ORNL NCSP Training and Education Support for FY 2020

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NCSP Technical Program Review
February 25, 2021
# ORNL Approved Training and Education Tasks for FY 2020

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ORNL TE1—Manage and Provide Instruction for the DOE Nuclear Criticality Safety Training and Education Program

• Q1
  – Archived FY 2019 course materials in accordance with the course procedure
  – December 2019—led an FY 2020 planning session at Sandia National Laboratories to plan lecture courses for the year. All lecture course instructors were present

• Q2
  – Planned and executed the first 2-week hands-on course as scheduled (lecture, Sandia and NCERC)
  – CSO Manager course materials finalized for June pilot course

• Q3
  – April Manager course at Sandia cancelled because of COVID-19
  – Y-12 special course planning

• Q4
  – June NCERC Manager/CSO course cancelled because of COVID-19 (CSO course pilot)
  – August 2-week hands-on course cancelled because of COVID-19
  – Y-12 special course – lecture portion of the 2-week hands-on course conducted over a 2-day period (September)

• FY 2020 preparations
  – Planned for virtual course in FY 2020
  – Completed the Y-12 special course with the second hands-on week at NCERC
NCSP Training and Education Course Statistics + COVID Impacts in FYs 2020/21

- **Q2**
  - 2-week course held as scheduled; 23 students attended (14 Sandia, 9 NCERC)

- **Q3**
  - April Manager course at Sandia cancelled because of COVID-19

- **Q4**
  - June NCERC Manager/CSO course cancelled because of COVID-19 (CSO course pilot)
  - August 2-week hands-on course cancelled because of COVID-19
  - Y-12 special course—lecture portion held in Sept.
    - 16 students attended; 10 attended NCERC portion

- **FY 2020**
  - Total: 39 (14 Sandia/19 NCERC)
  - Six from Y-12 need to attend second week

- **FY 2021**
  - One lecture portion of the 2-week course completed; second week at NCERC and Sandia postponed
  - 21 students need to attend second week

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NCSP T&E Courses – Total Trained FY12-FY21

- **Total Trained**
- **Total Capacity**

![Graph showing total trained and total capacity from FY12 to FY21 with data points]

Total Students Trained: 518
NCSP Training and Education Course Statistics + COVID Impacts in FYs 2020/21

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- **FY 2020** Total: 39 (14 Sandia/19 NCERC)
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- **FY 2021** – One lecture portion of the 2-week course completed; second week at NCERC and Sandia postponed
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ORNL TE3—Hand-Calculation Primer Expansion, LA-14244-M

• Status—delayed
• Review of current methods complete
• Addition of new example problems in progress for typical NCS applications (single-unit and array problems)
• Solid angle method chapter will be revised based on extensive literature review and research on applicability
• Web-based example problems to be included
  – All data needed to complete a problem will be available
  – HTML format—to be linked to NCSP website (NCSET modules) and linked to the NCSP training course
  – Student intern work delayed by COVID-19
  – ORNL summer programs cancelled in FY 2020
• New ORNL report to be completed at the end of FY 2021
ORNL TE5—On-Site Introductory Training for the NCS Practitioner on Modern Approaches to Validation Using Sensitivity and Uncertainty Analysis Tools

- This task was not completed because of COVID-19
- LANL/ORNL collaboration is planning one or two virtual courses in FY 2021
  - Kickoff meeting held in January
- Potential sites
  - BWXT facilities in VA and TN
  - INL NCS group
ORNL TE9—Design and Develop a New NCSP TE Course for Criticality Safety Officers at DOE/NNSA Nuclear Facilities

- Design and development is complete
- Dry run was held at LANL in early March 2020
- Pilot course in June 2020 was postponed: new target June 2021
ORNL TE10—Design of a Subcritical Assembly at ORNL for Use with the TE Courses

• Task was delayed by a Y-12 MC&A search of AGN-201M fuel available to support the proposed design of the assembly

• Configurations were explored
  – Fuel configuration
  – Reflector type and configuration
  – Facility profile
  – NCS limits
  – Fuel transportation

• Feasibility study was successful; ORNL report published; presented at winter ANS meeting

• NCSP funding in FY 2021 to be used to finalize design details for installation at ORNL to supplement the NCSP TE program (and other missions)
This work was supported by the NCSP, funded and managed by the NNSA for DOE