Testing of preVII Mar’05 Actinides

MacFarlane

July’05

Assembly	Experiment	C/E Release 8	C/E preVII May'04	C/E preVII Mar'05
Godiva	1.0000(10)	.99665(19)	.99970(19)	.99950(15)
HMF001	1.0000(10)	.99664(19)	.99942(19)	.99979(15)
Jezebel	1.0000(20)	.99722(18)	1.00051(18)	1.00032(14)
PMF001	1.0000(20)	.99750(19)	1.00024(18)	1.00034(15)
Flattop-25	1.0000(10)	1.00193(19)	1.00299(21)	1.00283(16)
HMF028	1.0000(30)	1.00147(21)	1.00328(20)	1.00330(16)
Flattop-Pu	1.0000(14)	1.00203(22)	1.00194(23)	1.00178(17)
PMF006	1.0000(30)	1.00269(18)	1.00169(17)	1.00136(18)
Jezebel-23	1.0000(10)	.99255(18)	.99883(18)	.99974(15)
UMF001	1.0000(10)	.99256(18)	.99857(18)	.99984(15)
Flattop-23	1.0000(14)	1.00239(23)	1.00061(17)	1.00093(17)
UMF006	1.0000(14)	1.00055(21)	.99864(21)	.99963(17)
HMF004	.9985	.99625(25)	.99995(24)	.99964(25)
PMF011	1.0000(10)	.99715(23)	.99908(23)	.99910(24)
Bigten	.9960(30)	1.01355(17)	1.00108(16)	1.00174(13)
IMF007h	.9948(13)	1.01251(16)	.99985(16)	1.00035(13)
IMF007s	1.0045(07)	1.01167(24)	.99989(24)	1.00001(13)
ZPR-6/6A	.9939(23)	.99921(26)	.99792(26)	.99817(16)
MCF001(ZPR-6/7)	.9866(23)	1.00605(33)	.99878(33)	1.00087(15)
HST042-3	.9994(34)	1.00100(11)	1.00093(12)	1.00045(09)
LCT006-6	1.0000	.99367(25)	.99931(22)	.99935(18)
HST009-2	1.0000(57)	1.00055(22)	1.00051(22)	1.00061(22)
B&WXI2	1.0000	.99770(22)	.99959(20)	1.00010(21)
Godiva Ratios				
U238f/U235f	.1643(18)	.965	.961	.965
Np237f/U235f	.8516(120)	.959	.954	.958
U233f/U235f	1.590(30)	1.001	.987	.988
Pu239f/U235f	1.4152(140)	.977	.974	.978
Jezebel Ratios				
U238f/U235f	.2133(23)	.968	.977	.974
Np237f/U235f	.9835(140)	.973	.972	.972
U233f/U235f	1.578(27)	1.001	.989	.988
Pu239f/U235f	1.4609(130)	.976	.973	.976
Flattop-25 Ratios				
U238f/U235f	.1492(16)	.981	.970	.968
Np237f/U235f	.7804(100)	.981	.971	.970
U233f/U235f	1.608(30)	.990	.975	.976
Pu239f/U235f	1.3847(120)	.985	.980	.983
Flattop-Pu Ratios				
U238f/U235	.1799(20)	.986	.979	.982
Np237f/U235f	.8561(120)	.989	.976	.978

Jezebel-23 Ratios				
U238f/U235f	.2131(26)	1.011	.981	.993
Np237f/U235f	.9970(150)	.988	.981	.986
Flattop-23 Ratios				
U238f/U235f	.1916(21)	.999	.9785	.987
Np237f/U235f	.9103(130)	.994	.9791	.988
Bigten Ratios				
U238f/U235f	.03739(30)	1.041	.961	.959
Np237f/U235f	.3223(39)	1.034	.943	.942
U233f/U235f	1.580(30)	.998	.971	.980

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Names like “Godiva” are the CSEWG benchmarks, and names like “HMF001” are the corresponding ICSBEP benchmarks.

Godiva, Jezebel, and Jezebel-23 are bare spheres of U-235, Pu-239, and U-233, respectively. Flattop-25, Flattop-Pu, and Flattop-23 are the corresponding spheres reflected by U-238 shells. HMF004 and PMF001 are spheres of U-235 and Pu-239 reflected by water. Bigten is an assembly approximating 10% uranium enrichment reflected by U-238. ZPR-6/6A is a uranium LMFBR mockup, and ZPR-6/7 is a Pu-239 LMFBR mockup. HST42-3 is a large HEU solution, HST9-2 is a small leaky HEU solution reflected by Water, LCT6-6 is an LEU lattice of rods in water, and B&WXI2 is a larger LEU lattice brought to criticality with boron concentration.