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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-250 OLA-4
FLORIDA POWER AND LIGHT COMPANY	)	50-251 OLA-4
	)	
(Turkey Point Plant, Units 3 and 4)	)	(P/T Limits)

NRC STAFF RESPONSE TO THE CENTER FOR NUCLEAR RESPONSIBILITY AND JOETTE LORION'S FIRST SET OF DISCOVERY REQUESTS TO THE NRC STAFF

I. INTRODUCTION

On August 7, 1989, the Center for Nuclear Responsibility and Joette Lorion (Intervenors), filed their "First Set of Discovery Requests to the NRC Staff". The Staff notes that interrogatories to parties other than the Staff are governed by 10 C.F.R. § 2.740b. However, under 10 C.F.R. § 2.720(h)(2)(ii), answers to interrogatories directed to the Staff are required only on a finding by the presiding officer: 1) that answers to the interrogatories are necessary to a proper decision in the proceeding, and 2) that answers to the interrogatories are not reasonably obtainable from any other source. The Commission's regulation concerning production of NRC records and documents, 10 C.F.R. § 2.744, requires that a request to the Executive Director of Operations for the production of an NRC record or document not available pursuant to § 2.790 by a party to an initial licensing proceeding state, among other things, why the requested record or document is relevant to the proceeding. Notwithstanding the regulations in 10 C.F.R. §§ 2.744 and 2.720(h)(2)(ii), the Staff is voluntarily providing responses to the Intervenors' interrogatories.

The Staff is responding to Interrogatories 1, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 16 and 17. Mr. Barry J. Elliot provides responses to all the interrogatories, except Interrogatory 5. Dr. Gordon E. Edison provides the response to Interrogatory 5. For the reasons set forth below, the Staff objects to Interrogatories 2, 11, 14 and 15. In responding to the Intervenors' interrogatories, the Staff is not waiving its rights, pursuant to 10 C.F.R. § 2.720(h)(2)(ii), to object to interrogatories in the future.

II. INTERROGATORIES

INTERROGATORY 1

Identify the facts, transactions and documents on which the NRC Staff relies in alleging on page 1 of the NRC Safety Evaluation that "It is estimated that Turkey Point 3 will reach 1 EFPY early in 1989 and Turkey Point 4 will reach 10 EFPY in mid-1989."

RESPONSE

Florida Power and Light Company's estimate is reported in a September 21, 1988, letter from the Licensee. The NRC staff estimate is based on the data reported in NUREG-0020, Vol. 12, No. 6, June 1988, "Licensed Operating Reactor Data as of 5/31/88."

INTERROGATORY 2

Identify the facts, transactions and documents on which the NRC Staff relies in stating on page 1 of the Safety Evaluation that "P/T limits are among the limiting conditions of operation in the TS for nearly all, if not all, plants in the U.S."

RESPONSE

The Staff objects to this interrogatory as irrelevant. The interrogatory is beyond the scope of either Contention 2 or Contention 3 as admitted by the Atomic Safety and Licensing Board's (Board) Memorandum and Order (Ruling Upon Contentions), LBP-89-15, 29 NRC ____, slip op. (June 8, 1989) (hereinafter Memorandum and Order). The Board's Memorandum and Order limited Contention 2 to consideration of the significance of the difference of five percent in operating times at the Turkey Point Units 3 and 4. Memorandum and Order at 18, 26. Contention 3 was admitted as limited to whether the correct percentage of copper content was used in predicting RT_{NDT} of the critical beltline materials for setting P/T limits. Memorandum and Order at 25, 26. The Board excluded Intervenor's challenge "upon the integrated surveillance test program itself or as specifically applied to the Turkey Point Units 3 and 4 by the 1985 license amendments" from consideration in this proceeding. Memorandum and Order at 17.

INTERROGATORY 3

State whether the weld wire heat number 71249 and Flux Lot 8445 identified on page 2 section 2 of the Safety Evaluation pertain to the surveillance capsules from both units 3 and 4.

RESPONSE

Weld wire of heat number 71249 and flux lot 8445 was used to fabricate the intermediate-shell-to-lower-shell girth welds in Turkey Point 3 and Turkey Point 4 and the surveillance weld in Turkey Point 3. The surveillance weld samples in Turkey Point Unit 4 were fabricated using weld wire from heat number 71249, but a different flux lot was used.

INTERROGATORY 4

Identify the facts, transactions and documents on which the NRC Staff relies in contending that the 0.26% copper content is the correct and conservative copper content to use in calculating the RTNDT and setting the P/T limits for Units 3 and 4.

RESPONSE

The NRC staff did not use 0.26% copper content to confirm that the P/T limits for Turkey Point Units 3 and 4 meet the requirements of Appendix G, 10 C.F.R. 50. The increase in RT_{NDT} resulting from neutron radiation was calculated based on Section 2.1 of Regulatory Guide 1.99, Rev. 2, "Radiation Embrittlement of Reactor Vessel Materials" (May 1988). The copper content of intermediate-shell-lower-shell girth welds in Turkey Point 3 and Turkey Point 4 are reported in a Florida Power and Light Company letter, dated February 10, 1984.

INTERROGATORY 5

Identify the facts, transactions and documents on which the NRC Staff relies in contending on Page 6 of the Safety Evaluation that "the twin units 3 and 4 at Turkey Point are nearly identical in their design, construction, reactor vessel materials, operating procedures and neutron flux spectra".

RESPONSE

The Turkey Point Units 3 and 4, while not identical in every detail, are twin units. The Final Safety Analysis Report (FSAR) for Turkey Point is a single document which applies to both units 3 and 4. The FSAR indicates that the units are very similar in design and construction, and that major components of the reactor coolant system and the materials in the reactor vessel are virtually the same. In addition, a number of systems at the plant are shared by Unit 3 and Unit 4, for example, the emergency feedwater system, the high pressure injection system, and the emergency power diesel generators. While the units are both of the same design, there minor differences between the units as a result of normal construction practices. The FSAR is updated annually and a current copy is maintained in the local public document room. The NRC staff's many inspections of the Turkey Point Units over the past 20 years have confirmed that the plant and its control room, the auxiliary equipment, and the supporting systems are very close in technical detail, although there are many minor differences in the units. The Technical Specifications for the Turkey Point Plant indicate similar operating procedures for the two units. The accumulated neutron fluence showed less than a five

percent difference after 13 years of operation. "Turkey Point Units 3 and 4, Evaluation of the Flux Reduction Factor Using Part-Length Burnable Absorber Assemblies to Meet the NRC Pressurized Thermal Shock Criteria," February 27, 1985 and "Turkey Point Units 3 and 4, Supplemental Evaluation of the Flux Reduction Factor Using Part-Length Burnable Absorber Assemblies to Meet the NRC Pressurized Thermal Shock Criteria," February 27, 1985.

INTERROGATORY 6

Identify the facts, transactions and documents on which the NRC Staff relies in contending on page 6 of the Safety Evaluation that the welds for Unit 4 test speciments [sic] were made with weld wire from the same heat of material but from a different flux lot that the girth welds in both reactor vessels.

RESPONSE

The heat number and flux lot number of the weld wire used in the Unit 4 surveillance weld and used in the girth welds in the Turkey Point Units 3 and 4 reactor vessels are reported in a letter from Florida Power and Light Company, dated October 21, 1977.

INTERROGATORY 7

Identify the facts, transactions and documents on which the NRC Staff relies in contending on page 6 of the Safety Evaluation that "Although the Unit 4 surveillance weld specimens were fabricated using a different flux lot, the weld specimens were considered to be representative of the girth welds in both reactor vessels because flux lot number is only of minor importance in determining the sensitivity to irradiation embrittlement".

RESPONSE

The Turkey Point Units 3 and 4 surveillance welds and reactor vessel beltline girth welds were fabricated using Linde 80 type flux. Linde 80 type flux is a neutral flux which does not increase or decrease the amount of copper or nickel in the weld material. "B&W 177-FA Reactor Vessel Beltline Weld Chemistry Study," BAW-1799, dated July 1983. Since irradiation embrittlement is dependent upon the amount of copper and nickel in the weld and the accumulated neutron fluence (see, Regulatory Guide 1.99, Rev. 2), the flux lot is not considered important in determining the sensitivity of the weld to irradiation embrittlement.

INTERROGATORY 8

Identify the facts, transactions and documents on which the NRC Staff relies in contending on page 6 of the Safety Evaluation that "Based on the similarity between materials in the center girth welds and the materials used to fabricate the surveillance weld specimens, the test results from capsules in either Units 3 and 4 can be used to monitor the neutron embrittlement in both reactor vessels."

RESPONSE

Welds are fabricated using weld wire and flux. As was discussed in the response to Interrogatory 7, the flux lot does not contribute to irradiation embrittlement. The weld wire is the main contributor to irradiation embrittlement of the weld. Since the weld surveillance samples in Units 3 and 4 were fabricated using the same heat of weld wire as the center girth welds in Unit 3 and 4, the test results from the surveillance capsules in either unit can be used to monitor the neutron embrittlement in both reactor vessels. The heat number for the weld wire used to fabricate the center girth welds and the surveillance welds in Units 3 and 4 are reported in a letter from Florida Power and Light Company, dated October 21, 1977.

INTERROGATORY 9

Identify the facts, transactions and documents on which the NRC Staff relies in contending on page 7 of the Safety Evaluation that "the greater than expected embrittlement from one weld sample from Unit 4 does not demonstrate that the beltline material in Unit 4 is as embrittled as the sample".

RESPONSE

Embrittlement, as discussed on page 7 of the Safety Evaluation, is determined from the results of Charpy-energy tests which measure Charpy-energy at different temperatures. Surveillance specimens are broken over a range of different temperatures to provide a curve of Charpy-energy versus temperature. The Charpy-energy test results have

uncertainties associated with them. Therefore, the NRC staff in Regulatory Guide 1.99, Rev. 2, recommends that embrittlement be determined from test data from two or more surveillance capsules. In addition, an evaluation of the amount of embrittlement must include a margin for the uncertainties for the test method. The test results from one surveillance capsule (for example, Capsule T from Unit 4) do not, alone, demonstrate the precise amount of embrittlement of the Unit 4 beltline material, because more than one data point is necessary to obtain adequate test results.

INTERROGATORY 10

Identify the facts, transactions and documents on which the NRC Staff relies in contending on page 7 of the Safety Evaluation that "the Unit 4 data point is within the uncertainty and scatter that can be expected from measurements of this type".

RESPONSE

The uncertainty and scatter expected for the measurements of the increase in RT_{NDT} resulting from neutron irradiation is discussed in Regulatory Guide 1.99, Rev. 2.

INTERROGATORY 11

Identify the facts, transactions and documents on which the NRC Staff relies in contending that the Turkey Point units no longer have the second

and third highest PTS screening nil-ductility temperature for all plants as stated on page 8 of the SE.

RESPONSE

The Staff objects to this interrogatory as irrelevant and beyond the scope of Contention 2 as admitted by the Board's Memorandum and Order. The Board specifically excluded pressurized thermal shock (PTS) as an issue in this proceeding. Memorandum and Order at 19. The Board concluded that PTS was not the subject of the October 19, 1988, Federal Register Notice of Opportunity to Request Hearing. Id.; see 53 Fed. Reg. 40981, 40988 (October 19, 1988).

INTERROGATORY 12

State whether the RTNDT value identified for Unit 4 in Table 1 of the Safety Evaluation was calculated based on an Charpy energy level of 30 ft-lb or a Charpy energy level of 42 ft-lb.

RESPONSE

The increase in RT_{NDT} reported in Table 1 for the Unit 4 surveillance data was measured at 30 ft-lb Charpy energy.

INTERROGATORY 13

State whether the copper content of 0.26% identified in table 2 under the Staff's calculation is the mean copper content for Unit 4 and exp'ain whether or not the NRC Staff factored in a Standard Deviation when performing this calculation. If the answer is no, explain why not. (Refers to Safety Evaluation)

RESPONSE

The copper content listed in the Table 2 under the subheading "Staff Calculation" is the mean value for copper content for the beltline girth weld in Unit 4. The Staff calculation in Table 2 indicates the adjusted RT_{NDT} for girth weld at ¼T (where T is the thickness of the reactor vessel) and 20 effective full power years (EFPY) is 251°F. The calculation includes a margin of 28°F, which is one standard deviation, for the surveillance material. See Section 2.1 of Regulatory Guide 1.99, Rev. 2.

INTERROGATORY 14

State whether or not the Licensee has provided documents to the NRC Staff as required by 10 C.F.R. [Part 50] Appendix H, Section II C, Parts 1-6 [sic] since 1985. If the answer is yes, identify all such documents provided to the NRC Staff.

RESPONSE

The staff objects to this interrogatory because the information requested is reasonably obtainable from another source, Florida Power and Light Company, the Licensee. See 10 C.F.R. § 2.720(h)(2)(ii). The Staff also objects to the interrogatory as unclear. The Staff is not certain what information is being requested because no reporting requirements for a licensee, beyond the original proposal for a license amendment to incorporate an integrated surveillance program, are set forth in 10 C.F.R. Part 50, Appendix H, Section IIC, Parts 1-4. (Section IIC of Appendix H contains only Parts 1-4, not Parts 1-6 as Intervenors indicate.) A proposal was submitted by Florida Power and Light Company on February 8, and March 6, 1985.

INTERROGATORY 15

State the reason(s) that the NRC Staff allowed Florida Power and Light to implement the Integrated Surveillance Program in 1985 despite the fact that actual weld metal tests for capsule T of Unit 4 did not agree with the original predictions for that Unit, in violation of the requirements of 10 CFR [Part 50] Appendix H, Section II C.

RESPONSE

The Staff objects to this interrogatory as irrelevant and beyond the scope of Contention 2 as admitted by the Board in its Memorandum and Order. The Board limited the scope of Contention 2 to a consideration of whether the difference of less than five percent in the operating times of Turkey Point Units 3 and 4 is significant. Memorandum and Order at 18.

The Board specifically excluded from Contention 2 attacks upon the integrated surveillance test program or upon the program as applied at the Turkey Point Units 3 and 4 under the 1985 license amendments. Memorandum and Order at 17.

INTERROGATORY 16

Identify any and all historical documents that support the NRC Staff's claim that Unit 4's surveillance capsules T and V used a different welding flux lot number.

RESPONSE

The Staff objects to this interrogatory because it requests information from the Staff which is reasonably available from another source. See 10 C.F.R. § 2.70(h)(2)(ii). The documentation on flux lots was generated by the Licensee. For this reason the Licensee would be in a better position than the Staff to provide the requested information. The presiding officer in a proceeding may require that the Staff provide answers to interrogatories that are not reasonably obtainable from any other source pursuant to 10 C.F.R. § 2.720(h)(2)(ii). In addition, it would be overly burdensome to the Staff to review each and every document in this proceeding for references to the flux lot number of Unit 4 surveillance capsules.

The Staff is responding to this interrogatory by identifying all the documentary materials on which it relied in making its statement about the

flux lot number of weld samples in the Unit 4 surveillance capsules. The flux lot number for the weld material samples placed in Capsules T and V in Turkey Point Units 3 and 4 is identified in a letter from Florida Power and Light Company, dated October 21, 1977.

INTERROGATORY 17

Copies of Minutes of April 7, 1977, meeting between the NRC Staff and Florida Power and Light concerning FPL's use of Unit 3 weld metal surveillance data to predict radiation damage to Unit 4.

RESPONSE

Based on a review of our files the only information that we have concerning an April 7, 1977, meeting between the NRC staff and Florida Power and Light Company staff is a document, "Agenda: Meeting with NRC on Turkey Point 4 Reactor Vessel, April 7, 1977." A copy of the Florida Power and Light Company agenda is attached.

Respectfully submitted,

Patricia Jehle

Patricia Jehle
Counsel for NRC Staff

Dated at Rockville, Maryland
this 28th day of August, 1989.

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(Turkey Point Plant, Units 3 and 4)	)	(P/T Limits)

AFFIDAVIT OF BARRY J. ELLIOT

I, Barry J. Elliot, being duly sworn, state as follows:

I am employed as a Materials Engineer in the Materials and Chemical Engineering Branch, Division of Engineering and Systems Technology, Office of Nuclear Reactor Regulation of the U.S. Nuclear Regulatory Commission. I have provided responses to Interrogatories 1, 3, 4, 6, 7, 8, 9, 10, 12, 13, 16, and 17.

I hereby certify that the answers are true and correct to the best of my knowledge.

Barry J. Elliot

Subscribed and sworn before me
this ____ day of _____, 1989.

BARRY J. ELLIOT

U.S. NUCLEAR REGULATORY COMMISSION
MATERIALS AND CHEMICAL ENGINEERING BRANCH
DIVISION OF ENGINEERING AND SYSTEMS TECHNOLOGY
OFFICE OF NUCLEAR REACTOR REGULATION

STATEMENT OF PROFESSIONAL QUALIFICATIONS

I am currently employed by the U.S. Nuclear Regulatory Commission as a Senior Materials Engineer in the Materials and Chemical Engineering Branch, Division of Engineering and Systems Technology, Office of Nuclear Reactor Regulation. I am responsible for the review and the evaluation of safety analysis reports which are related to the material engineering aspects of components in nuclear power plant systems. I also provide technical assistance to the Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research on related reactor safety matters. I have been employed at the Nuclear Regulatory Commission since March 31, 1980. I graduated from Rensselaer Polytechnic Institute in 1968 with a Bachelor of Science degree in Materials Engineering. I attended evening classes at Fairleigh Dickinson University, where in 1971, I received a Masters of Science degree in Business Administration.

I was employed by Curtiss Wright Corporation from 1968 to 1980. From 1968 to 1971 I worked in the Materials Development Laboratory of the Aeronautical Division where I performed failure analyses on reciprocating and gas-turbine engines, and developed test apparatus to evaluate material reliability. From 1971 to 1980 I worked in the Nuclear Division where I was responsible for developing and implementing non-destructive examination test procedures and fusion weld procedures to be used in the fabrication and inspection of U.S. Department of the Navy nuclear pressure vessels.