November 14, 2006

L-MT-06-071
10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Monticello Nuclear Generating Plant
Docket 50-263
License No. DPR-22

License Amendment Request: One-Time Low Pressure Coolant Injection Loop Select Logic Time Delay Relay Surveillance Interval Extension

Pursuant to 10 CFR 50.90, the Nuclear Management Company, LLC (NMC) submits this proposed amendment requesting a one-time extension to the quarterly surveillance interval specified in the Technical Specifications (TS) for the following low pressure coolant injection loop select logic functions in Table 3.3.5.1-1 of Specification 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation:"

2.k. Reactor Steam Dome Pressure - Time Delay Relay (Break Detection)

2.l. Recirculation Pump Differential Pressure - Time Delay Relay (Break Detection)

2.m. Recirculation Riser Differential Pressure - Time Delay Relay (Break Detection)

Performance of quarterly channel functional tests and calibrations of these relays is required in accordance with the recently implemented improved standard TS by January 29, 2007. On-line testing of these time delay relays poses an unacceptable risk for an inadvertent plant transient resulting in an unnecessary challenge to safety systems. NMC requests a one-time extension of the surveillance interval for these time delay relays until the surveillance(s) can be performed with the unit shutdown during the upcoming refueling outage (scheduled to begin March 12, 2007).

Enclosure 1 provides a description of the proposed change and includes the technical evaluation and associated no significant hazards and environmental considerations. Enclosure 2 provides the existing TS pages marked-up to indicate the proposed changes. Enclosure 3 provides the re-typed (clean) TS pages.

NMC requests approval of the proposed license amendment by January 26, 2007, with an implementation period of 30 days.

This letter makes no new commitments or changes to any existing commitments.

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

I declare under penalty of perjury that the foregoing is true and correct.
Executed on November 14, 2006.

J. T. Conway
Site Vice President, Monticello Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosures (3)

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC
Minnesota Department of Commerce

ENCLOSURE 1

DESCRIPTION OF CHANGE

LICENSE AMENDMENT REQUEST
ONE-TIME LOW PRESSURE COOLANT INJECTION LOOP SELECT LOGIC TIME DELAY RELAY SURVEILLANCE INTERVAL EXTENSION

1.0 INTRODUCTION

Pursuant to 10 CFR 50.90, the Nuclear Management Company, LLC (NMC) submits this proposed amendment requesting a one-time extension to the quarterly surveillance interval specified in the Technical Specifications (TS) for the following low pressure coolant injection (LPCI) loop select logic functions in Table 3.3.5.1-1 of Specification 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation:"

2.k. Reactor Steam Dome Pressure - Time Delay Relay (Break Detection)

2.l. Recirculation Pump Differential Pressure - Time Delay Relay (Break Detection)

2.m. Recirculation Riser Differential Pressure - Time Delay Relay (Break Detection)

On October 29, 2006, the NMC implemented the Improved Standard Technical Specifications (ITS) at the Monticello Nuclear Generating Plant (MNGP). The above time delay relays were not included in the previous MNGP custom TS. Surveillance Requirements (SR) 3.3.5.1.2 and 3.3.5.1.4 require a CHANNEL FUNCTIONAL TEST and a CHANNEL CALIBRATION, respectively, to be performed every 92 days. Quarterly surveillance testing of these time delay relays is required by January 29, 2007.

The original design of General Electric (GE) Boiling Water Reactors (BWR) of the BWR/3 and 4 vintage included a LPCI loop select logic used to determine the broken recirculation loop in the event of a design basis Loss of Coolant Accident (LOCA) and to direct flow from the Residual Heat Removal (RHR) LPCI mode pumps to the discharge line of the unbroken loop. GE subsequently offered a LPCI modification resulting in the loop select logic being removed from most of the applicable BWRs. In the ITS NUREG for the BWR/4 plant design (NUREG-1433) (Reference 1), only plants with the LPCI loop select logic design removed were considered. LPCI loop select logic was included on a case-by-case basis during ITS conversion by the few BWR units retaining the logic (including the MNGP).

The LPCI loop select logic was not designed to be tested on-line and testing of the above time delay relays has never been performed on-line at the MNGP. NMC failed to recognize the inappropriateness of the proposed LPCI loop select time delay relay surveillance intervals during ITS development. On-line testing of these time delay relays represents an unacceptable risk for an inadvertent plant transient resulting in unnecessary challenges to safety systems. Consequently, NMC requests a one-time extension of the surveillance interval for these LPCI loop select logic time delay relays until the surveillance(s) can be safely performed with the unit shutdown during the upcoming 2007 Refueling Outage (RFO).

By a separate license amendment request, NMC intends to revise the channel functional testing and channel calibration surveillance interval for these three LPCI loop select logic time delay relay functions, to that which should have originally been specified in the MNGP ITS conversion amendment application, i.e., 24-months, consistent with the once a cycle duration approved by the NRC for other current ITS conversions for BWR plants with LPCI loop select logic.

2.0 PROPOSED CHANGES

Specification 3.3.5.1 requires the instrumentation for each LPCI loop select logic time delay relay function in Table 3.3.5.1-1 to be OPERABLE in the applicable modes. SR 3.3.5.1.2 requires a CHANNEL FUNCTIONAL TEST and SR 3.3.5.1.4 requires a CHANNEL CALIBRATION to be performed at a specified frequency of 92 days.

In accordance with MNGP Operating License (OL) License Condition number 2.C.9, "Implementation of New and Revised Surveillance Requirements," added as part of ITS approval to the MNGP OL, "the first [surveillance] performance [for new surveillance requirements] is due at the end of the first surveillance interval, which begins on the date of implementation of this amendment." NMC implemented the ITS on October 29, 2006. Accordingly, the first surveillance performance at the specified quarterly frequency of 92 days is required on January 29, 2007.

NMC proposes to add a new footnote (f) to SR 3.3.5.1.2 and SR 3.3.5.1.4 in Table 3.3.5.1-1 for Functions 2.k, 2.l, and 2.m respectively, to extend on a one-time basis the surveillance interval to until performance of these surveillances to no later than just prior to entry into MODE 2 during startup from the upcoming spring 2007 RFO. The applicable portion of revised Table 3.3.5.1-1 is shown below. Proposed footnote (f) to Table 3.3.5.1-1 will read:

(f) Surveillance performance for these functions is not required to be current until entry into MODE 2 from the 2007 refueling outage.

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System					
k. Reactor Steam Dome Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	B	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 2.79 seconds
l. Recirculation Pump Differential Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	C	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 0.716 seconds
m. Recirculation Riser Differential Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	C	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 0.697 seconds

(f) Surveillance performance for these functions is not required to be current until entry into MODE 2 from the 2007 refueling outage.

This proposed TS change will allow performance of the surveillance test(s) during modes (i.e., MODES 4 and 5) when the LPCI loop select logic time delay relay instrumentation is not required to be OPERABLE minimizing the possibility of an inadvertent plant transient.

As previously stated, surveillance testing of these time delay relays is currently required to be performed by January 29, 2007. On March 12, 2007, the unit is scheduled to enter MODE 4[(1)] during shutdown for the 2007 RFO. Note the actual date for MODE 4 may shift by several days due to operational considerations. Upon entry into MODE 4 during the shutdown process these LPCI loop select logic time delay relay functions are no longer required to be OPERABLE. From this point on (MODE 4) until entry into MODE 2 during startup from the 2007 RFO, in accordance with Note (f) to Table 3.3.5.1-1, OPERABILITY of these LPCI loop select logic time delay relays is not required in accordance with the TS.

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1 The quarterly (92 day) surveillance interval ends January 29, 2007 (February 21, 2007, if SR 3.0.2 is applied). The 2007 RFO starts approximately 20 days later (assuming MODE 4 on the twelfth).

NMC is not planning to perform SR 3.3.5.1.2 and SR 3.3.5.1.4 in the interval between January 29, 2007, and the time the unit enters MODE 4 (projected for March 12, 2007) if a plant shutdown were to occur during this period. Considering the short, several week duration of this interval, it is unnecessary to perform and then re-perform the surveillance a few weeks later during the RFO (as originally scheduled).

NMC intends to revise, in a separate submittal, the channel functional testing and channel calibration surveillance interval for these three LPCI loop select logic time delay relay functions, to reflect the industry standard 'operating cycle' (i.e., 18 or 24-months) surveillance interval.

A mark-up of the proposed changes to TS Table 3.3.5.1-1 is provided in Enclosure 2. Additions to Table 3.3.5.1-1 are indicated with double-underlining (there are no deletions). A re-typed version of the applicable pages of Table 3.3.5.1-1 is provided in Enclosure 3. No TS Bases changes are associated with this one-time extension to the quarterly surveillance interval for these time delay relays in Specification 3.3.5.1.

3.0 BACKGROUND

The ECCS are designed, in conjunction with the primary and secondary containment, to limit the release of radioactive materials to the environment following a LOCA. The ECCS consists of the High Pressure Coolant Injection (HPCI) System, the Core Spray (CS) System, the LPCI mode of the RHR System, and the Automatic Depressurization System (ADS).

Summary of ECCS Operation

On receipt of an initiation signal, ECCS pumps automatically start and align to inject water from either the Condensate Storage Tanks or suppression pool (SP) into the Reactor Coolant System (RCS). ADS is initiated, but action is delayed, allowing the operator to interrupt the timed sequence to depressurization if it is not required. Following initiation, HPCI pump discharge pressure almost immediately exceeds RCS pressure and injects coolant into the reactor vessel to cool the core. If the break is small, the HPCI System maintains coolant inventory as well as level with the RCS pressurized. If HPCI fails, or is unable to maintain inventory, it is backed up by the ADS in combination with the LPCI and CS Systems. In this case, the ADS timed sequence is allowed to time-out and open selected safety / relief valves depressurizing the RCS, allowing the LPCI and CS to overcome RCS pressure and inject. If the break is large, RCS pressure initially drops rapidly and the LPCI and CS cool the core. Water from the RCS break returns to the SP where it is recycled and circulated through a heat exchanger cooled by the RHR Service Water System.

Low Pressure Coolant Injection Mode of Operation

The LPCI mode is an independent operating mode of the RHR System. There are two LPCI subsystems, each consisting of two motor driven RHR pumps (in the same RHR division) and piping and valves to transfer water from the SP to the RCS via the selected recirculation loop. The LPCI system initiation logic contains the LPCI loop select logic whose purpose is to determine which, if any, of the recirculation loops are broken and select the non-broken loop for injection (the B loop is selected if neither loop is broken).

The LPCI subsystems are designed to provide core cooling at low RCS pressure. Upon receipt of an initiation signal, all four LPCI pumps are automatically started (A and B at approximately 5 seconds and C and D at approximately 10 seconds after AC power is available). The RHR System valves in the LPCI flow path automatically position to provide the proper flow path to inject into the selected recirculation loop. When the RCS pressure drops sufficiently, LPCI injection begins and water enters the reactor via the jet pumps.

Low Pressure Coolant Injection Loop Select Logic Operation

There are two redundant trip systems in the LPCI loop select logic. The logic is initiated upon the receipt of either a Reactor Vessel Water Level - Low Low signal or a Drywell Pressure - High signal. When initiated, the logic first determines recirculation pump operation by sensing the differential pressure (Δp) between the suction and discharge of each recirculation pump.

If the logic senses that either recirculation pump is not running, i.e., the unit is in single loop operation, then a trip signal is sent to both recirculation pumps to eliminate the possibility of pipe breaks being masked by the operating recirculation pump pressure. The recirculation pump trip signal is delayed by approximately 0.5 second to ensure that at least one pump is off since the break detection sensitivity is greater with both pumps running. If a recirculation pump trip signal is generated, reactor steam dome pressure must decrease to a specified value before the logic will continue. This adjusts the selection time to optimize sensitivity and still ensure that LPCI injection is not unnecessarily delayed. After the satisfaction of this pressure requirement or if both recirculation pumps indicate they are running, a 2 second time delay is provided to allow momentum effects to establish the maximum Δp for loop selection. Selection of the unbroken recirculation loop is then done by comparing the absolute pressure of the two recirculation riser loops. A broken recirculation loop is indicated by a lower pressure than the unbroken loop. The recirculation loop with the higher pressure is used for LPCI injection. If, after a small time delay (approximately 0.5 seconds), the pressure in recirculation loop A is not indicating higher than loop B, the logic will actuate to inject to the B recirculation loop, the 'default' choice for the logic. A signal will be provided to close the B recirculation loop discharge valve, open the LPCI injection valve to the B recirculation loop and close the LPCI injection valve to the A recirculation loop. If recirculation loop A pressure indicates higher than loop B pressure, the converse occurs.

<u>Description of the Reactor Steam Dome Pressure, Recirculation Pump Differential Pressure, and Recirculation Riser Differential Pressure Time Delay Relays Function in Support of LPCI Loop Select Logic Operation</u>

Reactor Steam Dome Pressure - Time Delay Relay (Function 2.k)

The purpose of this time delay is to optimize the LPCI loop select logic sensitivity if the logic previously actuated recirculation pump trips. This is accomplished by preventing the logic from continuing on to the unbroken loop selection activity until reactor steam dome pressure drops below a specified value. The value of the reactor steam dome pressure was chosen to allow for coastdown of any recirculation pump which has just tripped, optimizing the sensitivity of the loop select logic and the associated time delay was chosen to allow momentum effects to establish the maximum Δp for break detection.

Recirculation Pump Differential Pressure - Time Delay Relay (Function 2.l)

Recirculation pump Δp signals are used by the LPCI loop select logic to determine if either recirculation pump is running. If either pump is not running, i.e., single loop operation, the logic, after a short time delay, sends a trip signal to both recirculation pumps. This is necessary to eliminate the possibility of small pipe breaks being masked by a running recirculation pump. The recirculation pump Δp was chosen to be as low as possible, while still maintaining the ability to differentiate between a running and non-running recirculation pump, while the associated time delay was chosen to allow enough time to determine the status of the operating condition of the recirculation pumps.

Recirculation Riser Differential Pressure - Time Delay Relay (Function 2.m)

Recirculation riser Δp signals are used by the LPCI loop select logic to determine which, if any, recirculation loop is broken by comparing the pressure of the two recirculation loops. A broken loop will indicate a lower pressure than an unbroken loop. The loop with the higher pressure is then selected, after a short delay, for LPCI injection. If neither loop is broken, the logic defaults to injecting into the B recirculation loop. The recirculation riser Δp signals are initiated from Δp pressure switches that sense the Δp between the A and B recirculation loop risers. If, after a small time delay, the pressure in loop A is not indicating higher than loop B pressure, the logic will select the B loop for injection. If recirculation loop A pressure is indicating higher than loop B, the logic will select the A loop for LPCI injection. The recirculation riser Δp value was chosen to be as low as possible, while still maintaining the ability to differentiate between a broken and unbroken recirculation loop, while the associated time delay was chosen to provide sufficient time to determine which recirculation loop was broken.

4.0 TECHNICAL ANALYSIS

Table 3.3.5.1-1 of Specification 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," requires each function to be OPERABLE in the applicable modes specified. During detailed plant implementation / impact reviews by Instrumentation and Controls (I&C) personnel of changes to surveillance test procedures associated with ITS implementation it was identified that the time delay relay channel functional tests and calibrations that were now necessary to be performed on-line at the specified frequency of every 92 days posed an unacceptable risk to safe and conservative unit operation.

Prior to the imposition of the ITS, these LPCI loop select logic time delay relays were not included in the TS. Proper operation of the relays was inferred by output device actuation through completion of the logic strings during integrated ECCS testing performed each refueling outage. Testing of these time delay relays has never been performed on-line at the MNGP. Further internal discussion questioned the safety of attempting to perform surveillance testing of the LPCI loop select logic time delay relays, listed below, on-line.

2.k. Reactor Steam Dome Pressure - Time Delay Relay (Break Detection)

2.l. Recirculation Pump Differential Pressure - Time Delay Relay (Break Detection)

2.m. Recirculation Riser Differential Pressure - Time Delay Relay (Break Detection)

4.1 Potential for Plant Transients Due to Surveillance Testing Errors

Based upon the draft channel calibration and functional test procedure, a multi-channel recorder would be connected across each time delay relay to accurately measure the output, and the circuits actuated by the LPCI logic must be isolated by disabling (booting) the relay contacts (or installing jumpers) to prevent the normal functioning of the equipment. A jumper must be installed to simulate an initiation signal for the LPCI break detection logic, and finally a manual test switch must be closed to initiate the logic. Note, the logic has two divisions and the above actions must be repeated for each division of the associated time delay relays.

Some of the potential consequences identified that could occur if an error were to occur during on-line performance of the channel calibrations and functional tests of the logic at the specified frequency of every 92 days are:

1. A failure to correctly install the recorder channel connections could inadvertently blow circuit fuses or cross-connect portions of the logic circuitry that were not intended.
2. A failure to correctly install the 'boots' for relay isolation could result in equipment actuating that was not desired. Examples are:
   a. Inadvertent opening of the LPCI inboard motor operated isolation valves (MO-2014 and/or MO-2015), potentially resulting in a high/low pressure interface (intersystem LOCA) event.
   b. Inadvertent closing of the 11 and/or 12 recirculation pump discharge valves, resulting in a trip of the reactor recirculation pump(s) and a down power transient.
   c. Inadvertent trip of the 11 and/or 12 recirculation pumps causing a down power transient.
3. A failure to correctly install the jumpers to simulate an initiation signal for the LPCI break detection logic could initiate undesired portions of the LPCI logic.
4. A failure to correctly install the test switches in the LPCI loop select logic circuitry could result in the actuation of undesired portions of the circuitry or could inadvertently blow circuit fuses.

Many other plant systems are designed as separate trains (or subsystems) which can be fully removed from service and isolated for on-line testing. However, the design of the LPCI loop select logic was not developed and not intended to support on-line testing, and hence does not include the capabilities, e.g., such as test jacks, and having sufficient redundancy to allow the ability to put a channel in test while maintaining complete functionality during testing. Hence, any testing on-line of the LPCI loop select logic provides an inherent possibility of inducing a transient. Performance of this testing during MODES 4 and 5, when the instrumentation functions are not required to be OPERABLE (and the unit is not operating) greatly reduces the potential consequences of an inadvertent human performance error. Public health and safety will be enhanced by the decreased risk associated with performance of channel calibrations and channel functional tests of the LPCI loop select logic time delay relays during the shutdown state occurring during outages.

4.2 Summary Description of the Analysis Basis for LPCI Loop Select Logic

The LPCI loop select logic functions specified in Table 3.3.5.1-1 are only necessary in the event of a recirculation line break LOCA, i.e., proper functioning of this logic is assumed for mitigation. The GE ECCS performance evaluation

(References 2 and 3) considered breaks ranging from the maximum suction line break down to a 0.05 square-foot recirculation suction line break. For the DBA LOCA analysis the bounding break location was assumed to be in the recirculation system suction piping. For a recirculation line break, including the DBA LOCA, the analysis assumes that the LPCI loop select logic successfully identifies and directs LPCI flow to the unbroken recirculation loop, so that core reflooding is accomplished in time to ensure that the peak cladding temperature of the fuel remains within the limits of 10 CFR 50.46. ECCS performance for four non-recirculation line breaks; i.e., in the feedwater, core spray, and main steam lines (both in and outside containment) were also evaluated. For these other LOCA events, (i.e., for non-recirculation system pipe breaks) success of the loop select logic to properly pick the unbroken recirculation loop is not required.

Operation of the LPCI loop select logic functions is required in MODES 1, 2, and 3 to ensure that no single failure can prevent the LPCI loop select logic from successfully selecting the unbroken recirculation loop for LPCI injection. These functions are not required OPERABLE in MODES 4 and 5 because the accident of concern in these modes is an inadvertent vessel draindown rather than a LOCA. Multiple means of low pressure injection (controlled by plant procedures) are available in MODES 4 and 5 and the LPCI loop select logic is not required to be OPERABLE.

4.3 Impact of LPCI Loop Select Logic Being Inoperable

The LPCI loop select logic consists of two redundant trip systems. In order for the LPCI loop select logic to fail in its function of directing LPCI flow to the unbroken recirculation loop both trip systems would have to fail.

Assuming a failure involving slow actuation times of the time delay relays, there is redundancy in the logic to open the valves associated with LPCI loop select and margin in the durations assumed in the safety analyses for the LPCI injection time, hence the risk associated with failure of the LPCI loop select logic based upon slow actuation of time delay relays is considered to be very small.

The importance of the LPCI loop select logic is limited due to the relatively narrow range of events that rely on proper recirculation loop selection. The LPCI loop select logic is not required at all for any transient or accident other than for the recirculation line break LOCA. For a LOCA where the break occurs on piping not associated with the recirculation loops, it is not important which recirculation loop is selected by LPCI loop select logic.

As determined by the current Probabilistic Risk Assessment average maintenance model, LPCI injection into a broken recirculation loop provides adequate core cooling for 'small' and 'medium' pipe breaks (i.e., breaks with less than a 3 inch equivalent diameter hole). Therefore, as borne out by the PRA model, only a recirculation line break LOCA involving a 'large' (greater than a

3 inch equivalent diameter hole) actually challenges the need for LPCI to select the proper recirculation loop for injection.

4.4 Increase in Instrument Drift Due to the Increase in Surveillance Interval

The GE Instrument Setpoint Methodology (ISM) (Reference 4) is one of the primary basis documents for determination of instrument setpoints at the MNGP. The approaches outlined below represent some conservative means for evaluating the impact of a one-time extension of the surveillance interval for the LPCI loop time delay relays from 92 to 140 days. Also, the impact of the variation of the time delay for the LPCI loop select time delay relays on the ECCS performance analysis was considered.

Quantifying the Impact on Drift of Extending the Surveillance Interval

The original calculation for the LPCI loop select time delay relay settings included a GE Licensee Event Report (LER) Avoidance Test evaluation to assure sufficient margin between the setpoint and the Allowable Value (AV). In accordance with the MNGP plant-specific setpoint methodology, the calculation with a 92 day surveillance frequency demonstrated a 90 percent probability of not exceeding the AV at next surveillance performance.

To evaluate the potential impact of the increase in drift from extension of the LPCI loop select time delay relay surveillance interval from 92 to 140 days[2] the GE LER Avoidance Test was used as a figure of merit. The GE LER Avoidance Test was chosen as it can be used to determine the increase in probability of exceeding the AV due to instrument drift.

Essentially, the GE LER Avoidance Test determines a standard deviation of the statistical combination of the uncertainties of an instrument channel, consisting of the following: the channel instrument accuracy, channel calibration accuracy, and instrument drift (combined by square-root-sum-of–the-squares), and compares that to the absolute value of the difference of the nominal trip setpoint and AV. Note that worst case as-left settings were assumed. The setpoint drift was extrapolated for the extended calibration interval (140 days) and the GE LER Avoidance Test evaluation was performed with the adjusted drift values.

The margin between the AV and the Nominal Trip Setpoint (NTSP) allows for instrument drift that might occur during the established surveillance period. The probability for not exceeding the AV was set as 90 percent due to instrument drift during development of LPCI loop select time delay relay

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2 The quarterly surveillance interval (92 days) plus the SR 3.0.2 25-percent extension corresponds to 115 days. 20-days were added for the period between end of the interval and the beginning of the RFO. Five additional days were added for conservatism.

setpoints. Applying the GE LER Avoidance Test, extending the calibration interval from 92 to 140 days increased the probability of exceeding the AV by approximately 2.5 percent (assuming worst case as-left settings) for the most affected time delay relay applying the GE LER Avoidance Test. In other words the probability of not exceeding the AV was reduced from 90 to approximately 87.5 percent assuming worst case as-left settings. The small delay in LPCI loop select logic initiation, from exceeding the AV, if it were to occur, is insignificant when compared to the overall time available for LPCI initiation in the ECCS performance evaluation (discussed in more detail below).

<u>Overall Time Delay Drift Compared to the Time Available Under the ECCS Performance Evaluation.</u>

Applying a different evaluation approach assuming conservatively that a worst case combination of errors was considered, the increase in the sum of the time delays, for the LPCI loop select time delay relays was determined and compared to the overall time available for LPCI initiation in the ECCS performance evaluation. In certain plant scenarios, the LPCI loop select time delay relays act in series and the overall time delay is the sum of the three individual LPCI loop select logic relays, time delays, in each channel.

To determine the maximum possible effect of extending the surveillance interval, this sum of the time delays, for the LPCI loop select time delay relays, was determined for both 92 and 140-day intervals. For this evaluation, the tolerances and errors were assumed to be aligned to produce the maximum total addition to the nominal setpoint. With the worst case combination of errors considered, the affect of extending the calibration interval from 92 to 140 days on the sum of the time delays, for the LPCI loop select time delay relays, was to increase the LPCI loop select logic time delay by approximately 2 percent.

<u>Impact of Variation of the Time Delay for the LPCI Loop Select Time Delay Relays on the ECCS Analysis</u>

The impact of the variation of the time delay for the LPCI loop select time delay relays on the ECCS performance analysis was considered. Updated Safety Analysis Report (USAR) Section 14.7.2.3.3 discusses ECCS equipment performance. USAR Figure 14.7-12 depicts schematically the LPCI initiation logic and Table 14.7-12 presents the timing parameters used in the ECCS performance analysis. The maximum of the time required to complete each of several parallel event sequences determines the LPCI injection time. The time required to complete each path is a combination of initiation signal and equipment parameter times. Inspection of USAR Figure 14.7-12 indicates that minor variations in subcomponent time delays are inconsequential considering the overall duration of the LPCI injection actuation scenarios.

The above evaluations demonstrate that extending the LPCI loop select time delay relays calibration interval from 92 to 140 days does not have any significant effect on plant safety. Applying the GE LER Avoidance Test, the effect of extending the surveillance interval was to increase the probability of exceeding the AV by approximately 2.5 percent due to instrument drift (assuming worst case as-left settings). The resulting small time delay in LPCI loop select logic initiation, if it were to occur, is insignificant compared to the overall time available for LPCI initiation in the ECCS performance evaluation. Applying a different evaluation approach conservatively assuming that the worst case combination of errors is considered, the increase in the sum of the time delays, for the LPCI loop select time delay relays, is also insignificant when compared to the overall time available for LPCI initiation in the ECCS performance evaluation.

4.5 Probabilistic Risk Assessment (PRA)

The MNGP 2005 average maintenance Probabilistic Risk Assessment (PRA) model was applied to reasonably quantify the significance of increasing the surveillance interval for the LPCI loop select logic time delay relays. To do this, the change in the probability of failure (failure rate) associated with extending a surveillance interval from 3 to 6 months was determined, and then the PRA model was run assuming this failure rate and failure of the LPCI loop select logic (i.e., the logic always selects the wrong recirculation loop for injection).

The effect of increasing a surveillance interval can be determined by applying the equation for determining the average unavailability between tests.

Average Unavailability between Tests = $1+ 1/\lambda\tau\ (e^{-\lambda\tau} -1)$

Applying this equation and assuming a failure rate (λ) of 1.0 E-06/hour (a conservative failure rate), the following failure probabilities were determined when the surveillance test interval (τ) was changed from 3 to 6 months (chosen to bound an increase to 140 days). This represents less than a factor of two increase in failure probability.

- Probability of failure at 3 months 1.10 E-03
- Probability of failure at 6 months 2.19 E-03

The failure rate for the LPCI loop select logic event presently included in the PRA model was increased by a factor of two to account for the increase in surveillance interval from 3 to 6 months.

Note that the importance of the LPCI loop select logic in the PRA model is limited since it is not required at all for any accident other than for the recirculation line break LOCA. The PRA model conservatively assumes that failure of the LPCI loop select logic will always result in LPCI injection to the broken (wrong) recirculation loop as apposed to a random chance that the logic selects the broken loop. This in turn, will result in complete LPCI failure for recirculation loop LOCA initiated events with break sizes greater than a 3 inch equivalent diameter. For breaks with less than a 3 inch equivalent diameter hole the current PRA average maintenance model indicates that adequate core cooling is maintained even with LPCI injection into the broken recirculation loop.

Quantifying the model with this two fold increase in loop select failure probability results in a Core Damage Frequency (CDF) of 7.316 E-06/year as opposed to the baseline CDF value of 7.315 E-06/year, a change (ΔCDF) of 1.0 E-09/year.

As discussed in Regulatory Guide (RG) 1.174 (Reference 5), a change in CDF at Monticello is considered "Very Small" if it is less than 1.0 E-06/year. Additionally, RG 1.174 considers a change in Large Early Release Frequency (LERF) to be "Very Small" if it is less than 1.0 E-07/year. For this evaluation, if all core damage events were assumed to lead to a large early release, the resulting ΔLERF would still remain below the "Very Small" threshold.

The NMC has conservatively evaluated the change in risk, consisting of CDF and LERF, associated with increasing the surveillance interval for SR 3.3.5.1.2 and SR 3.3.5.1.4 for the LPCI loop select time delay relays. The results of the analysis are:

1. The change in CDF is 1.0 E-09/year (much less than 1.0 E-06/year).

2. The change in LERF is less than 1.0 E-07/year.

As can be seen the increase in CDF assuming an increase in surveillance interval to six months represents much less than a "Very Small" change as described in RG 1.174. Accordingly, the increase in risk from lengthening the surveillance interval by several weeks (from a nominal quarterly frequency) results in an extremely small increase in risk, resulting in a negligible risk impact.

4.6 Conclusion

The potential for plant transients is greatly increased by performing channel calibration and channel functional testing of the LPCI loop select time delay relays with the plant on-line. Performance of this testing when the plant is shutdown and these instrument functions are not required to be OPERABLE greatly reduces the potential consequences of an error.

The LPCI loop select logic is not required at all for any transient or accident other than for the recirculation line break LOCA. For a LOCA where the break occurs on piping not associated with the recirculation loops, it is not important which recirculation loop is selected by LPCI loop select logic.

The proposed one-time increase in surveillance interval for LPCI loop select time delay relays is supported by the low risk demonstrated by the calibration interval drift evaluation and the PRA evaluation associated with extending surveillance interval versus the inherent transition risk associated with shutting down the plant to perform the surveillance when the RFO is scheduled to begin several weeks later.

Approval of this TS change avoids a potential undesirable transient caused by the shutdown of the reactor solely as a result of compliance with TS Limiting Condition for Operation 3.0.3. This proposed change removes the potential operational risks (e.g., inadvertent equipment actuations and resulting transients) associated with the potential for errors during performance of surveillance testing on equipment not configured (designed) to be amenable to on-line testing. Approval of this proposed amendment prevents an otherwise unnecessary additional plant shutdown.

Public health and safety will be enhanced by the decreased risk associated with performance of channel calibrations and channel functional tests of the LPCI loop select logic time delay relays during the shutdown state occurring during outages.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Determination

In accordance with the requirements of 10 CFR 50.90, Nuclear Management Company (licensee) hereby requests an amendment to facility operating license DPR-22, for Monticello Nuclear Generating Plant (MNGP). The proposed amendment requests a one-time extension to the surveillance intervals for the following low pressure coolant injection loop select logic time delay relay functions in Table 3.3.5.1-1; reactor steam dome pressure (2.k) and recirculation pump and riser differential pressures (2.l and 2.m).

Nuclear Management Company, LLC (NMC), has evaluated the proposed amendment in accordance with 10 CFR 50.91 against the standards in 10 CFR 50.92 and has determined that the operation of the MNGP in accordance with the proposed amendment presents no significant hazards. The NMC evaluation against each of the criteria in 10 CFR 50.92 follows.

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

   Response: No.

This amendment requests a one-time extension to the performance interval for a limited number of TS surveillance requirements. The performance of these surveillances, or the failure to perform, is not a precursor and does not affect the probability of an accident. Therefore, the delay in performance proposed in this amendment request for these surveillance requirements does not increase the probability of an accident previously evaluated.

A delay in performing these surveillances does not result in a system being unable to perform its required function. In the case of this one-time extension, the relatively short period of additional time period for the systems and components to be in service prior to the next performance of the surveillance will not affect the ability of those systems to operate as designed. Therefore, the systems required to mitigate accidents will remain capable of performing their required function. No new failure modes have been introduced because of this action and the consequences remain consistent with previously evaluated accidents. Therefore, the proposed delay in performance of the surveillance requirements in this amendment request does not involve a significant increase in the consequences of an accident.

Therefore, operation of the facility in accordance with the proposed license amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed amendment does not involve a physical alteration of any system, structure, or component (SSC) or a change in the way any SSC is operated. The proposed amendment does not involve operation of any SSCs in a manner or configuration different from those previously recognized or evaluated. No new failure mechanisms will be introduced by the one-time surveillance requirement deferrals being requested.

Thus, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   The proposed amendment is a one-time extension of the performance interval of a limited number of TS surveillance requirements. Extending these surveillance requirements does not involve a modification of any TS Limiting Condition for Operation. Extending these surveillance requirements does not involve a change to any limit on accident consequences specified in the license or regulations. Extending these surveillance requirements does not involve a change to how accidents are mitigated or a significant increase in the consequences of an accident. Extending these surveillance requirements does not involve a change in a methodology used to evaluate consequences of an accident. Extending these surveillance requirements does not involve a change in any operating procedure or process.

   The instrumentation and components involved in this request have exhibited reliable operation based on the results of their performance during past periodic ECCS functional testing.

   Based on the limited additional period of time that the systems and components will be in service before the surveillances are next performed, as well as the operating experience that these surveillances are typically successful when performed, it is reasonable to conclude that the margins of safety associated with these surveillance requirements will not be affected by the requested extension.

   Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, the NMC has determined that operation of the facility in accordance with the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92(c), in that it does not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) involve a significant reduction in a margin of safety.

5.2 Applicable Regulatory Requirements

The MNGP was designed largely before the publishing of the 70 General Design Criteria (GDC) for Nuclear Power Plant Construction Permits proposed by the Atomic Energy Commission for public comment in July, 1967 and the 1971 publishing of the GDCs in Appendix A to 10 CFR 50. As such, MNGP is not licensed to the GDCs. The MNGP Updated Safety Analysis Report (USAR), Section 1.2, lists the principal design criteria (PDCs) for the design, construction and operation of the plant and USAR Appendix E provides a plant comparative evaluation to the 70 proposed AEC design criteria. NMC believes that the MNGP design is in conformance with the intent of the GDCs.

Criterion 38 - Reliability and Testability of Engineered Safely Features

All engineered safety features shall be designed to provide high functional reliability and ready testability. In determining the suitability of a facility for proposed site, the degree of reliance upon and acceptance of the inherent and engineered safety afforded by the systems, including engineered safety features, will be influenced by the known and the demonstrated performance capability and reliability of the systems, and by the extent to which the operability of such systems can be tested and inspected where appropriate during the life of the plant.

Criterion 46 - Testing of Emergency Core Cooling System Components

Design provisions shall be made so that active components of the emergency core cooling systems, such as pumps and valves, can be tested periodically for operability and required functional performance.

NMC has evaluated the proposed changes against the applicable regulatory requirements and acceptance criteria as described herein. Based on these evaluations there is reasonable assurance that the health and safety of the public following approval of this one-time change to temporarily extend the LPCI loop select logic time delay relay surveillance interval.

5.3 Commitments

This letter makes no new commitments or changes to any existing commitments.

6.0 ENVIRONMENTAL EVALUATION

NMC has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for a categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, NMC concludes pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

REFERENCES

1. NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 3.0, dated June 2004.

2. General Electric report, NEDC-32514P, Revision 1, "Monticello Nuclear Generating Plant SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis," dated October 1997.

3. GE-NE-J1103878-09-02P, "Monticello ECCS-LOCA Evaluation for GE14," August 2001.

4. GE Nuclear Energy, NEDC-31336-P-A, "General Electric Instrument Setpoint Methodology," dated September 1996.

5. NRC Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Revision 1, dated November 2002.

ENCLOSURE 2

MONTICELLO NUCLEAR GENERATING PLANT

LICENSE AMENDMENT REQUEST
ONE-TIME LOW PRESSURE COOLANT INJECTION LOOP SELECT
LOGIC TIME DELAY RELAY SURVEILLANCE INTERVAL EXTENSION

MARKED-UP TECHNICAL SPECIFICATION PAGES

(3 pages follows)

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 3.c and 3.f; and (b) for up to 6 hours for Functions other than 3.c and 3.f provided the associated Function or the redundant Function maintains ECCS initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.5.1.3	Calibrate the trip unit.	92 days
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	92 days
SR 3.3.5.1.5	Perform CHANNEL FUNCTIONAL TEST.	12 months
SR 3.3.5.1.6	Perform CHANNEL CALIBRATION.	12 months
SR 3.3.5.1.7	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.5.1.8	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

**FOR INFORMATION ONLY –
NO CHANGES**

Table 3.3.5.1-1 (page 3 of 6)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System					
e. Reactor Steam Dome Pressure Permissive - Bypass Timer (Pump Permissive)	1, 2, 3	2	C	SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 18 minutes and ≤ 22 minutes
	4[(a)], 5[(a)]	2	B	SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 18 minutes and ≤ 22 minutes
f. Low Pressure Coolant Injection Pump Start - Time Delay Relay	1, 2, 3, 4[(a)], 5[(a)]	4 per pump	B	SR 3.3.5.1.7 SR 3.3.5.1.8	
Pumps A, B					≤ 5.33 seconds
Pumps C, D					≤ 10.59 seconds
g. Low Pressure Coolant Injection Pump Discharge Flow - Low (Bypass)	1, 2, 3, 4[(a)], 5[(a)]	1 per pump	E	SR 3.3.5.1.2 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 360 gpm and ≤ 745 gpm
h. Reactor Steam Dome Pressure - Low (Break Detection)	1, 2, 3,	4	B	SR 3.3.5.1.2 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 873.6 psig and ≤ 923.4 psig
i. Recirculation Pump Differential Pressure - High (Break Detection)	1, 2, 3	4 per pump	C	SR 3.3.5.1.2 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 63.5 inches wc
j. Recirculation Riser Differential Pressure - High (Break Detection)	1, 2, 3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.6 SR 3.3.5.1.8	≤ 24.0 inches wc
k. Reactor Steam Dome Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	B	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 2.79 seconds

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2.

(f) Surveillance performance for these functions is not required to be current until entry into MODE 2 from the 2007 refueling outage.

Table 3.3.5.1-1 (page 4 of 6)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System					
l. Recirculation Pump Differential Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	C	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 0.716 seconds
m. Recirculation Riser Differential Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	C	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 0.697 seconds
3. High Pressure Coolant Injection (HPCI) System					
a. Reactor Vessel Water Level - Low Low	1, 2[(e)], 3[(e)]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ -48 inches
b. Drywell Pressure - High	1, 2[(e)], 3[(e)]	4	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.8	≤ 2 psig
c. Reactor Vessel Water Level - High	1, 2[(e)], 3[(e)]	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.7 SR 3.3.5.1.8	≤ 48 inches
d. Condensate Storage Tank Level - Low	1, 2[(e)], 3[(e)]	2	D	SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 29.3 inches
e. Suppression Pool Water Level - High	1, 2[(e)], 3[(e)]	2	D	SR 3.3.5.1.5 SR 3.3.5.1.6 SR 3.3.5.1.8	≤ 3.0 inches
f. High Pressure Coolant Injection Pump Discharge Flow - Low (Bypass)	1, 2[(e)], 3[(e)]	1	E	SR 3.3.5.1.5 SR 3.3.5.1.6 SR 3.3.5.1.8	≥ 362 gpm and ≤ 849 gpm

(e) With reactor steam dome pressure > 150 psig.

(f) Surveillance performance for these functions is not required to be current until entry into MODE 2 from the 2007 refueling outage.

<u>**ENCLOSURE 3**</u>

MONTICELLO NUCLEAR GENERATING PLANT

LICENSE AMENDMENT REQUEST
ONE-TIME LOW PRESSURE COOLANT INJECTION LOOP SELECT
LOGIC TIME DELAY RELAY SURVEILLANCE INTERVAL EXTENSION

RETYPED TECHNICAL SPECIFICATION PAGES

(2 pages follows)

Table 3.3.5.1-1 (page 3 of 6)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System					
e. Reactor Steam Dome Pressure Permissive - Bypass Timer (Pump Permissive)	1, 2, 3	2	C	SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 18 minutes and ≤ 22 minutes
	4[(a)], 5[(a)]	2	B	SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 18 minutes and ≤ 22 minutes
f. Low Pressure Coolant Injection Pump Start - Time Delay Relay	1, 2, 3, 4[(a)], 5[(a)]	4 per pump	B	SR 3.3.5.1.7 SR 3.3.5.1.8	
Pumps A, B					≤ 5.33 seconds
Pumps C, D					≤ 10.59 seconds
g. Low Pressure Coolant Injection Pump Discharge Flow - Low (Bypass)	1, 2, 3, 4[(a)], 5[(a)]	1 per pump	E	SR 3.3.5.1.2 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 360 gpm and ≤ 745 gpm
h. Reactor Steam Dome Pressure - Low (Break Detection)	1, 2, 3,	4	B	SR 3.3.5.1.2 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 873.6 psig and ≤ 923.4 psig
i. Recirculation Pump Differential Pressure - High (Break Detection)	1, 2, 3	4 per pump	C	SR 3.3.5.1.2 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 63.5 inches wc
j. Recirculation Riser Differential Pressure - High (Break Detection)	1, 2, 3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.6 SR 3.3.5.1.8	≤ 24.0 inches wc
k. Reactor Steam Dome Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	B	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 2.79 seconds

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2.

(f) Surveillance performance for these functions is not required to be current until entry into MODE 2 from the 2007 refueling outage.

Table 3.3.5.1-1 (page 4 of 6)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System					
l. Recirculation Pump Differential Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	C	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 0.716 seconds
m. Recirculation Riser Differential Pressure - Time Delay Relay (Break Detection)	1, 2, 3	2	C	SR 3.3.5.1.2[(f)] SR 3.3.5.1.4[(f)] SR 3.3.5.1.8	≤ 0.697 seconds
3. High Pressure Coolant Injection (HPCI) System					
a. Reactor Vessel Water Level - Low Low	1, 2[(e)], 3[(e)]	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.7 SR 3.3.5.1.8	≥ -48 inches
b. Drywell Pressure - High	1, 2[(e)], 3[(e)]	4	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.8	≤ 2 psig
c. Reactor Vessel Water Level - High	1, 2[(e)], 3[(e)]	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.7 SR 3.3.5.1.8	≤ 48 inches
d. Condensate Storage Tank Level - Low	1, 2[(e)], 3[(e)]	2	D	SR 3.3.5.1.7 SR 3.3.5.1.8	≥ 29.3 inches
e. Suppression Pool Water Level - High	1, 2[(e)], 3[(e)]	2	D	SR 3.3.5.1.5 SR 3.3.5.1.6 SR 3.3.5.1.8	≤ 3.0 inches
f. High Pressure Coolant Injection Pump Discharge Flow - Low (Bypass)	1, 2[(e)], 3[(e)]	1	E	SR 3.3.5.1.5 SR 3.3.5.1.6 SR 3.3.5.1.8	≥ 362 gpm and ≤ 849 gpm

(e) With reactor steam dome pressure > 150 psig.

(f) Surveillance performance for these functions is not required to be current until entry into MODE 2 from the 2007 refueling outage.