30071
REGISTERED

YEAR 4, CRUISE I
CRUISE REPORT

Prepared for:

MINERALS MANAGEMENT SERVICE
Washington, D.C.

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

ESE No. 83-513-0561

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1.0 CRUISE PLAN

During Cruise I of Year 4 of the Southwest Florida Outer Continental Shelf Benthic Community Study, all 15 stations chosen by ESE/LGL and MMS were to be sampled. The reasons for choosing these stations are presented in ESE's proposal in response to Solicitation 3071 and other correspondence with MMS and will not be presented here.

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

Epifauna sampling was to be conducted at the five Group I hard-bottom stations (I-H) and all five Group II stations (II). 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.

Infauna sampling using diver corers was to be conducted at all five Group I soft-bottom (I-S) stations. Ten replicates were to be obtained from each station.

Divers or, where water depths were too deep, a Smith-McIntyre grab were to be used to collect sediment samples (two replicates at each station) at all 15 stations.

A hydrographic profile, measurement of sea surface temperature, and meteorological and ancillary marine observations were to be made at all 15 stations. The hydrographic profile, which included conductivity,

salinity, temperature, dissolved oxygen (DO), pH, and transmissivity, were 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, an in situ array was to be deployed. Each array would be equipped with 2 year's 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 would have arrays equipped with wave gages and time-lapse cameras (for monitoring epifaunal recruitment and seidment movement).

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 the evening of December 4, 1983, to coordinate the next day's loading activities and to discuss any last-minute modifications. Loading of FIO's R/V SUNCOASTER began the morning of December 5, 1983, with the able assistance of FIO personnel. By 2000 hours that day, all gear was loaded and secured, and any modifications to the vessel and equipment had been made. Sailing was delayed pending arrival of the lighted marker buoys via air freight. The Year 4, Cruise I officially began just after midnight on December 6, 1983, as the vessel got under way and was completed December 16, 1983, upon return to St. Petersburg.

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 Log (see appendix). This log also contains station information and sampling times and positions; hydrographic, meteorological, and ancillary marine data; UTV/BSP track logs; assorted QC sheets (equipment lists, sample control sheets, etc.); and the ROSCOP Form.

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 missing epifauna and sediment data will be collected during Cruises II and III. Due to the nonmotile nature of the epifauna, this makeup scheme was considered valid.

GPII Stations

52 - 21 - 23 - 36

old transect D, close to 26°N

could serve as reference

point for Expl. Rig.

monitoring.

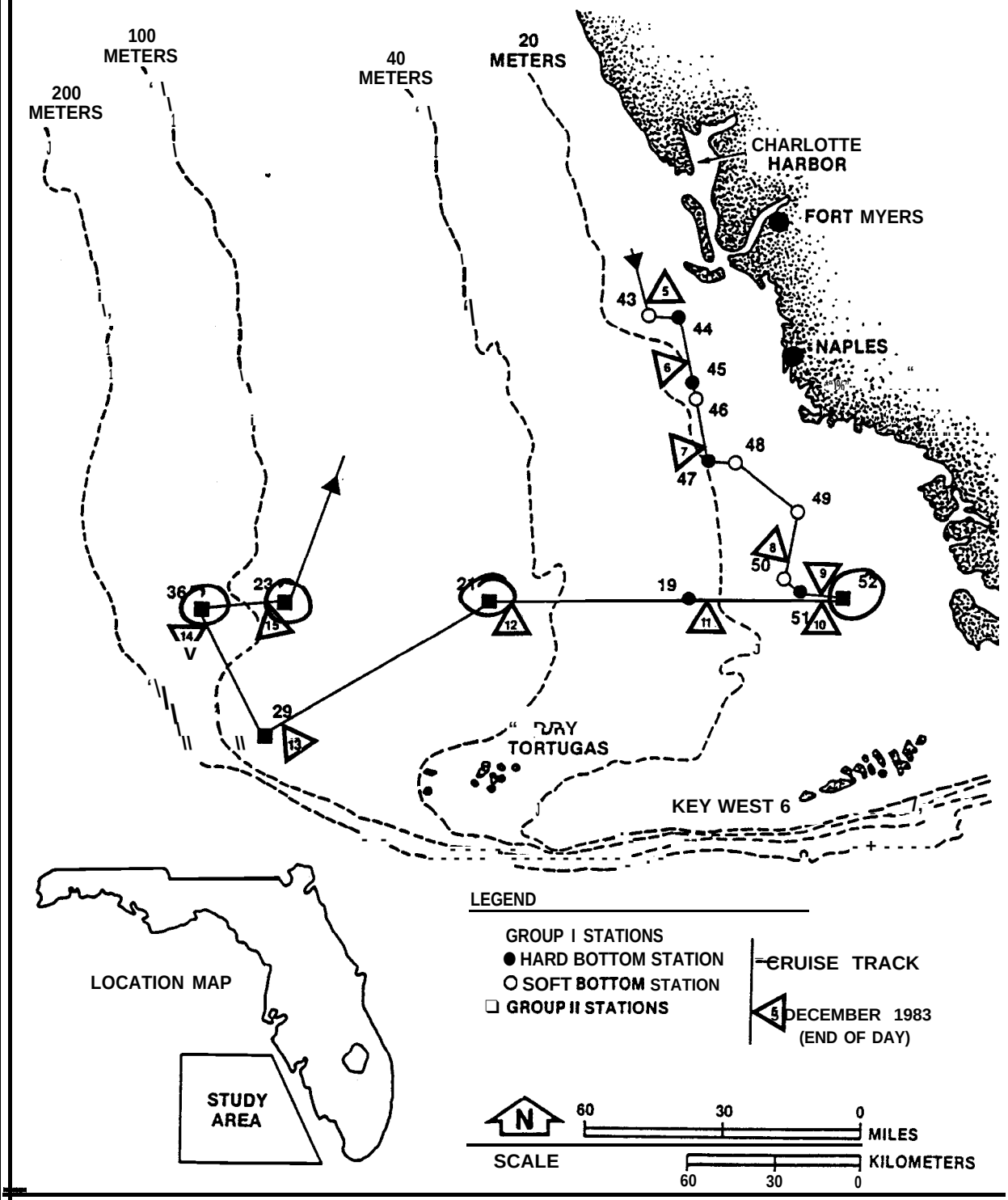


Figure 1
PROPOSED CRUISE TRACK FOR YEAR 4, CRUISE i

SOURCE: ESE, 1984.

MINERALS MANAGEMENT

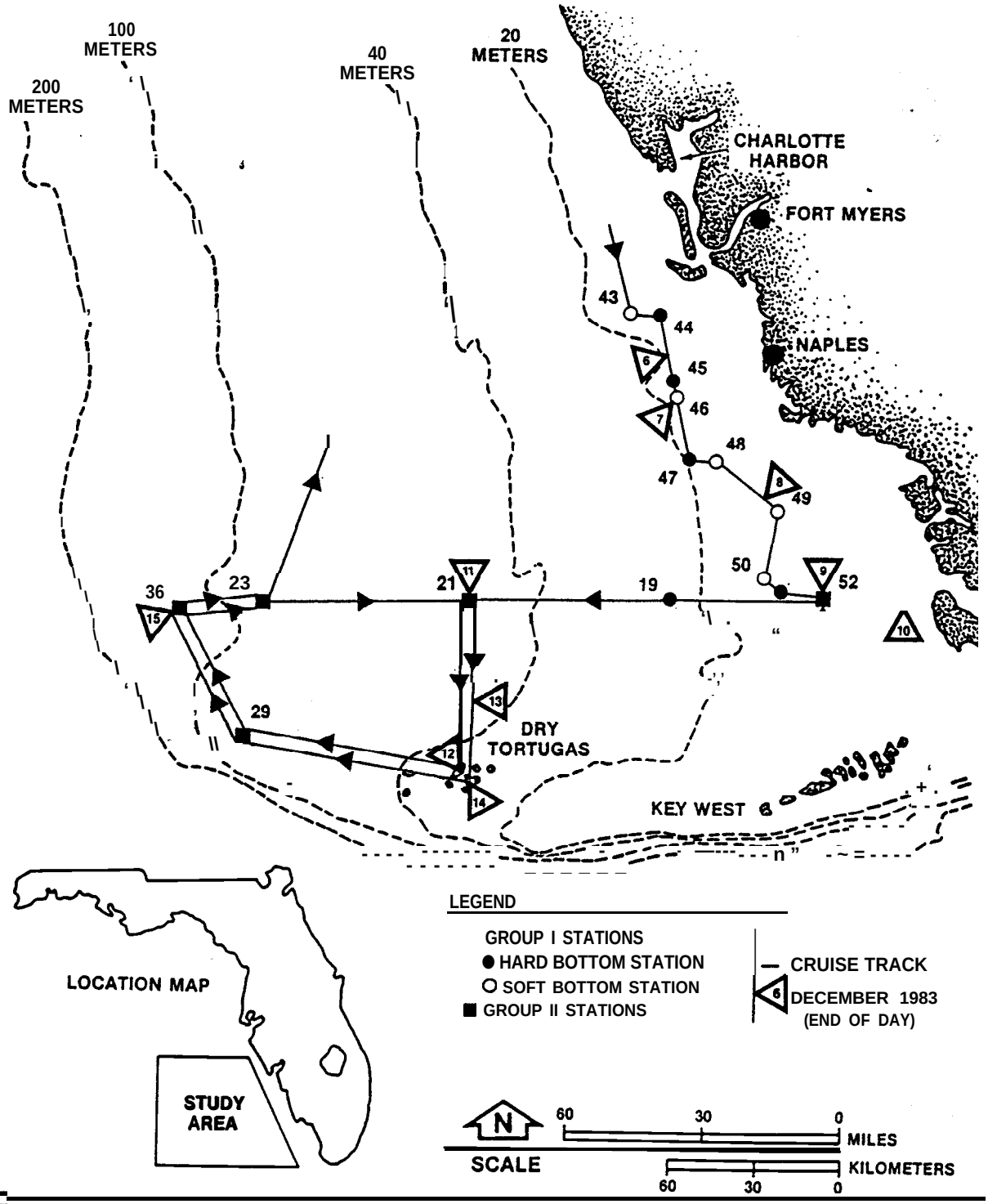


Figure 2
YEAR 4, CRUISE I – CRUISE TRACK

MINERALS

MANAGEMENT SERVICE

SOURCE: ESE, 1984.

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

Name	Title	Affiliation
Larry J. Danek	Project Manager, Chief Scientist	E SE
Michael S. Tomlinson	Logistics Coordinator	ESE
Gary P. Dalbec	Chief Technician	E SE
George S. Lewbel	Biological Advisor	LGL
Gregory S. Boland	Principal Investigator	LGL
Larry R. Martin	Principal Investigator	LGL

Source: ESE, 1984.

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

Data Types	Method	Number of Stations		Number of Samples		Percent Complete (%)
		Proposed	Actual	Proposed	Actual	
Epifauna	UTV/BSP	10	7	(≥2 km of transects)		70
	Triangular Dredge	10	9	30	27	90
	Otter Trawl	10	7	10	7	70
Infauna	Diver Corers	5	5	50	50	100
Sediment	Diver Corers/Grabs	15	13	30	25	83
Hydrography						
Conductivity	CSTD	15	14	Profiles		93
Salinity	CSTD	15	14	Profiles		93
Temperature	CSTD	15	14	profiles		93
DO	CSTD	15	14	Profiles		93
pH	CSTD	15	0	Profiles		0
Transmissivity	CSTD	15	14	Profiles		93
Calibration						
Surface Temperature	Niskin/DRST	15	14	15	14	93
Salinity	Niskin	3	3	6	6	100
Temperature	Niskin/DRST	3	3	6	6	100
DO	Niskin	3	3	6	6	100
Meteorological and Ancillary Marine	Observation	15	14	--	--	93
*	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.

The UTV/BSP surveys were conducted at all five Group I hard-bottom (I-H) stations and at two of the Group II (II) stations. Due to adverse weather conditions (discussed in Section 3.0), Stations 21, 23, and 36 were not surveyed. 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 F1O'S LORAN C plotter and are presented in the Cruise Log (appendix). 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 of the I-H stations and four of the II stations; Station 21 was not sampled due to adverse weather conditions. After the initial dredge tow of 10 minutes yielded an absolutely full dredge, it was decided to reduce tow times to 2 minutes. This tow time did not generally fill the dredge, but samples were still so 'large as to require subsampling. Subsampling was done as a random scoop through the pile. Any unusual organisms were also noted, photographed, and preserved.

A single, 10-minute trawl with a 25-foot roller-type otter trawl was performed at all five of the I-H and two of the II stations. Stations 21, 23, and 36 were not sampled either due to weather problems or trawl cable length limitations. All fish and selected invertebrates were preserved from these trawls.

Ten diver-collected infauna cores were taken from all five of the Group I soft-bottom (I-S) stations. These samples were sieved and placed in sample bottles where they were labeled and relaxed with ethanol prior to preservation with formalin (with Rose Bengal).

Two sediment samples per station [top 5 centimeters (cm)] were obtained either by diver or Smith-McIntyre grab at all stations except 21, 23, and 29. Rough seas precluded sampling at Stations 21 and 23, and a continuous hard calcareous algal pavement yielded only enough sediment for one sample at Station 29.

Continuous CSTD profiles were obtained for 14 of the 15 stations, with Station 21 not sampled. The data collected during these CSTD profiles included conductivity, salinity, temperature, DO, and transmissivity versus depth; pH was not measured due to a probe failure. 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 14 of the 15 stations (excluding Station 21), sea surface temperatures were measured and compared with the CSTD temperature results. At Stations 43, 52, and 36, the Niskin/DSRT was used to obtain salinity, temperature, and DO data at the surface and bottom to verify CSTD data.

In addition to hydrographic data collected on station, surface hydrographic data were collected with the CSTD at seven stations at approximately 15-km intervals between selected stations.

At 14 of the 15 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 11 stations. Each array was equipped with an ENDECO® 174 current meter capable of continuously measuring and recording current speed and

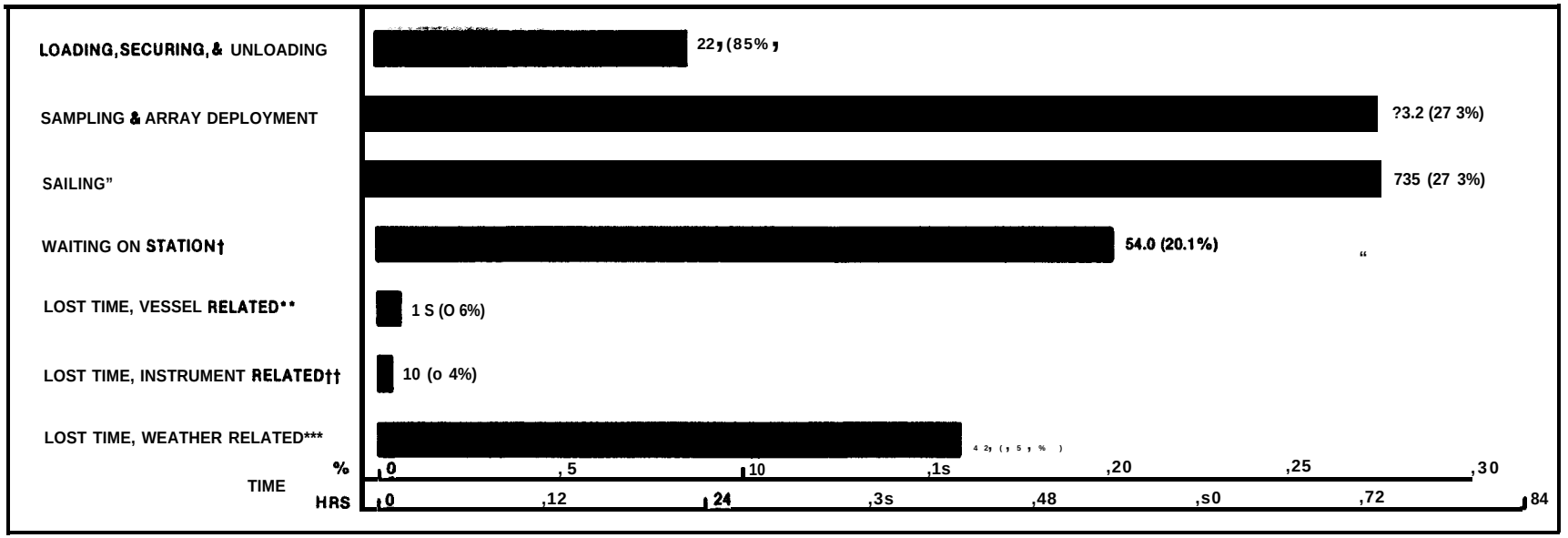
direction, conductivity, and temperature. Each array also contained enough sets of fouling plates for a "2-year study and three sets of sediment traps (with five replicates) at 0.5, 1.0 and 1.5 m above the bottom. The'two shallowest station arrays were equipped with wave gages and time-lapse cameras to monitor sediment movement as well as epifaunal recruitment . The Station 52 array was sufficiently shallow to allow diver inspection following deployment. This inspection revealed no problems other than the marker mooring, which was too close to the array. The marker mooring was subsequently moved approximately 30 m away.

2.3 TIME UTILIZATION

Figure 3 is a bar graph showing time utilization during the cruise. The graph presents time as hours and as a percentage of the total cruise time.

The two single largest categories are sampling and sailing, each at 27.3 percent. Sampling time included array deployment. The sailing category included sailing between stations, array rigging time, maintenance time, and some sleeping time. Because of the nature of the work and the manpower requirements, ESE chose not to operate on a 24-hour basis. Rather, the scientific crew would sleep between stations and, if necessary, wait on station until daybreak. Waiting on station accounted for 20.1 percent of the cruise time. This time not only included sleep, but also array rigging, preparation, and maintenance. The fourth largest category, 15.9 percent, was lost time due to adverse weather conditions. This is discussed in more detail in Section 3.0. Loading, securing, and unloading accounted for 8.5 percent of the total time. This time also included the 4 hours spent waiting for the arrival of the buoys. Lost time due to either vessel or equipment-related problems was brief, accounting for a total of 1 percent of the time.

It is anticipated that for Cruise II, the loading/unloading time will be substantially reduced as no arrays are being deployed and fewer stations will be sampled. The greatest unknown, of course, will be the weather,



- • INCLUDES: PREPARATION FOR NEXT STATION, INSTRUMENT CALIBRATION, ARRAY RIGGING, AND BETWEEN. STATION HYDROGRAPHY
- † INCLUDES ALL OF THE ABOVE EXCEPT BETWEEN-STATION HYDROGRAPHY, AND INCLUDES SLEEPING TIME
- ** PROBLEMS WITH INFLATABLE BOAT OUTBOARD ENGINE
- †† PROBLEMS WITH MARKER BUOY DESIGN . REQUIRED MODIFICATION OF BUOY
- .*' INCLUDES RUNNING AND AT-ANCHOR TIME

Figure 3
YEAR 4, CRUISE I — TIME UTILIZATION

SOURCE ESE, 1984.

MINERALS MANAGEMENT SERVICE

as February and March are generally stormier months in the Gulf of Mexico. The other time percentages will probably remain similar to , those for Cruise I.

3.0 PROBLEMS ENCOUNTERED AND RECOMMENDATIONS

3.1 WEATHER-RELATED PROBLEMS

As stated previously, 15.9 percent (42.8 hours) of cruise time was lost due to adverse weather conditions. This was time spent either running or in a sheltered anchorage. A storm with accompanying 3-m seas on December 12, 1983, precluded any sampling at Station 21. The vessel ran to the Dry Tortugas and anchored until the morning of December 13. The decision was made to use the relative calm between the last front and the forecasted front to follow that evening to deploy the remaining four arrays. This was done before weather forced the vessel back to the Dry Tortugas.

Sampling resumed on December 15; however, the forecast for the next 3 days was not encouraging. Sampling at Station 29 was completed; however, by the time the SUNCOASTER arrived at Station 36, seas were too rough to conduct UTV/BSP surveys. The vessel proceeded to Station 23, where all but the UTV/BSP, trawling, and sediment surveys were conducted. By that time, seas were up to 3 m and the decks frequently awash, making processing of dredge samples difficult. Because the forecast remained the same for at least 3 days, the decision was made to terminate the cruise and return to St. Petersburg. A run to a sheltered anchorage to wait out the storms would have been prohibitively expensive. Sampling that was not conducted will be made up on subsequent cruises.

ESE'S experience with these particular instruments and vessel has shown that all surveys can be conducted in seas equal to or less than 2 m. With seas between 2 and 3 m, UTV/BSP surveys, diving, and possibly trawling must be curtailed. At seas greater than 3 m, all work should be stopped. For future cruises, depending on forecasts and at-sea observation, a decision may be made to conduct all sampling that requires calmer seas during those calm periods (similar to the array deployment during Cruise I). This would leave the more weather-tolerant sampling for possibly rougher weather.

3.2 EQUIPMENT-RELATED PROBLEMS

Figure 3 (Section 2.3) indicates that only 0.4 percent of the cruise time was lost to equipment-related problems. There were more problems than are apparent from this figure, but because of contingency plans, little time was lost. A brief discussion of these problems and associated remedial action is presented in the following paragraphs.

Several problems were associated with the CSTD. These included failure of the pH probe and occasional erratic behavior of the DO circuit and the 690M Magnetic Recorder. The reason for the pH probe failure is unknown; however, a replacement probe is being procured for Cruise II. The erratic behavior of the DO is best described as an occasional surge where DO would "peg out" at 25 milligrams per liter (mg/L) and then slowly drop back to normal. This occurred approximately four times and required the operator to halt the CSTD profile until normal probe operation returned. ESE suspects that this was either the result of surges in the ship's power or a possible sporadic short in" the CSTD winch (the winch will be reexamined prior to Cruise II). In an effort to protect the CSTD from surges in the ship's power, an isolation transformer will be placed between the AC power outlet and the CSTD. This may also solve the problem with the 690M recorder (which would occasionally blank); however, the unit will still be returned to the manufacturer for a checkup.

There were some problems with the UTV/BSP system; these included failure of one video camera and strobe and advance problems with the BSC. The video camera malfunction could not be corrected on board; however, since a stereo system was used, the second camera acted as backup with no loss of data. The malfunctioning camera was returned to the manufacturer and repaired, and it will be available for Cruise II.

During the first station survey, the strobe on the BSC would work only intermittently, and the camera failed to advance during another survey. Both of these problems were solved on board.

The only problem encountered with actual epifauna sampling equipment was damage to one otter trawl at Station 44. The net was retrieved with the belly severely torn, one parted trawling warp, several broken rollers, and evidence of severe chafing. The backup trawl was used for all subsequent sampling. There was some problem with the nylon trawling warps twisting, and a decision was made to use l/4-inch stainless steel wire rope, which greatly reduced the twisting.

Both the trawl and the dredge, in particular, were bringing up large quantities of epifauna, even during abbreviated tows. This resulted in subsampling, which still required large amounts of formalin. Toward the end of the cruise, with formalin stocks becoming low, these subsamples were made even smaller. For all subsequent cruises, a full drum of formalin and FIO's formalin dispensing system will be on board. It is anticipated that subsampling will still be required, however.

The last actual equipment-related problem involved the lighted array marker buoys, The manufacturer had apparently assumed a taut wire mooring and, therefore, had not weighted the buoys to be self-righting. This was corrected on board by the ship's crew, who welded the backup array weights to the buoys.

There were a few small problems associated with normal environmental conditions. The first was the use of a rain gage on board. Due to the rough seas, the rain gage would fill with spray in addition to rain water. The weather data merely indicate whether it rained.

Second, because of the nature of the bottom, not all infauna cores penetrated to a depth of 15 cm. Even at these soft-bottom stations, the presence of a hard substrate beneath the unconsolidated sediments occurred, although infrequently. And, finally, due to a nearly continuous algal pavement at Station 29, only a small amount of sediment was obtained with the Smith-McIntyre grab for sediment analysis.

3.3 VESSEL-RELATED PROBLEMS

Vessel-related problems were few and surmountable. The unreliability of the inflatable boat outboard resulted in most diving operations being conducted from the ship. ESE will request a thorough servicing of the motor by FIO and, if possible, will obtain a backup motor.

Skywave problems at night at certain locations would occasionally interfere with navigation. However, this was not a serious problem because usually only one of the two LORAN C units would blank out.

Finally, because of the high seas at Station 36, which required a fair amount of headway to maintain steerage, there was insufficient wire on the trawl winch to reach the bottom. In calmer areas, the 4.6:1 scope should be sufficient at Station 36.

APPENDIX
CRUISE LOG

GENERAL QA/QC

CRUISE LOG REVIEW SHEET

CRUISE NO. I DATE (S): 4-16 Dec 83 (-17 Dec 83) 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	11/29/83	LJD	12/21/83
2	M. S. Tomlinson	Log. Coord. (ESE)	MSJ	29Nov83	MSJ	21Dec83
3	G. M. Powell	Div. Mgr. (ESE)	GMP	29Nov83		
4	W. T. Gillespie	Data Mgr. (ESE)	WTG	11/29/83		
5	M. G. Schultz	QA Officer (ESE)	MGS	29Nov83		
6	J. J. Mousa (opt)					
7						
8						
9						
10						

PRE-CRUISE COMMENTS

POST-CRUISE COMMENTS

CRUISE LOG REVIEW SHEET

CRUISE NO. I DATE ISI: 5-17 DEC 83 COPY: LGL

ID NO.	NAME	TITLE & AFFILIATION	PRE-CRUISE APP. INIT.	PRE-CRUISE APP. DATE	POST-CRUISE APP. INIT.	POST-CRUISE APP. DATE
1	Greg Boland	LGL	GB	11/18/83		
2	L.L. Martin	LGL	LLM	11/18/83		
3	[illegible]	LGL	[illegible]	11/18/83		
4						
5						
6						
7						
8						
9						
10						

PRE-CRUISE COMMENTS

GB I'm not sure how hungry I'll be at 5:30 AM

GL I'm not hungry until at least 0630

POST-CRUISE COMMENTS

CREW LIST

NAME	INIT.	TITLE	AFFILIATION
Charles W. Horan	W	CAPTAIN	FIO
Philip Clark	B	ENGINEER	FIO
Harry Freeman	I	ENG./DECK	FIO
David Thomas		MATE	FIO
Michael A. Jewusiak		COOK	FIO
Larry J. Donck	LJD	Project Mgr	ESE
Michael S. Tomlinson	MST	Logistic Coord.	ESE
Gary P. Dalbec		Chief Tech.	ESE
Gregory S. Boland	GSB	PI	LGL
Larry R. Martin	LRM	PI	LGL
George S. Lewbel	GSL	COMPUTER	LGL

CONTACT

Field:	ESE & LGL Crew via FIO radio c/o Dr. William Behrens or Mr. Dean Milliken Florida Institute of Oceanography 830 1st Street South St. Petersburg, FL 33701 (813) 893-9100
or	Sunday Evening (December 4, 1983) c/o Bayfront Concourse Hotel 333 First Street South St. Petersburg, FL (813) 896-1111
Lab:	ESE, Gainesville (904) 332-3318
	ESE, Tampa (813) 886-6672
	LGL (409)775-2000
Vendors:	ENDECO. (617) 748-0366
	Inter Oceans (619) 565-8400
	Sea Data (617) 244-3203
	General Oceanics (305) 621-2882
Instrument Leasing Co.	Ocean Surveys, Inc. (203) 388-4631
	Intersea Research Corp. (619) 453-5200
	Tetra Tech, Inc. (213) 449-6400

Bob Avent

(504) 838-0399
(504) 456-2119

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: SW FLORIDA OCS BENTHIC STUDY

A11 CRUISE NUMBER OR NAME: YEAR IV, CRUISE I

A02 SHIP OR PLATFORM: R/V SUNCOASTER & ARRAY

A12 PLATFORM TYPE: RESEARCH SHIP & FIXED PLATFORM

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

A03 COUNTRY: USA

A04 ORGANIZATION: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

A05 CHIEF SCIENTIST(S): 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, L&L, 1410 CAVITT ST. BRYAN, TX	B2
C1	C2
D1	02
E1	E2

OAT E	DAY	MONTH	YEAR
A07 FROM	05	12	83
A17 TO	12	12	83

A08 GENERAL OCEAN AREAS: 26 GULF OF MEXICO

A09 TYPE(SI OF MARINE ZONE(S): C7 CONTINENTAL SHELF

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: MINERALS MANAGEMENT SERVICE (U.S.D.O.I.)

A25 REMARKS

DISCIPLINE AND TYPE OF MEASUREMENTS	Index 10" X 10. Qc	L	G	G	INDEX 1° x 1°	DISCIPLINE AND TYPE OF MEASUREMENTS	ndex 10° x 10" Qc	L	G	G	INDEX 1° x 1°
A GLGLGS B	?	2	0	8		A B					
A D B	7	2	9	8		A B					
A M B	7	2	0	8		A B					
A H HC B	7	2	0	3		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 MAOE AT A SPECIFIC LOCATION	NUMBER	i	I	FORMAT
G01 Dredge	9	B	1	9
G02 Grab	6	A	1	9
G03 Core rock (no. of cores)				
G04 Core-soft bottom (no. of cores)				
G05 Sampling by divers	6	A	I	9
G06 Sampling by submersible				
G07 Drilling				
G08 Bottom photography	7	B	1	8
G09 Sea floor temperature (≤ 1 m from bottom)				
" o 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)	13.3	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	13	A	1	9
G32 Chemical analysis of sediments				
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

001 Current meters (no. of stat.)	5	A	I	7
D02 Current meters (A verage duration of measurement days)				
D03 Currents measured from ship drift				
004 GEK				
DOS 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)	14	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	14	A	1	1
M06 Systematic-standard measurements				
M90 Other measurements				

H-HYDROGRAPHY

HSSURFACE	NUMBER	i	1	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	?
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)	14	A	1	7
H11 Sub-surface measurements underway				
H12 Mechanical bathythermograph (No. of drops)				
H13 Bathythermograph—expendable (No. of dropa)				
H14 Sound velocity stations				
H15 Acoustic stations				
H16 Transparency	14	A	1	7
H17 Optics				
H18 Diffusion (Dynamic)				
H80 Other measurements				
Transmissivity	14	A	1	7
HC CHEMICAL				
H21 Oxygen	14	A	1	7
H22 Phosphates				
H23 Total-P				
H24 Nitrates				
H25 Nitrites				

HC CHEMICAL	NUMBER	i	1	FORMAT
H26 Silicates		H	I	
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				
PI 1 Discolored water				
P12 Bottom deposits				
P13 Contaminated organisms				
P90 Other measurements				

B - BIOLOGY

	NUMBER	i	l	FORMAT		NUMBER	i	l	FORMAT
B01 Primary productivity					B31 Vitamin concentrations				
B02 Phytoplankton pigments					B32 Amino acid concentration				
B03 Seston					B33 Hydrocarbon concentrations				
B04 Particulate organic carbon					B34 Lipid concentrations				
B05 Particulate organic nitrogen					B35 ATP–ADP–AMP concentrations				
B06 Dissolved organic matter					B36 DNA–RNA concentrations				
B07 Bacterial and pelagic micro–organisms					B37 Taggings				
B08 Phytoplankton					B80 Other measurements				
B09 Zooplankton									
B10 Neuston					**BS TYPES OF STUDIES**				
B11 Nekton					B51 Identification	14	B	1	9, 8
B12 Invertebrate nekton					B52 Spatial and temporal distribution	14	B	1	9, 8
B13 Pelagic eggs and larvae					B53 Monitoring and surveillance	14	B	1	9, 8
B14 Pelagic fish					B54 Biomass determination				
B15 Amphibians					B55 Description of communities	14	B	1	9, 8
B16 Benthic bacteria and micro–organisms					B56 Food chains energy transfers				
B17 Phytobenthos					B57 Population and environments	14	B	1	9, 8
B18 Zoobenthos	14	B	1	9, 8	B58 Population structures	14	B	1	9, 8
B19 Commercial demersal fish					B59 Taxonomy, systematics, classification	14	B	1	9, 8
B20 Commercial benthic molluscs					B60 Physiology				
B21 Commercial benthic crustacean					B61 Behaviour				
B22 Attached plants and algae	14	B	1	9, 8	B62 Pathology, parasitology				
B23 Intertidal organisms					B63 Toxicology				
B24 Borers and foulers					B64 Gear research				
B25 Birds					B65 Exploratory fishing				
B26 Mammals and reptiles					B66 Commercial fishing				
B27 Deep scattering layers					B67 Aquaculture				
B28 Acoustical reflections on marine organisms					B90 Other measurements				
B29 Biologic sounds									
B30 Bioluminescence									

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—0-200-987

STATION CHECKLIST

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

DATE [S1: 4-16 Dec 83 (Cruise I)

/ REQUIRED ☒ COMPLETED

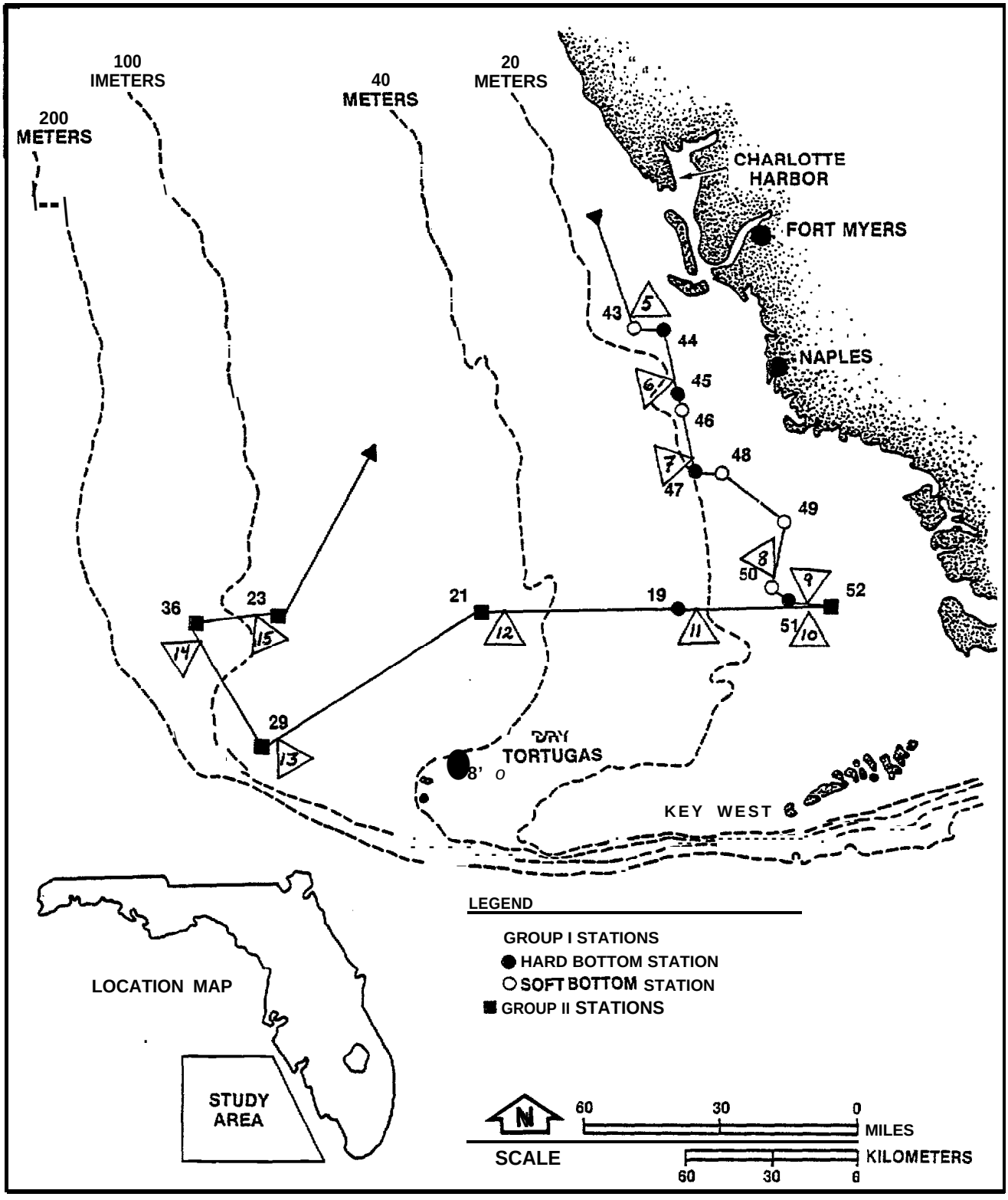
TASK OR PARAMETER DESCRIPTION	STATION NUMBER														
	43	44	45	46	47	48	49	50	51	52★	19	21★	23★	29★	36★
UTV/BSP Survey (GE 2km of survey track)		X	X		X				X	X	X	/	/	X	/
Hydrographic Data, CSTD	X	X	X	X	X	X	X	X	X	X	X	/	X	X	X
Meteorological & Ancillary Mar. Data & Surf. T	X	X	X	X	X	X	X	X	X	X	X	/	X	X	X
Niskin/DSRT Cast for S,T,DO (surf. & bot.)	X									X					X
Epifauna & Macroalgae, Triang. Dredge (3 trawl)		X	X		X				X	X	X	/	X	X	X
" " , Roller Trawl (1 trawl)		X	X		X				X	X	X	/	/	X	/
Benthic Infauna Cores (10 replicates)	X			X		X	X	X							
Sediments, Diver Cores (2 replicates)	X	X	X	X	X	X	X	X	X	X	X				
" , S-M Grab (2 replicates)												/	/	X	X
In Situ Array Deployment										X		X	X	X	X

★ GROUP II

FIELD LEADER: M Tomlinson DATE: 16 Dec 83 PROJ. MGR.: L J T DATE: 12/21/83

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

Stat ion Number	Depth (M)	Latitude (N)	Longitude (w)	Loran C A	B	C
43				14064.1	44008.8	
44				14078.2	43961.5	
45				14055.9	43888.5	
46				14052.6	43878.9	
47				14025.9	43833.5	
48				14036.4	43798.8	
49				14045.1	43681.5	
50				14006.3	43700 .1	
51				14008.0	43675.7	
52				14024.3	43625.4	
19				13964.6	43807.4	
21				13864.4	44083.4	
23				13740.9	44369.1	
29				13678.6	44310.0	
36				13682.5	44487.4	

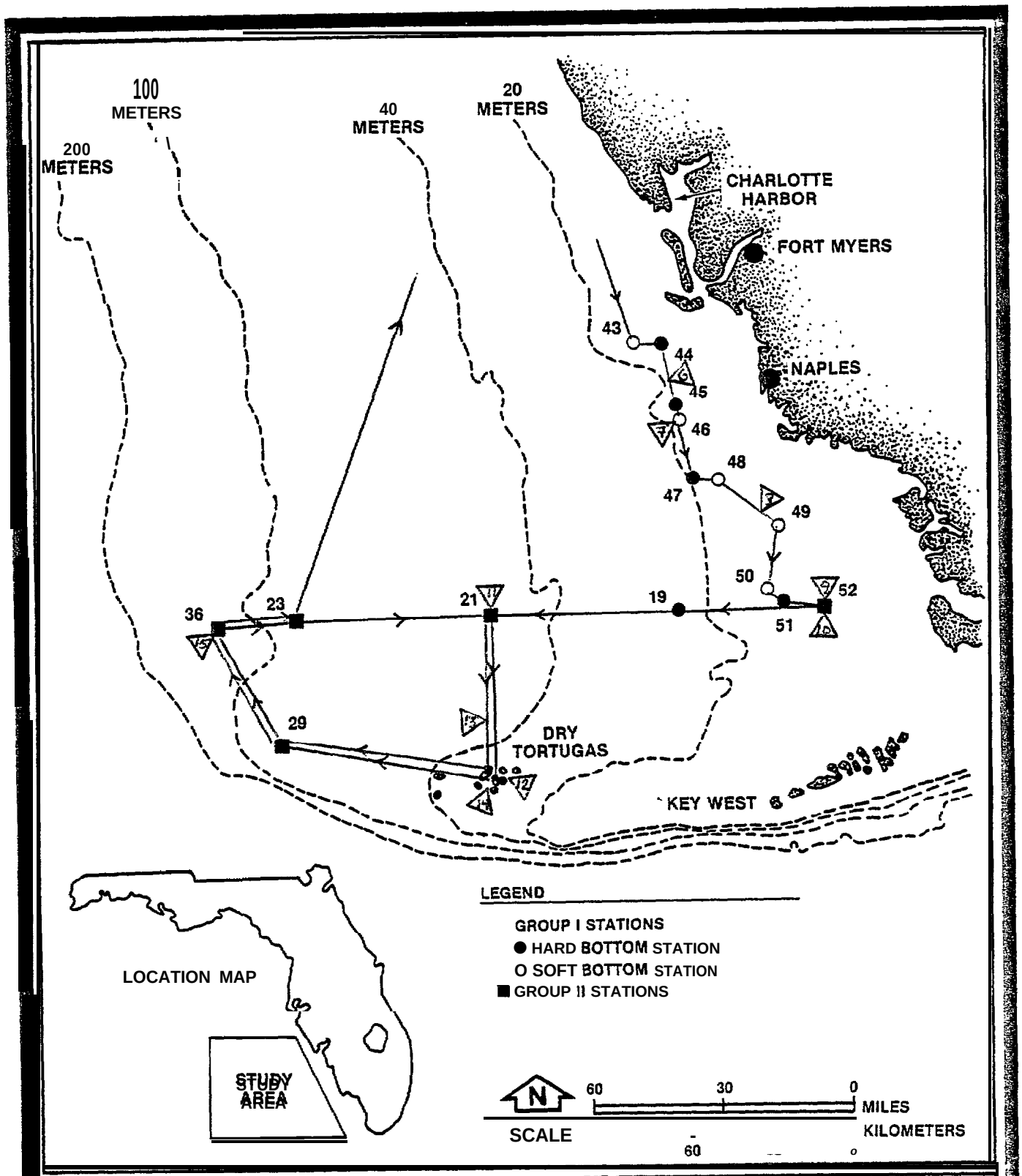


TENTATIVE CRUISE TRACK FOR CRUISE #1

DEC83 (end of day)

SOURCE ESE, 1983.

MINERALS MANAGEMENT SERVICE



ACTUAL CRUISE TRACK

ENDING DATE (DEC 83)

SOURCE: ESE, 1983.

MINERALS
MANAGEMENT
SERVICE

MONTH December 83

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4 1000 ly for SP, ar 1300, begin loading & rig ging. Chk int hotel	5 0800 arr @ ship, cont. loading & riggir 1500 u/w for Sta 43	6 0200 arr. Sta. 43, anchor ti AM, 0600 begin sampling, 0900 u/ for Sta 44, 1800 sampling compl., u/w for 45	7 0600 begin sampling @45, 1500 sampling compl. u/w for 46, 1800 samplin compl. u/w for Sta. 47	8 0600-1500 sampling @ Sta. 47, 1500-1900 sampling @ 48 & 49, u/w for Sta 50	9 0600-0900 sampling @ Sta 50, 0900-1800 sampling @ Sta 51, u/w for Sta 52	10 3600-1900 sampling @ 52, deploy arra u/w for Sta 19 if 52 completed
11)600-1500 sampling ? Sta 19, u/w for Sta 21	12 0600-1900 sampling @ 21, deploy array & u/w for Sta 29	13 0600-1900 sampling @ Sta 29, deploy array, u/w for 36	14 0600-1900 sampling @ Sta 36, deploy array, u/w for Sta 23	15 0600-1900 sampling @ Sta 23, deploy array, u/w for St. Petersburg	16 0800 arr. St. Peters-burg, offload	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

ENDECO®
TOWER BUILDING
MARION, **MA. 02738**
TELEPHONE: 61 7/748-0366 TELEX: 929451

TYPE 174 CM SERVICE SHEET

SHOP ORDER: _____

DATE RECEIVED: _____

CUSTOMER: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

TIME ZONE: EASTERN

LOADED BY: G. DAKBEC

SITE: SW FLORIDA OCS 83-513-510/ MMS

UNLOADED BY: _____

INSTRUMENT SERIAL NO.	POSITION [STATION]	START [2nd RESET]		DEPLOYMENT DATE	DEPLOYMENT TIME	RETRIEVAL DATE	RETRIEVAL TIME	END [LAST RESET]		UNLOAD DATE	UNLOAD TIME	ENDECO MASTER NO.
174A129	52	1200	10Dec83	12/10/83	1610							
174A133	29	1000	13Dec83	12/13/83	1158							
174A131	36	1400	12/13/83	12/13/83	1558							
174A130	23	1700	12/13/83	12/13/83	1753							
174A132	21	2000	12/13/83	12/13/83	2216							

REMARKS: , VANE GAGE AT STA 21 SERIAL # 16734

Name of Requester Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out Calibrated	Condition out Checked	Condition In	Comments	Daily Rate	Days Used	Total Charge
HYDROGRAPHY :								
CSTD-721-115 Winch	(1) "							
-513D Sonde	(1)							
-514D Console	(1)							
-690M Recorder	(1)							
-Magnetic Cassettes	(2)							
-Bulk Eraser	(1)							
-Head Demagnetizer	(1)							
-Head Cleaner w/ Swabs	(1)							
-VOM	(1)							
-Servicing Kit	(1)							
-Electrical Spray	(1)							
-Dish Detergent	(1 btl)							
-pH Buffer, 10	(2 pts)							
-pH Buffer, 7	(2 pts)							
-Distilled Water	(5 gal)							
-N_2 Bottle w/ Regulator	(1)							
-Plastic Bags	(1 bx)							
-Rubber Tubing	(3 ft)							

TOTAL PROJECT COST

☐ The above equipment has been checked and/or calibrated

☐ The above equipment has not been checked or calibrated

Signature _____ Date _____

Checked in by: _____ Date _____

☐ I agree that the above equipment Is complete and in working order.

☐ I'm aware that the above equipment has not been checked or calibrated, 'and 'do assume responsibility for its field operation,

Signature _____ Date _____

Name of Requestor Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out Calibrated	Condition out Checked	In	Comments	Daily Rate	Days Used	Total Charge
-Conductivity Std	(1gal)							
-Conductivity Calib. Box	(1)							
-Black Rubber Sheet	(1)							
-Calib. Logs	(20)							
-Hydrography Logs	(50)							
-Snatch Block w/ Shackle	(1)							
-Hydrolab	(1)							
Niskin Cast								
-Niskin Bottle	(2)							
-DSRT w/ Reversing Rack	(1)							
-DSRT Reader & Illumin.	(1)							
-Messengers	(2)							
-Secchi Disk (metric)	(1)							
-Salinity Bottles	(lo)							
-DO Bottles	(24)							
-Surgical/Glass Tubing	(1 ft)							
-Cubitainers	(30)							
-Preservation Kit	(1)							
-Labels	(30)							

TOTAL PROJECT COST

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Signature _____ Date _____

Name of Requestor Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out Calibrated	Checked	In	Comments	Daily Rate	Days Used	Total Charge
Winkler Kit								
-Pipettor, $MnSO_4$	(500ml)							
-Pipettor, NaOH	(500ml)							
-Pipettor, H_2SO_4	(500ml)							
-$Na_2S_2O_3$ in Dark Bottle	(2 L)							
-Starch Solution	(100ml)							
-Magnetic Stirrer	(1)							
-Stirring Bars	(2)							
-Automatic Burette	(1)							
-Plastic Volumetric 203 ml	(1)							
METEOROLOGY:								
Plastic Rain Gage	(1)							
Sling Psychrometer	(1)							
Spare Thermometers	(2)							
Dwyer Wind Gage	(1)							
Stopwatch	(1)							

TOTAL PROJECT COST

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Signature _____ Date _____

Name of Requestor Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out: Calibrated	Condition out: checked	Condition In	Comments	Daily Rate	Days Used	Total Charge
BENTHIC EPIFAUNA & MACROALGAE:								
UTV -Video Frame	(1)							
-Video Lamp	(1)							
-Spare Bulb	(1)							
-Microphones								
-Speakers								
-Power Supply	(1)							
-Control Console	(1)							
-Video Cameras	(2)							
-VHS Video Recorders	(2)							
-Pan & Tilt Motor	(1)							
-Aluminum Bracket	(1)							
-Double Video Cable	(500 ft)							
-Double Video Cable	(600 ft)							
-Misc. Accessories	(asst'd)							
-Repair Kit	(1)							
-Safety Line & Buoy	(1)							
-Video Tapes	(20)							
-B&W TV Monitor	(1)							

TOTAL PROJECT COST

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Signature _____ Date _____

Checked in by: Date

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Signature _____ Date _____

Name of Requester Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument		Serial No.	Condition out Calibrated	Condition out Checked	In	Comments	Daily Rate	Days Used	Total Charge
-Igloo Coolers	(3)								
BSP -Olympus 35 mm Camera	(1)								
-Bulk Film Back	(1)								
-Auto Winder	(1)								
-Film Magazines	(5)								
-Bulk Loader	(1)								
-Underwater Housing	(1)								
-Bulk Film ASA 200									
-Konica 35 mm Camera	(1)								
-Ikelite Underwater Housing	(2)								
-Trip Wire	(600 ft)								
-35 mm Film for Konica									
-Ektachrome ASA 200	(20 rl)								
-Kodak E-6 Processing Kit	(1)								

TOTAL PROJECT COST

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Signature _____ Date _____

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Signature _____ Date _____

Checked In by: _____ Date

Name of Requester Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out Calibrated	Checked	In	Comments	Dally Rate	Days Used	Total Charge
Trawls-25' Otter Trawls, Roller	(2)							
Otter Doors	(4)							
-Trawl Warps	(4)							
-Shackles	(asst'd)							
-Sorting Trays	(l o)							
-Measuring Tape	(1)							
-Scales	(asst'd)							
-Cheese Cloth								
-Wire Tag Labels	(l o o)							
-Labels	(loo)							
-5 gal Buckets w/ Lids	(60)							
-$MgCl_2$	(5 lb)							
-37% Buffered Formalin	(55 gal)							
-70% Ethanol	(5 gal)							
-1 m^2 photo Grid	(1)							
-Trawl Sheets	(20)							
-Safety Line & Buoy	(1)							

TOTAL PROJECT COST

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Signature _____ Date _____

Name of Requester Michael S. Tomlinsom Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out Calibrated	Condition out Checked	Condition In	Comments	Daily Rate	Days Used	Total Charge
Dredges-Triangular Dredges	(2)							
-Dredge Bridles	(2)							
-5 gal Buckets w/ Lids	(60)							
-Dredge Sheets	(30)							
Miscellaneous-35 mm Cameras	(2)							
-35 mm 36 exp Film ASA 64	(30)							
BENTHIC INFAUNA:								
Corers w/ Caps & ½mm Screen	(15)							
Benthos Bottles	(100)							
Labels	(200)							
8% Buffered Formalin	(5 gal)							
Rose Bengal	(100ml)							
½ mm Sieve Buckets or Boxes	(2)							
2m Sampling Ring (optional)	[1)							

TOTAL PROJECT COST

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signature _____ Date _____

Name of Requestor Michael S. Tomlinson project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

g

m		N	O C b d Ch d	mm	D R	D U d	T Cha g
SEDIMENTS :							
Smith-McIntyre Grab	(i)						
S-M Cocking Lever	(1)						
Core Tubes w/ Caps	(60)						
or Bottles	(30)						
Labels	(30)						
Hacksaw	(1)						
Ponar Grab	(1)						

TOTAL PROJECT COST

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Name of Requester Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

instrument		Serial No.	Condition out calibrated	Checked	in	Comments	Daily Rate	Days Used	Total Charge
IN SITU ARRAYS:									
Frames	(6)								
135 lb Roller Weights	(24)								
70 lb. Roller Weights	(8)								
24" Pipe Wrench	(1)								
Taut Wire Moorings	(6)								
Marker Moorings	(6)								
RR Wheels	(6)								
Servicing Spar Buoy	(1)								
50 ft Deployment Cable	(1)								
Extra Legs (w/ Spikes)	(4)								
Extra Legs (w/o Spikes)	(2)								
Current Meters-ENDECO 174's	(6)								
-Magnetic Cartridges	(6)								
-D Cells	(48)								
-Spare O-rings	(asst'd)								
-O-ring Grease	(1 tube)								
-Trimming Weights	(asst'd)								
-Desiccant Bags	(6)								

TOTAL PROJECT COST

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Checked in by: _____ Date _____

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Signature _____ Date _____

Name of Requestor Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument		Serial No.	Condition out calibrated	Checked	In	Comments	Daily Rate	Days Used	Total Charge
-Auto Trim Gages	(2)								
-Delrin Clamps	(6)								
-Allen Wrenches	(2)								
-Wrench Set	(1)								
-Pinger Receiver	(1)								
-Hydrophore	(1)								
Time-Lapse Cameras & Housings	(3)								
-Strobes and Housings	(3)								
-Battery Packs	(3)								
-Moun ts	(3)								
-Film Packs	(3)								
-Antifouling Compound	(1 cn)								
Sediment Traps- Assemblies	(18)								
-Core Caps	(90)								
-Hair pins or Trailer Pins	(18)								

TOTAL PROJECT COST

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Signature _____ Date _____

Name of Requester Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument	Serial No.	Condition out Calibrated	Condition out chacked	Condition in	Comments	Daily Rate	Days Used	Total Charge
Fouling Plates (Std)-								
-Ceramic Sets (42)								
-Steel Sets (6)								
-Tie Wraps (96)								
-Wire Tags (optional) (50)								
Auxiliary Fouling Plates								
-1½m Ceramic Sets (6)								
-Horizontal Sets (6)								
-Seal. Rod mounted (2/rod) (6)								
-Tie Wraps (24)								
-Wire Tags (optional) (24)								

TOTAL PROJECT COST

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Signature _____ Date _____

Checked in by: _____ Date _____

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☐ I'maware that theaboveequlpment has not been checked or calibrated, 'and do assume responsibility for its field operation,

Signature _____ Date _____

Name of Requestor Michael S. Tomlinson Project No. 83-513-510/MMS Date Needed 4 Dec 83 Date Returned 17 Dec 83

Instrument		Serial No.	Condition out Calibrated	Checked	In	Comments	Daily Rate	Days Used	Total Charge
Wave & Tide Gages	(2)								
-Battery Packs	(2)								
-Magnetic Cassettes	(2)								
Miscellaneous									
-Foul Weather Gear	**(6 sets)**								
-Tool Box	**(1)**								
Additional									

TOTAL PROJECT COST

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Signature _____ Date _____

Checked in by: _____ Date

MULTI-PARAMETER CALIBRATION LOG

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

DATE CALIBRATION PERFORMED: 12/17/83

INSTRUMENT	S/N	PARAMETER	STD(Y)	RDG(X)	UNITS	COMMENTS
CSTD		CONDUCTIVITY	0	0	mmhos	
			20	20.09		
			30	30.16		
			40	40.21		
			50	50.27		
			60	60.31		
			70	70.34		
		PRECISION RESISTOR		48.10	OHMS	
		SALINITY		35.61	‰	
		TEMPERATURE		19.54	°C	
		TRANSMISSIVITY		0.000		SENSOR BLOCKED
				0.000		Light Blocked

CALIB. BY: LFD DATE: 12/17/83 FTL: MB DATE: 21 Dec 83 QA/QC: _____ DATE: _____

MULTI--PARAMETER CALIBRATION LOG

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

DATE CALIBRATION PERFORMED: 12/17/83

INSTRUMENT	S/N	PARAMETER	STD(Y)	RDG(X)	UNITS	COMMENTS
CSTD		Dissolved Oxygen		11.71	PPM	Air Calibration
		Temperature		20.17		
		Dissolved Oxygen		4.35	PPM	Nitrogen Purge
		Transmissivity		88.0		w/ Distilled H_2O
		Depth		000.1	M	
		Transmissivity		61.1		in Air

CALIB. BY: GAD & LJD DATE: 12/17/83 FTL: MB DATE: 21 Dec 83 QA/QC: _____ DATE: _____

MULTI-PARAMETER CALIBRATION LOG

PAGE 1 OF ____

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

DATE CALIBRATION PERFORMED: 12/8/83

INSTRUMENT	S/N	PARAMETER	STD(Y)	RDG(X)	UNITS	COMMENTS
Intellicon CSTD		Conductivity	0.0	0.0	mmhos	
		"	20.00	20.10		
		"	30.00	30.17		
		"	40.00	40.22		
		"	50.00	50.27		
		"	60.00	60.30		
		"	70.00	70.35		
		Transmissivity?		000.0		with sensor cover
				000.1		with light cover
		Dissolved Oxygen		5.25		Nitrogen Purged
			Air Sat 18.9	6.7		Air Calibrated
		Transmissivity	in D.I	86.3		

CALIB. BY: LJD & GPL DATE: 12/8/83 FTL: 7789 DATE: 15 Dec 83 QA/QC: _____ DATE: _____

DAILY LOG

DAILY FIELD LOG

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

CRUISE or TRIP DESC.: Cruise #1

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

DATE: 5 Dec 83 DAY OF WEEK: Mon PAGE 1 OF 16

TIME	ENTRY
0745	Arr. @ FIO to load gear & prep
	Mayflower Van w/ LGL equip. arrives.
2000	Buoys arrive air freight from k?. . . . City.
2300	Picked up buoys - Arrive ship - all loaded

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

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

3: _____ DATE: _____ FTL: [illegible] DATE: 6 Dec 83

PROJ. MGR: [illegible] DATE: 12/11/83 DIV. MGR: _____ DATE: _____

[COPIES TO PROJECT and DIVISION FILES]

DAILY FIELD LOG

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

CRUISE or TRIP DESC.: Cruise #21

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

DATE: 6 Dec 83 DAY OF WEEK: Tue PAGE 2 OF 16

TIME	ENTRY
0003	u/w for Sta. 43, continuing prep.
0700	Crew prepping for Sta. 43
1115	Ship arr. Sta. 43, marker buoy deployed, divers suiting up
1155	Begin CSTD cast.
1200	End CSTD cast, diver infauna sampling continues
1320	Divers onboard after collecting infauna and sediment samples; u/w for Sta. 44, Experienced some difficulties in sieving infauna samples in rubber boats. Henceforth zip lock ~~bag~~ bags will be taken by dive crew to dump samples in for sieving onboard ship.
1404	Arr. Sta. 44, dropping marker buoy
1522	Begin UTV/BSP survey
1715	Begin Hydrocast w/ CSTD; UTV/BSP continues
1745	Completed Niskin cast for surf. T°C
1822	Complete UTV/BSP survey w/at least 2 kms of track
1850	Complete collection of sediments using Smith-McIntyre, grab came up w/ ~ 3 cm. of sediment each time.
1906	Begin dredging w/ 60 cm. Δ dredge. Dredge #1 after 10 minutes towing was completely filled. It was decided to keep only selected specimens & scratch this tow. to avoid heavy subsampling. STANDARDIZED at 2 minute Dredges
2018	Dredges 1, 2, and 3 completed. Rigging for otter trawl
2100	Begin trawling (@ 2114 trawl brought up empty, net on bottom.
2200	Completed second trawl, however net came up torn, one trawling warp parted, & rollers broken.
2220	u/w for Sta. 45
2330	Anchored ~ 2 nmi off of Sta. 45

DAY CONT'D NEXT PAGE? Y or N

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

_____ DATE: _____ FTL: [signature] DATE: 7 Dec 83

PROJ. MGR: _____ DATE: 12/11/83 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.: Cruise #1

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

DATE: 7 Dec 83 DAY OF WEEK: Wed PAGE 8 OF 10

TIME	ENTRY
0715	Begin rigging for UTV/BSP survey @ sta. 45
0720	Positioning ship for survey, still continuing prep
0922	Repositioning ship for UTV track #2, CSTD cast completed
1027	Repositioning ship for UTV track #3, rigging new otter trawl
1118	Complete sediment sampling w/ Smith-McIntyre (took ~4 grabs to get sed.)
1136	Complete Niskin cast for Surf. T°C
1137	UTV/BSP Track #3 completed, break for lunch & camera servicing. (some problems w/ intermittent strobe response on BSC).
1237	Lunch completed, rigging Δ dredges
1256	Begin dredge tows (2 10 minute tows.)
1327	All 3 tows completed, rigging for otter trawl.
1422	Trawling completed, sample being picked and treated
1440	u/w for sta. 46
1446	Buoy deployed @ sta. 46, divers suiting up.
1530	Trouble w/ Avon outboard (won't start)
1556	Avon back on board, will anchor ship & use as platform
1606	Marker buoy recvd., moving into anchor position
1638	Divers in water to collect sediment & infauna samples
1711	Begin CSTD cast (upcurrent ~ 100 yds. from divers).
1719	Divers on board
1729	CSTD cast & Niskin cast completed, rinsing infauna samples & preserving.

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

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

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

PROJ. MGR: [illegible] DATE: 12/11/83 DIV. MGR: _____ DATE: 7 Dec 83

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DAILY FIELD LOG

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

CRUISE or TRIP DESC.: Cruise #1

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

DATE: 8 Dec 83 DAY OF WEEK: Thu PAGE 4 OF 16

TIME	ENTRY
0542	u/w for sta. 47
0624	Prob. w/ G90M (CSTD recorder), corrected itself after shutting unit off. Suspect a power surge in night. Isolation transforme recommended for CSTD system. (might explain leaps in DO [illegible]
0702	Arr. Sta. 47 (Note: CSTD record will have 0000 between test and data)
0718	Begin CSTD cast, 0730 - cast completed
0739	Niskin cast for surface T°c completed
0805	otter trawl in water after rigging.
0827	Trawl came up empty (probably not on bottom). Redo
0908	Trawling completed, rigging dredge
1050	4 Δ dredge hauls made (w/ rep. #1 discarded because of small catch). It should be noted that while ideally we are trying for 2 minute hauls, it is difficult to determine exactly when a dredge (or trawl) is sampling.
1100	Begin UTV/BSP epifaunal surveys Drift speeds are higher today allowing for more tracklines.
1233	UTV on deck. Some prob. w/ wires hanging up on pan & tilt motor. Corrected by taping wires out of way.
1343	Completed Smith-McIntyre grab for sediments
1505	UTV survey (4 tracks) complete & u/w for sta. 48
1538	Arr. Sta. 48, prep to drop anchor
1608	Vessel stable @ anchor, divers in the water. Begin CSTD & Niskin cast.
1635	Divers aboard after collecting sediment & infauna samples All hydrography completed. (Note: dive made from ship.)
1700	u/w for anchorage. Insufficient time to do sta. 49. (will do tomorrow, early). Rest of time will be spent taking care of equip., preserving infauna samples & paperwork.

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

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

3: _____ DATE: _____ FTL: MJS DATE: 8 Dec 83

PROJ. MGR: LJD DATE: 12/14/83 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.: Cruise #1

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

DATE: 8 Dec 83 DAY OF WEEK: Thu PAGE 5 OF 16

M	N R
	Additional note: ~ 50% of the infaunal samples could not be sampled to 15 cm due to a hard rock substrate ~ 5-6 cm below sediment surface.
1830	Begin CSTD calibration
	C
	S - ok
	T - ok
	D - ok reads 0.1 m on deck
	DO - High, will require calibration curve
	pH - Not functional
	Tr. - Low, will require calibration curve
1930	CSTD calib. completed.

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

Watch CHIEF 1: _____ DATE: _____ 2: _____ DATE: _____

3: _____ DATE: _____ FTL: [illegible] DATE: 8 Dec 83

PROJ. MGR: [illegible] DATE: 12/14/83 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.: Cruise #1

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

DATE: 9 Dec 83 DAY OF WEEK: Fri PAGE 6 OF &

TIME	ENTRY
0644	Arr. Sta. 49, prep. to anchor.
0729	Anchored & stable, begin CSTD cast & divers in water to collect ~~epif~~ infauna & sediment samples
0747	Divers out w/ samples
0752	Niskin cast completed, weighing anchor
0805	u/w for sta. 50
0851	Benthic infauna samples preserved, divers prepped for next station
0945	Prep. to set anchor @ sta. 50
0959	Vessel anchored & stable, divers final prep. for entry
*	Note: Scale on LORAN C plots is 10" = 1 nm
1010	Divers in to collect infauna and sediment samples, begin CSTD cast. We have had some problems w/ DO surging up to 25 mg/L (electrical?) and then dropping. Also there is some prob. w/ Transmissivity cable where stress on cable drops Tr. values to near 0. OK in water, however.
1036	Divers on board, niskin cast completed, weighing anchor.
1056	u/w for sta. 51
1224	Arr. @ N. end. of sta. 51 to run UTV surveys.
1234	Begin UTV survey
1258	Applying OMP 2 & 8 to optical surfaces of camera & strobe housings. Because of toxicity it must be done on deck which presents less than ideal conditions. The OMP is thick like corn syrup.
1500	Track #2 of UTV survey aborted due to a switch in wind pushing vessel out of survey area
1642 ~~1659~~	UTV survey completed on tracks 1, 2, & 3.
1718	CSTD & Niskin cast, & sediment sampling completed
1808	Trawl on board & catch preserved break for dinner

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

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

3: _____ DATE: _____ FTL: [illegible] DATE: 9 Dec 83

PROJ. MGR: [illegible] DATE: 12/11/83 DIV. MGR: _____ DATE: _____

[COPIES TO PROJECT and DIVISION FILES]

DAILY FIELD LOG

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

CRUISE or TRIP DESC.: Cruise #1

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

DATE: 9 Dec 83 DAY OF WEEK: Fri PAGE 7 OF 16

TIME	NOTES
1838	Dinner completed, begin dredging
1930	Dredging completed & u/w for Sta. 52
1947	Dredge samples processed.
*	Bring full 55 gal drum of formalin w/ pump. (10 gal. of 100% formaline, enough for 100 gal of 10% formalin, is cutting it close).
1950	Vessel stopped briefly to test T-L ~~camera~~ & battery ~~strobe~~ housings. to 30 ft. Checked out OK.
2000	Vessel u/w. Array frames being touched up w/ Fiberglass resin to help protect them from corrosion. First attempt @ applying OMP was marginal so a second attempt was made using a sponge applicator and thicker coats. Work continues on prep. for tomorrows array deployment.
2005	Arr. Sta. 52

Notes:

1) Eastern edge, only, of 51 appears to be hard bottom remainder is sand

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

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

3: _____ DATE: _____ FTL: [illegible] DATE: 9 Dec 83

PROJ. MGR: [illegible] DATE: 12/11/83 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.: Cruise #1

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

DATE: 10 Dec 83 DAY OF WEEK: Sat PAGE 8 OF 16

TIME	ENTRY
0700	Rigging marker mooring for deployment
0704	Begin CSTD & Niskin (calibration) cast
0746	Cast completed.
0727	UTV over side briefly to insure that deployment site is live
*	Depths recorded previous to this day should have 2m added to them as Furuno was not compensated for vessel draft.
0849	Marker mooring deployed after 1 false start. Topper buoys have a design flaw in that bottoms aren't weighted so 1 70 lb. roller weight was chained to it prior to deployment.
0915	Weighing anchor & positioning for UTV/BSP survey
0933	Begin UTV surveys and begin rigging & assembling array (w/ fouling plates, sediment traps, T-C camera etc.).
1320	UTV surveys completed. Rigging continues on ~~UTV~~ array.
1506	Array deployed w/o marker float, CM174 on WG
	Divers prepping for array inspection
1603	Divers in (from small boat) to attach marker float & install CM174 & VG. The array looked OK on bottom but RR wheel (Marker Mooring anchor) was found to be only ~20 ft. S. of array. Divers attached line ~~for~~ to enable the anchor to be shifted. Sediments collected in vicinity of array. Divers out
1725	Using Suncoaster, anchor was drug ~100 ft. south of array
1815	Break for dinner
1920	First attempt @ trawling @ 52 failed, trawl tangled.
2007	Otter trawl completed rigging for dredging
2100	Dredging (3 dredges) completed, prep. to anchor @ 52
*	Some prob. w/ LORAN acting up very inconsistent

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

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

3: _____ DATE: _____

PROJ. MGR: LJD DATE: 12/11/83 FTL: [illegible] DATE: 11 Dec 83

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.: Cruise #1

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

DATE: 11Dec83 DAY OF WEEK: Sun PAGE 9 OF 16

M	N R
0600	Taking surf. CSTD @ Sta. 52 before getting u/w for Sta. 19, vessel crew in process of repairing steering pin.
0613	u/w for Sta. 19
0700	Surf. CSTD @ intermediate station I-1, (u/w @ 0705)
~~0730~~ 0745	Surf. CSTD @ I-2 (u/w @ 0748).
0829	Arr. I-3 (for surf. CSTD), u/w @ 0832
0845	Arr. Sta. 19, cruising to catr. to begin. CSTD
0915	CSTD & Niskin cast completed; C on CSTD dropped to ∅ then would fluctuate wildly w/ ship motion. (possibly a calib. plug, which had come out, affected it). Prep. for dredging
1019	Finishing last dredge sample, moving into position to begin UTV surveys
*	Sub samples of epibenthos have been cut back to ~ 1gal. due to shortage of formalin.
1211	UTV transect cross dredge transect #3
1222	" " " " " #2, in both crossings, while it was obvious that the dredge had been on the bottom, it did not strip the bottom clean. Algae in particular were still present. Transect showed no skips.
1300	Smith-McIntyre grab for sediments; (light rain), grab came up full of sand indicating at least in spots sand is more than a thin veneer.
1342	One UTV video camera has failed (inspection later revealed no obvious cause).
1424	UTV transects (1, 2, & 3) completed; work continues on modifications to marker buoys (addition of weight) arrays, & UTV servicing

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

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

3: _____ DATE: _____ FTL: MRD DATE: 11Dec83

PROJ. MGR: TJD DATE: 12/21/83 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.: Cruise # 1

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

DATE: 11 Dec 83 DAY OF WEEK: Sun PAGE 10 OF 16

TIME	ENTRY
*	The BSC appeared to work fine, strobe fired every time and the film advanced.
1544	Preparing to deploy trawl. (Note that Nylon trawl warps have been replaced w/ 2-60ft. 1/4" SS cable warps which are joined to form a bridle).
1610	Trawl on board. It worked fine, est. haul at 400 lbs. w/ ~ 350 lbs. the result of 4 large sponges. Remainder of mass was attributed to smaller sponges, other inverts. & some fish.
1633	u/w for Sta. 21, doing Winkler titrations, array being prepped.
1722	Surf. CSTD @ I-4 (u/w @ 1725)
1811	Surf. CSTD @ I-5 (u/w @ 1844), dinner, working on T-L camera (timer problems & broken weld). Marker mooring for Sta. 21 rigged.
1858	Surf. CSTD @ I-6 (u/w @ 1904)
1948	Surf. CSTD @ I-7 (u/w @ 1955)
2028	Arr. Sta. 21, prep. to deploy marker mooring
2100	Marker mooring deployed on second try. First attempt resulted in a cracked light lens when mooring buoy struck ship. Henceforth the buoys will be deployed w/ some way on
*	It might prove useful to rig buoys w/ some sort of retrieval system.

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

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

3: _____ DATE: _____ FTL: [illegible] DATE: 13 Dec 83

PROJ. MGR: [illegible] DATE: 12/21/83 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.: Cruise # 1

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

DATE: 12 Dec 83 DAY OF WEEK: Mon PAGE 11 OF 16

TIME	ENTRY
0700	Seas are building (currently @ 4-6 ft.), gale force winds predicted.
0826	Back on sta. 21 (we had dragged the anchor) It is already too rough for any of our work except trawling (which would be marginal). Capt. Horan said that we should run while we still can. Up for the Dry Tortugas.
1448	Setting anchor just off Loggerhead Key (Dry Tortugas). On way to Loggerhead Key we ran into seas as high as 14 ft. which would have been too high for any work

DAY CONT'D NEXT PAGE? Y or N

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

3: _____ DATE: _____ FTL: MJJ DATE: 15 Dec 83

PROJ. MGR: LAD DATE: 12/21/83 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.: Cruise #1

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

DATE: 13Dec83 DAY OF WEEK: Tue PAGE 12 OF 16

TIME	NOTES
0640	u/w for sta. 29, weather forecast is for 3 fronts in the next 3 days w/ winds up to 30 kts. Rigging moorings & arrays
1135	Arr. Sta. 29, Marker Mooring deployed
1158	Array deployed, u/w for sta. 36, rigging array & mooring
1534	Arr. Sta. 36, marker mooring deployed
1558	Array deployed
1603	u/w for 23, rigging array & mooring
*	Array leg threads in poor shape, required tack welding
1740	Arr. Sta. 23, marker mooring deployed
1753	Array deployed
1805	u/w for Sta. 21
2149	Arr. Sta. 21, Marker buoy is still there & lighted The LORAN was only 0.01 nm off
2216	Array deployed (T-6 camera strobe flashed on deck @2200)
2225	u/w for Dry Tortugas to outrun a storm.

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

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

3: _____ DATE: _____ FTL: [illegible] DATE: 15 Dec 83

PROJ. MGR: [illegible] DATE: 12/21/83 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.: Cruise #1

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

DATE: 14 Dec 83 DAY OF WEEK: Wed PAGE 13 OF 16

TIME	ENTRY
0355	Anchored at Dry Tortugas after going through 6-9 ft seas.

DAY CONT'D NEXT PAGE? Y or N

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

3: _____ DATE: _____ FTL: [illegible] DATE: 15 Dec 83

PROJ. MGR: [illegible] DATE: 12/21/13 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.: Cruise # I

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

DATE: 15 Dec 83 DAY OF WEEK: Thu PAGE 14 OF 16

TIME	ENTRY
0537	u/w for Sta. 29 seas moderating (for work) thunderstorms.
1010	Arr. @ Sta. 29, prep. to do UTV/BSP survey.
1052	Begin CSTD cast, prob. again w/ DO probe
1106	CSTD cast completed
1129	3 Smith-McIntyre grabs completed w/ only a little sediment obtained due to hard algal pavement
*	Rain gage doesn't work on ship, rough seas (spray) have filled it and yet it has only sprinkled.
*	Video image from single remain camera is jumpy, switch cables did not help.
*	LORAN C plotter on bridge temporarily died, cont'd. taking fixes by hand in lab.
1306	Nurse shark obsv'd. on UTV Track #2
1326	Begin dredge sampling
*	Dredge #2 contained a rare specimen of the Gulf Abalone Haliotis bartelsii
1506	Dredging completed, the third dredge came up empty due to a high towing speed keeping dredge off bottom.
1529	Begin trawling.
1600	Trawl on board, however some of sample was probably lost through a hole in cod end or liner which will require repair (153 turns on winch)
1605	u/w for Sta. 36
2025	Arr. Sta. 36, winds gusting to 50 kts. w/ sustained 30 kts.
2101	Begin dredging, first dredge came up empty, probably
23s-0	Dredging complete all catches small & predom. Ophiuroids

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

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

3: _____ DATE: _____ FTL: MBJ DATE: 15 Dec 83

PROJ. MGR: LJD DATE: 12/21/83 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.: Cruise # J -

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

DATE: 15 Dec 83 DAY OF WEEK: Thu PAGE 14 OF 16

TIME	ENTRY
0537	u/w for Sta. 2? Ta - marginal (for ok) thunderstorms in distance
1010	Arr. @ Sta. 29, prep. to do UTV/BSP survey.
1052	Begin CSTD cast, prob. again w/ DO probe
1106	CSTD cast completed
1129	3 Smith-McIntyre grabs completed w/ only a little sediment obtained due to hard algal pavement
*	Rain gage doesn't work on ship, rough seas (spray) have filled it and yet it has only sprinkled.
*	Video image from single remain camera is jumpy, switch cables did not help.
*	LORAN & plotter on bridge temporarily died, cont'd. taking fixes by hand in lab.
1306	Nurse shark obsv'd. on UTV Track #2
1326	Begin dredge sampling
*	Dredge #2 contained a rare specimen of the Gulf Abalone Haliotis bortelesii
1506	Dredging completed, the third dredge came up empty due to a high towing speed keeping dredge off bottom.
1529	Begin trawling.
1600	Trawl on board, however some of sample was probably lost through a hole in cod end & liner which will require repair (153 turns on winch)
1605	u/w for Sta. 36
2025	Arr. Sta. 36, winds gusting to 50 kts. w/ sustained 30 kts.
2101	Begin dredging, first dredge came up empty, probably not on bottom
2350	Dredging complete, all catches small & predom. Ophiuroids

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

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

3: _____ DATE: _____ FTL: MSJ DATE: 15 Dec 83

PROJ. MGR: LJD DATE: 12/21/83 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.: Cruise #I

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

DATE: 16Dec83 DAY OF WEEK: Fri PAGE 15 OF 16

TIME	ENTRY
*	In the future a telemetering meter wheel for the trawl winch & a more readable meter wheel for the hydrowinch would be desirable.
0007	Prep. for CSTD cast (Station 36)
0032	CSTD cast completed to 90m (end of wire), prep for Niskin DSRT cast.
*	DO surges occurred during lowering & raising
0101	Niskin/DSRT cast completed for 125 & 9.5 m. w/ S‰, & DO, & T°C sampling. Prep. for sediments
0114	Sediment sampling w/ Smith-McIntyre completed
0118	u/w for Sta. 23 (Note that CSTD, Niskin, & sediment sampling done w/ operator trying to hold station.)
*	Trawling not done @ this station because there was insufficient wire on trawl winch, a tear in the net, & rough seas. ROV/BSP was not done because of rough seas
0605	Arr. Sta. 23, seas are building w/ sustained 3m waves & occasional 4m waves
0616	Begin dredging
0813	Dredging completed after 4 tows (1 tow not on bottom due to increased towing speed w/ following seas
0832	Begin CSTD cast
0846	CSTD cast completed, begin Niskin/DSRT cast for surface temperature.
0855	Niskin cast completed, blown off
0858	u/w for St. Petersburg after contacting Dr. Bob Avent (MMS) to inform him of decision to blow off

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

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

3: _____ DATE: _____ FTL: [illegible] DATE: 16 Dec 83

PROJ. MGR: [illegible] DATE: 12/21/83 DIV. MGR: _____ DATE: _____

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STATION INFORMATION

STATION INFORMATION SHEET FOR STATION NO. 43

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

CRUISE NO: I DATE: 6 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1115" DEP. TIME: 1320 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	1153	1155	1200	1201	14064.1 44008.9	44008.8 14064.2		
2	Sediments	Diver Corers								
3	Infauna	Diver Corers								
4	Hydrography	Niskin Btls	1215	1220	1245	1246				

( )

STATION INFORMATION SHEET FOR STATION NO. 44

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

CRUISE NO: 1 DATE: 6 Dec 83 PLATFORM: R/V SUNCOASTER [FIO]

ARR. TIME: 1404 DEP. TIME: 2220 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1a	Epifauna	UTV/BSP	1522	1525	1642	1645	43961.05 14077.30	43962.87 14079.04		
1b	Epifauna	UTV/BSP	1706	1707	1821	1822	43959.33 14077.49	~~14077~~. 43961.29 14079.00		
2	Hydrography	CSTD	1714	1715	1718	1719		43960.25 14077.90		
3	Niskin Cast	Niskin Bt & DSRT	1740	—	—	1745		43960.75 14078.28		
4	Sediments	Smith-McIntyre	1840	—	—	1850		43961.55 14078.56		
5a	Epifauna	60 cm. Δ Dredge #1	1906	1911	1921	1923	43962.93 14077.92	43962.13 14077.15		
5b	Epifauna	60 cm. Δ Dredge #1	1948	1951	1953	1956	43961.22 14077.94	43960.58 14078.18		
5c	Epifauna	60 cm. Δ Dredge #2	1959	2002	2003	2007	43960.05 14079.09	43960.33 14079.30		
5d	Epifauna	60 cm. Δ Dredge #3	2010	2012	2013		43961.96 14078.89			
5e	Epifauna	60 cm. Δ Dredge #3	2010	2013	2014	2018	43961.81 14078.76	43961.68 14078.71		
6	Epifauna	25 ft. Otter (Roller) Trawl	2100	2104	2114		43960.11 14078.82	43958.70 14078.04	Trawl not on bottom	
6	Epifauna *	25 ft. Otter (Roller) Trawl	2131 ~~2122~~	2145	2155	2200	43960.14 14079.28	43963.03 14078.48		

* Trawl came up torn, w/ otter & roller s in a pretty tangled mess.

16 A)2

track 1 1525
1642
1707

NAVigation Notes
12/6/83
Station 44

12/6/83
Trawl 1
Loran

Dredge 14077.93 43963.00
start 26°17.67' 82°12.88'
start at 1913

END Trawl 14077.16 43962.26
10 min

26° 17.35' 82° 12.92

Trawl
~~Tow~~ Dredge 1

D1
9:50 26°17.551 82°12.70'
14078.05 43961.08 NO END POINTS

D2
20:03 26°17.78' 82°12.49' } START
14079.06 43960.30
26°17.90 82°12.47' } END
14079.32 43960.52

D3
2013 26°17.93 82°12.67' } START
14078.87 43962.10
26°17.85 82°12.66 } end

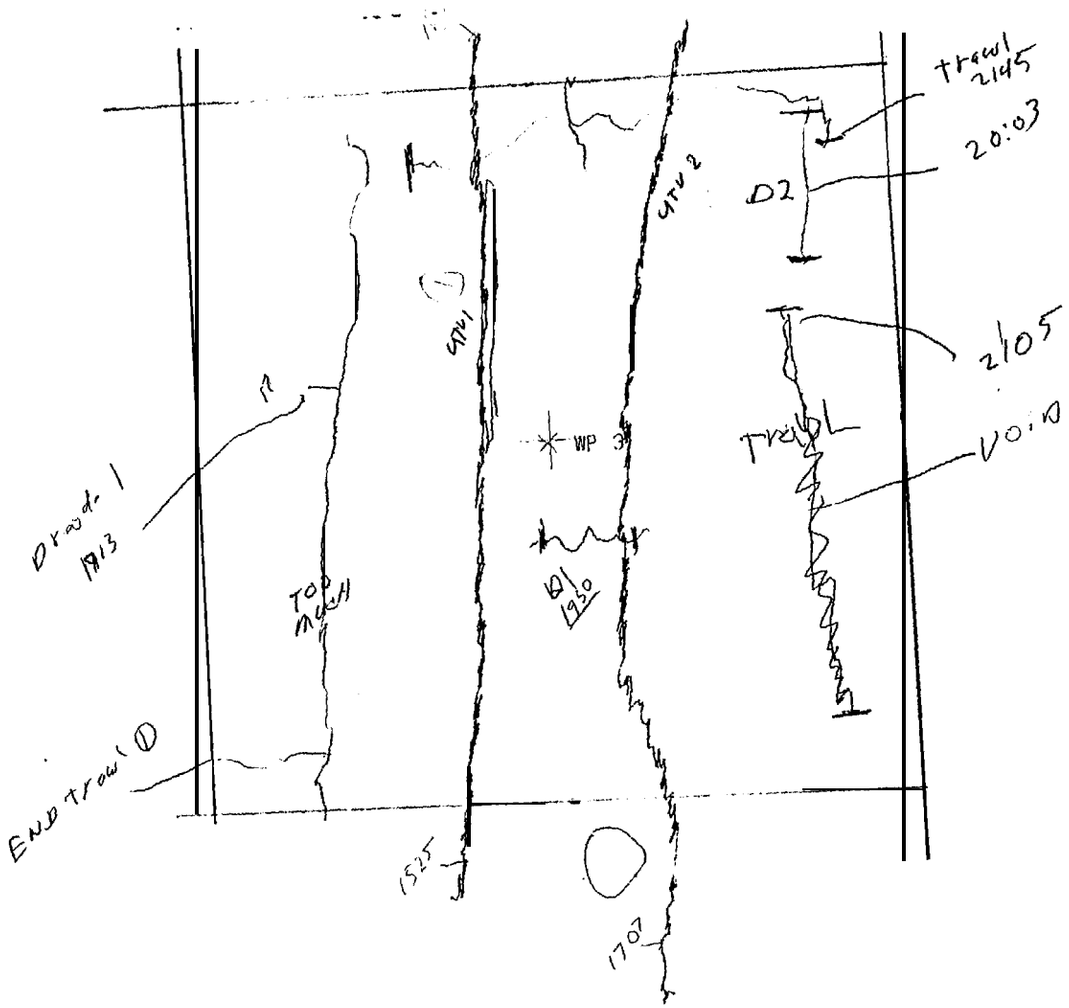
Trawl

2105	26°17.72	82°12.50	Start
~~9~~	~~14108.81~~	43960.03	
	14078.81		
2115	26°17.38	82°12.46'	
	14078.13	43958.76	
TRAWL			
~~945~~ 2145	26°17.89	82°12.46	
	14079.26	43960.33	
2155	26°17.88	82°12.83	End
	14078.45	43963.32	

LAT 26 17.64 N SCALE 0 00.10 LON 82 12.71 E SCALE 0 00 0

STATION 44

12/6/83
Dgt
Pgt
UTV



STATION 49

12/6/83
%3
UTV

STATION INFORMATION SHEET FOR STATION NO. 45

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

CRUISE No: I DATE: 2 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 0720 DEP. TIME: 1440 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD *	0856	0857	0901	0902	43888.52 14055.61	43888.38 14055.59		
2a	Epifauna	UTV/BSP (Track #1)	0825	0828	0919	0922	43890.82 14056.20	43887.19 14055.44		
2b	Epifauna	UTV/BSP (Track #2)	0937	0940	1025	1026	43889.87 14056.26	43885.73 14055.48		
2c	Epifauna	UTV/BSP (Track #3)	1040	1044	1136	1137	43889.52 14056.44	43885.28 14055.24		
3	Sediments	Smith-McIntyre	—	1110	1118	—	43887.30 14055.60	43886.18 14055.63		
4	Hydrography	Niskin w/ DSRT	—	1129	1136	—	43885.68 14055.30	43885.28 14055.24		
5a	Epifauna	60 cm. Δ Dredge #1	1256	1258	1259	1301	43886.16 14056.27	43886.17 14056.42		
5b	Epifauna	60 cm. Δ Dredge #2	1310	1313	1314	1316	43888.07 14056.87	43888.53 14055.72		
5c	Epifauna	60 cm. Δ Dredge #3	1322	1324	1325	1327	43889.71 14055.48	43889.94 14055.66		
6	Epifauna	25 ft. Otter (Roller) Trawl	1402	1407	1417	1422	43887.12 14056.36	43886.00 14055.03		

* Clock 7 minutes slow

12/7/93

Station 45

Dredge S

01	26° 02.85'	82° 08.29	Start
	14056.17	43886.36	
	26° 02.93'	82° 08.26	End
	14056.45	43886.41	

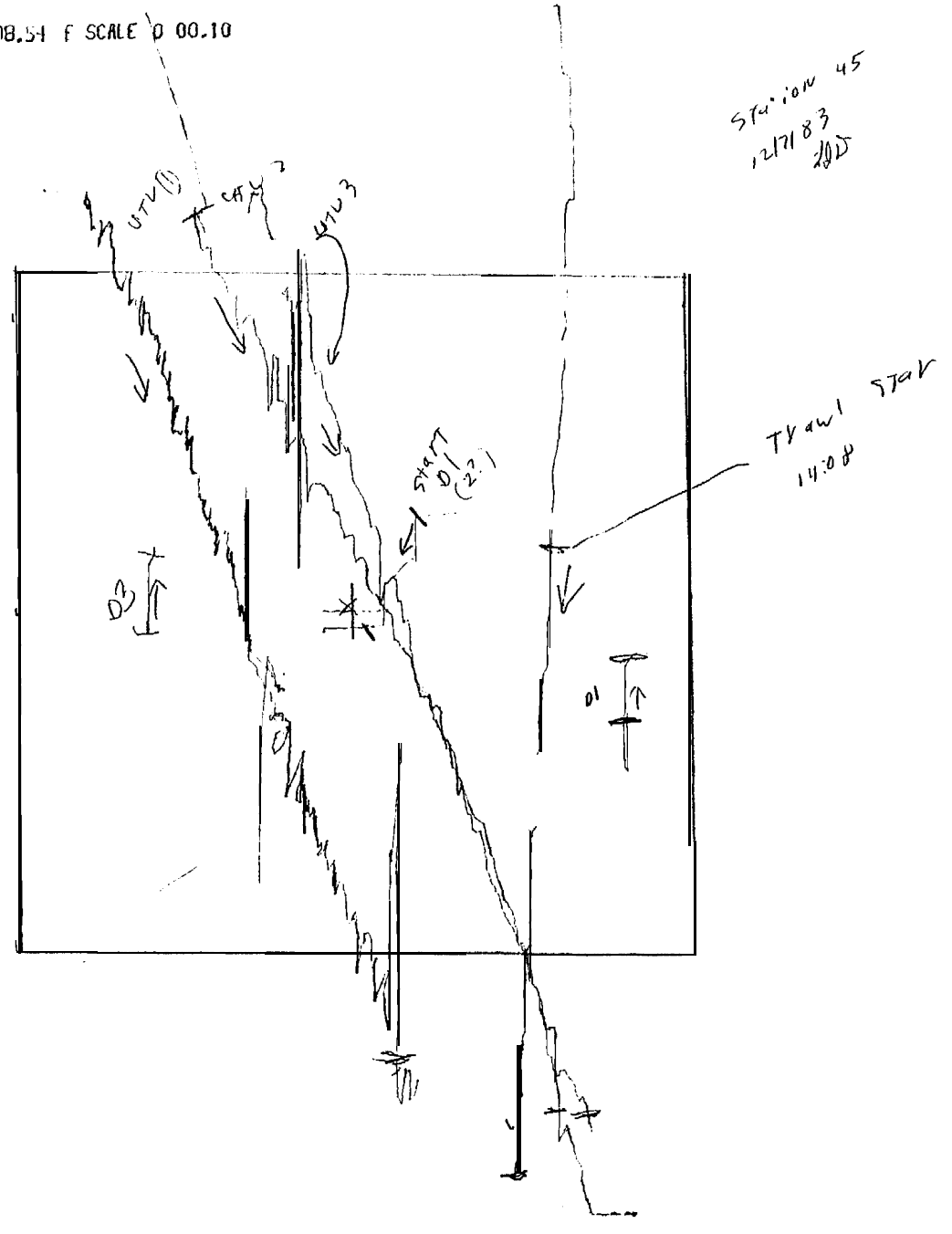
13:38

02	26° 03.02'	82° 08.48	Start
	14056.10	43888.25	
	26° 02.89	82° 08.58	
	14055.61	43888.69	

13:26

03	26° 02.91	82° 08.73	
	14055.51	43889.81	
	26° 03.03'	82° 08.71'	End
	14055.73	43890.02	

LAT 26 02.95 N SCALE 0 00. 0 LON 82 08.54 F SCALE 0 00.10



STATION INFORMATION SHEET FOR STATION NO. 46

PROJECT TITLE: Sw FLORIDA Ocs BENTHIC STUDY PROJECT NO: £3-513-510/MMS

CRUISE NO: I DATE: 7 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1446 DEP. TIME: 1740* NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	1711	1712	1716	1717	43878.96 14052.12	43 878.93 14052.17		
2	Surf. T°C	Niskin w/ DSRT	1724	–	–	1729	~~43~~	43878.90 14052.17		
3	Sediments	Diver Corer	1638	–	–	1719	43878.81 14052.13	43878.86 14052.23		
4	Infauna	Diver Corer	1638	–	–	1719	43878.81 14052.13	43878.86 14052.23		

*All sampling complete, but will remain anchored for night.

STATION INFORMATION SHEET FOR STATION NO. 47

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

CRUISE NO: I DATE: 8 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 0702 DEP. TIME: 1505 NAVIGATION: LORAN C

NO	TASK	EQUIPMENT "	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD ~~(46-690M)~~ *	0718	0719	0729	0730	43833.26 / 14025.72	43833.89 / 14025.31		
2	Surf. T°c	Niskin w/DSR 7	—	0734	0739	·		43833.75 / 14024.37		
3	~~Epifauna~~	~~25 ft. Otter (Roller) Trawl~~	0805	0811	0821	0827	43834.28 / 14025.15	43834.09 / 14026.12		
3	Epi fa un	25 ft. Otter (Roller) Tra	0845	0850	0906	0908	43834.09 / 14026.08	43833.21 / 14025.18		
4a	~~Epifauna~~	~~60cm Δ Dredge~~	~~0938~~	~~0942~~	0943	0945	43833.61 / 14025.07	43834.47 / 14025.01		
4b	Epifauna	60cm. Δ Dredge	0956	0959	1000	1002	43834.47 / 14025.62	43835.35 / 14025.41		
4c	Epifauna	60cm Δ Dredge	1011	1014	1016	1018	43832.95 / 14026.18	43832.17 / 14026.20		
4d	Epifauna	60cm. Δ Dredge	1030	1033	1035	1037	43833.71 / 14025.47	43834.60 / 14025.33		
5a	Epifauna	UTV/BSP Track #1	1100	1103	1139	1141	43833.06 / 14026.42	43831.03 / 14025.41		
5b	Epifauna	UTV/BSP Track #2	1202	1205	1237	1239	43833.48† / 14025.86	43831.96 / 14025.42		
5c	Epifauna	UTV/BSP Track #3	131?	1320	1359	1400	43835.57 / 14025.84	43833.37 / 14024.88		
6a	Sediments	Smith-McIntyre	1337	—	—	1343	43834.53 / 14025.37	43834.19 / 14025.33		
5d	Epifauna	UTV/BSP Track #4	1413	1415	1502	1504	43835.70 / 14026.20	43833.75 / 14024.68		

* 690 m not functioning, ocasi started working again. Suspect power surge.

† First good fix @ 1213

504 838-0899

LARRY DANEK

Station 47

12/8/83

Dredge

D1	0942	25°45.50	82°06.27' S start
		25°45.51	82°06.36" S end

(904) 332-3318

D2 only 1 minute

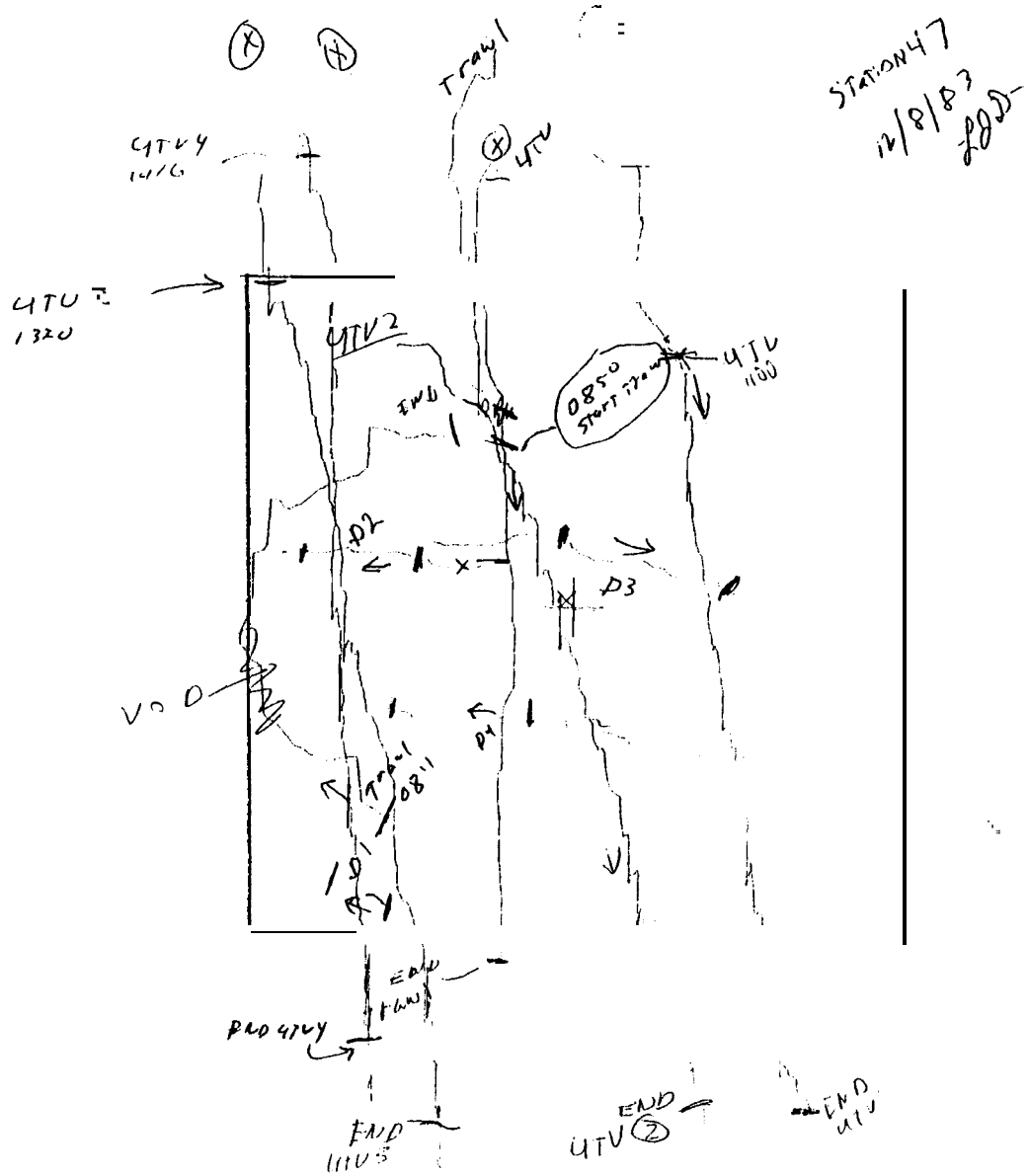
D3	10:15	25°45.79	82°06.13 S start
	10:17	25° 45.76	82° 05.98' END

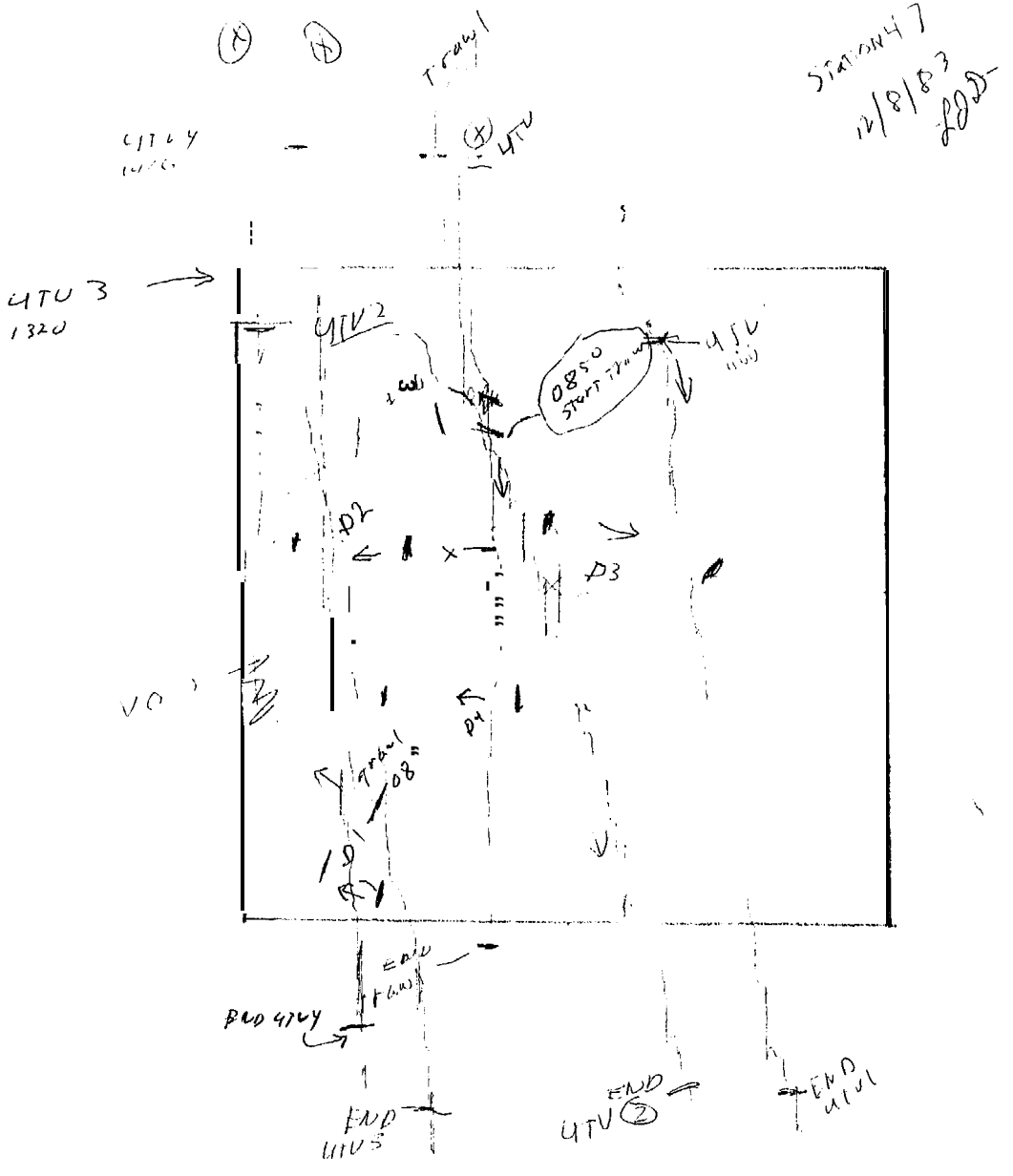
D4	10:34	25° 45.65	82°06.21' start
	10:36	25° 45.68	82°06.37' end

1) UTV takes too long

2) at 47 on Tues 48 & 49 tonight

3)


STATION 47
12/8/83
LBD
Trawl
4TV
4TV 4
1476
4TV 3
1320
4TV 2
END
0850
START TRAWL
4TV
1100
D2
D3
D4
VOID
Trawl
0811
END
TRAWL
END 4TV
END
1115
END
4TV 2
END
4TV


STATION 47
12/8/83
LBD
4TU 3
1320
4TU 2
0850
START TRAVEL
4TU
D2
D3
D4
VC
END
4TU 5
END
4TU 3
END
4TU

STATION INFORMATION SHEET FOR STATION NO. 48

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

CRUISE NO: I DATE: 8 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1538 DEP. TIME: 1700 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	1610	1611	1619	1620	43798.52 14036.39	43798.58 14036.37		
2	Surf. T°C	Niskin w/DSRT	—	1624	1629	—	43798.62 14036.33	43798.52 14036.35		
3	Sediments	Diver Corers	1608	—	—	1635	43798.57 14036.33	43798.67 14036.38		
4	Infauna	Diver Corers	1608	—	—	1635	43798.57 14036.33	43798.67 14036.38		

STATION INFORMATION SHEET FOR STATION NO. 49

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

CRUISE NO: I DATE: 9 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 0644 DEP. TIME: 0805 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	0729	0730	0736	0737	43686.41 14039.97	43686.39 14039.93		
2	Surf. T°C	Niskin w/DSRT	—	0747	0752	—	43686.50 14039.82	43686.50 14039.91		
3	Sediments	Diver Corer	0729	—	—	0747	43686.41 14039.97	43686.50 14039.82		
4	Infauna	Diver Corer	0729	—	—	0747	43686.41 14039.97	43686.50 14039.82		

STATION INFORMATION SHEET FOR STATION NO. 50

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

CRUISE NO: I DATE: 9 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 0745- DEP. TIME: 1056 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	1013	1014	1023	1025	43705.34 14000.89	43705.30 14000.91		
2	Surface T°C	Niskin w/ DSRT	—	1031	1036	—	43705.37 14000.74	43705.38 14001.00		
3	Sediments	Diver Corers	1010	—	—	1033	43705.31 14000.98	43705.32 14001.12		
4	Infauna	Diver Corers	1010	—	—	1033	43705.31 14000.98	43705.32 14001.12		

STATION INFORMATION SHEET FOR STATION NO. 1051

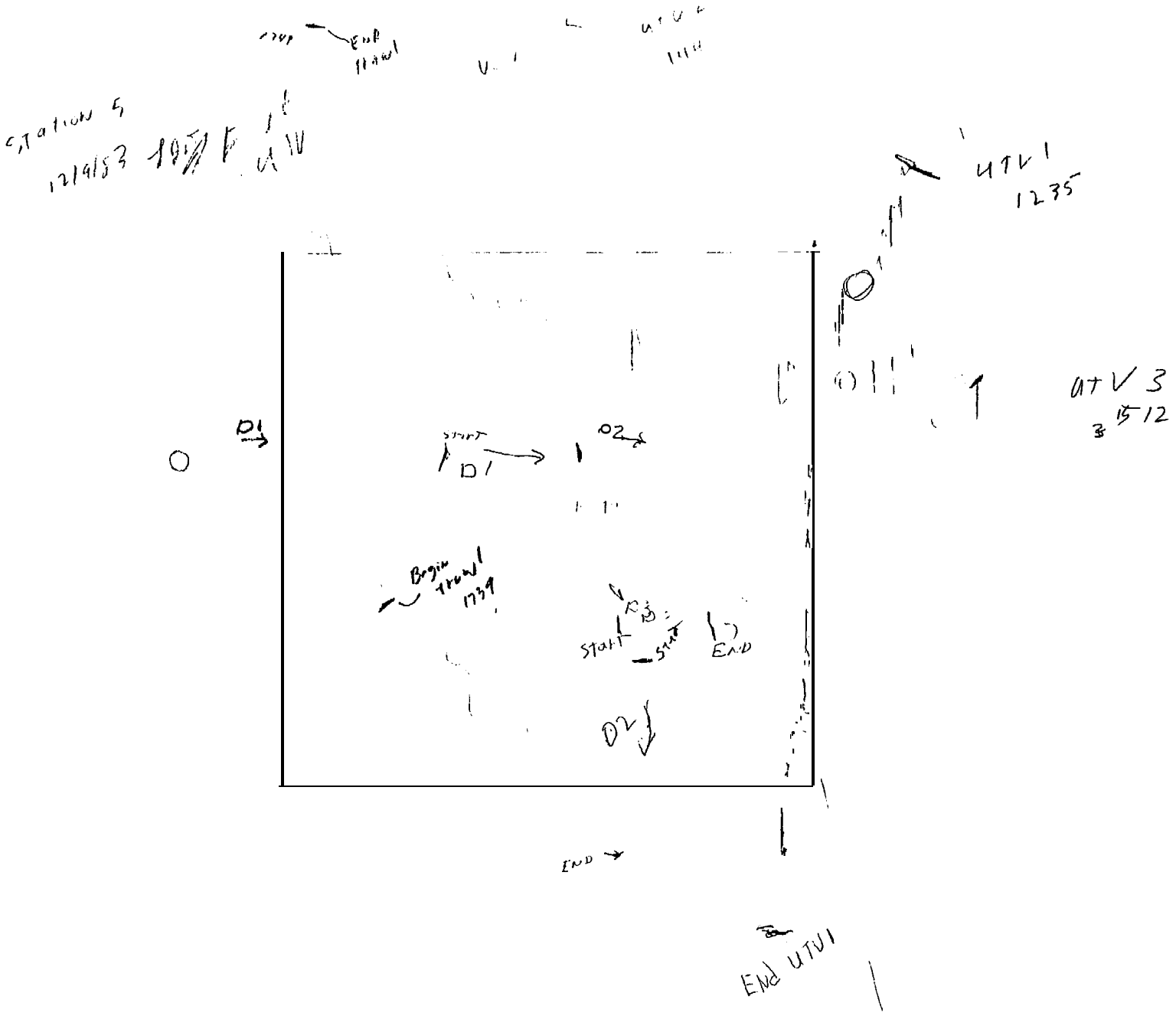
PROJECT TITLE: SW FLORIDA OCS BENTHIC STUDY PROJECT NO: 83-513-510/MMS

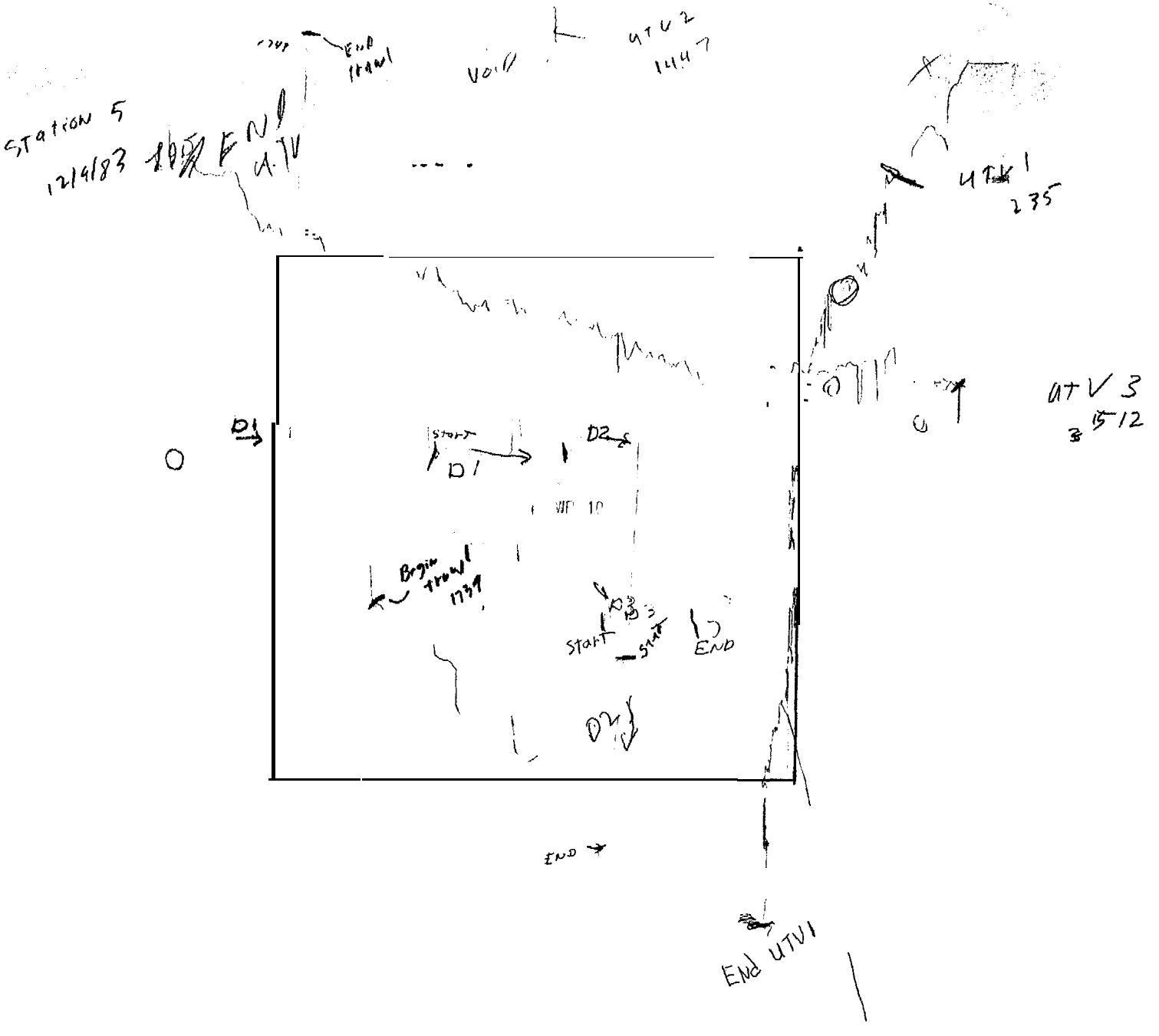
CRUISE NO: I DATE: 9 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1224 DEP. TIME: 1930 NAVIGATION: LORAN C

NO	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1a	Epifauna	UTV/BSP Track #1	1234	1235	410	1412	43673.71 * 14009.33	43672.65 14007.68		
1b	Epifauna	UTV/BSP Track #2	1444	1446	1459	1500	43675.85 14008.99	43676.43 14008.53		
1c	Epifauna	UTV/BSP Track #3	1509	1510	1640	1642	43673.05 14009.02	43678.46 14007.86		
2	Hydrography	CSTD	1651	1651	1659	1659	43675.74 14007.86	43676.15 14007.86		
3	Surface T°C	Niskin w/ DSRT	—	1713	718	—	43677.61 14007.47	43678.03 14007.31		
4	Sediments	Smith-McIntyre	—	1703	705	—	43676.47 14007.63	43676.76 14007.54		
5	Epifauna	15ft. Otter (Roller) Trawl	1732	1739	749	1755	43676.91 14007.51	43677.55 14007.58		
6a	Epifauna	60 cm. Δ Dredge	1845	1848	1850	1852	43675.97 14007.97	43675.17 14008.28		
6b	Epifauna	60 cm. Δ Dredge	1859	1902	904	1906	43675.00 14007.77	43675.03 14007.53		
6c	Epifauna	60 cm. Δ Dredge	1921	1923	925	1927	43674.90 14008.06	43674.23 14008.16		

Fix @ 1238


Station 5
121453
End Travel
UTV 1
1235
ATV 3
1512
D1
Start
D1
D2
Begin Travel
1739
Start
Start
End
D2
END
End UTV1


STATION 5
12/4/83
END
ATV
END TRAIL
VOID
ATV 2
1447
ATV 1
235
ATV 3
1512
D1
START
D1
D2
D2
Begin TRAIL
1739
D3
START
START
END
END
END UTV1

STAT ON ^FORMATIO^ SHEET FOR STATION NO. 52

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

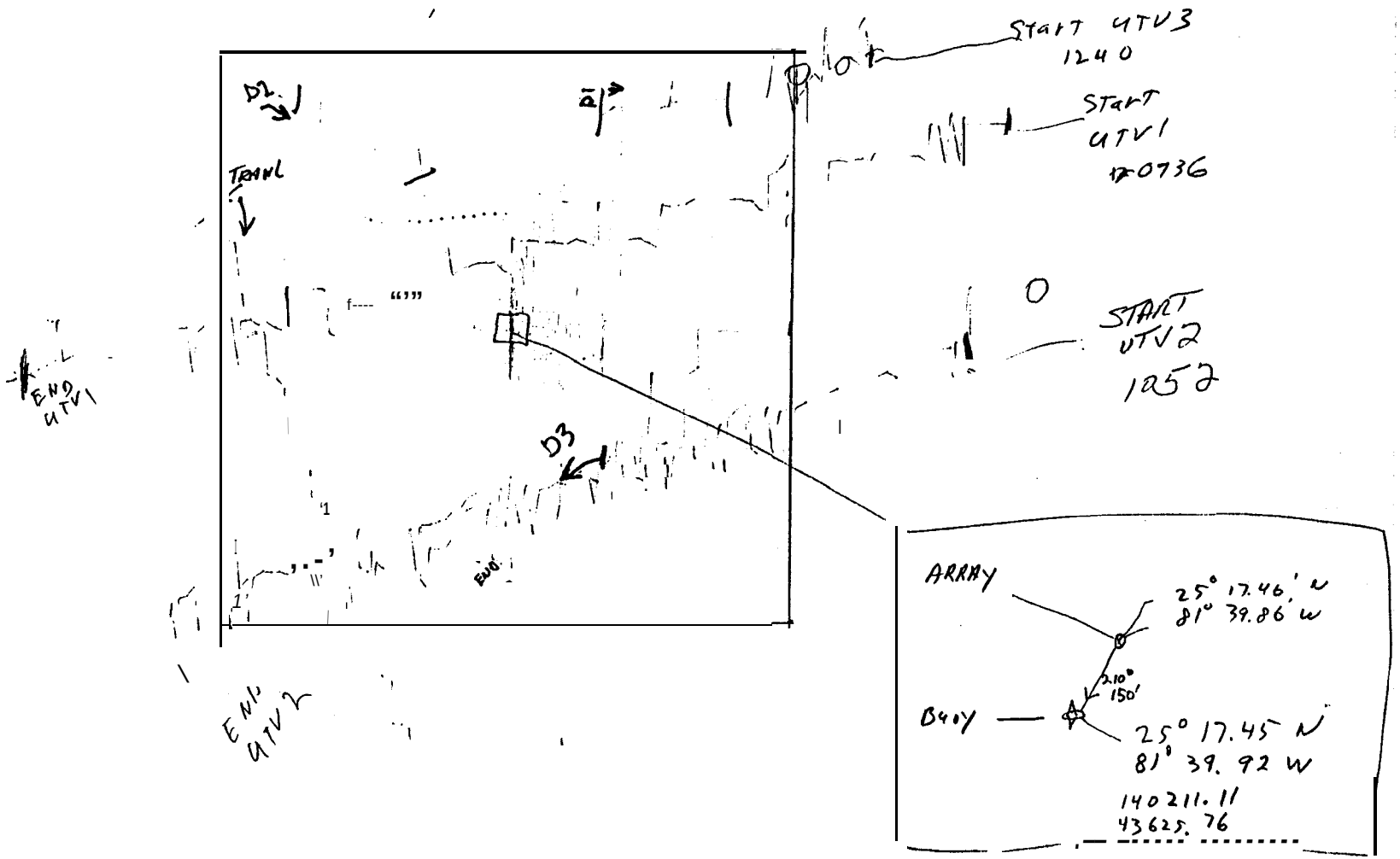
CRUISE NO: I DATE: 10 Dec 83 PLATFORM: R SUNCO S ER F O

ARR. TIME: 2005 (9Dec83) DEP. TIME: 0605 (11Dec83) NAVIGATION: LORAN C

NO	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	0704	0705	0715	0715	[illegible]	[illegible]		
2	Calib. Chk.	Niskin w/DSRT	—	0724	0746	—	43630.21 14029.09	43630.21 14029.14		
3	Deploy Mkr. Mooring	Marker Moorings	0849	—	—	—	43630.12 14029.13	43625.62 14024.11	Moved w/ slip	
4a	Epifauna	UTV/BSP Track #1	0933	0935	1035	1037	[illegible] 14020.22	[illegible] 14023.17		
4b	Ep	UTV/BSP Track #2	1050	1052	1210	1212	[illegible]* 14025.29	[illegible] 14023.14		
4c	E	UTV/BSP Track #3	1237	1239	1318	1320	[illegible] 14025.49	[illegible] 14025.22		
5	Epifauna	25 ft. Otter Trawl	[illegible]	[illegible]	1957	2000	[illegible] [illegible]	43625.31 [illegible]		
6a	Epifauna	60 cm. Δ Dredge #1	2024	2025	[illegible]	2029	43624.64 [illegible]	43624.06 [illegible]		
6b	Epifauna	60 cm. Δ Dredge #2	2041	2043	2045	2047	[illegible] 14024.41	[illegible] 14024.68		
6c	Epifauna	60 cm. Δ Dredge #3	2053	2056	2058	2100	[illegible] 14024.26	[illegible] [illegible]		
7	Sediments	Diver Cores	1628	—	—	1644	Near Array			
8	Deploy Array	Array	1541	—	—	—	43625.62 [illegible]			

*Fix @ 1100 Array 1603-1623 [illegible] 14024.11

→ install CM174 & wave gage

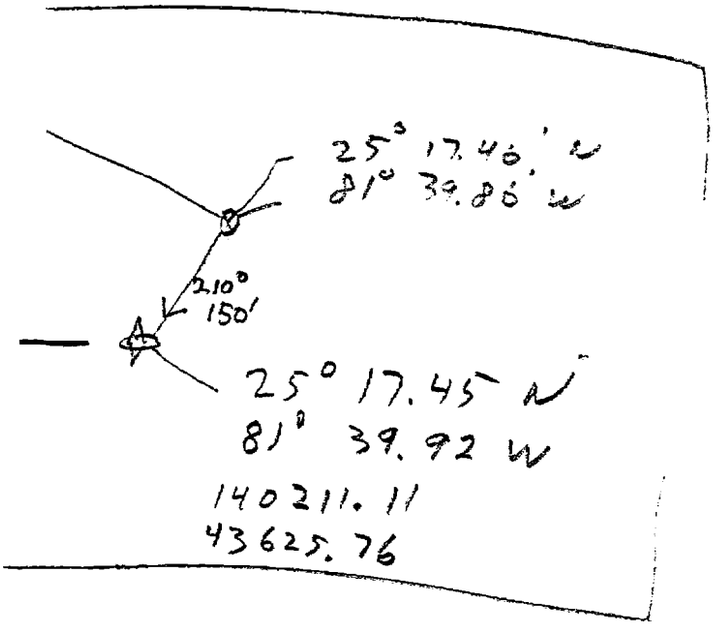

START UTV3
1240
START
UTV1
0736
START
UTV2
1252
D2
TRAIL
D3
END
UTV1
END
UTV2
ARRAY
25° 17.46' N
81° 39.86' W
210°
150'
BUOY
25° 17.45 N
81° 39.92 W
140211.11
43625.76

START UTV3
1240

START
UTV1
0736

START
UTV2
1252

END
UTV1



STATION INFORMATION SHEET FOR STATION NO. 19

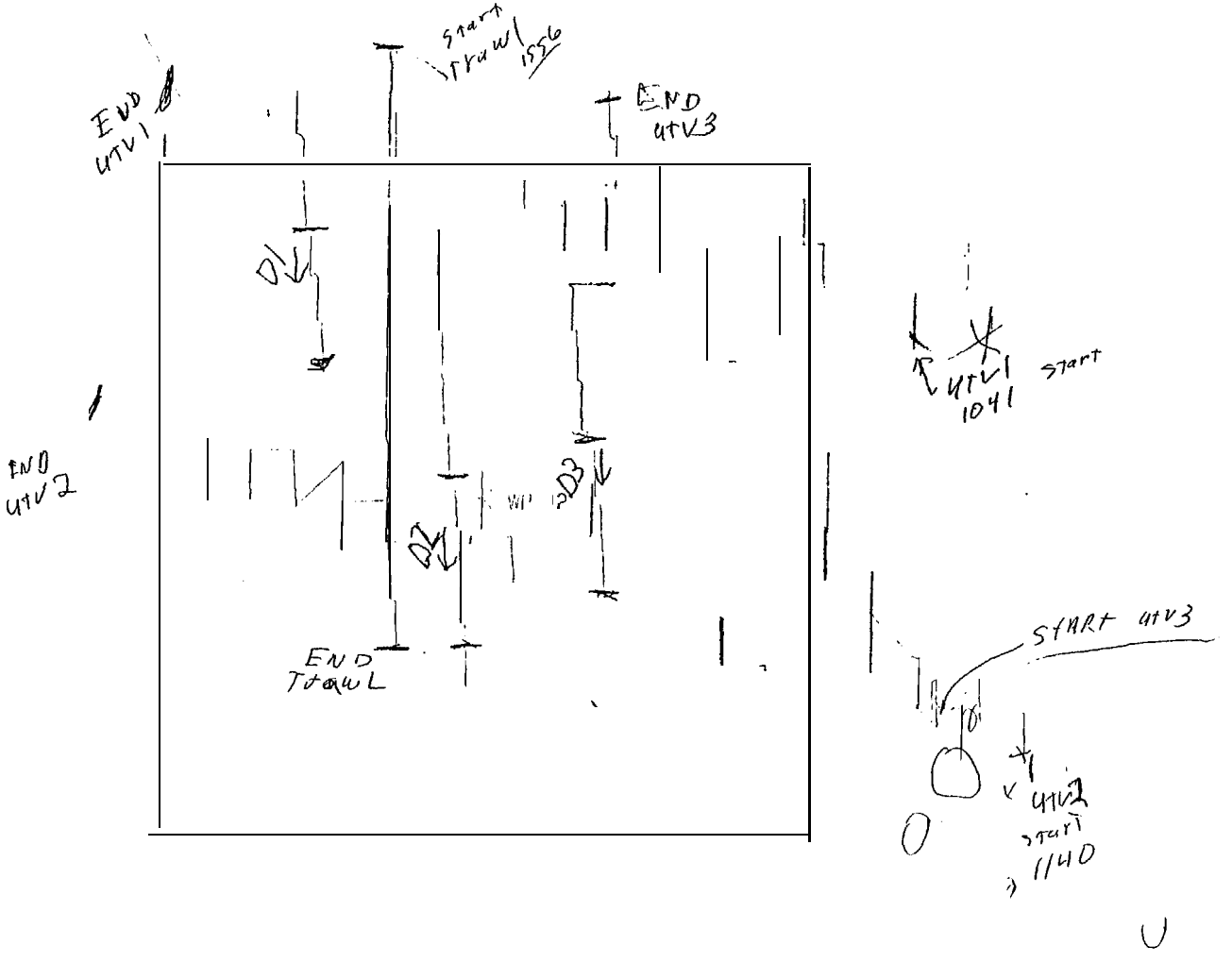
PROJECT TITLE: SW FLORIDA OCS BENTHIC STUDY PROJECT NO: 83-513-5101/-

CRUISE NO: I DATE: 11 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

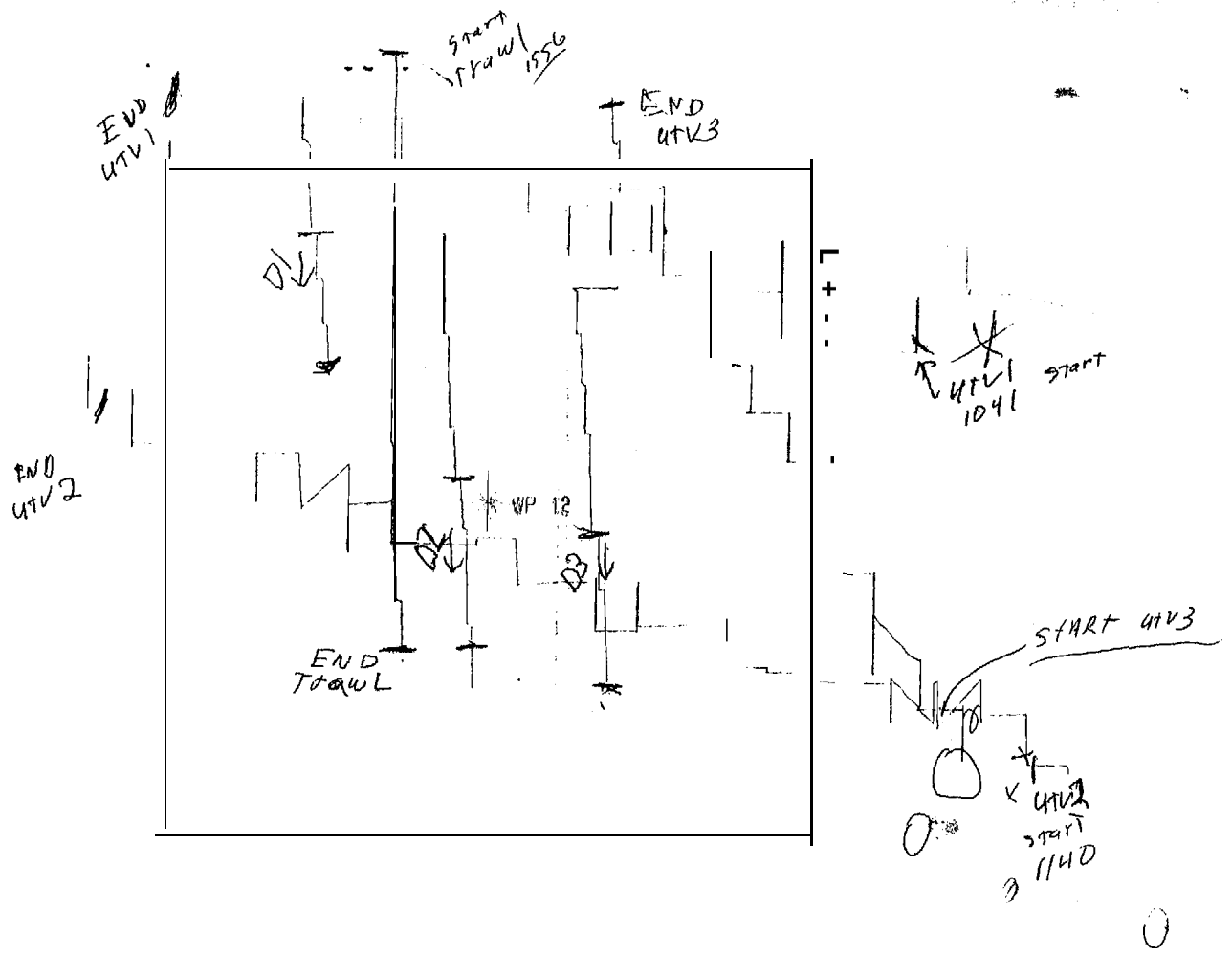
ARR. TIME: 0845 DEP. TIME: 1633 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	0851	0853	0904	0906	43808.17 13964.26	43809.43 3963.95		
2	surf. T°C	Niskin w/ DSRT	—	0910	0915	—	43810.38 13963.10	43810.98 13963.63		
3a	Epifauna	60cm. ΔDredge #1	0925	0927	0929	0932	43808.41 13964.71	43808.30 13964.60		
3b	Epifauna	60cm. ΔDredge #2	0942	0947	0949	0953	43807.46 13964.49	43807.20 13964.27		
3c	Epifauna	60cm ΔDredge #3	1003	1007	1009	1012	43806.67 13964.72	43806.32 13964.53		
4a	Epifauna	UTV/BSP Track #1	1040	1046	126	1128	43805.76 13965.48	43810.18 13964.46		
4b	Epifauna	UTV/BSP Track #2	1139	1142	1250	1252	43804.29 13965.16	43809.68 13963.97		
4c	Epifauna	UTV/BSP Track #3	1311	1314	423	1424	43804.67 13965.11	43807.58 13965.48		
5	Sediments	Smith-McIntyre Grab	—	1300	301	—	43807.61 13964.49	43807.78 13964.63		
6	Epifauna	25ft. Otter Trawl.	1551	1556	606	1610	43808.48 13965.14	43807.65 13964.28		

Station 19
12/11/83
LAD



Station 19
12/11/83
LJD



STATION INFORMATION SHEET FOR STATION NO. 21

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

CRUISE NO: I DATE: 11-12 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 2028 (11 Dec 83) DEP. TIME: 0820 (12 Dec 83) NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME % m -	TIME -0 UT -	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Mkr. Moving Dep.	Sam	2100	—	-	-	44083.21 13864.40	"	25° 17.20'N 82° 52.15'W	—
—	Blown	OPC	—							

STATION INFORMATION SHEET FOR STATION NO. 29

PROJECT TITLE: SW FLORIDA OCS BENTHIC STUDY PROJECT NO: 83-513-5101/-

CRUISE NO: I DATE: 13Dec83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1135 DEP. TIME: 1200 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX EG N	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Deploy Mkr. Mooring	Mkr. Mooring	1135	—	—	—	44309.68 13678.76	—	24°47.49'N 83°41.20'W	—
2	Deploy Array.	~150 ft. bearing 60° off Mkr. Array	1158	—	—	—	44309.57 13678.92	—		

STATION INFORMATION SHEET FOR STATION NO. 36

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

CRUISE NO: I DATE: 13 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1534 DEP. TIME: 1603 NAVIGATION: LORAN c

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Deploy Mkr. Mooring	Mkr. Mooring	1534	—	—	—	44487.65 13682.55	—	25°16.86'N 83°57.39'W	
2	Deploy Array	Array *	558	—	—	—	44486.73 13682.83	—	25°16.81'N 83°57.26'W	

* Array is ~20 ft. on a bearing of 110° M from Marker

STATION INFORMATION SHEET FOR STATION NO. 23

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

CRUISE NO: I DATE: 13 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1740 DEP. TIME: 1805 NAVIGATION: LORAN C

Uo.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEG N	POSITION (LAT/LON) END
1	Depoy MKR Mooring	Marker Mooring	1740	—	—	—	4 4369.11 13740.90	—	25°16.88'N 83°37.81'W	
2	Deploy Array	Array *	1753	—	—	—	44369.31 13740.89	—	25°16.90'N 83°37.84'W	—

Array is ~140 ft. from Marker Mooring on a bearing of 010 °M
Hydrophone check of CM174 indicates all is OK

STATION INFORMATION SHEET FOR STATION NO. 21

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

CRUISE NO: I DATE: 13Dec83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 2149 DEP. TIME: 2235 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Deploy Array	Array *	2216	—	—	—	44083.13 13864.56	—	25° 17.23'N 83° 52.14'W	—

* Array is ~ 1004'ft. from Marker mooring bearing 115° M.

STATION INFORMATION SHEET FOR STATION NO. 29

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

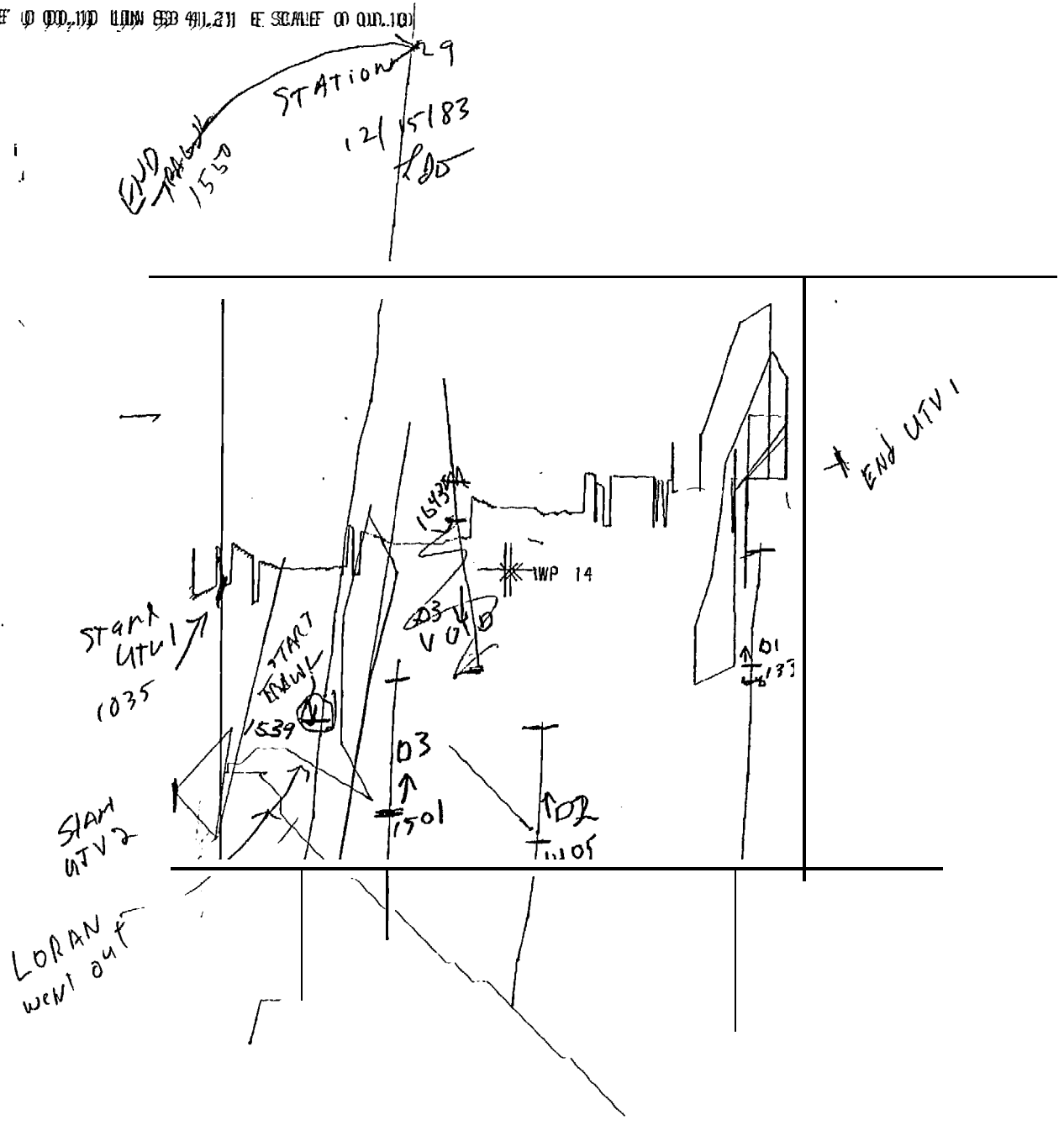
CRUISE NO: I DATE: 15 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 1010 DEP. TIME: 1605 NAVIGATION: LORAN C

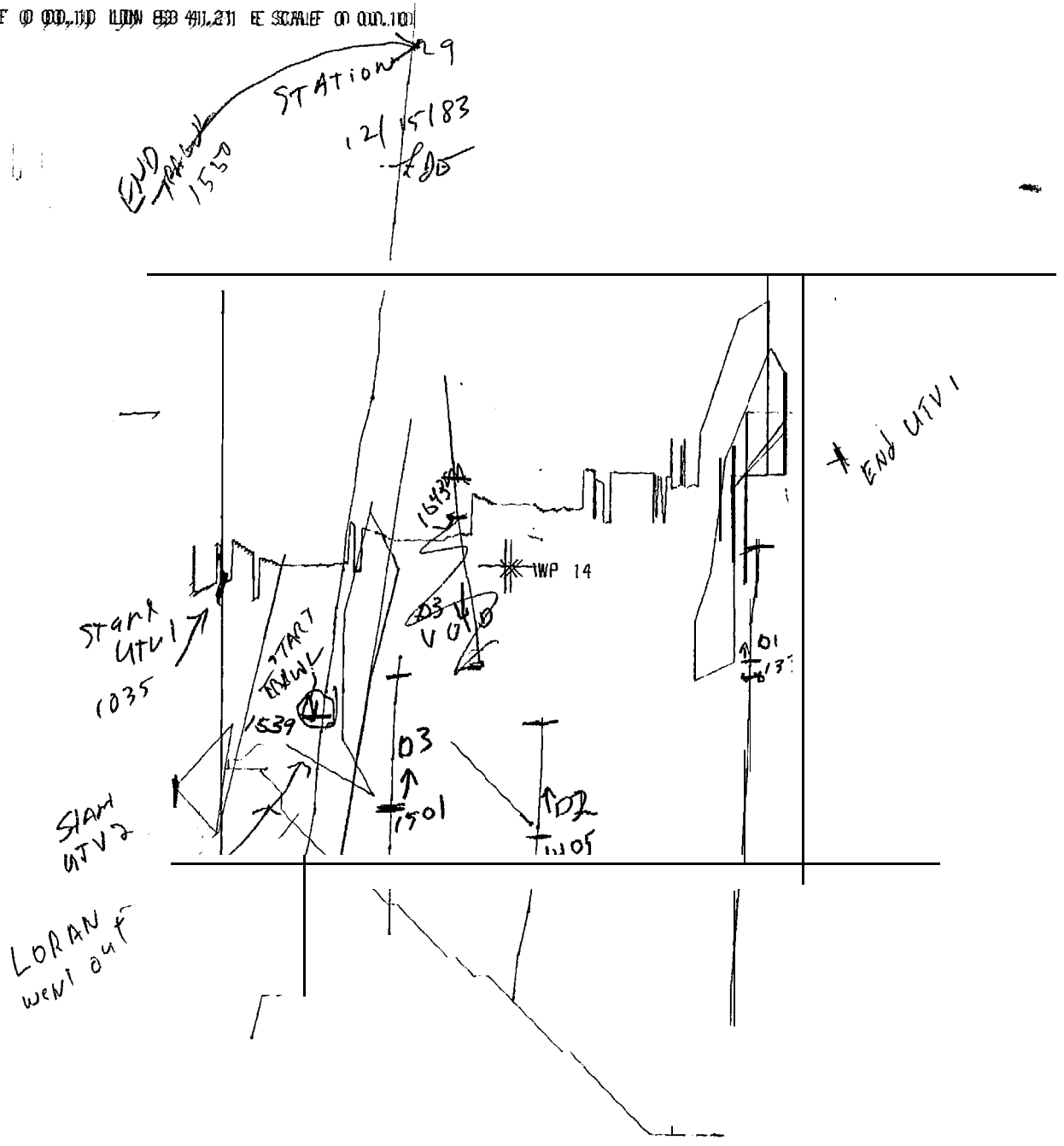
NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX * BEGIN	NAVIGATION FIX * END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
1	Hydrography	CSTD	1052	1054	1105	1106	44310.07 13677.99	44309.81 13678.96		
2	Surf. T°C	Nishin w/ DSRT	–	1239	1244	–	44308.20 13678.08	44308.03 13678.06		
3a	Epifauna	UTV/BSP Track #1	1031	1040	1130	1137	44311.06 13677.78	44309.00 13678.55		
3b	Epifauna	UTV/BSP Track #2	1211	1217	1311	1314	44310.10 13677.78	44305.75 13678.11		
3c	Epifauna	UTV/BSP Track #3								
4	Sediments	Smith-McIntyre	1110	–	–	1129	44310.07 13679.39	44308.71 13679.72		
5a	Epifauna	60cm. Δ Dredge #1 (70) †	1326	1332	1334	1338	44308.46 13679.19	44308.70 13679.36		
5b	Epifauna	60cm. Δ Dredge #2 (72)	1400	1405	1407	1411	44309.26 13678.25	44309.50 13678.36		
5c	Epifauna	60cm. Δ Dredge #3 (72)	~~1439~~	~~1443~~	1445	1449	44310.13 13678.54	44309.57 13678.32		
5d	Epifauna	60cm. Δ Dredge #3 (75)	1455	1500	1502	1506	44310.07 13677.81	44310.25 13678.08		
6	Epifauna	25 ft. Otter Trawl	1529	1539	1549	1600	44310.54 13677.91	44311.57 13679.04		

* LORAN unstable, fixes ± 20 @ extremes. † 70 turns on winch to fish bottom

LAT 24 47.499 N SCALE 0 000.100 LON 550 41.211 E SCALE 0 000.100



LAT 24 47.499 N SCALE 0 000.110 LON 83 41.211 E SCALE 0 000.100



STATION INFORMATION SHEET FOR STATION NO. 36

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

CRUISE NO: I DATE: 15 Dec 83 / 16 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

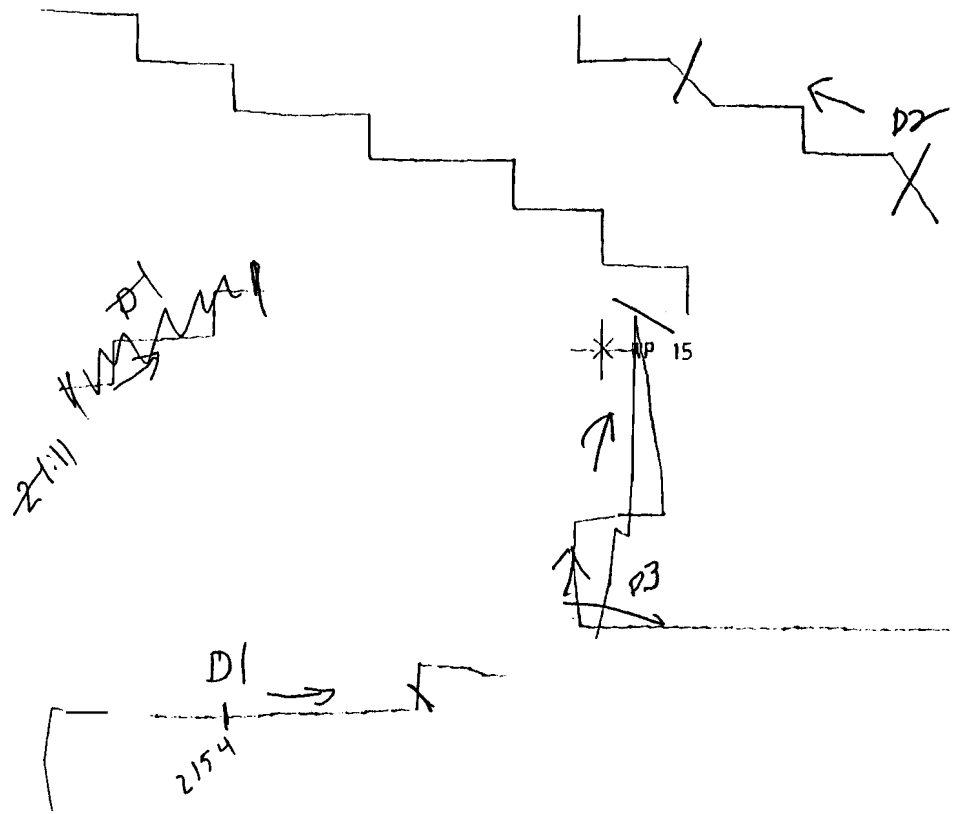
ARR. TIME: 2025 DEP. TIME: 0118 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
	*	(156 turns)					44490.24	44489.53		
1a	~~Epifauna~~	~~60cm. Δ Dredge #1~~	~~2101~~	~~2112~~	~~2114~~	~~2125~~	13681.25	13681.80		
1a	Epifauna	(210 turns) 60cm. Δ Dredge #1	2138	2154	2156	2212	44488.23 / 13681.24	44487.65 / 13681.53		
1b	Epifauna	60cm Δ Dredge #2	2222	2236	2238	2254	44491.66 / 13681.56	44493.27 / 13681.07		
1c	Epifauna	60cm. Δ Dredge #3	2319	2334	2336	2350	44486.60 / 13682.08	44486.62 / 13682.17		
2	Hydrography	CSTD	0010	0011	0032	0033	44487.46 / 13681.72	44488.42 / 13680.73		
3	Surf. & Bottom CSTD Cal & Supp	Niskin w/DSRT	—	0040	0101 ~~0045~~	—	44489.54 / 13679.75	44491.58 / 13677.83		
4	Sediments	Smith-McIntyre	0110	—	—	0114	44492.60 / 13676.66	44492.72 / 13676.47		

T

* came up empty, not on bottom + overshot 2 min. mark, went for 3 min. tow

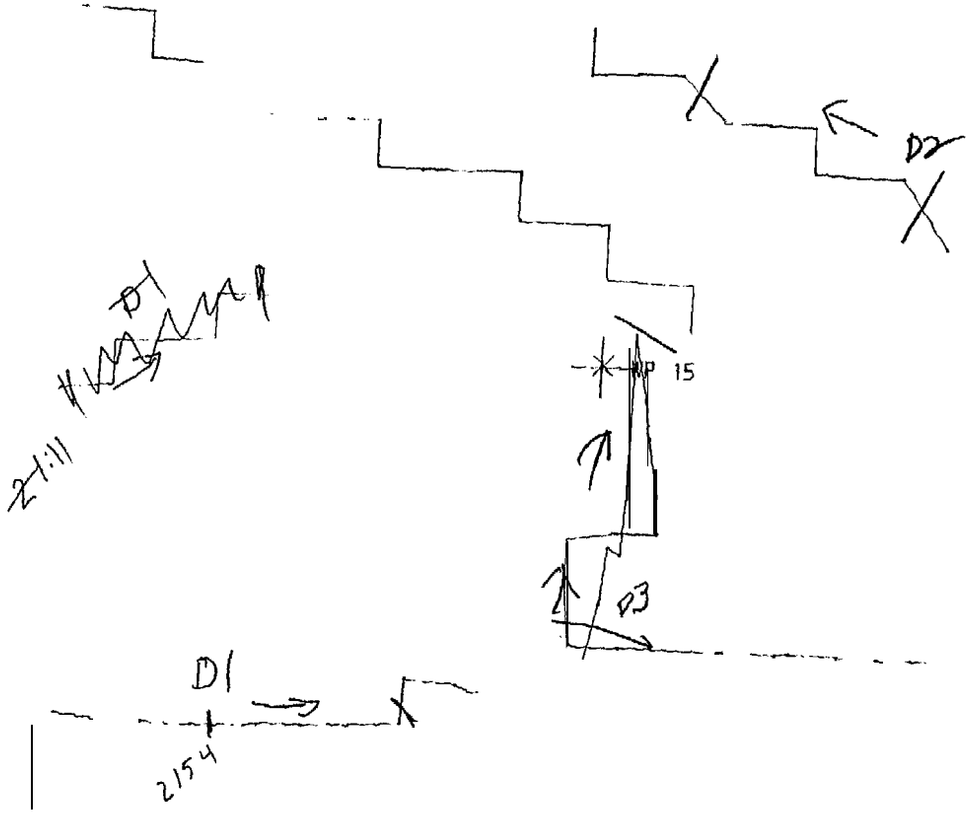
STATION 36
12/15/83 RJD



LAT 2' 16.86 N SCALE 0 00.10 LON 43 57.39 E SCAL 0 :0. 0

STATION 3,6

12/15/83 R.J.D.



STATION INFORMATION SHEET FOR STATION NO. 23

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

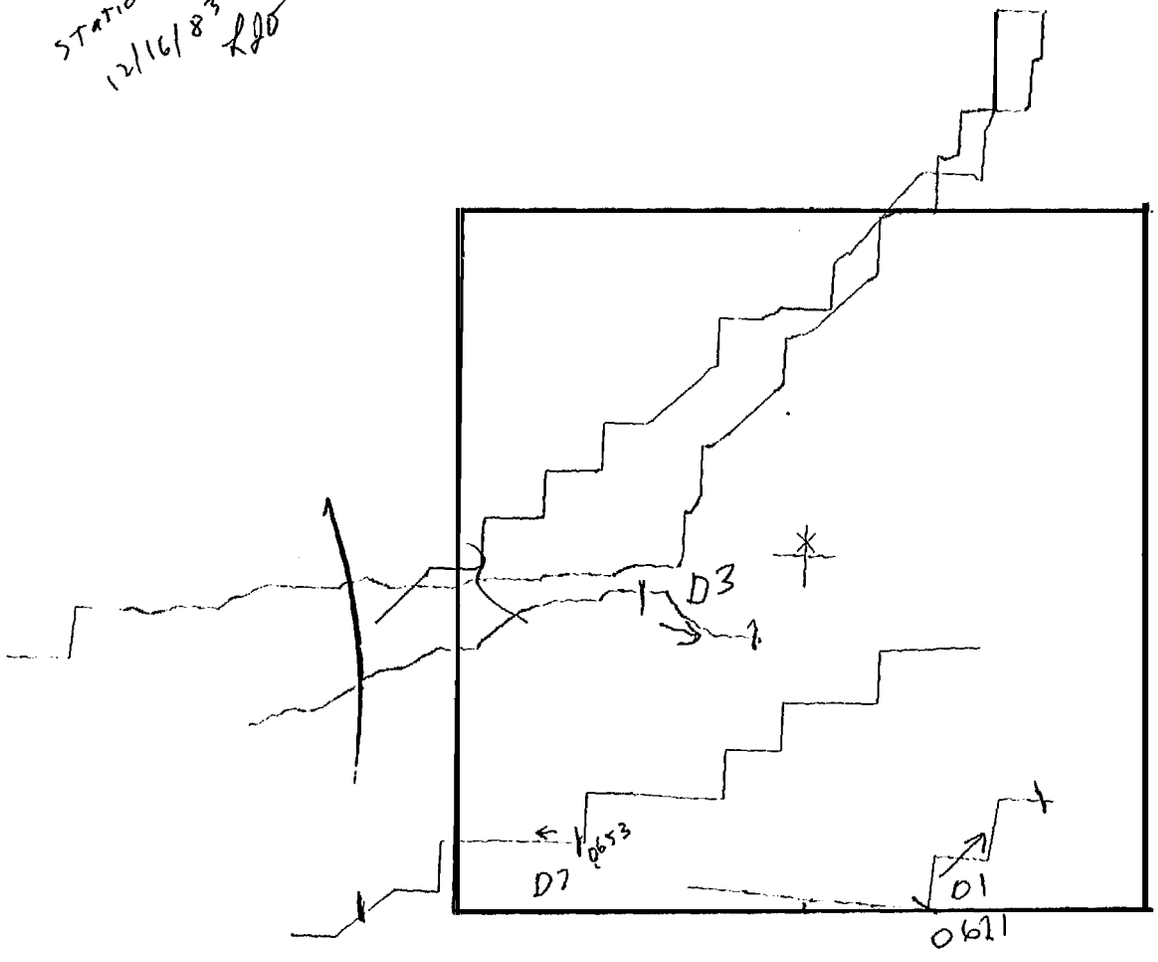
CRUISE NO: E DATE: 16 Dec 83 PLATFORM: R/V SUNCOASTER (FIO)

ARR. TIME: 0605 DEP. TIME: 0858 NAVIGATION: LORAN C

NO.	TASK	EQUIPMENT	TIME IN	TIME BEGIN	TIME END	TIME OUT	NAVIGATION FIX BEGIN	NAVIGATION FIX END	POSITION (LAT/LON) BEGIN	POSITION (LAT/LON) END
		Preserved all visible live animals + random collection					44367.32	44367.06		
1a	Epifauna *	60cm Δ Dredge #1	0616	0622	0624	0630	13740.87	13741.06		
	+						44369.71	44370.50		
1b	Epifauna	60 cm Δ Dredge #2	0647	0653	0655	0702	13739.76	13739.14		
							44370.88	44370.50		
1b	Epifauna	60cm Δ Dredge #2	0720	0728	0730	0736	13739.91	13740.05		
							44369.70	44368.76		
1c	Epifauna	60cm Δ Dredge #3	0757	0805	0807	0813	13740.49	13740.69		
							44368.37	44368.41		
2	Hydrography	CSTD	0833	0835	0846	0846	13743.63	13743.43		
							—	44368.73		
3	Surf. T°C	Niskin w/ DSRT	—	—	0855	—		13743.13		

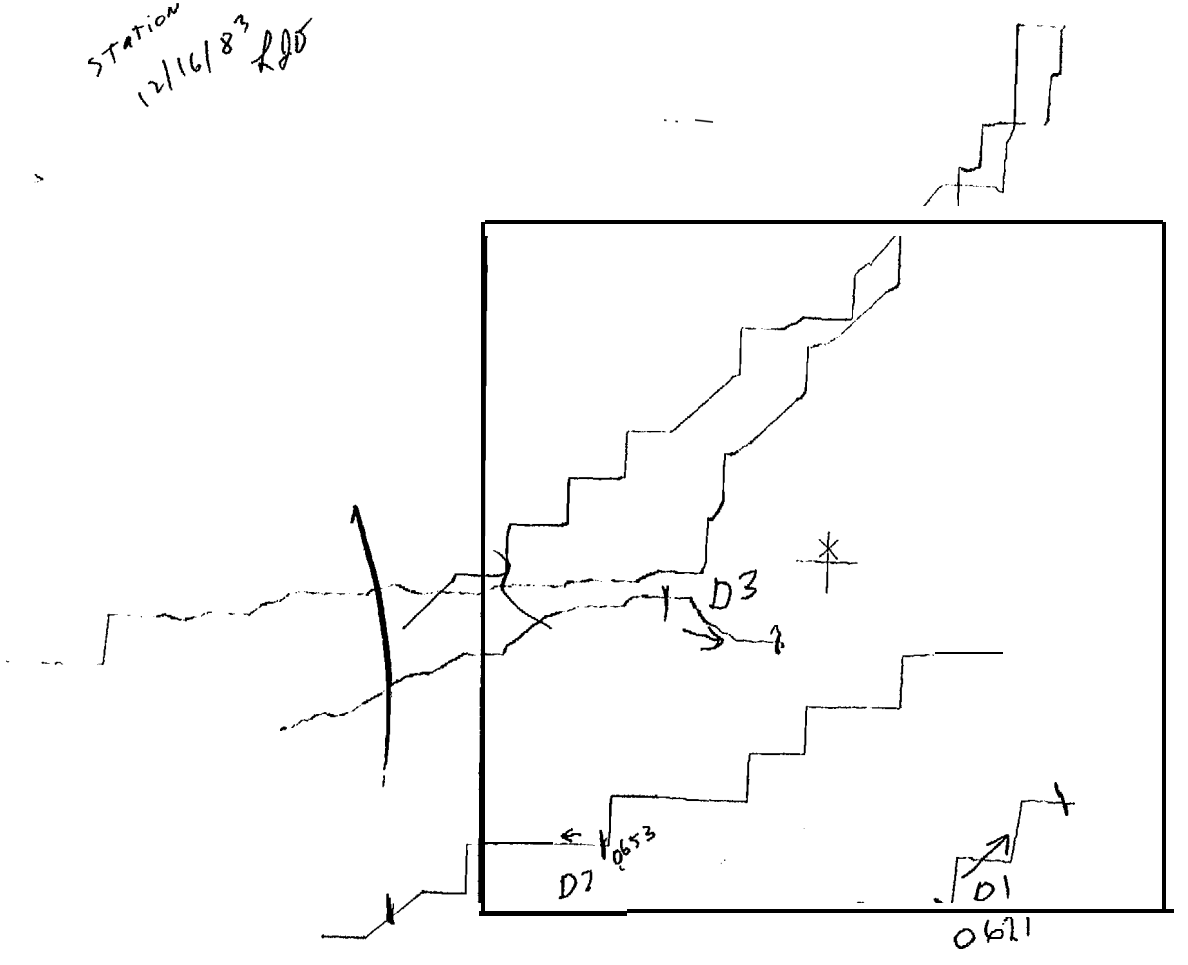
Preserved all visible live animals + random sample of dredge contents
Not enough wire out for tow speed (following seas)

STATION 23
12/16/83 RJD



LAT 25 16.86 N SCALE 0 00. LON 83 37.81 E SCALE 0 00.10

STATION 23
12/16/83 RJD



SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 43

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

CRUISE NO.: I DATE: 6 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? ES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	DATE	RECEIVED INIT.	DATE
2	Sediments	Rep. #1 & 2			✓	N/A	ESE	[illegible]	6 Dec 83	DFM	12-20-83
3	Infauna	Rep. #1 - 10	✓			EtOH & Formalin	ESE	[illegible]	6 Dec 83	GT	12-17-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 44

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

CRUISE NO.: 1 DATE: 6 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED ES	PRESERVED NO	PRESERVED NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
1	Epifauna (Video Tape)	LGL #1 & #2			✓	N/A	LGL	[illegible]	6 Dec 83		
4	Sediments	Rep #1 & #2			✓	N/A	ESE	[illegible]	6 Dec 83	DFM	12-20-8
5	Δ Dredge (Epifauna)	Rep. #s 1, 2 & 3	✓			$MgCl_2$, Form.	LGL	[illegible]	6 Dec 83		
6	Otter Trawl (Epifauna)	Rep. #1	✓			"	LGL	[illegible]	6 Dec 83		

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 45

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

CRUISE NO.: I DATE: 7 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED ES	PRESERVED NO	PRESERVED NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
2	Epifauna	LGL Tape # 283				N/A	[illegible]	[illegible]			
3	Sediments	Reps. # 1 & 2			✓	N/A	ESE	[illegible]		DFM	12-20-83
5	Epifauna (Dredge)	Reps. # 1, 2, C 3	✓			$MgCl_2$ & Formalin	[illegible]	[illegible]			
6	Epifauna (Trawl)	# ,	✓			Formalin	[illegible]	[illegible]			

NOTE
ALL GSL SIGNATURES FOR THIS CRUISE
COLLECTED AT
DOCKWHILE ONLY 1/3 AWAKE!

SAMPLE & RECORD INFORMATION HEET FOR STATION NO. 46

PROJECT TITLE: SW OR DA OCS BEN H C S UD PROJECT NO.: 83 513 510 MMS

CRUISE NO. 7 DATE: D 8 PLATFORM: R/V SUNCOAS ER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
3	Sediments	Rep #1 & 2			✓	N/A	ESE	[illegible]	7Dec83	DFM	12-20-83
4	Infauna	Rep #s 1-10	✓			Ethanol Formaline	ESE	[illegible]	7Dec83	GT	12-17-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 47

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

CRUISE NO.: I DATE: 8 Dec 83 PLATFORM: R/V SUNCOASTER PAGE _ OF ___

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED ES	PRESERVED NO	PRESERVED NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
3	Epifauna (Trawl)	#1	✓			Formalin	LGL				
4	Epifauna (Dredge)	Rep. #'s 2, 3, 4	✓			Mg Cl and Formalin	LGL				
5	Epifauna (UTV/BSP)	Tape. # 4 & 5			✓	N/A	LGL				
6	Sediments (Grab)	Rep. #'s 1 & 2			✓	N/A	ESE		8 Dec 83	DFM	12-20-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 48

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

CRUISE NO.: i DATE: 8 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED ES	PRESERVED NO	PRESERVED NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
3	Sediments	Rep. #'s 1 & 2			✓	N/A	ESE	MJ	8 Dec 83	DFM	12-20-83
4	Infauna	Rep. #'s 1-10	✓			EtOH & Formalin	ESE	MJ	8 Dec 83	GT	12-14-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 49

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

CRUISE NO.: I DATE: 9 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	DATE	RECEIVED INIT.	DATE
3	Sediments (Diver Corer)	Rep.#'s 1 & 2			✓	N/A	ESE	~~MS~~	9Dec83	DFM	12-20-83
4	Infauna (Diver Corer)	Rep.#'s 1-10	✓			EtOH & Formalin	ESE	~~MS~~	9Dec83	GT	12-14-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 50

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

CRUISE NO.: I DATE: 9 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO	TASK	SAMPLE OR RECORD NO	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT	COLLECTED DATE	RECEIVED INIT	RECEIVED DATE
3	Sediments (Diver Corer)	Rep. #'s 1 & 2			✓	N/A	ESE	MSD	9Dec83	DFM	12-20-83
4	Infauna (Diver Corer)	Rep #'s 1-10	✓			EtOH & Formalin	ESE	MSD	9Dec83	GT	12-17-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 51

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

CRUISE NO.: I DATE: 9 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	DATE	RECEIVED INIT.	DATE
1	Epifauna (UTV/BSP)	Tape #'s 5, 6, 7			✓	N/A	LGL	[illegible]			
4	Sediments	Rep. #'s 1 & 2			✓	N/A	ESE	[illegible]	9 Dec 83	DFM	12-20-83
5	Epifauna (Trawl)	#1	✓			$MgCl_2$ & Formalin	LGL	[illegible]			
6	Epifauna (Dredge)	Rep. #'s 1, 2, 3	✓			$MgCl_2$ & Formalin	LGL	[illegible]			

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 52

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

CRUISE NO.: 1 DATE: 10 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	DATE	RECEIVED INIT.	DATE
2	Calib. Chk. of CSTD	S‰ #1 & 2, ~~#3~~			✓	N/A	ESE	MB	10 Dec 83		
2	"	DO #1 & 2	✓			Winkler	ESE	MB	10 Dec 83		
4	Epifauna (UTV/BSP)	Tape #'s 7 & 8			✓	N/A	LGL	[illegible]			
5	Epifauna (Trawl)	Discarded	no	fish			N/A	→			
6	Epifauna (Dredge)	Rep. #1, 2, 3	✓			$MgCl_2$ & Formalin	LGL	[illegible]			
7		Rep. #'s 1 & 2			✓	N/A	ESE	MB	10 Dec 83	DFM	12-20-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 19

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

CRUISE NO.: I DATE: 11 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO	TASK	SAMPLE OR RECORD NO.	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
3	Epifauna (Dredge)	Rep #'s 1, 2, 3	✓			$MgCl_2$ & Formalin	LGL	[illegible]			
4	Epifauna (UTV/BSP)	Tape #'s 9 & 10			✓	N/A	LGL	[illegible]			
5	Sediments (Grab)	Rep #'s 1 & 2			✓	N/A	ESE	MDJ ~~11 Dec 83~~	11 Dec 83	DFM	12-20-8
6	Epifauna (Trawl)	# 1	✓			$MgCl_2$ & Formalin	LGL	[illegible]			

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 29

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

CRUISE NO.: I DATE: 15 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO	TASK	SAMPLE OR RECORD NO.	PRESERVED ES	PRESERVED NO	PRESERVED NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	COLLECTED DATE	RECEIVED INIT.	RECEIVED DATE
3	Epifauna (UTV)	Tapes #'s 10,11			✓	N/A	LGL	[illegible]			
4	Sediments (Grab)	Rep. #1 only*				N/A	ESE	[illegible]	15Dec83	DPM	12-20-83
5	Epifauna (Dredge)	Rep. #'s 1,2,3	✓			$MgCl_2$ & Formalin	LGL ~~ESE~~	[illegible]			
6	Epifauna (Trawl)	#1 †	✓			$MgCl_2$ & Formalin	LGL	[illegible]			

* 3 Grabs were unable to penetrate bottom, only a small sample of smaller sediments was kept.
† Trawl came up w/ hole in codend & liner, probably lost some of catch.

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 36

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

CRUISE NO.: I DATE: 15 Dec 83 / 16 Dec 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? YES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	DATE	RECEIVED INIT.	DATE
1	Epifauna (Dredge)	Rep. #'s 1, 2, 3	✓			$MgCl_2$ & Formalin	LGL	[illegible]			
3	Hydrography (Niskin)	5‰ & DO, 9.5m	✓			DO-Winkler	ESE	[illegible]	16 Dec 83		
3	" "	5‰ & DO, 125m	✓			DO-Winkler	ESE	[illegible]	16 Dec 83		
4	Sediments (Grab)	Rep. #'s 1, 2			✓	N/A	ESE	[illegible]	16 Dec 83	DFM	12-20-83

SAMPLE & RECORD INFORMATION SHEET FOR STATION NO. 23

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

CRUISE NO.: I DATE: 16 Dec. 83 PLATFORM: R/V SUNCOASTER PAGE 1 OF 1

NO.	TASK	SAMPLE OR RECORD NO.	PRESERVED? ES	NO	NA	PRESERV. METHOD	CUSTODY	COLLECTED INIT.	DATE	RECEIVED INIT.	DATE
1	Epifauna (Dredge)	Rep. #'s 1, 2, 3	✓			MgCl2 & Formalin	LGL	[illegible]			

HYDROGRAPHY LOGS

ESE Hydrography Field Data Log

E 1
OF

PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. ID. (19)	R C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (25–74, 2 col. per fraction)	SPEC. SAMPLE (75–80)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
43	6 Dec 83	1115	1320	LORAN C			NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	14	M	—	M	NA	NA	NA	NA	NA	NA	/	M	4	SC	22.5 (NNE)	DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
	0	2.2	M/S	225	DM	25.0	C	27.0	C	—	MB	PRECIP- 0 MM Partly cloudy	Y or (N)

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	(41–50)	SN (51–60)	(61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SALI (25–32) PPT	TEMP (33–40) DEGC	DO (41–48) MG/L	PH (49–56) SU	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	AUX TEMP (73–80) DEGC
1155		14.0	50.70	34.88	22.76	10.99		89.0		
		6.4	50.92	34.89	22.97	11.13		90.6		CSTD
		0.8	51.24	34.94	23.22	11.22		93.4		
		0.5	52.8		23.3	8.8	7.8		Hydrolab	
		7.0	52.8		23.0	8.0	7.8			
		9.0	52.7		22.9	7.9	7.9			
1225		11.0				7.0			22.86	25.0
1243		1.0				7.0			23.40	25.9

OBSVR: M. Tomlinson DATE: 7 Dec 83 FTL: [illegible] DATE: 8 Dec 83 QC: DATE:
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PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER	TIME	DATE(mo/dy/yr)	STA. ID.	B	C	CF	CL	D	F	H	HG	M	N	NF	O	P	R	RP	RS	S	T	UP	V	W	X	Z	SPEC. SAMPLE
				col. per fraction																							

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
44	6 Dec 83	1404 ~~1715~~	2220 ~~1725~~	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	6 Dec 83	M	—	M	NA	NA	NA	NA	NA	NA	~~3~~ 1	M	4	SC	045 ~~NE~~	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL. COM?
	~~4~~	~~2.7~~ 2.6	M/S	~~95~~ 50	DM	23.9	C	25.5	C	30.29	MB	PRECIP- 0 MM Partly cloudy	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME	SID	DEPTH	COND	SALI	TEMP	DO	PH	TRAN	DSRT TEMP	AUX TEMP
LMT	*	M	MMHO/CM	PPT	DEGC	MG/L	SU	PERCENT	DEGC	DEGC
1715		10.0	51.34	35.02	23.21	12.75	—	85.4	—	—
↓		5.0	51.32	34.98	23.25	12.62	—	87.0	—	—
		1.0	51.26	34.76	23.55	12.96	—	86.6	23.60	24.0

OBSVR: M. Tomlinson DATE: 6 Dec 83 FTL: MJ DATE: 8 Dec 83 QC: DATE: PAGE 1

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PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER	TIME	DATE(mo/dy/yr)	STA. ID.	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z	SPEC. SAMPLE
				2 col. per fraction	

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMY	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
~~43~~ 45	7Dec83	0720	1440	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	14	M	5.0	M	NA	NA	NA	NA	NA	NA	1.6	M	4	SC	910	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL. COM?
	50	7.2	M/S	310	DM	17.6	C	21.0	C	30.51	MB	PRECIP- 0 MM sunny, Partly cloudy	Y or (N)

PAR	SM	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT	SID *	DEPTH M	COND MMHO/CM	SALI PPT	TEMP DEGC	DO MG/L	PH SU	TRAN PERCENT	DSRT TEMP DEGC	
0857		13.4	52.69	35.66	23.68	~~12.9~~ 11.08	–	93.2		
		6.6	52.69	35.65	23.68	11.03		92.9	Record down & up	
		1.3	52.66	35.64	23.67	11.05		92.4	23.56	20.8

OBSVR: M Jamieson DATE: 7Dec83 FTL: MJ DATE: 8Dec83 QC: DATE: PAGE 1

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PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA 'OCS	VERT

SAMPLE NUMBER	TIME	DATE(mo/dy/yr)	STA. ID.	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (col. per fraction)	SPEC. SAMPLE

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
46	7 Dec 83	1446		LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	16	M	5.2	M	NA	NA	NA	NA	NA	NA	1.3	M	4	SC	045	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL.COM?
	80	5.4	M/S	045	DM	16.0	C	21.0	C	30.55	MB	PRECIP- 0 MM Mostly Overcast	Y or (N)

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT	SID *	DEPTH M	COND MMHO/CM	SALI PPT	TEMP DEGC	DO MG/L	PH SU	TRAN PERCENT	DSRT TEMP DEGC	AUX TEMP DEG C
1713		15.6	52.50	35.61	23.54	11.71	—	90.3		Rec. left on
		8.0	52.53	35.62	23.56	11.52	—	90.2		during ascent
		1.5	52.53	35.62	23.54	11.51	—	89.5	23.46	18.6

OBSVR: M. Tomlinson DATE: 7 Dec 83 FT L: MM DATE: 8 Dec 83 QC: DATE: PAGE 1

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PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER	TIME	DATE (mo/dy/yr)	STA. ID.	B	C	CF	CL	D	E	H	HG	M	N	NF	O	P	R	RP	RS	S	T	UP	V	W	X	Z	I	SPEC. SAMPLE
				(2 col. per fraction)																								

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
47	8Dec83	0702	1505	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	18.0	M	4.5	M	NA	NA	NA	NA	NA	NA	1.3	M	5	SC	000	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL.COM?
	70	6.7	M/S	045	DM	17.0	C	19.4	C	30.61	MB	PRECIP- 0 MM Partly Sunny	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT	SID *	DEPTH M	COND MMHO/CM	SALI PPT	TEMP DEGC	DO MG/L	PH SU	TRAN PERCENT	DSRT TEMP DEGC	AUX TEMP DEG C
0720		17.3	52.71	35.68	23.65	11.96	—	92.2		
		15.0	52.74	35.70	23.64	11.95	—	91.8		
		13.3	52.74	35.70	23.64	11.93	—	91.0		
		11.0	52.74	35.71	23.64	11.94	—	90.5		
		8.3	52.74	35.71	23.64	11.92	—	90.4		
		5.8	52.75	35.72	23.64	11.93	—	90.6		
		3.3	52.74	35.71	23.64	11.93	—	90.1		
0729		1.2	52.76	35.72	23.64	11.93	—	90.3	23.66	22.5

OBSVR: M. Sanborn DATE: 8Dec83 FT L: MID DATE: 8Dec83 QC: DATE: PAGE 1

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PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW, FLORIDA "OCS	VERT

SAMPLE NUMBER	TIME	DATE(mo/dy/yr)	STA. ID.	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (2 col. per fraction)	SPEC. SAMPLE

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
48	8Dec 83	1538	1700	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	16.0	M	5.0	M	NA	NA	NA	NA	NA	NA	1.0	M	3	SC	315	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL. COM?
	0	4.0	M/S	315	DM	19.9	C	23.5	C	30.44	MB	PRECIP- 0 MM clear	Y or (N)

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT	SID *	DEPTH M	COND MMHO/CM	SALI PPT	TEMP DEGC	DO MG/L	PH SU	TRAN PERCENT	DSRT TEMP DEGC	AUX TEMP DEG C
1611		15.2	52.29	35.58	23.40	11.50	—	87.6		
		13.6	52.30	35.58	23.39	11.44	—	90.0		
		11.3	52.30	35.59	23.39	11.40	—	90.2		
		9.5	52.30	35.59	23.39	11.42	—	90.2		
		7.2	52.30	35.59	23.38	11.44	—	89.8		
		4.5	52.30	35.59	23.38	11.46	—	90.4		
1619		2.3	52.29	35.59	23.38	11.47	—	90.2	23.36	22.1

OBSVR: M Tomlinson DATE: 8 Dec 83 FTL: MJ DATE: 8 Dec 83 QC: DATE:

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ESE Hydrography Field Data Log

PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER	TIME	DATE (mo/dy/yr)	STA. ID.	B	C	CF	CL	D	E	H	HG	M	N	NE	O	P	R	RP	RS	S	T	UP	V	W	X	Z			SPEC. SAMPLE
				(2 col. per fraction)																									

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
49	9 Dec 83	0644	0805	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	9.0	M	3.8	M	NA	NA	NA	NA	NA	NA	1.0	M	3	SC	075	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL.COM?
	100	4.5	M/S	075	DM	19.0	C	22.1	C	30.60"	MB	PRECIP- 0 MM overcast	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME	SID	DEPTH	COND	SALI	TEMP	DO	PH	TRAN	DSRT TEMP	AUX TEMP
L M T	*	M	MMHO/CM	PPT	DEGC	MG/L	SU	PERCENT	DEGC	DEGC
0730		8.6	51.34	35.20	22.95	11.27		84.5		
		6.6	51.34	35.20	22.95	11.35		84.5		
		4.3	51.34	35.20	22.95	11.31		85.0		
2736		1.8	51.34	35.20	22.93	11.31		84.1	22.94	21.5

OBSVR: M Jonkinson DATE: 9 Dec 83 FT L: DATE: QC: DATE: PAGE 1

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA 'OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. ID. (19–24)	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z I (25–4 2 col. per fraction)	SPEC. SAMPLE (75)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP. TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
50	9Dec82	0945	1056	LORAN C			NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	13.5	M	6.0	M	NA	NA	NA	NA	NA	NA	1.3	M	3	SC	070	DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL.COM? (78–80)
	70	4.5	M/S	070°	DM	20.8	C	23.9	C	30.59	MB	PRECIP- 0 MM Overcast	Y or (N)

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SALI (25–32) PPT	TEMP (33–40) DEGC	DO (41–46) MG/L	PH (49–56) SU	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	AUX TEMP (73–80) DEG C
1015		12.6	52.18	3>7 43	23.46	11.39	-	88.3		
		10.2	52.17	3 5.44	23.46	11.43	—	88.4		
		7.5	52.18	3 5.44	23, 46	11 41		88.5		
		5.3	52.19	3 5.44	23.46	11.51		88.5		
1023		2.3	52.18	35.44	23.46	11.54		89.9	23.44	22.5

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA 'OCS	VERT

NUM

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. ID. (19–24)	B	C	CF	CL	D	E	H	HG	M	N	NF	O	P	R	RP	RS	S	T	UP	V	W	X	Z			SPEC. SAMPLE (75–80)
				(25–74) (2 col. per fraction)																									

LAB

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
51	9 Dec 83	1224	1930	LORAN C			NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	13.0	M	6.0	M	NA	NA	NA	NA	NA	NA	1.0	M	4	SC	090	DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
	20	6.2	M/S	090	DM	22.2	C	24.6	C	30.47	MB	PRECIP- 0 MM Partly cloudy	Y or N

GEN STATION INFO

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

CAL

TIME (6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SALI (25–32) PPT	TEMP (33–40) DEGC	DO (41–48) MG/L	PH (49–56) SU	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	AUX TEMP (73–80) DEGC
1652		12.5	52.44	35.50	23.64	11.57	—	87.0		
		10.4	52.44	35.50	23.64	11.53	—	87.1		
		7.7	52.43	35.50	23.64	11.59	—	86.3		
		5.1	52.44	35.50	23.64	11.59	—	86.8		
		2.6	52.44	35.50	23.64	11.58	—	87.1		
1659		0.8	52.42	35.50	23.64	11.58	—	86.4	23.61	23.5

DATA

OBSVR: M. Sanborn	DATE: 9 Dec 83	FTL:	DATE:	QC:	DATE:	PAGE /
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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. ID. (19–24)	B C CF CL D E H HG M N NF O P R RP RS S T UP V W X Z (25–74, 2 col. per fraction)	SPEC. SAMPLE (75)

STATION (1–6)	DATE (7–13)	ARR. TIME (14–17)	DEP. TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO. or RP (52–59)	BASELINE LENGTH (60–80)
52	10 Dec 83	9 Dec 83 2005		LORAN C			NA	NA

DESCRIPTOR (1–11)	STA. DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	11.0 †*	M	5.0	M	NA	NA	NA	NA	NA	NA	0.6	M	3	SC	110	DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
	20	5.4	M/S	110	DM	22.6	C	24.2	C	30.57	MB	PRECIP- 0 MM Sunny * CALIB. SHK.	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SALI (25–32) PPT	TEMP (33–40) DEGC	DO (41–48) MG/L	PH (49–56) SU	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	AUX TEMP (73–80) DEG C
0707		10.4	51.93	35.27 *	23.44	11.03 *	—	87.0	23.44	23.5
		8.5	51.93	35.27	23.43	11.12	—	86.7		
		7.1	51.93	35.28	23.43	11.11	—	86.7		
		5.4	51.94	35.28	23.43	11.10	—	86.5		
		2.8	51.93	35.28	23.43	11.16	—	86.6		
0715		0.7	51.94	35.29 *	23.43	11.15 *	—	86.7	23.44	23.4
Winkler		10.5				6.8				
		0.75				6.9				

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† add 2m to Z to account for transducer depth.

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE mo/dy/yr (11–18)	STA. ID. (19–24)	B	C	CF	CL	D	E	H	HG	M	N	NF	O	P	R	RP	RS	S	T	UP	V	W	X	Z			SPEC. SAMPLE (75–80)
INTERMEDIATE				(2 col. per fraction) (25–74)																									

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
52	11Dec82			LORAN C			NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	13.0	M		M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6)	SID (7–9)	DEPTH (10–16)	COND (17–24)	SAL I (25–32)	TEMP (33–40)	DO (41–46)	PH (49–56)	TRAN (57–64)	DSRT TEMP (65–72)	(73–80)
L M T	*	M	MMHO/CM	PPT	DEGC	MG/L	SU	PERCENT	DEGC	
0600		17	51.95	35.30	23.43	11.04	"	84.6		

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. I.D. (19–24)	B C CE CL D E H HG M N NF O P R RP RS S T UP V W X Z (25–42, col. per fraction)	SPEC. SAMPLE (75–80)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
I-1	11Dec83	0701	0705	LORAN C	43693.28	13998.09	NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	15.0	M		M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL.COM? (78–80)
			M/S		DM		C		C		MB	PRECIP- MM	Y or (N)

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6)	SID (7–9)	DEPTH (10–16)	COND (17–24)	SAL I (25–32)	TEMP (33–40)	DO (41–46)	PH (49–56)	TRAN (57–64)	DSRT TEMP (65–72)	(73–80)
LMT	*	M	MMHO/CM	PPT	DEGC	MG/L	Su	PERCENT	DEGC	
0703		0.8	52.19	35.46	23.46	11.16		83.2		

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (25–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE(mo/dy/yr) (11–18)	STA. I.D. (19–24)	B C CE CL D E H HG M N NF O P R RP RS S T UP V W X Z (25–74, 2 col. per fraction)	SPEC. SAMPLE (75–80)
INTERMEDIATE					

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
I-2	11Dec83	0745	0748	LORAN C	43745.85	13991.88	NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE		M	18.0	M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL.COM? (78–80)
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SAL I (25–32) PPT	TEMP (33–40) DEGC	DO (41–46) MG/L	PH (49–56) SU	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	(73–80)
0740		0.8	52-56	35.65	23.56	11.03		84.5		

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–0)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. I.D. (19–24)	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (25–4, 2 col. per fraction)	SPEC. SAMPLE (75)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
I-3	11Dec83	0829	0832	LORAN C	43800.21	13964.22	NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	23.0	M	·	M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL.COM? (78–80)
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SALI (25–32) PPT	TEMP (22–40) DEGC	DO (41–46) MG/L	PH (49–56) SU	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	(73–80)
0730		1.0	S-3.3?	36.05 ~~36.20~~	23.84	11.02	—	85.0		

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA 'OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE [mo/dy/yr] (11–18)	STA. ID. (19–24)	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (25–74) [2 col. per fraction]	SPEC. SAMPLE (75–80)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
19	11Dec83	0845		LORAN C			NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	24.0	M	8.5	M	NA	NA	NA	NA	NA	NA	0.5	M	3	SC	140°	DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL.COM? (78–80)
	0	3.1	M/S	140	DM	23.9	C	26.0	C	30.44"	MB	PRECIP- 0 MM Sunny	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT (1–6)	SID * (7–9)	DEPTH M (10–16)	COND MMHO/CM (17–24)	SALI PPT (25–32)	TEMP DEGC (33–40)	DO MG/L (41–46)	PH SU (49–56)	TRAN PERCENT (57–64)	DSRT TEMP DEGC (65–72)	(73–80)
0855		22.5	* — ?	36.25	23.96	11.13	—	84.6		
		18.4	—	36.25	23.96	11.15	—	85.2		
		15.2	—	36.23	23.95	11.15	—	85.5		
		11.1	—	36.22	23.95	11.18	—	84.1		
		7.1	—	36.22	23.94	11.18	—	84.7		
		3.9	—	36.21	23.94	11.20	—	85.1		
0904		1.0	—	36.21	23.94	11.21	—	84.1		

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PROJECT NUMBER	PROJECT NAME/CLIE	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER	TIME	DATE(mo/dy/yr)	STA. I.D.	B	C	CE	CL	D	F	H	HG	M	N	NF	O	P	R	RP	RS	S	T	UP	V	W	X	Z	1	SPEC. SAMPLE
				(2 col. per fraction)																								

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
I-4	11 Dec 83	1722	1725	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	28.0	M		M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL.COM?
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME	SID	DEPTH	COND	SALI	TEMP	DO	PH	TRAN	DSRT TEMP	
LMT	#	M	MMHO/CM	PPT	DEGC	MG/L	Su	PERCENT	DEGC	
1722		2	53.87	36.15	24.20	12.15	-	82.7		

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA "OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. ID. (19–24)	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z 1 (25–74, 2 col. per fraction)	SPEC. SAMPLE (75–80)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
I-5	11 Dec 83	1811	1814	LORAN C	43929.33	13924.32	NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	32	M		M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–60)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6)	SID (7–9)	DEPTH (10–16)	COND (17–24)	SAL I (25–32)	TEM P (33–40)	DO (41–46)	PH (49–56)	TRAN (57–64)	DSRT TEMP (65–72)	(73–80)
LMT	*	M	MMHO/CM	PPT	DEGC	MG/L	SU	PERCENT	DEGC	
18 1'z		1.1	54.30	36.26	24.44	12.02	—	83.2		

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE (mo/dy/yr) (11–18)	STA. NO. (19–24)	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (25–74, 2 col. per fraction)	SPEC. SAMPLE (75–80)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
I-6	11 Dec 83	1858	1904	LORAN C	413988.33	1390493	NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	370	M		M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6)	SID (7–9)	DEPTH (10–16)	COND (17–24)	SALI (25–32)	TEMP (33–40)	DO (41–48)	PH (49–56)	TRAN (57–64)	DSRT TEMP (65–72)	(73–80)
LMT	*	M	MMHO/CM	PPT	DEGC	MG/L	SU	PERCENT	DEGC	
1902		1.0	54.43	30.24	24.58	12.69	—	84.3		

OBSVR: M. Tomlinson DATE: 11 Dec 83 FT L: DATE: QC: DATE: PAGE

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ESE Hydrography Field Data Log

PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
,83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER	TIME	DATE (mo/dy/yr)	STA. ID.	B	C	CE	CL	D	F	H	HG	M	N	NF	O	P	R	RP	RS	S	T	UP	V	W	X	Z		SPEC. SAMPLE
				(2 col. per fraction)																								

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
T-7	11 Dec 83	1948	1955	LORAN C	4404 4.60	13883.00	NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	42	M		M	NA	NA	NA	NA	NA	NA		M		SC		DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL. COM?
			M/S		DM		C		C		MB	PRECIP- MM	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME	SID	DEPTH	COND	SALI	TEMP	DO	PH	TRAN	DSRT TEMP	
L M T	*	M	MMHO/CM	PPT	DEGC	MG/L	SU	PERCENT	DEGC	
1949		1.	54.43	36.12	24.75	13.67	—	85.1		

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	DATE:	FILENAME:		ACC NO:		OF

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OF

PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER	TIME	DATE (mo/dy/yr)	STA. ID.	B C CF CL D F H HG M N NF O P R RP RS S T U PL V W X Z	SPEC. SAMPLE
				(22 col. per fraction)	

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
29	15 Dec 83	1010		LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	60.0	M	9.0	M	NA	NA	NA	NA	NA	NA	2.0	M	5	SC	210	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL. COM?
	100	2.2	M/S	280	DM	22.6	C	24.0	C	30.50	MB	PRECIP- MM SOME RAIN, OVERCAST, SWELLS	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT	SID *	DEPTH M	COND MMHO/CM	SALI PPT	TEMP DEGC	DO MG/L	PH SU	TRAN PERCENT	DSRT TEMP DEGC	AUX TEMP DEGC
1057		58.0	53.99	36.40	23.93	10.62	—	81.9		
		48.0	54.94	36.21	25.09	11.00	—	82.5		
		37.5	55.08	36.21	25.22	11.07	—	82.5		
		27.0	55.09	36.21	25.22	11.12	—	82.9		
		18.0	55.09	36.21	25.22	11.16	—	83.8		
1105		6.2	55.07	36.20	25.23	—	—	83.9	25.10	24.2

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PROJECT NUMBER	PROJECT NAME/CLIENT	PROJ. DESCRIPTOR	DATA TYPE
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER	TIME	DATE(mo/dy/yr)	STA. ID.	B C CF CL D E H HG M N NF O P R RP RS S T up v w x z	SPEC. SAMPLE
				(2 col. per fraction)	

STATION	DATE	ARR.TIME	DEP.TIME	LOCATION METHOD	LAT-RNG1-A1-UTMV	LON-RNG2-A2-UTMH	BL NO.or RP	BASELINE LENGTH
36	16Dec83	t 2025	0118	LORAN C			NA	NA

DESCRIPTOR	STA.DEPTH	UNITS	SECCHI	UNITS	STAGE	UNITS	CURSPD	UNITS	CURDIR	UNITS	WV-HT	UNITS	WV-PER	UNITS	WV-DIR	UNITS	SHADE	BANK	SED
MARINE	~~6.5~~ 13.7	M	—	M	NA	NA	NA	NA	NA	NA	2.5	M	4	SC	340	DM	NA	NA	

WTHR	CLD	W-SPD	UNITS	W-DIR	UNITS	WET-T	UNITS	DRY-T	UNITS	PRESS.	UNITS	COMMENTS	ADDNL. COM?
	100	11.2	M/S	340	DM	19.5	C	21.2	C	30.15	MB	PRECIP- 0 MM overcast	Y or N

PAR	SN	PAR	SN	PAR	SN	PAR	SN
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME LMT	SID *	DEPTH M	COND MMHO/CM	SALI PPT	TEMP DEGC	DO MG/L	PH SU	TRAN PERCENT	DSRT TEMP DEGC	AUX TEMP DEG C
0015		90.0	49.39	36.48	19.57	9.65	—	83.2		
		80.0	50.36	36.42	20.46	9.57	—	84.3		
		70.0	51.77	36.48	21.76	9.97	—	83.8		
		60.0	54.55	36.16	24.31	11.20	—	83.2		
		49.0	54.51	36.20	24.70	11.30	—	83.1		
		39.0	54.50	36.20	24.70	11.55	—	83.1		
		29.8	54.40	36.16	24.64	11.48	—	83.2		
		19.0	54.40	36.16	24.64	11.47	—	82.5	24.60	22.3
0032		9.5*	54.39	36.16	24.64	11.47	—	82.4		
		125*							17.22	22.0

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*Indicates S‰ & DO sample t 15 Dec83

ESE Hydrography" Field Data Log

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PROJECT NUMBER (1–10)	PROJECT NAME/CLIENT (11–40)	PROJ. DESCRIPTOR (41–74)	DATA TYPE (75–80)
83-513-510	MINERALS MANAGEMENT SERVICE	SW FLORIDA OCS	VERT

SAMPLE NUMBER (1–6)	TIME (7–10)	DATE(mo/dy/yr) (11–18)	STA.I.D. (19–24)	B C CF CL D F H HG M N NF O P R RP RS S T UP V W X Z (25–4[illegible]) [2 col. per fraction]	SPEC. SAMPLE (75)

STATION (1–6)	DATE (7–13)	ARR.TIME (14–17)	DEP.TIME (18–21)	LOCATION METHOD (22–31)	LAT-RNG1-A1-UTMV (32–41)	LON-RNG2-A2-UTMH (42–51)	BL NO.or RP (52–59)	BASELINE LENGTH (60–80)
23	16Dec83	0605	0858	LORAN C			NA	NA

DESCRIPTOR (1–11)	STA.DEPTH (12–16)	UNITS (17–18)	SECCHI (19–22)	UNITS (23–24)	STAGE (25–29)	UNITS (30–31)	CURSPD (32–35)	UNITS (36–38)	CURDIR (39–41)	UNITS (42–43)	WV-HT (44–47)	UNITS (48–49)	WV-PER (50–53)	UNITS (54–55)	WV-DIR (56–58)	UNITS (59–60)	SHADE (61–64)	BANK (65–72)	SED (73–80)
MARINE	78.0	M	—	M	NA	NA	NA	NA	NA	NA	3.0	M	5	SC	040	DM	NA	NA	

WTHR (1–2)	CLD (3–4)	W-SPD (5–9)	UNITS (10–12)	W-DIR (13–15)	UNITS (16–17)	WET-T (18–22)	UNITS (23–24)	DRY-T (25–29)	UNITS (30–31)	PRESS. (32–36)	UNITS (37–38)	COMMENTS (39–77)	ADDNL. COM? (78–80)
	100	11.2	M/S	040	DM	19.6	C	21.8	C	30.58	MB	PRECIP- 0 MM Overcast	Y or N

PAR (1–10)	SN (11–20)	PAR (21–30)	SN (31–40)	PAR (41–50)	SN (51–60)	PAR (61–70)	SN (71–80)
COSATE	IOCSTD	DEPHTR	IOCSTD				

TIME (1–6) LMT	SID (7–9) *	DEPTH (10–16) M	COND (17–24) MMHO/CM	SALI (25–32) PPT	TEMP (33–40) DEGC	DO (41–48) MG/L	PH (49–56) Su	TRAN (57–64) PERCENT	DSRT TEMP (65–72) DEGC	AUX TEMP. (73–80)
0839		76.0	49.53	36.41	12.70	10.01	—	83.5		
		38.0	S-Y.0?	36.11	24.40	11.35	-	84.8		
0846		2.0	54.06	36.06	24.38	11.82	—	83.2	24.40	23.5

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UTV/BSP LOGS

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STATION 44 UTV/BSP SURVEY

	TIME (EST)	LORAN C	POSITION	COMMENTS
TRACK 1	1522	43960.95	14077.21	Tripod in water, water marks
	1525	43961.05	4077.30	Bottom in ~~sil~~ sight
	1530	13961.04	4077.33	
	1535	13961.21	4077.54	Drift @ 1/2 kt, 014°M
	1540	13961.16	4077.64	
	1545	13961.30	4077.69	
	1550	13961.48	4077.88	3-4 ft. scars
	1555	13961.65	14077.98	Sand ripples running // to drift dir.
	1600	13961.80	14078.18	Almost all sand, not live bottom (Z=12.
	1605	43961.84	14078.15	More surface life again, hard bottom
	1610	43962.00	14078.18	408 Tape check of voice
	1615	43962.10	14078.34	Z = 11m, live bottom
	1620	43962.20	14078.45	
	1625	43962.37	14078.54	
	1630	43962.52	14078.67	Z=11m
	1635	43962.68	14078.74	Sand bottom
	1640	43962.86	14078.77	
	1642	43962.87	14078.92	Begin retrieval of UTV
	1645	43962.95	14079.04	Out of water, End track #1
TRACK 2	1706	43959.33	14077.47	Tripod in water.
	1707	43962.67	14076.52 ?	Bottom in sight, LORAN cycling (?)
	1719	43960.02	14077.82	
	1724	43960.25	14077.90	Live bottom.
	1729	43959.[illegible]	14076.50	GRD TAKE OVER
	1734	43961.97	14069.33	Z=11

STATION 44 UTV/BSP SURVEY PAGE 2 OF 2

TIME (EST)	LORAN C	POSITION	COMMENTS
1739	43960.35	14078.2[illegible]	
1744	43960.75	14078.28	SAND BOTTOM, NOT LIVE
1749	43960.87	14078.35	LIVE BOTTOM, SMALL FISH
1754	43960.96	14078.44	
~~1758~~ 1759	43961.07	14078.59	Z = 11 M
1804	43961.13	14078.65	
1809	43961.18	14078.80	
1814	43961.18	14078.86	
1819	43961.25	14078.96	LIVE BOTTOM
1820	43961.22	14078.97	~~Retrieve tripod~~
1821	43961.29	14079.00	Retrieve tripod.
1822	43961.33	14079.07	On Deck, End Track #2

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STATION 45 UTV/BSP SURVEY PAGE 1 OF 2

TIME (EST)	LORAN C	POSITION	COMMENTS
0825	43890.93	14056.25	Tripod in water, Beginning on Tape #2
0828	43890.82	14056.20	Bottom in sight, Z = 14m
0833	43890.50	14056.12	Live bottom (soft corals, no big sponges)
0842	43889.85	14055.91	
0845	43889.69	14055.94	
0850	43889.31	14055.78	
0855	43889.05	14055.64	
0902	43888.30	14055.52	
0905	43888.17	14055.53	Still soft corals w/ thin sand veneer
0910	43887.83	14055.41	
0915	43887.38	14055.32	
0919	43887.19	14055.44	Retrieval, end track #1
0922	43886.94	14055.14	On deck.
0937	43890.13	14056.36	Tripod in water, Track #2 (Tape #2)
0940	43889.87	14056.26	Bottom in sight.
0945	43889.37	14056.23	Soft corals, Z = 15m, sand ripples
0950	43888.90	14056.13	
0955	43888.46	14056.08	On Tape #3
0957	43888.21	14055.95	Sand predominates, fewer soft corals
1000	43888.10	14056.06	Soft corals predominate
1005	43887.51	14055.87	
1010	43887.02	14055.82	Z = 14m
1015	43886.52	14055.66	

STATION 45 UTV/BSP SURVEY PAGE 2 OF 2

TIME(EST)	LORAN C POSITION		COMMENTS
1020	43886.13	14055.59	
1025	43885.73	14055.48	Retrieving
1026	43885.59	14055.47	On deck, end Track #2
1040	43889.77	14056.56	Tripod in water, begin Track #3
1044	43889.52	14056.44	Bottom in sight (Tape #3) Z=14
1049	43889.01	14056.26	
1107	43887.50	14055.94	
1112	43887.10	14055.82	Z=14m
1117	43886.60	14055.73	
1122	43886.17	14055.52	
1130	43885.63	14055.37	Z=15m
1136	43885.28	14055.24	Retrieving tripod, end track #3
1137	43885.06	14055.28	On Deck

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STATION 47 UTV/BSP SURVEY PAGE 1 OF 3

TIME (EST)	LORAN C	POSITION	COMMENTS
1100	43833.36	14026.53	
~~1100~~	~~43839.61~~	~~14026.59~~	Tripod in water for track #1 (Tape 4)
1103	43833.06	14026.42	Bottom in sight, Z = 17m
1108	43832.90	14026.29	Bottom appears sandy, strobe not open.
1112	43832.69	14026.22	Sand ripples, no soft coral, algae pre
1113	43832.66	14026.23	Lots of algae, sand ripples
1118	43832.33	14026.02	
1123	43832.07	14025.91	Sand ripples, algae
1128	43831.80	14025.79	Some soft corals
1130	43831.61	14025.68	Sponges & fish
1136	43831.36	14025.48	Sand, isolated sponges
1139	43831.13	14025.48	Retrieve tripod, end Track #1
1141	43831.03	4025.41	Tripod on deck, pos. for Track #2
			Loran C Cycling (?)
1202	~~43849.92~~	~~14042.04~~ (?)	Tripod in water for track #2 (Tape 4)
1205	~~43832.93~~	~~14014.79~~ (?)	Bottom in sight, Z = ~~15m~~ 18m
1210	—	—	Soft corals, LORAN still acting up.
1213	43833.48	14025.86	Sand.
1218	43833.08	14025.72	Sand, algae
1223	43832.80	14025.64	Sand, soft coral
1228	43832.42	4025.52	Z = 18m., sand, algae
1233	43832.20	4025.44	Sand, algae
1237	43831.96	4025.42	Retrieve tripod, end track #2
1239	43831.85	14025.29	Tripod on deck
~~1316~~	~~43835.91~~	~~14026.02~~	~~Tripod in water for track #3 (Tape 4)~~
St.	be not on		Bottom in sight, Z=

STATION 47 CCTV/BSP SURVEY PAGE 2 OF 3

TIME(EST)	LORAN C	POSITION	COMMENTS
1317	43835.76	14025.94	Tripod in water for track #3 (Tape 4)
1320	43835.57	14025.84	Bottom in sight, Z = 18m
1326	43835.20	14025.69	Sand, algae
1330	43834.93	14025.54	
1336	43834.67	14025.46	Sand, algae
1340	43834.39	14025.37	Sand, ~~algae~~ almost bare
1345	43834.09	14025.21	Sand, sponge, Z=18m
1348	43833.93	14025.14	Change to Tape #5
1350	43833.79	14025.07	
1355	43833.48	14025.01	Sand, algae (some soft coral previously)
1359	43833.37	14024.88	Retrieving Tripod, end track #3
1400	43833.26	14024.77	On deck.
1413	43835.86	14026.22	Tripod in water for Track #4 (Tape #5)
1415	43835.70	14026.20	Bottom in sight, Z = 17m, sand, algae
1420	43835.39	14026.04	Sand, algae Z = 18m
1425	43835.20	14025.98	Sand, algae, bare sand previously
1430	43835.07	14025.79	
1431	43835.01	14025.73	Soft corals
1432	43834.98	14025.69	sand, some algae
1433	43834.85	14025.62	soft corals (briefly) then sand
1435	43834.88	14025.57	T or Gorgonians (?) soft corals, some sponges
1441	43834.62	14025.42	
1445	43834.49	14025.29	Sand, algae
1450	43834.27	14025.15	

STATION 47 UTV/BSP SURVEY PAGE 3 OF 3

TIME(EST)	LORAN C	POSITION	COMMENT
1455	43834.06	14025.01	
1500	43833.86	14024.77	
1502	43833.75	14024.76	Retrieve tripod, end Track #4
1504	43833.71	14024.68	On deck.

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STATION 51 BSP/ULTV SURVEY PAGE 1 OF 3

TIME(EST)	LORAN C	POSITION	COMMENTS
1234	—	— No fix	Tripod in water, Begin track #1 (Tape 5)
1235	—	— "	Bottom in sight, Z = 13 m
1238	43673.71	4009.33	Ctenophores drifting in water
1240	43673.66	4009.27	Bottom rich w/ epifauna, fish
1245	43673.66	4009.16	
1250	43673.82	4009.17	
1255	43673.85	4008.94	entered bare patch for 2 minutes
1300	43673.91	4008.83	
1305	43673.88	4008.73	Very plush - just entered studyarea
1310	43673.93	4008.68	
1315	43673.95	4008.55	
1320	43673.89	4008.48	Nice grouper - lots of fish
1325	43673.82	4008.41	plush
1330	43673.77	4008.39	END TAPE - New Tape #6
1335	43673.74	4008.23	Change habitat - barren - soft bottom
1340	43673.80	4008.14	enter new hab - grouper - fish
1345	43673.80	4008.01	1 minute late
1350	43673.84	4008.05	
1355	43673.79	4007.91	plush
1400	43673.72	4007.79	
1405	43673.76	4007.74	
1410	43673.65	4007.68	Retrieval, end track #1
1412	43673.66	4007.69	on deck.
1444	43675.85	4009.03	Tripod in water, Begin Track #2 (Tape 6)
1446	43675.85	4008.99	Bottom in sight, Z = 13 m

STATION 51 ULTV/BSP SURVEY · PAGE 2 OF 3

TIME (EST)	LORAN C	POSITION	COMMENTS
1450	43676.05	14008.96	Rich epifauna w/motile species (e.g. crabs).
1458	43676.32	14008.73	Grouper city
1459 ~~1500~~	43676.43	14008.83	Retrieve tripod, wind switched
1500	43676.47	14008.64	on deck. End track #2
1509	43672.91	14007.16	Tripod in water for track #3, (Tape 6)
1510	43673.05	14009.02	Bottom in sight, Z = 13m
1515	43673.~~8~~46	4008.87	
1520	43673.87	4008.93	
1525	43674.23	4008.77	Rich epifauna
1530	43674.53	14008.69	
1537	43674.82	14008.53	
1540	43674.90	4008.54	
1545	43675.17	14008.52	Z = 13m, bottom less rich
1550	43675.35	14008.37	sand ripples, algae
1555	43675.62	14008.41	Sand, algae
1600	43675.92	14008.29	Sand, algae
1605	43676.17	14008.19	Sand, algae
1607	43676.31	14008.24	Switch from Tape 6 to Tape #7
1612	43676.56	14008.21	
1615	43676.73	14008.16	
1620	43677.10	14008.16	Sand, algae
1625	43677.~~40~~ 42	14008.07	Z = 13m, Sand algae
1630	43677.75	14007.94	Sand, algae

STATION 51 UTV/BSP SURVEY

TIME (EST)	LORAN C	POSITION	COMMENTS
1635	43678.13	14007.01	Sand, algae
1640	43678.46	14007.86	Retrieve tripod, end track #3
1642	43678.60	14007.83	On deck

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STATION 52 RTV/BSP SURVEY

TIME (EST)	LORAN C	POSITION	COMMENTS
0929	43608.115	14020.07	Tape on Tape 7
0933	43627.42	14020.53	Tripod in water, (Tape # 7) corr. Z
0935	43627.47	14020.22	Bottom in sight (Z = 12m)
0940	43627.99	14020.16	
0945	43628.53	14019.84	
0950	43629.16	14019.68 ~~14029.85~~	probably 14019.68 loran fluct.
1000	43625.17	14024.56	reset loran with in 10ths of plater unit
1005	43625.57	14024.28	
1010	43626.07	14024.03	
1015	43626.49	14023.89	
1020	43626.97	14023.79	
1025	43627.42	14023.60	
1030	43627.86	14023.42	
1035	43628.24	14023.17	End of transect
1050	43632.46	14025.09	in water Start Tape #8
1052			on bottom
1100	43623.15	14024.82	
1105	43623.51	14024.76	
1110	43623.84	14024.64	
1120	43624.46	14024.32	
1125	43624.72	14024.10	
1130	43625.08	14024.06	
1135	43625.32	14023.91	
1140	43625.68	14023.80	
1145	43625.90	14023.64	
1150	43626.15	14023.49	
1155	43626.44	14023.47	

STATION 52 UTV/BSP SURVEY PAGE 2 OF 2

TIME (EST	LORAN C	POSITION	COMMENTS
1200	43626.6[illegible]	14023.3	
1205	43626.84	14023.2[illegible]	
1210	43627.04	14023.14	END OF TRANSECT
1212	—	—	On deck
.1234?7	43623.32	14025.48	Tripod in water for Track #3 (Tape #8)
1239	43623.37	14025.49	Bottom in sight, z = 12m. (corr.)
1245	43623.47	14025.36	
1250	43623.50	14025.40	
1255	43623.60	14025.38	
1300	43623.6[illegible]	14025.3[illegible]	
1305	43623.67	14025.3[illegible]	
1310	43623.70	14025.28	
1315	43623.75	14025.28	
1318	43623.80	14025.22	END OF TRANSECT
1320	43623.77	14025.19	On deck.

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TIME(EST)	LORAN C	POSITION	COMMENTS
1040	43805.17	13965.74	Tripod in water for Track #1 (Tape #9)
1046	43805.76	3965.48	Bottom in sight, Z = 23m
1051	43806.11	3965.36	Some algae, medusae off bottom
1056	43806.66	13965.34	Some fish, hard bottom w/ thin sand veneer
1101	43807.11	3965.22	Some large sponges / bottom predom. algae
1106	43807.53	13965.08	Predom algae, previously some bare sand
1111	43808.10	13965.02	Angel fish, large sponges
1116	43808.51	13964.84	
1121	43809.06	13964.79	Algae, occasional sponges & fish
1126	43809.50	13964.65	Z = 24m.
//SG.S	43810.18	13964.46	Retrieval, end track #1
1128	43804.79	13961.76	On deck (Tape #9), Fix bad.
1139	No	Fix	Tripod in water for Track #2 (Tape # 9)
1142	43804.29	13965.16	Bottom in sight, Z = 23m
1147	43804.52	13965.21	Sand, algae, sea cucumbers, tracks.
1152	13804.96	13964.92	Tracks in sand, large starfish, predom. sand
1157	43805.38	13964.92	Sand, some fish. large starfish
1203	43805.88	13964.76	
1205	43806.06	13964.81	Sand, some algae, large (territorial) starfish.
1210	43806.50	13964.62	Sand, some algae
1211	43806.58	13964.68	~~Possibly~~ dredge #3 track, ~~[illegible]~~
1215	43806.82	13964.54	Sand, some algae
1220	43807.21	13964.44	Sand, corals(?), grouper
1222.5	43807.47	13964.51	Dredge track #2

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TIME (EST)	LORAN C	POSITION	COMMENTS
1225	43807.71	13964.36	
1230	43808.06	13964.36	
1235	43808.48	13964.19	Sand, some algae
1240	43808.85	13964.12	Sand, some tracks
1245	43809.22	13964.06	Sand, some algae; occasional sea cucumber
1250	43809.68	13963.97	Large starfish, sand, retrieve end
1252	43809.86	13963.99	track #2, On deck
1311	43804.45	13965.04	Tripod in water for Track #3 (Tape #10)
1314	43804.67	13965.11	Bottom in sight. (Z = 23 m)
1320	—	—	Missed
1321	43805.03	13965.09	
1326	43805.27	13965.01	Sand, algae
1330	43805.48	13965.16	Sand, algae
1335	43805.56	13965.34	Some large starfish (isolated)
1340	43805.76	13965.21	isolated clumps. Large sponges, fish (Jacknife, etc.)
1345	43806.03	13965.23	Z = 23 m Starfish, Wrass — Some depressions w/colonies
1350	43806.16	13965.25	Sand, algae
1355	43806.~~30~~ 46	13965.~~32~~ 32	Sand, algae
~~1359~~ 1400	43806.65	13965.29	Sand, algae, coral (?)
1405	43806.89	13965.29	Some large sponges, fish.
1410	43807.15	13965.37	
1415	43807.33	13965.39	Large sponges, fish
1420	43807.53	13965.42	Z = 24 m

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TIME (EST	LORAN C	POSITION	COMMENTS
1423	43807.58	13965.48	Retrieve tripod, and track #3
1424	43807.69	13965.45	On deck

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Time (EST)	LORAN C	POSITION	COMMENTS
1031	44311.56	13677.78	Tripod in water for Track #1 (Tape #10
1040	44311.06	13677.78	Bottom in sight, Z=60 m
1045	44310.87	13678.11	Left camera still out, Rich fauna sponges, seaw
1050	44310.75	13678.19	
1055	44310.39	13678.65	LORAN UNSTABLE, FIXES ± 20
1100	44309.58	13679.77	" "
1105	44310.08	13679.01	" "
1110	44309.33	13678.63	" "
1115-1118			LORAN BLANK
1120	44297.22	13711.31	LORAN UNSTABLE FIXES ± 20
1125	44308.88	13679.58	" "
1130	44309.00	13679.55	" "
1137	—	—	On deck, end Track #1 (Tape #11)
1211	44310.80	13677.80	Tripod in water for Track #2 (Tape #11)
1217	44310.10	13677.78	Bottom in sight, Z = 65m
1220	44309.96	13678.27	Rich epifauna, Z=62m
1226	44309.26	13678.19	Camera image still flickering
1230	44308.96	13678.20	
1240	44308.15	13678.18	
1245	44307.97	13678.37	Rich epifauna
1250	44307.~~45~~ 35	13678.~~14~~ 13	Same.
1255	44307.44	13678.19	Z = 66m
1301	44306.66	13678.16	
1305	14306.16	13677.67	Nurse (?) shark @ 1306, Z = 65m
1311	44305.75	13678.11	Retrieve Tripod, end Track #2
1314			On deck. (Tape #11)