

171-9322



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14 September 2006  
E&L-033-06

Jill Caverly  
Project Manager  
Spent Fuel Project Office  
Office of Nuclear Material Safety and Safeguards, NMSS  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Ms. Caverly:

Subject: Special Package Authorization for the LACBWR Reactor Pressure Vessel Package (TAC L23931)

Duratek was issued a Special Package Authorization (SPA) for the LACBWR Reactor Pressure Vessel Package (RPVP) on April 27, 2006. In our submittal requesting the SPA, we based the shielding design on gamma measurements made on the exterior of the reactor vessel. Changes in exterior gamma levels following grouting of the vessel have led us to modify the design and request a change in the SPA.

The design for the LACBWR RPVP includes shielding to meet the limits of 10 CFR 71.47. The amount of shielding was based on measurements of the exterior of the reactor vessel made in 2005. Subsequently, as part of the plan for preparing the vessel for removal and transport, grout was injected into the vessel filling the internal voids. Modeling did not predict a significant decrease in the external gamma levels due to the low density of the grout. Thus, the grout was not included in the modeling to determine the shielding required to meet 10 CFR 71.47. However, recent measurements made following grouting of the vessel show a significant decrease in exposure rates from those made in 2005, decreases by factors ranging from about 4 to over 12. With such a large decrease the need for shielding is greatly diminished. Due to physical interference, measurements were not able to be made at all the same points as in 2005 resulting in some uncertainty in the actual impact of the grouting. Therefore, Duratek has revised the shielding design to make the addition of the final layer of shielding (Supplementary Shield, Table 5-2 of SAR) optional based on dose rate measurements made in the field. The two Supplementary Shields were planned to be installed in the field after closure and downending of the package onto the railcar. This change makes the installation dependant on dose rate measurements after the package is on the railcar, i.e., if the measured dose rates show compliance with 10 CFR 71.47 without the Supplementary Shields, they will not be added.

No changes to the SAR are required except for a revision to the canister drawing. The structural analysis of the LACBWR RPVP is not affected by changing the Supplementary Shields to optional. They were assumed to detach under HAC and did not provide structural support under NCT. The other sections of the SAR are similarly unaffected.

Attached to this letter are:

1. Revised drawing C-068-163041-002, Rev. 1, RPV Canister Assembly – a note was added that Item 5 is optional
2. RPV surveys after grouting

Should you or members of your staff have questions about this request, please contact Mark Whittaker at (803) 758-1898.

Sincerely,

Patrick L. Paquin  
General Manager – Engineering & Licensing

Attachments: As stated

NMSS01

## Reactor Vessel Radiation Survey

(14 degrees east of north)

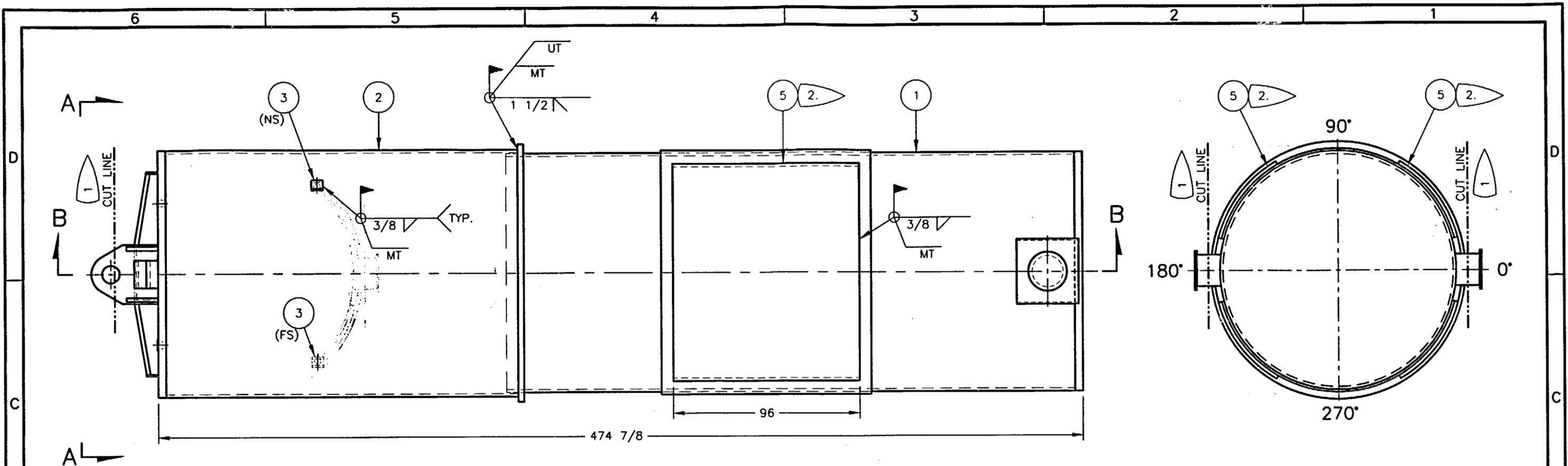
Measurements are from the bottom of the thermal shield up the vessel

<u>DISTANCE UP SIDE OF VESSEL</u>	<u>DOSE FOUND 6/1/2005</u>	<u>DOSE FOUND 5/4/2006</u>
0	800 mRem/hr	80 mRem/hr
1	3.2 Rem/hr	250 mRem/hr
2	6.6 Rem/hr	850 mRem/hr
3	9.2 Rem/Hr	1.7 Rem/hr
4	12 Rem/hr	2.4 Rem/hr
5	11 Rem/hr	2.7 Rem/hr
6	11 Rem/hr	——

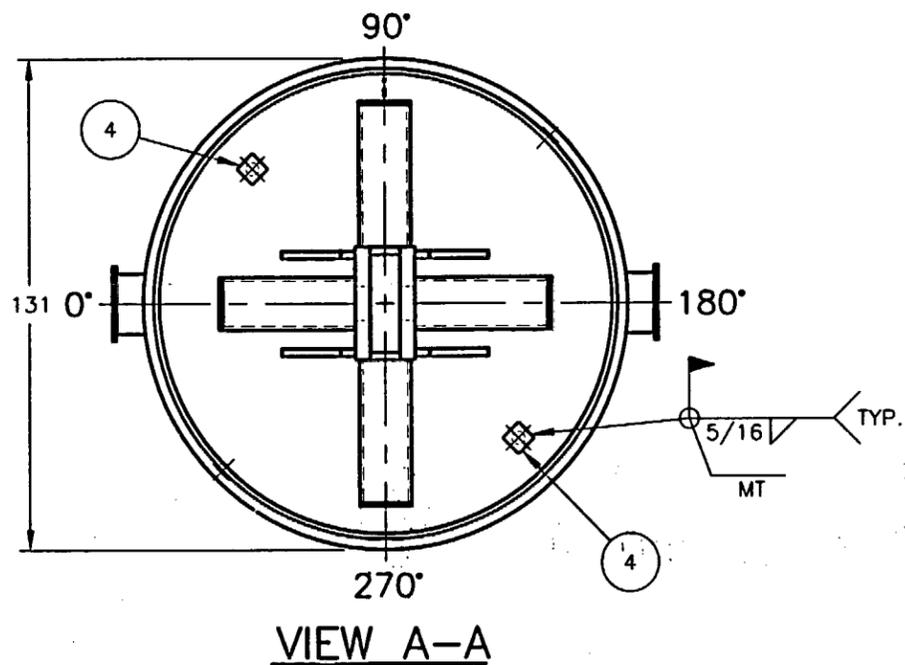
Performed by Nansen

Date 5-4-6

Instrument Used EXTENDER Serial # 15879



**ITEM-6, CANISTER ASSEMBLY**



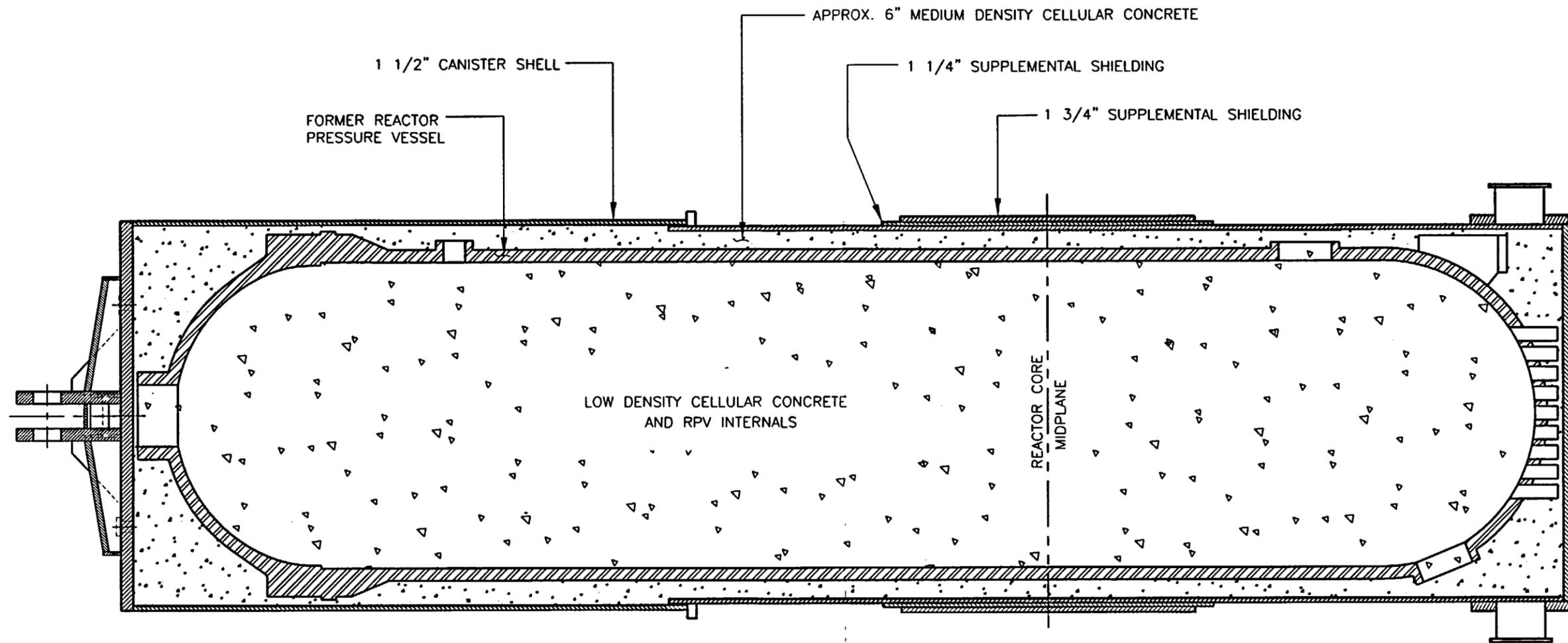
**NOTE:**

- 1. THE LIFT ASSEMBLY AND TRUNNIONS ARE DISABLED PRIOR TO SHIPMENT.
- 2. OPTIONAL, ATTACH IF NECESSARY TO COMPLY WITH 10CFR71.47.

ITEM	QTY	DESCRIPTION	SPEC. AND / OR PART No.
6	-	CANISTER ASSEMBLY	-----
5	2	PLATE, 1 3/4" THK., 96" LG., ROLLED TO 62" I.R.	ASTM A516 GR. 70
4	2	GROUT PLUG, SEE C-068-163041-004 ITEM-8B	-----
3	2	GROUT PLUG, SEE C-068-163041-004 ITEM-8A	-----
2	1	UPPER SHELL, SEE C-068-163041-004 ITEM-4	-----
1	1	LOWER SHELL, SEE C-068-163041-003, ITEM 8	-----

**BILL OF MATERIALS**

<input type="checkbox"/> PROPRIETARY		FSCM No. 54643		
<input checked="" type="checkbox"/> NON-PROPRIETARY		DO NOT SCALE PRINT		
TOLERANCES (UNLESS NOTED)		DIMENSIONS ARE IN INCHES UNLESS NOTED		<b>RPV CANISTER ASSEMBLY</b>
HOLE DIA. & LOC. ±1/32 DEC. .X ±.1		CAD FILE No. C0681630410020101		
DEC. .XX ±.01 DEC. .XXX ±.005		REVIEWERS OF ORIGINAL (REV. 0)		
ANGLES ±1° FRACTIONS ±1/8		DRAWN BY M. ROZINSKI 12/14/05		
DOES NOT APPLY TO REFERENCE DIMENSIONS		CHECKED BY C. MCGOVERN 12/14/05		SIZE <b>B</b> DRAWING NUMBER <b>C-068-163041-002</b> REV. <b>1</b>
		ENGINEER P. DANESHVAR 12/14/05		
		SCALE 1 = 50		WT. N / A SHEET 1 OF 2



SECTION B-B

<input type="checkbox"/> PROPRIETARY <input checked="" type="checkbox"/> NON-PROPRIETARY		FSCM No. 54643		 <b>Duratek™</b>	
TOLERANCES (UNLESS NOTED) HOLE DIA. & LOC. ±1/32 DEC. .X ±.1 DEC. .XX ±.01 DEC. .XXX ±.005 ANGLES ±1° FRACTIONS ±1/8 DOES NOT APPLY TO REFERENCE DIMENSIONS		DO NOT SCALE PRINT			
		DIMENSIONS ARE IN INCHES UNLESS NOTED		<b>RPV CANISTER ASSEMBLY</b>	
		CAD FILE No. C0681630410020201			
		REVIEWERS OF ORIGINAL (REV. 0)			
		DRAWN BY M. ROZINSKI 12/14/05		SIZE B DRAWING NUMBER C-068-163041-002 REV. 1	
		CHECKED BY C. MCGOVERN 12/14/05			
		ENGINEER P. DANESHVAR 12/14/05			
		SCALE 1 = 40		WT. N/A SHEET 2 OF 2	