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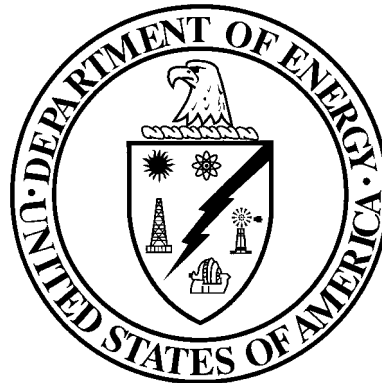
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DOE HANDBOOK

GUIDE TO GOOD PRACTICES FOR LINE AND TRAINING MANAGER ACTIVITIES



**U.S. Department of Energy
Washington, D.C. 20585**

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FOREWORD

1. This Department of Energy (DOE) Handbook is approved for use by all DOE Components and their contractors. The Handbook incorporates editorial changes to DOE-STD-1056-93, *Guide to Good Practices for Line and Training Manager Activities Related to Training and Qualification*, and supersedes DOE-STD-1056-93. Technical content of this Handbook has not changed from the original technical standard. Changes are primarily editorial improvements, redesignation of the standard to a Handbook, and format changes to conform with current Technical Standards Program Procedures.

2. The purpose of this Department of Energy (DOE) *Guide to Good Practices for Line and Training Manager Activities Related to Training and Qualification* is to provide Department of Energy contractor organizations with information that can be used to modify existing programs or to develop new programs. Contractors are not obligated to adopt all parts of the document. Rather, they can use the information in this guide to develop programs that apply to their facility. This guide contains guidance for line and training managers relative to participation and oversight of the facility's training and qualification programs. It also contains administrative responsibilities that are typically associated with the effective management of training programs and outlines employee responsibilities for training.

3. Beneficial comments (recommendations, additions, deletions) and any pertinent data that may improve this document should be sent to the Office of Nuclear Safety Policy and Standards (EH-31), U.S. Department of Energy, Washington, DC 20585, by letter or by using the self-addressed Document Improvement Proposal (DOE F 1300.3) appearing at the end of this document.

4. DOE technical standards, such as this Handbook, do not establish requirements. However, all or part of the provisions in a technical standard can become requirements under the following circumstances:
 - (1) they are explicitly stated to be requirements in a DOE requirements document; or

 - (2) the organization makes a commitment to meet a technical standard in a contract or in a plan or program required by a DOE requirements document.

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1. INTRODUCTION

1.1 Purpose

The purpose of this guide is to provide direction for line and training managers in carrying out their responsibilities for training and qualifying assigned personnel and to verify that existing training activities are effective.

1.2 Background

Training provides personnel with the knowledge and skills necessary to perform their jobs safely, effectively, and efficiently with minimal supervision. Excellence in training and qualification is particularly important in the industry where adherence to proper work practices and procedures is essential to public health and safety. To achieve this, facility personnel should be fully involved and accountable for their contribution to the success of their facility. Line and training managers share the responsibility of ensuring that all training programs are effective. Periodic observation and monitoring of training and qualification programs by line managers is essential to this effort. These line managers include appropriate levels of involvement by the reactor or nuclear facility manager, the facility manager, the line manager, and others in the line organization as needed. Interest in personnel training and qualification by senior management, including an occasional visit to the training classroom, laboratory, simulator, or on-the job should be used to reinforce the importance of training, qualification, and line manager involvement. Communications between line and training managers will aid in establishing the relationship necessary between the facility and training organization to achieve the training goals.

Training and job qualification should be viewed as an integral part of everyone's job function. Achievement of organizational goals and objectives is facilitated when personnel understand the basis of organizational policies and practices and when they are highly motivated, continuously trained, and remain qualified. Since training is such an integral part of achieving the level of performance necessary to ensure safe and secure operation of DOE facilities, it follows that a close, cooperative relationship must exist between these organizations.

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2.0 LINE MANAGER RESPONSIBILITIES

Line managers are responsible for the training, qualification, and performance of operating organization personnel to support safe and reliable operations. Line managers should verify that training meets the needs of their organizations to help ensure the safe and reliable operation of their facilities. This is accomplished by a variety of methods including observation of training and qualification activities, observation of personnel performance on the job, and interviews that can identify any knowledge or skill weaknesses. Line managers should provide results of their training reviews as feedback to training department managers in order to improve the training program. The following sections provide additional guidance for line managers in implementing an effective training and qualification program.

2.1 Line Manager Standards of Performance

Performance standards established by line managers should be presented, discussed, and reinforced during initial and continuing training. Understanding of these standards should be verified during employee training evaluation and the qualification process. Line manager standards of performance such as policies, procedures, and standing orders should be written. Industry experience has shown that standards need a thorough explanation so that expectations are clear. Many line managers have found it effective to discuss and explain their standards of performance during training sessions because they can focus attention with minimal interruptions. For example, an operations manager can reinforce the expectations of team communications following an exercise by using examples from that exercise. Similarly, a maintenance manager can reinforce expectations of adherence to procedures during hands-on pump alignment training. Periodic review and reemphasis of performance standards and expectations are helpful during training, particularly if done by managers, when expectations are not being fully met.

The importance of conducting work activities according to approved practices and procedures should be emphasized continuously, especially during training. Additionally, the reasons behind work standards should be explained. This information is best explained by line managers and supervisors. Personnel who understand the reasons for a standard are better able to meet their management's expectations.

Line managers should monitor and assess personnel performance to determine how well established standards are being met. Results of the assessments can be used to determine training effectiveness and revise training programs or develop other corrective actions.

2.2 Personnel Training and Qualification

The goal of training and qualification programs is to produce and maintain well-trained, qualified, competent personnel to operate and maintain DOE facilities in a safe and reliable manner. It is important for line managers to be actively involved in the development and implementation of their facility's initial and continuing training programs, the identification of training needs, and the review and approval of training materials. A line manager's understanding of the basic principles involved in a

systematic approach to training is essential when developing and implementing training. The line manager should also know how to evaluate materials by accepted criteria. Understanding training will allow the line manager to better evaluate existing programs and recommend the development of new ones.

Initial training programs should provide the basic knowledge and skills needed to perform intended job functions. Initial training may include a combination of classroom, laboratory, simulator, self-study, and on-the-job training.

Once personnel have completed initial training and are qualified to perform a task or function independently, they should receive periodic continuing training on the skills and knowledge required to maintain and enhance their proficiency in job performance. Continuing training provides current information in areas such as changes to facility structures, systems, and components; procedures; regulations; and lessons learned from facility and industry operating experience. A periodic review of fundamentals and their applicability to facility operations is also an important part of continuing training. The *DOE Guide to Good Practices for Continuing Training* provides additional guidance in this area.

Personnel training is more effective and credible when line managers from all levels are actively involved; from the senior line manager to the first-line supervisor. Line manager involvement in training may include attendance at scheduled training, participation in the delivery of training material, or review of attendance at scheduled training. Another method to improve training effectiveness is to have supervisors receive the same technical and professional training as their workers, in addition to leadership and supervisory training.

2.3 Technical Supervision of Trainees

Work activities at the facility should be performed by, or under the technical supervision of, personnel who are qualified to perform the task. In all cases, personnel who supervise trainees performing tasks should meet the qualification requirements for the task to be completed and should observe the activity to the extent necessary to verify proper task performance. Technical supervision in this manner allows intervention by qualified personnel to prevent errors in task performance, as well as providing immediate feedback on correct performance.

2.4 On-The-Job Training and Evaluation

Line and training organizations should work together to identify the tasks that need to be taught and tested, in on-the-job training, before an employee works independently. On-the-job training is most effective when performed under the same conditions that would be experienced during actual task performance. Line managers should verify that trainees have been trained and have demonstrated proficiency on a task before being qualified and assigned to perform the task independently. Personnel qualification should be documented to verify that assigned individuals are qualified. The *DOE Guide to Good Practices for On-The-Job Training* provides additional guidance in this area.

2.5 Temporary Employee Training and Qualification

Subcontractors and temporary employees who work independently at a facility must be qualified to perform their assigned tasks. Line managers should review the qualifications of these individuals and verify that they possess the skills required to perform assignments properly. In addition, the facility should provide general employee training and facility-specific training that is applicable to the individual job assignment.

Training and qualification for long-term subcontractors and temporary employees filling permanent employee positions should be the same as that required for permanent employees. Short-term contractors should be qualified for the tasks they are to perform independently. Subcontractors and temporary employees should attend the continuing training that is appropriate for their job responsibilities (e.g., those who work on motor-operated valves should attend continuing training and industry operating experience training on motor-operated valves).

2.6 Exceptions

An exception refers to a release of an individual from portions of a training program through prior education, experience, and/or testing. Line managers may grant exceptions from training within the exception criteria established jointly by line and training managers using 5480.20A. Experienced personnel may be considered for exception from applicable training. Exception from training requirements should not include exception from qualification requirements. Exceptions should be administered in accordance with facility procedures. Line managers may except personnel from training topics on a case-by-case basis. A line manager's review of an individual's prior training and job performance history provides data for this exception. This review should consist of one or both of the following, or an equivalent process:

- C An objective, technical interview of the individual to determine work experience history, qualifications, and training. This interview helps to ensure that work history is related to the candidate's assignment, and may include contact with previous work supervisors.
- C A review of previous training and qualification records and job performance history to determine training received and work accomplished.

To verify that the individual possesses adequate knowledge and skills, the following should be conducted:

- C An examination based on the learning objectives from the training being excepted. It is not necessary to test all of the learning objectives. Input from the training and experience review should be used to determine the scope of the examination.
- C An evaluation to verify proficiency of skills necessary to perform the tasks for which training is being excepted. This evaluation may be based on the candidate performing the tasks satisfactorily, or a technical "walk-through" or "talk-through" of the tasks. Task performance is the preferred method.

If an individual is not qualified, or does not meet the facility's established exception criteria, the line manager should designate the training and qualification requirements to be completed before task qualification and independent job assignment. Some training may be excepted; but task performance, as part of qualification prior to assignment to complete a job independently, should not be excepted.

2.7 Observation and Evaluation of Training

Line managers should periodically observe and evaluate scheduled classroom, laboratory, OJT, and simulator training to verify that facility and personnel needs are met and management performance standards are reinforced. In addition, observations of task performance may be used to verify that the training is effective. The line manager should conduct these observations, based on established evaluation criteria, in order to promote consistency and objectivity in the evaluations. Training activities that do not meet evaluation criteria should be corrected. Line managers, with the assistance of the training department, should verify that learning objectives are task-based and support improved employee performance. Line manager observation of training can affect trainee attitude and performance by demonstrating the importance that line management places on training.

The following is a partial list of questions the line manager can ask as a part of reviewing and evaluating training and qualification programs:

- C How well do personnel perform assigned tasks?
- C How effective is initial classroom, laboratory, simulator, and on-the-job training and task performance evaluation in providing the knowledge and skills necessary for personnel to work in a safe and competent manner?
- C How does initial and continuing training address knowledge and skill weaknesses seen at the facility; improve skills to accomplish selected tasks; review applied fundamental knowledge and theory; include procedure changes, equipment modifications, and applicable facility and industry operating experience?
- C Is training material up-to-date prior to use?
- C How does the timeliness of training topics compare with the current facility needs?
- C Are personnel attending the training for which they are scheduled?
- C How responsive is the training organization in addressing training needs?
- C Which specific line organization training needs have been communicated to the training organization so they can be met?
- C How has the line organization provided the support needed by the training organization to accomplish identified training needs?
- C Do trainers focus on equipment and system problems and solutions to these problems?
- C What specific training currently needs to be implemented?
- C How well do personnel recognize that the knowledge and skills they develop in training will be needed in their jobs? How much time is provided for personnel to attend these training sessions?
- C What training is conducted by the line organization that is not supported by the training organization?
- C How are facility and industry operating experiences used to provide relevancy to training?

- C How well do day-to-day individual practices and actions in the facility reflect the knowledge and skills learned in training?
- C Do line managers and supervisors routinely monitor and assess personnel performance? How are these observations used to improve supervisor and personnel performance during training?

In addition to asking the above questions, line managers should be aware of key indicators of training system performance and should use these indicators to verify the effectiveness of training. The following is a partial list of indicators of performance problems:

- C Personnel errors that are the result of knowledge or skill weaknesses
- C Employee comments that training is not what they need or is ineffective
- C Poor training attendance by designated trainees
- C Postponed training sessions that are not rescheduled and completed in a timely manner
- C Line personnel provide no comments on training when solicited
- C Lack of coordination between the facility and training personnel in meeting training needs
- C Degraded performance of facility personnel in their assigned duties as identified by line managers
- C Repetition of occurrences that have been used as lessons learned in continuing training
- C Abnormal rates of test failures, employees failing to complete qualification, or drop-outs.

As indicators of performance problems are noted, the line manager should be involved in the determination of the root cause(s) of these problems. The line manager and the training manager should work together to implement changes to eliminate the problems.

2.8 Distribution of Information

Line managers should ensure that their employees are provided with information that affects job-related knowledge and skills. The information that should be distributed to employees can be industry and facility events and occurrences, procedure changes, operating experiences, and facility modifications. One method of distributing this information is a required reading program, which can provide information to broaden employee knowledge and understanding. However, it may be ineffective if used as the only means of distributing need-to-know information. Need-to-know information should be presented during preshift or shift briefings, working meetings, or scheduled continuing training and then put in required reading for reference. Need-to-know information may include topics such as applicable facility modifications, procedure changes, and industry or facility operating experience. If need-to-know information is put out in a required reading program, then the information should be tested for retention. Testing the information instills a sense of responsibility in the employee to actually read the information.

2.9 Developing Employee Attitude

Line managers and supervisors should use training and qualification programs as a means to instill and reinforce a positive, questioning, and probing attitude in personnel for all work activities. Employees should be able to ask whether the training received was complete, whether a procedure is effective or could be improved, or whether some management policy is not effective. This attitude should be

reinforced by training instructors. Additionally, managers and supervisors should encourage a sense of ownership of training program content and quality by personnel receiving the training.

Line managers and supervisors should observe work and identify personnel weaknesses, including those of a technical nature and those reflecting an inappropriate attitude. As weaknesses are identified, they should be reviewed to determine the best method(s) to correct them. One method to consider may be to address these topics in the training program. For example, if a supervisor observes personnel working at the facility who do not fully understand the results of their actions on process operation, the supervisor should correct the personnel and provide these observations to the training department. The training staff should then review the training program content and determine how future training can eliminate these shortcomings.

To encourage a sense of ownership of training program content, personnel may be invited to participate in curriculum review or planning committees, provide guest instruction, or evaluate training activities. Training and line managers should meet regularly to review training effectiveness, personnel performance in training activities, and provide feedback to the employee's supervisor. Including training performance in an employee's regular performance evaluations can further instill a sense of training ownership and can increase an employee's incentive to excel.

3.0 TRAINING MANAGER RESPONSIBILITIES

Training managers have the primary responsibility of working with line managers to identify and meet personnel training needs. The training manager should establish training and entry-level requirements for key training positions and implement programs to select and develop training personnel. The training organization should exhibit a strong desire to meet the training needs of the line organization in both its approach to day-to-day activities and its long-term strategic planning. The training organization should help line managers, supervisors, and personnel recognize that training strengthens personnel and facility performance.

Line and training managers can anticipate future training and development needs by periodically evaluating personnel performance, reviewing line organization turnover rates, identifying industry and regulatory initiatives in training, and recognizing the changing educational and experience background of employees. Plans should be developed that address such factors, and the plans adjusted as requirements change. A training manager's supporting responsibilities may include the following:

- C Maintain training programs current
- C Monitor instructor performance to verify training is conducted as outlined in approved training materials and in a manner that motivates personnel to learn
- C Verify that the training staff has obtained and is maintaining their technical and instructional knowledge and skills
- C Develop training programs according to approved methodology
- C Track training commitments to outside organizations such as the state and federal regulators, and assist line management in meeting these commitments
- C Develop training program and trainee status reports for line managers, and assist line managers in identifying and resolving human performance issues
- C Track current industry training issues
- C Solicit line managers' involvement when training commitments or needs are not being fulfilled
- C Work to establish mutual trust and cooperation between the training organization and all facility personnel
- C Develop improved methods to meet training and facility objectives and goals as required
- C Develop training policies that establish guidelines for all training functions
- C Assist line management in identifying potential training needs based on facility and industry operating experiences
- C Initiate and help prepare long-range objectives for the training organization that are consistent with corporate, facility, and training policies, and develop a system for verifying implementation of the actions needed to meet the objectives.

Training managers should verify that employees participate in training and that training meets the employees' needs. The following sections provide guidance for several specific topics that relate to the responsibilities of a training manager.

3.1 Training Professionalism and Motivation

Training enhances professionalism by establishing role models and by emphasizing manager expectations. The training organization can support the line manager and encourage professionalism by several different activities.

Training personnel should serve as role models for trainees by exhibiting a high level of professionalism in their personal conduct, appearance, and motivation in every training setting. Such behavior enhances performance throughout the facility. The training staff should constantly help to motivate the trainees and reinforce their desire to achieve learning goals. If trainees perceive a need to learn, they will be motivated to achieve that goal.

The training staff should reflect the standards and expectations held by line management. Instructors should conduct training according to clear standards of performance and behavior. Instructors should let the trainees know what is expected of them and hold them to those expectations. They should emphasize pride of ownership for the training and clarify the method for performing tasks correctly.

Line management involvement in training activities should be encouraged by requesting that line supervisors periodically attend training with assigned personnel. Middle and senior management should be encouraged to participate in, as well as observe training. Managers and supervisors should provide feedback on training program improvements and should be shown the results of their input.

A sense of ownership of training programs should be fostered by both the training staff and line managers. In addition, the facility should have clear, well-understood goals that establish the importance and relevance of training. If training does not reflect what personnel need to know in the facility, the credibility and the effectiveness of training programs are damaged.

Training managers should recognize and acknowledge superior performance of personnel as it relates to training. If a trainee has performed above expectations, let others know about it. Recognizing this effort through course completion certificates, awards, or letters of recognition/appreciation can foster a sense of accomplishment in personnel. Similarly, superior performance of personnel developing, conducting, and evaluating training should be recognized and acknowledged.

3.2 Career Development of the Training Staff

Training managers should encourage the professional development of the training staff by providing growth opportunities that include periodic objective-based assignments to line organizations during routine operations and maintenance periods. Assignments for short duration in line organizations may enhance the professional background and credibility of training personnel and strengthen communications between line and training organizations.

Each member of the training staff must maintain credibility and should be a positive, professional role model for line personnel to emulate. For this reason, the training staff should be carefully chosen; experienced performers with the potential for career growth in the organization.

3.3 Operating Experience

Presentation of the lessons learned from facility and industry operating experience should be included frequently in instruction. Effective use of operating experience involves citing incidents or situations that make subject matter realistic, gain trainee interest, and stress the importance and credibility of the topic.

Principles that should guide the instructor in using lessons learned from operating experience include the following:

- C The trainees must first know the sequence of events to understand the lessons learned.
- C The lessons learned from operating experience examples, and their relevance to the trainee's facility, should be objectives of the training session.
- C The details of the occurrence should be accurate to help prevent the trainees from drawing the wrong conclusions.
- C The selection of occurrences to use for a particular lesson should be based on the lessons learned that need to be understood and applied by the trainees.
- C The root cause(s) of the occurrence should be included to provide the trainees with a clear understanding of the occurrence and methods to recognize and prevent it from happening in the future.

Providing realistic examples of events in lesson materials, including the action taken or programs implemented to prevent similar events, promotes the overall effectiveness of training. This will emphasize to the trainee that the event has occurred and has some potential to recur if proper precautions are not taken. As more recent facility or industry events are identified for training, older, similar events already presented may be deleted to minimize repetitive training. However, the impact an event may have on safety and health may warrant the presentation of both old and new events. The DOE Handbook *Implementing U.S. Department of Energy Lessons Learned Programs* provides additional guidance in this area.

3.4 Indicators of Training Effectiveness

Facility performance indicators can be used as a measure of progress by facilities in meeting their goals. Many factors contribute to the achievement of these goals, including management and supervisory involvement, ongoing facility self-assessment, sharing operating experience, and the emulation of best industry practices. Providing in-depth training to facility personnel is also an important factor. The training contribution toward the achievement of facility goals should be monitored frequently by the training manager. This can be accomplished by using training system indicators to monitor for training system effectiveness. Examples of effective training indicators include the following:

- C Meeting facility performance goals
- C Decreasing personnel errors and equipment rework
- C Obtaining timely and constructive line organization feedback for improving training
- C Improving instructor effectiveness and training content as indicated by training program critiques
- C Meeting performance-based personnel training needs
- C Considering personnel examination pass/fail rates or success of task performance evaluations.

Line and training managers should address facility and training performance problems that have training-related root causes promptly. Well-planned solutions implemented in a timely fashion minimize the need to take more extensive measures later to improve facility and personnel performance.

3.5 Training Resources

Improved facility performance due to the training organization is often the basis for the allocation of facility resources to training. This provides future impetus for the training organization to consistently provide high-quality training.

The training environment should promote learning and support a variety of instructional techniques. This environment should include facilities such as classrooms, simulators and laboratories (if applicable), and mock-ups designed and maintained to meet training program requirements. Training support services, such as reference libraries and quiet study areas, should be available and maintained to meet personnel and instructor needs. Training staff facilities should encourage development of high-quality instructional material, instructor preparation, and personnel counseling.

Training settings, such as simulators and laboratories, should reflect actual facility equipment and working environment as closely as possible and should be reviewed and updated continually. Noted differences should be explained to personnel before training begins.

Instructional media equipment and support should be available and maintained to allow for a variety of instructional methods for achieving learning objectives. Effective information systems, including accurate databases, should be used to manage training activities.

The training organization should be staffed with personnel who are technically qualified, respected by facility personnel, and trained instructors. If subcontract personnel are used, they should have the knowledge and skills necessary for assigned responsibilities.

4.0 PERSONNEL RESPONSIBILITIES TOWARD TRAINING

Employees share in the responsibility for meaningful training. Line managers should emphasize the responsibility of each individual to complete training and qualification requirements before being assigned to work independently in the facility. Personnel should be made aware that they are accountable for the training they receive and should inform the training organization of deficiencies in training content. Additional personnel responsibilities that should be stressed by line managers include the following:

- C Acting professionally
- C Participating in training by developing a questioning attitude that stimulates discussions and promotes employee understanding of training material
- C Providing feedback to support facility and personnel training needs
- C Giving immediate constructive feedback on training program and material weaknesses following training, and as needed after returning to the facility
- C Completing training assignments, exercises, quizzes, and tests in a timely manner
- C Providing examples of facility lessons learned during training discussions.

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5.0 ADMINISTRATION OF TRAINING ACTIVITIES

Qualified personnel are vital to facility safety and reliability. To develop qualified personnel, the training staff should emphasize analysis, design, development, implementation, evaluation, and revision of training and qualification activities for facility personnel. Facilities should periodically evaluate and revise training programs due to changes in standards, technology, procedures, requirements, job assignments, and qualifications of new personnel.

5.1 Training Mission, Goals, and Objectives

The training organization should have a mission with clearly-written goals and supporting objectives that establish the required elements of the training system. The training mission and philosophy should be consistent with facility commitments and policies and should apply to all organizations that share responsibility for training. Long-term goals, objectives, and policies necessary to accomplish the training mission should be clearly defined, published, and distributed to all organizations that contribute to their accomplishment. The training mission, goals, objectives, and policies should be reviewed periodically and updated as necessary to reflect changing needs.

Overall training objectives or goals should be developed by the training organization with input from the appropriate line managers. The objectives should be specific, clearly-stated, and results-oriented such that their accomplishment can be measured. The number of developed objectives should be a manageable amount. Training objectives should be reviewed in a periodic self-assessment and any weaknesses in the methods should be revised.

The following is a partial listing of training objectives that might be used for a training program:

- C Develop and provide quality performance-based initial and continuing training to prepare personnel to perform duties in a safe and reliable manner.
- C Develop and provide initial and continuing training to subcontract personnel who support facility operation and outside agencies used to assist during site emergencies.
- C Assist line management in ensuring that subcontract personnel are qualified and their use does not result in degraded facility safety or reliability.
- C Establish and maintain a training organization staffed with qualified personnel who are capable of accomplishing their assigned tasks.
- C Provide the settings, equipment, and materials necessary for effective support of training activities.
- C Assist the line organization in the training and qualification of facility personnel.
- C Provide training that meets the needs of facility personnel.
- C Encourage line managers to take responsibility for training program content and oversight with assistance from the training organization.
- C Develop and provide a mechanism to identify and analyze performance problems. Review facility and industry operating experience and training trends (e.g., continued team performance weaknesses during facility walkthroughs) to identify the need for training program changes or improvements.
- C Routinely evaluate training effectiveness and correct identified weaknesses.

The objectives that support training goals should be used to establish plans, priorities, and budgets and should be reviewed and revised as periodic self-assessments identify weaknesses.

5.2 Training Policies and Procedures

Training policies and procedures should support the accomplishment of the training mission, goals, and objectives by providing general guidance and detailed directions. Policies typically describe the conditions that guide the decisionmaking process (i.e., thoroughness, prudence, openness, and responsiveness). Procedures describe how specific tasks will be accomplished. Policy statements and procedures should be developed on topics such as the following:

- C Analyzing tasks, designing and developing training materials, implementing and evaluating the effectiveness of training activities
- C Identifying personnel qualification and training needs according to position descriptions, job assignments, previous education, training, and experience
- C Assessing the level of expertise of subcontract personnel and temporary employees performing work at the facility
- C Pursuing job-related education activities
- C Handling of individuals whose performance is marginal or unsatisfactory during training (i.e., remedial training)
- C Describing training department and line organization responsibilities for the training and qualification of facility employees
- C Incorporating into training lessons learned from facility and industry operating experiences
- C Conducting consistent training and evaluation in the classroom, laboratory, simulator, and on-the-job training
- C Communicating between training and line managers (e.g., curriculum committees, peer review groups)
- C Maintaining training records of personnel training and performance
- C Controlling and administering tests to maintain evaluation integrity
- C Training and qualifying instructors
- C Scheduling of training activities and determining makeup requirements
- C Maintaining control of training equipment
- C Exceptions
- C Facility evaluation criteria
- C Vendor short courses or use of vendors for training.

Training procedures should describe the types of training and training programs to be conducted, training program prerequisites, and the training audience. The procedures should clearly indicate the training needed for each job position and the sequence in which it is to be completed. The procedures also may reflect the facility's division of labor policies, position descriptions, and work assignment practices.

5.2.1 Types of Training

Training procedures should address initial, continuing, remedial, and special training programs. Initial training develops the knowledge and skills necessary for the proper performance of job functions. Continuing training maintains and enhances proficiency in performing currently assigned, safety-related job functions by:

- C Reviewing selected information or skills presented during initial training based on feedback from job incumbent performance and other sources identified by the operating organization
- C Providing more in-depth instruction in job-related subjects
- C Providing information on changes in equipment or procedures affecting the job
- C Distributing lessons learned from facility and industry operating experience.

Remedial training is the training and retesting of individuals whose knowledge or skills are found to be inadequate through tests or evaluation of on-the-job performance and also to upgrade an employee's entry-level knowledge and skills if they are found to be lacking. Special training provides information or develops skills needed for special job assignments, such as supervisory or manager training, or infrequent activities (e.g., activities conducted at intervals greater than two years). These activities are not normally a part of the continuing training program. Rather, they are included in training programs on an as-needed basis.

5.2.2 Training Program and Procedures

Training procedures should include a brief description of each training program that is provided by the facility. The organizational unit or position responsible for the analysis, design, development, implementation, and evaluation of training should be identified for each program. The job positions for which each program is provided should be clearly indicated. The procedures should describe training that is provided to the facility employees, subcontractors and temporary employees, outside agency personnel, and escorted/unescorted visitors. Initial, continuing, and special training should be provided to all employees whose job functions affect facility safety and/or reliability.

5.3 Training Organization

Each facility should have a clearly defined training organization staffed with qualified personnel. If a facility has several training organizational units, their relationships and responsibilities should be clearly defined. The training organization's structure, accountability, functional responsibilities, level of authority, and lines of communication should facilitate accomplishing the established training goals and objectives. The organizational structure should be reviewed periodically for effectiveness and revised to achieve training goals and objectives.

The authority of the training organization and the responsibilities and authorities of each position in the training organization should be understood by all affected individuals. The authority of each position in the training organization to make decisions affecting training and to commit resources to accomplish training activities should be clearly defined. Each individual's authority should be sufficient to carry out

assigned responsibilities. Authority should be assigned so that decisionmaking is efficient and should be established at the lowest effective level. The training organization's responsibilities should include the accomplishment of training activities required for individuals involved in facility operation and support.

5.4 Training Staff

The members of the training staff who are responsible for analyzing, designing, developing, implementing, evaluating, or managing training activities should be properly trained and qualified to perform these functions. An adequate number of personnel should be assigned to the training staff to support all required activities.

All training staff members should possess and maintain knowledge (education, training, and experience) appropriate for their position and the instructional capabilities appropriate for their training function. Facility line and training managers should establish subject-matter expertise and instructional capability standards for instructor positions and should qualify individual instructors using these standards. Detailed guidance on instructor initial and continuing training and qualification is contained in DOE *Guide to Good Practices for Training and Qualification of Instructors*.

5.5 Facilities, Equipment, and Materials

Training programs require a variety of resources to deliver effective instruction. Facilities, equipment, and materials should be provided to accomplish the training mission. There may be a potentially long lead time required for the procurement or development of many of these resources. These resource needs should be identified and prioritized so that resources can be applied to the most important project or activity. Sometimes innovative ideas, such as refurbishing a burnt-out motor in the maintenance training area, can be implemented to provide cost effective training.

5.6 Development and Revision of Materials

Training program development and modification should be systematically accomplished using the systematic approach to training. Training program content should be based on the knowledge and skills required for the job position as determined by a job analysis and the resultant analysis of the tasks selected for training. The required knowledge and skills should be used to establish measurable learning objectives. These learning objectives should be grouped and arranged in a logical sequence to develop the trainee's capabilities. The most appropriate instruction and evaluation methods for the training should be determined on the basis of the type of learning involved and the level of proficiency required.

The following are some methods of identifying the need for new or special training courses or the need to change training materials:

- C When changes occur in facility equipment, procedures, or job duties
- C When trainee performance or training program effectiveness evaluations identify new or changing needs

- C When personnel performance deficiencies are the result of inadequate training and additional or improved training could reduce or eliminate these deficiencies.

Individual training needs should be identified by line managers and supervisors with training organization assistance. This identification of individual training needs may consist of comparing education, training, and experience to position description requirements, observing on-the-job performance, or testing individuals.

5.7 Scheduling of Training

Training schedules should maximize learning effectiveness and result in the efficient use of instructors, facilities, and equipment. Training also should be scheduled to minimize the impact on line organization activities.

Instructor selection and training assignments should be included in the scheduling process. Instructor assignments should be made on the basis of those with the most appropriate technical competence and instructional capabilities. Variation in instructional assignments should be considered to develop the instructor's skills and knowledge.

Training schedules and instructor assignments should be established and published far enough in advance to permit instructor planning, technical and administrative preparation, and material preparation. Training schedules should also be published sufficiently in advance to permit adequate preparation and planning by trainees and their supervisors. Schedules should include time for test preparation and correction, subsequent trainee review, record keeping, trainee assistance and remediation, and self-study. Schedules should also be flexible to permit adding or changing content or repeating selected portions based on trainee performance.

5.8 Training Program Delivery

Training programs may be delivered in several ways, including classroom lecture, seminar, discussion, case study, satellite delivery, interactive-video or computer-based training, individual self-study, laboratory or simulator instruction, and on-the-job observation and supervised practice. The instructional method(s) for a particular training program should be selected by the type of learning involved and the level of proficiency required.

All necessary training materials should be developed and approved before training is conducted. Training materials promote consistency in training by specifying the method of instruction, learning objectives, schedule and sequence of instruction, and evaluation methods and standards. However, training content may be modified to meet the specific needs and limitations of each class. Policies should be established and control exercised to ensure that training materials are used in a uniform manner by instructors and that all changes are approved by training supervision or a defined review process.

5.8.1 Classroom Instruction

For classroom instruction, lectures should alternate with demonstrations, discussions, seminars, study sessions, and trainee practice of the material being learned. Training aids should be used to enhance trainee interest. When films and videotapes are used, an instructor should be available to emphasize important points and answer questions. Films and videotapes may supplement, but should not replace, live instruction. Trainees should be encouraged to participate actively in discussions and to ask questions. Lesson assignments should reinforce the desired learning and allow for practice to develop required skills. All written assignments should be corrected and returned promptly to the trainees to derive the maximum benefit. Regular attendance at classroom instruction sessions and proper behavior (punctuality, attentiveness, and performance of assignments) should be required. All missed training sessions should be made up through appropriate study and evaluation.

5.8.2 Laboratory and Simulator Instruction

Laboratory, simulator instruction, and facility drills and walkthroughs should be preceded by lecture or discussion designed to prepare trainees to derive the maximum benefit from the practical experience. Training aids may be used and personnel encouraged to actively participate and to ask questions. Laboratory and simulator exercises should be structured to provide consistent and repeatable training. Exercises should also be designed to maximize the development and maintenance of necessary job-related knowledge and skills.

5.8.3 Case Studies

The case study approach has been used effectively in learning from facility and industry experiences. The case study teaching method promotes the generation of ideas and solutions by the trainees rather than memorization of responses provided by lectures. This method gives trainees an appreciation of events that have actually occurred. Many different case study methods and settings can be used to enhance diagnostic, communication, and team skills by allowing personnel to apply what they have previously learned to new situations. The *DOE Guide to Good Practices for Developing and Conducting Case Studies* provides additional guidance in this area.

5.8.4 On-The-Job Training

On-the-job training should consist of a systematic process where a trainee observes and practices in-facility activities. This training should be administered by the trainee's supervisor or another fully qualified individual using training guides that specify the activity and standard of acceptable performance. Qualified individuals should be designated to conduct OJT evaluations and verify a satisfactory demonstration of job performance and knowledge requirements by personnel. A schedule should be established for completion of specified portions of this training and individual qualification progress monitored. Individuals, instructors, and evaluators should be alert to and take advantage of unexpected on-the-job training and task performance evaluation opportunities as they occur. The *DOE Guide to Good Practices for On-the-Job Training* contains additional information to develop, conduct, and evaluate on-the-job training.

5.8.5 Individualized Instruction

Individualized instruction (self-paced instruction, computer-based training, etc.) may be used when the number of trainees does not justify the resources of group instruction. This instructional method should not be confused with the personal studying required as part of any training program. Individuals who are participating in individualized instruction should have frequent contact with, and easy access to, instructors and should demonstrate they can effectively study on their own. Individuals should be given explicit instructions about study materials, required exercises, and self-tests that conform to established schedules. Individualized instruction should include written assignments that are evaluated by an instructor.

5.9 Trainee Testing

Trainee performance should be tested regularly during and at the completion of each training program or major segment of a training program. Possible trainee testing methods include written tests, oral examinations, review of trainee participation during seminars and discussions, performance tests, simulations, and drills. The test method, frequency, and standards should be specified in the training program procedures and/or policies. The type of test that is used, the content of the test instrument, and the standard of acceptable performance should be based on the applicable learning objectives derived from job performance requirements. The types of questions or methods used in a test should reflect job knowledge and skill requirements and should be varied when appropriate.

Trainee tests should be evaluated promptly and the trainees informed of their performance. Trainees should be allowed to review their errors and be given the correct responses. Written tests should be corrected, graded, and reviewed with the trainees as soon as possible to derive maximum benefit from the test.

Representatives of the training and line organizations should monitor trainee performance and progress toward completing training on schedule. They should be alert for symptoms that may indicate misunderstanding, presentation weaknesses, or the need for remedial training and reevaluation. Trainees should be interviewed periodically on their performance in the training program and at any time that significant deficiencies occur. Training and line management should be kept informed of individual progress and performance. Performance evaluation is important because it verifies that personnel can complete assigned tasks properly. However, performance should not be evaluated solely on the basis of "clock" time (i.e., the time it takes to complete actions) but rather on the effects of an individual's actions or inactions and his/her ability to complete the assigned task successfully. The DOE *Guide to Good Practices for the Development of Test Items* and the DOE *Guide to Good Practices for the Design, Development, and Implementation of Examinations* provide additional guidance in this area.

5.10 Program Records

Auditable records of an individual's participation and performance in, or exception(s) granted from, the training program(s) should be maintained. Individual training records should include the following (as applicable):

- C Verified education, experience, employment history, and most recent health evaluation summary
- C Training completed and qualification(s) achieved
- C Latest completed checklists, graded written examinations (with answers corrected as necessary or examination keys) and operational evaluations used for qualification (this requires controlled access to training records to maintain examination security)
- C Lists of questions asked and the examiners' overall evaluation of responses on oral examinations
- C Correspondence relating to exceptions granted to training requirements (including justification and approval)
- C Records of qualification for one-time-only special tests or operations
- C Attendance records for required training courses or sessions.

A historical record that documents initial qualifications on each position qualified should be maintained as part of individual training records. For example, if an individual initially qualified in 1986, the record should have the date and name of the qualification. If more than one qualification is achieved and maintained, the individual training record should contain that documentation.

For current qualification(s), the completed examinations, checklists, operational evaluations, etc., should be maintained in the record. Some facilities may prefer to maintain a separate file of completed examinations with answer keys for an employee. When an individual holds qualification on multiple positions, records that support current qualifications for each position should be maintained. Duty area or task qualification should be documented using a similar method (for facilities/positions that use duty area or task qualification instead of position qualification). Functional supervisors should have access to qualification records, as necessary, to support the assignment of work to qualified personnel.

Upon requalification, records that supported the previous qualification may be removed from the record and replaced with the information documenting present qualification. Superseded information should be handled in accordance with the requirements contained in DOE 1324.2A, "Records Disposition."

In addition, records of the training programs (which should include an audit trail documenting the development of and modifications to each program) and evaluations of the effectiveness of those programs should also be maintained.

5.11 Training Effectiveness

The effectiveness of training should be periodically evaluated by both training and line management. Several items can be examined that indicate whether training activities are achieving the training mission. Training goals and objectives should be established and reviewed periodically, and their accomplishment should ensure that enough qualified personnel are available to operate and maintain the facility and support facility activities. The training activities should be evaluated regularly to determine the extent to which the goals and objectives are being accomplished. The results of these evaluations should be used to modify the training plans, organization, programs, materials, or procedures to improve training effectiveness.

The evaluation of training effectiveness should include examination of various activities involved in the training process and analysis of data on the results achieved by the training organization. Training process evaluations should include training and operating organization line manager reviews and independent audits.

The evaluation of training results should include trainee performance while in training and later during on-the-job performance. These two approaches should indicate the extent to which the training activities are accomplishing the goals and objectives that have been established. If the goals and objectives are not being met, managers should determine the root cause(s) for failure to accomplish them and take appropriate corrective actions. Evaluations should be conducted by, or results reviewed by, individuals who have the authority to initiate corrective actions.

The facility's training organization and programs should be evaluated periodically to determine whether they are achieving the established goals and objectives. The effectiveness of training programs to produce qualified personnel should also be evaluated periodically. This should be accomplished by reviewing operating occurrences, interviewing job incumbents and first-line supervisors, observing operations, etc. The results of these evaluations, if used correctly, will help assure a facility of safe, efficient, and reliable operations. The DOE *Guide to Good Practices: Evaluation Instrument Examples* provides details on this topic.

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