

CRUISE REPORT

Ship Utilization Data

1. Ship Name W MAURICE EWING		2. Operating Institution Lamont-Doherty Earth Observatory Pallsades, N.Y. 10964		3. Cruise (leg) Number EW 92-09																																													
4. Dates of Project: Begin: 21-Aug-92 End: 26-Sep-92		7. Participating Personnel:		Function on Cruise (Ch.Sci.,Obs.,Tech.,Grad. <u>Student Undergrad For Obsv.</u>)																																													
Port Calls <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;"><u>Place</u></td> <td style="width: 50%; border-bottom: 1px solid black;"><u>Date</u></td> </tr> <tr> <td>Bridgetown, Barbados</td> <td>21-22 August 1992</td> </tr> <tr> <td>Bridgetown, Barbados</td> <td>26-Sep-92</td> </tr> </table>		<u>Place</u>	<u>Date</u>	Bridgetown, Barbados	21-22 August 1992	Bridgetown, Barbados	26-Sep-92	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;"><u>Code</u></td> <td style="width: 50%; border-bottom: 1px solid black;"><u>Title Name Institution</u></td> </tr> <tr><td>1.</td><td>Gregory S. Mountain, L-DEO</td></tr> <tr><td>2.</td><td>William B. Curry, WHOI</td></tr> <tr><td>3.</td><td>Eva C. Anderson, L-DEO</td></tr> <tr><td>4.</td><td>Jan E. Backman, WHOI</td></tr> <tr><td>5.</td><td>James E. Broda, WHOI</td></tr> <tr><td>6.</td><td>James L. Cullen, WHOI</td></tr> <tr><td>7.</td><td>Crete K. havelrud, WHOI</td></tr> <tr><td>8.</td><td>Linnea R. Norby, WHOI</td></tr> <tr><td>9.</td><td>Dorinda R. Oslermann, WHOI</td></tr> <tr><td>10.</td><td>James D. Wright, WHOI</td></tr> <tr><td>11.</td><td>Thomas D. Aitken, L-DEO</td></tr> <tr><td>12.</td><td>Stephanus Budhypromano, L-DEO</td></tr> <tr><td>13.</td><td>John DiBernardo, L-DEO</td></tr> <tr><td>14.</td><td>Bruce A. Francis, L-DEO</td></tr> <tr><td>15.</td><td>Jim C. Griffin, L-DEO</td></tr> <tr><td>16.</td><td>William Kosczynski, L-DEO</td></tr> <tr><td>17.</td><td>Malwirwiri, Ropate, L-DEO</td></tr> <tr><td>18.</td><td>Suzanne O'Hara, L-DEO</td></tr> </table>		<u>Code</u>	<u>Title Name Institution</u>	1.	Gregory S. Mountain, L-DEO	2.	William B. Curry, WHOI	3.	Eva C. Anderson, L-DEO	4.	Jan E. Backman, WHOI	5.	James E. Broda, WHOI	6.	James L. Cullen, WHOI	7.	Crete K. havelrud, WHOI	8.	Linnea R. Norby, WHOI	9.	Dorinda R. Oslermann, WHOI	10.	James D. Wright, WHOI	11.	Thomas D. Aitken, L-DEO	12.	Stephanus Budhypromano, L-DEO	13.	John DiBernardo, L-DEO	14.	Bruce A. Francis, L-DEO	15.	Jim C. Griffin, L-DEO	16.	William Kosczynski, L-DEO	17.	Malwirwiri, Ropate, L-DEO	18.	Suzanne O'Hara, L-DEO	Dates (If less than <u>entire cruise</u>)	
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5. Number, Sea Days		6. Number, Port Days																																															
34		3																																															
8a. Area of Operations, Area Index and Geographic Description																																																	
89 NL (Ceara Rise & Amazon Fan) NA9																																																	
8b. Research in Foreign Waters?_No_																																																	
Country:		Use reverse of necessary																																															
9. Primary Project(s)																																																	
a. Project Title, Principal Investigator, Institution		b. Sponsoring Agency/	c. Grant or Contract	d. Participating Personnel	ee. Discipline																																												
a. "Cenozoic History of Deepwater Circulation and Chemistry at Ceara Rise", William Curry, WHOI & Gregory Mountain, L-DEO																																																	
b. National Science Foundation		c. OCE 91-16303	d. 1-10	e. GG																																													
10. Ancillary Project(s)																																																	
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a. "Site Survey Augmentation for ODP Drilling on Amazon Fan", Roger Flood, SUNY, Stonybrook																																																	
b. JOI/USSAC		c. JSC15-92	d. 1,2	e.																																													
11. Science Party:		12. Cost Allocation Data																																															
Scientists_7_ Grad. Students_____		a. Days Charged	b. Agency or Activity Charged	c. Grant or Contract No.																																													
Undergrads_____ Technicians_11_		35 Days	NSF	OCE90-01169																																													
Observers_____		2 Days	JOI/USSAC	JSC15-92																																													
Foreign Observers_____																																																	
13		 Michael Rawson, Marine Science Coordinator Title, Signature, Operating Institution Official			Date January 26, 1993																																												

Date: March 9, 1993

To: Aitken, T. L-DEO
Chayes, D. L-DEO
Cox, L. L-DEO
Eaton, G. L-DEO
Hayes, D. L-DEO
Mutter, J. L-DEO
MARSCICO, L-DEO
Science Officer EWING
Captain EWING
Stennett, J. L-DEO
Robinson, W. L-DEO

RESEARCH CRUISE REPORT
R/V MAURICE EWING, LEG 92-09

" Cenozoic History of Deepwater Circulation and Chemistry at Ceara Rise"

Dr. Gregory S. Mountain, L-DEO
Dr William B. Curry, WHOI

Dates: 21 August 1992 - 26 September 1992
Ports: Barbados/Barbados

mr/2/93

Mercy Garland
Marine Department

March 9, 1993

Cruise Report for Ew9209

--- submitted by ---

Gregory Mountain, Chief Scientist

begin: 1000 hrs JD 236 (23 August, 1992)
end: 0900 hrs JD 269 (25 September, 1992)
distance traveled: 10,360 km
personnel:

<i>name</i>	<i>affiliation</i>	<i>shipboard duty</i>
G. Mountain	LDEO	Ch. Sci.
W. Curry	WHOI	Co-Ch. Sci.
T. Aitken	LDEO	Data Reduction
C. Anderson	U Sweden	Watchstander
J. Backman	U Sweden	Biostratigrapher
J. Broda	WHOI	Coring Tech.
S. Budhypramono	LDEO	Network Sys. Mgr.
J. DiBernardo	LDEO	Air Gun Tech.
J. Cullen	Salem State	Watch Leader
B. Francis	LDEO	Sci. Officer
J. Griffis	LDEO	Air Gun Tech.
G. Hovelsrud	WHOI	Watchstander
W. Koczynski	LDEO	Elect. Tech.
R. Maiwiriwiri	LDEO	Coring Tech.
L. Norby	LDEO	Watchstander
R. Osterman	WHOI	Watchstander
S. O'Hara	LDEO	Hydrosweep Tech.
J. Wright	LDEO	Watchstander

data collected:

3.5 kHz echosounder

Krupp-Atlas Hydrosweep

on: 1423 hrs JD 236

off: 1254 hrs JD 269

tuned 6-airgun single channel digital seismics

<i>Line</i>	<i>JD</i>	<i>Time on</i>	<i>JD</i>	<i>Time off</i>
0	241	/ 1100	241	/ 1851
1	241	/ 1853	242	/ 1020
2	242	/ 1035	243	/ 0600
3	243	/ 0632	243	/ 1030
4	243	/ 1108	244	/ 0413
5	244	/ 0440	244	/ 1000
6	245	/ 0005	245	/ 0536
7	245	/ 0544	245	/ 1836
8	245	/ 1849	246	/ 0708
9	246	/ 0729	246	/ 2224
10	246	/ 2253	247	/ 0926
11	248	/ 0146	248	/ 0607
12	248	/ 0609	248	/ 2153

13	248	/	2203	249	/	1335
14	249	/	1338	250	/	0557
15	250	/	0628	250	/	2217
16	250	/	2236	251	/	0651
17	251	/	1302	252	/	0432
18	252	/	0503	252	/	1554
19	252	/	1629	252	/	2316
20	252	/	2324	253	/	1753
21	254	/	0602	254	/	1225
22	254	/	1227	254	/	1546
23	255	/	0010	255	/	0841
24	255	/	0844	255	/	1341
25	255	/	1913	256	/	1315
26	257	/	0634	257	/	1407
27	257	/	1410	257	/	2007
28	257	/	2013	258	/	1121
29	258	/	1457	258	/	1745
30	259	/	0747	259	/	2030
31	259	/	2040	260	/	0318
32	260	/	1203	261	/	0307
33	261	/	1149	261	/	1900
34	261	/	1922	261	/	2247
35	262	/	1020	262	/	2241
36	263	/	1309	264	/	0935
37	264	/	0938	266	/	0658

10 sec rep rate

guns @ 2000 psi = 500, 145, 120, 80, 200, and 305 in³ (stbd to port)

4-channel recording of "high speed" SCS streamer

12.5, 25, 50, and 50m groups (near to far)

2 msec sampling on DSS240 as traces 1-4

7 sec recording on Fujitsu 3480 tape cartridges

processing with JDSEIS

gain normalization file based on 1st 100 shots of each SCS line

NMO and stack based on water velocity

spherical divergence correction

bandpass filter 20-70 Hz, roll-off width 10 Hz lo, 40 Hz hi

time-varying gain

display on shipboard 300 dpi laserprinter

D-to-A converted trace 2 displayed on two recorders

5 sec display, 20-80 Hz

4 sec display, 20-120 Hz, 20 dB amplification

GI airgun single channel digital seismics

recording, processing as with airgun array

sonobuoy reflection/refraction measurements

6-airgun array source as before

all recorded by SSQ41A expendable buoys

15 sec rep rate

4 msec sampling on DSS240 as traces 5-8

12 sec recording on Fujitsu 3480 tape cartridges

processing with JDSEIS

display on shipboard 300 dpi laserprinter

large-diameter piston cores

<i>Core</i>	<i>JD</i>	<i>GMT</i>	<i>Latitude</i>	<i>Longitude</i>
1 JPC	244	1336	5 53.95'	44 11.78'
2 JPC	244	2113	5 38.0'	44.28.5'
3 JPC	247	1228	5 18.8'	44 15.7'
4 JPC	247	1817	5 32.0'	44 02.3'
5 JPC	251	900	4 16.322'	43 24.903'
6 JPC	253	2114	5 58.63'	43 44.48'
7 JPC	254	1921	5 24.15'	43 58.85'
8 JPC	255	1629	4 32.729'	43 47.515'
9 JPC	256	1551	4 13.8'	43 27.9'
10 JPC	258	2024	4 33.79'	44 04.82'
11 JPC	259	328	4 32.81'	43 45.13'
12 JPC	260	700	3 46.792'	42 58.797'
13 JPC	261	619	4 47.3'	43 48.1'
14 JPC	262	425	5 27.24'	43 45.09'
15 JPC	262	208	6 11.9677'	43 30.9044'

underway magnetics using the Varian V75 magnetometer

on: 1117 hrs on JD 237

off: 1217 hrs on JD 268

underway gravity using the KSS-30 gravimeter

on: 1502 hrs on JD 236

off: 1918 hrs on JD 269

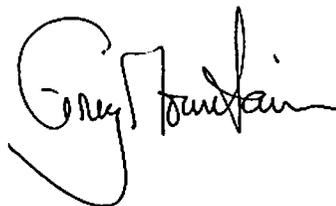
Comments:

We had a very successful cruise. The ship's officers, crew and the technical staff were superb. Our most serious problem occurred during the recovery of our second core and involved metal scraps in the hydraulic line that powers the core winch. Though not absolutely certain, it was thought that a retaining ring in the hydraulic pump had dislodged and been ground up somewhere in the hydraulic line. The ship's engineers led by Chief Steve Pica did an outstanding job of determining the problem and providing a work-around solution. They removed high-pressure filters from the unused MCS winch power pack, inserted them in the core winch line to guard against further damage, and re-plumbed the CTD hydraulic line to power the core winch. Due to smaller fluid volume of this substitute system, however, the core winch could not be driven beyond 30 meters per minute; hence coring operations were slowed, but they worked. Lengthy "winch watches" by Ropate Maiwirwiri were conducted in his typically stoic and cheerful manner. This was the first coring attempted from the Ewing. We used WHOI's large-diameter, lined piston corer with a launch/recovery bucket built specifically for the Ewing by Jim Broda. Though most cores were 60 feet in length, 80-footers could have been handled. We had consistent difficulties in extracting the cores because of imploded liners. The crushed sections often occurred in the middle of a core (not at the top), and we concluded that wire rebound during trip (not incomplete penetration) was a likely cause. The lack of torque-balanced core wire very likely contributed to this problem. The 6-airgun array and single-channel streamer worked well due to the outstanding work provided by the gunners John DiBernardo and Jim Griffis. Only two problems need be mentioned. One is that the DT's on the airguns continue to provide reliable towing depths for very short intervals if at all. The second is that without DT's on the streamer we continue to be "shooting" in the dark as far as "high resolution" SCS is concerned. Depths of both the gun array and the streamer should be known and ideally controllable. We tested the dual-chamber GI airgun and were

pleased with the results. Science Officer Bruce Francis kept the DSS240 recording system running without so much as one crash for the entire cruise. His myriad of other tasks were done with equal skill and consistently in a cheerful and constructive manner. Willy Kosczynski performed a variety of tasks launching and recovering gear and maintaining the main lab equipment. On-board seismic processing was done with the JDSEIS package. While it took a non-trivial amount of time to learn, it worked well. With Macintosh graphic packages brought along for the cruise, we produced entirely acceptable, page-size displays of processed SCS profiles before reaching port. Suzanne O'Hara managed the Hydrosweep logging and off-line editing/processing/display stream, and provided considerable help in managing the complicated network of workstations we were using for on-board processing. The official System Manager, Stephanus Budhyprmano, provided superb network performance. Tom Aitken edited our underway geophysical data, and within hours of completing a day's acquisition had all of the routine analyses done.

Recommendations:

1. Install torque-balanced core wire.
2. Make it widely known that the Ewing can take 60 to 80-foot cores.
3. When it is time to replace the water guns, consider GI guns instead.
4. Get DT's for both the guns AND the SCS streamer.
5. Maintain a shipboard library of digital and hard copy data of all types to provide a means for comparing data quality from one cruise to the next.
6. Routinely record XBT measurements on disk (with a record in a log book) and supply these data to the Co-Chief in the same package as all the other underway data.
7. Without degrading Hydrosweep data quality, find a way to uncover the bow thrusters for use during station keeping.

A handwritten signature in black ink, appearing to read "Greg Fountain". The signature is written in a cursive, somewhat stylized font. The first name "Greg" is written in a larger, more prominent script, and "Fountain" is written in a smaller, more compact script to its right. The signature is located in the lower right quadrant of the page.