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# DOE STANDARD

## GUIDE TO GOOD PRACTICES FOR THE SELECTION, TRAINING, AND QUALIFICATION OF SHIFT SUPERVISORS



**U.S. Department of Energy**  
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## **FOREWORD**

The purpose of the Department of Energy (DOE) *Guide to Good Practices for Selection, Training, and Qualification of Shift Supervisors* is to provide DOE contractor organizations with information that can be used to modify existing programs or to develop new programs. DOE contractors should not feel obligated to adopt all parts of this guide. Rather, they can use the information in this guide to develop programs that apply to their facility.

This guide can be used as an aid in the design and development of a facility's shift supervisor's training program. This guide can be used in developing a program for initial and continuing training.



# CONTENTS

FOREWORD .....	iii
1. INTRODUCTION .....	1
1.1 Purpose .....	1
1.2 Background .....	1
1.3 Application .....	1
1.3.1 Discussion .....	2
2. SELECTION OF SHIFT SUPERVISORS .....	3
2.1 Education and Experience .....	3
2.2 Selection Process .....	3
3. INITIAL TRAINING AND QUALIFICATION .....	5
3.1 Qualification .....	5
3.2 Initial-Training Program .....	5
3.2.1 Supervisory Skills .....	6
3.2.2 Probabilistic Risk Assessment .....	7
3.2.3 Nuclear Safety .....	8
3.2.4 Occurrence Reports .....	8
3.2.5 Facility Self-Assessment .....	9
3.2.6 Conduct of Operations .....	9
3.2.7 Work Control .....	9
3.2.8 Subordinate Training and Qualification .....	10
4. CONTINUING TRAINING .....	11
4.1 Subject Material and Depth .....	12
4.2 Management Training .....	12
4.2.1 Quality Assurance (QA) and Quality Control (QC) .....	12
4.2.2 Facility Security and Emergency Plans .....	13
4.2.3 Purchasing .....	14
4.2.4 Material Storage .....	14

4.2.5 Facility Modifications .....	14
4.2.6 Nuclear, Industrial, and Radiation Safety .....	15
4.2.7 Interfacing With External Groups and Organizations .....	15
4.2.8 Budgeting .....	16
4.2.9 Public Relations and News Releases .....	16
4.2.10 Teamwork Training .....	16
4.2.11 Diagnostic Skills Training .....	17
4.3 Regulatory Training .....	18
4.4 Methods of Training .....	18
5. PROFESSIONAL DEVELOPMENT .....	19
6. EVALUATION .....	21
7. TRAINING RECORDS .....	23
APPENDIX A SHIFT SUPERVISOR INITIAL-TRAINING LESSON SPECIFICATIONS .....	A-1
APPENDIX B SHIFT SUPERVISOR PROFESSIONAL DEVELOPMENT SEMINAR .....	B-1

# **1. INTRODUCTION**

## **1.1 Purpose**

This guide, used in conjunction with a facility-specific job analysis, provides a framework for the selection, training, qualification, and professional development of reactor facility and non-reactor nuclear facility shift supervisors. Training and qualification programs based on this guide should provide assurance that shift supervisors perform their jobs safely and competently.

The shift supervisor is the senior management representative on shift who is responsible for the safe operation of the facility. This responsibility typically includes direct supervision of operations department personnel and functional supervision of maintenance personnel and technicians, especially during backshifts and holidays. The shift supervisor is responsible for overall facility safety, personnel safety, coordination of facility activities, and facility operation during the assigned shift.

Training for the shift supervisor goes beyond the training for the nuclear facility operator or reactor operator because of the broad scope of responsibility the shift supervisor has as the on-shift management representative. This additional training addresses management skills and behaviors.

## **1.2 Background**

DOE identified the need for shift supervisor training, qualification, and professional development guidance. The need was based on the increasing emphasis on properly conducting operations and maintenance activities in the nuclear industry. The shift supervisor has become the focal point of the facility because of the impact the shift supervisor has on facility operation and safety.

## **1.3 Application**

The content of this guide is generally applicable to all DOE reactor and non-reactor nuclear facilities, with the exception of those topics which relate specifically to reactor activities. Portions of the programs outlined may not be applicable to all facilities, because operations department organizations, titles, and responsibilities vary among DOE reactor and non-reactor nuclear facilities. Facility training personnel can verify the adequacy or improve existing training programs by adapting the portions of this guide that is applicable to their

specific facility shift supervisor needs. For those facilities under DOE Order 5480.18A, “Accreditation of Performance-Based Training For Category A Reactors and Nuclear Facilities,” the senior reactor operator position is included under the shift supervisor/shift manager program, and the training content identified in this guide and on Attachment II-4 in the *Training Accreditation Program Manual* (TAP 3), should be included in the training program for the shift supervisor.

### **1.3.1 Discussion**

Full implementation of shift supervisor training program requires a long-term commitment. Training activities should be carefully managed to produce effective results. Training plans should be developed, organizations should be staffed with qualified instructors, and sufficient controls should be applied to ensure delivery of an effective training program.

Each facility should analyze its training needs to develop a facility-specific training program. Analysis results should be used to establish learning objectives, test items, instructional methods, and instructional settings. Performance measures used to evaluate employee performance and assess training effectiveness can also be derived from the analysis.

Training programs should be evaluated on a continuous basis to determine the extent to which established learning objectives are being accomplished. Evaluation results should be used to improve training plans, facilities, programs, materials, and procedures. In addition, it is important to implement a systematic method to update training-program content, to incorporate facility modifications, operating experiences, procedure changes, and changes in job requirements.



## **2. SELECTION OF SHIFT SUPERVISORS**

The operating contractor should have a selection process for initial hiring and transferring of personnel into the operating organization. This process should consider such selection criteria as: problem-solving ability, emotional stability, motivation, initiative, background, experience, educational level, and mechanical aptitude. This process may involve a selection test. Administrative procedures should be developed to establish the criteria for shift supervisor selection. Selection should be based on the ability to meet position qualification criteria with reasonable amounts of training.

### **2.1 Education and Experience**

The training and qualification program described in this guide assumes that shift supervisor trainees are nuclear facility operators or reactor operators and have significant on-shift experience. Modifications to initial-training program may be necessary for those trainees with less training and experience. The educational and experience requirements should be consistent with those stipulated in DOE Order 5480.20, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities."

Individuals who do not possess the formal educational or experience requirements should not be automatically eliminated from consideration where other factors provide sufficient demonstration of their abilities. These other factors should be evaluated on a case-by-case basis and documented by facility management. DOE Order 5480.20, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities" should be referenced for alternatives to experience and education.

### **2.2 Selection Process**

The selection of shift supervisor trainees should be a careful and thoughtful process that recognizes the responsibilities that are unique to the shift supervisor position. The selection process should include an evaluation of the shift supervisor trainee's supervisory and technical skills, as well as the individual's experience and past performance. Line management should establish the attributes, characteristics, and skills used as criteria for selecting shift supervisor trainees. The criteria should include demonstrated qualities such as: leadership, judgment, motivation, integrity, management and supervisory ability, teamwork skills, analytical ability, and strong technical competence. Selection of shift

supervisor trainees should include consideration of the following characteristics and associated attributes listed below them:

- Strong leadership and management capabilities
  - willingness to assume the responsibilities and accountabilities of the shift supervisor position
  - knowledge and support of facility policies and operating philosophies
  - initiative
  - motivation
  - ability to communicate
  - ability to function as a team leader
  - administrative abilities
  - ability to organize
  - coaching skills
- Sound judgment
  - maturity
  - conservative approach toward nuclear and personnel safety
  - inquisitive
  - persistent, yet cautious
  - effective planning
  - logical and cautious decision making
  - understands personal limitations and policy
- High values and integrity
  - professional ethics
  - high personal standards of performance and commitment to quality
  - positive attitude
- Thorough technical knowledge
  - technical knowledge of the tasks performed by the personnel supervised
  - analytical ability
  - industrial safety awareness.

Some techniques that may be used to provide input for selecting shift supervisor trainees include: questionnaires, aptitude tests, examinations of technical knowledge and supervisory ability, on-the-job observations, performance during continuing training, and interviews by facility line managers. The techniques should be applied in a manner that attains consistent assessment of trainees. Regardless of the techniques used to provide inputs, careful and thoughtful selection by line management is essential.

### **3. INITIAL TRAINING AND QUALIFICATION**

An initial-training program should be established to develop and enhance the skills, knowledge, and abilities of shift supervisor trainees at DOE reactor and non-reactor nuclear facilities to perform their job assignments. The program should consist of a combination of classroom-type and on-the-job training, and should include simulator and laboratory training (for those facilities that have a simulator or laboratory facilities), as it applies to the shift supervisor position.

The facility manager, the facility manager's staff, senior managers, selected personnel (e.g., top-performing shift supervisors), and training facility staff should conduct training and mentoring sessions with shift supervisor trainees to discuss and promote areas that include commitment to high standards of performance and nuclear safety. Some portions of initial-training program may also be accomplished through on-the-job interaction with other appropriate departments within the nuclear organization or on-shift as a shift supervisor under instruction. Training should be conducted, evaluated, and documented through the use of qualification guides, discussion outlines, or checklists.

#### **3.1 Qualification**

Qualification for shift supervisors should be documented by the responsible manager's written endorsement of the satisfactory completion of initial training and qualification requirements. Administrative procedures should be developed to describe the process for progressing through the levels of qualification, periodic requalification, and personnel record keeping.

#### **3.2 Initial-Training Program**

Facilities should perform a job analysis for the shift supervisor initial-training program. The guidance in this section, in Appendix A, and in Attachment II-4 of *Training Program Support Manual* (TAP 3) provides the basis for establishing the initial-training program. Appendix A contains learning objectives and recommended learning activities to support the enhancement of training materials for initial training. Additional facility-specific subjects may be added to the initial-training program for shift supervisors, as deemed appropriate, by management.

The initial-training program described in this section and in Appendix A builds upon the training and experience gained by an on-shift nuclear facility operator or reactor operator.

Therefore, this training should be conducted following nuclear facility operator or reactor operator training.

### 3.2.1 Supervisory Skills

Shift supervisor trainees should receive supervisory skills training as appropriate to their job responsibilities. Supervisory skills training does not need to be subject to the examination process. This training also does not need to be repeated in the continuing training program. The purpose of this training is to aid the individual's transition into management. Training should achieve the following:

- Prepare the individual for increased administrative responsibilities, such as the following:
  - delegation of work
  - efficient recordkeeping
  - recordkeeping systems and requirements
  - time management
  - labor relations
  - expanding understanding of the management system, its interrelationships, and its lines of communication
  - ethics
  - effective interviews
  - understanding the goals and objectives concept
  - ascertaining when and to what degree management involvement in work of subordinates is appropriate
  - fitness for duty procedures/programs
  - administrative policies and procedures
  - supervisory responsibilities and limitations
- Prepare the individual to cope with personnel matters, such as the following:
  - staffing issues
  - motivation of personnel and creating a motivating work atmosphere
  - dealing with differing personalities
  - establishing and demonstrating high standards of job performance
  - using performance appraisal systems effectively
  - providing career counseling
  - conflict resolution
  - dealing with chronic and acute stress
  - dealing effectively with subordinates
- Improve the individual's communication skills in such areas as the following:

- interpersonal communication
- oral and written communications
- praising and reprimanding
- directing
- listening
- conducting meetings
- conducting shift briefings
- Enhance the individual's ability to make decisions, such as the following:
  - problem analysis and decision making
  - establishing priorities
  - predetermining alternatives for normal and emergency operations
  - anticipating and responding to stress-induced reactions
  - planning and organizing.

### 3.2.2 Probabilistic Risk Assessment

For those facilities for which a Probabilistic Risk Assessment (PRA) has been performed, initial and continuing training programs should include the principal results of the PRA. The training should address the following:

- The importance of facility systems in preventing damage or severe accidents
- The probabilistic basis for defining magnitudes and compositions of potential releases of radionuclides (or other toxic materials) and consequences of potential releases in terms of facility worker and offsite population health effects
- Dominant types of potential operational accidents as defined in terms of frequency and consequences
- Locations of all significant amounts of radioactive and other hazardous materials, and measures to prevent their release
- The importance of maintaining operational limits and conditions, and the consequences of violating those limits
- Identification of potential hardware failures and human errors which constitute dominant contributors to important accident sequences
- The role PRA can play in evaluating proposed changes in operating procedures or equipment configuration
- The role of external events such as earthquakes, extreme winds, flooding, transportation accidents, etc., in terms of their contribution to facility risk
- The role PRA can play in optimizing operating limits, Technical Safety Requirements, testing, and maintenance intervals.

### 3.2.3 Nuclear Safety

A goal of operations of DOE nuclear facilities is that operation will not result in any significant impact on the health and safety of the public, facility employees or contractors, or the environment. Therefore, shift supervisor trainees should receive training in the following areas:

- Nuclear criticality safety limits
- Nuclear materials safeguards
- Limiting conditions of operation
- Safety envelope
- Facility Safety Analysis Report
- Technical Safety Appraisals
- Safety analysis and review system
- DOE Nuclear Safety Policy Statement
- DOE orders relating to nuclear safety
- Applicable NRC regulations relating to nuclear safety
- Operating experience.

### 3.2.4 Occurrence Reports

Shift supervisor trainees should receive occurrence report training as appropriate to their job responsibilities. This training should be further emphasized in the continuing training program. Training should address the following:

- Importance of the occurrence reporting system
- Internal, external, and follow-up notification requirements of reportable occurrences
- Occurrence categorization and notification process
- Utilization of reportable occurrence information
- Occurrence Reporting and Processing System (ORPS)
- Collection of data required for generation of occurrence reports
  - operating conditions at the time of the occurrence
  - documented statements of persons who were involved in or who witnessed the occurrence
  - recordings, charts, and/or printouts from instruments or computers monitoring the operation during the occurrence
  - first 18 fields of an occurrence report
- Internal and external investigations of the occurrence
- Final evaluation and lessons-learned from occurrence.

### 3.2.5 Facility Self-Assessment

Shift supervisor trainees should receive training in facility self-assessment as appropriate to their job responsibilities. This training should be further emphasized in the continuing training program. Training should include the following topical areas:

- Importance of the self-assessment
- Shift supervisor's role in the self-assessment program
- Self-assessment process and reporting requirements
- Standard operating procedures for self-assessment
- Root cause analysis
- Reporting system to document, communicate, and track findings and corrective actions.

### 3.2.6 Conduct of Operations

Shift supervisor trainees should receive training in conduct of operations because the shift supervisor is the key player in the safe operation of the facility. Training should address the requirements listed in DOE Order 5480.19, "Conduct of Operations Requirements For DOE Facilities."

### 3.2.7 Work Control

The shift supervisor is involved in the planning and organizing of work to be accomplished during the shift. In order to effectively and properly manage the shift work load, the shift supervisor should receive training in the following areas:

- Work control documents
  - work release or authorization forms
  - safe work permits
  - radiological control work permits
  - highly radioactive work permits
  - standard (repetitive) work permits
- Process for obtaining reviews prior to commencing work
- Safety Analysis and Technical Safety Requirements
  - objectives
  - management responsibilities
  - review and approval requirements
  - hazard classification levels

- Environment, Safety, and Health requirements
- Department of Energy work control audits.

### **3.2.8 Subordinate Training and Qualification**

The shift supervisor is responsible for becoming actively involved in the operating crew's training, qualification, requalification, certification, and recertification to ensure that the operators are properly trained to established standards and qualified or certified to perform their assigned tasks. To be responsive to the needs of subordinates and to help them achieve qualification/certification, the shift supervisor should receive training in the following areas:

- Role of the shift supervisor in training
- Qualification process of subordinates
- Qualification progress of subordinates
- Training schedules
- Training requirements of subordinates
- Academic and remedial counseling.



## 4. CONTINUING TRAINING

The frequency of continuing training should be on a biennial cycle and should be based on job performance. Continuing training in technical and administrative subjects should be provided to help ensure that shift supervisors maintain and improve their job proficiency. Continuing training should not be a repeat of the initial-training program, rather it should build on job experiences subsequent to the initial-training program and build on the knowledge and skills that the individual gained during initial-training program. Specific areas that should be part of a continuing-training program include, but are not limited to, the following:

- Facility and industry operating experience
- Conduct of operations
- Facility self-assessment
- Abnormal and emergency procedures
- Changes to applicable facility procedures, codes, and standards
- Significant facility systems, components, and equipment changes
- Changes to Technical Safety Requirements
- Selected topics from the initial-training program to correct identified weaknesses and performance problems
- Selected fundamentals with emphasis on seldom-used knowledge and skills necessary to assure safety
- Lessons learned and near-miss events
- Topics requested by shift supervisors or management.

During evaluations of training program effectiveness, areas for training opportunities may be identified. When performance deficiencies or training weaknesses are noted, the continuing training program can serve to upgrade the skills and knowledge level of the incumbent. For further guidance in developing, implementing, and evaluating a continuing training program, refer to the DOE *Guide to Good Practices for Continuing Training*.

The participation and performance of shift supervisors in the continuing training program should be documented. Documentation should be in a form that is easily auditable by internal and external reviewers.

## 4.1 Subject Material and Depth

The subject material and depth to be covered in the continuing training program should build on job experiences subsequent to the initial-training program and build on the knowledge and skills that the individual gained during initial-training program. Further emphasis should be placed on: occurrence reports, facility self-assessment, conduct of operations, changes to applicable facility procedures and standards, changes to Technical Safety Requirements, facility and industry operating experience, review of safety-related material, abnormal and emergency procedures, etc.

## 4.2 Management Training

In addition to the supervisory skills training discussed in the initial-training program section, the topics that follow should be considered for inclusion in the training program. This guide divides the shift supervisor training into eleven modules:

- Quality assurance and quality control
- Facility security and emergency plans
- Purchasing
- Material storage
- Facility modifications
- Nuclear, industrial, and radiation safety
- Interfacing with external groups and organizations
- Budgeting
- Public relations and news releases
- Teamwork training
- Diagnostic skills training.

### 4.2.1 Quality Assurance (QA) and Quality Control (QC)

The purpose of this module is to enable the shift supervisor to effectively manage the activities of their particular area of responsibility consistent with the facility's policies and procedures regarding QA and QC. Training may include topics such as the following:

- Corporate QA policies
- Facility procedures for implementation of the policies
- Appropriate regulatory requirements regarding QA and QC
- Department-level QC responsibilities.

#### 4.2.2 Facility Security and Emergency Plans

The purpose of this module is to enable the shift supervisor to perform effectively and to provide reasonable assurance that subordinates will do likewise in the event of threats or breaches in security and on- or offsite emergencies. Training may include topics such as the following:

- Security threats and breaches
  - the security system
  - security plans and procedures
  - reporting requirements
  - investigative responsibilities
- Natural disasters
  - procedures for coping with tornados, earthquakes, floods, or other natural disasters
- Facility fires
  - prefire plans
  - fire brigade organization and responsibilities
  - offsite firefighting support
  - applicable codes and standards related to fire prevention and protection
  - facility Technical Safety Requirements associated with fire prevention, detection, and protection
  - transient fire loads
  - fire prevention work control procedures
- Radiological emergencies, onsite and offsite
  - position responsibilities during an emergency
  - department, group, or facility responsibilities (as applicable)
  - classification of emergencies
  - applicable DOE Orders and directives
  - applicable federal regulations
  - state requirements and plans
  - reporting requirements
  - local organization commitments and plans
  - handling of contaminated injuries
  - offsite support groups (facility and/or contracted emergency support)
  - overall emergency plan, including action steps, support, and data collecting and gathering systems, such as computers and environmental monitoring systems

- public and media information plan, including news releases, philosophies, facilities, and specific responsibilities.

### **4.2.3 Purchasing**

The purpose of this module is to enable shift supervisors to work effectively when purchasing materials and contracting services. Topics for training may include the following:

- Policies and procedures related to purchasing of materials
- Purchasing services available at the facility
- Contract approval requirements
- QA and QC requirements relative to purchasing
- Classifications of material purchases
- Provisions for expediting purchases
- Storage requirements
- Applicable standards and regulatory requirements related to materials stores
- Environmental qualification requirements and processes.

### **4.2.4 Material Storage**

The purpose of this module is to enable the shift supervisor to function effectively regarding material storage procedures and practices and the distribution of materials and parts into the facility for use. Topics for training may include the following:

- Policies and procedures related to material storage
- Applicable standards and regulatory requirements
- Facility and/or department policies regarding spare parts inventory
- Facility policies regarding material procurement from facility stores
- Facility policies regarding disposal of used or outdated parts and components.

### **4.2.5 Facility Modifications**

The purpose of this module is to enable the shift supervisor to initiate and implement facility modifications in accordance with facility policies and procedures. Topics for training may include the following:

- Determination of what constitutes a modification
- Modification implementation procedures
- Policies and procedures

- Technical Safety Requirements and approval
- Configuration change control
- QC requirements
- Replacement parts and component requirements (equal-to or better concept)
- Post-modification activities, such as testing, drawing update, procedure changes, and training.

#### **4.2.6 Nuclear, Industrial, and Radiation Safety**

The purpose of this module is to enable the shift supervisor to understand and effectively manage the safety requirements as defined by applicable DOE Orders and directives. Topics for training may include the following:

- Safety Analysis Reports
- Job safety analyses
- Handling of safety matters
- Industrial safety programs
- Applicable DOE Orders
- As-low-as-reasonably-achievable (ALARA) Program
- Occurrence reports.

#### **4.2.7 Interfacing With External Groups and Organizations**

The purpose of this module is to enable the shift supervisor to interface with external organizations in accordance with established facility policies and procedures. Topics for training may include the following (Note: Some topics listed may only apply to multifacility sites or facilities still under construction.):

- Corporate organization (whether onsite or offsite)
- Corporate policies concerning industrial relations and hiring practices
- Corporate-level goals and objectives
- Department of Energy and other federal agencies
- Labor relations
- Areas of corporate support for facility activities (such as maintenance support)
- Lines of communication appropriate to the managerial position
- Methodology for obtaining changes to the facility Technical Safety Requirements
- Working relationships with contractors and vendors
- Resolution of contractual problems

- Policies and procedures regarding transfer of equipment from construction contractors to the operations organization
- Facility interfacing procedures at multifacility sites when one or more facilities are operating and one or more are under construction or reconstruction
- Inactive equipment lay-up and storage following transfer to the operating organization
- Cost and scheduling control, if the facility is still under construction or if they have regular interface with contractors
- Environmental issues.

#### **4.2.8 Budgeting**

The purpose of this module is to enable the shift supervisor to use the budget system to achieve department, group, or facility goals and objectives. Topics for training may include the following:

- Budget planning and preparation
- Budget review and approval process
- Implementation of a periodic budget review system
- Achievement of established goals and objectives through budgeting
- Prioritization of goals and objectives for a budget ceiling
- Preparation and submittal of budget change requests.

#### **4.2.9 Public Relations and News Releases**

The purpose of this module is to enable shift supervisors to function in accordance with established policies and procedures in public relations and news release matters. Training may include the following topics:

- Applicable policies and procedures
- Review and approval process for public speeches and presentations
- Individual responsibilities in dealing with public sectors and groups
- Responsibilities for review, approval, and presentations to professional organizations, educational institutions, community groups, and the media.

#### **4.2.10 Teamwork Training**

The responsibility of the shift supervisor includes promoting teamwork while supervising the control room team and during interactions with all personnel who support

facility operations. This module will give the shift supervisor the knowledge and skills necessary to improve shift team performance. Topics for training may include the following:

- Identifying deficiencies and initiating corrective action for performance problems resulting from lack of teamwork
- Describing and applying criteria used to measure team effectiveness
- Describing characteristics common to effective teams and determining which are present in their own team
- Identifying and promoting factors essential to internal group support and cohesiveness
- Describing team member roles assigned during abnormal or emergency operations
- Performing a self-assessment to identify and compensate for personality traits that detract from effective teamwork
- Defining the team values, attitudes, and beliefs adopted by the work team and describing how they affect team interaction.

#### **4.2.11 Diagnostic Skills Training**

The responsibility of the shift supervisor includes diagnosing facility problems by monitoring system or process parameters, interpreting the data, and then concurring with and directing appropriate corrective actions. This module should enable the shift supervisor to:

- Identify potential causes of problems
- Monitor data, and detect impending problems
- Recognize the importance of attention to detail and recognize problems early
- Differentiate between expected conditions and problem conditions
- Identify conditions requiring action
- Determine the expected response and identify deviations in that response
- Analyze potential causes of problems to identify the most probable cause
- Prioritize problems using a systematic process
- Determine and initiate appropriate corrective actions based on a systematic prioritization
- Evaluate success of corrective action and respond accordingly.

For further guidance on teamwork and diagnostic skills training, refer to *DOE Guide to Good Practices for Teamwork Training and Diagnostic Skills Development*.

### **4.3 Regulatory Training**

Regulatory compliance training should be a fixed component of the continuing-training program. This is mandated training, such as HAZMAT or security training, that is required by DOE Orders, Occupational Safety and Health Act (OSHA), Environmental Protection Agency (EPA), etc., and can be readily scheduled in advance.

### **4.4 Methods of Training**

The methods that can be used to accomplish continuing training can be essentially the same as those used for the initial-training program; however, there will be less emphasis on the one-on-one training conducted by the training manager with a new trainee. Portions of the continuing training may be accomplished by guided self-study or computer-based training (CBT).



## 5. PROFESSIONAL DEVELOPMENT

As with other managers, an important aspect of developing a shift supervisor is ongoing professional development. The selection process can be helpful in forming the basis for long-range professional development.

Each facility should establish activities that promote the professional growth of the shift supervisor. These activities should provide a means of career development to ensure that shift supervisors remain motivated in their current assignments. They should also be provided the opportunity to increase their contribution to the facility.

Good practices that can enhance professional growth include management by objectives and individual development plans. These approaches link individual performance to facility goals and can provide benefits to both the organization and the individual shift supervisor.

Professional growth opportunities may be identified from sources such as facility human resource groups or surveys of shift supervisors. Professional development activities may include the following:

- Working for short periods in a variety of functional areas in the facility nuclear organization to broaden their perspective and understanding of overall plant functions
- Expanding lead activities such as providing guidance to work groups and subcontractors
- Authoring operating procedures and other facility documentation
- Assignment to the operations department's problem-solving and decision-making “task forces”
- Participating in operations committees (operations review committees, design review groups, procedural review groups, etc.)
- Participating actively in professional associations and operations-related workshops
- Enrolling in company-funded college vocational/educational programs
- Participating actively in professional organizations related to technical areas
- Visiting other nuclear facilities to broaden their perspective and to simulate comparison and emulation of good practices
- Attending management courses
- Obtaining membership in professional organizations [American Nuclear Society (ANS), etc.].

Another important element of the professional development of shift supervisors is the day-to-day coaching provided by their manager. Though not formally structured or documented, coaching should focus on individual needs and reinforcement of management expectations, with the results reflected in the performance of the shift supervisor.

An additional source of professional development is the Shift Supervisor Professional Development Seminar that is described in Appendix B. The seminar would provide an environment for qualified shift supervisors to share and learn from peers. This seminar should be an integral part of the ongoing development of shift supervisors. The seminar is designed to augment, but not replace, each facility's professional-development program for shift supervisors.

## 6. EVALUATION

The shift supervisor training program should be evaluated on a continuous basis to determine program effectiveness. Recommended changes to the training program as a result of the evaluation should be formalized, approved, and tracked. The areas encompassed should include the following:

- Feedback from recently qualified shift supervisors and their managers
- Inspection, audit, and evaluation reports of training completed by outside organizations and facility personnel
- Individual performance evaluations related to shift supervisor duties
- Facility and simulator performance evaluations and examination results
- Facility operations problems related to individual knowledge or skill deficiencies
- Occurrence reports from the facility or the nuclear organization relevant to shift supervisors
- Changes in job assignments related to facility duties or safety-related functions of shift supervisors
- Regulations or standards affecting shift supervisor training
- Assessment by the operations manager of shift supervisor performance deficiencies related to training
- Assessment of changes from updates in the job analysis and new task analysis.

Training program evaluation should also be used to identify operating practices, facility design factors, and procedures that adversely impact the performance of shift supervisors. This evaluation should include root-cause analysis to determine if problems are attributable to training, operating procedures, facility design, or any combination of these factors. Analysis results and recommendations for corrections should be transmitted to facility line management for resolution.

The operations manager should review the training curriculum periodically to identify deficiencies, required changes that need immediate action or significant program modification. The training manager should recommend corrective action for review and approval by the operations manager. Additionally, the operations training manager should implement the necessary changes to the program and lesson plans.



## 7. TRAINING RECORDS

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

- Education, experience, employment history, and most recent health evaluation summary
- Training programs completed and qualification(s) achieved
- Lists of questions asked and the examiners' overall evaluation of responses on oral examinations
- Correspondence relating to exceptions granted to training requirements (including justification and approval)
- Records of qualification for one-time-only special tests or operations
- Attendance records for required training courses or sessions
- Latest completed checklists, graded written examinations (with answers corrected as necessary or examination keys) and operational evaluations used for qualification. Some facilities may prefer to maintain a separate file of completed examinations with answer keys for each individual, since inclusion of the examinations with the answer key requires controlled access to training records to maintain examination security.

A historical record that documents initial qualification on each position qualified or certified 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 entered into it. If more than one qualification is achieved and maintained, the individual training record should contain documentation to that effect.

For presently held qualification(s), the completed examinations, checklists, operational evaluations, etc., should be maintained on record. When an individual holds qualifications 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). Shift 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 procedures contained in DOE Order 1324.2A, "Records Disposition."



**APPENDIX A**  
**SHIFT SUPERVISOR INITIAL-TRAINING**  
**LESSON SPECIFICATIONS**





## **SHIFT SUPERVISOR INITIAL-TRAINING LESSON SPECIFICATIONS**

This appendix provides lesson specifications for the shift supervisor initial-training program. These lesson specifications should be used in conjunction with the topical subjects discussed in the Initial Training section of this guide to develop an initial-training program. The learning objectives on which the training is based address higher-order knowledge and abilities. Because of this, the training objectives should be modified to be consistent with facility-specific philosophy and values.

These lesson specifications and the topics described in the Initial Training section provide a framework with which the training department can use to enhance or develop facility training materials. These lesson specifications is not intended to limit facility-specific development of initial-training materials. Instead, the lesson specifications provide the learning objectives and suggested activities on which to develop instructional materials and evaluation methods. The suggested learning activities in the lesson specifications are one method for presenting appropriate shift supervisor training and, as such, should be reviewed and modified as needed to meet the needs of line management.

Learning activities for shift supervisors should maximize the experiential learning process (i.e., active trainee participation and internalization) and minimize use of lectures. The learning activities may be conducted and documented through the use of any or all of the following:

- Discussion outlines or checklists
- Qualification guides
- Simulator training
- On-the-job interaction with appropriate persons in the nuclear organization
- On-the-job as a shift supervisor under instruction
- Role-plays
- Case studies
- Classroom presentations.

The learning objectives in each lesson specification have conditions for performance (or are implied as being “from memory”) and action statements. Learning objective standards should be added or modified as needed to conform to the performance standards at the facility and the level of performance expected from the trainee. Often, and especially for

higher-order learning objectives, the standards statements may be qualitative rather than quantitative.

Suggested instructors or facilitators for individual lessons are included in the suggested learning activities portion of the lesson specifications. These are only suggestions; however, involvement by appropriate facility managers is an important part of the success of the shift supervisor initial-training program. In those learning activities where a suggested instructor is not indicated, selected training staff instructors should be used.

References have been provided for the individual lesson specifications. These references are generic in nature and are given as recommended references for lesson preparation. The references used may vary and should be modified as necessary to meet individual facility needs. Also, references to operating experience should include selected industry operating experience and facility-specific operating experience. Appropriate and more recent operating experience should be incorporated into and normally replace the operating experience used in shift supervisor training as it is updated over time.

In order to evaluate the effectiveness of the training presented to shift supervisor trainees, suggested evaluation activities have been provided in the lesson specifications in this appendix. Performance checks and other interactive evaluation methods should be considered. These could be both formal and informal exchanges between the trainee and the instructor but should be documented. The evaluation activity that is used for each specific lesson or group of lessons should be based on the associated learning objectives and may be achieved concurrently with the training activities. Evaluations should be focused on the trainee's understanding of the underlying principles associated with each learning objective and the internalization of the material.

The lesson specifications described above for the initial-training program are presented on the following pages. A brief table-of-contents page has been prepared to facilitate determining the location of each topic outline. Lesson specifications are divided into lesson modules. The lesson modules are represented in the following format:

- OE—Operating Experience
- AN—Analytical Process
- LM—Leadership and Management
- PE—Personnel
- AD—Administrative Procedures
- SA—Safety

- TE—Technical (plant design bases)
- EP—Emergency Plans
- AC—Accident Assessment.

In addition, the “Terminal Learning Objectives” are numbered consecutively from outline to outline.



## TABLE OF CONTENTS FOR LESSON SPECIFICATIONS

OE—1	Application of Operating Experience .....	A-9
AN—1	Problem-Solving Skills .....	A-11
LM—1	Planning and Managing Evolutions .....	A-15
LM—2	Maintaining a Broad View of Plant Operations .....	A-19
LM—3	Application of Observation Skills .....	A-23
SA—1	Industrial Safety .....	A-25
AD—1	Personnel Accident Procedures .....	A-27
LM—4	Operating Philosophy .....	A-29
LM—5	Interpersonal Skills .....	A-33
LM—6	Shift Team Management .....	A-35
AD—2	Plant Modifications .....	A-37
AD—3	Temporary Modifications .....	A-39
AD—4	Procedure Changes .....	A-41
AD—5	Setpoint Changes .....	A-43
AD—6	Postmodification and Postmaintenance Testing .....	A-45
PE—1	Supervisory Counseling .....	A-47
PE—2	Behavioral Observation .....	A-49
PE—3	Disciplining Personnel .....	A-51
PE—4	Personnel Performance Evaluations .....	A-53
TE—1	Applying Design Bases to Operations .....	A-57
AD—7	Nonroutine Reporting Requirements .....	A-59
EP—1	Emergency Plans .....	A-61
AC—1	Transient and Accident Analysis .....	A-65
AC—2	Emergency Operating Procedures .....	A-69



## **Application of Operating Experience**

**Module: Operating Experience**

**Outline Number: OE—1**

### **Terminal Learning Objective:**

1. Promote the application of lessons learned from operating experience.

### **Enabling Learning Objectives:**

- 1.1 Describe the facility and company philosophy concerning the review and use of lessons learned from operating experience.
- 1.2 Using the appropriate facility procedure(s), explain the facility/company process for obtaining, reviewing, and assigning actions based on the lessons learned from industry- and facility-specific operating experience.
- 1.3 Describe how application of the lessons learned from operating experience can prevent a facility event and how you can make better use of the lessons learned from operating experience in the future.

### **References:**

1. Plant procedures and policies concerning receipt or initiation, review, and incorporation of industry- and facility-specific operating experience.
2. Examples of operating experience that were used to benefit facility operations, and examples that could have been used more effectively to avoid a facility event. (Note: The facility event can be any activity that caused undesirable results. It does not need to be limited to occurrence reports that are significant.)

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- 1.1,1.2 Review and discuss the facility philosophy and process for obtaining and using industry- and facility-specific operating experience. Specifically discuss the role of the shift supervisor in this process (e.g., providing the perspective of an operator in the review process and sharing facility-specific operating experience in a complete and candid manner).
- 1.3 Discuss several examples and the facility-specific benefits derived from obtaining and incorporating the lessons learned from industry- and facility-specific operating experience. Include in this discussion how the use of lessons learned from operating experience has prevented several events and how better use of operating experience could have prevented several events. Emphasize the role of the shift supervisor in achieving the maximum benefit from the examples discussed and the lessons learned from operating experience in general. Discuss how the shift supervisor can impart similar attitudes and resulting behavior to the operators. Also, discuss how the shift supervisor can influence support personnel to use the lessons learned from operating experience for their benefit.

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

- 1.1-1.3 Conduct a qualitative evaluation of trainee responses and discussions.



## **Problem-Solving Skills**

**Module: Analytical Process**

**Outline Number: AN—1**

### **Terminal Learning Objectives:**

2. Diagnose facility operating problems.
3. Lead in the use of the fundamental principles for effective problem-solving.

### **Enabling Learning Objectives:**

- 2.1 Given a significant event or accident, review the information, identify the root cause(s), and recommend and verify corrective actions.
- 2.2 When making decisions based on a large amount of input data, categorize the data, ignore irrelevant data, and prioritize important facts for evaluation and action.
- 2.3 Given a set of personnel, facility, or equipment conditions, and actions taken in response to the conditions, predict the most probable outcomes.
- 2.4 Given information that needs to be acted upon and intervening variables or distractors, conscientiously and thoroughly review the information before making a decision.
- 2.5 Once a solution to a problem has been determined, implement it, and follow up to determine that the solution is effective.
- 2.6 When one or more people have input to a decision, facilitate a discussion of the facts, issues, and possible responses by listening to input from everyone, asking questions, accepting questions, and leading the group to a decision.
- 2.7 Using a team approach (group discussion, brainstorming, etc.), develop a problem-solving plan of action for a given set of conditions.
- 2.8 Given a set of conditions, actions taken, and expected responses to the actions, diagnose the causes when the expected responses do not occur.
- 2.9 Using alternate indications for a given set of conditions, and before selecting a course of action, verify or confirm all initial assumptions made during a problem-solving activity.

- 2.10** Given a situation identified as a problem, manage the follow-through to an acceptable solution, either directly or through delegation, by setting priorities and evaluating resources.
- 2.11** Given a problem requiring resolution, anticipate the outcome of potential decisions and predict the expected impact of the final decision.
- 2.12** For a given activity, assess the impact of procedural/resource limitations and time constraints on planned actions.
- 2.13** When choosing among alternative actions, prioritize the alternatives to select the optimum choice including actions outside of established procedures.
- 2.14** Given a situation requiring a decision, consider whether the benefits outweigh the risks for selected alternatives.
- 2.15** In rapidly changing or uncertain situations, display a cautious approach to decision making.
- 2.16** Develop conservative decisions that protect the safety of the facility, personnel, and equipment.
- 2.17** Following the completion of a job, task, or step, evaluate whether the actions taken resulted in the desired response.
- 3.1** Given a situation or problem to solve, apply knowledge gained from operating experience to identify possible causes.
- 3.2** Explain and support the reasons for making cautious decisions.

**References:**

- 1. Problem-solving and root cause analysis reference(s) or handout(s).
- 2. Conduct of operations procedure.
- 3. Examples of situations (operating experience) with associated data (if case-study approach discussions are used).

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- 2.1,2.2 Review and discuss problem-solving skills with an individual who is routinely assigned to review events and problems. Include a discussion of root cause analysis, recommend corrective actions, and the basic principles and techniques that may be used.
- 2.3-2.17, 3.1-3.2 Apply the basic principles and techniques for problem-solving to actual situations or to exercises such as the case-study approach. In so doing, use a team approach to problem-solving and carry out or discuss follow-up activities for recommended corrective actions. Develop the application of caution, a questioning attitude, dealing with uncertainty, and open-mindedness during these learning activities. This may be accomplished with an occurrence investigation team, a human performance enhancement team, an experienced shift supervisor, or an instructor. During these learning activities, the trainee should be faced with operational situations encountered by shift supervisors.

**Note**

Existing simulator scenarios may be used to exercise problem-solving skills in conjunction with other training activities. For example, when an experienced reactor operator or nuclear facility operator (who is a shift supervisor candidate) acts as the shift supervisor during normal shift crew training in the simulator (for those facilities that have simulators), those individual's problem-solving skills could be exercised. Postexercise critiques and discussions should be used to review results and sharpen the problem-solving skills that were applied.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- All Conduct a qualitative evaluation of trainee responses and discussions, including caution, questioning attitude, dealing with uncertainty, and open-mindedness.



# Planning and Managing Evolutions

Module: Leadership and Management

Outline Number: LM—1

## Terminal Learning Objective:

4. Plan and implement activities to conduct evolutions, such as special tests or integrated facility operations tasks.

## Enabling Learning Objectives:

- 4.1 Given an operating evolution to be accomplished and access to all documents available in the control room area, evaluate the evolution to determine facility conditions necessary for task completion.
- 4.2 Given a statement of desired facility conditions and current facility indications showing that the desired conditions do not exist, plan the actions necessary to establish the desired conditions.
- 4.3 Given a required series of operating actions, coordinate facility activities to complete the required actions correctly and in the proper sequence.
- 4.4 Given a required series of operating actions, conduct a briefing of the operating crew to prepare them to carry out the actions efficiently and effectively.
- 4.5 Given complications that hinder the completion of a desired operating evolution, determine whether or not to continue with the evolution.
- 4.6 Given an operating task that affects or requires support from other facility departments, coordinate activities with those departments to accomplish the task efficiently and without unnecessarily impacting those departments.
- 4.7 Given a request by another department that affects operating tasks, evaluate the ability of the operating crew to support the request.
- 4.8 Given conflicting plans, evaluate the plans to establish priorities for accomplishing the tasks.
- 4.9 Given changing conditions, adjust priorities for the conduct or delay of assigned tasks to account for the changes.

- 4.10** Given conflicting plans, conflicting priorities, or inappropriate facility conditions that could affect facility safety or facility schedules, obtain the advice and guidance of appropriate individuals and managers to verify the course of action to be taken.

**References:**

1. Examples of leadership and management problems that have resulted in occurrence reports such as a facility or process accident/event following an improperly conducted test, a lack of control of testing disables or challenges safety systems, the failure to secure the system when startup test conditions were exceeded, or the nonconservative use of system trip setpoints during system startup.
2. Conduct of operations procedure.
3. DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities."

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- |                 |   |
|-----------------|---|
| 4.1-4.3,4.5-4.9 | Review and discuss the preparation necessary for special tests and integrated facility operations with the operations manager or an experienced shift supervisor. Emphasize methods for planning and implementing complex evolutions including application of problem-solving and decision-making fundamentals; bring out the primary priorities and philosophical positions of management. |
| 4.2, 4.7, 4.8   | Use a case-study approach with emphasis on correct facility conditions for special tests and the ability of the crew to support interdepartmental requests that affect operations. Referenced operating experience can support this activity.   |
| 4.1, 4.3-4.10   | A simulator (for those facilities that have them) may be used to exercise implementation skills in determining and establishing facility conditions, coordinating operator activities, and establishing and adjusting priorities.   |

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

4.1, 4.2, 4.5,  
4.7-4.9

Conduct a qualitative evaluation of trainee responses and discussions including establishing facility conditions and coordination of interdepartmental requests.

4.1, 4.3-4.10

Complete appropriate simulator objectives that include evaluating and adjusting facility conditions, coordinating operator actions, and changing priorities.





## **Maintaining a Broad View of Facility Operations**

**Module: Leadership and Management**

**Outline Number: LM—2**

### **Terminal Learning Objective:**

5. Demonstrate a broad view of facility operations.

### **Enabling Learning Objectives:**

- 5.1 Given a description of an operating task that puts the public at risk, state the steps necessary to eliminate the risk.
- 5.2 Describe what conservative actions might be necessary to prevent challenges to facility safety (or decrease in the margin of safety) during facility operations.
- 5.3 Given a series of operating tasks, evaluate each task to determine the degree to which the shift supervisor should be personally involved.
- 5.4 Given a facility condition, diagnose the impact that manual intervention, in anticipation of automatic system actions, would have on facility operation.
- 5.5 Given a facility condition involving several parallel tasks, identify the indication that must be monitored to maintain oversight and overall perspective of facility operations.

### **References:**

1. Examples of operating experience that have resulted in occurrence reports such as a severe or adverse accident following an improperly conducted test, a criticality event, or problems experienced during a heat exchanger tube rupture.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- 5.1, 5.2            Review and discuss, with an experienced shift supervisor, the necessary involvement of the shift supervisor and the impact of the shift supervisor's actions on facility operations and public safety.
- 5.2-5.5            Use a case-study approach to facility operations with emphasis on shift supervisor involvement and oversight to maintain the basic design operating considerations associated with safety. Stress the responsibility of and the need for the shift supervisor to maintain an overall perspective of facility operations and not be so drawn into a specific problem or activity that this perspective is essentially lost. Reference 3 may be helpful in demonstrating this need [e.g., taking conservative actions, monitoring appropriate indications, and exercising necessary caution when the facility approaches or is in a condition that could result in challenges to reactor facility safety or a reduced safety margin (operating experience can be used to support this activity)].
- 5.1, 5.2, 5.5        A simulator (for those facilities that have them) may be used to exercise implementation skills in advocating public safety, shift supervisor involvement, monitoring appropriate indications, and exercising caution when the facility is approaching or in a condition that could result in reduced safety.

**Note**

The simulator may be used to exercise these skills in conjunction with other learning objectives and training activities (e.g., when an experienced reactor operator or nuclear facility operator, who is a shift supervisor candidate, is acting as the shift supervisor in the simulator as part of normal shift crew continuing training).

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

5.2-5.5

Conduct a qualitative evaluation of trainee responses and discussions.

5.1, 5.2, 5.5

Complete appropriate simulator objectives that include advocating public safety, shift supervisor involvement and oversight, and exercising necessary caution when the facility is approaching or in a condition that could result in reduced safety.



## **Application of Observation Skills**

**Module: Leadership and Management**

**Outline Number: LM—3**

### **Terminal Learning Objective:**

- 6.** Apply the results of observations in the control room and facility to management of shift activities.

### **Enabling Learning Objectives:**

- 6.1** Identify the steps of the observation process.
- 6.2** Describe how the results of observation of facility and control room activities can be used.
- 6.3** Given a task affecting operations, evaluate the task to determine the level of supervision or independent verification needed.
- 6.4** Given an actual or simulated task affecting operations, identify areas for improvement and areas where additional investigation is required.

### **References:**

- 1.** Appropriate administrative procedures.

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- 6.1-6.3 Review and discuss, with an operations manager, the role of the shift supervisor in observing facility activities. Discuss the techniques for observing personnel performance and facility conditions (e.g., material, cleanliness, and industrial safety conditions) in a thorough and critical manner as part of the normal routine for the shift supervisor. Emphasize really “seeing” what exists, application of observation results, and taking action (i.e., reinforcing what is correct or taking action to correct deficiencies).
- 6.4 Perform a structured exercise of observation skills on operations activities (i.e., operators performing tasks or technicians or workers performing tasks that have a direct effect on facility operations) and inspection of facility conditions (e.g., material, cleanliness, and industrial safety conditions). Facility observations (including facility tours) with the operations manager or an experienced shift supervisor can be useful in providing the experience. Simulator activities and videotaped operational activities may also be useful in providing the experience.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- 6.1-6.3 Conduct a qualitative evaluation of trainee responses and discussion.
- 6.4 Conduct a critique during the structure exercise.

# Industrial Safety

Module: Safety

Outline Number: SA—1

## Terminal Learning Objective:

7. Evaluate potential industrial safety problems associated with work assignments or operator tasks.

## Enabling Learning Objectives:

- 7.1 Describe the effects of various facility operations on radiation levels in work areas.
- 7.2 List potential processing hazards.
- 7.3 Describe situations involving the potential for tripping, falling, dropping items, hearing loss, and sight loss.
- 7.4 Describe potential facility situations that present electrical shock hazards.
- 7.5 Describe potential facility problems associated with high-energy systems.
- 7.6 Describe the typical risks and cautions when working around rotating equipment.
- 7.7 List the methods available for determining if an industrial safety problem exists.
- 7.8 Describe any unique facility hazards.
- 7.9 While viewing a movie/videotape or on a facility tour, identify actual or potentially unsafe work practices.
- 7.10 Given a facility work assignment, predict potential safety problems and actions to take to prevent them.
- 7.11 Discuss reasons for the industrial safety program including the potential effects of safety problems on the company.

## References:

1. Company safety manual.
2. Annual safety reports.

3. Examples of leadership and management problems that have resulted in occurrence reports such as excessive personnel radiation exposures caused by inadequate work practices, an inadvertent introduction of hydrogen in the instrument and facility air systems, or extremity overexposure during system or compartment closeout inspection.

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- |               |  |
|---------------|--|
| 7.1-7.8, 7.11 | Review and discuss, with an emphasis on recognition of hazards, potential personnel injury hazards, facility radiological hazards, responsibilities of shift supervisor, preventive measures, and reasons for safety programs (i.e., potential consequences to employees and the company) with the facility safety coordinator or other individual knowledgeable of industrial safety practices. |
| 7.9           | Perform a structured exercise (observation) with a discussion on the results of the observation, including application of observation skills.  |
| 7.10          | Use a case-study approach to industrial accidents, including a discussion of accidents and injuries that have occurred at the facility, (if possible), and how they could have been prevented. Use of accident and injury reports that describe undesirable trends and the operating experience listed in occurrence reports can be used to support this activity.                               |

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- |              |  |
|--------------|--|
| 7.1-7.8,7.11 | Conduct a qualitative evaluation of trainee responses and discussions. |
| 7.9          | Review of the product resulting from the observation.                  |
| 7.10         | Review products derived by trainees during the case study.             |



## Personnel Accident Procedures

Module: Administrative Procedures

Outline Number: AD—1

### Terminal Learning Objective:

8. Apply administrative procedure requirements of personnel accidents.

### Enabling Learning Objectives:

- 8.1 Given an industrial safety event, analyze the event for the root cause(s).
- 8.2 Given a personnel accident event and using facility procedures, develop a plan to accomplish required activities.

### References:

1. Appropriate facility administrative procedures.
2. Applicable portion of company safety manual.
3. Site emergency plan.

### Enabling Learning Objectives

### Suggested Learning Activities:

- |          |   |
|----------|---|
| 8.1, 8.2 | Use a case-study approach, performed by the facility safety coordinator or another individual knowledgeable of industrial safety practices, which addresses a personnel accident and includes a diagnosis of root causes and a determination of activities to be accomplished by the shift supervisor. The case study should include a discussion of the bases for the company's safety policy, responsibilities of the shift supervisor following a personnel accident (including immediate and follow-up actions), company policy and the role of the supervisor in correcting accident causes, and the reasons for the implementation of procedural requirements during and following an accident. |
|----------|---|

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

8.1, 8.2

Review products derived by trainees during the case study, including correctness of diagnosis and the process used to determine causes, completeness, and correctness of actions to be accomplished.

# Operating Philosophy

**Module: Leadership and Management**

**Outline Number: LM—4**

## **Terminal Learning Objective:**

9. Apply the operating philosophy of the company to managing the shift.

## **Enabling Learning Objectives:**

- 9.1 Describe the responsibility and authority of the shift supervisor.
- 9.2 In a variety of circumstances, advocate the operating philosophy of the facility in accordance with facility policies and procedures and the operator's code of professionalism. This may include the following:
- Applying assertiveness skills
  - Exhibiting composure during abnormal or emergency events
  - Intervening to restore an operator's composure
  - Enforcing standards of operating performance
  - Promoting and applying teamwork skills
  - Using coaching techniques with operators
  - Advocating an overriding attitude of conservatism for facility safety
  - Exhibiting a positive, optimistic attitude
  - Demonstrating initiative and perseverance
  - Applying prudent judgment based on training, experience, and management expectations
  - Exhibiting a helpful attitude
  - Demonstrating courtesy and respect for individuals
  - Requesting needed assistance and guidance without hesitation
  - Promoting technical curiosity and inquisitiveness.
- 9.3 When presented with a scenario or facility situation that requires corrective actions by operators, explain how the operating philosophy of the facility governs your actions in responses to the scenario or situation.
- 9.4 Given an operating condition that is not addressed in procedures, direct conservative actions designed to protect the facility and public health and safety.
- 9.5 Given an action or condition that reduces the reliability of safety-related equipment, develop a plan to mitigate the situation and restore the equipment to full reliability in a timely manner.

- 9.6** Given a choice of two or more alternatives for a given facility operational situation, select the one that provides the greater margin of safety, consistent with operating requirements.
- 9.7** Given complex actual or simulated operating activities, focus on the following safety functions or evolutions:
- Transportation of fuels or wastes
  - Spent-fuel receiving and storage
  - Criticality control
  - Reactivity control
  - Process control
  - Heat sink availability
  - Primary system integrity
  - Containment integrity.
- 9.8** Explain the significance of improper water chemistry on facility operations and the importance of maintaining chemistry parameters over the life of the facility.
- 9.9** Describe the importance of correctly interfacing with outside agencies or groups.
- 9.10** Using various operational situations as examples, explain how foregoing a short-term benefit to prevent sacrificing long-term component integrity is applied to managing facility operations.

**References:**

1. Conduct of operations procedure.
2. DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities."

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- 9.1-9.10 Review and discuss the role and responsibilities of a shift supervisor interfacing with outside agencies with the operations manager or an experienced shift supervisor. Also, discuss facility goals, emphasizing a strong safety culture, and the need to place the facility in a safe condition when faced with uncertainty.
- 9.5 Use a case-study approach to developing a plan for restoring safety-related equipment that is in a condition of reduced reliability.
- 9.2, 9.4, 9.6-9.7 A simulator (for those facilities that have them) may be used to exercise implementation skills with emphasis on conservative decision making, with due consideration for facility and public safety. This may also be done with other training activities and learning objectives.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- 9.1, 9.3, 9.5, 9.8-9.10 Conduct a qualitative evaluation of trainee responses and discussions.
- 9.2, 9.4, 9.6-9.7 Complete appropriate simulator objectives that include proper application of operating philosophy, conservative decision making, and consideration of public and facility safety.



## **Interpersonal Skills**

**Module: Leadership and Management**

**Outline Number: LM—5**

### **Terminal Learning Objective:**

- 10.** Apply and advocate appropriate interpersonal skills to situations to achieve team support.

### **Enabling Learning Objectives:**

- 10.1** Given a situation that is difficult to control, acknowledge your need for help.
- 10.2** Having taken an incorrect action, acknowledge and correct the error.
- 10.3** Define “coaching” and discuss the principles and some techniques that may be used when coaching.
- 10.4** Identify operational situations where coaching can be used to improve team performance.
- 10.5** Given an operational situation, demonstrate coaching techniques that improve individual and team performance.
- 10.6** Explain how to use coaching techniques to perform the following:
  - Boost the confidence of an individual or crew
  - Boost the morale of an individual or crew
  - Foster increased participation from quiet individuals
  - Encourage professional behavior.

### **References:**

1. Appropriate company human resource guidance.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- |                  |   |
|------------------|---|
| 10.1-10.4, 10.6  | Discuss leadership and management principles with the operations manager or an experienced shift supervisor. Emphasize personal and crew limitations and the application of coaching techniques.                                    |
| 10.1, 10.2, 10.5 | Perform a role-play as a shift supervisor in a typical facility situation with emphasis on application of interpersonal skills that includes acknowledging and correcting errors, requests for assistance, and coaching techniques. |
| 10.1, 10.2, 10.5 | A simulator (for those facilities that have them) can be used to exercise implementation skills in acknowledging and correcting errors, requests for assistance, and coaching techniques.   |

**Note**

The simulator can be used to exercise these skills in conjunction with other learning objectives, such as LM—6.

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

- |                  |  |
|------------------|--|
| 10.3, 10.4, 10.6 | Conduct a qualitative evaluation of trainee responses and discussion.  |
| 10.1, 10.2, 10.5 | Conduct a critique of role-playing activities that includes acknowledging and correcting errors, willingness to ask for assistance, and coaching techniques. |
| 10.1, 10.2, 10.5 | Complete appropriate simulator objectives that includes acknowledging and correcting errors, willingness to ask for assistance, and coaching techniques.     |



## Shift Team Management

Module: Leadership and Management

Outline Number: LM—6

### Terminal Learning Objective:

11. Manage the shift team.

### Enabling Learning Objectives:

- 11.1 Given a rapidly changing actual or simulated operational task, demonstrate the following attributes of leadership to successfully accomplish and control the task:
  - Motivating the control room crew
  - Supervising the control room crew
  - Establishing and enforcing standards of behavior
  - Directing actions of individuals and the team
  - Applying facilitative techniques, when appropriate, to reinforce teamwork (e.g., participative problem-solving)
  - Establishing priorities
  - Communicating expectations to the control room crew and support organizations
  - Informing operations or facility management of facility conditions
  - Evaluating results and providing constructive feedback
  - Maintaining an overall perspective of current facility conditions and desired end conditions.
- 11.2 Given a requirement to complete a task, identify established and desired conditions under which delegation of the task is appropriate.

### References:

1. Appropriate company human-resource guidance.

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

11.1, 11.2

Engage in a discussion of leadership and management techniques applicable to supervising the shift team, including delegation of tasks and follow-up to completion with support organizations, with the operations manager or an experienced shift supervisor.

11.1, 11.2

Conduct a structured exercise in the simulator or in an actual on-shift situation that would exercise implementation of shift team management. Facilitate discussion and develop plans to overcome difficulties encountered on the job. These routines may be done with other training and learning objectives.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

11.1, 11.2

Perform a critique of the structured exercise or the actual on-shift experience.

## Facility Modifications

Module: Administrative Procedures

Outline Number: AD—2

### Terminal Learning Objective:

12. Evaluate the effect of modifications or configuration changes to the facility.

### Enabling Learning Objectives:

- 12.1 Given a proposed facility modification package, describe the reviews required for approval of the modification.
- 12.2 Given a proposed facility modification package, explain the purpose of each review in the approval process.
- 12.3 Describe what potential problems may occur from inadequate design review.
- 12.4 Given a proposed facility modification package, evaluate the package for potential problems.
- 12.5 Given a proposed facility modification package, explain how the change will affect facility operations.

### References:

1. Appropriate facility administrative procedures

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- |                  |   |
|------------------|---|
| 12.1, 12.3       | Discuss with the manager, who is knowledgeable of the entire modification process: the key steps, and the reasons for the steps in the modification process; authority of the shift supervisor; basis for this authority; and the associated responsibilities of the shift supervisor as seen by facility, design engineering, and construction managers. |
| 12.2, 12.4, 12.5 | Use a case-study approach to a modification that includes evaluation of potential problems with the design, facility limitations during work, and how to determine the effects of the modification on facility operation.   |

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- |                  |  |
|------------------|--|
| 12.1, 12.3       | Conduct a qualitative evaluation of trainee responses and discussions. |
| 12.2, 12.4, 12.5 | Review responses derived by trainees during the case study.            |

## Temporary Modifications

Module: Administrative Procedures

Outline Number: AD—3

### Terminal Learning Objective:

13. Apply and promote the philosophy underlying administrative procedure requirements for temporary modifications.

### Enabling Learning Objectives:

- 13.1 Given a recommended temporary modification and using administrative procedures, describe the review and approval process for a temporary modification and discuss the reasons for the key steps in the process.
- 13.2 Given various requests for temporary modifications and facility conditions, evaluate the impact of temporary modifications on facility conditions.

### References:

1. Appropriate facility administrative procedures.
2. Applicable facility operating experience.
3. Conduct of operations procedure.
4. DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities."

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- 13.1 Discuss with the manager who is knowledgeable of the entire temporary modification process: what is an allowed temporary modification, including lifted leads and jumpers; the review and approval process; the authority of the shift supervisor; basis for this authority; and associated responsibilities in the process, as seen by facility and design engineering managers.
- 13.2 Use a case-study approach to various situations of a requested temporary modification; focus on evaluating all applicable considerations for the facility condition, any limitations that would be necessary, any individuals whose advice should be sought, and when authorization should not be given or should be delayed to involve the facility management team.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- 13.1 Conduct a qualitative evaluation of trainee responses and discussions.
- 13.2 Review responses derived by trainees during the case study.

## Procedure Changes

Module: Administrative Procedures

Outline Number: AD—4

### Terminal Learning Objective:

14. Apply and promote the philosophy underlying administrative requirements for procedure changes.

### Enabling Learning Objectives:

- 14.1 Apply administrative procedure requirements for temporary or permanent procedure changes; discuss the reasons for these requirements.
- 14.2 Given a procedural change request for approval, evaluate the effect of a recommended procedure change on facility operations and safety to determine if a procedure change should be processed.
- 14.3 For an adverse operational situation, discuss the authorization of a procedural deviation to protect public health and safety as allowed by administrative procedures and discuss the factors considered and the benefits and risks to making such a decision.

### References:

1. Appropriate facility administrative procedures.
2. Conduct of operations procedure.
3. DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities."

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- 14.1 Engage in a discussion with management regarding the authority of the shift supervisor, using the basis for this authority, and associated responsibilities and expectations of management when authorizing change approvals.
- 14.2 Discuss factors that should be considered before approving a procedure change, using various actual or hypothetical recommended changes. Also, discuss who should be consulted if advice is desired and typical situations where authorization should **not** be given or should be delayed in order to involve the facility management team.
- 14.3 Discuss factors that should be considered before authorizing procedural deviations, and management expectations associated with such an authorization. Apply discussion to actual or hypothetical situations emphasizing the factors to be considered and the benefits and risks to authorizing a procedural deviation, especially in an unusual situation when it is deemed that public health and safety require such an authorization.

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

- 14.1-14.3 Conduct a qualitative evaluation of trainee responses and discussions.



## Setpoint Changes

Module: Administrative Procedures

Outline Number: AD—5

### Terminal Learning Objective:

15. Apply and promote the philosophy underlying administrative procedure requirements for setpoint changes.

### Enabling Learning Objectives:

- 15.1 Identify and discuss the reasons for the required actions necessary to implement a setpoint change.
- 15.2 Given a need to adjust an equipment setpoint, evaluate the appropriateness of making the adjustment.

### References:

1. Appropriate facility administrative procedures.
2. Applicable facility operating experience.
3. Conduct of operations procedure.
4. DOE Order 5480.19, “Conduct of Operations Requirements for DOE Facilities.”

**Enabling  
Learning  
Objectives**

15.1, 15.2

**Suggested Learning Activities:**

Discuss with management the key steps and the reasons for these steps in the setpoint change process, stressing the basic principles and operations impact of the process, authority of the shift supervisor, basis for this authority, and associated responsibilities as seen by facility and design engineering managers. Also, address considerations prior to approving adjustment, including who should be consulted if advice is desired, typical situations when authorization should not be given or should be delayed to involve the facility management team, and required actions to implement a setpoint change. Apply discussion to actual or hypothetical situations in a role-playing environment.

**Enabling  
Learning  
Objectives**

15.1, 15.2

**Suggested Evaluation Activities:**

Conduct a qualitative evaluation of trainee responses and discussions.

## **Postmodification and Postmaintenance Testing**

**Module: Administrative Procedures**

**Outline Number: AD—6**

### **Terminal Learning Objective:**

- 16.** Apply and promote the philosophy underlying postmodification and postmaintenance test requirements.

### **Enabling Learning Objectives:**

- 16.1** Identify when postmodification and postmaintenance testing are required using facility procedures and regulatory requirements.
- 16.2** Given a request to perform postmodification or postmaintenance testing, determine if the test can be conducted considering the potential adverse effects on facility conditions and personnel safety.
- 16.3** Determine if test results meet predetermined test criteria and if equipment may be returned to service.
- 16.4** Given the appropriate procedures, identify the required postmodification testing for several given situations.

### **References:**

1. Appropriate facility administrative procedure.
3. Examples of operating experience that have resulted in occurrence reports such as valve inoperability caused by motor-operator failures, and lack of testing control that disables or challenges safety systems.

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- 16.1-16.3 Discuss with the maintenance manager, engineering manager, or an experienced shift supervisor when testing is required and how to determine appropriate testing. This discussion should focus on the principles for determining what test is needed and understanding the intent of the test [i.e., testing that will verify proper operational performance of the equipment and system(s) worked on and isolated during the work]. Discuss the adequacy of facility conditions for safe test performance and evaluating test results. Focus on the responsibility and authority of the shift supervisor, the basis for this authority, and associated responsibilities as seen by facility and design engineering managers. Also, apply these testing principles to a discussion of postmaintenance testing and, as appropriate, postmodification testing.
- 16.2-16.4 Use a case-study approach to postmodification and postmaintenance testing including determining appropriate testing, considerations for authorizing performance, who should be consulted if advice is desired, typical situations when authorization should not be given or should be delayed in order to involve the facility management team, and evaluate the test results for follow-up action as necessary. Operating experience listed in occurrence reports can support this activity.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- 16.1-16.3 Conduct a qualitative evaluation of trainee responses and discussions.
- 16.2-16.4 Review responses derived by trainees during the case study.

## Supervisory Counseling

Module: Personnel

Outline Number: PE—1

### Terminal Learning Objective:

17. Apply effective supervisory counseling.

### Enabling Learning Objectives:

- 17.1 Define counseling.
- 17.2 Describe counseling principles and techniques to be used by supervisors.
- 17.3 Explain the supervisor's role as a counselor.
- 17.4 Discuss precautions associated with counseling employees.
- 17.5 Discuss community or company organizations to which employees could be referred for counseling.

### References:

1. Company policies and procedures related to conduct and documentation of employee counseling.

### Enabling Learning Objectives

### Suggested Learning Activities:

- |           |   |
|-----------|---|
| 17.1-17.5 | Have a discussion with a human resources person regarding the role, responsibilities and limits of the shift supervisor during personnel counseling. Discuss the techniques that can be used, emphasizing the responsibility of the shift supervisor for developing assigned personnel. Include in this discussion any aspects unique to the shift supervisor position. |
|-----------|---|

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

17.1-17.5

Conduct a qualitative evaluation of trainee responses and discussions.

## **Behavioral Observation**

**Module: Personnel**

**Outline Number: PE—2**

### **Terminal Learning Objective:**

- 18.** Apply the company policy on behavioral observation.

### **Enabling Learning Objectives:**

- 18.1** Describe your responsibilities as supervisor with regard to the fitness-for-duty program.
- 18.2** Given a group of scenarios that describe employee behavior on the job, classify each scenario with respect to normal or aberrant behavior.
- 18.3** For each scenario classified as aberrant behavior, describe the applicable counseling technique to be used by the supervisor.
- 18.4** For each scenario classified as aberrant behavior, identify the applicable policy or practice relative to fitness-for-duty.
- 18.5** For each scenario classified as aberrant behavior, provide the appropriate supervisory counseling.

### **References:**

1. Company policy or procedures on fitness-for-duty.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- 18.1-18.4 Have a discussion with human resources person regarding the role of fitness-for-duty in a nuclear environment (including importance to company and public, implications, regulations, and the special role of supervisor), responsibility of the supervisor (including accountabilities and actions), expectations of management, recognition of aberrant behavior, and applicable supervisory counseling limitations and techniques. Include in this discussion any aspects unique to the shift supervisor position.
- 18.5 Use a case-study approach or role-play of supervisory counseling of an employee exhibiting aberrant behavior. Videotaped scenarios can be useful in this activity. Facilitate feedback from the case study or role-play that includes the following:
- Employee perceptions and supervisor viewpoints
  - Effectiveness of the counseling process
  - Application and implementation of company policy.

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

- 18.1-18.4 Conduct a qualitative evaluation of trainee responses and discussions.
- 18.5 Review products derived by trainees during case study, critique, or role-playing activity.



## **Disciplining Personnel**

**Module: Personnel**

**Outline Number: PE—3**

### **Terminal Learning Objective:**

- 19.** Apply and defend company policy in situations requiring disciplining personnel.

### **Enabling Learning Objectives:**

- 19.1** Discuss counseling principles and techniques typically used in dealing with employee discipline matters.
- 19.2** State and discuss the possible reasons for degraded work performance by an individual.
- 19.3** Identify employee behavior that may be precursor to employee discipline problems.
- 19.4** Given various scenarios that describe employee discipline problems, describe the applicable counseling techniques to be used.
- 19.5** Given various scenarios that describe employee discipline problems, identify the applicable company policy or practice relative to the discipline problems.
- 19.6** Given various scenarios that describe employee discipline problems, recognize the employee discipline problems that may require involvement or intervention by managers above the shift supervisor or of persons of agencies outside the organization.
- 19.7** In a role-playing setting, counsel an employee who is experiencing a discipline problem. Advocate a position or concern, manage the conflict, and provide complete input and feedback. Demonstrate use of operating experience as a rationale for particular desired behavior.

### **References:**

1. Appropriate company policy or procedure.
2. Bargaining unit agreement.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- 19.1-19.6 Have a discussion with a human-resources person or manager who can portray the company or facility philosophy regarding the role of the shift supervisor in identifying precursors to employee discipline problems and in counseling or in referring them to other persons (either inside or outside the company). Discussions should include limitations of supervisory actions, and the actions that a shift supervisor should take for different situations, including management's expectations of shift supervisor involvement. Include in this discussion any aspects to the shift supervisor position.
- 19.7 Perform a role-play of a shift supervisor counseling an employee who is experiencing discipline problems. Facilitate feedback from the role-play to include the following:
- Employee perceptions and manager viewpoints
  - Effectiveness of the counseling process
  - Application and implementation of company procedures.

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

- 19.1-19.6 Conduct a qualitative evaluation of trainee responses and discussions.
- 19.7 Conduct a critique of the role-playing activity.

## **Personnel Performance Evaluations**

**Module: Personnel**

**Outline Number: PE—4**

### **Terminal Learning Objective:**

- 20.** Evaluate personnel performance.

### **Enabling Learning Objectives:**

- 20.1** Discuss counseling principles and techniques typically used in conducting performance evaluations of employees.
- 20.2** Identify counseling principles and techniques typically used in guiding the career development of employees.
- 20.3** Describe how counseling techniques can be applied to providing performance evaluation feedback to employees at times other than the annual appraisal review.
- 20.4** Describe the process for completing the employee appraisal form.
- 20.5** Describe the process for establishing individual performance goals to improve employee performance.
- 20.6** Identify techniques for observing and recording employee performance on an ongoing basis.
- 20.7** Discuss the potential problems associated with conducting employee performance appraisals.
- 20.8** Discuss the reason for maintaining confidentiality in conducting employee performance appraisals.
- 20.9** Using an operator job description, discuss job performance standards for that position.
- 20.10** Following an observation of control room activities, discuss the operator's personal abilities and limitations.
- 20.11** Given information about a fictitious operator, complete a performance appraisal form on that person.

**20.12** In a role-playing setting, conduct a review of a performance appraisal with an individual using a completed performance appraisal.

**References:**

1. Company policy and procedures on performance evaluations.
2. Bargaining unit agreement.

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

- |              |  |
|--------------|--|
| 20.1-20.9    | Have a discussion with a human-resources person or operations manager on personnel evaluation methods and standards, responsibilities of the supervisor, expectations of management, and applicable counseling techniques (including use of objectives, observations, and facts; timely, candid, and two-way constructive discussions with employees; and the realization that each individual can improve their performance with the help of appropriate coaching from their supervisor). Include in this discussion any aspects unique to the shift supervisor position. |
| 20.10, 20.11 | Perform a structured exercise to highlight the difficulty of observing and removing subjectivity from writing performance appraisals. Plans should be developed for dealing with the same types of issues encountered on the job.  |
| 20.12        | Perform role-play of a shift supervisor conducting a review of a performance appraisal with an individual. Facilitate feedback from the role-play and include the following: <ul style="list-style-type: none"><li>• Effectiveness of the counseling process</li><li>• Application and implementation of company procedures</li><li>• Challenges in conducting the review.</li></ul>   |

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

- |              |  |
|--------------|--|
| 20.1-20.9    | Conduct a qualitative evaluation of trainee responses and discussions. |
| 20.10, 20.11 | Use critiques during the structured exercises.                         |
| 20.12        | Conduct a critique of role-playing activity.                           |



## Applying Design Bases to Operations

Module: Technical

Outline Number: TE—1

### Terminal Learning Objective:

21. Apply design bases to operational situations.

### Enabling Learning Objectives:

- 21.1 Given various facility conditions, determine if operation is outside facility design bases.
- 21.2 In the presence of conditions outside the normal operating limits, identify any safety concerns associated with facility operations.
- 21.3 In the presence of conditions outside the design bases, identify the safety concerns associated with facility operations.
- 21.4 Given a situation where the facility is known to be outside the design bases, determine the appropriate course of action to return the facility to within design bases.
- 21.5 Explain the design basis for environmental qualification of instrumentation.
- 21.6 Given a facility-specific event that has the potential for putting the facility outside the design bases (such as loss of the residual heat removal system, and improper surveillance or maintenance), evaluate the effect of the event on facility safety using the appropriate design bases.

### References:

1. Facility safety analysis reports regarding design bases.
2. Facility operating limits.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

- None Review basic concepts covered in previous nuclear facility operator training, to refamiliarize the trainee with information contained in the facility safety analysis report and plant operating limits.
- 21.1-21.5 Have a discussion with an operations instructor (having individual knowledge of facility design criteria) on fundamental design considerations and the relation of these considerations to facility operation and operating limits. Stress aspects of design that affect facility safety, including systems important to mitigating facility transients. Discuss the role of design bases and operating limits in minimizing the potential for adverse interactions among systems (e.g., adjustments of cooling water to a large component may affect cooling to other components served by that cooling water system). Discuss environmentally qualified equipment and the impact upon facility operation if environmental qualification deficiencies are encountered.
- 21.6 Use a case-study approach to facility-specific, challenging, and plausible event(s) that addresses the potential of putting the facility outside the design bases, such as loss of residual heat removal. Operating experience may be used to support this activity. (A simulator may also be used for demonstration following classroom discussion.)

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

- 21.1-21.5 Conduct a qualitative evaluation of trainee responses and discussions.
- 21.6 Review responses derived by trainees during the case study or simulator exercise as described by learning objectives.



## Nonroutine Reporting Requirements

**Module: Administrative Procedures**

**Outline Number: AD—7**

### Terminal Learning Objective:

22. Apply nonroutine reporting requirements to operational situations.

### Enabling Learning Objectives:

- 22.1 Given a facility condition, analyze the process or system status to determine the reporting requirements.
- 22.2 Given a facility condition and using facility procedures, determine the reporting requirements.
- 22.3 Given a facility condition and using facility procedures, formulate required reports and identify proper notification.
- 22.4 Apply administrative and corporate philosophy to occurrence reporting requirements.

### References:

1. Appropriate facility administrative procedures.
2. Federal, state, and local reporting requirements (excluding emergency plan reports).

### Enabling Learning Objectives

### Suggested Learning Activities:

None	Review basic concepts covered in nuclear facility operator training, to refamiliarize the trainee with the nonroutine reporting requirements.
22.1-22.4	Discuss with an operations manager or an experienced shift supervisor situations with potential for adversely affecting the environment, and reasons for required reports, including environmental impact of parameters monitored, consequences to the company for failure to report, responsibilities to initiate various special reports, reporting priorities, and practical application of procedures for various situations.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

22.1-22.4

Conduct a qualitative evaluation of trainee responses and discussions.

# Emergency Plans

**Module: Emergency Plans**

**Outline Number: EP—1**

## **Terminal Learning Objectives:**

23. Determine protective measures for onsite personnel.
24. Develop priorities for managing the event while implementing the emergency plan.
25. Recommend protective action guidelines to public officials.
26. Determine additional resources needed during an emergency event.
27. Develop emergency director turnover information.
28. Maintain necessary communications during an emergency event.

## **Enabling Learning Objectives:**

- 23.1 Given a facility condition requiring event classification, determine protective measures for onsite personnel in accordance with the emergency plan.
- 23.2 Develop a plan for protection of onsite personnel when normal protective measures, routes, or devices are constrained.
- 24.1 Describe the responsibilities of the shift supervisor in managing an emergency event while implementing the emergency plan.
- 24.2 Given an emergency event condition, describe the typical decisions (with priorities) that a shift supervisor must make in transitioning from normal operations to coping with an emergency event and implementing the emergency plan.
- 24.3 Given an emergency event condition, assign priorities to activities that ensure resources are appropriately directed in order to manage the facility condition and implement the emergency plan in accordance with the facility procedure.
- 25.1 Given emergency event condition and the emergency plan, identify the proper protective action recommendations in accordance with the emergency plan.
- 25.2 Make conservative recommendations based on system status and given information.

- 25.3 Given emergency conditions, identify constraints or impediments that may impact timely protection of the general public.
- 25.4 Given emergency event conditions, analyze the radioactive release data and make conservative recommendations in accordance with the emergency plan.
- 26.1 Identify organizations available to offer equipment or assistance for mitigating an emergency.
- 26.2 Given emergency conditions, determine additional resources needed for mitigating the event.
- 27.1 Describe the responsibilities of the site emergency director.
- 27.2 Explain the process of turning over the site emergency director from the shift supervisor to the assigned director.
- 27.3 Given emergency conditions, develop the relevant information to conduct a turnover of the site emergency director.
- 27.4 Given emergency conditions, demonstrate a proper and timely turnover of the site emergency director.
- 28.1 Explain the shift supervisor's responsibilities to the Emergency Control Centers before and after the turnover of the site emergency director in accordance with the emergency plan.
- 28.2 Given emergency event conditions, accurately communicate the required information in accordance with the emergency plan.

**References:**

1. Site emergency plan.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

None	Review basic concepts covered in previous nuclear facility operator training, to refamiliarize the trainee with information contained in the site emergency plan.
23.1, 23.2	Discuss with a senior member of the facility management team the emergency plan, with emphasis on responsibilities and application of procedures and basic philosophy associated with key steps in the procedures. A simulator may be useful to exercise application in conjunction with other training related to the emergency plan.
24.1-24.3	Have a discussion with an emergency preparedness director or use a case-study approach, with emphasis on the importance of managing the transition from normal operation to coping with an emergency while implementing the emergency plan; a thorough discussion of the priorities of the simultaneous functions (to include turnover to the site emergency director) that are carried out by the shift supervisor is essential. A simulator may be useful to exercise application in conjunction with other training related to the emergency plan.
25.1-25.4 26.1, 26.2 27.1-27.4 28.1, 28.2	Have a discussion with an emergency preparedness director emphasizing appropriate conservative protective action recommendations, resources to mitigate an emergency event, determining relevant information, and responsibilities of the director and the shift supervisor. Role-play may be a useful technique for all or portions of the discussion.

**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

All	Conduct a qualitative evaluation of trainee responses and discussions.
24.1-24.3	Complete appropriate simulator objectives, with emphasis on transitioning from an emergency operating procedure to the emergency plan, and priorities in directing resources to manage the facility while implementing the emergency plan.
24.1-24.3	Review responses derived by trainees during the case study to include assigning priorities and managing the transition in implementing the emergency plan.
27.1-27.4	Conduct a critique of the role-playing activity, with emphasis on the process, and expected information to be demonstrated in turnover to the site emergency director.
28.1, 28.2	Conduct a critique of the role-playing activity with emphasis on the shift supervisor's responsibilities.

## Transient and Accident Analysis

Module: Accident Assessment

Outline Number: AC—1

### Terminal Learning Objective:

29. Apply transient and accident analysis considerations to accident events.

### Enabling Learning Objectives:

- 29.1 Discuss the assumptions used in the facility accident analysis.
- 29.2 Using the facility accident analysis curves, predict facility response to varied initial conditions.
- 29.3 Given a set of accident data, recognize the parameters to determine the system or process conditions.
- 29.4 Given a set of accident data, evaluate parameters to determine if a loss of cooling flow is occurring prior to equipment damage.
- 29.5 Given a set of accident data, identify when conditions have degraded to such an extent that system or process damage is possible.
- 29.6 During simulated conditions, demonstrate a thorough understanding of, and the skills needed to maintain and restore, the following safety conditions:
- Transportation of fuels or wastes
  - Spent-fuel receiving and storage
  - Criticality control
  - Reactivity control
  - Process control
  - Heat sink availability
  - Primary system integrity
  - Containment integrity.
- 29.7 For a given facility operational condition, identify and discuss the failure mechanism (human or equipment) that would provide a large risk of facility damage.
- 29.8 List the parameters used and identify the indications of a degraded process.

**29.9** State the potential problems of a degraded system or process, and discuss policies and procedures that are used to diagnose and mitigate the situation.

**References:**

1. Safety Analysis Report.
2. Probabilistic Risk Assessment data or reports.

**Enabling  
Learning  
Objectives**

**Suggested Learning Activities:**

None	Review concepts covered in previous training, to refamiliarize the trainee with information that has operational impact contained in the safety analysis report.
29.1, 29.2 29.6-29.9	Have a discussion with individual knowledgeable in transient and accident analysis, with an emphasis on providing the shift supervisor a thorough operational understanding of transient and accident analyses that will enhance the ability to make decisions during emergencies. Include a discussion of the concepts and information that have operational impact contained in the Probabilistic Risk Assessment. Operating experience may be useful to relate the reasons and operational considerations resulting from the analyses.
29.3, 29.4	Use a case-study approach with emphasis on understanding, evaluating, and responding to the parameters affecting core heat transfer capabilities and accident mitigation.
29.5, 29.6	A simulator (for those facilities that have them) should be used to exercise implementation skills related to the application of transient and accident analysis to events that could result in system or process damage. This should be done to the extent that the simulator models conditions approaching core damage. Emphasize the understanding and skills needed to maintain and restore safety functions.



**Enabling  
Learning  
Objectives**

**Suggested Evaluation Activities:**

29.1, 29.2,  
29.6-29.9

Conduct a qualitative evaluation of trainee responses and discussions.

29.3, 29.4

Review products derived by trainees during the case study that would include parameters for evaluating system or process capabilities and accident mitigation.

29.5, 29.6

Complete appropriate simulator objectives that would include identification of, and proper response to, degraded system or process conditions.



## **Emergency Operating Procedures**

**Module: Accident Assessment**

**Outline Number: AC—2**

### **Terminal Learning Objective:**

- 30.** Apply the bases of the emergency operating procedures to accident events that may require deviation from the procedures.

### **Enabling Learning Objectives:**

- 30.1** Explain the methods of verifying proper implementation of the emergency operating procedures, in accordance with facility operating philosophy.
- 30.2** Given an accident scenario, predict the facility response to the recommended actions by applying knowledge of emergency operating procedure bases.
- 30.3** Describe and discuss example situations that allow for deviation from emergency operating procedures, in accordance with facility administrative procedures.
- 30.4** Given situations that allow for deviation from emergency operating procedures, discuss the benefits of the deviation and potential problems if improperly applied.

### **References:**

1. Facility emergency operating procedures.
2. Documents that describe the emergency operating procedures design bases.
3. Facility administrative procedures on deviation from emergency operating procedures.

**Enabling  
Learning  
Objectives****Suggested Learning Activities:**

None	Review basic concepts covered in previous training, to refamiliarize the trainee with information contained in the emergency operating procedure design bases.
30.1-30.3	Have a discussion with an individual that is knowledgeable in transient and accident analysis, with an emphasis on providing the shift supervisor a thorough, design-based operational understanding of emergency operating procedures that will enhance their ability to make decisions during emergencies.
30.4	Use a case-study approach with emphasis on situations where deviation from emergency operating procedures is allowed. Also, discuss the limitations and problems associated with such a decision. Trainee's plans may be run in the simulator to illustrate the results.

**Enabling  
Learning  
Objectives****Suggested Evaluation Activities:**

30.1-30.3	Conduct a qualitative evaluation of trainee responses and discussions.
30.4	Review responses derived by trainee during the case study to include allowances in deviation from emergency operating procedures and associated problems and benefits.

**Note**

A simulator (for those facilities that have simulators) may be used to apply learning from discussions and case studies for evaluation of the terminal learning objective.

**APPENDIX B**  
**SHIFT SUPERVISOR PROFESSIONAL**  
**DEVELOPMENT SEMINAR**



## **SHIFT SUPERVISOR PROFESSIONAL DEVELOPMENT SEMINAR**

A professional development seminar for shift supervisors may be conducted by the facility. The purpose of this appendix is to provide facility and training management a description of the seminar for their use in planning professional development assignments. The seminar should augment, but not replace, each facility's professional development program for shift supervisors.

A major attribute of this seminar is the interaction of trainees with their peers from other shifts in the facility. The benefit of this interaction will be the sharing by peers of different experiences, perspectives, and methods for effectively managing a shift crew. Each newly qualified shift supervisor should attend the seminar a short time after being assigned to the position.

The content of the Shift Supervisor Professional Development Seminar should be based upon the results of the shift supervisor job and task analysis. It should incorporate the knowledge and skills beyond those necessary for initial training and qualification. The content of the seminar is primarily focused on leadership and management learning objectives, including some of the same subject areas as were in the initial-training program for shift supervisors. The seminar should be conducted in a facilitative manner that allows shift supervisors to share experiences with one another, and should include the following subjects:

- Planning Facility Operations—predicting complications to facility operation and developing plans to avoid or mitigate those complications.
- Oversight of Facility Operations—evaluating conditions of reduced facility safety and directing actions to minimize the impact of adverse conditions on facility operations and on public safety.
- Applying Facility Resources—developing time-efficient strategies, constructing alternative strategies for task completion, delegating tasks, and developing priorities.
- Managing the Shift Team—techniques for managing the direction of a team's efforts in accomplishing goals.

- Promoting Team Communication—application of team communication skills and the shift supervisor's role in promoting good communications.
- Team-Building Techniques—role of the team leader, facilitation skills to obtain the best results from the team as a whole and when participative management may be exercised.
- Applying Interpersonal Skills—various situations of interaction between the shift supervisor and the shift crew or other facility members in which the shift supervisor should optimize the responses of the individuals involved to achieve management objectives.
- Fact Gathering Through Interviews—the interview process, common interviewer mistakes, and listening techniques. (Type of interviewing addressed involves day-to-day facility interactions with operators, maintenance personnel, technicians, engineers, and other support personnel.)
- Applying Problem-Solving Fundamentals—decision making in uncertain circumstances, considering alternatives, resolving minor problems, considering preemptive actions, and applying facility and industry experience to corrective actions.
- Conducting Group Presentations or Meetings—preparing for presentations, directing and facilitating discussion, and responding to questions.
- Case Studies of Selected Industry Operating Experience—many of the above areas should be discussed using operating experience. Additionally, some industry operating experience should be discussed to reinforce generic industry operating principles (e.g., Three Mile Island and Chernobyl).

The facility manager should be provided a summary of the seminar as their shift supervisors participate so that the facility management team is aware of the seminar content and can reinforce the principles developed during the seminar by their day-to-day interactions with the shift supervisors.



CONCLUDING MATERIAL

Review activities:

Preparing activity:

DOE Facilities

ANL-W, BNL, EG&G Idaho,  
EG&G Mound, EG&G Rocky Flats,  
LLNL, LANL, MMES, ORAU, REECo,  
WHC, WINCO, WEMCO, and WSRC.

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DOE Program Offices

AD, DP, EH, EM, ER, NP, NS, RW.

DOE Field Offices

AL, CH, ID, NV, OR, RL, SR, SAN, RF.