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Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Response to Generic Letter 88-17

References: 1) "Loss of Decay Heat Removal," Generic Letter 88-17 received on November 4, 1988
2) Letter from D. C. Hintz (WPSC) to Document Control Desk dated January 3, 1989

By means of Generic Letter 88-17 (reference 1), the NRC requested licensees to respond regarding their plans with respect to certain recommendations for operating the NSSS on shutdown cooling. The request for information included expeditious actions which were recommended to be implemented prior to operating in a reduced inventory condition, and a schedule for implementation of certain programmed enhancements.

WPSC's response to the eight expeditious actions was provided in our 60-day response to the generic letter (reference 2). Attachment 1 to this letter provides our response to the six recommended programmed enhancements.

If you need further information or clarification please feel free to contact my staff.

Sincerely,

D. C. Hintz
Vice President - Power Production

SLB/jms
Attach.
cc - Mr. Robert Nelson, US NRC
US NRC, Region III

Subscribed and Sworn to
Before Me This 2nd Day
of February 1989

Jeanne M. Stein
Notary Public, State of Wisconsin

My Commission Expires:
June 23, 1991

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Attachment 1

To

Letter from D. C. Hintz (WPSC) to Document Control Desk (NRC)

Dated

February 2, 1989

NRC Recommendation 1

Instrumentation

Provide reliable indication of parameters that describe the state of the RCS and the performance of systems normally used to cool the RCS for both normal and accident conditions. At a minimum, provide the following in the CR:

a) two independent RCS level indications

b) at least two independent temperature measurements representative of core exit whenever the RV head is located on top of the RV (We suggest that temperature indications be provided at all times.)

c) the capability of continuously monitoring DHR system performance whenever a DHR system is being used for cooling the RCS.

d) visible and audible indications of abnormal conditions in temperature, level and DHR system performance.

WPSC Response to Recommendation 1

When developing a methodology to implement this recommendation, WPSC found it necessary to make certain assumptions in order to bound the conditions for which the instrumentation would need to be in service. The RCS "normal condition" referenced encompasses NSSS operation when the residual heat removal (RHR) system is being used for decay heat removal in preparation for or operation in a reduced inventory condition. Under this premise, the "accident condition" referenced is a loss of RHR system operation. Modes of RCS operation for which the steam generators (SGs) are normally relied upon for cooling are considered beyond the scope of this generic letter.

WPSC Response to Part (a) of Recommendation 1

The NSSS can be in a mode of RHR system cooling for a multitude of reasons. These could be technical specification required mode reductions, secondary side equipment maintenance, or in preparation for a refueling outage and/or NSSS equipment maintenance. In some of these cases, e.g., secondary side components which can be returned to service in a short time, the RCS water level would not

be reduced below the normal operating band. In this case the two methods for monitoring RCS inventory are the pressurizer cold calibrated level channel, and the volume control tank (VCT) level. Both of these level indications are available in the control room and there is a high and low level alarm associated with VCT inventory. If it is necessary to drain the RCS below the range of the pressurizer level instrumentation, e.g., in preparation for a refueling outage, then the refueling water level systems will be valved into service.

The recommendation for two independent refueling water level systems will be satisfied by utilizing an existing system and installing a new system prior to being in a reduced inventory condition for the 1989 refueling outage. The water leg for the existing system is off the loop A intermediate leg. The system is hard piped, with a sight glass for local indication, and a d/p transmitter which provides an input to the operators' control panel as well as to the plant process computer. The reference leg is vented to the containment atmosphere.

The new refueling water level indication system will consist of two d/p transmitters, one narrow and one wide range. The water leg will be the thimble guide tube used for the RVLIS, and for the 1989 refueling outage draindown the reference leg will be vented to containment atmosphere. Indication of both narrow and wide range level will be available on the plant process computer.

To compensate for potential level inaccuracies due to pressure differences between the RCS and the containment building atmosphere, WPSC plans to reroute the reference leg for both systems to the pressurizer. Separate reference leg taps will be utilized to preserve independence. This will be completed by the end of the 1989 refueling outage. This delay is necessary to allow the operations and design personnel time to evaluate the systems' performance and verify the location of instrument taps which are only accessible during nonpower operation. In the interim, reduced inventory operation will be performed in conjunction with

either the removal of the two pressurizer safety valves, or with inventory in the secondary side of at least one steam generator. Either configuration will minimize the pressure differences between the RCS (water leg) and the containment building (reference leg). In addition, operator training has heightened the awareness of the potential for pressure differences, and precautions will be added to the RCS draindown procedure to ensure the draindown evolution is performed in a slow and controlled manner.

The installation of the new refueling water level system, and modification to the existing refueling water level system, are being performed as a part of the KNPP design change program. This program will ensure that a complete system design review, including instrument error analysis, is performed; and that the equipment is installed using approved engineering practices. After the equipment is considered operational the necessary information for system maintenance and operation is made available to the appropriate plant groups. The two level systems will be permanently installed and dedicated to the single function of providing RCS water level indication during RCS nonpower conditions. The operations group will be responsible for verifying proper system configuration and valve positions, and the Instrument and Controls group will be responsible for calibrating the transmitters prior to operating in a reduced inventory condition for each scheduled refueling outage. The appropriate procedures will be developed for these activities. The above stated actions will ensure that the refueling water level systems are properly designed, installed and maintained.

Information provided by Westinghouse on level gradients throughout the RCS will be reviewed to estimate a relationship between the RCS level at the RHR suction inlet nozzles versus the measured levels. This information will be provided to the operators to aid them in understanding the anticipated differences in the level indicating systems for the 1989 refueling outage. While it is recognized that level gradients exist, WPSC believes that there are plant specific flow

dynamics which must be observed and accounted for when applying the Westinghouse conceptual information. For this reason, the level systems' responses will be monitored during the 1989 outage and significant observations will be factored into future procedure revisions and operator training as needed.

The refueling water level instrumentation, as described above, will provide indication consistent with the recommendation for reliable normal and loss of RHR cooling accident condition monitoring in the control room. WPSC's response to parts (c) and (d) of recommendation 1 discusses the type of control room (CR) indication and alarms that will be provided.

WPSC Response to Part (b) of Recommendation 1

Two independent methods of RCS temperature measurement will be provided by maintaining at least two core exit thermocouples (TCs) connected when the head is on the reactor vessel (RV). The exceptions to this are when the TCs are disconnected for a short time period in preparation for RV head lift, just prior to removing the RV head and until they are reconnected shortly after the head is reset. The TCs provide a temperature measurement representative of the core exit conditions for both normal and loss of RHR accident conditions with indication in the CR.

A hardware modification to use a temporary electrical cable and connection will be assessed after the 1989 refueling outage. This may be necessary because the electrical cables used during power operation can be easily damaged. With the amount of personnel working on and around the RV head during refueling outages using a temporary cable may prove to be more reliable.

WPSC Response to Parts (c) and (d) of Recommendation 1

The following indications of RHR system performance are presently available in the CR; RHR pump discharge pressure, RHR pump motor amperage, RHR system combined flowrate, RHR heat exchanger inlet and outlet temperature, RCS core exit temperature when the RV head is on, pressurizer level on the cold calibrated level channel, VCT level, and RCS refueling water level when valved into service. There is also local indication of RHR pump suction pressure and RCS refueling water level.

To assist the operators when using the RHR system for cooling, selected performance parameters will be available on the plant process computer system (PPCS) for the 1989 refueling outage. Among these are; narrow and wide range RCS refueling water level; RCS temperature when the RV head is on; and a combined (A and B train) RHR system flowrate. A computer alarm will be associated with the level and temperature indication. This alarm setpoint will be established by the CR operators once desired steady state conditions are established.

Subject to a human factors review by the Control Room Design Review Committee, selected performance parameters will be coordinated as a single group function on the Safety Assessment System (SAS) by the end of the 1990 refueling outage. Indications that are potential candidates for the SAS display are:

Refueling water level, both narrow and wide range.

RCS core exit temperature when the RV head is on.

RHR pump discharge pressure, train A and B.

RHR pump suction pressure, train A and B.

RHR pump motor amperage, train A and B.

RHR flowrate, train A and B.

To support this CR display new RHR pump suction pressure and flow rate instruments will be installed prior to the end of the 1990 refueling.

WPSC intends to use the SAS because it has the ability to provide continuous, reliable indication; the display screen is located in a central, visible area of the CR; the instantaneous parameters can be presented along with a trend of recent historical data (e.g., 30 minutes or greater); and the display function will be unique to RHR system cooling operation.

The PPCS will be utilized to monitor and provide an audible alarm for abnormal RHR performance. The alarm setpoint will normally be established by the control room operators, once desired steady state conditions are reached. While there is not a viable integrated alarm for RHR system performance, the alarm can be set to annunciate if there is a small deviation from the desired steady state condition in any one of the performance parameters. A procedure is being written to provide the operators with guidance for establishing the alarm setpoints, and contingency actions to monitor other control room indications, or record local data if the SAS or PPCS is unavailable. This combination of features will provide the operators with visible and audible indication of abnormal conditions in temperature, level and RHR system performance.

NRC Recommendations

Procedures

Develop and implement procedures that cover reduced inventory operation and that provide an adequate basis for entry into a reduced inventory condition. These include:

a) procedures that cover normal operation of the NSSS, the containment, and supporting systems under conditions for which cooling would normally be provided by DHR systems.

b) procedures that cover emergency, abnormal, off-normal, or the equivalent operation of the NSSS, the containment, and supporting systems if an off-normal condition occurs while operating under conditions for which cooling would normally be provided by DHR systems.

c) administrative controls that support and supplement the procedures in items (a), (b) and all other actions identified in this communication, as appropriate.

WPSC Response to Part (a) of Recommendation 2

Operating procedures are being revised and where appropriate, new procedures written to address operation of the NSSS, containment, and support systems when the RHR system is used for RCS cooling. WPSC's bases for entry into and operation in a reduced inventory condition are; 1) that precautions have been taken to prevent a loss of RHR cooling accident, 2) the equipment and procedures necessary to mitigate a loss of RHR accident before core damage occurs are available, and 3) the operators have the ability to minimize the potential for a release of radioactive materials if an accident were to occur.

Three procedures which cover the normal operation of the NSSS, containment, and support systems when the RHR system is being used for cooling are; N-RHR-34, "Residual Heat Removal System Operation", N-RHR-34C, "RHR Operation at a Reduced Inventory Condition" and N-RCS-36E, "Draining the Reactor Coolant System". Summarized below is a culmination of the limitations, precautions and required plant initial conditions contained in these procedures which pertain to reduced inventory operation:

1) Two independent methods of RCS refueling water level indication must be in service prior to reaching a reduced inventory condition. Implicit in this statement is that the level systems are responding as expected.

2) The total RHR system flowrate must not exceed the recommended flowrate in order to avoid air ingestion.

3) RCS draining shall be performed in a slow and controlled manner. For the 1989 refuleing outage the control operators will be cautioned to remain cognizant of RCS pressure increases or decreases which could adversely affect the accuracy of the level instrumentation, and

4) Maintenance and test activities that could affect the stability of the RCS, RHR system and systems that communicate with the RCS or RHR, and could affect decay heat removal or RCS inventory, should not be performed.

The above limitations are imposed to control and monitor RCS level. This is based on industry events which show that inadequate inventory is the greatest contributor to loss of RHR cooling accidents.

5) Time in a reduced inventory condition must be minimized and should be avoided if possible,

6) An unobstructed hot leg side opening, of a magnitude to prevent pressurizing the RCS should be established before reaching a reduced inventory condition,

7) Avoid placing the RCS in an adverse condition, i.e., cold leg side opening(s) totaling greater than one square inch with no hot leg side opening. If this configuration cannot be precluded then either maintain the containment closed, or be able to be closed within 30 minutes,

8) If plant conditions and scheduled work activities permit, maintain at least one steam generator water filled, and

9) Maintain at least one high head safety injection pump and one other means of adding inventory in service prior to and when operating in a reduced inventory condition.

The limitations discussed in items 5 through 9 above recognize that the consequences of a loss of RHR accident can vary significantly depending on the plants' initial conditions. By maintaining the favorable conditions of either having one steam generator available for heat removal, or a hot leg side vent large enough to prevent RCS pressurization, the operators have adequate response time and a variety of recovery actions available to them. Maintaining two methods of inventory addition will allow the operators to successfully mitigate a loss of RHR accident before core damage occurs.

10) When the RV head is on the vessel, two core exit TCs must be inservice when in a midloop condition, and

11) At least one barrier, capable of limiting the release of radioactive materials, should be maintained operable or closed for each containment penetration. If it is not possible to maintain the penetration closed then its status shall be recorded on the Open Boundary Tracking Log.

The limitations discussed in items 10 and 11 provide the operators with indication of core temperature and the ability to minimize the potential for a release of radioactive materials if an accident occurs.

All of the precautions and limitations discussed above are extracted from procedures that are presently being revised and scheduled to be implemented by the 1989 refueling outage. However, it should be noted that the procedure contents are subject to change based on operating experiences, and new information as it is obtained from Westinghouse, the NRC, or other industry sources.

WPSC Response to Part (b) of Recommendation 2

In the unlikely event that RHR system cooling is lost, the operators are provided with a variety of response actions in operating procedure A-RHR-34, "Loss of Residual Heat Removal Cooling". The hierarchy of operator action is to first protect the RHR pumps, re-establish conditions for RHR system operation and restore RHR cooling. If RHR cooling cannot be restored contingency actions will be implemented to prevent core damage and limit the release of radioactive materials. These contingency actions are to establish alternate methods of core cooling, maintain RCS inventory, and take actions to close containment. This information is taken from interim guidance provided by the Westinghouse Owners' Group (WOG).

Operating procedure A-RHR-34 is entered when an operating RHR pump displays signs of cavitation or trips, RCS overpressurization exists, RCS temperature increases, there is a reduction of RCS water inventory or upon operator discretion when responding to abnormal or unexplained indications. Graphs relating the RCS refill rate necessary to make up for boiloff rate, versus time after shutdown and RCS time to reach saturated conditions after shutdown, are included to assist the operators in their decision making.

The content and format of operating procedure A-RHR-34 will be revised after the WOG finishes their work on the emergency response guidelines (ERGs) for midloop operation. These guidelines are expected in February 1989, but the verification and background documents will not be completed until late summer 1989, if additional funding is approved by the member utilities. Therefore, WPSC does not anticipate implementing the ERGs for mid-loop operation until the 1990 refueling outage.

WPSC Response to Part (c) of Recommendation 2

Administrative controls already exist at KNPP to give the shift supervisor ultimate control over test and work activities that are performed. The shift supervisor will use this authority to ensure that support and backup equipment are available, activities that could lead to known perturbations of the RCS and support systems are controlled, and an open boundary tracking log is maintained when in a reduced inventory condition.

During scheduled outages, the Outage Coordinator, aided by the plant management staff, will assist the shift supervisor by reviewing work activities in advance and when possible scheduling activities so the plant is not knowingly placed in a vulnerable configuration.

NRC Recommendation 3

Equipment

a) Assure that adequate operating, operable, and/or available equipment of high reliability is provided for cooling the RCS and for avoiding a loss of RCS cooling.

b) Maintain sufficient existing equipment in an operable or available status so as to mitigate loss of DHR or loss of RCS inventory should they occur. This should include at least one high pressure injection pump and one other system. The water addition rate capable of being provided by each equipment item should be at least sufficient to keep the core covered.

c) Provide adequate equipment for personnel communications that involve activities related to the RCS or systems necessary to maintain the RCS in a stable and controlled condition.

WPSC Response to Part (a) of Recommendation 3

The RHR system, which provides normal cooling to the RCS during reduced inventory conditions, is a highly reliable system which is powered from safeguards buses with emergency diesel generator backup. KNPP Technical Specification 3.1.a.2 states:

a) TWO residual heat removal trains shall be operable whenever the average reactor coolant temperature is less than or equal to 200°F and irradiated fuel is in the reactor, except when in the refueling mode one train may be inoperable for maintenance.

   1. Each residual heat removal train shall be comprised of:

      a) ONE operable residual heat removal pump

      b) ONE operable residual heat removal heat exchanger

      c) An operable flow path consisting of all valves and piping associated with the above train of components and required to remove decay heat from the core during normal shutdown situations. This flow path shall be capable of taking suction form the appropriate reactor coolant system hot leg and returning it to the reactor coolant system.

   2. If one residual heat removal train is inoperable, corrective action shall be taken immediately to return it to the operable status.

KNPP has administratively interpreted that one train of RHR cannot be removed from service unless there is 23 feet of water above the vessel flange. In addition, operating procedure N-RC-36E, "Draining the Reactor Coolant System", requires that one train of RHR demonstrate the ability to remove decay heat prior to entering a midloop condition. This will ensure redundant cooling capacity.

An operable RHR system supported by the instrumentation and procedures discussed in other sections of this response, will help preclude a loss of RCS cooling accident. One of the concerns identified by the NRC in the generic letter is the automatic closure interlock (ACI) feature which isolates the RHR system from the RCS on high pressure. This automatic feature no longer exists at KNPP.

WPSC Response to Part (b) of Question 3

Operating procedure N-RHR-34C "RHR Operation at a Reduced Inventory Condition" will require that one high head safety injection (SI) pump, and one other method of adding inventory be available when the RCS is in a reduced inventory condition. The other means of adding inventory may be the other SI pump, one of the three positive displacement charging pumps, or gravity feed from the refueling water storage tank (RWST). Available is interpreted to mean that the device and its associated flow path have a reliable power supply and source of water, and operator action may be relied upon to align and start components.

The water addition rate necessary to prevent core uncovery is dependent on the initial RCS configuration and time after shutdown. Below is a summary of five initial RCS configurations and typical RCS responses following a loss of RHR accident. The water addition rate necessary to prevent core uncovery for each is based on information from WCAP-11916 "Loss of RHRS Cooling While the RCS is Partially Filled", with plant specific refinements performed by Westinghouse for the KNPP.

Case 1: The RCS is intact, or nearly intact, with no water in the steam generators (SG), and no obstructions to the flow of vapor on the hot leg side (e.g., nozzle dams are not in place.) This configuration bounds the conditions when the pressurizer PORV's are open to the pressurizer relief tank (PRT) and the ¾" vent lines are open to containment. If RHR is lost in this configuration, then

inventory is not depleted until RCS pressure reaches the setpoint of the low temperature over pressure (LTOP) relief valve which is nominally 500 psig. Based on the typical two loop plant discussed in WCAP-11916, it will take greater than an hour to reach the LTOP setpoint.

In this situation the operators' response will be to increase RCS level in order to re-establish RHR system operation. To restore RCS inventory, gravity feed from the RWST can be used if initiated before RCS pressure exceeds the RWST water head. This time frame is approximately 15 to 20 minutes. If gravity feed is not possible, then a positive displacement charging pump can be used. If RHR cooling cannot be restored, then the operators' contingency actions would be to remove decay heat by establishing water level in the secondary side of one SG (see case 2 below). As a last resort, after RCS pressure reaches the setpoint of the LTOP relief valve, or if another discharge path can be opened, feed and bleed can be established.

Case 2: The RCS initial conditions are similar to case 1 except there is water in the secondary side of one SG. If RHR cooling is lost, the secondary heat sink will significantly reduce the rate of the RCS pressure increase. This means the LTOP setpoint will not be reached for several hours and gravity feed will be viable for approximately 30 minutes. If RHR cooling cannot be re-established, feedwater or auxiliary feedwater addition to compensate for SG secondary side boiloff is an acceptable means of providing alternate cooling for several hours.

Case 3: The RCS has a large hot leg side opening with an unobstructed flowpath to the opening. Based on analysis work performed by Westinghouse the removal of two pressurizer safety valves at approximately 100 hours after shutdown will provide a vent path large enough to maintain the RCS pressure less than approximately 2 psig following the onset of boiling. A plant specific analysis of the

minimum makeup required to compensate for RCS boiloff versus time after shutdown was performed as a part of this effort. The results demonstrate that the makeup required to prevent core uncovery is within the capacity of a single charging pump.

Case 4: The RCS has a cold leg side opening of greater than 0.05 ft^2 with no obstruction to vapor flow (e.g., nozzle dams not installed). If the opening is due to the removal of a SG cold leg side primary manway then the RCS response is bounded by case 3. For other large cold leg openings the RCS will pressurize until the water in the intermediate leg piping is expelled out the cold leg opening. This establishes a vent opening and the RCS inventory will then be depleted at the boiloff rate. Establishing makeup flow to the intact cold leg within 30 minutes following the loss of RHR at a rate which exceeds boiloff will typically be sufficient to prevent core uncovery.

Case 5: Large cold leg side opening with obstructed hot legs (e.g., hot leg SG nozzle dams installed). This configuration is of the greatest concern because core uncovery can occur rapidly. If RHR cooling is lost with the RCS in this condition, upper plenum injection at a high flow rate is effective to suppress boiling and refill the RCS. According to WCAP-11916 the required flow rate is within the capacity of one high-head safety injection pump for a 2-loop plant.

WPSC's principal intent is to avoid adverse configurations such as this case. This will typically be addressed by removing the two pressurizer safety valves to create a hot leg side vent path. If entering into an adverse configuration is unavoidable, then the time duration will be minimized to the extent practical. In addition, the operators will be aware of the plants' vulnerability and be able to expeditiously close containment if RHR system cooling is lost. This philosophy is prevalent in the operating procedures and SG nozzle dam installation and removal procedure.

In summary, for cases 1 through 4, nozzle dams are not in place, and the operators have a variety of recovery methods available. In cases 1 and 2, inventory loss due to boiloff is not a concern; RWST gravity feed, one charging pump, or one SI pump will be sufficient to increase level to the point of restarting the RHR pump(s). In cases 3 and 4, one charging pump will be sufficient to prevent core uncovery. In order to recover RCS inventory so that RHR can be established, the recommended refill rate is 2 to 3 times the boiloff rate. At KNPP, this can be accomplished by two charging pumps or one SI pump. In the unlikely event the plant is in a configuration similar to case 5, upper plenum injection with one SI pump will prevent core uncovery.

In general, these five cases represent the RCS configurations of interest. By maintaining one SI pump and one other method of inventory addition in service, there will be sufficient equipment available to prevent core uncovery for all RCS conditions.

WPSC Response to Part (c) of Recommendation 3

Adequate equipment for personnel communications presently exist at KNPP. There is a five channel gaitronics system which is available throughout the plant and supplied by safeguards power. In addition, the operators have sound powered phones and portable 2-way radios at their disposal.

NRC Recommendation 4

Analyses

Conduct analyses to supplement existing information and develop a basis for procedures, instrumentation installation and response, and equipment/NSSS interactions and response. The analyses should encompass thermodynamic and physical (configuration) states to which the hardware can be subjected and should provide sufficient depth that the basis is developed. Emphasis should be placed upon obtaining a complete understanding of NSSS behavior under manpower operation.

WPSC Response to Recommendation 4

WPSC is a member of the Westinghouse Owners Group (WOG) with full access to the analytical documents they have prepared. The WOG generic information with some plant specific refinements, and information provided in the generic letter have been used to develop a basis for reduced inventory operation at KNPP. In addition, two members of WPSC's nuclear staff attended a two day workshop on mid-loop operation which was sponsored by the WOG.

The inclusion of the above mentioned analytical information as a basis for procedures, instrumentation and equipment is discussed in WPSC's response to the various NRC recommendations. WPSC is committed to further evaluations and/or analyses in an effort towards better understanding of NSSS behavior during nonpower operation. This is evidenced by continued funding of the WOG work on emergency response guidelines, and reviews of industry events made available by INPO and the NRC.

NRC Recommendation 5

Technical Specifications

Technical specifications (TSs) that restrict or limit the safety benefit of the actions identified in this letter should be identified and appropriate changes should be submitted.

WPSC Response to Recommendation 5

The NRC has identified two common TSs that could adversely affect RHR performance during reduced inventory conditions. These are a minimum RHR system flowrate and autoclosure interlock on high RCS pressure. Neither one of these specifications are applicable to KNPP.

WPSC concurs with NRC's position to simplify TSs for nonpower operation. To this end the requirements for containment closure, instrumentation, and backup equipment availability will be implemented through plant operating procedures.

In addition, WPSC is continuing to pursue a TS change which would require placing the plant in an intermediate instead of cold shutdown upon the long-term loss of a component cooling water (CCW) pump. This would prevent having to place the plant in a mode which would demand the maximum CCW system support for decay heat removal. By remaining above 350°F, the SGs are still available for decay heat removal. This TS change was proposed in our response to GL87-12.

NRC Recommendation 6

RCS perturbations

Item (5) of the expeditious actions should be re-examined and operations refined as necessary to reasonably minimize the likelihood of loss of DHR.

WPSC Response to Recommendation 6

Precautions have been added to operating procedure N-RHR-34C, "RHR Operation at a Reduced Inventory Condition" to avoid operations that could lead to known perturbations of the RCS and support systems. During refueling outages, major maintenance and test activities are planned in advance. These activities are scheduled by the Outage Coordinator and reviewed by the plant management staff. For the 1989 and future refueling outages a general rule will be to avoid scheduling activities that will knowingly challenge the stability of the RCS and support systems during reduced inventory operation. Many of the activities will have to be reviewed on a case by case basis. Since the time normally spent in midloop is minimized to the extent possible, it will be possible to adjust the schedule accordingly. Special consideration will have to be given to maintenance work on the RCS up to the first isolation valve and certain Inservice Inspection examinations. Attempts will be made to schedule these activities either near the end of outage when decay heat is low, or when the core is unloaded.