Supplemental Online Material

Analysis of VIP-BWR reactor core physics experiments on UO_2 and MOX mockup fuel assemblies - part 2: analysis with SIMULATE5

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This Supplemental Online Material consists of 4 pages including 3 figures

3.33							
	-0.63						
-0.03		-1.13					
	-1.27						
1.41	1.54	0.91					
		0.29	2.32	0.45	0.26		
-1.37		1.43	1.88	1.57		0.53	
0.63	2.28		2.27	0.45		-0.62	-2.04

1.94	2.58	-2.12	-0.91	-1.22	-2.91	-1.10	-2.90
	-1.70	*-2.61*	-2.81	0.39	*-2.32*	-5.07	
2.47	*-1.03*	-4.57	1.08	1.72	-4.04		
1.54	-2.23	-0.57					
1.31	-1.77	0.73					
-1.84	*-3.55*	-4.40					
1.65	-3.18						
2.38							

x.xx UO_2 fuel rod *x.xx* Gd_2O_3-UO_2 fuel rod

Two fuel assemblies

2.71							
	-1.23						
-0.63		-1.73					
	-1.87						
0.80	0.92	0.30					
		-0.31	1.70	-0.15	-0.34		
-1.96		0.82	1.26	0.96		-0.08	
0.02	1.66		1.65	-0.15		-1.22	-2.63

Reference fuel assembly

1.87	2.51	-2.19	-0.98	-1.28	-2.97	-1.16	-2.97
	-1.77	*-2.67*	-2.88	0.33	*-2.38*	-5.13	
2.40	*-1.10*	-4.64	1.02	1.66	-4.10		
1.47	-2.29	-0.64					
1.25	-1.83	0.66					
-1.91	*-3.61*	-4.46					
1.59	-3.24						
2.32							

all-UO_2 fuel assembly

Figure S1. Comparison of the calculated core radial fission rate distribution of SIMULATE5 (C) with the measurements (E) in (C/E−1)% in the two assemblies, all-UO_2 fuel assembly, and reference fuel assembly for the all-UO_2 core.

-2.83							-3.87
	-2.74						
-3.81		-1.70					
	-2.07						
-2.09		-2.33			-0.56		1.14
	-2.32		0.30		-0.07		
-3.01		-0.50	0.29	0.81		1.11	
-4.37	-2.10		-0.55	0.90		1.25	-1.23

-1.42							-2.47
	-1.32						
-2.42		-0.27					
	-0.65						
-0.66		-0.91			0.88		2.60
	-0.90		1.75		1.38		
-1.60		0.95	1.74	2.28		2.58	
-2.98	-0.68		0.90	2.37		2.73	0.20

Reference fuel assembly

-0.73	-1.20	-3.89	**-2.72**	**0.97**	**-0.61**	**-0.65**	-6.86
-1.24	**2.88**	*-3.43*	**0.61**	*-2.13*	**1.36**	*-3.30*	**1.56**
-4.56	*-3.41*	**4.39**	**4.88**	**6.68**	**3.64**		
2.36	**2.74**	**5.65**			**2.25**		
2.93	*-1.89*	**5.49**					
2.48	**1.70**	**1.88**			**5.26**		
3.88	*-2.27*					**2.35**	
-1.75							-0.14

x.xx	UO_2 fuel rod	*x.xx*	Gd_2O_3-UO_2 fuel rod
x.xx	MOX fuel rod		

Two fuel assemblies

-1.85	-2.32	-4.97	**-3.82**	**-0.16**	**-1.73**	**-1.76**	-7.91
-2.35	**1.73**	*-4.52*	**-0.53**	*-3.24*	**0.22**	*-4.39*	**0.42**
-5.63	*-4.50*	**3.21**	**3.69**	**5.48**	**2.47**		
1.20	**1.58**	**4.46**			**1.09**		
1.77	*-3.00*	**4.31**					
1.32	**0.55**	**0.73**			**4.08**		
2.71	*-3.37*					**1.20**	
-2.86							-1.26

I-MOX fuel assembly

Figure S2. Comparison of the calculated core radial fission rate distribution of SIMULATE5 (C) with the measurements (E) in (C/E−1)% in the two fuel assemblies, I-MOX fuel assembly, and reference fuel assembly for the I-MOX core.

-2.17							
	-3.50						
-6.02		-4.45					
	-3.50						
-4.08		-2.23					
	-2.79		-1.91	-0.83	-1.59		
-2.85		-0.61	-0.78	-1.11		0.99	
-2.48	-1.48		-0.88	-0.95		-0.32	-0.38

1.73	**0.49**	**0.55**	**-0.73**	**-0.99**	**-0.02**	**-0.81**	**0.40**
-0.40	**-0.39**	*-2.51*	**0.40**	*-2.65*	**-0.40**	*-3.56*	
2.17	*-1.60*	**3.61**	*-1.50*	**6.03**	**3.94**		
2.58	**3.46**	*-2.42*					
2.97	*-2.13*	**6.57**					
6.49	**2.68**	**4.06**					
3.78	*-1.56*						
5.60							

x.xx UO_2 fuel rod

x.xx Gd_2O_3-UO_2 fuel rod

x.xx MOX fuel rod

Two fuel assemblies

-0.12							
	-1.48						
-4.05		-2.45					
	-1.48						
-2.07		-0.18					
	-0.76		0.14	1.24	0.47		
-0.82		1.47	1.29	0.96		3.10	
-0.44	0.58		1.19	1.12		1.77	1.70

Reference fuel assembly

-0.15	**-1.37**	**-1.31**	**-2.57**	**-2.82**	**-1.87**	**-2.64**	**-1.46**
-2.24	**-2.24**	*-4.31*	**-1.45**	*-4.45*	**-2.25**	*-5.34*	
0.28	*-3.42*	**1.69**	*-3.32*	**4.07**	**2.02**		
0.68	**1.55**	*-4.22*					
1.07	*-3.94*	**4.60**					
4.52	**0.78**	**2.14**					
1.86	*-3.38*						
3.65							

all-MOX fuel assembly

Figure S3. Comparison of the calculated core radial fission rate distribution of SIMULATE5 (C) with the measurements (E) in (C/E−1)% in the two fuel assemblies, all-MOX fuel assembly, and reference assembly for the all-MOX core.