

PLANT SYSTEMS

3/4 7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR  
OPERATION

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3.7.5.1 The ultimate heat sink shall be OPERABLE with:

- a. Cooling water from the Atlantic Ocean providing a water level above -10.5 feet elevation, Mean Low Water, at the plant intake structure.
- b. Two OPERABLE valves in the barrier dam between Big Mud Creek and the intake structure.

APPLICABILITY: At all times.

ACTION:

- a. With the water level requirement of the above Specification not satisfied, be in at least HOT STANDBY within one hour and provide cooling water from Big Mud Creek within the next 12 hours.
- b. With one isolation valve in the barrier dam between Big Mud Creek and the intake structure inoperable, restore the inoperable valve to OPERABLE status within 72 hours or, within the next 24 hours, install a temporary flow barrier and open the barrier dam isolation valve. The availability of the onsite equipment capable of removing the barrier shall be verified at least once per seven days thereafter.
- c. With both of the isolation valves in the barrier dam between the intake structure and Big Mud Creek inoperable, within 24 hours either:
  - 1) Install both temporary flow barriers and manually open both barrier dam isolation valves. The availability of the onsite equipment capable of removing the barriers shall be verified at least once per seven days thereafter, or
  - 2) Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours;

The provisions of Specification 3.0.4 are not applicable.

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THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

REPORT OF THE COMMITTEE ON THE  
PROGRESS OF CHEMISTRY

FOR THE YEAR 1954

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SURVEILLANCE REQUIREMENTS

- 4.7.5.1 The ultimate heat sink shall be determined OPERABLE at least once per 24 hours by verifying the average water level to be within limits.
- 4.7.5.2 The isolation valves in the barrier dam between the intake structure and Big Mud Creek shall be demonstrated OPERABLE at least once per six months by cycling each valve through at least one complete cycle of full travel.

## SAFETY EVALUATION

Re: St. Lucie Unit 1  
Docket No. 50-335  
Ultimate Heat Sink

### I. INTRODUCTION

This evaluation discusses a proposed revision to the ultimate heat sink Limiting Conditions for Operation and Surveillance Requirements contained in Technical Specification 3/4.7.5.

### II. DISCUSSION

A description of the design bases for the ultimate heat sink is provided in Section 9.2.7 of the St. Lucie Unit 1 FSAR. In summary, the ultimate heat sink consists of two separate water sources. The primary source is the Atlantic Ocean; the secondary source is Big Mud Creek and the Indian River which are connected to the Atlantic Ocean via the Fort Pierce and St. Lucie Inlets located north and south of Hutchinson Island, respectively. To separate these two sources of water for normal operation, a barrier dam was designed and constructed. The design of the barrier dam provides for flow control devices to be actuated only in an emergency which requires water to be supplied from Big Mud Creek.

The current Specification requires that on-site equipment capability for removing the flow barrier between the intake structure and Big Mud Creek be verified at least once per 7 days. This Specification was based upon the configuration of the interim barrier dam, consisting of two earthen dikes, which was in place as of the date of issuance of the Operating License. Following completion of the permanent barrier dam in June 1976, stop logs were installed, pending the installation of the flow control valves, to preclude the flow of water from Big Mud Creek through the openings in the barrier dam during normal operation. On July 31, 1977, as required by paragraph F.1 of Enclosure 1 to License No. DPR-67, St. Lucie Plant Unit No. 1, installation of gates/valves to control water flow in the ultimate heat sink barrier dam was completed. In accordance with FPL's application dated July 18, 1977, (L-77-225), license condition F.1 was deleted by amendment No. 18 to the license on December 22, 1977. The final system configuration is thus as described in St. Lucie Plant Unit No. 1 Final Safety Analysis Report Section 9.2.7.2.1. On-site equipment capability is therefore required only in the event that the flow control valves are inoperable and stop logs must be installed on an interim basis to block flow.

The revised Specification contains the following provisions:

- (1) Operability of both isolation valves in the barrier dam



1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for ensuring the integrity of the financial system and for providing a clear audit trail.

2. The second part of the document outlines the various methods used to collect and analyze data. It describes how different types of information are gathered and how they are processed to identify trends and anomalies.

3. The third part of the document focuses on the role of technology in modern data management. It highlights the benefits of using advanced software and hardware to store and retrieve information efficiently.

4. The fourth part of the document discusses the challenges of data security and privacy. It explains the risks of unauthorized access and the measures that can be taken to protect sensitive information.

5. The fifth part of the document provides a summary of the key findings and recommendations. It concludes that a robust data management strategy is crucial for the success of any organization.

between Big Mud Creek and the intake structure is required. As discussed in Section 9.2.7.2.2 of the FSAR, each valve represents a 100% opening, i.e., each opening is capable of providing sufficient flow for both Units 1 and 2.

- (2) Both isolation valves must be demonstrated OPERABLE at least once per 6 months by cycling through at least one complete cycle of full travel.
- (3) Reliance is placed upon on-site equipment capability only in the event that stop logs must be installed to control flow. By previous safety evaluations submitted on June 22, 1976 (L-76-233), and March 9, 1977 (L-77-75), the use of stop logs to control flow through a barrier dam was shown to be an acceptable interim means of flow control.
- (4) Existing Specification 3.7.5.1.b requires that the average ultimate heat sink water temperature be no greater than 96°F. Existing Specification 4.7.5.1.1 requires, in part, that daily surveillance of the average ultimate heat sink water temperature be conducted. The performance and documentation of the temperature surveillance is considered to be redundant and unnecessary for the following reasons:
  - a. The ultimate source of cooling water is the Atlantic Ocean which, in this geographical area, does not exhibit temperature measurements in excess of 87°F. This is sufficiently below 96°F to render surveillance of ocean water temperature unnecessary. Furthermore, in the unlikely event that the ocean water temperature does reach 96°F, the water in Big Mud Creek would be at least at that temperature because of its connection with the Atlantic Ocean through the Indian River and the St. Lucie and Fort Pierce Inlets. The requirement to then provide cooling water from the Big Mud Creek to meet the Limiting Condition for Operation thereby becomes meaningless.
  - b. The heating effect of the sun can cause the water in the intake canal to heat up as much as 2°F above the ocean water temperature. Thus, taking incident solar heating into account, the intake canal water temperature will still be well below 96°F and therefore not likely to require initiation of the ACTION statement by itself.



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- c. The heating effect of the sun would be greater if the level of water in the intake canal were lower, which could occur in case of sufficient flow blockage. However, such blockage would rapidly lower the intake canal level and would be detected during the performance of the daily water level surveillance required by Specification 4.7.5.1.1. Thus, daily surveillance of average water temperature is redundant to the daily water level surveillance.

In regard to testing of the ultimate heat sink, Section 9.2.7.4 of St. Lucie Unit No. 1 FSAR states:

"9.2.7.4 TESTING AND INSPECTION

Valves provided in the barrier wall which prohibit flow from Big Mud Creek to the intake canal are tested as specified by the Technical Specifications. These devices will be tested individually and in accordance with the restrictions on the quantity of water that may be withdrawn from Big Mud Creek as imposed by local, state and federal authorities."

The Atomic Safety Licensing Board's Partial Initial Decision on St. Lucie Unit No. 2 regarding testing of the ultimate heat sink, which was incorporated into the construction permit for Unit 2, includes condition (i) as follows:

"(i) the Applicant shall not draw more than four (4) million gallons of water per year from Big Mud Creek for routine testing;"

In addition, by agreement between Florida Power & Light Company and the Central and South Florida Flood Control District, flow drawn from Big Mud Creek is to be limited to less than four million gallons per year.

Based upon data supplied by the architect-engineer and the results of preoperational testing of the system involving actual flow, the surveillance testing at the interval prescribed in Specification 4.7.5.1.2 will result in a draw of water significantly less than the above limit.

III. CONCLUSION

Based on these considerations:

- (1) the proposed change does not increase the probability or consequences of accidents or malfunctions of equipment important to safety and does not reduce the margin of safety as defined in the basis for any technical specification,



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1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is divided into two main sections: the first section deals with the general situation and the second section deals with the progress of the work.

2. The general situation of the country is described in the first section. It is noted that the country has made considerable progress in the field of industry and commerce during the year. The production of goods has increased and the trade has expanded. The government has also taken steps to improve the living conditions of the people and to promote the development of the country.

3. The progress of the work is described in the second section. It is noted that the work has been carried out in accordance with the plan and that the objectives have been largely achieved. The work has been carried out in a systematic and organized manner and the results have been satisfactory.

4. The report concludes with a summary of the work done during the year and a statement of the objectives for the next year. It is noted that the work has been carried out in a systematic and organized manner and the results have been satisfactory.

- (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and
- (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public. In addition, the proposed surveillance requirements will have no adverse impact upon the environment.

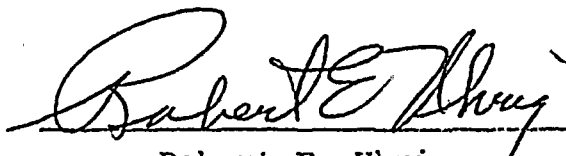
1. The first part of the document is a list of names and their corresponding addresses. The names are arranged in two columns, with the first column containing names and the second column containing addresses. The names are: J. H. Smith, W. R. Jones, T. A. Brown, and M. L. White. The addresses are: 123 Main St., 456 Elm St., 789 Oak St., and 1010 Pine St.

STATE OF FLORIDA     )  
                              )  
COUNTY OF DADE     )            SS.

Robert E. Uhrig, being first duly sworn, deposes and says:

That he is a Vice President of Florida Power & Light Company,  
the Licensee herein;

That he has executed the foregoing document; that the state-  
ments made in this said document are true and correct to the  
best of his knowledge, information, and belief, and that he  
is authorized to execute the document on behalf of said  
Licensee.



Robert E. Uhrig

Subscribed and sworn to before me this

8<sup>th</sup> day of January, 1981

Cheryl I. Fredrick  
NOTARY PUBLIC, in and for the county of Dade,  
State of Florida

My commission expires: Notary Public, State of Florida at Large  
My Commission Expires October 30, 1983  
Bonded thru Maynard Bonding Agency



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