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DOE STANDARD

GUIDE TO GOOD PRACTICES FOR CONTROL OF ON-SHIFT TRAINING

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Guide to Good Practices for Control of On-Shift Training

Page/Section	Change
pg. vii / Definitions	The definition "Performance-Based Training" was replaced with "Systematic Approach to Training (SAT)."
pg. 5 / Section 3	The reference to DOE-STD-1012-92 was updated to DOE-HDBK-1206-97.
pg. 7 / Section 4.1.1	The reference to DOE-NE-0102T was updated to DOE-HDBK-1078-94.
pg. 9 / Section 4.2	The reference to DOE-STD-1001-91 was updated to DOE-HDBK-1001-96.
pg. 15 / Section 4.6	This entire section was added.
Supplemental Resources	References to DOE-STD-1012-92, DOE-NE-0102T and DOE-STD-1001-91 were updated to DOE-HDBK-1206-97, DOE-HDBK-1078-94 and DOE-HDBK1001-96, respectively.
Concluding Material	The Preparing Activity was changed from NE-73 to EH-31.

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FOREWORD

The purpose of this Guide to Good Practices is to provide Department of Energy (DOE) contractors with information that can be used to validate and/or modify existing programs relative to Conduct of Operations. This Guide to Good Practices is part of a series of guides designed to enhance the guidelines set forth in DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities.*

KEYWORDS

Control of Trainees
Instructor Qualification
On-Shift Training

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DEFINITIONS

Instructor Internship	The method employed to provide an on-shift instructor candidate with individualized instruction and monitoring prior to assignment as an instructor.
On-the-Job Training	The formal training that is conducted and evaluated in the work environment.
Operations	The business activity of the facility and assigned personnel, e.g., controlling process equipment, producing/assembling components, performing tests, conducting experiments, processing information, etc.
Operations Supervisor	The individual having authority and responsibility for operational control of a facility, process, experiment, or other project.
Operator	A qualified person assigned specific responsibilities related to the operation of facility process systems and equipment.
Systematic Approach to Training (SAT)	A training program that includes the following five elements: (1) Systematic analysis of the jobs to be performed; (2) Learning objectives derived from the analysis which describes performance after training; (3) Training design, development, and implementation based on the learning objectives; (4) Evaluation of trainee mastery of the objectives during training; and (5) Evaluation and revision of the training based on the performance of trained personnel in the job setting.
Qualification Program	The formal training process that is used to fully prepare a trainee for the performance of assigned responsibilities.

Qualification Card (On-shift Training Checklist/Performance Evaluation Checklist/Practical Factor Card)	A document that lists qualification program requirements for a specific work station, which is used to document training and evaluation results on a task-by-task basis. (Qualification cards may also be used to document the evaluation of theoretical, equipment, system, and procedural knowledge.)
Shift	The normal period of work for an individual or group (e.g., 8:00 a.m. to 5:00 p.m.)
Training Manager	The individual having authority and responsibility for all training requirements of a facility.
Work Station	The physical area, equipment, and systems for which a person is assigned responsibility.

GUIDE TO GOOD PRACTICES FOR CONTROL OF ON-SHIFT TRAINING

1. INTRODUCTION

This Guide to Good Practices is written to enhance understanding of, and provide direction for, Control of On-Shift Training, Chapter V of Department of Energy (DOE) Order 5480.19, *Conduct of Operations Requirements for DOE Facilities.* The practices in this guide should be considered when planning or reviewing on-shift training programs. Contractors may use different methods as long as the intent is in agreement with DOE Order 5480.19.

"Control of On-Shift Training" is an element of an effective Conduct of Operations program. The complexity and array of activities performed in DOE facilities dictate the necessity for a coordinated on-shift training program to meet the continuous demand for skilled, well-trained personnel to promote safe and efficient operations.

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2. OBJECTIVE

The objective and criteria are derived from DOE Order 5480.19. They are intended to aid each facility in meeting the intent of the order.

Facility operation by personnel under instruction is carefully supervised and controlled to avoid mistakes by unqualified personnel, and training activities are conducted to ensure that the time is used effectively.

Criteria:

1. The on-shift training process adheres to established training programs.

2. Trainees are supervised by on-shift instructors who are currently qualified at the work station.

3. Policies directing the use of trainees in support of operations activities are developed to ensure that trainees are effectively and appropriately used.

4. The operations supervisor, or equivalent, approves training programs that best meet operations needs.

5. On-shift training is appropriately documented.

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3. DISCUSSION

On-shift training provides the mechanism for applying the knowledge and skills learned in the classroom, through self-study, and in the laboratory to operating the facility. On-shift training activities are required to provide the trainee with hands-on experience, because neither an outstanding classroom presentation of fundamentals and facility-specific knowledge nor specific laboratory exercises sufficiently prepares an operator to operate a facility safely and efficiently. Since on-shift training allows unqualified personnel the opportunity to operate the facility, controls must be implemented during the performance of on-shift training to ensure that the facility is operated safely and reliably. These controls should prevent accidental, inadvertent, or incorrect manipulation of components, equipment, or systems by trainees. Both on-shift instructors and trainees must understand the controls that regulate the performance of on-shift training.

On-shift training is commonly conducted using the instructional method of on-the-job training (OJT). This form of training has proven very effective in qualifying trainees. OJT addresses the steps necessary to successfully train an individual in the performance of a task, but does not specifically address the controls of the training process and their relationship to the operation of the facility. For information concerning the OJT process, refer to DOE Guideline DOE-HDBK-1206-98, *Guide to Good Practices for On-the-Job Training* (hereafter referred to as *OJT Guide to Good Practices*). "Control of On-Shift Training" addresses the formal, disciplined controls that are required in the operating environment to ensure that on-shift training is conducted safely and efficiently.

On-shift training includes activities that a trainee performs in the operating environment under supervision, as well as training activities that are performed in the operating environment as part of the operator continuing training program. The primary purpose of on-shift training is to allow personnel to acquire first-hand experience by performing or observing operations, special processes, tests, inspections, and other work activities.

In addition to the necessary administrative controls, qualified instructors are also important to the successful control of on-shift training. Competent instructors ensure quality and consistent training of potential operators without compromising the safety and reliability of facility operations. Trainees receive the best and most consistent training concurrent with meeting the production goals of the facility when the instructors are proficient in performing their assigned operational duties while conducting on-shift training. These instructors are best able to interrupt the training when a compromise to safety is becoming evident.

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4. GOOD PRACTICES

4.1 Administrative Controls for the Conduct of On-Shift Training

The Training Department should specify the requirements for a formal on-shift training process to ensure consistent performance of on-shift training activities. Administrative policies or procedures should be established to govern trainee prerequisites, instructor qualifications, and training program coordination.

Cognizant line managers and supervisors should be involved in determining training program content, establishing performance standards, and implementing the program through proper coordination. Involving managers and supervisors helps provide resources, technical input, and commitment to schedules. This involvement also provides the managers and supervisors with insight to the qualification process and its relation to the work assignment.

4.1.1 Trainee Prerequisites

Prior to beginning the on-shift training process, the trainee should be taught fundamental technical and administrative knowledge. The fundamental technical knowledge should be derived from a task analysis. This analysis ensures that the training is appropriate for the actual job performance. The Training Program Handbook DOE-HDBK-1078-94, *Training Program Handbook: A Systematic Approach to Training*, and DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*, contain procedures and information to systematically determine training needs.

The trainee should understand safety practices and procedures, work station responsibilities and authorities, and administrative procedures. The instructor should ensure that the trainee understands basic information affecting attention to detail, attitude toward the job, and awareness of the work station's relationship to plant reliability and safety.

4.1.2 Coordination of Training in the Operating Environment

On-shift training activities should be scheduled based on the operating schedules of the facility. This allows trainees to take full advantage of the facility's schedule, minimizing impact on the facility and maximizing the effectiveness of training. In order to maximize training within the operating schedule, the Training Department and the Operations Department must communicate to integrate their respective schedules. In addition, policies and procedures should assign responsibility to a specific individual for coordinating on-shift training. For the purposes of this

document, the person with this responsibility will be referred to as the training coordinator. For facilities using a rotating shift or multiple-shift crews, this responsibility may be delegated to one training coordinator per shift. Using one person per shift should increase training efficiency because training can be rescheduled as necessary to take advantage of operating situations (e.g., unusual or infrequent activities) that might arise during a shift.

4.1.3 Approval of the Operator Qualification Program

The operator qualification program should be approved by the operations supervisor and the training manager (TM) to ensure that both operational needs and training requirements are satisfied. Changes to the program should be coordinated with the Training Department.

4.2 Instructor Qualification

To ensure that training is effectively performed in the operating environment, on-shift training should be conducted by specially selected, qualified operators. The selection should be based on items such as communication skills, technical knowledge, and the ability to impart trainees with hands-on experience. This may require that the operator has received and successfully completed on-shift instructor training. At a minimum, special instructor techniques should be covered that are designed to prevent misoperation or damage to equipment (e.g., where to place hands to prevent inadvertent breaker, switch, or valve operation). Training Department personnel may conduct on-shift training as long as they remain current in their operator qualifications. The requirements for maintaining operator proficiency should be specified in facility procedures.

Potential instructors should complete an instructor internship prior to conducting training in the operating environment. This allows the candidate to acquire supervised practical training similar to mentoring. An instructor internship is designed to verify and strengthen the instructor candidate's instructional abilities within the operating environment. It also gives a candidate's supervisor the opportunity to monitor and evaluate the candidate's instructional and technical competency in a specific training setting.

A qualified instructor should train the instructor candidate on the facility's on-shift training requirements. To ensure consistency in training, items to be performed should be outlined on a qualification card. When the qualified instructor is satisfied that the instructor candidate has demonstrated adequate instructional skills, the qualified instructor should sign the qualification card and recommend the individual for a final evaluation.

The cognizant supervisor should conduct a final evaluation of the instructor candidate's instructional abilities and competencies during an actual on-shift training session. If the instructor candidate is evaluated as satisfactory, the supervisor should sign the qualification card and ensure that the individual's name is entered in the appropriate documents for tracking qualifications (e.g., qualification matrixes, Training Department records, Personnel Department records). For more information on instructor training, refer to DOE-HDBK-1001-96, *Guide to Good Practices for Training and Qualification of Instructors*.

4.3 Supervision and Control of On-Shift Training

The classroom, self-study, and laboratory training portions of the qualification program should provide a trainee with the knowledge and basic skills to perform tasks at a work station. The on-shift training portion of the qualification program should provide the trainee with actual hands-on operation of the facility while under instruction. Unlike training conducted in a simulator or training facility, on-shift training causes the trainee to impact the status of facility operations. For this reason, the on-shift training must be closely supervised and controlled in a way that prevents the trainee from accidentally operating a component, piece of equipment, or system that might cause danger to personnel, to the environment, or adversely affect the operation of the facility.

4.3.1 Preparation (Pre-Training Brief)

Prior to beginning an on-shift training session, the instructor and the trainee should meet to discuss the upcoming session. This meeting is designed to set the ground rules for the session, discuss the events that will take place, and advise the trainee of the information he or she will be responsible for. This requires that the instructor and the trainee have full knowledge of the scheduled training items.

4.3.1.1 Setting the Ground Rules

Before beginning on-shift training, the trainee should understand what is expected. A standard for control of on-shift training that can be easily understood and followed by the trainee and the instructor should be defined in the administrative policies. This should provide a stable on-shift training environment.

All trainees should understand that they are actually operating the facility when performing a task. Unlike training that is performed in a training center or simulator, an incorrectly operated valve, switch, or control may adversely impact a process, an experiment, or the operation of the facility. Trainees

should have a clear understanding of what it is they are about to do, why they are doing it, and the expected effects their action(s) will have on the equipment, system, or process. If the trainee cannot answer these questions, he/she should get clarification prior to performing the action(s).

The trainee should also be aware of the mobility limitations and should remain in sight of the instructor at all times so that the instructor can maintain control of the trainee during the hands-on situation. A good practice is to have the trainee stay "within arm's distance" of the instructor when the trainee operates equipment. Although it is the responsibility of the instructor to supervise the trainee, it is the trainee's responsibility to be in a position to be supervised.

Trainees should also understand that any official round sheets or narrative logs that they use to record facility parameters or remarks are formal documents. Although it is the instructor's responsibility to ensure that all data or remarks are correctly recorded, it is the trainee's responsibility to correctly and accurately record the information in a legible, precise, and understandable manner.

4.3.1.2 Previewing Scheduled Training

The on-shift training schedule should contain a list of all training that is scheduled for a given period. The training coordinator is responsible for developing the schedule. Discussing the scheduled training prior to its occurrence will help the instructor determine how well the trainee is prepared and may also help the trainee gain an understanding of the relationship between upcoming training activities and the operational schedule. If the scheduled training conflicts with the operational schedule, the training coordinator should be contacted to modify the training schedule.

4.3.1.3 Knowledge Spotcheck

The instructor may use the pre-training briefing to determine if the trainee has the required knowledge and skills to perform the training tasks. If the trainee does not have the required knowledge and skills, the instructor must not let the trainee commence training; however, the trainee may be allowed to observe the tasks to gain more knowledge. Information on the appropriate methods for conducting a knowledge spotcheck can be found in the *OJT Guide to Good Practices*.

4.3.2 Supervising On-Shift Trainees

An on-shift training session allows a trainee to operate portions of the facility from a specific work station. Because each action performed by the trainee actually changes the status of the facility, the trainee must be supervised to prevent an adverse situation from arising. Careful and competent supervision of a trainee will prevent mistakes that could lead to an adverse situation.

4.3.2.1 Placing the Trainee at Ease

Immediately prior to beginning a period of on-shift training, the instructor should try to put the trainee at ease. Although the trainee may have had some prior basic instruction, the trainee may not have had enough experience with this particular type of work. It is advisable to ensure that the trainee is fully briefed on all aspects of operations prior to the start of hands-on performance.

4.3.2.2 Commencing Training

Since an on-shift training session allows a trainee to operate equipment at a particular work station, the trainee should perform a turnover with the instructor and also sign into the narrative log, if applicable. The trainee should annotate in the log that he/she is assuming the duties and responsibilities for the work station under instruction. For details concerning making log entries, refer to DOE Order 5480.19, Chapter XI, "Logkeeping." For details addressing turnovers, refer to DOE Order 5480.19, Chapter XII, "Operations Turnover."

4.3.2.3 Control of Trainees

Instructors must maintain control of trainees assigned to their work stations. They must never allow a trainee to operate equipment without directly supervising them. Prior to allowing a trainee to operate equipment, the instructor should:

- Have the trainee review the procedures and reference documents required for performing the task

- Have the trainee explain the action to be performed, including any cautions and notes

- Have the trainee physically identify the component to be manipulated (e.g., valve, switch)

- Assume a position to observe the trainee's action and to prevent the trainee from incorrectly operating the equipment.

These steps should be followed every time a trainee operates equipment until the trainee has demonstrated proficiency in performing the action. Even after a trainee has shown proficiency for a task, the instructor should not become complacent. The trainee may still not be aware of all problems that could occur. Since the instructor still has the ultimate responsibility for the work station, he/she should remain in a position to intervene.

4.3.2.4 Communications During Training

Since communications are an important aspect of operations, proper communication techniques should be reinforced during on-shift training. The need to pass information to operators or supervisors is an essential part of operations in all facilities. This is especially true if the position requires communicating with other work stations during the normal performance of work station activities. The trainee should perform the proper communications as part of the training. The instructor should monitor all trainee communications and correct the trainee when necessary. Instructors must not allow incorrect information to be transmitted.

All communications should be handled in accordance with the guidelines addressed in DOE Order 5480.19, Chapter IV, "Communications." Specific factors that can help promote successful communication training are:

- Using dual communication devices (walkie-talkies, handsets, phones, etc.)

- Requiring the trainee to say the information to the instructor prior to the actual communication

- Correcting errors in trainee communications immediately.

4.3.2.5 Suspension of Training

Suspension of training is the formal termination of the training session. When this is necessary, the instructor should inform the trainee that training is suspended and that the instructor now has control of the work station.

The trainee should have no doubt that training is terminated and that the trainee is to immediately stop whatever he/she is doing. The use of a clear, mutually understandable phrase, such as "hands off," should be spoken in conjunction with the suspension. When the phrase is used, it should be a clear signal to the trainee that the instructor has taken over the control of the work station.

Training should be immediately suspended in the event of unanticipated or abnormal situations. Since the instructor is responsible for operating the facility, training should also be suspended whenever the instructor believes suspension is necessary to ensure safe and reliable facility operation. The responsibility for assessing all abnormal and accident conditions and taking action remains with the instructor.

During abnormal or emergency conditions, trainees may provide assistance (e.g., make narrative log entries, get tools and procedures) at the discretion of the instructor. The instructor must first decide if the trainee is knowledgeable and skillful enough to assist in responding to the situation.

When a training session is suspended for the remainder of a shift, the trainee should sign out of the narrative log. This signifies the official termination of the training session. In order to achieve some benefit from a suspended training session, the instructor may allow the trainee to remain at the work station to observe the instructor perform the assigned task(s). The trainee must remain in a position to observe without obstructing the instructor. An exception to this practice would be if training was suspended for an abnormal or emergency condition, and the condition required evacuation of all unnecessary personnel. In this case, the trainee must evacuate from the premises.

4.3.2.6 Maximum Number of Trainees

Normally, on-shift training, when performing OJT, should be conducted one-on-one. Because of operational commitments or task performance frequency, it may become necessary to simultaneously train more than one person on a task. In these cases, the maximum number of trainees allowed to participate in a training evolution needs to be determined. In making this determination, consideration should be given to precluding the potential for adverse effects on the facility. This determination should also reflect the concern for ensuring effective, high-quality training. Supervisors should ensure that established limits for number of trainees are observed.

In addition, operators should consider the maximum number of trainees (i.e., trainees not performing OJT) that they can adequately supervise at their work station. Even if the trainees are only observing a task or studying components and systems at the work station, they should be supervised or at least instructed of their responsibilities while at the work station. Although there might not be prescribed limits for this situation, operators should limit the number of trainees so that they can continue to operate safely and efficiently.

4.3.3 Concluding On-Shift Training

The instructor should formally conclude the on-shift training session by informing the trainee that the training session is concluded. To enhance training effectiveness, the instructor should receive a turnover from the trainee. For information on turnovers, refer to DOE Order 5480.19, Chapter XII, "Operations Turnover." The instructor should then evaluate the training session in a manner so as to not interfere with his/her ability to continue operating. For information on performing evaluations, refer to the *OJT Guide to Good Practices*.

4.4 Training Documentation

On-shift training documentation should be consistent with Training Department requirements and should be formally documented. The use of qualification cards has proven effective for documenting training. The documentation requirements, including who, how, and when to document training, should be clearly defined and understood by the instructors and the trainees. For additional information on training documentation refer to the *OJT Guide to Good Practices*.

In addition to documenting training in the qualification card, training events should be annotated in the work station narrative log, if applicable. Since narrative logs contain a chronological list of all operational activities that occurred during a specific shift and since most training events are operational activities, the majority of events should already be recorded. Using the narrative log to record events performed during a training session will make it easier to document all training that occurred during a session.

4.5 Using Trainees to Support Operations

Facility policies should address how trainees may be used to support operations. Trainee time should be effectively and appropriately used to ensure a timely completion of training activities. They may be used to support operations but should not be used to perform tasks that they are not qualified to perform. An

example of effective use of trainees would be qualifying a trainee on a task to support the operating schedule, such as fire watch, and then relieving the trainee as soon as possible to allow the trainee to continue with the training process. Prior to assigning trainees to assist in nontask-related activities (e.g., collecting logs, reviewing procedures, and other administrative jobs), supervisors should verify that the trainee has time to perform the assignment and that the assignment will not conflict with the trainee's training schedule.

4.6 Operations Management Involvement in Training

Operations line managers should be personally involved in identifying training needs and verifying that initial and continuing training programs meet these needs. Operations managers approve and periodically review the effectiveness of operations training programs. This includes observing personnel performance, both on shift and during simulator training sessions, and providing feedback to the training department to initiate training program improvements.

Performance standards established by operations managers should be presented, discussed, and reinforced during initial and continuing training. Operations managers should instill a sense of ownership with each shift manager for the training of his or her crew. Shift managers should help identify crew weaknesses and work with operations and training managers to provide training that will strengthen overall crew performance.

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SUPPLEMENTAL RESOURCES

The following sources provide additional information pertaining to topics discussed in this Guide to Good Practices:

DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter IV, "Communications."

DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter V, "Control of On-Shift-Training."

DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter XI, "Logkeeping."

DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter XII, "Operations Turnover."

DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*.

DOE-HDBK-1078-94, *Training Program Handbook: A Systematic Approach to Training.*

DOE-HDBK-1001-96, *Guide to Good Practices for Training and Qualification of Instructors*.

DOE-HDBK-1206-98, *Guide to Good Practices for On-the-Job Training*.

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CONCLUDING MATERIAL

Review Activities:

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Preparing Activity:

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