

**Florida
Power**
CORPORATION

May 23, 1984
3F0584-09

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
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 Reporting

Dear Sir:

Florida Power Corporation hereby transmits a copy of recent correspondence with the Environmental Protection Agency, in accordance with Crystal River Unit 3 Technical Specifications, Appendix B, Part II, Section 3.2. The attached letters involve the sample gathering for the 316 Study and the denial of relief from delta-T limitations requested on April 24, 1984.

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

Sincerely,

P. Y. Baynard
P. Y. Baynard
Assistant to Vice President
Nuclear Operations

DVH/feb

Attachments

cc: Mr. J. P. O'Reilly, Regional Administrator
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
101 Marietta Street N.W., Suite 2900
Atlanta, GA 30303

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

APR 12 1983

REF: 4WM-FP

*Copy to Gary Westafar
May 14, 1984*

John A. Hancock, Vice President
Fossil Operations
P. O. Box 14042
St. Petersburg, Florida 33733

Dear Mr. Hancock:

Staff members of Florida Power Corporation, EPA and the State of Florida have discussed the magnitude and potential problems associated with the missing thermograph data for the period of July-September, 1984. Temperature data recovery averaged only slightly more than 76 percent for the 72 thermographs during this period of critically high temperatures. Twenty-six of the stations have 1/3 of the data missing and of these eight are missing 1/2 and two are missing 2/3 of the data. Serious consideration has been given by this Agency as to whether this loss of data will be critical to review of the 316 study results and whether all 72 thermographs should be redeployed for the "fifth quarter" of the study.

Our evaluation indicates that the data loss from some of these recorders is excessive and that additional thermograph data during the summer of 1985 is mandatory. However, rather than deploy all 72 units at the existing stations, we feel that installation of bottom thermographs at the 40 benthic stations will provide more useful data to complete the study objectives. Continuous data from these stations during the summer periods of maximum temperatures will assist in comparisons of the fauna at the benthic stations and in quantifying the area of thermal impact (major objectives of the 316 study) as well as providing data necessary to complete the thermograph record for the 72-station assessment.

Should you have any questions or feel that deployment of thermographs at the benthic stations is not acceptable, feel free to contact us.

Sincerely yours,

John J. Traina for
Paul J. Traina, Director
Water Management Division

cc: Mr. William S. O'Brien, FPC
Dr. J. P. Subramani
Mr. Delbert Hicks
Dr. Lawrence Olson, FDER
Mr. Douglas Ferrel, Tampa FDER



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

APR 13 1984

REF: 4WM-FP

John A. Hancock, Vice President
Fossil Operations
P. O. Box 14042
St. Petersburg, Florida 33733

RE: Crystal River 316 Study
NPDES Permit FL0000159

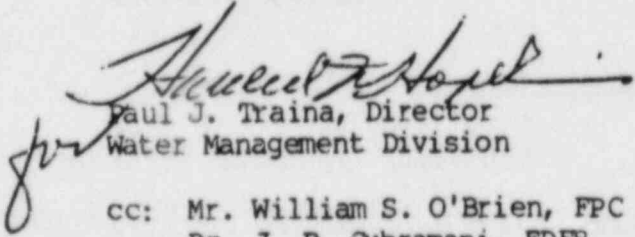
Dear Mr. Hancock:

A letter was sent to you on April 12, 1984, discusssing thermograph data at the referenced facility, but was incorrectly dated April 12, 1983.

Within the body of that letter, two additional erroneous year designations were included.

Please replace that letter with the attached letter dated April 12, 1984.

Sincerely yours,


Paul J. Traina, Director
Water Management Division

cc: Mr. William S. O'Brien, FPC
Dr. J. P. Subramani, FDER
Mr. Delbert Hicks, EPA
Dr. Lawrence Olson, FDER
Mr. Douglas Ferrell, Tampa FDER

April 12, 1984

REF: GWH-FP

John A. Hancock, Vice President
Fossil Operations
P. O. Box 14042
St. Petersburg, Florida 33711

Dear Mr. Hancock:

Staff members of Florida Power Corporation, EPA and the State of Florida have discussed the magnitude and potential problems associated with the missing thermograph data for the period of July-September 1983. Temperature data recovery averaged only slightly more than 76 percent for the 72 thermographs during this period of critically high temperatures. Twenty-six of the stations have 1/3 of the data missing and of these, eight are missing 1/2 and two are missing 2/3 of the data. Serious consideration has been given by this Agency as to whether this loss of data will be critical to review of the 116 study results and whether all 72 thermographs should be redeployed for the "fifth quarter" of the study.

Our evaluation indicates that the data loss from some of these recorders is excessive and that additional thermograph data during the summer of 1984 is mandatory. However, rather than deploy all 72 units at the existing stations, we feel that installation of bottom thermographs at the 46 benthic stations, will provide more useful data to complete the study objectives. Continuous data from these stations during the summer periods of maximum temperatures will assist in comparisons of the fauna at the benthic stations and in quantifying the area of thermal impact (major objectives of the 116 study) as well as providing data necessary to complete the thermograph record for the 72-station assessment.

Should you have any questions or feel that deployment of thermographs at the benthic stations is not acceptable, feel free to contact us.

Sincerely yours,

Isai J. Traina, Director
Water Management Division

cc: Mr. William S. O'Brien, FPC
Mr. J. P. Sabatani, FDEP
Mr. Robert Hicks, EPA
Dr. Lawrence Olson, FDEP
Mr. Douglas Ferrell, Tampa FDEP

bcc: Mr. Paul J. Behrens, FPC
Mr. Peter McGarry, EPA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAY 10 1984

REF: 4WMFP

Mr. Paul Behrens
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

Re: Crystal River 316 Study
NPDES Permit No. FL0000159

Dear Mr. Behrens:

Reference is made to information presented in the second and third quarterly reports and to discussions at subsequent meetings. Additional information is requested to be made available at this time and/or in the 316 Demonstration as applicable. Availability of portions of this information now will assist in our continuing assessment and dialog with FPC staff. To the extent that requested material is not readily available or can not be provided with a reasonable level of effort, please call me so that we can discuss alternative approaches.

1. Weekly STD Surveys

- (a) Time of high or low tide, times of sample collection (tide window), tide amplitude and average wind speed and direction should be added to the tabulation of data. Where data points are significantly outside the tide window, sampling times should be noted and applicable data points marked as not being representative of the tide condition sampled. This is especially applicable to Stations 4-30.
- (b) Map(s) providing benthic and thermograph station locations within the area of benthic Stations 4-30 and a grid of designated size (possibly by overlay) at a scale larger (approximately three times) than Figure 2-9 of the January 11, 1984, study plan summary. A map showing only bathymetry, oyster bars and station locations would be desirable. Expedient receipt of this material would be helpful in plotting selected STD data.
- (c) Tabulation of depths for benthic stations and also for thermograph stations.

2. Intensive Surveys

- (a) Map(s) with specific locations of the stations sampled at a scale consistent with Figures in Section 4.5 of the third quarterly report. Map(s) of the same size or overlays showing location of benthic and thermograph stations and inclusion of a linear scale and grid of designated size would be appreciated.
- (b) Listing of individual data points and times of sampling.

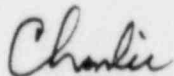
(c) Information similar to item 1. (a) above.

3. Plant Operating Data

Hourly data logs for Crystal River Units 1, 2, and 3 for all intensive and weekly STD surveys during August 1983 and January 1984 including load (MW), intake temperature, delta temperature by unit and POD temperature. Data listing should start about six to 12 hours before start of the survey. With the exception of August 13, requested data for August, 1983 was provided at the May 3, 1984, meeting. This information is requested to assist in assessment of data in the second and third quarterly reports. Future discussions will include data requirements and presentation in the 316 Demonstration.

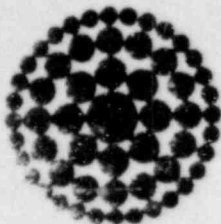
Should you have any questions please feel free to contact me. Your assistance in this matter is greatly appreciated.

Sincerely yours,



Charles H. Kaplan, PE
Coordinator, Thermal Analysis

cc: Subramani
Olson
Ferrell



**Florida
Power**
CORPORATION

bcc: J. A. Hancock - A5A
W. S. Wilgus - A5C
H. A. Evertz - A5D
M. B. Foley - H8
G. R. Westafer w/attachment - H3
R. E. Parnelle
D. K. Voigts

May 1, 1984

Mr. Paul J. Traina, Director
Water Management Division
U. S. Environmental Protection Agency
345 Courtland Street NE
Atlanta, GA 30365

Subject: Crystal River 316 Study

Dear Mr. Traina:

We have received your letter of April 17, 1984, and thank you for approving previously requested modifications to the subject study.

There was a lengthy discussion of the need for "typical curves" at the Second Quarterly Progress Meeting and it was agreed that one set would be developed for review. However, discussions between Messrs. Behrens and Hicks subsequent to the meeting indicated these plots would not be necessary if other data were provided. This change is recorded in the Notes of Conference from the Second Quarterly Progress Meeting transmitted to Mr. Kaplan on March 5, 1984. A copy is enclosed for your information with the appropriate section highlighted. We had assumed this matter resolved. If this is not the case, it should be discussed at the upcoming May 3, 1984 meeting.

In the third paragraph of your letter you state that FPC has not "specifically indicated the alternative thermal limitations" which it is seeking. This is correct. We are not proposing any alternate thermal limitations at this time nor do we think any should be proposed until after the 316 Study is completed. The scientific facts and analyses the study yields should logically play a large role in the final outcome of Crystal River. Establishing positions at this time could jeopardize that final resolution.

Sincerely,

J. A. Hancock
Vice President, Fossil Operations

JAH:1b

Enclosure

cc: Ms. V. J. Tschinkel, FDER w/Encl



March 5, 1984

Mr. Charles H. Kaplan
Water Management Division
Permits Section
U. S. Environmental Protection Agency
345 Courtland Street
Atlanta, Georgia 30365

Subject: Crystal River 316 Study

Dear Mr. Kaplan:

Enclosed is a copy of the Notes of Conference from our Second Quarterly Progress Meeting, held on February 2, 1984. Should you have any comments or questions regarding these notes, call me in St. Petersburg at (813) 866-5521.

Sincerely,

Paul J. Behrens
Paul J. Behrens

PJB/gr

Enclosure

NOTES OF CONFERENCE

J.O.No. 14498

FLORIDA POWER CORPORATION

Held in the Offices of
Florida Power Corporation
St. Petersburg, FL
February 2, 1984

Present for:

Florida Power Corporation (FPC)

David Voigts
Paul Behrens

U.S. Environmental Protection
Agency (EPA)

Charles Kaplan
Delbert Hicks

Florida Department of Environmental
Resources (DER)

Lawrence Olsen
Doug Farrell

U.S. Fish and Wildlife Service (FWS)

Jack Gallagher

Mote Marine Laboratory (MML)

Kumar Mahadevan

Stone & Webster Engineering
Corporation (SWEC)

Tom Biffar
David McDougall
Tom Folger

PURPOSE

The meeting constituted the Second 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. Mr. Behrens opened the meeting, noting that a summary plan of study had been produced as requested at the first quarterly progress meeting and distributed to interested parties.

Dr. Biffar reported that Station L, a grassbed station for plankton sampling, was relocated on October 24 as the grassbed no longer existed. It was suggested that sampling continue at the new location but that re-establishment of the grassbed be monitored. Should the grass reach

previous densities, supplemental sampling at the original site will be considered. In the course of the discussion Dr. Mahadevan noted that Stations L and M were not intended to be comparable and do have different dominant macrophytes. It was also noted that the crab tagging program began in September and was completed in early January. Dr. Farrell expressed some concerns that female movements as influenced by the intake spoil dike would not be adequately monitored without further sampling, however, it was pointed out that the program had been designed and previously approved to run from September through December. DNR's longer term return information could be used to supplement the site-specific data. Dr. Farrell is particularly interested in total catch, male versus female ratio and catch by station.

Dr. Mahadevan reviewed the status of field collections and laboratory analyses as summarized in Tables 3-1 and 3-2. No exceptions were taken regarding any of the biological tasks. Mr. Kaplan inquired about the ground truthing question raised at the first meeting and was told that macrophytes at locations other than specific station locations are also investigated and recorded. Mr. Kaplan questioned the lack of available aerial photographs and asked if EPA Las Vegas had been contacted for help. MML had done this and got no new suggestions. Mr. Hicks indicated that experience in the present program is about what he would expect considering meteorological and water quality conditions. Dr. Voigts noted the desirability of hand-held, amateur photographs in lieu of no photographs. Changes in gear types as described in the first quarterly meeting are working well.

Mr. Kaplan was concerned that references in Table 3-1 to stations missed during low-tide, photometry sampling do not always correspond to data presented in the data tables. Table 3-1 will be reviewed and corrected as necessary for future reports, but it was noted that the table is not intended to be as precise as the data. Mr. Kaplan also referred to several apparently incorrect temperature records in the monthly temperature tables. Most numbers questioned were correct when compared to field logs but two values were input errors. An additional check will be put into the system to a) evaluate field data for "reasonableness" before input and b) evaluate variations within and between stations. Relative to the weekly temperature data, Mr. Kaplan stated that EPA documented by letter (April 22) their desire for plume plots and average determinations for each survey. After an extended discussion of the need for such an effort, it was suggested that only plots of worst case temperature under high and low tide conditions, approximately each six weeks (the benthic core schedule) might be sufficient. Dr. Voigts asked SMEC to develop one set of plots for Mr. Kaplan's review. Discussion between Mr. Behrens and Mr. Hicks subsequent to the meeting suggested that plots of weekly data would not be needed if these data are to be correlated directly with the biological data (see Attachment 3). Plant heat output data is needed to correlate with the measured temperature.

Dr. Mahadevan reported better thermograph recovery since markers were changed. Mr. Kaplan noted that EPA has been reviewing thermograph data recovery especially for July, August and September. They expect to make a decision on adequacy in the near future. If the data are judged inadequate,

EPA may request an extension of the collections to cover June, July and August, 1984. Mr. Behrens questioned the level considered adequate and the need for an extension since recovery may be no better in 1984. He stated that if more data were requested, collecting at fewer stations should be considered. Mr. Hicks agreed that 75 percent recovery was reasonable and stated that his prime interest was in "bottom" units and only Stations 17B and 45B appear to have real problems. DER is interested in having adequate data for a mixing zone determination and would be concerned with gaps in the temperature data.

Adequacy of tide height data was briefly discussed. Boundary stations are most important but even loss of data at some of these stations can be compensated for, although with difficulty. Latest information from MML is that data enhancement efforts have been successful and good recovery of boundary information will result. Exact status will be known in two weeks and EPA will be notified.

It was agreed that, if necessary, scheduled photometry and related water quality sampling would be altered to ensure sampling correlated with storms and barge traffic the necessary number of times.

Meteorology data from FPC has been obtained to compensate for the August gap in data from MML's facility. Data from overlapping periods will be compared to define the relationship between the two sets of data.

Replication adequacy is being reviewed for benthic samples. Several parameters such as saturation curves, density changes, Shannon-Weaver and Morisita's index are being used. The results should be available in about two weeks. Dr. Farrell is interested in the Shannon-Weaver results.

Oyster reef data is being affected by sediment at certain stations. As sedimentation occurs, cages are being lifted but not relocated. It was agreed that this was appropriate.

Mr. Kaplan noted several open items from the earlier meeting. In particular, the definition of ambient temperature remains open. EPA does need any revision of the MML Quality Assurance Manual/Standard Operating Procedures. The need for additional entrainment sampling was discussed at length. Since it was estimated that complete mixing requires much of the discharge canal and that settlement of plankton in the canal is unlikely given ambient currents, Station C in its present location will suffice.

Mr. Kaplan stated that the quality assurance program in place is acceptable; DER has no definitive problem. Mr. Kaplan also reiterated program changes made since June, 1983 and requested and received formal approvals. The changes were: moving Stations B, I, K and L; inclusion of only Stations 4-30 in the 90 minute window; deletion of fish stomach analysis and changing the crab tagging program. The movement of Station L should be documented by letter to EPA. While no new entrainment sampling station is needed, Station C should be sampled at an appropriate interval after Stations D and E. The Technical Specification Summary submitted previously is

acceptable. Extending thermograph data collection for three months is still under consideration.

Mr. McDougall reported the status of modeling. Model setup and testing with mock data has been successful; the site grid and a model velocity output were displayed. The computer programs and procedures to handle data on tides, currents, water quality and meteorological conditions have been completed and the August data will soon be prepared for use as model input; data from Station 5 were displayed. The last of the August data should be received within the week. Returns are better than previously thought, but in either case should be sufficient for the modeling effort. The January surveys have been completed and data from the in situ meters should be available in about a month. The near-field model has not yet been selected. Mr. Kaplan reiterated concern with multilayer plume conditions; this phenomenon will be handled in the near-field but is not modeled in the far-field.

Dr. Biffar passed out some explanatory notes concerning the data presentations and data tables as follows: replacement salt marsh (Spartina) tables, new oyster mortality tables for November, replacement impingement tables, replacement drop net biomass tables, and a new crab tagging table. Mr. Hicks would like to see species lists by family. Input on desired analyses are requested for the next meeting. A summary of anticipated analyses will be included in the next report as a starting point for the discussion.

TBiffar:PBF

ATTACHMENT 1

AGENDA

SECOND QUARTERLY PROGRESS MEETING

CRYSTAL RIVER NPDES STUDIES

1. Introduction - P. Behrens
2. Program Changes - T. Biffar
3. Field Work and Laboratory Analysis - S. Mahadevan
4. Hydrodynamic and Hydrothermal Modeling - D. McDougall
5. Data Tables and Data Analysis - T. Biffar
6. Discussion

ATTACHMENT 2

Attendees

2nd Quarterly Progress Mtg

TOM BIFFAR

Stone & Webster

KUMAR MAHADEVAN

Mote Marine Laboratory

Thomas A. Folger

Stone & Webster Eng. Corp.

David W McDougall

" " " "

Delbert B. Hicks

EPA

CHARLES H. KAPLAN

"

JACK GALLAGHER

USFWS ✓

David Voigts

FPC

Doug Farrell

FDER ✓

Lawrence A. Olsen

FDER ✓

Paul BENNETT

FPC

Attachment 3

Dr. S. Mahadevan has prepared the following response regarding the use of weekly temperature data (collected in conjunction with light, conductivity and pH measurements) in the assessment of thermal impact on the benthic infaunal community in the vicinity of Florida Power Corporation's Crystal River Power Plant.

In the original Plan of Study bottom temperature at the benthic stations was proposed to be collected monthly in conjunction with the infaunal sampling program. In MML's review of the Plan of Study, such a sampling frequency was considered inadequate and MML recommended that weekly sampling of temperature and other parameters be conducted at the infaunal stations in order to statistically delineate temperature differences at the stations.

It is anticipated that this information will be used as follows:

1. Confirming the validity of northern and southern control stations in terms of temperature regime.
2. In terms of temperature, classify the stations in thermal area according to the gradation of delta T's as determined from 6 weeks or quarterly averaged data and comparing the thermal stations with paired control stations.
3. Identify in terms of infaunal benthic community characteristics, the gradation of stations that are different or under stress. Utilizing the information obtained in Item #2 (above), along with similar information from other physical parameters, identify the thermally altered stations and thereby the area of thermal impact.

Therefore, all the analyses of temperature data will be on an inter and intra station basis with emphasis on bottom temperature and not vertical profiles. The utility of extrapolated plots or isotherms (as suggested by the Environmental Protection Agency) will be limited for purposes of the benthic community impact assessment.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

File: CR 316 Study

APR 17 1984

REF: 4WM-FP

John A. Hancock, Vice President
Fossil Operations
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

Re: Crystal River, 316 Study
NPDES Permit No. FL0000159

Dear Mr. Hancock:

Modifications to the referenced study as discussed at the Second Quarterly Progress Meeting and included in the meeting notes transmitted by Paul J. Behrens on March 5, 1984, are hereby approved. These include relocation of Stations B, I, K, and L; inclusion of Stations 4-30 within the 90-minute sampling window; deletion of fish stomach analysis; and changes to the crab tagging program.

One major area still remains unresolved at this time. EPA has maintained throughout the study plan development and approval (specifically see my letter of April 20, 1983) that plots of each individual field survey are necessary in the final report and should show delta temperature isotherms, isohalines, and ambient temperature, with multi-depth plots provided as necessary to present thermal/salinity stratification. FPC staff have been of the opinion that only "typical curves" are necessary. At the Second Quarterly Meeting, an alternate suggestion was briefly discussed. Namely, that the highest temperatures at each station and thermograph during a 6-week period be utilized to develop worst case plots. One set of such plots was to be developed to allow further evaluation; however, it has not been provided.

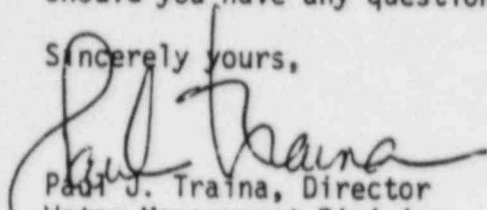
At this time although FPC is now collecting field data to support a 316(a) Demonstration, you have not specifically indicated the alternative thermal limitations which you are seeking. It is requested that you provide us with

- 2 -

this information prior to the May 3, 1984, meeting. Resolution of the number and complexity of the plots of the STD data needed, as well as, the mathematical modeling runs to be conducted will hinge, at least in part, on the alternative thermal limitations being requested.

Should you have any questions, do not hesitate to contact me or my staff.

Sincerely yours,



Paul J. Traina, Director
Water Management Division

cc: Dr. J. P. Subramani, FDER
Dr. Lawrence Olson, FDER
Mr. Douglas Farrell, FDER (Tampa)
Mr. William S. O'Brien, FPC



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAY 10 1984

REF: 4WM-FP

Mr. W. S. Wilgus
Vice President, Nuclear Operations
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

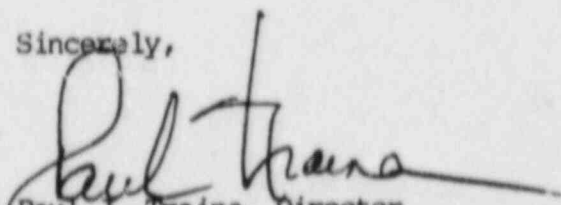
RE: Crystal River Unit 3
NPDES Permit No. FL0000159
Condenser delta-T - Your Letter of April 24, 1984

Dear Mr. Wilgus:

We have reviewed your request for relief from delta-T limitations as stated in your letter dated April 24, 1984. It is my decision that such relief cannot be granted at this time.

The permit has expired. Although its provisions still are in effect under the Administrative Procedures Act, the expiration means that the permit may not be modified. In addition, the thermal studies required under Section 316 of the Clean Water Act have not been completed. Until such time as those studies are complete and determinations regarding necessary thermal limitations are made, the permit will not be reissued.

Sincerely,


Paul J. Traina, Director
Water Management Division

cc: FDER

