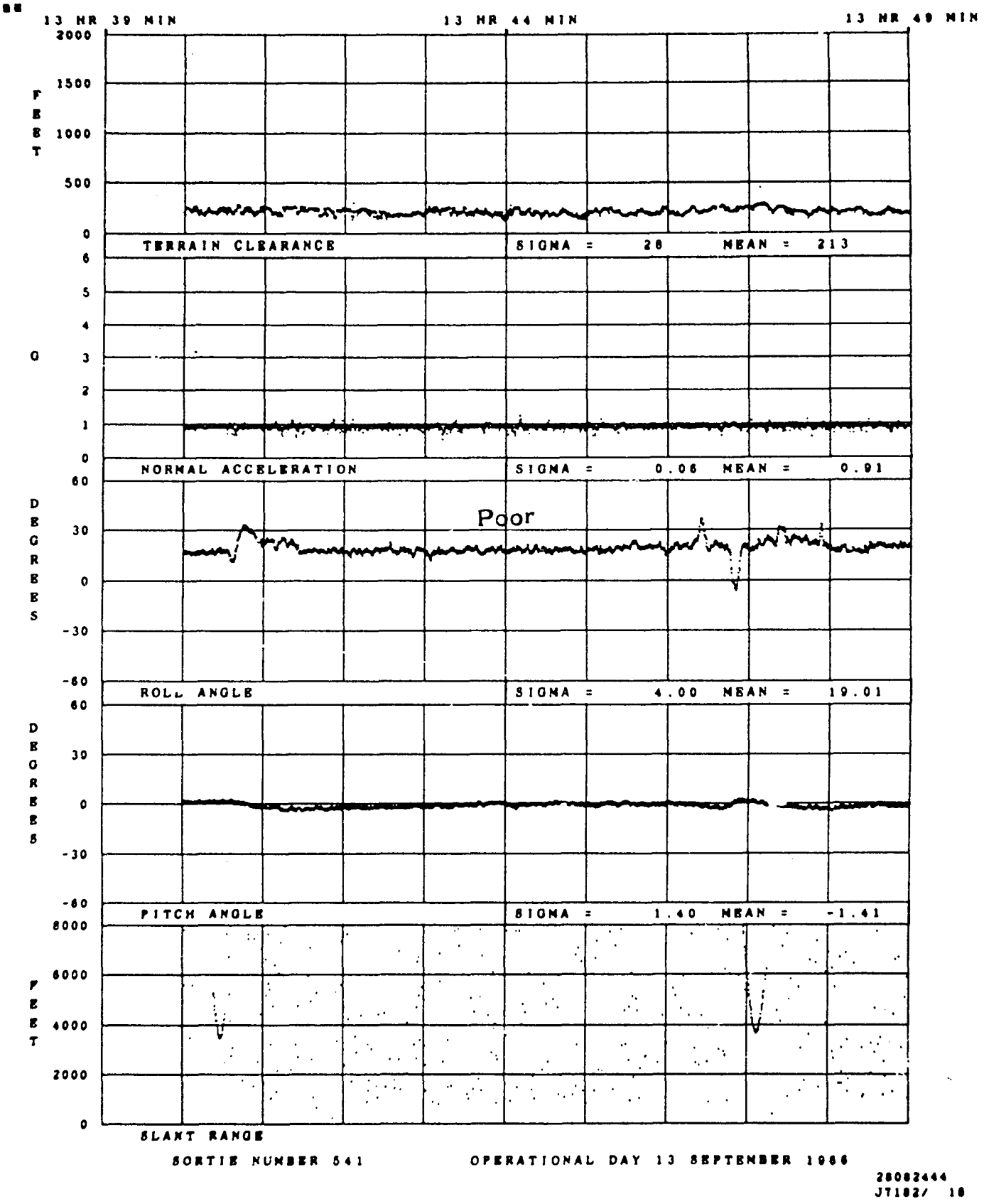


Figure 3-51 (U) Telemetered Data (Page 1 of 4)

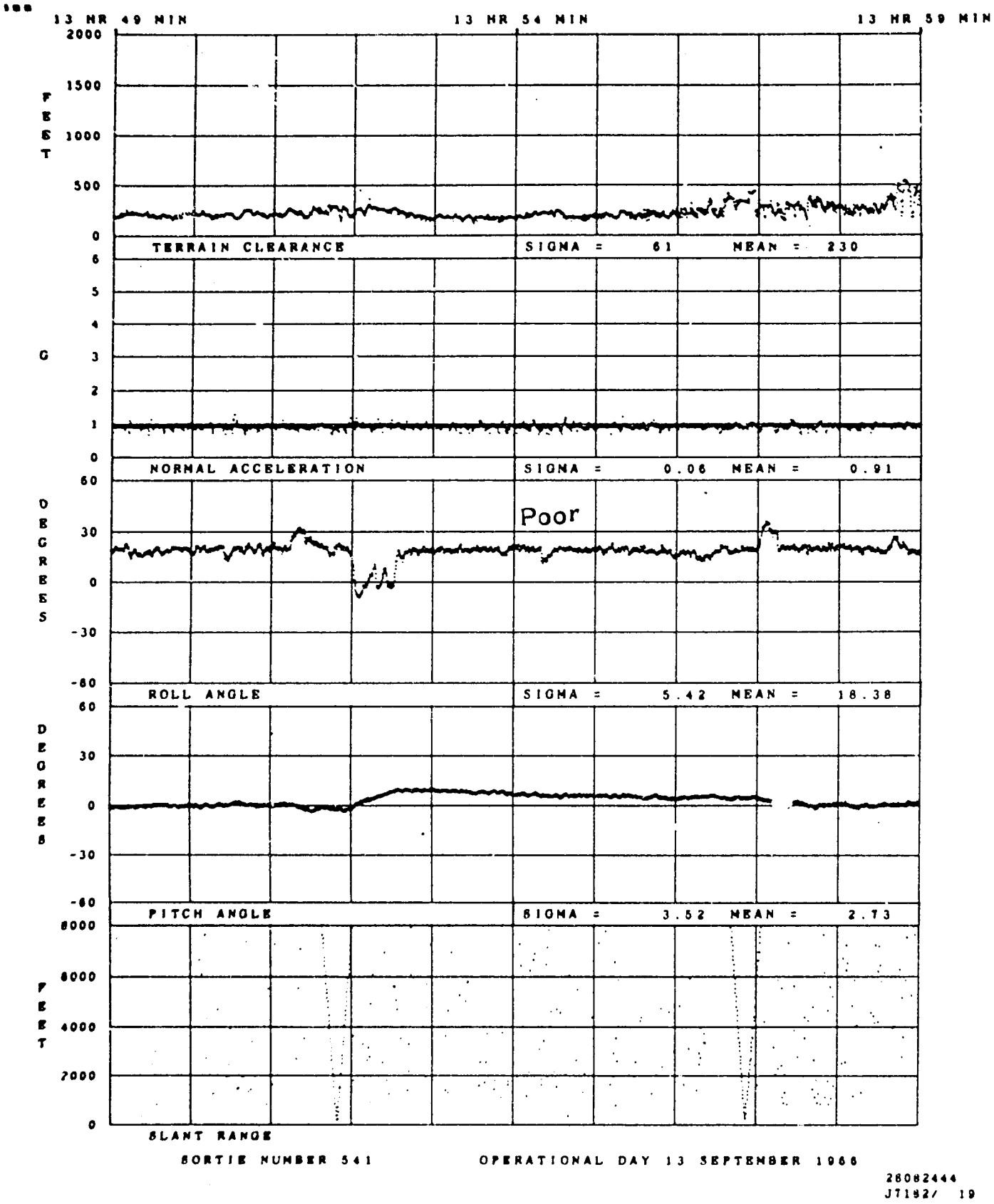


Figure 3-51 (U) Telemetered Data (Part 2 of 4)

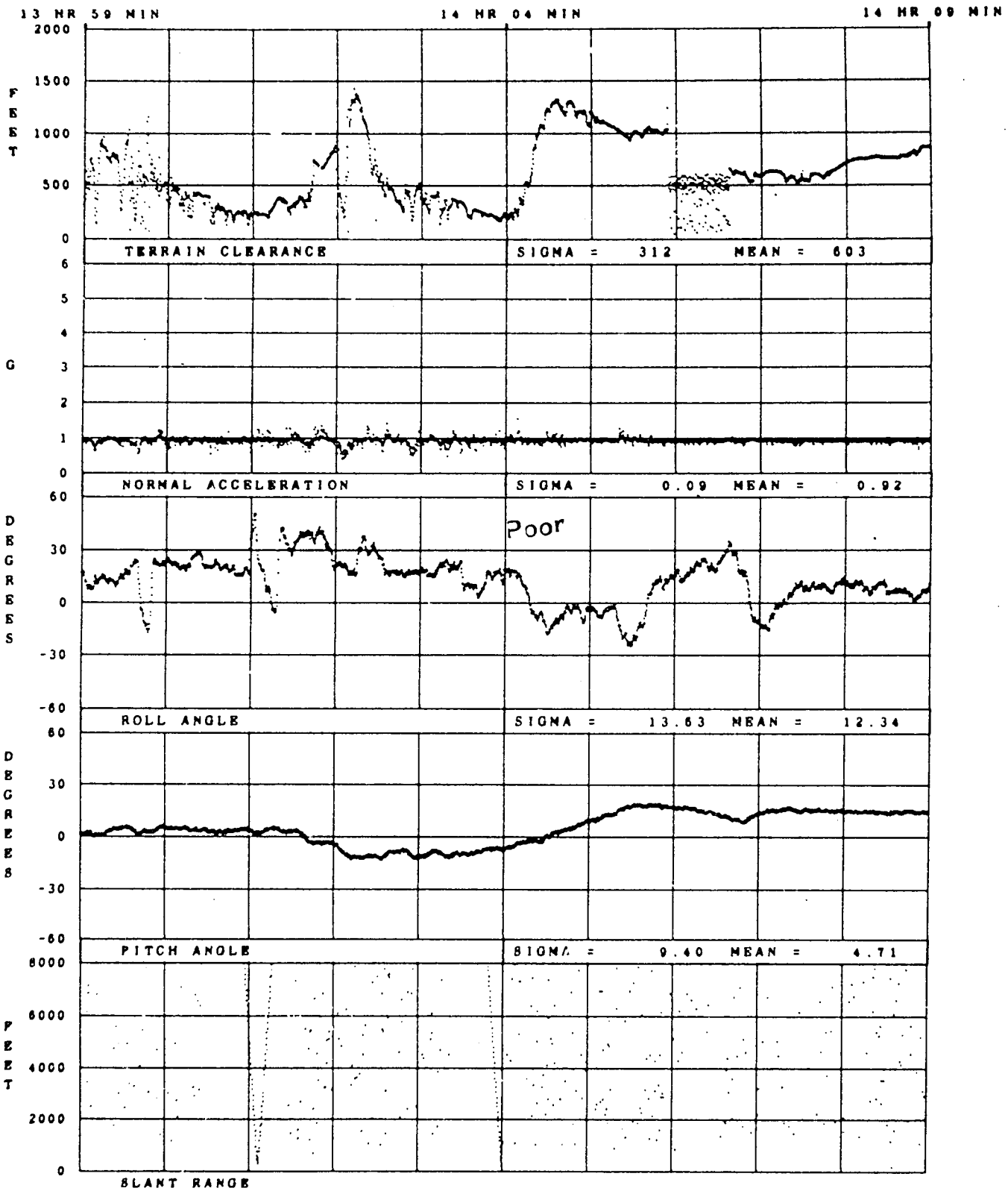


Figure 3-51 (U) Telemetered Data (Part 3 of 4)

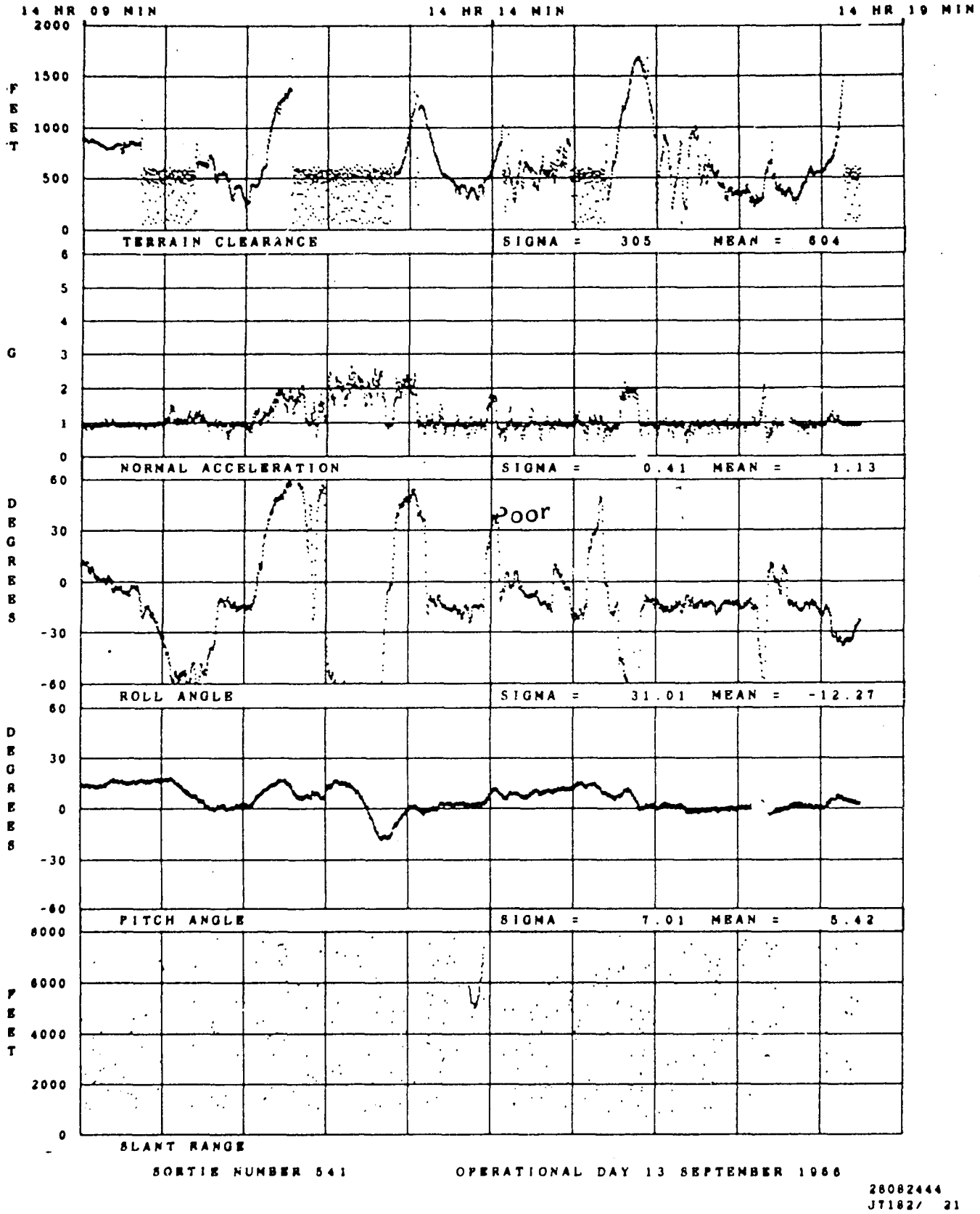
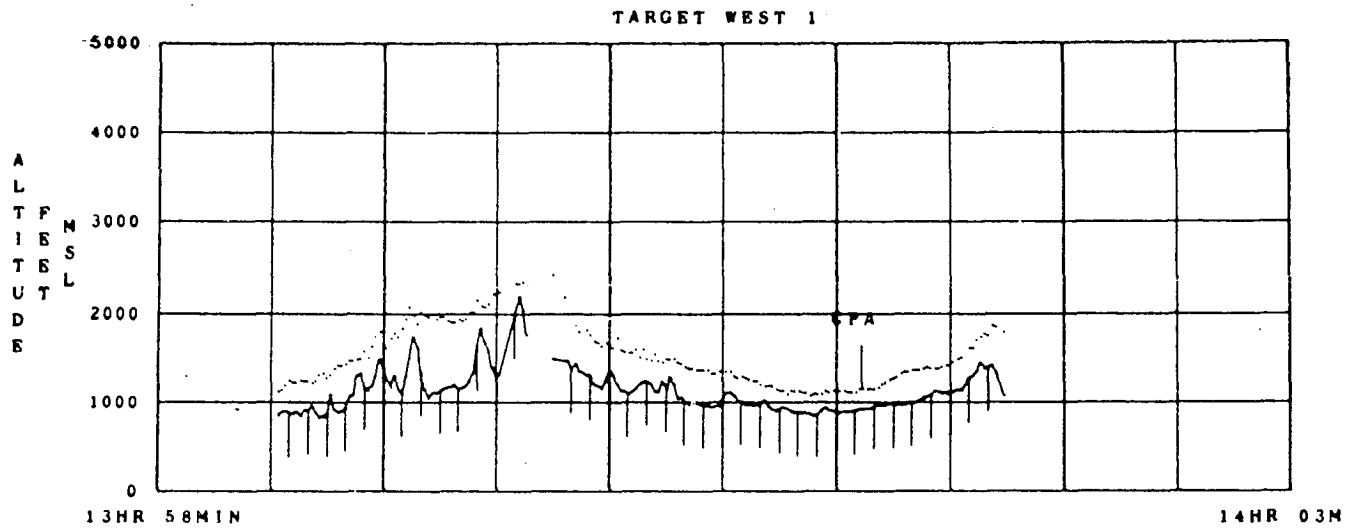
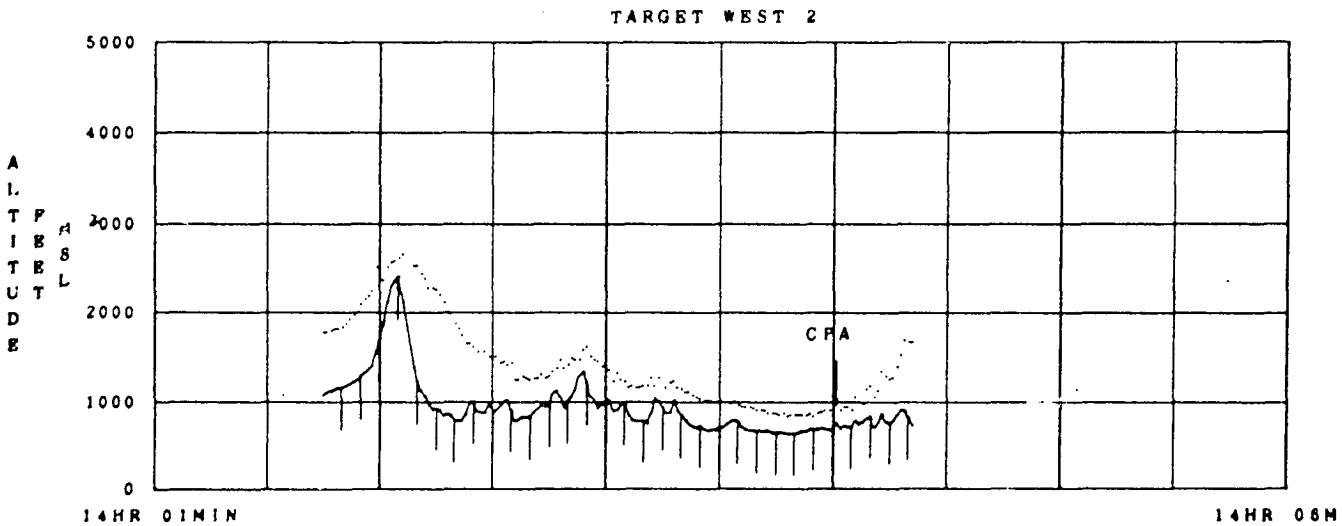


Figure 3-51 (U) Telemetered Data (Part 4 of 4)

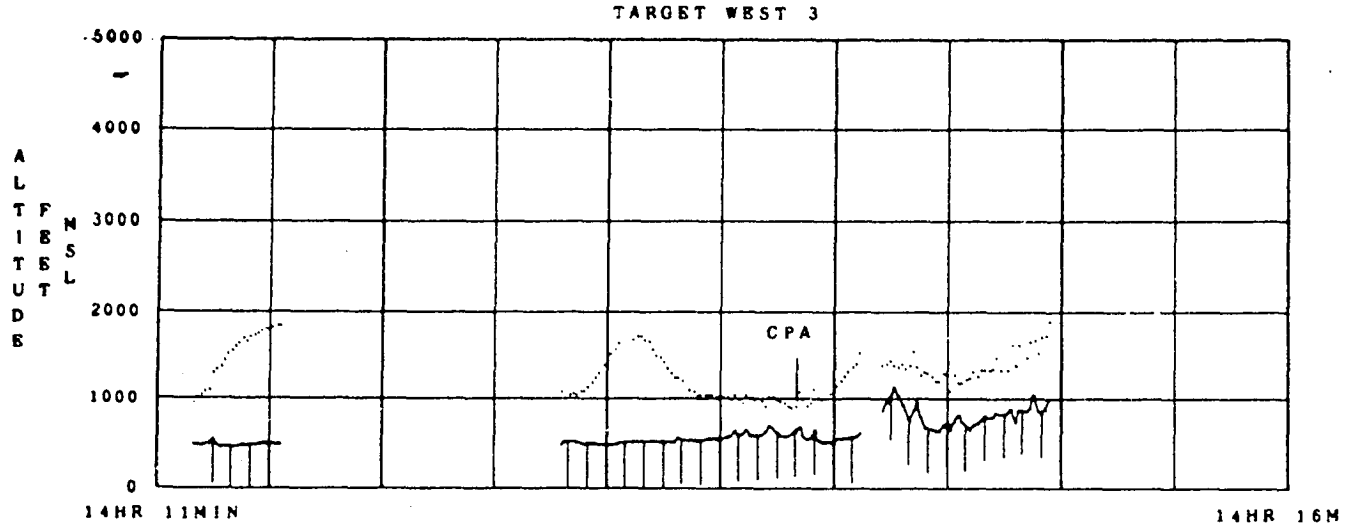


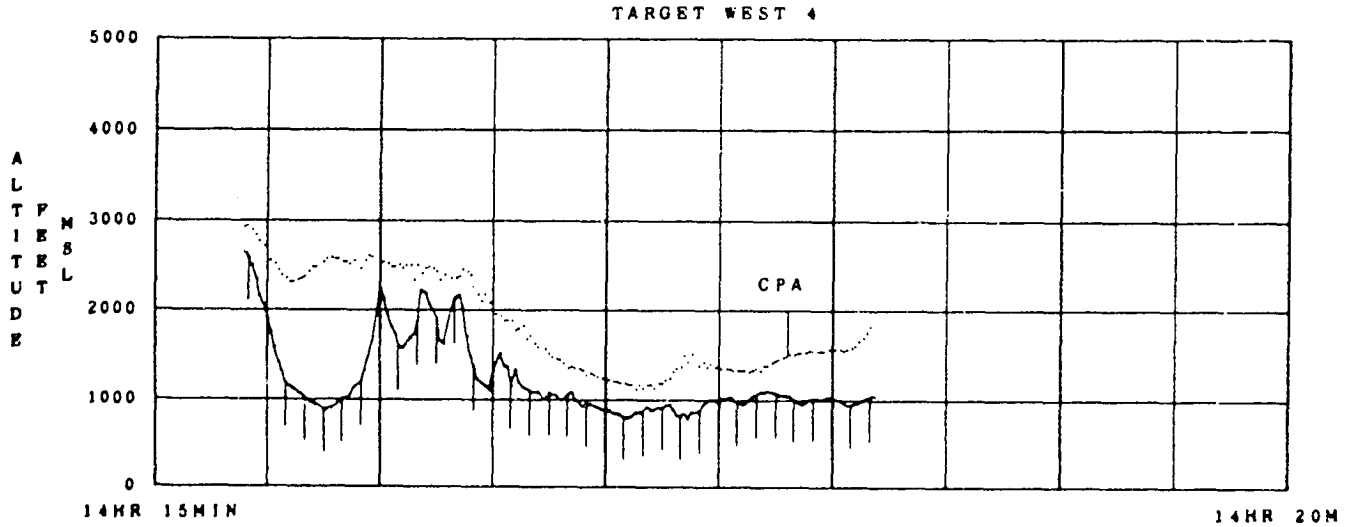


SORTIE NUMBER 541

04092447
J9139

Figure 3-52 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

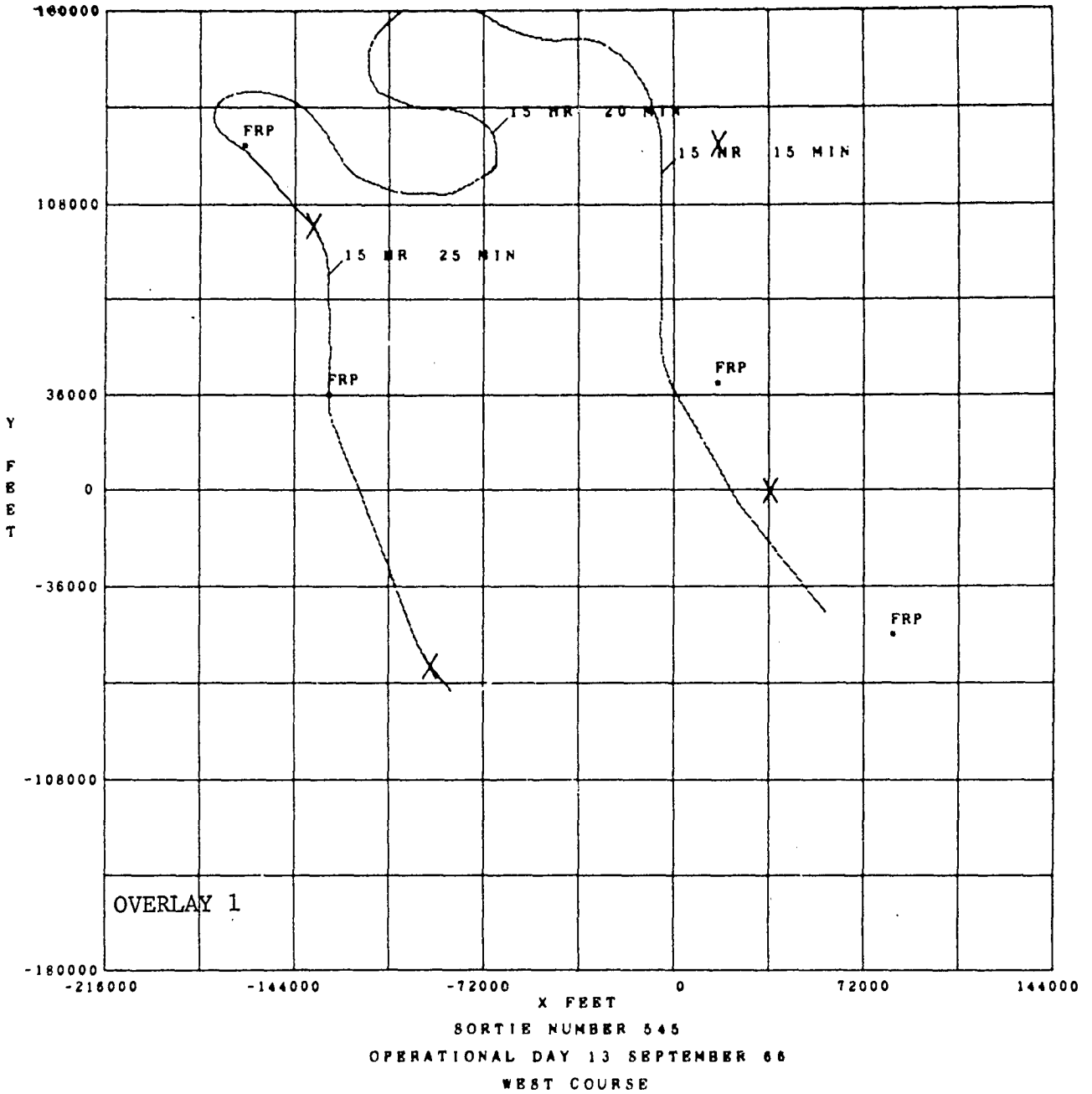




SORTIE NUMBER 541

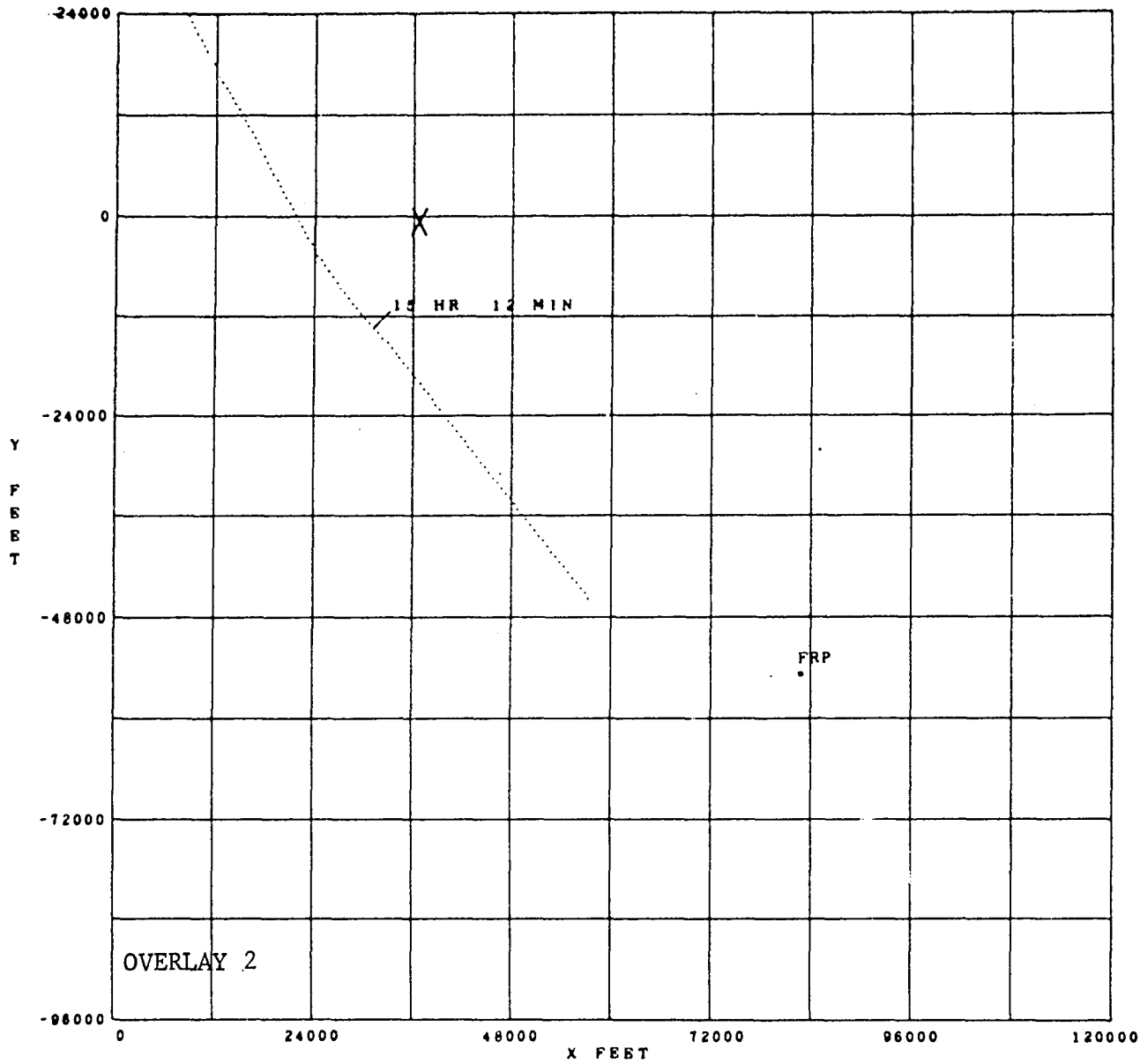
04092447
J9139

Figure 3-52 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092448
J9139 11

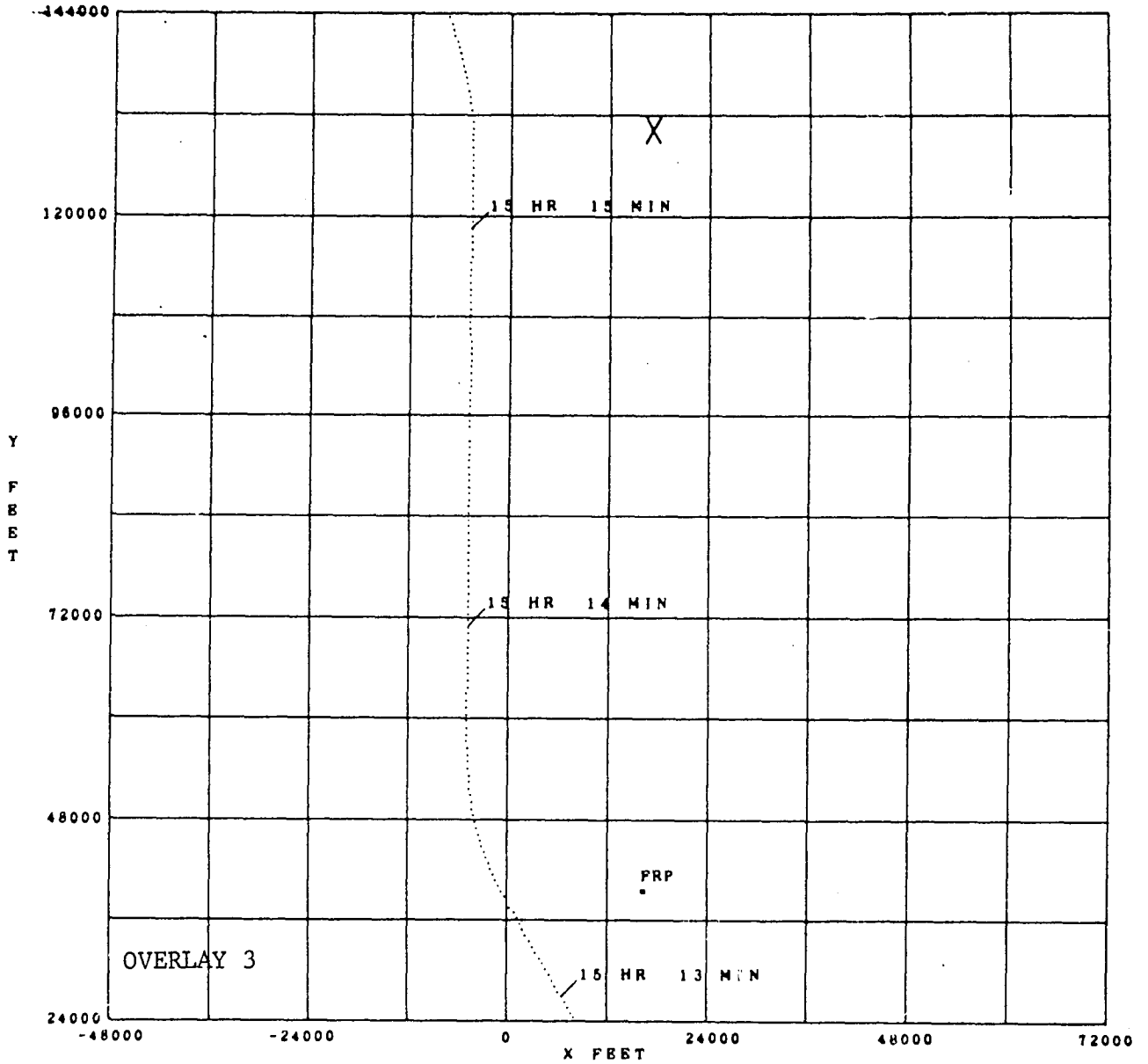
Figure 3-53 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 12328 FEET
MINIMUM GROUND DISTANCE QUALIFIER = ONE
SORTIE NUMBER 545
TARGET WEST 1

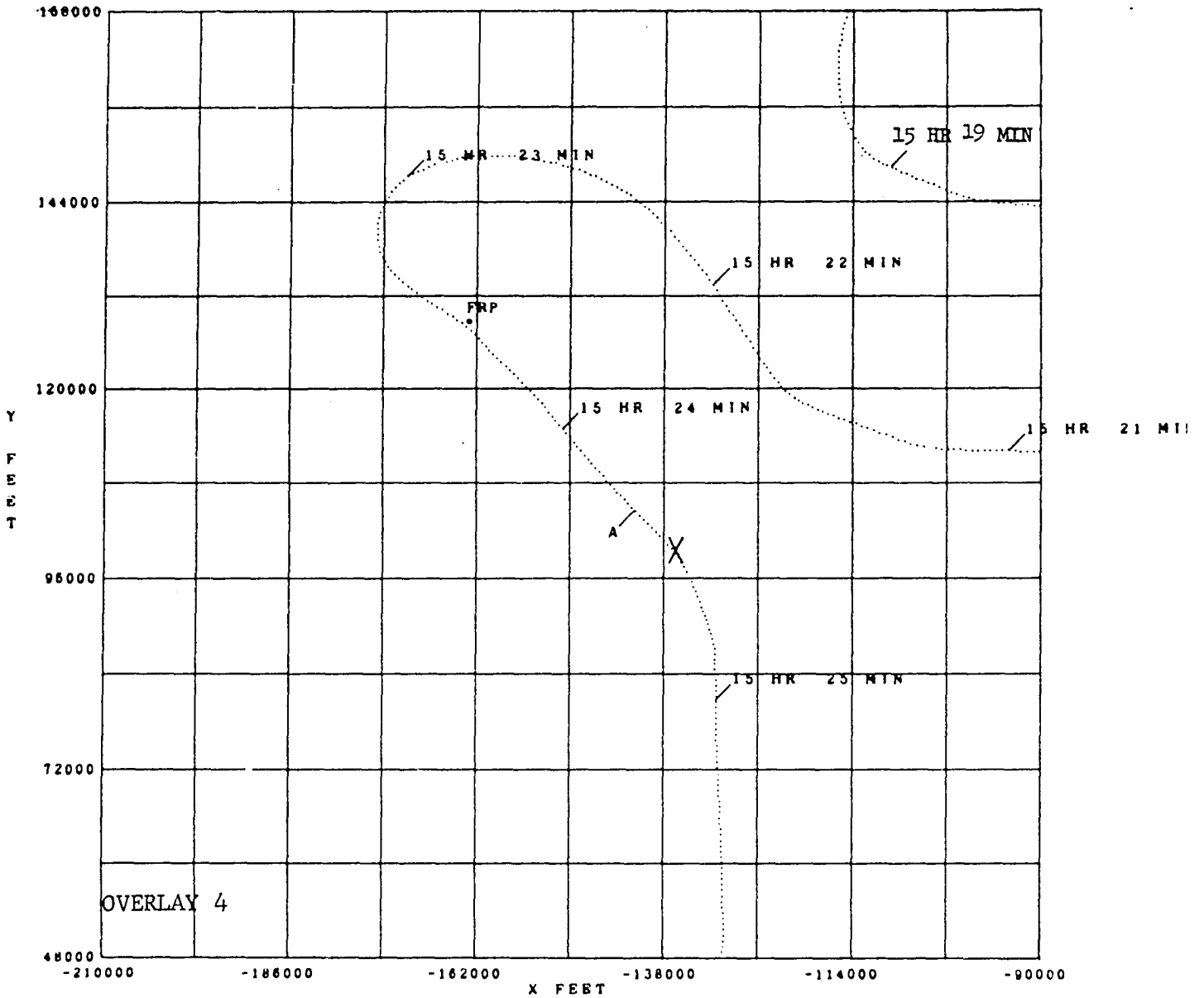
04092448
J9139 174

Figure 3-53 (U) Aircraft Position Data (Part 2 of 5)



04092448
J9139 175

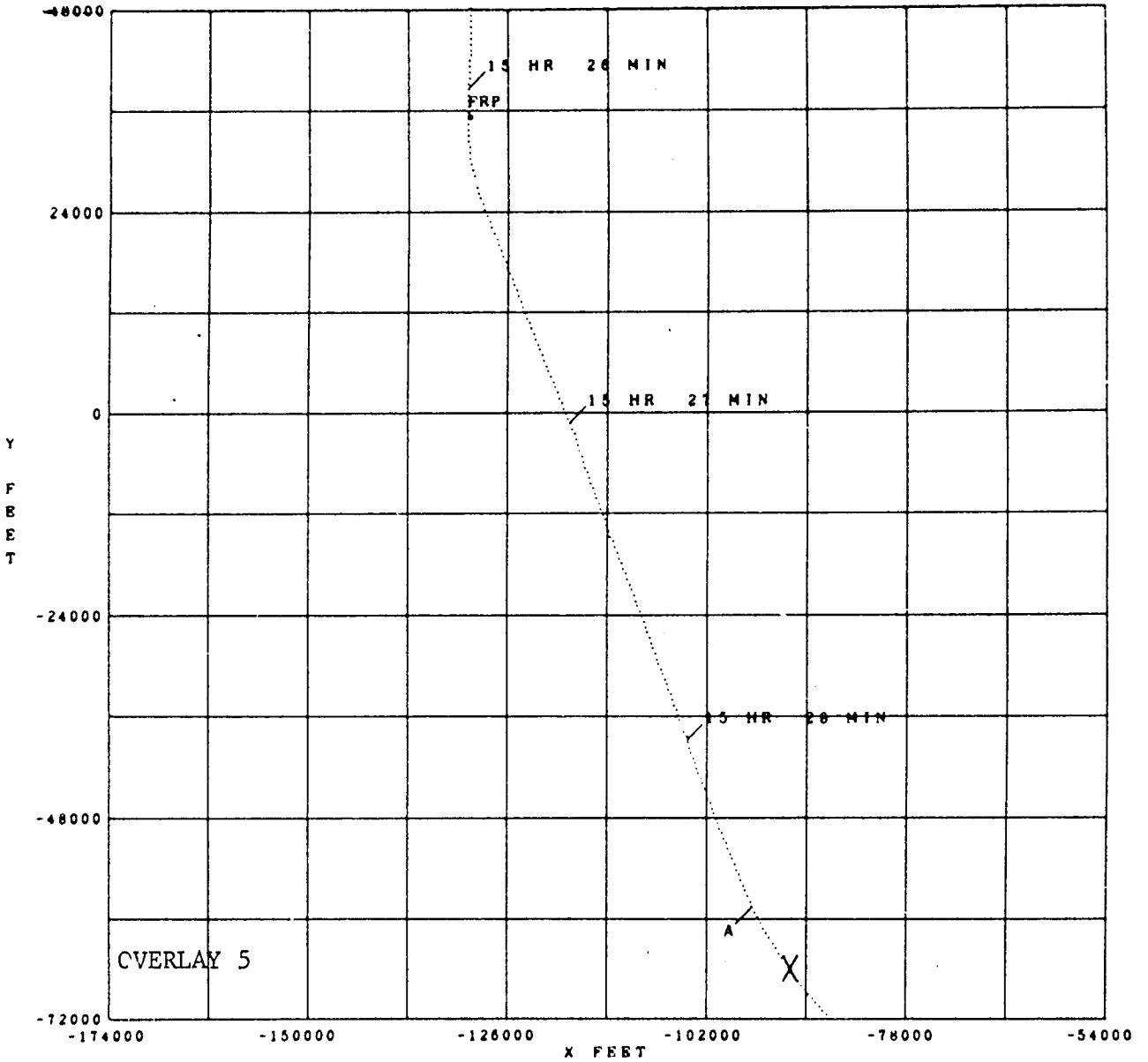
Figure 3-53 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 311 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 545
TARGET WEST 3

04092448
J9139 176

Figure 3-53 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 80 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 545
TARGET WEST 4

04092448
J9139 177

Figure 3-53 (U) Aircraft Position Data (Part 5 of 5)

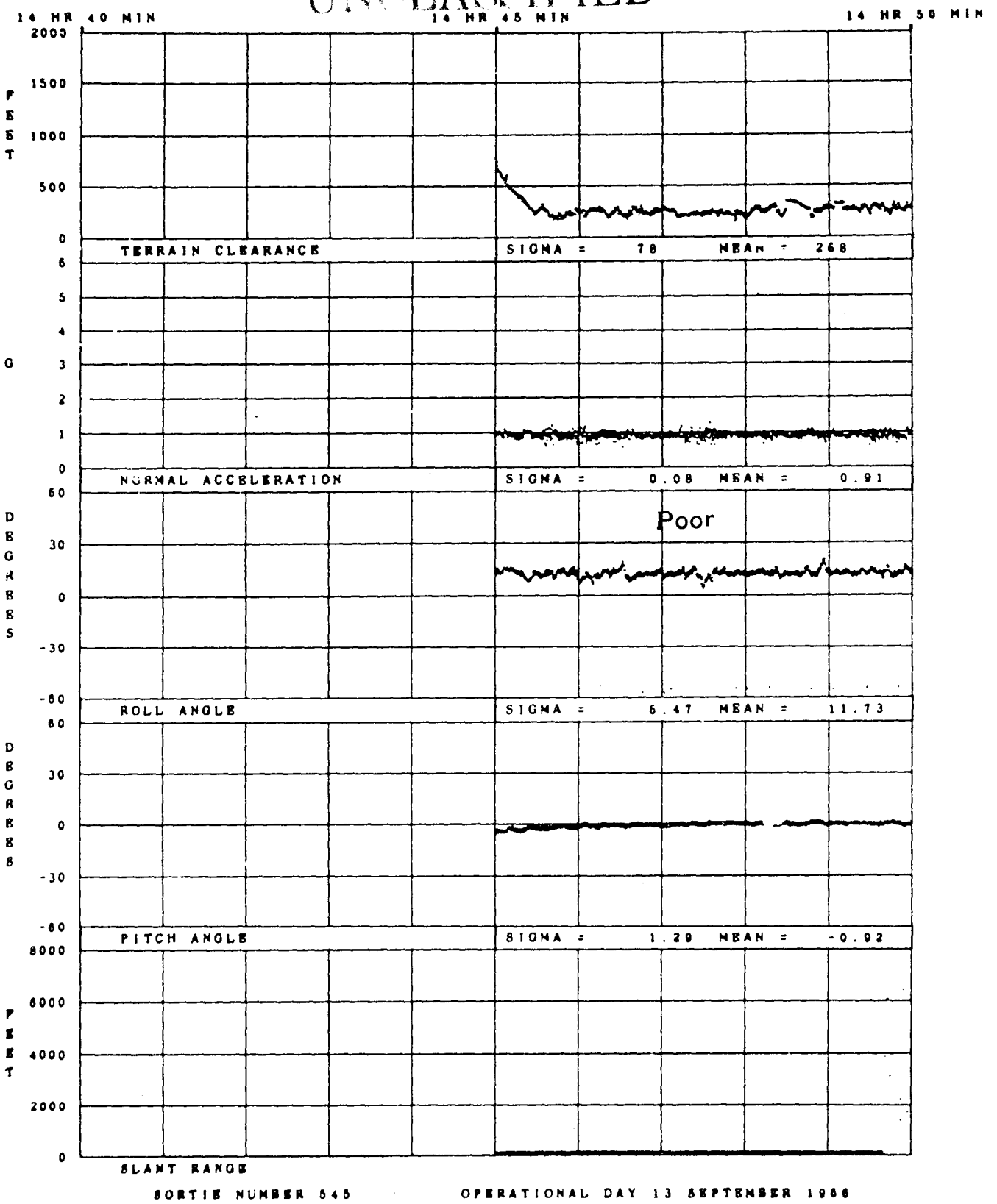


Figure 3-54 (U) Telemetered Data (Part 1 of 5)

UNCLASSIFIED

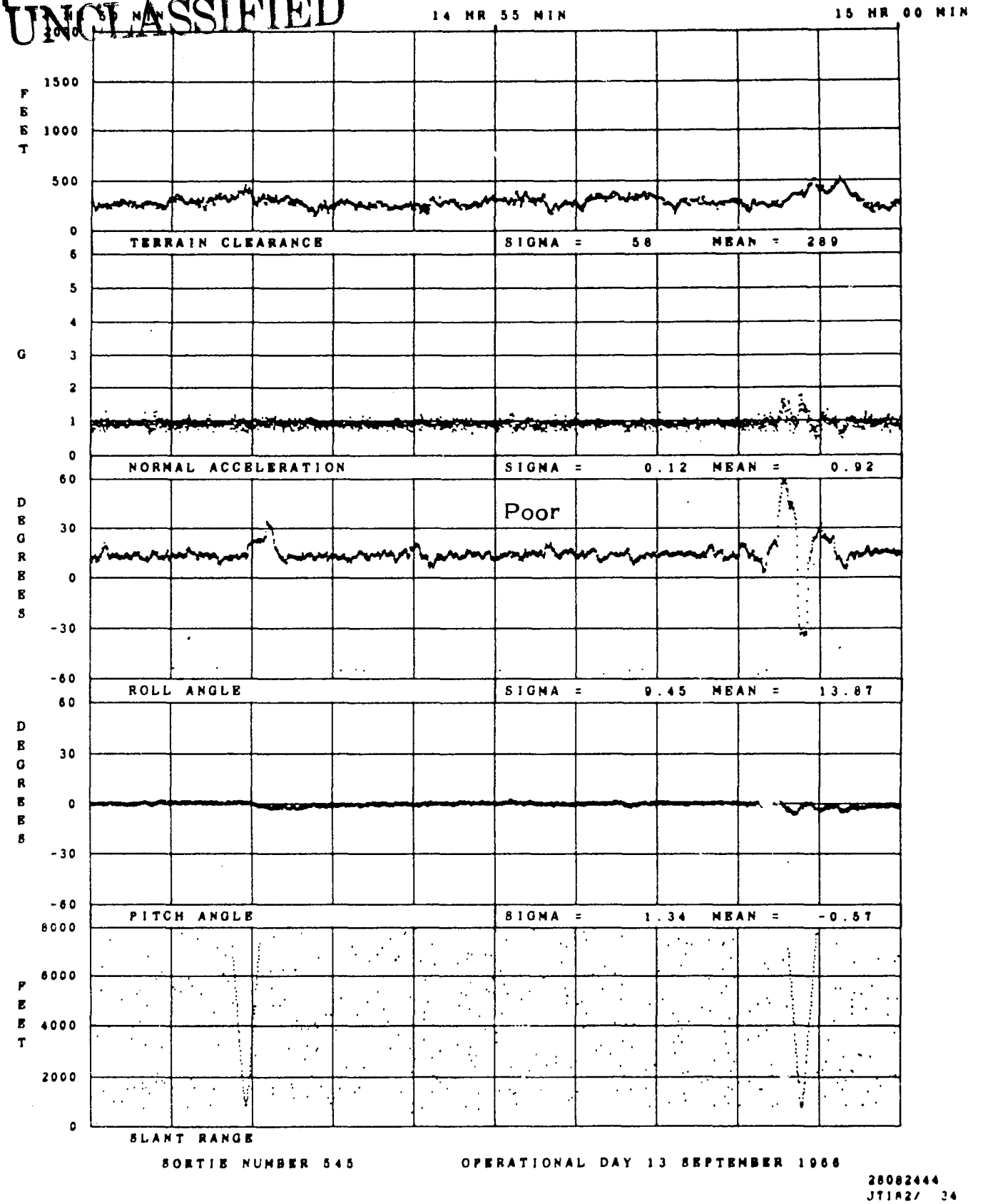


Figure 3-54 (U) Telemetered Data (Part 2 of 5)

UNCLASSIFIED

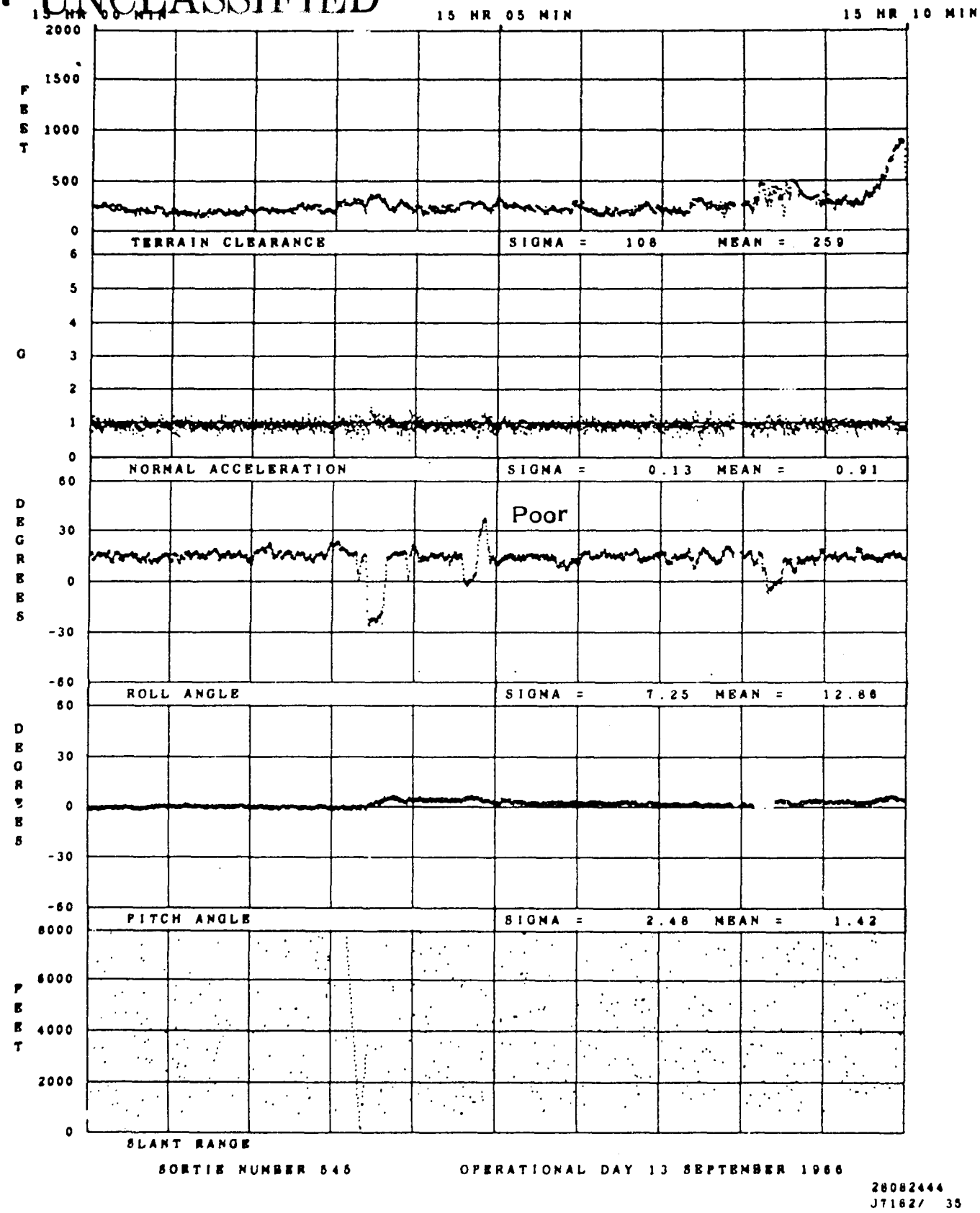


Figure 3-54 (U) Telemetered Data (Part 3 of 5)

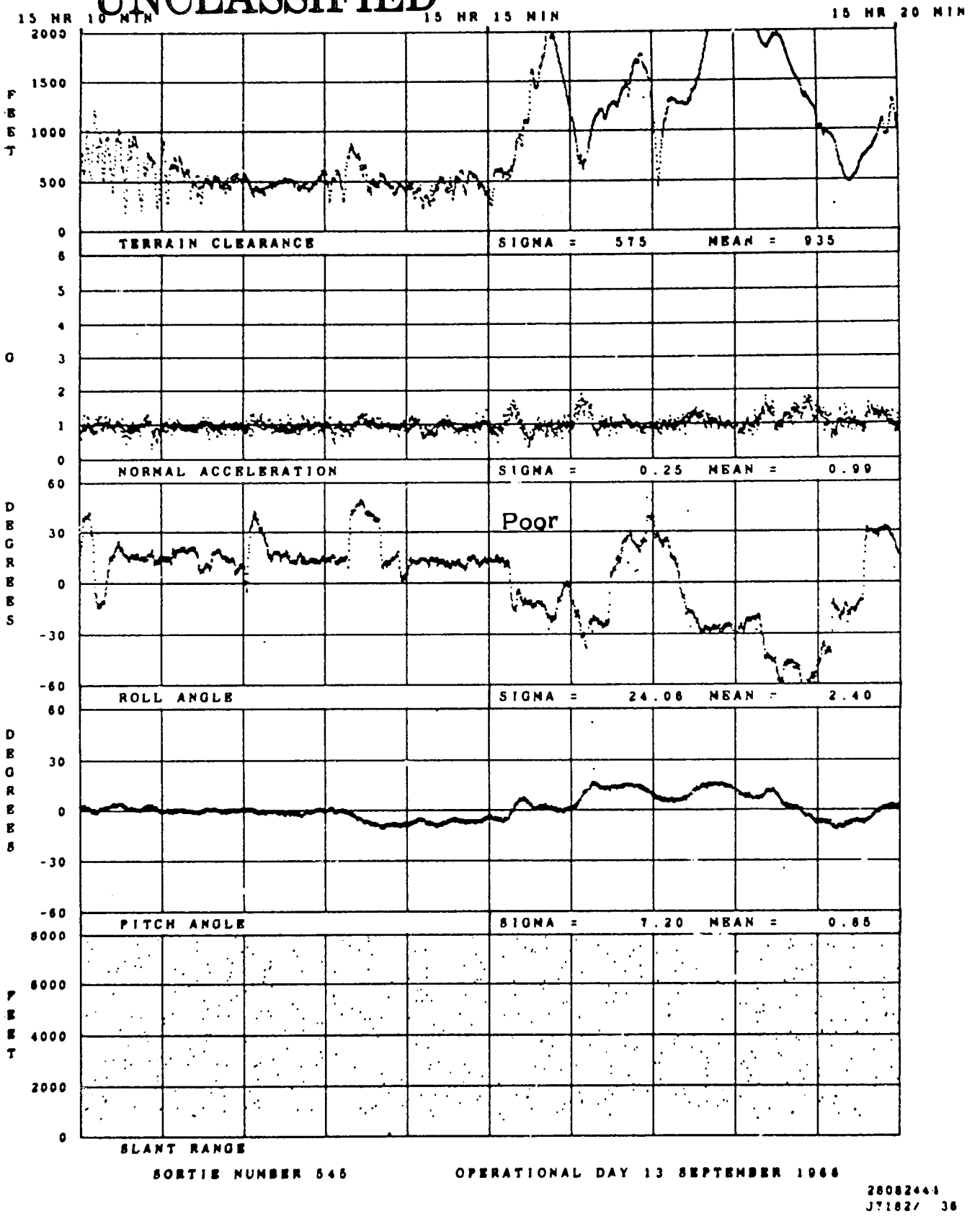


Figure 3-54 (U) Telemetered Data (Part 4 of 5)

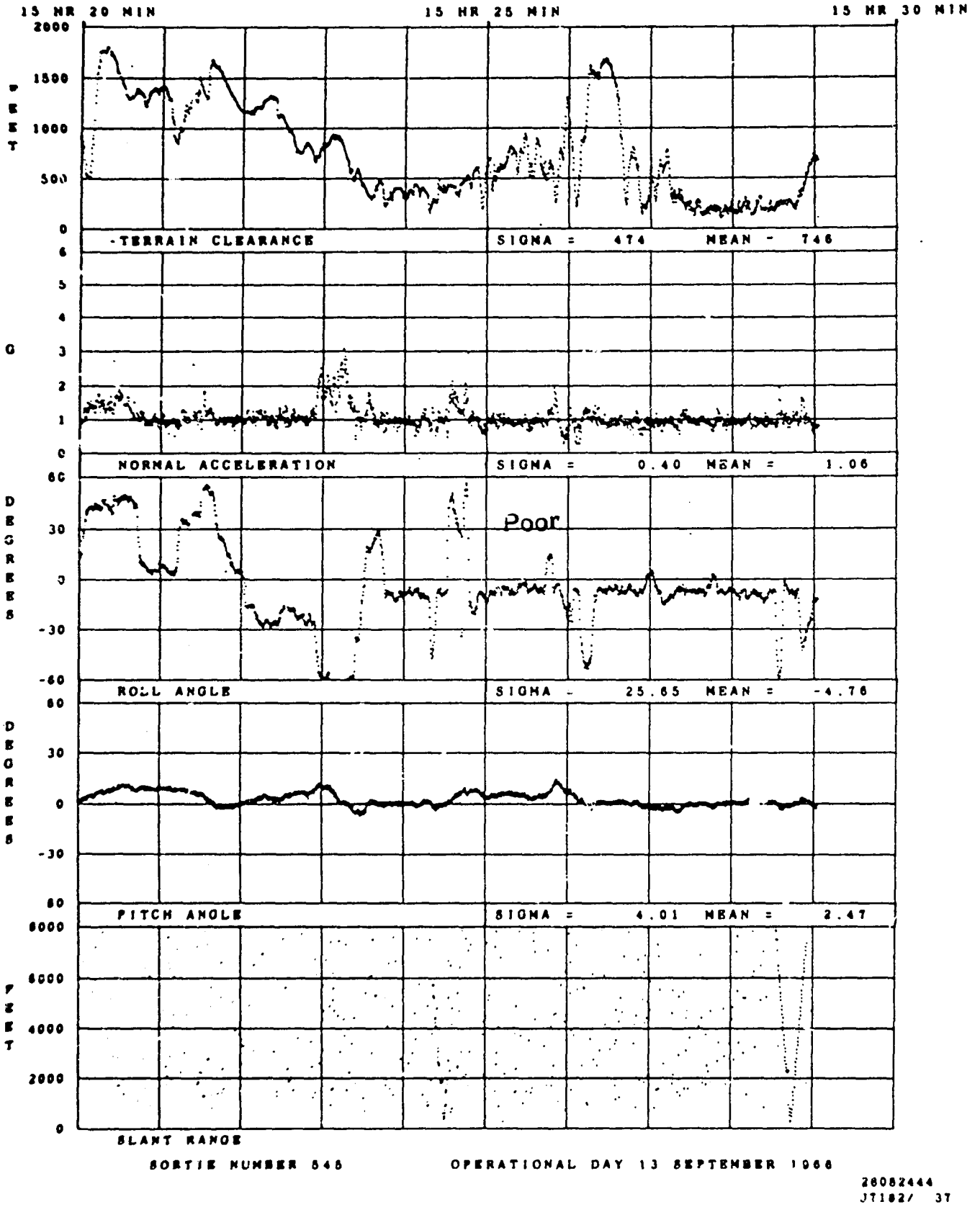
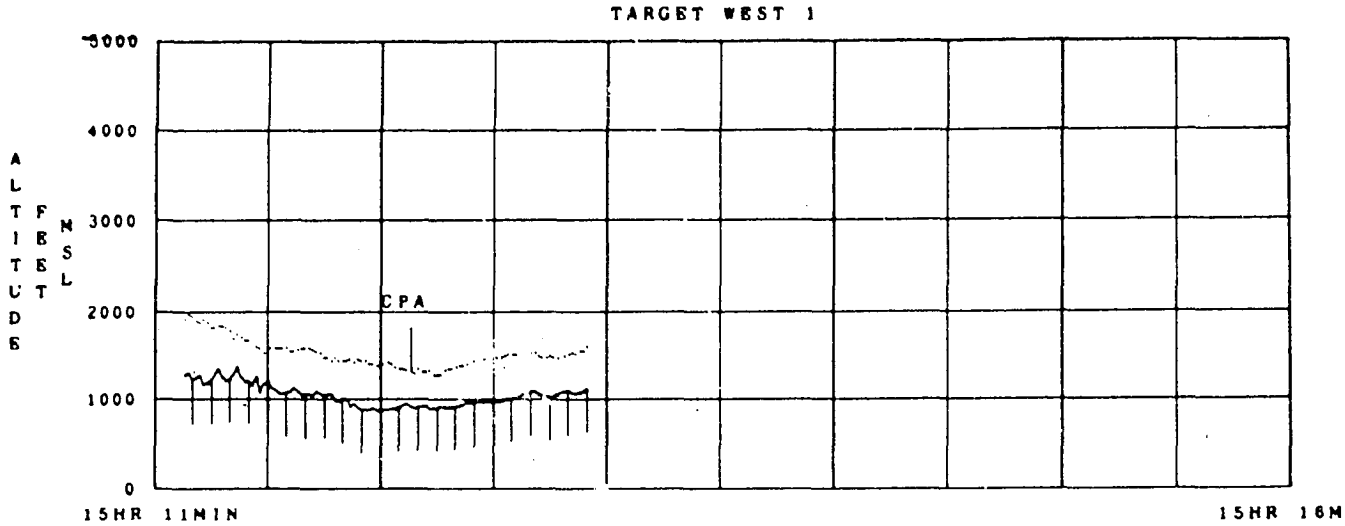
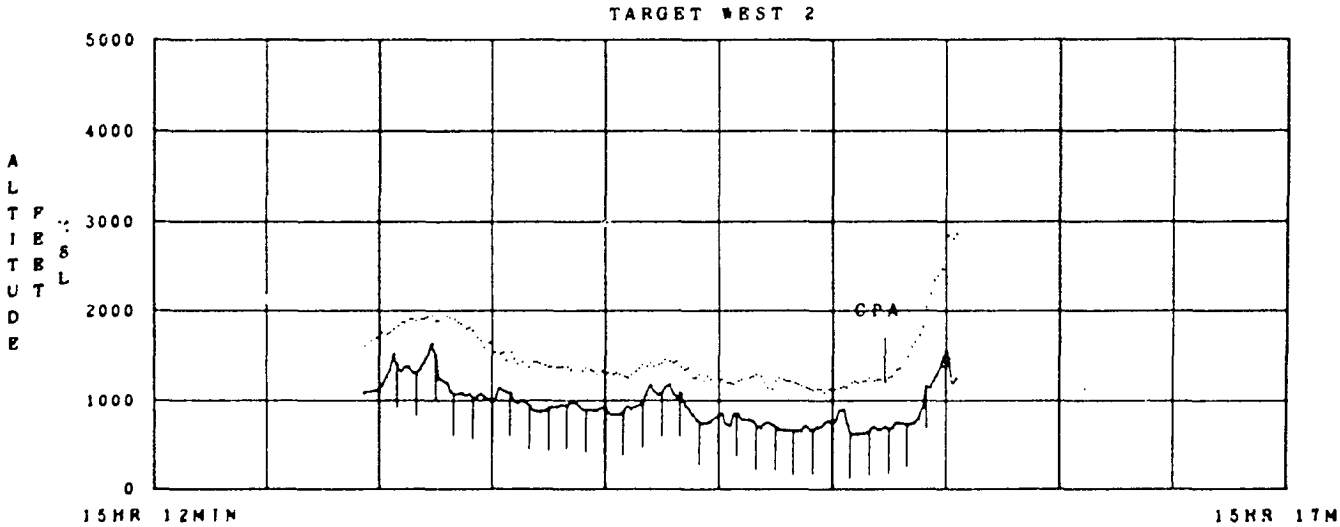


Figure 3-54 (U) Telemetered Data (Part 5 of 5)

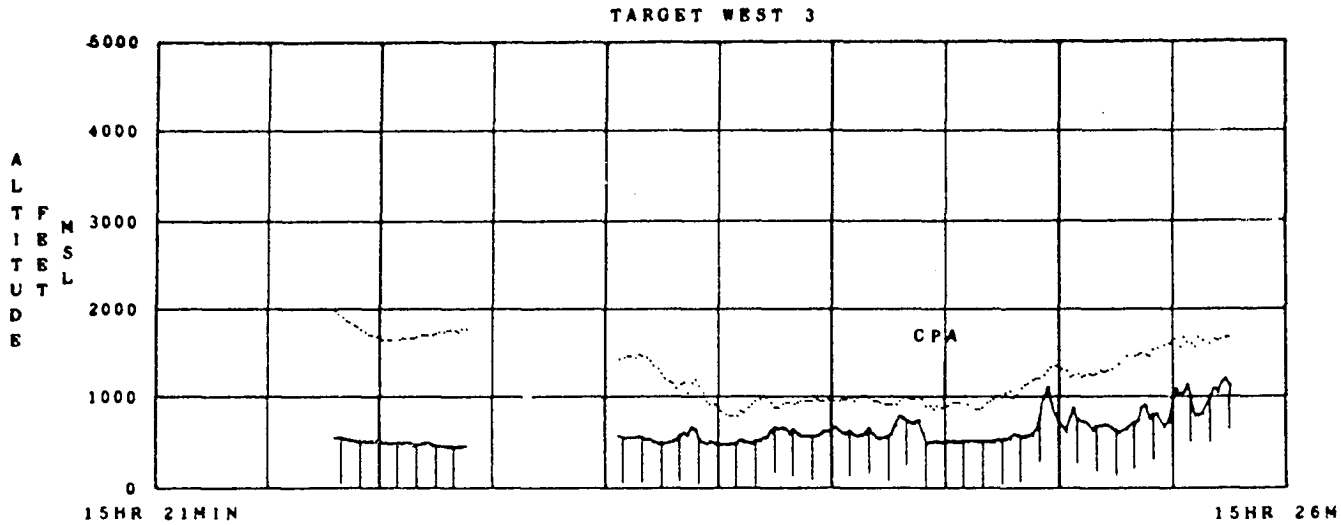


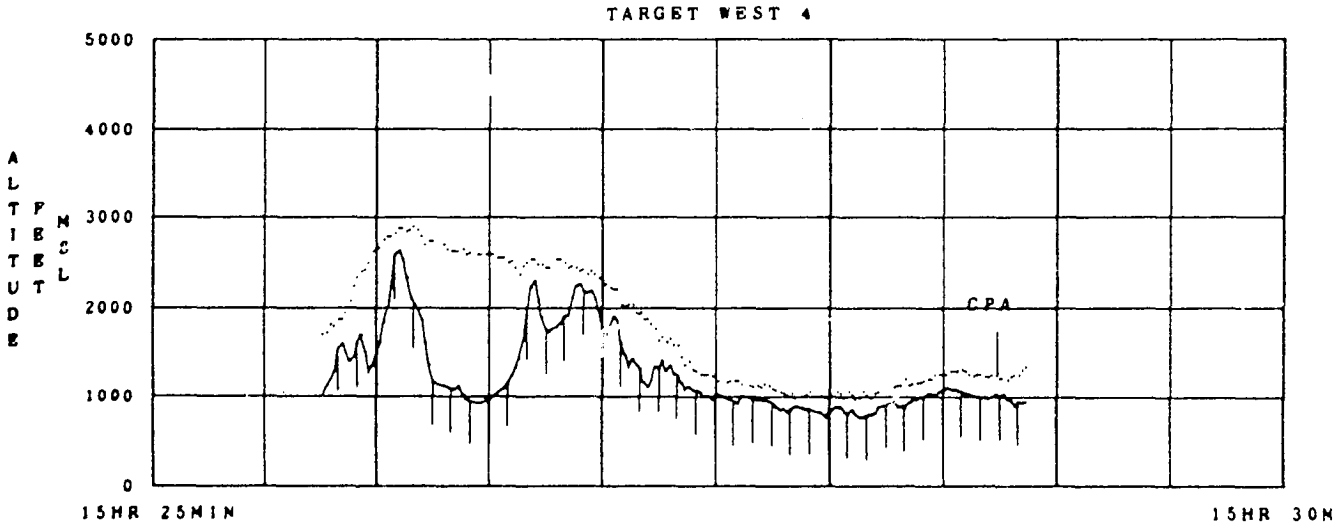


SORTIE NUMBER 545

04092448
J9139

Figure 3-55 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 545

04092448
J9139

Figure 3-55 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

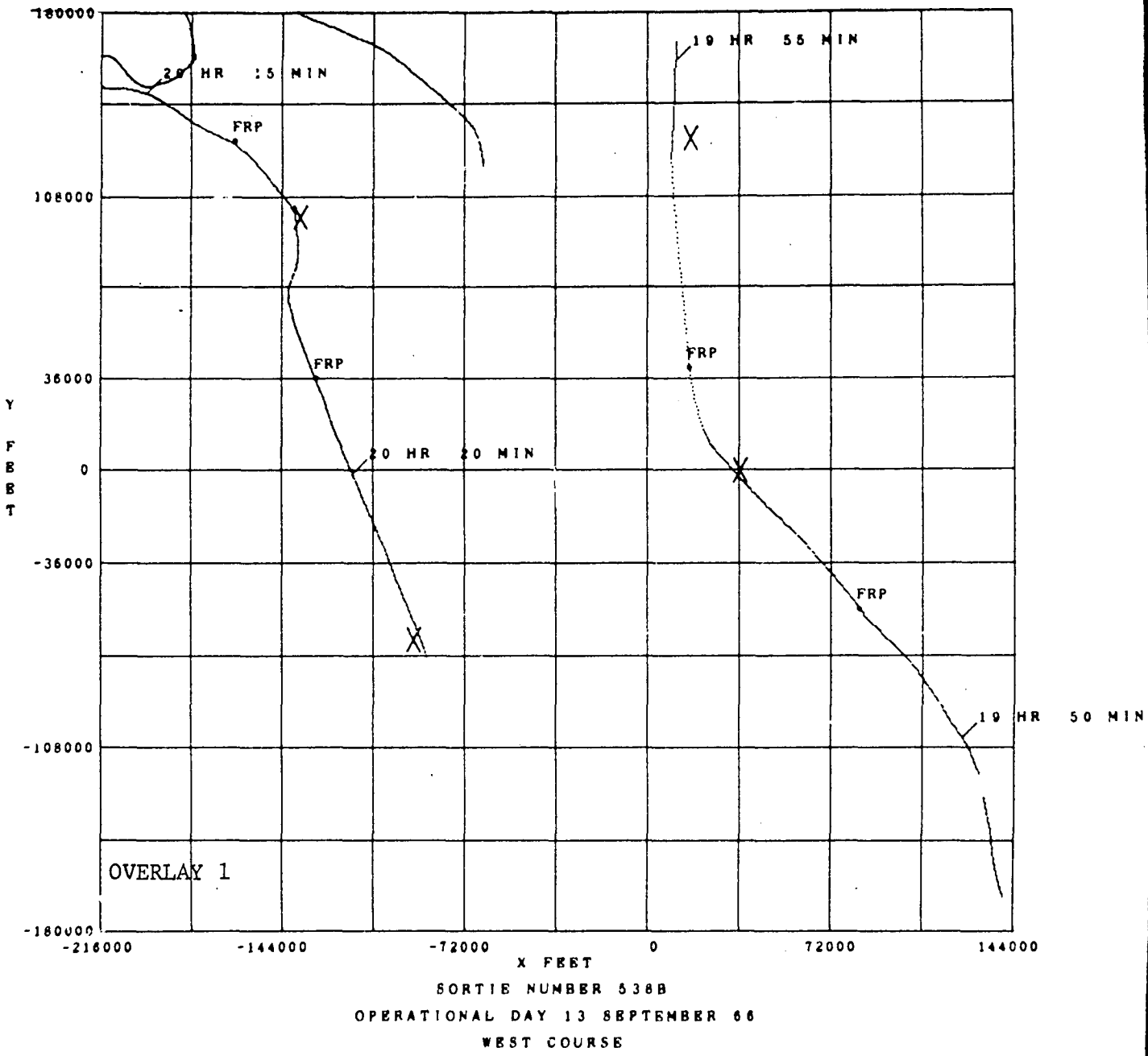
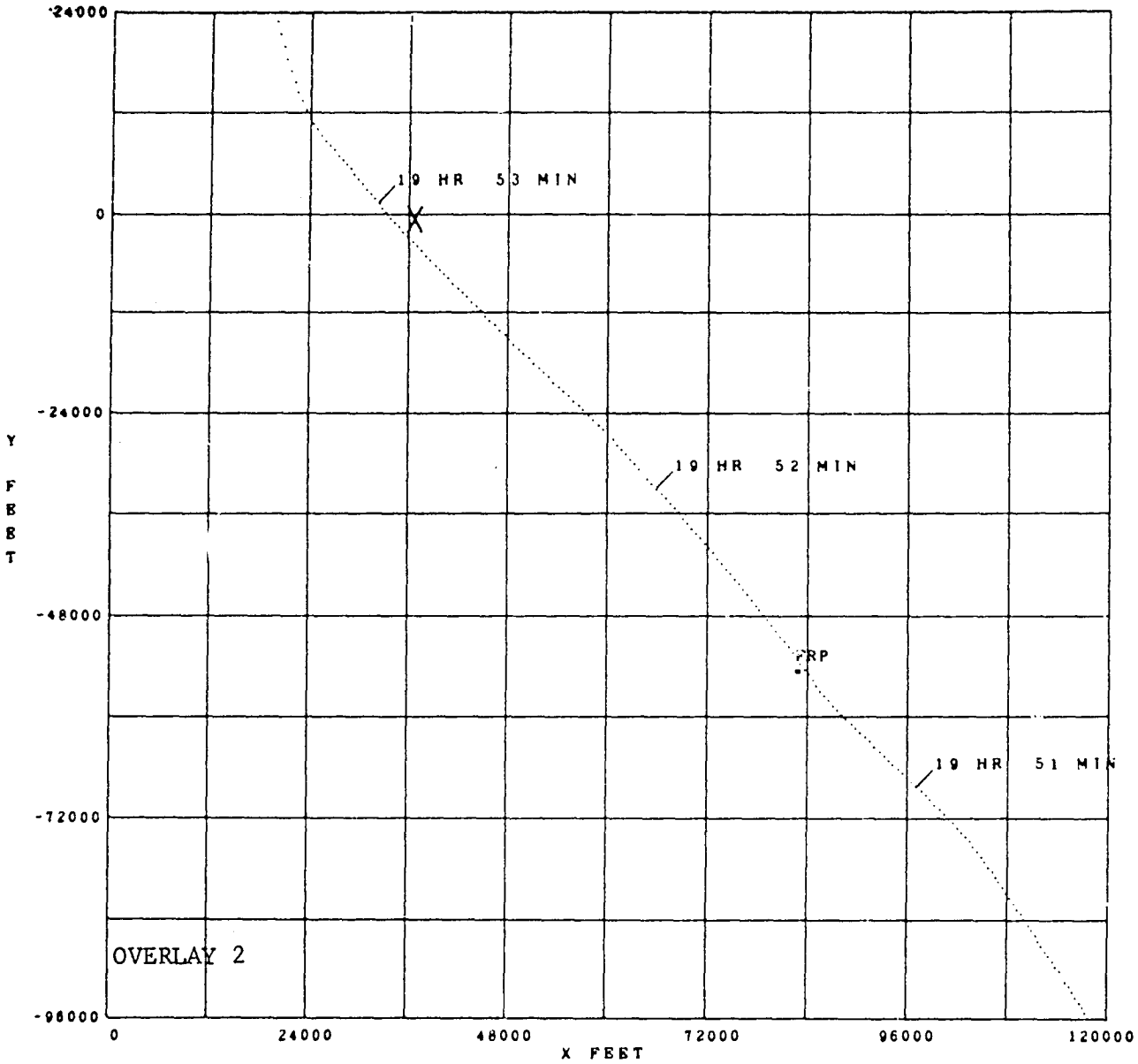


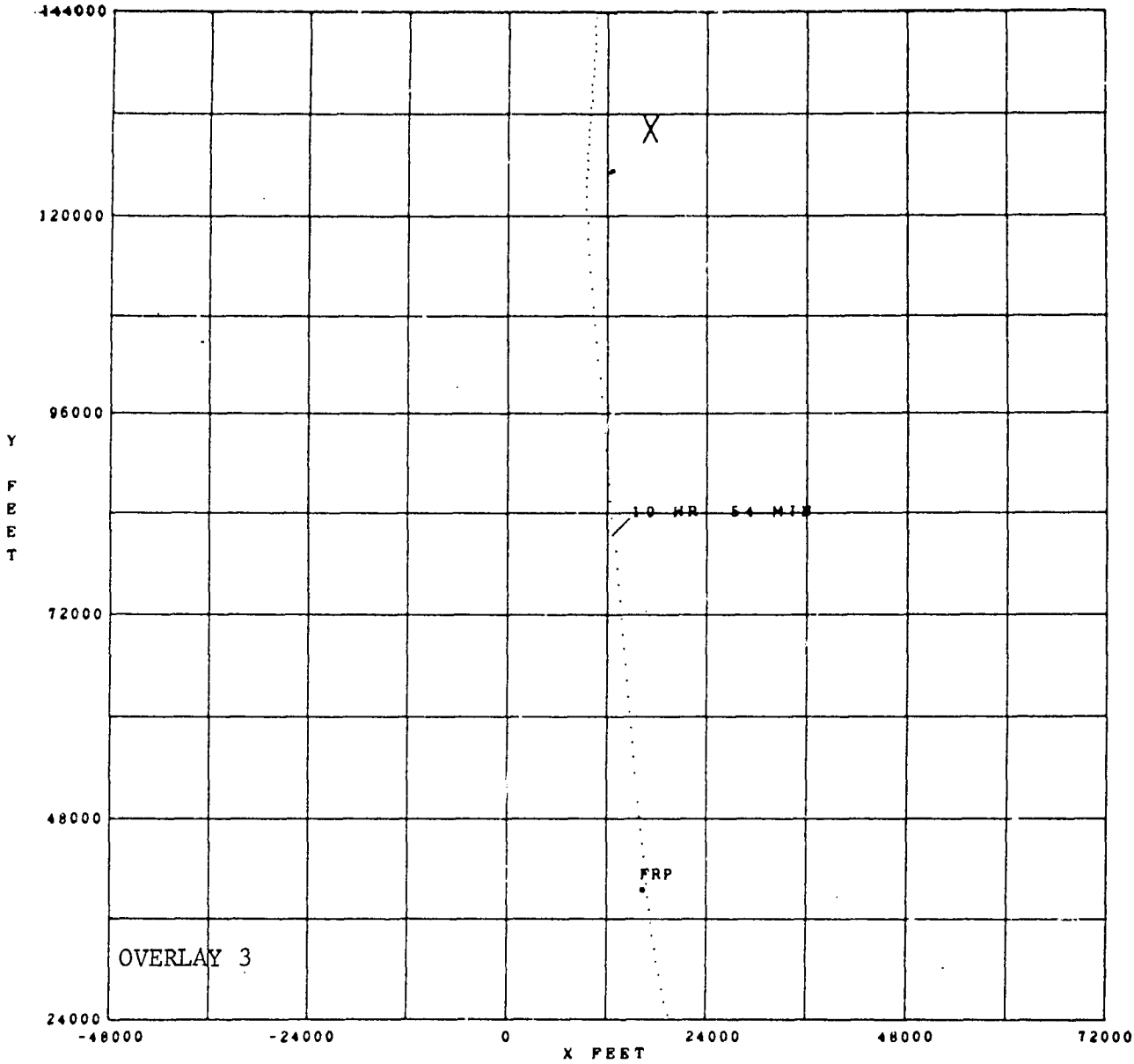
Figure 3-26 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1678 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 538B
TARGET WEST 1

04092447
J9139 158

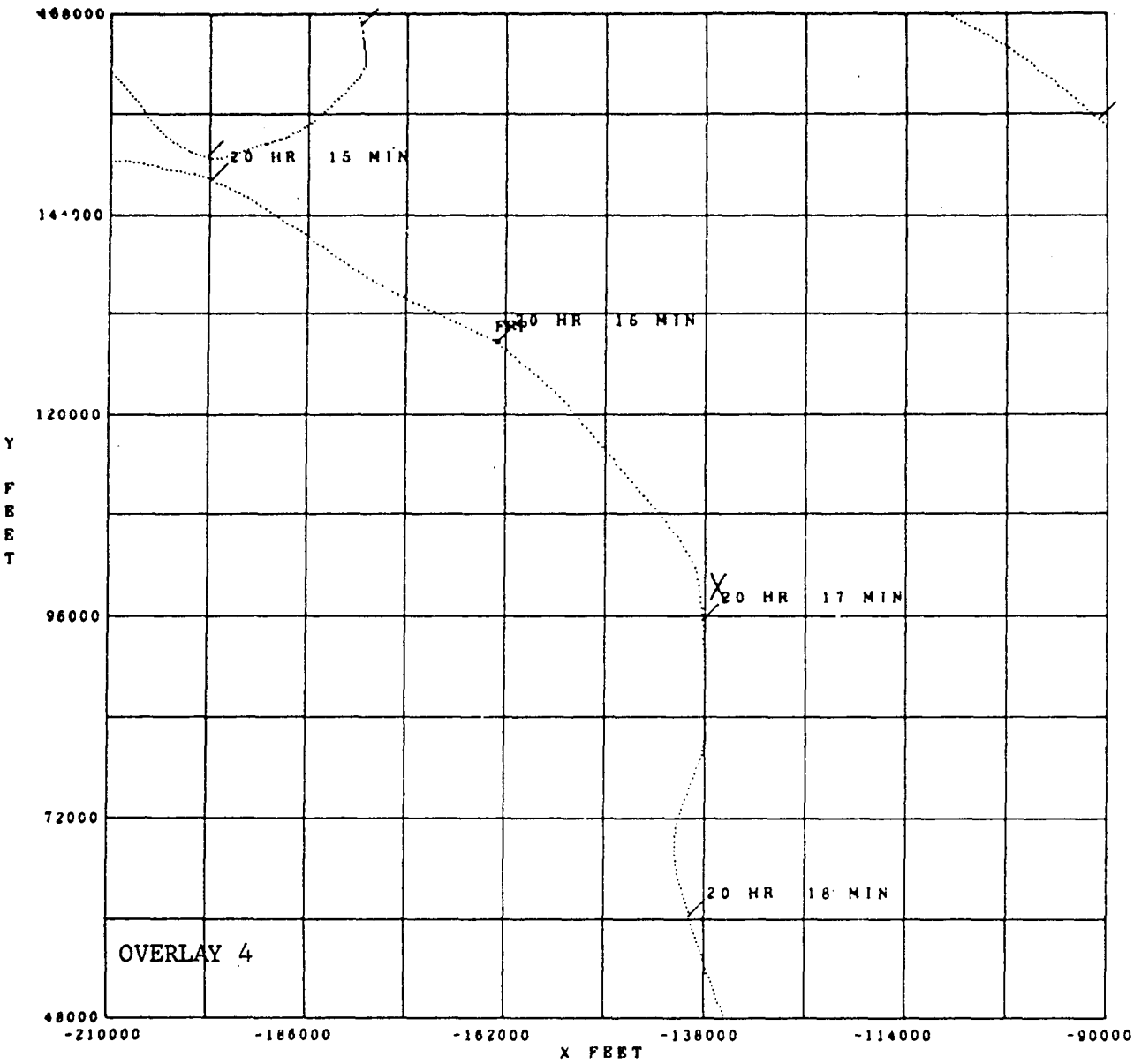
Figure 3-56 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 7452 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DHE
SORTIE NUMBER 538B
TARGET WEST 2

04092447
J9139 159

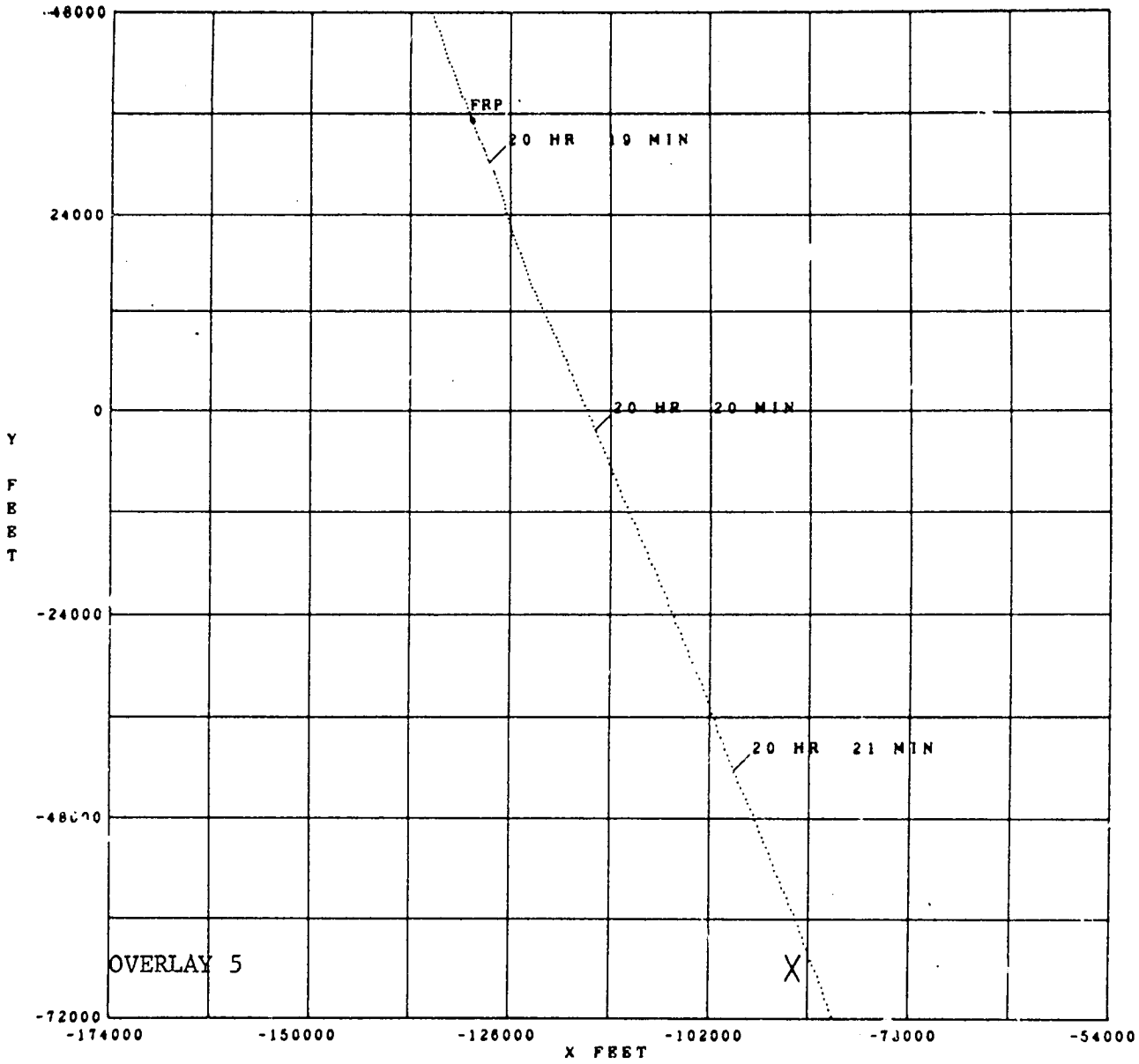
Figure 3-56 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2301 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 538B
TARGET WEST 3

04092447
J9139 160

Figure 3-56 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2402 FEET
MINIMUM GROUND DISTANCE QUALIFIER = ONE
SORTIE NUMBER 538B
TARGET WEST 4

04092447
J9139 161

Figure 3-56 (U) Aircraft Position Data (Part 5 of 5)

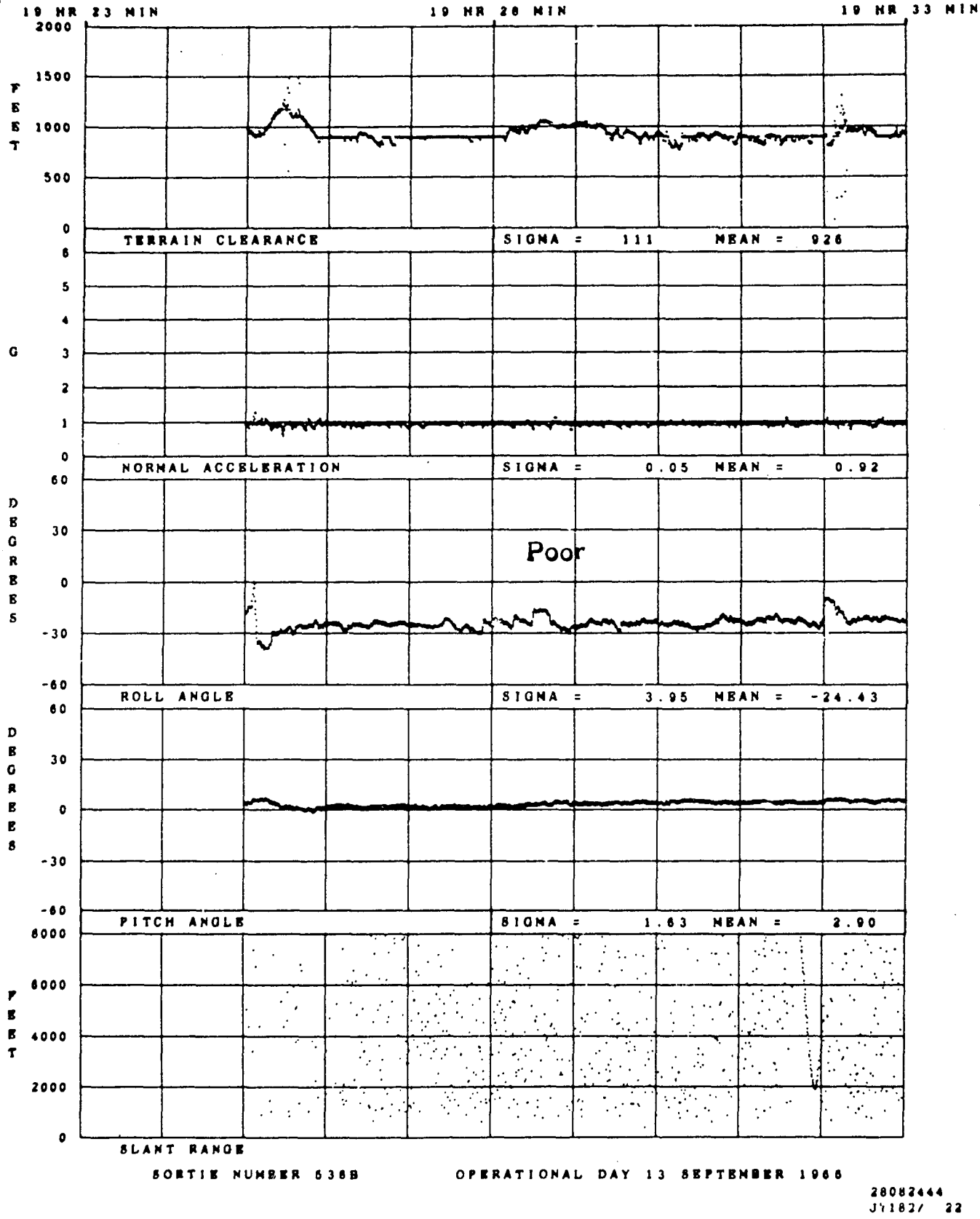


Figure 3-57 (U) Telemetered Data (Part 1 of 6)

UNCLASSIFIED

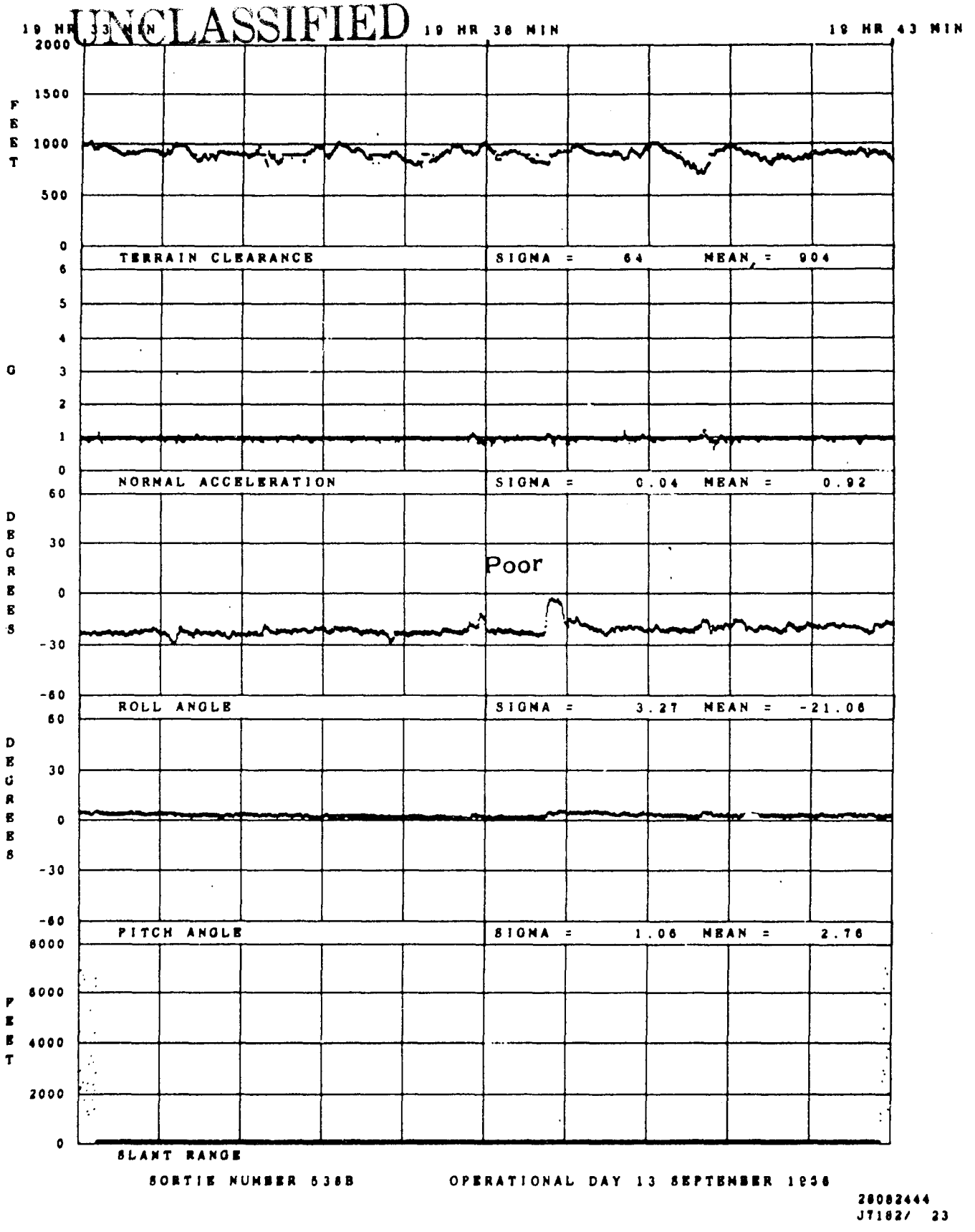


Figure 3-57 (U) Telemetered Data (Part 2 of 6)

UNCLASSIFIED

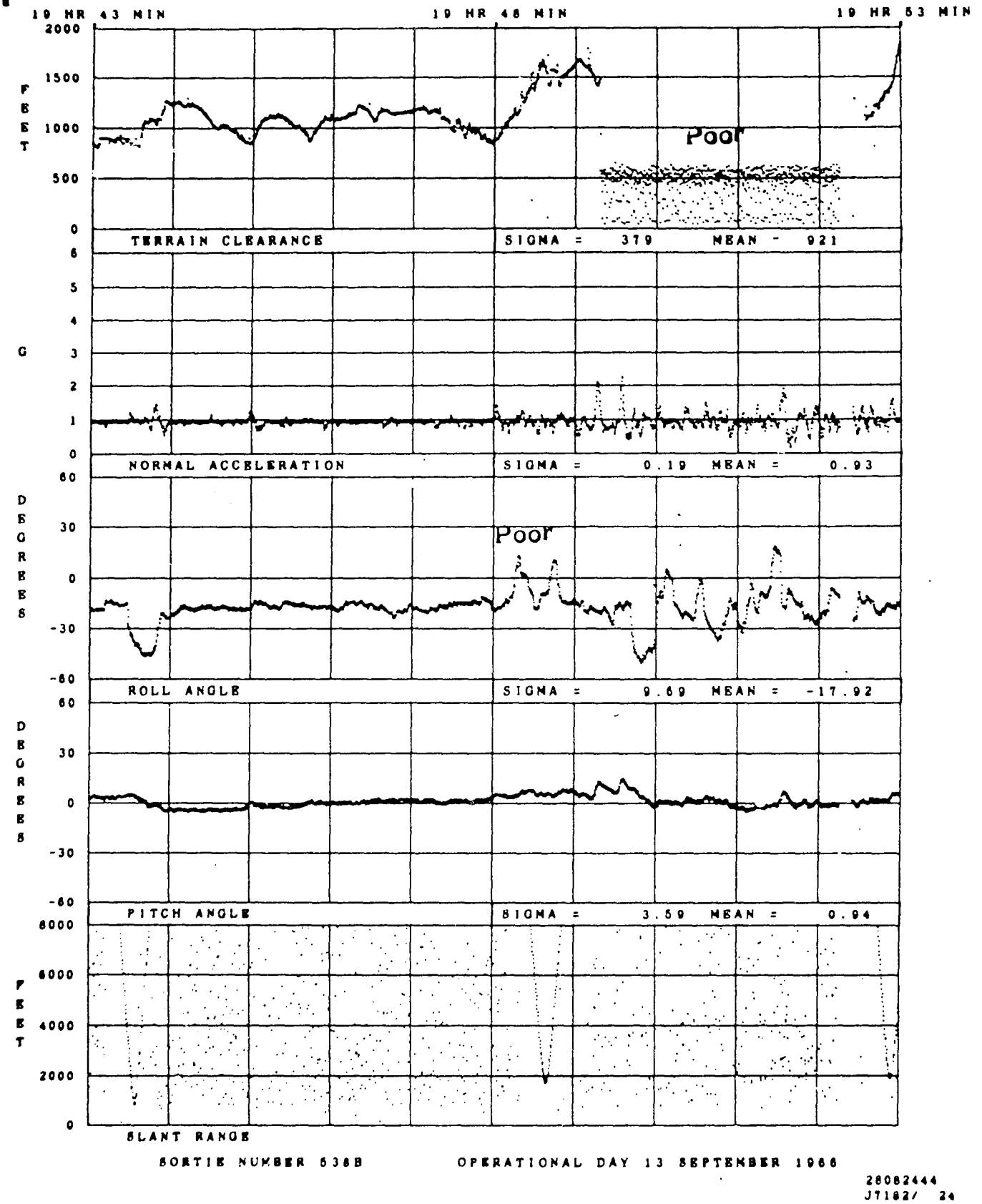


Figure 3-57 (U) Telemetered Data (Part 3 of 6)

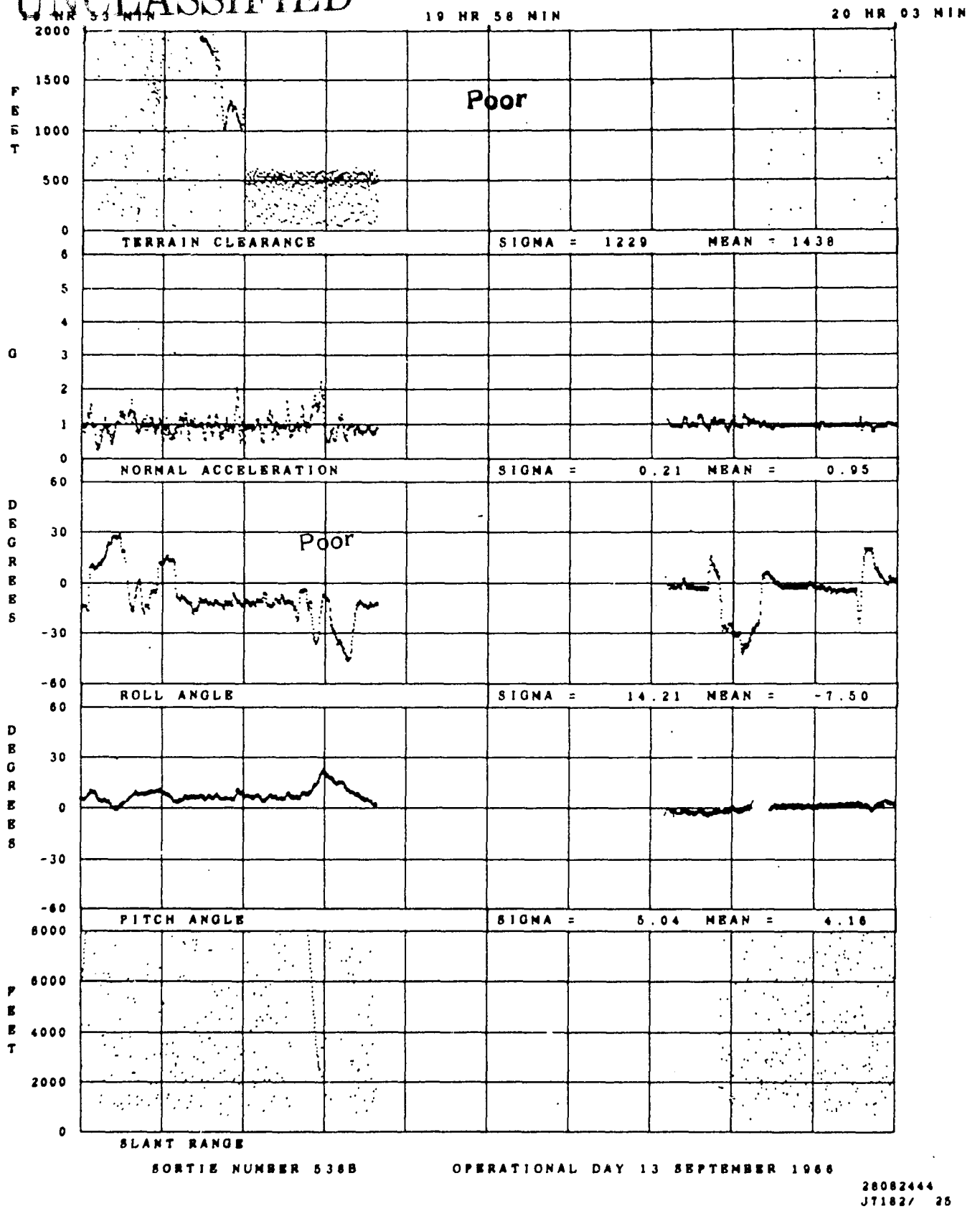


Figure 3-57 (U) Telemetered Data (Part 4 of 6)

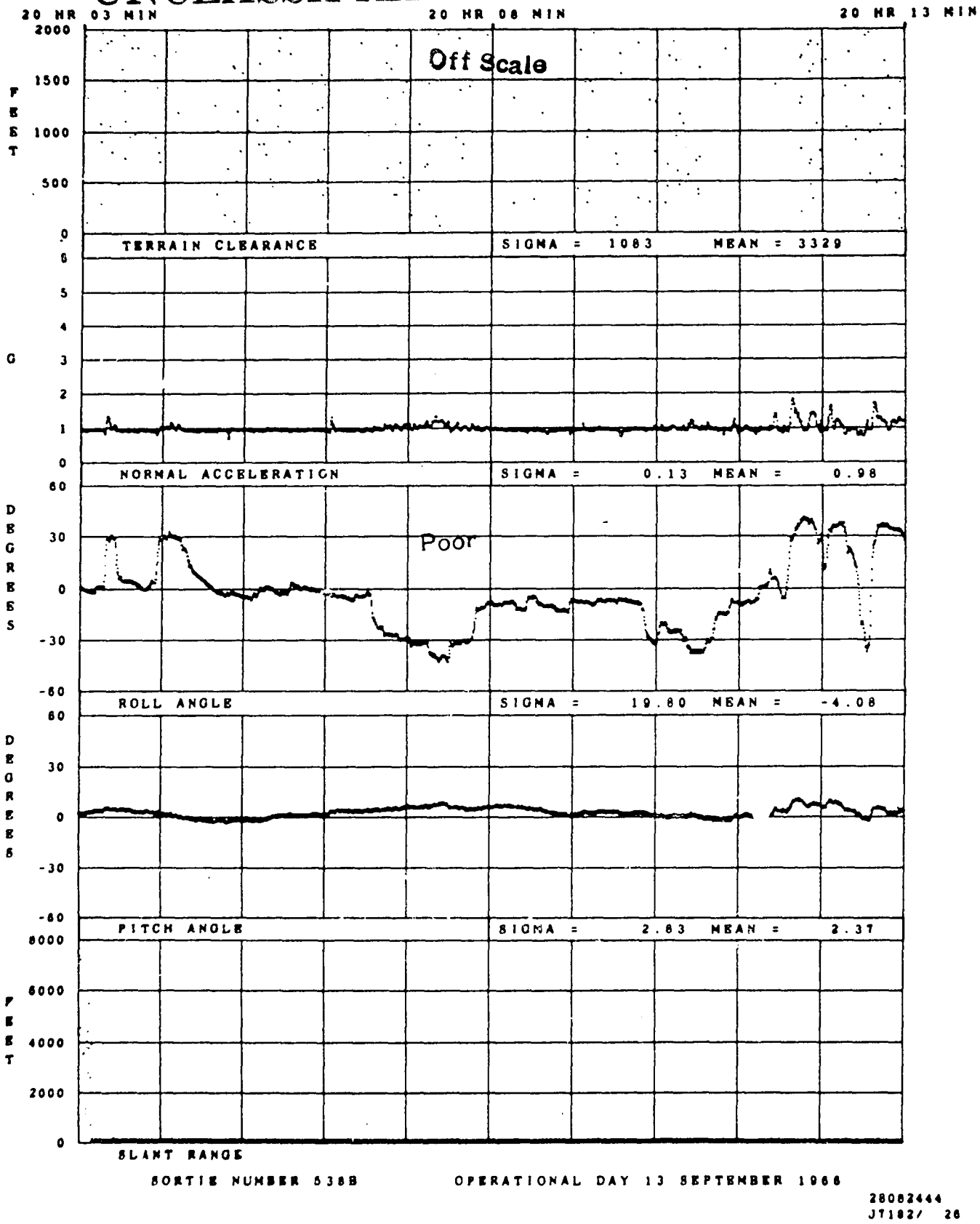


Figure 3-57 (U) Telemetered Data (Part 5 of 6)

UNCLASSIFIED

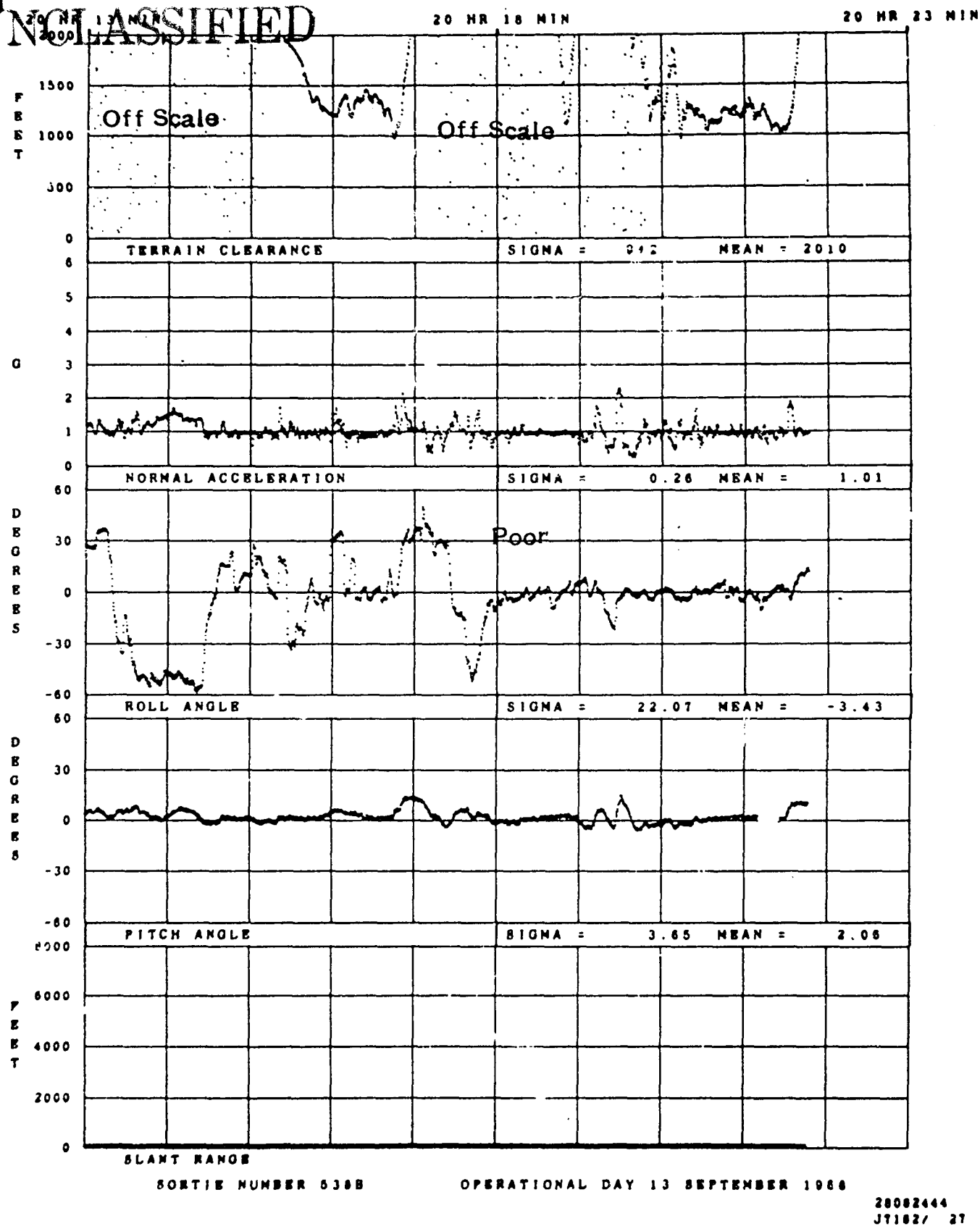
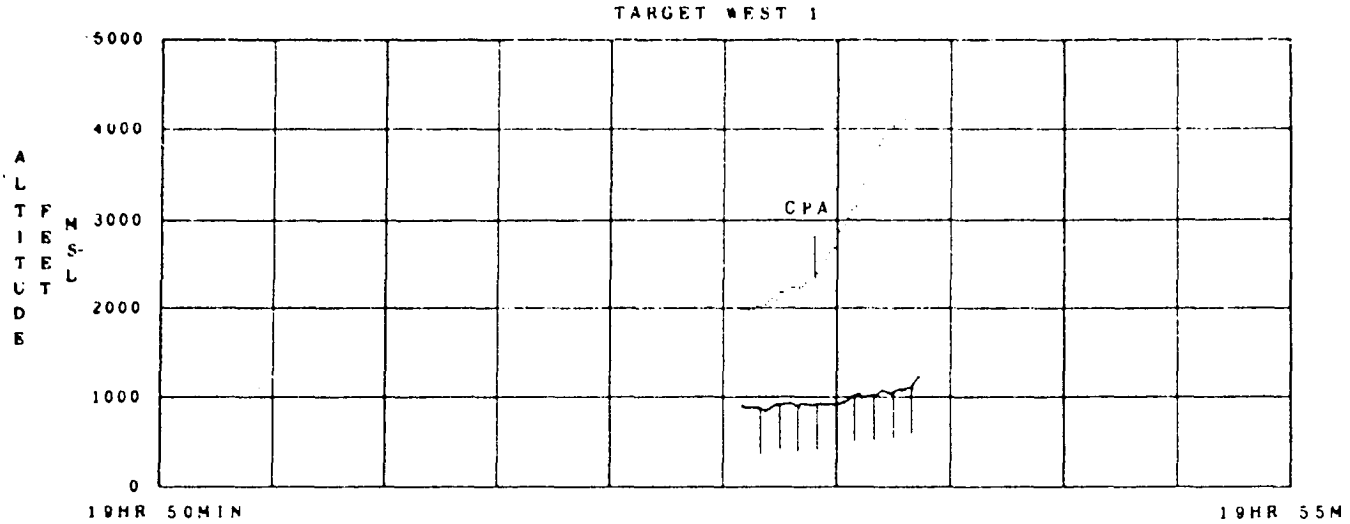
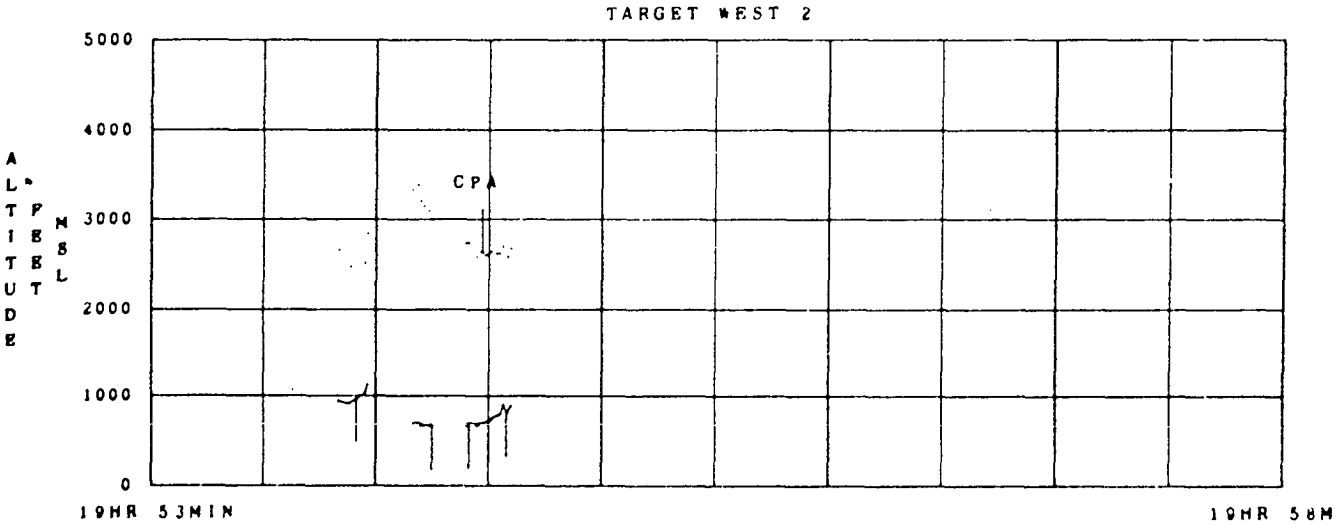


Figure 3-57 (U) Telemetered Data (Part 6 of 6)

UNCLASSIFIED

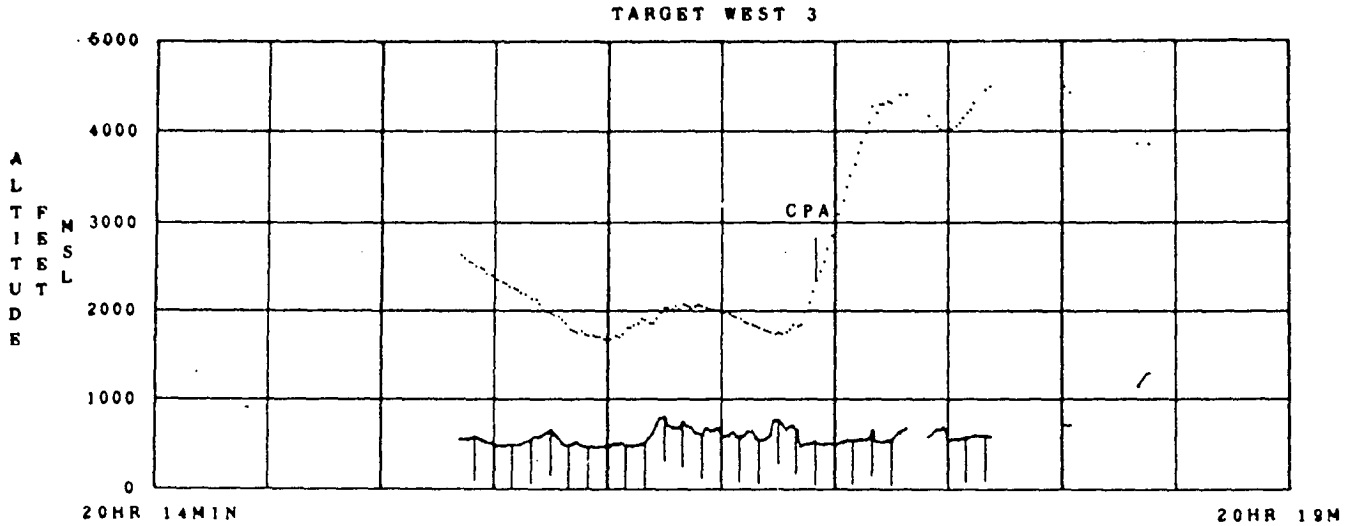


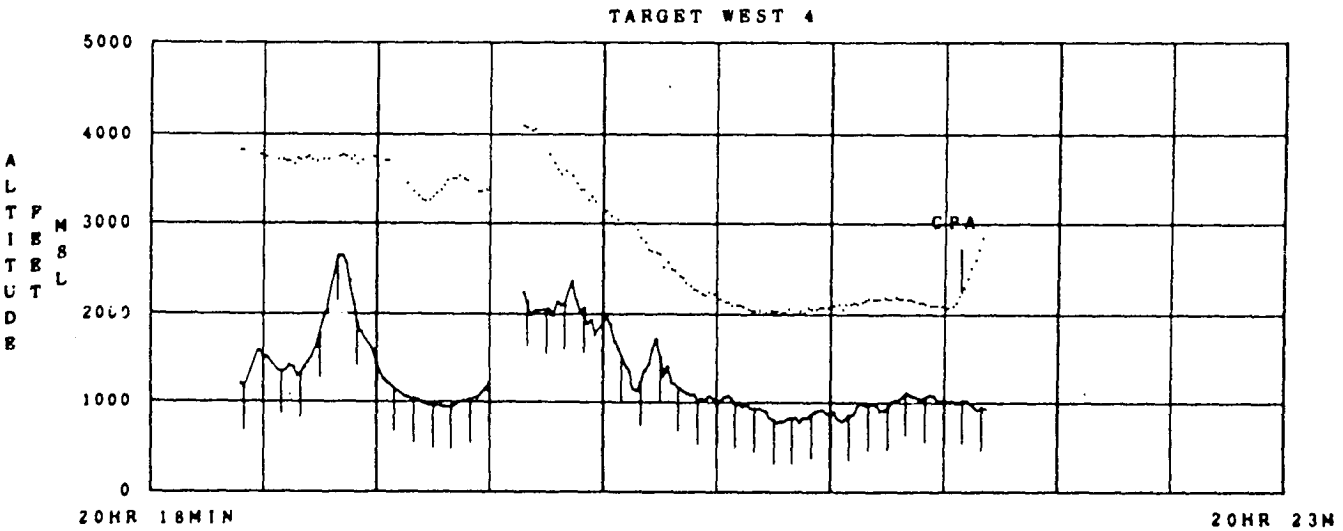


SORTIE NUMBER 538B

04092447
J9139

Figure 3-58 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

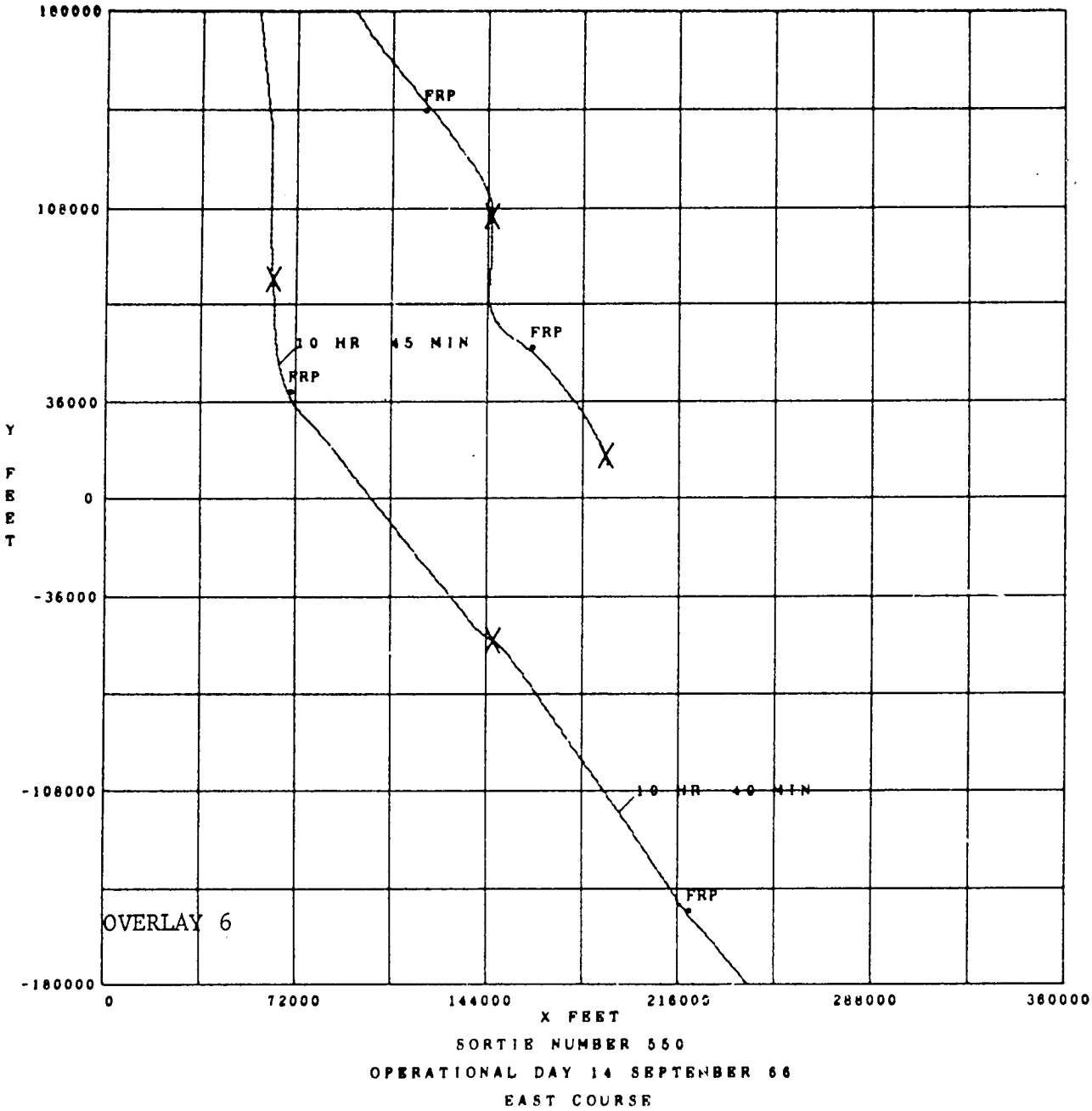




SORTIE NUMBER 538B

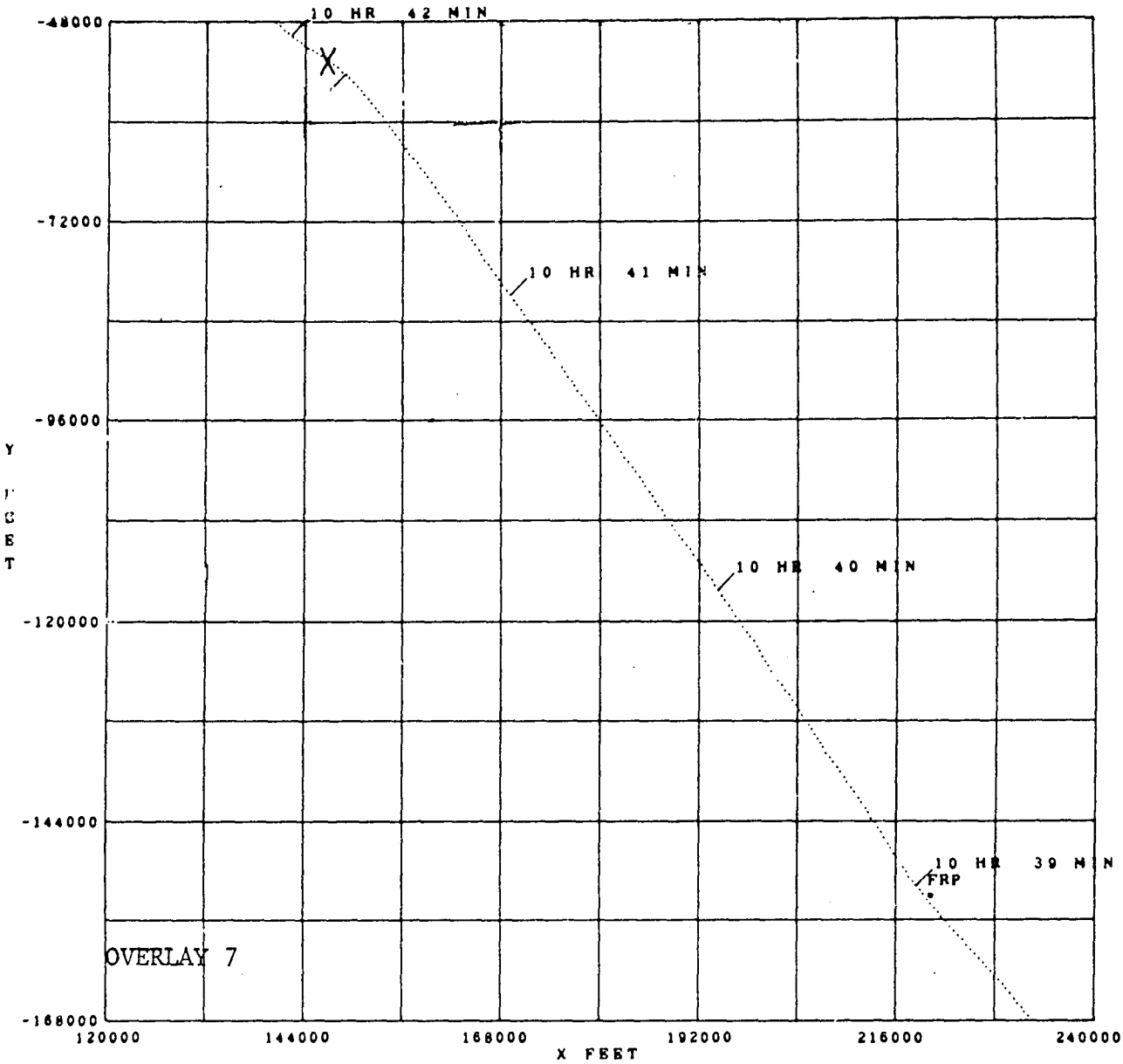
04092447
J9139

Figure 3-58 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092450
J9139 198

Figure 3-59 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 60 FEET

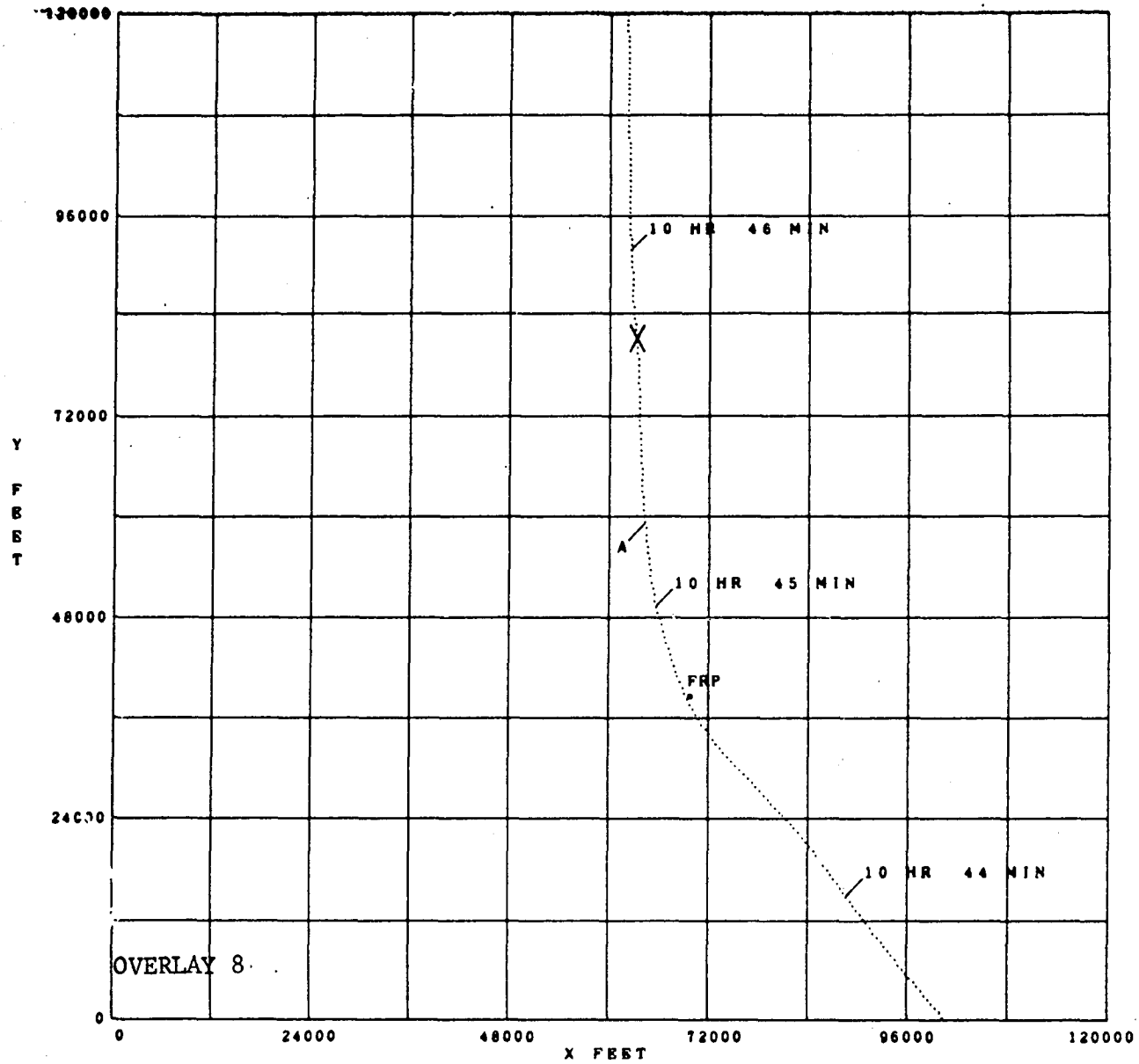
MINIMUM GROUND DISTANCE QUALIFIER = DME

SORTIE NUMBER 550

TARGET EAST 1

04092450
J9139 199

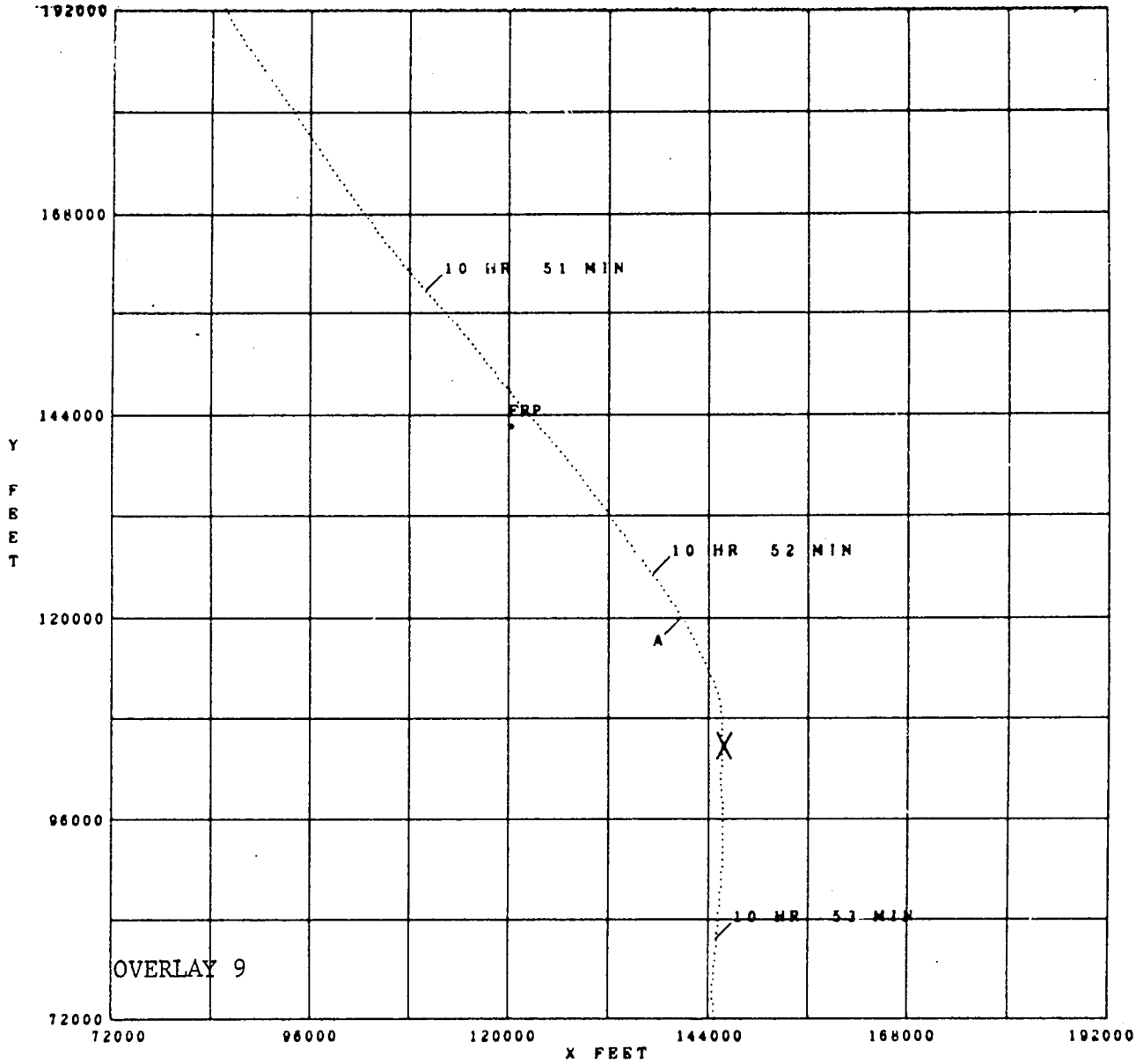
Figure 3-59 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 102 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 550
TARGET EAST 2

04092450
J9139 200

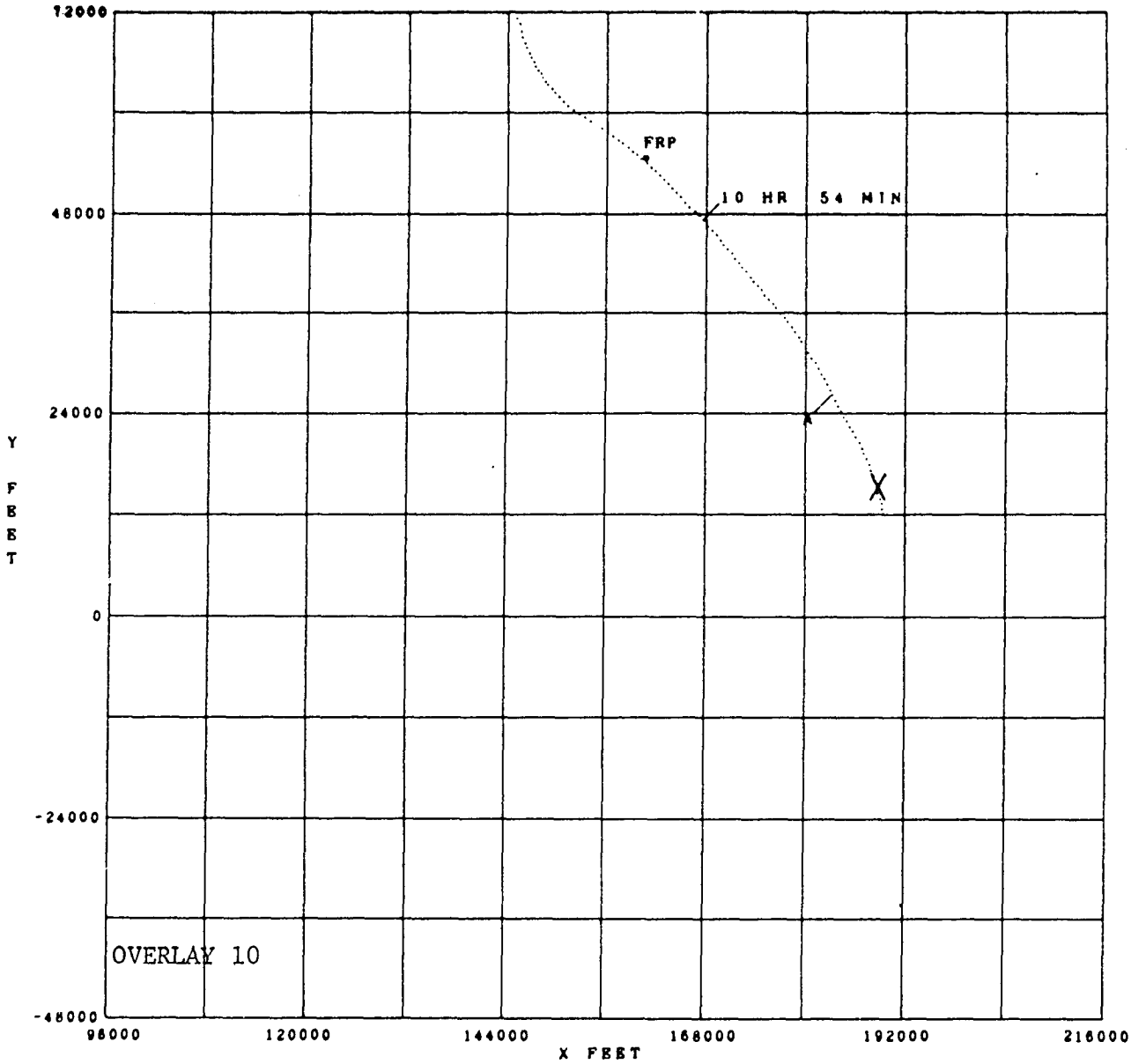
Figure 3-59 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 163 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 550
TARGET EAST 3

04092450
J9139 201

Figure 3-59 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 145 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 550
TARGET EAST 4

04092450
J9139 202

Figure 3-59 (U) Aircraft Position Data (Part 5 of 5)

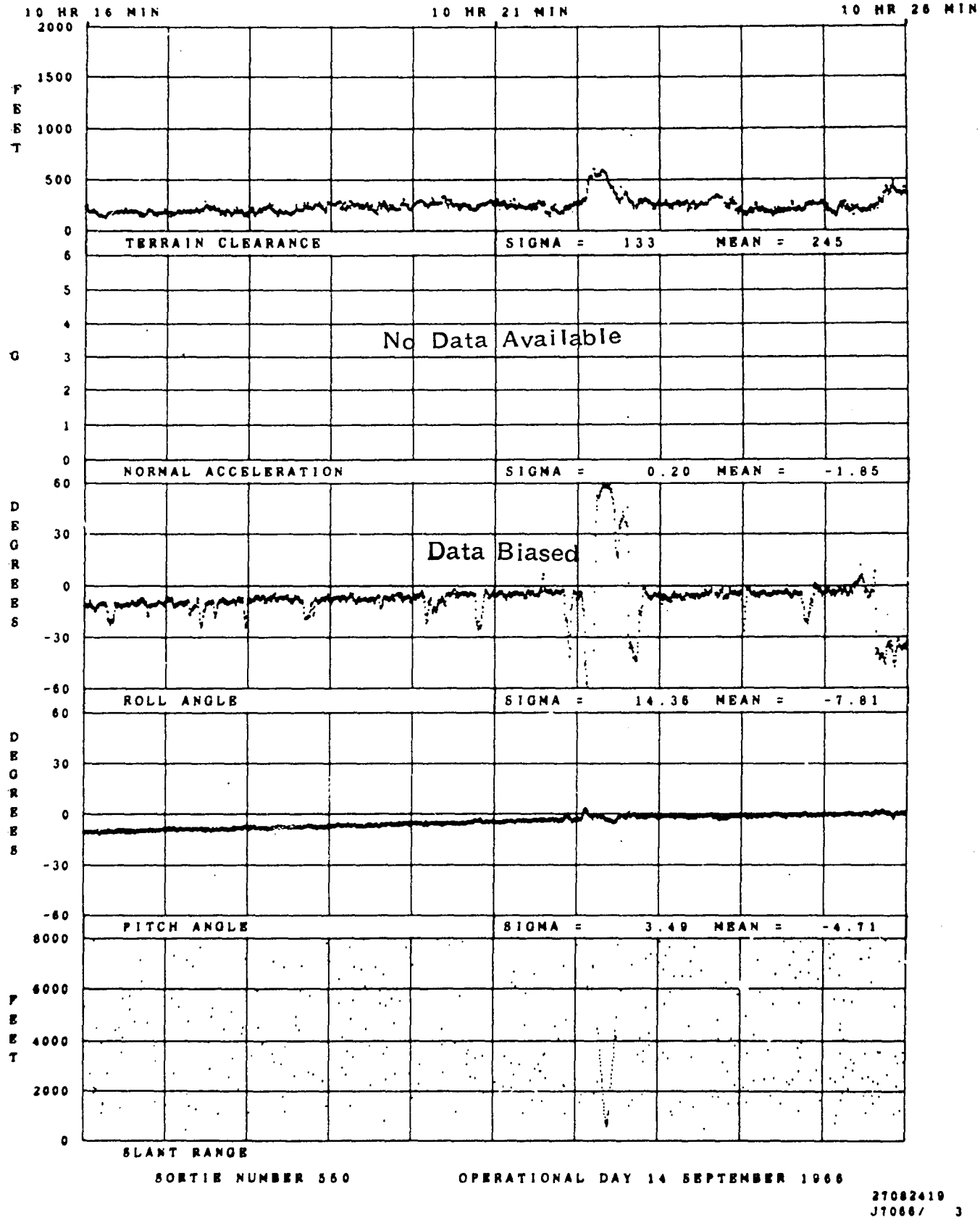


Figure 3-60 (U) Telemetered Data (Part 1 of 4)

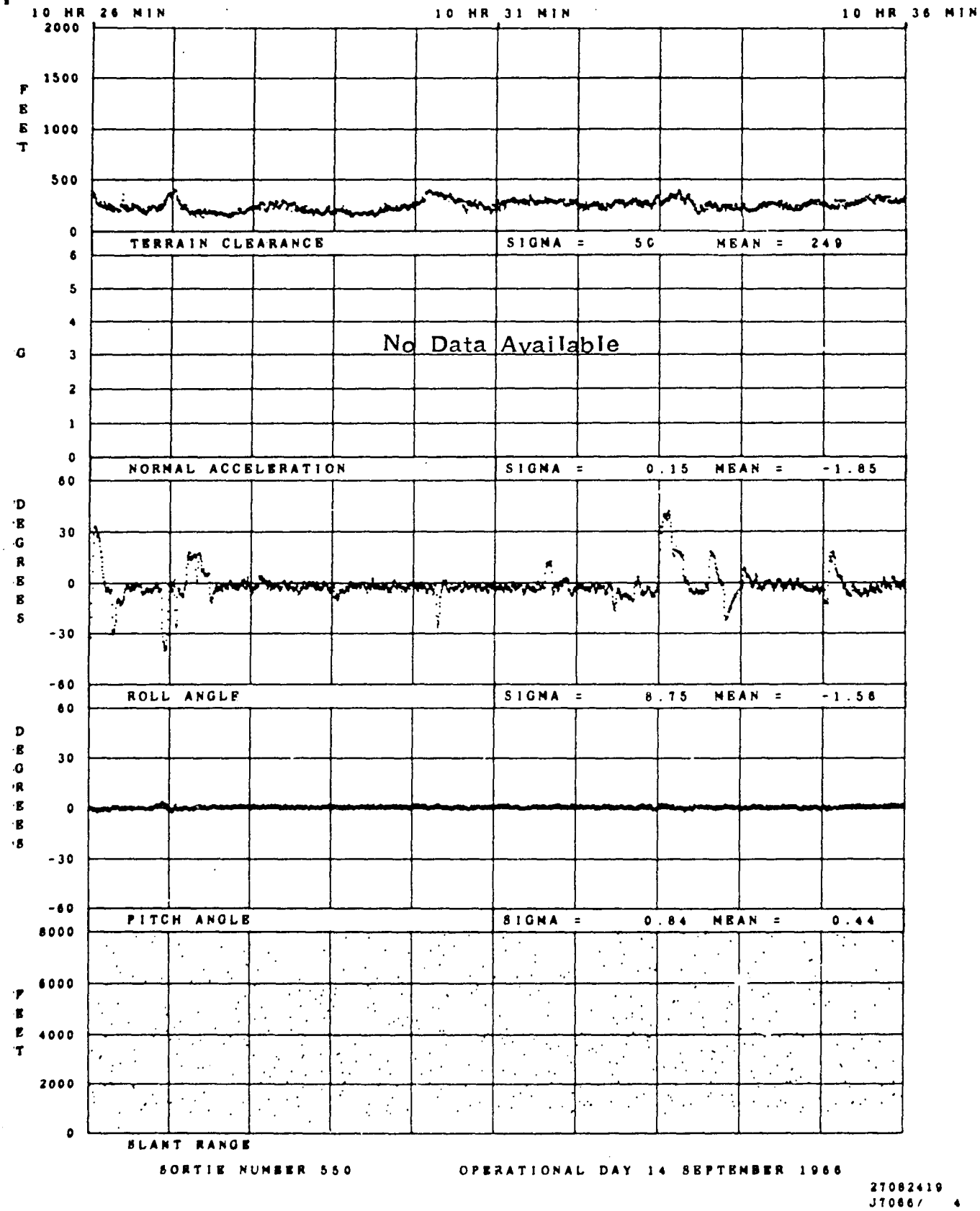


Figure 3-60 (U) Telemetered Data (Part 2 of 4)

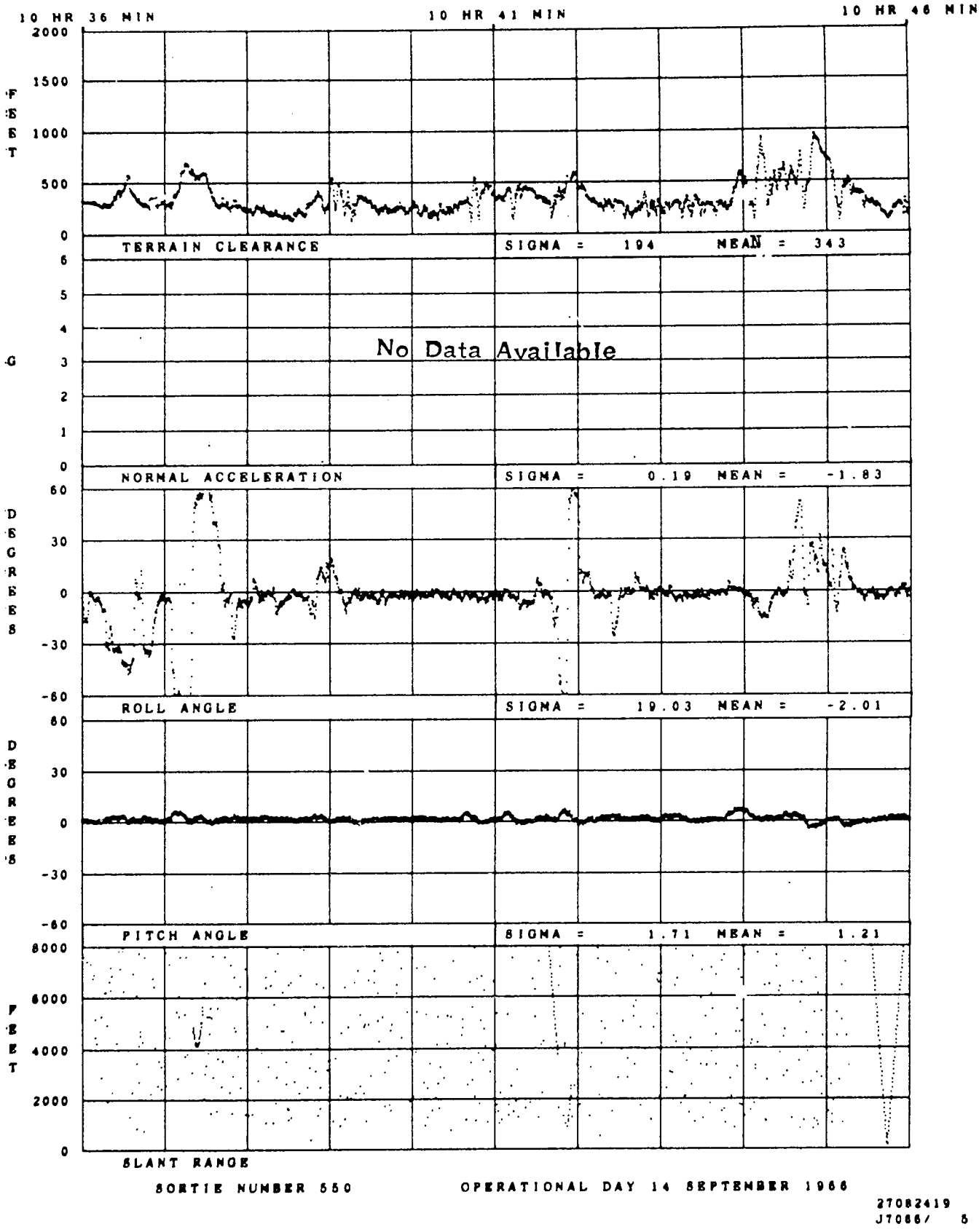


Figure 3-60 (U) Telemetered Data (Part 3 of 4)

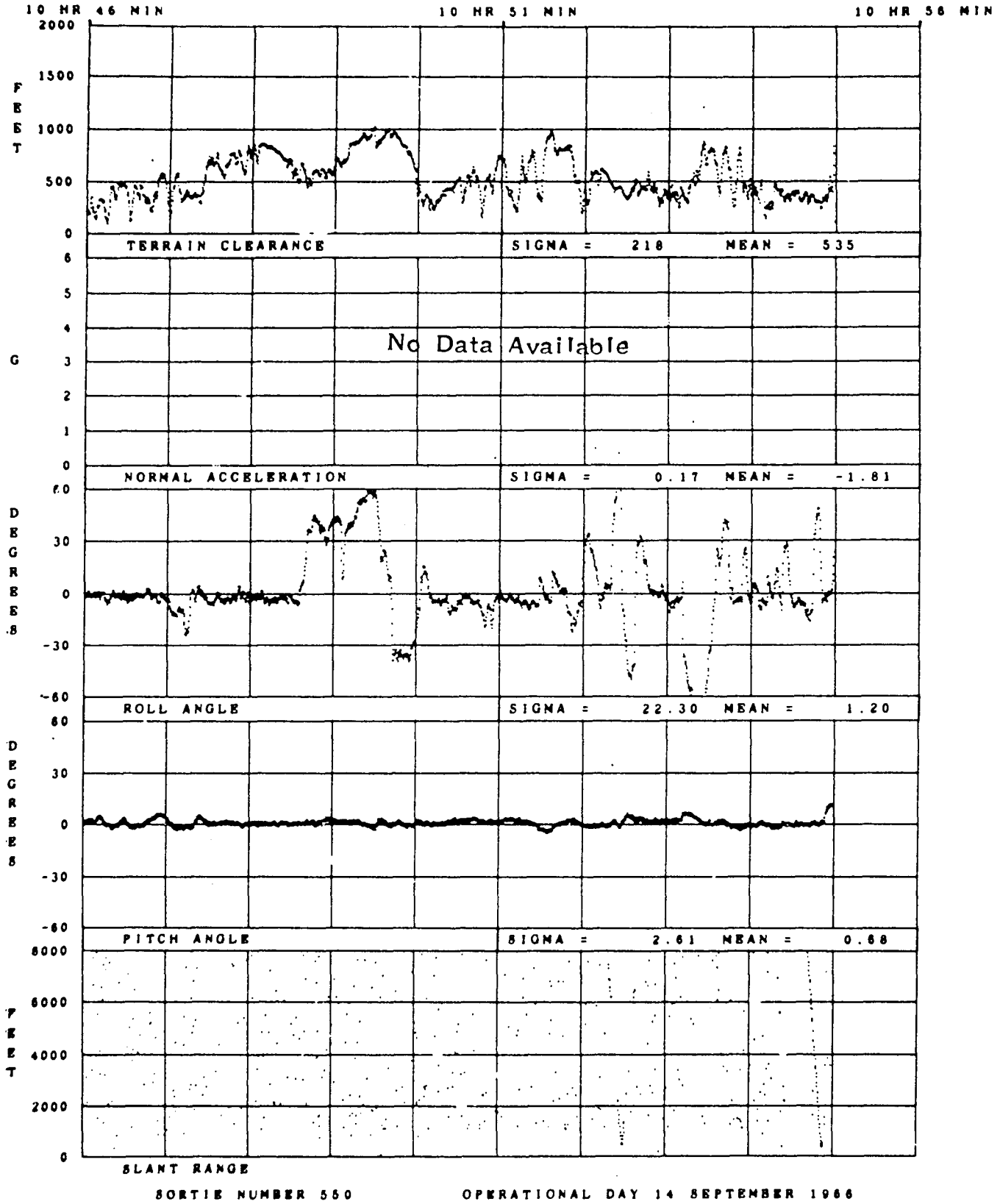
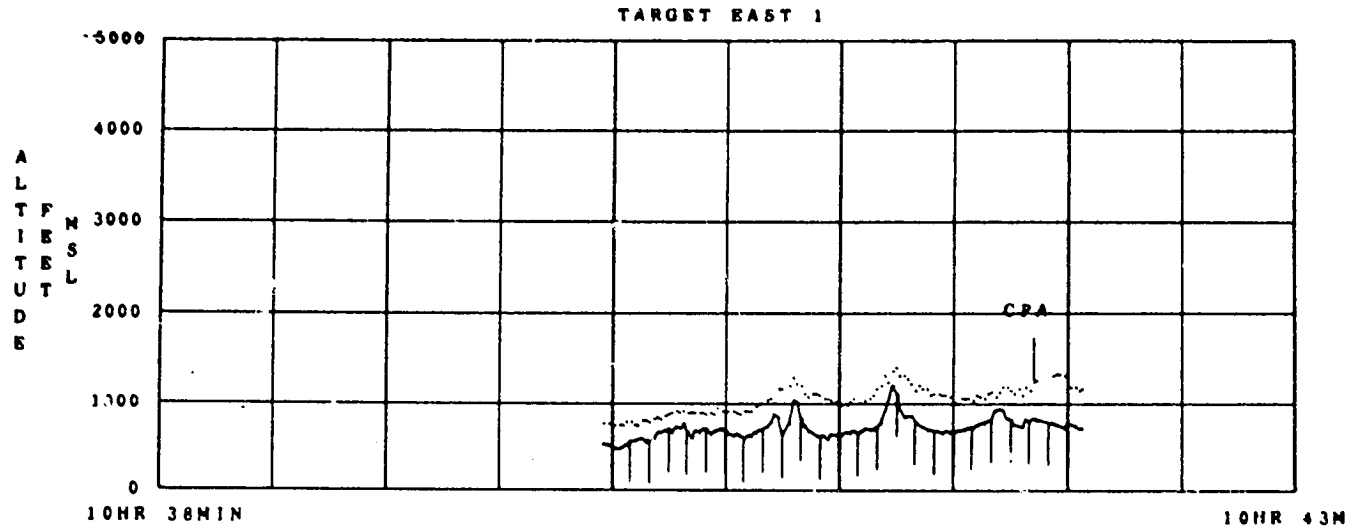
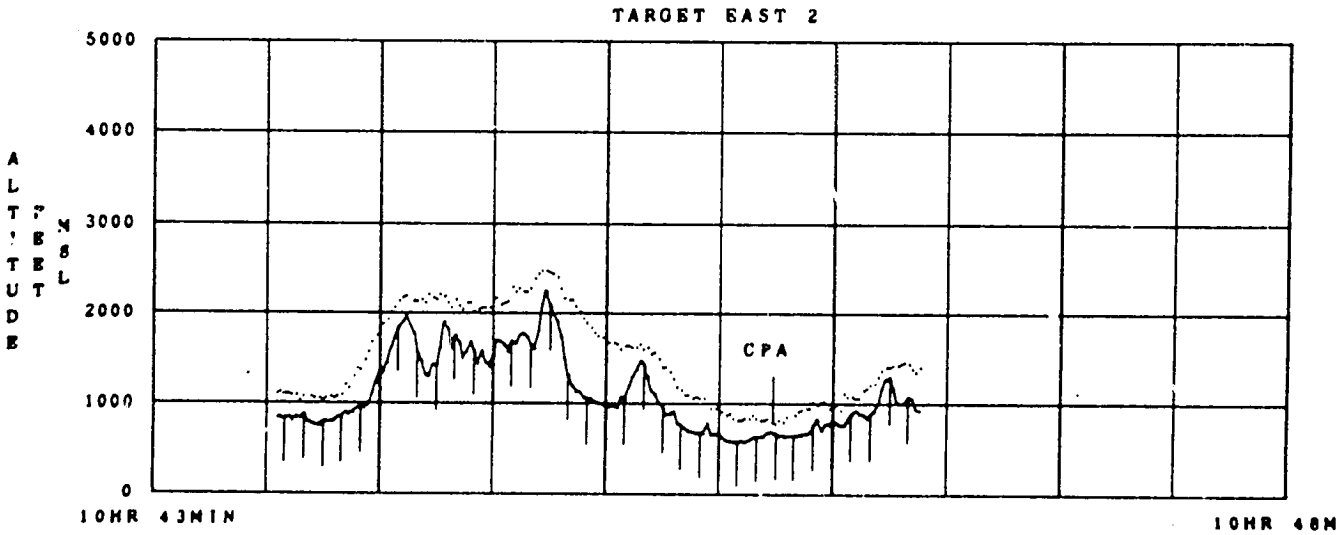


Figure 3-60 (U) Telemetered Data (Part 4 of 4)

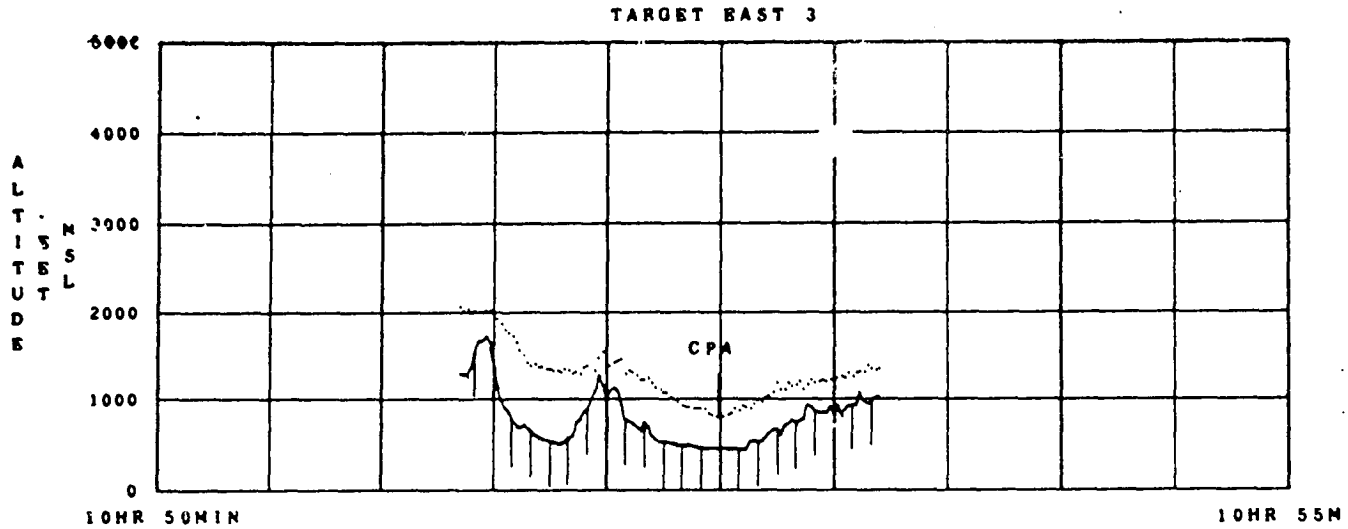


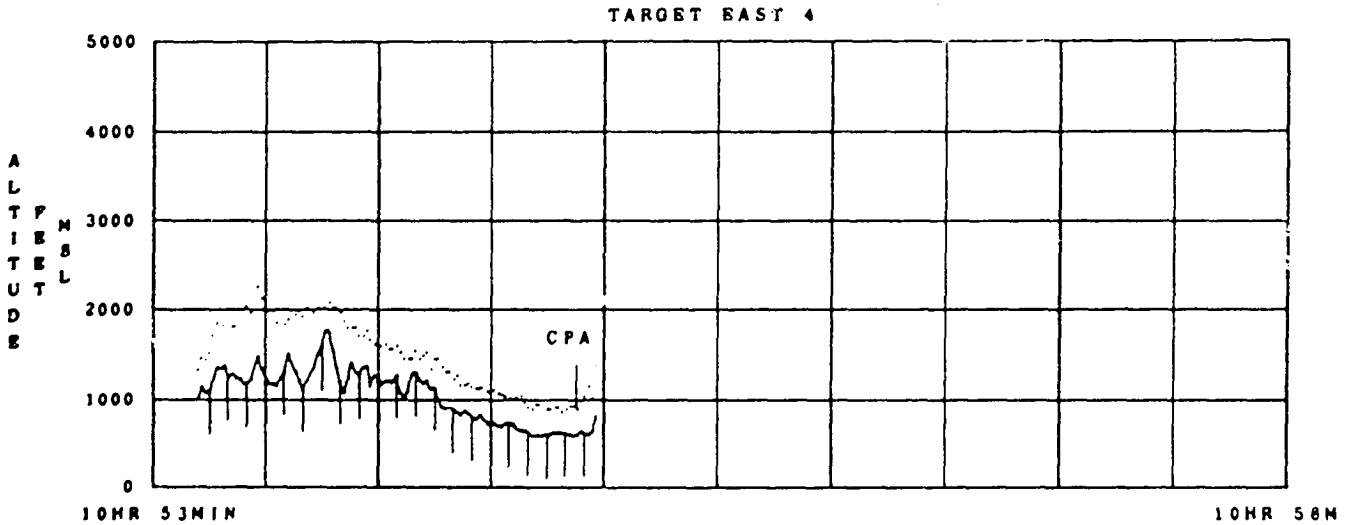


SORTIE NUMBER 550

04092450
J9139

Figure 3-61 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

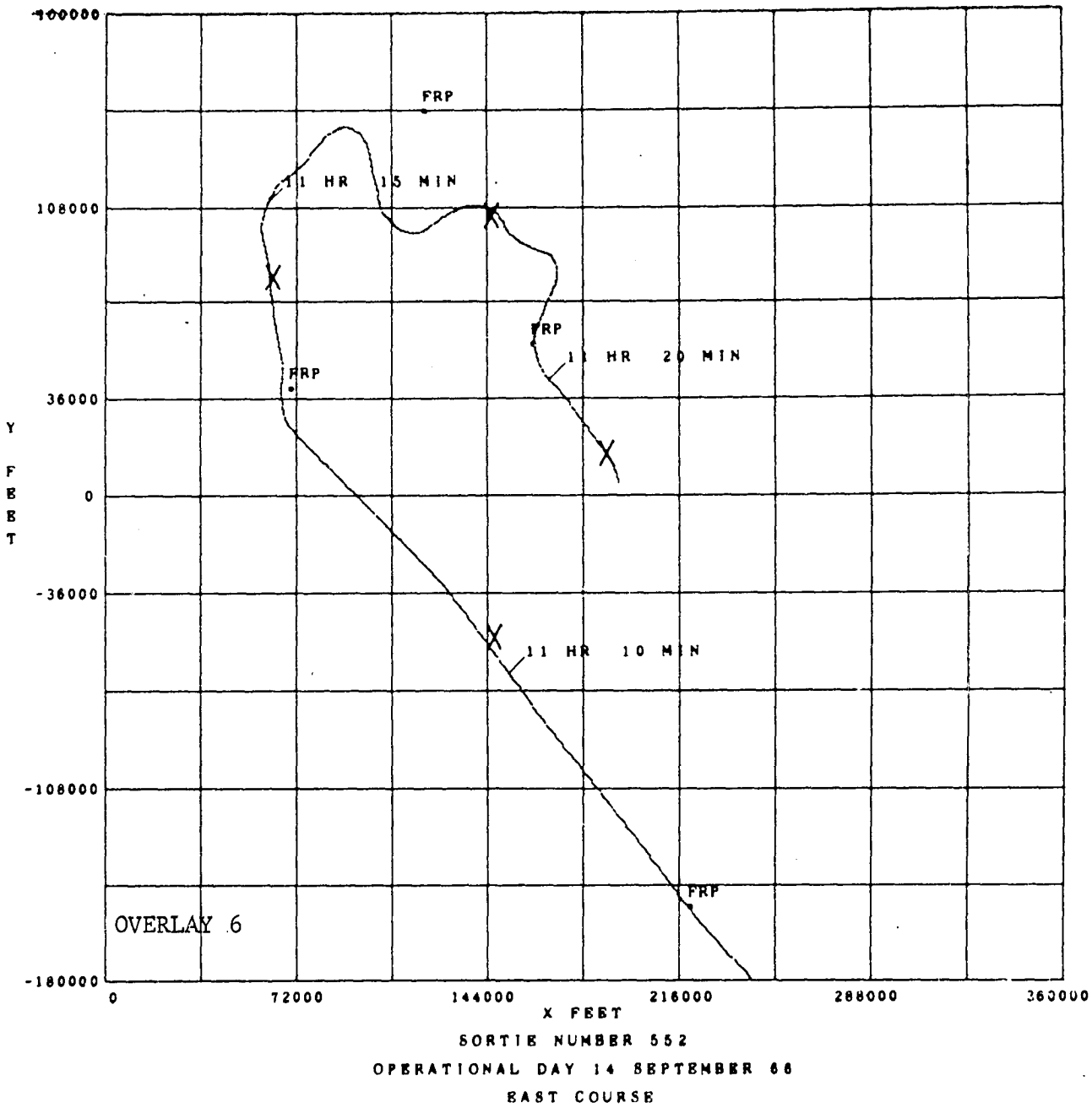




SORTIE NUMBER 550

04092450
J9139

Figure 3-61 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092452
J9139 222

Figure 3-62 (U) Aircraft Position Data (Part 1 of 5)

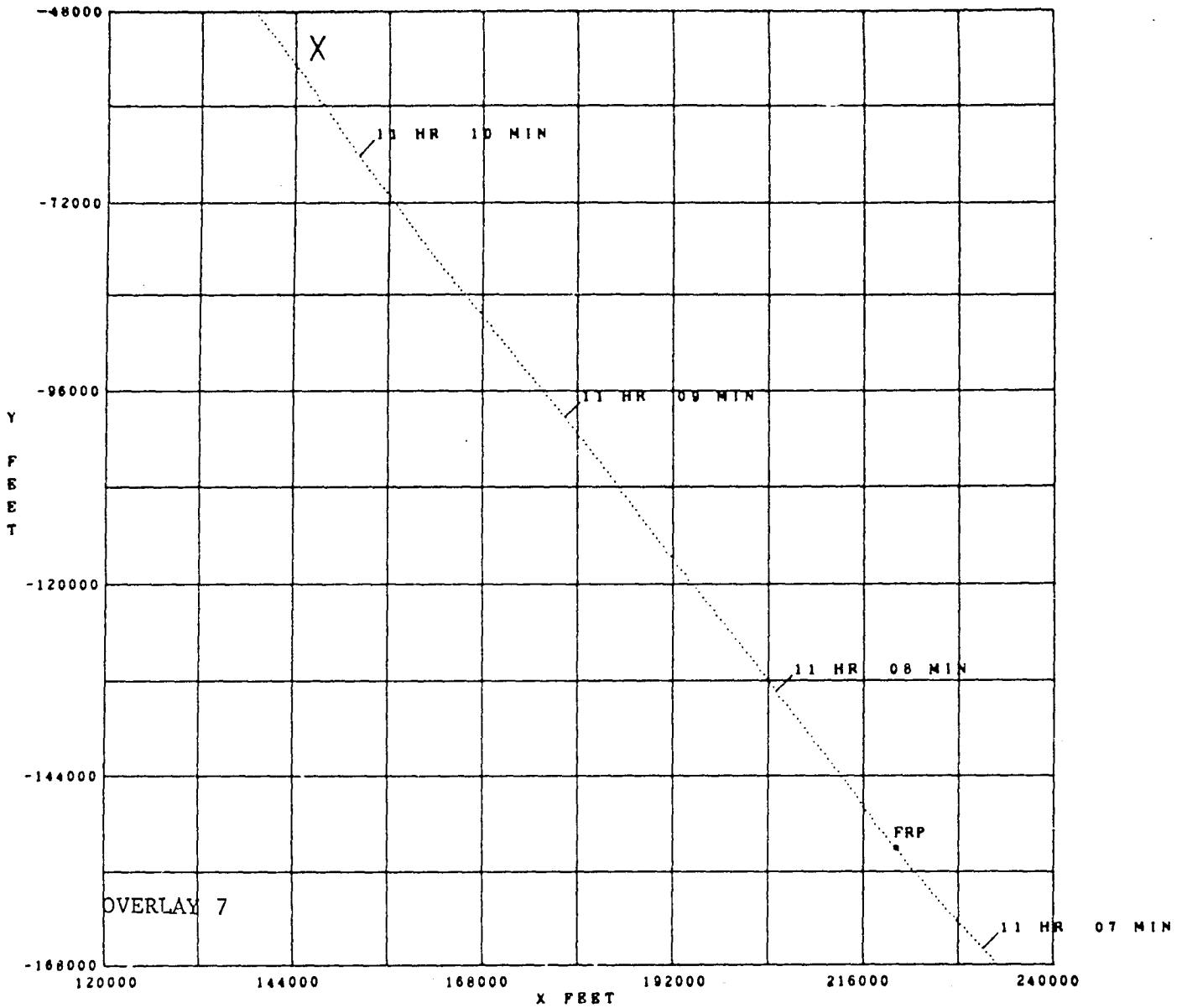
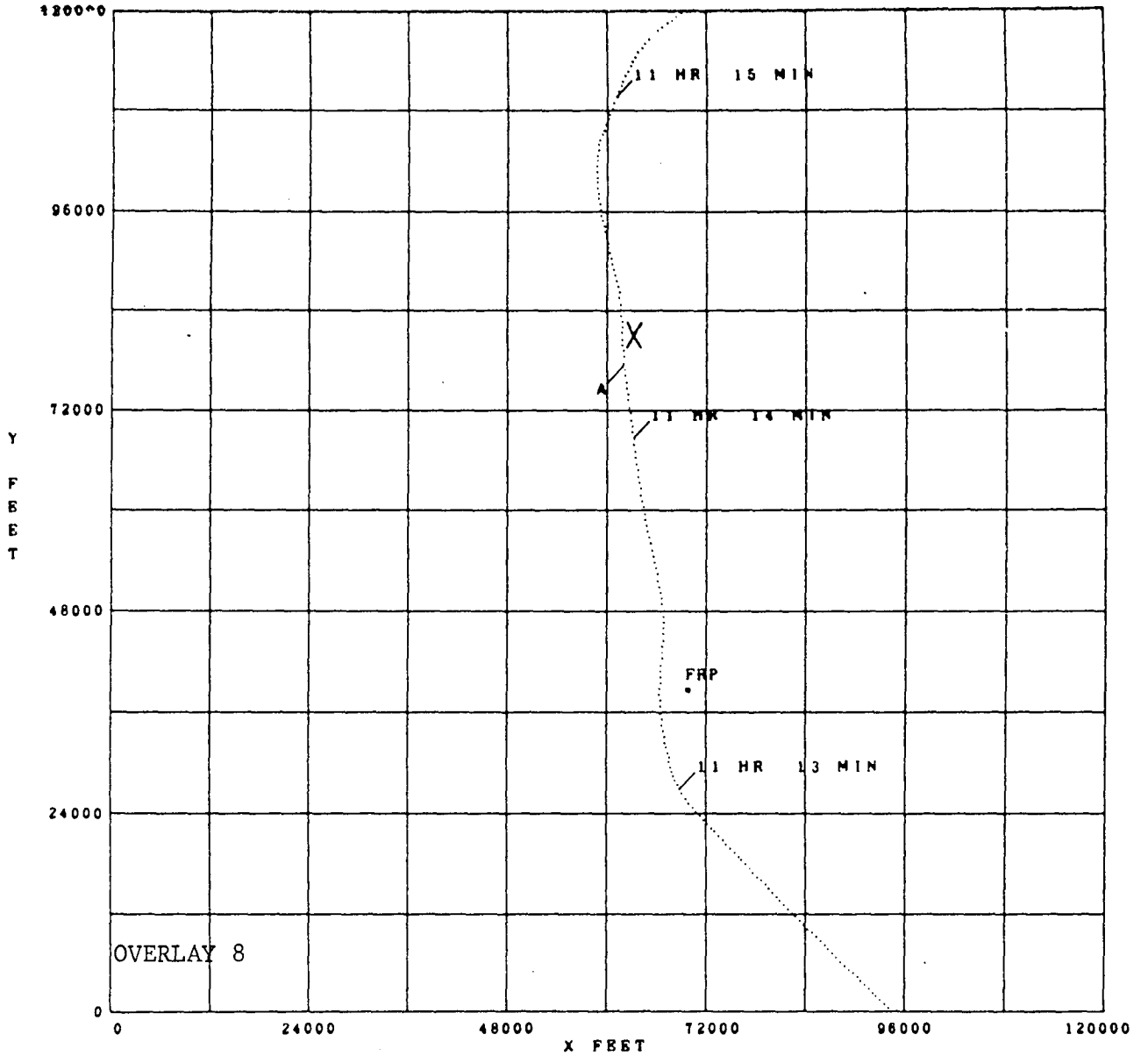


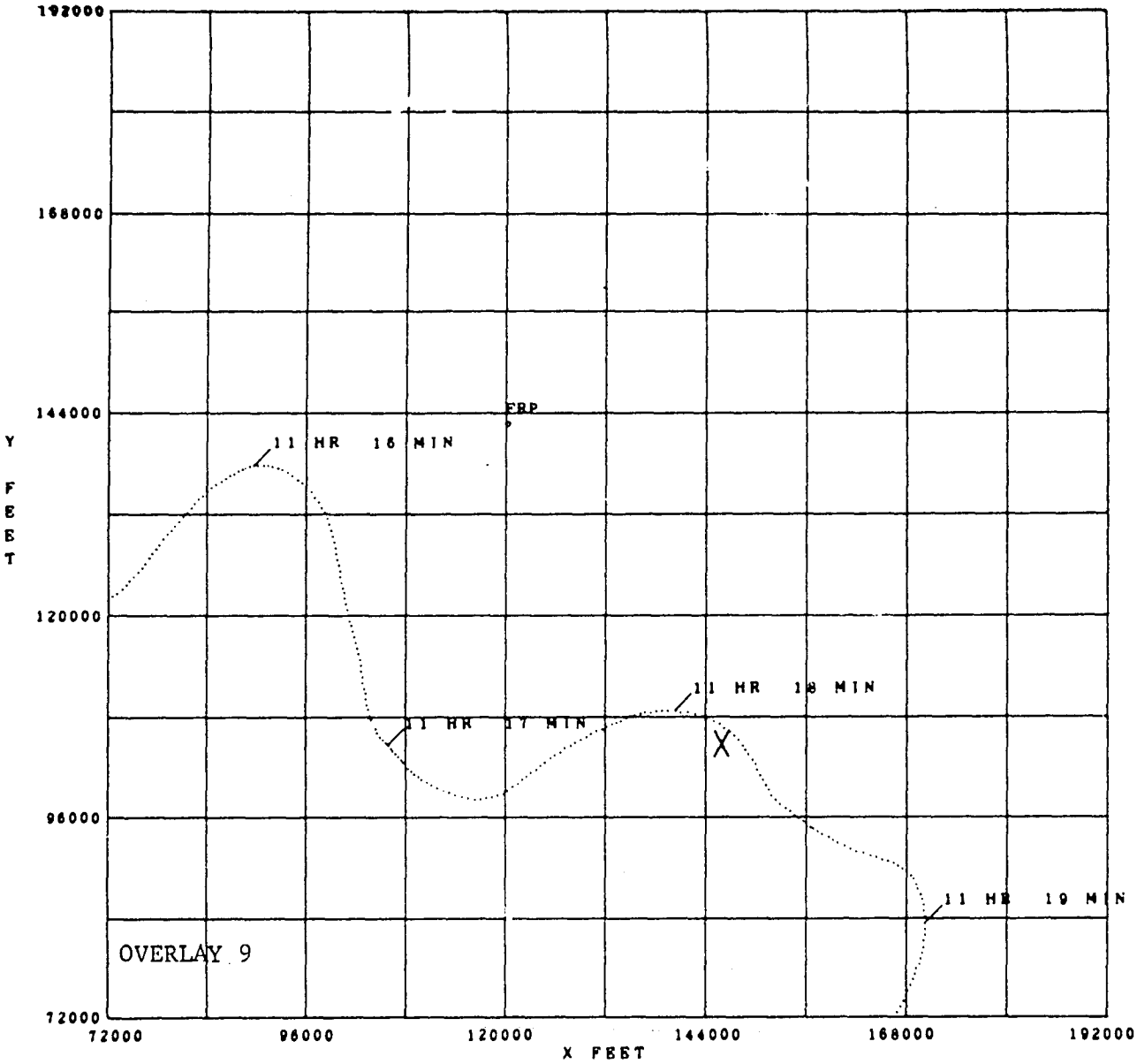
Figure 3-62 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1380 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 552
TARGET EAST 2

04092452
J9139 224

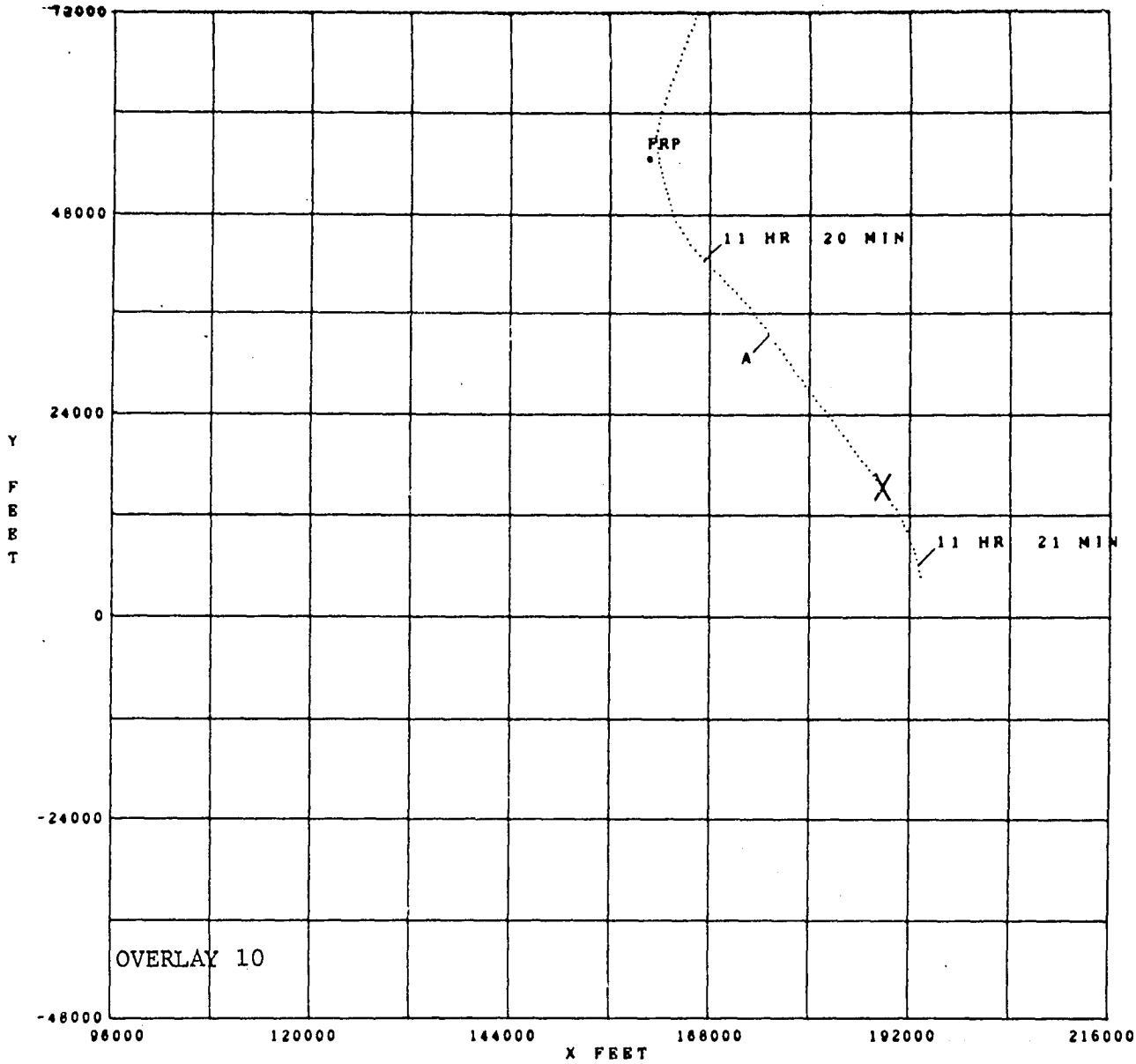
Figure 3-62 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1888 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 552
TARGET EAST 3

04092452
J9139 225

Figure 3-62 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 40 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 552
TARGET EAST 4

04092452
J9139 226

Figure 3-62 (U) Aircraft Position Data (Part 5 of 5)

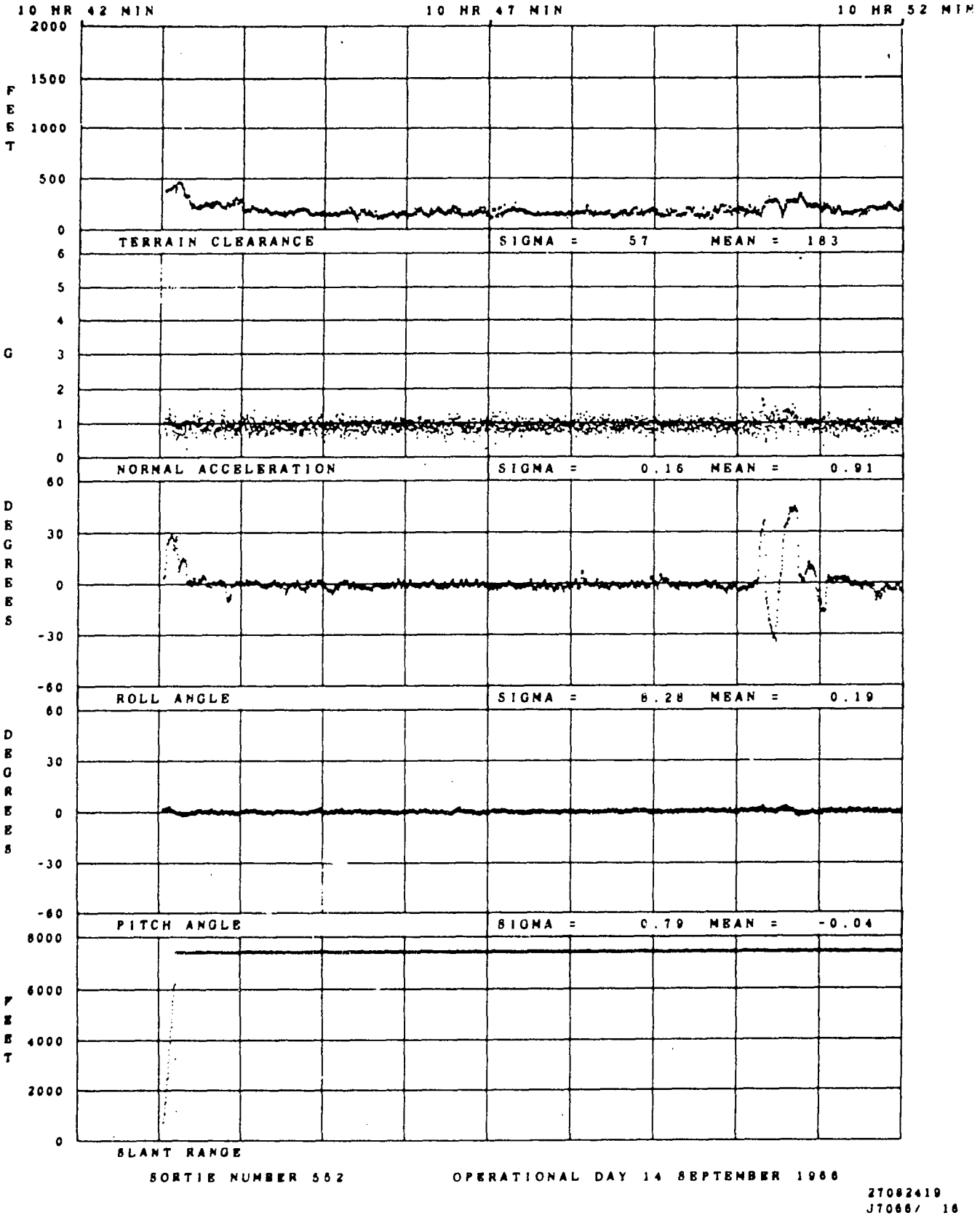


Figure 3-63 (U) Telemetered Data (Part 1 of 4)

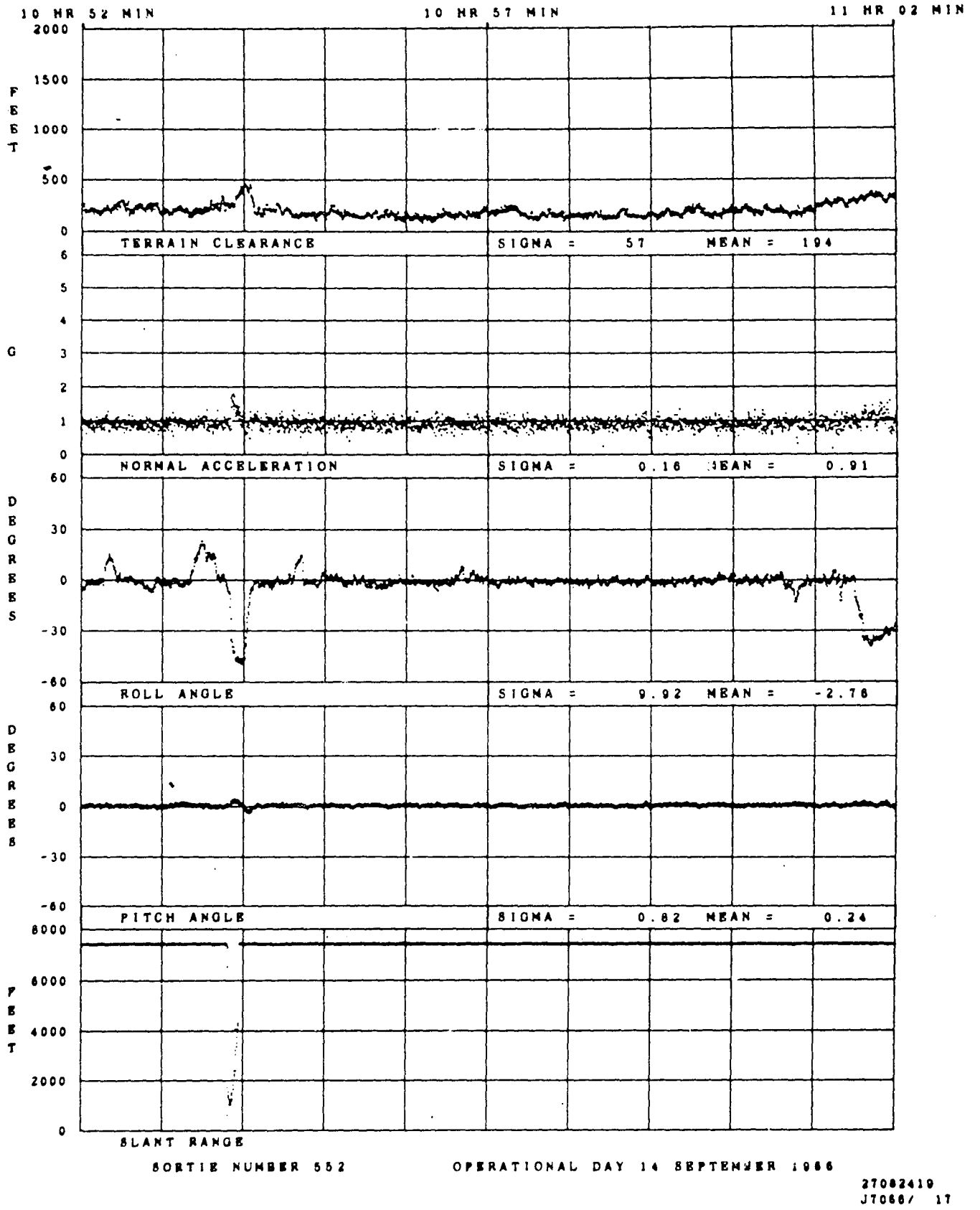


Figure 3-63 (U) Telemetered Data (Part 2 of 4)

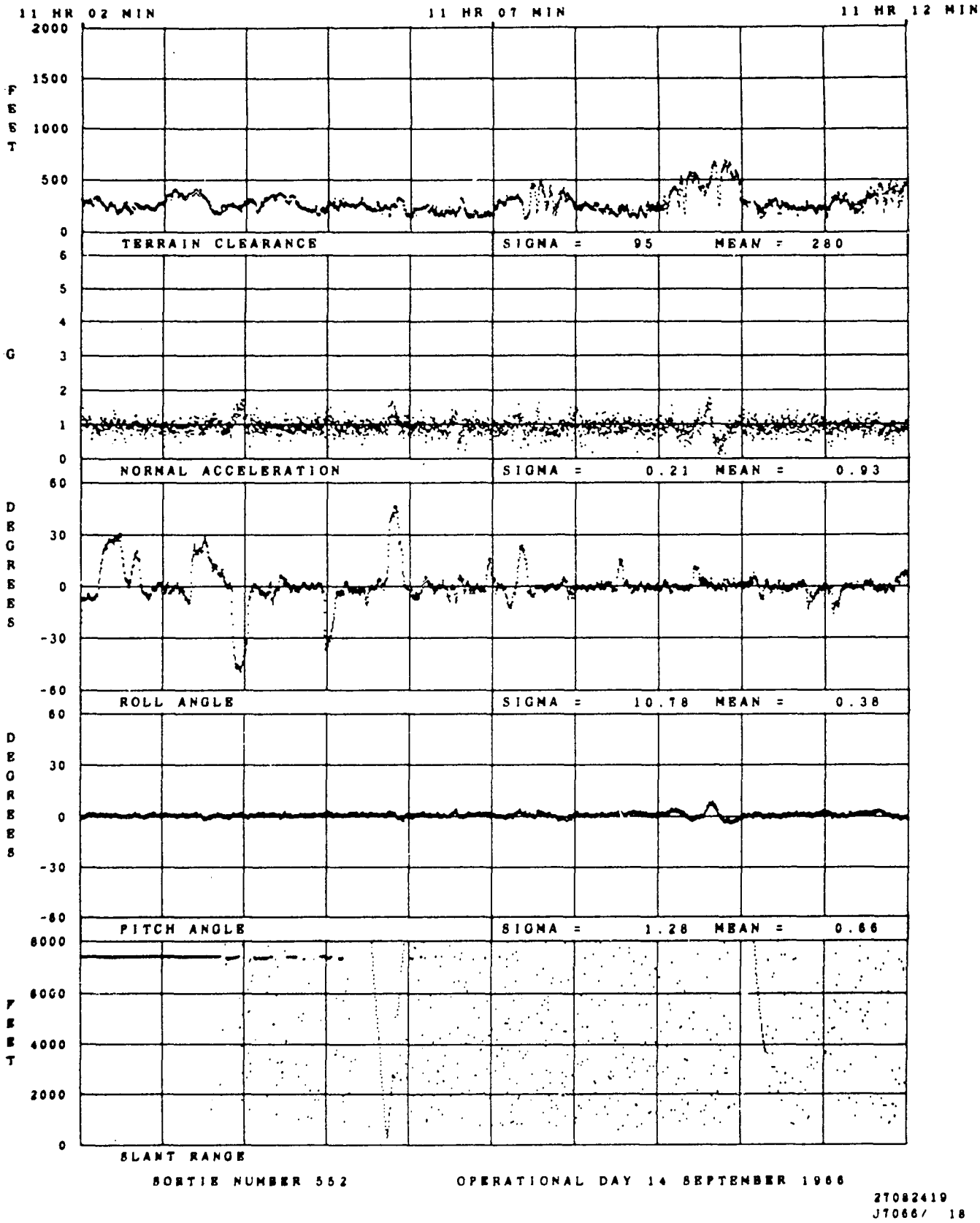


Figure 3-63 (U) Telemetered Data (Part 3 of 4)

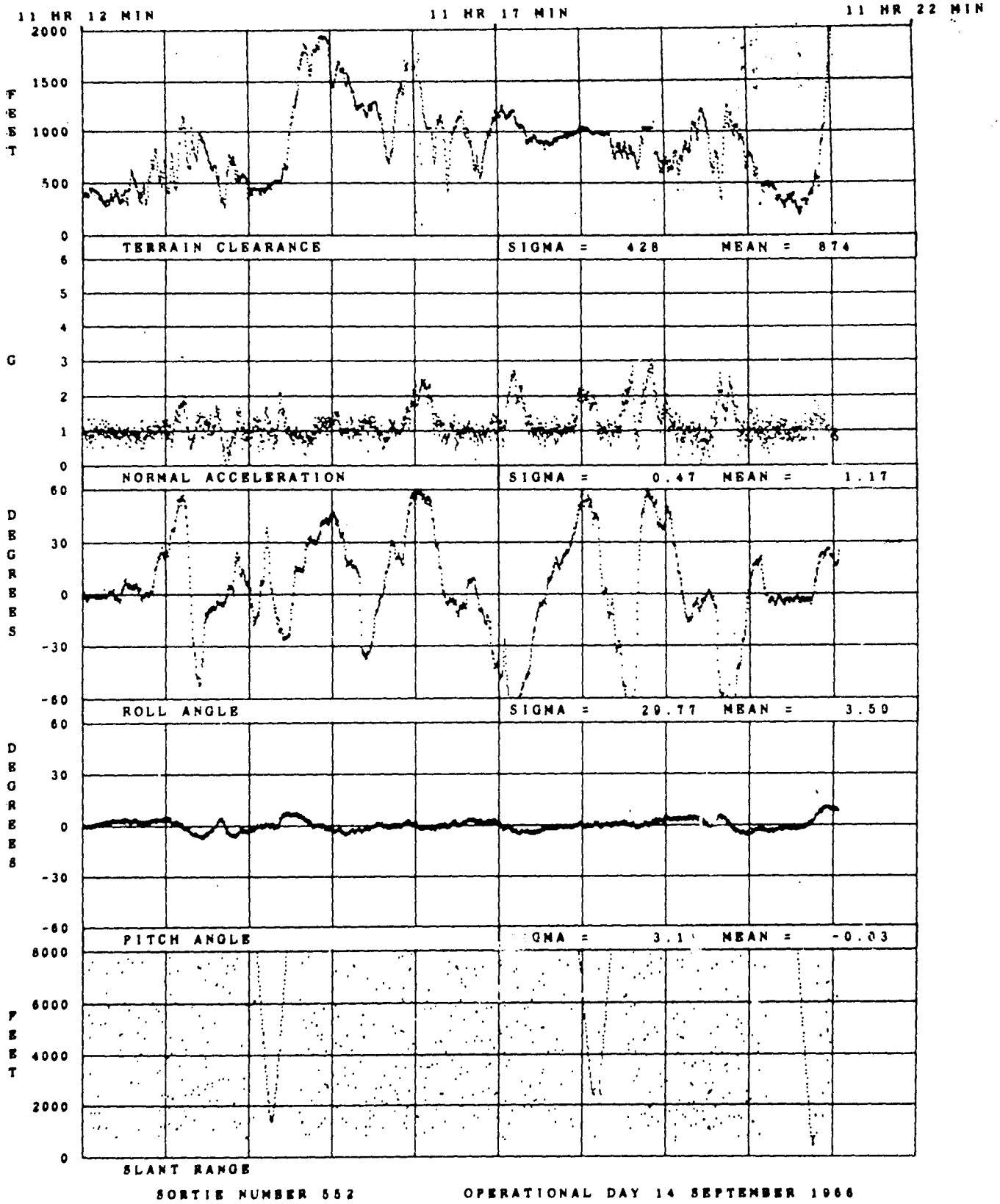
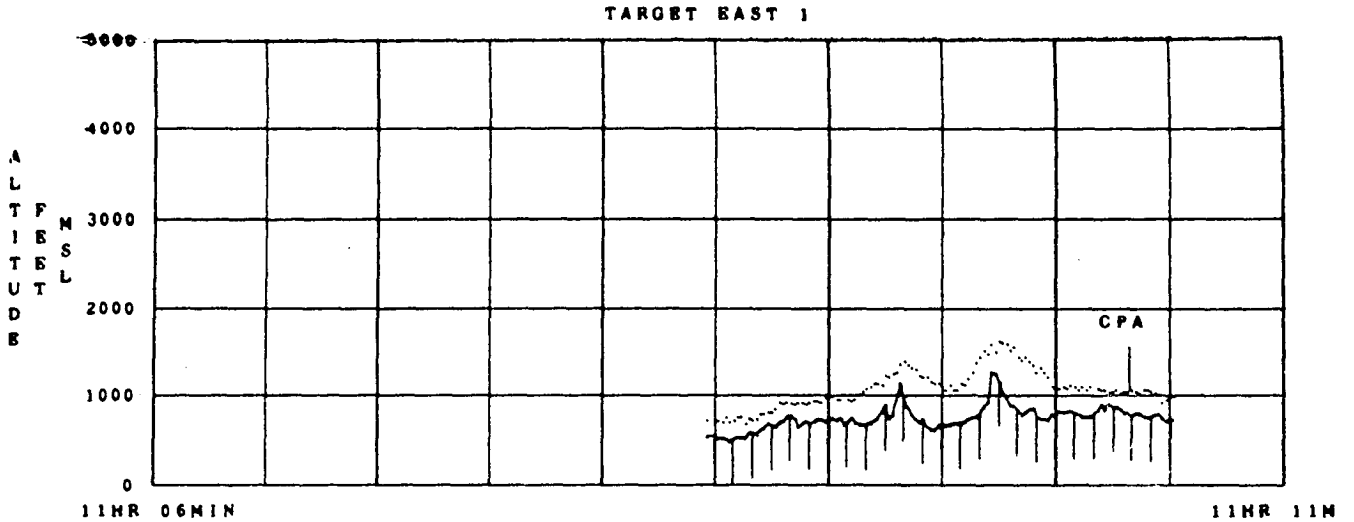
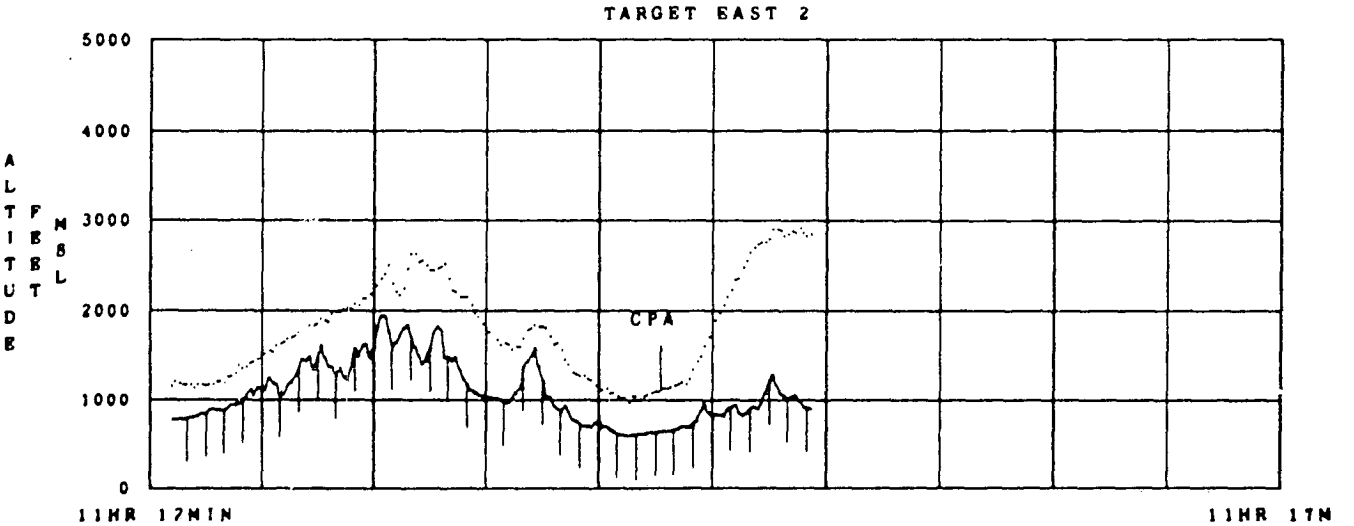


Figure 3-63 (U) Telemetered Data (Part 4 of 4)

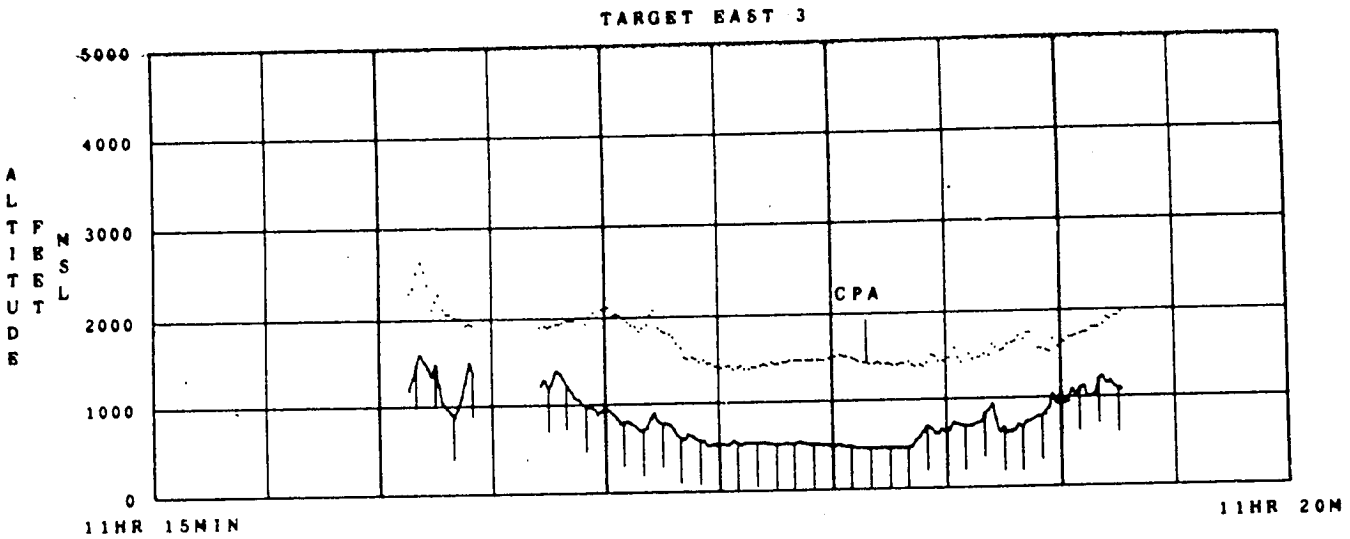


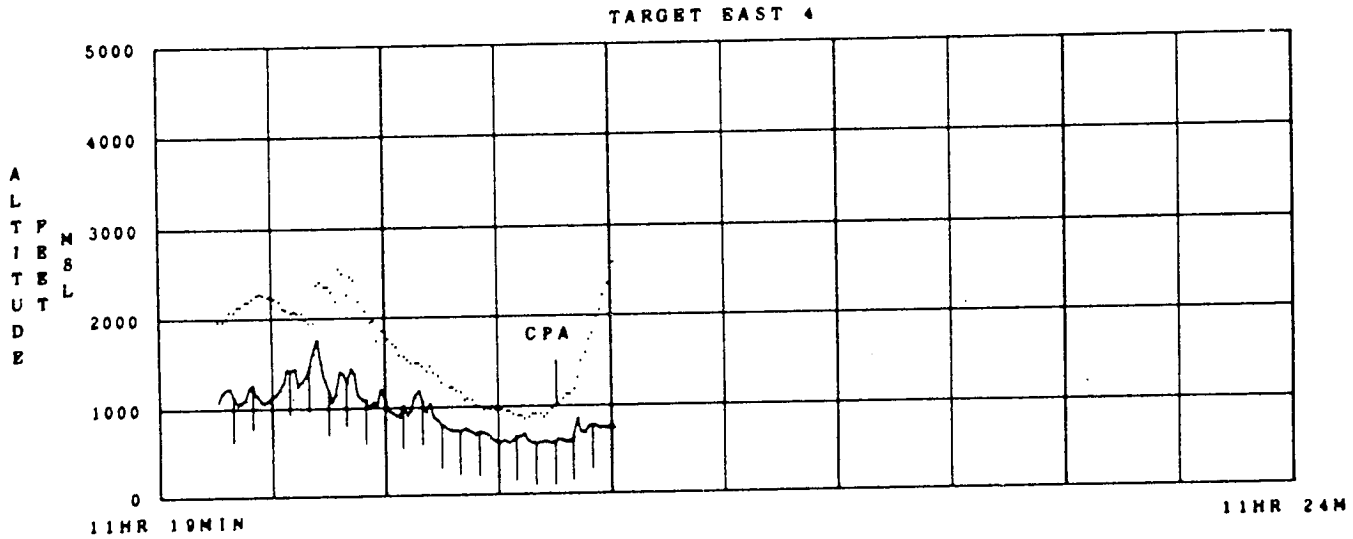


SORTIE NUMBER 552

04092452
J9139

Figure 3-64 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

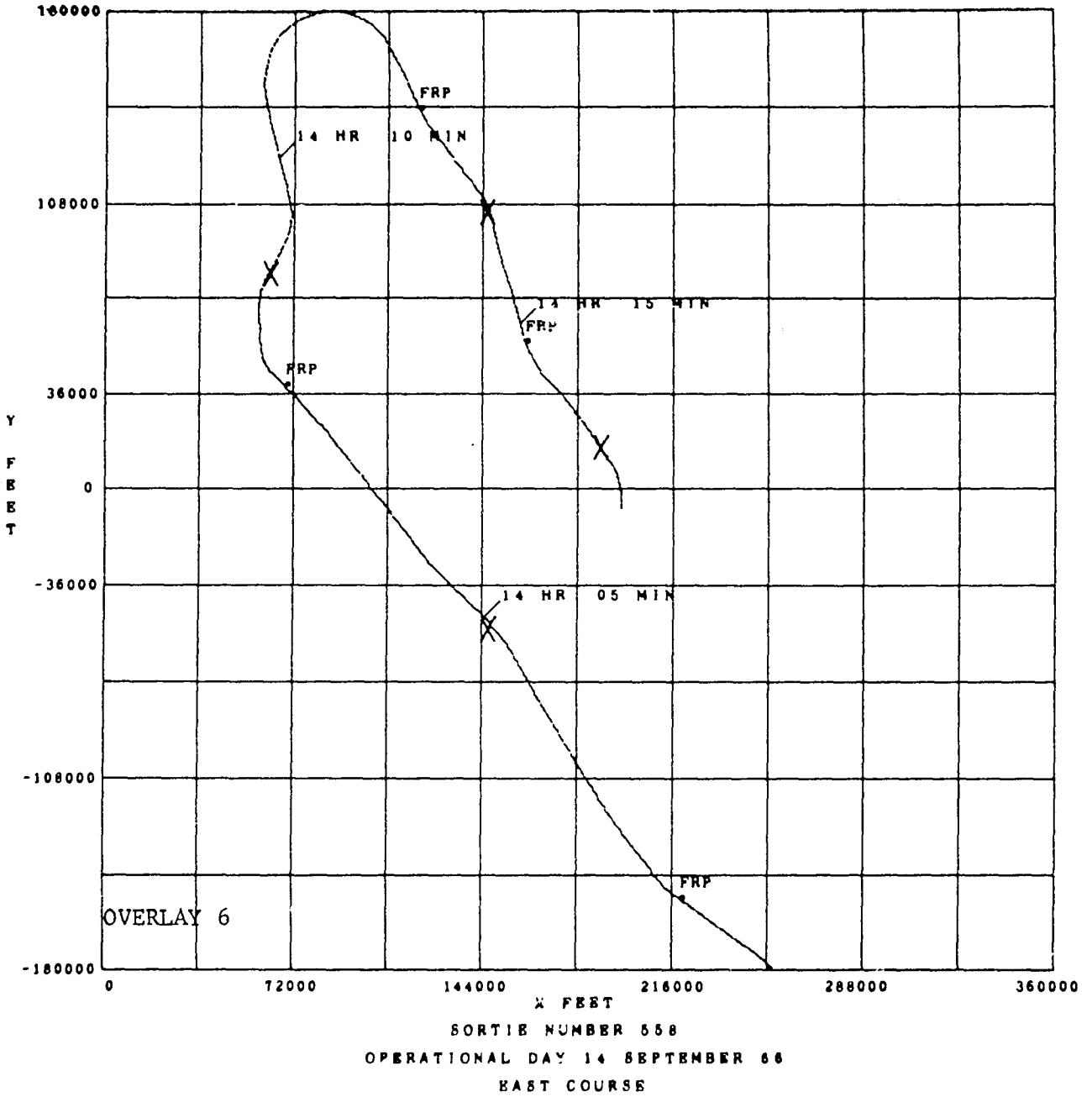




SORTIE NUMBER 552

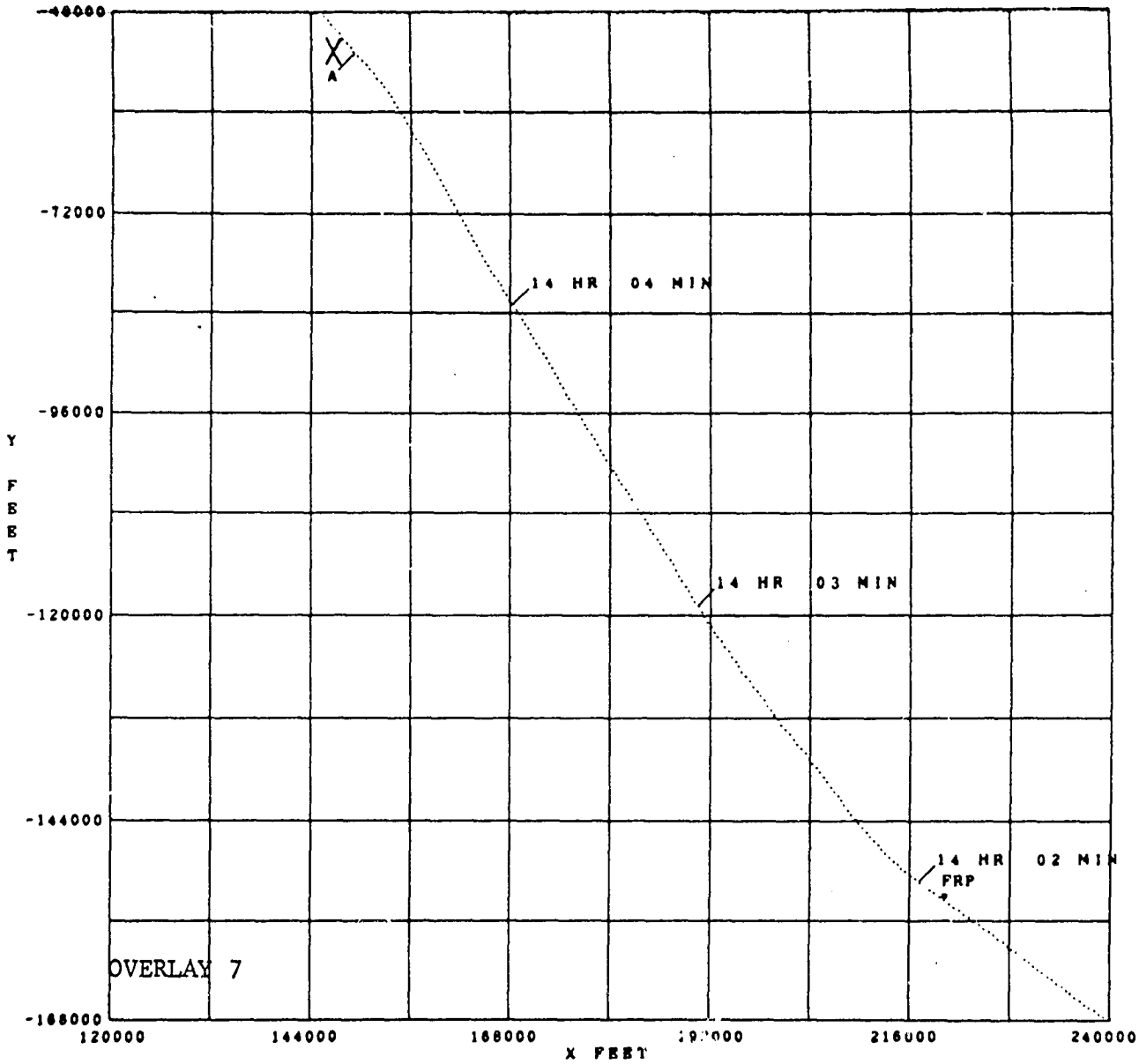
04092452
J9139

Figure 3-64 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092453
J9139 230

Figure 3-65 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1783 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 558
TARGET EAST 1

04092453
J9139 231

Figure 3-65 (U) Aircraft Position Data (Part 2 of 5)

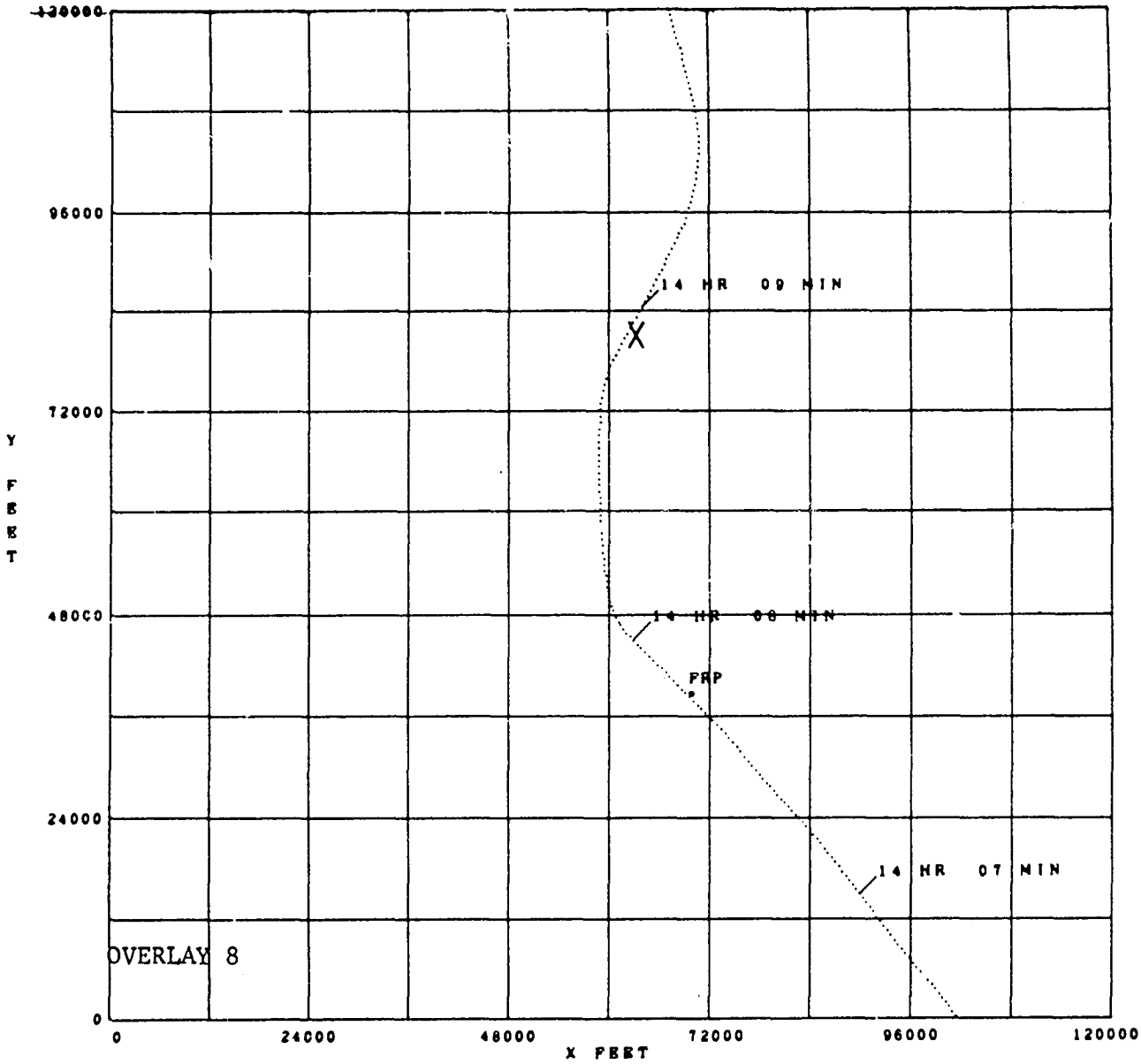
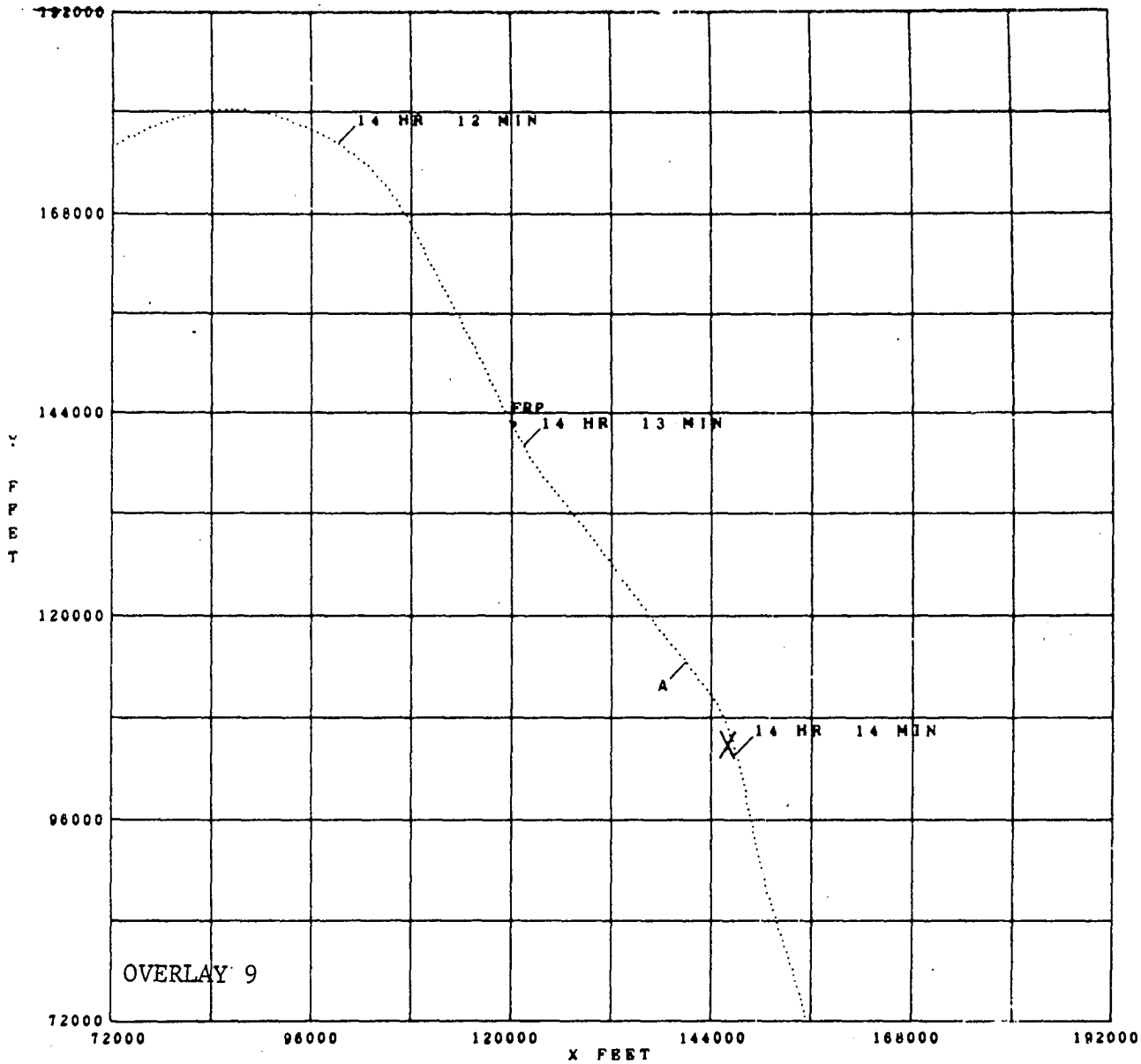


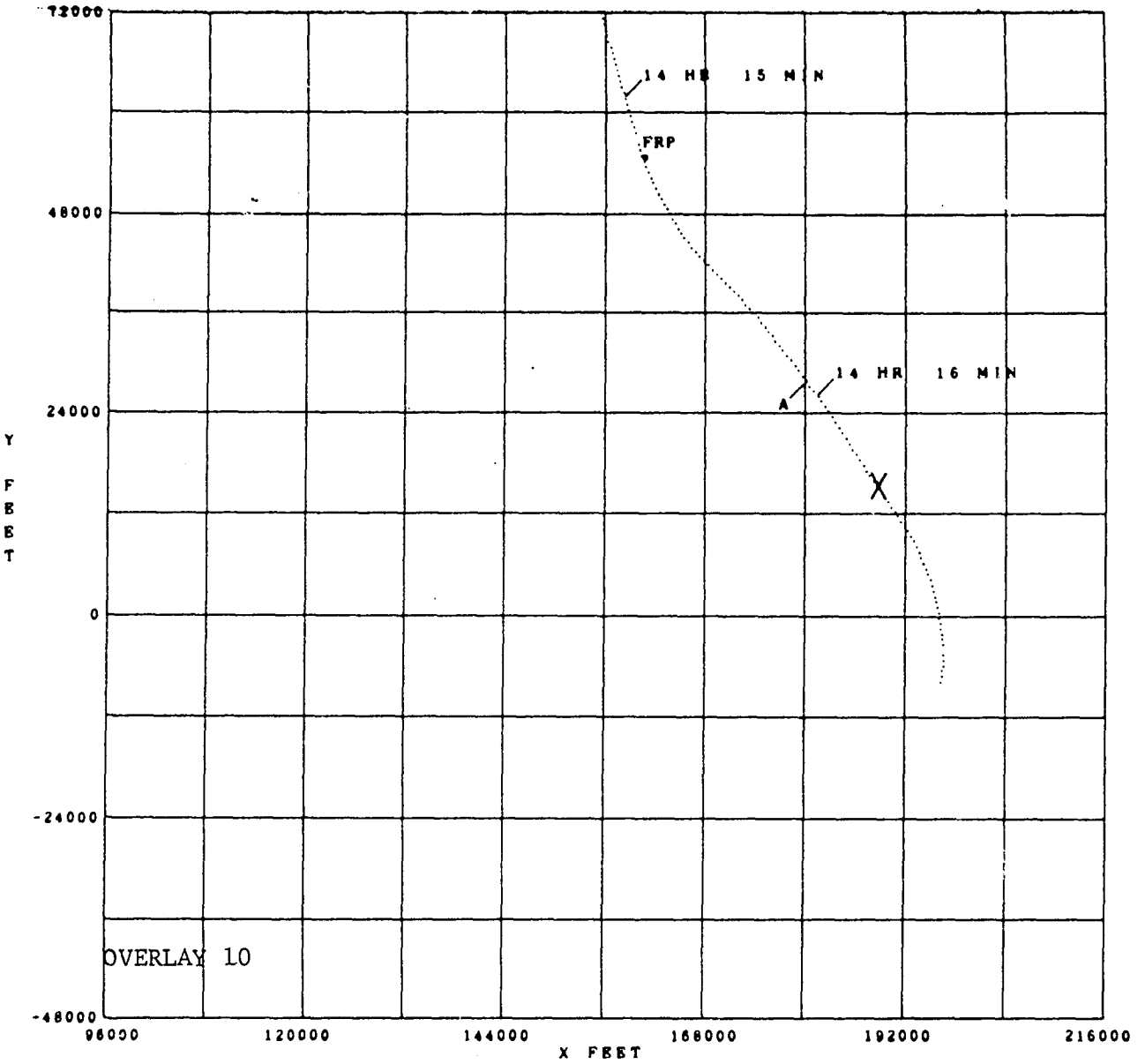
Figure 3-65 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 757 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 558
TARGET EAST 3

04092453
J9139

Figure 3-65 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 128 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 558
TARGET EAST 4

04092453
J9139 234

Figure 3-65 (U) Aircraft Position Data (Part 5 of 5)

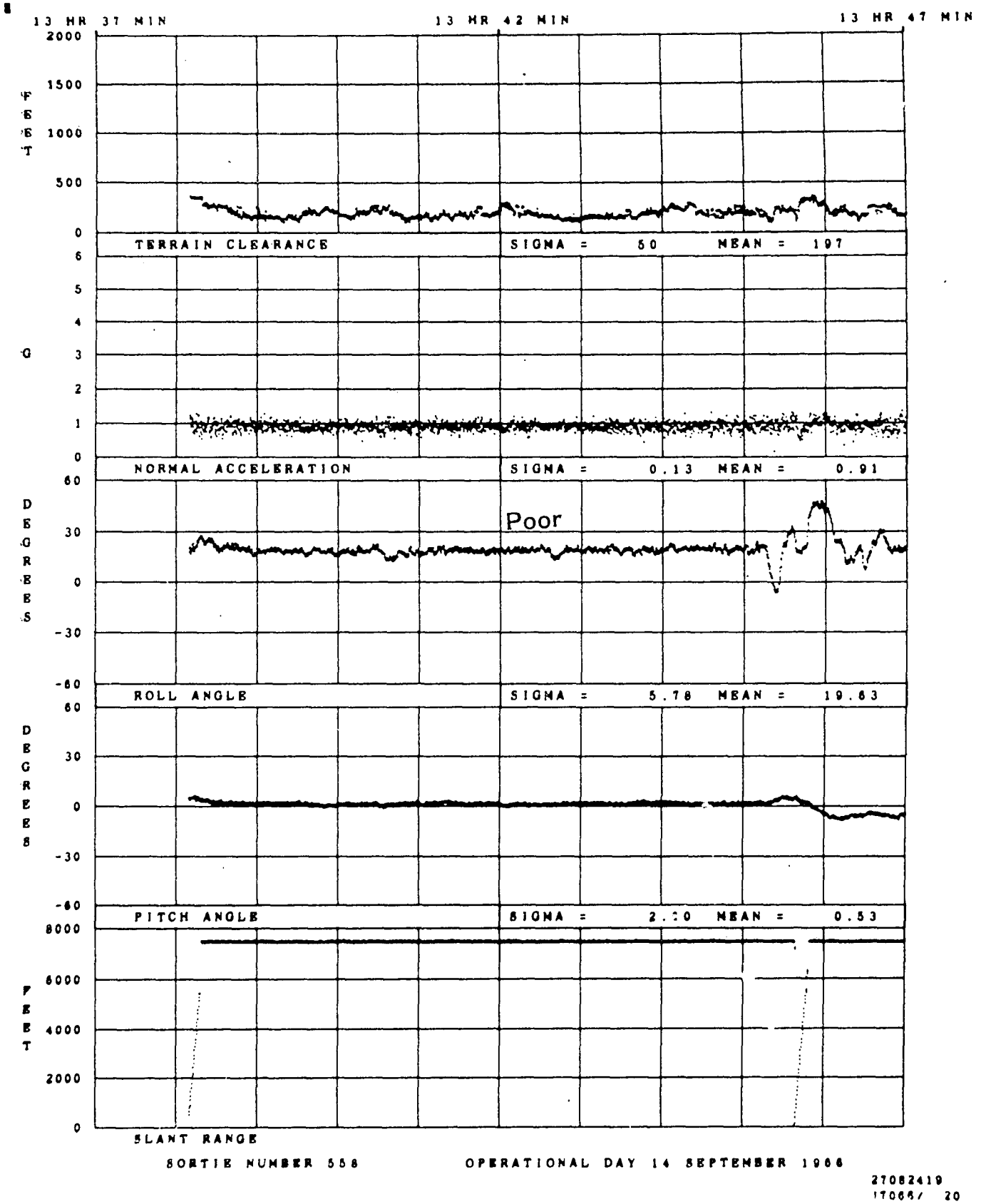


Figure 3-66 (U) Telemetered Data (Part 1 of 4)

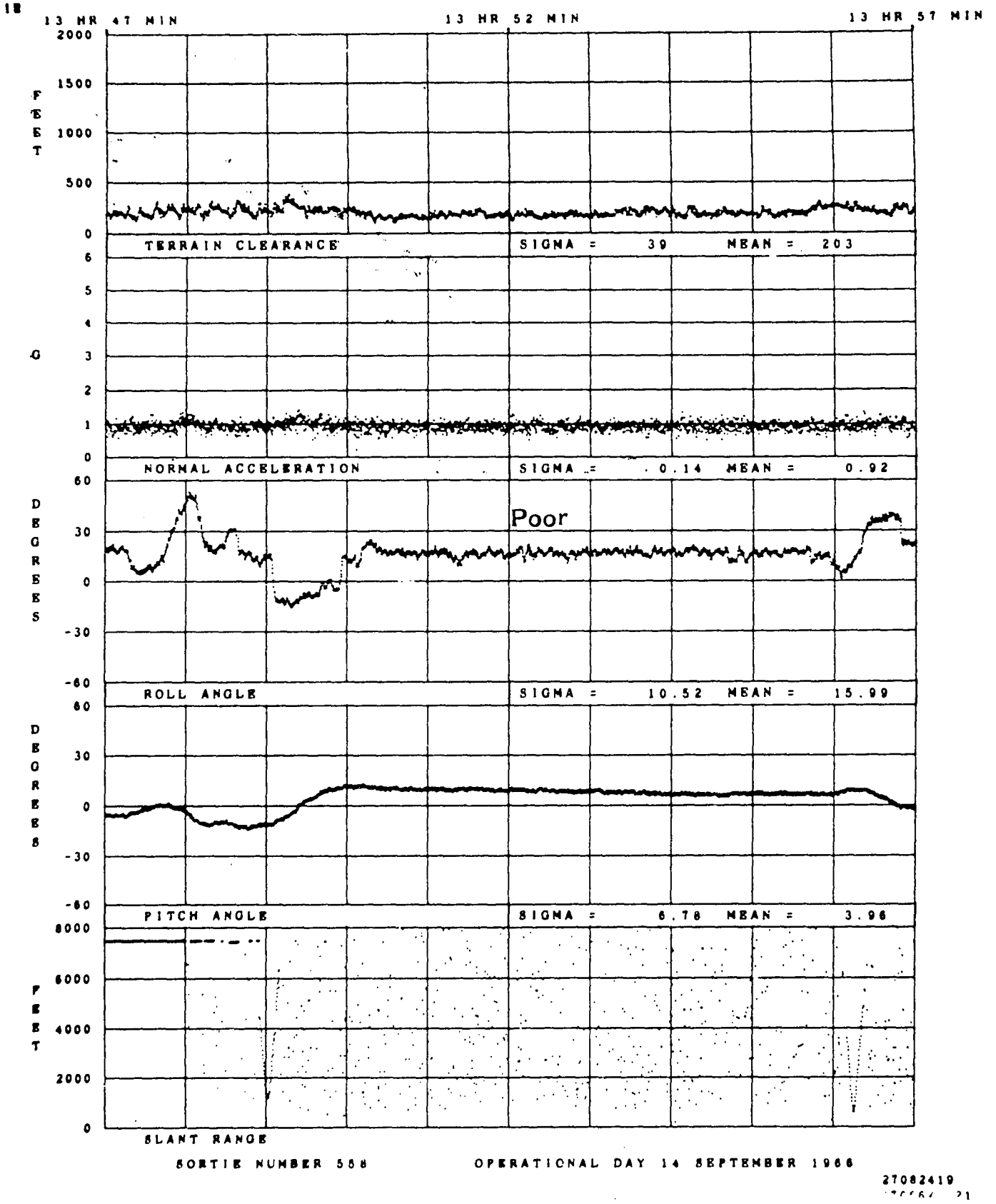


Figure 3-66 (U) Telemetered Data (Part 2 of 4)

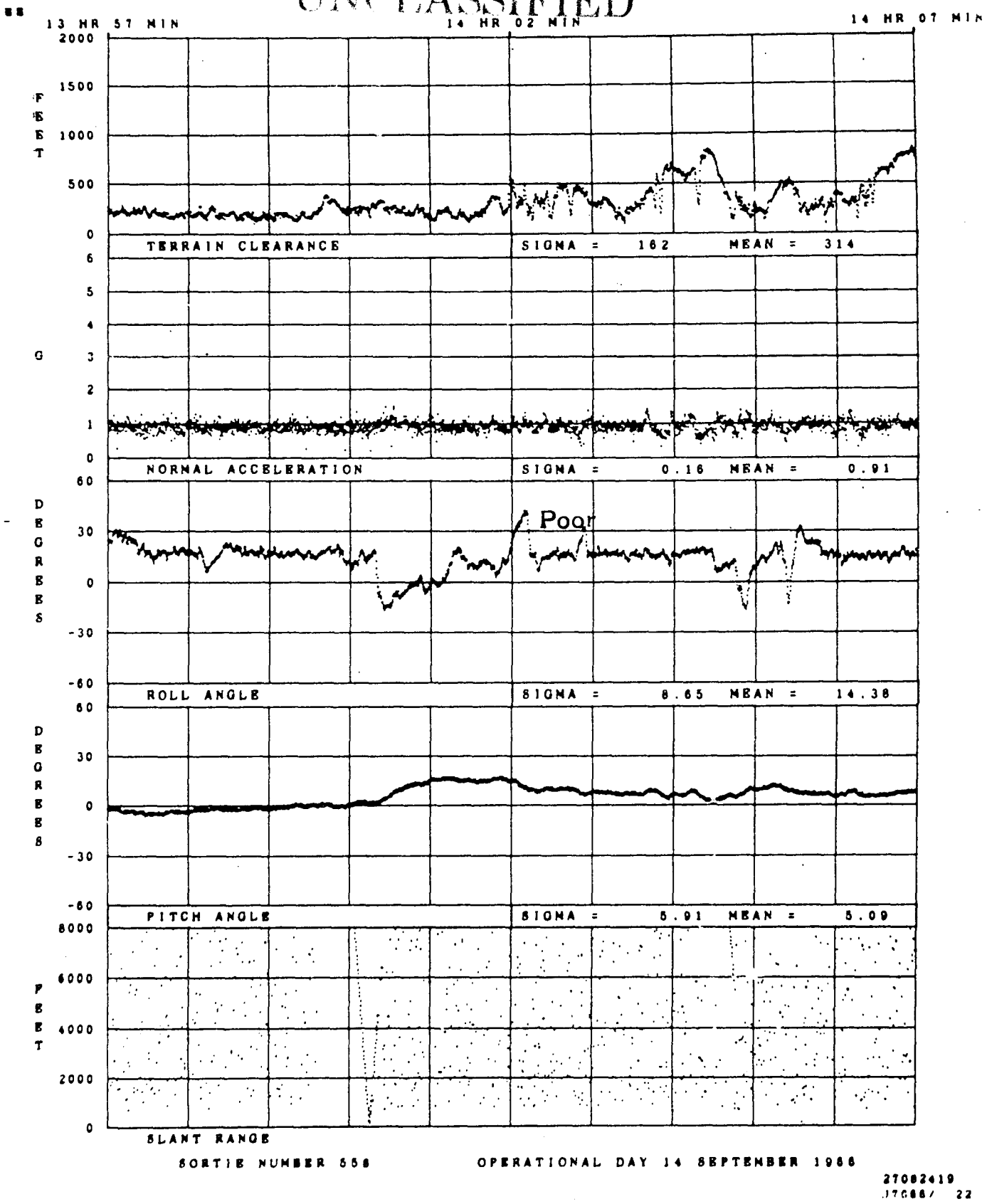


Figure 3-66 (U) Telemetered Data (Part 3 of 4)

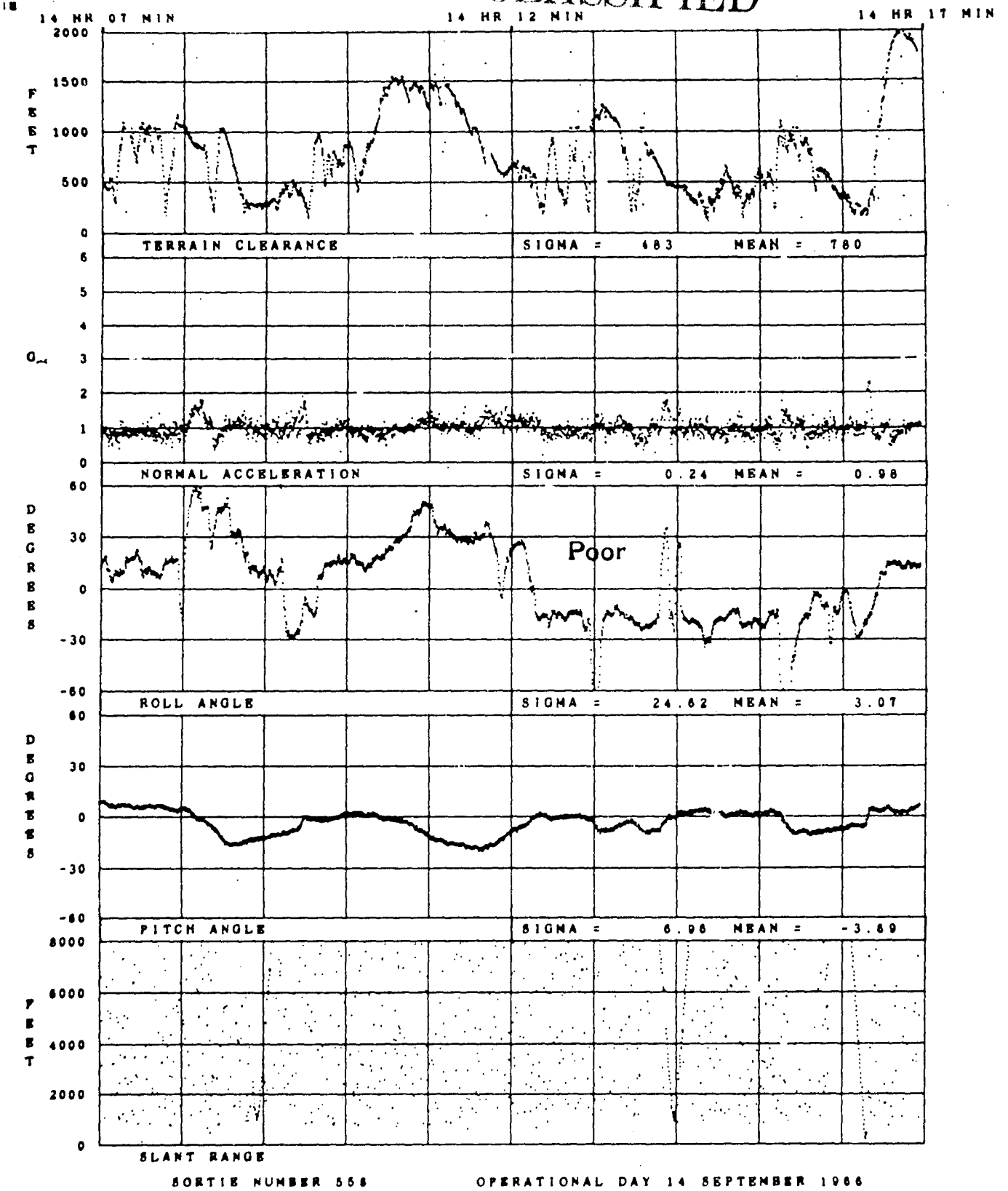
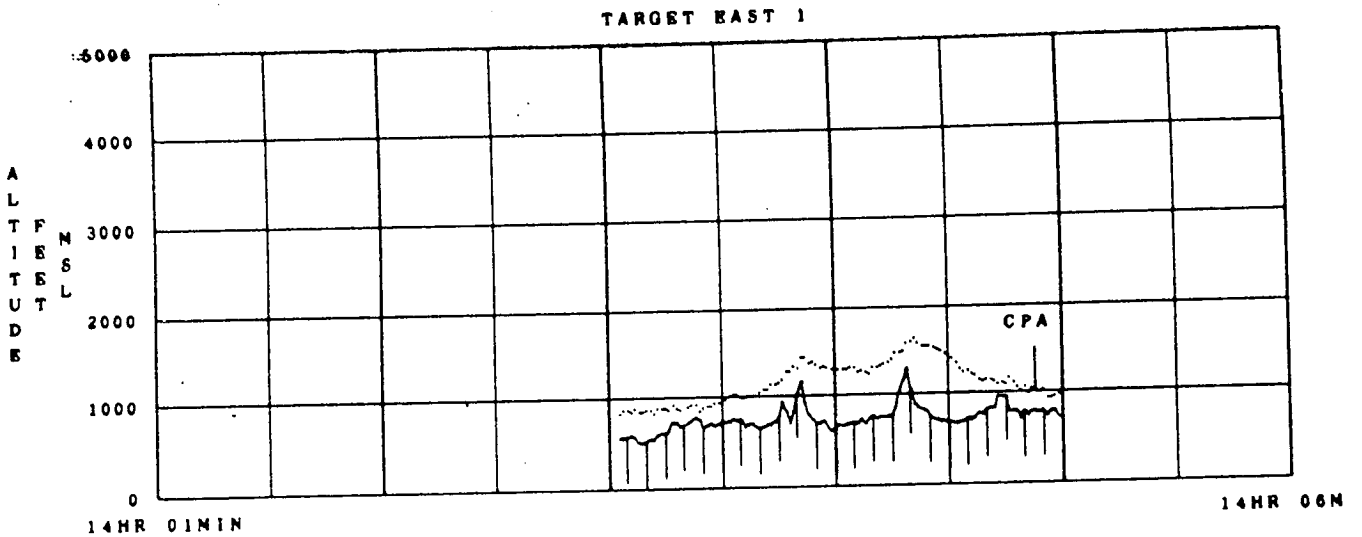
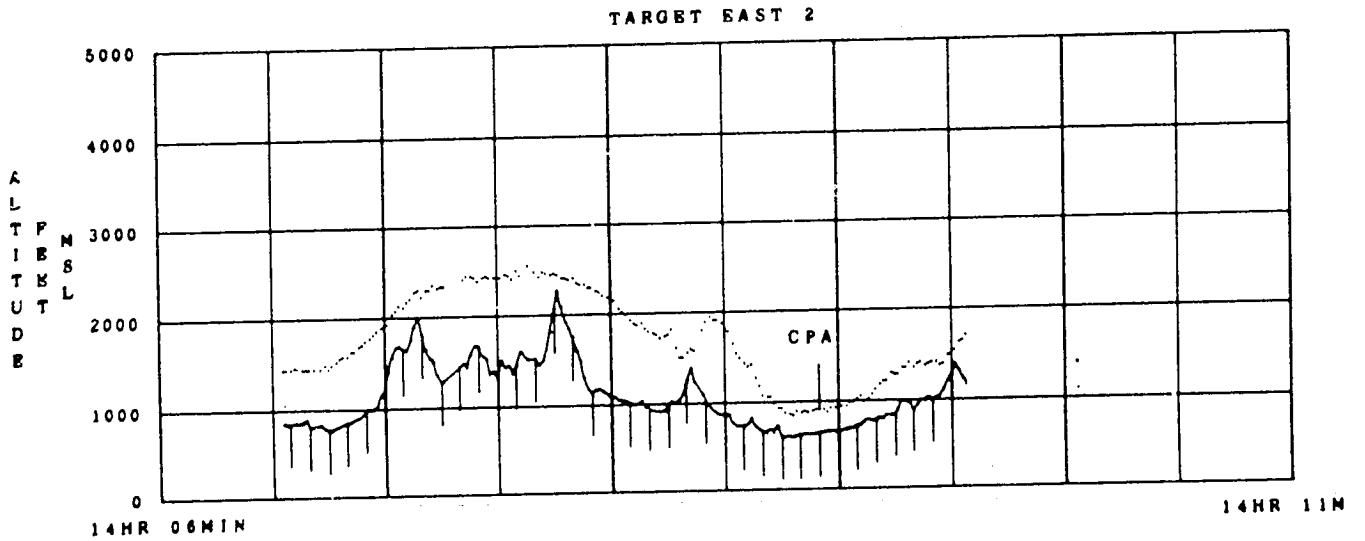


Figure 3-66 (U) Telemetered Data (Part 4 of 4)

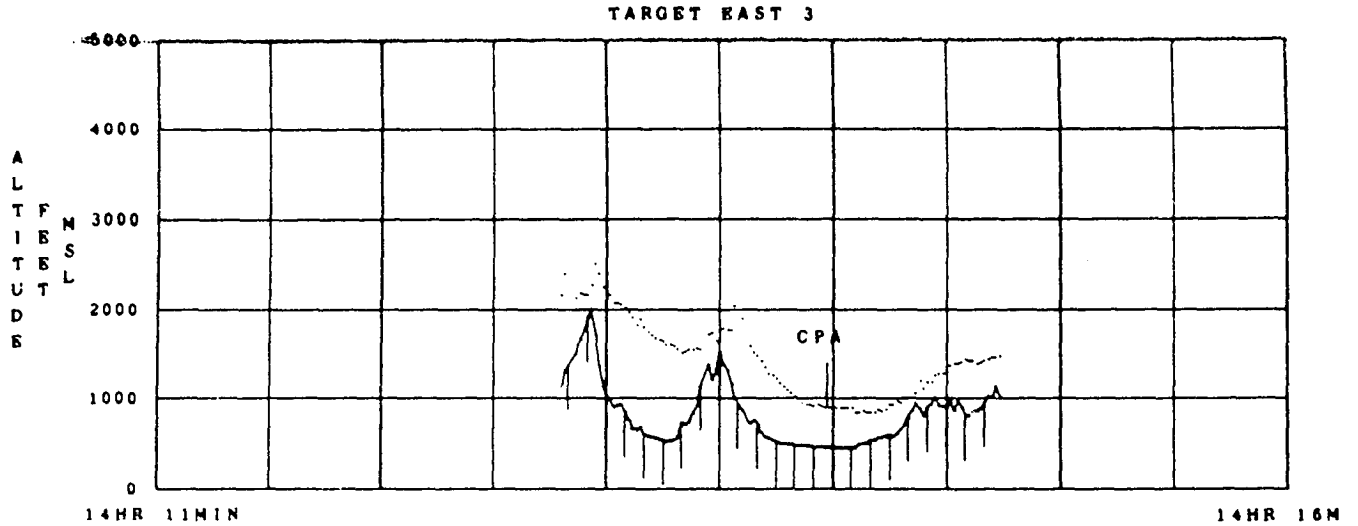


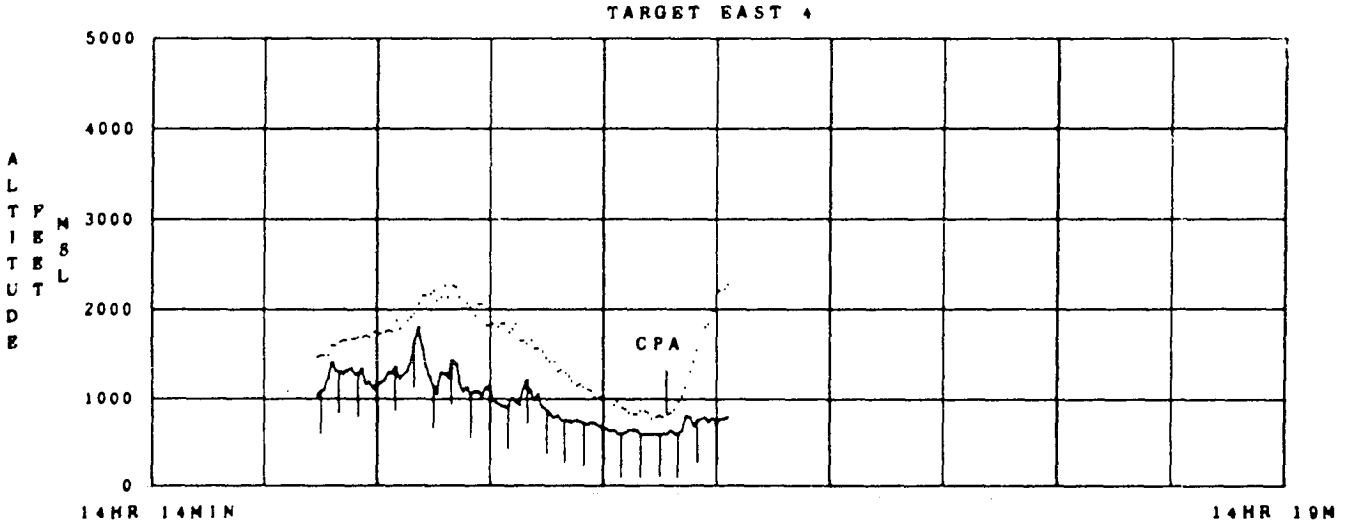


SORTIE NUMBER 558

04092453
J9139

Figure 3-67 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

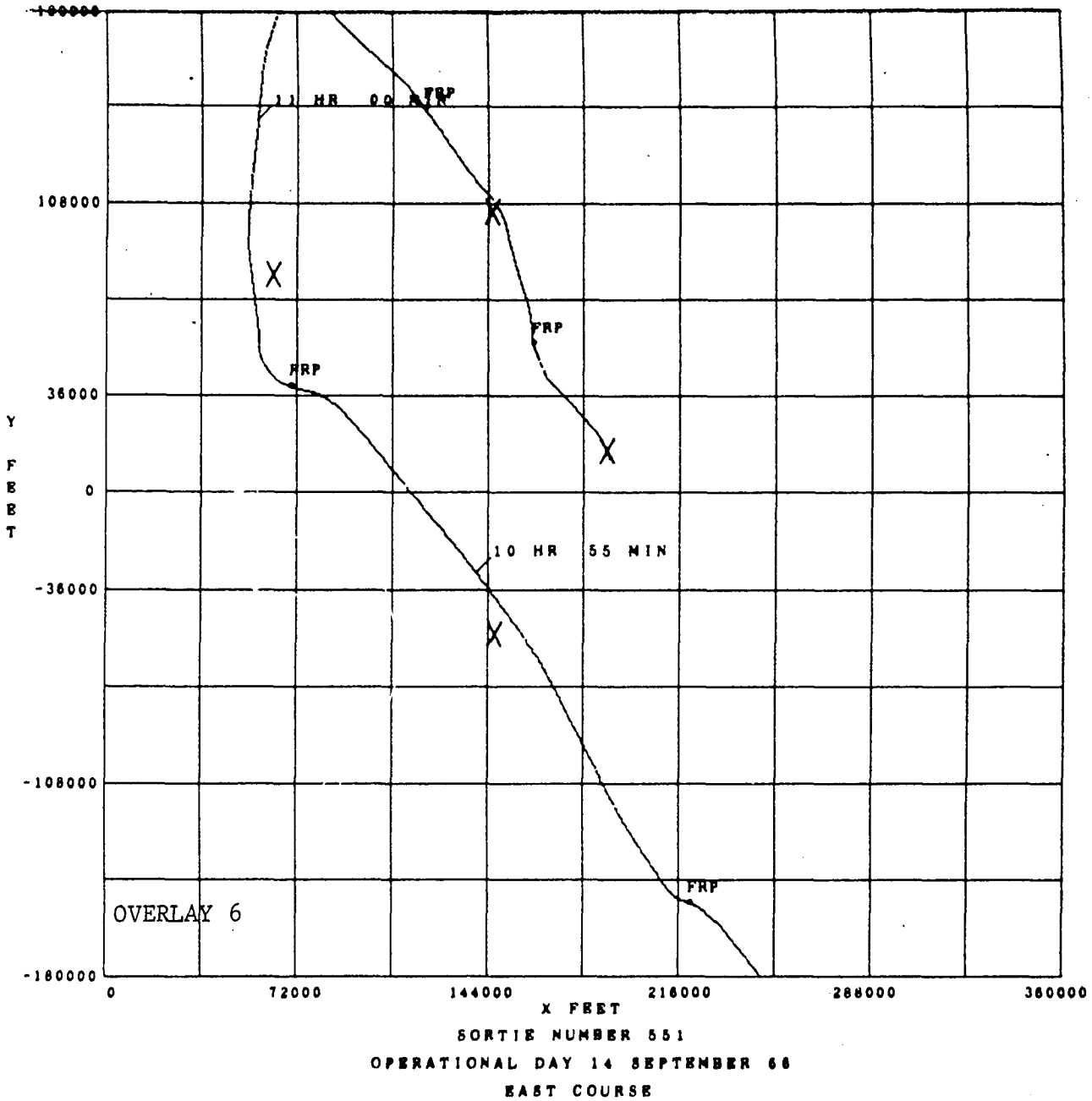




SORTIE NUMBER 558

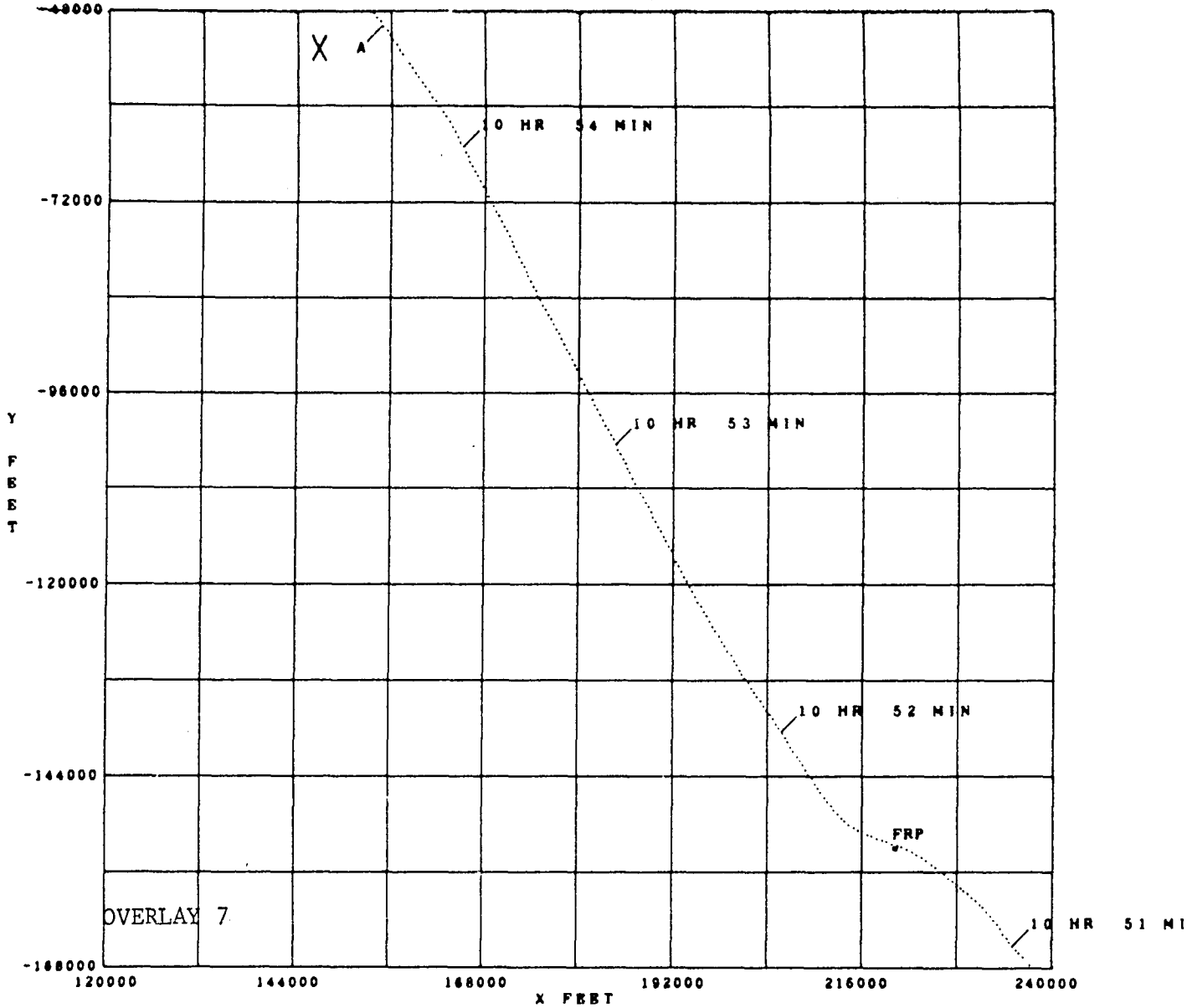
04092453
J9139

Figure 3-67 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092455
J9139 2

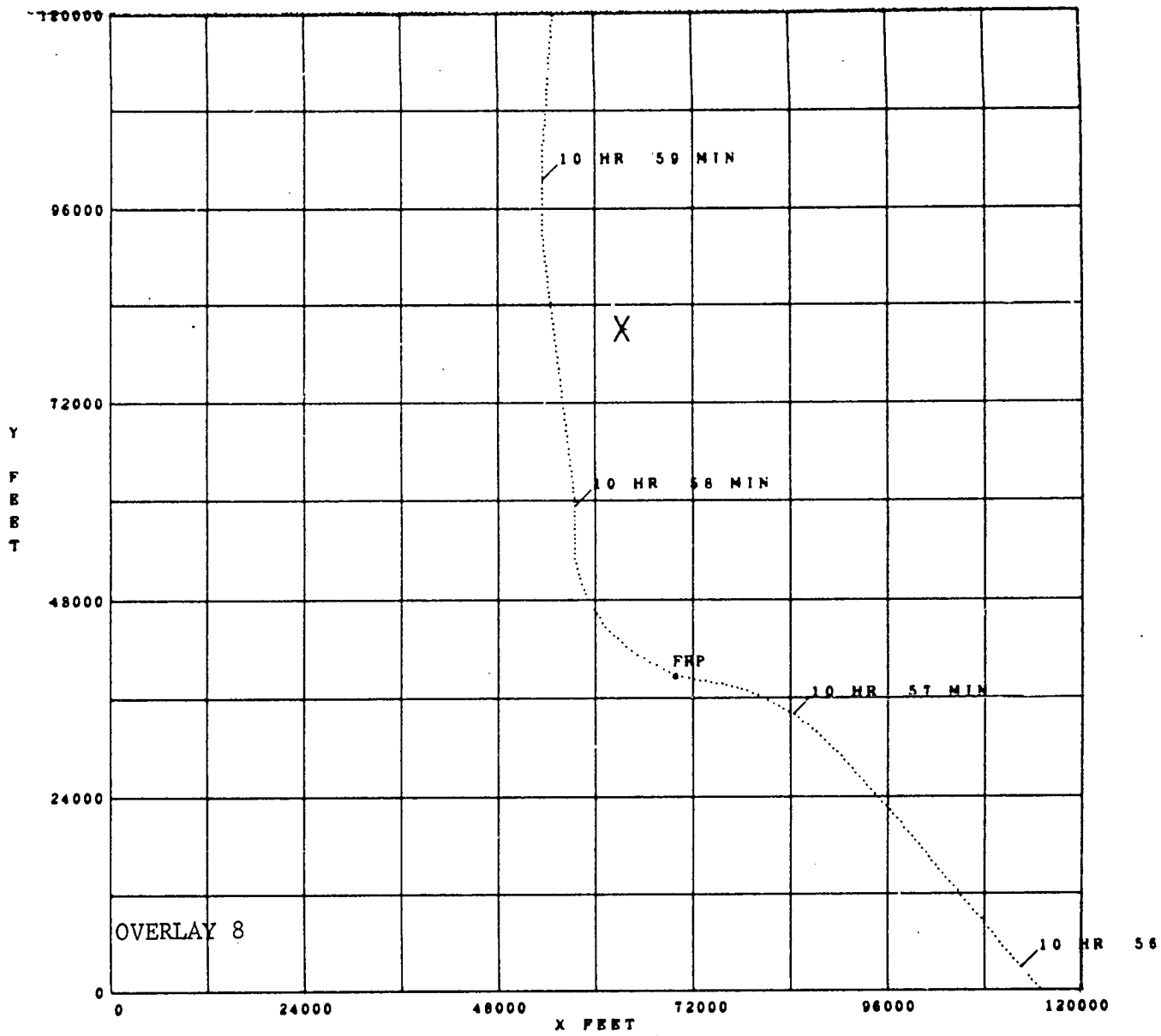
Figure 3-68 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 8242 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 551
TARGET EAST 1

04092455
J9139 261

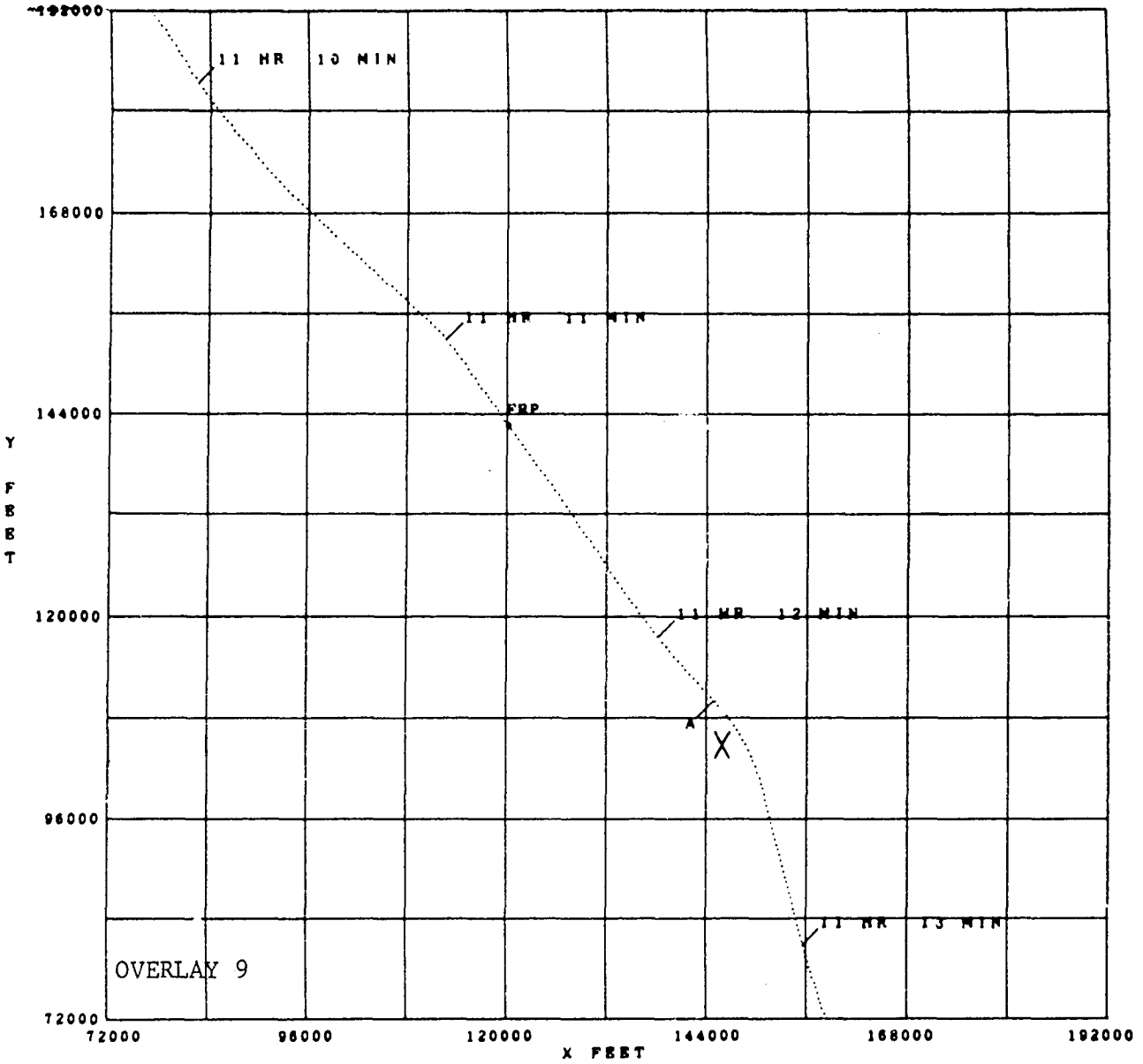
Figure 3-68 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 8256 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DNE
SORTIE NUMBER 551
TARGET EAST 2

04092455
J9139 26

Figure 3-68 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 2444 FEET

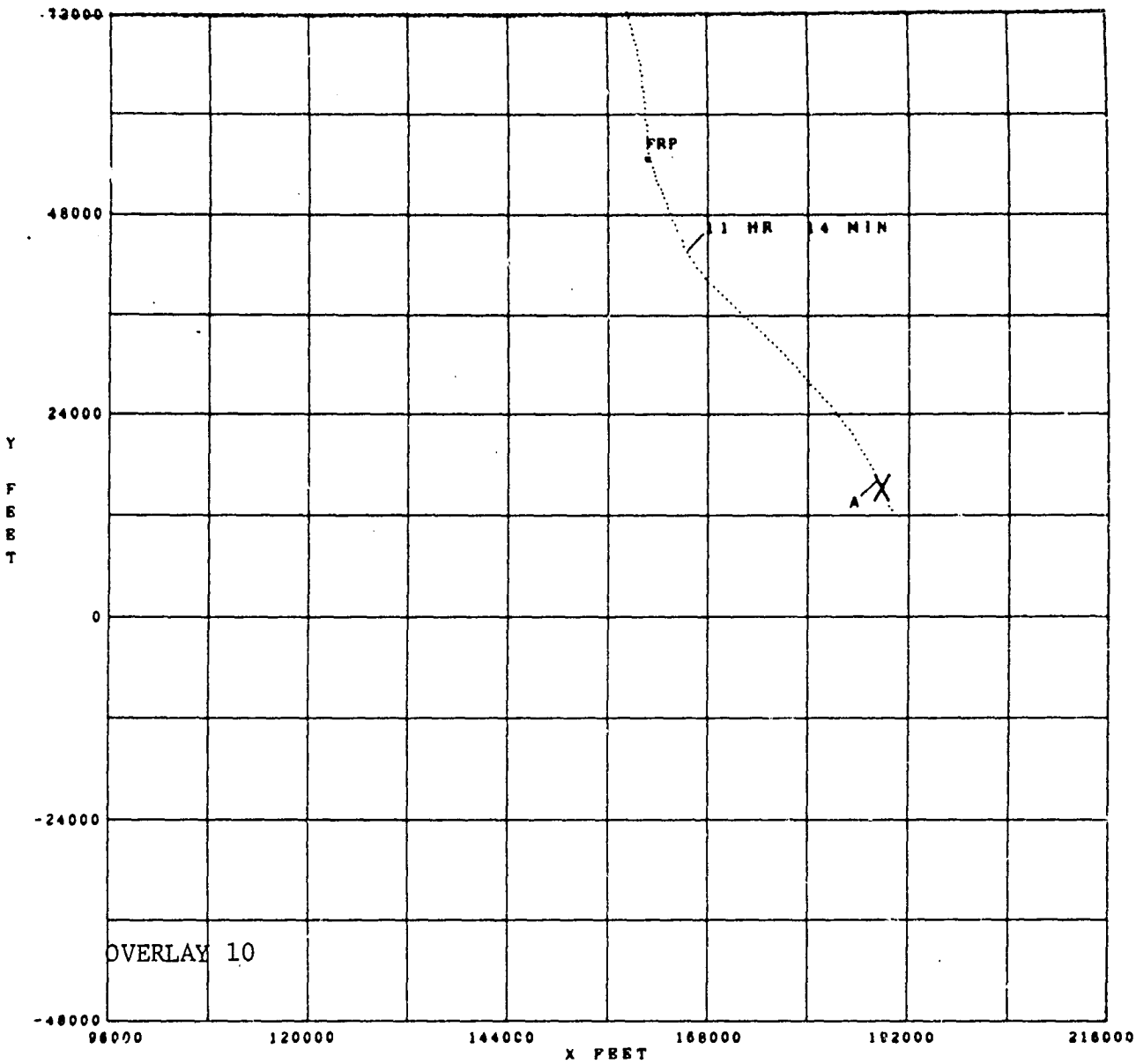
MINIMUM GROUND DISTANCE QUALIFIER = DNE

SORTIE NUMBER 551

TARGET EAST 3

04092455
J9139 26

Figure 3-68 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 24 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 551
TARGET EAST 4

04092455
J9139

Figure 3-68 (U) Aircraft Position Data (Part 5 of 5)

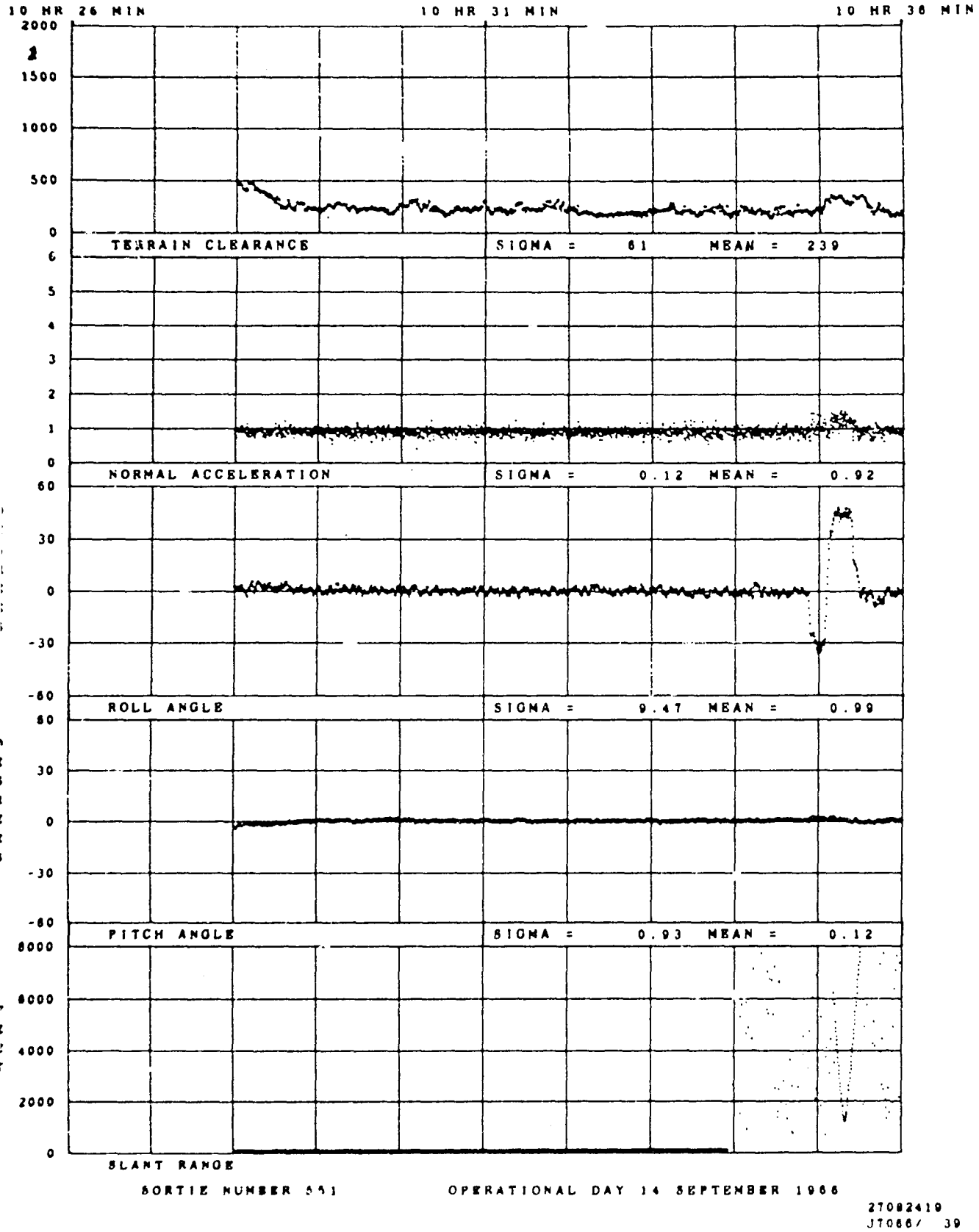


Figure 3-69 (U) Telemetered Data (Part 1 of 5)

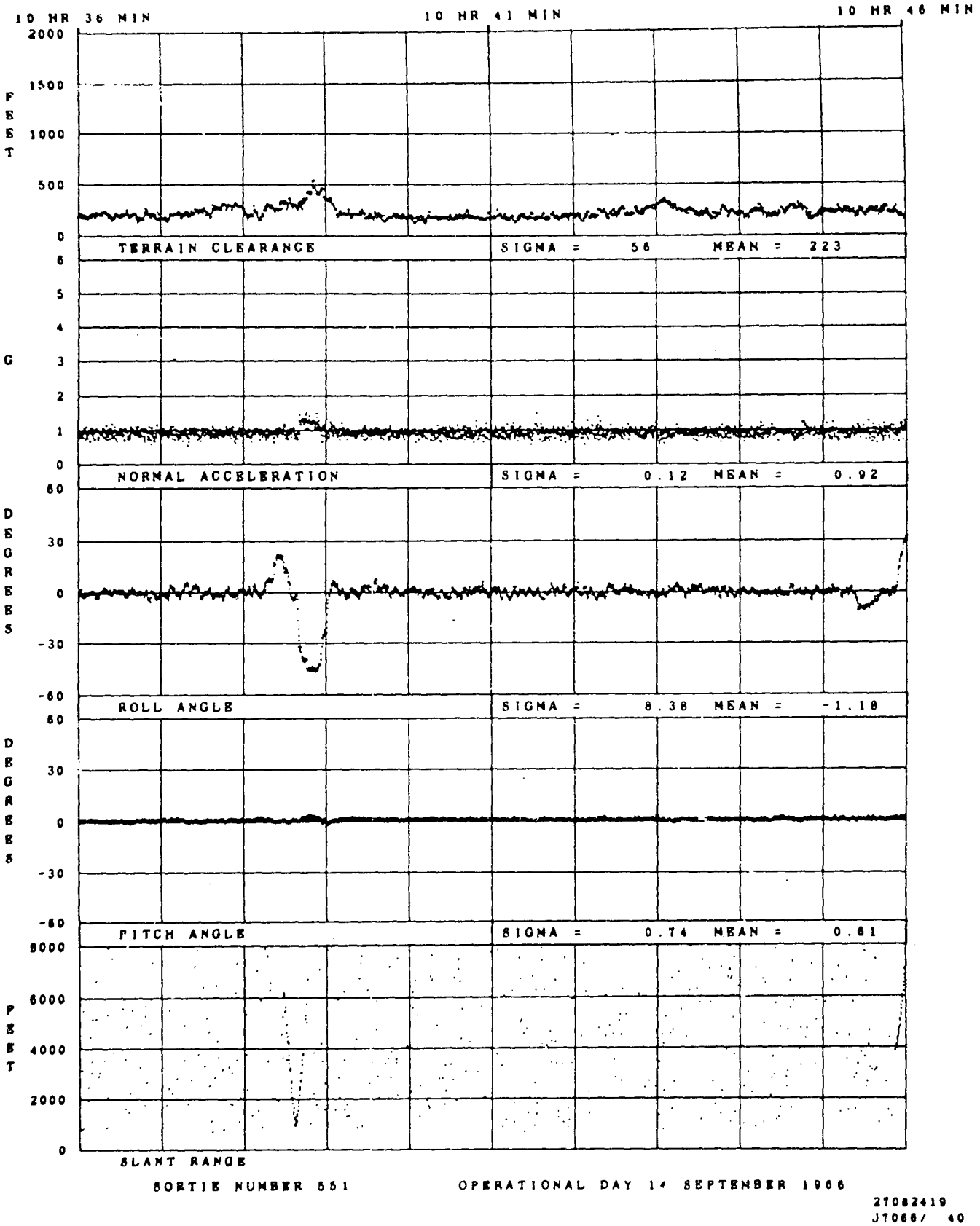


Figure 3-69 (U) Telemetered Data (Part 2 of 5)

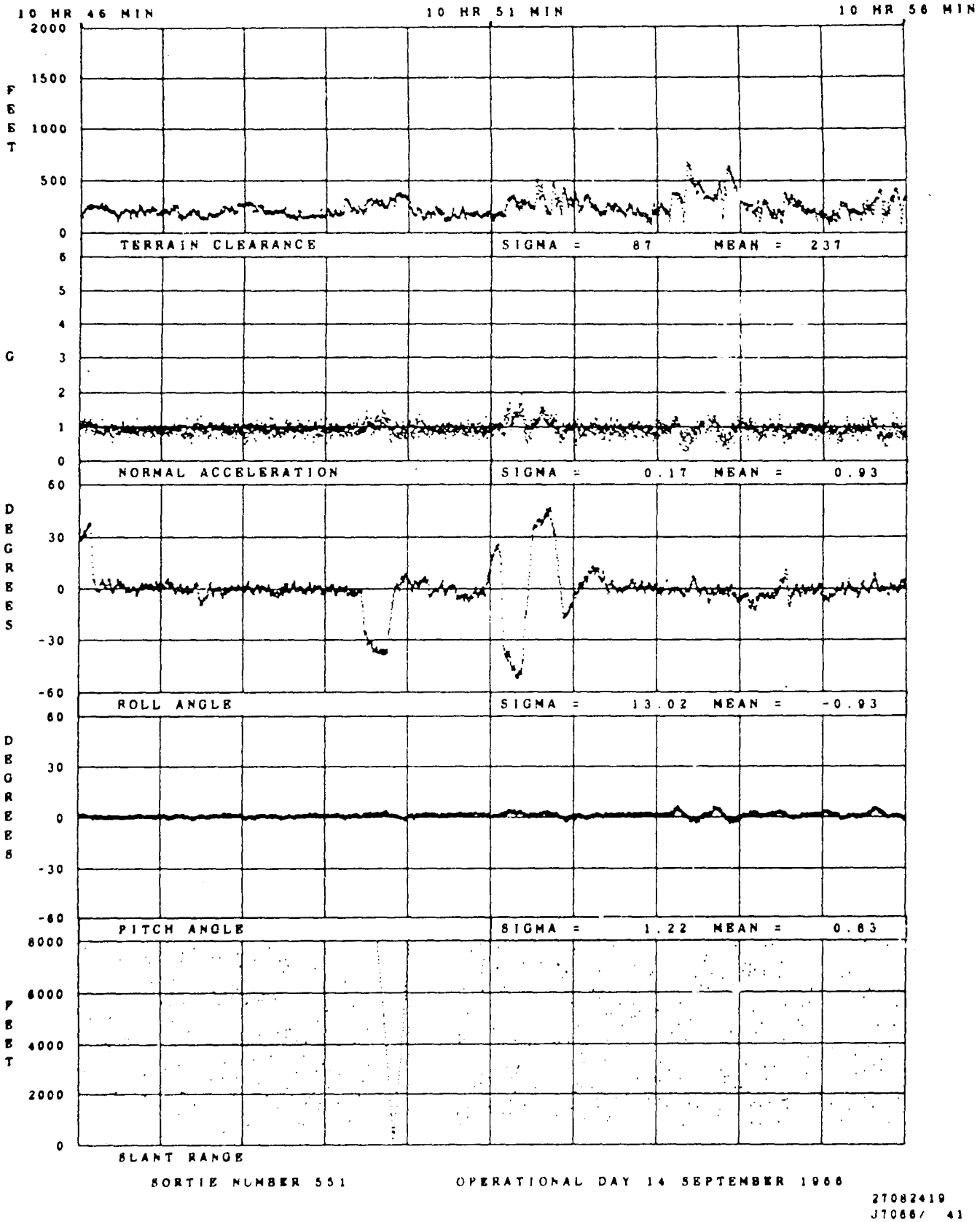


Figure 3-69 (U) Telemetered Data (Part 3 of 5)

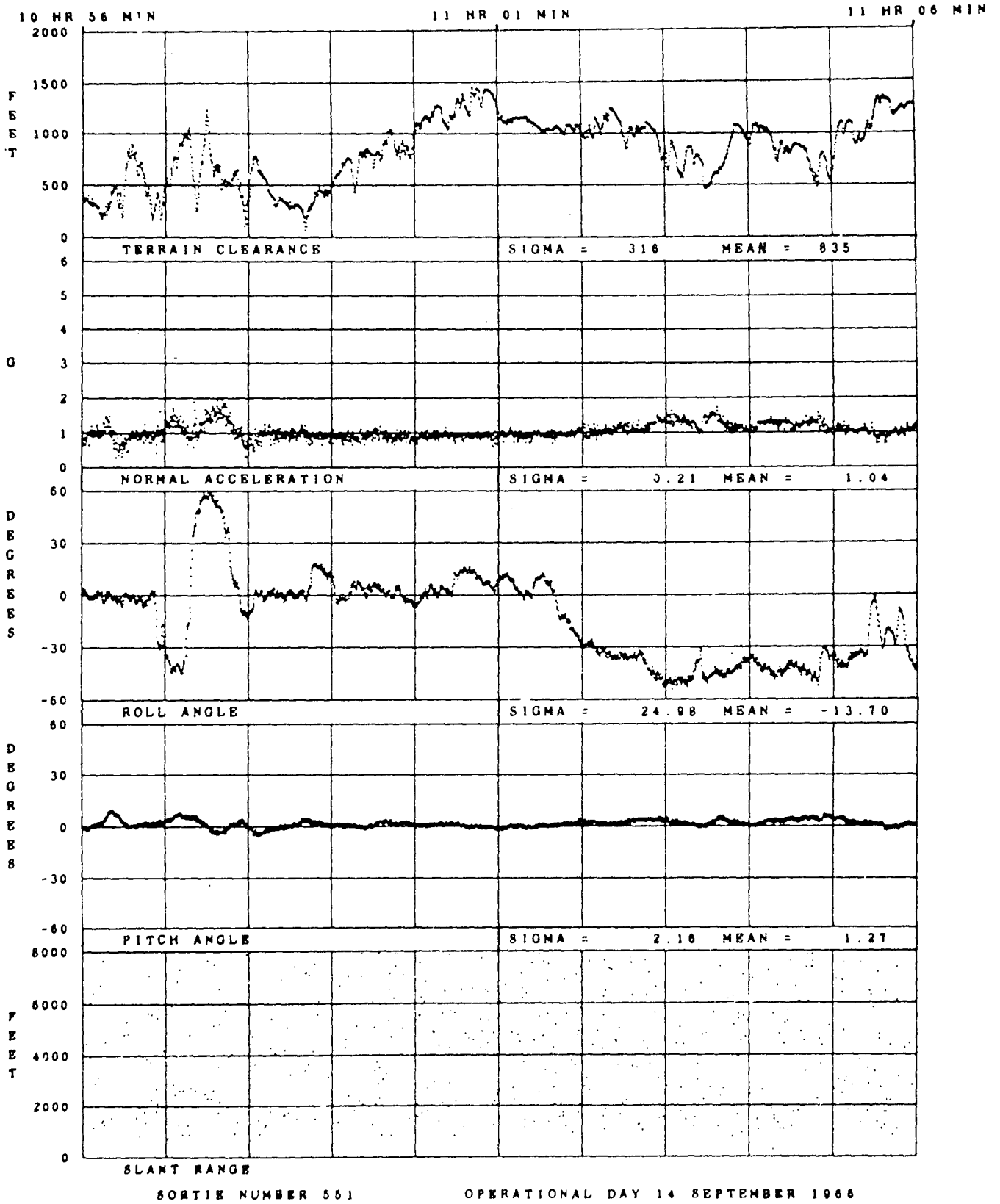


Figure 3-69 (U) Telemetered Data (Part 4 of 5)

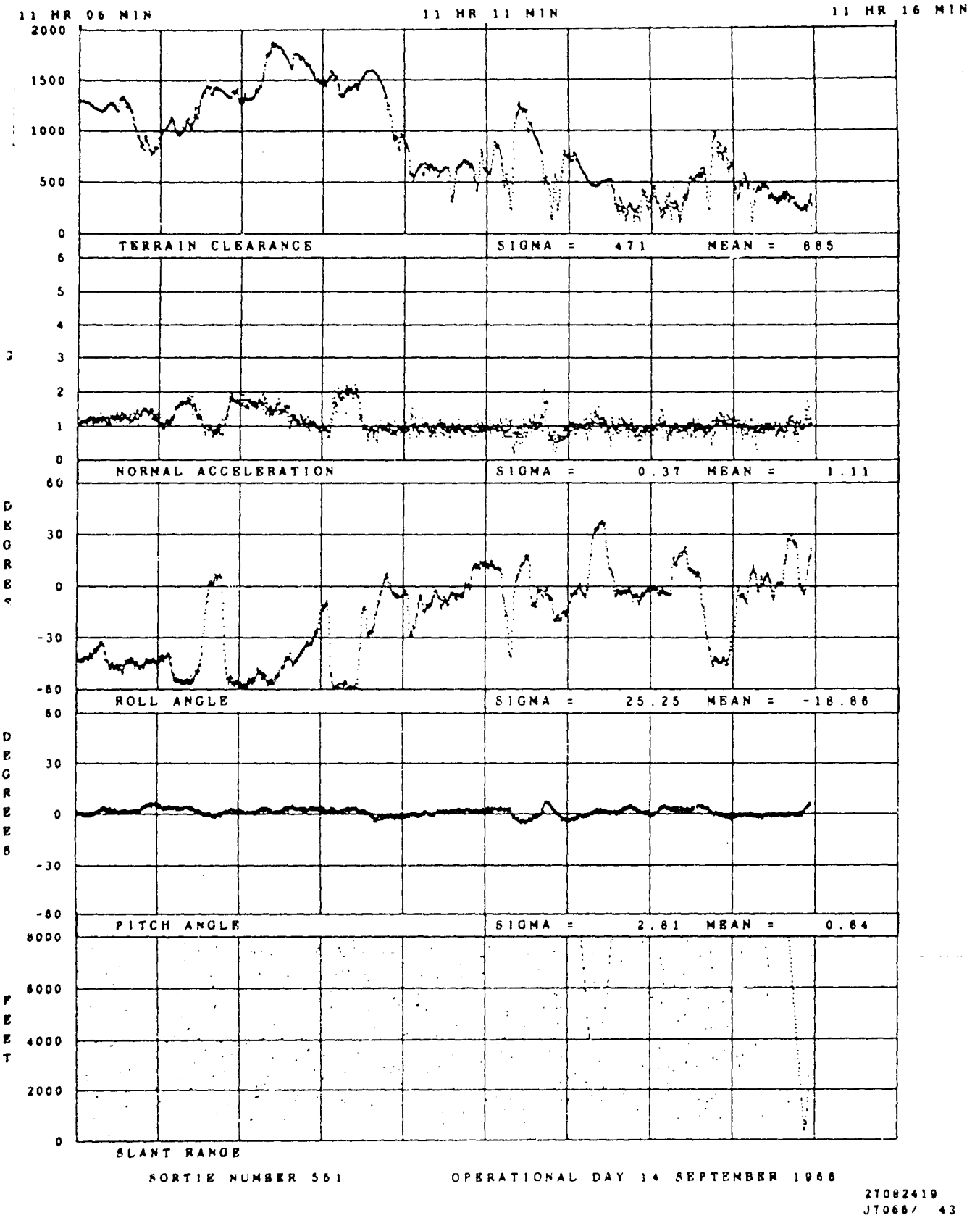
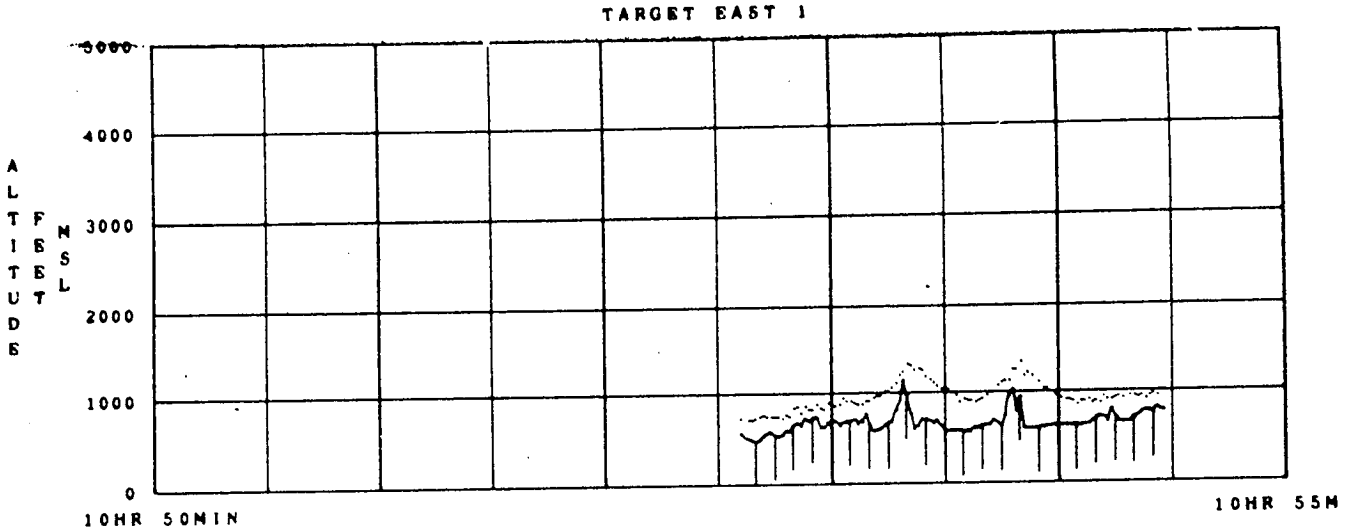
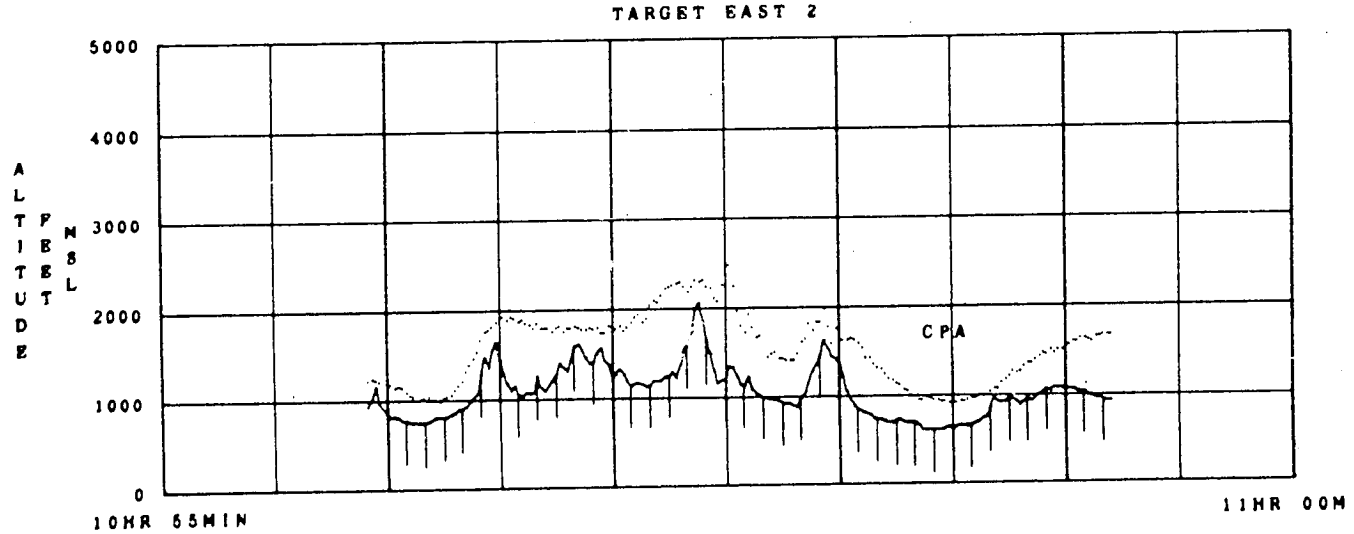


Figure 3-69 (U) Telemetered Data (Part 5 of 5)

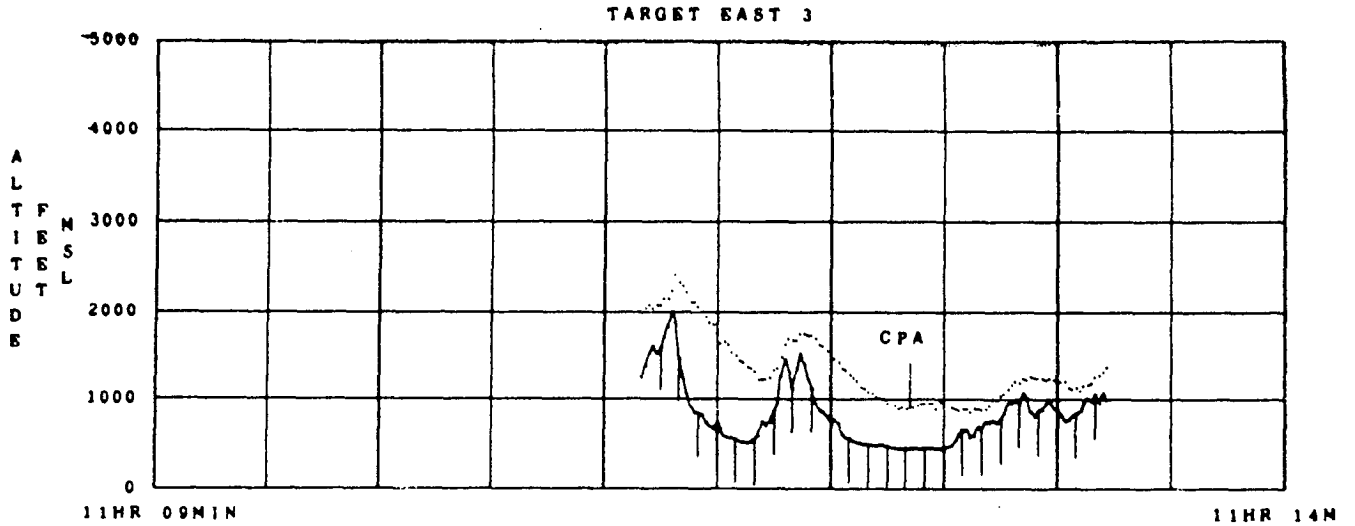


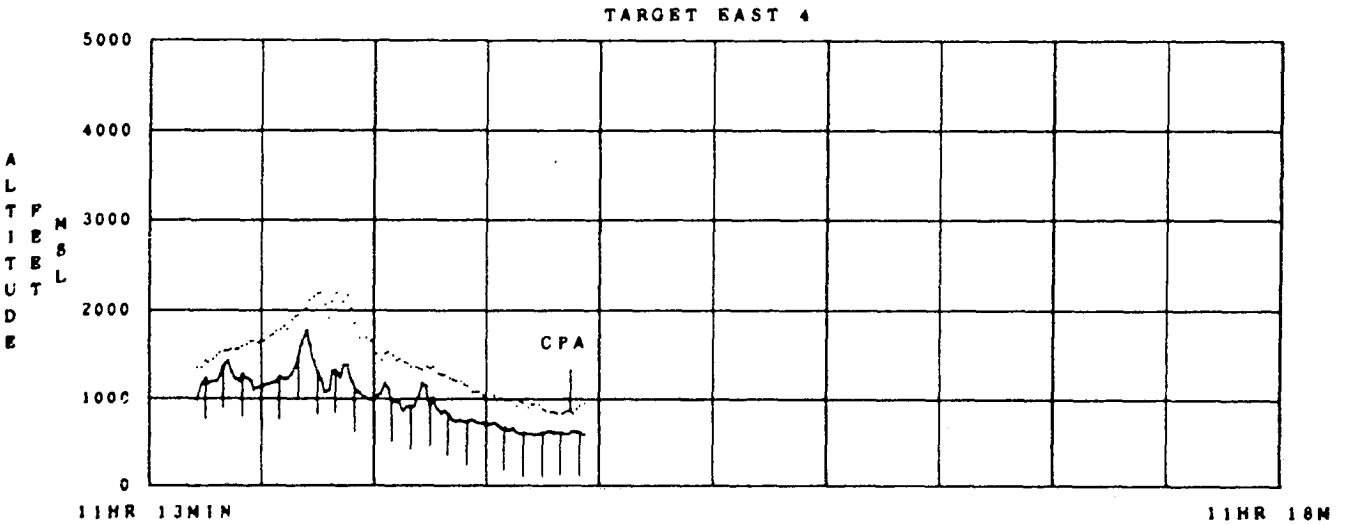


SORTIE NUMBER 551

04092455
J9139

Figure 3-70 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

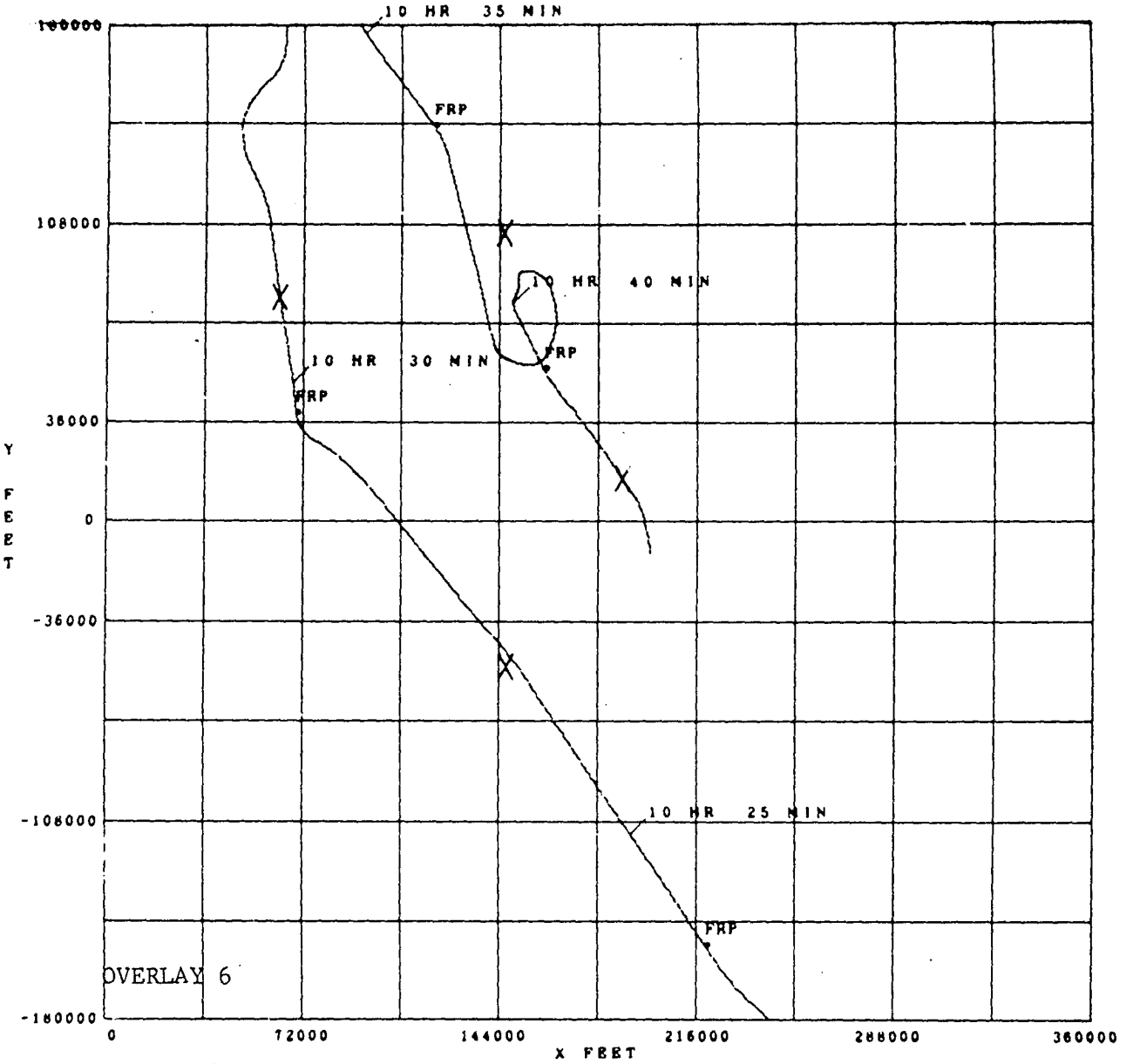




SORTIE NUMBER 551

04092456
J9139

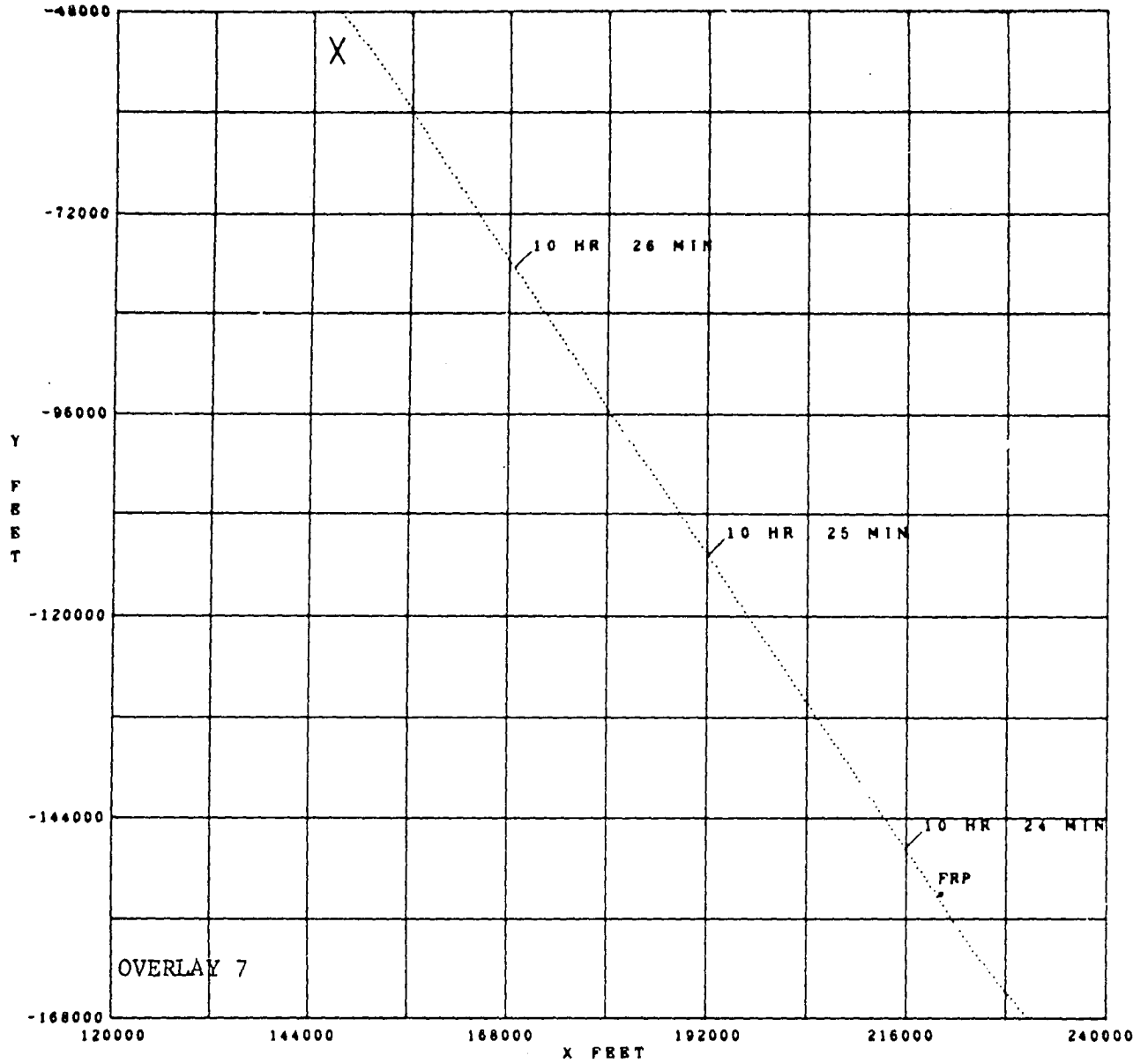
Figure 3-70 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



SORTIE NUMBER 540
OPERATIONAL DAY 14 SEPTEMBER 66
EAST COURSE

04092457
J9139 278

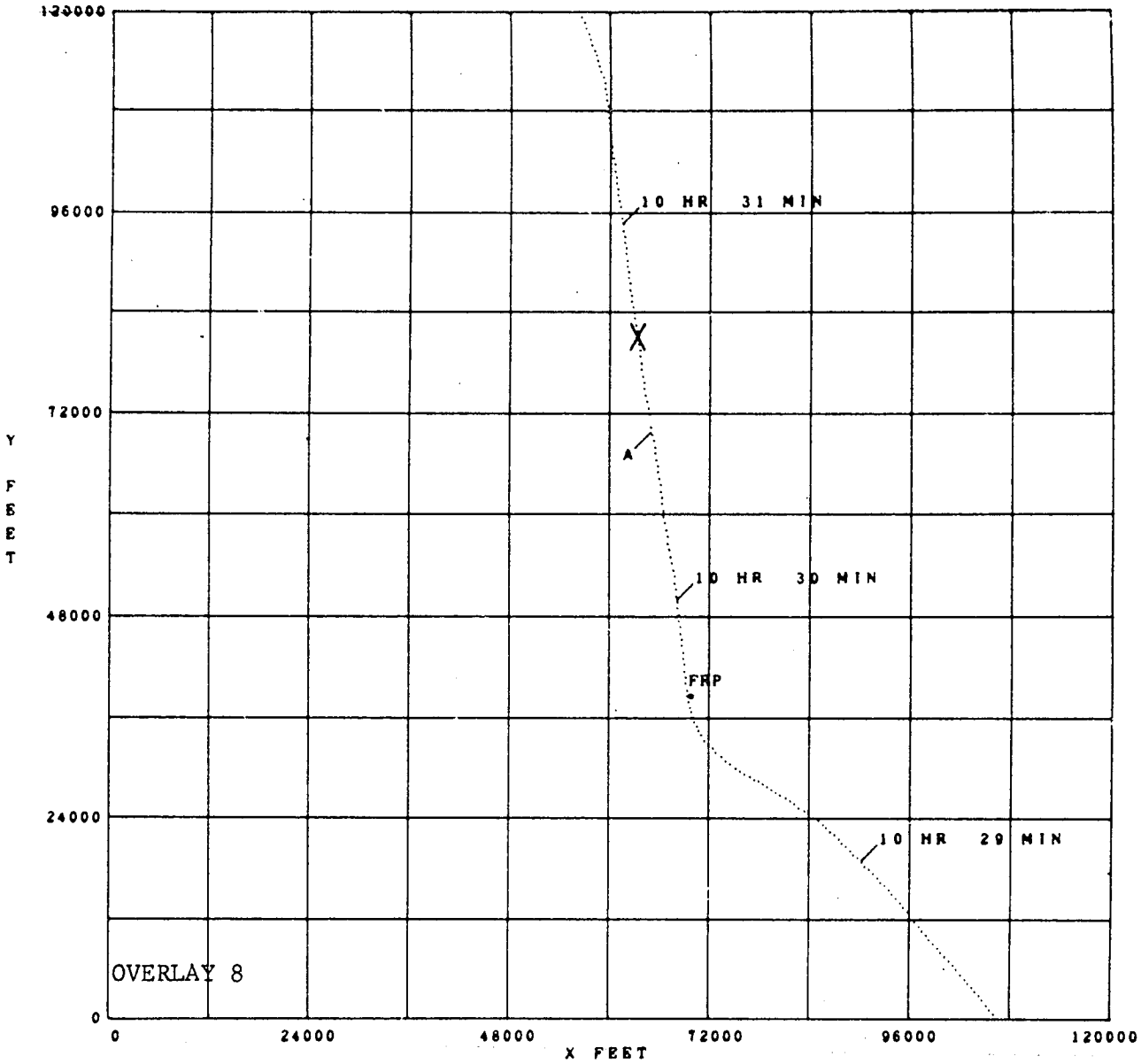
Figure 3-71 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 3362 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 549
TARGET EAST 1

04092457
J9139 279

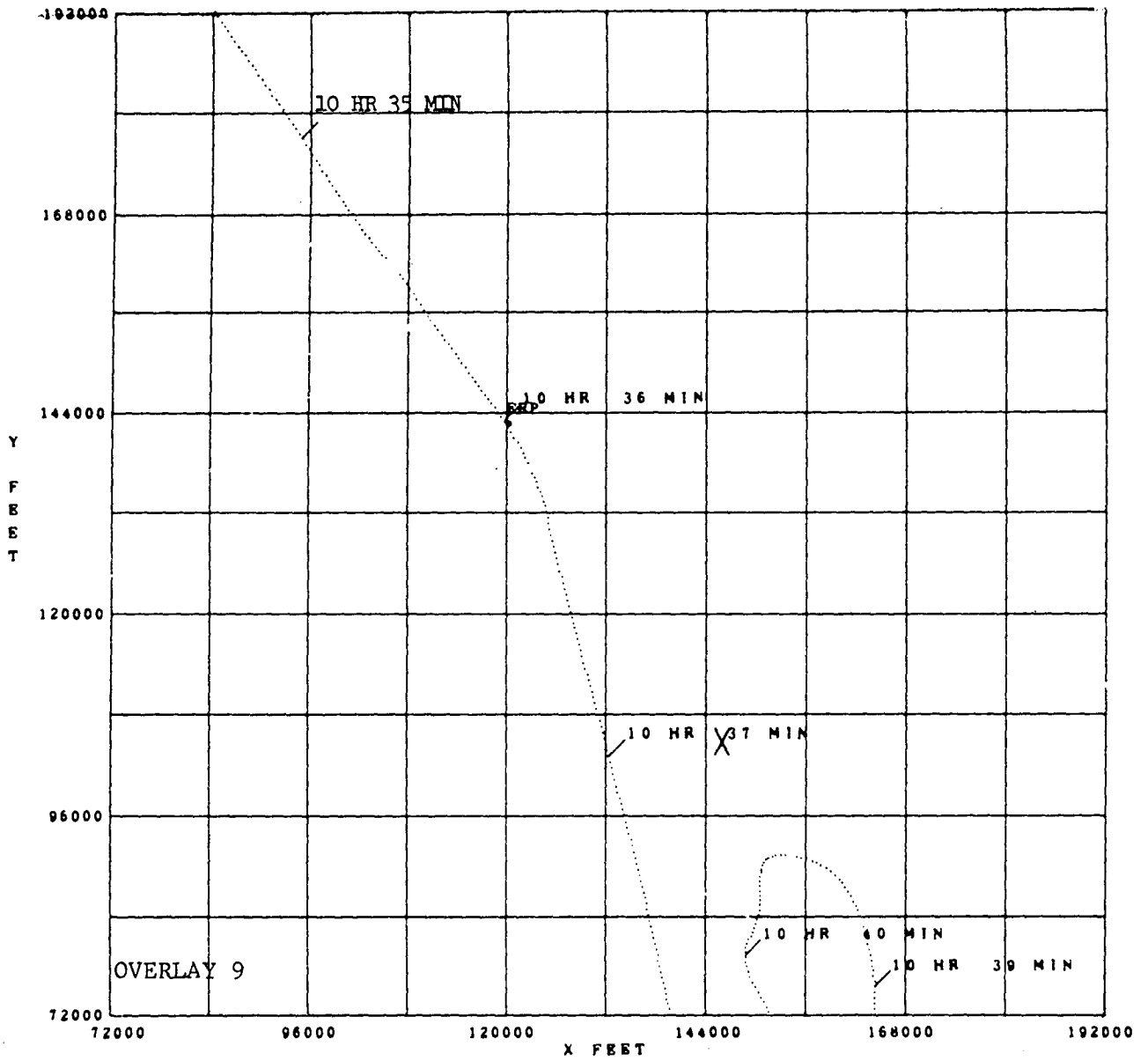
Figure 3-71 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 44 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 549
TARGET EAST 2

04092457
J9139 280

Figure 3-71 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 13506 FEET

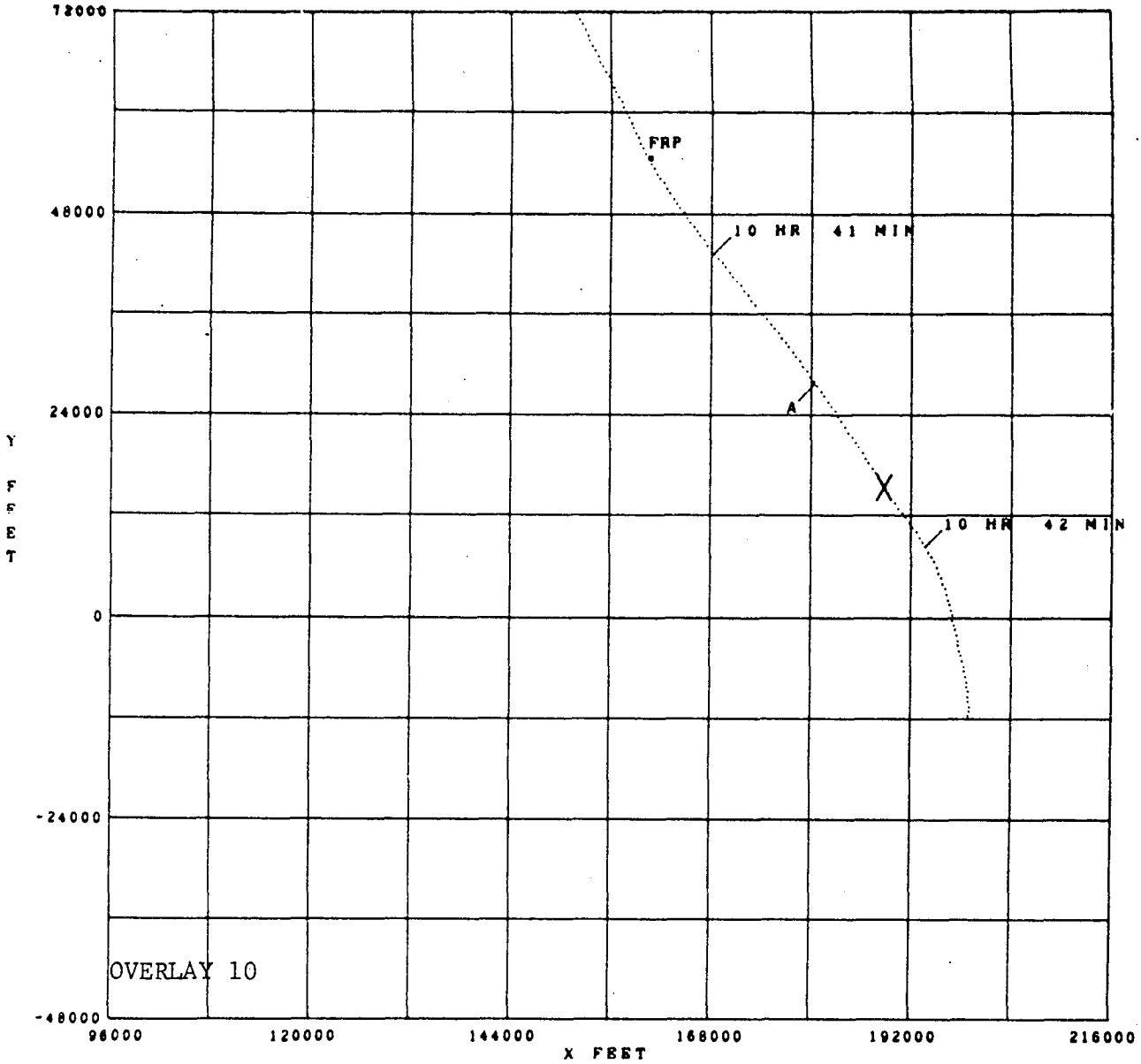
MINIMUM GROUND DISTANCE QUALIFIER = DME

SORTIE NUMBER 549

TARGET EAST 3

04092457
J9139 281

Figure 3-71 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 66 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 549
TARGET EAST 4

04092457
J9139 282

Figure 3-71 (U) Aircraft Position Data (Part 5 of 5)

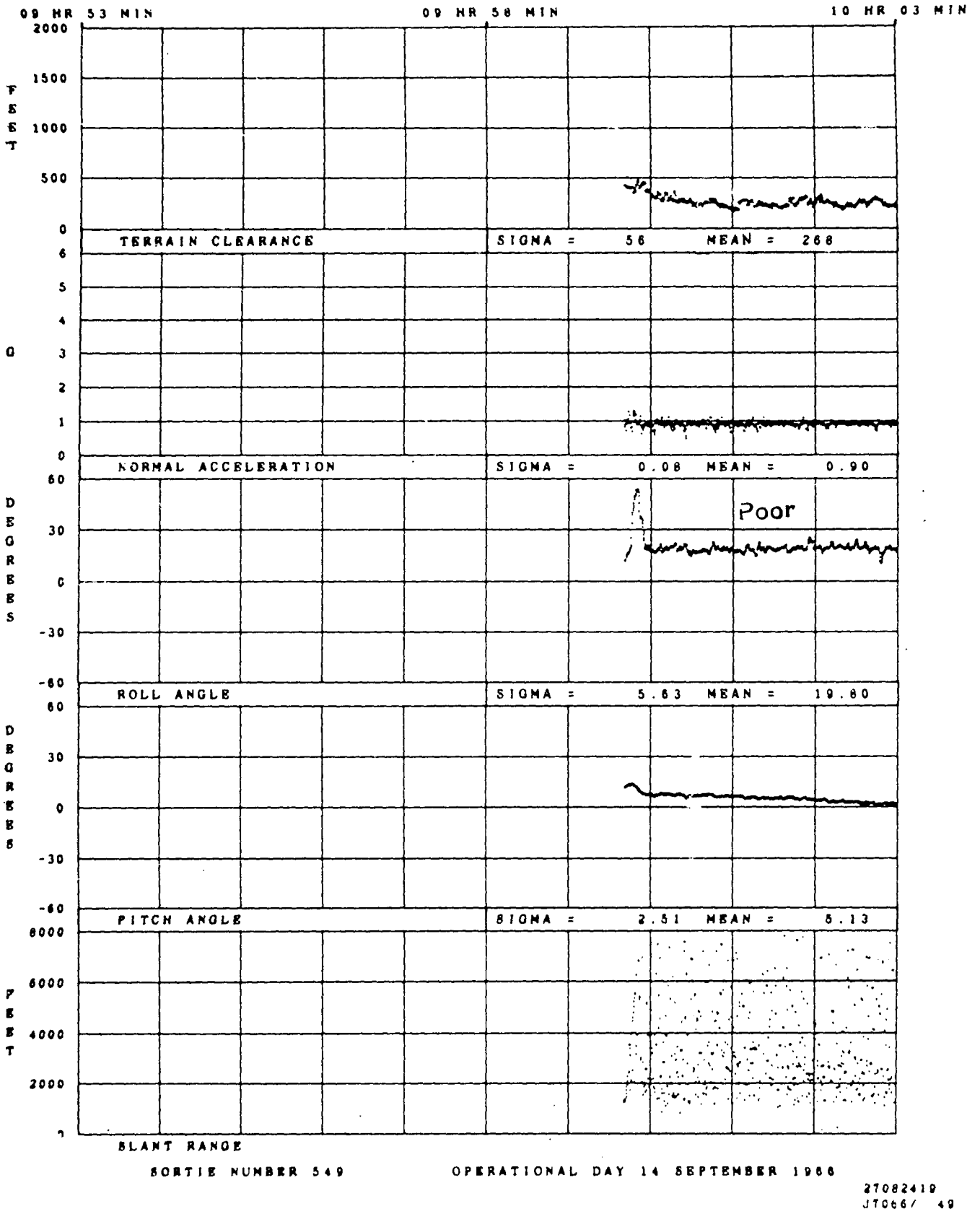


Figure 3-72 (U) Telemetered Data (Part 1 of 5)

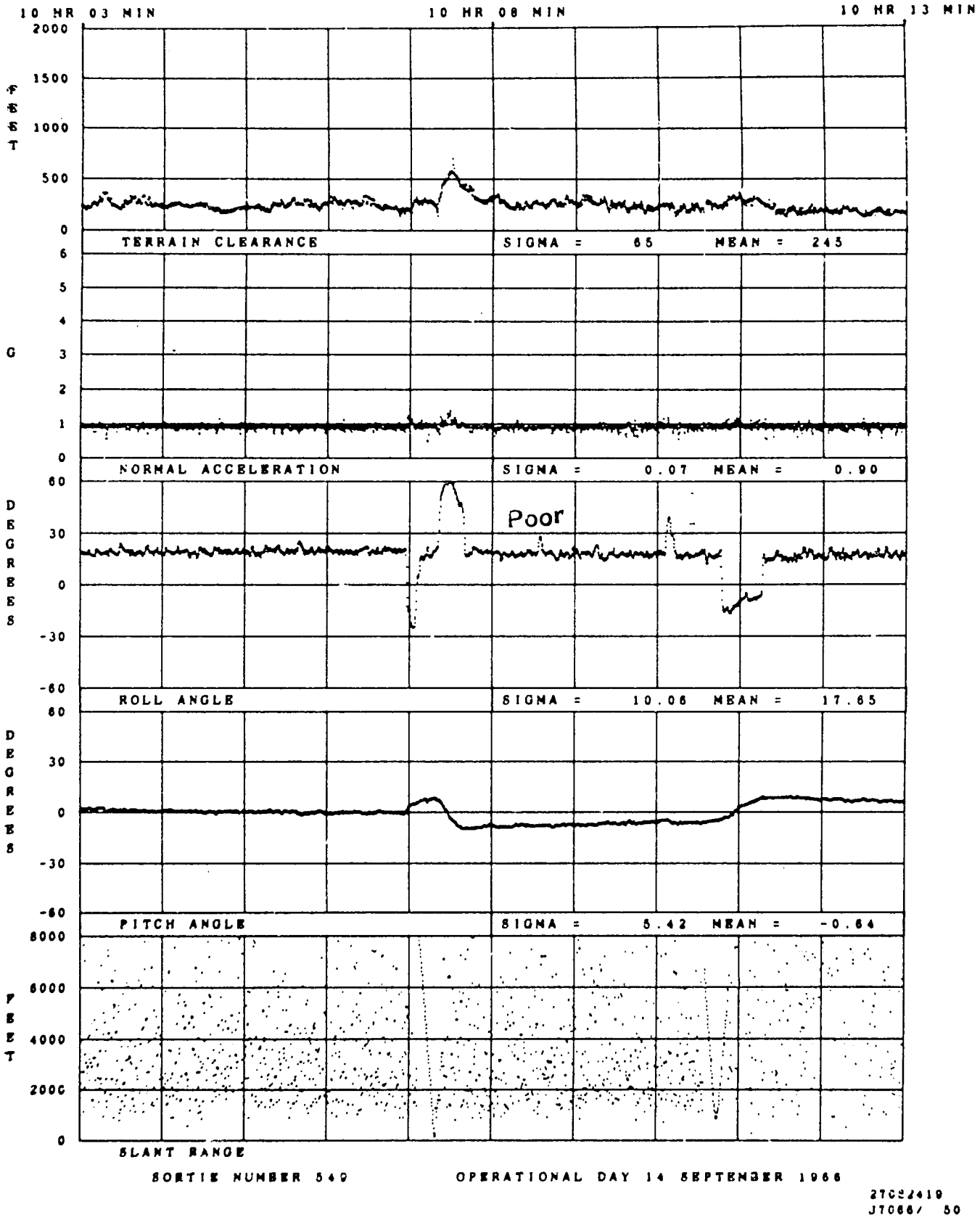


Figure 3-72 (U) Telemetered Data (Part 2 of 5)

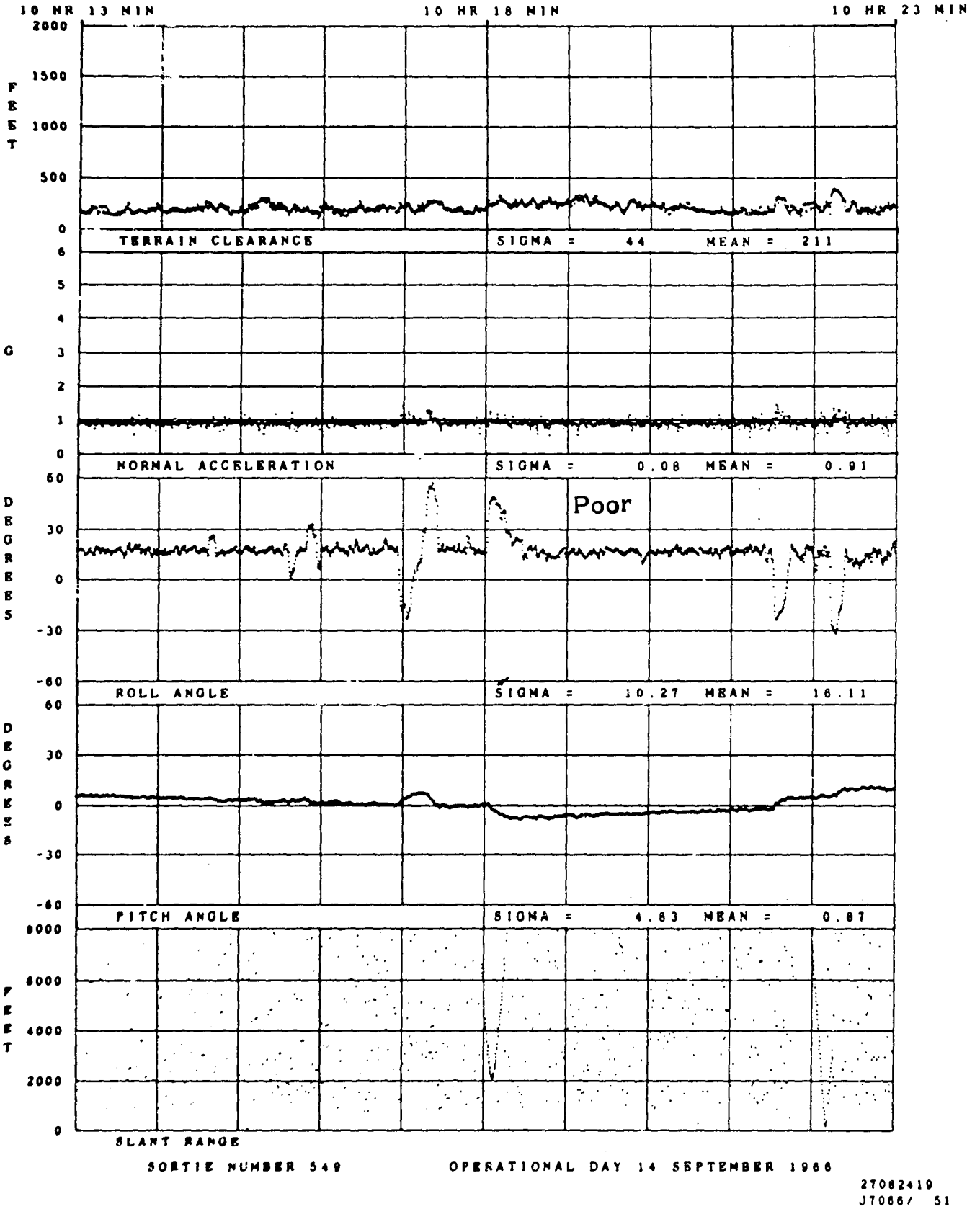


Figure 3-72 (U) Telemetered Data (Part 3 of 5)

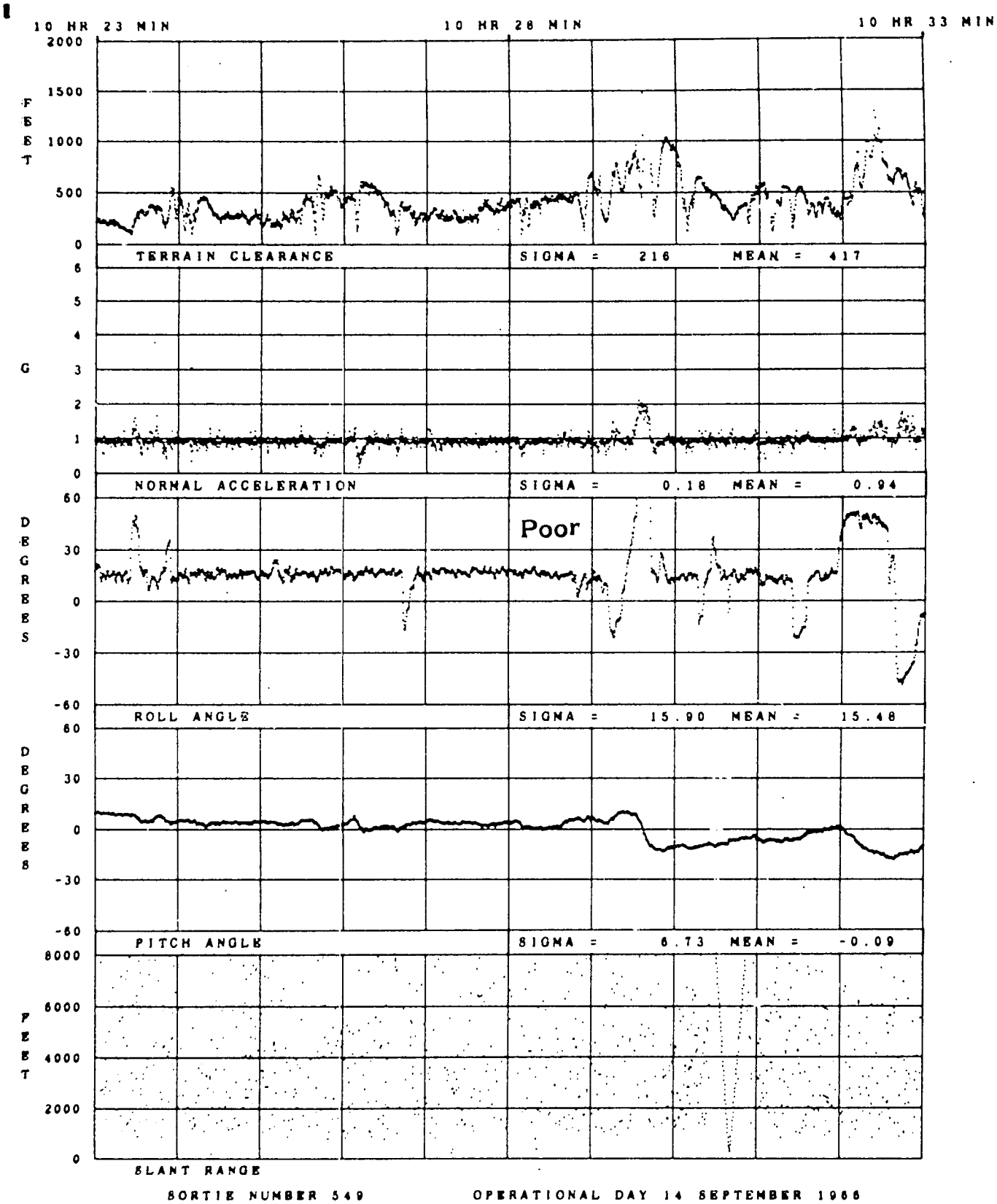


Figure 3-72 (U) Telemetered Data (Part 4 of 5)

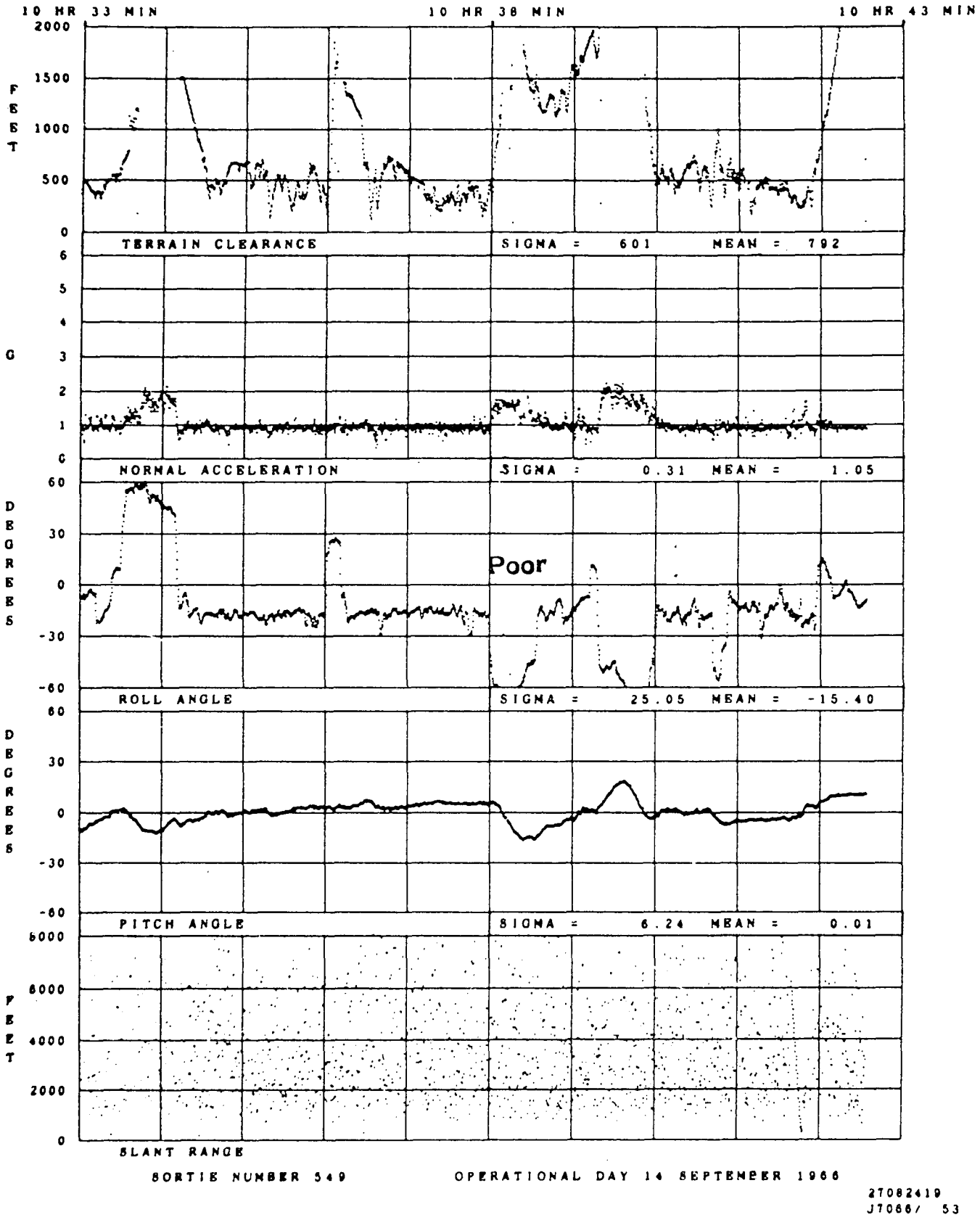
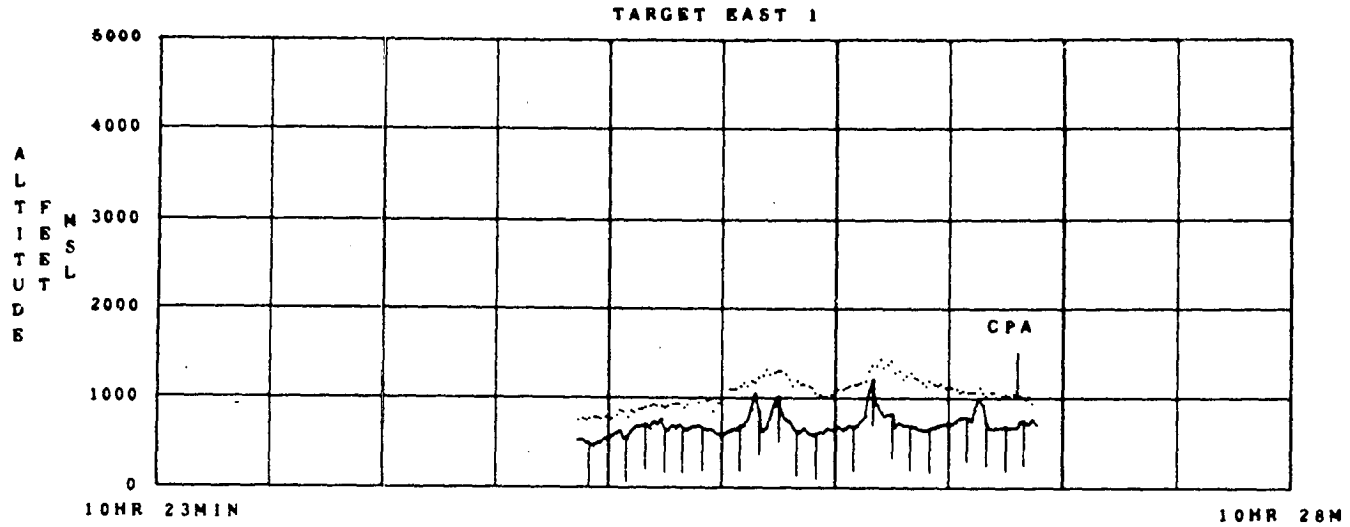
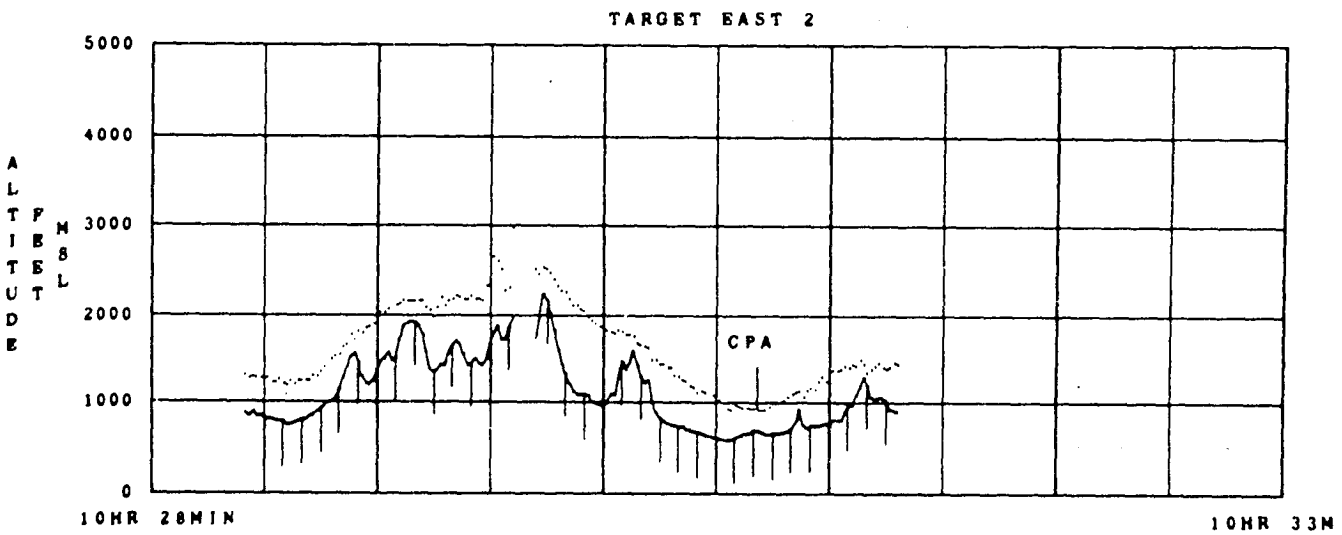


Figure 3-72 (U) Telemetered Data (Part 5 of 5)

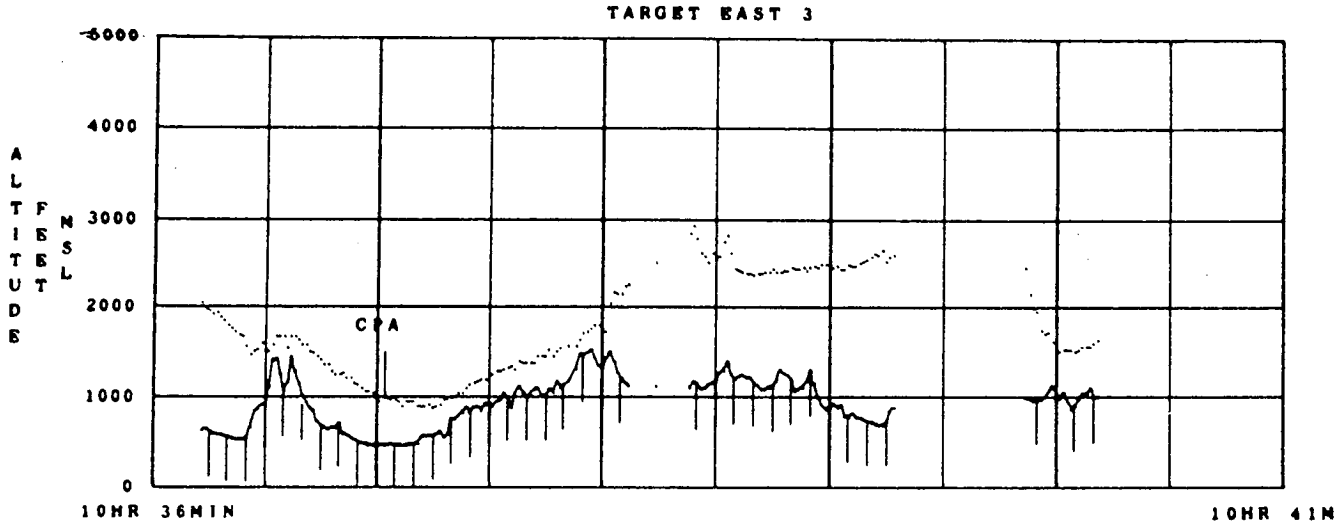


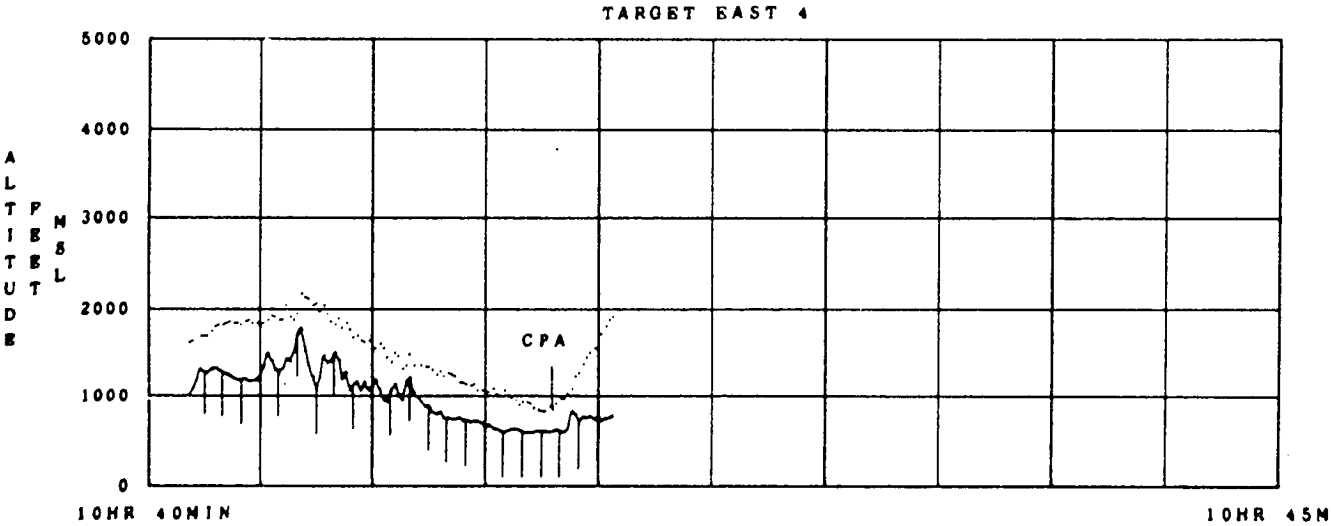


SORTIE NUMBER 549

04092457
J9139

Figure 3-73 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

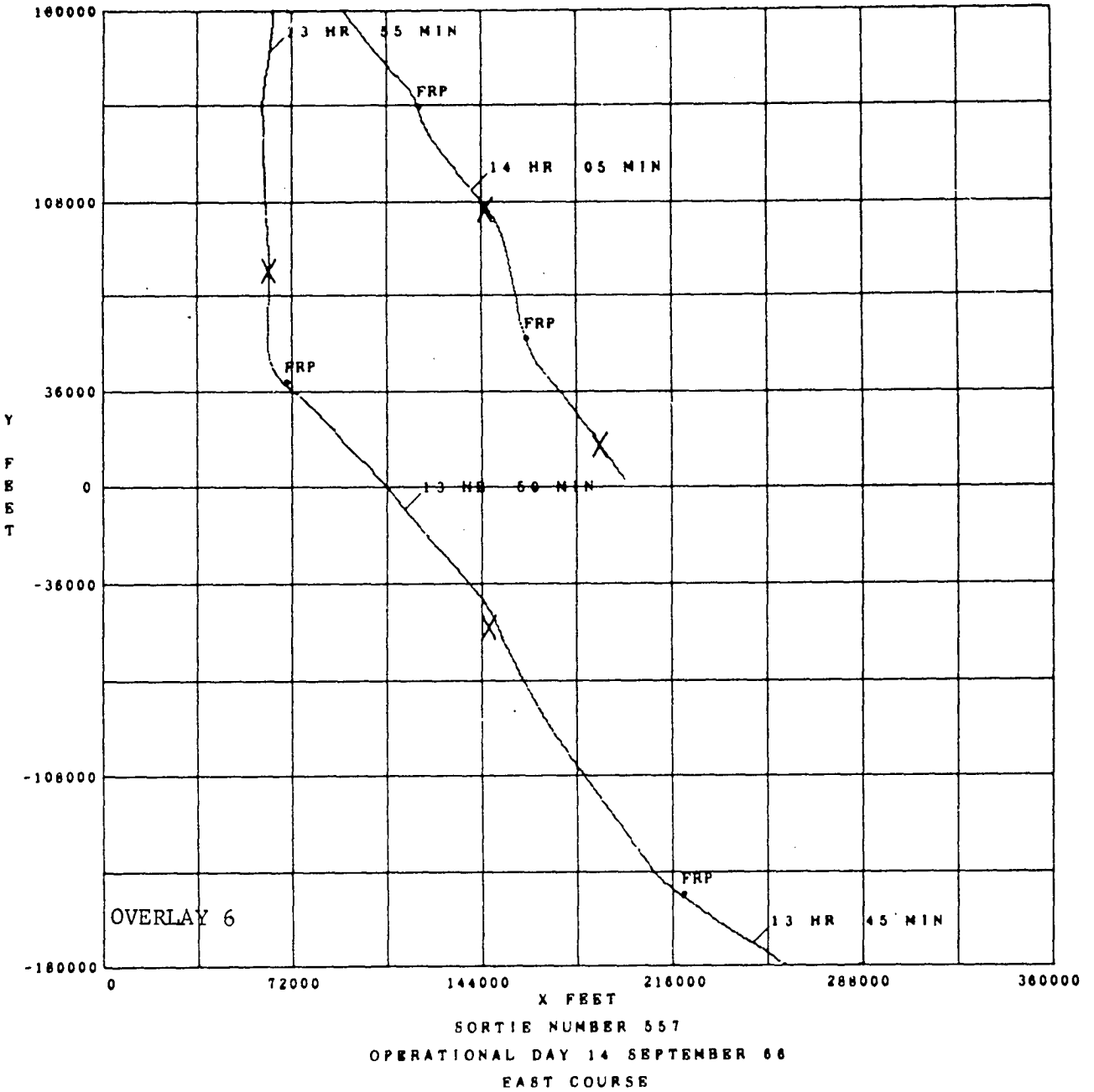




SORTIE NUMBER 549

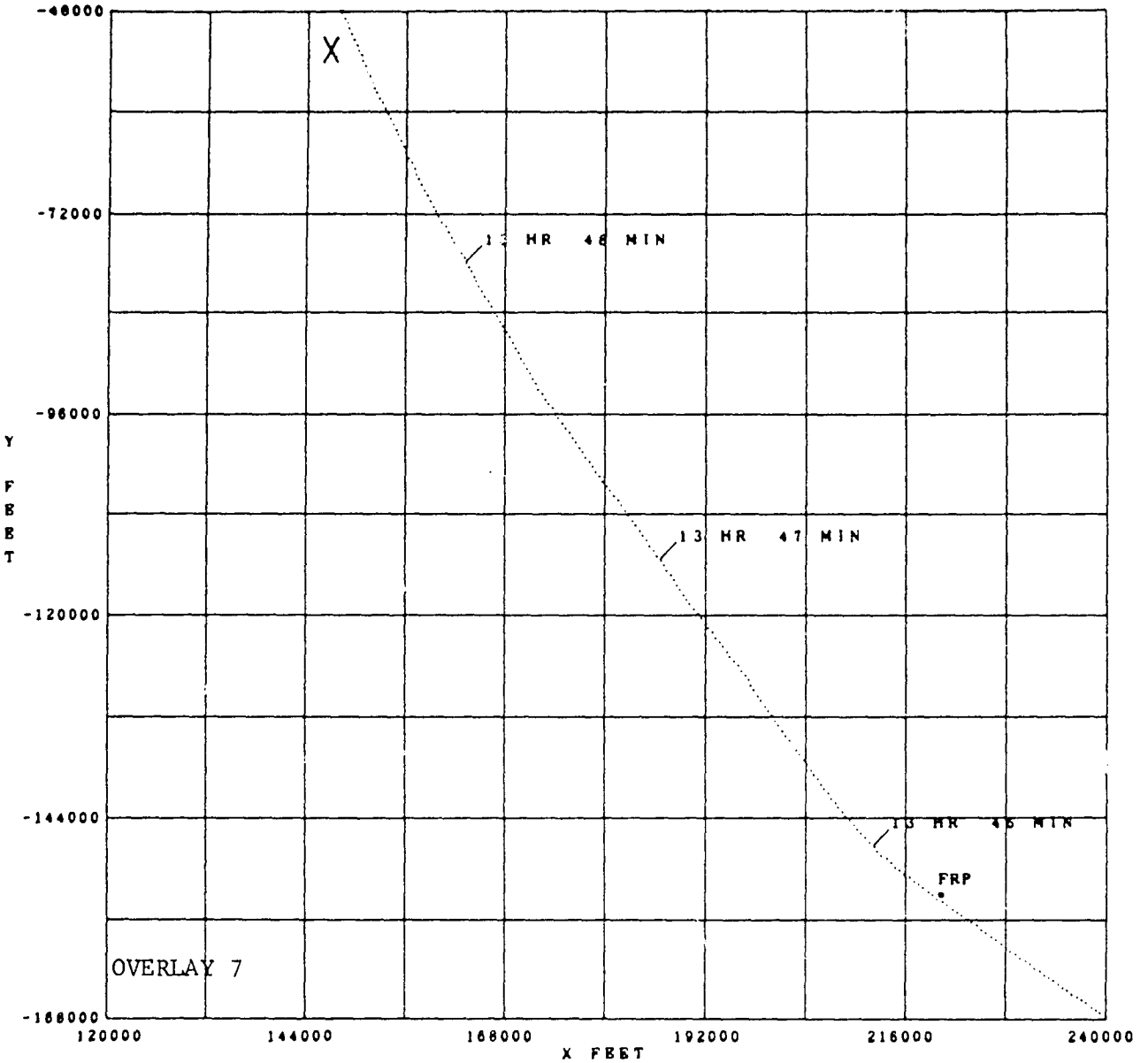
04092457
J0139

Figure 3-73 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092458
J9139 6V4

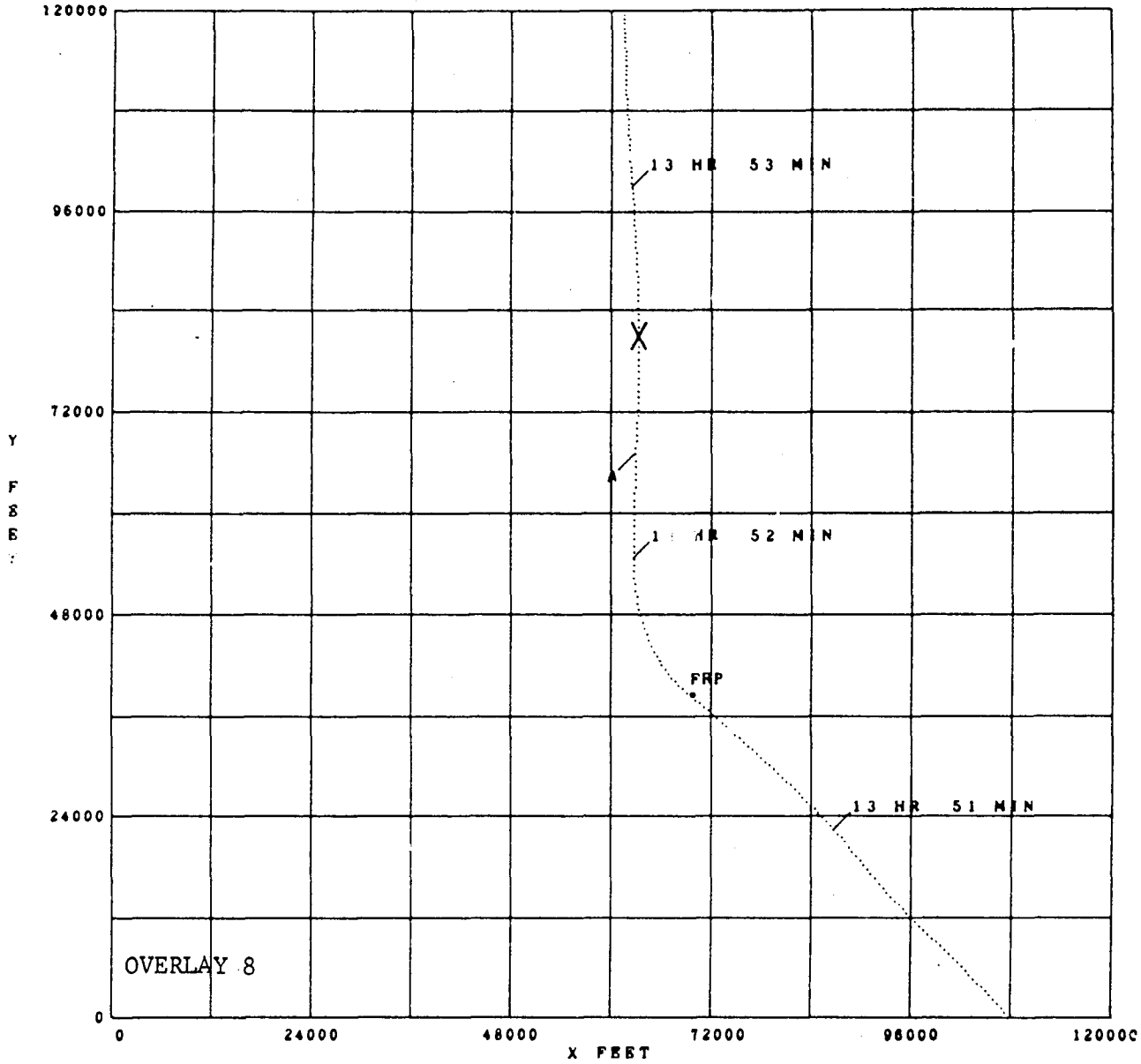
Figure 3-74 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 3100 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 557
TARGET EAST 1

04092458
J9139 295

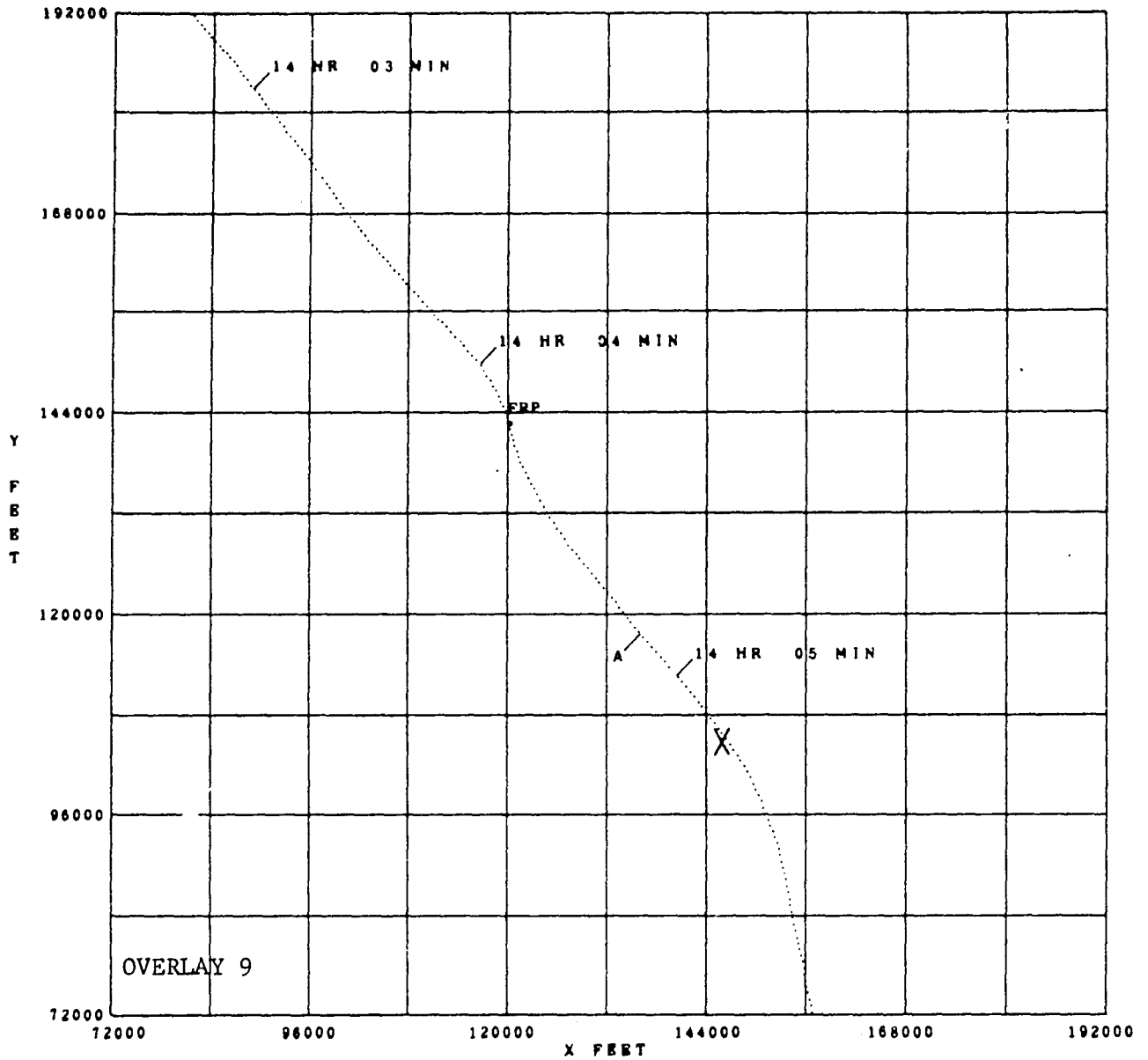
Figure 3-74 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 60 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 557
TARGET EAST 2

04092458
J9139 295

Figure 3-74 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 685 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 557
TARGET EAST 3

04092458
J9139 297

Figure 3-74 (U) Aircraft Position Data (Part 4 of 5)

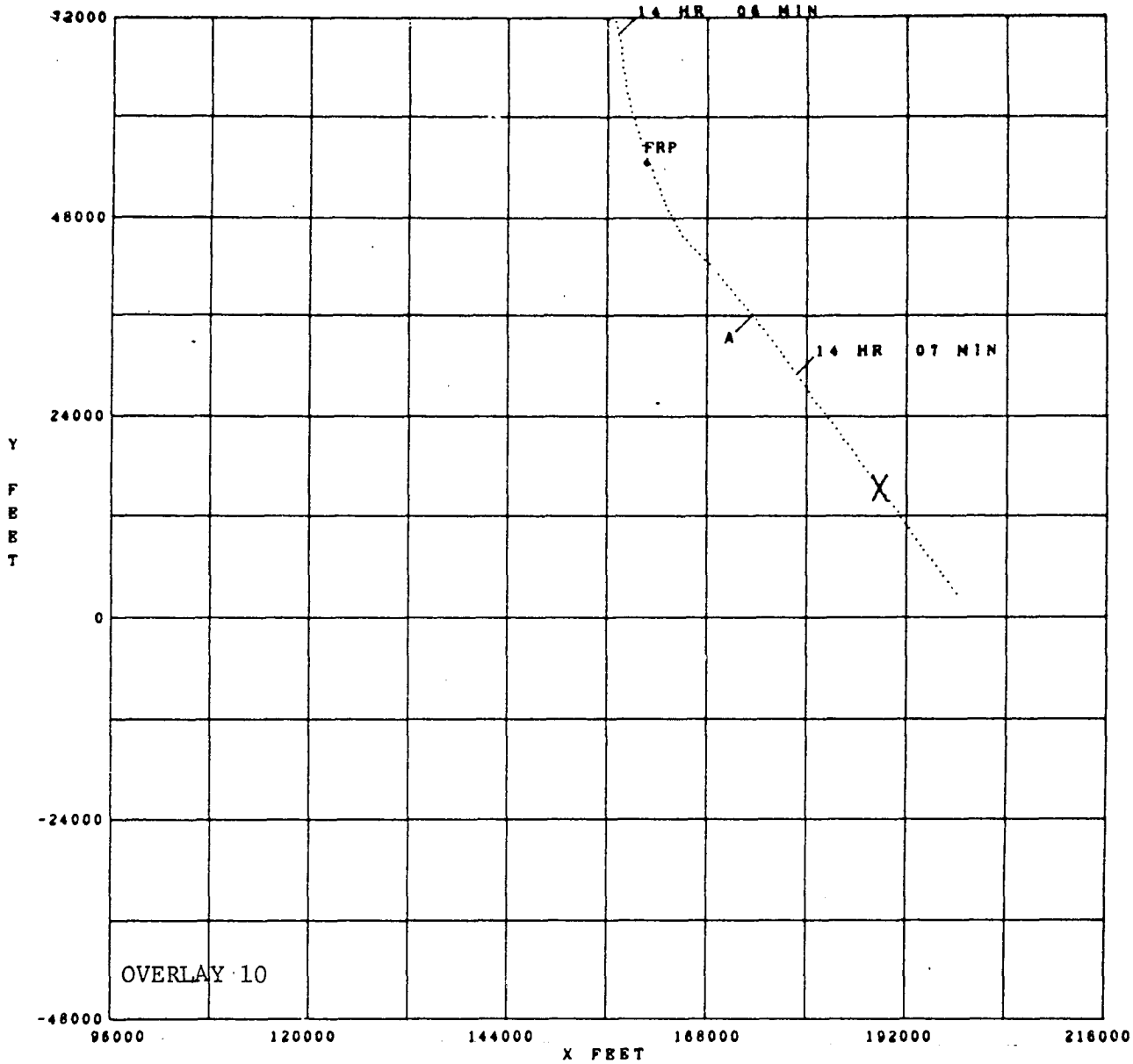


Figure 3-74 (U) Aircraft Position Data (Part 5 of 5)

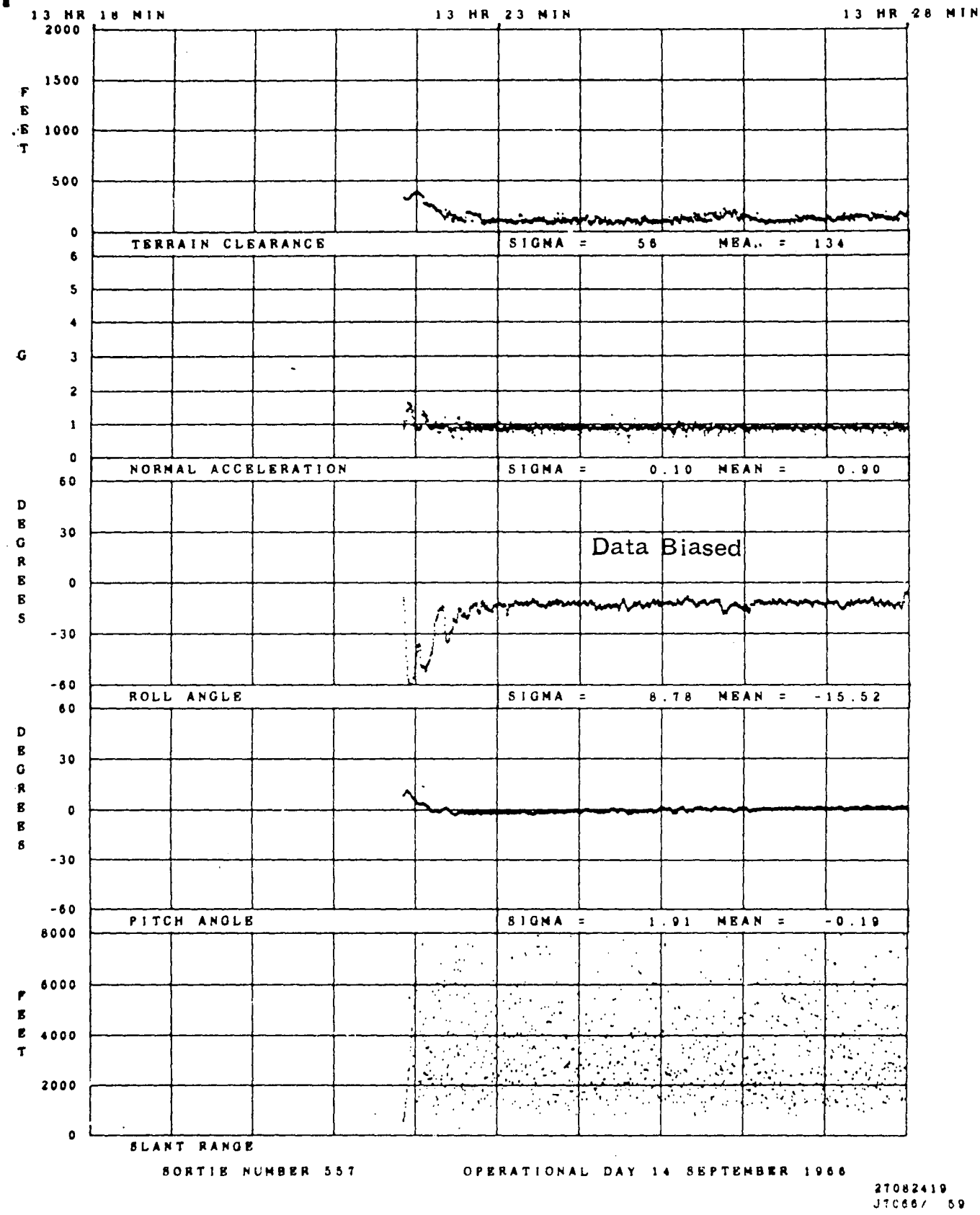


Figure 3-75 (U) Telemetered Data (Part 1 of 5)

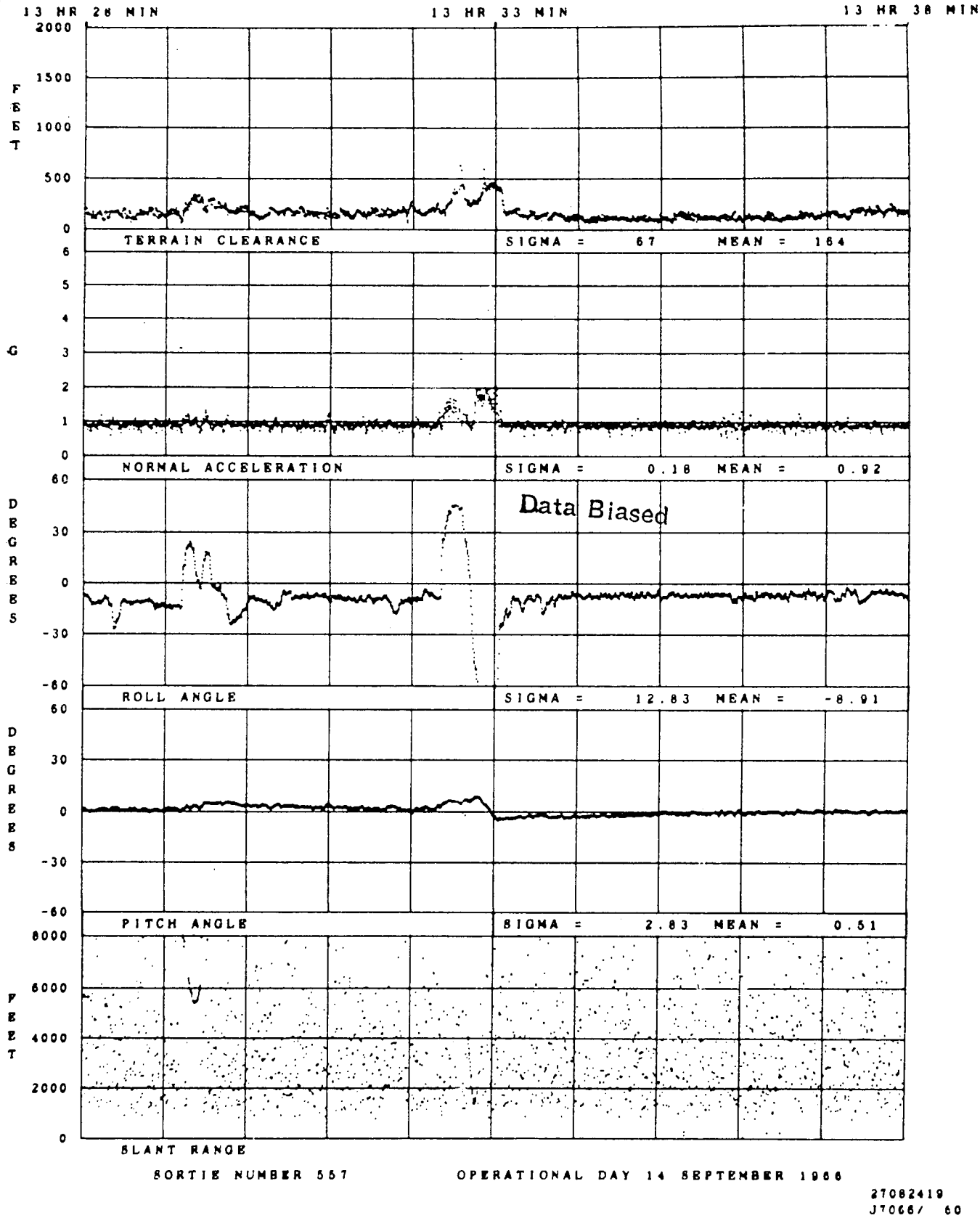


Figure 3-75 (U) Telemetered Data (Part 2 of 5)

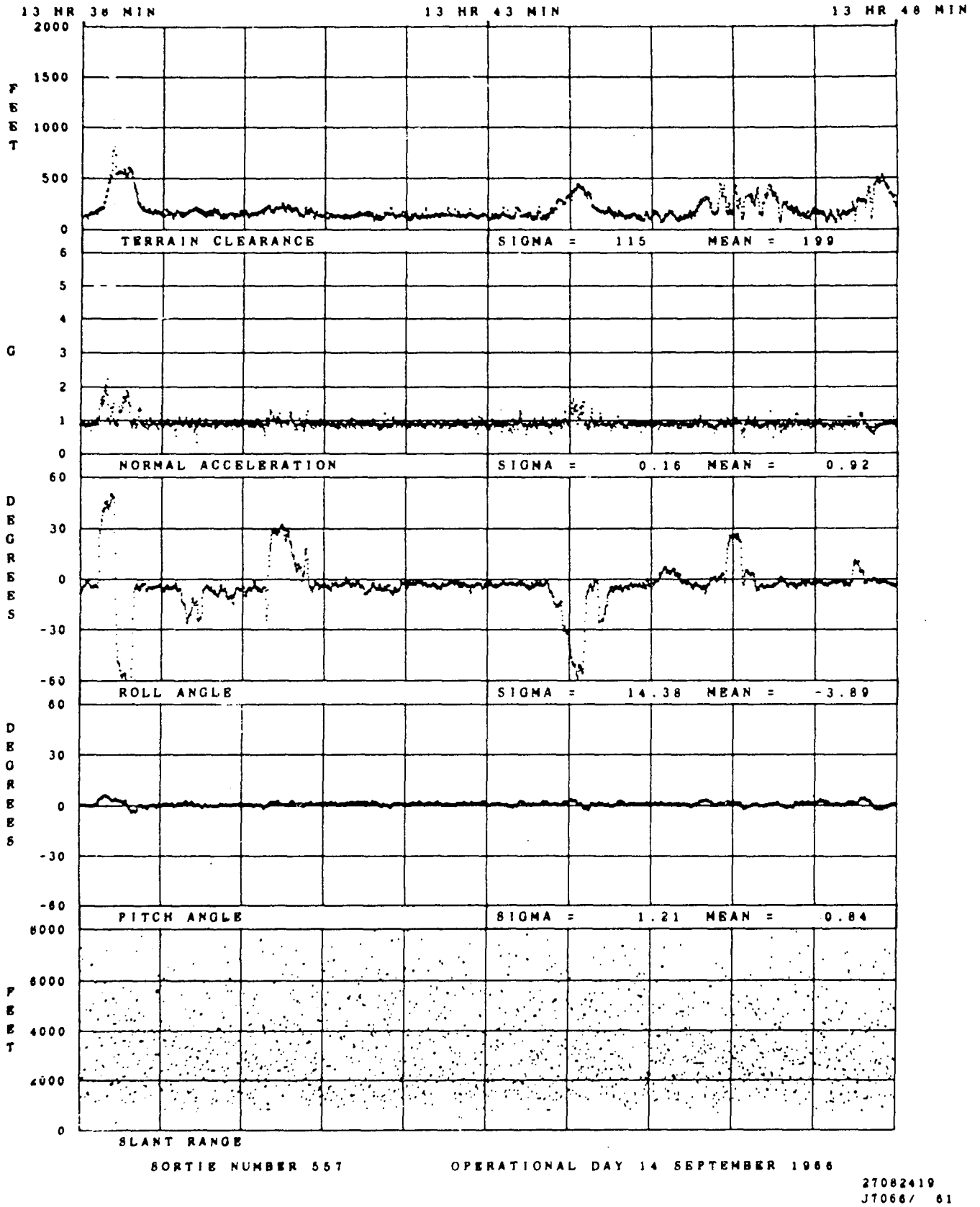


Figure 3-75 (U) Telemetered Data (Part 3 of 5)

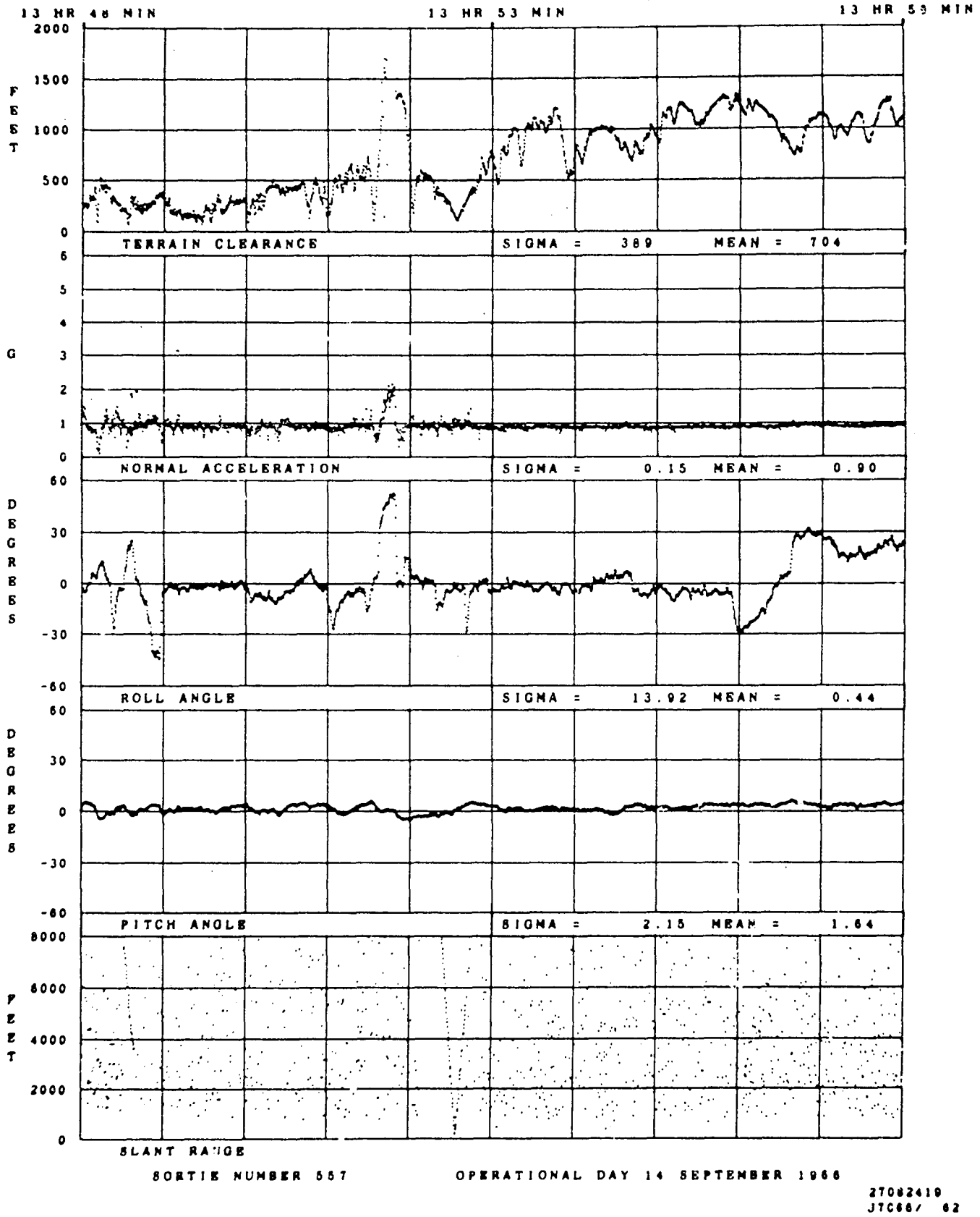


Figure 3-75 (U) Telemetered Data (Part 4 of 5)

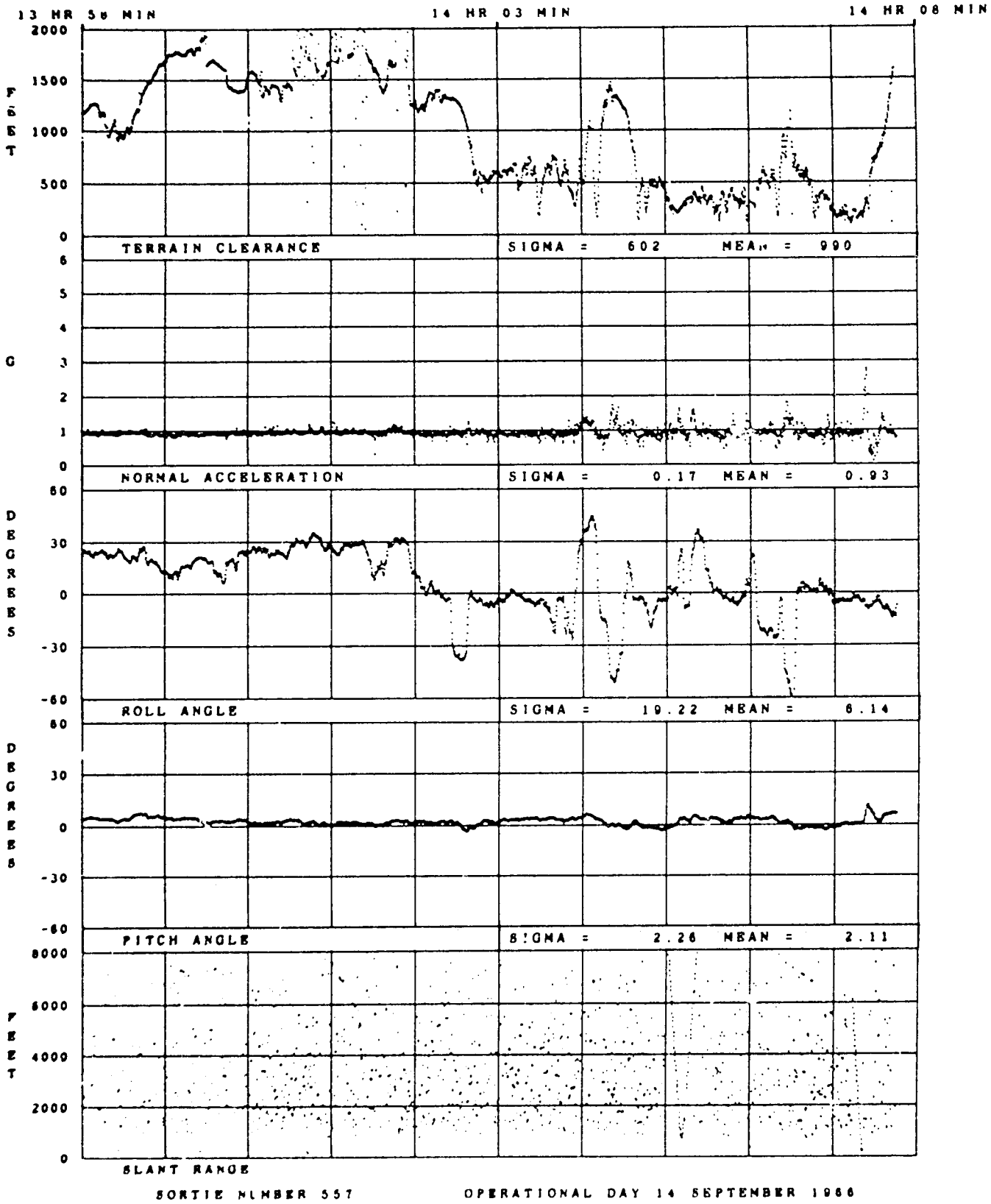
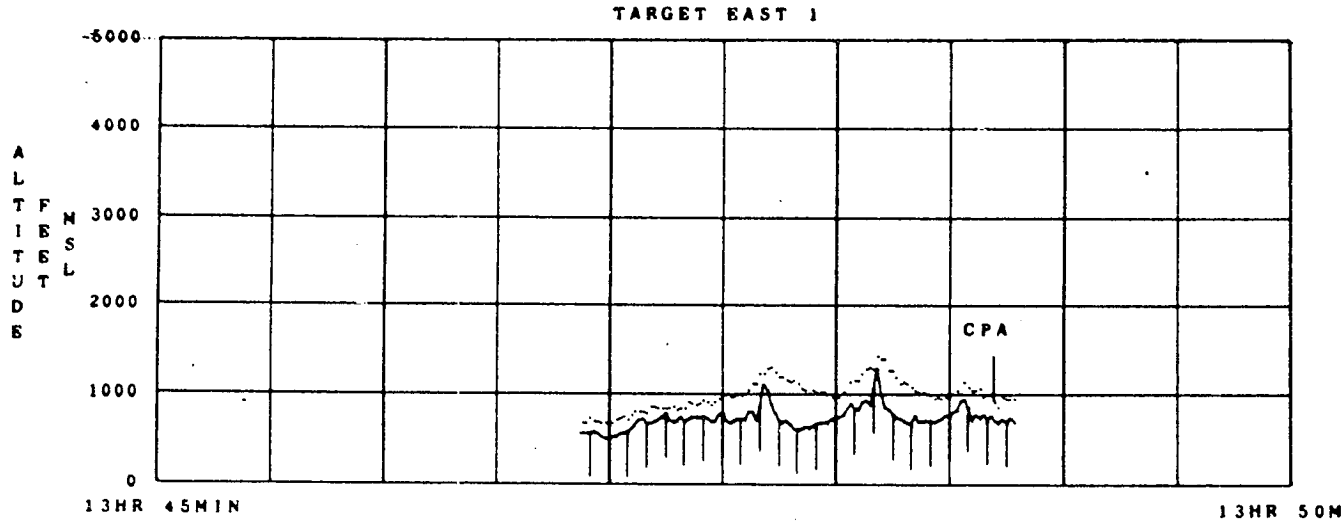
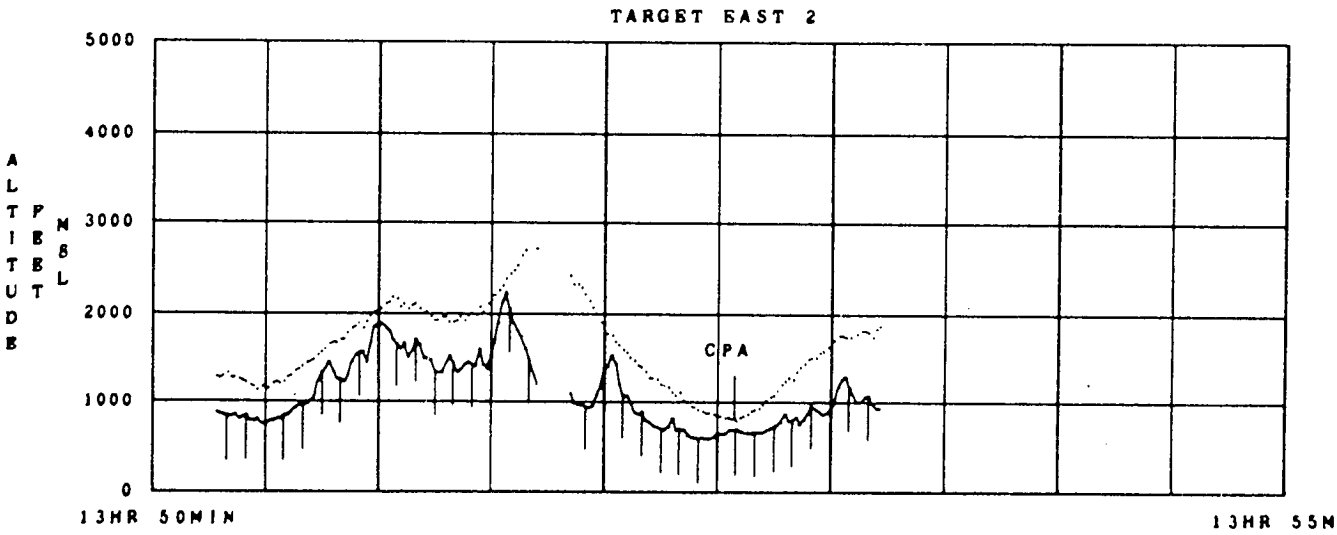


Figure 3-75 (U) Telemetered Data (Part 5 of 5)

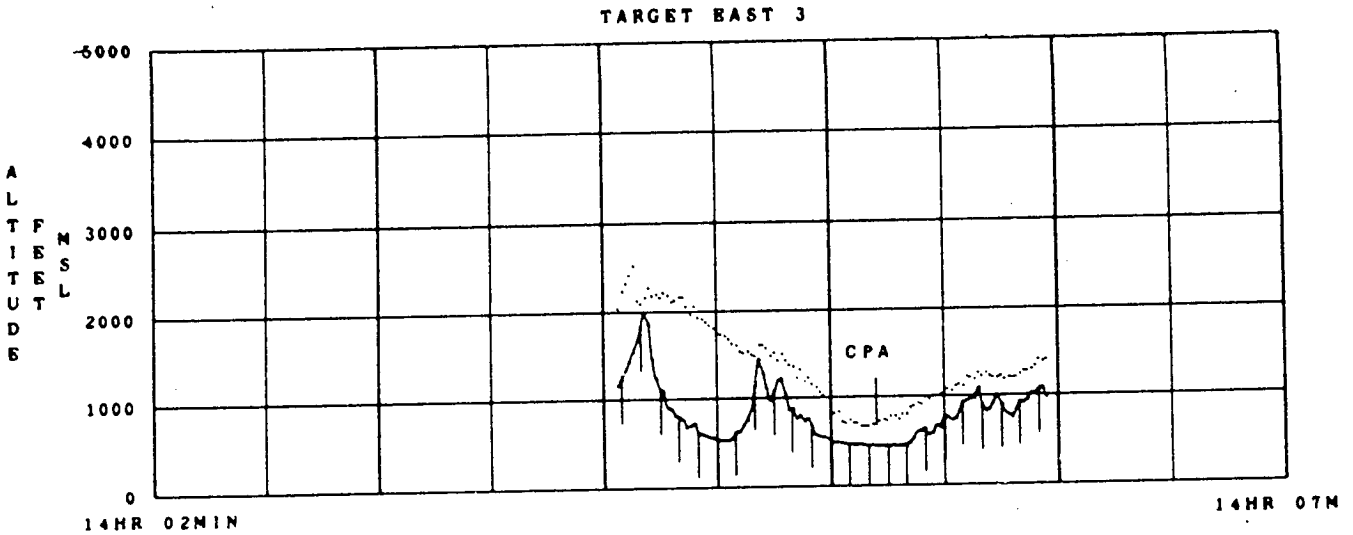


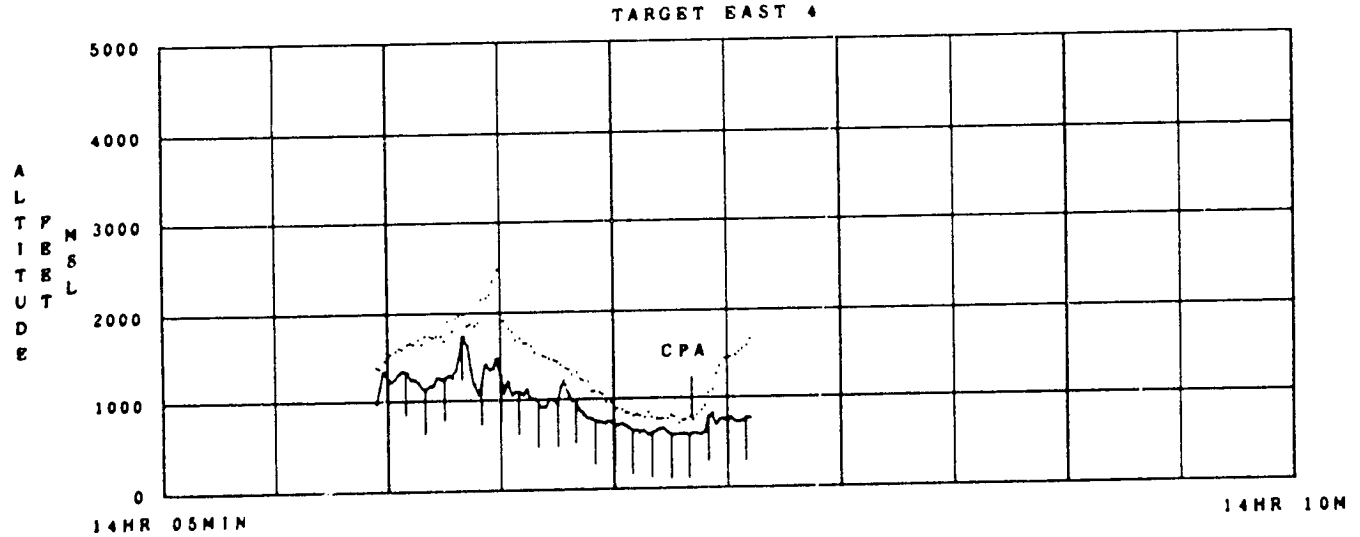


SORTIE NUMBER 557

04092458
J9139

Figure 3-76 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

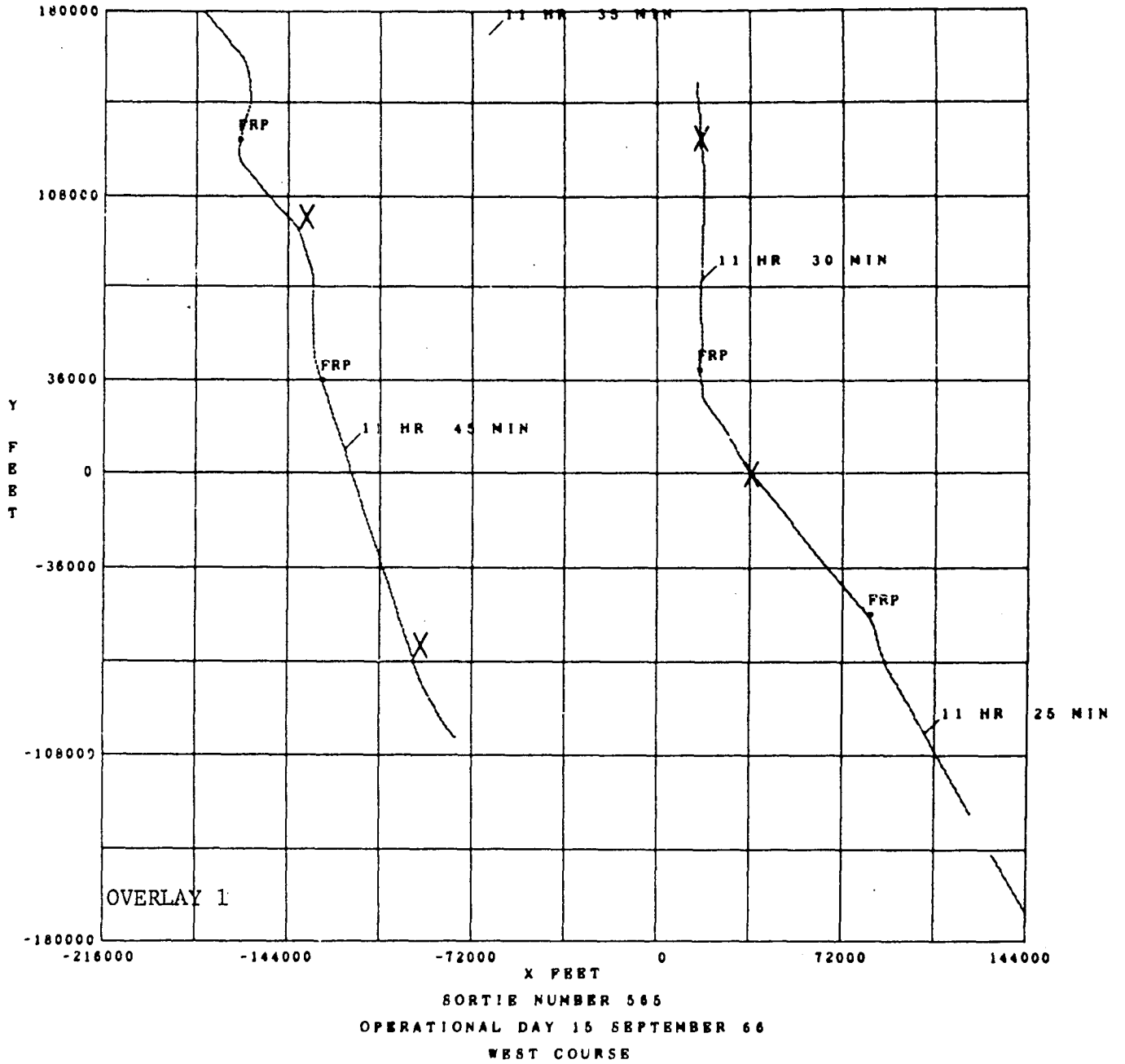




SORTIE NUMBER 557

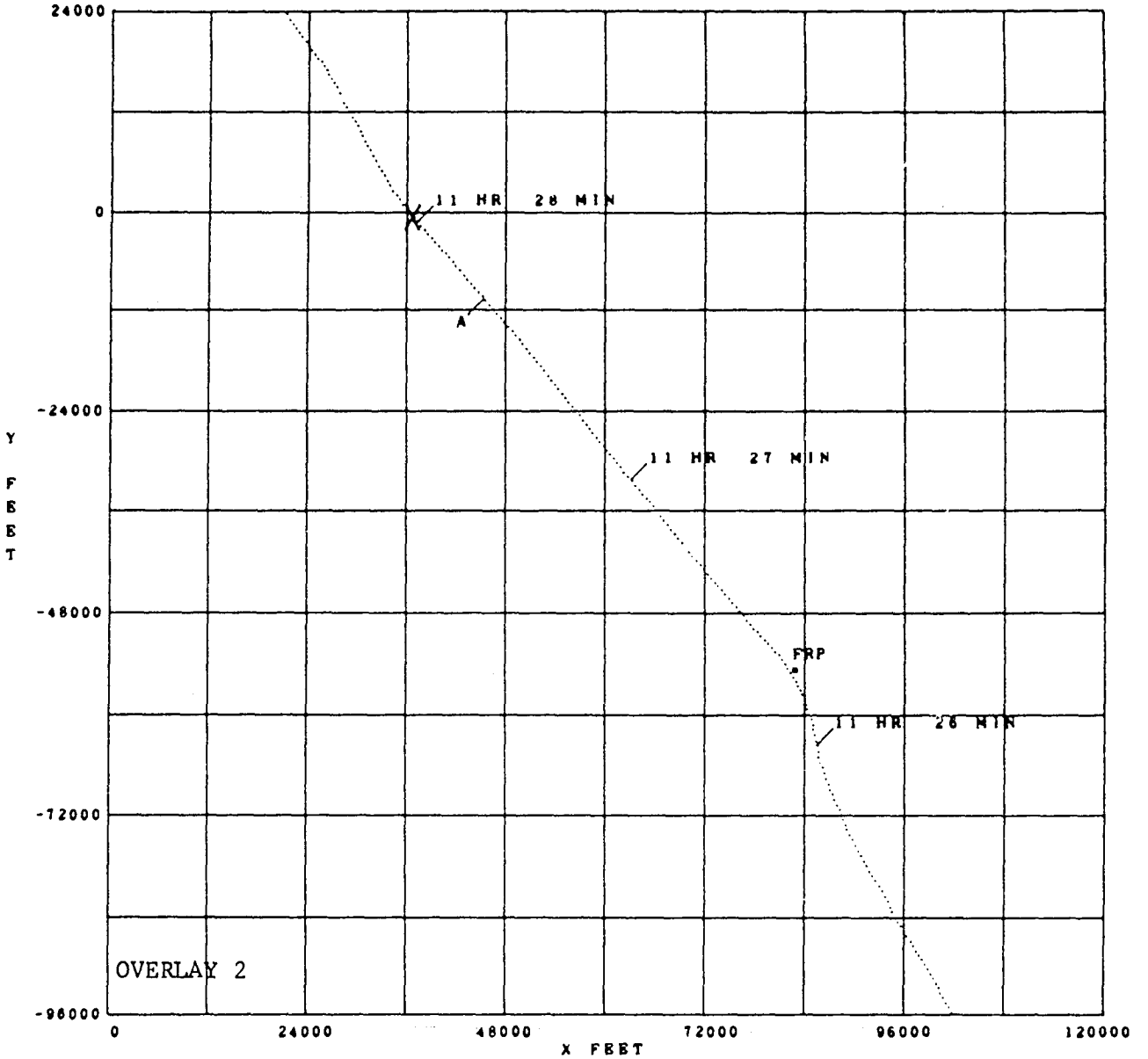
04092458
J9139

Figure 3-76 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092502
J8136 11

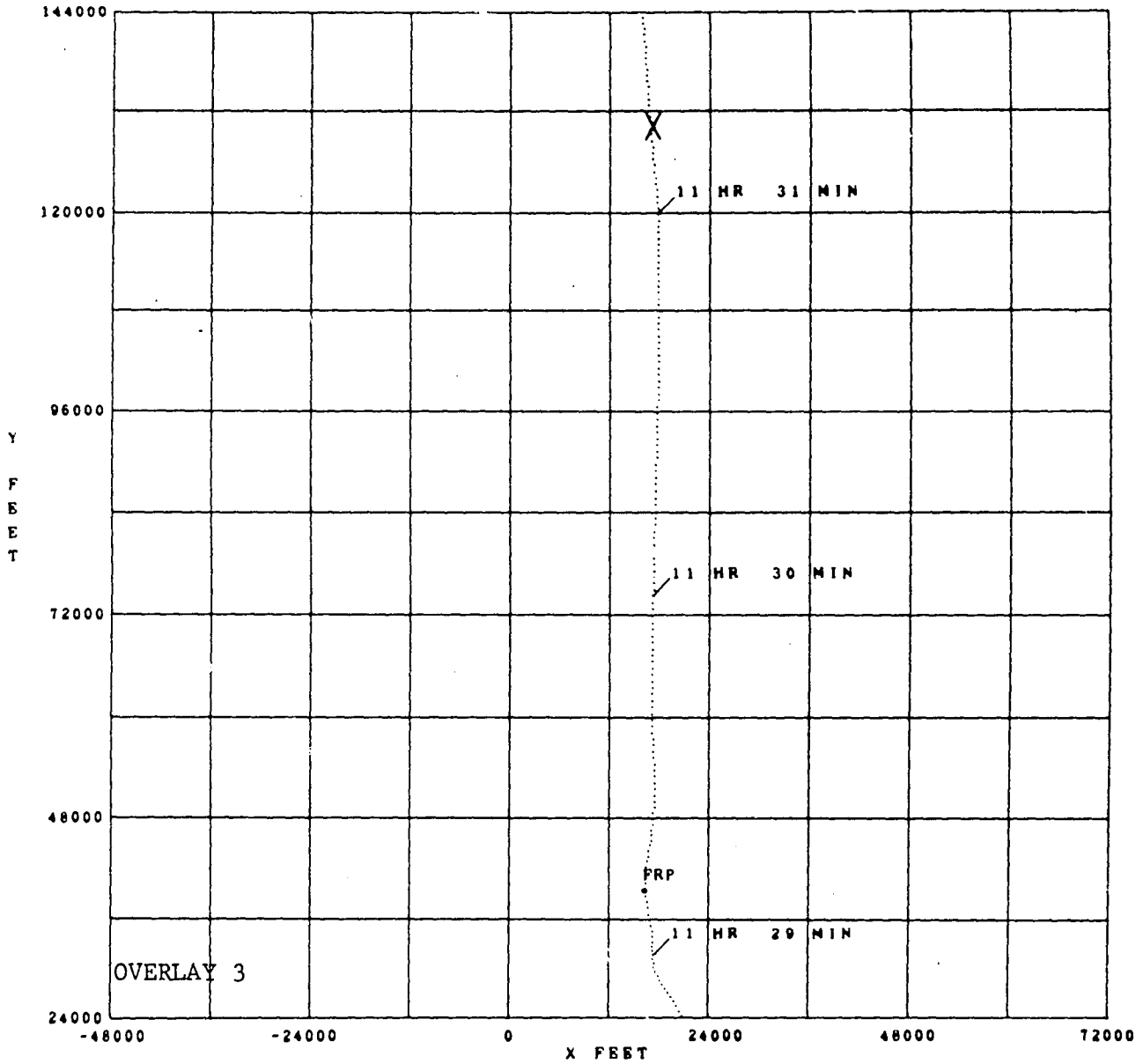
Figure 3-77 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 110 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 565
TARGET WEST 1

04092502
J9138 12

Figure 3-77 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 427 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 565
TARGET WEST 2

04092502
J9138

Figure 3-77 (U) Aircraft Position Data (Part 3 of 5)

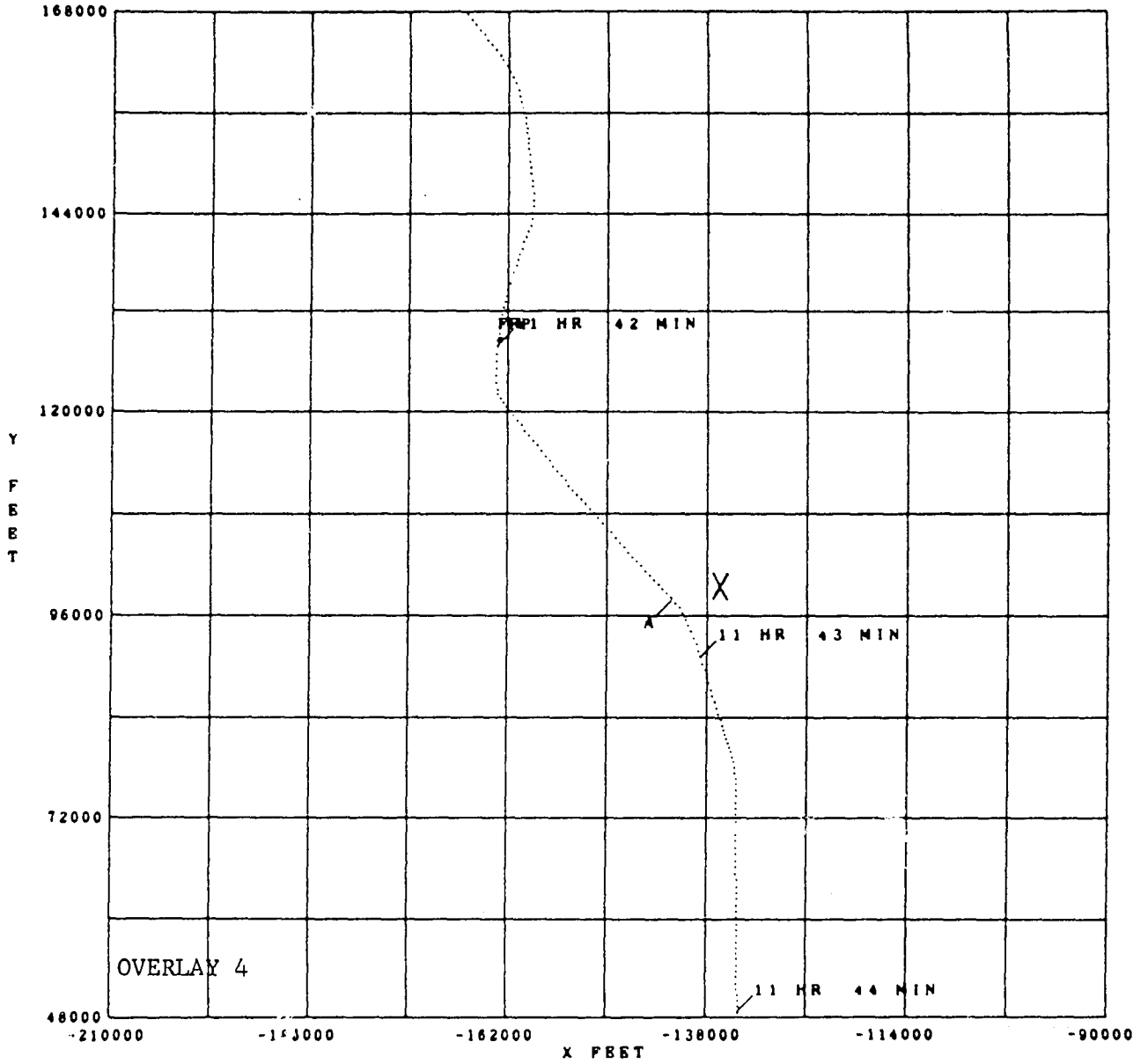
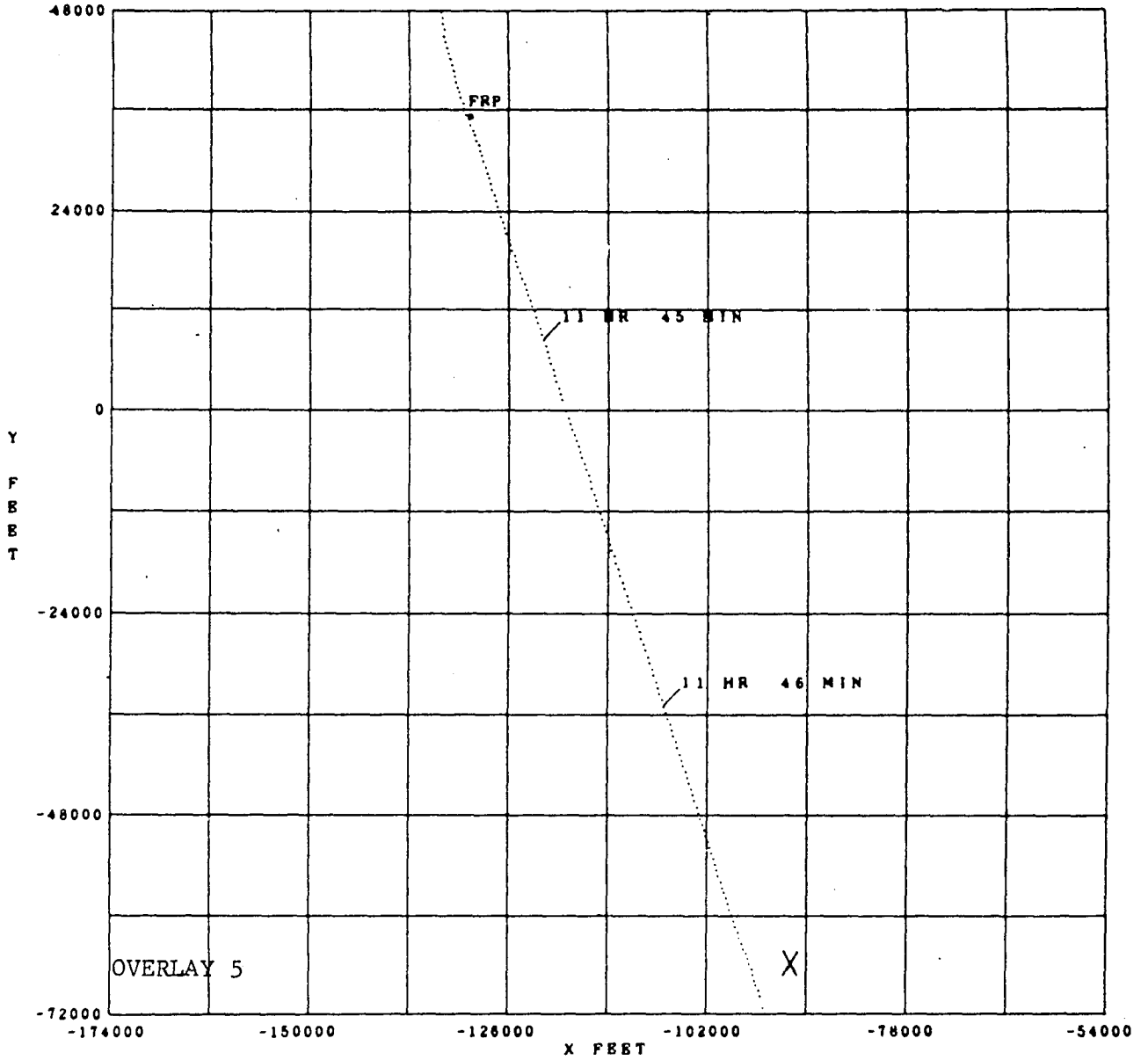


Figure 3-77 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 4765 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 565
TARGET WEST 4

04092503
J9138 15

Figure 3-77 (U) Aircraft Position Data (Part 5 of 5)

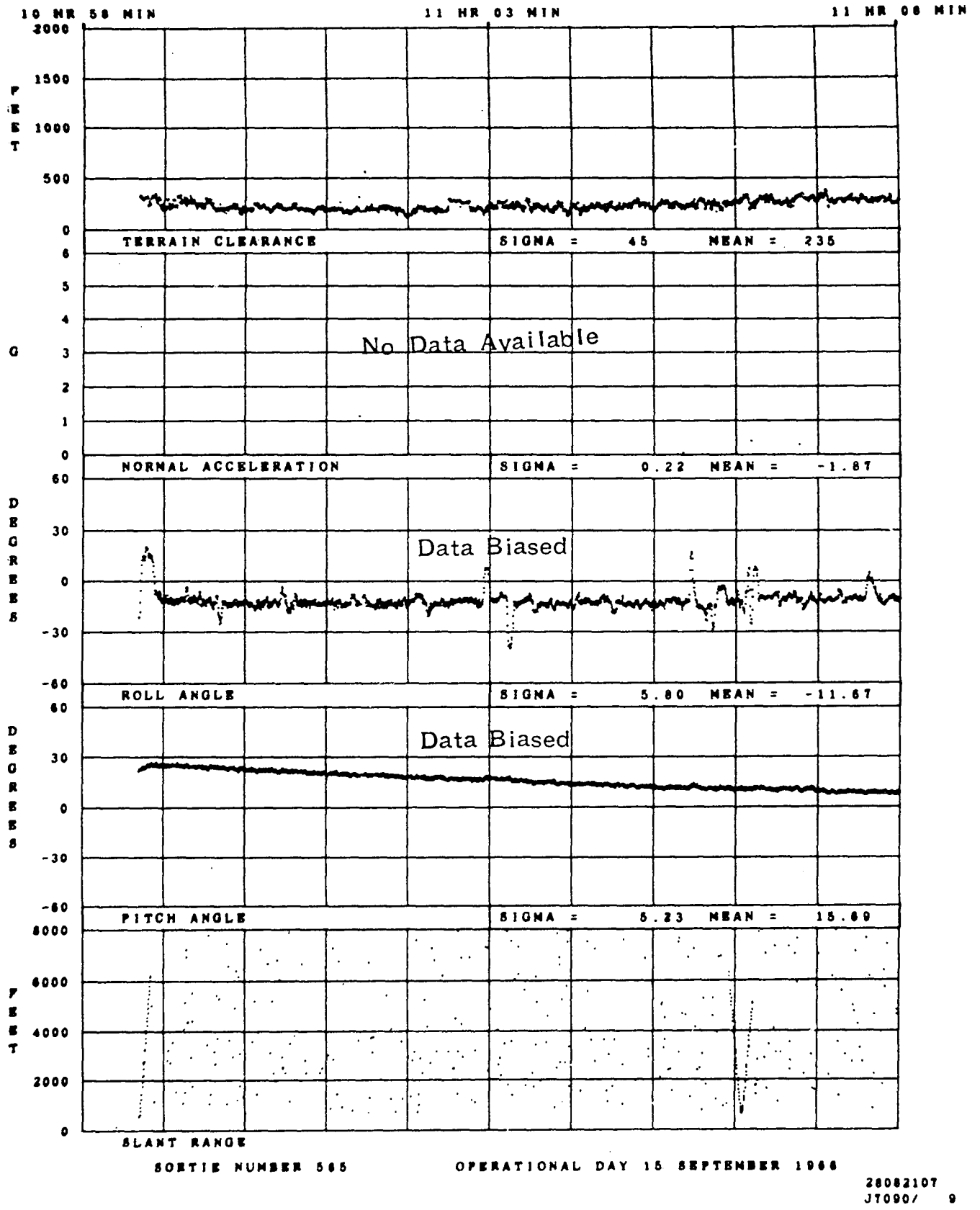


Figure 3-78 (U) Telemetered Data (Part 1 of 5)

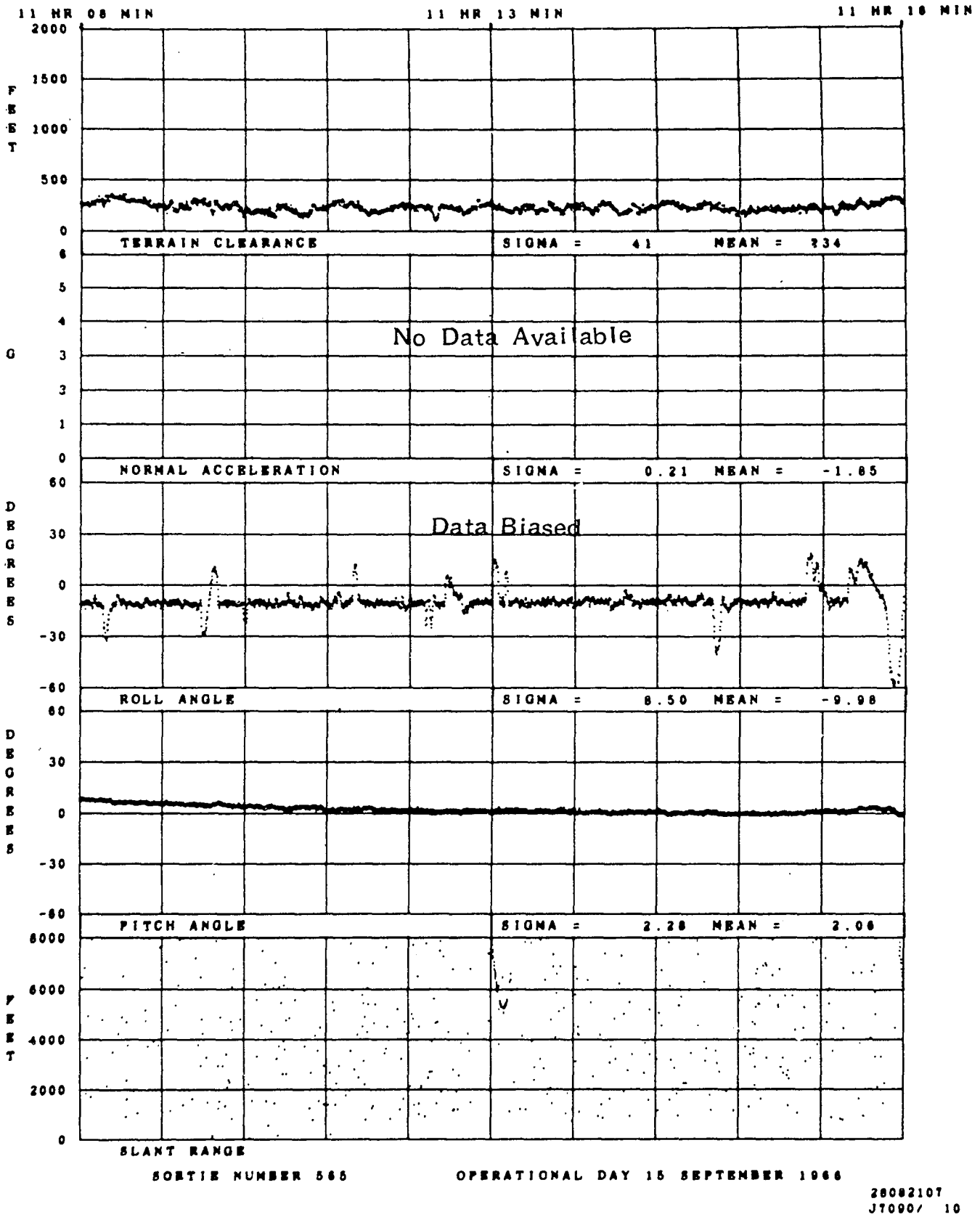


Figure 3-78 (U) Telemetered Data (Part 2 of 5)

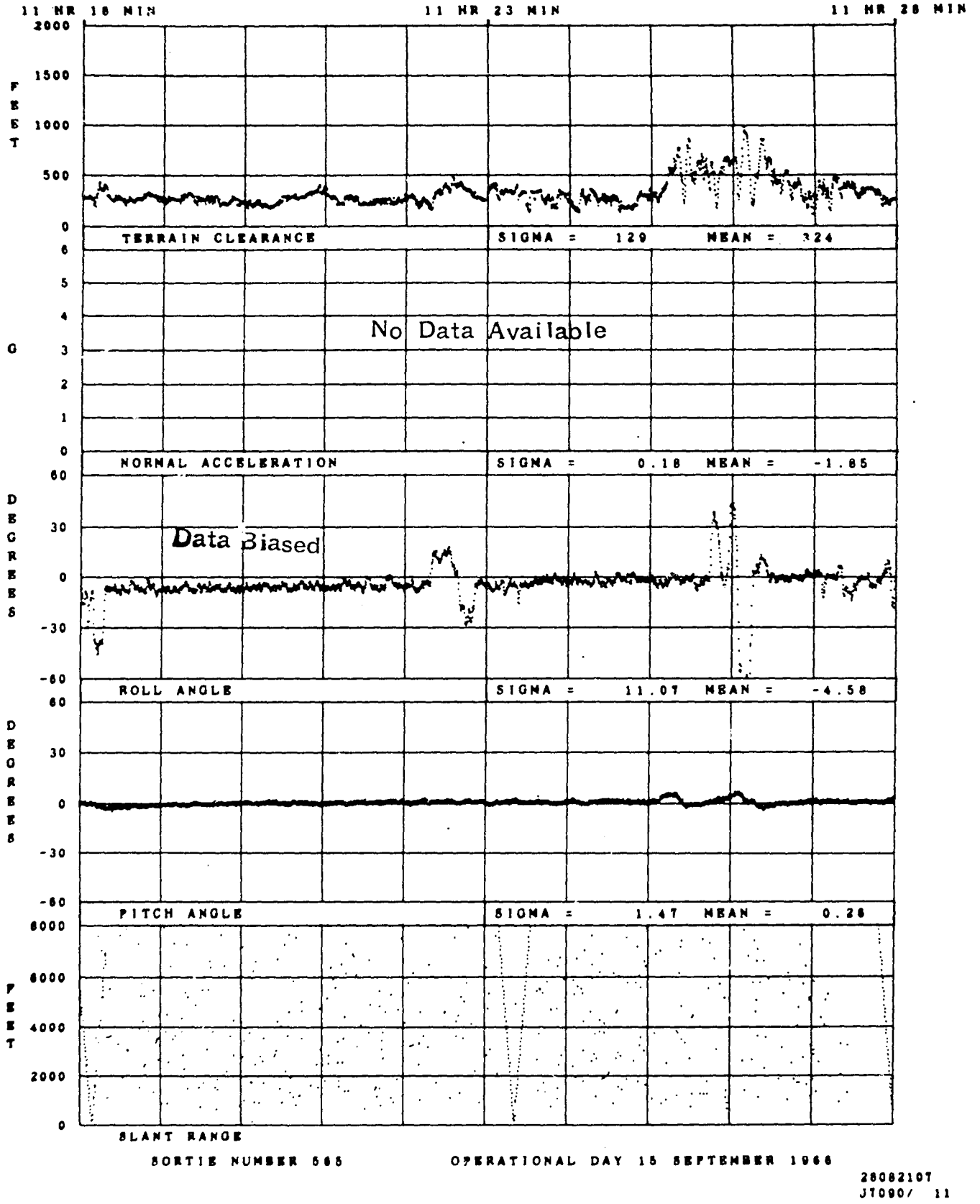


Figure 3-78 (U) Telemetered Data (Part 3 of 5)

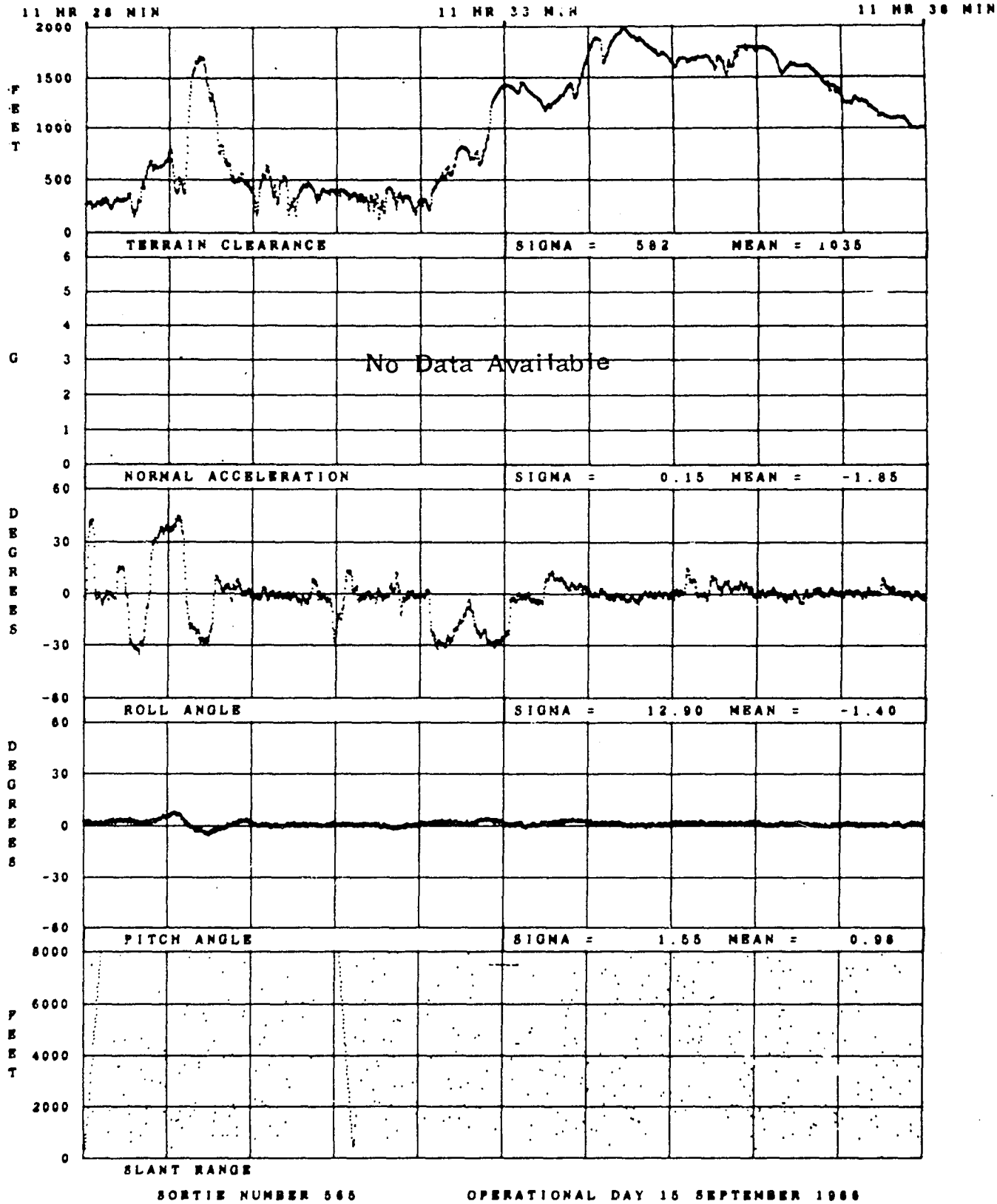


Figure 3-78 (U) Telemetered Data (Part 4 of 5)

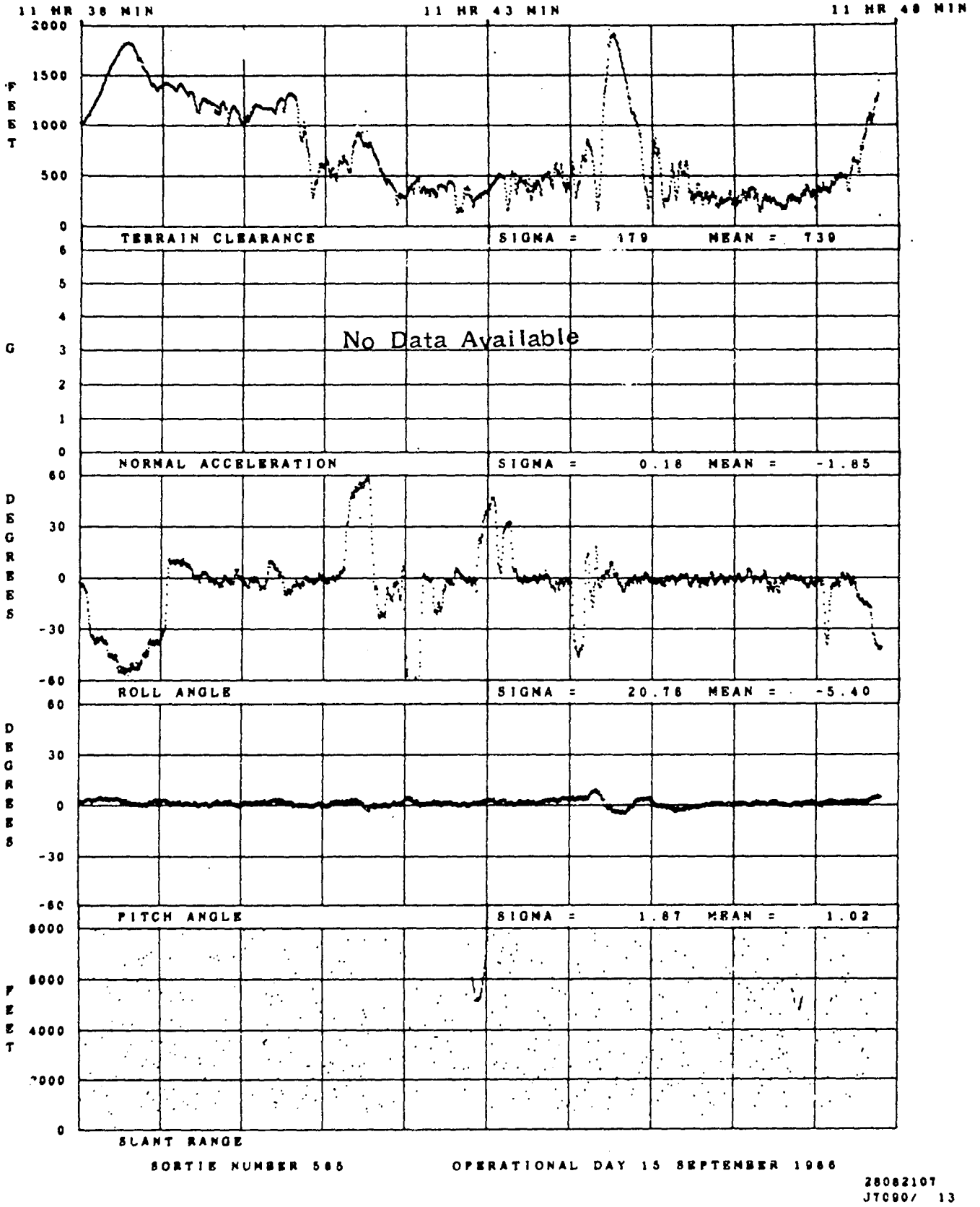
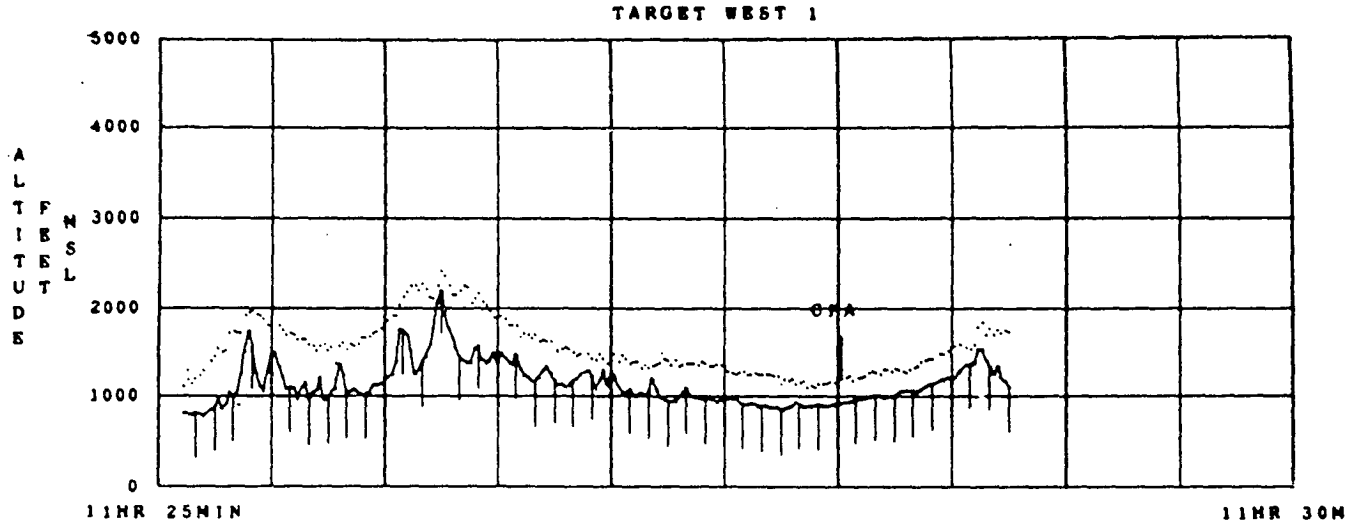
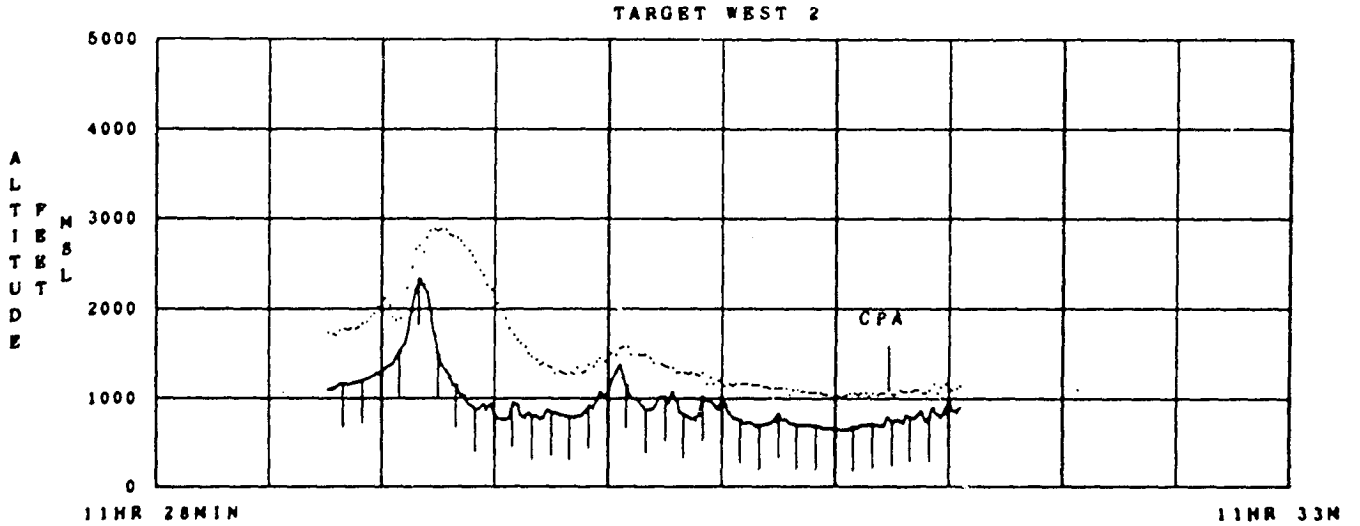


Figure 3-78 (U) Telemetered Data (Part 5 of 5)

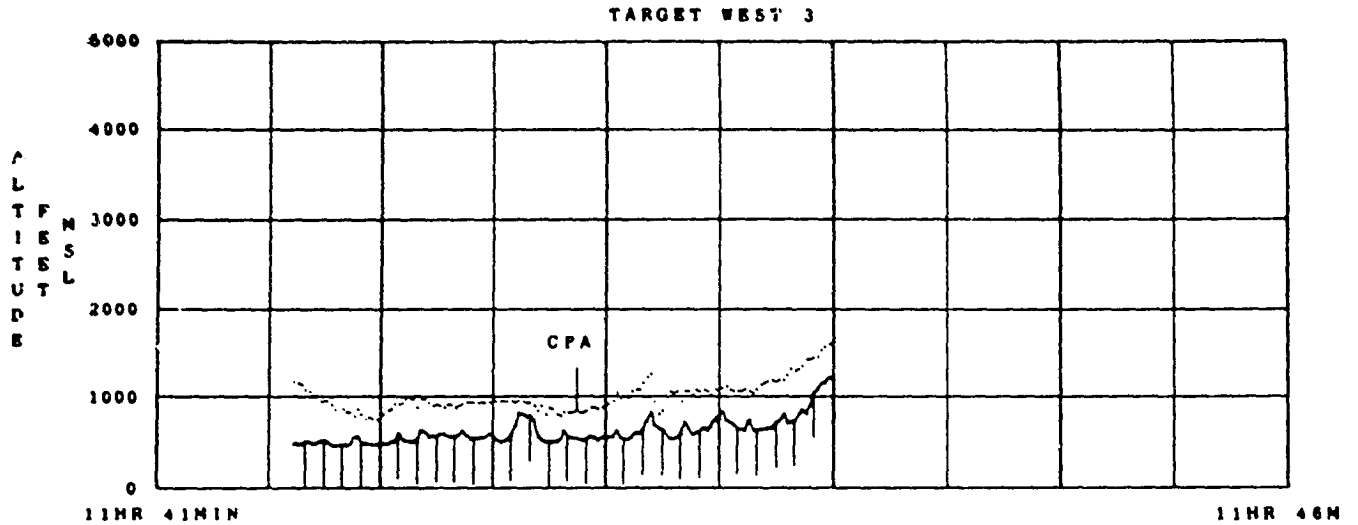


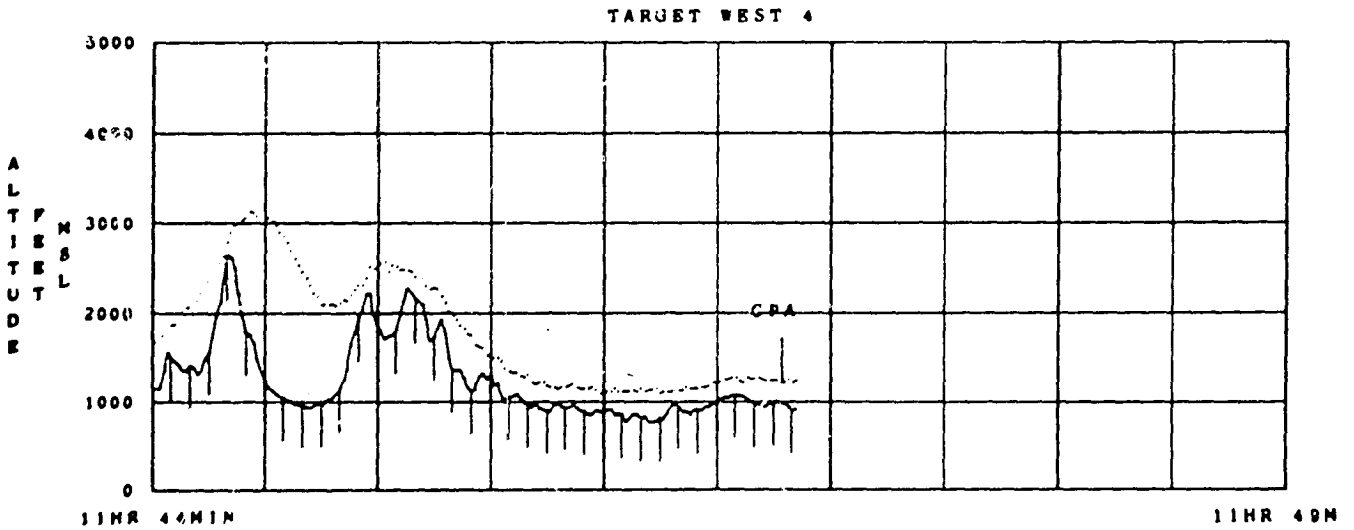


SORTIE NUMBER 565

04092503
J9138

Figure 3-79 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 565

04092503
J9138

Figure 3-79 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

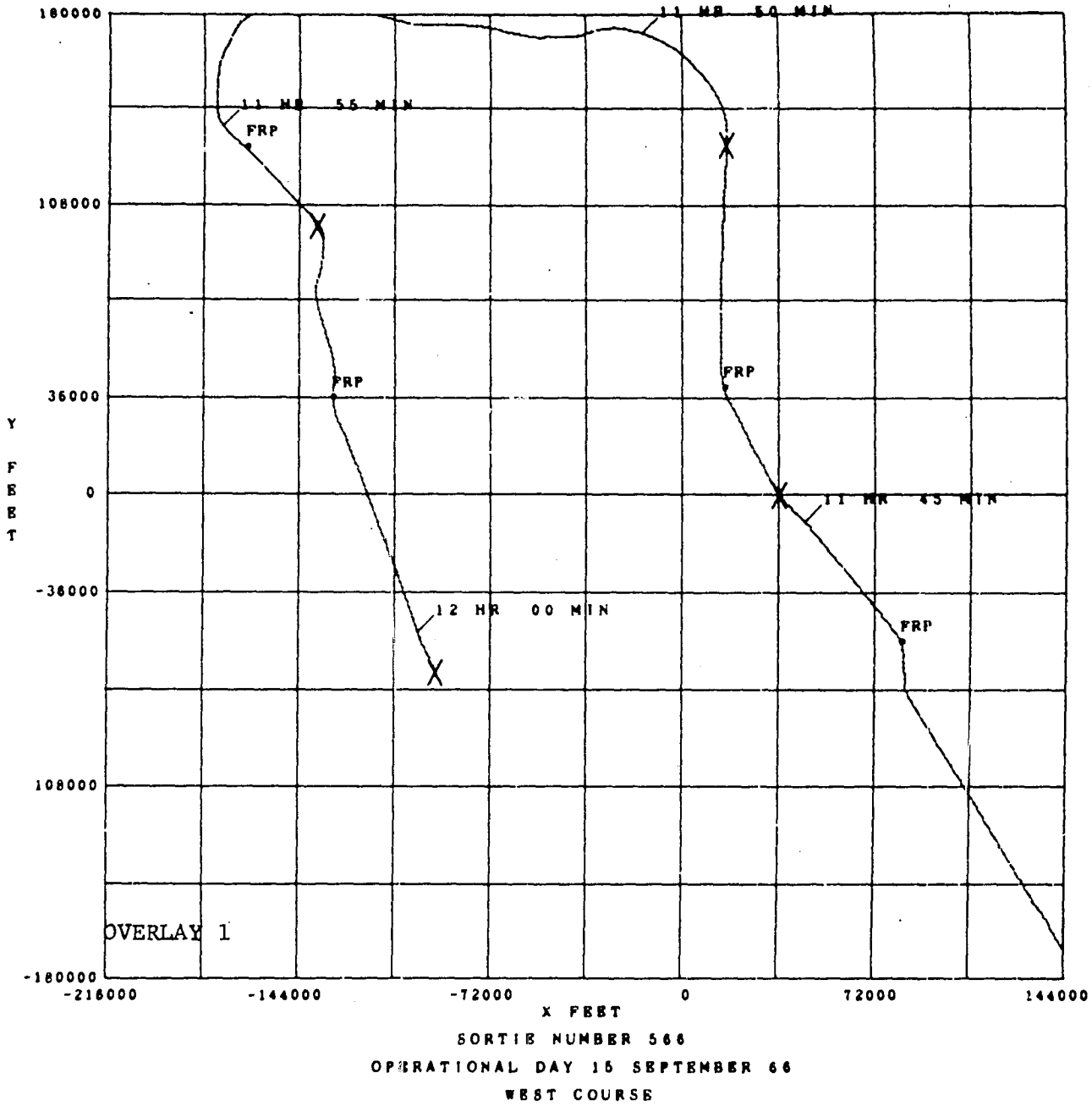
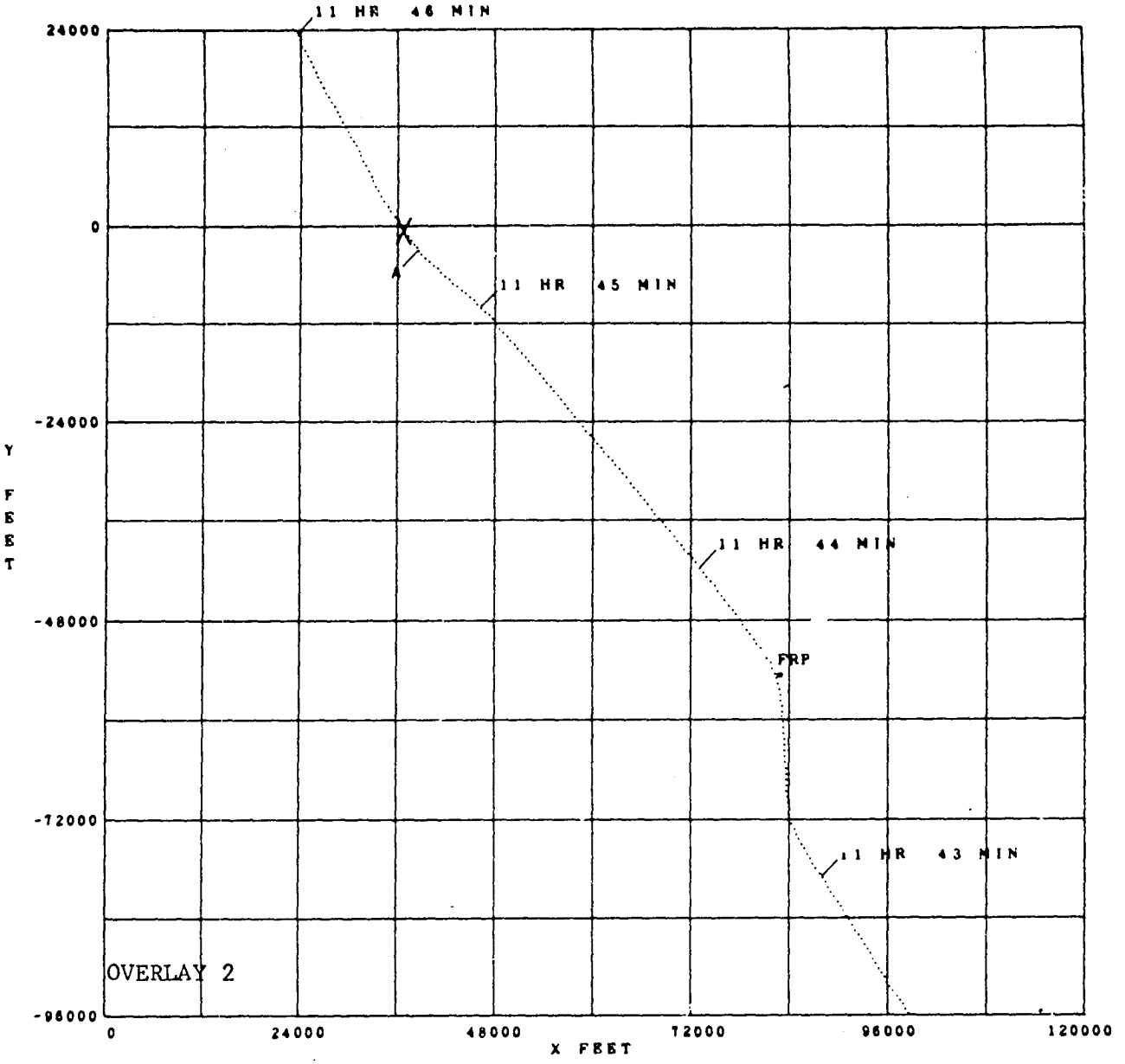


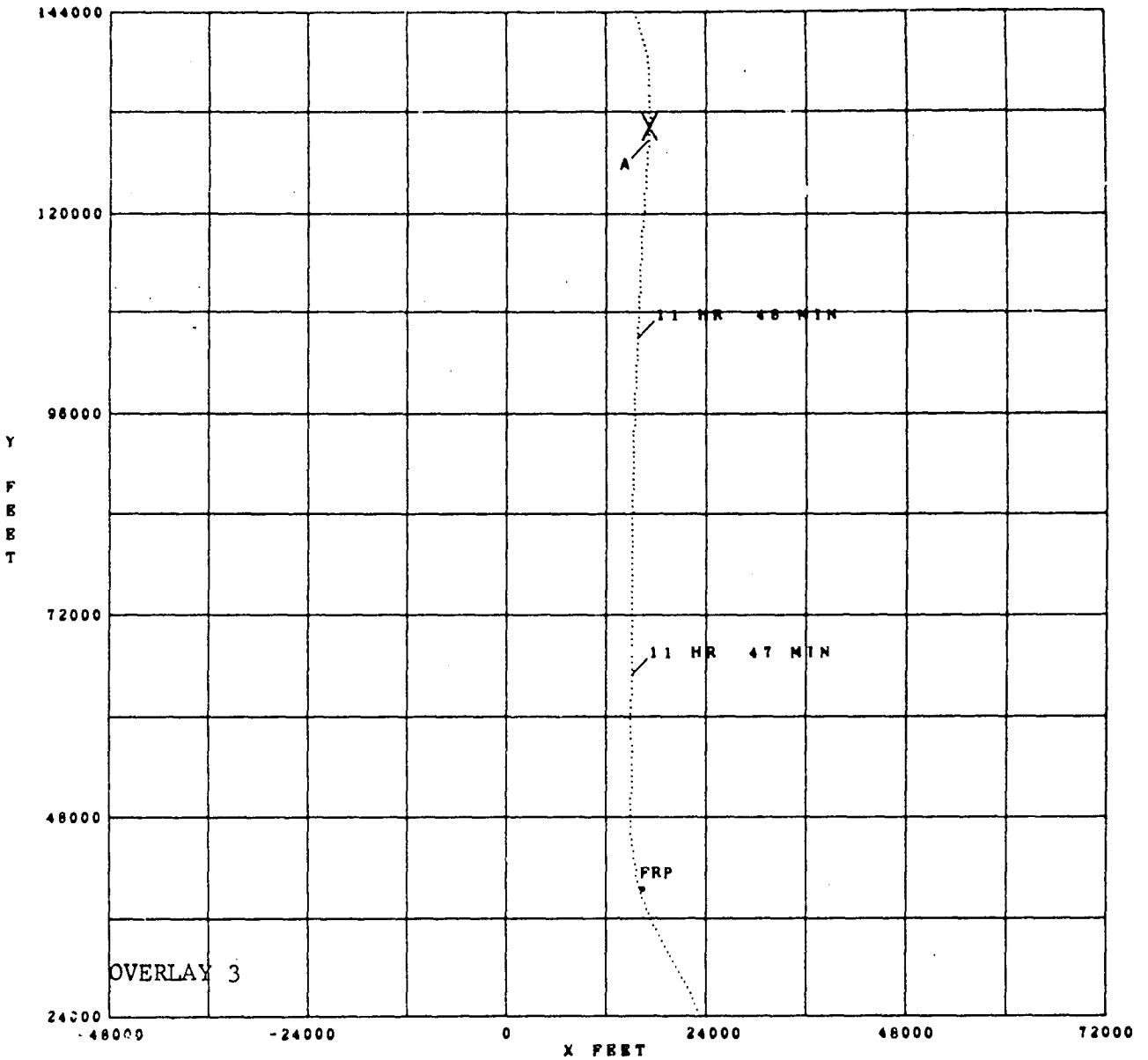
Figure 3-80 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 175 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 566
TARGET WEST 1

04092504
J9138 28

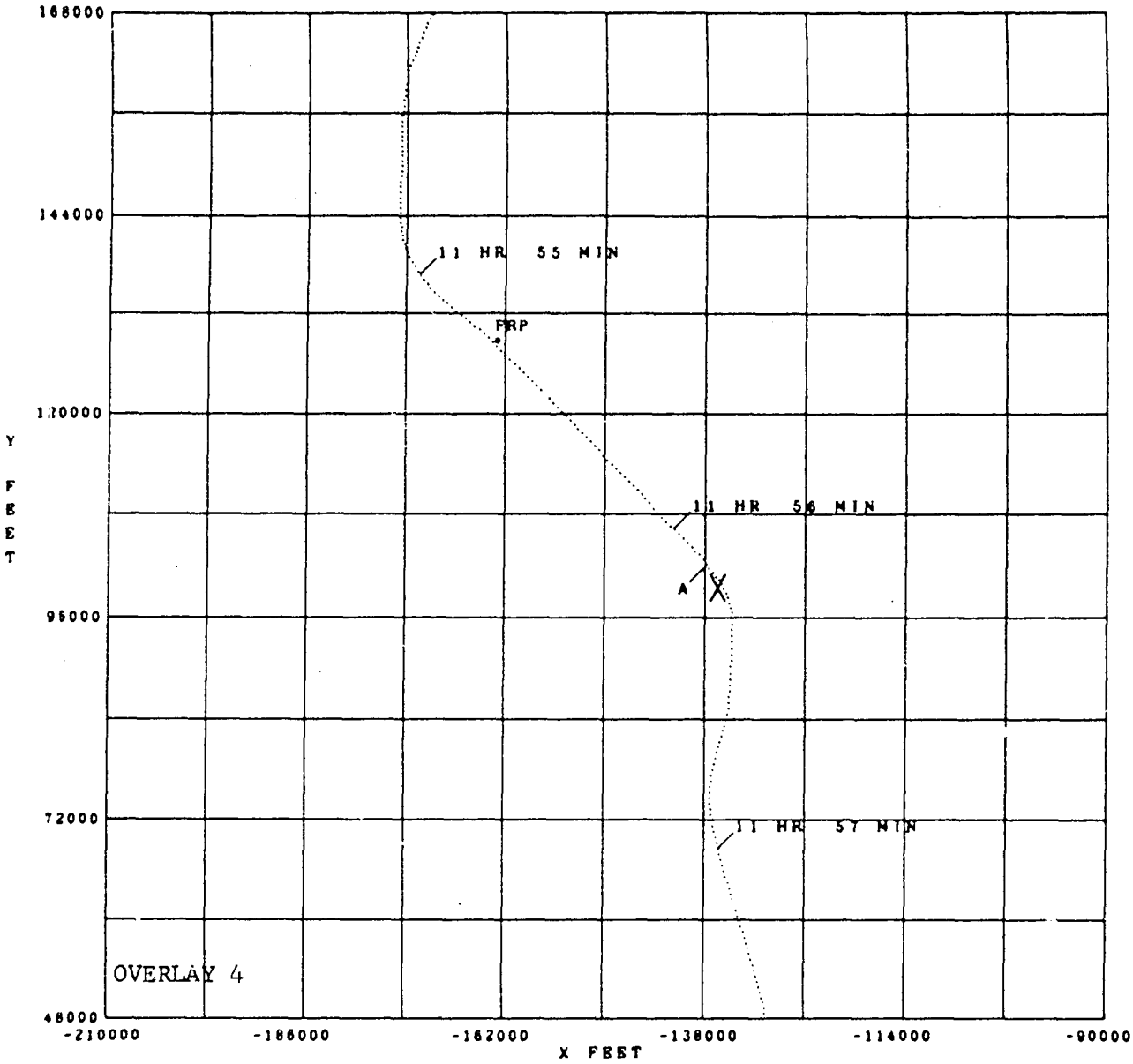
Figure 3-80 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 83 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 566
TARGET WEST 2

04092504
J9138 29

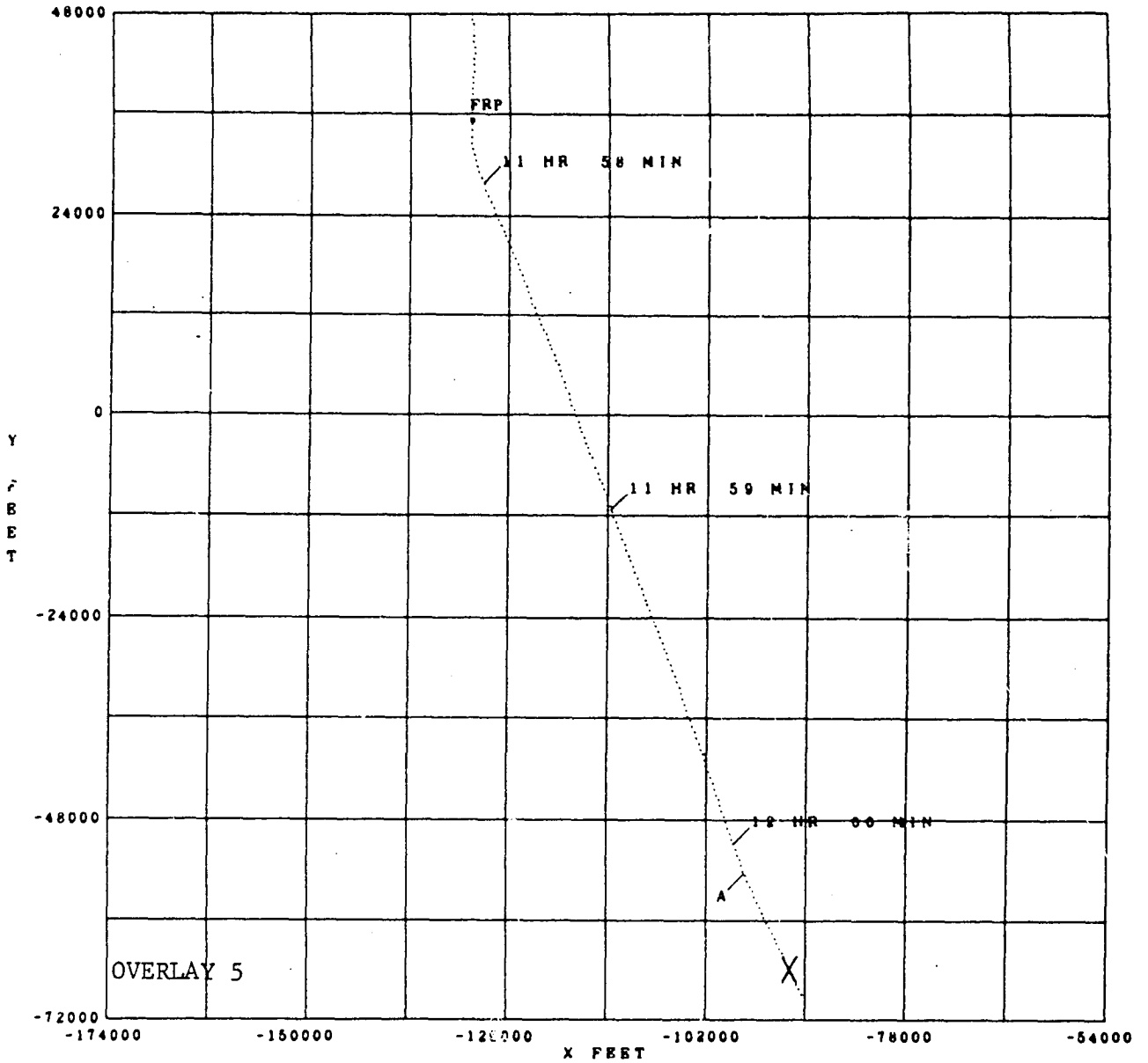
Figure 3-80 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 533 FEET
MINIMUM GROUND DISTANCE QUALIFIER = [illegible]
SORTIE NUMBER 566
TARGET WEST 3

04092504
J9138 3C

Figure 3-80 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 32 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DMB
SORTIE NUMBER 566
TARGET WEST 4

04092504
J9138 31

Figure 3-80 (U) Aircraft Position Data (Part 5 of 5)

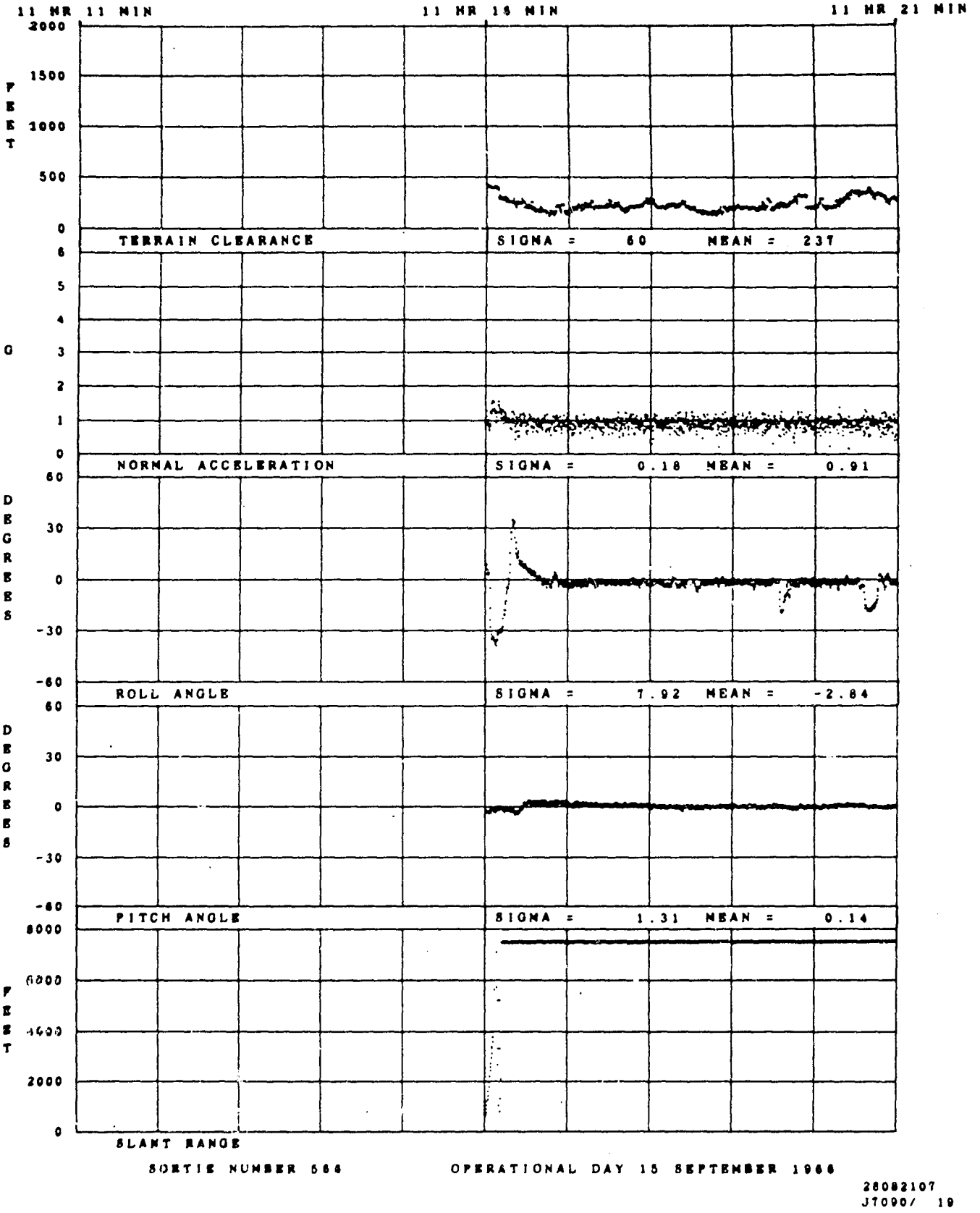


Figure 3-81 (U) Telemetered Data (Part 1 of 5)

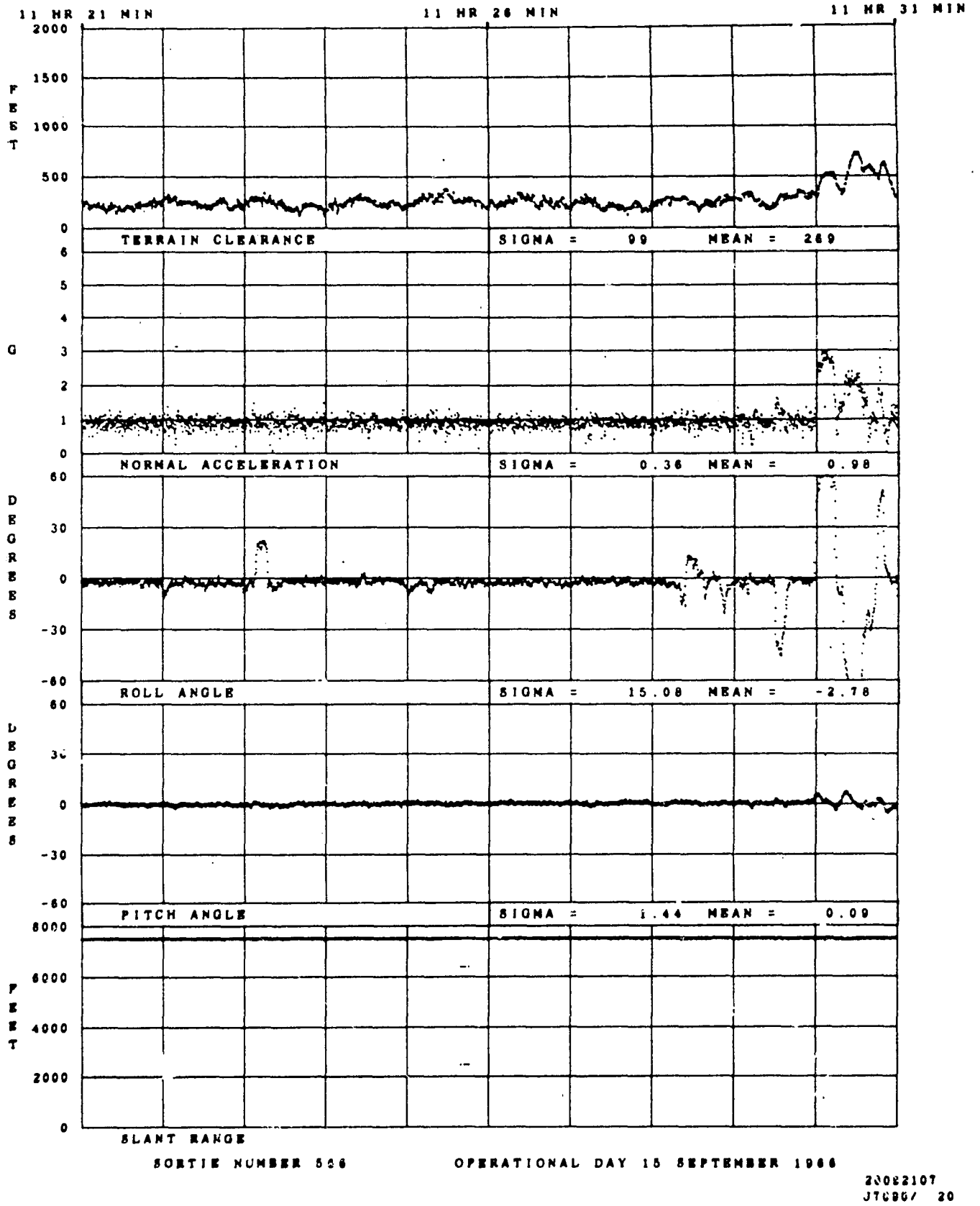


Figure 3-81 (U) Telemetered Data (Part 2 of 5)

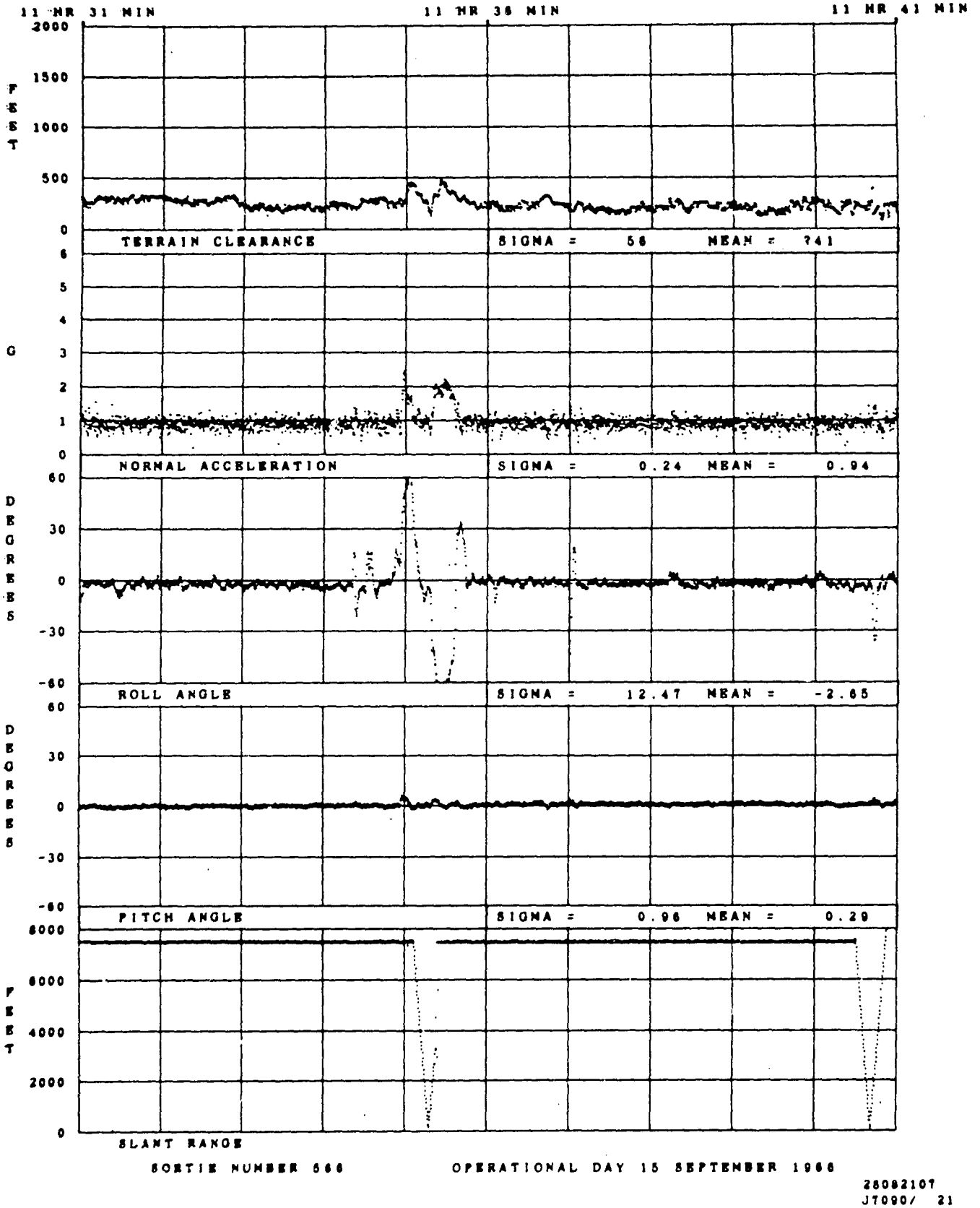


Figure 3-81 (U) Telemetered Data (Part 3 of 5)

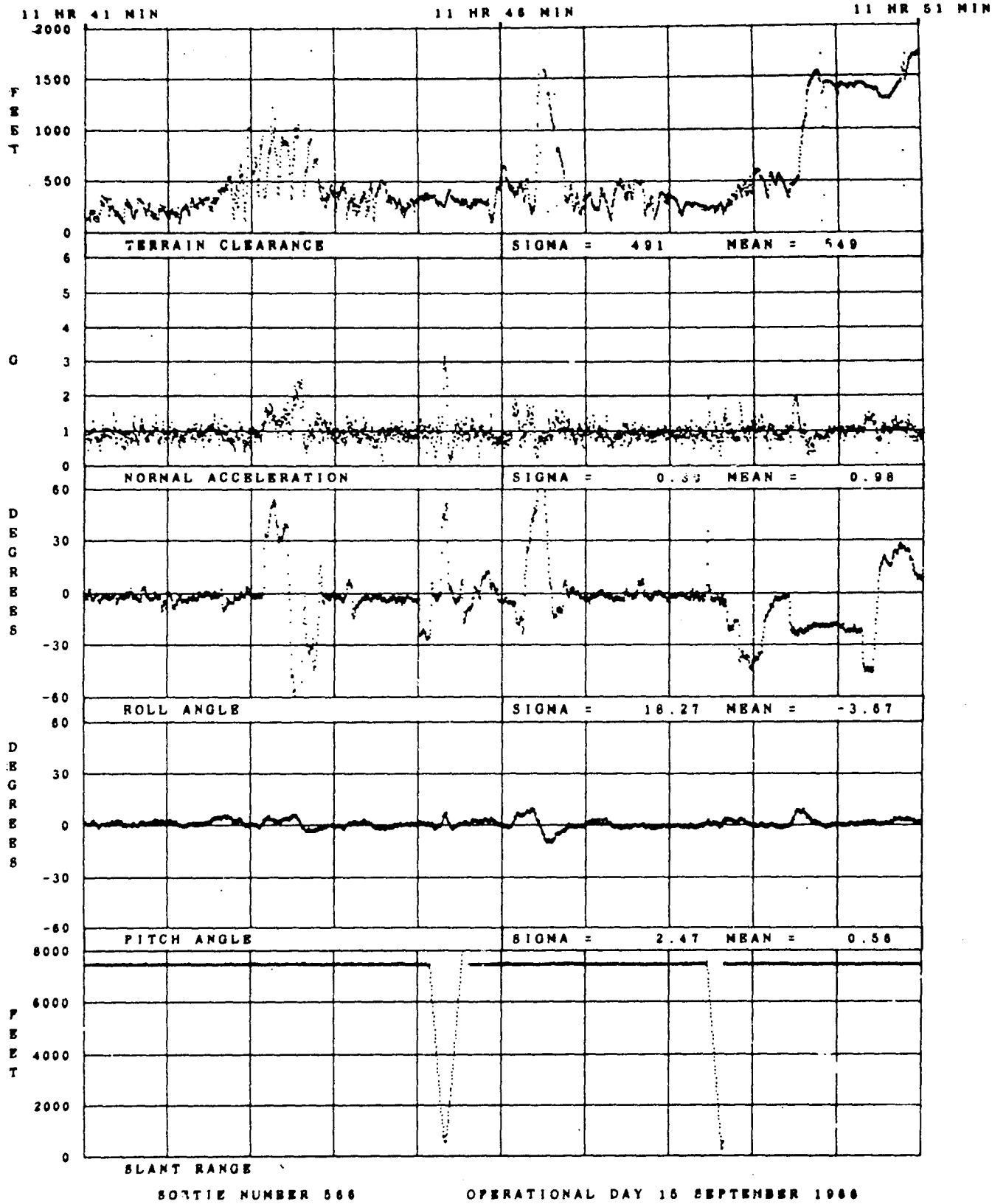


Figure 3-81 (U) Telemetered Data (Part 4 of 5)

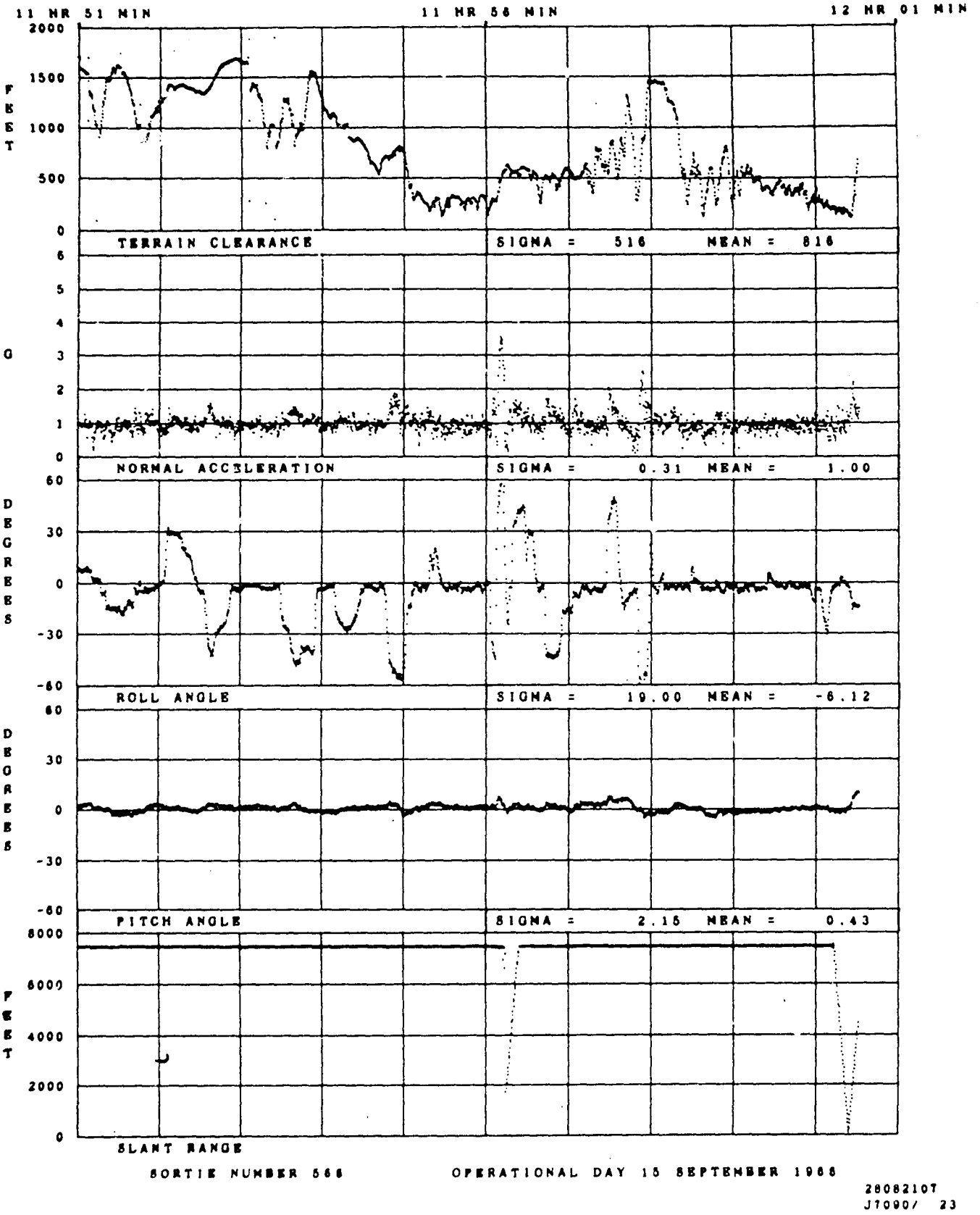
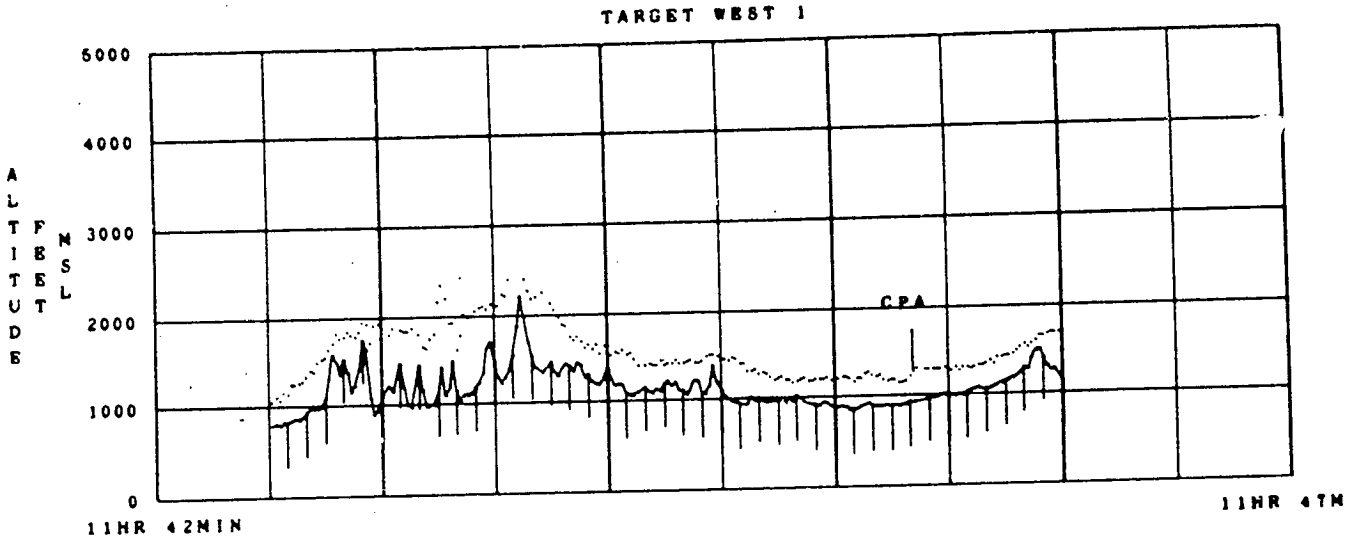
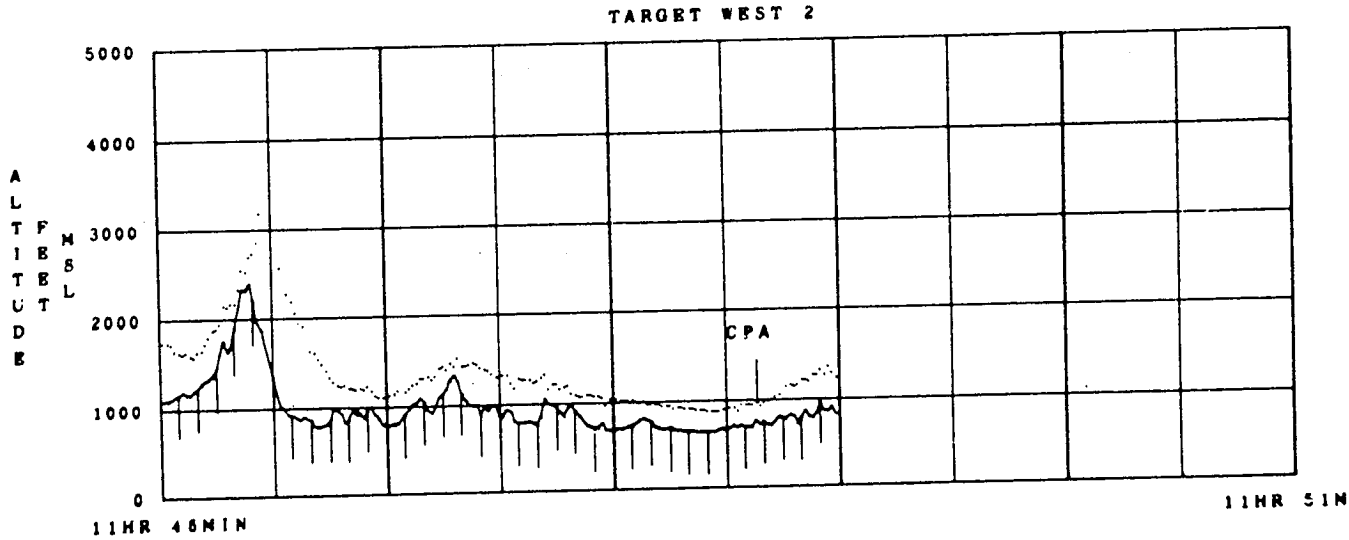


Figure 3-81 (U) Telemetered Data (Part 5 of 5)

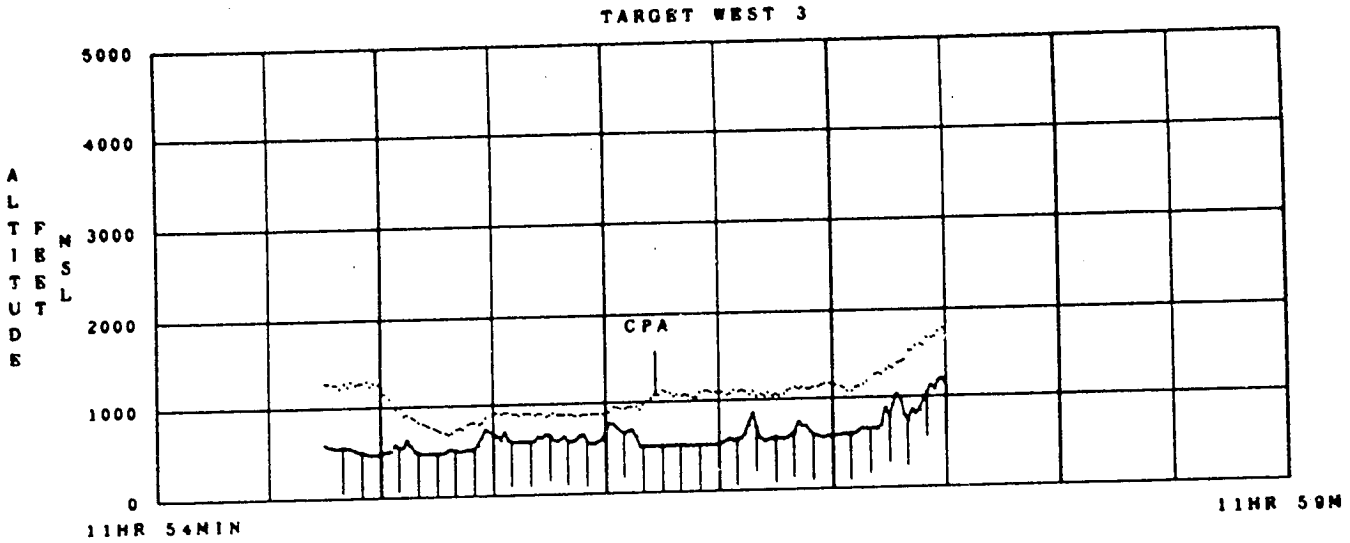


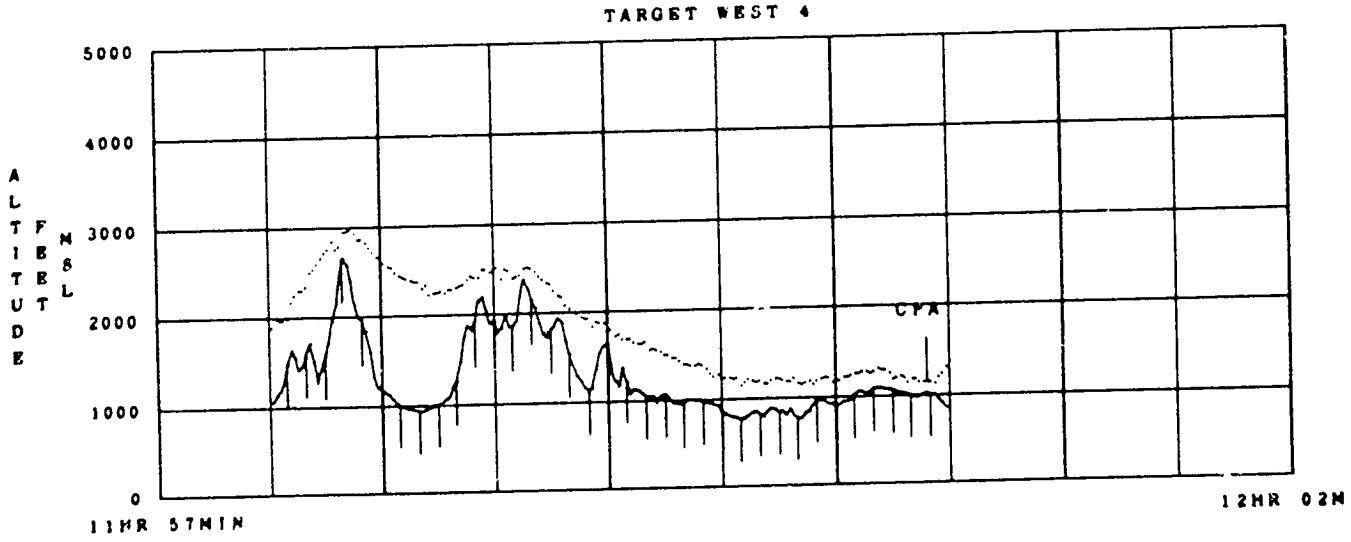


SORTIE NUMBER 566

04092504
J9138

Figure 3-82 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)





SORTIE NUMBER 566

04092504
J9138

Figure 3-82 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

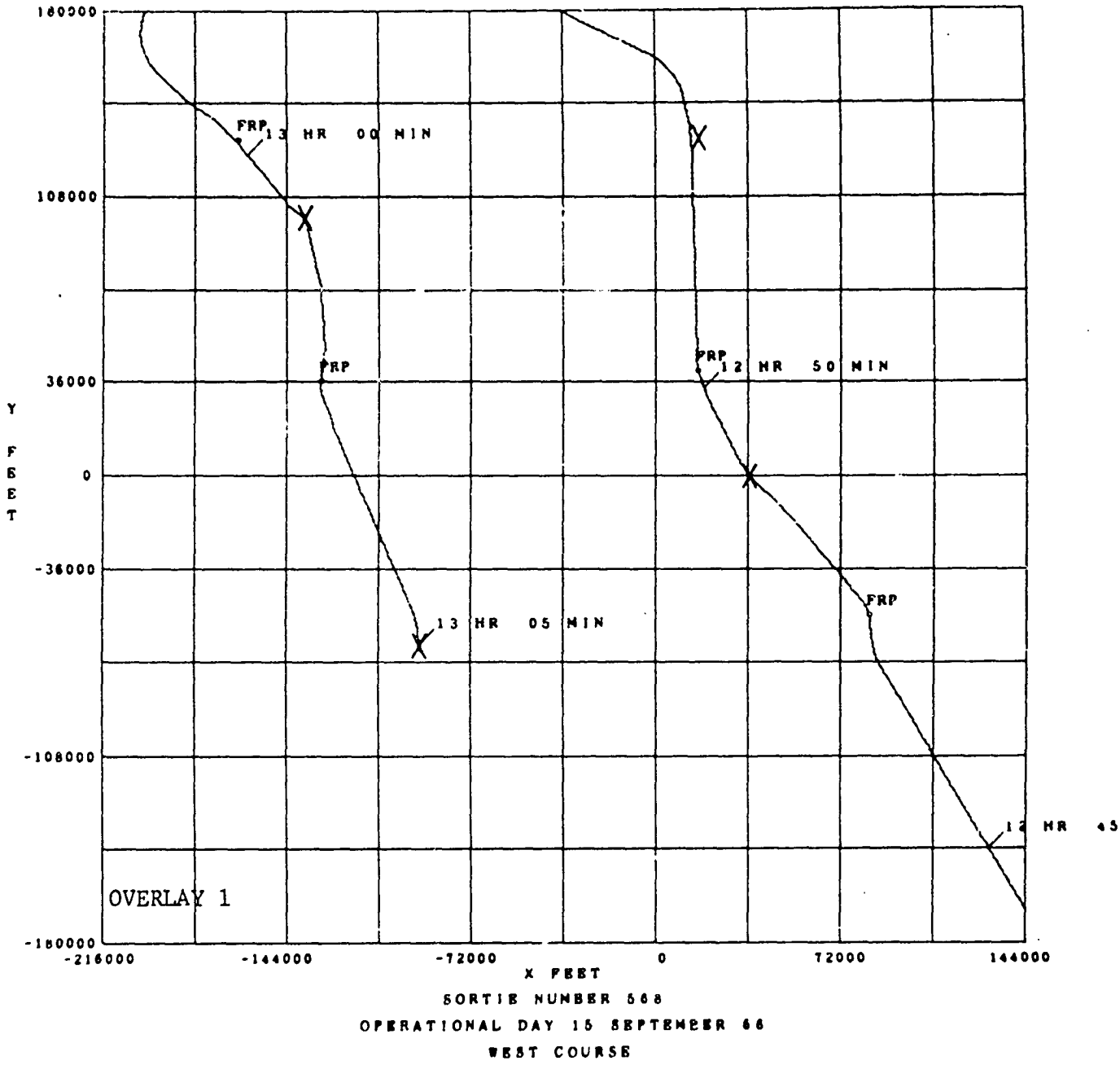


Figure 3-83 (U) Aircraft Position Data (Part 1 of 5)

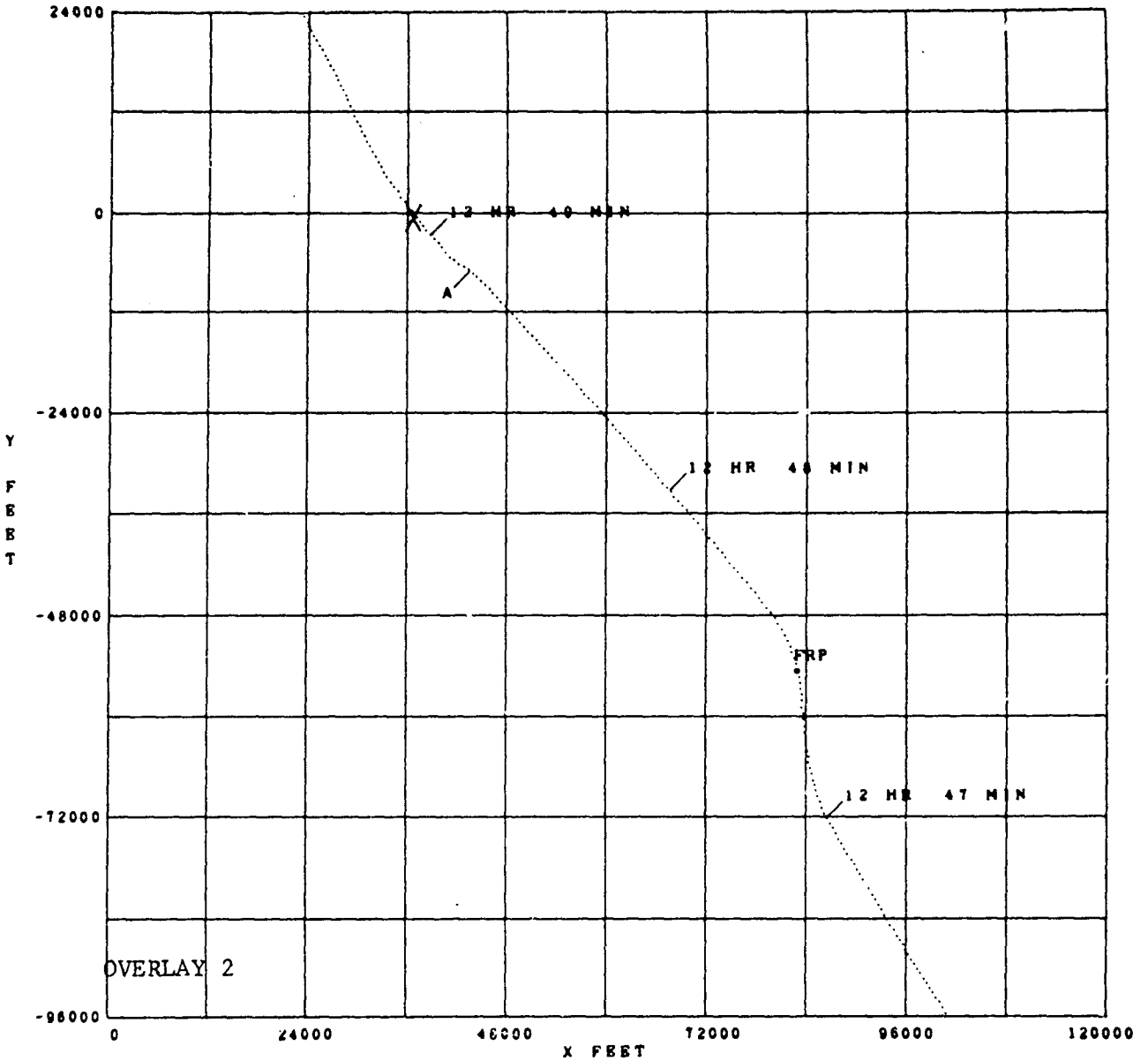
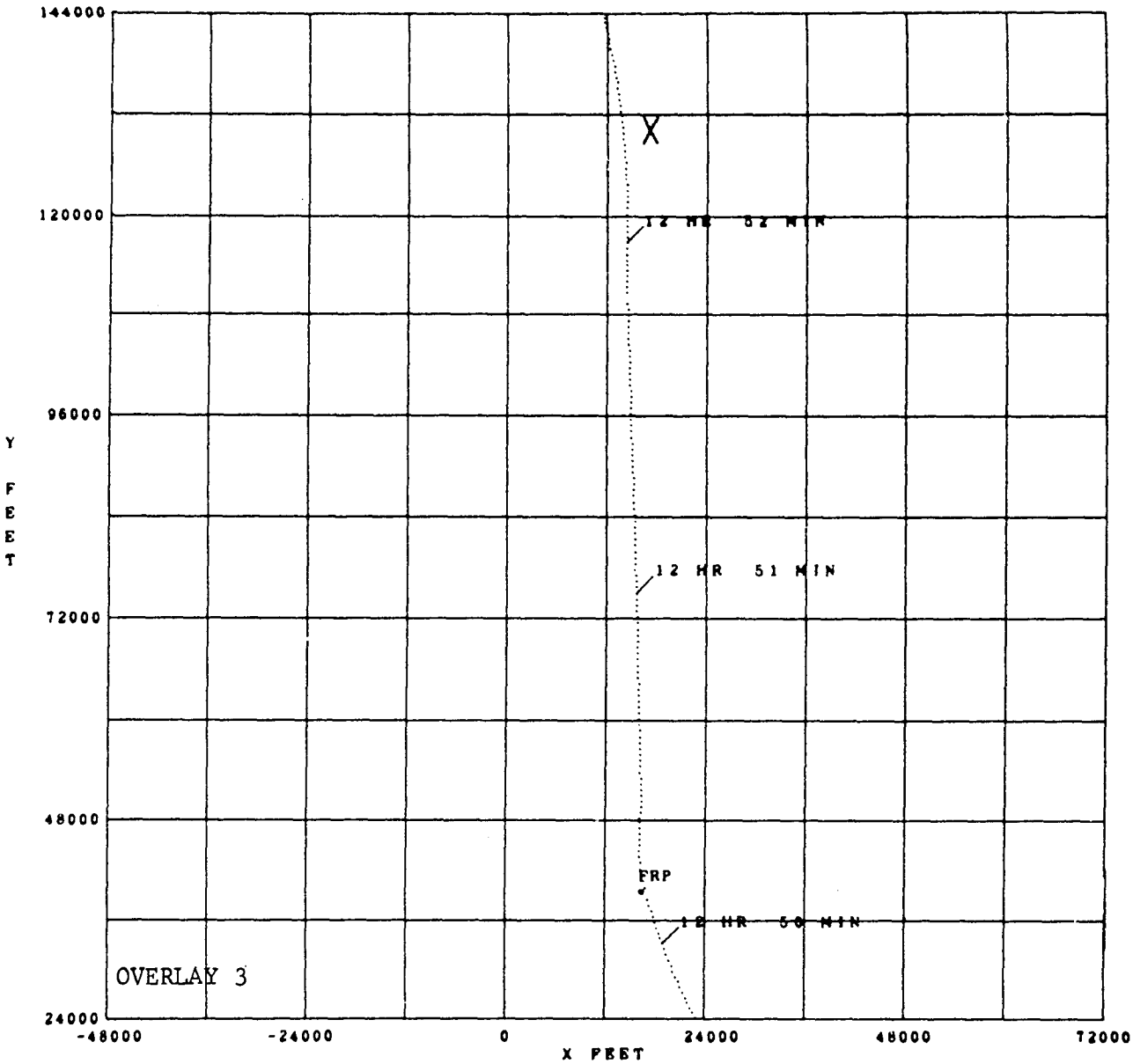


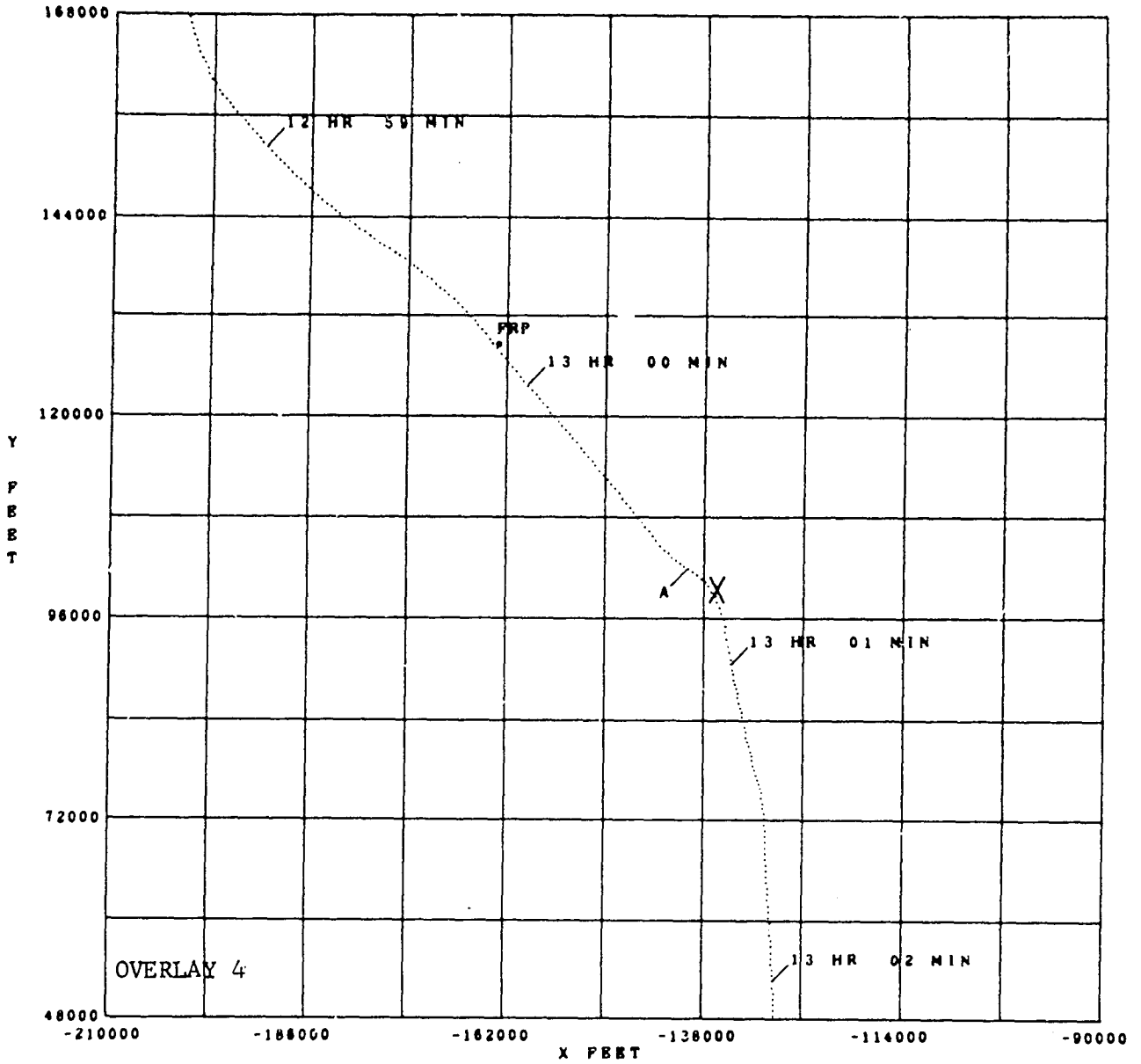
Figure 3-83 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 3433 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 568
TARGET WEST 2

04092504
J9138 37

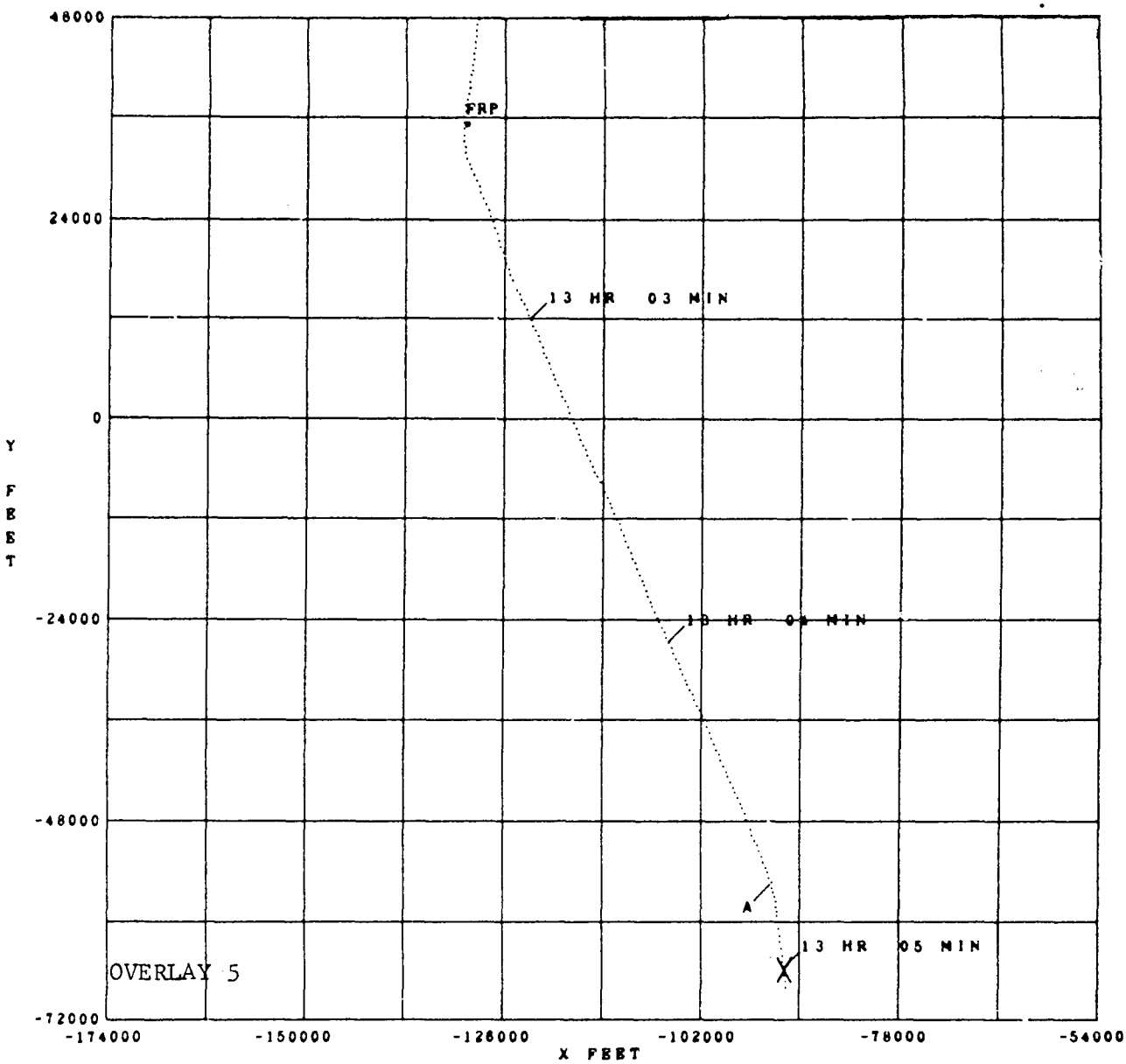
Figure 3-83 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 0 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 568
TARGET WEST 3

04092504
J9138 38

Figure 3-83 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 89 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 568
TARGET WEST 4

04092504
J9138 39

Figure 3-83 (U) Aircraft Position Data (Part 5 of 5)

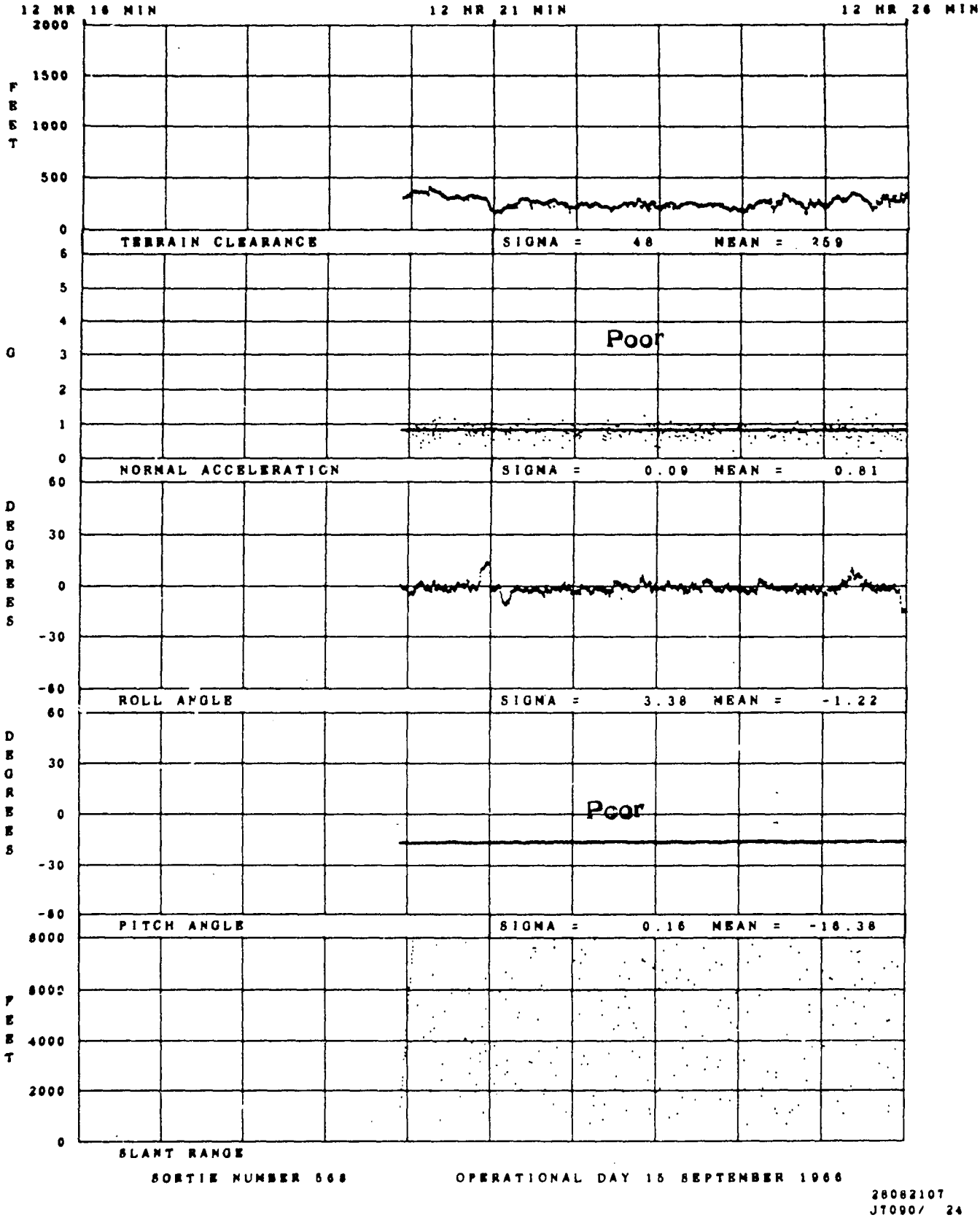


Figure 3-84 (U) Telemetered Data (Part 1 of 5)

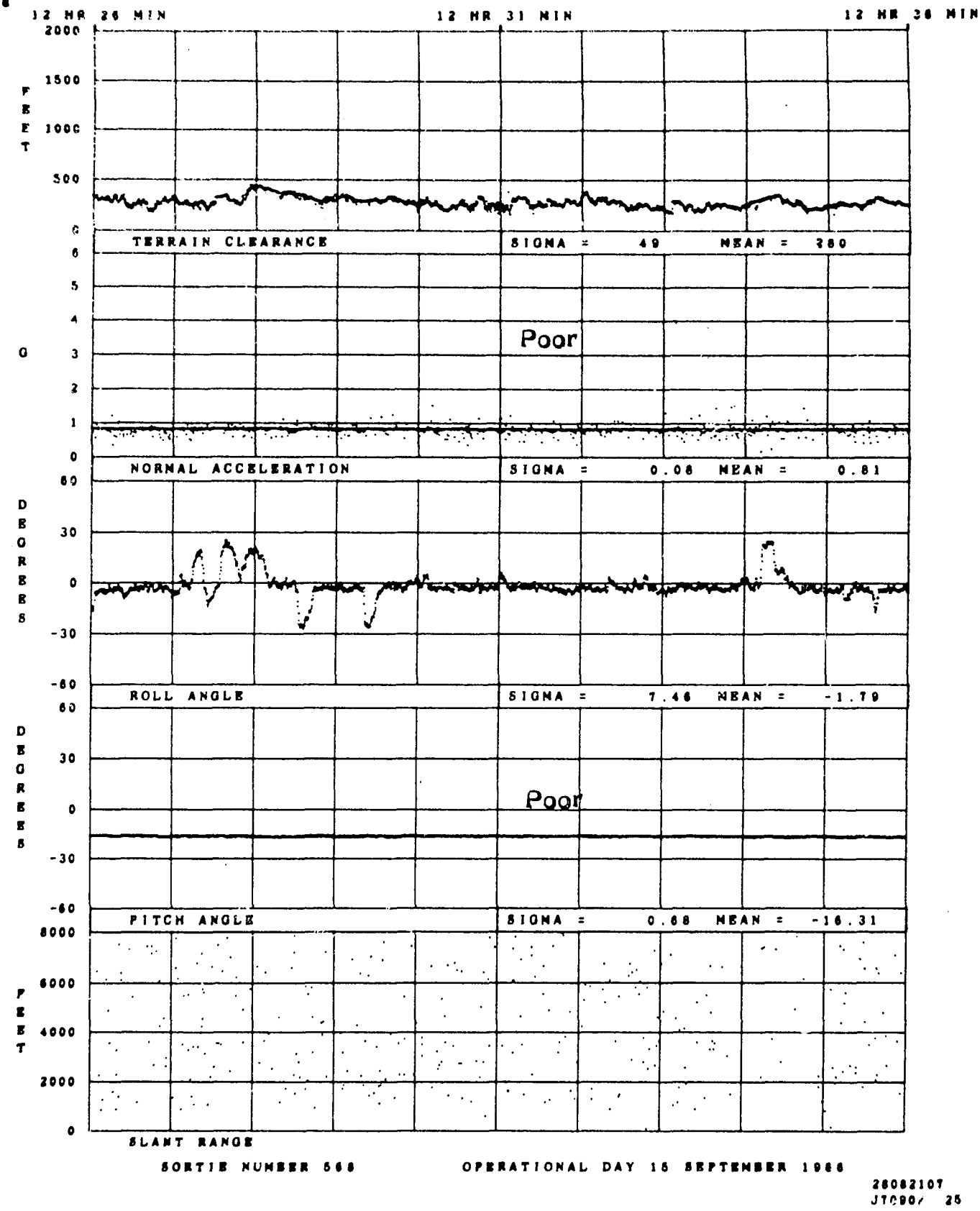


Figure 3-84 (U) Telemetered Data (Part 2 of 5)

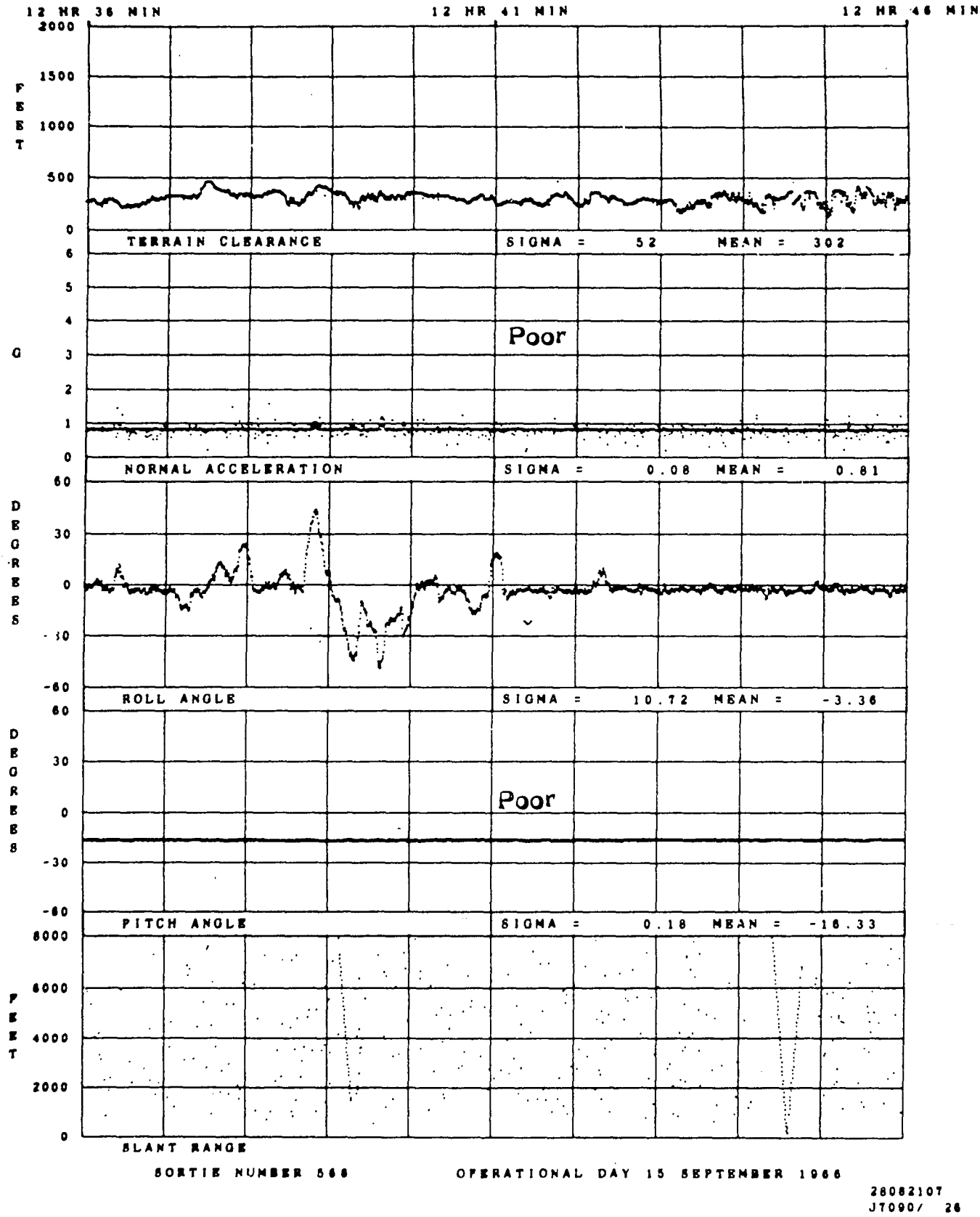


Figure 3-84 (U) Telemetered Data (Part 3 of 5)

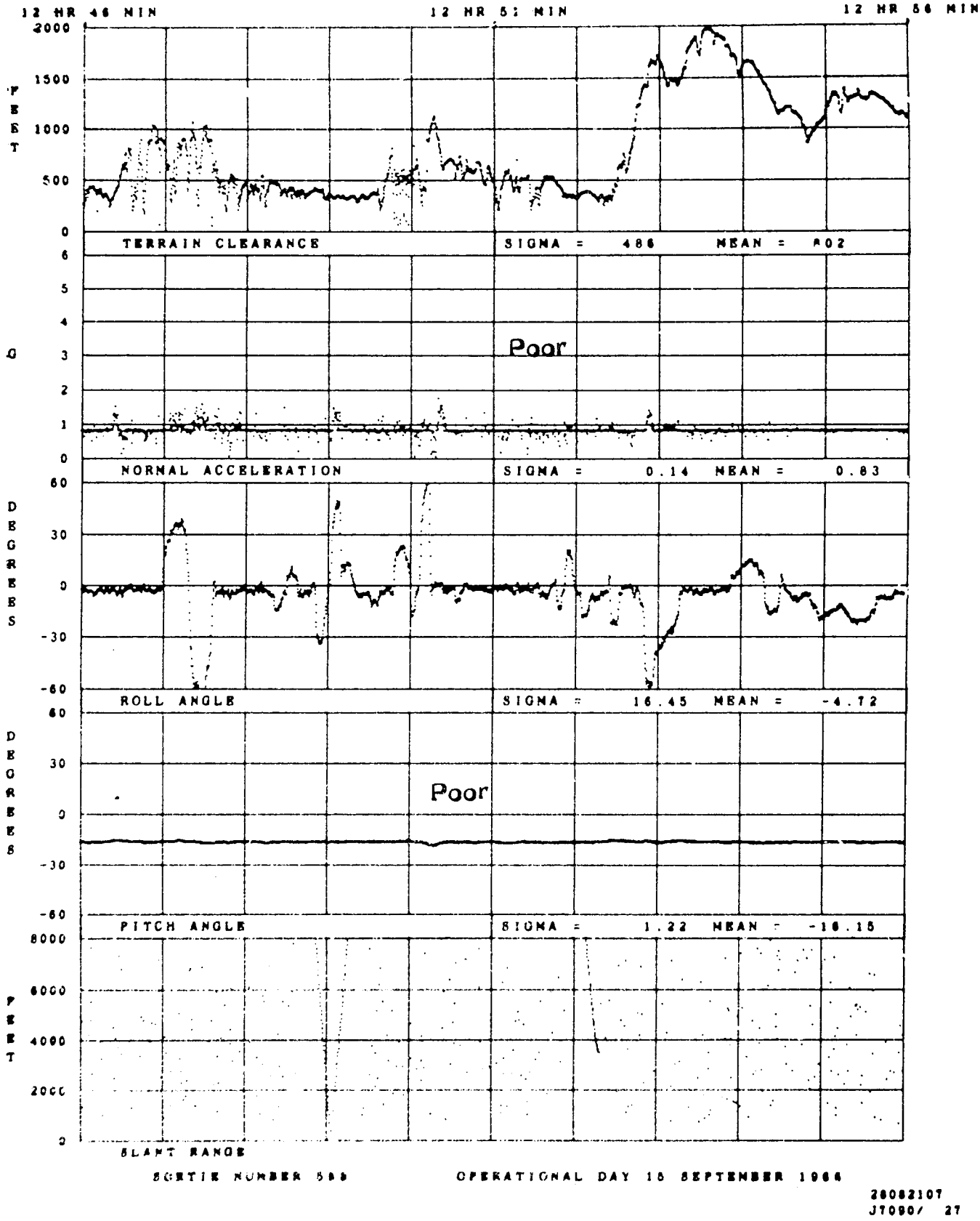


Figure 3-84 (U) Telemetered Data (Part 4 of 5)

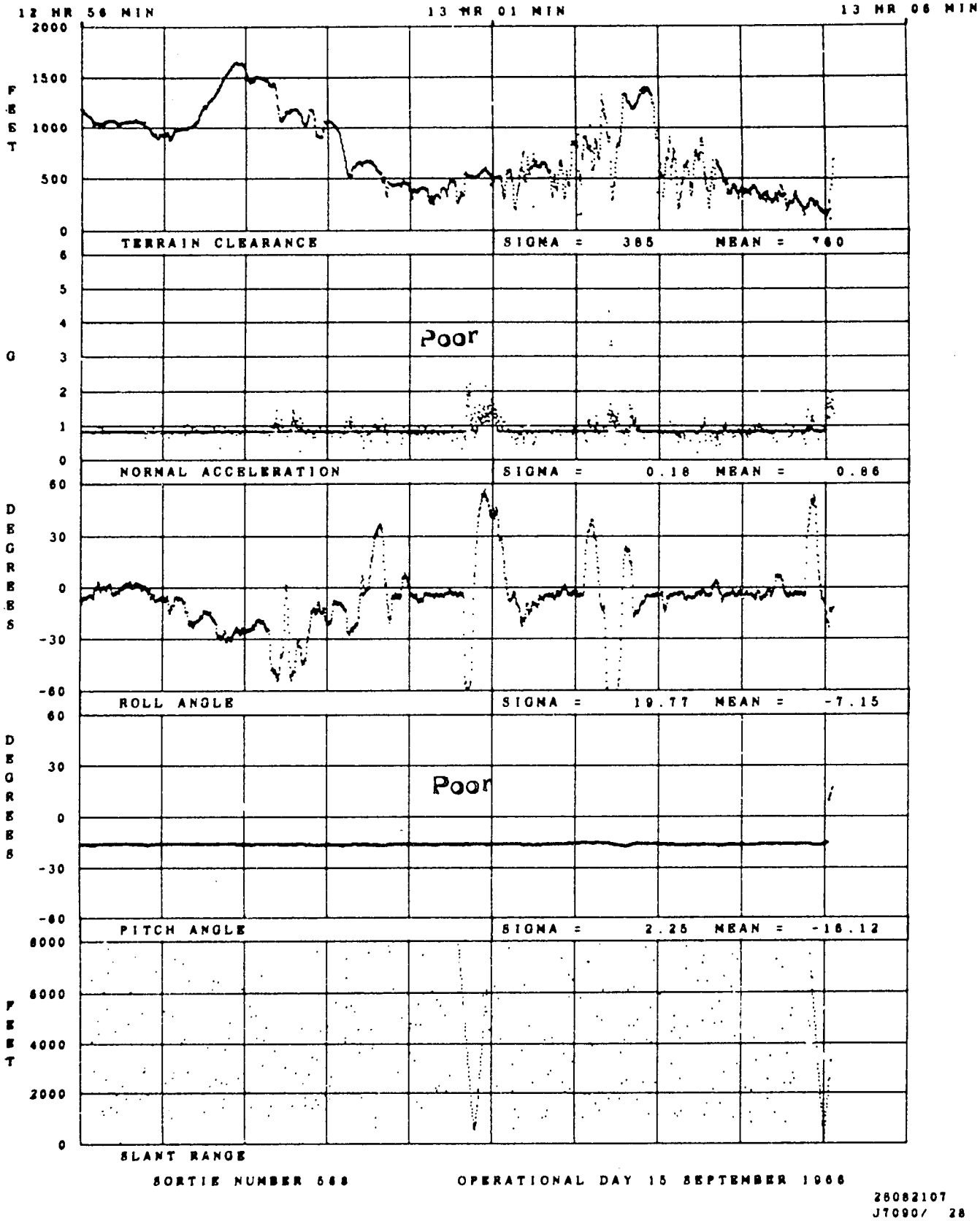
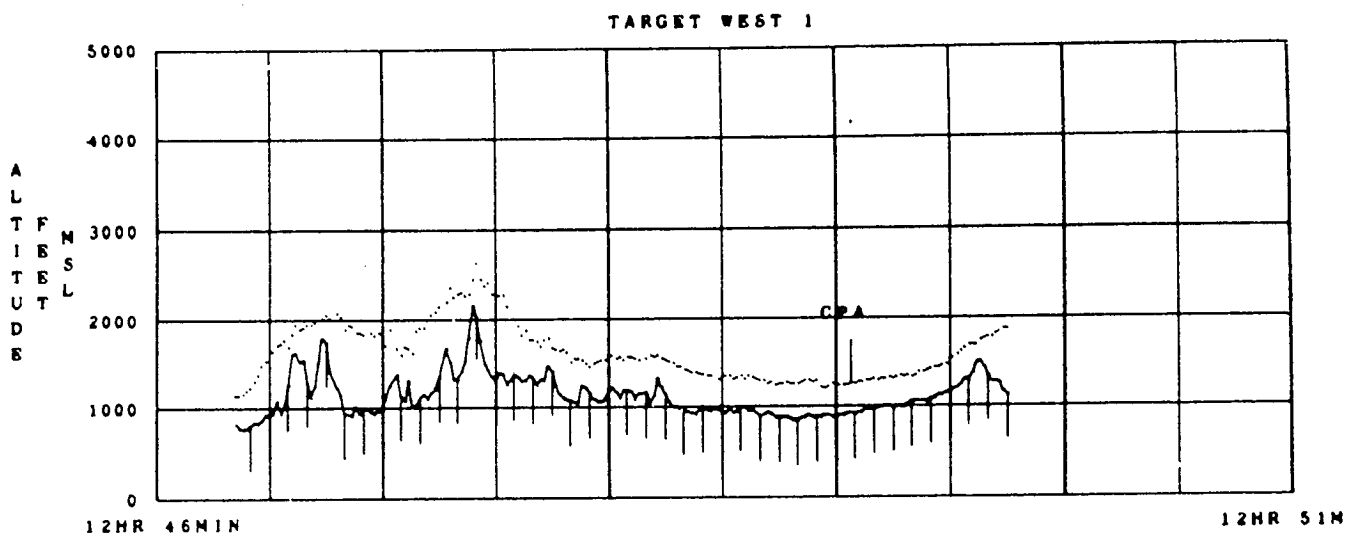
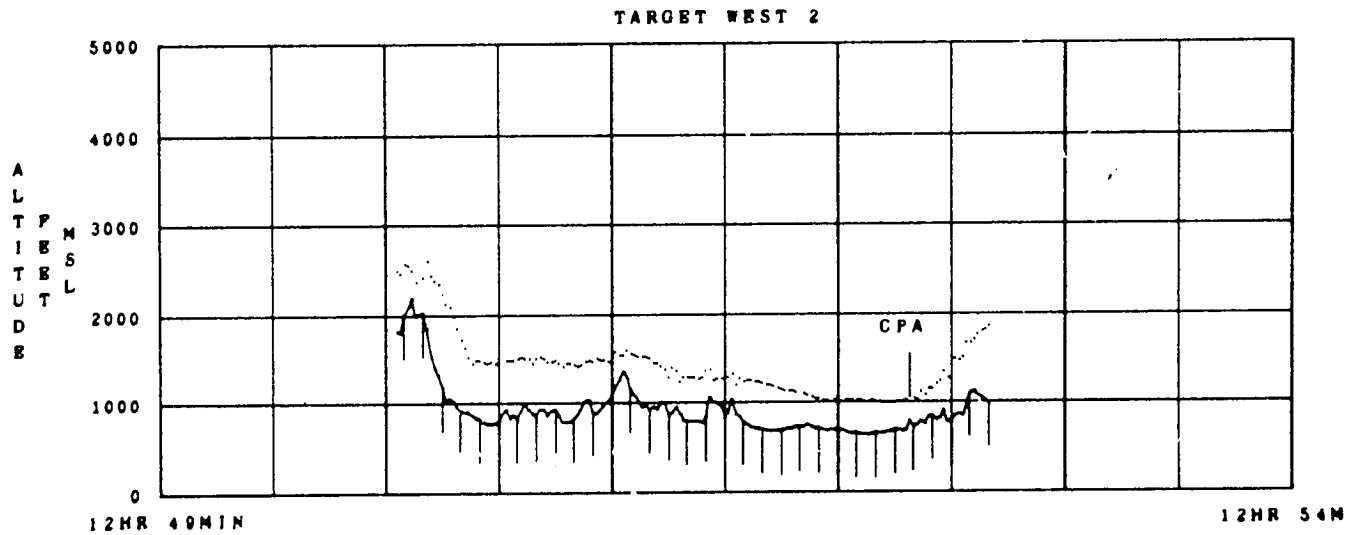


Figure 3-84 (U) Telemetered Data (Part 5 of 5)

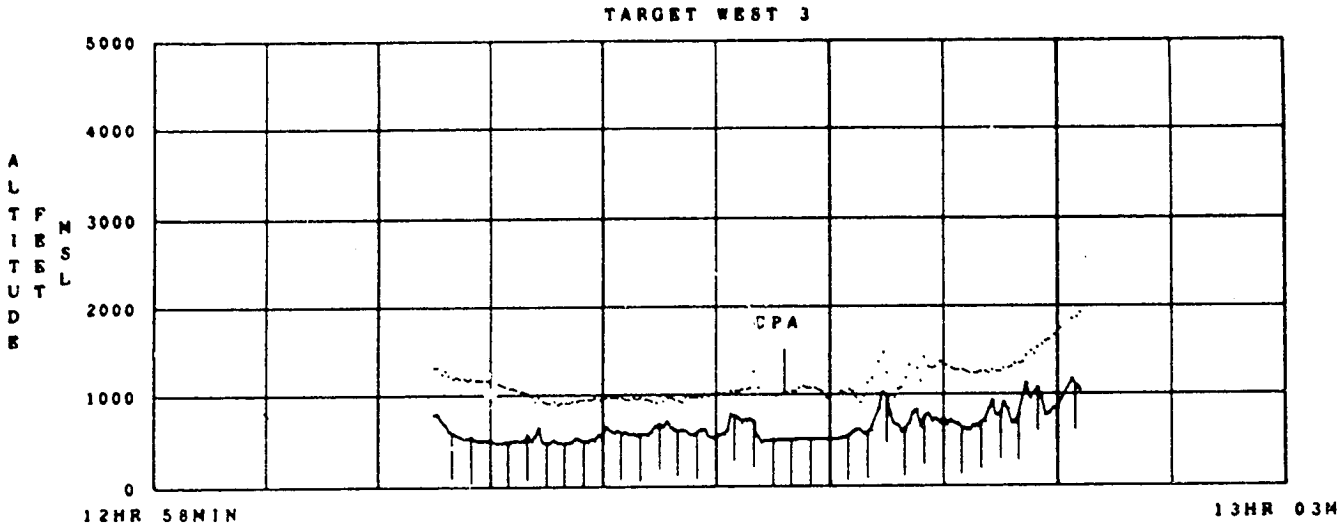


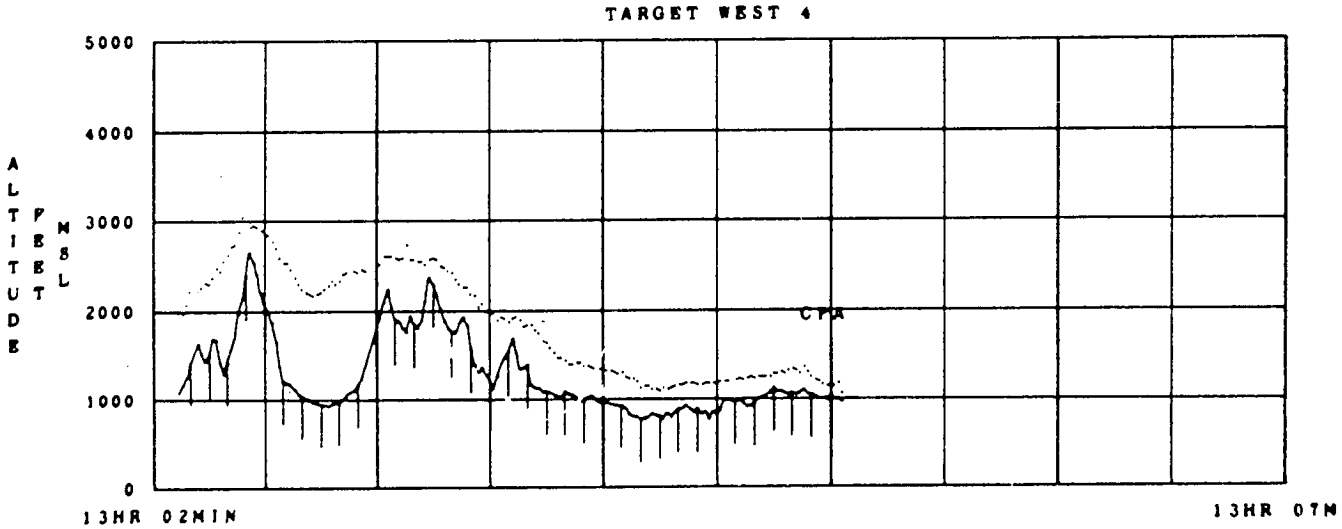


SORTIE NUMBER 568

04092505
J9138

Figure 3-85 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

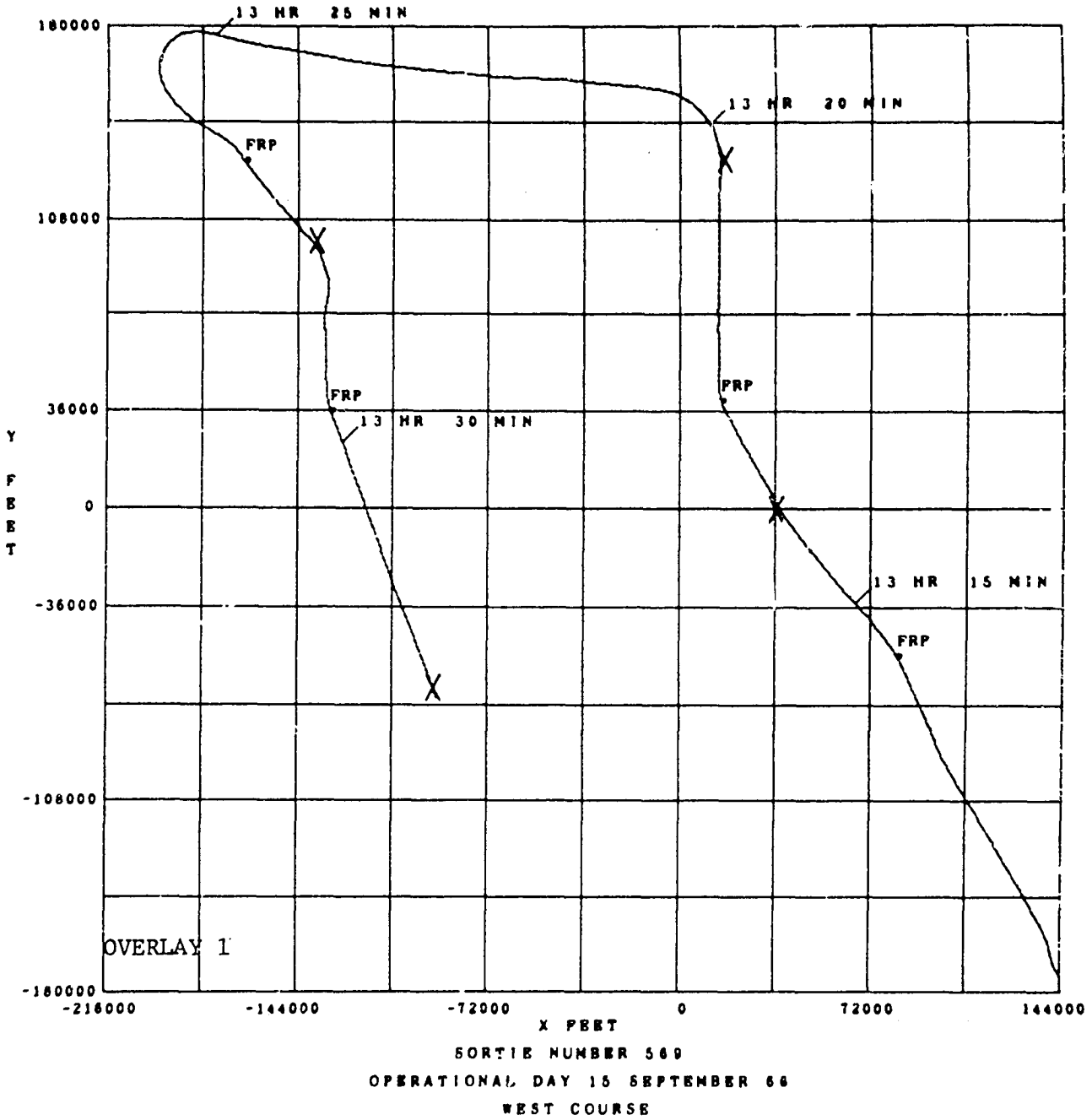




SORTIE NUMBER 568

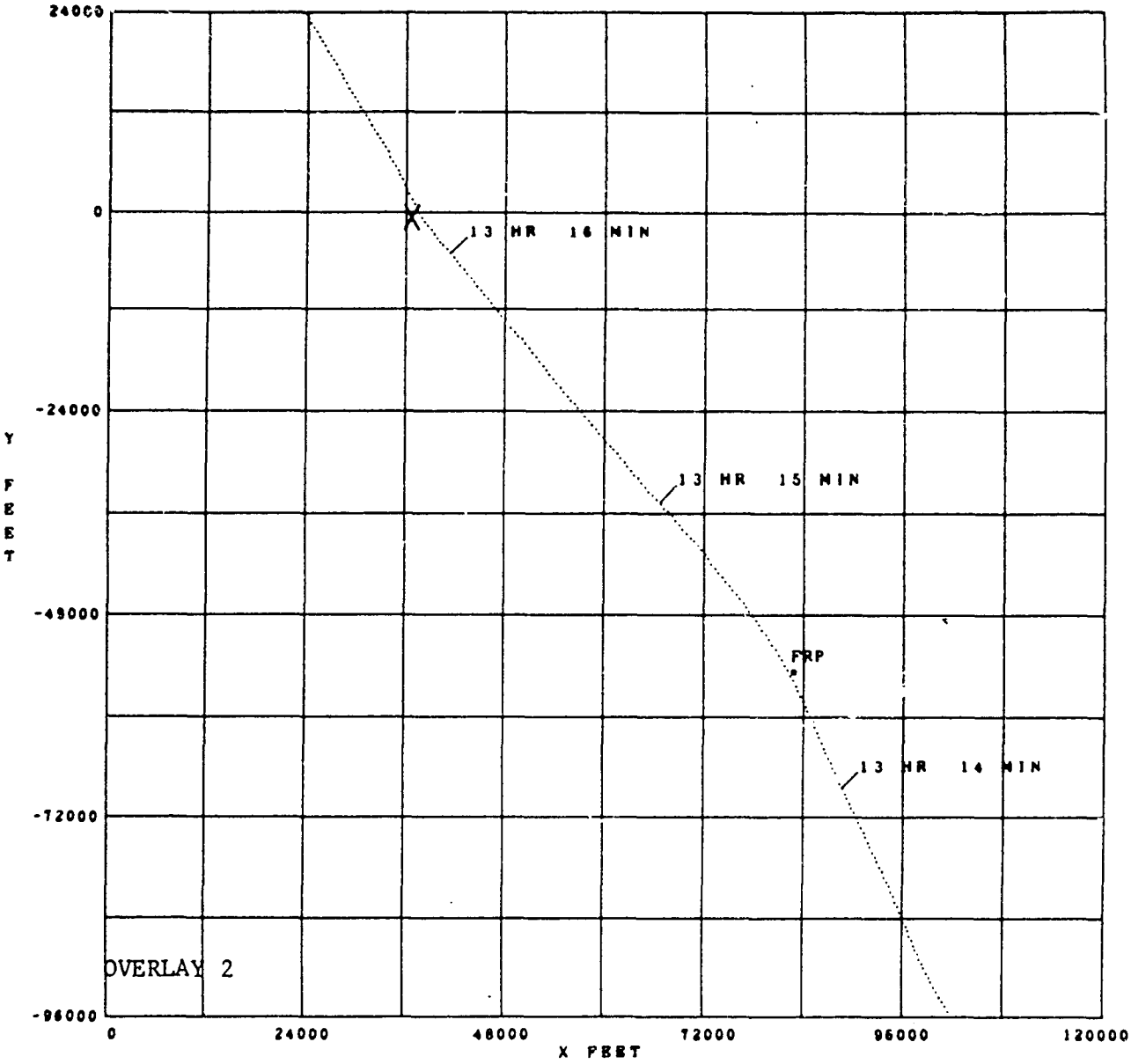
04092505
J9138

Figure 3-85 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092509
J9138 91

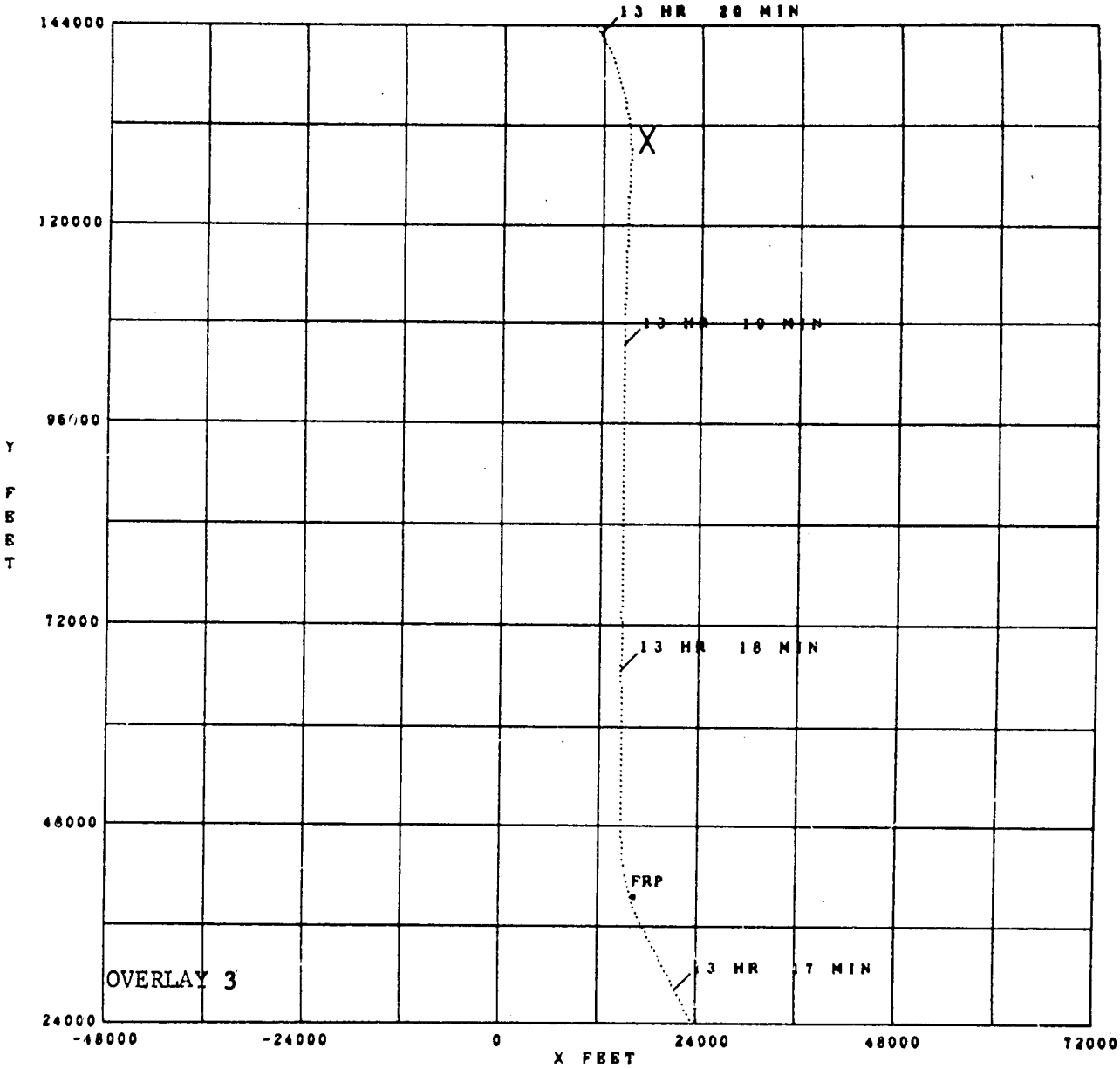
Figure 3-86 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1086 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 569
TARGET WEST 1

04092509
J9138 92

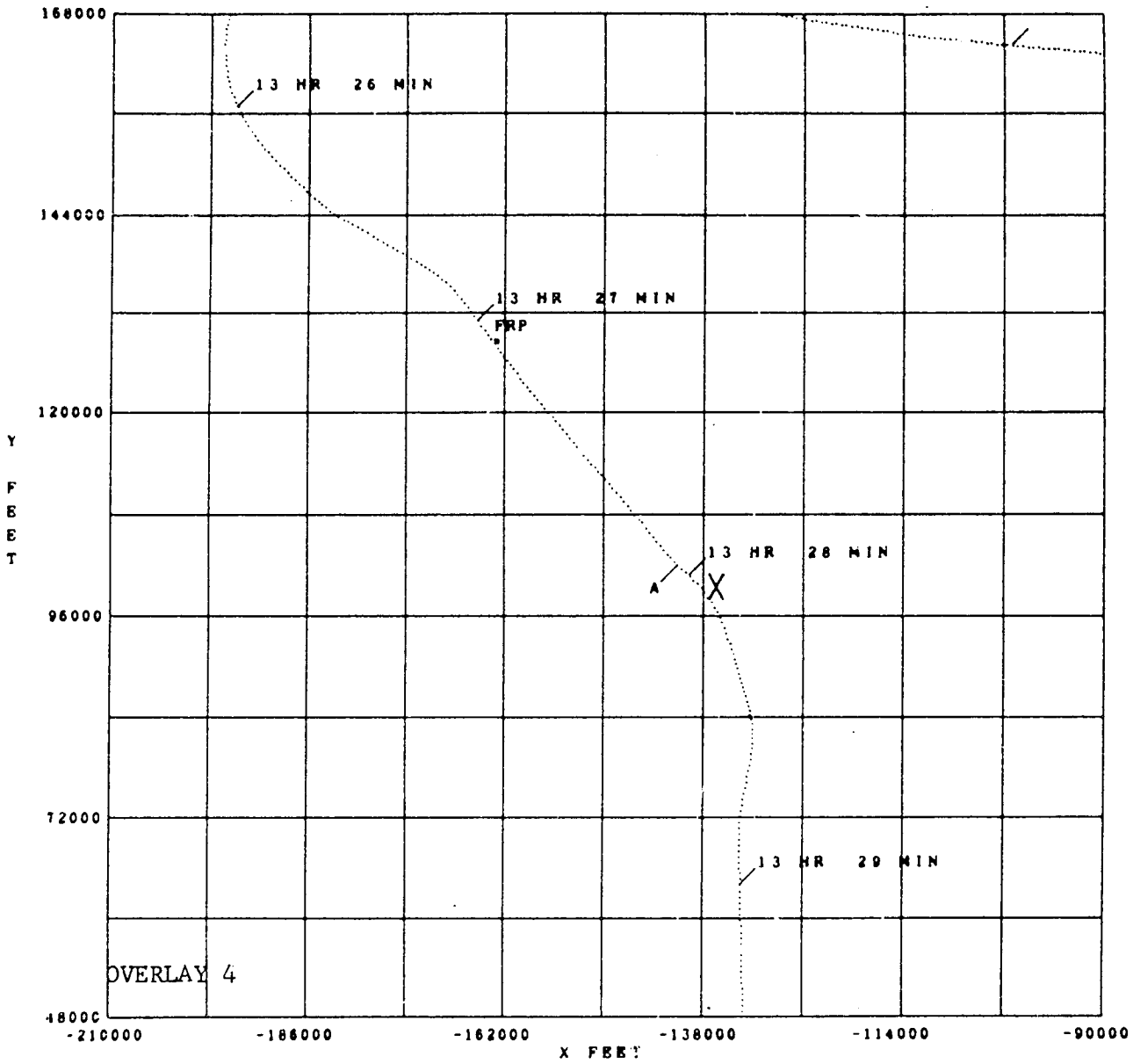
Figure 3-86 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1991 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 569
TARGET WEST 2

04092509
J9138 93

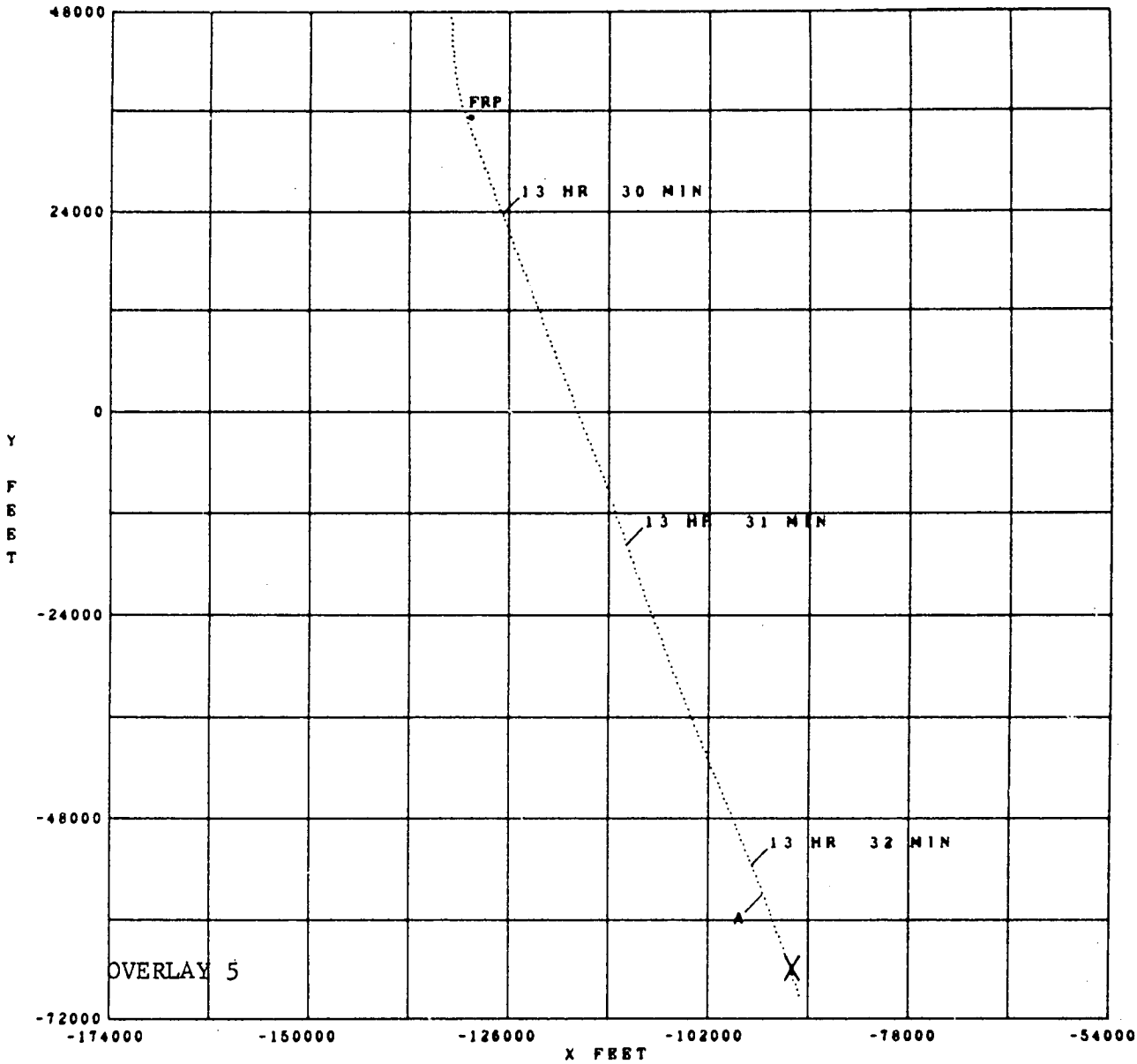
Figure 3-86 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 700 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 569
TARGET WEST 3

04092509
J9138 94

Figure 3-86 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 260 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 569
TARGET WEST 4

04092509
J9138 95

Figure 3-86 (U) Aircraft Position Data (Part 5 of 5)

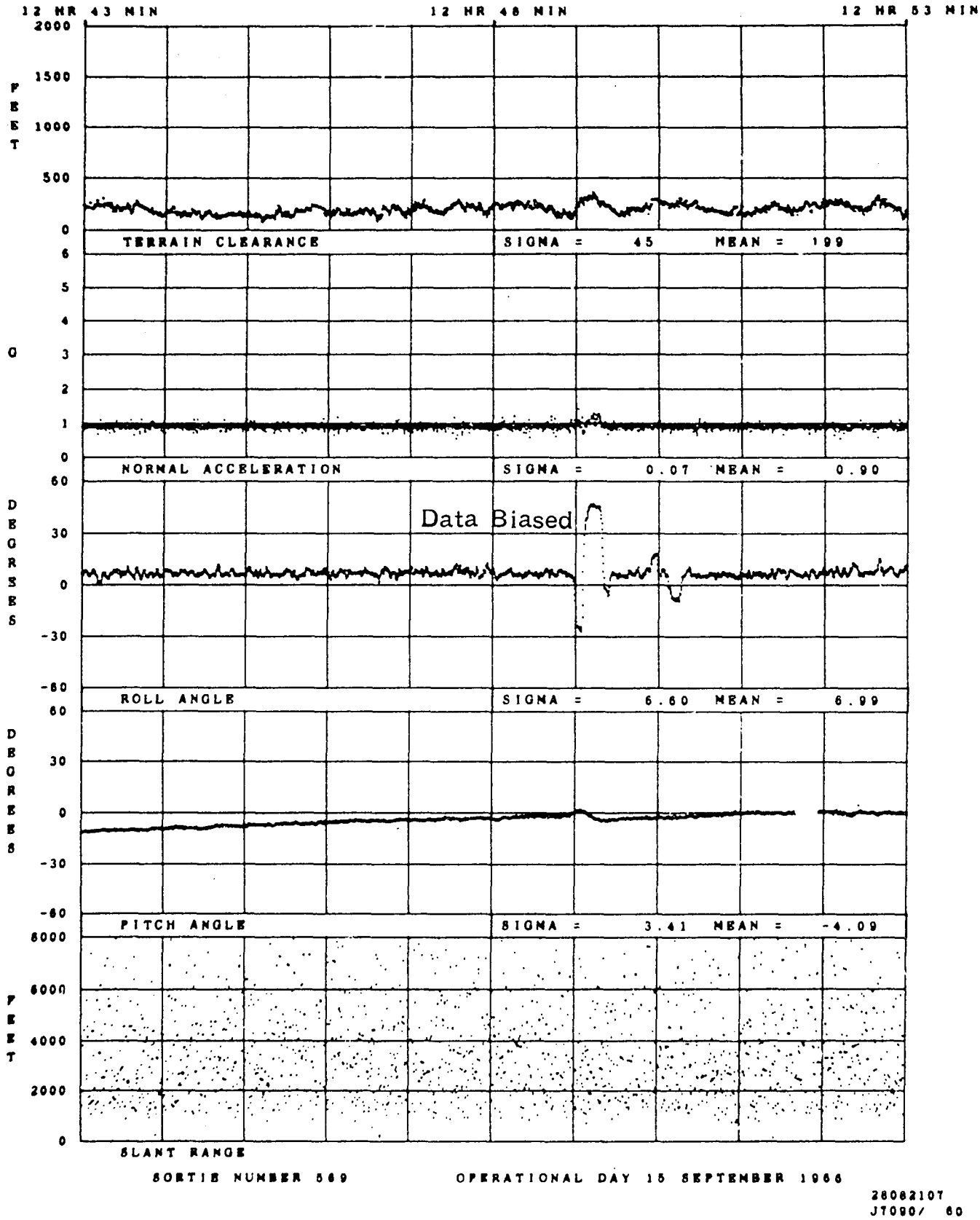


Figure 3-87 (U) Telemetered Data (Part 1 of 5)

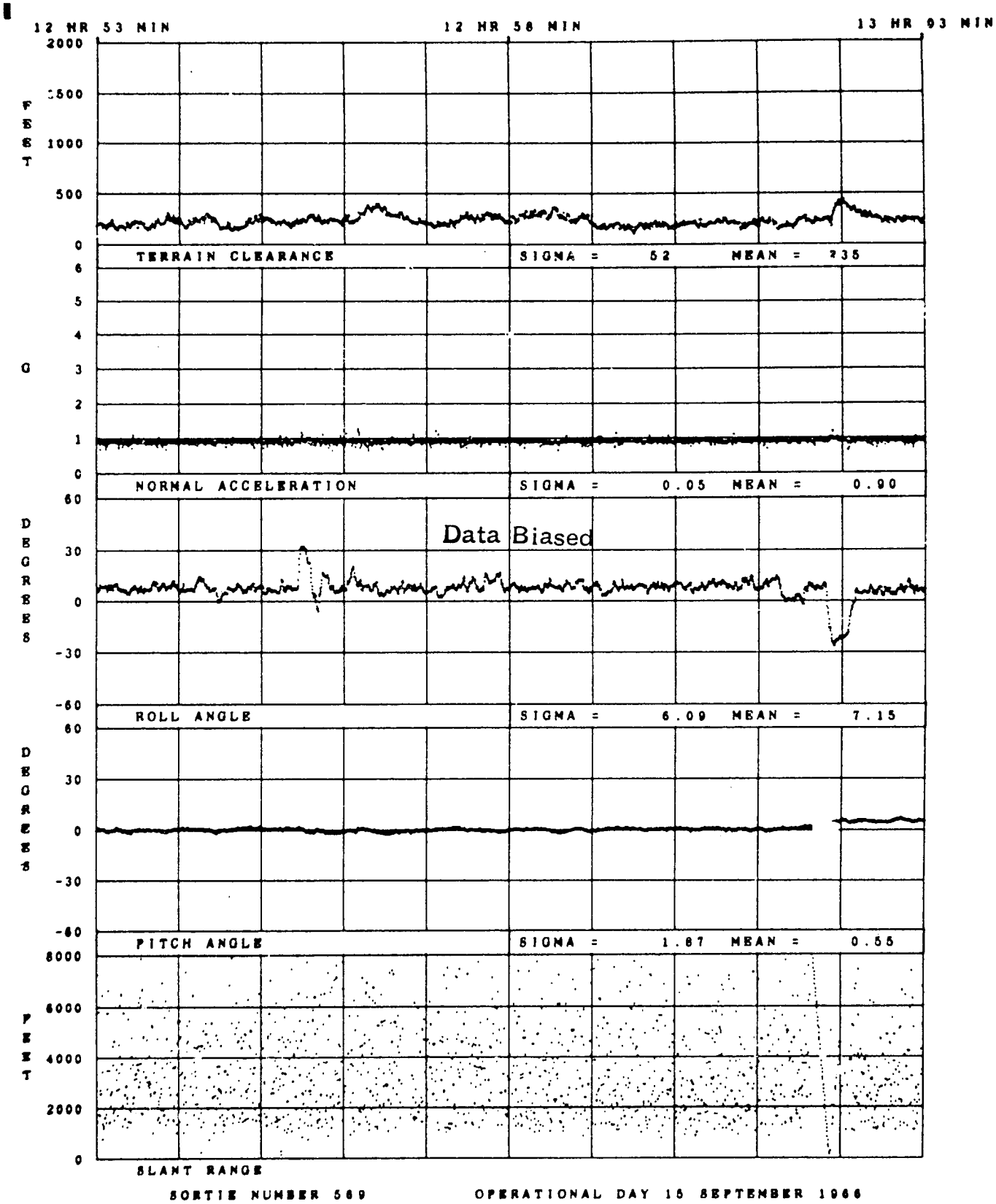


Figure 3-87 (U) Telemetered Data (Part 2 of 5)

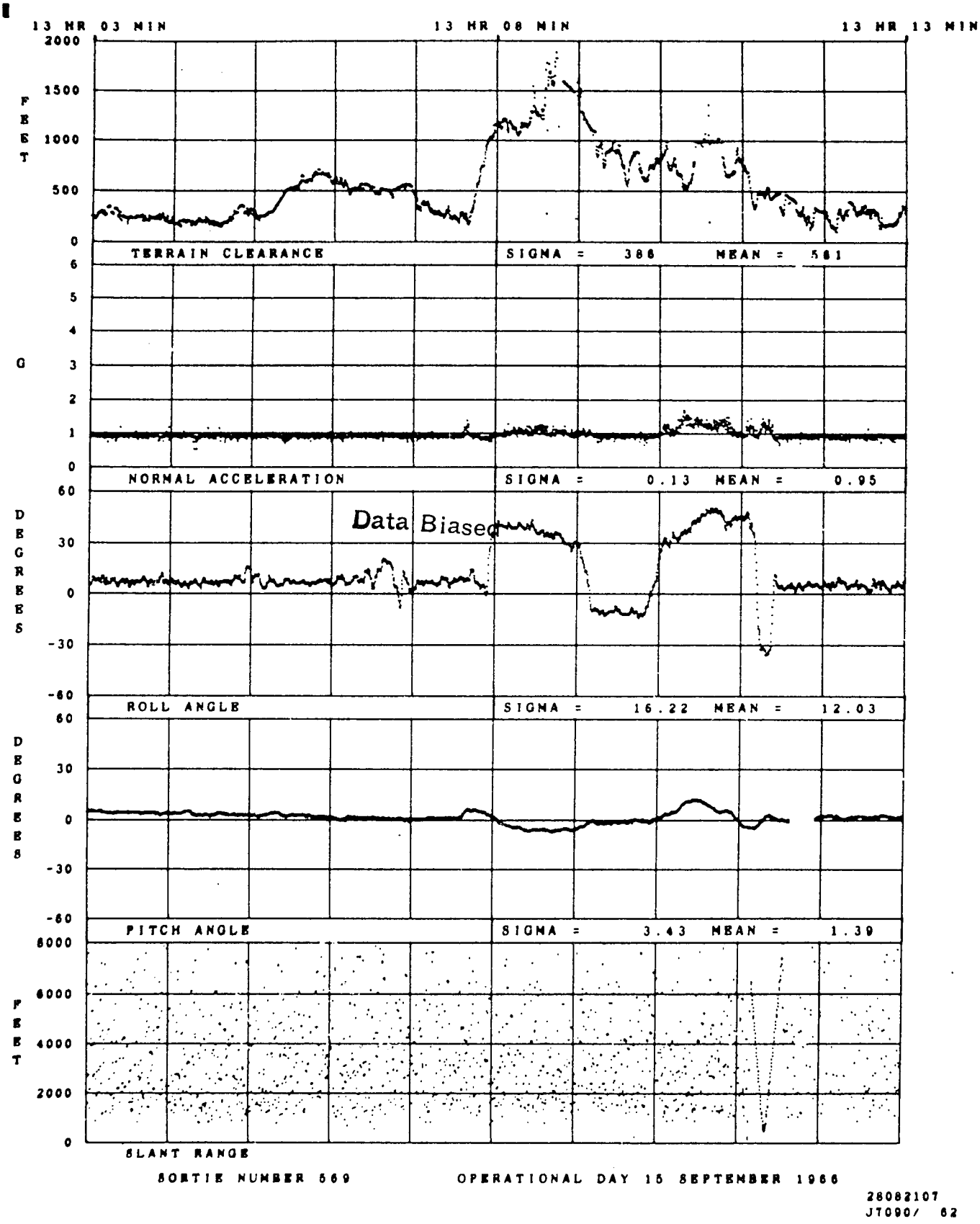


Figure 3-87 (U) Telemetered Data (Part 3 of 5)

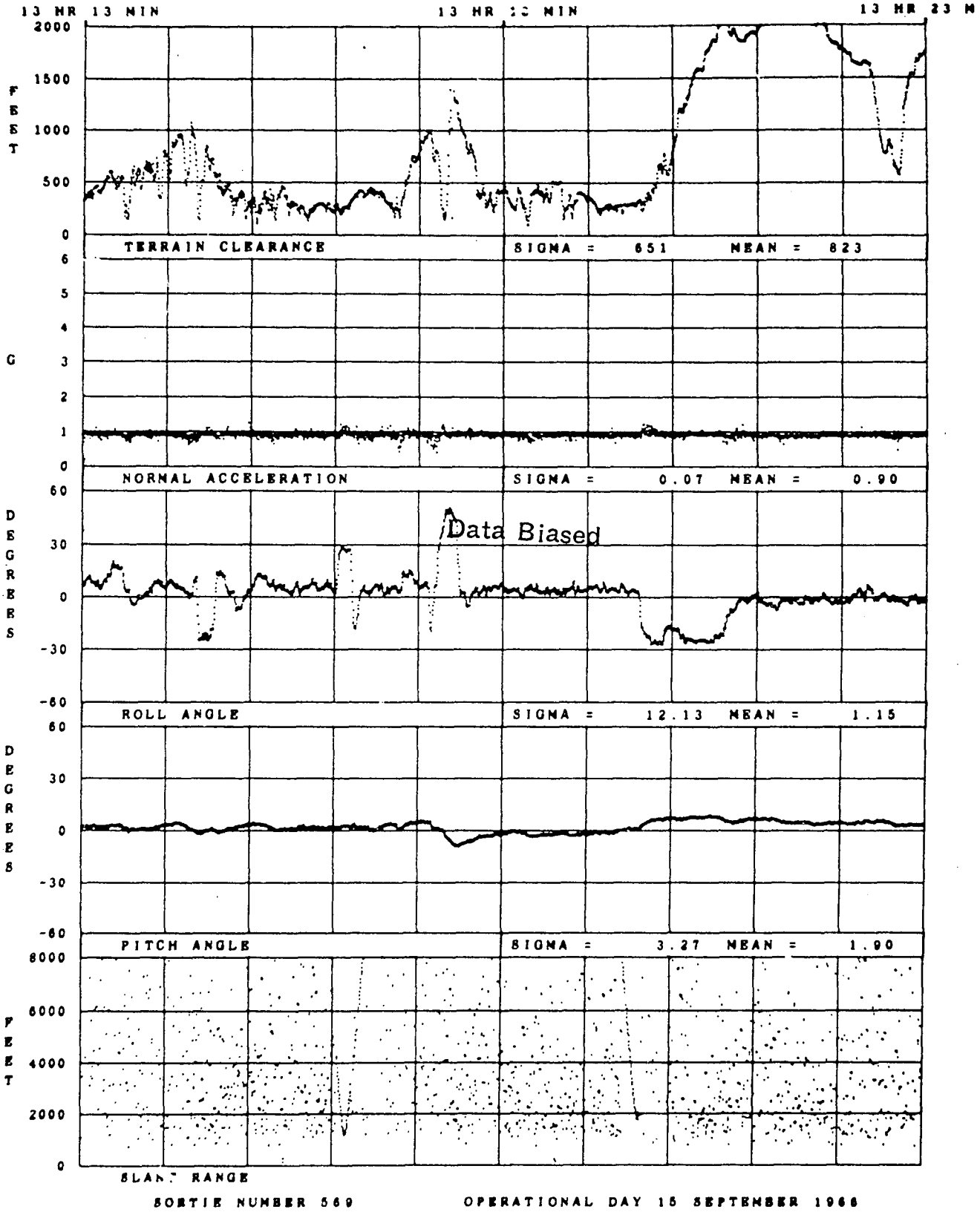


Figure 3-87 (U) Telemetered Data (Part 4 of 5)

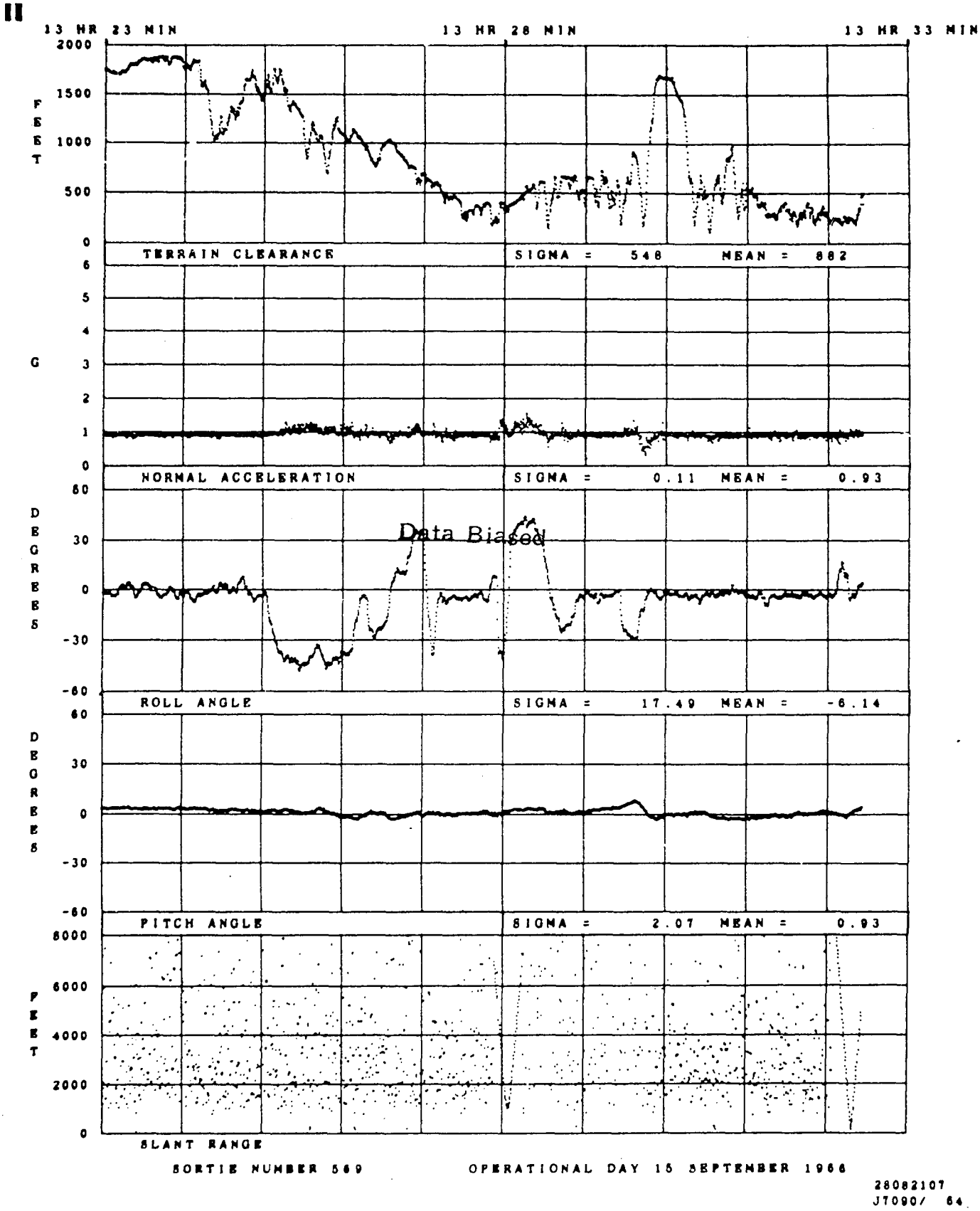
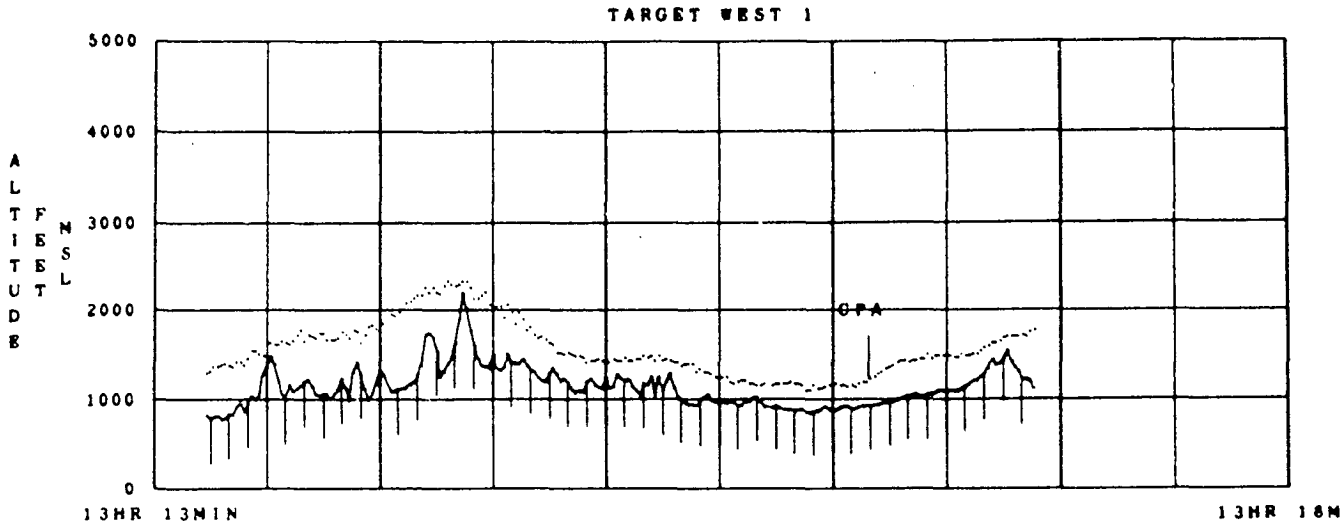
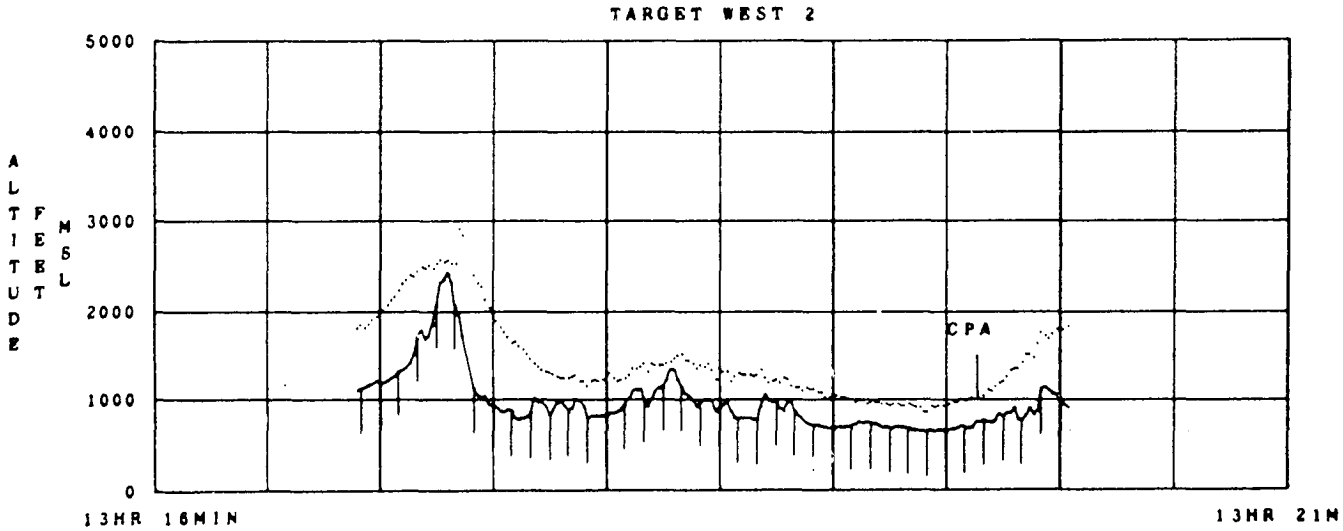


Figure 3-87 (U) Telemetered Data (Part 5 of 5)

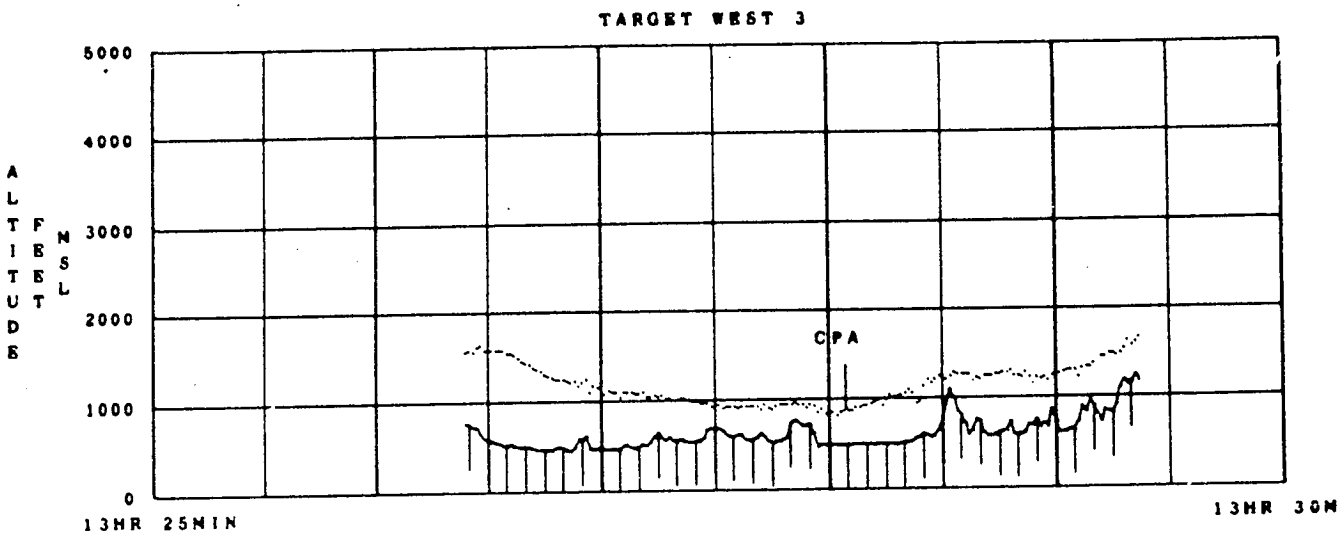


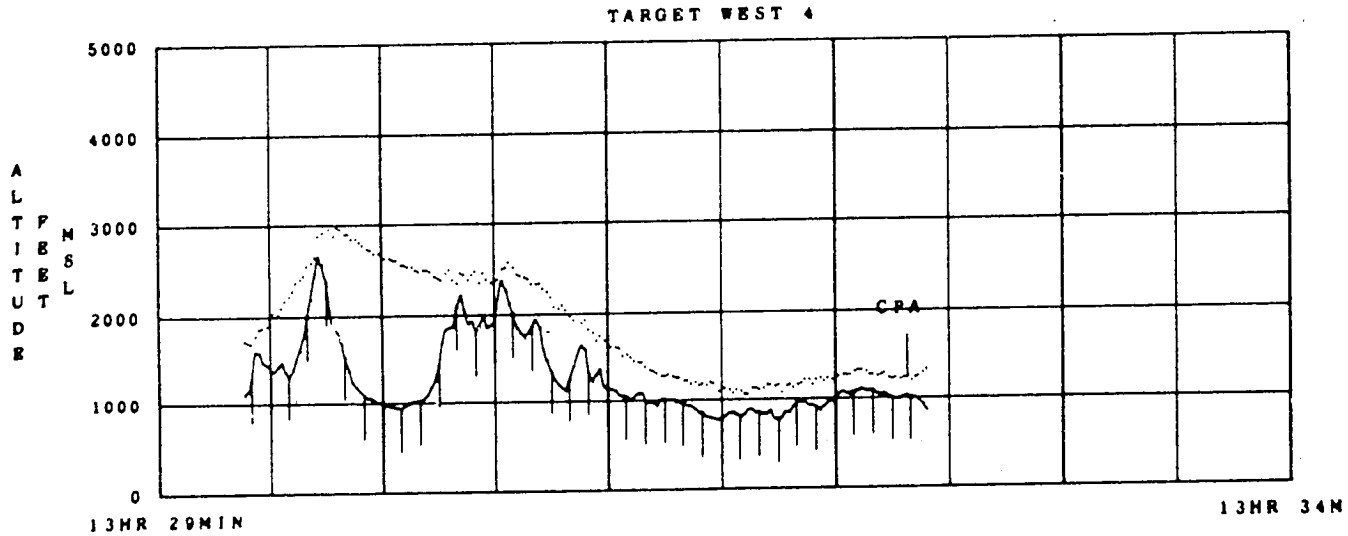


SORTIE NUMBER 569

04092509
J9138

Figure 3-88 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

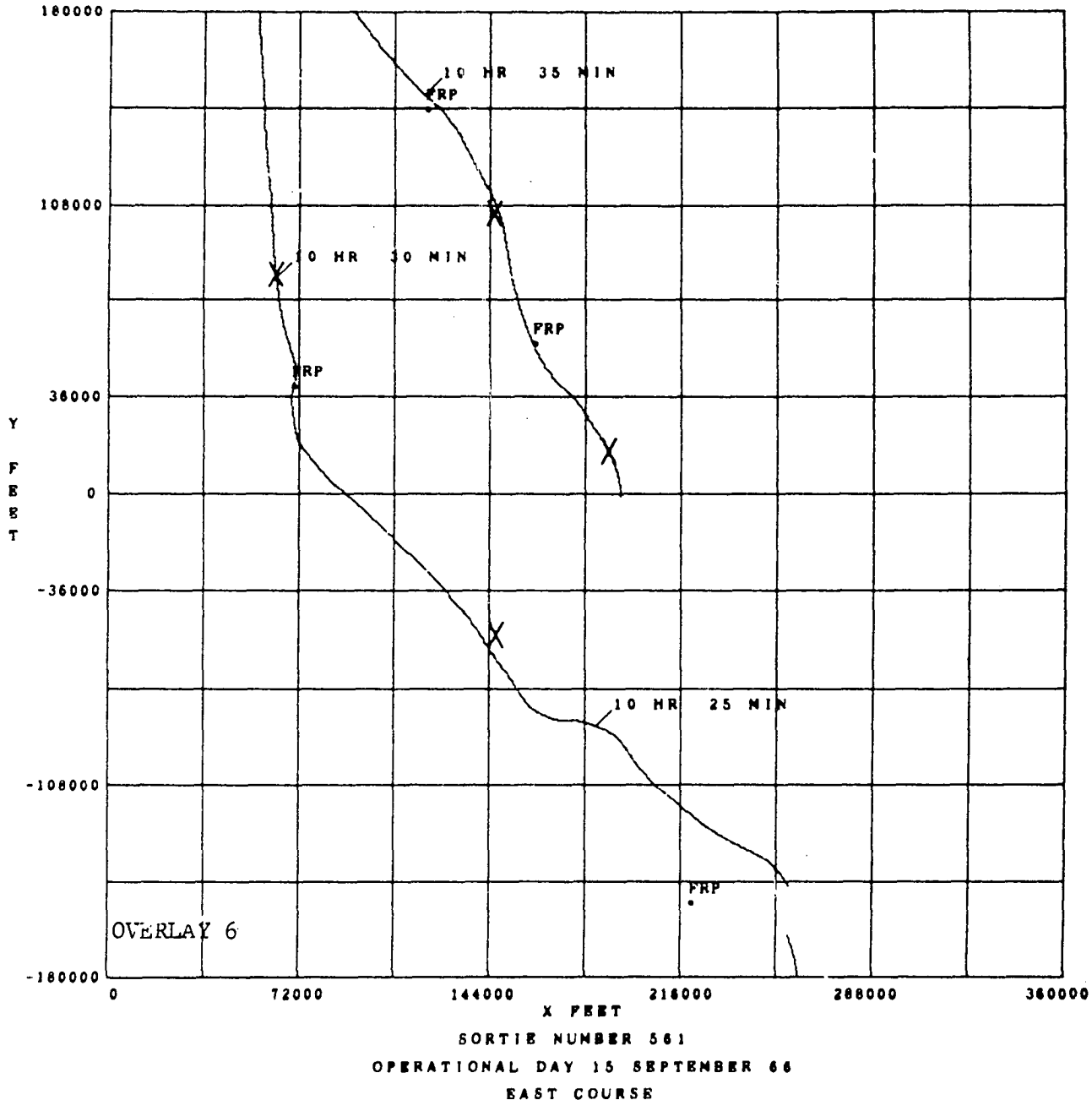




SORTIE NUMBER 569

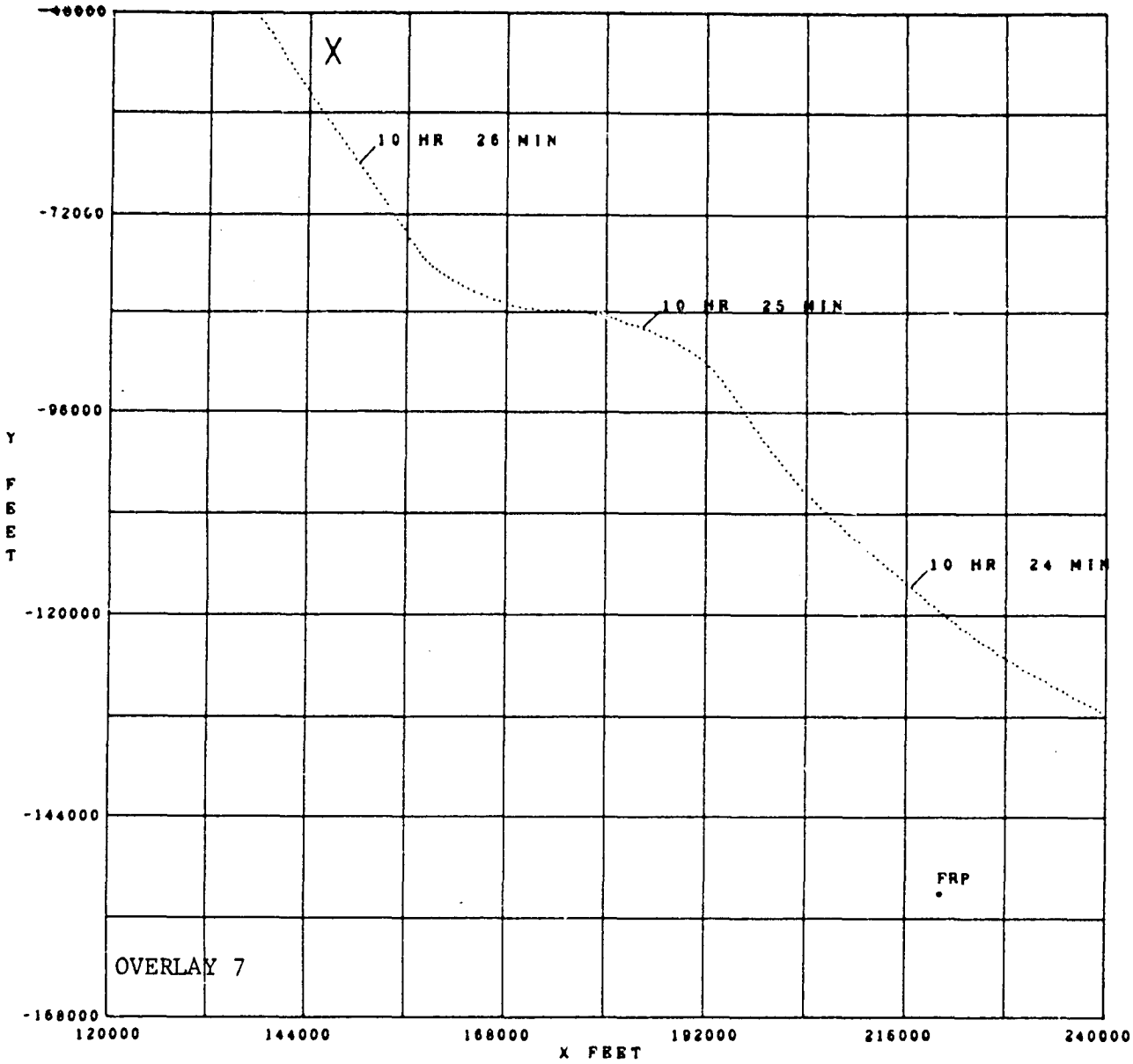
04092509
J9138

Figure 3-88 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092507
J9138 75

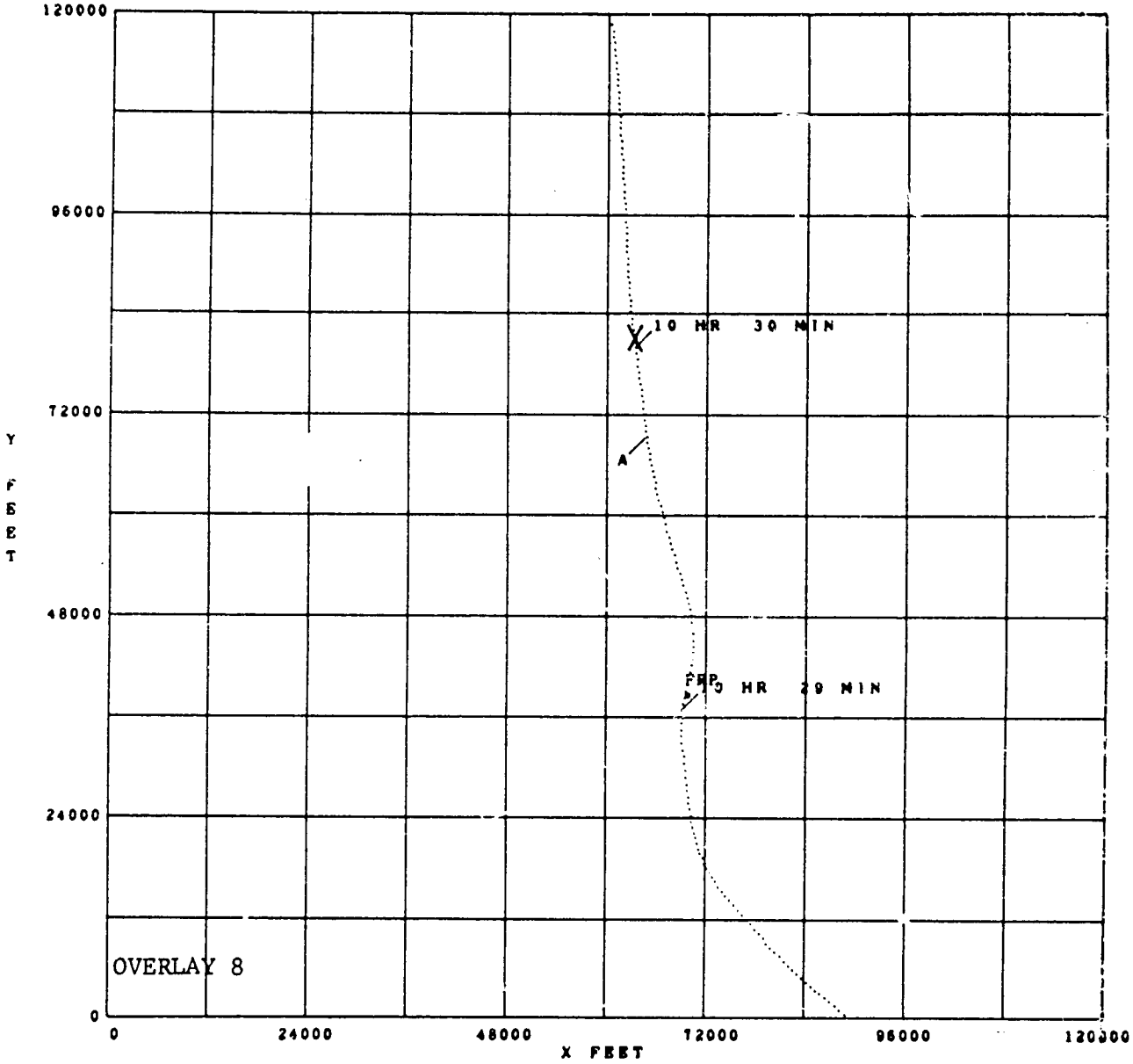
Figure 3-89 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 5032 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 561
TARGET EAST 1

04092507
J9138 76

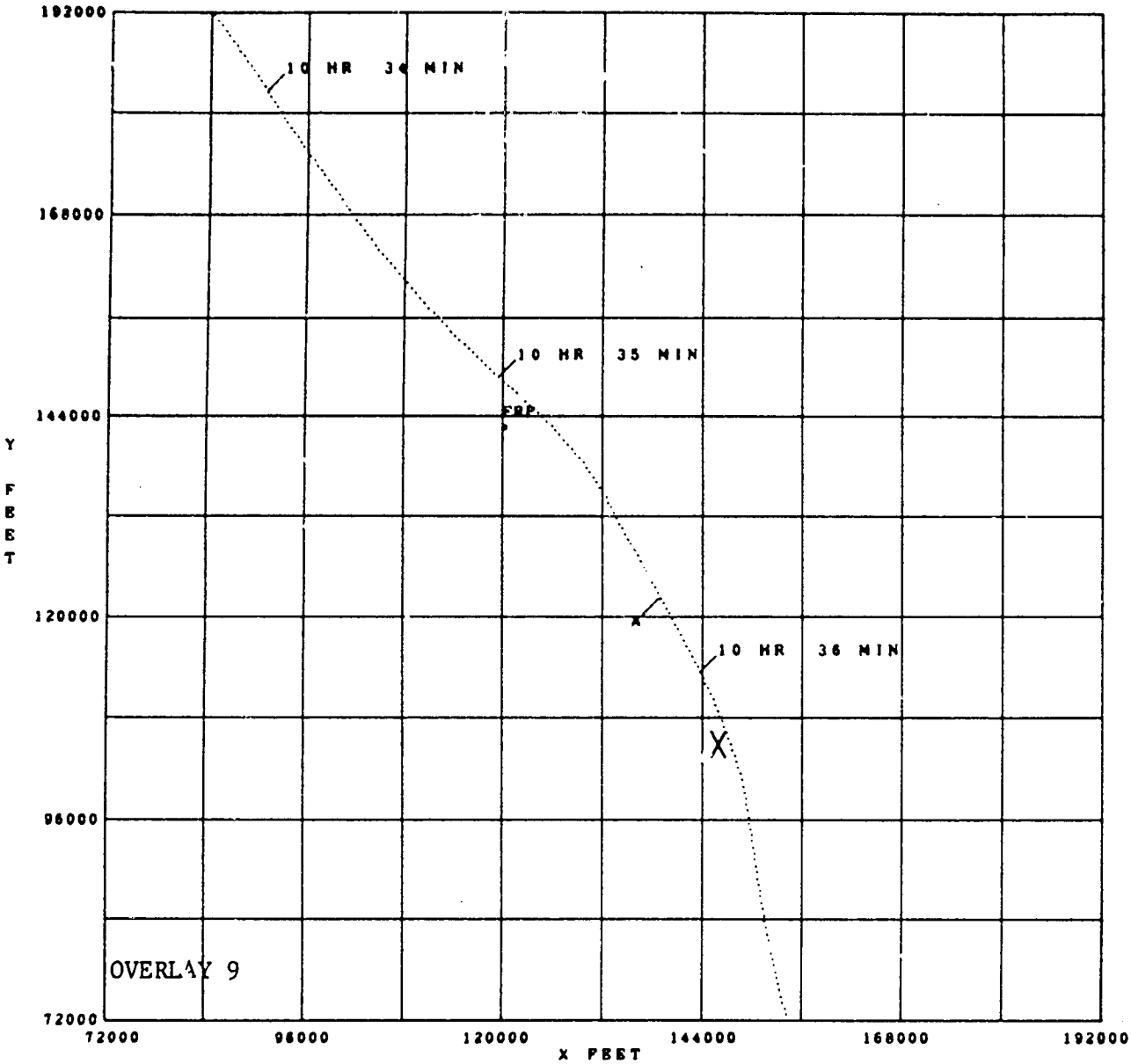
Figure 3-89 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 47 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 561
TARGET EAST 2

04092'08
J9138 T1

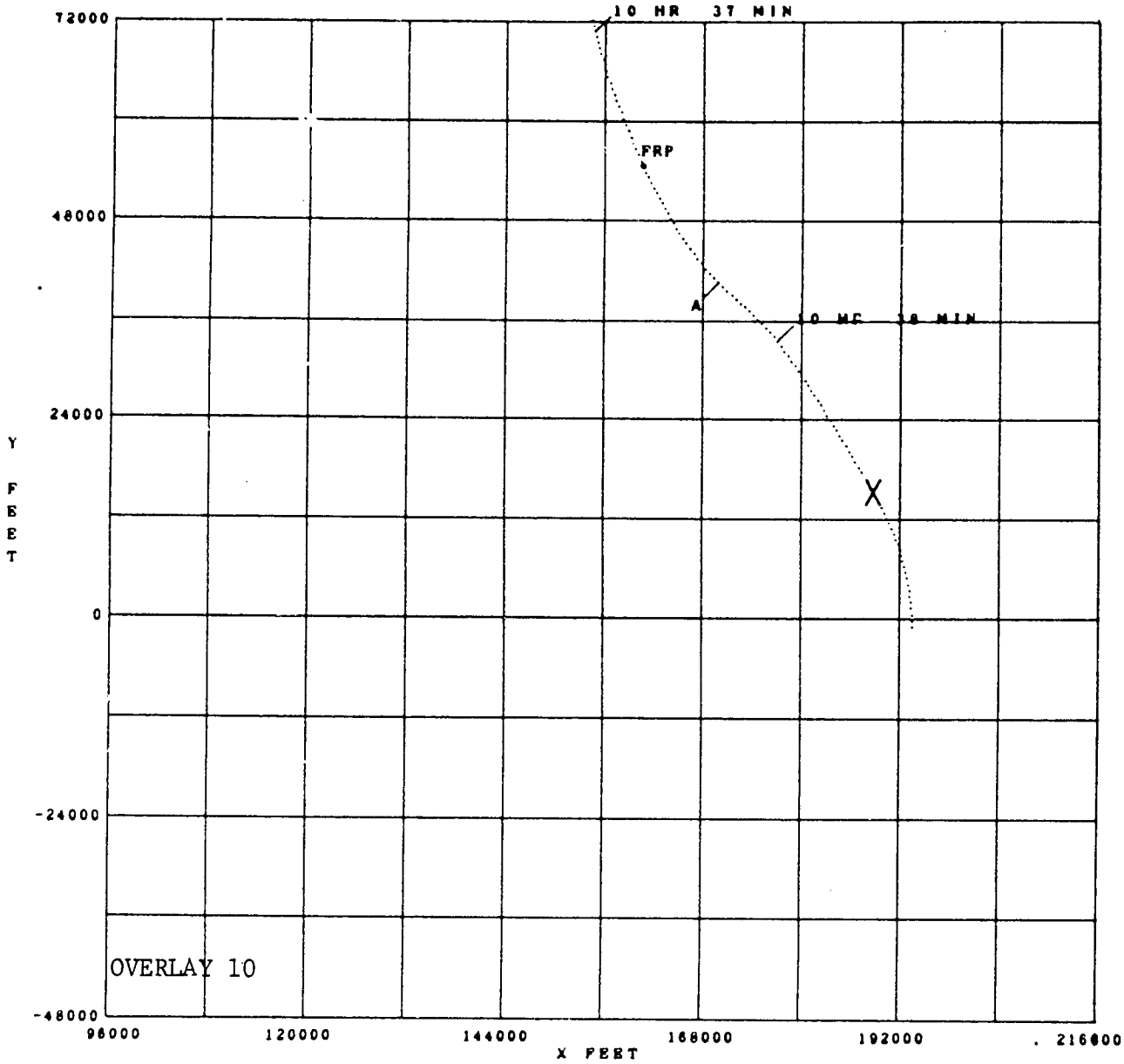
Figure 3-89 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1451 FEET
MINIMUM GROUND DISTANCE QUALIFIER = ONE
SORTIE NUMBER 561
TARGET EAST 3

04092508
J9138 78

Figure 3-89 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 37 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 561
TARGET EAST 4

04092508
J9138 78

Figure 3-89 (U) Aircraft Position Data (Part 5 of 5)

UNCLASSIFIED

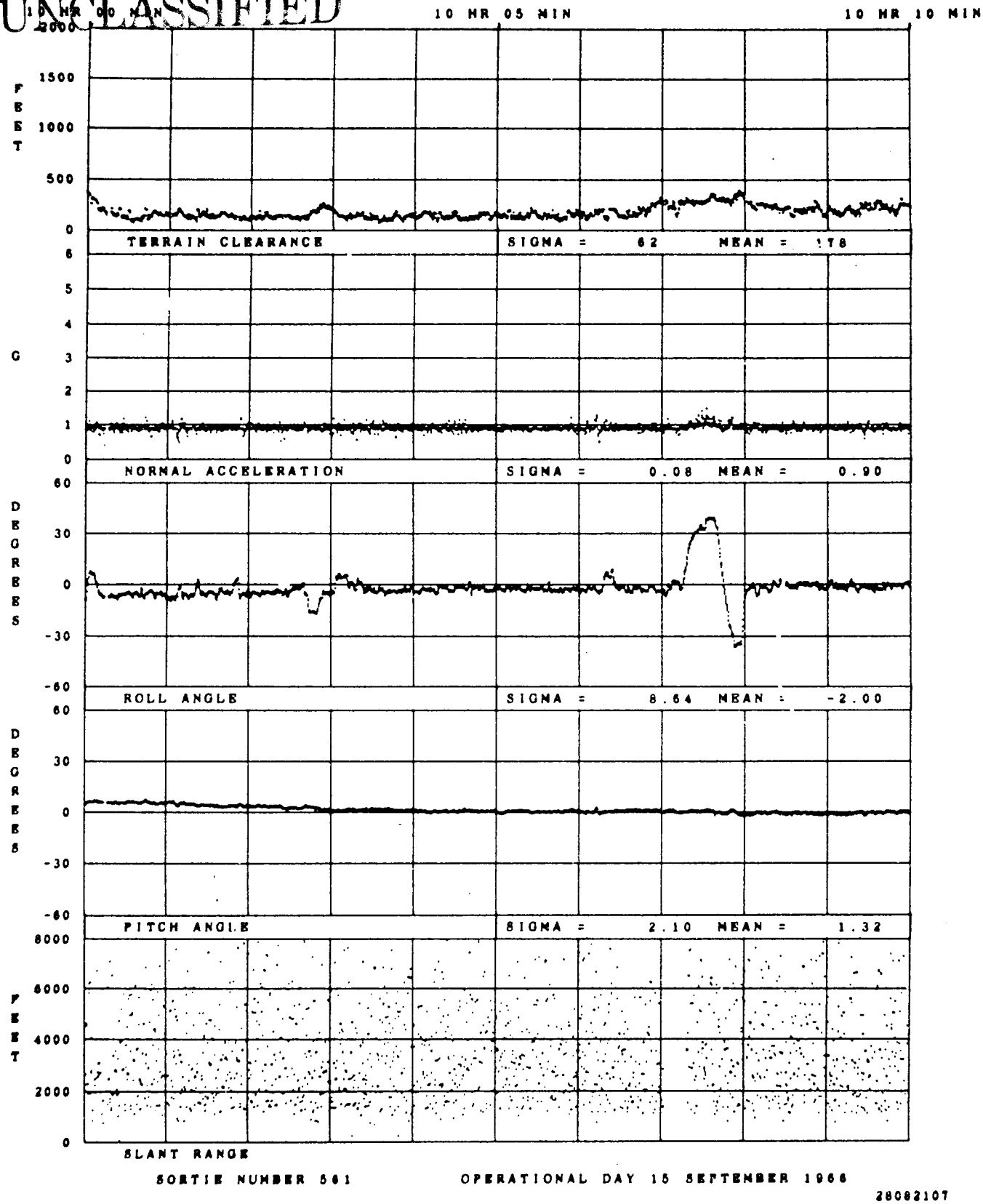


Figure 3-90 (U) Telemetered Data (Part 1 of 4)

UNCLASSIFIED

UNCLASSIFIED

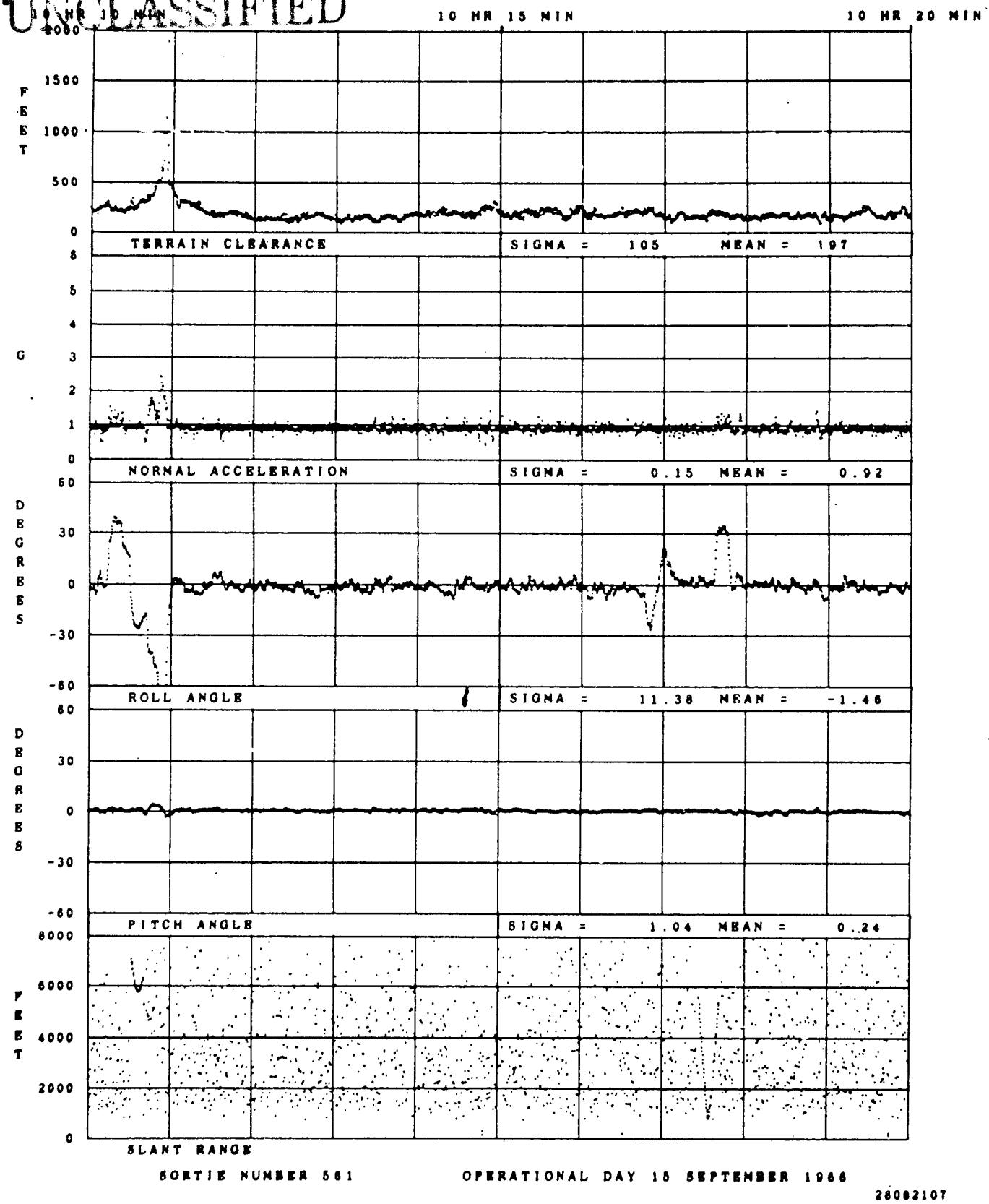


Figure 3-90 (U) Telemetered Data (Part 2 of 4)

UNCLASSIFIED

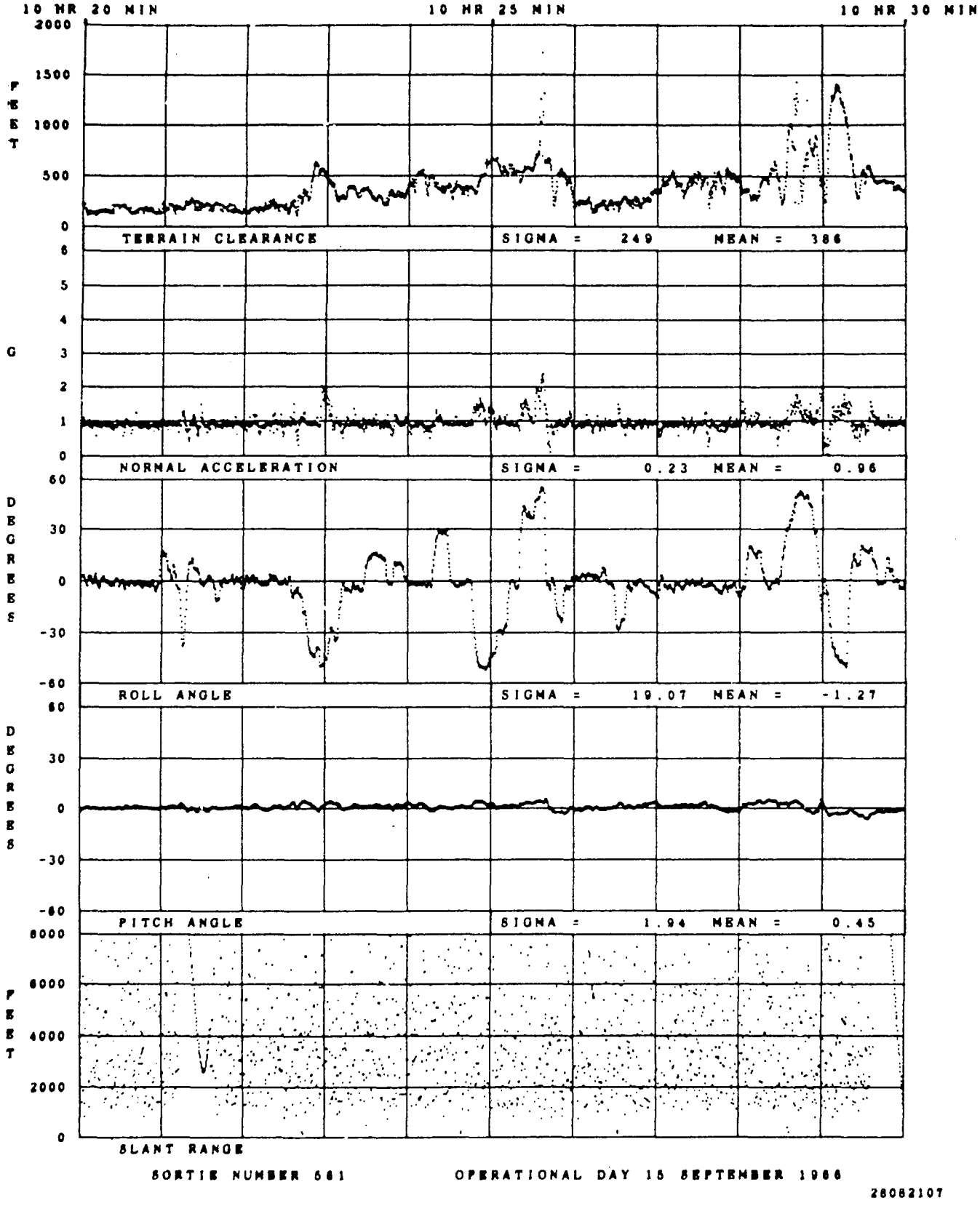


Figure 3-90 (U) Telemetered Data (Part 3 of 4)

UNCLASSIFIED

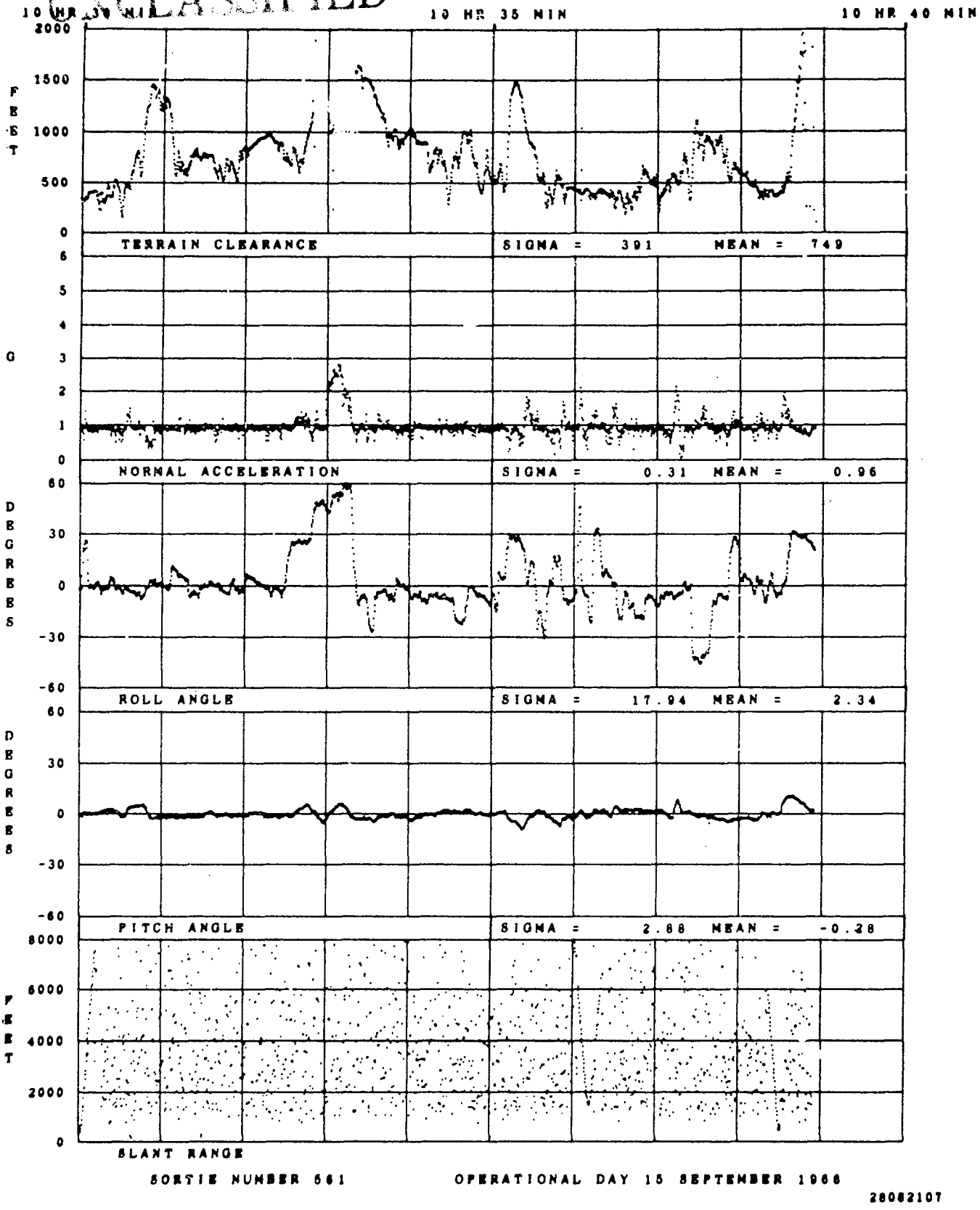
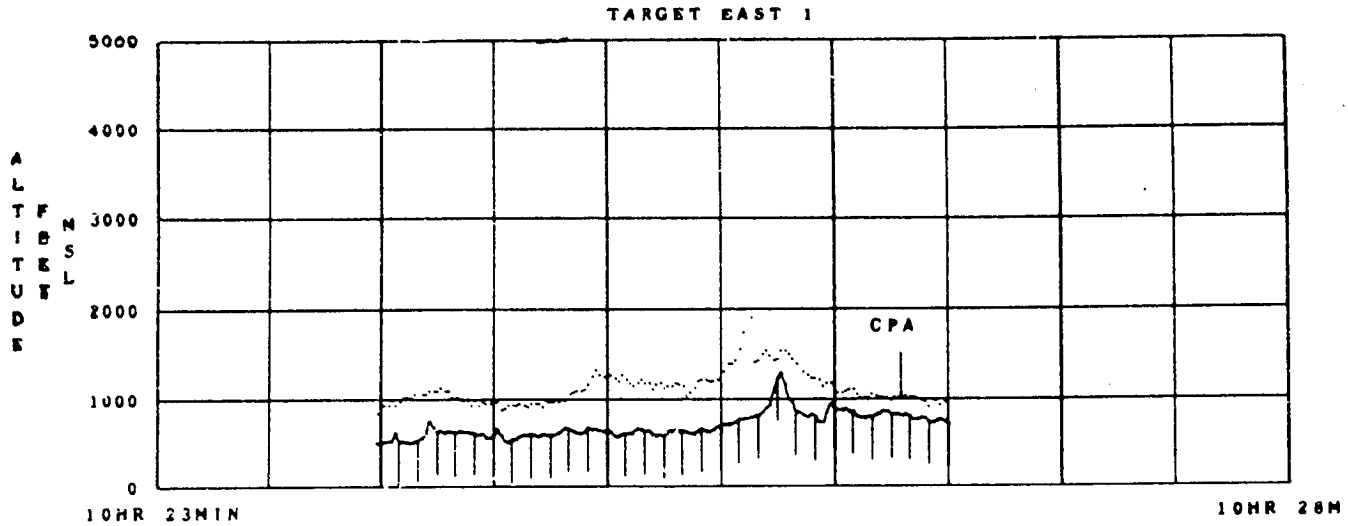
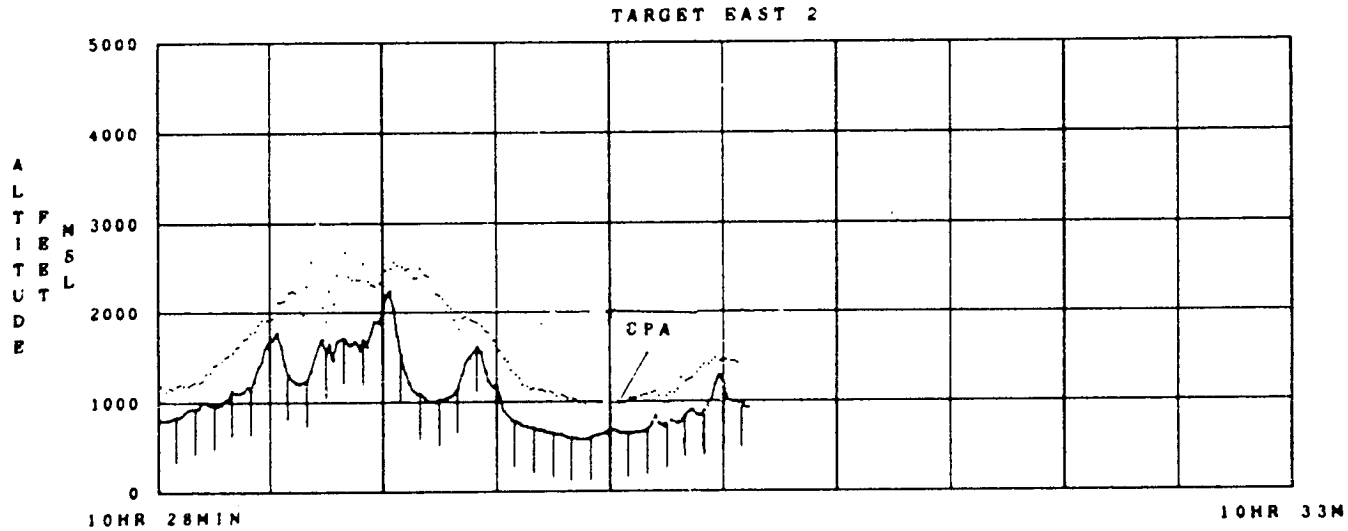


Figure 3-90 (U) Telemetered Data (Part 4 of 4)

UNCLASSIFIED

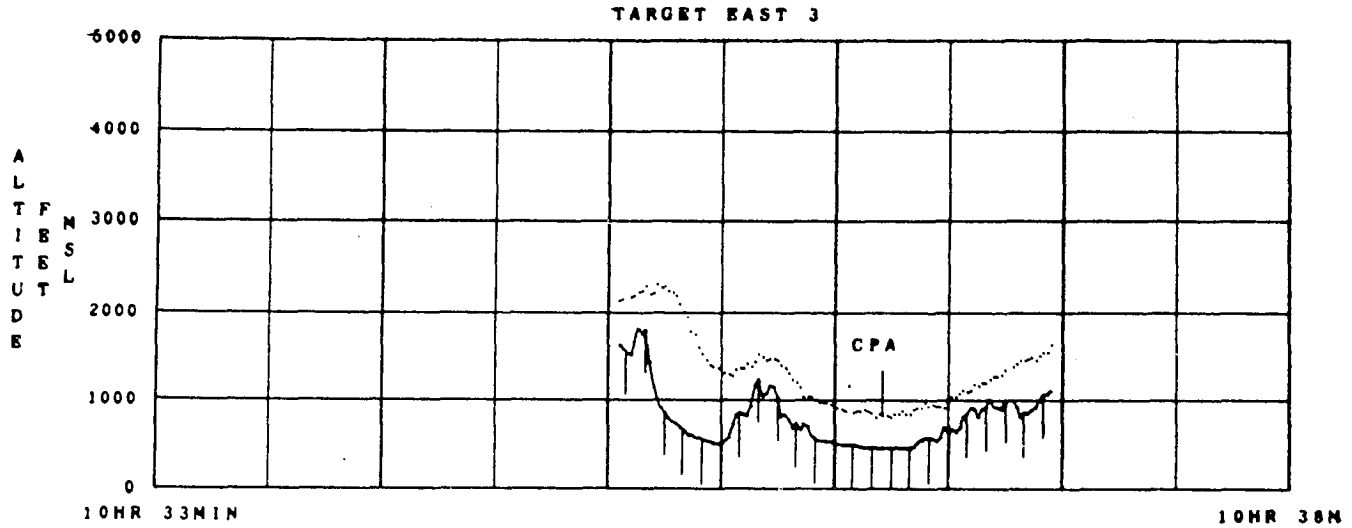


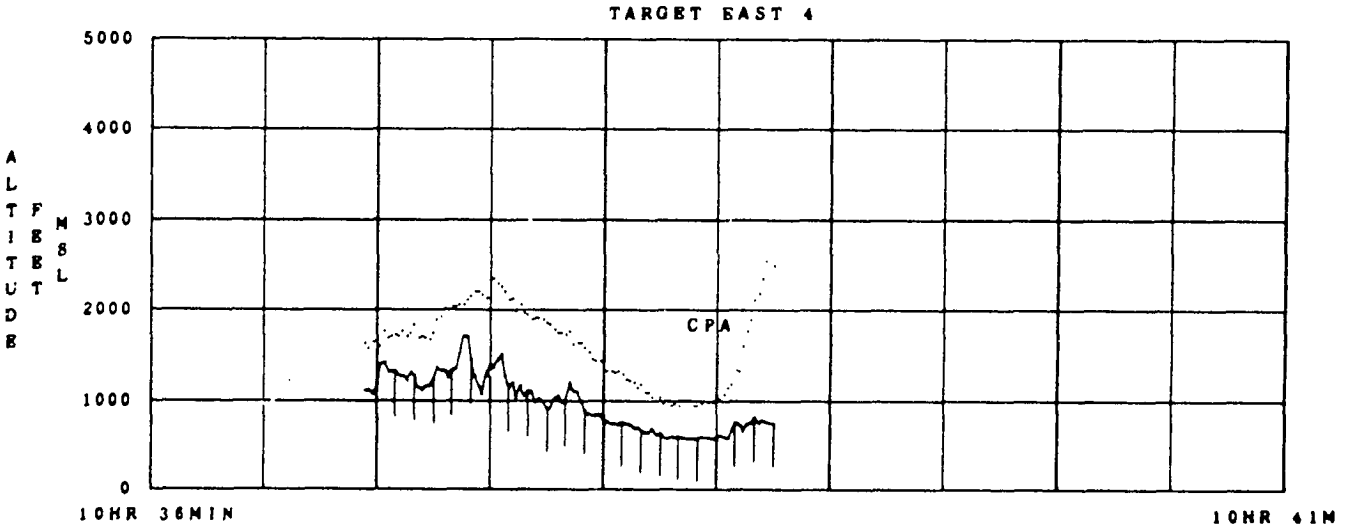


SORTIE NUMBER 561

04092508
J9138

Figure 3-91 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)

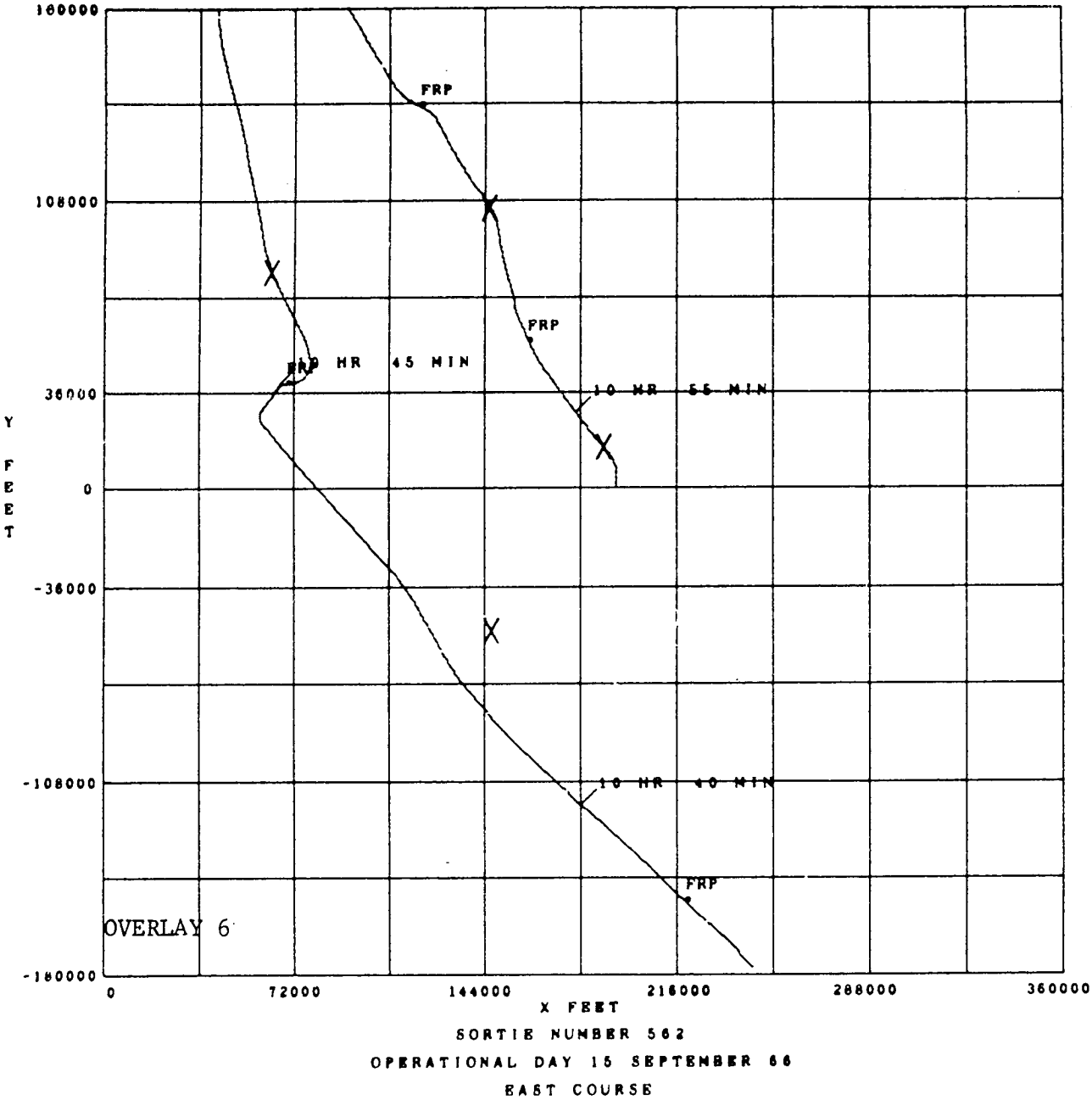




SORTIE NUMBER 561

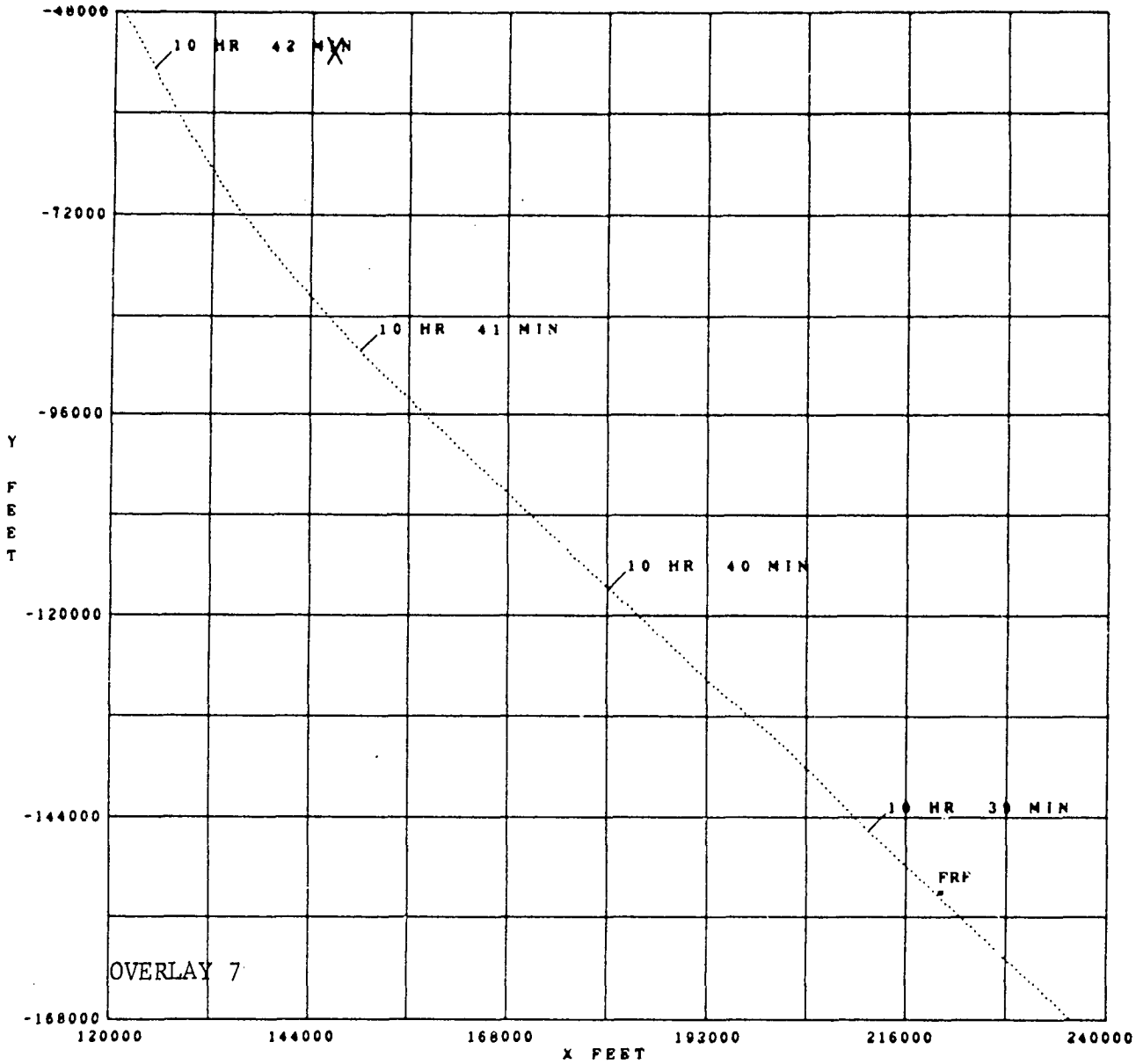
04092508
J9138

Figure 3-91 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)



04092506
J9138 59

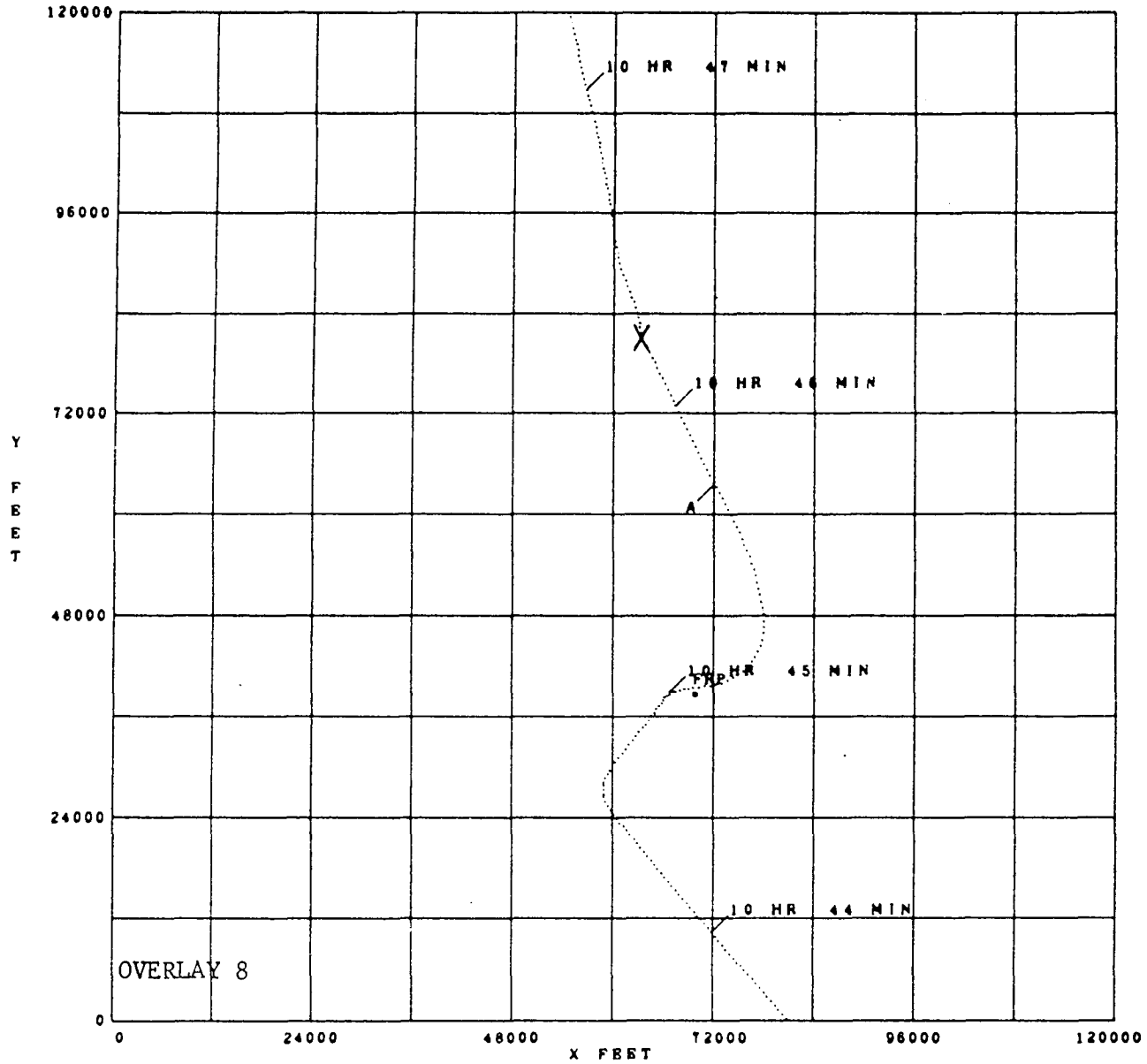
Figure 3-92 (U) Aircraft Position Data (Part 1 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 20070 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 562
TARGET EAST 1

04092506
J9138 60

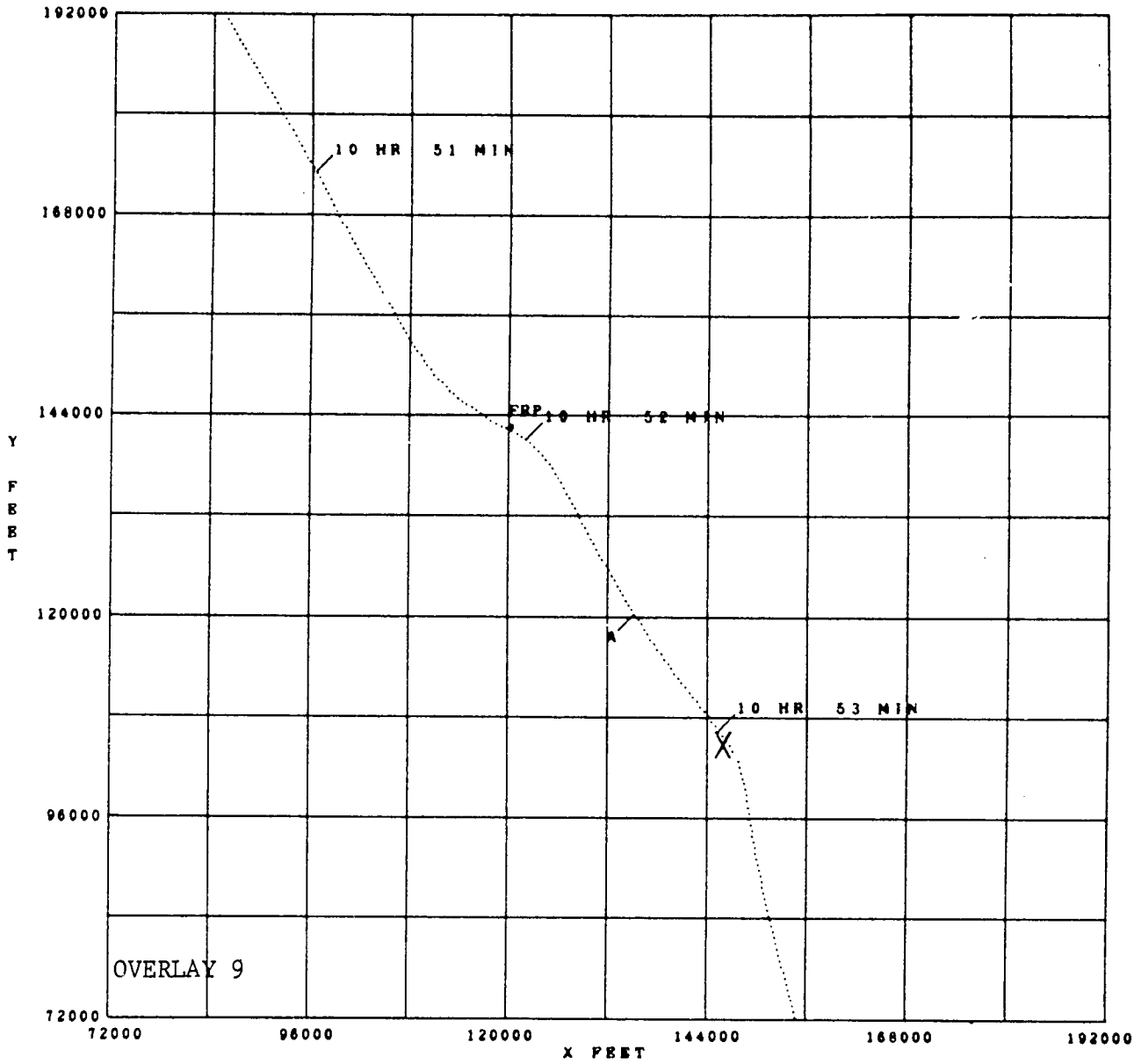
Figure 3-92 (U) Aircraft Position Data (Part 2 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 251 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 562
TARGET EAST 2

04092506
J9138 61

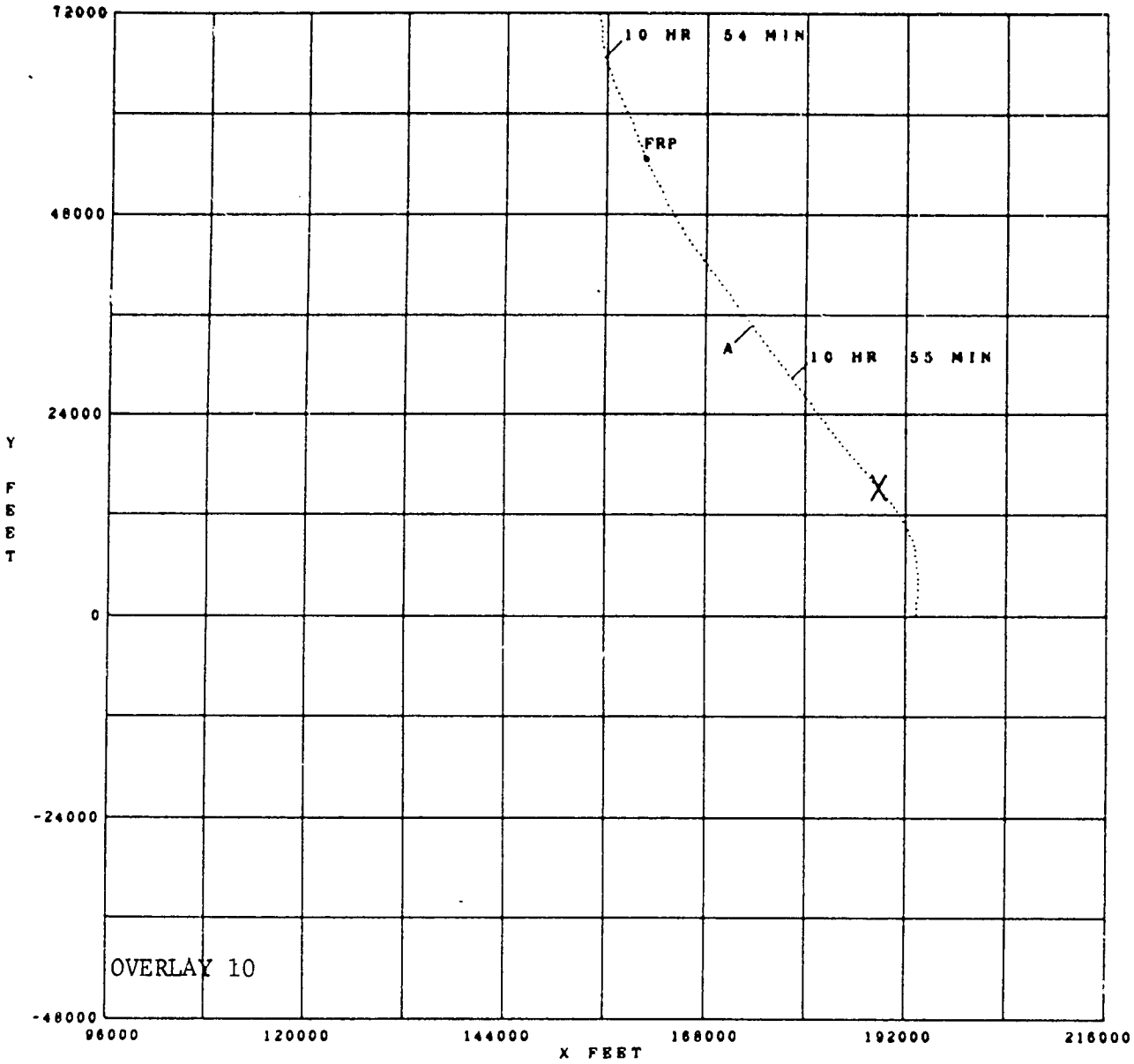
Figure 3-92 (U) Aircraft Position Data (Part 3 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 1200 FEET
MINIMUM GROUND DISTANCE QUALIFIER = C-BAND
SORTIE NUMBER 562
TARGET EAST 3

04092506
J9138 62

Figure 3-92 (U) Aircraft Position Data (Part 4 of 5)



MINIMUM GROUND DISTANCE TO TARGET = 24 FEET
MINIMUM GROUND DISTANCE QUALIFIER = DME
SORTIE NUMBER 562
TARGET EAST 4

04092506
J9138 63

Figure 3-92 (U) Aircraft Position Data (Part 5 of 5)

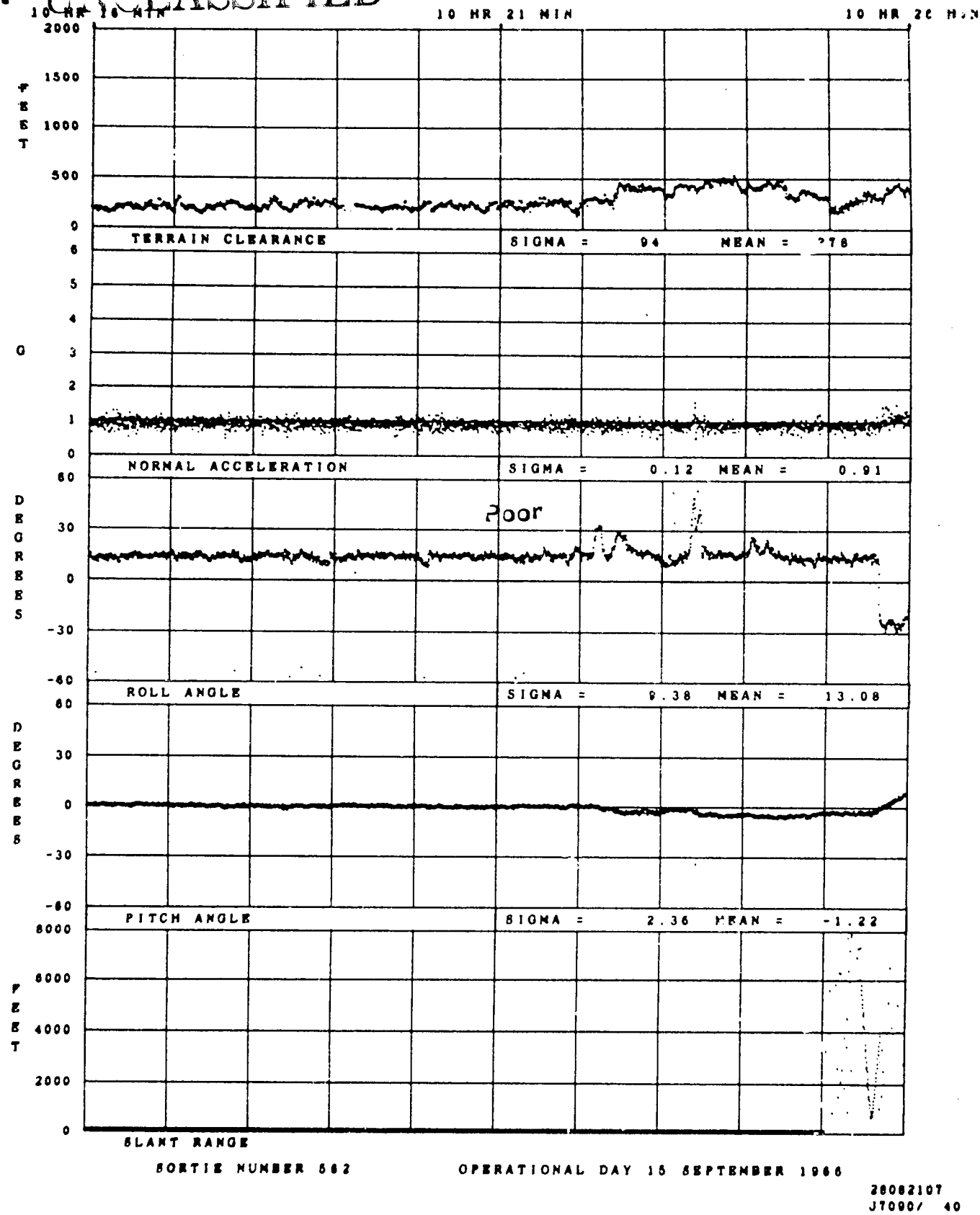


Figure 3-93 (U) Telemetered Data (Part 1 of 4)

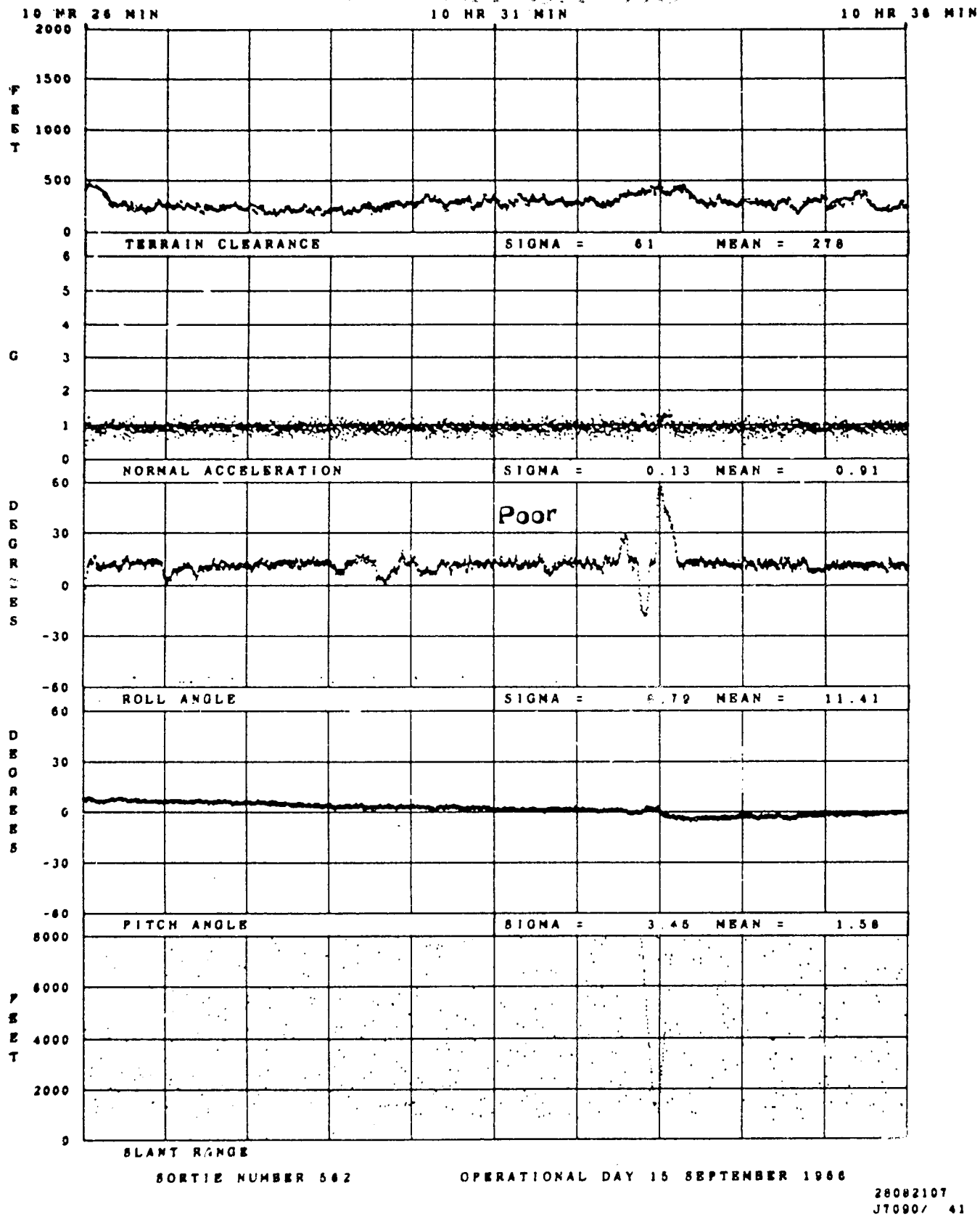


Figure 3-93 (U) Telemetered Data (Part 2 of 4)

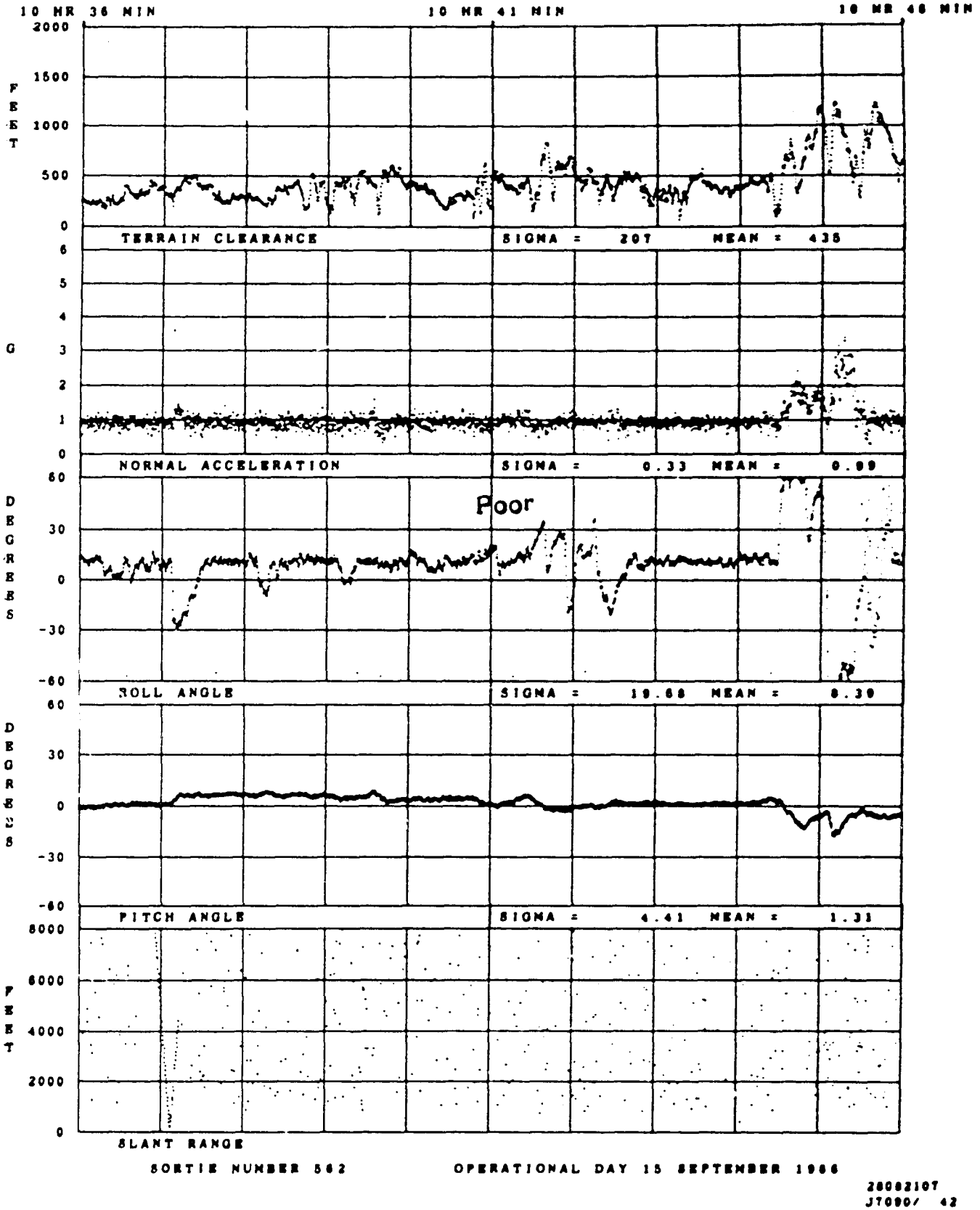


Figure 3-93 (U) Telemetered Data (Part 3 of 4)

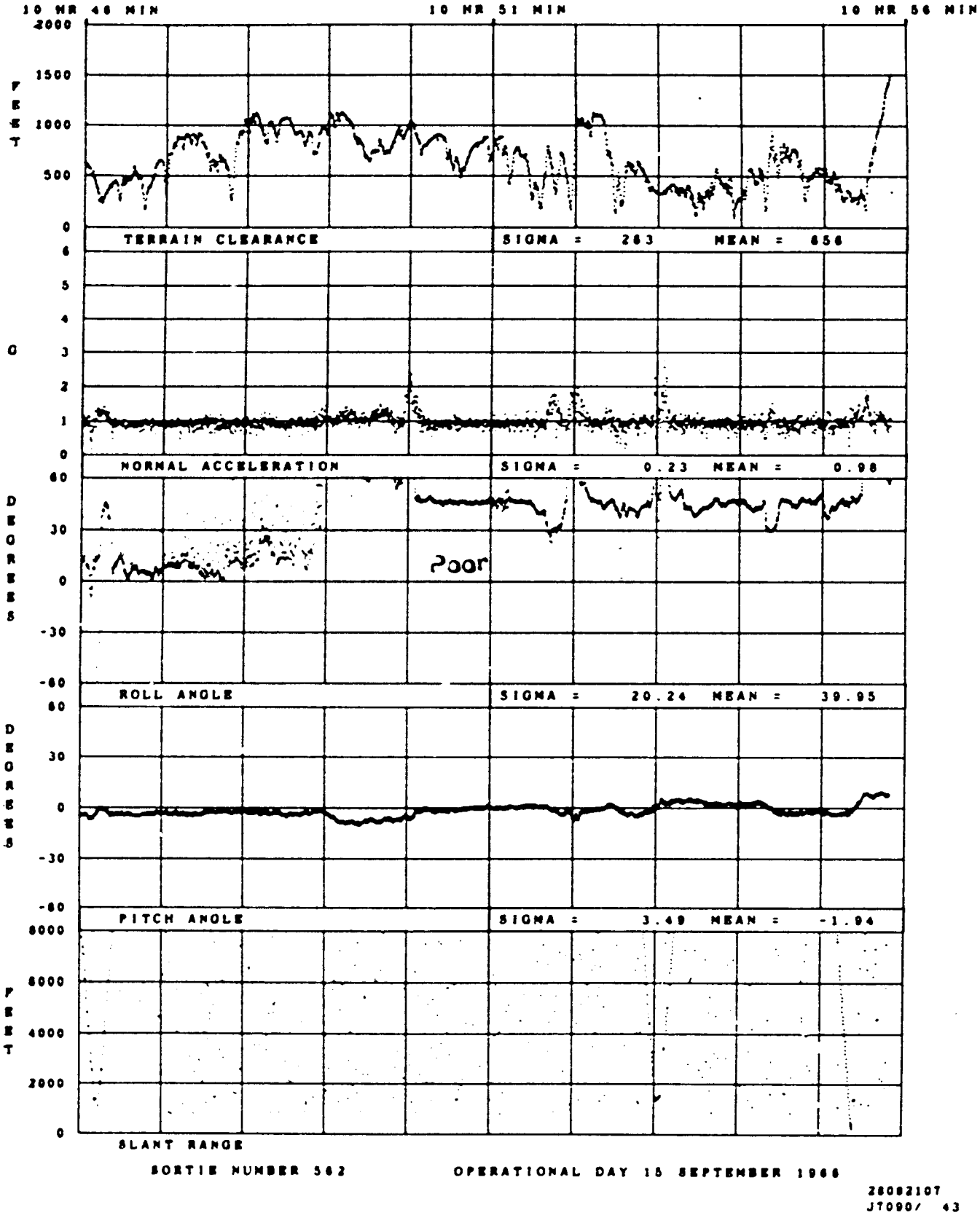
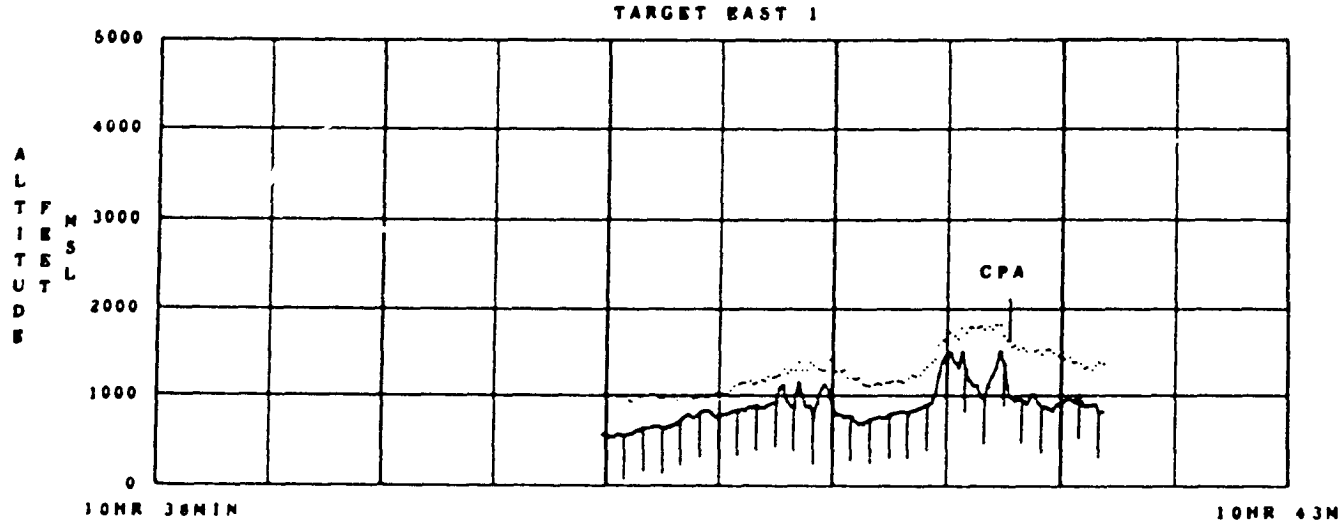
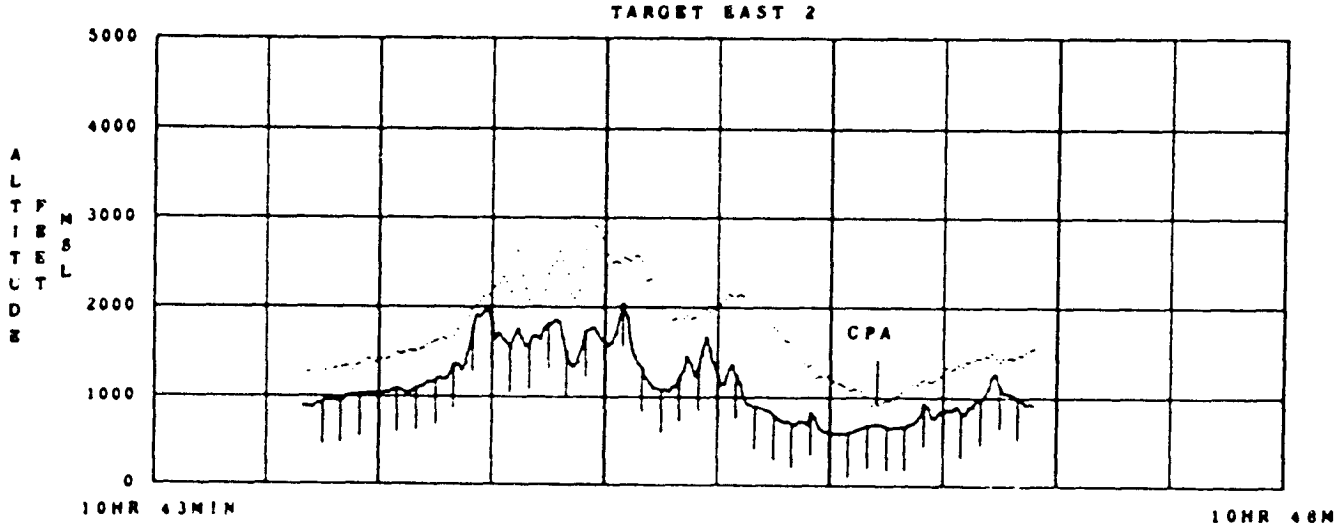


Figure 3-93 (U) Telemetered Data (Part 4 of 4)

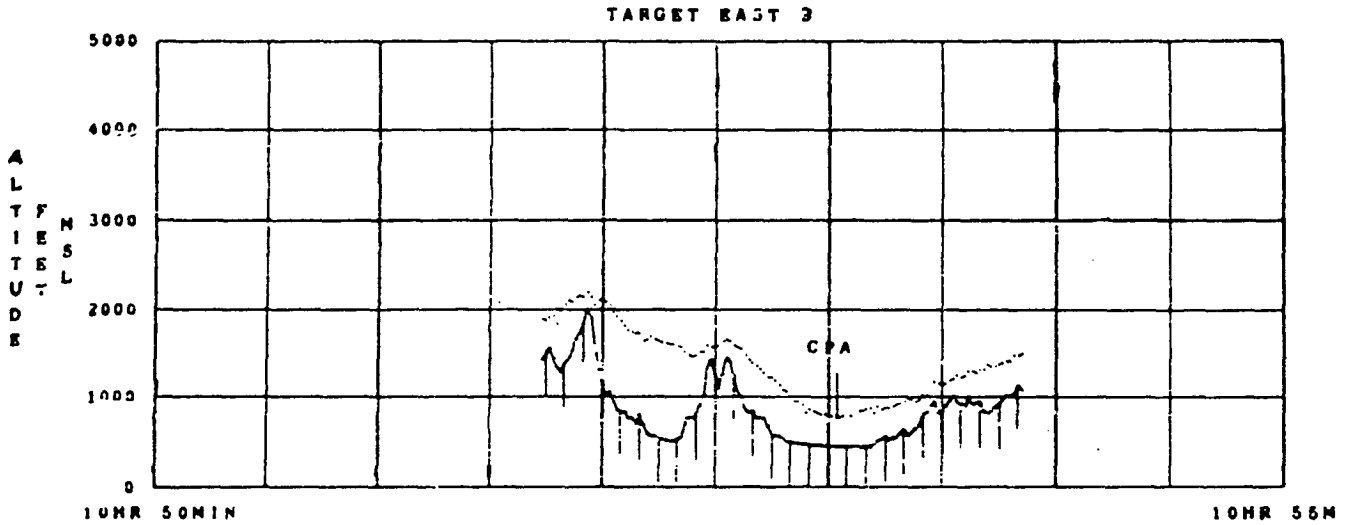




SORTIE NUMBER 562

04092506
J9138

Figure 3-94 (U) Aircraft Altitude and Terrain Profile (Part 1 of 2)



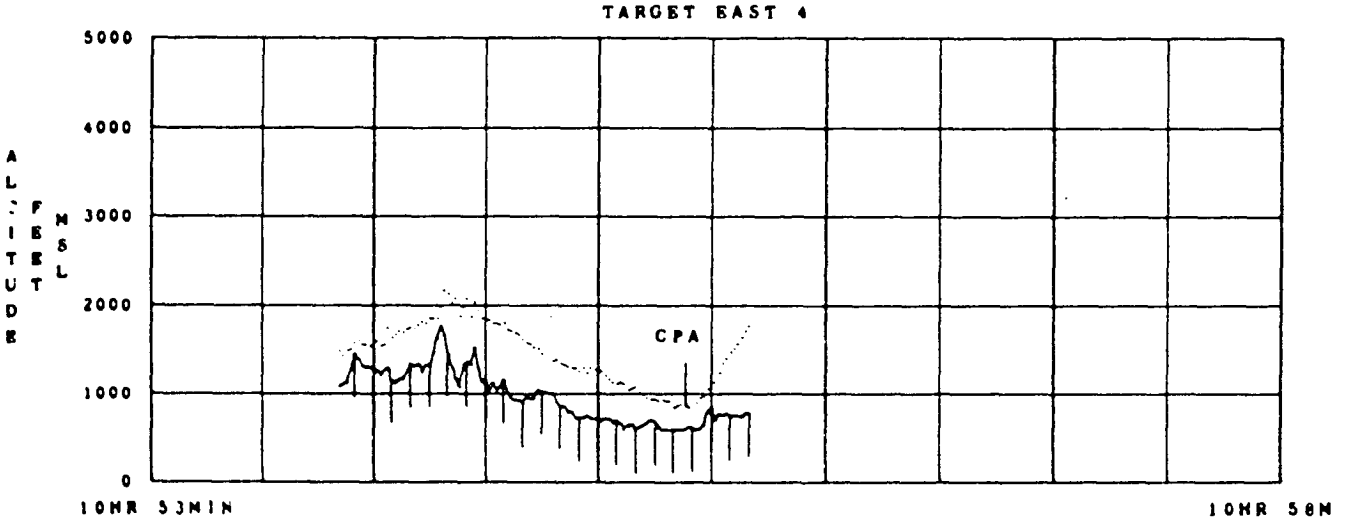


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Figure 3-94 (U) Aircraft Altitude and Terrain Profile (Part 2 of 2)

APPENDIX A

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BIBLIOGRAPHY

1. Low Altitude Test 4.1, Visual Target Acquisition, Volume 1: Controlled Flight Observation; JTF2-4.1 Report to the Joint Chiefs of Staff; December 1966 (OUO).

2. Low Altitude Test 4.1, Visual Target Acquisition, Volume 2: Field Test Description; JTF2-4.1 Report to the Joint Chiefs of Staff; October 1967 (OUO).

3. Low Altitude Test 4.1, Visual Target Acquisition, Volume 3: Navigation Over Flat Terrain (Test 2.1 Penetration-Operational Systems) (U); JTF2-4.1 Report to the Joint Chiefs of Staff; June 1968 (S).

4. Low Altitude Test 4.1, Visual Target Acquisition, Volume 4: Tactical Aircraft Performance (U); JTF2-4.1 Report to the Joint Chiefs of Staff; June 1968 (S).

5. VISPTS; Braddock, Dunn and McDonald, Inc., Report to Sandia Corporation under Contract 5215-001; October 1967 (U).

6. A Study of Visibility Parameter Accuracies and Development of a Visibility Index; Braddock, Dunn and McDonald, Inc., Report to Sandia Corporation under Contract 5007-002; December 1967 (U).

7. Janes All The World's Aircraft 1965-1966; Edited by John W. R. Taylor; McGraw-Hill Book Company 1966 (U).

8. Low Altitude Test 4.1, Visual Target Acquisition, Volume 6: Human Factors Studies (U); JTF2-4.1 Report to the Joint Chiefs of Staff (C).

9. Low Altitude Test 4.1, Visual Target Acquisition; All Aircraft; Data Summary Book (U); October 1968 (S).

UNCLASSIFIED

10. Low Altitude Test 4.1, Visual Target Acquisition, Volume 5: Strategic Aircraft Performance (U); JTF2-4.1 Report to the Joint Chiefs of Staff; August 1968 (S).

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