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

PRIORITY ROUTING

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FILE OR16-46

March 11, 1999

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

SUBJECT: AMENDMENT NO. 102 TO FACILITY OPERATING LICENSE NO. NPF-58 - PERRY NUCLEAR POWER PLANT, UNIT 1 (TAC NO. M94028)

Dear Mr. Myers:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 102 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 November 2, 1995 (PY-CEI/NRR-1995L), as supplemented by submittal dated January 7, 1999 (PY-CEI/NRR-2354L).

This amendment revises technical specification requirements for handling irradiated fuel in the Primary Containment and the Fuel Handling Building, and selected specifications associated with performing core alterations.

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,

Douglas 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

DFx2

Enclosures: 1. Amendment No. 102 to License No. NPF-58
2. Safety Evaluation

cc w/encls: See next page

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L. Myers
FirstEnergy Nuclear Operating Company

cc:

Mary E. O'Reilly
FirstEnergy Corporation
76 South Main St.
Akron, OH 44308

Resident Inspector's Office
U.S. Nuclear Regulatory Commission
P.O. Box 331
Perry, OH 44081-0331

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4531

Sue Hiatt
OCRE Interim Representative
8275 Munson
Mentor, OH 44060

Henry L. Hegrat
Regulatory Affairs Manager
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
P.O. Box 97, A210
Perry, OH 44081

William R. Kanda, Jr., Plant Manager
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
P.O. Box 97, SB306
Perry, OH 44081

Mayor, Village of North Perry
North Perry Village Hall
4778 Lockwood Road
North Perry Village, OH 44081

Donna Owens, Director
Ohio Department of Commerce
Division of Industrial Compliance
Bureau of Operations & Maintenance
6606 Tussing Road
P. O. Box 4009
Reynoldsburg, OH 43068-9009

James R. Williams
Chief of Staff
Ohio Emergency Management Agency
2855 West Dublin Granville Road
Columbus, OH 43235-7150

Mayor, Village of Perry
P.O. Box 100
Perry, OH 44081-0100

Radiological Health Program
Ohio Department of Health
P.O. Box 118
Columbus, OH 43266-0118

Ohio Environmental Protection
Agency
DERR--Compliance Unit
ATTN: Mr. Zack A. Clayton
P.O. Box 1049
Columbus, OH 43266-0149

Chairman
Perry Township Board of Trustees
3750 Center Road, Box 65
Perry, OH 44081

State of Ohio
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. 102
License No. NPF-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the FirstEnergy Nuclear Operating Company (the licensee, formerly The Cleveland Electric Illuminating Company, Centerior Service Company, Duquesne Light Company, Ohio Edison Company, OES Nuclear, Inc., Pennsylvania Power Company, and Toledo Edison Company) dated November 2, 1995, and as supplemented by submittal dated January 7, 1999, 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:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 102 are hereby incorporated into this license. The FirstEnergy Nuclear Operating Company 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: March 11, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 102

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Remove	Insert
3.3-52	3.3-52
3.3-55	3.3-55
3.3-56	3.3-56
3.3-73	3.3-73
3.6-13	3.6-13
3.6-14	3.6-14
3.6-29	3.6-29
3.6-30	3.6-30
3.6-31	3.6-31
3.6-32	3.6-32
3.6-34	3.6-34
3.6-35	3.6-35
3.6-51	3.6-51
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3.6-56	3.6-56
3.6-57	3.6-57
3.7-4	3.7-4
3.7-5	3.7-5
3.7-6	3.7-6
3.7-8	3.7-8
3.7-9	3.7-9
3.7-10	3.7-10
3.7-15	3.7-15
3.7-16	3.7-16
3.8-17	3.8-17
3.8-18	3.8-18
3.8-19	3.8-19
3.8-28	3.8-28
3.8-29	3.8-29
3.8-38	3.8-38

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	K.1 Isolate the affected penetration flow path(s). OR K.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND K.2.2 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately Immediately Immediately
L. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	L.1 Initiate actions to suspend operations with a potential for draining the reactor vessel.	Immediately

Table 3.3.6.1-1 (page 2 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment and Drywell Isolation					
a. Reactor Vessel Water Level—Low Low, Level 2 (continued)	(c)	2[(b)]	L	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 127.6 inches
b. Drywell Pressure — High	1,2,3	2[(b)]	H	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 1.88 psig
c. Reactor Vessel Water Level — Low Low Low, Level 1 (ECCS Divisions 1 and 2)	1,2,3	2[(b)]	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 14.3 inches
	(c)	2[(b)]	L	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 14.3 inches
d. Drywell Pressure — High (ECCS Divisions 1 and 2)	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 1.88 psig
e. Reactor Vessel Water Level — Low Low, Level 2 (HPCS)	1,2,3	4	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 127.6 inches
	(c)	4	L	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 127.6 inches
f. Drywell Pressure — High (HPCS)	1,2,3	4	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 1.88 psig
g. Containment and Drywell Purge Exhaust Plenum Radiation — High	1,2,3	2[(b)]	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 4.0 mR/hr above background

(continued)

(b) Required to initiate the drywell isolation function.

(c) During operations with a potential for draining the reactor vessel.

Table 3.3.6.1-1 (page 3 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment and Drywell Isolation					
g. Containment and Drywell Purge Exhaust Plenum Radiation — High (continued)	(d)	2	K	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 4.0 mR/hr above background
h. Manual Initiation	1,2,3	2[(b)]	G	SR 3.3.6.1.5	NA
	(d)	2	K	SR 3.3.6.1.5	NA
3. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. RCIC Steam Line Flow — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 298.5 inches water
b. RCIC Steam Line Flow Time Delay	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 3 seconds and ≤ 13 seconds
c. RCIC Steam Supply Line Pressure — Low	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 55 psig
d. RCIC Turbine Exhaust Diaphragm Pressure — High	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 20 psig
e. RCIC Equipment Area Ambient Temperature — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.5 SR 3.3.6.1.7	≤ 145.9°F
f. Main Steam Line Pipe Tunnel Temperature — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.4 SR 3.3.6.1.5 SR 3.3.6.1.7	≤ 158.9°F

(continued)

(b) Required to initiate the drywell isolation function.

(d) During operations with a potential for draining the reactor vessel, and movement of recently irradiated fuel assemblies in primary containment.

Table 3.3.7.1-1 (page 1 of 1)
Control Room Emergency Recirculation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Reactor Vessel Water Level — Low Low Low, Level 1	1,2,3, (a)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5	≥ 14.3 inches
2.	Drywell Pressure — High	1,2,3	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5	≤ 1.88 psig
3.	Control Room Ventilation Radiation Monitor	1,2,3, (b)	1	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.5	≤ 800 cpm

(a) During operations with a potential for draining the reactor vessel.

(b) During operations with a potential for draining the reactor vessel, and movement of recently irradiated fuel assemblies in the primary containment or fuel handling building.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. (continued)	D.3	Perform SR 3.6.1.3.6 for the resilient seal purge valves closed to comply with Required Action D.1.	Once per 92 days
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1	Be in MODE 3.	12 hours
	AND		
	E.2	Be in MODE 4.	36 hours
F. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during movement of recently irradiated fuel assemblies in the primary containment.	F.1	Suspend movement of recently irradiated fuel assemblies in primary containment.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during MODE 4 or 5 or during operations with a potential for draining the reactor vessel (OPDRVs).	G.1 Initiate action to suspend OPDRVs. OR G.2 Initiate action to restore valve(s) to OPERABLE status.	Immediately Immediately

3.6 CONTAINMENT SYSTEMS

3.6.1.10 Primary Containment—Shutdown

LCO 3.6.1.10 Primary containment shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the primary containment.
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment inoperable.	A.1 Suspend movement of recently irradiated fuel assemblies in the primary containment.	Immediately
	AND	
	A.2 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.10.1 ----------NOTES---------- 1. Not required to be met for pathways capable of being closed by OPERABLE primary containment automatic isolation valves. 2. Not required to be met for the Fire Protection System manual hose reel containment isolation valves. 3. Not required to be met for manual isolation valves open under administrative controls. ---------- Verify each penetration flow path, required to be closed during accident conditions, is closed.	31 days

3.6 CONTAINMENT SYSTEMS

3.6.1.11 Containment Vacuum Breakers

LCO 3.6.1.11 Three containment vacuum breakers shall be OPERABLE and four containment vacuum breakers shall be closed.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

----------NOTE----------
Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment—Operating" when the containment vacuum relief subsystem leakage results in exceeding overall containment leakage acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Separate Condition entry is allowed for each containment vacuum breaker. ---------- One or two containment vacuum breakers not closed. OR One required containment vacuum breaker inoperable for other reasons.	A.1 Close the associated motor operated isolation valve. AND A.2 Restore containment vacuum breaker to OPERABLE status.	4 hours 72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR Three or more containment vacuum breakers not closed. OR Two or more required containment vacuum breakers inoperable for other reasons.	----------NOTE---------- Only applicable in MODE 1, 2 or 3. ---------- B.1.1 Be in MODE 3. AND B.1.2 Be in MODE 4. AND ----------NOTE---------- Only applicable during movement of recently irradiated fuel assemblies in the primary containment, and OPDRVs. ---------- B.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND B.2.2 Initiate action to suspend OPDRVs.	 12 hours 36 hours Immediately Immediately

3.6 CONTAINMENT SYSTEMS

3.6.1.12 Containment Humidity Control

LCO 3.6.1.12 Containment average temperature-to-relative humidity shall be maintained within limits.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of LCO not met in MODE 1, 2, or 3.	A.1 Restore containment average temperature-to-relative humidity to within limits.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met or in MODE 1, 2, or 3.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1	Suspend movement of recently irradiated fuel assemblies in the primary containment.	Immediately
	AND		
	C.2	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENT

SURVEILLANCE		FREQUENCY
SR 3.6.1.12.1	Verify containment average temperature-to-relative humidity to be within limits.	24 hours

3.6 CONTAINMENT SYSTEMS

3.6.4.1 Secondary Containment

LCO 3.6.4.1 The secondary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Secondary containment inoperable in MODE 1, 2, or 3.	A.1	Restore secondary containment to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Secondary containment inoperable during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND C.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1.1	Verify secondary containment vacuum is ≥ 0.66 inch of vacuum water gauge.	24 hours
SR 3.6.4.1.2	Verify the primary containment equipment hatch is closed and sealed and the shield blocks are installed adjacent to the shield building.	31 days
SR 3.6.4.1.3	Verify each secondary containment access door is closed, except when the access opening is being used for entry and exit.	31 days

3.6 CONTAINMENT SYSTEMS

3.6.4.2 Secondary Containment Isolation Valves (SCIVs)

LCO 3.6.4.2 Each SCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

----------NOTES----------

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for systems made inoperable by SCIVs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one SCIV inoperable.	A.1 Isolate the affected penetration flow path by use of at least one closed manual valve or blind flange. AND	8 hours (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	D.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND D.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.4.2.1 ----------NOTES---------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. ---------- Verify each secondary containment isolation manual valve and blind flange that is required to be closed during accident conditions is closed.	31 days

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Annulus Exhaust Gas Treatment (AEGT) System

LCO 3.6.4.3 Two AEGT subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment.
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AEGT subsystem inoperable.	A.1 Restore AEGT subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1 Place OPERABLE AEGT subsystem in operation. OR	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND C.2.2 Initiate action to suspend OPDRVs.	Immediately Immediately
D. Two AEGT subsystems inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately
E. Two AEGT subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	E.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND E.2 Initiate action to suspend OPDRVs.	Immediately Immediately

3.7 PLANT SYSTEM

3.7.3 Control Room Emergency Recirculation (CRER) System

LCO 3.7.3 Two CRER subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CRER subsystem inoperable.	A.1	Restore CRER subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 AND B.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- C.1 Place OPERABLE CRER subsystem in emergency recirculation mode. OR C.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND C.2.2 Initiate action to suspend OPDRVs.	Immediately Immediately Immediately
D. Two CRER subsystems inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two CRER subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	E.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND E.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CRER subsystem for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.3.2	Perform required CRER filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.3.3	Verify each CRER subsystem actuates on an actual or simulated initiation signal.	18 months

(continued)

3.7 PLANT SYSTEMS

3.7.4 Control Room Heating, Ventilating, and Air Conditioning (HVAC) System

LCO 3.7.4 Two control room HVAC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building.
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One control room HVAC subsystem inoperable.	A.1	Restore control room HVAC subsystem to OPERABLE status.	30 days
B. Two control room HVAC subsystems inoperable.	B.1	Verify control room air temperature is ≤ 90°F.	Once per 4 hours
	AND		
	B.2	Restore one control room HVAC subsystem to OPERABLE status.	7 days
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1	Be in MODE 3.	12 hours
	AND		
	C.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- D.1 Place OPERABLE control room HVAC subsystem in operation. OR D.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND D.2.2 Initiate action to suspend OPDRVs.	Immediately Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- E.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND E.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify each control room HVAC subsystem has the capability to remove the assumed heat load.	18 months

3.7 PLANT SYSTEMS

3.7.8 Fuel Handling Building

LCO 3.7.8 The fuel handling building (FHB) shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the FHB.

ACTIONS

NOTE
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. FHB inoperable.	A.1 Suspend movement of recently irradiated fuel assemblies in the FHB.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify all FHB floor hatches and the shield blocks adjacent to the shield building are installed, and the FHB railroad track door is closed.	24 hours
SR 3.7.8.2	Verify each FHB access door is closed, except when the access opening is being used for entry and exit.	24 hours

3.7 PLANT SYSTEMS

3.7.9 Fuel Handling Building Ventilation Exhaust System

LCO 3.7.9 Three fuel handling building (FHB) ventilation exhaust subsystems shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the FHB.

ACTIONS

----------NOTE----------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required FHB ventilation exhaust subsystem inoperable.	A.1	Restore FHB ventilation exhaust subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1	Place two OPERABLE FHB ventilation exhaust subsystems in operation.	Immediately
	OR		
	B.2	Suspend movement of recently irradiated fuel assemblies in the FHB.	Immediately
C. Two or three FHB ventilation exhaust subsystems inoperable.	C.1	Suspend movement of recently irradiated fuel assemblies in the FHB.	Immediately

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources — Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems — Shutdown";

b. One diesel generator (DG) capable of supplying one division of the Division 1 or 2 onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8; and

c. One qualified circuit, other than the circuit in LCO 3.8.2.a, between the offsite transmission network and the Division 3 onsite Class 1E electrical power distribution subsystem, or the Division 3 DG capable of supplying the Division 3 onsite Class 1E AC electrical power distribution subsystem, when the Division 3 onsite Class 1E electrical power distribution subsystem is required by LCO 3.8.8.

APPLICABILITY: MODES 4 and 5,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building.

ACTIONS

----------NOTE----------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO Item a not met.	----------NOTE---------- Enter applicable Condition and Required Actions of LCO 3.8.8, when any required division is de-energized as a result of Condition A. ----------	
	A.1 Declare required feature(s) with no offsite power available from a required circuit inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	Immediately
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (Continued)	A.2.4	Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
B. LCO Item b not met.	B.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	B.2	Suspend movement of recently irradiated fuel assemblies in primary containment and fuel handling building.	Immediately
	AND		
	B.3	Initiate action to suspend OPDRVs.	Immediately
	AND		
	B.4	Initiate action to restore required DG to OPERABLE status.	Immediately
C. LCO Item c not met.	C.1	Declare High Pressure Core Spray System inoperable.	72 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources — Shutdown

LCO 3.8.5 The following DC electrical power subsystems shall be OPERABLE:

a. One Class 1E DC electrical power subsystem capable of supplying one division of the Division 1 or 2 onsite Class 1E electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems - Shutdown";

b. One Class 1E battery or battery charger, other than the DC electrical power subsystem in LCO 3.8.5.a, capable of supplying the remaining Division 1 or Division 2 onsite Class 1E DC electrical power distribution subsystem when required by LCO 3.8.8; and

c. The Division 3 DC electrical power subsystem capable of supplying the Division 3 onsite Class 1E DC electrical power distribution subsystem, when the Division 3 onsite Class 1E DC electrical power distribution subsystem is required by LCO 3.8.8.

APPLICABILITY: MODES 4 and 5,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building.

ACTIONS

---NOTE---

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	
	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Distribution Systems — Shutdown

LCO 3.8.8 The necessary portions of the Division 1, Division 2, and Division 3 AC and DC electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 4 and 5,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building.

ACTIONS

----------NOTE----------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC or DC electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building.	Immediately
	AND	

(continued)

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 102 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 letter dated November 2, 1995, as supplemented by submittal dated January 7, 1999, FirstEnergy Nuclear Operating Company (the licensee, formerly The Cleveland Electric Illuminating Company and Centerior Service Company) proposed changes to the Perry Nuclear Power Plant, Unit 1 (PNPP) Technical Specifications (TSs) during the handling of irradiated fuel in the Primary Containment and Fuel Handling Building, and selected specifications associated with CORE ALTERATIONS. The purpose is to establish a point where OPERABILITY of those systems typically used to mitigate the consequences of a fuel handling accident (FHA) is no longer required to meet the Standard Review Plan guidance on offsite dose effects (i.e., less than 25% of 10 CFR Part 100 limits). Specifically, the proposal identifies that only "recently" irradiated fuel contains sufficient fission products to require OPERABILITY of accident mitigation features to meet the accident analysis assumptions. Therefore, the APPLICABILITY requirements for the associated mitigation features are revised.

The licensee has performed a fuel handling accident (FHA) dose analysis which takes credit for a radioactive decay period that is longer than the 24-hour period originally assumed. Given this longer decay period, the licensee proposed changes to redefine the TS requirements by relaxing Primary Containment, Secondary Containment, and Fuel Handling Building integrity requirements and relaxing requirements for those engineered safety feature systems originally relied upon to mitigate a FHA. To implement the above concepts, these TSs will only apply if fuel has been "recently irradiated." The term "recently irradiated" is a cycle specific number and represents the decay period for the reduction in radionuclide inventory available for release in the event of an FHA. For the upcoming refueling outage, the licensee has determined that the appropriate decay period will be 7 days. In summary, once the reactor has been shut down for a minimum of 7 days, the licensee has demonstrated that the FHA reanalysis (that does not rely on either building integrity or the FHA mitigating systems) will not exceed offsite dose limitations. The TS Bases will be revised to provide a cycle-specific definition of "recently irradiated" fuel.

The supplemental information contained clarifying information and did not change the initial no significant hazards consideration determination and did not expand the scope of the original application.

2.0 BACKGROUND

2.1 Regulatory Requirements for Shutdown Operation

Historic development of regulatory requirements for nuclear power plant operation was based on the premise that most potential risk was due to operation at power and, consequently, protection of the public could be ensured by designs and operations that conservatively bounded all conditions by achieving defense-in-depth for power operation. Fuel movement was recognized as a departure from this concept since there was no corresponding power operation configuration, and this was judged as an area where additional regulatory protection was necessary. This is reflected in technical specifications where there are many containment requirements during power operation, but during Cold Shutdown and Refueling Modes few requirements apply outside of fuel handling and related operations.

During the late 1980s and early 1990s, the staff and industry realized that significant risk reductions could be achieved during shutdown operation. The staff responded with a rulemaking effort and industry implemented voluntary initiatives to realize risk improvements. In recognition of these efforts, work to improve technical specifications was concentrated on power operation specifications, with the intention to address shutdown once a rule was in place. As a result, shutdown technical specifications are not consistent with the reduction in risk that would be achieved from increased emphasis on technical specifications.

In regard to shutdown operation, on July 30, 1997, the staff credited the effectiveness of industry's voluntary actions in well-operated plants by informing the Commission that such voluntary "... initiatives have been successful in achieving the acceptable level of risk that now exists at U.S. nuclear power plants" and "The practical effect of rule implementation is, therefore, not to raise the current level of safety, but rather to ensure that at least the current level of safety will be maintained."[1] On December 11, 1997, the Commission decided not to issue a shutdown rule for comment. Instead, the Commission instructed the staff to "...continue to monitor licensee performance, through inspections and other means, in the area of shutdown operations to ensure that the current level of safety is maintained."[2] The major component of the Commission's decision to not issue a shutdown rule was the effective voluntary actions in place in the well-run nuclear power plants, and the expectation that those or equally effective actions would continue.

One aspect of enhanced understanding of shutdown operation is an understanding that the risk due to potential fuel handling accidents, particularly if the decay heat generation rate is low, is almost nil, whereas the risk due to many other shutdown operations is comparable to, and sometimes exceeds, the risk during power operation. Yet, there are more restrictive technical

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[1]Issuance for Public Comment of Proposed Rulemaking Package for Shutdown and Fuel Storage Pool Operation," SECY-97-168, July 30, 1997.

[2]Staff Requirements - SECY-97-168 - Issuance for Public Comment of Proposed Rulemaking Package for Shutdown and Fuel Storage Pool Operation," Staff Requirements Memorandum, December 11, 1997.

specifications for fuel handling compared to other aspects of shutdown operation. With respect to containment during the Cold Shutdown and Refueling Modes, the only requirement applies to fuel movement and related operations; there are no other containment requirements. The Perry licensee has recognized this paradox, and is proposing to relax technical specification requirements during fuel handling when an appropriately low decay heat generation rate has been achieved while committing to continue to ensure an available containment during Cold Shutdown and Refueling Mode operation via administrative procedures. The licensee states that this technical specification relaxation will permit the optimization of outages to achieve an overall risk reduction while also reducing outage time and cost. A significant contributor to this risk reduction is the ability to postpone operations early in the outage that, from a practical standpoint to achieve a short outage time, must be performed soon after shutdown when there is no technical specification requirement for a closed containment. The requested amendment will allow some of these operations to be accomplished later, when the reactor vessel is open and covered by 23 feet of water - when the risk of a severe core damage accident is almost nil. The trade-offs between the requested technical specification relaxation during fuel handling and the voluntary actions to achieve containment closure during Cold Shutdown and Refueling Mode operations, with a corresponding reduction in risk, are basic to the staff's approval of the licensee's request.

2.2 Original Requirements/Licensee's Proposal

The Perry licensee has implemented NUREG-1434, Revision 1, "BWR-6 Improved Standard Technical Specifications." These TSs have a number of operational restrictions during shutdown conditions. The shutdown conditions requiring TS OPERABILITY are captured in the APPLICABILITY statements of the TS. The standard wording of the APPLICABILITY statements during shutdown are as follows:

> During movement of irradiated fuel assemblies in the primary containment,
> During CORE ALTERATIONS,
> During operations with a potential for draining the reactor vessel (OPDRVs).

Structures such as the Primary Containment, Secondary Containment, and Fuel Building must be OPERABLE during the above conditions. Similarly, systems related to performing core alterations must also be OPERABLE during the above conditions. However, outside of the above conditions, OPERABILITY of the Primary Containment, Secondary Containment, Fuel Building, and systems related to performing core alterations are not required.

During refueling outages, movement of large equipment into or out of Primary Containment or the Fuel Building (such as chemical-decontamination equipment, inservice examination/test equipment, or large component parts that require repair) must either be completed prior to establishing OPERABILITY or delayed until after OPERABILITY is required. Real dollar losses are incurred due to the inability of specialized contractors to perform their designated activities due to delays in performance of critical path activities. Also, productivity losses occur when personnel are involved in multiple evolutions of establishing, maintaining, and releasing OPERABILITY. These factors, coupled with the increased flexibility for scheduling testing and maintenance activities on containment valves and instrumentation, can result in significant accrued cost reductions and productivity enhancements over the remaining operating life of the

plant, allowing outage resources to be directed to other activities, which ultimately will result in improvements in plant maintenance, operations, and overall safety.

The Perry licensee has proposed to relax TS requirements during shutdown conditions. The premise is to take credit for the normal decay of irradiated fuel, reanalyze the design basis accident during shutdown conditions (i.e., the FHA), and thus conclude that neither building integrity nor the FHA mitigating systems are required to be OPERABLE during shutdown conditions.

On many plant dockets, including PNPP, the NRC has determined that the FHA is acceptable when conservatively calculated dose analyses result in doses which remain less than 25% of 10 CFR Part 100 guidelines. This is also reflected in Standard Review Plan 15.7.4, "Radiological Consequences of Fuel Handling Accidents." Typically for Boiling Water Reactors (BWR's), these types of dose analyses show that fuel handling is acceptable to begin once 24 hours has passed after entry into a plant shutdown. Perry has installed filtration capabilities in the ventilation system for the fuel handling area and their current analyses take credit for the filtration in reducing the doses when performing such dose calculations.

The alternative approach being proposed is to take credit for the normal decay of irradiated fuel rather than crediting the active mitigative systems (e.g., ventilation and filtration systems). Since radioactive decay is a natural phenomenon, it has a reliability of 100 percent in reducing the radiological release from the fuel bundles. In addition, the water level that covers the fuel bundles is another natural method that provides an adequate barrier to a significant radiological release and this defense-in-depth method will continue to be enforced by Technical Specification controls (i.e., TS 3.9.6, "Reactor Pressure Vessel (RPV) Water Level - Irradiated Fuel," requires that RPV water level be ≥22 feet 9 inches above the top of the RPV flange).

By letter dated November 2, 1995, the licensee provided a revised offsite dose calculation showing that the consequences of a FHA would remain less than 25% of 10 CFR Part 100 guidelines discussed above, once the fuel had undergone radioactive decay for several days. The length of this "several day" period is determined by a plant-specific dose calculation. The analysis took no credit for the primary containment, the fuel handling building, or the installed ventilation systems (including their filtration capabilities) after this extended period of decay. The submittal proposed that the NRC should permit core alteration/fuel handling activities to occur after this period of radioactive decay, without requiring TS controls over building integrity and ventilation system/filtration operability. The period of decay that was assumed for Perry is 7 days. Thus, 7 days following reactor shutdown, the licensee's analyses show that due to the natural decay of irradiated fuel, the off-site dose resulting from the FHA will not exceed 25% of 10 CFR Part 100 even if credit is not taken for building integrity or FHA mitigating systems.

The licensee proposed large-scale relaxations to the TS by revising the APPLICABILITY statements for shutdown conditions for structures (e.g., Primary Containment, Secondary Containment, Fuel Handling Building) and systems previously used to mitigate the consequences of a FHA. The APPLICABILITY statements were to be revised as follows:

During movement of *recently* irradiated fuel assemblies in the primary containment or fuel handling building,
~~During CORE ALTERATIONS,~~
During operations with a potential for draining the reactor vessel (OPDRVs).

In order to implement the above APPLICABILITY statements, the Limiting Condition for Operation (LCOs) for INTEGRITY and for the selected ESF systems need only apply if fuel that has recently been in the critical reactor core (i.e., "recently irradiated fuel") is handled during the first several days of an outage (prior to completion of the longer decay period). The TS Bases will be revised to identify "recently irradiated fuel" as fuel that has occupied part of a critical reactor core within the previous 7 days.

The deletion of the CORE ALTERATIONS term is justified since a FHA is the only event during CORE ALTERATIONS that is postulated to result in fuel damage and radiological release, and such FHAs will be fully enveloped by the proposed APPLICABILITY.

In addition to the above changes to the APPLICABILITY statements, the licensee proposed numerous corresponding changes to the ACTION statements, such as elimination of references to CORE ALTERATIONS and the insertion of *"recently* irradiated fuel" when referring to the movement of irradiated fuel.

The proposed changes do not impact TS requirements for systems needed to prevent or mitigate CORE ALTERATION events other than the FHA. They also do not change the requirements for systems needed to mitigate potential vessel draindown events, systems needed for decay heat removal, or the requirements to maintain high water levels over irradiated fuel.

The licensee proposed changes to the following TS:

SPECIFICATION TITLE	TS NUMBER
Primary Containment and Drywell Isolation Instrumentation	3.3.6.1
Control Room Emergency Recirculation (CRER) System Instrumentation	3.3.7.1
Primary Containment Air Locks	3.6.1.2
Primary Containment Isolation Valves (PCIVs)	3.6.1.3
Primary Containment - Shutdown	3.6.1.10
Containment Vacuum Breakers	3.6.1.11
Containment Humidity Control	3.6.1.12
Secondary Containment	3.6.4.1
Secondary Containment Isolation Valves (SCIVs)	3.6.4.2
Annulus Exhaust Gas Treatment (AEGT) System	3.6.4.3
Control Room Emergency Recirculation (CRER) System	3.7.3
Control Room HVAC System	3.7.4
Fuel Handling Building	3.7.8
Fuel Handling Building Ventilation Exhaust System	3.7.9
AC Sources - Shutdown*	3.8.2
DC Sources - Shutdown*	3.8.5
Distribution Systems - Shutdown*	3.8.8

* TSs for electrical systems do not have CORE ALTERATIONS in their APPLICABILITY statements. Since these TSs also have MODES 4 and 5 in their APPLICABILITY statements, OPERABILITY will always be applicable provided that fuel remains in the reactor vessel.

2.3 Limited Staff Approval for Containment Personnel Airlocks

By letter dated February 2, 1996, the staff issued Amendment No. 80 to the Perry operating license. This was a partial approval of the licensee's submittal and only approved opening of the containment personnel air locks (TS 3.6.1.2) during shutdown conditions. The staff's review included a reanalysis of the FHA under the premise that the reactor had been shut down for a minimum of seven days. The staff assumed an instantaneous puff release of noble gases and

radioiodines from the gap and plenum of the broken fuel rods. These gas bubbles were assumed to pass through at least 22 feet 9 inches of water covering the fuel prior ro reaching the containment atmosphere. All airborne activity reaching the containment was assumed to exhaust from the plant vent to the environment within 2 hours. The staff approval was contingent upon licensee procedures to close one personnel airlock door quickly in the event of an accident in order to establish containment integrity.

While approving extended opening of the containment personnel airlocks during plant shutdown, the staff deferred taking action on the licensee's larger request since, as discussed in Section 2.1 above, ongoing activities related to the shutdown rule were anticipated to provide additional staff guidance on TSs during plant shutdown.

2.4 Industry Initiative

On September 8, 1998, the BWR/6 owners met with the NRC staff to readdress the FHA reanalysis. Since the original proposal of November 1995, the staff had granted limited approval to permit opening of the containment personnel airlock doors for most plants but had deferred taking additional actions. Modeled after Perry's original plant-specific proposal, the Nuclear Energy Institute (NEI) proposed generic changes to the Improved Standard Technical Specifications via Technical Specification Task Force Traveler 51 for all four owners groups on March 25, 1996. During the public meeting of September 8, 1998, it was agreed that the Perry facility would be treated as the lead plant for this activity.

3.0 EVALUATION

The staff's review focused on the following four areas:

(1) Dose Calculations - Control room and offsite dose consequences must be within acceptable regulatory limits without taking credit for the integrity of the Primary Containment, Secondary Containment, and Fuel Handling Building as well as the FHA mitigating systems.

(2) Administrative Controls - Shutdown safety controls must address 1) procedures to assess the impact of removing systems from service during shutdown conditions, 2) the ability to implement prompt methods to close both the Primary Containment and the Fuel Handling Building in the event of a FHA, and 3) controls to avoid unmonitored releases.

(3) Risk Significance - The licensee's risk-related discussion needs to support the proposed TS changes.

(4) Shutdown Operations - The licensee's proposed amendment should be consistent with the Commission's December 11, 1997, instructions to the staff.

3.1 FHA Reanalysis

The staff reviewed the licensee's justification for allowing relaxation of the Primary Containment and Fuel Handling Building integrity requirements during fuel handling activities not involving recently irradiated fuel. The licensee defines "recently irradiated fuel" as fuel that has occupied part of a critical reactor core within the previous 7 days. As part of this review, the staff reviewed the licensee's reanalysis of the FHA.

The licensee's revised FHA analysis assumed an instantaneous release to the environment with no holdup or treatment (i.e., no credit was taken for building integrity or FHA mitigating systems). The offsite dose consequence results were previously submitted to the NRC by letter dated March 16, 1990, in support of a request for approval of TS changes to allow opening of up to six 3/4-inch vent and drain line pathways during refueling activities. In review of that request, the staff confirmed the licensee offsite dose results and found they met 10 CFR Part 100 acceptance criteria (see the NRC Safety Evaluation for PNPP Operating License NPF-58, Amendment No. 35, dated September 28, 1990.) No new or different offsite dose analyses were performed for this current request. The staff has determined that the previously submitted offsite dose analysis and NRC staff review are applicable to this request.

By letter dated January 7, 1999, the licensee submitted the control room dose analysis for the fuel handling accident. The analysis assumed a 7-day decay period and took no credit for Containment or Fuel Handling Building integrity and the FHA mitigating systems. The licensee's analysis also assumed that the Control Room Emergency Recirculation System does not initiate, while the normal control room ventilation system continues to run and draw in unfiltered outside air at 6,600 cfm. The licensee's dose results were as follows:

Licensee Calculated Control Room Doses (0-30 days)

	Calculated	GDC 19 Acceptance Criteria
Whole Body Gamma Dose (rem)	0.0125	5
Inhalation Dose (rem)	27.3	30

The staff performed an independent control room radiological dose analysis using the same assumptions with regard to control room ventilation and containment integrity. These assumptions are listed below.

FHA Control Room Dose Assumptions Used by NRC Staff

No credit for containment integrity (direct release of radioactivity to the environment)
Normal control room ventilation
No filters on control room ventilation intake

Power Level	3758MWth
Radial peaking factor	1.5
Radioactive decay period	7 days
Fuel Rods damaged	98 (1 assembly)
Total fuel rods in core	59,460

Iodine gap activity fractions	
Organic	0.0025
Inorganic	0.9975
Control Room X/Qs	
0-8 hours	3.5E-04
8-24	2.1E-04
1-4 days	1.1E-04
4-30 days	5.75E-05

The results of the staff calculation were:

NRC Staff Calculated Control Room Doses (0-30 days)

	Calculated	GDC 19 Acceptance Criteria
Whole Body Gamma Dose (rem)	< 1	5
Inhalation Dose (rem)	23.1	30

The licensee's control room dose results are comparable to staff calculated doses and meet the acceptance criteria given in 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 19. The staff finds the licensee's control room radiological dose analysis and results to be conservative and acceptable. Taking into consideration the previously reviewed FHA offsite dose calculations, the staff finds the proposed changes acceptable with regard to radiological consequences.

3.2 Shutdown Safety Controls

The area of review under shutdown safety controls focused on 1) procedures to assess the impact of removing systems from service during shutdown conditions, 2) the ability to implement prompt methods to close both the Primary Containment and the Fuel Handling Building in the event of a FHA, and 3) controls to avoid unmonitored releases.

In the licensee's submittal of November 2, 1995, it referenced Section 4.5 of NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management." NUMARC 91-06 focused on events involving loss of decay heat removal and addressed the ability to promptly restore containment integrity. It identified that the time to effect closure should be consistent with plant conditions (e.g., reactor coolant inventory and decay heat load). In this regard, the licensee developed administrative controls for the closure of the Primary Containment and the Fuel Handling Building, which were based on the recommendations of NUMARC 91-06 Section 4.5.

Subsequent to the development of NUMARC 91-06, the staff completed its activities associated with the Shudown Rulemaking. The Shutdown Rulemaking did not result in any additional TSs during shutdown conditions. With regard to NRC concerns over removal of significant systems from service during plant shutdowns, the Commission directed the staff to address these concerns by placing new limitations in the maintenance rule (i.e., 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants"). The proposed change to 10 CFR 50.65 would require licensees to assess the impact on shutdown safety before removing equipment from service for maintenance.

The industry, through the Nuclear Energy Institute (NEI), has been developing guidance to implement this Commission directive. A revised draft of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants was submitted to the NRC on July 1, 1998. While NUMARC 91-06 only focused on selected shutdown operations, NUMARC 93-01 addressed a broad scope of activities during shutdown conditions.

In the draft NUMARC 93-01 guideline, Section 11.2.6, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," under the subheading of "Containment - Primary (PWR)/Secondary (BWR)", the following guidance is provided:

"... for plants which obtain amendments to modify Technical Specification requirements on primary or secondary containment operability and ventilation system operability during fuel handling or core alterations, the following guidelines should be included in the assessment of systems removed from service:

During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification operability amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.

A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure."

The purpose of the "prompt methods" mentioned above is to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored.

The draft NUMARC 93-01 guidance is built upon two basic premises: avoiding unmonitored releases and using available (although not necessarily "Technical Specification OPERABLE") filtration capabilities to reduce doses below those achieved from the decay of the source term and the scrubbing of the water. Until such time that NUMARC 93-01 is endorsed as a formal industry position, the Perry licensee has committed to the above draft wording for controlling the removal from service of systems, structures and components that are currently required by TSs during periods of core alteration/fuel handling.

In response to its commitment to NUMARC 93-01, the licensee updated its administrative controls for Primary Containment/Fuel Handling Building closure. These closure controls are in effect whenever the Primary Containment or Fuel Handling Building is open and are not limited to fuel handling operations. Areas addressed in these administrative controls include the following:

- Equipment necessary to implement containment closure shall be appropriately staged prior to maintaining airlock doors open.

• Hoses and cables running through any open penetration, airlock, or hatch should be tagged to facilitate rapid removal in the event that containment closure is required.

• One door in each airlock is capable of being closed and the airlock door is not blocked in such a way that it cannot be expeditiously closed. In addition, personnel are designated with the responsibility for expeditious closure of airlock doors.

• Major disassembly of containment boundary valves, except those valves 3/4-inch or less, should only be performed on one valve at a time with administrative controls established on the opposite boundary valve. If conditions require working both containment isolation valves in parallel, closure devices shall be fabricated and staged at the work area.

• Major ventilation and air conditioning systems, including radiation release monitoring, shall be available. Such HVAC systems include the Control Room, Fuel Handling Building, Annulus Exhaust Gas Treatment, and Primary Containment Building.

• Compensatory actions for prompt closure of the Primary Containment/Fuel Handling Building will give priority to the following: Containment airlock doors, Fuel Handling Building roll-up door and personnel doors, containment ventilation boundary valves, feedwater isolation valves, main steam isolation valves, annulus exhaust gas treatment system, and containment vacuum relief valves.

• Personnel responsible for Primary Containment/Fuel Handling Building closure shall be trained and knowledgeable in using procedures for re-establishing building integrity.

The staff has reviewed the Perry administrative procedures on closure and concludes that they provide reasonable and adequate controls to achieve Primary Containment/ Fuel Handling Building closure.[3]

In accordance with regulatory requirements, the licensee must develop procedures to maintain control of radioactive effluents and to maintain doses to members of the public from radioactive effluents as low as reasonably achievable. The licensee's program for these requirements are described in TS 5.5.4, "Radioactive Effluent Controls Program." The staff notes that the licensee's Radioactive Effluent Controls Program is not impacted by these proposed TS changes and, therefore, a situation will not occur that could result in an unmonitored release.

The staff considers the licensee's described administrative controls as an adequate means to control monitoring and filtration of any releases that might occur from a FHA and to be consistent with the Commission's December 11, 1997, instructions to the staff. Therefore, the staff concludes that the licensee's shutdown safety controls for building integrity and ventilation/filtration systems is an acceptable means of supporting the proposed TS changes.

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[3]Reasonable and adequate controls means an integral barrier or controlled filtration can be provided in time to control a significant release of radioactive material and to achieve an adequate means to control monitoring of releases.

3.3 Risk Evaluation

There have been several occurrences in the history of the nuclear power industry in which fuel bundles have actually been dropped in the course of fuel handling activities. In each of these instances, the actual releases from the fuel have been minimal or nonexistent (reference NSAC/129 and other subsequent plant operating event reports). This has shown that the assumptions utilized in the radiological dose calculations for a fuel handling accident are quite conservative.

An examination of the significance of Fuel Handling Accidents was examined as part of a Grand Gulf shutdown risk study (reference NRC Meeting Summary of September 9, 1998, "Meeting To Discuss The Planned Joint Proposals On Containment Requirements To Mitigate Fuel Handling Accidents During Refueling" with several BWR/6 plants). Insights from this study show that due to the much lower potential releases from a Fuel Handling Accident than from a core damage accident (approximately 100 Curies as compared to 3 $X10^6$ Curies) the risk from a Fuel Handling Accident is very low, and is 3 orders of magnitude below the risk associated with a core damage event during shutdown.

The staff has reviewed the licensee's risk-informed discussion and supports the proposed license amendment for the following reasons:

- Results of agency sponsored probabilistic risk assessment (PRA) studies for Grand Gulf, a plant of similar design to Perry, indicate that during shutdown, the potential for core damage is least when the reactor vessel head is off (thus alleviating concerns regarding overpressurization of shutdown cooling system components) and the vessel water level is raised (thereby providing more time for mitigation of accident initiating events). During refueling activities when fuel movement is taking place, TSs require a minimum water level of 22 feet 9 inches of water above the active core. This is the case of the plant operating state (POS) associated with fuel handling during refueling outages.

- There are no TSs requiring containment integrity during shutdown other than the one involving fuel handling (even though the risk associated with some of these POSs is higher). Furthermore, no such TSs were proposed to address core damage related concerns raised during the Shutdown Rulemaking process.

- PNPP has outage management administrative controls in place for re-establishing containment closure consistent with plant conditions.

- Increases in core damage frequency (CDF) and large early release frequency (LERF), associated with the proposed change, would most likely be considerably less than 1E-6/yr and 1E-7/yr, respectively.

3.4 Summary

The proposed TS changes redefine the fuel handling requirements in two areas, given the longer decay period from the time of reactor subcriticality:

- Requirements associated with INTEGRITY for the Primary Containment and Fuel Handling Building are relaxed (since no credit is taken for these in the new analysis for mitigation of a FHA).

- Requirements for selected engineered safety feature systems (those that are not credited in the new analysis for mitigation of a FHA).

The proposed changes do not impact TS requirements for systems needed to prevent or mitigate CORE ALTERATION events other than the FHA. They also do not change the requirements for systems needed to mitigate potential vessel draindown events, systems needed for decay heat removal, or the requirements to maintain high water levels over irradiated fuel.

As previously discussed in this evaluation, the staff finds the proposed TS changes acceptable because:

- Fuel handling accidents are not risk-significant and have not merited individual TS controls.

- Adequate defense in depth is maintained by the requirements for water level and the natural decay of irradiated fuel.

- The control room and offsite dose calculations meet the acceptance criterion without reliance on building integrity or FHA mitigating systems.

- Administrative controls over shutdown safety are in effect that ensure containment closure, should it be needed, and to control monitoring and filtration of any releases that might occur from a FHA.

- Risk-informed considerations support the licensee's proposed TS changes.

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 (60 FR 62497). 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(s): Michelle Hart
Nicholas Saltos
Warren Lyon
Douglas Pickett

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