LLNL-PRES-470940

Lawrence Livermore National Laboratory

4 Day Hands-on Criticality Course

FY 2010 Accomplishments

Catherine Percher, Song Huang, and Dave Heinrichs

Presented at the Nuclear Criticality Safety Program Technical Conference
at Oak Ridge National Laboratory, March 1, 2011

Lawrence Livermore National Laboratory, P.O. Box 808, L-198, Livermore, CA 94551-0808
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LLNL 4 Day NCS Training Overview

- First class in August of 2006
- Curriculum designed to satisfy DOE-STD-1135-99 requirements for hands-on NCS Training and reviewed by CSSG in 2006
- Lecture topics follow 1135 and include:
  - Criticality Safety Fundamentals
  - DOE NCS Regulations
  - Hand Calculations and Computational Methods
  - NCS Evaluations
  - Nuclear Instrumentation and Physics of Multiplying Systems
  - Criticality Accidents, including an in-class exercise with the ORNL Criticality Accident Slide Rule

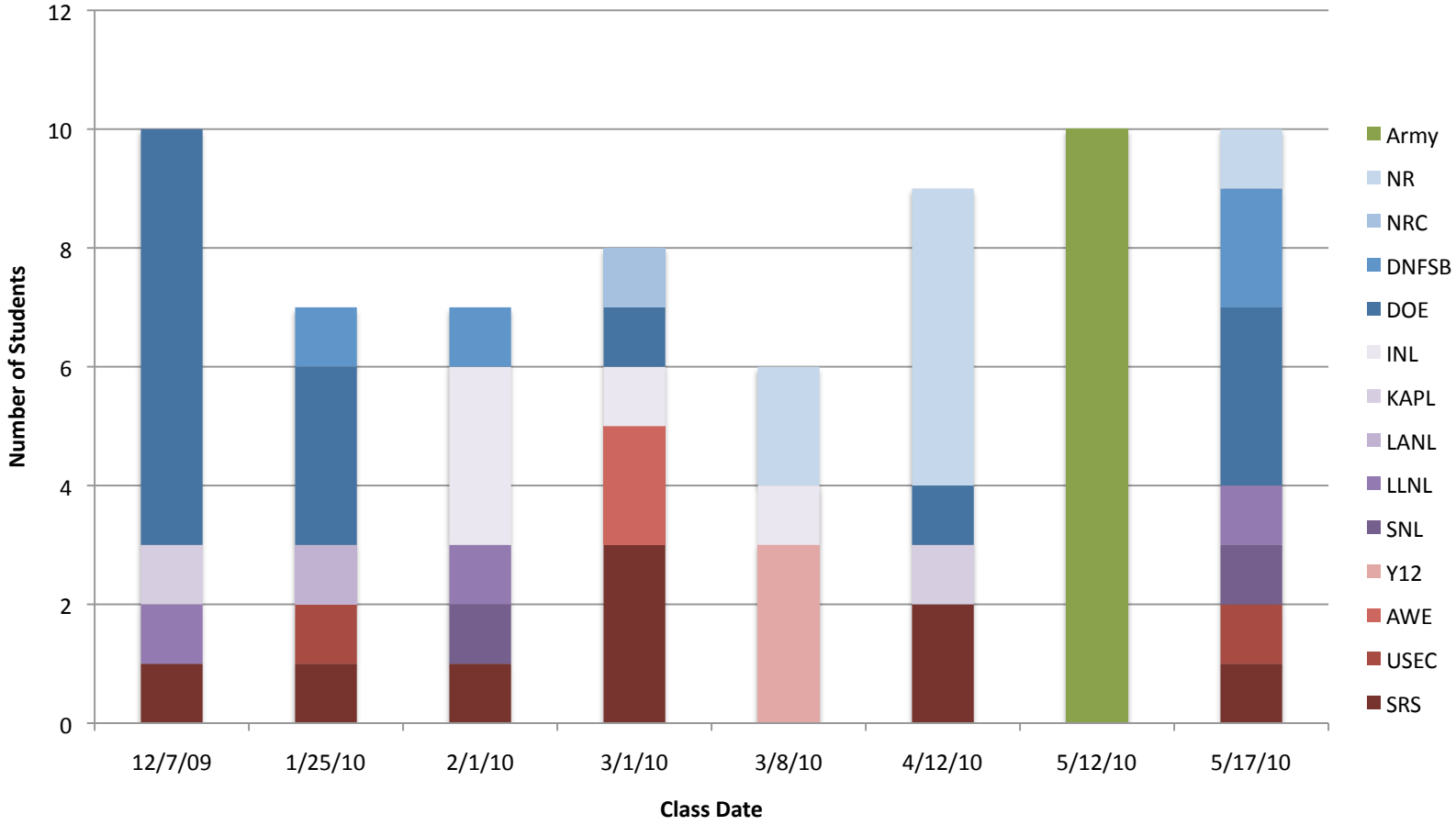
Training Assembly for Criticality Safety (TACS)

- Eight Nimbus HEU Shells
- Vertical lift machine with lower, moveable platform driven by a hand crank
- 1-D, spherical assembly
- Driven by neutron source
- Subcritical with a peak multiplication of 10

FY2010 Accomplishments

- 8 classes conducted with 68 students (student demographic information on next slide)
- Began transition of material to the Device Assembly Facility, including establishing a secondary REOP
- Presented a well-received paper detailing hands-on training at Las Vegas ANS Conference

Continuing High Demand for Training in FY2010



Regulators Plants Laboratory First Responders

Transition to DAF

- LLNL is deinventorying, with all Category 1 and 2 material to be offsite by July 2011
- The NCS Division has partnered with LLNL Global Security to transition the TACS to DAF in concert with NCT materials
- Due to this partnership, FY2010 spending on transition was minimized

Status of Transition

Phase 1 – Transfer course materials to the DAF in July 2011

ACTION	OWNER	STATUS
LLNL secondary REOP for receiving and staging LLNL shipping packages	LLNL	
NMC&A Shipper/Receiver Agreement	LLNL NSTec	
DPP-2 SARP Addendum for TACS HEU shells	Y-12	
DPP-2 Certificate authorizes off-site shipment of TACS HEU shells	PCP	
HEU and D38 shells shipped to DAF	LLNL	
Inventory list of all TACS equipment	LLNL	
Transfer other TACS equipment to DAF	LLNL	

Blue: Complete
Green: In-Progress