Battelle

November 11, 1988

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 3-1, Leg 1 and Leg 2. I have distributed copies of this document to Principal Investigators, Quality Review Board members, and oil company representatives.

Sincerely,

Jeffrey Hyland

Jeffrey L. Hyland, Ph.D.
Program Manager

JLH/hms

Enclosure

cc: 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 3-1

LEG 1 and LEG 2

November 11, 1988

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

Mr. James F. Campbell
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1.0 INTRODUCTION

CRUISE REPORT
FOR
MMS CRUISE CAMP 3-1
September 29 - October 18, 1988

1.0 INTRODUCTION

Cruise CAMP 3-1 was the first 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 3-1 was to provide environmental data to help make these kinds of correlations and inferences. Cruise CAMP 3-1 represents the second post-spud cruise relative to the history of drilling at Platform Hidalgo (drilling began at this platform in November 1987).

Cruise CAMP 3-1 consisted of two legs: Soft-Bottom Box Coring (Leg 1); and Hard-Bottom Sediment-Trap/Physical Oceanography (Leg 2).

The M/V Aloha, which is owned and operated by International Underwater Contractors (I.U.C.), was the support vessel for the cruise. The study area for MMS Cruise CAMP 3-1is shown in Figure 1-1.

The Leg-1 Cruise Report, written by James Campbell, is in Section 2.0, and the Leg-2 Cruise Report, written by Dane Hardin, is in Section 3.0.

2.0 MMS CRUISE CAMP 3-1

LEG 1 REPORT

2.0 CRUISE REPORT
MMS CRUISE CAMP 3-1, LEG 1
Soft-Bottom Box Coring
29 September - 4 October, 1988

2.1 Objectives

The objectives of the Soft-Bottom Leg were to collect three replicate box cores at nine regional stations and one site-specific station. Each box core was to be sampled for benthic infauna (macrofauna and meiofauna), sediment chemistry, and sedimentology parameters. A single hydrocast was to be performed at each of the nine regional stations for near-bottom measurements of dissolved oxygen, salinity, and temperature. An additional box core was to be collected at stations R-7, R-8, R-9, and PJ-1 for small-scale grain-size analyses and simple bioturbation experiments.

2.2 Results

International Underwater Contractor's M/V Aloha departed Ventura Harbor on Friday, 30 September, 1988 at 0000 hours and returned on Monday, 3 October, 1988 at 1830 hours. Operations commenced at 1030 on Friday and proceeded without interruption to the completion of the sampling on Monday morning. Fair winds (5-15 knots), calm seas and overcast skies were encountered throughout the cruise. As a result of the fair weather and no equipment-down-time, the allotted weather contingency time was not used and the cruise returned to port more than a day ahead of schedule.

All the intended samples were collected successfully. The cruise track and study area are shown in Figure 2-1. A summary of samples collected is shown in Table 2-1.

2.3 Navigation

The Northstar 800 LORAN-C receiver was the primary navigational aid for Leg 1. A navigation software package developed by Mr. Andy Eliason of Eliason Data Services was used to integrate an Apple IIe microcomputer and Epson printer with the Northstar 800 LORAN-C receiver.

Cruise CAMP 3-1 was the first cruise of this program on which the Northstar 800 receiver was used as the primary navigation system. To ensure navigational consistency, the Northstar 800 and the Northstar 7000 LORAN-C receivers were operated simultaneously throughout the cruise. The time delays were exactly the same at all times for both systems. However, due to algorithmic changes in the Northstar 800, there are minor differences between the latitude and longitude and the range and bearing readings of the systems. Station navigation will not be affected by the minor differences between the systems because the station locations are based on the time delays.

All LORAN time delays were in the 9940 Group Repetition Interval (GRI) using a combination of the X and Y secondary stations, the 27-K and 41-K lines, respectively. All station navigation was based on LORAN time delays established in conjunction with the Miniranger System on previous cruises. The latitude and longitude coordinates listed in this section are the products of the Northstar

TABLE 2-1. SUMMARY OF SAMPLES COLLECTED ON MMS CRUISE CAMP 3-1, LEG 1 OF THE MMS CALIFORNIA OCS PHASE II MONITORING PROGRAM.

Sample Type	Number of Stations	Number of Replicates/ Station	Total Number Collected on Cruise	Sample Custody
Infaunal Box Core	10	3	30	Battelle (Ventura)
Meiofauna	10	3	30	Univ. Texas
Core Radiography	10	1(x2)(1)	10(x2)	Univ. Maine
Surface Sediment (0-2cm): TM	10	3	30	Battelle (PNL)
Surface Sediment (0-2cm): HC	10	3	30	Battelle (Duxbury)
Subsurface Sediments (2-10cm): TM	4	3	12	Battelle (PNL)
Subsurface Sediments (2-10cm): HC	4	3	12	Battelle (Duxbury)
Pb-210 Dating(2) (0-20cm)	4	1	4	Battelle (PNL)
Sedimentology	10	3	30	Kinnetics (KLI)
Hydrography	9	1	9	Kinnetics (KLI)
Fine-Scale Sediment Profiling(2)	4	1	4	Woods Hole (WHOI)

1. One X-ray was taken of each of the two sediment cartridges collected from the 10 x 30-cm subcore.

2. Samples were collected from separate dedicated box core in support of the new Optional Study on vertical variability of grain-size and radioisotope dating.

TABLE 2-2. REGIONAL AND SITE-SPECIFIC STATION REFERENCE COORDINATES FOR MMS CRUISE CAMP 3-1, LEG 1 OF THE MMS CALIFORNIA OCS PHASE II MONITORING PROGRAM

Station	Northstar 7000 Latitude Longitude	UTM Coordinates	LORAN Time Delays	Depth (m)
R-1	35°05.55'N 120°49.20'W	N3885790 E698776	27794.9 42044.9	91
R-2	35°05.13'N 120°53.40'W	N3885047 E692345	27780.8 42057.1	161
R-3	35°04.98'N 121°00.84'W	N3884443 E680956	27756.2 42081.0	409
R-4	34°43.18'N 120°47.28'W	N3843676 E702399	27800.3 41921.5	92
R-5	34°42.85'N 120°50.69'W	N3842964 E697156	27789.8 41932.0	154
R-6	34°41.43'N 120°57.78'W	N3840354 E686413	27768.0 41949.8	410
R-7	34°52.62'N 121°10.31'W	N3861248 E667092	27727.7 42047.7	565
R-8	34°55.24'N 120°45.80'W	N3866433 E704208	27805.6 41978.2	90
R-9	34°53.49'N 120°59.03'W	N3863016 E684098	27763.2 42014.9	410
PJ-1	34°55.65'N 120°49.87'W	N3867215 E698032	27792.5 41994.6	145

Revised 9/88

Latitude and Longitude from Northstar 7000 algorithm

TABLE 2-3. SUMMARY OF SAMPLE POSITIONS ON MMS CRUISE CAMP 3-1, LEG 1 (M/V Aloha) (Continued)

Station	Date and Time (PDT)	Sample	Latitude Longitude	LORAN Time Delays	Depth (m)	Comments
R-3	Reference Coordinates		35°04.98'N 121°00.84'W	27756.2 42081.0	409	
R-3	01 Oct 88 0256	Box Core 1	35°04.94'N 121°00.84'W	27756.2 42081.0	409	Penetration to 25 cm. Very soft sediment. Corer-piston pins secured to corer.
R-3	01 Oct 88 0450	Box Core 2	35°04.99'N 121°00.84'W	27756.2 42081.1	409	Penetration to 30 cm.
R-3	01 Oct 88 0609	Box Core 3	35°04.92'N 121°00.91'W	27756.0 42081.0	409	Good sample.
R-3	01 Oct 88 0732	Hydrocast	35°05.02'N 121°00.83'W	27756.2 42081.3	409	Good sample. Enroute to PSL for additional hydraulic fluid.
R-4	Reference Coordinates		34°43.18'N 120°47.28'W	27800.3 41921.5	92	
R-4	03 Oct 88 0536	Box Core 1	34°43.17'N 120°47.26'W	27800.4 41921.5	92	Four previous attempts; 1 washout, 3 no trips. Slightly disturbed sample.
R-4	03 Oct 88 0730	Box Core 2	34°43.15'N 120°47.34'W	27800.1 41921.6	92	Two previous attempts; no trips. Slightly disturbed sample.
R-4	03 Oct 88 0913	Box Core 3	34°43.14'N 120°47.24'W	27800.5 41921.3	92	Good penetration. Penetration to 20 cm. Undisturbed sample.
R-4	03 Oct 88 0945	Hydrocast	34°43.09'N 120°47.20'W	27800.6 41920.9	92	Good sample.

TABLE 2-3. SUMMARY OF SAMPLE POSITIONS ON MMS CRUISE CAMP 3-1, LEG 1 (M/V Aloha) (Continued)

Station	Date and Time (PDT)	Sample	Latitude Longitude	LORAN Time Delays	Depth (m)	Comments
R-7	Reference Coordinates		34°52.62'N 121°10.31'W	27727.7 42047.7	565	
R-7	30 Sept 88 1424	Box Core 1	34°52.56'N 121°10.36'W	27727.6 42047.7	565	Two previous attempts; no trips. Sample box damaged by camera trip-weight.
R-7	30 Sept 88 1715	Box Core 2	34°52.54'N 121°10.42'W	27727.4 42047.8	565	Two previous attempts; no trips. Extremely soft sediment. Corer pins secured.
R-7	30 Sept 88 1917	Box Core 3	34°52.60'N 121°10.36'W	27727.5 42047.9	565	Good sample, penetration to 25 cm.
R-7	30 Sept 88 2058	Box Core 4	34°52.62'N 121°10.34'W	27727.6 42048.0	565	Fine-scale sediment-profile box core. Good sample. Bioturbation experiment conducted.
R-7	30 Sept 88 2211	Hydrocast	34°52.60'N 121°10.30'W	27727.8 42047.7	565	Some mud in water samples.
R-8	Reference Coordinates		34°55.24'N 120°45.80'W	27805.6 41978.2	90	
R-8	01 Oct 88 2212	Box Core 1	34°55.20'N 120°45.76'W	27805.8 41978.0	90	Penetration to 15 cm. Alternate subcores used for macrofauna.
R-8	01 Oct 88 2325	Box Core 2	34°55.22'N 120°45.82'W	27805.6 41978.1	90	Sediment loosely packed. Some alternate subcores used.
R-8	02 Oct 88 0107	Box Core 3	34°55.25'N 120°45.78'W	27805.7 41978.2	90	Many ophiuroids present. Penetration to 15 cm.
R-8	01 Oct 88 2043	Box Core 4	34°55.20'N 120°45.81'W	27805.6 41978.2	90	Fine-scale sediment-profile box core. Good sample.
R-8	02 Oct 88 0217	Hydrocast	34°55.25'N 120°45.80'W	27805.6 41978.2	90	

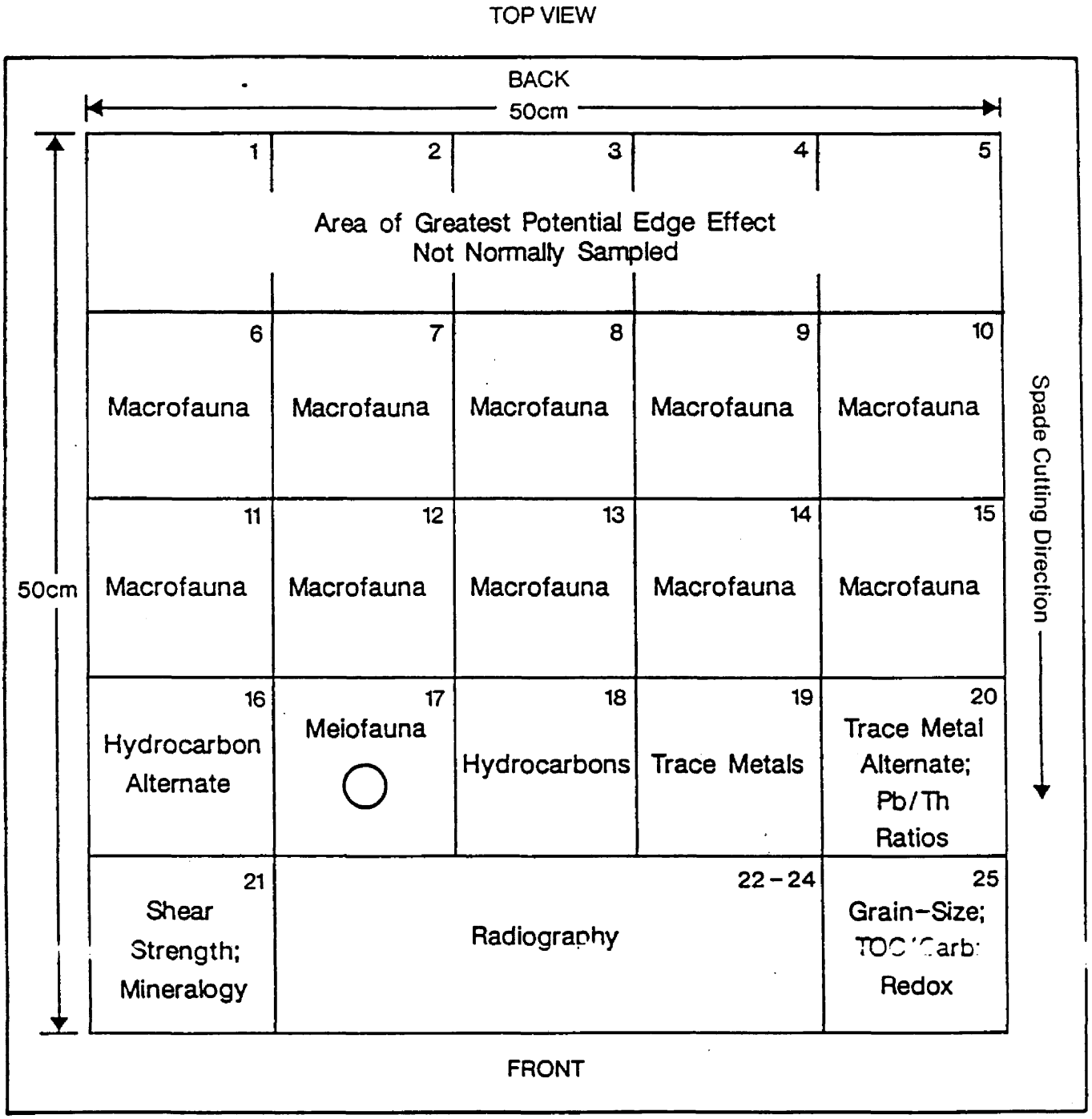

Figure 2-2 .Box core illustrating "vegematic" partitioning (top view).

A fourth 3.8-cm subcore tube was collected for radioisotope (Pb-210) dating. This sample was fractioned at 5-mm intervals to a depth of ~ 40 cm (bottom of core). An additional subcore was collected for radioisotope dating and was left intact (not fractionated). Both samples were frozen following collection.

In addition, three subcore tubes were collected and processed for phytoplankton-input samples to evaluate variability in the potential food quality of sediments.

2.10 Hydrography

A single Niskin bottle equipped with two deep-sea reversing thermometer (DSRT) was deployed at each of the nine regional stations (R-1 through R-9), to collect samples for the determination of near-bottom dissolved oxygen, salinity, and temperature. Dissolved oxygen was measured in triplicate on board using the Winkler titrimetric method. Salinity samples were measured using a Hanna H-18333 conductivity probe. Temperature was recorded from the thermometer.

2.11 Cruise Participants

Participants on Cruise CAMP 3-1, Leg 1 and their affiliations were:

Battelle

James Campbell, Chief Scientist
Janet Kennedy, Second Scientist
John Brown, Chemist
Christie Dolstra
Roy Kropp

Kinnetic Laboratories, Inc.

Gary Gillingham
Sherri Hamer
Don Arnold
Paul Barter
Tony Zamora

University of Maine

Linda McCann

University of Texas

Frank Fiers

Woods Hole Oceanographic Institution

Rose Petrecca
Nan Trowbridge

2.12 Acknowledgements

The Chief Scientist and Second Scientist wish to thank the scientific personnel for their untiring dedication and skilled performances which resulted in a very successful cruise and an early return to port. Special thanks is given to the crew of International Underwater Contractor's M/V Aloha for their skillful ship handling and their attention to details.

3.0 MMS CRUISE CAMP 3-1

LEG 2 REPORT

3.0 CRUISE REPORT
MMS CRUISE CAMP 3-1, LEG 2
Hard-Bottom Sediment-Trap/Physical Oceanography
October 6 - 18, 1988

3.1 Objectives

1. Retrieve, service and redeploy current meters at Platform Hidalgo and Platform Julius.

2. Retrieve, service and redeploy sediment traps at hard-bottom stations.

3. Obtain water quality profiles and bottle casts from two locations near Platform Hidalgo and two locations near Platform Julius.

4. Obtain photoquadrat samples from 11 hard-bottom sampling sites.

5. Obtain samples of surficial sediments from nine hard-bottom sampling sites.

6. Obtain specimens of target species for analysis of body-burdens of pollutants.

3.2 Scientific Personnel

Name	Affiliation	Responsibility
P. Barter	KLI	Sediment-Trap Servicing
D. Beard	KLI	Current-Meter Servicing
R. Dellaert	Land & Sea	Navigation
R. Gale	Land & Sea	Navigation
D. Hardin	KLI	Chief Scientist
J. Kennedy	Battelle	Tissue, Sediment, and Photoquadrat Sampling
M. Mertz	KLI	Current-Meter Servicing
T. Parr	KLI	Photoquadrat Sampling
J. Shrake	KLI	Photoquadrat Sampling
P. Wilde	KLI	Current-Meter Servicing

3.3 Activities

10/06/88	1515-1830	Mobilized M/V Aloha.
10/07/88	0005	Departed Ventura Harbor.
	0800-1100	Retrieved current meters at Platform Hidalgo.
	1400-1930	Attempted to retrieve current meters at Platform Julius. Departed for Port San Luis.
10/08/88	0700-0830	Retrieved current meters at Platform Julius using ROV. Departed for Platform Hidalgo.
	1130-1930	Retrieved and redeployed sediment traps from stations PH-J, PH-I, PH-F, and PH-E. Departed for Cojo anchorage.

3.4 Current Meters

The current meter retrieval and redeployment were very successful, in spite of mooring disruption probably caused by fishing activity. At Platform Hidalgo, the groundline connecting the primary and secondary anchors was fouled around the acoustic release, preventing its proper operation. This mooring was retrieved by dragging a grappling hook across the groundline and pulling it onboard. The secondary anchor on the mooring at Platform Julius had been moved approximately 150 degrees out of its original position. This mooring was retrieved using the ROV to hook a line onto the groundline and winching it onboard.

The current speed and direction data appeared complete for five out of the six meters. The middle meter at Platform Hidalgo did not record data into it's internal memory. Although it operated correctly on deck before deployment, it did not communicate with the telemetry system after deployment. Therefore, this is the first case in which the built-in redundancy provided by the current meter internal memory and the telemetry data logger did not result in a return of data. Table 3-1 lists the positions of the current-meter arrays.

3.5 Sediment Traps

The sediment trap retrieval and redeployment were also very successful. The locations of sediment trap and hard-bottom sampling stations are shown in Figure 3-1. Sediment trap deployment coordinates are shown in Table 3-2. All of the arrays were located and retrieved, including the one at Platform Harvest which we had found but been unable to retrieve in May. The array at PH-K was on its side and was fouled in a piece of gill net. Although this array was recovered, the sample material was not retained. Use of the slow winch speed on the hydrowinch eliminated the loss of samples experienced during the first retrieval operation in May, 1988.

Some samples appeared anoxic, suggesting diminished action of sodium azide fixative. Examination of the polyethylene bottles containing the fixative indicated that the air-escape holes in the bottom of some bottles had expanded. This may have allowed the fixative to diffuse out the bottom of the bottle, instead of flowing by gravity into the sediment trap. An average of less than two out of four replicates on each array were affected and may give misleading results for hydocarbon analyses due to bacterial action indicated by the anoxic conditions. Since barium is so insoluble, its concentrations may be less affected by the anoxia. New fixative bottles will be used during the spring 1989 redeployment of the arrays.

By and large, the amount of trapped material appeared very similar among the replicates on a given array. The traps from Platform Harvest had much more material than those from the other stations, since they had not been retrieved in May as had all the other sediment traps.

3.6 Water Quality

All water quality parameters were sampled successfully. Water-quality profiles and bottle casts were performed at Stations PJ-11 and PJ-13A in the Platform Julius Study Area and at Stations Hydro 1 and Hydro 2 in the Platform Hidalgo Study Area.

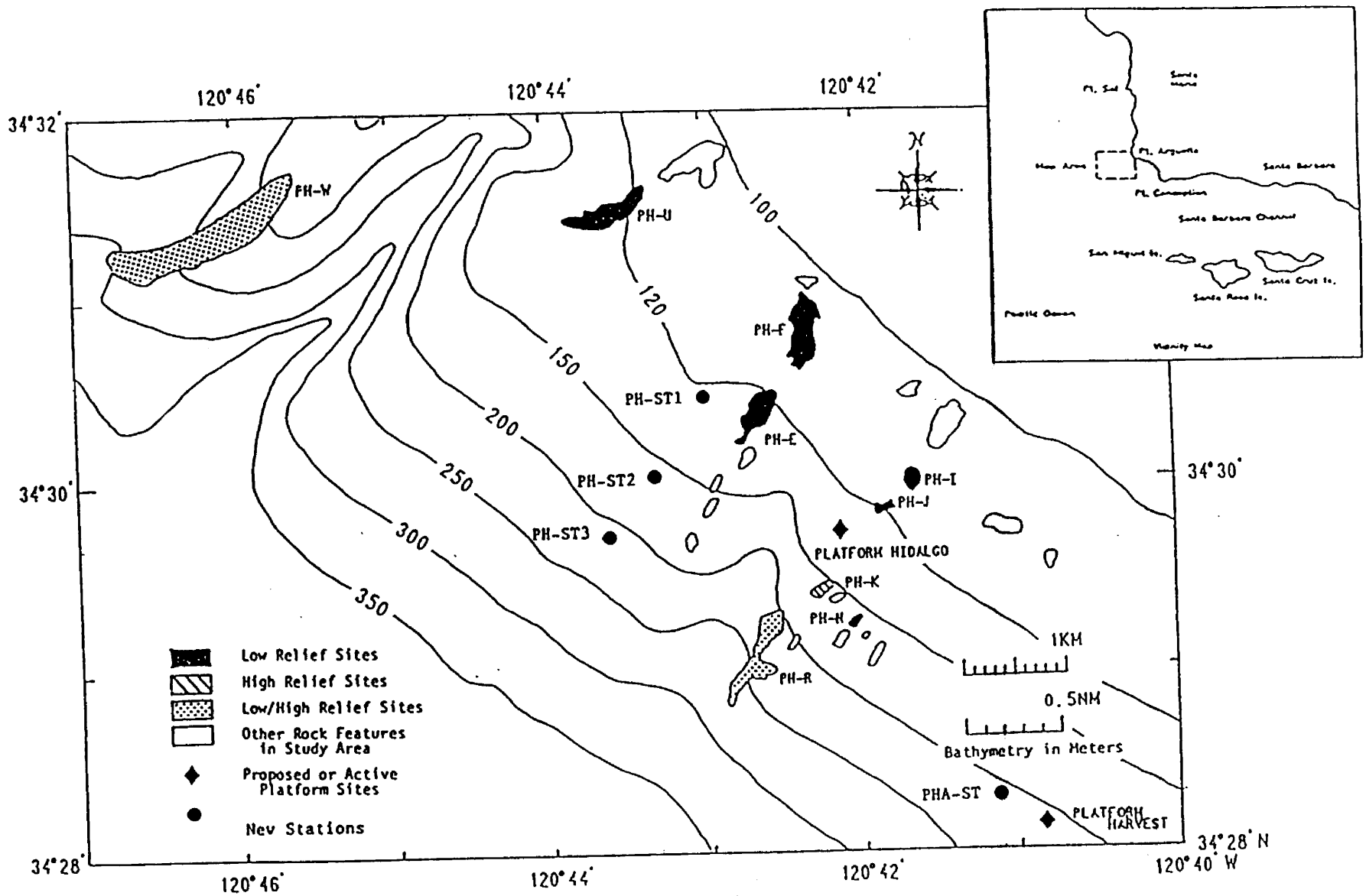

FIGURE 3-1. HARD BOTTOM FEATURES FOR SITE-SPECIFIC MONITORING NEAR PLATFORM HIDALGO

At each of the four stations, water-quality profiles were conducted using an InterOcean CSTD, which continuously recorded the parameters of dissolved oxygen, salinity, temperature, pH, and transmissivity.

Water samples were collected at each of the four stations using a series of Niskin bottles situated for near-surface, mid-water, and near-bottom collections. Water samples were collected for the determination of salinity, dissolved oxygen, pH, total phosphate, nitrate/nitrite, and silicates. Dissolved oxygen and pH samples were also used for CSTD probe calibrations.

3.7 Photoguadrats

The collection of the photoquadrats proceeded very smoothly. Except for some minor delays caused by drained strobe batteries, the equipment operated very well. The only major issue to occur during the photoquadrat sampling involved a derelict gill net at Station PH-W. The net was fouled across our sampling site at that station, and spanned at least 50 meters. After the ROV became fouled in the net, adjustments of 25-50 meters were necessary to collect the low-relief samples.

3.9 Sediment Samples

Except for a 50% success rate for grab attempts at the deeper stations, which slowed this operation down, the collection of surficial sediment grab samples went smoothly and all required samples were obtained. The low success rate at the deeper stations was probably due to a combination of large swell and patchy distribution of soft sediments in the areas being sampled. The large swell resulted in occasional pre-tripping of the grab, which could have been alleviated only by adding more weight. This measure was not taken because additional weight also causes the grab to over-penetrate, disrupting the surficial sediments through contact with the doors of the grab. A Summary of grab sample positions is shown in Table 3-3.

3.9 Animal Collections for Body-Burden Analyses

With minor exceptions, the collections of animals for analyses of pollutant body-burdens went very smoothly. The only problem occurred when the mooring line for the animal traps at Station PHA-3 was sheared against the ship's hull during retrieval, and the traps and samples were lost. Nevertheless, the 80-hour deployment period used for the animal traps during this cruise resulted in the trapping of many more Pleurobranchaea at the other two stations than have been caught in the past. A summary of animal trap positions is shown in Table 3-4.

The suction-pump sampling device designed by IUC worked very well for the collection of Parastichopus californicus. The device sucked the animals up very easily and deposited them into a nylon mesh bag, without damaging them. In fact, some Paracyathus stearnsii were dislodged from the seabed during the collection of P. californicus because they were also recovered from the mesh bag. This occurence suggests that the device may also work to collect that species for pollutant body-burden analyses.

TABLE 3-3. SUMMARY OF GRAB SAMPLE POSITIONS ON MMS CRUISE CAMP 3-1, LEG 2 (M/V Aloha) (Continued)

Station	Date and Time (PDT)	Sample	Latitude Longitude	UTM Coordinates	Comments
PH-I	Reference Coordinates		34°29.98'N 120°41.70'W	N3819770 E711629	Depth 107 m.
PH-I	18 Oct 88 1152	Grab 1	34°30.00'N 120°41.69'W	N3819818 E711635	
PH-I	18 Oct 88 1210	Grab 2	34°29.98'N 120°41.72'W	N3819784 E711605	
PH-I	18 Oct 88 1250	Grab 3	34°29.99'N 120°41.72'W	N3819794 E711606	
PH-J	Reference Coordinates		34°29.83'N 120°41.86'W	N3819495 E711399	Depth 117 m.
PH-J	18 Oct 88 1050	Grab 1	34°29.85'N 120°41.85'W	N3819526 E711410	
PH-J	18 Oct 88 1110	Grab 2	34°29.84'N 120°41.86'W	N3819508 E711390	
PH-J	18 Oct 88 1127	Grab 3	34°29.85'N 120°41.86'W	N3819530 E711392	Entire surface in contact with lid of grab.

TABLE 3.3. SUMMARY OF GRAB SAMPLE POSITIONS ON MMS CRUISE CAMP 3-1, LEG 2 (M/V Aloha) (Continued)

Station	Date and Time (PDT)	Sample	Latitude Longitude	UTM Coordinates	Comments
PH-R	Reference Coordinates		34°29.17'N 120°42.46'W	N3818250 E710500	Depth 213 m.
PH-R	17 Oct 88 1516	Grab 1	34°29.24'N 120°42.10'W	N3818387 E711050	Good sample; overlying water.
PH-R	17 Oct 88 1039	Grab 2	34°29.18'N 120°42.47'W	N3818267 E710491	First attempt no sample.
PH-R	17 Oct 88 1121	Grab 3	34°29.18'N 120°42.46'W	N3818262 E710493	
PH-U	Reference Coordinates		34°31.42'N 120°43.47'W	N3822370 E708870	Depth 113 m.
PH-U	17 Oct 88 2144	Grab 1	34°31.41'N 120°43.47'W	N3822357 E708864	
PH-U	17 Oct 88 2203	Grab 2	34°31.42'N 120°43.47'W	N3822382 E708860	
PH-U	17 Oct 88 2235	Grab 3	34°31.43'N 120°43.47'W	N3822400 E708858	

TABLE 3-4. SUMMARY OF ANIMAL TRAP POSITIONS ON MMS CRUISE CAMP 3-1, LEG 2 (M/V Aloha) (Continued)

Station	Date and Time (PDT)	Phase	Latitude Longitude	UTM Coordinates	Comments
PHA-1	Reference Coordinates		34°29.89'N 120°42.37'W	N3819592 E710611	
PHA-1	14 Oct 88 0859	Animal Traps Deployed	34°29.91'N 120°42.36'W	N3819627 E710624	High flyer in water. Bait: chicken, cat food, and fish scraps.
PHA-1	17 Oct 88 1730	Animal Traps Recovered	not noted	not noted	Trap catches: 9 Pleurobranchaea, 10 Asteroidea.
PHA-2	Reference Coordinates		34°30.08'N 120°42.60'W	N3819938 E710249	
PHA-2	14 Oct 88 0844	Animal Traps Deployed	34°30.06'N 120°42.60'W	N3819899 E710247	High flyer in water. Bait: chicken, cat food, and fish scraps.
PHA-2	17 Oct 88 1800	Animal Traps Recovered	not noted	not noted	Trap catches: 19 Pleurobranchaea, 9 Asteroidea.
PHA-3	Reference Coordinates		34°31.23'N 120°43.99'W	N3822011 E708080	
PHA-3	14 Oct 88 0809	Animal Traps Deployed	34°31.02'N 120°43.99'W	N3821970 E708063	High flyer in water. Bait: chicken, cat food, and fish scraps.
PHA-3	17 Oct 88 1830	Animal Traps Recovered	not noted	not noted	High flyer retrieved. Three traps lost as line sheared against hull- no samples.

TABLE 3.5. SUMMARY OF ROV TISSUE COLLECTIONS ON MMS CRUISE CAMP 3-1, LEG 2 (M/V Aloha)

Station	Date and Time (PDT)	Collection
PH-J	16 Oct 88 1226	2 Paracyathus spp. 4 Caryophyllia spp. Cup Corals
PH-J	17 Oct 88 0845	4 Parastichopus 2 Paracyathus Sea Cucumber Cup Coral
PH-U	16 Oct 88 1950	6 Paracyathus Cup Coral
PH-U	17 Oct 88	4 Parastichopus Sea Cucumber

APPENDIX A

FORM APPROVED: OMB NO. 41-R2765 - EXPIRES : 12-31-79

NOAA FORM 24-23 (1-76)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ENVIRONMENTAL DATA SERVICE
NATIONAL OCEANOGRAPHIC DATA CENTER

A00 DATA CENTER

A40 REFERENCE NUMBER

OCEANOGRAPHY - GENERAL CRUISE INVENTORY
(ROSCOP - II)

A01 EXPEDITION/PROJECT
California OCS Phase II Monitoring Program

A11 CRUISE NUMBER OR NAME
CAMP 3-1, Legs 1 and 2

A02 SHIP OR PLATFORM
M/V Aloha

A12 PLATFORM TYPE
01

	YES	NO	PART
A91 Declared national program?	X		
A81 Exchange restricted?		X	
A92 Co-operative program?		X	A72 NAME
A82 Co-ordinated internationally?		X	A62 BY WHOM?

A03 COUNTRY: USA

A04 ORGANIZATION: Battelle Ocean Sciences; Kinnetic Laboratories, Inc.

A05 CHIEF SCIENTIST(S): J. F. Campbell, Battelle; Dane Hardin, Kinnetics

A06 NAME AND ADDRESSES OF ORGANIZATIONS AND PERSONS WHOM TO QUERY

	FINAL DISPOSITION OF DATA
A1 J. L. Hyland, Battelle, Ventura, CA	A2 J. L. Hyland
B1 P. D. Boehm, Battelle, Duxbury, CA	B2 Program Manager
C1 E. Crecelius, Battelle, Sequim, WA	C2 Battelle Ocean Sciences
D1 P. Kinney, Kinnetics, Santa Cruz, CA	D2 1431 Spinnaker Drive
E1 L. Watling, Univ. of Maine, Walpole, ME	E2 Ventura, CA 93001

DATE	DAY	MONTH	YEAR
A07 FROM	30	09	88
A17 TO	18	10	88

A08 GENERAL OCEAN AREAS: 57 A NE Pacific Ocean 121°W

A09 TYPE(S) OF MARINE ZONE(S): 07, 08

GEOGRAPHIC AREA
If all data were collected at a fixed station, fill in the co-ordinates

A10 LATITUDE ° ' '' N/S

A20 LONGITUDE ° ' '' E/W

A15 FEDERAL SUPPORT U.S.D.I. - Minerals Management Service

A25 REMARKS

F1 - C. A. Butman - W.H.O.I., Woods Hole, MA
F2 - J. L. Hyland - Battelle, Ventura, CA
Sediment Collection: 10 stations sampled with 0.25m^2 box core
9 stations sampled with 0.1m^2 grab
13 stations sampled with sediment-trap arrays

DISCIPLINE AND TYPE OF MEASUREMENTS	Index 10° x 10° Qc	L	G	G	INDEX 1° x 1°	DISCIPLINE AND TYPE OF MEASUREMENTS	Index 10° x 10° Qc	L	G	G	INDEX 1° x 1°
A GU, GS, D B	7	3	1	2		A B					
A HS, H(NSF) B	7	3	1	2		A B					
A HP, HC, P B	7	3	1	2		A B					
A B, BS B	7	3	1	2		A B					
A B						A B					
A B						A B					
A B						A B					

H – HYDROGRAPHY

HS SURFACE	NUMBER	i	l	FORMAT
H01 Continuous temperature recording				
H02 Continuous salinity recording				
H03 Discrete temperature measurements				
H04 Discrete salinity measurements	4	D 1	A 2	9
NEAR SEA FLOOR (≤ 10 m)				
H05 Continuous temperature recording				
H06 Continuous salinity recording				
H07 Discrete temperature measurements	13	D 1	A 2	9
H08 Discrete salinity measurements	13	D 1	A 2	9
HP PHYSICAL				
H09 Classical oceanographic stations				
H10 Vertical profiles (STD/CTD)	4	D 1	A 2	7
H11 Sub–surface measurements underway				
H12 Mechanical bathythermograph (No. of drops)				
H13 Bathythermograph–expendable (No. of drops)				
H14 Sound velocity stations				
H15 Acoustic stations				
H16 Transparency				
H17 Optics				
H18 Diffusion (Dynamic)				
H80 Other measurements				
HC CHEMICAL				
H21 Oxygen	13	D 1	A 2	9
H22 Phosphates				
H23 Total–P				
H24 Nitrates				
H25 Nitrites				

HC CHEMICAL	NUMBER	i	l	FORMAT
H26 Silicates				
H27 Alkalinity				
H28 pH				
H29 Chlorinity				
H30 Trace elements				
H31 Radioactivity				
H32 Isotopes Pb-210 in sediment	4	C 1	A 2	9
H33 Dissolved gases				
H90 Other measurements				

P – POLLUTION

P01 Suspended solids				
P02 Heavy metals in sediment	32	C 1	A 2	9
P03 Petroleum residues in sediment	32	B 1	A 2	9
P04 Chlorinated hydrocarbons				
P05 Other dissolved substances				
P06 Thermal pollution				
P07 Waste water: BOD				
P08 Waste water: Nitrates				
P09 Waste water: Microbiology				
P10 Waste water: Other				
P11 Discolored water				
P12 Bottom deposits				
P13 Contaminated organisms				
P90 Other measurements				
Heavy metals in animal tissues	5	C 1	A 2	9
Heavy metals in animal tissues	5	B 1	A 2	9