WHOI-73-50

CRUISE REPORT
CHAIN 112, LEG VI
24 June - 9 July, 1973

By

R. Heinmiller, Chief Scientist

WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts 02543

August 1973

TECHNICAL REPORT

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Approved for Distribution

Ferris Webster, Acting Chairman
Department of Physical Oceanography

Cruise Report

CHAIN 112, Leg VI
R. Heinmiller, Chief Scientist

Leg VI of CHAIN 112 was scheduled from 24 June to 9 July, St. Georges, Bermuda to Woods Hole. The original plans called for the following work:

- Recovery of sixteen intermediate moorings at the MODE site
(28° N., 69° 40'W.)
- Recovery of three subsurface moorings in the MODE area for
the University of Rhode Island
- Launching of two new intermediate moorings at the MODE site
- Bathymetric and meteorological observations in the MODE area
- Bathymetry at Site D
- Acoustic checks of three intermediate moorings at Site D
(39° 10'N., 70° 00'W.)
- CTDs at each mooring recovery and setting

R/V CHAIN sailed from St. Georges, Bermuda at 1800Q on June 24, 1973, and proceeded directly to the site of Station 482 in the MODE area. This mooring was recovered before doing an acoustic-release test-lowering on the CTD wire. A CTD was done while preparing for the launch of Station 502, a long-term site mooring. A set of corrosion sample modules at various depths had been removed from Station 482 and kept immersed in sea water during the interval between recovery and launch. Due to mistakes in the placement and attachment of these samples, Station 502 had to be partially hauled back in and paid out again twice during the launch. The mooring was eventually towed into

position and the anchor dropped at 1954Q on 26 June.

Minor difficulties were noticed with the acoustic tracking gear aboard ship during the recovery of Station 500, but the recovery went smoothly, followed by a CTD. On April 26, on CHAIN 112, Leg III, a towfish had been tangled in the mooring at a depth of about 750 meters with the ship traveling at about six knots. The fish and tow wire had been freed approximately eight hours later but a 250 pound sensor package attached to the towfish was lost. Very little damage was noted on the mooring at recovery. The plastic wire jacket was stripped back over a length of about five meters at a depth of 790 meters, but there was little or no damage to any instrumentation.

At the site of the central mooring the acoustic release of Station 481 was checked. Since it was desired to leave this mooring until last, it was not released. Station 503, the second site mooring, was set about four miles west. After a CTD the ship proceeded to Station 499.

Stations 499, 498, 497 and 495 were recovered without difficulty, each followed by a CTD. Due to the particular combination of current profile and wind present some of the moorings came up with their glass ball clusters arranged in an awkward manner for ship pickup. Some moorings were therefore recovered in the reverse of the normal order, with the lower end picked up first to minimize fouling. CTD's were started in most cases shortly after the start of the mooring recovery, as soon as the mooring wire angle had stabilized. Most CTD's were finished within an hour after the recovery.

Two of the Vector Averaging Current Meters on Station 497 were flooded. Eventually a total of five instruments on Stations 495, 497,

498 and 500 were found flooded. The apparent cause was a faulty electrical feed-through on the Sony diode rotor sensor.

On the 29th, while the CTD winch was being used to spool off recovered dacron line enroute to Station 494, the winch began making loud noises. The problem was diagnosed as a bad bearing. Bermuda was contacted and arrangements were made for the F. V. HUNT to bring out a new set of bearings to be flown from Woods Hole. In addition, HUNT would bring a supply of extra gasoline for the mooring recovery winch. In the event that the CTD winch could not be repaired it was intended to rig the mooring winch to do shallow CTDs, and our gasoline supply was getting low. Meanwhile, temporary repairs were underway on the CTD winch.

During the next four days Stations 494, 493, 489, 488, 486, 485, 484, and 483 were recovered without incident. CTDs were resumed with Station 489. All were done during the mooring recoveries.

During this period a subtropical depression to the south of the MODE site developed into tropical storm Alice, moving northward. However, it went to the east of our working area, hitting Bermuda, and we felt little or no effect from it.

CHAIN arrived at the central mooring at 0340Q on July 4. A CTD was done and the mooring, Station 481, was recovered in the morning. HUNT arrived around noon and the bearings and gasoline were transferred by the CHAIN's inflatable outboard.

After release checks on Station 503, set earlier, the ship went to the site of Station 480, the surface mooring set in March. On May 23, on Leg IV, the CHAIN had been approaching the surface float at night. At a distance of about seven or eight miles a strong radar

return was noticed at the position of the float. At a shorter distance a large vessel could be seen, hove to at the precise mooring position, with deck lights lit. As the CHAIN approached the unknown vessel had gotten underway, turning out her deck lights, and left the area at about fifteen knots, leaving no trace of the surface float. The vessel had not responded to radio calls. On the afternoon of July 4 we passed through the position of Station 480. There were no radio signals heard. The mooring had not had an anchor release nor a backup-recovery glass ball package.

On the 5th and 6th we recovered University of Rhode Island moorings #21, #22, and #23 with no problems, each followed by a CTD. At 0750Q on July 6th the ship headed North for Site D.

On the morning radio schedule the HUNT, still in the vicinity of the central mooring site, requested that we exchange Loran C units with her, since hers was not working. However, our arrival time in Woods Hole could not be changed at this point and we were forced to continue North. CTDs were taken at Site L (34° N., 70° W.) and at the 5,000-meter curve.

In the Site D area the releases were checked on Stations 490, 491, and 492, all set in March on Leg II. An unsuccessful attempt was also made to contact the release on Station 461, a bottom mooring which had been set in July, 1972. In December of 1972 at the scheduled recovery time no response had been heard from the acoustic release. We were unable to contact this mooring. After two CTDs the ship headed for Woods Hole, arriving at 0700Q on 9 July, 1973.

Acknowledgements

I would like to thank all those who participated in CHAIN 112, Leg VI, both at sea and ashore, including the officers and crew of R/V CHAIN.

Experiments Initiated and/or Completed
and Data Collected on
CHAIN 112, Leg VI

- Recovery of MODE I array (481, 482, 483, 484, 485, 486, 488, 489, 493, 494, 495, 497, 498, 499, 500, 501) - Schmitz, Fofonoff, Webster, Wunsch
- Setting of MODE site maintenance moorings (502 and 503) - Schmitz
- Exposure of plastic samples (recovered from 498 and set new samples on 503) - W. Vachon, Draper Lab
- Exposure of corrosion samples (recovered on 482 and same samples reset on 502) - S. Dexter
- MODE bathymetry - MODE Council
- Site D Bathymetry - Rory Thompson
- Meteorological measurements - MODE Council
- Twenty-one CTD stations - Fofonoff

Personnel

Robert Heinmiller

James Gifford

George Tupper

David Simoneau

John Scharff

Rod LaRochelle

William Horn

Joseph Poirier

Alan Bruen

Nancy Bauchmann

Susan Tarbell

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Nick Fofonoff

Stanley Hayes

Michael Parke

Sharon Gwinn (Wellesley College)

Ya Hseuh (Harvard University)

William Vachon (Draper Laboratory)

Luch Fomin (Institute of
Oceanology, U.S.S.R.)

Michael Koshlyakov (Institute
of Oceanology, U.S.S.R.)

Adam Giffard (Centre Films)

Joanna McDonough (Centre Films)

Yuri Grachev (Institute of
Oceanology, U.S.S.R.)

SHIP'S TRACK IN MODE AREA

- () MOORINGS SET
- MOORINGS RECOVERED
- ▲ MOORING LOST

FIG. 1 - LEG VI, CHAIN 112

STATION 481

STATION 481

(CONTINUED)

3/8" DACRON

6 m

470 m

TEMP/DEPTH RECORDER — 481,11

12 m

458 m

10 16" GLASS BALLS IN HARD HATS ON 10 m 3/8" CHAIN

VACM — 481,12

2 m 1/2" DACRON

TEMP/DEPTH RECORDER — 481,13

20 m

455 m

3/8" DACRON

TEMP/DEPTH RECORDER — 481,14

18 m

455 m

5 16" GLASS BALLS IN HARD HATS ON 5 m 3/8" CHAIN

CURRENT METER — 481,15

2 m 1/2" DACRON

TEMP/DEPTH RECORDER — 481,16

376 m

TEMP/DEPTH RECORDER — 481,17

442 m

456 m

CURRENT METER — 481,18

2 m 1/2" DACRON

TEMP/DEPTH RECORDER — 481,19

55 m 3/8" DACRON

(CONTINUED)

STATION 481

(CONTINUED)

15 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2500 LBS

STATION 482

RADIO FLOAT
WITH LIGHT

CONICAL FLOAT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

CORROSION LINK
VACM — 4821

2 m 3/8" CHAIN

96 m 3/16" WIRE

2 m 3/8" CHAIN

TEMP/DEPTH RECORDER — 4822

196 m 3/16" WIRE

VACM — 4823

2 m 3/8" CHAIN

198 m 3/16" WIRE

CORROSION SAMPLE
2 m 3/8" CHAIN

TEMP/DEPTH RECORDER — 4824

199 m 3/16" WIRE

280 m 3/16" WIRE

10 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 4825

500 m 3/16" WIRE

45 m 3/8" DACRON

(CONTINUED)

(CONTINUED)

STATION 482

3/8" DACRON

456 m

457 m

6 16" GLASS BALLS IN HARD HATS ON 6 m 3/8" CHAIN

VACM — 4826

CORROSION SAMPLE

38 m

459 m

455 m

VACM — 4827

170 m

457 m

457 m

CURRENT METER — 4828

57 m

17 16" GLASS BALLS IN HARD HATS ON 17 m 3/8" CHAIN

CORROSION SAMPLE

ACOUSTIC RELEASE

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR .2550 LBS.

STATION 483

STATION 483

(CONTINUED)

3/8" DACRON

30 m

457 m

458 m

VACM — 4837

141 m

458 m

457 m

TEMP / DEPTH RECORDER — 4838

8 m

47 m

14 17" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2450 LBS.

STATION 484

STATION 484

(CONTINUED)

3/8" DACRON

46 m

457 m

453 m

VACM- 4847

148 m

455 m

456 m

13 17" GLASS BALLS IN HARD HATS ON 13 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2450 LBS.

STATION 485

3/16" WIRE

3/8" DACRON

490m

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

13 17" GLASS BALLS IN HARD HATS ON 13 m 3/8" CHAIN

VACM - 4851

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

TEMP/DEPTH RECORDER - 4852

196 m 3/16" WIRE

VACM - 4853

2 m 3/8" CHAIN

198 m

TEMP/DEPTH RECORDER - 4854

199 m

TEMP/DEPTH RECORDER - 4855

280 m

8 17" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM - 4856

500 m

TEMP/DEPTH RECORDER - 4857

10 m

16 m

457 m

TEMP/DEPTH RECORDER - 4858

8 m

458 m

(CONTINUED)

STATION 485

(CONTINUED)

3/8" DACRON

STATION 486

STATION 486

(CONTINUED)

3/8" DACRON

VACM - 4865

41 m

458 m

457 m

TEMP / DEPTH RECORDER - 4866

3 m

71 m

339 m

455 m

448 m

CURRENT METER - 4867

55 m

13 17" GLASS BALLS IN HARD HATS ON 13 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR 2650 LBS.

STATION 488

RADIO FLOAT
WITH LIGHT
2m 1/2" CHAIN
2m 3/8" CHAIN

12 17" GLASS BALLS IN HARD HATS ON 12m 3/8" CHAIN

VACM - 4881

2m 3/8" CHAIN

96m 3/16" WIRE

3m 3/8" CHAIN

TEMP/DEPTH RECORDER - 4882

196m 3/16" WIRE

VACM - 4883

2m 3/8" CHAIN

198m 3/16" WIRE

1m 3/8" CHAIN

199m 3/16" WIRE

1m 3/8" CHAIN

280m 3/16" WIRE

8 17" GLASS BALLS IN HARD HATS ON 15m 3/8" CHAIN

VACM - 4884

500m 3/16" WIRE

458m

458m

35m

3/8" DACRON

(CONTINUED)

STATION 488

(CONTINUED)

3/8" DACRON

STATION 489

STATION 489

(CONTINUED)

3/8" DACRON

STATION 492

STATION 493

STATION 493

(CONTINUED)

3/8" DACRON

52 m

454 m

454 m

TEMP/DEPTH RECORDER — 4937

337 m

456 m

456 m

43 m

CURRENT METER — 4938

57 m

15 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

15 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2350 LBS.

STATION 494

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

12-16" + 2-17" GLASS BALLS IN HARD HATS ON 14 m CHAIN

VACM - 4941

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

TEMP/DEPTH RECORDER - 4942

196 m 3/16" WIRE

VACM - 4943

2m 3/8" CHAIN

198 m 3/16" WIRE

TEMP/DEPTH RECORDER - 4944

199 m 3/16" WIRE

1 m 3/8" CHAIN

280 m 3/16" WIRE

10 16" GLASS BALLS IN HARD HATS ON 10 m 3/8" CHAIN

5 m 3/8" CHAIN

VACM - 4945

500 m 3/16" WIRE

52 m

454 m

453 m

3/8" DACRON

(CONTINUED)

STATION 494

(CONTINUED)

5 16" GLASS BALLS IN HARD HATS ON 5m 3/8" CHAIN

VACM - 4946

54 m

453 m

453 m

TEMP/DEPTH RECORDER - 4947

45 m

340 m

454 m

455 m

CURRENT METER - 4948

57 m

15 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

15m 3/4" NYLON

3m 1/2" CHAIN

STIMSON ANCHOR, 2400 LBS.

STATION 495

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

VACM— 4951

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

TEMP/DEPTH RECORDER— 4952

196 m 3/16" WIRE

CURRENT METER — 4953

2 m 3/8" CHAIN

198 m 3/16" WIRE

TEMP/DEPTH RECORDER— 4954

199 m 3/16" WIRE

1 m 3/8" CHAIN

280 m 3/16" WIRE

9 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM— 4955

500 m 3/16" WIRE

847 m 3/8" DACRON

108 m 3/8" DACRON

(CONTINUED)

STATION 495

(CONTINUED)

3/8" DACRON

STATION 497

3/16" WIRE

463 m

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

13 17" GLASS BALLS IN HARD HATS ON 13 m 3/8" CHAIN

VACM — 4971

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

TEMP/DEPTH RECORDER — 4972

196 m 3/16" WIRE

CURRENT METER — 4973

2 m 3/8" CHAIN

198 m

TEMP/DEPTH RECORDER — 4974

199 m

TEMP/DEPTH RECORDER — 4975

280 m

8 17" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 4976

500 m

TEMP/DEPTH RECORDER — 4977

456 m 3/8" DACRON

(CONTINUED)

STATION 497

-22a-

(CONTINUED)

3/8" DACRON

23 m

TEMP / DEPTH RECORDER — 4978

455 m

11 m

16 m

8 17" GLASS BALLS IN HARD HATS ON 8 m 3/8" CHAIN

VACM — 4979

455 m

11 m

11 m

TEMP / DEPTH RECORDER — 497,10

457 m

10 m

8 m

CURRENT METER — 497,11

379 m

TEMP / DEPTH RECORDER — 497,12

456 m

316 m

CURRENT METER — 497,13

2 m 1/2" DACRON

TEMP / DEPTH RECORDER — 497,14

57 m 3/8" DACRON

15 17" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2400 LBS.

STATION 498

STATION 498

(CONTINUED)

3/8" DACRON

455 m

455 m

7 16" GLASS BALLS IN HARD HATS ON 7 m 3/8" CHAIN

VACM — 4986

39 m

458 m

455 m

TEMP/DEPTH RECORDER — 4987

72 m

395 m

451 m

453 m

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN
STIMSON ANCHOR, 2350 LBS.

STATION 499

3/16" WIRE

478 m

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

VACM — 4991

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN
TEMP/DEPTH RECORDER — 4992

196 m 3/16" WIRE

VACM — 4993

2 m 3/8" CHAIN

198 m

TEMP/DEPTH RECORDER — 4994

199 m

1 m CHAIN

280 m

9 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 4995

500 m

42 m 3/8" DACRON

(CONTINUED)

STATION 499

(CONTINUED)

3/8" DACRON

455 m

458 m

7 16" GLASS BALLS IN HARD HATS ON 7m 3/8" CHAIN

VACM — 4996

41 m

455 m

456 m

TEMP/DEPTH RECORDER — 4997

387 m

456 m

456 m

67 m

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN
STIMSON ANCHOR, 2450 LBS.

STATION 500

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

VACM — 5001

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

TEMP/DEPTH RECORDER — 5002

196 m

VACM — 5003

2 m 3/8" CHAIN

198 m

TEMP/DEPTH RECORDER — 5003

199 m 1 m 3/4" CHAIN

280 m

9 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 5005

500 m

43 m

456 m

(CONTINUED)

-25a-

(CONTINUED)

STATION 500

456 m

7 16" GLASS BALLS IN HARD HATS ON 7 m 3/8" CHAIN

VACM — 5006

9 m

32 m

455 m

3/8" DACRON

456 m

TEMP/DEPTH RECORDER — 5007

65 m

400 m

455 m

450 m

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2300 LBS.

STATION 501

RADIO FLOAT
WITH LIGHT

2 m 1/2" CHAIN
2 m 3/8" CHAIN

12-16" + 2-17" GLASS BALLS IN HARD HATS ON 14 m
3/8" CHAIN

VACM — 5011

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN
TEMP/DEPTH RECORDER — 5012

196 m 3/16" WIRE

CURRENT METER — 5013

2 m 3/8" CHAIN

198 m 3/16" WIRE

TEMP/DEPTH RECORDER — 5014

199 m 3/16" WIRE

1 m 3/8" CHAIN

280 m 3/16" WIRE

10 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 5015

500 m 3/16" WIRE

35 m 3/8" DACRON

(CONTINUED)

STATION 501

(CONTINUED)

3/8" DACRON

458 m 3/8" DACRON

457 m 3/8" DACRON

5 16" GLASS BALLS IN HARD HATS ON 5 m 3/8" CHAIN

VACM — 5016

40 m

456 m

456 m

CURRENT METER — 5017

335 m

447 m

457 m

CURRENT METER — 5018

57 m

15 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

15 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2500 LBS.

STATION 502

3/4" DACRON

502

(CONTINUED)

CORROSION MODULE

438 m

3/8" DACRON

27 m

446 m

4 17" GLASS BALLS IN HARD HATS ON 5 m 3/8" CHAIN

CURRENT METER — 5023

155 m

3/8" DACRON

440 m

63 m

443 m

11 17" GLASS BALLS IN HARD HATS ON 12 m 3/8" CHAIN

CORROSION MODULE

ACOUSTIC RELEASE, TRANSPONDING
WITH ISOLATION LINK

5 m 1/2" CHAIN

15 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2500 LB.

STATION 503

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

20 16" GLASS BALLS IN HARD HATS ON 22 m 3/8" CHAIN

CURRENT METER — 5031

500 m 3/16" WIRE

500 m 3/16" WIRE

4 16" GLASS BALLS IN HARD HATS ON 5 m 3/8" CHAIN

CURRENT METER — 5032

500 m 3/16" WIRE

451 m 3/8" DACRON

451 m 3/8" DACRON

(CONTINUED)

(CONTINUED)

503

3/8" DACRON

469 m

469 m

4 16" GLASS BALLS IN HARD HATS ON 5 m 3/8" CHAIN

CURRENT METER — 5033

152 m

282 m

407 m

167 m

13 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING
WITH ISOLATION LINK

5 m 1/2" CHAIN

15 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2475 LB.

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CHAIN 112, Leg VI carried out mooring work from 24 June to 9 July, 1973. A total of two moorings was set and 19 recovered. All work was done near the 70th meridian at the MODE Site (vicinity of 28° N., 69°40' W.) and Site D (vicinity of 39°10' N., 70°00' W.)

1. Moorings
2. Ocean Currents
3. MODE

- I. Heinmiller, R.
- II. N00014-66-C0241; NR 083-004

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CRUISE REPORT: CHAIN 112, LEG VI, 24 June - 9 July, 1973. R. Heinmiller, Chief Scientist. 6 Pages and 22 Figures. August 1973. Contract No. N00014-66-C0241; NR 083-004.

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1. Moorings
2. Ocean Currents
3. MODE

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