J-G

TR-154

UNIVERSITY OF RHODE ISLAND KINGSTON, R.I.

Graduate School of Oceanography Narragansett Bay Campus

CRUISE REPORT
TR-154 (Leg I, Gilliss Seamount)
(Leg II, MAR, 38°-45°N)
June 5 - 28, 1974

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SCHEDULE

A 24-day cruise was undertaken from Narragansett to Horta, Faial, Azores (Leg I, 5 June - 19 June, 1974), and from Horta, Faial to Ponta Del Gada, San Miguel, Azores (Leg II, 19 June - 28 June, 1974). During transit, rock dredge sampling was carried out on the Gilliss Seamount (35°34'N, 58°38'W) and along the Mid-Atlantic Ridge between 38°N and 45°N. Each dredge site was accompanied by magnetic and seismic reconnaissance profiling.

SCIENTIFIC PARTY

Dr. Jean-Guy Schilling	URI	Chief Scientist, Leg II	Switzerland
David G. Johnson	URI	Chief Scientist, Leg I	USA
William White	URI	Graduate Student, Leg II	USA
Michael Bergeron	URI	Graduate Student	USA
Mark Zajac	URI	Geologist	USA
Richard Zollinger	Kent State	Geologist	USA
Randall Baker	Wesleyan	Student	USA
Peter Hansen	Wesleyan	Student	USA
Enid Kumin	Wesleyan	Student	USA
Monica Montague	Wesleyan	Student	USA
Arthur Buddington	URI	Marine Technician	USA
Philip Hendershot	URI	Marine Technician	USA

SHIPS COMPANY

C. W. Vanderhoop, Master
F. C. Sena, Chief Mate
S. J. Beuth, Second Mate
A. B. Carter, Radio Officer
T. P. Waters, Bos'n
P. Breslin, AB Seaman
H. Martin, AB Seaman
R. E. Soucy, AB Seaman, Leg I
R. Johnson, AB Seaman, Leg II
E. M. Carvalho, Ordinary Seaman
W. M. Theagene, Ord. Seaman
J. P. Symonds, Chief Engineer
J. A. Kibbe, First Engineer
D. L. Humphrey, Second Engineer
J. M. Moscatelli, Oiler
A. Leonard, Oiler
C. Davidson, Oiler
R. R. Mortensen, Steward
M. Phelan, Second Cook

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OPERATIONS AND PRELIMINARY RESULTS

Operations were broken down into the following:

Operation	Leg I (hrs)	Leg II (hrs)
Bathymetric profiling	109.6	154.
Seismic reflection profiling	9.2	37.4
Magnetic intensity profiling	22.5	117.4
Dredge stations	52.4	49.6
Transit	254.	113.2

A preliminary seismic profiling survey was made over the Gilliss Seamount during aborted cruise TR153 and completed during TR154-Leg I. Five (5) dredging attempts were made for collecting manganese crust from the Gilliss Seamount, but only one (1) station was successful.

Sixteen (16) bathymetric, seismic and magnetic profiles of 20-30 nm length were conducted across the rift of the Mid-Atlantic Ridge between 38°N-45°N, for the purpose of locating dredge sites. Out of sixteen attempts, sixteen dredge hauls successfully recovered relatively fresh pillow basalt from the center of the rift floor with the exception of dredge 11D, which was outside of the valley floor (6 dredge hauls during Leg I, and 10 during Leg II).

See attached Table for dredge locations and recovery details, and Figures 1 and 2 for ship tracks.

Petrological and geochemical studies will be performed on these rocks, including determination of isotope, rare earth and volatile contents.

ACKNOWLEDGMENTS

The cooperation of Captain Vanderhoop and his crew and Chief Engineer, J. Symonds, is appreciated.

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TR-154 DREDGING STATIONS

Station	Latitude & Longitude	Date 1974	Depth Range (Meters)	Operator	# Gunny Sacks	Results
1D	35°33.6'N 58°41.2'W	6/9	3400-3600	Johnson	-	Gilliss Seamount - lost dredge
2D	35°33.1'N 58°39.3'W	6/9	3100-3300	Johnson	-	Gilliss Seamount (west side) - unsuccessful.
3D	35°34.9'N 58°40.9'W	6/9	2400-2700	Bergeron	1 storage box 1 gunny sack	Gilliss Seamount (north side) - ~22 Kg. manganese crust, with fragments of altered basalt and palagonite attached, branching coral with thin manganese coating.
4D	35°31.0'N 58°40.0'W	6/9	3400-3850	Bergeron	-	Gilliss Seamount (SW side) - unsuccessful.
5D	35°36.3'N 58°41.6'W	6/10	3300-3600	Johnson	-	Gilliss Seamount - unsuccessful.
6D	39°57.1'N 29°39.9'W	6/17	2000-2200	Bergeron	1	MAR, west slope of central hill of rift floor - ~33 Kg. pillow basalt with palagonite and thin film of manganese coating on fracture surface.
7D	39°56.1'N 29°40.1'W	6/17	1900-2000	Bergeron	5	MAR, top of central hill of rift floor - 158 Kg. of semi-fresh to fresh pillow basalt.
8D	39°11.9'N 29°56.8'W	6/17	1620-1640	Johnson	4	MAR, east side of axial hill of rift floor - 96 Kg. fresh vesicular pillow basalt fragments with glass, traces of palagonite and manganese stain on some fracture surfaces.

TR-154 DREDGING STATIONS (cont'd)

Station	Latitude & Longitude	Date 1974	Depth Range (Meters)	Operator	# Gunny Sacks	Results
9D	38°41.1'N 30°09.3'W	6/18	1200-1250	Johnson	1	MAR, deepest part of rift floor - 1 fist size 1.4 Kg. pillow fragment and 1 liter of sediment.
10D	38°41.9'N 30°11.4'W	6/18	1100-1200	Bergeron	16	MAR, east facing slope of western axial ridge in rift floor - 402 Kg. semi-fresh vesicular pillow basalt fragments with traces of palagonite and manganese stain on some surfaces.
11D	38°18.7'N 30°40.9'W	6/18	600- 670	Bergeron	5	MAR, off-ridge height - 152 Kg. reddish-brown tuff and scoria with some small glass fragments.
12D	43°22.4'N 28°58.9'W	6/21	3000-3080	Bergeron	6	MAR, small axial hill of rift floor - 123 Kg. semi-fresh pillow basalt fragments, manganese and palagonite.
13D	44°00'N 28°23.6'W	6/21-22	2520-2600	White	7	MAR, west side near top of axial hill of rift floor - 261 Kg. relatively fresh pillow basalt, minor manganese staining, glass significantly altered, some plagioclase phenocrysts, may represent more than one flow
14D	44°49.2'N 28°02.6'W	6/22	2850-3000	Bergeron	5	MAR, small axial hill of rift floor - 195 Kg. semi-fresh pillow basalt and neck fragments, traces of palagonite and minor manganese stain, small branching coral fragments with manganese stain.

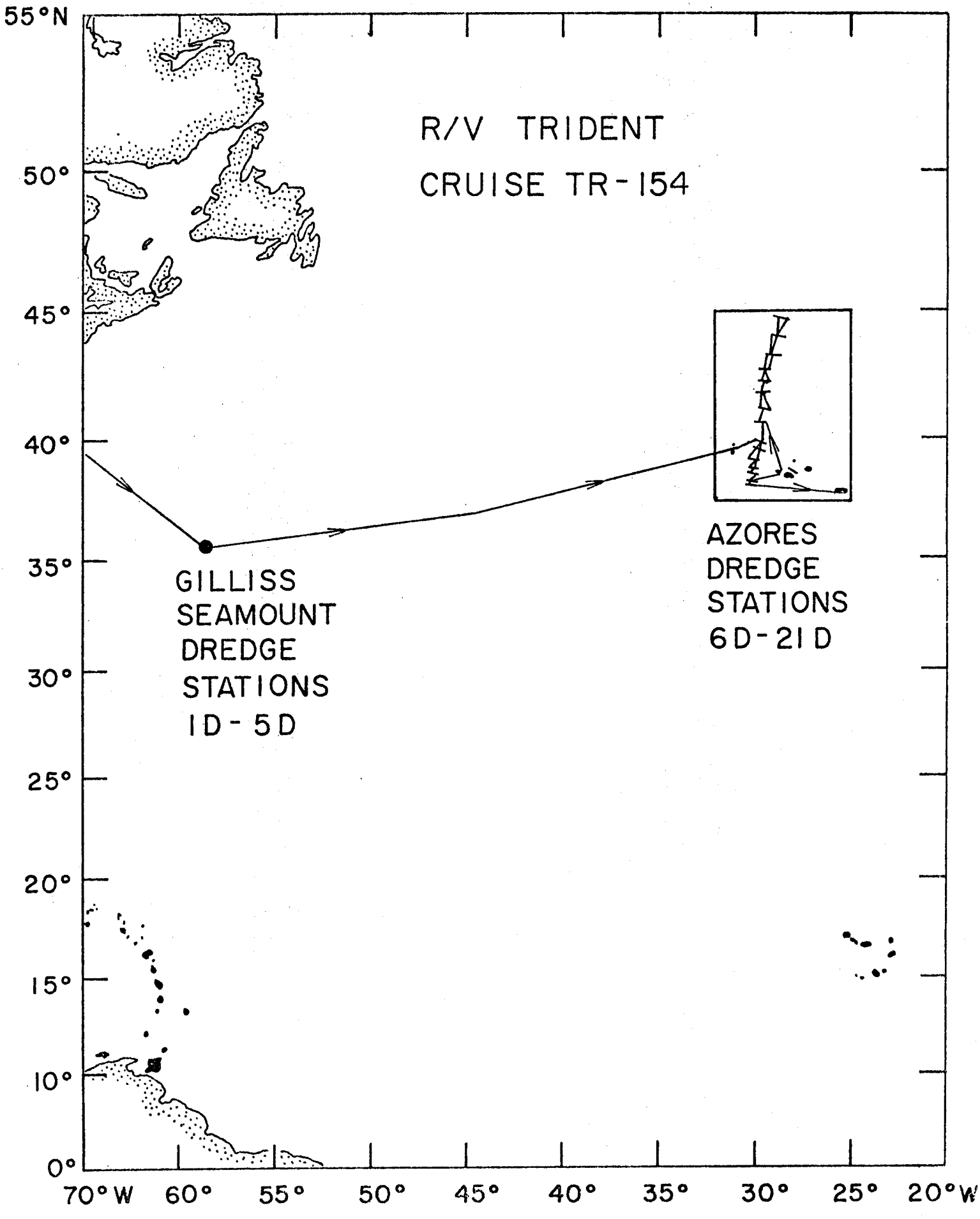
TR-154 DREDGING STATIONS (cont'd)

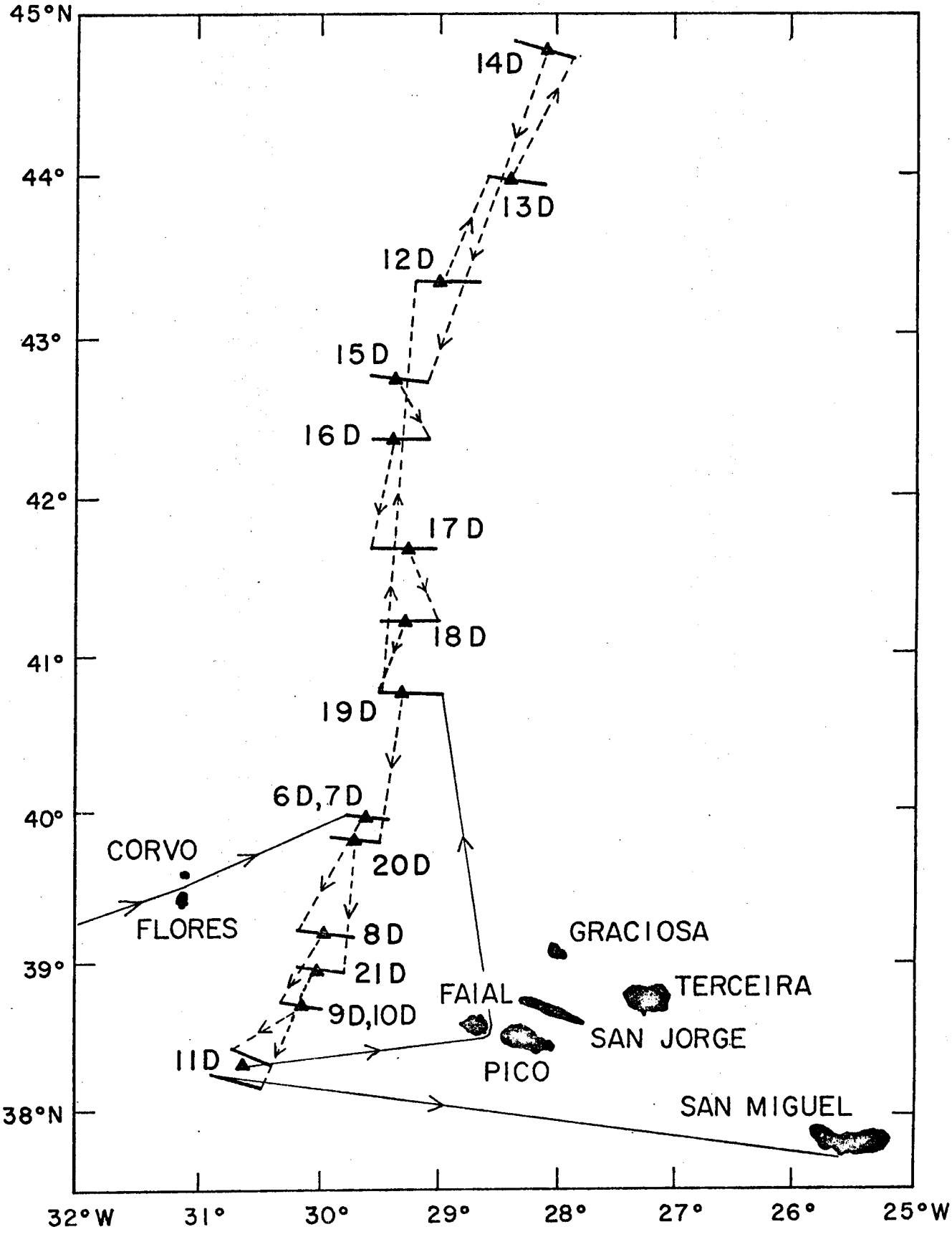
Station	Latitude & Longitude	Date 1974	Depth Range (Meters)	Operator	# Gunny Sacks	Results
15D	42°47.5'N 29°21.6'W	6/23	2850-3000	White	2	MAR, hill in rift floor - 52 Kg., one small fragment (1 Kg.), 1 large pillow (42 Kg.) with altered glass and manganese crust, one small pillow (9 Kg.) with fresh glass.
16D	42°23.1'N 29°24.1'W	6/24	2830-2960	Bergeron	5 1 qt. container of glass	MAR, west bottom wall of rift floor - 163 Kg. fresh pillow basalt with abundant glass.
17D	41°40.4'N 29°15.7'W	6/24	2500-2750	White	18 1 carton glass fragments	MAR, deepest part of rift floor -559 Kg. semi-fresh pillow basalt, glass with some palagonite, some manganese stains - may represent more than one flow.
18D	41°10.7'N 29°18.3'W	6/25	2150-2300	Bergeron	2 1 qt. container	MAR, rift floor between two central hills - 27 Kg. semi-fresh basalt with some palagonite and manganese stains - branching coral with manganese stain.
19D	40°44.6'N 29°15.2'W	6/25	2340-2520	White	8	MAR, small axial hill in rift floor - 241 Kg. fresh pillow basalt, no glass remaining, some palagonite and plagioclase phenocrysts.
20D	39°45.7'N 29°41.2'W	6/26	2150-2300	Schilling	9	MAR, east side of small hill of rift floor - 207 Kg. fresh pillow fragments, little glass remaining.

TR-154 DREDGING STATIONS (cont'd)

Station	Latitude & Longitude	Date 1974	Depth Range (Meters)	Operator	# Gunny Sacks	Results
21D	38°53.3'N 30°02.9'W	6/27	1210-1400	White	4 1 canvas bag	MAR, deepest part of rift floor - 57 Kg. vesicular fresh pillow basalt and crust with well preserved granular glass, plagioclase phenocrysts.

Total overall - 2536 Kg. = 5580 lbs = 2.8 tons


R/V TRIDENT
CRUISE TR-154
GILLISS
SEAMOUNT
DREDGE
STATIONS
1D-5D
AZORES
DREDGE
STATIONS
6D-21D
55°N
50°
45°
40°
35°
30°
25°
20°
15°
10°
0°
70°W
60°
55°
50°
45°
40°
35°
30°
25°
20°W


45°N
44°
43°
42°
41°
40°
39°
38°N
32°W
31°
30°
29°
28°
27°
26°
25°W
14D
13D
12D
15D
16D
17D
18D
19D
6D,7D
20D
8D
21D
9D,10D
11D
CORVO
FLORES
FAIAL
PICO
GRACIOSA
TERCEIRA
SAN JORGE
SAN MIGUEL