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July 18, 2018
E-52176

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Subject: Application for Amendment No. 4 to Certificate of Compliance No.
1029 – Revised RSI 5-1 Response (Docket 72-1029, EPID No. L-2017-
LLA-0390)

Reference: Letter E-50760 from Jayant Bondre (TN Americas LLC) to U.S. NRC
Document Control Desk, "Acceptance Review of TN Americas LLC
Application for Amendment No. 4 to Certificate of Compliance No.
1029 – Response to Request for Supplemental Information," dated
February 22, 2018 (Docket No. 72-1029)

Based on recent communications with the NRC staff, this submittal provides a revised response to the Request for Supplemental Information (RSI) for RSI 5-1 provided originally in Enclosure 2 of the reference document. Changes were made solely to the proprietary designation in the response to RSI 5-1 so that this response is now designated as public in its entirety.

Enclosure 1 herein provides the revised response to RSI 5-1. For completeness, the UFSAR changed pages associated with this response (unchanged from those provided in the referenced submittal) are also provided as Enclosure 2.

Should NRC staff have any questions or require additional information to support the review of this application, please contact Mr. Dennis Williford by telephone at (704) 805-2223, or by email at Dennnis.Williford@orano.group.

NM5526

Sincerely,



Jayant Bondre
Chief Technical Officer

cc: Siva Lingam (NRC SFM) as follows, all provided in a separate mailing:

- Six paper copies of this cover letter and Enclosures 1 and 2

Enclosures:

1. RSI and Response – RSI 5-1
2. CoC 1029 Amendment 4 Application RSI 5-1 UFSAR Changed Pages

Enclosure 1 to E-52176

RSI and Response – RSI 5-1

RSI 5-1

Provide calculations, computer input files or other information which justify adding the proposed dose rates to the technical specifications.

The applicant proposed dose rate limits of 50 mrem/hr on the AHSM front inlet bird screen and 10 mrem/hr on the AHSM door outside surface. However, the applicant did not provide information justifying that these dose rates limits are adequate. The applicant should provide all calculations and computer input files which substantiate implementing the proposed dose rate limits.

This information is necessary for the staff to evaluate compliance with 10 CFR 72.236(d).

RESPONSE TO RSI 5-1:

The proposed dose rate limits on the advanced horizontal storage module (AHSM) front inlet bird screen and on the AHSM door outside surface are based on shielding analysis results presented in Updated Final Safety Analysis Report (UFSAR) Table 5.1-2 for the 24PT1 dry shielded canister (DSC), and UFSAR Table A.5.1-2 for the 24PT4 DSC. The shielding analysis results for the AHSM door outside surface have been added to UFSAR Table 5.1-2 for the 24PT1 DSC, and UFSAR Table A.5.1-2 for the 24PT4 DSC. The dose rate results shown in UFSAR Tables 5.1-2 and A.5.1-2 indicate that the proposed limits are adequate.

The proposed dose rate limit of 50 mrem/hr on the AHSM front inlet bird screen is based on a calculated maximum dose rate of 45.81 mrem/hr for the 24PT1 DSC, and a calculated maximum dose rate of 45.156 mrem/hr for the 24PT4 DSC. For the 24PT1 DSC, the dose rate reported in Table 5.1-2 of the UFSAR is obtained from Table 8.3 of Calculation SCE-01.0502 Revision 2. For the 24PT4 DSC, the dose rate reported in Table A.5.1-2 of the UFSAR is obtained from Table 8-4 of Calculation SCE-23.0502 Revision 0.

The proposed dose rate limit of 10 mrem/hr on the AHSM door outside surface is based on a calculated maximum dose rate of 4.04 mrem/hr for the 24PT1 DSC and a calculated maximum dose rate of 4.453 mrem/hr for the 24PT4 DSC. For the 24PT1 DSC, the dose rate added to Table 5.1-2 of the UFSAR is obtained from Table B1 of Calculation SCE-01.0502 Revision 2. For the 24PT4 DSC, the dose rate added to Table A.5.1-2 of the UFSAR is obtained from Table 8-4 of Calculation SCE-23.0502 Revision 0.

Calculation 503821-0500 Revision 0 was prepared to summarize the above information to support the proposed dose rate limits of 50 mrem/hr on the AHSM front inlet bird screen, and 10 mrem/hr on the AHSM door outside surface. This calculation also references calculations SCE-01.0502 Revision 2 and SCE-23.0502 Revision 0. Calculations 503821-0500 Revision 0, SCE-01.0502 Revision 2 and SCE-23.0502 Revision 0 are provided in Enclosures 6 through 8 of this submittal. Computer input files associated with these calculations are provided in Enclosure 10, with a summary listing of these files provided in Enclosure 9.

Application Impact:

UFSAR Table 5.1-2 and Table A.5.1-2 have been revised as described in the response.

Enclosure 2 to E-52176

**CoC 1029 Amendment 4 Application
RSI 5-1 UFSAR Changed Pages**

Table 5.1-2
Summary AHSM Dose Rates

Surface	Dose Rate Component	Maximum Dose Rate, mrem/hr	Minimum Dose Rate, mrem/hr	Average Surface Dose Rate ⁽²⁾ , mrem/hr
Rear ⁽¹⁾	Gamma	0.11	1.06E-04	4.06E-03
	Neutron	0.01	3.04E-06	3.70E-04
Front ⁽³⁾	Gamma	45.27	1.59E-02	1.89
	Neutron	0.54	6.99E-04	0.04
Roof	Gamma	3.57	3.57E-04	0.03
	Neutron	0.05	2.37E-05	8.56E-04
Side ⁽¹⁾	Gamma	1.35	5.13E-06	0.26
	Neutron	0.03	4.61E-08	0.01

(1) Rear and side does rates are on the outer surfaces of the shield walls.

(2) These dose rates are bounding for 1 meter occupational exposures during transfer operations.

(3) The maximum dose rates on the front surface are based on the results calculated in front of the entrance of the bottom air inlet. Around the door centerline (between 152 cm to 394 cm above the ground) has maximum dose rate 4.04 mrem/hr (gamma dose rate 3.97 mrem/hr and neutron dose rate 0.07 mrem/hr).

Table A.5.1-2
Summary of AHSM Dose Rates

Surface	Dose Rate Component	Dose Rate (mrem/hr)	
		Maximum	Average
Rear End of the TSBA ^(b)	Gamma	143.881 ± 15.5% ^(a)	N/A
	Neutron	0.207 ± 4.3%	
	Total	144.088 ± 15.5%	
Back of the Rear Shield Wall ^(b)	Gamma	1.115 ± 4.2%	0.085 ± 3.3%
	Neutron	0.008 ± 1.4%	1.05E-3 ± 1.6%
	Total	1.123 ± 4.1%	0.086 ± 3.3%
Front ^(c)	Gamma	44.318 ± 5.3%	2.154 ± 2.9%
	Neutron	0.838 ± 1.1%	0.138 ± 7.7%
	Total	45.156 ± 5.2%	2.292 ± 2.8%
Roof ^(d)	Gamma	149.298 ± 4.5%	0.011 ± 2.7%
	Neutron	0.279 ± 1.6%	0.001 ± 7.5%
	Total	149.577 ± 4.5%	0.012 ± 2.6%
AHSM Top ^(e)	Gamma	6.657 ± 6.8%	0.474 ± 5.6%
	Neutron	0.016 ± 1.8%	1.56E-3 ± 1.5%
	Total	6.673 ± 6.8%	0.476 ± 5.6%
Side	Gamma	1.790 ± 3.3%	0.309 ± 2.0%
	Neutron	0.074 ± 3.6%	1.06E-3 ± 1.4%
	Total	1.865 ± 3.1%	0.319 ± 1.9%

- (a) Statistical one standard deviation uncertainty in the Monte Carlo calculation.
- (b) The maximum gamma dose rates on the rear concrete surface (of “top” model) but below the roof elevation are less than 0.2 mrem/hr and the maximum gamma dose rates on this surface above the roof level are about 1.12 mrem/hr; i.e., the dose rate above the roof drops off very rapidly with distance in x from the vent (note the dose rate near the edge of the vent is 144.1 mrem/hr).
- (c) These maximum dose rates on the front of the AHSM are based on the results calculated just in front of the entrance of the bottom air inlet. *The maximum dose rate around the door is 4.453 mrem/hr (gamma dose rate 3.909 mrem/hr and neutron dose rate 0.544 mrem/hr) from the “top” MCNP model as shown in Figure A.5.4-3.*
- (d) The dose rates are calculated on top of the AHSM roof. The maximum dose rates on the roof are based on the dose rates just at the roof vent opening. Knowing dose rates just above the roof vent opening is important, since this area must be accessed to clean the vent screens, if debris accumulates on the screens. For dose rates in front of the Top Shield Block Assembly (TSBA), the “Roof” maximum dose rate is below 1.0 mrem/hr. The average dose rates are calculated over the roof segment in front of the TSBA (before its -x side).
- (e) The dose rates are calculated on the plane enveloping the AHSM from the top. The average dose rate is calculated over the entire plane enveloping the AHSM from the top. This dose rate is used for the site dose rate analysis. The location of the maximum dose rate is near the rear end of the TSBA (its +x side, the side facing rear of the AHSM).

Note: Gamma results include the dose rates from gammas produced from neutrons in the neutron calculation. These partial gamma dose rates and the neutron dose rates have been multiplied by $[1/(1-k)=1/(1-0.45)=1.82]$ to conservatively include neutron multiplication from induced fissions in the source region containing damaged fuel rods.

Note: The averaged dose rates are calculated over the planes enveloping the AHSM geometry, while peak dose rates are for localized areas. The average dose rates are needed for the site dose rate analysis.