

Donald K. Cobb
Assistant Vice President, Nuclear Generation

Fermi 2
6400 North Dixie Hwy., Newport, MI 48166
Tel: 734.586.5201 Fax: 734.586.4172

DTE Energy



January 31, 2006
NRC-06-0001

10 CFR 50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

- References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
- 2) Detroit Edison Letter to NRC "Proposed License Amendment to Revise Technical Specification 3.3.6.1, "Primary Containment Isolation Instrumentation,"" NRC-04-0006, dated March 19, 2004.
- 3) Detroit Edison Letter to NRC "Revision to License Amendment Request to Revise Technical Specification 3.3.6.1, "Primary Containment Isolation Instrumentation,"" NRC-05-0016, dated March 17, 2005.

Subject: Revision to License Amendment Request to Revise Technical Specification 3.3.6.1, "Primary Containment Isolation Instrumentation"

Pursuant to 10 CFR 50.90, Detroit Edison hereby requests the following amendment. This submittal replaces Reference 3 in its entirety and incorporates Detroit Edison's September 8, November 7, November 28, and December 13, 2005 telephone discussions with the Fermi 2 NRC Project Manager. Accordingly, Detroit Edison requests that our Reference 3 submittal be withdrawn.

The proposed change addresses an inconsistency that was inadvertently introduced during conversion to Improved Technical Specifications when "1 per room" replaced "2" as the Required Channels per Trip System for the Reactor Water Cleanup Area Ventilation Differential Temperature – High isolation function. This inaccuracy in the Technical Specifications was introduced during conversion to the Improved Technical Specifications.

Detroit Edison requests approval of the proposed License Amendment by April 30, 2006, with the amendment being implemented within 90 days following approval.

A001

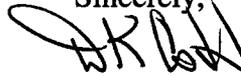
Enclosure 1 contains an evaluation, including a significant hazards consideration, of the proposed change. Enclosure 2 contains a copy of the existing Technical Specification (TS) pages marked up to show the proposed change. Enclosure 3 contains a copy of the proposed revised TS pages. Enclosure 4 provides marked up pages of the existing TS Bases showing the proposed changes (for information only). There are no new regulatory commitments associated with this proposed change.

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not involve a significant hazards consideration, nor does it significantly change the types or significantly increase the amounts of effluents that may be released offsite. The proposed change does not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed change meets the criteria provided in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated Michigan Official.

If you have any questions regarding this submittal, please contact Ronald W. Gaston at (734) 586-5197.

Sincerely,



D. K. Cobb
Assistant Vice President
Nuclear Generation

Enclosures:

1. Fermi 2 Nuclear Power Plant Evaluation for License Amendment Request
2. Proposed Technical Specification Change (Mark-Up)
3. Proposed Technical Specification Revised Page
4. Marked up pages of the existing TS Bases showing the proposed changes (for information only)

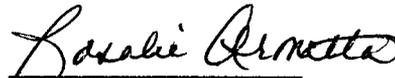
cc: D. H. Jaffe
T. J. Kozak
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, Donald K. Cobb, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.



D. K. Cobb
Assistant Vice President
Nuclear Generation

On this 31st day of January, 2006 before me personally appeared Donald K. Cobb, being first duly sworn and says that he executed the foregoing as his free act and deed.



Notary Public

ROSALIE ARMETTA
NOTARY PUBLIC MONROE CO., MI
MY COMMISSION EXPIRES Oct 11, 2007



**ENCLOSURE 1 to
NRC-06-0001**

**FERMI 2 NUCLEAR POWER PLANT
EVALUATION FOR LICENSE AMENDMENT REQUEST**

FERMI 2 NUCLEAR POWER PLANT

EVALUATION

SUBJECT: Revise Technical Specification (TS) 3.3.6.1, "Primary Containment Isolation Instrumentation."

1. DESCRIPTION
2. PROPOSED CHANGE
3. BACKGROUND
4. TECHNICAL ANALYSIS
5. REGULATORY ANALYSIS
 - 5.1 No Significant Hazards Consideration
 - 5.2 Applicable Regulatory Requirements / Criteria
6. ENVIRONMENTAL CONSIDERATION
7. REFERENCES

1.0 DESCRIPTION:

The proposed change would:

- Add a note to Condition B of Technical Specification (TS) 3.3.6.1, "Primary Containment Isolation Instrumentation," stating "With a Table 3.3.6.1-1 Function 5.c channel inoperable, isolation capability is considered maintained provided Function 5.b is OPERABLE in the affected room."
- Modify Surveillance Requirements Notes by splitting Note 2.b. The new Note 2.b will continue to address Reactor Water Cleanup (RWCU) components for Function 5, (other than non-redundant circuitry of Function 5.a), and contains a new statement: "6 hours for Function 5.c provided Function 5.b is OPERABLE in the affected room;." A new Note 2.c continues to provide 6 hours for surveillance testing for Functions 1, 2, and 6, provided the associated Function maintains isolation capability. The current Note 2.c is renumbered as 2.d.
- Modify TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," Function 5.c, Reactor Water Cleanup Area Ventilation Differential Temperature - High by replacing "1 per room" with "1 per room (d)" for the Required Channels Per Trip System.
- Add note (d) to TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," explaining: "For Function 5.c, Reactor Water Cleanup System Isolation, Area Ventilation Differential Temperature – High, the required channels is 1 per room". This note clarifies that the Fermi 2 design has only 1 trip system for each Function 5.c room.

As a result of the change inadvertently introduced during the conversion to Improved Technical Specifications (ITS), the actions specified by TS 3.3.6.1, "Primary Containment Isolation Instrumentation," for RWCU Area Ventilation Differential Temperature - High, are inconsistent with other RWCU isolation instruments listed in TS Table 3.3.6.1-1. Administrative controls have been put in place using the guidance provided in NRC Administrative Letter 98-10, "Dispositioning Of Technical Specifications That Are Insufficient To Assure Plant Safety." The administrative controls ensure that actions consistent with the intent of TS 3.3.6.1 will be taken until implementation of this amendment request.

2.0 PROPOSED CHANGE:

The proposed change will restore consistency between the installed RWCU Area Ventilation Differential Temperature – High instrumentation and TS Table 3.3.6.1-1, accurately reflecting the number of installed instruments. The proposed change:

- Ensures, during surveillance testing and normal operation, there will always be at least one instrument monitoring for a small leak in all RWCU locations.

- Allows an inoperable RWCU Area Ventilation Differential Temperature – High instrument a completion time of 24 hours in accordance with Condition A of TS 3.3.6.1.

3.0 BACKGROUND:

The RWCU system is classified as a power conversion subsystem and is designed to 1) maintain the reactor coolant chemistry within TS limits; 2) conserve thermal energy during removal and return of reactor coolant to the pressure vessel; 3) remove excess reactor coolant during various operational phases; 4) serve, in part, as a reactor coolant pressure boundary; and 5) provide a containment isolation function. Only the latter two functions are directly related to safety.

The major RWCU system equipment is located within the secondary containment and external to the primary containment. Because the system processes high energy and high activity coolant, the system components are located in shielded, separated rooms or areas. Each area is ventilated by the Reactor Building Heating, Ventilation and Air Conditioning (RBHVAC) system whose discharge is through radiation monitored reactor building ventilation stack. The ventilation stack is automatically isolated by a high radiation signal.

The RWCU system is designed for continuous, controlled removal of reactor coolant from the reactor recirculation system piping. The RWCU system inlet connects to both the reactor recirculation system piping and the bottom of the reactor vessel. After passing through an inboard and outboard primary containment isolation valve, suction flow is driven by parallel motor driven pumps which discharge to the regenerative heat exchangers. From there the flow is routed to the nonregenerative heat exchangers, and parallel filter demineralizers. It is returned to the feedwater piping via the shell side of the regenerative heat exchangers, a motor-operated primary containment isolation valve, and check valves.

Automatic isolation of the RWCU system is provided to meet the safety related requirements for primary containment isolation. The two RWCU suction isolation valves and one RWCU return isolation valve are closed on signal from the Primary Containment Isolation System (PCIS), which are triggered by reactor water level (level 2). During an accident, closure of these valves assures that 1) primary coolant pressure boundary is maintained and losses of reactor coolant are limited; and 2) the release of radioactivity from the primary containment is limited.

Additional automatic isolation capability is provided as non-safety related, and serves to limit RWCU system leakage of radioactive reactor coolant outside the primary containment. This in turn limits local contamination, high radiation and high temperature environments in equipment areas (Reference 4). These include isolations on Differential Flow - High, Area Temperature - High, and Area Ventilation Differential Temperature – High. Although not specifically required by NRC regulations, the differential temperature monitoring was originally recommended for relatively small leak detection in small volume compartments.

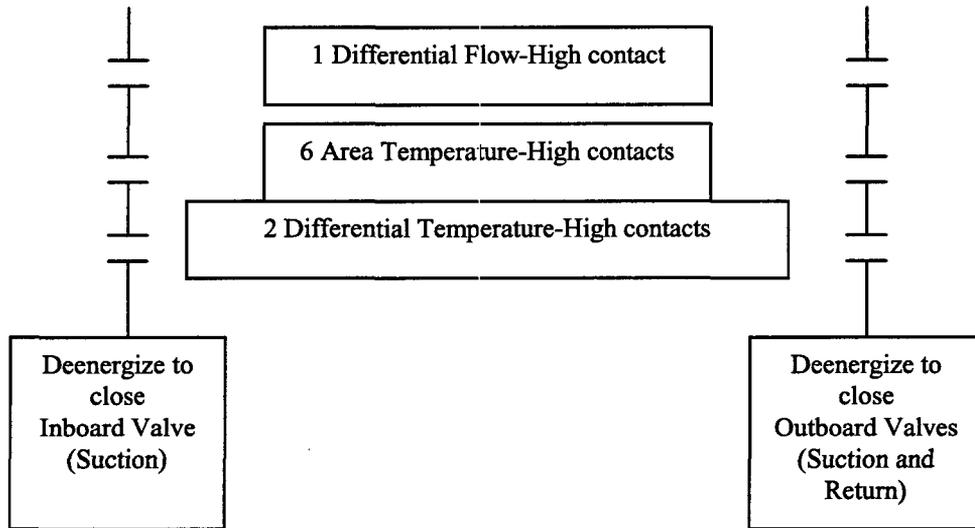
The RWCU isolation logic at Fermi 2 is designed to meet IEEE Std 279-1971, "Criteria for Protection Systems for Nuclear Power Stations." The degree of conformance to IEEE-279-1971 is described in Topical Report NEDO-10139, "Compliance of Protection Systems to Industry Criteria: General Electric BWR Nuclear Steam Supply System."

In NEDO-10139, Figure 4-13, the Functional Control Diagram for the RWCU System shows the isolation control logic. The figure differentiates between the safeguards and non-safeguards inputs for isolation signals. Reactor Low Water Level is a safeguards input designated Signal Code 8 and uses a fail safe one-out-of-two-taken-twice logic. The non-safeguards inputs are Standby Liquid Control (SLC) initiation (no Signal Code specified), and the RWCU System Area Temperature - High, Area Ventilation Differential Temperature - High, and RWCU Differential Flow - High, designated Signal Code 1. For Signal Code 1, combining of the three different Leakage Detection System (LDS) signals is done by redundant relay logic on valve control circuits for each isolation valve. Per NEDO-10139, Section 4.1.2.1, this is so a single signal failure or a single trip logic failure can be tolerated without loss of the isolation function. The Area Temperature - High and Area Ventilation Differential Temperature - High signals work in tandem to initiate containment isolation and are not required to be redundant for each isolation valve.

At Fermi 2, the RWCU LDS consists of the RWCU system isolations on Differential Flow - High, Area Temperature - High, and Area Ventilation Differential Temperature - High. The temperature based RWCU LDS is designed based on an assumed leakage equivalent to the allowable leakage inside containment as established in the TSs (Reference 4). The combining of the three RWCU LDS signals is done by a redundant relay logic on valve control circuits for each of the isolation valves. The isolation logic deenergizes to operate. Exceeding differential flow, any area temperature or any area ventilation differential temperature causes isolation of the RWCU system.

Summary of RWCU LDS Relay Logic

Inboard and Outboard isolation valves each have a total of 8 temperature isolations and one differential flow isolation. All three leak detection signals are combined into two redundant, deenergize to trip (fail safe) isolation logics. An isolation of the RWCU system can be accomplished by actuation of either trip system logic.



Summary of RWCU Isolation Logic

RWCU Isolation Signal	Safeguards	Non-Safeguards	Isolation
Water Level Low	X		Sensors (channels) and relay logic are redundant
SLC		X	Isolates only 1 valve (outboard), no redundancy
LDS		X	Sensors (channels) are non-redundant, Relay logic is redundant

The Area Temperature - High channels are located in six areas with two detectors in each area. One of the two detectors is part of the inboard valve isolation logic and one is part of the outboard valve isolation logic. Actuation of either inboard or outboard isolation logic is sufficient to isolate the RWCU system. High temperature in a single area will cause both the inboard and outboard isolation valves to close by actuating both detection channels for that area.

The Area Ventilation Differential Temperature – High channels are located in four rooms with one detector in each room. Two rooms are part of the inboard isolation logic and two rooms are

part of the outboard isolation logic. A high differential temperature in a single room will cause either the RWCU isolation inboard valve or outboard isolation valves to close.

Both the RWCU Area Ventilation Differential Temperature – High and the RWCU Area Temperature - High primary containment isolation instrumentation are provided to detect a leak from the RWCU system. The RWCU Area Ventilation Differential Temperature - High and RWCU Area Temperature - High isolation signals are redundant and diverse to the high differential flow instrumentation for the hot portions of the RWCU system.

Twelve thermocouples provide input to the RWCU Area Temperature – High Function (two per area). Eight thermocouples provide input to the RWCU Area Ventilation Differential Temperature – High Function. Two thermocouples are required for each differential temperature channel, one each in the inlet and outlet of the room cooling systems, for a total of four channels (one channel per room). Fermi 2 RWCU Area Ventilation Differential Temperature - High instrumentation is non-redundant at the channel level due to having one channel per room.

Fermi 2 has diversity in its RWCU temperature isolation instrumentation in that Area Ventilation Differential Temperature – High and the RWCU Area Temperature – High monitor for a small leak in the same rooms. The reliability of the RWCU system isolation function remains high even in the presence of single or multiple failures of differential temperature channels because of redundancy and diversity of the LDS. A steam leak will cause a coincidental trip of both the differential and ambient temperature channels in the same area.

LDS Isolation Sensor (Channel) Comparison

RWCU Spaces	RWCU A Pump Room (North)	RWCU B Pump Room (South)	RWCU HX Room	RWCU Phase Sep Room	Torus Room Area	Trench Piping Area	Total Sensors (Channels)
No. of Temperature- High Channels	2	2	2	2	2	2	12
Isolation signal to:	Inboard & Outboard	Inboard & Outboard	Inboard & Outboard	Inboard & Outboard	Inboard & Outboard	Inboard & Outboard	
No. of Ventilation Differential Temperature- High Channels	1	1	1	1	0	0	4
Isolation signal to:	Inboard	Outboard	Inboard	Outboard			

Summary of RWCU LDS Isolation Signal Redundancy

RWCU LDS Signal	Total Available Channels	Number of areas or rooms covered	Redundant relay logic
Area Temperature – High	12	6	2 (1 inboard, 1 outboard)
Area Ventilation Differential Temperature – High	4	4	2 (1 inboard, 1 outboard)
Differential Flow – High	1	All	2 (1 inboard, 1 outboard)

4.0 TECHNICAL ANALYSIS:

The proposed license amendment adds a note to Condition B of Technical Specification (TS) 3.3.6.1, "Primary Containment Isolation Instrumentation," stating "With a Table 3.3.6.1-1 Function 5.c channel inoperable, isolation capability is considered maintained provided Function 5.b is OPERABLE in the affected room." This allows a single inoperable Area Ventilation Differential Temperature - High instrument to use Condition A, providing a 24 hour action statement.

The proposed license amendment modifies the TS 3.3.6.1 Surveillance Requirements Notes by splitting Note 2.b. The new Note 2.b will continue to address Reactor Water Cleanup (RWCU) components for Function 5, (other than non-redundant circuitry of Function 5.a), and contains a new statement: "6 hours for Function 5.c provided Function 5.b is OPERABLE in the affected room;" A new Note 2.c continues to provide 6 hours for surveillance testing for Functions 1, 2, and 6, provided the associated Function maintains isolation capability.

The proposed license amendment adds note (d) to TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," explaining: "For Function 5.c, Reactor Water Cleanup System Isolation, Area Ventilation Differential Temperature - High, the required channels is 1 per room". This note clarifies that the Fermi 2 design has only 1 Area Ventilation Differential Temperature - High trip system for each room.

The change that prompted this proposed license amendment was introduced during TS Amendment No. 134, which implemented the ITS (TAC NO. MA1465). In Table A, Administrative Changes to Current Technical Specifications, of the NRC Safety Evaluation (ITS Section 3.3.6.1, A.13), the change from "2" to "1 per room" was described as an administrative change to better specify the number of channels for each trip system. This change was made to match the nomenclature used in the NRC Improved Standard Technical Specifications (ISTS) and to specify the number of instruments per room.

The Fermi 2 TS Bases for the RWCU Area Ventilation Differential Temperature - High isolation Function were revised during conversion to ITS. The changes were made to reflect the plant specific instrumentation at Fermi. The Bases acknowledge that there are a total of four Area Differential Temperature - High monitors for RWCU, one per room.

The Fermi 2 design for the RWCU Area Ventilation Differential Temperature - High isolation Function does not match the design used in the NRC ISTS and this change to the number of Required Channels Per Trip System created an inconsistency. Fermi 2 is designed with one differential temperature monitor per room as opposed to the NRC ISTS format of two differential temperature monitors per room. The Fermi 2 design for the RWCU Area Ventilation Differential Temperature - High isolation Function is described in a License Amendment Request (Reference 3) dated December 22, 1988, subsequently issued to Fermi 2 as TS Amendment No. 41 (TAC NO. 72759).

TS Amendment No. 41 revised the RWCU Area Temperature – High isolation instrumentation by adding a second instrument to all areas monitored. This plant modification provided redundancy for the RWCU Area Temperature – High isolation Function in order to be used as isolation for a RWCU High Energy Line Break scenario. Prior to this, the RWCU Area Temperature – High isolation Function was one instrument per area, similar to the RWCU Area Ventilation Differential Temperature – High instruments.

The proposed changes acknowledge that the Fermi 2 design has four RWCU Area Ventilation Differential Temperature - High instruments and provides a completion time of 24 hours for an inoperable instrument per Condition A of TS 3.3.6.1. This is accomplished by the addition of a note to Condition B stating “With a Table 3.3.6.1-1, Function 5.c channel inoperable, isolation capability is considered maintained provided Function 5.b is OPERABLE in the affected room.” TS 3.3.6.1 Surveillance Requirements Note 2.b is modified to address surveillance requirements for RWCU Area Ventilation Differential Temperature - High instruments. The addition of note (d) to TS Table 3.3.6.1-1 clarifies the number of RWCU Area Ventilation Differential Temperature – High instruments available to be 1 per room. The RWCU Area Ventilation Differential Temperature – High instrumentation has only 1 trip system per room.

In summary, the proposed change to TS 3.3.6.1 Condition B and RWCU Area Ventilation Differential Temperature - High isolation, Function 5.c of TS Table 3.3.6.1-1, “Primary Containment Isolation Instrumentation,” restores the TS to be consistent with the Fermi 2 design and ensures redundant channels are maintained in all RWCU locations in order to maintain isolation capability during surveillance testing and normal operation.

5.0 REGULATORY ANALYSIS:

5.1 No Significant Hazards Consideration

Detroit Edison has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of amendment,” as described below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change clarifies the requirement to maintain isolation capability for the RWCU Area Ventilation Differential Temperature - High isolation instrumentation by addition of a note to TS 3.3.6.1 Condition B, modification of TS 3.3.6.1 Surveillance Requirements Notes, and by clarifying the number of instruments required to be available

in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," Function 5.c, by the addition of note (d). This ensures, during surveillance testing and normal operation, there will always be at least one instrument monitoring for a small leak in all RWCU locations. No changes in operating practices or physical plant equipment are created as a result of this change. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different type of accident from any accident previously evaluated?

Response: No.

The proposed change clarifies the requirement to maintain isolation capability for the RWCU Area Ventilation Differential Temperature - High isolation instrumentation by addition of a note to TS 3.3.6.1 Condition B, modification of TS 3.3.6.1 Surveillance Requirements Notes, and by clarifying the number of instruments required to be available in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," Function 5.c, by the addition of note (d). This ensures, during surveillance testing and normal operation, there will always be at least one instrument monitoring for a small leak in all RWCU locations. No physical change in plant equipment will result from this proposed change. Therefore, the proposed change does not create the possibility of a new or different type of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed change clarifies the requirement to maintain isolation capability for the RWCU Area Ventilation Differential Temperature - High isolation instrumentation by addition of a note to TS 3.3.6.1 Condition B, modification of TS 3.3.6.1 Surveillance Requirements Notes, and by clarifying the number of instruments required to be available in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," Function 5.c, by the addition of note (d). This ensures, during surveillance testing and normal operation, there will always be at least one instrument monitoring for a small leak in all RWCU locations. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

5.2 Applicable Regulatory Requirements / Criteria

The proposed changes address an inconsistency that was inadvertently introduced during implementation of the ITS. The proposed changes have no impact on regulatory requirements or regulatory criteria.

In conclusion, based on the considerations discussed above, (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 the amendment will not adversely affect the common defense and security or the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION:

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not involve a significant hazards consideration, nor does it significantly change the types or significantly increase the amounts of effluents that may be released offsite. The proposed change does not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed change meets the criteria provided in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

7.0 REFERENCES:

1. Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
2. Detroit Edison Letter to NRC "Proposed License Amendment to Revise Technical Specification 3.3.6.1, "Primary Containment Isolation Instrumentation,"" NRC-04-0006, dated March 19, 2004.
3. Letter to NRC: NRC-88-0279, "Proposed Technical Specification Change (License Amendment) – Isolation Actuation Instrumentation (3/4.3.2)," dated December 22, 1988.
4. AEOD/NRC Engineering Evaluation Report, "RWCUC System Automatic Isolation and Safety Considerations (AEOD/E705)," dated March 1987.

**ENCLOSURE 2 to
NRC-06-0001**

PROPOSED TECHNICAL SPECIFICATION CHANGE (MARK-UP)

INCLUDED PAGE:

TS 3.3-50

TS 3.3-53

TS 3.3-58

3.3 INSTRUMENTATION

3.3.6.1 Primary Containment Isolation Instrumentation

LCO 3.3.6.1 The primary containment isolation instrumentation for each Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours for Functions 1.f, 2.a, 2.c, and 6.b <u>AND</u> 24 hours for Functions other than Functions 1.f, 2.a, 2.c, and 6.b
B. One or more automatic Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour

-----Note-----
With a Table 3.3.6.1-1 Function 5.c channel inoperable, isolation capability is considered maintained provided Function 5.b is OPERABLE in the affected room

(continued)

b. 6 hours for Function 5 (other than non-redundant circuitry of 5.a) provided the associated Function maintains isolation capability. 6 hours for Function 5.c provided Function 5.b is OPERABLE in the affected room;

.....
each Primary

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to:
 - a. 2 hours for Function 5.a when testing non-redundant circuitry that results in loss of isolation capability associated with this Function, provided Functions 5.b, 5.c, and 5.e are OPERABLE;
 - c ~~b~~: 6 hours for Functions 1, 2, ~~5 (other than non-redundant circuitry of 5.a)~~ and 6, provided the associated Function maintains isolation capability; and
 - d ~~c~~: 8 hours for Functions 3 and 4, provided the associated Function maintains isolation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.6.1.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.6.1.3	Verify the trip unit setpoint.	92 days
SR 3.3.6.1.4	Perform CHANNEL CALIBRATION.	18 months
SR 3.3.6.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months
SR 3.3.6.1.6	Perform CHANNEL FUNCTIONAL TEST.	18 months

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

Table 3.3.6.1-1 (page 4 of 4)
Primary Containment 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
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Differential Flow - High	1.2.3	1	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	≈ 63.4 gpm
b. Area Temperature - High	1.2.3	1 per area	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	≈ 183°F
c. Area Ventilation Differential Temperature - High	1.2.3	1 per room	(d)	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≈ 53°F
d. SLC System Initiation	1.2	2(b)	I	SR 3.3.6.1.5	NA
e. Reactor Vessel Water Level - Low Low, Level 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	≈ 103.8 inches
f. Manual Initiation	1.2.3	1 per valve	G	SR 3.3.6.1.6	NA
6. Shutdown Cooling System Isolation					
a. Reactor Steam Dome Pressure - 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	≈ 95.5 psig
b. Reactor Vessel Water Level - Low, Level 3	3.4.5	2(c)	J	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	≈ 171.9 inches
c. Manual Initiation	1.2.3	1 per valve	G	SR 3.3.6.1.6	NA

(b) SLC System Initiation only inputs into one of the two trip systems.

(c) Only one trip system required in MODES 4 and 5 when RHR Shutdown Cooling System integrity maintained.

(d) For Function 5.c, Reactor Water Cleanup (RWCU) System Isolation, Area Ventilation Differential Temperature - High, the required channels is 1 per room.

**ENCLOSURE 3 to
NRC-06-0001**

PROPOSED TECHNICAL SPECIFICATION REVISED PAGE

INCLUDED PAGE:

**TS 3.3-50
TS 3.3-53
TS 3.3-58**

Primary Containment Isolation Instrumentation
3.3.6.1

3.3 INSTRUMENTATION

3.3.6.1 Primary Containment Isolation Instrumentation

LC0 3.3.6.1 The primary containment isolation instrumentation for each Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours for Functions 1.f, 2.a, 2.c, and 6.b <u>AND</u> 24 hours for Functions other than Functions 1.f, 2.a, 2.c, and 6.b
<p style="text-align: center;">-----NOTE-----</p> <p>With a Table 3.3.6.1-1 Function 5.c channel inoperable, isolation capability is considered maintained provided Function 5.b is OPERABLE in the affected room.</p> <p>-----</p> <p>B. One or more automatic Functions with isolation capability not maintained.</p>	B.1 Restore isolation capability.	1 hour

(continued)

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Primary Containment Isolation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to:
 - a. 2 hours for Function 5.a when testing non-redundant circuitry that results in loss of isolation capability associated with this Function, provided Functions 5.b, 5.c, and 5.e are OPERABLE;
 - b. 6 hours for Function 5 (other than non-redundant circuitry of 5.a) provided the associated Function maintains isolation capability.
6 hours for Function 5.c provided Function 5.b is OPERABLE in the affected room;
 - c. 6 hours for Functions 1, 2, and 6, provided the associated Function maintains isolation capability; and
 - d. 8 hours for Functions 3 and 4, provided the associated Function maintains isolation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.6.1.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.6.1.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.6.1.3 Verify the trip unit setpoint.	92 days
SR 3.3.6.1.4 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.6.1.5 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months
SR 3.3.6.1.6 Perform CHANNEL FUNCTIONAL TEST.	18 months

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

Table 3.3.6.1-1 (page 4 of 4)
Primary Containment 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
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Differential Flow - High	1,2,3	1	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	≤ 63.4 gpm
b. Area Temperature - High	1,2,3	1 per area	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	≤ 183°F
c. Area Ventilation Differential Temperature - High	1,2,3	1 per (d) room	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	≤ 53°F
d. SLC System Initiation	1,2	2 ^(b)	I	SR 3.3.6.1.5	NA
e. Reactor Vessel Water Level - Low Low, Level 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	≥ 103.8 inches
f. Manual Initiation	1,2,3	1 per valve	G	SR 3.3.6.1.6	NA
6. Shutdown Cooling System Isolation					
a. Reactor Steam Dome Pressure - 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	≤ 95.5 psig
b. Reactor Vessel Water Level - Low, Level 3	3,4,5	2 ^(c)	J	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	≥ 171.9 inches
c. Manual Initiation	1,2,3	1 per valve	G	SR 3.3.6.1.6	NA

(b) SLC System Initiation only inputs into one of the two trip systems.

(c) Only one trip system required in MODES 4 and 5 when RHR Shutdown Cooling System integrity maintained.

(d) For Function 5.c. Reactor Water Cleanup (RWCU) System Isolation, Area Ventilation Differential Temperature - High, the required channels is 1 per room.

**ENCLOSURE 4 to
NRC-06-0001**

**PROPOSED TECHNICAL SPECIFICATION BASES CHANGES
(FOR INFORMATION ONLY)**

INCLUDED PAGES:

**B 3.3.6.1- 1
B 3.3.6.1- 4
B 3.3.6.1-19
B 3.3.6.1-24
B 3.3.6.1-25
B 3.3.6.1-29
B 3.3.6.1-32**

B 3.3 INSTRUMENTATION

B 3.3.6.1 Primary Containment Isolation Instrumentation

BASES

BACKGROUND

The primary containment isolation instrumentation automatically initiates closure of appropriate primary containment isolation valves (PCIVs). The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs). Primary containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA.

The isolation instrumentation includes the sensors, relays, and switches that are necessary to cause initiation of primary containment and reactor coolant pressure boundary (RCPB) isolation. Most channels include electronic equipment (e.g., trip units) that compares measured input signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a primary containment isolation signal to the isolation logic. Functional diversity is provided by monitoring a wide range of independent parameters. The input parameters to the isolation logics are (a) reactor vessel water level, (b) area ambient and differential temperatures, (c) main steam line (MSL) flow and radiation, (d) Standby Liquid Control (SLC) System initiation, (e) condenser pressure, (f) main steam line pressure, (g) high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) steam line flow, (h) drywell pressure, (i) HPCI and RCIC steam line pressure, (j) HPCI and RCIC turbine exhaust diaphragm pressure, (k) reactor water cleanup (RWCU) differential flow, and (l) reactor steam dome pressure. Redundant sensor input signals from each parameter are typically provided for initiation of isolation. The only exceptions are SLC System initiation and RWCU differential flow. In addition, manual isolation of the valves is provided.

Primary containment isolation instrumentation has inputs to the trip logic of the isolation functions listed below.

, RWCU differential temperature

BASES

BACKGROUND (continued)

and Drywell Pressure-High Functions. These Functions receive inputs from four turbine exhaust diaphragm pressure and four steam supply pressure channels for each system. The outputs from the turbine exhaust diaphragm pressure and steam supply pressure channels are each connected to two two-out-of-two trip systems. Each trip system isolates one valve per associated penetration.

HPCI and RCIC Functions isolate the HPCI and RCIC isolation valves.

5. Reactor Water Cleanup System Isolation

The Reactor Vessel Water Level-Low Low, Level 2 Isolation Function receives input from four reactor vessel water level channels. The outputs from the reactor vessel water level channels are connected into two two-out-of-two trip systems.

The Differential Flow-High function is derived from three non-redundant flow transmitters and a non-redundant flow summer. The output of the summer is fed to two trip units, the outputs of which are channeled through relays into two trip systems. One trip system isolates the inboard isolation valve, while the other trip system isolates the two outboard isolation valves.

SLC System Initiation Functions receive input from two channels, with each channel in one trip system using a one-out-of-one logic. Both channels are only input to the trip systems that isolates the outboard isolation valves.

The Area Temperature-High Function receives input from twelve temperature monitors, six to each trip system. The Area Ventilation Differential Temperature-High Function receives input from four differential temperature monitors, two in each trip system. These are configured so that any one input will trip the associated trip system. One of the two trip systems is connected to the inboard valve and the other trip system is connected to the two outboard valves on each RWCU penetration.

Insert 1

→
RWCU Functions isolate the RWCU isolation valves.

Insert 1

The Area Temperature—High, and Area Ventilation Differential Temperature—High, Functions act together to provide protection from small leaks in the monitored areas and rooms of the RWCU system.

Area Ventilation Differential Temperature-High

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The Differential Flow-High Allowable Value ensures that a break of the RWCU piping is detected.

This Function isolates the RWCU isolation valves.

5.b., 5.c. Area and Area Ventilation Differential Temperature-High

Area Temperature-High — RWCU area and area ventilation differential temperatures are provided to detect a leak from the RWCU System. The isolation occurs even when very small leaks have occurred and is diverse to the high differential flow instrumentation for the hot portions of the RWCU System. If the small leak continues without isolation, offsite dose limits may be reached. Credit for these instruments is not taken in any transient or accident analysis in the UFSAR, since bounding analyses are performed for large breaks such as recirculation or MSL breaks.

Differential Flow High —

, six areas — ~~Area and area ventilation differential temperature~~ signals are initiated from temperature elements that are located in the area or room that is being monitored. Twelve thermocouples provide input to the Area Temperature-High Function (two per area). Two channels per area are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

, four rooms — Eight thermocouples provide input to the Area Ventilation Differential Temperature-High Function. The output of these thermocouples is used to determine the differential temperature in four rooms containing RWCU piping and equipment. Each channel consists of a differential temperature instrument that receives inputs from thermocouples that are located in the inlet and outlet of the room cooling system and for a total of four available channels (one per room).

→ The Area and Area Ventilation Differential Temperature-High Allowable Values are set low enough to detect a leak equivalent to 25 gpm.

These Functions isolate the RWCU isolation valves, as appropriate.

A note has been added to Table 3.3.6.1-1 for Function 5.c, RWCU Area Differential Temperature - High, clarifying the required channels per room is one. Function 5.c has only one trip system per room.

BASES

ACTIONS (continued)

Condition. However, the Required Actions for inoperable primary containment isolation instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable primary containment isolation instrumentation channel.

A.1

Because of the diversity of sensors available to provide isolation signals and the redundancy of the isolation design, an allowable out of service time of 12 hours for Functions 1.f, 2.a, 2.c, and 6.b and 24 hours for Functions other than Functions 1.f, 2.a, 2.c, and 6.b has been shown to be acceptable (Refs. 5 and 6) to permit restoration of any inoperable channel to OPERABLE status. This out of service time is only acceptable provided the associated Function is still maintaining isolation capability (refer to Required Action B.1 Bases). If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action A.1. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue with no further restrictions. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in an isolation), Condition C must be entered and its Required Action taken. ~~As an administrative control (reference 12) with one or more RWCU Area Ventilation Differential Temperature High instruments inoperable TS 3.3.6.1, Condition B.1 should be entered.~~

B.1

Required Action B.1 is intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels within the same Function result in redundant automatic isolation capability being lost for the associated penetration flow path(s). The MSL Isolation Functions are considered to be maintaining isolation capability when sufficient channels are OPERABLE or in trip, such that both trip systems will generate a trip signal from the given Function on a valid signal. The other isolation functions are considered to be maintaining isolation capability when sufficient channels are OPERABLE or in trip, such that one

BASES

ACTIONS (continued)

trip system will generate a trip signal from the given Function on a valid signal. This ensures that one of the two PCIVs in the associated penetration flow path can receive an isolation signal from the given Function. For Functions 1.a, 1.b, 1.d, and 1.f, this would require both trip systems to have one channel OPERABLE or in trip. For Function 1.c, this would require both trip systems to have one channel, associated with each MSL, OPERABLE or in trip. For Functions 1.e and 1.g, each Function consists of channels that monitor several locations within a given area (e.g., different locations within the main steam tunnel area). Therefore, this would require both trip systems to have one channel per location OPERABLE or in trip. For Functions 2.a, 2.b, 2.c, 3.b, 3.c, 4.b, 4.c, 5.e, and 6.b, this would require one trip system to have two channels, each OPERABLE or in trip. For Functions 3.a, 3.d, 4.a, 4.d, 5.a, 5.d, and 6.a, this would require one trip system to have one channel OPERABLE or in trip. For Functions 5.b and 5.c, each Function consists of channels that monitor several different locations. Therefore, this would require one channel per location to be OPERABLE or in trip (the channels are not required to be in the same trip system).

Insert 2

The Condition does not include the Manual Initiation Functions (Functions 1.h, 2.d, 3.f, 4.f, 5.f, and 6.c), since they are not assumed in any accident or transient analysis. Thus, a total loss of manual initiation capability for 24 hours (as allowed by Required Action A.1) is allowed. ~~As an administrative control (reference 12) Condition B.1 is to be used for an inoperable RWCU Area Ventilation Differential Temperature High instrument. It is recognized that application of Condition B when a single channel of RWCU Area Ventilation Differential Temperature High is inoperable is conservative in this context. However, in the most restrictive reading of Condition B, isolation capability for RWCU Area Ventilation Differential Temperature High for a given room is not maintained if the channel is inoperable.~~

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Insert 2

As noted, with a Table 3.3.6.1-1 Function 5.c channel inoperable, isolation capability is considered maintained provided Function 5.b is OPERABLE in the affected room. There is diversity in the RWCU temperature isolation instrumentation in that Area Ventilation Differential Temperature-High and the Area Temperature-High monitor for a small leak in the same rooms. The reliability of the RWCU system isolation function remains high even in the presence of single or multiple failures of differential temperature channels because of the redundancy and diversity of the RWCU Leakage Detection System. A steam leak will cause a coincidental trip of both the Area Ventilation Differential Temperature-High and the Area Temperature-High channels in the same room.

BASES

SURVEILLANCE REQUIREMENTS (continued)

(Refs. 5 and 6) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the testing allowance does not significantly reduce the probability that the PCIVs will isolate the penetration flow path(s) when necessary.

Insert 3

SR 3.3.6.1.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.6.1.2 and SR 3.3.6.1.6

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL

Insert 3

Note 2.b clarifies that the isolation function is maintained for Function 5.c, RWCU Area Differential Temperature – High, provided a Function 5.b, RWCU Area Temperature – High channel, is OPERABLE in the affected room.

BASES

SURVEILLANCE REQUIREMENTS (continued)

ISOLATION SYSTEM RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. The 18 month Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience that shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

REFERENCES

1. UFSAR, Section 6.3.
2. UFSAR, Chapter 15.
3. NEDO-31466, "Technical Specification Screening Criteria Application and Risk Assessment," November 1987.
4. UFSAR, Section 4.5.2.4.
5. NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," July 1990.
6. NEDC-30851P-A Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.
7. UFSAR, Section 7.3.
8. UFSAR, Section 6.2.
9. NEDO-31400, "Safety Evaluation for Eliminating the BWR MSIV Closure Function and Scram Function of the MSL Radiation Monitor," Licensing Topical Plant Report for BWROG.
10. NEDO-32291, "System Analysis for Elimination of Selected Response Time Testing Requirements," January 1994; and Fermi-2 SER for Amendment 111, dated April 18, 1997.
11. NEDO-32291-A, Supplement 1, "System Analyses for The Elimination of Selected Response Time Testing Requirement," October 1999.
- ~~12. NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety".~~