BSC

Engineering Change Notice

1. QA: QA

2. Page 1 of 4

Complete only applicable items.

3. Document Identifier: CAL-DSU-NU-000012	4. Rev.: 00A	5. Title: PWR Axial Burnup Profile Analysis	6. ECN: 2
7. Reason for Change: The purpose of this change is to use the original source reference instead of a data tracking number to remove TBV-5327 from this technical product.			
8. Supersedes Change Document:		☐ Yes If, Yes, Change Doc.: _____ ☒ No	
9. Change Impact:			
Inputs Changed: ☐ Yes ☒ No		Results Impacted: ☐ Yes ☒ No	
Assumptions Changed: ☐ Yes ☒ No		Design Impacted: ☐ Yes ☒ No	
10. Description of Change: (Address any "Yes" answers) Changes are as follows: 1. p. 24 - Source should state as follows: Source: ASME 2001 (Section II, Part A, SA-516/SA-516M, Table 1); Density from ASME 2001 (Section II, Part A, SA-20, Section 14.1). 2. pp. 39-40 modified to incorporate additional reference and removal of data tracking number reference. A summary list of attachments is as follows: p. 24 and pp. 39-40.			
11. Originator: (Print/Sign/Date) John M. Scaglione <i>John M. Scaglione</i> 8/25/05			
Checker: (Print/Sign/Date) Cheng T. Hsu <i>Cheng T. Hsu</i> 8/25/05			
Approved: (Print/Sign/Date) William E. Hutchins <i>William E. Hutchins</i> 8/25/05			

Table 13. Grade 70 A516 Carbon Steel Composition

Element/Isotope	ZAID ^a	Wt%	Element/Isotope	ZAID	Wt%
C-nat	6000.50c	0.2700	Fe-54	26054.60c	5.5558
Mn-55	25055.50c	1.0450	Fe-56	26056.60c	90.3584
P-31	15031.50c	0.0350	Fe-57	26057.60c	2.1252
S-32	16032.50c	0.0350	Fe-58	26058.60c	0.2856
Si-nat	14000.50c	0.2900	Density = 7.850 g/cm ³		

Source: ASME 2001 (Section II, Part A, SA-516/SA-516M, Table 1); Density from ASME 2001 (Section II, Part A, SA-20, Section 14.1)

NOTE: ^a ZAID = MCNP material identifier

The cladding composition was Zircaloy-4 as presented in Table 14 and the spacer grids were Inconel 718 as presented in Table 15. Table 16 presents the component material volume fractions for the upper and lower end-fitting regions and Table 18 presents the upper and lower fuel rod plenum material volume fractions for the B&W 15x15 assembly design. Table 17 presents the upper and lower end-fitting homogenized material compositions and Table 19 presents the upper and lower fuel rod plenum homogenized material compositions for the B&W 15x15 assembly design.

Table 14. Zircaloy-4 Material Composition

Element/Isotope	ZAID ^a	Wt%	Element/Isotope	ZAID	Wt%
Cr-50	24050.60c	0.0042	Fe-57	26057.60c	0.0045
Cr-52	24052.60c	0.0837	Fe-58	26058.60c	0.0006
Cr-53	24053.60c	0.0097	O-16	8016.50c	0.1250
Cr-54	24054.60c	0.0024	Zr-nat	40000.60c	98.1150
Fe-54	26054.60c	0.0119	Sn-nat	50000.35c	1.4500
Fe-56	26056.60c	0.1930	Density ^b = 6.56 g/cm ³		

Source: ASTM B 811-90 1991, p. 2, Table 2

NOTES: ^a ZAID = MCNP material identifier.

^b From ASM International 1990, p. 666, Table 6.

Table 15. Inconel 718 Material Composition

Element/Isotope	ZAID ^a	Wt%	Element/Isotope	ZAID	Wt%
C-nat	6000.50c	0.0400	Fe-58	26058.60c	0.0537
Si-nat	14000.50c	0.1800	Ni-58	28058.60c	35.2846
S-32	16032.50c	0.0080	Ni-60	28060.60c	14.0574
Cr-50	24050.60c	0.7940	Ni-61	28061.60c	0.6214
Cr-52	24052.60c	15.9050	Ni-62	28062.60c	2.0110
Cr-53	24053.60c	1.8380	Ni-64	28064.60c	0.5319
Cr-54	24054.60c	0.4652	Ti-nat	22000.50c	0.9001
Mn-55	25055.50c	0.1800	Al-27	13027.50c	0.5001

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