

# Nuclear Material Accounting & Control (NMAC) for Practitioners: A New Approach to International Training on NMAC Concepts

In August 2018, the Nuclear Security Division of the International Atomic Energy Agency (IAEA) presented the first-ever pilot International Training Course (ITC) on “Nuclear Material Accounting & Control (NMAC) for Practitioners” in conjunction with the United State Department of Energy/National Nuclear Security Administration Office of International Nuclear Security (NA-21.1) and Los Alamos National Laboratory (LANL). The course was truly an international event, with twenty-four participants from over fifteen nations as well as instructors from another half-dozen countries. The course curriculum, based on IAEA Nuclear Security Series No. 25-G, Use of Nuclear Material Accounting and Control for Nuclear Security Purposes at Facilities, was developed collaboratively with experts from a dozen countries worldwide contributing their knowledge and experience to enhance the material with real-world examples. Subjects covered included the interplay between NMAC and other elements of nuclear security, including information and cyber security; records and procedures; physical inventory taking, material-unaccounted-for (MUF) evaluation; nuclear material measurements; measurement quality control; controls, including tamper indicating devices (TIDs) and item and process monitoring; resolution of irregularities; and performance testing. With the IAEA NMAC implementing guide 25-G providing the overarching framework, the course provided the opportunity for “deep dives” into key topics of operational interest to NMAC practitioners, such as the evaluation of measurement control data and proper selection of controls for various facility types. Another key goal of this course, with its emphasis on practitioners, was to provide hands-on experience and opportunities for nuclear material measurement and implementation of controls. This was met with over thirty percent of the two-week course spent in the laboratory, working with nuclear material standards available at LANL. The course culminated in a day-long capstone exercise which served as a final integrated test, putting to work the material covered in the preceding weeks. During the capstone exercise, the participants were afforded to opportunity to conduct a nuclear material inventory, apply and remove TIDs; use procedures tailored to the scenarios; make nuclear material measurements; investigate and resolve irregularities that were planted in the scenario; and report to relevant authorities. Feedback from the participants was extremely positive, with great benefit realized by the ability to incorporate the concepts being taught into an authentic environment. The hands-on component was recognized as extremely valuable, providing concrete benefits for the participants to take back to their home facilities. The addition of a hands-on, advanced International Training Course in NMAC specially tailored to practitioners from nuclear facilities worldwide contributes substantially to strengthening the nuclear security regime, and represents an outstanding addition to the IAEA’s flagship courses in nuclear security.

## Gender

Female

## State

United States

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