

**Florida
Power**
CORPORATION

June 11, 1984
3F0684-08

Mr. H. R. Denton, Director
Office of Nuclear Reactor Regulation
Attention: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Environmental Protection Agency 316 Study

Dear Mr. Denton:

Attached are two letters (dated June 4 and June 7, 1984) which have been submitted to the Environmental Protection Agency and are hereby transmitted in accordance with Crystal River Unit 3 Technical Specifications, Appendix B, Part II, Section 3.2.

If there are any question concerning this information, please contact this office.

Sincerely,

G. R. Westafer
Manager, Nuclear Operations
Licensing and Fuel Management

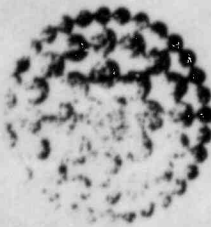
Attachments

DVH/ddl

cc: Mr. J. P. O'Reilly
Regional Administrator, Region II
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
101 Marietta Street, N.W., Suite 2900
Atlanta, GA 30323

A001
ADD: NRR/DE/REAB
NRR/DE/EEB
NRR/DE/EHEB
NRR/DE/SAB

8406150032 840611
PDR ADOCK 05000302
R PDR



**Florida
Power**
CORPORATION

June 4, 1984

Mr. Charles Kaplan
ENVIRONMENTAL PROTECTION AGENCY
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Kaplan,

Enclosed is a copy of the Notes of Conference from our Third Quarterly Progress Meeting held on May, 3, 1984. Should you have any comments or questions regarding these notes, please let me know.

As you requested during the Quarterly Meeting and in subsequent correspondence, enclosed is a map showing the pre-established location of sampling stations for the August and January plume delineation (intensive) surveys. A loran grid is provided on the map for your use. During the plume delineation surveys, data were collected as close as possible to the fixed station locations. However, due to tidal variation, difficulties with nighttime navigation, etc., not all data was collected at the exact station location. When this occurred, the loran coordinates for the actual sampling points were recorded. Loran coordinates for each sample collected will be presented along with a tabular listing of the field data in the final report.

Also enclosed in this package are two copies of a bathymetry chart for the Crystal River discharge basin. One copy of this chart has been reduced in scale to equal that of the intensive survey sampling station locations. I hope the bathymetry drawing will be of some use to you.

Regarding other information requested in your May 10, 1984, correspondence, Florida Power Corporation realizes the need to provide agency personnel the materials required to verify that the 316 Study is being conducted in accordance with the Plan of Study and Standard Operating Procedures. However, as we have previously discussed, Florida Power feels it is premature to analyze results and draw conclusions regarding the study while data continues to be collected. The data requests detailed in your letter will be provided in the Final Report. To ensure that the study results are presented in a useable, yet cost effective manner, discussions similar to those occurring at the Quarterly Meetings should continue at the Quarter 4 Progress Meeting. In the interim, feel free to contact me should you have any questions regarding the 316 Study.

Sincerely,

FLORIDA POWER CORPORATION

P. J. Behrens by DKV

Paul J. Behrens
Environmental Scientist

NOTES OF CONFERENCE
THIRD QUARTERLY PROGRESS MEETING
FLORIDA POWER CORPORATION

J.O.No. 14498

Held in the Offices of
Florida Power Corporation
St. Petersburg, FL
May 3, 1984

Present for:

Florida Power Corporation
(FPC)

P. Behrens
D. Voigts

U.S. Environmental Protection
Agency (EPA)

D. Hicks*
C. Kaplan*

Florida Department of
Environmental Regulation (DER)

D. Farrell*
L. Olsen
S. Palmer

Mote Marine Laboratory (MML)

K. Mahadevan

Stone & Webster Engineering
Corporation (SWEC)

J. Downing
T. Folger
T. Horst
D. McDougall
T. Biffar

*Part-time

PURPOSE

The meeting constituted the Third Quarterly Progress Meeting for the Crystal River NPDES 316(a) and (b) Studies.

DISCUSSION

Attachments 1 and 2 provide the meeting agenda and the attendance list. C. Kaplan and D. Hicks were delayed; events to that point were summarized on their arrival. Items of interest or concern to D. Farrell and his comments on the program were addressed prior to his early departure.

K. Mahadevan summarized the status of field collections and laboratory analysis. In general, the program is going well and is on schedule. Some oyster stations are experiencing sedimentation but attempts are being made to regularly clear the cages. One more set of aerial photographs will be attempted in early summer. The fisheries and impingement programs end in May. Thermograph returns are good now but higher loss rates are anticipated in May and June. DER considers the summer thermograph data necessary to define a mixing zone (surface and bottom).

Crab tag returns are still active so no cutoff date has been set. It was suggested that July 1, 1984 be used with subsequent returns listed as a supplement. The DER is concerned with the adequacy of the data to define crab movement, particularly through Fishermen's Cut and it would also like to integrate DNR data on coastal migration with FPC data. These data are not presently available and their existence in a compatible form and timely delivery would be necessary for the data to be included in the analysis of the present data. D. Farrell agreed to contact DNR concerning these data and will call K. Mahadevan by May 18, 1984. The feasibility of using the data would then be evaluated. DER is, in part, trying to evaluate the effect of the Crystal River power plants on coastal crab migration; this is beyond the present scope of the present study which was intended only to determine local effects of the dikes.

An analysis by benthic core replicate sampling was completed on the data from the first three sampling dates. The analyses indicated that replication is adequate overall despite a few stations exceeding standards. Further analyses will be conducted; D. Farrell suggested special emphasis on samples from February and March.

Comments were solicited concerning the summary of final analyses that was provided in the progress report. L. Olsen indicated that analyses of interest to him were largely covered. For benthos, he prefers summary figures showing density, species richness and H' by station and sampling period (quarterly data are sufficient with six week data necessary only to confirm trends) to matrices. D. Farrell noted the need to add conductivity to the parameters listed for benthic analysis due to its effect on Shannon-Weaver results. L. Olsen would like to see color coding or overlays for macrophyte maps.

Groupings for benthic analysis will be based on statistical analysis and common sense. Items to be considered include: sediment characteristics, control and thermal areas; and near shore and offshore location. The data resulting from these groupings will be used to confirm study design. Reduced, summary data should be presented as appendices to the final report to: a) provide ready access to data, and b) show the basis for correlations and other conclusions in text. The "life styles" of organisms will be addressed and analyses reported much as was done for Big Bend Station. D. Hicks outlined a desirable approach as: 1) define trends in benthos, 2) look for driving mechanisms, and 3) base impact evaluations on worst case temperature predictions.

L. Olsen indicated that impingement is a limited concern at this site as local fisheries pressure is probably more significant. The entrainment analysis will use T. Horst's model but the fisheries area to be used for comparison with the model's predictions is not yet defined. Suggestions were requested but no obvious choice emerged. Crystal River landings may be available and T. McIlwain at Ocean Springs may be able to offer suggestions.

The source term analysis was defined and the form of results discussed. It was stressed that it is a modeling approximation since organism movement is not modelled. The mechanisms simulated will be advection (transport due to currents) and dispersion (transport due to mixing). The model is expected to generate results which identify regions from which organisms originate. D. Farrell indicated that he is comfortable with the analyses proposed for impingement, entrainment, and fisheries.

DER regulations for a thermal mixing zone are in °F so at a minimum, D. Farrell would like to have the 2°F isotherm added to presentations of plume predictions. Bottom detachment is important as are representations of worst case surface and bottom conditions. It was noted that the near-field model would address bottom detachment but far-field modeling provides a vertically integrated value. D. Hicks noted that he does not believe stratification is a problem at this site based on available data. Precision in locating isotherms of lower ΔT 's is limited as small changes in temperature result in large changes in isotherm location; it is far easier to report what the temperature is at a given location. An indication of the accuracy of model results will be in the final report. A plant load data summary should accompany field temperature sampling data; C. Kaplan is interested in related point of discharge (POD) temperatures. P. Behrens provided the data to C. Kaplan during the meeting.

The August and January plume delineation surveys were discussed. Stations were marked by buoys but did vary from one circuit to the next based on tidal conditions, problems locating stations at night, etc. Loran was used to locate stations not at buoys. A map should be provided showing station locations and depths.

There are a few errors in the existing data tables (salt marsh, temperature, entrainment). Corrections were made available at the meeting and marked pages will be sent out shortly. C. Kaplan believes there are still some outliers in the temperature tables and would like to have more information regarding these data including: tidal phase and tide level sampled, station depth, time of tide window, and time of sampling by station.

D. McDougall discussed the status of the hydrodynamic and hydrothermal modeling. The topics covered at the April 4 meeting on this subject with EPA and DER were summarized. Ambient temperature conditions as modeled were defined to include circulating water system operation with no plant heat rejection. The use of salinity to calibrate and verify the models was emphasized; this provides a more effective parameter than temperature as atmospheric exchange does not exist. S. Palmer agreed with this approach. The final product will be a representation of ΔT 's, at 4 phases of the tide, at 2 plant loads, and for 2 seasons. C. Kaplan questioned the adequacy of

providing results for only 2 plant load conditions but no specific suggestions were provided. S. Palmer stated that total temperature is a concern and that there are several ways to get it. However, it is understood that the model produces ΔT 's. T. Horst noted that after correlating temperature with benthos data, it should be possible to identify ΔT 's of interest and then use predicted ΔT information rather than going through the considerable effort of developing actual temperatures from the ΔT 's modeled. Where varying loads are of concern, it is possible to take the measured field values, subtract the ΔT for a measured load and then add the ΔT for an extrapolated load. Such a procedure may be desirable to meet regulatory concerns but is not necessary to complete the impact evaluation.

The use of average or maximum temperature was discussed. Averages will be used for impact assessment but definition of impacted area should consider full-load plant operation to project the worst case. Thermographs may give a stronger record of average temperature than the weekly results but the weeklies tend to overestimate impacts at a given temperature. In general, the average differences between stations should be sufficient for our needs and weekly data will be used for comparisons.

Since FPC has temperature limits at the point of discharge, plant operations are controlled to achieve the limits. Various load conditions can be modeled, however, hydrodynamic conditions monitored during the calibration and verification period carry through to the predictions. Looking at other conditions for worst case is not presently part of the program. The conditions of "worst case" plume, given 102°F at the POD, need to be defined and evaluated regarding the impacts to biota.

C. Kaplan indicated that for his evaluation he would like to have a map showing benthic and thermograph stations and an overlay grid. C. Kaplan and D. Hicks then reviewed concurrent thermograph and weekly temperature data. They were able to conclude that the weekly temperature data provided an adequate representation of conditions and would not underestimate temperatures. As a result, C. Kaplan will send a letter to FPC stating that three additional months of thermograph data will not be necessary.

TABiffar:MTD

ATTACHMENT 1

AGENDA

THIRD QUARTERLY PROGRESS MEETING

CRYSTAL RIVER NPDES STUDIES

1. Introduction - P. Behrens
2. Field Work and Laboratory Analysis - S. Mahadevan
3. Hydrodynamic and Hydrothermal Modeling - D. McDougall
4. Data Tables and Display - T. Biffar
5. Summary of Final Analysis - T. Horst

ATTACHMENT 2

Paul Behrens
David Voigts
TOM HORST
JOHN DOWNING
Lawrence Olson
Steve Palmer
Jay Farrell
Thomas A. Folger
David W. McDougall
Kumar Mahadevan
Tom BIFFAR
Charles Kaplan
Jel Hicks

Florida Power
Florida Power
STONE & WEBSTER
STONE + WEBSTER
F.D.E.R. - Biology
FDER - Water Quality Analysis
FDER - TAMPA
Stone & Webster
Stone & Webster
Mote Marine Laboratory
STONE + WEBSTER
EPA Atlanta
" Athens.

SURFACE AND BOTTOM TEMPERATURES (DEGREES C) BY STATION AND WEEK OF
JUNE 1983

STATION	JUNE 9, 1983		JUNE 15, 1983		JUNE 22, 1983		JUNE 30, 1983	
	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	29.0	28.9*	28.9	28.3*	30.4	30.4*	29.2	29.2*
2	29.2	29.1*	28.2	27.7	30.4	30.4*	29.8	29.9*
3	29.2	28.5*	28.3	27.4	29.6	29.4*	30.3	30.1*
4	28.6	28.4	27.7	28.1*	29.4	29.1	30.4	30.5
5	28.5	28.3	27.7	28.2*	29.6	29.4	30.4	30.6
6	28.3	19.4	27.8	27.6	29.6	29.2	30.4	30.3
7	28.6	22.5	27.8	27.7	29.5	28.9	30.4	30.4
8	28.8	28.5	28.0	27.7	29.4	28.6	30.6	30.3
9	28.9	28.6*	28.0	27.4	28.4	28.4*	31.2	30.6
10	28.8	28.7*	28.2	27.7	29.6	28.4*	30.9	29.9
11	28.9	28.7*	28.2	28.0	28.1	28.1*	30.2	29.9
12	29.0	28.7*	28.4	28.0	28.3	28.3*	30.3	29.9
13	29.8	30.0	29.7	29.4	32.6	32.6	31.3	31.3
14	28.5	28.5	29.0	29.0*	30.2	30.5	30.9	31.1
15	28.9	28.1*	28.7	28.3*	29.8	29.0	30.8	30.5
16	28.9	28.4*	28.7	27.9*	29.2	28.8*	30.9	30.4
17	31.5	31.5	30.1	30.1*	34.1	33.8	31.7	31.7
18	30.3	30.1	30.2	31.4	32.1	32.0*	33.3	33.1
19	29.1	29.3	29.8	31.6	31.9	31.9*	32.2	32.2*
20	28.7	28.8	29.4	30.2	29.8	29.5*	31.7	31.1
21	28.8	28.3*	29.1	29.8*	29.7	29.2*	31.2	30.5
22	28.8	28.3*	29.1	38.1*	28.5	28.8*	32.2	30.3
23		*	28.4	27.8*	28.5	28.1	31.6	29.6
24	27.8	28.0*	28.1	27.8*	28.3	28.2*	30.2	29.6
25	28.8	28.2*	28.1	28.0	28.1	28.1*	30.1	29.7
26	28.9	28.1*	28.4	28.0	28.3	28.1*	30.0	29.7
27	29.2	29.3	28.0	28.0	29.3	29.2	30.5	30.7
28	29.6	29.3	28.1	28.3	30.8	29.5*	31.5	31.0
29	28.9	28.9	29.3	29.5	28.6	28.6*	33.2	31.3
30	28.4	28.1*	28.9	28.4	28.5	28.5*	31.9	30.2
31	28.2	28.2	28.2	27.2	28.9	28.8	30.4	30.4*
32	28.3	28.2	27.9	27.9*	28.9	28.9	30.6	30.4*
33	28.2	28.2*	28.1	27.4*	28.4	28.4*	30.6	30.1*
34	28.5	28.2*	28.0	27.3*	28.4	28.4*	30.6	30.2*
35	29.2	28.8*	28.3	28.0	28.9	28.6*	29.9	29.6*
36	28.6	28.6*	28.2	28.1	28.8	28.6*	24.9	27.8*
37	28.7	28.7*	28.8	28.1	28.6	28.5*	30.2	29.8*
38	28.5	28.2*	28.9	28.6*	28.9	28.9*	29.6	29.7*
39	28.6	28.3*	27.9	27.2*	29.1	28.8*	29.9	29.8*
40	28.9	28.6*	28.3	28.0*	28.8	28.4	30.7	29.9

* OUTSIDE TIDE WINDOW

SURFACE AND BOTTOM CONDUCTIVITY (MMHDS/CM) BY STATION AND WEEK OF
JUNE 1983

STATION	JUNE 9, 1983		JUNE 15, 1983		JUNE 22, 1983		JUNE 30, 1983	
	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	27.2	27.5*	18.0	23.3*	19.8	19.5*	16.1	21.2*
2	28.9	29.9*	24.3	27.9	30.6	30.8*	27.0	35.8*
3	29.0	39.4*	26.9	31.7	39.3	40.4*	33.0	43.5*
4	26.1	30.2	26.5	35.8*	32.7	36.3	31.6	38.5
5	23.4	31.5	28.1	35.0*	34.3	38.8	33.0	39.3
6	28.1	32.4	28.0	30.8	36.3	38.9	28.8	39.4
7	31.9	37.6	28.8	35.3	40.3	40.5	37.3	44.0
8	33.7	37.2	30.8	35.1	41.0	41.3	36.4	44.6
9	32.6	38.9*	31.7	35.5	42.8	42.9*	41.4	43.0
10	38.5	41.7*	33.6	39.2	44.0	44.7*	43.9	46.1
11	38.2	41.3*	34.5	41.8	47.0	46.8*	47.7	49.1
12	39.7	41.9*	38.6	42.8	49.3	49.1*	51.2	50.5
13	34.6	35.5	35.5	37.5	46.7	46.7	41.2	41.5
14	32.2	32.3	29.7	36.5*	41.7	43.3	35.3	42.8
15	32.1	36.4*	31.8	35.9*	42.7	42.6	36.4	45.3
16	35.2	39.6*	35.1	39.6*	45.7	48*	44.5	44.9
17	37.9	38.0	42.1	42.1*	47.8	47.6	46.9	46.9
18	35.3	35.5	39.7	43.6	46.3	26.6*	48.5	48.4
19	34.7	35.1	38.8	43.9	46.1	46.1*	47.2	47.2*
20	34.3	36.1	37.1	41.3	43.2	43.3*	43.5	45.3
21	34.1	36.8*	33.3	32.7*	43.3	43.2*	41.1	45.5
22	34.6	38.0*	33.7	39.5*	43.7	44.9*	45.2	45.8
23			37.3	38.4*	44.9	44.7	46.3	46.3
24	37.7	32.6*	35.0	39.9*	46.7	46.7*	46.7	48.9
25	39.0	42.0*	37.8	42.3	47.8	48.0*	50.6	50.7
26	39.9	43.9*	41.7	43.5	48.8	49.2*	51.2	51.4
27	35.5	35.5	35.2	35.3	40.8	40.7	42.6	43.4
28	35.2	35.8	36.5	37.8	44.2	42.8*	45.3	43.5
29	36.9	37.2	37.4	39.8	44.1	44.1*	47.4	44.9
30	37.8	37.7*	37.8	37.4	44.6	44.6*	45.6	45.2
31	33.2	33.4	30.6	36.5	38.0	38.1	33.3	34.1*
32	34.0	34.2	35.5	35.5*	38.5	38.6	32.8	33.2*
33	36.4	36.5*	38.0	39.2*	38.5	38.8*	34.6	37.9*
34	38.3	39.3*	39.1	41.2*	41.8	41.8*	38.5	41.5*
35	40.0	41.2*	39.4	41.6	46.8	47.2*	43.1	48.9*
36	40.2	40.2*	43.9	43.8	47.9	48.2*	49.8	49.9*
37	42.9	42.8*	44.8	45.3	48.8	48.6*	50.0	50.8*
38	27.3	31.3*	25.2	25.1*	34.7	34.8*	28.6	36.9*
39	33.1	34.9*	34.7	38.5*	42.1	43.3*	34.1	37.1*
40	38.4	43.6*	41.4	44.7*	47.2	46.9	43.7	48.6

* OUTSIDE TIDE WINDOW

SURFACE AND BOTTOM TEMPERATURES (DEGREES C) BY STATION AND WEEK OF
 JULY 1983

STATION	JULY 7, 1983		JULY 12, 1983		JULY 20, 1983		JULY 26, 1983	
	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
40	31.0	30.5	30.5	30.0*	31.2	31.1*	30.1	30.0*
39	30.7	30.6*	29.7	30.0*	31.0	30.6*	29.2	29.3
38	30.5	30.5*	30.1	30.1*	30.8	30.8*	29.3	29.2*
37	29.8	29.0*	30.5	30.5*	31.1	30.9*	30.1	29.9*
36	30.0	29.5*	30.0	30.0*	31.1	31.0*	30.0	30.0*
35	30.0	29.8*	30.0	30.0*	31.2	31.1*	30.0	30.0*
34	31.5	30.8*	30.5	30.1*	31.2	31.1*	29.7	29.7*
33	31.3	30.9*	30.0	30.0*	30.9	30.8*	29.5	29.5*
32	31.3	31.0	30.2	30.2*	30.7	30.7*	29.3	29.3*
31	31.0	30.9	29.9	30.0*	30.5	30.6*	29.1	29.1*
30	31.3	31.0	31.3	31.2	30.9	30.8	30.7	30.8
29	31.5	31.2	32.0	32.2	31.1	31.0	30.7	31.8
28	32.1	33.0	29.8	29.8	31.3	33.2	29.8	29.5
27	32.2	30.9	29.5	29.6	30.6	31.0	30.0	29.0
26	30.5	30.5	30.0	30.0	30.7	30.7	29.8	29.9
25	30.5	30.5	30.0	30.0	30.8	30.8	29.8	29.8
24	30.5	30.5	30.0	30.0	31.0	30.9	30.2	30.1
23	31.0	30.5	31.5	30.5	30.8	30.9	30.4	30.7
22	31.3	30.8	31.5	30.7*	30.8	30.9	29.7	31.1
21	31.8	31.2	31.7	31.6*	30.8	30.8	29.5	32.3
20	32.3	31.4	31.8	31.6*	30.9	30.9	29.7	31.8
19	32.4	32.4	31.6	31.7	31.7	33.9	30.1	31.6
18	32.5	32.8	32.2	31.3	32.1	33.6	29.5	30.7
17	33.0	33.4	30.9	30.9	33.7	33.8	29.1	29.1
16	30.5	30.5	30.0	30.0	30.5	30.8	29.9	29.9
15	31.6	30.9	30.3	30.3	31.4	31.0	29.9	29.9
14	32.3	32.0	30.8	31.3	31.7	31.8	29.3	30.4
13	32.7	32.6	31.0	30.8	32.3	33.4	29.3	29.3
12	30.5	30.5	30.0	30.0	31.0	30.8	29.9	30.1
11	30.5	30.5	30.0	30.0	30.8	30.8	29.9	29.8
10	30.5	30.5	30.5	30.5	30.6	30.7	29.8	30.0
9	31.8	31.0*	30.2	30.1	31.1	31.0	29.3	29.5
8	31.3	31.0*	30.1	30.2	31.2	31.1	28.9	29.2
7	31.4	31.1	29.8	29.8	31.1	31.3	29.1	29.0
6	30.9	31.1	29.8	29.8	31.5	31.9	29.0	29.1
5	30.6	31.4	29.6	30.3	31.7	31.5	29.0	29.0
4	31.1	31.1	29.6	30.3	31.2	32.3*	28.7	29.0
3	30.5	30.7*	30.2	30.0*	31.2	31.0*	29.4	29.4*
2	30.3	30.9*	30.3	30.2*	31.6	31.2*	28.9	28.9*
1	30.4	30.6*	30.6	30.3*	31.6	31.6*	29.0	29.0*

29.6 (19.0)

30.5 (15.5)

* OUTSIDE TIDE WINDOW

BENTHOS
JUNCUS MARSH DENSITY, BIOMASS, AND HEIGHT
OCTOBER 1983

LOCATIONS	STATION							THUMB ISLAND	FENCE	DAVIS ISLAND
	UPPER SALT CREEK	LOWER SALT CREEK	CONTROL	MIDWAY	THERMAL					
1	LIVE HEIGHT									
	LIVE WEIGHT	153.990	182.067	254.600	57.220	278.700	96.827	325.567	300.967	
	LIVE DENSITY	83.000	68.000	113.333	24.667	100.333	53.000	92.333	76.333	
	DEAD WEIGHT	154.867	40.193	37.467	17.593	151.567	46.767	127.933	90.753	
2	LIVE HEIGHT									
	LIVE WEIGHT	179.367	201.207	320.800	296.000	156.600	197.650 ^{0.67}	214.333	153.190	
	LIVE DENSITY	120.667	87.667	115.333	96.333	66.333	53.000 ⁶⁷	64.667	48.333	
	DEAD WEIGHT	143.667	155.657	134.813	79.067	78.890	103.035 ^{0.67}	134.580	79.440	
3	LIVE HEIGHT									
	LIVE WEIGHT	179.033	222.700	150.230	512.200	102.320	265.200	247.833	154.133	
	LIVE DENSITY	67.333	89.333	64.000	190.333	48.333	79.667	72.667	74.667	
	DEAD WEIGHT	96.567	123.633	164.880	206.667	67.593	118.433	104.693	86.077	
4	LIVE HEIGHT									
	LIVE WEIGHT	235.533	197.300	252.967	312.500	185.637	281.833	239.433	195.400	
	LIVE DENSITY	108.333	72.000	77.333	83.667	113.333	118.333	60.667	53.667	
	DEAD WEIGHT	144.100	107.937	230.860	88.233	96.187	171.500	106.280	75.363	

ENTRAINMENT
DENSITY BY STATION
NUMBER PER 100 CUBIC METERS

JULY 21, 1983

SPECIES NAME	STATION											
	A	B	C	D	E	F	G	H	I	J	K	
FAMILY CLUPEIDAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.290	0.418	0.000	0.270
HAERENGULA JAGUANA	0.882	0.000	0.230	0.000	0.000	0.938	0.000	0.000	4.597	14.150	2.290	9.172
OPHISTHONEMA OGLINUM	6.618	5.187	19.735	64.317	6.898	9.097	70.677	98.435	467.632	127.448	500.538	
FAMILY ENGRAULIDAE	4.088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ANCHOA HEPSETUS	74.867	64.465	32.072	2.333	3.782	21.697	42.463	30.950	36.868	32.833	48.642	
ANCHOA MITCHILLI	148.440	398.578	112.218	195.195	54.005	1670.04	3777.53	174.368	73.310	33.608	54.230	
ANCHOA SP.	270.883	107.445	69.100	110.202	34.938	76.250	184.400	191.197	314.745	71.767	130.845	
GOBIESOX STRUMOSUS	0.000	0.345	0.000	0.000	0.760	0.372	0.000	0.000	0.000	0.000	0.240	0.000
HEMIRHAMPHUS BRASILIENSIS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.270
HYPORHAMPHUS UNIFASCIATUS	0.000	0.000	0.000	0.000	0.000	0.848	0.000	0.467	0.515	0.415	0.322	
MEMBRAS MARTINICA	0.000	0.000	0.115	0.467	0.000	0.000	0.000	0.000	0.000	0.000	0.240	0.000
MENIDIA BERYLLINA	0.000	0.000	0.115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.240	0.000
HIPPOCAMPUS ERECTUS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.278
HIPPOCAMPUS ZOSTERAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.352	0.278
MICROGNATHUS CRINIGER	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.278
SYNGNATHUS FLORIDAE	1.778	0.125	0.252	0.000	0.000	0.445	0.000	0.640	0.145	0.557	1.698	1.183
SYNGNATHUS LOUISIANAE	0.000	0.000	0.000	0.000	0.760	0.000	0.000	0.000	0.140	0.517	0.000	0.585
SYNGNATHUS SCOVELLI	0.000	0.000	0.278	0.000	0.000	0.000	0.000	0.000	0.000	0.233	0.000	0.233
CHLOROSCOMBRUS CHRYSURUS	13.363	0.373	0.000	1.295	0.000	0.817	0.630	3.818	1.567	0.340	1.465	
OLIGOPTILITES SAURUS	2.330	0.720	0.762	1.230	1.517	1.255	0.150	5.777	1.502	0.713	1.490	
EUCINDOSTOMUS SP.	0.000	0.123	0.115	0.388	0.000	0.000	0.150	0.000	0.138	0.232	0.558	
FAMILY SCIAENIDAE	189.750	0.000	310.423	431.567	306.167	8.033	52.813	278.567	181.017	1218.17	630.000	
BAIRDIELLA CHRYSOURA	0.450	0.000	0.000	0.000	0.000	0.000	0.000	0.717	0.857	0.240	0.000	
CYNOSCION ARENARTUS	9.475	0.373	0.000	0.388	0.000	0.000	1.162	30.542	5.038	0.767	4.488	
CYNOSCION NEBULOSUS	1.152	0.625	1.042	3.303	2.563	3.455	1.202	5.105	11.133	54.667	8.570	
MENICIRRHUS SAXATILIS	0.222	0.302	0.252	0.000	0.000	0.000	0.300	2.667	0.467	0.000	0.000	
MENICIRRHUS SP.	3.473	0.473	1.580	0.895	0.823	1.637	4.507	5.710	7.973	2.647	6.452	
CHAETODIPTERUS FABER	0.235	0.248	0.505	0.428	0.760	0.000	1.992	5.338	4.840	1.647	5.505	
PARACLINUS FASCIATUS	0.153	0.748	1.258	2.195	0.000	5.592	0.000	0.723	5.963	7.070	1.565	
FAMILY BLENIIDAE	0.000	0.000	0.000	0.000	0.760	0.000	0.000	0.000	0.000	0.000	0.000	
UNIDENTIFIED BLENNY	1.033	5.490	6.002	5.228	4.483	13.192	1.892	1.207	0.280	69.610	3.735	
FAMILY CALLIONYMIDAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.720	0.000	1.540	0.558	
FAMILY GOBIIDAE	65.733	1.617	1.565	0.000	0.000	1.657	0.120	2.253	0.000	0.465	0.322	
BATHYGObIUS SOPORATOR	0.153	0.828	7.110	0.388	0.000	2.570	2.858	1.350	2.142	7.797	4.000	
GOBIOSOMA ROBUSTUM	125.700	100.917	45.095	5.255	2.087	25.213	21.510	18.200	138.945	148.000	36.343	
MICROGOBIUS GULOSUS	362.567	12.407	5.645	0.817	0.000	3.700	2.285	0.430	0.300	0.705	2.915	
PEPRILUS ALEPIDOTUS	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
PRIONOTUS SP.	0.130	0.000	0.000	0.388	0.413	0.000	0.345	8.023	1.118	0.240	0.278	
FAMILY TRIGLIDAE/SOLEIDAE	0.668	0.000	0.000	0.442	0.000	0.000	0.955	9.283	2.483	20.283	52.283	
ACHIRUS LINEATUS	14.072	4.755	2.462	4.988	4.267	10.962	8.243	26.638	23.260	22.348	17.952	
SYMPHURUS PLAGIUSA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.145	0.138	0.000	0.278	
MONACANTHUS SP.	0.795	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.608	0.000	0.000	
FAMILY OSTRACIIDAE	0.000	0.000	0.000	0.428	0.000	0.000	0.000	0.287	0.000	0.712	0.880	
UNIDENTIFIED	16.572	0.698	5.405	3.777	2.075	8.078	4.328	38.463	64.058	90.555	38.348	
UNIDENTIFIED-DAMAGED	14.750	4.117	14.680	15.212	3.955	0.808	28.787	16.427	3.883	13.070	12.170	
PENAEUS SP.	2.453	1.100	0.368	0.000	0.435	0.387	0.792	0.000	0.000	1.595	1.410	

TRACHYPENAEUS SP.
CALLINECTES SP.
MENIPPE MERCENARIA

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.602	0.240	0.000
0.308	0.123	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.278
2418.13	74.567	533.003	615.572	671.627	246.888	362.245	1151.11	1144.65	161.388	2158.76					
2420.19															
3751.53	786.750	1171.52	1466.7	1103.07	2113.93	4573.09	2115.09	2511.91	2096.17	3737.72					
3153.64															

TOTAL OF AVERAGE DENSITIES

ENTRAINMENT
DENSITY BY STATION
NUMBER PER 100 CUBIC METERS

AUGUST 31, 1983

SPECIES NAME	A	B	C	D	E	F	G	H	I	J	K
FAMILY CLUPEIDAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	51.833	78.343	1.883	0.000
CLUPEID	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	25.833	0.000	0.000
HARENGULA JAGUANA	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.205	0.000	0.000	0.203
OPHISTIAGEMA OGLINUM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	49.333	2.488	0.000	8.233
FAMILY ENGRAULIDAE	0.000	0.000	0.000	0.000	0.195	0.000	0.258	11.300	14.283	0.000	0.000
ANCHOA HEPSETUS	9.543	0.000	0.557	2.310	5.715	0.000	8.155	7.650	1.970	24.483	81.890
ANCHOA MITCHILLI	2096.92	195.747	290.305	746.198	1250.34	242.250	1193.14	170.358	1494.93	1191.77	2744
ANCHOA SP.	354.883	6.033	49.650	35.807	79.477	142.737	125.880	886.950	102.533	80.833	107.317
PORICHTHYS ELECTRODON	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.000	0.000	0.000
GOBIESOX STRUMOSUS	0.000	0.000	0.000	0.000	0.195	0.417	0.790	0.000	0.000	0.000	0.000
FAMILY EXOCETIDAE	0.000	0.000	0.000	0.000	0.000	0.000	0.258	0.000	0.000	0.000	0.000
HYPORHAMPHUS UNIFASCIATUS	0.127	0.000	0.007	0.000	0.000	0.353	0.753	0.557	0.172	0.188	0.397
FAMILY ATHERINIDAE	0.000	0.163	0.000	0.000	0.000	0.000	4.230	0.000	0.000	0.000	0.000
MEMBRAS MARTINICA	0.000	0.000	0.180	0.000	0.380	0.175	0.210	0.000	0.000	0.353	0.000
MENIDIA SP.	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.000	0.000	0.000	0.000
FAMILY SYGNATHIDAE	0.000	0.000	0.000	0.000	0.000	0.332	0.000	0.000	0.000	0.000	0.000
HIPPOCAMPUS ERECTUS	0.000	0.000	0.000	0.000	0.000	0.165	0.467	0.173	0.372	0.183	0.203
HIPPOCAMPUS ZOSTERAE	0.000	0.000	0.000	0.205	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SYGNATHUS FLORIDAE	0.750	0.153	0.000	0.000	0.000	0.188	0.630	0.000	1.282	0.557	1.915
SYGNATHUS LOUISIANAE	0.285	0.000	0.000	0.000	0.000	0.457	0.585	0.000	1.235	0.000	0.730
SYGNATHUS SCOVELLI	0.000	0.145	0.000	0.000	0.000	1.502	0.880	0.538	0.348	4.010	0.000
CHLOROSCOMBRUS CHRYSURUS	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.172	0.000	0.000
DILGOLITES SAURUS	0.127	0.000	0.000	0.000	0.000	0.000	0.210	0.192	0.370	0.000	0.193
EUCINOSTOMUS SP.	0.000	0.292	0.000	0.000	0.000	0.175	0.160	0.000	0.177	0.000	0.000
FAMILY SCIAENIDAE	32.782	0.180	86.185	10.585	290.133	2.983	0.468	1208.98	39.517	154.067	302.255
BAIRDIELLA CHRYSOURA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.380
CYNOSCION ARENARIUS	0.527	0.000	0.000	0.000	0.000	0.000	0.000	0.552	0.000	0.000	0.170
CYNOSCION NEBULOSUS	1.402	0.145	0.000	0.000	0.000	0.000	0.000	15.253	27.047	12.995	17.258
MENTICIRRHUS SAXATILIS	0.000	0.000	0.000	0.000	0.218	0.000	0.000	0.840	0.480	0.202	0.185
MENTICIRRHUS SP.	2.290	0.000	0.000	0.000	0.000	0.172	0.418	9.778	2.157	1.632	3.165
CHAETODIPIERUS FABER	0.213	0.000	0.000	0.000	0.000	0.188	0.000	0.352	1.298	0.000	0.767
PARACLINUS FASCIATUS	0.000	0.000	0.000	0.190	0.190	0.000	2.342	0.000	0.385	0.000	0.558
FAMILY BLENNIIDAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.715	10.860	9.937
HYPSOBLENNIUS HENTZI	1.273	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
UNIDENTIFIED BLENNY	3.085	2.530	5.058	11.592	11.302	21.433	127.300	0.757	0.760	0.000	0.000
CALLIONYMUS PAUCIRADIATUS	0.567	0.000	0.000	0.000	0.188	0.000	0.208	1.430	0.860	0.715	0.513
FAMILY GOBIIDAE	20.825	1.925	46.150	0.192	0.188	9.694	0.195	0.000	37.783	4.133	0.000
BATHYGObIUS SOPORATOR	0.752	0.000	0.660	0.000	0.000	0.346	0.298	1.462	6.350	0.188	3.982
GOBIOSOMA ROBUSTUM	34.897	2.742	53.215	14.017	10.645	30.562	7.547	55.868	92.717	31.250	66.493
MICROGOBIUS GULOSUS	2.835	2.965	3.247	4.065	3.145	39.103	31.558	0.000	0.000	0.377	0.170
PRIONOTUS SP.	0.130	0.000	0.000	0.000	0.000	0.000	0.000	2.215	2.797	0.555	1.737
FAMILY TRIGLIDAE/SOLEIDAE	7.300	0.202	5.858	0.407	0.000	0.398	0.258	14.867	2.087	3.250	17.283
ACHIRUS LINEATUS	6.715	1.130	4.390	5.047	2.718	5.360	5.653	7.020	20.505	6.100	8.978
SYMPHRUS PLAGIUSA	0.127	0.000	0.000	0.000	0.000	0.000	0.000	0.173	0.172	0.000	0.000
MONACANTHUS SP.	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.365	0.702	0.000	0.377
FAMILY OSTRACIIDAE	0.000	0.000	0.000	0.000	0.197	0.340	0.160	0.265	0.172	0.697	1.195

ENTRAINMENT

DENSITY BY STATION

NUMBER PER 100 CUBIC METERS

AUGUST 31, 1983

SPECIES NAME	STATION				P
	L	M	N	P	
ANCHOA MITCHILLI	7.645	2.735	0.000	0.000	0.000
ANCHOA SP.	8.190	1.177	0.497	0.000	0.000
HYPORHAMPHUS UNIFASCIATUS	0.000	0.417	0.000	0.000	0.000
CYPRINODON VARIEGATUS	0.000	0.000	1.822	0.000	0.000
LUCANIA PARVA	0.000	0.322	0.000	0.000	1.897
HIPPOCAMPUS ZOSTERAE	0.000	0.597	0.000	0.000	0.000
SYNGNATHUS FLORIDAE	0.000	0.000	0.000	0.000	0.585
SYNGNATHUS SCOVELLI	0.000	0.605	0.000	0.000	0.393
CHLOROSCOMBERUS CHRYSURUS	0.468	0.000	0.000	0.000	0.000
EUCINOSTOMUS SP.	0.000	1.842	6.195	0.000	36.700
CYNOSSION NEBULOSUS	0.422	0.605	0.000	0.000	0.000
FAMILY BLENITIDAE	1.300	2.725	15.532	9.997	9.997
BATHYGObIUS SOPORATOR	0.000	0.000	0.523	0.000	0.000
GObIOSOMA ROBUSTUM	13.595	46.467	6.248	23.050	23.050
MICROGObIUS GULOSUS	3.262	9.883	9.130	2.098	2.098
ACHIRUS LINEATUS	0.000	1.065	0.922	1.892	1.892
UNIDENTIFIED	0.000	0.643	0.000	0.000	0.000
UNIDENTIFIED-DAMAGED	0.422	0.000	0.000	0.000	0.393
PENAEUS SP.	0.958	0.000	0.000	0.000	0.000
CALLINECTES SP.	0.000	0.000	2.383	1.767	1.767
MENIPPE MERCENARIA	0.422	0.000	0.408	0.000	0.000

TOTAL OF AVERAGE DENSITIES

29.338

69.082

43.660

78.772

28.493

ENTRAINMENT
DENSITY BY STATION
NUMBER PER 100 CUBIC METERS

SEPTEMBER 14, 1983

SPECIES NAME	A	B	C	D	E	F	G	H	I	J	K
FAMILY CLUPEIDAE	0.000	0.000	0.000	0.000	0.000	0.175	0.000	0.000	0.000	0.000	0.220
BREVOORTIA SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.207	0.000	0.000	0.000
HARENGULA JAGUANA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.232	0.000	0.000
OPHISTIIONEMA OGLINUM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.217	0.000	0.168	0.000
FAMILY ENGRAULIDAE	0.000	0.000	0.187	0.000	0.538	0.000	0.000	42.567	11.678	0.000	13.533
ANCHOA HEPSETUS	0.000	0.000	0.000	0.238	0.268	0.000	1.128	0.000	4.650	1.240	0.880
ANCHOA MITCHELLI	28.294	627.442	22.658	96.870	171.568	56.363	125.808	367.877	294.093	307.862	247.23
ANCHOA SP.	1.856	140.033	0.360	12.885	17.340	4.850	1.512	3.483	1.000	1.807	4.567
GOBIESOX STRUMOSUS	0.280	0.000	0.000	0.808	0.000	0.200	0.000	0.000	0.000	0.373	0.000
HYPORHAMPIUS UNIFASCIATUS	1.142	0.000	0.187	1.065	1.053	0.000	0.280	0.000	0.543	1.225	0.220
MEMBRAS MARTINICA	0.000	0.180	0.000	0.000	0.268	0.000	0.172	0.000	0.000	0.245	0.000
MENIDIA SP.	0.000	0.000	0.000	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000
HIPPOCAMPUS ERECTUS	1.282	0.000	0.000	0.000	0.538	0.175	0.000	1.083	1.937	0.168	0.000
MICROGNATHUS CRINIGER	0.000	0.000	0.000	0.000	0.270	0.175	0.390	0.000	0.000	0.000	0.000
HIPPOCAMPUS ZOSTERAE	0.507	0.000	0.000	0.000	0.000	0.175	0.000	0.000	0.000	0.158	0.208
MICROGNATHUS FLORIDAE	2.482	0.000	0.000	0.000	1.093	0.175	0.310	3.767	4.565	1.763	4.565
SYNGNATHUS LOUISIANAE	0.000	0.000	0.000	0.000	0.222	1.102	0.280	1.932	0.225	0.223	0.645
SYNGNATHUS SCOVELLI	0.000	0.000	0.000	0.000	0.000	0.000	0.900	1.308	1.118	0.452	1.380
RACHYCENTRON CANADUM	0.000	0.000	0.000	0.000	0.000	0.000	0.197	0.000	0.180	0.000	0.000
RACHYCENTRON CANADUM	0.000	0.000	0.000	0.303	0.000	0.000	0.197	0.000	0.338	0.000	0.000
DLIGLOPLITES SAURUS	0.000	0.455	0.000	0.000	0.000	0.000	0.197	0.000	0.232	0.000	0.000
EUCINDOSTOMUS SP.	39.185	0.000	39.353	103.333	36.988	0.000	7.980	233.583	10.943	40.323	47.270
FAMILY SCIAENIDAE	1.117	0.000	0.000	0.000	1.902	0.000	0.000	0.000	0.555	0.000	0.683
CYNOSSION NEBULOSUS	1.533	0.000	0.000	0.267	0.270	0.000	0.000	0.000	0.000	0.000	0.937
MENTICIRRIUS SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.235
CHAETODIPTERRUS FABER	0.280	0.000	0.000	0.000	0.538	0.000	0.000	0.442	0.922	0.000	0.748
PARACLINUS FASCIATUS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.670	11.160
FAMILY BLENNIIDAE	27.525	4.435	0.000	7.537	19.343	1.460	2.025	2.378	6.087	0.505	0.000
UNIDENTIFIED BLENNY	2.187	0.180	0.252	0.238	0.000	0.350	0.000	0.632	4.515	0.000	1.845
CALLIONYMUS PAUCIRADIATUS	11.945	0.000	0.157	0.460	19.885	33.547	2.890	33.217	3.802	0.000	0.000
FAMILY GOBIIDAE	4.872	0.000	0.000	0.000	1.093	0.000	0.000	6.113	1.520	0.395	3.763
BATHYGOBIUS SOPORATOR	80.780	5.112	30.222	3.893	8.067	74.627	4.420	9.950	51.013	29.493	58.788
GOBIOSOMA ROBUSTUM	4.148	15.508	1.782	0.303	0.285	19.138	9.707	0.000	0.000	0.000	0.918
MICROGOBIUS GULOSUS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.070
PRIONOTUS SP.	8.533	0.000	0.627	0.238	5.517	0.677	2.083	3.465	2.845	11.083	3.517
FAMILY TRIGLIDAE/SOLEIDAE	0.887	0.275	0.462	2.852	8.140	1.127	0.000	2.238	1.753	3.133	2.807
ACHIRUS LINEATUS	0.000	0.473	0.000	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SYMPHURUS PLAGIOSA	0.000	0.000	0.000	0.000	0.000	0.173	0.000	0.000	0.000	0.000	0.000
MONACANTHUS CILIATUS	0.512	0.000	0.003	0.000	0.268	0.200	0.310	0.207	0.232	0.000	0.187
MONACANTHUS SP.	0.000	0.000	0.000	0.000	0.840	0.000	0.000	0.000	0.000	0.000	0.375
FAMILY OSTRACIIDAE	0.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPHEROIDES SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.217	0.000	0.000	0.000
CHILOMYCTERUS SCHOEFFI	3.138	0.000	0.738	0.238	2.000	1.008	1.368	26.998	29.008	13.968	11.330
UNIDENTIFIED	5.393	0.000	0.167	0.505	3.807	0.378	0.930	0.640	0.180	1.100	0.615
UNIDENTIFIED-DAMAGED	0.655	6.270	4.735	5.353	11.672	0.000	26.165	1.093	0.000	1.332	1.385
PENAEUS SP.	0.315	0.882	0.000	0.000	0.000	0.200	0.280	0.217	0.225	0.000	0.000
TRACHYPENAEUS SP.											

237.23 232.475

4231.05

30.775

CALLINECTES SP.	0.000	1.578	1.000	0.238	3.465	1.383	0.788	0.808	0.225	0.395	0.440
MENIPPE MERCENARIA	2117.35	25.310	1.000	562.722	420.768	168.097	1239.12	1904.5	114.705	3584.77	
LOLLIGUNCULA BREVIS	0.000	0.000	0.252	0.000	0.000	0.000	0.280	0.000	0.000	0.000	1.358

TOTAL OF AVERAGE DENSITIES	3083.8	83.677	139.358	879.962	618.427	358.497	4981.75	2339.12	539.788	4008.84	3773.84
			141.268	702.157			1783.68				

ENTRAINMENT
DENSITY BY STATION
NUMBER PER 100 CUBIC METERS
SEPTEMBER 27, 1983

SPECIES NAME	A	B	C	D	E	F	G	H	I	J	K
CLUPEID	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.523	0.000	0.000	0.000
BREVDORTIA SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.925	0.645	0.000	0.000
FAMILY ENGRAULIDAE	0.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.315	0.000
ANCHOA HEPSETUS	0.000	0.000	0.000	0.000	0.000	0.513	0.250	0.000	0.000	7.465	8.725
ANCHOA MITCHILLI	2.083	137.517	52.108	8.488	7.473	29.990	32.677	12.133	118.043	17.368	19.133
ANCHOA SP.	1.310	7.198	62.427	4.720	5.278	17.267	15.580	0.217	0.323	46.910	41.907
GOBIESOX STRUMOSUS	0.000	0.230	0.228	0.482	0.468	0.257	0.167	0.000	0.307	0.000	0.760
HIPPOCAMPUS ERECTUS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.245	0.303	0.203	0.000
HIPPOCAMPUS ZOSTERAE	0.000	0.000	0.000	0.000	0.228	0.000	0.000	0.000	0.000	0.000	0.000
MICROGNATHUS CRINIGER	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.315	0.000
SYNGNATHUS FLORIDAE	0.000	0.230	0.000	0.302	1.370	0.237	2.625	0.643	1.617	5.082	1.433
SYNGNATHUS LOJISTANAE	0.000	0.000	0.267	0.000	0.000	0.000	0.000	0.245	1.402	0.000	0.000
SYNGNATHUS SCOVELLI	0.000	0.000	0.000	0.000	0.000	0.000	2.707	0.247	0.000	0.000	1.908
CHILDROSCOMBURUS CHRYSURUS	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.000	0.000	0.000
FAMILY SCIAENIDAE	2.430	0.000	0.000	0.000	0.000	0.000	0.365	3.153	1.740	0.000	3.823
CYNOSCION NEBULOSUS	0.000	0.000	0.000	0.282	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MENTICIRRHUS SAXATILIS	0.000	0.000	0.257	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FAMILY BLENNIIDAE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.468	0.768
UNIDENTIFIED BLENNY	0.225	0.965	0.743	0.000	1.662	0.750	3.115	0.000	0.630	3.128	0.990
CALLIONYMUS PAUCIRADIATUS	0.000	0.000	0.223	0.000	0.000	0.000	0.000	0.247	0.000	0.000	0.203
FAMILY GOBIIDAE	0.000	3.995	0.000	0.302	0.235	3.082	0.332	0.495	4.400	16.880	0.247
BATHYGOBIOUS SOPORATOR	0.000	0.248	0.712	0.000	0.228	0.000	0.000	0.000	0.307	1.063	1.617
ORTOSOMA ROBUSTUM	1.555	5.088	24.687	2.768	4.618	9.733	14.587	1.793	1.362	57.835	63.792
MICROGOBIOUS GULOSUS	0.000	3.953	3.638	0.000	0.000	3.978	1.883	0.000	0.000	0.000	0.443
PRIONOMYX SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FAMILY PLOGLIDAE/SOLEIDAE	0.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ACHIRUS LINEATUS	0.893	0.000	0.745	0.533	0.240	0.630	0.083	1.887	2.490	1.247	0.585
MONACANTHUS SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.365	0.000	0.000	0.000	0.000
SPHEROIDES SP.	0.297	0.000	0.000	0.000	0.000	0.000	0.332	0.000	0.000	0.000	0.000
UNIDENTIFIED	0.000	0.000	0.000	0.000	0.480	0.317	1.428	7.155	14.082	2.625	4.960
UNIDENTIFIED-DAMAGED	0.000	0.000	0.000	0.000	0.292	0.313	0.332	2.783	1.823	1.367	1.203
PENAEUS SP.	0.000	0.488	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.203	0.000
TRACHYPENAEUS SP.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.203	0.000
CALLINECTES SP.	0.225	2.023	2.693	9.063	13.683	2.480	0.998	0.247	1.507	5.367	0.495
MENIPPE MERCENARIA	122.467	13.445	113.283	145.613	240.165	49.220	287.958	63.105	535.640	504.087	2398.63
LOLLIGUNCULA BREVIS	0.000	0.000	0.258	0.000	0.000	0.000	0.083	0.000	0.215	0.000	0.000

TOTAL OF AVERAGE DENSITIES

132.078 175.382 262.270 172.553 276.422 118.767 366.117 98.043 687.052 672.132 2551.62
673.552

-104.545

Survey #1

Temperatures (°C) HWS (1)

8/6/83 1136-1236



Temperatures (°C)

LWS (1)

(3)

8/6/83

1953-2053



Temperatures (°C)

LWS (2)

8/7/83 0734-0834

7



Temperatures (°C)

Flood (z)

(8)

8/7/83

1003 - 1103



Temperatures (°C)

HWS(3)

9

8/7/83

1230 - 1330



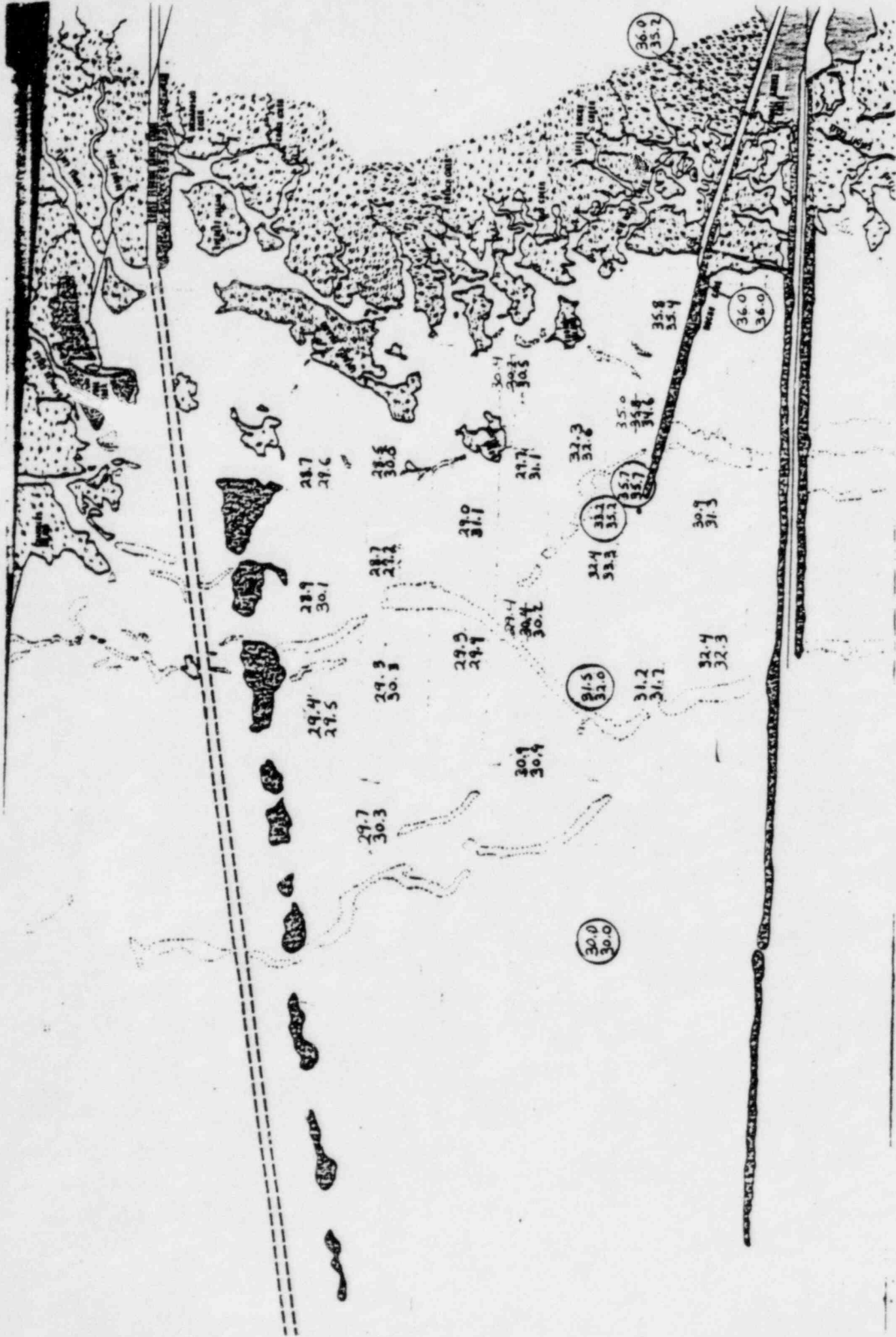
Survey #2

Temperatures (°C)

8/13/83

Ebb

0846-0946

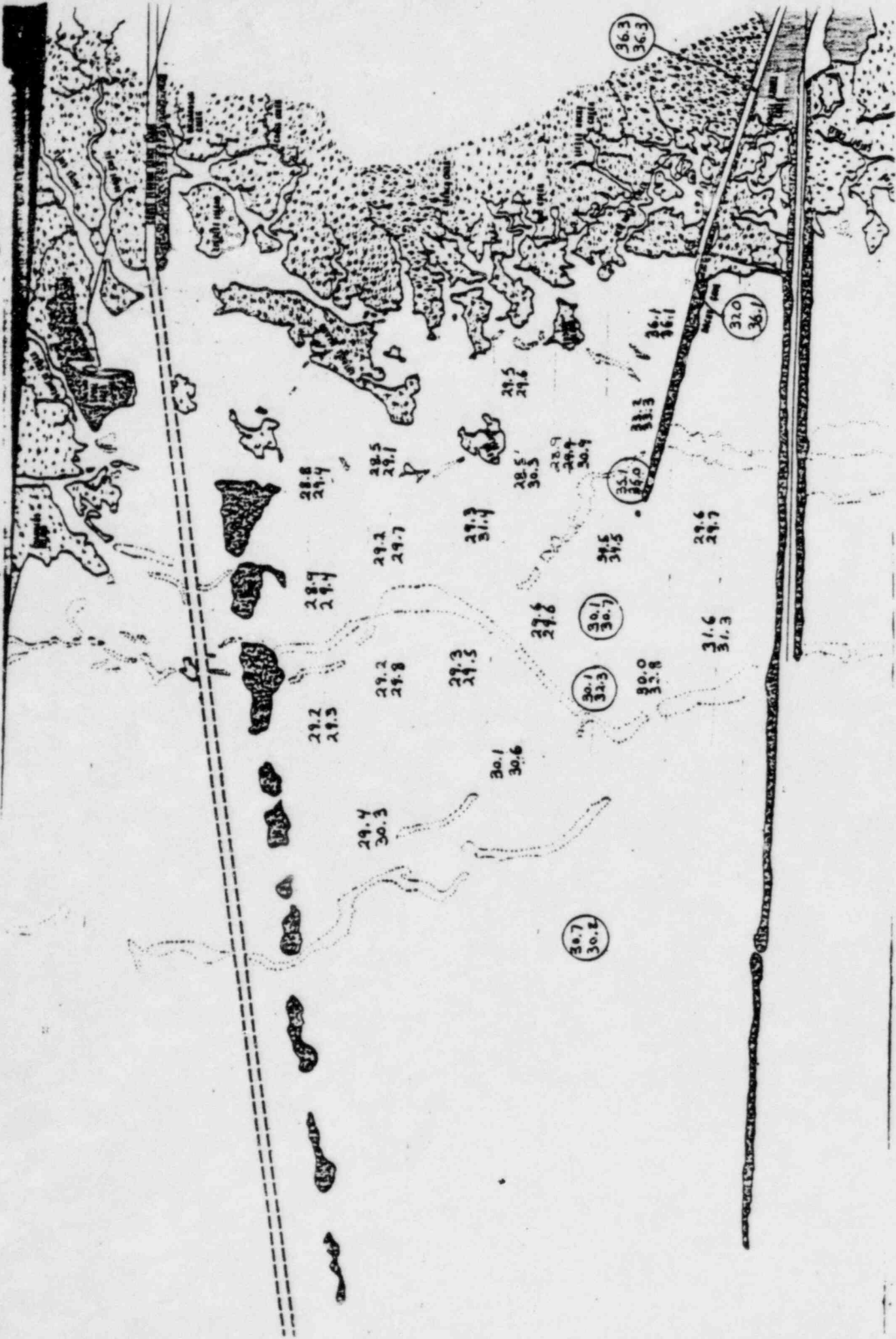


Temperatures (°C)

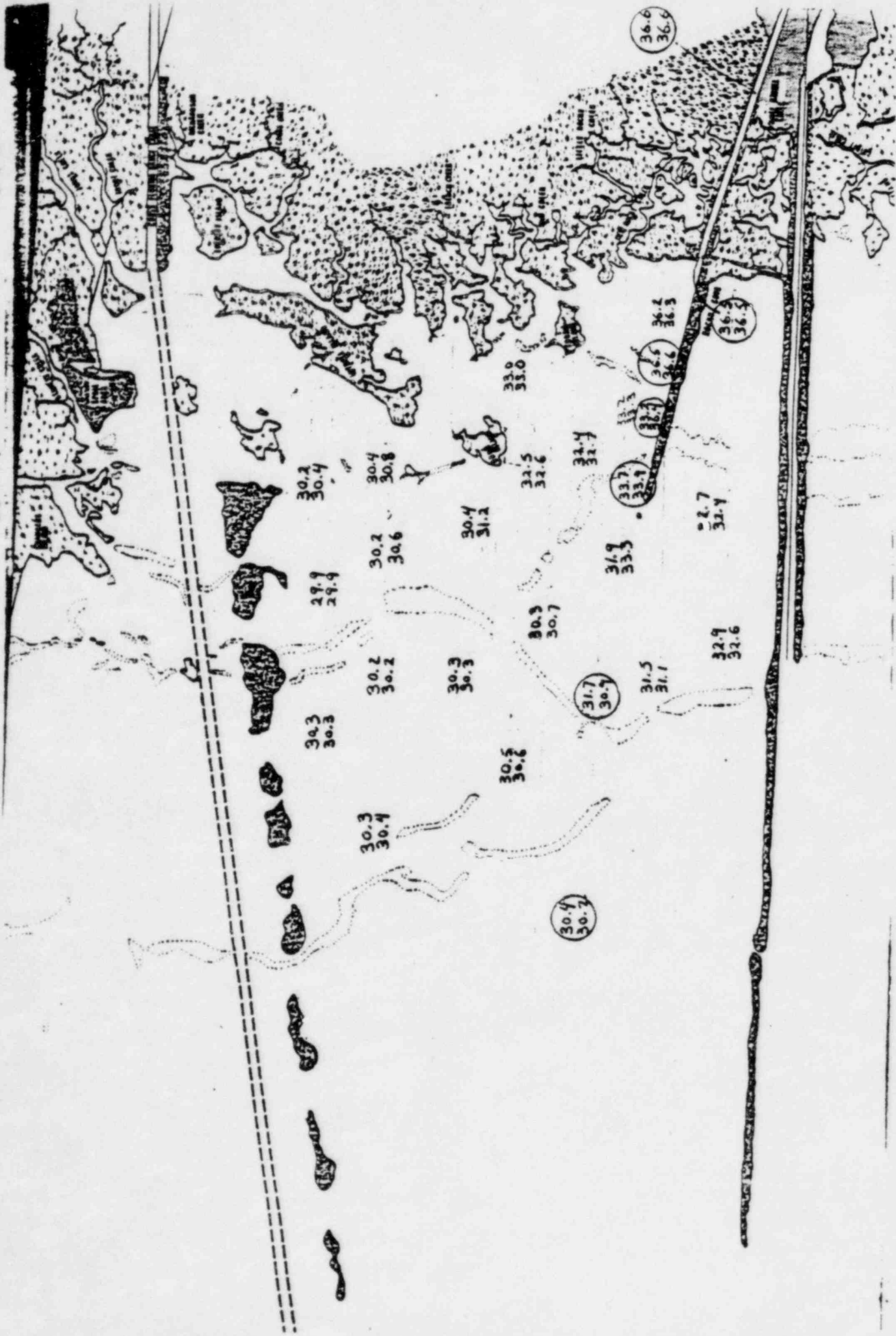
LWS

8/13/83

1216 - 1316



Temperatures (°C) HWS
 8/13/83 1740 - 1840



TEMPERATURES (°C)

FLOOD (1)

1/6/84

1300 - 1400



10.9
9.3
Off North Jetty
Sather 9.2
Sather 9.2

Temperatures (°C) HWS (1)

1/6/84 1555-1655



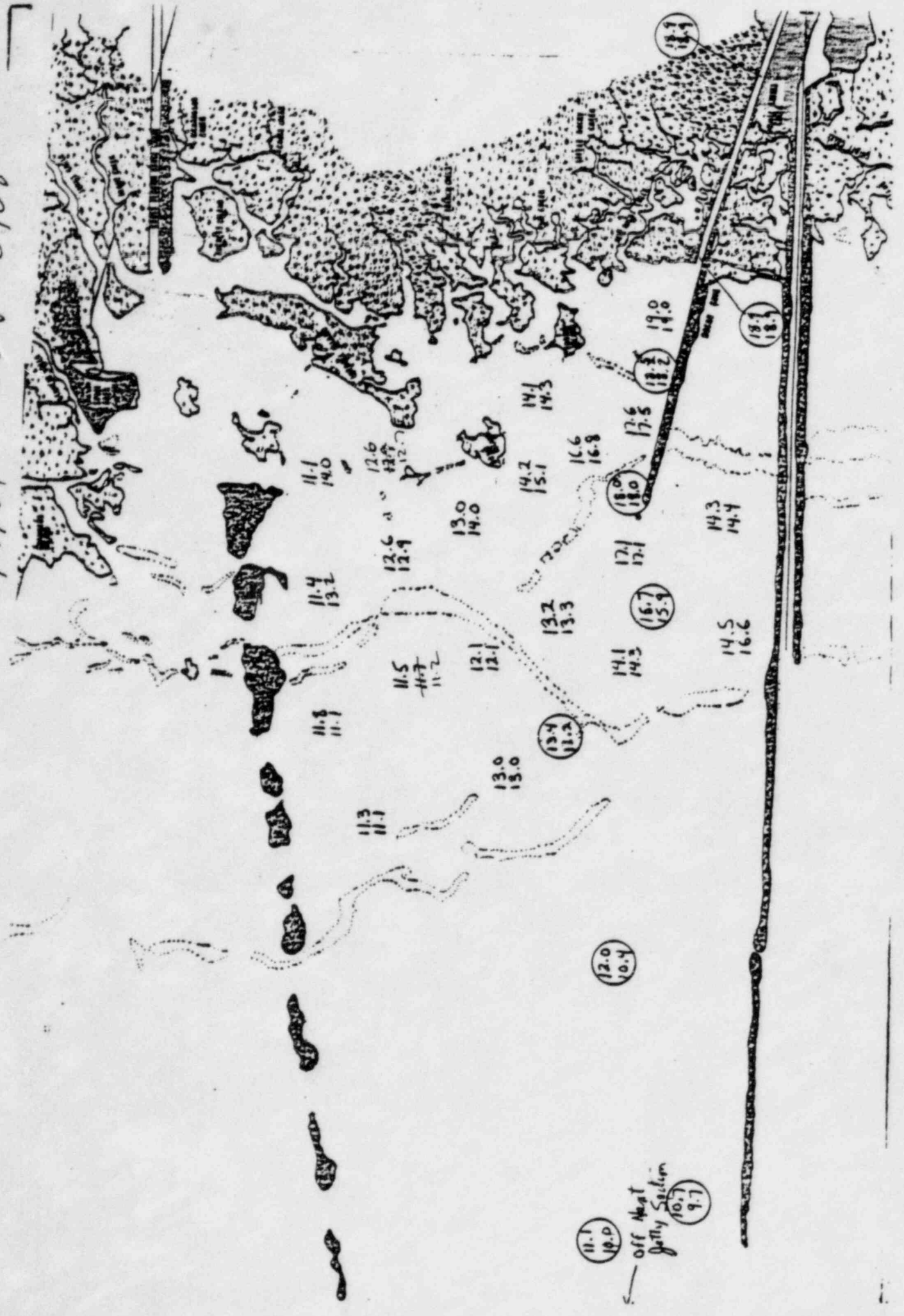
temperatures (°C) HWS(2)

1/7/84 0254 - 0354



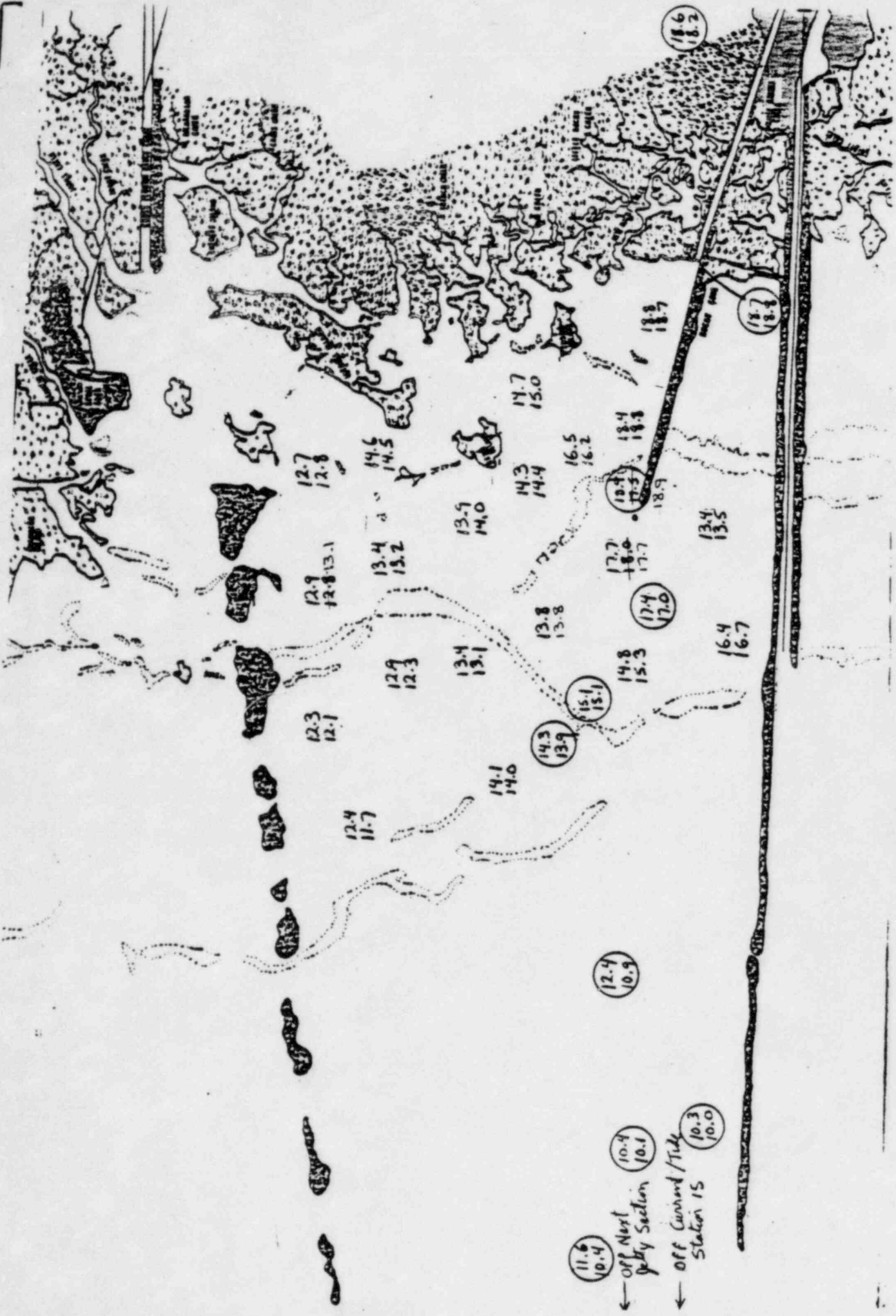
SURVEY # 4

①
Temperatures (°C) Ebb
1/9/84 0808 - 0908



Temperatures (°C) LWS ②

1/9/84 1146-1246





**Florida
Power**
CORPORATION

June 7, 1984

Mr. Paul J. Traina
Water Management Division
United States Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Traina,

Enclosed is a copy of the Notes of Conference from the Third Quarterly Progress Meeting for the Crystal River 316 Study held in St. Petersburg on May 3, 1984.

During the Quarterly Meeting, it was noted that several corrections to the data tables in the Third Quarterly Report were needed, and it was requested that marked tables be provided. Pursuant to that request, copies of the following corrected tables are enclosed:

- Revised tables of June temperature and conductivity. These tables have been changed to reflect a 90 minute, rather than a 2 hour, tide window and to correct incorrectly specified times for maximum tide.
- July, 1984, temperatures by week.
- Juncus marsh data for October, 1983.
- Entrainment densities for July 21, August 31 (2), September 14, and September 27.
- Fourteen figures showing temperatures monitored in August and January. Also, please note that a few uncircled temperatures have been found to represent single readings in contrast to the absolute statement on Page 4-1 of the Quarterly Report, however, they remain uncircled to distinguish the readings from ones taken by the "chase" boat.

Figures showing salinity data for the intensive surveys will be checked during the next several weeks since changes in temperature are reflected in the conductivity to salinity conversion. Any needed corrections will be forwarded.

If you have any questions concerning the enclosed items, please contact Mr. Paul Behrens in St. Petersburg at 813/866-5521.

Sincerely,

FLORIDA POWER CORPORATION

William S. O'Brien

William S. O'Brien
Director
Environmental & Licensing Affairs

WSO/taf

Enclosures

cc: Mr. C. H. Kaplan, EPA
Mr. D. Hicks, EPA
Mr. J. P. Subramani, FDER
Dr. L. A. Olsen, FDER
Dr. D. Farrell, FDER
Mr. J. W. Pulliam, FWS, w/o enclosure
Mr. J. R. Carroll, FWS
Mr. J. T. Brawner, NMFS, w/o enclosure
Dr. E. Keppner, NMFS