

(2) *Handwritten initials*

POR - 2032
(WT - 2032)
VOLUME 2 - SAN

Operation

DOMINIC

FISH BOWL SERIES

PROJECT OFFICERS REPORT—PROJECT 6.13

RF MEASUREMENTS AND OPTICAL MEASUREMENTS,
SHOT STAR FISH PRIME

Handwritten scribbles

AD-A955 680

J. E. Hagefstration, Project Officer

Army Missile Command
Redstone Arsenal, Alabama

and personnel of:

Radio Corporation of America
Missile and Surface Radar Division
Moorestown, New Jersey

and

Barnes Engineering Company
30 Commerce Road
Stamford, Connecticut

DTIC
ELECTE
JUN 16 1989
S D

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

Issuance Date: May 22, 1964

Document released under the
Freedom of Information Act.
GSA Case No. 86-90

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

[REDACTED]

POR-2032
(WT-2032)
VOLUME 2

OPERATION DOMINIC

FISH BOWL SERIES

PROJECT OFFICERS REPORT — PROJECT 6.13

RF MEASUREMENTS AND OPTICAL MEASUREMENTS,
SHOT STAR FISH PRIME [REDACTED]

[REDACTED]

J. E. Hagefstration, Project Officer

Army Missile Command
Redstone Arsenal, Alabama

and personnel of:

[REDACTED]

Radio Corporation of America
Missile and Surface Radar Division
Moorestown, New Jersey

and

[REDACTED]

Barnes Engineering Company
30 Commerce Road
Stamford, Connecticut

[REDACTED]

This document is the author(s) report to the Director, Defense Atomic Support Agency, of the results of experimentation sponsored by that agency during nuclear weapons effects testing. The results and findings in this report are those of the author(s) and not necessarily those of the DOD. Accordingly, reference to this material must credit the author(s). This report is the property of the Department of Defense and, as such, may be reclassified or withdrawn from circulation as appropriate by the Defense Atomic Support Agency.

DEPARTMENT OF DEFENSE
WASHINGTON, D. C. 20301

[REDACTED]

PREFACE

The reduction and compilation of the data presented in Part 2 are joint efforts. The efforts of Mr. C. Vaugh and Mr. R. Aldrich, who determined the major portions of fireball growth and altitude data, are particularly mentioned.

In addition, acknowledgement is made of the many helpful suggestions contributed by Dr. S. Stone of Los Alamos Scientific Laboratory. Without him, pretest predictions would have been difficult.

The XR triple-layer film was furnished and processed through the generosity of Edgerton, Germeshausen, and Grier, specifically Charles W. Wyckoff. Its performance exceeded the anticipations, and considerable data were obtained from the record.



Accession For	
NTIS - GRA&I	<input checked="" type="checkbox"/>
DTIC - TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By <i>per ltr</i>	
Date	
Approved by	
Date	
Comments	
A-1:	23 ok

UNANNOUNCED

CONTENTS

PREFACE -----	4
PART 1 RF MEASUREMENTS -----	8
CHAPTER 1 OBJECTIVES AND OPERATIONAL DESCRIPTION -----	9
1.1 Objectives -----	9
1.2 Operational Parameters -----	11
1.3 Frequency Summary-----	12
1.4 Data Summary-----	13
CHAPTER 2 EQUIPMENT SUMMARY -----	21
2.1 L-Band UHF Radars -----	22
2.2 Telemetry Tracker -----	23
2.3 Vidicon -----	24
2.4 Slave Pedestals -----	24
2.5 Recorders -----	25
CHAPTER 3 TRACKING RADAR TRAJECTORY -----	27
3.1 Introduction -----	27
3.2 Description of Trajectory Listing -----	28
3.3 Description of Trajectory Program-----	30
3.4 Trajectory Accuracy -----	33
CHAPTER 4 C-BAND SIGNAL STRENGTH AND ERRORS (BEACON)-----	48
CHAPTER 5 UHF/L-BAND TRAJECTORY -----	50
CHAPTER 6 TELEMETRY TRACKING POINTING ANGLES-----	52
CHAPTER 7 VIDEO-DERIVED CROSS SECTION AND BEACON POWER (NEAR H-0)-----	53
CHAPTER 8 TELEMETRY TRACKER SIGNAL STRENGTH AND ANGLE ERRORS -----	57
CHAPTER 9 VIDICON MEASUREMENTS -----	58
CHAPTER 10 FIREBALL AND DEBRIS RADAR REFLECTIONS; AURORAL-TYPE CLUTTER RETURNS; RADIOMETER AND RIOMETER BACKGROUND MEASUREMENTS -----	59
10.1 Fireball and Debris Reflections and Auroral-Type Clutter Returns -----	59

10.2 Radiometer Measurements-----	60
10.3 Riometer Data-----	60
CHAPTER 11 TRANSIT AND PROJECT 6.1 COHERENT MEASUREMENTS ----	62
PART 2 OPTICAL MEASUREMENTS-----	63
CHAPTER 12 DATA PRESENTATION-----	64
CHAPTER 13 PROCEDURE-----	66
13.1 Test Participation-----	66
13.2 Instrumentation Description-----	66
13.3 Use of Instrumentation-----	66
13.3.1 Burst Measurement Equipment-----	67
13.3.2 Long-Term Measurement Equipment-----	67
13.3.3 Support Equipment-----	68
13.4 Calibration-----	68
CHAPTER 14 RESULTS-----	74
14.1 Burst Measurements-----	74
14.2 Long-Term Measurements-----	75
14.3 Support Instrumentation-----	77
APPENDIX A PROBE SUMMARY-----	79
APPENDIX B CALIBRATIONS AND PROBE TRACKS, C-BAND-----	134
APPENDIX C TRAJECTORY DATA, UHF/L-BAND-----	161
REFERENCES-----	180
TABLES	
1.1 Equipment and Recording Description-----	15
1.2 Edited Time and Events Record Port (Radar No. 1)-----	17
1.3 UHF L-Band Slave Intervals, Slaved to Starboard C-Band Radar No. 2-----	20
2.1 Recorder Tabulation-----	26
3.1 Numerical Estimate of Typical Tracking Errors-----	38
13.1 Test Parameters-----	69
13.2 Fish Bowl Instrumentation-----	70
FIGURES	
3.1 Geometrical figures used in derivation of trajectory equations-----	39
3.2 Star Fish Prime plan trajectories-----	42
3.3 Star Fish Prime ship movement for six tracked probes-----	43
3.4 Star Fish Prime plan view-----	44
3.5 Star Fish Prime time-altitude trajectories 6.13 and 9.1a probes-----	45
3.6 Star Fish Prime time-altitude trajectories, 6.2 and 6.13 probes-----	46

3.7 Star Fish Prime probe trajectories-----	47
7.1 Star Fish Prime video-derived beacon power -----	55
13.1 Instrumentation layout, DAMP ship-----	73
B.1 Calibrations-----	134
B.2 Track. Probe 1-----	135
B.3 Track. Probe 3-----	138
B.4 Track. Probe 4-----	139
B.5 Track. Probe 5-----	141
B.6 Track. Probe 6-----	147
B.7 Track. Probe 7-----	152

PART 1

RF MEASUREMENTS 

J. E. Hagefstration, Project Officer

Contributors:

E. Austein
R. Bachinsky
A. Gold
R. E. Kansas
E. Phelan

Radio Corporation of America
Missile and Surface Radar Division
Moorestown, New Jersey


CHAPTER 1

OBJECTIVES AND OPERATIONAL DESCRIPTION

1.1 OBJECTIVES

The primary DAMP Star Fish Prime objective was the measurement of C-band angular jitter. A total of nine rockets, equipped with DAMP C-band beacons, was originally scheduled for launch during the Star Fish Prime event. However, the toll of probes taken during the previous aborts in the Fish Bowl series, the desire to reserve several probe missiles for training to achieve reliable acquisition procedures, and the requirement for a probe control flight in a non-nuclear environment necessitated reserving the two late-time Speedball rockets originally scheduled for Star Fish Prime (probes 8 and 9) for test firings between Star Fish Prime and Blue Gill Triple Prime.

Of the seven resulting DAMP C-band rockets fired, three were Speedballs. The other four rockets were launched by projects 9.1a, 6.2, and 6.7. A list of firing times, projects, and tracked intervals is provided in the trajectory section of this report.

An operator error involving power programming prohibited acquisition of the project 6.7 rocket. Since it was



of paramount importance to have a tracked target in the air at burst time, the Speedball backup was fired at H-50 seconds, and no further attempts were made to acquire the 6.7 rocket. Of the remaining six rockets fired, all were tracked for most of their flight, with the exception of the H-50 second Speedball, which was lost shortly after burst and never re-acquired.

All Speedball rockets were equipped with Daisy flares. This flare package was designed to measure the target RF optical bias by ejecting intense flares which would enable comparison of the radar line of sight to the rocket with the optical position. However, due to complete overcast at the DAMP ship position, no flares were seen during Star Fish Prime.

Three radars were used for clutter and fireball reflection measurements. These were the second C-band tracker, the UHF and the L-band radars. The UHF and L-band frequencies were radiated from the same 28-foot parabolic antenna. The C-band tracker used was the Starboard 16-foot FPQ-4. The shipboard digital computer was used to program the C-band tracker through a series of eight different regions of antenna directions, with combinations of five

different scan patterns, with the UHF/L-band system slaved to the C-band tracker.

Possible interference with the destruct mechanism of the warhead prevented the UHF/L-band system from observing burst at H-0. Auroral-type clutter measurements, however, were obtained after H + 1 minute. UHF interference may have invalidated the radiometric measurements.

In addition to these objectives, the Thor booster was skin-tracked to burnout, and the composite telemetry and signal strength of the 246.3-Mc Thor health link was recorded. Riometer data was recorded for project 6.8 during the entire Fish Bowl series. Transit measurements are presented in Volume 7.

1.2 OPERATIONAL PARAMETERS

Date 9 July 1962

Time 0900; 09.0290 GMT

Altitude 400.15 km.

Yield 1.4 Mt

Position of burst with respect to Johnston Island

33.34-km ground range

200.31 degrees azimuth

Carrier vehicle Thor

Ships position at H-0

360 km from Johnston

Azimuth from Johnston = 10.3 degrees

Geodetic Latitude: 19.91 degrees N

Longitude: 168.91 degrees W

Ship's Maneuvers

10 degrees heading at H-33 min, 10 knots

Turn to Starboard at H-24 min, arriving at 330 degrees
at H-17 min

Turn to Starboard at H-700 sec, arriving 280 degrees
at H-340 sec

280 degrees heading at 4 knots until H+50 min

Turn to starboard to 100 degrees at H+50 min

Total probes, DAMP ship

C-band track: eight

Flare pack probe = four

Telemetry track = one (Thor)

1.3 FREQUENCY SUMMARY

C-band tracker 1 (Port)

Interrogate	5700 Mc
Receive	5775 - beacon
	5700 - skin

C-band tracker, 2 (Starboard)

Transmit	5795 Mc
Receive	5795 Mc
L-band radar	1300 Mc
UHF radar	430 Mc
Telemetry tracker	246.3 (Thor booster)
Radiometer	442 Mc
Riometer	30, 60, 120 Mc
Transit	400, 324, 150 Mc

1.4 DATA SUMMARY

For this report a separate data volume has been prepared for each Fish Bowl test in which the DAMP project was engaged (Star Fish Prime, Check Mate, Blue Gill Triple Prime, King Fish, and Tight Rope). It is the intent of each volume to present only the most pertinent and readily available data within the limited time scale available. Each test report volume contains less than 1 percent of the total recorded data accumulated during each mission, including calibrations.

Apologies must be presented for the lack of equipment block diagrams, sub-system parameters, calibration, and alignment procedures, etc. Equipment-related considerations are covered in detail in the following standard DAMP volumes:

1. System Function Manual (Equipment)
2. Equipment Operation Manual (Calibration, and Alignment procedures)
3. Data Processing Procedures Manual

The interested reader is referred to these documents for most questions concerning the nature of the equipment or the calibration methods.

Table 1.1 provides a tabulation of the various quantities recorded by each instrumentation system. The program followed by the port C-band radar is detailed in Table 1.2, and UHF/L-band slave intervals are given in Table 1.3.

TABLE 1.1 EQUIPMENT AND RECORDING DESCRIPTION

Type of Recording	Quantity Recorded	Speed of Recording
Digital (three recorders)	<ol style="list-style-type: none"> 1. Range, azimuth, elevation AGC voltage elevation error, azimuth error and range errors for tracking radars #1 and #2 2. Pitch, roll, ships heading for gyros No. 1 and No. 2 3. Azimuth, error, elevation error and AGC voltage for UHF/L-band radar 4. Azimuth, elevation and AGC voltage for telemetry tracker 5. Azimuth and elevation angles for slave pedestals No. 1, No. 3 and No. 4 6. Twenty-four bit real time and sync. pulses 	16 in/sec 100 samples per second per channel
Ampex (analog) (two recorders) Recorders #1 and #2	<ol style="list-style-type: none"> 1. AGC voltage, AUDAR, azimuth error, elevation error and range error for tracking radars No. 1 and No. 2 2. AGC voltage, azimuth error and elevation error for UHF/L-band radar 3. AGC voltage, azimuth error and elevation error for telemetry tracker 4. Audio commentary (operations net) 5. Tracking radar No. 1 analog range recorded on Ampex No. 1 6. Thirteen bit time and control track 	7½ in/sec
Sanborn (analog) (two recorders)	<ol style="list-style-type: none"> 1. AGC voltage for tracking radars No. 1 2. AGC voltage for UHF/L-band radar 3. Time 4. Tracking radar No. 1 analog range 5. Telemetry AGC 	10mm/sec
Video No. 1	<ol style="list-style-type: none"> 1. Reference and non-normalized bi-polar video from WDR 2. Audio commentary (operations net) 3. Time 	N/A

TABLE 1.1 (CONTINUED)

Type of Recording	Quantity Recorded	Speed of Recording
Video No. 2	<ol style="list-style-type: none"> 1. Reference, and non-normalized error and elevation error video signals from WDR receivers for tracking radar No. 2 2. Reference video from UHF/L-band radar 3. Audio commentary (operations net) 4. Time 	N/A
Boresight camera	<ol style="list-style-type: none"> 1. Tracking radar No. 2 (1000 ft reel) 2. Tracking radar No. 1 (400 ft reel) 	20 frames per second
Four channel audio recorder	<ol style="list-style-type: none"> 1. Commentary 	3-3/4 in/sec
X-Y plotter	<p><u>Probe 2 only</u></p> <ol style="list-style-type: none"> 1. X_g versus Y_g of tracking radar No. 1 2. R_g versus H of tracking radar No. 1 	N/A
Minicom video recorder	<ol style="list-style-type: none"> A. H-851 seconds to H-600 seconds: telemetry composite video cyclelock, 13 bit real time, and operations net commentary F. H-190 seconds to end of test: tracking radar No. 1 and No. 2 video, UHF/L-band radar video, 13 bit real time, and operations net commentary 	60 in/sec
Time and events recorders (brush strip chart - two recorders)	<ol style="list-style-type: none"> 1. switching events, 200 channels 	10mm/sec
Vidicon TV monitor	<ol style="list-style-type: none"> 1. Photographs during 6.13 probe flare firing sequences 	12 1/2 frames per sec
Events recorder (portable)	<ol style="list-style-type: none"> 1. Radiometer and radiometer events 	
Radiometer recordings	<ol style="list-style-type: none"> 1. Three AGC channels 2. Three audio channels 3. Time 	N/A
UHF radiometer	<ol style="list-style-type: none"> 1. UHF noise temperature 2. Time 	15 in/min
CEC/digital punch	<ol style="list-style-type: none"> 1. Transit print-outs of satellite passes 	N/A

TABLE 1.2 EDITED TIME AND EVENTS RECORD PORT C-BAND (RADAR NO. 1)

Time (H+sec)	GMT	Events	Notes
<u>Initial mission conditions</u>		MGC	Manual gain control
		External designate mode	The radar servos were directed by computers.
		285 PRF	Pulse repetition frequency
		1-microsecond pulse width	
		Receiver bandwidth 8 megacycles	
		Slave pedestal three unassigned	
		Boresight camera off	
		Azimuth bandwidth 3 cps	These figures refer to the three tracking servos.
		Elevation bandwidth 3 cps	
		Range bandwidth 4 cps	
	Beacon local oscillator on, MFC	Manual frequency control	
	Skin local oscillator	Status not recoverable from the raw time and events records for this mission	
-1754.4	08:30:54.6	Lockon automatic track mode, AGC	Start of probe 1 beacon track. Azimuth, elevation, and range servos commenced tracking the beacon return.
-1752.0	08:30:57	Slave pedestal 3 assigned to radar 1.	Slave pedestal 3 carried the vidicon camera
-1749.0	08:31:00	Beacon local oscillator, APC	Automatic frequency control
-1747.0	08:31:02	Receiver bandwidth 2 megacycles	
-1449.5	08:35:39.5	Manual mode, MGC	Azimuth, elevation, and range servos were now under the operator's manual control.
<u>Starting conditions probe 3</u>		Receiver bandwidth 8 megacycles	Only the changes from the last conditions above are noted.
		External designate mode	
		Boresight camera off	
		Beacon local oscillator, MFC	
		Slave pedestal 3 unassigned	

TABLE 1.2 (CONTINUED)

Time (H-sec)	GMT	Events	Notes
-30.0	08:59:38.7	Boresight camera on	
-14.0	08:59:55	Lockon automatic track mode, AGC	Start of probe 3 beacon track
+24.0	09:00:33	External designate mode, MGC	Radar designated by computers, disabling automatic track
		Receiver bandwidth 8 megacycles	
		Boresight camera off	
		Beacon local oscillator, MFC	
		Slave pedestal 3 unassigned	
781.3	09:13:10.3	Lockon automatic track mode	Start of probe 4 beacon track
		AGC	
784.0	09:13:13	Slave pedestal 3 assigned to radar 1	
793.1	09:13:14.1	Receiver bandwidth 2 megacycles	
797.5	09:13:26.5	Beacon local oscillator, AFC	
946.0	09:15:55	External designate mode, MGC	
		Receiver bandwidth 8 megacycles	
		Beacon local oscillator, MFC	
		Slave pedestal 3 unassigned	
124.9	09:21:40.9	Lockon automatic track mode	Start of probe 5 beacon track
		AGC	
1293.0	09:21:42.0	Slave pedestal 3 assigned to radar 1	
1294.6	09:21:43.6	Receiver bandwidth 2 megacycles	
1295.5	09:21:44.5	Beacon local oscillator, AFC	
1810.0	09:30:19	Slave pedestal 3 unassigned	
1810.3	09:30:19.3	Manual mode, MGC	
1813.5	09:30:22.5	External designate mode	
1817.9	09:30:26.9	Receiver bandwidth 8 megacycles	
1819.4	09:30:28.4	Beacon local oscillator, MFC	
1900.1	09:31:49.1	Lockon automatic track mode, AGC	Start of probe 6 beacon track

TABLE 1.2 (CONTINUED)

Time (H+sec)	GMT	Events	Notes
1901.2	09:31:50.2	Slave pedestal 3 assigned to radar 1	
1903.0	09:31:52	Beacon local oscillator, AFC	
1904.2	09:31:53.2	Receiver bandwidth 2 megacycles	
2142.7	09:35:51.7	External designate mode, MGC	Lost track; attempted to re-acquire
2143.4	09:35:52.4	Slave pedestal 3 unassigned	
2187.6	09:36:36.6	Lockon automatic track mode, AGC	Re-acquired probe 6
2189.0	09:36:38	Slave pedestal 3 assigned to radar 1	
2309.0	09:38:38	Slave pedestal 3 unassigned	
2309.5	09:38:38.5	Manual mode, MGC	
		Beacon local oscillator, MFC	
		Receiver bandwidth 8 megacycles	
		Lockon automatic track mode, AGC	Start of probe 7 track
2440.6	09:40:49.6	Receiver bandwidth 2 megacycles	
2442.1	09:40:51.1	Slave pedestal 3 assigned to radar 1	
2442.3	09:40:51.3	Beacon local oscillator, AFC	
2443.0	09:40:52	Slave pedestal 3 unassigned	
3285.0	09:54:54	Manual mode, MGC	
3286.2	09:54:55.2		

TABLE 1.3 UHF/L-BAND SLAVE INTERVALS,
SLAVED TO STARBOARD C-BAND RADAR NO. 2

From (H +, Sec)	To
81	116
133	166
183	218
235	289
309	362
378	431
447	566
597	715
730	806
820	after 900



CHAPTER 2

EQUIPMENT SUMMARY

The following equipment listings are intended to convey the important parameters of the various sensors and recorders contained on the DAMP ship applicable to the Fish Bowl measurement:

AN/FPQ-4 (2 each)	Tracking Radar
Antenna	16-foot parabolic reflector 46.9-db gain 4-horn monopulse feed 14-mil (=0.8 degree) beam-width (one way)
Repetition rate	142, 285, 855 pps
Pulse duration	1.7, 1.0, 0.25 μ sec
Receiver bandwidth	1.2 Mc, 2.2 Mc, 8 Mc
Noise figure	6 db
Frequency	C-band (5400 to 5900 Mc)
Peak power	3 megawatts
Pedestal	Azimuth-elevation mount
Track rates	Range 10k yds/sec Azimuth 720 mils/sec Elevation 400 mils/sec
Pedestal data output	Digital and synchros
Polarization	1 horizontal, 1 vertical For Fish Bowl tests, tracking radar is vertically polarized radar (Port radar).

Unambiguous range 1000 naut mi (TR 1 Port)
 500 naut mi (TR 2 Starboard)

2.1 L-BAND/UHF RADARS

The L-band and UHF radars, which share a common antenna, permit observation of the target by illumination other than C-band. These radars are not automatic tracking radars and are normally slaved to one of the AN/FPQ-4 tracking radars.

Antenna	28-foot reflector, paraboloid	
	Gain L-band	38.3 db
	UHF	29 db
	Beamwidth L-band	2 degrees
	UHF	6 degrees
	Polarization	vertical
	Sidelobes: UHF	14 db
	L-band	17 db
	<u>L-Band</u>	<u>UHF</u>
Range (1-m ² target, S/N = 1)	266 naut mi	204 naut mi
Repetition rates	285 pps	285 pps
Pulse duration	1.7 μsec	1.7 μsec
Receiver bandwidth	1.2 Mc	1.2 Mc
Noise figure	8 db	5 db
Frequency	1250 to 1350 Mc	406 to 450 Mc
Peak power	2 Mw	2 Mw
Pedestal	Modified 5-inch Mark 38 gun-mount on 10-foot tower	

Track rate	Slaved to AN/FPQ-4 radar
	Azimuth 0.43 radian/sec
	Elevation 0.25 radian/sec
Pedestal data:	Synchros
Travel:	Azimuth ± 135 degrees with respect to stern
	Elevation -50 degrees to +85 degrees with respect to deck

2.2 TELEMETRY TRACKER

The telemetry tracker is an acquisition aid operating on the interferometer principle which gives angular position of the telemetry target from the ship.

General characteristics include:

Purpose	Telemetry recording and acquisition vectoring
Antenna	12-foot-square ground plane with four antenna assem- blies (Vought Electronics CVAT-162-4)
Frequency	215 to 260 Mc
Polarization	Vertical, horizontal, cir- cular (left or right)
Gain	18 db
Receiver	Nems-Clark 1432
Beamwidth	20 degrees
Side-lobe level	-12 db
VSWR	1.5 maximum

Power capacity	200 watts (continuous)
Pedestal	Canoga Electronic Corporation Model 8417, modified by RCA
Tracking rates	Azimuth 10 degrees/sec Elevation 10 degrees/sec Slew 30 degrees/sec
Tracking receiver preamp threshold:	-160 dbw
Pedestal output	Synchros, digitally encoded
Discriminators	EMR 67-D

2.3 VIDICON

Objective lens: Wollensak 20-inch Mirrotel F16-3

Field of view: 2 degrees

Resolving power: 2 seconds of arc

Image converter: 3-stage, electrostatic focused.
RCA C-73491

TV monitor: TM - 9N (twin)

Cameras (2) flight: Research IV-C 30 frames/sec
35 mm

2.4 SLAVE PEDESTALS

Four modified Talos AN/FPW-2 guidance pedestals may be slaved to either or both of the AN/FPQ-4 tracking radars. Dynamic and other characteristics of these slave pedestals are as follows:

	<u>Azimuth</u>	<u>Elevation</u>
Travel	Unlimited	-10 to 180 degrees
Angular velocity maximum	15 rpm	6 rpm
Angular accelera- tion maximum	9 radians/sec ²	6 radians/sec ²
Data output	Synchros, digitally encoded	

2.5 RECORDERS

Operating parameters of the various recorders used in conjunction with the above equipment are given in Table 2.1.

TABLE 2.1 RECORDER TABULATION

Recorder	Channels	Normal Speed	Information Capacity per Channel	Length	Model
CEC Digital	48	16 inches/sec	100 samples/sec 24 bits/sample	45 minutes	CEC #P00504
Ampex	42	Direct and FM 7 1/2 inches/sec	10-1.5M 100-1.5M at 60 in/sec	25 minutes	FR-100B
Mincom Video	7	120 inches/sec	1.0 Mc	12 minutes	CM-100
RCA Video	2	Multiplexed	4 Mc	30 minutes	Special
Sanborn	38	1 cm/sec	low frequency		Sanborn 156-100 series
Time and Events	200	1 cm/sec		215 minutes	Brush, RE 3610 00
Audio	4	7 1/2 inches/sec	Audio	96 minutes	RCA Audio Tape Deck
Vidicon Cameras	2	10 1/2 frames/sec		20 minutes	Flight Research IV-C
Boresight Cameras	2	20 frames/sec		10 minutes	Flight Research IV-C
CEC, Digital Punch	4				
Chart Recorders	8	Variable	Low		Esterline Angus 43006

CHAPTER 3

TRACKING RADAR TRAJECTORY

3.1 INTRODUCTION

All trajectory data was reduced from raw digital tapes of range, azimuth, elevation, roll, pitch, and own ship's heading (OSH) according to the IBM 709 digital program outlined below. Although the raw data was obtained and is available at 100 points per second, it was reduced and is presented, for obvious reasons, at 1 point per second during periods of valid FPQ-4 automatic track.

The following launcher locations were assumed:

1. Star Fish: All rocket launchers

Latitude 16.7350° (GEOD.)

Longitude 169.5255°

This assumption was made since the expected error in all Star Fish Prime trajectory printouts is of the order of the dimensions of Johnston Island.

2. Check Mate, Blue Gill Triple Prime, and King Fish: 6.13 Probes longitude 169.5208° W

Latitude 16.7350° (GEOD.)

6.2 Probes longitude 169.5148° W

Latitude 16.7350° (GEOD.)

3. Tight Rope:

N-Hercules Longitude 169.5255° W

Latitude 16.7350° (GEOD.)

Firing azimuths listed were computed generally from the X- and Y-values near the last point of track. They are therefore not corrected for Coriolis force.

3.2 DESCRIPTION OF TRAJECTORY LISTING

The sequence of the listing (reading across from left to right is:

1. Time in seconds relative to H-time
2. Target range from ship, kilometers
3. Target azimuth with respect to true North, degrees
4. Target geodetic elevation, degrees

These four quantities are raw data referenced to the ship, obtained by removing the effects of raw recorded roll, pitch, and OSR data from the raw range and pedestal angle information.

The next eight quantities involve translation to the launcher position and require that the ship and launcher position be used in computation. These quantities are:

5. X-distance East relative to launcher, kilometers

6. Y-distance North, kilometers
7. Z-vertical at launcher site. kilometers
8. $\sqrt{X^2 + Y^2}$. kilometers
9. Height over surface of earth, kilofeet
10. Height over surface of earth, kilometers
11. Latitude of target (geodetic), degrees
12. Longitude of target, - degrees

The X - Y - Z coordinate system is therefore an orthogonal system tangent to the earth surface at the launcher.

At the end of each printed interval of track, a number of input parameters are printed out. These parameters are:

1st Line:

1. Code
2. Code
3. Code
4. Code
5. Ship heading, degrees true
6. Ship velocity, knots
7. Code

2nd Line:

8. Launcher latitude (geodetic), degrees
9. Launcher longitude, degrees

10. Launcher height, feet
11. Earth semi-major axis, feet
12. Earth semi-minor axis, feet

3rd Line:

13. Start latitude of ship, degrees
14. Start longitude of ship, degrees
15. Height of radar, feet
16. Starting time
17. Stopping time

4th Line:

18. Final latitude of ship, degrees
19. Final longitude of ship, degrees

No data printed for those portions of track below 3 degrees with respect to the DAMP ship is considered reliable. It is included only to establish a minimum time-of-flight and impact range.

3.3 DESCRIPTION OF TRAJECTORY PROGRAM

The following symbols and equations were used in the development of the trajectory program. The drawings in Figure 3.1 show the geometry of the problem and indicate the location of the symbols used.

- a Equatorial radius of the earth: 20,926,428 feet
- A_1 Angle measured positive clockwise from the Y-axis, in the X - X plane, to the projection of the target position vector in the X - Y plane (See A, Figure 3.1.)
- A_2 Same as A_1 but all references are made to the $X_e - Y_e - Z_e$ coordinate system rather than the X - Y - Z (See E, Figure 3.1.)
- b Polar radius of the earth: 20,855,968 feet
- E_1 Angle measured positive upward from the X - Y plane to the target position vector (See A, Figure 3.1.)
- E_2 Same as E_1 but referenced to the $X_e - Y_e - Z_e$ coordinate system rather than the X - Y - Z (See E, Figure 3.5.)
- h_1 Height above mean sea level of the sensor at position 1
- h_2 Height above mean sea level of the sensor at position 2
- h_t Height (geocentric) of the target above mean sea level

R_1 Radar range of the target from position 1

R_2 Radar range of the target from position 2

R_{E1} Radius of the earth at position 1

R_{E2} Radius of the earth of position 2

R_E Radius of the earth at position of the target

α_1 Angle measured clockwise in the tangent plane
at position 1 from true North to the Y-axis
(See A, Figure 3.1.)

α_2 Angle measured clockwise in the tangent plane
at position 2 from true North to the Y-axis
(See E, Figure 3.5.)

λ_1 Longitude of position 1 (positive East)

λ_2 Longitude of position 2 (positive East)

λ_T Longitude of position of the target
(positive East)

\emptyset_1 Geocentric latitude of position 1
(positive North)

\emptyset_1^V Geodetic latitude of position 1
(positive North)

\emptyset_2 Geocentric latitude of position 2
(positive North)

\emptyset_2^V Geodetic latitude of position 2
(positive North)

θ_T Geocentric latitude of position of the
target (positive North)

θ_{TV} Geodetic latitude of position of the
target (positive North)

3.4 TRAJECTORY ACCURACY

A numerical estimate of typical tracking errors of the DAMP system was obtained (Reference 1) by comparison of seven spans of tracking data with Atlantic Missile Range (AMR) station 12 FPS-16 tracking data during six ICBM tests in the Ascension area in 1961. Station 12 data was assumed perfect. The tracking noise and bias errors in DAMP data (due to uncertainty in ship's position, and gyro noise and bias, including radar range, azimuth, and elevation errors) thus determined are presented in Table 3.1 for four of these spans. These four spans are considered to be more representative of the tracking geometry of the Fish Bowl DAMP tracking intervals since they are end-aspect shots (DAMP ship positioned downrange from impact). The other three tests were side-aspect shots involving high angular rates and cannot be considered pertinent.

To obtain the noise in the Johnston Island referenced portion of the listing, the noise estimate in Table 3.1 may be used

with the range, azimuth, and elevation data referenced to the ship. Caution must be used in applying any bias error estimates to the data referenced to Johnston Island or the earth (latitude, longitude, and altitude) in the trajectory listings included in Appendix A. Bias was removed in part by forcing the ship position, within limits, to make the X - Y portion of the trajectory meet at $X = 0$ and $Y = 0$. The bias errors tabulated in Table 3.1 are therefore pessimistic for the present purpose.

The transformation equations are as follows:

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} R_1 \cos E_1 \sin A_1 \\ R_1 \cos E_1 \cos A_1 \\ R_1 \sin E_1 \end{pmatrix}$$

(3.1)
See A,
Figure 3.1

$$\begin{pmatrix} x \\ y \\ z_1 \end{pmatrix} = \begin{pmatrix} \cos \alpha_1 & \sin \alpha_1 & 0 \\ -\sin \alpha_1 & \cos \alpha_1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

(3.2)
See A,
Figure 3.1

$$\begin{pmatrix} x \\ y \\ z_2 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos(\phi_1^V - \phi_1) & \sin(\phi_1^V - \phi_1) \\ 0 & -\sin(\phi_1^V - \phi_1) & \cos(\phi_1^V - \phi_1) \end{pmatrix} \begin{pmatrix} x \\ y \\ z_1 \end{pmatrix}$$

(3.3)
See B,
Figure 3.1

Where: $\phi_1 = \tan^{-1} \left\{ \left(\frac{b}{a} \right)^2 \tan \phi_1^V \right\}$

$$\begin{pmatrix} x \\ y \\ z_3 \end{pmatrix} = \begin{pmatrix} x \\ y \\ z_2 \end{pmatrix} + \begin{pmatrix} 0 \\ 0 \\ R_{E_1} + h_1 \end{pmatrix}$$

(3.4)
See B,
Figure 3.1

Where: $R_{E_1} = ab \left[(b \cos \phi_1)^2 + (a \sin \phi_1)^2 \right]^{-\frac{1}{2}}$

$$\begin{pmatrix} x \\ y \\ z_4 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \phi_1 & \sin \phi_1 \\ 0 & -\sin \phi_1 & \cos \phi_1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z_3 \end{pmatrix}$$

(3.5)
See B,
Figure 3.1

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix}_5 = \begin{pmatrix} \cos(\lambda_2 - \lambda_1) & 0 & -\sin(\lambda_2 - \lambda_1) \\ 0 & 1 & 0 \\ \sin(\lambda_2 - \lambda_1) & 0 & \cos(\lambda_2 - \lambda_1) \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix}_4$$

(3.6)
See C,
Figure 3.1

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix}_6 = \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \phi_2 & -\sin \phi_2 \\ 0 & \sin \phi_2 & \cos \phi_2 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix}_5$$

(3.7)
See L,
Figure 3.1

Where: $\phi_2 = \tan^{-1} \left\{ \left(\frac{b}{a} \right)^2 \tan \phi_2^V \right\}$

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix}_7 = \begin{pmatrix} x \\ y \\ z \end{pmatrix}_6 - \begin{pmatrix} 0 \\ 0 \\ R_{E_2} + h_2 \end{pmatrix}$$

(3.8)
See D,
Figure 3.1

Where: $R_{E_2} = ab \left[(b \cos \phi_2)^2 + (a \sin \phi_2)^2 \right]^{-\frac{1}{2}}$

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix}_8 = \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos(\phi_2^V - \phi_2) & \sin(\phi_2^V - \phi_2) \\ 0 & -\sin(\phi_2^V - \phi_2) & \cos(\phi_2^V - \phi_2) \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix}_7$$

(3.9)
See D,
Figure 3.1

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix}_9 = \begin{pmatrix} -\sin \alpha_2 & \cos \alpha_2 & 0 \\ \cos \alpha_2 & \sin \alpha_2 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix}_8$$

(3.10)
See E,
Figure 3.1

See E, Figure 3.1, for all quantities defined by the following equations:

$$A_2 = \tan^{-1} \left\{ \frac{x_9}{y_9} \right\} \quad (3.11)$$

$$R_2 = \left[(x_9)^2 + (y_9)^2 + (z_9)^2 \right]^{\frac{1}{2}} \quad (3.12)$$

$$E_2 = \sin^{-1} \left\{ \frac{z_9}{R_2} \right\} \quad (3.13)$$

See F, Figure 3.1, for all quantities defined by the following equations:

$$\phi_T^v = \tan^{-1} \left\{ \left(\frac{a}{b} \right)^2 \tan \phi_T \right\} \quad (3.14)$$

$$\text{Where: } \phi_T = \tan^{-1} \left\{ y_4 \left[(x_4)^2 + (z_4)^2 \right]^{-\frac{1}{2}} \right\}$$

$$\lambda_T = \lambda_1 + \tan^{-1} \left\{ \frac{x_4}{z_4} \right\} \quad (3.15)$$

$$h_T = \left[(x_4)^2 + (y_4)^2 + (z_4)^2 \right]^{\frac{1}{2}} - R_{ET} \quad (3.16)$$

$$\text{Where: } R_{ET} = ab \left[(b \cos \phi_T)^2 + (a \sin \phi_T)^2 \right]^{-\frac{1}{2}}$$

The plan trajectories of the probes, the ship movement, and a general plan view of the Star Fish Prime geometry are shown in Figures 3.2 through 3.4. Figures 3.5 through 3.7 show the probe trajectories for Star Fish Prime.

TABLE 3.1 NUMERICAL ESTIMATE OF TYPICAL TRACKING ERRORS

Test	Geometry Aspects	Tracking Period	Tracking Differences											
			Azimuth			Elevation			Range					
			Mean	Std	RMS	Mean	Std	RMS	Mean	Std	RMS			
5462	End	sec 1802-1882	deg -0.287	deg 0.086	deg 0.300	deg -0.050	deg 0.056	deg 0.075	feet 7220	feet 1183	feet 7316			
3212	End	1882-1956	-0.055	0.047	0.072	0.067	0.064	0.093	2949	406	2978			
6203	End	1812-1904	0.063	0.285	0.292	0.169	0.074	0.184	-3733	411	3756			
6203	End	1888-1911	0.828	0.467	0.950	0.260	0.094	0.277	-4520	149	4522			

^aEnd aspect, ship position in trajectory plane downrange from impact point.

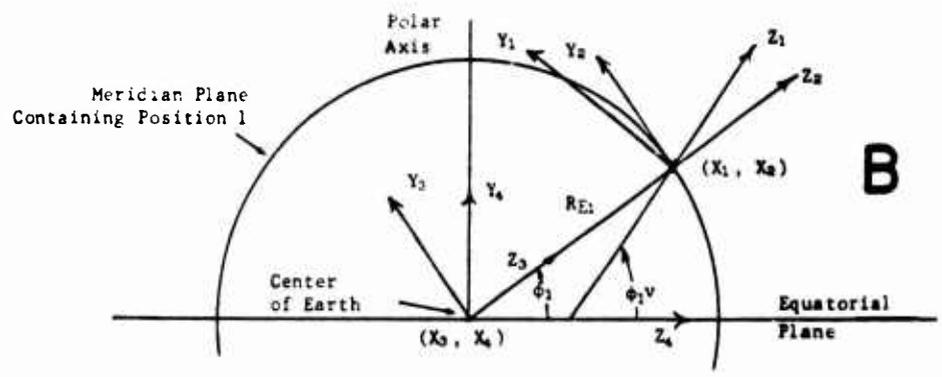
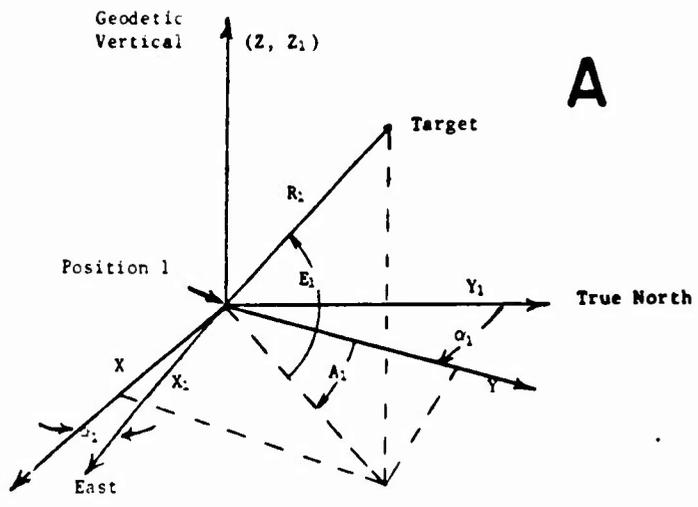


Figure 3.1 Geometrical figures used in derivation of trajectory equations.

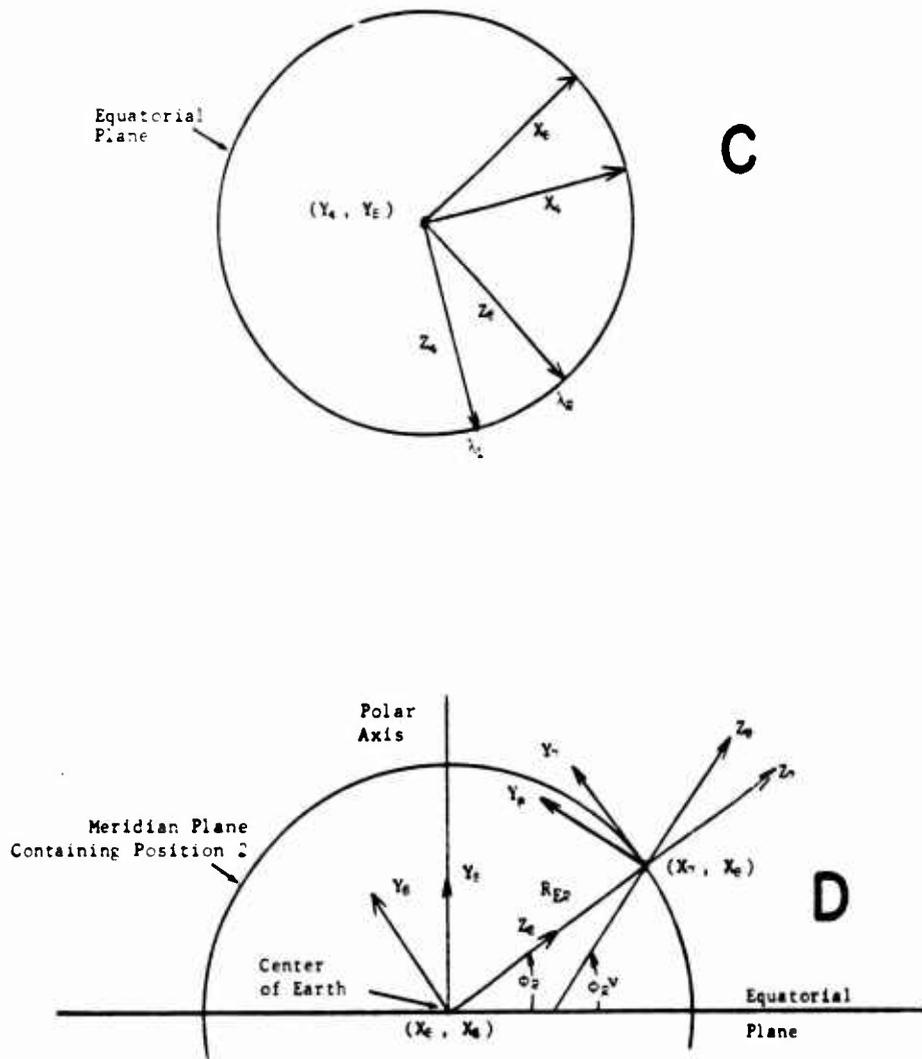


Figure 3.1 Continued

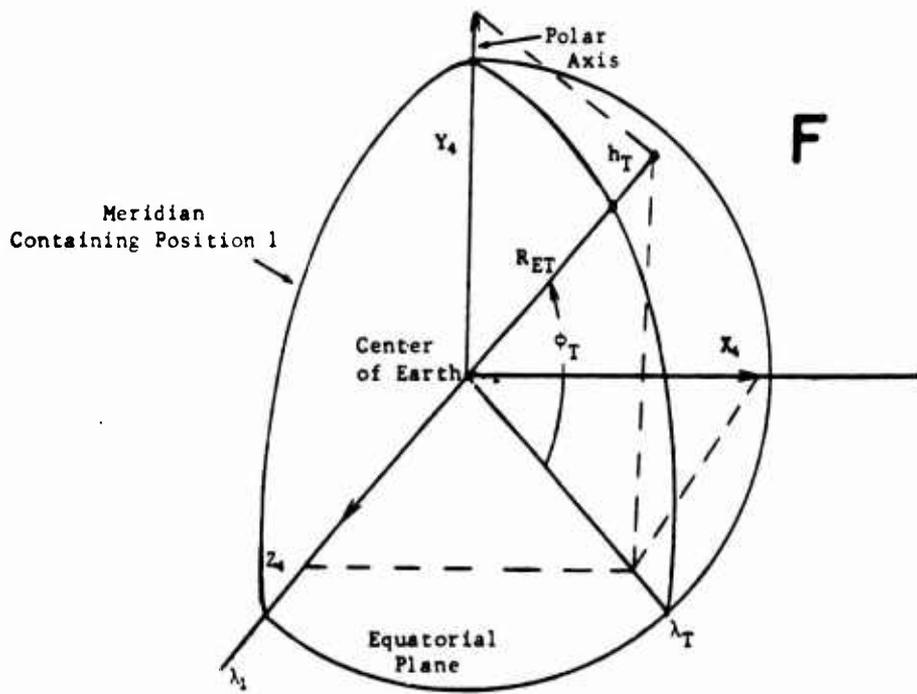
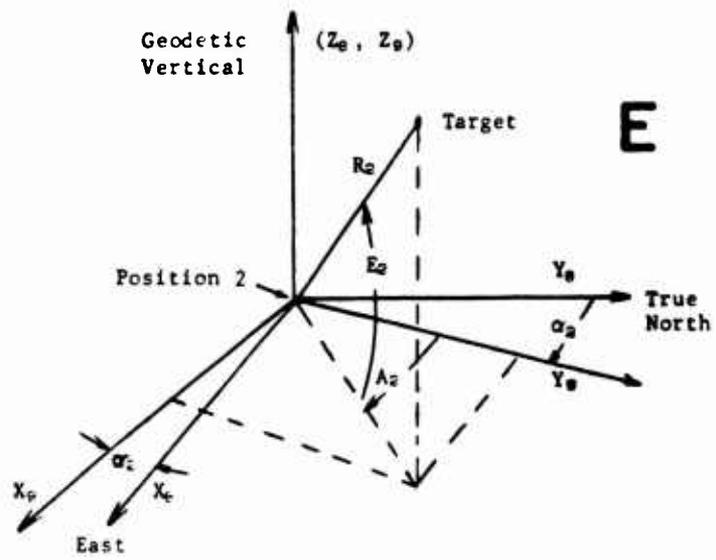


Figure 3.1 Continued

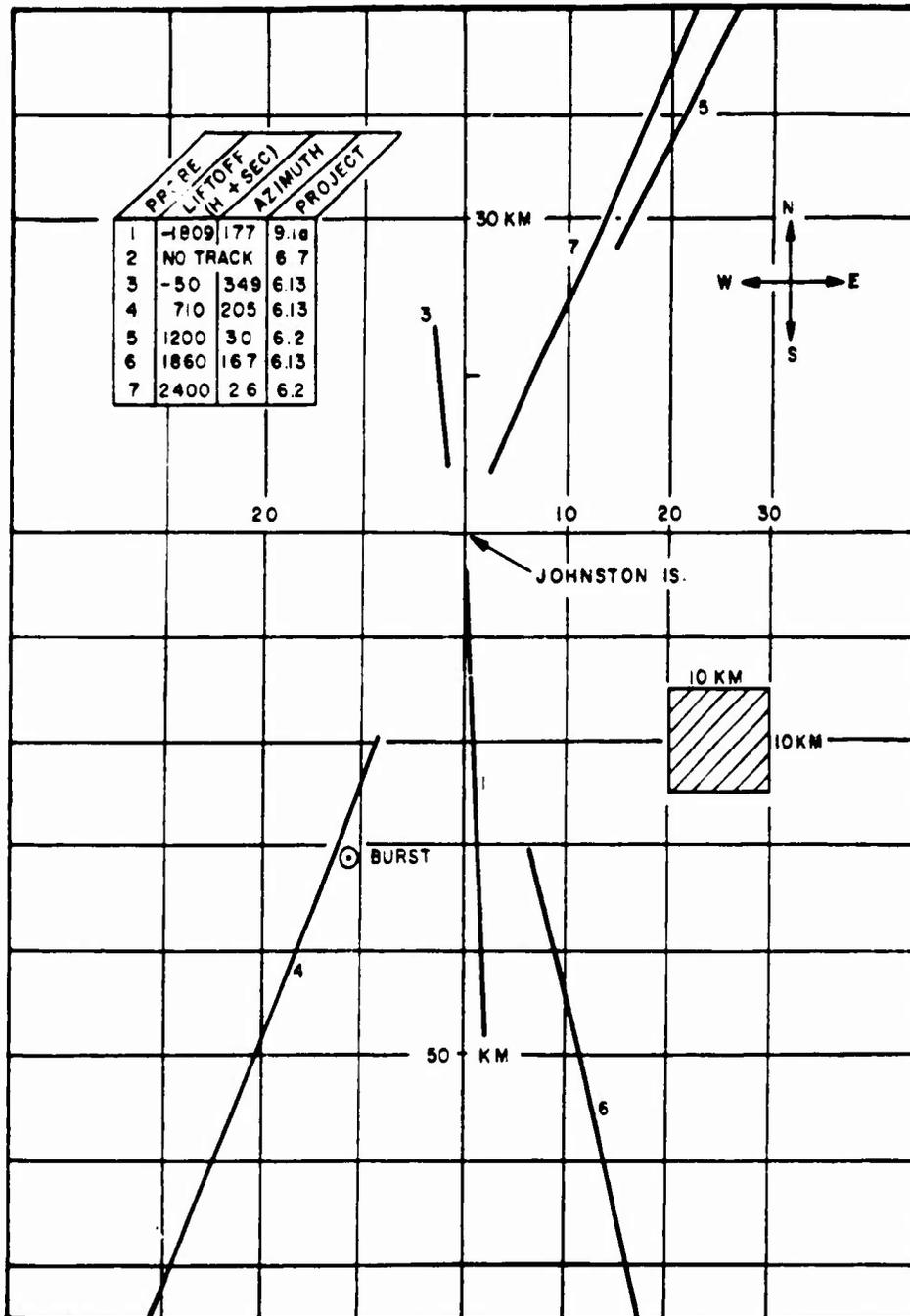


Figure 3.2 Star Fish Prime plan trajectories.

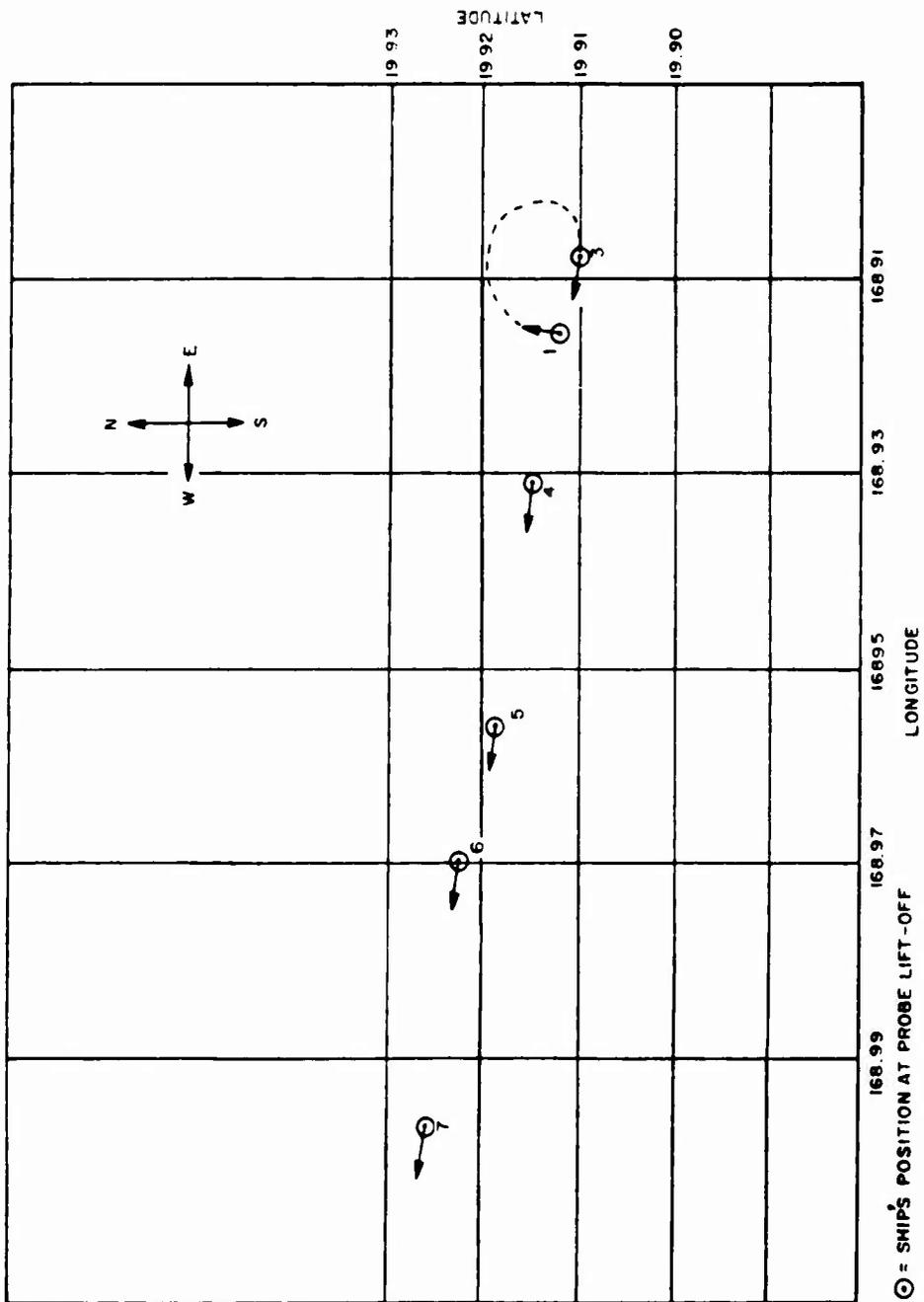


Figure 3.3 Star Fish Prime ship movement for six tracked probes.

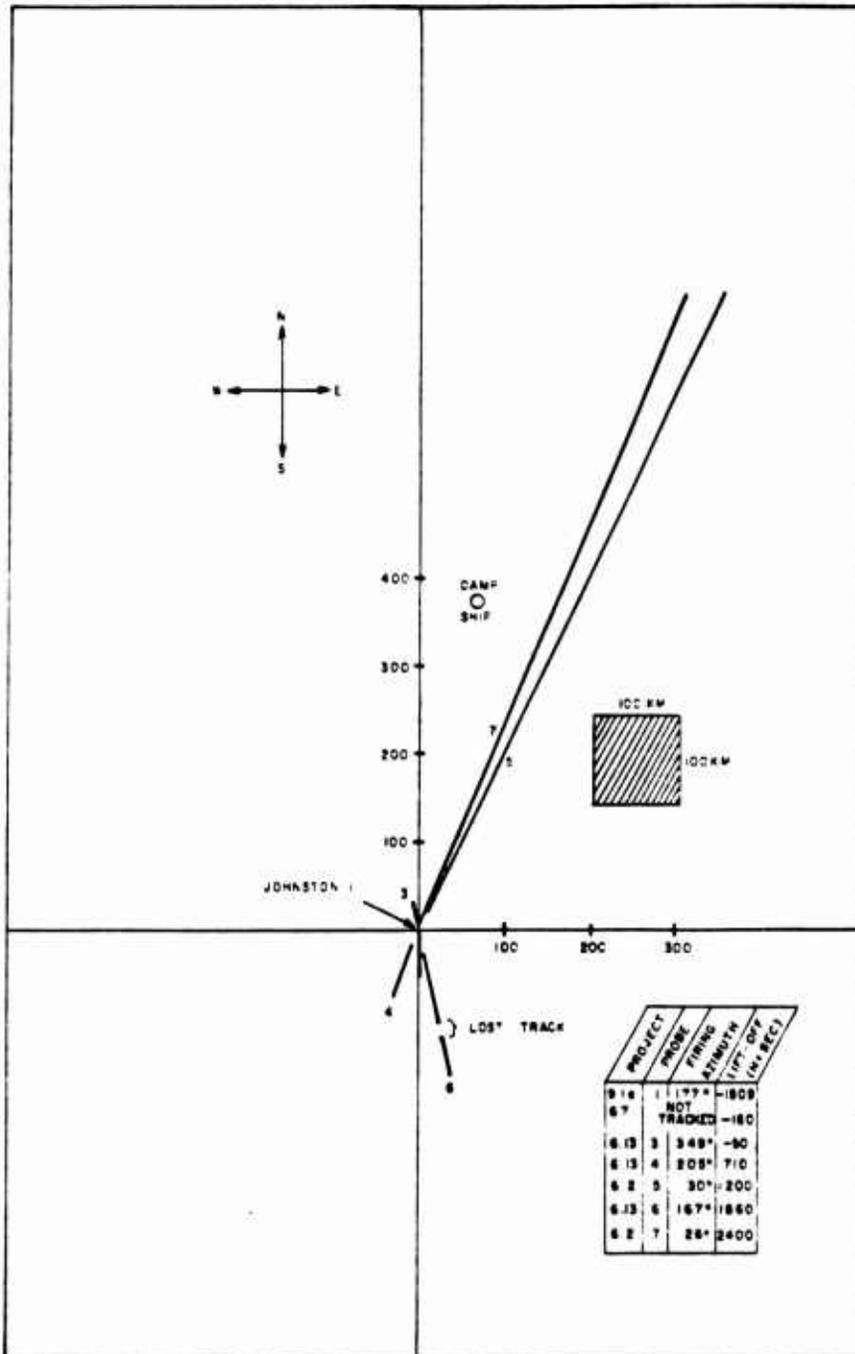


Figure 3.4 Star Fish Prime plan view.

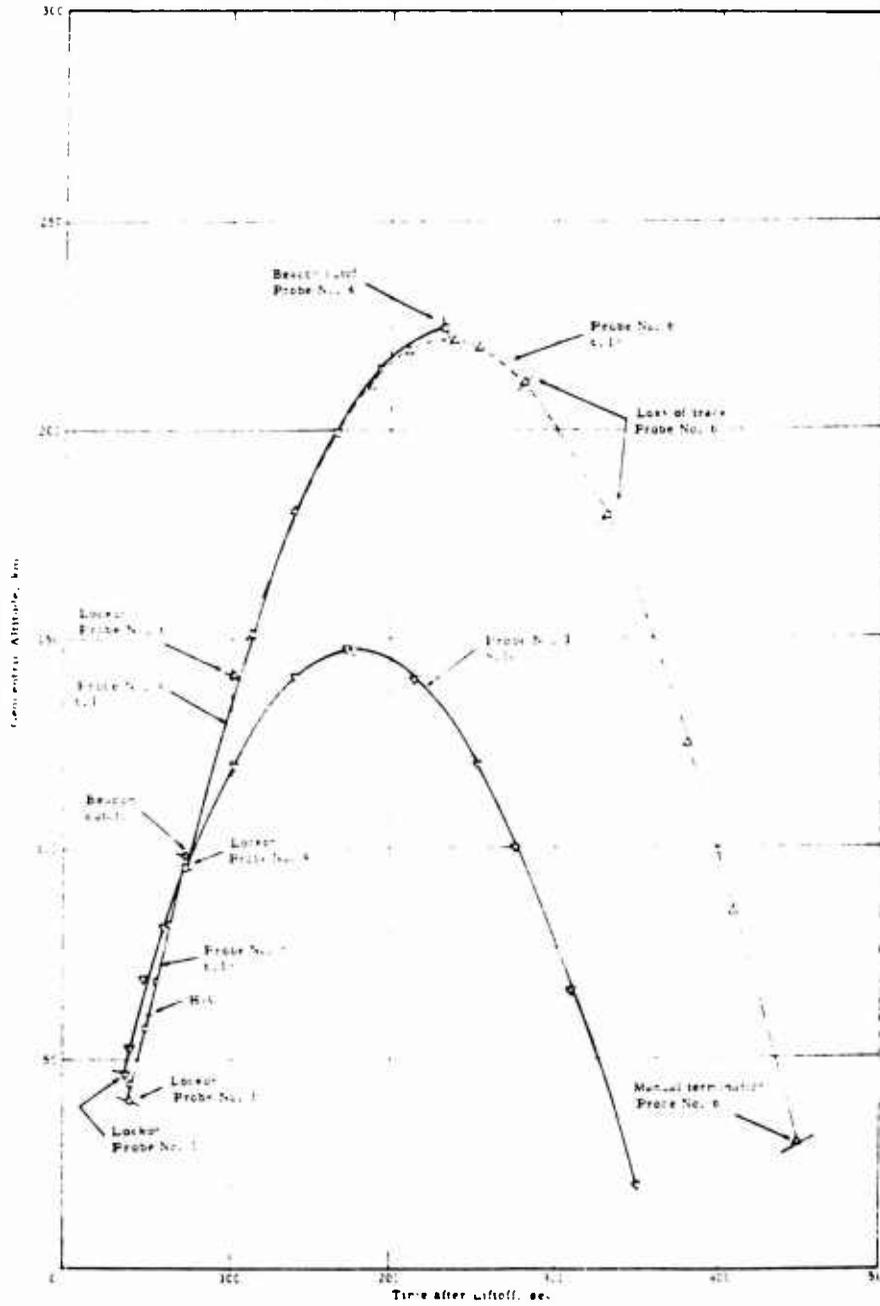


Figure 3.5 Star Fish Prime time-altitude trajectories, 6.13 and 9.1a probes.

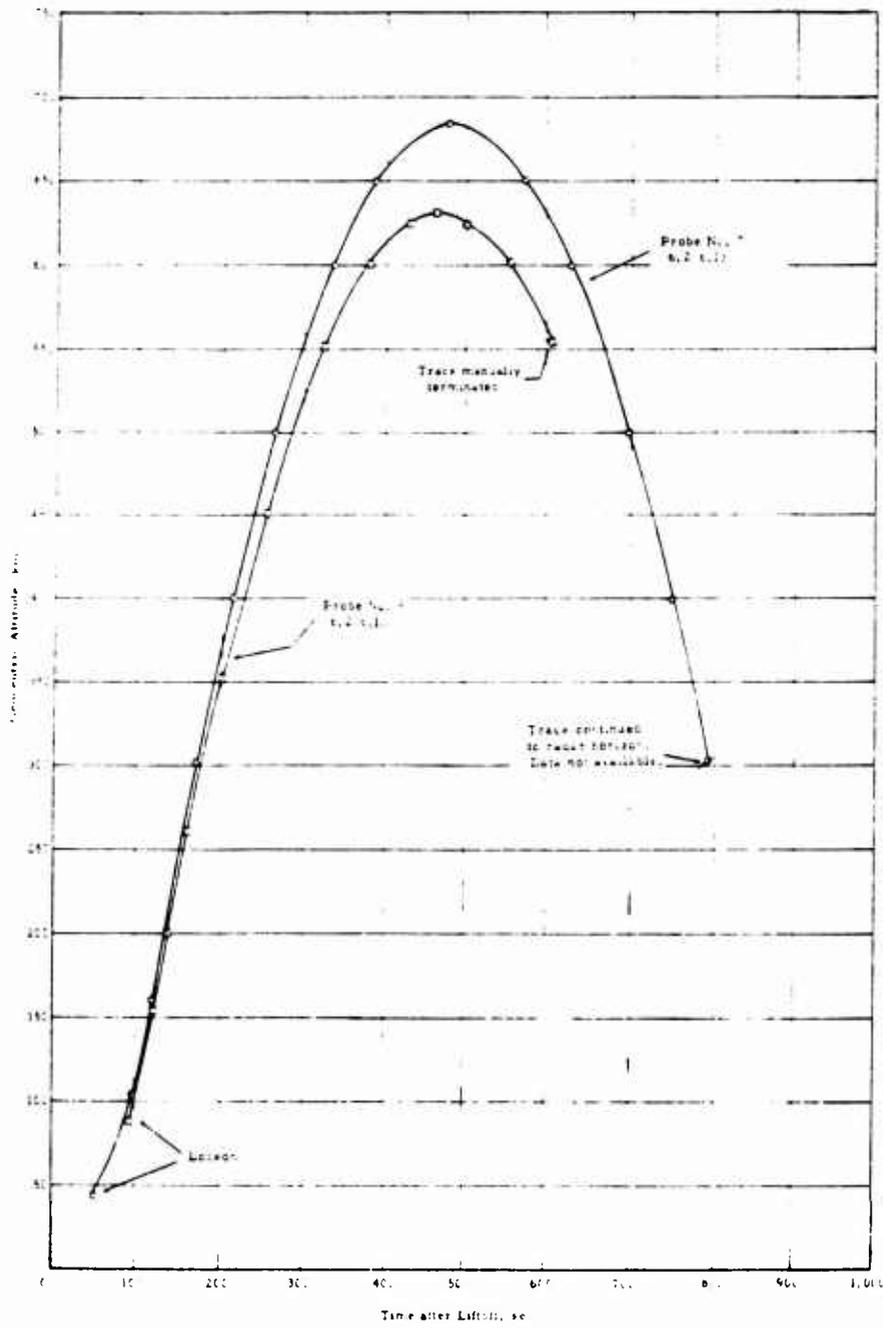


Figure 3.6 Star Fish Prime time-altitude trajectories, 6.2 and 6.13 probes.

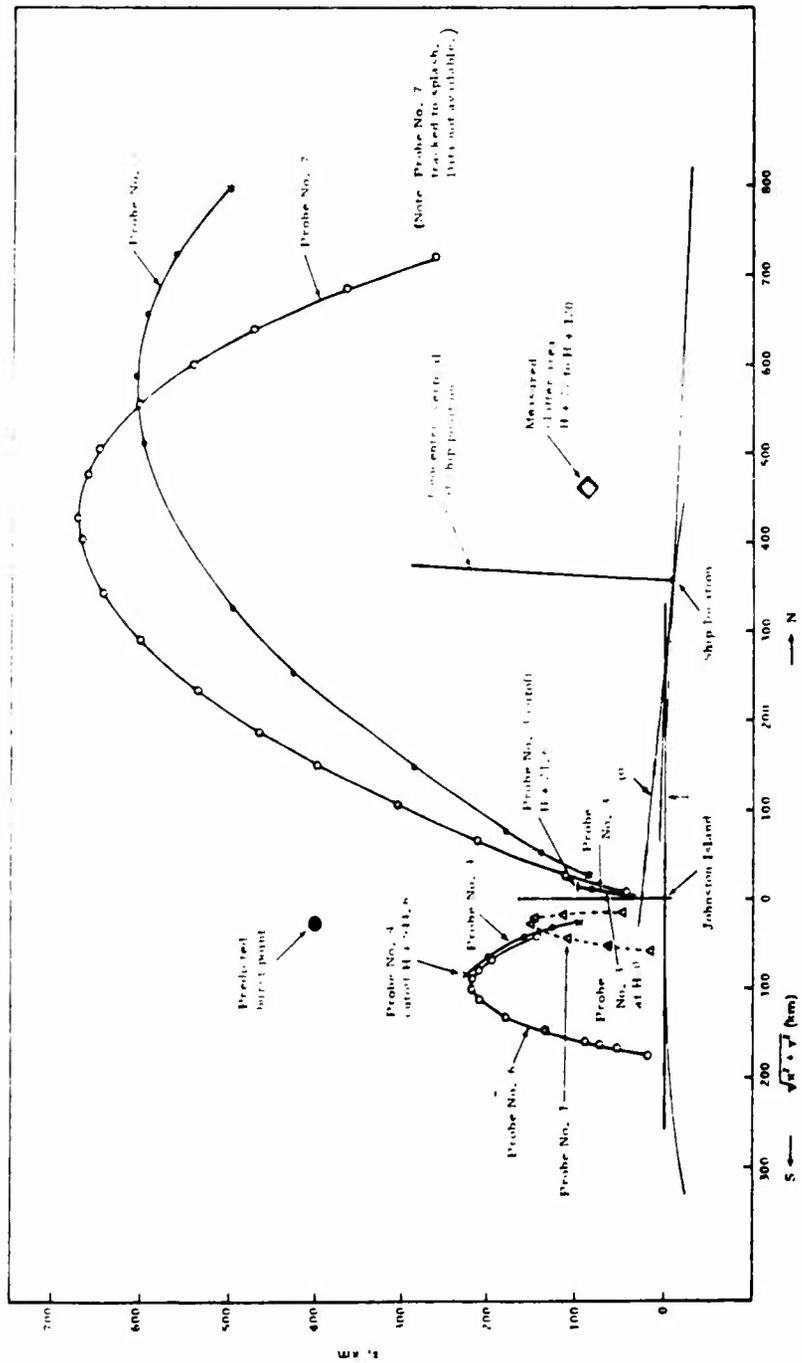


Figure 3.7 Star Fish Prime probe trajectories.

CHAPTER 4

C-BAND SIGNAL STRENGTH AND ERRORS (BEACON)

Appendix B contains the Sanborn records for all mission Radar 1 beacon tracking and acquisition intervals. The signal strength presented is the automatic gain control voltage of the tracking receivers of the FPQ-4. The records are annotated with events taken from the edited time and events records. Calibration of signal strength is presented in db/m units. This refers to the peak output power level of an RF pulsed signal generator. This signal generator output was fed to a waveguide run of several hundred feet, thence to the foremast horn from which the RF signal was radiated about 300 feet to the FPQ-4 antenna. When parameters were changed (bandwidth changes, local oscillators, etc.) during a mission, signal strength calibrations are included for each combination.

Angle error calibrations were obtained by moving the antenna from the foremast horn 10 mils in each of four directions.

Pre-mission and post-mission calibrations were available. However, for this report, the calibration occurring closer to the mission was included (Figure B.1).

The Sanborn records include a real-time GMT 13-bit digital 1-pulse/second code, repeated every 15 seconds. The pulses are of three different widths. The thickest pulse is the reference pulse. The left edge of this pulse signifies the beginning of a 15-second GMT interval. The next 13 bits designate which 15-second interval of the day begins at that reference pulse. Medium width pulses designate a "1," and thin pulses designate a "0." The two pulses following the reference pulse signify which 15-second interval of the minute, the following six signify which minute of the hour, and the following five signify the particular hour of the day. Thus, the pulse train 10, 100100, 10010 after the reference pulse means that the reference pulse left edge corresponds to 9 hours, 9 minutes, and 0 seconds GMT. The last pulse prior to the next reference pulse is a dummy pulse.

CHAPTER 5

UHF/L-BAND TRAJECTORY

Trajectory data for the UHF/L-band radar (Appendix C) has been reduced in the same manner as the trajectory data presented in the Port C-band tracking radar listings. The UHF-L listings, however, were derived from the Starboard C-band radar to which the UHF-L band radar was slaved during most of the mission.

Under conditions of UHF-L band slaving to the Starboard radar, the antenna will follow the C-band radar to within 6 milliradians in angle, provided the following angular rates are not exceeded:

Azimuth Velocity	25 degrees/sec
Elevation Velocity	14 degrees/sec
Azimuth Acceleration	110 degrees/sec
Elevation Acceleration	85 degrees/sec

It is believed that these rates were not exceeded during any mission.

Due to equipment limitations, the UHF-L band antenna cannot be slaved to the Starboard C-band radar during discontinuities in designation data (for example, when a point chosen for scanning is suddenly changed). These periods

during which the UHF-L antenna is slaved to the C-band radar are tabulated in the time and event record. For the remainder of the time, angles presented pertain only to the Starboard C-band radar.

It must be emphasized that the range (column 2) and all quantities transferred to Johnston Island refer to the range gate, although tracking was not employed. The position of the range gate on the intensity-modulated photographs is 21 Kyds after the pre-trigger; the position of the range gate on the amplitude versus range presentation is 21 Kyds after the pre-trigger, unless otherwise noted.

Although the mapping was generally continued for hours, only 900 seconds of look angles are presented, since the observed effects decreased rapidly (preliminary examination of the records reveals that, in general, nothing was seen after 5 minutes).

CHAPTER 6

TELEMETRY TRACKING POINTING ANGLES

There were no telemetry rockets utilized by DAMP during this event.

CHAPTER 7

VIDEO-DERIVED CROSS SECTION AND BEACON POWER (NEAR H-O)

Magnetic tape records were taken in each mission of ungated video from each of the radars. The video was supplied by special receivers intended solely for that purpose, and operating outside the radar tracking loops. The receivers had roughly logarithmic transfer characteristics, compressing 80-decibel input variations to the 32-decibel dynamic range of the video recorders. They contained no AGC loop. In data reduction, the amplitude of each received pulse was recovered from the video tapes, and by applying calibration information, it was converted to received peak power relative to an arbitrary reference. The video bandwidth used during playback was 0.6 megacycle.

For the beacon returns, power variation with changing distance between the radar and the beacon was removed by dividing the received power by the square of the slant range. The resulting normalized received beacon power (in decibels) was plotted versus time in the vicinity of H-O (Figure 7.1).

For Tight Rope, the echo return from the DAMP Nike-Hercules was discernible in the video records, and its C-band radar cross section was computed and plotted.

The calculation was

$$\sigma = \sigma_r \frac{SR^4}{S_r R_r^4}$$

where: σ \equiv radar cross section

S \equiv received power relative to a common (arbitrary)
reference

R \equiv slant range to the target

The quantities without subscripts refer to the Nike-Hercules. The quantities with subscript r refer to the post-mission track of a balloon-borne 6-inch-diameter aluminum sphere, whose cross section was calculated to be σ_r .

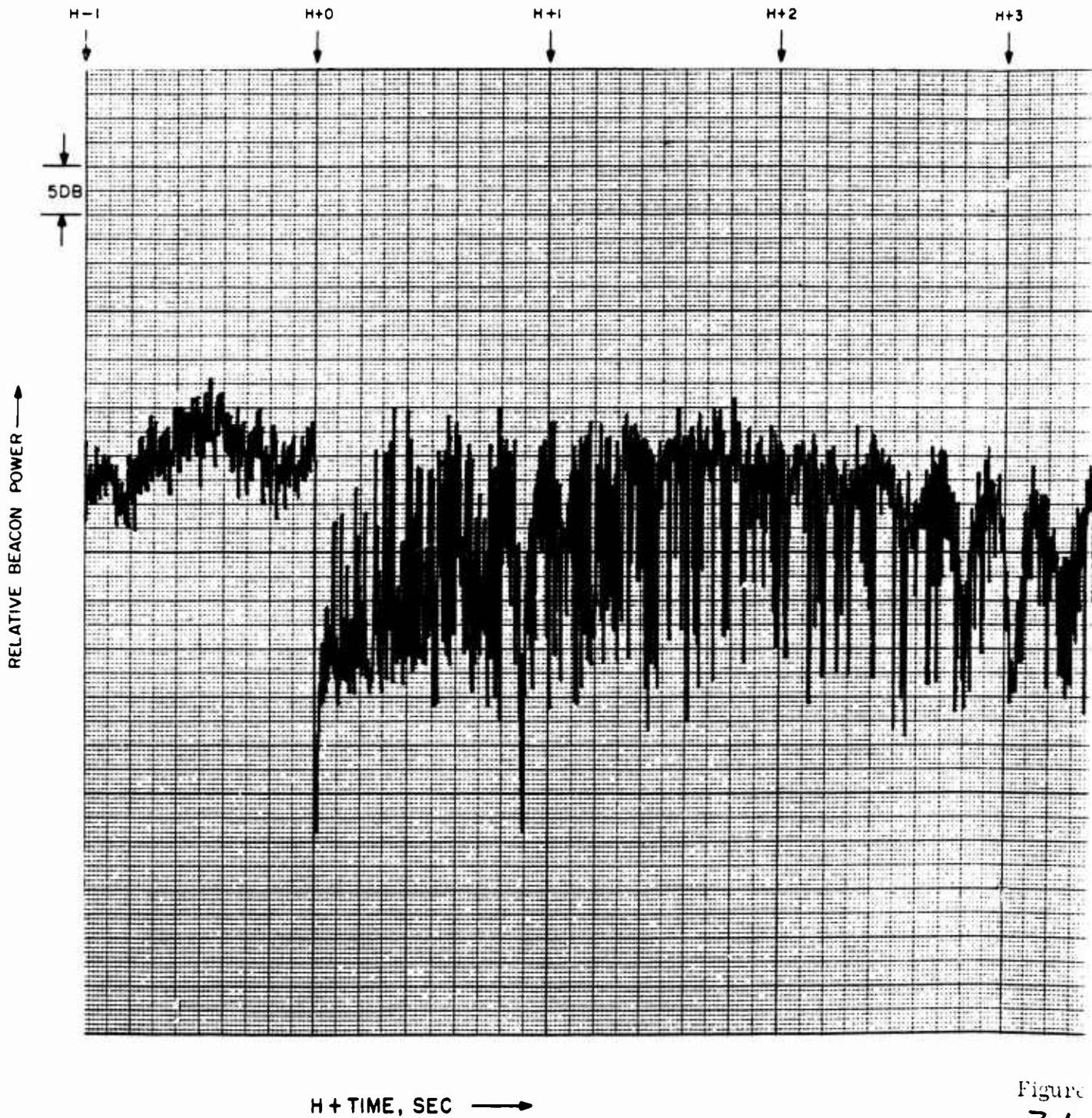


Figure
7.1

55-1

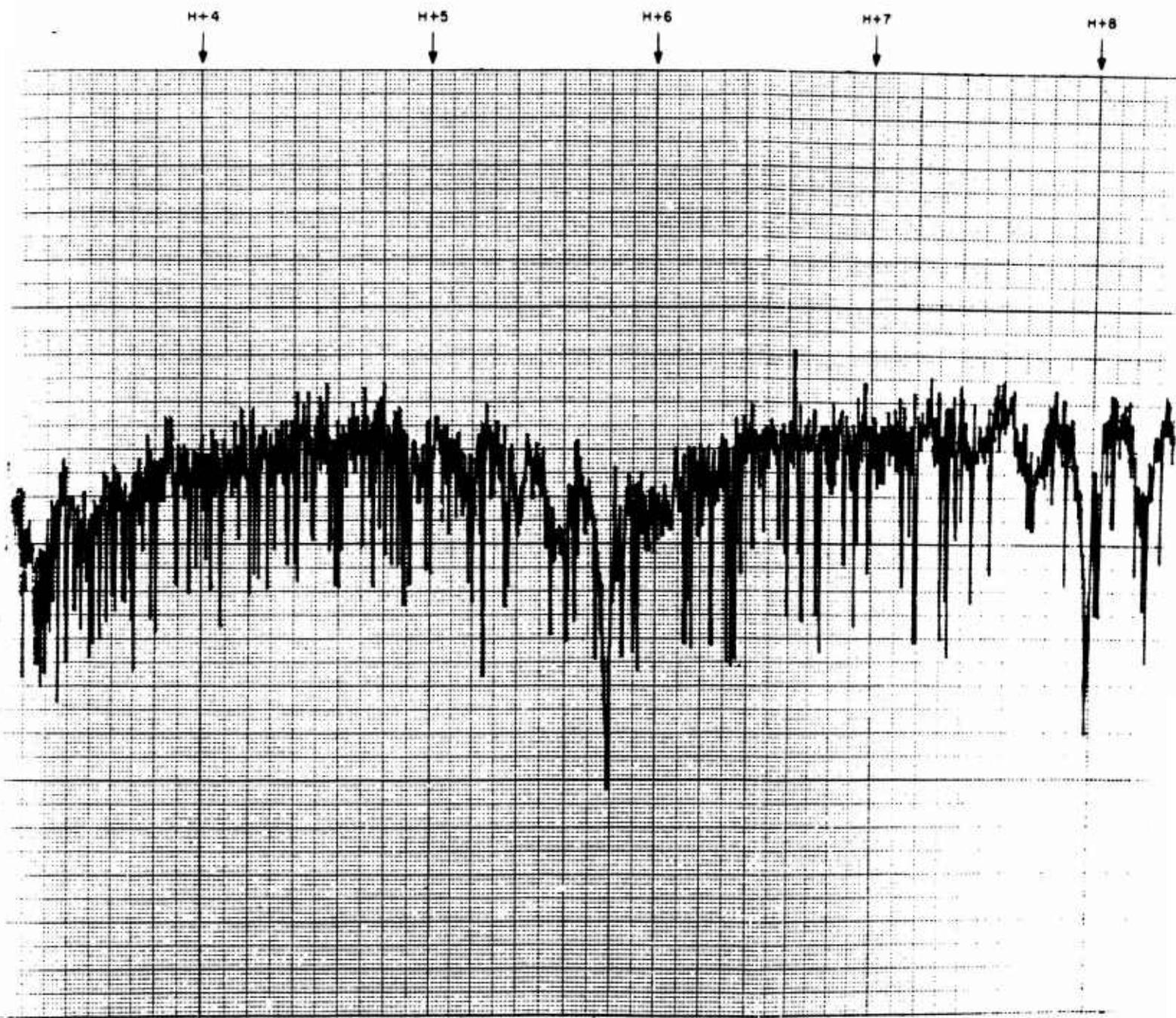


Figure 7.1 Star Fish Prime video-derived beacon power.

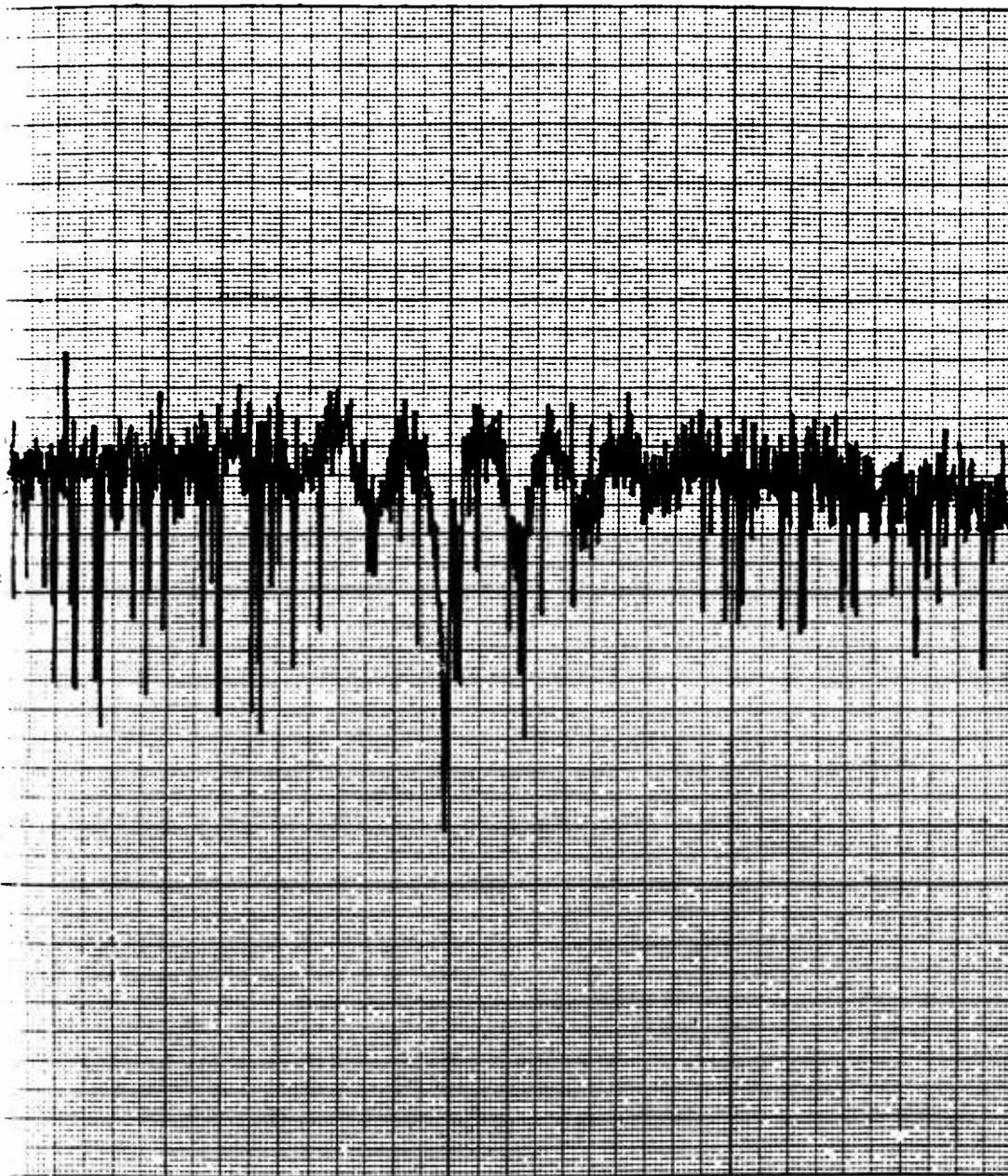


H+7

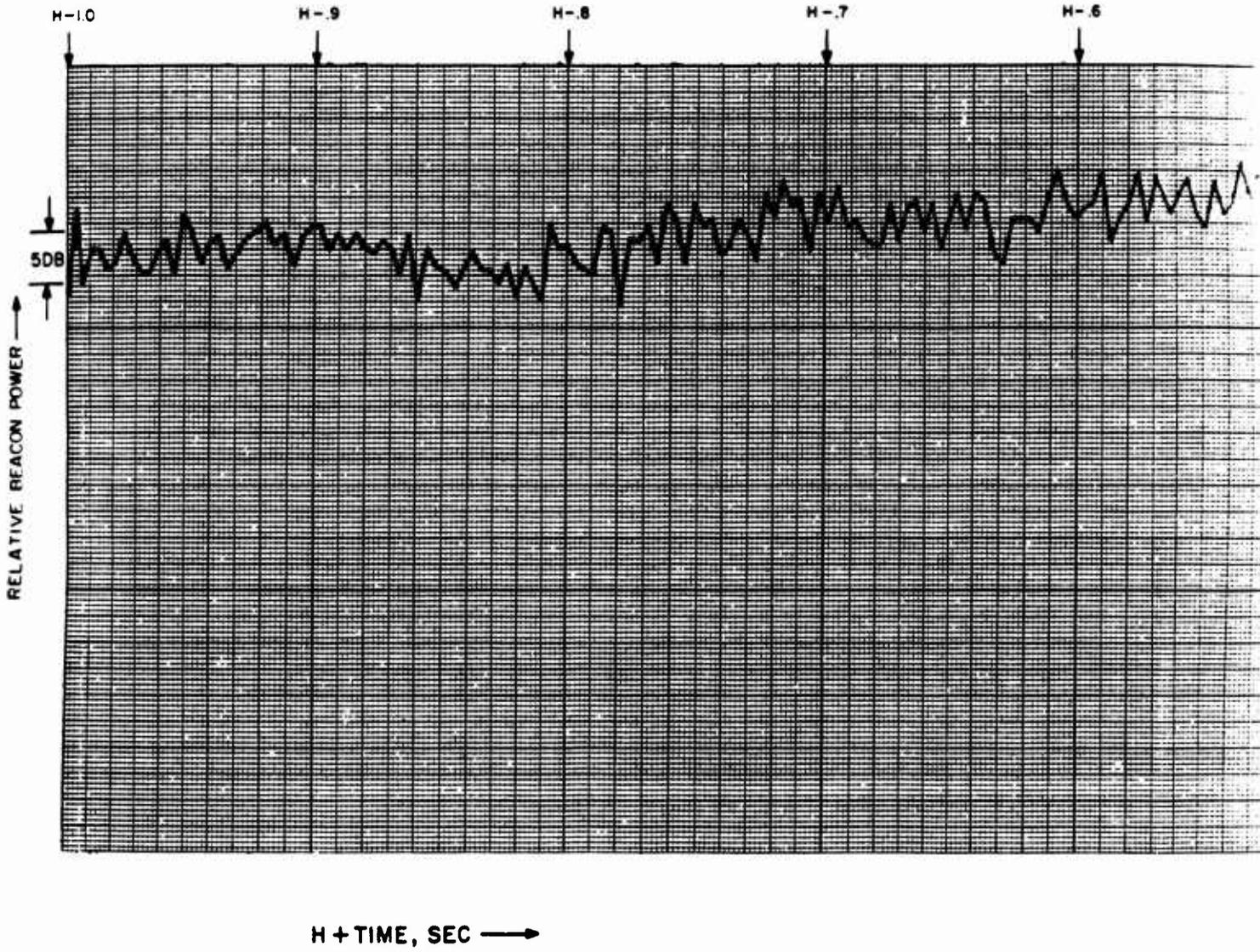
H+8

H+9

H+10



55-3



56-1

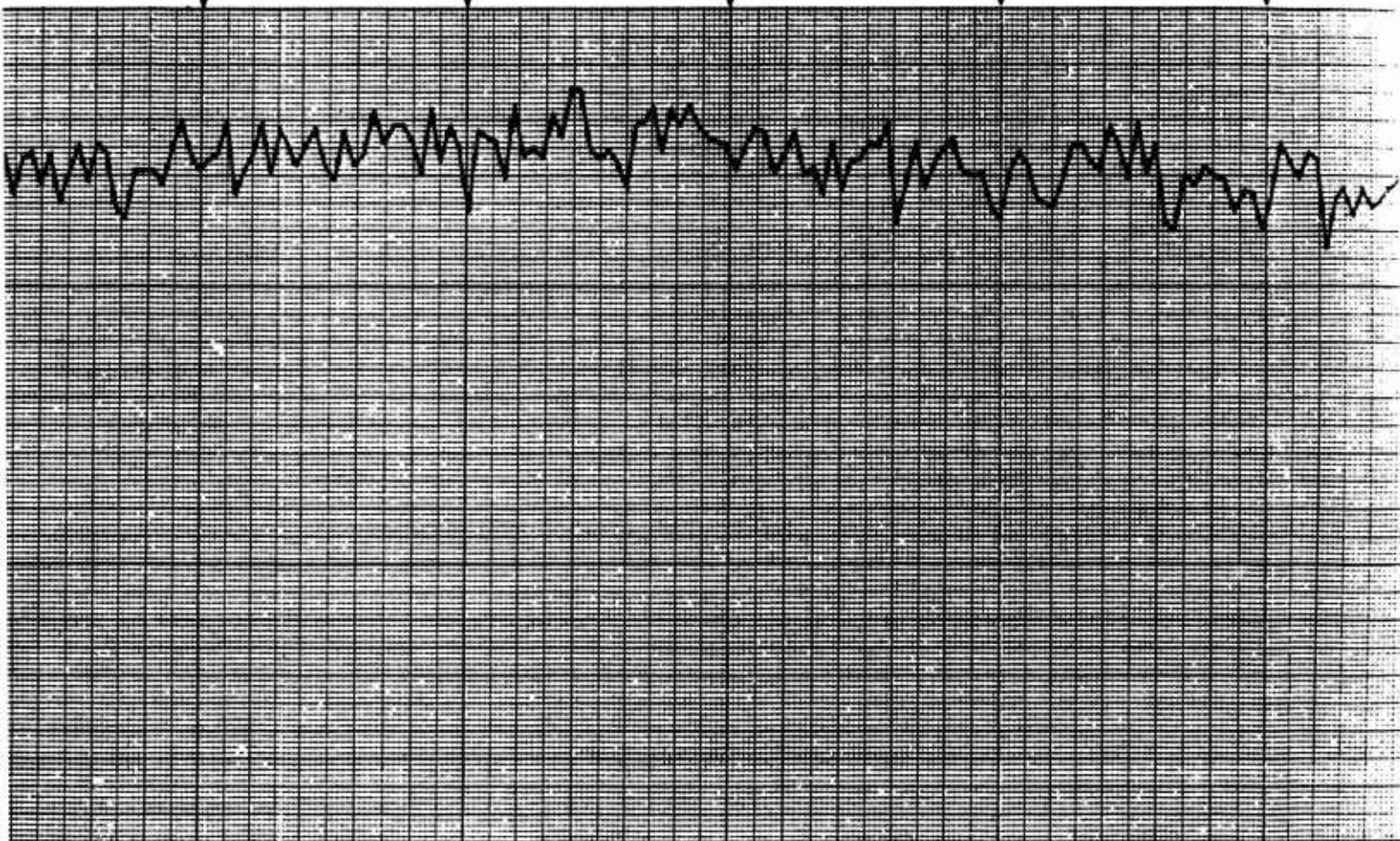
H-6

H-5

H-4

H-3

H-2



56-2

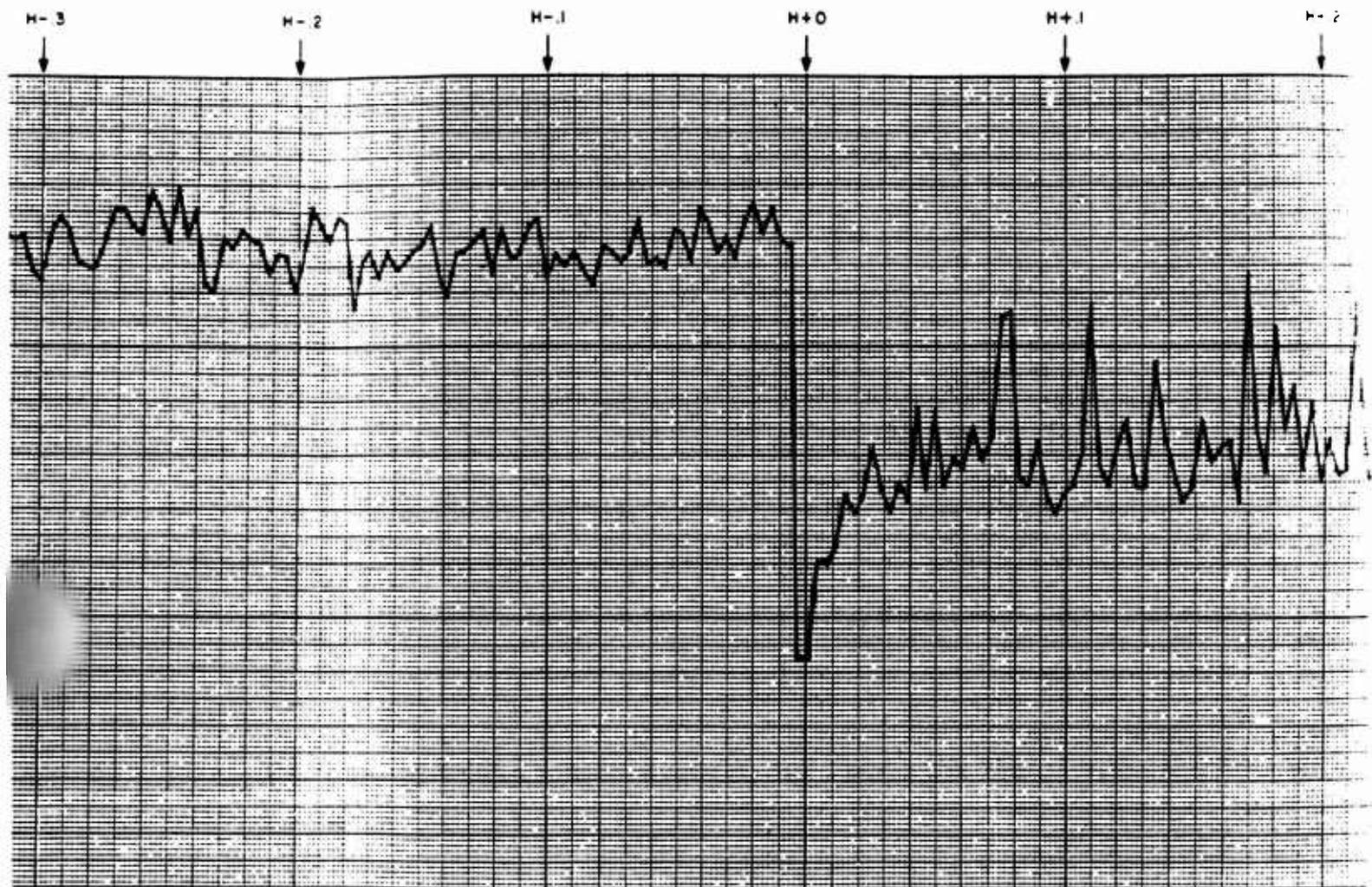


Figure 7.1 Continued.



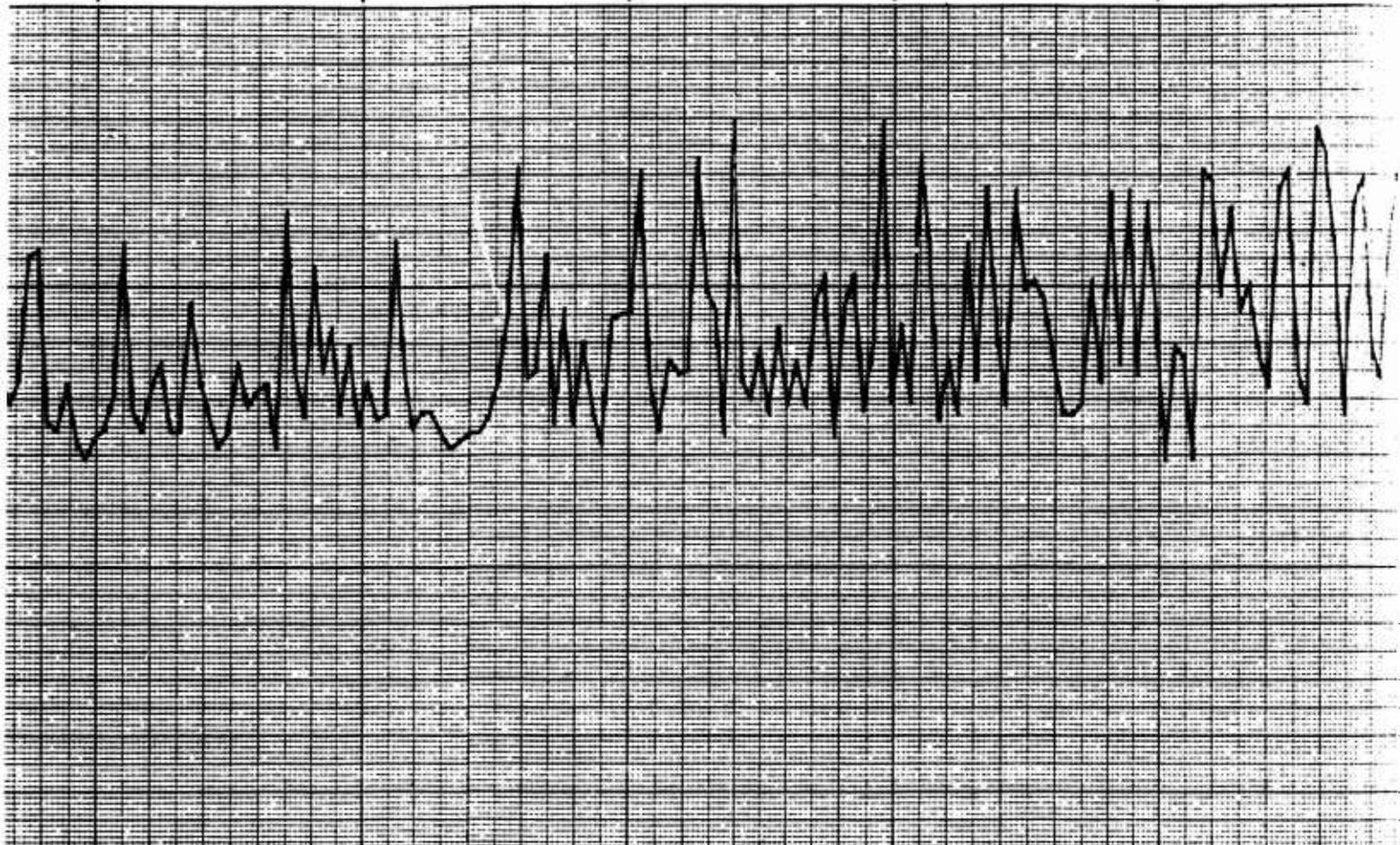
H+1

H+2

H+3

H+4

H+5



56.4

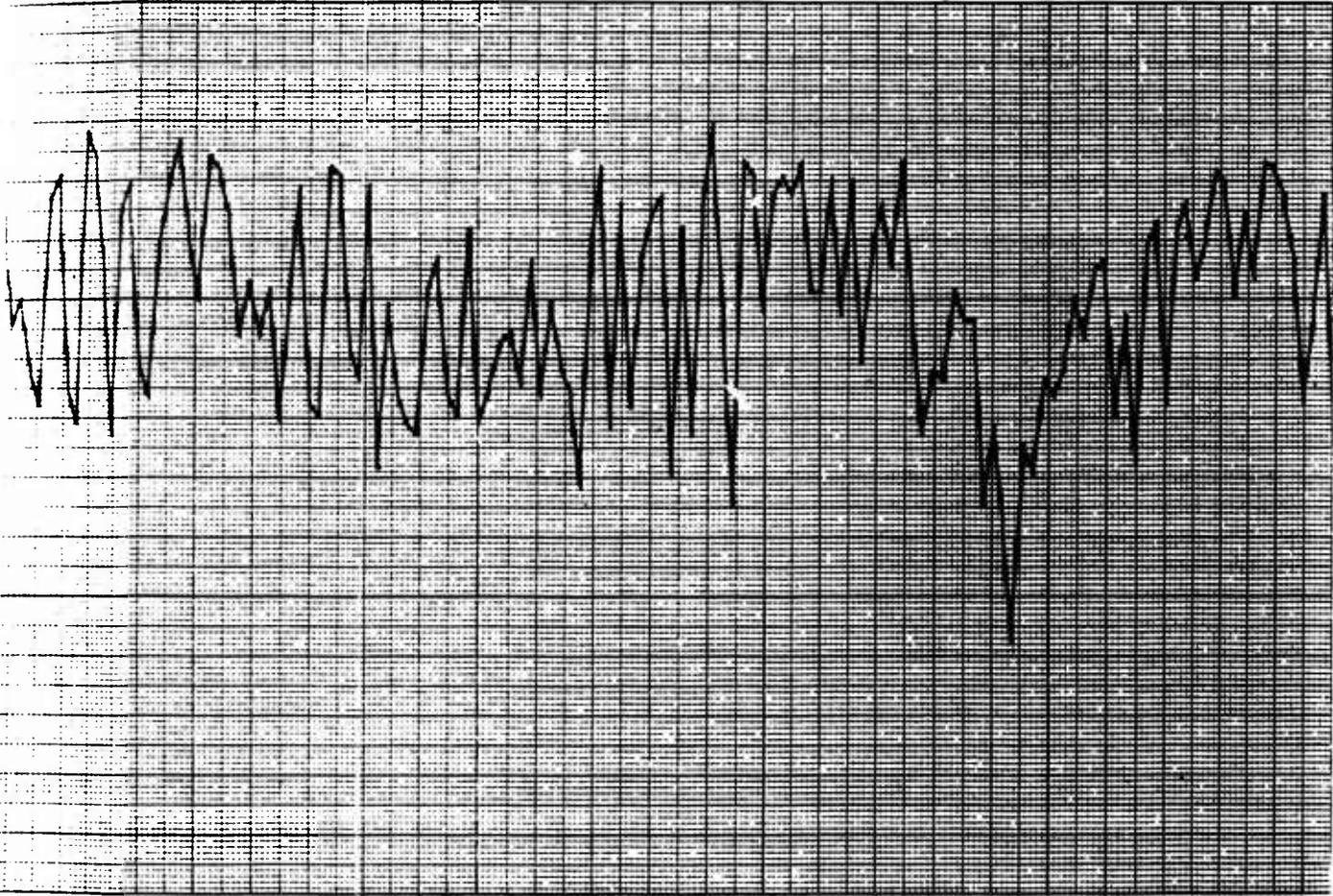
H+6

H+7

H+8

H+9

H+1.0



56-5

CHAPTER 8

TELEMETRY TRACKER SIGNAL STRENGTH AND ANGLE ERRORS

No rocket-borne telemetry transmitters were scheduled by DAMP during this event to monitor the nuclear effects at UHF or to monitor C-band beacon performance. The Thor booster telemetry health transmitter was tracked by the telemetry tracker, and sub-carrier modulations were recorded to provide backup data in the event of Thor malfunctions. However, since burnout of the Thor booster occurred approximately 15 minutes prior to burst, no telemetry data is presented for the Thor telemetry tracking interval.

CHAPTER 9

VIDICON MEASUREMENTS

All Speedball rockets launched during the Star Fish Prime event were equipped with a Daisy flare ejector system, so that optical measurement of the Speedball target could be used for comparison with the radar line of sight to provide a concurrent estimate of refractive anomalies at optical frequencies. However, due to the inclement weather during Star Fish Prime in the vicinity of the DAMP ship, no optical measurement attempts yielded data.

CHAPTER 10

FIREBALL AND DEBRIS RADAR REFLECTIONS; AURORAL-TYPE CLUTTER RETURNS; RADIOMETER AND RIOMETER BACKGROUND MEASUREMENTS

10.1 FIREBALL AND DEBRIS REFLECTIONS AND AURORAL-TYPE CLUTTER RETURNS

The shipboard digital computer was used to designate the Starboard tracking radar to various angles and ranges at which radar returns were expected, and to scan the radar about each of these points using scan dimensions which increased with elapsed time after burst. The 28-foot-parabola UHF/L-band radar was slaved to the Starboard C-band radar during these scanning periods, which have been referred to as clutter mapping. The general sequence employed was to first examine the burst area to provide a three-frequency measurement of the absorption and reflection properties of the expanding fireball, and then to observe the geomagnetically aligned auroral-backscatter areas expected to the north of the ship when viewing the ionosphere perpendicularly to the field lines.

A general summary of this data is given in Volume 1. A more detailed presentation of the data on a single radar pulse basis is given in Volume 7.

10.2 RADIOMETER MEASUREMENTS

A Dicke-type comparison radiometer was used in the expectation of deriving background radio noise temperatures. This radiometer was used in conjunction with the UHF/L-band 28-foot dish, but derived its RF signal from the horizontally polarized portion of the feed horn rather than the vertically polarized portion used by the UHF/L-band radar for normal receive and transmit.

Generally speaking, the data derived from the radiometer is inconclusive. Heavy interference was noticed on all tests, and on one test the fluctuations due to interference just prior to H-0 can be seen to encompass the entire dynamic range of the instrument.

10.3 RIOMETER DATA

At the request of Stanford Research Institute (SRI), riometers operating on frequency assignments of 30, 60, and 120 Mc were installed on the American Mariner to be included in the DAMP experiments. The equipment collected data during each of the five Fish Bowl events, and during some low-altitude, air-drop tests near Johnston Island. In this experiment, however, DAMP provided only the technician services required to maintain, monitor, and

service the sensing and recording equipment connected with the riometer system. All riometer data obtained by the DAMP ship was delivered to SRI, and inquiries concerning the data are referred to that organization. The presentation and analysis of this data and the correlation of the data with other riometer sensors may be found in Reference 2.

CHAPTER 11

TRANSIT AND PROJECT 6.1 COHERENT MEASUREMENTS

Doppler measurements of the very stable 150-megacycle and 400-megacycle Transit 4A satellite CW transmissions were performed for every usable satellite pass occurring within several weeks of the Fish Bowl events. The system used to record the data was the actual DAMP shipboard Transit navigation system, which normally gives ship's position from the difference between predicted and observed satellite doppler curves, using reiterative digital computations. Based on either the navigator's normal measurement of ship's position, or, utilizing the radar tracking data during a mission to obtain ship's position, a measurement of the absolute doppler shift could be inferred from the measured doppler curve. It was hoped that a Transit pass would occur at $H - 0$ during at least one event so that the early time pronounced effects could be measured. However, the closest pass available occurred at $H + 1$ hour, during Star Fish Prime.

The Transit measurements are presented in Volume 7.

No Project 6.1 rockets were tracked by the DAMP ship during this event, since all available 6.1 transmitting frequencies were outside the frequency range of the DAMP measurement system.

PART 2

OPTICAL MEASUREMENTS

J. E. Hagefstration, Project Officer

Contributors:

A. F. Wiebe

H. W. Yates

W. Planet

Barnes Engineering Company
30 Commerce Road
Stamford, Connecticut

PART 2

OPTICAL MEASUREMENTS

CHAPTER 12

DATA PRESENTATION

The targets during these tests were extended and generally covered fully the fields of view of the photometers and radiometer. It is therefore convenient to express the data in terms of brightness (radiance) (watts $\text{cm}^{-2} \Omega^{-1}$) rather than irradiance. (All quoted values are absolute, not brightnesses above adjacent background.) The relationship between brightness and irradiance, for the instruments under discussion, when the fields of view are totally covered, is:

irradiance = brightness (radiance) x subtended solid angle

or

$$H = N \cdot \Omega$$

The solid angle of the source when the field of view is filled is simply the solid angle of the instrument. For the photometer (1° circular field of view) this is:

$$\begin{aligned} \Omega &= \pi \tan^2(\theta/2) \quad (\theta/2 = \text{half angle of field}) \\ &= 2.39 \times 10^{-6} \text{ steradian} \end{aligned}$$

Similarly, for the radiometer ($2^\circ \times 2^\circ$ square field of view) it is:

$$\begin{aligned}\Omega &= 4 \tan^2 (\theta/2) \\ &= 1.22 \times 10^{-3} \text{ steradian}\end{aligned}$$

It follows, then, that:

$$\begin{aligned}N &= H \cdot \Omega^{-1} \\ &= H \times 4.18 \times 10^3 \text{ (photometers)} \\ &= H \times 8.21 \times 10^2 \text{ (radiometer)}\end{aligned}$$

The fields of view are not totally filled at all times, and as a result some of the data presented are integrated (intensity and spatially) values. When the fields of view are fully covered, such as on the major portion of the fireball mappings, notations will be made.

Instrument malfunctions, insensitivity, pedestal pointing inaccuracies, weather, and over-exposures all contributed to a reduction of the amount of data gathered. In some cases, the instruments mechanically malfunctioned, and in others the exposure level was too low (or too high) to be recorded satisfactorily. Ballistic cameras in particular did not contribute to the data as a result of the low flare intensities. In the following pages, when an instrument is not discussed, it should be understood that either no significant data were recorded or a malfunction occurred.

CHAPTER 13

PROCEDURE

13.1 TEST PARTICIPATION

The DAMP ship, USAS American Mariner, participated in five tests during Fish Bowl. The important parameters of the tests are shown in Table 13.1. It is informative to note that they can conveniently be divided into high-altitude tests (Star Fish Prime, Check Mate, and King Fish) and low-altitude tests (Blue Gill Triple Prime and Tight Rope). Additionally, high- and low-yield devices were detonated at both altitudes, further contributing to data cross-correlation.

13.2 INSTRUMENTATION DESCRIPTION

As a result of experience obtained during each test, the instrumentation was under constant modification during the series. Table 13.2 lists all of the instruments utilized during the tests, and Figure 13.1 shows the instrumentation shipboard placement for the individual tests.

13.3 USE OF INSTRUMENTATION

Instrumentation was divided into three major groups according to their usage: (1) burst measurement equipment,

(2) long-term (mapping) measurement equipment, and (3) support equipment.

Excessively high radiation levels were anticipated during the initial seconds after detonation, and it was necessary to protect the sensitive electronic equipment (photometers and radiometer) from damage. As they were all positioned on Pedestal 1, the pedestal was directed away to nearly a right angle (in azimuth) from the predicted burst co-ordinates and was trained on the burst only when the levels had decayed sufficiently. The additional burst measurement equipment was under control of the TV-monitored optical director. As a consequence of the protection precautions, it was not possible to view early burst events with the photometers or radiometers. Individual instruments in each of the major divisions are listed below.

13.3.1 Burst Measurement Equipment. This equipment consisted of the following instruments: (1) total-thermal-power-time radiometer; (2) 70mm high-resolution camera; (3) 16mm DBM-5 cameras; (4) 70mm streak objective spectrograph; and (5) 35mm Flight Research camera (XR emulsion).

13.3.2 Long-Term Measurement Equipment. The equipment, operated during mapping periods, consisted of the following instrumentation: (1) thermograph and

complementary K-24 Star camera (used only on Check Mate and Blue Gill Triple Prime); (2) two 35mm Flight Research boresight cameras; (3) four-channel photometer; (4) R4K1 PbS radiometer; (5) R4K1 thermistor radiometer; (6) all-sky camera operated for Stanford Research Institute (SRI).

13.3.3 Support Equipment. The following equipment supported the gathering of optical flare data from the 6.13 Speedball probes: (1) eight K-19 ballistic cameras located on Johnston Island, and (2) K-24 ballistic (probe) camera operated aboard the DAMP ship.

Another instrument that was utilized as support equipment throughout the entire experiment was the modified Kintel acquisition television system. This system, in conjunction with Optical Director No. 2, was designed to provide pointing information to the slave pedestal carrying instruments committed to the burst phase of the experiments.

13.4 CALIBRATION

Premission background measurements were recorded by H - 60 minutes. All quantitative measurement instruments were calibrated using as a source of radiation either a standard blackbody (up to 1000° K) or National Bureau of Standards (NBS) calibrated tungsten ribbon lamp. The full dynamic range of the instrument outputs (film density or voltage) were covered in the calibration. Also, preburst background mappings were completed to aid in data analysis.

TABLE 13.1 TEST PARAMETERS

Test	DATE	Yield	Altitude	H - 0	Slant Range	Elevation	Remarks
	1962	kt	km	GMT	km		
Star Fish Prime	ZULU 9 Jul	1.4 (Mt)	400	09:00:09	560 (Pred.)	44.4° (Pred.)	Obscured by clouds
Check Mate	20 Oct	[REDACTED]	147.3	08:30:00	315	27.8°	Partially obscured by clouds
Blue Gill Triple Prime	26 Oct	[REDACTED]	48.3	09:59:48	144	19.6°	Detonated behind cloud but rose above. Excellent coverage.
King Fish	1 Nov	[REDACTED]	97.4	12:10:06	190	30.8°	Excellent coverage. Clouds formed at H + 15 minutes
Tight Rope	4 Nov	[REDACTED]	21.0	07:30:00	28	48.6°	Low altitude, close range

DIA (1)(3)

TABLE 13.2 FISH BOWL INSTRUMENTATION

Instrument	Field of View	Spectral Sensitivity	Emission/Detector	Chop or Frame Rate	Exposure Time	Remarks
<u>35mm Camera</u>						
No. 1	7° x 9°	.38 - .65μ	Super Hypan	12/sec	1/36 sec	Optical Director Boresight
No. 2	7° x 9°	.38 - .65μ	Super Hypan	12/sec	1/36 sec	Pedestal 1 Boresight
No. 3	13.7° x 18.2°	.38 - .65μ	XR (Wyckoff)	32/sec	1/320 sec	Pedestal 2 Boresight. Triple Layer Emission
<u>70mm Camera</u>						
High Resolution	3.2° x 3.2°	.38 - .65μ	Tri-X Pan	32/sec	1/720 sec	
Streak Spectrograph	11° x 12°	.38 - .70μ	Plus-X Aerecon	144 in./sec	N/A	
Long Focus	5.4° x 12°	.38 - .65μ	Tri-X Pan	30/sec	1/1020 sec	Used only on Tight Rope
Long Focus (Spectral)	5.4° x 12°	.38 - .9μ	Infrared	15/sec	1/1020 sec	Used only on King Fish
<u>16mm Camera</u>						
	10.7° x 8.3°	.38 - .65μ	Tri-X Pan	400/sec	1/4000 sec	High Speed Record of Tests

TABLE 13.2 (CONTINUED)

Instrument	Field of View	Spectral Sensitivity	Emission/ Detector	Chop or Frame Rate	Exposure Time	Remarks
<u>Ballistic Camera</u>						
K-24 (Star)	40° x 40°	.38 - .70 μ	Tri-X Aercon	Sequenced	10.30 sec	To obtain star background for thermograph
K-24 (Probe)	40° x 40°	.48 - .53 μ	Tri-X Aercon	Sequenced	45 sec	To obtain speedball flare positions
K-24 (Spectral)	40° x 40°	.38 - .70 μ	Tri-X Aercon	Sequenced		Used on Blue Gill Triple Prime and King Fish
K-19 (Probe) (4)	37° x 45°	.48 - .53 μ	103-F	Plate	Variable	Positioned on Johnston Island. Probe-flare data
<u>All-Sky Camera</u>	160°	.38 - .65 μ	Royal-X Pan	53 sec	53 sec	Stanford Research Institute received data
<u>Photometer</u>						
1	1° circular	4036 Å	6810 PMT	1/50 sec resolution	N/A	Photometers used on all tests. Filters chosen to record selected nitrogen aurora
2	1° circular	7000 Å	7102 PMT	1/50 sec resolution	N/A	Normal half bandwidths of 100 Å
3	1° circular	8846 Å	6217 PMT	1/50 sec resolution		
4	1° circular	3892 Å	6903 PMT	1/50 sec resolution		

TABLE 13.2 (CONTINUED)

Instrument	Field of View	Spectral Sensitivity	Emulsion/ Detector	Chop or Frame Rate	Exposure Time	Remarks
<u>Radiometer</u> 1	2° x 2°	1.8 - 2.8 μ	Lead Sulphide	1/50 sec resolution	N/A	Total chop mode
2	2° x 2°	1.8 - 15 μ	Thermistor	1/50 sec resolution	N/A	Did not record data
Total Thermal Radiometer	~35°	.3 - 15 μ	Thermistor	1000 cycle/ sec	N/A	Two channel 5, no optics
Thermo- graph	5° x 20°	1.8 - 15 μ	Thermistor	50 sec/ picture	N/A	Printed on photo- record of backgrounds

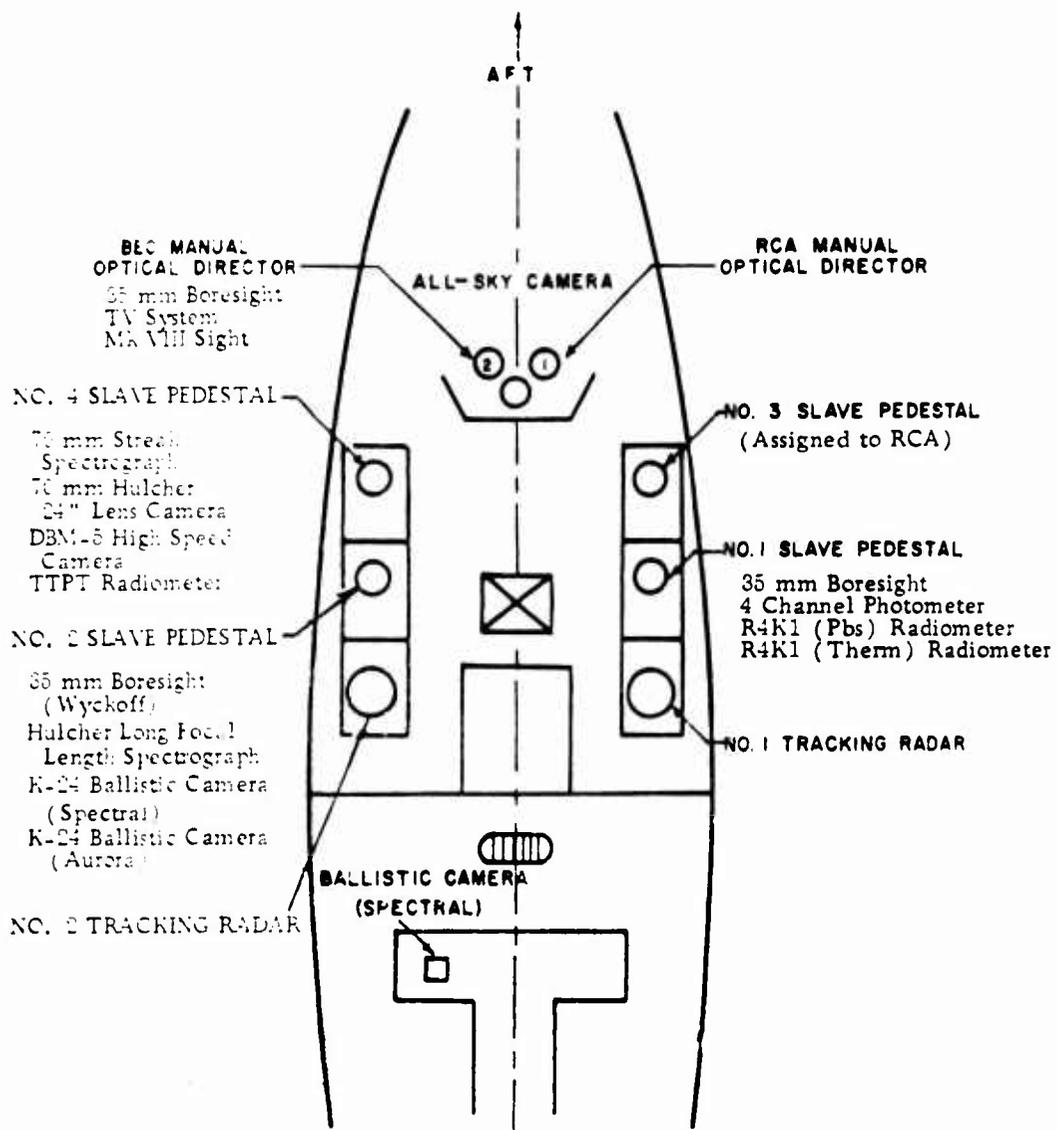


Figure 13.1 Instrumentation layout, DAMP ship.

CHAPTER 14

RESULTS

14.1 BURST MEASUREMENTS

Inclement weather prevented the gathering of satisfactory data in support of pretest objectives. Photographic instrumentation recorded an opalescent background produced by a dense layer of clouds uniformly illuminated by the burst. Burst instrumentation was directed to the point of detonation by Optical Director No. 2. The following descriptions are those of data obtained by each burst instrument.

The 70mm high-resolution camera started 10 seconds prior to burst and operated for 60 seconds. Data were recorded from $H - 0$ to $H + 0.3$ second and consisted of 10 frames of evenly exposed, unimaged intensities. At $H - 0$ the frame containing the burst was totally opaque, and each successive frame became less dense with time.

The 16mm DBM-5 high-speed camera was started 10 seconds prior to detonation and operated for 37 seconds. Data were recorded from $H - 0$ to $H + 0.01$ second, and consisted of 4 frames of evenly exposed, unimaged intensities. At $H - 0$ the frame containing the burst was totally opaque, and each of the three successive frames became less dense with time.

The 70mm streak objective spectrograph was started 10 seconds prior to detonation and operated for 39 seconds. Burst data were recorded from H - 0 to H + 4 seconds and consisted of a 48-foot length of dense exposed film. The remaining length of film decreased in density with time.

The TIPT Radiometer—Channel A and Channel B—was started 120 seconds prior to H - 0. This instrument was operated until H + 379 seconds, during which time Channel A recorded a pulse width of 0.5 msec with an amplitude of 4 volts, and Channel B recorded a pulse width of 0.2 msec with an amplitude of 0.5 volt. Both pulses were recorded at H - 0, and their amplitudes decay with time. Although highly attenuated by dense clouds, results from this instrument are tentatively positive.

The 35mm flight research Wycoff camera was started 10 seconds prior to detonation and operated for 200 seconds. The results were expected to be similar to the 70mm high-resolution camera.

14.2 LONG-TERM MEASUREMENTS

A long-term period of surveillance was conducted in support of the pretest objectives. However, inclement weather resulted in a serious degradation of recorded information. This surveillance consisted of mapping an area surrounding the burst point, the

conjugate point, and large azimuth and elevation scan patterns covering the operational limits of the optical director and the instrumented slave pedestals.

Post-mission mapping was started at H + 323 seconds and continued intermittently until sunrise on D + 1 day. The sampling periods were taken every half-hour with a duration of from 5 to 10 minutes. A 5-minute final mapping mission was conducted after sunset on D + 1 day.

During the mapping periods, almost total cloud coverage persisted. No auroral phenomena were observed at any time. In addition, no long-term effects were believed to have been recorded which could be directly attributed to the nuclear detonation. It is significant to note that little, if any, long-term effects were recorded in the monitored wavelength regions. In this respect, the severe attenuations imposed on the selected wavelength regions by intermittent precipitation and heavy cloud coverage must be considered. Individual instruments with their preliminary results are listed below:

R4K-1 Thermistor Radiometer. The results from this instrument are unknown due to low levels of recorded signal, but results are believed to be negative.

R4K-1 Lead Sulfide (PbS) Radiometer. The results from this instrument are unknown due to low levels of recorded

signal, but the results are believed to be negative.

4-Channel Photometer. The results from this instrument are unknown due to low levels of recorded signal, but results are believed to be negative.

35mm Boresight Camera (Slave Pedestal 1). Due to heavy rains, this camera was started after burst at H + 447 seconds and stopped at H + 1245 seconds. No positive results were obtained.

After burst, the thermograph and star camera were directed at the detonation point by the operator. Four thermograph exposures and a sequence series of 3-star exposures for each thermograph exposure were made. The results were negative.

35mm Boresight Camera (Optical Director 2). This camera was not operated due to the lack of recordable optical phenomena.

The all-sky camera was operated for Stanford Research Institute and the film delivered to that organization for review. Recording commenced prior to Thor lift-off and ceased at sunrise on D + 1 day.

14.3 SUPPORT INSTRUMENTATION

Eight K-19 aerial ballistic cameras were mounted on Johnston Island to record optical flare data from the Speedball probes. These probes

ejected 14 flares at designated points along the trajectory.
Positive results were obtained from four of the eight K-19
cameras.

Because of total cloud coverage, the K-24 ballistic
(probe) camera mounted on the DAMP Ship yield negative
results with respect to flare data.

APPENDIX A

PROBE SUMMARY

The trajectory listings are time referenced to the beginning of the GMT second in which burst occurred. Therefore, H + 0 in the listings corresponds to H - 0.029 second for Star Fish Prime, to an accuracy of 50 milliseconds.

Approximate Tracking Records				
Project	Lift-Off	Begin	End	Azimuth
	sec	sec	sec	deg
9.1a	H-1809	H-1754	H-1451	177
6.7	-100			NOT TRACKED
6.13	-50	H-13	H+22	349
6.13	+710	H+782	+945	205
6.2	+1200	+1292	+1810	30
6.13	+1860	1900 ^a	2140	167
		2182	2303	26
6.2	+2400	2441	3223	

^aDigital recorder tapes were being changed in the interval H+1900 to H+1951, and no recorded trajectory is available for this interval.

Probe No. 1; 11ft-off time: H-1809 seconds; and project No. 9.1a

Raw data referenced to the ship		Quantities have been translated to the launcher position									
Time, sec	Range, km	Azimuth, deg T	Elevation, deg Geod.	x, km distance east	y, km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg	Longitude of target, deg

-1754.00	369.09	190.31	9.03	0.32	-6.37	63.48	224.78	68.49	16.6970	-169.1255
-1753.00	370.19	190.37	9.11	0.18	-6.02	69.17	276.78	69.17	16.6949	-169.1258
-1752.00	370.79	190.35	9.14	0.07	-6.63	70.66	231.82	70.66	16.6946	-169.1261
-1751.00	371.18	190.10	9.53	0.27	-6.81	71.93	216.01	71.93	16.6932	-169.1270
-1750.00	371.59	190.15	9.75	-0.04	-6.83	73.60	240.83	73.60	16.6931	-169.1273
-1749.00	371.78	190.31	9.66	0.14	-6.89	74.21	243.48	74.21	16.6907	-169.1278
-1748.00	372.19	190.31	10.09	0.16	-6.94	75.15	246.54	75.15	16.6891	-169.1282
-1747.00	372.80	190.27	10.17	0.33	-6.96	76.31	250.37	76.31	16.6864	-169.1276
-1746.00	373.21	190.27	10.14	0.33	-6.93	77.51	254.29	77.51	16.6864	-169.1276
-1745.00	373.67	190.30	10.47	0.14	-6.75	78.43	257.32	78.43	16.6869	-169.1282
-1744.00	374.03	190.29	10.71	0.18	-6.78	80.04	262.62	80.04	16.6848	-169.1279
-1743.00	374.45	190.28	10.86	0.22	-6.79	81.17	266.16	81.17	16.6832	-169.1274
-1742.00	374.84	190.30	10.97	0.03	-6.13	81.89	268.68	81.89	16.6816	-169.1267
-1741.00	375.25	190.29	11.27	0.11	-6.13	83.57	274.18	83.57	16.6817	-169.1265
-1740.00	375.66	190.25	11.26	0.34	-6.33	83.92	275.35	83.92	16.6786	-169.1273
-1739.00	376.09	190.22	11.51	0.33	-6.54	85.61	280.89	85.61	16.6781	-169.1276
-1738.00	376.48	190.24	11.64	0.38	-6.67	86.61	283.88	86.61	16.6770	-169.1270
-1737.00	376.89	190.23	11.84	0.34	-6.72	87.94	288.54	87.94	16.6765	-169.1275
-1736.00	377.30	190.23	11.94	0.40	-6.73	89.65	290.86	89.65	16.6745	-169.1278
-1735.00	377.72	190.23	12.03	0.33	-6.87	89.65	294.48	89.65	16.6735	-169.1274
-1734.00	378.17	190.22	12.13	0.33	-6.22	90.75	297.75	90.75	16.6727	-169.1270
-1733.00	378.55	190.24	12.41	0.23	-6.29	92.00	303.50	92.00	16.6716	-169.1282
-1732.00	378.95	190.23	12.47	0.25	-6.56	93.79	307.51	93.79	16.6692	-169.1272
-1731.00	379.37	190.27	12.66	0.33	-6.29	94.38	309.67	94.38	16.6685	-169.1274
-1730.00	380.20	190.21	12.73	0.34	-6.90	95.71	314.01	95.71	16.6655	-169.1274
-1729.00	380.60	190.17	12.92	0.63	-6.93	96.72	317.35	96.72	16.6662	-169.1276
-1728.00	381.02	190.17	13.06	0.54	-6.11	97.67	320.47	97.67	16.6664	-169.1206
-1727.00	381.47	190.15	13.20	0.54	-6.27	98.57	323.47	98.57	16.6616	-169.1205
-1726.00	381.83	190.12	13.32	0.65	-6.44	99.33	325.90	99.33	16.6595	-169.1181
-1725.00	381.83	190.12	13.42	0.81	-6.67	102.22	328.83	102.22	16.6585	-169.1198
-1724.00	382.23	190.14	13.54	0.62	-6.78	101.47	332.94	101.47	16.6580	-169.1195
-1723.00	382.65	190.14	13.72	0.63	-6.94	102.42	336.03	102.42	16.6570	-169.1200
-1722.00	383.05	190.14	13.85	0.60	-6.95	103.25	338.76	103.25	16.6558	-169.1218
-1721.00	383.46	190.17	13.76	0.41	-6.10	104.06	341.44	104.06	16.6541	-169.1202
-1720.00	383.86	190.14	14.07	0.57	-6.27	104.88	344.09	104.88	16.6526	-169.1205
-1719.00	384.27	190.14	14.17	0.54	-6.47	104.88	348.19	104.88	16.6519	-169.1181
-1718.00	384.69	190.10	14.35	0.80	-6.55	104.88	348.19	104.88	16.6506	-169.1188
-1717.00	385.08	190.10	14.65	0.73	-6.70	106.89	354.75	106.89	16.6501	-169.1192
-1716.00	385.47	190.11	14.65	0.73	-6.76	107.97	358.25	107.97	16.6482	-169.1192
-1715.00	385.88	190.10	14.60	0.68	-6.78	109.61	360.52	109.61	16.6482	-169.1192
-1714.00	386.27	190.10	14.88	0.68	-6.78	109.98	360.52	109.98	16.6482	-169.1178
-1713.00	386.67	190.10	14.89	0.84	-6.84	110.21	361.57	110.21	16.6455	-169.1176
-1712.00	387.07	190.06	15.00	0.87	-6.78	110.21	364.20	110.21	16.6438	-169.1176
-1711.00	387.46	190.03	15.15	1.07	-6.47	112.09	367.79	112.09	16.6431	-169.1157
-1710.00	387.85	190.06	15.15	0.82	-6.56	112.78	370.02	112.78	16.6418	-169.1180
-1709.00	388.25	190.08	15.30	0.70	-6.72	113.30	371.75	113.30	16.6399	-169.1181
-1708.00	388.66	190.10	15.47	0.53	-6.10	114.55	375.85	114.55	16.6401	-169.1206
-1707.00	389.03	190.08	15.54	0.64	-6.10	115.14	377.77	115.14	16.6383	-169.1186
-1706.00	389.47	190.07	15.64	0.65	-6.11	115.82	380.22	115.82	16.6369	-169.1195
-1705.00	389.80	190.05	15.73	0.77	-6.26	116.58	382.50	116.58	16.6353	-169.1184
-1704.00	390.18	190.06	15.86	0.69	-6.45	117.56	385.74	117.56	16.6349	-169.1187

-1701.00	390.56	190.03	15.16	-11.71	119.17	11.73	197.73	118.10	16.6331	-163.5178
-1702.00	390.36	190.05	15.25	-11.71	119.01	11.86	196.48	119.25	16.6341	-163.5187
-1703.00	391.32	190.02	15.10	-12.07	119.45	12.10	195.95	119.47	16.6299	-163.5176
-1704.00	391.70	190.07	15.21	-12.07	119.40	12.20	195.71	119.51	16.6290	-163.5177
-1699.00	392.06	190.53	15.31	-12.33	121.11	12.40	198.64	120.49	16.6274	-163.5167
-1697.00	392.44	190.51	15.37	-12.33	121.17	12.53	198.88	121.58	16.6262	-163.5177
-1696.00	392.80	190.51	15.45	-12.41	121.00	12.63	199.31	122.32	16.6252	-163.5169
-1695.00	393.17	190.51	15.56	-12.41	121.00	12.73	199.88	123.10	16.6283	-163.5189
-1694.00	393.54	189.99	15.66	-12.43	121.13	12.96	200.25	123.76	16.6227	-163.5159
-1693.00	393.91	190.02	15.75	-12.43	121.08	13.08	200.79	124.60	16.6223	-163.5165
-1692.00	394.25	190.01	15.83	-12.43	121.23	13.25	201.12	125.31	16.6214	-163.5185
-1691.00	394.62	190.03	15.94	-12.43	121.17	13.43	201.51	126.77	16.6186	-163.5187
-1690.00	395.33	189.93	16.03	-12.43	121.33	13.66	202.11	127.85	16.6163	-163.5162
-1689.00	395.67	189.97	16.13	-12.43	121.41	13.84	202.66	128.10	16.6147	-163.5169
-1688.00	396.03	189.99	16.23	-12.43	121.48	14.07	203.10	128.10	16.6131	-163.5171
-1687.00	396.37	189.97	16.33	-12.43	121.56	14.21	203.48	129.04	16.6160	-163.5185
-1686.00	396.71	189.97	16.43	-12.43	121.62	14.47	203.82	129.74	16.6127	-163.5176
-1685.00	397.10	190.00	16.53	-12.43	121.69	14.63	204.15	130.41	16.6118	-163.5198
-1684.00	397.55	189.96	16.63	-12.43	121.73	14.87	204.32	130.55	16.6092	-163.5177
-1683.00	398.06	190.16	16.76	-12.43	121.79	15.09	204.80	131.00	16.6073	-163.5175
-1682.00	398.39	190.31	16.87	-12.43	121.85	15.35	205.11	131.52	16.6060	-163.5166
-1681.00	398.72	189.91	16.97	-12.43	121.85	15.63	205.28	132.17	16.6057	-163.5163
-1679.00	399.04	189.92	17.06	-12.43	121.86	15.97	205.89	132.86	16.6082	-163.5152
-1678.00	399.35	189.92	17.15	-12.43	121.86	16.27	206.19	133.56	16.6037	-163.5161
-1677.00	399.68	189.94	17.25	-12.43	121.87	16.58	206.30	134.24	16.6018	-163.5167
-1676.00	400.00	189.98	17.35	-12.43	121.87	16.84	206.40	134.99	16.6007	-163.5178
-1675.00	400.31	189.96	17.45	-12.43	121.88	17.10	206.48	135.67	16.5985	-163.5162
-1674.00	400.61	189.96	17.55	-12.43	121.87	17.34	206.52	136.34	16.5982	-163.5181
-1673.00	400.93	189.91	17.65	-12.43	121.87	17.58	206.53	137.01	16.5966	-163.5165
-1672.00	401.21	189.86	17.75	-12.43	121.87	17.80	206.50	137.68	16.5950	-163.5172
-1671.00	401.55	189.87	17.85	-12.43	121.86	18.05	206.46	138.35	16.5935	-163.5185
-1670.00	401.84	189.87	17.95	-12.43	121.86	18.25	206.37	139.08	16.5921	-163.5169
-1669.00	402.12	189.98	18.05	-12.43	121.85	18.50	206.25	139.81	16.5916	-163.5161
-1668.00	402.41	189.98	18.15	-12.43	121.85	18.68	206.09	140.54	16.5899	-163.5176
-1667.00	402.69	189.86	18.25	-12.43	121.85	18.98	205.93	141.27	16.5873	-163.5177
-1666.00	403.27	189.86	18.35	-12.43	121.84	19.25	205.70	142.00	16.5865	-163.5163
-1665.00	403.56	189.95	18.45	-12.43	121.84	19.50	205.30	142.72	16.5845	-163.5152
-1664.00	403.93	189.94	18.55	-12.43	121.83	19.75	204.80	143.40	16.5815	-163.5161
-1663.00	404.13	189.86	18.65	-12.43	121.83	20.00	204.25	144.09	16.5796	-163.5167
-1662.00	404.35	189.84	18.75	-12.43	121.83	20.22	203.62	144.77	16.5783	-163.5157
-1660.00	404.67	189.84	18.85	-12.43	121.82	20.47	202.86	145.47	16.5772	-163.5166
-1659.00	404.88	189.85	18.95	-12.43	121.82	20.66	202.08	146.18	16.5771	-163.5164
-1658.00	405.18	189.95	19.05	-12.43	121.81	20.85	201.25	146.94	16.5746	-163.5163
-1657.00	405.42	189.84	19.15	-12.43	121.81	21.06	200.29	147.74	16.5736	-163.5166
-1656.00	405.66	189.83	19.25	-12.43	121.81	21.26	199.26	148.54	16.5728	-163.5165
-1655.00	405.90	189.81	19.35	-12.43	121.81	21.46	198.16	149.31	16.5703	-163.5166
-1654.00	406.15	189.90	19.45	-12.43	121.81	21.66	196.92	150.09	16.5697	-163.5161
-1653.00	406.37	189.79	19.55	-12.43	121.81	21.87	195.57	150.82	16.5697	-163.5161

-1652.00	406.62	189.81	19.00	1.09	-19.13	161.77	17.16	471.78	183.80	16.5683	-169.5154
-1651.00	406.87	189.82	19.02	0.99	-19.40	161.96	18.33	472.41	183.99	16.5682	-169.5164
-1650.00	407.12	189.80	19.04	1.03	-19.68	162.35	19.51	473.05	184.28	16.5682	-169.5155
-1649.00	407.36	189.80	19.08	1.07	-19.99	162.84	19.62	473.31	184.57	16.5682	-169.5155
-1648.00	407.57	189.80	19.07	1.00	-19.50	164.54	19.83	474.54	184.64	16.5674	-169.5157
-1647.00	407.77	189.78	19.14	1.17	-19.83	164.64	19.86	476.73	185.15	16.5672	-169.5148
-1646.00	407.99	189.78	19.16	1.15	-19.97	165.12	20.01	478.90	185.36	16.5609	-169.5149
-1645.00	408.20	189.79	19.24	1.07	-19.97	165.94	19.95	478.92	185.98	16.5614	-169.5158
-1644.00	408.40	189.79	19.18	1.05	-20.78	165.62	20.30	477.86	185.65	16.5583	-169.5159
-1643.00	408.62	189.81	19.23	0.90	-20.31	166.04	20.33	478.24	186.07	16.5580	-169.5173
-1642.00	408.83	189.79	19.29	1.01	-20.35	166.54	20.36	480.87	186.57	16.5576	-169.5161
-1641.00	409.07	189.79	19.28	0.97	-20.60	166.53	20.38	480.84	186.56	16.5554	-169.5166
-1640.00	409.24	189.76	19.27	1.13	-20.96	166.17	20.99	479.68	186.21	16.5523	-169.5164
-1639.00	409.48	189.77	19.19	1.00	-21.27	166.11	21.74	479.50	186.15	16.5500	-169.5164
-1638.00	409.60	189.75	19.23	1.17	-21.26	166.39	21.29	480.41	186.43	16.5496	-169.5148
-1637.00	409.86	189.74	19.27	1.15	-21.51	166.64	21.54	480.58	186.48	16.5474	-169.5150
-1636.00	409.97	189.75	19.26	1.22	-21.63	166.79	21.52	481.71	186.83	16.5476	-169.5153
-1635.00	410.37	189.77	19.31	0.94	-21.63	167.19	21.56	483.04	187.23	16.5472	-169.5169
-1634.00	410.70	189.72	19.29	1.23	-21.80	167.08	21.84	482.67	187.12	16.5448	-169.5162
-1633.00	410.54	189.72	19.31	1.24	-21.90	167.30	21.93	483.39	187.34	16.5440	-169.5162
-1632.00	410.69	189.75	19.29	1.02	-22.04	167.25	22.07	483.23	187.29	16.5427	-169.5162
-1631.00	410.66	189.74	19.31	1.08	-22.17	167.41	22.70	483.77	187.45	16.5416	-169.5156
-1630.00	411.01	189.72	19.30	1.14	-22.34	167.40	22.37	483.73	187.44	16.5401	-169.5151
-1629.00	411.16	189.72	19.28	1.12	-22.53	167.94	22.56	483.51	187.38	16.5384	-169.5153
-1628.00	411.32	189.72	19.28	1.10	-22.64	167.49	22.66	483.01	187.53	16.5375	-169.5155
-1627.00	411.48	189.68	19.27	1.36	-22.89	167.38	22.93	483.66	187.42	16.5353	-169.5131
-1626.00	411.62	189.69	19.29	1.30	-22.93	167.67	22.97	484.44	187.66	16.5349	-169.5136
-1625.00	411.79	189.71	19.30	1.13	-23.05	167.72	23.07	484.78	187.76	16.5339	-169.5152
-1624.00	411.90	189.74	19.31	0.92	-23.02	167.97	23.04	485.61	188.02	16.5341	-169.5171
-1623.00	412.05	189.71	19.31	1.10	-23.25	167.87	23.28	485.29	187.92	16.5321	-169.5154
-1622.00	412.19	189.73	19.28	0.93	-23.44	167.70	23.46	484.74	187.75	16.5304	-169.5170
-1621.00	412.30	189.69	19.24	1.13	-23.68	167.51	23.71	484.09	187.55	16.5283	-169.5151
-1620.00	412.46	189.67	19.25	1.29	-23.90	167.67	23.83	484.63	187.72	16.5272	-169.5137
-1619.00	412.56	189.65	19.26	1.39	-23.90	167.75	23.94	484.88	187.79	16.5264	-169.5128
-1618.00	412.67	189.68	19.28	1.16	-23.89	167.94	23.92	485.52	187.99	16.5265	-169.5149
-1617.00	412.80	189.65	19.27	1.31	-24.28	167.40	24.31	483.75	187.45	16.5230	-169.5135
-1616.00	412.91	189.64	19.21	1.40	-24.35	167.56	24.39	484.28	187.61	16.5224	-169.5127
-1615.00	413.01	189.64	19.15	1.34	-24.60	167.19	24.64	483.04	187.23	16.5201	-169.5133
-1614.00	413.16	189.53	19.12	2.04	-24.94	167.03	25.02	482.56	187.08	16.5172	-169.5069
-1613.00	413.22	189.64	19.11	1.27	-24.88	167.02	24.91	482.41	187.07	16.5177	-169.5139
-1612.00	413.34	189.65	19.10	1.22	-25.01	166.99	25.04	482.41	187.04	16.5165	-169.5144
-1611.00	413.42	189.67	19.10	1.08	-25.07	166.99	25.10	482.40	187.04	16.5160	-169.5154
-1610.00	413.51	189.64	19.07	1.20	-25.24	166.86	25.27	481.99	186.91	16.5145	-169.5145
-1609.00	413.61	189.63	19.03	1.27	-25.44	166.62	25.48	481.19	186.67	16.5126	-169.5145
-1608.00	413.74	189.63	19.03	1.24	-25.56	166.59	25.59	481.42	186.74	16.5116	-169.5141
-1607.00	413.77	189.63	18.97	1.20	-25.76	166.26	25.79	480.42	186.31	16.5099	-169.5145
-1606.00	413.81	189.60	18.95	1.43	-25.93	166.17	25.97	479.73	186.22	16.5084	-169.5125
-1605.00	413.91	189.60	18.94	1.40	-26.00	166.12	26.04	479.58	186.18	16.5077	-169.5127
-1604.00	413.97	189.60	18.92	1.38	-26.12	166.01	26.16	479.21	186.06	16.5066	-169.5129
-1603.00	414.06	189.61	18.87	1.29	-26.28	165.75	26.31	478.34	185.80	16.5052	-169.5137
-1602.00	414.14	189.63	18.87	1.10	-26.46	165.43	26.49	477.33	185.49	16.5036	-169.5154

-15.71:00	416.19	192.63	13.77	1.14	3.26	162.11	26.66	476.25	145.16	16.5020	169.1156
-15.70:00	416.25	192.60	13.83	1.14	3.26	162.15	26.86	476.27	145.17	16.5003	169.1163
-15.69:00	416.30	192.57	13.88	1.14	3.26	162.19	27.06	476.29	145.18	16.4986	169.1169
-15.68:00	416.35	192.54	13.93	1.14	3.26	162.23	27.26	476.31	145.19	16.4969	169.1177
-15.67:00	416.39	192.51	13.97	1.14	3.26	162.27	27.46	476.33	145.20	16.4952	169.1183
-15.66:00	416.43	192.48	14.02	1.14	3.26	162.31	27.66	476.35	145.21	16.4935	169.1191
-15.65:00	416.47	192.45	14.06	1.14	3.26	162.35	27.86	476.37	145.22	16.4918	169.1198
-15.64:00	416.51	192.42	14.10	1.14	3.26	162.39	28.06	476.39	145.23	16.4901	169.1205
-15.63:00	416.55	192.39	14.14	1.14	3.26	162.43	28.26	476.41	145.24	16.4884	169.1212
-15.62:00	416.59	192.36	14.18	1.14	3.26	162.47	28.46	476.43	145.25	16.4867	169.1219
-15.61:00	416.63	192.33	14.22	1.14	3.26	162.51	28.66	476.45	145.26	16.4850	169.1226
-15.60:00	416.67	192.30	14.26	1.14	3.26	162.55	28.86	476.47	145.27	16.4833	169.1233
-15.59:00	416.71	192.27	14.30	1.14	3.26	162.59	29.06	476.49	145.28	16.4816	169.1240
-15.58:00	416.75	192.24	14.34	1.14	3.26	162.63	29.26	476.51	145.29	16.4799	169.1247
-15.57:00	416.79	192.21	14.38	1.14	3.26	162.67	29.46	476.53	145.30	16.4782	169.1254
-15.56:00	416.83	192.18	14.42	1.14	3.26	162.71	29.66	476.55	145.31	16.4765	169.1261
-15.55:00	416.87	192.15	14.46	1.14	3.26	162.75	29.86	476.57	145.32	16.4748	169.1268
-15.54:00	416.91	192.12	14.50	1.14	3.26	162.79	30.06	476.59	145.33	16.4731	169.1275
-15.53:00	416.95	192.09	14.54	1.14	3.26	162.83	30.26	476.61	145.34	16.4714	169.1282
-15.52:00	416.99	192.06	14.58	1.14	3.26	162.87	30.46	476.63	145.35	16.4697	169.1289
-15.51:00	417.03	192.03	14.62	1.14	3.26	162.91	30.66	476.65	145.36	16.4680	169.1296
-15.50:00	417.07	192.00	14.66	1.14	3.26	162.95	30.86	476.67	145.37	16.4663	169.1303
-15.49:00	417.11	191.97	14.70	1.14	3.26	162.99	31.06	476.69	145.38	16.4646	169.1310
-15.48:00	417.15	191.94	14.74	1.14	3.26	163.03	31.26	476.71	145.39	16.4629	169.1317
-15.47:00	417.19	191.91	14.78	1.14	3.26	163.07	31.46	476.73	145.40	16.4612	169.1324
-15.46:00	417.23	191.88	14.82	1.14	3.26	163.11	31.66	476.75	145.41	16.4595	169.1331
-15.45:00	417.27	191.85	14.86	1.14	3.26	163.15	31.86	476.77	145.42	16.4578	169.1338
-15.44:00	417.31	191.82	14.90	1.14	3.26	163.19	32.06	476.79	145.43	16.4561	169.1345
-15.43:00	417.35	191.79	14.94	1.14	3.26	163.23	32.26	476.81	145.44	16.4544	169.1352
-15.42:00	417.39	191.76	14.98	1.14	3.26	163.27	32.46	476.83	145.45	16.4527	169.1359
-15.41:00	417.43	191.73	15.02	1.14	3.26	163.31	32.66	476.85	145.46	16.4510	169.1366
-15.40:00	417.47	191.70	15.06	1.14	3.26	163.35	32.86	476.87	145.47	16.4493	169.1373
-15.39:00	417.51	191.67	15.10	1.14	3.26	163.39	33.06	476.89	145.48	16.4476	169.1380
-15.38:00	417.55	191.64	15.14	1.14	3.26	163.43	33.26	476.91	145.49	16.4459	169.1387
-15.37:00	417.59	191.61	15.18	1.14	3.26	163.47	33.46	476.93	145.50	16.4442	169.1394
-15.36:00	417.63	191.58	15.22	1.14	3.26	163.51	33.66	476.95	145.51	16.4425	169.1401
-15.35:00	417.67	191.55	15.26	1.14	3.26	163.55	33.86	476.97	145.52	16.4408	169.1408
-15.34:00	417.71	191.52	15.30	1.14	3.26	163.59	34.06	476.99	145.53	16.4391	169.1415
-15.33:00	417.75	191.49	15.34	1.14	3.26	163.63	34.26	477.01	145.54	16.4374	169.1422
-15.32:00	417.79	191.46	15.38	1.14	3.26	163.67	34.46	477.03	145.55	16.4357	169.1429
-15.31:00	417.83	191.43	15.42	1.14	3.26	163.71	34.66	477.05	145.56	16.4340	169.1436
-15.30:00	417.87	191.40	15.46	1.14	3.26	163.75	34.86	477.07	145.57	16.4323	169.1443
-15.29:00	417.91	191.37	15.50	1.14	3.26	163.79	35.06	477.09	145.58	16.4306	169.1450
-15.28:00	417.95	191.34	15.54	1.14	3.26	163.83	35.26	477.11	145.59	16.4289	169.1457
-15.27:00	417.99	191.31	15.58	1.14	3.26	163.87	35.46	477.13	145.60	16.4272	169.1464
-15.26:00	418.03	191.28	15.62	1.14	3.26	163.91	35.66	477.15	145.61	16.4255	169.1471
-15.25:00	418.07	191.25	15.66	1.14	3.26	163.95	35.86	477.17	145.62	16.4238	169.1478
-15.24:00	418.11	191.22	15.70	1.14	3.26	163.99	36.06	477.19	145.63	16.4221	169.1485
-15.23:00	418.15	191.19	15.74	1.14	3.26	164.03	36.26	477.21	145.64	16.4204	169.1492
-15.22:00	418.19	191.16	15.78	1.14	3.26	164.07	36.46	477.23	145.65	16.4187	169.1499
-15.21:00	418.23	191.13	15.82	1.14	3.26	164.11	36.66	477.25	145.66	16.4170	169.1506
-15.20:00	418.27	191.10	15.86	1.14	3.26	164.15	36.86	477.27	145.67	16.4153	169.1513
-15.19:00	418.31	191.07	15.90	1.14	3.26	164.19	37.06	477.29	145.68	16.4136	169.1520
-15.18:00	418.35	191.04	15.94	1.14	3.26	164.23	37.26	477.31	145.69	16.4119	169.1527
-15.17:00	418.39	191.01	15.98	1.14	3.26	164.27	37.46	477.33	145.70	16.4102	169.1534
-15.16:00	418.43	190.98	16.02	1.14	3.26	164.31	37.66	477.35	145.71	16.4085	169.1541
-15.15:00	418.47	190.95	16.06	1.14	3.26	164.35	37.86	477.37	145.72	16.4068	169.1548
-15.14:00	418.51	190.92	16.10	1.14	3.26	164.39	38.06	477.39	145.73	16.4051	169.1555
-15.13:00	418.55	190.89	16.14	1.14	3.26	164.43	38.26	477.41	145.74	16.4034	169.1562
-15.12:00	418.59	190.86	16.18	1.14	3.26	164.47	38.46	477.43	145.75	16.4017	169.1569
-15.11:00	418.63	190.83	16.22	1.14	3.26	164.51	38.66	477.45	145.76	16.4000	169.1576
-15.10:00	418.67	190.80	16.26	1.14	3.26	164.55	38.86	477.47	145.77	16.3983	169.1583
-15.09:00	418.71	190.77	16.30	1.14	3.26	164.59	39.06	477.49	145.78	16.3966	169.1590
-15.08:00	418.75	190.74	16.34	1.14	3.26	164.63	39.26	477.51	145.79	16.3949	169.1597
-15.07:00	418.79	190.71	16.38	1.14	3.26	164.67	39.46	477.53	145.80	16.3932	169.1604
-15.06:00	418.83	190.68	16.42	1.14	3.26	164.71	39.66	477.55	145.81	16.3915	169.1611
-15.05:00	418.87	190.65	16.46	1.14	3.26	164.75	39.86	477.57	145.82	16.3898	169.1618
-15.04:00	418.91	190.62	16.50	1.14	3.26	164.79	40.06	477.59	145.83	16.3881	169.1625
-15.03:00	418.95	190.59	16.54	1.14	3.26	164.83	40.26	477.61	145.84	16.3864	169.1632
-15.02:00	418.99	190.56	16.58	1.14	3.26	164.87	40.46	477.63	145.85	16.3847	169.1639
-15.01:00	419.03	190.53	16.62	1.14	3.26	164.91	40.66	477.65	145.86	16.3830	169.1646
-15.00:00	419.07	190.50	16.66	1.14	3.26	164.95	40.86	477.67	145.87	16.3813	169.1653
-14.99:00	419.11	190.47	16.70	1.14	3.26	164.99	41.06	477.69	145.88	16.3796	169.1660
-14.98:00	419.15	190.44	16.74	1.14	3.26	165.03	41.26	477.71	145.89	16.3779	169.1667
-14.97:00	419.19	190.41	16.78	1.14	3.26	165.07	41.46	477.73	145.90	16.3762	169.1674
-14.96:00	419.23	190.38	16.82	1.14	3.26	165.11	41.66	477.75	145.91	16.3745	169.1681
-14.95:00	419.27	190.35	16.86	1.14	3.26	165.15	41.86	477.77	145.92	16.3728	169.1688
-14.94:00	419.31	190.32	16.90	1.14	3.26	165.19	42.06	477.79	145.93	16.3711	169.1695
-14.93:00	419.35	190.29	16.94	1.14	3.26	165.23	42.26	477.81	145.94	16.3694	169.1702
-14.92:00	419.39	190.26	16.98	1.14	3.26	165.27	42.46	477.83	145.95	16.3677	169.1709
-14.91:00	419.43	190.23	17.02	1.14	3.26	165.31	42.66	477.85	145.96	16.3660	169.1716
-14.90:00	419.47	190.20	17.06	1.14	3.26	165.35	42.86	477.87	145.97	16.3643	169.1723
-14.89:00	419.51	190.17	17.10	1.14	3.26	165.39	43.06	477.89	145.98	16.3626	169.1730
-14.88:00	419.55	190.14	17.14	1.14	3.26	165.43	43.26	477.91	145.99	16.3609	169.1737
-14.87:00	419.59	190.11	17.18	1.14	3.26	165.47	43.46	477.93	146.00	16.3592	169.1744
-14.86:00	419.63	190.08	17.22	1.14	3.26	165.51	43.66	477.95	146.01	16.3575	169.1751
-14.85:00	419.67	190.05	17.26	1.14	3.26	165.55	43.86	477.97	146.02	16.3558	169.1758
-14.84:00	419.71	190.02	17.30	1.14	3.26	165.59	44.06	477.99	146.03	16.3541	169.1765
-14.83:00	419.75	190.00	17.34	1.14	3.26	165.63	44.26	478.01	146.04	16.3524	169.1772
-14.82:00	419.79	190.00	17.38	1.14	3.26	165.67	44.46	478.03	146.05	16.3507	169.1779
-14.81:00	419.83	190.00	17.42	1.14	3.26	165.71	44.66	478.05	146.0		

-1540.00	413.60	189.47	16.66	1.25	-34.14	122.65	36.16	401.88	122.69	166.584
-1541.00	413.31	189.61	16.39	1.36	-36.74	121.89	35.26	405.18	121.98	166.585
-1542.00	413.02	189.75	16.12	1.46	-39.34	121.13	34.36	408.48	121.06	166.586
-1543.00	412.73	189.89	15.85	1.56	-41.94	120.37	33.46	411.78	120.15	166.587
-1544.00	412.44	189.36	15.58	1.67	-44.54	119.61	32.56	415.08	119.24	166.588
-1545.00	412.15	189.36	15.31	1.77	-47.14	118.85	31.66	418.38	118.33	166.589
-1546.00	411.86	189.36	15.04	1.87	-49.74	118.09	30.76	421.68	117.42	166.590
-1547.00	411.57	189.36	14.77	1.97	-52.34	117.33	29.86	424.98	116.51	166.591
-1548.00	411.28	189.36	14.50	2.07	-54.94	116.57	28.96	428.28	115.60	166.592
-1549.00	410.99	189.36	14.23	2.17	-57.54	115.81	28.06	431.58	114.69	166.593
-1550.00	410.70	189.36	13.96	2.27	-60.14	115.05	27.16	434.88	113.78	166.594
-1551.00	410.41	189.36	13.69	2.37	-62.74	114.29	26.26	438.18	112.87	166.595
-1552.00	410.12	189.36	13.42	2.47	-65.34	113.53	25.36	441.48	111.96	166.596
-1553.00	409.83	189.36	13.15	2.57	-67.94	112.77	24.46	444.78	111.05	166.597
-1554.00	409.54	189.36	12.88	2.67	-70.54	112.01	23.56	448.08	110.14	166.598
-1555.00	409.25	189.36	12.61	2.77	-73.14	111.25	22.66	451.38	109.23	166.599
-1556.00	408.96	189.36	12.34	2.87	-75.74	110.49	21.76	454.68	108.32	166.600
-1557.00	408.67	189.36	12.07	2.97	-78.34	109.73	20.86	457.98	107.41	166.601
-1558.00	408.38	189.36	11.80	3.07	-80.94	108.97	19.96	461.28	106.50	166.602
-1559.00	408.09	189.36	11.53	3.17	-83.54	108.21	19.06	464.58	105.59	166.603
-1560.00	407.80	189.36	11.26	3.27	-86.14	107.45	18.16	467.88	104.68	166.604
-1561.00	407.51	189.36	10.99	3.37	-88.74	106.69	17.26	471.18	103.77	166.605
-1562.00	407.22	189.36	10.72	3.47	-91.34	105.93	16.36	474.48	102.86	166.606
-1563.00	406.93	189.36	10.45	3.57	-93.94	105.17	15.46	477.78	101.95	166.607
-1564.00	406.64	189.36	10.18	3.67	-96.54	104.41	14.56	481.08	101.04	166.608
-1565.00	406.35	189.36	9.91	3.77	-99.14	103.65	13.66	484.38	100.13	166.609
-1566.00	406.06	189.36	9.64	3.87	-101.74	102.89	12.76	487.68	99.22	166.610
-1567.00	405.77	189.36	9.37	3.97	-104.34	102.13	11.86	490.98	98.31	166.611
-1568.00	405.48	189.36	9.10	4.07	-106.94	101.37	10.96	494.28	97.40	166.612
-1569.00	405.19	189.36	8.83	4.17	-109.54	100.61	10.06	497.58	96.49	166.613
-1570.00	404.90	189.36	8.56	4.27	-112.14	99.85	9.16	500.88	95.58	166.614
-1571.00	404.61	189.36	8.29	4.37	-114.74	99.09	8.26	504.18	94.67	166.615
-1572.00	404.32	189.36	8.02	4.47	-117.34	98.33	7.36	507.48	93.76	166.616
-1573.00	404.03	189.36	7.75	4.57	-119.94	97.57	6.46	510.78	92.85	166.617
-1574.00	403.74	189.36	7.48	4.67	-122.54	96.81	5.56	514.08	91.94	166.618
-1575.00	403.45	189.36	7.21	4.77	-125.14	96.05	4.66	517.38	91.03	166.619
-1576.00	403.16	189.36	6.94	4.87	-127.74	95.29	3.76	520.68	90.12	166.620
-1577.00	402.87	189.36	6.67	4.97	-130.34	94.53	2.86	523.98	89.21	166.621
-1578.00	402.58	189.36	6.40	5.07	-132.94	93.77	1.96	527.28	88.30	166.622
-1579.00	402.29	189.36	6.13	5.17	-135.54	93.01	1.06	530.58	87.39	166.623
-1580.00	402.00	189.36	5.86	5.27	-138.14	92.25	0.16	533.88	86.48	166.624
-1581.00	401.71	189.36	5.59	5.37	-140.74	91.49	-0.74	537.18	85.57	166.625
-1582.00	401.42	189.36	5.32	5.47	-143.34	90.73	-1.84	540.48	84.66	166.626
-1583.00	401.13	189.36	5.05	5.57	-145.94	90.00	-2.94	543.78	83.75	166.627
-1584.00	400.84	189.36	4.78	5.67	-148.54	89.24	-4.04	547.08	82.84	166.628
-1585.00	400.55	189.36	4.51	5.77	-151.14	88.48	-5.14	550.38	81.93	166.629
-1586.00	400.26	189.36	4.24	5.87	-153.74	87.72	-6.24	553.68	81.02	166.630
-1587.00	400.00	189.36	3.97	5.97	-156.34	86.96	-7.34	556.98	80.11	166.631
-1588.00	399.73	189.36	3.70	6.07	-158.94	86.20	-8.44	560.28	79.20	166.632
-1589.00	399.46	189.36	3.43	6.17	-161.54	85.44	-9.54	563.58	78.29	166.633
-1590.00	399.19	189.36	3.16	6.27	-164.14	84.68	-10.64	566.88	77.38	166.634
-1591.00	398.92	189.36	2.89	6.37	-166.74	83.92	-11.74	570.18	76.47	166.635
-1592.00	398.65	189.36	2.62	6.47	-169.34	83.16	-12.84	573.48	75.56	166.636
-1593.00	398.38	189.36	2.35	6.57	-171.94	82.40	-13.94	576.78	74.65	166.637
-1594.00	398.11	189.36	2.08	6.67	-174.54	81.64	-15.04	580.08	73.74	166.638
-1595.00	397.84	189.36	1.81	6.77	-177.14	80.88	-16.14	583.38	72.83	166.639
-1596.00	397.57	189.36	1.54	6.87	-179.74	80.12	-17.24	586.68	71.92	166.640
-1597.00	397.30	189.36	1.27	6.97	-182.34	79.36	-18.34	589.98	71.01	166.641
-1598.00	397.03	189.36	1.00	7.07	-184.94	78.60	-19.44	593.28	70.10	166.642
-1599.00	396.76	189.36	0.73	7.17	-187.54	77.84	-20.54	596.58	69.19	166.643
-1600.00	396.49	189.36	0.46	7.27	-190.14	77.08	-21.64	599.88	68.28	166.644

-16,13,00	407,25	104,11	3,33	1,77	51,75	75,27	41,78	54,18	75,40	16,1634	-169,0827
-16,10,00	409,16	109,11	3,59	1,76	51,71	75,23	41,96	54,33	74,17	16,1619	-169,5093
-16,17,00	409,36	109,15	3,63	1,75	51,72	75,23	42,11	54,33	72,36	16,1603	-169,5096
-16,15,00	407,99	107,15	3,36	1,77	51,71	74,91	42,27	54,37	70,04	16,1583	-169,5092
-16,15,00	407,88	107,16	3,31	1,78	51,71	74,91	42,37	54,37	70,25	16,1583	-169,5090
-16,14,00	407,79	107,15	3,53	1,76	51,66	74,98	42,48	54,28	69,74	16,1568	-169,5083
-16,13,00	407,70	107,15	3,74	1,75	51,67	74,96	42,75	54,25	68,55	16,1553	-169,5083
-16,11,00	407,62	107,11	3,77	1,77	51,71	74,97	42,75	54,25	67,19	16,1541	-169,5077
-16,11,00	407,55	107,15	3,75	1,77	51,71	74,97	42,75	54,25	65,83	16,1523	-169,5071
-16,10,00	407,37	107,16	3,73	1,75	51,71	74,97	43,17	54,16	64,71	16,1510	-169,5091
-16,10,00	407,29	107,17	3,72	1,77	51,75	74,97	43,17	54,16	63,75	16,1501	-169,5093
-16,16,00	407,24	107,17	3,76	1,77	51,75	74,97	43,32	54,16	62,54	16,1487	-169,5091
-16,16,00	407,15	107,11	3,52	1,77	51,68	74,98	43,68	54,16	61,22	16,1472	-169,5086
-16,15,00	407,10	107,11	3,65	1,76	51,71	74,98	43,68	54,16	59,72	16,1453	-169,5086
-16,15,00	407,02	107,11	3,55	1,75	51,71	74,98	43,98	54,16	58,56	16,1440	-169,5084
-16,13,00	407,35	107,19	3,71	1,76	51,75	74,98	43,98	54,16	57,25	16,1425	-169,5077
-16,12,00	407,89	107,11	3,73	1,76	51,75	74,98	44,21	54,06	56,11	16,1413	-169,5071
-16,11,00	407,83	107,12	3,72	1,77	51,75	74,98	44,21	54,06	54,80	16,1397	-169,5081
-16,10,00	406,77	107,11	3,76	1,77	51,75	74,97	44,71	53,76	53,54	16,1386	-169,5093
-16,10,00	406,72	107,08	3,73	1,76	51,75	74,97	44,71	53,76	52,12	16,1372	-169,5093
-16,14,00	406,67	107,08	3,73	1,76	51,75	74,97	44,71	53,76	50,63	16,1352	-169,5077
-16,11,00	406,63	107,09	3,71	1,77	51,75	74,97	44,71	53,76	49,39	16,1343	-169,5081
-16,15,00	406,59	107,10	3,74	1,77	51,75	74,97	44,96	53,76	48,23	16,1329	-169,5086
-16,15,00	407,51	107,08	3,76	1,76	51,71	74,98	45,07	53,76	47,16	16,1319	-169,5085
-16,16,00	407,51	107,07	3,76	1,76	51,71	74,98	45,21	53,76	45,40	16,1305	-169,5082
-16,13,00	406,49	107,05	3,72	1,77	51,75	74,98	45,21	53,76	44,11	16,1285	-169,5077
-16,12,00	406,46	107,07	3,72	1,76	51,75	74,98	45,59	53,69	42,79	16,1269	-169,5070
-16,11,00	407,43	107,07	3,70	1,76	51,75	74,98	45,59	53,69	41,84	16,1250	-169,5086
-16,10,00	406,42	107,08	3,73	1,76	51,75	74,98	45,65	53,72	40,57	16,1240	-169,5087
-16,10,00	406,39	107,05	3,75	1,76	51,75	74,97	45,89	53,67	39,18	16,1248	-169,5081
-16,10,00	407,19	107,02	3,71	1,76	51,75	74,97	45,89	53,67	37,15	16,1248	-169,5074
-16,17,00	407,19	107,04	3,72	1,77	51,75	74,97	46,30	53,60	36,18	16,1201	-169,5090
-16,15,00	407,18	107,06	3,74	1,77	51,75	74,97	46,30	53,60	35,04	16,1188	-169,5092
-16,15,00	407,19	107,05	3,75	1,77	51,75	74,97	46,30	53,60	33,22	16,1173	-169,5095
-16,13,00	407,16	107,13	3,73	1,75	51,71	74,98	46,77	53,24	31,33	16,1153	-169,5095
-16,13,00	407,15	107,06	3,73	1,75	51,71	74,98	46,77	53,24	30,25	16,1144	-169,5094
-16,16,00	407,15	107,04	3,74	1,76	51,75	74,97	47,13	53,11	28,64	16,1118	-169,5077
-16,16,00	407,14	107,07	3,74	1,75	51,75	74,98	47,13	53,11	27,67	16,1113	-169,5082
-16,16,00	407,15	107,05	3,74	1,75	51,75	74,98	47,29	53,00	26,79	16,1103	-169,5067
-16,16,00	407,14	107,06	3,73	1,75	51,75	74,97	47,29	53,00	25,90	16,1093	-169,5071
-16,16,00	407,17	107,06	3,75	1,75	51,75	74,97	47,54	52,94	24,64	16,1086	-169,5094
-16,16,00	407,17	107,04	3,74	1,75	51,75	74,97	47,68	52,91	23,65	16,1068	-169,5092
-16,16,00	407,18	107,09	3,73	1,75	51,75	74,97	47,68	52,91	22,91	16,1062	-169,5095
-16,16,00	407,18	107,08	3,74	1,75	51,75	74,97	47,71	52,90	21,91	16,1054	-169,5095
-16,16,00	407,18	107,08	3,74	1,75	51,75	74,97	47,94	52,85	21,51	16,1049	-169,5076
-16,16,00	407,15	107,13	3,72	1,75	51,75	74,97	47,94	52,85	20,26	16,1044	-169,5071
-16,16,00	406,62	107,05	3,70	1,75	51,75	74,97	48,06	52,85	19,37	16,1028	-169,5061
-16,16,00	406,62	107,04	3,71	1,75	51,75	74,97	48,06	52,85	19,20	16,1028	-169,5064
407,25,00	100,00	100,00,00	3,00	1,00	1,00	1,00	4,00	6,00	1,00	16,0000	-169,5066

167,430 - 169,525
17,917 - 168,910
19,271 - 168,911

3,000
63,700

3,660,000
8,660,000

5,330,000
14,330,000

Probe No. 3; lift-off time: H-50 seconds; and project No. 6.13

Raw data referenced to the ship		Quantities have been translated to the launcher position									
Time, sec	Range, km	Azimuth, deg T	Elevation, deg Geod.	x, km distance east	y, km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg	Longitude of target, deg

-13.00	354.89	191.05	5.04	-1.55	6.45	40.98	6.63	134.47	40.99	16.7936	-169.5400
-12.00	354.80	191.08	5.34	-1.63	6.43	42.82	7.02	140.48	42.82	16.7970	-169.5407
-11.00	354.72	191.11	5.66	-1.76	6.44	44.75	7.45	146.82	44.75	16.8007	-169.5419
-10.00	354.65	191.17	6.06	-1.91	6.45	46.65	7.91	152.47	46.65	16.8037	-169.5414
-9.00	354.59	191.13	6.25	-1.93	6.45	48.32	8.33	158.34	48.32	16.8071	-169.5413
-8.00	354.54	191.15	6.51	-1.77	6.45	50.03	8.53	164.18	50.04	16.8104	-169.5420
-7.00	354.49	191.15	6.80	-1.74	6.45	51.66	8.82	169.53	51.67	16.8134	-169.5417
-6.00	354.45	191.18	7.11	-1.86	6.45	53.56	9.24	175.73	53.56	16.8170	-169.5427
-5.00	354.42	191.22	7.39	-1.90	6.44	55.27	9.66	181.37	55.28	16.8204	-169.5441
-4.00	354.40	191.24	7.67	-1.97	6.40	56.97	10.02	186.94	56.98	16.8237	-169.5448
-3.00	354.39	191.26	7.97	-2.12	10.19	58.79	10.40	192.93	58.80	16.8272	-169.5452
-2.00	354.38	191.26	8.25	-2.03	10.52	60.47	10.71	198.43	60.48	16.8302	-169.5444
-1.00	354.39	191.27	8.52	-2.07	10.97	62.11	11.06	203.81	62.12	16.8333	-169.5447
0.	354.39	191.30	8.81	-2.16	11.26	63.88	11.46	209.62	63.89	16.8368	-169.5455
1.00	354.40	191.31	9.08	-2.14	11.60	65.51	11.80	214.96	65.52	16.8398	-169.5454
2.00	354.42	191.34	9.36	-2.26	11.93	67.21	12.20	220.55	67.22	16.8433	-169.5465
3.00	354.45	191.37	9.63	-2.41	12.36	68.84	12.59	225.89	68.85	16.8466	-169.5479
4.00	354.48	191.39	9.90	-2.63	12.71	70.48	12.95	231.24	70.48	16.8498	-169.5481
5.00	354.51	191.41	10.20	-2.51	13.11	72.25	13.35	237.08	72.26	16.8533	-169.5488
6.00	354.57	191.41	10.54	-2.68	13.41	73.71	13.64	241.87	73.72	16.8560	-169.5485
7.00	354.63	191.44	10.75	-2.53	13.45	75.63	13.88	248.19	75.65	16.8600	-169.5489
8.00	354.68	191.45	11.02	-2.56	14.20	77.21	14.43	253.99	77.23	16.8631	-169.5492
9.00	354.75	191.48	11.30	-2.66	14.70	78.92	14.86	258.99	78.94	16.8666	-169.5501
10.00	354.82	191.52	11.54	-2.86	15.31	80.41	15.23	263.88	80.43	16.8698	-169.5520
11.00	354.89	191.53	11.80	-2.84	15.70	81.97	15.57	269.00	81.99	16.8729	-169.5518
12.00	354.97	191.56	12.08	-2.91	16.04	83.66	15.97	274.33	83.68	16.8764	-169.5525
13.00	355.06	191.58	12.33	-2.97	16.04	85.16	16.31	279.46	85.18	16.8795	-169.5530
14.00	355.15	191.60	12.57	-3.05	16.39	86.65	16.67	284.34	86.67	16.8827	-169.5537
15.00	355.25	191.61	12.83	-3.02	16.74	88.20	17.01	289.44	88.22	16.8856	-169.5535
16.00	355.35	191.65	13.14	-3.19	17.22	89.70	17.51	295.63	90.11	16.8899	-169.5550
17.00	355.46	191.66	13.31	-3.22	17.43	91.13	17.72	299.08	91.16	16.8918	-169.5553
18.00	355.56	191.69	13.64	-3.33	17.34	93.11	18.25	305.56	93.13	16.8963	-169.5563
19.00	355.69	191.72	13.91	-3.43	18.35	94.74	18.67	310.92	94.77	16.8999	-169.5572
20.00	355.80	191.74	14.13	-3.50	19.66	96.10	18.99	315.38	96.13	16.9027	-169.5578
21.00	355.92	191.75	14.38	-3.49	19.02	97.63	19.34	320.39	97.66	16.9059	-169.5578
22.00	356.01	191.66	14.64	-2.88	19.12	99.19	19.53	325.52	99.22	16.9085	-169.5522
23.00	356.04	191.29	14.67	-0.66	18.89	99.34	18.99	326.07	99.39	16.9047	-169.5316

0 0 100.00 -10000.00 280.00 3.00 1.00
 16.7350 -169.5254 3.2000 20224628.90 20555948.50
 19.9100 -168.9080 40.0000 991806.00 1002300.00
 12.9101 -168.9085

Probe No. 4; lift-off time: H710 seconds; and project No. 6.13

Raw data referenced to the ship		Quantities have been translated to the launcher position									
Time, sec	Range, km	Azimuth, deg T	Elevation, deg Geod.	x, km distance east	y, km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg R	Longitude of target, deg

873.00	433.93	131.63	22.5	1.41	7.4	173.36	59.69	531.76	163.93	162.8183
874.00	433.71	131.66	22.5	1.41	7.4	173.36	60.17	532.24	164.23	162.8118
875.00	433.50	131.67	22.5	1.41	7.4	173.36	60.63	532.71	164.51	162.8052
876.00	433.29	131.69	22.5	1.41	7.4	173.36	61.09	533.18	164.79	162.7986
877.00	433.08	131.71	22.5	1.41	7.4	173.36	61.55	533.65	165.07	162.7920
878.00	432.87	131.73	22.5	1.41	7.4	173.36	62.01	534.12	165.35	162.7854
879.00	432.66	131.75	22.5	1.41	7.4	173.36	62.47	534.59	165.63	162.7788
880.00	432.45	131.77	22.5	1.41	7.4	173.36	62.93	535.06	165.91	162.7722
881.00	432.24	131.79	22.5	1.41	7.4	173.36	63.39	535.53	166.19	162.7656
882.00	432.03	131.81	22.5	1.41	7.4	173.36	63.85	536.00	166.47	162.7590
883.00	431.82	131.83	22.5	1.41	7.4	173.36	64.31	536.47	166.75	162.7524
884.00	431.61	131.85	22.5	1.41	7.4	173.36	64.77	536.94	167.03	162.7458
885.00	431.40	131.87	22.5	1.41	7.4	173.36	65.23	537.41	167.31	162.7392
886.00	431.19	131.89	22.5	1.41	7.4	173.36	65.69	537.88	167.59	162.7326
887.00	430.98	131.91	22.5	1.41	7.4	173.36	66.15	538.35	167.87	162.7260
888.00	430.77	131.93	22.5	1.41	7.4	173.36	66.61	538.82	168.15	162.7194
889.00	430.56	131.95	22.5	1.41	7.4	173.36	67.07	539.29	168.43	162.7128
890.00	430.35	131.97	22.5	1.41	7.4	173.36	67.53	539.76	168.71	162.7062
891.00	430.14	131.99	22.5	1.41	7.4	173.36	67.99	540.23	168.99	162.6996
892.00	429.93	132.01	22.5	1.41	7.4	173.36	68.45	540.70	169.27	162.6930
893.00	429.72	132.03	22.5	1.41	7.4	173.36	68.91	541.17	169.55	162.6864
894.00	429.51	132.05	22.5	1.41	7.4	173.36	69.37	541.64	169.83	162.6798
895.00	429.30	132.07	22.5	1.41	7.4	173.36	69.83	542.11	170.11	162.6732
896.00	429.09	132.09	22.5	1.41	7.4	173.36	70.29	542.58	170.39	162.6666
897.00	428.88	132.11	22.5	1.41	7.4	173.36	70.75	543.05	170.67	162.6600
898.00	428.67	132.13	22.5	1.41	7.4	173.36	71.21	543.52	170.95	162.6534
899.00	428.46	132.15	22.5	1.41	7.4	173.36	71.67	543.99	171.23	162.6468
900.00	428.25	132.17	22.5	1.41	7.4	173.36	72.13	544.46	171.51	162.6402
901.00	428.04	132.19	22.5	1.41	7.4	173.36	72.59	544.93	171.79	162.6336
902.00	427.83	132.21	22.5	1.41	7.4	173.36	73.05	545.40	172.07	162.6270
903.00	427.62	132.23	22.5	1.41	7.4	173.36	73.51	545.87	172.35	162.6204
904.00	427.41	132.25	22.5	1.41	7.4	173.36	73.97	546.34	172.63	162.6138
905.00	427.20	132.27	22.5	1.41	7.4	173.36	74.43	546.81	172.91	162.6072
906.00	426.99	132.29	22.5	1.41	7.4	173.36	74.89	547.28	173.19	162.6006
907.00	426.78	132.31	22.5	1.41	7.4	173.36	75.35	547.75	173.47	162.5940
908.00	426.57	132.33	22.5	1.41	7.4	173.36	75.81	548.22	173.75	162.5874
909.00	426.36	132.35	22.5	1.41	7.4	173.36	76.27	548.69	174.03	162.5808
910.00	426.15	132.37	22.5	1.41	7.4	173.36	76.73	549.16	174.31	162.5742
911.00	425.94	132.39	22.5	1.41	7.4	173.36	77.19	549.63	174.59	162.5676
912.00	425.73	132.41	22.5	1.41	7.4	173.36	77.65	550.10	174.87	162.5610
913.00	425.52	132.43	22.5	1.41	7.4	173.36	78.11	550.57	175.15	162.5544
914.00	425.31	132.45	22.5	1.41	7.4	173.36	78.57	551.04	175.43	162.5478
915.00	425.10	132.47	22.5	1.41	7.4	173.36	79.03	551.51	175.71	162.5412
916.00	424.89	132.49	22.5	1.41	7.4	173.36	79.49	551.98	175.99	162.5346
917.00	424.68	132.51	22.5	1.41	7.4	173.36	79.95	552.45	176.27	162.5280
918.00	424.47	132.53	22.5	1.41	7.4	173.36	80.41	552.92	176.55	162.5214
919.00	424.26	132.55	22.5	1.41	7.4	173.36	80.87	553.39	176.83	162.5148
920.00	424.05	132.57	22.5	1.41	7.4	173.36	81.33	553.86	177.11	162.5082
921.00	423.84	132.59	22.5	1.41	7.4	173.36	81.79	554.33	177.39	162.5016
922.00	423.63	132.61	22.5	1.41	7.4	173.36	82.25	554.80	177.67	162.4950
923.00	423.42	132.63	22.5	1.41	7.4	173.36	82.71	555.27	177.95	162.4884
924.00	423.21	132.65	22.5	1.41	7.4	173.36	83.17	555.74	178.23	162.4818
925.00	423.00	132.67	22.5	1.41	7.4	173.36	83.63	556.21	178.51	162.4752
926.00	422.79	132.69	22.5	1.41	7.4	173.36	84.09	556.68	178.79	162.4686
927.00	422.58	132.71	22.5	1.41	7.4	173.36	84.55	557.15	179.07	162.4620
928.00	422.37	132.73	22.5	1.41	7.4	173.36	85.01	557.62	179.35	162.4554
929.00	422.16	132.75	22.5	1.41	7.4	173.36	85.47	558.09	179.63	162.4488
930.00	421.95	132.77	22.5	1.41	7.4	173.36	85.93	558.56	179.91	162.4422
931.00	421.74	132.79	22.5	1.41	7.4	173.36	86.39	559.03	180.19	162.4356
932.00	421.53	132.81	22.5	1.41	7.4	173.36	86.85	559.50	180.47	162.4290
933.00	421.32	132.83	22.5	1.41	7.4	173.36	87.31	559.97	180.75	162.4224
934.00	421.11	132.85	22.5	1.41	7.4	173.36	87.77	560.44	181.03	162.4158
935.00	420.90	132.87	22.5	1.41	7.4	173.36	88.23	560.91	181.31	162.4092
936.00	420.69	132.89	22.5	1.41	7.4	173.36	88.69	561.38	181.59	162.4026
937.00	420.48	132.91	22.5	1.41	7.4	173.36	89.15	561.85	181.87	162.3960
938.00	420.27	132.93	22.5	1.41	7.4	173.36	89.61	562.32	182.15	162.3894
939.00	420.06	132.95	22.5	1.41	7.4	173.36	90.07	562.79	182.43	162.3828
940.00	419.85	132.97	22.5	1.41	7.4	173.36	90.53	563.26	182.71	162.3762
941.00	419.64	132.99	22.5	1.41	7.4	173.36	90.99	563.73	182.99	162.3696
942.00	419.43	133.01	22.5	1.41	7.4	173.36	91.45	564.20	183.27	162.3630
943.00	419.22	133.03	22.5	1.41	7.4	173.36	91.91	564.67	183.55	162.3564
944.00	419.01	133.05	22.5	1.41	7.4	173.36	92.37	565.14	183.83	162.3498
945.00	418.80	133.07	22.5	1.41	7.4	173.36	92.83	565.61	184.11	162.3432
946.00	418.59	133.09	22.5	1.41	7.4	173.36	93.29	566.08	184.39	162.3366
947.00	418.38	133.11	22.5	1.41	7.4	173.36	93.75	566.55	184.67	162.3300
948.00	418.17	133.13	22.5	1.41	7.4	173.36	94.21	567.02	184.95	162.3234
949.00	417.96	133.15	22.5	1.41	7.4	173.36	94.67	567.49	185.23	162.3168
950.00	417.75	133.17	22.5	1.41	7.4	173.36	95.13	567.96	185.51	162.3102
951.00	417.54	133.19	22.5	1.41	7.4	173.36	95.59	568.43	185.79	162.3036
952.00	417.33	133.21	22.5	1.41	7.4	173.36	96.05	568.90	186.07	162.2970
953.00	417.12	133.23	22.5	1.41	7.4	173.36	96.51	569.37	186.35	162.2904
954.00	416.91	133.25	22.5	1.41	7.4	173.36	96.97	569.84	186.63	162.2838
955.00	416.70	133.27	22.5	1.41	7.4	173.36	97.43	570.31	186.91	162.2772
956.00	416.49	133.29	22.5	1.41	7.4	173.36	97.89	570.78	187.19	162.2706
957.00	416.28	133.31	22.5	1.41	7.4	173.36	98.35	571.25	187.47	162.2640
958.00	416.07	133.33	22.5	1.41	7.4	173.36	98.81	571.72	187.75	162.2574
959.00	415.86	133.35	22.5	1.41	7.4	173.36	99.27	572.19	188.03	162.2508
960.00	415.65	133.37	22.5	1.41	7.4	173.36	99.73	572.66	188.31	162.2442
961.00	415.44	133.39	22.5	1.41	7.4	173.36	100.19	573.13	188.59	162.2376
962.00	415.23	133.41	22.5	1.41	7.4	173.36	100.65	573.60	188.87	162.2310
963.00	415.02	133.43	22.5	1.41	7.4	173.36	101.11	574.07	189.15	162.2244
964.00	414.81	133.45	22.5	1.41	7.4	173.36	101.57	574.54	189.43	162.2178
965.00	414.60	133.47	22.5	1.41	7.4	173.36	102.03	575.01	189.71	162.2112
966.00	414.39	133.49	22.5	1.41	7.4	173.36	102.49	575.48	190.00	162.2046
967.00	414.18	133.51	22.5	1.41	7.4	173.36	102.95	575.95	190.28	162.1980
968.00	413.97	133.53	22.5	1.41	7.4	173.36	103.41	576.42	190.56	162.1914
969.00	413.76	133.55	22.5	1.41	7.4	173.36	103.87	576.89	190.84	162.1848
970.00	413.55	133.57	22.5	1.41	7.4	173.36	104.33	577.36	191.12	162.1782
971.00	413.34	133.59	22.5	1.41	7.4	173.36	104.79	577.83	191.40	162.1716
972.00	413.13	133.61	22.5	1.41	7.4	173.36	105.25	578.30	191.68	162.1650
973.00	412.92	133.63	22.5	1.41	7.4	173.36	105.71	578.77	191.96	162.1584
974.00	412.71	133.65	22.5	1.41	7.4	173.36	106.17	579.24	192.24	162.1518
975.00	412.50	133.67	22.5	1.41	7.4	173.36	106.63	579.7		

884.00	467.39	191.93	24.13	-22.75	-54.41	204.75	58.98	672.62	205.01	16.2418
885.00	467.99	191.74	24.18	-22.86	-54.75	204.38	59.33	674.71	205.65	16.2590
886.00	468.59	191.54	24.21	-22.99	-55.17	204.04	59.77	676.81	206.11	16.2553
887.00	469.19	191.37	24.23	-23.14	-55.56	203.78	60.24	678.97	206.54	16.2519
888.00	469.78	191.21	24.26	-23.31	-55.96	203.54	60.64	681.11	207.06	16.2484
889.00	470.36	191.08	24.31	-23.55	-56.38	203.31	61.01	683.47	207.66	16.2457
890.00	470.95	191.00	24.36	-23.65	-56.58	203.14	61.33	685.67	208.32	16.2431
891.00	471.53	192.00	24.41	-23.81	-56.86	202.70	61.65	688.06	208.99	16.2408
892.00	472.10	192.02	24.45	-24.02	-57.19	202.24	62.03	690.53	209.53	16.2379
893.00	472.67	192.01	24.48	-24.19	-57.57	201.74	62.45	693.11	209.99	16.2347
894.00	473.24	192.02	24.52	-24.15	-57.91	210.26	62.76	695.80	210.56	16.2316
895.00	473.80	192.01	24.56	-24.35	-58.24	210.80	63.13	698.60	211.10	16.2289
896.00	474.36	192.04	24.60	-24.49	-58.57	211.34	63.49	701.50	211.65	16.2260
897.00	474.92	192.07	24.67	-24.78	-58.91	211.79	63.91	704.50	212.10	16.2231
898.00	475.47	192.06	24.65	-24.80	-59.28	212.27	64.26	707.65	212.58	16.2199
899.00	476.01	192.07	24.67	-24.92	-59.68	212.66	64.67	710.94	213.08	16.2165
900.00	476.56	192.07	24.70	-25.01	-60.01	213.14	65.03	714.34	213.46	16.2135
901.00	477.09	192.10	24.72	-25.31	-60.37	213.52	65.47	717.81	213.85	16.2105
902.00	477.63	192.13	24.76	-25.63	-60.63	214.07	65.83	721.40	214.40	16.2083
903.00	478.16	192.14	24.78	-25.78	-60.98	214.51	66.20	725.10	214.84	16.2053
904.00	478.68	192.13	24.81	-25.80	-61.26	215.04	66.47	728.95	215.42	16.2028
905.00	479.20	192.12	24.84	-25.75	-61.68	215.44	66.84	732.95	215.78	16.1993
906.00	479.72	192.13	24.85	-25.91	-62.08	215.76	67.21	737.10	216.10	16.1958
907.00	480.23	192.15	24.87	-26.21	-62.51	216.12	67.69	741.40	216.47	16.1930
908.00	480.74	192.17	24.88	-26.40	-62.78	216.44	68.10	745.80	216.80	16.1898
909.00	481.24	192.16	24.91	-26.60	-63.12	216.87	68.43	750.30	217.23	16.1867
910.00	481.75	192.18	24.92	-26.65	-63.55	217.06	68.91	754.90	217.42	16.1830
911.00	482.24	192.19	24.92	-26.83	-63.87	217.46	69.27	759.60	217.83	16.1803
912.00	482.73	192.21	24.97	-27.07	-64.26	217.68	69.73	764.40	218.05	16.1769
913.00	483.21	192.21	24.95	-27.12	-64.56	218.14	70.03	769.30	218.51	16.1743
914.00	483.70	192.22	24.97	-27.23	-64.90	218.51	70.38	774.30	218.89	16.1714
915.00	484.18	192.22	25.00	-27.37	-65.19	218.94	70.70	779.40	219.33	16.1689
916.00	484.65	192.24	25.01	-27.56	-65.53	219.24	71.09	784.60	219.63	16.1659
917.00	485.12	192.23	25.02	-27.59	-65.83	219.56	71.44	789.90	219.95	16.1627
918.00	485.59	192.26	25.04	-27.86	-66.19	219.90	71.82	795.30	220.30	16.1602
919.00	486.04	192.27	25.04	-28.01	-66.52	220.13	72.22	800.80	220.53	16.1570
920.00	486.50	192.28	25.04	-28.20	-66.92	220.37	72.62	806.40	220.77	16.1539
921.00	486.95	192.30	25.05	-28.40	-67.25	220.64	73.00	812.10	221.05	16.1510
922.00	487.40	192.30	25.05	-28.48	-67.65	220.84	73.40	817.90	221.25	16.1476
923.00	487.84	192.30	25.06	-28.57	-67.97	221.15	73.73	823.80	221.57	16.1448
924.00	488.28	192.29	25.06	-28.60	-68.39	221.30	74.13	829.80	221.72	16.1412
925.00	488.71	192.31	25.05	-28.84	-68.74	221.49	74.54	835.90	221.92	16.1382
926.00	489.14	192.33	25.05	-29.08	-69.07	221.70	74.95	842.10	222.13	16.1353
927.00	489.57	192.36	25.07	-29.35	-69.33	222.02	75.29	848.40	222.45	16.1306
928.00	489.99	192.36	25.09	-29.62	-69.62	222.36	75.58	854.80	222.80	16.1269
929.00	490.41	192.34	25.09	-29.52	-70.04	222.53	75.93	861.30	222.97	16.1238
930.00	490.82	192.36	25.08	-29.53	-70.39	222.66	76.34	867.90	223.10	16.1208
931.00	491.23	192.36	25.08	-29.63	-70.74	222.86	76.69	874.60	223.31	16.1178
932.00	491.63	192.37	25.08	-29.79	-71.09	223.01	77.08	881.40	223.46	16.1157
933.00	492.02	192.39	25.09	-30.04	-71.33	223.30	77.40	888.30	223.76	16.1122
934.00	492.42	192.47	25.06	-30.34	-71.74	223.78	77.89	895.30	223.74	16.1095

Probe No. 5; 11ft-off time: H+1200 seconds; and project No. 6.2

Raw data referenced to the ship		Quantities have been translated to the launcher position										
Time, sec	Range, km	Azimuth, deg T	Elevation, deg	Coord.	x, km distance east	y, km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg	Longitude of target, deg

1292-00	343-60	188-71	12-63	14-44	24-91	83-81	28-70	275-17	83-87	16-9585
1293-00	343-22	188-19	13-25	16-73	26-20	87-26	10-13	286-54	87-34	16-9707
1294-00	347-84	188-17	13-63	15-04	27-55	89-76	31-12	289-11	89-34	16-9872
1295-00	342-07	188-10	13-99	15-54	28-71	91-26	32-20	292-88	91-40	16-9877
1296-00	347-08	188-03	14-37	16-16	29-19	93-37	33-33	306-60	93-45	16-9884
1297-00	341-68	187-83	14-75	16-16	30-16	95-17	34-51	313-10	95-46	17-0051
1298-00	341-29	187-83	15-14	17-52	31-17	97-47	35-76	320-12	97-57	17-0140
1299-00	340-90	187-76	15-56	18-09	32-28	99-74	37-00	327-58	99-85	17-0238
1300-00	340-51	187-71	16-00	18-52	33-65	102-05	38-23	335-19	102-17	17-0341
1301-00	340-12	187-64	16-46	19-13	34-67	104-54	39-60	343-17	104-66	17-0448
1302-00	339-75	187-54	16-92	19-83	35-86	106-97	40-98	351-37	107-10	17-0554
1303-00	339-38	187-46	17-41	20-46	37-15	109-56	42-41	359-21	109-70	17-0667
1304-00	339-03	187-38	17-92	21-09	38-58	112-24	43-88	368-75	112-39	17-0785
1305-00	338-69	187-27	18-42	21-82	39-73	114-88	45-41	377-43	115-04	17-0900
1306-00	338-37	187-18	18-95	22-56	41-19	117-66	46-96	386-58	117-83	17-1022
1307-00	338-03	187-08	19-50	23-40	42-62	120-54	48-57	396-09	120-73	17-1148
1308-00	337-80	186-99	20-05	24-03	44-07	123-44	50-19	406-59	123-64	17-1275
1309-00	337-56	186-90	20-63	24-72	45-59	126-48	51-86	416-64	126-69	17-1409
1310-00	337-34	186-81	21-16	25-35	46-99	129-22	53-39	426-67	129-44	17-1532
1311-00	337-16	186-72	21-72	26-05	48-65	132-10	55-01	436-18	132-34	17-1659
1312-00	337-00	186-59	22-24	26-92	49-82	134-83	56-63	445-15	135-07	17-1779
1313-00	336-84	186-47	22-80	27-73	51-29	137-74	58-31	454-76	138-00	17-1908
1314-00	336-76	186-36	23-34	28-49	52-73	140-55	59-93	462-03	140-83	17-2033
1315-00	336-68	186-27	23-91	29-16	54-11	143-25	61-47	470-95	143-55	17-2154
1316-00	336-63	186-20	24-50	29-87	55-57	146-09	63-09	480-30	146-40	17-2281
1317-00	336-61	186-14	25-09	30-57	57-05	148-92	64-69	489-64	148-24	17-2409
1318-00	336-61	186-08	25-69	31-26	58-52	151-59	66-26	498-45	151-93	17-2529
1319-00	336-64	186-03	26-30	32-02	59-93	154-50	67-95	508-05	154-86	17-2660
1320-00	336-70	185-97	26-93	32-76	61-40	157-32	69-59	517-38	157-70	17-2788
1321-00	336-78	185-91	27-58	33-39	62-83	160-05	71-15	526-39	160-44	17-2912
1322-00	336-89	185-85	28-26	34-12	64-30	162-85	72-79	535-62	163-26	17-3039
1323-00	337-02	185-84	28-97	34-77	65-77	165-63	74-40	544-80	166-06	17-3167
1324-00	337-18	185-80	29-71	35-64	67-15	168-28	76-02	553-57	168-73	17-3286
1325-00	337-37	185-77	29-24	36-48	68-57	171-00	77-67	562-53	171-46	17-3409
1326-00	337-58	185-75	29-76	37-22	70-01	173-71	79-28	571-19	174-19	17-3533
1327-00	337-82	185-75	30-29	38-06	71-55	176-41	80-86	580-43	176-92	17-3658
1328-00	338-07	184-86	30-81	38-43	72-99	179-10	82-40	589-30	179-62	17-3782
1329-00	338-36	184-75	31-31	39-15	74-28	181-70	83-96	597-97	182-25	17-3902
1330-00	338-67	184-62	31-83	39-93	75-73	184-42	85-61	606-90	184-98	17-4027
1331-00	339-00	184-58	32-35	40-75	77-16	187-08	87-26	615-70	187-67	17-4150
1332-00	339-35	184-55	32-87	41-50	78-67	189-78	88-90	624-63	189-39	17-4276
1333-00	339-73	184-52	33-39	42-23	80-11	192-50	90-56	633-64	193-13	17-4404
1334-00	340-13	184-41	33-91	42-74	81-60	195-21	92-20	642-59	195-86	17-4531
1335-00	340-55	183-99	34-40	43-64	82-98	197-77	93-76	651-05	198-44	17-4650
1336-00	340-99	183-87	34-90	44-33	84-42	200-40	95-35	659-77	201-10	17-4774
1337-00	341-44	183-75	35-39	45-03	85-33	202-98	96-92	668-29	203-70	17-4894
1338-00	341-95	183-64	35-89	45-67	87-29	205-61	98-52	677-01	206-35	17-5019
1339-00	342-44	183-51	36-38	46-37	88-71	208-20	100-10	685-57	208-96	17-5141
1340-00	342-99	183-35	36-89	47-27	90-20	210-85	101-83	694-36	211-64	17-5268
1341-00	343-54	183-20	37-17	48-06	91-59	213-99	103-43	703-77	214-21	17-5387
1342-00	344-11	183-07	37-85	48-76	93-01	215-94	105-01	711-22	216-78	17-5508

1343.00	344.70	147.95	1.0	4.76	96.62	211.57	106.58	719.62	219.34	17.5679	169.0751
1344.00	345.31	147.93	58.11	52.23	97.17	221.04	108.17	728.17	221.94	17.5752	169.0623
1345.00	345.94	147.92	115.73	53.63	97.72	228.43	109.75	736.70	224.55	17.5828	169.0562
1346.00	346.59	147.91	175.35	55.03	98.27	236.19	111.34	745.23	227.13	17.5907	169.0511
1347.00	347.26	147.90	236.97	56.42	98.82	244.38	112.93	753.76	229.78	17.5987	169.0466
1348.00	347.94	147.89	300.62	57.82	99.37	253.00	114.52	762.29	232.38	17.6068	169.0436
1349.00	348.63	147.88	366.28	59.21	99.92	262.11	116.11	770.82	235.00	17.6150	169.0410
1350.00	349.33	147.87	433.95	60.60	100.47	271.62	117.70	779.35	237.57	17.6233	169.0387
1351.00	350.04	147.86	503.64	62.00	101.02	281.44	119.29	787.88	240.15	17.6316	169.0367
1352.00	350.76	147.85	575.35	63.40	101.57	291.67	120.88	796.41	242.70	17.6400	169.0348
1353.00	351.49	147.84	649.08	64.80	102.12	302.32	122.47	804.94	245.25	17.6484	169.0330
1354.00	352.23	147.83	724.84	66.20	102.67	313.39	124.06	813.47	247.79	17.6569	169.0313
1355.00	352.98	147.82	802.63	67.60	103.22	324.87	125.65	822.00	250.32	17.6654	169.0297
1356.00	353.74	147.81	882.45	69.00	103.77	336.76	127.24	830.53	252.84	17.6740	169.0282
1357.00	354.51	147.80	964.30	70.40	104.32	349.07	128.83	839.06	255.35	17.6826	169.0268
1358.00	355.29	147.79	1048.18	71.80	104.87	361.80	130.42	847.59	257.85	17.6912	169.0255
1359.00	356.08	147.78	1134.10	73.20	105.42	374.95	132.01	856.12	260.33	17.7000	169.0242
1360.00	356.88	147.77	1222.08	74.60	105.97	388.52	133.60	864.65	262.80	17.7088	169.0230
1361.00	357.69	147.76	1312.13	76.00	106.52	402.51	135.19	873.18	265.25	17.7177	169.0218
1362.00	358.51	147.75	1404.25	77.40	107.07	416.92	136.78	881.71	267.68	17.7267	169.0207
1363.00	359.34	147.74	1508.44	78.80	107.62	431.75	138.37	890.24	270.10	17.7357	169.0196
1364.00	360.18	147.73	1624.71	80.20	108.17	447.00	140.00	898.77	272.50	17.7447	169.0186
1365.00	361.03	147.72	1753.07	81.60	108.72	462.67	141.63	907.30	274.88	17.7538	169.0176
1366.00	361.89	147.71	1893.53	83.00	109.27	478.76	143.26	915.83	277.25	17.7629	169.0166
1367.00	362.76	147.70	2046.10	84.40	109.82	495.27	144.89	924.36	279.60	17.7720	169.0157
1368.00	363.64	147.69	2210.80	85.80	110.37	512.20	146.52	932.89	281.92	17.7812	169.0148
1369.00	364.53	147.68	2387.63	87.20	110.92	529.55	148.15	941.42	284.23	17.7904	169.0139
1370.00	365.43	147.67	2576.61	88.60	111.47	547.32	149.78	949.95	286.52	17.8000	169.0130
1371.00	366.34	147.66	2777.75	90.00	112.02	565.51	151.41	958.48	288.80	17.8096	169.0122
1372.00	367.26	147.65	2991.06	91.40	112.57	584.12	153.04	967.01	291.06	17.8193	169.0114
1373.00	368.19	147.64	3216.54	92.80	113.12	603.15	154.67	975.54	293.27	17.8291	169.0106
1374.00	369.13	147.63	3454.31	94.20	113.67	622.60	156.30	984.07	295.46	17.8390	169.0098
1375.00	370.08	147.62	3704.38	95.60	114.22	642.47	157.93	992.60	297.62	17.8489	169.0091
1376.00	371.04	147.61	3966.76	97.00	114.77	662.76	159.56	1001.13	299.75	17.8589	169.0084
1377.00	372.01	147.60	4241.56	98.40	115.32	683.47	161.19	1009.66	301.85	17.8689	169.0077
1378.00	373.00	147.59	4528.80	99.80	115.87	704.60	162.82	1018.19	303.92	17.8789	169.0070
1379.00	374.00	147.58	4828.50	101.20	116.42	726.05	164.45	1026.72	305.97	17.8890	169.0063
1380.00	375.01	147.57	5140.78	102.60	116.97	747.92	166.08	1035.25	308.00	17.8991	169.0056
1381.00	376.03	147.56	5465.66	104.00	117.52	770.21	167.71	1043.78	310.00	17.9092	169.0049
1382.00	377.06	147.55	5803.17	105.40	118.07	792.92	169.34	1052.31	312.00	17.9193	169.0042
1383.00	378.10	147.54	6153.34	106.80	118.62	816.05	170.97	1060.84	313.97	17.9294	169.0035
1384.00	379.15	147.53	6516.21	108.20	119.17	839.60	172.60	1069.37	315.92	17.9395	169.0028
1385.00	380.21	147.52	6892.90	109.60	119.72	863.67	174.23	1077.90	317.84	17.9496	169.0021
1386.00	381.28	147.51	7283.44	111.00	120.27	888.16	175.86	1086.43	319.75	17.9597	169.0014
1387.00	382.36	147.50	7687.87	112.40	120.82	913.07	177.49	1094.96	321.63	17.9698	169.0007
1388.00	383.45	147.49	8106.23	113.80	121.37	938.40	179.12	1103.49	323.49	17.9799	168.9999
1389.00	384.55	147.48	8548.56	115.20	121.92	964.15	180.75	1112.02	325.33	17.9900	168.9992
1390.00	385.66	147.47	9014.91	116.60	122.47	990.32	182.38	1120.55	327.15	17.9999	168.9984
1391.00	386.78	147.46	9505.32	118.00	123.02	1016.91	184.01	1129.08	328.94	18.0099	168.9977
1392.00	387.91	147.45	10030.84	119.40	123.57	1043.92	185.64	1137.61	330.71	18.0199	168.9969
1393.00	389.05	147.44	10591.61	120.80	124.12	1071.35	187.27	1146.14	332.46	18.0299	168.9962
1394.00	390.20	147.43	11188.78	122.20	124.67	1109.20	188.90	1154.67	334.19	18.0399	168.9954
1395.00	391.36	147.42	11822.40	123.60	125.22	1147.57	190.53	1163.20	335.90	18.0499	168.9947
1396.00	392.53	147.41	12493.63	125.00	125.77	1186.46	192.16	1171.73	337.59	18.0599	168.9939
1397.00	393.71	147.40	13203.53	126.40	126.32	1225.87	193.79	1180.26	339.26	18.0699	168.9932
1398.00	394.90	147.39	13952.16	127.80	126.87	1265.80	195.42	1188.79	340.91	18.0799	168.9924
1399.00	396.10	147.38	14740.69	129.20	127.42	1306.25	197.05	1197.32	342.54	18.0899	168.9917
1400.00	397.31	147.37	15569.29	130.60	127.97	1347.22	198.68	1205.85	344.15	18.0999	168.9909

1374.00 392.59 173.98 08.66 167.27 337.00 189.31 1116.06 140.45 18.1178 -168.769
1375.00 393.59 174.98 09.66 168.27 338.00 189.30 1117.06 141.45 18.1179 -168.770
1376.00 394.59 175.98 10.66 169.27 339.00 189.29 1118.06 142.45 18.1180 -168.771
1377.00 395.59 176.98 11.66 170.27 340.00 189.28 1119.06 143.45 18.1181 -168.772
1378.00 396.59 177.98 12.66 171.27 341.00 189.27 1120.06 144.45 18.1182 -168.773
1379.00 397.59 178.98 13.66 172.27 342.00 189.26 1121.06 145.45 18.1183 -168.774
1380.00 398.59 179.98 14.66 173.27 343.00 189.25 1122.06 146.45 18.1184 -168.775
1381.00 399.59 180.98 15.66 174.27 344.00 189.24 1123.06 147.45 18.1185 -168.776
1382.00 400.59 181.98 16.66 175.27 345.00 189.23 1124.06 148.45 18.1186 -168.777
1383.00 401.59 182.98 17.66 176.27 346.00 189.22 1125.06 149.45 18.1187 -168.778
1384.00 402.59 183.98 18.66 177.27 347.00 189.21 1126.06 150.45 18.1188 -168.779
1385.00 403.59 184.98 19.66 178.27 348.00 189.20 1127.06 151.45 18.1189 -168.780
1386.00 404.59 185.98 20.66 179.27 349.00 189.19 1128.06 152.45 18.1190 -168.781
1387.00 405.59 186.98 21.66 180.27 350.00 189.18 1129.06 153.45 18.1191 -168.782
1388.00 406.59 187.98 22.66 181.27 351.00 189.17 1130.06 154.45 18.1192 -168.783
1389.00 407.59 188.98 23.66 182.27 352.00 189.16 1131.06 155.45 18.1193 -168.784
1390.00 408.59 189.98 24.66 183.27 353.00 189.15 1132.06 156.45 18.1194 -168.785
1391.00 409.59 190.98 25.66 184.27 354.00 189.14 1133.06 157.45 18.1195 -168.786
1392.00 410.59 191.98 26.66 185.27 355.00 189.13 1134.06 158.45 18.1196 -168.787
1393.00 411.59 192.98 27.66 186.27 356.00 189.12 1135.06 159.45 18.1197 -168.788
1394.00 412.59 193.98 28.66 187.27 357.00 189.11 1136.06 160.45 18.1198 -168.789
1395.00 413.59 194.98 29.66 188.27 358.00 189.10 1137.06 161.45 18.1199 -168.790
1396.00 414.59 195.98 30.66 189.27 359.00 189.09 1138.06 162.45 18.1200 -168.791
1397.00 415.59 196.98 31.66 190.27 360.00 189.08 1139.06 163.45 18.1201 -168.792
1398.00 416.59 197.98 32.66 191.27 361.00 189.07 1140.06 164.45 18.1202 -168.793
1399.00 417.59 198.98 33.66 192.27 362.00 189.06 1141.06 165.45 18.1203 -168.794
1400.00 418.59 199.98 34.66 193.27 363.00 189.05 1142.06 166.45 18.1204 -168.795
1401.00 419.59 200.98 35.66 194.27 364.00 189.04 1143.06 167.45 18.1205 -168.796
1402.00 420.59 201.98 36.66 195.27 365.00 189.03 1144.06 168.45 18.1206 -168.797
1403.00 421.59 202.98 37.66 196.27 366.00 189.02 1145.06 169.45 18.1207 -168.798
1404.00 422.59 203.98 38.66 197.27 367.00 189.01 1146.06 170.45 18.1208 -168.799
1405.00 423.59 204.98 39.66 198.27 368.00 189.00 1147.06 171.45 18.1209 -168.800
1406.00 424.59 205.98 40.66 199.27 369.00 188.99 1148.06 172.45 18.1210 -168.801
1407.00 425.59 206.98 41.66 200.27 370.00 188.98 1149.06 173.45 18.1211 -168.802
1408.00 426.59 207.98 42.66 201.27 371.00 188.97 1150.06 174.45 18.1212 -168.803
1409.00 427.59 208.98 43.66 202.27 372.00 188.96 1151.06 175.45 18.1213 -168.804
1410.00 428.59 209.98 44.66 203.27 373.00 188.95 1152.06 176.45 18.1214 -168.805
1411.00 429.59 210.98 45.66 204.27 374.00 188.94 1153.06 177.45 18.1215 -168.806
1412.00 430.59 211.98 46.66 205.27 375.00 188.93 1154.06 178.45 18.1216 -168.807
1413.00 431.59 212.98 47.66 206.27 376.00 188.92 1155.06 179.45 18.1217 -168.808
1414.00 432.59 213.98 48.66 207.27 377.00 188.91 1156.06 180.45 18.1218 -168.809
1415.00 433.59 214.98 49.66 208.27 378.00 188.90 1157.06 181.45 18.1219 -168.810
1416.00 434.59 215.98 50.66 209.27 379.00 188.89 1158.06 182.45 18.1220 -168.811
1417.00 435.59 216.98 51.66 210.27 380.00 188.88 1159.06 183.45 18.1221 -168.812
1418.00 436.59 217.98 52.66 211.27 381.00 188.87 1160.06 184.45 18.1222 -168.813
1419.00 437.59 218.98 53.66 212.27 382.00 188.86 1161.06 185.45 18.1223 -168.814
1420.00 438.59 219.98 54.66 213.27 383.00 188.85 1162.06 186.45 18.1224 -168.815
1421.00 439.59 220.98 55.66 214.27 384.00 188.84 1163.06 187.45 18.1225 -168.816
1422.00 440.59 221.98 56.66 215.27 385.00 188.83 1164.06 188.45 18.1226 -168.817
1423.00 441.59 222.98 57.66 216.27 386.00 188.82 1165.06 189.45 18.1227 -168.818
1424.00 442.59 223.98 58.66 217.27 387.00 188.81 1166.06 190.45 18.1228 -168.819
1425.00 443.59 224.98 59.66 218.27 388.00 188.80 1167.06 191.45 18.1229 -168.820
1426.00 444.59 225.98 60.66 219.27 389.00 188.79 1168.06 192.45 18.1230 -168.821
1427.00 445.59 226.98 61.66 220.27 390.00 188.78 1169.06 193.45 18.1231 -168.822
1428.00 446.59 227.98 62.66 221.27 391.00 188.77 1170.06 194.45 18.1232 -168.823
1429.00 447.59 228.98 63.66 222.27 392.00 188.76 1171.06 195.45 18.1233 -168.824
1430.00 448.59 229.98 64.66 223.27 393.00 188.75 1172.06 196.45 18.1234 -168.825
1431.00 449.59 230.98 65.66 224.27 394.00 188.74 1173.06 197.45 18.1235 -168.826
1432.00 450.59 231.98 66.66 225.27 395.00 188.73 1174.06 198.45 18.1236 -168.827
1433.00 451.59 232.98 67.66 226.27 396.00 188.72 1175.06 199.45 18.1237 -168.828
1434.00 452.59 233.98 68.66 227.27 397.00 188.71 1176.06 200.45 18.1238 -168.829
1435.00 453.59 234.98 69.66 228.27 398.00 188.70 1177.06 201.45 18.1239 -168.830
1436.00 454.59 235.98 70.66 229.27 399.00 188.69 1178.06 202.45 18.1240 -168.831
1437.00 455.59 236.98 71.66 230.27 400.00 188.68 1179.06 203.45 18.1241 -168.832
1438.00 456.59 237.98 72.66 231.27 401.00 188.67 1180.06 204.45 18.1242 -168.833
1439.00 457.59 238.98 73.66 232.27 402.00 188.66 1181.06 205.45 18.1243 -168.834
1440.00 458.59 239.98 74.66 233.27 403.00 188.65 1182.06 206.45 18.1244 -168.835
1441.00 459.59 240.98 75.66 234.27 404.00 188.64 1183.06 207.45 18.1245 -168.836
1442.00 460.59 241.98 76.66 235.27 405.00 188.63 1184.06 208.45 18.1246 -168.837
1443.00 461.59 242.98 77.66 236.27 406.00 188.62 1185.06 209.45 18.1247 -168.838
1444.00 462.59 243.98 78.66 237.27 407.00 188.61 1186.06 210.45 18.1248 -168.839
1445.00 463.59 244.98 79.66 238.27 408.00 188.60 1187.06 211.45 18.1249 -168.840
1446.00 464.59 245.98 80.66 239.27 409.00 188.59 1188.06 212.45 18.1250 -168.841
1447.00 465.59 246.98 81.66 240.27 410.00 188.58 1189.06 213.45 18.1251 -168.842
1448.00 466.59 247.98 82.66 241.27 411.00 188.57 1190.06 214.45 18.1252 -168.843
1449.00 467.59 248.98 83.66 242.27 412.00 188.56 1191.06 215.45 18.1253 -168.844
1450.00 468.59 249.98 84.66 243.27 413.00 188.55 1192.06 216.45 18.1254 -168.845
1451.00 469.59 250.98 85.66 244.27 414.00 188.54 1193.06 217.45 18.1255 -168.846
1452.00 470.59 251.98 86.66 245.27 415.00 188.53 1194.06 218.45 18.1256 -168.847
1453.00 471.59 252.98 87.66 246.27 416.00 188.52 1195.06 219.45 18.1257 -168.848
1454.00 472.59 253.98 88.66 247.27 417.00 188.51 1196.06 220.45 18.1258 -168.849
1455.00 473.59 254.98 89.66 248.27 418.00 188.50 1197.06 221.45 18.1259 -168.850
1456.00 474.59 255.98 90.66 249.27 419.00 188.49 1198.06 222.45 18.1260 -168.851
1457.00 475.59 256.98 91.66 250.27 420.00 188.48 1199.06 223.45 18.1261 -168.852
1458.00 476.59 257.98 92.66 251.27 421.00 188.47 1200.06 224.45 18.1262 -168.853
1459.00 477.59 258.98 93.66 252.27 422.00 188.46 1201.06 225.45 18.1263 -168.854
1460.00 478.59 259.98 94.66 253.27 423.00 188.45 1202.06 226.45 18.1264 -168.855
1461.00 479.59 260.98 95.66 254.27 424.00 188.44 1203.06 227.45 18.1265 -168.856
1462.00 480.59 261.98 96.66 255.27 425.00 188.43 1204.06 228.45 18.1266 -168.857
1463.00 481.59 262.98 97.66 256.27 426.00 188.42 1205.06 229.45 18.1267 -168.858
1464.00 482.59 263.98 98.66 257.27 427.00 188.41 1206.06 230.45 18.1268 -168.859
1465.00 483.59 264.98 99.66 258.27 428.00 188.40 1207.06 231.45 18.1269 -168.860
1466.00 484.59 265.98 100.66 259.27 429.00 188.39 1208.06 232.45 18.1270 -168.861
1467.00 485.59 266.98 101.66 260.27 430.00 188.38 1209.06 233.45 18.1271 -168.862
1468.00 486.59 267.98 102.66 261.27 431.00 188.37 1210.06 234.45 18.1272 -168.863
1469.00 487.59 268.98 103.66 262.27 432.00 188.36 1211.06 235.45 18.1273 -168.864
1470.00 488.59 269.98 104.66 263.27 433.00 188.35 1212.06 236.45 18.1274 -168.865
1471.00 489.59 270.98 105.66 264.27 434.00 188.34 1213.06 237.45 18.1275 -168.866
1472.00 490.59 271.98 106.66 265.27 435.00 188.33 1214.06 238.45 18.1276 -168.867
1473.00 491.59 272.98 107.66 266.27 436.00 188.32 1215.06 239.45 18.1277 -168.868
1474.00 492.59 273.98 108.66 267.27 437.00 188.31 1216.06 240.45 18.1278 -168.869
1475.00 493.59 274.98 109.66 268.27 438.00 188.30 1217.06 241.45 18.1279 -168.870
1476.00 494.59 275.98 110.66 269.27 439.00 188.29 1218.06 242.45 18.1280 -168.871
1477.00 495.59 276.98 111.66 270.27 440.00 188.28 1219.06 243.45 18.1281 -168.872
1478.00 496.59 277.98 112.66 271.27 441.00 188.27 1220.06 244.45 18.1282 -168.873
1479.00 497.59 278.98 113.66 272.27 442.00 188.26 1221.06 245.45 18.1283 -168.874
1480.00 498.59 279.98 114.66 273.27 443.00 188.25 1222.06 246.45 18.1284 -168.875
1481.00 499.59 280.98 115.66 274.27 444.00 188.24 1223.06 247.45 18.1285 -168.876
1482.00 500.59 281.98 116.66 275.27 445.00 188.23 1224.06 248.45 18.1286 -168.877
1483.00 501.59 282.98 117.66 276.27 446.00 188.22 1225.06 249.45 18.1287 -168.878
1484.00 502.59 283.98 118.66 277.27 447.00 188.21 1226.06 250.45 18.1288 -168.879
1485.00 503.59 284.98 119.66 278.27 448.00 188.20 1227.06 251.45 18.1289 -168.880
1486.00 504.59 285.98 120.66 279.27 449.00 188.19 1228.06 252.45 18.1290 -168.881
1487.00 505.59 286.98 121.66 280.27 450.00 188.18 1229.06 253.45 18.1291 -168.882
1488.00 506.59 287.98 122.66 281.27 451.00 188.17 1230.06 254.45 18.1292 -168.883
1489.00 507.59 288.98 123.66 282.27 452.00 188.16 1231.06 255.45 18.1293 -168.884
1490.00 508.59 289.98 124.66 283.27 453.00 188.15 1232.06 256.45 18.1294 -168.885
1491.00 509.59 290.98 125.66 284.27 454.00 188.14 1233.06 257.45 18.1295 -168.886
1492.00 510.59 291.98 126.66 285.27 455.00 188.13 1234.06 258.45 18.1296 -168.887
1493.00 511.59 292.98 127.66 286.27 456.00 188.12 1235.06 259.45 18.1297 -168.888
1494.00 512.59 293.98 128.66 287.27 457.00 188.11 1236.06 260.45 18.1298 -168.889
1495.00 513.59 294.98 129.66 288.27 458.00 188.10 1237.06 261.45 18.1299 -168.890
1496.00 514.59 295.98 130.66 289.27 459.00 188.09 1238.06 262.45 18.1300 -168.891
1497.00 515.59 296.98 131.66 290.27 460.00 188.08 1239.06 263.45 18.1301 -168.892
1498.00 516.59 297.98 132.66 291.27 461.00 188.07 1240.06 264.45 18.1302 -168.893
1499.00 517.59 298.98 133.66 292.27 462.00 188.06 1241.06 265.45 18.1303 -168.894
1500.00 518.59 299.98 134.66 293.27 463.00 188.05 1242.06 266.45 18.1304 -168.895

1445.00	467.14	157.75	121.07	340.13	446.39	268.98	1442.65	439.72	17.7697	168.4513
1446.00	468.75	157.12	121.50	291.26	437.05	270.69	1440.31	441.44	18.7014	168.6614
1447.00	469.11	156.84	122.24	291.26	437.76	272.04	1438.40	442.21	18.7927	168.4413
1448.00	469.66	156.96	122.73	292.67	438.44	273.56	1436.97	443.06	18.8841	168.4413
1449.00	470.02	156.96	123.65	294.17	439.08	275.08	1435.04	443.91	18.9754	168.4413
1450.00	470.18	156.96	124.56	295.67	439.72	276.58	1433.11	444.76	19.0667	168.4413
1451.00	470.53	156.96	125.47	297.17	440.36	278.09	1431.18	445.61	19.1580	168.4413
1452.00	471.89	156.96	126.38	298.67	441.00	279.60	1429.25	446.46	19.2493	168.4413
1453.00	473.24	156.96	127.29	299.67	441.64	281.11	1427.32	447.31	19.3406	168.4413
1454.00	474.59	156.96	128.20	300.67	442.28	282.62	1425.39	448.16	19.4319	168.4413
1455.00	475.94	156.96	129.11	301.67	442.92	284.13	1423.46	449.01	19.5232	168.4413
1456.00	477.29	156.96	130.02	302.67	443.56	285.64	1421.53	449.86	19.6145	168.4413
1457.00	478.64	156.96	130.93	303.67	444.20	287.15	1419.60	450.71	19.7058	168.4413
1458.00	479.99	156.96	131.84	304.67	444.84	288.66	1417.67	451.56	19.7971	168.4413
1459.00	481.34	156.96	132.75	305.67	445.48	290.17	1415.74	452.41	19.8884	168.4413
1460.00	482.69	156.96	133.66	306.67	446.12	291.68	1413.81	453.26	19.9797	168.4413
1461.00	484.04	156.96	134.57	307.67	446.76	293.19	1411.88	454.11	20.0710	168.4413
1462.00	485.39	156.96	135.48	308.67	447.40	294.70	1409.95	454.96	20.1623	168.4413
1463.00	486.74	156.96	136.39	309.67	448.04	296.21	1408.02	455.81	20.2536	168.4413
1464.00	488.09	156.96	137.30	310.67	448.68	297.72	1406.09	456.66	20.3449	168.4413
1465.00	489.44	156.96	138.21	311.67	449.32	299.23	1404.16	457.51	20.4362	168.4413
1466.00	490.79	156.96	139.12	312.67	449.96	300.74	1402.23	458.36	20.5275	168.4413
1467.00	492.14	156.96	140.03	313.67	450.60	302.25	1400.30	459.21	20.6188	168.4413
1468.00	493.49	156.96	140.94	314.67	451.24	303.76	1398.37	460.06	20.7101	168.4413
1469.00	494.84	156.96	141.85	315.67	451.88	305.27	1396.44	460.91	20.8014	168.4413
1470.00	496.19	156.96	142.76	316.67	452.52	306.78	1394.51	461.76	20.8927	168.4413
1471.00	497.54	156.96	143.67	317.67	453.16	308.29	1392.58	462.61	20.9840	168.4413
1472.00	498.89	156.96	144.58	318.67	453.80	309.80	1390.65	463.46	21.0753	168.4413
1473.00	500.24	156.96	145.49	319.67	454.44	311.31	1388.72	464.31	21.1666	168.4413
1474.00	501.59	156.96	146.40	320.67	455.08	312.82	1386.79	465.16	21.2579	168.4413
1475.00	502.94	156.96	147.31	321.67	455.72	314.33	1384.86	466.01	21.3492	168.4413
1476.00	504.29	156.96	148.22	322.67	456.36	315.84	1382.93	466.86	21.4405	168.4413
1477.00	505.64	156.96	149.13	323.67	457.00	317.35	1381.00	467.71	21.5318	168.4413
1478.00	506.99	156.96	150.04	324.67	457.64	318.86	1379.07	468.56	21.6231	168.4413
1479.00	508.34	156.96	150.95	325.67	458.28	320.37	1377.14	469.41	21.7144	168.4413
1480.00	509.69	156.96	151.86	326.67	458.92	321.88	1375.21	470.26	21.8057	168.4413
1481.00	511.04	156.96	152.77	327.67	459.56	323.39	1373.28	471.11	21.8970	168.4413
1482.00	512.39	156.96	153.68	328.67	460.20	324.90	1371.35	471.96	21.9883	168.4413
1483.00	513.74	156.96	154.59	329.67	460.84	326.41	1369.42	472.81	22.0796	168.4413
1484.00	515.09	156.96	155.50	330.67	461.48	327.92	1367.49	473.66	22.1709	168.4413
1485.00	516.44	156.96	156.41	331.67	462.12	329.43	1365.56	474.51	22.2622	168.4413
1486.00	517.79	156.96	157.32	332.67	462.76	330.94	1363.63	475.36	22.3535	168.4413
1487.00	519.14	156.96	158.23	333.67	463.40	332.45	1361.70	476.21	22.4448	168.4413
1488.00	520.49	156.96	159.14	334.67	464.04	333.96	1359.77	477.06	22.5361	168.4413
1489.00	521.84	156.96	160.05	335.67	464.68	335.47	1357.84	477.91	22.6274	168.4413
1490.00	523.19	156.96	160.96	336.67	465.32	336.98	1355.91	478.76	22.7187	168.4413
1491.00	524.54	156.96	161.87	337.67	465.96	338.49	1353.98	479.61	22.8100	168.4413
1492.00	525.89	156.96	162.78	338.67	466.60	340.00	1352.05	480.46	22.9013	168.4413
1493.00	527.24	156.96	163.69	339.67	467.24	341.51	1350.12	481.31	22.9926	168.4413
1494.00	528.59	156.96	164.60	340.67	467.88	343.02	1348.19	482.16	23.0839	168.4413
1495.00	529.94	156.96	165.51	341.67	468.52	344.53	1346.26	483.01	23.1752	168.4413
1496.00	531.29	156.96	166.42	342.67	469.16	346.04	1344.33	483.86	23.2665	168.4413
1497.00	532.64	156.96	167.33	343.67	469.80	347.55	1342.40	484.71	23.3578	168.4413
1498.00	533.99	156.96	168.24	344.67	470.44	349.06	1340.47	485.56	23.4491	168.4413
1499.00	535.34	156.96	169.15	345.67	471.08	350.57	1338.54	486.41	23.5404	168.4413
1500.00	536.69	156.96	170.06	346.67	471.72	352.08	1336.61	487.26	23.6317	168.4413

1567.00	587.58	91.28	77.7	13.64	5.18	56.72	6.73	1987.73	579.36	20.0930	167.842
1568.00	590.52	92.78	78.10	14.03	5.25	57.01	6.81	1990.90	581.79	20.0930	167.842
1569.00	593.46	94.28	78.42	14.42	5.32	57.29	6.84	1994.07	584.22	20.0930	167.842
1570.00	596.40	95.78	78.74	14.81	5.39	57.58	6.87	1997.24	586.65	20.0930	167.842
1571.00	599.34	97.28	79.06	15.20	5.46	57.86	6.90	2000.41	589.08	20.0930	167.842
1572.00	602.28	98.78	79.38	15.59	5.53	58.15	6.93	2003.58	591.51	20.0930	167.842
1573.00	605.22	100.28	79.70	15.98	5.60	58.43	6.96	2006.75	593.94	20.0930	167.842
1574.00	608.16	101.78	80.02	16.37	5.67	58.72	6.99	2009.92	596.37	20.0930	167.842
1575.00	611.10	103.28	80.34	16.76	5.74	59.00	7.02	2013.09	598.80	20.0930	167.842
1576.00	614.04	104.78	80.66	17.15	5.81	59.29	7.05	2016.26	601.23	20.0930	167.842
1577.00	616.98	106.28	80.98	17.54	5.88	59.57	7.08	2019.43	603.66	20.0930	167.842
1578.00	619.92	107.78	81.30	17.93	5.95	59.86	7.11	2022.60	606.09	20.0930	167.842
1579.00	622.86	109.28	81.62	18.32	6.02	60.14	7.14	2025.77	608.52	20.0930	167.842
1580.00	625.80	110.78	81.94	18.71	6.09	60.43	7.17	2028.94	610.95	20.0930	167.842
1581.00	628.74	112.28	82.26	19.10	6.16	60.71	7.20	2032.11	613.38	20.0930	167.842
1582.00	631.68	113.78	82.58	19.49	6.23	61.00	7.23	2035.28	615.81	20.0930	167.842
1583.00	634.62	115.28	82.90	19.88	6.30	61.28	7.26	2038.45	618.24	20.0930	167.842
1584.00	637.56	116.78	83.22	20.27	6.37	61.57	7.29	2041.62	620.67	20.0930	167.842
1585.00	640.50	118.28	83.54	20.66	6.44	61.85	7.32	2044.79	623.10	20.0930	167.842
1586.00	643.44	119.78	83.86	21.05	6.51	62.14	7.35	2047.96	625.53	20.0930	167.842
1587.00	646.38	121.28	84.18	21.44	6.58	62.42	7.38	2051.13	627.96	20.0930	167.842
1588.00	649.32	122.78	84.50	21.83	6.65	62.71	7.41	2054.30	630.39	20.0930	167.842
1589.00	652.26	124.28	84.82	22.22	6.72	63.00	7.44	2057.47	632.82	20.0930	167.842
1590.00	655.20	125.78	85.14	22.61	6.79	63.28	7.47	2060.64	635.25	20.0930	167.842
1591.00	658.14	127.28	85.46	23.00	6.86	63.57	7.50	2063.81	637.68	20.0930	167.842
1592.00	661.08	128.78	85.78	23.39	6.93	63.85	7.53	2066.98	640.11	20.0930	167.842
1593.00	664.02	130.28	86.10	23.78	7.00	64.14	7.56	2070.15	642.54	20.0930	167.842
1594.00	666.96	131.78	86.42	24.17	7.07	64.42	7.59	2073.32	644.97	20.0930	167.842
1595.00	669.90	133.28	86.74	24.56	7.14	64.71	7.62	2076.49	647.40	20.0930	167.842
1596.00	672.84	134.78	87.06	24.95	7.21	65.00	7.65	2079.66	649.83	20.0930	167.842
1597.00	675.78	136.28	87.38	25.34	7.28	65.28	7.68	2082.83	652.26	20.0930	167.842
1598.00	678.72	137.78	87.70	25.73	7.35	65.57	7.71	2086.00	654.69	20.0930	167.842
1599.00	681.66	139.28	88.02	26.12	7.42	65.85	7.74	2089.17	657.12	20.0930	167.842
1600.00	684.60	140.78	88.34	26.51	7.49	66.14	7.77	2092.34	659.55	20.0930	167.842
1601.00	687.54	142.28	88.66	26.90	7.56	66.42	7.80	2095.51	661.98	20.0930	167.842
1602.00	690.48	143.78	88.98	27.29	7.63	66.71	7.83	2098.68	664.41	20.0930	167.842
1603.00	693.42	145.28	89.30	27.68	7.70	67.00	7.86	2101.85	666.84	20.0930	167.842
1604.00	696.36	146.78	89.62	28.07	7.77	67.28	7.89	2105.02	669.27	20.0930	167.842
1605.00	699.30	148.28	89.94	28.46	7.84	67.57	7.92	2108.19	671.70	20.0930	167.842
1606.00	702.24	149.78	90.26	28.85	7.91	67.85	7.95	2111.36	674.13	20.0930	167.842
1607.00	705.18	151.28	90.58	29.24	7.98	68.14	7.98	2114.53	676.56	20.0930	167.842
1608.00	708.12	152.78	90.90	29.63	8.05	68.42	8.01	2117.70	678.99	20.0930	167.842
1609.00	711.06	154.28	91.22	30.02	8.12	68.71	8.04	2120.87	681.42	20.0930	167.842
1610.00	714.00	155.78	91.54	30.41	8.19	69.00	8.07	2124.04	683.85	20.0930	167.842
1611.00	716.94	157.28	91.86	30.80	8.26	69.28	8.10	2127.21	686.28	20.0930	167.842
1612.00	719.88	158.78	92.18	31.19	8.33	69.57	8.13	2130.38	688.71	20.0930	167.842
1613.00	722.82	160.28	92.50	31.58	8.40	69.85	8.16	2133.55	691.14	20.0930	167.842
1614.00	725.76	161.78	92.82	31.97	8.47	70.14	8.19	2136.72	693.57	20.0930	167.842
1615.00	728.70	163.28	93.14	32.36	8.54	70.42	8.22	2139.89	696.00	20.0930	167.842
1616.00	731.64	164.78	93.46	32.75	8.61	70.71	8.25	2143.06	698.43	20.0930	167.842
1617.00	734.58	166.28	93.78	33.14	8.68	71.00	8.28	2146.23	700.86	20.0930	167.842
1618.00	737.52	167.78	94.10	33.53	8.75	71.28	8.31	2149.40	703.29	20.0930	167.842
1619.00	740.46	169.28	94.42	33.92	8.82	71.57	8.34	2152.57	705.72	20.0930	167.842
1620.00	743.40	170.78	94.74	34.31	8.89	71.85	8.37	2155.74	708.15	20.0930	167.842
1621.00	746.34	172.28	95.06	34.70	8.96	72.14	8.40	2158.91	710.58	20.0930	167.842
1622.00	749.28	173.78	95.38	35.09	9.03	72.42	8.43	2162.08	713.01	20.0930	167.842
1623.00	752.22	175.28	95.70	35.48	9.10	72.71	8.46	2165.25	715.44	20.0930	167.842
1624.00	755.16	176.78	96.02	35.87	9.17	73.00	8.49	2168.42	717.87	20.0930	167.842
1625.00	758.10	178.28	96.34	36.26	9.24	73.28	8.52	2171.59	720.30	20.0930	167.842
1626.00	761.04	179.78	96.66	36.65	9.31	73.57	8.55	2174.76	722.73	20.0930	167.842
1627.00	763.98	181.28	96.98	37.04	9.38	73.85	8.58	2177.93	725.16	20.0930	167.842
1628.00	766.92	182.78	97.30	37.43	9.45	74.14	8.61	2181.10	727.59	20.0930	167.842
1629.00	769.86	184.28	97.62	37.82	9.52	74.42	8.64	2184.27	730.02	20.0930	167.842
1630.00	772.80	185.78	97.94	38.21	9.59	74.71	8.67	2187.44	732.45	20.0930	167.842
1631.00	775.74	187.28	98.26	38.60	9.66	75.00	8.70	2190.61	734.88	20.0930	167.842
1632.00	778.68	188.78	98.58	38.99	9.73	75.28	8.73	2193.78	737.31	20.0930	167.842
1633.00	781.62	190.28	98.90	39.38	9.80	75.57	8.76	2196.95	739.74	20.0930	167.842
1634.00	784.56	191.78	99.22	39.77	9.87	75.85	8.79	2200.12	742.17	20.0930	167.842
1635.00	787.50	193.28	99.54	40.16	9.94	76.14	8.82	2203.29	744.60	20.0930	167.842
1636.00	790.44	194.78	99.86	40.55	10.01	76.42	8.85	2206.46	747.03	20.0930	167.842
1637.00	793.38	196.28	100.18	40.94	10.08	76.71	8.88	2209.63	749.46	20.0930	167.842
1638.00	796.32	197.78	100.50	41.33	10.15	77.00	8.91	2212.80	751.89	20.0930	167.842
1639.00	799.26	199.28	100.82	41.72	10.22	77.28	8.94	2215.97	754.32	20.0930	167.842
1640.00	802.20	200.78	101.14	42.11	10.29	77.57	8.97	2219.14	756.75	20.0930	167.842
1641.00	805.14	202.28	101.46	42.50	10.36	77.85	9.00	2222.31	759.18	20.0930	167.842
1642.00	808.08	203.78	101.78	42.89	10.43	78.14	9.03	2225.48	761.61	20.0930	167.842
1643.00	811.02	205.28	102.10	43.28	10.50	78.42	9.06	2228.65	764.04	20.0930	167.842
1644.00	813.96	206.78	102.42	43.67	10.57	78.71	9.09	2231.82	766.47	20.0930	167.842
1645.00	816.90	208.28	102.74	44.06	10.64	79.00	9.12	2234.99	768.90	20.0930	167.842
1646.00	819.84	209.78	103.06	44.45	10.71	79.28	9.15	2238.16	771.33	20.0930	167.842
1647.00	822.78	211.28	103.38	44.84	10.78	79.57	9.18	2241.33	773.76	20.0930	167.842
1648.00	825.72	212.78	103.70	45.23	10.85	79.85	9.21	2244.50	776.19	20.0930	167.842
1649.00	828.66	214.28	104.02	45.62	10.92	80.14	9.24	2247.67	778.62	20.0930	167.842
1650.00	831.60	215.78	104.34	46.01	10.99	80.42	9.27	2250.84	781.05	20.0930	167.842
1651.00	834.54	217.28	104.66	46.40	11.06	80.71	9.30	2254.01	783.48	20.0930	167.842
1652.00	837.48	218.78	104.98	46.79	11.13	81.00	9.33	2257.18	785.91	20.0930	167.842
1653.00	840.42	220.28	105.30	47.18	11.20	81.28	9.36	2260.35	788.34	20.0930	167.842
1654.00	843.36	221.78	105.62	47.57	11.27	81.57	9.39	2263.52	790.77	20.0930	167.842
1655.00	846.30	223.28	105.94	47.96	11.34	81.85	9.42	2266.69	793.20	20.0930	167.842
1656.00	849.24	224.78	106.26	48.35	11.41	82.14	9.45	2269.86	795.63	20.0930	167.842
1657.00	852.18	226.28	106.58	48.74	11.48	82.42	9.48	2273.03	798.06	20.0930	167.842
1658.00	855.12	227.78	106.90	49.13	11.55	82.71	9.51	2276.20	800.49	20.	

1636.00	659.35	57.08	71.05	347.77	501.15	604.49	558.40	2356.74	676.90	20.8532	167.464
1637.00	659.94	57.08	70.96	347.80	501.15	604.49	559.77	2356.74	676.90	20.8532	167.464
1638.00	660.52	57.08	70.84	347.83	501.15	604.49	561.14	2356.74	676.90	20.8532	167.464
1639.00	661.11	57.08	70.72	347.86	501.15	604.49	562.51	2356.74	676.90	20.8532	167.464
1640.00	661.68	57.08	70.60	347.89	501.15	604.49	563.88	2356.74	676.90	20.8532	167.464
1641.00	662.26	57.08	70.48	347.92	501.15	604.49	565.25	2356.74	676.90	20.8532	167.464
1642.00	662.82	57.08	70.36	347.95	501.15	604.49	566.62	2356.74	676.90	20.8532	167.464
1643.00	663.39	57.08	70.24	347.98	501.15	604.49	567.99	2356.74	676.90	20.8532	167.464
1644.00	663.94	57.08	70.12	348.01	501.15	604.49	569.36	2356.74	676.90	20.8532	167.464
1645.00	664.50	57.08	70.00	348.04	501.15	604.49	570.73	2356.74	676.90	20.8532	167.464
1646.00	665.05	57.08	69.88	348.07	501.15	604.49	572.10	2356.74	676.90	20.8532	167.464
1647.00	665.59	57.08	69.76	348.10	501.15	604.49	573.47	2356.74	676.90	20.8532	167.464
1648.00	666.13	57.08	69.64	348.13	501.15	604.49	574.84	2356.74	676.90	20.8532	167.464
1649.00	666.66	57.08	69.52	348.16	501.15	604.49	576.21	2356.74	676.90	20.8532	167.464
1650.00	667.22	57.08	69.40	348.19	501.15	604.49	577.58	2356.74	676.90	20.8532	167.464
1651.00	667.77	57.08	69.28	348.22	501.15	604.49	578.95	2356.74	676.90	20.8532	167.464
1652.00	668.33	57.08	69.16	348.25	501.15	604.49	580.32	2356.74	676.90	20.8532	167.464
1653.00	668.87	57.08	69.04	348.28	501.15	604.49	581.69	2356.74	676.90	20.8532	167.464
1654.00	669.42	57.08	68.92	348.31	501.15	604.49	583.06	2356.74	676.90	20.8532	167.464
1655.00	669.96	57.08	68.80	348.34	501.15	604.49	584.43	2356.74	676.90	20.8532	167.464
1656.00	670.50	57.08	68.68	348.37	501.15	604.49	585.80	2356.74	676.90	20.8532	167.464
1657.00	671.04	57.08	68.56	348.40	501.15	604.49	587.17	2356.74	676.90	20.8532	167.464
1658.00	671.58	57.08	68.44	348.43	501.15	604.49	588.54	2356.74	676.90	20.8532	167.464
1659.00	672.12	57.08	68.32	348.46	501.15	604.49	589.91	2356.74	676.90	20.8532	167.464
1660.00	672.66	57.08	68.20	348.49	501.15	604.49	591.28	2356.74	676.90	20.8532	167.464
1661.00	673.20	57.08	68.08	348.52	501.15	604.49	592.65	2356.74	676.90	20.8532	167.464
1662.00	673.74	57.08	67.96	348.55	501.15	604.49	594.02	2356.74	676.90	20.8532	167.464
1663.00	674.28	57.08	67.84	348.58	501.15	604.49	595.39	2356.74	676.90	20.8532	167.464
1664.00	674.82	57.08	67.72	348.61	501.15	604.49	596.76	2356.74	676.90	20.8532	167.464
1665.00	675.36	57.08	67.60	348.64	501.15	604.49	598.13	2356.74	676.90	20.8532	167.464
1666.00	675.90	57.08	67.48	348.67	501.15	604.49	599.50	2356.74	676.90	20.8532	167.464
1667.00	676.44	57.08	67.36	348.70	501.15	604.49	600.87	2356.74	676.90	20.8532	167.464
1668.00	676.98	57.08	67.24	348.73	501.15	604.49	602.24	2356.74	676.90	20.8532	167.464
1669.00	677.52	57.08	67.12	348.76	501.15	604.49	603.61	2356.74	676.90	20.8532	167.464
1670.00	678.06	57.08	67.00	348.79	501.15	604.49	604.98	2356.74	676.90	20.8532	167.464
1671.00	678.60	57.08	66.88	348.82	501.15	604.49	606.35	2356.74	676.90	20.8532	167.464
1672.00	679.14	57.08	66.76	348.85	501.15	604.49	607.72	2356.74	676.90	20.8532	167.464
1673.00	679.68	57.08	66.64	348.88	501.15	604.49	609.09	2356.74	676.90	20.8532	167.464
1674.00	680.22	57.08	66.52	348.91	501.15	604.49	610.46	2356.74	676.90	20.8532	167.464
1675.00	680.76	57.08	66.40	348.94	501.15	604.49	611.83	2356.74	676.90	20.8532	167.464
1676.00	681.30	57.08	66.28	348.97	501.15	604.49	613.20	2356.74	676.90	20.8532	167.464
1677.00	681.84	57.08	66.16	349.00	501.15	604.49	614.57	2356.74	676.90	20.8532	167.464
1678.00	682.38	57.08	66.04	349.03	501.15	604.49	615.94	2356.74	676.90	20.8532	167.464
1679.00	682.92	57.08	65.92	349.06	501.15	604.49	617.31	2356.74	676.90	20.8532	167.464
1680.00	683.46	57.08	65.80	349.09	501.15	604.49	618.68	2356.74	676.90	20.8532	167.464
1681.00	684.00	57.08	65.68	349.12	501.15	604.49	620.05	2356.74	676.90	20.8532	167.464
1682.00	684.54	57.08	65.56	349.15	501.15	604.49	621.42	2356.74	676.90	20.8532	167.464
1683.00	685.08	57.08	65.44	349.18	501.15	604.49	622.79	2356.74	676.90	20.8532	167.464
1684.00	685.62	57.08	65.32	349.21	501.15	604.49	624.16	2356.74	676.90	20.8532	167.464
1685.00	686.16	57.08	65.20	349.24	501.15	604.49	625.53	2356.74	676.90	20.8532	167.464
1686.00	686.70	57.08	65.08	349.27	501.15	604.49	626.90	2356.74	676.90	20.8532	167.464

1738-00	697-92	44-97	60-03	11-26	63-27	57-87	704-12	2008-45	611-57	21-9440	166-7840
1739-00	696-06	44-98	59-20	11-27	63-27	57-87	705-00	2008-45	610-93	21-9526	166-7840
1740-00	696-20	44-99	59-28	11-27	63-27	57-87	705-00	2008-45	610-93	21-9526	166-7840
1741-00	696-33	44-86	59-28	11-27	63-27	57-87	706-78	2008-45	610-02	21-9604	166-7840
1742-00	696-46	44-78	59-28	11-27	63-27	57-87	707-06	2008-45	610-02	21-9604	166-7840
1743-00	696-58	44-73	59-28	11-27	63-27	57-87	709-12	1999-72	609-52	21-9706	166-7840
1744-00	696-71	44-58	59-28	11-27	63-27	57-87	710-60	1999-72	608-87	21-9712	166-7840
1745-00	696-84	44-51	59-28	11-27	63-27	57-87	712-13	1999-72	608-28	22-0365	166-7840
1746-00	696-94	44-45	59-28	11-27	63-27	57-87	713-08	1999-72	607-76	22-0365	166-7840
1747-00	697-06	44-37	59-28	11-27	63-27	57-87	714-61	1999-72	607-24	22-0365	166-7840
1748-00	697-16	44-36	59-28	11-27	63-27	57-87	716-13	1999-72	606-55	22-0365	166-7840
1749-00	697-27	44-23	59-28	11-27	63-27	57-87	717-57	1999-72	605-86	22-0365	166-7840
1750-00	697-53	44-19	59-28	11-27	63-27	57-87	718-96	1999-72	605-21	22-0365	166-7840
1751-00	697-53	44-19	59-28	11-27	63-27	57-87	721-11	1999-72	604-11	22-0365	166-7840
1752-00	697-62	44-06	59-28	11-27	63-27	57-87	722-81	1999-72	603-44	22-0365	166-7840
1753-00	697-71	43-88	59-28	11-27	63-27	57-87	724-16	1999-72	602-86	22-0365	166-7840
1754-00	697-80	43-80	59-28	11-27	63-27	57-87	725-43	1999-72	602-26	22-0365	166-7840
1755-00	697-89	43-78	59-28	11-27	63-27	57-87	726-73	1999-72	601-66	22-0365	166-7840
1756-00	697-96	43-74	59-28	11-27	63-27	57-87	728-23	1999-72	600-86	22-0365	166-7840
1757-00	698-04	43-71	59-28	11-27	63-27	57-87	729-50	1999-72	600-20	22-0365	166-7840
1758-00	698-11	43-67	59-28	11-27	63-27	57-87	730-75	1999-72	599-54	22-0365	166-7840
1759-00	698-18	43-55	59-28	11-27	63-27	57-87	732-18	1999-72	598-78	22-0365	166-7840
1760-00	698-25	43-50	59-28	11-27	63-27	57-87	733-57	1999-72	598-13	22-0365	166-7840
1761-00	698-31	43-34	59-28	11-27	63-27	57-87	734-76	1999-72	597-51	22-0365	166-7840
1762-00	698-37	43-34	59-28	11-27	63-27	57-87	736-11	1999-72	596-81	22-0365	166-7840
1763-00	698-53	43-24	59-28	11-27	63-27	57-87	737-60	1999-72	596-05	22-0365	166-7840
1764-00	698-48	43-24	59-28	11-27	63-27	57-87	739-05	1999-72	595-29	22-0365	166-7840
1765-00	698-53	43-20	59-28	11-27	63-27	57-87	740-43	1999-72	594-47	22-0365	166-7840
1766-00	698-58	43-14	59-28	11-27	63-27	57-87	741-95	1999-72	593-58	22-0365	166-7840
1767-00	698-63	43-03	59-28	11-27	63-27	57-87	743-46	1999-72	592-71	22-0365	166-7840
1768-00	698-67	42-93	59-28	11-27	63-27	57-87	744-97	1999-72	591-45	22-0365	166-7840
1769-00	698-71	42-86	59-28	11-27	63-27	57-87	746-51	1999-72	590-66	22-0365	166-7840
1770-00	698-74	42-84	59-28	11-27	63-27	57-87	748-00	1999-72	589-62	22-0365	166-7840
1771-00	698-77	42-84	59-28	11-27	63-27	57-87	749-00	1999-72	588-94	22-0365	166-7840
1772-00	698-80	42-77	59-28	11-27	63-27	57-87	750-06	1999-72	588-10	22-0365	166-7840
1773-00	698-83	42-68	59-28	11-27	63-27	57-87	751-49	1999-72	587-47	22-0365	166-7840
1774-00	698-86	42-61	59-28	11-27	63-27	57-87	752-96	1999-72	586-63	22-0365	166-7840
1775-00	698-88	42-54	59-28	11-27	63-27	57-87	754-06	1999-72	585-81	22-0365	166-7840
1776-00	698-90	42-44	59-28	11-27	63-27	57-87	755-43	1999-72	584-95	22-0365	166-7840
1777-00	698-91	42-40	59-28	11-27	63-27	57-87	756-84	1999-72	583-92	22-0365	166-7840
1778-00	698-93	42-37	59-28	11-27	63-27	57-87	758-42	1999-72	583-15	22-0365	166-7840
1779-00	698-94	42-31	59-28	11-27	63-27	57-87	760-90	1999-72	582-31	22-0365	166-7840
1780-00	698-93	42-21	59-28	11-27	63-27	57-87	762-27	1999-72	581-44	22-0365	166-7840
1781-00	698-94	42-15	59-28	11-27	63-27	57-87	763-82	1999-72	580-45	22-0365	166-7840
1782-00	698-94	42-11	59-28	11-27	63-27	57-87	765-10	1999-72	579-65	22-0365	166-7840
1783-00	698-95	42-06	59-28	11-27	63-27	57-87	766-43	1999-72	578-74	22-0365	166-7840
1784-00	698-95	42-02	59-28	11-27	63-27	57-87	767-76	1999-72	577-85	22-0365	166-7840
1785-00	698-94	41-94	59-28	11-27	63-27	57-87	769-01	1999-72	577-02	22-0365	166-7840
1786-00	698-94	41-74	59-28	11-27	63-27	57-87	770-28	1999-72	576-13	22-0365	166-7840
1787-00	698-93	41-87	59-28	11-27	63-27	57-87	771-93	1999-72	575-07	22-0365	166-7840
1788-00	698-90	41-84	59-28	11-27	63-27	57-87	773-22	1999-72	574-14	22-0365	166-7840

Probe No. 6; 11ft-off time: H+1860 seconds; and project No. 6.13

Raw data referenced to the ship		Quantities have been translated to the launcher position									
Time, sec	Range, km	Azimuth, deg T	Elevation, deg Geod.	x, km distance east	y, km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg	Longitude of target, deg

1951.00	410.25	187.95	17.57	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1952.00	411.05	187.93	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1953.00	411.84	187.90	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1954.00	412.63	187.89	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1955.00	413.42	187.86	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1956.00	414.22	187.81	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1957.00	415.01	187.74	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1958.00	415.80	187.71	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1959.00	416.59	187.71	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1960.00	417.38	187.74	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1961.00	418.18	187.71	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1962.00	418.96	187.70	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1963.00	419.75	187.68	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1964.00	420.54	187.64	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1965.00	421.32	187.64	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1966.00	422.11	187.62	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1967.00	422.89	187.59	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1968.00	423.67	187.53	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1969.00	424.45	187.58	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1970.00	425.24	187.57	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1971.00	426.01	187.55	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1972.00	426.79	187.53	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1973.00	427.56	187.48	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1974.00	428.33	187.46	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1975.00	429.11	187.45	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1976.00	429.87	187.43	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1977.00	430.64	187.41	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1978.00	431.40	187.40	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1979.00	432.15	187.36	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1980.00	432.93	187.35	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1981.00	433.69	187.34	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1982.00	434.45	187.31	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1983.00	435.20	187.29	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1984.00	435.95	187.27	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1985.00	436.70	187.28	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1986.00	437.45	187.26	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1987.00	438.20	187.23	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1988.00	438.94	187.21	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1989.00	439.68	187.18	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1990.00	440.42	187.16	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1991.00	441.16	187.13	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1992.00	441.89	187.11	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1993.00	442.61	187.11	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1994.00	443.34	187.11	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1995.00	444.07	187.10	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1996.00	444.79	187.09	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1997.00	445.51	187.06	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1998.00	446.22	187.05	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
1999.00	446.94	187.04	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
2000.00	447.64	187.04	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660
2001.00	448.35	187.04	16.73	31.73	17.57	10.96	518.77	177.65	16.4607	169.4660

2002.00	449.05	186.96	22.17	10.96	-50.27	182.50	51.60	599.40	182.70	16.7968	-169.4259
2003.00	449.75	186.95	22.25	10.99	-50.55	182.43	51.73	602.47	183.63	16.7968	-169.4256
2004.00	450.45	186.97	22.30	11.03	-50.86	182.02	51.25	604.47	184.73	16.7895	-169.4246
2005.00	451.14	186.90	22.40	11.06	-51.15	181.04	50.57	607.79	185.26	16.7800	-169.4233
2006.00	451.83	186.88	22.46	11.13	-51.76	180.81	50.97	610.12	186.03	16.7835	-169.4255
2007.00	452.52	186.87	22.55	11.19	-52.07	180.74	51.32	613.39	186.96	16.7807	-169.4270
2008.00	453.21	186.84	22.62	11.22	-52.68	180.54	51.73	616.02	187.76	16.7774	-169.4208
2009.00	453.85	186.84	22.70	11.27	-53.27	180.33	52.05	618.67	188.54	16.7745	-169.4211
2010.00	454.57	186.87	22.76	11.31	-53.75	180.09	52.31	621.12	189.37	16.7707	-169.4200
2011.00	455.24	186.78	22.83	11.37	-54.25	180.87	52.93	623.70	190.10	16.7673	-169.4181
2012.00	455.91	186.75	22.85	11.41	-54.73	190.34	55.41	625.74	190.57	16.7626	-169.4164
2013.00	456.58	186.76	22.93	11.46	-55.21	191.19	55.80	627.04	191.43	16.7599	-169.4173
2014.00	457.24	186.75	22.96	11.51	-55.70	191.71	56.28	629.76	191.95	16.7556	-169.4172
2015.00	457.90	186.70	23.07	11.57	-56.26	192.79	56.59	633.33	193.04	16.7536	-169.4159
2016.00	458.55	186.70	23.11	11.63	-56.67	193.40	56.79	635.13	193.65	16.7499	-169.4165
2017.00	459.21	186.68	23.18	11.70	-57.05	194.12	57.18	637.12	194.38	16.7467	-169.4139
2018.00	459.85	186.68	23.26	11.79	-57.41	195.29	57.63	640.75	195.30	16.7444	-169.4141
2019.00	460.50	186.64	23.35	11.88	-57.76	196.74	58.20	644.55	195.55	16.7444	-169.4141
2020.00	461.14	186.64	23.39	11.97	-58.11	198.80	58.81	648.91	196.54	16.7392	-169.4149
2021.00	461.78	186.62	23.44	12.07	-58.46	199.12	59.38	653.57	197.07	16.7330	-169.4173
2022.00	462.41	186.61	23.49	12.17	-58.81	199.39	59.76	658.07	197.72	16.7297	-169.4110
2023.00	463.05	186.60	23.56	12.28	-59.18	199.94	60.09	662.92	198.39	16.7264	-169.4106
2024.00	463.68	186.56	23.63	12.39	-59.54	200.61	60.56	668.08	199.67	16.7237	-169.4095
2025.00	464.29	186.54	23.68	12.50	-60.00	201.28	61.39	673.11	200.73	16.7160	-169.4082
2026.00	464.91	186.54	23.74	12.61	-60.46	202.01	62.09	678.20	200.90	16.7128	-169.4069
2027.00	465.53	186.52	23.79	12.74	-60.92	202.78	62.50	683.42	202.21	16.7099	-169.4075
2028.00	466.15	186.52	23.84	12.87	-61.38	203.61	62.70	688.82	202.76	16.7067	-169.4064
2029.00	466.75	186.50	23.87	13.01	-61.84	204.46	63.20	694.36	203.33	16.7032	-169.4054
2030.00	467.35	186.49	23.92	13.16	-62.30	205.33	63.67	699.98	204.12	16.7008	-169.4054
2031.00	467.95	186.47	23.96	13.26	-62.77	206.31	64.09	705.71	204.61	16.7002	-169.4077
2032.00	468.55	186.45	24.00	13.37	-63.24	207.38	64.52	711.53	205.17	16.7002	-169.4077
2033.00	469.14	186.47	24.04	13.55	-63.71	208.54	64.86	717.48	205.68	16.7002	-169.4077
2034.00	469.73	186.47	24.07	13.72	-64.18	209.86	65.09	723.56	206.20	16.7002	-169.4077
2035.00	470.36	186.47	24.10	13.89	-64.65	211.33	65.26	729.77	206.72	16.7002	-169.4077
2036.00	470.90	186.47	24.13	14.07	-65.12	212.88	65.42	736.11	207.20	16.7002	-169.4077
2037.00	471.47	186.47	24.16	14.26	-65.59	214.51	65.57	742.60	207.63	16.7002	-169.4077
2038.00	472.04	186.47	24.19	14.46	-66.06	216.22	65.67	749.24	207.99	16.7002	-169.4077
2039.00	472.61	186.47	24.22	14.66	-66.53	218.01	65.73	756.03	208.20	16.7002	-169.4077
2040.00	473.18	186.47	24.25	14.86	-67.00	219.87	65.79	762.97	208.62	16.7002	-169.4077
2041.00	473.74	186.47	24.27	15.06	-67.47	221.80	65.84	770.06	209.12	16.7002	-169.4077
2042.00	474.29	186.47	24.29	15.26	-67.94	223.80	65.89	777.30	209.72	16.7002	-169.4077
2043.00	474.84	186.47	24.30	15.46	-68.41	225.86	65.93	784.69	210.19	16.7002	-169.4077
2044.00	475.39	186.47	24.31	15.66	-68.88	228.00	65.95	792.23	210.66	16.7002	-169.4077
2045.00	475.93	186.47	24.33	15.86	-69.35	230.21	65.95	799.92	211.11	16.7002	-169.4077
2046.00	476.47	186.47	24.34	16.06	-69.82	232.50	65.95	807.77	211.46	16.7002	-169.4077
2047.00	477.01	186.47	24.35	16.26	-70.29	234.86	65.95	815.77	211.82	16.7002	-169.4077
2048.00	477.54	186.47	24.36	16.46	-70.76	237.29	65.95	823.92	212.19	16.7002	-169.4077
2049.00	478.07	186.47	24.37	16.66	-71.23	239.79	65.95	832.23	212.54	16.7002	-169.4077
2050.00	478.59	186.47	24.38	16.86	-71.70	242.36	65.95	840.70	212.92	16.7002	-169.4077
2051.00	479.11	186.47	24.39	17.06	-72.17	244.99	65.95	849.33	213.31	16.7002	-169.4077
2052.00	479.62	186.47	24.40	17.26	-72.64	247.70	65.95	858.12	213.72	16.7002	-169.4077

2053.00	186.07	73.13	213.30	71.76	701.10	213.70	16.1253	169.1080
2054.00	186.08	70.54	213.03	72.06	702.84	218.23	16.1271	169.1076
2055.00	186.07	70.58	214.33	72.36	704.20	218.73	16.1290	169.1071
2056.00	186.15	70.77	215.65	72.65	706.83	216.05	16.1710	169.1075
2057.00	186.09	71.44	215.10	73.02	707.04	215.51	16.1160	169.1069
2058.00	186.06	71.33	215.42	73.45	708.11	215.83	16.1106	169.1070
2059.00	186.05	72.33	215.90	73.91	709.51	216.22	16.1172	169.1069
2060.00	186.00	73.36	216.11	74.28	710.68	216.62	16.1141	169.1075
2061.00	186.00	73.36	216.69	74.99	709.07	216.13	16.0973	169.1067
2062.00	186.53	73.69	216.56	75.33	711.90	216.99	16.0962	169.1061
2063.00	186.94	73.76	216.70	75.66	712.38	217.14	16.0924	169.1013
2064.00	186.94	74.13	216.13	76.02	713.16	217.37	16.0889	169.1017
2065.00	186.96	74.74	217.12	76.48	713.81	217.57	16.0954	169.1032
2066.00	186.91	75.33	217.60	76.74	715.57	218.05	16.0829	169.1070
2067.00	186.87	75.71	217.98	77.15	716.32	218.33	16.0776	169.1085
2068.00	186.87	75.76	218.19	77.50	717.34	218.65	16.0766	169.1179
2069.00	186.93	76.16	218.29	77.79	717.69	218.75	16.0731	169.1077
2070.00	186.86	76.55	218.77	78.19	719.28	219.24	16.0706	169.1075
2071.00	186.86	76.91	219.08	78.70	719.70	219.36	16.0666	169.1068
2072.00	186.81	76.91	219.89	79.08	719.70	219.55	16.0632	169.1068
2073.00	186.81	77.30	219.08	79.59	720.59	219.55	16.0592	169.1076
2074.00	186.77	77.77	218.15	79.90	721.66	219.76	16.0565	169.1072
2075.00	186.77	78.07	218.47	80.14	722.84	220.32	16.0542	169.1072
2076.00	186.76	78.36	219.85	80.58	723.60	220.34	16.0502	169.1075
2077.00	186.76	78.50	219.85	81.00	723.13	220.41	16.0464	169.1073
2078.00	186.73	79.23	219.91	81.42	723.83	220.62	16.0432	169.1072
2079.00	186.73	79.97	220.12	81.80	724.49	220.83	16.0401	169.1069
2080.00	186.70	80.46	220.31	82.11	724.46	220.81	16.0359	169.1080
2081.00	186.67	80.30	220.30	82.74	725.42	220.81	16.0321	169.1082
2082.00	186.65	81.13	220.58	83.06	726.10	221.11	16.0295	169.1072
2083.00	186.67	81.63	220.79	83.32	726.10	221.32	16.0268	169.1080
2084.00	186.65	81.63	221.05	83.64	726.99	221.59	16.0263	169.1076
2085.00	186.62	82.25	221.02	84.11	726.89	221.56	16.0203	169.1063
2086.00	186.61	82.75	220.99	84.55	726.81	221.53	16.0164	169.1060
2087.00	186.59	83.31	220.69	85.26	726.20	221.04	16.0103	169.1069
2088.00	186.58	83.50	221.06	85.39	727.02	221.60	16.0093	169.1062
2089.00	186.56	83.71	221.22	85.71	727.61	221.78	16.0066	169.1035
2090.00	186.53	84.29	221.27	86.14	727.83	221.84	16.0032	169.1013
2091.00	186.51	84.71	221.29	86.07	727.24	221.66	15.9987	169.1001
2092.00	186.51	85.25	221.17	86.99	727.52	221.75	15.9958	169.1007
2093.00	186.52	85.67	221.11	87.37	727.55	221.76	15.9926	169.1018
2094.00	186.50	86.24	221.11	87.76	727.35	221.70	15.9889	169.1018
2095.00	186.50	86.71	221.12	88.12	727.40	221.71	15.9856	169.1009
2096.00	186.47	86.53	221.14	88.53	727.40	221.73	15.9823	169.1033
2097.00	186.44	87.21	221.07	88.97	727.26	221.67	15.9787	169.1077
2098.00	186.46	87.05	221.62	88.99	729.08	222.23	15.9783	169.1052
2099.00	186.46	87.37	221.05	89.76	727.24	221.66	15.9721	169.1053
2100.00	186.40	87.75	221.05	90.09	727.16	221.64	15.9690	169.1061
2101.00	186.41	88.11	221.02	90.47	726.91	221.56	15.9656	169.1061
2102.00	186.40	88.50	220.94	91.85	726.82	218.72	15.9473	169.1061
2103.00	186.24	89.01	218.01	91.97	717.36	218.65	15.9479	169.1069

2232.00	181.50	12.31	35.65	-161.27	17.55	143.55	616.16	126.84	152.339	1632.672
2260.00	183.67	14.39	38.37	-167.77	19.619	143.39	612.16	128.79	152.611	1632.479
2292.00	185.86	16.50	40.99	-174.31	21.706	146.27	612.16	128.15	152.608	1632.463
2324.00	188.13	18.65	43.65	-181.03	23.813	149.34	612.16	127.88	152.636	1632.553
2356.00	190.51	20.83	46.34	-187.92	25.940	152.50	612.16	127.46	152.678	1632.703
2388.00	192.98	23.05	49.07	-195.00	28.087	155.75	612.16	126.94	152.734	1632.814
2420.00	195.55	25.32	51.84	-202.28	30.254	159.10	612.16	126.32	152.806	1632.896
2452.00	198.21	27.64	54.64	-209.76	32.441	162.55	612.16	125.60	152.894	1632.950
2484.00	200.96	29.99	57.47	-217.44	34.648	166.10	612.16	124.78	152.996	1632.978
2516.00	203.79	32.38	60.34	-225.32	36.875	169.75	612.16	123.86	153.112	1632.980
2548.00	206.70	34.80	63.24	-233.40	39.122	173.50	612.16	122.84	153.242	1632.956
2580.00	209.69	37.25	66.16	-241.68	41.389	177.35	612.16	121.72	153.386	1632.906
2612.00	212.75	39.74	69.11	-250.16	43.676	181.30	612.16	120.50	153.544	1632.830
2644.00	215.88	42.26	72.10	-258.84	45.983	185.35	612.16	119.18	153.716	1632.728
2676.00	219.08	44.81	75.12	-267.72	48.310	189.50	612.16	117.76	153.902	1632.594
2708.00	222.35	47.39	78.17	-276.80	50.657	193.75	612.16	116.24	154.102	1632.428
2740.00	225.68	49.99	81.24	-286.08	53.024	198.10	612.16	114.62	154.316	1632.230
2772.00	229.08	52.61	84.33	-295.56	55.411	202.55	612.16	112.90	154.544	1631.999
2804.00	232.54	55.26	87.44	-305.24	57.818	207.10	612.16	111.08	154.786	1631.736
2836.00	236.06	57.94	90.57	-315.12	60.245	211.75	612.16	109.16	155.042	1631.442
2868.00	239.64	60.65	93.72	-325.20	62.692	216.50	612.16	107.14	155.312	1631.118
2900.00	243.28	63.39	96.93	-335.48	65.159	221.35	612.16	105.02	155.596	1630.764
2932.00	246.98	66.16	100.16	-345.96	67.646	226.30	612.16	102.80	155.894	1630.380
2964.00	250.74	68.96	103.41	-356.64	70.153	231.35	612.16	100.48	156.206	1629.966
2996.00	254.56	71.79	106.68	-367.52	72.680	236.50	612.16	98.06	156.532	1629.522
3028.00	258.44	74.64	110.07	-378.60	75.227	241.75	612.16	95.54	156.872	1629.048
3060.00	262.38	77.51	113.48	-389.88	77.794	247.10	612.16	92.92	157.226	1628.544
3092.00	266.38	80.41	116.91	-401.36	80.381	252.55	612.16	90.20	157.594	1628.010
3124.00	270.44	83.33	120.36	-413.04	83.088	258.10	612.16	87.38	157.976	1627.446
3156.00	274.56	86.28	123.83	-424.92	85.815	263.75	612.16	84.46	158.372	1626.852
3188.00	278.74	89.24	127.32	-437.00	88.562	269.50	612.16	81.44	158.782	1626.228
3220.00	282.98	92.22	130.83	-449.28	91.329	275.35	612.16	78.32	159.206	1625.574
3252.00	287.28	95.13	134.36	-461.76	94.116	281.30	612.16	75.10	159.644	1624.890
3284.00	291.64	98.06	137.91	-474.44	96.923	287.35	612.16	71.78	160.096	1624.176
3316.00	296.06	100.94	141.48	-487.32	99.750	293.50	612.16	68.36	160.562	1623.432
3348.00	300.54	103.84	145.07	-500.40	102.597	300.75	612.16	64.84	161.042	1622.658
3380.00	305.08	106.76	148.68	-513.68	105.464	308.10	612.16	61.22	161.536	1621.854
3412.00	309.68	109.70	152.31	-527.16	108.351	315.55	612.16	57.50	162.044	1621.020
3444.00	314.34	112.66	155.98	-540.84	111.258	323.10	612.16	53.68	162.566	1620.156
3476.00	319.06	115.56	159.69	-554.72	114.185	330.75	612.16	49.76	163.102	1619.262
3508.00	323.84	118.49	163.42	-568.80	117.132	338.50	612.16	45.74	163.652	1618.338
3540.00	328.68	121.44	167.17	-583.08	120.099	346.35	612.16	41.62	164.216	1617.384
3572.00	333.58	124.41	170.94	-597.56	123.086	354.30	612.16	37.40	164.794	1616.399
3604.00	338.54	127.40	174.73	-612.24	126.093	362.35	612.16	33.08	165.386	1615.384
3636.00	343.56	130.41	178.54	-627.12	129.120	370.50	612.16	28.66	165.992	1614.339
3668.00	348.64	133.44	182.37	-642.20	132.167	378.75	612.16	24.14	166.612	1613.264
3700.00	353.78	136.49	186.22	-657.48	135.234	387.10	612.16	19.52	167.246	1612.159
3732.00	358.98	139.56	190.09	-672.96	138.321	395.55	612.16	14.80	167.894	1611.024
3764.00	364.24	142.65	193.98	-688.64	141.428	404.10	612.16	10.08	168.556	1609.859
3796.00	369.56	145.76	197.89	-704.52	144.555	412.75	612.16	5.26	169.232	1608.664
3828.00	374.94	148.89	201.81	-720.60	147.692	421.50	612.16	0.34	169.922	1607.439
3860.00	380.38	152.04	205.74	-736.88	150.849	430.35	612.16	-4.58	170.626	1606.184
3892.00	385.88	155.21	209.69	-753.36	154.026	439.30	612.16	-9.36	171.344	1604.999
3924.00	391.44	158.40	213.66	-770.04	157.223	448.35	612.16	-14.14	172.076	1603.784
3956.00	397.06	161.61	217.65	-786.92	160.440	457.50	612.16	-18.92	172.822	1602.539
3988.00	402.74	164.84	221.66	-804.00	163.677	466.75	612.16	-23.60	173.582	1601.274
4020.00	408.48	168.09	225.69	-821.28	166.934	476.10	612.16	-28.28	174.356	1600.079
4052.00	414.28	171.36	229.73	-838.76	170.211	485.55	612.16	-32.96	175.144	1598.944
4084.00	420.14	174.65	233.79	-856.44	173.508	495.10	612.16	-37.64	175.946	1597.769
4116.00	426.06	177.96	237.86	-874.32	176.825	504.75	612.16	-42.32	176.762	1596.554
4148.00	432.04	181.29	241.94	-892.40	180.162	514.50	612.16	-46.90	177.592	1595.299
4180.00	438.08	184.64	246.03	-910.68	183.519	524.35	612.16	-51.48	178.436	1594.014
4212.00	444.18	188.01	250.14	-929.16	186.896	534.30	612.16	-56.06	179.294	1592.699
4244.00	450.34	191.40	254.26	-947.84	190.293	544.35	612.16	-60.64	180.166	1591.354
4276.00	456.56	194.81	258.39	-966.72	193.710	554.50	612.16	-65.22	181.052	1590.079
4308.00	462.84	198.24	262.53	-985.80	197.147	564.75	612.16	-69.80	181.952	1588.784
4340.00	469.18	201.69	266.68	-1005.08	200.604	575.10	612.16	-74.38	182.866	1587.459
4372.00	475.58	205.16	270.84	-1024.56	204.081	585.55	612.16	-78.96	183.794	1586.094
4404.00	482.04	208.65	275.01	-1044.24	207.578	596.10	612.16	-83.54	184.736	1584.699
4436.00	488.56	212.16	279.19	-1064.12	211.095	606.75	612.16	-88.12	185.692	1583.274
4468.00	495.14	215.69	283.38	-1084.20	214.632	617.50	612.16	-92.70	186.662	1581.819
4500.00	501.78	219.24	287.58	-1104.48	218.189	628.35	612.16	-97.28	187.646	1580.334
4532.00	508.48	222.81	291.79	-1124.96	221.766	639.30	612.16	-101.86	188.644	1578.819
4564.00	515.24	226.40	296.01	-1145.64	225.363	650.35	612.16	-106.44	189.656	1577.274
4596.00	522.06	230.01	300.24	-1166.52	228.980	661.50	612.16	-111.02	190.682	1575.699
4628.00	528.94	233.64	304.48	-1187.60	232.617	672.75	612.16	-115.60	191.722	1574.094
4660.00	535.88	237.29	308.73	-1208.88	236.274	684.10	612.16	-120.18	192.776	1572.469
4692.00	542.88	240.96	313.09	-1230.36	240.051	695.55	612.16	-124.76	193.844	1570.814
4724.00	549.94	244.65	317.46	-1252.04	243.848	707.10	612.16	-129.34	194.926	1569.129
4756.00	557.06	248.36	321.84	-1273.92	247.665	718.75	612.16	-133.92	196.022	1567.414
4788.00	564.24	252.09	326.23	-1296.00	251.492	730.50	612.16	-138.50	197.132	1565.669
4820.00	571.48	255.84	330.63	-1318.28	255.339	742.35	612.16	-143.08	198.256	1563.894
4852.00	578.78	259.61	335.04	-1340.76	259.206	754.30	612.16	-147.66	199.394	1562.089
4884.00	586.14	263.40	339.46	-1363.44	263.093	766.35	612.16	-152.24	200.546	1560.254
4916.00	593.56	267.21	343.89	-1386.32	267.000	778.50	612.16	-156.82	201.712	1558.389
4948.00	601.04	271.04	348.33	-1409.40	270.927	790.75	612.16	-161.40	202.892	1556.494
4980.00	608.58	274.89	352.78	-1432.68	274.874	803.10	612.16	-166.08	204.086	1554.569
5012.00	616.18	278.76	357.24	-1456.16	278.841	815.55	612.16	-170.76	205.294	1552.614
5044.00	623.84	282.65	361.71	-1479.84	282.828	828.10	612.16	-175.44	206.516	1550.629
5076.00	631.56	286.56	366.19	-1503.72	286.835	840.75	612.16	-180.12	207.752	1548.614
5108.00	639.34	290.49	370.68	-1527.80	290.862	853.50	612.16	-184.80	209.002	1546.569
5140.00	647.18	294.44	375.18	-1552.08	294.909	866.35	612.16	-189.48	210.266	1544.494
5172.00	655.08	298.41	379.69	-1576.56	298.976	879.30	612.16	-194.16	211.544	1542.389
5204.00	663.04	302.40	384.21	-1601.24	303.063	892.45	612.16	-198.84	212.836	1540.254
5236.00	671.06	306.41	388.74	-1626.12	307.170	905.70	612.16	-203.52	214.142	1538.089
5268.00										

Probe No. 7; lift-off time: H+2400 seconds; and project No. 6.2

Raw data referenced to the ship		Quantities have been translated to the launcher position									
Time, sec	Range, km	Azimuth, deg T	Elevation, deg Geod.	x , km distance east	y , km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg	Longitude of target, deg

Table with 14 columns and multiple rows. Columns are labeled with alphanumeric codes and numbers. The data is arranged in vertical columns, with the leftmost column containing 16-digit alphanumeric codes and the rightmost column containing 6-digit alphanumeric codes. The table contains approximately 35 rows of data.

26096.00	437.26	191.34	55.61	136.79	504.70	134.09	1191.20	363.08	172.997	169.9610
26097.00	437.65	191.21	55.69	136.76	504.63	134.00	1190.82	363.40	172.998	169.9590
26098.00	438.04	191.09	55.76	136.73	504.56	133.92	1190.44	363.71	172.999	169.9570
26099.00	438.43	190.97	55.83	136.70	504.49	133.84	1190.06	364.03	172.999	169.9550
26100.00	438.82	190.85	55.91	136.67	504.42	133.76	1189.68	364.35	172.999	169.9530
26101.00	439.21	190.73	55.98	136.64	504.35	133.68	1189.30	364.68	172.999	169.9510
26102.00	439.60	190.61	56.06	136.61	504.28	133.60	1188.92	365.00	172.999	169.9490
26103.00	440.00	190.50	56.13	136.58	504.21	133.52	1188.54	365.33	172.999	169.9470
26104.00	440.40	190.38	56.21	136.55	504.14	133.44	1188.16	365.65	172.999	169.9450
26105.00	440.80	190.26	56.28	136.52	504.07	133.36	1187.78	365.98	172.999	169.9430
26106.00	441.20	190.14	56.35	136.49	504.00	133.28	1187.40	366.31	172.999	169.9410
26107.00	441.60	190.02	56.43	136.46	503.93	133.20	1187.02	366.63	172.999	169.9390
26108.00	442.00	189.90	56.50	136.43	503.86	133.12	1186.64	366.96	172.999	169.9370
26109.00	442.40	189.78	56.58	136.40	503.79	133.04	1186.26	367.29	172.999	169.9350
26110.00	442.80	189.66	56.65	136.37	503.72	132.96	1185.88	367.62	172.999	169.9330
26111.00	443.20	189.54	56.73	136.34	503.65	132.88	1185.50	367.95	172.999	169.9310
26112.00	443.60	189.42	56.80	136.31	503.58	132.80	1185.12	368.28	172.999	169.9290
26113.00	444.00	189.30	56.88	136.28	503.51	132.72	1184.74	368.61	172.999	169.9270
26114.00	444.40	189.18	56.95	136.25	503.44	132.64	1184.36	368.94	172.999	169.9250
26115.00	444.80	189.06	57.03	136.22	503.37	132.56	1183.98	369.27	172.999	169.9230
26116.00	445.20	188.94	57.10	136.19	503.30	132.48	1183.60	369.60	172.999	169.9210
26117.00	445.60	188.82	57.18	136.16	503.23	132.40	1183.22	369.93	172.999	169.9190
26118.00	446.00	188.70	57.25	136.13	503.16	132.32	1182.84	370.26	172.999	169.9170
26119.00	446.40	188.58	57.33	136.10	503.09	132.24	1182.46	370.59	172.999	169.9150
26120.00	446.80	188.46	57.40	136.07	503.02	132.16	1182.08	370.92	172.999	169.9130
26121.00	447.20	188.34	57.48	136.04	502.95	132.08	1181.70	371.25	172.999	169.9110
26122.00	447.60	188.22	57.55	136.01	502.88	132.00	1181.32	371.58	172.999	169.9090
26123.00	448.00	188.10	57.63	135.98	502.81	131.92	1180.94	371.91	172.999	169.9070
26124.00	448.40	187.98	57.70	135.95	502.74	131.84	1180.56	372.24	172.999	169.9050
26125.00	448.80	187.86	57.78	135.92	502.67	131.76	1180.18	372.57	172.999	169.9030
26126.00	449.20	187.74	57.85	135.89	502.60	131.68	1179.80	372.90	172.999	169.9010
26127.00	449.60	187.62	57.93	135.86	502.53	131.60	1179.42	373.23	172.999	169.8990
26128.00	450.00	187.50	58.00	135.83	502.46	131.52	1179.04	373.56	172.999	169.8970
26129.00	450.40	187.38	58.08	135.80	502.39	131.44	1178.66	373.89	172.999	169.8950
26130.00	450.80	187.26	58.15	135.77	502.32	131.36	1178.28	374.22	172.999	169.8930
26131.00	451.20	187.14	58.23	135.74	502.25	131.28	1177.90	374.55	172.999	169.8910
26132.00	451.60	187.02	58.30	135.71	502.18	131.20	1177.52	374.88	172.999	169.8890
26133.00	452.00	186.90	58.38	135.68	502.11	131.12	1177.14	375.21	172.999	169.8870
26134.00	452.40	186.78	58.45	135.65	502.04	131.04	1176.76	375.54	172.999	169.8850
26135.00	452.80	186.66	58.53	135.62	501.97	130.96	1176.38	375.87	172.999	169.8830
26136.00	453.20	186.54	58.60	135.59	501.90	130.88	1176.00	376.20	172.999	169.8810
26137.00	453.60	186.42	58.68	135.56	501.83	130.80	1175.62	376.53	172.999	169.8790
26138.00	454.00	186.30	58.75	135.53	501.76	130.72	1175.24	376.86	172.999	169.8770
26139.00	454.40	186.18	58.83	135.50	501.69	130.64	1174.86	377.19	172.999	169.8750
26140.00	454.80	186.06	58.90	135.47	501.62	130.56	1174.48	377.52	172.999	169.8730
26141.00	455.20	185.94	58.98	135.44	501.55	130.48	1174.10	377.85	172.999	169.8710
26142.00	455.60	185.82	59.05	135.41	501.48	130.40	1173.72	378.18	172.999	169.8690
26143.00	456.00	185.70	59.13	135.38	501.41	130.32	1173.34	378.51	172.999	169.8670
26144.00	456.40	185.58	59.20	135.35	501.34	130.24	1172.96	378.84	172.999	169.8650
26145.00	456.80	185.46	59.28	135.32	501.27	130.16	1172.58	379.17	172.999	169.8630
26146.00	457.20	185.34	59.35	135.29	501.20	130.08	1172.20	379.50	172.999	169.8610
26147.00	457.60	185.22	59.43	135.26	501.13	130.00	1171.82	379.83	172.999	169.8590
26148.00	458.00	185.10	59.50	135.23	501.06	129.92	1171.44	380.16	172.999	169.8570
26149.00	458.40	184.98	59.58	135.20	500.99	129.84	1171.06	380.49	172.999	169.8550
26150.00	458.80	184.86	59.65	135.17	500.92	129.76	1170.68	380.82	172.999	169.8530
26151.00	459.20	184.74	59.73	135.14	500.85	129.68	1170.30	381.15	172.999	169.8510
26152.00	459.60	184.62	59.80	135.11	500.78	129.60	1169.92	381.48	172.999	169.8490
26153.00	460.00	184.50	59.88	135.08	500.71	129.52	1169.54	381.81	172.999	169.8470
26154.00	460.40	184.38	59.95	135.05	500.64	129.44	1169.16	382.14	172.999	169.8450
26155.00	460.80	184.26	60.03	135.02	500.57	129.36	1168.78	382.47	172.999	169.8430
26156.00	461.20	184.14	60.10	134.99	500.50	129.28	1168.40	382.80	172.999	169.8410
26157.00	461.60	184.02	60.18	134.96	500.43	129.20	1168.02	383.13	172.999	169.8390
26158.00	462.00	183.90	60.25	134.93	500.36	129.12	1167.64	383.46	172.999	169.8370
26159.00	462.40	183.78	60.33	134.90	500.29	129.04	1167.26	383.79	172.999	169.8350
26160.00	462.80	183.66	60.40	134.87	500.22	128.96	1166.88	384.12	172.999	169.8330
26161.00	463.20	183.54	60.48	134.84	500.15	128.88	1166.50	384.45	172.999	169.8310
26162.00	463.60	183.42	60.55	134.81	500.08	128.80	1166.12	384.78	172.999	169.8290
26163.00	464.00	183.30	60.63	134.78	500.01	128.72	1165.74	385.11	172.999	169.8270
26164.00	464.40	183.18	60.70	134.75	499.94	128.64	1165.36	385.44	172.999	169.8250
26165.00	464.80	183.06	60.78	134.72	499.87	128.56	1164.98	385.77	172.999	169.8230
26166.00	465.20	182.94	60.85	134.69	499.80	128.48	1164.60	386.10	172.999	169.8210
26167.00	465.60	182.82	60.93	134.66	499.73	128.40	1164.22	386.43	172.999	169.8190
26168.00	466.00	182.70	61.00	134.63	499.66	128.32	1163.84	386.76	172.999	169.8170
26169.00	466.40	182.58	61.08	134.60	499.59	128.24	1163.46	387.09	172.999	169.8150
26170.00	466.80	182.46	61.15	134.57	499.52	128.16	1163.08	387.42	172.999	169.8130
26171.00	467.20	182.34	61.23	134.54	499.45	128.08	1162.70	387.75	172.999	169.8110
26172.00	467.60	182.22	61.30	134.51	499.38	128.00	1162.32	388.08	172.999	169.8090
26173.00	468.00	182.10	61.38	134.48	499.31	127.92	1161.94	388.41	172.999	169.8070
26174.00	468.40	181.98	61.45	134.45	499.24	127.84	1161.56	388.74	172.999	169.8050
26175.00	468.80	181.86	61.53	134.42	499.17	127.76	1161.18	389.07	172.999	169.8030
26176.00	469.20	181.74	61.60	134.39	499.10	127.68	1160.80	389.40	172.999	169.8010
26177.00	469.60	181.62	61.68	134.36	499.03	127.60	1160.42	389.73	172.999	169.7990
26178.00	470.00	181.50	61.75	134.33	498.96	127.52	1160.04	390.06	172.999	169.7970
26179.00	470.40	181.38	61.83	134.30	498.89	127.44	1159.66	390.39	172.999	169.7950
26180.00	470.80	181.26	61.90	134.27	498.82	127.36	1159.28	390.72	172.999	169.7930
26181.00	471.20	181.14	61.98	134.24	498.75	127.28	1158.90	391.05	172.999	169.7910
26182.00	471.60	181.02	62.05	134.21	498.68	127.20	1158.52	391.38	172.999	169.7890
26183.00	472.00	180.90	62.13	134.18	498.61	127.12	1158.14	391.71	172.999	169.7870
26184.00	472.40	180.78	62.20	134.15	498.54	127.04	1157.76	392.04	172.999	169.7850
26185.00	472.80	180.66	62.28	134.12	498.47	126.96	1157.38	392.37	172.999	169.7830
26186.00	473.20	180.54	62.35	134.09	498.40	126.88	1157.00	392.70	172.999	169.7810
26187.00	473.60	180.42	62.43	134.06	498.33	126.80	1156.62	393.03	172.999	169.7790
26188.00	474.00	180.30	62.50	134.03	498.26	126.72	1156.24	393.36	172.999	169.7770
26189.00	474.40	180.18	62.58	134.00	498.19	126.64	1155.86	393.69	172.999	169.7750
26190.00	474.80	18								

2696-00	573-35	167-28	73-12	9-60	19-12	548-27	268-57	10-13-47	552-75	18-66-71	168-68-67
2697-00	574-53	167-00	72-02	97-25	23-33	54-56	262-66	1012-11	554-16	18-66-44	168-67-96
2698-00	575-70	166-66	71-16	97-26	23-11	55-57	262-06	1012-80	555-59	18-66-10	168-67-32
2699-00	576-87	166-51	70-39	97-27	23-33	55-56	262-73	1012-23	557-06	18-67-6	168-66-96
2700-00	577-03	166-34	70-39	97-28	23-33	55-56	262-47	1012-86	558-47	18-68-7	168-66-96
2701-00	577-17	166-06	70-31	97-29	23-33	55-56	262-27	1012-86	559-88	18-68-07	168-66-96
2702-00	577-31	165-92	70-31	97-30	23-33	55-56	262-56	1012-40	561-26	18-69-59	168-66-11
2703-00	577-47	165-64	70-31	97-31	23-33	55-56	262-56	1012-40	561-26	18-69-59	168-66-11
2704-00	577-62	165-56	70-31	97-32	23-33	55-56	262-56	1012-40	562-66	18-70-60	168-66-11
2705-00	577-77	165-29	70-31	97-33	23-33	55-56	262-56	1012-40	563-11	18-71-32	168-66-11
2706-00	577-95	165-05	70-31	97-34	23-33	55-56	262-56	1012-40	563-43	18-71-32	168-66-11
2707-00	578-12	164-67	70-14	101-21	20-30	56-33	260-68	1012-40	564-71	18-72-58	168-66-11
2708-00	578-28	164-39	70-26	101-22	20-30	56-33	260-68	1012-40	564-71	18-72-58	168-66-11
2709-00	578-45	164-19	70-39	101-23	20-30	56-33	260-68	1012-40	565-11	18-73-16	168-66-11
2710-00	578-62	163-95	70-49	101-24	20-30	56-33	260-68	1012-40	565-43	18-73-16	168-66-11
2711-00	578-79	163-68	70-49	101-25	20-30	56-33	260-68	1012-40	565-85	18-73-16	168-66-11
2712-00	578-95	163-46	70-49	101-26	20-30	56-33	260-68	1012-40	566-27	18-73-16	168-66-11
2713-00	579-12	163-22	70-49	101-27	20-30	56-33	260-68	1012-40	566-69	18-73-16	168-66-11
2714-00	579-28	162-94	70-33	101-28	20-30	56-33	260-68	1012-40	567-11	18-73-16	168-66-11
2715-00	579-45	162-68	70-33	101-29	20-30	56-33	260-68	1012-40	567-53	18-73-16	168-66-11
2716-00	579-62	162-48	70-33	101-30	20-30	56-33	260-68	1012-40	567-95	18-73-16	168-66-11
2717-00	579-79	162-28	70-33	101-31	20-30	56-33	260-68	1012-40	568-37	18-73-16	168-66-11
2718-00	579-96	162-08	70-33	101-32	20-30	56-33	260-68	1012-40	568-79	18-73-16	168-66-11
2719-00	580-13	161-87	70-31	101-33	20-30	56-33	260-68	1012-40	569-21	18-73-16	168-66-11
2720-00	580-30	161-67	70-31	101-34	20-30	56-33	260-68	1012-40	569-63	18-73-16	168-66-11
2721-00	580-47	161-47	70-31	101-35	20-30	56-33	260-68	1012-40	570-05	18-73-16	168-66-11
2722-00	580-64	161-27	70-31	101-36	20-30	56-33	260-68	1012-40	570-47	18-73-16	168-66-11
2723-00	580-81	161-07	70-31	101-37	20-30	56-33	260-68	1012-40	570-89	18-73-16	168-66-11
2724-00	580-98	160-87	70-31	101-38	20-30	56-33	260-68	1012-40	571-31	18-73-16	168-66-11
2725-00	581-15	160-67	70-31	101-39	20-30	56-33	260-68	1012-40	571-73	18-73-16	168-66-11
2726-00	581-32	160-47	70-31	101-40	20-30	56-33	260-68	1012-40	572-15	18-73-16	168-66-11
2727-00	581-49	160-27	70-31	101-41	20-30	56-33	260-68	1012-40	572-57	18-73-16	168-66-11
2728-00	581-66	160-07	70-31	101-42	20-30	56-33	260-68	1012-40	573-00	18-73-16	168-66-11
2729-00	581-83	159-87	70-31	101-43	20-30	56-33	260-68	1012-40	573-42	18-73-16	168-66-11
2730-00	581-99	159-67	70-31	101-44	20-30	56-33	260-68	1012-40	573-84	18-73-16	168-66-11
2731-00	582-16	159-47	70-31	101-45	20-30	56-33	260-68	1012-40	574-26	18-73-16	168-66-11
2732-00	582-33	159-27	70-31	101-46	20-30	56-33	260-68	1012-40	574-68	18-73-16	168-66-11
2733-00	582-50	159-07	70-31	101-47	20-30	56-33	260-68	1012-40	575-10	18-73-16	168-66-11
2734-00	582-67	158-87	70-31	101-48	20-30	56-33	260-68	1012-40	575-52	18-73-16	168-66-11
2735-00	582-84	158-67	70-31	101-49	20-30	56-33	260-68	1012-40	575-94	18-73-16	168-66-11
2736-00	583-01	158-47	70-31	101-50	20-30	56-33	260-68	1012-40	576-36	18-73-16	168-66-11
2737-00	583-18	158-27	70-31	101-51	20-30	56-33	260-68	1012-40	576-78	18-73-16	168-66-11
2738-00	583-35	158-07	70-31	101-52	20-30	56-33	260-68	1012-40	577-20	18-73-16	168-66-11
2739-00	583-52	157-87	70-31	101-53	20-30	56-33	260-68	1012-40	577-62	18-73-16	168-66-11
2740-00	583-69	157-67	70-31	101-54	20-30	56-33	260-68	1012-40	578-04	18-73-16	168-66-11
2741-00	583-86	157-47	70-31	101-55	20-30	56-33	260-68	1012-40	578-46	18-73-16	168-66-11
2742-00	584-03	157-27	70-31	101-56	20-30	56-33	260-68	1012-40	578-88	18-73-16	168-66-11
2743-00	584-20	157-07	70-31	101-57	20-30	56-33	260-68	1012-40	579-30	18-73-16	168-66-11
2744-00	584-37	156-87	70-31	101-58	20-30	56-33	260-68	1012-40	579-72	18-73-16	168-66-11
2745-00	584-54	156-67	70-31	101-59	20-30	56-33	260-68	1012-40	580-14	18-73-16	168-66-11
2746-00	584-71	156-47	70-31	101-60	20-30	56-33	260-68	1012-40	580-56	18-73-16	168-66-11
2747-00	584-88	156-27	70-31	101-61	20-30	56-33	260-68	1012-40	581-00	18-73-16	168-66-11
2748-00	585-05	156-07	70-31	101-62	20-30	56-33	260-68	1012-40	581-42	18-73-16	168-66-11
2749-00	585-22	155-87	70-31	101-63	20-30	56-33	260-68	1012-40	581-84	18-73-16	168-66-11
2750-00	585-39	155-67	70-31	101-64	20-30	56-33	260-68	1012-40	582-26	18-73-16	168-66-11
2751-00	585-56	155-47	70-31	101-65	20-30	56-33	260-68	1012-40	582-68	18-73-16	168-66-11
2752-00	585-73	155-27	70-31	101-66	20-30	56-33	260-68	1012-40	583-10	18-73-16	168-66-11
2753-00	585-90	155-07	70-31	101-67	20-30	56-33	260-68	1012-40	583-52	18-73-16	168-66-11
2754-00	586-07	154-87	70-31	101-68	20-30	56-33	260-68	1012-40	583-94	18-73-16	168-66-11
2755-00	586-24	154-67	70-31	101-69	20-30	56-33	260-68	1012-40	584-36	18-73-16	168-66-11
2756-00	586-41	154-47	70-31	101-70	20-30	56-33	260-68	1012-40	584-78	18-73-16	168-66-11
2757-00	586-58	154-27	70-31	101-71	20-30	56-33	260-68	1012-40	585-20	18-73-16	168-66-11
2758-00	586-75	154-07	70-31	101-72	20-30	56-33	260-68	1012-40	585-62	18-73-16	168-66-11
2759-00	586-92	153-87	70-31	101-73	20-30	56-33	260-68	1012-40	586-04	18-73-16	168-66-11
2760-00	587-09	153-67	70-31	101-74	20-30	56-33	260-68	1012-40	586-46	18-73-16	168-66-11
2761-00	587-26	153-47	70-31	101-75	20-30	56-33	260-68	1012-40	586-88	18-73-16	168-66-11
2762-00	587-43	153-27	70-31	101-76	20-30	56-33	260-68	1012-40	587-30	18-73-16	168-66-11
2763-00	587-60	153-07	70-31	101-77	20-30	56-33	260-68	1012-40	587-72	18-73-16	168-66-11
2764-00	587-77	152-87	70-31	101-78	20-30	56-33	260-68	1012-40	588-14	18-73-16	168-66-11
2765-00	587-94	152-67	70-31	101-79	20-30	56-33	260-68	1012-40	588-56	18-73-16	168-66-11
2766-00	588-11	152-47	70-31	101-80	20-30	56-33	260-68	1012-40	588-98	18-73-16	168-66-11
2767-00	588-28	152-27	70-31	101-81	20-30	56-33	260-68	1012-40	589-40	18-73-16	168-66-11
2768-00	588-45	152-07	70-31	101-82	20-30	56-33	260-68	1012-40	589-82	18-73-16	168-66-11
2769-00	588-62	151-87	70-31	101-83	20-30	56-33	260-68	1012-40	590-24	18-73-16	168-66-11
2770-00	588-79	151-67	70-31	101-84	20-30	56-33	260-68	1012-40	590-66	18-73-16	168-66-11
2771-00	588-96	151-47	70-31	101-85	20-30	56-33	260-68	1012-40	591-08	18-73-16	168-66-11
2772-00	589-13	151-27	70-31	101-86	20-30	56-33	260-68	1012-40	591-50	18-73-16	168-66-11
2773-00	589-30	151-07	70-31	101-87	20-30	56-33	260-68	1012-40	591-92	18-73-16	168-66-11
2774-00	589-47	150-87	70-31	101-88	20-30	56-33	260-68	1012-40	592-34	18-73-16	168-66-11
2775-00	589-64	150-67	70-31	101-89	20-30	56-33	260-68	1012-40	592-76	18-73-16	168-66-11
2776-00	589-81	150-47	70-31	101-90	20-30	56-33	260-68	1012-40	593-18	18-73-16	168-66-11
2777-00	589-98	150-27	70-31	101-91	20-30	56-33	260-68	1012-40	593-60	18-73-16	168-66-11
2778-00	590-15	150-07	70-31	101-92	20-30	56-33	260-68	1012-40	594-02	18-73-16	168-66-11
2779-00	590-32	149-87	70-31	101-93	20-30	56-33	260-68	1012-40	594-44	18-73-16	168-66-11
2780-00	590-49	149-67	70-31	101-94	20-30	56-33	260-68	1012-40	594-86	18-73-16	168-66-11
2781-00	590-66	149-47	70-31	101-95	20-30	56-33	260-68	1012-40	595-28	18-73-16	168-66-11
2782-00	590-83	149-27	70-31	101-96	20-30	56-33	260-68	1012-40	595-70	18-73-16	168-66-11
2783-00	591-00	149-07	70-31	101-97	20-30	56-33	260-68	1012-40	596-12	18-73-16	168-66-11
2784-00	591-17	148-87	70-								

Table with multiple columns containing alphanumeric data, organized in rows and columns.



2812-00	601-94	75-74	17-65	613-13	663-77	605-37	2752-09	603-59	70-1619	1628-57
2813-00	601-93	75-67	17-67	613-12	663-76	605-36	2751-05	603-58	70-1618	1628-56
2814-00	601-92	75-78	17-36	613-16	663-66	605-35	2751-01	603-57	70-1617	1628-55
2815-00	601-89	75-17	17-50	613-11	663-59	605-34	2750-17	603-56	70-1616	1628-54
2816-00	601-86	75-09	17-58	613-10	663-56	605-33	2750-16	603-55	70-1615	1628-53
2817-00	601-82	74-17	17-66	613-09	663-52	605-32	2750-15	603-54	70-1614	1628-52
2818-00	601-78	74-60	17-66	613-08	663-51	605-31	2750-14	603-53	70-1613	1628-51
2819-00	601-73	74-52	17-69	613-07	663-48	605-30	2750-13	603-52	70-1612	1628-50
2820-00	601-68	74-33	17-70	613-06	663-47	605-29	2750-12	603-51	70-1611	1628-49
2821-00	601-61	74-18	17-65	613-05	663-44	605-28	2750-11	603-50	70-1610	1628-48
2822-00	601-54	74-14	17-65	613-04	663-43	605-27	2750-10	603-49	70-1609	1628-47
2823-00	601-47	74-05	17-63	613-03	663-40	605-26	2750-09	603-48	70-1608	1628-46
2824-00	601-39	74-09	17-63	613-02	663-37	605-25	2750-08	603-47	70-1607	1628-45
2825-00	601-30	74-11	17-63	613-01	663-36	605-24	2750-07	603-46	70-1606	1628-44
2826-00	601-21	74-09	17-63	613-00	663-33	605-23	2750-06	603-45	70-1605	1628-43
2827-00	601-11	74-11	17-63	613-00	663-32	605-22	2750-05	603-44	70-1604	1628-42
2828-00	601-00	74-06	17-66	613-00	663-29	605-21	2750-04	603-43	70-1603	1628-41
2829-00	600-89	74-38	17-68	613-00	663-28	605-20	2750-03	603-42	70-1602	1628-40
2830-00	600-85	74-36	17-69	613-00	663-27	605-19	2750-02	603-41	70-1601	1628-39
2831-00	600-79	74-30	17-70	613-00	663-26	605-18	2750-01	603-40	70-1600	1628-38
2832-00	600-72	74-10	17-73	613-00	663-25	605-17	2749-99	603-39	70-1599	1628-37
2833-00	600-65	74-10	17-73	613-00	663-24	605-16	2749-98	603-38	70-1598	1628-36
2834-00	600-58	74-05	17-73	613-00	663-23	605-15	2749-97	603-37	70-1597	1628-35
2835-00	600-52	74-05	17-73	613-00	663-22	605-14	2749-96	603-36	70-1596	1628-34
2836-00	600-45	74-05	17-73	613-00	663-21	605-13	2749-95	603-35	70-1595	1628-33
2837-00	600-38	74-05	17-73	613-00	663-20	605-12	2749-94	603-34	70-1594	1628-32
2838-00	600-32	74-05	17-73	613-00	663-19	605-11	2749-93	603-33	70-1593	1628-31
2839-00	600-25	74-05	17-73	613-00	663-18	605-10	2749-92	603-32	70-1592	1628-30
2840-00	600-19	74-05	17-73	613-00	663-17	605-09	2749-91	603-31	70-1591	1628-29
2841-00	600-13	74-05	17-73	613-00	663-16	605-08	2749-90	603-30	70-1590	1628-28
2842-00	600-06	74-05	17-73	613-00	663-15	605-07	2749-89	603-29	70-1589	1628-27
2843-00	600-00	74-05	17-73	613-00	663-14	605-06	2749-88	603-28	70-1588	1628-26
2844-00	600-00	74-05	17-73	613-00	663-13	605-05	2749-87	603-27	70-1587	1628-25
2845-00	600-00	74-05	17-73	613-00	663-12	605-04	2749-86	603-26	70-1586	1628-24
2846-00	600-00	74-05	17-73	613-00	663-11	605-03	2749-85	603-25	70-1585	1628-23
2847-00	600-00	74-05	17-73	613-00	663-10	605-02	2749-84	603-24	70-1584	1628-22
2848-00	600-00	74-05	17-73	613-00	663-09	605-01	2749-83	603-23	70-1583	1628-21
2849-00	600-00	74-05	17-73	613-00	663-08	605-00	2749-82	603-22	70-1582	1628-20
2850-00	600-00	74-05	17-73	613-00	663-07	605-00	2749-81	603-21	70-1581	1628-19
2851-00	600-00	74-05	17-73	613-00	663-06	605-00	2749-80	603-20	70-1580	1628-18
2852-00	600-00	74-05	17-73	613-00	663-05	605-00	2749-79	603-19	70-1579	1628-17
2853-00	600-00	74-05	17-73	613-00	663-04	605-00	2749-78	603-18	70-1578	1628-16
2854-00	600-00	74-05	17-73	613-00	663-03	605-00	2749-77	603-17	70-1577	1628-15
2855-00	600-00	74-05	17-73	613-00	663-02	605-00	2749-76	603-16	70-1576	1628-14
2856-00	600-00	74-05	17-73	613-00	663-01	605-00	2749-75	603-15	70-1575	1628-13
2857-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-74	603-14	70-1574	1628-12
2858-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-73	603-13	70-1573	1628-11
2859-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-72	603-12	70-1572	1628-10
2860-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-71	603-11	70-1571	1628-09
2861-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-70	603-10	70-1570	1628-08
2862-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-69	603-09	70-1569	1628-07
2863-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-68	603-08	70-1568	1628-06
2864-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-67	603-07	70-1567	1628-05
2865-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-66	603-06	70-1566	1628-04
2866-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-65	603-05	70-1565	1628-03
2867-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-64	603-04	70-1564	1628-02
2868-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-63	603-03	70-1563	1628-01
2869-00	600-00	74-05	17-73	613-00	663-00	605-00	2749-62	603-02	70-1562	1628-00

2943.00	683.37	592.84	772.37	191.10	562.27	503.50	2112.72	1672.8674
2944.00	683.04	592.97	772.75	191.25	662.71	504.82	2191.94	1672.8675
2945.00	682.71	593.09	773.13	191.40	662.43	506.04	2191.94	1672.8676
2946.00	682.37	592.56	772.46	191.56	662.43	505.31	2191.94	1672.8677
2947.00	682.02	592.27	772.06	191.56	662.37	506.64	2191.94	1672.8678
2948.00	681.67	591.97	771.47	191.56	662.67	507.24	2191.94	1672.8679
2949.00	681.31	591.78	771.04	191.56	662.75	507.44	2191.94	1672.8680
2950.00	680.95	591.59	770.66	191.56	662.66	507.44	2191.94	1672.8681
2951.00	680.57	591.47	770.29	191.56	662.30	507.44	2191.94	1672.8682
2952.00	680.20	591.32	769.91	191.56	662.44	507.44	2191.94	1672.8683
2953.00	679.84	591.64	769.55	191.56	662.44	507.44	2191.94	1672.8684
2954.00	679.47	591.69	769.20	191.56	662.44	507.44	2191.94	1672.8685
2955.00	679.10	591.76	768.85	191.56	662.44	507.44	2191.94	1672.8686
2956.00	678.73	591.83	768.50	191.56	662.44	507.44	2191.94	1672.8687
2957.00	678.36	591.90	768.15	191.56	662.44	507.44	2191.94	1672.8688
2958.00	677.99	591.97	767.80	191.56	662.44	507.44	2191.94	1672.8689
2959.00	677.62	592.04	767.45	191.56	662.44	507.44	2191.94	1672.8690
2960.00	677.25	592.11	767.10	191.56	662.44	507.44	2191.94	1672.8691
2961.00	676.88	592.18	766.75	191.56	662.44	507.44	2191.94	1672.8692
2962.00	676.51	592.25	766.40	191.56	662.44	507.44	2191.94	1672.8693
2963.00	676.14	592.32	766.05	191.56	662.44	507.44	2191.94	1672.8694
2964.00	675.77	592.39	765.70	191.56	662.44	507.44	2191.94	1672.8695
2965.00	675.40	592.46	765.35	191.56	662.44	507.44	2191.94	1672.8696
2966.00	675.03	592.53	765.00	191.56	662.44	507.44	2191.94	1672.8697
2967.00	674.66	592.60	764.65	191.56	662.44	507.44	2191.94	1672.8698
2968.00	674.29	592.67	764.30	191.56	662.44	507.44	2191.94	1672.8699
2969.00	673.92	592.74	763.95	191.56	662.44	507.44	2191.94	1672.8700
2970.00	673.55	592.81	763.60	191.56	662.44	507.44	2191.94	1672.8701
2971.00	673.18	592.88	763.25	191.56	662.44	507.44	2191.94	1672.8702
2972.00	672.81	592.95	762.90	191.56	662.44	507.44	2191.94	1672.8703
2973.00	672.44	593.02	762.55	191.56	662.44	507.44	2191.94	1672.8704
2974.00	672.07	593.09	762.20	191.56	662.44	507.44	2191.94	1672.8705
2975.00	671.70	593.16	761.85	191.56	662.44	507.44	2191.94	1672.8706
2976.00	671.33	593.23	761.50	191.56	662.44	507.44	2191.94	1672.8707
2977.00	670.96	593.30	761.15	191.56	662.44	507.44	2191.94	1672.8708
2978.00	670.59	593.37	760.80	191.56	662.44	507.44	2191.94	1672.8709
2979.00	670.22	593.44	760.45	191.56	662.44	507.44	2191.94	1672.8710
2980.00	669.85	593.51	760.10	191.56	662.44	507.44	2191.94	1672.8711
2981.00	669.48	593.58	759.75	191.56	662.44	507.44	2191.94	1672.8712
2982.00	669.11	593.65	759.40	191.56	662.44	507.44	2191.94	1672.8713
2983.00	668.74	593.72	759.05	191.56	662.44	507.44	2191.94	1672.8714
2984.00	668.37	593.79	758.70	191.56	662.44	507.44	2191.94	1672.8715
2985.00	668.00	593.86	758.35	191.56	662.44	507.44	2191.94	1672.8716
2986.00	667.63	593.93	758.00	191.56	662.44	507.44	2191.94	1672.8717
2987.00	667.26	594.00	757.65	191.56	662.44	507.44	2191.94	1672.8718
2988.00	666.89	594.07	757.30	191.56	662.44	507.44	2191.94	1672.8719
2989.00	666.52	594.14	756.95	191.56	662.44	507.44	2191.94	1672.8720
2990.00	666.15	594.21	756.60	191.56	662.44	507.44	2191.94	1672.8721
2991.00	665.78	594.28	756.25	191.56	662.44	507.44	2191.94	1672.8722
2992.00	665.41	594.35	755.90	191.56	662.44	507.44	2191.94	1672.8723
2993.00	665.04	594.42	755.55	191.56	662.44	507.44	2191.94	1672.8724
2994.00	664.67	594.49	755.20	191.56	662.44	507.44	2191.94	1672.8725
2995.00	664.30	594.56	754.85	191.56	662.44	507.44	2191.94	1672.8726
2996.00	663.93	594.63	754.50	191.56	662.44	507.44	2191.94	1672.8727
2997.00	663.56	594.70	754.15	191.56	662.44	507.44	2191.94	1672.8728
2998.00	663.19	594.77	753.80	191.56	662.44	507.44	2191.94	1672.8729
2999.00	662.82	594.84	753.45	191.56	662.44	507.44	2191.94	1672.8730
3000.00	662.45	594.91	753.10	191.56	662.44	507.44	2191.94	1672.8731

1016.00	570.78	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	500.36	21.72.51	167.1109
1017.00	569.77	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	498.31	21.73.08	167.1109
1018.00	568.76	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	496.30	21.73.25	167.1109
1019.00	567.75	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	494.29	21.73.42	167.1109
1020.00	566.74	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	492.28	21.73.59	167.1109
1021.00	565.73	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	490.27	21.74.16	167.1109
1022.00	564.72	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	488.26	21.74.33	167.1109
1023.00	563.71	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	486.25	21.74.50	167.1109
1024.00	562.70	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	484.24	21.75.07	167.1109
1025.00	561.69	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	482.23	21.75.24	167.1109
1026.00	560.68	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	480.22	21.75.41	167.1109
1027.00	559.67	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	478.21	21.75.58	167.1109
1028.00	558.66	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	476.20	21.76.15	167.1109
1029.00	557.65	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	474.19	21.76.32	167.1109
1030.00	556.64	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	472.18	21.76.49	167.1109
1031.00	555.63	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	470.17	21.77.06	167.1109
1032.00	554.62	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	468.16	21.77.23	167.1109
1033.00	553.61	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	466.15	21.77.40	167.1109
1034.00	552.60	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	464.14	21.77.57	167.1109
1035.00	551.59	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	462.13	21.78.14	167.1109
1036.00	550.58	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	460.12	21.78.31	167.1109
1037.00	549.57	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	458.11	21.78.48	167.1109
1038.00	548.56	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	456.10	21.79.05	167.1109
1039.00	547.55	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	454.09	21.79.22	167.1109
1040.00	546.54	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	452.08	21.79.39	167.1109
1041.00	545.53	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	450.07	21.79.56	167.1109
1042.00	544.52	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	448.06	21.80.13	167.1109
1043.00	543.51	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	446.05	21.80.30	167.1109
1044.00	542.50	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	444.04	21.80.47	167.1109
1045.00	541.49	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	442.03	21.81.04	167.1109
1046.00	540.48	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	440.02	21.81.21	167.1109
1047.00	539.47	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	438.01	21.81.38	167.1109
1048.00	538.46	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	436.00	21.81.55	167.1109
1049.00	537.45	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	433.99	21.82.12	167.1109
1050.00	536.44	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	431.98	21.82.29	167.1109
1051.00	535.43	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	429.97	21.82.46	167.1109
1052.00	534.42	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	427.96	21.83.03	167.1109
1053.00	533.41	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	425.95	21.83.20	167.1109
1054.00	532.40	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	423.94	21.83.37	167.1109
1055.00	531.39	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	421.93	21.83.54	167.1109
1056.00	530.38	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	419.92	21.84.11	167.1109
1057.00	529.37	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	417.91	21.84.28	167.1109
1058.00	528.36	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	415.90	21.84.45	167.1109
1059.00	527.35	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	413.89	21.85.02	167.1109
1060.00	526.34	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	411.88	21.85.19	167.1109
1061.00	525.33	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	409.87	21.85.36	167.1109
1062.00	524.32	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	407.86	21.85.53	167.1109
1063.00	523.31	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	405.85	21.86.10	167.1109
1064.00	522.30	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	403.84	21.86.27	167.1109
1065.00	521.29	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	401.83	21.86.44	167.1109
1066.00	520.28	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	399.82	21.87.01	167.1109
1067.00	519.27	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	397.81	21.87.18	167.1109
1068.00	518.26	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	395.80	21.87.35	167.1109
1069.00	517.25	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	393.79	21.87.52	167.1109
1070.00	516.24	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	391.78	21.88.09	167.1109
1071.00	515.23	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	389.77	21.88.26	167.1109
1072.00	514.22	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	387.76	21.88.43	167.1109
1073.00	513.21	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	385.75	21.89.00	167.1109
1074.00	512.20	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	383.74	21.89.17	167.1109
1075.00	511.19	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	381.73	21.89.34	167.1109
1076.00	510.18	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	379.72	21.89.51	167.1109
1077.00	509.17	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	377.71	21.90.08	167.1109
1078.00	508.16	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	375.70	21.90.25	167.1109
1079.00	507.15	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	373.69	21.90.42	167.1109
1080.00	506.14	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	371.68	21.90.59	167.1109
1081.00	505.13	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	369.67	21.91.16	167.1109
1082.00	504.12	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	367.66	21.91.33	167.1109
1083.00	503.11	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	365.65	21.91.50	167.1109
1084.00	502.10	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	363.64	21.92.07	167.1109
1085.00	501.09	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	361.63	21.92.24	167.1109
1086.00	500.08	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	359.62	21.92.41	167.1109
1087.00	499.07	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	357.61	21.92.58	167.1109
1088.00	498.06	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	355.60	21.93.15	167.1109
1089.00	497.05	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	353.59	21.93.32	167.1109
1090.00	496.04	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	351.58	21.93.49	167.1109
1091.00	495.03	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	349.57	21.94.06	167.1109
1092.00	494.02	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	347.56	21.94.23	167.1109
1093.00	493.01	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	345.55	21.94.40	167.1109
1094.00	492.00	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	343.54	21.94.57	167.1109
1095.00	490.99	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	341.53	21.95.14	167.1109
1096.00	489.98	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	339.52	21.95.31	167.1109
1097.00	488.97	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	337.51	21.95.48	167.1109
1098.00	487.96	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	335.50	21.96.05	167.1109
1099.00	486.95	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	333.49	21.96.22	167.1109
1100.00	485.94	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	331.48	21.96.39	167.1109
1101.00	484.93	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	329.47	21.96.56	167.1109
1102.00	483.92	61.71	50.67	267.05	1.75.44	469.33	666.65	1664.53	327.46	21.97.13	167.

1161.00	51.47	60.77	69.75	76.43	83.66	86.26	699.50	1419.37	602.15	22.1310	167.0977
1162.00	51.46	60.76	69.74	76.42	83.65	86.25	699.49	1419.36	602.14	22.1309	167.0976
1163.00	51.45	60.75	69.73	76.41	83.64	86.24	699.48	1419.35	602.13	22.1308	167.0975
1164.00	51.44	60.74	69.72	76.40	83.63	86.23	699.47	1419.34	602.12	22.1307	167.0974
1165.00	51.43	60.73	69.71	76.39	83.62	86.22	699.46	1419.33	602.11	22.1306	167.0973
1166.00	51.42	60.72	69.70	76.38	83.61	86.21	699.45	1419.32	602.10	22.1305	167.0972
1167.00	51.41	60.71	69.69	76.37	83.60	86.20	699.44	1419.31	602.09	22.1304	167.0971
1168.00	51.40	60.70	69.68	76.36	83.59	86.19	699.43	1419.30	602.08	22.1303	167.0970
1169.00	51.39	60.69	69.67	76.35	83.58	86.18	699.42	1419.29	602.07	22.1302	167.0969
1170.00	51.38	60.68	69.66	76.34	83.57	86.17	699.41	1419.28	602.06	22.1301	167.0968
1171.00	51.37	60.67	69.65	76.33	83.56	86.16	699.40	1419.27	602.05	22.1300	167.0967
1172.00	51.36	60.66	69.64	76.32	83.55	86.15	699.39	1419.26	602.04	22.1299	167.0966
1173.00	51.35	60.65	69.63	76.31	83.54	86.14	699.38	1419.25	602.03	22.1298	167.0965
1174.00	51.34	60.64	69.62	76.30	83.53	86.13	699.37	1419.24	602.02	22.1297	167.0964
1175.00	51.33	60.63	69.61	76.29	83.52	86.12	699.36	1419.23	602.01	22.1296	167.0963
1176.00	51.32	60.62	69.60	76.28	83.51	86.11	699.35	1419.22	602.00	22.1295	167.0962
1177.00	51.31	60.61	69.59	76.27	83.50	86.10	699.34	1419.21	601.99	22.1294	167.0961
1178.00	51.30	60.60	69.58	76.26	83.49	86.09	699.33	1419.20	601.98	22.1293	167.0960
1179.00	51.29	60.59	69.57	76.25	83.48	86.08	699.32	1419.19	601.97	22.1292	167.0959
1180.00	51.28	60.58	69.56	76.24	83.47	86.07	699.31	1419.18	601.96	22.1291	167.0958
1181.00	51.27	60.57	69.55	76.23	83.46	86.06	699.30	1419.17	601.95	22.1290	167.0957
1182.00	51.26	60.56	69.54	76.22	83.45	86.05	699.29	1419.16	601.94	22.1289	167.0956
1183.00	51.25	60.55	69.53	76.21	83.44	86.04	699.28	1419.15	601.93	22.1288	167.0955
1184.00	51.24	60.54	69.52	76.20	83.43	86.03	699.27	1419.14	601.92	22.1287	167.0954
1185.00	51.23	60.53	69.51	76.19	83.42	86.02	699.26	1419.13	601.91	22.1286	167.0953
1186.00	51.22	60.52	69.50	76.18	83.41	86.01	699.25	1419.12	601.90	22.1285	167.0952
1187.00	51.21	60.51	69.49	76.17	83.40	86.00	699.24	1419.11	601.89	22.1284	167.0951
1188.00	51.20	60.50	69.48	76.16	83.39	85.99	699.23	1419.10	601.88	22.1283	167.0950
1189.00	51.19	60.49	69.47	76.15	83.38	85.98	699.22	1419.09	601.87	22.1282	167.0949
1190.00	51.18	60.48	69.46	76.14	83.37	85.97	699.21	1419.08	601.86	22.1281	167.0948
1191.00	51.17	60.47	69.45	76.13	83.36	85.96	699.20	1419.07	601.85	22.1280	167.0947
1192.00	51.16	60.46	69.44	76.12	83.35	85.95	699.19	1419.06	601.84	22.1279	167.0946
1193.00	51.15	60.45	69.43	76.11	83.34	85.94	699.18	1419.05	601.83	22.1278	167.0945
1194.00	51.14	60.44	69.42	76.10	83.33	85.93	699.17	1419.04	601.82	22.1277	167.0944
1195.00	51.13	60.43	69.41	76.09	83.32	85.92	699.16	1419.03	601.81	22.1276	167.0943
1196.00	51.12	60.42	69.40	76.08	83.31	85.91	699.15	1419.02	601.80	22.1275	167.0942
1197.00	51.11	60.41	69.39	76.07	83.30	85.90	699.14	1419.01	601.79	22.1274	167.0941
1198.00	51.10	60.40	69.38	76.06	83.29	85.89	699.13	1419.00	601.78	22.1273	167.0940
1199.00	51.09	60.39	69.37	76.05	83.28	85.88	699.12	1418.99	601.77	22.1272	167.0939
1200.00	51.08	60.38	69.36	76.04	83.27	85.87	699.11	1418.98	601.76	22.1271	167.0938

1198.00	467.00	16.85	15.14	285.71	677.77	261.90	730.19	925.71	282.16	22,553.5	166,876.0
1199.00	467.23	16.85	15.14	285.71	677.77	261.90	731.12	917.47	279.61	22,553.5	166,860.1
1200.00	467.47	16.83	14.87	283.20	675.02	259.62	731.83	909.32	277.16	22,566.1	166,863.0
1201.00	467.72	16.77	14.56	280.74	672.06	257.30	732.68	900.77	274.55	22,578.5	166,867.0
1202.00	467.98	16.74	14.23	278.44	668.87	254.88	733.50	892.15	271.93	22,590.9	166,871.0
1203.00	468.26	16.74	13.86	276.20	665.66	252.63	734.27	883.54	269.30	22,603.3	166,875.0
1204.00	468.54	16.69	13.44	274.01	662.44	250.63	735.12	874.91	266.64	22,615.6	166,879.0
1205.00	468.83	16.61	13.17	271.90	659.21	248.73	736.00	866.37	264.01	22,627.9	166,883.0
1206.00	469.10	16.53	12.93	269.86	656.00	246.90	736.90	857.90	261.41	22,640.2	166,887.0
1207.00	469.39	16.45	12.71	267.88	652.80	245.23	737.80	849.50	258.81	22,652.5	166,891.0
1208.00	469.69	16.37	12.51	265.94	649.63	243.70	738.70	841.16	256.21	22,664.8	166,895.0
1209.00	469.99	16.30	12.32	264.04	646.50	242.30	739.60	832.89	253.61	22,677.1	166,899.0
1210.00	470.29	16.23	12.15	262.17	643.40	241.00	740.50	824.68	251.01	22,689.4	166,903.0
1211.00	470.59	16.16	12.00	260.33	640.33	239.80	741.40	816.54	248.41	22,701.7	166,907.0
1212.00	470.89	16.10	11.86	258.51	637.29	238.70	742.30	808.46	245.81	22,714.0	166,911.0
1213.00	471.19	16.04	11.74	256.72	634.28	237.70	743.20	800.43	243.21	22,726.3	166,915.0
1214.00	471.49	16.00	11.63	254.95	631.29	236.80	744.10	792.46	240.61	22,738.6	166,919.0
1215.00	471.79	15.96	11.54	253.21	628.32	235.90	745.00	784.54	238.01	22,750.9	166,923.0
1216.00	472.09	15.92	11.46	251.49	625.38	235.10	745.90	776.67	235.41	22,763.2	166,927.0
1217.00	472.39	15.88	11.39	249.80	622.47	234.40	746.80	768.84	232.81	22,775.5	166,931.0
1218.00	472.69	15.85	11.33	248.13	619.58	233.80	747.70	761.06	230.21	22,787.8	166,935.0
1219.00	472.99	15.82	11.28	246.49	616.71	233.30	748.60	753.32	227.61	22,800.1	166,939.0
1220.00	473.29	15.79	11.24	244.87	613.86	232.90	749.50	745.62	225.01	22,812.4	166,943.0
1221.00	473.59	15.76	11.21	243.28	611.03	232.60	750.40	738.00	222.41	22,824.7	166,947.0
1222.00	473.89	15.73	11.18	241.71	608.22	232.40	751.30	730.42	219.81	22,837.0	166,951.0
1223.00	474.19	15.70	11.16	240.17	605.43	232.30	752.20	722.89	217.21	22,849.3	166,955.0
1224.00	474.49	15.67	11.14	238.64	602.66	232.30	753.10	715.40	214.61	22,861.6	166,959.0
1225.00	474.79	15.64	11.13	237.14	600.00	232.40	754.00	707.96	212.01	22,873.9	166,963.0
1226.00	475.09	15.61	11.12	235.65	597.36	232.60	754.90	700.57	209.41	22,886.2	166,967.0
1227.00	475.39	15.58	11.11	234.18	594.73	232.90	755.80	693.21	206.81	22,898.5	166,971.0
1228.00	475.69	15.55	11.11	232.73	592.12	233.30	756.70	685.89	204.21	22,910.8	166,975.0
1229.00	475.99	15.52	11.10	231.30	589.53	233.80	757.60	678.60	201.61	22,923.1	166,979.0
1230.00	476.29	15.49	11.10	229.89	586.96	234.40	758.50	671.34	199.01	22,935.4	166,983.0
1231.00	476.59	15.46	11.10	228.50	584.41	235.10	759.40	664.11	196.41	22,947.7	166,987.0
1232.00	476.89	15.43	11.10	227.13	581.88	235.90	760.30	656.91	193.81	22,960.0	166,991.0
1233.00	477.19	15.40	11.10	225.78	579.37	236.80	761.20	649.73	191.21	22,972.3	166,995.0
1234.00	477.49	15.37	11.10	224.45	576.88	237.80	762.10	642.58	188.61	22,984.6	166,999.0
1235.00	477.79	15.34	11.10	223.13	574.41	238.90	763.00	635.45	186.01	22,996.9	167,003.0
1236.00	478.09	15.31	11.10	221.83	571.96	240.10	763.90	628.34	183.41	23,009.2	167,007.0
1237.00	478.39	15.28	11.10	220.54	569.53	241.40	764.80	621.26	180.81	23,021.5	167,011.0
1238.00	478.69	15.25	11.10	219.27	567.12	242.80	765.70	614.20	178.21	23,033.8	167,015.0
1239.00	478.99	15.22	11.10	218.01	564.73	244.30	766.60	607.16	175.61	23,046.1	167,019.0
1240.00	479.29	15.19	11.10	216.77	562.36	245.90	767.50	600.14	173.01	23,058.4	167,023.0
1241.00	479.59	15.16	11.10	215.54	560.01	247.60	768.40	593.14	170.41	23,070.7	167,027.0
1242.00	479.89	15.13	11.10	214.32	557.68	249.40	769.30	586.16	167.81	23,083.0	167,031.0
1243.00	480.19	15.10	11.10	213.12	555.37	251.30	770.20	579.20	165.21	23,095.3	167,035.0
1244.00	480.49	15.07	11.10	211.93	553.08	253.30	771.10	572.26	162.61	23,107.6	167,039.0
1245.00	480.79	15.04	11.10	210.75	550.81	255.40	772.00	565.34	160.01	23,119.9	167,043.0
1246.00	481.09	15.01	11.10	209.59	548.56	257.60	772.90	558.44	157.41	23,132.2	167,047.0
1247.00	481.39	14.98	11.10	208.44	546.33	259.90	773.80	551.56	154.81	23,144.5	167,051.0
1248.00	481.69	14.95	11.10	207.30	544.12	262.30	774.70	544.70	152.21	23,156.8	167,055.0
1249.00	481.99	14.92	11.10	206.18	541.93	264.80	775.60	537.86	149.61	23,169.1	167,059.0
1250.00	482.29	14.89	11.10	205.07	539.76	267.40	776.50	531.04	147.01	23,181.4	167,063.0
1251.00	482.59	14.86	11.10	203.98	537.61	270.10	777.40	524.24	144.41	23,193.7	167,067.0
1252.00	482.89	14.83	11.10	202.90	535.48	272.90	778.30	517.46	141.81	23,206.0	167,071.0
1253.00	483.19	14.80	11.10	201.83	533.37	275.80	779.20	510.70	139.21	23,218.3	167,075.0
1254.00	483.49	14.77	11.10	200.78	531.28	278.80	780.10	504.00	136.61	23,230.6	167,079.0
1255.00	483.79	14.74	11.10	199.74	529.21	281.90	781.00	497.32	134.01	23,242.9	167,083.0
1256.00	484.09	14.71	11.10	198.71	527.16	285.10	781.90	490.66	131.41	23,255.2	167,087.0
1257.00	484.39	14.68	11.10	197.70	525.13	288.40	782.80	484.02	128.81	23,267.5	167,091.0
1258.00	484.69	14.65	11.10	196.70	523.12	291.80	783.70	477.40	126.21	23,279.8	167,095.0
1259.00	484.99	14.62	11.10	195.72	521.13	295.30	784.60	470.80	123.61	23,292.1	167,099.0
1260.00	485.29	14.59	11.10	194.75	519.16	298.90	785.50	464.22	121.01	23,304.4	167,103.0
1261.00	485.59	14.56	11.10	193.80	517.21	302.60	786.40	457.66	118.41	23,316.7	167,107.0
1262.00	485.89	14.53	11.10	192.86	515.28	306.40	787.30	451.12	115.81	23,329.0	167,111.0
1263.00	486.19	14.50	11.10	191.93	513.37	310.30	788.20	444.60	113.21	23,341.3	167,115.0
1264.00	486.49	14.47	11.10	191.01	511.48	314.40	789.10	438.10	110.61	23,353.6	167,119.0
1265.00	486.79	14.44	11.10	190.10	509.61	318.60	790.00	431.62	108.01	23,365.9	167,123.0
1266.00	487.09	14.41	11.10	189.20	507.76	322.90	790.90	425.16	105.41	23,378.2	167,127.0
1267.00	487.39	14.38	11.10	188.31	505.93	327.30	791.80	418.72	102.81	23,390.5	167,131.0
1268.00	487.69	14.35	11.10	187.43	504.12	331.80	792.70	412.30	100.21	23,402.8	167,135.0
1269.00	487.99	14.32	11.10	186.56	502.33	336.40	793.60	405.90	97.61	23,415.1	167,139.0
1270.00	488.29	14.29	11.10	185.70	500.56	341.10	794.50	399.52	95.01	23,427.4	167,143.0
1271.00	488.59	14.26	11.10	184.85	498.81	345.90	795.40	393.16	92.41	23,439.7	167,147.0
1272.00	488.89	14.23	11.10	184.01	497.08	350.80	796.30	386.82	89.81	23,452.0	167,151.0
1273.00	489.19	14.20	11.10	183.18	495.37	355.80	797.20	380.50	87.21	23,464.3	167,155.0
1274.00	489.49	14.17	11.10	182.36	493.68	360.90	798.10	374.20	84.61	23,476.6	167,159.0
1275.00	489.79	14.14	11.10	181.55	492.01	366.10	799.00	367.92	82.01	23,488.9	167,163.0
1276.00	490.09	14.11	11.10	180.75	490.36	371.40	799.90	361.66	79.41	23,501.2	167,167.0
1277.00	490.39	14.08	11.10	180.00	488.73	376.80	800.80	355.42</			

1206.00	461.15	42.37	287.78	678.20	228.12	736.73	857.33	281.31	22.6178	166.8304
3207.00	462.47	42.66	287.83	678.20	217.29	737.58	848.60	282.59	22.6267	166.8304
3208.00	462.80	42.95	287.88	678.20	216.46	738.43	839.88	283.87	22.6356	166.8304
3209.00	463.14	43.24	287.93	678.20	215.63	739.28	831.16	285.15	22.6445	166.8304
3210.00	463.49	43.53	287.98	678.20	214.80	740.13	822.44	286.43	22.6534	166.8304
3211.00	463.83	43.82	288.03	678.20	213.97	740.98	813.72	287.71	22.6623	166.8304
3212.00	464.18	44.11	288.08	678.20	213.14	741.83	805.00	288.99	22.6712	166.8304
3213.00	464.53	44.40	288.13	678.20	212.31	742.68	796.28	290.27	22.6801	166.8304
3214.00	464.88	44.69	288.18	678.20	211.48	743.53	787.56	291.55	22.6890	166.8304
3215.00	465.23	44.98	288.23	678.20	210.65	744.38	778.84	292.83	22.6979	166.8304
3216.00	465.58	45.27	288.28	678.20	209.82	745.23	770.12	294.11	22.7068	166.8304
3217.00	465.93	45.56	288.33	678.20	208.99	746.08	761.40	295.39	22.7157	166.8304
3218.00	466.28	45.85	288.38	678.20	208.16	746.93	752.68	296.67	22.7246	166.8304
3219.00	466.63	46.14	288.43	678.20	207.33	747.78	743.96	297.95	22.7335	166.8304
3220.00	466.98	46.43	288.48	678.20	206.50	748.63	735.24	299.23	22.7424	166.8304
3221.00	467.33	46.72	288.53	678.20	205.67	749.48	726.52	300.51	22.7513	166.8304
3222.00	467.68	47.01	288.58	678.20	204.84	750.33	717.80	301.79	22.7602	166.8304
3223.00	468.03	47.30	288.63	678.20	204.01	751.18	709.08	303.07	22.7691	166.8304
3224.00	468.38	47.59	288.68	678.20	203.18	752.03	700.36	304.35	22.7780	166.8304
3225.00	468.73	47.88	288.73	678.20	202.35	752.88	691.64	305.63	22.7869	166.8304
3226.00	469.08	48.17	288.78	678.20	201.52	753.73	682.92	306.91	22.7958	166.8304
3227.00	469.43	48.46	288.83	678.20	200.69	754.58	674.20	308.19	22.8047	166.8304
3228.00	469.78	48.75	288.88	678.20	199.86	755.43	665.48	309.47	22.8136	166.8304
3229.00	470.13	49.04	288.93	678.20	199.03	756.28	656.76	310.75	22.8225	166.8304
3230.00	470.48	49.33	288.98	678.20	198.20	757.13	648.04	312.03	22.8314	166.8304
3231.00	470.83	49.62	289.03	678.20	197.37	757.98	639.32	313.31	22.8403	166.8304
3232.00	471.18	49.91	289.08	678.20	196.54	758.83	630.60	314.59	22.8492	166.8304
3233.00	471.53	50.20	289.13	678.20	195.71	759.68	621.88	315.87	22.8581	166.8304
3234.00	471.88	50.49	289.18	678.20	194.88	760.53	613.16	317.15	22.8670	166.8304
3235.00	472.23	50.78	289.23	678.20	194.05	761.38	604.44	318.43	22.8759	166.8304
3236.00	472.58	51.07	289.28	678.20	193.22	762.23	595.72	319.71	22.8848	166.8304
3237.00	472.93	51.36	289.33	678.20	192.39	763.08	587.00	320.99	22.8937	166.8304
3238.00	473.28	51.65	289.38	678.20	191.56	763.93	578.28	322.27	22.9026	166.8304
3239.00	473.63	51.94	289.43	678.20	190.73	764.78	569.56	323.55	22.9115	166.8304
3240.00	473.98	52.23	289.48	678.20	189.90	765.63	560.84	324.83	22.9204	166.8304
3241.00	474.33	52.52	289.53	678.20	189.07	766.48	552.12	326.11	22.9293	166.8304
3242.00	474.68	52.81	289.58	678.20	188.24	767.33	543.40	327.39	22.9382	166.8304
3243.00	475.03	53.10	289.63	678.20	187.41	768.18	534.68	328.67	22.9471	166.8304
3244.00	475.38	53.39	289.68	678.20	186.58	769.03	525.96	329.95	22.9560	166.8304
3245.00	475.73	53.68	289.73	678.20	185.75	769.88	517.24	331.23	22.9649	166.8304
3246.00	476.08	53.97	289.78	678.20	184.92	770.73	508.52	332.51	22.9738	166.8304
3247.00	476.43	54.26	289.83	678.20	184.09	771.58	500.00	333.79	22.9827	166.8304
3248.00	476.78	54.55	289.88	678.20	183.26	772.43	491.48	335.07	22.9916	166.8304
3249.00	477.13	54.84	289.93	678.20	182.43	773.28	482.96	336.35	23.0005	166.8304
3250.00	477.48	55.13	289.98	678.20	181.60	774.13	474.44	337.63	23.0094	166.8304
3251.00	477.83	55.42	290.03	678.20	180.77	774.98	465.92	338.91	23.0183	166.8304
3252.00	478.18	55.71	290.08	678.20	179.94	775.83	457.40	340.19	23.0272	166.8304
3253.00	478.53	56.00	290.13	678.20	179.11	776.68	448.88	341.47	23.0361	166.8304
3254.00	478.88	56.29	290.18	678.20	178.28	777.53	440.36	342.75	23.0450	166.8304
3255.00	479.23	56.58	290.23	678.20	177.45	778.38	431.84	344.03	23.0539	166.8304
3256.00	479.58	56.87	290.28	678.20	176.62	779.23	423.32	345.31	23.0628	166.8304
3257.00	480.00	57.16	290.33	678.20	175.79	780.08	414.80	346.59	23.0717	166.8304
3258.00	480.42	57.45	290.38	678.20	174.96	780.93	406.28	347.87	23.0806	166.8304
3259.00	480.84	57.74	290.43	678.20	174.13	781.78	397.76	349.15	23.0895	166.8304
3260.00	481.26	58.03	290.48	678.20	173.30	782.63	389.24	350.43	23.0984	166.8304

16572.00	445,75	135.07	1066.71	712.73	632.67	772.93	138.66	112.41	232.0532	166.3847
16592.00	445.96	122.06	1071.03	713.63	632.41	772.68	139.55	112.71	232.0621	166.3795
16612.00	446.15	110.23	1075.27	714.53	632.19	772.43	140.43	112.99	232.0711	166.3743
16632.00	446.34	100.16	1079.51	715.43	631.97	772.18	141.31	113.28	232.0801	166.3691
16652.00	446.53	91.25	1083.75	716.33	631.75	771.93	142.19	113.57	232.0891	166.3639
16672.00	446.73	83.06	1088.00	717.23	631.53	771.68	143.06	113.86	232.0981	166.3587
16692.00	446.92	75.26	1092.24	718.13	631.32	771.43	143.94	114.15	232.1071	166.3535
16712.00	447.12	67.57	1096.49	719.03	631.10	771.18	144.82	114.44	232.1161	166.3483
16732.00	447.31	60.56	1100.73	719.93	630.89	770.93	145.70	114.73	232.1251	166.3431
16752.00	447.51	54.04	1104.98	720.83	630.67	770.68	146.58	115.02	232.1341	166.3379
16772.00	447.70	47.84	1109.23	721.73	630.46	770.43	147.46	115.31	232.1431	166.3327
16792.00	447.89	42.04	1113.47	722.63	630.25	770.18	148.34	115.60	232.1521	166.3275
16812.00	448.09	36.56	1117.72	723.53	630.04	769.93	149.22	115.89	232.1611	166.3223
16832.00	448.28	31.40	1121.97	724.43	629.83	769.68	150.10	116.18	232.1701	166.3171
16852.00	448.47	26.56	1126.22	725.33	629.62	769.43	150.98	116.47	232.1791	166.3119
16872.00	448.67	22.04	1130.47	726.23	629.41	769.18	151.86	116.76	232.1881	166.3067
16892.00	448.86	17.84	1134.72	727.13	629.20	768.93	152.74	117.05	232.1971	166.3015
16912.00	449.06	13.96	1138.97	728.03	628.99	768.68	153.62	117.34	232.2061	166.2963
16932.00	449.25	10.40	1143.22	728.93	628.78	768.43	154.50	117.63	232.2151	166.2911
16952.00	449.45	7.76	1147.47	729.83	628.57	768.18	155.38	117.92	232.2241	166.2859
16972.00	449.64	5.40	1151.72	730.73	628.36	767.93	156.26	118.21	232.2331	166.2807
16992.00	449.84	3.36	1155.97	731.63	628.15	767.68	157.14	118.50	232.2421	166.2755
17012.00	450.03	1.60	1160.22	732.53	627.94	767.43	158.02	118.79	232.2511	166.2703
17032.00	450.23	0.16	1164.47	733.43	627.73	767.18	158.90	119.08	232.2601	166.2651
17052.00	450.42	-0.04	1168.72	734.33	627.52	766.93	159.78	119.37	232.2691	166.2599
17072.00	450.62	-0.24	1172.97	735.23	627.31	766.68	160.66	119.66	232.2781	166.2547
17092.00	450.81	-0.44	1177.22	736.13	627.10	766.43	161.54	119.95	232.2871	166.2495
17112.00	451.01	-0.64	1181.47	737.03	626.89	766.18	162.42	120.24	232.2961	166.2443
17132.00	451.20	-0.84	1185.72	737.93	626.68	765.93	163.30	120.53	232.3051	166.2391
17152.00	451.40	-1.04	1189.97	738.83	626.47	765.68	164.18	120.82	232.3141	166.2339
17172.00	451.59	-1.24	1194.22	739.73	626.26	765.43	165.06	121.11	232.3231	166.2287
17192.00	451.79	-1.44	1198.47	740.63	626.05	765.18	165.94	121.40	232.3321	166.2235
17212.00	451.98	-1.64	1202.72	741.53	625.84	764.93	166.82	121.69	232.3411	166.2183
17232.00	452.18	-1.84	1206.97	742.43	625.63	764.68	167.70	121.98	232.3501	166.2131
17252.00	452.37	-2.04	1211.22	743.33	625.42	764.43	168.58	122.27	232.3591	166.2079
17272.00	452.57	-2.24	1215.47	744.23	625.21	764.18	169.46	122.56	232.3681	166.2027
17292.00	452.76	-2.44	1219.72	745.13	625.00	763.93	170.34	122.85	232.3771	166.1975
17312.00	452.96	-2.64	1223.97	746.03	624.79	763.68	171.22	123.14	232.3861	166.1923
17332.00	453.15	-2.84	1228.22	746.93	624.58	763.43	172.10	123.43	232.3951	166.1871
17352.00	453.35	-3.04	1232.47	747.83	624.37	763.18	172.98	123.72	232.4041	166.1819
17372.00	453.54	-3.24	1236.72	748.73	624.16	762.93	173.86	124.01	232.4131	166.1767
17392.00	453.74	-3.44	1240.97	749.63	623.95	762.68	174.74	124.30	232.4221	166.1715
17412.00	453.93	-3.64	1245.22	750.53	623.74	762.43	175.62	124.59	232.4311	166.1663
17432.00	454.13	-3.84	1249.47	751.43	623.53	762.18	176.50	124.88	232.4401	166.1611
17452.00	454.32	-4.04	1253.72	752.33	623.32	761.93	177.38	125.17	232.4491	166.1559
17472.00	454.52	-4.24	1257.97	753.23	623.11	761.68	178.26	125.46	232.4581	166.1507
17492.00	454.71	-4.44	1262.22	754.13	622.90	761.43	179.14	125.75	232.4671	166.1455
17512.00	454.91	-4.64	1266.47	755.03	622.69	761.18	180.02	126.04	232.4761	166.1403
17532.00	455.10	-4.84	1270.72	755.93	622.48	760.93	180.90	126.33	232.4851	166.1351
17552.00	455.30	-5.04	1274.97	756.83	622.27	760.68	181.78	126.62	232.4941	166.1299
17572.00	455.49	-5.24	1279.22	757.73	622.06	760.43	182.66	126.91	232.5031	166.1247
17592.00	455.69	-5.44	1283.47	758.63	621.85	760.18	183.54	127.20	232.5121	166.1195
17612.00	455.88	-5.64	1287.72	759.53	621.64	759.93	184.42	127.49	232.5211	166.1143
17632.00	456.08	-5.84	1291.97	760.43	621.43	759.68	185.30	127.78	232.5301	166.1091
17652.00	456.27	-6.04	1296.22	761.33	621.22	759.43	186.18	128.07	232.5391	166.1039
17672.00	456.47	-6.24	1300.47	762.23	621.01	759.18	187.06	128.36	232.5481	166.0987
17692.00	456.66	-6.44	1304.72	763.13	620.80	758.93	187.94	128.65	232.5571	166.0935
17712.00	456.86	-6.64	1308.97	764.03	620.59	758.68	188.82	128.94	232.5661	166.0883
17732.00	457.05	-6.84	1313.22	764.93	620.38	758.43	189.70	129.23	232.5751	166.0831
17752.00	457.25	-7.04	1317.47	765.83	620.17	758.18	190.58	129.52	232.5841	166.0779
17772.00	457.44	-7.24	1321.72	766.73	619.96	757.93	191.46	129.81	232.5931	166.0727
17792.00	457.64	-7.44	1325.97	767.63	619.75	757.68	192.34	130.10	232.6021	166.0675
17812.00	457.83	-7.64	1330.22	768.53	619.54	757.43	193.22	130.39	232.6111	166.0623
17832.00	458.03	-7.84	1334.47	769.43	619.33	757.18	194.10	130.68	232.6201	166.0571
17852.00	458.22	-8.04	1338.72	770.33	619.12	756.93	194.98	130.97	232.6291	166.0519
17872.00	458.42	-8.24	1342.97	771.23	618.91	756.68	195.86	131.26	232.6381	166.0467
17892.00	458.61	-8.44	1347.22	772.13	618.70	756.43	196.74	131.55	232.6471	166.0415
17912.00	458.81	-8.64	1351.47	773.03	618.49	756.18	197.62	131.84	232.6561	166.0363
17932.00	459.00	-8.84	1355.72	773.93	618.28	755.93	198.50	132.13	232.6651	166.0311
17952.00	459.20	-9.04	1359.97	774.83	618.07	755.68	199.38	132.42	232.6741	166.0259
17972.00	459.39	-9.24	1364.22	775.73	617.86	755.43	200.26	132.71	232.6831	166.0207
17992.00	459.59	-9.44	1368.47	776.63	617.65	755.18	201.14	133.00	232.6921	166.0155
18012.00	459.78	-9.64	1372.72	777.53	617.44	754.93	202.02	133.29	232.7011	166.0103
18032.00	459.98	-9.84	1376.97	778.43	617.23	754.68	202.90	133.58	232.7101	166.0051
18052.00	460.17	-10.04	1381.22	779.33	617.02	754.43	203.78	133.87	232.7191	166.0000
18072.00	460.37	-10.24	1385.47	780.23	616.81	754.18	204.66	134.16	232.7281	165.9948
18092.00	460.56	-10.44	1389.72	781.13	616.60	753.93	205.54	134.45	232.7371	165.9896
18112.00	460.76	-10.64	1393.97	782.03	616.39	753.68	206.42	134.74	232.7461	165.9844
18132.00	460.95	-10.84	1398.22	782.93	616.18	753.43	207.30	135.03	232.7551	165.9792
18152.00	461.15	-11.04	1402.47	783.83	615.97	753.18	208.18	135.32	232.7641	165.9740
18172.00	461.34	-11.24	1406.72	784.73	615.76	752.93	209.06	135.61	232.7731	165.9688
18192.00	461.54	-11.44	1410.97	785.63	615.55	752.68	209.94	135.90	232.7821	165.9636
18212.00	461.73	-11.64	1415.22	786.53	615.34	752.43	210.82	136.19	232.7911	165.9584
18232.00	461.93	-11.84	1419.47	787.43	615.13	752.18	211.70	136.48	232.8001	165.9532
18252.00	462.12	-12.04	1423.72	788.33	614.92	751.93	212.58	136.77	232.8091	165.9480
18272.00	462.32	-12.24	1427.97	789.23	614.71	751.68	213.46	137.06	232.8181	165.9428
18292.00	462.51	-12.44	1432.22	790.13	614.50	751.43	214.34	137.35	232.8271	165.9376
18312.00	462.71	-12.64	1436.47	791.03	614.29	751.18	215.22	137.64	232.8361	165.9324
18332.00	462.90	-12.84	1440.72	791.93	614.08	750.93	216.10	137.93	232.8451	165.9272
18352.00	463.10	-13.04	1444.97	792.83	613.87	750.68	216.98	138.22	232.8541	165.9220
18372.00	463.29	-13.24	1449.22	793.73	613.66	750.43	217.86	138.51	232.8631	165.9168
18392.00	463.49	-13.44	1453.47	794.63	613.45	750.18	218.74	138.80	232.8721	165.9116
18412.00	463.68	-13.64	1457.72	795.53	613.24	749.93	219.62	139.09	232.8811	165.9064
18432.00	463.88	-13.84	1461.97	796.43	613.03	749.68	220.50	139.38	232.8901	165.

Appendix B

CALIBRATIONS AND PROBE TRACKS, C-BAND

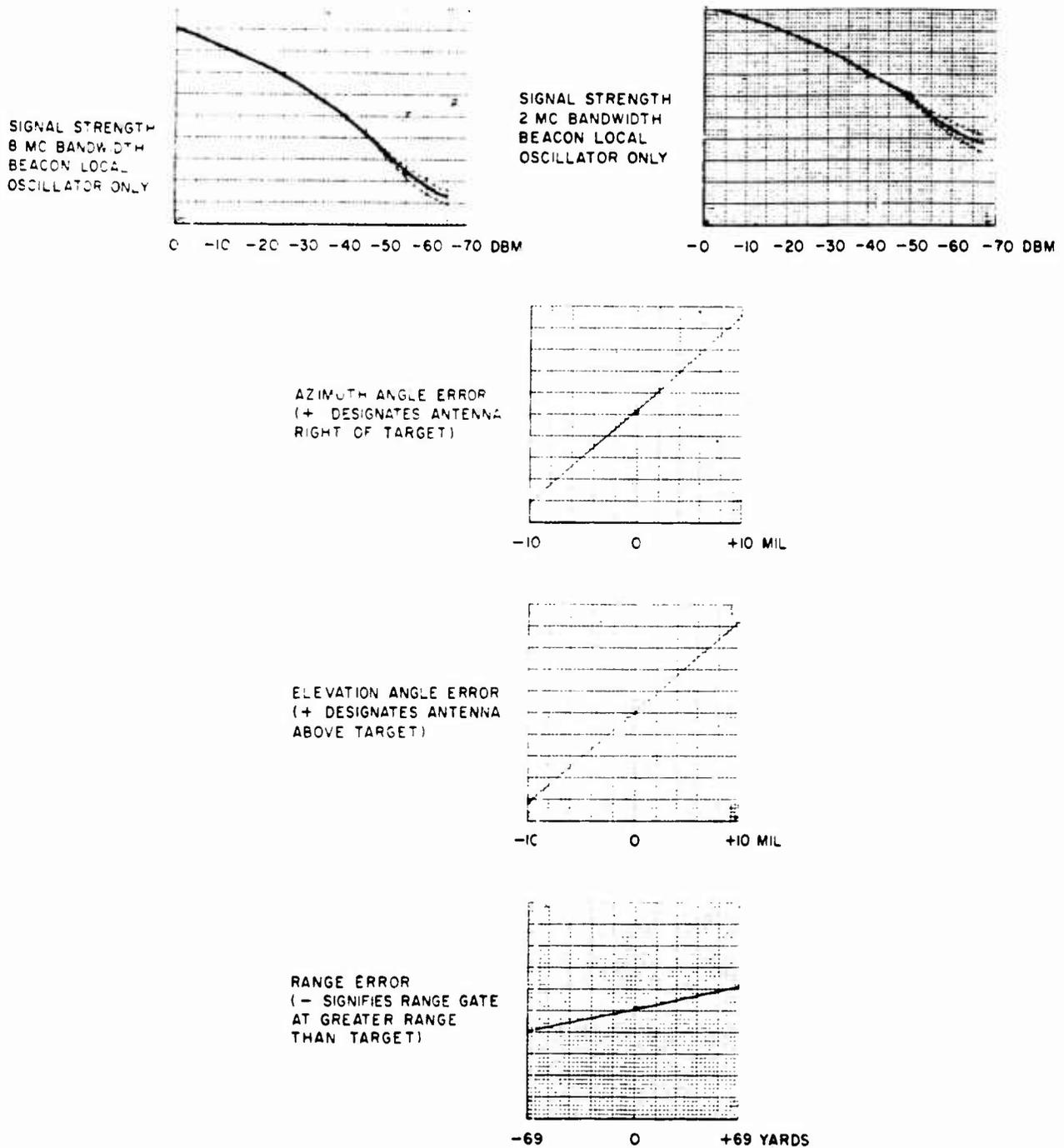


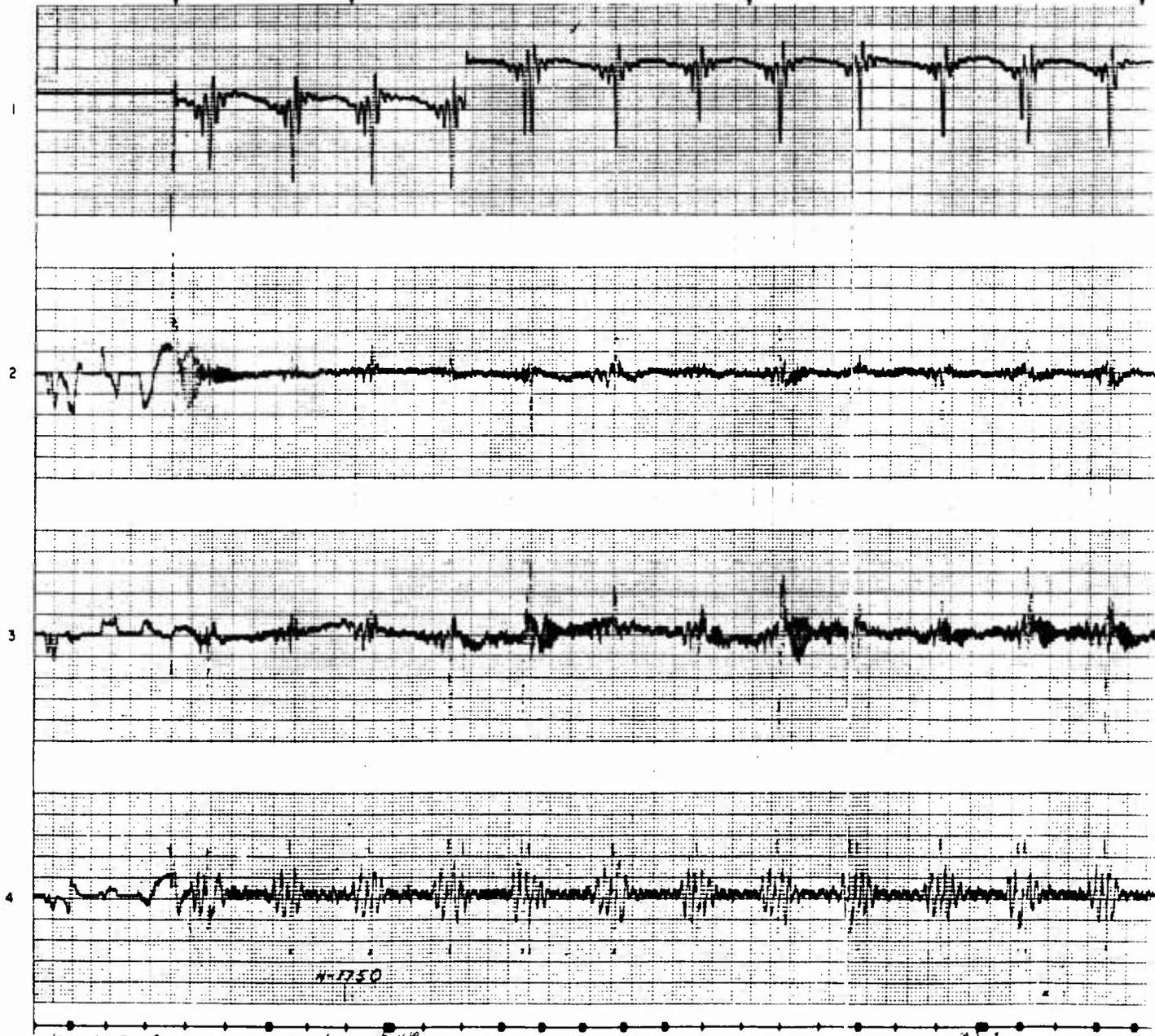
Figure B.1 Calibrations.

LOCKON-AUTO
TRACK MODE

H-1750

H-1740

H-17



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

135-1

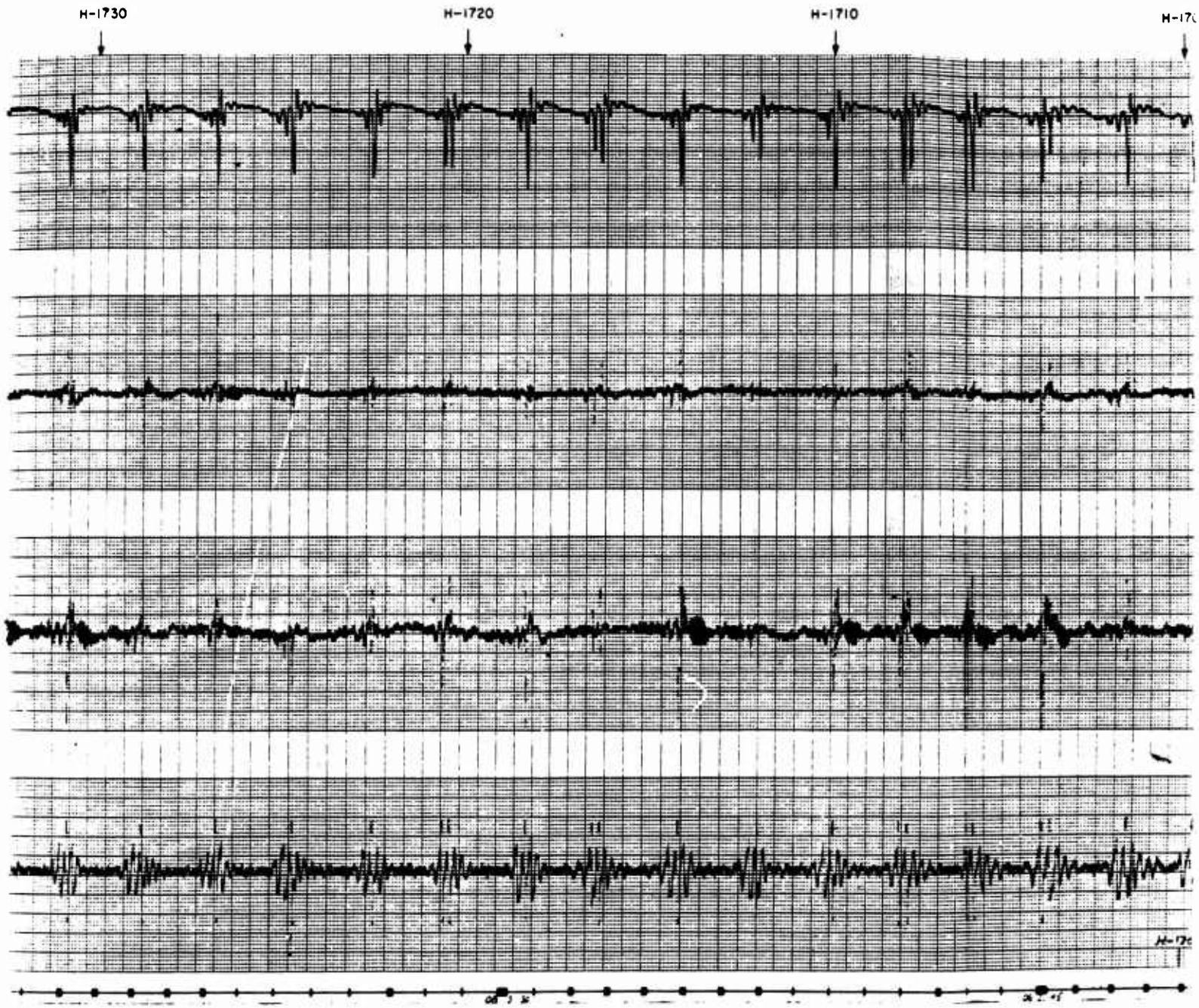


Figure B.2 Track, Probe 1.



Trace 1.

353

H-1660

H-1670

H-1660



135.4

H-1650

H-1640



- 1-AGC
- 2-AZ ERROR
- 3-EL ERROR
- 4-RANGE ERROR

136-1



H-1630

H-1620

H-1610

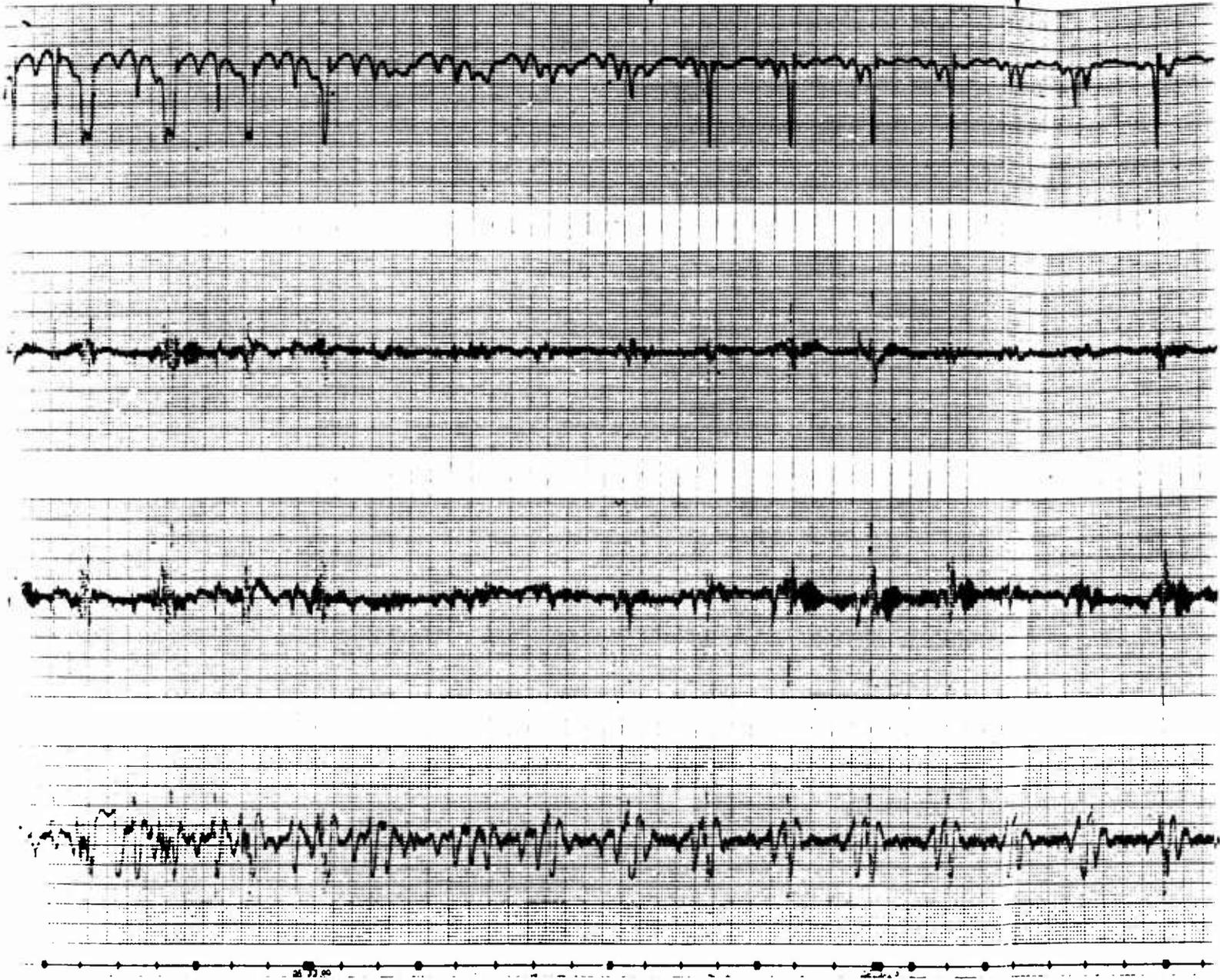


Figure B.2 Continued.





Continued

108 - 3



H-1580

H-1570

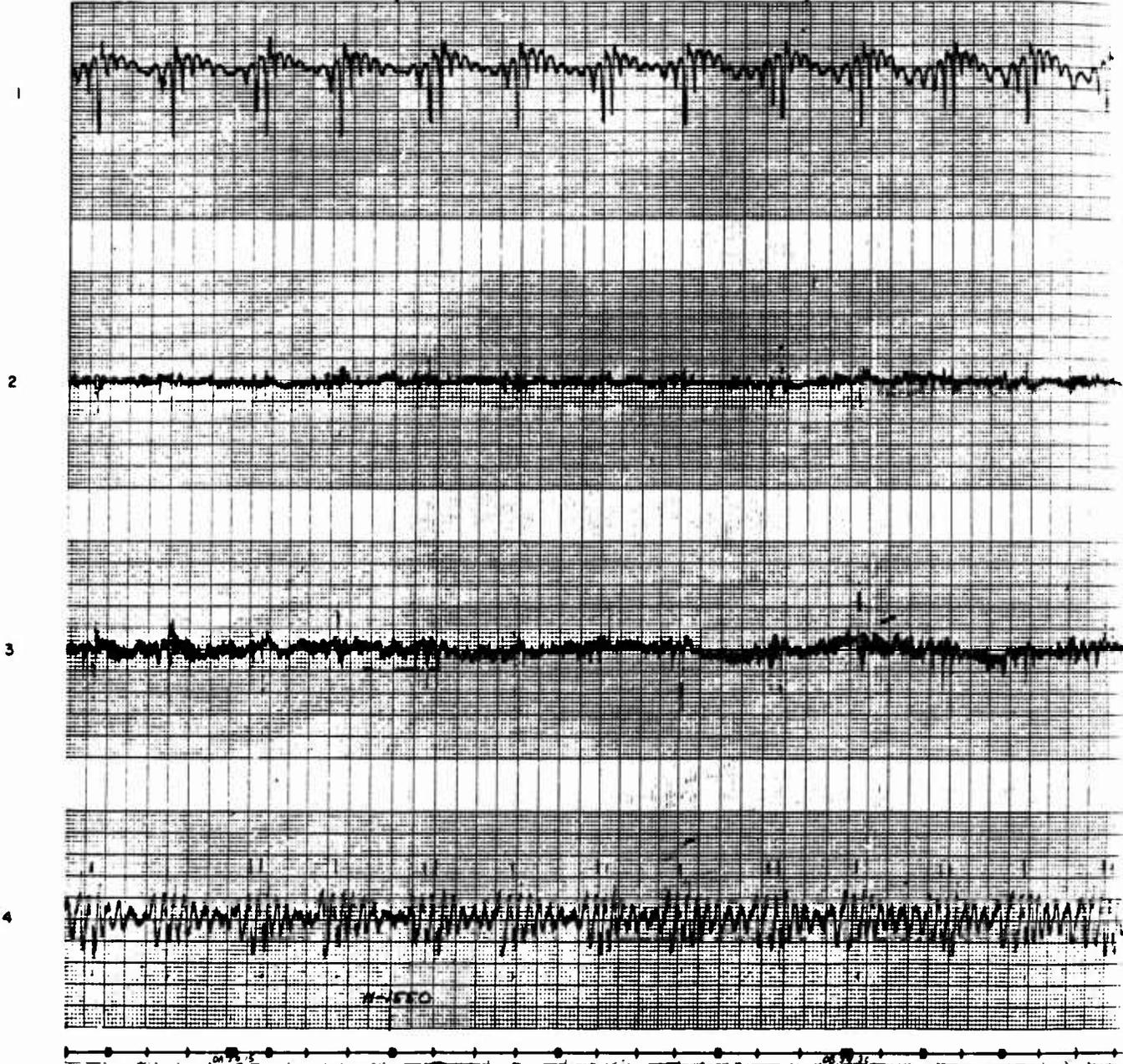
H-1560



136-4

H-1550

H-1540



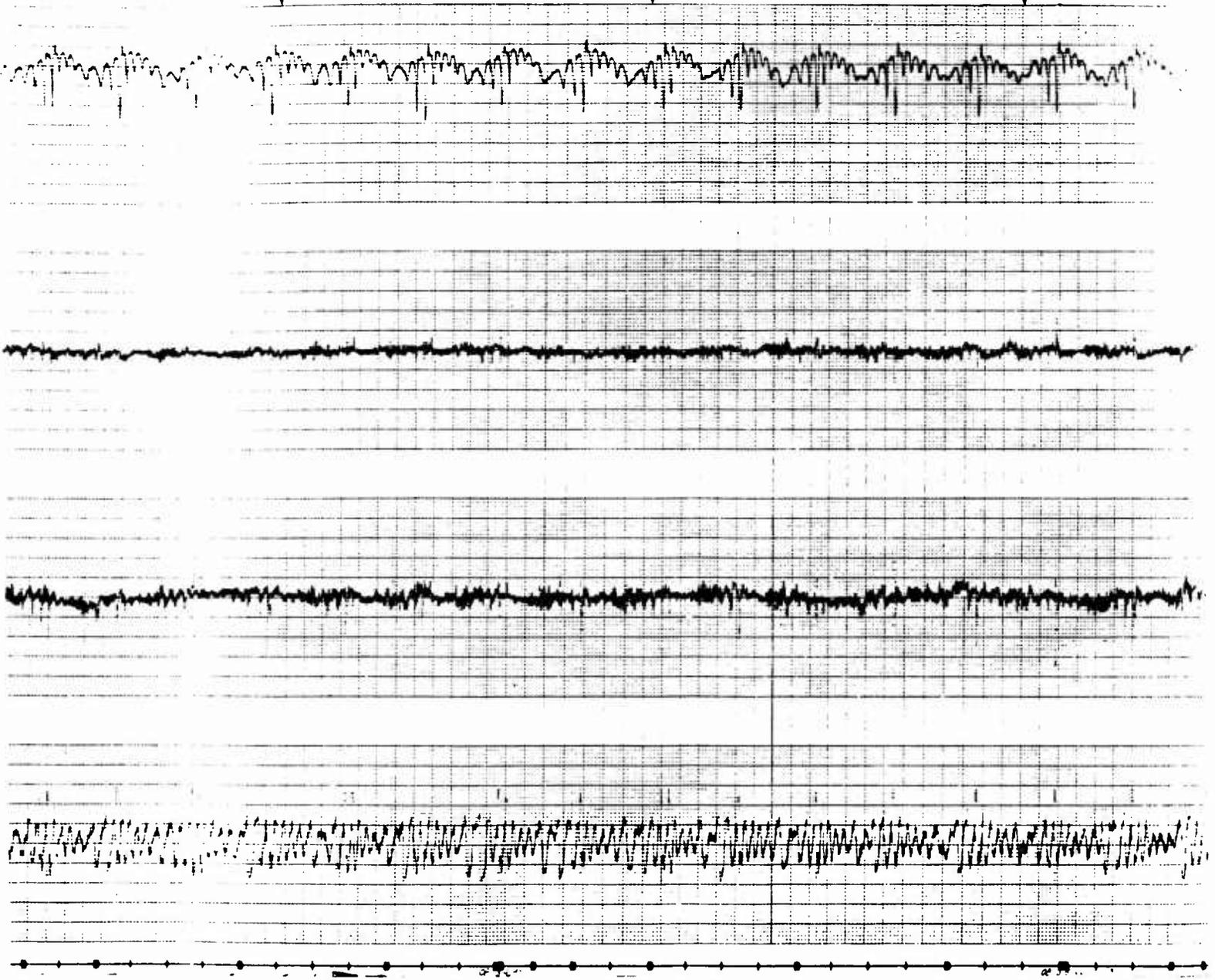
- 1-AGC
- 2-AZ ERROR
- 3-EL ERROR
- 4-RANGE ERROR

137-1

H-151

H-152C

H-151C



137-2



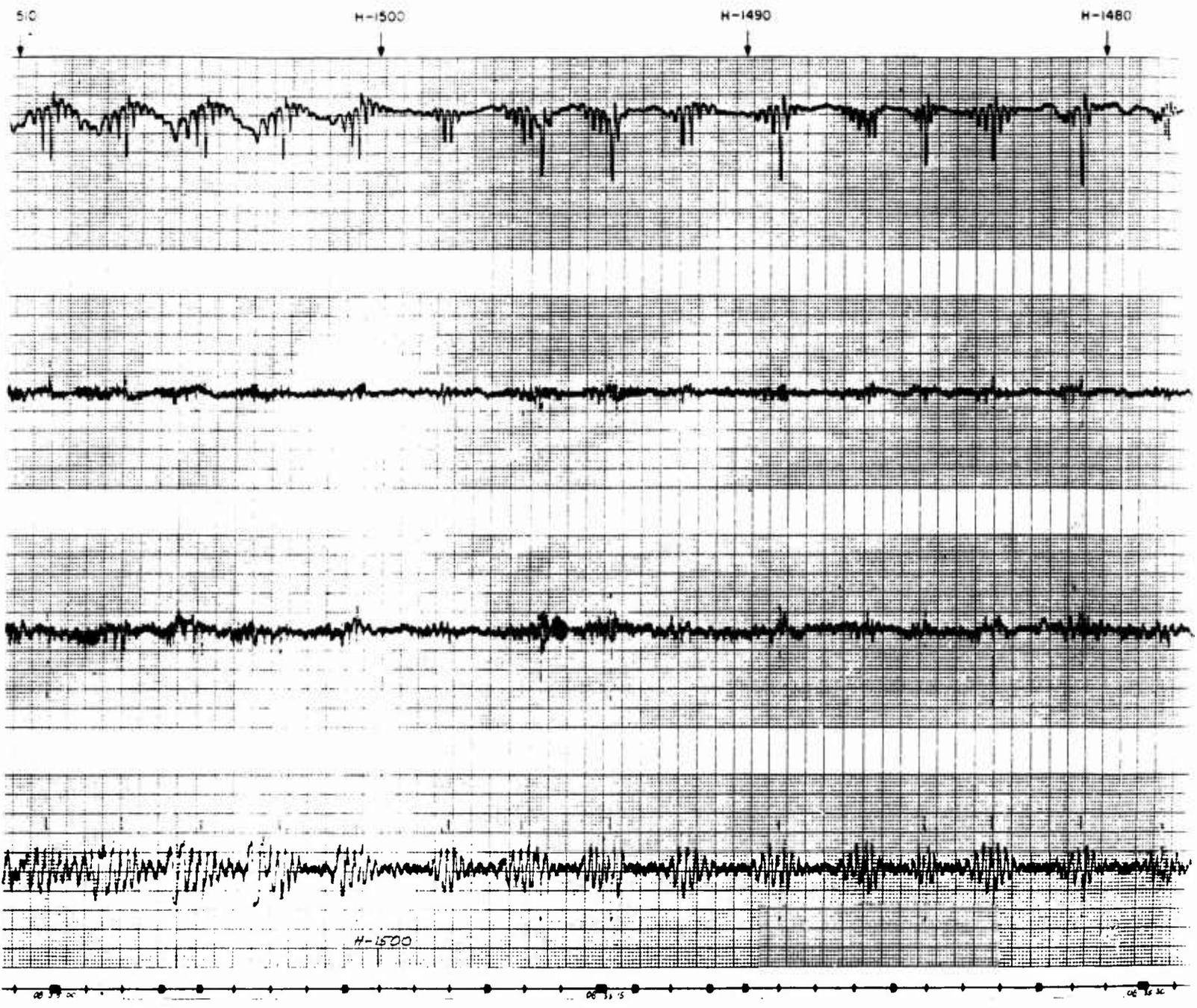


Figure B.2 Continued.



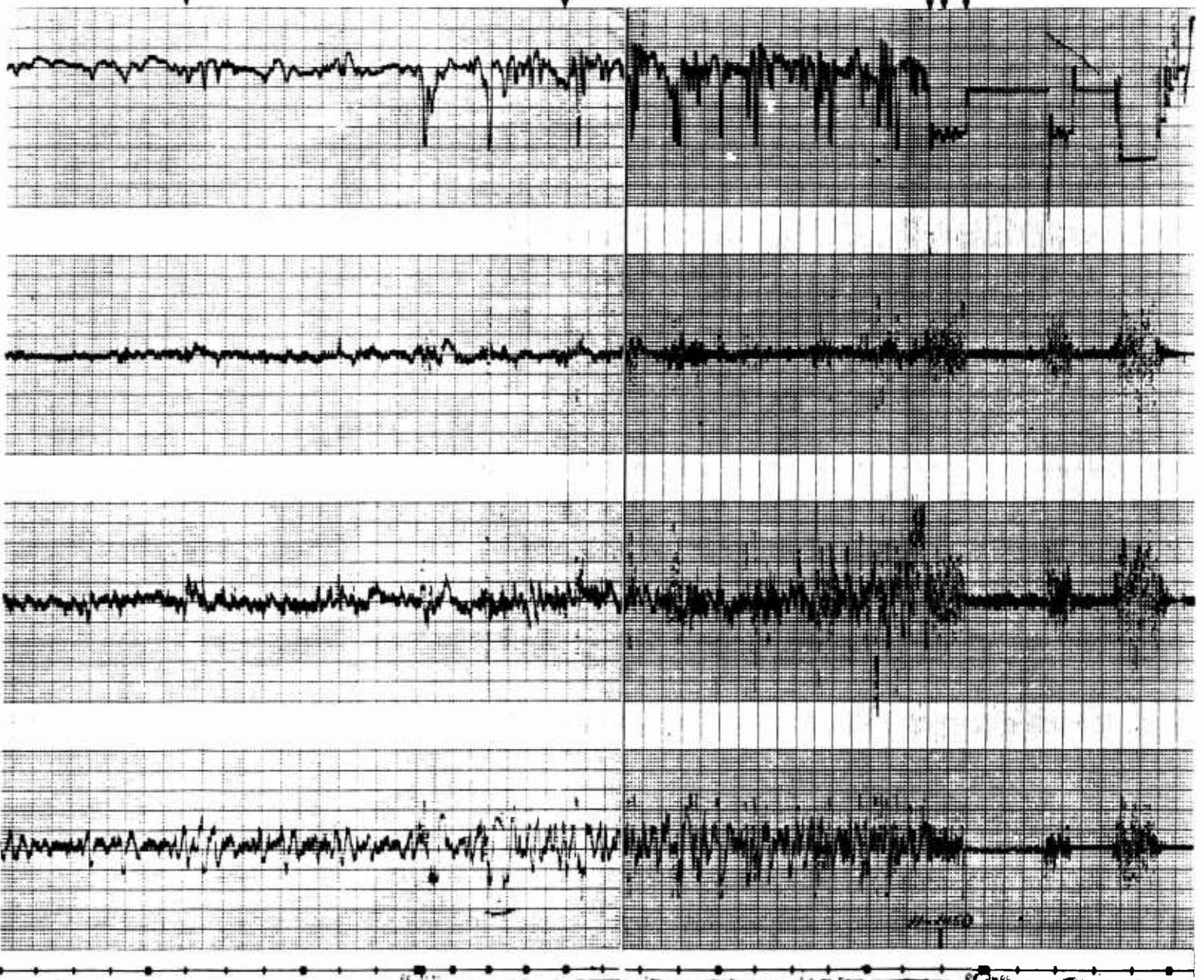
H-1470

H-1460

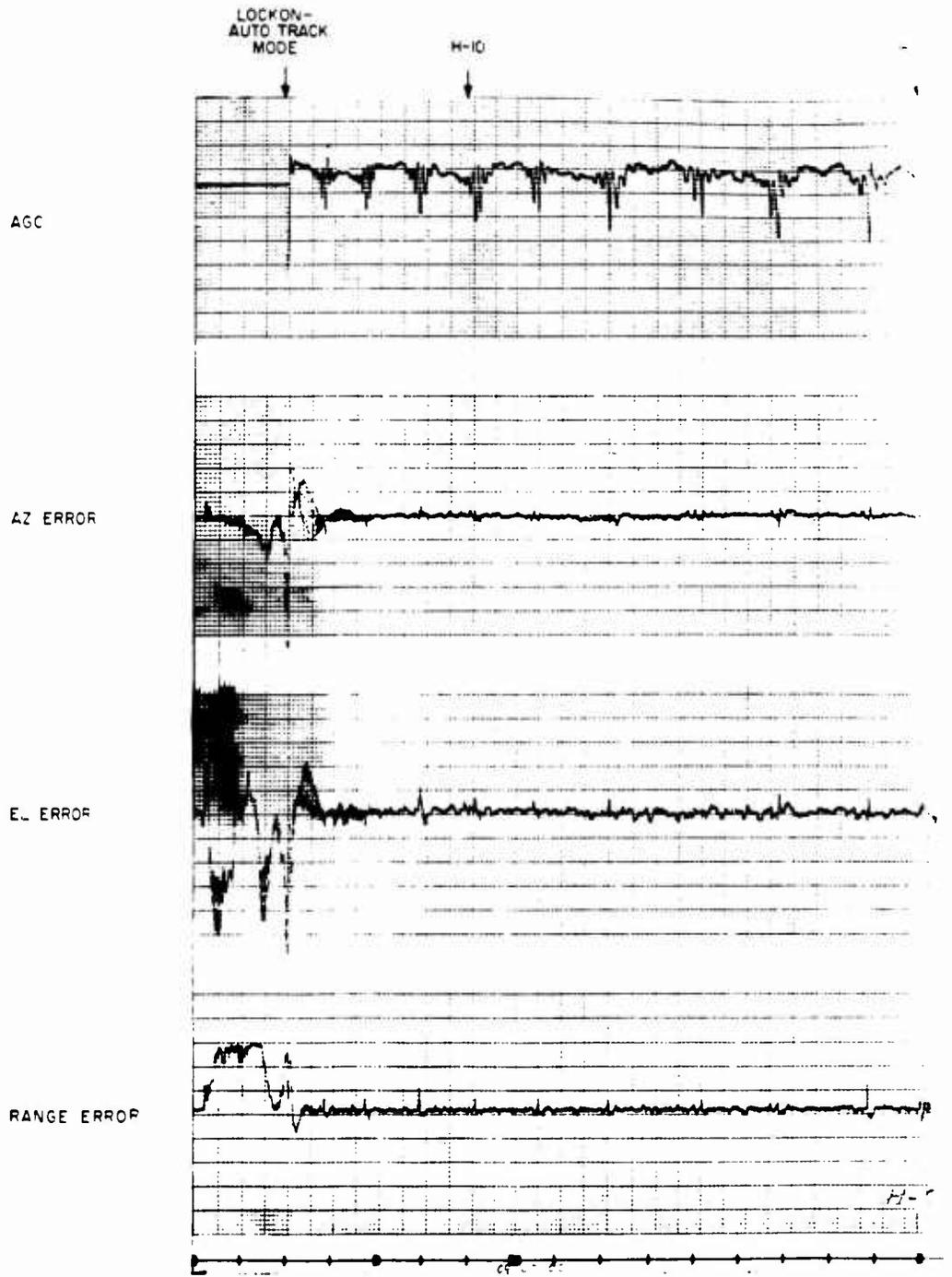
LOST
TRACK

H-1450

MANUAL
MODE



137-4



Figure

138-1



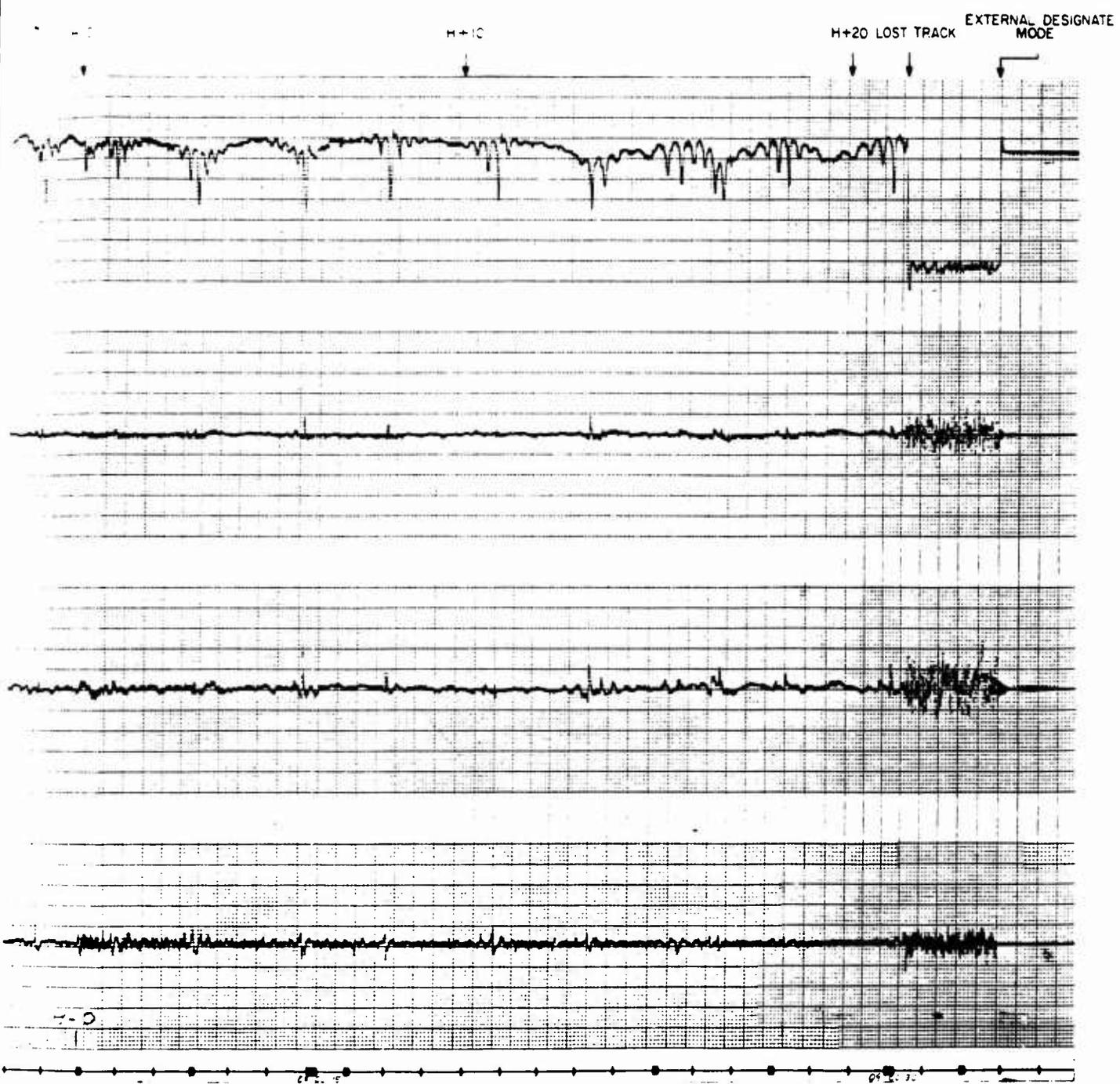


Figure B.3 Track, Probe 3.

138 - Z

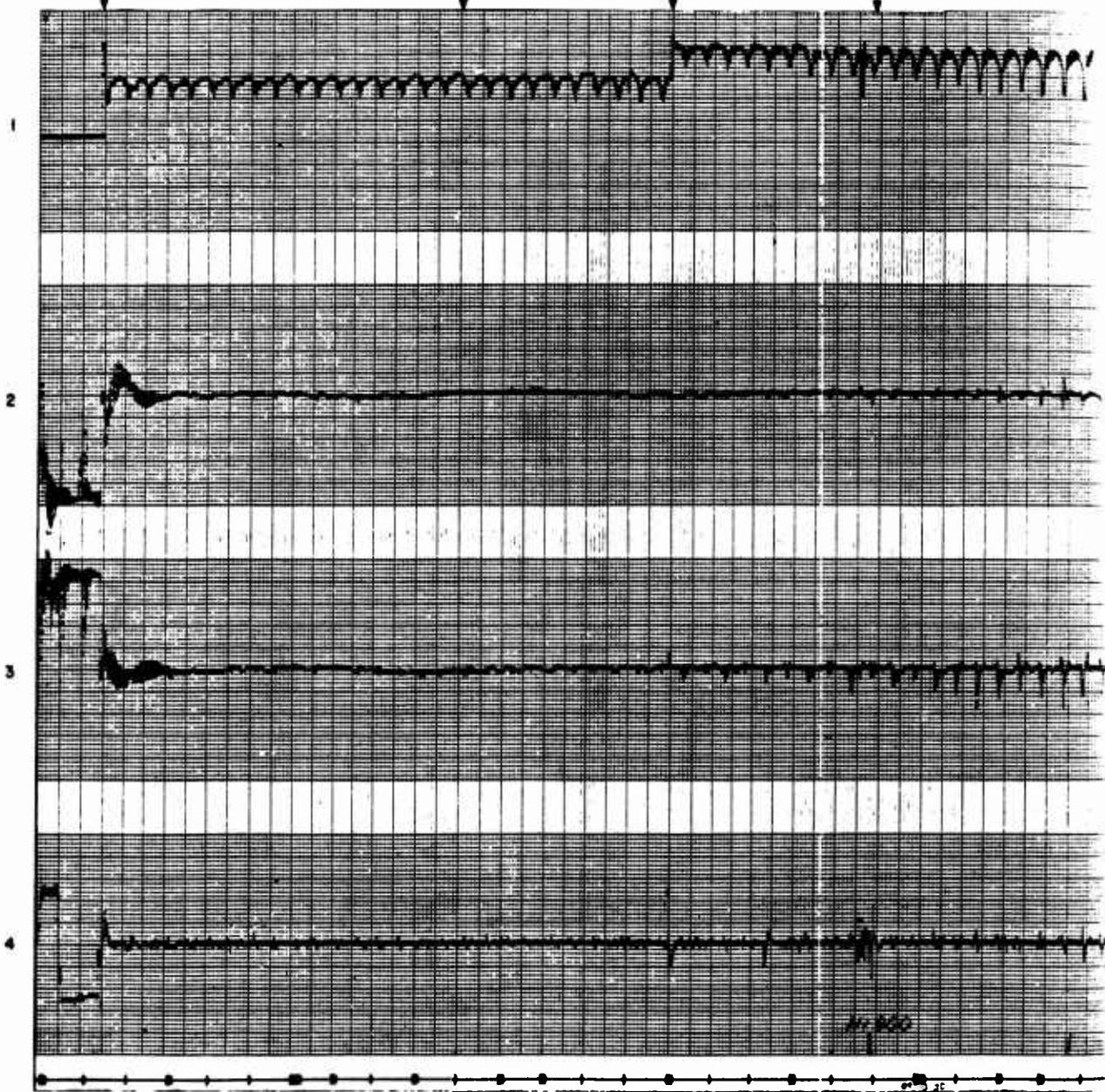


LOCKON-
AUTO TRACK MODE

H+790

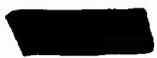
RECEIVER
BANDWIDTH 2 MC

H+800



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

139-1



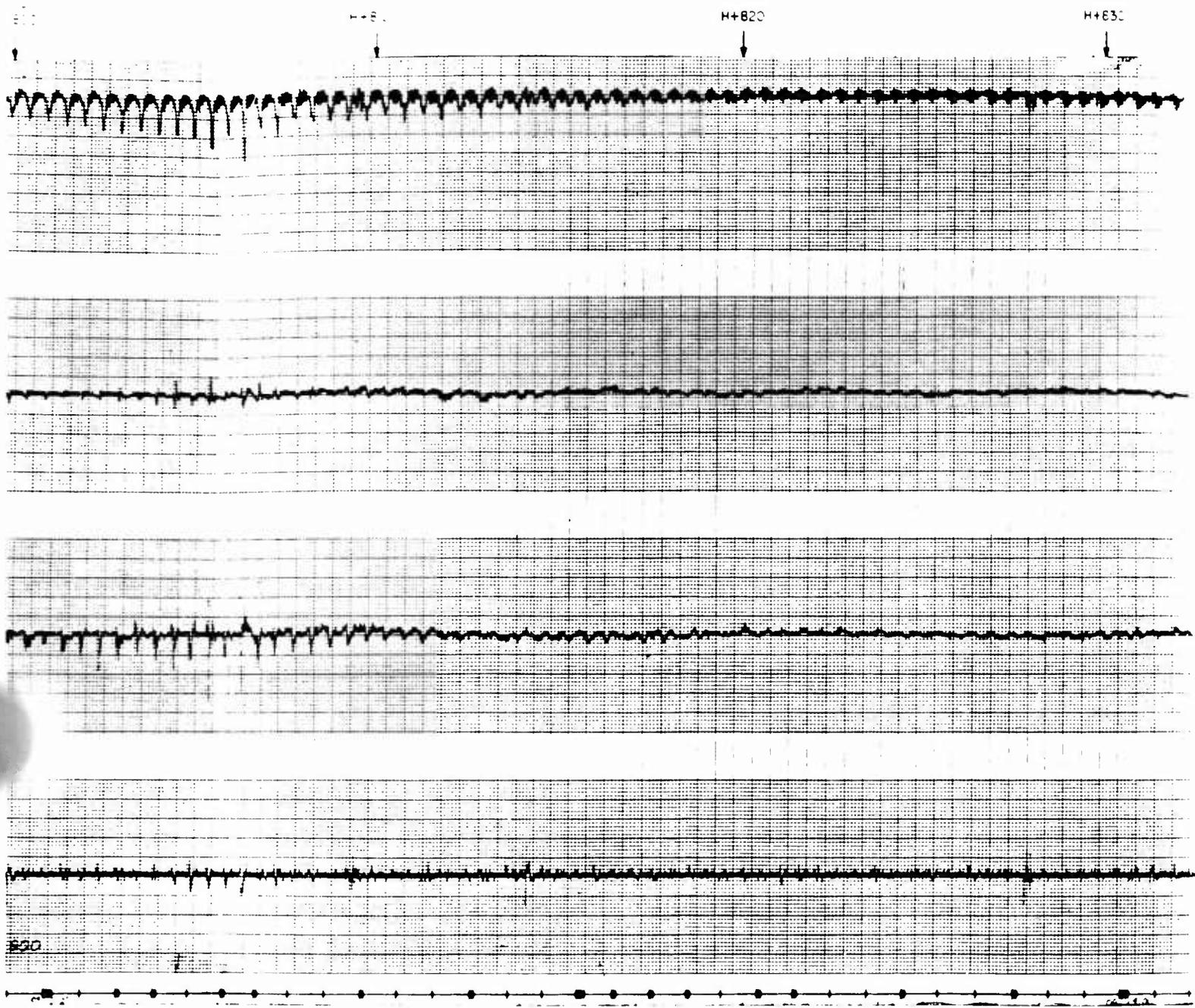
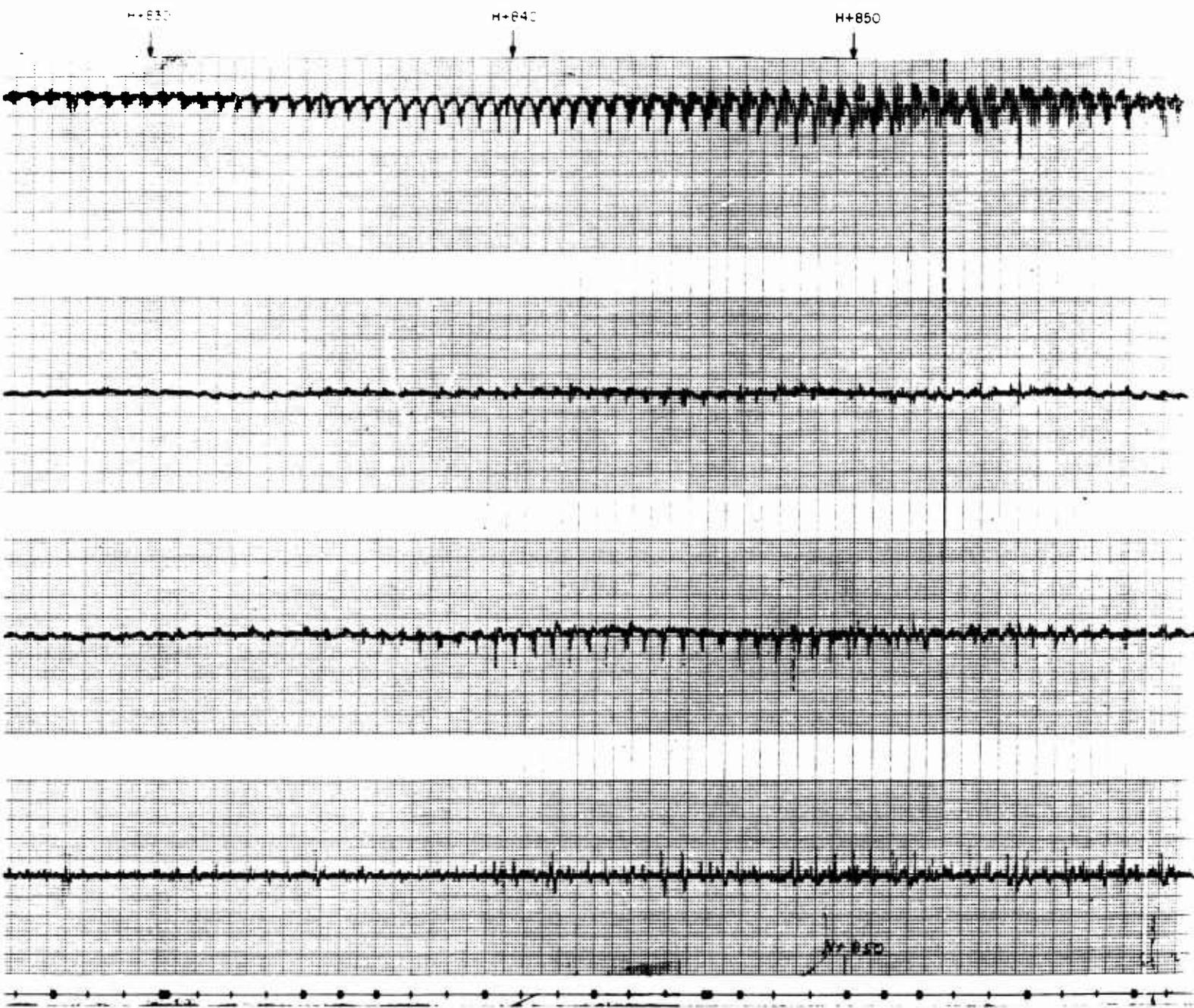


Figure B.4 Track. Probe





Track. Probe 4.

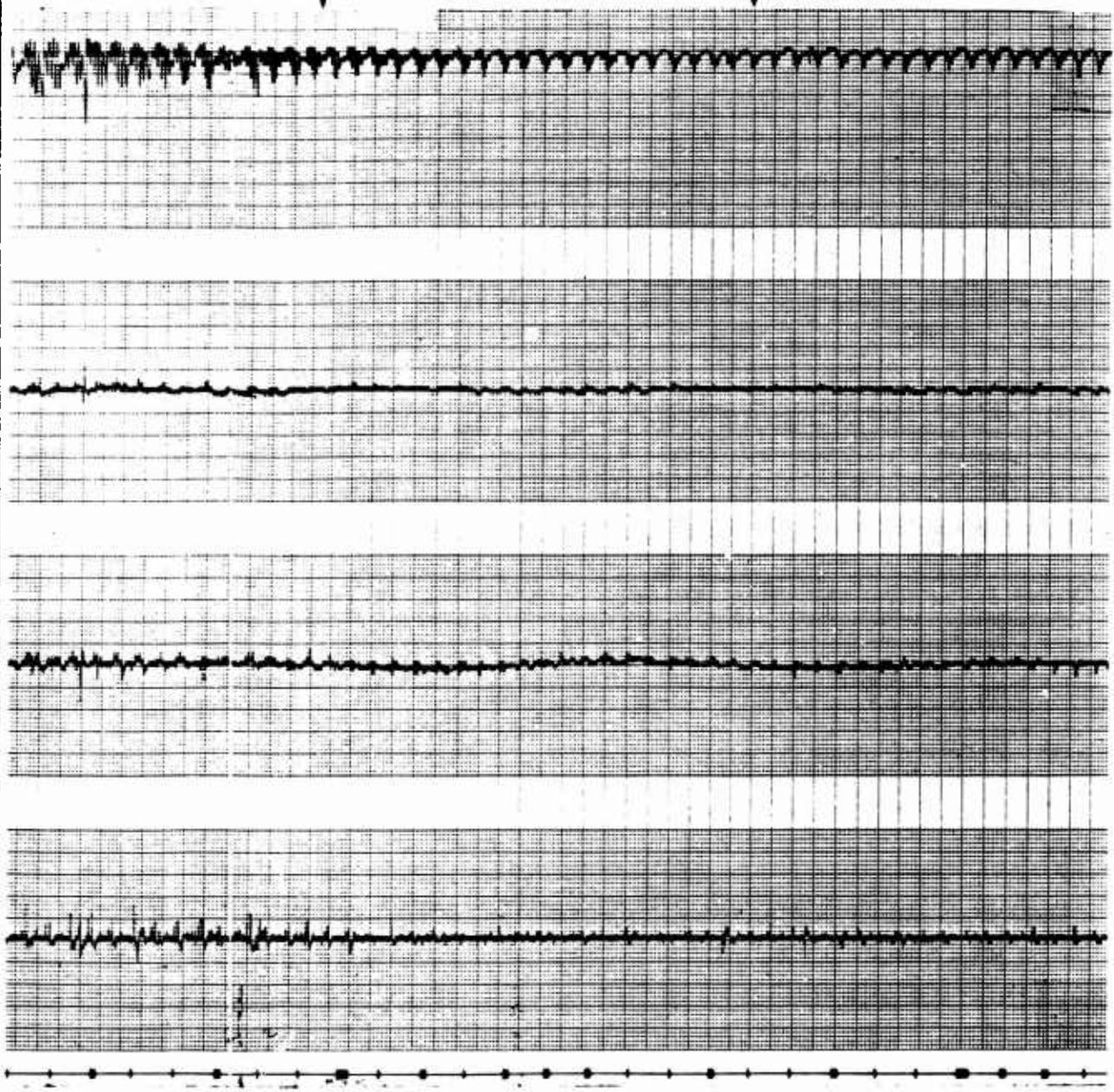
139 - 3

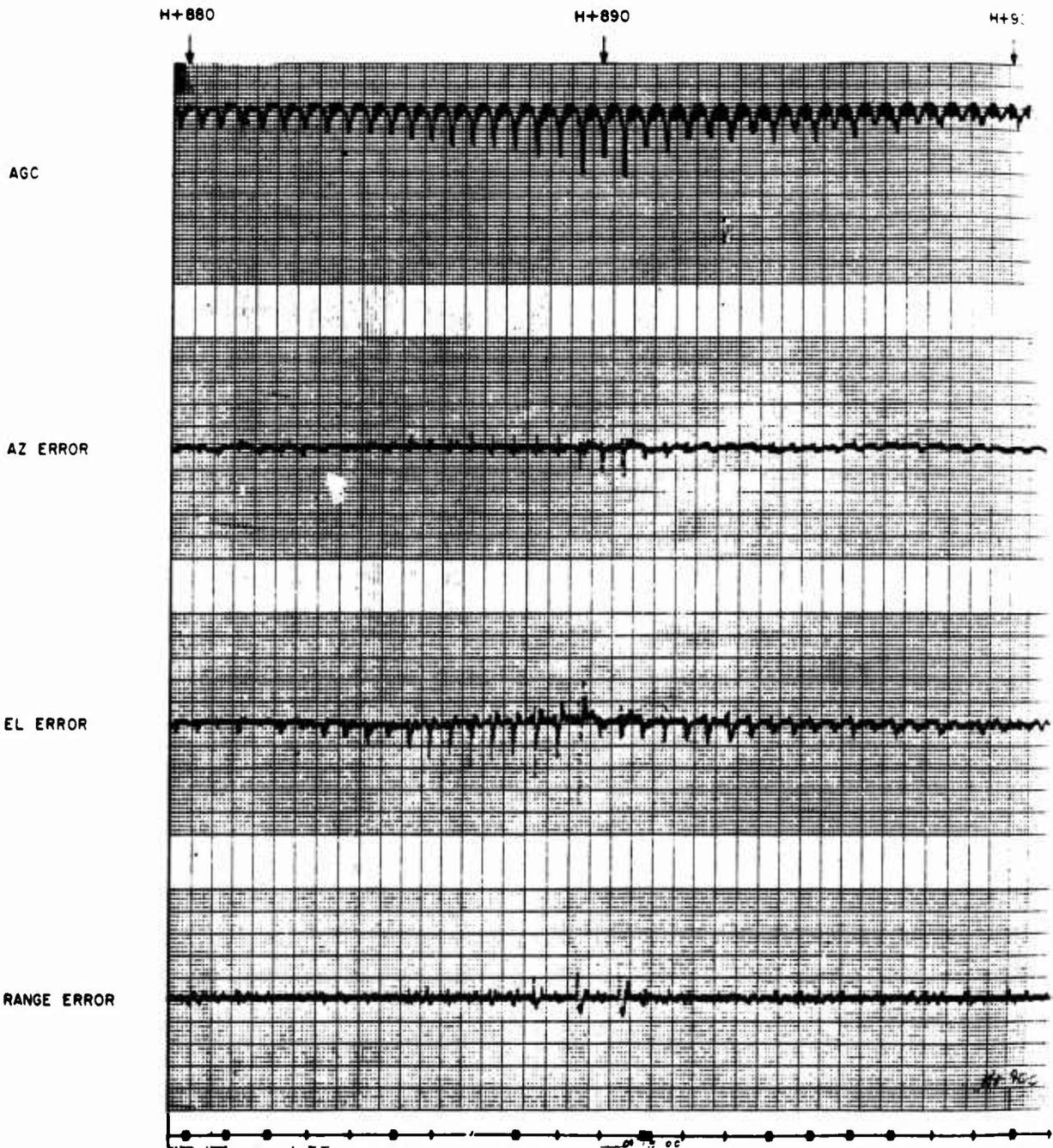


139-3

H+520

H+870



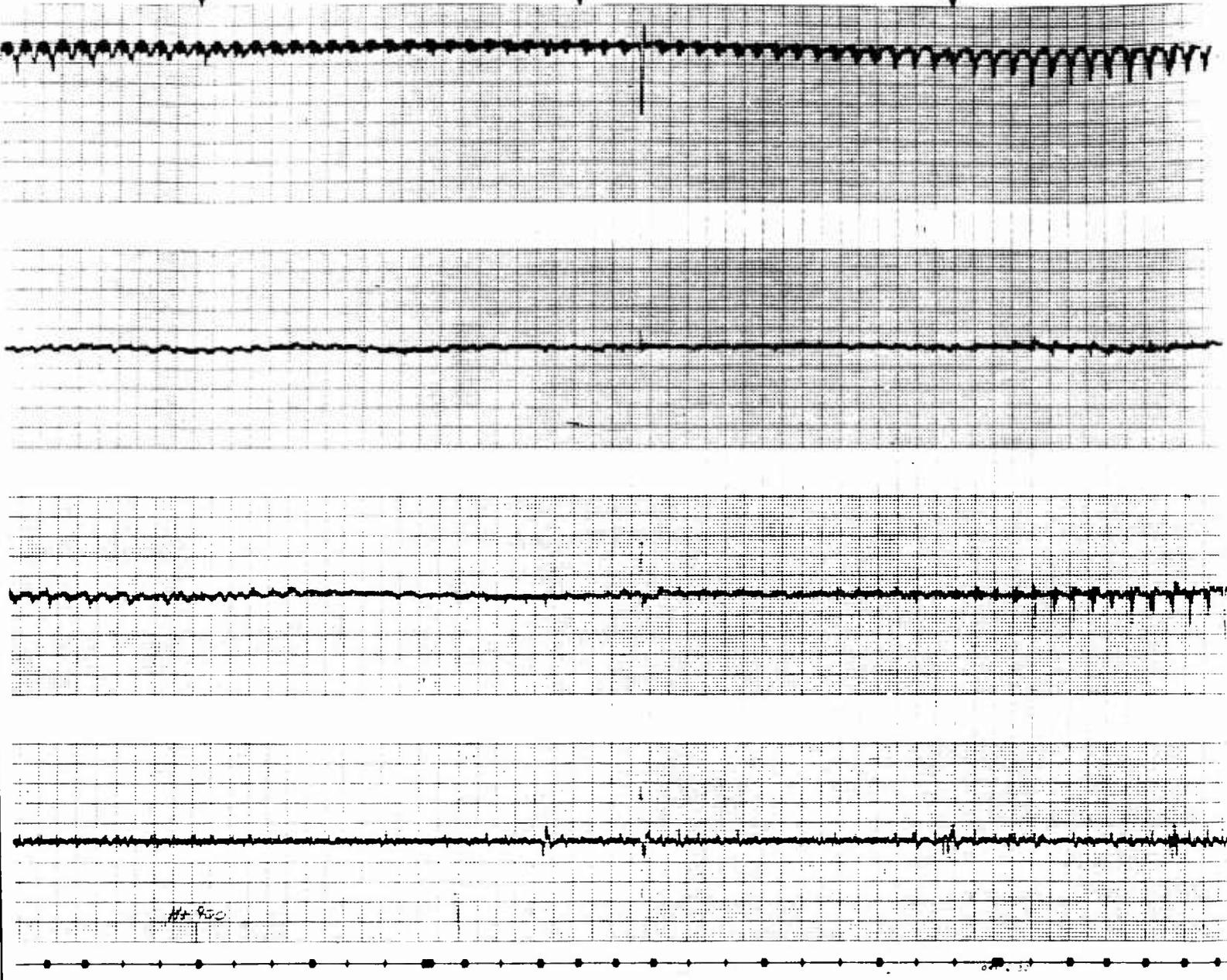


140-1

H+91

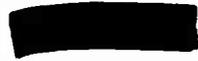
H+90

H+920



H+950

Figure B.4 Continued.



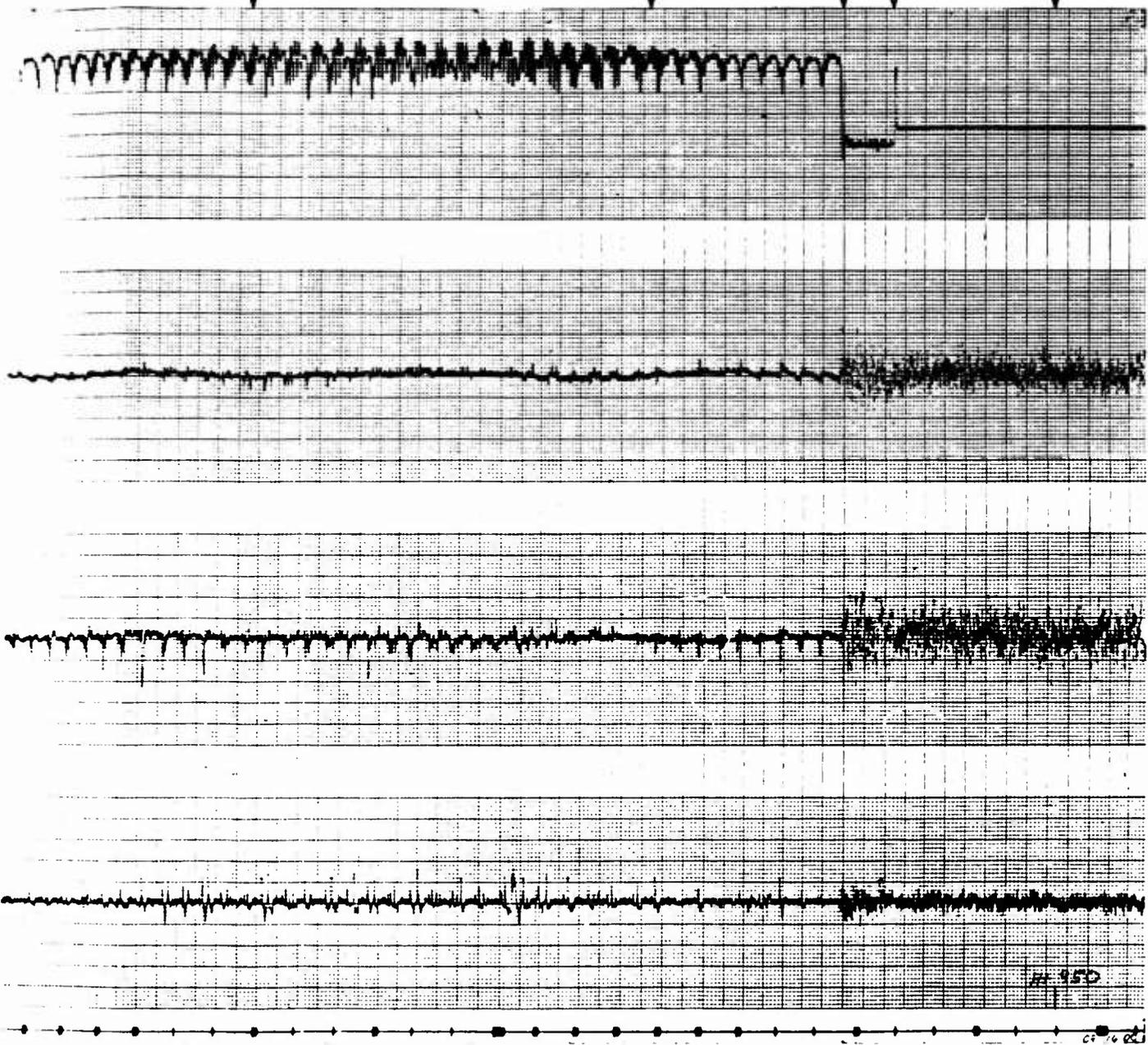
H+930

H+940

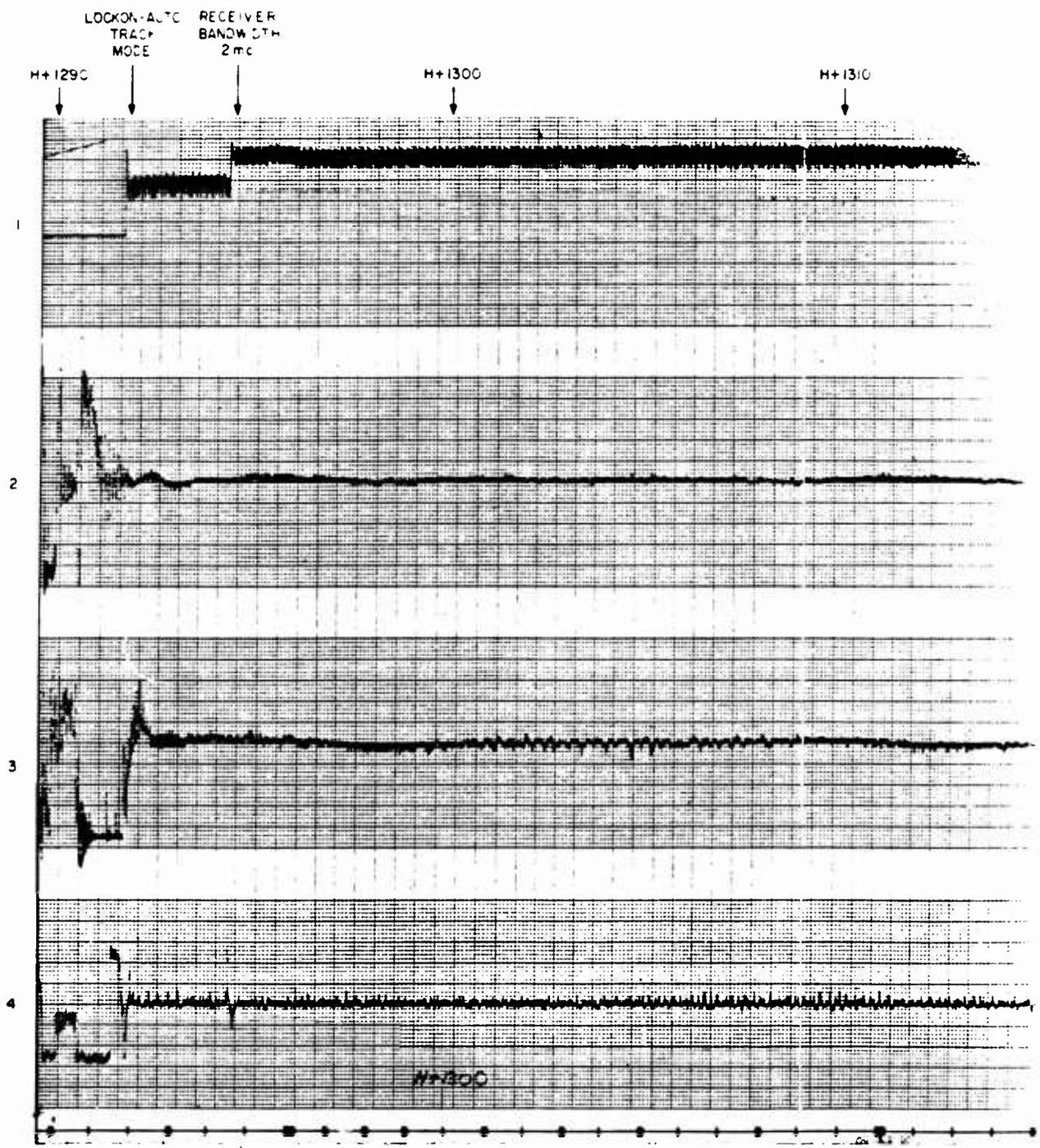
LOST TRACK

EXTERNAL DESIGNATE MODE

H+950



1403



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

141-1

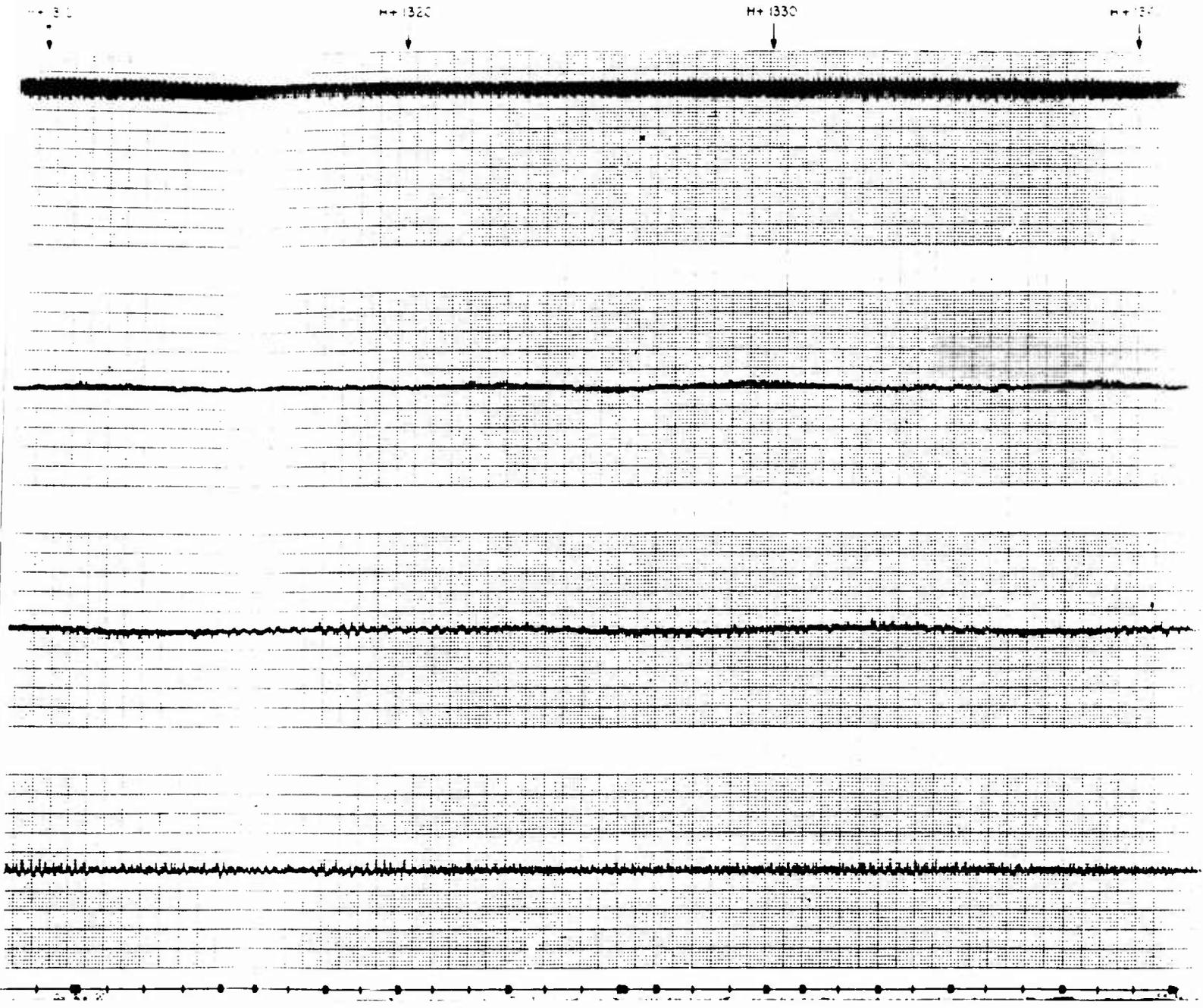


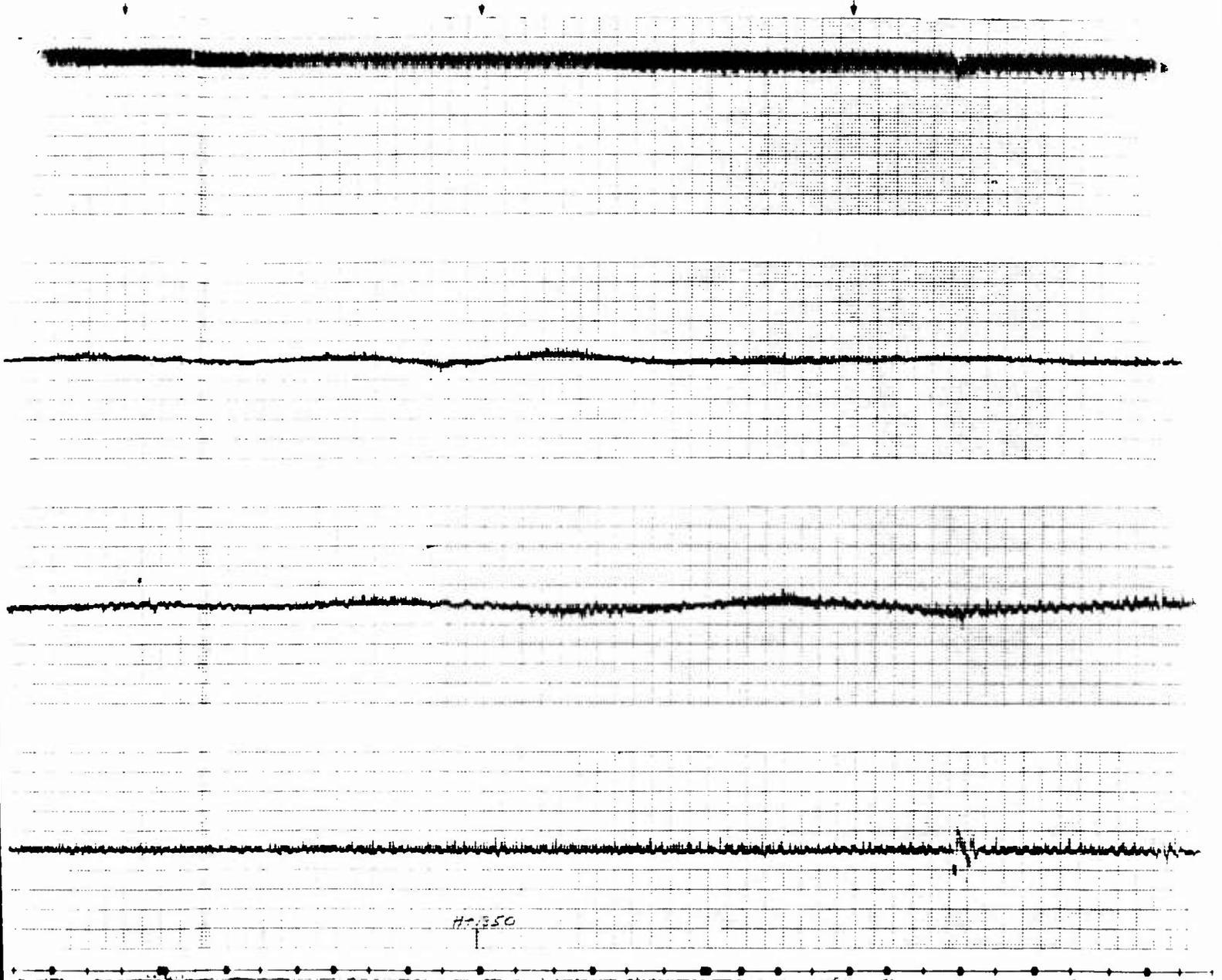
Figure B.5 Track. Probe 5.



H+340

H+350

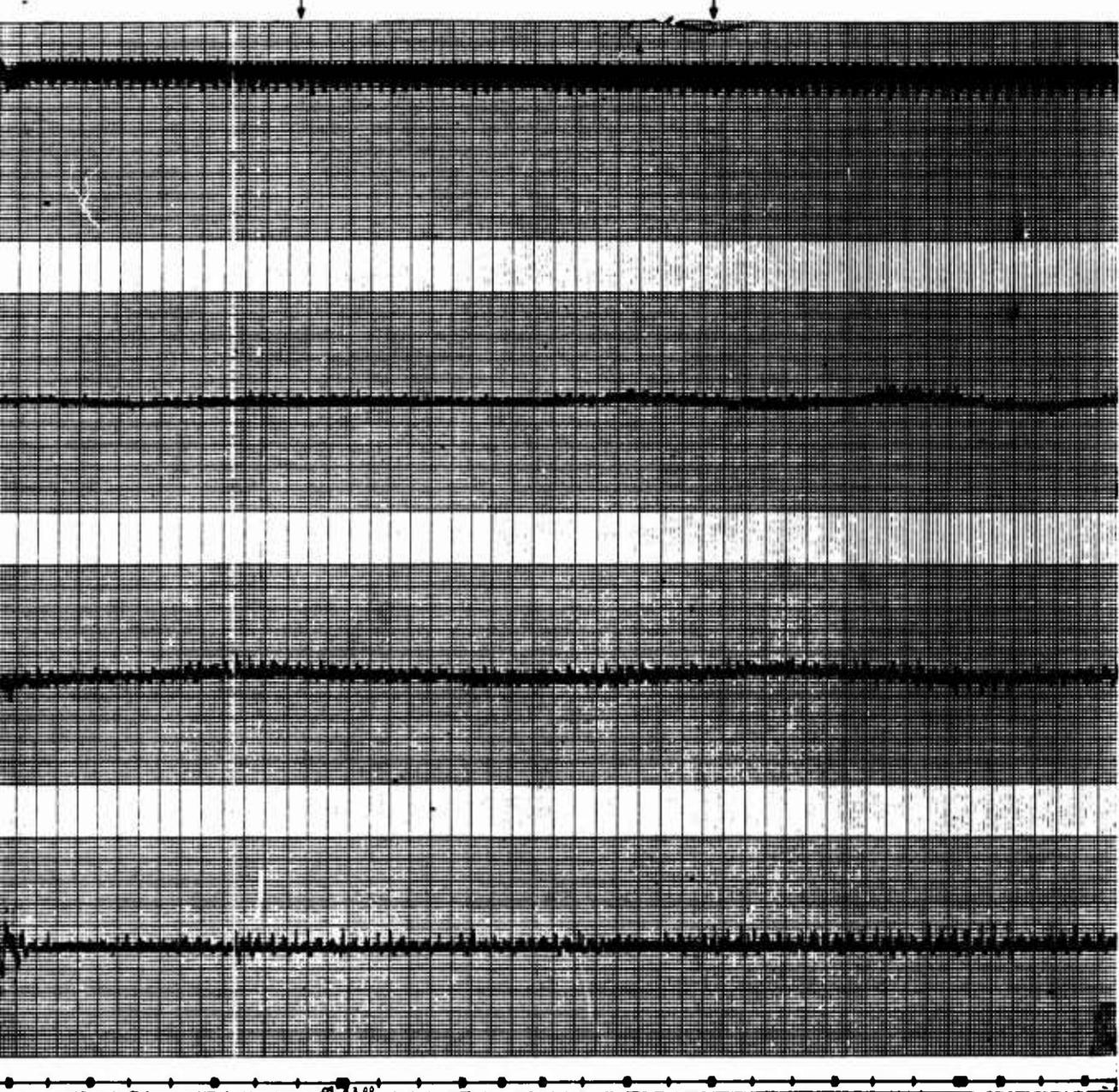
H+360



recd. Probe 5.

H+1370

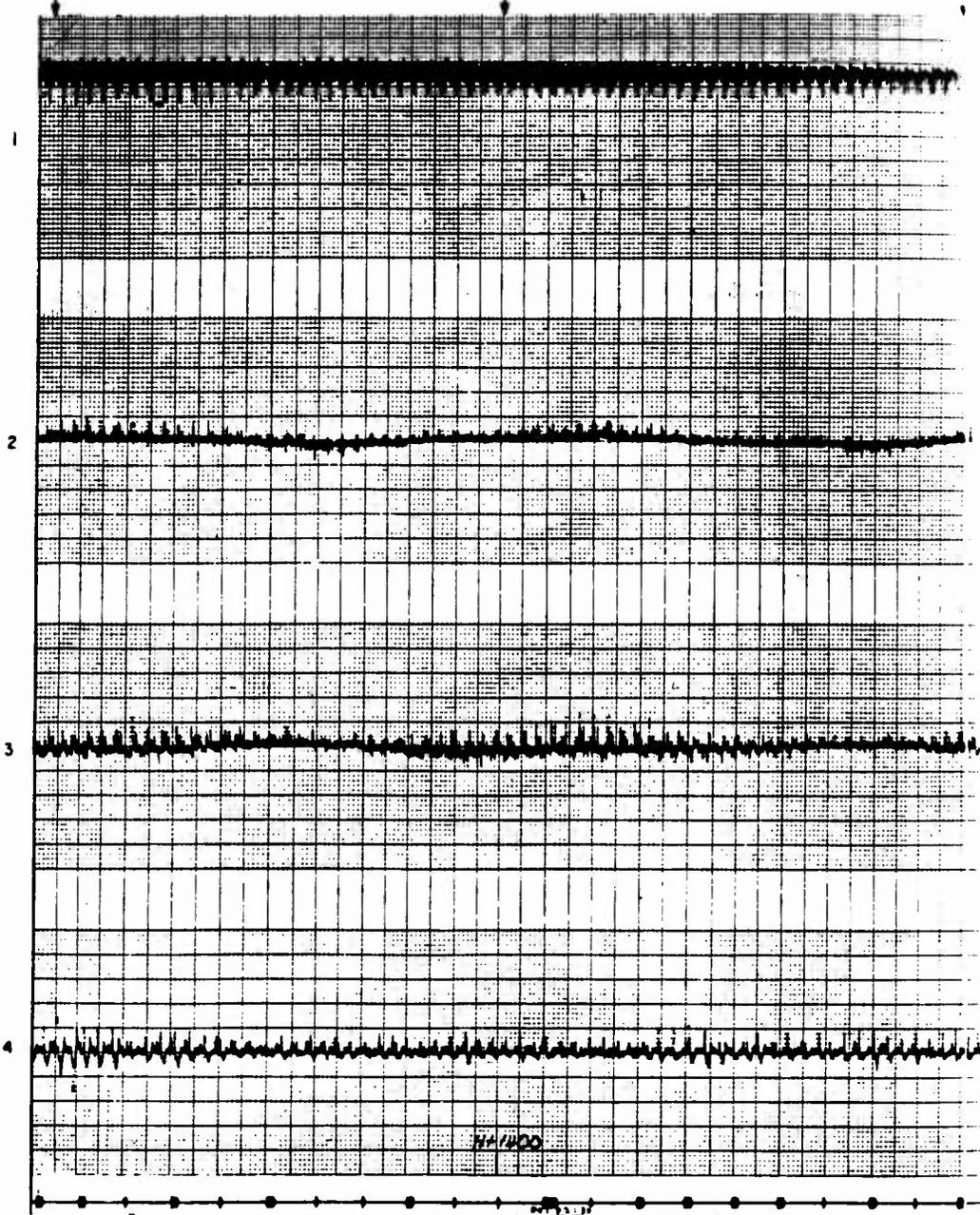
H+1380



H + 1390

H + 1400

H +



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

142-1



H + 1410

H + 1420

H + 1430

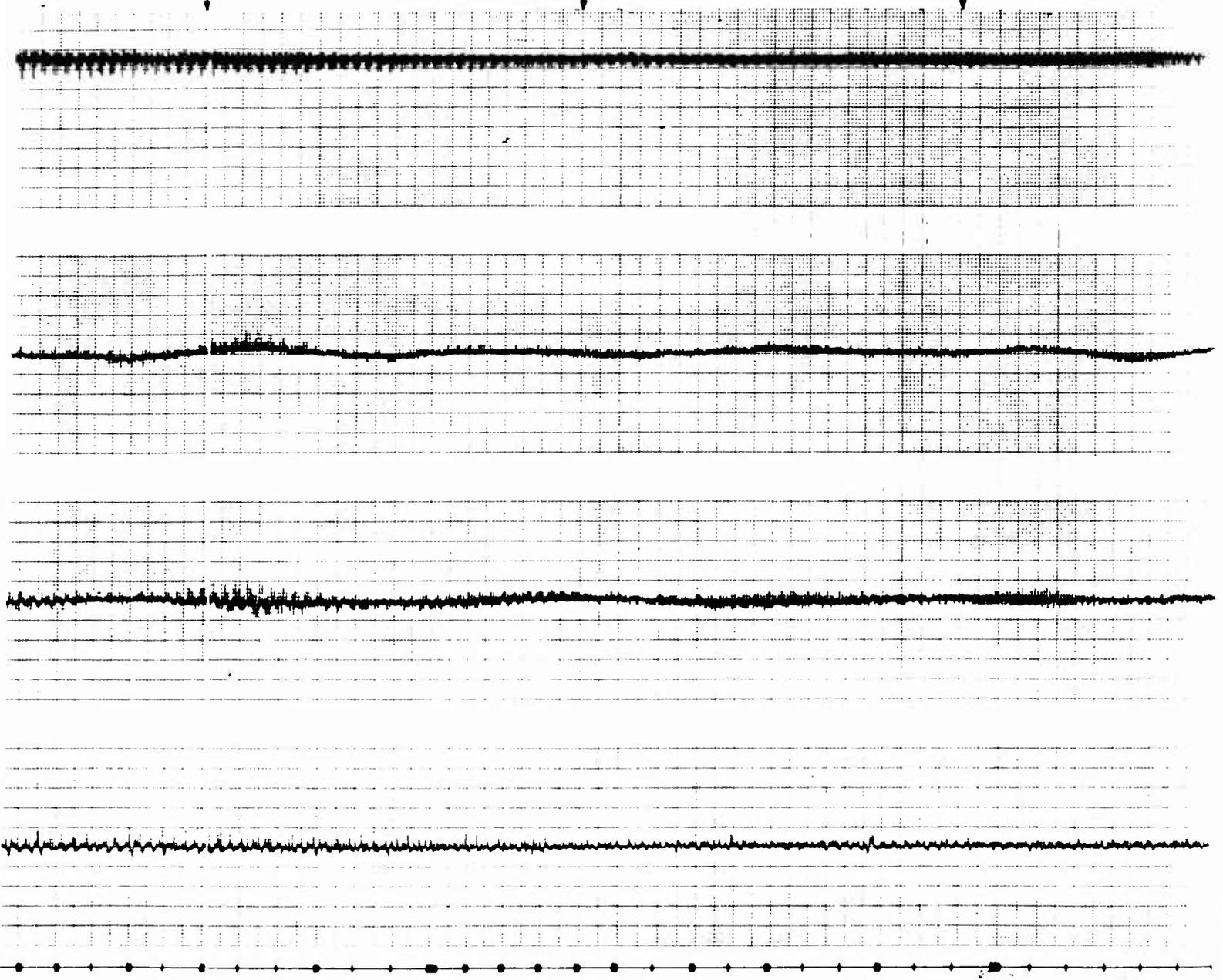


Figure B.5

142-2

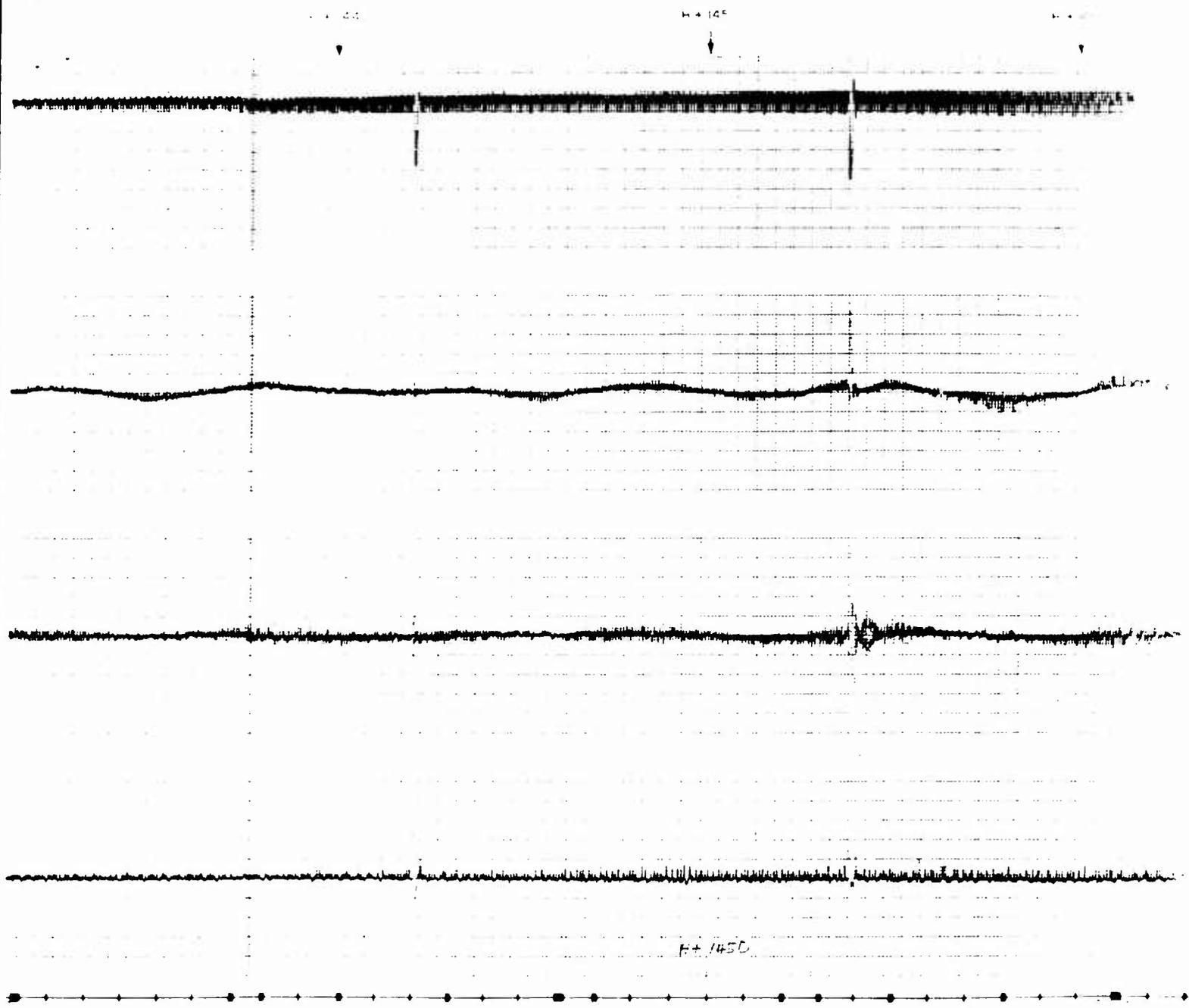


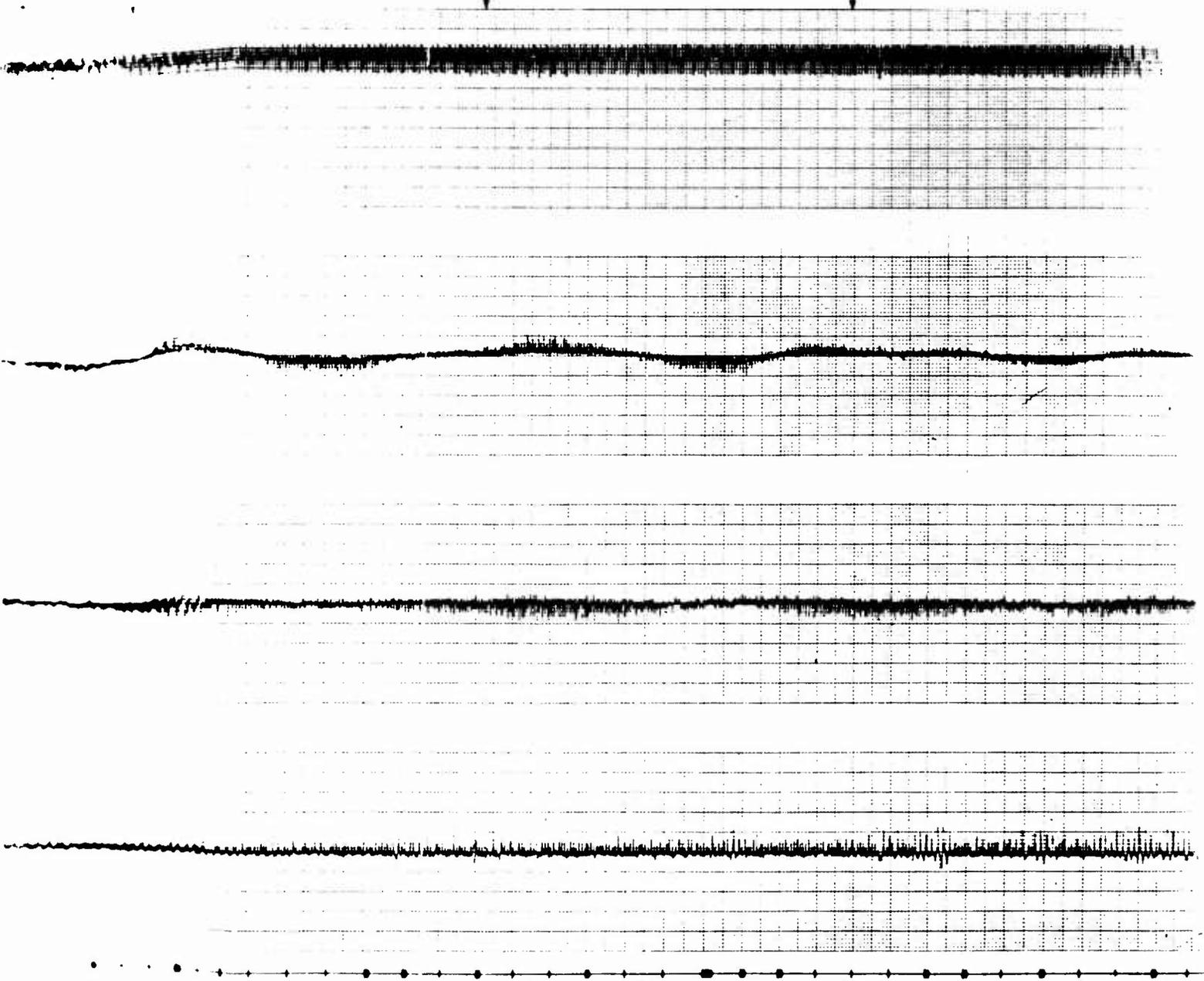
Figure B.5 - Continued.

142-3



H + 1424

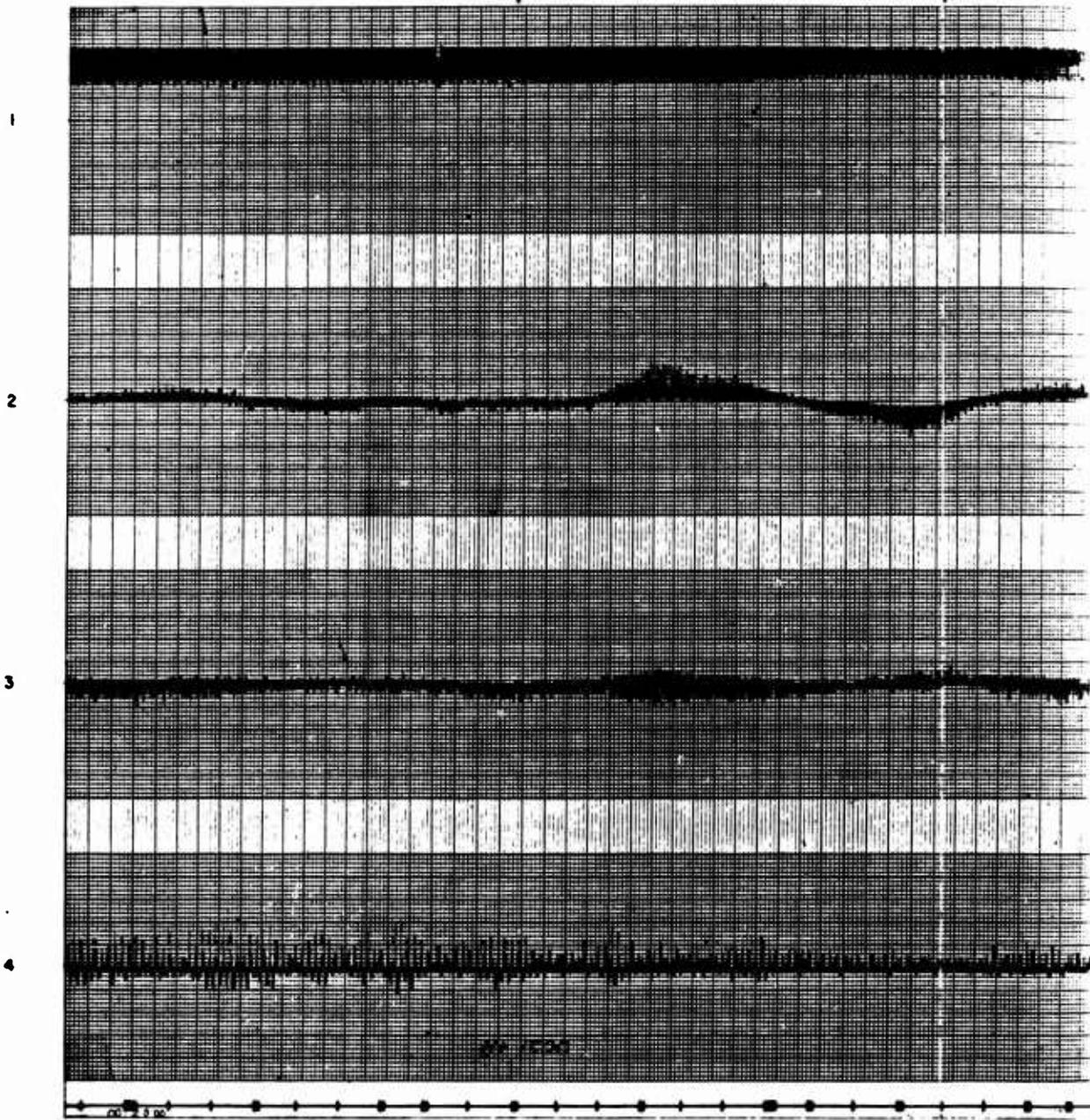
H + 1450



1424

H+1500

H+1510



- 1- AGC
- 2- AZ ERROR
- 3- EL ERROR
- 4- RANGE ERROR

143-1

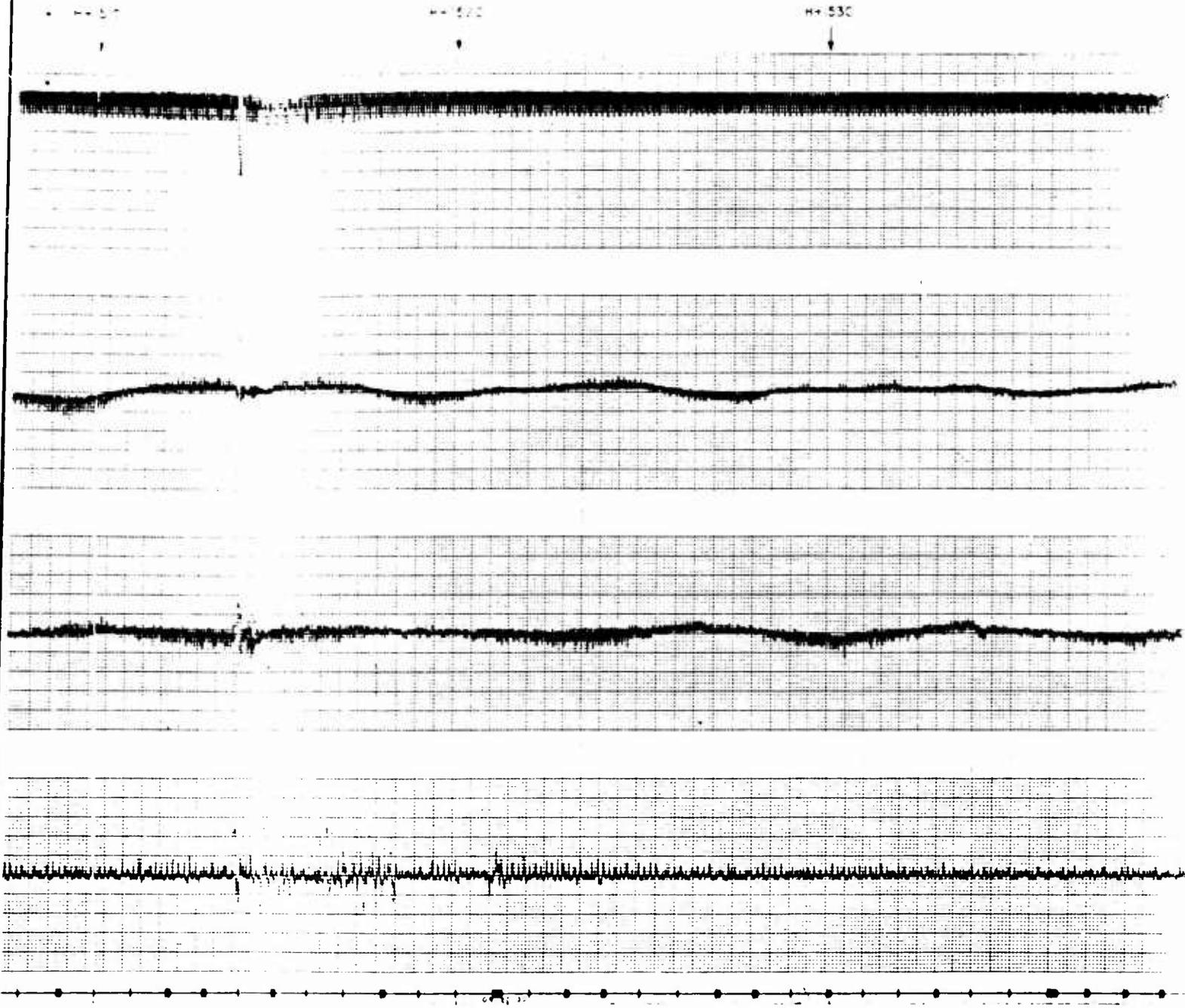
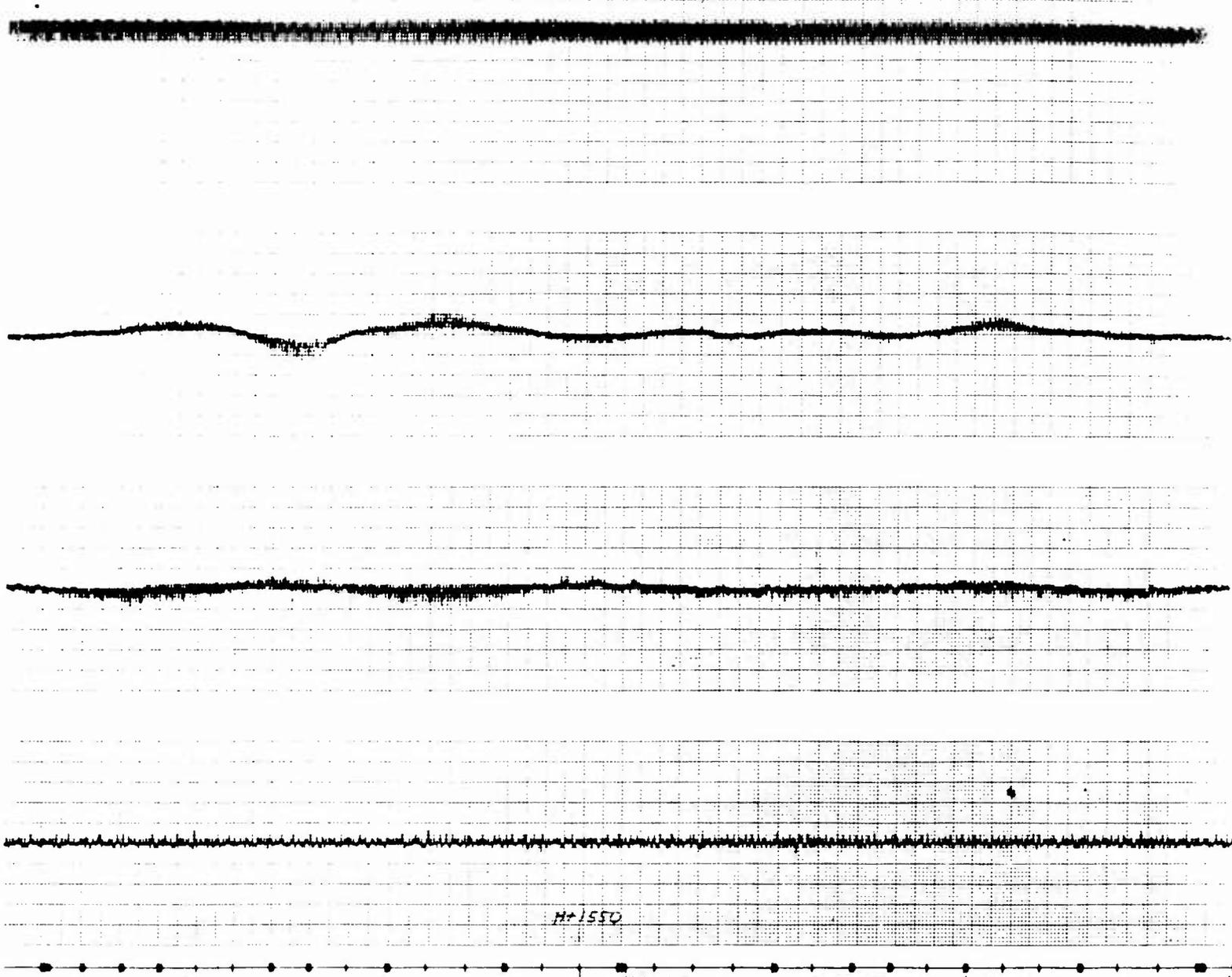


Figure B.5 Continued.



H+ 560

H+ 560



H+ 550

(Continued)

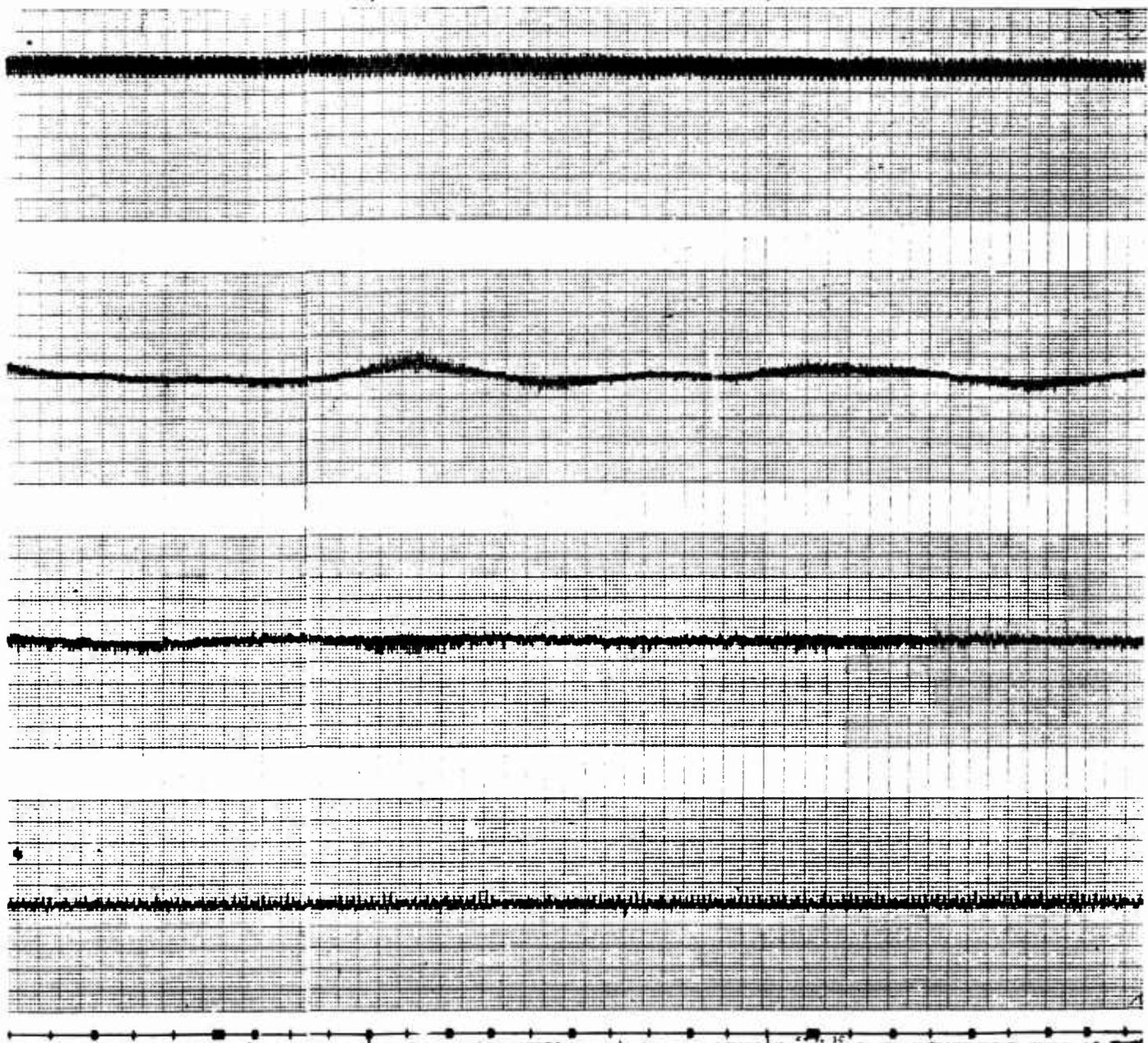
3 .

RET

143-3

H+1570

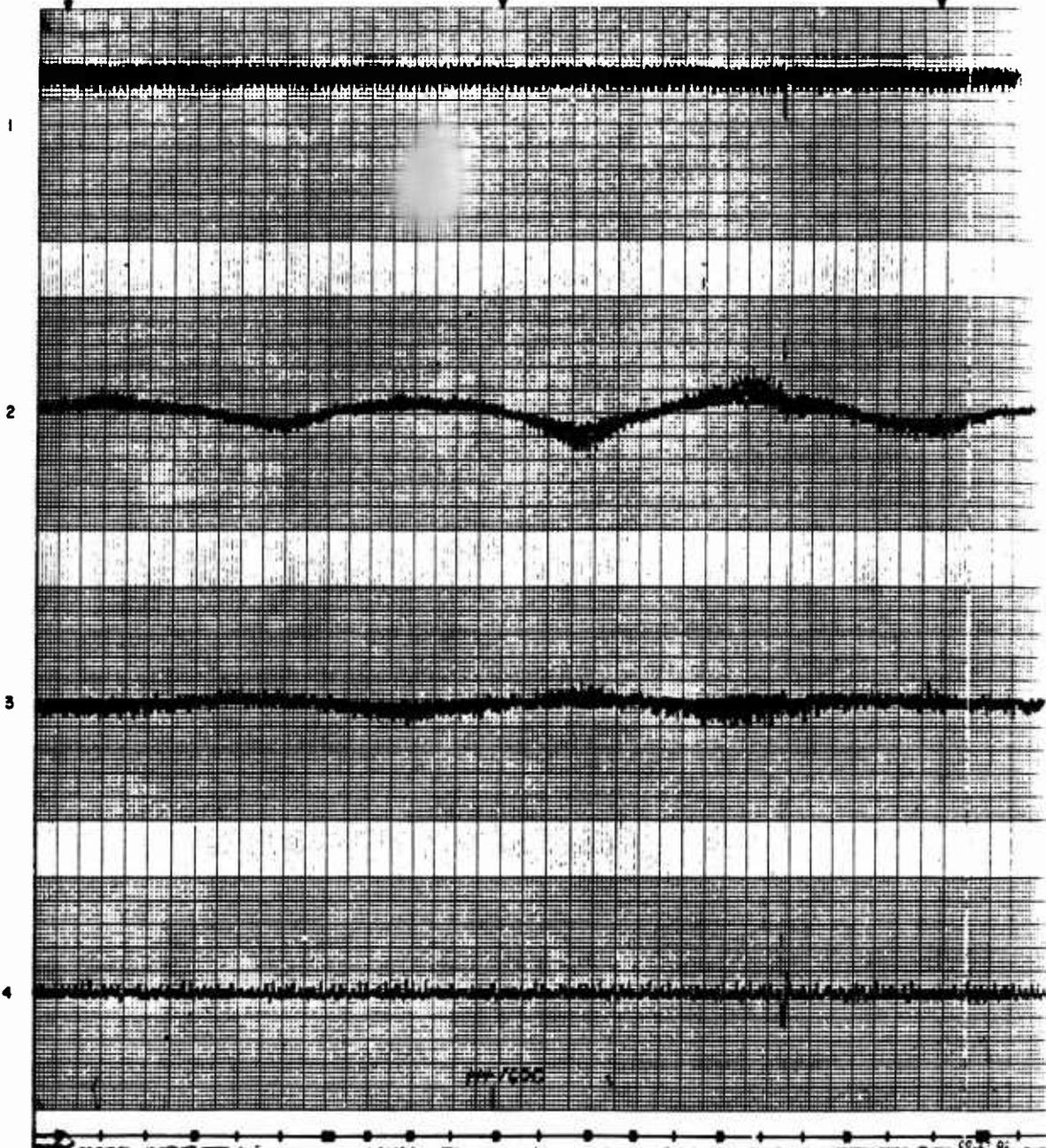
H+1580



H+1590

H+1600

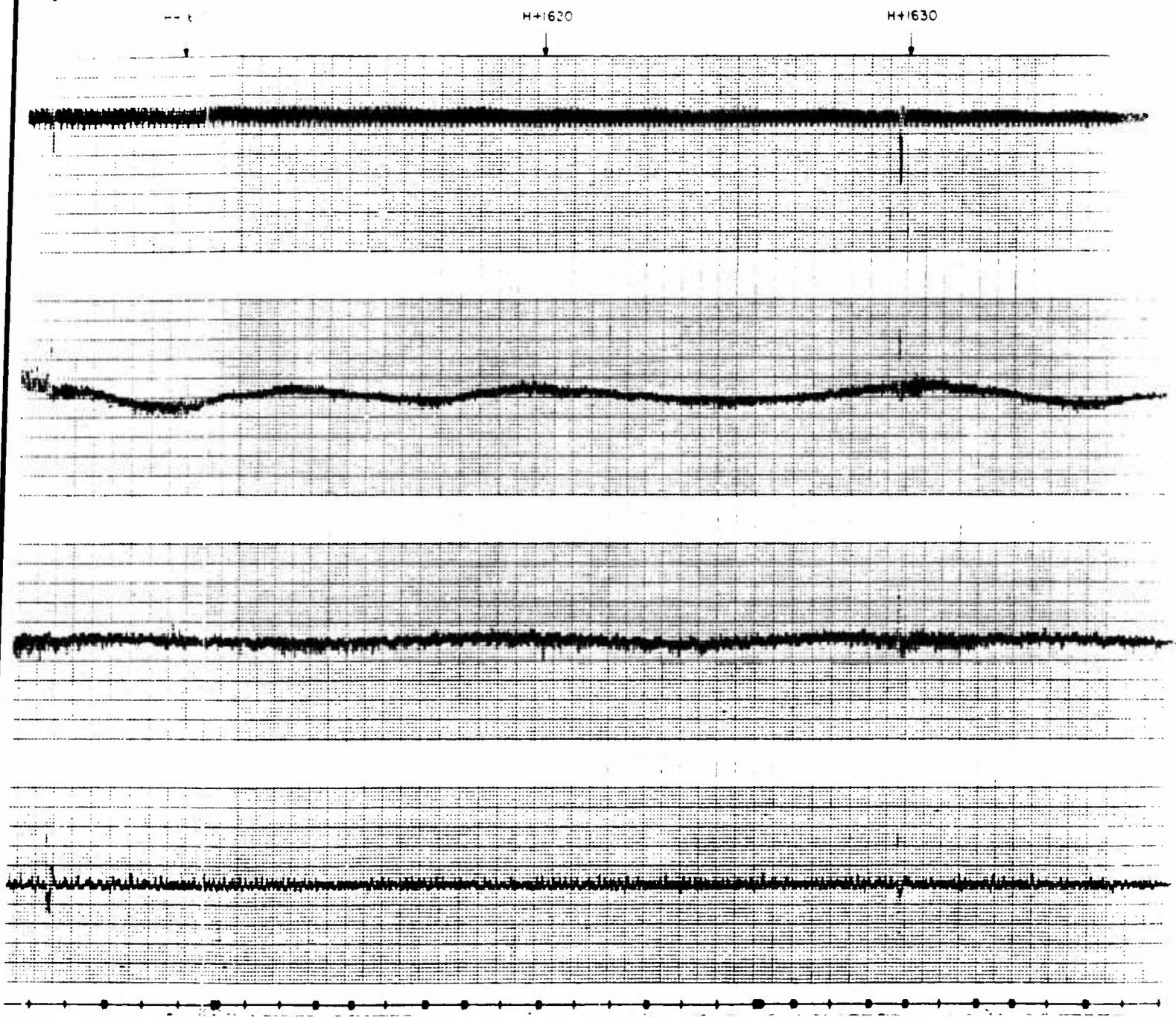
H+1610



- 1- AGC
- 2- AZ ERROR
- 3- EL ERROR
- 4- RANGE ERROR

144-1





H+1620

H+1630

Figure B.5 Conti

M+650

M+650

M+650

!

!

!



M+650



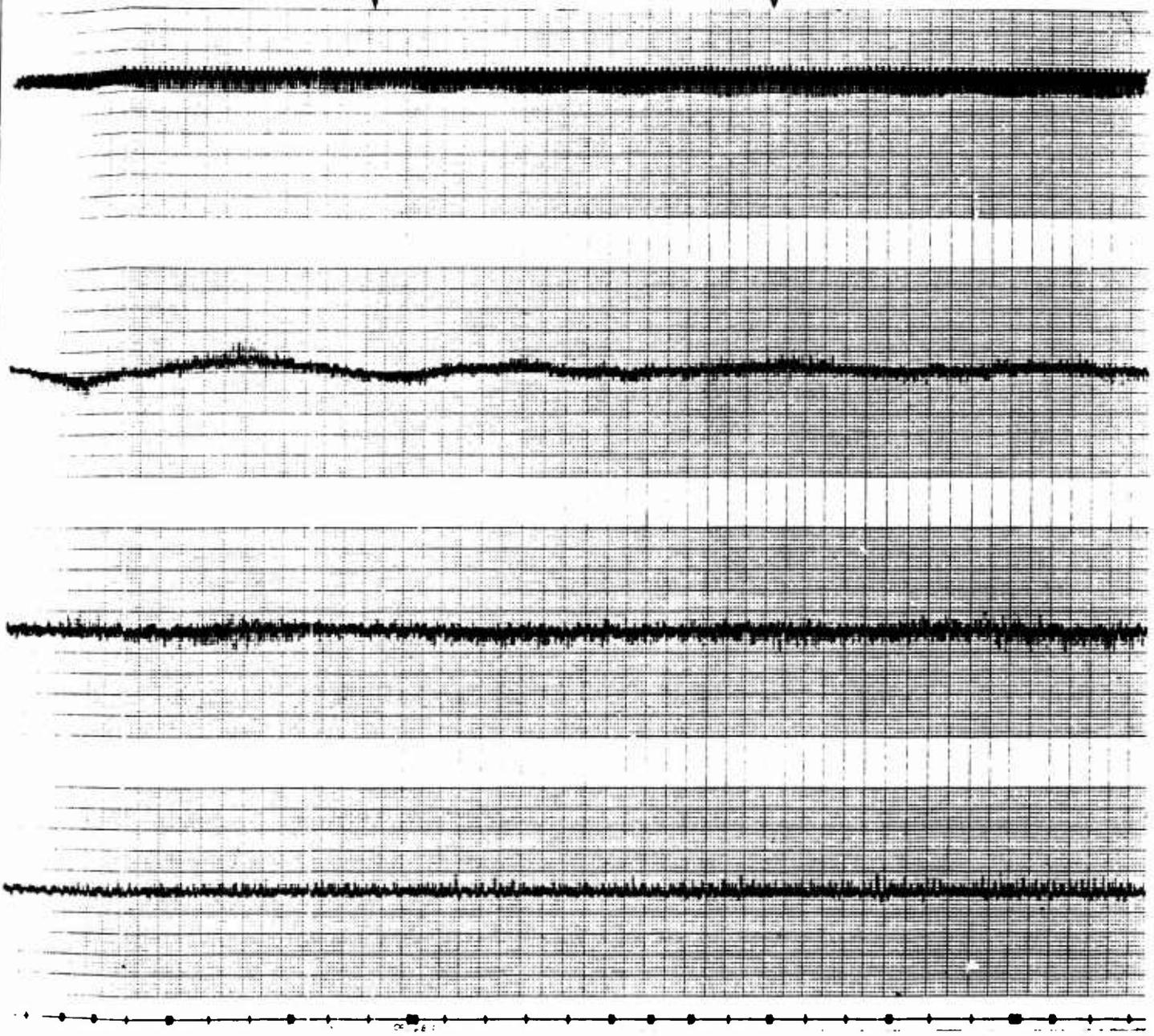
Figure B.5 Continue

14:3



H+1670

H+1680



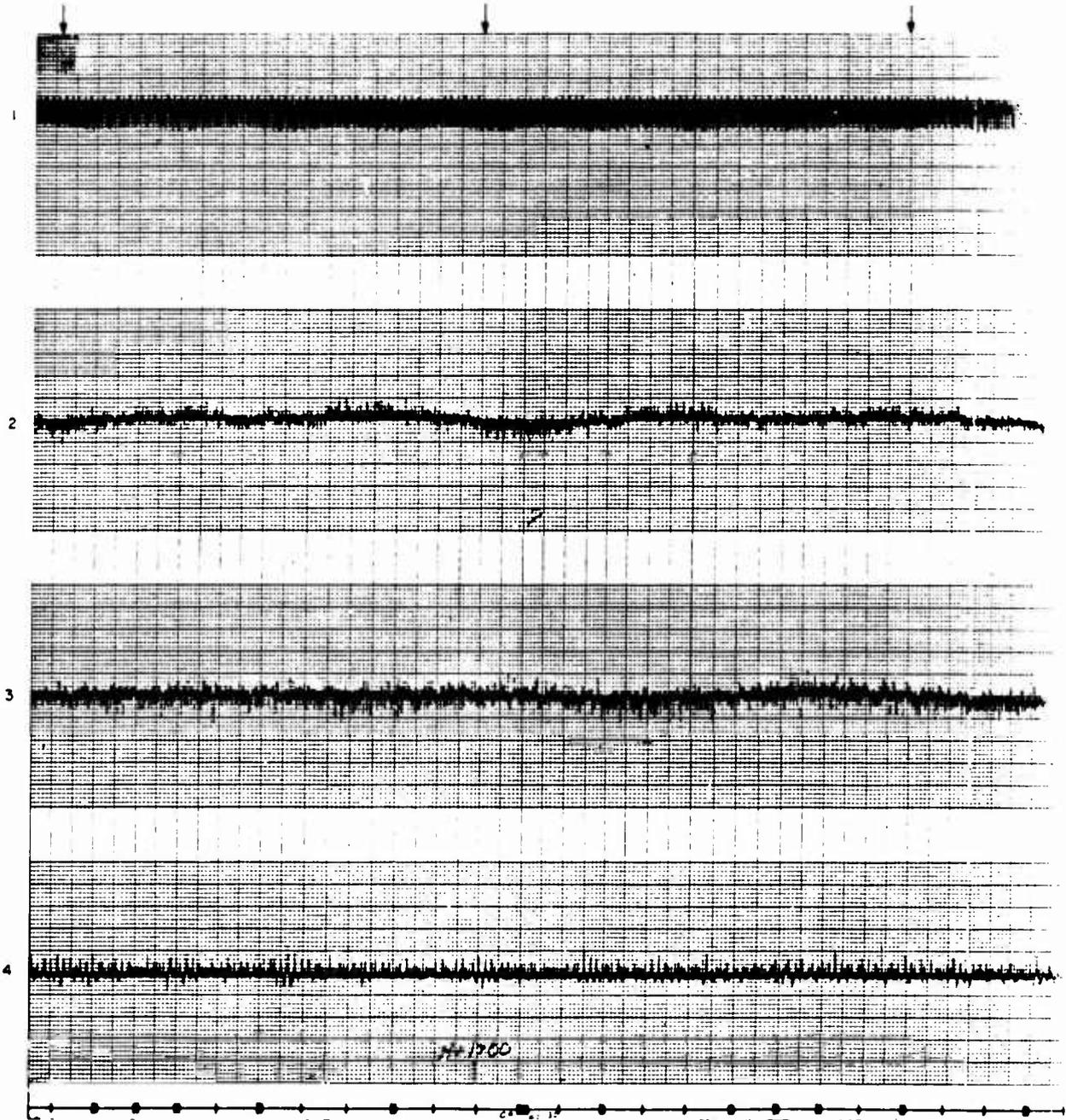
144-4



H+1690

H+1700

H+1710



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

145-1

H+720

H+1730

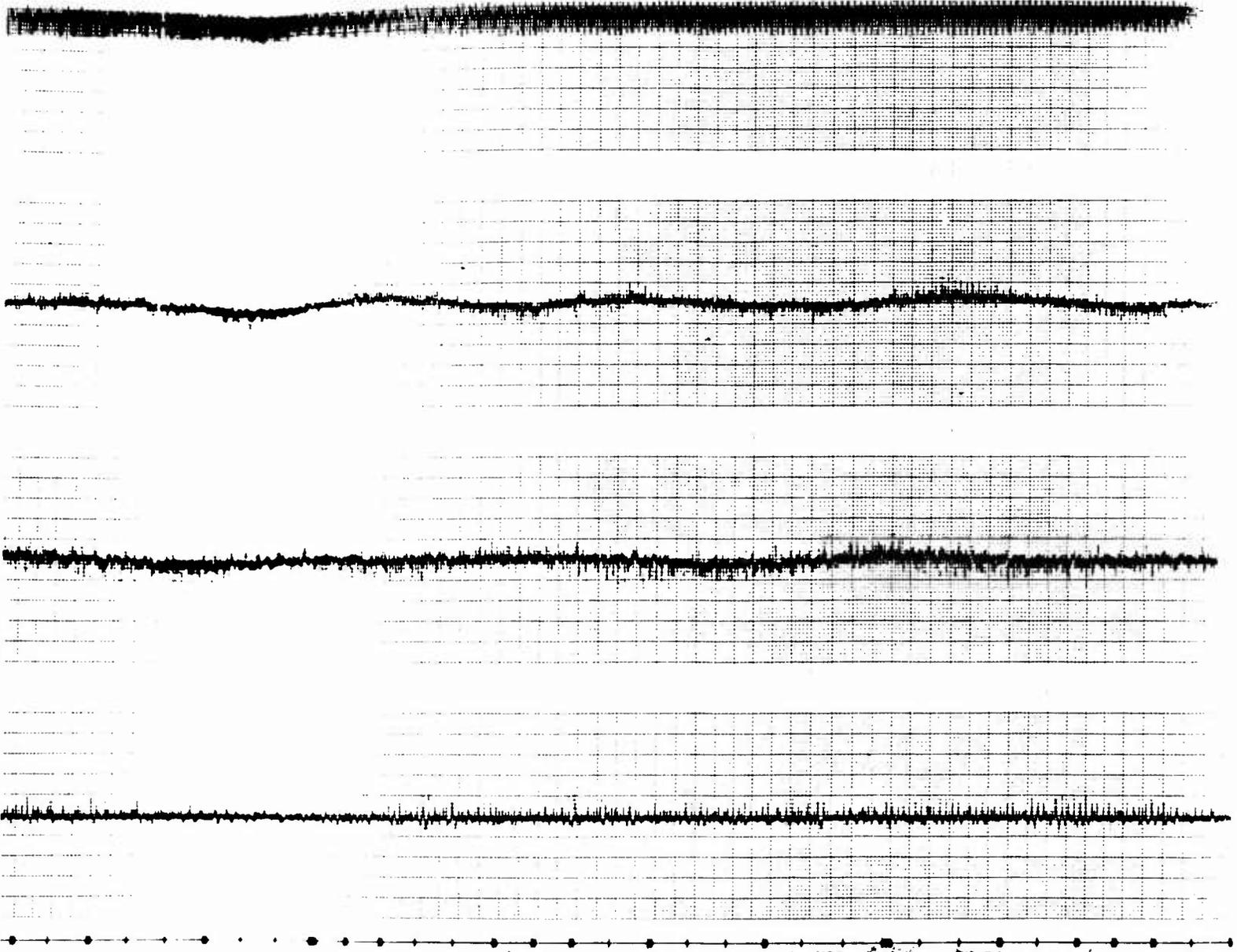


Figure B.5 Continued.

145 - 2

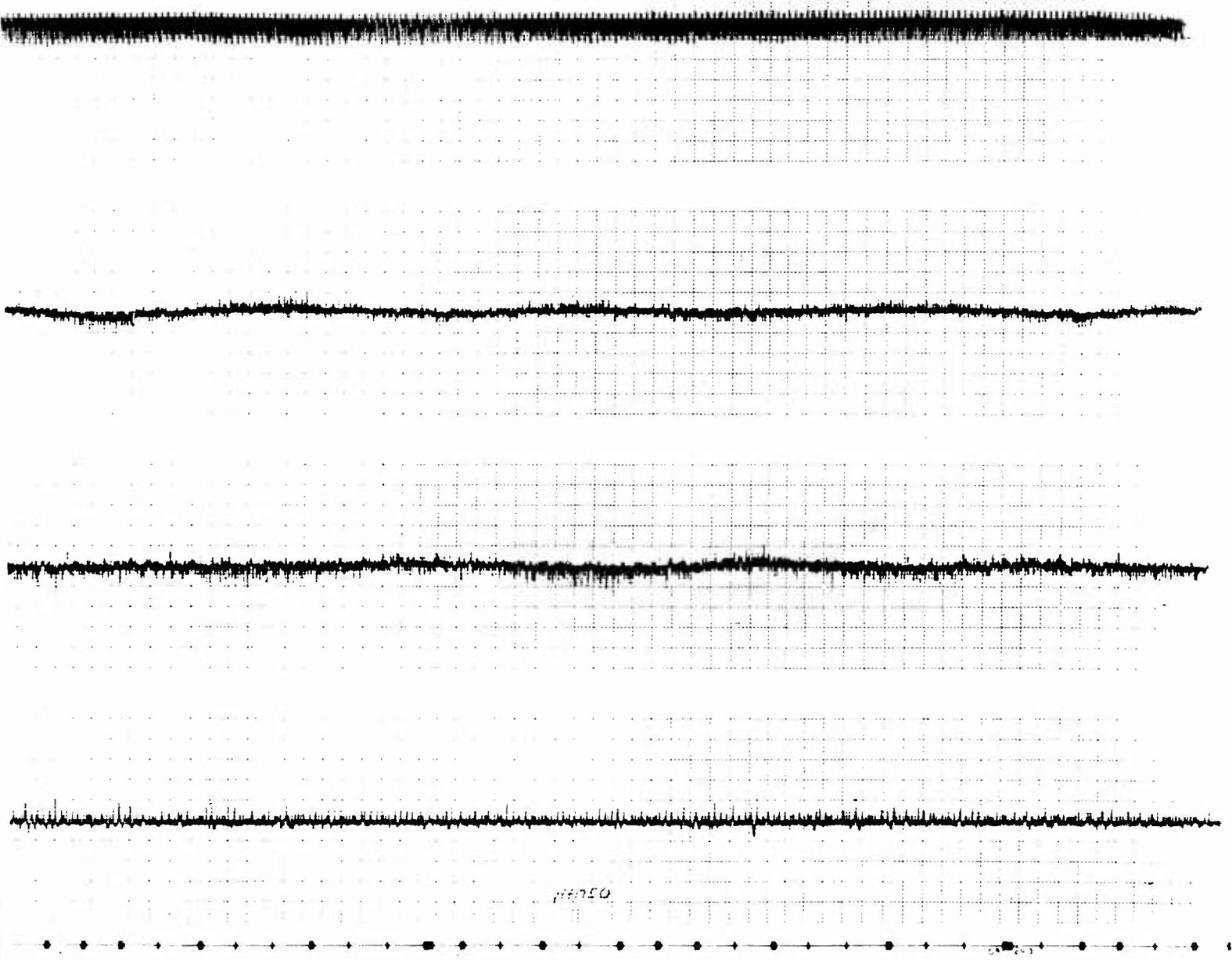


1001 - 2

H+1760

H+1760

H+1760

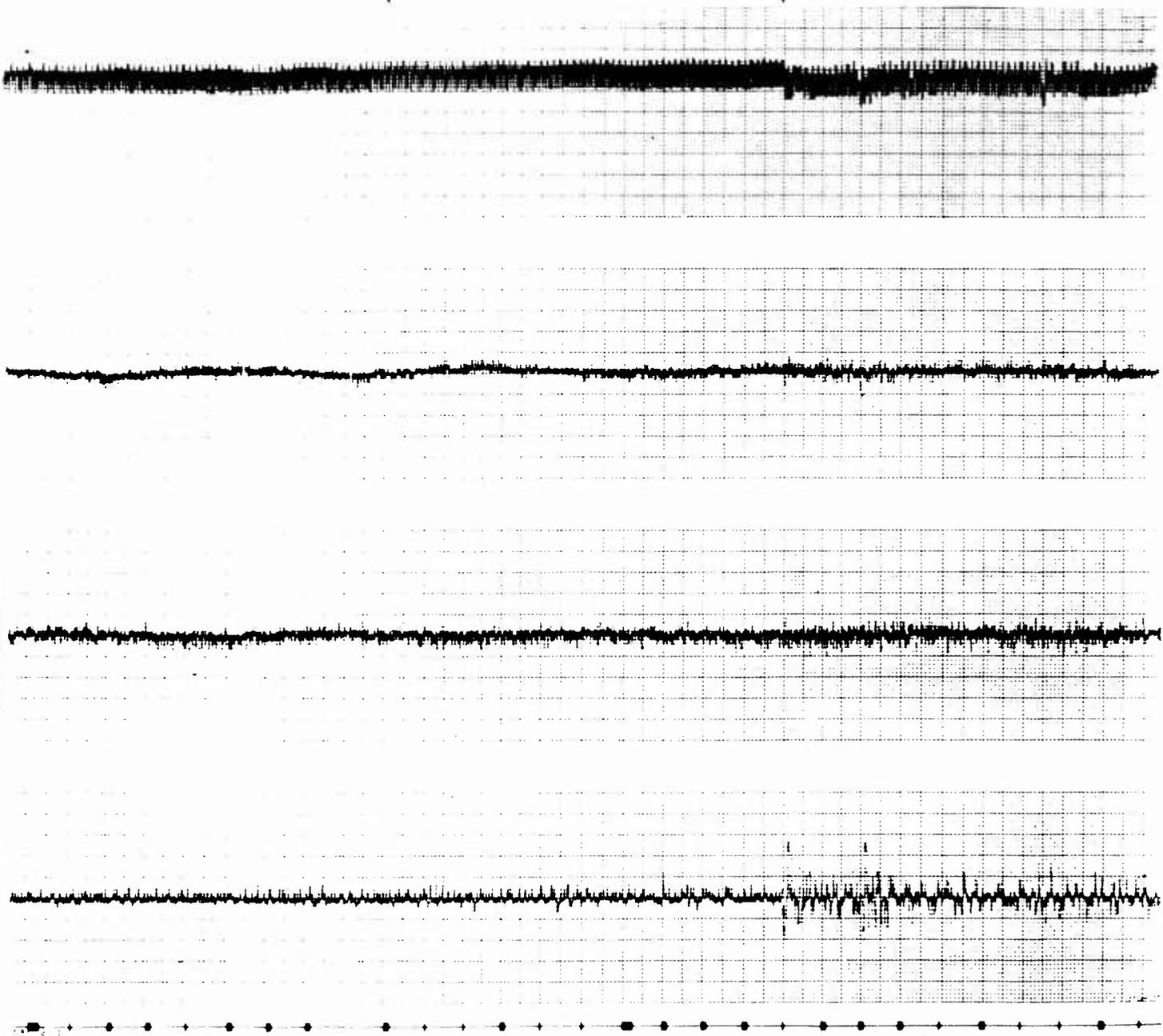


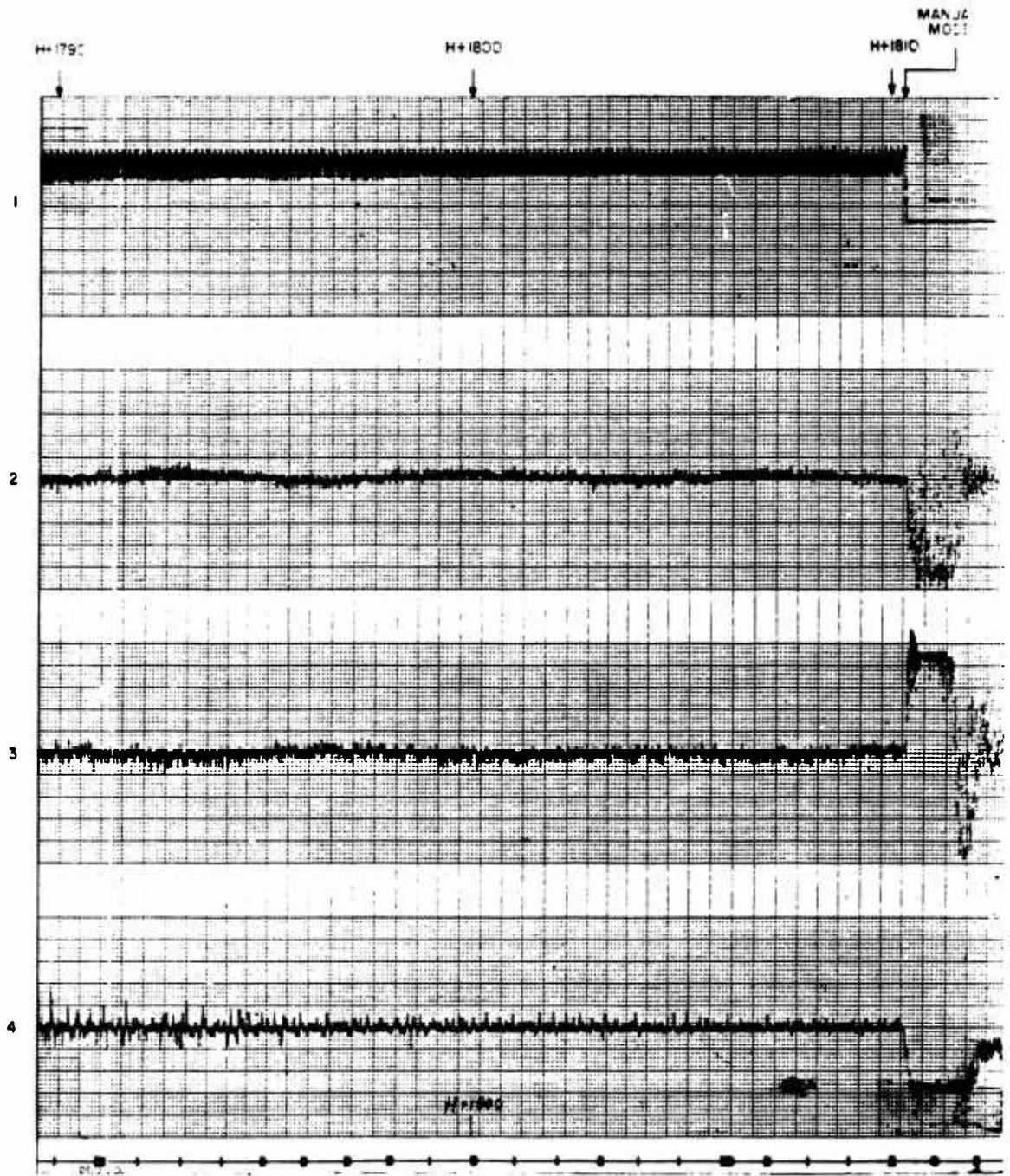
Continued

5
RET

3

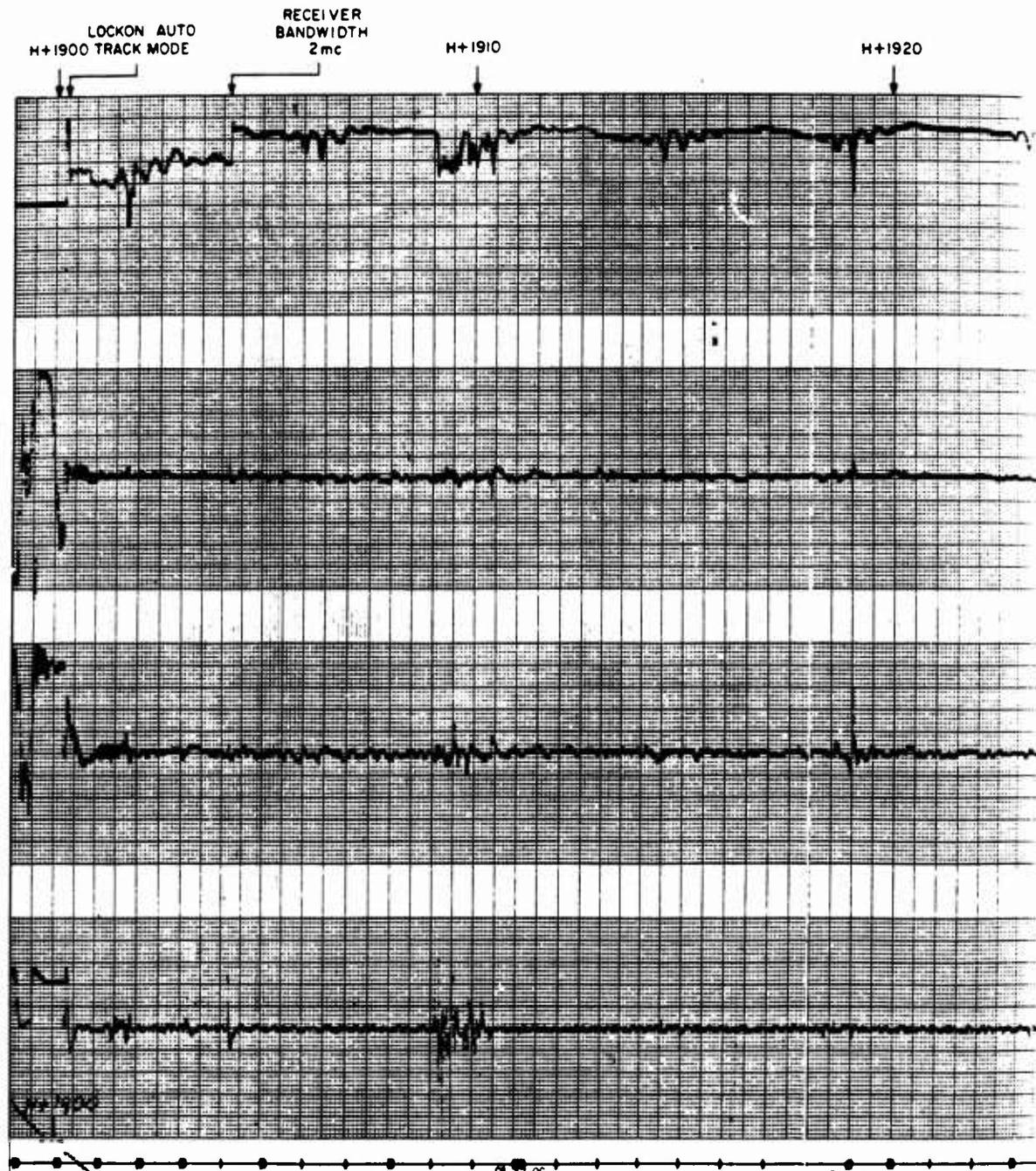
H-780





- 1- AGC
- 2- AZ ERROR
- 3- EL ERROR
- 4- RANGE ERROR

Figure B.5 Continued.



- 1-AGC
- 2-AZ ERROR
- 3-EL ERROR
- 4-RANGE ERROR

147-1



H+ 930

H+ 930

H+ 940



Figure B.6 Trac



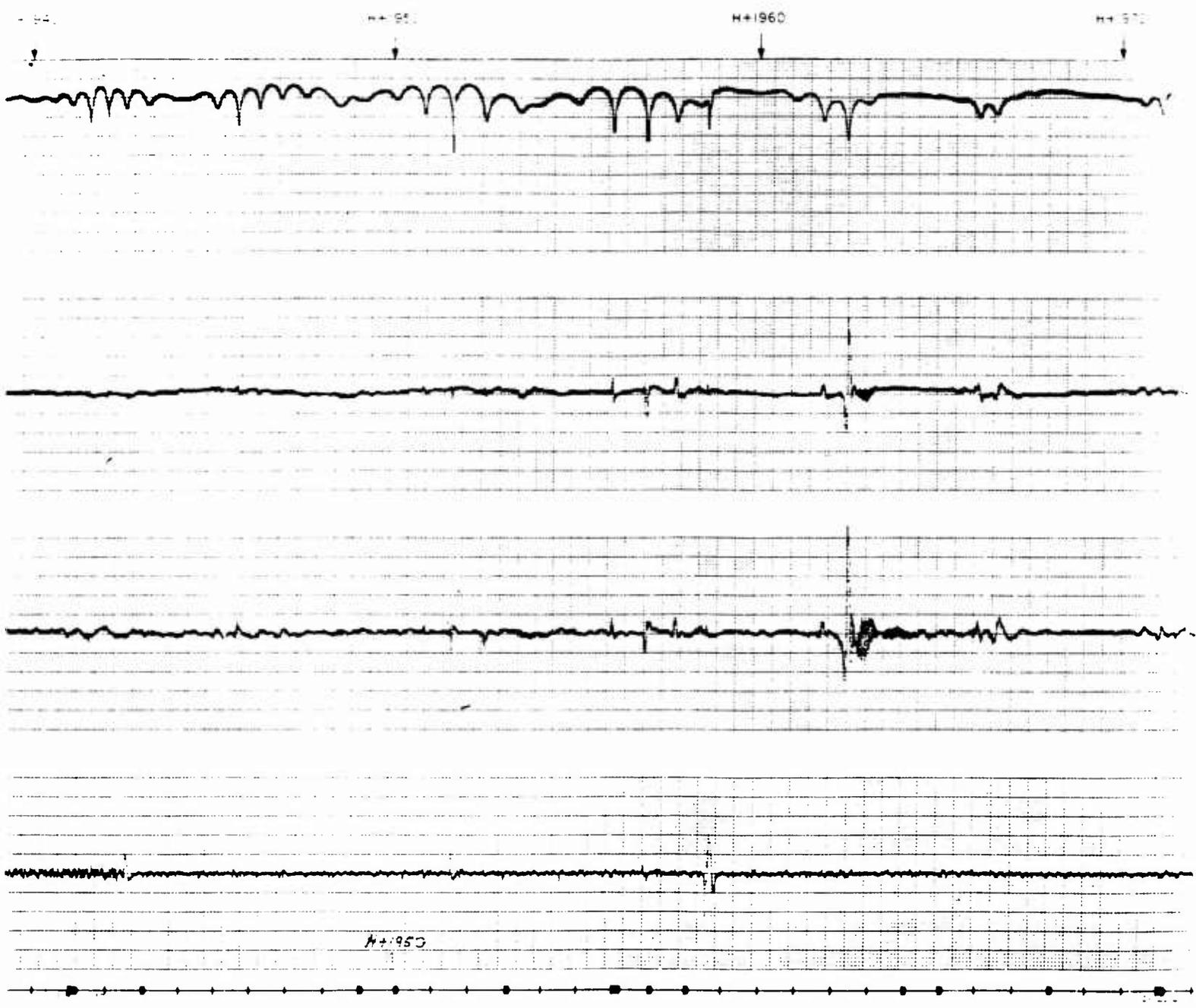
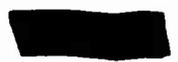
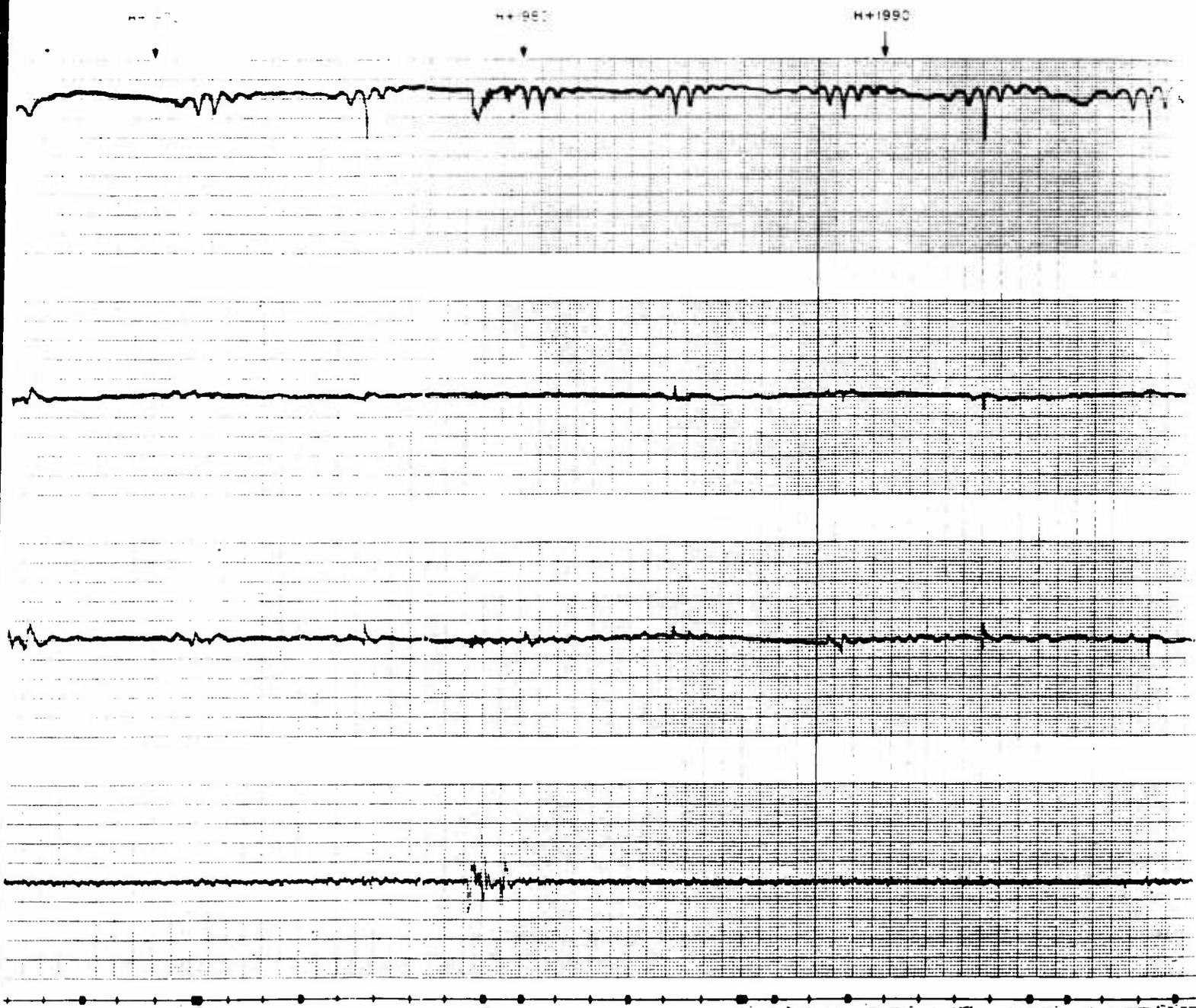


Figure B.6 Track. Probe 6.

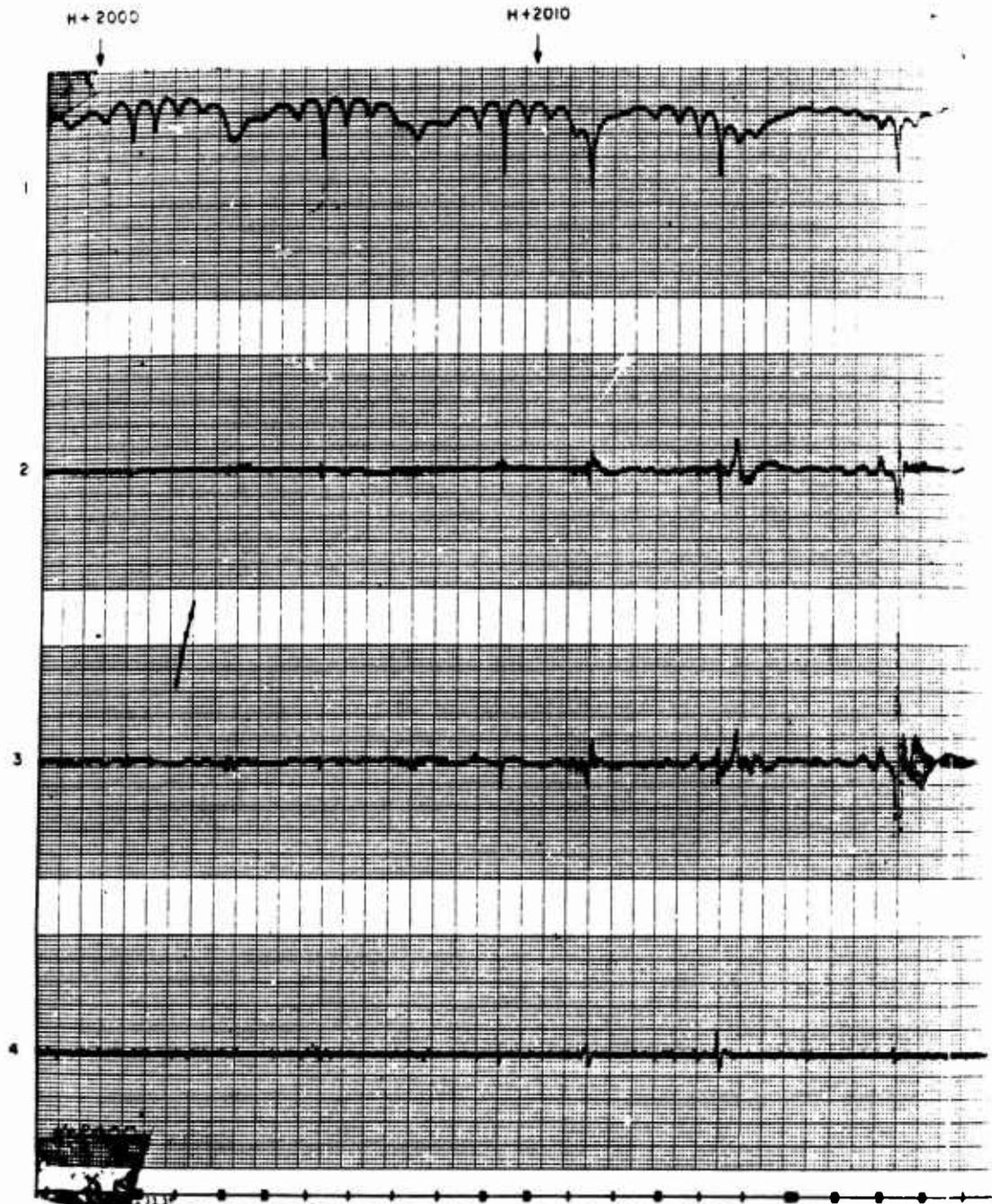
147-3





147-4





1 - AGC
2 - AZ ERROR
3 - EI. ERROR
4 - RANGE ERROR

148-1

H - 200

H - 2035

H - 2040



Figure B.6 Cont.



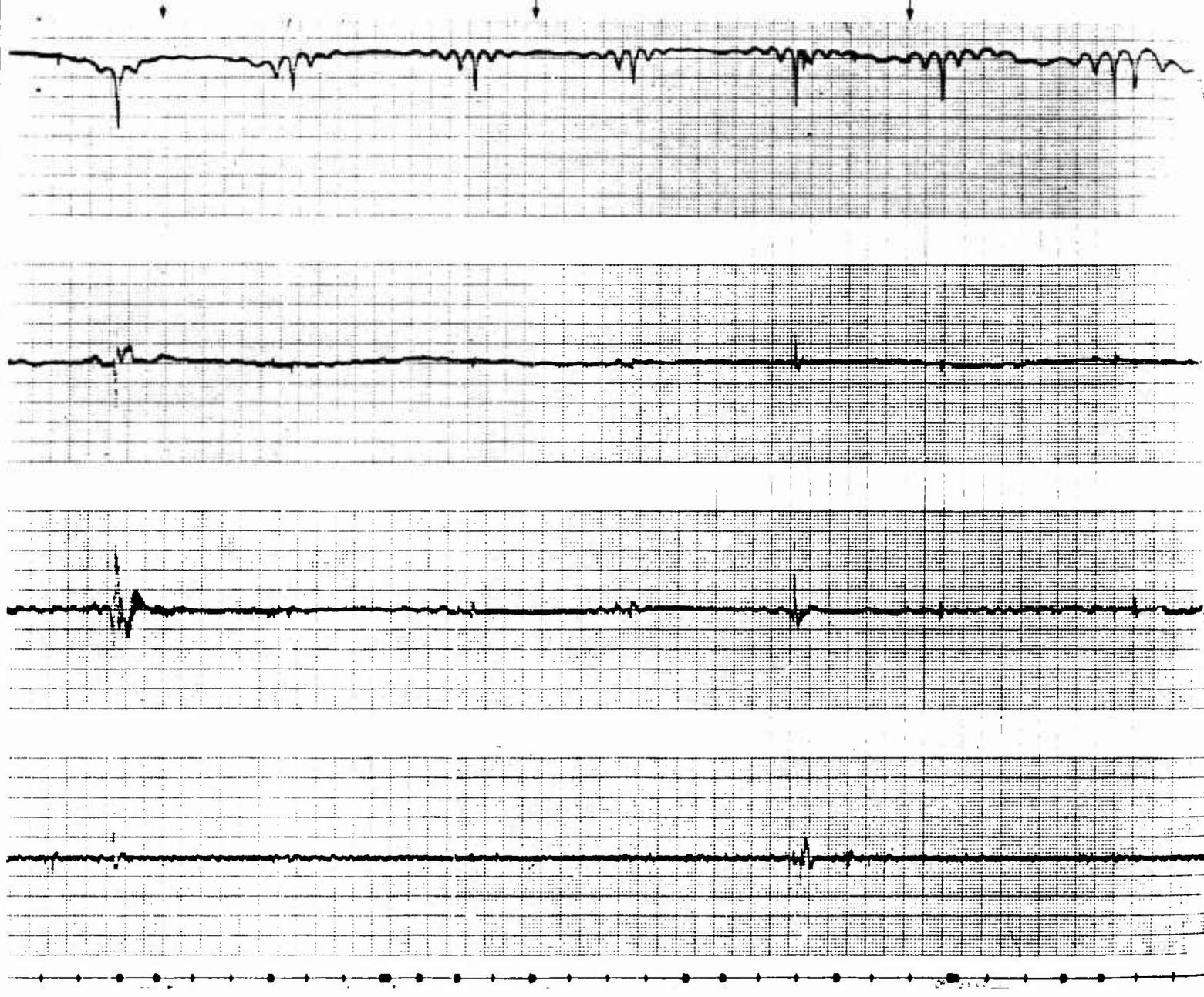


Figure B.6 Continued.

H + 207

H + 2080

H + 2090



148-4



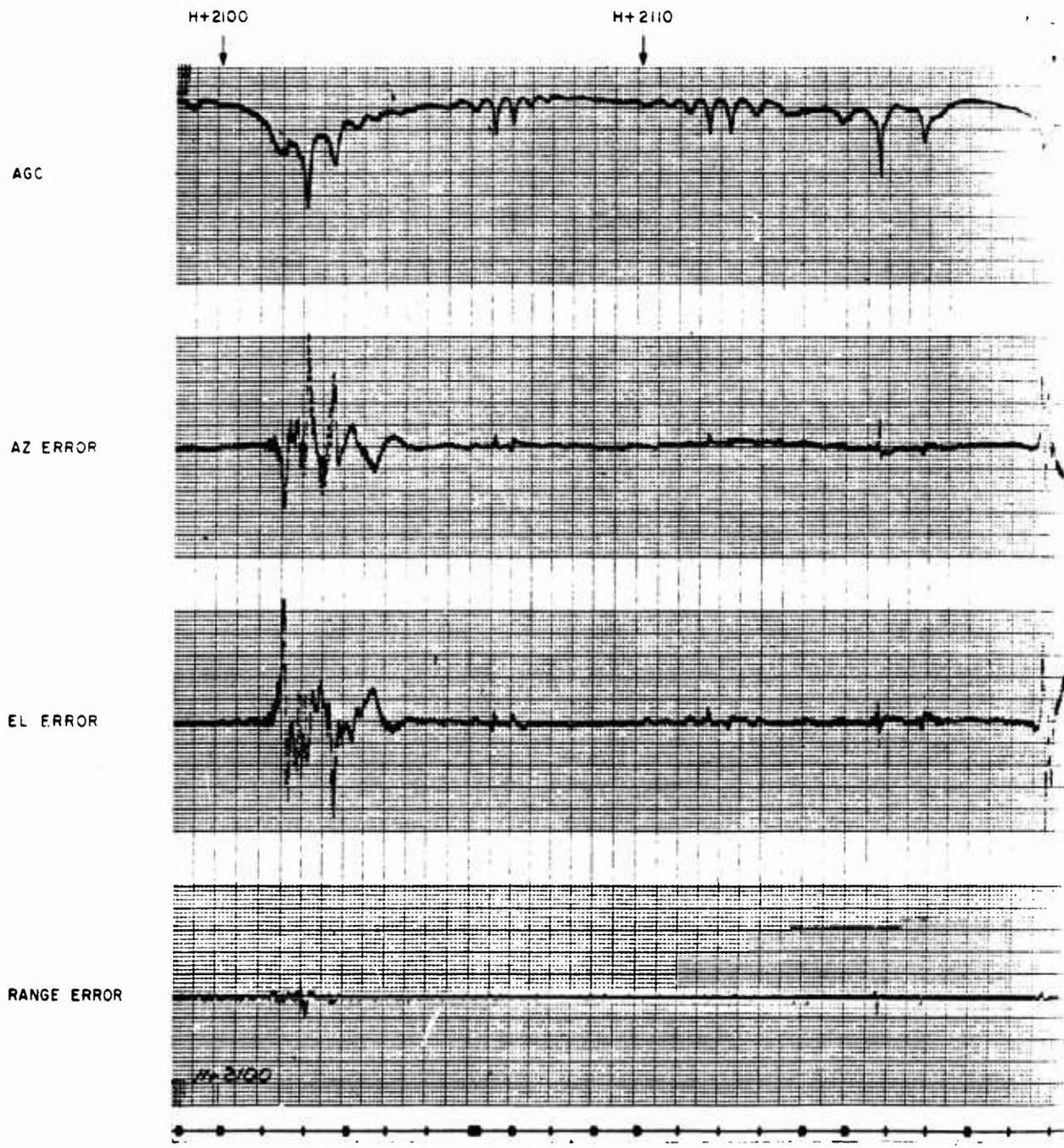


Figure B.6

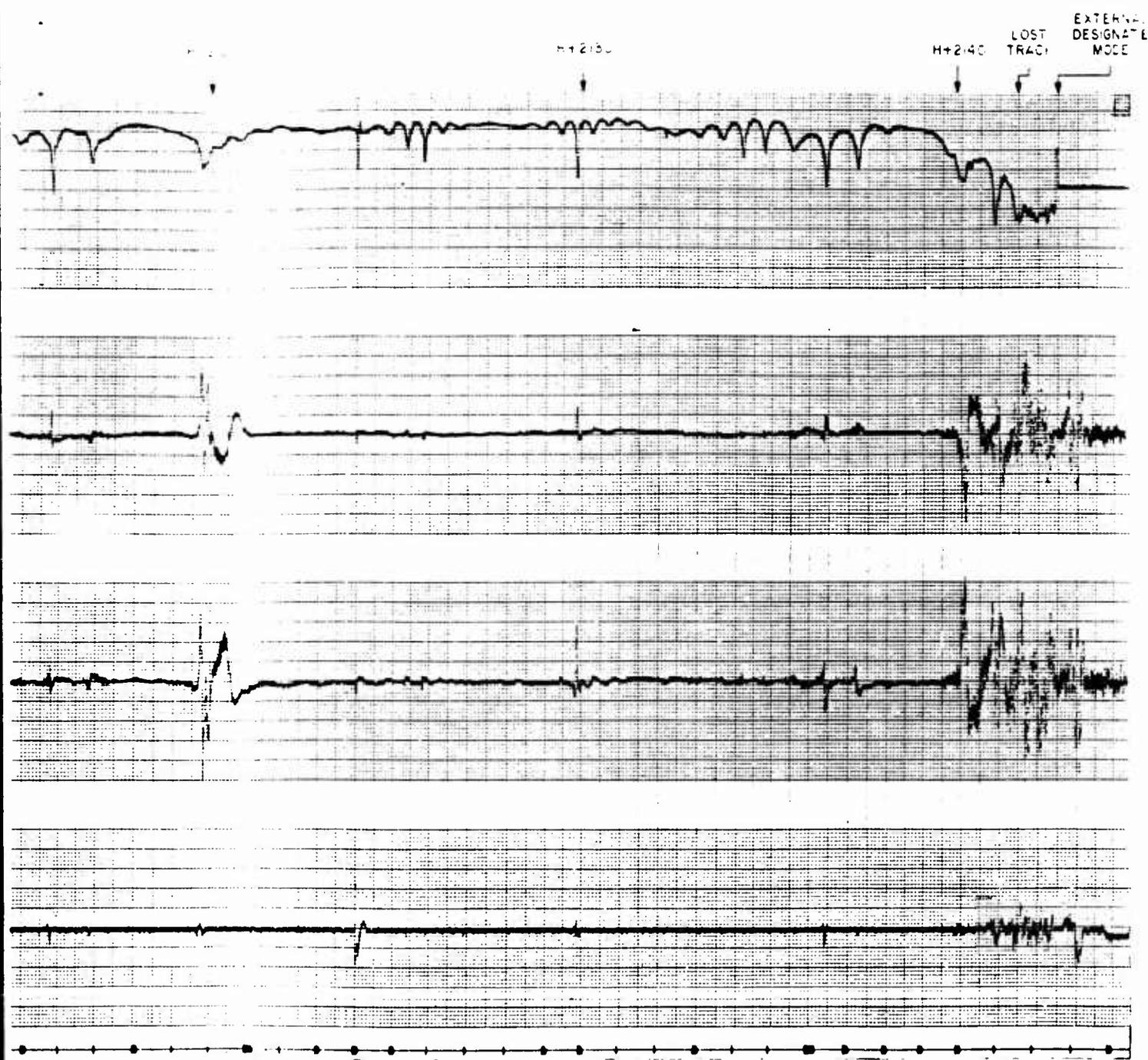


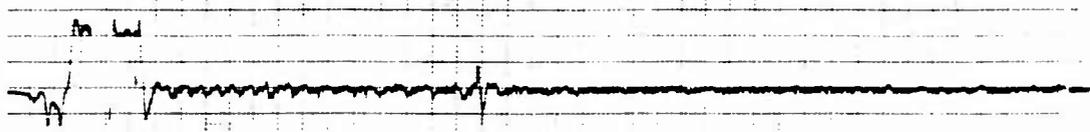
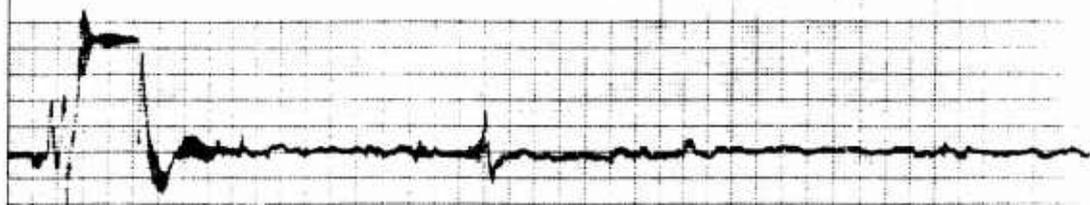
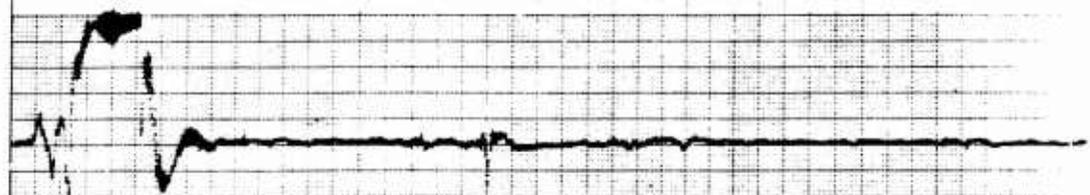
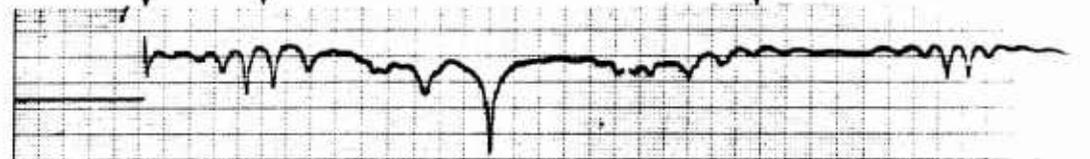
Figure E.6 Continued.

149-2



LOCKON-AUTO
TRACK MODE H+2 90

H+2200



H+2200

- 1- AGC
- 2- AZ ERROR
- 3- EL ERROR
- 4- RANGE ERROR

150-1

H+2210

H+2220

H+2230

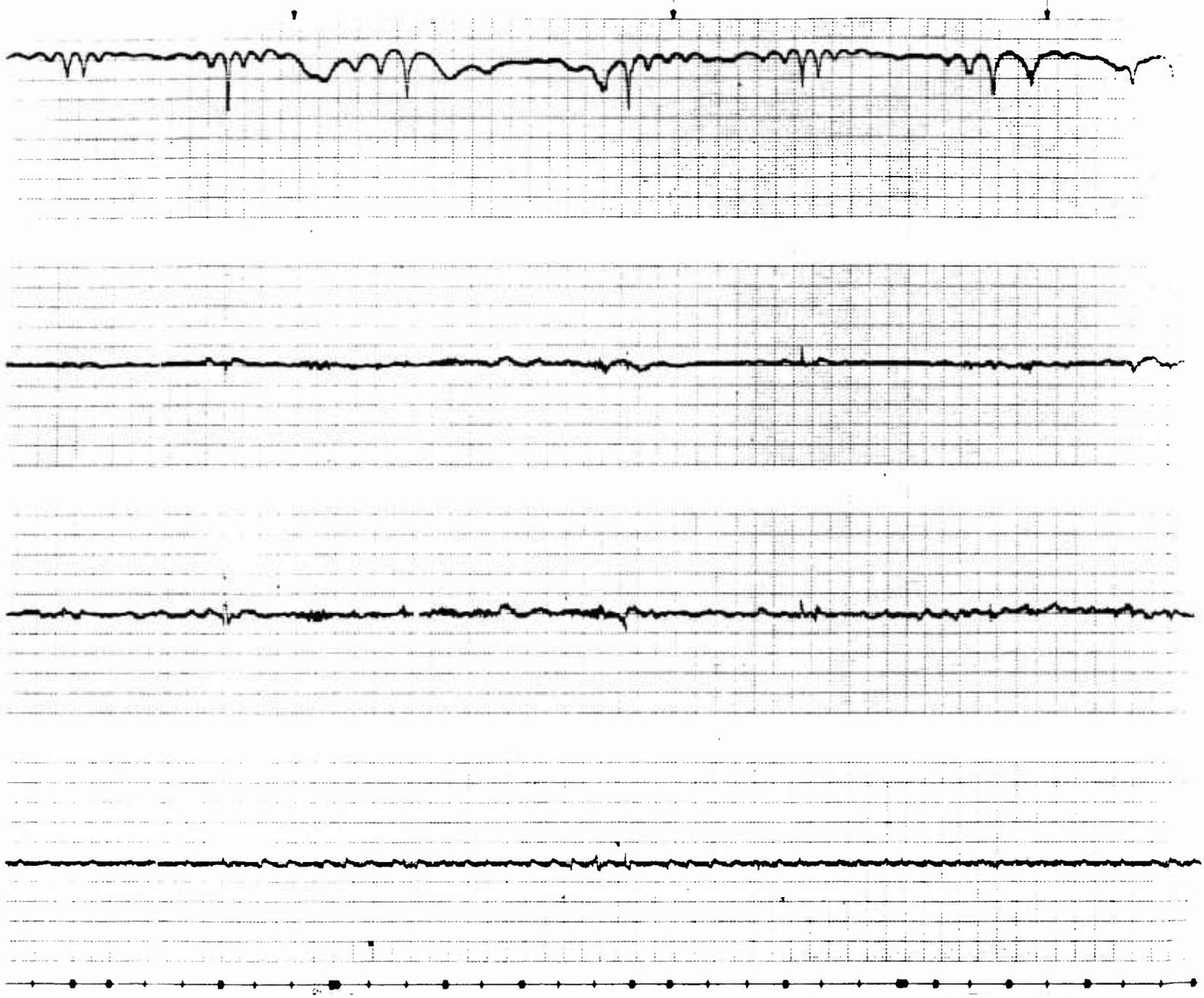
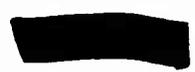


Figure B.6 Continued.



H+2230

H+2240

H+2250



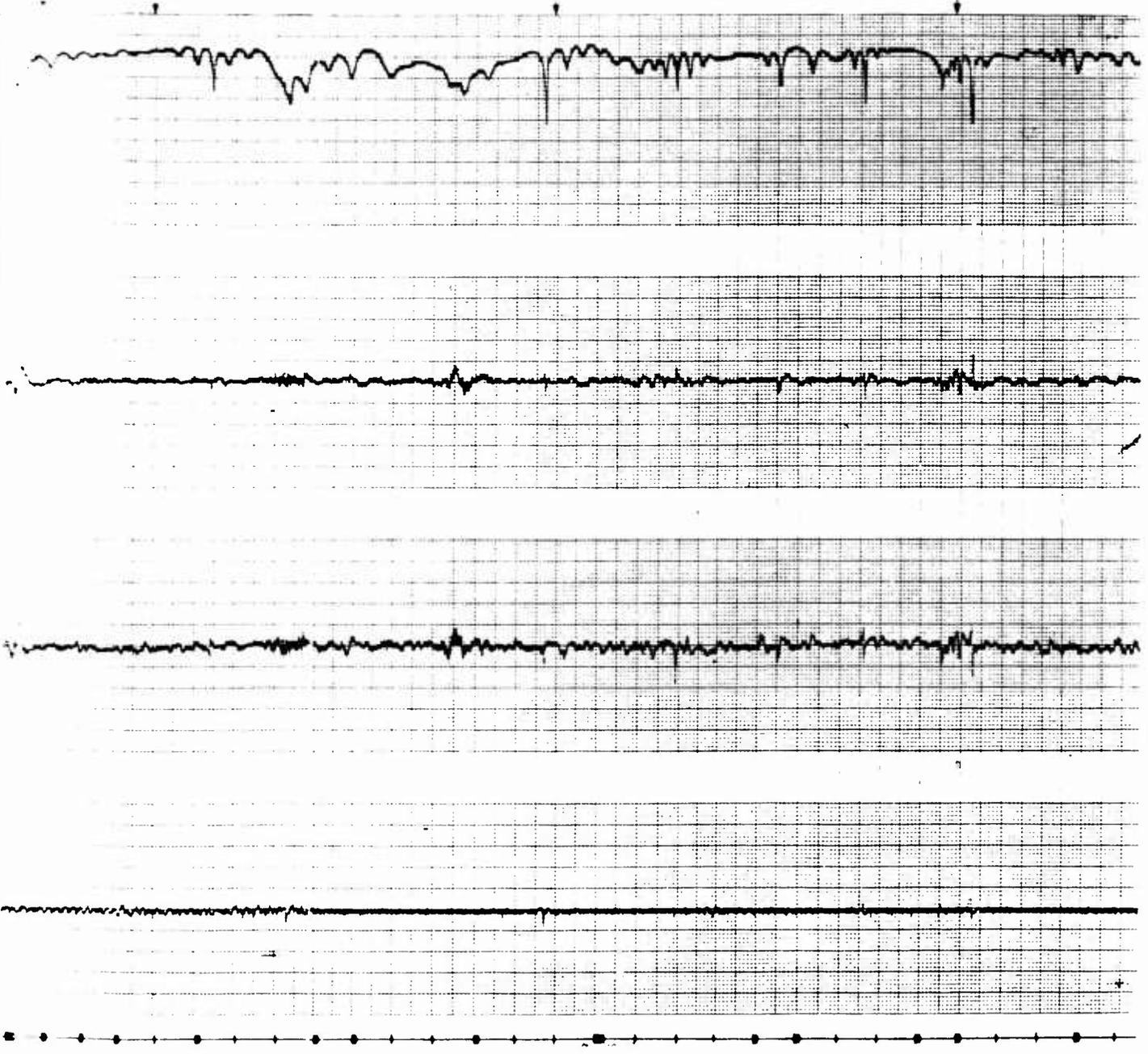
Figure B.6 Continud.



H+2280

H+2270

H+2280



150-4



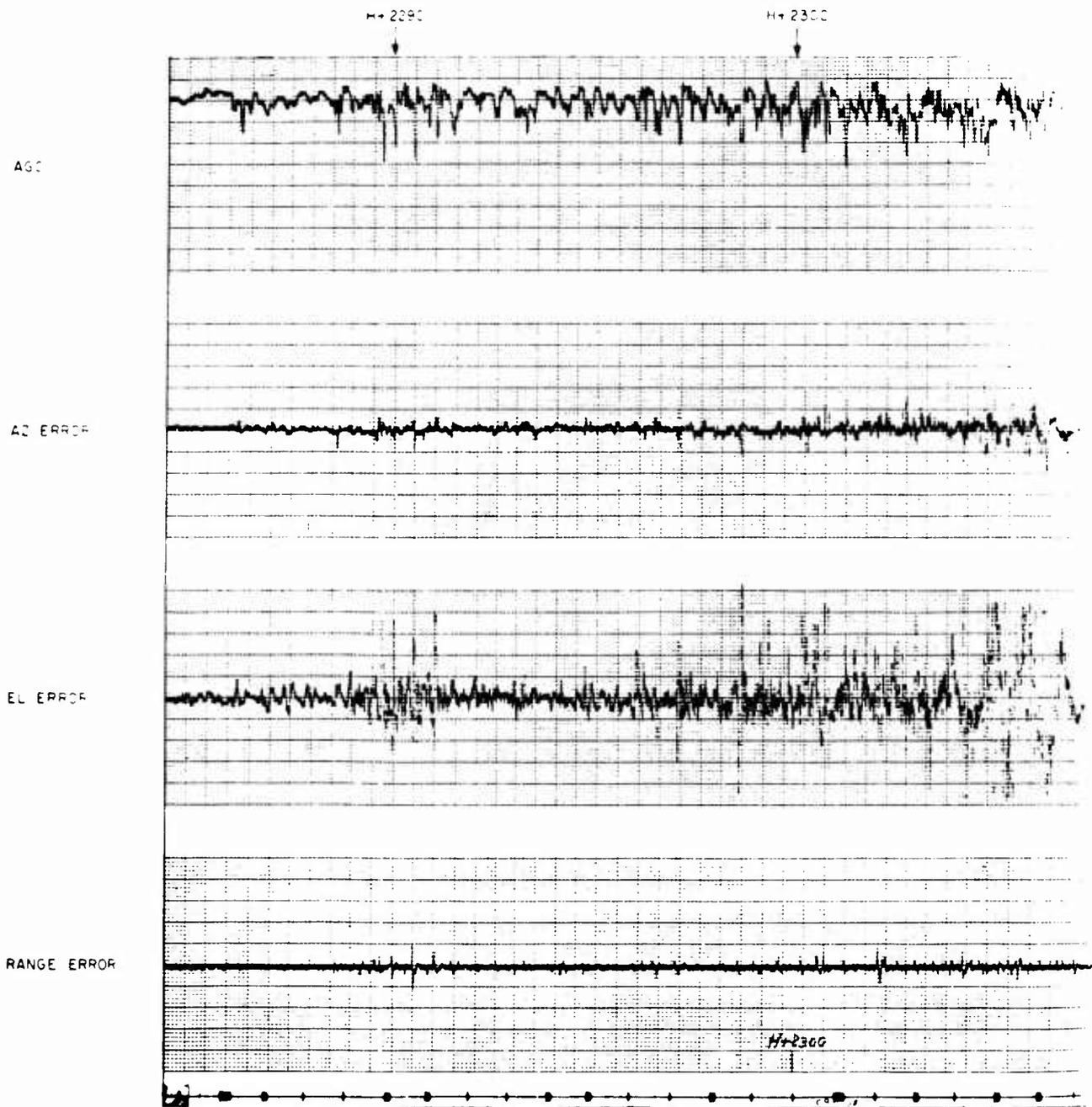
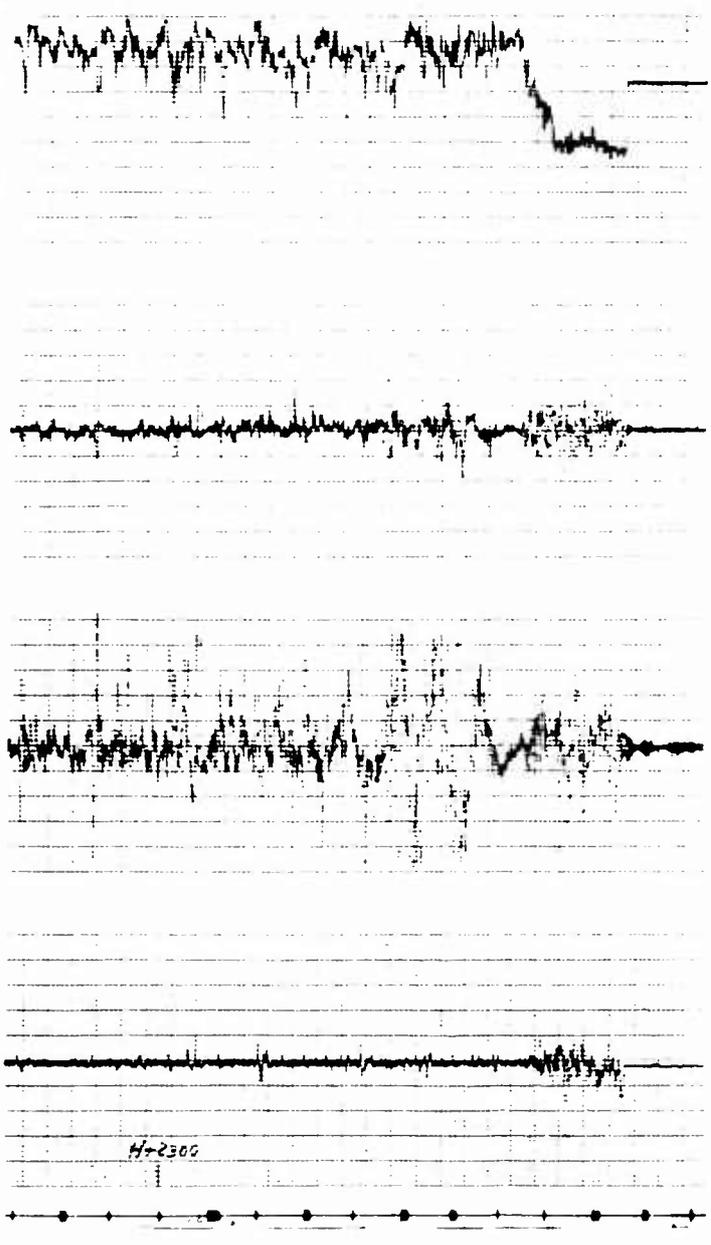


Figure B.6 Continued.

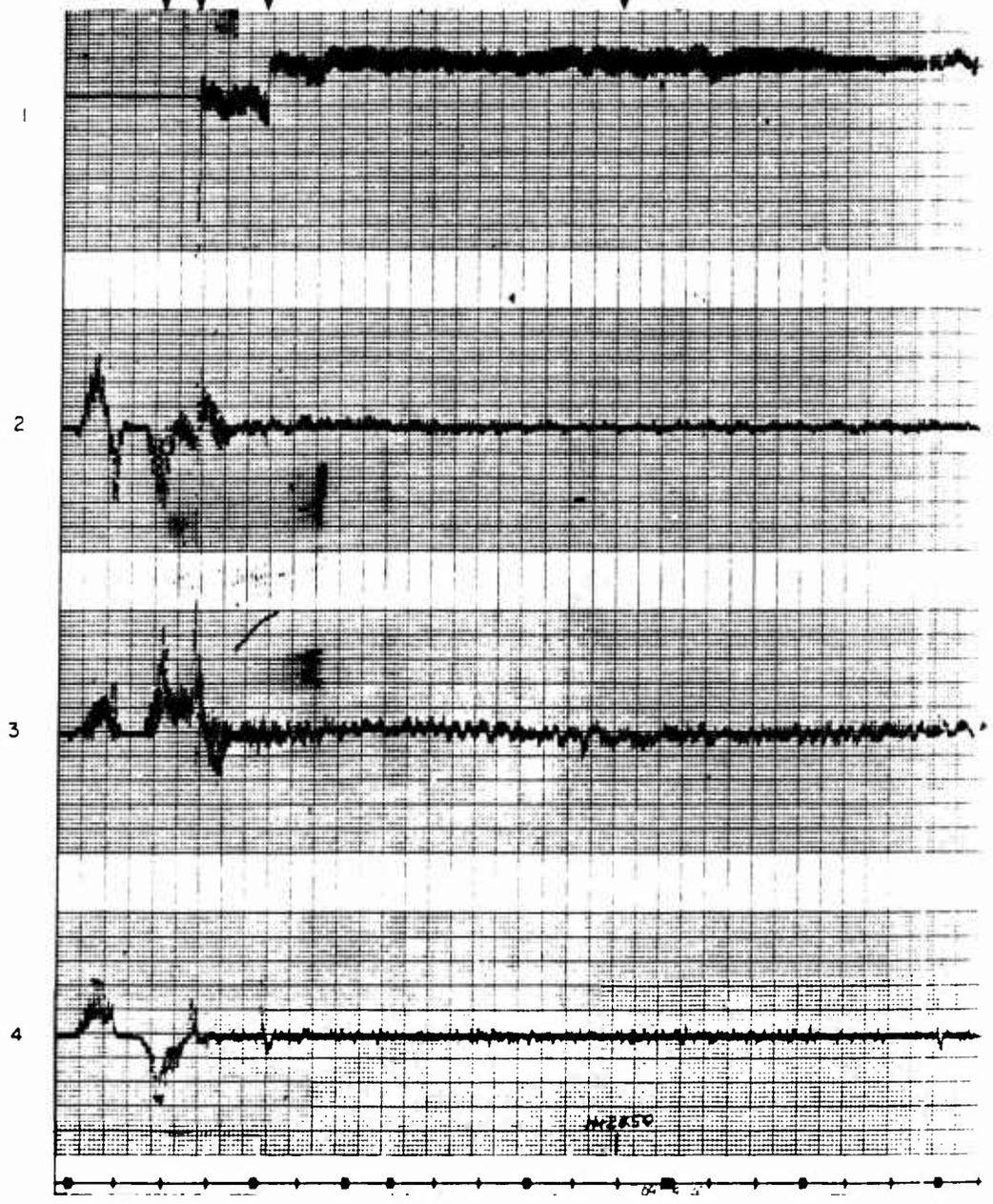
M-100
W-100
100
100



H-2300

continued.

H+244C LOCKON-AUTO TRACK MODE RECEIVER BANDWIDTH 2 mc H+2450



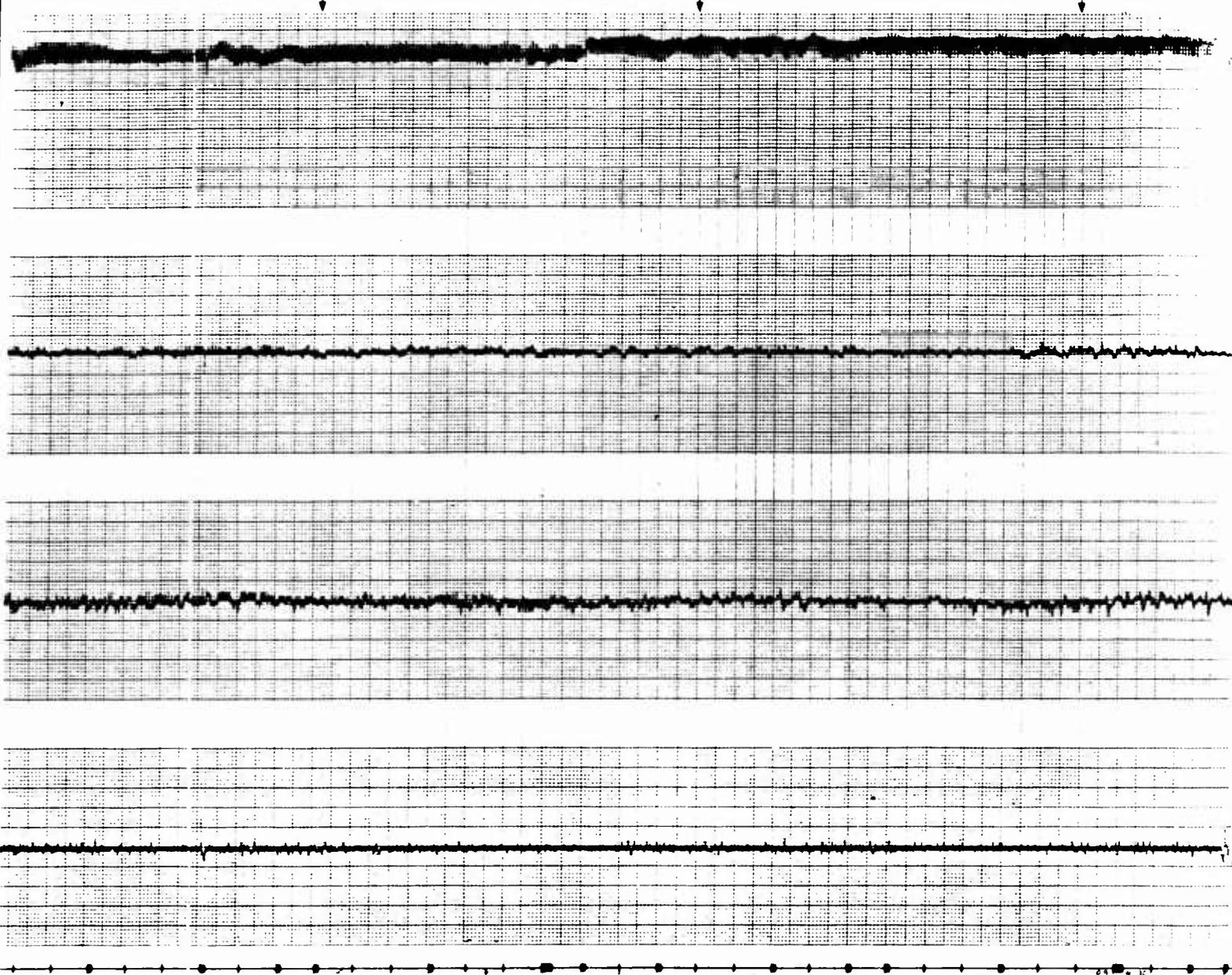
- 1- AGC
- 2- AZ ERROR
- 3- EL ERROR
- 4- RANGE ERROR

152-1

H+2460

H+2470

H+2480



Figure

152-2



H+2480

H+2490

H+2500

H+2510

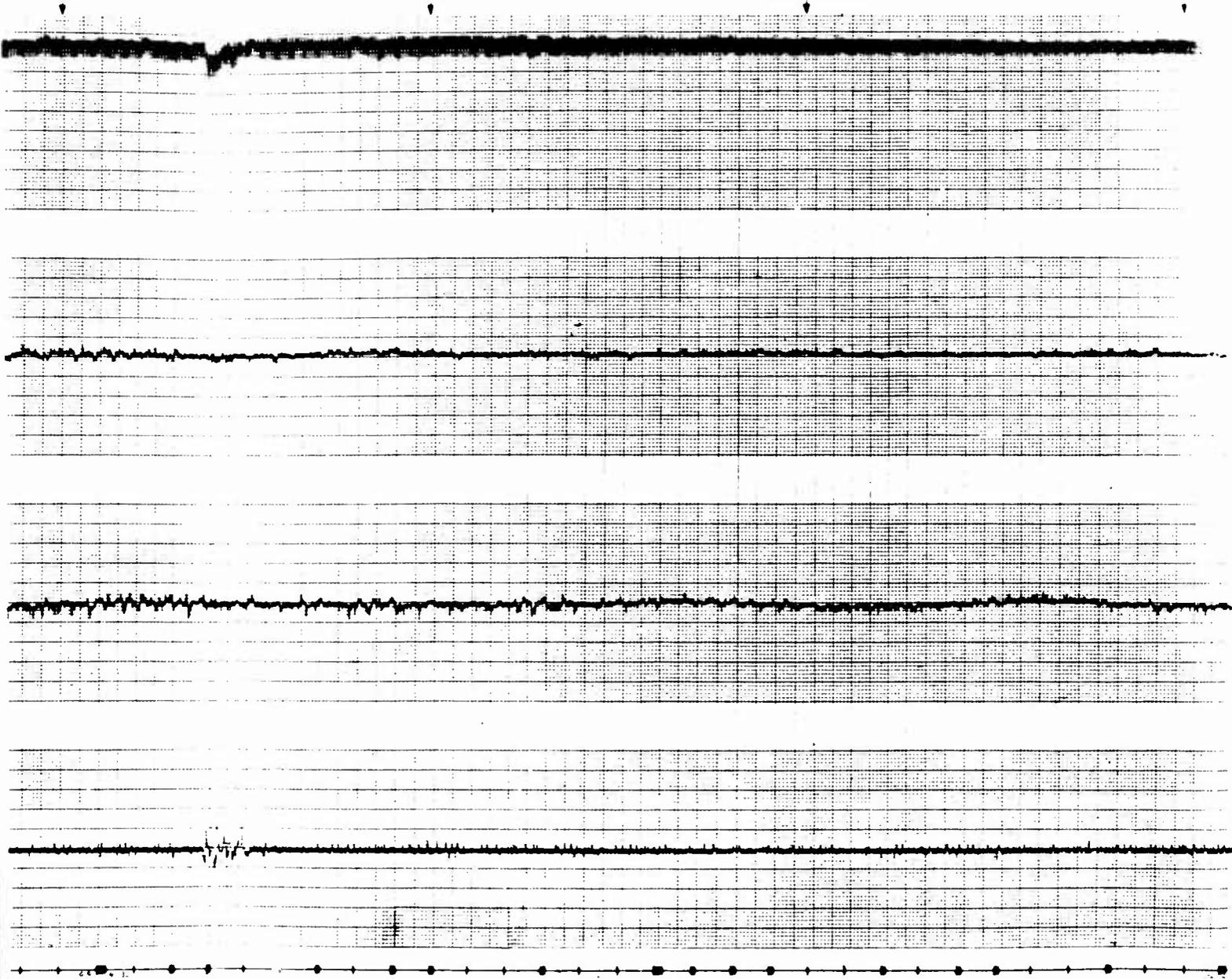


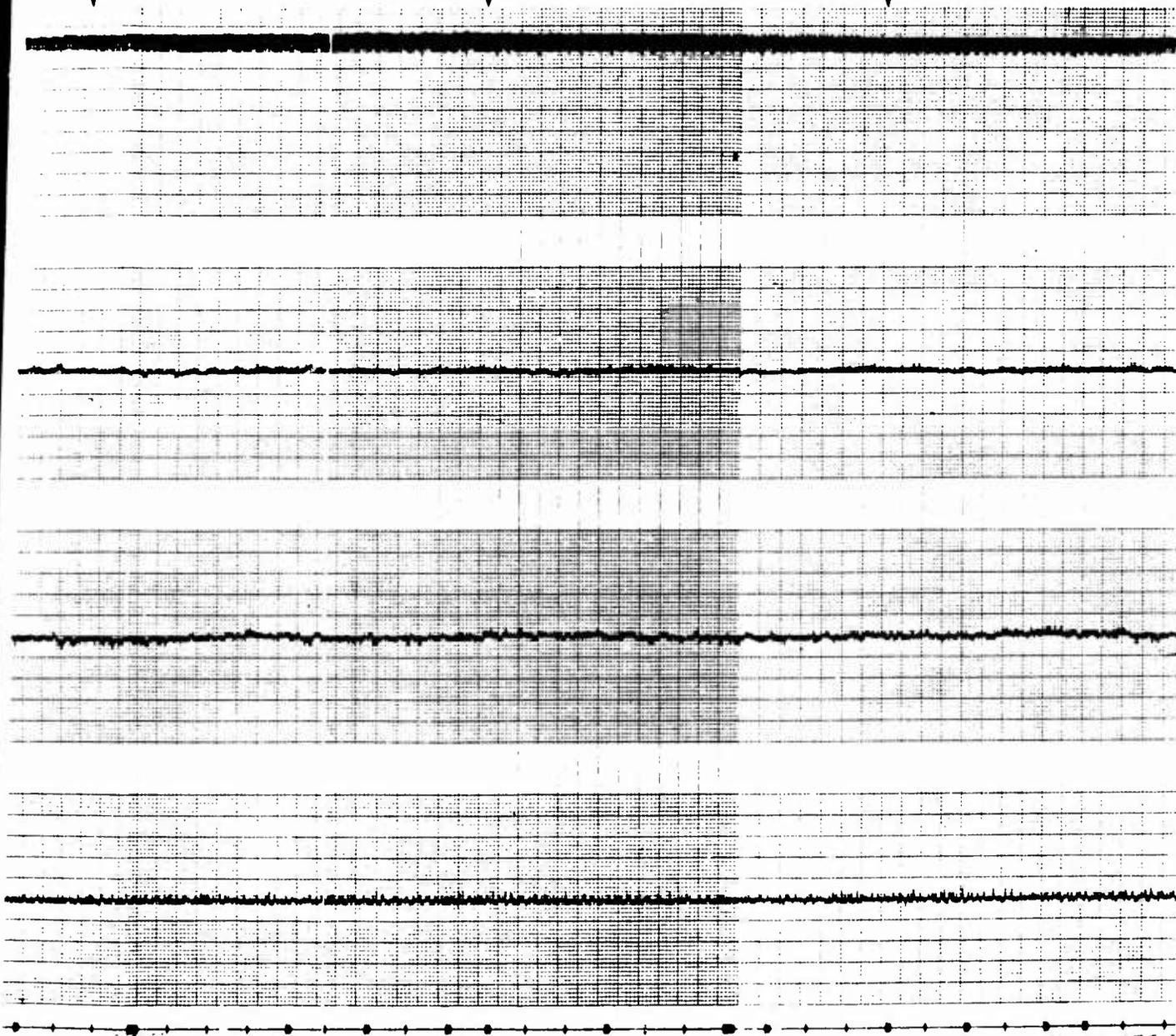
Figure B.7 Track, Probe 7.

152 - 3



H+2520

H+2530



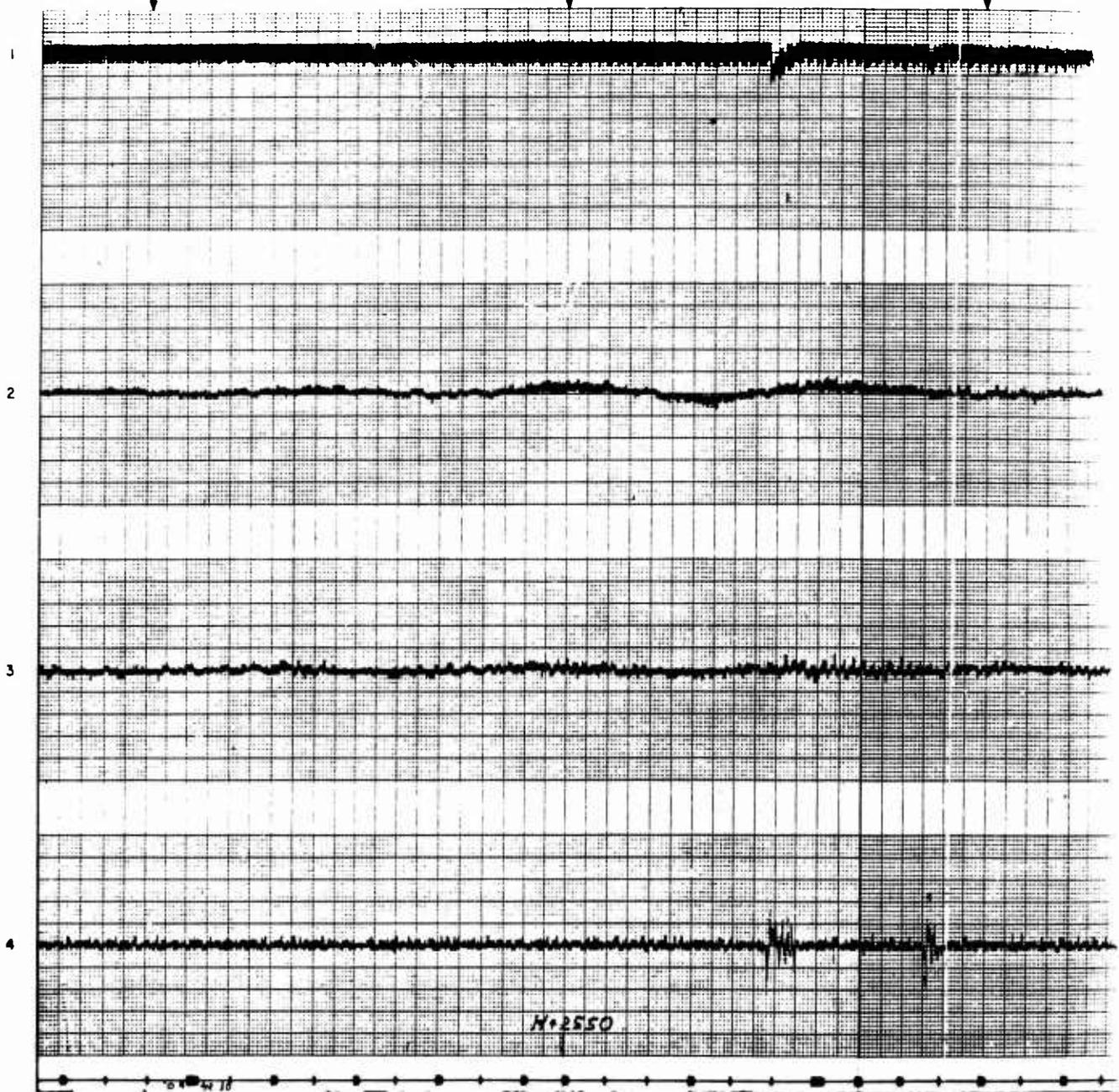
152-4



H+2540

H+2550

H+2560



1 - AGC
2 - AZ ERROR
3 - EL ERROR
4 - RANGE ERROR

153-1

m=25c

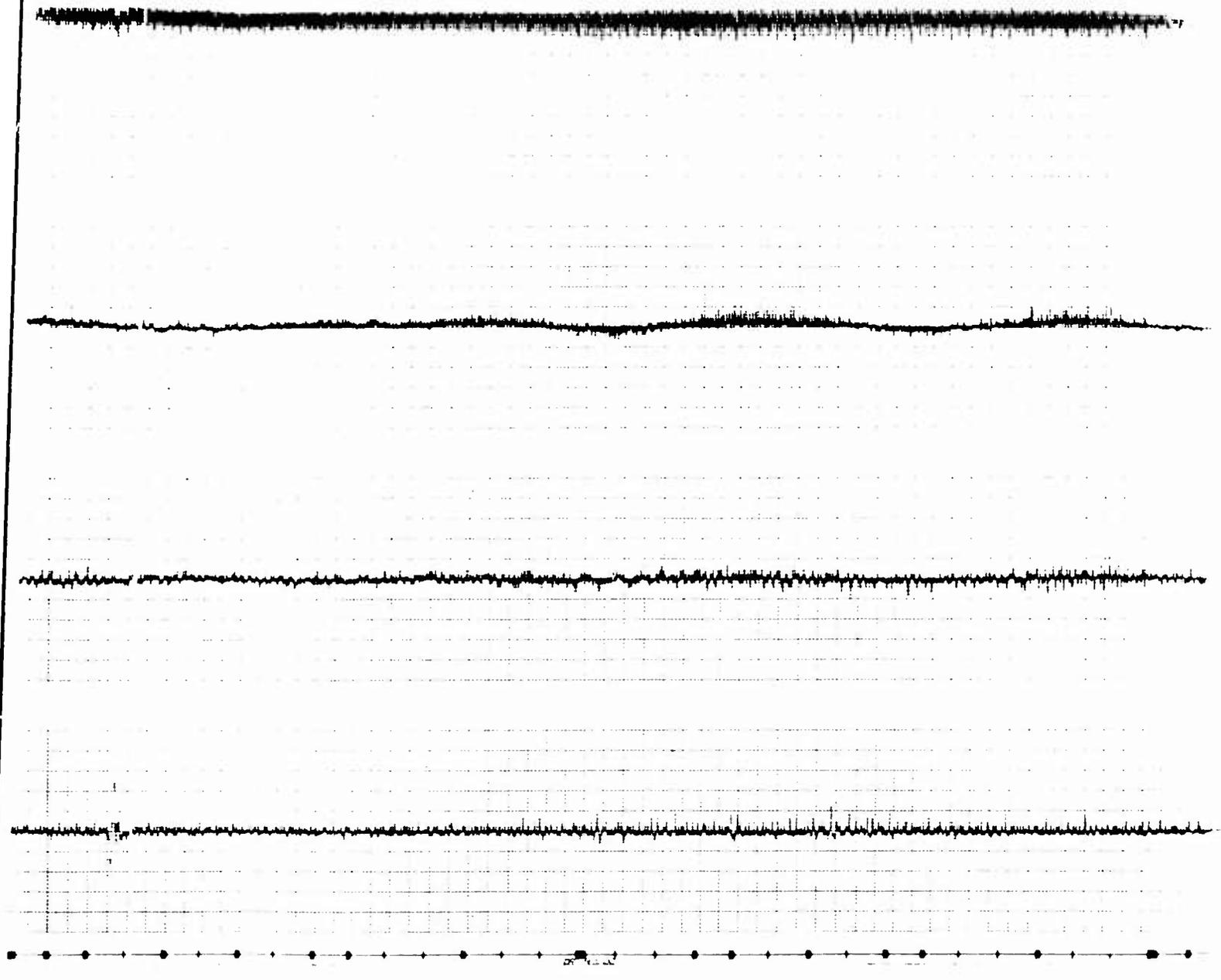
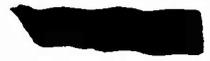
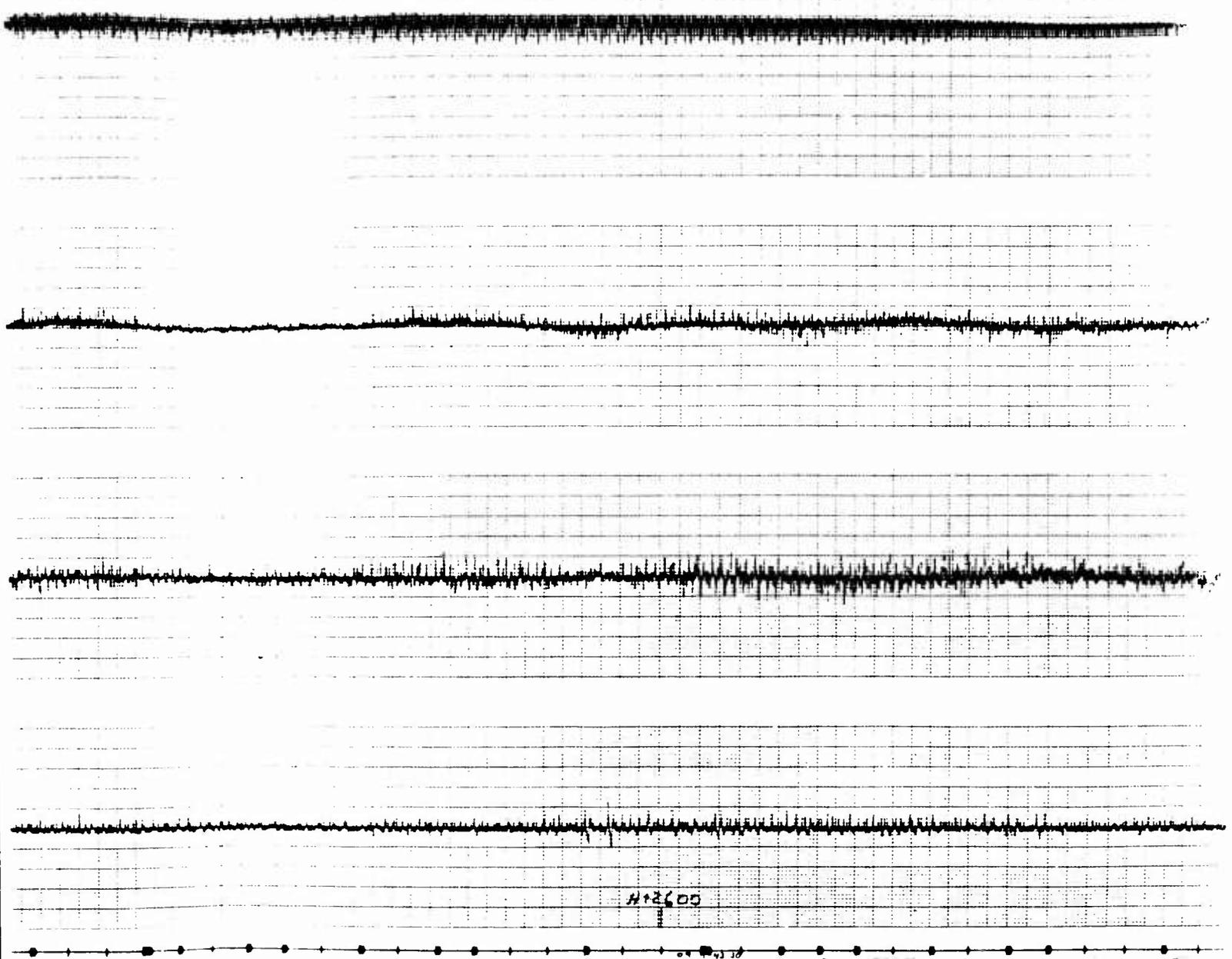


Figure B.7 - Continues



H-2600

H-2600



3.7 Continued.

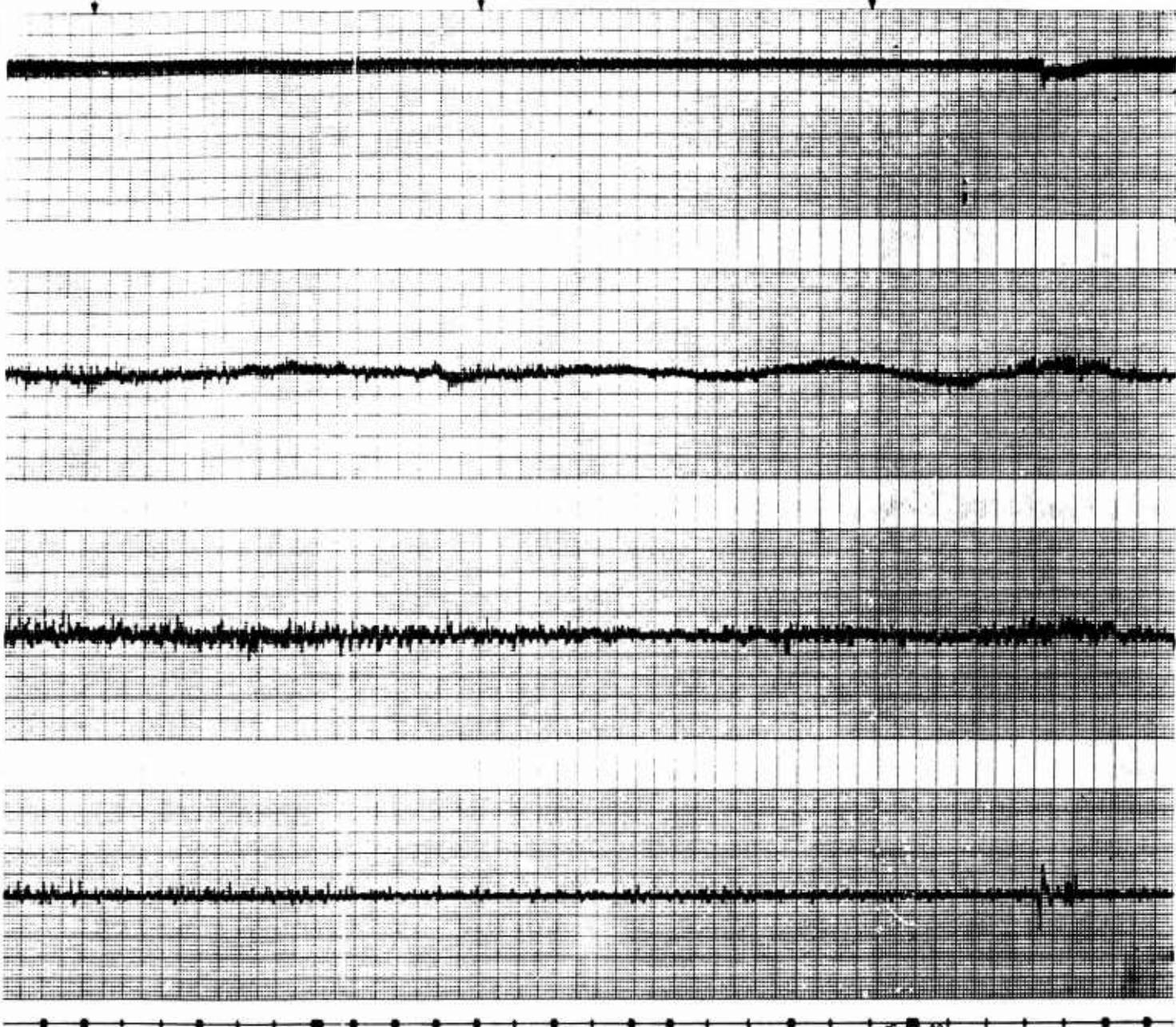
153 - 3



H+2600

H+2620

H+2630

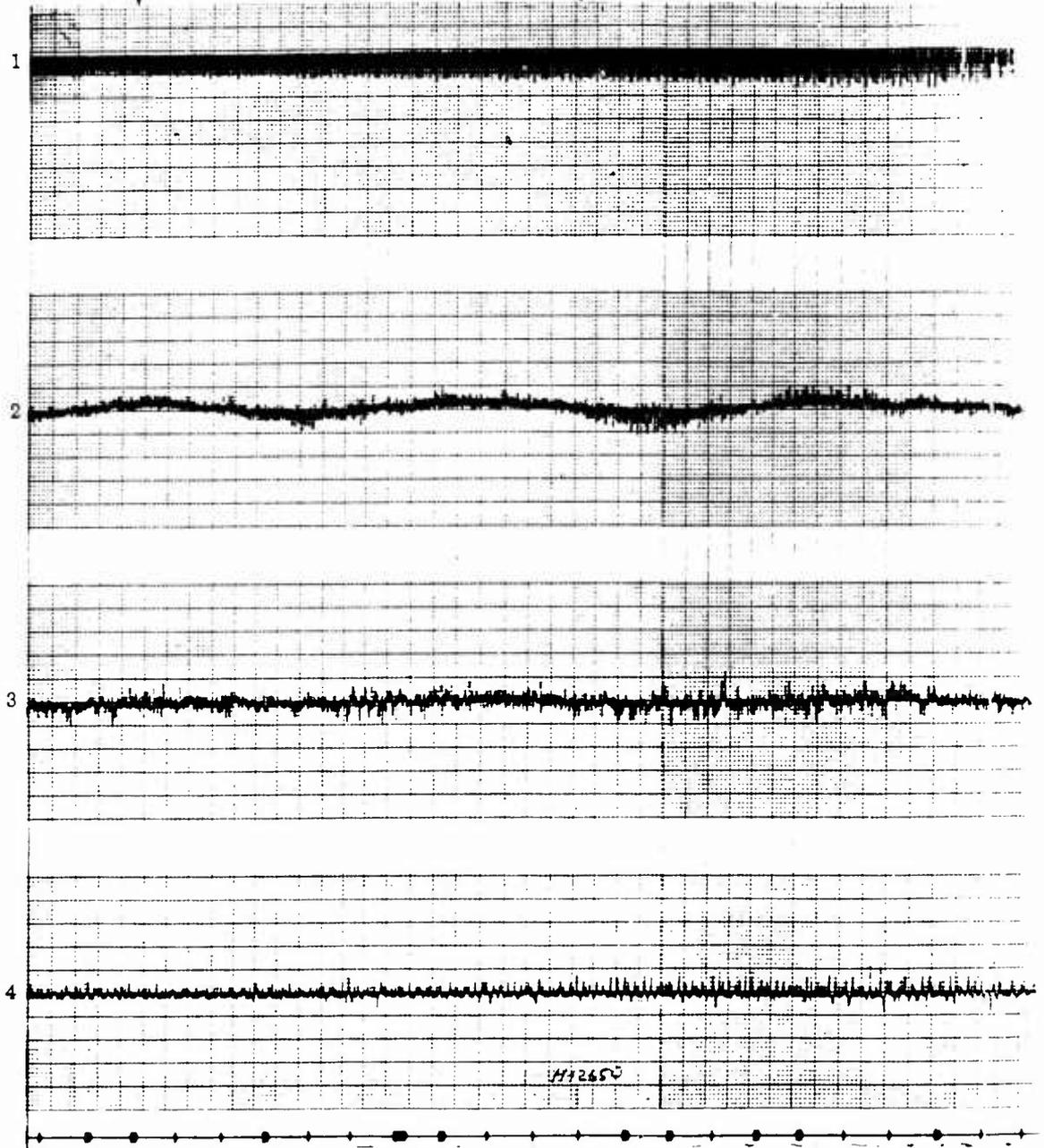


153-4



H+2640

H+2650



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

154-1

H+2670

H+2680

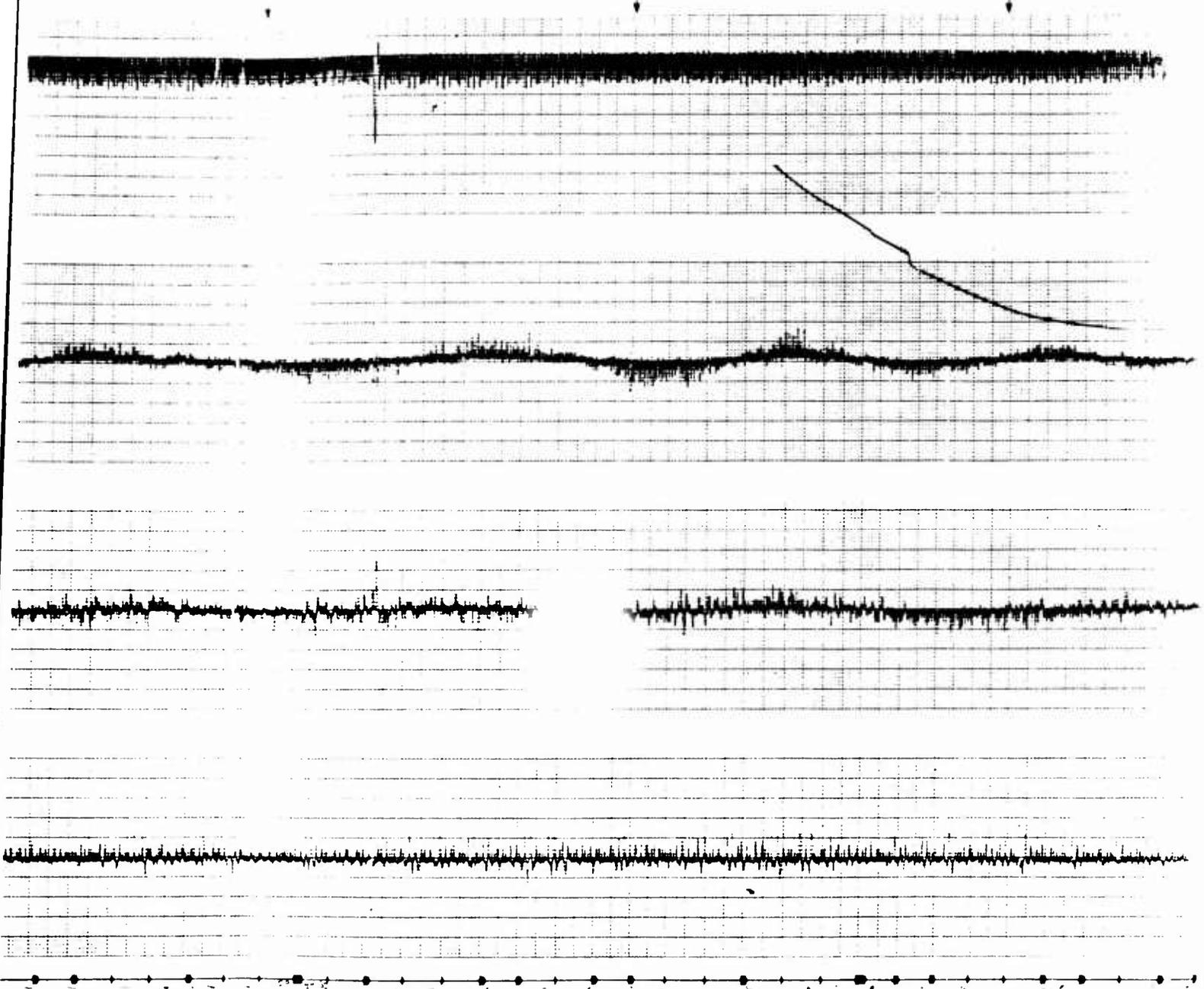
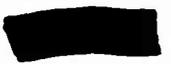


Figure B.7 Cc



BC

H+2697

H+2700

H+2710

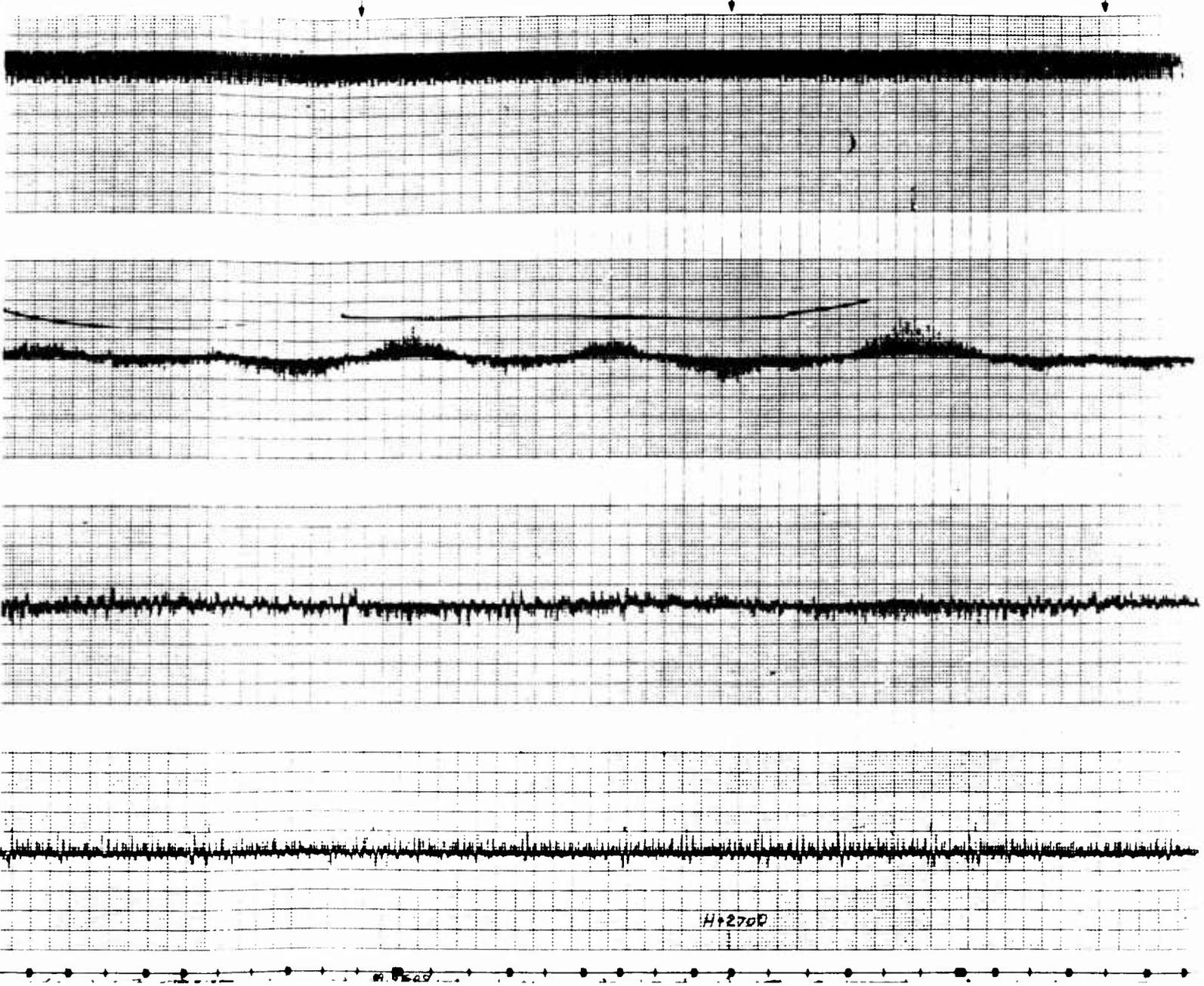
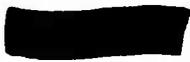


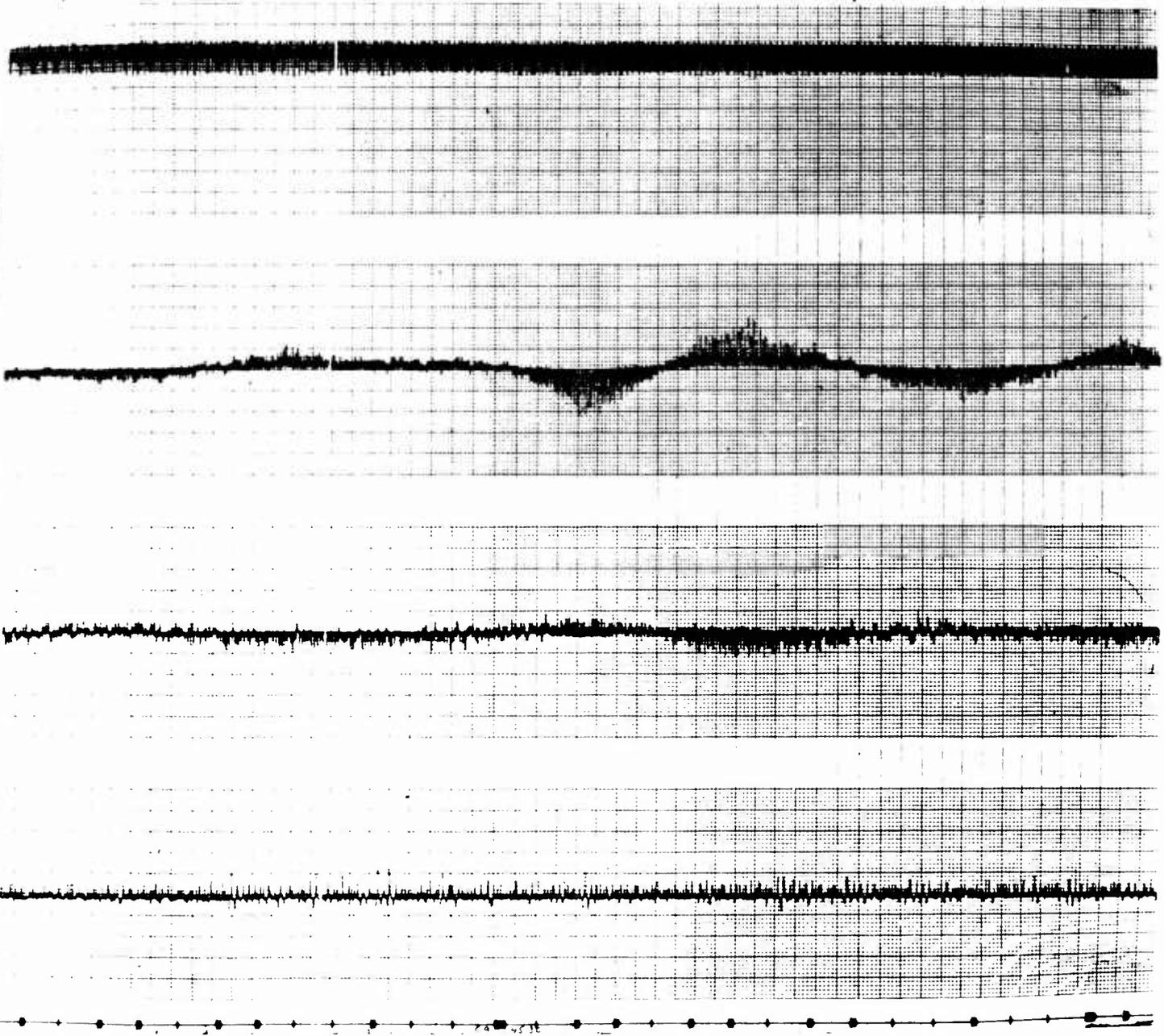
Figure B.7 Continued.

154 -3



H+2720

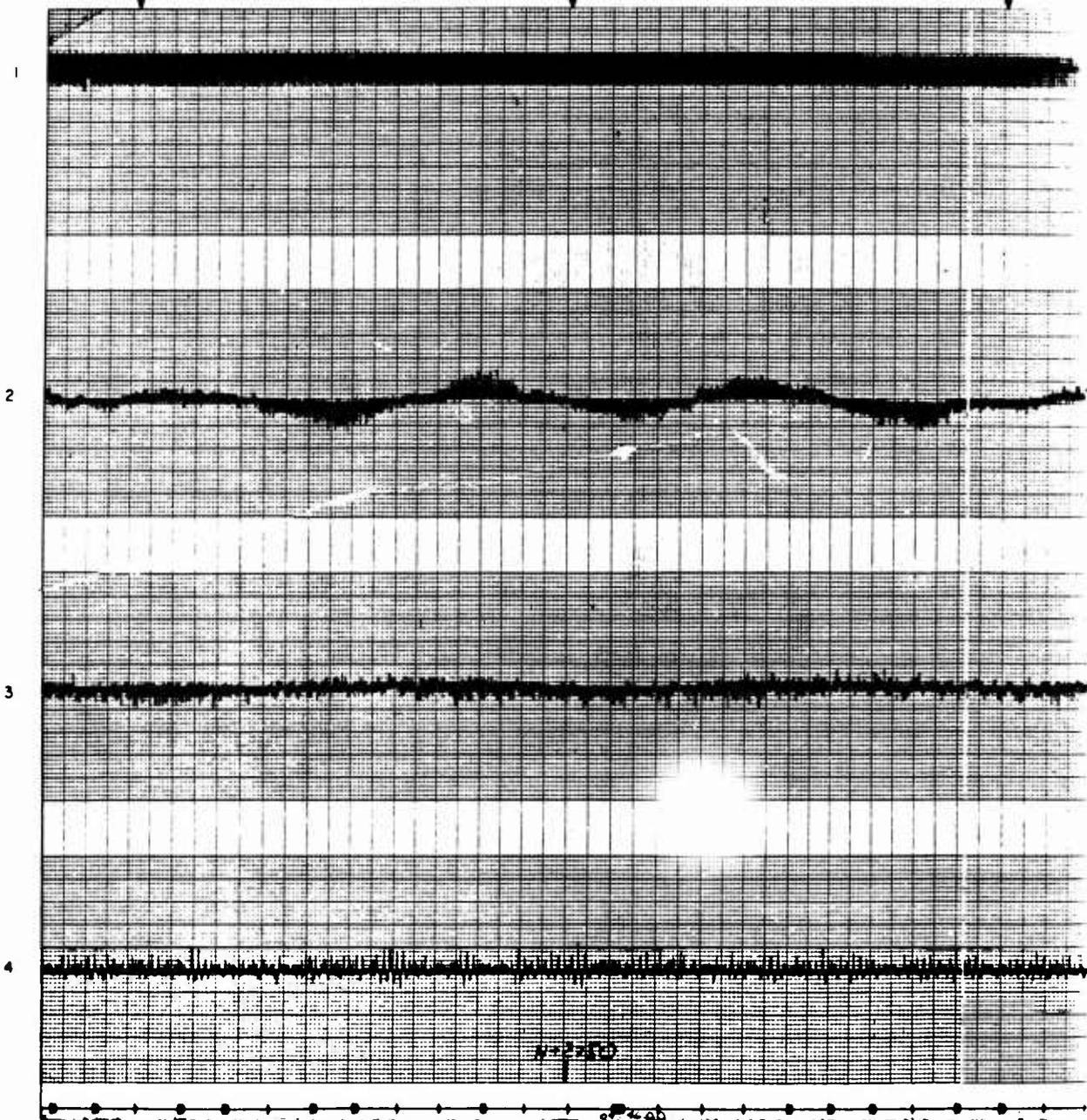
H+2730



H+2740

H+2750

H+2760



- 1-AGC
- 2-AZ ERROR
- 3-EL ERROR
- 4-RANGE ERROR

155-1



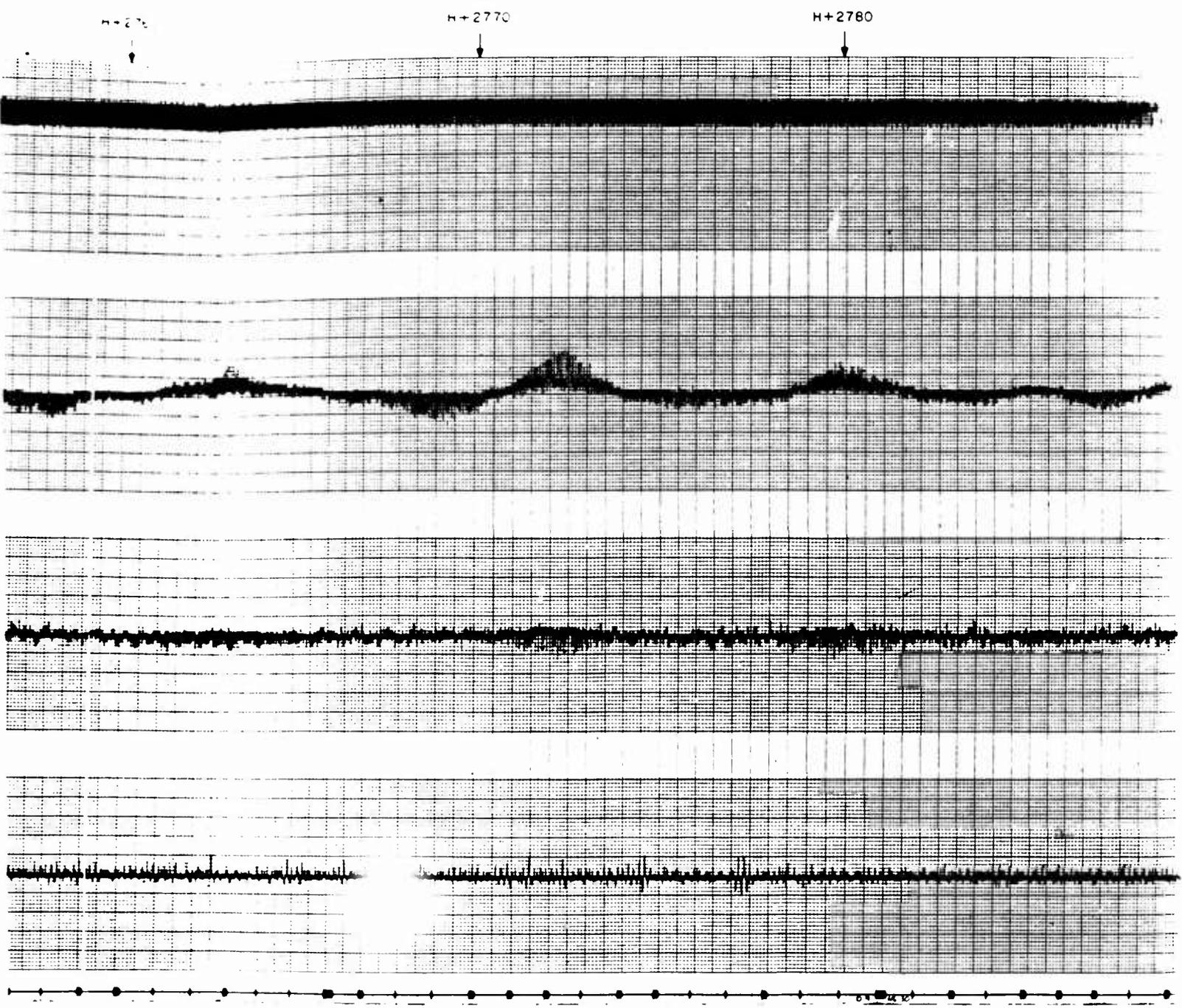


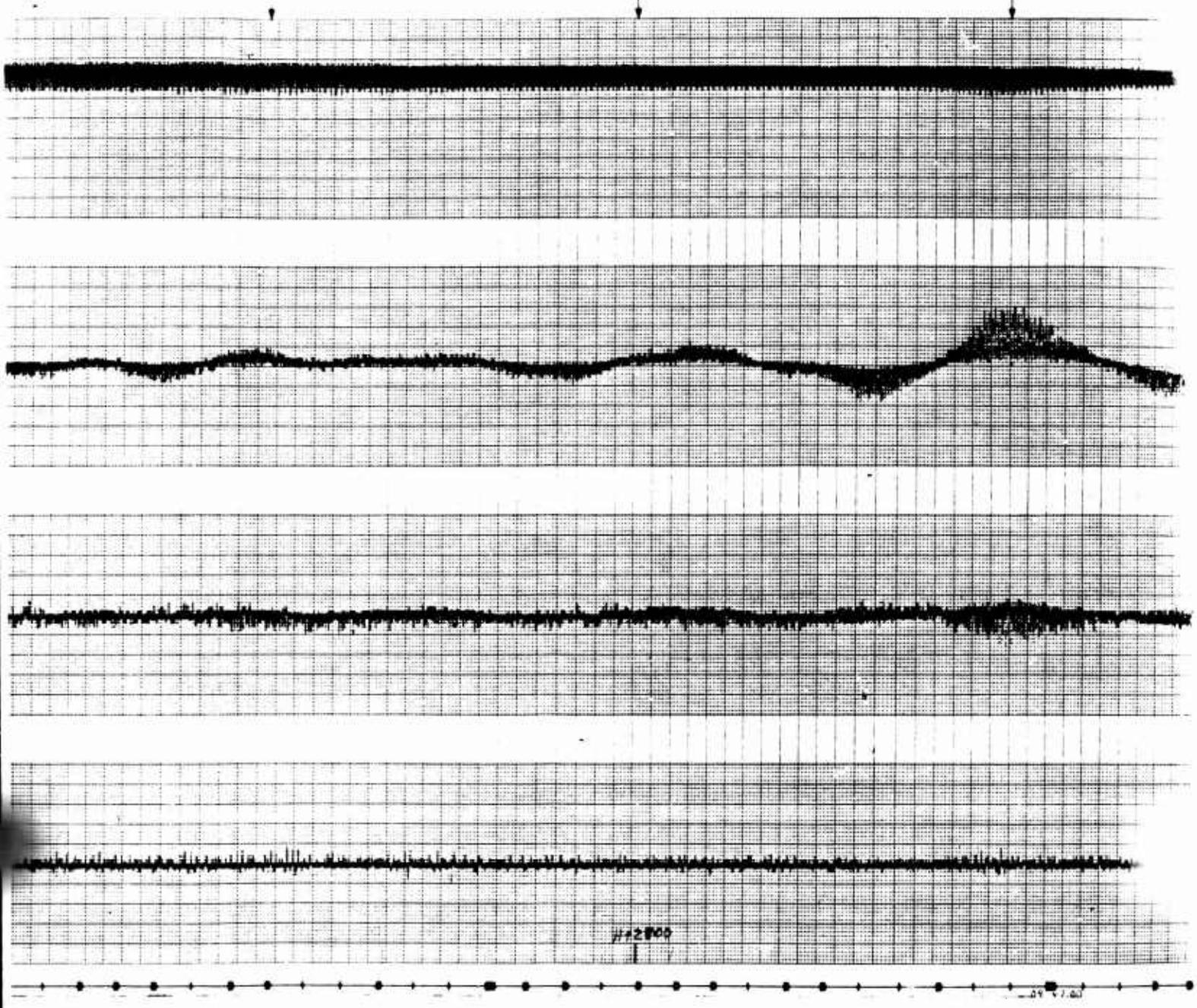
Figure B.7 Continued.



H+2700

H+2800

H+2810

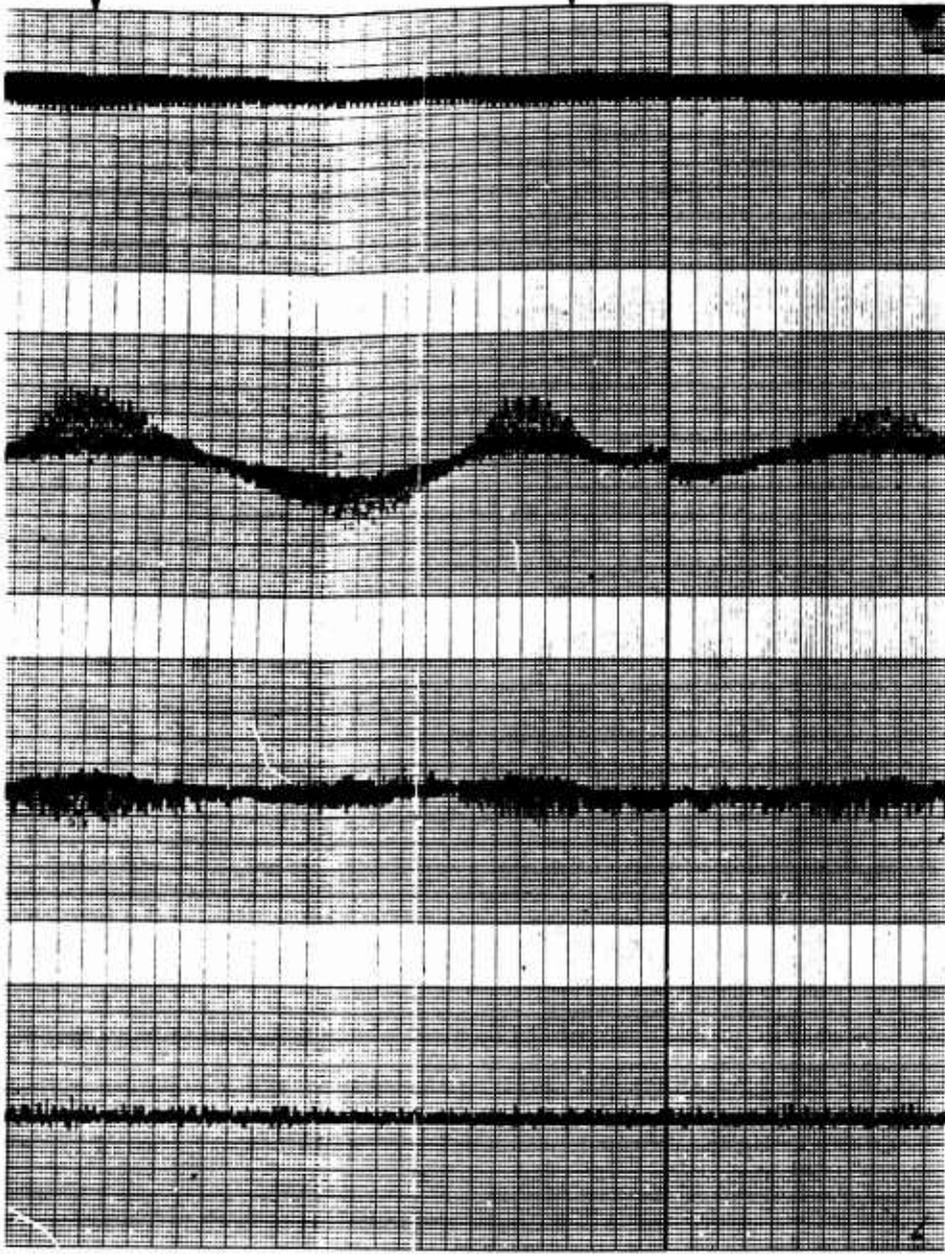


Continued.

ISS-3

H+2810

H+2820



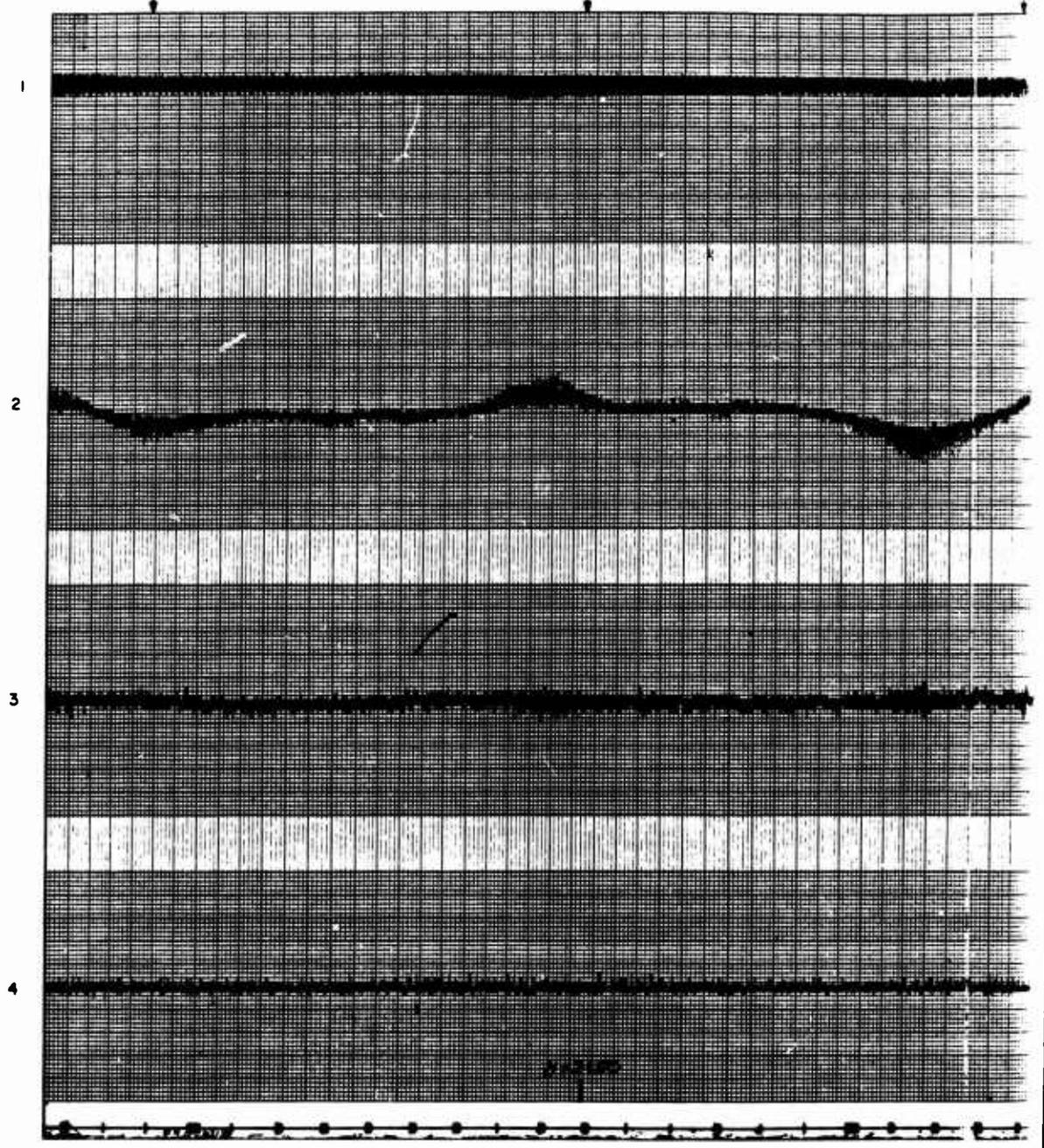
24 7.00

155-4

H+2840

H+2850

H+29



- 1-AGC
- 2-AZ ERROR
- 3-EL ERROR
- 4-RANGE ERROR

156-1



H+2860

H+2870

H+2880

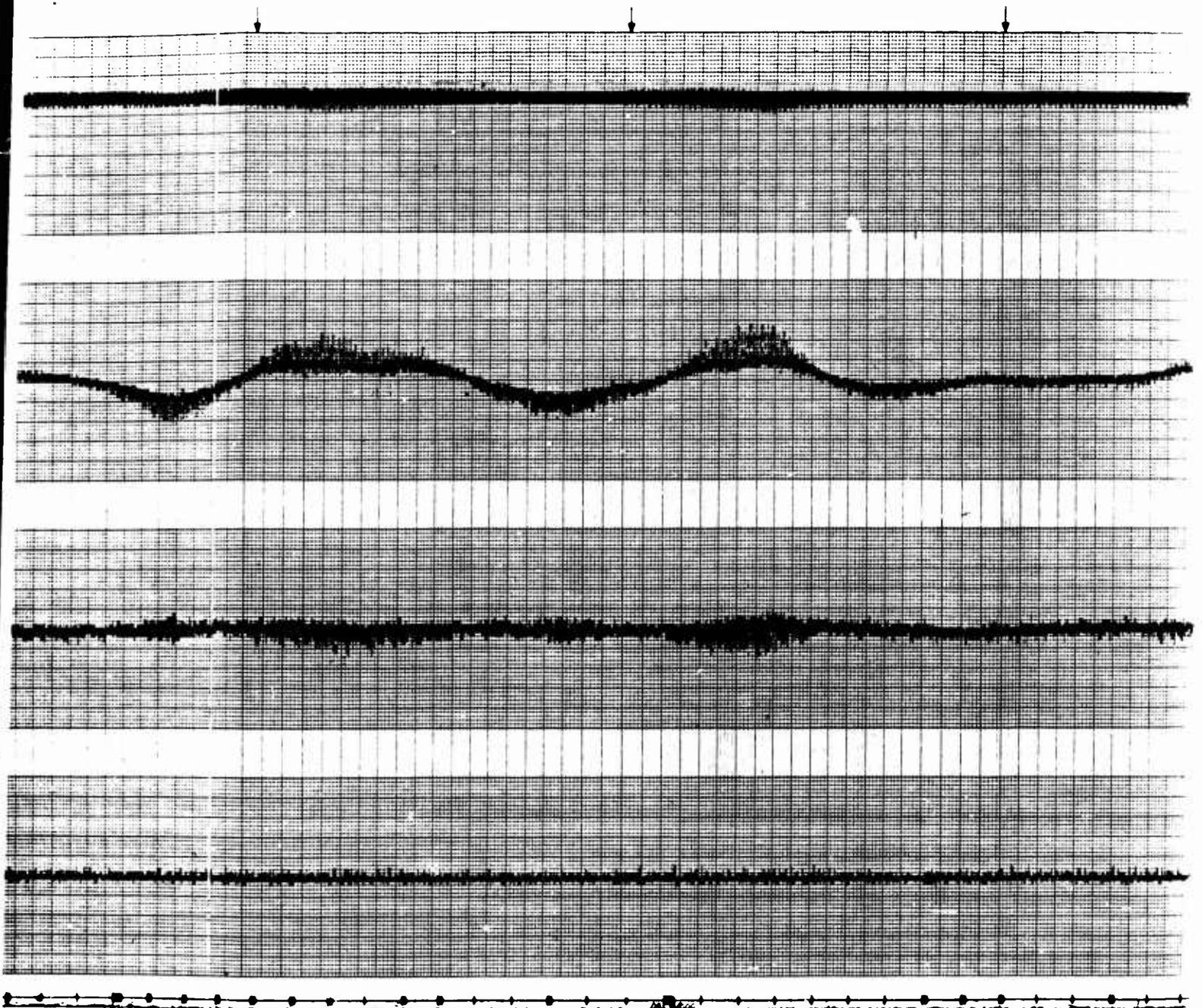


Figure B.7 Conti



H+2800

H+2900

H+29

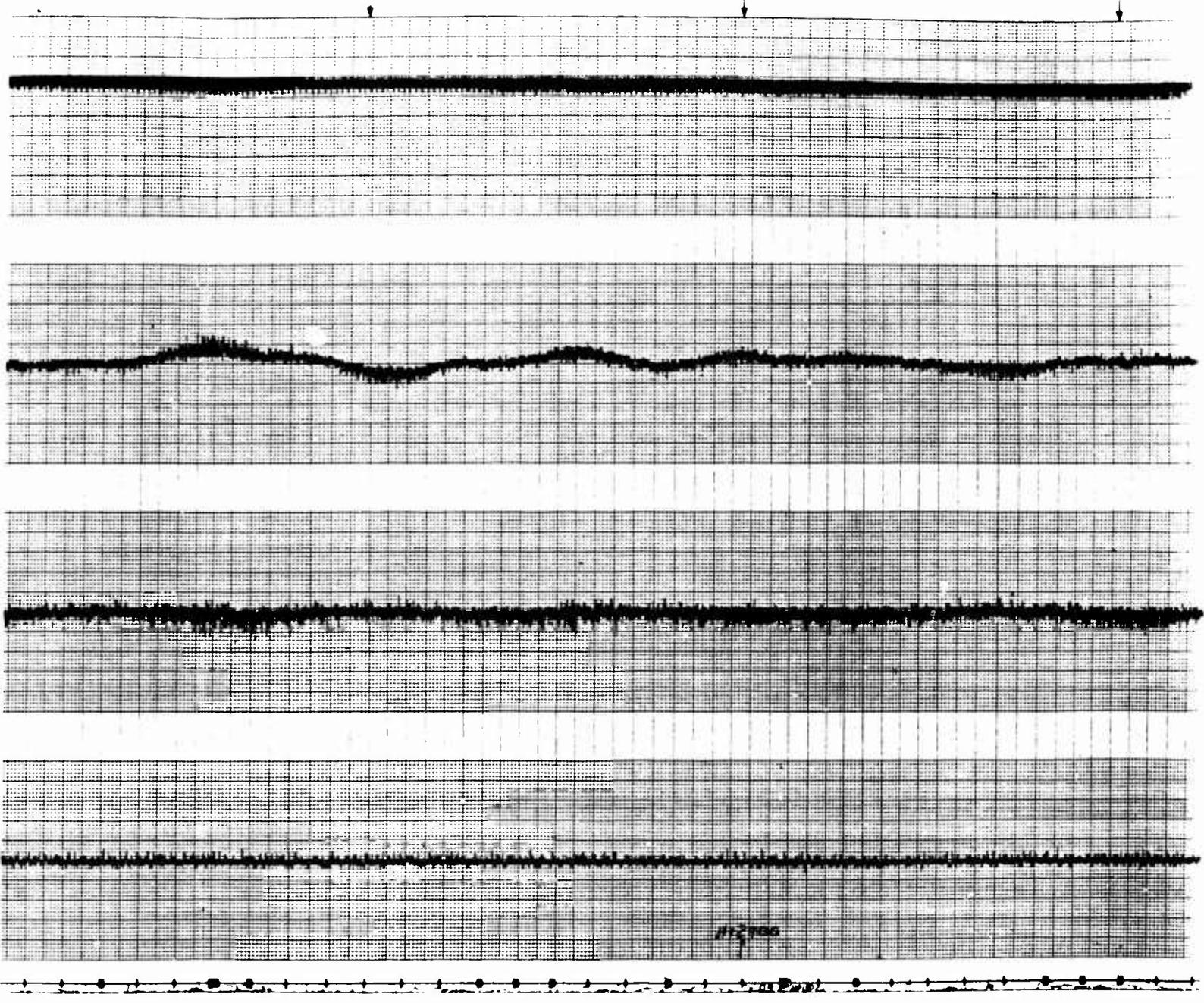


Figure B.7 Continued.

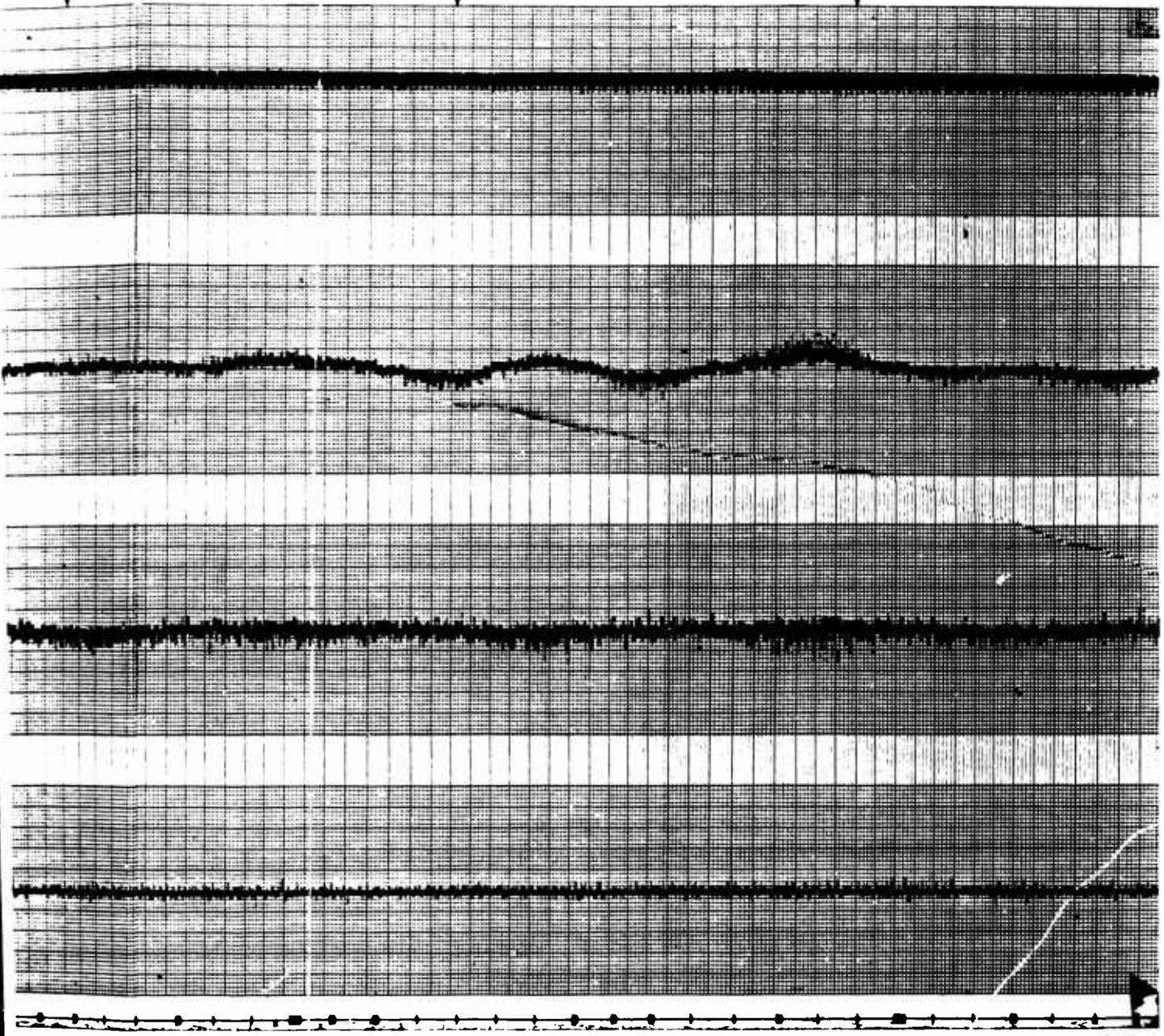
156-3



H+2910

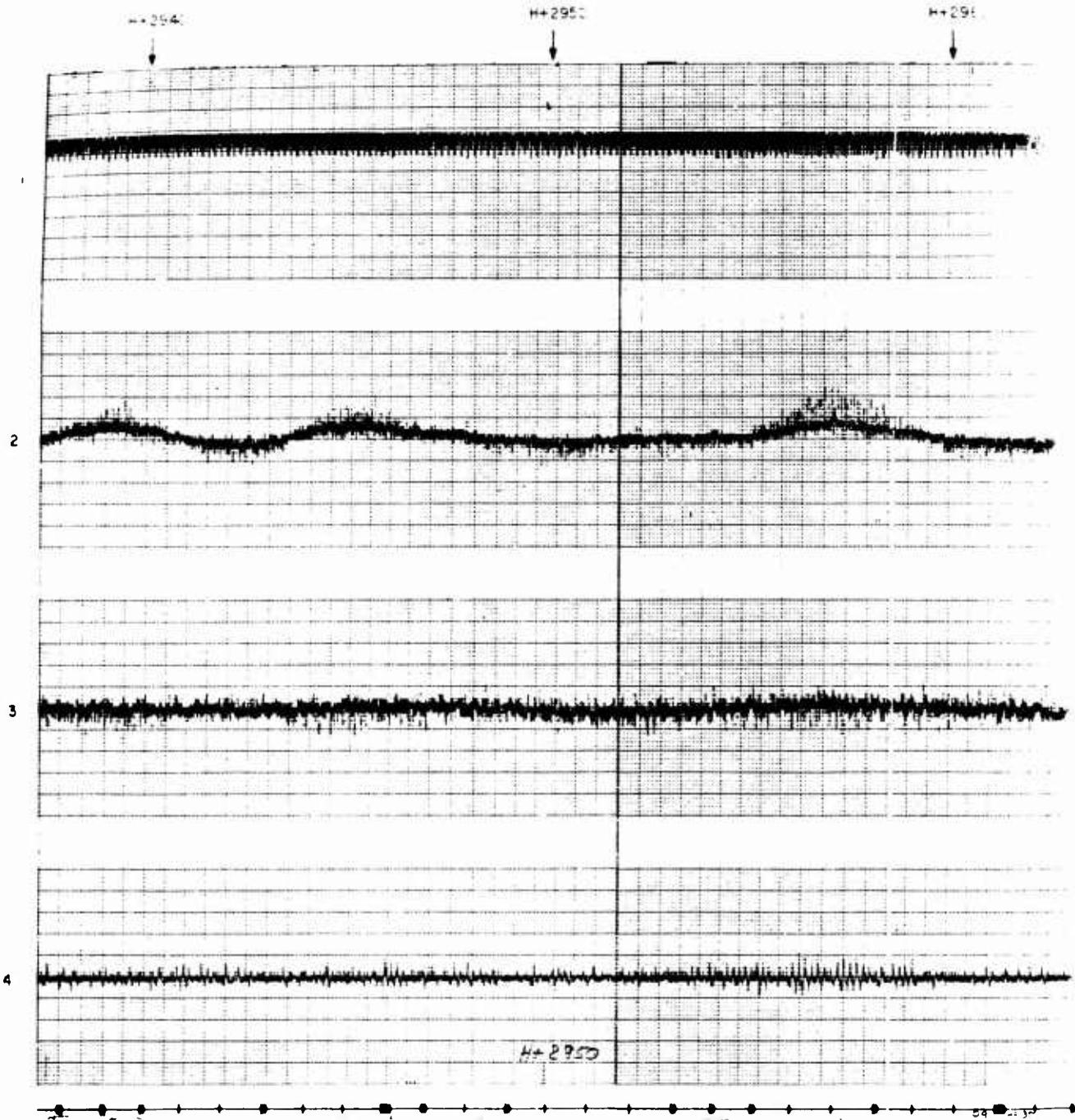
H+2920

H+2930



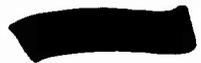
156-4





- 1- AGC
- 2- AZ ERROR
- 3- EL ERROR
- 4- RANGE ERROR

157-1



H+2960

H+2970

H+2980

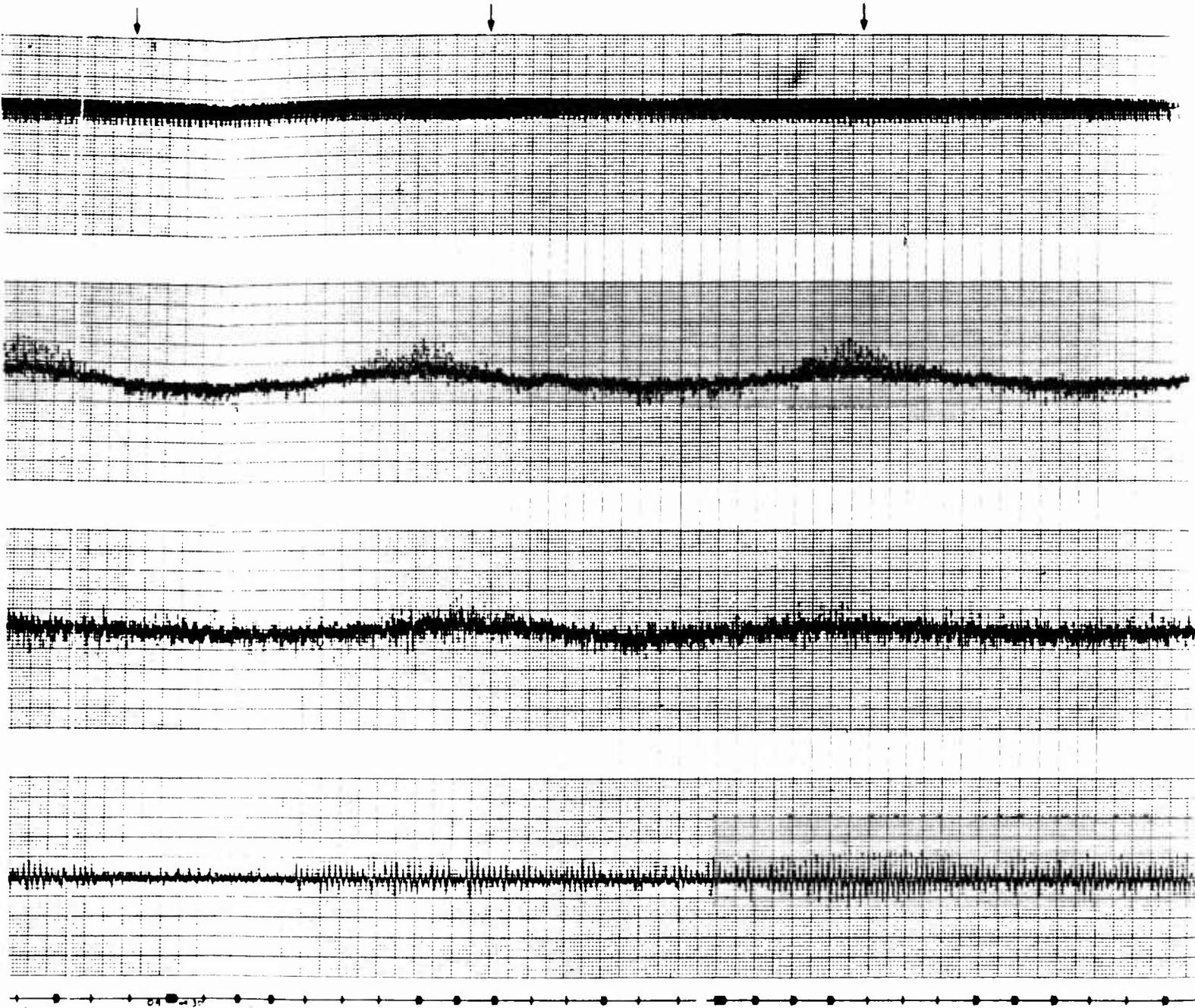


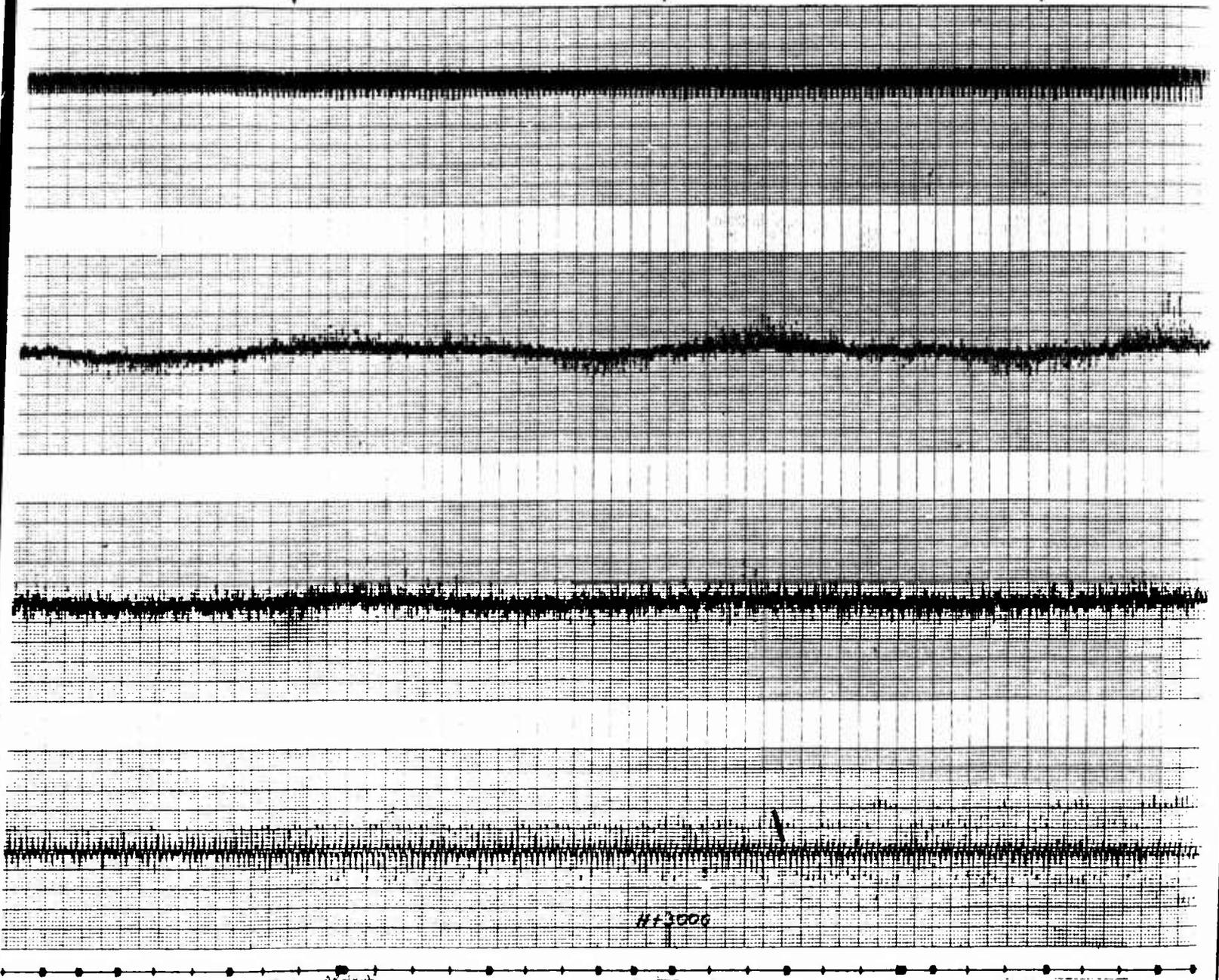
Figure B.7 Continued.



H+2990

H+3000

H+3010



B.7 Continued.

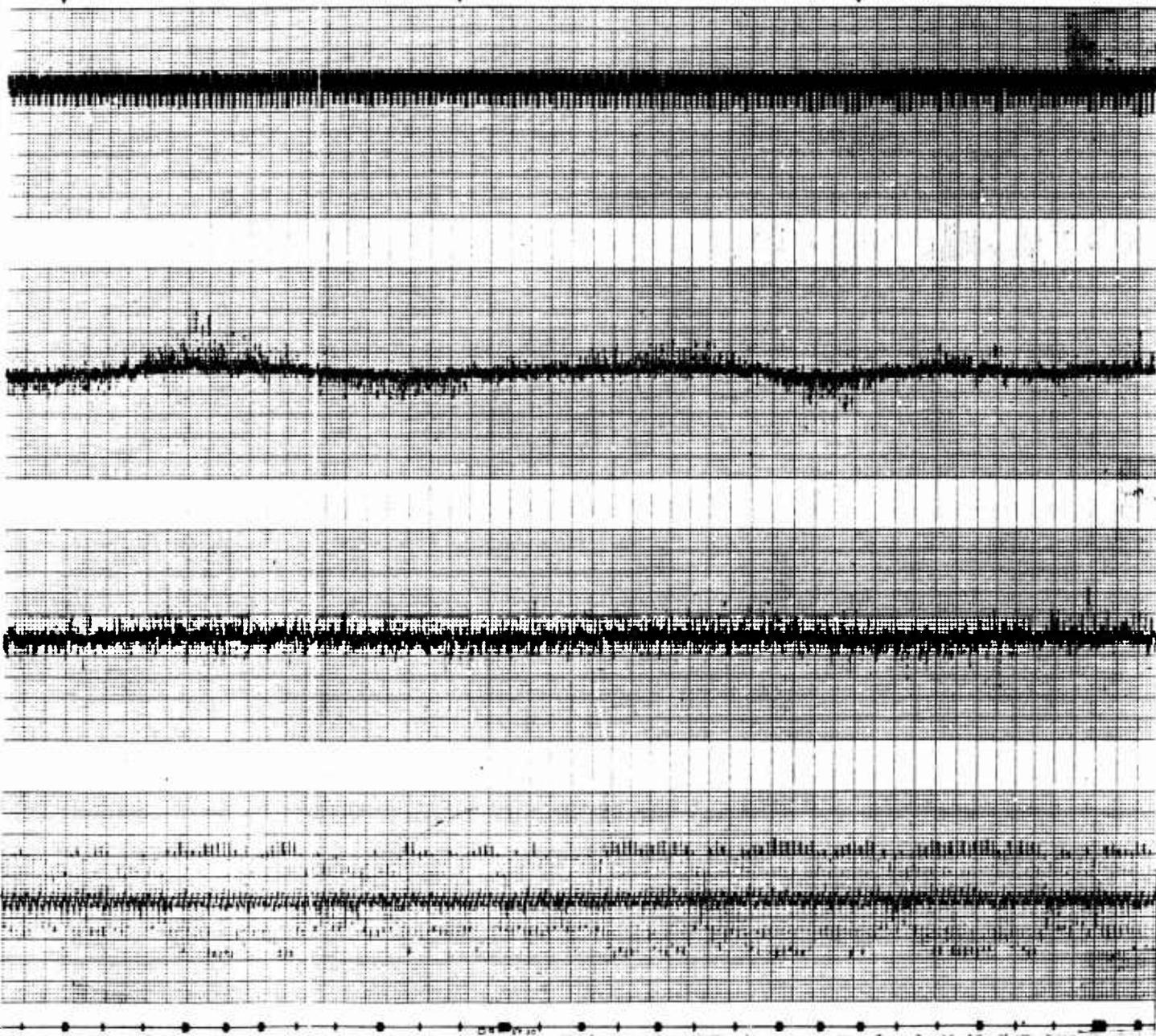
157 -3



H+3010

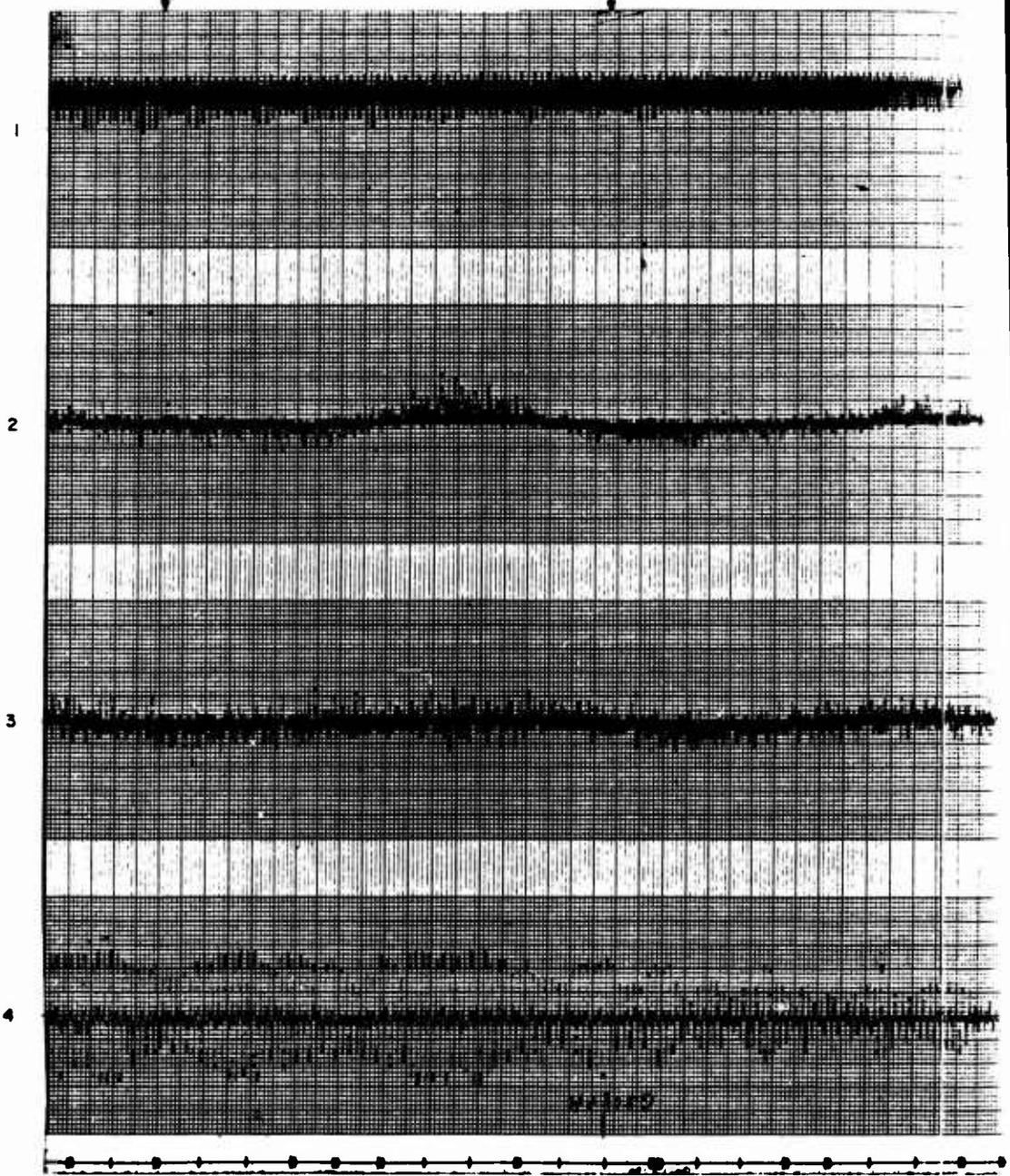
H+3020

H+3030



H+3040

H+3050



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

158-1



H+3060

H+3070

H+3080

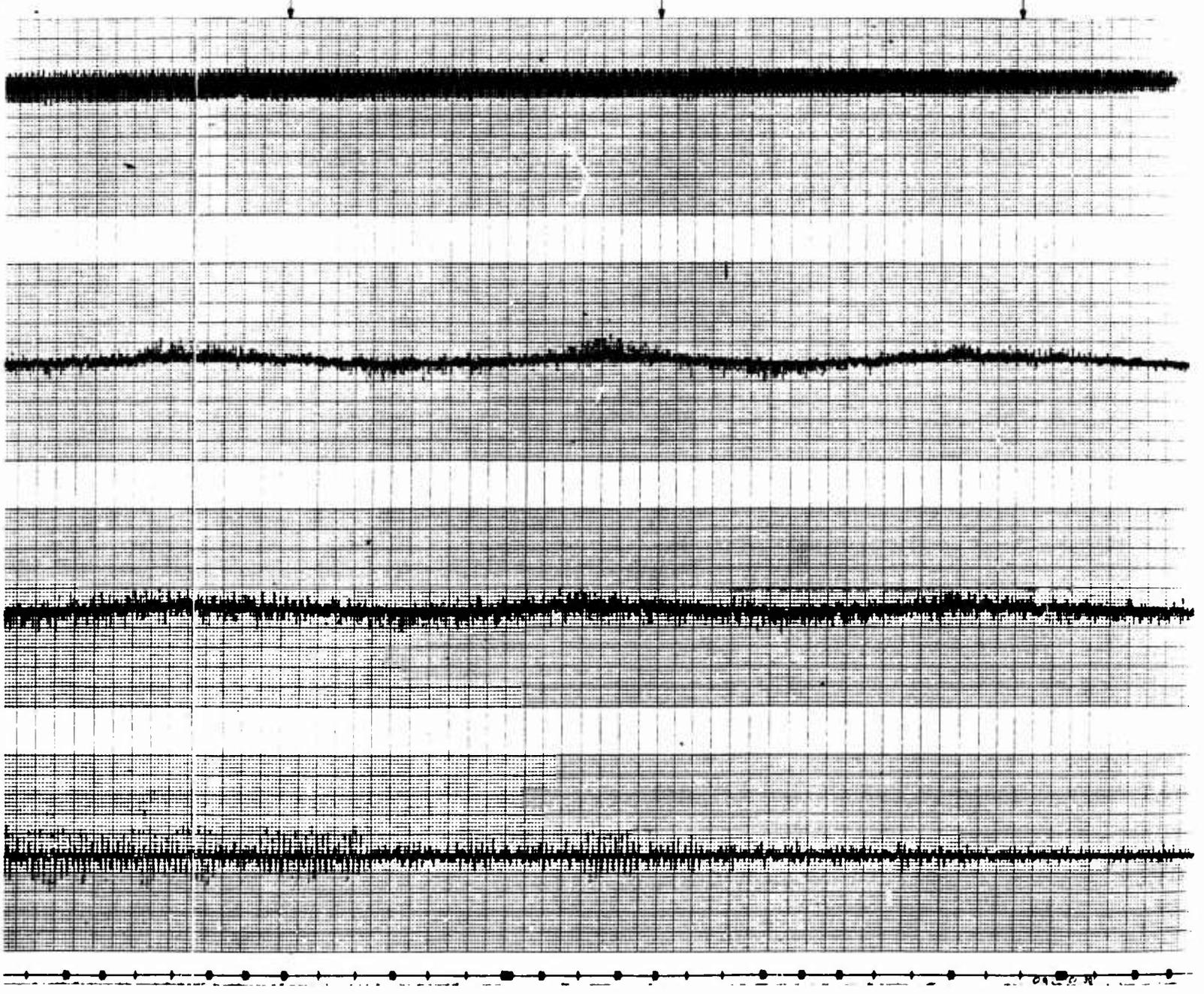
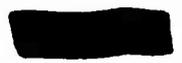


Figure B.7 Conti



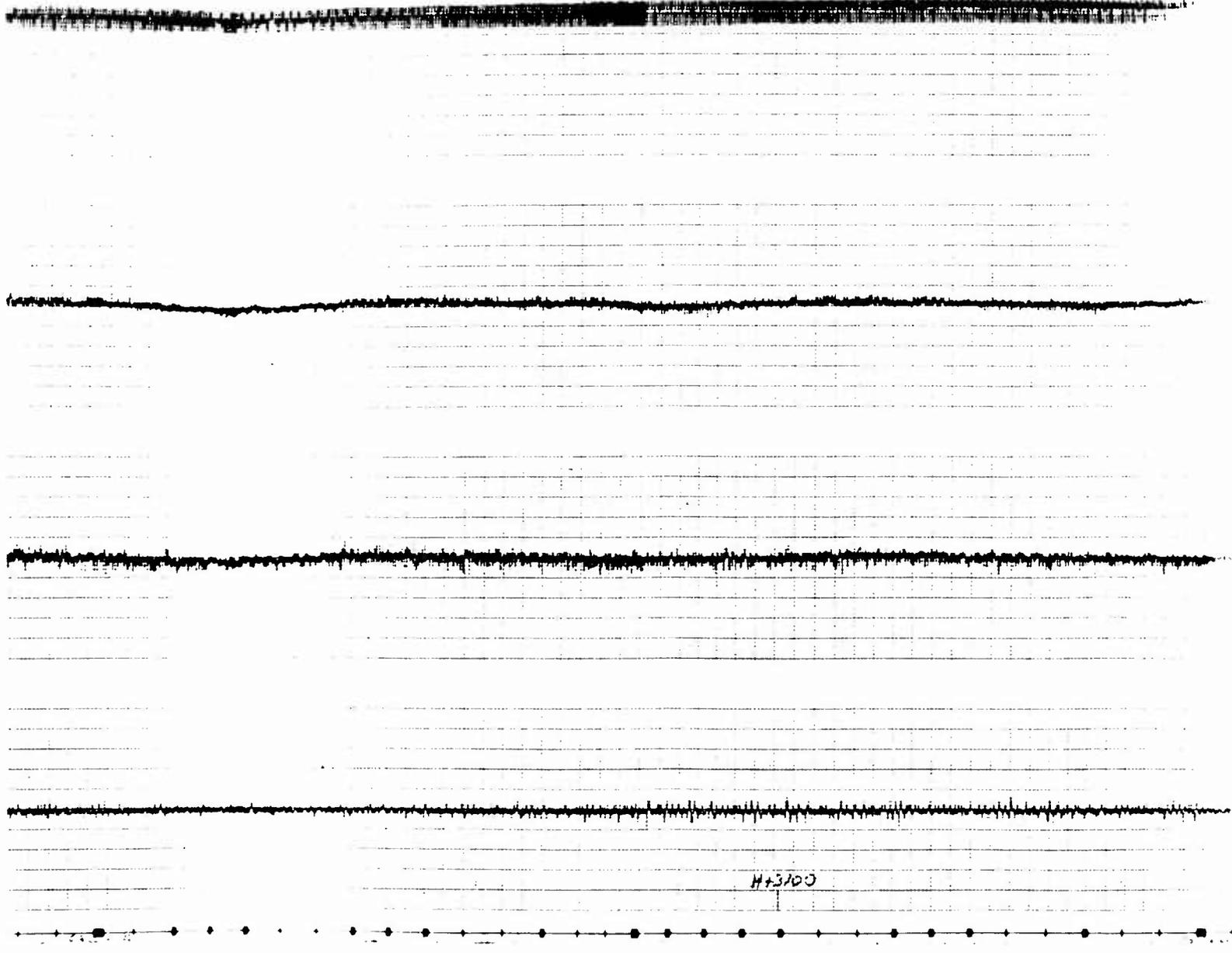


Figure B.7 C-3

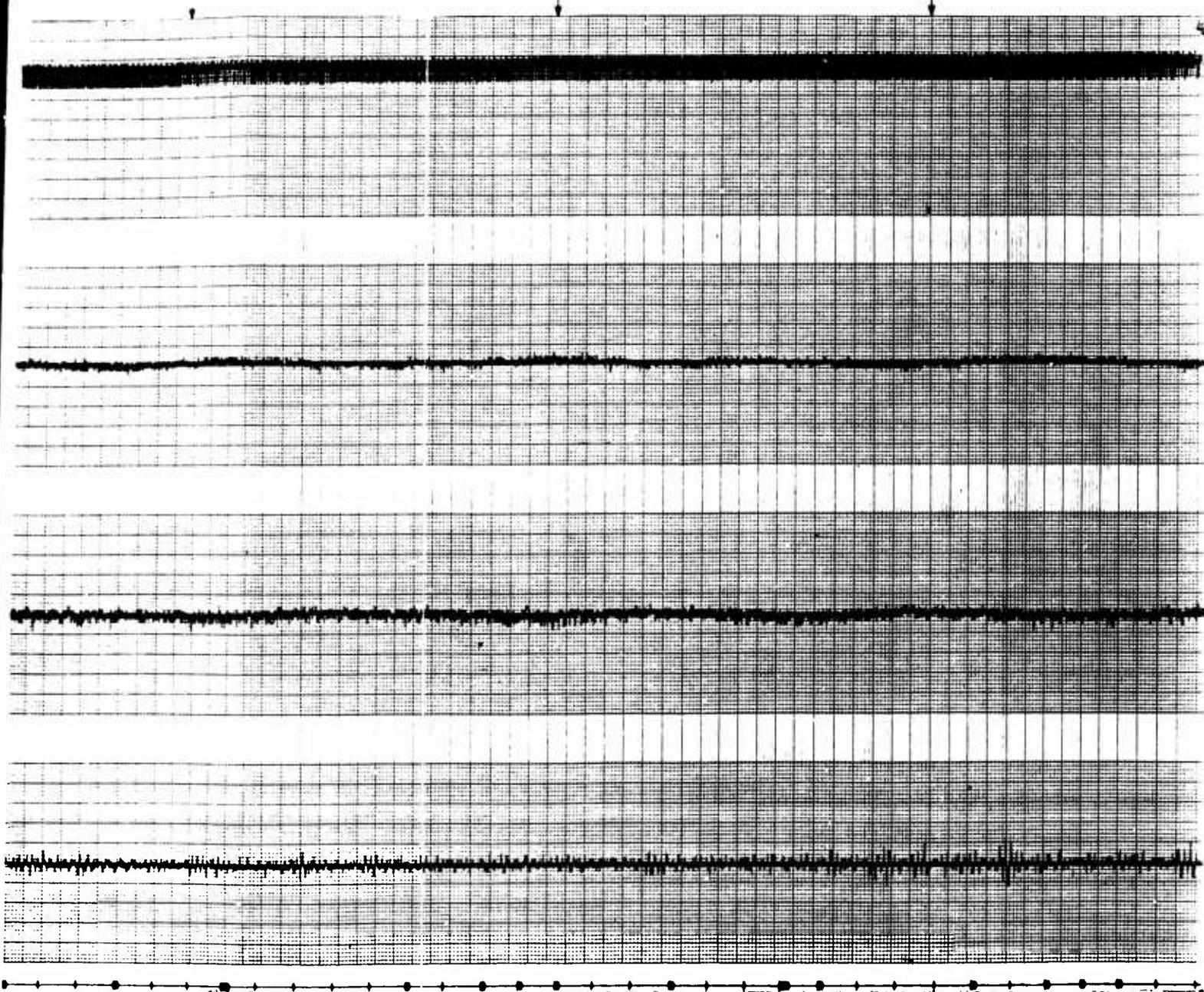
158-3



H+310

H+3120

H+3130

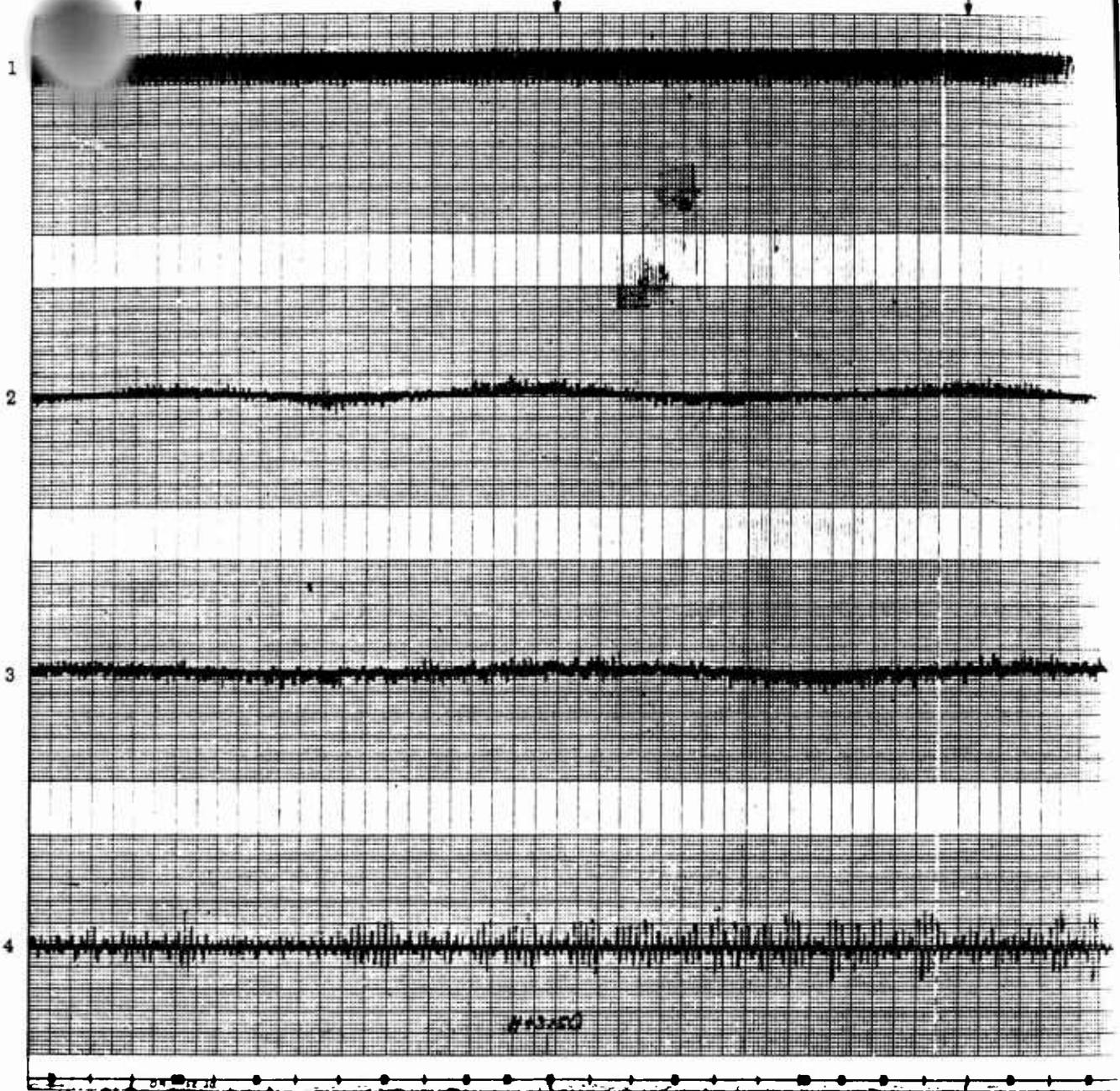


SS-4

H+3140

H+3150

H+3160



- 1 - AGC
- 2 - AZ ERROR
- 3 - EL ERROR
- 4 - RANGE ERROR

159-1

H+3:60

H+3:70

H+3:80

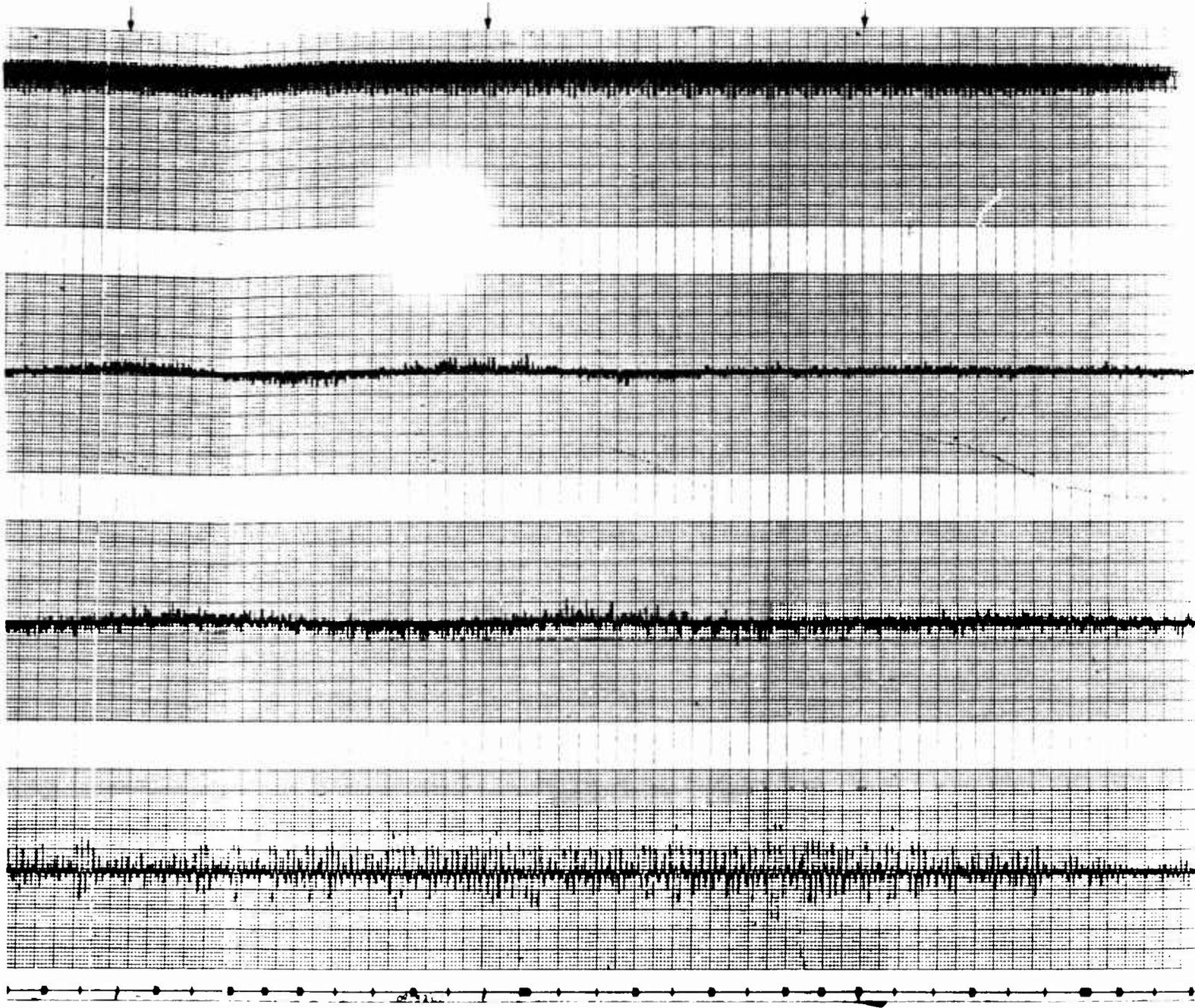


Figure B.7 Cont.



H-3190

H+3200

H+3210

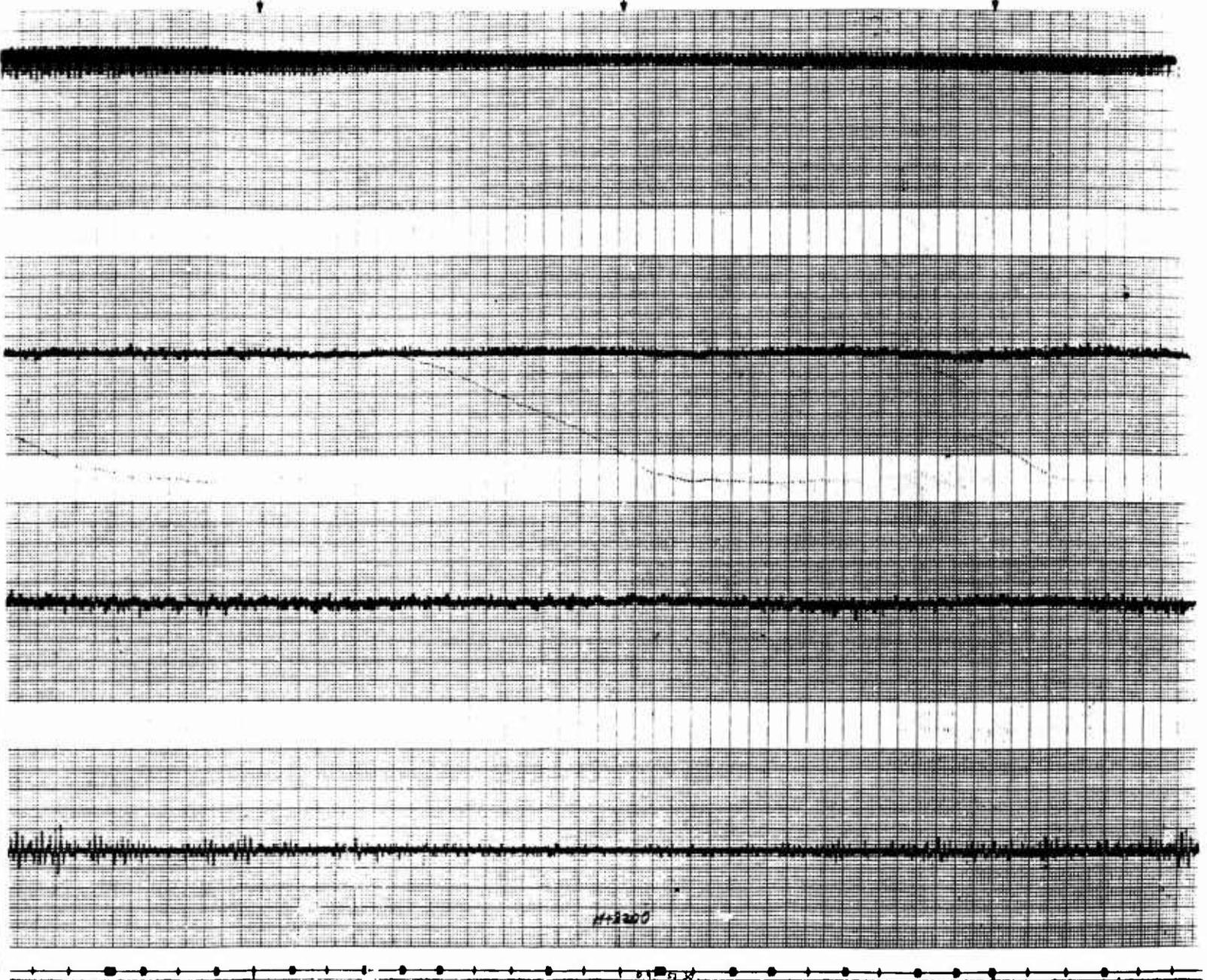
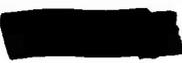


Figure B.7 Continued.

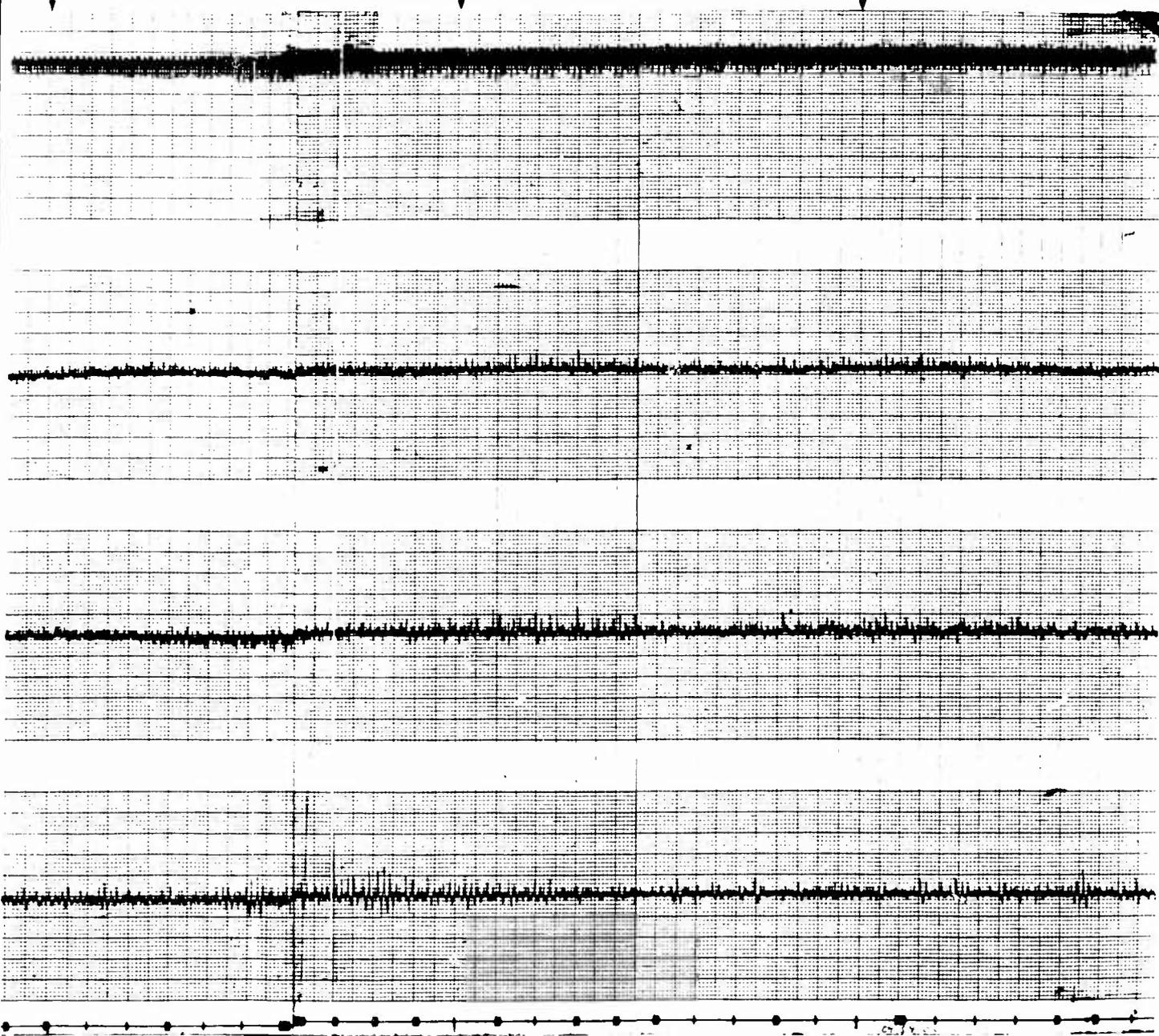
159 - 3



H+3220

H+3220

H+3230



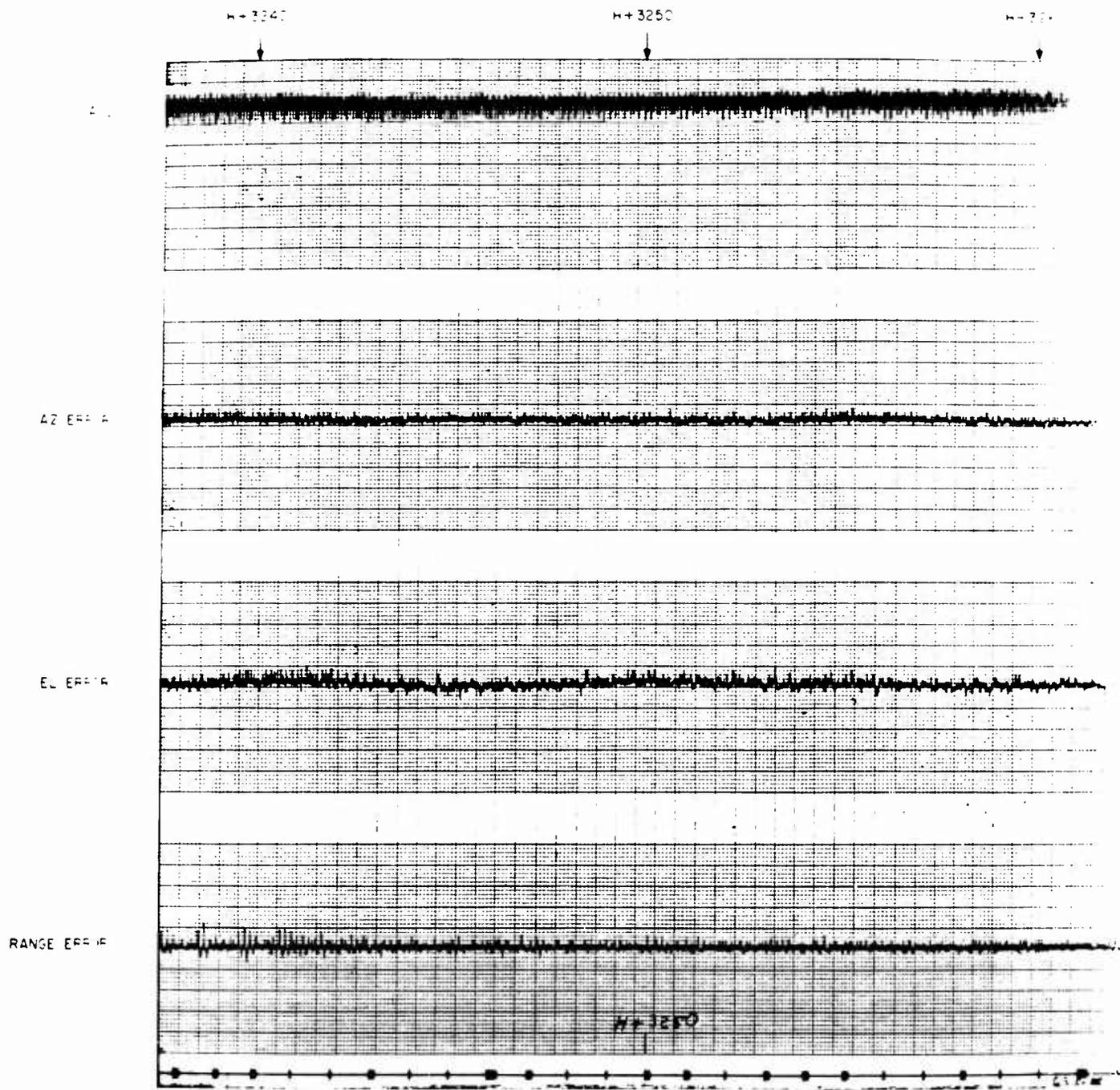


Figure B.7 Cont.



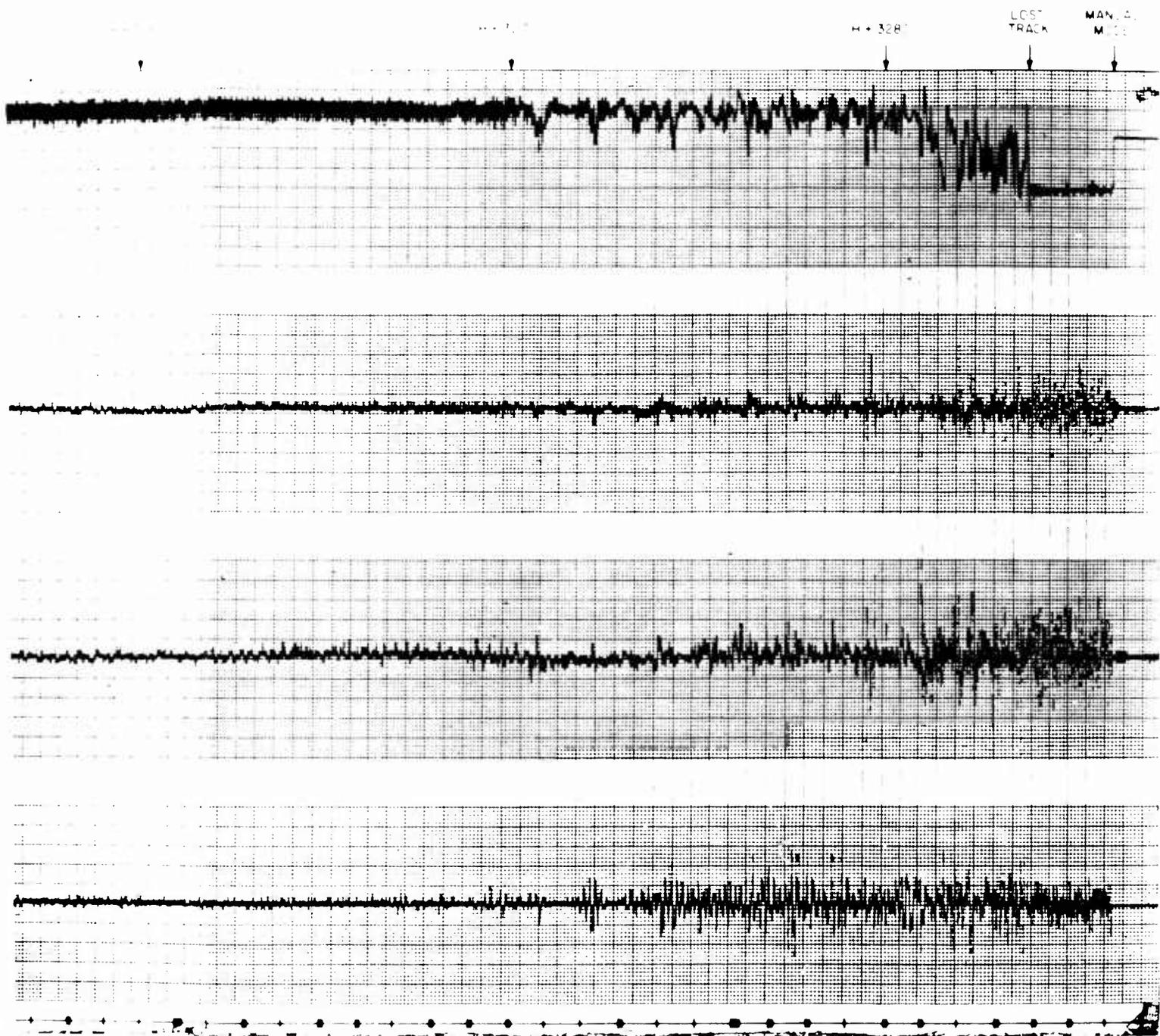


Figure 17 - Continuation

APPENDIX C
 TRAJECTORY DATA, UHF/L-BAND

Star Fish Prime clutter mapping look angles

Raw data referenced to the ship		Quantities have been translated to the launcher position									
Time, sec	Range, km	Azimuth, deg T	Elevation, deg (geod.)	x, km distance east	y, km distance north	z at launcher	$\sqrt{x^2 + y^2}$, km	Height above earth, kft	Height above earth, km	Latitude of target, deg	Longitude of target, deg

101.00	165.20	13.15	66.67	89.63	60.05	88.70	60.96	89.21	135.31	169.806
111.00	169.20	12.30	63.55	89.20	60.54	89.20	61.00	89.20	135.31	169.806
121.00	173.20	11.45	60.43	88.77	60.13	88.77	61.00	88.77	135.31	169.806
131.00	177.20	10.60	57.31	88.34	59.72	88.34	61.00	88.34	135.31	169.806
141.00	181.20	9.75	54.19	87.91	59.31	87.91	61.00	87.91	135.31	169.806
151.00	185.20	8.90	51.07	87.48	58.90	87.48	61.00	87.48	135.31	169.806
161.00	189.20	8.05	47.95	87.05	58.49	87.05	61.00	87.05	135.31	169.806
171.00	193.20	7.20	44.83	86.62	58.08	86.62	61.00	86.62	135.31	169.806
181.00	197.20	6.35	41.71	86.19	57.67	86.19	61.00	86.19	135.31	169.806
191.00	201.20	5.50	38.59	85.76	57.26	85.76	61.00	85.76	135.31	169.806
201.00	205.20	4.65	35.47	85.33	56.85	85.33	61.00	85.33	135.31	169.806
211.00	209.20	3.80	32.35	84.90	56.44	84.90	61.00	84.90	135.31	169.806
221.00	213.20	2.95	29.23	84.47	56.03	84.47	61.00	84.47	135.31	169.806
231.00	217.20	2.10	26.11	84.04	55.62	84.04	61.00	84.04	135.31	169.806
241.00	221.20	1.25	22.99	83.61	55.21	83.61	61.00	83.61	135.31	169.806
251.00	225.20	0.40	19.87	83.18	54.80	83.18	61.00	83.18	135.31	169.806
261.00	229.20		16.75	82.75	54.39	82.75	61.00	82.75	135.31	169.806
271.00	233.20		13.63	82.32	53.98	82.32	61.00	82.32	135.31	169.806
281.00	237.20		10.51	81.89	53.57	81.89	61.00	81.89	135.31	169.806
291.00	241.20		7.39	81.46	53.16	81.46	61.00	81.46	135.31	169.806
301.00	245.20		4.27	81.03	52.75	81.03	61.00	81.03	135.31	169.806
311.00	249.20		1.15	80.60	52.34	80.60	61.00	80.60	135.31	169.806
321.00	253.20			80.17	51.93	80.17	61.00	80.17	135.31	169.806
331.00	257.20			79.74	51.52	79.74	61.00	79.74	135.31	169.806
341.00	261.20			79.31	51.11	79.31	61.00	79.31	135.31	169.806
351.00	265.20			78.88	50.70	78.88	61.00	78.88	135.31	169.806
361.00	269.20			78.45	50.29	78.45	61.00	78.45	135.31	169.806
371.00	273.20			78.02	49.88	78.02	61.00	78.02	135.31	169.806
381.00	277.20			77.59	49.47	77.59	61.00	77.59	135.31	169.806
391.00	281.20			77.16	49.06	77.16	61.00	77.16	135.31	169.806
401.00	285.20			76.73	48.65	76.73	61.00	76.73	135.31	169.806
411.00	289.20			76.30	48.24	76.30	61.00	76.30	135.31	169.806
421.00	293.20			75.87	47.83	75.87	61.00	75.87	135.31	169.806
431.00	297.20			75.44	47.42	75.44	61.00	75.44	135.31	169.806
441.00	301.20			75.01	47.01	75.01	61.00	75.01	135.31	169.806
451.00	305.20			74.58	46.60	74.58	61.00	74.58	135.31	169.806
461.00	309.20			74.15	46.19	74.15	61.00	74.15	135.31	169.806
471.00	313.20			73.72	45.78	73.72	61.00	73.72	135.31	169.806
481.00	317.20			73.29	45.37	73.29	61.00	73.29	135.31	169.806
491.00	321.20			72.86	44.96	72.86	61.00	72.86	135.31	169.806
501.00	325.20			72.43	44.55	72.43	61.00	72.43	135.31	169.806
511.00	329.20			72.00	44.14	72.00	61.00	72.00	135.31	169.806
521.00	333.20			71.57	43.73	71.57	61.00	71.57	135.31	169.806
531.00	337.20			71.14	43.32	71.14	61.00	71.14	135.31	169.806
541.00	341.20			70.71	42.91	70.71	61.00	70.71	135.31	169.806
551.00	345.20			70.28	42.50	70.28	61.00	70.28	135.31	169.806
561.00	349.20			69.85	42.09	69.85	61.00	69.85	135.31	169.806
571.00	353.20			69.42	41.68	69.42	61.00	69.42	135.31	169.806
581.00	357.20			68.99	41.27	68.99	61.00	68.99	135.31	169.806
591.00	361.20			68.56	40.86	68.56	61.00	68.56	135.31	169.806
601.00	365.20			68.13	40.45	68.13	61.00	68.13	135.31	169.806
611.00	369.20			67.70	40.04	67.70	61.00	67.70	135.31	169.806
621.00	373.20			67.27	39.63	67.27	61.00	67.27	135.31	169.806
631.00	377.20			66.84	39.22	66.84	61.00	66.84	135.31	169.806
641.00	381.20			66.41	38.81	66.41	61.00	66.41	135.31	169.806
651.00	385.20			65.98	38.40	65.98	61.00	65.98	135.31	169.806
661.00	389.20			65.55	37.99	65.55	61.00	65.55	135.31	169.806
671.00	393.20			65.12	37.58	65.12	61.00	65.12	135.31	169.806
681.00	397.20			64.69	37.17	64.69	61.00	64.69	135.31	169.806
691.00	401.20			64.26	36.76	64.26	61.00	64.26	135.31	169.806
701.00	405.20			63.83	36.35	63.83	61.00	63.83	135.31	169.806
711.00	409.20			63.40	35.94	63.40	61.00	63.40	135.31	169.806
721.00	413.20			62.97	35.53	62.97	61.00	62.97	135.31	169.806
731.00	417.20			62.54	35.12	62.54	61.00	62.54	135.31	169.806
741.00	421.20			62.11	34.71	62.11	61.00	62.11	135.31	169.806
751.00	425.20			61.68	34.30	61.68	61.00	61.68	135.31	169.806
761.00	429.20			61.25	33.89	61.25	61.00	61.25	135.31	169.806
771.00	433.20			60.82	33.48	60.82	61.00	60.82	135.31	169.806
781.00	437.20			60.39	33.07	60.39	61.00	60.39	135.31	169.806
791.00	441.20			59.96	32.66	59.96	61.00	59.96	135.31	169.806
801.00	445.20			59.53	32.25	59.53	61.00	59.53	135.31	169.806
811.00	449.20			59.10	31.84	59.10	61.00	59.10	135.31	169.806
821.00	453.20			58.67	31.43	58.67	61.00	58.67	135.31	169.806
831.00	457.20			58.24	31.02	58.24	61.00	58.24	135.31	169.806
841.00	461.20			57.81	30.61	57.81	61.00	57.81	135.31	169.806
851.00	465.20			57.38	30.20	57.38	61.00	57.38	135.31	169.806
861.00	469.20			56.95	29.79	56.95	61.00	56.95	135.31	169.806
871.00	473.20			56.52	29.38	56.52	61.00	56.52	135.31	169.806
881.00	477.20			56.09	28.97	56.09	61.00	56.09	135.31	169.806
891.00	481.20			55.66	28.56	55.66	61.00	55.66	135.31	169.806
901.00	485.20			55.23	28.15	55.23	61.00	55.23	135.31	169.806
911.00	489.20			54.80	27.74	54.80	61.00	54.80	135.31	169.806
921.00	493.20			54.37	27.33	54.37	61.00	54.37	135.31	169.806
931.00	497.20			53.94	26.92	53.94	61.00	53.94	135.31	169.806
941.00	501.20			53.51	26.51	53.51	61.00	53.51	135.31	169.806
951.00	505.20			53.08	26.10	53.08	61.00	53.08	135.31	169.806
961.00	509.20			52.65	25.69	52.65	61.00	52.65	135.31	169.806
971.00	513.20			52.22	25.28	52.22	61.00	52.22	135.31	169.806
981.00	517.20			51.79	24.87	51.79	61.00	51.79	135.31	169.806
991.00	521.20			51.36	24.46	51.36	61.00	51.36	135.31	169.806
1001.00	525.20			50.93	24.05	50.93	61.00	50.93	135.31	169.806

211.00	149.20	11.57	63.96	97.70	66.74	07.44	67.44	66.74	196.670	196.6706
212.00	150.20	12.57	63.96	98.70	66.74	8.44	67.44	66.74	197.670	197.6706
213.00	151.20	13.57	63.96	99.70	66.74	9.44	67.44	66.74	198.670	198.6706
214.00	152.20	14.57	63.96	100.70	66.74	10.44	67.44	66.74	199.670	199.6706
215.00	153.20	15.57	63.96	101.70	66.74	11.44	67.44	66.74	200.670	200.6706
216.00	154.20	16.57	63.96	102.70	66.74	12.44	67.44	66.74	201.670	201.6706
217.00	155.20	17.57	63.96	103.70	66.74	13.44	67.44	66.74	202.670	202.6706
218.00	156.20	18.57	63.96	104.70	66.74	14.44	67.44	66.74	203.670	203.6706
219.00	157.20	19.57	63.96	105.70	66.74	15.44	67.44	66.74	204.670	204.6706
220.00	158.20	20.57	63.96	106.70	66.74	16.44	67.44	66.74	205.670	205.6706
221.00	159.20	21.57	63.96	107.70	66.74	17.44	67.44	66.74	206.670	206.6706
222.00	160.20	22.57	63.96	108.70	66.74	18.44	67.44	66.74	207.670	207.6706
223.00	161.20	23.57	63.96	109.70	66.74	19.44	67.44	66.74	208.670	208.6706
224.00	162.20	24.57	63.96	110.70	66.74	20.44	67.44	66.74	209.670	209.6706
225.00	163.20	25.57	63.96	111.70	66.74	21.44	67.44	66.74	210.670	210.6706
226.00	164.20	26.57	63.96	112.70	66.74	22.44	67.44	66.74	211.670	211.6706
227.00	165.20	27.57	63.96	113.70	66.74	23.44	67.44	66.74	212.670	212.6706
228.00	166.20	28.57	63.96	114.70	66.74	24.44	67.44	66.74	213.670	213.6706
229.00	167.20	29.57	63.96	115.70	66.74	25.44	67.44	66.74	214.670	214.6706
230.00	168.20	30.57	63.96	116.70	66.74	26.44	67.44	66.74	215.670	215.6706
231.00	169.20	31.57	63.96	117.70	66.74	27.44	67.44	66.74	216.670	216.6706
232.00	170.20	32.57	63.96	118.70	66.74	28.44	67.44	66.74	217.670	217.6706
233.00	171.20	33.57	63.96	119.70	66.74	29.44	67.44	66.74	218.670	218.6706
234.00	172.20	34.57	63.96	120.70	66.74	30.44	67.44	66.74	219.670	219.6706
235.00	173.20	35.57	63.96	121.70	66.74	31.44	67.44	66.74	220.670	220.6706
236.00	174.20	36.57	63.96	122.70	66.74	32.44	67.44	66.74	221.670	221.6706
237.00	175.20	37.57	63.96	123.70	66.74	33.44	67.44	66.74	222.670	222.6706
238.00	176.20	38.57	63.96	124.70	66.74	34.44	67.44	66.74	223.670	223.6706
239.00	177.20	39.57	63.96	125.70	66.74	35.44	67.44	66.74	224.670	224.6706
240.00	178.20	40.57	63.96	126.70	66.74	36.44	67.44	66.74	225.670	225.6706
241.00	179.20	41.57	63.96	127.70	66.74	37.44	67.44	66.74	226.670	226.6706
242.00	180.20	42.57	63.96	128.70	66.74	38.44	67.44	66.74	227.670	227.6706
243.00	181.20	43.57	63.96	129.70	66.74	39.44	67.44	66.74	228.670	228.6706
244.00	182.20	44.57	63.96	130.70	66.74	40.44	67.44	66.74	229.670	229.6706
245.00	183.20	45.57	63.96	131.70	66.74	41.44	67.44	66.74	230.670	230.6706
246.00	184.20	46.57	63.96	132.70	66.74	42.44	67.44	66.74	231.670	231.6706
247.00	185.20	47.57	63.96	133.70	66.74	43.44	67.44	66.74	232.670	232.6706
248.00	186.20	48.57	63.96	134.70	66.74	44.44	67.44	66.74	233.670	233.6706
249.00	187.20	49.57	63.96	135.70	66.74	45.44	67.44	66.74	234.670	234.6706
250.00	188.20	50.57	63.96	136.70	66.74	46.44	67.44	66.74	235.670	235.6706
251.00	189.20	51.57	63.96	137.70	66.74	47.44	67.44	66.74	236.670	236.6706
252.00	190.20	52.57	63.96	138.70	66.74	48.44	67.44	66.74	237.670	237.6706
253.00	191.20	53.57	63.96	139.70	66.74	49.44	67.44	66.74	238.670	238.6706
254.00	192.20	54.57	63.96	140.70	66.74	50.44	67.44	66.74	239.670	239.6706
255.00	193.20	55.57	63.96	141.70	66.74	51.44	67.44	66.74	240.670	240.6706
256.00	194.20	56.57	63.96	142.70	66.74	52.44	67.44	66.74	241.670	241.6706
257.00	195.20	57.57	63.96	143.70	66.74	53.44	67.44	66.74	242.670	242.6706
258.00	196.20	58.57	63.96	144.70	66.74	54.44	67.44	66.74	243.670	243.6706
259.00	197.20	59.57	63.96	145.70	66.74	55.44	67.44	66.74	244.670	244.6706
260.00	198.20	60.57	63.96	146.70	66.74	56.44	67.44	66.74	245.670	245.6706
261.00	199.20	61.57	63.96	147.70	66.74	57.44	67.44	66.74	246.670	246.6706
262.00	200.20	62.57	63.96	148.70	66.74	58.44	67.44	66.74	247.670	247.6706
263.00	201.20	63.57	63.96	149.70	66.74	59.44	67.44	66.74	248.670	248.6706
264.00	202.20	64.57	63.96	150.70	66.74	60.44	67.44	66.74	249.670	249.6706
265.00	203.20	65.57	63.96	151.70	66.74	61.44	67.44	66.74	250.670	250.6706
266.00	204.20	66.57	63.96	152.70	66.74	62.44	67.44	66.74	251.670	251.6706
267.00	205.20	67.57	63.96	153.70	66.74	63.44	67.44	66.74	252.670	252.6706
268.00	206.20	68.57	63.96	154.70	66.74	64.44	67.44	66.74	253.670	253.6706
269.00	207.20	69.57	63.96	155.70	66.74	65.44	67.44	66.74	254.670	254.6706
270.00	208.20	70.57	63.96	156.70	66.74	66.44	67.44	66.74	255.670	255.6706

375-00	149-20	18-44	63-27	78-56	661-33	92-77	671-07	130-57	1-3-57	20-807	19-2-27
376-00	149-20	15-14	60-22	76-66	662-27	75-76	672-16	111-55	1-2-57	20-807	19-2-27
377-00	149-20	11-03	60-01	80-52	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
378-00	149-20	7-21	58-37	90-35	66-14	75-76	672-16	111-55	1-2-57	20-807	19-2-27
379-00	149-20	5-01	64-56	75-65	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
380-00	149-20	7-13	60-10	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
381-00	149-20	11-09	60-31	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
382-00	149-20	16-03	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
383-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
384-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
385-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
386-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
387-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
388-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
389-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
390-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
391-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
392-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
393-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
394-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
395-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
396-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
397-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
398-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
399-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27
400-00	149-20	18-09	60-23	66-53	67-46	75-76	672-16	111-55	1-2-57	20-807	19-2-27

Account Number	Balance	Debit	Credit	Balance
573.00				
581.00				
582.00				
583.00				
584.00				
585.00				
586.00				
587.00				
588.00				
589.00				
590.00				
591.00				
592.00				
593.00				
594.00				
595.00				
596.00				
597.00				
598.00				
599.00				
600.00				
601.00				
602.00				
603.00				
604.00				
605.00				
606.00				
607.00				
608.00				
609.00				
610.00				
611.00				
612.00				
613.00				
614.00				
615.00				
616.00				
617.00				
618.00				
619.00				
620.00				
621.00				
622.00				
623.00				
624.00				
625.00				
626.00				
627.00				
628.00				
629.00				
630.00				
631.00				
632.00				
633.00				
634.00				
635.00				
636.00				
637.00				
638.00				
639.00				
640.00				
641.00				
642.00				
643.00				
644.00				
645.00				
646.00				
647.00				
648.00				
649.00				
650.00				
651.00				
652.00				
653.00				
654.00				
655.00				
656.00				
657.00				
658.00				
659.00				
660.00				
661.00				
662.00				
663.00				
664.00				
665.00				
666.00				
667.00				
668.00				
669.00				
670.00				
671.00				
672.00				
673.00				
674.00				
675.00				
676.00				
677.00				
678.00				
679.00				
680.00				
681.00				
682.00				
683.00				
684.00				
685.00				
686.00				
687.00				
688.00				
689.00				
690.00				
691.00				
692.00				
693.00				
694.00				
695.00				
696.00				
697.00				
698.00				
699.00				
700.00				

423.00	55.25	189.17	61.73	57.35	412.28	312.71	121.54	16.7	11.5665	18.1165
424.00	55.25	189.45	61.83	57.36	413.31	313.20	122.03	16.7	11.5665	18.1165
425.00	55.25	189.73	61.93	57.36	414.34	313.69	122.51	16.7	11.5665	18.1165
426.00	55.25	190.01	62.03	57.36	415.37	314.18	123.00	16.7	11.5665	18.1165
427.00	55.25	190.29	62.13	57.36	416.40	314.67	123.48	16.7	11.5665	18.1165
428.00	55.25	190.57	62.23	57.36	417.43	315.16	123.97	16.7	11.5665	18.1165
429.00	55.25	190.85	62.33	57.36	418.46	315.65	124.45	16.7	11.5665	18.1165
430.00	55.25	191.13	62.43	57.36	419.49	316.14	124.94	16.7	11.5665	18.1165
431.00	55.25	191.41	62.53	57.36	420.52	316.63	125.42	16.7	11.5665	18.1165
432.00	55.25	191.69	62.63	57.36	421.55	317.12	125.91	16.7	11.5665	18.1165
433.00	55.25	191.97	62.73	57.36	422.58	317.61	126.39	16.7	11.5665	18.1165
434.00	55.25	192.25	62.83	57.36	423.61	318.10	126.88	16.7	11.5665	18.1165
435.00	55.25	192.53	62.93	57.36	424.64	318.59	127.36	16.7	11.5665	18.1165
436.00	55.25	192.81	63.03	57.36	425.67	319.08	127.85	16.7	11.5665	18.1165
437.00	55.25	193.09	63.13	57.36	426.70	319.57	128.33	16.7	11.5665	18.1165
438.00	55.25	193.37	63.23	57.36	427.73	320.06	128.82	16.7	11.5665	18.1165
439.00	55.25	193.65	63.33	57.36	428.76	320.55	129.30	16.7	11.5665	18.1165
440.00	55.25	193.93	63.43	57.36	429.79	321.04	129.79	16.7	11.5665	18.1165
441.00	55.25	194.21	63.53	57.36	430.82	321.53	130.27	16.7	11.5665	18.1165
442.00	55.25	194.49	63.63	57.36	431.85	322.02	130.76	16.7	11.5665	18.1165
443.00	55.25	194.77	63.73	57.36	432.88	322.51	131.24	16.7	11.5665	18.1165
444.00	55.25	195.05	63.83	57.36	433.91	323.00	131.73	16.7	11.5665	18.1165
445.00	55.25	195.33	63.93	57.36	434.94	323.49	132.21	16.7	11.5665	18.1165
446.00	55.25	195.61	64.03	57.36	435.97	323.98	132.70	16.7	11.5665	18.1165
447.00	55.25	195.89	64.13	57.36	437.00	324.47	133.18	16.7	11.5665	18.1165
448.00	55.25	196.17	64.23	57.36	438.03	324.96	133.67	16.7	11.5665	18.1165
449.00	55.25	196.45	64.33	57.36	439.06	325.45	134.15	16.7	11.5665	18.1165
450.00	55.25	196.73	64.43	57.36	440.09	325.94	134.64	16.7	11.5665	18.1165
451.00	55.25	197.01	64.53	57.36	441.12	326.43	135.12	16.7	11.5665	18.1165
452.00	55.25	197.29	64.63	57.36	442.15	326.92	135.61	16.7	11.5665	18.1165
453.00	55.25	197.57	64.73	57.36	443.18	327.41	136.09	16.7	11.5665	18.1165
454.00	55.25	197.85	64.83	57.36	444.21	327.90	136.58	16.7	11.5665	18.1165
455.00	55.25	198.13	64.93	57.36	445.24	328.39	137.06	16.7	11.5665	18.1165
456.00	55.25	198.41	65.03	57.36	446.27	328.88	137.55	16.7	11.5665	18.1165
457.00	55.25	198.69	65.13	57.36	447.30	329.37	138.03	16.7	11.5665	18.1165
458.00	55.25	198.97	65.23	57.36	448.33	329.86	138.52	16.7	11.5665	18.1165
459.00	55.25	199.25	65.33	57.36	449.36	330.35	139.00	16.7	11.5665	18.1165
460.00	55.25	199.53	65.43	57.36	450.39	330.84	139.49	16.7	11.5665	18.1165
461.00	55.25	199.81	65.53	57.36	451.42	331.33	139.97	16.7	11.5665	18.1165
462.00	55.25	200.09	65.63	57.36	452.45	331.82	140.46	16.7	11.5665	18.1165
463.00	55.25	200.37	65.73	57.36	453.48	332.31	140.94	16.7	11.5665	18.1165
464.00	55.25	200.65	65.83	57.36	454.51	332.80	141.43	16.7	11.5665	18.1165
465.00	55.25	200.93	65.93	57.36	455.54	333.29	141.91	16.7	11.5665	18.1165
466.00	55.25	201.21	66.03	57.36	456.57	333.78	142.40	16.7	11.5665	18.1165
467.00	55.25	201.49	66.13	57.36	457.60	334.27	142.88	16.7	11.5665	18.1165
468.00	55.25	201.77	66.23	57.36	458.63	334.76	143.37	16.7	11.5665	18.1165
469.00	55.25	202.05	66.33	57.36	459.66	335.25	143.85	16.7	11.5665	18.1165
470.00	55.25	202.33	66.43	57.36	460.69	335.74	144.34	16.7	11.5665	18.1165
471.00	55.25	202.61	66.53	57.36	461.72	336.23	144.82	16.7	11.5665	18.1165
472.00	55.25	202.89	66.63	57.36	462.75	336.72	145.31	16.7	11.5665	18.1165
473.00	55.25	203.17	66.73	57.36	463.78	337.21	145.79	16.7	11.5665	18.1165
474.00	55.25	203.45	66.83	57.36	464.81	337.70	146.28	16.7	11.5665	18.1165
475.00	55.25	203.73	66.93	57.36	465.84	338.19	146.76	16.7	11.5665	18.1165
476.00	55.25	204.01	67.03	57.36	466.87	338.68	147.25	16.7	11.5665	18.1165
477.00	55.25	204.29	67.13	57.36	467.90	339.17	147.73	16.7	11.5665	18.1165
478.00	55.25	204.57	67.23	57.36	468.93	339.66	148.22	16.7	11.5665	18.1165
479.00	55.25	204.85	67.33	57.36	469.96	340.15	148.70	16.7	11.5665	18.1165
480.00	55.25	205.13	67.43	57.36	470.99	340.64	149.19	16.7	11.5665	18.1165
481.00	55.25	205.41	67.53	57.36	472.02	341.13	149.67	16.7	11.5665	18.1165
482.00	55.25	205.69	67.63	57.36	473.05	341.62	150.16	16.7	11.5665	18.1165
483.00	55.25	205.97	67.73	57.36	474.08	342.11	150.64	16.7	11.5665	18.1165
484.00	55.25	206.25	67.83	57.36	475.11	342.60	151.13	16.7	11.5665	18.1165
485.00	55.25	206.53	67.93	57.36	476.14	343.09	151.61	16.7	11.5665	18.1165
486.00	55.25	206.81	68.03	57.36	477.17	343.58	152.10	16.7	11.5665	18.1165
487.00	55.25	207.09	68.13	57.36	478.20	344.07	152.58	16.7	11.5665	18.1165
488.00	55.25	207.37	68.23	57.36	479.23	344.56	153.07	16.7	11.5665	18.1165
489.00	55.25	207.65	68.33	57.36	480.26	345.05	153.55	16.7	11.5665	18.1165
490.00	55.25	207.93	68.43	57.36	481.29	345.54	154.04	16.7	11.5665	18.1165
491.00	55.25	208.21	68.53	57.36	482.32	346.03	154.52	16.7	11.5665	18.1165
492.00	55.25	208.49	68.63	57.36	483.35	346.52	155.01	16.7	11.5665	18.1165
493.00	55.25	208.77	68.73	57.36	484.38	347.01	155.49	16.7	11.5665	18.1165
494.00	55.25	209.05	68.83	57.36	485.41	347.50	155.98	16.7	11.5665	18.1165
495.00	55.25	209.33	68.93	57.36	486.44	347.99	156.46	16.7	11.5665	18.1165
496.00	55.25	209.61	69.03	57.36	487.47	348.48	156.95	16.7	11.5665	18.1165
497.00	55.25	209.89	69.13	57.36	488.50	348.97	157.43	16.7	11.5665	18.1165
498.00	55.25	210.17	69.23	57.36	489.53	349.46	157.92	16.7	11.5665	18.1165
499.00	55.25	210.45	69.33	57.36	490.56	349.95	158.40	16.7	11.5665	18.1165
500.00	55.25	210.73	69.43	57.36	491.59	350.44	158.89	16.7	11.5665	18.1165

671.00	165.21	84.91	672.75	55.53	55.53	154.77	154.77	2.20	166.97
672.00	165.21	84.91	673.70	55.53	55.53	154.77	154.77	2.20	168.17
673.00	165.21	84.91	674.65	55.53	55.53	154.77	154.77	2.20	169.37
674.00	165.21	84.91	675.60	55.53	55.53	154.77	154.77	2.20	170.57
675.00	165.21	84.91	676.55	55.53	55.53	154.77	154.77	2.20	171.77
676.00	165.21	84.91	677.50	55.53	55.53	154.77	154.77	2.20	172.97
677.00	165.21	84.91	678.45	55.53	55.53	154.77	154.77	2.20	174.17
678.00	165.21	84.91	679.40	55.53	55.53	154.77	154.77	2.20	175.37
679.00	165.21	84.91	680.35	55.53	55.53	154.77	154.77	2.20	176.57
680.00	165.21	84.91	681.30	55.53	55.53	154.77	154.77	2.20	177.77
681.00	165.21	84.91	682.25	55.53	55.53	154.77	154.77	2.20	178.97
682.00	165.21	84.91	683.20	55.53	55.53	154.77	154.77	2.20	180.17
683.00	165.21	84.91	684.15	55.53	55.53	154.77	154.77	2.20	181.37
684.00	165.21	84.91	685.10	55.53	55.53	154.77	154.77	2.20	182.57
685.00	165.21	84.91	686.05	55.53	55.53	154.77	154.77	2.20	183.77
686.00	165.21	84.91	687.00	55.53	55.53	154.77	154.77	2.20	184.97
687.00	165.21	84.91	687.95	55.53	55.53	154.77	154.77	2.20	186.17
688.00	165.21	84.91	688.90	55.53	55.53	154.77	154.77	2.20	187.37
689.00	165.21	84.91	689.85	55.53	55.53	154.77	154.77	2.20	188.57
690.00	165.21	84.91	690.80	55.53	55.53	154.77	154.77	2.20	189.77
691.00	165.21	84.91	691.75	55.53	55.53	154.77	154.77	2.20	190.97
692.00	165.21	84.91	692.70	55.53	55.53	154.77	154.77	2.20	192.17
693.00	165.21	84.91	693.65	55.53	55.53	154.77	154.77	2.20	193.37
694.00	165.21	84.91	694.60	55.53	55.53	154.77	154.77	2.20	194.57
695.00	165.21	84.91	695.55	55.53	55.53	154.77	154.77	2.20	195.77
696.00	165.21	84.91	696.50	55.53	55.53	154.77	154.77	2.20	196.97
697.00	165.21	84.91	697.45	55.53	55.53	154.77	154.77	2.20	198.17
698.00	165.21	84.91	698.40	55.53	55.53	154.77	154.77	2.20	199.37
699.00	165.21	84.91	699.35	55.53	55.53	154.77	154.77	2.20	200.57
700.00	165.21	84.91	700.30	55.53	55.53	154.77	154.77	2.20	201.77
701.00	165.21	84.91	701.25	55.53	55.53	154.77	154.77	2.20	202.97
702.00	165.21	84.91	702.20	55.53	55.53	154.77	154.77	2.20	204.17
703.00	165.21	84.91	703.15	55.53	55.53	154.77	154.77	2.20	205.37
704.00	165.21	84.91	704.10	55.53	55.53	154.77	154.77	2.20	206.57
705.00	165.21	84.91	705.05	55.53	55.53	154.77	154.77	2.20	207.77
706.00	165.21	84.91	706.00	55.53	55.53	154.77	154.77	2.20	208.97
707.00	165.21	84.91	706.95	55.53	55.53	154.77	154.77	2.20	210.17
708.00	165.21	84.91	707.90	55.53	55.53	154.77	154.77	2.20	211.37
709.00	165.21	84.91	708.85	55.53	55.53	154.77	154.77	2.20	212.57
710.00	165.21	84.91	709.80	55.53	55.53	154.77	154.77	2.20	213.77
711.00	165.21	84.91	710.75	55.53	55.53	154.77	154.77	2.20	214.97
712.00	165.21	84.91	711.70	55.53	55.53	154.77	154.77	2.20	216.17
713.00	165.21	84.91	712.65	55.53	55.53	154.77	154.77	2.20	217.37
714.00	165.21	84.91	713.60	55.53	55.53	154.77	154.77	2.20	218.57
715.00	165.21	84.91	714.55	55.53	55.53	154.77	154.77	2.20	219.77
716.00	165.21	84.91	715.50	55.53	55.53	154.77	154.77	2.20	220.97
717.00	165.21	84.91	716.45	55.53	55.53	154.77	154.77	2.20	222.17
718.00	165.21	84.91	717.40	55.53	55.53	154.77	154.77	2.20	223.37
719.00	165.21	84.91	718.35	55.53	55.53	154.77	154.77	2.20	224.57
720.00	165.21	84.91	719.30	55.53	55.53	154.77	154.77	2.20	225.77
721.00	165.21	84.91	720.25	55.53	55.53	154.77	154.77	2.20	226.97
722.00	165.21	84.91	721.20	55.53	55.53	154.77	154.77	2.20	228.17
723.00	165.21	84.91	722.15	55.53	55.53	154.77	154.77	2.20	229.37
724.00	165.21	84.91	723.10	55.53	55.53	154.77	154.77	2.20	230.57
725.00	165.21	84.91	724.05	55.53	55.53	154.77	154.77	2.20	231.77
726.00	165.21	84.91	725.00	55.53	55.53	154.77	154.77	2.20	232.97
727.00	165.21	84.91	725.95	55.53	55.53	154.77	154.77	2.20	234.17
728.00	165.21	84.91	726.90	55.53	55.53	154.77	154.77	2.20	235.37
729.00	165.21	84.91	727.85	55.53	55.53	154.77	154.77	2.20	236.57
730.00	165.21	84.91	728.80	55.53	55.53	154.77	154.77	2.20	237.77
731.00	165.21	84.91	729.75	55.53	55.53	154.77	154.77	2.20	238.97
732.00	165.21	84.91	730.70	55.53	55.53	154.77	154.77	2.20	240.17
733.00	165.21	84.91	731.65	55.53	55.53	154.77	154.77	2.20	241.37
734.00	165.21	84.91	732.60	55.53	55.53	154.77	154.77	2.20	242.57
735.00	165.21	84.91	733.55	55.53	55.53	154.77	154.77	2.20	243.77
736.00	165.21	84.91	734.50	55.53	55.53	154.77	154.77	2.20	244.97
737.00	165.21	84.91	735.45	55.53	55.53	154.77	154.77	2.20	246.17
738.00	165.21	84.91	736.40	55.53	55.53	154.77	154.77	2.20	247.37
739.00	165.21	84.91	737.35	55.53	55.53	154.77	154.77	2.20	248.57
740.00	165.21	84.91	738.30	55.53	55.53	154.77	154.77	2.20	249.77
741.00	165.21	84.91	739.25	55.53	55.53	154.77	154.77	2.20	250.97
742.00	165.21	84.91	740.20	55.53	55.53	154.77	154.77	2.20	252.17
743.00	165.21	84.91	741.15	55.53	55.53	154.77	154.77	2.20	253.37
744.00	165.21	84.91	742.10	55.53	55.53	154.77	154.77	2.20	254.57
745.00	165.21	84.91	743.05	55.53	55.53	154.77	154.77	2.20	255.77
746.00	165.21	84.91	744.00	55.53	55.53	154.77	154.77	2.20	256.97
747.00	165.21	84.91	744.95	55.53	55.53	154.77	154.77	2.20	258.17
748.00	165.21	84.91	745.90	55.53	55.53	154.77	154.77	2.20	259.37
749.00	165.21	84.91	746.85	55.53	55.53	154.77	154.77	2.20	260.57
750.00	165.21	84.91	747.80	55.53	55.53	154.77	154.77	2.20	261.77
751.00	165.21	84.91	748.75	55.53	55.53	154.77	154.77	2.20	262.97
752.00	165.21	84.91	749.70	55.53	55.53	154.77	154.77	2.20	264.17
753.00	165.21	84.91	750.65	55.53	55.53	154.77	154.77	2.20	265.37
754.00	165.21	84.91	751.60	55.53	55.53	154.77	154.77	2.20	266.57
755.00	165.21	84.91	752.55	55.53	55.53	154.77	154.77	2.20	267.77
756.00	165.21	84.91	753.50	55.53	55.53	154.77	154.77	2.20	268.97
757.00	165.21	84.91	754.45	55.53	55.53	154.77	154.77	2.20	270.17
758.00	165.21	84.91	755.40	55.53	55.53	154.77	154.77	2.20	271.37
759.00	165.21	84.91	756.35	55.53	55.53	154.77	154.77	2.20	272.57
760.00	165.21	84.91	757.30	55.53	55.53	154.77	154.77	2.20	273.77
761.00	165.21	84.91	758.25	55.53	55.53	154.77	154.77	2.20	274.97
762.00	165.21	84.91	759.20	55.53	55.53	154.77	154.77	2.20	276.17
763.00	165.21	84.91	760.15	55.53	55.53	154.77	154.77	2.20	277.37
764.00	165.21	84.91	761.10	55.53	55.53	154.77	154.77	2.20	278.57
765.00	165.21	84.91	762.05	55.53	55.53	154.77	154.77	2.20	279.77
766.00	165.21	84.91	763.00	55.53	55.53	154.77	154.77	2.20	280.97
767.00	165.21	84.91	763.95	55.53	55.53	154.77	154.77	2.20	282.17
768.00	165.21	84.91	764.90	55.53	55.53	154.77	154.77	2.20	283.37
769.00	165.21	84.91	765.85	55.53	55.53	154.77	154.77	2.20	284.57
770.00	165.21	84.91	766.80	55.53	55.53	154.77	154.77	2.20	285.77
771.00	165.21	84.91	767.75	55.53	55.53	154.77	154.77	2.20	286.97
772.00	165.21	84.91	768.70	55.53	55.53	154.77	154.77	2.20	288.17
773.00	165.21	84.91	769.65	55.53	55.53	154.77	154.77	2.20	289.37
774.00	165.21	84.91	770.60	55.53	55.53	154.77	154.77	2.20	290.57
775.00	165.21	84.91	771.55	55.53	55.53	154.77	154.77	2.20	291.77
776.00	165.21	84.91	772.50	55.53	55.53	154.77	154.77	2.20	292.97
777.00	165.21	84.91	773.45	55.53	55.53	154.77	154.77	2.20	294.17
778.00	165.21	84.91	774.40	55.53	55.53	154.77	154.77	2.20	295.37
779.00	165.21	84.91	775.35	55.53	55.53	154.77	154.77	2.20	296.57
780.00	165.21	84.91	776.30	55.53	55.53	154.77	154.77	2.20	297.77
781.00	165.21	84.91	777.25	55.53	55.53	154.77	154.77	2.20	298.97
782.00	165.21	84.91	778.20	55.53	55.53	154.77	154.77	2.20	300.17
783.00	165.21								

511.00	149.22	6.65	62.52	77.13	667.13	86.66	473.56	136.23	101.91	75.8866	149.7381
512.00	149.22	6.76	63.19	76.30	661.69	86.71	469.68	136.12	102.72	76.2961	149.7381
513.00	149.22	7.36	64.11	75.56	657.66	86.76	465.76	136.01	111.53	76.7111	149.7381
514.00	149.22	7.36	64.11	74.01	653.63	86.81	461.84	135.90	117.30	77.1261	149.7381
515.00	149.22	8.92	65.20	73.39	650.25	86.86	457.92	135.79	117.30	77.5411	149.7381
516.00	149.22	9.21	65.79	72.98	646.83	86.91	454.00	135.68	117.30	77.9561	149.7381
517.00	149.22	10.77	66.87	72.57	643.41	86.96	450.08	135.57	119.63	78.3711	149.7381
518.00	149.22	11.97	67.95	72.16	640.00	87.01	446.16	135.46	119.63	78.7861	149.7381
519.00	149.22	13.35	69.03	71.75	636.58	87.06	442.24	135.35	119.63	79.2011	149.7381
520.00	149.22	14.50	70.11	71.34	633.16	87.11	438.32	135.24	119.63	79.6161	149.7381
521.00	149.22	15.65	71.19	70.93	629.74	87.16	434.40	135.13	119.63	80.0311	149.7381
522.00	149.22	16.80	72.27	70.52	626.32	87.21	430.48	135.02	119.63	80.4461	149.7381
523.00	149.22	17.95	73.35	70.11	622.90	87.26	426.56	134.91	119.63	80.8611	149.7381
524.00	149.22	19.10	74.43	69.70	619.48	87.31	422.64	134.80	119.63	81.2761	149.7381
525.00	149.22	20.25	75.51	69.29	616.06	87.36	418.72	134.69	119.63	81.6911	149.7381
526.00	149.22	21.40	76.59	68.88	612.64	87.41	414.80	134.58	119.63	82.1061	149.7381
527.00	149.22	22.55	77.67	68.47	609.22	87.46	410.88	134.47	119.63	82.5211	149.7381
528.00	149.22	23.70	78.75	68.06	605.80	87.51	406.96	134.36	119.63	82.9361	149.7381
529.00	149.22	24.85	79.83	67.65	602.38	87.56	403.04	134.25	119.63	83.3511	149.7381
530.00	149.22	26.00	80.91	67.24	598.96	87.61	399.12	134.14	119.63	83.7661	149.7381
531.00	149.22	27.15	81.99	66.83	595.54	87.66	395.20	134.03	119.63	84.1811	149.7381
532.00	149.22	28.30	83.07	66.42	592.12	87.71	391.28	133.92	119.63	84.5961	149.7381
533.00	149.22	29.45	84.15	66.01	588.70	87.76	387.36	133.81	119.63	85.0111	149.7381
534.00	149.22	30.60	85.23	65.60	585.28	87.81	383.44	133.70	119.63	85.4261	149.7381
535.00	149.22	31.75	86.31	65.19	581.86	87.86	379.52	133.59	119.63	85.8411	149.7381
536.00	149.22	32.90	87.39	64.78	578.44	87.91	375.60	133.48	119.63	86.2561	149.7381
537.00	149.22	34.05	88.47	64.37	575.02	87.96	371.68	133.37	119.63	86.6711	149.7381
538.00	149.22	35.20	89.55	63.96	571.60	88.01	367.76	133.26	119.63	87.0861	149.7381
539.00	149.22	36.35	90.63	63.55	568.18	88.06	363.84	133.15	119.63	87.5011	149.7381
540.00	149.22	37.50	91.71	63.14	564.76	88.11	359.92	133.04	119.63	87.9161	149.7381
541.00	149.22	38.65	92.79	62.73	561.34	88.16	356.00	132.93	119.63	88.3311	149.7381
542.00	149.22	39.80	93.87	62.32	557.92	88.21	352.08	132.82	119.63	88.7461	149.7381
543.00	149.22	40.95	94.95	61.91	554.50	88.26	348.16	132.71	119.63	89.1611	149.7381
544.00	149.22	42.10	96.03	61.50	551.08	88.31	344.24	132.60	119.63	89.5761	149.7381
545.00	149.22	43.25	97.11	61.09	547.66	88.36	340.32	132.49	119.63	90.0911	149.7381
546.00	149.22	44.40	98.19	60.68	544.24	88.41	336.40	132.38	119.63	90.5061	149.7381
547.00	149.22	45.55	99.27	60.27	540.82	88.46	332.48	132.27	119.63	90.9211	149.7381
548.00	149.22	46.70	100.35	59.86	537.40	88.51	328.56	132.16	119.63	91.3361	149.7381
549.00	149.22	47.85	101.43	59.45	533.98	88.56	324.64	132.05	119.63	91.7511	149.7381
550.00	149.22	49.00	102.51	59.04	530.56	88.61	320.72	131.94	119.63	92.1661	149.7381
551.00	149.22	50.15	103.59	58.63	527.14	88.66	316.80	131.83	119.63	92.5811	149.7381
552.00	149.22	51.30	104.67	58.22	523.72	88.71	312.88	131.72	119.63	93.0961	149.7381
553.00	149.22	52.45	105.75	57.81	520.30	88.76	308.96	131.61	119.63	93.5111	149.7381
554.00	149.22	53.60	106.83	57.40	516.88	88.81	305.04	131.50	119.63	93.9261	149.7381
555.00	149.22	54.75	107.91	56.99	513.46	88.86	301.12	131.39	119.63	94.3411	149.7381
556.00	149.22	55.90	108.99	56.58	510.04	88.91	297.20	131.28	119.63	94.7561	149.7381
557.00	149.22	57.05	110.07	56.17	506.62	88.96	293.28	131.17	119.63	95.1711	149.7381
558.00	149.22	58.20	111.15	55.76	503.20	89.01	289.36	131.06	119.63	95.5861	149.7381
559.00	149.22	59.35	112.23	55.35	499.78	89.06	285.44	130.95	119.63	96.0011	149.7381
560.00	149.22	60.50	113.31	54.94	496.36	89.11	281.52	130.84	119.63	96.4161	149.7381
561.00	149.22	61.65	114.39	54.53	492.94	89.16	277.60	130.73	119.63	96.8311	149.7381
562.00	149.22	62.80	115.47	54.12	489.52	89.21	273.68	130.62	119.63	97.2461	149.7381
563.00	149.22	63.95	116.55	53.71	486.10	89.26	269.76	130.51	119.63	97.6611	149.7381
564.00	149.22	65.10	117.63	53.30	482.68	89.31	265.84	130.40	119.63	98.0761	149.7381
565.00	149.22	66.25	118.71	52.89	479.26	89.36	261.92	130.29	119.63	98.4911	149.7381
566.00	149.22	67.40	119.79	52.48	475.84	89.41	258.00	130.18	119.63	98.9061	149.7381
567.00	149.22	68.55	120.87	52.07	472.42	89.46	254.08	130.07	119.63	99.3211	149.7381
568.00	149.22	69.70	121.95	51.66	469.00	89.51	250.16	129.96	119.63	99.7361	149.7381
569.00	149.22	70.85	123.03	51.25	465.58	89.56	246.24	129.85	119.63	100.1511	149.7381
570.00	149.22	72.00	124.11	50.84	462.16	89.61	242.32	129.74	119.63	100.5661	149.7381
571.00	149.22	73.15	125.19	50.43	458.74	89.66	238.40	129.63	119.63	100.9811	149.7381
572.00	149.22	74.30	126.27	50.02	455.32	89.71	234.48	129.52	119.63	101.3961	149.7381
573.00	149.22	75.45	127.35	49.61	451.90	89.76	230.56	129.41	119.63	101.8111	149.7381
574.00	149.22	76.60	128.43	49.20	448.48	89.81	226.64	129.30	119.63	102.2261	149.7381
575.00	149.22	77.75	129.51	48.79	445.06	89.86	222.72	129.19	119.63	102.6411	149.7381
576.00	149.22	78.90	130.59	48.38	441.64	89.91	218.80	129.08	119.63	103.0561	149.7381
577.00	149.22	80.05	131.67	47.97	438.22	89.96	214.88	128.97	119.63	103.4711	149.7381
578.00	149.22	81.20	132.75	47.56	434.80	90.01	210.96	128.86	119.63	103.8861	149.7381
579.00	149.22	82.35	133.83	47.15	431.38	90.06	207.04	128.75	119.63	104.3011	149.7381
580.00	149.22	83.50	134.91	46.74	427.96	90.11	203.12	128.64	119.63	104.7161	149.7381
581.00	149.22	84.65	135.99	46.33	424.54	90.16	199.20	128.53	119.63	105.1311	149.7381
582.00	149.22	85.80	137.07	45.92	421.12	90.21	195.28	128.42	119.63	105.5461	149.7381
583.00	149.22	86.95	138.15	45.51	417.70	90.26	191.36	128.31	119.63	105.9611	149.7381
584.00	149.22	88.10	139.23	45.10	414.28	90.31	187.44	128.20	119.63	106.3761	149.7381

585.00	814.00	74.00	63.60	76.00	619.00	674.00	675.00	701.00	614.00	75.00	149.00	149.00
586.00	815.00	75.00	64.00	77.00	620.00	675.00	676.00	702.00	615.00	76.00	150.00	150.00
587.00	816.00	76.00	64.50	78.00	621.00	676.00	677.00	703.00	616.00	77.00	151.00	151.00
588.00	817.00	77.00	65.00	79.00	622.00	677.00	678.00	704.00	617.00	78.00	152.00	152.00
589.00	818.00	78.00	65.50	80.00	623.00	678.00	679.00	705.00	618.00	79.00	153.00	153.00
590.00	819.00	79.00	66.00	81.00	624.00	679.00	680.00	706.00	619.00	80.00	154.00	154.00
591.00	820.00	80.00	66.50	82.00	625.00	680.00	681.00	707.00	620.00	81.00	155.00	155.00
592.00	821.00	81.00	67.00	83.00	626.00	681.00	682.00	708.00	621.00	82.00	156.00	156.00
593.00	822.00	82.00	67.50	84.00	627.00	682.00	683.00	709.00	622.00	83.00	157.00	157.00
594.00	823.00	83.00	68.00	85.00	628.00	683.00	684.00	710.00	623.00	84.00	158.00	158.00
595.00	824.00	84.00	68.50	86.00	629.00	684.00	685.00	711.00	624.00	85.00	159.00	159.00
596.00	825.00	85.00	69.00	87.00	630.00	685.00	686.00	712.00	625.00	86.00	160.00	160.00
597.00	826.00	86.00	69.50	88.00	631.00	686.00	687.00	713.00	626.00	87.00	161.00	161.00
598.00	827.00	87.00	70.00	89.00	632.00	687.00	688.00	714.00	627.00	88.00	162.00	162.00
599.00	828.00	88.00	70.50	90.00	633.00	688.00	689.00	715.00	628.00	89.00	163.00	163.00
600.00	829.00	89.00	71.00	91.00	634.00	689.00	690.00	716.00	629.00	90.00	164.00	164.00
601.00	830.00	90.00	71.50	92.00	635.00	690.00	691.00	717.00	630.00	91.00	165.00	165.00
602.00	831.00	91.00	72.00	93.00	636.00	691.00	692.00	718.00	631.00	92.00	166.00	166.00
603.00	832.00	92.00	72.50	94.00	637.00	692.00	693.00	719.00	632.00	93.00	167.00	167.00
604.00	833.00	93.00	73.00	95.00	638.00	693.00	694.00	720.00	633.00	94.00	168.00	168.00
605.00	834.00	94.00	73.50	96.00	639.00	694.00	695.00	721.00	634.00	95.00	169.00	169.00
606.00	835.00	95.00	74.00	97.00	640.00	695.00	696.00	722.00	635.00	96.00	170.00	170.00
607.00	836.00	96.00	74.50	98.00	641.00	696.00	697.00	723.00	636.00	97.00	171.00	171.00
608.00	837.00	97.00	75.00	99.00	642.00	697.00	698.00	724.00	637.00	98.00	172.00	172.00
609.00	838.00	98.00	75.50	100.00	643.00	698.00	699.00	725.00	638.00	99.00	173.00	173.00
610.00	839.00	99.00	76.00	101.00	644.00	699.00	700.00	726.00	639.00	100.00	174.00	174.00
611.00	840.00	100.00	76.50	102.00	645.00	700.00	701.00	727.00	640.00	101.00	175.00	175.00
612.00	841.00	101.00	77.00	103.00	646.00	701.00	702.00	728.00	641.00	102.00	176.00	176.00
613.00	842.00	102.00	77.50	104.00	647.00	702.00	703.00	729.00	642.00	103.00	177.00	177.00
614.00	843.00	103.00	78.00	105.00	648.00	703.00	704.00	730.00	643.00	104.00	178.00	178.00
615.00	844.00	104.00	78.50	106.00	649.00	704.00	705.00	731.00	644.00	105.00	179.00	179.00
616.00	845.00	105.00	79.00	107.00	650.00	705.00	706.00	732.00	645.00	106.00	180.00	180.00
617.00	846.00	106.00	79.50	108.00	651.00	706.00	707.00	733.00	646.00	107.00	181.00	181.00
618.00	847.00	107.00	80.00	109.00	652.00	707.00	708.00	734.00	647.00	108.00	182.00	182.00
619.00	848.00	108.00	80.50	110.00	653.00	708.00	709.00	735.00	648.00	109.00	183.00	183.00
620.00	849.00	109.00	81.00	111.00	654.00	709.00	710.00	736.00	649.00	110.00	184.00	184.00
621.00	850.00	110.00	81.50	112.00	655.00	710.00	711.00	737.00	650.00	111.00	185.00	185.00
622.00	851.00	111.00	82.00	113.00	656.00	711.00	712.00	738.00	651.00	112.00	186.00	186.00
623.00	852.00	112.00	82.50	114.00	657.00	712.00	713.00	739.00	652.00	113.00	187.00	187.00
624.00	853.00	113.00	83.00	115.00	658.00	713.00	714.00	740.00	653.00	114.00	188.00	188.00
625.00	854.00	114.00	83.50	116.00	659.00	714.00	715.00	741.00	654.00	115.00	189.00	189.00
626.00	855.00	115.00	84.00	117.00	660.00	715.00	716.00	742.00	655.00	116.00	190.00	190.00
627.00	856.00	116.00	84.50	118.00	661.00	716.00	717.00	743.00	656.00	117.00	191.00	191.00
628.00	857.00	117.00	85.00	119.00	662.00	717.00	718.00	744.00	657.00	118.00	192.00	192.00
629.00	858.00	118.00	85.50	120.00	663.00	718.00	719.00	745.00	658.00	119.00	193.00	193.00
630.00	859.00	119.00	86.00	121.00	664.00	719.00	720.00	746.00	659.00	120.00	194.00	194.00
631.00	860.00	120.00	86.50	122.00	665.00	720.00	721.00	747.00	660.00	121.00	195.00	195.00
632.00	861.00	121.00	87.00	123.00	666.00	721.00	722.00	748.00	661.00	122.00	196.00	196.00
633.00	862.00	122.00	87.50	124.00	667.00	722.00	723.00	749.00	662.00	123.00	197.00	197.00
634.00	863.00	123.00	88.00	125.00	668.00	723.00	724.00	750.00	663.00	124.00	198.00	198.00
635.00	864.00	124.00	88.50	126.00	669.00	724.00	725.00	751.00	664.00	125.00	199.00	199.00
636.00	865.00	125.00	89.00	127.00	670.00	725.00	726.00	752.00	665.00	126.00	200.00	200.00
637.00	866.00	126.00	89.50	128.00	671.00	726.00	727.00	753.00	666.00	127.00	201.00	201.00
638.00	867.00	127.00	90.00	129.00	672.00	727.00	728.00	754.00	667.00	128.00	202.00	202.00
639.00	868.00	128.00	90.50	130.00	673.00	728.00	729.00	755.00	668.00	129.00	203.00	203.00
640.00	869.00	129.00	91.00	131.00	674.00	729.00	730.00	756.00	669.00	130.00	204.00	204.00
641.00	870.00	130.00	91.50	132.00	675.00	730.00	731.00	757.00	670.00	131.00	205.00	205.00
642.00	871.00	131.00	92.00	133.00	676.00	731.00	732.00	758.00	671.00	132.00	206.00	206.00
643.00	872.00	132.00	92.50	134.00	677.00	732.00	733.00	759.00	672.00	133.00	207.00	207.00
644.00	873.00	133.00	93.00	135.00	678.00	733.00	734.00	760.00	673.00	134.00	208.00	208.00
645.00	874.00	134.00	93.50	136.00	679.00	734.00	735.00	761.00	674.00	135.00	209.00	209.00
646.00	875.00	135.00	94.00	137.00	680.00	735.00	736.00	762.00	675.00	136.00	210.00	210.00
647.00	876.00	136.00	94.50	138.00	681.00	736.00	737.00	763.00	676.00	137.00	211.00	211.00
648.00	877.00	137.00	95.00	139.00	682.00	737.00	738.00	764.00	677.00	138.00	212.00	212.00
649.00	878.00	138.00	95.50	140.00	683.00	738.00	739.00	765.00	678.00	139.00	213.00	213.00
650.00	879.00	139.00	96.00	141.00	684.00	739.00	740.00	766.00	679.00	140.00	214.00	214.00
651.00	880.00	140.00	96.50	142.00	685.00	740.00	741.00	767.00	680.00	141.00	215.00	215.00
652.00	881.00	141.00	97.00	143.00	686.00	741.00	742.00	768.00	681.00	142.00	216.00	216.00
653.00	882.00	142.00	97.50	144.00	687.00	742.00	743.00	769.00	682.00	143.00	217.00	217.00
654.00	883.00	143.00	98.00	145.00	688.00	743.00	744.00	770.00	683.00	144.00	218.00	218.00
655.00	884.00	144.00	98.50	146.00	689.00	744.00	745.00	771.00	684.00	145.00	219.00	219.00
656.00	885.00	145.00	99.00	147.00	690.00	745.00	746.00	772.00	685.00	146.00	220.00	220.00
657.00	886.00	146.00	99.50	148.00	691.00	746.00	747.00	773.00	686.00	147.00	221.00	221.00
658.00	887.00	147.00	100.00	149.00	692.00	747.00	748.00	774.00	687.00	148.00	222.00	222.00
659.00	888.00	148.00	100.50	150.00	693.00	748.00	749.00	775.00	688.00	149.00	223.00	223.00
660.00	889.00	149.00	101.00	151.00	694.00	749.00	750.00	776.00	689.00	150.00	224.00	224.00
661.00	890.00	150.00	101.50	152.00	695.00	750.00	751.00	777.00	690.00	151.00	225.00	225.00
662.00	891.00	151.00	102.00	153.00	696.00	751.00	752.00	778.00	691.00	152.00	226.00	226.00
663.00	892.00	152.00	102.50	154.00	697.00	752.00	753.00	779.00	692.00	153.00	227.00	227.00
664.00	893.00	153.00	103.00	155.00	698.00	753.00	754.00	780.00	693.00	154.00	228.00	228.00
665.00	894.00	154.00	103.50	156.00	699.00	754.00	755.00	781.00	694.00	155.00	229.00	229.00
666.00	895.00	155.00	104.00	157.00	700.00	755.00	756.00	782.00	695.00	156.00	230.00	230.00
667.00	896.00	156.00	104.50	158.00	701.00	756.00	757.00	783.00	696.00	157.00	231.00	231.00
668.00	897.00	157.00	105.00	159.00	702.00	757.00	758.00	784.00	697.00	158.00	232.00	232.00
669.00	898.00	158.00	105.50	160.00	7							

637.00	55.25	199.78	47.48	51.22	318.63	32.79	32.50	136.50	40.97	13.5372	169.0339
640.00	55.25	200.77	46.76	50.75	319.41	32.16	32.33	135.33	40.31	13.5364	169.0668
641.00	55.25	201.76	46.04	49.66	317.71	31.25	32.11	123.12	39.85	13.5351	169.0972
642.00	55.25	203.06	45.63	48.56	316.73	30.26	31.86	120.66	39.40	13.5337	169.1256
643.00	55.25	204.56	45.05	48.05	315.71	29.25	31.56	117.56	38.96	13.5322	169.1513
644.00	55.25	206.27	44.26	48.04	314.56	28.21	31.25	114.21	38.52	13.5307	169.1754
645.00	55.25	208.17	43.76	48.04	313.16	27.04	30.93	110.74	38.09	13.5291	169.1976
646.00	55.25	198.17	43.67	50.52	311.50	25.26	30.59	107.26	37.67	13.5274	169.2179
647.00	55.25	194.89	43.57	51.75	310.00	23.81	30.24	103.81	37.26	13.5257	169.2364
648.00	55.25	191.43	43.47	53.27	308.60	22.49	29.87	100.49	36.86	13.5240	169.2531
649.00	55.25	187.96	43.36	55.05	307.16	21.41	29.49	97.16	36.47	13.5222	169.2680
650.00	55.25	184.51	43.25	57.04	305.71	20.56	29.08	93.84	36.09	13.5204	169.2812
651.00	55.25	181.08	43.14	59.24	304.24	19.93	28.64	90.54	35.73	13.5186	169.2928
652.00	55.25	177.66	43.03	61.64	302.74	19.47	28.17	87.27	35.38	13.5167	169.3030
653.00	55.25	174.24	42.93	64.24	301.21	19.17	27.77	84.04	35.04	13.5148	169.3118
654.00	55.25	170.84	42.83	67.04	299.66	18.93	27.44	80.86	34.71	13.5129	169.3193
655.00	55.25	167.45	42.74	69.94	298.09	18.75	27.17	77.71	34.39	13.5110	169.3256
656.00	55.25	164.08	42.65	72.94	296.50	18.63	26.93	74.63	34.08	13.5091	169.3307
657.00	55.25	160.74	42.56	76.14	294.89	18.56	26.71	71.61	33.78	13.5072	169.3356
658.00	55.25	157.43	42.47	79.54	293.26	18.53	26.51	68.66	33.49	13.5053	169.3403
659.00	55.25	154.14	42.38	83.14	291.61	18.54	26.33	65.78	33.21	13.5034	169.3447
660.00	55.25	150.87	42.29	86.94	289.94	18.59	26.17	62.94	32.94	13.5015	169.3488
661.00	55.25	147.62	42.20	90.94	288.26	18.67	26.03	60.13	32.68	13.4996	169.3526
662.00	55.25	144.39	42.11	95.14	286.56	18.78	25.91	57.36	32.43	13.4977	169.3561
663.00	55.25	141.18	42.02	99.54	284.84	18.91	25.81	54.63	32.19	13.4958	169.3594
664.00	55.25	138.00	41.93	104.14	283.11	19.06	25.71	52.04	31.96	13.4939	169.3625
665.00	55.25	134.84	41.84	108.94	281.37	19.23	25.63	49.54	31.74	13.4920	169.3654
666.00	55.25	131.71	41.75	113.94	279.62	19.41	25.56	47.13	31.53	13.4901	169.3681
667.00	55.25	128.61	41.66	119.14	277.86	19.60	25.50	44.81	31.33	13.4882	169.3707
668.00	55.25	125.54	41.57	124.54	276.09	19.80	25.45	42.58	31.14	13.4863	169.3731
669.00	55.25	122.50	41.48	130.14	274.31	19.99	25.41	40.44	30.96	13.4844	169.3754
670.00	55.25	119.49	41.39	135.94	272.52	20.19	25.38	38.39	30.79	13.4825	169.3775
671.00	55.25	116.51	41.30	141.94	270.72	20.40	25.36	36.43	30.63	13.4806	169.3794
672.00	55.25	113.56	41.21	148.14	268.91	20.61	25.35	34.56	30.48	13.4787	169.3811
673.00	55.25	110.64	41.12	154.54	267.09	20.82	25.34	32.78	30.34	13.4768	169.3827
674.00	55.25	107.74	41.03	161.14	265.26	21.03	25.34	31.09	30.21	13.4749	169.3841
675.00	55.25	104.87	40.94	167.94	263.42	21.24	25.34	29.51	30.09	13.4730	169.3853
676.00	55.25	102.03	40.85	174.94	261.57	21.45	25.34	28.04	29.98	13.4711	169.3864
677.00	55.25	99.21	40.76	182.14	259.71	21.66	25.34	26.66	29.87	13.4692	169.3874
678.00	55.25	96.41	40.67	189.54	257.84	21.87	25.34	25.36	29.77	13.4673	169.3883
679.00	55.25	93.63	40.58	197.14	255.96	22.07	25.34	24.13	29.68	13.4654	169.3891
680.00	55.25	90.87	40.49	204.94	254.07	22.27	25.34	22.96	29.60	13.4635	169.3900
681.00	55.25	88.14	40.40	212.94	252.17	22.47	25.34	21.84	29.53	13.4616	169.3908
682.00	55.25	85.43	40.31	221.14	250.26	22.67	25.34	20.76	29.47	13.4597	169.3915
683.00	55.25	82.74	40.22	229.54	248.34	22.86	25.34	19.71	29.42	13.4578	169.3922
684.00	55.25	80.07	40.13	238.14	246.41	23.05	25.34	18.69	29.38	13.4559	169.3929
685.00	55.25	77.43	40.04	246.94	244.47	23.24	25.34	17.70	29.34	13.4540	169.3935
686.00	55.25	74.81	39.95	255.94	242.52	23.43	25.34	16.74	29.31	13.4521	169.3941
687.00	55.25	72.21	39.86	265.14	240.56	23.61	25.34	15.81	29.28	13.4502	169.3947
688.00	55.25	69.63	39.77	274.54	238.59	23.79	25.34	14.91	29.25	13.4483	169.3952
689.00	55.25	67.07	39.68	284.14	236.61	23.97	25.34	14.04	29.22	13.4464	169.3958
690.00	55.25	64.54	39.59	293.94	234.62	24.15	25.34	13.20	29.19	13.4445	169.3964
691.00	55.25	62.03	39.50	303.94	232.62	24.33	25.34	12.39	29.16	13.4426	169.3970
692.00	55.25	59.54	39.41	314.14	230.61	24.51	25.34	11.60	29.13	13.4407	169.3976

B01.00	165.20	25.70	56.03	109.08	650.00	91.53	373.39	335.56	109.22	25.76	165.20
B02.00	145.20	24.04	56.93	110.09	653.00	90.55	644.65	367.63	109.22	25.76	145.20
B03.00	145.20	25.71	62.70	111.58	655.96	95.17	605.90	367.63	109.22	25.76	145.20
B04.00	145.20	26.52	61.16	110.00	658.01	95.17	616.02	372.70	109.22	25.76	145.20
B05.00	145.20	27.24	59.95	108.00	661.30	95.17	616.02	372.70	109.22	25.76	145.20
B07.00	145.20	20.20	38.87	106.06	665.76	78.10	671.22	310.73	109.22	25.76	145.20
B08.00	145.20	19.55	38.86	107.63	666.25	78.10	671.22	310.73	109.22	25.76	145.20
B09.00	145.20	17.57	39.23	102.66	665.85	78.10	671.22	310.73	109.22	25.76	145.20
B10.00	145.20	17.73	39.58	102.71	665.06	78.10	671.22	310.73	109.22	25.76	145.20
B11.00	145.20	21.75	39.60	106.57	663.58	78.55	675.87	315.66	109.22	25.76	145.20
B11.00	145.20	21.54	66.06	103.55	657.01	91.61	669.58	363.30	109.22	25.76	145.20
B12.00	145.20	20.92	58.47	92.26	631.67	112.60	661.22	619.83	127.66	20.92	145.20
B13.00	145.20	19.00	72.62	79.18	601.57	120.63	609.31	467.71	167.56	20.92	145.20
B14.00	145.20	17.71	70.35	71.92	580.55	136.17	596.52	467.71	167.56	20.92	145.20
B15.00	145.20	13.14	78.02	66.63	530.11	136.06	596.52	467.71	167.56	20.92	145.20
B17.00	145.20	3.55	78.19	60.26	380.51	136.06	596.52	467.71	167.56	20.92	145.20
B18.00	145.20	35.16	79.70	60.26	380.51	136.06	596.52	467.71	167.56	20.92	145.20
B19.00	145.20	36.14	79.02	58.71	397.45	136.70	591.00	480.78	160.56	20.92	145.20
B20.00	142.44	36.99	79.28	57.33	385.73	120.36	599.09	480.78	160.56	20.92	142.44
B21.00	121.95	36.14	79.63	57.68	379.00	109.62	591.83	480.78	160.56	20.92	121.95
B22.00	101.52	36.14	80.00	58.42	373.00	109.62	591.83	480.78	160.56	20.92	101.52
B23.00	81.14	36.14	80.28	60.73	369.11	63.11	573.59	329.13	160.56	20.92	81.14
B24.00	72.55	36.14	80.24	60.73	369.11	63.11	573.59	329.13	160.56	20.92	72.55
B25.00	72.55	36.60	79.91	60.00	369.69	65.59	573.59	329.13	160.56	20.92	72.55
B26.00	72.55	36.60	79.26	62.98	369.69	65.59	573.59	329.13	160.56	20.92	72.55
B27.00	72.55	36.60	78.71	66.02	370.15	65.23	573.59	329.13	160.56	20.92	72.55
B28.00	72.55	36.60	78.71	66.02	370.15	65.23	573.59	329.13	160.56	20.92	72.55
B29.00	10.22	10.22	10.44	66.02	370.15	65.23	573.59	329.13	160.56	20.92	10.22
0 0	10.20	280.00	3.00	3.00	1.00						
16.7350	-169.5255	3.0000	2092629.00	2095998.50							
17.9111	-168.9143	40.0000	6230.00	6260.00							
19.9171	-168.9201										

871.00	77.55	314.87	79.67	63.59	170.45	66.53	106.33	25.28	76.26	2.4341	199.0934
872.00	77.55	315.87	79.67	63.59	169.45	66.53	106.33	25.28	76.26	2.4341	199.0934
873.00	77.55	316.87	79.67	63.59	168.45	66.53	106.33	25.28	76.26	2.4341	199.0934
874.00	77.55	317.87	79.67	63.59	167.45	66.53	106.33	25.28	76.26	2.4341	199.0934
875.00	77.55	318.87	79.67	63.59	166.45	66.53	106.33	25.28	76.26	2.4341	199.0934
876.00	77.55	319.87	79.67	63.59	165.45	66.53	106.33	25.28	76.26	2.4341	199.0934
877.00	77.55	320.87	79.67	63.59	164.45	66.53	106.33	25.28	76.26	2.4341	199.0934
878.00	77.55	321.87	79.67	63.59	163.45	66.53	106.33	25.28	76.26	2.4341	199.0934
879.00	77.55	322.87	79.67	63.59	162.45	66.53	106.33	25.28	76.26	2.4341	199.0934
880.00	77.55	323.87	79.67	63.59	161.45	66.53	106.33	25.28	76.26	2.4341	199.0934
881.00	77.55	324.87	79.67	63.59	160.45	66.53	106.33	25.28	76.26	2.4341	199.0934
882.00	77.55	325.87	79.67	63.59	159.45	66.53	106.33	25.28	76.26	2.4341	199.0934
883.00	77.55	326.87	79.67	63.59	158.45	66.53	106.33	25.28	76.26	2.4341	199.0934
884.00	77.55	327.87	79.67	63.59	157.45	66.53	106.33	25.28	76.26	2.4341	199.0934
885.00	77.55	328.87	79.67	63.59	156.45	66.53	106.33	25.28	76.26	2.4341	199.0934
886.00	77.55	329.87	79.67	63.59	155.45	66.53	106.33	25.28	76.26	2.4341	199.0934
887.00	77.55	330.87	79.67	63.59	154.45	66.53	106.33	25.28	76.26	2.4341	199.0934
888.00	77.55	331.87	79.67	63.59	153.45	66.53	106.33	25.28	76.26	2.4341	199.0934
889.00	77.55	332.87	79.67	63.59	152.45	66.53	106.33	25.28	76.26	2.4341	199.0934
890.00	77.55	333.87	79.67	63.59	151.45	66.53	106.33	25.28	76.26	2.4341	199.0934
891.00	77.55	334.87	79.67	63.59	150.45	66.53	106.33	25.28	76.26	2.4341	199.0934
892.00	77.55	335.87	79.67	63.59	149.45	66.53	106.33	25.28	76.26	2.4341	199.0934
893.00	77.55	336.87	79.67	63.59	148.45	66.53	106.33	25.28	76.26	2.4341	199.0934
894.00	77.55	337.87	79.67	63.59	147.45	66.53	106.33	25.28	76.26	2.4341	199.0934
895.00	77.55	338.87	79.67	63.59	146.45	66.53	106.33	25.28	76.26	2.4341	199.0934
896.00	77.55	339.87	79.67	63.59	145.45	66.53	106.33	25.28	76.26	2.4341	199.0934
897.00	77.55	340.87	79.67	63.59	144.45	66.53	106.33	25.28	76.26	2.4341	199.0934
898.00	77.55	341.87	79.67	63.59	143.45	66.53	106.33	25.28	76.26	2.4341	199.0934
899.00	77.55	342.87	79.67	63.59	142.45	66.53	106.33	25.28	76.26	2.4341	199.0934
900.00	77.55	343.87	79.67	63.59	141.45	66.53	106.33	25.28	76.26	2.4341	199.0934

881.00	72.55	137.87	76.67	56.66	322.73	67.77	330.76	233.59	71.13	12.75	15.15
882.00	72.55	235.26	66.63	60.67	332.73	67.77	332.73	235.26	71.13	12.75	15.15
883.00	72.55	211.13	67.11	61.63	330.77	67.77	332.73	235.26	71.13	12.75	15.15
884.00	72.55	212.76	66.31	62.38	329.77	67.77	332.73	235.26	71.13	12.75	15.15
885.00	72.55	211.37	66.63	62.67	327.87	67.77	332.73	235.26	71.13	12.75	15.15
886.00	72.55	211.31	65.73	63.56	325.87	67.77	332.73	235.26	71.13	12.75	15.15
887.00	72.55	200.76	63.87	64.56	321.87	67.77	332.73	235.26	71.13	12.75	15.15
888.00	72.55	197.87	60.35	64.83	319.87	67.77	332.73	235.26	71.13	12.75	15.15
889.00	72.55	175.00	60.55	64.66	317.87	67.77	332.73	235.26	71.13	12.75	15.15
890.00	72.55	161.37	60.55	64.96	315.87	67.77	332.73	235.26	71.13	12.75	15.15
891.00	72.55	147.97	60.86	64.12	313.87	67.77	332.73	235.26	71.13	12.75	15.15
892.00	72.55	133.65	61.11	62.55	311.87	67.77	332.73	235.26	71.13	12.75	15.15
893.00	72.55	119.91	61.33	62.66	309.87	67.77	332.73	235.26	71.13	12.75	15.15
894.00	72.55	106.28	61.52	62.57	307.87	67.77	332.73	235.26	71.13	12.75	15.15
895.00	72.55	92.30	61.71	62.63	305.87	67.77	332.73	235.26	71.13	12.75	15.15
896.00	72.55	78.30	61.77	62.83	303.87	67.77	332.73	235.26	71.13	12.75	15.15
897.00	72.55	64.30	61.77	62.83	301.87	67.77	332.73	235.26	71.13	12.75	15.15
898.00	72.55	50.30	61.66	62.83	299.87	67.77	332.73	235.26	71.13	12.75	15.15
899.00	72.55	36.30	61.57	62.83	297.87	67.77	332.73	235.26	71.13	12.75	15.15
900.00	72.55	22.30	61.42	62.83	295.87	67.77	332.73	235.26	71.13	12.75	15.15
901.00	72.55	8.30	61.22	62.83	293.87	67.77	332.73	235.26	71.13	12.75	15.15
902.00	72.55	0.67	61.52	62.83	291.87	67.77	332.73	235.26	71.13	12.75	15.15
903.00	72.55	16.35	61.61	62.83	289.87	67.77	332.73	235.26	71.13	12.75	15.15
904.00	72.55	32.30	61.75	62.83	287.87	67.77	332.73	235.26	71.13	12.75	15.15
905.00	72.55	48.30	61.75	62.83	285.87	67.77	332.73	235.26	71.13	12.75	15.15
906.00	72.55	64.30	61.75	62.83	283.87	67.77	332.73	235.26	71.13	12.75	15.15
907.00	72.55	80.30	61.75	62.83	281.87	67.77	332.73	235.26	71.13	12.75	15.15
908.00	72.55	96.30	61.75	62.83	279.87	67.77	332.73	235.26	71.13	12.75	15.15
909.00	72.55	112.30	61.75	62.83	277.87	67.77	332.73	235.26	71.13	12.75	15.15
910.00	72.55	128.30	61.75	62.83	275.87	67.77	332.73	235.26	71.13	12.75	15.15
911.00	72.55	144.30	61.75	62.83	273.87	67.77	332.73	235.26	71.13	12.75	15.15
912.00	72.55	160.30	61.75	62.83	271.87	67.77	332.73	235.26	71.13	12.75	15.15
913.00	72.55	176.30	61.75	62.83	269.87	67.77	332.73	235.26	71.13	12.75	15.15
914.00	72.55	192.30	61.75	62.83	267.87	67.77	332.73	235.26	71.13	12.75	15.15
915.00	72.55	208.30	61.75	62.83	265.87	67.77	332.73	235.26	71.13	12.75	15.15
916.00	72.55	224.30	61.75	62.83	263.87	67.77	332.73	235.26	71.13	12.75	15.15
917.00	72.55	240.30	61.75	62.83	261.87	67.77	332.73	235.26	71.13	12.75	15.15
918.00	72.55	256.30	61.75	62.83	259.87	67.77	332.73	235.26	71.13	12.75	15.15
919.00	72.55	272.30	61.75	62.83	257.87	67.77	332.73	235.26	71.13	12.75	15.15
920.00	72.55	288.30	61.75	62.83	255.87	67.77	332.73	235.26	71.13	12.75	15.15
921.00	72.55	304.30	61.75	62.83	253.87	67.77	332.73	235.26	71.13	12.75	15.15
922.00	72.55	320.30	61.75	62.83	251.87	67.77	332.73	235.26	71.13	12.75	15.15
923.00	72.55	336.30	61.75	62.83	249.87	67.77	332.73	235.26	71.13	12.75	15.15
924.00	72.55	352.30	61.75	62.83	247.87	67.77	332.73	235.26	71.13	12.75	15.15

(17,2,9610,2,251,64)
0 0
10.00
16.7350 - 169.5255
17.9120 - 168.9200
19.9122 - 168.9214
280.00
3.0000
60.0000
20926428.00
8270.00
3.00
70855968.50
7260.00

REFERENCES

1. "DAMP - Station 12 Tracking Comparison." R. Bachinsky, Internal Correspondence. 25 January 1963
2. S. Horowitz and others; "Riometer Measurements"; Project 6.8, Operation Dominic. Fish Bowl Series, POR-2027; Stanford Research Institute, Menlo Park, California

DISTRIBUTION

Military Distribution Category 62

ARMY ACTIVITIES

- 1 CHIEF OF R & D IA
- 2 AC OF S INTELLIGENCE DA
- 3 CHIEF OF ENGINEERS DA
- 4- 7 ARMY MATERIAL COMMAND
- 8 CHIEF SIGNAL OFFICER DA
- 9- 10 U S ARMY COMBAT DEVELOPMENTS COMMAND
- 11 U S ARMY CDC NUCLEAR GROUP
- 12 U S ARMY ARTILLERY BOARD
- 13 U S ARMY AIR DEFENSE BOARD
- 14 U S ARMY AVIATION BOARD
- 15 U S ARMY COMMAND AND GENERAL STAFF COLLEGE
- 16 U S ARMY AIR DEFENSE SCHOOL
- 17 U S ARMY CDC ARMOE AGENCY
- 18 U S ARMY CDC ARTILLERY AGENCY
- 19 U S ARMY CDC INFANTRY AGENCY
- 20 U S ARMY CDC CBR AGENCY
- 21 U S ARMY SIGNAL SCHOOL
- 22 ARMY MEDICAL RESEARCH LAB
- 23- 24 ENGINEER RESEARCH & DEV LAB
- 25 WATERWAYS EXPERIMENT STATION
- 26 DIAMOND ORDNANCE FUZE LABORATORY
- 27 BALLISTIC RESEARCH LABORATORY
- 28- 30 REDSTONE SCIENTIFIC INFORMATION CENTER
- 31- 32 WHITE SANDS MISSILE RANGE
- 33 U S ARMY MOBILITY COMMAND
- 34 U S ARMY AMMUNITION COMMAND
- 35 ELECTRONICS COMMAND
- 36 U S ARMY ELECTRONIC PROVING GROUND
- 37- 40 U S ARMY ELECTRONIC R & D LABORATORY
- 41- 42 U S ARMY CDC COMBAT SERVICE SUPPORT GROUP
- 43 THE RESEARCH & ANALYSIS CORP
- 44- 45 WHITE SANDS SIGNAL SUPPORT AGENCY
- 46 U S ARMY NUCLEAR DEFENSE LABORATORY
- 47 U S ARMY CDC AIR DEFENSE AGENCY
- 48 UNITED STATES CONTINENTAL ARMY COMMAND
- 49 U S ARMY CDC COMBINED ARMS GROUP
- 50 US ARMY ENGINEER PGD LAFS SMOFH-EP
- 51- 54 US ARMY MATERIAL COMMAND SANDIA

NAVY ACTIVITIES

- 55- 56 CHIEF OF NAVAL OPERATIONS OP03EG
- 57 CHIEF OF NAVAL OPERATIONS OP-09P5
- 58 CHIEF OF NAVAL OPERATIONS OP-75
- 59 CHIEF OF NAVAL OPERATIONS OP-922G1
- 60 CHIEF OF NAVAL OPERATIONS OP-94
- 61 CHIEF OF NAVAL OPERATIONS OP-922F2
- 62- 63 CHIEF OF NAVAL OPERATIONS CODE 811
- 64- 66 CHIEF BUREAU OF NAVAL WEAPONS DLI-3
- 67 CHIEF BUREAU OF SHIPS CODE 423
- 68 CHIEF BUREAU OF YARDS & DOCKS CODE 74
- 69 DIR. US NAVAL RESEARCH LAB.
- 70- 71 U S NAVAL ORDNANCE LABORATORY
- 72 NAVY ELECTRONICS LABORATORY
- 73 U S NAVAL RADIOLOGICAL DEFENSE LAB
- 74 U S NAVAL CIVIL ENGINEERING LABORATORY
- 75 U S NAVAL SCHOOLS COMMAND U S NAVAL STATION
- 76 U S NAVAL POSTGRADUATE SCHOOL
- 77 AIR DEVELOPMENT SQUADRON 5 VX-5
- 78 U S NAVAL AIR DEVELOPMENT CENTER
- 79 U S NAVAL WEAPONS EVALUATION FACILITY
- 80 U S NAVAL MEDICAL RESEARCH INSTITUTE
- 81 DAVID W TAYLOR MODEL BASIN
- 82- 85 U S MARINE CORPS CODE A03H

AIR FORCE ACTIVITIES

- 86- 88 HQ USAF AFTAC-TD
- 89 HQ USAF AFRNEA
- 90 HQ USAF AFXPDG
- 91 HQ USAF AFCCCBF
- 92 HQ USAF AFCEKA
- 93 HQ USAF AFGDA
- 94- 98 HQ USAF AFCIN-301
- 99 RESEARCH & TECHNOLOGY DIV ROLLING AFB
- 100 BALLISTIC SYSTEMS DIVISION
- 101 SPACE SYSTEMS DIVISION SSTDS
- 102 TACTICAL AIR COMMAND
- 103 AIR DEFENSE COMMAND
- 104 AIR FORCE SYSTEMS COMMAND
- 105 AF COMMUNICATIONS SERVICE
- 106 RADC-RAALD, GRIFFISS AFB
- 107 SECOND AIR FORCE
- 108-109 AF CAMBRIDGE RESEARCH CENTER
- 110-112 AFWL WLL-3 KIRTLAND AFB
- 113 SCHOOL OF AVIATION MEDICINE
- 114-116 AERONAUTICAL SYSTEMS DIVISION
- 117-118 USAF PROJECT RAND
- 119 ELECTRONIC SYSTEMS DIV ESAT
- 120 AIR TECHNICAL INTELLIGENCE CENTER
- 121 HQ USAF AFORD
- 122 HQ USAF AFXPDK

OTHER DEPARTMENT OF DEFENSE ACTIVITIES

- 123 DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
- 124 ASST TO THE SECRETARY OF DEFENSE ATOMIC ENERGY
- 125-126 ADVANCE RESEARCH PROJECT AGENCY
- 127 WEAPONS SYSTEM EVALUATION GROUP
- 128-131 DEFENSE ATOMIC SUPPORT AGENCY
- 132 FIELD COMMAND DASA
- 133 FIELD COMMAND DASA FCTG
- 134-135 FIELD COMMAND DASA FCWT
- 136-137 DEFENSE INTELLIGENCE AGENCY
- 138 DEFENSE COMMUNICATIONS AGENCY
- 139 JOINT TASK FORCE-8
- 140 COMMANDER-IN-CHIEF PACIFIC
- 141 COMMANDER-IN-CHIEF ATLANTIC FLEET
- 142 STRATEGIC AIR COMMAND
- 143 CINCONAD
- 144 DIR. DEFENSE INTELLIGENCE AGENCY
- 145-164 DEFENSE DOCUMENTATION CENTER

POR CIVILIAN DISTR CAT. R 1

- 165 CMD. PACIFIC MISSILE RANGE ATTN RITLAND
- 166 AEROSPACE CORPORATION ATTN DR. J. F. WEEKS
- 167 AERJET GENERAL NUCLEONICS SAN RAMON CALIF
- 168 FORJ MOTOR CO NEWPORT BEACH CALIF ATTN TECH LIBRARY
- 169 AEROSPACE CORP EL SEGUNDO CALIF
- 170 ALLIED RESEARCH ASSOC. INC ENCORD MASS
- 171 AMER. SCIENCE & ENG CO CAMBRIDGE MASS
- 172 IIT RESEARCH INSTITUTE CHICAGO ILL.
- 173 AVCO CORP EVERETT MASS
- 174 AVCO CORP WILMINGTON MASS ATTN TECH. LIBRARY
- 175 BYI COLUMBUS OHIO ATTN DEFENDER INFO CENTER