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FEB 09 2015

L-PI-15-017
10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
Renewed License Nos. DPR-42 and DPR-60

Supplement to License Amendment Request (LAR) to Revise the Licensing Basis Analysis for a Waste Gas Decay Tank Rupture (TAC Nos. MF4680 and MF4681)

By letter dated August 21, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14233A431), Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), submitted a license amendment request to revise the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, licensing basis analysis for a waste gas decay tank rupture. By email dated December 11, 2014 (ML14345A643), NRC Staff requested additional information (RAIs) on the August 21, 2014, LAR (ML14233A431). The enclosure to this letter provides the response to the NRC Staff RAIs. NSPM submits this supplement in accordance with the provisions of 10 CFR 50.90.

The supplemental information provided in this letter does not impact the conclusions of the Determination of No Significant Hazards Consideration and Environmental Assessment presented in the August 21, 2014, LAR (ML14233A431).

In accordance with 10 CFR 50.91, NSPM is notifying the State of Minnesota of this LAR supplement by transmitting a copy of this letter and enclosure to the designated State Official.

If there are any questions or if additional information is needed, please contact Mr. Dale Vincent, P.E., at 651-267-1736.

1717 Wakonade Drive East • Welch, Minnesota 55089-9642
Telephone: 651.388.1121

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on FEB 09 2015

Kevin Davison
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosures (1)

cc: Administrator, Region III, USNRC
Project Manager, PINGP, USNRC
Resident Inspector, PINGP, USNRC
State of Minnesota

ENCLOSURE

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NRC (RAI) ARCB-RAI-1:

In application dated August 21, 2014, it stated:

> In the updated analysis, the activity in a gas decay tank is taken to be the maximum amount that could accumulate over the plant lifetime (60 years) from operation with one percent of the rated core thermal power being generated by rods with clad defects. For all isotopes except Kr-85, the postulated amount of activity is taken to be one reactor coolant system equilibrium cycle inventory. The Kr-85 inventory represents the activity at the end of a 60 year plant life.

On page 9.1-2 in PINGP USAR section 9 it states, "...the waste disposal system is common to Units 1 and 2."

The waste gas decay tank radionuclide inventory presented in USAR, Table D.7-1 is used as an input to the waste gas decay tank rupture dose analysis, along with an update of Kr-85 to reflect the radioactivity at the end of the 60-year plant life. Explain if USAR, Table D.7-1, including the update of Kr-85 to reflect the radioactivity at the end of the 60-year plant life, reflects the input from both PINGP units 1 and 2 into the waste gas decay tank since the tank is common and receives input from units 1 and 2.

NSPM Response:

USAR, Revision 33, Section 14.5.3.1 states:

> The activity in a gas decay tank is taken to be the maximum amount that could accumulate over the plant lifetime from operation with one percent of the rated core thermal power being generated by rods with clad defects. For all isotopes except Kr-85, this postulated amount of activity is taken to be one Reactor Coolant System equilibrium cycle inventory as given in Appendix D, Table D.7-1. This

value is particularly conservative because some of this activity would normally remain in the coolant, some would have been dispersed earlier through the stack via equipment leakage, and the shorter-lived isotopes will have decayed substantially. The Kr-85 inventory given in Appendix D, Table D.7-1, represents the activity at the end of the 60 year plant life.

Therefore, the isotopic mix of Table D.7-1, which is used in Calculation 12400604-UR(B)-001 Rev0A for the waste gas decay tank rupture dose analysis, for all isotopes except Kr-85, is one unit's Reactor Coolant System equilibrium cycle inventory. The Kr-85 inventory differs in that it is summed to account for one unit's operation for 60 years. This methodology has been in effect since initial plant licensing.

This methodology is consistent with the Atomic Energy Commission (AEC) SE for PINGP dated September 23, 1972, Section 15.0, "Accident Analyses", which states:

> The applicant has evaluated the loss-of-coolant accident, the fuel handling accident and the radioactive gas decay tank rupture accident using assumptions that are substantially the same as those used by the regulatory staff.
>
> 15.4 Gas Decay Tank Rupture Assumptions
>
> 1. Gas decay tank contains one complete primary coolant loop inventory of noble gases resulting from operation with 1% failed fuel.

NRC (RAI) ARCB-RAI-2:

PINGP Technical Specifications (TS) 5.5.10, "Explosive Gas and Storage Tank Radioactivity Monitoring Program," states,

> This program provides controls for potentially explosive gas mixtures contained in the waste gas holdup system, the quantity of radioactivity contained in gas storage tanks, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks.

The program shall include:

> a...
>
> b. A surveillance program to ensure that the quantity of radioactivity contained in each gas storage tank is less than or equal to 78,800 Curies of noble gas (considered as dose equivalent Xe-133); ...

TS 5.5.10 limits the waste gas decay tank quantity of radioactivity as stated above. Provide the basis for the TS Waste Gas Decay Tank Curie limit, include the dose

criteria used to establish the dose equivalent Xe-133 limit of 78,800 curies, and explain how the limit is accounted for in the waste gas decay tank rupture dose analysis.

NSPM Response:

TS 5.5.10.b is provided to limit the radioactivity which can be stored in one decay tank. Restricting the quantity of radioactivity contained in each gas storage tank provides assurance that in the event of an uncontrolled release of the tank's contents, the resulting total body exposure to an individual at the nearest exclusion area boundary will not exceed 0.5 rem. The methodology used to calculate the activity limit is from NUREG-0133.

The waste gas decay tank (WGDT) rupture dose analysis was originally developed prior to plant startup in 1973. The TS activity limit was introduced later when PINGP was revising the radiological effluent TS to meet the requirements of 10 CFR 50 Appendix I and 40 CFR Part 190 (license amendment request dated June 1, 1979 as supplemented and revised by letter dated August 13, 1982).

The NRC approved this value in its Safety Evaluation (SE) dated October 21, 1982 (ML022180206) for License Amendments 59 and 53 for PINGP, Units 1 and 2, respectively.

The TS 5.5.10 WGDT Curie limit is not tied to the design basis accident analysis documented in USAR 14.5.3 and is, therefore, not accounted for in the WGDT rupture dose analysis.

NRC (RAI) ARCB-RAI-3:

On page 12 of 13 in the Waste Gas Decay Tank Rupture Dose Analysis Calculation the tables show that EAB "Total Gamma + Beta Dose" are 4.32E+00 and the LPZ "Total Gamma + Beta Dose" is 1.18E+00.

What is the technical basis for adding the Beta Skin Dose to the Whole Body Gamma Dose?

NSPM Response:

The WGDT rupture dose consequence analysis was reconstituted in 2010 because the original design basis analysis could not be found. The beta skin dose was added to the whole body gamma dose because this methodology was included in the plant's original Final Safety Analysis Report (FSAR) Appendix D submittal. The dose results achieved through summation were consistent with those originally reported in the USAR, Revision 0.

NRC (RAI) ARCB-RAI-4:

Given that the only change in the projected Waste Gas Decay Tank inventory is the increase in Kr-85, and given that Kr-85 is a low energy Beta emitter; please explain the impact of the additional Kr-85 inventory on the Waste Gas Decay Tank TS Dose Equivalent Xe-133 limit of 78,800 curies.

NSPM Response:

The TS 5.5.10 WGDT Curie limit is not tied to the design basis accident analysis documented in USAR 14.5.3.

Normal operation includes periodically venting waste gas to the atmosphere. Therefore, the assumed Kr-85 buildup that is an input to the accident analysis does not occur.