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U.S. Nuclear Regulatory Commission
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Perry Nuclear Power Plant
Docket No. 50-440
Operating License Amendment Request -
Removal of the Reactor Protection
System Trips and Main Steam Line
Isolation Actuation Signals from the
Main Steam Line Radiation Monitors

Gentlemen:

Enclosed is a request for amendment of Facility Operating License NPF-58 for the Perry Nuclear Power Plant (PNPP) Unit 1.

This amendment requests revision of Technical Specifications (TS) 2.2.1 "Reactor Protection System Instrumentation Setpoints", TS 3.3.1 "Reactor Protection System Instrumentation" and TS 3.3.2 "Isolation Actuation Instrumentation". The changes involve eliminating the Technical Specification requirements for the Reactor Protection System trip and the Main Steam Line Isolation Actuation signals from the Main Steam Line Radiation Monitors. In addition, changes to the appropriate Bases are being made for consistency. Although not a formal part of the Technical Specifications (as described in 10 CFR 50.36), these are included for your information.

Attachment 1 provides the Introduction, Safety Analysis, and the Environmental and Significant Hazards Considerations. Attachment 2 provides a copy of the proposed Technical Specification changes. Attachment 3 is a copy of the marked up Bases page.

If you have any questions, please feel free to call.

Sincerely,

Michael D. Lyster

MDL:BSF:ss

Attachments

cc: NRC Project Manager
NRC Resident Inspector Office
NRC Region III
State of Ohio

100095

A001

Operating Companies
Cleveland Electric Illuminating
Toledo Edison

INTRODUCTION

A Reactor Protection System (RPS) trip and Main Steam Line Isolation signal are currently provided from the Main Steam Line Radiation Monitors (MSLRMs), in addition to an alarm at a lower setpoint. Due to spurious reactor scrams and vessel isolations that were occurring in the industry, a Boiling Water Reactor Owner's Group (BWROG) committee effort was undertaken to determine if the MSLRM trips and isolations could be eliminated. Review of the accident analyses for the participating utilities verified that the only MSLRM trip/isolation for which credit was taken in response to a design basis accident was the Main Steam Line isolation valves closure signal, which was discussed for the Control Rod Drop Accident (CRDA) for most of the participants. It was concluded that it would be more conservative and therefore more appropriate to keep the MSIVs open, permitting the offgas system to remain operating and filtering any noble gases and iodines resulting from the design basis CRDA. In addition, for plants with PNPP's design features, the release of radioactivity from a CRDA would be insignificant and would therefore not result in an isolation of the Main Steam Lines.

In July 1987 the BWROG and the General Electric (GE) Company submitted topical report NEDO-31400, "Safety Evaluation for Eliminating the Boiling Water Reactor Main Steam Line Isolation Valve Closure Function and Scram Function of the Main Steam Line Radiation Monitor, (May 1987)". On May 15, 1991, after numerous meetings and clarifications, the Nuclear Regulatory Commission (NRC) staff published a Safety Evaluation Report (SER) entitled "Acceptance for Referencing of Licensing Topical Report NEDO-31400, 'Safety Evaluation for Eliminating the Boiling Water Reactor Main Steam Line Isolation Valve Closure Function and Scram Function of the Main Steam Line Radiation Monitor'". This NRC SER detailed the NRC's review and acceptance of the NEDO-31400 submittal on a generic basis.

The NRC's SER concluded that the removal of the MSLRM trips that automatically shut down the reactor and isolate the Main Steam Lines is acceptable. The NRC stated that participating BWR licensees may reference NEDO-31400 in support of their licensing applications provided they meet three conditions specified within the SER. Even though PNPP's design eliminates the significance of the CRDA, Perry was a member of the committee and has performed the radiological analysis per the NEDO guidelines using design numbers as presented in the USAR. The Safety Analysis section below will demonstrate PNPP's position on meeting the three conditions that were specified by the NRC in the SER.

SAFETY ANALYSIS

The MSLRM system consists of redundant gamma ionization chambers and logarithmic radiation monitors (LRM) that monitor the main steam lines for gross gamma radioactivity. The ionization chambers are physically located near the four main steam lines just downstream of the outboard main steam isolation valves (MSIVs). These detectors are arranged so that the system is capable of detecting significant increases in radiation levels with any number of main steam lines in operation. The intent of the MSLRMs are to provide an early indication of gross fuel failures.

The signal from each detector is transmitted to the Control Room where it is processed and displayed by its respective LRM. Trip signals originate from the LRMs, which feed into the Reactor Protection System (RPS) and the Isolation Actuation trip logics. The Main Steam Line isolation function is completed by closing the MSIVs and the Main Steam Line drain valves. The other isolation function discussed in the Technical Specifications is addressed by a note to Technical Specification Table 3.3.2-1 which indicates that the mechanical vacuum pump is tripped and isolated as a result of a high main steam line radiation signal. This change request will not eliminate this mechanical vacuum pump line isolation, since NEDO-31400 did not specifically discuss or justify its deletion. Therefore, a revised version of this footnote will be retained in the Technical Specifications at this time. In addition, the MSLRM alarm will remain in the design, and as discussed below will be set at 1.5 times the 100 percent power nominal background dose rate value.

At PNPP, no USAR accident relies on the RPS scram signal from the MSLRMs in either the accident sequence description or the associated radiological assessment (the scram signal assumed in the CRDA is the APRM Upscale Signal).

Also, at PNPP, the control rod drop accident sequence description in the USAR does not depend upon the Main Steam Line isolation signals from the MSLRMs. As described in USAR 15.4.9.1 and 15.4.9.2, and in the NRC Safety Evaluation Report (SER) for PNPP, Section 15.4.4, the Control Rod Drop Accident (CRDA) at PNPP would lead to insignificant radiological releases because of PNPP's design which includes the Rod Pattern Control System (RPCS). The RPCS is a subsystem of the Rod Control and Information System (RC&IS) and is discussed in USAR Sections 4.3.2.5 and 7.6.1.5. The RPCS is a safety-related dual channel system which can withstand a single failure, and the system is required to be Operable by PNPP Technical Specification 3.1.4.2 "Rod Pattern Control System," with appropriate actions specified for any brief periods of inoperability. The Rod Pattern Controller portion of RPCS is designed to enforce the Banked Position Withdrawal Sequence (BPWS) criteria developed by General Electric and described in NEDO-21231, when the plant is below the Low Power Setpoint (LPSP) (for PNPP, the LPSP is 20% thermal power). The BPWS criteria ensure that an individual control rod's worth is such that if it is dropped during rod withdrawals, the enthalpy rise will be less than the 280 calories/gram limit established by the NRC as the acceptance criteria for CRDA scenarios. The NRC staff concluded in the original PNPP SER Section 15.4.4 that the predicted enthalpy rise for the CRDA at PNPP would be between 75-135 calories/gram, which is well below the acceptance criteria. Operation within the constraints of the BPWS analysis ensures that the 280 calorie/gram limit will be met, and therefore a CRDA event would not result in any significant radiological release, and the magnitude of any such release would be less than any level which would cause an isolation signal from the MSLRMs. As noted in the Bases for Specification 3.1.4.2, during power reductions below the LPSP, the Rod Pattern Controller portion of RPCS provides automatic supervision to assure that out-of-sequence rods will not be withdrawn or inserted. If this condition is not correctable in a manner consistent with the BPWS analysis, controls are in place to scram the plant. If the Rod Pattern Controller portion of RPCS is inoperable when thermal power is below the Low Power Setpoint, Technical Specification 3.1.4.2, Rod Pattern Control System, requires that no control rod be moved except by scram. Therefore, enforcement of the BPWS/RPCS requirements assure that the CRDA is of no significance at PNPP, and that the Main Steam Li.e isolation signal from the MSLRMs is not required.

Even though the BPWS/RPCS is designed to minimize the consequences of the CRDA, the current USAR 15.4.9 discussion conservatively performs a hypothetical radiological assessment which assumes that the BPWS/RPCS and the corresponding Technical Specification does not exist (see USAR 15.4.9.1.1 discussion), in order to evaluate the radiological consequences. The radiological assessment currently discussed in USAR 15.4.9 was therefore performed per the NRC's Standard Review Plan (SRP) assumptions, and therefore includes consideration of the isolation of the Main Steam Lines. The assessment is described in USAR 15.4.9.3 through 15.4.9.5. The design basis radiological assessment in USAR 15.4.9.5.1.2 assumes that the Main Steam Line isolation occurs after all the radioactive noble gas and 10% of the iodine generated as a result of the CRDA has been transported to the main condenser (instantaneous arrival is assumed), as is conservatively specified by SRP section 15.4.9 Appendix A item III.9. The scenario then assumes that all of the noble gases and 10% of the iodine in the main condenser remains airborne and leaks directly to the environment at a rate of 1% per day with no filtration. Although not specifically stated in the USAR, this 1% per day leak rate assumption is predicated on the shutdown of the offgas system and the mechanical vacuum pump line.

The NEDO presented two separate radiological assessments. The first NEDO assessment assumed MSIV closure and the SRP assumptions, utilizing parameters from the BWROG members involved. The second assessment instead assumed the MSIVs did not trip on MSLRM signals, thereby allowing the Offgas system to continue to operate. The source term assumptions for noble gases did not change from the first assessment to the second assessment since 100% of the generated noble gases had been assumed to reach the condenser. With respect to iodine source terms, since the Offgas system will continue to operate for the second assessment (no MSIV closure) the NEDO document assumed that any amount of iodine activity transported to the condenser would be processed by the Offgas system and would be retained indefinitely within the Offgas system, and would therefore not contribute to the offsite doses. Thyroid doses from this postulated accident are therefore negligible. If the event is assumed to occur at low power without the Offgas system operating, the NEDO and the NRC SER concluded that the radiological consequences were acceptable since they would be similar to the first NEDO assessment [as noted in NUREG-0016, the iodine carryover factor to the steam is less than 0.02; therefore the SRP assumption that 10% of the released iodines are instantaneously transported to the condenser is conservative and bounds the carryover during the low power, non-MSIV closure event]. It is for this portion of the radiological analysis that the footnote describing the isolation of the mechanical vacuum pump lines is retained within the Technical Specifications. The revised footnote will not include a reference to the trip of the vacuum pump, since it is the isolation of the line which is the appropriate parameter to be addressed by the Technical Specifications.

As discussed above, the BWROG committee performed updated design basis radiological analyses for the plants sponsoring the effort to eliminate the RPS and Isolation Actuation trip from the MSLRMs. PNPP has been a member of the BWR Owner's Group, which in coordinatior with the General Electric (GE)

Company developed and submitted NEDO-31400, as shown on Appendix B of the NEDO-31400 document. Therefore it is acceptable for PNPP to reference the NEDO-31400 document in support of this licensing application as long as PNPP can demonstrate it meets the three conditions specified by the NRC in their SER as discussed in the Introduction above. The following section will discuss how PNPP adequately addresses each of the requirements placed on utilities by the NRC in the SER for the elimination of MSLRM automatic reactor trips and containment isolation valve isolation signals.

1. **The applicant demonstrates that the assumptions with regard to input values (including power per assembly, Chi/Q, and decay times) that are made in the generic analysis bound those for the plant.**

Table 1 lists the input values used in NEDO-31400 and the same input parameters as listed in the PNPP USAR for the Control Rod Drop Accident radiological assessment, Section 15.4.9. As shown by the Table, all PNPP parameters are consistent with the NEDO-31400 values used in the analysis. Discussions of some minor deviations from the GE Topical Report concerning the power/rod number, the Chi/Q value used in the NEDO document and two of the source terms used in the NEDO analyses are presented below.

a. Power/rod:

The value for the power/rod used in the NEDO analysis was 0.12 MW/rod, which is equivalent to the PNPP value truncated at two significant figures. If carried to the third significant figure, the PNPP value could be construed to be higher, however there is no impact on the outcome of the analysis, since the only use of the power/rod value was in determination of the fission product inventory used in the radiological analyses (see NEDO-31400, section 6.2.2.1). See item 1.c. below for a comparison of the PNPP fission product inventory to the NEDO inventory.

b. Chi/Q:

The Chi/Q value that was used in the NEDO analyses was 0.0003 seconds/cubic meter. The value used at PNPP is the short term (accident) diffusion estimates based on seven site years at the Exclusion Area Boundary (EAB), as provided in USAR Table 2.3-24. The slightly higher conservative value (the first two hour Chi/Q value at the EAB) of 0.00043 seconds/cubic meter, was used in the PNPP CRDA radiological assessments rather than the 0.0003 seconds/cubic meter NEDO value. However, Section 6.3.2.2 of NEDO-31400 states that "Offsite doses for Chi/Q values not shown may be obtained by scaling directly from any of the curves, since the calculated dose is proportional to the Chi/Q value". PNPP has performed the calculation of doses using the other input parameters of NEDO-31400 along with the plant specific Chi/Q value discussed above and the PNPP design Offgas System retention times. The whole body dose at the PNPP Exclusion Area Boundary (EAB) based on the assessment was calculated to be 0.003 rem. This is well within the guidelines established in the Standard Review Plan (SRP) Section 15.4.9 which indicated the radiological consequences should be less than 25 percent of the 10 CFR Part 100 limits, or 6 rem whole body (0.003 rem is .05% of 6 rem). This is also less than a third of the dose result of the NEDO-31400 analyses which was 0.01 rem (see page 17 of NEDO-31400).

c. Fission Product Inventory:

In the review of the NEDO-31400 input values for this submittal it was determined that two of the eighteen source terms used in the NEDO analyses were not quite as large as the corresponding PNPP source terms depicted in USAR Table 15.4-13. The other 16 source terms used in the NEDO analysis were either the same or a larger value than the PNPP USAR values. Both GE and PNPP have reviewed all eighteen of the source terms used and have determined that the overall NEDO source terms do bound the PNPP USAR source terms. The two source terms that had higher values in USAR Table 15.4-13 were both noble gases, Kr-89 and Xe-133m. The overall difference in the Kr-89 and Xe-133m source terms are more than offset by differences in the conservative direction in the other source terms. The relative abundance of these two sources is small. When this is taken into account together with the individual isotope half lives and dose conversion factors, the relative contribution to the total whole body dose from these two sources is small and easily offset by the higher activity assumed for the other isotopes.

In conclusion, the results of the NEDO analyses are applicable to PNPP and overall the results are bounding.

2. **The applicant includes sufficient evidence (implemented or proposed operating procedures or equivalent controls) to provide reasonable assurance that increased significant levels of radioactivity in the main steam lines will be controlled expeditiously to limit both occupational doses and environmental releases.**

Existing Alarm Response Instructions (ARIs), and Off-Normal Instructions (ONIs) have been reviewed to verify that proper actions were delineated for high radiation levels detected in the main steam lines by the MSLRM and in the Offgas system as sensed by the Offgas Pre-treatment Monitor.

The offgas Pre-treatment Monitor generates two separate Control Room alarms, one from the monitor itself, and the other from a control room recorder which receives its inputs from the Pre-treatment Monitor. These annunciators are discussed in more detail below. The present actions required by the ARIs for both of these Pre-treatment Monitor alarms are adequate. These include the requirement to monitor other instruments such as the MSLRM and Offgas Post-treatment Radiation Monitors to check for trends, to sample the reactor coolant, and to enter the ONI for "Gross Fuel Cladding Failure" if there is an indication of gross fuel failure. This ONI requires as immediate actions such things as suspending control rod movements, and performing power reductions in order to lower radiation levels to below the alarm setpoints for the MSLRMs and the Offgas Pre-treatment Monitors. The ONI also includes a requirement for an evaluation by the Shift Supervisor and a Reactor Engineer as to whether plant operation may continue or whether an orderly plant shutdown is required. PNPP feels these procedural requirements meet the full intent of the NRC's SER condition for the Offgas Pre-treatment Monitor.

For the MSLRM annunciator, the ARI already contains a requirement to enter the ONI discussed above for fuel cladding failures. The MSLRM ARI will be revised to also include a requirement to sample the reactor coolant, and to check the Offgas Pre-treatment Monitor for trends in the radiation levels. This revision will be made prior to implementing this Technical Specification change.

3. **The applicant standardizes the MSLRM and offgas radiation monitor alarm setpoint at 1.5 times the nominal nitrogen-16 background dose rate at the monitor locations, and commits to promptly sample the reactor coolant to determine possibie contamination levels in the plant reactor coolant and the need for additional corrective actions, if the MSLRM or offgas radiation monitor or both exceed their alarm setpoints.**

Presently the MSLRM alarm is set at 2.0 times the nominal 100 percent background (baseline) reading at the monitor locations. PNPP will adjust this alarm setpoint to 1.5 times the nominal 100 percent background reading as part of the implementation of this change once approved by the NRC staff. The procedural requirements for sampling and determining the need for additional actions .or MSLRM alarms are discussed in the response to the second requirement above.

The current Offgas Pre-treatment Monitor alarm setpoint is sufficient to provide an early indication of potential environmental release problems, or an early indication of fuel problems. Using the suggested 1.5 times nominal N-16 background dose rate to determine an action level for the Offgas Pre-treatment Radiation Monitor is felt to be inappropriate for PNPP. The Offgas Pre-treatment Monitor is intended to be able to identify extremely small fuel failures, and thus it is designed to be in a low background area. It is located within the process path at a point which allows short-lived activation gases, i.e. N-16, to decay to extremely low levels. This permits the monitor to be very sensitive to minor changes in the fission gas release rate from the fuel. Thus, using N-16 activity level as a basis for setting an action level for potential fuel failure is inappropriate. In discussions with the BWROG subsequent to issuance of the SER, the NRC has stated that if any utility can demonstrate a technical basis for taking an exception to setting the alarm at 1.5 times N-16 background that it would be considered.

There are presently two alarms that are generated by the Offgas Pre-treatment Monitor. First there is an alarm generated by the Pre-treatment Monitor itself. This alarm is addressed in Technical Specification 3.3.7.1, Table 3.3.7.1-1 Item 4. Note (c) to the table requires this setpoint to be set in accordance with Technical Specification 3.11.2.7. Specification 3.11.2.7 requires that the release rate of the sum of the activities of the noble gases Kr-85m, Kr-87, Kr-88, Xe-133, Xe-135, and Xe-138 measured at the main condenser air ejector shall be limited to less than or equal to 358 millicuries/second (equal to 0.358 Ci/sec), after 30 minutes decay. Thus this alarm is established to limit the offgas release. This alarm setpoint ensures that the NEDO-31400 Section 7 assumption for the offgas pretreatment monitor is met, since the NEDO stated that a change associated with a noble gas release rate in the range of 1 to 10 Ci/sec would be promptly alarmed. If the PNPP value is exceeded, the Specification requires the release rate to be restored to its limit within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Thus this setpoint serves to ensure that the operators limit the amount of offsite release and the time the plant is permitted to continue operating if the release rate is exceeded.

It should be noted that Surveillance Requirement 4.11.2.7.2.b requires that the release rate of the specified noble gases must be sampled and determined to be within the limits of Specification 3.11.2.7 within 4 hours following a 50 percent increase as indicated by the Offgas Pre-treatment Monitor. This requirement is accomplished by operator rounds with any increase of 50 percent (1.5 times the current background rate) requiring performance of the sampling established by the Surveillance. These shiftly operator rounds would present an indication if levels of offgas activity would increase.

The second Control Room annunciator is generated from a recorder which receives its signal from the Offgas Pre-treatment Monitor. The ability to alarm at the NEDO-31400 Section 7 value of 1 to 10 Ci/sec will also be met by this Offgas Pre-treatment Radiation Monitor recorder. This alarm is typically set at 0.01 Ci/sec above the background dose rate, and if offgas release rates exceed 0.075 Ci/sec, the alarm is set at 1.15 times the background release rate. These values are consistent with those outlined in LCO 3.4.5 Actions c.2 and c.3. Thus release rate increases much less than those predicted by the NEDO-31400 document would create an alarm from the Offgas Pretreatment Radiation Monitor recorder.

In addition, plant operating experience has shown that very minor fuel damage can be accurately sensed and trended by the Offgas Pre-treatment Monitor. During both the first and second fuel cycles, PNPP noted increased readings on the Offgas Pre-treatment Monitor. Although the radiation levels were well below any regulatory concern, minor fuel rod failures were confirmed by reactor coolant and offgas sample results. Testing during the subsequent refueling outages were able to determine that the extent of the problem was isolated to leaks in two rods (one in each of two fuel bundles) during the first cycle, and to leaks in one bundle during the second cycle. Thus PNPP feels justified that the Offgas Pre-treatment Monitor can give early indication of problems with the fuel, as well as having the capability of providing adequate Control Room alarms at the present established setpoints to react to a more serious fuel problem such as those evaluated by NEDO-31400.

In summary, PNPP proposes to change the MSLRM alarm setpoint to be 1.5 times the nominal Nitrogen-16 background dose rate at the monitor location, and to change the MSLRM ARI to sample the reactor coolant and check the Offgas Pre-treatment Monitor for trends in the radiation levels if the MSLRM exceeds its alarm setpoint. The setpoints associated with the Offgas Pre-treatment Monitor will continue to be set to meet TS 3.11.2.7 and 3.4.5 requirements/actions.

PROPOSED TECHNICAL SPECIFICATION CHANGES

Neither the NEDO-31400 document nor the NRC's SER stipulated what the specific Technical Specification changes should be to implement the changes discussed in the documents. PNPP has reviewed the Technical Specifications and is submitting as Attachment 2 a marked up copy of the proposed Technical Specification changes. Attachment 3 provides a marked up copy of the associated Bases change. These changes are summarized below.

1. Table 2.2.1-1 Item 7. This Table lists the Reactor Protection System Instrumentation Setpoints. Item 7 is for the Main Steam Line Radiation-High RPS setpoint. Therefore, the item will be deleted and the word "Deleted" will be inserted in place of the instruments.

2. Table 3.3.1-1, Item 7 and ACTION 5. The Table lists RPS Instrumentation operability requirements, and since the Main Steam Line Radiation-High RPS Trip is being eliminated, Item 7 is being deleted. Since ACTION 5 was only a requirement for the MSLRM instruments, the ACTION is also being deleted.

3. Table 3.3.1-2, Item 7. This Table lists RPS Instrument Response Times. Item 7 is for the MSLRM RPS trip, and is therefore being deleted.

4. Table 4.3.1.1-1, Item 7. This Table lists the RPS Instrument Surveillance Requirements. Item 7 is for the MSLRM RPS trip, and is therefore being deleted.

5. Table 3.3.2-1, Item 2.b, Table Note (d), and new Action 29. This Table lists the Isolation Actuation Instrumentation with Item 2.b being the Main Steam Line Radiation-High signal. As noted above on page 2, the isolation of the mechanical vacuum pump line is being retained in the Technical Specifications, although Note (d) describing it is being revised to reflect the fact that this is now the only Technical Specification isolation function from the MSLRM's rather than it being treated as an ancillary function. The vacuum pump line isolation valves will be designated Valve Group 6 valves, therefore the "Valve Group" column will not require change. Although the logic is atypical of the other isolation functions, it does contain 2 channels in its Trip System, therefore the "Minimum Operable Channels Per Trip System" column remains unchanged other than by the addition of Note (d), which also now describes the isolation logic for the vacuum pump lines. The "Applicable Operational Condition" column is revised to reflect that this isolation logic is only required Operable when the associated mechanical vacuum pump lines are not isolated (in Operational Conditions 1 or 2) since this is the only time that the radiological analysis depends on the isolation signal. The "Action" column is revised to reference a new Action 29 instead of Action 23. New Action 29 incorporates the appropriate provisions of Action 23 (closure of the associated isolation valves within 6 hours or a requirement to place the plant into Hot Shutdown within 12 hours), while eliminating the unnecessary requirement to place the plant into Cold Shutdown. If the operator chooses to close the isolation valves, the potential release path has been isolated, and if the operator chooses to place the plant in Hot Shutdown, all the control

rods will be inserted and the possibility of a Control Rod Drop Accident is eliminated. There then is no analysis-related need to force the plant into Cold Shutdown.

6. Table 3.3.2-3, Item 2.b. This Table lists the Isolation System Instrumentation Response Times. Item 2.b is for the MSLRM trip, and is therefore being revised to show the Response Time for the Main Steam Line Radiation- High item as "Not Applicable (NA)." The 1.0 second/ 10 second times currently shown in Table 3.3.2-3 are associated with the MSIVs and the Main Steam Line drain valves, respectively, and therefore are no longer applicable due to the elimination of the associated isolation signals to these valves. A response time for the mechanical vacuum pump line isolation valves is not applicable, since their closure is not dependent on diesel starting times (they immediately close upon de-energization of their solenoids), and the supporting analyses do not assume specific rapid closures of these valves.

7. Table 4.3.2.1-1, Item 2.b. This Table lists the Isolation Instrumentation Surveillance Requirements. These requirements now apply only for the isolation of the mechanical vacuum pump line, but are unchanged by this amendment request, with the exception that the Operational Condition column is revised to be consistent with the proposed change to Table 3.3.2-1.

8. Bases Section 2.2.1, Items 6 and 7. Item 6 discusses the signals that result in a Main Steam Line Isolation signal, and therefore reference to the High Steam Line Radiation signal is removed. Item 7 discusses the Reactor Protection System Setpoints for the Main Steam Line Radiation - High instruments which were deleted from Table 2.2.1-1, and is therefore also being deleted.

SIGNIFICANT HAZARDS CONSIDERATION

The standards used to arrive at a determination that a request for amendment involves no significant hazards considerations are included in the Commission's Regulations, 10 CFR 50.92, which state that the operation of the facility in accordance with the proposed amendment would 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 previously evaluated, or (3) involve a significant reduction in a margin of safety. The proposed amendment has been reviewed with respect to these three factors and it has been determined that the proposed changes do not involve a significant hazard because:

1. These changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change does not involve any increase in the probability of a previously evaluated accident. The RPS trips and Main Steam Line isolations being deleted were in place only to react to a previously evaluated accident, the Control Rod Drop Accident (CRDA). The elimination of the trips/isolations will not change the probability of occurrence of the CRDA, and thus has no affect on the probability of occurrence of previously evaluated accidents.

The consequences of previously evaluated accidents are also not increased as a result of the proposed changes. No credit was ever taken for the RPS trip from the Main Steam Line radiation monitors (MSLRMs) in the Control Rod Drop Accident (CRDA) accident sequence description or in the associated radiological assessment (the scram signal assumed in the CRDA is the APRM Upscale signal). At PNPP, the CRDA accident sequence description also does not depend upon the Main Steam Line isolation signals from the MSLRMs. The plant will continue to be operated in compliance with the Banked Position Withdrawal Sequence (BPWS) analysis criteria, which are unchanged by this proposed amendment. These criteria are enforced by the Rod Pattern Controller portion of the Rod Pattern Control System (RPCS), whose design and Technical Specification controls are also unchanged by this amendment, and conformance to the BPWS criteria ensure that an individual control rod's worth is such that if it is dropped during rod withdrawals, the enthalpy rise will continue to be less than the acceptance criteria for such scenarios. A CRDA event would not result in any significant radiological release, and the magnitude of any such release would continue to be less than any level which would have caused an isolation signal from the MSLRMs. As noted in the Bases for Specification 3.1.4.2, during power reductions below the LPSP, the Rod Pattern Controller portion of RPCS provides automatic supervision to assure that out-of-sequence rods will not be withdrawn or inserted. If this condition is not correctable in a manner consistent with the BPWS analysis, controls are in place to scram the plant. If the Rod Pattern Controller portion of RPCS is inoperable when thermal power is below the Low Power Setpoint, Technical Specification 3.1.4.2, Rod Pattern Control System, requires that no control rod be moved except by scram. Therefore, enforcement of the BPWS/RPCS requirements assures that the CRDA is of no significance at PNPP, and that the Main Steam Line isolation signal from the MSLRMs is not required.

Even though the BPWS/RPCS is designed to minimize the consequences of the CRDA, a hypothetical radiological assessment of a CRDA was performed which assumed that the BPWS/RPCS and their corresponding requirements do not exist in order to evaluate the radiological consequences without subsequent main steam line isolation, as compared to previous design basis assessments. This assessment was performed consistent with the BWR Owners Group Topical Report NEDO-31400 "Safety Evaluation for Eliminating the Boiling Water Reactor Main Steam Line Isolation Valve Closure Function and Scram Function of the Main Steam Line Radiation Monitor," which has been reviewed and generically accepted by the NRC staff in a Safety Evaluation Report (SER) dated May 15, 1991.

The NEDO-31400 submittal and the NRC's SER analyzed the proposed changes and both concluded that as long as the individual utilities met certain conditions the changes would not significantly affect the consequences of a previously evaluated accident. This amendment request documents how PNPP meets the conditions imposed by the NRC's SER, and that the PNPP design is in fact bounded by the NEDO-31400 radiological analysis. Thus this assessment also shows that there is no significant increase in the consequences of any previously evaluated accident.

2. The proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

   The proposed changes request the removal of the Technical Specification requirements for the RPS trips and main steam line isolation signals generated by the MSLRMs. The original reason for the signals was to respond to a CRDA as discussed above. The elimination of these signals, which served only in a mitigative function, do not create the possibility of a new or different kind of accident from those previously evaluated. Also, radiation monitors with alarm functions will remain installed in the plant to warn the operators of a high radiation condition in the main steam lines, or in the offgas system. In addition, the trip signal from the MSLRMs to the mechanical vacuum pump line isolation valves will remain installed in the plant, and will be addressed in the Technical Specifications. As such, the condenser release path through the mechanical vacuum pump line will still be isolated on a high Main Steam Line Radiation condition. Thus no new or different accident can be postulated by the proposed changes.

3. The proposed changes do not involve a significant reduction in the margin of safety.

   A reliability assessment of the elimination of the MSLRM scram function on reactivity control failure frequency and core damage frequency was performed as part of the NEDO analysis. The results of the analysis indicated a negligible increase in reactivity control failure frequency with deletion of the MSLRM scram function. However, this increase is offset by the reduction in the transient initiating events (inadvertent scrams). This reduction in transient initiating events represents a reduction in core damage frequency. The final result was determined to be a net improvement to safety.

ENVIRONMENTAL CONSIDERATION

The proposed Technical Specification change request has been reviewed against the criteria of 10 CFR 51.22 for environmental considerations. As shown above, the proposed change does not involve a significant hazards consideration, nor increase the types and amounts of effluent that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, it has been concluded that proposed Technical Specification change meets the criteria given in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

TABLE 1
INPUT VALUES FOR CRDA

	PARAMETER	NEDO-31400	PNPP USAR
1.	Number of Failed Fuel Rods	850	770
2.	Mass Fraction of Fuel > Melt Temperature	0.0077	0.0077
3.	Core Ave. Fuel Rod Power Multiplier (Peaking Factor)	1.5	1.5
4.	Release Fractions for Melt (to coolant)		
	a. Noble Gas	100%	100%
	b. Iodides	50%	50%
5.	Release Fraction for Non Melt (to coolant)		
	a. Noble Gas	10%	10%
	b. Iodides	10%	10%
6.	Multiplier of Rated Thermal Power	1.05	1.05
7.	Transport to Steam		
	a. Noble Gas	100%	100%
	b. Iodides (Scenario 1)	10%	10%
8.	Condenser Activity Remaining Airborne		
	a. Noble Gas	100%	100%
	b. Iodides (Scenario 1)	10%	10%
9.	Condenser Leak Rate (Scenario 1)	1%/day	1%/day
10.	Holdup/Decay		
	a. Turbine Building (Scenario 1)	None	None
	b. Activity Prior to Accident Initiation	None	None
	c. Decay during Residence In Condenser	Yes	Yes
	d. Decay after Release to Environment	No	No

PARAMETER	NEDO 31400	PNPP USAR
11. Chi/Q (sec/cubic meter)		
a. Scenario 1	.0025	.00067
b. Scenario 2	.0003	.00043*
12. Holdup Time in Offgas Treatment System (Scenario 2)	Yes	Yes
a. Xe	NEDO Figure 4	54.2 days (USAR Table 11.3-8a)
b. Kr	NEDO Figure 3	59.3 hours (USAR Table 11.3-8a)

* This value is discussed in the letter