

August 7, 2019

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD, 20852-2738

Attn: Document Control Desk

Subject: Submission of a Replacement Page to Make an Editorial Correction to Table 8.1-1, of the MAGNATRAN Transportation Package Safety Analysis Report (SAR), Revision 0

Docket No. 71-9356

- Reference:**
1. Certificate of Compliance No. 9356, Revision 0, for the Model No. MAGNATRAN Transport Package, U.S. Nuclear Regulatory Commission (NRC), April 5, 2019
 2. ED20190069, Submission of the MAGNATRAN Transportation Package Safety Analysis Report (SAR), Revision 0, July 1, 2019
 3. ED20190074, MAGNATRAN Transportation Package Safety Analysis Report (SAR), Revision 0, Replacement Pages, July 15, 2019

NAC International (NAC) hereby submits a replacement page to make an editorial correction to the minimum actual areal boron densities listed in Table 8.1-1 of the MAGNATRAN SAR. Specifically, the Required Minimum Actual Areal Density for PWR fuel shown for Borated Aluminum Alloy and Borated MMC should be "0.0334" and not "0.334". The correct value for the areal density ("0.0334") was used in the MAGNATRAN SAR in Chapter 6, Table 6.1.1-1.

NAC requested this to be corrected in 2014 for the MAGNASTOR Cask System FSAR and Technical Specifications and was subsequently approved by the NRC. Revisions to the Technical Specification 0-5 were issued on February 1, 2016.

The error in Table 8.1-1 does exist in both the proprietary and non-proprietary versions of the MAGNATRAN SAR. Enclosure 1 contains a separate replacement page for each of the proprietary and non-proprietary versions. These pages do not contain proprietary data therefore an Affidavit pursuant to 10 CFR 2.390 is not being provided.

NAC will not update our controlled copy of the proprietary and non-proprietary versions of the SARs with replacement pages until the NRC approves the consolidated application including supplements (References 2, 3 and ED20190093), since the CoC references Chapter 8 of the MAGNATRAN SAR.

ED20190093

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Should you require further details regarding the submittal, please feel free to contact me at 678-328-1236.

Sincerely,



Mr. Wren Fowler
Director, Licensing
Engineering

Enclosures:

Enclosure 1 – Replacement Page 8.1-22 for Table 8.1-1, MAGNATRAN Transportation Package SAR, Revision 0 (Proprietary and Non-Proprietary Versions)

Enclosure 1

Replacement Page 8.1-22 for Table 8.1-1,
MAGNATRAN Transportation Package
SAR, Revision 0

(Proprietary and Non-Proprietary Versions)

8.1.5.3.11 Additional Material Specifications

Boron carbide particles for MMCs shall have an average size in the range of 10-40 microns and no more than 10% of the particles shall be over 60 microns. The material shall have negligible interconnected porosity exposed at the surface or edges.

Open porosity for borated aluminum and borated MMC neutron absorber material must be no greater than 0.5% unless qualification tests are performed to ensure that blisters are not produced under submerging and subsequent vacuum drying conditions.

Chemical composition of the boron carbide powder must meet the requirements of Table 1 of ASTM C 750-03, Type 3. Additional chemical requirements, applicable to a particular absorber material, may be placed on the boron carbide powder as a result of the "key manufacturing process controls" invoked by Section 8.1.5.3.10. Additional requirements may include, but are not limited to, upper limits on fluorine and chlorine content.

Table 8.1-1 Neutron Absorber Material Minimum ¹⁰B Loading

Neutron Absorber Type	Required Minimum Effective Areal Density (¹⁰ B g/cm ²)		% Credit Used in Criticality Analyses	Required Minimum Actual Areal Density (¹⁰ B g/cm ²)	
	PWR Fuel	BWR Fuel		PWR Fuel	BWR Fuel
Borated Aluminum Alloy	0.036	0.027	90	0.04	0.03
	0.030	0.0225		0.0334	0.025
	0.027	0.020		0.03	0.0223
Borated MMC	0.036	0.027	90	0.04	0.03
	0.030	0.0225		0.0334	0.025
	0.027	0.020		0.03	0.0223
Boral	0.036	0.027	75	0.048	0.036
	0.030	0.0225		0.04	0.030
	0.027	0.020		0.036	0.0267

Table 8.1-2 Mechanical Properties of Neutron Absorber

Property (units)	Values at Temperature (°F)
	70
Ultimate Tensile Strength, S _u (ksi) ^a	13.1
Yield Strength, S _y (ksi) ^a	5.0

^a Equal to aluminum alloy 1100-O properties

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Table 8.1-1 Neutron Absorber Material Minimum ¹⁰B Loading

Neutron Absorber Type	Required Minimum <u>Effective</u> Areal Density (¹⁰ B g/cm ²)		% Credit Used in Criticality Analyses	Required Minimum <u>Actual</u> Areal Density (¹⁰ B g/cm ²)	
	PWR Fuel	BWR Fuel		PWR Fuel	BWR Fuel
Borated	0.036	0.027	90	0.04	0.03
Aluminum Alloy	0.030	0.0225		0.0334	0.025
	0.027	0.020		0.03	0.0223
Borated MMC	0.036	0.027	90	0.04	0.03
	0.030	0.0225		0.0334	0.025
	0.027	0.020		0.03	0.0223
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