NSP

Northern States Power Company

Prairie Island Nuclear Generating Plant
1717 Wakonade Dr. East
Welch, Minnesota 55089

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10 CFR 50.71(e)

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Submittal of Revision No. 18 to the
Updated Safety Analysis Report (USAR)

Pursuant to 10 CFR 50.71(e) we are submitting one original and 10 copies of Revision No. 18 to the Updated Safety Analysis Report (USAR) for the Prairie Island Nuclear Generating Plant. This revision brings the USAR up-to-date as of February 28, 1999, though some information is more recent.

On September 26, 1997 NSP docketed a commitment to complete the USAR Review Project by December of 2001. Within that letter, the project was broken down into three phases. Phase I was a review of the USAR in order to identify and resolve discrepancies within and between Sections of the USAR. The current (at that time) revision of the USAR was compared to the FSAR and the NRC SER. Additionally, previous revisions of the USAR were reviewed. Discrepancies that were identified were researched and resolved. This revision is the result of the Phase I activities.

The changes made to the USAR were controlled by two processes. An Editorial Change was made for correcting typographical errors, grammar, capitalization, etc. An Editorial Change was also used to correct inaccurate information that was the subject of a previously reviewed document. For example, a design change that was reviewed per 10CFR50.59, or a License Amendment reviewed and approved per 10CFR50.90, would be a previously reviewed document. If information in the USAR

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was found to be inaccurate and that information should have been updated per the previously reviewed document, then the discrepancy was resolved through the Editorial Change process. If a discrepancy was identified that did not have a previously reviewed document associated with it, then a 50.59 evaluation was written to evaluate the change to the USAR.

With the exception of some historical appendices, all sections of the USAR were revised to some degree. To make updating the document easier and less susceptible to mistakes, entire replacement sections are being transmitted.

Attachment 1 contains descriptions and summaries of safety evaluations for changes, tests, and experiments made under the provisions of 10 CFR 50.59 during the period since the last update. Attachment 1 also contains discussions of changes made to regulatory commitments made within our Regulatory Commitment Change Process.

Attachment 2 contains the USAR page changes and instructions for entering the changes.

In this letter we have made no new Nuclear Regulatory Commission commitments.

I certify that the information presented herein accurately presents changes made since the last updating submittal of the Prairie Island USAR.

Please contact Jack Leveille (651-388-1121, Ext. 4124) if you have any questions related to this letter.

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Attachments: 1. Safety Evaluation Summaries
2. USAR page changes

ATTACHMENT 1

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
REPORT OF CHANGES, TESTS AND EXPERIMENTS – JULY 1999

The following sections include a brief description and a summary of the safety evaluation for each of those changes, tests, and experiments which were carried out without prior NRC approval, pursuant to the requirements of 10 CFR Part 50, Section 50.59(b).

Safety Evaluation 173, Addendum 1 – Impact of Throttling Emergency Boration Flow on Time to Hot Shutdown Using Boric Acid Injection

Description of Change

This change increases from 15 minutes to 30 minutes the time given in the USAR for shutting the reactor down hot with no rods inserted using one pump injecting boric acid. This change resulted from throttling the flow of concentrated boric acid through the emergency boration motor operated valve.

Summary of Safety Evaluation

The charging system injecting the boric acid is classified as functionally non-safety related, and the time to hot shutdown using boric acid injection is not credited for mitigation purposes in any accident analysis. Therefore, there is no applicable NRC approved acceptance limit in the Technical Specifications.

Safety Evaluation 173, Addendum 2 – Impact of Throttling Emergency Boration Flow on Boric Acid Injection for Xenon Decay Compensation

Description of Change

This change revises Sections 3.1.2.6, 10.2.3.1c., and 7.8.5.1b.2. of the USAR to reflect the impact of throttling emergency boration flow on boric acid injection for xenon decay compensation.

Summary of Safety Evaluation

The system which compensates for xenon decay by boric acid injection is functionally non-safety related. The time at which xenon decays below the equilibrium operating level following trips from even low power levels is much greater than the increased time in compensating for xenon by boric acid injection caused by throttling emergency boration flow. The time to compensate for xenon decay using boric acid injection is not credited for mitigation purposes in any accident analysis.

Safety Evaluation 478-00-01 – USAR Update Figures

Description of Change

This safety evaluation corrects errors in the text, title, or index, reinstates figures previously in the FSAR, adds figures not previously in the FSAR or USAR, replaces or deletes figures, or relocates figures.

Summary of Safety Evaluation

No unreviewed safety questions were created as a result of the revisions.

Safety Evaluation 478-00-01 Addendum 1 – USAR Update Figures, Section 14

Description of Change

This safety evaluation justified redrafting several USAR figures using a CAD system or best print master available. The SE also reinstates figures that were originally in the FSAR, adds figures not previously in the FSAR or USAR, and revises figures to include the most recent information.

Summary of Safety Evaluation

There were no technical changes to the figures for Section 14. No unreviewed safety questions were created as a result of the revisions.

Safety Evaluation 478-01-01 – USAR Update Sections 1.1 and 1.3

Description of Change

This non-modification safety evaluation revised Sections 1.1 (Purpose, Scope and Organization) and 1.3 (Summary Design Description and Safety Analysis) of the USAR as follows:

Deleted the phrase concerning the regulatory status of the USAR.

Added brief descriptions of the primary containment, secondary containment and contents of the intake structures.

Deleted the description of the core loading pattern and added a reference to Sections 14B and C (Current unit reload safety analysis).

Revised the discussions concerning the relationship between the containment spray system and the containment fan coil units.

Expanded the description of the various ventilation filter systems.

Added several shared systems to the Tables and revised the descriptions for several components.

Summary of Safety Evaluation

The proposed USAR revisions do not affect the design basis, function or failure mode of any component and do not involve any accident analysis. Therefore, there are no dose or malfunction consequences.

Safety Evaluation 478-02-01 – USAR Update Section 2

Description of Change

This non-modification safety evaluation revised Section 2 of the USAR as follows:

Relocated information from Technical Specification Section 5 in accordance with a recent License Amendment Request.

Added information concerning license numbers, docket numbers and applicable dates to the introduction.

Re-instated and up-dated discussions concerning Corps of Engineers' property and emergency traffic control near the site.

Up-dated local land use and industrial facilities based on the most recent emergency planning report.

Expanded the discussion concerning the use of meteorology data for accident analysis, ODCM, etc.

Expanded and revised the discussion of the Radiological Environmental Monitoring Program.

Expanded and revised discussions concerning consequences of local catastrophes.

Corrected errors in the Tables.

Re-instated, corrected and added Figures.

Summary of Safety Evaluation

The proposed USAR revisions do not affect the design basis, function or failure mode of any component and do not involve any accident analysis. Therefore, there are no dose or malfunction consequences.

Safety Evaluation 478-03-01 - USAR Update Section 3, Deletion of ENC Fuel-Specific Material

Description of Change

This change deletes from Section 3 of the USAR material and references regarding Exxon Nuclear Company (ENC) supplied fuel, except for those providing an historical perspective on the evolution of the current core design, those relevant to the current core, and those affecting handling and storage. The deleted material is now irrelevant because ENC supplied fuel assemblies can no longer be loaded in the core.

Summary of Safety Evaluation

Westinghouse fuel has been used exclusively in the core since Cycle 15 for both units and all accidents evaluated in Section 14 of the USAR have been previously evaluated for Westinghouse, not ENC, fuel.

Safety Evaluation 478-03-02 - USAR Update Section 3, Updates of Design Bases and Other Technical Material To Current Fuel

Description of Change

This change updates the material in Section 3 of the USAR to the Westinghouse fuel design bases. This change is needed because much material in Section 3 still reflects previous fuel designs.

Summary of Safety Evaluation

Westinghouse fuel has been used exclusively in the core since Cycle 15 for both units and all accidents evaluated in Section 14 of the USAR have been previously evaluated for the current Westinghouse fuel.

Safety Evaluation 478-03-05 - USAR Update Section 3 - Average Assembly Burnup for Representative Fuel Rod Bow Effects

Description of Change

This change increases from 24,000 MWD/MTU to 33,000 MWD/MTU the average assembly burnup given in Section 3 of the USAR for representative rod bow penalty and the maximum burnup of concern for evaluating effects of rod bow.

Summary of Safety Evaluation

This change updates Section 3 of the USAR to reflect the latest NRC approval regarding fuel rod bow penalty and does not change the NRC approved allowable

DNBR limit. The accidents previously evaluated in the SAR already use 33,000 MWD/MTU as the average assembly burnup on which fuel rod bow penalty is based.

Safety Evaluation 478-03-07 - USAR Update Section 3, CRDM Cooling Modification

Description of Change

This change rewrites the third through sixth paragraphs of Section 3.5.3.2.1c. of the USAR to reflect Modification Number 86Y685. Modification Number 86Y685 modified the control rod drive mechanism (CRDM) ducting system above the vessel missile shield and replaced the original high speed axi-vane fans with low speed centrifugal fans. The modification also reversed the direction of the air flow past the CRDMs from drawing warm air past the CRDMs, cooling the air, and discharging it to containment to drawing air from containment past cooling coils and discharging it past the CRDMs.

Summary of Safety Evaluation

The equipment, components and overall system modified are not important to safety. The modified equipment on the CRDM cooling skid replaced similar equipment on the skid. No new potential missiles were created. The new locations and weights of the replacement equipment were considered in seismic analysis calculations.

Safety Evaluation 478-04-02 - USAR Update Section 4, Two Transient Condition Experience Updates

Description of Change

This change makes two updates to the USAR based on actual experience related to the transient conditions selected for the fatigue evaluation at the time of the reactor coolant system design. The first update changes the characterization of the heatup and cooldown frequency to be expected at Prairie Island based on the experience recorded

in Surveillance Procedure SP 1173[2173]. The other update adds a sentence to the USAR section on turbine roll test reporting the cycles actually performed.

Summary of Safety Evaluation

The SP 1173[2173] record shows that the Prairie Island experience falls well within the estimate of frequency of transient conditions selected for the original fatigue evaluation of the reactor coolant system, so there is no impact on the fatigue evaluation due to the actual experience.

Safety Evaluation 478-04-03 - USAR Update Section 4, Deletion of Steam Generator Tube Inspection, Repair and Plugging Histories from USAR

Description of Change

This change deletes Tables 4.3-13 and 4.3-14, steam generator tube inspection, repair and plugging history for Unit 1 and 2, respectively, from the USAR.

Summary of Safety Evaluation
Technical Specification 4.12E. contains requirements for reports to the Nuclear Regulatory Commission on steam generator tube surveillance. Tables 4.3-13 and 4.3-14 are redundant to these reports.

Safety Evaluation 478-04-04 - USAR Update Section 4, Update of Inconel Tubing Corrosion Experience

Description of Change

This change updates the Inconel tubing corrosion experience reported in the USAR to reflect operating experience with Inconel 600 tubing in steam generators in nuclear power plants.
Summary of Safety Evaluation

As the nuclear industry has become aware of steam generator tube degradation, significant improvements in inspection technology have reduced the probability of steam generator tube rupture. However, the accident analyses in the USAR already assume that steam generator tube leakage and steam generator tube rupture can occur due to degraded tubing, and none of the assumptions for the tubing change as a result of this USAR update. Both wastage and stress corrosion cracking degradation mechanisms in Inconel 600 tubing in the steam generators are addressed in the basis for Technical Specification 4.12.

Safety Evaluation 478-04-05 - USAR Update Section 4, Correction of Minimum Factor of Safety Against Collapse of Steam Generator Tubes

Description of Change

This change corrects the minimum factor of safety against collapse of steam generator tubes reported in the USAR.

Summary of Safety Evaluation

The maximum secondary-primary pressure differential remains 1100 psi; the ASME Section VIII design collapse pressure remains 2310 psi – these have not changed.

Safety Evaluation 478-04-06 - USAR Update Section 4, Addition of Section to Address Loose Parts Monitoring

Description of Change

Section 4.7.4 has been added to the USAR to address loose parts monitoring.

Summary of Safety Evaluation

The loose parts monitoring system, the Digital Metal Impact Monitoring System, is an entirely passive system. It provides no control or protection functions associated with any systems or components important to safety or accident or transient evaluated in the USAR.

Safety Evaluation 478-04-07 - USAR Update Section 4, Correction of Pressurizer Relief Tank Rupture Disc Relief Capacity in Table 4.1-4

Description of Change

This change corrects the pressurizer relief tank rupture disc relief capacity shown in Table 4.1-4 of the USAR.

Summary of Safety Evaluation

The design basis for the relief capacity of the rupture disc on the pressurizer relief tank remains that it be at least equal to the combined capacity of the pressurizer safety valves; this basis is satisfied by the correction. The pressurizer relief tank rupture disc relief capacity is not used in any accident analysis.

Safety Evaluation 478-04-08 - USAR Update Section 4, Deletion of "Expected" Column from Table 4.1-8

Description of Change

This change deletes the "Expected" column from Table 4.1-8 of the USAR.

Summary of Safety Evaluation

The NRC approved acceptance limit for operating transients in the reactor coolant system is based on the design column in USAR Table 4.1-8, which remains unchanged.

Safety Evaluation No. 478-05-01 – USAR Update Sections 5.1 and 5.2

Description of Change

Safety Evaluation 478-05-01 evaluates proposed changes to the USAR, Sections 5.1 and 5.2, identified as part of the USAR update project. These USAR sections address

the design capability of the containment systems. Specifically, Section 5.1 provides the summary description and Section 5.2 addresses primary containment. The discussion of the primary containment includes the criteria, the isolation systems, vessel penetrations, ventilation systems, testing, etc. The changes made to these sections address editorial changes, updates due to previous 10 CFR 50.59 evaluations and NRC SERs, and clarifications to describe plant configuration and operation.

Summary of Safety Evaluation

These changes have no effect on any of the methods, inputs or assumptions used in any accident analysis. Thus, there is no potential increase in consequences or a reduction in margin of safety. These changes do not affect any assumptions or precursors which could lead to any different types of accidents. These changes do not adversely affect the design or operation assumptions used in any accident analyses for any structures systems or components important to safety. The assumptions regarding component performance are consistent with their design bases. Thus, there is no increase in the probability of an accident or equipment malfunction previously evaluated, nor is there the possibility of creating an accident or equipment malfunction of a different type. Therefore, these changes do not constitute an unreviewed safety question.

Safety Evaluation 478-05-02 – USAR Update Section 5.3

Description of Change

Safety Evaluation 478-05-02 evaluates proposed changes to the USAR, Section 5.3, identified as part of the USAR update project. This USAR section addresses the design capability of the secondary containment systems (shield building and shield building ventilation). Other portions of secondary containment such as the Auxiliary Building Special Ventilation Zone and System are addressed in Section 10. The changes made to this section addresses editorial changes, updates due to previous 10 CFR 50.59 evaluations and NRC SERs, and clarifications to describe plant configuration and operation.

Summary of Safety Evaluation

These changes have no effect on any of the methods, inputs or assumptions used in any accident analysis. Thus, there is no potential increase in consequences or a reduction in margin of safety. These changes do not affect any assumptions or precursors which could lead to any different types of accidents. These changes do not adversely affect the design or operating assumptions used in any accident analyses for any structures systems or components important to safety. The assumptions regarding component performance are consistent with their design bases. Thus, there is no increase in the probability of an accident or equipment malfunction previously evaluated, nor is there the possibility of creating an accident or equipment malfunction of a different type. Therefore, these changes do not constitute an unreviewed safety question.

Safety Evaluation 478-05-03 – USAR Update Section 5.4

Description of Change

Safety Evaluation 478-05-03 evaluates proposed changes to the USAR, Section 5.4, identified as part of the USAR update project. This USAR section addresses containment capability. Specifically this section includes an evaluation of potential hydrogen generation and a historical evaluation of containment capability with respect to dose reduction. The changes made to this section addresses editorial changes, updates due to previous 10 CFR 50.59 evaluations and NRC SERs, and clarifications to describe plant configuration and operation.

Summary of Safety Evaluation

These changes have no effect on any of the methods, inputs or assumptions used in any accident analysis. Thus, there is no potential increase in consequences or a reduction in margin of safety. These changes do not affect any assumptions or precursors which could lead to any different types of accidents. These changes do not adversely affect the design or operating assumptions used in any accident analyses for any structures systems or components important to safety. The assumptions regarding component performance are consistent with their design bases. Thus, there is no increase in the probability of an accident or equipment malfunction previously evaluated, nor is there the possibility of creating an accident or equipment malfunction of a different type. Therefore, these changes do not constitute an unreviewed safety question.

Safety Evaluation 478-06-01 – USAR Update Table 6.2-5

Description of Change

NRC Generic Letter 97-04 requested information pertaining to the adequacy of the available net positive suction head for the SI and RHR pumps during the injection and recirculation phases. Though Amendment 12 of the FSAR's Table 6.2-5 included this data, the original supporting analysis was not retrievable. Thus a new calculation was prepared, ENG-ME-005 Rev. 2, the results of which proved consistent with Table 6.2-5 Amendment 12 of the FSAR for the minimum available NPSH for the RHR pumps during the recirculation phase. Coincidentally analysis ENG-ME-293 Rev. 0 was retrieved and it was determined that the minimum available NPSH for the RHR pumps during the injection phase should be revised upward from 26 feet to 50 feet in Table 6.2-5.

This SE has been prepared to revise Table 6.2-5 to correct the RHR minimum available NPSH data.

Summary of Safety Evaluation

This change to Table 6.2-5 adds the value for the RHR pumps minimum available NPSH during the recirculation phase and deletes Note 2 since it is superfluous now that a value for available NPSH is listed. Amendment 12 of the FSAR previously listed a value which was consistent with the value calculated by analysis ENG-ME-005 Rev. 2 but the original analysis was not retrievable. Further it was determined upon review of analysis ENG-ME-293 Rev. 0 that the minimum available NPSH during the injection phase could be raised from 26 feet to 50 feet.

Consequences of an accident and equipment malfunction which were previously evaluated in the SAR are not affected by this change in Table 6.2-5. Similarly the probability of occurrence of an accident and equipment malfunction previously evaluated in the SAR remain unchanged by this updating of the minimum available NPSH values for the RHR pumps during injection and recirculation. No new accidents or different types of equipment malfunctions are created by this correction to the RHR pumps' minimum available NPSH values.

Safety Evaluation 478-07-01 – USAR Update Section 7.9, Seismic Design, Testing, and Monitoring

Description of Change

The purpose of this safety evaluation is to review the proposed update to section 7.9 of the USAR.

USAR Section 7.9 provides the basis for seismic design and testing of instrumentation and electrical equipment, and seismic monitoring system design.

The objectives of the rewrite of section 7.9 are as follows:

to separate seismic design from seismic testing,
to bring the Seismic Monitoring System back into the USAR. Seismic Monitoring Instrumentation was originally described in section 1.6.4.15 of the FSAR. This discussion was subsequently deleted in Revision 0 of the USAR and a small paragraph referencing a figure was retained and moved to section 12.2.2.5.7. It was the desire of the USAR Update project to reinstate this discussion and relocate it, along with the figure, to section 7.9 of the USAR for reasons of clarity and to provide a better fit.
to better describe the design basis of the Seismic Monitoring System and,
to update the USAR for current seismic design/testing requirements.

Items 1 and 2 are considered editorial changes per the direction of 5AWI 4.9.0. Items 3 and 4 are reviewed to for safety implications.

Summary of Safety Evaluation

No unreviewed safety question were discovered due to the configuration and operation of the seismic monitoring system. The Seismic Monitoring System provides no control or protection functions associated with any equipment that is important to safety. The Seismic Monitoring System provides only indication of seismic activity and recording of such activity. Therefore, the system cannot create the possibility of an unreviewed safety question.

Safety Evaluation 478-07-02 – USAR Update Section 7.6, Incore Instrumentation

Description of Change

Review of this section indicated that the information was incorrect and did not represent the PINGP installed configuration. Therefore, a rewrite was required to correct these errors.

The objectives of the rewrite of section 7.6 are as follows:

Correct apparent deficiencies in subsection 7.6.2.1.1 regarding calibration and normalization of incore thermocouples,
Delete references to isothermal calibration of incore thermocouples in subsection 7.6.2.1.2,
Modify the method of application of normalization factors in subsections 7.6.2.1.3 and 7.6.2.1.4,
Update subsection 7.6.3 with information on the number of movable incore detectors that are required to be operable,
Delete Tables 7.6-1 and 7.6-2, and Figure 7.6-3 which presented incorrect information concerning the incore thermocouple design and installation configuration
Correct information on Figure 7.6-1, and
Delete Figure 7.6-2 since the information presented is not necessary or beneficial and is not currently accurate.

Summary of Safety Evaluation

The proposed USAR revisions do not affect the design basis, function or failure mode of any component and do not involve any accident analysis. Therefore, there are no dose or malfunction consequences.

Safety Evaluation 478-07-03 – USAR Update Section 7, Control Bank D High Bank Position Rod Stop

Description of Change

USAR Section 7.2 provides the basis for reactor controls design. Rod stops are a group of reactor controls that prevent the control rods from being withdrawn from the reactor

when certain conditions exist. Currently, the list of rod stops indicated in USAR Table 7.4-2 excludes the Control Bank D automatic withdrawal rod stop. The Control Bank D automatic withdrawal rod stop should be included on this list.

Rod stops are used as a control interlock which attempts to preclude the use of a reactor protection feature. For example, on an approach to an overpower ΔT/overtemperature ΔT condition which could result in a reactor trip, the reactor control system will initiate a rod stop to stop the automatic and manual withdrawal of the control rods. This action attempts to prevent challenging the reactor protection system as the primary line of defense and keeps the plant within its Technical Specification required parameters.

The objective of this safety evaluation is to recognize the existence of this rod stop by adding the relative information concerning the rod stop associated with the high bank position of CBD into the USAR.

Summary of Safety Evaluation

The proposed USAR revisions do not affect the design basis, function or failure mode of any component and do not involve any accident analysis. Therefore, there are no dose or malfunction consequences.

Safety Evaluation 478-08-01 – USAR Update Section 8.7

Description of Change

Section 8.7 was reviewed as part of the USAR Update project. Several additions to this section are required to incorporate the results of project 96ED01 "Cable Tray Barrier Installation" and clarify text of the section. Project 96ED01 installed barriers where required according to the USAR criteria. However, it was found in the course of the project that the USAR is only a summary of the general criteria and that more details are required to implement the requirements in the plant. Project 96ED01 reviewed the USAR, construction era documents, and plant drawings to determine the criteria used for installing cable tray covers in order to provide electrical separation via barriers where separation distances are not maintained. Analysis of Record ENG-EE-085 Rev.1 "Cable Tray Separation Barrier/Cover Criteria" was generated to document the results of the 96ED01 project review.

Summary of Safety Evaluation

This USAR change is not related to a physical change to the plant. This USAR change makes cable tray separation criteria requirement additions and corrections in accordance with original plant construction design documents and drawings containing details on routing criteria, separation criteria, and protective barrier requirements. The USAR is a summary of these other documents. As a summary, some details which provide a full explanation of all of the considerations involved in determining whether a

protective cover is required and what separation distances are needed in complex configurations are not included in the USAR. Analysis of Record ENG-EE-085 Rev. 1 associated with modification 96ED01 outlines the historical design and construction documents and the detailed clarifications which are not included in the USAR.

These changes in the wording of the USAR do not change a system, structure, or component in the plant. These changes add details regarding tray separation which were not included in the short description in the FSAR/USAR but were implemented in plant construction and in modifications since then. Project 96ED01 verified that the plant conforms with these criteria for tray separation. Because these changes are consistent with or more conservative than the summary statements currently in the USAR they do not alter the plant, its response to events, or its design basis.

Safety Evaluation 478-09-01 - USAR Update Section 9

Description of Change

Corrected technical inaccuracies in stated capacities and ratings of tanks in Table 9.1-3

Deleted the last sentence of paragraph three on page 9.3-2 with regards to cover gas hold up times. The sentence, in the context of the paragraph, is irrelevant and misleading.

Summary of Safety Evaluation

The capacity of the tanks in question, nor the rating of the tanks or filters, are not considered in the mitigation of any accident. The tanks in question are not limiting components in USAR 14.5.3.1. The cover gas system is not assumed to be the limiting factor described in USAR 14.5.3.1.

The changes in capacity, etc., outlined above have no effect on the initiation of the accidents that are analyzed in the USAR or any pending submittal and therefore cannot change the probability of occurrence.

The components being considered are not initiating factors with regards to the malfunction of any equipment important to safety.

Since none of this equipment is involved with mitigating the consequences of any event it does not have any influence on the results of any other equipment malfunction.

Failures of radiation waste system components are already analyzed. Changing the capacity, ratings, etc., will not create a new initiation scenario for any accident.

The resolution of the USAR to as built conditions will not create any malfunction initiations. With regards to the radiation waste system components discussed in this SE, the failure methods assumptions are unchanged.

The Technical Specifications Bases were reviewed and the configuration changes addressed in this evaluation are not used in any analysis to determine any safety margin. The deletion of the cover gas statement is irrelevant to the basis of any technical specification. Therefore, there can be no reduction in any safety margin as a result of this change.

Safety Evaluation 478-10-01 – USAR Update Section 10.2.3.2.3, Charging Pump Speed Control Circuitry

Description of Change

A feedback loop was added into the charging pump speed control circuitry. This feedback circuitry enables the charging pump to change speed by smaller amounts and enables the pressurizer level control circuitry to maintain a constant pressurizer level.

Previously, for small changes in pressurizer level the air signal to the charging pump actuator is proportional to the signal from the level control circuit. However, for small changes in pressurizer level the air signal was not large enough to effect a change in charging pump speed. As a result, the pressurizer level varied much like a sine wave.

Summary of Safety Evaluation

The addition of a feedback loop to the charging pump speed control circuitry does not lead to an unreviewed safety question. The modification does not affect nuclear safety in a way not previously evaluated in the SAR. The charging pump response to a small break LOCA event, which has been evaluated as an accident, is not affected by this modification. Technical Specification Section 3.2 identifies the operability criteria for the pumps but no Technical Specification discusses the pump control system.

Safety Evaluation 478-10-02 – USAR Update Section 10.2.2.2, Add Two Filters to Spent Fuel Pool Cooling System

Description of Change

Two filters were added to the demineralizer inlet side of the spent fuel pool cooling system. These filters are intended to collect debris from the spent fuel pool rather than let the debris collect within the demineralizer.

Safety evaluation #SE 380 was prepared to "justify changing Table 10.2-3 to incorporate the changes due to modification 79L509" as well as to support the adequacy of these filters' 150# design pressure. However the update to Section 10.2.2.2 to account for the two additional filters was not addressed by SE 380 nor did the SE address adding these two filters.

Summary of Safety Evaluation

The addition of these two filters and the revision to USAR Section 10.2.2 have no effect upon the results of any dose analysis. The increased probability of occurrence of an accident previously evaluated in the USAR has no relationship to the revisions intended

for Section 10.2.2. Similarly, revising USAR Section 10.2.2.2 will not increase the probability of any equipment malfunction or the consequences of any malfunction of equipment.

Safety Evaluation 478-10-03 – USAR Update Section 10.3.4.2.3, Correct Erroneous Reference to Auxiliary Building Special to read Shield Building Vent Stack

Description of Change

From the original FSAR submittal in the 70's through the current USAR, Section 10.3.4.2.3 has erroneously indicated that the Auxiliary Building Special Ventilation System exhaust flow is via the "Auxiliary Building Vent". However, the Auxiliary Building HVAC flow diagram and related operating procedure, C37.1, correctly indicate that this exhaust flow is via the Shield Building Vent Stack. This safety evaluation rectifies the erroneous reference in the text of Section 10.3.4.2.3.

Summary of Safety Evaluation

This revision to the text of Section 10.3.4.2.3 is strictly editorial and has no physical relationship to the plant. Thus the consequences of an accident previously evaluated in the SAR, the probability of occurrence of an accident previously evaluated in the SAR, the probability of occurrence of a equipment malfunction or its consequences remain unaffected by this USAR text change. Similarly this USAR text change will not create the possibility of an accident of a different type nor the possibility of a different type of equipment malfunction. The margin of safety as defined in the basis for any Technical Specification remains unchanged by this USAR text update.

Safety Evaluation 478-10-04 – USAR Update Section 10.2.1, Revise Minimum Contents of RWST

Description of Change

Engineering calculations were prepared which determined that the minimum required refueling water storage tank (RWST) contents of 200,000 gallons are more than sufficient to satisfy SI and CS system operability. Both the Plant Technical Specifications, Section 3.3.A.1.a, and Table 6.2-4 already indicate this minimum RWST content of 200,000 gallons.

This SE has been prepared to revise Table 10.2-1 Rev. 14 to delete the minimum contents of the RWST for SI and CS operability as it is redundant to Table 6.2-4.

Summary of Safety Evaluation

This change to Table 10.2-1 lowers the minimum contents of the RWST from 269,000 gallons to 200,000 gallons.

Engineering calculations were prepared which concluded that a minimum 200,000 gallons of RWST contents are required to support SI and CS system operability.

Consequences of an accident and equipment malfunction which were previously evaluated in the SAR are not affected by this reduction in the minimum required RWST contents. Similarly the probability of occurrence of an accident and equipment malfunction previously evaluated in the SAR remain unchanged by this reduction in minimum required contents of the RWST. No new accidents or different types of equipment malfunctions are created by this reduction in minimum required RWST contents. This change will now match the minimum required contents of the RWST as listed in TS.3.3.A.1.a.

Safety Evaluation Number 478-11-01 - USAR Update Section 11, Steam Dump Capacity

Description of Change

Revised all USAR statements referring to steam dump capacity to be in conformance with each other.

Corrected statements in 1.3.4, 3.1.2.1, 11.1.2, 11.4.1, 11.4.2, 11.4.3, Table 11.1-3, and 14.4.9 regarding capacity of the condenser steam dump valve to conform with capacity indicated in sections 4.1.4.4, 7.2.1, 7.2.2.3, 7.2.3.4, and on the valve data sheets.

All statements regarding steam dump capacity will reflect the following statements: The load rejection capacity of the plant between 55% and 100% of nominal full load is 47.5%. The steam dump capacity for load rejection is 37.5%. The capacity of the atmospheric steam dumps is 30%. The capacity of the turbine bypass is 7.5%.

The original design of the steam dump system consisted of 4-8 inch atmospheric valves, 1-8 inch condenser valve, and 1-4 inch condenser valve. This system was advertised to accommodate a 40% load rejection (50% including automatic control rod insertion) @ 750 psia S/G pressure.

However, the capacity of the 4-inch valve was incorrectly included in this calculation, since the control scheme prevented the 4-inch valve and the 8-inch valves from being actuated at the same time.

Although never used, the control scheme for the 4-inch valve was disconnected by Modification Package 89L097 and was subtracted from the system configuration in the descriptive text. In doing so, two sets of capacities were stated for the remaining

5-8 inch valves: 37.5% in sections 4.1.4.4, 7.2 1, 7.2.2.3, and 7.2.3.4; 37% in sections 11.1.2, 11.4.1, 11.4.2, 11.4.3, and 14.4.9.

The 37% statements erroneously assign a smaller capacity to the condenser 8-inch valve than the atmospheric 8-inch valves, despite the fact the valves are trimmed identically.

Furthermore, the "percentage of" statements are also inconsistent. Some places say "external load", others say "turbine load" others say "rated steam flow". Although all of these references are related, they represent different situations. To avoid future confusion, all statements will be worded identically in "% of nominal full load".

Summary of Safety Evaluation

Condenser steam dump load rejection capacity is not a mitigating factor in any accident evaluation. The capacity of the valve with regards to a stuck open condition is evaluated in the small steamline break. This capacity has not changed. Furthermore, the capacity of the stuck open valve is well within the bounds of the small break analysis limitations, which assumes a 25% flow rate.

The function, control, and location of the valve has not changed. There is no accident or transient evaluation that credits operation of the condenser steam dump valve as an initiating factor.

There is no relationship between the steam dump capacity and any equipment important to safety. The relative capacity of the steam dump system can not be an initiator of any malfunction of any equipment important to safety and therefore cannot increase the probability of occurrence of a malfunction.

The relative capacity of the steam dump system is given no credit in the mitigation of any accident; therefore it cannot create a different type of malfunction.

The Technical Specifications Bases were reviewed and the capacity of the steam dump system is not used in any analysis to determine any safety margin; therefore, there can be no reduction in any safety margin as a result of this change.

Safety Evaluation 478-11-02 - USAR Update Section 11.4, Steam Dump Operations

Description of Change

The statement "Plant cooldown below 540F is only possible using the bypass valves" is untrue and has been deleted.

Added wording to indicate the power operated relief valves may be used for plant cooldown when the Steam Dump System is not available.

Summary of Safety Evaluation

Steam dump control function is not a factor in any accident mitigation.

The steam dump system is not considered an initiator in any accident.

The relationship of steam dump system and equipment important to safety has not changed. The operations or capacity of the steam dump system have no increased potential for initiating malfunction of equipment important to safety.

There is no change in function or control or configuration of the steam dump system, which is given no credit for mitigating the consequences of a malfunction in any case.

There is no change to the system. The variation in method of cooldown control will not initiate a different type of accident since only two things could happen: the PORV sticks in an open or throttled position, which is an accident type already analyzed, or the valve fails to open, which is not an accident condition.

The changes of operation or capacity of the steam dump system do not constitute a new method of initiating a malfunction of equipment important to safety.

The Technical Specifications Bases were reviewed and the operational options of the steam dump system are not used in any analysis to determine any safety margin; therefore; there can be no reduction in any safety margin as a result of this change.

Safety Evaluation Number 478-11-03 - USAR Update Table 11.1-1, Condensate Pump Flow Rate

Description of Change

Revise USAR Table 11.1-1. Condensate Pump data with regard to flow capacity.

Previous entry in USAR Table 11.1-1 does not agree with technical data supplied with pump. The peak operating flow capacity of the pump is 5250 gpm at 1034 ft T.H.

Summary of Safety Evaluation

The condensate pumps are not relied upon to mitigate any accident; therefore, there can be no increase in accident consequences from this change.

There are no accident analyses where the condensate pump is considered to be an initiating component. Condensate pump performance, nor lack thereof, is not an initiating situation, either.

There is no relationship between the condensate pump capacity and any piece of equipment important to safety.

Since accident mitigation is not dependent on condensate pump performance, this change will not have any effect on any malfunction of equipment important to safety.

Condensate pump rated capacity is not involved in any initiating event scenario. Since there is no physical change to the system or operation of the system, there is no different initiator for a new accident.

Condensate pump performance is not connected to any equipment important to safety.

The Technical Specifications Bases were reviewed and the capacity of the condensate pumps is not used in any analysis to determine any safety margin,. Therefore, there can be no reduction in any safety margin as a result of this change.

Safety Evaluation 478-11-04 - USAR Update Section 11.8, Condensate Polishing Radiation Monitor

Description of Change

Deleted all direct and indirect references to process radiation monitoring. There are no process monitors installed, nor have there ever been. The previously installed area monitors were abandoned and evaluated per SE-476.

Summary of Safety Evaluation

There is no aspect of the condensate polishing radiation monitors that has any mitigating effects on any accident

The lack of an indicating device for condensate polishing radiation level has no bearing on the initiation of any accident.

There is no connection between the condensate polishing area monitors and the initiation of a failure of any equipment important to safety.

The indication of condensate polishing system radiation levels has no mitigating effects on any malfunction of any equipment important to safety.

There is no accident initiator that could arise from the effect of the condensate polishing system radiation detection and indication.

There is no equipment interaction between the radiation monitors and equipment important to safety. The resolution of the USAR to as built conditions will not create a new situation.

The Technical Specifications Bases were reviewed and the condensate polishing radiation level is not used in any analysis to determine any safety margin. Therefore, there can be no reduction in any safety margin as a result of this change.

Safety Evaluation Number 478-11-05 - USAR Update Section 11.7.2, Reheater Drains

Description of Change

The current USAR Section 11.7.2 description of reheater drain path indicates, "The four reheaters drain the No. 5 high-pressure heaters." This is incorrect. The statement should read, "The four reheaters drain to the No. 5 high-pressure heaters."

Summary of Safety Evaluation

The flow path of the heater drains is not a determining factor for mitigating any accident.

The destination of heater and reheater drains is not a factor in initiating any accident.

Changing the heater drain path has no effect on any equipment important to safety.

Heater drain operations, regardless of routing have no effect on mitigating the consequences of a failure of any equipment important to safety.

The revised configuration is consistent with configurations that were the basis for evaluations of accidents already recognized.

Since there was no equipment interaction to begin with, the resolution of the USAR to as built conditions will not create a new situation.

Feedwater preheater configuration is not a variable in any Technical Specification margin of safety determination and therefore this change does not reduce any margin of safety.

Safety Evaluation Number 478-11-06 – USAR Update Section 11.5, Circulating Water System

Description of Change

Deleted all numerical and calendar references with regards to recirculation and discharge rates and temperatures and replaced with reference to NPDES permit.

Summary of Safety Evaluation

The Circulating Water System is not used to mitigate any accident and therefore is not a factor in the outcome of any accident.

The recirculation mode of the Circulating Water System is not an initiating factor in any accident and therefore has no bearing on the probability of any accident occurring.

Circulating Water System recirculation has no interface with equipment important to safety.

Circulating Water System recirculation has no mitigating role with regards to failure of any equipment important to safety.

The recirculation rates of the Circulating Water System are not considered as initiating parameters for any accident.

The Circulating Water System recirculation rates are not an initiator of any failure mechanism of any equipment important to safety.

Circulating Water System recirculation is not a variable in any Technical Specification margin of safety determination and therefore this change does not reduce any margin of safety.

Safety Evaluation 478-12-01 – Plant Structures and Shielding

Description of Change

This non-modification safety evaluation revised Section 12 of the USAR in the following areas:

- Design classification of items
- Load combinations for the D5/D6 Building and its contents
- Discussion of turbine missiles
- Inspection of lifting devices
- Water depth above fuel assemblies

Summary of Safety Evaluation

The proposed USAR revisions do not affect the design basis, function or failure mode of any component and do not involve any accident analysis. Therefore, there are no dose or malfunction consequences.

Safety Evaluation No. 478-14-02 – USAR Update Section 14.1, 14.2, 14.3

Description of Change

Safety Evaluation 478-14-02 evaluates proposed changes to the USAR, Sections 14.1 through 14.3, identified as part of the USAR update project. Section 14 of the USAR addresses the transient and accident analyses performed for Prairie Island. Specifically, Sections 14.1 through 14.3 are essentially introductory sections describing, in general, the types of transients and accidents that are analyzed, and the methodologies that are used to perform these analyses. The changes made to this

section addresses editorial changes, updates due to previous 10 CFR 50.59 evaluations and NRC SERs, and clarifications to describe plant configuration and operation.

Summary of Safety Evaluation

These changes have no effect on any of the methods, inputs or assumptions used in any analysis. Thus, there is no potential increase in consequences or a reduction in margin of safety. These changes do not affect any assumptions or precursors which could lead to any different types of accidents. These changes do not adversely affect the design or operating assumptions used in any accident analyses for any structures systems or components important to safety. The assumptions regarding component performance are consistent with their design bases. Thus, there is no increase in the probability of an accident or equipment malfunction previously evaluated, nor is there the possibility of creating an accident or equipment malfunction of a different type. Therefore, these changes do not constitute an unreviewed safety question.

Safety Evaluation No. 478-14-03 – USAR Update Section 14.9

Description of Change

Safety Evaluation 478-14-03 evaluates proposed changes to the USAR, Section 14.9, identified as part of the USAR update project. USAR, Section 14.9, provides the post loss of coolant dose analysis. No new analyses were performed as part of this update nor were any of the dose analysis results changed. The changes to this section are made to more accurately reflect the current analysis methods, inputs and assumptions.

Summary of Safety Evaluation

The proposed changes to this section have no adverse affect on any structure, system or component. The only impact that this change could have would be to possibly impact the calculated dose (consequences); therefore, accident or equipment malfunction probability are unaffected, no new types of accidents or malfunctions could be created and no margins of safety are reduced. Consequences are evaluated with respect to off site and control room personnel dose. As discussed above, as part of this change there is no increase in the post LOCA off site dose. Thus, this change will not increase the consequences of an accident or equipment malfunction previously evaluated in the USAR. Therefore, this change does not create an unreviewed safety question

Safety Evaluation No. 478-14-04 – USAR Update Section 14.5

Description of Change

Safety Evaluation 478-14-04 evaluates proposed changes to the USAR, Section 14.5, identified as part of the USAR update project. USAR, Section 14.5, provides the analyses for the following accidents:

•Fuel Handling Accident
•Miscellaneous Radioactive Liquid or Gaseous Release
•Steam Generator Tube Rupture
•Main Steam Line Break
•Rod Ejection

No new analyses were performed as part of this update nor were any of the dose analysis results changed, except those which were updated to reflect previous safety evaluations. The changes to this section are made to more accurately reflect the current analysis methods, inputs and assumptions.

Summary of Safety Evaluation

The proposed changes to this section have no adverse affect on any structure, system or component. The only impact that this change could have would be to possibly impact the calculated dose (consequences); therefore, accident or equipment malfunction probability are unaffected, no new types of accidents or malfunctions could be created and no margins of safety are reduced. Consequences are evaluated with respect to off site and control room personnel dose. As discussed above, the only changes to any dose analysis were due to incorporating information from previous safety evaluations. Thus, this change will not increase the consequences of an accident or equipment malfunction previously evaluated in the USAR. Therefore, this change does not create an unreviewed safety question.

Safety Evaluation 481 – Abandoning Installed Check Sources

Description of Change

The SE justifies deletion of USAR references to check source mechanisms in the Radiation Monitoring System monitors. This would allow removal of the check source function from monitors where it serves no useful function. Check source function removal reduces personnel exposure by eliminating maintenance of the check source mechanism and eliminating check source inventory at the monitor location.

Summary of Safety Evaluation

Removal of check sources does not affect any safety analyses. The check sources are for testing only and do not affect function of the monitors. A portable source is used to perform periodic checks and calibrations to satisfy surveillance requirements.

Safety Evaluation No. 497 – USAR Update Appendix G

Description of Change

Safety Evaluation 497 evaluates proposed changes to the USAR, Appendix G, identified as part of the USAR update project. Appendix G provides an evaluation of the dual containment concept; i.e., containment and shield building performance. Most of the information in Appendix G is strictly historical (sensitivities on various inputs to the dose analysis), and will be treated as such unless plant changes would require that they be updated. The information which is considered pertinent, and evaluated as part of the USAR update effort, is that relating to containment isolation and Shield Building ventilation performance (Sections G.1, G.2, G.3, and G.6). The changes made to these sections address editorial changes, updates due to previous 10 CFR 50.59 evaluations and NRC SERs, and clarifications to describe plant configuration and operation. These revisions do not change any inputs, results or conclusions of any analysis.

Summary of Safety Evaluation

This change only affects the potential containment leakage paths. These potential leakage paths are bounded by the inputs to the dose analyses; thus, there is no potential increase in consequences. These changes do not affect any assumptions or precursors which could lead to any different types of accidents. These changes do not adversely affect the design or operation assumptions used in any accident analyses for any structures, systems or components important to safety. The assumptions regarding component performance are consistent with their design bases. Thus, there is no increase in the probability of an accident or equipment malfunction previously evaluated, nor is there the possibility of creating an accident or equipment malfunction of a different type. Furthermore, there is no reduction in the margin of safety. Therefore, these changes do not constitute an unreviewed safety question.

Safety Evaluation No. 498 – USAR Update Appendix K

Description of Change

Safety Evaluation 498 evaluates proposed changes to the USAR, Appendix K, identified as part of the USAR update project. Appendix K addresses the post accident containment pressure response. The changes made to these sections address editorial changes, updates due to previous 10 CFR 50.59 evaluations and NRC SERs, and clarifications to describe plant configuration and operation. The most significant change is due to analysis performed to support a license amendment pertaining to fan coil units and containment spray pumps.

Summary of Safety Evaluation

This change affects only the containment pressure analysis. The results of the analysis are bounded by the inputs to the dose analyses; thus, there is no potential increase in

consequences. These changes do not affect any assumptions or precursors which could lead to any different types of accidents. These changes do not adversely affect the design or operation assumptions used in any accident analyses for any structures, systems or components important to safety. The assumptions regarding component performance are consistent with their design bases. Thus, there is no increase in the probability of an accident or equipment malfunction previously evaluated, nor is there the possibility of creating an accident or equipment malfunction of a different type. The analyses showed that the design bases requirements for containment pressure were satisfied with one spray pump (during the injection phase only) and one fan coil unit throughout the course of the event. This Technical Specification change was reviewed and approved by the NRC as being less than the design pressure for containment. The analysis results are all less than the design basis. This part of the change is being made to incorporate a previously reviewed submittal to the NRC. Thus, there is no reduction in the margin of safety. Therefore, these changes do not constitute an unreviewed safety question.

Safety Evaluation No. 499 – USAR Update Appendix D

Description of Change

Safety Evaluation 499 evaluates proposed changes to the USAR, Appendix D, identified as part of the USAR update project. USAR Appendix D provides radioactive source terms to be used in various dose analyses. The key source terms which have been changed since initial plant licensing due to core changes are the total activity in the core and the fuel handling sources.

Summary of Safety Evaluation

Appendix D contains only source term information used in various dose analyses, which are documented in other sections of the USAR. Consequences are evaluated with respect to off site and control room personnel dose. Current dose analyses bound the changes to Appendix D. The changes have no effect on any structure, system or component.

CHANGES TO REGULATORY COMMITMENTS

Regulatory Commitment Change 99-02

NRC Inspection Report 92011 noted that the licensee had stated that it would add to its surveillance procedure SP 1190 the requirement for sampling of the emergency diesel generator fuel oil day tanks as well as the individual fuel oil storage tanks. The sampling of the individual fuel oil storage tanks is required by the Technical Specifications. In order to meet the Technical Specification required surveillance time limits (the samples need to be sent off-site for analysis), non-Technical Specification sampling of the fuel oil day tanks has been discontinued in order to expedite the analysis of the required sampling.

ATTACHMENT 2

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Revision 18 to the Updated Safety Analysis Report

Instructions:

Remove and discard individual USAR pages, tables, and figures and replace with the new Revision 18 pages provided.

In the first 5 Volumes, all text, tables and figures are to be replaced in their entirety. That is, everything but the binders and tabs should be replaced.

In Volumes 6 and 7, only Appendix G and Appendix K should be replaced.

When page removal/replacement is complete, review the USAR List of Effective Pages to ensure your copy of the USAR is current and complete. Contact NSP Nuclear Licensing at 651-388-1121, Extension 4142 if you require additional assistance.

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Mfst Num: 1999 - 0406 Date : 07/28/99
FROM : Bruce Loesch/Jane Rogers Loc : Prairie Island
TO : US NRC DOC CONTROL DESK
Copy Num: 383 Holder : US NRC DOC CONTROL DESK
SUBJECT : Revisions to CONTROLLED DOCUMENTS

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Procedure #	Rev	Title

Revisions:

USAR	18	UNDATED SAFETY ANALYSIS REPORT

UPDATING INSTRUCTIONS

Place this material in your Prairie Island Controlled Manual or File. Remove revised or cancelled material and recycle it. Sign and date this letter in the space provided below within ten working days and return to Bruce Loesch or Jane Rogers, Prairie Island Nuclear Plant, 1717 Wakonade Drive E., Welch, MN 55089.
Contact Bruce Loesch (ext 4664) or Jane Rogers (ext 4659) if you have any questions.

Received the material stated above and complied with the updating instructions

_____ Date _____

ORIGINAL cover letter enclosed with this copy

** Please update your USAR Manuals per Attachment 2 (Goldenrod Instruction Sheet) **