

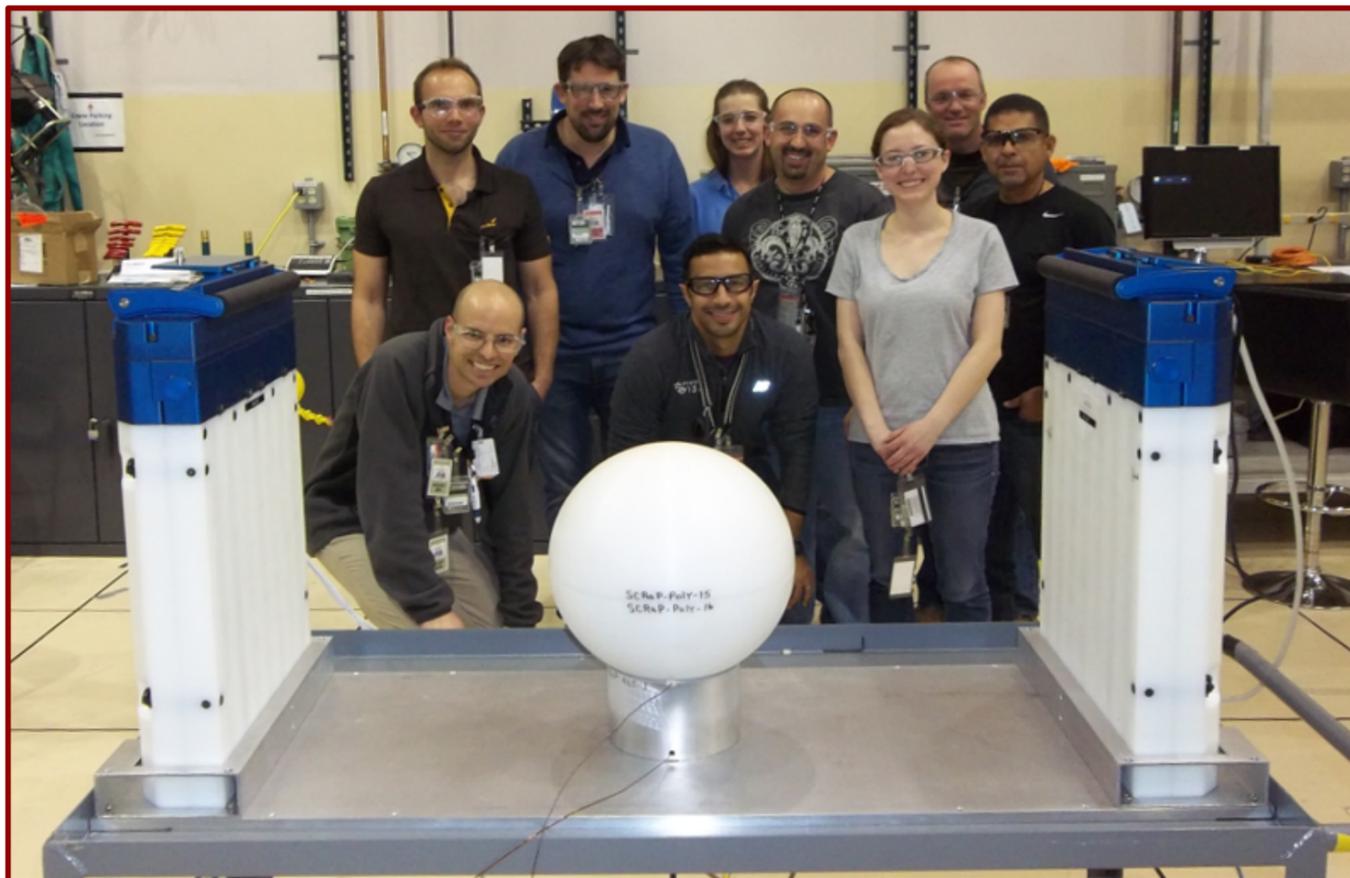


**NCSP FY2017 1<sup>st</sup> QUARTER ACCOMPLISHMENTS**

**Brookhaven National Laboratory (BNL):** Released ENDF/B-VIII.β3 to include 8 new charged particle evaluations, 5 new thermal scattering law evaluations and 20 NE neutron evaluations. ENDF/B-VIII.β3.1 is coming soon!

**Los Alamos National Laboratory (LANL):** The Subcritical Copper-Reflected alpha-phase Plutonium (SCRαP) integral benchmark experiment was successfully executed at the National Criticality Experiments Research Center (NCERC) with participation from LANL and IRSN (pictured below). Measurements were performed on various subcritical experimental configurations consisting of a 4.5-kg alpha-phase stainless steel clad weapons-grade plutonium sphere surrounded by different copper and polyethylene thicknesses.

The SCRαP measurement campaign builds on the momentum of recent past year efforts, where nickel and tungsten –reflected plutonium subcritical experiments were also executed at NCERC. The nickel and tungsten -reflected experiments were documented as first-of-their-kind subcritical benchmark evaluations that were accepted and published by the International Criticality Safety Benchmark Evaluation Project (ICSBEP). Comparisons of the measured and simulated data for SCRαP are currently underway, and the results will also be documented as a benchmark evaluation that will be submitted to ICSBEP later this year. This growing dataset of neutron multiplication benchmarks experiments and accompanied evaluations are intended to provide unique datasets that will help validate and quantify uncertainties in nuclear data and computational methods.



**SCRαP Integral Benchmark Measurement Campaign Successfully Executed at NCERC with Participation from LANL and IRSN**

**Lawrence Livermore National Laboratory (LLNL):** LLNL and LANL personnel completed a cold load test for the TEX experiments on the critical assembly machine Planet the week of January 16. TEX will be fueled with layers of Plutonium-aluminum alloy Zero Power Physics Reactor (ZPPR) plates stacked with polyethylene sheets and tantalum diluent plates. The cold test demonstrated the stack would remain aligned during a machine scram, with molybdenum plates standing in for plutonium. This cold test successfully resolved the last outstanding LANL Criticality Experiments Safety Committee concern, thus paving the way for committee approval.

**NCSP FY2017 1<sup>st</sup> QUARTER ACCOMPLISHMENTS (continued)**

**Oakridge National Laboratory (ORNL):** The <sup>235</sup>U evaluation work in the resolved resonance region performed at ORNL in collaboration with the IAEA showed improved performance for a large suite of benchmarks. The evaluation work was accepted to be included in the ENDF/B-VIII.0 beta 3.1 library which was released in January 2017.

**Hands-on Training Courses – Quarter 1**

1-Week Manager Course – Jan. 9-13, 2017: A 1-week NCS Manager Course at Sandia National Laboratories (SNL) was successfully completed that involved a series of NCS lectures and hands-on experiments with the critical assembly at SNL. Three students were from NNSA and two others were from Los Alamos National Laboratory.

2-Week Hands-on Course – Jan. 30 - Feb. 10, 2017: A 2-week NCS Hands-on Course for practitioners at the Nevada Field Office (NFO), Sandia National Laboratories (SNL), and the National Criticality Experiments Research Center (NCERC) was successfully completed. Students in the course were from Y-12, NRC, DNFSB, SRS, SNL, Pantex, NSTec, LLNL, Knolls Atomic Power Lab, and UNNPP.



**Week 1: Hands-on Classroom Training at NFO**



**Week 2: Hands-on Training (BERP Ball) at NCERC**

**Rensselaer Polytechnic Institute (RPI):** Hosted a SAMMY analysis workshop in collaboration with ORNL and NR during November 1-3. Hosted NR/NCSP technical review meeting on December 12. Presented results during CSEWG and participated in NDAG meeting at BNL during November 14-16, 2016. Working with IAEA and BNL evaluators on incorporation on the Fe and Fe-56 capture (and scattering) into ENDF/B-VIII.

**Sandia National Laboratory (SNL):** Conducted Hands-on Training course in January. Continued efforts on Sandia Critical Experiments.

**Y12:** Participated in Hands-on Training course development and instruction.



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