

LAMONT DATA REDUCTION CRUISE SUMMARY

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CRUISE: C2907

START: 06/27/88 179 Barbados

END: 07/27/88 209 Puerto Rico

PURPOSE: Geophysical Cruise:

(* Seabeam floor mapping and bottom towed 3.5 KHz bathymetry experiment

(* Heat Flow experiment.

CHIEF SCIENTIST(S): Marcus G. Langseth

DATA REDUCTION: Richard Bartholomeow Jr., Stefanus Budhypramono

SPEED AND HEADING:

Instrument: Furuno CI-30 2-axis doppler speed log, Sperry MK-27 gyro

Logging: 3 second intervals

Checking: visual check of plot of data

Smoothing: mean value of all good values within the same minute

TRANSIT SATELLITE FIXES:

Instrument: Magnavox MX-1107RS dual frequency Transit satellite receiver

Logging: all fixes

Checking: reject receiver flagged fixes, fixes with high drifts in

navigation and fixes producing Eotvos correction errors in gravity

GPS SATELLITE FIXES:

Instrument: Magnavox T-Set Global Positioning System receiver

Logging: 30 second intervals

Checking:

minimum number of sats: 2

dilution of precision maximum: north = 6.0, east = 6.0

carrier signal-noise ratio minimum: 35.0

standard deviation maximum: north = 10.0, east = 10.0

time step maximum: 3

speed maximum: 15.0

compared GPS speed and course with Furuno smooth speed and heading

compared positions with Transit-Furuno navigation

reject fixes with high drifts in navigation

reject fixes producing Eotvos correction errors in gravity

Interpolation: interpolated positions at 00, 30 seconds of each minute

Smoothing: smoothed interpolated positions with 9 point running average

NAVIGATION:

A "1 minute navigation" is produced from the above sources. Acceptable fixes are merged at 1 per minute with priority given to GPS, then to Transit. The smooth speed and heading data is used to fill any gaps of 2 minutes or longer between fixes by computing 1 minute DR'ed positions corrected for set and drift between fixes. The DR'ed positions are produced at 00 seconds of each minute.

Chief scientist's final data: 1 minute navigation.

Lamont database: 1 minute navigation.

BATHYMETRY:

Instrument: Raytheon LSR 3.5 kilohertz Precision Depth Recorder (PDR)
Logging: readings from continuous PDR paper records
Checking: visual check of plot of data
Chief scientist's final data: PDR record depth values at 6 minute intervals.
Depth is in meters.
Lamont database: PDR record depth values at 6 minute intervals.
Depth is in fathoms.
Notes: PDR records was read to cover the portion of the cruise where seabeam
no longer covered (day 193 - 209).

DAY ===	TIME ====	COMMENTS =====
193	0000	reading started
193	0049-0159	gap, problem with PDR
194	0255-2359	gap, end of first part of leg
195	0000-2359	gap, end of first part of leg
196	0000-0829	gap, transponder in water
196	1055-1159	gap, piston coring
197	0000-0223	gap, probe penetration
197	0537-0847	gap, coring, transponder
197	1201-2359	gap, coring, transponder
198	0000-0859	gap, coring, transponder
198	1101-1353	gap, puppi dropped
199	1531-2359	gap, coring activity
200	0000-0817	gap, coring activity
200	2001-2359	gap, coring activity
201	0000-2359	gap, coring activity
202	0000-2359	gap, coring activity
203	0000-0959	gap, coring activity
203	1637-2359	gap, coring activity
204	0000-2359	gap, coring activity
205	0000-1253	gap, coring activity
205	1649-2359	gap, coring activity
206	0000-0259	gap, coring activity
206	0431-1123	gap, coring activity
206	1819-2359	gap, coring activity
207	0000-1311	gap, coring activity
209	1043	end of cruise

Instrument: General Instrument Seabeam
Logging: 6 second intervals (center beam from Seabeam computer)
Checking: visual check of plot of data
Chief scientist's final data: interpolated depth value at 00 seconds
of each minute. Depth is in meters.
Lamont database: interpolated depth value at 00 seconds of each minute.
Depth is in fathoms.
Notes: Seabeam data only covers part of the cruise from day 179 - 193

DAY ===	TIME ====	COMMENTS =====
179	1643	started logging
182	2019-2359	gap, listened to bottom transponder
183	0000-0651	gap, listened to bottom transponder
190	1621-1727	gap (?)
190	2146-2246	gap, seabeam VAX down
193	0010	ended logging

GRAVITY:

Instrument: Bell Aerospace BGM-3 marine gravity meter
Logging: 1 minute intervals
Merge with navigation: calculate Eotvos correction and Free Air Anomaly.
Checking: visual check of plot of data to determine satisfactory Eotvos
corrections, reject spikes of data at turns.
Velocity smoothing: 5 point running average for days 179 - 209
Drift rate: 0.074193548 mgals per day
Dc shift: -0.3 mgals
Chief scientist's final data: Free Air Anomaly value at 00 seconds of
each minute. 1980 theoretical gravity formula.
Lamont database: Free Air Anomaly value at 00 seconds of each minute.
1930 International gravity formula.
Notes: A gravity tie was taken in Barbados. Whereabout the record was not
available at the moment this cruise was processed.

PRE-CRUISE GRAVITY TIE-IN:

Port: Recife
Date: May 27, 1988
Operator: Steve Labrecque
Reference Station: not available
Pier/Ship's position: not available
Gravity meter: L & R Model G, serial number 70.
Readings and Calculations:
 Pierside gravity (from tie) = 978176.4 mgals
 Pier height = ~4 meters
 Time and date of tie : 1920Z on May 27, 1988
 BGM readings at time of tie = 978176.1 mgals
 Gyro hours = 16439.0
The BGM reads -0.3 mgals high.

Notes: The value of pierside gravity is assumed to be the corrected value.
The description of whereabouts the gravity readings were taken place
was not available.

POST-CRUISE GRAVITY TIE-IN:

Port: San Juan, Puerto Rico

Date: July 28, 1988

Operator: Joe Stennet

Reference Station: The indicated point is at what is now called Berth B. This is about a quarter-mile west of the Club Nautico of San Juan on the north side of the San Antonio Channel. It is east and adjacent the Police Training Center and across Fernandez Juncos Road from a fire station. Readings were taken along the entire length of the Berth and varied only +/- .05 mgals.

Pier/Ship's position: The Conrad was docked on the east side of Pier 8 about 100 m from the outboard end.

Gravity meter: L & R Model G, serial number 70. The meter was at 50.5 degrees C throughout.

Readings and Calculations:

TIME	LOCATION	L&R READINGS	HEIGHT ABOVE BGM	BGM/REF
1315Z	PIER	2732.65	1.5 m.	BGM 978683.8
1345Z	REF. STAT.	2234.30	---	BGM 978680.7
1420Z	PIER	2732.55	1.5 m.	BGM 978683.8

Pier Value = Ref. value - L&R = 978680.7 - 1.7 = 978679.0 mgals

BGM = Pier + Height corr. = 978679.0 + 0.5 = 978679.5 mgals

BGM Reading = 978683.8 mgals

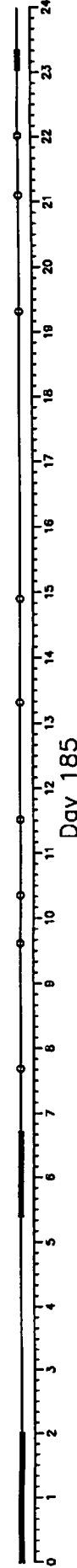
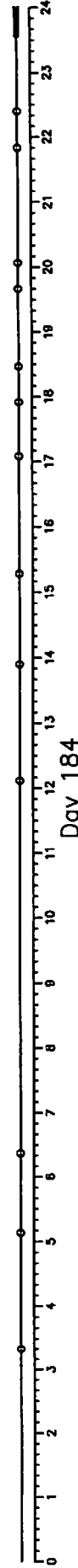
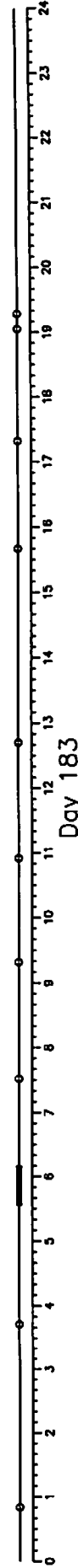
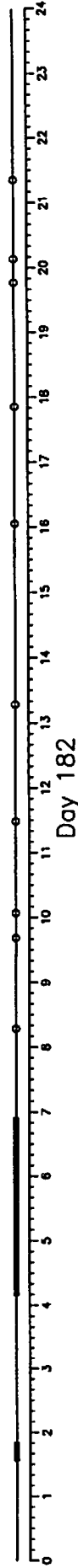
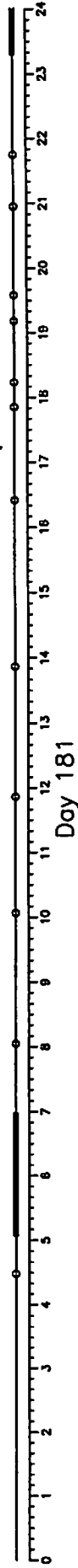
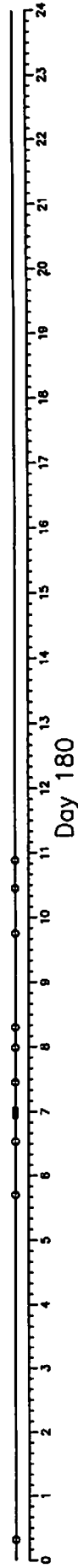
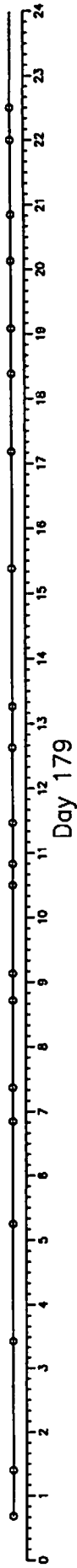
The BGM reads 4.3 mgals high. On May 27 1988, in Recife, it was -0.3 mgals high. Drifts since then is 4.6 mgals in 62 days.

ADDITIONAL DATA SETS:

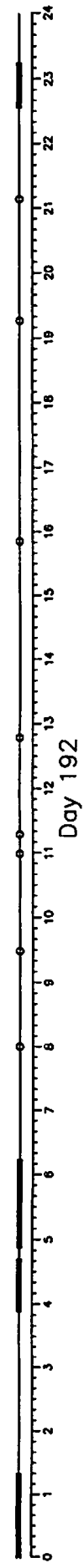
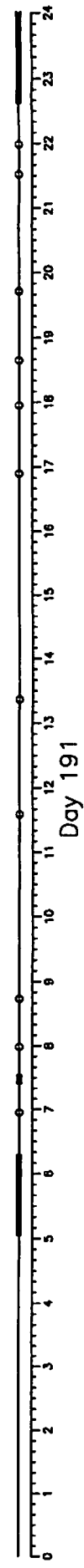
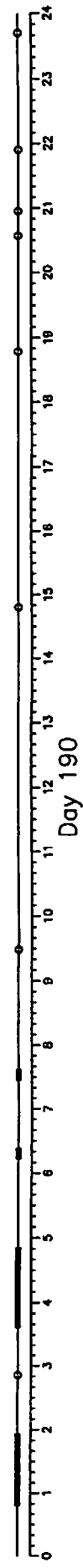
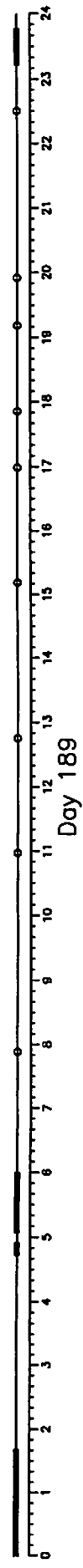
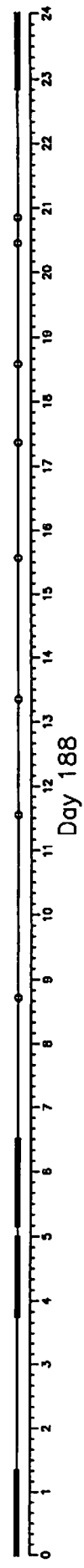
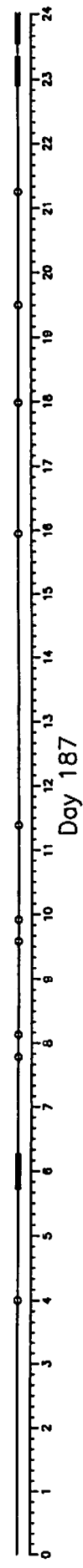
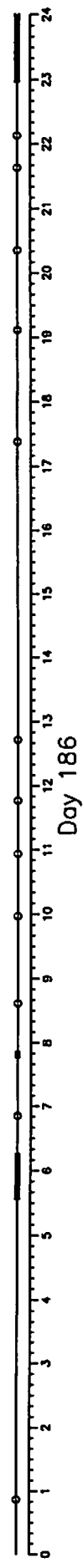
(1) BGM-3 gravity 10 second "counts"

C2907 Barbados—Puerto Rico

Lamont daily navigation line: x = GPS o = transit - = dr

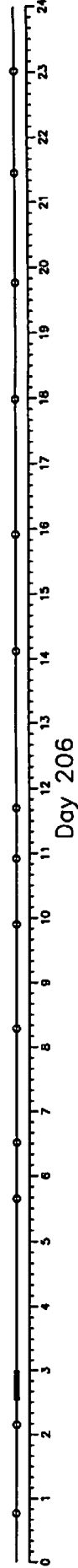
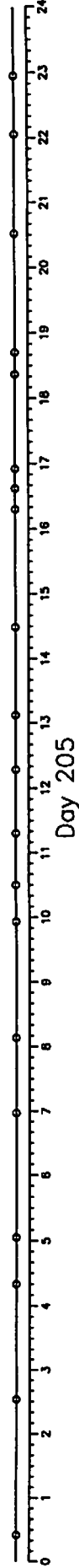
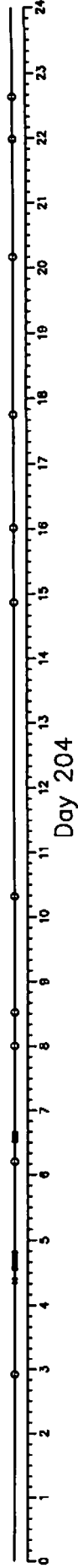
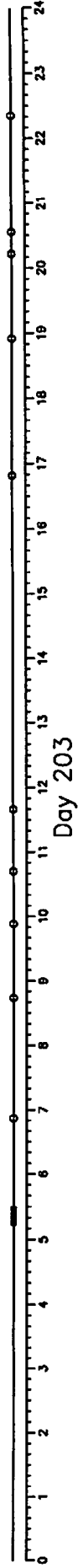
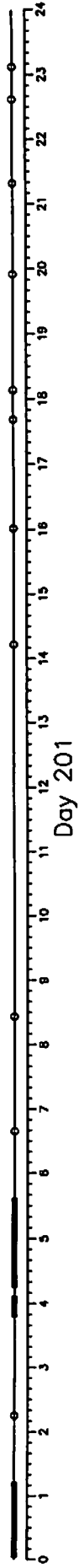
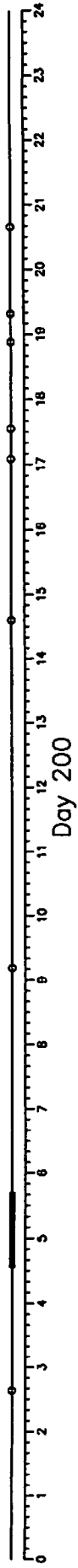


C2907 Barbados—Puerto Rico
Lamont daily navigation line: x = GPS o = transit - = dr



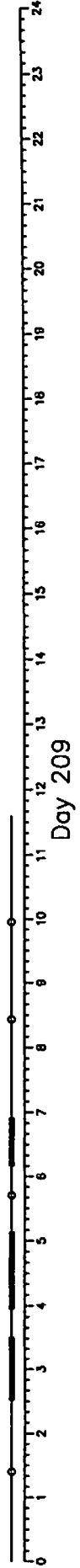
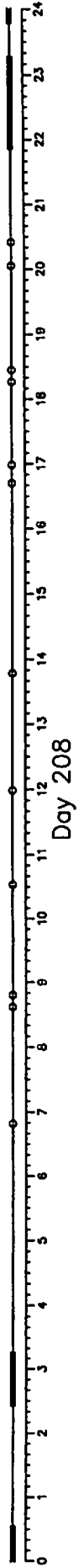
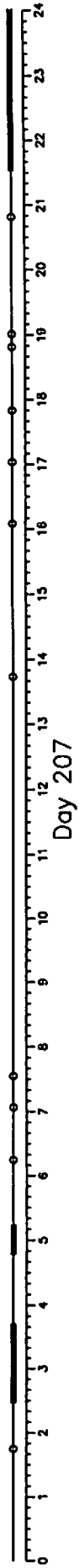
C2907 Barbados—Puerto Rico

Lamont daily navigation line: x = GPS o = transit - = dr

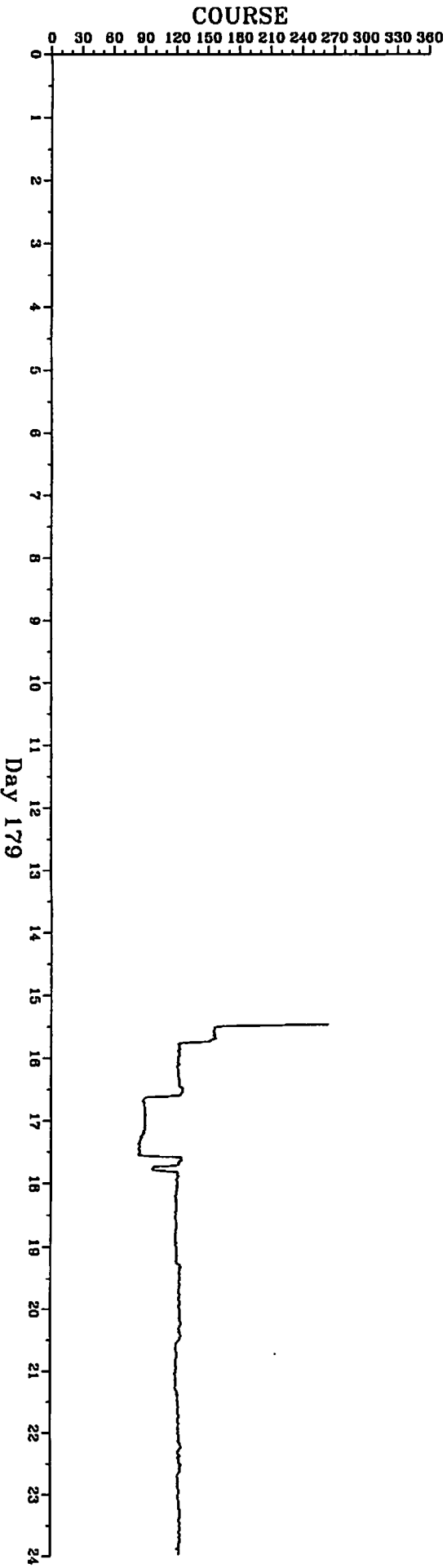
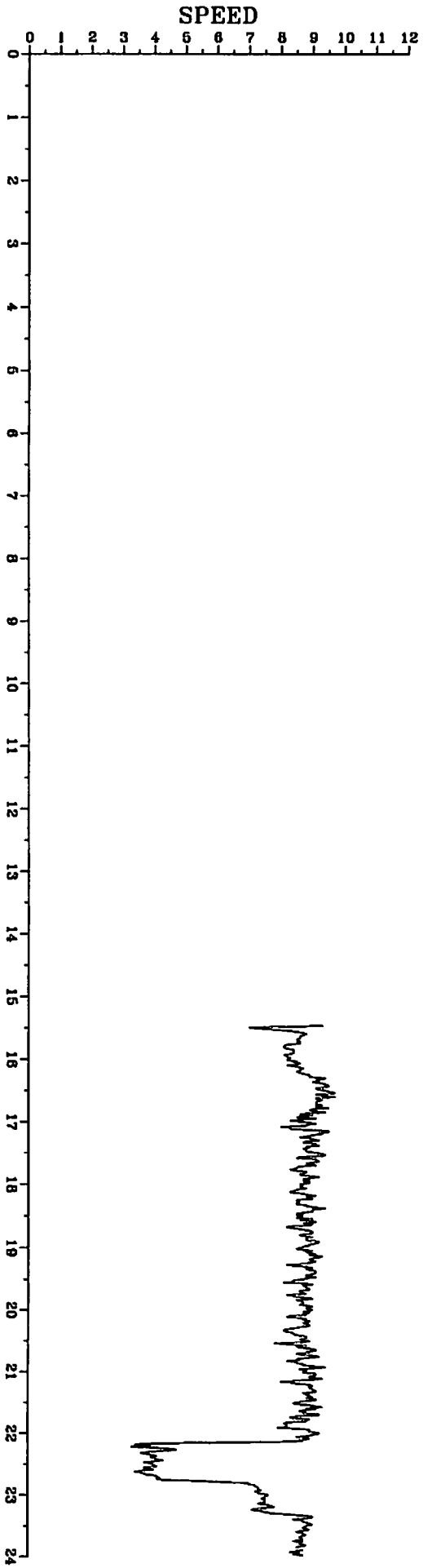


C2907 Barbados—Puerto Rico

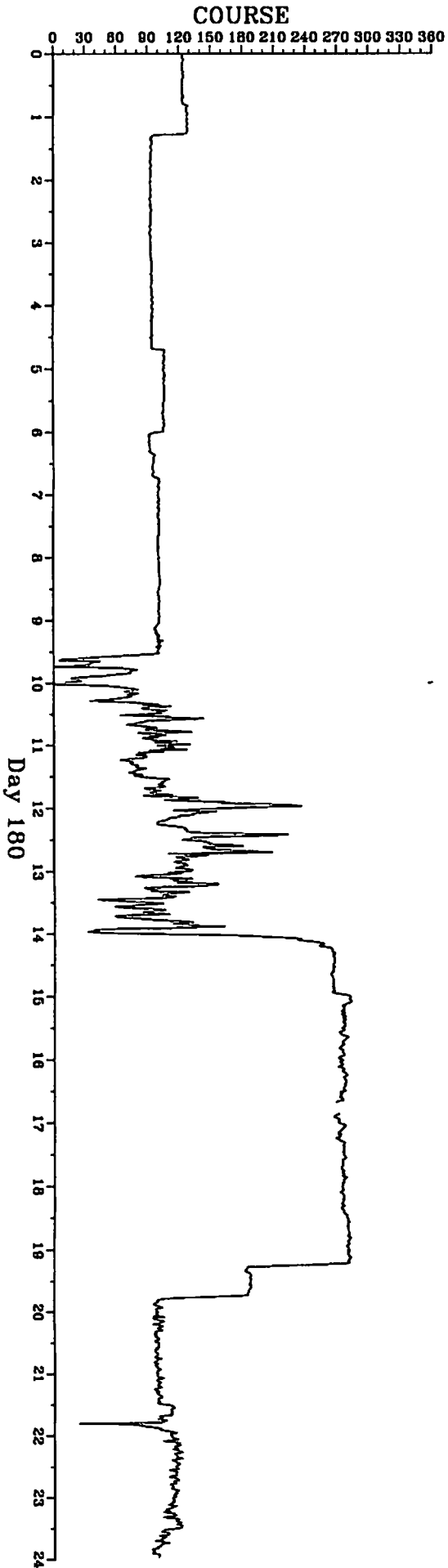
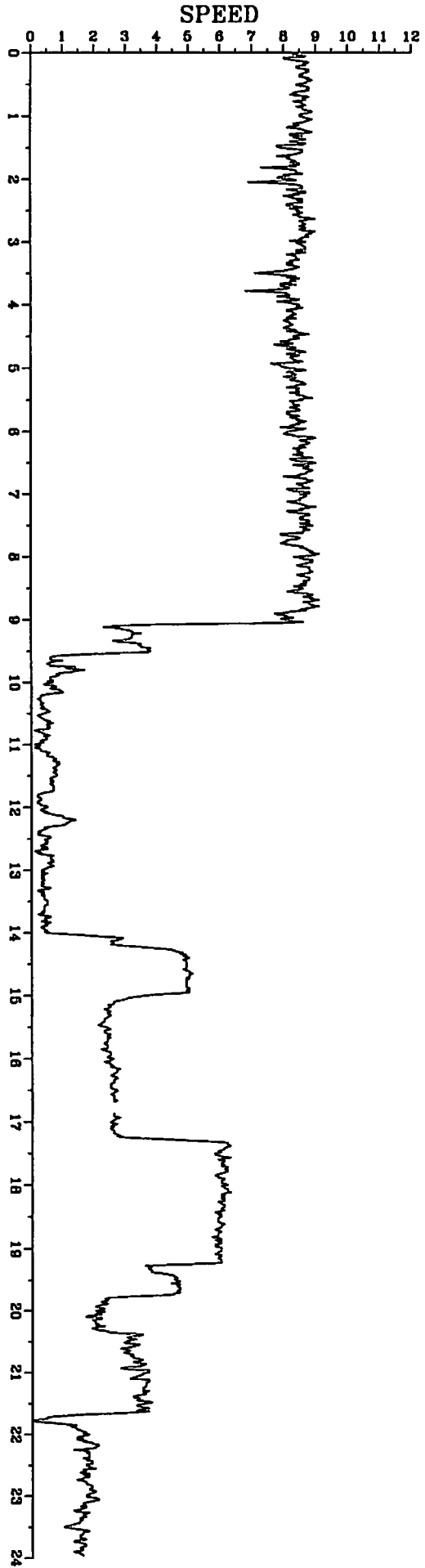
Lamont daily navigation line: x = GPS o = transit - = dr



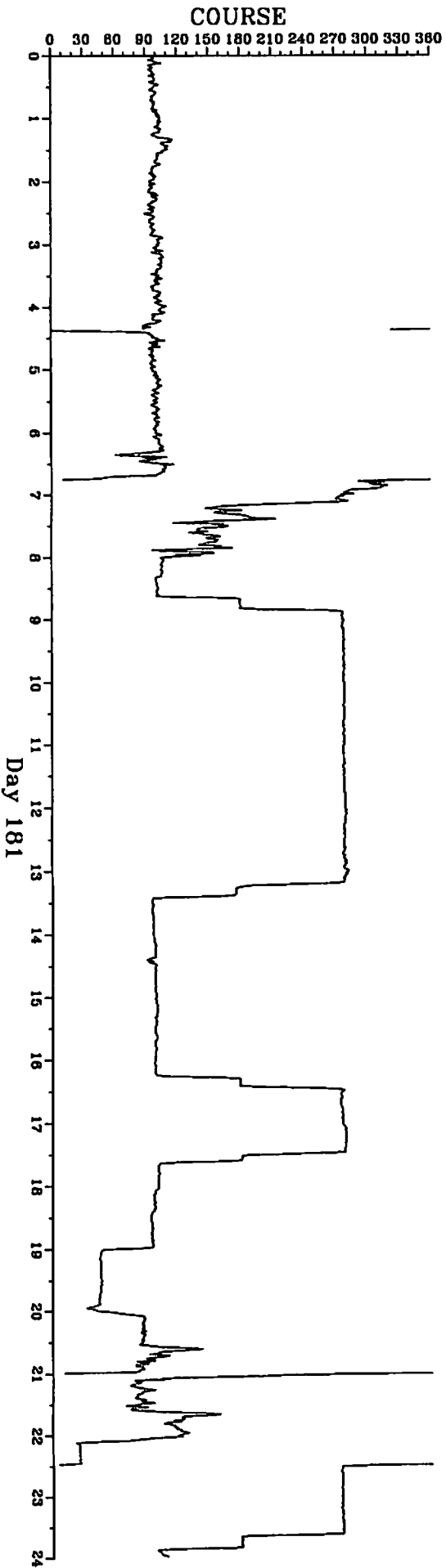
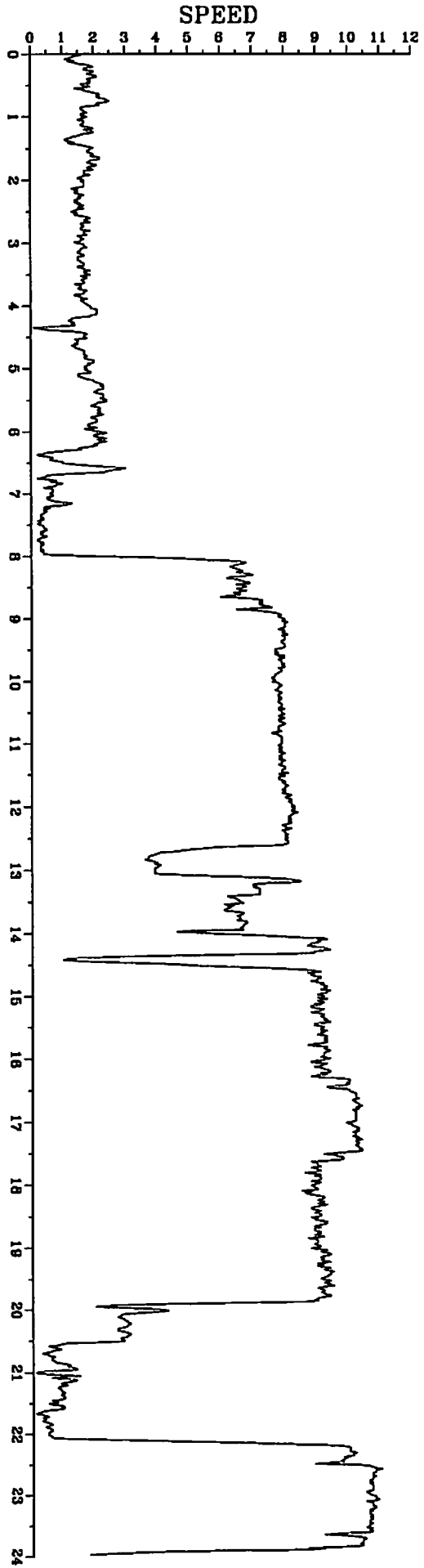
C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s179



C2907 Barbados – Puerto Rico Smooth Speed and Heading
Data file: fu.s180

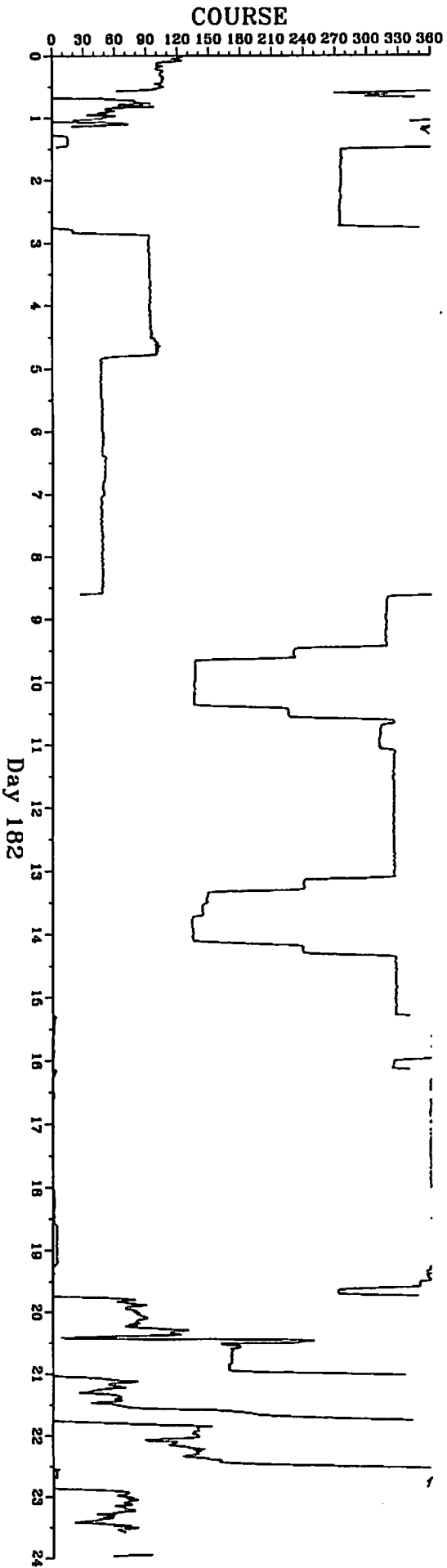
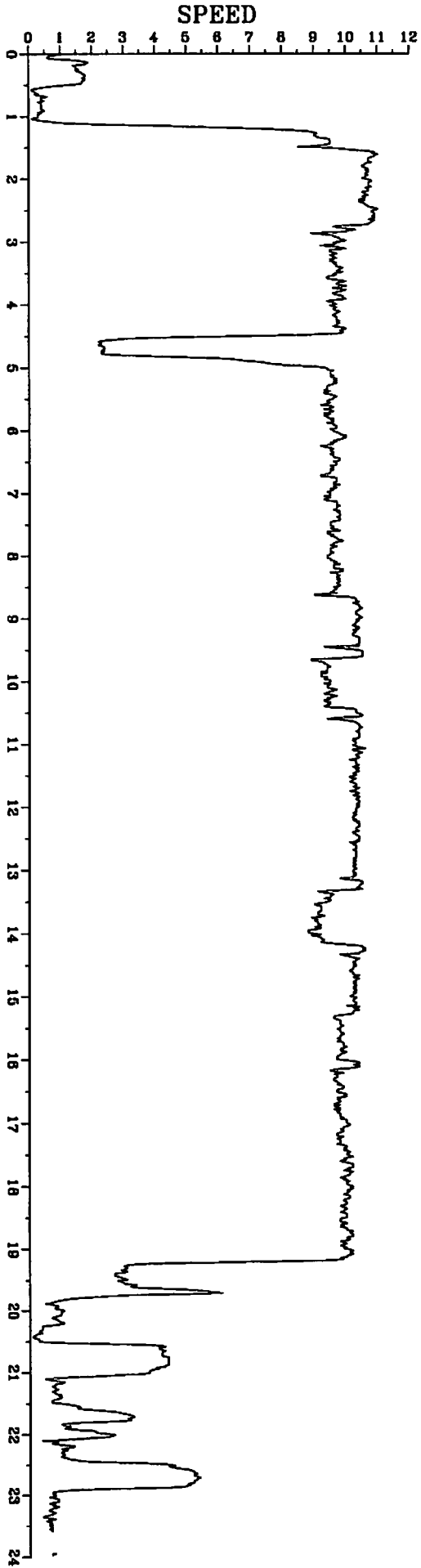


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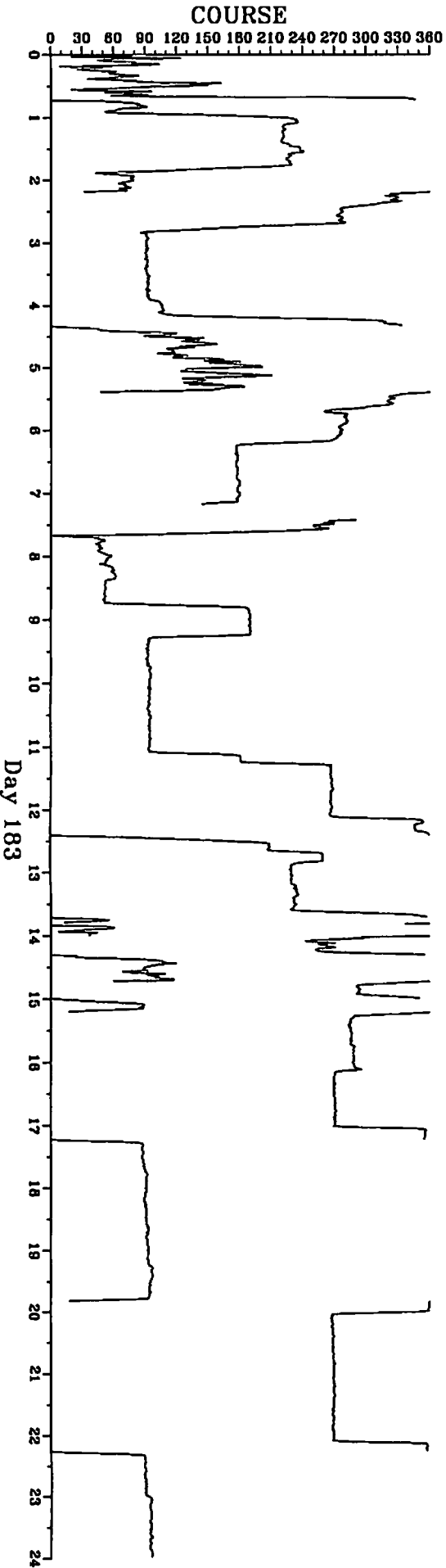
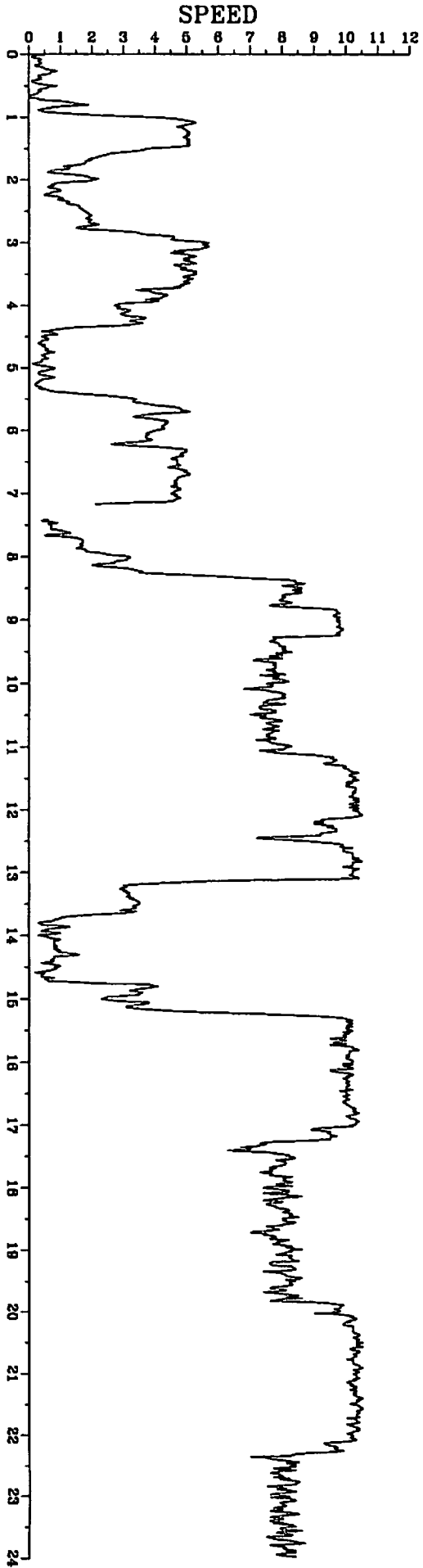


Day 181

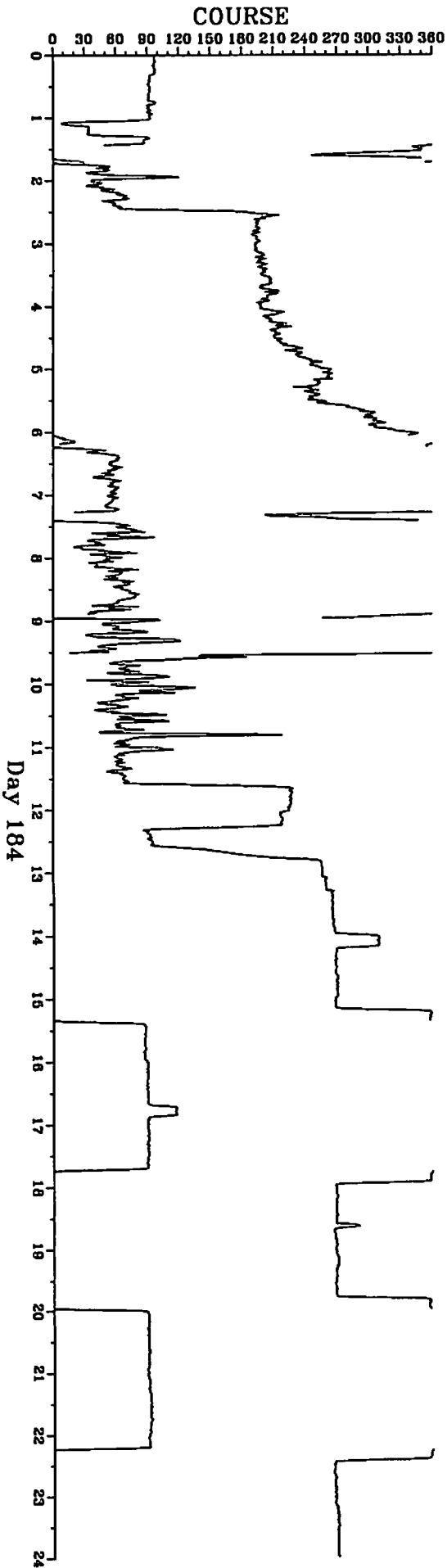
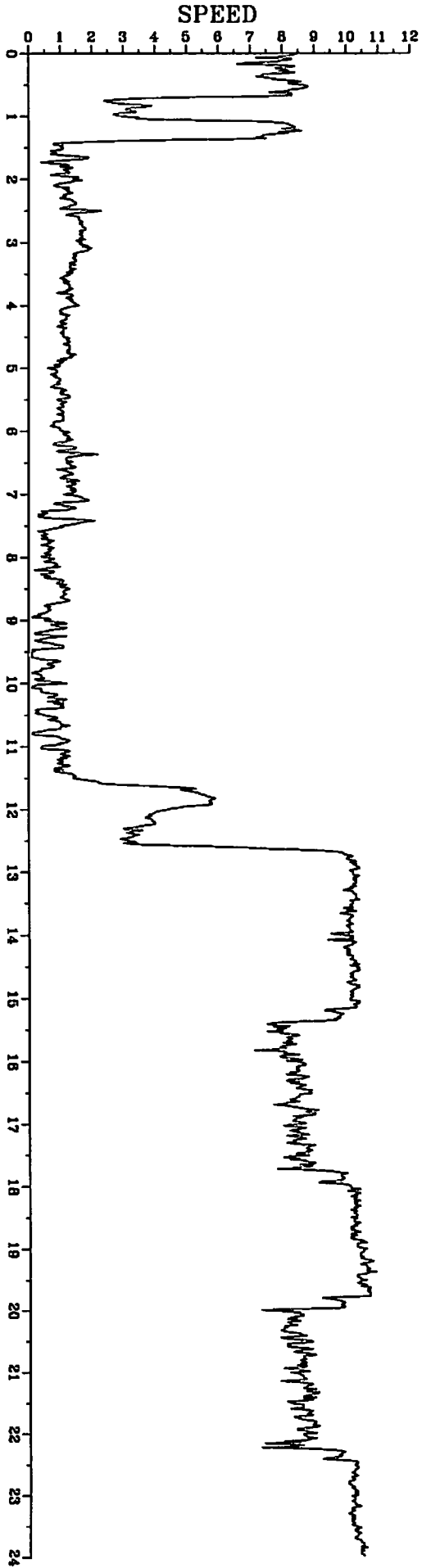
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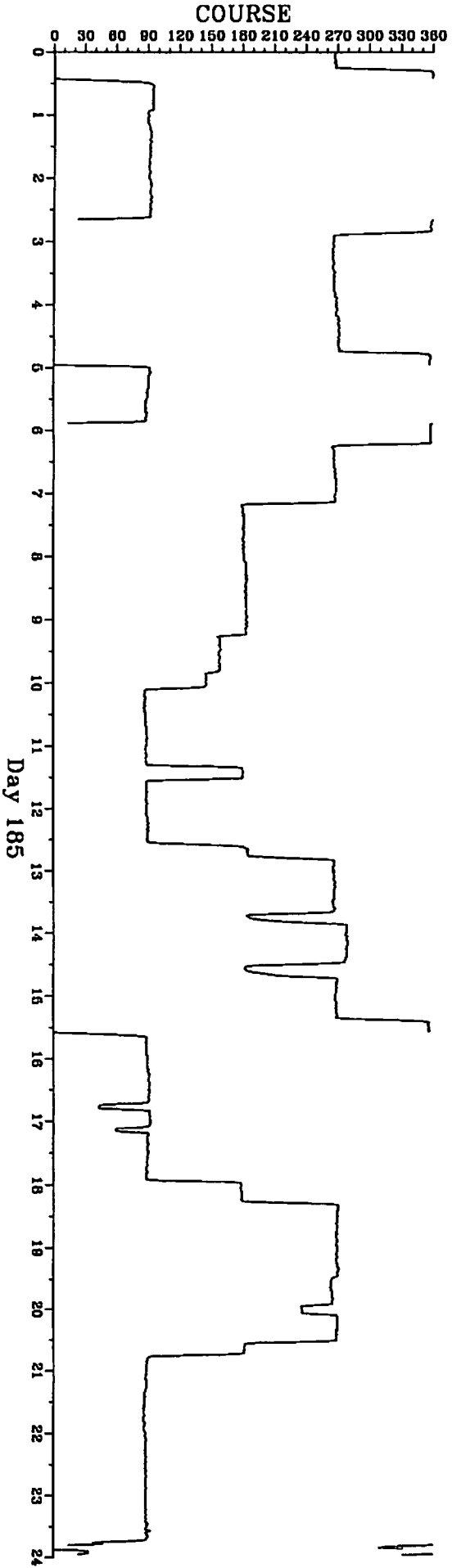
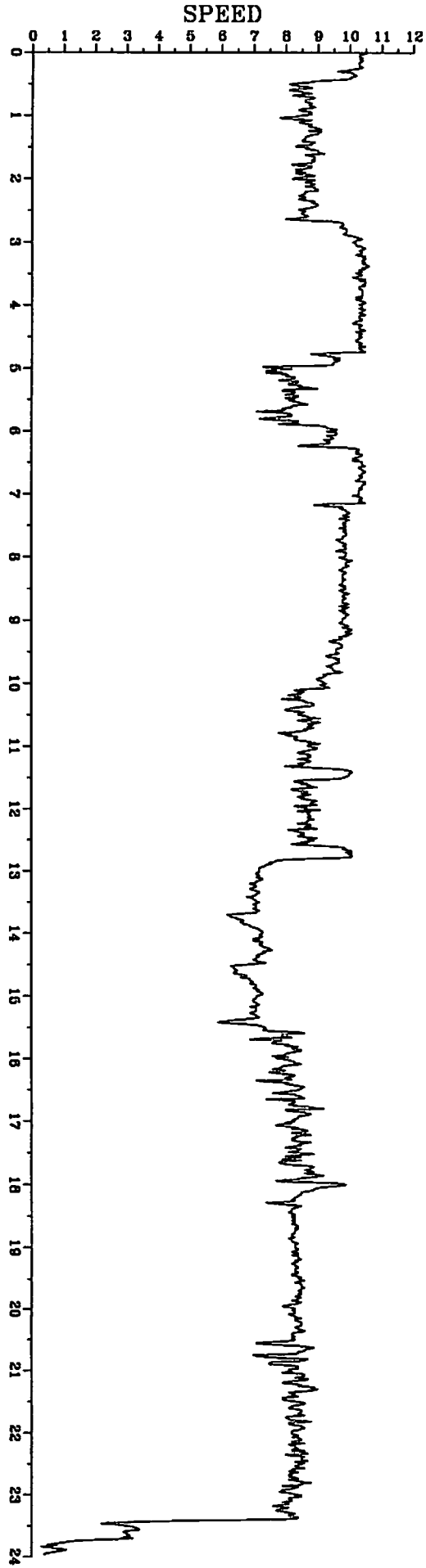
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C2907 Barbados - Puerto Rico Smooth Speed and Heading
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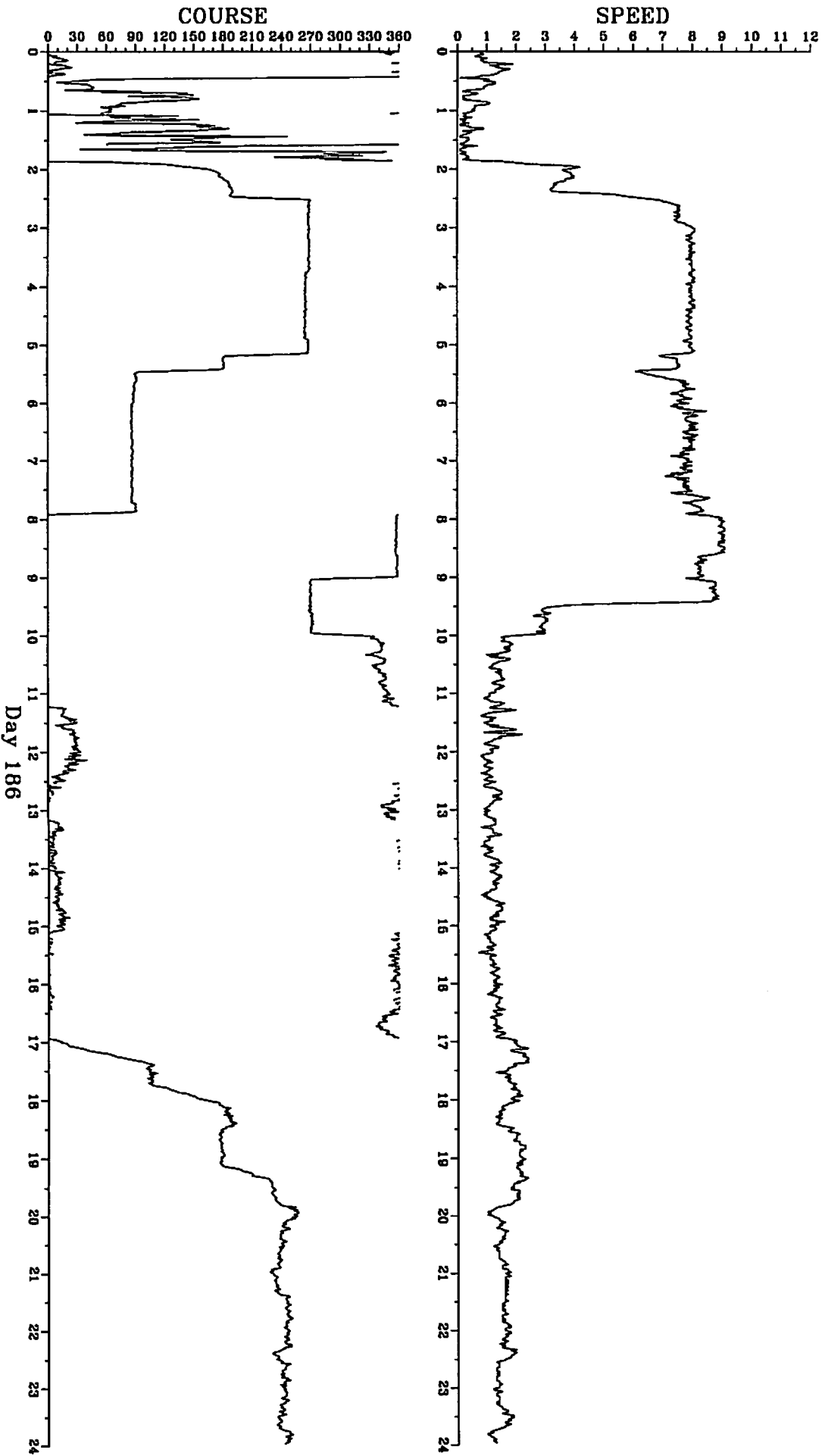


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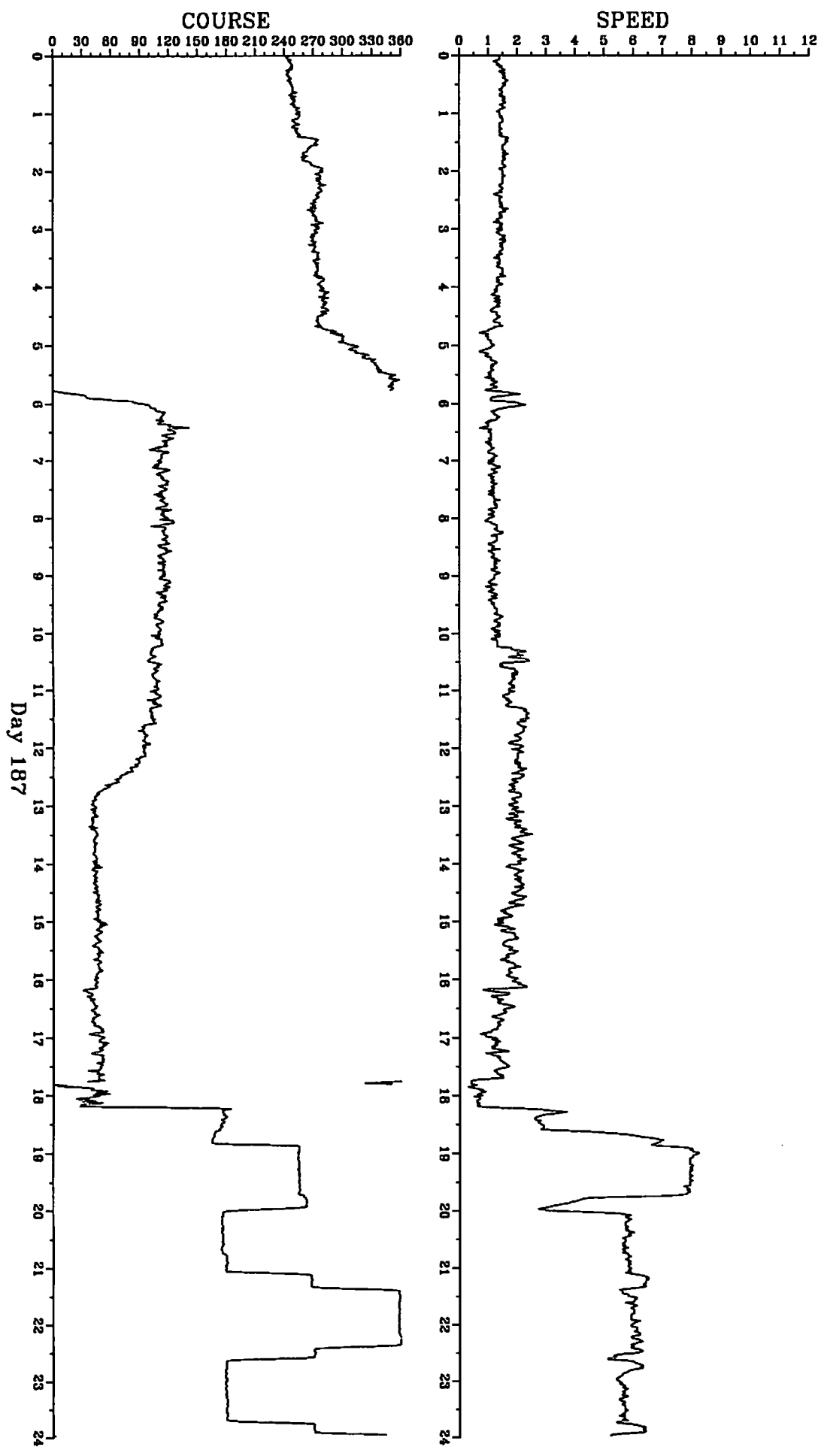


Day 185

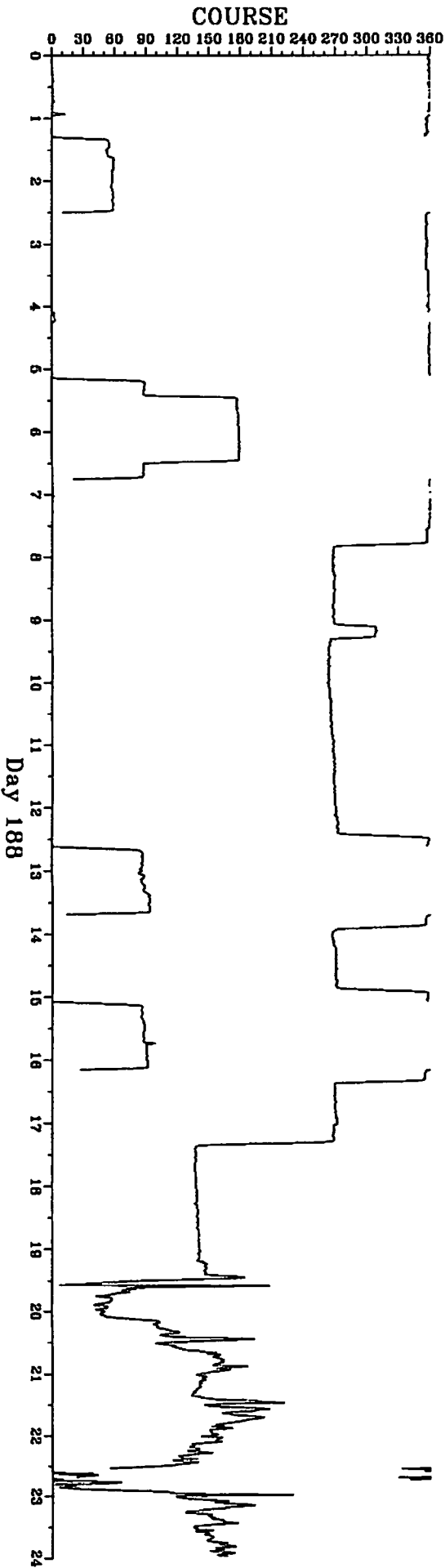
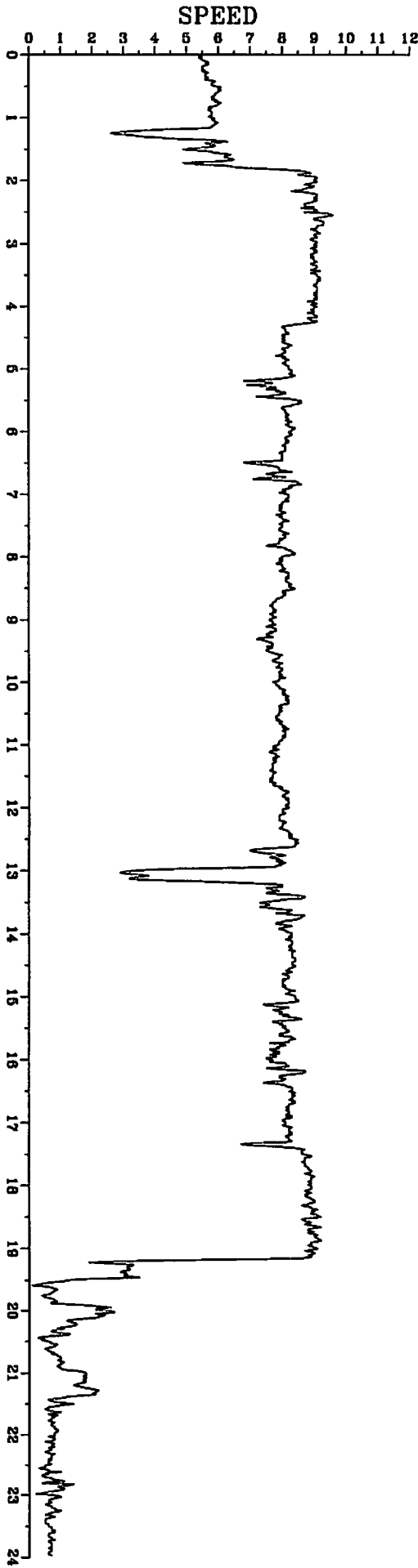
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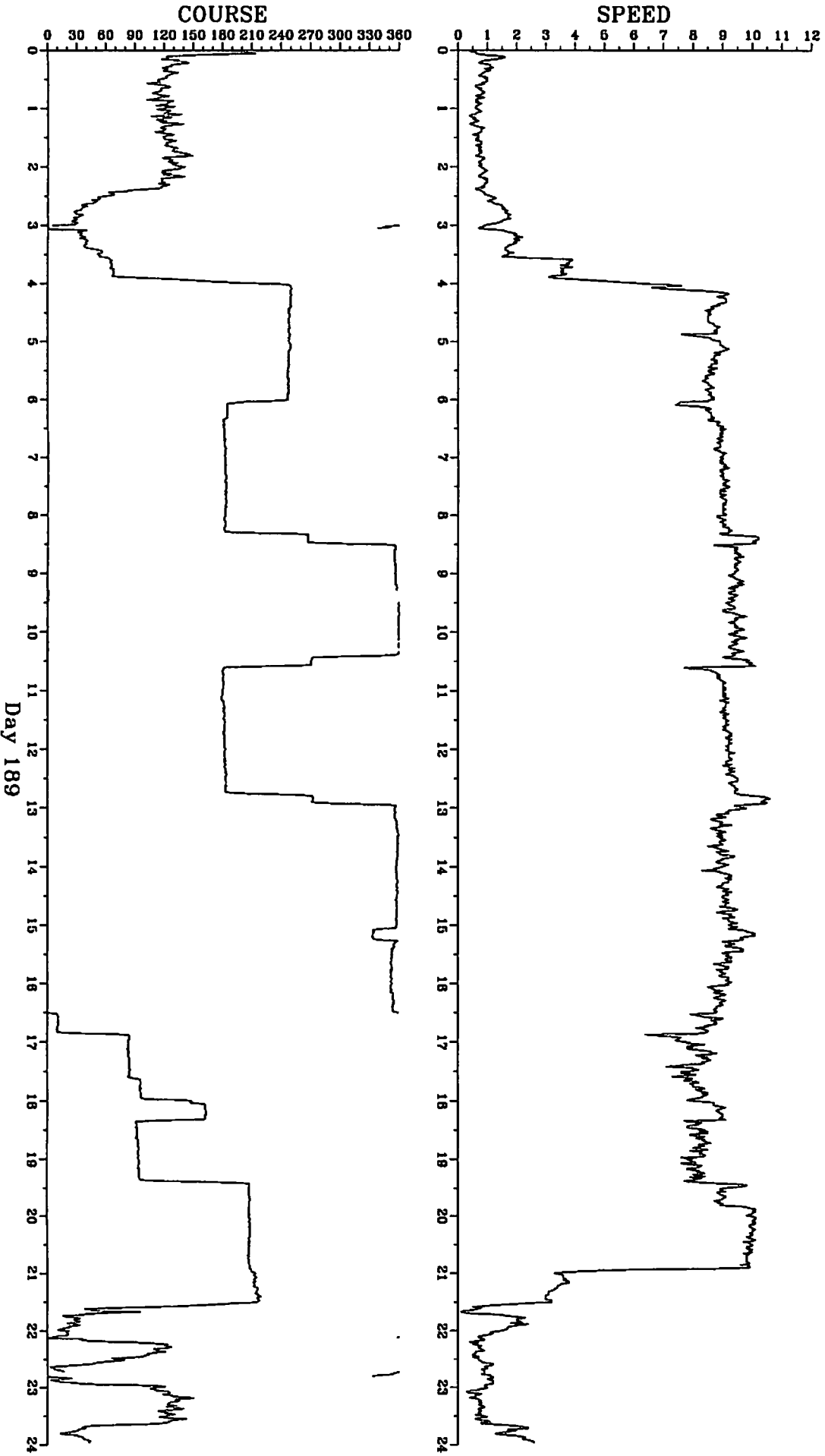
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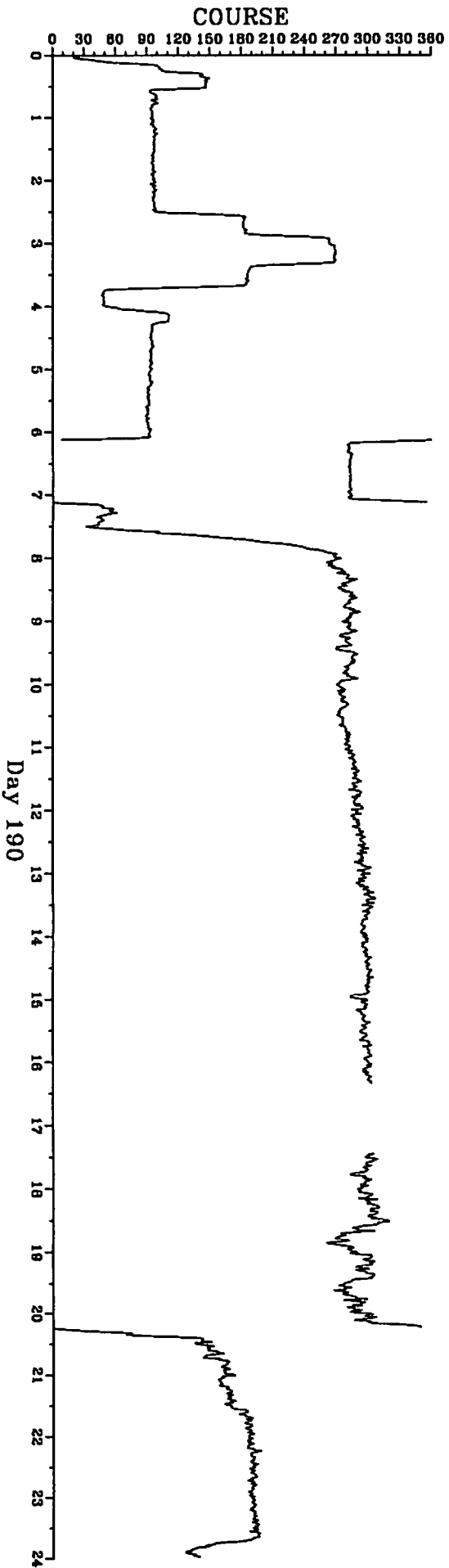
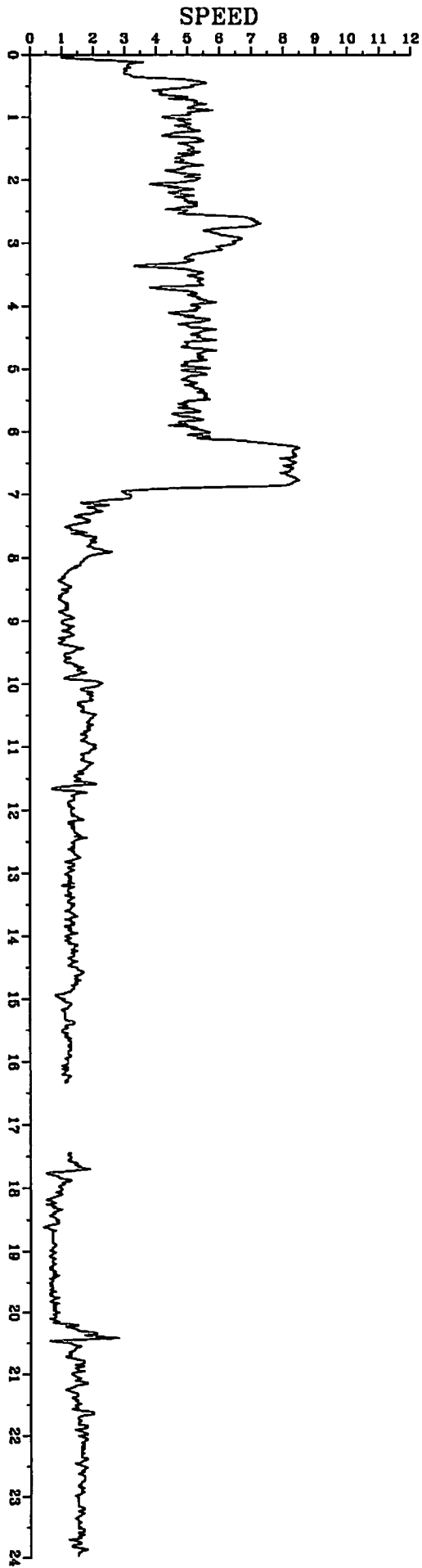
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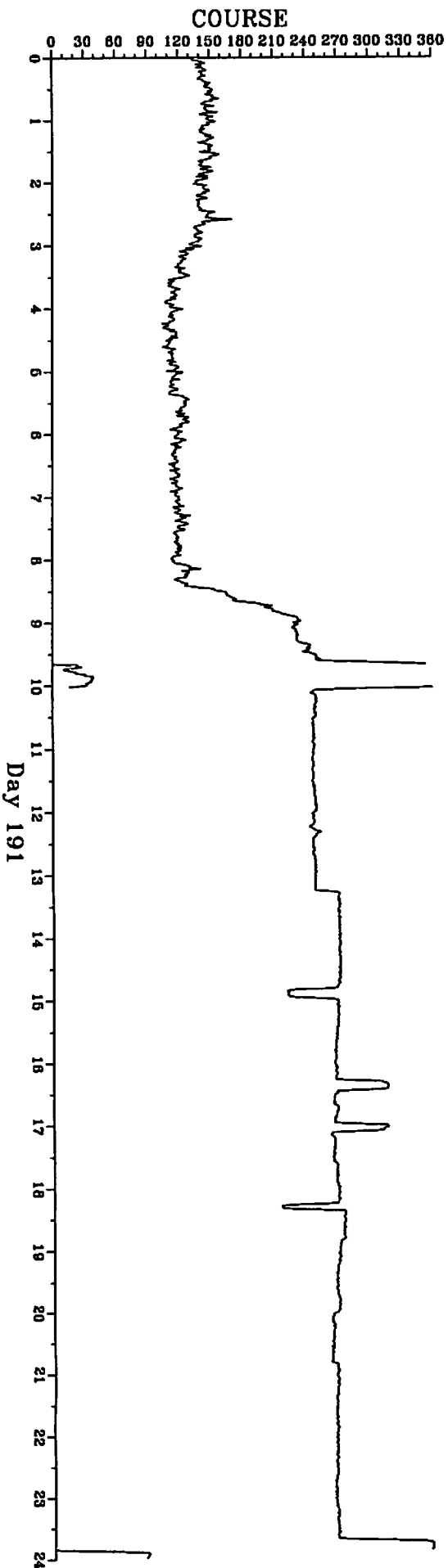
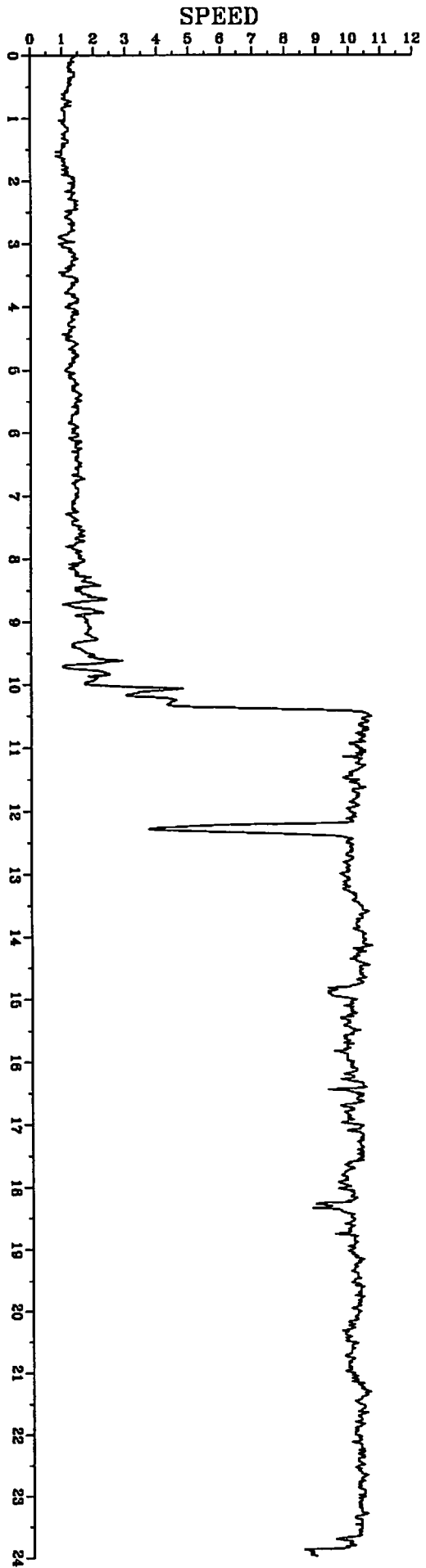
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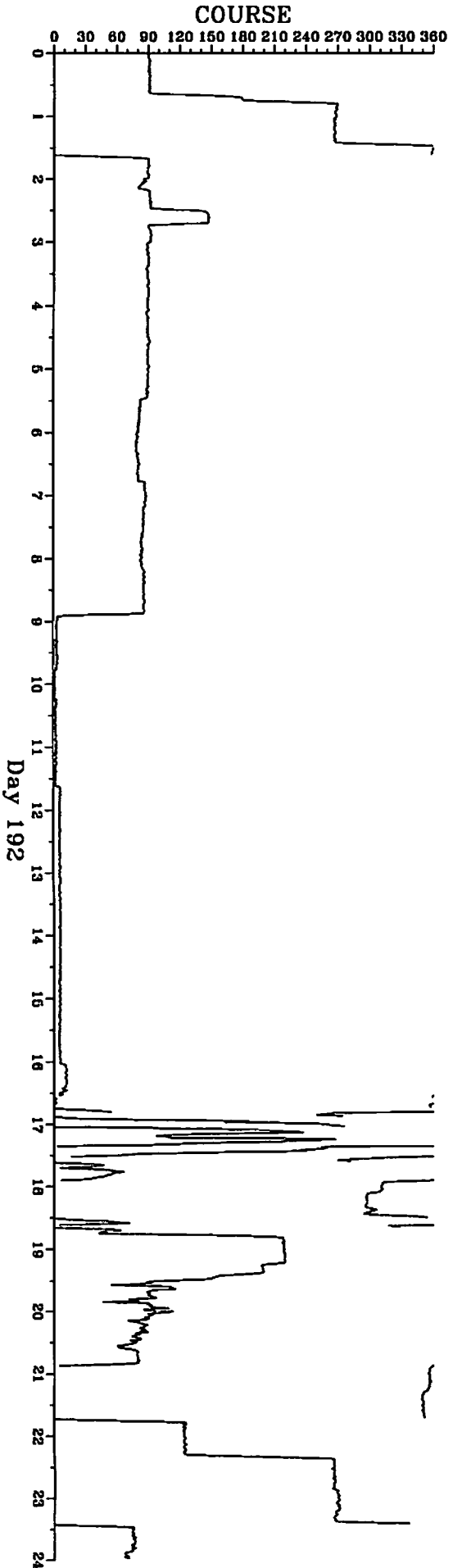
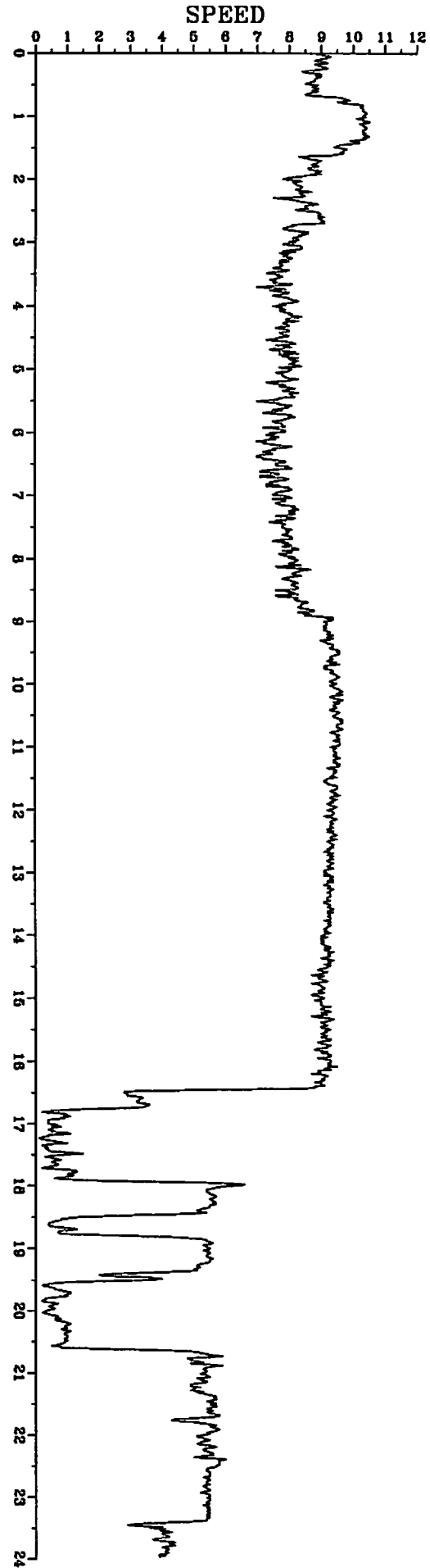
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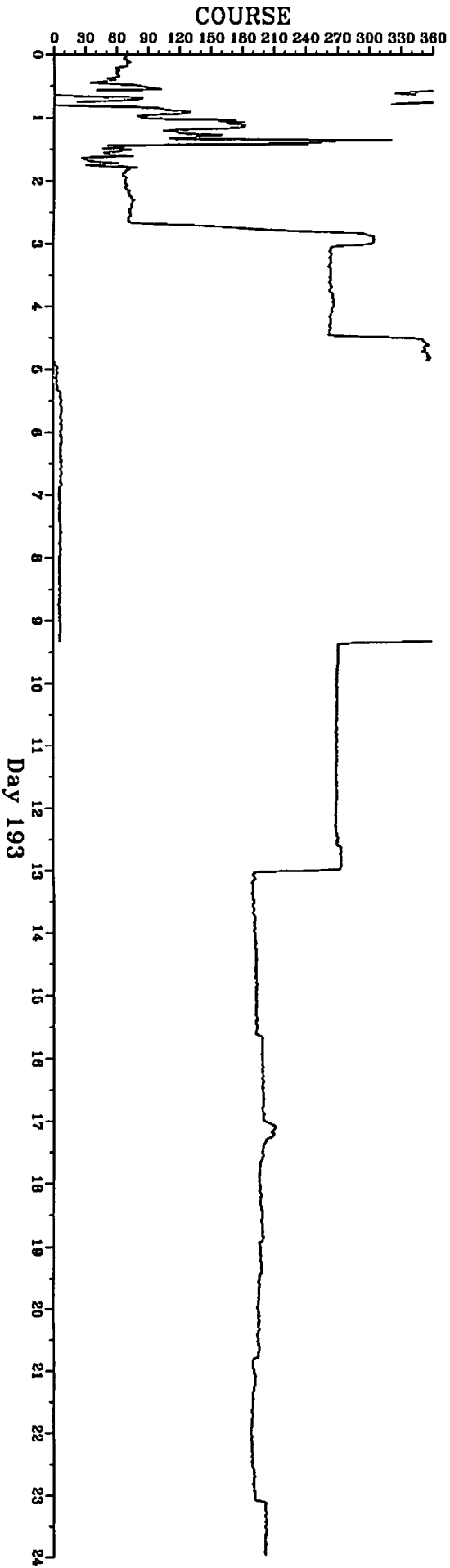
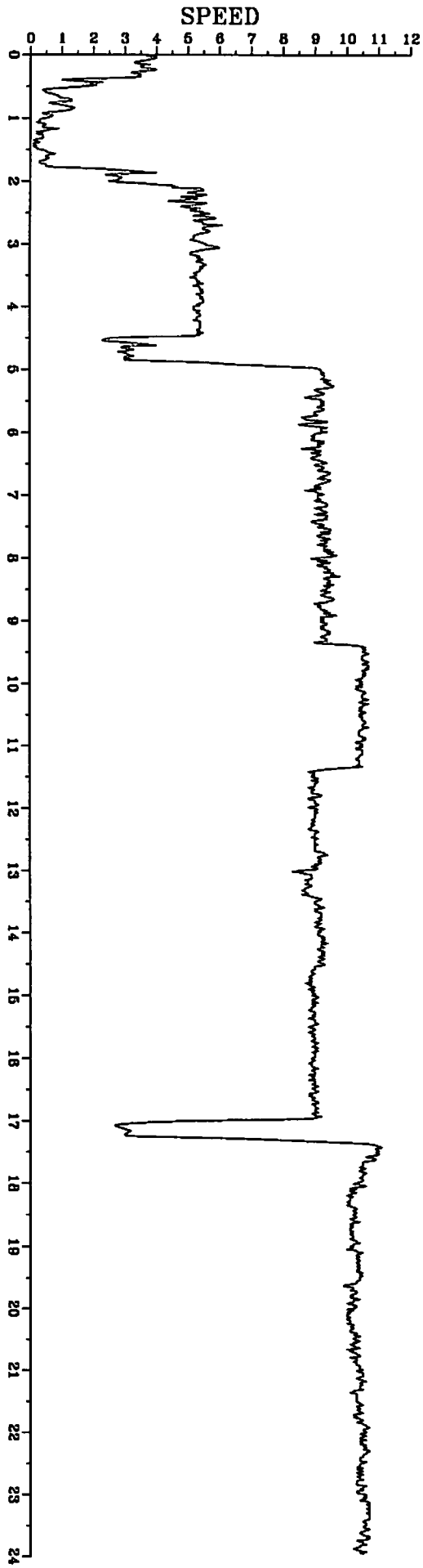
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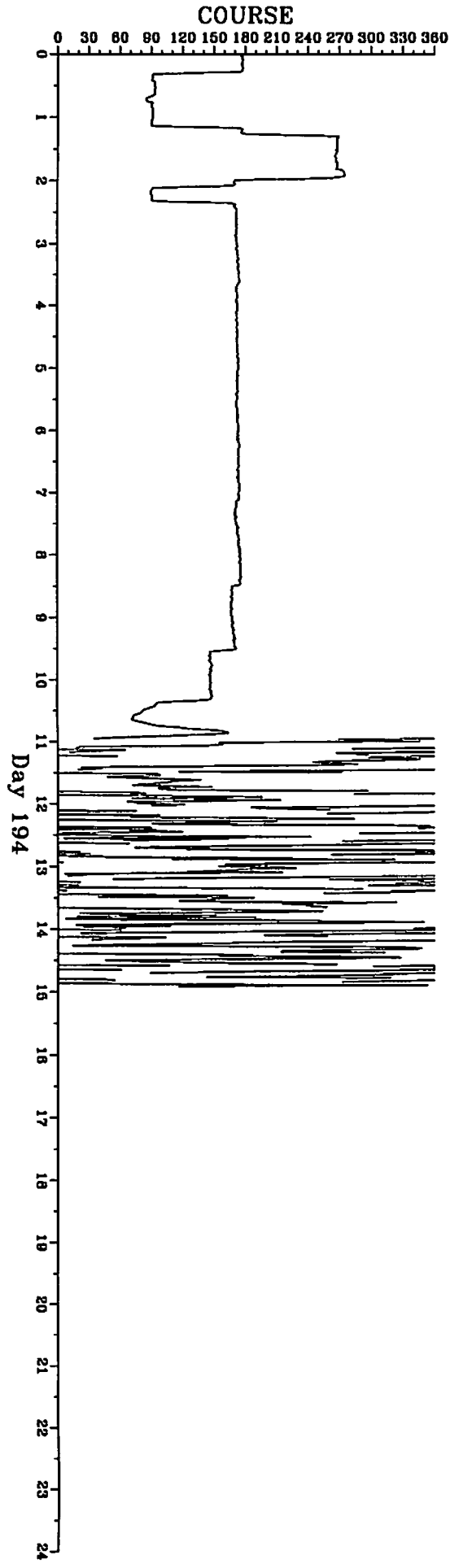
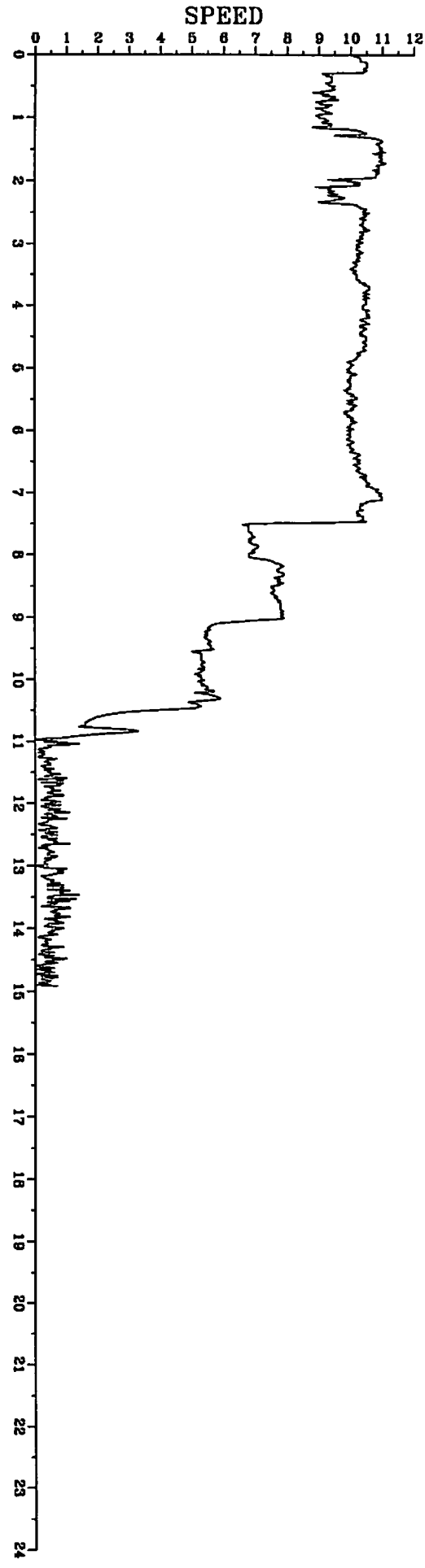
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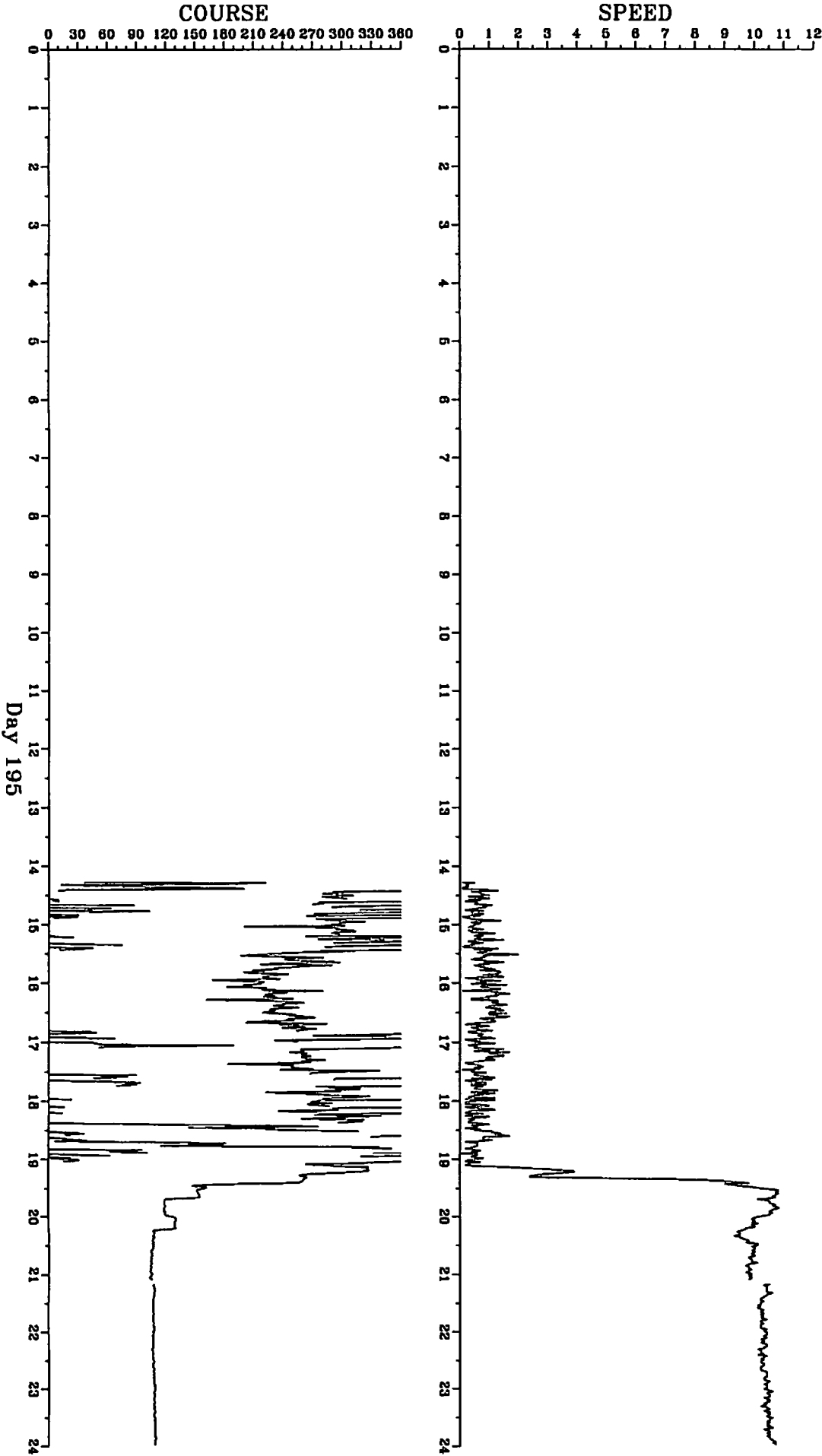
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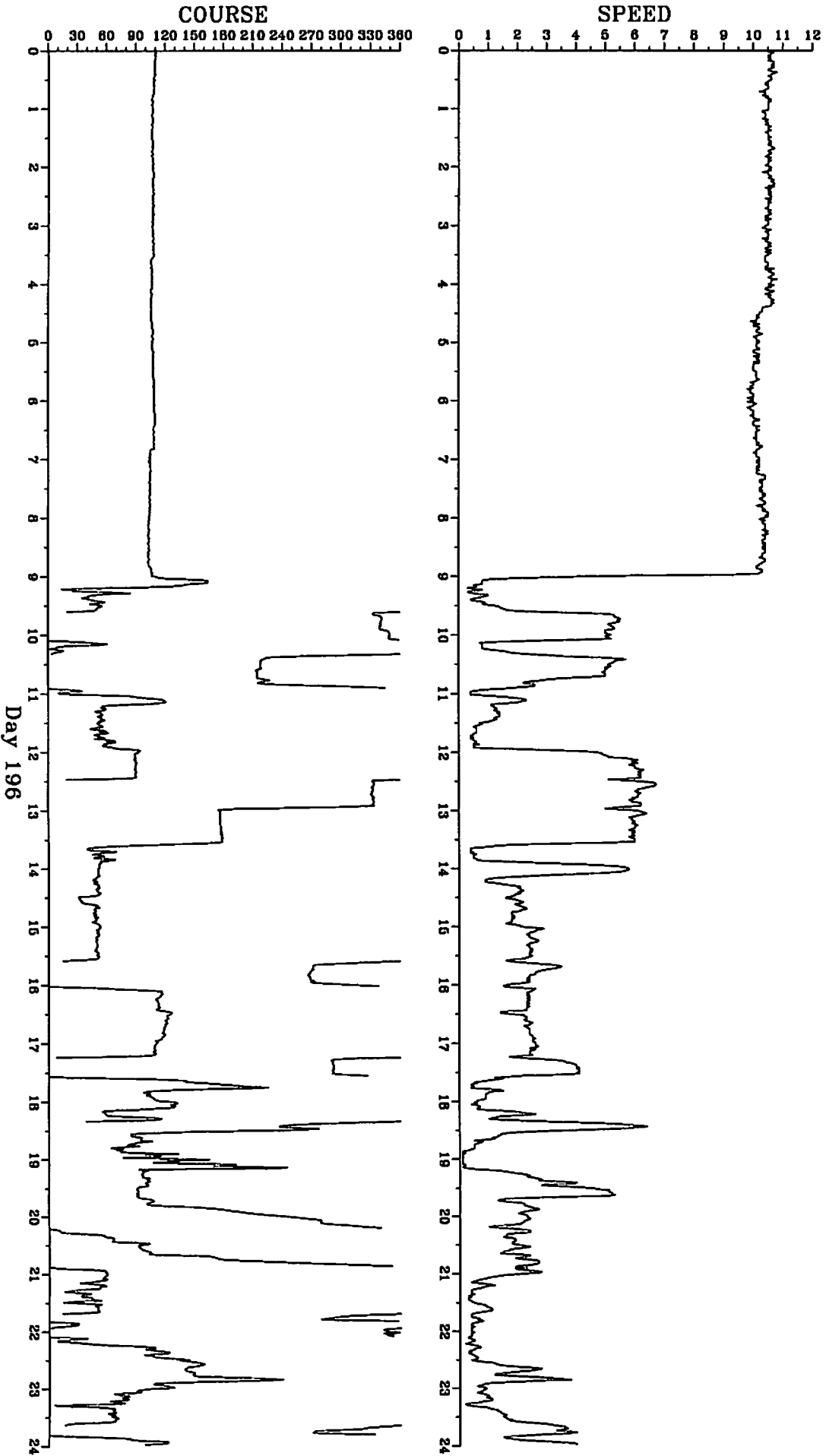
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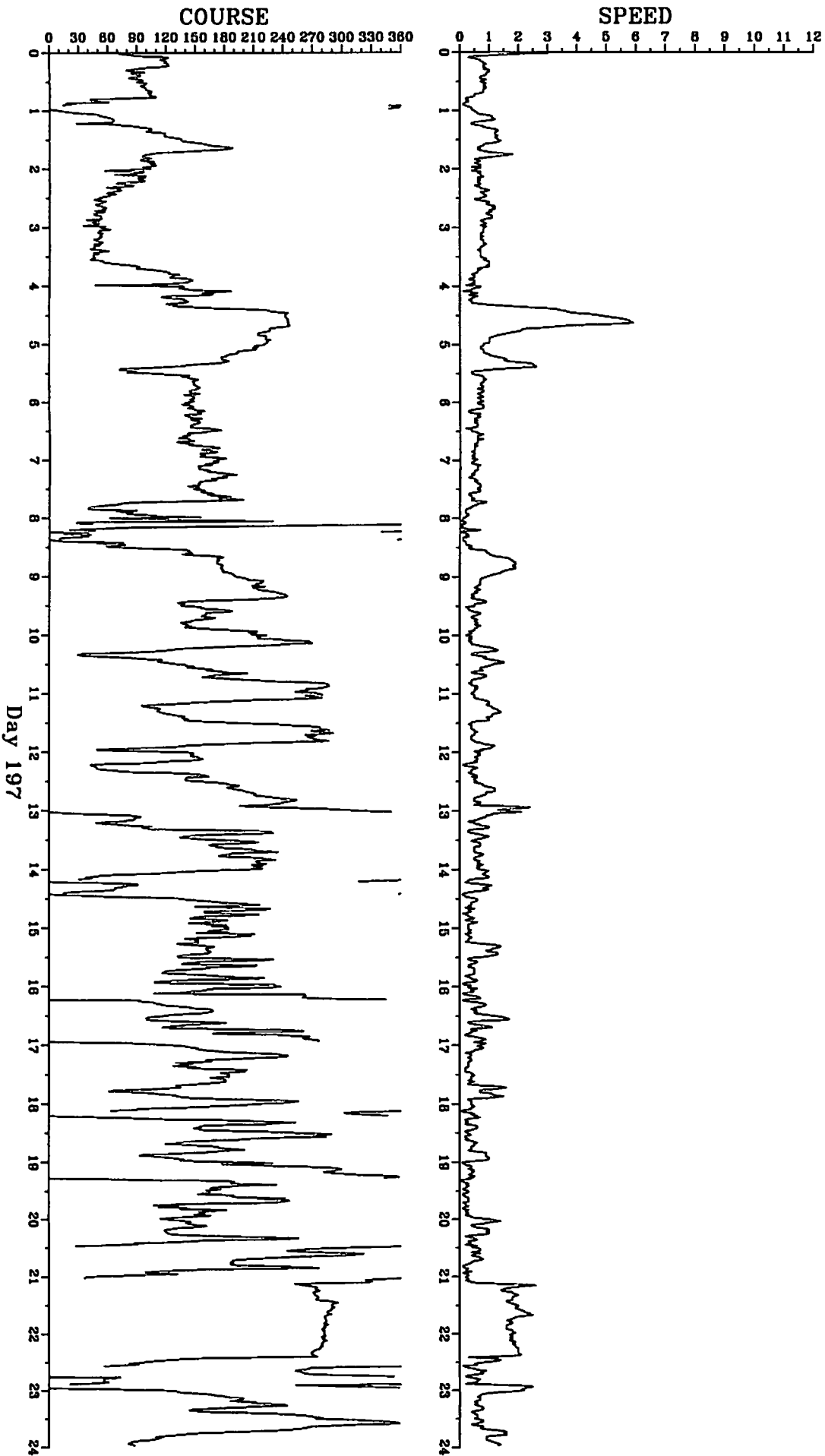
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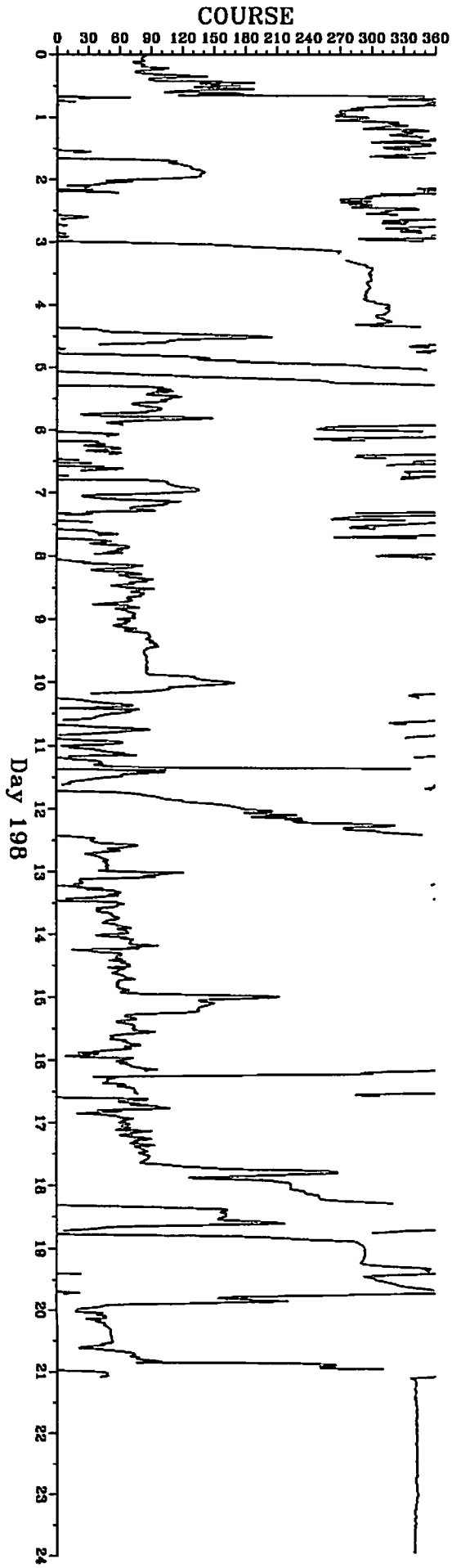
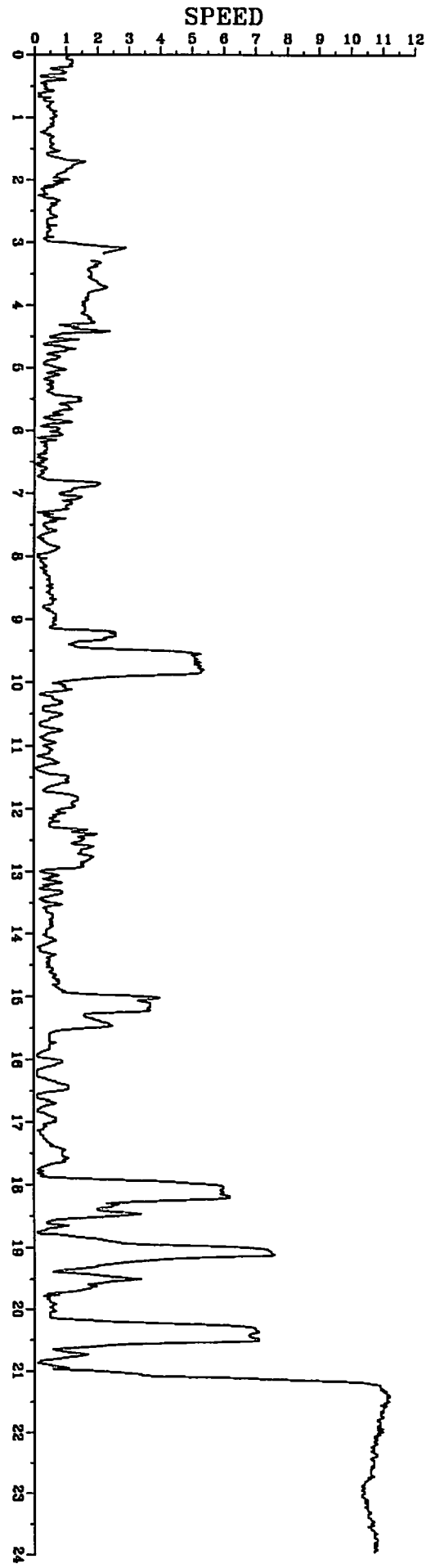
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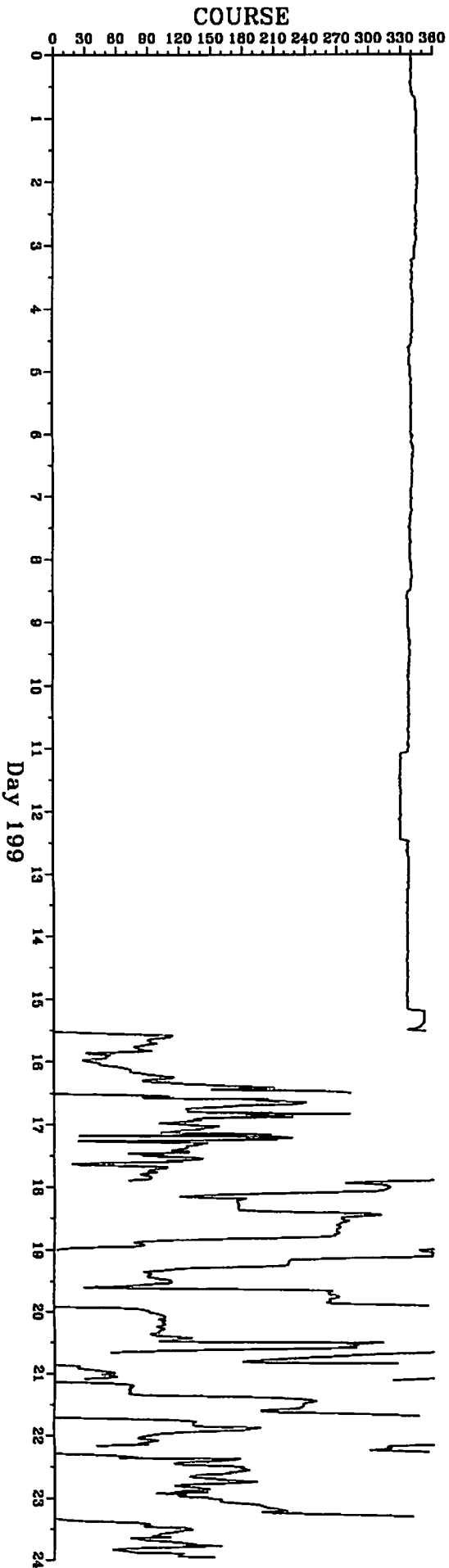
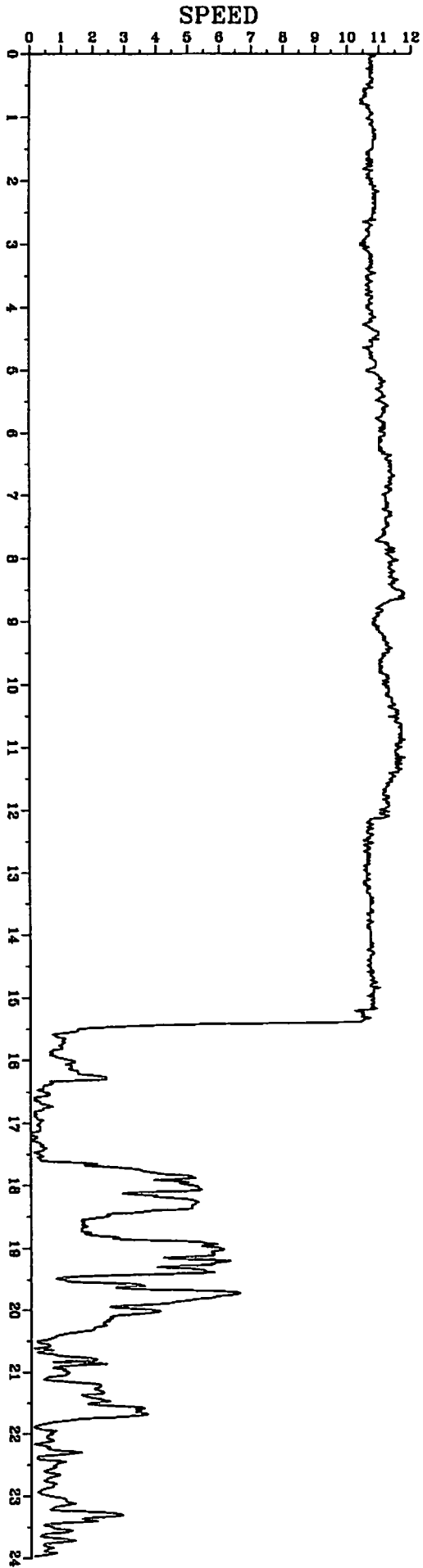
C2907 Barbados - Puerto Rico Smooth Speed and Heading
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C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s198

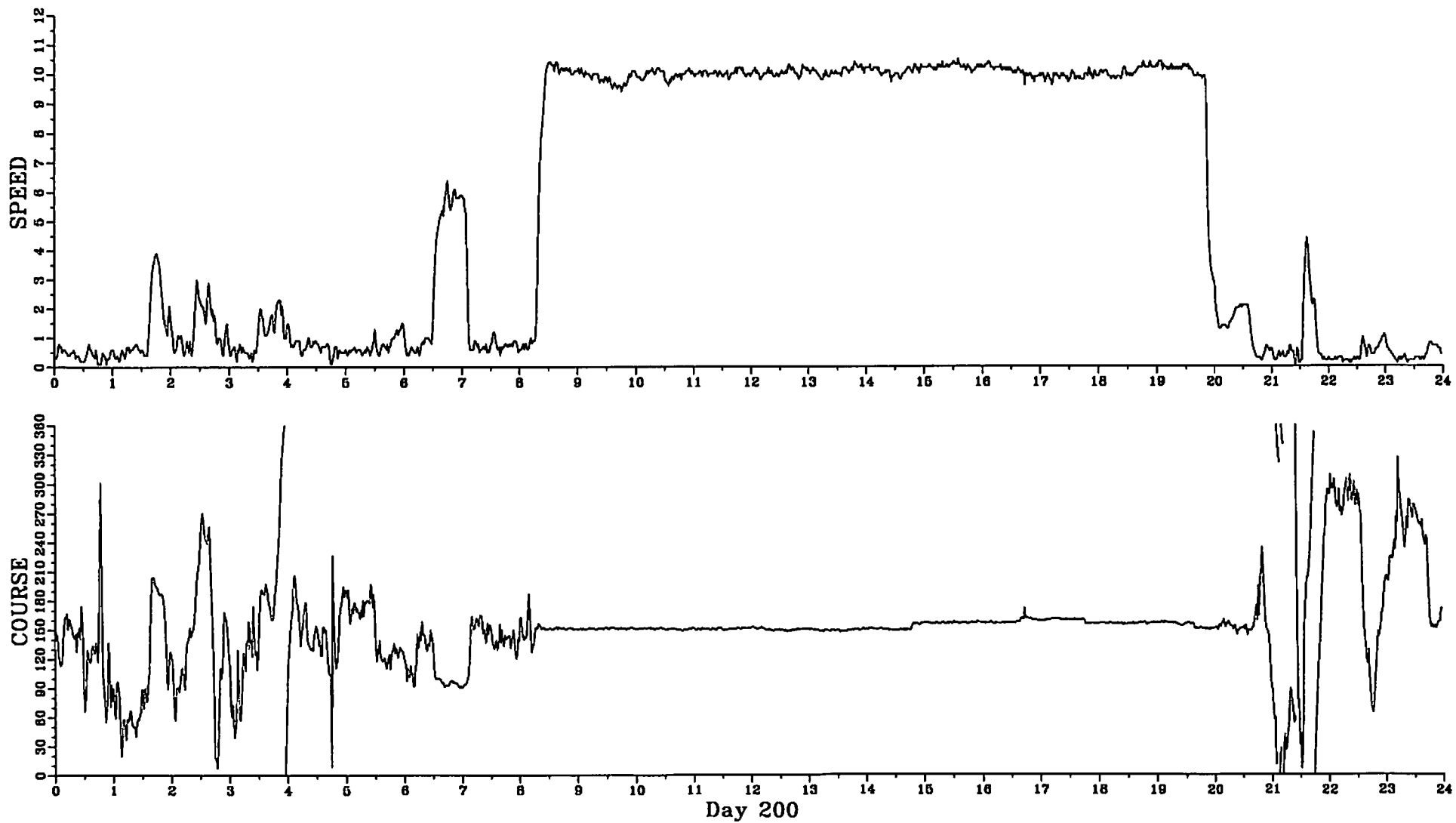


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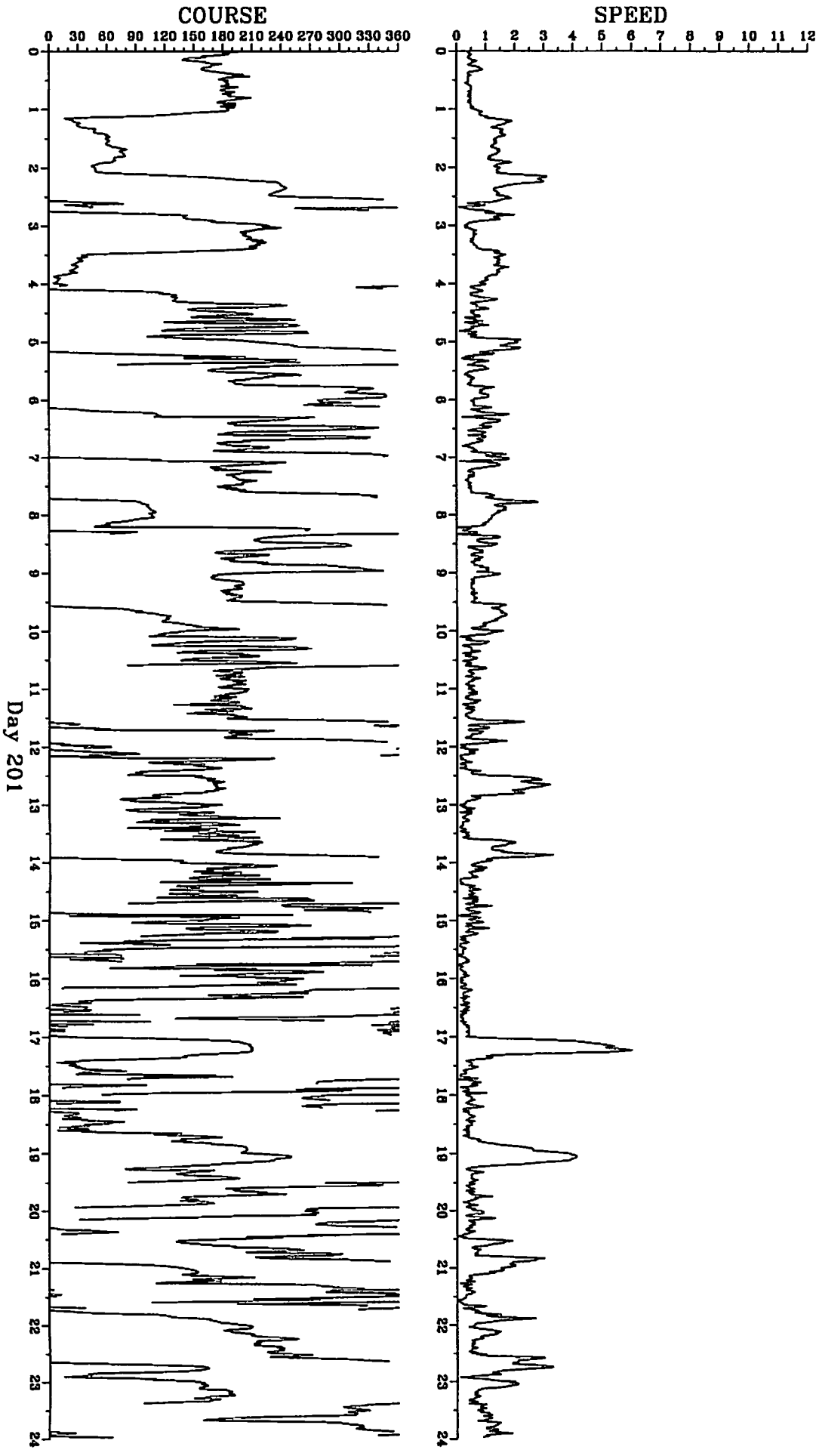


C2907 Barbados - Puerto Rico Smooth Speed and Heading

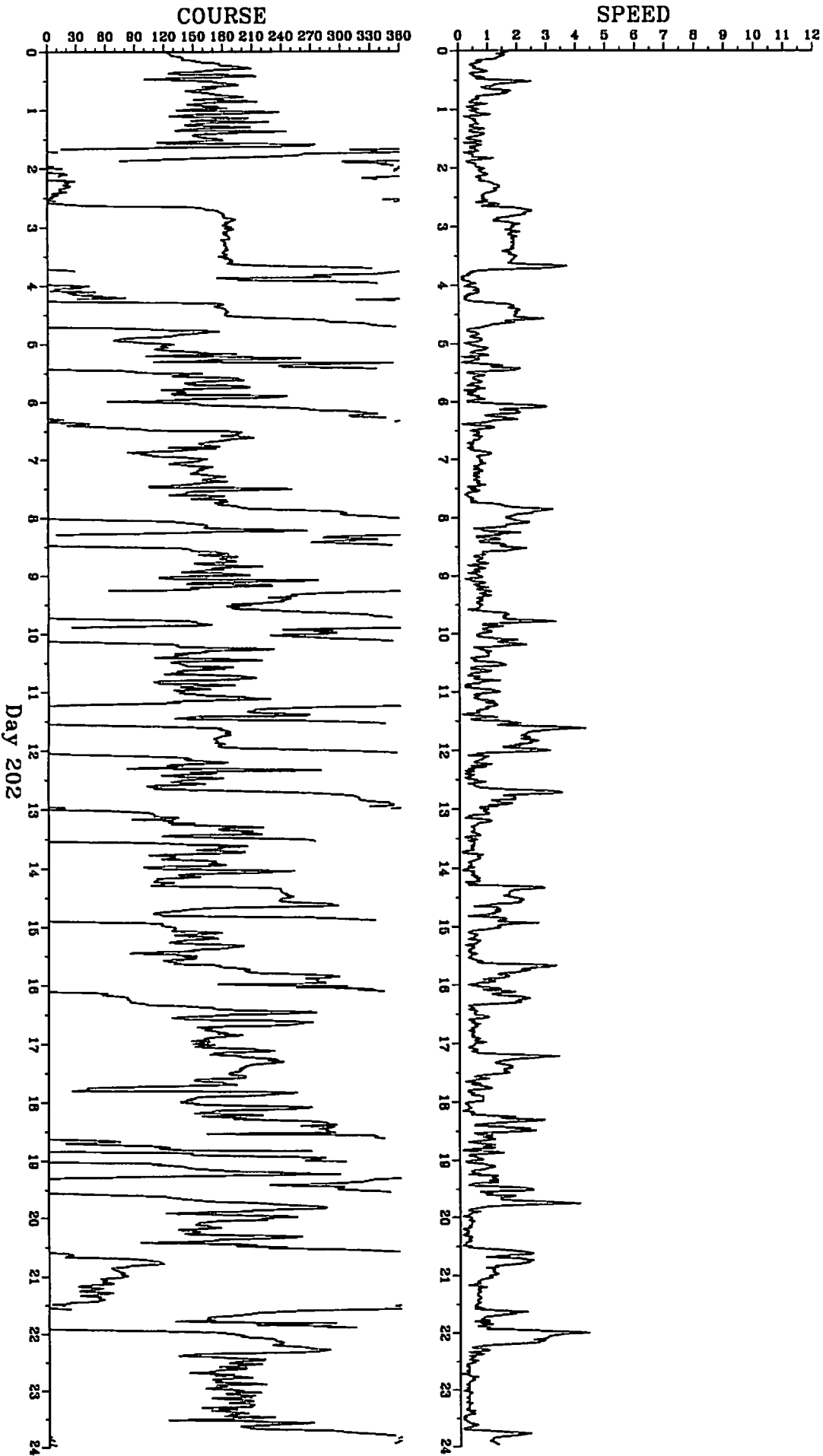
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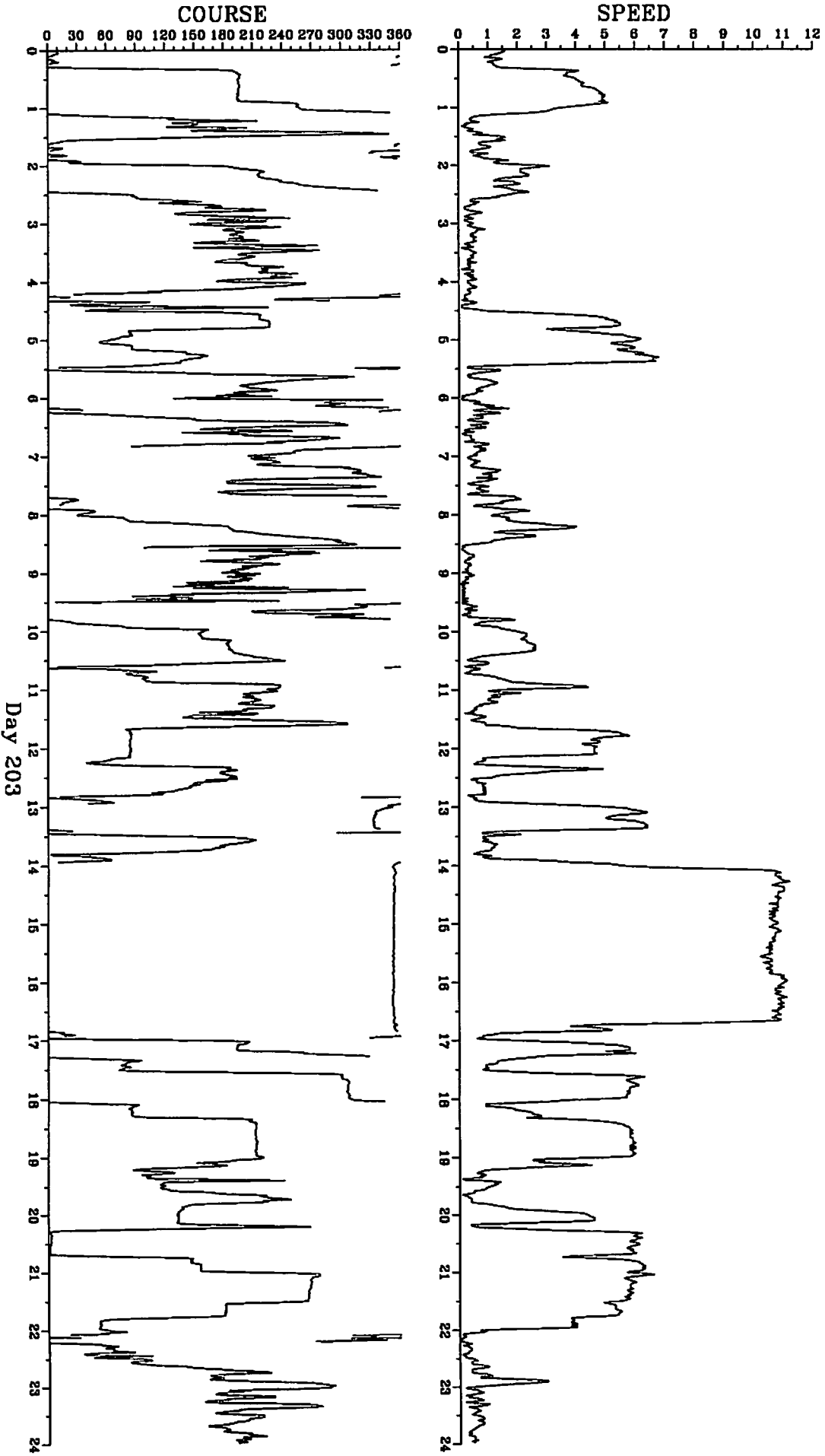
C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s201



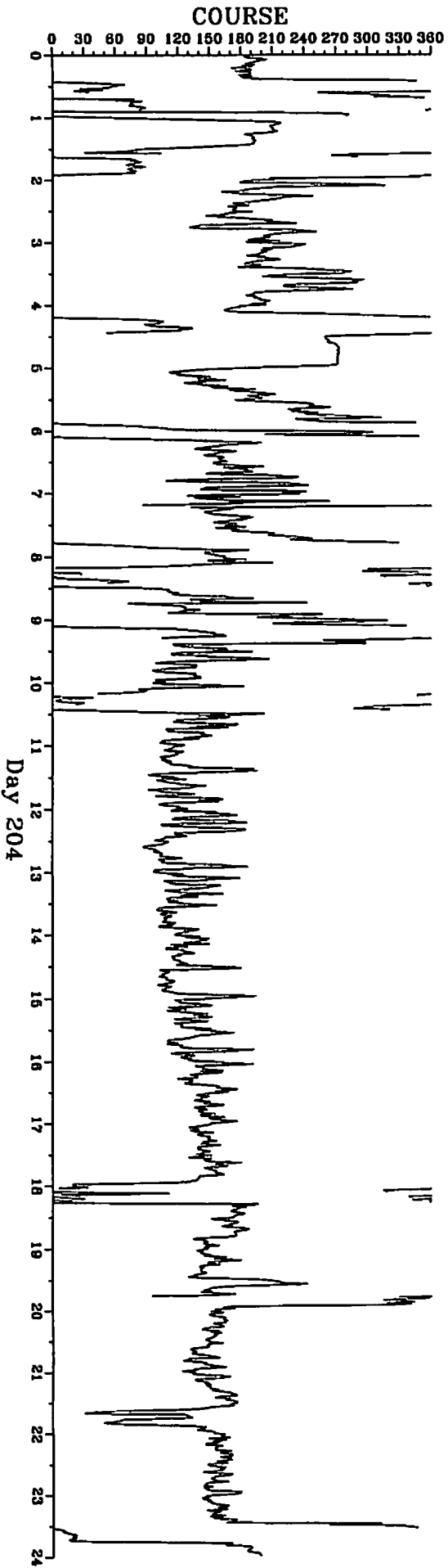
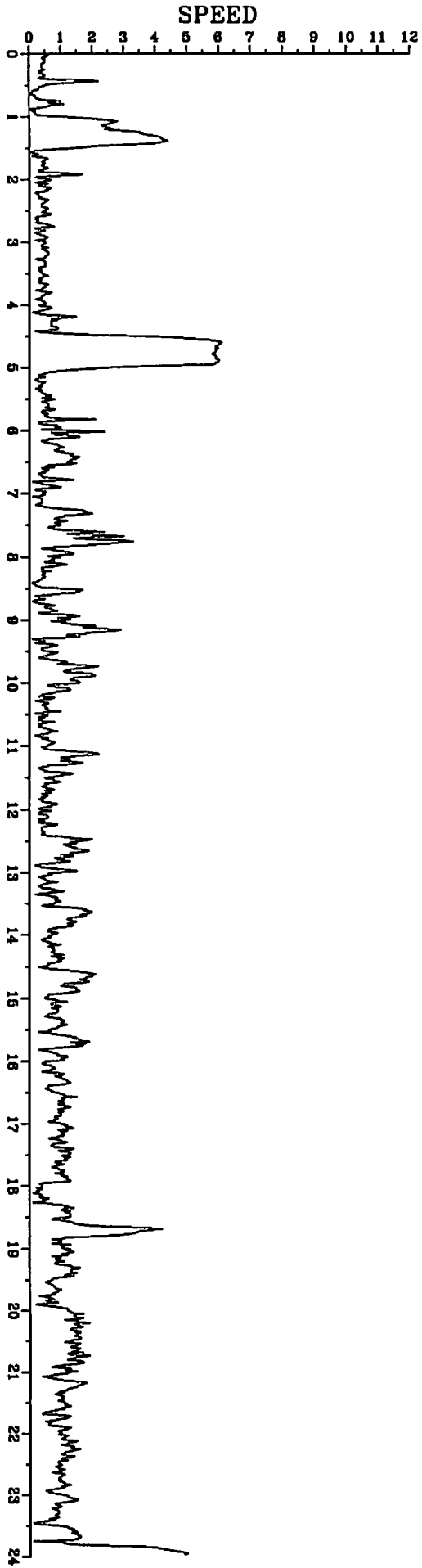
C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s202



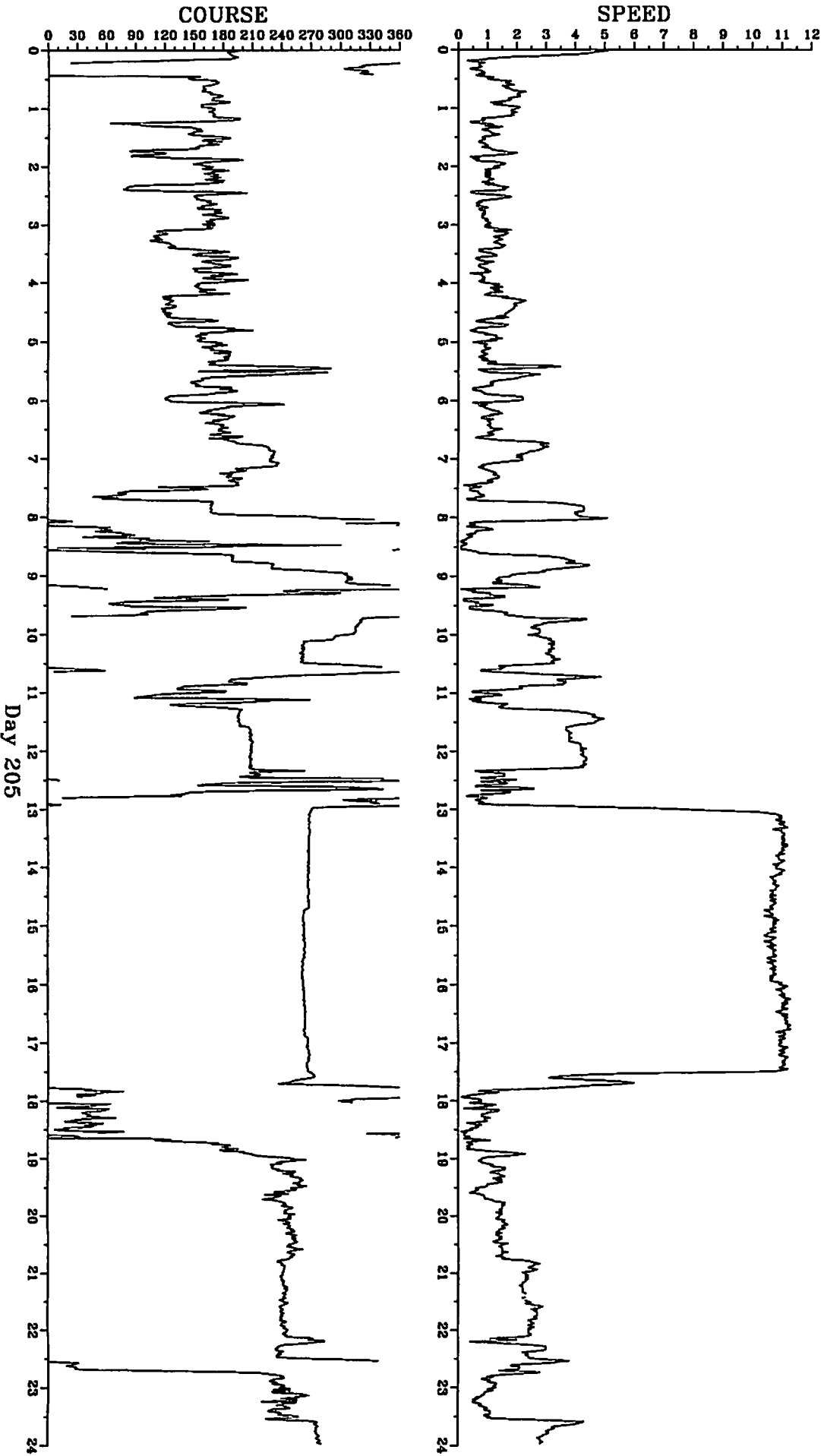
C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s203



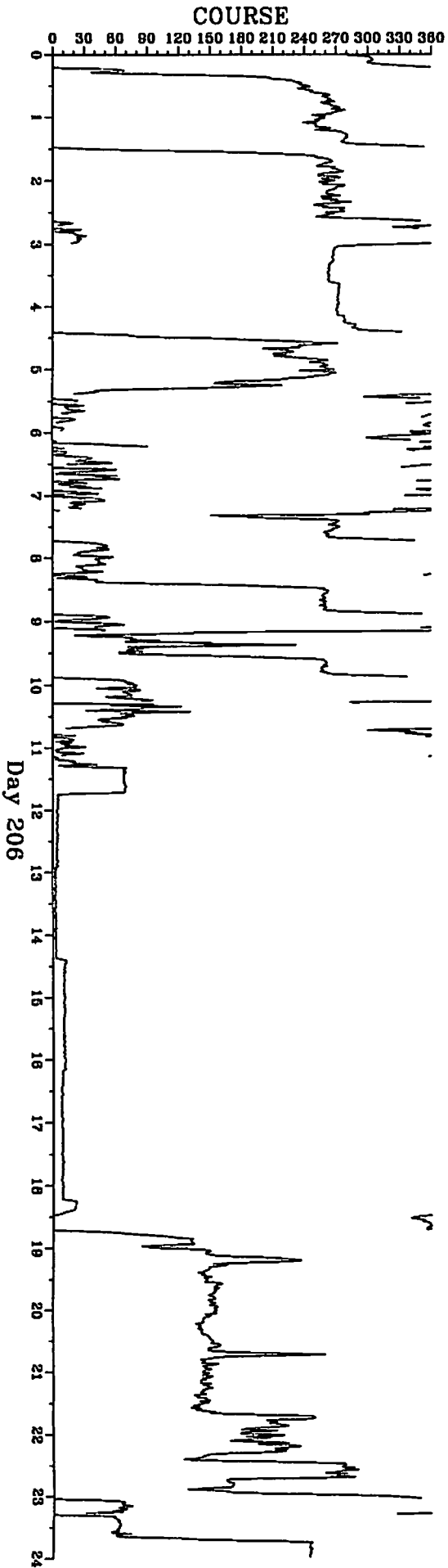
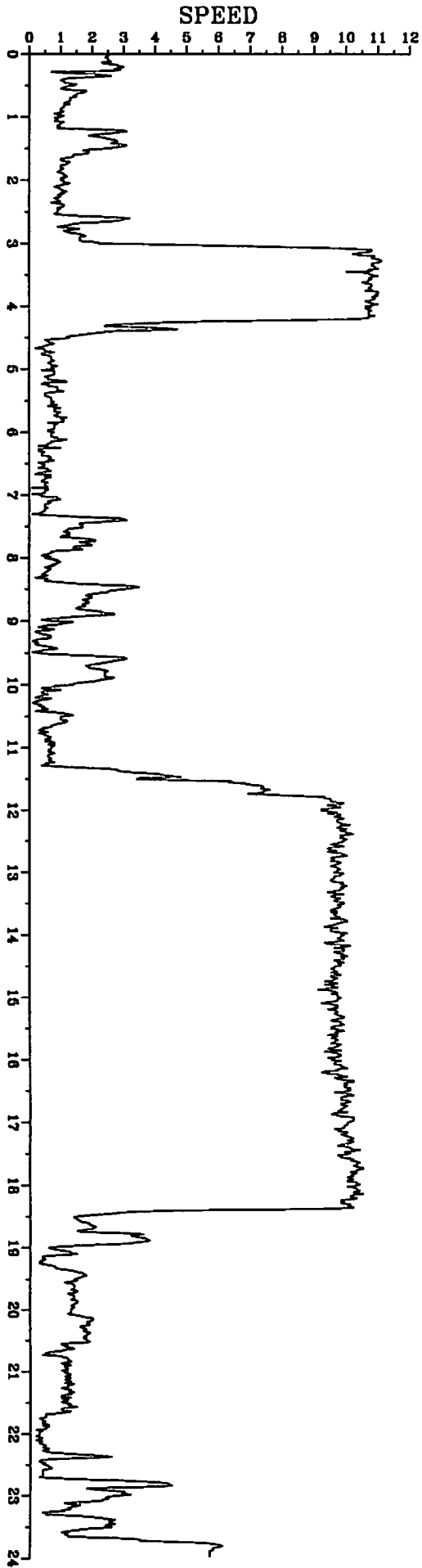
C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s204



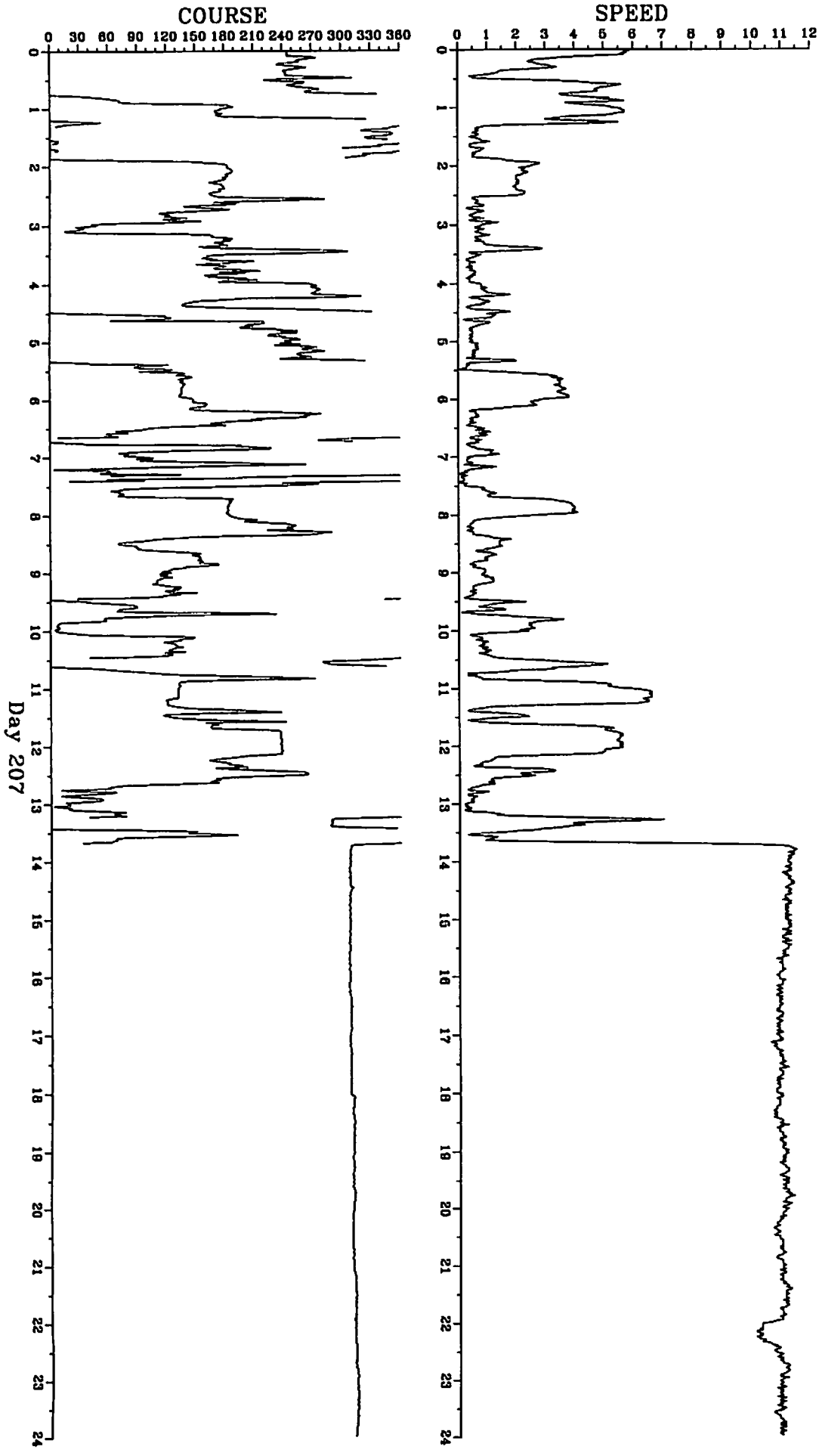
C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s205



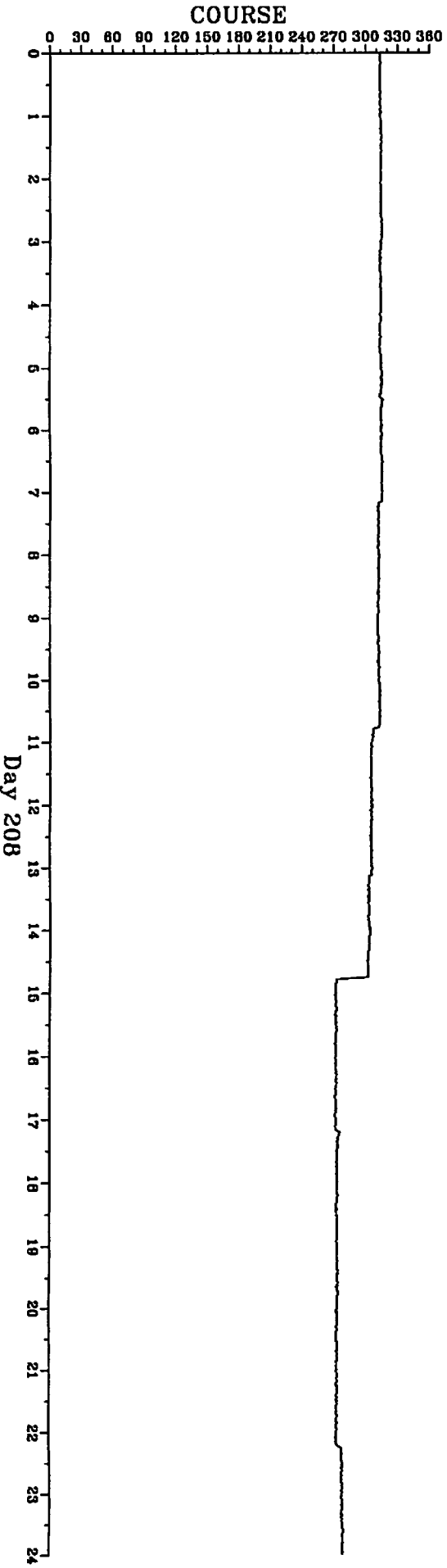
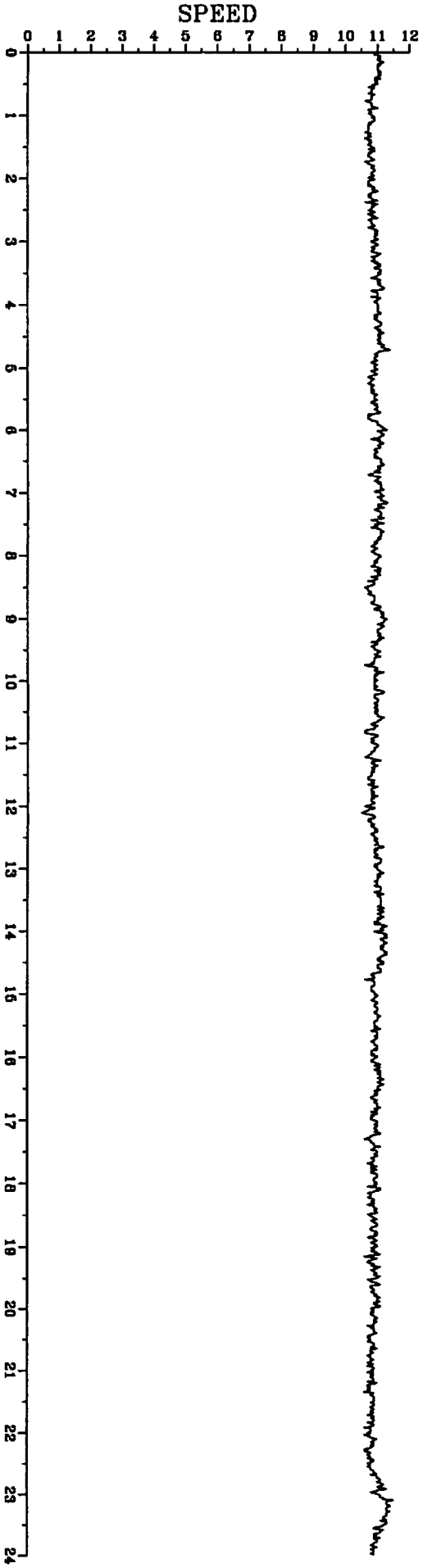
C2907 Barbados – Puerto Rico Smooth Speed and Heading
Data file: fu.s206



C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s207

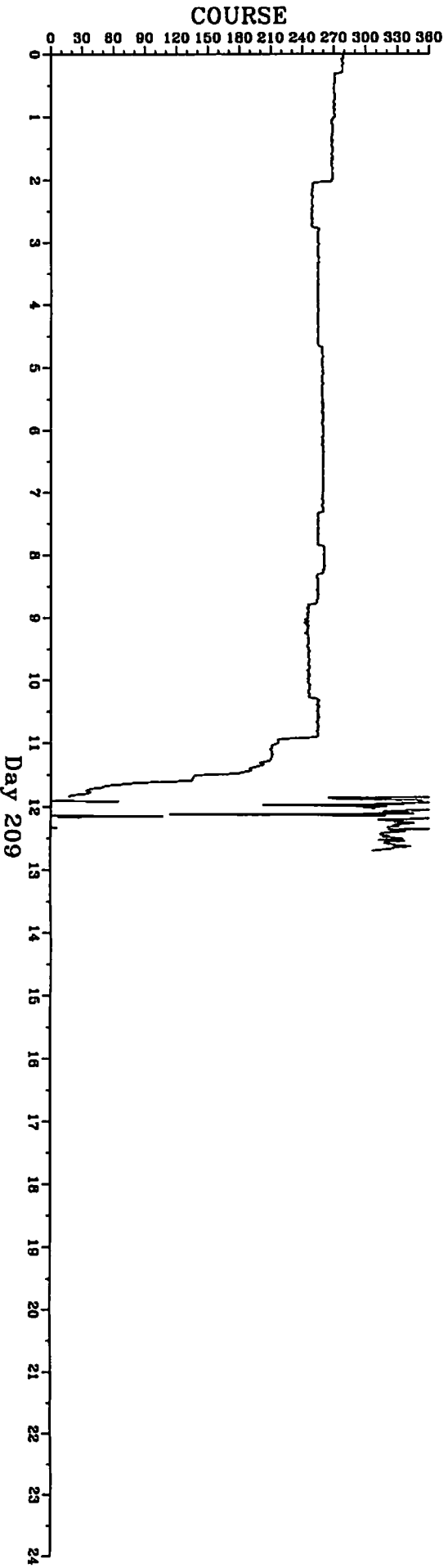
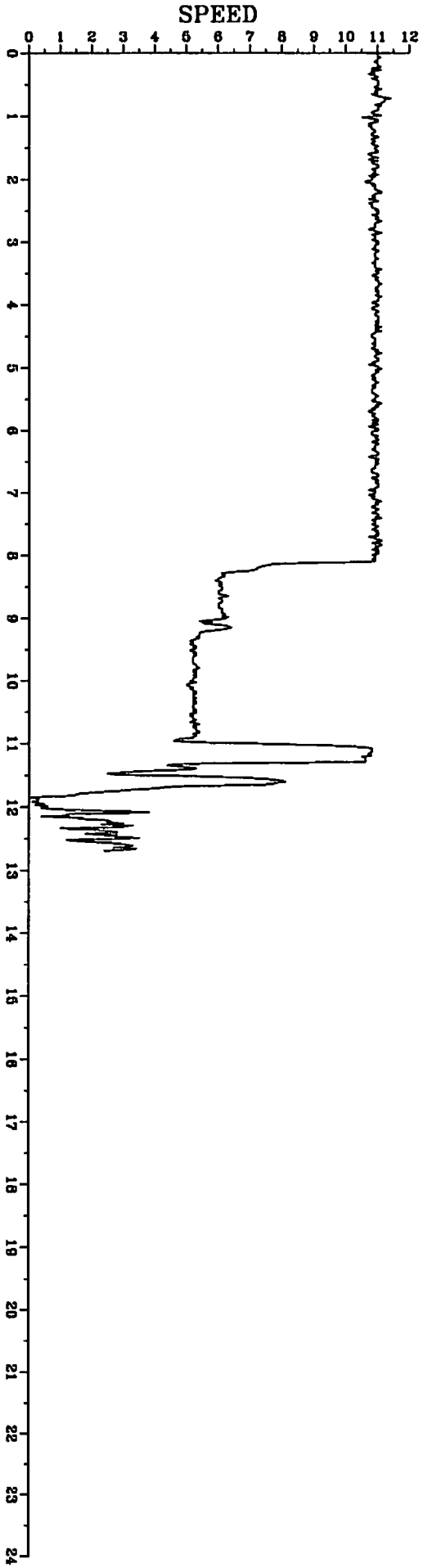


C2907 Barbados – Puerto Rico Smooth Speed and Heading
Data file: fu.s208

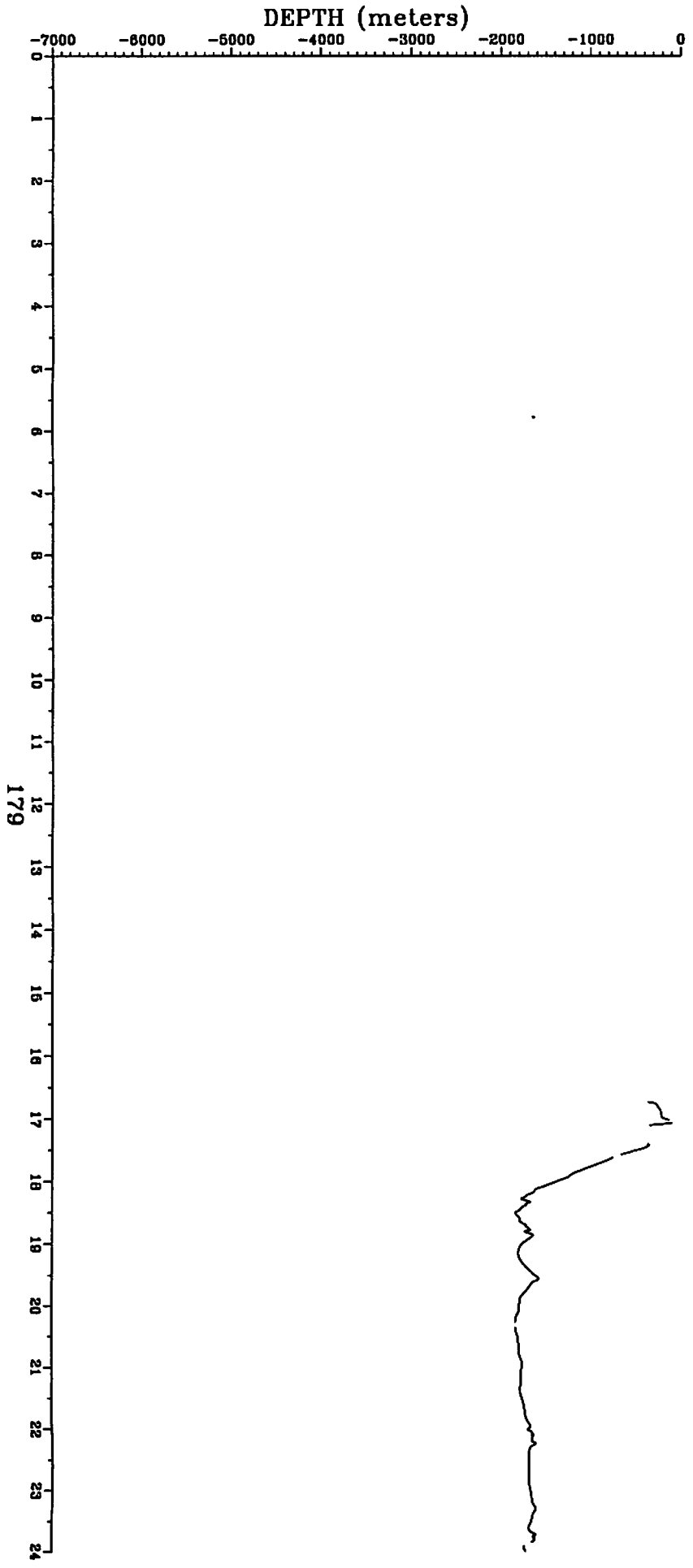


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C2907 Barbados - Puerto Rico Smooth Speed and Heading
Data file: fu.s209

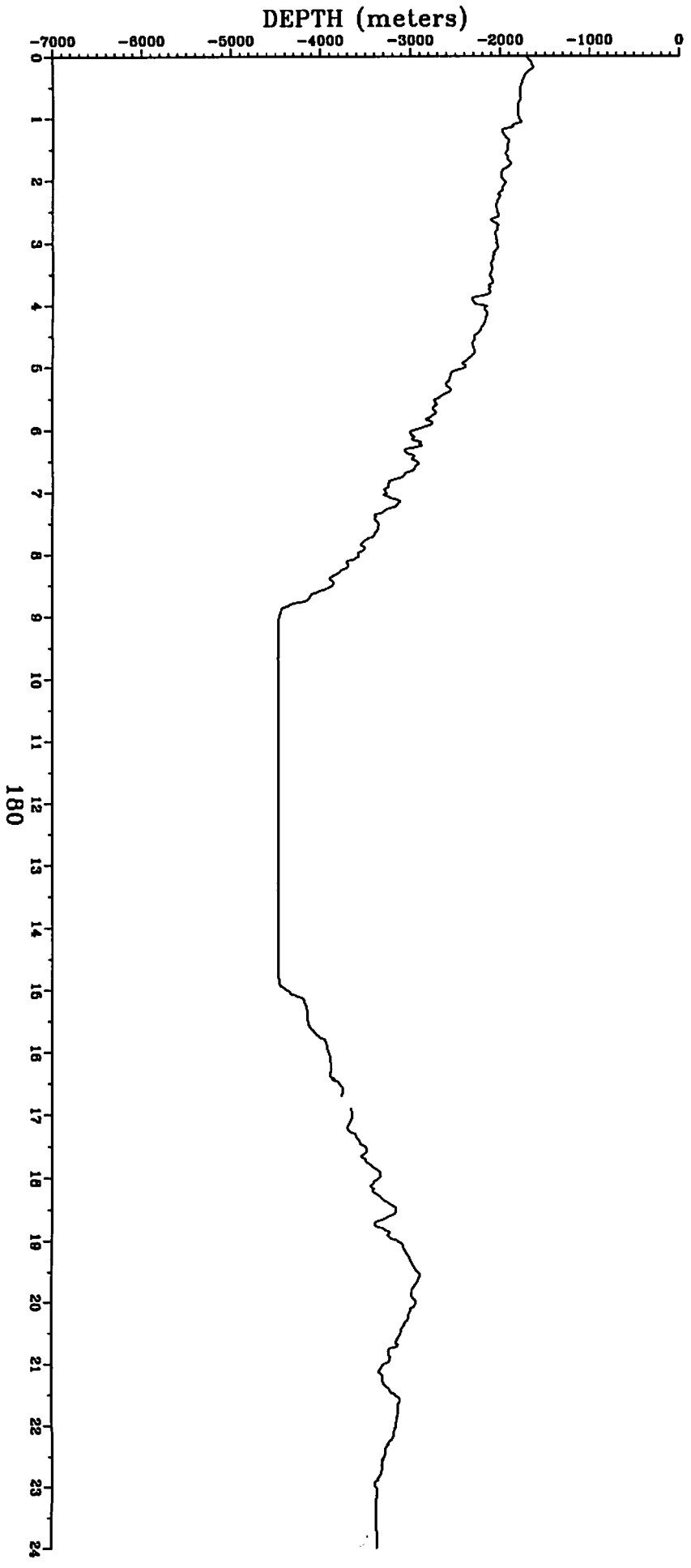


C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n179

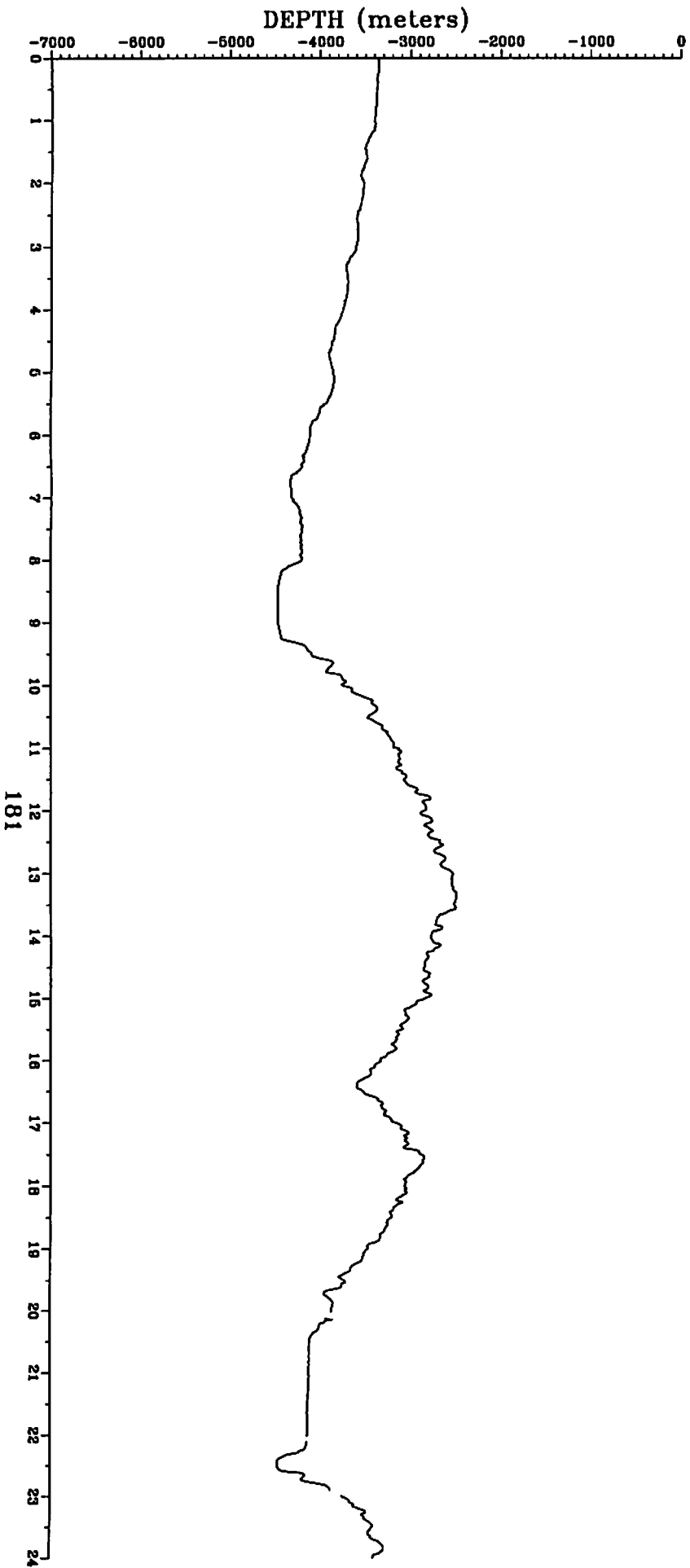


179

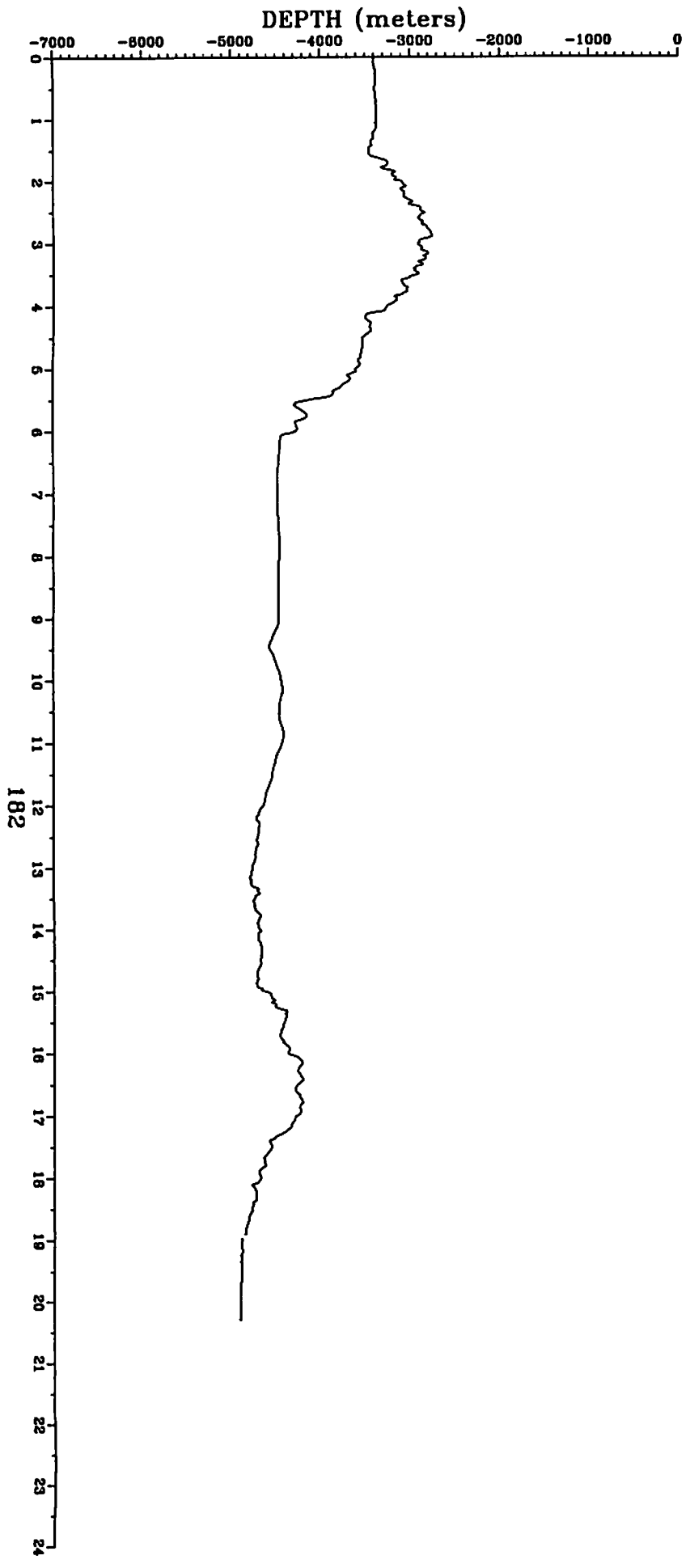
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n180



C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n181

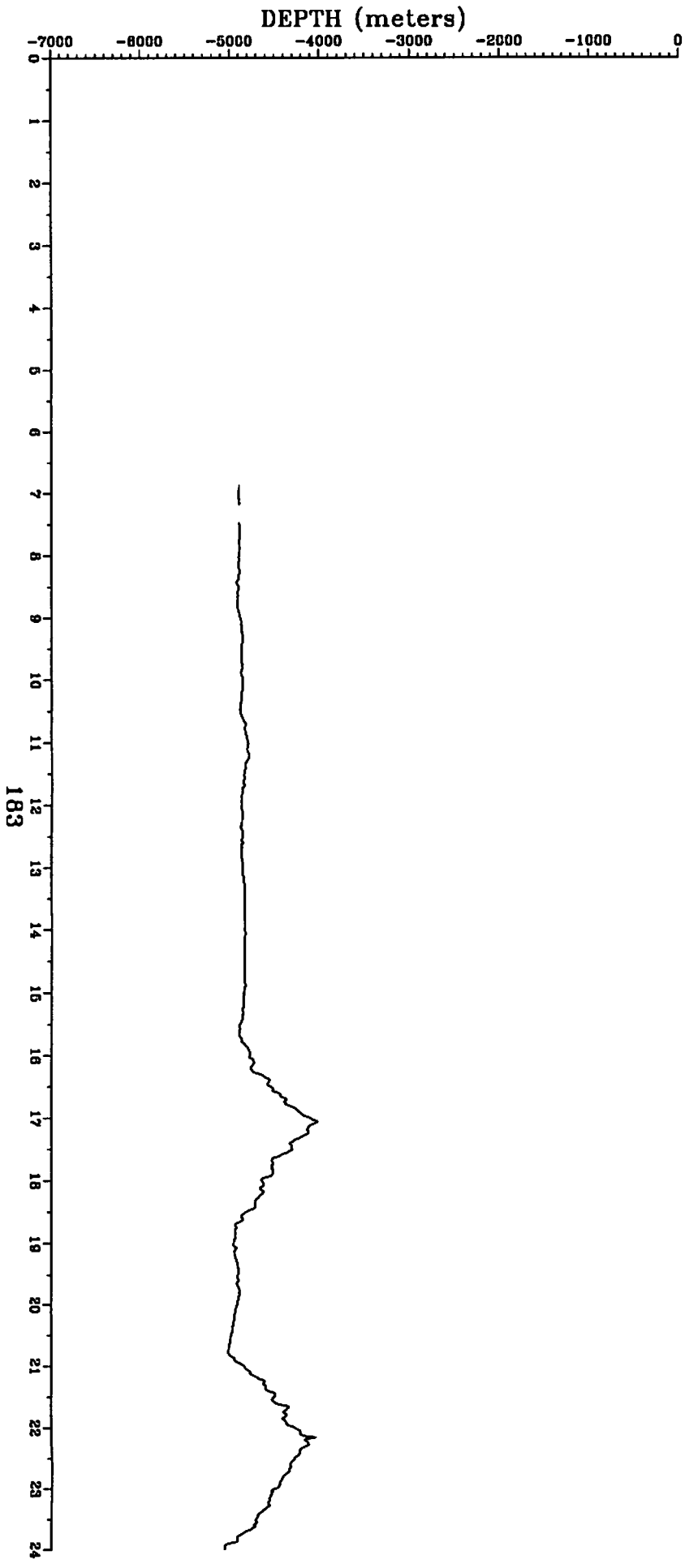


C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n182



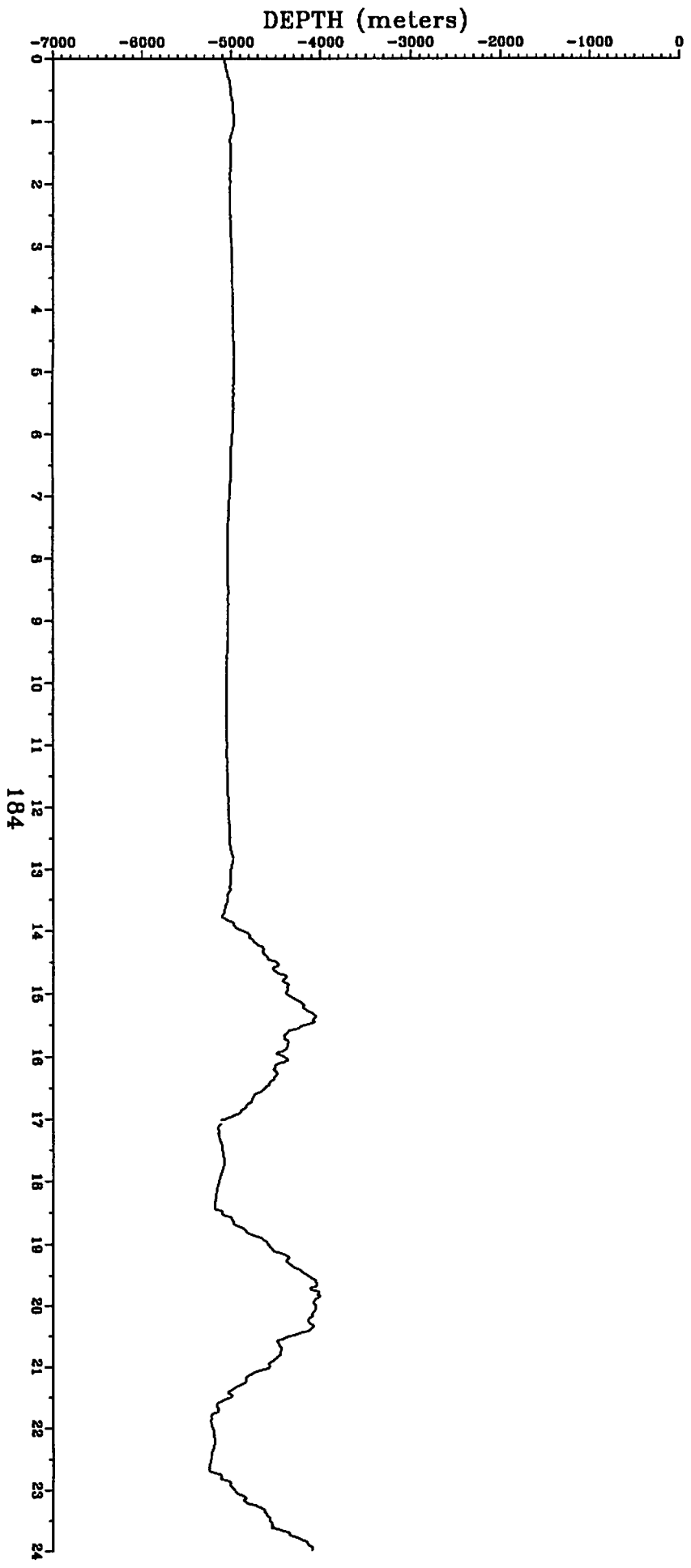
182

C2907 Barbados--Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n183

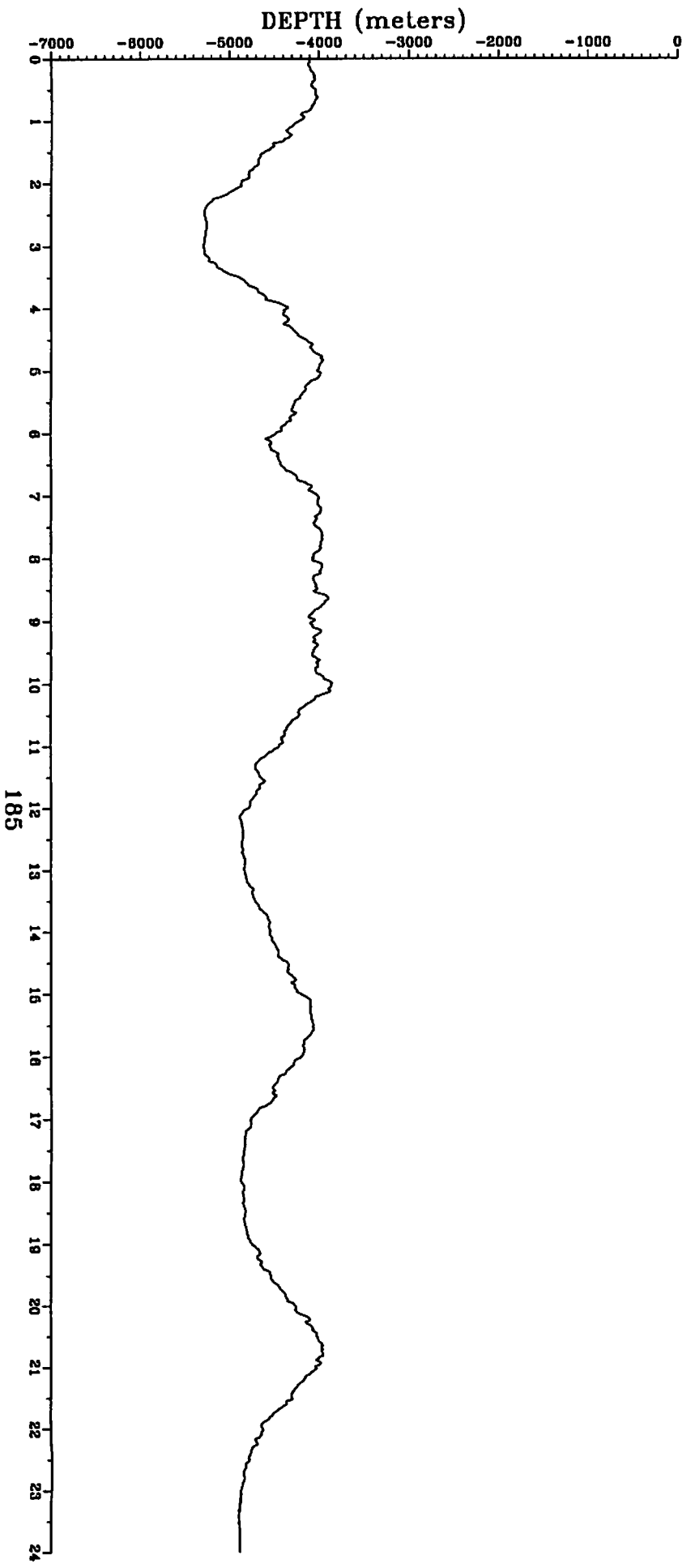


183

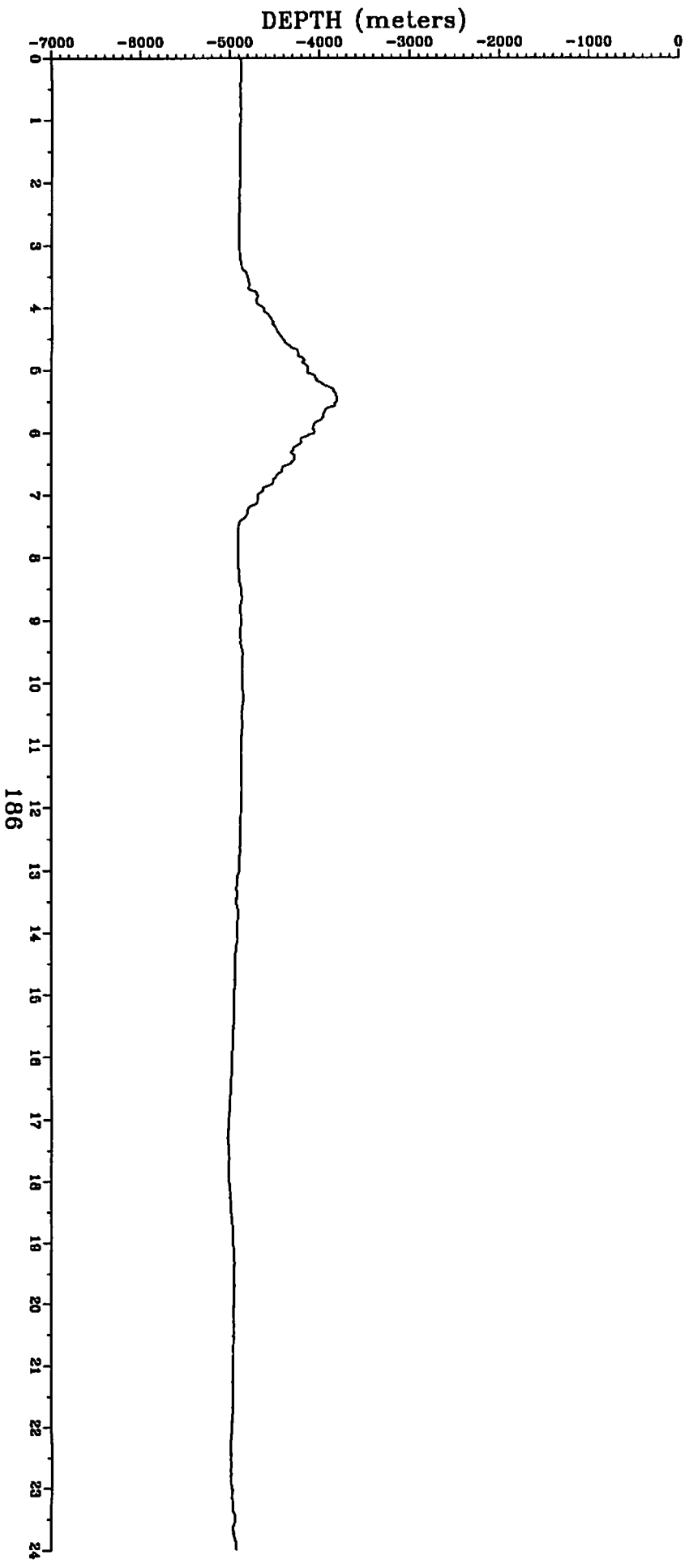
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n184



C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n185

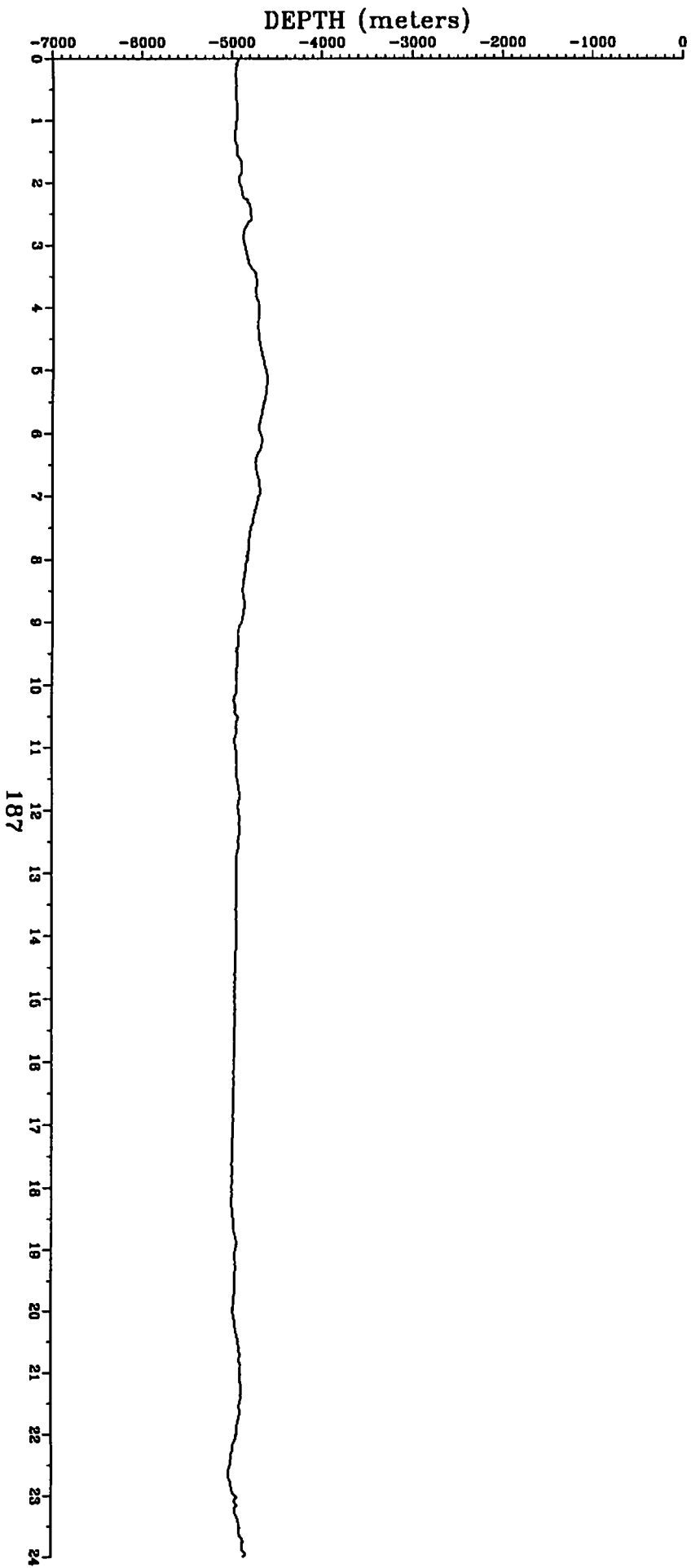


C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n186

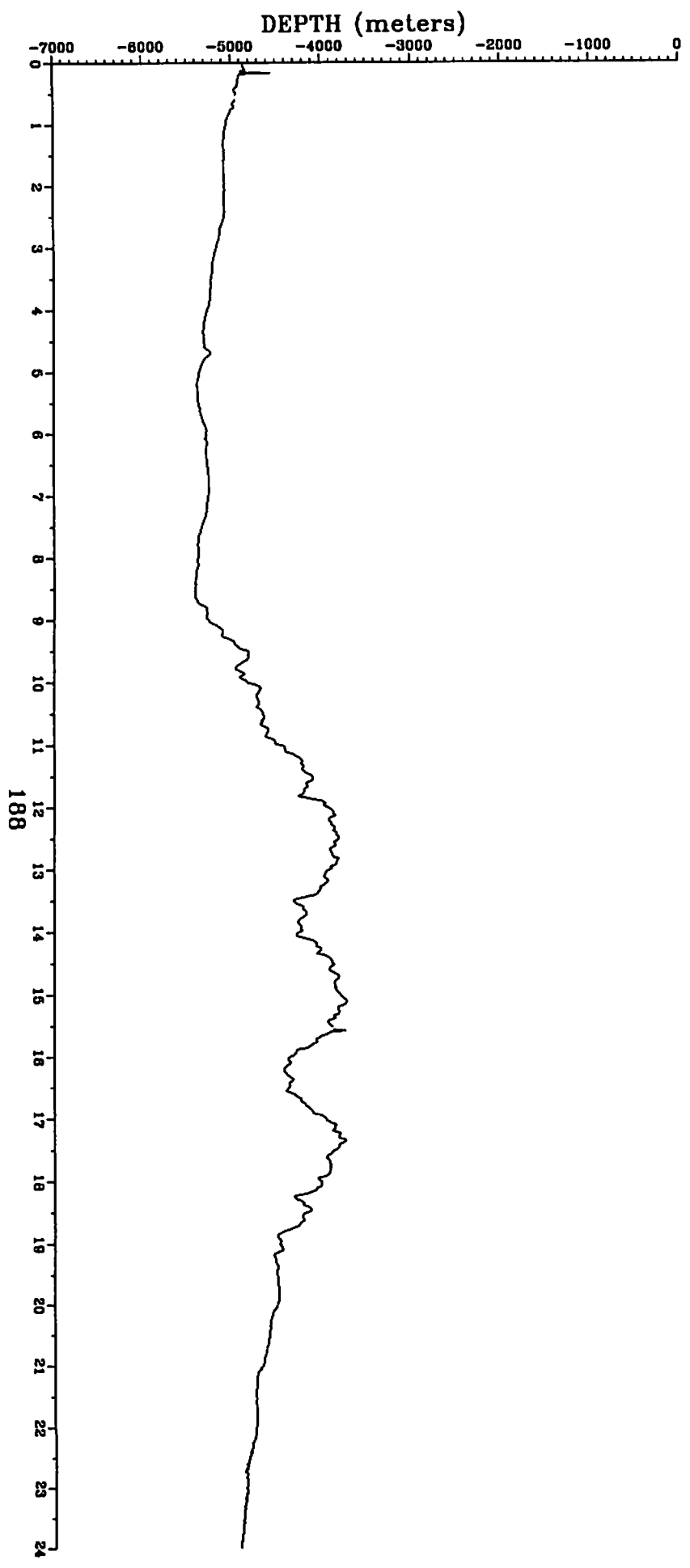


186

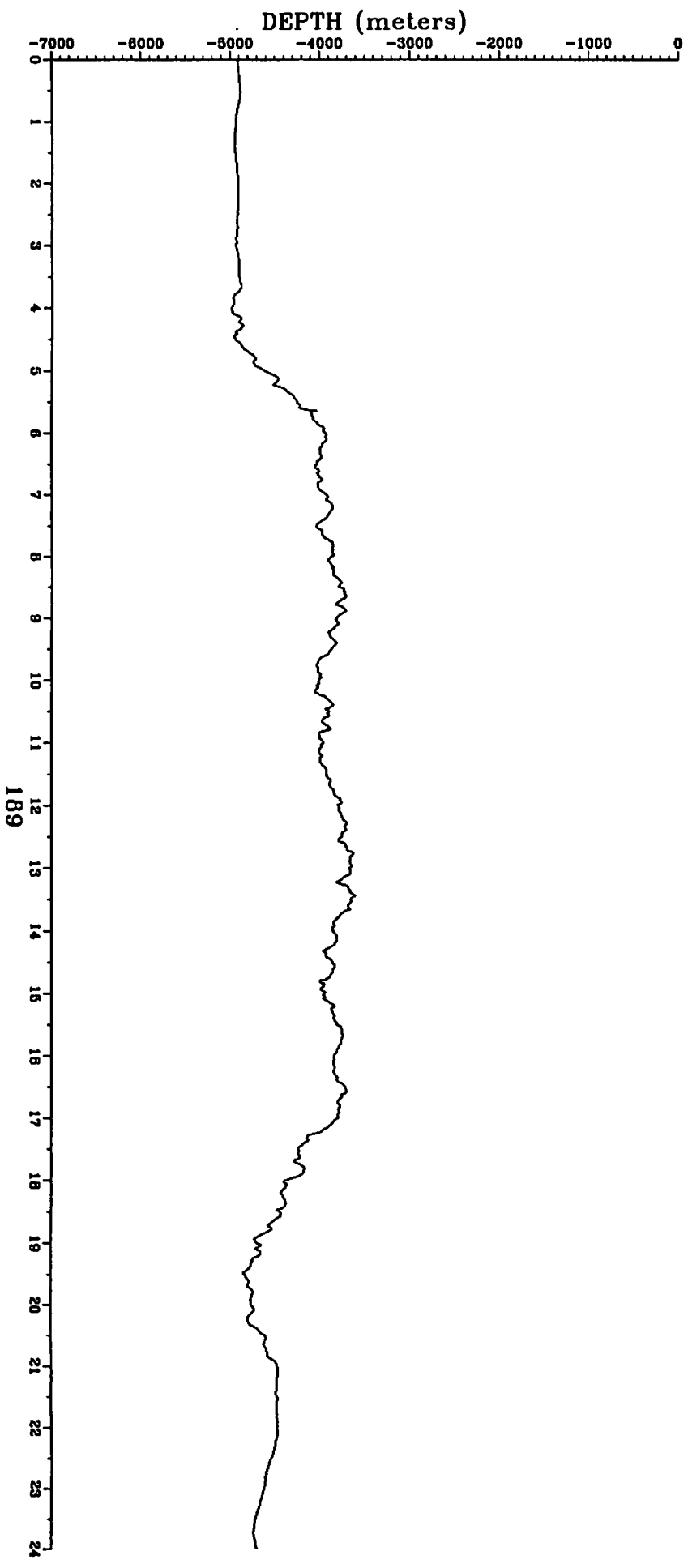
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n187



C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n188

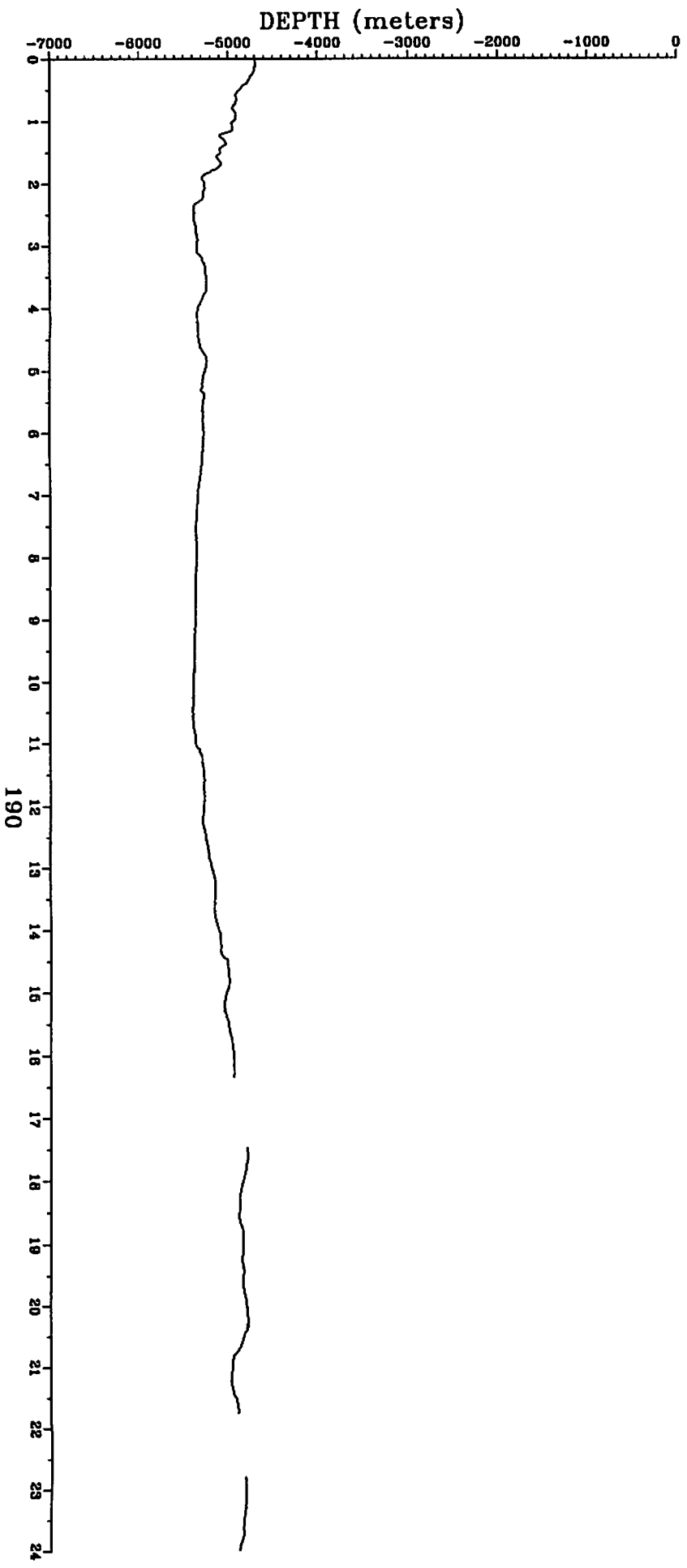


C2907 Barbados--Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n189

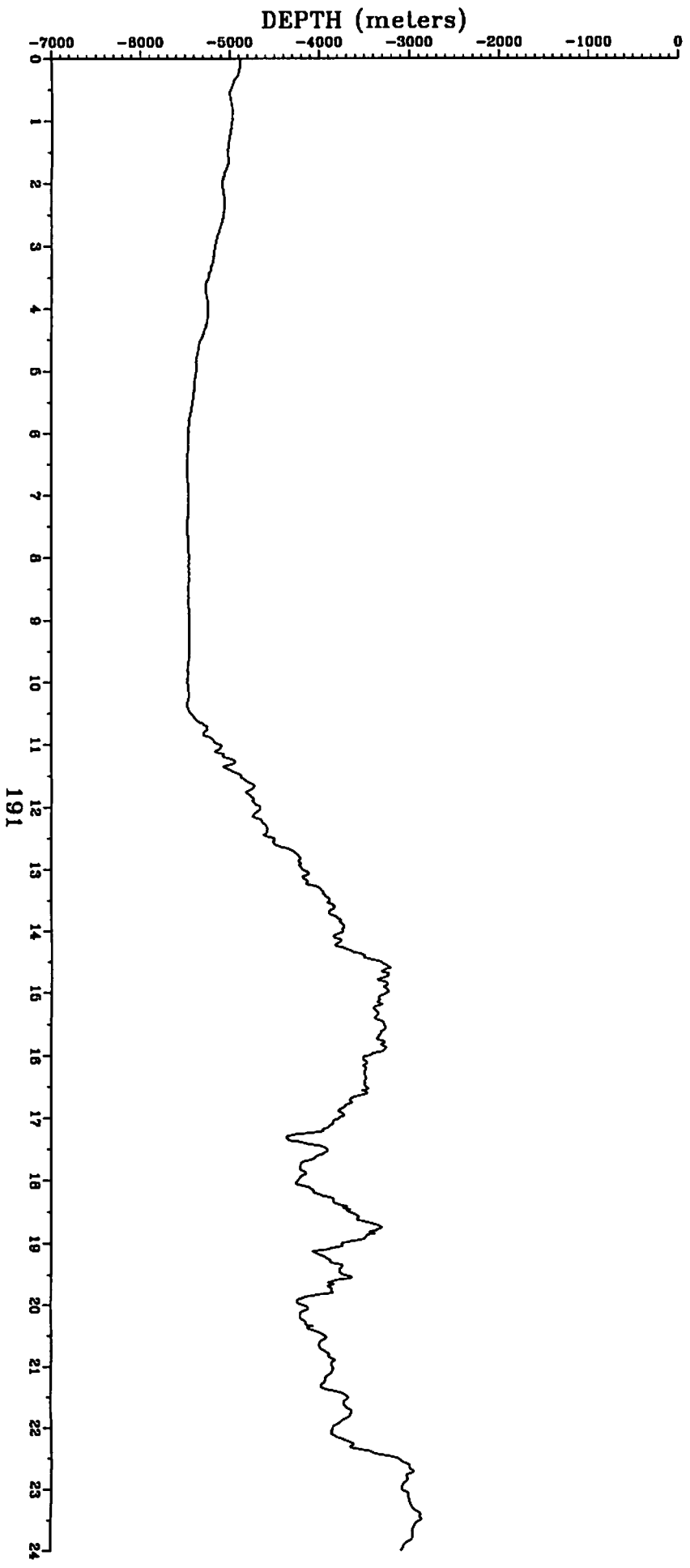


189

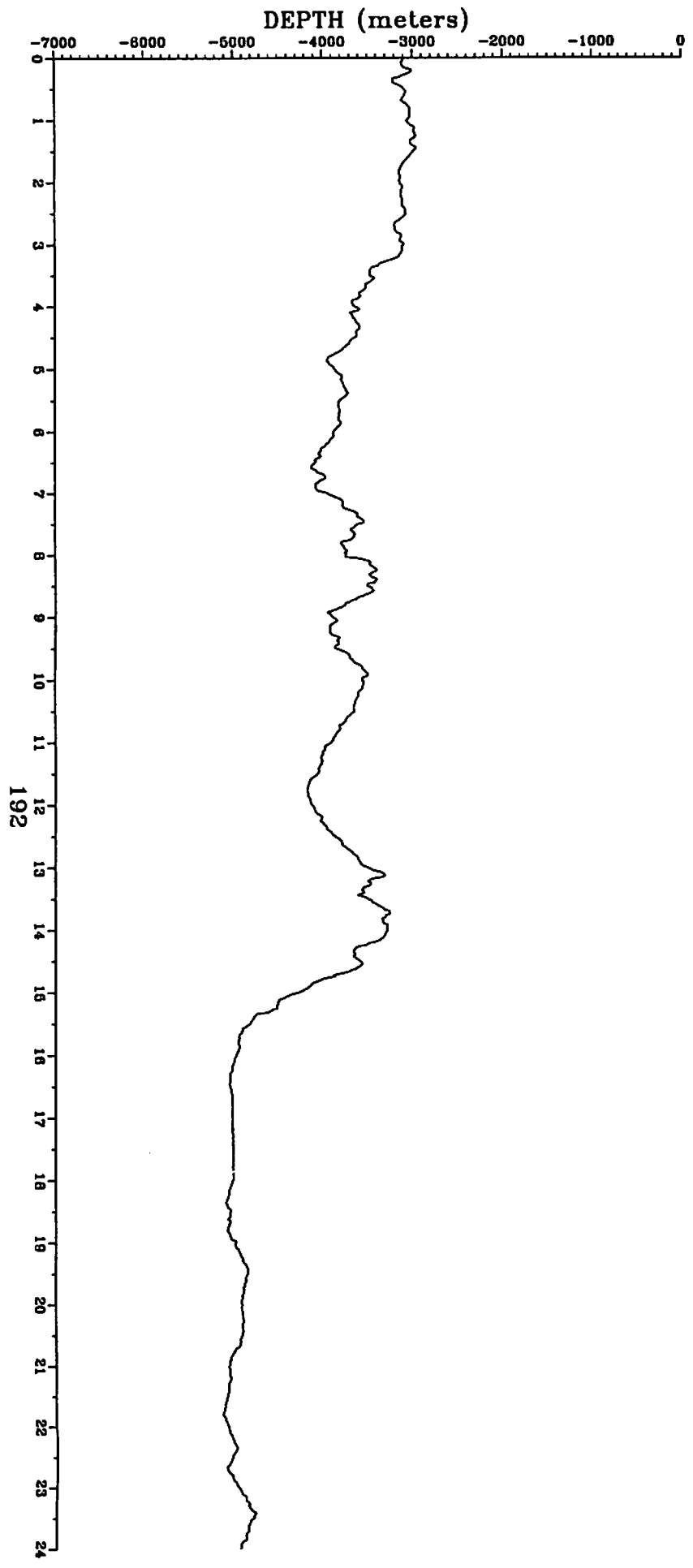
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n190



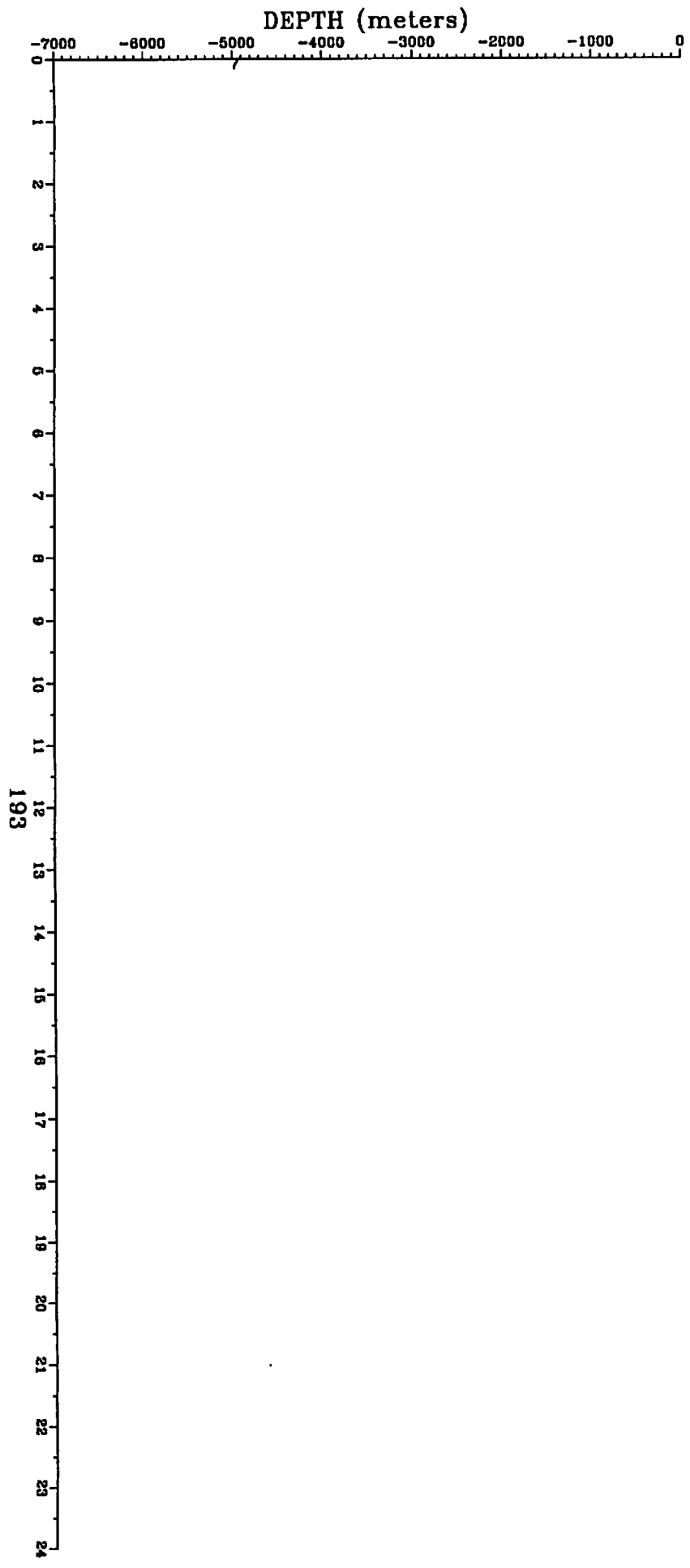
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n191



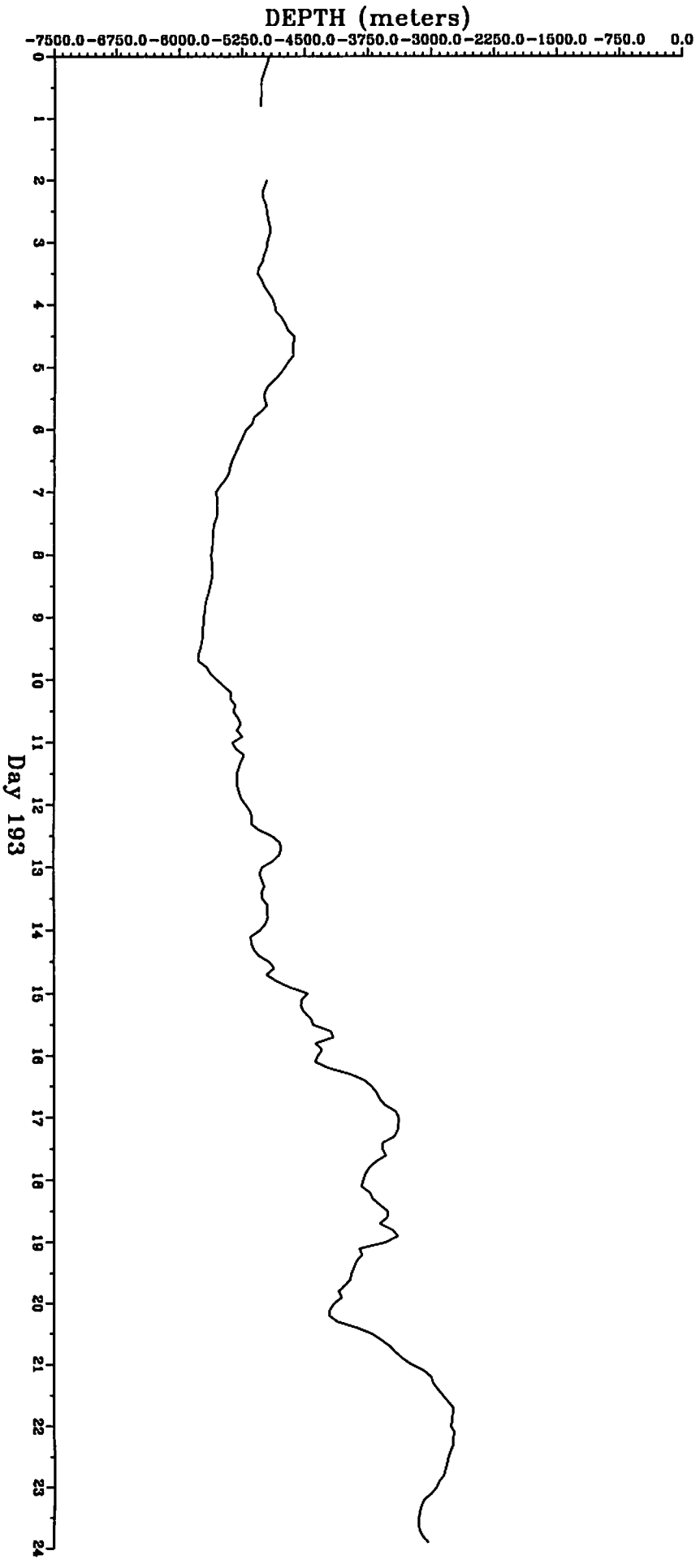
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n192



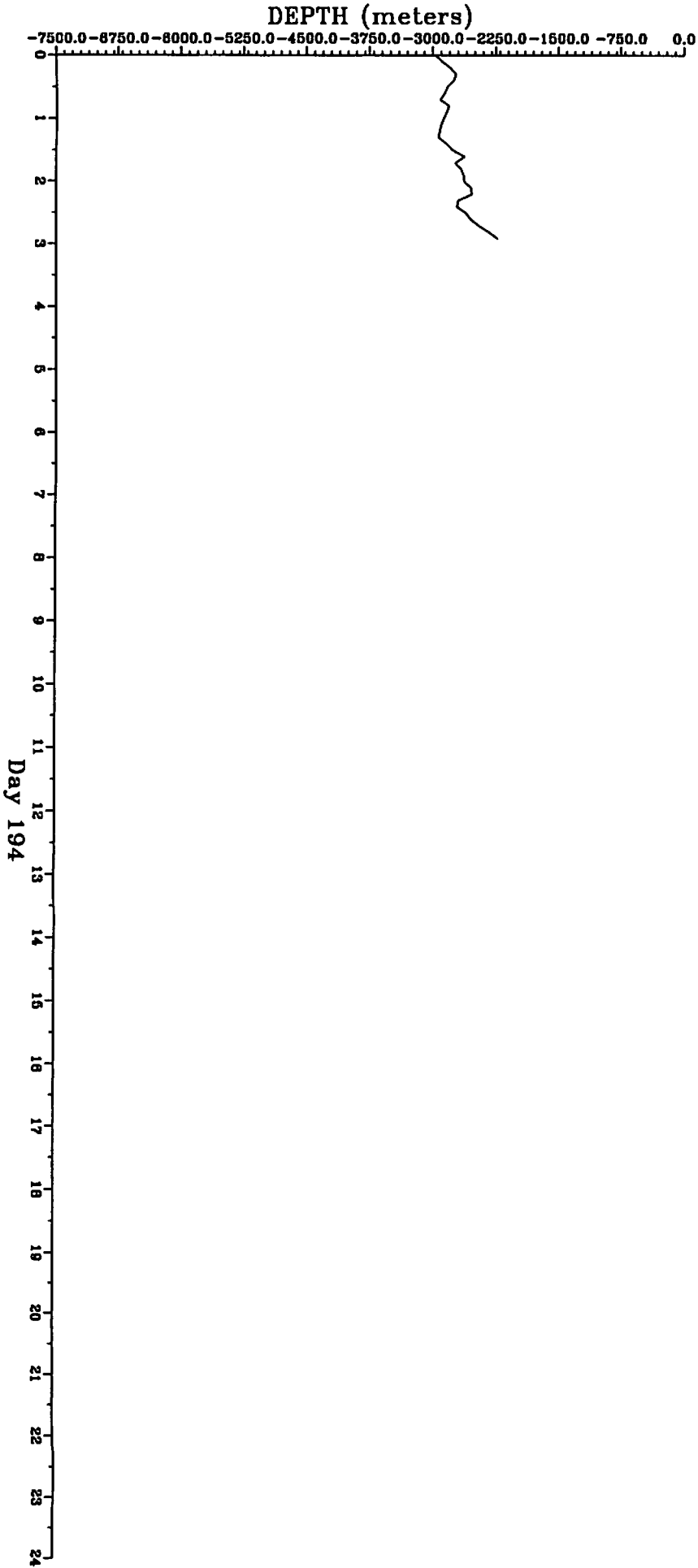
C2907 Barbados-Puerto Rico Seabeam Center Beam Interpolated Depth at 00 sec.
Data file: cb.n193



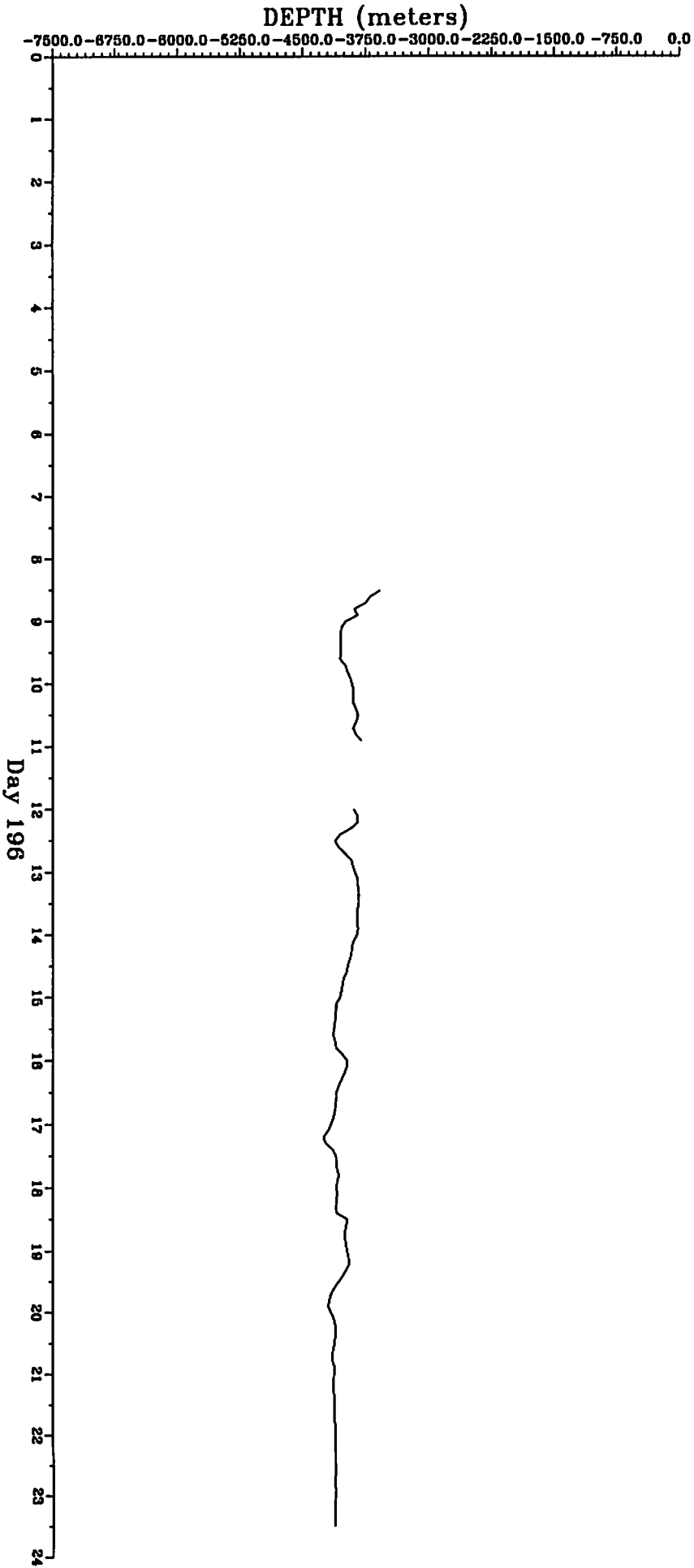
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n193



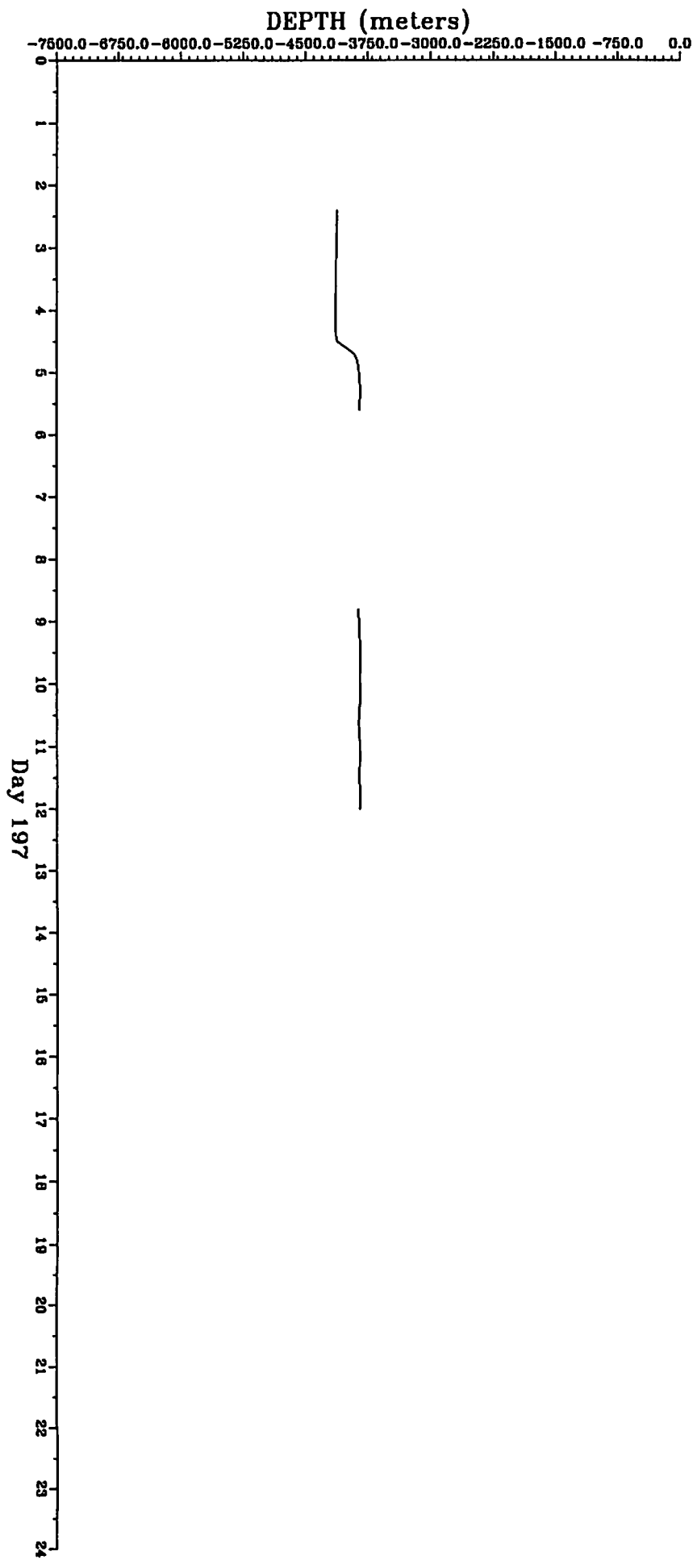
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n194

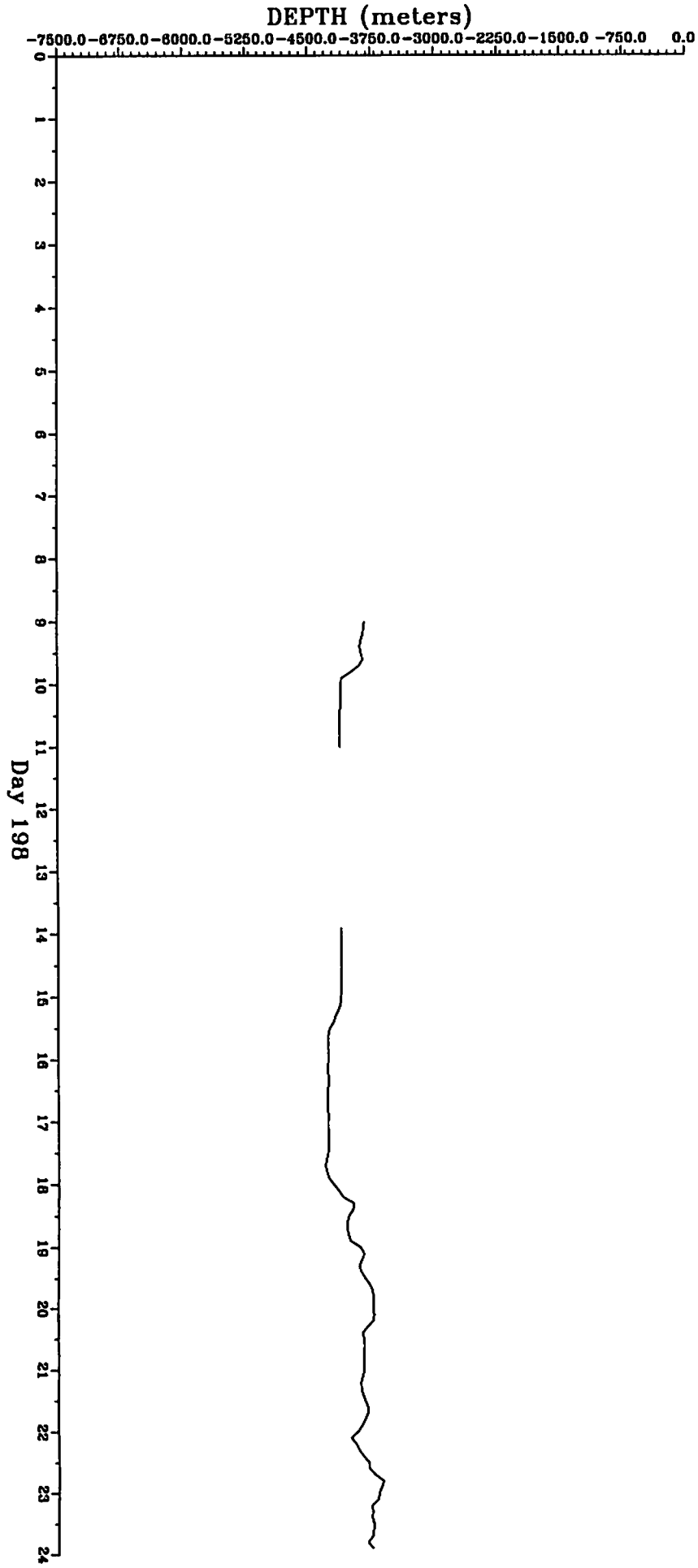


C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n196



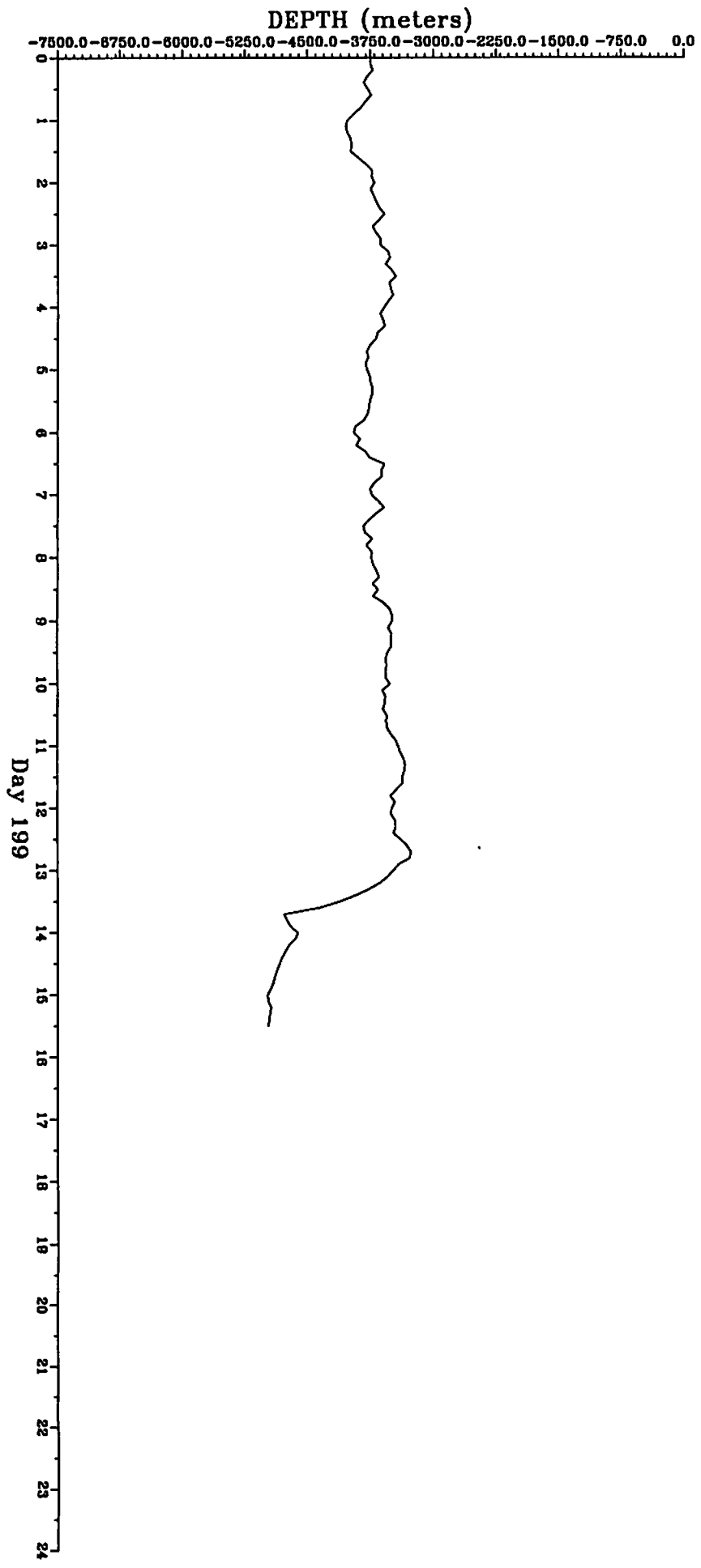
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n197



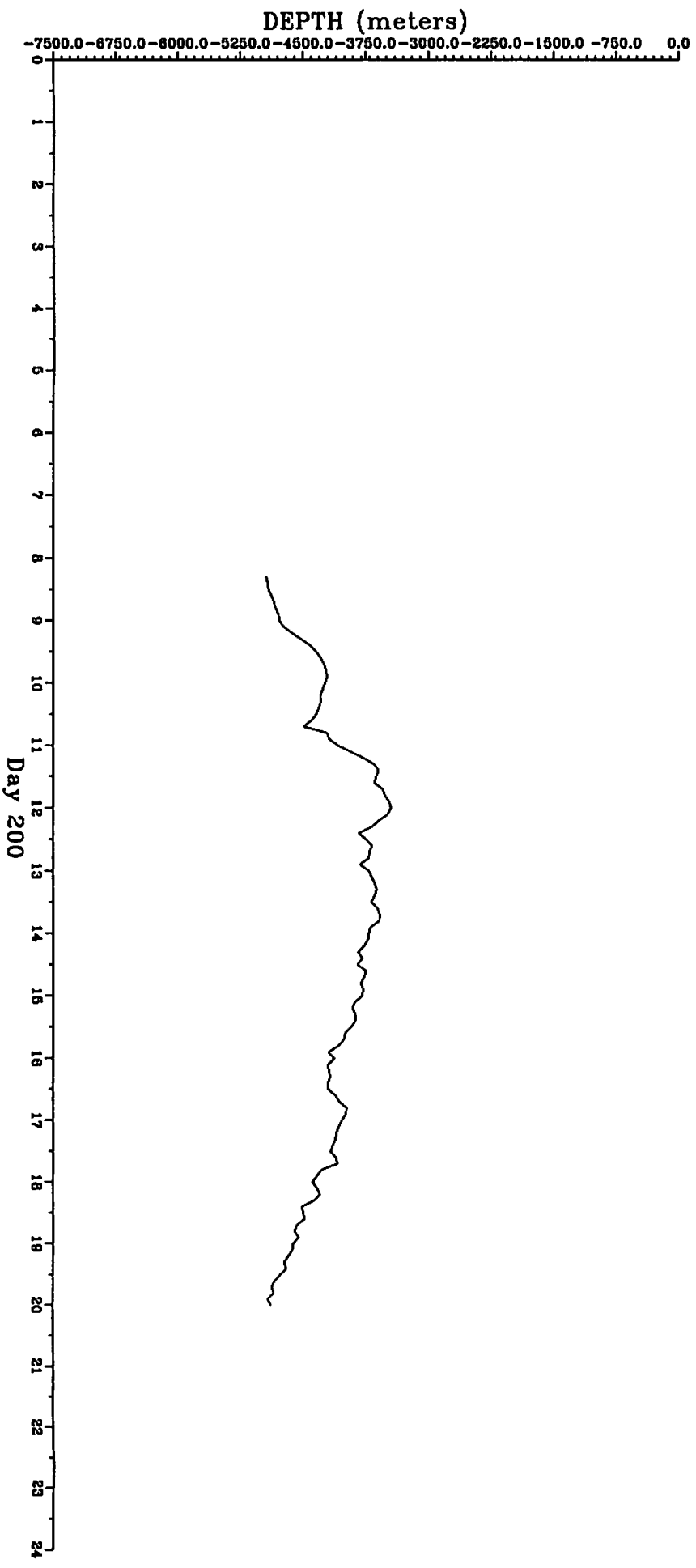


C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n198

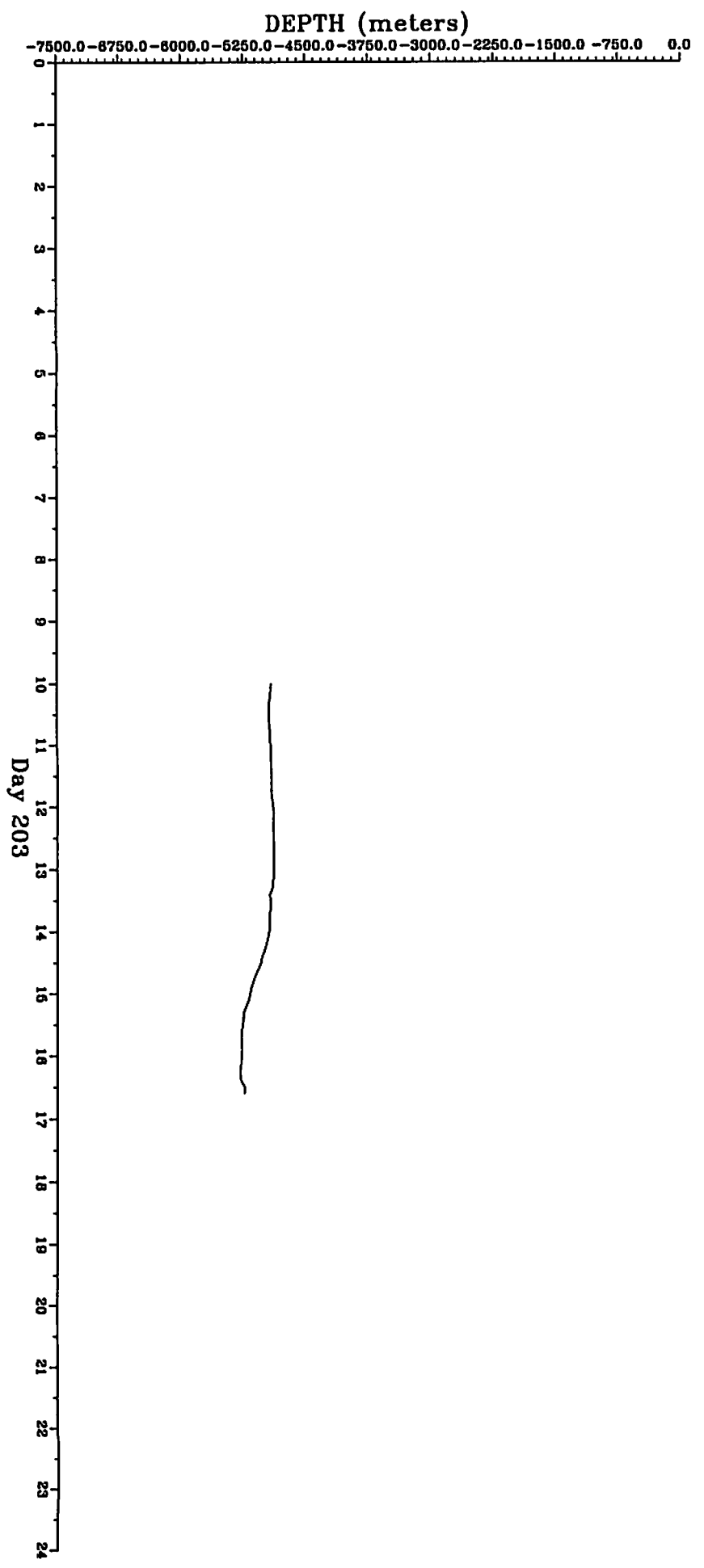
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: btm199

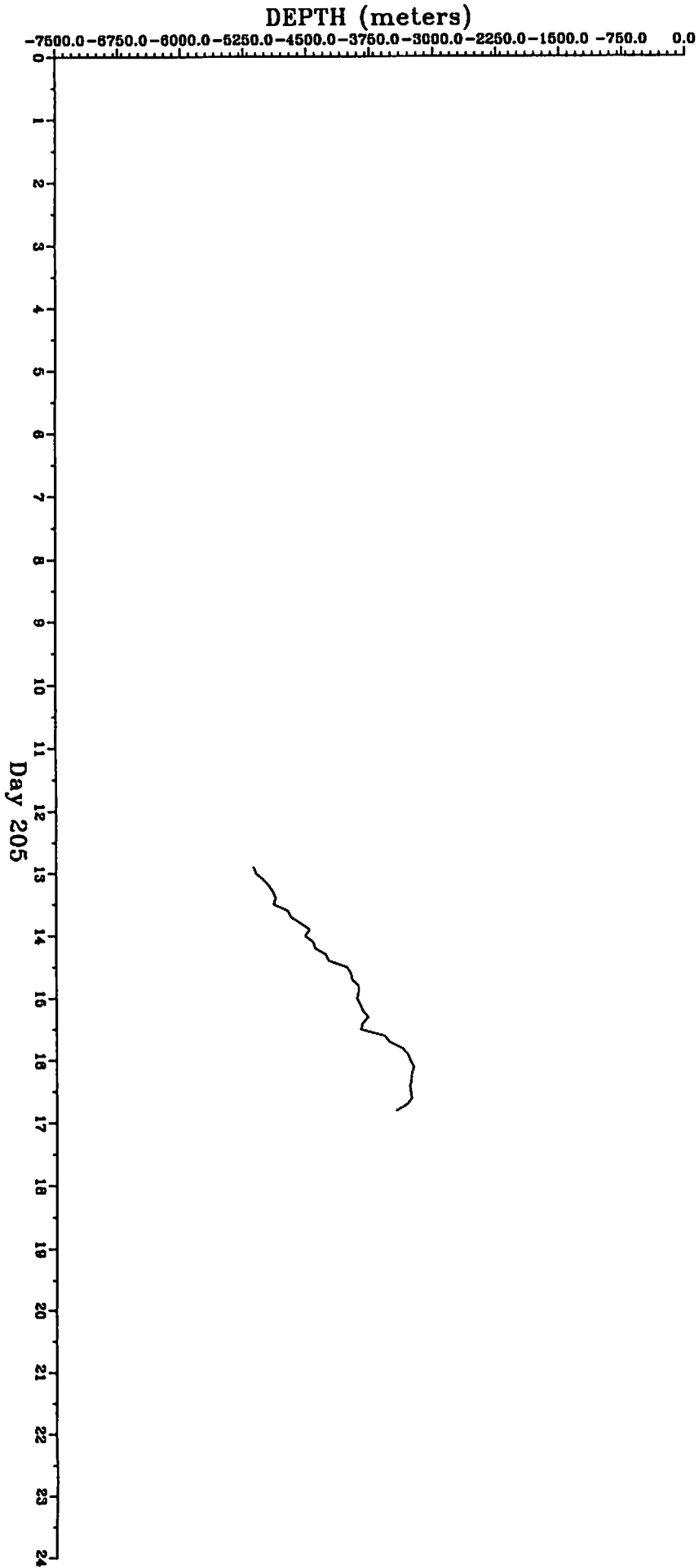


C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bl.n200



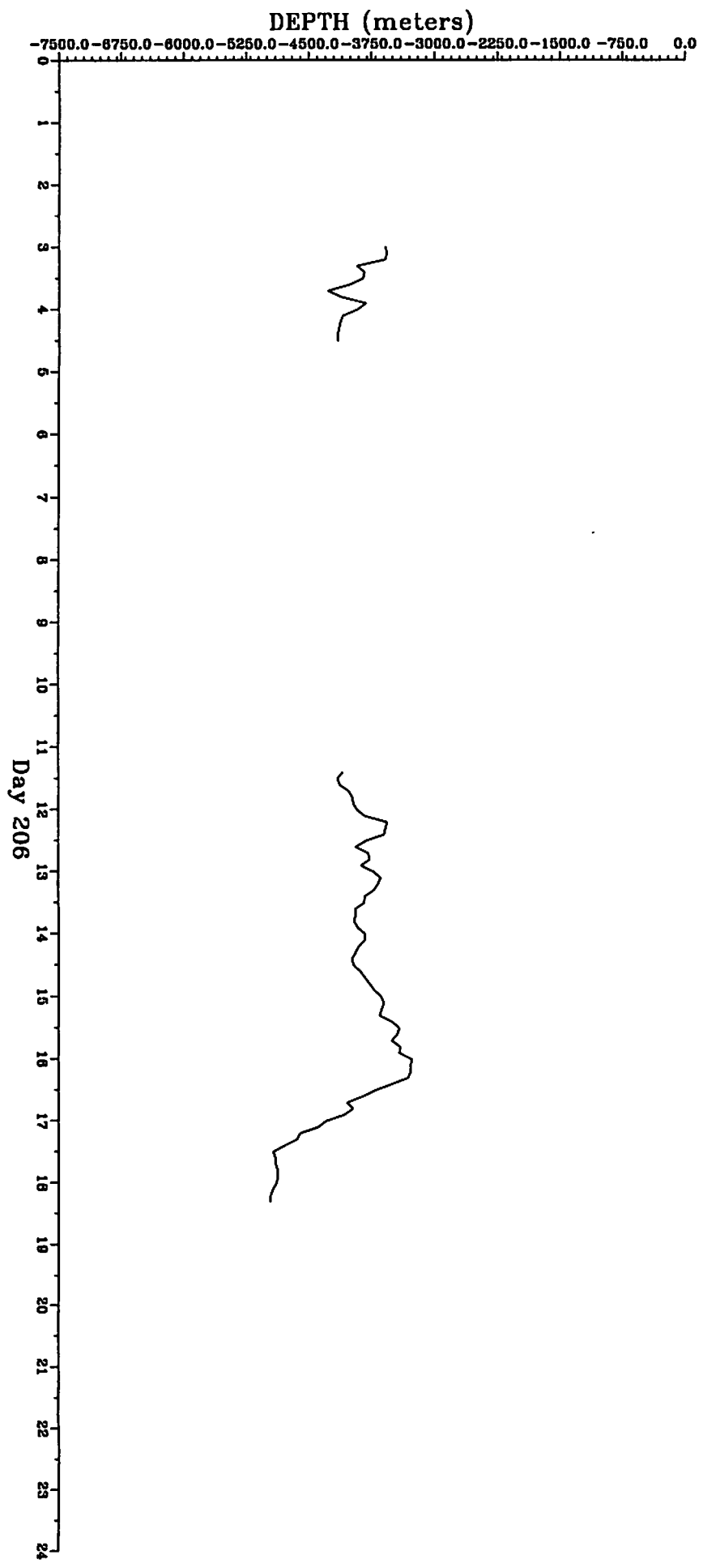
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n203



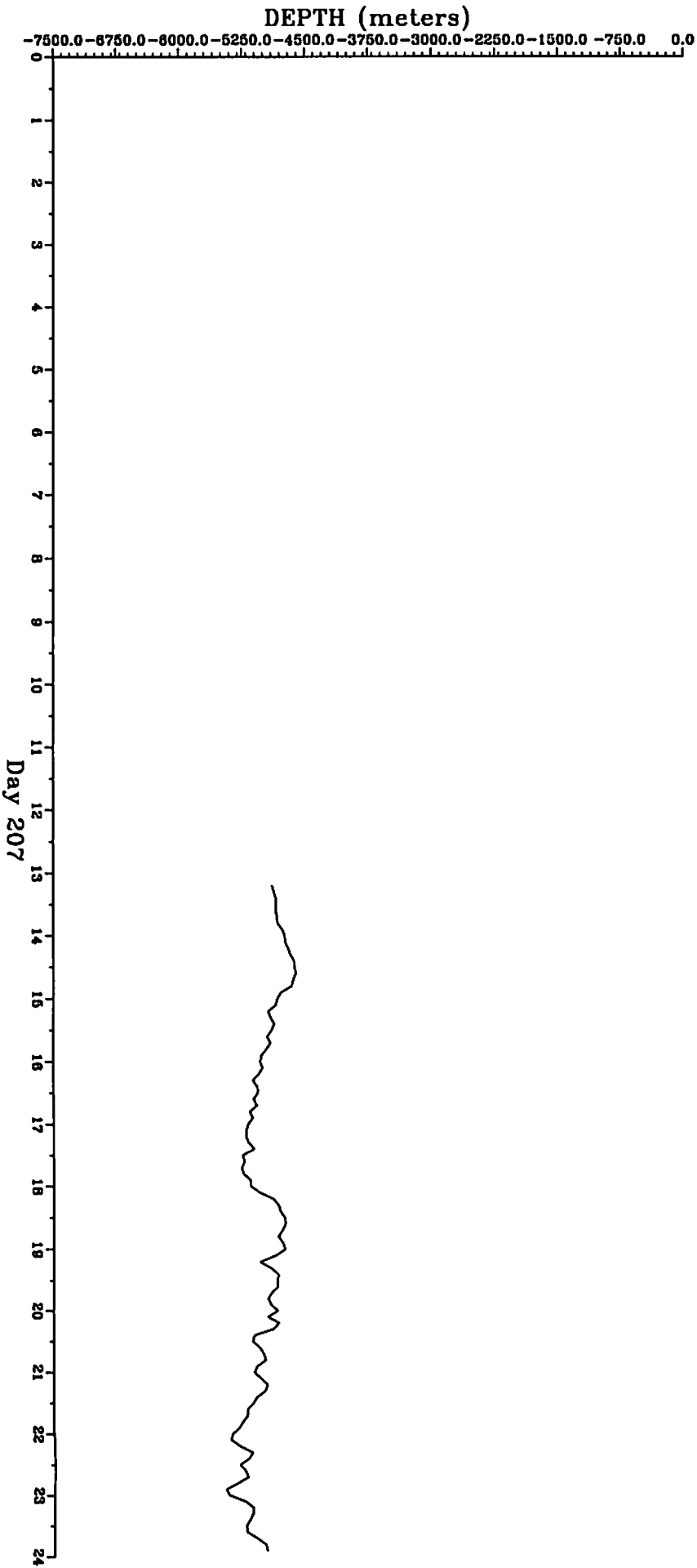


C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n205

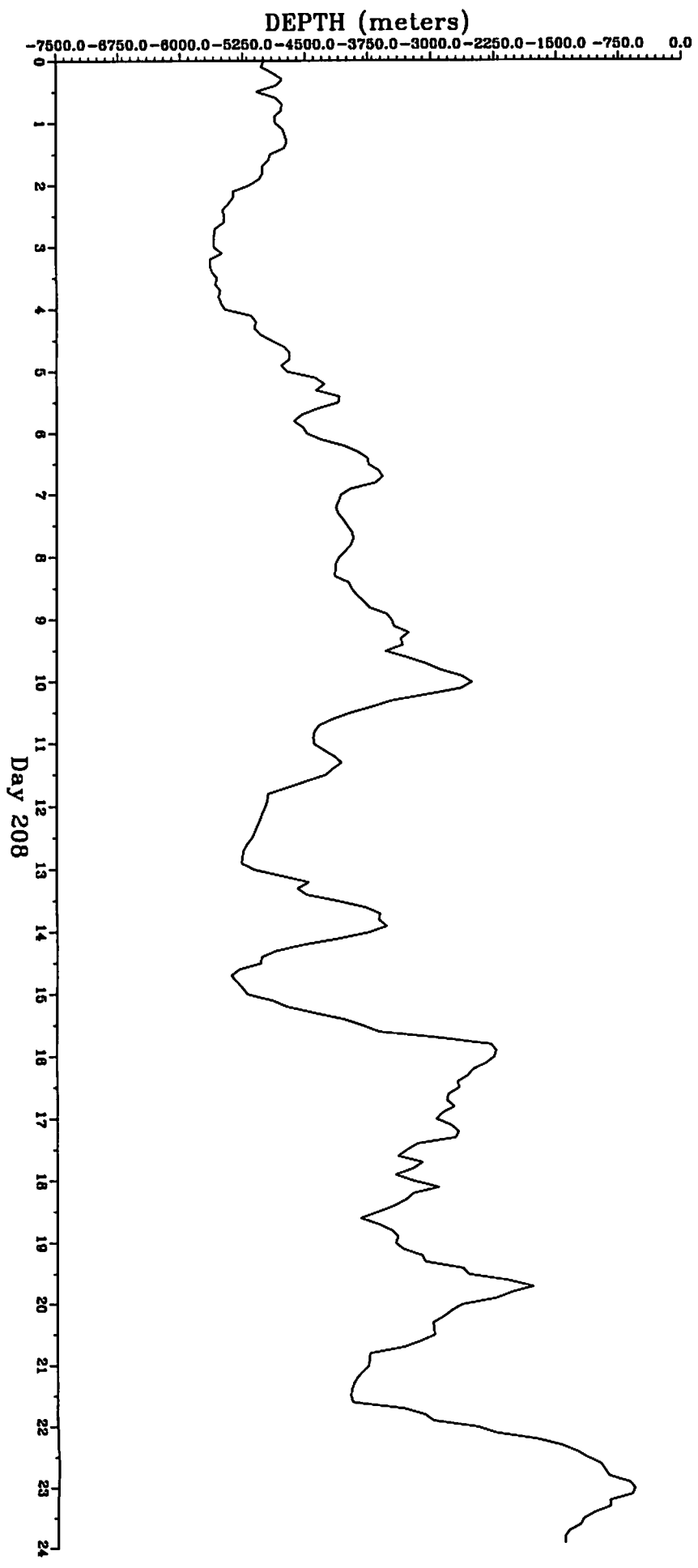
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bl.n206

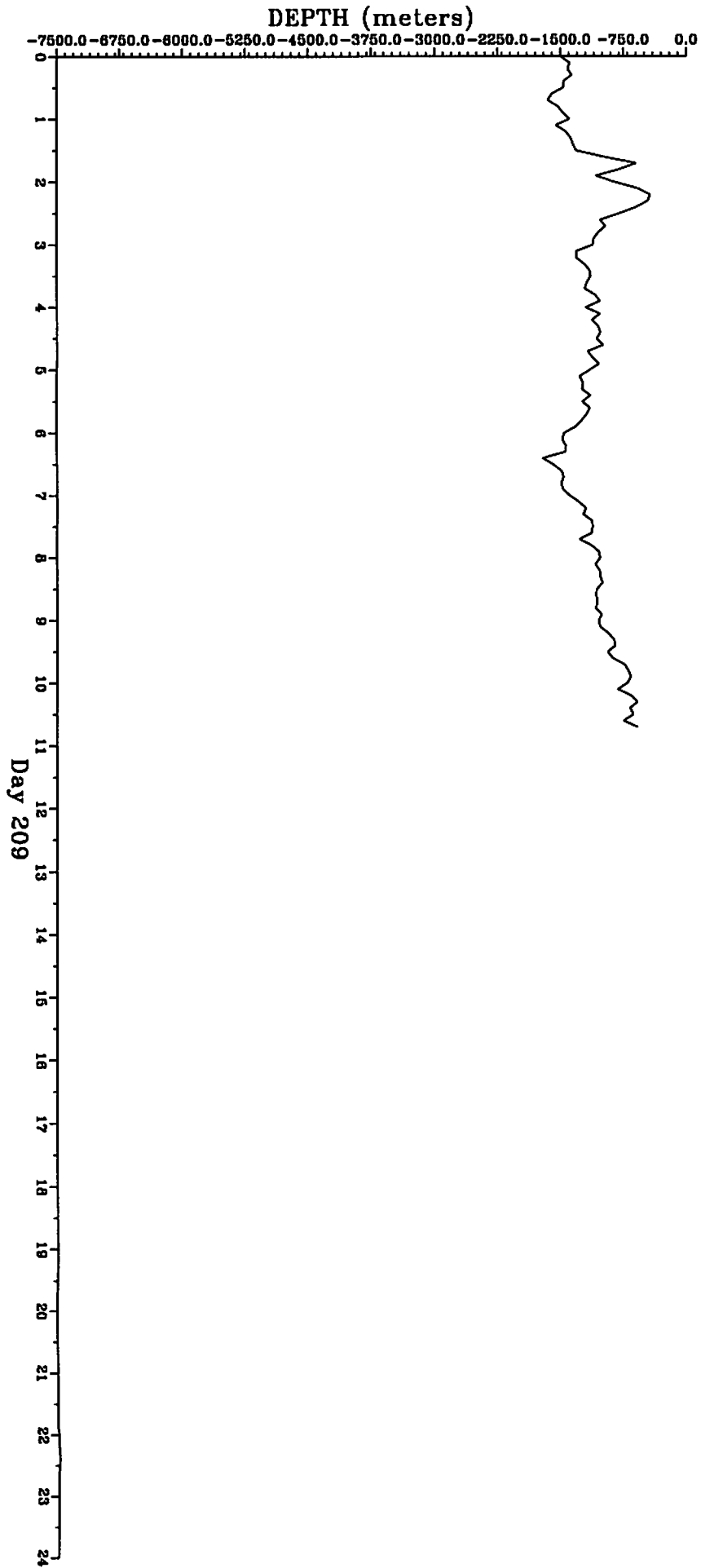


C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n207



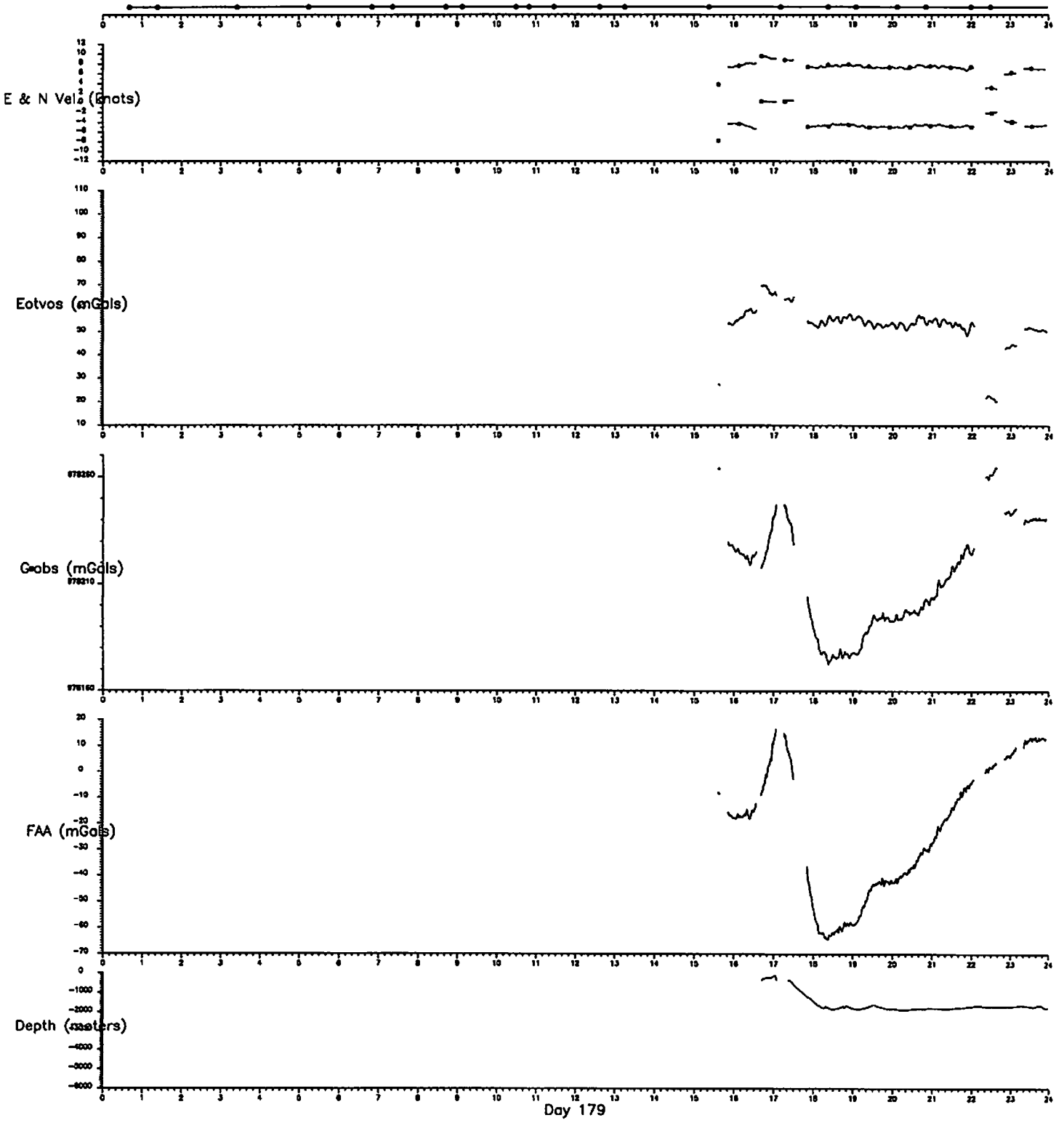
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bt.n208





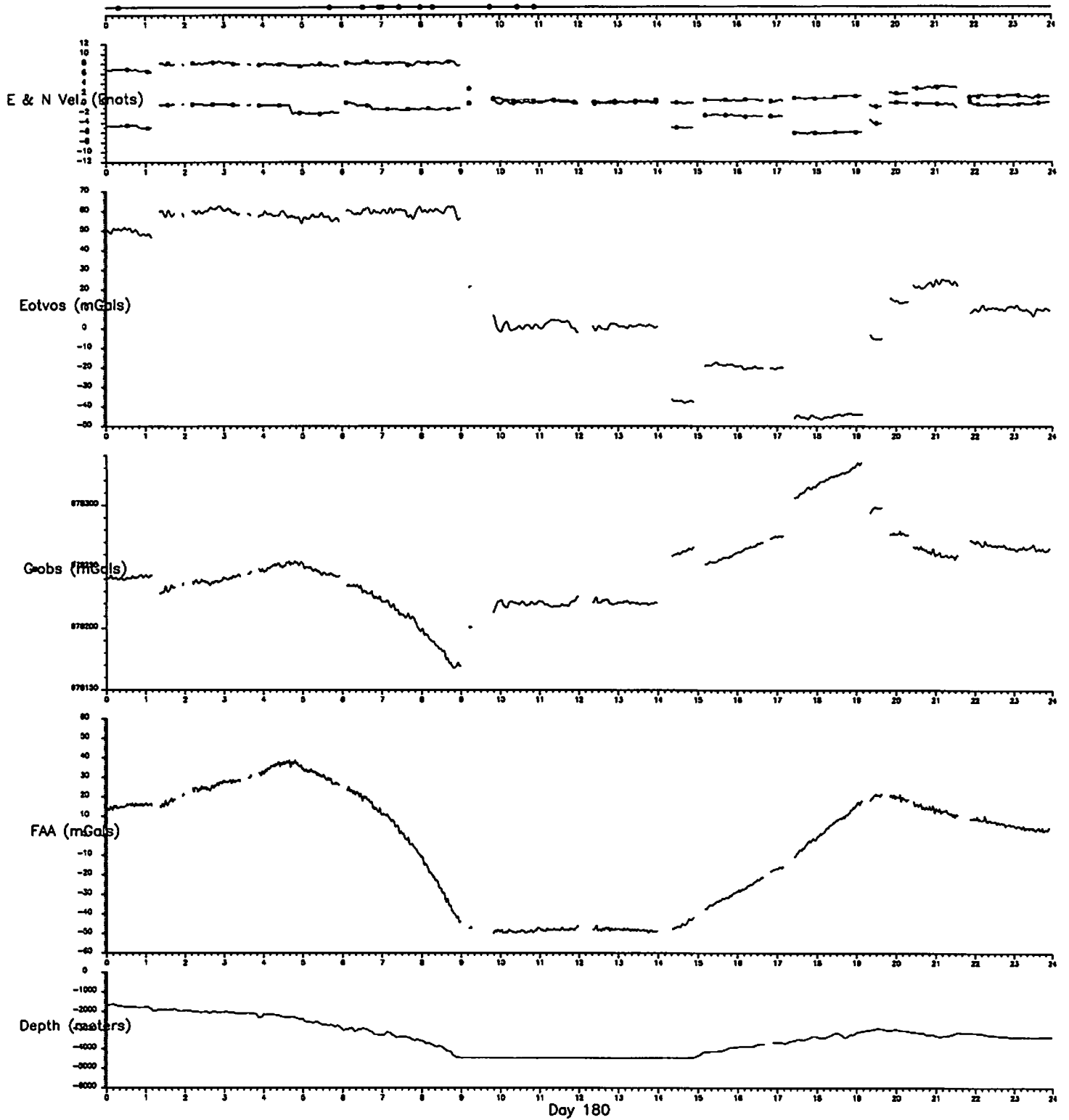
C2907 Barbados-Puerto Rico PDR Depths at 6 min. Interval
Data file: bl.n209

C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n179 Bathymetry file: cb.i179 Navigation file: n.179



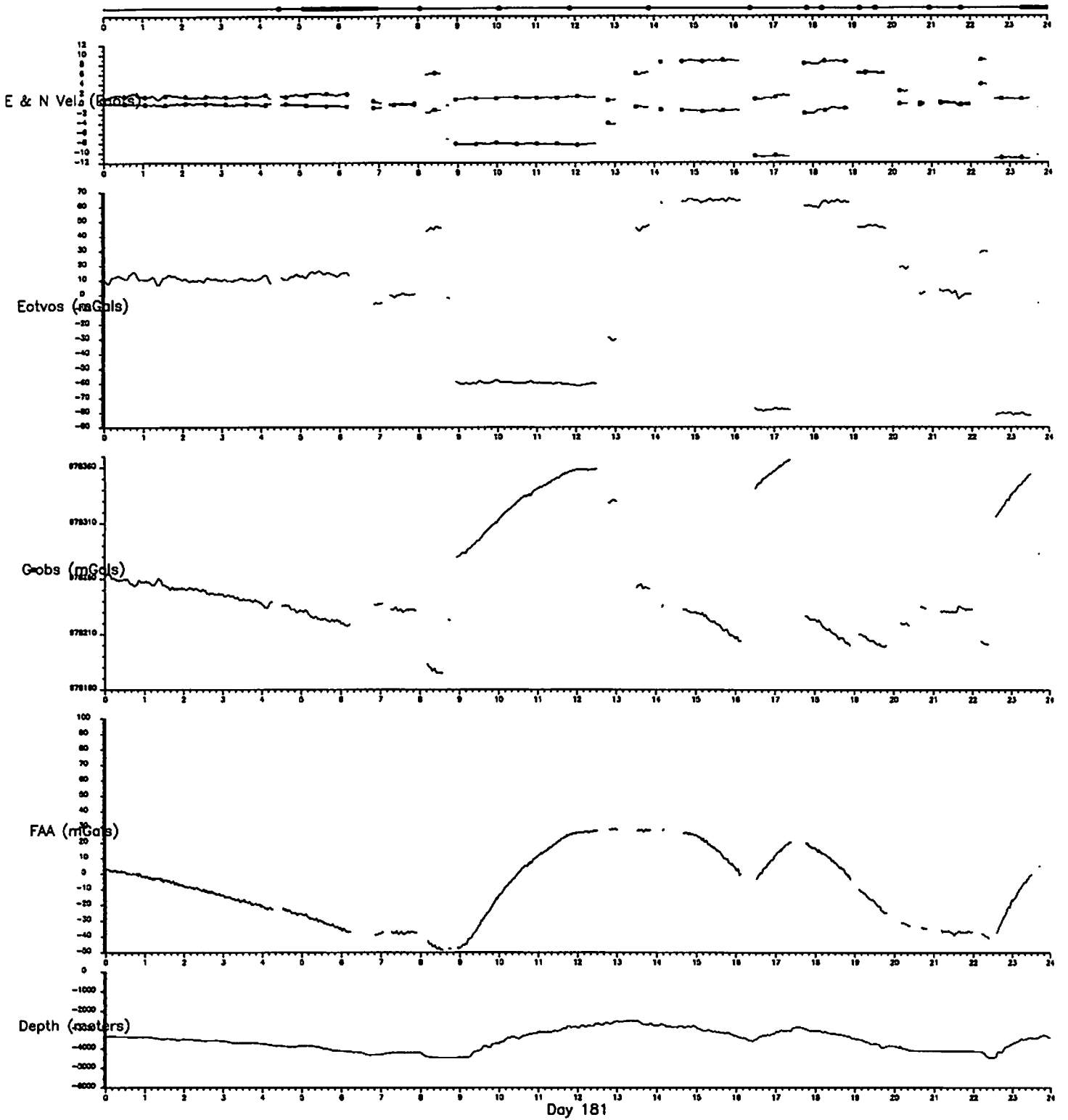
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

Gravity file: vLn180 Bathymetry file: cb.i180 Navigation file: n.180



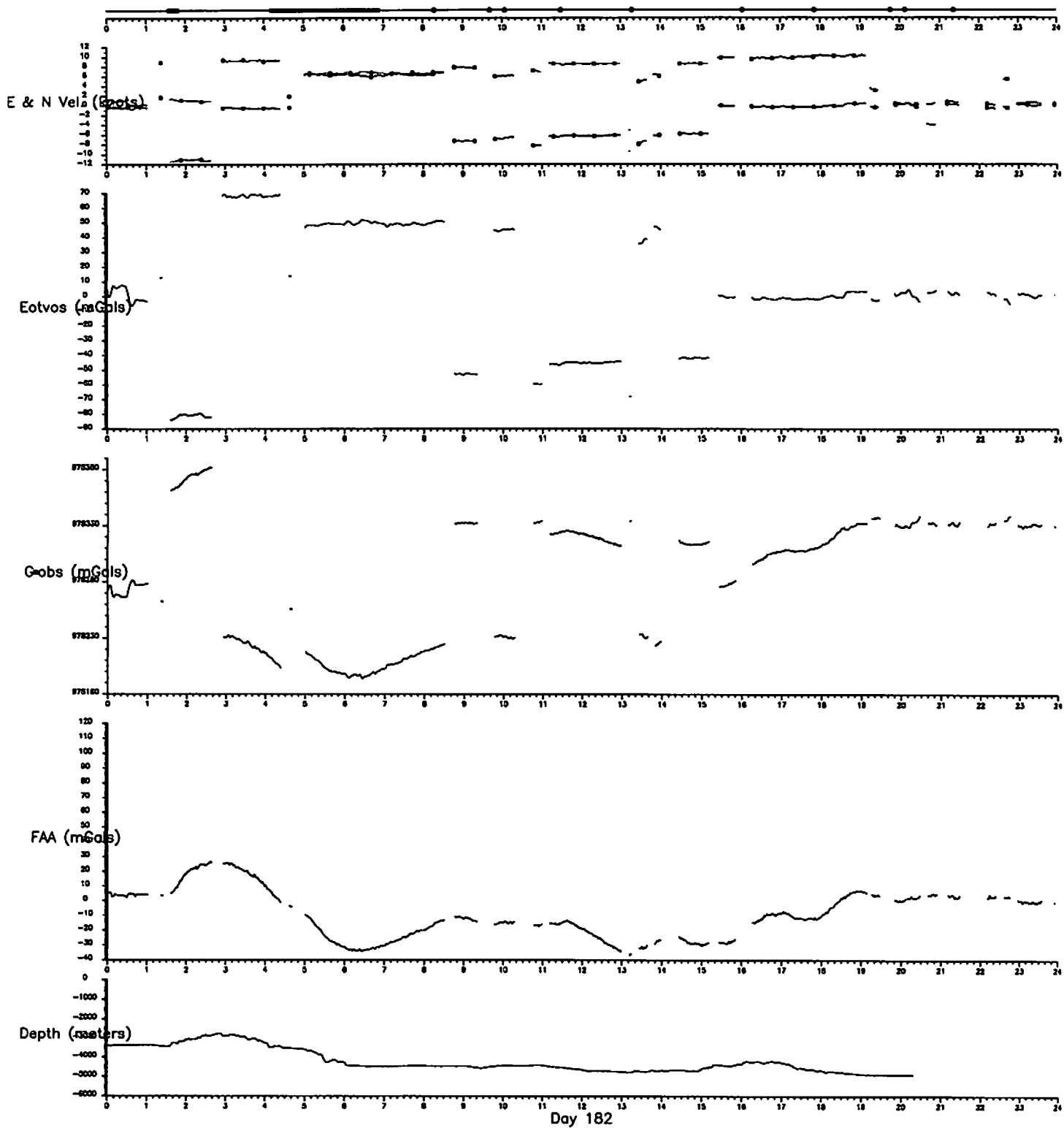
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

Gravity file: vt.n181 Bathymetry file: cb.1181 Navigation file: n.181



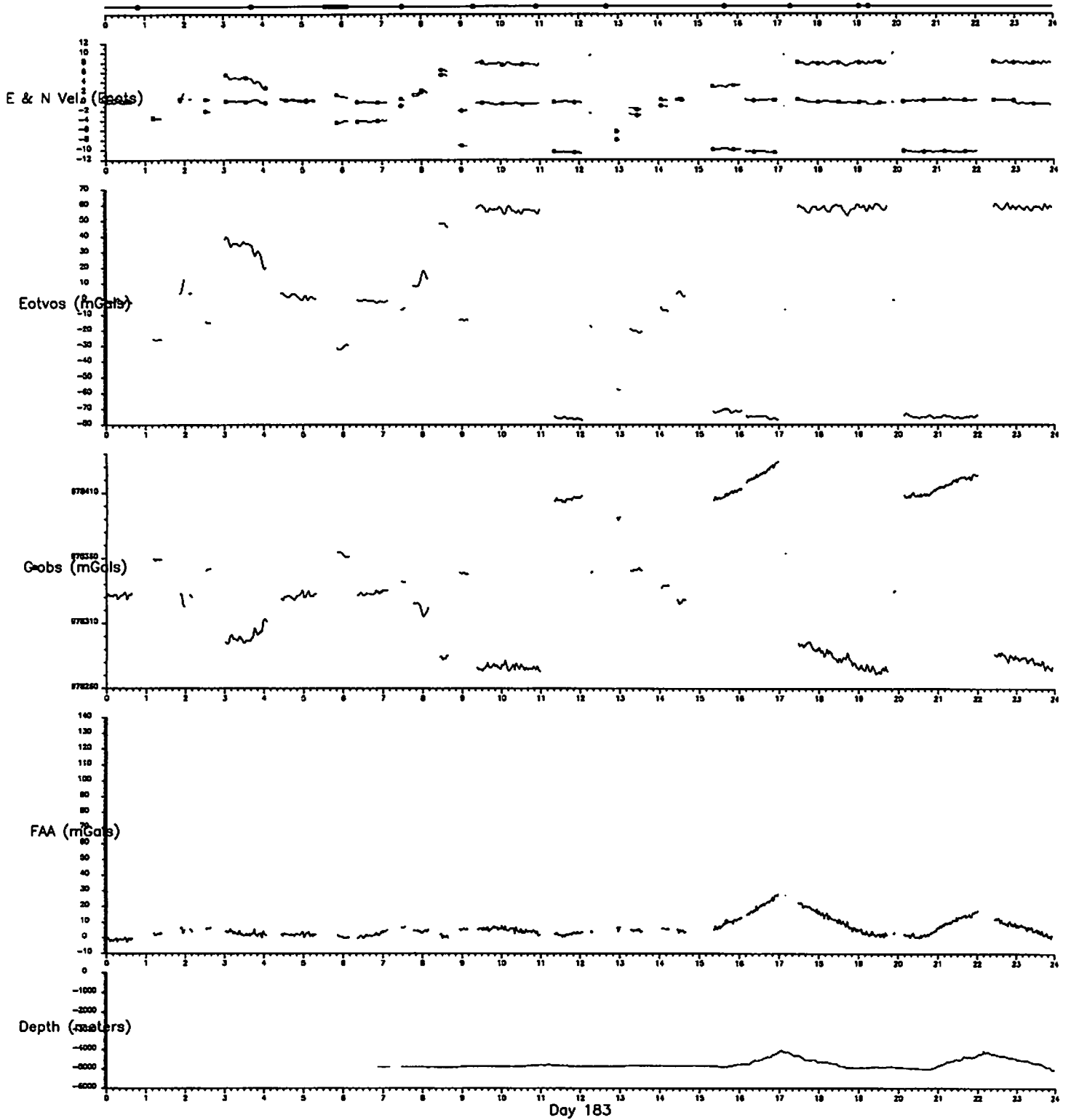
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

Gravity file: vt.n182 Bathymetry file: cb.i182 Navigation file: n.182

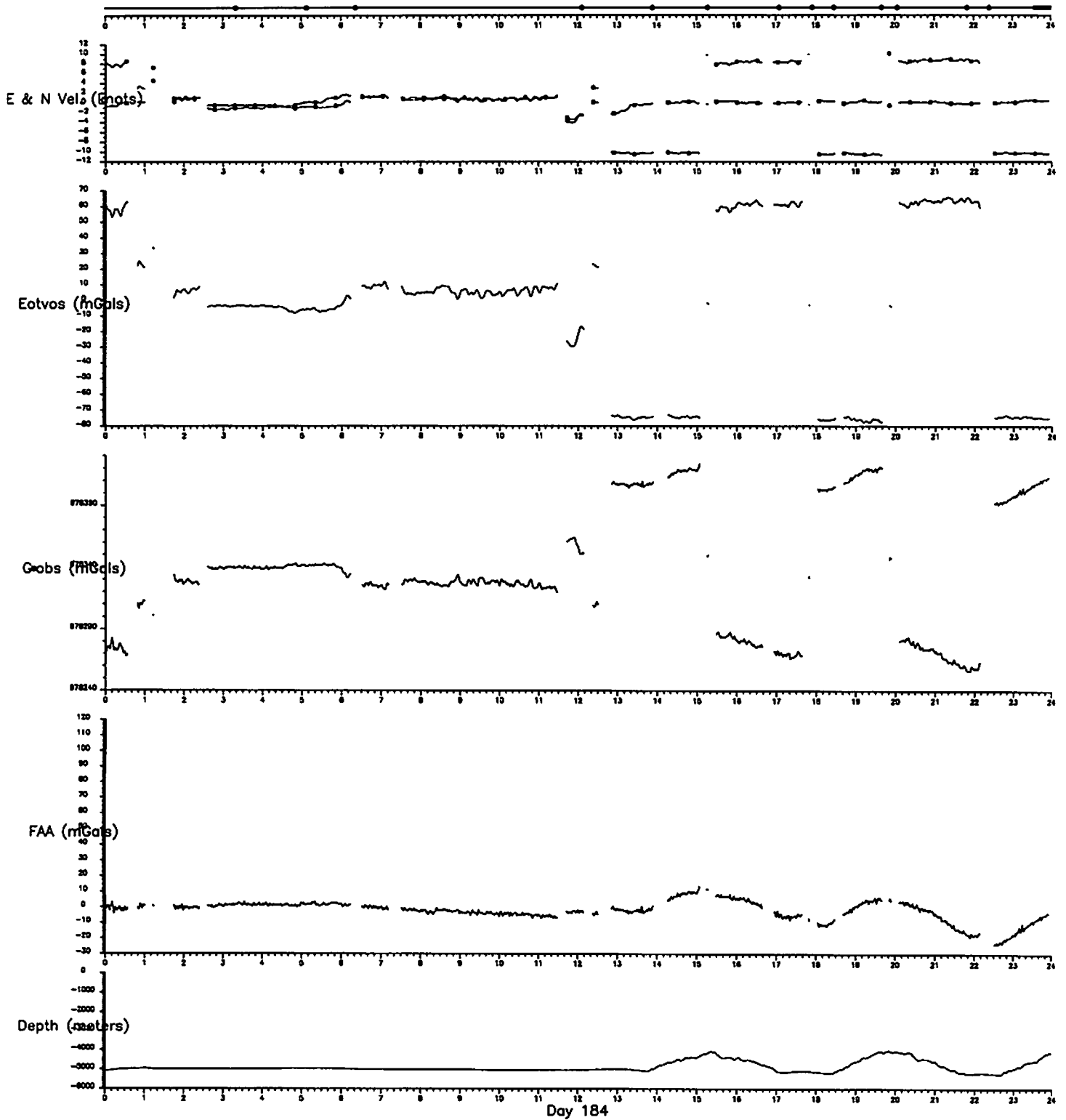


C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

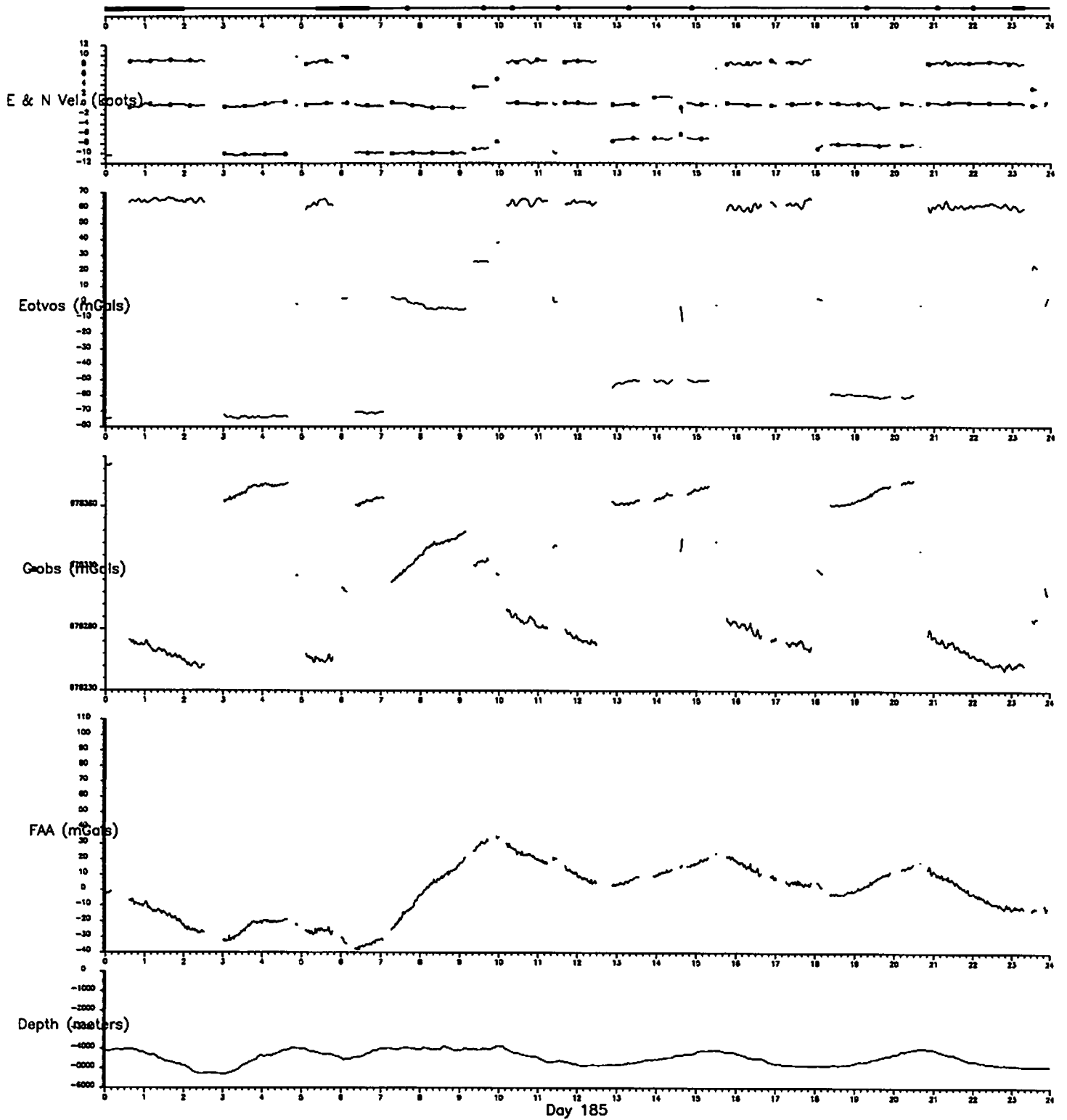
Gravity file: vt.n183 Bathymetry file: cb.i183 Navigation file: n.183



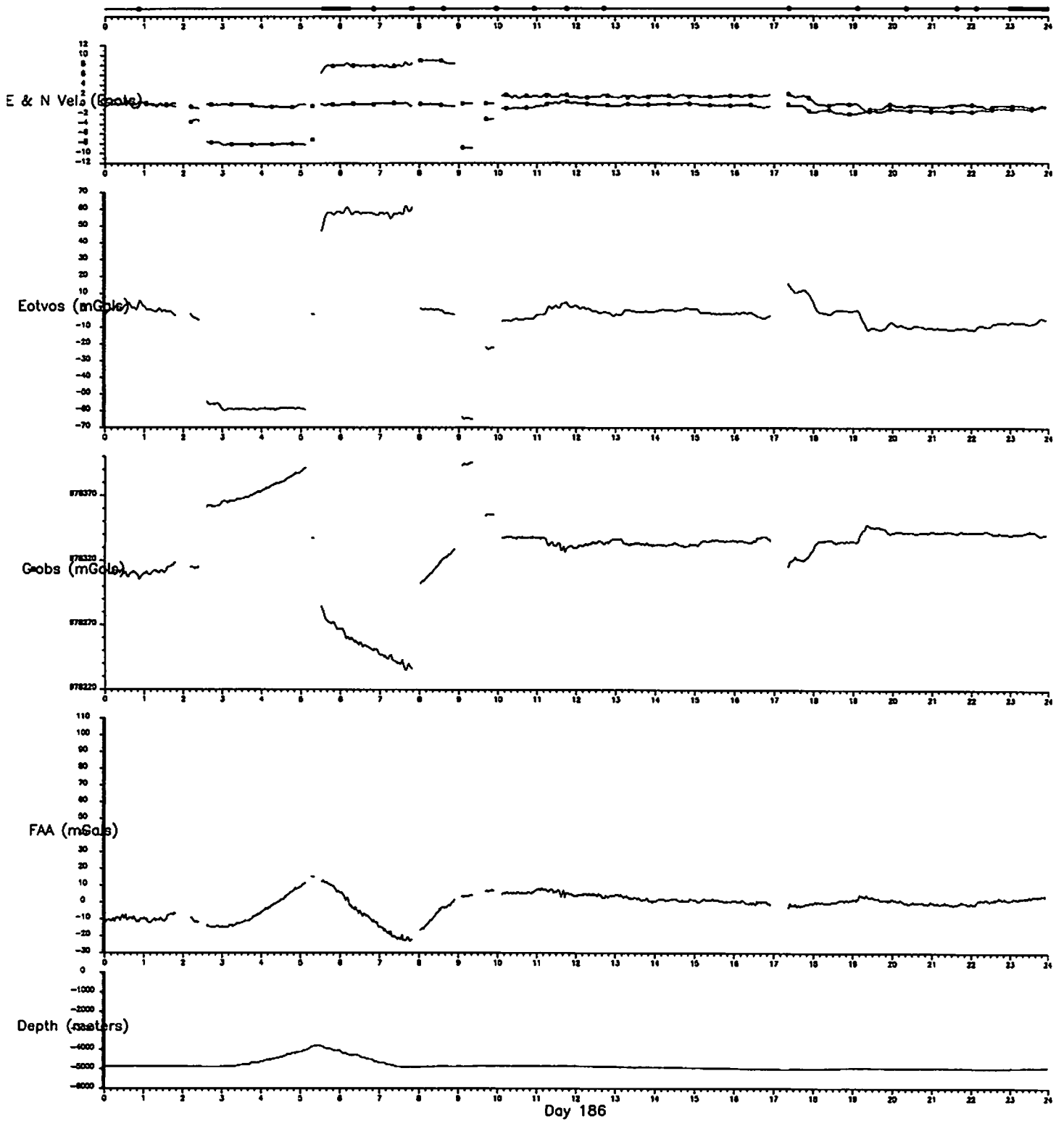
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n184 Bathymetry file: cb.i184 Navigation file: n.184



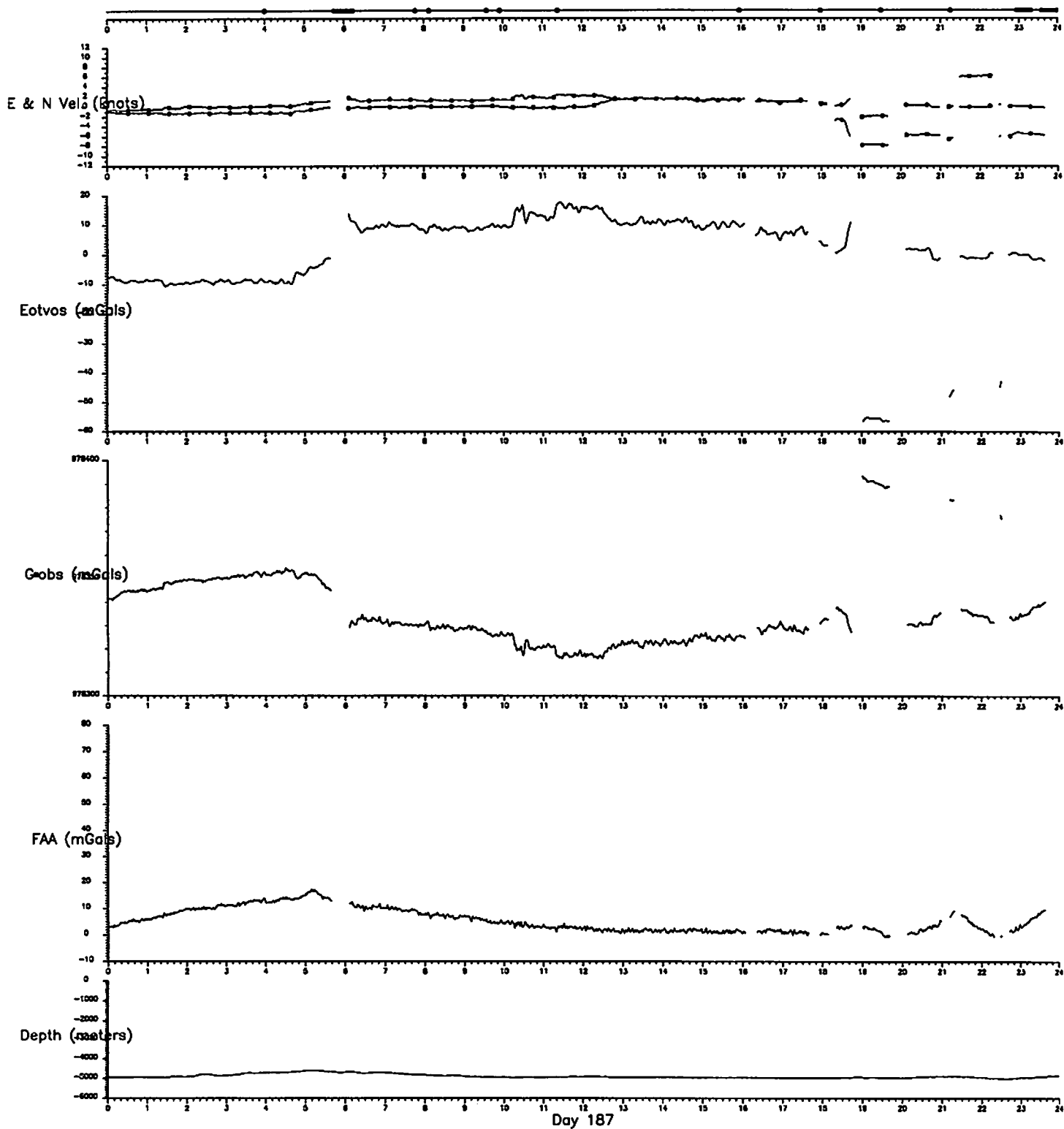
C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n185 Bathymetry file: cb.185 Navigation file: n.185



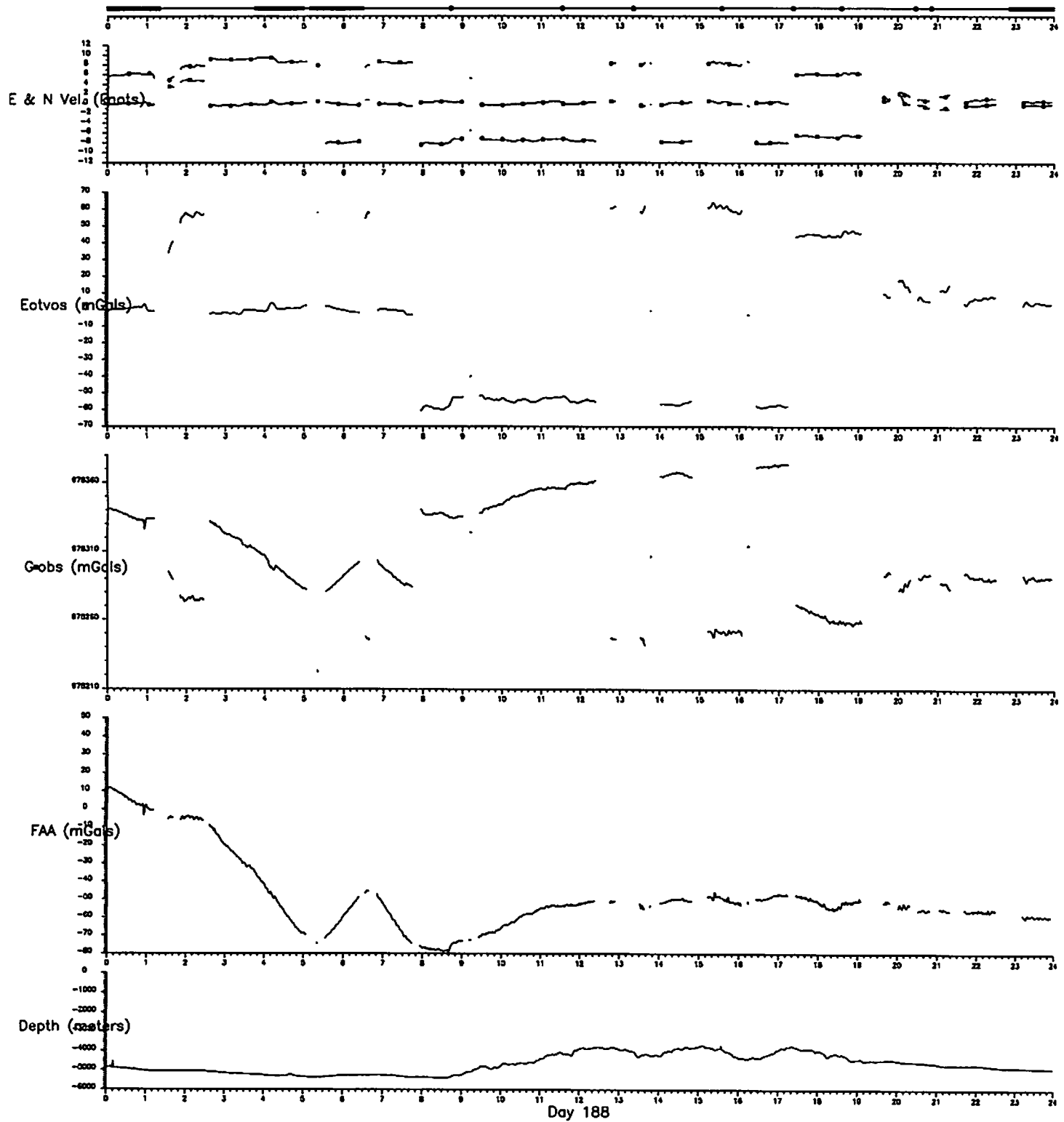
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n186 Bathymetry file: cb.i186 Navigation file: n.186



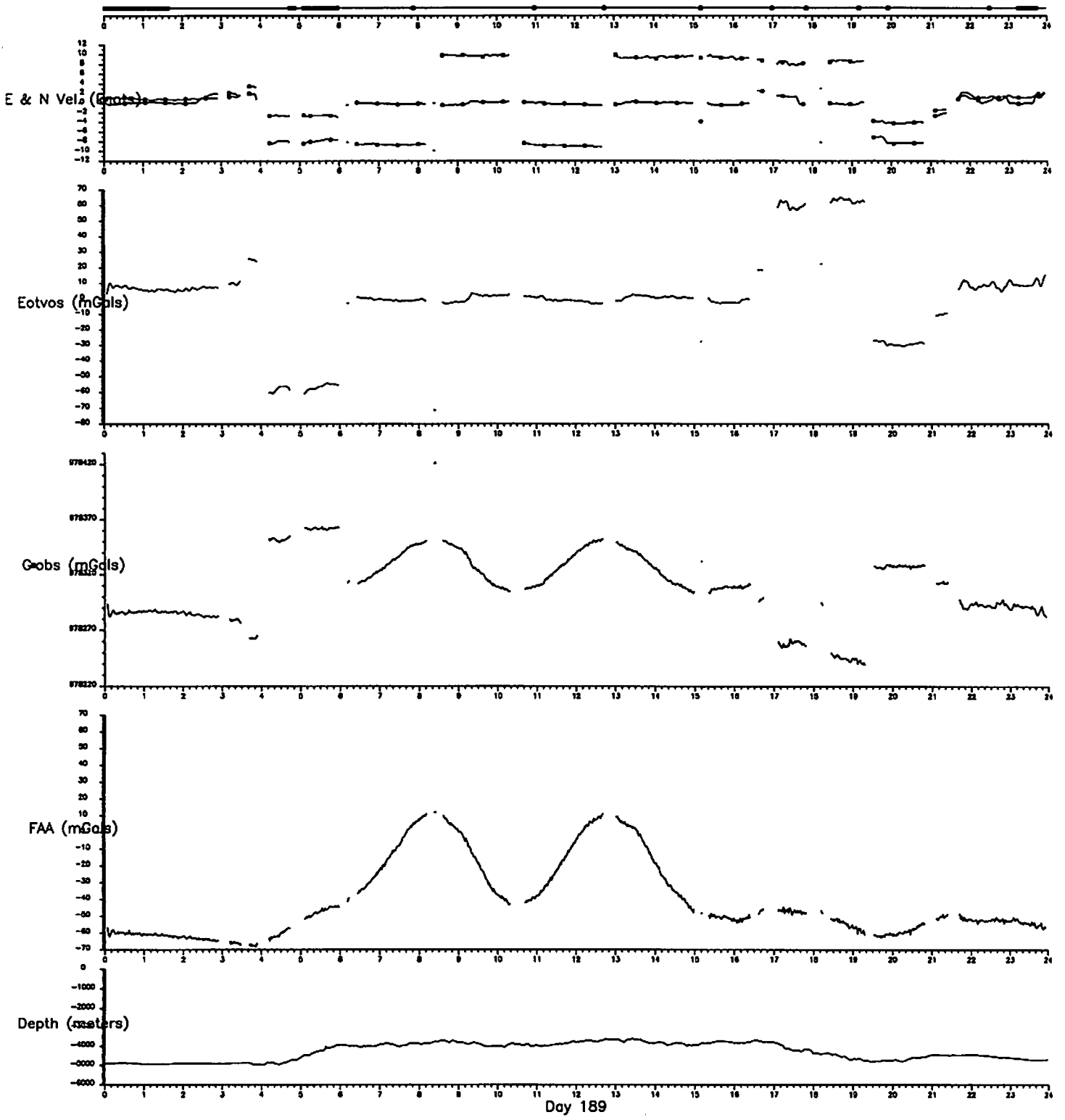
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n187 Bathymetry file: cb.i187 Navigation file: n.187



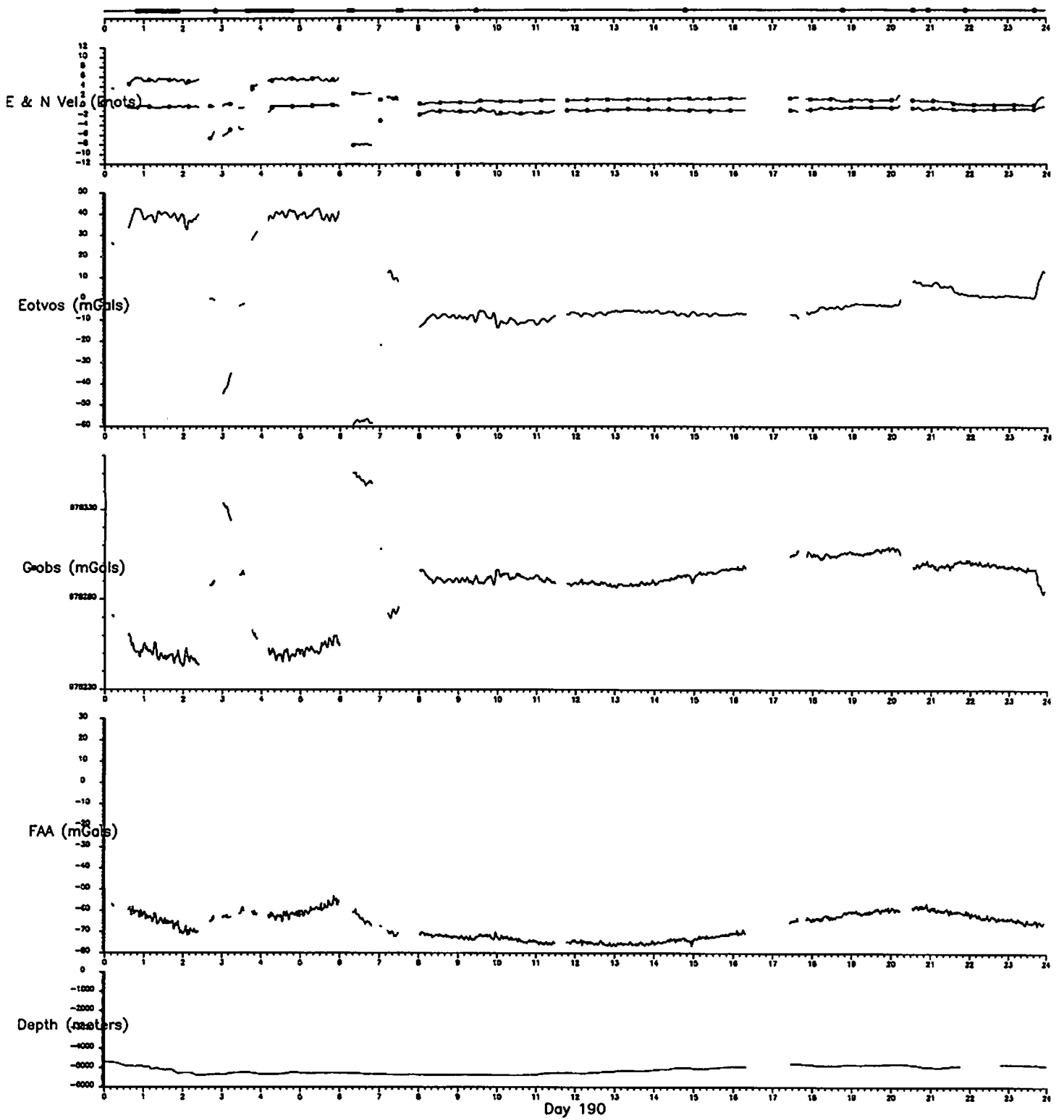
C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n188 Bathymetry file: cb.i188 Navigation file: n.188



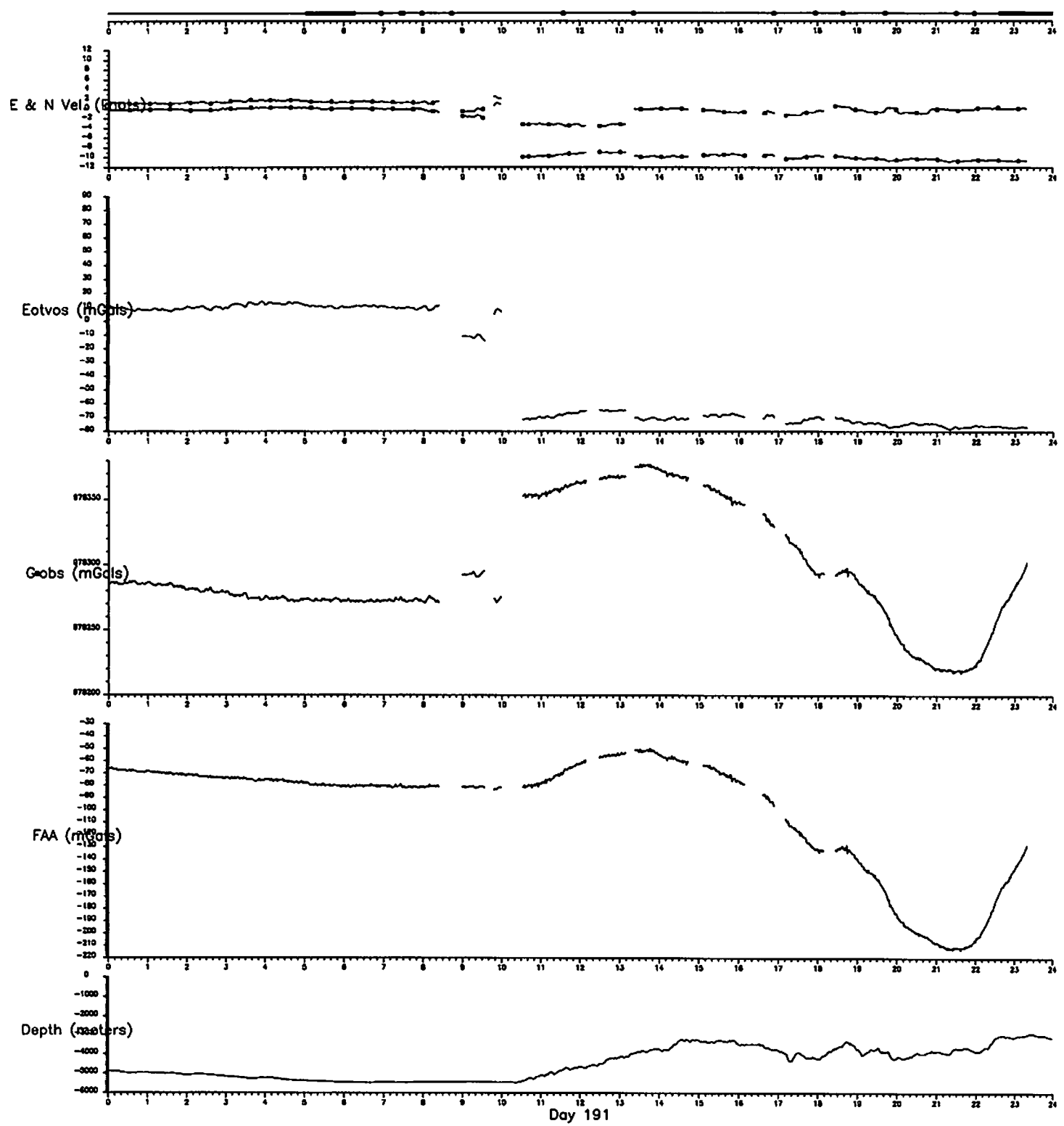
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n189 Bathymetry file: cb.l189 Navigation file: n.189



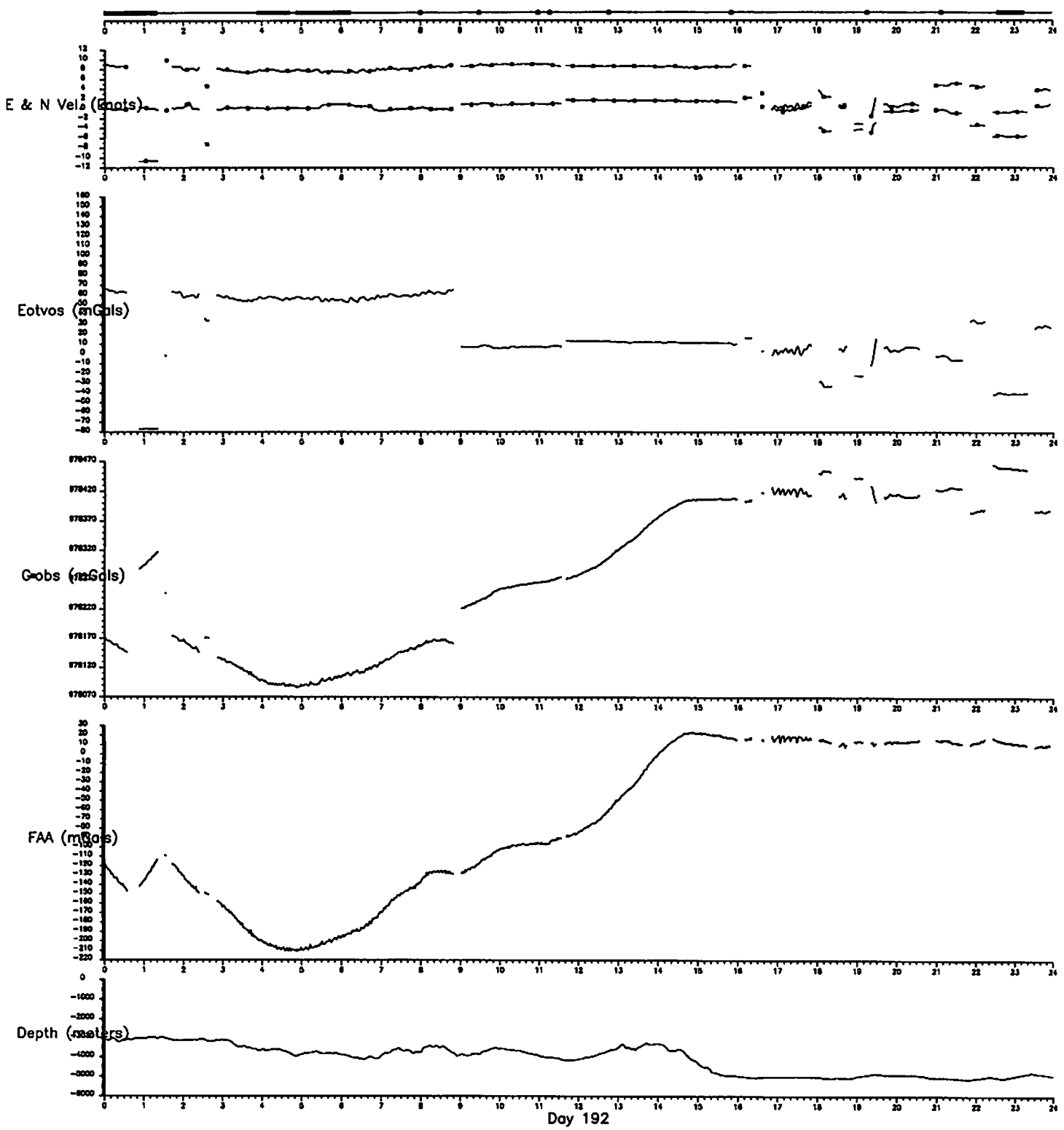
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n190 Bathymetry file: cb.i190 Navigation file: n.190



C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
 Gravity file: vt.n191 Bathymetry file: cb.i191 Navigation file: n.191

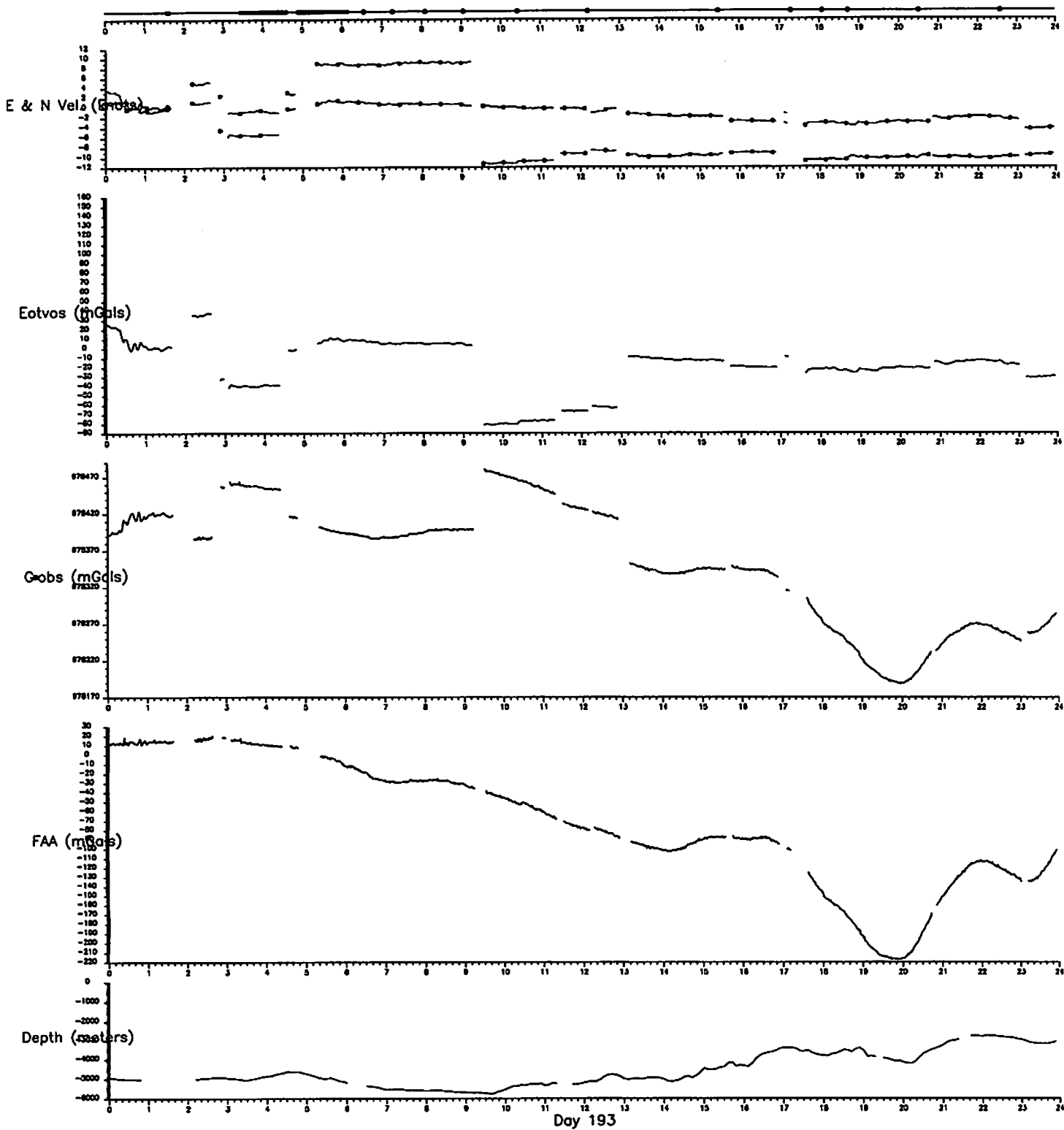


C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
 Gravity file: vt.n192 Bathymetry file: cb.i192 Navigation file: n.192

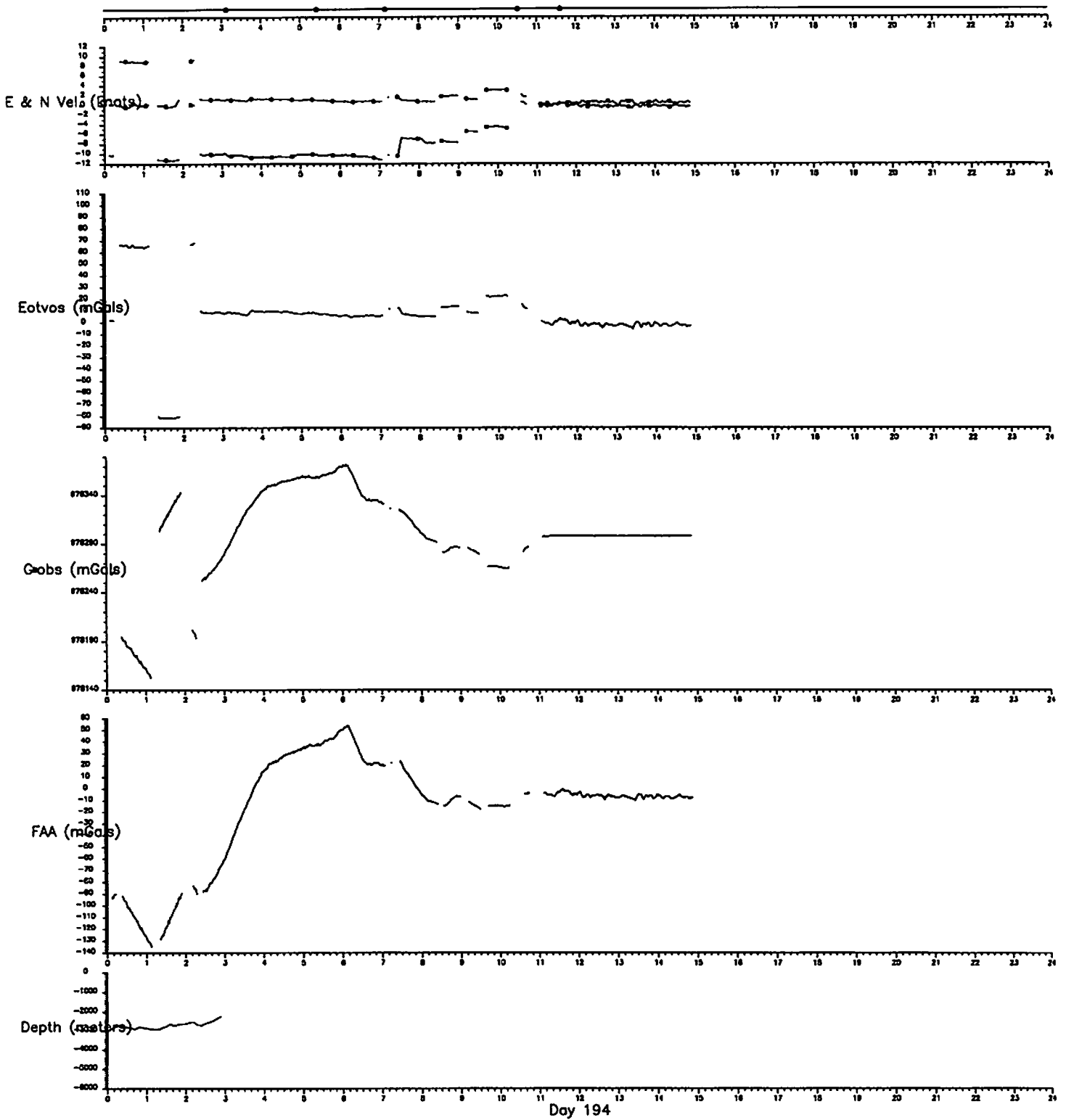


C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

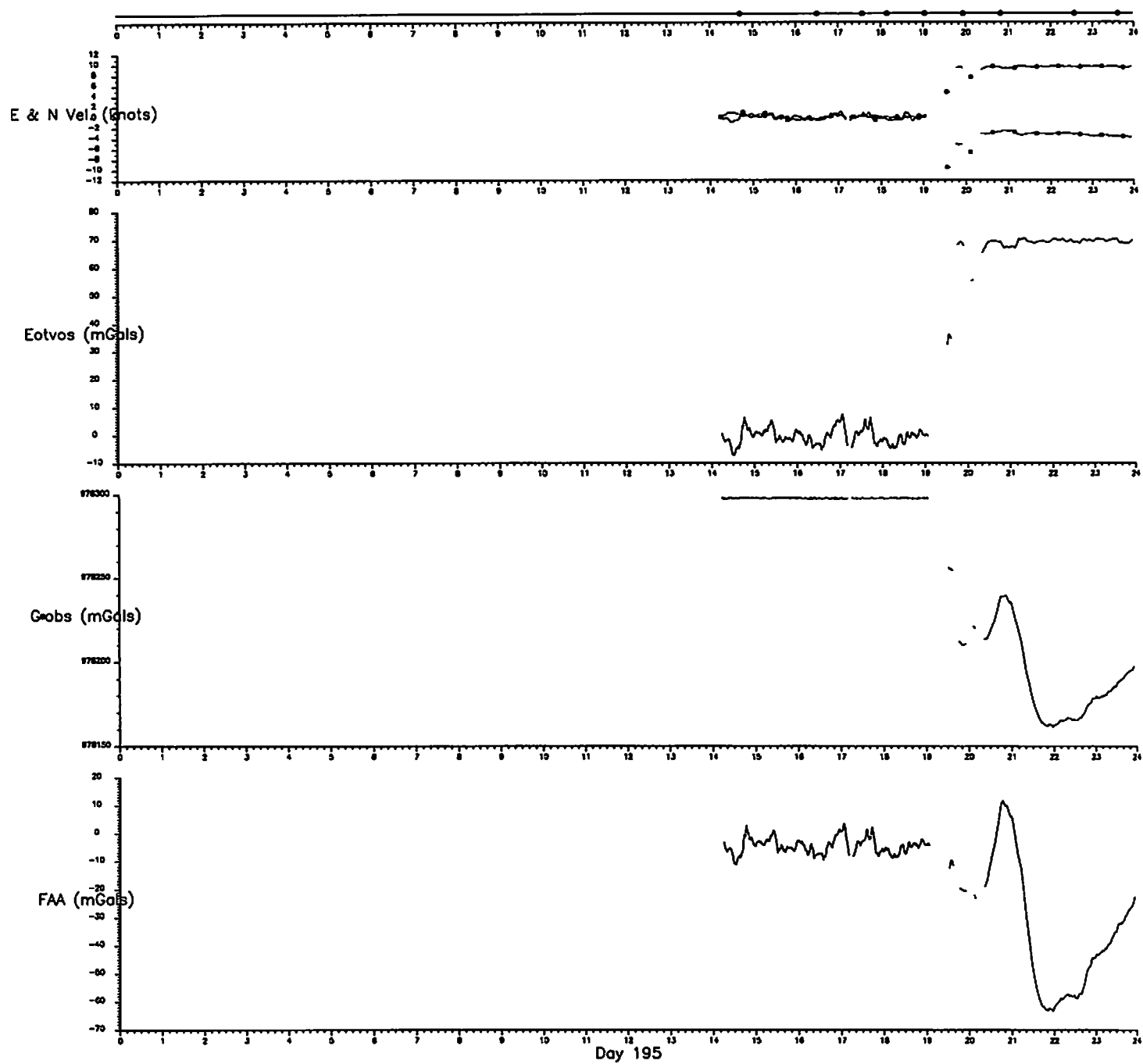
Gravity file: v.l.n193 Bathymetry file: bt.d193 Navigation file: n.193



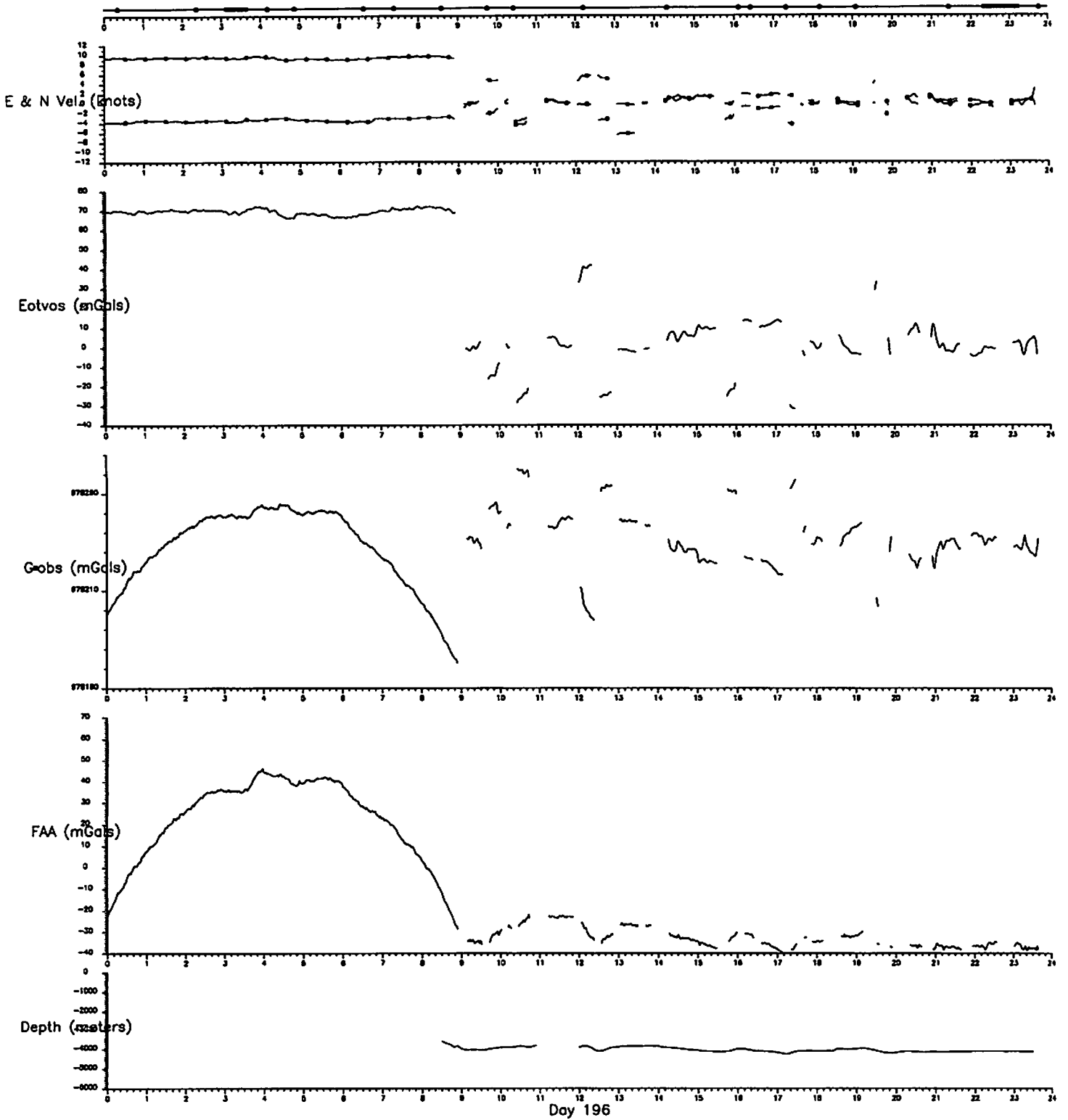
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vLn194 Bathymetry file: bt.d194 Navigation file: n.194



C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n195 Navigation file: n.195

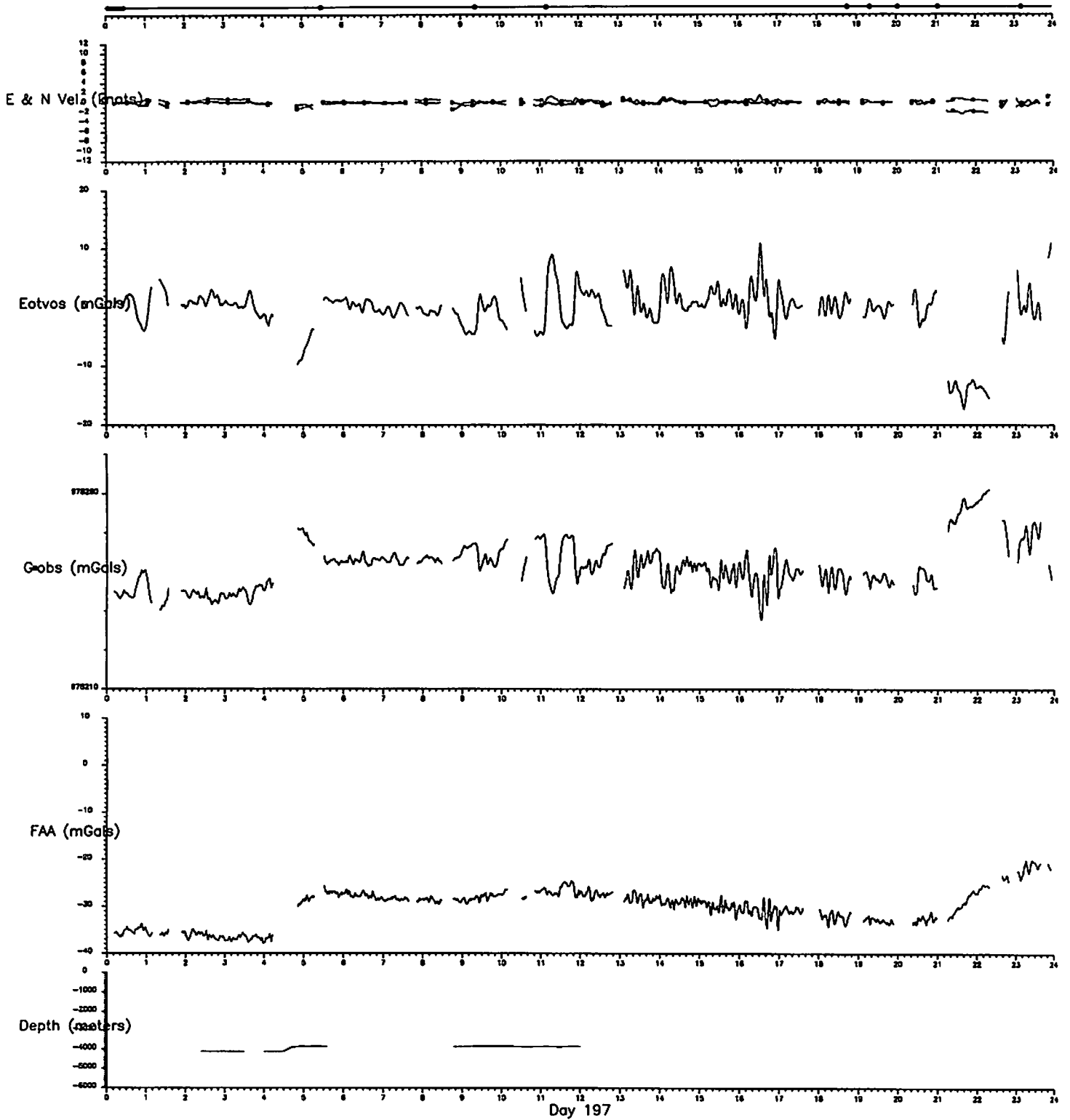


C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n196 Bathymetry file: bt.d196 Navigation file: n.196

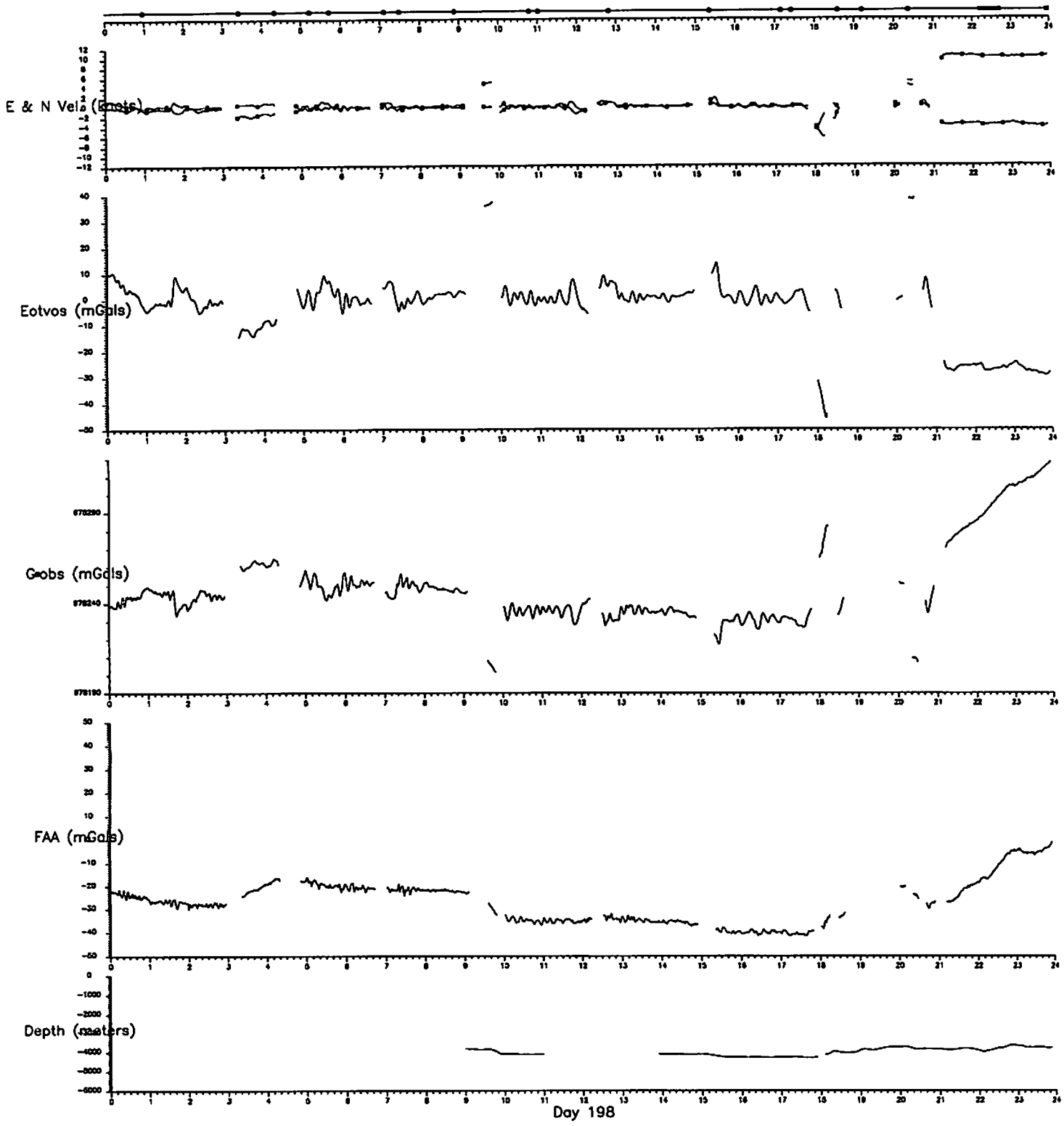


C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

Gravity file: vt.n197 Bathymetry file: bt.d197 Navigation file: n.197



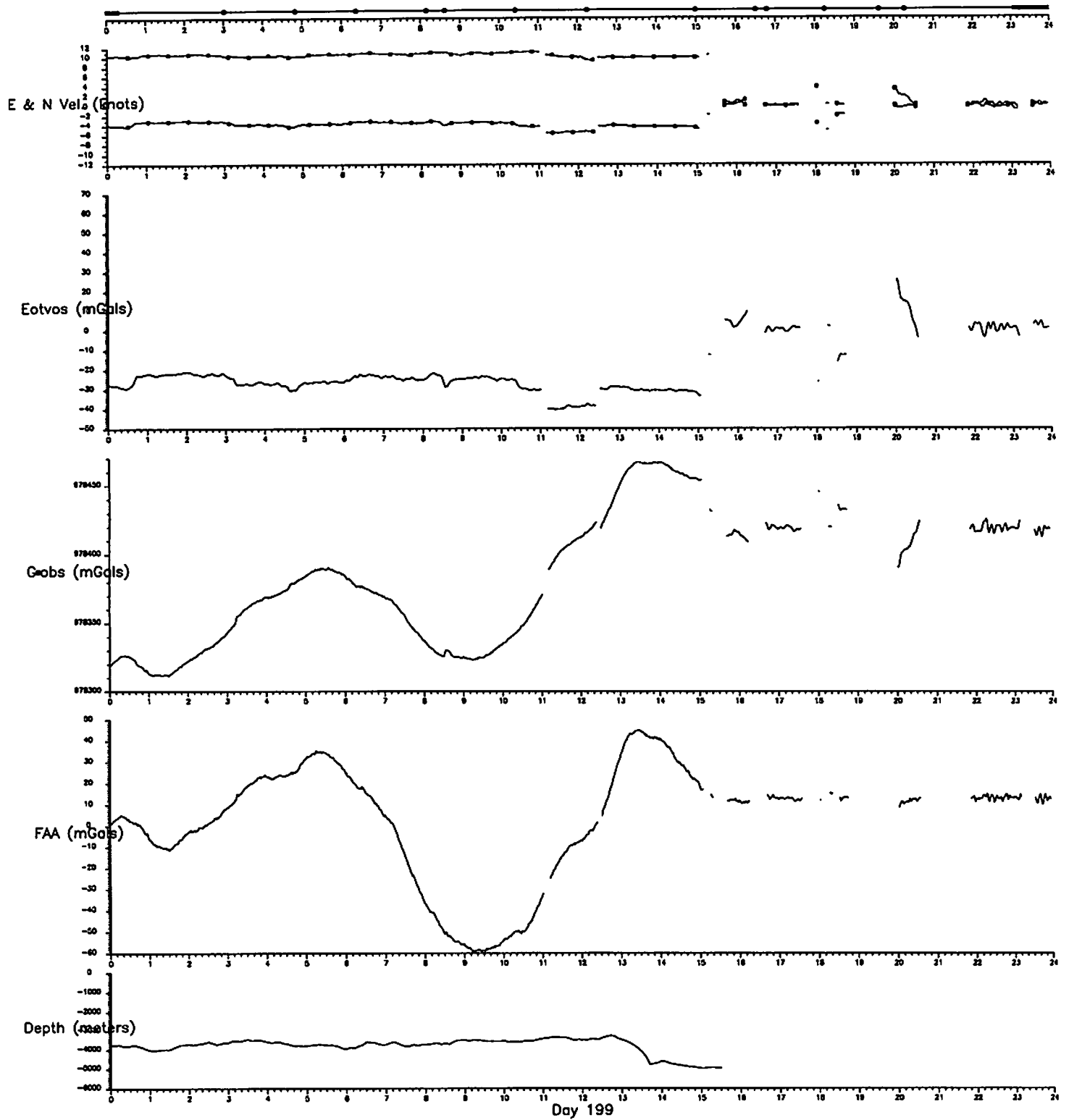
C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n198 Bathymetry file: bt.d198 Navigation file: n.198



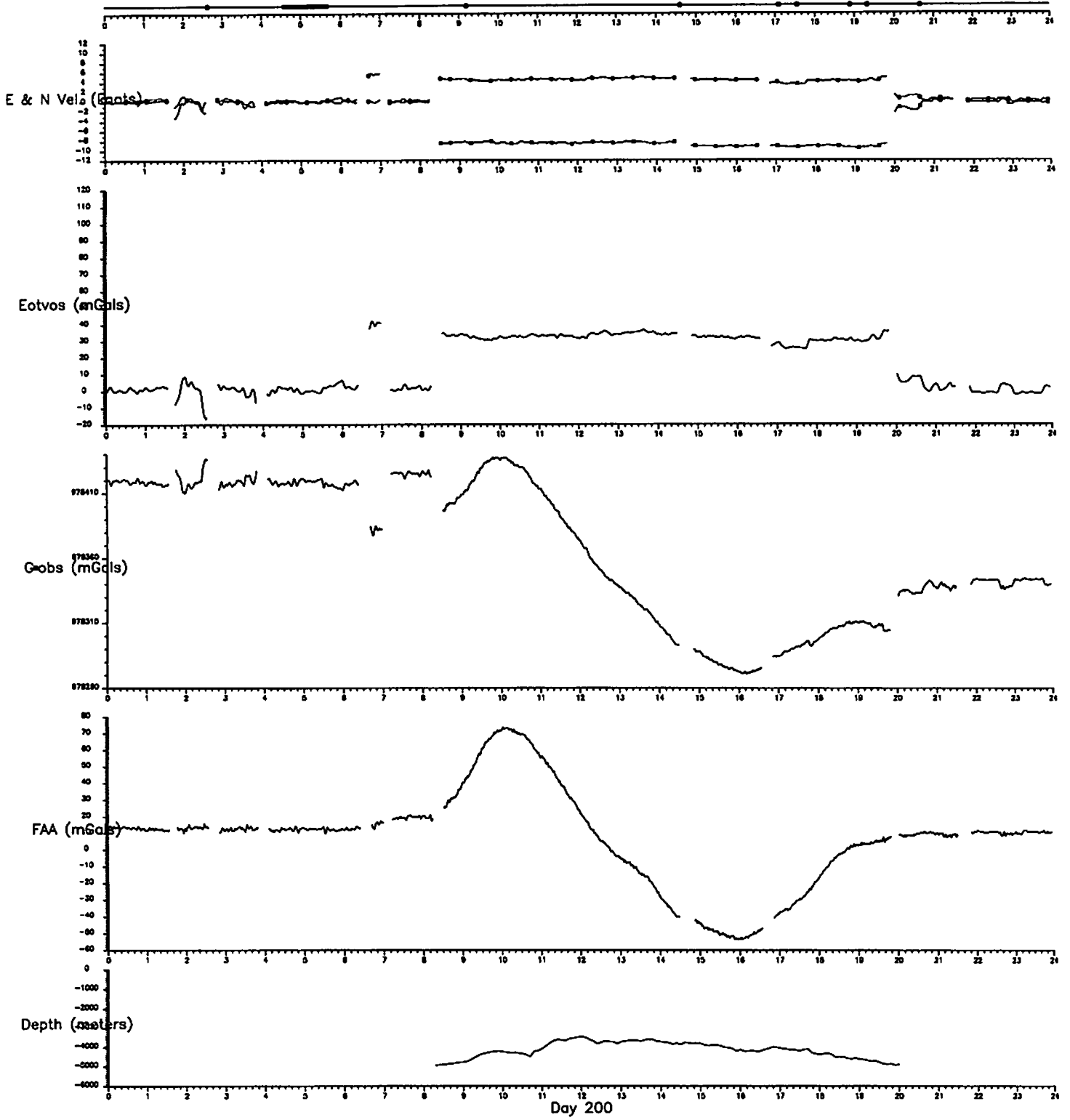
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C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

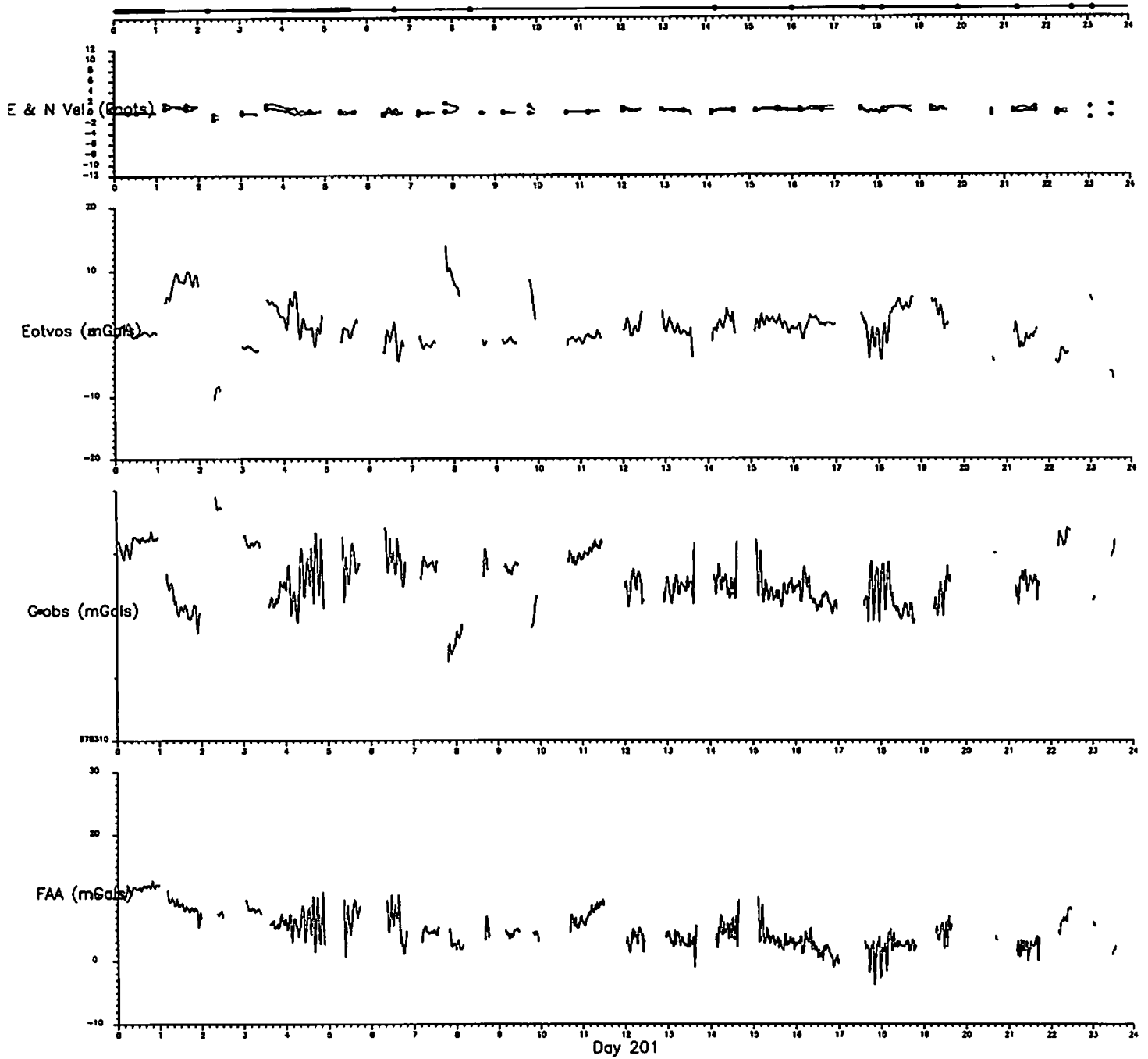
Gravity file: vt.n199 Bathymetry file: bt.d199 Navigation file: n.199



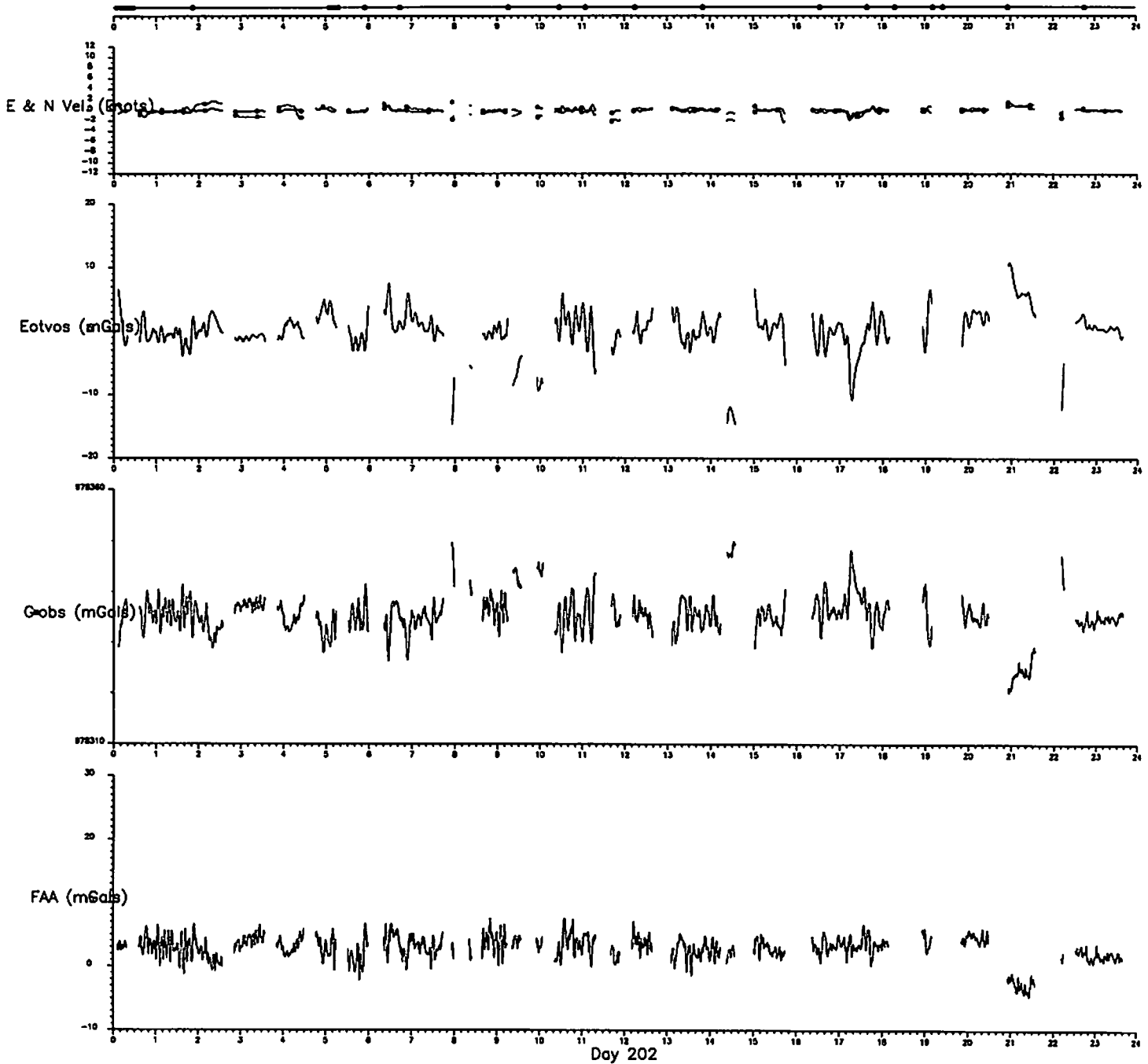
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n200 Bathymetry file: bt.d200 Navigation file: n.200



C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n201 Navigation file: n.201

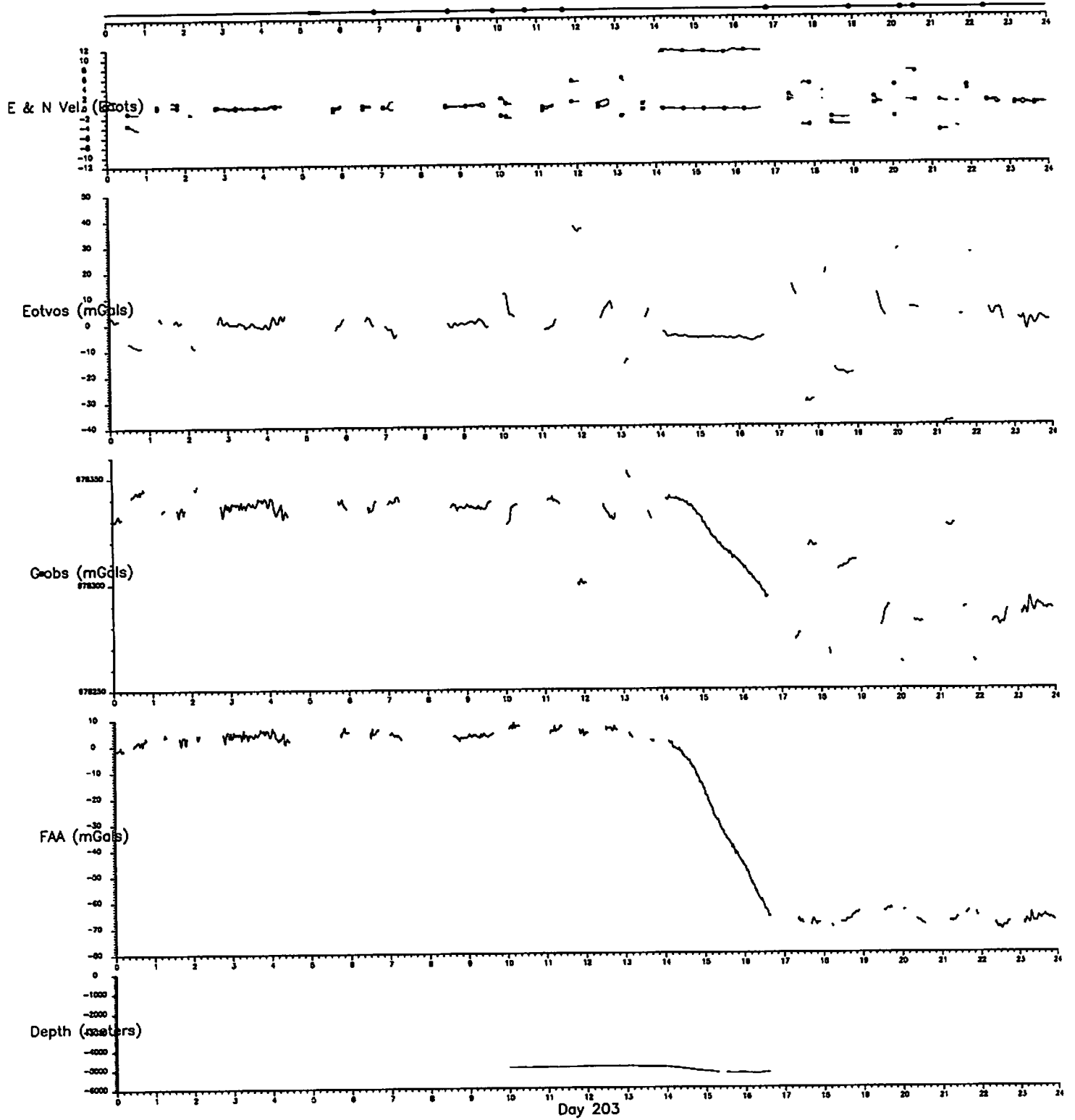


C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n202 Navigation file: n.202



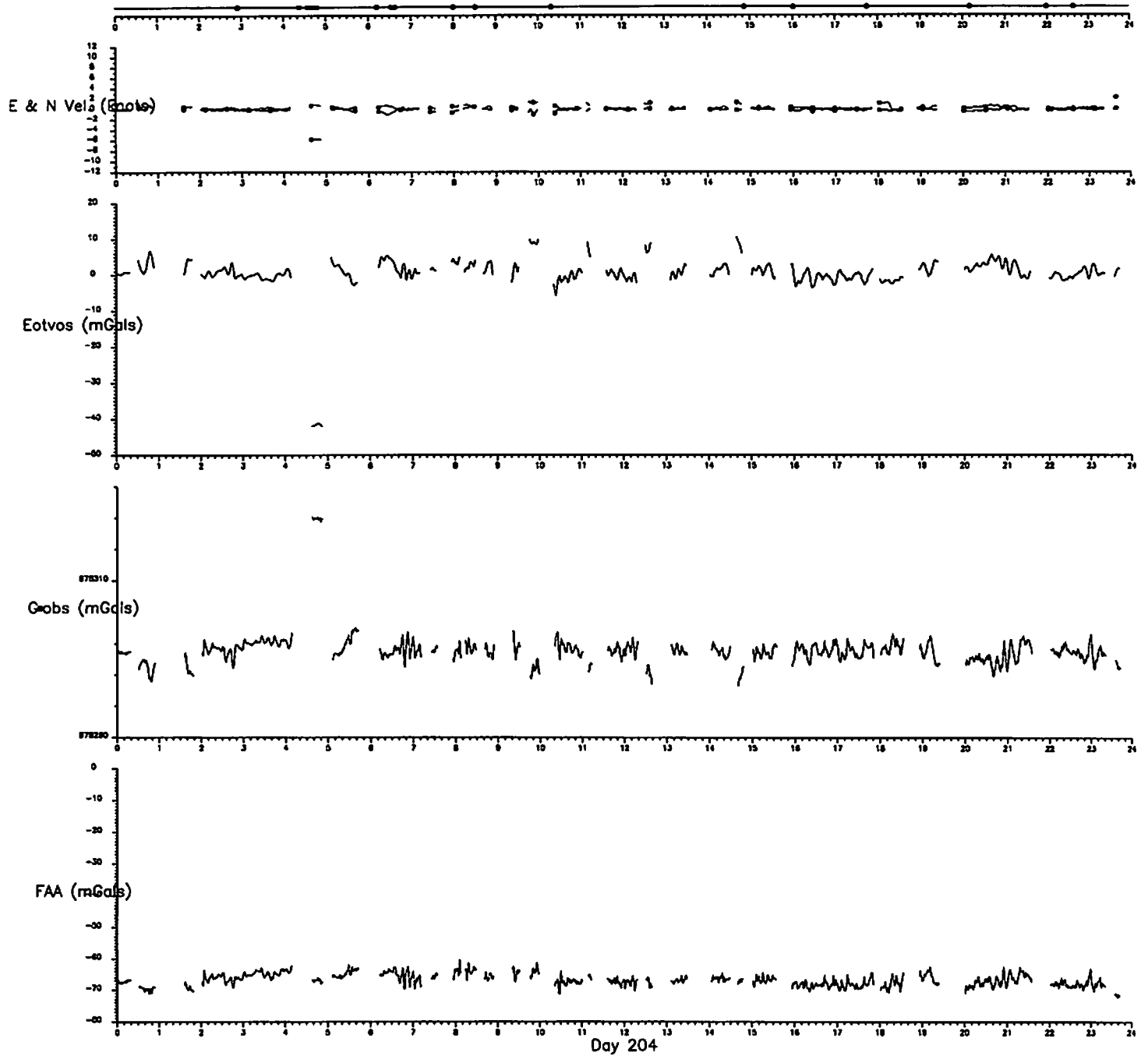
C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

Gravity file: vt.n203 Bathymetry file: bt.d203 Navigation file: n.203

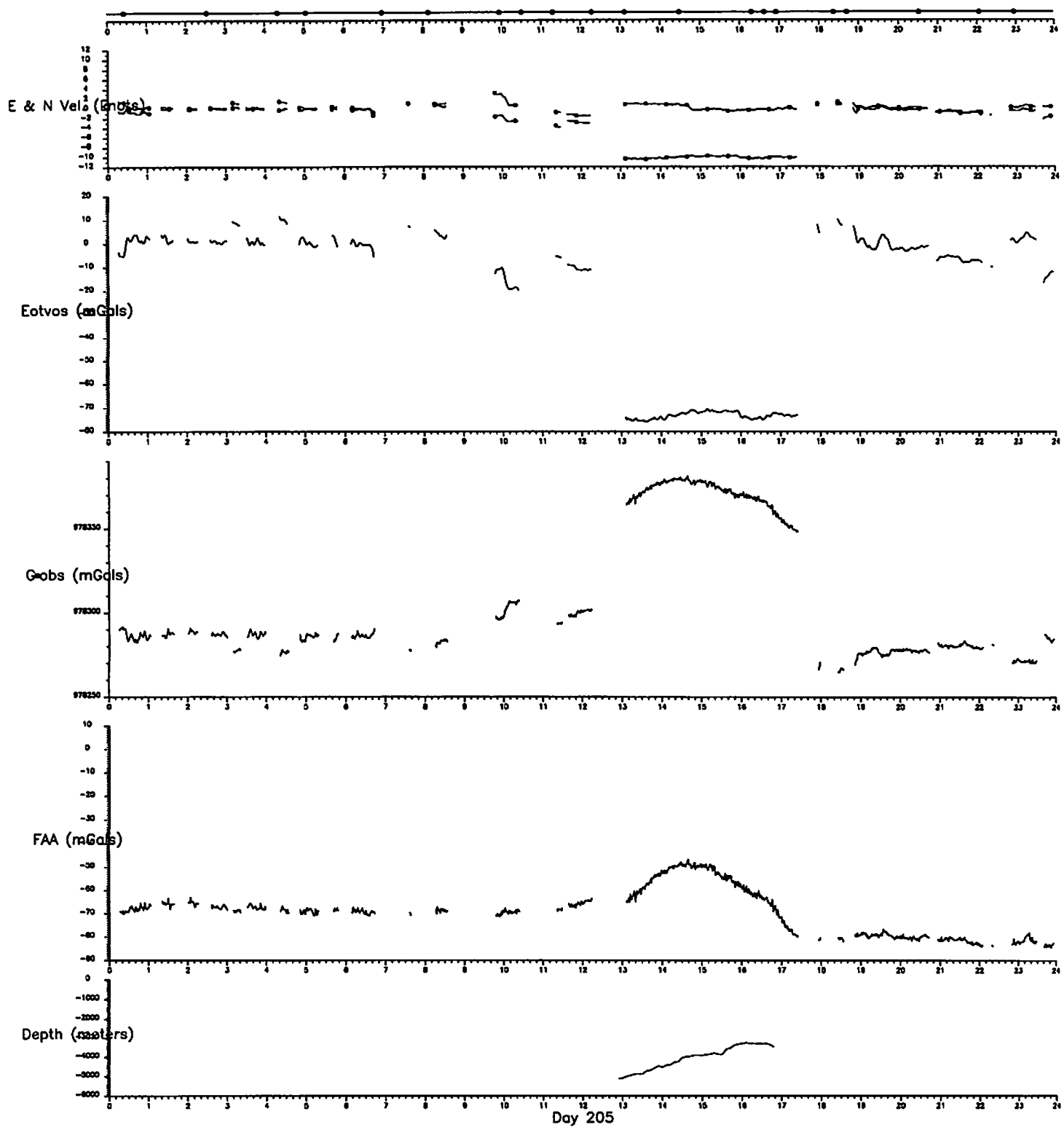


C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5

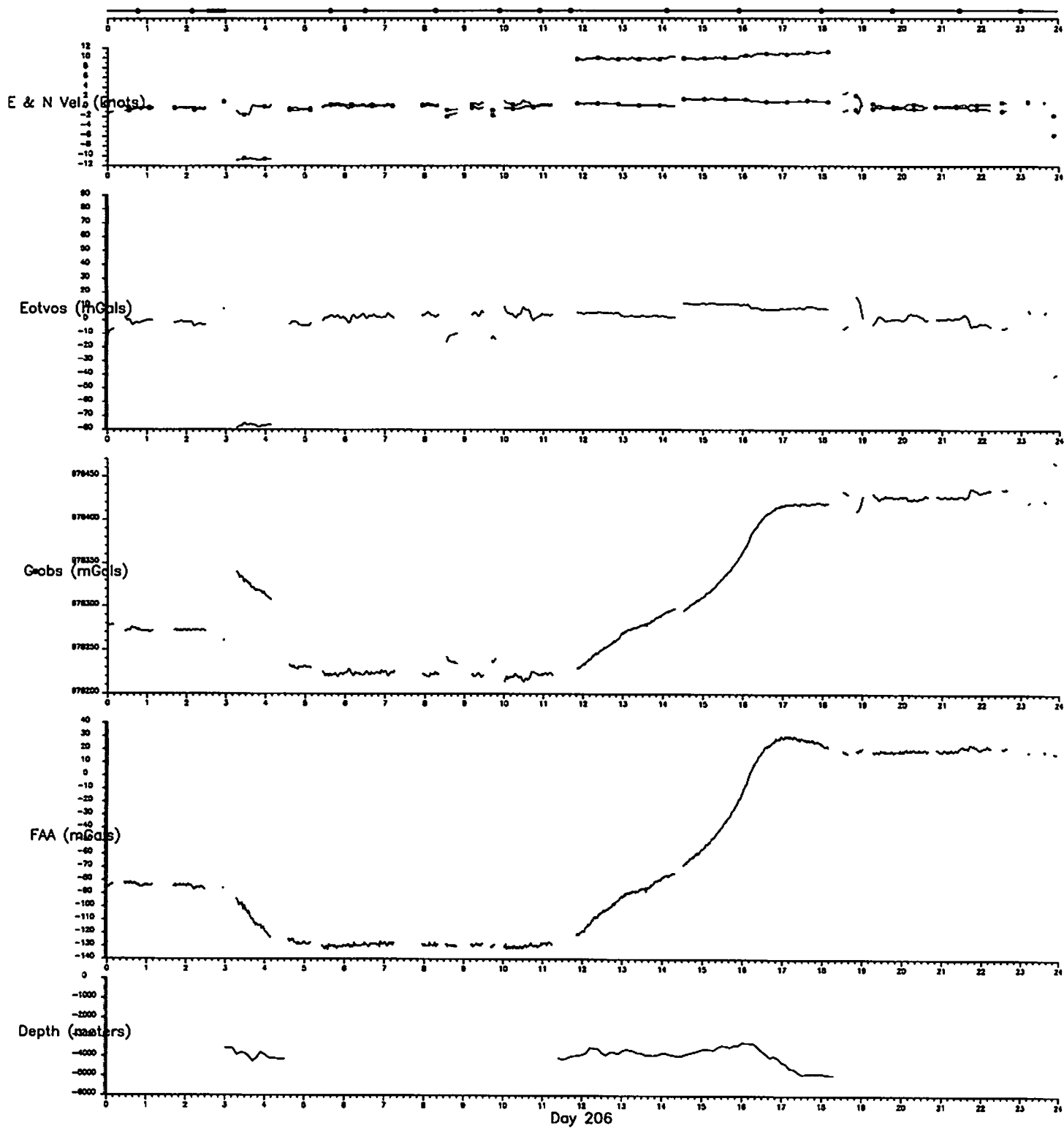
Gravity file: vt.n204 Navigation file: n.204



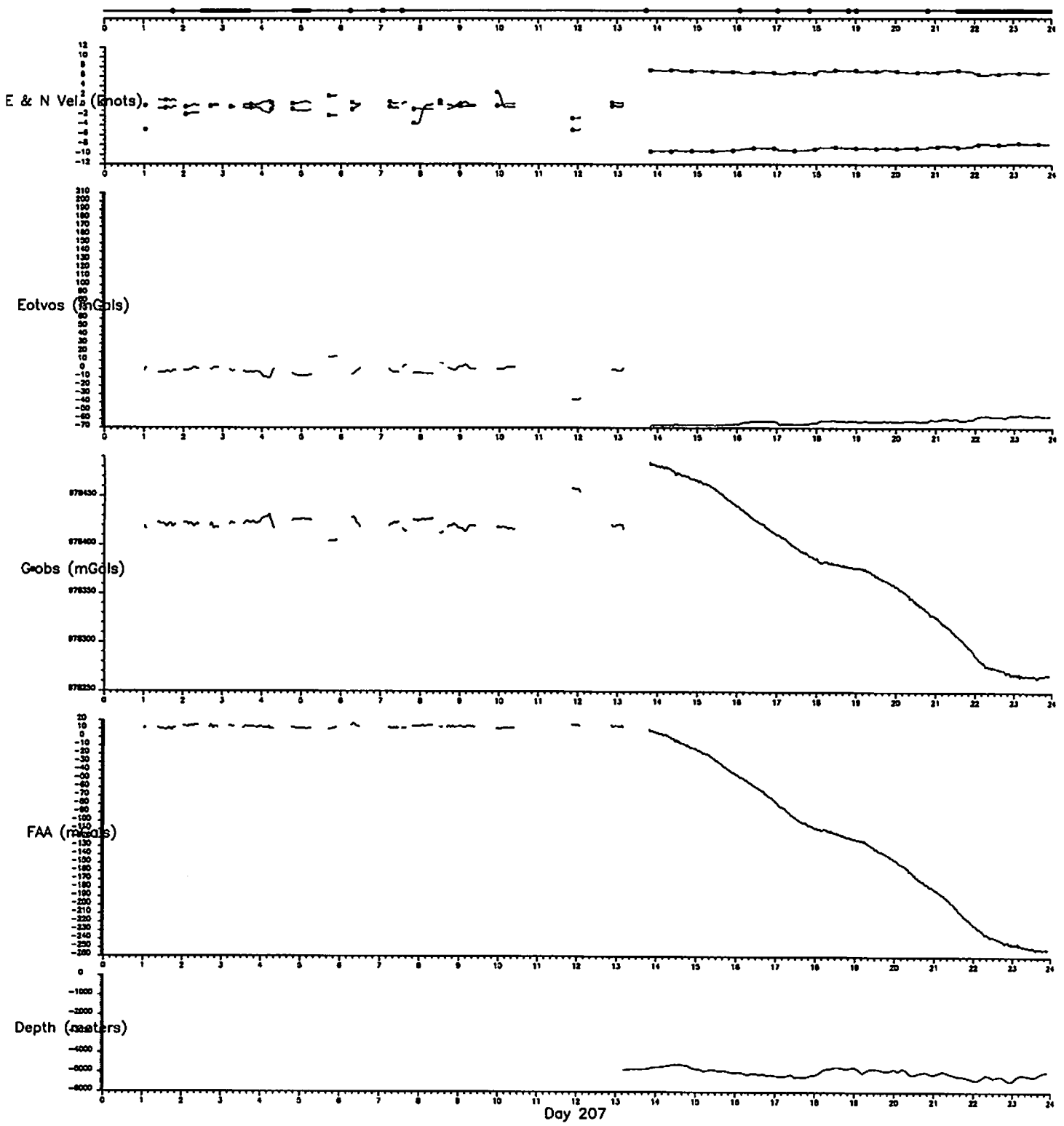
C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vt.n205 Bathymetry file: bt.d205 Navigation file: n.205



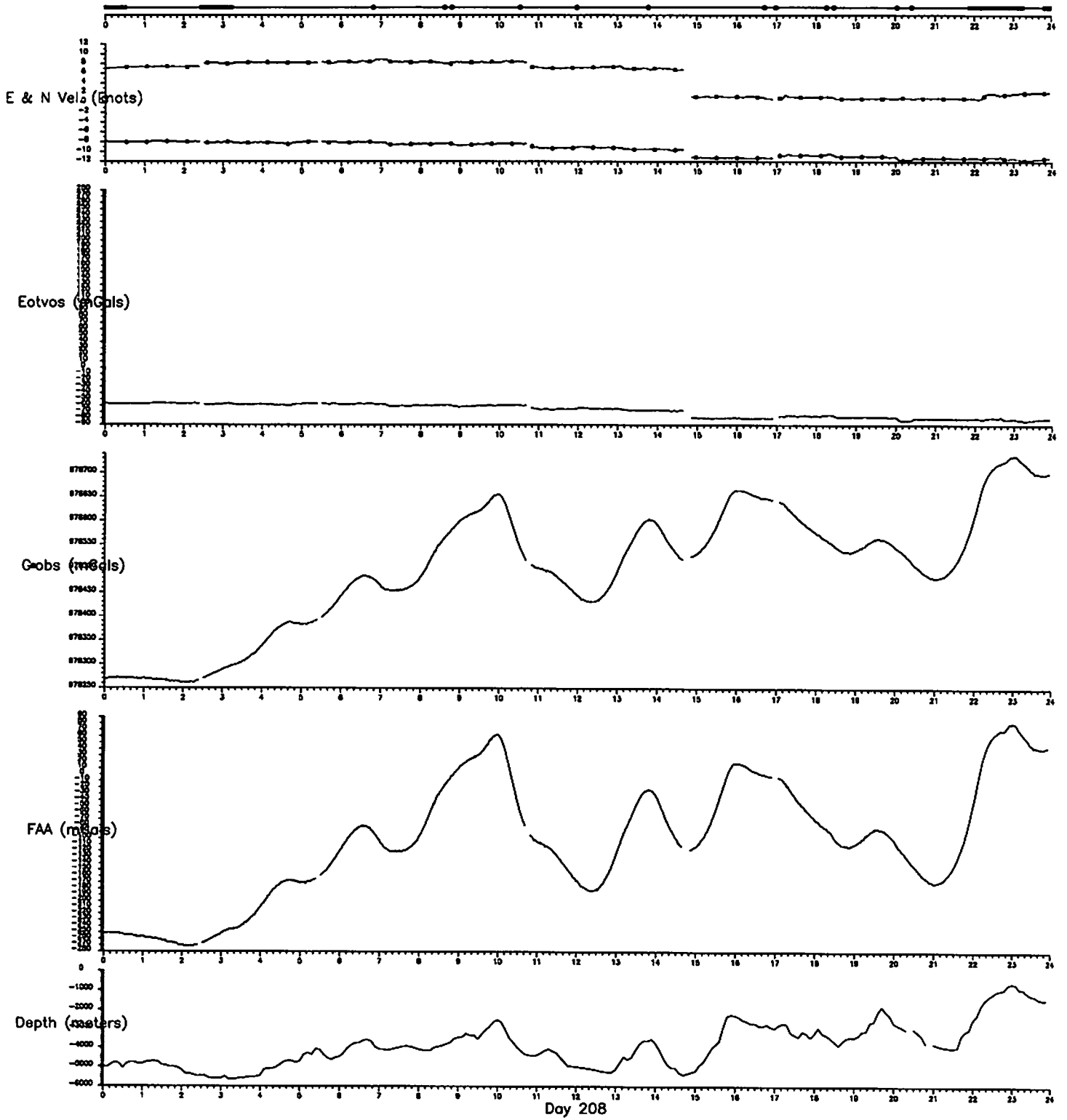
C2907 Barbados—Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vl.n206 Bathymetry file: bt.d206 Navigation file: n.206



C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
 Gravity file: vt.n207 Bathymetry file: bt.d207 Navigation file: n.207



C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
Gravity file: vL.n208 Bathymetry file: bt.d208 Navigation file: n.208



C2907 Barbados-Puerto Rico GRAVITY DATA: 1980; velocity smoothing of 5
 Gravity file: vt.n209 Bathymetry file: bt.d209 Navigation file: n.209

