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Serial: RNP-RA/15-0047

MAY 19 2015
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261 / RENEWED LICENSE NO. DPR-23

**RESPONSE TO FOLLOW-UP REQUEST FOR ADDITIONAL INFORMATION (RAI)
ASSOCIATED WITH RESPONSE TO 90-DAY RAI RELATED TO LICENSE AMENDMENT
REQUEST TO ADOPT NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARD 805**

Dear Sir/Madam:

By letter dated September 16, 2013 (Reference 1) Duke Energy Progress, Inc. submitted a license amendment request to adopt a new risk-informed performance-based fire protection licensing basis for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2). During the week of September 22, 2014, the NRC conducted an audit at HBRSEP2 to support development of questions regarding the license amendment request. On October 23, 2014 the NRC provided a set of requests for additional information (RAI) regarding the license amendment request (Reference 2). That letter divided the RAIs into 60-day, 90-day, and 120-day required responses. The Duke Energy Progress 60-Day, 90-Day, and 120-Day responses were conveyed to the NRC Document Control Desk via letters from R. Michael Glover on November 24, 2014 (Reference 3), December 22, 2014 (Reference 4), and January 22, 2015 (Reference 5), respectively. On April 23, 2015 a follow-up RAI regarding the Reference 4 submittal was conveyed to Duke Energy Progress, Inc. via electronic mail message (Reference 8). Enclosed is the Duke Energy Progress response to that request.

Please address any comments or questions regarding this matter to Mr. Richard Hightower, Manager – Nuclear Regulatory Affairs at (843) 857-1329.

There are no new regulatory commitments made in this letter.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
May 19, 2015.

Sincerely,

R. Michael Glover
Site Vice President

A006
NRK

RMG/jmw

Enclosure

cc: Mr. V. M. McCree, NRC, Region II
Ms. Martha C. Barillas, NRC Project Manager, NRR
NRC Resident Inspector, HBRSEP2
Ms. S. E. Jenkins, Manager, Infectious and Radioactive Waste Management Section (SC)

REFERENCES:

1. Letter from W. R. Gideon (Duke Energy Progress) to U. S. Nuclear Regulatory Commission (USNRC) (Serial: RNP-RA/13-0090), *License Amendment Request (LAR) to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition)*, dated September 16, 2013, ADAMS Accession No. ML13267A211
2. Letter from Martha Barillas (USNRC) to Site Vice President, H. B. Robinson Steam Electric Plant (Duke Energy Progress), *H. B. Robinson Steam Electric Plant, Unit 2 – Request for Additional Information on License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard for Fire Protection (TAC No. MF2746)*, dated October 23, 2014, ADAMS Accession No. ML14289A260
3. Letter from R. Michael Glover (Duke Energy Progress) to U. S. Nuclear Regulatory Commission (USNRC) (Serial: RNP-RA/14-0122), *Response (60-Day) to Request for Additional Information Associated with License Amendment Request to Adopt National Fire Protection Association (NFPA) Standard 805*, dated November 24, 2014
4. Letter from R. Michael Glover (Duke Energy Progress) to U. S. Nuclear Regulatory Commission (USNRC) (Serial: RNP-RA/14-0134), *Response (90-Day) to Request for Additional Information Associated with License Amendment Request to Adopt National Fire Protection Association (NFPA) Standard 805*, dated December 22, 2014
5. Letter from R. Michael Glover (Duke Energy Progress) to U. S. Nuclear Regulatory Commission (USNRC) (Serial: RNP-RA/15-0006), *Response (120-Day) to Request for Additional Information Associated with License Amendment Request to Adopt National Fire Protection Association (NFPA) Standard 805*, dated January 22, 2015
6. Letter from Martha Barillas (USNRC) to Site Vice President, H. B. Robinson Steam Electric Plant (Duke Energy Progress), *H. B. Robinson Steam Electric Plant, Unit 2 – Request for Additional Information on 60-Day Response to License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard for Fire Protection (TAC No. MF2746)*, dated March 26, 2015, ADAMS Accession No. ML15057A403
7. Letter from R. Michael Glover (Duke Energy Progress) to U. S. Nuclear Regulatory Commission (USNRC) (Serial: RNP-RA/15-0021), *Supplemental Response (120-Day) to Request for Additional Information Associated with License Amendment Request to Adopt National Fire Protection Association (NFPA) Standard 805*, dated April 1, 2015
8. Electronic Mail message from Martha Barillas (USNRC) to H. B. Robinson Steam Electric Plant, Unit 2 Regulatory Affairs staff members Richard Hightower/Scott Connelly (Duke Energy Progress) – Robinson NFPA 805 Follow-up 90-Day FM and RR RAI, dated April 23, 2015.

U. S. Nuclear Regulatory Commission
Enclosure to Serial: RNP-RA/15-0047
4 Pages (including this cover page)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING VOLUNTARY FIRE
PROTECTION RISK INITIATIVE**

REQUEST FOR ADDITIONAL INFORMATION

VOLUNTARY FIRE PROTECTION RISK INITIATIVE

DUKE ENERGY PROGRESS

H. B ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-261

Fire Modeling (FM) Request for Additional Information (RAI) 01.o.01

In a letter dated December 22, 2014 (ADAMS Accession No. ML15005A073), the licensee responded to FM RAI 01.o and explained that the individual panels considered in the main control room (MCR) abandonment analysis were effectively separated by double wall construction and therefore, propagation to adjacent cabinets was not assumed. In NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," Appendix S, Section S.1, it is recommended that in order to assume there is no fire propagation between cabinets, an air-gap must be present. However, the licensee did not state such an assumption (e.g., that an air-gap was present between the walls of the electrical cabinets,) only that the panels were of double wall construction. State whether the individual panels considered in the MCR abandonment analysis are separated by a double wall with an air-gap or provide the technical justification for not assuming fire propagation between cabinets.

Response:

- o) The statement in Section 5.1.3.1 refers to the MCBs and the cabinets located at the ends of the horseshoe that have the same configuration as the MCBs (In-Core Instrument Racks, Radiation Control Panels, and Nuclear Instrument Racks). Fire scenarios involving these panels are characterized using fires that propagate to adjacent panels and those that do not (i.e., third and fourth bullets in Section 5.3.1). These are baseline fire scenarios as seen in Section 5.4. The other panels within the MCR are individual panels that are effectively separated by a double wall with an air gap construction. In these cases, non-propagating fire scenarios are applicable (i.e., first and second bullets in Section 5.3.1).

Radiation Release RAI 02.01

In a letter dated December 22, 2014 (ADAMS Accession No. ML15005A073), the licensee responded to RR 02 described its evaluation of the potential for radioactive release and radiation exposure to members of the public using a quantitative analysis (i.e., dose calculation) for radiological storage and sea-land containers in the RCA Yard. The dose calculation considered dry active waste (DAW) radionuclide distribution and activities, atmospheric dispersion, distance from the RCA Yard to the site exclusion boundary, release fraction, burn time, and plume exposure period.

From the NRC staff's review of the licensee's analysis, it was determined that although gaseous radioactive releases and radiation exposures were evaluated, liquid radioactive releases and radiation exposures due to the direct effects of fire suppression activities were not evaluated.

- a) Provide an analysis that demonstrates liquid radioactive releases and radiation exposures to members of the public are as low as reasonably achievable (ALARA) and do not exceed the applicable 10 CFR Part 20 dose limits. The analysis should describe:
 - i. The liquid radionuclide distribution and activities (and their basis).
 - ii. The method, any inputs (and their basis), and assumptions used in the analysis.
- b) Describe the administrative controls such as procedures and training that will limit the amount of activity which may be present in radiological storage and sea-land type containers in the RCA Yard.
- c) Describe the engineering controls such as catch basins to collect leakage for sampling, storm drain covers, diversion equipment, or other means to prevent water runoff used to contain potentially contaminated fire suppression water runoff for radiological storage and sea-land containers in the RCA Yard.

Response:

- a)
 - i. An analysis was performed to demonstrate liquid radioactive releases and radiation exposures to members of the public are as low as reasonably achievable (ALARA) and do not exceed the applicable 10 CFR Part 20 dose limits. The analysis calculated the estimated TEDE from a "standard" DAW shipment, then took the TEDE, and found a ratio to the 100 mRem member of the public dose limit from 10 CFR 20. This ratio was in turn used to scale the "standard" DAW to a "max" DAW activity allowable to ensure compliance with 10 CFR 20. While this value may change based on the container's radionuclide content, it serves as an average for the purpose of the calculation.

ii. Assumptions

Fight fire	60	min
Hose Flow	125	gpm
Rad Mat in water	0.4	NUREG/CR 2658 is 30% 40% for conservatism
Lake Robinson Dam flow (dilution)	1.01E+05	gpm
f	0.001236	
conv	3780	ml/gal
conv	4.49E+02	gpm/cfs
Lake Rob Flow	225	Cfs
Nuclides considered are the same as those considered for gaseous effluents.		
Results		
TEDE	1.91E-01	mrem
Allowed	1.36E+03	Ci

- b) LAR Table S-3, will be updated to include an Implementation Item to revise site programs and procedures to ensure actions are in place for limiting the amount of radionuclide activity consistent with the assumptions and inputs provided in calculation RNP-M/MECH-1901, Evaluation of Dose Consequence from Fire in a Radwaste Container Stored in an Outside Area for airborne effluents.
- c) The volume of fire suppression flow from a typical attack line is well within the site capability to contain and monitor firefighting related run-off prior to release to areas outside the Owner Controlled Area. A conservative one hour of suppression flow from a single 1½" attack line, at a rate of 125 gallons per minute, equates to 0.25 cubic feet per second of runoff (assuming no loss of water volume). The capacity of RNP's storm drain system is not credited for flooding on site. It was designed to accommodate the 5 inch per hour, 50 year storm. The piping at the beginning of the storm run is 10 inch reinforced concrete pipe (RCP) and progressively grows to a 30 inch RCP. It would take significantly more fire suppression flow to over tax this sized storm pipe.

In the event of a fire during a significant storm event, RNP has developed a new calculation RNP-M/MECH-1901, Evaluation of Dose Consequence from Fire in a Radwaste Container Stored in an Outside Area. This calculation establishes the maximum level of curies that can be stored in a single fuel package (i.e., area, container or building) which, if completely consumed by fire, would not result in a radioactive release as a gaseous effluent that would exceed 10 CFR 20 limits. If the same release conditions were assumed, but with all activity released as a liquid effluent the bounding conditions, in concert with site actions to contain and monitor prior to release, it would ensure the same result of not exceeding 10 CFR 20 limits.