

### ICSBEP BENCHMARK PRIORITIES FOR FY-2009

<i><b>IDENTIFIER</b></i>	<i><b>DRAFT TITLE</b></i>	<i><b>JUSTIFICATION:</b></i>
MIX-COMP-FAST-003	ZPR-3 Assemblies 48 and 48B: A Clean Cylindrical Pu /U/C/Na Cores, Reflected by Depleted Uranium	ZPR-3 Assembly 48 is a CSEWG Benchmark that has traditionally been used to test plutonium data in a slightly softened spectrum. There are known deficiencies in <sup>239</sup> Pu and the data may be irretrievable within a few years. Assembly 48B is a variant with increased <sup>240</sup> Pu.
PU-COMP-FAST-004	ZPR-3 Assembly 56B: A Clean, Cylindrical Plutonium Oxide Benchmark Assembly Reflected by Nickel	This experiment is a CSEWG Benchmark that has traditionally been used to test plutonium and nickel (important structural material) data in a slightly softened spectrum. There are known deficiencies in both of these nuclides and the data may be irretrievable within a few years.
PU-MET-FAST-047	Investigation of Lead Cross Sections in Fast and Intermediate Neutron Spectra in BFS (IPPE)	The lead cross section has undergone recent improvements as a result of several ICSBEP benchmarks. These experiments provide independent test of lead transport, capture, and inelastic scatter cross sections while lead is undergoing improvements.
SUB-PU-MET-FAST-003	Nickel-Reflected Plutonium Metal Sphere Subcritical Noise Measurements	This experiment is a new CEF measurement. There are known deficiencies in Ni.
SUB-PU-MET-FAST-002	Acrylic-Reflected Plutonium Metal Sphere Subcritical Noise Measurements	This experiment is a new CEF measurement. Only a small amount of data on Acrylic is currently available.
HEU-MET-FAST-043	VNIITF Fe/HEU Cylindrical Configurations (Experiments 2017-2019, 2021, 2022, 3010, 4006, 4012) and CH <sub>2</sub> Moderated/Reflected Base Case (4002)	These experiments test the iron cross section and fill a gap in ICSBEP database. The data are needed for spent fuel shipping/disposal container analyses and are expected to be high-fidelity benchmarks.
HEU-MET-THERM-028	SPADE – BeO Moderated Oy Experiments with Special Materials — Part 1: Tungsten, Tantalum, and Gold	Special materials (Tungsten, Tantalum and Gold) for which there is little on no data in the ICSBEP database will be systematically selected from the large SPADE series of integral experiments that test nuclear cross sections of these materials. Tungsten is included to coincide with new VNIITF results and provide independent tests of the tungsten cross sections.

### ICSBEP BENCHMARK PRIORITIES FOR FY-2010

<i><b>IDENTIFIER</b></i>	<i><b>DRAFT TITLE</b></i>	<i><b>JUSTIFICATION:</b></i>
IEU-MET-FAST-015	ZPR-3 Assembly 6F: A Clean Cylindrical Core with a <sup>235</sup> U-to- <sup>238</sup> U Ratio of 1, Reflected by Depleted Uranium	This experiment is a CSEWG Benchmark that has a unique <sup>235</sup> U-to- <sup>238</sup> U Ratio and helps fill the gap in intermediate enriched systems. These data may be irretrievable within a few years.
IEU-COMP-FAST-004	ZPR-3 Assembly 12: A Large, Clean, Cylindrical Uranium (21% <sup>235</sup> U) Carbide Benchmark Assembly Reflected by Depleted Uranium	This experiment is a CSEWG Benchmark that simulates a <sup>235</sup> U enrichment of 21% and helps fill the gap in intermediate enriched systems. These data may be irretrievable within a few years.
HEU-MET-THERM-029	SPADE – BeO Moderated Oy Experiments with Special Materials — Part 2: TBD	Special materials (TBD) for which there is little on no data in the ICSBEP database will be systematically selected from the large SPADE series of integral experiments that test nuclear cross sections of these materials.
HEU-MET-INTER-010	ORNL HEU Metal Annuli filled with Be	There are known deficiencies in the beryllium cross section. This series of experiments is expected to provide an excellent test of beryllium and should contribute significantly to the improvement of the Be cross section.
SUB-PU-MET-FAST-006	Lead-Reflected Plutonium Metal Sphere Subcritical Noise Measurements	This experiment is a new CEF measurement and has been moved up in priority to complete the set of integral data for lead. Timely performance and evaluation of these data will enable cross section evaluators to work with all available data in an effort to resolve known deficiencies in Pb.
SUB-PU-MET-FAST-005	Tungsten-Reflected Plutonium Metal Sphere Subcritical Noise Measurements	This experiment is a new CEF measurement that will complement the new tungsten data that are being generated at VNIITF during FY-2009. Timely performance and evaluation of these data will enable cross section evaluators to work with all available data in an effort to resolve known deficiencies in W.
HEU-MET-FAST-044	VNIITF Al/HEU Cylindrical Configurations (Experiments 2023-2027, 3005, 4008, 4014)	These experiments test the aluminum cross section. The data are needed for spent fuel shipping/disposal container analyses and are expected to be high-fidelity benchmarks. <b>(Check Sensitivity)</b>

<b>ICSBEP BENCHMARK PRIORITIES FOR FY-2011</b>		
<b><i>IDENTIFIER</i></b>	<b><i>DRAFT TITLE</i></b>	<b><i>JUSTIFICATION:</i></b>
IEU-COMP-FAST-005	ZPR-3 Assembly 11: A Large, Clean, Cylindrical Uranium (12% <sup>235</sup> U) Carbide Benchmark Assembly Reflected by Depleted Uranium	This experiment is a CSEWG Benchmark that simulates a <sup>235</sup> U enrichment of 12% with a slightly softened spectrum and helps fill the gap in intermediate enriched systems. These data may be irretrievable within a few years.
PU-COMP-FAST-005	ZPR-3 Assembly 53: A Clean Cylindrical Pu Carbide Core, Reflected by DU	ZPR-3 Assembly 53 is a high-fidelity benchmark that serves as the reference case for Assembly 54. These data may be irretrievable within a few years.
PU-COMP-FAST-006	ZPR-3 Assembly 54: A Clean Cylindrical Pu Carbide Core, Reflected by Iron	This experiment provides unique, high-fidelity data for iron as a reflector and the data may be irretrievable within a few years.
HEU-MET-THERM-004	SPADE – BeO Moderated OY Experiments with Special Materials – Part 3: TBD	Special materials (TBD) for which there is little or no data in the ICSBEP database will be systematically selected from the large SPADE series of integral experiments that test nuclear cross sections of these materials.
SUB-PU-MET-FAST-004	Copper-Reflected Plutonium Metal Sphere Subcritical Noise Measurements	This experiment is a new CEF measurement. Since the ZEUS assembly utilizes a thick copper reflector, it is important to clearly understand the nuclear properties of copper.
SUB-PU-MET-FAST-007	Manganese-Reflected Plutonium Metal Sphere Subcritical Noise Measurements	This experiment is a new CEF measurement. Manganese is an important structural material with known deficiencies. ( <b>Verify Relevance in the fast regime</b> )
HEU-MET-MIXED-013	SNOOPY Experiments -- Graphite Moderated HEU Foils – Part II (C/U = 1200)	This experiment provides data for a unique carbon-to-uranium ratio.

<b>ICSBEP BENCHMARK PRIORITIES FOR FY-2012</b>		
<b><i>IDENTIFIER</i></b>	<b><i>DRAFT TITLE</i></b>	<b><i>JUSTIFICATION:</i></b>
HEU-MET-FAST-045	Borabond Experiment	This experiment is a new CEF measurement and fills a gap in the ICSBEP database for Borabond and satisfies a specific user need.
HEU-MET-TBD-TBD	HEU Spherical Lattice	This experiment is a new CEF measurement and fills a gap in the ICSBEP database for the combination of materials and geometry and satisfies a specific user need.
HEU-COMP-FAST-004	ZPR-3 Assembly 14: A Clean HEU (93% <sup>235</sup> U) Carbide Core Reflected by Depleted Uranium	This experiment provides a test of <sup>235</sup> U in a slightly softened spectrum. These data may be irretrievable within a few years.
IEU-COMP-FAST-003	ZPR-6 Assembly 5: A Large, Clean, Cylindrical Uranium Carbide Benchmark Assembly Reflected by Depleted Uranium	This experiment is a CSEWG Benchmark that has traditionally been used to test plutonium data in a slightly softened spectrum. These data may be irretrievable within a few years.
HEU-TBD-TBD	Y-DR-83 polyethylene-reflected 8-unit array experiments with HEU separated by plywood, celotex, foamglas, and borated plastic foam.	These experiments provide data for a unique set of important materials used in transportation and storage containers.
HEU-MET-THERM-017	SPADE – BeO Moderated OY Experiments with Special Materials – Part 4: TBD	Special materials (TBD) for which there is little or no data in the ICSBEP database will be systematically selected from the large SPADE series of integral experiments that test nuclear cross sections of these materials.
HEU-MET-THERM-030	SNOOPY Experiments -- Graphite Moderated HEU Foils – Part III(C/U = 2340)	This experiment provides data for a unique carbon-to-uranium ratio.

**ICSBEP BENCHMARK PRIORITIES FOR FY-2013**

<b><i>IDENTIFIER</i></b>	<b><i>DRAFT TITLE</i></b>	<b>JUSTIFICATION:</b>
HEU-MET-FAST-046	HEU / Vanadium Critical Experiments	This experiment is a new CEF measurement that will complement the new vanadium data that were generated at VNIITF during FY-2008. Timely performance and evaluation of these data will enable cross section evaluators to work with all available data in an effort to establish the accuracy and, if necessary, improve the V cross sections.
TBD	Flat-Top Gap Experiments	This experiment is a new CEF measurement that will challenge current ability to calculate the effects of significant streaming paths.
PU-COMP-FAST-003	ZPR-9 Assembly 31: Plutonium Carbide Benchmark Assembly Reflected by DU	This experiment is a CSEWG Benchmark that has traditionally been used to test plutonium data in a slightly softened spectrum. These data may be irretrievable within a few years.
IEU-MET-FAST-011	ZPR6-1 All Aluminum - 14% Enriched	This experiment provides high-fidelity benchmark data that simulates a unique uranium enrichment of %14. These data may be irretrievable within a few years.
HEU-TBD	Y-DR-109 concrete reflected arrays of HEU and polyethylene reflected arrays of HEU separated by vermiculite	These experiments provide data for a unique set of important materials used in transportation and storage containers.
HEU-MET-THERM-019	SPADE – BeO Moderated Oy Experiments with Special Materials — Part 5: TBD	Special materials (TBD) for which there is little or no data in the ICSBEP database will be systematically selected from the large SPADE series of integral experiments that test nuclear cross sections of these materials.
IEU-MET-THERM-001	Cronin U(37.5) Metal Experiments, Recently Unclassified	These experiments provide unique intermediate enriched data. The experimenter is no longer available and those familiar with the experiments may no longer be available within a few years.