

REQUEST FOR ADDITIONAL INFORMATION

PRAIRIE ISLAND NUCLEAR GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

By letter dated October 27, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093160583), supplemented by letters dated April 29, 2010, May 25, 2010, June 23, 2010, August 12, 2010, December 17, 2010, June 22, 2011, July 11, 2011, and August 9, 2011, (ADAMS Accession Nos. ML101200083, ML101460064, ML101760017, ML102300295, ML103510322, ML111740145, ML111930157, and ML112220098, respectively), Northern States Power Company, a Minnesota corporation (the licensee) requested Technical Specifications changes related to adoption of an Alternative Source Term (AST) Methodology for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2.

Recently, the U.S. Nuclear Regulatory Commission (NRC) staff conducted several conference calls with the licensee to discuss the technical details of the licensee's main steam line break atmospheric dispersion model, which was submitted with its AST application. To complete its review, the staff requests the following additional information.

Background

Following a conference call with the NRC staff on September 22, 2011, the licensee provided the following information concerning the design criteria for the Common Area of the Auxiliary Building (CAAB):

Updated Safety Analysis Report (USAR), Table 12.2-1, Page 1 indicates that the Common Area of the Auxiliary Building is a Design Class III* structure (i.e., above the concrete part of the structure). The CAAB is referred to as "Auxiliary Building (Except Class I or I*)" in the Table. This is a Design Class III* structure. USAR Table 12.2-4 indicates that Class III* structures are designed for Dead + Live + Wind or Snow normal operating loads and Dead + Live + Uniform Building Code Zone I (earthquake) Loads. USAR Section 12.2.1.3.1 defines snow loading as 50 lbs per sq-ft and the design wind speed as 100 mph. USAR Section 12.2.1.4.1d describes the load combinations for Class III* structures. These structures are designed for the greater of the above load combinations, where the Uniform Building Code Zone I earthquake loads are 0.05g. Although the CAAB is a corrugated steel building, it is structurally sound with fairly rigorous design criteria.

Request for Additional Information

1. With regard to a postulated release into the CAAB associated with the faulted steam generator in a main steam line break accident, please summarize the release scenario from the point of release at the failure location to the location of release to the environment from the CAAB. At the location of release to the environment, the effluent is assumed to be uniformly and homogeneously distributed along a line in width of approximately 52.2 meters (m) prior to proceeding to the 121 CR (control room) intake or 59.7 m prior to proceeding toward the 122 CR intake. These dimensions are the product of the initial diffusion coefficients on page 35 of the October 27, 2009, PINGP alternative source term license amendment request (ADAMS Accession No. ML093160583) multiplied by a factor of 6.

The response should include a discussion of the CAAB leak tightness and other factors causing the effluent to be uniformly and homogeneously mixed within the CAAB. In addition, the licensee should include any applicable scenarios when pressurization or other factors could cause a reduction in the CAAB normal leakage integrity which would result in effluent releases from the CAAB being of a lesser dimension than the values cited above. This includes a range of potential conditions, from enhanced localized leakage without loss of structural integrity to conditions that may result in breaches in the CAAB (e.g., blowout panel activation).

2. The NRC staff's understanding is that the common area of the auxiliary building (CAAB) is from elevation 755' to 809' and between columns 7 to 11 and J to Q (from USAR Figure 1.1-8 and Figure 1.1-16). The CAAB has metal siding between elevations 775' and 809'. There are no ventilation systems directly supplying fresh air to or providing exhaust from this area. Under normal operation the CAAB pressure is maintained negative relative to atmosphere through indirect connection to one of the two unit's auxiliary building exhaust systems. Below elevation 775', the CAAB walls are concrete construction or have adjacent unit specific auxiliary building spaces. Please verify if the NRC staff's understanding is correct or provide information needed to correct the staff's understanding.
3. Figure 3 of the LAR, along with Attachment 1 of L-PI-09-056 (ADAMS Accession No. ML091210703), show the control room outdoor air intake at column coordinates 5-G. Attachment 2 of L-PI-09-056 shows an elevator close to the same coordinates (5.2-G.8).
 - a. Does this elevator have a rooftop equipment room equipped with ventilation? If yes:
 - b. Please discuss the potential for a flow path from a main-steam line break into the elevator shaft through any shaft ventilation openings in the auxiliary building and/or around the doors, out through the elevator equipment room ventilation and to the Unit 1 control room outdoor air intake.
4. Please discuss releases from the Auxiliary Building Exhaust stacks (USAR Fig. 10.3-6). The auxiliary building exhaust stacks are identified on USAR Figure 10.3-6 at approximate coordinates A-9 and A-10. These exhaust stacks are not identified as a potential release point in Table 3.1-2, "Release Points and Receptor Locations", of the LAR. These exhaust stacks are not discussed in LAR section 3.1.3. Discussion of the auxiliary building exhaust stacks was not identified in any other section of the LAR, however, such discussion may have been missed by the reviewer. The discussion should indicate why the auxiliary building exhaust stacks are not considered a release point. If the justification is the exhaust fans are tripped on a safety related signal at the onset of an accident (e.g., emergency diesel load sequencing), verify the fans are shut down on an accident with no loss of offsite power. If potential releases are enveloped by a more conservative release-receptor combination, please indicate so.
5. The auxiliary building ventilation make-up air intakes are evaluated as a release point for a RWST release. Please discuss the potential for a release through the auxiliary building ventilation make-up air intakes from a main-steam line break through the ventilation system (back through the fan isolation damper and through the make-up air fan). If the continued operation of the ventilation system during the main-steam line break is credited for preventing such a release, please discuss how the reliability of system operation is justified.

6. Attachment 1 of L-PI-09-056 (ADAMS Accession No. ML091210703) shows a vent pipe above the roof on the north side of the auxiliary building high bay area (drawing coordinates J.3, 6.7 and J.3, 11.3). Please identify what is vented from this pipe and if this vent can be a release point during any accident.

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