

University of Rhode Island, Kingston, R.I. 02881  
Graduate School of Oceanography, Narragansett Bay Campus

**ASAF ASHRAF**

CRUISE REPORT  
R/V ENDEAVOR  
EN-026

Core Laboratory  
Graduate School of Oceanography  
University of Rhode Island

EN-026  
D. Ash. 2/23/79

SCHEDULE

Depart: 30 July 1978 Reykjavik, Iceland  
22 August 1978 Bergen, Norway

REGION OF INVESTIGATION AND PURPOSE

Rock dredging along the Mid-Atlantic Ridge Axis (Mohs Ridge and Knipovich Ridge) for the purpose of laboratory petrological, geochemical and geological studies (a test of the Jan Mayen Plume hypothesis).

SCIENTIFIC PARTY

J-C. Schilling	Chief Scientist, URI
E.S. Neumann	Petrologist, Mineralogisk-Geologisk Museum, Norway
H. Bergeron	Marine Specialist, URI
R. Kingsley	Marine Specialist, URI
J. Devine	Graduate Student, URI
E. Rowe	Graduate Student, URI
K. Benjamin	Graduate Student, URI
D. Loebner	Graduate Student, URI
J. Hickey	Student, URI
C. Sylvia	Student, URI
J. Kearns	Student, St. Francis College
B. Knobel	Marine Technician, URI
T. Penttinen	Marine Technician, URI

SHIP COMPANY

H.P. Pennitt, Jr.	Master
S.E. Kosinski	1st Mate
T.J. Lavin	2nd Mate
H.D. Dickford	Boat Swain
D.H. Andrisek	Able-Seaman
I.D. Hall	Able-Seaman
J.P. Symonds	Chief Engineer
P.G. Nielson	Assistant Engineer
C.L. Smith	Assistant Engineer
J.H. DeBarros	Steward/Cook
D.R. Lizotte	Cook/Messman

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OPERATIONS AND RESULTS

1. Thirty-four dredged stations were occupied. Twenty-four (24) dredge hauls recovered volcanic rocks, one recovered ultramafic rocks, three recovered only sediments, and six were unsuccessful. Locations, depth and nature of recovery are given in Table 1.
2. Each dredge station was preceded by a short seismic, bathymetric and magnetic intensity profile usually ran perpendicular to the ridge axis to locate outcrops for dredging. More detailed short survey lines over the rift of the Knipovich Ridge had to be undertaken because of heavy sedimentation and paucity of volcanic outcrops. The ship tracks are shown in Figure 1.
3. Breakdown of operations are the following:

	<u>Hours</u>	<u>Nautical Miles</u>
Dredging	166	
Magnetic Profiling	229.2	1332
Sub-bottom seismic Profiling (3.5KHz)	204.2	1520
Bathymetric profiling (12KHz)	476.2	2333
Total	<u>500</u>	<u>2333</u>

ACKNOWLEDGMENTS

The assistance and cooperation of Captain H. P. Bennett and his crew are greatly appreciated. This work was supported by the National Science Foundation under Grant OCE76-01577.

EM-026 DREDGING RECOVERY

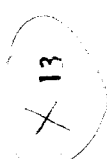
SURVEY LINE	STATION	LOCATION	DEPTH(m)	FEATURE	RESULTS	OPERATOR
1	1D	71° 29'N 06° 37.6'W	1050-1500	North wall of Jan Mayen F.Z.	Angular basalt, fresh vesicular basalt, some glass rounded volc. boulders; some palagonitized tuff, 3-4 glacial erratics cobbles. Total 3 sample bags.	Schilling
2	2D	71° 24.7'N 07° 29.6'W	1000-700	Seamount, NE of Jan Mayen	Mud, few pieces of vesicular volcanics subaerial in appearance some glacial errati; cobbles. Total 5 sample bags.	Bergeron
3	3D	71° 11.2'N 07° 05.4'W	1050-1150	N. wall of Jan Mayen F.Z.	Mud; 5-10 relatively fresh vesicular volc. fragments, angular and rounded, one fresh piece of tephra. Total 1 bag.	Schilling
4	4D	71° 15.7'N 06° 29'W	720-660	Ridge NE of Jan Mayen F.Z.	Mud; with abundant ice rafted erratics; a few vesicular volcanic fragments. Total 2 small bags.	Bergeron
5	5D	71° 14.3'N 05° 40.9'W	600-640	Small volcano on top of ridge NE of Jan Mayen	Highly vesicular basalts (oxidized) pillow fragments (no glass) and glacial erratics, crinoids and urchins. Total 5 bags.	Schilling/ Kingsley

EM-926 BRECCIA RECOVERY

SURVEY LINE	STATION	LOCATION	DEPTH (m)	FEATURE	RESULTS	OPERATOR
6	60	71° 19.5'N 05° 25.0'W	1750-1700	Mohs R. ridge axis	Pillow fragments palagonitized and vesicular basalt cobbles some glacial erratics; siliceous sponges; indurated ooze. Total 2 small bags.	Bergeron
7	70	71° 26'N 05° 47.6'W	2225-2250	Mohs R., bottom of North wall	Fresh massive pillow basalt with glass; older palagonitized pillow fragments with lin-coating; some glacial erratics. Total 3 bags.	Schilling
8	80	71° 31.0'N 03° 56.3'W	3000-2950	Central volcano, rift bottom of Mohs R.	100 Kg Large, fresh, glassy massive pillow basalts. Total 4 bags.	Kingsley
9	90	71° 38.5'N 03° 03.6'W	2100-2250	Central volcano, rift bottom of Mohs R.	Very fresh glassy basaltic slabs with breasted crust. Total 1 bag.	Schilling
10	100	71° 53.3'N 01° 23.6'W	2050-2050	1) Central volcano, rift bottom of Mohs R. 2) Bottom N. wall of rift, Mohs R.	1) Very fresh and glassy basalt with breasted crust. 2) Older massive pillow basalt fragments. Total 2 bags.	Kingsley
11	110	71° 59.5'N 00° 39.0'W	2300-2300	Top at large central volcano, rift bottom of Mohs R.	Very fresh and glassy pillow basalts and slabs with breasted crust. Glass unusually thick. Total 3 bags.	Schilling

EN-026 DREDGING RECOVERY

SURVEY LINE	STATION	LOCATION	DEPTH(m)	FEATURE	RESULTS	OPERATOR
12	12D	72° 10.4'N 01° 20.9'E	2000-2150	Large central volcano, bottom of Mohns R. 1) top 2) side	1) Very fresh and glassy contorted basalt. 2) Older basalt with some thin lin coating (with some glass) Total 11 bags.	Kingsley
13	13D	72° 29.4'N 02° 22.4'E		Mohns R., rift	<del>lost dredge</del>	Bergeron/ Schilling
14	14D	72° 48.8'N 04° 15.8'E	2520-2560	Mohns R. asymmetrical rift	Feldsparphyric basalt, slightly palagonitized, glass sparse, some thin lin-coating. Total 3 bags.	Kingsley
15	15D	73° 12.9'N 00° 26.3'E	2050-2730	Rift center, of Mohns R. (asymmetrical)	Aphyric pillow basalt fragments, glass sparse w/possibly older type. Total 5 bags.	Schilling
16	16D	73° 24.3'N 07° 23.3'E	2520-2725	Near top of large central volcano in rift of Mohns R. (asymmetrical)	1) Sparsely felsparphyric pillow basalts with thin glass and breaded crust. 2) Possibly fresher type (no glass, rognon type) Total 5 bags.	Kingsley
17	17D	73° 42.0'N 08° 19.9'E	3325	W. wall of Mohns R. rift	No recovery	Bergeron
17A	17A	73° 44.2'N 08° 17.3'E	3300-2500	E. wall Mohns R. rift.	No recovery	Schilling



## EH-026 BRECCIA RECOVERY

SURVEY LINE	STATION	LOCATION	DEPTH (m)	FEATURE	RESULTS	OPERATOR
13	100	74° 02.7'N 06° 46.7'E	3500-3250	West wall of rift Mohns R.	Massive pyrite rich claystone and conglomerate in calcitic cement. Total 2 bags.	Kingsley
24A	190	75° 57.3'N 07° 16.9'E	3200-3225	Side of hill within bottom of graben of Knipovich R.	Pillow basalt fragments with some glass and thin lin staining Total 1 bag.	Kingsley
25A	200	76° 16.7'N 07° 05.4'E	3500-3400	Bottom of rift valley, Knipovich R.	No Recovery	Schilling
26	210	76° 33.4'N 07° 11.3'E	2760-2860	Lower W. side of asymmetrical rift Knipovich R.	Fresh pillow basalt fragments, glass sparse. Total 1 bag.	Kingsley
27	220	76° 51.3'N 07° 22.3'E	3500-3400	Bottom of asymmetrical rift of Knipovich R.	Very fresh and glassy slabs, small pillows and pahoehoe type flow structures with some blue stain. Total 2 bags.	Bergeron
290	230	77° 10.6'N 07° 24.3'E	3600-3300	Bottom and lower W. side of rift, Knipovich R.	Mud only, Total 1 bag.	Schilling
29	240	77° 24.1'N 07° 26.9'E	3650-2800	W. wall of rift, Knipovich R.	Mud only, Total 1 bag.	Kingsley

EN-026 DREDGING RECOVERY

SURVEY LINE	STATION	LOCATION	DEPTH(m)	FEATURE	RESULTS	OPERATOR
29	25D	77°31.7'N 07°40.3'E	3000-2850	Side of central volcano in graben Knipovich R.	1) Fresh massive feldsparphyric, glassy pillow basalt fragments, 2) Possibly other type of glassy pillow basalts. Total 15 bags.	Bergeron
31	26D	79°22.8'N 02°38.7'E	3200-2000	E. wall of possible rift zone, or Spitzbergen F.Z.?	Abundant serpentinized peridotite, and some glacial erratics, including limestone. Total 10 bags.	Schilling
32	27D	75°31.4'N 07°30.2'E	3540-3500	Bottom of graben Knipovich R.	2 small angular basalt fragments freshly broken-up-mud balls, and conglomerated mud balls.	Bergeron
33E	28D	75°2.9'N 08°09.9'E	3450-3470	Median valley Knipovich R.	No recovery	Kingsley
34	29D	74°39.2'N 03°30.7'E	3000-2755	Small central volcano, bottom of rift, Knipovich R.	1) Few very fresh glassy basalt crusts 2) abundant pillow basalt with some glassy rinds 3) Older palagonitized pillow basalt with Mn-coating. Total 10 bags.	Bergeron

EN-026 DREDGE RECOVERY

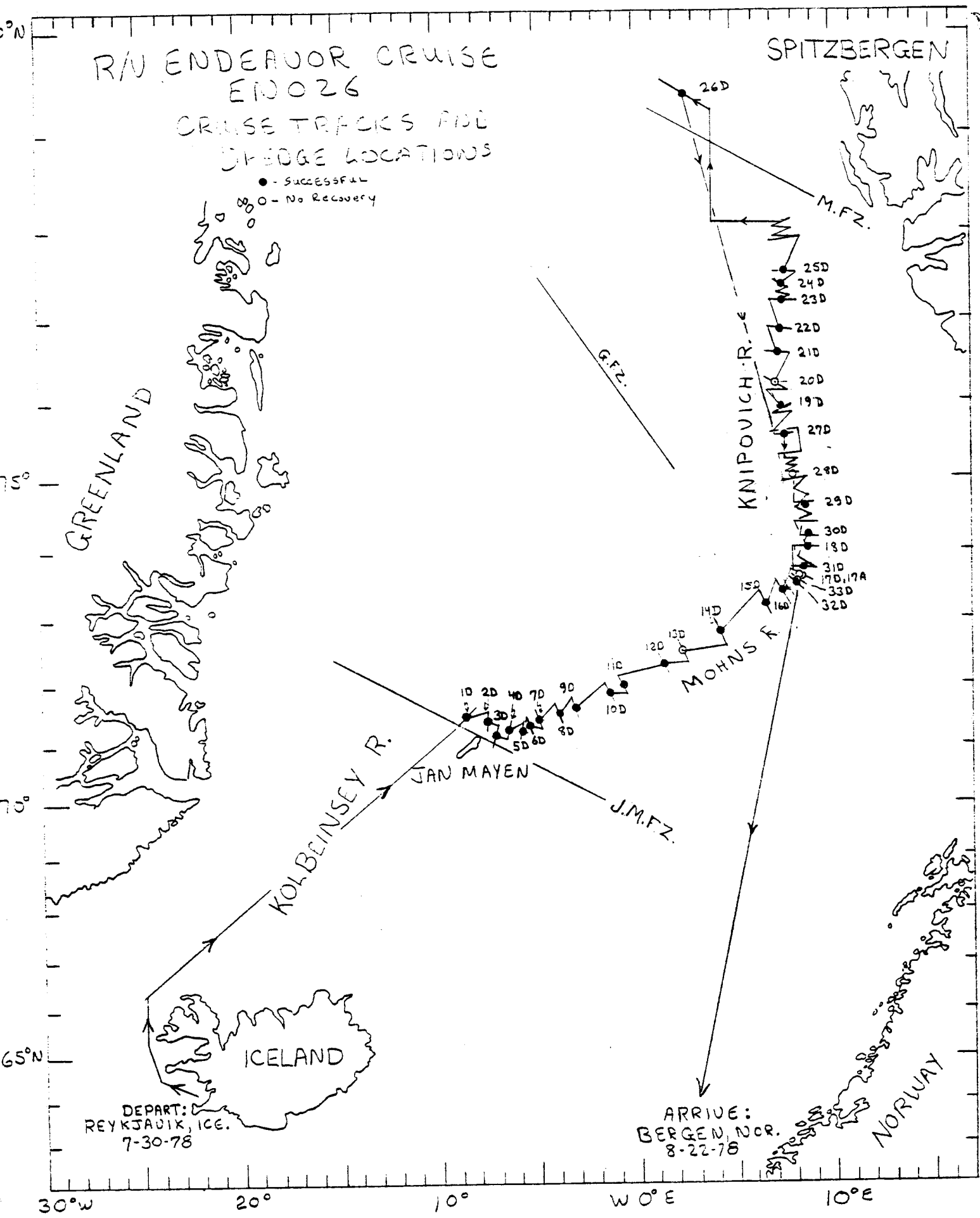
SURVEY LINE	STATION	LOCATION	DEPTH(m)	FEATURE	RESULTS	OPERATOR
35	30D	74° 11.7'N 08° 50.1'E	3250-3170	Bottom of rift, Knipovich R.	Very fresh glassy slabs with stalactites and ridges preserved; recent eruption, glass very abundant. Total 1 hand bag.	Schilling
36B	31D	73° 44.6'N 08° 22.3'E	3265-3315	Bottom of rift, Knipovich R.	Few pillow basalt fragments, with glass embedded in mud, few glass nuggets, some glacial erratics, one siltstone. Total 1 bag and 2 large pillows.	Kingsley
37	32D	73° 31.2'N 08° 06.5'E	2450-2125	Central ridge within rift of Knipovich R.	1) Feldsparphyric fist size pillow with some glass 2) Abundant very fresh dark brown glassy pillow basalts 3) Dull brown pillow basalt. 4) Older pillow basalts with thick tin-coating (1-2mm) Total 3 hand bags.	Schilling
38	33D	73° 35.5'N 08° 10.5'E	2365-2325	Central ridge within rift - Mohns - Knipovich R. Junction	no recovery	Schilling



# R/V ENDEAVOR CRUISE ENOZ6

## CRUISE TRACKS AND DREDGE LOCATIONS

● - SUCCESSFUL  
○ - No Recovery



DEPART:  
REYKJAVIK, ICE.  
7-30-78

ARRIVE:  
BERGEN, NOR.  
8-22-78

30°W

20°

10°

W 0° E

10°E