REPORT AND INDEX OF

UNDERWAY MARINE GEOPHYSICAL DATA

WESTWARD EXPEDITION

LEG 1

R/V Melville

(Issued March 1994)

San Diego, Calif. (23 November 1993)
to
Papeete, Tahiti (30 December 1993)

Chief Scientist:

T. Urabe (Geologic Survey of Japan)

Resident Marine Technician - Gene Pillard

Computer Technician - Jim Charters

Sea Beam/Underway Processor - Stuart M. Smith

Post-Cruise Processing and Report Preparation by the
Geological Data Center, Scripps Institution of Oceanography
La Jolla, California 92093

Data Collection and Processing Funded by:
NSF Grant Number OCE91-00522

GDC Cruise I.D.# 266

INFORMAL REPORT AND INDEX OF NAVIGATION AND UNDERWAY GEOPHYSICAL DATA

Processed by the Geological Data Center
Scripps Institution of Oceanography

Contents:

Index Chart - gives track of cruise leg, dates, ports, and mileage of each type of data collected.

Track Charts - annotated with dates and hour ticks.

Profiles - depth, magnetic anomaly and gravity free air anomaly vs. distance. (Sections of track with seismic reflection data have a wide black line along the bottom of the profile).

Sample Index - list of begin/end times and positions of all underway records as well as samples and measurements from other disciplines if collected on the cruise leg.

NOTE: One or more of the underway data types may not be collected on a given cruise leg.

For information on the availability and reproduction costs of data in the following forms, contact S. M. Smith, Curator, Geological Data Center, Scripps Institution of Oceanography, La Jolla, CA 92093-0223. Phone (619)534-2752. Fax (619)534-5306. Internet Email:ssmith@ucsd.edu

1. Files on Exabyte, DAT or 1/2 inch magnetic tape:
   a) Separate time series ASCII files of navigation, single beam depth, gravity and magnetics.
   b) These same data in a merged ASCII file in the MGD77 Exchange format.
   c) SeaBeam depth data (binary, Sun byte order) in SIO Swath Bathymetry format (not available on 1/2" tape).
   d) SeaBeam Sidescan data (not available on 1/2" tape).

2. Microfilm (35mm flowfilm) or Xerox copies of:
   a) Underway Watch log book.
   b) SeaBeam vertical beam profile/Sidescan records.
   c) Echosounder records - 3.5 kHz frequency.
   d) Magnetometer records.
   e) Seismic reflection profiler records.

3. Navigation listing with times and positions of fixes and course and speed changes.

4. Plots:
   a) Copies of archived 1.2"/degree scale trackplots.
   b) Copies of archived 8"/degree scale SeaBeam depth plots.
   c) Custom plots in Mercator projection:
      1) Track plots.
      2) SeaBeam depth contour plots.
      3) Depth, magnetic or gravity values printed or profiled along track.

SIO SeaBeam 2000 Data Information

The following forms are available, subject to approval of the cruise leg chief scientist:

1) Hardcopy of realtime contour swath records and records with vertical beam and sidescan grayscale display are available for inspection at the data center.

2) Microfilm (35mm flowfilm) of vertical beam/sidescan records.

3) Sea Beam merged tapes - Sea Beam data merged with GPS-based navigation. (Navigation is edited to the extent that DR courses and speeds are edited and poor fixes are removed after inspection of speeds and drift vectors between fix pairs. No editing is done on the basis of adjusting to overlapping Sea Beam swaths.)

4) Archive contour plots - 8"/degree chart scale, with contour interval nominally 50m, are generated for all transit lines. Some survey areas are plotted at appropriate scales as well. Available for inspection at data center; additional copies may be generated from plot files stored on tape.

5) Custom generated plots of Sea Beam swaths on Mercator projection in four colors at variable plot scales and contour intervals. There are provisions to adjust positions of individual track lines and to edit out beams (bad data or overlapping data on inside of turns).

Revised February 1993

UNDERWAY GEOPHYSICAL DATA COLLECTION AND PROCESSING ON RIDGE FLUX R/V Melville Cruise (WEST01MV)

by Stuart Smith
James Charters
Earl Heckman

Shipboard Technical Support Group
Scripps Institution of Oceanography
24 December 1993

Navigation, multibeam echosounder (SeaBeam 2000) bathymetry and sidescan, gravity and surface towed total field magnetics were collected during the entire leg except for the first few days after leaving San Diego when the ship was in Mexican waters. (A separate program of collecting 3-component magnetics was conducted by T. Yamazaki).

Profiles of depth, magnetic anomaly and free-air gravity anomaly plotted vs. distance along ship's track are attached to this report.

Real Time Data Acquisition and Logging

All underway (u/w) data were logged to separate files on hard disk on a Sun MP630 server. Once per day these files were tagged with date and copied to tape (one copy to DAT; another to Exabyte 8500) and also copied to a second Sun MP630 for post processing. See Appendix A for a description of the log and processed data files provided as data products.

Navigation

Navigation control was by GPS using a 10-channel CA-code Trimble GPS receiver (Mod 4000AX). Positions were logged at 2 to 3 second intervals.

Two navigation display programs were used extensively. One, called Helm Display, provided a circle of specified radius centered on the target position with the ship's position plotted at 10 to 20 second intervals. This display provided the bridge and scientific party with exact location information throughout any station work.

The second program, Lab Display, provided continuously updated information on time, position, course and speed plus values of depth, magnetics and gravity.

Navigation was also displayed, along with SeaBeam contours and magnetic anomaly profile, in near real-time in Mercator projection charts on the DR plotter.

In post processing, fixes at 1 minute intervals were extracted from the logged data and put through a smoothing program to reduce high frequency jitter. Output from a listing program of the resulting file was visually checked for jumps in course and speed and any bad fixes flagged but not removed from the file of smoothed navigation data. The resulting binary (navbin) file was then ready for merging with the other u/w data.

Multibeam (SeaBeam 2000) Bathymetry and Sidescan Imaging

At the depths encountered on this leg, the SeaBeam 2000 has a 120 degree cross track swath covering a total of 3.5 times water depth composed of 120 two-degree beams with one degree overlap. Ping rates vary with water depth but were usually 10 to 12 seconds in the study area depths of 2600-3000 meters. Real-time displays of the bathymetry

included a cross-track profile on a CRT screen, contours on the DR plot and a contour swath plot. Sidescan data were displayed on a scrolling display on the CRT and on a hardcopy recorder which also recorded the vertical bathymetric beam profile. The large volume of sidescan data (300 megabytes per day) were logged to tape daily for future processing and archiving.

The sea surface temperature was monitored and an XBT temperature - depth profile taken whenever the surface temperature changed by 2 degrees C or whenever the ship entered a new Matthews (Carter) Table area. A new sound velocity profile (SVP) was then entered into the SeaBeam Computer. Velocity conditions changed little in the study area so only 2 different profiles were used in that region. A comparison made between a SVP calculated from the XBT/Carter Table method to one calculated from a full water column CTD cast showed good agreement.

Excellent navigation and overlapping parallel swaths over well defined topographic features along the ridge axis confirmed earlier somewhat equivocal roll bias tests conducted on the previous test leg, as well as reports by previous users, that the roll bias was in error by 0.25 degrees such that the port-side beams were too shallow. Applying the correction to the previously processed data and replotting the results gave very good matches between swaths. The new roll bias value of 0.0 degrees was entered into the system at 2345Z/15dec93, replacing the previous value of +0.25 degrees. A confirming roll bias test was conducted in deep water on the transit from the study area to Tahati.

During post processing, the logged SeaBeam bathymetry data were merged with smoothed navigation and run through programs to remove spikes in individual beams and then filtered with a 9 point box filter on each beam. The files were then put through a checking program which flags time gaps and writes information on the begin/end time and boundaries of the file to an index file for later archiving and retrieval.

In the study area, the SeaBeam bathymetry data were gridded to a 200 meter cell size and plotted with 20 meter contours on Mercator projection at a scale of 87 inches per degree longitude (the same scale as charts previously prepared from the URI data base by NOAA/PMEL). In general there was good match between the contours of the URI data set and those from this leg. However, in some places there were differences of up to 0.4 km, not surprising in that the URI data set is a composite of a number of cruises, some as old as 1982 when only Transit Satellite navigation was available.

Plots at 8 inches per degree longitude were produced for the transit between the study area and Tahiti. The transit from San Diego to the study area was funded in the reduced rate ancillary mode in which data were logged but no charts produced.

Single Beam Depth

Vertical beam depths were extracted from SeaBeam at one minute intervals. These depths, along with the magnetics and gravity described below, were merged with the smoothed navigation and profiles generated versus distance along ship track for data display and quality control.

Magnetics

Magnetic data were logged digitally and also recorded on an analogue strip chart from a Geometrics proton surface towed total field magnetometer (Mod.G801) with the sensor streamed about 300 meters behind the ship. Total field data were logged at approximately 6 second intervals and later extracted at one minute intervals for merging with navigation, depth and gravity. During merging, the magnetic anomaly was calculated by removal of the 1990 IGRF regional magnetic field. Surface towed magnetic data were not collected during

the slow speed Tow-Yo runs or on short runs between closely spaced stations.

Gravity

Gravity data were collected on a Bell-Aerospace Gravity meter (Mod. BGM-3) and the count output logged at a one second rate. For post processing, the data were passed through a variable length Gaussian filter to remove short period ship accelerations to produce a time series of gravity at one minute intervals. During merging with navigation and the other geophysical values (depth and magnetics) the International Gravity 1967 formula and Eotvos corrections were applied to calculate gravity free air anomaly.

A gravity tie was conducted at the Scripps Marine Facilities pier in San Diego and a second tie done in Papeete to determine the drift of the Bell meter during the leg. This correction will be applied to the final processed data.

DATA PRODUCTS

The following data products will be provided to Dr. T. Urabe, Geological Survey of Japan:

Plots and Hardcopy

1) Underway Geophysical Logbook (yellow copy)

2) Summary plot of cruise track (page size)

3) Track plots (1.2"/degree) for transit parts of the leg

4) Track plots (22"/degree) for survey area (13-19S,112-114W)

5) Gridded SeaBeam contour plots (200m grid; 20 m contour; 87in/deg scale) to match NOAA/PMEL-URI charts GAR05; MV04 to MV16

6) SeaBeam plots for transit between study area and Papeete (50m contour interval; 8"/degree scale)

7) Profiles vs distance along ship track of depth, magnetic anomaly and gravity free air anomaly (17 n.miles/inch in 500 mile sections)

8) Page size versions of item (7)

9) U/W Data Report, produced after the cruise by SIO/GDC, with page size trackplots, profiles of depth, magnetics and gravity, plus Sample Index which lists time and position for each record and sample collected on the cruise

10) Sound Velocity Profiles used for SeaBeam: XBT temp-depth and calculated sound velocity profile and listing of profile depth-velocity values

11) Microfilm of SeaBeam vertical beam and sidescan record (35mm flowfilm microfilm)

12) Format descriptions of digital data files described below.

Digital Data

All data will be provided on Exabyte 8500 mode tape as Unix tar files in ASCII character mode unless otherwise noted:

1) Raw logged data files of SeaBeam bathymetry, GPS, gravity and magnetics (one file for each data type per day - different formats)

2) Time series files of navigation (satdata format) and depth, magnetic total field and measured gravity (each in separate uwts format files for the whole leg)

3) SeaBeam bathymetry merged with smoothed navigation (one file per day in SIO swath_bathy binary format)

4) MGD77 Standard Exchange format file containing time, position, depth (2-way travel time), magnetics (total field and anomaly) and gravity (measured and free-air anomaly)

5) Magnetic total field vs. time (1 minute intervals in uwts format, one file per day) on PC floppy diskette for T. Yamazaki

6) XBT raw logged data, as recorded by Sippican XBT acquisition program

The following data products will be provided to Dr. E. Baker, Pacific Marine Environmental Laboratory/NOAA:

Plots and Hardcopy
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1) Depth profiles along track for Tow-Yo lines T93E01 - T93E07

2) SeaBeam contour plots, (200m grid; 100m contour; page size) for each Tow-Yo line

3) SeaBeam contour plots (200m grid; 20m contour; 22"/deg scale) for each Tow-Yo line

4) U/W Data Report, produced after the cruise by SIO/GDC, with page size trackplots, profiles of depth, magnetics and gravity, plus Sample Index which lists time and position for each record and sample collected on the cruise

#end

APPENDIX A

FORMATS OF DIGITAL U/W DATA PROVIDED BY SIO/STS ON WESTWARD, LEG 1

Logged Data Formats

(referred to collectively, for historical reasons, as PFILE data):
All files are ASCII character mode unless otherwise noted.

1) CS_SPinpf: Navigation: Time, position, ship speed and heading (one second rate) Presently uses Trimble GPS for source and interpolates 1 second positions from 10 second interval fixes.

2) GPTinpf: Navigation: GPS Trimble Mod. 4000AX data (2 to 3 second rate)

3) MAGinpf: Magnetics: Geometrics Mod. G801 time and total magnetic field at approximately 6 second rate.

4) GRAVinpf: Gravity: Bell Gravitymeter Mod BGM-3, time and meter counts at one second rate.

5) sb2000: Logged SeaBeam data: Format as provided by SeaBeam Inc. for logged bathymetry with additional header records added by SIO software.

Processed data formats:

1) satdata: GPS fixes, smoothed from logged data, at 1 minute intervals.

2) dep.uwts: Under Way Time Series of vertical beam depth at 1 minute intervals.
   mag.uwts: Under Way Time Series of magnetic total field at 1 minute intervals.
   grav.uwts: Under Way Time Series of gravity at 1 minute intervals.

3) MGD77 Standard Exchange format: Time, position, vertical beam depth (2-way travel time), magnetic total field and anomaly, measured gravity and free-air anomaly (documentation not available at sea).

4) SIO Swath_bathy (SBfixavg): Binary mode file of SeaBeam bathymetry; time, position, ship speed and heading and 120 pairs of depth and x-track distances (90 in deep (>5000m) water). Sound velocity records included.

5) Swath Bathymetry Software System - Real time software description by J.S. Charters

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###  San Diego to Papeete  23 November - 30 December 1993
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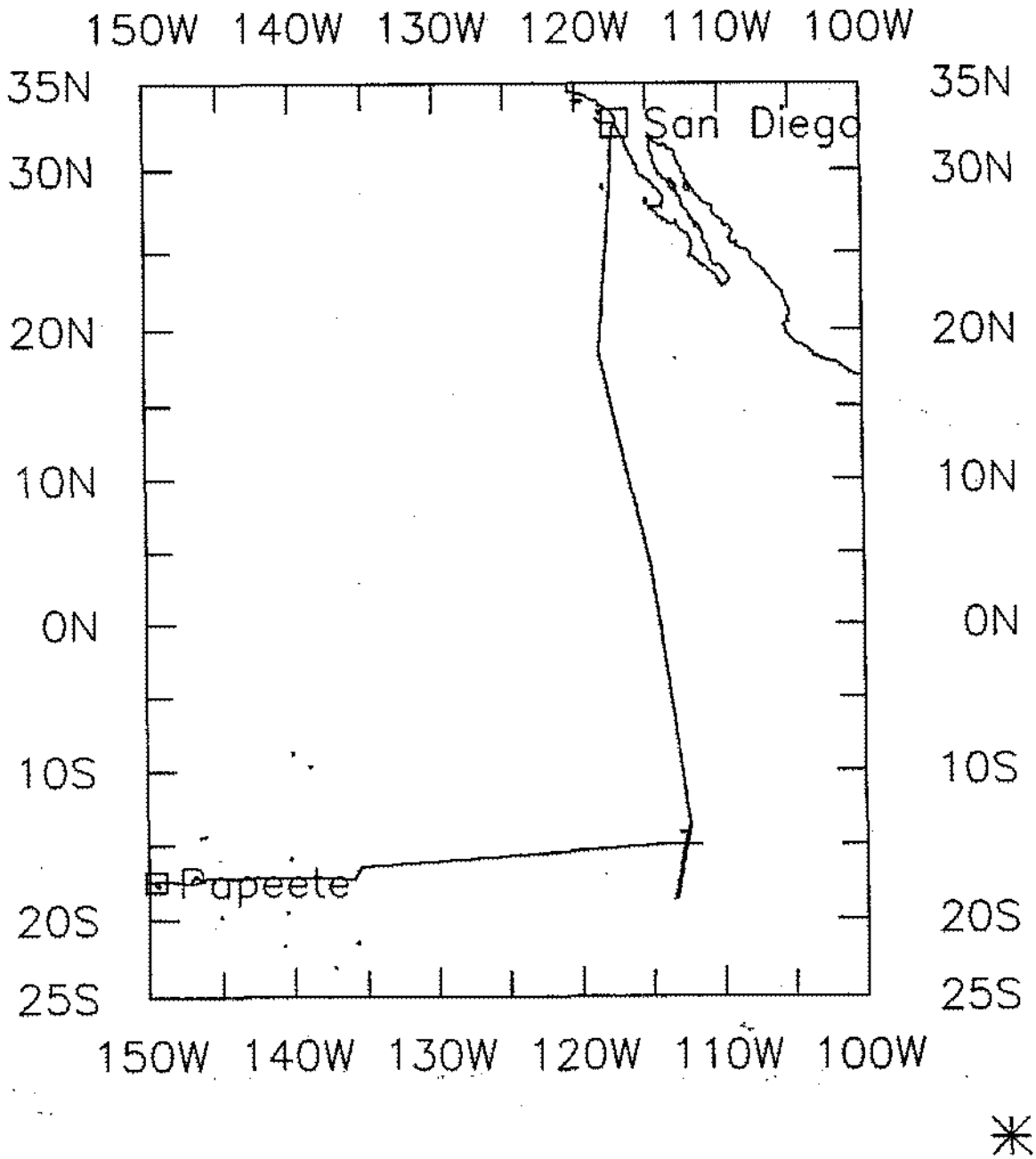
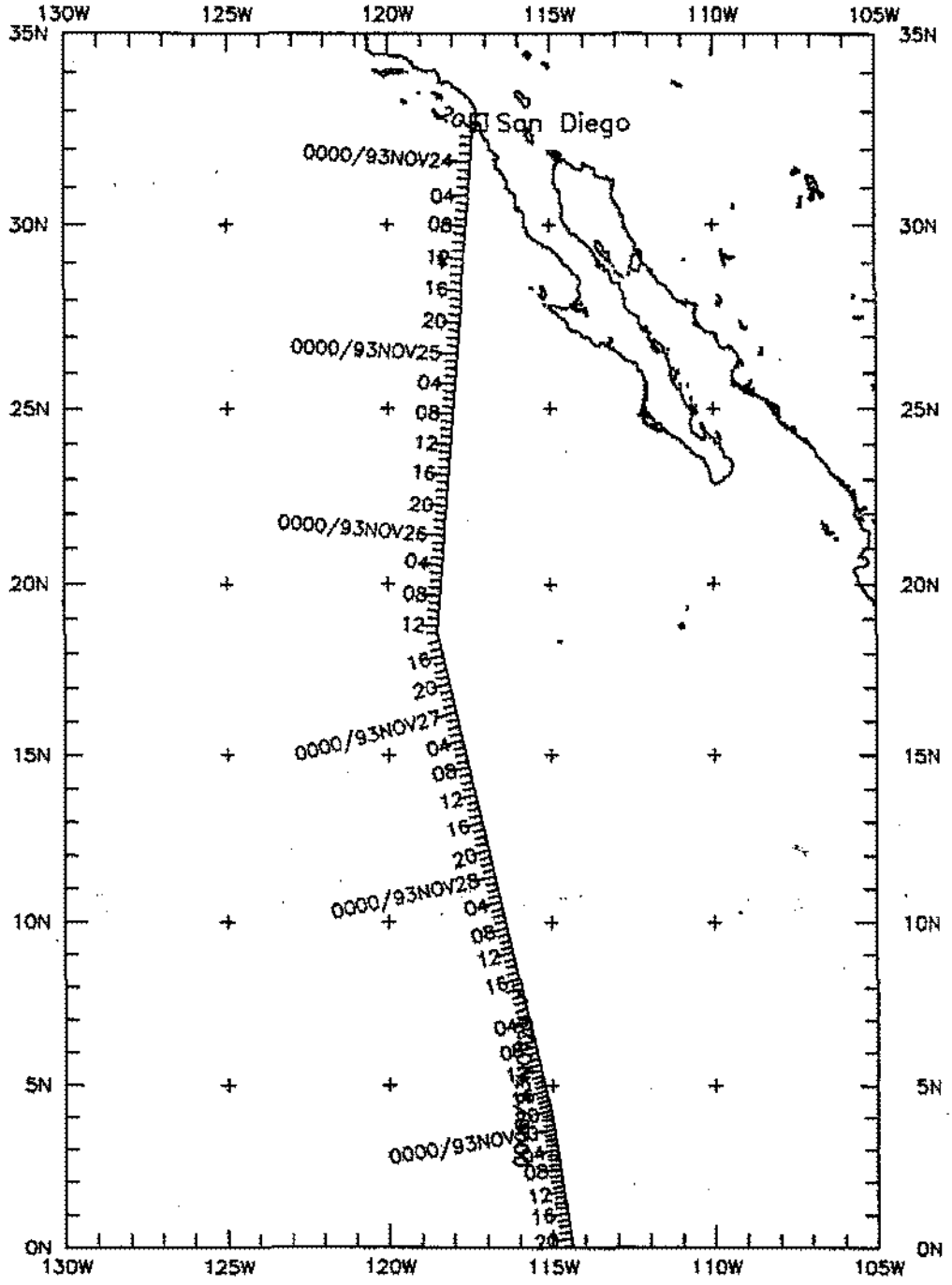


WESTWARD EXPEDITION LEG 1

CHIEF SCIENTIST: T. Urabe, Geologic Survey of Japan
PORTS: San Diego, Calif. - Papeete, Tahiti
DATES: 23 November -30 December 1993
SHIP: R/V Melville

TOTAL MILEAGE OF UNDERWAY DATA COLLECTED

Cruise - 6900 miles	Magnetics - 5255 miles
Bathymetry - 6440 miles	Seismic Reflection - none collected
Sea Beam - 6440 miles	Gravity - 6420 miles



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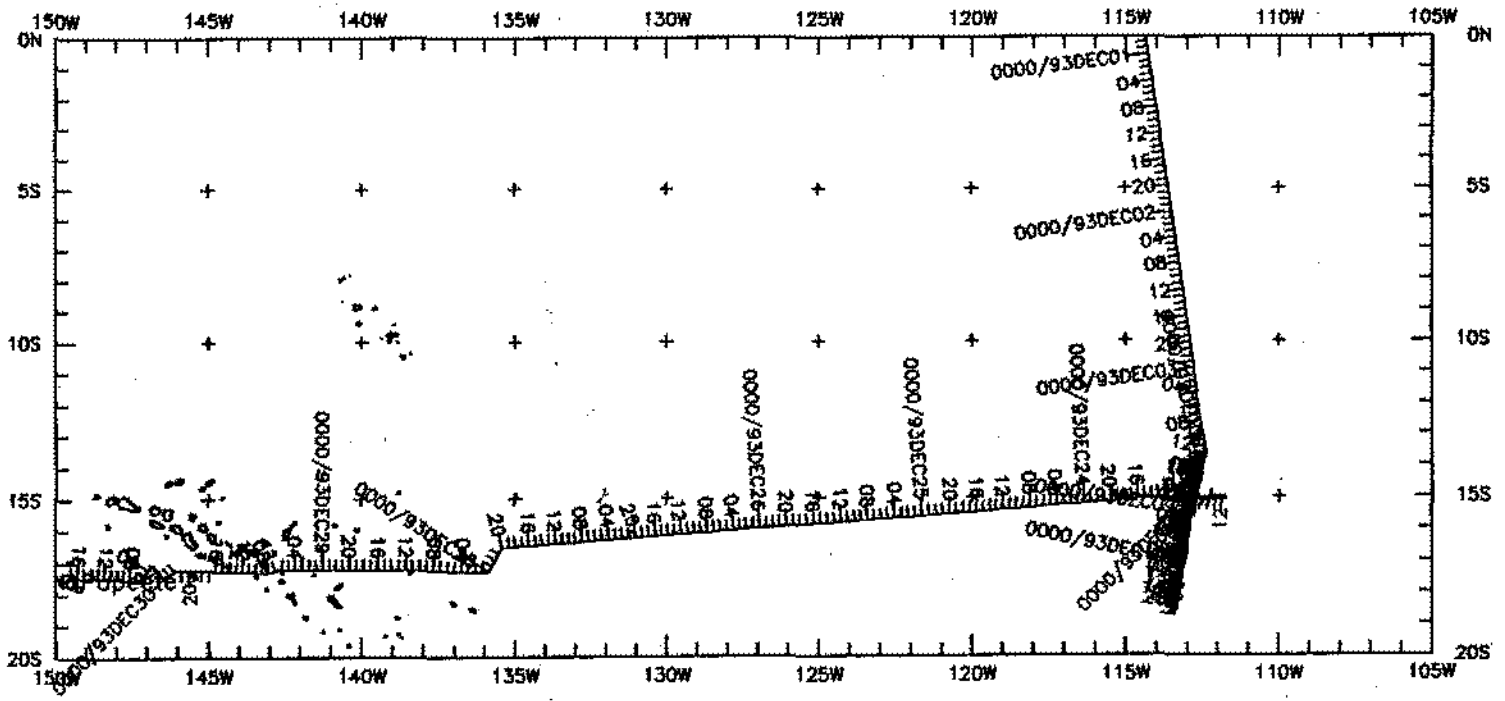

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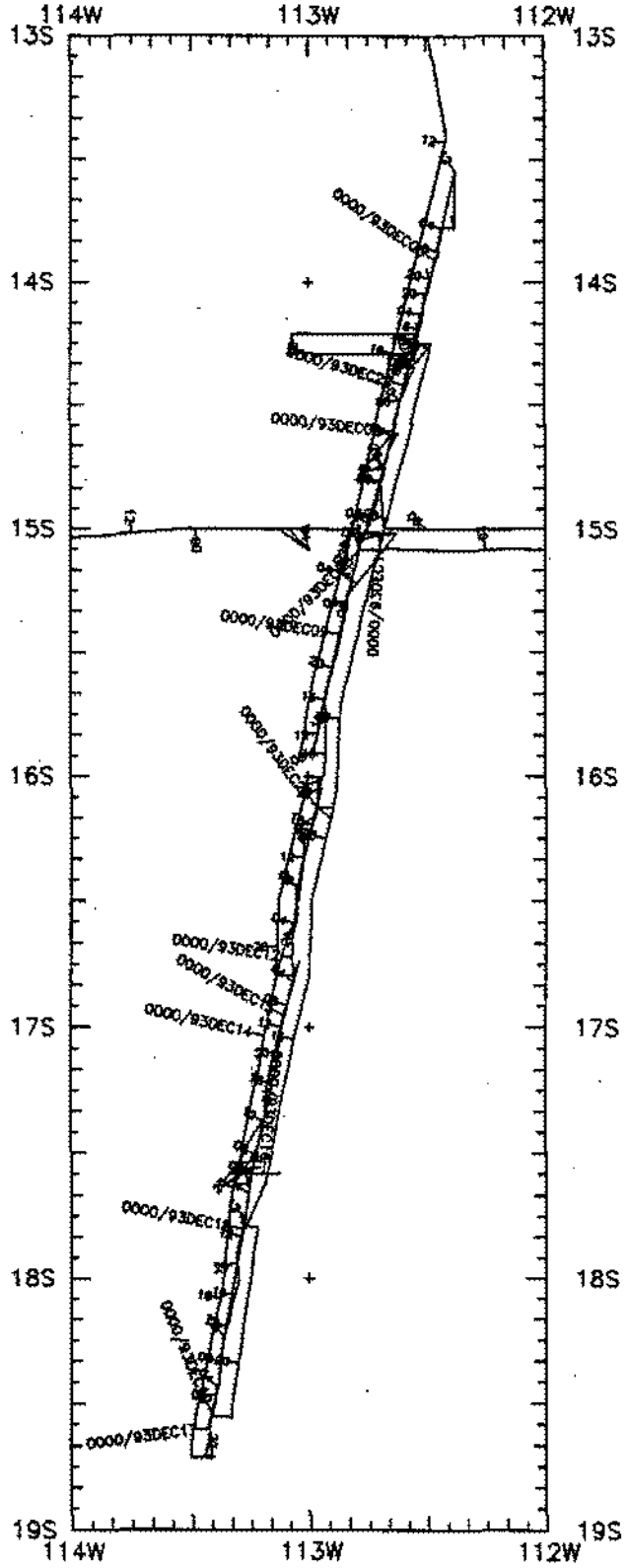

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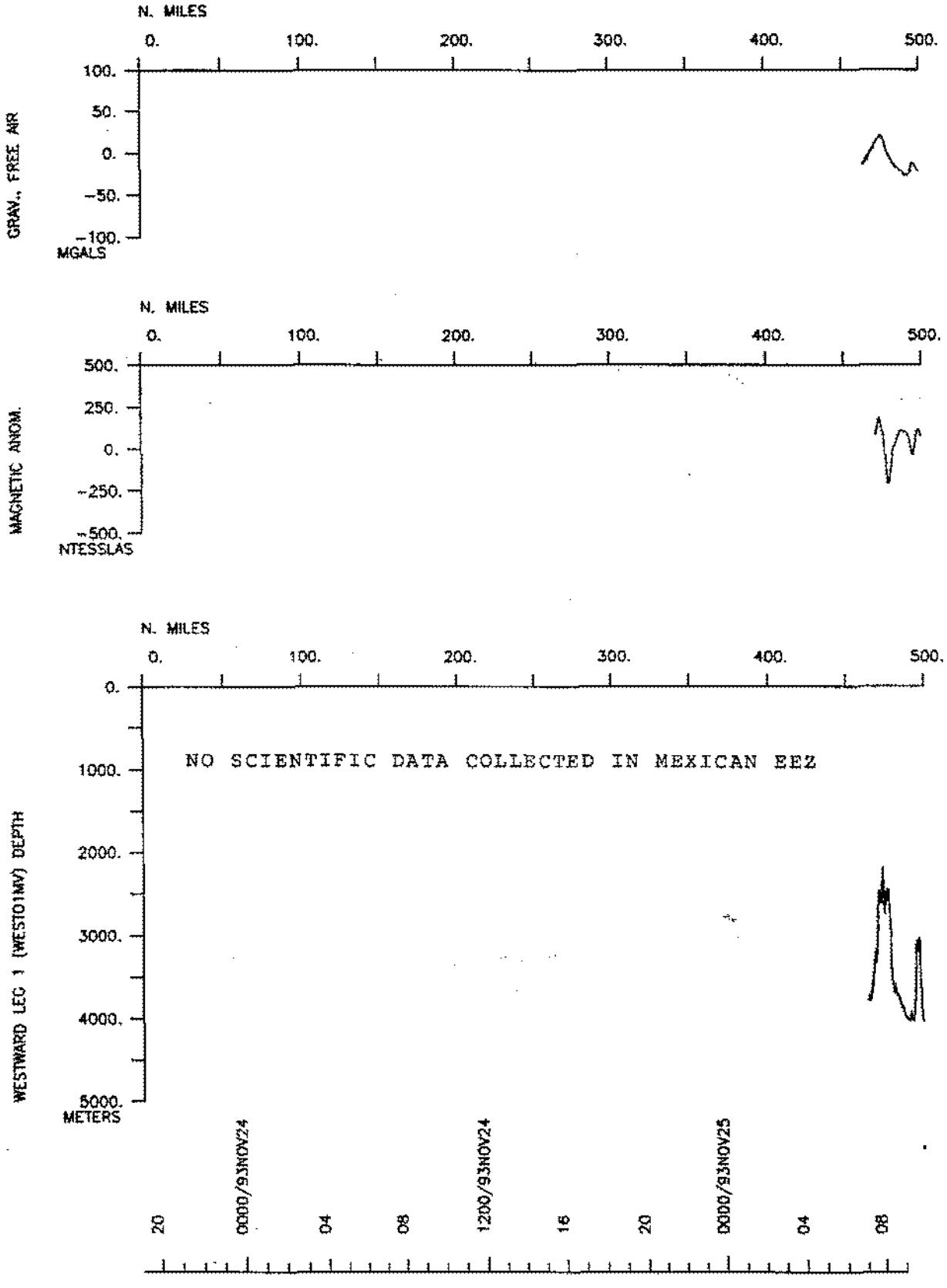
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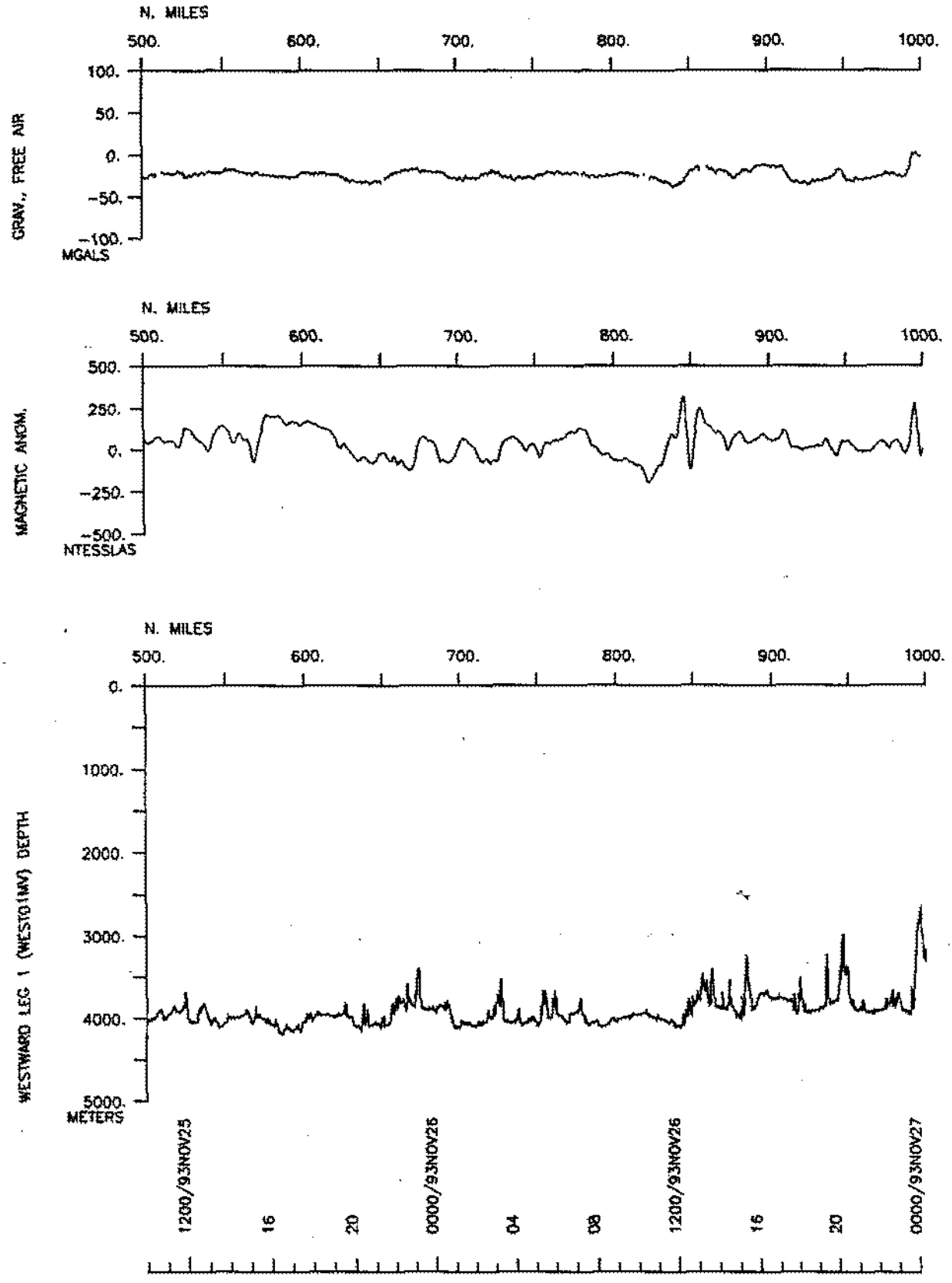
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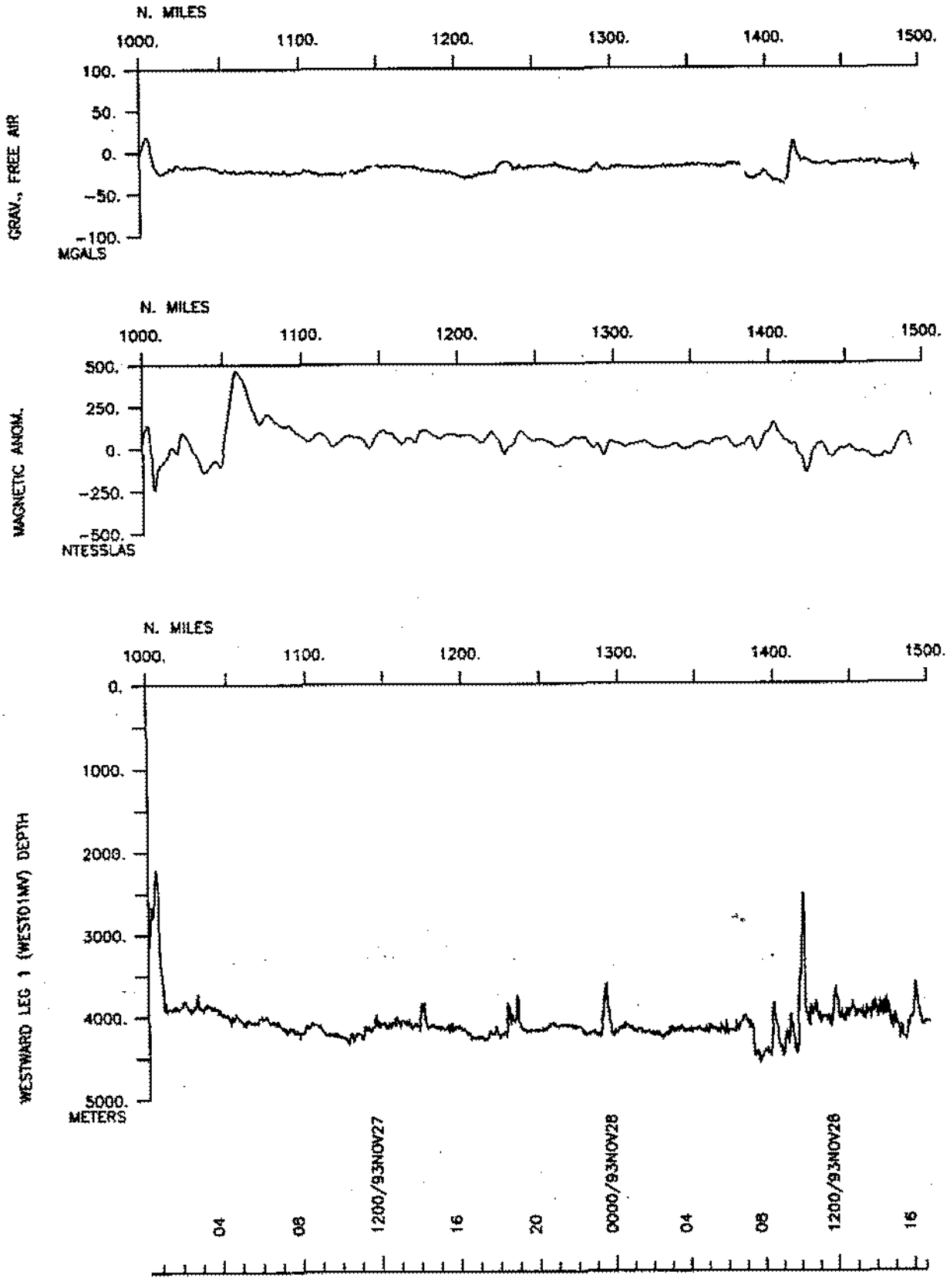
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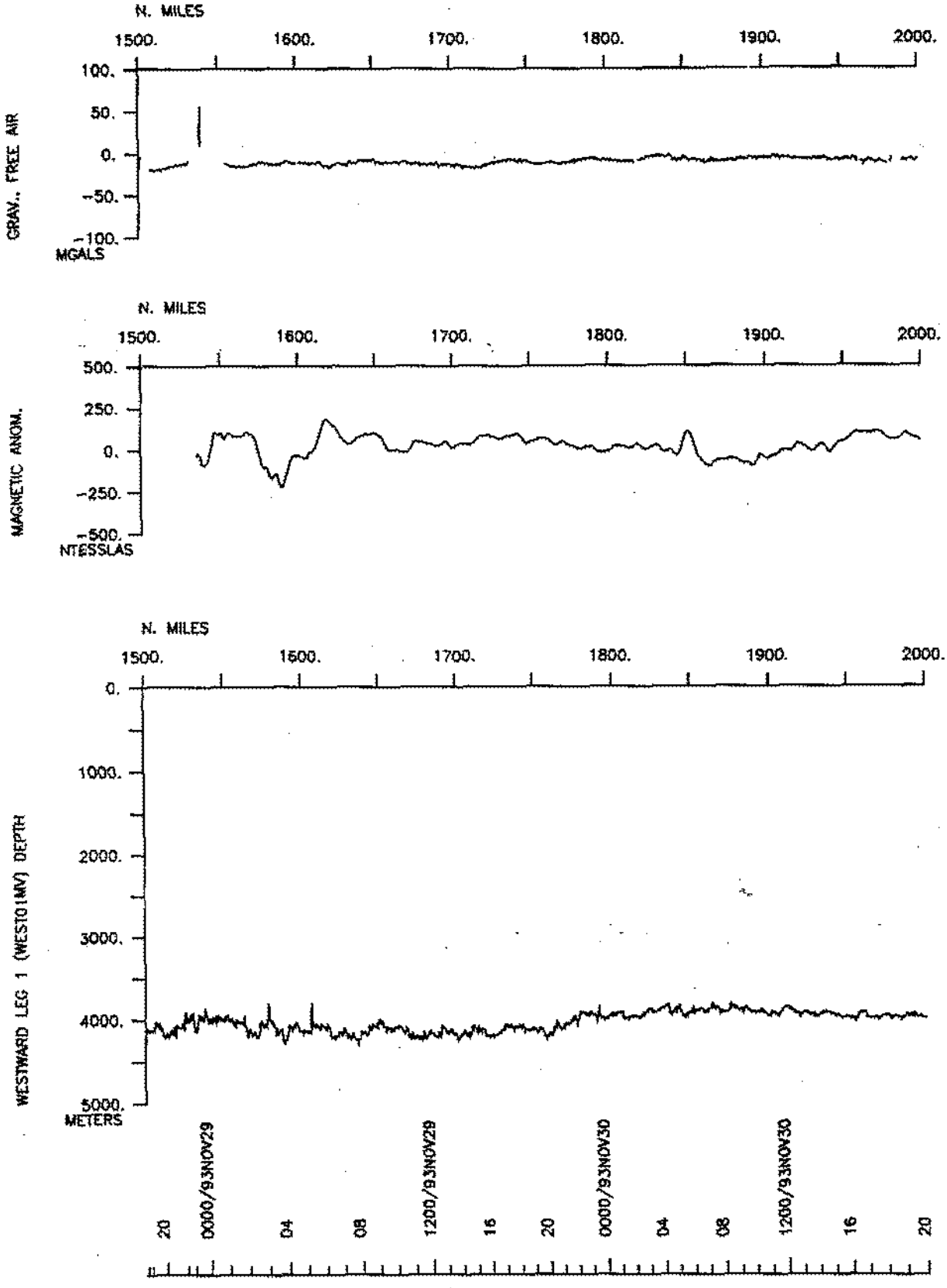
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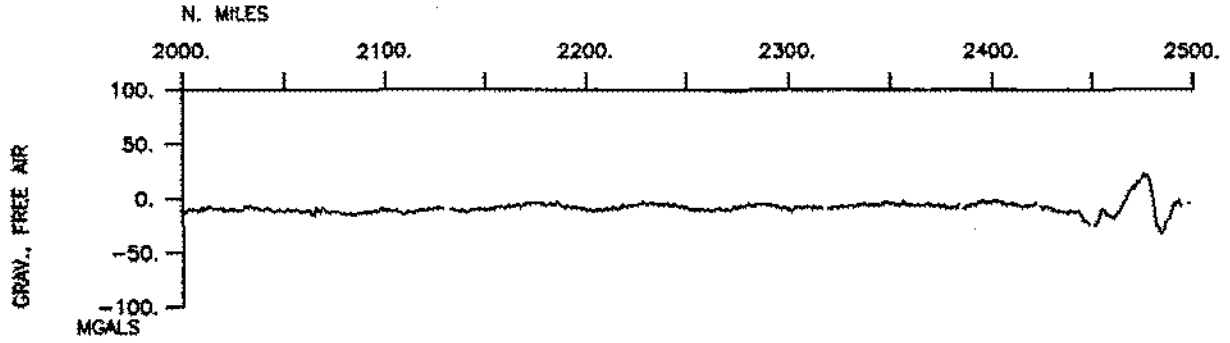
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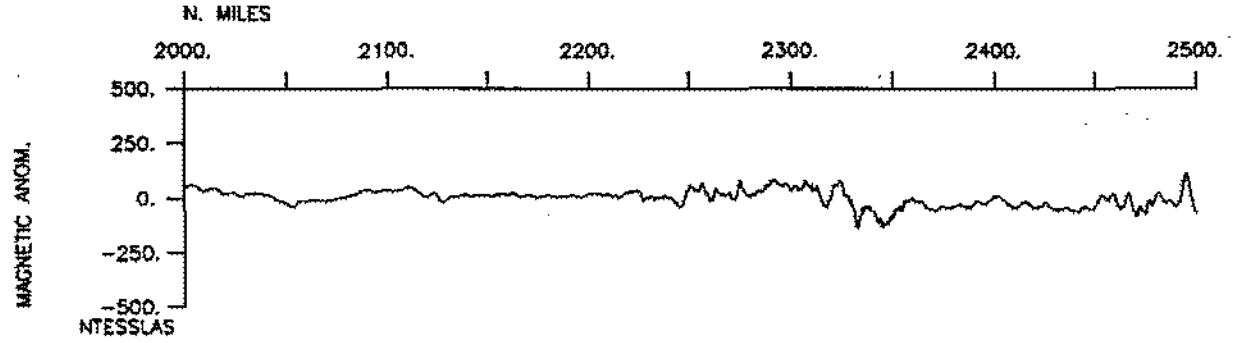
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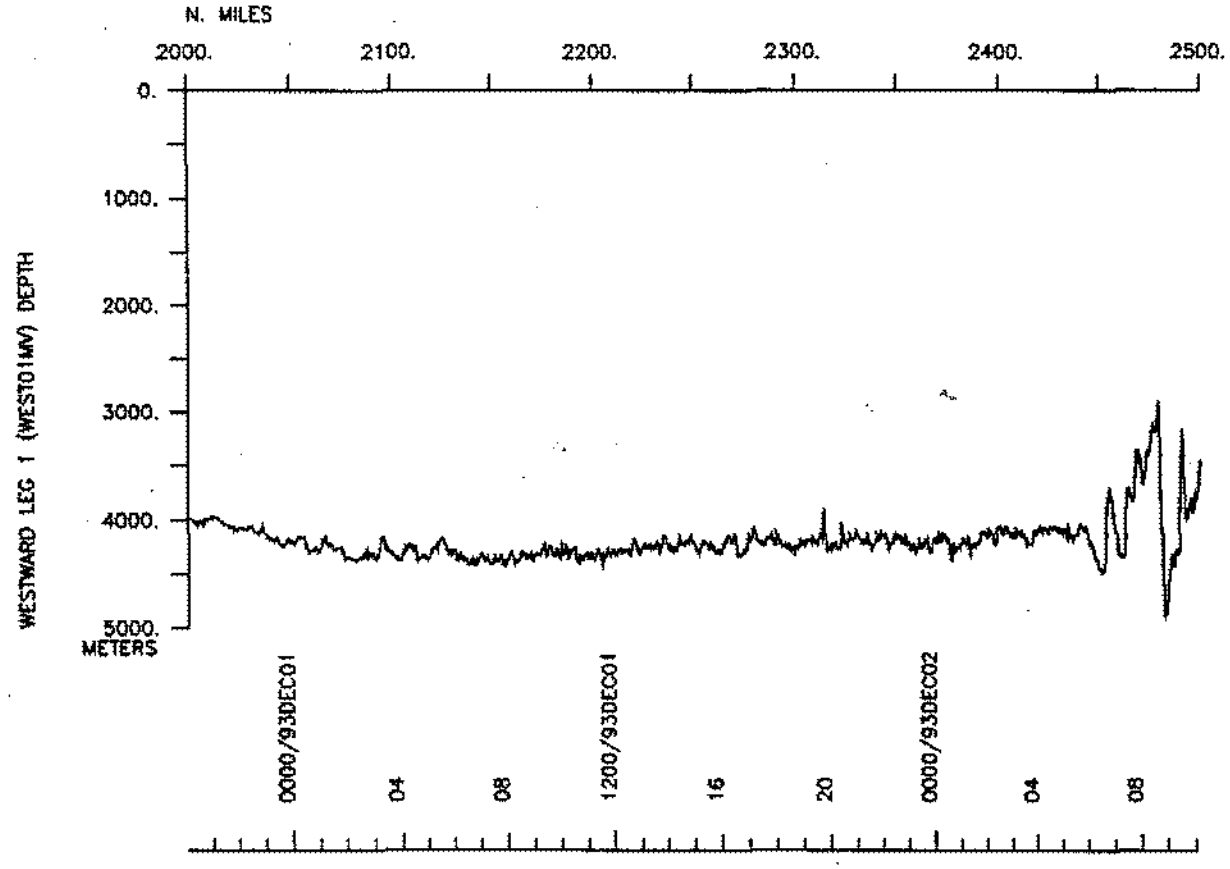
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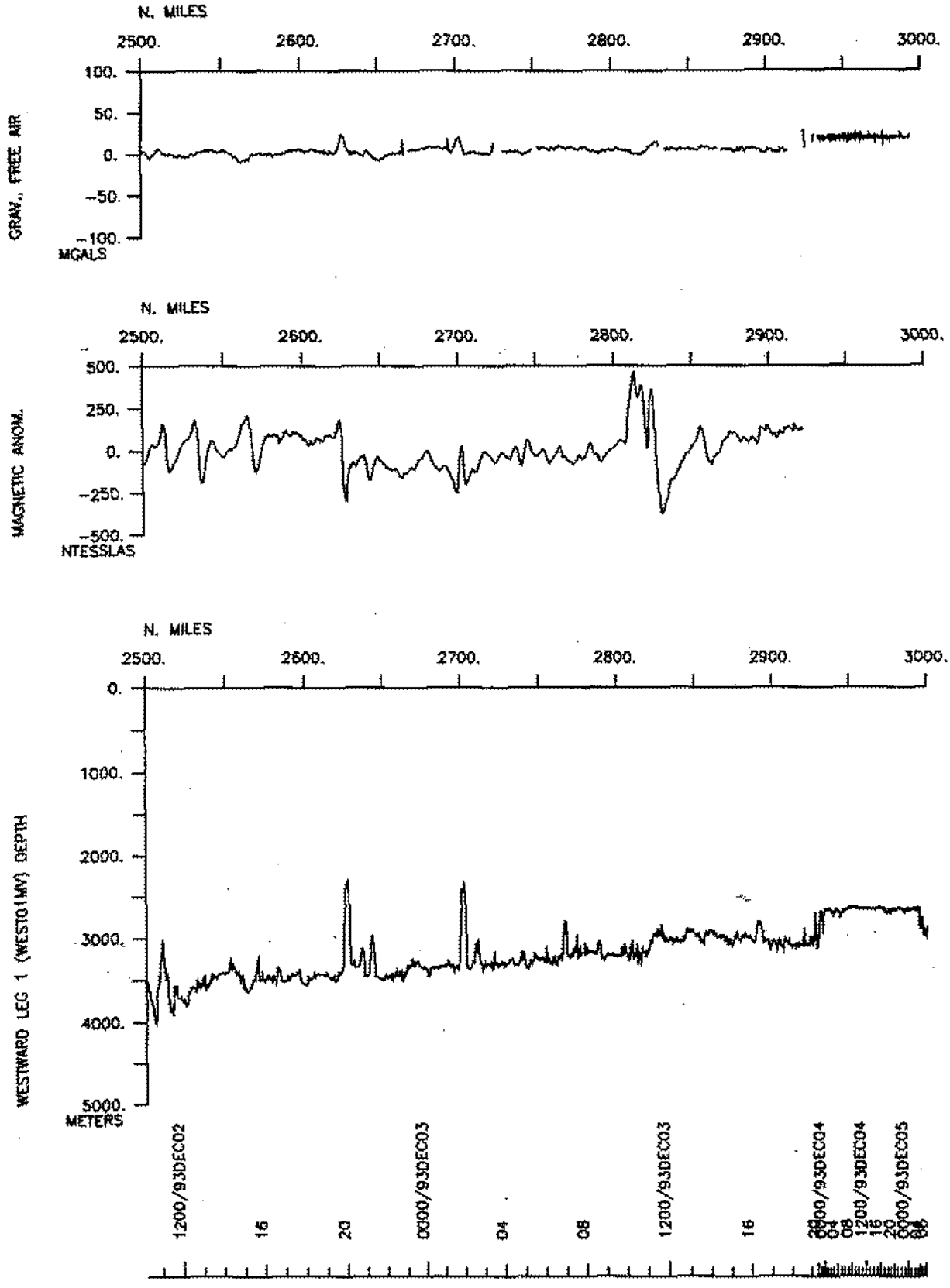
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4000.
5000.
METERS
WESTWARD LEG 1 (WEST01MV) DEPTH
1200/93DEC02
16
20
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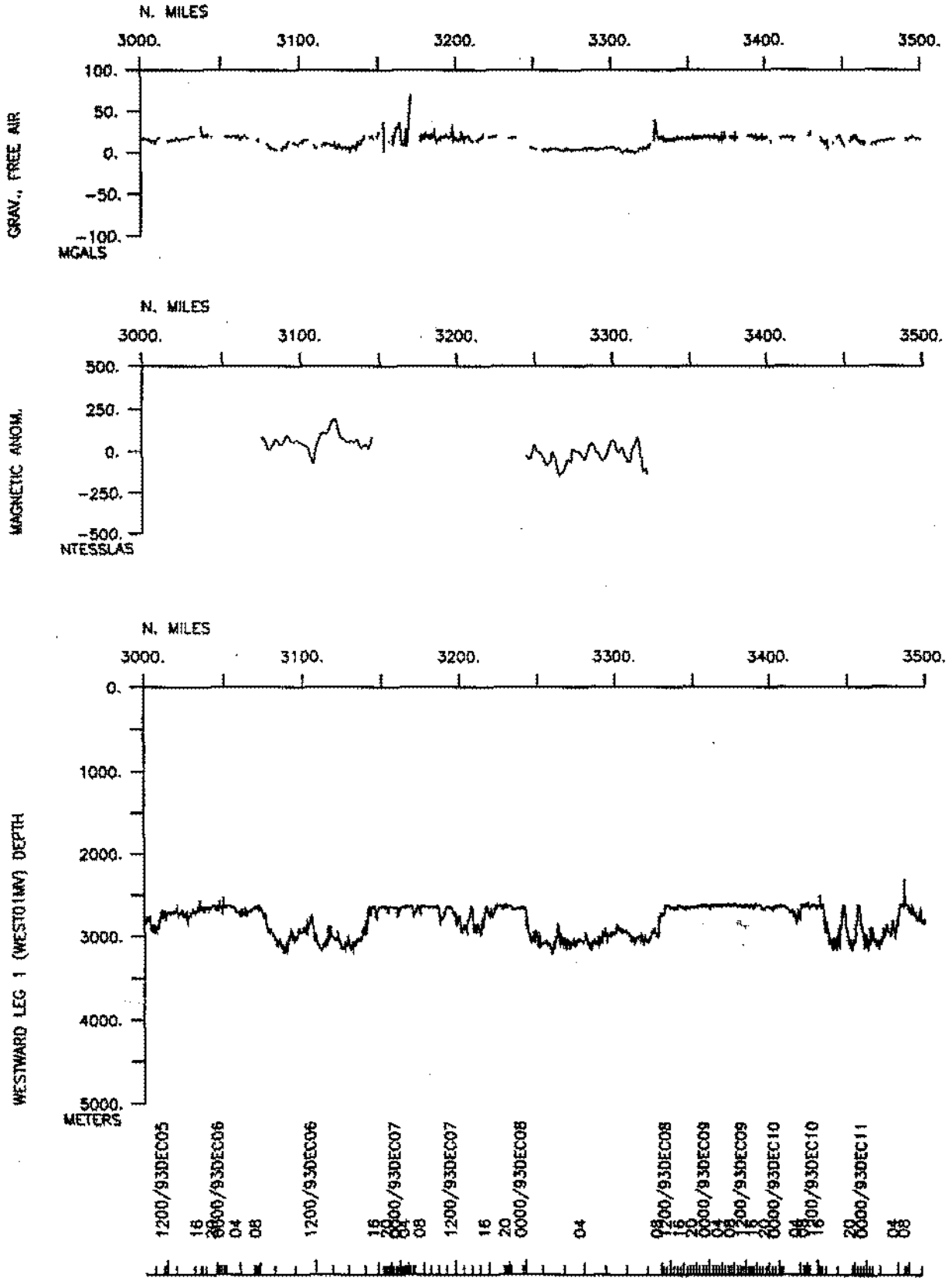
04
08
1200/93DEC03
16
0000/93DEC04
04
08
1200/93DEC04
16
20
0000/93DEC05
08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MGALS
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3500.
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500.
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NTESSLAS
N. MILES
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3100.
3200.
3300.
3400.
3500.
WESTWARD LEG 1 (WEST01MV) DEPTH
0.
1000.
2000.
3000.
4000.
5000.
METERS
1200/93DEC05
1200/93DEC06
1200/93DEC06
1200/93DEC07
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0000/93DEC09
1200/93DEC09
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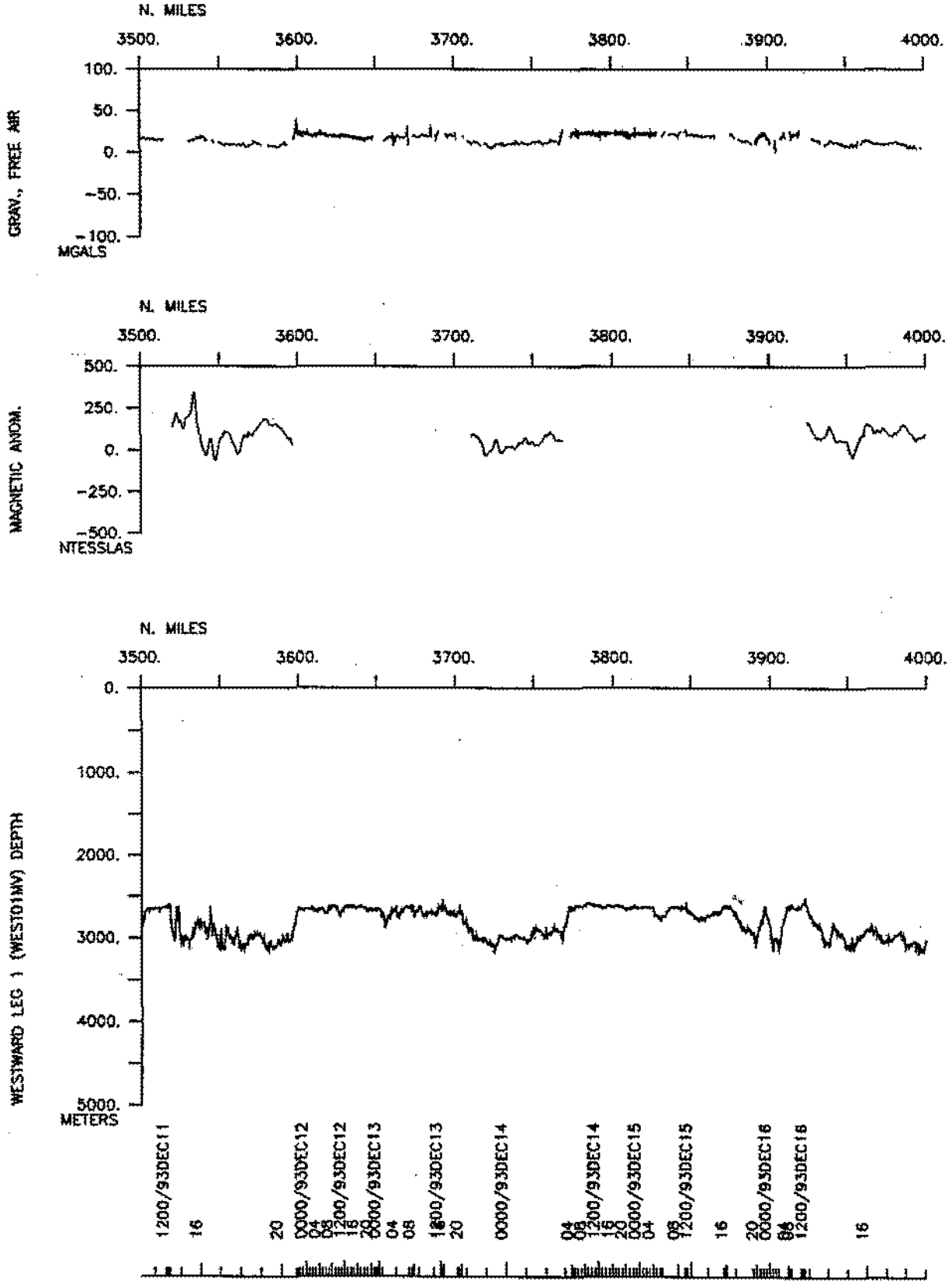
0000/93DEC11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MAGNETIC ANOM.
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NTESSLAS
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3700.
3800.
3900.
4000.
WESTWARD LEG 1 (WEST01WV) DEPTH
0.
1000.
2000.
3000.
4000.
5000.
METERS
1200/93DEC11
16
20
0000/93DEC12
04
08
1200/93DEC12
16
20
0000/93DEC13
04
08
1200/93DEC13
20
0000/93DEC14
04
08
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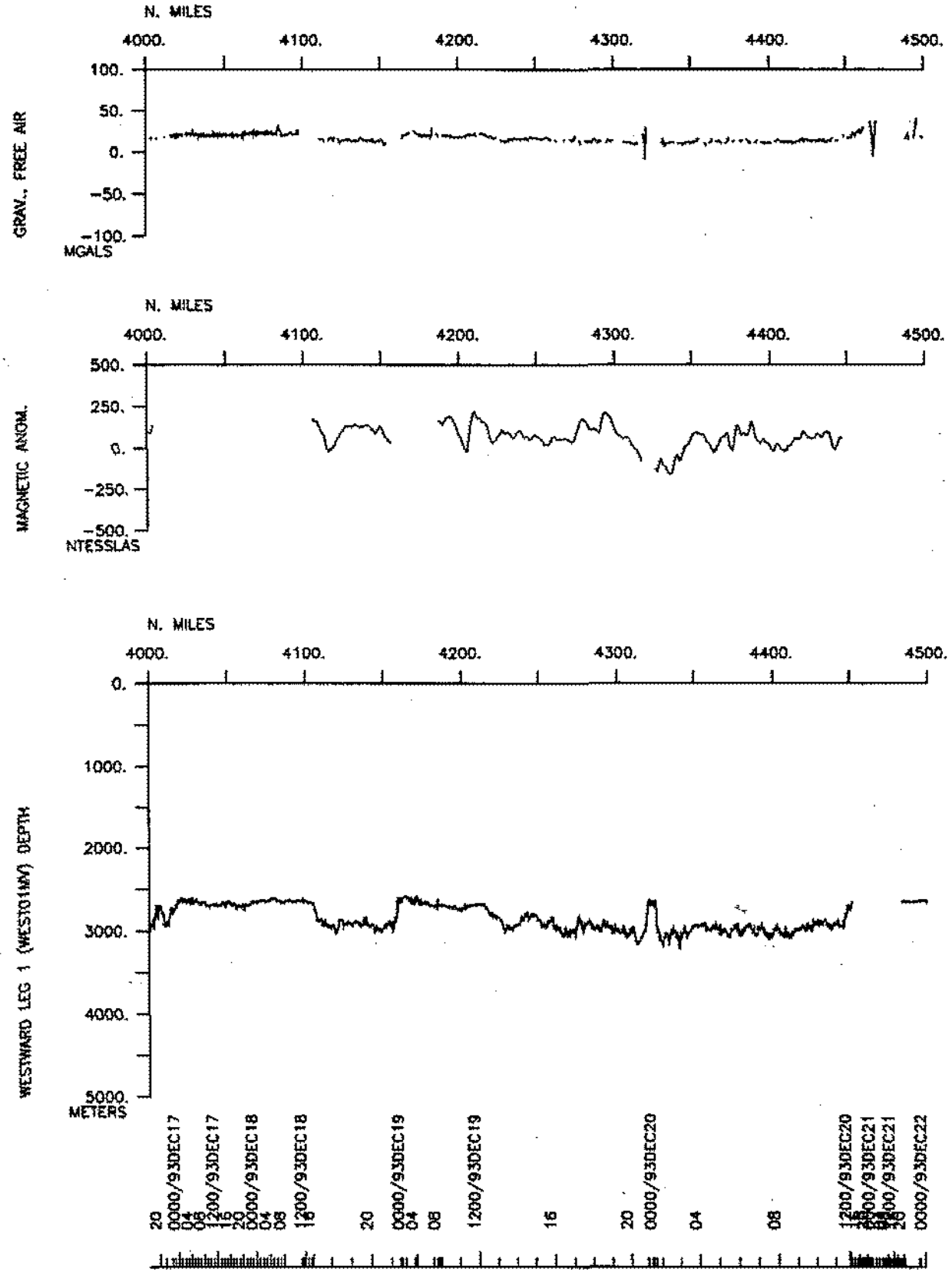
1200/93DEC16
16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0.
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MGALS
N. MILES
4000.
4100.
4200.
4300.
4400.
4500.
MAGNETIC ANOM.
500.
250.
0.
-250.
-500.
NTESSLAS
N. MILES
4000.
4100.
4200.
4300.
4400.
4500.
WESTWARD LEG 1 (WEST01MV) DEPTH
0.
1000.
2000.
3000.
4000.
5000.
METERS
20
0000/93DEC17
04
08
1200/93DEC17
16
20
0000/93DEC18
04
08
1200/93DEC18
16
20
0000/93DEC19
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20
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04
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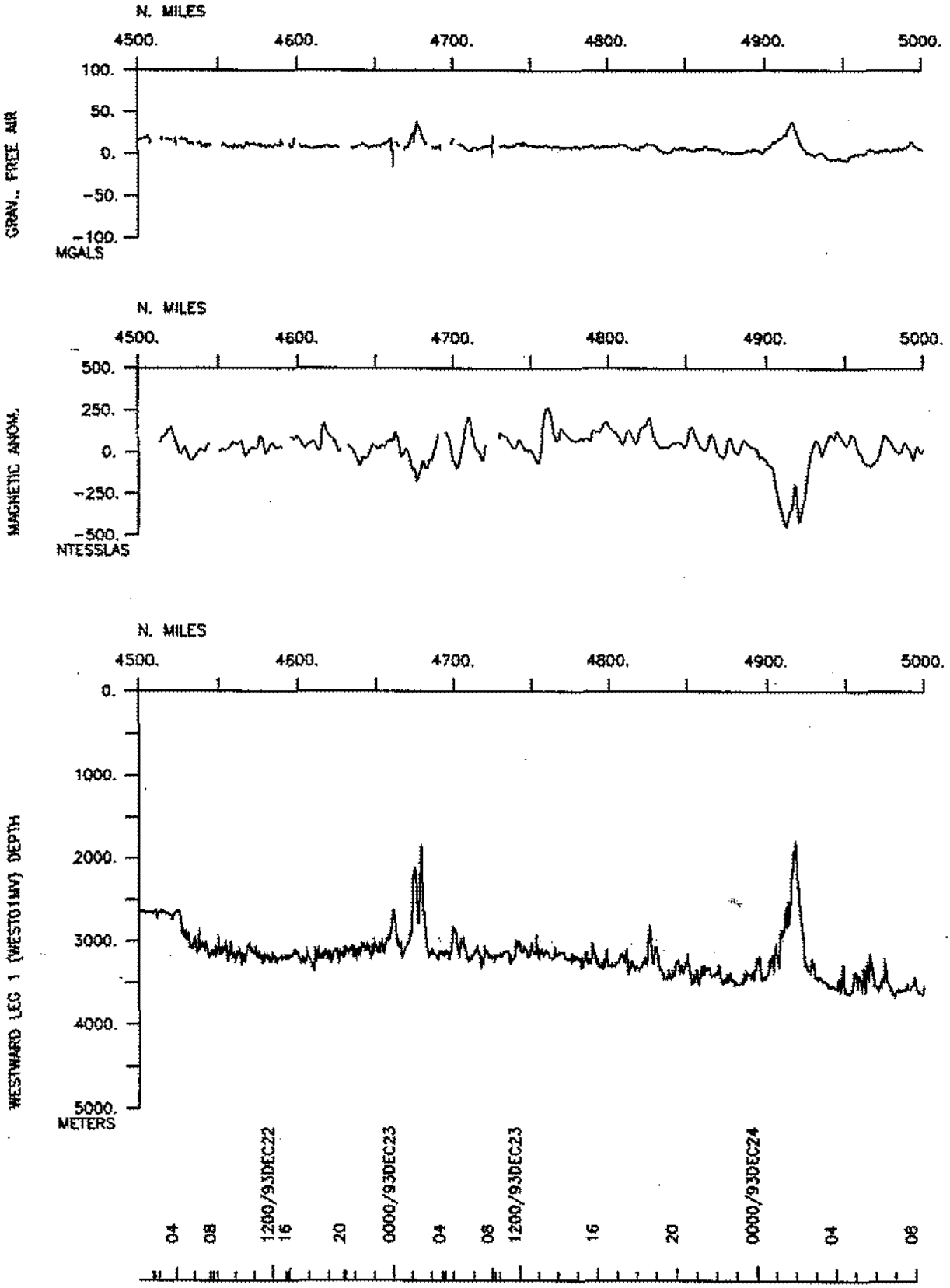
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MGALS
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4700.
4800.
4900.
5000.
MAGNETIC ANOM.
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0.
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-500.
NTESSLAS
N. MILES
4500.
4600.
4700.
4800.
4900.
5000.
WESTWARD LEG 1 (WEST01MV) DEPTH
0.
1000.
2000.
3000.
4000.
5000.
METERS
04
08
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16
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20
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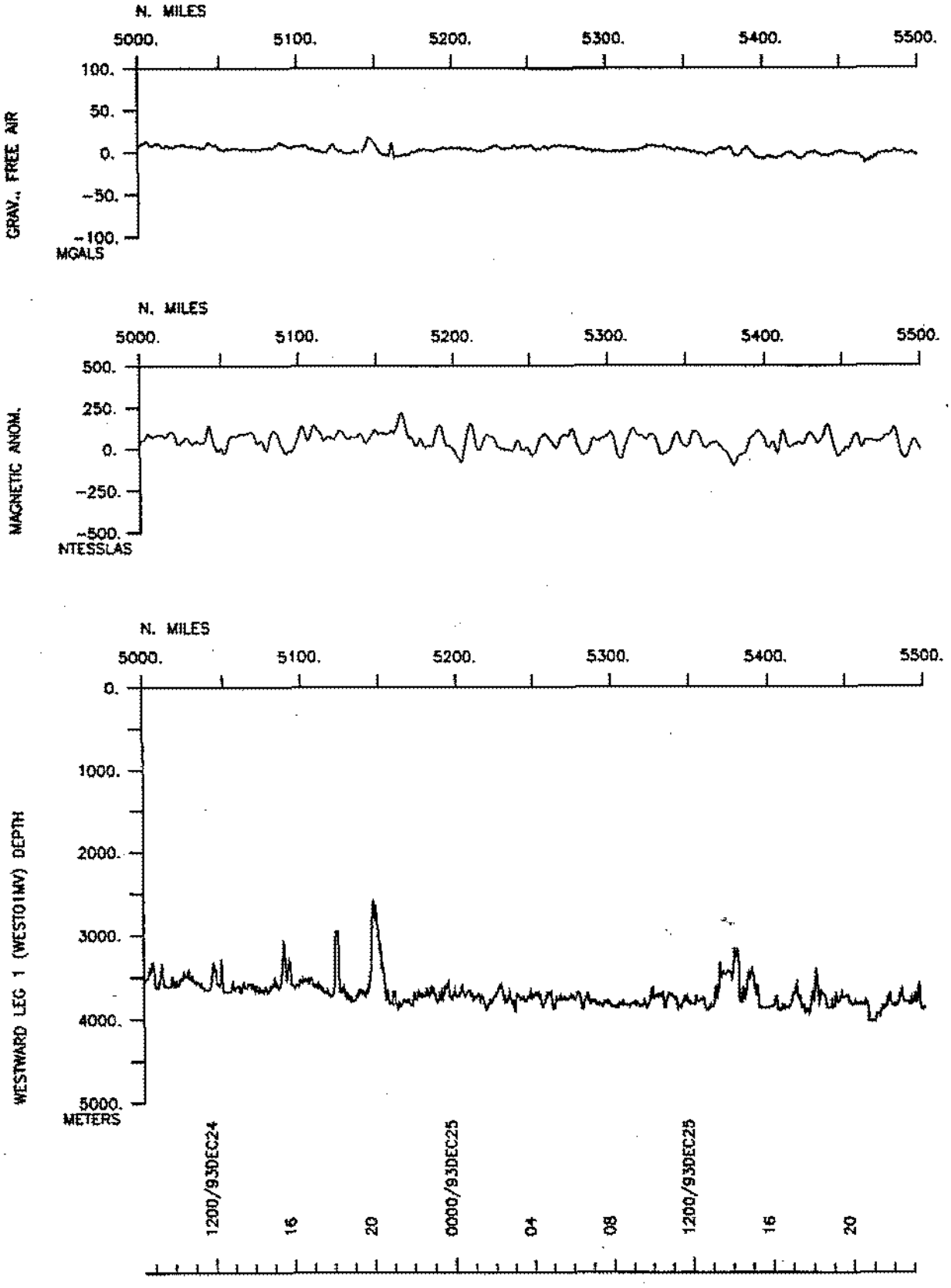
04
08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5300.
5400.
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NTESSLAS
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5100.
5200.
5300.
5400.
5500.
WESTWARD LEG 1 (WEST01MV) DEPTH
0.
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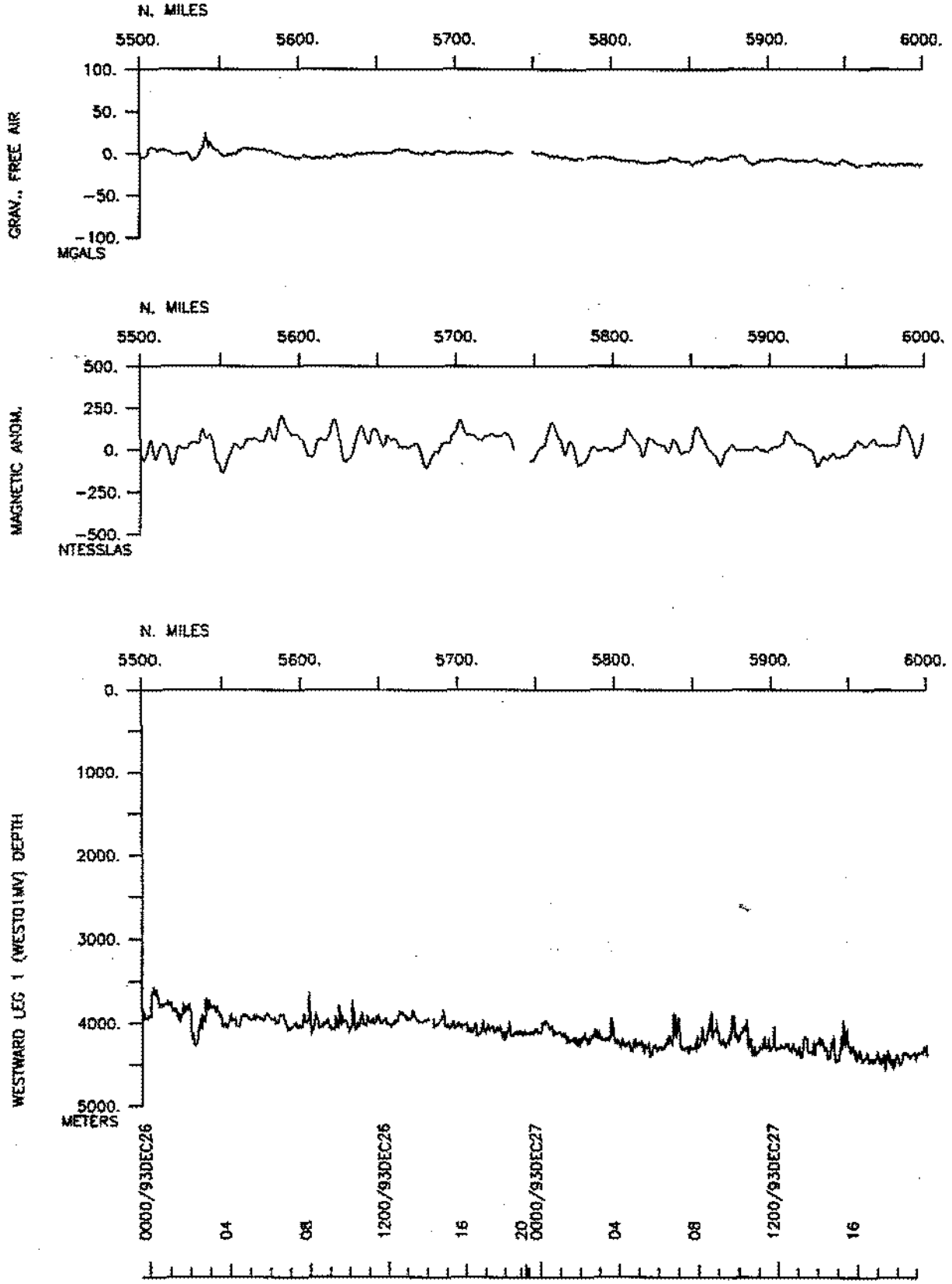
2000.
3000.
4000.
5000.
METERS
1200/930EC24
16
20
0000/930EC25
04
08
1200/930EC25
16
20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MAGNETIC ANOM.
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5700.
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2000.
3000.
4000.
5000.
METERS
WESTWARD LEG 1 (WEST01MV) DEPTH
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04
08
1200/93DEC26
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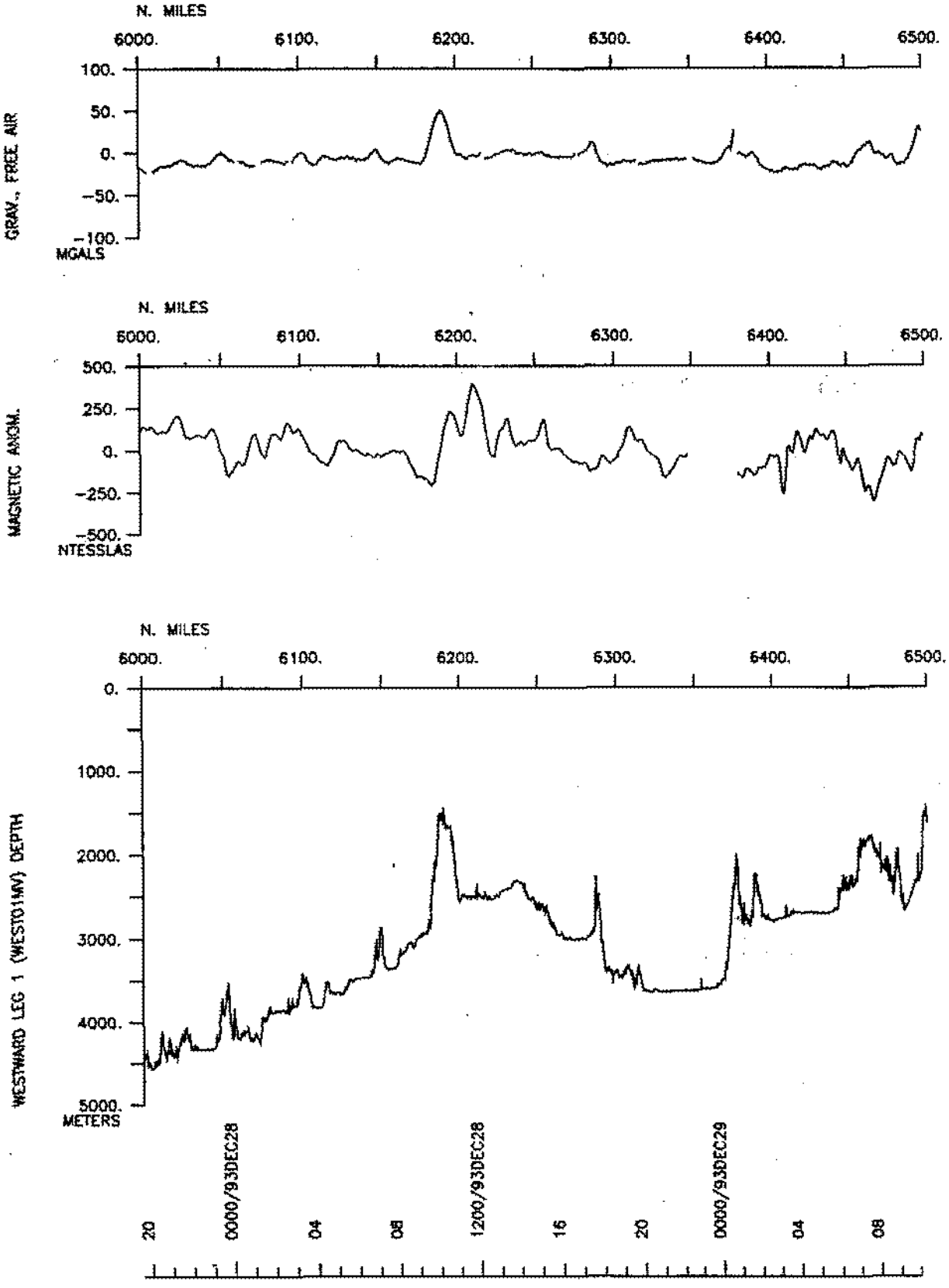
20
0000/93DEC27
04
08
1200/93DEC27
16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N. MILES
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6200.
6300.
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0.
1000.
2000.
3000.
4000.
5000.
METERS
WESTWARD LEG 1 (WEST01MV) DEPTH
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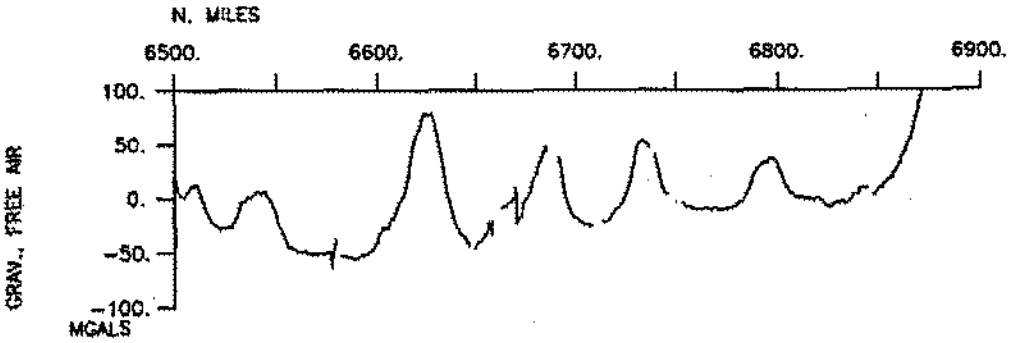
04
08
1200/93DEC28
16
20
0000/93DEC29
04
08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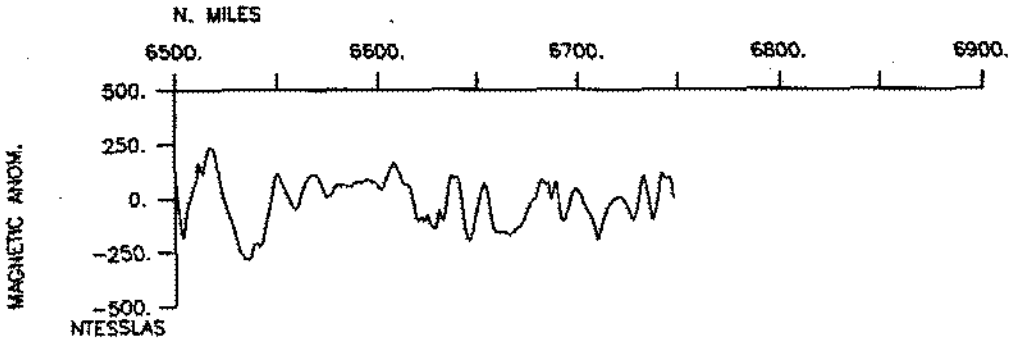
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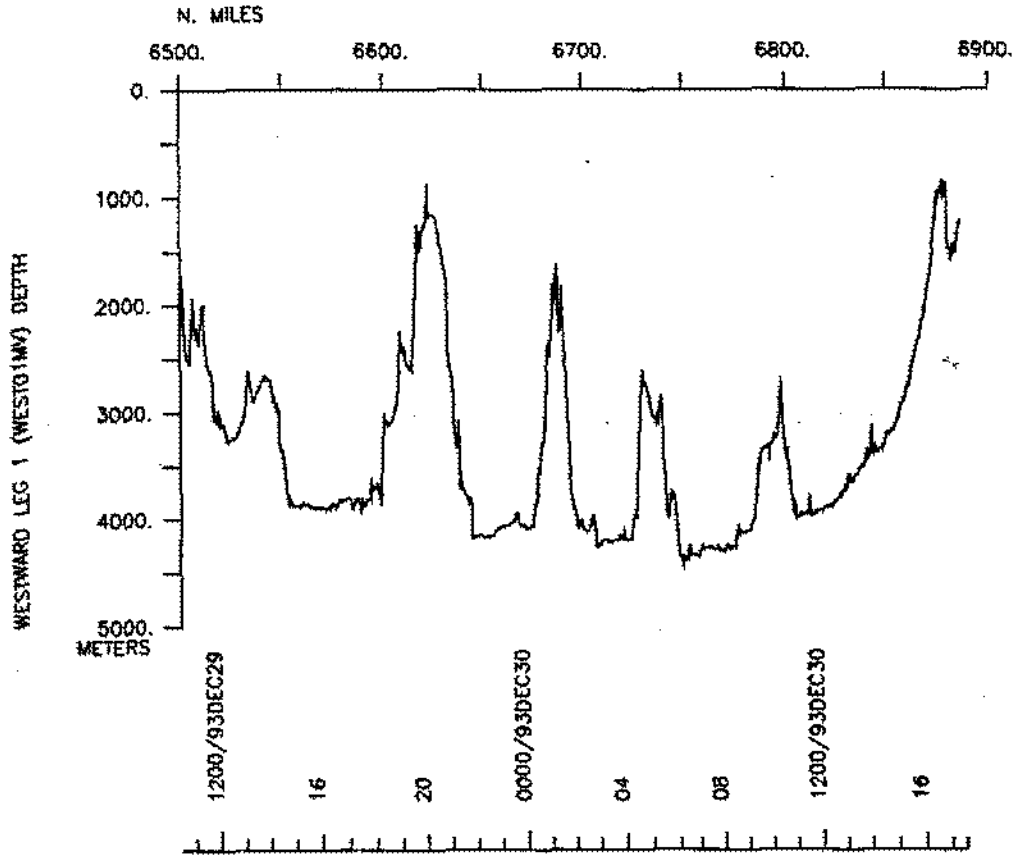
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METERS
WESTWARD LEG 1 (WEST01MV) DEPTH
1200/93DEC29
16
20
0000/93DEC30
04
08
1200/93DEC30
16

S.I.O. SAMPLE INDEX

(Issued March 1994)

WESTWARD EXPEDITION

Leg 1

R/V Melville

San Diego, Calif. (23 November 1993)
to
Papeete, Tahiti (30 December 1993)

Chief Scientist:

T. Urabe (Geologic Survey of Japan)

The Sample Index is a first level interdisciplinary listing of time, position, sample identification and disposition of all samples, records and measurements collected on this cruise leg. The index data are encoded at sea by the resident marine technician and processed on shore by the S.I.O. Geological Data Center shortly after the completion of the cruise leg.

Positions are interpolated on the basis of sample time by comparison to a single, edited navigation file. Samples beginning at one time and position and ending at another are entered on two consecutive lines. Disposition and sample type are represented by three and four character codes to permit further computer searches on these parameters. (Listings defining these codes are available from the Geological Data Center.)

GDC Cruise I.D.# 266

**** Ports ***

1854 231193 0 LGPT B San Diego, Calif. 32-37.30n 117-14.80w WEST01MV
1830 301293 0 LGPT E Papeete, Tahiti 17-30.60s 149-36.15w WEST01MV

#*** Personnel ***

#		******* Name *******	***** Title *****	**** Affiliation ***	* CRID *
PECS	JPN	Urabe,T.	Chief scientist	Geologic Survey JPN	WEST01MV
PESP	JPN	Akoi,M.	Marine technician	Nippon Marine Ent.	WEST01MV
PESP	NOAA	Baker,E.	Oceanograper	NOAA/PMEL	WEST01MV
PECT	STS	Charters,J.	Computer tech	Scripps Institution	WEST01MV
PEST	NOAA	Feely,R.	Chem.oceanograper	NOAA/PMEL	WEST01MV
PESP	NOAA	Gendron,J.	Oceanographer	NOAA/PMEL	WEST01MV
PESP	NOAA	Green,R.	Research assoc.	NOAA/PMEL/OSU	WEST01MV
PEBE	STS	Heckman,E.	Seabeam engineer	Scripps Institution	WEST01MV
PESP	JPN	Ishibashi,J.	Research assoc.	Univ. of Tokyo	WEST01MV
PESP	JPN	Kaiho,Y.	Researcher	Marine Sci&Tech.Ctr.	WEST01MV
PESP	JPN	Kisimoto,K.	Sr.researcher	Geologic Survey JPN	WEST01MV
PESP	UWA	Lebon,J.	Oceanographer	Univ. of Washington	WEST01MV
PESP	JPN	Marmumo,K.	Sr. geologist	Geologic Survey JPN	WEST01MV
PESP	JPN	Maruyama,A.	Sr. researcher	Nat.Res.Inst.Biosci.	WEST01MV
PESP	NOAA	Massoth,G.	Chem.oceanograper	NOAA/PMEL	WEST01MV
PESP	JPN	Matsumoto,T.	Researcher	Marine Sci&Tech.Ctr.	WEST01MV
PESP	JPN	Nakamura,K.	Sr. geologist	Geologic Survey JPN	WEST01MV
PESP	JPN	Nishizawa,A.	Research officer	Hydrographic Dept.	WEST01MV
PEST	JPN	Okamura,K.	Grad student	Kyoto University	WEST01MV
PESP	JPN	Okano,O.	Research assoc.	Okayama Univ.	WEST01MV
PESP	NOAA	Paradis,G.	Research assoc.	NOAA/PMEL.OSU	WEST01MV
PERT	STS	Pillard,E.	Resident tech	Scripps Institution	WEST01MV
PESP	UWA	Roe,K.	Oceanographer	Univ. of Washington	WEST01MV
PESP	JPN	Shibata,T.	Prof.of geology	Okayama Univ.	WEST01MV
PESP	JPN	Shitashima,K.	Sr. researcher	Inst. of Elec.Power	WEST01MV
PEBO	STS	Smith,S.	Seabeam operator	Scripps Institution	WEST01MV
PESP	JPN	Sonoda,A.	Marine technician	Nippon Marine Ent.	WEST01MV
PESP	NOAA	Tennant,D.	Oceanographer	NOAA/PMEL	WEST01MV
PESP	NOAA	Vance,T.	Oceanographer	NOAA/PMEL	WEST01MV
PESP	JPN	Yabuki,T.	Research officer	Hydrographic Dept.	WEST01MV
PESP	JPN	Yamazaki,T.	Sr. geophysicist	Geologic Survey JPN	WEST01MV
PESP	JPN	Ytow,N.	Research assoc.	Univ. of Tsukuba	WEST01MV

#*** Notes ***
#An 'x' in the (b)egin/(e)nd column following the sample code indicates no
#sample or data recovered. A 'C' indicates continuation of data collection
#from before the beginning or after the end of a particular leg, (moored
#bottom instruments, for example). The number appearing in the columns
#between the Sample Identifier and the Disposition Code, for many sample
#entries, is the water depth in corrected meters.

#GMT ddmmyy #Time Date	tz	Samp Code	B E	Sample Identifier	Disp Code	Latitude	Longitude	P C	Cruise Leg-Ship
#*** Underway Data Curator - S. M. Smith ext. 42752 ***									
#*** Log Books ***									
1855 231193	0	LBUW	B	Underway log book	GDC	32-42.40N	117-14.17W	g	WEST01MV
1729 301293	0	LBUW	B	Underway log book	GDC	17-29.38S	149-34.86W	g	WEST01MV
#*** SeaBeam Records (vertical beam and sidescan) ***									
0048 241193	0	MBRB	B	v.beam&sidescan r-01	GDC	31-29.74N	117-27.71W	g	WEST01MV
0715 251193	0	MBRB	E	v.beam&sidescan r-01	GDC	24-59.18N	118-00.25W	g	WEST01MV
0715 251193	0	MBRB	B	v.beam&sidescan r-02	GDC	24-59.18N	118-00.25W	g	WEST01MV
0610 131293	0	MBRB	E	v.beam&sidescan r-02	GDC	16-18.02S	113-01.03W	g	WEST01MV
0612 131293	0	MBRB	B	v.beam&sidescan r-03	GDC	16-18.00S	113-01.05W	g	WEST01MV
1729 301293	0	MBRB	E	v.beam&sidescan r-03	GDC	17-29.38S	149-34.86W	g	WEST01MV
#*** Continuous Recorded Gravity ***									
1854 281193	0	GVCR	B	digital gravity	GDC	8-03.66N	115-58.06W	g	WEST01MV
2800 301293	10	GVCR	E	digital gravity	GDC	17-32.32S	149-34.19W	g	WEST01MV
#*** Magnetics (Earth Total Field) Records ***									
0734 251193	0	MGRA	B	Magnetic analog r-01	GDC	24-56.62N	118-00.48W	g	WEST01MV
1718 031293	0	MGRA	E	Magnetic analog r-01	GDC	14-33.92S	112-42.79W	g	WEST01MV
1728 031293	0	MGRA	B	Magnetic analog r-02	GDC	14-36.07S	112-43.37W	g	WEST01MV
0559 301293	0	MGRA	E	Magnetic analog r-02	GDC	17-35.08S	147-11.13W	g	WEST01MV
#*** This sample belongs to Geologic Survey of Japan ***									
0649 281293	0	MGXX	B	3d Magnetometer	JPN	17-16.82S	137-23.91W	g	WEST01MV
0412 291293	0	MGXX	E	3d Magnetometer	JPN	17-14.27S	142-11.84W	g	WEST01MV

#*** Hydrocasts ***

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1725 151293  0 HCNI E xrf,  s ni  19btl     NOA  17-20.15S 113-10.99W g WEST01MV

0522 161293  0 HCNI B s93e19,ch4 al he      NOA  17-34.87S 113-14.83W g WEST01MV
0811 161293  0 HCNI E xrf,  s ni  19btl B   NOA  17-34.84S 113-14.81W g WEST01MV

1020 161293  0 HCNI B s93e20,ch4 al he      NOA  17-28.60S 113-13.30W g WEST01MV
1220 161293  0 HCNI E xrf,  s ni  19btl B   NOA  17-28.54S 113-13.18W g WEST01MV

1024 181293  0 HCNI B s93e21 ch4 al he      NOA  17-45.42S 113-16.45W g WEST01MV
1245 181293  0 HCNI E xrf,  s ni  19btl     NOA  17-45.40S 113-16.48W g WEST01MV

2247 181293  0 HCNI B s93e23 ch4 al he      NOA  18-33.03S 113-24.89W g WEST01MV
0048 191293  0 HCNI E xrf,  s ni  19btl B   NOA  18-33.02S 113-24.89W g WEST01MV

1435 181293  0 HCNI B s93e22 ch4 al he      NOA  17-47.51S 113-16.94W g WEST01MV
1652 181293  0 HCNI E xrf,  s ni  19btl B   NOA  17-47.43S 113-16.85W g WEST01MV
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0252 191293  0 HCNI B s93e24 ch4 al he      NOA  18-26.52S 113-23.49W g WEST01MV
0451 191293  0 HCNI E xrf,  s ni  19btl     NOA  18-26.51S 113-23.50W g WEST01MV

0738 191293  0 HCNI B s93e25 ch4 al he      NOA  18-14.32S 113-21.82W g WEST01MV
0944 191293  0 HCNI E xrf,  s ni  19btl B   NOA  18-14.40S 113-21.92W g WEST01MV

2257 191293  0 HCNI B s93e26 ch4 al he      NOA  16-07.49S 112-58.21W g WEST01MV
0133 201293  0 HCNI E xrf,  s ni  19btl B   NOA  16-07.52S 112-58.26W g WEST01MV

0626 221293  0 HCNI B s93e27 ch4 al he      NOA  15-00.02S 112-29.95W g WEST01MV
0842 221293  0 HCNI E xrf,  s ni  19btl     NOA  15-00.01S 112-30.20W g WEST01MV

1254 221293  0 HCNI B s93e28 ch4 al he      NOA  15-00.06S 111-44.99W g WEST01MV
1548 221293  0 HCNI E xrf,  s ni  19btl B   NOA  15-00.03S 111-45.12W g WEST01MV

1907 221293  0 HCNI B s93e29 ch4 al he      NOA  15-05.01S 112-15.00W g WEST01MV
2113 221293  0 HCNI E xrf,  s ni  19btl B   NOA  15-05.01S 112-15.06W g WEST01MV

0253 231293  0 HCNI B s93e30 ch4 al he      NOA  15-05.03S 112-60.00W g WEST01MV
0518 231293  0 HCNI E xrf,  s ni  19btl B   NOA  15-04.96S 113-00.03W g WEST01MV

0828 231293  0 HCNI B s93e31 ch4 al he      NOA  15-00.03S 113-30.02W g WEST01MV
1038 231293  0 HCNI E xrf,  s ni  19btl B   NOA  15-00.01S 113-30.18W g WEST01MV


#*** Conductivity, Temperature, Depth ***

2118 031293  0 TDCT B t93e01 towed ctd      NOA  14-44.97S 112-41.07W g WEST01MV
0610 051293  0 TDCT E transmissometer       NOA  13-46.67S 112-24.45W g WEST01MV

0805 081293  0 TDCT B t93e02 towed ctd      NOA  15-54.05S 112-58.81W g WEST01MV
2252 091293  0 TDCT E transmissometer       NOA  14-45.46S 112-40.96W g WEST01MV

1913 101293  0 TDCT B t93e03 towed ctd      NOA  15-00.89S 112-50.15W g WEST01MV
0230 111293  0 TDCT E transmissometer       NOA  15-01.03S 112-38.20W g WEST01MV

2134 111293  0 TDCT B t93e04 towed ctd      NOA  16-47.71S 113-04.15W g WEST01MV
2142 121293  0 TDCT E transmissometer       NOA  16-00.90S 112-56.90W g WEST01MV

0354 141293  0 TDCT B t93e05 towed ctd      NOA  17-37.57S 113-15.56W g WEST01MV
0638 151293  0 TDCT E transmissometer       NOA  16-44.64S 113-02.81W g WEST01MV

1938 151293  0 TDCT B t93e06 towed ctd      NOA  17-34.79S 113-20.15W g WEST01MV
0317 161293  0 TDCT E transmissometer       NOA  17-35.05S 113-08.96W g WEST01MV

2143 161293  0 TDCT B t93e07 towed ctd      NOA  18-39.00S 113-25.14W g WEST01MV
0753 181293  0 TDCT E tranmisometer         NOA  17-32.78S 113-14.59W g WEST01MV
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2136	281193	0	TDCT	B	s93e01, ph,eh	NOA	7-39.54N	115-52.71W	g	WEST01MV
2258	281193	0	TDCT	E	transmisssometer	NOA	7-39.48N	115-52.78W	g	WEST01MV
0953	051293	0	TDCT	B	s93e02 ph, eh	NOA	13-32.83S	112-22.73W	g	WEST01MV
1220	051293	0	TDCT	E	transmissometer	NOA	13-32.82S	112-22.80W	g	WEST01MV
1454	051293	0	TDCT	B	s93e03, ph, eh	NOA	13-52.35S	112-27.13W	g	WEST01MV
1710	051293	0	TDCT	E	transmissometer	NOA	13-52.32S	112-26.98W	g	WEST01MV
2054	051293	0	TDCT	B	s93e04, ph, eh	NOA	13-59.71S	112-29.32W	g	WEST01MV
2308	051293	0	TDCT	E	transmissometer	NOA	13-59.67S	112-29.04W	g	WEST01MV
0639	061293	0	TDCT	B	s93e05, ph, eh	NOA	14-16.29S	112-33.27W	g	WEST01MV
0905	061293	0	TDCT	E	transmissometer	NOA	14-16.28S	112-33.19W	g	WEST01MV
1731	071293	0	TDCT	B	s93e06, ph, eh	NOA	14-29.15S	112-36.62W	g	WEST01MV
1937	071293	0	TDCT	E	transmissometer	NOA	14-28.96S	112-36.89W	g	WEST01MV
2214	071293	0	TDCT	B	s93e07, ph, eh	NOA	14-36.47S	112-38.46W	g	WEST01MV
0100	081293	0	TDCT	E	transmissometer	NOA	14-36.51S	112-38.62W	g	WEST01MV
0050	101293	0	TDCT	B	s93e08, ph, eh	NOA	14-47.01S	112-41.33W	g	WEST01MV
0249	101293	0	TDCT	E	transmissometer	NOA	14-46.99S	112-41.33W	g	WEST01MV
0824	101293	0	TDCT	B	s93e09, ph, eh	NOA	14-58.97S	112-44.95W	g	WEST01MV
1121	101293	0	TDCT	E	transmissometer	NOA	14-58.93S	112-45.08W	g	WEST01MV
1410	101293	0	TDCT	B	s93e10, ph, eh	NOA	15-02.67S	112-46.81W	g	WEST01MV
1630	101293	0	TDCT	E	transmissometer	NOA	15-02.66S	112-46.78W	g	WEST01MV
0539	111293	0	TDCT	B	s93e11, ph, eh	NOA	15-15.97S	112-49.92W	g	WEST01MV
0812	111293	0	TDCT	E	transmissometer	NOA	15-15.78S	112-50.23W	g	WEST01MV
1200	111293	0	TDCT	B	s93e12, ph, eh	NOA	15-42.98S	112-56.23W	g	WEST01MV
1416	111293	0	TDCT	E	transmissometer	NOA	15-42.97S	112-56.10W	g	WEST01MV
2334	121293	0	TDCT	B	s93e13, ph, eh	NOA	16-01.01S	112-57.15W	g	WEST01MV
0137	131293	0	TDCT	E	transmissometer	NOA	16-01.02S	112-57.10W	g	WEST01MV
0519	131293	0	TDCT	B	s93e14, ph, eh	NOA	16-18.04S	113-01.04W	g	WEST01MV
0726	131293	0	TDCT	E	transmissometer	NOA	16-18.03S	113-00.99W	g	WEST01MV
1320	131293	0	TDCT	B	s93e15, ph, eh	NOA	16-26.72S	113-02.85W	g	WEST01MV
1605	131293	0	TDCT	E	transmissometer	NOA	16-26.76S	113-02.88W	g	WEST01MV
1833	131293	0	TDCT	B	s93e16, ph, eh	NOA	16-35.50S	113-03.54W	g	WEST01MV
2112	131293	0	TDCT	E	transmissometer	NOA	16-35.49S	113-03.54W	g	WEST01MV

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0936 151293  0 TDCT B s93e17, ph, eh        NOA  16-58.51S 113-06.52W g WEST01MV
1141 151293  0 TDCT E transmissometer       NOA  16-58.44S 113-06.63W g WEST01MV

1514 151293  0 TDCT B s93e18, ph, eh        NOA  17-20.19S 113-10.89W g WEST01MV
1725 151293  0 TDCT E transmissometer       NOA  17-20.15S 113-10.99W g WEST01MV

0522 161293  0 TDCT B s93e19, ph, eh        NOA  17-34.87S 113-14.83W g WEST01MV
0811 161293  0 TDCT E transmissometr        NOA  17-34.84S 113-14.81W g WEST01MV

1020 161293  0 TDCT B s93e20, ph, eh        NOA  17-28.60S 113-13.30W g WEST01MV
1220 161293  0 TDCT E transmissometer       NOA  17-28.54S 113-13.18W g WEST01MV

1024 181293  0 TDCT B s93e21, ph, eh        NOA  17-45.42S 113-16.45W g WEST01MV
1245 181293  0 TDCT E transmissometer       NOA  17-45.40S 113-16.48W g WEST01MV

1435 181293  0 TDCT B s93e22, ph, eh        NOA  17-47.51S 113-16.94W g WEST01MV
1652 181293  0 TDCT E transmissometer       NOA  17-47.43S 113-16.85W g WEST01MV

2247 181293  0 TDCT B s93e23, ph, eh        NOA  18-33.03S 113-24.89W g WEST01MV
0048 191293  0 TDCT E transmissometer       NOA  18-33.02S 113-24.89W g WEST01MV

0252 191293  0 TDCT B s93e24, ph, eh        NOA  18-26.52S 113-23.49W g WEST01MV
0451 191293  0 TDCT E transmissometer       NOA  18-26.51S 113-23.50W g WEST01MV

0738 191293  0 TDCT B s93e25, ph, eh        NOA  18-14.32S 113-21.82W g WEST01MV
0944 191293  0 TDCT E transmissometer       NOA  18-14.40S 113-21.92W g WEST01MV

2257 191293  0 TDCT B s93e26, ph, eh        NOA  16-07.49S 112-58.21W g WEST01MV
0133 201293  0 TDCT E transmissometer       NOA  16-07.52S 112-58.26W g WEST01MV

0626 221293  0 TDCT B s93e27, ph, eh        NOA  15-00.02S 112-29.95W g WEST01MV
0842 221293  0 TDCT E transmissometer       NOA  15-00.01S 112-30.20W g WEST01MV

1254 221293  0 TDCT B s93e28, ph, eh        NOA  15-00.06S 111-44.99W g WEST01MV
1548 221293  0 TDCT E transmissometer       NOA  15-00.03S 111-45.12W g WEST01MV

1907 221293  0 TDCT B s93e29, ph, eh        NOA  15-05.01S 112-15.00W g WEST01MV
2113 221293  0 TDCT E transmissometer       NOA  15-05.01S 112-15.06W g WEST01MV

0253 231293  0 TDCT B s93e30, ph, eh        NOA  15-05.03S 112-60.00W g WEST01MV
0518 231293  0 TDCT E transmissometer       NOA  15-04.96S 113-00.03W g WEST01MV

0828 231293  0 TDCT B s93e31, ph, eh        NOA  15-00.03S 113-30.02W g WEST01MV
1038 231293  0 TDCT E transmissometer       NOA  15-00.01S 113-30.18W g WEST01MV
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#*** Cores ***
#*** These samples belong to Okayama University of Japan ***

1735	051293	0	CORG	B	rock core 1	JPN	13-52.30S	112-27.16W	g WEST01MV
1840	051293	0	CORG	E	rock core 1	JPN	13-52.34S	112-27.01W	g WEST01MV
2320	051293	0	CORG	B	rock core 2	JPN	13-59.68S	112-29.16W	g WEST01MV
0015	061293	0	CORG	E	rock core 2	JPN	13-59.70S	112-29.17W	g WEST01MV
0506	061293	0	CORG	B	rock core 3	JPN	14-16.27S	112-33.28W	g WEST01MV
0616	061293	0	CORG	E	rock core 3	JPN	14-16.21S	112-33.22W	g WEST01MV
2158	061293	0	CORG	B	rock core 4	JPN	14-15.51S	112-32.78W	g WEST01MV
2255	061293	0	CORG	E	rock core 4	JPN	14-15.06S	112-32.91W	g WEST01MV
1955	071293	0	CORG	B	rock core 5	JPN	14-29.19S	112-36.82W	g WEST01MV
2048	071293	0	CORG	E	rock core 5	JPN	14-29.15S	112-36.63W	g WEST01MV
2326	091293	0	CORG	B	rock core 6	JPN	14-47.02S	112-41.36W	g WEST01MV
0022	101293	0	CORG	E	rock core 6	JPN	14-46.99S	112-41.40W	g WEST01MV
0515	101293	0	CORG	B	rock core 7	JPN	14-59.00S	112-44.96W	g WEST01MV
0805	101293	0	CORG	E	rock core 7	JPN	14-58.97S	112-44.91W	g WEST01MV
1212	101293	0	CORG	B	rock core 8	JPN	15-02.69S	112-46.67W	g WEST01MV
1310	101293	0	CORG	E	rock core 8	JPN	15-02.67S	112-46.63W	g WEST01MV
0428	111293	0	CORG	B	rock core 9	JPN	15-16.08S	112-50.25W	g WEST01MV
0527	111293	0	CORG	E	rock core 9	JPN	15-15.88S	112-49.95W	g WEST01MV
1056	111293	0	CORG	B	rock core 10	JPN	15-42.96S	112-56.24W	g WEST01MV
1154	111293	0	CORG	E	rock core 10	JPN	15-42.99S	112-56.18W	g WEST01MV
2153	121293	0	CORG	B	rock core 11	JPN	16-00.95S	112-57.03W	g WEST01MV
2253	121293	0	CORG	E	rock core 11	JPN	16-01.02S	112-56.83W	g WEST01MV
0300	131293	0	CORG	B	rock core 12	JPN	16-09.51S	112-58.72W	g WEST01MV
0401	131293	0	CORG	E	rock core 12	JPN	16-09.57S	112-58.68W	g WEST01MV
0736	131293	0	CORG	B	rock core 13	JPN	16-18.02S	113-01.05W	g WEST01MV
0838	131293	0	CORG	E	rock core 13	JPN	16-17.95S	113-01.22W	g WEST01MV
1006	131293	0	CORG	B	rock core 14	JPN	16-30.00S	113-02.73W	g WEST01MV
1106	131293	0	CORG	E	rock core 14	JPN	16-30.07S	113-02.75W	g WEST01MV
1149	131293	0	CORG	B	rock core 15	JPN	16-26.74S	113-02.79W	g WEST01MV
1251	131293	0	CORG	E	rock core 15	JPN	16-26.71S	113-02.87W	g WEST01MV

1716	131293	0	CORG	B	rock core	16	JPN	16-35.50S	113-03.48W	g WEST01MV
1816	131293	0	CORG	E	rock core	16	JPN	16-35.48S	113-03.55W	g WEST01MV
0829	151293	0	CORG	B	rock core	17	JPN	16-58.49S	113-06.64W	g WEST01MV
0926	151293	0	CORG	E	rock core	17	JPN	16-58.47S	113-06.45W	g WEST01MV
1403	151293	0	CORG	B	rock core	18	JPN	17-20.13S	113-11.14W	g WEST01MV
1508	151293	0	CORG	E	rock core	18	JPN	17-20.19S	113-10.91W	g WEST01MV
0409	161293	0	CORG	B	rock core	19	JPN	17-34.81S	113-14.97W	g WEST01MV
0509	161293	0	CORG	E	rock core	19	JPN	17-34.88S	113-14.87W	g WEST01MV
0914	161293	0	CORG	B	rock core	20	JPN	17-28.55S	113-13.22W	g WEST01MV
1010	161293	0	CORG	E	rock core	20	JPN	17-28.55S	113-13.24W	g WEST01MV
0910	181293	0	CORG	B	rock core	21	JPN	17-45.40S	113-16.52W	g WEST01MV
1006	181293	0	CORG	E	rock core	21	JPN	17-45.37S	113-16.51W	g WEST01MV
1323	181293	0	CORG	B	rock core	22	JPN	17-47.54S	113-16.84W	g WEST01MV
1424	181293	0	CORG	E	rock core	22	JPN	17-47.46S	113-16.92W	g WEST01MV
2141	181293	0	CORG	B	rock core	23	JPN	18-33.02S	113-24.93W	g WEST01MV
2239	181293	0	CORG	E	rock core	23	JPN	18-33.11S	113-25.11W	g WEST01MV
0140	191293	0	CORG	B	rock core	24	JPN	18-26.49S	113-23.47W	g WEST01MV
0242	191293	0	CORG	E	rock core	24	JPN	18-26.50S	113-23.50W	g WEST01MV
0626	191293	0	CORG	B	rock core	25	JPN	18-14.34S	113-21.81W	g WEST01MV
0730	191293	0	CORG	E	rock core	25	JPN	18-14.34S	113-21.79W	g WEST01MV
2145	191293	0	CORG	B	rock core	26	JPN	16-07.56S	112-58.15W	g WEST01MV
2242	191293	0	CORG	E	rock core	26	JPN	16-07.53S	112-58.20W	g WEST01MV
2210	211293	0	CORG	B	rock core	27	JPN	14-23.02S	112-35.02W	g WEST01MV
2348	211293	0	CORG	E	rock core	27	JPN	14-23.21S	112-34.92W	g WEST01MV
0111	221293	0	CORG	B	rock core	28	JPN	14-37.01S	112-38.65W	g WEST01MV
0242	221293	0	CORG	E	rock core	28	JPN	14-37.01S	112-38.09W	g WEST01MV

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#*** Ocean Bottom Seismometers ***
#*** These samples belong to Geologic Survey of Japan ***

1651 061293  0 SBOB x obs #la2              JPN  14-15.53S 112-32.78W g WEST01MV

1745 061293  0 SBOB B obs #sa4              JPN  14-15.09S 112-32.62W g WEST01MV
1805 201293  0 SBOB E obs #sa4              JPN  14-15.18S 112-32.84W g WEST01MV

1808 061293  0 SBOB B obs #sa1              JPN  14-14.98S 112-32.75W g WEST01MV
1701 201293  0 SBOB E obs #sa1              JPN  14-15.10S 112-33.01W g WEST01MV

1833 061293  0 SBOB B obs #sa3              JPN  14-15.10S 112-32.94W g WEST01MV
1551 201293  0 SBOB E obs #sa3              JPN  14-15.18S 112-33.19W g WEST01MV

1902 061293  0 SBOB B obs #sa2              JPN  14-14.79S 112-32.76W g WEST01MV
1908 201293  0 SBOB E obs #sa2              JPN  14-14.89S 112-32.97W g WEST01MV

1940 061293  0 SBOB x obs #la1              JPN  14-14.58S 112-33.09W g WEST01MV

2029 061293  0 SBOB B obs #la3              JPN  14-14.52S 112-32.29W g WEST01MV
2206 201293  0 SBOB E obs #la3              JPN  14-14.66S 112-32.45W g WEST01MV


#*** Expendable Bathythermographs ***

0428 251193  0 BTXP B xbts 1-20            GDC  25-35.06N 117-57.18W g WEST01MV
0622 301293  0 BTXP E xbts 1-20            GDC  17-34.98S 147-14.12W g WEST01MV


#                          End Sample Index                          WEST01MV
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