SOUTHWEST FLORIDA SHELF
BENTHIC COMMUNITIES STUDY
YEAR 4, CRUISE IV
CRUISE REPORT

Prepared for:

MINERALS MANAGEMENT SERVICE
Washington, D.C.

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

ESE No. 83-513-0561-0120

September 17, 1984

REGISTERED

ENVIRONMENTAL SCIENCE
AND **ENGINEERING,** INC.

September 17, 1984
ESE No. 83-513-0561-0120

Dr. Robert Avent
Minerals Management Service
Gulf of Mexico OCS Regional Office
Imperial Office Building
3301 N. Causeway Boulevard
Metairie, LA 70003

Re: SW Florida Benthos Study--Year 4, Cruise IV Cruise Report
(Contract No. 14-12-0001-30071)

Dear Bob:

I have enclosed four copies of the Year 4, Cruise IV cruise report. One copy has been sent to the Contracting Officer; one copy to Jim Barkuloo; and two copies to the Chief, Offshore Studies (644), as required. Please note that the cruise log (appendix) is not final as latitudes and longitudes have not been calculated and not all sample control sheets are yet signed. When the log is finalized, we can provide you with copies, should you require it.

If you have any questions or comments concerning the cruise report, please do not hesitate to contact me.

Sincerely,

Michael S. Tomlinson
Logistics Coordinator

MST/vs

Enclosures

cc: C. Day, MMS
B. Gallaway, LGL
J. Barkuloo
Washington Office, Chief

P.O. Box ESE Gainesville, Florida 32602 904/332-3318 TWX 810-825-6310

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1.0 CRUISE PLAN

During Cruise IV of Year 4 of the Southwest Florida Shelf Benthic Community Study, the five Group 11 stations were to be sampled.

The sample types included epifauna, hydrography (with associated calibration casts), and meteorological and ancillary marine observations. Servicing of the five *in situ* arrays was also planned for Cruise IV. A brief description of the cruise plan follows.

Epifauna sampling was to be conducted at all five Group 11 stations. The sampling was to include underwater television/benthic still photography (UTV/BSP) surveys, dredging, and trawling. At each station, for a minimum of 3 to 4 hours, at least 2 kilometers (km) of UTV/BSP transects were to be surveyed. The benthic still camera (BSC) was to be used to photograph either representative or unusual specimens. In addition to the UTV/BSP surveys, three dredge tows and one otter trawl were to be performed at each epifauna station.

A hydrographic profile, measurement of sea surface temperature, and meteorological and ancillary marine observations were to be made at all five stations. The hydrographic profile, which included conductivity, salinity, temperature, dissolved oxygen (DO), pH, and transmissivity, was to be measured with a CSTD. Sea surface temperature was to be measured with a deep sea reversing thermometer (DSRT) mounted on a Niskin bottle (this would serve as verification of the CSTD temperature probe). The meteorological and ancillary marine data were to be collected by assorted instruments and observation.

At three stations, preferably near the beginning, midpoint, and end of the cruise, a Niskin/DSRT cast to obtain temperature, salinity, and DO data was to be conducted for verification and calibration of the CSTD.

Finally, at all five Group II stations, the *in situ* arrays were to be serviced. Each array was equipped with 2 years' worth of fouling plates, three sets of sediment traps, and a current meter (capable of measuring current speed and direction, temperature, and conductivity continuously). In addition, the two shallowest stations (52 and 21) had arrays equipped with time-lapse cameras (for monitoring epifaunal recruitment and sediment movement). Station 52 was equipped with a wave gage which required servicing, and a new wave gage was to be placed at Station 21.

The events of this cruise are discussed in the following sections.

2.0 CRUISE DESCRIPTION

2.1 SCHEDULE AND PARTICIPANTS

ESE and LGL personnel met in St. Petersburg, Florida, the morning of August 14, 1984, to begin loading the R/V SUNCOASTER. Cruise IV began with the vessel getting underway at 1650 August 14 and ended August 21, 1984.

The planned and actual cruise tracks are presented in Figures 1 and 2, respectively. Table 1 presents the cruise participants, their titles, and affiliations.

A detailed account of cruise events is presented in the Cruise Daily Log (see appendix).

A brief description of data collected, by task, is presented in the following section.

2.2 DATA COLLECTED

Table 2 presents data collected as proposed and actual as well as percent-complete figures.

The UTV/BSP surveys were conducted at all five Group II stations. The UTV/BSP surveys were conducted with the vessel drifting across the l-km-wide site. Depending on wind speed and currents, as many as three transects could be covered in 3 to 4 hours. These tracks were recorded on FIO's LORAN C plotter. During the UTV/BSP surveys, a voice and paper record of observations and position fixes were made, as well as still photographs of either representative or unusual specimens viewed with the UTV.

Actual samples of the epifauna were obtained with a triangular dredge. Three replicates were obtained from all five Group II stations. All dredge tow times were the standard 2 minutes' duration established during Cruise I. Subsampling was still necessary in some instances.

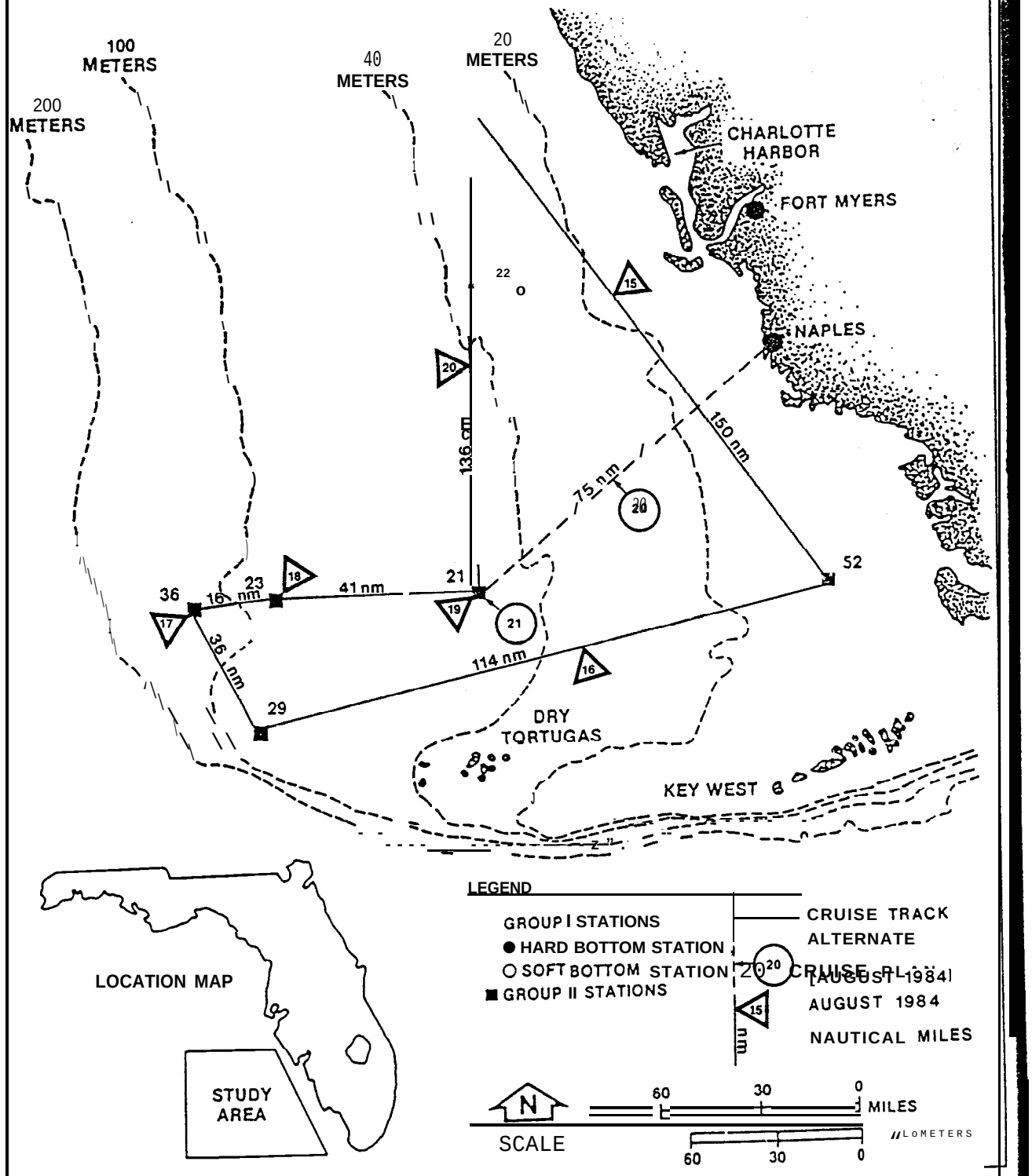


Figure 1
PROPOSED CRUISE TRACK FOR YEAR 4 — CRUISE IV

MINERALS MANAGEMENT SERVICE

SOURCE: ESE, 1984.

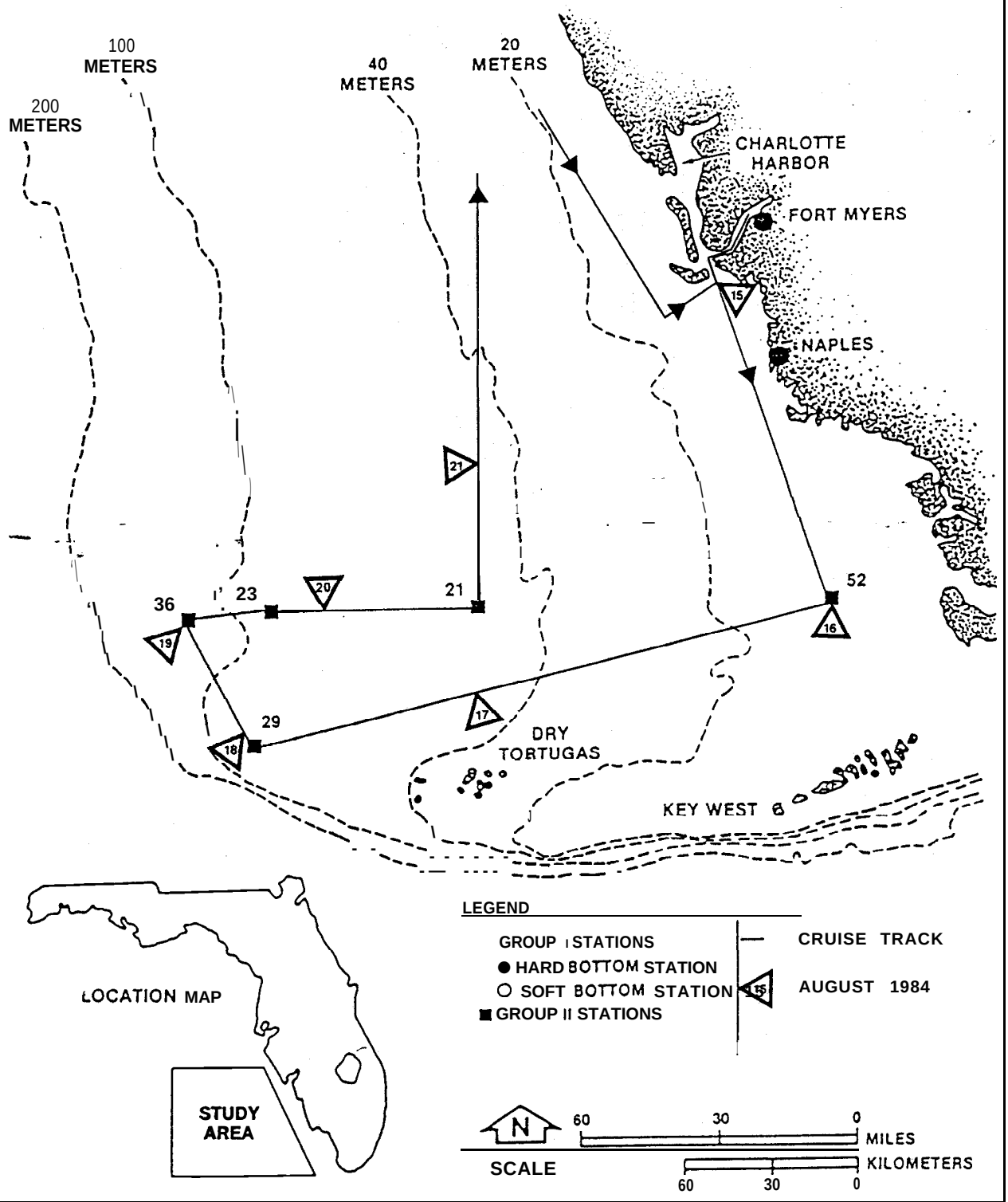


Figure 2
ACTUAL CRUISE TRACK FOR YEAR 4 – CRUISE IV

SOURCE: ESE, 1984.

MINERALS MANAGEMENT SERVICE

Table 1. Year 4, Cruise IV Participants, Titles, and Affiliations

Name	Title	Affiliation
Carla Langley	Observer	MMs
Michael S. Tomlinson	Logistics Coordinator, Chief Scientist	ESE
Gary H. Tourtellotte	Technician	ESE
Paula Anderson-Findley	Technician	ESE
Randall Howard	Principal Investigator	LGL
Gregory S. Boland	Principal Investigator	LGL
Charley Chandler	Technician	LGL

Source: ESE, 1984.

Table 2. Summary of Data Collected (Proposed and Actual) for Year 4, Cruise IV

Data Types	Method	Number of Stations Proposed	Number of Stations Actual	Number of Samples Proposed	Number of Samples Actual	Percent Complete (%)
Epifauna	UTV/BSP	5	5	(≥2 km of transects)		100
	Triangular Dredge	5	5	15	15	100
	Otter Trawl	5	5	5	5	100
Hydrography						
Conductivity	CSTD	5	1	Profiles		20
Salinity	CSTD	5	5	Profiles		100
Temperature	CSTD	5	5	Profiles		100
DO	CSTD	5	4	Profiles		80
Transmissivity	CSTD	5	5	Profiles		100
pH	CSTD	5	5	Profiles		100
Calibration						
Surface Temperature	Niskin/DSRT	5	5	5	5	100
Salinity	Niskin	3	3	6	6	100
Temperature	Niskin/DSRT	3	3	6	6	100
DO	Niskin	3	3	6	6	100
Meteorological and Ancillary Marine	Observation	5	5	--	--	100
*Servicing	In Situ Array	5	5	--	--	100

* In situ array includes continuous measurement of conductivity, temperature, current speed and direction, sedimentation rate, epifaunal recruitment, and, at Stations 21 and 52, continuous wave height and period measurements as well as time-lapse photography of sediments and bio-fouling.

Source: ESE, 1984.

Subsampling during Cruise IV involved carefully sorting through the entire dredge haul. All motile epifauna and fish were preserved, as well as sections of the larger sponges. In addition, all macroalgae, representative sessile epifauna, and unusual specimens were preserved. The largest hauls were usually from those stations with an algal pavement. Only representative nodules were retained, and the others, following close inspection, were discarded. In every instance, the total volume and subsample volume were noted on the biological log sheets.

A single trawl with a 25-foot roller-type otter trawl was made at each station. Tow times were either 10 (standard) or 5 minutes long. The 5-minute tow time was used at Station 29 in an effort to minimize damage to the otter trawl.

All trawl samples were photographed and sorted, with all fish and motile invertebrates preserved for further analysis. The rest of the sample was discarded.

Continuous CSTD profiles were obtained for all five stations. The data collected during these CSTD profiles included conductivity, salinity, temperature, DO, pH, and transmissivity versus depth. With the exception of Station 36, where water depth was 127 meters (m), the CSTD was lowered in the record mode to within 1 to 2 m of the bottom. At Station 36, the CSTD was lowered to 90 m (end of cable), and the bottom salinity, temperature, and DO were sampled with a Niskin bottle equipped with a DSRT. As a backup, the above parameters were manually recorded on hydrographic field logs at selected depths.

The Niskin/DSRT, described previously, was also used to verify and, if necessary, calibrate the CSTD. At all stations, sea surface temperatures were measured and compared with the CSTD temperature results. At Stations 52, 21, and 36, the Niskin/DSRT was used to obtain salinity, temperature, and DO data at the surface and bottom to verify CSTD data.

At all five stations, standard meteorological and ancillary marine observations were made and noted on the hydrographic log.

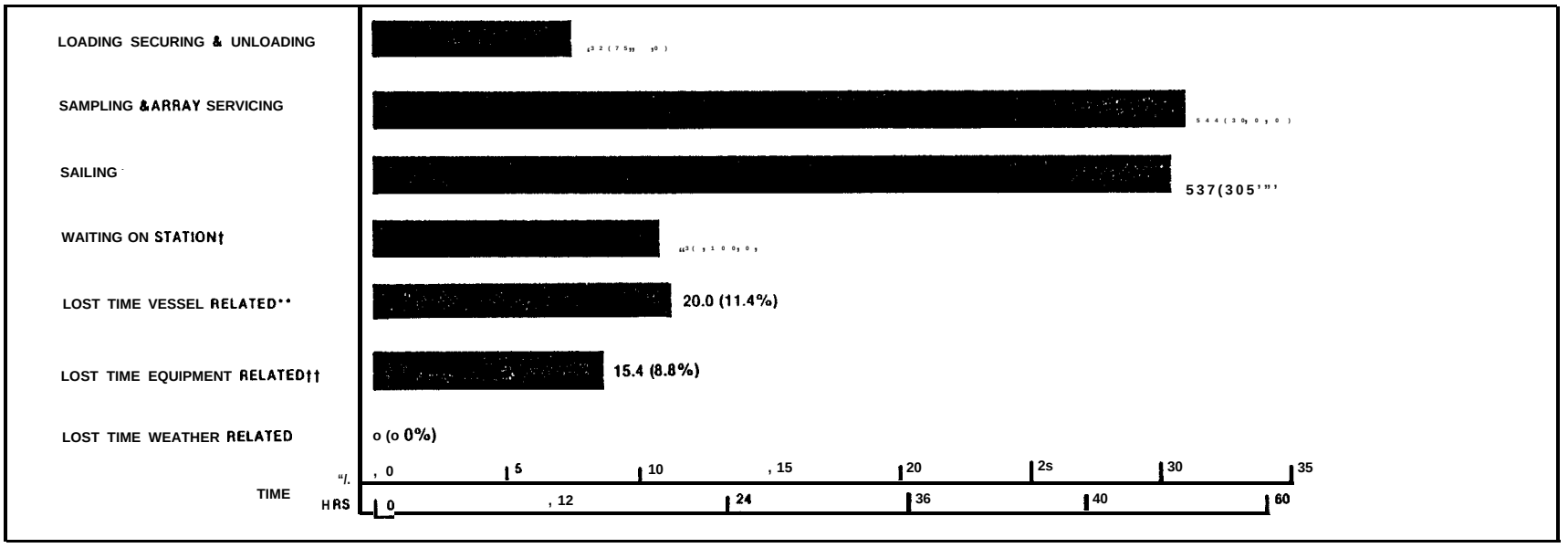
In situ arrays with marking and retrieval moorings were deployed at all five Group 11 stations during Cruise I. Each array was equipped with an ENDECO® 174 current meter capable of continuously measuring and recording current speed and direction, conductivity, and temperature. Each array also contained enough sets of fouling plates for a 2-year study and three sets of sediment traps (with five replicates) at 0.5, 1.0, and 1.5 m above the bottom. The two shallowest station arrays were equipped with wave gages and time-lapse cameras to monitor sediment movement as well as epifaunal recruitment. The array at Station 21 was lost , and a backup array was deployed during Cruise III.

All five arrays were serviced during Cruise IV; however, some problems (discussed in Section 3.2) were encountered.

2.3 TIME UTILIZATION

Figure 3 presents a time utilization bar graph for Cruise IV. The graph indicates time as hours and as a percentage of the total *cruise* time. The total cruise time of 176 hours included 20 hours (11.4 percent) lost due to a LORAN failure (discussed in Section 3.3). ESE was not charged for a day of ship time; however, the entire scientific crew was on standby.

As is normal, the two largest categories were sampling/array servicing and sailing at 30.9 and 30.5 percent, respectively. The sailing category included not only sailing but instrument preparation, equipment calibration, maintenance, and sleeping time. Time waiting on station, which also included many of the activities outlined for the sailing time category, accounted for 11.0 percent of the total time. Equipment-related problem time (discussed in Section 3.2) and time associated with loading, securing, and unloading accounted for 8.8 and 7.5 percent, respectively, of the total cruise time. No time was lost



INCLUDES: PREPARATION FOR NEXT STATION, INSTRUMENT CALIBRATION, INSTRUMENT SERVICING, ANO BETWEEN. STATION HYDROGRAPHY.

† INCLUDES: ALL OF THE ABOVE EXCEPT BETWEEN-STATION HYDROGRAPHY, ANO INCLUDES SLEEPING TIME.

** PROBLEMS WITH SHIPS LORAN.

†† PROBLEMS WITH SERVICING OF ARRAYS.

Figure 3
YEAR 4, CRUISE IV — TIME UTILIZATION

SOURCE: ESE, 1984.

MINERALS MANAGEMENT SERVICE

due to weather; however, lightning activity on August 14 was the probable cause of the LORAN failure.

3.0 PROBLEMS ENCOUNTERED AND RECOMMENDATIONS

3.1 WEATHER-RELATED PROBLEMS

Other than the possibility that lightning caused the LORAN failure (discussed in Section 3.3), there were no weather-related problems.

3.2 EQUIPMENT-RELATED PROBLEMS

The majority of the equipment-related problems was probably caused by large animals such as fish and turtles. Station 52 again suffered damage to its TLC, fouling plates, and sediment traps. The TLC functioned for a few days only before the cables between camera, strobe, and battery failed. More fouling plates were destroyed, the 0.5 m sediment trap was destroyed, and the other traps were damaged. ESE suspects that much of this damage was caused by two 300-pound jewfish and one large turtle that reside in and around the array. ESE will contact Brad Buttman of Woodshole Oceanographic Institute who has had extensive experience in ocean-floor tripods. It is possible that he has experience in dealing with this problem and may recommend a solution.

Fish" bites definitely caused the problem at Station 36 and probably caused the problem at Station 23. UTV observation revealed the subsurface buoys for Station 36 lying on the ocean bottom. This necessitated dragging for the array with the grapnel system and bringing the array on deck (fouling plates to be redeployed were placed in buckets of seawater). Examination of both subsurface buoys showed numerous fish bites. The array was redeployed with a rigid plastic (and hopefully fish-proof) subsurface buoy.

Although it is probable that fish bites caused the problem at Station 23, confirmation could not be made. In this case, the 1/2-inch, double-braided nylon parted during retrieval. None of this line at any station has shown wear or hint of failure. The line almost appeared to have been cut (as with sharp teeth). Because the line parted, the grapnel system again had to be used. Unfortunately, the array sustained

sufficient damage (including the loss of three legs) that redeployment was impossible. The array will be redeployed during the next cruise.

It should be noted that sediment trap samples on arrays retrieved with the grapnel system were not saved because grappling stirs up sediment and, at the same time, has a tendency to flush out the traps.

In an effort to avoid fish-bite problems, ESE is considering replacing all line and buoys with metal components. These components will increase the weight of the mooring and potential for corrosion and will decrease the manageability; however, fish bites should no longer be a problem.

Servicing at the Station 21 array presented an entirely new problem. The current procedure for array servicing is to position the vessel upcurrent, drop the anchor, and then play out sufficient line to put the vessel within 50 feet of the array. At Station 21, however, the ship's anchor became entangled with the array, and two legs and one sediment trap were broken off the array. No other damage to the array occurred, and it was brought on deck to be repaired. The fouling plates to be redeployed were placed in buckets of fresh seawater.

Other equipment-related problems included the loss of conductivity (but not salinity) on the CSTD and the loss of DO at Station 21. The BSC failed to advance the film during the UTV/BSP survey at Station 36. After repairing the BSC, another transect was run to obtain the required BSC data.

3.3 VESSEL-RELATED PROBLEMS

on August 14, a violent thunderstorm was encountered during the sail from FIO to Station 52. It is probable that a direct or close lightning strike caused the failure of the ship's LORAN C and required the vessel to sail to Fort Myers for repair. The LORAN was repaired and the vessel underway by 1124 on August 15. The vessel did not arrive at Station 52 until 1830 which was too late for sampling other than the hydrographic survey. No other vessel-related problems occurred.

APPENDIX

CRUISE LOG

CRUISE LOG REVIEW SHEET

CRUISE NO. IV DATE [S1: 14-20 (or 22) Aug 84 COPY: ESE

ID NO.	NAME	TITLE & AFFILIATION	PRE-CRUISE APP. INIT.	PRE-CRUISE APP. DATE	POST-CRUISE APP. INIT.	POST-CRUISE APP. DATE
1	L.J. Danek	Proj. Mgr. (ESE)	LJD	8/7/84		
2	M. S. Tomlinson	Log. Coord. (ESE)	[illegible]	7 Aug 84	[illegible]	[illegible]
3	G.M. Powell	Div. Mgr. (ESE)	—	—		
4	W.T. Gillespie	Data Mgr. (ESE)	WTG	8/7/84		
5	M.G. Schultz	QA Officer (ESE)	—	—		
6	J.J. Mousa	QA Officer (ESE)	JJM	8/7/84		
7						
8						
9						
10						

PRE-CRUISE COMMENTS

POST-CRUISE COMMENTS

CRUISE LOG REVIEW SHEET

CRUISE NO.: IV DATE [S1: 14-20 or (22) Aug 84 COPY: LGL

ID NO.	NAME	TITLE & AFFILIATION	PRE-CRUISE APP. INIT.	PRE-CRUISE APP. DATE	POST-CRUISE APP. INIT.	POST-CRUISE APP. DATE
1	G. Lewbel	Project Manager (LGL)	forgot to sign not going			
2	L. Martin	Principal Investigator (LGL)	LRM	7/23/84		
3	G. Boland	Principal Investigator (LGL)	GB	7/19/84	GB	8/20/84
4						
5						
6						
7						
8						
9						
10						

PRE-CRUISE COMMENTS

3rd cruise IV LGL participant likely to be unnamed as opposed to Mr. Steve Viada

POST-CRUISE COMMENTS

GB I liked the Flat water - Need more next cruise

PC I'm not to keen on diving to 180' twice in on day,

CREW LIST

NAME	INIT.	TITLE	AFFILIATION
[illegible]	[illegible]	[illegible]	[illegible]
Gary Tomtellotte	GHT	slave	E S E, Inc
LARRY BRIGGS	LB	COOK	FIO
JAMES BROWN		ASST ENG. DN	FIO
DAVID THOMAS		MATE	FIO
ROMAN JARMULA		ENGINEER	FIO
CHARLES HORAN	CH	CAPTAIN	FIO
[illegible]	[illegible]	Tech	E S E
[illegible]	[illegible]	[illegible]	E S E
Gregory S Bolaird	GB	Captain Video	L G L
Randall Howard	RH	C N.	L G L
Charles B Chandler	CBC	Lieutenant Video	L G L
~~Richard Christensen~~	~~RC~~	~~——?——~~	~~N Z X~~

TENTATIVE CRUISE PLAN

DEPARTURE: 1400 14Aug84

RETURN : 0500 20Aug84 or

0800 22Aug84 (see option discussed below)

PARTICIPANTS:	ESE	LGL
	Mr. Mike Tomlinson	Mr. Larry Martin
	Mr. Gary Tourtellotte	Mr. Greg Boland
	Ms. Paula Anderson	Mr. Steve Viada
Additional:	Dr. Bob Avent (MMS, tentative)	
	Mr. Dave McGehee (UF, option)	
	Unidentified SSS Technician (option)	

ITINERARY:

1000	14Aug84	LGL & ESE begin loading vessel
1400	"	u/w for Sta. 52
0700	15Aug84	Sampling & array servicing @ Sta. **52**
0700	16Aug84	" " " " Sta. **29**
0700	17Aug84	" " " " " Sta. **36**
0700	18Aug84	" " " " Sta. **23**
0700	19Aug84	" " " " " Sta. **21**
1300	"	Sampling complete & u/w for FIO (or Naples-option)
(2200	"	Arrive Naples, 3-4 scientific crew off and search team on)
0500	20Aug84	Arrive FIO or
(0600	"	Arrive @ Sta. 21, begin search for missing array)
(1600	21Aug84	Halt search for array, u/w for FIO)
(0800	22Aug84	Arrive @ FIO)

STATION CHECKLIST

PROJECT TITLE: SW FLORIDA OCS BENTHIC STUDY PROJECT NO.: 83-513-510/MMS

DATE (S): 14-70 (22) Aug 84 Cruise IV

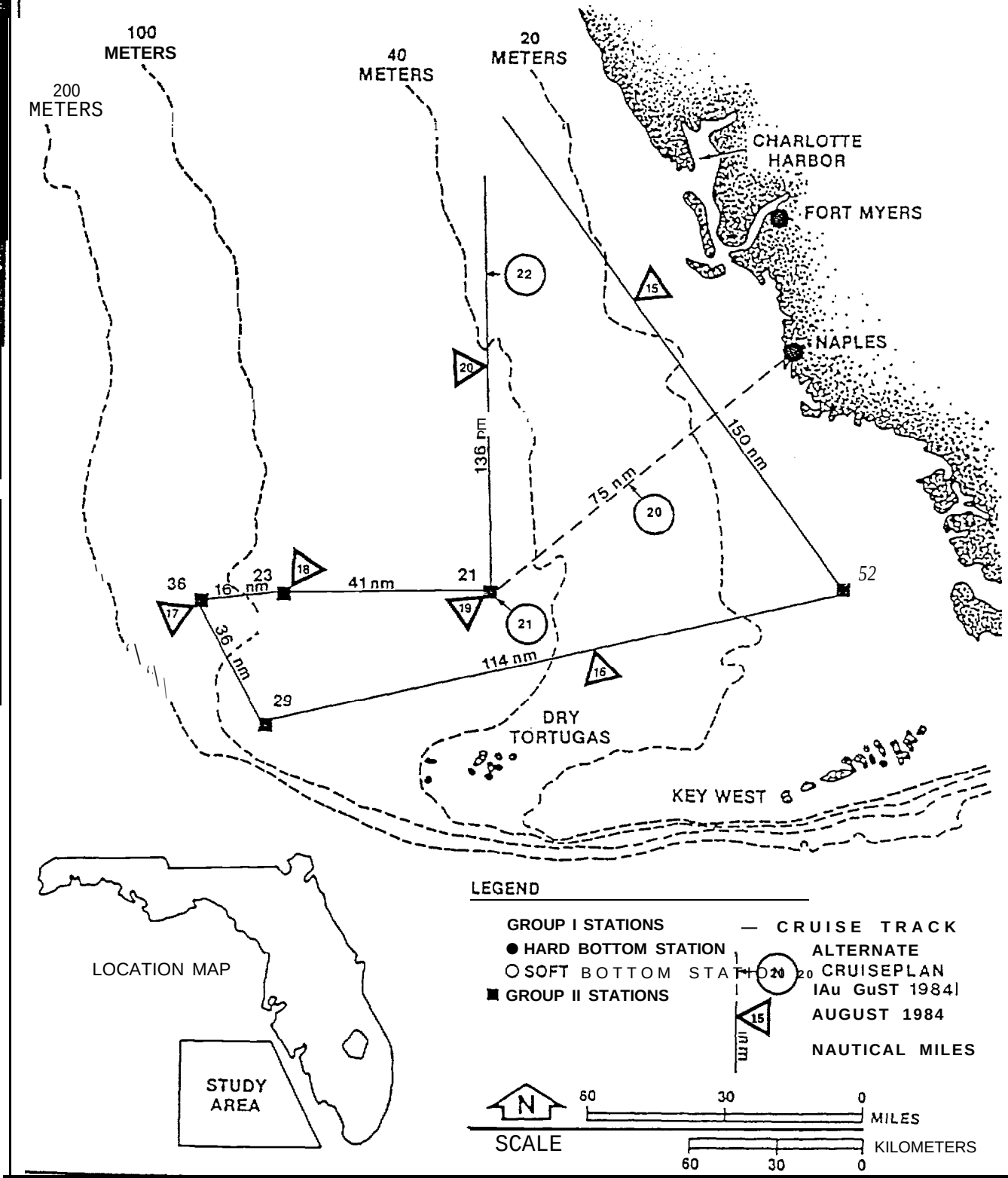
☒ REQUIRED ☒ COMPLETED

TASK OR PARAMETER DESCRIPTION	STATION NUMBER														
	43	44	45	46	47	48	49	50	51	52*	19	21*	23*	29*	36*
Epifauna, UTV/BSP Survey (3-4 hr & 2 km)										X		X	X	X	X
" , Triangular Dredge (3 trawls)										X		X	X	X	X
" Roller Trawl (1 trawl)										X		X	X	X	X
Hydrography, CSTD										X		X	X	X	X
" , Niskin/DSRT For S,T,DO (surf & bot)										X		X			X
Met. & Ancillary Marine Data & Surf. Temp.										X		X	X	X	X
In Situ Array Servicing										X		X	X	X	X

★ GROUP II

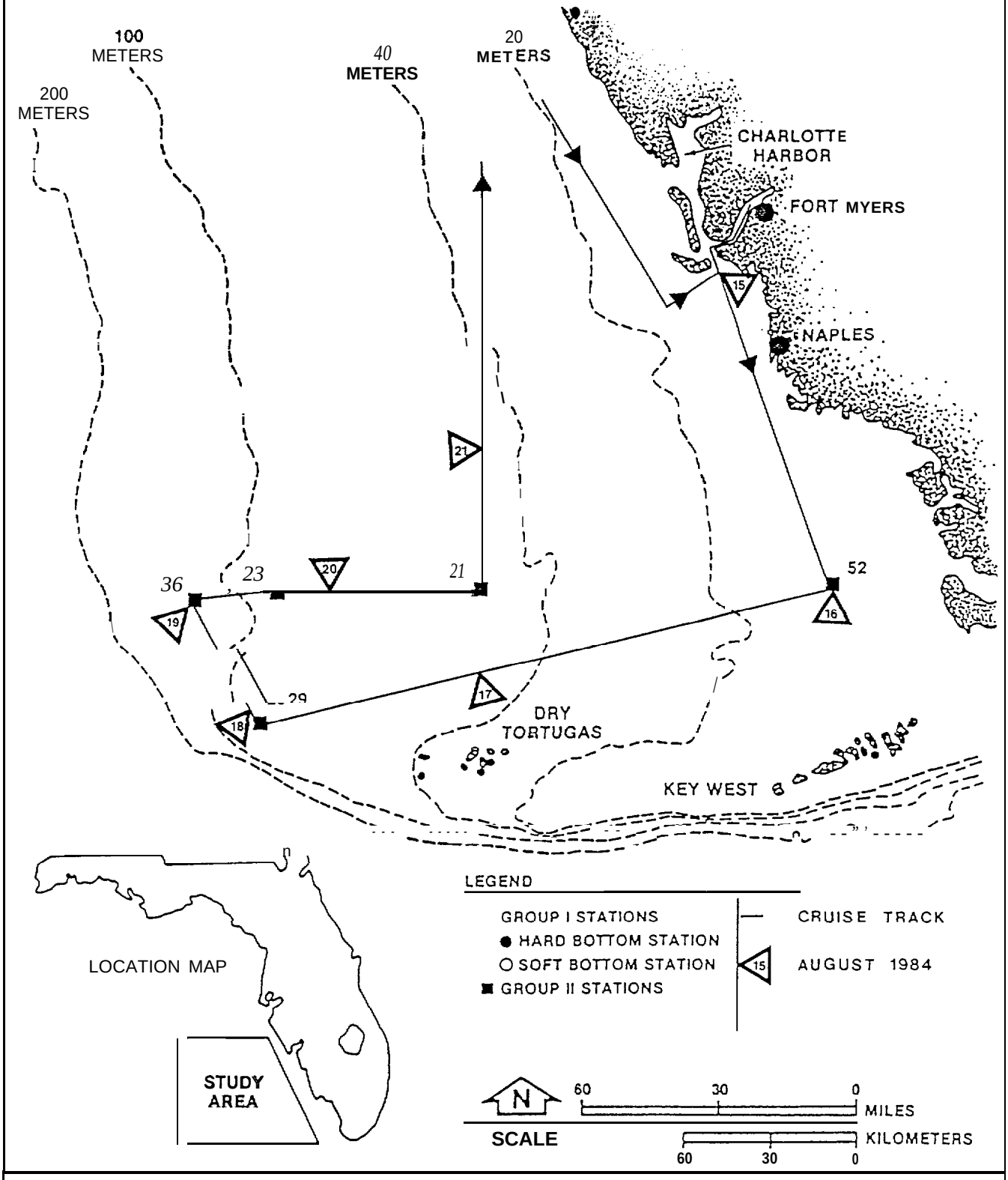
FIELD LEADER: [illegible] DATE: [illegible] PROJ. MGR.: [illegible] DATE: 9/5/84

DATA MGR. : _____ DATE: _____ QA/QC REP.: _____ DATE: _____



TENTATIVE CRUISE TRACK FOR YEAR 4--CRUISE IV

MINERALS MANAGEMENT SERVICE



YEAR 4, CRUISE IV CRUISE TRACK

MINERALS MANAGEMENT SERVICE

MONTH : August 1984

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				2	3	4
5	6	7		9	10	11
	13	ESE & LGL meet @ FIO 14 to begin loading vessel. 1400 u/w for Sta. 52	0700 arr. @ Sta. 52 beg. sampling & a servicing. l Sta. 52 comp & u/w for St. 29 15	0400 arr. @ 16 Sta. 29. 0700 begin sampling and array servicing. 1600 Sta. 29 complete & u/w for Sta. 3 1900 arr. @ Sta. 36, CTD &/or dredge (if time avail.).	17 0700 cont. 1500 Sta. 36 complete & u/w for 23 1700 arr. @ Sta. 23. begin CTD &/or dredge (if time avail.	0700 cont. sampling @ 18 Sta. 23. 1300 Sta. 23 comple &u/w for 21. 1700 arr. @ 21 CTD &/or dredg
700 cont. Sta. 21 300 compl /w for FI or Naples 200 arr. crew off	0500 arr. FIO 20 (or 0600 arr. @ Sta. 21 w/ searc team to begin array search.)	0630 search or missing rray continues. 600 search halt- d & u/w for FIO) 21	(0800 arr. @ FIO beg. offloading vessel.)			25
	26	27		29	30	31

Table 1. Southwest Florida Shelf Benthic Communities Study Station Information for Year 4

Station Number	Average Depth (M)	Latitude (N)	Longitude (W)	Loran C A	Loran C B	Loran C C
43	16	26°17.26”	82°18.94”	14064.1	44008.8	
44	13	26°17.710	82°12.66”	14078.2	43961.5	
45	16	26°03.03′	82°08.50”	14055.9	43888.5	
46	18	26°00.86”	82°07.92”	14052.6	43878.9	
47	20	25°45.83”	82°06.10′	14025.9	43833.5	
48	18	25°45.96”	82°01.13’	14036.4	43798.8	
49	11	25°35.23”	81°46.24”	14045.1	43681.5	
50	16	25°20.27”	81°51.51”	14006.3	43700.1	
51	15	25°17.42”	81°48.01”	14008.0	43675.7	
52	13	25°17.54”	81°39.81”	14024.3	43625.4	
19	24	25°17.40′	82°08.98”	13964.6	43807.4	
21	47	25°17.30”	82°52.14’	13864.4	44083.4	
23	74	25°16.92”	83°37.78”	13740.9	44369.1	
29	64	24°47.53”	83°41.17”	13678.6	44310.0	
36	125	25°16.86”	83°57.34”	13682.5	44487.4	

Source : ESE, 1984

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 OATA CENTER

0CEAN0GRAPH% - GENERAL CRUISE INVENTORY
(ROSCOP - II)

A40 REFERENCE NUMBER

		YES	NO	
A01 EXPEDITION/PROJECT SW FLORIDA OCS BENTHIC STUDY				PART
All CRUISE NUMBER OR NAME YEAR 4 CRUISE IV	A91 Declared national program?			
A02 SHIP OR PLATFORM R/V SUNCOASER & AR RAYS	A81 Exchange restricted?			
A12 PLATFORM TYPE RESEARCH SHIP & FIXED PLATFORM	A92 Co-operative program?			A72 NAME
	A82 Co-ordinated internationally?			A62 BY WHOM?

A03 COUNTRY	A04 ORGANIZATION	A05 CHIEF SCIENTIST(SI
USA	ENVIRONMENTAL SCIENCE & ENGINEERING, INC.	DR. L. J. DANEK

A06 NAME AND ADDRESSES OF ORGANIZATIONS AND PERSONS

WHOM TO QUERY	FINAL DISPOSITION OF OATA
A1 L.J. DANEK, ESE, P.O. BOX ESE, GAINESVILLE, FL	A2
B1 B. GALLAWAY, LGL 1410 CAVITT ST. BRYAN, TX	B2
c l	C2
D1	D2
EI	E2

DATE	DAY	MONTH	YEAR
A07 FROM	14	08	84
A17 TO	21	08	84

A08 GENERAL OCEAN AREAS
26 - GULF OF MEXICO

A09 TYPE(S) OF MARINE ZONE(S)
07 - CONTINENTAL SHELF

GEOGRAPHIC AREA	A10 LATITUDE	A20 LONGITUDE
If all data were collected at a fixed station, fill in the co-ordinates	° ' '' N/S	° ' '' E/W

A15 FEDERAL SUPPORT MINERALS MANAGEMENT SERVICE (USDOI)

A25 REMARKS

DISCIPLINE AND TYPE OF MEASUREMENTS		Index 10°x10° 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, GL	B	7	2	0	8								
A D	B	7	2	0	8		A	B					
A M	B	7	2	0	8		A	B					
A H, HP, HC	B	7	2	0	8		A	B					
A B, BS	B	7	2	0	8		A	B					
A	B						A	B					
A	B						A	B					

G – GEOLOGY GEOPHYSICS

GL MEASUREMENTS MADE AT A SPECIFIC LOCATION	NUMBER	i	I	FORMAT
G01 Dredge				
G02 Grab				
G03 Core rock *(no. of cores)*				
G04 Core–soft bottom *(no. of cores)*				
G05 Sampling by divers				
G06 Sampling by submersible				
G07 Drilling				
G08 Bottom photography	5	B	1	8
G09 Sea floor temperature *(≤ 1 m from bottom)*				
G10 Accoustical properties of the sea floor				
G11 Engineering properties of the sea floor				
G12 Magnetic properties of the sea floor				
G13 Gravimetric properties of the sea floor				
G14 Radioactivity measurements				
G70 Other measurements				

GU MEASUREMENTS UNDERWAY				
G21 Motion picture of sea floor *(No. of nautical miles)*	5.4	B	1	8
G22 Bathymetry-wide beam *(no. of nautical miles)*				
G23 Bathymetry-narrow beam *(no. of nautical miles)*				
G24 Side scan sonor *(no. of nautical miles)*				
G25 Seismic reflection *(no. of nautical miles)*				
G26 Seismic refraction *(no. of nautical miles)*				
G27 Gravimetry				
G28 Magnetism				
G29 Other measurements				

G – GEOLOGY GEOPHYSICS *(Continued)*

GS TYPES OF STUDIES	NUMBER	i	I	FORMAT
G31 Physical analysis of sediments	5	A	1	9
G32 Chemical analysis of sediments	5	A	1	9
G33 Paleothermy				
G34 Paleomagnetism and rock magnetism				
G35 Paleontology				
G36 Geothermy				
G37 Geochronology				
G38 Mineral and fossil resources				
G39 Litteral zone studies				
G90 Other measurements				

D – DYNAMICS

D01 Current meters *(no. of stat.)*	5	A	1	7
D02 Current meters *(Average duration of measurement days)*				
D03 Currents measured from ship drift				
D04 GEK				
D05 Drifters *(number)*				
D06 Swallow floats *(number)*				
D07 Drift cards *(no. released)*				
D08 Bottom drifters *(no. released)*				
D09 Tidal observation *(duration)*				
D10 Sea and swell *(no. of observations)*	5	A	1	1
D90 Other measurements				

M – METEOROLOGY

M01 Upper air observations				
M02 Incident radiation				
M03 Air–sea interface studies				
M04 Ice observations				
M05 Occasional standard measurements	5	A	1	1
M06 Systematic standard measurements				
M90 Other measurements				

H – HYDROGRAPHY

HS SURFACE	NUMBER	i	l	FORMAT
H01 Continuous temperature recording				
H02 Continuous salinity recording				
H03 Discrete temperature measurements				
H04 Discrete salinity measurements				
NEAR SEA FLOOR (≤ 10 m)				
H05 Continuous temperature recording	5	A	1	7
H06 Continuous salinity recording	5	A	1	7
H07 Discrete temperature measurements				
H08 Discrete salinity measurements				
HP PHYSICAL				
H09 Classical oceanographic stations				
H10 Vertical profiles (STD/CTD)	5	A	1	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	5	A	1	7
H17 Optics				
H18 Diffusion (Dynamic)				
H80 Other measurements				
TRANSMISSIVITY	5	A	1	7
HC CHEMICAL				
H21 Oxygen	5	A	1	7
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				
H33 Dissolved gases				
H90 Other measurements				
P – POLLUTION				
P01 Suspended solids				
P02 Heavy metals				
P03 Petroleum residues				
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				

B – BIOLOGY

	NUMBER	i	l	FORMAT
B01 Primary productivity				
B02 Phytoplankton pigments				
B03 Seston				
B04 Particulate organic carbon				
B05 Particulate organic nitrogen				
B06 Dissolved organic matter				
B07 Bacterial and pelagic micro–organisms				
B08 Phytoplankton				
B09 Zooplankton				
B10 Neuston				
B11 Nekton				
B12 Invertebrate nekton				
B13 Pelagic eggs and larvae				
B14 Pelagic fish				
B15 Amphibians				
B16 Benthic bacteria and micro–organisms				
B17 Phytobenthos				
B18 Zoobenthos	5	B	1	9,8
B19 Commercial demersal fish				
B20 Commercial benthic molluscs				
B21 Commercial benthic crustacean				
B22 Attached plants and algae	5	B	1	9,8
B23 Intertidal organisms				
B24 Borers and foulers				
B25 Birds				
B26 Mammals and reptiles				
B27 Deep scattering layers				
B28 Acoustical reflections on marine organisms				
B29 Biologic sounds				
B30 Bioluminescence				

	NUMBER	i	l	FORMAT
B31 Vitamin concentrations				
B32 Amino acid concentration				
B33 Hydrocarbon concentrations				
B34 Lipid concentrations				
B35 ATP–ADP–AMP concentrations				
B36 DNA–RNA concentrations				
B37 Taggings				
B80 Other measurements				
B5 TYPES OF STUDIES				
B51 Identification	5	B	1	9,8
B52 Spatial and temporal distribution	5	B	1	9,8
B53 Monitoring and surveillance	5	B	1	9,8
B54 Biomass determination				
B55 Description of communities	5	B	1	9,8
B56 Food chains energy transfers				
B57 Population and environments	5	B	1	9,8
B58 Population structures	5	B	1	9,8
B59 Taxonomy, systematics, classification	5	B	1	9,8
B60 Physiology				
B61 Behaviour				
B62 Pathology, parasitology				
B63 Toxicology				
B64 Gear research				
B65 Exploratory fishing				
B66 Commercial fishing				
B67 Aquaculture				
B90 Ocher measurements				

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER – GULF OF MEXICO

DATE: 14 Aug 84 DAY OF WEEK: Tue PAGE 1 OF 12

TIME	ENTRY
0800	LGL begins loading boat (after arriving previous night).
1000	ESE and LGL continue loading vessel, CSTD sitting in
*	tub of water appears OK, but Z reads -1.2m.
1650	u/w for sta. 52, rigging continues
*	Addnl. Note: G. Boland (LGL) and M. Tomlinson (ESE) spoke w/ Dr. William Lyons regarding possible investigation of a known "hole" near sta. 36. This info. was transmitted to L. Danek for possible inclusion in proposal.
2136	TLC nearly rigged, the Sea Data 635-11 (w/ 45 psia sensor) just sent from Sea Data has been set up, programmed & is ready for deployment.
	Sed. Traps & fouling plates assembled for sta. 52 array.
2140	LORAN on bridge lost during lightning squall.
	Vessel awaiting instruction from FIO
?	Instructions rec'd. & u/w for Ft. Meyers vicinity to put in for repairs.

DAY CONT'D NEXT PAGE? Y or (N)

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: MRS DATE: 16 Aug 84

PROJ. MGR; _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA OCS BENTHIC STUDY PROJ. NO.: 83-513 -510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER - GULF OF MEXICO

DATE: 15 Aug 84 DAY OF WEEK: Wed PAGE 2 OF 1%

TIME	ENTRY
0245	Dropped anc or off Ft. Meyers & waiting for light.
0710	u/w for prime docks @ Ft. Meyers.
0825	Docked & waiting for repairman. LGL discovers that a cooler w/ first aid supplies & a BC is missing. Brief trip to store filled an. first aid needs not covered by vessel.
1124	u/w for Sta. 52
1348	CSTD calib. completed. Many parameters (DO, pH, & trans. are all off thus req. mathematical correction)
*	Calib @ ESE few days before was right on. TZC rigging continues.
1830	Arr. @ Sta. 52, surface buoy, marker flont & secondary sub-surf. buoy (5558) all in place.
1916 1960	Began hydrography. Lost the LORAN chain, will use array position if chain not up in time.
2058	Hydrography completed. * water T°C too high for DSRT (off scale).

DAY CONT'D NEXT PAGE? Y or (N)

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: MSD DATE: 16 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION : R/V SUNCOASTER-GULF OF MEXICO

DATE : 16Aug84 DAY OF WEEK: Thu PAGE 3 OF 12

TIME	ENTRY
0602	Engines started, prep. to weigh anchor.
0641	Begin dredging w/ 60 cm. Δ dredge (2 min. tows).
0745	Dredging completed. Prep. for trawling
0812	Trawling begun (lots of algae on bottom)
0832	Trawling completed, attempting to wash trawl by towing.
	Rigging for UTV
0915	Checked drift of boat (very slow heading 265°M)
0930	UTV was deployed & ~~retrieved~~ retrieved after
	strobe problem became evident.
0951	Begin UTV/BSP survey.
1220	UTV survey completed. Vessel prep. to anchor
	for array servicing. Break for lunch.
1250	Lunch and array servicing briefing completed. Divers
	prep for servicing.
1328	Divers over the side. The vessel crew was able to
	position & anchor ship w/in 25 ft. of array location.
1403	Divers up w/ sed. traps., current meter, & wave gage.
	The following is a status rept. on the above:
	1) sed. traps. - 0.5 m., virtually destroyed by critters (there
	are now 2 large jewfish in area.)
	1.0 m, - 1 Sed. Trap retrieved intact.
	1.5 m, 3 Sed. Traps retrieved intact.
	*The white duct tape used on traps is not good
	for immersion it wasn't holding well.
*	2) current meter - tether wrapped around taut wire
	& heavily fouled (recommend replacement
	in Nov. for servicing @ ENDECO
	3) Wave gage - heavily fouled

DAY CONT'D NEXT PAGE? (Y) or N

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: [illegible] DATE: 16 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA OCS BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER—GULF OF MEXICO

DATE: 16 Aug 84 DAY OF WEEK: Thu PAGE 4 OF 12

TIME	ENTRY
1422	TLC & battery on deck, however, both strobe & camera cases partly flooded. Fouling plates recovered.
1458	CM174 serviced & ready for deployment
*	Fouling plate status (# retrieved): 3 mo. steel – 6, 3 mo. ceramic – 4, 9 mo. ceramic – 2, TLC being rigged.
1618	Final prep. on TLC continues
1626	Made test of Hulls pinger & recvr. (pinger just below sub-surf. buoy @ Sta. 32) Checks out very good & very directional).
1642	Divers in, & quickly back, some minor equipment problems.
1653	Divers in again. w/ WG (w/ 45 psia sensor) & CM174
1703	Divers up after installation of WG & CM Done w/ TLC
1717	Divers up after deploying TLC. Taking up dive platform & prep. to weigh anchor.
1736	u/w for Sta. 29.

DAY CONT'D NEXT PAGE? Y or N

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FT L: MRD DATE: 16 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER – GULF OF MEXICO

DATE: 17 Aug 84 DAY OF WEEK: Fri PAGE 5 OF 12

TIM	N
0535	Arr. @ Sta. 29
0630	Begin Sta. 29 hydrography. (Lost C on CSTD just @ end of cast; possibly a loose wire @ console again)
0713	Hydrography completed; rigging for dredging
*	Oil on water (slick w/ some chocolate mousse) LORAN - 13677.5/44312.8 to 13676.7/49314.4; slick was rather thick & odiferous
0915	Begin trawling
1006	Trawl on board after much difficulty. Large amounts of Agaricia, Net cod end torn somewhat. Steaming back to array location to search briefly.
1027	Deployed temp. mkr. buoy. The array prim. sub-surf. buoy was sighted from ship. ~~Surface~~ & 555B missing
1046	UTV survey begins.
1217	UTV on deck @ end of Tr #1 to service BSC; lunch
1252	UTV B being deployed for Tr. #2
1430	UTV on deck. Prep. for array servicing w/ vessel @ anchor.
1510	Divers in water to attach service line
1525	Array hooked up to spar buoy
* 1535	Divers up w/ CM174 and sed. traps. Contrary to what Ala-pac said. the eyebolt is straight not dog-legged and it was pure luck that sub-surf. buoy had not slipped through float (eye-nut was missing)
1724	Fouling plates on deck & preserved. CM ready (refer to Sta. 29 CM174 checklist for comments.) Divers in w/ CM 174 & fouling plates
1730	Divers down w. sed. traps.

DAY CONT'D NEXT PAGE? (Y) or N

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: MSD DATE: 17 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER-GULF OF MEXICO

DATE: 17 Aug 84 DAY OF WEEK: Fri. PAGE 6 OF 12

TIME	ENTRY
1745	Divers up after installing photographing servicing procedures
1802	Divers up after disconnecting servicing line & attaching pinger. Break for dinner.
1900	Maneuvering to recover temp. mkr. float.
1910	Temp. mkr. retrieved & u/w for an anchorage in vicinity of Sta. 29 (too deep @ Sta. 3 & for anchoring) Work on damaged strobe (Sta. 52 TLC) continues & not being repaired.

DAY CONT'D NEXT PAGE? Y or (N)

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: [signature] DATE: 17 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA OCS BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER - GULF OF MEXICO

DATE: 18 Aug 84 DAY OF WEEK: Sat PAGE 7 OF 12

TIME	ENTRY
0305	Weighing anchor, u/w for Sta. 36
0615	rr. @ Sta - 36 steady 2 kt (!) current setting to south
	Begin CSTD hydrocast.
0710	CSTD cast completed; begin Niskin/DSRT calib. cast. Conductivity continues to act up intermittently
0916	Niskin/DSRT casts (all 3) completed. Possible prob. w/ DSRT. Positioning for trawl (will trawl into current)
0927	Begin trawling
1012	Trawl on board; processing sample (some unusual fish and octopus) - also a "Gulf Gold" crab.
1047	u/w to search for array & temp. mkr. deployment
1110	Marker deployed and promptly sucked under by current even w/ an extra 50 ft. of line.
1130	Begin UTV survey.
1230	UTV up; break for lunch.
1256	Resume UTV survey.
1330	During UTV survey tried Helle Pinger Receiver w/ no luck
1350	UTV survey completed. Trying to motor w/ UTV down to search for array
1414	Motored N of array coordinates, attempting drift
1438	Maneuvering around vessel which refused our right of way (Lady Kay). No radio contact
1500	Array in sight on UTV; LORAN: 13C82.1/44487.9. Array mooring line strung out straight south on bottom: Both subsurface buoys appear intact but are only a few feet above bottom.
1509	Begin recovering U.T.-d setting up a serial arsenal system (rather than otter doors system)

DAY CONT'D NEXT PAGE? (Y) or N

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: MMS DATE: 18 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLOR1OA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER - GULF OF MEXICO

DATE: 18 Aug 84 DAY OF WEEK: Sat PAGE 8 OF 12

TIME	ENTRY
1602	Grapnels deployed.
1710	Begin dredging (no luck w/ grapnels)
1920	Dredging completed (w/ 1 abort). Rigging UTV for redeployment (film did not advance during #
2037	Strobe would not work @ Z>70m. abort UTV Rigging grapnel system w/ otter doors.
2108	Grapnel system rigged; positioning for deployment
2326	Array on deck; missing one leg, all fouling plates ok, sed. samples washed out when array retrieved sideways. (Grapnels snagged array, not line?. Subsurface floats (perm. & sec.) flooded. Teeth marks in both buoys. Fouling plates are being placed in buckets of sea water (rather than hosing them down). CM ok but tether wrapped around mooring line. Array now has only 2-137 lb wts. & 1 small weight.
0020	Array being lowered to sea floor. Array was deployed w/ 60" Polyform & a rigid ENDECO plastic float.
0031	Array down / LORAN: 13682.8 / 44487.1
0034	Up for Sta. 23 (Bridge fix: 13682.87 / 44487.16)

DAY CONT'D NEXT PAGE? Y or N

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: MSS DATE: _____

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA OCS BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER - GULF OF MEXICO

DATE: 19Aug84 DAY OF WEEK: Sun PAGE 9 OF 12

TIME	ENTRY
0230	Arr. @ sta. 23; anchoring (surface float sighted)
0802	Begin CSTD hydrocast
0825	Hydrocast completed. Niskin/DSRT cast not done because DSRT is off scale. Warming up engines & preparing to weigh anchor. Prep. for dredging
0917	Begin dredging
1031	Dredging completed, rigging for trawling.
1124	Begin trawling. (Had to reassemble after last night's grappling).
1224	Trawl on board; break for lunch.
1327	UTV down to begin survey.
1558	UTV on board. Position for array servicing (@ anchor)
1700	Anchored, just upcurrent of array.
1716	During retrieval array mooring line parted, both sub-surf. floats & surface float (+ pinger) recovered. Secondary sub-surf. float had been bitten numerous times. LORAN fix. @ parting - 13740.4/44369.5 Trying to rig grapnels to UTV
1844	UTV back on deck. Array was seen on UTV but no luck in trying to snag.
1909	Rigging grapnel system w/ otter doors for dragging
2213	Array snagged
2226	Array on board, w/ sed. traps. NG, 3 legs missing, 3 mo. fouling plates missing, CM 174 OK (array will not be deployed)
2234	Grapnel system on board u/w for sta. 21
2300	Samples preserved and CM serviced.

DAY CONT'D NEXT PAGE? Y or (N)

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: [illegible] DATE: 19Aug84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP 13 ESC.: IV

PLATFORM and/or LOCATION: R/V SUN COASTER-GULF OF MEXICO

DATE: 20Aug84 DAY OF WEEK: Mon PAGE 10 OF 12

TIME	ENTRY
0305	Arr. Sta. 21, 0330 anchored dropped.
0805	Begin Niskin/DSRT calib. cast. CSTD had been shut off @ 0200 (during generator switchover) and not turned on till 0730. DO doesn't seem to be dropping quickly
0850	Calib. cast completed. Rigging for trawling.
0928	Trawl ~~deployed~~ Prep. UTV system for deployment
1040	Trawl onboard after washing net. Processing sample.
1113	UTV deployed for survey.
1403	UTV on deck, survey completed. Begin search for array from ship. Large marker buoy still in place but not the small surface array marker
1430	Temporary marker buoy deployed near sub-surface buoy which was spotted from ship. Positioning for anchoring to service.
1518	Servicing line attached to ~~—~~ array, however, after attaching spar buoy it was found it wouldn't support the array. An inspection by skin divers showed that somehow the ship's anchor had landed atop the array.
1530	Array (w/ anchor) suspended to 1/4" stop. cable so that 1/2" dbl. brd. nylon can be unwound from winch to free up trawl wire for anchor retrieval. Divers prep. for attaching trawl cable to anchor.
1545	Array on deck. Anchor fell off array when diver attempted to remove CM174. Two legs had been knocked off. One set of sed. traps was lost. The fouling plates to be redeployed are being soaked in buckets of seawater.

DAY CONT'D NEXT PAGE? (Y) or N

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: [signature] DATE: 20Aug84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA OCS BENTHIC STUDY PROJ. NO.: 83-513-5101M MS

CRUISE or TRIP DESC.: IV

PLATFORM and/or LOCATION: R/V SUNCOASTER-GULF OF MEXICO

DATE: 20 Aug 84 DAY OF WEEK: Mon PAGE 11 OF 12

TIME	ENTRY
	Vessel weighing anchor & preparing to recover temporary marker float (which had been entangled in array, but was freed by divers). ~~Maneuvering~~
1612	Temporary marker retrieved & maneuvering to anchor.
1629	Anchored just off Sta. 21 marker buoy. Prep. TLC for deployement along w/ CM174. Sed. trap. and fouling plate samples being processed.
1705	CSTD hydrocast ~~being~~ begun. Still prob. w/ DO. (reading too high).
1717	CSTD cast completed.
1910	Array over the side equipped w/ the following:
	2- sed. traps (1.0 & 1.5m).
	1- CM174
	1- 635-11 WG
	Fouling plates
	1- TLC
1923	Array on bottom. LORAN coord. - 13864.0/44082.7
	(Bridge LORAN coord.- 13864.13/44082.86)
	Array equipped w/ Ala-Pac sub.surf. float & a small polyform sub.-surf. float ~ 10 ft. underwater.
	Rigging for dredging, weighing anchor
1950	Begin dredging.
2100	Dredging completed & u/w for St. Petersburg.

DAY CONT'D NEXT PAGE? Y or (N)

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: " DATE: _____ FTL: [illegible] DATE: 20 Aug 84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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DAILY FIELD LOG

PROJ. TITLE: SW FLORIDA Ocs BENTHIC STUDY PROJ. NO.: 83-513-510/MMS

CRUISE or TRIP DESC.: TV

PLATFORM and/or LOCATION: R/V SUNCOASTER-GULF OF MEXICO

DATE: 21Aug84 DAY OF WEEK: Tue PAGE 12 OF 12

TIME	ENTRY
0820	St. "11 u/w for F10; begin CSTD calib., equip. disassembly & packing
1150	Arr. @ F10 begin unloading ship. Forklift not operating.
1600	All scientific personnel & equip off R/V SUNCOASTER

DAY CONT'D NEXT PAGE? Y or (N)

WATCH CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: [illegible] DATE: 21Aug84

PROJ. MGR: _____ DATE: _____ DIV. MGR: _____ DATE: _____

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