April 15, 1975

Docket No. 50-315

Indiana and Michigan Electric Company
Indiana and Michigan Power Company
ATTN: Mr. John A. Tillinghast
Vice President
P. O. Box 18
Bowling Green Station
New York, New York 10004

Gentlemen:

In response to your requests of November 20, 1974; December 24, 1974; January 17, 1975; and March 3, 1975; the Commission has issued Amendment No. 4 to Facility Operating License DPR-58 to change certain of the Technical Specifications, Appendix A of DPR-58. A signed copy of the amendment is enclosed. A copy of a related notice, which has been forwarded to the Office of the Federal Register for filing and publication, is also enclosed.

Amendment No. 4 to DPR-58 consists of Change No. 4 to the Technical Specifications. The specifications that have been changed are listed in the staff's safety evaluation that is enclosed herewith.

We have revised the applicable pages of the Technical Specifications to reflect the authorized changes. One copy of the changed pages is included herewith and one copy is being sent directly to the D. C. Cook Plant Manager. Additional copies will be sent to you separately. The location of the change is identified on each page by a vertical line in the side margin.

You also requested certain additional changes in Appendix A. Those changes are numbered 19, 22, 28, 30, 38, 40, 41, 42, 51, 52, and 53 in Attachment A to your March 3 request. The staff has concluded that you have not provided sufficient information to permit us to evaluate the requested changes (included in this category is your request to change the LCO of Specification 3.9.9, item 66 of your Attachment A). Therefore, we are taking no action at this time on the changes listed above.

Also enclosed are copies of Change No. 3 of page 3/4 3-42. This change was authorized by license Amendment 3 dated February 11, 1975.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

Form AEC-318 (Rev. 9-53) AECM 0240

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The staff has concluded that Change No. 4 will not present any danger to the health and safety of the public; nor will it result in (i) any significant increase in the probability of an accident or (ii) a significant increase in the consequences of an accident or (iii) a significant decrease in a safety margin.

Sincerely,

Original signed by
K. Kniel

Karl Kniel, Chief
Light Water Reactors Branch 2-2
Division of Reactor Licensing

Enclosures:
1. Amendment 4 to DPR-58
2. Staff Safety Evaluation
3. Federal Register Notice
4. Revised pages of Appendix A
5. Page 3/4 3-42, Change No. 3

ccs:
Listed on page 3

OFFICE	LWR 2-3	LWR 2-2	ELD	AD:LWR		
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DATE	3/21/75	3/25/75	4/14/75	4/ /75		

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

INDIANA AND MICHIGAN ELECTRIC COMPANY

INDIANA AND MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT 1

FACILITY OPERATING LICENSE

Amendment No. 4
License No. DPR-58

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

   A. The applications for amendment by Indiana and Michigan Electric Company and Indiana and Michigan Power Company (the licensees) dated November 20, 1974; December 24, 1974; January 17, 1975; and March 3, 1975, comply 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 applications, 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; and

   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.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C(2) of Facility License No. DPR-58 is hereby amended to read as follows:

"(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised, are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 4.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION:

Karl Kniel, Chief
Light Water Reactors Branch 2-2
Division of Reactor Licensing

Attachment:
Change No. 4 to the
Technical Specifications

Date of Issuance:

April 15, 1975

CHANGE NO. 4
TO
TECHNICAL SPECIFICATIONS
DPR-58

Replace those pages of the Technical Specifications, Appendix A that are listed in the left-hand column below with the revised pages attached hereto that are listed in the right-hand column. Each revised page is identified with Change No. 4, dated April 15, 1975, in its lower right-hand corner.

OLD PAGES	REVISED PAGES
XI	XI
1-1	1-1
1-2	1-2
3/4 0-1	3/4 0-1
3/4 1-1	3/4 1-1
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B 3/4 4-5	B 3/4 4-5
B 3/4 4-7	B 3/4 4-7

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-315

INDIANA AND MICHIGAN ELECTRIC COMPANY
INDIANA AND MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT UNIT 1

NOTICE OF ISSUANCE OF AMENDMENT TO
FACILITY OPERATING LICENSE

Notice is hereby given that the U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 4 to Facility Operating License No. DPR-58 issued to Indiana and Michigan Electric Company and Indiana and Michigan Power Company. The amendment revises the Technical Specifications for operation of the Donald C. Cook Nuclear Plant Unit 1 located in Berrien County, Michigan, and is effective as of its date of issuance.

The amendment changes certain Technical Specifications to clarify their intent, to correct proofreading errors, to make specifications consistent with each other, to correct inadvertent restrictions on plant operation, and to up-date reporting requirements.

The applications for the amendment comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings required by the Act and the Commission's rules and regulations in 10 CFR Chapter I. These findings are set forth in the license amendment. Prior public notice of this amendment is not required because the amendment does not involve a significant hazards consideration.

For further details with respect to this action, see (1) the applications for amendment dated November 20, 1974; December 24, 1974; January 17, 1975; and March 3, 1975, (2) Amendment No. 4 to License No. DPR-58, with Change No. 4, and (3) the Commission's related safety evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the St. Joseph Public Library, 500 Market Street, St. Joseph, Michigan 49085. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland, this 15th day of April 1975.

FOR THE NUCLEAR REGULATORY COMMISSION

Karl Kniel, Chief
Light Water Reactors Branch 2-2
Division of Reactor Licensing

COMBINED

CHANGE NO. 3, DATED FEBRUARY 11, 1975

AND

CHANGE NO. 4, DATED APRIL 15, 1975

TO

DPR-58

D. C. COOK - UNIT 1

The enclosed pages of Change No. 3, dated February 11, 1975, and Change No. 4, dated April 15, 1975, should be substituted for the corresponding pages of Appendix "A" to DPR-58. The vertical lines in the right hand margin indicate the portion of the specification that has been changed.

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1.0 DEFINITIONS

DEFINED TERMS

1.1 The DEFINED TERMS of this section appear in capitalized type and are applicable throughout these Technical Specifications.

THERMAL POWER

1.2 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

RATED THERMAL POWER

1.3 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3250 MWt.

OPERATIONAL MODE

1.4 An OPERATIONAL MODE shall correspond to any one inclusive combination of core reactivity condition, power level and average reactor coolant temperature specified in Table 1.1.

ACTION

1.5 ACTION shall be those additional requirements specified as corollary statements to each principle specification and shall be part of the specifications.

OPERABLE - OPERABILITY

1.6 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all attendant instrumentation, controls, electric power, cooling or seal water, lubrication or other required auxiliary equipment is also OPERABLE.

ABNORMAL OCCURRENCE

1.7 An ABNORMAL OCCURRENCE shall be any of those conditions specified in Revision 3 of Regulatory Guide 1.16, "Reporting of Operating Information — Appendix "A" Technical Specifications."

CONTAINMENT INTEGRITY

1.8 CONTAINMENT INTEGRITY shall exist when:

1.8.1 The containment automatic isolation valve system is OPERABLE,

1.8.2 All penetrations required to be closed during accident conditions are either:

a. Capable of being closed by OPERABLE containment automatic isolation valves, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured and locked in their closed positions,

1.8.3 All equipment hatches are closed and sealed, and

1.8.4 Each air lock is OPERABLE pursuant to Specification 3.6.1.3.

CHANNEL CALIBRATION

1.9 A CHANNEL CALIBRATION shall be the adjustment of the channel output such that it responds with specified range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST.

CHANNEL CHECK

1.10 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication with other indications derived from independent instrument channels measuring the same parameter.

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Limiting Conditions for Operation and ACTION requirements shall be applicable during the OPERATIONAL MODES specified for each specification.

3.0.2 Adherence to the requirements of the Limiting Condition for Operation and associated ACTION within the specified time interval shall constitute compliance with the specification. In the event the Limiting Condition for Operation is restored prior to expiration of the specified time interval, completion of the ACTION statement is not required.

3.0.3 In the event a Limiting Condition for Operation and associated ACTION requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the facility shall be placed in COLD SHUTDOWN within 30 hours unless corrective measures are completed that permit operation under the permissible ACTION statements for the specified time interval as measured from initial discovery. Exceptions to these requirements shall be stated in the individual specifications.

3.0.4 Entry into an OPERATIONAL MODE shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted. This provision shall not prevent passage through OPERATIONAL MODES as required to comply with ACTION statements.

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be applicable during the OPERATIONAL MODES associated with individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

4.0.2 Each Surveillance Requirement shall be performed within the specified time interval with:

a. A maximum allowable extension not to exceed 25% of the surveillance interval, and

b. A total maximum combined interval time for any 3 consecutive surveillance intervals not to exceed 3.25 times the specified surveillance interval.

4.0.3 Performance of a Surveillance Requirement within the specified time interval shall constitute compliance with OPERABILITY requirements for a Limiting Condition for Operation and associated ACTION statements.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be equal to or greater than the value specified by Figure 3.1-1.

APPLICABILITY: MODES 1, 2* and 3.

ACTION:

a. With the SHUTDOWN MARGIN less than that value specified by Figure 3.1-1, immediately initiate and continue boration at $\geq$ 70 gpm until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be within the limit by:

a. Consideration of the following factors:

1. Reactor coolant boron concentration,
2. Control rod position,
3. Reactor coolant temperature,
4. THERMAL POWER level,
5. Fuel burnup, and
6. Xenon concentration.

*See Special Test Exception 3.10.1.

SURVEILLANCE REQUIREMENTS (Continued)

b. Comparison of the above data with that predicted by analysis or obtained from experiment.

4.1.1.1.2 The SHUTDOWN MARGIN shall be determined:

a. Immediately upon detection of an inoperable control rod,

b. At least once per 8 hours when the rate of change of T_{avg} is $\leq$ 10°F per hour, and

c. At least once per 4 hours when the rate of change of T_{avg} is > 10°F per hour.

4.1.1.1.3 The fuel burnup shall be determined at least once per 400 EFPH.

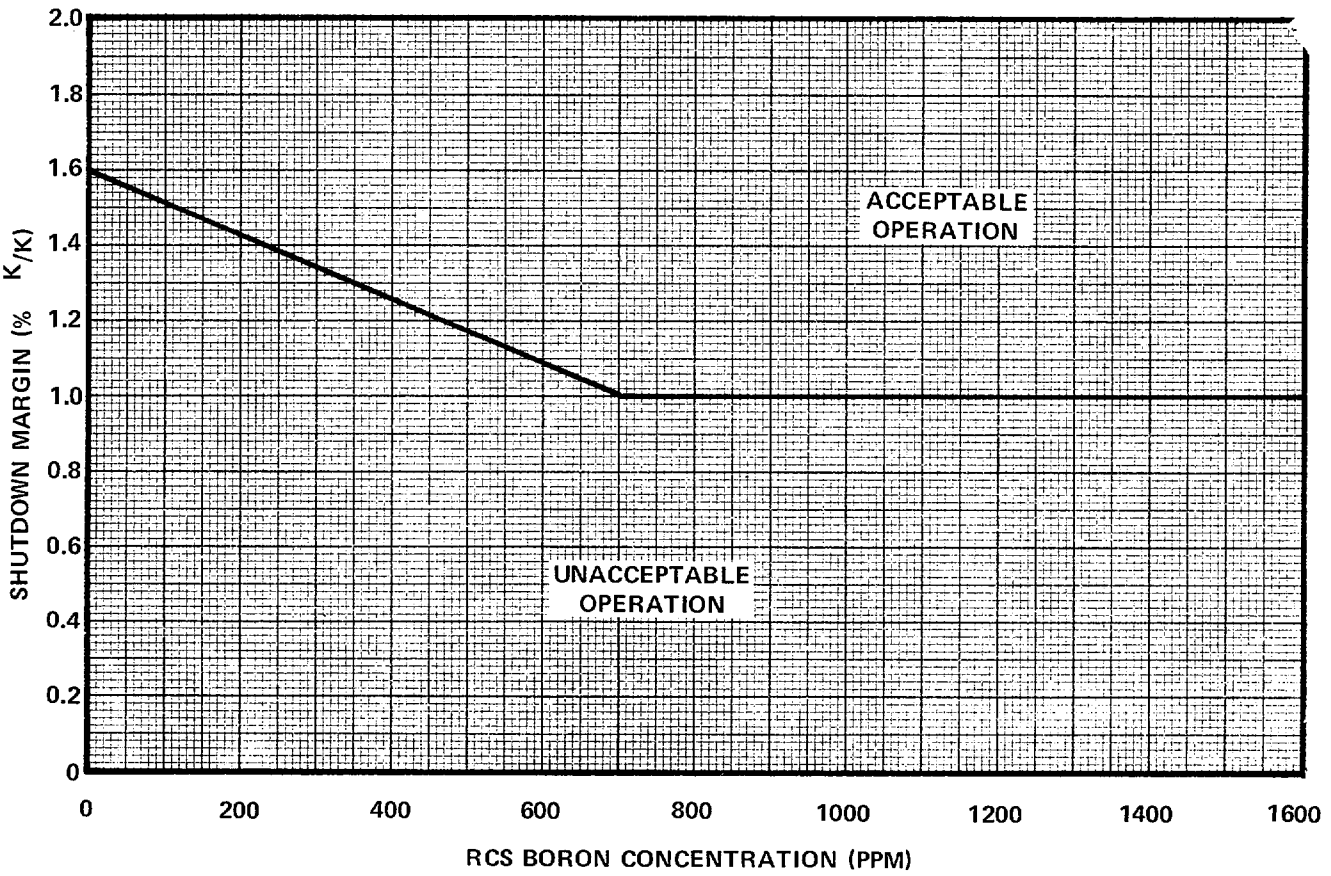

FIGURE 3.1-1

SHUTDOWN MARGIN REQUIRED VERSUS RCS BORON CONCENTRATION

SHUTDOWN MARGIN - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be ≥ 1 percent Δk/k.

APPLICABILITY: MODES 4 and 5.

ACTION:

With the SHUTDOWN MARGIN < 1 percent Δk/k, immediately initiate and continue boration at ≥ 70 gpm until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.2.1 The SHUTDOWN MARGIN shall be determined to be ≥ 1 percent Δk/k by:

a. Consideration of the following factors:

1. Reactor coolant boron concentration,
2. Control rod position,
3. Reactor coolant temperature,
4. Fuel burnup, and
5. Xenon concentration.

b. Comparison of the above data with that predicted by analysis or obtained from experiment.

4.1.1.2.2 The SHUTDOWN MARGIN shall be determined:

a. At least once per 8 hours when the rate of change of T_{avg} is ≤ 10°F per hour, and

b. At least once per 4 hours when the rate of change of T_{avg} is > 10°F per hour.

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 As a minimum, one charging pump shall be OPERABLE and capable of being powered from an OPERABLE diesel generator.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no charging pump OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until one charging pump is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.3 One charging pump shall be demonstrated OPERABLE at least once per 30 days by:

a. Manually starting the pump from the control room,

b. Verifying, that on recirculation flow, the pump develops a discharge pressure of $\geq$ 2390 psig,

c. Verifying pump operation for at least 15 minutes, and

d. Verifying that the electrical bus providing pump power is aligned to receive power from an OPERABLE diesel generator.

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 48 hours or be in HOT STANDBY within the next 4 hours; restore at least two charging pumps to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4 Two charging pumps shall be demonstrated OPERABLE at least once per 30 days on a STAGGERED TEST BASIS by:

a. Starting (unless already in operation) each pump from the control room,

b. Verifying, that on recirculation flow, each pump develops a discharge pressure of $\geq$ 2405 psig,

c. Verifying that each pump operates for at least 15 minutes, and

d. Verifying that each of the electrical busses providing pump power are aligned to receive power from separate diesel generators.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full length (shutdown and control) rods and part length rods shall be OPERABLE and positioned within ± 13 steps (indicated position) of their group demand height.

APPLICABILITY: MODES 1* and 2*.

ACTION:

With a maximum of one full or part length rod misaligned from its group demand height by more than ± 13 steps (indicated position), operation may continue provided that:

a. Within two hours either:

   1. The rod is restored to within the above alignment requirement, or

   2. Compliance with Specifications 3.2.2, 3.2.3 and 3.2.4 (as applicable) is determined, or

   3. The high neutron flux trip setpoint is reduced to 85 percent of RATED THERMAL POWER.

b. An analysis of the potential ejected rod worth is performed within 3 days and the rod worth is determined to be ≤ 0.35 percent Δk at zero power and ≤ 0.31 percent Δk at RATED THERMAL POWER for the remainder of the fuel cycle.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full and part length rod shall be dtermined to be within the group demand limit by verifying the individual rod positions at least once per 8 hours except during time intervals when the Rod Position Deviation Alarm is inoperable, then verify the individual rod positions at least once per hour.

4.1.3.1.2 Each full length rod not fully inserted shall be determined to be OPERABLE by movement of at least 8 steps every 30 days.

*See Special Test Exception 3.10.2.

POSITION INDICATOR CHANNELS

LIMITING CONDITION FOR OPERATION

3.1.3.2 All shutdown, control and part length control rod position indicator channels and the demand position indication system shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

With a maximum of one rod position indicator channel per bank or one demand position indicator per bank inoperable either:

a. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 8 hours and immediately after any motion of the non-indicating rod which exceeds 24 steps since the last determination of the rod's position, or

b. Reduce THERMAL POWER to < 50 percent of RATED THERMAL POWER within 8 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.2 Each rod position indicator channel shall be determined to be OPERABLE by comparing the demand position indication and the rod position indicator channels:

a. During manual rod withdrawal and/or insertion, and

b. At least once per 8 hours for each rod not fully inserted except during time intervals when the Rod Position Deviation Alarm is inoperable, then compare the demand position indication and rod position indicator channels at least once per hour.

ROD DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.3 The individual full length (shutdown and control) rod drop time from the fully withdrawn position shall be $\leq$ 1.8 seconds from loss of stationary gripper coil voltage to dashpot entry with:

a. $T_{avg} \geq 541°F$, and

b. All reactor coolant pumps operating.

APPLICABILITY: MODE 3.

ACTION:

a. With the drop time of any full length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to proceeding to MODE 1 or 2.

b. With the rod drop times within limits but determined with 3 reactor coolant pumps operating, operation may proceed provided THERMAL POWER is restricted to $\leq$ 75 percent of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.1.3.3 The rod drop time of full length rods shall be demonstrated through measurement prior to reactor criticality:

a. For all rods following each removal of the reactor vessel head,

b. For specifically affected individual rods following any maintenance on or modification to the control rod drive system which could affect the drop time of those specific rods, and

c. At least once per 18 months.

SHUTDOWN ROD INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.4 All shutdown rods shall be fully withdrawn.

APPLICABILITY: MODES 1* and 2*.

ACTION:

With a maximum of one shutdown rod not fully withdrawn, except for surveillance testing pursuant to Specification 4.1.3.1.2, within one hour either:

a. Fully withdraw the rod, or

b. Declare the rod to be inoperable and apply Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.4 Each shutdown rod shall be determined to fully withdrawn:

a. Prior to withdrawal of any rods in control banks A, B, C or D during an approach to reactor criticality, and

b. At least once per 8 hour therafter.

*See Special Test Exception 3.10.2.

CONTROL ROD INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.5 The control banks shall be limited in physical insertion as shown in Figures 3.1-2 and 3.1-3.

APPLICABILITY: MODES 1* and 2*#.

ACTION:

With the control banks inserted beyond the above insertion limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, restore control banks to within the limits within 2 hours or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.5 The position of each control bank shall be determined to be within the insertion limits at least once per 8 hours except during the time intervals when the Rod Insertion Limit Alarm is inoperable, then verify the individual rod positions at least once per hour.

*See Special Test Exceptions 3.10.2 and 3.10.5.

#With $K_{eff} \geq 1.0$.

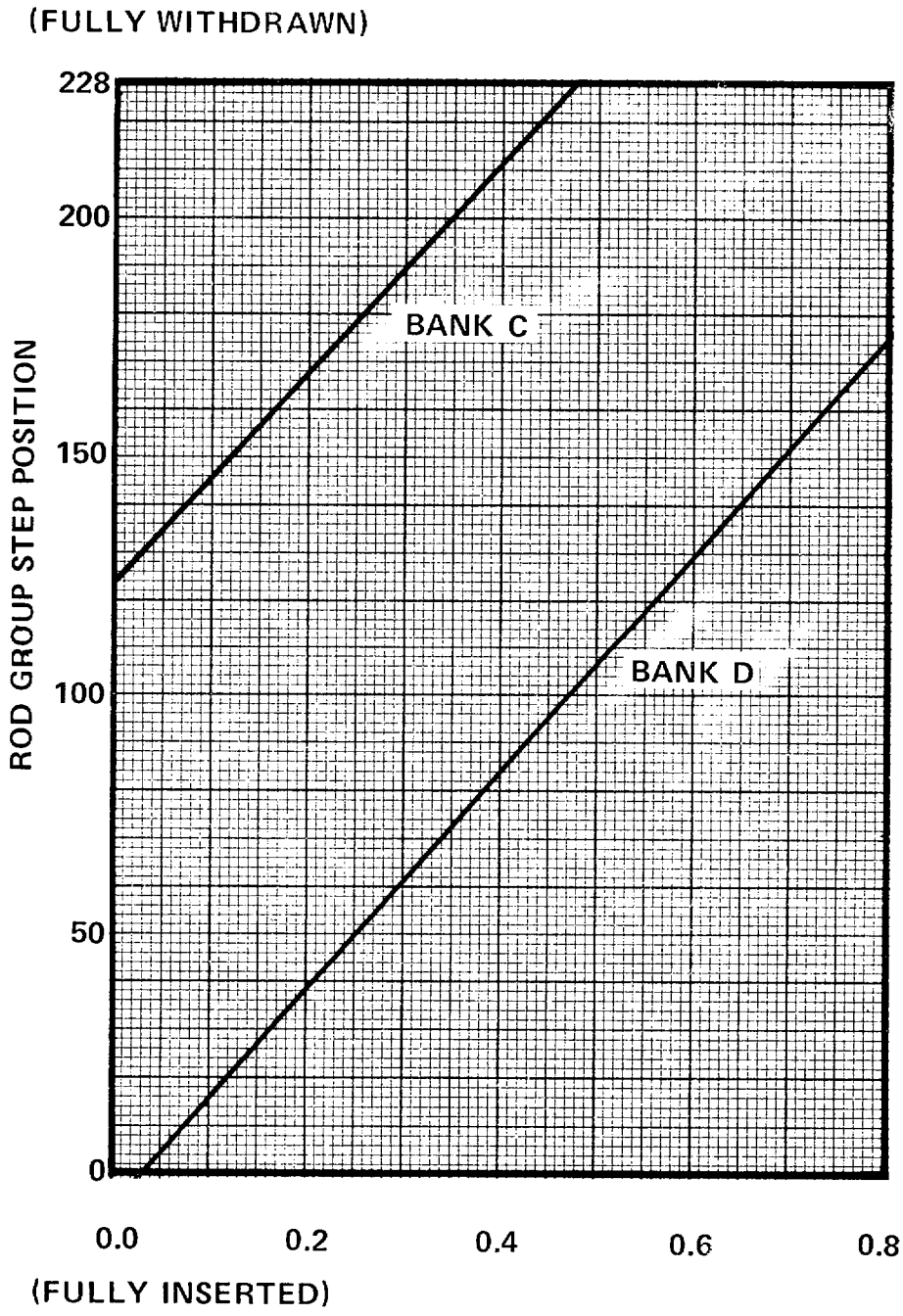

FIGURE 3.1-3

ROD GROUP INSERTION LIMITS VERSUS THERMAL POWER
THREE LOOP OPERATION

POWER DISTRIBUTION LIMITS

HOT CHANNEL FACTOR - F_Q

LIMITING CONDITION FOR OPERATION

3.2.2 F_Q shall be limited by the following relationships with the THERMAL POWER is less than or equal to the Excore Limit shown on Figure 3.2-2:

$$F_Q \leq \frac{2.60}{M} \text{ for } M > 0.52$$

$$F_Q \leq 5.0 \text{ for } M \leq 0.52$$

$$\text{where } M = \frac{\text{THERMAL POWER}}{\text{Excore Limit from Figure 3.2-2}}$$

APPLICABILITY: MODE 1 and 2*.

ACTION:

With F_Q exceeding its limit:

a. Immediately bring F_Q within its limit, or

b. Immediately reduce THERMAL POWER and the Power Range Neutron Flux-High Trip Setpoint in direct proportion to the excess that F_Q exceeds its limit, and

c. Demonstrate through in-core mapping that F_Q is within limits within 24 hours or be in HOT STANDBY within the next 2 hours.

SURVEILLANCE REQUIREMENTS

4.2.2 The measured F_Q shall be increased by both the Power Spike Penalty S(Z) of Figure 3.2-4 and 5% for measurement uncertainty and determined to be within its limit by using the movable incore detectors to obtain a power distribution map:

a. Prior to initial operation above 75 percent of RATED THERMAL POWER after each fuel loading, and

b. At least once per 30 Effective Full Power Days during operation at THERMAL POWER levels equal to or below the Excore Limit shown on Figure 3.2-2.

*See Special Test Exception 3.10.5.

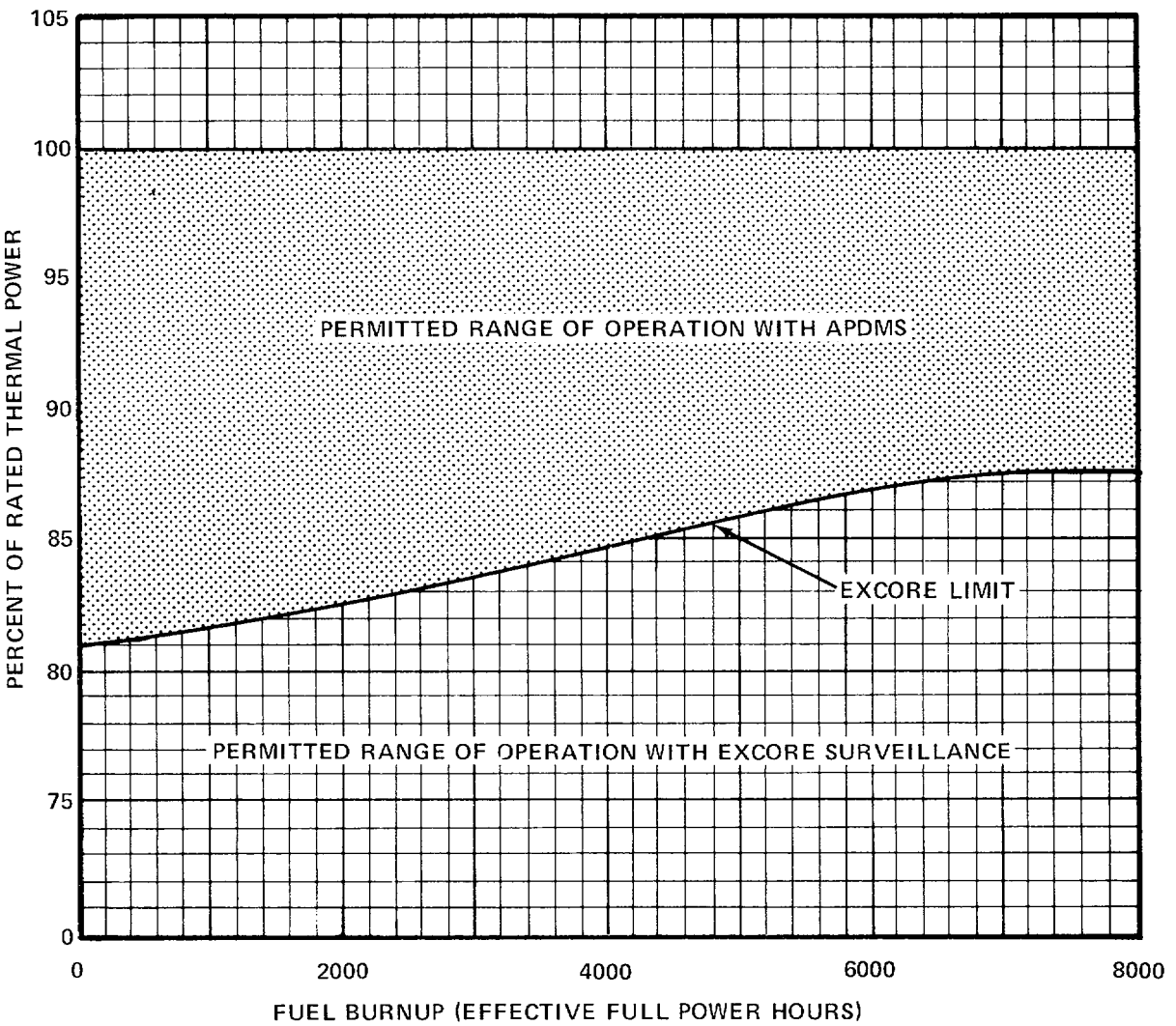

FIGURE 3.2-2

THERMAL POWER LIMIT FOR OPERATION WITH APDMS
OR EXCORE SURVEILLANCE AS A FUNCTION OF FUEL BURNUP

POWER DISTRIBUTION LIMITS

HOT CHANNEL FACTOR - $F^N_{\Delta H}$

LIMITING CONDITION FOR OPERATION

3.2.3 $F^N_{\Delta H}$ shall be limited by the following relationship:

$$F^N_{\Delta H} \leq 1.55\ [1.0 + 0.2\ (1-P)]$$

where $P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$

and $P \leq 1.0$

APPLICABILITY: MODES 1 and 2*.

ACTION:

With $F^N_{\Delta H}$ exceeding its limit:

a. Immediately reduce THERMAL POWER in direct proportion to the excess that $F^N_{\Delta H}$ exceeds its limit and within 2 hours similarly reduce the Power Range Neutron Flux-High Trip Setpoint and the K_1 constant in the Overtemperature ΔT trip channel.

b. Demonstrate through in-core mapping that $F^N_{\Delta H}$ is within limits within 24 hours or be in HOT STANDBY within the next 2 hours.

SURVEILLANCE REQUIREMENTS

4.2.3 The measured $F^N_{\Delta H}$ shall be increased by 4% for measurement uncertainty and determined to be within its limit by using the movable incore detectors to obtain a power distribution map:

a. Prior to operation above 75 percent of RATED THERMAL POWER after each fuel loading, and

b. At least once per 30 days.

*See Special Test Exception 3.10.5.

AXIAL POWER DISTRIBUTION

LIMITING CONDITION FOR OPERATION

3.2.4 The axial power distribution shall be limited by the following relationships when the THERMAL POWER is in excess of the Excore Limit shown on Figure 3.2-2:

$$[F_j(Z)]_L = \frac{[F_Q(Z)]_L}{\bar{R}_j\ (1+\sigma_j)(1.07)(1.03)}$$

and:

$$[F_Q(Z)]_L = \frac{[Kw/ft]_L}{6.96} \cdot \frac{1}{P_L} \cdot \frac{1}{S(Z)}$$

where:

a. $F_j(Z)$ is the normalized axial power distribution from thimble j at core elevation Z.

b. P_L is the projected fraction of RATED THERMAL POWER used to determine $[Kw/ft]_L$.

c. $[Kw/ft]_L$ is the limiting Kw/ft consistent with burnup and P_L as determined from Figure 3.2-3.

d. 6.96 is the effective average Kw/ft at RATED THERMAL POWER.

e. S(Z) is the reduction in limit due to potential densification flux peaks, as determined from Figure 3.2-4.

f. $\bar{R}_j$, for thimble j, is determined from at least n=6 in-core flux maps covering the full configuration of permissible rod patterns at RATED THERMAL POWER in accordance with:

$$\bar{R}_j = \frac{1}{n} \sum_{i=1}^{n} R_{ij}$$

TABLE 3.3-1 (Continued)

TABLE NOTATION

*With the protective system trip breakers in the closed position and the control rod drive system capable of rod withdrawal.

**The channel associated with the out of service Reactor Coolant Loop shall be placed in the tripped condition.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 12 hours.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level:

a. Less than or equal to 5% of RATED THERMAL POWER, immediately place the inoperable channel in the tripped condition; restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

b. Above 5% of RATED THERMAL POWER, operation may continue provided all of the following conditions are satisfied:

1. The inoperable channel is immediately placed in the tripped condition.

2. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

3. THERMAL POWER is restricted to $\leq$ 75% of RATED THERMAL POWER and the Power Range, Neutron Flux trip setpoint is reduced to $\leq$ 85% of RATED THERMAL POWER or the QUADRANT POWER TILT RATIO is monitored at least once per 8 hours.

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requiremert and with the THERMAL POWER level:

a. Below P-10, immediately go to HOT STANDBY and/or open the reactor trip breakers.

b. Above P-10, power operation may continue.

TABLE 3.3-1 (Continued)

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, immediately go to HOT STANDBY and/or open the reactor trip breakers.

b. Above P-6, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, immediately verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, and at least once per 4 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level:

a. Below P-10, immediately go to HOT STANDBY.

b. Above P-10, operation may continue provided both of the following conditions are satisfied:

1. The inoperable channel is immediately placed in the tripped condition.

2. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level:

a. Below P-10, immediately go to HOT STANDBY.

b. Above P-10, immediately place the inoperable channel in the tripped condition; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.

ACTION 8 - With less than the Total Number of Channels OPERABLE, reduce THERMAL POWER to less than 10% of RATED THERMAL POWER.

ACTION 9 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT STANDBY within the next 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
OR, COINCIDENT WITH					
Steam Line Pressure-Low				1, 2, 3##	
Four Loops Operating	1 pressure/ loop	2 pressures any loops	1 pressure any 3 loops		14
Three Loops Operating	1 pressure/ operating loop	1### pressure in any operating loop	1 pressure in any 2 operating loops		15
2. CONTAINMENT SPRAY					
a. Manual	2	2	2	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure--High-High	4	2	3	1, 2, 3	16
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	18
2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
b. Phase "B" Isolation					
1) Manual	2	2	2	1, 2, 3, 4	18
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
3) Containment Pressure--High-High	4	2	3	1, 2, 3	16
c. Purge and Exhaust Isolation					
1) Manual	2	1	2	1, 2, 3, 4, 6	17
2) Containment Radioactivity-High	3	1	2	ALL MODES	17
4. STEAM LINE ISOLATION					
a. Manual	1/steam line	1/steam line	1/operating steam line	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure--High-High	4	2	3	1, 2, 3	16

Change No. 4
April 15, 1975

TABLE 3.3-3 (Continued)

TABLE NOTATION

#Trip function may be bypassed in this mode below P-11.

##Trip function may be bypassed in this mode below P-12.

###The channel associated with the out of service Reactor Coolant Loop shall be placed in the tripped mode.

ACTION STATEMENTS

ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in COLD SHUTDOWN within 36 hours.

ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels:

a. Below P-11 or P-12, immediately go to HOT SHUTDOWN.

b. Above P-11 and P-12, immediately place the inoperable channel in the tripped condition; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.

ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within 18 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.2.

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels:

a. Below P-11 or P-12, immediately go to HOT SHUTDOWN.

b. Above P-11 or P-12, immediately demonstrate that the Minimum Channels OPERABLE requirement is met; operation may continue with the inoperable channel bypassed and one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.2.

ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.

TABLE 3.3-3 (Continued)

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

ENGINEERED SAFETY FEATURES INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-11	P-11 is inactive with 2 of 3 pressurizer pressure channels $\geq$ 1915 psig.	Prevents manual block of safety injection actuation on low pressurizer pressure coincident with low pressurizer water level.
	P-11 is active with 2 of 3 pressurizer pressure channels < 1915 psig.	Allows manual block of safety injection actuation on low pressurizer pressure coincident with low pressurizer water level.
P-12	P-12 is inactive with 2 of 4 T_{avg} channels $\geq$ 540°F.	Prevents manual block of safety injection actuation on high steam line flow.
	P-12 is active with 2 of 4 T_{avg} channels < 540°F.	Allows manual block of safety injection actuation on high steam line flow.

Change No. 4
April 15, 1975

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
1. AREA MONITORS					
a. Containment	1	1, 2	$\leq$ 50 mR/hr	10^{-1} - 10^{+4} mR/hr	19
		3, 4, 5, 6	$\leq$ 2.5 mR/hr	10^{-1} - 10^{+4} mR/hr	19 (a)
b. Spent Fuel Storage	1	*	$\leq$ 15 mR/hr	10^{-1} - 10^{+4} mR/hr	19 (b)
2. PROCESS MONITORS					
a. Containment Atmosphere-Particulate	1	ALL MODES	$\leq 3.2 \times 10^{-7}$ µCi/cc	10^{-9} - 10^{-6} µCi/cc	20 (a)
b. Containment Atmosphere-Gaseous	1	ALL MODES	$\leq 2.4 \times 10^{-4}$ µCi/cc	10^{-6} - 10^{-3} µCi/cc	20 (a)

*With Fuel In Storage Building.

TABLE 3.3-6 (Continued)

TABLE NOTATION

(a) - During MODE 6, also comply with the ACTION requirements of Specification 3.9.9, as applicable.

(b) - During movement of fuel or fuel handling equipment within the storage building, also comply with the ACTION requirements of Specification 3.9.13, as applicable.

ACTION 19 - For each area monitor inoperable, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 8 hours.

ACTION 20 - For each process monitor inoperable, obtain and analyze grap samples of the monitored parameter at least once per 8 hours. This ACTION is not required during performance of containment integrated leak rate test.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. AREA MONITORS				
a. Containment	S	R	M	ALL MODES
b. Spent Fuel Storage	S	R	M	*
2. PROCESS MONITORS				
a. Containment Atmosphere-Particulate	S	R	M	ALL MODES
b. Containment Atmosphere-Gaseous	S	R	M	ALL MODES

*When fuel is in the storage building

INSTRUMENTATION

MOVABLE INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

3.3.3.2 As a minimum, 75 percent of all detector thimbles, with a minimum of two detector thimbles per core quadrant, and sufficient movable detectors, drives, and readout equipment to map these thimbles, shall be OPERABLE during recalibration of the excore axial flux offset detection system and during use of these detectors to monitor QUADRANT POWER TILT RATIO.

APPLICABILITY: MODES 1 and 2.

ACTION:

With less than the required equipment OPERABLE, the movable incore system shall not be used for recalibration of the excore axial flux offset detection system and for monitoring the QUADRANT POWER TILT RATIO.

SURVEILLANCE REQUIREMENTS

4.3.3.2 The incore movable detection system shall be demonstrated OPERABLE:

a. By performance of a CHANNEL FUNCTIONAL TEST within 7 days prior to its use and at least once per 30 days thereafter when used for:

   1. Recalibration of the excore axial flux offset detection system, or

   2. Monitoring the QUADRANT POWER TILT RATIO.

b. At least once per 18 months by performance of a CHANNEL CALIBRATION.

INSTRUMENTATION

SEISMIC INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.3 The seismic monitoring instrumentation channels shown in Table 3.3-7 shall be OPERABLE.

APPLICABILITY: ALL MODES

ACTION:

With a seismic monitoring channel inoperable, restore the inoperable channel to OPERABLE status within 30 days. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.3 Each seismic monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-4.

TABLE 3.3-7

SEISMIC MONITORING INSTRUMENTATION

INSTRUMENT CHANNEL	SENSOR LOCATION	MEASUREMENT RANGE	MINIMUM CHANNELS OPERABLE
1. STRONG MOTION TRIAXIAL ACCELEROGRAPHS			
a.	Reactor Pit Floor	0-1 g	1
b.	Top of Crane Wall	0-1 g	1
c.	Free Field	0-1 g	1
2. PEAK RECORDING ACCELEROGRAPHS			
a.	Containment Spring Line	0-2 g	1
b.	Diesel Generator Room Floor	0-2 g	1
c.	Spent Fuel Pool	0-2 g	1

TABLE 4.3-4

SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT CHANNEL	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. STRONG MOTION TRIAXIAL ACCELEROGRAPHS			
a. Reactor Pit Floor			
1. Time History Recorder	M	R	SA
2. Seismic Trigger	NA	R	SA
b. Top of Crane Wall			
1. Time History Recorder	M	R	SA
c. Free Field			
1. Time History Recorder	M	R	SA
2. Seismic Trigger	NA	R	SA
2. PEAK RECORDING ACCELEROGRAPHS			
a. Containment Spring Line	NA	R	NA
b. Diesel Generator Room Floor	NA	R	NA
c. Spent Fuel Pool	NA	R	NA

METEOROLOGICAL INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.4 The meteorological monitoring instrumentation channels shown in Table 3.3-8 shall be OPERABLE.

APPLICABILITY: ALL MODES

ACTION:

With a meteorological monitoring instrumentation channel inoperable, either:

a. Suspend all release of gaseous radioactive material from the radwaste system and restore the inoperable channel to OPERABLE status within 3 days, or

b. Immediately demonstrate the OPERABILITY of a redundant measurement channel. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.4 Each meteorological monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-5.

SURVEILLANCE REQUIREMENTS (Continued)

b. As a minimum, an additional 3 percent of the steam generator tubes shall be eddy current inspected if more than 10 percent (all tubes previously identified as having wall penetrations > 20 percent and exhibiting further wall penetrations of > 5 percent shall be included in this 10 percent) of the tubes inspected per 4.4.5.1.a above, have wall penetrations of > 20 percent or if one or more of the inspected tubes have an unacceptable defect. An unacceptable defect is one which would result in not satisfying the calculated minimum acceptable tube wall thickness that is capable of withstanding a LOCA in combination with a safe shutdown earthquake and is equivalent to a wall penetration of > 50% of the tube nominal wall thickness. At least 75 percent of these additional tubes selected for eddy current inspection shall be from tubes in those areas of the tube sheet array where tubes with defects were found.

c. As a minimum, an additional 3 percent of the steam generator tubes shall be eddy current inspected if more than 10 percent of the tubes inspected per 4.4.5.1.b above, have wall penetrations of > 20 percent or if one or more of the inspected tubes have an unacceptable defect. These additional tubes selected for eddy current inspection shall be from tubes in those areas of the tube sheet array where tubes with defects were found.

4.4.5.2 Inspection Frequencies - The above required inservice inspections of steam tubes shall be performed at the following frequencies:

a. At intervals of not less than 12 or more than 20 calendar months, except the first scheduled inservice inspection shall be performed at the first extended outage after 6 months of operation. If two consecutive inservice inspections of steam generator tubes show no additional tubes with wall penetrations > 20 percent and no significant (> 5 percent) further penetration of tubes with previous defect indications, the inspection frequency for hot-leg tubes may be extended to at least once per 40 months. If two consecutive inservice inspections of the cold-leg tubes of the steam generator show no additional tubes with wall penetrations > 20 percent and no significant (> 5 percent) further penetration of tubes with previous defect indications, the inspection frequency for cold-leg tubes may be extended to at least once per 10 years.

b. During the shutdown subsequent to any of the following conditions:

1. Primary-to-secondary leakage in excess of the limits of Specification 3.4.6.2,

SURVEILLANCE REQUIREMENTS (Continued)

2. A seismic occurrence greater than the Operating Basis Earthquake,

3. A loss-of-coolant accident requiring actuation of the engineered safeguards, or

4. A steam line or feed water line break requiring a reactor shut down.

4.4.5.3 Acceptance Criteria

a. The steam generator shall be determined OPERABLE by verifying that when inspected per Specification 4.4.5.1.a, less than 10 percent of the tubes inspected have wall penetrations of > 20 percent and no tube has an unacceptable defect.

b. The steam generator may be determined OPERABLE after plugging any tubes containing unacceptable defects if the inspections performed per Specifications 4.4.5.1.b and 4.4.5.1.c show that < 10 percent of the total tubes inspected have wall penetrations of > 20 percent and no more than 3 tubes have unacceptable defects. Wall penetrations of > 20 percent in ≥ 10 percent of the total tubes inspected or unacceptable defects in more than 3 of the tubes inspected is evidence of abnormal degradation of the steam generator.

4.4.5.4 Reports - The results of these steam generator tube inservice inspections shall be submitted to the Commission in the Annual Operating Report for the period in which this inspection was completed.

REACTOR COOLANT SYSTEM

SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the primary coolant shall be limited to:

a. $\leq$ 1.0 µCi/gram DOSE EQUIVALENT I-131, and

b. $\leq 100/\bar{E}$ µCi/gram for all noble gases with half-lives greater than 10 minutes.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

a. With the specific activity of the primary coolant > 1.0 µci/gram DOSE EQUIVALENT I-131 but within the allowable limit (below and to the left of the line) shown on Figure 3.4-1, operation may continue for up to 48 hours provided that operation under these circumstances shall not exceed 10 percent of the unit's total yearly operating time. The provisions of Specification 3.0.4 are not applicable.

b. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in HOT STANDBY with T_{avg} < 500°F within 4 hours.

c. With the specific activity of the primary coolant > $100/\bar{E}$ µCi/gram for all noble gases with half-lives greater than 10 minutes, be in HOT STANDBY with T_{avg} < 500°F within 4 hours.

d. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 or > $100/\bar{E}$ µCi/gram for all noble gases with half-lives greater than 10 minutes, an ABNORMAL OCCURRENCE Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.1 In addition to the information required by the ABNORMAL OCCURRENCE Report, this report shall contain the results of the specific activity analyses together with the following information:

1. Reactor power history starting 48 hours prior to the first sample in which the limit was exceeded,

*With $T_{avg} \geq$ 500°F.

ACTION: (Continued)

2. Fuel burnup by core region,

3. Clean-up flow history starting 48 hours prior to the first sample in which the limit was exceeded,

4. History of de-gassing operations, if any, and

5. The time duration when the specific activity of the primary coolant exceeded 1.0 μCi/gram DOSE EQUIVALENT I-131.

SURVEILLANCE REQUIREMENTS

4.4.8 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-2.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION

3.4.9.1 The Reactor Coolant System temperature and pressure shall be limited in accordance with the limit lines shown on Figures 3.4-2 and 3.4-3 during heatup, cooldown, criticality, and inservice leak and hydrostatic testing with:

a. A maximum heatup rate of 100°F/hour, averaged over 30 minutes, during heatup operations,

b. A maximum cooldown rate of 100°F/hour, averaged over 30 minutes, during cooldown operations, and

c. A maximum temperature change rate of $\leq$ 5°F/hour, averaged over 30 minutes, during inservice leak and hydrostatic testing operations.

APPLICABILITY: MODES 1, 2*, 3, 4 and 5.

ACTION:

With any of the above limits exceeded, perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operations or be in COLD SHUTDOWN within 36 hours.

*See Special Test Exception 3.10.3.

SURVEILLANCE REQUIREMENTS

4.4.9.1

a. The Reactor Coolant System temperature, pressure and heatup and/or cooldown rate shall be determined to be within the limits at least once per 30 minutes during system heatup, cooldown, and inservice leak and hydrostatic testing operations.

b. The Reactor Coolant System temperature and pressure conditions shall be determined to be to the right of the criticality limit line within 15 minutes prior to making the reactor critical.

c. The reactor vessel material irradiation surveillance specimens shall be removed and examined, to determine changes in material properties, at the intervals shown in Table 4.4-3. The results of these examinations shall be used to update Figures 3.4-2 and 3.4-3.

TABLE 4.4-3

REACTOR VESSEL MATERIAL IRRADIATION SURVEILLANCE SCHEDULE

SPECIMEN	REMOVAL INTERVAL
Capsule 1	Replacement of 1st region of core
Capsule 2	10 years
Capsule 3	20 years
Capsule 4	30 years
Capsule 5, 6, 7, 8	Extra capsules for complementary duplicate testing

PRESSURIZER

LIMITING CONDITION FOR OPERATION

3.4.9.2 The pressurizer temperature shall be limited to:

a. A maximum heatup and cooldown rate of 200°F/hour, averaged over 30 minutes, and

b. A maximum spray water temperature differential of 320°F.

APPLICABILITY: MODES 1, 2, 3, 4 and 5.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in COLD SHUTDOWN within 36 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.2 The pressurizer heatup and/or cooldown rates and spray water temperature differential shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown. The spray water temperature differential shall be determined to be within the limit at least once per 8 hours during steady state operation.

REACTOR COOLANT SYSTEM

STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

3.4.10 The structural integrity of the Reactor Coolant System components shall be maintained at a level comparable to the original acceptance standards.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the structural integrity of any of the above components not conforming to its original acceptance standards and T_{avg} > 200°F, either immediately isolate the affected component or be in COLD SHUTDOWN within the next 36 hours.

b. With the structural integrity of any of the above components not conforming to its original acceptance standards and the unit in COLD SHUTDOWN, restore the structural integrity of the affected component to within its limits prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.4.10 The following inspection program shall be performed:

a. Inservice Inspections The structural integrity of the Reactor Coolant System components shall be demonstrated by verifying their acceptability per the requirements of Articles IS-200 and IS-500 of Section XI of the ASME Boiler and Pressure Vessel Code, dated 1971, as outlined by the inspection program shown in Table 4.4-4.

An initial report of any abnormal degradation of the structural integrity of the Reactor Coolant System components detected during the above required inspections shall be made within 10 days after detection and the detailed report shall be submitted pursuant to Specification 6.9.1 within 90 days after completion of the surveillance requirements of this specification.

SURVEILLANCE REQUIREMENTS (Continued)

The Inservice Inspection Program shall be reviewed every 5 years to assure that the equipment, techniques and procedures being utilized are current and applicable. The results of these reviews shall be reported in Special Reports to the Commission pursuant to Specification 6.9.2 within 90 days of completion.

b. Inspections Following Repairs or Replacements The structural integrity of the reactor coolant system shall be demonstrated after completion of all repairs and/or replacements to the system by verifying the repairs and/or replacements meet the requirements of Articles IS-400 and IS-500 (Winter 1972 Addenda) of Section XI of the ASME Boiler and Pressure Vessel Code. When repairs and/or replacements are made which involve new strength welds on components greater than 2 inch diameter, the new welds shall receive a surface and 100 percent volumetric examination and meet applicable code requirements. When repairs and/or replacements are made which involve new strength welds on components 2 inch diameter or smaller, the new welds shall receive a surface examination and meet applicable code requirements.

c. Inspections Following System Opening The structural integrity of the reactor coolant system shall be demonstrated after each closing by performing a leak test, with the system pressurized to at least 2235 psig, in accordance with Article IS-500 (Winter 1972 Addenda) of Section XI of the ASME Boiler and Pressure Vessel Code.

d. Pipe Hanger Inspections The structural integrity of the reactor coolant system shall be demonstrated by verifying that when inspected pursuant to the requirements of Article IS-200 of Section XI of the ASME Boiler and Pressure Vessel Code, dated 1971, the pipe hangers and supports are within their permissible travel and/or loading limits in both the cold ($T_{avg} \leq 200°F$) and hot ($T_{avg} \geq 541°F$) conditions.

e. Pipe Snubber Inspections The OPERABILITY of the hydraulic pipe snubbers shall be demonstrated initially at least once after not less than 4 months or more than 6 months of operation and then at least once per 18 months by verifying that the snubber hydraulic fluid reservoirs are filled to between their minimum and maximum level indication marks.

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ACCUMULATORS

LIMITING CONDITION FOR OPERATION

3.5.1 Each reactor coolant system accumulator shall be OPERABLE with:

a. The isolation valve open,

b. Between 850 and 934 cubic feet of borated water,

c. A minimum boron concentration of 1950 PPM, and

d. A nitrogen cover-pressure of between 585 and 658 psig.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

a. With any accumulator inoperable, except as a result of a closed isolation valve, restore the inoperative accumulator to OPERABLE status within one hour or be in HOT SHUTDOWN within the next 6 hours.

b. With any accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in HOT STANDBY within one hour and be in HOT SHUTDOWN within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.1 Each accumulator shall be demonstrated OPERABLE by:

a. Verifying the water level and nitrogen cover-pressure in the tanks at least once per 8 hours,

b. Verifying at least once per 8 hours that each accumulator isolation valve is open, and

c. Verifying the boron concentration of the accumulator solution at least once per 30 days and at each 1 percent increase in total tank volume.

*Pressurizer Pressure above 1000 psig.

ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

3.5.2 Two separate and independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE safety injection pump,

c. One OPERABLE residual heat removal heat exchanger,

d. One OPERABLE residual heat removal pump, and

e. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 30 days on a STAGGERED TEST BASIS by:

1. Verifying that each centrifugal charging pump:

a) Starts automatically on a test signal.

b) Develops a discharge pressure of $\geq$ 2405 psig on recirculation flow.

c) Operates for at least 15 minutes.

2. Verifying that each safety injection pump:

a) Starts automatically on a test signal.

b) Develops a discharge pressure of $\geq$ 1445 psig on recirculation flow.

c) Operates for at least 15 minutes.

3. Verifying that each residual heat removal pump:

a) Starts automatically on a test signal.

b) Develops a discharge pressure of $\geq$ 195 psig on recirculation flow.

c) Operates for at least 15 minutes.

4. Verifying that upon operator action in the control room, suction for each ECCS subsystem can be transferred from the RWST to the containment sump by opening the containment sump isolation valves and closing the RWST discharge valves.

SURVEILLANCE REQUIREMENTS (Continued)

5. Cycling each testable remote or automatically operated valve through at least one complete cycle.

6. Verifying the correct position for each manual valve not locked in position.

7. Verifying the correct position for each remote or automatically operated valve.

8. Verifying that each of the electrical busses providing ECCS subsystem power is aligned to receive power from separate diesel generators.

b. At least once per 30 days and following all maintenance activities within the primary containment by a visual inspection of the containment to ensure that no loose debris (rags, trash, clothing, etc.) is present which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions.

c. At least once per 18 months by:

1. Verifying automatic isolation of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is $\geq$ 600 psig.

2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE residual heat removal heat exchanger,

c. One OPERABLE residual heat removal pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODE 4.

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, immediately restore at least one ECCS subsystem to OPERABLE status or be in COLD SHUTDOWN within 20 hours.

b. With no ECCS subsystem OPERABLE because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump, immediately restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods.

c. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

SURVEILLANCE REQUIREMENTS

4.5.3 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

3/4.5.4 BORON INJECTION SYSTEM

BORON INJECTION TANK

LIMITING CONDITION FOR OPERATION

3.5.4.1 The boron injection tank shall be OPERABLE with:

a. A minimum contained volume of 900 gallons of borated water,

b. Between 20,000 and 22,500 ppm of boron, and

c. A minimum solution temperature of 145°F.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

With the boron injection tank inoperable, restore the tank to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.5.4.1 The boron injection tank shall be demonstrated OPERABLE by:

a. Verifying the water level through a recirculation flow test at least once per 7 days,

b. Verifying the boron concentration of the water in the tank at least once per 7 days, and

c. Verifying the water temperature at least once per 8 hours.

SURVEILLANCE REQUIREMENTS (Continued)

c. The accuracy of each Type A test shall be verified by a supplemental test which:

1. Confirms the accuracy of the test instrumentation and calculational methods by agreeing within 25 percent,

2. Has a minimum duration of 6 hours following a stabilization period equivalent to the stabilization period for the Type A test, and

3. Requires the quantity of gas injected into the containment or bled from the containment during the supplemental test to be equivalent to at least 25 percent of the total measured leakage at P_a, 12.0 psig.

d. Type B and C tests shall be conducted at P_a, 12.0 psig, every 18 months except for tests involving air locks.

e. Air locks shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.3.

f. All test leakage rates shall be calculated using observed data converted to absolute values. Error analyses shall be performed to determine the effects on the measured leakage due to maximum instrument accuracy and also instrument repeatability.

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

3.6.1.3 Each containment air lock shall be OPERABLE with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed.

b. An overall air lock leakage rate of $\leq 0.05\ L_a$ at P_a, 12 psig.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With an air lock inoperable, except as a result of an inoperable door gasket, restore the air lock to OPERABLE status within 24 hours or be in COLD SHUTDOWN within the next 36 hours.

b. With an air lock inoperable due to an inoperable door gasket:

1. Maintain the remaining door of the affected air lock closed and sealed, and

2. Restore the air lock to OPERABLE status within 7 days or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

a. After each opening, by verifying no detectable seal leakage by pressure decay when the gap between the seals is pressurized to $\geq$ 12 psig for at least 15 minutes.

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 6 months by conducting an overall air lock leakage test at P_a, 12.0 psig, and by verifying that the overall air lock leakage rate is within its limit, and

c. At least once per 6 months by verifying that only one door in each air lock can be opened at a time.

INTERNAL PRESSURE

LIMITING CONDITION FOR OPERATION

3.6.1.4 Primary Containment internal pressure shall be maintained between -1.5 and +0.3 PSIG.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment internal pressure in excess of or below the limits above, restore the internal pressure to within the limits within 1 hour or be in HOT STANDBY within the next 4 hours, go to COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 The primary containment internal pressure shall be determined to within the limits by pressure measurement at least once per 8 hours.

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.6.1.5 Primary containment air temperature shall be maintained:

a. Between 60 and 100°F in the containment's upper compartment, and

b. Between 60 and 120°F in the containment's lower compartment.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment air temperature not conforming to the above limits, restore the air temperature to within the limits within 8 hours, or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5.1 The primary containment upper compartment maximum air temperature shall be the maximum temperature as indicated by any one of the following temperature sensors while the upper compartment minimum air temperature shall be the arithmetical average of these temperatures:

Instrument Number	Sensor Location
a. ETR-12	a. UV - Nominal Elev. 712' 0"
b. ETR-14	b. UV - Nominal Elev. 712' 0"
c. ETR-20	c. UV - Nominal Elev. 624' 10"

4.6.1.5.2 The primary containment lower compartment maximum air temperature shall be the maximum temperature as indicated by any one of the following temperature sensors while the lower compartment minimum air temperature shall be the arithmetical average of these temperatures:

SURVEILLANCE REQUIREMENTS (Continued)

Instrument Number	Sensor Location
a. ETR-18	a. LV Nominal Elev. 624' 10-1/2"
b. ETR-21	b. LV Nominal Elev. 624' 0"
c. ETR-22	c. LV Nominal Elev. 626' 6"

4.6.1.5.3 The primary containment air temperatures shall be determined by monitoring each of the above sensors or their equivalents at least once per 8 hours.

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITIONS FOR OPERATION

3.6.1.6 The structural integrity of the containment structure and steel liner shall be maintained at a level comparable to the original acceptance standards.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the structural integrity of the containment structure or steel liner not conforming to their original acceptance standards, restore their structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.6 The structural integrity of the containment structure and steel liner shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of all accessible surfaces of the structure and steel liner and verifying no apparent changes in appearance of the surfaces or other abnormal degradation.

An initial report of any abnormal degradation of the containment structure or liner detected during these inspections shall be made within 10 days after detection. A detailed report on the degradation shall be submitted to the Commission pursuant to Specification 6.9.1 within 90 days after completion of the inspection.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two separate and independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 48 hours or be in HOT STANDBY within the next 4 hours; restore the inoperable spray system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

a. At least once per 30 days on a STAGGERED TEST BASIS by:

1. Manually starting each spray pump from the control room,

2. Verifying, that on recirculation flow, each spray pump develops a discharge pressure of $\geq$ 255 psig at a flow of $\geq$ 700 gpm,

3. Verifying that each spray pump operates for at least 15 minutes,

4. Verifying that each of the electrical busses providing spray pump power is aligned to receive power from separate diesel generators,

TABLE 3.6-1 (Continued)

VALVE NUMBER		FUNCTION	TESTABLE DURING PLANT OPERATION	ISOLATION TIME IN SECONDS
B. PHASE "B" ISOLATION (Continued)				
33.	WCR-955	NESW from RCP Motor Air Cooler Vent #1	Yes	10
34.	WCR-956	NESW from RCP Motor Air Cooler Vent #2	Yes	10
35.	WCR-957	NESW from RCP Motor Air Cooler Vent #3	Yes	10
36.	WCR-958	NESW from RCP Motor Air Cooler Vent #4	Yes	10
37.	WCR-961	NESW to Instr. Rm. East Vent	Yes	10
38.	WCR-963	NESW to Instr. Rm. West Vent	Yes	10
39.	WCR-965	NESW from Instr. Rm. East Vent	Yes	10
40.	WCR-967	NESW to Instr. Rm. West Vent	Yes	10
C. CONTAINMENT PURGE AND EXHAUST				
1.	VCR-101	Instr. Room Purge Air Inlet	Yes	10
2.	VCR-102	Instr. Room Purge Air Outlet	Yes	10
3.	VCR-103	Lower Comp. Purge Air Inlet	Yes	10
4.	VCR-104	Lower Comp. Purge Air Outlet	Yes	10
5.	VCR-105	Upper Comp. Purge Air Inlet	Yes	10
6.	VCR-106	Upper Comp. Purge Air Outlet	Yes	10
7.	VCR-107	Cont. Press. Relief Fan Isolation	Yes	10
8.	VCR-201	Instr. Room Purge Air Inlet	Yes	10
9.	VCR-202	Instr. Room Purge Air Outlet	Yes	10
10.	VCR-203	Lower Comp. Purge Air Inlet	Yes	10
11.	VCR-204	Lower Comp. Purge Air Outlet	Yes	10
12.	VCR-205	Upper Comp. Purge Air Inlet	Yes	10
13.	VCR-206	Upper Comp. Purge Air Outlet	Yes	10
14.	VCR-207	Cont. Press Relief Fan Isolation	Yes	10

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TABLE 3.6-1 (Continued)

VALVE NUMBER		FUNCTION	TESTABLE DURING PLANT OPERATION	ISOLATION TIME IN SECONDS
D. MANUAL ISOLATION VALVES*				
1.	ICM-111	RHR to RC Cold Legs	Yes	NA
2.	ICM-129	RHR Inlet to Pumps	No	NA
3.	ICM-250	Boron Injection Inlet	Yes	NA
4.	ICM-251	Boron Injection Inlet	Yes	NA
5.	ICM-260	Safety Injection Inlet	Yes	NA
6.	ICM-265	Safety Injection Inlet	Yes	NA
7.	ICM-305	RHR Suction from Sump	Yes	NA
8.	ICM-306	RHR Suction from Sump	Yes	NA
9.	ICM-311	RHR to RC Hot Legs	Yes	NA
10.	ICM-321	RHR to RC HOt Legs		
11.	DW-209	Demineralized Water Supply for Refueling Cavity	Yes	NA
12.	DW-210	Demineralized Water Supply for Refueling Cavity	Yes	NA
13.	NPX 151 VI	Dead Weight Tester	Yes	NA
14.	PA 145	Containment Service Air	No	NA
15.	SF-151	Refueling Water Supply	Yes	NA
16.	SF-153	Refueling Water Supply	Yes	NA
17.	SF-159	Refueling Cavity Drain to Purification System	Yes	NA
18.	SF-160	Refueling Cavity Drain to Purification System	Yes	NA
19.	SI-171	Safety Injection Test Line	Yes	NA
20.	SI-172	Accumulator Test LIne	Yes	NA

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TABLE 3.6-1 (Continued)

VALVE NUMBER		FUNCTION	TESTABLE DURING PLANT OPERATION	ISOLATION TIME IN SECONDS
D. MANUAL ISOLATION VALVES*				
21.	CCR-440	CCW from Main Steam Penetration	Yes	NA
22.	CCR-441	CCW from Main Steam Penetration	Yes	NA
23.	MCM-221	Main Steam to Auxiliary Feed Pump	No	NA
24.	MCM-231	Main Steam to Auxiliary Feed Pump	No	NA
25.	CCM-430	CCW to East Pressure Equalization Fan	Yes	NA
26.	CCM-431	CCW from East Pressure Equalization Fan	Yes	NA
27.	CCM-432	CCW to West Pressure Equalization Fan	Yes	NA
28.	CCM-433	CCW from West Pressure Equalization Fan	Yes	NA

NA - Manual Valve-Isolation time not applicable.
* - Includes motor operated valves which do not isolate automatically.

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SURVEILLANCE REQUIREMENTS (Continued)

2. Weighing a representative sample of at least 60 ice baskets and verifying that each basket contains at least 1400 lbs of ice. The representative sample shall include at least two baskets from each ice condenser bay. If any ice basket is found to contain less than 1400 lbs of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1400 lbs.

3. Verifying, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on flow passages between ice baskets, past lattice frames, through the intermediate and top deck floor grating, or past the lower inlet plenum support structures and turning vanes is restricted to a thickness of $\leq$ 0.38 inches. If one flow passage per bay is found to have an accumulation of frost or ice with a thickness of > 0.38 inches, a representative sample of 20 additional flow passages from the same bay shall be visually inspected. If these additional flow passages are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one restricted flow passage per bay is evidence of abnormal degradation of the ice condenser.

c. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 12 feet for this inspection.

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.2 The ice bed temperature monitoring system shall be OPERABLE with at least 2 OPERABLE RTD channels in the ice bed at elevations 652' 2-1/4", 672' 5-1/4" and 696' 2-1/4" for each one third of the ice condenser.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the ice bed temperature monitoring system inoperable, power operation may continue for up to 30 days provided:

   1. The ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed;

   2. The last recorded mean ice bed temperature was $\leq$ 20°F and steady; and

   3. The ice condenser cooling system is OPERABLE with at least:

      a) 21 OPERABLE air handling units,

      b) 2 OPERABLE glycol circulating pumps, and

      c) 3 OPERABLE 25 ton refrigeration chillers;

   otherwise, be in COLD SHUTDOWN within the next 36 hours.

b. With the ice bed temperature monitoring system inoperable and with the ice condenser cooling system not satisfying the minimum components OPERABILITY requirements of a.3 above, power operation may continue for up to 6 days provided the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed and the last recorded mean ice bed temperature was $\leq$ 15°F and steady; otherwise, be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.2 The ice bed temperature monitoring system shall be determined OPERABLE by performance of a CHANNEL CHECK at least once per 8 hours.

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more ice condenser doors open or otherwise inoperable, operation may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained $\leq$ 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed by the inlet door position monitoring system, and

b. Demonstrated OPERABLE at least once per 3 months during the first year after the ice bed is fully loaded and at least once per 18 months thereafter by:

1. Verifying that the torque required to initially open each door is $\leq$ 675 inch pounds.

2. Verifying that opening of each door is not impaired by ice, frost or debris.

3. Testing a sample of at least 25 percent of the doors and verifying that the torque required to open each door is less than 195 inchpounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. The doors selected for determination of the "door opening torque" shall be selected to ensure that all doors are tested at least once during four test intervals.

SURVEILLANCE REQUIREMENTS (Continued)

4. Testing a sample of at least 25% of the doors and verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component. The doors selected for determination of the "door closing torque" shall be selected to ensure that all doors are tested at least once during four test intervals.

5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be $\leq$ 40 inch-pounds.

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

a. Verified closed by a visual inspection at least once per 3 months, and

b. Demonstrated OPERABLE at least once per 3 months during the first year after the ice bed is fully loaded and at least once per 18 months thereafter by visually verifying no frost accumulation or structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the applicable force shown below:

Door		Lifting Force
1.	Adjacent to Crane Wall	$\leq$ 37.4 lbs.
2.	Paired with Door Adjacent to Crane Wall	$\leq$ 33.8 lbs.
3.	Adjacent to Containment Wall	$\leq$ 31.8 lbs.
4.	Paired with Door Adjacent to Containment Wall	$\leq$ 31.0 lbs.

4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE at least once per 3 months by visually verifying:

SURVEILLANCE REQUIREMENTS (Continued)

a. That the doors are in place, and

b. That no condensation, frost, or ice has formed on the doors or blankets which would restrict their lifting and opening if required.

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 The inlet door position monitoring system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the inlet door position monitoring system inoperable, operation may continue for up to 14 days, provided the ice bed temperature monitoring system is OPERABLE and the maximum ice bed temperature is $\leq$ 27°F when monitored at least once per 4 hours; otherwise, restore the inlet door position monitoring system to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.4 The inlet door position monitoring system shall be determined OPERABLE by:

a. Performing a CHANNEL CHECK at least once per 8 hours,

b. Performing a CHANNEL FUNCTIONAL TEST at least once per 18 months, and

c. Verifying that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Specification 4.6.5.3.1.

DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

LIMITING CONDITION FOR OPERATION

3.6.5.5 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With a personnel access door or equipment hatch inoperable or open except for personnel transit entry and $T_{avg} > 200°F$, immediately restore the door or hatch to OPERABLE status or to its closed position (as applicable) or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.5.1 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined closed by a visual inspection prior to increasing the Reactor Coolant System T_{avg} above 200°F and after each personnel transit entry when the Reactor Coolant System T_{avg} is above 200°F.

4.6.5.5.2 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined OPERABLE by visually inspecting the seals and sealing surfaces of these penetrations and verifying no detrimental misalignments, cracks or defects in the sealing surfaces, or apparent deterioration of the seal material:

a. Prior to final closure of the penetration each time it has been opened, and

b. At least once per 10 years for penetrations containing seals fabricated from resilient materials.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

LIMITING CONDITION FOR OPERATION

3.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be > 70°F when the pressure of either coolant in the steam generator is > 200 psig.

APPLICABILITY: ALL MODES.

ACTION:

With the requirements of the above specification not satisfied:

a. Immediately depressurize the steam generator,

b. Perform an analysis to determine the effect of the over-pressurization on the integrity of the steam generator prior to increasing its temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.7.2.1 The temperatures of both the primary and secondary coolants in the steam generators shall be determined to be > 70°F at least once per hour when pressures in the steam generators are > 200 psig and T_{avg} is < 200°F.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3.1 Two independent component cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one component cooling water loop inoperable, restore the inoperable loop to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.7.3.1 Each component cooling water loop shall be demonstrated OPERABLE:

a. At least once per 30 days on a STAGGERED TEST BASIS by:

1. Starting (unless already in operation) each pump from the control room,
2. Verifying that each pump develops at least 93% of the discharge pressure for the applicable flow rate as determined from the Manufacturer's Pump Performance Curve,
3. Verifying that each pump operates for at least 15 minutes,
4. Verifying that each of the electrical busses providing loop power is aligned to receive power from separate diesel generators,
5. Verifying correct position of all valves accessible during operation that serve safety related equipment, and
6. Exercising all remotely operated valves testable during plant operation.

b. At least once per 18 months by exercising each valve through one complete cycle of full travel.

3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4.1 Two independent essential service water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one essential service water loop inoperable, restore the inoperable loop to OPERABLE status within 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.7.4.1 Each essential service water loop shall be demonstrated OPERABLE at least once per 30 days on a STAGGERED TEST BASIS by:

a. Starting (unless already in operation) each pump from the control room,

b. Verifying that each pump develops at least 93% of the discharge pressure for the applicable flow rate as determined from the Manufacturer's Pump Performance Curve.

c. Verifying that each pump operates for at least 15 minutes,

d. Verifying that each of the electrical busses providing loop power is aligned to receive power from separate diesel generators,

e. Verifying correct position of all valves, and

f. Exercising all remotely operated valves.

3/4.7.5 CONTROL ROOM VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.5.1 Two independent control room ventilation systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one control room ventilation system inoperable, restore the system to OPERABLE status within 7 days or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.7.5.1 Each control room ventilation system shall be demonstrated OPERABLE:

a. At least once per 8 hours by verifying that the control room air temperature is $\leq$ 120°F.

b. At least once per 30 days on a STAGGERED TEST BASIS by:

1. Initiating flow through the HEPA filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes.

2. Verifying that the electrical busses providing power to the ventilation systems are aligned to receive power from separate diesel generators.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 12 months or after every 720 hours of system operation and (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings by:

1. Verifying that the total filter bypass flow is $\leq$ 60 cfm when tested with cold DOP while operating the ventilation system at a flow rate of 6000 cfm $\pm$ 10 percent.

2. Verifying that the charcoal adsorbers remove $\geq$ 99 percent of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with USAEC Report DP-1082 while operating the ventilation system at a flow rate of 6000 cfm $\pm$ 10 percent.

3. Verifying that the HEPA filter banks remove $\geq$ 99 percent of the DOP when they are tested in-place in accordance with ANSI N101.1-1972 while operating the ventilation system at a flow rate of 6000 cfm $\pm$ 10 percent.

4. Subjecting at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of $\geq$ 90 percent for radioactive methyl iodide at an air flow velocity of 0.67 ft/sec $\pm$ 20 percent with an inlet methyl iodide concentration of 0.05 to 0.15 mg/m^3, $\geq$ 95 percent relative humidity, and $\geq$ 125°F; other test conditions shall be in accordance with USAEC RDT Standard M-16-1T, June 1972. The carbon samples shall be prepared by emptying one bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter with a length equal to the thickness of the bed.

5. Verifying a system flow rate of 6000 cfm $\pm$ 10 percent during system operation.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the ventilation system at a flow rate of 6000 cfm $\pm$ 10 percent.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that on a Safety Injection Signal from either Unit 1 or Unit 2, the system automatically diverts its inlet flow through the HEPA filters and charcoal adsorber banks.

3. Verifying that the system maintains the control room at a positive pressure of $\geq$ 1/16 inch Water Gauge relative to the outside atmosphere during system operation.

3/4.7.6 ESF VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6.1 Two separate and independent ESF ventilation system exhaust air filter trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one ESF ventilation system exhaust air filter train inoperable, restore the inoperable train to OPERABLE status within 7 days or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.7.6.1 Each ESF ventilation system exhaust air filter train shall be demonstrated OPERABLE:

a. At least once per 30 days on a STAGGERED TEST BASIS by:

   1. Initiating flow through the HEPA filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes, and

   2. Verifying that the electrical busses providing power to the filter trains are aligned to receive power from separate diesel generators.

b. At least once per 12 months or after every 720 hours of system operation and (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings by:

   1. Verifying that the total filter bypass flow is $\leq$ 250 cfm when tested with cold DOP while operating the ventilation system at a flow rate of 25,000 cfm $\pm$ 10 percent.

2. Verifying that the charcoal adsorbers remove $\geq$ 99 percent of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with USAEC Report DP-1082 while operating the ventilation system at a flow rate of 25,000 cfm $\pm$ 10 percent.

3. Verifying that the HEPA filter banks remove $\geq$ 99 percent of the DOP when they are tested in-place in accordance with ANSI N101.1-1972 while operating the ventilation system at a flow rate of 25,000 cfm $\pm$ 10 percent.

4. Subjecting at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of $\geq$ 90 percent for radioactive methyl iodide at an air flow velocity of 0.67 ft/sec + 20 percent with an inlet methyl iodide concentration of 0.05 to 0.15 mg/m^3, $\geq$ 95 percent relative humidity, and $\geq$ 125°F; other test conditions shall be in accordance with USAEC RDT Standard M-16-1T, June 1972. The carbon samples shall be prepared by emptying one bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

5. Verifying a system flow rate of 25,000 cfm $\pm$ 10 percent during system operation.

c. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the ventilation system at a flow rate of 25,000 cfm $\pm$ 10 percent.

2. Verifying that the air flow distribution to each HEPA filter and charcoal adsorber is within $\pm$ 20 percent of the averaged flow per unit.

3. Verifying that the standby fan starts automatically on a Containment Pressure--High-High Signal and diverts its exhaust flow through the HEPA filters and charcoal adsorber banks on a Containment Pressure--High-High Signal.

3/4.7.7 SEALED SOURCE CONTAMINATION

LIMITING CONDITION FOR OPERATION

3.7.7.1 Each sealed source containing radioactive material in excess of those quantities of byproduct material listed in 10 CFR 30.71 or 0.1 microcuries, including alpha emitters, shall be free of $\geq$ 0.005 microcuries of removable contamination.

APPLICABILITY: AT ALL TIMES.

ACTION:

Each sealed source with removable contamination in excess of the above limit shall be immediately withdrawn from use and:

a. Either decontaminated and repaired, or

b. Disposed of in accordance with Commission Regulations.

The requirements of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.7.1.1 Test Requirements - Each sealed source shall be tested for leakage and/or contamination by:

a. The licensee, or

b. Other persons specifically authorized by the Commission or an Agreement State.

The test method shall have a detection sensitivity of at least 0.005 microcuries per test sample.

4.7.7.1.2 Test Frequencies - Each category of sealed sources shall be tested at the frequency described below.

a. Sources in use (excluding startup sources previously subjected to core flux) - At least once per six months for all sealed sources containing radioactive material:

SURVEILLANCE REQUIREMENTS (Continued)

1. With a half-life greater than 30 days (excluding Hydrogen 3), and

2. In any form other than gas.

b. Stored sources not in use - Each sealed source shall be tested prior to use or transfer to another licensee unless tested within the previous six months. Sealed sources transferred without a certificate indicating the last test date shall be tested prior to being placed into use.

c. Startup sources - Each sealed startup source shall be tested prior to being subjected to core flux and following repair or maintenance to the source.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators each with:

1. A day fuel tank containing a minimum of 70 gallons of fuel,

2. A separate fuel storage system containing a minimum of 42,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.5 immediately and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in COLD SHUTDOWN within the next 36 hours.

b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.5 immediately and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in COLD SHUTDOWN within the next 36 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in COLD SHUTDOWN within the next 36 hours.

ACTION (Continued)

c. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.5 immediately and at least once per 8 hours thereafter; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 4 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in COLD SHUTDOWN within the next 36 hours.

d. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a immediately and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in COLD SHUTDOWN within the next 36 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of initial loss or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 24 hours by verifying correct breaker alignments, indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months by transferring the unit power source automatically from the normal auxiliary source to the preferred reserve source and by transferring manually to the alternate reserve source.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. At least once per 30 days on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day and engine-mounted fuel tank.

2. Verifying the fuel level in the fuel storage tank,

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-68 when checked for viscosity, water and sediment,

4. Verifying that the fuel transfer pump can be started from the control panel and transfers fuel from the storage system to the day tank,

5. Verifying the diesel starts from a cold ambient condition, and

6. Verifying the generator synchronizes, is loaded to $\geq$ 1750 kw, and operated for $\geq$ 60 minutes.

b. At least once per 18 months during shutdown by:

1. Subjecting the diesel to a thorough inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service,

2. Verifying the generator capability to reject a load of $\geq$ 600 kw without tripping,

3. Simulating a loss of offsite power in conjunction with a safety injection signal, and:

a) Verifying de-energization of the emergency busses and load shedding from the emergency busses,

b) Verifying the diesel starts from a cold ambient condition on the auto-start signal, energizes the emergency busses, and operates for $\geq$ 60 minutes while its generator is loaded with the emergency loads.

4. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 3650 kw.

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with:

1. A day fuel tank containing a minimum of 70 gallons of fuel,

2. A fuel storage system containing a minimum of 42,000 gallons of fuel, and

3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The A.C. electrical power sources shall be demonstrated OPERABLE per Surveillance Requirements 4.8.1.1.1 and 4.8.1.1.2.

REFUELING OPERATIONS

DECAY TIME

LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for a minimum of 100 hours prior to movement of irradiated fuel in the reactor pressure vessel.

APPLICABILITY: MODE 6.

ACTION:

With the reactor subcritical for less than 100 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel.

SURVEILLANCE REQUIREMENTS

4.9.3 The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock closed and secured, and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1. Closed by an isolation valve, blind flange, or manual valve, or

2. Be capable of being closed by an OPERABLE automatic Containment Purge and Exhaust isolation valve.

APPLICABILITY: DURING CORE ALTERATIONS OR MOVEMENT OF IRRADIATED FUEL WITHIN THE CONTAINMENT BUILDING.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of fuel in the containment building.

SURVEILLANCE REQUIREMENTS

4.9.4 The containment building penetration shall be determined to be either in its isolated condition or capable of being closed by an OPERABLE automatic Containment PUrge and Exhaust isolation valve within 72 hours prior to the start of and at least once per 30 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their isolated condition, or

b. Testing the Containment PUrge and Exhaust isolation valves per the applicable portions of Specification 4.6.3.1.2.

REFUELING OPERATIONS

CONTAINMENT RADIATION MONITORING

LIMITING CONDITION FOR OPERATION

3.9.9 The containment area radiation and airborne radioactivity monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTION:

With less than the above required instrumentation systems OPERABLE, either suspend all operations involving CORE ALTERATIONS and movement of fuel within the containment building or close all penetrations providing direct access from the containment atmosphere to the outside, then CORE ALTERATIONS and/or fuel movement within the containment building may proceed for up to 7 days subject to the ACTION requirements of Specification 3.3.3.1, as applicable.

SURVEILLANCE REQUIREMENTS

4.9.9.1 The specified instrumentation shall be demonstrated OPERABLE by performance of the surveillance requirements of Specification 4.3.3.1.

4.9.9.2 All penetrations providing direct access from the containment atmosphere to the outside atmosphere shall be verified closed at least once per 8 hours during CORE ALTERATIONS or fuel movement within the containment building when less than the above required instrumentation systems are OPERABLE.

REFUELING OPERATIONS

CONTAINMENT PURGE AND EXHAUST ISOLATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.10 The containment purge and exhaust isolation system shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTION:

With the containment purge and exhaust isolation system inoperable, either close each of the penetrations providing direct access from the containment atmosphere to the outside atmosphere or suspend all operations involving CORE ALTERATIONS or fuel movement within the containment building.

SURVEILLANCE REQUIREMENTS

4.9.10 The containment purge and exhaust isolation system shall be demonstrated OPERABLE within 3 days prior to the start of CORE ALTERATIONS by verifying that containment building isolation occurs on a high radiation signal from each of the containment radiation monitoring instrumentation channels.

REFUELING OPERATIONS

WATER LEVEL - REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

3.9.11 As a minimum 23.0 feet of water shall be maintained over the top of irradiated fuel assemblies seated within the reactor pressure vessel.

APPLICABILITY: DURING MOVEMENT OF FUEL WITHIN THE REACTOR PRESSURE VESSEL.

ACTION:

With the requirements of the above specification not satisfied, suspend all operations involving movement of fuel within the reactor pressure vessel.

SURVEILLANCE REQUIREMENTS

4.9.11 The water level shall be determined to be within its minimum depth within 2 hours prior to the start of fuel movement within the reactor pressure vessel and at least once per 7 days thereafter.

REFUELING OPERATIONS

STORAGE POOL WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.12 As a minimum, 23 feet of water shall be maintained over the top of irradiated fuel assemblies in the storage racks.

APPLICABILITY: WHENEVER IRRADIATED FUEL ASSEMBLIES ARE IN THE STORAGE POOL.

ACTION:

With the requirement of the specification not satisfied, suspend all movement of fuel and crane operations in the fuel storage area.

SURVEILLANCE REQUIREMENTS

4.9.12 The water level in the storage pool shall be determined to be within its minimum depth at least once per 7 days when irradiated fuel assemblies are in the fuel storage pool.

REFUELING OPERATIONS

STORAGE POOL RADIATION MONITORING

LIMITING CONDITION FOR OPERATION

3.9.13 The spent fuel storage pool area radiation monitor shall be OPERABLE.

APPLICABILITY: DURING FUEL STORAGE IN THE STORAGE BUILDING.

ACTION:

With the spent fuel storage pool area radiation monitor inoperable, immediately suspend all operations involving movement of fuel or fuel handling equipment within the storage building and at least once per 24 hours perform area surveys of the monitored area with portable monitoring instrumentation.

SURVEILLANCE REQUIREMENTS

4.9.13 The specified instrumentation shall be demonstrated OPERABLE by performance of the surveillance requirements of Specification 4.3.3.1.

STORAGE POOL VENTILATION SYSTEM - FUEL MOVEMENT

LIMITING CONDITION FOR OPERATION

3.9.14 The spent fuel storage pool exhaust ventilation system shall be operating and discharging through at least one train of HEPA filters and charcoal adsorbers during either:

a. Fuel movement within the spent fuel storage pool, or

b. Crane operation with loads over the spent fuel storage pool.

APPLICABILITY: WHEN IRRADIATED FUEL WHICH WAS DECAYED LESS THAN 60 DAYS IS IN THE SPENT FUEL STORAGE POOL.

ACTION:

With the requirement of the above specification not satisfied, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool.

SURVEILLANCE REQUIREMENTS

4.9.14 The spent fuel storage pool building exhaust ventilation system shall be verified to be operating with all storage pool building doors closed within 2 hours prior to the initiation of and at least once per 8 hours during either fuel movement within the spent fuel storage pool or crane operation with loads over the spent fuel storage pool.

REFUELING OPERATIONS

STORAGE POOL VENTILATION SYSTEM - FUEL STORAGE

LIMITING CONDITION FOR OPERATION

3.9.15 At least one spent fuel storage pool exhaust ventilation system shall be OPERABLE.

APPLICABILITY: WHENEVER IRRADIATED FUEL IS IN THE STORAGE POOL.

ACTION:

With no spent fuel storage pool exhaust ventilation system OPERABLE, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one spent fuel storage pool ventilation system is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.9.15 The above required spent fuel storage pool exhaust ventilation system shall be demonstrated OPERABLE:

a. At least once per 30 days by initiating flow through the HEPA filter and charcoal adsorber train and verifying that the train operates for at least 15 minutes.

b. At least once per 12 months or after every 720 hours of system operation and (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings by:

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that with the exhaust ventilation system operating at a flow rate of 30,000 cfm ± 10 percent and exhausting through the HEPA filters and charcoal adsorbers, the total bypass flow of the exhaust ventilation system to the facility vent, including leakage through the exhaust ventilation system diverting valves, is ≤ 1 percent when the exhaust ventilation system is tested by admitting cold DOP at the storage pool exhaust ventilation system intake.

2. Verifying that the charcoal adsorbers remove ≥ 99 percent of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with USAEC Report DP-1082 while operating the exhaust ventilation system at a flow rate of 30,000 cfm ± 10 percent.

3. Verifying that the HEPA filter banks remove ≥ 99 percent of the DOP when they are tested in-place in accordance with ANSI N101.1-1972 while operating the exhaust ventilation system at a flow rate of 30,000 cfm ± 10 percent.

4. Subjecting at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 90 percent for radioactive methyl iodide at an air flow velocity of 0.67 ft/sec ± 20 percent with an inlet methyl iodide concentration of 0.05 to 0.15 mg/m^3, ≥ 95 percent relative humidity, and ≥ 125°F; other test conditions shall be in accordance with USAEC RDT Standard M-16-1T, June 1972. The carbon samples shall be prepared by emptying one bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

5. Verifying a system flow rate of 30,000 cfm ± 10 percent during system operation.

c. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the exhaust ventilation system at a flow rate of 30,000 cfm ± 10 percent.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the air flow distribution to each HEPA filter and charcoal adsorber is within ± 20 percent of the averaged flow per unit.

3. Verifying that on a high radiation signal, the system automatically starts (unless already operating) and directs its exhaust flow through the HEPA filters and charcoal adsorber banks.

4. Verifying that the exhaust ventilation system maintains the spent fuel storage pool area at a negative pressure of ≥ 1/8 inches Water Gauge relative to the outside atmosphere during system operation.

3/4.10 SPECIAL TEST EXCEPTIONS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and shutdown margin provided that at a minimum, one full length rod is fully withdrawn and OPERABLE and all part length rods are withdrawn to at least the 180 step position and OPERABLE.

APPLICABILITY: MODE 2.

ACTION:

With less than the above minimum complement of full and part length rods fully withdrawn, immediately initiate and continue boration until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length and part length rod required by the limit above shall be determined to be fully withdrawn at least once per 2 hours.

4.10.1.2 The fully withdrawn full length rod shall be demonstrated OPERABLE by verifying its rod drop time to be $\leq$ 1.8 seconds within 4 hours prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

4.10.1.3 The part length rods shall be demonstrated OPERABLE by moving each part length rod $\geq$ 10 steps within 4 hours prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

SPECIAL TEST EXCEPTIONS

GROUP HEIGHT AND INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.10.2 The group height and insertion limit requirements of Specifications 3.1.3.1, 3.1.3.4, 3.1.3.5 and 3.1.3.6 may be suspended during the performance of physics tests provided the THERMAL POWER is limited to 85% or less of RATED THERMAL POWER.

APPLICABILITY: MODES 1 and 2.

ACTION:

With THERMAL POWER greater than the limit specified above, immediately reduce THERMAL POWER to within the limit or comply with the group height and insertion limits of Specifications 3.1.3.1, 3.1.3.4, 3.1.3.5 and 3.1.3.6.

SURVEILLANCE REQUIREMENTS

4.10.2 The THERMAL POWER shall be determined:

a. At least once per hour by indication on the Intermediate and Power Range Nuclear Channels when the THERMAL POWER is less than or equal to 5% of RATED THERMAL POWER, and

b. At least once per 4 hours by a heat balance calibration when the THERMAL POWER is greater than 5% of RATED THERMAL POWER.

SPECIAL TEST EXCEPTIONS

BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.10.4 The requirement to maintain a uniform boron concentration in all filled portions of the Reactor Coolant System and the refueling canal sufficient to ensure a K_{eff} of no greater than 0.90 with all full length rods fully inserted may be modified to permit K_{eff} to be no greater than 0.95 with all full length rods fully inserted during initial fuel loading operations.

APPLICABILITY: MODE 6.

ACTION:

With $K_{eff} > 0.95$, immediately suspend CORE ALTERATIONS and initiate and continue boration at $\geq$ 70 gpm until K_{eff} is reduced to $\leq$ 0.95. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.10.4 The boron concentration of each of the specified volumes shall be determined by chemical analysis at least once per 8 hours when K_{eff} is > 0.90.

SPECIAL TEST EXCEPTIONS

LOW POWER PHYSICS TESTS

LIMITING CONDITION FOR OPERATION

3.10.5 The limitations of Specifications 3.1.3.5, 3.2.1, 3.2.2, 3.2.3 and 3.2.5 may be suspended during the performance of LOW POWER PHYSICS TESTS provided:

a. The THERMAL POWER does not exceed 5% of RATED THERMAL POWER, and

b. The reactor trip setpoints on the OPERABLE Intermediate Range and Power Range Nuclear Channels are set $\leq$ 25% of RATED THERMAL POWER.

APPLICABILITY: MODE 2.

ACTION:

With the THERMAL POWER > 5% of RATED THERMAL POWER, immediately reduce THERMAL POWER to within the limit or comply with the limits of Specifications 3.2.1, 3.2.2, 3.2.3 and 3.2.5.

SURVEILLANCE REQUIREMENTS

4.10.5.1 The THERMAL POWER shall be determined to be $\leq$ 5% of RATED THERMAL POWER at least once per hour during LOW POWER PHYSICS TESTS by indication on the Intermediate and Power Range Nuclear Channels.

4.10.5.2 Each Intermediate and Power Range Channel shall be subjected to a CHANNEL FUNCTIONAL TEST within 8 hours prior to initiating LOW POWER PHYSICS TESTS.

activity levels in the primary coolant will be detected in sufficient time to take corrective action. Data obtained on iodine spiking during changes in power level will be used to assess the parameters associated with spiking phenomena. A reduction in frequency of isotopic analyses following power changes may be permissible if justified by the data obtained during approximately the first year of power operation.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS

All components in the Reactor Coolant System are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The various categories of load cycles used for design purposes are provided in Section 4.1.4 of the FSAR. During startup and shutdown, the rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates are consistent with the design assumptions and satisfy the stress limits for cyclic operation.

During heatup, the thermal gradients in the reactor vessel wall produce thermal stresses which vary from compressive at the inner wall to tensile at the outer wall. These thermal induced compressive stresses tend to alleviate the tensile stresses induced by the internal pressure. Therefore, a pressure-temperature curve based on steady state conditions (i.e., no thermal stresses) represents a lower bound of all similar curves for finite heatup rates when the inner wall of the vessel is treated as the governing location.

The heatup analysis also covers the determination of pressure-temperature limitations for the case in which the outer wall of the vessel becomes the controlling location. The thermal gradients established during heatup produce tensile stresses at the outer wall of the vessel. These stresses are additive to the pressure induced tensile stresses which are already present. The thermal induced stresses at the outer wall of the vessel are tensile and are dependent on both the rate of heatup and the time along the heatup ramp; therefore, a lower bound curve similar to that described for the heatup of the inner wall cannot be defined. Subsequently, for the cases in which the outer wall of the vessel becomes the stress controlling location, each heatup rate of interest must be analyzed on an individual basis.

The heatup limit curve (Figure 3.4-2) is a composite curve which was prepared by determining the most conservative case, with either the

inside or outside wall controlling, for any heatup rate up to 60°F per hour. The cooldown limit curves (Figure 3.4-3) are composite curves which were prepared based upon the same type analysis with the exception that the controlling location is always the inside wall where the cooldown thermal gradients tend to produce tensile stresses while producing compressive stresses at the outside wall. The heatup and cooldown curves were prepared based upon the most limiting value of the predicted adjusted reference temperature at the end of 12 EFPY.

The reactor vessel materials have been tested to determine their initial RT_{NDT}; the results of these tests are shown in Table B 3/4.4-1. Reactor operation and resultant fast neutron (E>1 Mev) irradiation will cause an increase in the RT_{NDT}. Therefore, an adjusted reference temperature, based upon the fluence and copper content of the material in question, can be predicted using Figures B 3/4.4-1 and 3/4.4-2. The heatup and cooldown limit curves Figures 3.4-2 and 3.4-3 include predicted adjustments for this shift in RT_{NDT} at the end of 12 EFPY, as well as adjustments for possible errors in the pressure and temperature sensing instruments.

The actual shift in NDTT of the vessel material will be established periodically during operation by removing and evaluating, in accordance with ASTM E185-73, reactor vessel material irradiation surveillance specimens installed near the inside wall of the reactor vessel in the core area. Since the neutron spectra at the irradiation samples and vessel inside radius are essentially identical, the measured transition shift for a sample can be applied with confidence to the adjacent section of the reactor vessel. The heatup and cooldown curves must be recalculated when the ΔRT_{NDT} determined from the surveillance capsule is different from the calculated ΔRT_{NDT} for the equivalent capsule radiation exposure.

The pressure-temperature limit lines shown on Figure 3.4-2 for reactor criticality and for inservice leak and hydrostatic testing have been provided to assure compliance with the minimum temperature requirements of Appendix G to 10 CFR 50 for reactor criticality and for inservice leak and hydrostatic testing.

The number of reactor vessel irradiation surveillance specimens and the frequencies for removing and testing these specimens are provided in Table 4.4-3 to assure compliance with the requirements of Appendix H to 10 CFR Part 50.

TABLE B 3/4.4-1

REACTOR VESSEL TOUGHNESS

COMPONENT	COMP CODE	MATERIAL TYPE	CU %	P %	NDTT F	50 FT-LB/35 MIL TEMP F LONG	50 FT-LB/35 MIL TEMP F TRANS	RTNDT F	MIN. UPPER SHELF FT-LB LONG	MIN. UPPER SHELF FT-LB TRANS
CL. HD. DOME	01FT	A533,B,1	0.11	0.011	10	30	70*	10	122	79**
CL. HD. SEG.	02FU	A533,B,1	0.11	0.011	10	5	42*	10	122	79**
CL. HD. SEG.	02FV	A533,B,1	0.11	0.009	0	12	42*	0	126	82**
CL. HD. SEG.	02FW	A533,B,1	0.10	0.009	0	35	74*	14	124	81**
CL. HD. FLG.	03FX	A508,2	NA	0.010	60$	36	55*	60	148	96**
VES. SH. FLG.	04FY	A508,2	NA	0.010	28$	-5	12*	28	152	99**
INLET NOZ.	06FZ	A508,2	NA	0.012	60$	100	140*	80	102	66**
INLET NOZ.	06GA	A508,2	NA	0.012	60$	52	116*	60	98	64**
INLET NOZ.	06GB	A508,2	NA	0.010	5$	-50	-35*	5	156	101**
INLET NOZ.	06GC	A508,2	NA	0.010	22$	-50	-35	22	157	102**
OUTLET NOZ.	07GD	A508,2	NA	0.019	38$	-55	-25*	38	138	90**
OUTLET NOZ.	07GE	A508,2	NA	0.005	60$	-16	10*	60	129	84**
OUTLET NOZ.	07GF	A508,2	NA	0.014	5$	-62	-28	5	128	83**
OUTLET NOZ.	07GG	A508,2	NA	0.010	60$	10	45*	60	124	81**
UPPER SHL.	08GH	A533,B,1	NA	0.007	10	42	90*	30	132	86**
UPPER SHL.	08GI	A533,B,1	NA	0.006	0	92	100	40	140	91**
UPPER SHL.	08GJ	A533,B,1	NA	0.008	0	80	122*	62	120	78**
INTER SHL.	09GK	A533,B,1	0.12	0.016	-10	12	83*	23	118	77**
INTER SHL.	09GL	A533,B,1	0.15	0.008	-10	72	104*	44	121	79**
INTER SHL.	09GM	A533,B,1	0.15	0.009	-10	75	105*	45	116	75**
LOWER SHL.	10GN	A533,B,1	0.14	0.010	-20	32	65*	5	127	83**
LOWER SHL.	10GO	A533,B,1	0.12	0.012	-20	10	50*	-10	146	95**
LOWER SHL.	10GP	A533,B,1	0.14	0.010	0	19	73	13	136	88**
BOT. HD. SEG.	12GR	A533,B,1	0.17	0.010	-70	10	73*	13	122	79**
BOT. HD. SEG.	12GS	A533,B,1	0.12	0.010	-40	75	104*	44	125	81**
BOT. HD. SEG.	12GT	A533,B,1	0.11	0.009	-40	49	81*	21	129	84**
BOT. HD. DOM.	13GU	A533,B,1	0.16	0.011	-40	28	70*	10	117	76**

SURV

TABLE B 3/4.4-1 (Continued)

REACTOR VESSEL TOUGHNESS

COMPONENT	COMP CODE	MATERIAL TYPE	CU %	P %	NDTT F	50 FT-LB/35 MIL TEMP F LONG	50 FT-LB/35 MIL TEMP F TRANS	RTNDT F	MIN. UPPER SHELF FT-LB LONG	MIN. UPPER SHELF FT-LB TRANS
WELD	14GV	WELD	0.27	0.023	-70	NA	8*	-52	NA	114**
HAZ CORE	15GV	HAZ			-60	-40	NA	NA	118	NA

$ ESTIMATED (60 F DR 100 FT-LB TEMP, WHICHEVER IS LESS)
* ESTIMATED (77FT-LB/54 MIL TEMP FOR LONGITUDINAL DATA)
** ESTIMATED (65 PER CENT OF LONGITUDINAL SHELF)
SURV PROBABLE MATERIAL FOR SURVEILLANCE PROGRAM ACCORDING TO E185

6.7 SAFETY LIMIT VIOLATION

6.7.1 The following actions shall be taken in the event a Safety Limit is violated:

a. The provisions of 10 CFR 50.36(c)(1)(i) shall be complied with immediately.

b. The Safety Limit violation shall be reported to the Commission and to the Chairman of the NSDRC immediately.

c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the PNSRC. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

d. The Safety Limit Violation Report shall be submitted to the Commission, the Chairman of the NSDRC and the Vice President, Nuclear Engineering within 10 days of the violation.

6.8 PROCEDURES

6.8.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, November, 1972.

b. Refueling operations.

c. Surveillance and test activities of safety related equipment.

d. Security Plan implementation.

e. Emergency Plan implementation.

6.8.2 Each procedure and administrative policy of 6.8.1 above, and changes thereto, shall be reviewed by the PNSRC and approved by the Plant Manager prior to implementation and periodically as set forth in each document.

6.8.3 Temporary changes to procedures of 6.8.1 above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.

c. The change is documented, reviewed by the PNSRC and approved by the Plant Manager within 7 days of implementation.

6.9 REPORTING REQUIREMENTS

ROUTINE AND ABNORMAL OCCURRENCE REPORTS

6.9.1 Information to be reported to the Commission, in addition to the reports required by Title 10, Code of Federal Regulations, shall be in accordance with the Regulatory Position in Revision 3 of Regulatory Guide 1.16, "Reporting of Operating Information - Appendix "A" Technical Specifications."

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Director of the Regulatory Operations Regional Office within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification.

a. Reactor Coolant System Inservice Program Review, Specification 4.4.10.

b. ECCS Actuation, Specifications 3.5.2 and 3.5.3.

6.10 RECORD RETENTION

6.10.1 The following records shall be retained for at least five years:

a. Records and logs of facility operation covering time interval at each power level.

b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.

c. ABNORMAL OCCURRENCE Reports.

d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.

e. Records of reactor tests and experiments.

f. Records of changes made to Operating Procedures.

g. Records of radioactive shipments.

h. Records of sealed source leak tests and results.

i. Records of annual physical inventory of all sealed source material of record.

6.10.2 The following records shall be retained for the duration of the Facility Operating License:

a. Record and drawing changes reflecting facility design modifications made to systems and equipment described in the Final Safety Analysis Report.

b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories.

c. Records of facility radiation and contamination surveys.

d. Records of radiation exposure for all individuals entering radiation control areas.

e. Records of gaseous and liquid radioactive material released to the environs.

f. Records of transient or operational cycles for those facility components designed for a limited number of transients or cycles.

g. Records of training and qualification for current members of the plant staff.

h. Records of in-service inspections performed pursuant to these Technical Specifications.

i. Records of Quality Assurance activities required by the QA Manual.

j. Records of reviews performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10 CFR 50.59.

k. Records of meetings of the PNSRC and the NSDRC.

6.11 RADIATION PROTECTION PROGRAM

Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure.

6.12 RESPIRATORY PROTECTION PROGRAM

ALLOWANCE

6.12.1 Pursuant to 10 CFR 20.103(c)(1) and (3), allowance may be made for the use of respiratory protective equipment in conjunction with

SAFETY EVALUATION BY OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 4 TO LICENSE NO. DPR-58
CHANGE NO. 4 TO TECHNICAL SPECIFICATIONS
INDIANA & MICHIGAN ELECTRIC COMPANY
INDIANA & MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT UNIT 1
DOCKET NO. 50-315

INTRODUCTION

By letters dated December 24, 1974; January 17, 1975; and March 3, 1975; and by telegram dated November 20, 1974, the licensee requested changes to the Technical Specifications for the Donald C. Cook Nuclear Plant, Unit 1. The changes, which apply to Appendix A to the license, include:

1. Changes to clarify the intent of certain specifications that were found by the licensee to be difficult to understand and could be misinterpreted as to their application.
2. Changes to correct proofreading errors.
3. Changes to make specifications consistent with each other.
4. Changes required to correct inadvertent restrictions on plant operation.
5. Changes in reporting requirements.

April 15, 1975

The changes issued in Change No. 4 to the Technical Specifications and the types of changes are identified in the following tabulation. In the tabulation the type of change is identified by number corresponding to the five categories listed above. Principal changes are discussed in the numbered paragraphs following the tabulation. Except as noted in discussion paragraphs 8, 17, and 29, all changes were requested by the licensee in his March 3, 1975 letter. Paragraphs 8, 17, and 29 address the December 24, 1974; January 17, 1975; and November 20, 1974 requests, respectively. The NRC staff's conclusions regarding these changes are given following the discussion.

CHANGES IN TECHNICAL SPECIFICATIONS

Technical Specification Number or Page	Type of Change	Discussion Paragraph
Index page XI	Add Spec 3/4.9.15	-
Definition 1.6	2	-
Definition 1.7	5	1
Definition 1.8	3	2
3.0.2	1	3
3.0.3	1	3
3.0.4	1	3
3.1.1.1	5	1
4.1.1.1.1	2	-
3.1.1.2	5	1
4.1.1.2.1	2	-
4.1.2.4	1	11
4.1.3.1.2	1	4
3.1.3.3	1	5
3.1.3.4	3	14
3.1.3.5 (APPLICABILITY)	2	-
3.1.3.5 (ACTION)	3	14
4.2.2	1	6
4.2.3	1	6
Table 3.3-1 Notation	1	7
Table 3.3-1 Action 2	4	8
Table 3.3-3	2	-
Table 3.3-6, Item 1.b	1	9
Table 3.3-6, Action 20	4	29
Table 4.3-3	3	9
4.3.3.2.b	2	-
3.3.3.3	1,5	12, 1
Table 4.3-4	1	10
4.4.5.4	5	1
3.4.8	5, 1	1, 19
3.4.9.1	5	1
4.4.9.1	5	1
3.4.9.2	5	1
4.4.10	5	1
3.5.2	1	13
4.5.2.a.5	1	20
3.5.3	1	15, 13
3.6.1.3	4	2
4.6.1.3	3	2
4.6.1.5.1	2	-
4.6.1.5.3	1	16
4.6.1.6	5	1

Table 3.6-1	2	-
4.6.5.1	2	-
4.6.5.3.1	4	17
3.6.5.5	1	18
4.6.5.5.1	1	18
3.7.2.1	5	1
4.7.3.1.a.1	1	11
4.7.3.1.a.2 and a.5	4, 1	23
4.7.4.1.a	1	11
4.7.4.1.b	4	23
4.7.5.1	2	27
4.7.6.1	2	27
3.7.7.1	1	28
4.7.7.1.3	5	1
4.8.1.1.1.b	2	-
3.9.3	1	21
4.9.3	1	21
3.9.4c	2	-
3.9.4 APPLICABILITY	1, 2	22
4.9.4	4	30
4.9.4.b	2	-
3.9.9	1	31
4.9.9.2	2	-
3.9.10	2	-
3.9.11	1	24
4.9.11	3	24
3.9.12	1	24
4.9.12	3	24
3.9.14	1	25
4.9.14	1	25
3.9.15	1	25
4.9.15	1	25
3.10.2	4	8
4.10.2	3	8
3.10.5	3	8
6.8.1	1	26
6.9.1	5	1
6.9.2	5	1
6.10.1	2	-
Page B 3/4 4-5	1	19
Page B 3/4 4-7	2	-

DISCUSSION

1. The initially issued Technical Specifications included reporting requirements that were based upon Revision 2 of Regulatory Guide 1.16, "Reporting of Operating Information." Revision 3 of this Guide was published in January 1975. The D. C. Cook Unit 1 Technical Specifications have been modified to include reporting requirements that are consistent with Revision 3 of Regulatory Guide 1.16.

2. The originally-specified leakage rates in Specification 3.6.1.3 are too small to be measurable. The revised Specification includes a leak rate that is measurable and includes the door gasket leak rate in the overall air lock leak rate. It is also consistent with containment leak rates assumed in the accident analyses. The revised specification 4.6.1.3 provides for a meaningful leak test consistent with the LCO and with 10 CFR Part 50, Appendix J. Definition 1.8 has been changed to be consistent with Specifications 3.6.1.3 and 4.6.1.3.

3. Specifications 3.0.2 and 3.0.3 have been changed to preclude a possible misinterpretation to the effect that an ACTION once started had to be completed even though the cause of the ACTION might be corrected while the ACTION was still in progress. Specification 3.0.4 has been changed to clarify the original intent as stated in the change to this Specification.

4. Specification 4.1.3.1.2 has been changed to clarify the intent that rod operability is determined by movement of either a bank of rods or an individual rod. The change from 10 steps to 8 prevents unnecessary actuation of the axial power distribution monitoring system while still maintaining sufficient rod movement (5 inches) to demonstrate operability.

5. Specification 3.1.3.3 has been changed to make it clear that rod drop time is to be measured from the control rod fully withdrawn position rather than permitting it to be measured from a partially withdrawn position.

6. Specification 4.2.2 was changed to clarify the intent that the conservatisms represented by the Power Spike Penalty and the 5% for measurement uncertainty be included in the measured F_Q. Similarly, Specification 4.2.3 now includes for clarification the 4% measurement uncertainty. These conservatisms were intended to be included in the original issue of the Technical Specifications but were inadvertently omitted.

7. The change in the Table Notation of Table 3.3-1 clarifies the intent that, whenever the control rods can be moved, the protective system channels must be operable in accordance with Table 3.3-1.

8. By letter dated January 17, 1975, the licensee requested that Action 2 of Table 3.3-1 be changed to permit use of a reactivity computer during low power physics testing. The computer would derive its input signal from one of the four power range nuclear instrumentation channels. When the reactor is operating at the low power levels experienced during low power testing the power range output signal is not strong enough to drive both the protective instrumentation and the reactivity computer. With the computer in operation, the applicable protective instrumentation would not be operable to fulfill its intended safety function. Therefore, the licensee has proposed that the inoperable channel be placed in the tripped condition. With one channel already tripped, a trip in only one other channel will trip the reactor. Therefore, should a condition exist that normally requires two channels to trip the reactor, the protective action required will be obtained from the tripping of only one channel.

Specification 3.10.5b was also changed to be consistent with the change in ACTION 2 of Table 3.3-1.

The licensee also requested changes in Specification 3.10.2 in order to permit the performance of low power physics tests. The original issue of the specification limited its applicability to power levels above 5%. Such a limitation was never intended, for low power physics testing is also performed

at power levels less than 5%. Surveillance requirement 4.10.2 is also changed to be consistent with the change in Specification 3.10.2.

9. The change in Item 1.b of Table 3.3-6 clarifies the intent that the spent fuel storage area monitor is required to be operable only when fuel is in the storage building, and makes the alarm/trip set point consistent with the requirements of 10 CFR Part 70.24 (a)(2). The change to Table 4.3-3 then makes the surveillance consistent with the LCO.

10. The change in Table 4.3-4 delineates the surveillance requirements for each of the various components of the seismic instrumentation. The original specification did not cover each component.

11. These changes clarify the intent of the specification that a pump that is operating need not be started in order to demonstrate operability; the pump is already shown to be performing its required function.

12. The seismic instrumentation is installed to provide data in case of seismic disturbances. It does not perform a safety-related action. A change in OPERATIONAL MODE does not affect the information that the instrumentation provides. Therefore, Specification 3.0.4 is not applicable.

13. The originally-issued Specifications 3.5.2 and 3.5.3 required a special report in the event of an ECCS actuation. The present change clarifies the staff's intent that a special report is required only if actuation results in injection of cold water into the reactor coolant system. Such an occurrence is of special interest to the Commission because of its desire to be kept informed of the thermal cycling to which systems and components essential to safety may be subjected.

14. The change in Specifications 3.1.3.4 and 3.1.3.5 (ACTION) is necessary in order that testing required under Specification 4.1.3.1.2 can be performed without violation of Specifications 3.1.3.4 and 3.1.3.5.

15. The change to Actions a and b reflects the actual capabilities of the plant. The originally-issued Action a could not be accomplished because the residual heat removal heat exchanger, which is part of the ECC system, must be operable to permit attaining cold shutdown.

16. Survillance requirements 4.6.1.5.1 and 4.6.1.5.2 delineate the particular instruments to be used in determining maximum and minimum temperatures in containment. For determination of nominal temperatures, however, other sensors mounted near the specified sensors may be used. The changed Specification 4.6.1.5.3 reflects this flexibility.

17. By letter dated December 24, 1974, the licensee submitted Amendment 61 to the FSAR, dated December 20, 1974, requesting certain changes to surveillance requirement 4.6.5.3.1b. The intent of this surveillance requirement is to assure that the opening and closing forces on the lower inlet doors remain within prescribed limits. It was originally intended that the opening and closing forces on the inlet doors be measured at the maximum unimpaired open position of 55 degrees. Due to physical limitations, this is not possible. However, the opening and closing forces on the doors vary linearly with the position of the door; hence, measurements at the proposed 40° open position of the door will also yield valid data. We therefore conclude that conducting the tests on the doors at the 40-degree open position proposed by the licensee is acceptable. We have also checked the proposed opening and closing torque values for the doors and conclude that they are not significantly different from those originally specified and will provide assurance of door operability.

18. The change to Specification 3.6.5.5 and surveillance requirement 4.6.5.5.1 clarifies the intent of the specification to permit the personnel access doors and equipment hatches to be open for the short periods of time needed to permit transit of personnel between the upper and lower compartments of the containment during reactor operation.

19. It is common, when a reactor trips, for iodine concentration in the reactor coolant to show a transient increase over the steady-state concentration. However, so long as the peak value of the transient concentration remains at or below certain values, offsite doses in case of an accident would not exceed the maximum allowable under 10 CFR Part 100.

As applied to this specification, the requirements of Specification 3.0.4 could be interpreted as preventing reactor startup following trip until the iodine concentration had decayed to an iodine 131 dose equivalent less than 1.0 uCi/gm. It was never the intent to prevent reactor startup in such an event. So long as the dose equivalent I-131 remains below the values given in Figure 3.4-1, reactor startup is permitted. Therefore, ACTION a. of the Specification has been changed to indicate that Specification 3.0.4 is not applicable.

The basis (page B 3/4 4-5) for this Specification has been changed to clarify the intent that the surveillance data will be used to learn more about the iodine spiking phenomenon and may provide justification for changing the frequency of isotopic analysis after more operating experience is gained.

20. The change to surveillance requirement 4.5.2 reflects the fact that cycling of some valves would result in the injection of ECCS water into the reactor coolant system. The staff believes that the resultant thermal cycling, referenced in paragraph 13 above, is not desirable because it may contribute to the reduction in fatigue life of the components subject to the cycling.

21. Specifications 3.9.3 and 4.9.3 were changed to clarify the intent that the specification applies only to the movement of irradiated fuel. The movement of such things as in-core instrumentation or samples need not await fuel decay.

22. Specification 3.9.4 was changed to clarify the intent that the specifications are not applicable when refueling operations do not involve an open source of radioactivity.

23. The changes to surveillance requirements 4.7.3.1.a.2 and 4.7.4.1.b provide demonstration of pump operability for all system operating modes rather than for only one point on the pump performance curves. The change to surveillance requirement 4.7.3.1.a.5 clarifies the intent to apply the requirement only to safety related equipment.

24. The original intent of specifying minimum water levels over irradiated fuel is to maintain radiation levels at personnel working stations as low as practicable. An irradiated core in the reactor vessel or storage pool represents a large source of radiation. The minimum water depth of 23 feet provides adequate shielding for the large source. It also

assures that there will be sufficient water coverage to provide adequate shielding during movement of irradiated fuel into or out of the reactor, fuel transfer canal, and fuel storage racks. Therefore, Specifications 3.9.11 and 3.9.12 have been changed to clarify the intent and applicability of the specifications, and survillance requirements 4.9.11 and 4.9.12 have been changed to be consistent with their LCOs.

25. Specification 3.9.14 has been completely rewritten. The essential features of this specification are now presented in Specifications 3.9.14 and 3.9.15 in order to clarify their applicabilities to the various operating conditions expected during fuel movement (3.9.14) and fuel storage (3.9.15). When irradiated fuel has decayed less than 60 days, its fission product inventory is sufficiently large that it is prudent to have the fuel storage pool ventilation system operating in order to reduce offsite doses in the unlikely event of a fuel handling accident. After the fuel has decayed for 60 days, the fission product inventory is significantly reduced such that an operable ventilation system is adequate for the protection of the health and safety of the public. The surveillance requirements in 4.9.14 and 4.9.15 are consistent with their related Limiting Conditions for Operation. The specifications are consistent with the accident analyses for which the ventilation system has been designed and with present NRC requirements.

26. ANSI N18.7 includes consideration of aspects of operation not related to safety. Therefore, Specification 6.8.1 has been changed to narrow its scope of applicability to safety-related aspects.

27. Surveillance requirements 4.7.5.1 and 4.7.6.1 that were included in the initial issuance of the Technical Specifications were intended to be applied to plants having heaters upstream of the filters to dry the air entering the filters. The D. C. Cook plant does not include such heaters. A testing time of 15 minutes is adequate to demonstrate operability of the filter train equipment.

28. Specification 3.7.7.1 is intended to assure that sealed sources remain sealed to prevent spread of contamination. The specification does not apply to reactor operation. Therefore, Specifications 3.0.3 and 3.0.4 do not apply.

29. By telegram dated November 20, 1974, the licensee requested relief from the requirements of ACTION 20 of Table 3.3-6 of Specification 3.3.3.1 during performance of the containment integrated leak rate test. The test is conducted at a containment pressure of 12 psig but the containment radiation process monitors become inoperable during the test because they isolate at 3 psig. When these monitors are inoperable, ACTION 20 requires the taking of grab samples of containment

atmosphere at least once every 8 hours. Since the containment is completely "bottled up" during the leak rate test, obtaining grab samples would interfere with the test.

Appendix J of 10 CFR Part 50 requires that Type A tests (the integrated leak rate test is a Type A test) be performed with the reactor coolant system open to containment atmosphere. Therefore, the test is performed with the reactor shut down, the reactor coolant temperature less than 200 F, and the reactor coolant system pressure boundary subject to no greater pressure differential than the hydrostatic head of water above the lowest elevation of the system. With the reactor coolant system in such a condition, the occurrence of a LOCA is extremely unlikely. Moreover, systems that are required to maintain the plant in a safe condition during the test must be operable. In addition, at least one containment area radiation monitor must be operable during the test, providing indication of the existence inside containment of high radiation levels. Therefore, the specification has been changed to indicate that ACTION 20 is not applicable during performance of containment integrated leak rate tests.

30. The surveillance Specification 4.9.4 was changed to require determination of operability within 72 hours of the start of the operations involved rather than within 24 hours. Experience has shown that the extra time permits a more orderly preparation of the facility for refueling operations, thus reducing the probability of error in the conductance of the check-out procedures. The staff believes that the earlier demonstration of operability will not significantly increase the probability of equipment failure in the intervening time interval.

31. The change to Specification 3.9.9 clarifies the intent that the requirements of specification 3.3.3.1 must also be considered.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.