Battelle

January 3, 1989

Dr. Gary Brewer
Minerals Management Service
Pacific OCS Office
1340 West Sixth Street
Los Angeles, CA 90017

Re: MMS Contract No. 14-12-0001-30262

Dear Gary:

Enclosed please find a copy of the Cruise Report for MMS Cruise CAMP 3-2. I have distributed copies of this document to Principal Investigators, Quality Review Board members, and oil company representatives.

Sincerely,

Eiji Imamura
Program Manager

EI/hms

Enclosure

c: Ms. Frances Sullivan, MMS Contracting Officer
(MS 635, Herndon, VA)

Dr. Donald Aurand, Chief of Environmental Studies Program
(MS 644, Washington, D.C.)

CRUISE REPORT

FOR

MMS CRUISE CAMP 3-2

January 3, 1989

CALIFORNIA OCS PHASE II MONITORING PROGRAM

Performed for

U. S. Department of the Interior
MINERALS MANAGEMENT SERVICE
Pacific OCS Office

1340 West Sixth Street
Los Angeles, California 90017

by

David Drake and David Cacchione
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CRUISE REPORT
FOR
MMS CRUISE CAMP 3-2
7-13 December, 1988

Introduction

Cruise CAMP 3-2 was the second of four major cruises scheduled for Year Three of the MMS California Phase II Monitoring Program (MMS Contract No. 14-12-0001-30262). This program is designed to monitor potential environmental changes at a series of regional stations and at two arrays of site-specific stations near oil production platforms in the Western Santa Barbara Channel and Santa Maria Basin region of the California OCS. Platform Hidalgo (Lease P-0450) off Point Arguello was selected for hard-bottom, site-specific monitoring, and Platform Julius (Lease P-0409) off Point Sal was selected for soft-bottom, site-specific monitoring. Specific objectives of the program are:

1. To detect and measure potential long-term (or short-term) changes in the marine environment adjacent to oil and gas platforms; and

2. To determine whether changes observed in the marine environment during the monitoring period are caused by drilling-related activities or are a product of natural processes.

To accomplish these objectives, we are looking closely for potential biological changes and concomitant chemical or physical changes that can be linked to specific drilling events. An overall objective of Cruise CAMP 3-2 was to provide environmental data to help make these kinds of correlations and inferences.

The M/V Farnella was the support vessel for the cruise.

Objectives

This cruise was devoted primarily to the deployment of instruments to measure sediment-transport processes under winter conditions. Box cores also were collected at selected sites to provide material for detailed sediment analyses (grain size, radioisotope profiles, food quality of sediments from phytoplankton inputs, and bioturbation measurements). The specific objectives were to:

1. Conduct side-scan surveys at project sites R-8, PJ-1, and R-9;
2. Deploy two surface guard buoys at each of the above sites;
3. Deploy 3 subsurface current-meter moorings at the above sites;
4. Deploy 2 GEOPROBE tripods at R-8 and PJ-1;
5. Collect box cores for detailed sediment analyses; and
6. Collect hydrographic and suspended matter samples.

Participating Personnel

Dave Cacchione	USGS, Menlo Park
Dave Drake	USGS, Menlo Park
Jim Nicholson	USGS, Menlo Park
George Tate	USGS, Menlo Park
Rick Vail	USGS, Menlo Park
Kevin O'Toole	USGS, Menlo Park
Corky Ozanne	USGS, Menlo Park
Kaye Kinoshita	USGS, Menlo Park
Barbara Seekins	USGS, Menlo Park
John Gann	USGS, Menlo Park
Leda Beth Pickthorn	USGS, Menlo Park
Brad Butman	USGS, Woods Hole
Bill Strahle	USGS, Woods Hole
Rick Rendigs	USGS, Woods Hole
Rose Petrecca	Woods Hole Oceanographic Institution
Charlene Fuller	Woods Hole Oceanographic Institution
Kevin Briggs	Office of Naval Research
Rick Ray	Office of Naval Research
Giovanni Bortoluzzi	Visiting Scientist

Major Equipment List

CTD System	USGS, Menlo Park
GEOPROBES (2)	USGS, Menlo Park
Guard Buoys (6)	USGS, Woods Hole
VACM Moorings (3)	USGS, Woods Hole
Side Scan System	USGS, Menlo Park
Box Core	Battelle Ocean Sciences
Gravity Core	USGS, Menlo Park
Bottom Camera	Naval Oceanography Research and Development Activity

Summary of Operations

Due to surprisingly good weather and no major equipment breakdowns, our CAMP winter-season deployment and sampling cruise was very successful. All of the primary objectives were completed. Tables 1 through 5 present the reference coordinates of the deployed systems, bottom samples, and hydrographic stations. Navigation was by GPS and LORAN C. Based on an earlier comparison with a shore-based transponder system, our position accuracy is $\pm$ 25 meters.

A pair of surface guard buoys, with Coast Guard certified flashers, were deployed at R-8, PJ-1, and R-9. Each pair was positioned on a north/south trend and separated by 0.2-0.3 nautical miles. A typical buoy mooring is shown in Figure 1.

Subsurface VACM moorings were deployed at CAMP sites R-8, PJ-1, and R-9 (see Figures 2-4) approximately equidistant from the surface buoy pair. GEOPROBE

Table 1. Reference Coordinates for Surface Guard Buoys

Site	Latitude Longitude	Comment
Northern Buoy (R-8)	34°55.71 120°45.80	Flashing Light
Southern Buoy (R-8)	34°55.50 120°45.80	Flashing Light
Northern Buoy (PJ-1)	34°55.11 120°49.82	Flashing Light
Southern Buoy (PJ-1)	34°54.88 120°49.83	Flashing Light
Northern Buoy (R-9)	34°53.93 120°59.18	Flashing Light
Southern Buoy (R-9)	34°53.70 120°59.14	Flashing Light

Table 2. Reference Coordinates for USGS (Woods Hole) VACM Moorings*

Site	Depth	Latitude Longitude	Comment
R-8	92 m	34°55.63 120°45.80	Mooring No. 330
PJ-1	143 m	34°54.99 120°49.85	Mooring No. 331
R-9	350 m	34°53.82 120°59.16	Mooring No. 332

* All moorings are subsurface.

Table 3. Reference Coordinates for USGS GEOPROBE Tripods

Site	Depth	Latitude Longitude	Comment
R-8	90 m	34°55.63 120°45.79	0.13 nmi, 180° from north buoy
PJ-1	143 m	34°54.92 120°49.80	

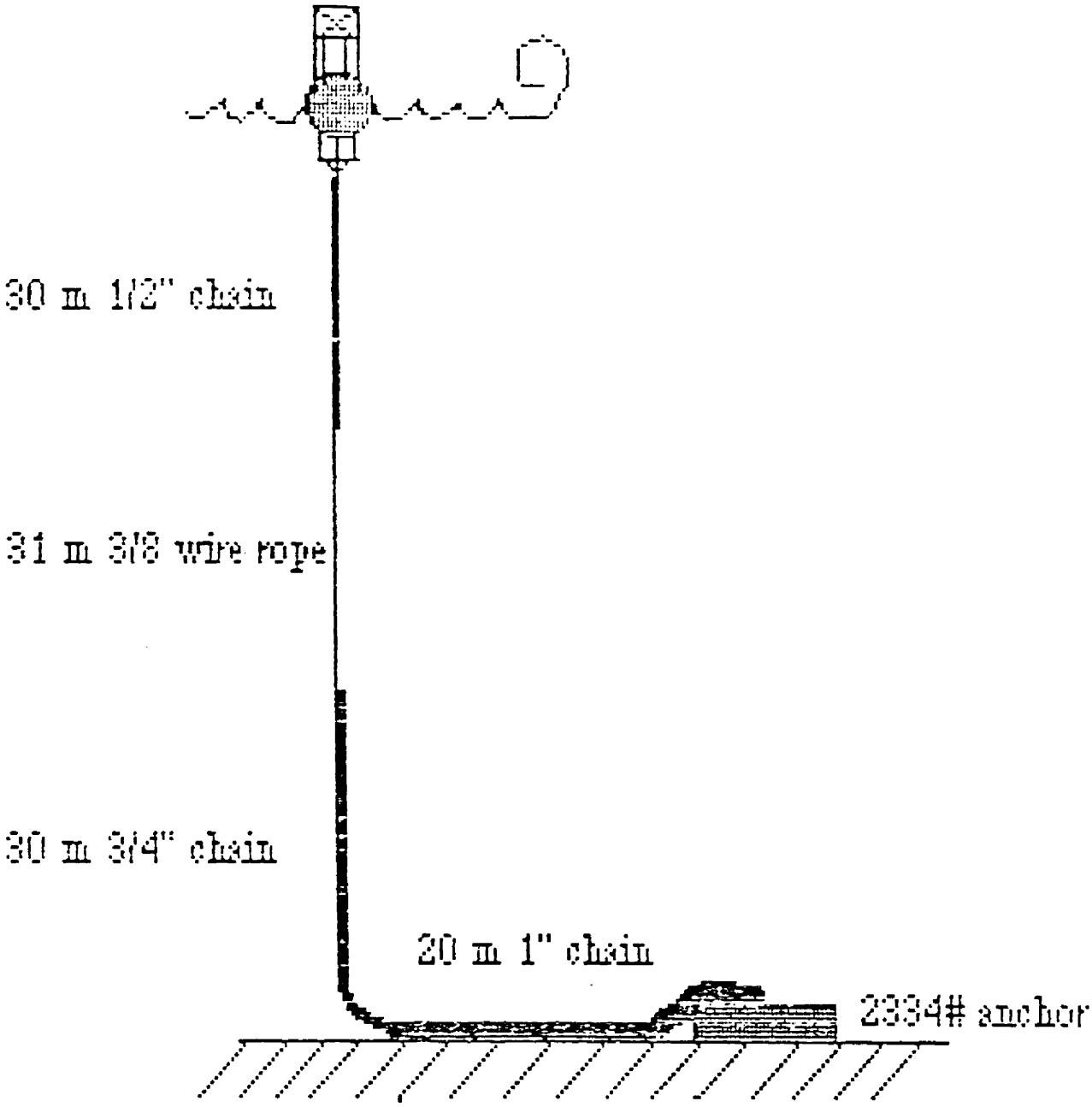
Table 4. Reference Coordinates for Sediment Samples

Site	Depth	Latitude Longitude	Comment
R-8	87 m	34°55.29 120°45.87	Cheryl A. Butman (WHOI)
R-8	83 m	34°55.35 120°45.80	Cheryl A. Butman (WHOI)
PJ-1	145 m	34°55.82 120°49.90	Cheryl A. Butman (WHOI)
PJ-1	147 m	34°55.88 120°49.94	Cheryl A. Butman (WHOI)
R-9	390 m	34°53.68 120°59.11	Cheryl A. Butman (WHOI)
R-7	575 m	34°52.80 121°10.33	Cheryl A. Butman (WHOI)
PJ-1	144 m	34°55.80 120°49.92	Eric Crecelius (Battelle)

Table 5. Reference Coordinates for CTD* Stations

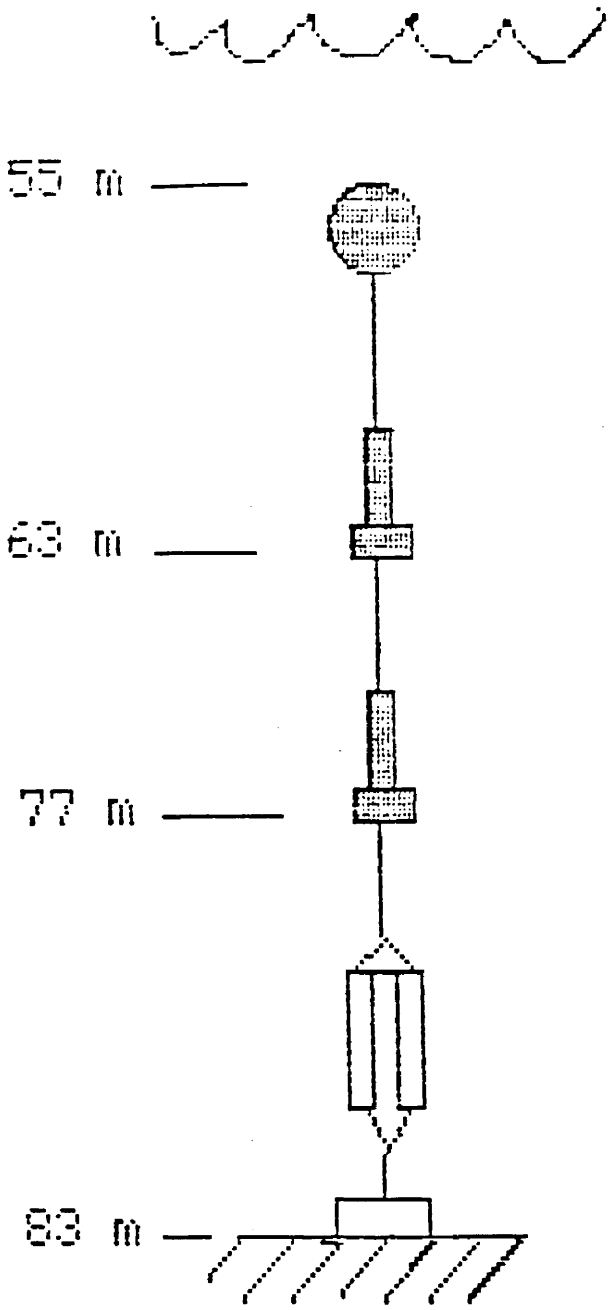
Site	Latitude Longitude	Depth
Central Line (No. 1)	34°55.76 120°43.39	55 m
(No. 2)	34°55.65 120°45.54	87 m
(No. 3)	34°55.27 120°47.90	120 m
(No. 4)	34°55.00 120°50.23	157 m
(No. 5)	34°54.67 120°52.79	210 m
(No. 6)	34°54.27 120°55.87	290 m
(No. 7)	34°53.58 120°58.86	385 m
(No. 8)	34°53.40 121°04.98	530 m
(No. 9)	34°52.92 121°10.26	565 m
Northern Line (No. 1)	35°05.75 120°45.26	62 m
(No. 2)	35°05.61 120°49.23	100 m
(No. 3)	35°05.47 120°53.30	167 m
(No. 4)	35°04.98 121°00.94	420 m

* NBIS MARK IIIB CTD and 25 cm pathlength sea tech transmissometer.



Surface Buoy - R8
(2 each)
Winter Deployment

FIGURE 1



41" Steel Sphere w/Radio and Light

5 m. 3/8" chain

VACM - TCT

11 m. 3/8" chain

VACM - TCT

2 m. 3/8" chain

Dual Release Package

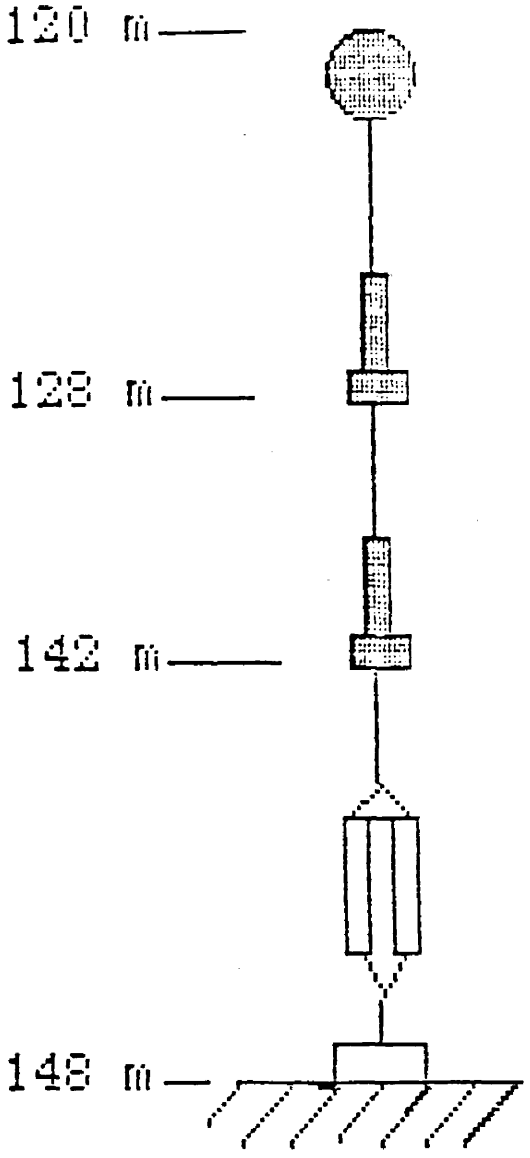
2 m. 3/8" chain

1950# anchor

USGS MOORING R8

WINTER DEPLOYMENT

FIGURE 2



41" Steel Sphere w/Radio and Light

5 m. 3/8" chain

VACM - TCT

11 m. 3/8" chain

VACM - TCT

2 m. 3/8" chain

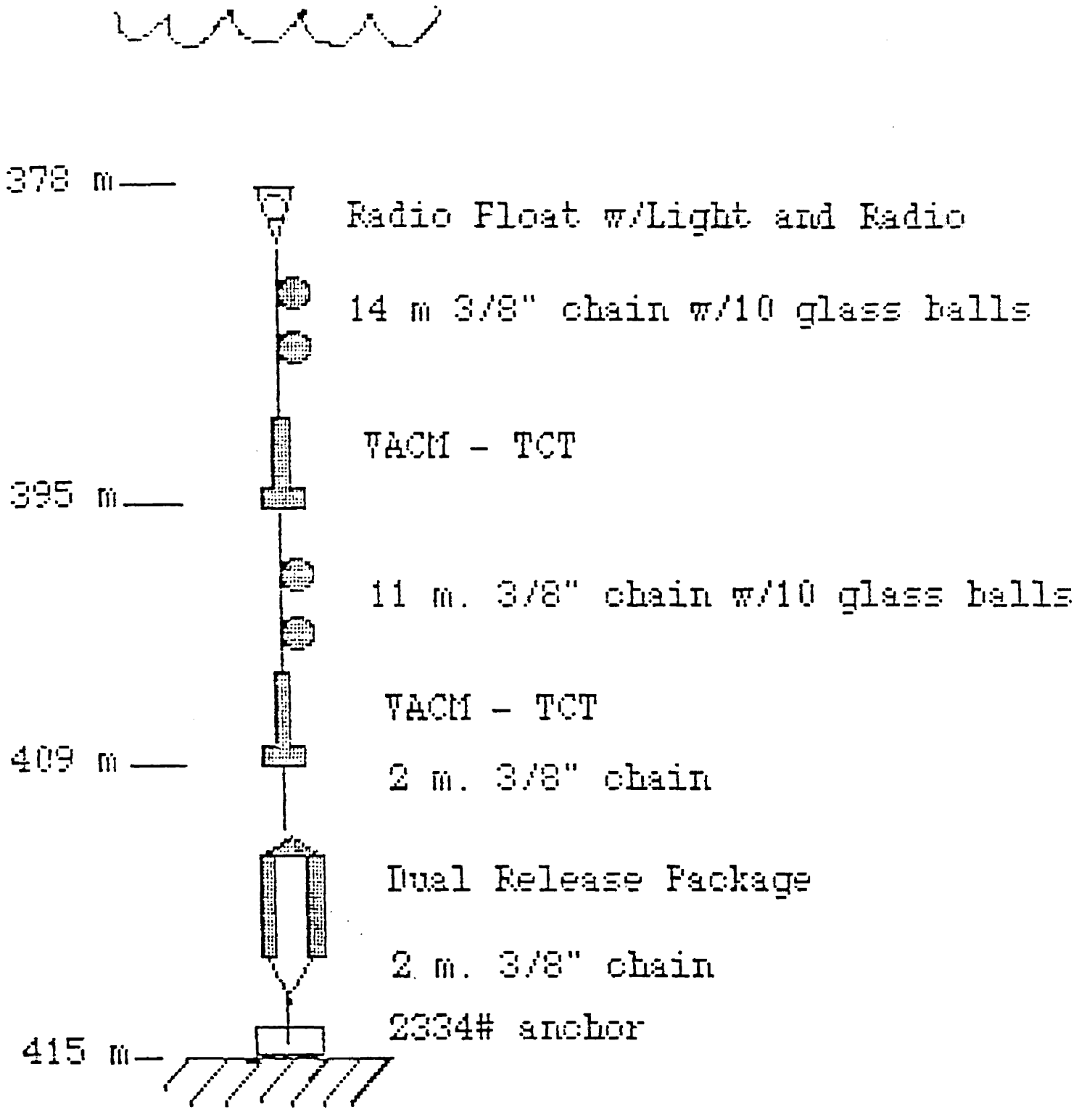
Dual Release Package

2 m. 3/8" chain

1950# anchor

USGS MOORING PJ1
WINTER DEPLOYMENT

FIGURE 3



USGS MOORING R9
WINTER DEPLOYMENT

FIGURE 4

bottom tripods were deployed within 200 m of the VACM moorings at sites R-8 and PJ-1. All deployments proceeded smoothly in large part because of the large, stable platform provided by the M/V Farnella, the bow thruster propulsion, and the experience of the ship's crew.

Six box cores and one gravity core (for E. Crecelius, Battelle) were collected (see Table 4) and the box cores were processed and studied on board by scientists from WHOI/MIT. In addition, there was time during the cruise to obtain more than 30 trackline nmi. of side-scan sonar data to study relatively large bottom features near R-8, PJ-1, and R-9. Finally, we occupied 13 hydrographic stations, 9 on a "central" line through R-8 and R-7 and 4 on a "northern" line off San Luis Obispo Bay (see Table 5). CTD/light transmission profiles to 5 m above the sea floor were obtained at each hydro station and total of 33 water samples were filtered through membrane filters for particulate matter analyses.

Problems Encountered

A malfunction in the power switching circuitry between the optical backscatter probe (OBS) system and its digital data logger became evident during the final check of the R-8 GEOPROBE tripod. Deployment was delayed as long as possible while our electronics technicians attempted to isolate the problem. Unfortunately, the cause or causes remained a mystery and the R-8 GEOPROBE had to be deployed without the OBS array. In order to partially offset the loss of the backscatter probes on this tripod, we added one Sea Tech transmissometer at 30 cm above the bottom, which gives us a combined array of 4 LED transmissometers at 30 cm, 100 cm, 500 cm, and 2000 cm above bottom at R-8.

System Recoveries

Recovery of all deployed equipment will be accomplished using the M/V Farnella during 19 February to 26 February, 1989. Inquiries regarding the present cruise report or the recovery cruise can be directed to:

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