

Personnel Training

October 2007

Key Facts

■ After investigating the 1979 accident at Three Mile Island, the Kemeny Commission recommended that the U.S. nuclear energy industry “set and police its own standards of excellence.” Within nine months of the accident, the industry formed the Institute of Nuclear Power Operations (INPO) to promote excellence in nuclear power plant operations, including the training of personnel.

■ The nuclear industry established a comprehensive system of personnel training and qualification. It created the National Academy for Nuclear Training to integrate the training programs of INPO, the training efforts of all U.S. nuclear energy companies and the independent activities of the National Nuclear Accrediting Board.

■ The industry’s training programs have been extremely successful. Since 1979, the number of professional training staff and the space dedicated to training activities have increased. The investments in training have yielded significant improvements in nuclear power plant safety and reliability in the past 25 years.

■ The U.S. Nuclear Regulatory Commission

has fulfilled its regulatory responsibilities through continuing oversight of nuclear plant programs, inspections, enforcement actions and oversight of the industry’s accreditation process.

■ The NRC issued a training rule in April 1993 that recognized the industry’s training and accreditation efforts.

■ In February 1994, the NRC issued a rule that allows each nuclear power plant operating company—rather than the agency—to conduct the requalification examination for licensed operators every two years.

Industry Conducts Comprehensive Training

The Pursuit of Excellence.

In its report on the Three Mile Island accident, the presidentially appointed Kemeny Commission recommended that the U.S. nuclear energy industry “set and police its own standards of excellence.” The industry formed the Institute of Nuclear Power Operations that same year to promote excellence in nuclear power plant operations, including the training of personnel.

Training and Accreditation.

As one of its first steps, INPO examined utility training needs

and developed a number of training and qualification guidelines. It also established procedures and criteria for training program accreditation.

Under INPO’s auspices, the nuclear energy industry has created a comprehensive system of training and accreditation for utility personnel. The National Academy for Nuclear Training, created in 1985, integrates and standardizes the training efforts of INPO and all U.S. nuclear companies.

The academy sets industry training standards. Its mission: to strengthen training and enhance the pride and professionalism of nuclear plant personnel. The academy conducts several special courses that promote the development, involvement and professionalism of utility executives, managers and supervisors.

Through the independent National Nuclear Accrediting Board, individual utility training programs are formally accredited.

The accreditation process covers operations, maintenance and technical training programs for all key positions at each plant. It requires:



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- a utility self-evaluation of its training programs based on industrywide standards
- a visit from a team of training experts, which examines the training programs and recommends improvements
- a review by a panel of the independent National Nuclear Accrediting Board, which determines whether the programs meet accreditation standards.

Each training program must renew its accreditation every four years.

Nuclear operating companies have invested extensive resources in training.

New Levels of Plant Safety and Performance. The success of the industry's training programs can be measured by nuclear power plant performance. Performance indicators for plant safety, efficiency and reliability have improved steadily in the past 25 years.

The average number of unplanned automatic shutdowns was down to zero per unit in 2002, from 7.3 in 1980. The median unit capacity factor for U.S. nuclear plants rose from 57.6 percent in 1980 to 89.8 percent in 2006. A high unit capacity factor means that more electricity is available to the electricity grid—a result of effective plant programs and practices to minimize

unplanned energy losses and to optimize planned outages.

The Training Academy and Accrediting Board

The Academy's Mission: Setting Standards. The National Academy for Nuclear Training sets industry training standards, focusing and unifying the training activities of the nation's nuclear energy industry, and serving as a vehicle for excellence in training. Its mission is to strengthen training and to enhance the pride and professionalism of nuclear plant personnel. The academy integrates the training efforts of all U.S. nuclear plant operating companies, the activities of the independent National Nuclear Accrediting Board and the training-related programs of INPO.

The academy's executive director meets regularly with the council of the National Academy for Nuclear Training. The council, composed of utility executives and senior managers, examines industry training issues and offers advice on the operation of the academy. It also plays an advisory role in all INPO training programs and activities.

The academy's activities range from conducting workshops for training managers to seminars for chief executive officers. It also publishes a quarterly journal, *The Nuclear Professional*, as well as

training-related reports and other documents.

The academy and INPO jointly manage and operate the National Academy for Nuclear Training e-Learning (NANTeL) system. Established in 2006, NANTeL is a national Web-based instruction and portable qualifications system that provides standardized training for the supplemental nuclear work force—contract employees who support the plant on a short- or long-term basis. NANTeL enables supplemental personnel to complete generic training in areas such as industrial safety and radiological protection prior to their work at a plant site.

Accrediting Board: Ensuring Standards Are Met. Once a company has set up its training programs, the independent National Nuclear Accrediting Board determines whether they meet accreditation standards. The board is composed of eminent American scholars and executives from four groups:

- industrial training experts from fields outside the nuclear industry
- members of the post-secondary education community
- individuals nominated by the NRC
- senior company executives.

A company must maintain its accreditation on an ongoing

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basis and formally renew it for each training program every four years.

The NRC's Role in Training

An Extensive Regulatory Infrastructure. The NRC oversees virtually every aspect of nuclear power plant personnel training—setting regulatory requirements, providing regulatory guidance, inspecting programs and enforcing requirements.

The NRC monitors company training programs and administers initial licensing examinations for plant operators. Requalification exams are routinely administered by the nuclear plant's operating company, but if there is cause, the NRC may administer them. The NRC also closely monitors the industry's accreditation process—observing industry accreditation team visits to companies, observing accrediting board meetings, and conducting random audits and training inspections. In addition, the NRC nominates some members of the National Nuclear Accrediting Board.

Training is also a major focus of NRC resident inspectors. All nuclear plant sites have a resident inspector for each unit, plus an additional inspector for the site. The inspectors routinely check plant performance, including training activities.

Evolution of the Regulations. Section 306 of the Nuclear

Waste Policy Act of 1982 directed the NRC to issue regulations or “other appropriate regulatory guidance” on the training and qualification of nuclear plant personnel. Recognizing that the nuclear industry already had developed a highly effective training program and accreditation process, the NRC complied with Section 306 by issuing a policy statement in 1985. The statement endorsed the INPO-managed accreditation program. That same year, the industry created the National Academy for Nuclear Training.

In 1988, after a comprehensive review of the industry's progress in training, the NRC reaffirmed its 1985 policy statement. It determined that regulatory guidance—coupled with a policy statement—was adequate to ensure public health and safety.

Training Rule. Because of challenges to the adequacy of the policy statement, the NRC drafted a revised, performance-based rule that takes the industry's training and accreditation efforts into account. The rule endorses a systematic approach to training that has been an industry standard practice. The final rule was issued in April 1993, along with a revised manual setting forth guidelines for NRC inspectors.

Operator Requalification Rule. In February 1994, the NRC issued a final rule eliminating the requirement that licensed operators pass an NRC-

administered comprehensive, written requalification examination and operating test every six years as a condition of license renewal. Instead, the written examination and operating test are administered by the plant's operating company on a two-year cycle.

Operator Licensing

Examination. In April 1999, the NRC issued a final rule that allows, but does not require, companies to prepare their own initial operator licensing examinations. Facilities, particularly those with small training staffs, may continue to have the examinations prepared and administered by the NRC staff. If a company volunteers to prepare the examination, the NRC will continue to approve and administer it, making a final determination to issue a license to an operator.

This fact sheet also is available at www.nei.org.