

February 24, 1999

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Docket File	GHill (2)
PUBLIC	OGC
PD3-3 Reading	WBeckner, TSB
ACRS	DRPM
GGrant, RIII	SRichards
RCN (SE only)	CBerlinger
RGallo	PERB

Mr. Lew W. Myers
 Vice President - Nuclear, Perry
 FirstEnergy Nuclear Operating Company
 P.O. Box 97, A200
 Perry, OH 44081

SUBJECT: AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. NPF-58 -
 PERRY NUCLEAR POWER PLANT, UNIT 1 (TAC NO. MA3486)

Dear Mr. Myers:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 100 to Facility Operating License No. NPF-58 for the Perry Nuclear Power Plant, Unit 1. This amendment revises the Technical Specifications in response to your application dated August 31, 1998. Additional clarifying information was provided in telephone conferences on December 17, 1998, and January 26, 1999.

This amendment revises Technical Specification Surveillance Requirement 3.6.1.3.4 to permit removal of the inclined fuel transfer system primary containment blind flange while primary containment integrity is required.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Original signed by:

Douglas V. Pickett, Senior Project Manager
 Project Directorate III-2
 Division of Licensing Project Management
 Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosures: 1. Amendment No. ¹⁰⁰ to
 License No. NPF-58
 2. Safety Evaluation

cc w/encls: See next page

DOCUMENT NAME: G:\PD3-3\PERRY\PEA3486.AMD *See Previous Concurrence

OFFICE	PD32:PM	E	PD32:LA	E	PD32:PD	E	SCSB:BC		HOHB:BC	OGC	
NAME	AHansen <i>ASW</i>		EBarnhill <i>EB</i>		SRichards <i>SR</i>		CBerlinger*		RGallo*	APH*	
DATE	2/23/99		2/24/99		2/24/99		2/1/99		2/4/99	2/9/99	

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NAME	AHansen		EBarnhill		SRichards		CBerlinger*	RGallo*	APH*
DATE	2/23/99		2/24/99		2/1/99		2/1/99	2/4/99	2/9/99

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 24, 1999

Mr. Lew W. Myers
Vice President - Nuclear, Perry
FirstEnergy Nuclear Operating Company
P.O. Box 97, A200
Perry, OH 44081

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Sincerely,

A handwritten signature in black ink, appearing to read "D. V. Pickett".

Douglas V. Pickett, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosures: 1. Amendment No. 100 to
License No. NPF-58
2. Safety Evaluation

cc w/encls: See next page

L. Myers
FirstEnergy Nuclear Operating Company

cc:

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Perry Nuclear Power Plant, Units 1 and 2

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Public Utilities Commission
East Broad Street
Columbus, OH 43266-0573



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FIRSTENERGY NUCLEAR OPERATING COMPANY

DOCKET NO. 50-440

PERRY NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 100
License No. NPF-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Cleveland Electric Illuminating Company (CEICO), Centerior Service Company, Duquesne Light Company, Ohio Edison Company, OES Nuclear, Inc., Pennsylvania Power Company, and Toledo Edison Company (the licensees at the time of the application; FirstEnergy Nuclear Operating Company became the sole licensed operator on January 1, 1999) dated August 31, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-58 is hereby amended to read as follows:

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P PDR

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 100 are hereby incorporated into this license. FENOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented not later than 90 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Douglas V. Pickett, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: February 24, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 100

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

Replace the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by Amendment number and contains a vertical line indicating the area of change.

Remove

TS 3.6-16

- - -

Insert

TS 3.6-16

TS 3.6-16a

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.3 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Only required to be met in MODES 1, 2, and 3. 2. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 3. Not required to be met for PCIVs that are open under administrative controls. <p>-----</p> <p>Verify each primary containment isolation manual valve and blind flange that is located outside primary containment, drywell, and steam tunnel and is required to be closed during accident conditions is closed.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.4 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Only required to be met in MODES 1, 2, and 3. 2. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 3. Not required to be met for PCIVs that are open under administrative controls. 4. Not required to be met for the Inclined Fuel Transfer System (IFTS) penetration when the associated primary containment blind flange is removed, provided that the Fuel Handling Building Fuel Transfer Pool water level is maintained $\geq 40'$ and the IFTS transfer tube drain valve remains closed. The IFTS transfer tube drain valve may be opened under administrative controls. <p>-----</p> <p>Verify each primary containment isolation manual valve and blind flange that is located inside primary containment, drywell, or steam tunnel and is required to be closed during accident conditions is closed.</p>	<p>Prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days</p>

(continued)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. NPF-58
FIRSTENERGY NUCLEAR OPERATING COMPANY
PERRY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-440

1.0 INTRODUCTION

By application dated August 31, 1998, Centerior Energy, the licensee (at the time of the application) for Perry Nuclear Power Plant, Unit 1, requested NRC's approval to implement amendments to its Operating License NPF-58, by incorporating modifications to the Technical Specifications (TS). This amendment would modify TS Surveillance Requirement (SR) 3.6.1.3.4 to permit removal of the inclined fuel transfer system (IFTS) primary containment blind flange while primary containment integrity is required. Additional clarifying information that did not affect the notice published at 63 FR 56260 (October 21, 1998) was provided in telephone conferences on December 17, 1998, and January 26, 1999. On January 1, 1999, FirstEnergy Nuclear Operating Company became the sole licensed operator of Perry.

2.0 BACKGROUND

The IFTS at Perry is used to transfer fuel, control rods and other items between the containment and fuel building pools. The IFTS consists of a carriage and support systems, which travel in a stainless steel transfer tube. The upper end of the transfer tube terminates in the containment upper pool in a sheave box, which has a hydraulically-operated flap valve, a vent pipe, cable enclosures and a fill valve connected to it. The lower end of the transfer tube terminates in the fuel building pool where it connects to a hydraulically-operated gate valve. Containment isolation is achieved by a blind flange and bellows, which connect from the containment penetration to the transfer tube assembly. A drain pipe for water level control is connected near the center of the transfer tube.

The IFTS is a complex system that remains idle during normal plant operation and is only used to support refueling activities. Once the plant is shut down and containment integrity is no longer required, the licensee is allowed to loosen the containment bellows and remove the primary containment blind flange. System operation (from the top) is initiated by the upper pool upender in the containment building fuel transfer pool tilting the fuel to align it with the fuel transfer tube. The flap valve is opened and the fuel travels on the carriage within the transfer tube. After the carriage travels almost the entire length of the transfer tube, it stops near the bottom gate valve. At this point, the flap valve is closed and the transfer tube is partially drained of water through a 4-inch drain line that leads to the fuel transfer tube drain tank in the intermediate building. The drain line has both a motor-operated and manual isolation valve in series. When the transfer tube is partially drained, the remaining head of water in the tube is

equal to the height of water in the fuel building fuel transfer pool. The lower 24-inch gate valve is then opened allowing the carriage to travel to the lower pool upender where the fuel is uprighted for long-term storage. System operation initiating from the bottom is similar except that once the carriage enters the transfer pool and the bottom 24-inch gate valve is closed, a fill valve is opened to fill the transfer tube prior to opening the flap valve and hoisting the carriage to the upper pool.

The IFTS system is normally maintained in an idle condition between refueling outages. Due to containment isolation requirements, the licensee is prohibited from removing the blind flange during operating modes 1, 2, and 3 to test and inspect the system. In the past, a satisfactory test and inspection of the entire system, including repairs, has taken up to several days. Since this can only be done after removal of the blind flange, currently only allowed during plant shutdown, this can be an outage "critical path" activity. The change sought by the licensee in this proposed amendment would allow the testing, inspection and repair to be conducted at power, so that there would be no impact on outage scheduling.

3.0 EVALUATION

Surveillance Requirement (SR) 3.6.1.3.4, associated with Technical Specification 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)" states that the licensee shall:

Verify each primary containment isolation manual valve and blind flange that is located inside primary containment, drywell, or steam tunnel and is required to be closed during accident conditions is closed.

The Frequency of the above SR is "Prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days."

The licensee has proposed inserting the following note to SR 3.6.1.3.4 to specify those conditions when the IFTS blind flange could be removed during operating modes 1, 2, and 3:

4. Not required to be met for the Inclined Fuel Transfer System (IFTS) penetration when the associated primary containment blind flange is removed, provided that the Fuel Handling Building Fuel Transfer Pool water level is maintained greater than or equal to 40 feet and the IFTS transfer tube drain valve remains closed. The IFTS transfer tube drain valve may be opened under administrative controls.

To justify this change, the licensee has identified an alternative means to ensure isolation of the IFTS containment penetration in lieu of having the IFTS blind flange in place. The acceptability of this alternative depends on the continued assurance of system integrity. There are two potential leakage scenarios from a design-basis accident that could compromise system integrity when the blind flange is removed. Each of these is evaluated below.

3.1 Leakage Through the Transfer Tube

The first potential leak scenario involves a design-basis loss-of-coolant accident (LOCA) with the fuel transfer tube drained down to the drain line and the lower 24-inch gate valve open. Three potential leakage paths are evaluated below.

a. Through the bottom of the IFTS tube

The peak calculated containment internal pressure (P_a) for the design basis LOCA is 7.8 psig. Following a postulated accident, the containment atmosphere would pressurize the fuel transfer tube, depressing the water level below the water level in the fuel handling building fuel transfer pool until the pressures equilibrated due to differential water levels. Since P_a is equivalent to a head of water of 18.8 feet, the water level in the tube would be approximately 18.8 feet below the level of the transfer pool. The proposed TS note would ensure that the pool level is at least 40 feet above the pool bottom. Based on the pool geometry at Perry, this provides 22.7 feet of submergence to the bottom valve of the IFTS tube. Therefore, the TS-controlled margin for leakage pathway protection would be the difference of these two levels, which is 3.9 feet.

The staff has determined that this margin provides adequate assurance that containment atmosphere leakage through the bottom of the fuel transfer tube is not plausible.

b. Through a structural breach in the IFTS tube

The portion of the IFTS tube below the blind flange is constructed to ANSI B31.1 specifications, is seismically qualified, and is fabricated from Schedule 20 XS stainless steel pipe, and P_a for the design-basis LOCA is 7.8 psig.

The staff has determined that, since the increase in fluid pressure in the IFTS tube post-LOCA with the blind flange removed is very small compared to the allowable pressure for this structure, a structural breach due to post-LOCA containment pressure is not a credible event.

c. Through a leak in the IFTS tube

As part of the implementation of this proposed amendment, the licensee will be including the section of the IFTS tube below the blind flange as part of the containment leakage rate test boundary. Therefore, any leakage through the tube will be quantified as part of the overall containment leakage, and will therefore not exceed the leak rate assumptions of the Perry accident analyses.

The staff has concluded that, since any leak through the IFTS tube will be included in the overall containment leakage, this potential leakage is acceptable.

3.2 Leakage Through the Drain Line

The second potential leak scenario involves a design-basis LOCA with both drain line valves open. Three potential leakage paths are evaluated below.

a. Through the line to the tube drain tank

The two valves in this 4-inch drain line must be opened to partially drain the fuel transfer tube for removal of the blind flange and before opening the bottom gate valve for testing and fuel transfers. If a design-basis LOCA occurs with these drain valves open, containment atmosphere could go directly through the 4-inch drain line to the drain tank. As described in

the proposed note to SR 3.6.1.3.4, the drain valves will only be opened under administrative controls. A description of the administrative controls is included in the proposed revision to the TS bases included in the licensee's application. This revision states, in part:

These [administrative] controls consist of designating an individual, whenever the 1F42-F003 valve is to be opened with the blind flange removed in MODE 1, 2, or 3, to be responsible for verifying closure of the valve if an accident occurs. This designated individual will remain in continuous communication with the control room, and be located at the 620' elevation in the Fuel Handling Area of the Intermediate Building. This person will be in addition to the minimum shift crew composition required to be at the plant site. Once the designated person is notified by the control room of the occurrence of an accident, his only assigned function will be to close this valve. The designated person will be equipped with portable lighting (e.g., a flashlight) to supplement emergency lighting.

The proposed bases revision also states:

Also, the drain piping motor-operated isolation valve is tested in accordance with the Primary Containment Leak Rate Test Program. The leakage rate on this valve will be controlled by the strict limits on potential secondary containment bypass leakage (SR 3.6.1.3.9). Thus, the combination of water seal in the Fuel Handling Building, pressure integrity of the IFTS transfer tube, and administrative controls on the motor-operated drain valve in the drain piping, creates an acceptable barrier against post-accident leakage to the environment.

Generic Letter (GL) 91-08, "Removal of Component Lists From Technical Specifications," states the staff's position on what constitutes an acceptable administrative control for opening locked or sealed closed containment isolation valves:

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing an operator, who is in constant communication with control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

GL 91-08 also states that these considerations may be included in the TS bases.

GL 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability," states that in a

...situation in which substitution of manual action for automatic action may be acceptable, the licensee's determination of operability must focus on the physical differences between automatic and manual action and the ability of the manual action to accomplish the specified function. The physical differences to be considered include, but are not limited to, the ability to recognize input signals for action, ready access to or recognition of setpoints, design nuances that may

complicate subsequent manual operation such as auto-reset, repositioning on temperature or pressure, timing required for automatic action, etc., minimum manning requirements, and emergency operating procedures [EOPs] written for the automatic mode of operation. The licensee should have written procedures in place and training accomplished on those procedures before substitution of any manual action for the loss of an automatic action.

The assignment of a dedicated operator for manual action is not acceptable without written procedures and a full consideration of all pertinent differences. The consideration of manual action in remote areas also must include the ability and timing in getting to the area, training of personnel to accomplish the task, and occupational hazards to be incurred such as radiation, temperature, chemical, sound or visibility hazards.

ANSI/ANS-58.8-1984, "American National Standard Time Response Design Criteria for Nuclear Safety Related Operator Actions," provides estimates of reasonable response times for operator actions, and allows licensees to use time intervals derived from independent sources, provided they are based on analyses with consideration given to human performance.

The licensee has proposed the substitution of manual action (closing the motor-operated drain valve) for the function of a passive device, a blind flange, to ensure that there is no leakage through the drain line post-LOCA. The staff has used GL 91-08, GL 91-18 and ANSI 58.8 for guidance as to the acceptability of this substitution. Each area considered is discussed below.

Ability to recognize signal for action. Control room fully-qualified instrumentation will signal operators that a LOCA has occurred. A control room operator will then relay the information to the dedicated operator. The staff has determined that this is acceptable.

Access to or recognition of setpoints. The staff has determined that there are no setpoint concerns for the manual action being evaluated.

Design nuances that could complicate manual action. The drain line valve motor actuator and associated control panel are not powered by a safety-grade source. However, in the event of loss of power after an accident, the dedicated operator will move to the valve location and close the valve by hand. The licensee has stated that the valve position is indicated on the valve. Since the valve position can be determined visually, and since the valve can be closed by hand, the staff has determined that this manual closure of the valve using the handwheel is an acceptable alternative to remote manual closure using the motorized actuator.

Minimum staffing requirements. The staff has determined that, since a dedicated operator who is not part of the minimum shift staffing is utilized for this evolution, there are no staffing concerns.

Procedures. The licensee has stated that the duties of the dedicated operator will be covered by plant procedures. The staff finds this acceptable.

Training. The licensee has stated that an IFTS panel operator will be utilized as the dedicated operator. This operator will be trained in the applicable manual operations, the IFTS operating

procedures will be updated, and system walkdowns will be conducted. In addition, control room briefings will normally be conducted each shift during IFTS operations, and fuel handling supervisors who have knowledge of the entire evolution will be in the area.

The staff has determined that the licensee has satisfactorily addressed all training concerns.

Time to perform action and environmental conditions. The licensee has stated that the valve closure evolution would take less than 5 minutes, that the total radiological dose to the operator would be less than 2 rem, and that the dose along the travel path to the valve would not impede access to the valve.

There is a possibility that the IFTS could be drained with the drain valves open when the accident occurs. In this case, containment atmosphere could be directed to the drain line, and possibly increase the operator dose level beyond the licensee's analysis values. However, considering the tortuous path the contaminated air would have to follow, the time required for the air to become contaminated considering the new source term guidance provided in NUREG-1465, and the volume of the air in the containment and IFTS tube which the contaminated air would have to mix with and/or displace, the staff has determined that this potential increase in the estimated dose is not credible.

Because the operator actions can be completed in a time that limits the dose to the operator to within regulatory limits and does not affect the offsite dose, the staff has determined that the time to perform the actions and the environmental conditions are acceptable.

Required equipment. The licensee has stated that the only required equipment is a flashlight or other portable light source, and that this equipment will be provided to the operator. The staff finds this acceptable.

Error recovery. The most significant contingency to plan for is the possible failure of the motor operated drain line valve to close. The licensee plans to address this concern by providing a proceduralized alternative (the operator manually closing the valve with the handwheel). The licensee stated that this valve will be maintained in accordance with the Primary Containment Leakage Rate Test Program. In addition, the licensee reviewed the work order history of this valve and determined that there have been no closure issues identified.

The staff has determined that the operator actions, maintenance approach and work order history provide reasonable assurance that the valve can be closed after an accident.

Risk significance. The licensee stated that the proposed evolution has no impact on the core damage frequency, and that the evolution will be conducted consistent with staff guidance provided in GL 91-08. The staff finds this acceptable.

b. Through a structural breach in the drain tube

The drain line is constructed of Schedule 40 stainless steel pipe, and P_a for the design basis LOCA is 7.8 psig.

The staff has determined that, since the increase in fluid pressure in the drain line post-LOCA is very small compared to the allowable pressure for this structure, a structural breach due to post-LOCA containment pressure is not a credible event.

c. Through a leak in the drain tube

As part of the implementation of this proposed amendment, the licensee will be including the section of the drain line up to and including the motor-operated valve as part of the containment leakage rate test boundary. Therefore, any leakage through the drain line (with the valve closed) will be quantified as part of the overall containment leakage, and will, therefore, not exceed the leak rate assumptions of the Perry accident analyses. The staff has concluded that, since any leak through the IFTS tube will be included in the overall containment leakage, this potential leakage is acceptable.

3.3 Acceptance

The staff finds that the licensee's alternative means to ensure isolation of the IFTS containment penetration provides reasonable assurance that containment integrity will be maintained following a design-basis accident. Therefore, the proposed TS change is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Ohio State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (63 FR 56260). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Hansen

Date: February 24, 1999