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DOE-NNSA Domestic and International Security Training

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Disclaimer

DOE-NNSA Domestic and International Security Training

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Introduction

An essential element of a safe and secure nuclear working environment is properly trained employees. The U.S. Department of Energy (DOE) and National Nuclear Security Administration (NNSA) have historically placed increasing emphasis in this area. This paper will describe the DOE-NNSA security training environment, both from an internal domestic perspective and an external international partner perspective.

DOE-NNSA Security Training - Domestic

The complexities of nuclear security operations and potential consequences of error require that employees be well trained for their respective work environments. To this end, DOE-NNSA has constructed a comprehensive approach to meet the training needs. Much of the training may be accomplished through the National Training Center (NTC), either by class room instructor led attendance, remote learning, or correspondence courses. Mobile training, where the NTC delivers a course at a DOE site is also available. In addition, DOE sites have their own security training, predominantly in the topic of protective force. DOE sites also employ computer based training (CBT) in a variety of topics for their employees, as well as On-The-Job Training (OJT). Attendance at commercially provided training is also widely used for specialized training. Security training within the DOE-NNSA is primarily focused on physical protection, vulnerability analysis, protective force, personnel security, and survey. In addition, nuclear material control and accounting courses are provided to enhance the integrated nature of safeguards and security.

The NTC offers training for the training practitioner through the Management and Instructional Training (MIT). Training methodology and implementation is driven by the Training Approval Program (TAP).

Management and Instructional Training (MIT)

Management and Instructional Training (MIT) assists in the effective implementation of the overall DOE S&S Training Program. Both Distance Learning (DL) and Classroom-Instructor led Training (CIT) courses are available.

MIT courses are intended for personnel who serve as managers, supervisors, instructors, and curriculum developers. Courses offered provide direct assistance to instructional personnel involved with the analysis, design, development, implementation, and evaluation of training. This training is essential to DOE site participation in the Training Approval Program (TAP).

Included in MIT is training in conducting a Job Analysis (JA).

A beginner-level course provides basic knowledge about the nature, process, and purposes of job analyses (JAs). Students achieve a basic understanding of 1) JA terminology, 2) how analysis

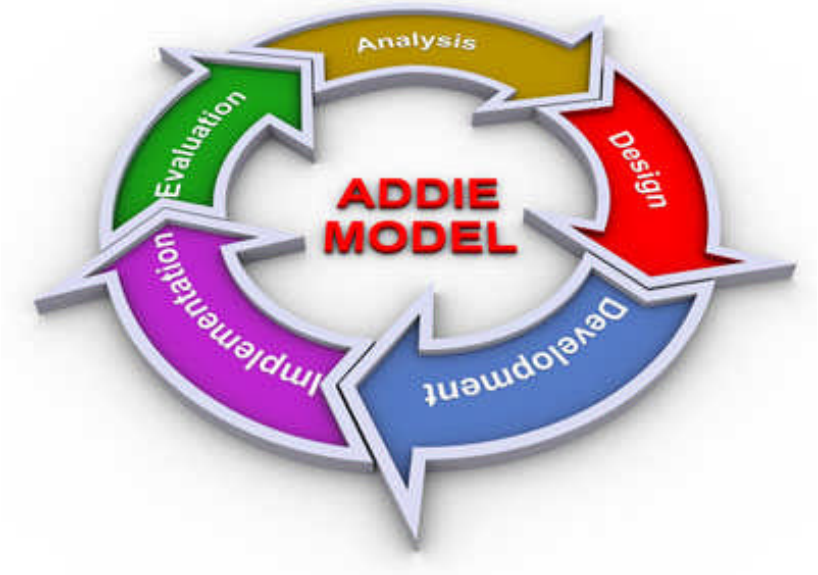
fits into the Instructional Systems Design process, 3) benefits of Jas, 4) fundamental JA techniques, 5) how to plan for a JA, and 6) JA products.

The JA course instructs students in 1) various aspects of the JA process, 2) required actions prior to starting a JA, 3) requirements for writing a task statement, 4) data collection techniques used in conducting a JA, 5) valid task inventory for use in the JA process, 6) how to administer a JA survey, 7) how to analyze data obtained during the JA process, 8) the steps necessary for presenting technical information relevant to a JA, 9) the steps to follow when conducting a table-top analysis, (10) the procedures for accomplishing a job task analysis, (11) the use of a task-to-training matrix, and (12) current issues that are associated with JAs in the DOE community.

Training Approval Program (TAP)

The Training Approval Program (TAP), whose purpose is to validate Protective Force training for all DOE sites, is mandated by DOE, as described in DOE O 473.3 Protection Program Operations, Appendix A, Section B, Training and Qualification. Qualification and training programs at all DOE sites must be based on criteria established and approved by DOE. TAP is a comprehensive means of fulfilling the requirements of both DOE O 473.3 and DOE O 470.4B, Safeguards and Security Program, Appendix B, Section 5, Safeguards and Security Training Program. The NTC TAP team conducts a site-evaluation visit to review the actual training products. In addition, a site may request a site-assistance visit. A TAP recertification normally begins 12–13 months in advance of the TAP expiration date. The TAP methodology influences most other security training.

A systematic approach to training development is used:



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Analysis

This first step in the process is to find out as much as possible about the issues needing to be addressed. The goal is to define the gap between current and desired performance states, identify objectives and define how any subsequent intervention will be evaluated:

- Determine if training can fix the problem.
- Establish training program goals and objectives.
- Find out more about the intended audience.
- Determine which type of training and delivery system will best address the objectives.
- Find out more about resources. These include staff, SMEs, existing training programs, print materials, videos, facilities, budget, etc…
- Identify program constraints. What hurdles need to be overcome? These often include deadlines, decentralized participants, cultural influences, language, and many other internal and external factors.

Design

The output of this phase of the project is a complete blueprint for the new training initiative. The blueprint, or working map of the project identifies all of the moving parts and the resources needed to successfully complete the project.

- Define and develop all instructional objectives.
- Define evaluation techniques, tools and plan.
- Develop course structure and sequence.
- Define all course and support materials.

Development

The development or construction phase involves the creation of all student and facilitator materials. This, in addition to pilot testing, results in a complete package including all deliverables.

- All student and facilitator materials are developed.
- All materials are reviewed by the stakeholders, SME's and facilitators for accuracy. Revisions are made based on this process.
- All materials are pilot tested with a small focus group. The output of this process is further revisions regarding content and timeline.
- Facilitators are prepared to present training if applicable.
- The program is packaged and distributed.

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Implementation

Training is ready and the content is delivered. The initial release of the training is carefully evaluated and again modified if necessary to ensure that learners meet objectives and that facilitators or delivery technologies are working properly.

- Input from participants through direct contact and appraisal tools.
- Facilitator program evaluation.
- Modification of design and materials as warranted.

Evaluation

The evaluation process identifies the level of program success. Four specific areas are evaluated through various means. Initially data is gathered during the training initiative to determine program reaction and to gauge the level of increased knowledge or intellectual capacity. Post training evaluation determines the level of change in behavior and the impact on the business environment.

- Reaction Evaluation - Gauge participant reaction to the training initiative.
- Learning Evaluation - Determine if learning objectives have been accomplished. Did the participants learn what was intended?
- Behavior Evaluation – To what extent are participants applying their new knowledge and what change in behavior is evident?
- Results Evaluation – Did the training initiative have the desired effect on the business environment?

For technical training, the NTC offers training in the main security topics:

Vulnerability Assessment

NTC training for the Vulnerability Assessment (VA) program element supports long-term, risk-management-based DOE policy through a systematic evaluation process. The process applies quantitative or qualitative techniques or both to arrive at an effectiveness level for an S&S system. NTC VA courses are intended for DOE Federal and contractor personnel and for other government agencies who work in the Physical Protection or Program Planning and Management Program elements. The NTC's fundamental VA courses provide an introductory knowledge of the systematic VA approach for evaluating S&S effectiveness against theft or sabotage by different adversaries and include the use of the ASSESS and ATLAS software. These courses address how to identify targets, define threats, characterize the protection system of facilities, and conduct elementary insider and outsider analyses. They also cover the calculations required to perform the various VA analyses in support of determining system effectiveness.

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Physical Protection

Physical protection systems and components, along with practices and procedures specific to each DOE site, are intended to deter, delay, detect, assess, and appropriately respond to an unauthorized activity. NTC Physical Protection courses are intended for personnel who are responsible for designing, installing, operating, maintaining, inspecting, performance testing, and assessing security systems. Both distance learning and instructor-led courses are available covering select topics in this area.

Protective Force

The NTC provides training to DOE and contractor Protective Force personnel who are involved in protecting DOE's vital national assets. Courses offered range from introductory to instructor-level. PFTD training at the NTC is conducted at the NTC Live Fire Range (LFR), at the Integrated Safety and Security Training and Evaluation Complex (ISSTEC), and via distance learning. Using mobile training teams (MTTs), the PFTD is also capable of conducting training at most field locations across the complex.

Personnel Security

The purpose of the Personnel Security Program is to ensure that granting an individual access to classified matter or special nuclear material (SNM) will not endanger the common defense and security and would be consistent with national security interests. Courses are intended for DOE Federal and contractor personnel who work in the PERSEC Program and adjudicate personnel security cases. NTC courses include distance learning and instructor-led courses and an interviewing techniques seminar. Each course provides a foundation for knowledge and skill training in access authorization and administrative review (AR). The NTC, in coordination with the DOE Office of Departmental Personnel Security, is establishing expectations for a Department-wide certification program and associated testing for personnel security professionals in accordance with Federal policy. This mandatory professional and continued education program for personnel security specialists will include mechanisms to assure timely, appropriate, and consistent personnel security processing.

Nuclear Material Control and Accountability

NTC Nuclear Material Control and Accountability courses are designed for DOE Federal and contractor personnel who are responsible for the control and accounting of nuclear material. NTC offers courses ranging from basic introduction in nuclear materials control and accounting to advanced nuclear material measurement techniques. Courses are presented at the NTC and at other DOE locations as dictated by the subject matter and specific site needs. Courses provide the necessary knowledge and skills for effectively and accurately controlling, measuring, and accounting for material.

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Survey

DOE requires that surveys and self-assessments be conducted at DOE and DOE-contractor facilities to evaluate their performance and compliance with S&S requirements and standards. DOE personnel conducting surveys or self-assessments are responsible for planning, conducting, evaluating, and documenting performance and compliance with S&S requirements or standards. NTC Survey courses illustrate and depict the philosophy, scope, and general procedures essential to surveys and self-assessments. Course work is intended to normalize the survey process and enhance the effective implementation of S&S programs throughout DOE.

The delivery of training is accomplished through many forms throughout the DOE-NNSA

Classroom

The majority of classes are instructor led courses in the classroom. This delivery method is accomplished at NTC and at sites, and remains the preferred learning method by students. In addition, this method provides the best instructor to student interactions thus enhancing the learning experience.

Distance Learning

Some courses at the NTC can be taken through use of the NTC Learning Management System. This system was established to provide better service, content, and critical training to sites. Personnel can access their NTC records, view and enroll in NTC courses, and take available NTC eLearning courses at will (24/7) from a single online address and from any computer with high-speed Internet access.

Prior to using the distance learning tool, students must first take the Introduction to Distance Learning Course Distance Learning takes place in a virtual classroom. Students attend classes using the internet to connect and interact with their instructor. Students will learn to use elements of the Distance Learning tool and be fully prepared for future Distance Learning courses.

Correspondence

Some courses can be taken by correspondence, but the offerings are limited as is the learning experience.

Computer Based

The majority of DOE-NNSA sites have full time training staffs which now deliver their internal training through web-based formats. This allows employees the opportunity to maintain their training requirements from their own office. In some cases, security system and protective force training has been digitized to incorporate gaming exercises of scenarios in lieu of actual performance training.

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On-The-Job

Site personnel are still trained on the job with supervisory evaluations. This type of training has become more formal in nature in order to meet current DOE-NNSA requirements.

DOE-NNSA Security Training - International

International cooperation often encompasses the exchange of operational best practices. This is true in regards to the technical topics related to security. The DOE-NNSA domestic training program serves as the basis for international cooperation. DOE-NNSA and the DOE National Laboratories work with international partners to further the technical capability of various disciplines within the security field. This cooperation can be accomplished solely in a bi-lateral cooperation, but is sometimes done in conjunction with the U.S. Department of State or the International Atomic Energy Agency.

Training often serves as an initial step in international cooperation and generally follows within a systematic approach for cooperation, 1) Technical Exchange, 2) Technical Workshops, 3) Training Needs Assessment, and 4) Formal Training. The diagram below depicts a common approach.

Technical Exchange

Technical exchanges often involve the introduction of subject matter to gauge mutual interest. Given mutual interest in a subject, an agreement to exchange best practices or operational procedures generally follows. This is generally referred to as Technical Workshops.

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Technical Workshops

The conduct of technical workshops is the most common international interaction. It allows for the exchange of proven methodologies in a technical environment presented by subject matter experts. It does not constitute training in a formal sense but is more collegial in nature. A workshop allows for security professional to compare and contrast approaches or explore new methodologies. These interactions may lead to a desire for a more formal learning cooperation and thus culminate in an agreement to begin a training needs assessment.

Training Needs Assessment

The training needs assessment is a critical step in the formal training process to ensure the correct training objectives have been identified prior to the expense of training development. The approach to training development can differ but a common objective is imperative. Once the proper data has been collected, a training needs assessment can be documented and used as a basis for formal curriculum development.

Formal Training

Joint development of formal training can be a rich and rewarding experience for participants. The process itself can incorporate an extensive exchange of technical approaches leading to improved security operations in the field. The DOE-NNSA offers its systematic approach to job analysis and curriculum development, as well as training delivery.

A legacy of success has developed in past decades of international cooperation. One could clearly make the case that nuclear non-proliferation has been enhanced through cooperation in training. Some notable examples are listed below:

Security Topic	Activity Type
Vulnerability Assessment	Technical Workshops, Formal Training
Insider Analysis	Technical Workshops
Nuclear Material Monitors	Technical Workshops
Secure Transportation	Technical Workshops
Configuration Management	Technical Workshops
Physical Protection Systems	Technical Workshops, Formal Training
Physical Protection System Performance Testing	Technical Workshops
Protective Force	Technical Workshops, Formal Training
Protective Force Performance Testing	Technical Workshops
Inspections	Technical Workshops
Security Culture	Technical Workshops

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In addition to training development, DOE-NNSA has assisted international partners in the construction and operation of training centers.

Expanded Cooperative Training

The DOE-NNSA also facilitates use of DOE National Laboratories' subject matter experts in support of other international security training efforts. The U.S. Department of State and the International Atomic Energy Agency (IAEA) provide two such examples:

U.S. Department of State

The Department of State Partnership for Nuclear Security (PNS) Program seeks to establish a self-sufficient nuclear security culture, engrained in the partner country's nuclear technical community. In order to do so, PNS joins with nuclear scientists, technicians, and engineers, and the academic community to promote technical cooperation and enhance nuclear security and related safety best practices. These efforts emphasize the importance of the human dimension of nuclear security, the need to enhance security culture, and the need to maintain a well-trained cadre of technical experts

Many countries are exploring or expanding civilian nuclear programs for electricity production, medicine, and other peaceful uses. In today's environment, it is important to ensure that nuclear materials, knowledge, and technology used for peaceful purposes are adequately secure and employees are properly trained in their responsibilities.

The PNS serves as a tool to help increase awareness of nuclear specialists (students, scientists, technicians, and engineers, and decision makers) to enhance nuclear security. This is often achieved through cooperative training efforts in the form of technical workshops. PNS provides training on issues (self and PNS-identified) of interest and need, including personnel reliability and other activities serving as foundations for a strong security culture. Cooperative engagements can be bilateral or regional.

IAEA

The IAEA conducts more than 60 training events for Member States as well as for Non-Member States. This training programme is provided by the Office of Nuclear Security to assist States in applying IAEA nuclear security recommendations and guidance and covers the full range of national responsibilities for nuclear security. It targets audiences at all levels of responsibility.

The training, which can be tailored to the needs of the various organizations responsible for nuclear security, can be provided in a national, regional or international setting. In addition, the IAEA can assist in establishing national training facilities and academic programmes covering nuclear security.

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Conclusion

In summary, the DOE-NNSA and the DOE National Laboratories have extensive experience in the field of security training. Through a comprehensive National Training Center integrated with site training programs, employees throughout the DOE-NNSA are afforded training in keeping with a risk based management approach to nuclear security. This capability has been extended to international partners with mutual benefit.

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