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DOE HANDBOOK

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



U.S. Department of Energy
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FOREWORD

1. This Department of Energy (DOE) Handbook is approved for use by all DOE Components and their contractors. The Handbook incorporates editorial changes to DOE-STD-1061-93, *Guide to Good Practices for the Selection, Training, and Qualification of Shift Supervisors*, and supersedes DOE-STD-1061-93. Technical content of this Handbook has not changed from the original technical standard. Changes are primarily editorial improvements, redesignation of the standard to a Handbook, and format changes to conform with current Technical Standards Program procedures.

2. This technical standard provides guidance to DOE staff and contractors 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 training program. This guide can be used in developing a program for initial and continuing training.

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

4. DOE technical standards, such as this Handbook, do not establish requirements. However, all or part of the provisions in a technical standard can become requirements under the following circumstances:

(1) they are explicitly stated to be requirements in a DOE requirements document; or

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

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1. INTRODUCTION

1.1 Purpose

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. The shift supervisor requires a broad perspective of facility operations and a high degree of proficiency when interacting with people to implement facility policies and procedures. In addition, the responsibilities of the shift supervisor normally include the following:

- C remaining in a supervisory role and avoiding activities that could detract from the primary responsibility of maintaining oversight of activities, particularly during abnormal and emergency operations
- C making conservative decisions as the senior facility manager on shift, with protection of the health and safety of personnel and the public being of highest priority
- C promoting teamwork and using effective communications while supervising the control room team and during interactions with all personnel who support facility operations
- C supporting and instilling the commitment to excellence established by the management team during day-to-day activities
- C applying the lessons learned from in-house and industry operating experience to facility operations
- C becoming actively involved in operations personnel qualification, requalification, and training to ensure that operators are properly trained to established standards and qualified to perform their assigned tasks
- C having initiative and perseverance in planning and carrying out scheduled facility activities; thinking ahead so that these activities can be accomplished in an orderly, efficient, and conservative fashion

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- C providing effective oversight of activities supporting complex and infrequently performed evolutions such as startup and shutdown and providing oversight during the conduct of all facility operations
- C directing facility operations in a manner that protects the environment (for example, during liquid and gaseous radiation releases, chemical usage and control)
- C ensuring appropriate diagnosis of facility problems by monitoring of appropriate parameters and interpretation of data by personnel, and then concurring in appropriate corrective actions
- C recognizing the need for, and obtaining, advice and help when appropriate; keeping appropriate managers informed of facility performance and problems
- C being cognizant of removal of equipment or systems from service for maintenance or modification, taking into account the effect on facility safety and reliability, always maintaining operation within the design bases
- C being cognizant of the performance of surveillance testing in conjunction with other facility activities to minimize transients and system/equipment outages
- C being cognizant of chemistry, and coordinating with chemistry personnel to resolve chemistry-related problems; understanding the long-term impact of chemistry deviations/excursions on facility component life
- C performing facility inspections and observing personnel during the conduct of their work to identify and correct problems involving personnel performance, policies and procedures, housekeeping, materiel condition, and personnel hazards; and reinforcing management expectations
- C verifying that shift personnel are fit for duty
- C making cautious decisions when administering activities dealing with conditions hazardous to personnel (such as work in high radiation areas and confined spaces, working on high-voltage electrical equipment, and movement of heavy loads)
- C taking conservative actions during unusual conditions that could hazard the operation
- C recognizing trends that may result in equipment damage or a reduction in facility safety, and taking prompt remedial action

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- C applying the safety limits, limiting safety system settings, and limiting conditions for operation as required by technical safety requirements
- C making cautious decisions when dealing with system integrity
- C recognizing when the facility is potentially outside the design bases and implementing appropriate procedures and regulatory requirements
- C authorizing deviation from technical safety requirements as allowed by facility policy and procedures
- C ensuring appropriate mitigation strategies are applied when abnormal or emergency operating procedures are implemented by providing oversight and maintaining an overall awareness of facility status
- C acting as the emergency director when the emergency plan is implemented, until relieved
- C directly supervising the placing and maintaining of the facility in a safe configuration

Training for the shift supervisor goes beyond the training for the nuclear facility operator or senior 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.

The initial training in Appendix A, Shift Supervisor Initial Training Lesson Specifications, was designed for nuclear facility operators or senior reactor operators with on-shift experience who have been selected as candidates for assuming the duties of shift supervisor. If candidates do not have the prerequisite training and experience gained as onshift, experienced nuclear facility operators or senior reactor operators, the qualification and training program must be supplemented to provide the equivalent. This training should be completed prior to candidates independently assuming the functions of shift supervisor. These guidelines apply to incumbent shift supervisors in the areas of continuing training, professional development, and any desired portions of initial training.

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.

1.3.1 Discussion

Full implementation of a 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 senior nuclear facility operators or senior reactor operators and have significant on-shift experience. Modifications to initial training programs 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 5480.20A, "Personnel Selection, Qualification, and Training Requirements for DOE 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 5480.20A should be referenced for alternatives to experience and education.

The following additional supplemental activities should be considered for candidates with limited on-shift, facility-specific nuclear facility operator or senior reactor operator experience:

- C temporary assignment in a senior nuclear facility operator or senior reactor operator leadership position such as control room supervisor
- C extension of the time in which these candidates participate in on-the-job training as shift supervisors under instruction
- C observation of and participation in key operational and infrequently performed activities such as startups and shutdowns in the facility
- C temporary assignment of experienced facility mentors to observe and work as advisors on shift to these new shift supervisors (These mentors should provide feedback to operations management on the progress and performance of these individuals as shift supervisors.)
- C increased management observation of these new shift supervisors

- C supplementing the candidates' initial training program to include additional simulator (if applicable) and situational training such as the following:
 - additional situations that challenge and develop judgment (for example, multiple tasks that represent distractions or excessively high workloads or conflicting plans, priorities, or facility conditions that could affect safety)
 - additional situations that challenge and develop interpersonal skills and abilities to manage and supervise personnel under stressful and adverse (but not necessarily emergency) conditions (for example, use of instructors or crew members to role-play in confrontational situations)

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:

- C 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
 - potential to assume further responsibilities
 - role models standards
- C Teamwork skills
 - demonstrate and advocate cooperation, collaboration, involvement, and partnering among personnel
 - encourage and provide critical and positive feedback in a constructive manner
 - reinforce and maintain self and other personnel focus on common goals and objectives
 - recognize achievement and consistently correct behaviors non-conducive to teamwork
 - resolve conflicts with diplomacy
 - promote independent verification and peer checking

- C 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
- C Motivation
 - responsible for own development
 - desire for additional challenges and responsibilities
- C High values and integrity
 - professional ethics
 - high personal standards of performance and commitment to quality
 - positive attitude
 - commitment to values that support organizational goals
 - high level of performance
- C Thorough technical knowledge
 - technical knowledge of the tasks performed by the personnel supervised
 - analytical ability
 - industrial safety awareness.
 - recognition of transients
 - emergency procedure bases
 - in-house and industry operating experience lessons learned 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.

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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.

Standards of excellence throughout the organization are stressed during training. The role of the shift supervisor as a member of the management team responsible for maintaining technically correct facility operations, for prudent risk management, and for maintaining a professional environment should also be stressed. Management expectations of shift supervisor performance should be provided while positive role models are presented to foster development of the candidate.

Performance evaluations of new shift supervisors should be conducted by operations management prior to independent assignment as a shift supervisor. These evaluations should include assessments of the skills of the candidate in (but not limited to) the following areas:

- C analytical, diagnostic, and problem-solving abilities
- C planning and managing evolutions
- C maintaining oversight and awareness of personnel actions in mitigating abnormal and emergency situations (while tending to the duties of the emergency director)
- C leadership and management of the operating organization
- C conservatism demonstrated when faced with uncertainty or decisions that could jeopardize the safety of the facility or have the potential to exceed design bases
- C team building, coaching, and critiquing performance

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 and in Appendix A provides the basis for establishing the initial training program. Appendix A contains learning objectives and recommended learning activities to support the development or revision 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 senior nuclear facility operator or senior reactor operator. Therefore, this training should be conducted following nuclear facility operator or senior reactor operator training.

3.2.1 Supervisory Skills

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

- C 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

- C 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
- C 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
- C 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:

- C The importance of facility systems in preventing damage or severe accidents
- C 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
- C Dominant types of potential operational accidents as defined in terms of frequency and consequences
- C Locations of all significant amounts of radioactive and other hazardous materials, and measures to prevent their release
- C The importance of maintaining operational limits and conditions, and the consequences of violating those limits
- C Identification of potential hardware failures and human errors which constitute dominant contributors to important accident sequences

- C The role PRA can play in evaluating proposed changes in operating procedures or equipment configuration
- C The role of external events such as earthquakes, extreme winds, flooding, transportation accidents, etc., in terms of their contribution to facility risk
- C 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 and continuing training in the following areas:

- C Nuclear criticality safety limits
- C Nuclear materials safeguards
- C Limiting conditions of operation
- C Safety envelope
- C Facility Safety Analysis Report
- C Technical Safety Appraisals
- C Safety analysis and review system
- C DOE Nuclear Safety Policy Statement
- C DOE orders relating to nuclear safety
- C Price Anderson Amendments Act
- C Applicable NRC regulations relating to nuclear safety
- C 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:

- C Importance of the Occurrence Reporting and Processing System (ORPS)
- C Internal, external, and follow-up notification requirements of reportable occurrences
- C Occurrence categorization and notification process
- C Utilization of reportable occurrence information
- C 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

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- recordings, charts, and/or printouts from instruments or computers monitoring the operation during the occurrence
- first 19 fields and field #25 of an occurrence report
- C Internal and external investigations of the occurrence
- C Final evaluation and lessons-learned from the 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:

- C Importance of the self-assessment
- C Shift supervisor's role in the self-assessment program
- C Self-assessment process and reporting requirements
- C Standard operating procedures for self-assessment
- C Root cause analysis
- C 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 to 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:

- C Work control documents
 - work release or authorization forms
 - safe work permits
 - radiological control work permits
 - standard work permits
- C Process for obtaining reviews prior to commencing work
- C Safety Analysis and Technical Safety Requirements
 - objectives
 - management responsibilities

- review and approval requirements
- hazard classification levels
- C Environment, Safety, and Health requirements
- C 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 and qualification 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:

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

3.3 Exemptions from Training

Some candidates for the shift supervisor position may be considered for exemption from portions of the initial training outlined in Appendix A. Review of an individual's prior training and job performance history provides data for this exemption. It is recommended that candidates not be considered for exemption from the leadership and management training modules due to the significance of these modules in the training and development of shift supervisors.

To verify candidates possess adequate knowledge and skills for exemption of training, an evaluation should be conducted. The evaluation should be based on discussion, simulator performance (as applicable), and/or on-the-job observations and should be used to verify proficiency of skills necessary to perform the objectives for which training is being exempted. This evaluation may be based on the candidate performing or having performed the objectives satisfactorily, or it may be a technical walkthrough or talkthrough of the objectives. For the purpose of exemption, it is not necessary to evaluate against all learning objectives in each subject area. An appropriate senior line manager should approve that the individual is qualified to perform the job-related duties for the training being exempted. The individual should complete all other designated training prior to being qualified and assigned as shift supervisor. All individual training exemptions and their bases should be documented in accordance with DOE 5480.20A (Exceptions to Training Requirements) and facility policies.

4. CONTINUING TRAINING

Continuing training should be conducted on a biennial cycle and 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 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:

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

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.

4.1 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 continuing training program. This guide divides the shift supervisor training into the following modules:

- C Quality assurance and quality control
- C Facility security and emergency plans
- C Purchasing
- C Material storage
- C Facility modifications
- C Nuclear, industrial, and radiation safety

- C Interfacing with external groups and organizations
- C Budgeting
- C Public relations and news releases
- C Teamwork training
- C Diagnostic skills training.

4.1.1 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:

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

4.1.2 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:

- C Security threats and breaches
 - the security system
 - security plans and procedures
 - reporting requirements
 - investigative responsibilities
- C Natural disasters
 - procedures for coping with tornados, earthquakes, floods, or other natural disasters
- C 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
- C Radiological emergencies, onsite and offsite
 - position responsibilities during an emergency

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- 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.

4.1.3 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:

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

4.1.4 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:

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

4.1.5 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:

- C Determination of what constitutes a modification
- C Modification implementation procedures
- C Policies and procedures
- C Technical Safety Requirements and approval
- C Configuration change control
- C QC requirements
- C Replacement parts and component requirements (equal-to or better concept)
- C Post-modification activities, such as testing, drawing update, procedure changes, and training.

4.1.6 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:

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

4.1.7 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):

- C Corporate organization (whether onsite or offsite)
- C Corporate policies concerning industrial relations and hiring practices
- C Corporate-level goals and objectives
- C Department of Energy and other federal agencies
- C Areas of corporate support for facility activities (such as maintenance support)
- C Lines of communication appropriate to the managerial position

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

4.1.8 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:

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

4.1.9 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:

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

4.1.10 Teamwork Training

The responsibility of the shift supervisor includes promoting teamwork while supervising the operating 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:

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

4.1.11 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:

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

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

4.2 Regulatory Training

Regulatory compliance training should be a fixed component of the continuing-training program. This generally consists of mandated training, such as HAZWOPER 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.

4.3 Methods of Training

The methods used to accomplish continuing training can be essentially the same as those used for the initial training program. Shift supervisor continuing training may be conducted using methods such as discussions, mentoring, case studies, role-playing, structured exercises, and simulator learning experiences (as applicable) to maximize the internalization of training. Training may be conducted and documented through the use of any or all of the following:

- C Discussion outlines or checklists
- C Qualification guides
- C Simulator training
- C On-the-job interaction with appropriate persons in the organization
- C Role-playing
- C Case studies
- C Classroom presentation.

Portions of continuing training may also 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:

- C 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

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- C Expanding lead activities such as providing guidance to work groups and subcontractors
- C Authoring operating procedures and other facility documentation
- C Assignment to the operating organization's problem-solving and decision-making "task forces"
- C Participating in operations committees (operations review committees, design review groups, procedural review groups, etc.)
- C Participating actively in professional associations and operations-related workshops
- C Enrolling in company-funded college vocational/educational programs
- C Participating actively in professional organizations related to technical areas
- C Visiting other nuclear facilities to broaden their perspective and to stimulate comparison and emulation of good practices
- C Attending management courses
- C 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. Necessary changes to the training program as a result of the evaluation should be formalized, approved, and tracked. The areas encompassed should include the following:

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

- C Assessment by the operations manager of shift supervisor performance deficiencies related to training
- C Assessment of changes from updates in the job 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. Corrective actions should be reviewed and approved by the operations manager.

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):

- C Education, experience, employment history, and most recent health evaluation summary
- C Training programs completed and qualification(s) achieved
- C Lists of questions asked and the examiners' overall evaluation of responses on oral examinations
- C Correspondence relating to exceptions granted to training requirements (including justification and approval)
- C Records of qualification for one-time-only special tests or operations
- C Attendance records for required training courses or sessions
- C 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.

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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 G 1324.5B, *Guide for Records Management*.

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

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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 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 are not intended to limit facility-specific development of initial training materials; instead, they 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:

- C Discussion outlines or checklists
- C Qualification guides
- C Simulator training
- C On-the-job interaction with appropriate persons in the nuclear organization
- C On-the-job as a shift supervisor under instruction
- C Role-plays
- C Case studies
- C 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, training staff instructors should be used.

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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:

- C OE-Operating Experience
- C AN-Analytical Process
- C LM-Leadership and Management
- C PE-Personnel
- C AD-Administrative Procedures
- C SA-Safety
- C TE-Technical (plant design bases)
- C EP-Emergency Plans
- C AC-Accident Assessment.

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

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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.
- 1.4 Describe the benefits of and bases for the reporting, effective tracking and trending, and sharing of information on nonconsequential or near-miss in-house events (as well as actual or consequential events) and the importance of facility management in promoting and cultivating an atmosphere of open communications in event or problem reporting within the workforce.
- 1.5 Describe how the application of lessons learned from operating experience should be integrated into pre-evolution briefings to further reinforce and internalize operating experience and instill into operations personnel that “it can happen here.”

References:

1. Facility 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.

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(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.

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- 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, and explain and support the reasons for caution and conservatism in these situations.
- 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 and conservative 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).

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**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. Post-exercise 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, conservative decision-making, and open-mindedness.

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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.

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- 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.
- 4.11** Given a complex or infrequently performed task and/or series of multiple tasks that result in excessively high workloads on operations personnel, evaluate the potential for distractions or conflicts and potential consequences (that is, challenges to safety) resulting from incorrect performance of these activities.

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 that 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, 4.11 | 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. |

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4.4 Discuss those elements that should be addressed within special tests, infrequently performed evolutions, or other pre-evolution briefings such as clearly defined termination criteria, contingency action requirements, operating experience, and conduct of briefings during these evolutions.

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.

4.11 Conduct a qualitative evaluation of student responses and discussion of potential adverse impact of multiple, conflicting, or distracting activities during critical evolutions.

4.1, 4.3-4.10 Complete appropriate simulator objectives that include evaluating and adjusting facility conditions, coordinating operator actions, and changing priorities.

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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 a 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.
- 5.6 Given a transient situation, describe the responsibilities of the shift supervisor in maintaining oversight to maintain adequacy of facility control and mitigation strategy by operations personnel.
- 5.7 Describe facility philosophy for restoring and maintaining equipment important to safety in a functional (even if not operable) condition.

References:

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

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**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.
- 5.2-5.7 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 1 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, 5.6 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).

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**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

5.2-5.5, 5.7

Conduct a qualitative evaluation of trainee responses and discussions.

5.1, 5.2, 5.5, 5.6

Complete appropriate 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.

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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 the 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 and the usefulness of ideas and feedback solicited from observed personnel.
- 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.
- 6.5 Discuss expectations for observations of facility activities by the shift supervisor and his or her direct reports.
- 6.6 Describe corrective actions for noted materiel condition and industrial safety concerns.

References:

1. Appropriate administrative procedures.

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**Enabling
Learning
Objectives**

Suggested Learning Activities:

- | | |
|-------------------|--|
| 6.1-6.3, 6.5, 6.6 | 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, 6.5, 6.6 | 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 and associated precautionary requirements.
- 7.4 Describe potential facility situations that present electrical shock hazards, and associated precautionary requirements.
- 7.5 Describe potential facility problems and associated precautionary requirements 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 and actions necessary to resolve them.
- 7.10 Given a facility work assignment, predict potential safety problems and actions to take to prevent them.

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7.11 Discuss reasons for the industrial safety program including the potential effects of safety problems on the company and the role of the shift supervisor as a leader and role model in this area.

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 the 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. |

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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.

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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) and actions to prevent recurrence.
- 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:

ALL	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.
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**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

ALL

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:
 - C Applying assertiveness skills
 - C Exhibiting composure during abnormal or emergency events
 - C Intervening to restore an operator's composure
 - C Enforcing standards of operating performance
 - C Promoting and applying teamwork skills
 - C Using coaching techniques with operators
 - C Advocating an overriding attitude of conservatism for facility safety
 - C Exhibiting a positive, optimistic attitude
 - C Demonstrating initiative and perseverance
 - C Applying prudent judgment based on training, experience, and management expectations
 - C Exhibiting a helpful attitude
 - C Demonstrating courtesy and respect for individuals
 - C Requesting needed assistance and guidance without hesitation
 - C 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.

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- 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:
- C Transportation of fuels or wastes
 - C Spent-fuel receiving and storage
 - C Criticality control
 - C Reactivity control
 - C Process control
 - C Heat sink availability
 - C Primary system integrity
 - C 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."

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**Enabling
Learning
Objectives**

Suggested Learning Activities:

- ALL 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.
- 9.2 Discuss management philosophy and expectations regarding conservative decision-making with the operations manager or senior line manager. This discussion should include events (actual in-house and industry) where personnel were challenged with situations that required sound and prudent judgement and how their decisions (both appropriate and inappropriate) affected the outcome of events.
- 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.

Note

Personnel decisions, either intentional or inadvertent, that bypass operational restrictions and reduce the overall margin of safety may be nonconservative. Compensatory measures and defense-in-depth techniques can sometimes restore the overall margin of safety or protect those margins when normal operating restrictions must be bypassed.

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**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 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:
 - C Boost the confidence of an individual or crew
 - C Boost the morale of an individual or crew
 - C Foster increased participation from quiet individuals
 - C Encourage professional behavior.
- 10.7 Describe interpersonal skills that may be required when working with other facility groups to achieve support.

References:

1. Appropriate company human resource guidance.

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**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, 10.7 | 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,
10.7 | 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 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

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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:

- C Motivating the on-shift/control room crew
- C Managing team efforts
- C Supervising the on-shift/control room crew
- C Actively monitoring crew activities and coaching
- C Establishing and enforcing standards of behavior
- C Directing actions of individuals and the team
- C Applying facilitative techniques, when appropriate, to reinforce teamwork (e.g., participative problem-solving)
- C Establishing priorities
- C Communicating expectations to the on-shift/control room crew and support organizations
- C Reinforcing desired behavior and correcting inappropriate behavior using feedback mechanisms
- C Promoting and accepting ownership and accountability for self and crew performance
- C Maintenance of an atmosphere of open communication and involving personnel in work-related decisions
- C Promoting avoidance of hasty decisions and hurried actions
- C Ensuring personnel possess accurate perceptions of potential consequences for improper task performance to avoid complacency
- C Ensuring tasks are assigned consistent with personnel abilities
- C Informing operations or facility management of facility conditions
- C Evaluating results and providing constructive feedback
- C Maintaining an overall perspective of current facility conditions and desired end conditions.

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11.2 Given a requirement to complete a task, identify established and desired conditions under which delegation of the task is appropriate.

11.3 Explain the functions of the shift supervisor in promoting and influencing the following individual behaviors of personnel:

- C demonstrating a strong sense of personal ownership
- C focusing on the task at hand
- C expecting success but anticipating failure
- C self-checking and expecting to be checked by others
- C taking the time needed to do the job right
- C verifying assumptions before taking action
- C working in a cautious, conservative manner
- C demonstrating a high degree of responsibility for safety
- C instinctively questioning the appropriateness of disabling a safety function or system
- C maintaining a questioning attitude
- C placing systems and components in a safe condition when unexpected conditions arise
- C communicating clearly and verifying understanding of others

11.4 Explain the functions of the shift supervisor as a leader and role model in promoting and influencing organizational behaviors to personnel.

- C Foster a defense-in-depth organizational philosophy through the following:
 - ensuring appropriate defenses are embedded in procedures, processes, and equipment
 - validating adequacy of existing defenses and warning systems when human performance problems occur
 - ensuring that all activities are performed to uniform high standards
 - vigorously resolving unnecessary "workarounds"
- C Promote an objective learning environment striving for continuous improvement through the following:
 - reinforcing an "it could happen here" attitude toward operating experience
 - supporting routine critical self-assessments to identify areas for improvement
 - recognizing task-specific conditions that could lead to error, and taking actions to eliminate or minimize the potential for error
 - ensuring that familiarization opportunities are provided prior to infrequently performed tasks
 - providing personnel with opportunities to work with positive role models
 - ensuring that processes exist to readily detect weaknesses or performance problems
 - monitoring the effectiveness of corrective actions to previously identified problems

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- ensuring that personnel recognize contributors to and are aware of existing trends in human performance problems
- C Ensure that a proper balance of supervision, training, and procedures exists to aid workers in correct performance through the following:
- verifying that compensatory actions for known or suspected weaknesses are implemented prior to work
 - verifying that procedures for special tests or evolutions are thoroughly reviewed for potential effects on safety
 - confirming a clear understanding by personnel of management expectations for procedure use and adherence
 - eliminating unnecessary sense of haste

References:

1. Appropriate company human-resource guidance.

**Enabling
Learning
Objectives**

Suggested Learning Activities:

- | | |
|------------|---|
| 11.1- 11.4 | 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, 11.3 | 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, 11.3 | Perform a critique of the structured exercise or the actual on-shift experience. |
|------------|--|

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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 and when DOE approval would be required prior to implementation 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.
- 12.6 Given a proposed facility modification package, discuss procedures affected and revisions required and additional training needs resulting from the modification.

References:

1. Appropriate facility administrative procedures

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**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 - 12.6 | 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, 12.4-12.6 | Review responses derived by trainees during the case study. |

Temporary Modifications and System Alterations

Module: Administrative Procedures

Outline Number: AD—3

Terminal Learning Objective:

13. Apply and promote the philosophy underlying administrative procedure requirements for temporary modifications or deviations to normal system alignments.

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, procedures, drawings, testing, and design bases and additional training needs resulting from the temporary modifications.
- 13.3 Given the need to align a component or system in a different configuration than that specified in facility prints or procedures, describe the review, evaluation, and approval process.

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."

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**Enabling
Learning
Objectives**

Suggested Learning Activities:

- 13.1, 13.3 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; the basis for this authority; and the 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, 13.3 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."

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Learning
Objectives**

Suggested Learning Activities:

- 14.1 Discuss the authority of the shift supervisor with the operations manager or an experienced shift supervisor 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:

- ALL 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.
- 15.3 Determine the bases for an existing setpoint.

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."

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Suggested Learning Activities:

ALL

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**

Suggested Evaluation Activities:

ALL

Conduct a qualitative evaluation of trainee responses and discussions.

Post-modification and Post-maintenance Testing

Module: Administrative Procedures

Outline Number: AD—6

Terminal Learning Objective:

16. Apply and promote the philosophy underlying post-modification and post-maintenance test requirements.

Enabling Learning Objectives:

- 16.1 Identify when post-modification and post-maintenance testing are required using facility procedures and regulatory requirements.
- 16.2 Given a request to perform post-modification or post-maintenance 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 post-modification 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.

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**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 post-maintenance testing and, as appropriate, post-modification testing.
- 16.2-16.4 Use a case study approach to post-modification and post-maintenance 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:

- | | |
|-----|--|
| ALL | 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. |
|-----|--|

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**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

ALL

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.

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**Enabling
Learning
Objectives**

Suggested Learning Activities:

- 18.1-18.4 Have a discussion with a 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:
- C Employee perceptions and supervisor viewpoints
 - C Effectiveness of the counseling process
 - C 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 organizations.
- 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.

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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:
- C Employee perceptions and manager viewpoints
 - C Effectiveness of the counseling process
 - C 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 on-shift activities, discuss the operator's personal abilities and limitations.

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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: C Effectiveness of the counseling process C Application and implementation of company procedures C Challenges in conducting the review.

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**Enabling
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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.

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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.
- 21.7 Given a specific facility condition coupled with a maintenance request, determine the effects on the operating envelope and if the request should be approved and work allowed to proceed.
- 21.8 Given a facility condition and information on planned activities, determine the facility parameters that define the basis of the operating envelope and how they might be affected by the planned activities.
- 21.9 Explain factors considered when determining availability and operability of structures, components, and systems important to facility safety.

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21.10 Explain the basis for and function of the DOE Maintenance Order.

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/reactor operator training to refamiliarize the trainee with information contained in the facility safety analysis report and plant operating limits.
21.1-21.5, 21.9	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.
ALL	Review (reading and self-study) and discuss with an engineering representative data from selected safety analyses involving facility vulnerabilities, dominant damaging events, important systems and equipment, and key operator actions for event mitigation as a result of facility-specific design characteristics.
21.6-21.8	Use a case study approach to a 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.)

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21.10 Review (reading and self-study) and discuss with maintenance and engineering representatives the purpose and scope of the DOE Maintenance Order and those methods and processes used for implementation.

**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

21.1-21.5, 21.9,
21.10 Conduct a qualitative evaluation of trainee responses and discussions.

21.6-21.8 Review responses derived by trainees during the case study or simulator exercise as described by learning objectives.

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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/reactor operator training to refamiliarize the trainee with the nonroutine reporting requirements.

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ALL 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:

ALL 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.

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- 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.

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**Enabling
Learning
Objectives**

Suggested Learning Activities:

None	Review basic concepts covered in previous nuclear facility/reactor 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 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.

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- 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 or core 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:
- C Transportation of fuels or wastes
 - C Spent-fuel receiving and storage
 - C Criticality control
 - C Reactivity control
 - C Process control
 - C Heat sink availability
 - C Primary system integrity
 - C 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.

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- 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.
- 29.10** Discuss the duties and responsibilities of the shift technical advisor during transients and accidents.

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 29.6-29.10	Have a discussion with an 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.

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**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

29.1, 29.2,
29.6-29.10

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

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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.

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**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, associated problems and benefits, and knowledge of the bases for emergency operating procedure requirements. |

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.

Systematic Approach to Training

Module: Leadership and Management

Outline Number: LM—7

Terminal Learning Objective:

31. Demonstrate proficiency in the understanding and application of the systematic approach to training for continuously improving knowledge and skills of facility personnel.

Enabling Learning Objectives:

- 31.1 Describe the facility and company philosophy concerning the application of the systematic approach to training.
- 31.2 Discuss the benefits and bases for tracking and trending facility personnel performance problems, using this information for analyzing additional training needs, designing and developing additional training materials, implementing enhanced training, and evaluating subsequent performance to assess the effectiveness of that training.
- 31.3 Given information on performance problems associated with a group of operators or facility personnel, analyze for weaknesses that contributed to this performance or additional training needs for strengthening performance.

References:

1. DOE Training Program Handbook: A Systematic Approach to Training
2. DOE Handbook: Alternative Systematic Approaches to Training
3. Appropriate facility administrative procedures.

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**Enabling
Learning
Objectives**

Suggested Learning Activities:

- 31.1 Review (reading and self-study) and discuss with the training manager and the operations manager the fundamental aspects and facility applications of the systematic approach to training (SAT), including training needs analysis, training material design and development, training implementation, and feedback based on evaluation of training effectiveness in supporting job performance and professional development of facility personnel.
- 31.2 Discuss several examples of and facility-specific benefits derived from effective application of the SAT process.
- 31.3 Structured exercise that involves the review of performance history of a (mock) group of facility operators to identify potential knowledge and performance weaknesses. This exercise should provide appropriate feedback to training personnel and result in enhancements to initial and continuing training programs.

**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

- 31.1-31.3 Qualitative evaluation of student responses and discussion.
- 31.1-31.3 Review products from structured exercises.

Support of Training

Module: Leadership and Management

Outline Number: LM—8

Terminal Learning Objective:

- 32. Apply ownership of personnel training by identifying training needs of crew or individual, and coordinate with operations management and training representatives to address these needs.
- 33. Assist training representatives and serve as facilitator during critiques of performance to provide appropriate feedback to crew personnel on their performance during operational activities or simulator training (as applicable).
- 34. Provide appropriate feedback to training on the effectiveness of training.

Enabling Learning Objectives:

- 32.1 During simulator training or observations of operational activities in the facility, evaluate performance of crew or individuals to identify additional training needs.
- 32.2 Following recognition of training needs, discuss with operations management to determine appropriate course of action.
- 32.3 Discuss with training representative those training actions necessary to strengthen crew or individual performance.
- 33.1 During on-the-job, laboratory, or simulator training, coordinate with appropriate personnel to provide feedback to crew personnel on performance.
- 33.2 Discuss/practice methods, skills, and techniques for effective facilitation during critiques.
- 33.3 Discuss demonstrated facilitative skills following critiquing session with experienced simulator instructor, and obtain feedback on strengths and areas for improvement.
- 34.1 Analyze the effectiveness of training to identify weaknesses in content or instructor effectiveness following participation in or observation of actual or mock training session (simulator or classroom).

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34.2 Using appropriate mechanisms, provide feedback to training on strengths and areas for improvement.

References:

1. DOE Training Program Handbook: A Systematic Approach to Training
2. DOE Handbook: Alternative Systematic Approaches to Training
3. Facility procedures and policies concerning duties and responsibilities of supervisors and line managers for the training and qualification of their personnel.

**Enabling
Learning
Objectives**

Suggested Learning Activities:

- | | |
|------------|---|
| 32.1 | Review (reading and self-study) and discuss with the operations manager or representative, the training manager or representative, and experienced shift supervisor those expectations and processes for monitoring crew and individual performance, recognizing and reporting training needs of operations personnel for consideration of inclusion into initial and continuing training programs or remedial training for individuals. Additionally, discuss limitations of training on their effectiveness and ability to modify personnel behaviors and the role of the shift supervisor in consistently reinforcing desired behaviors. |
| 32.2, 33.2 | The simulator (as applicable) may be used to exercise skills in observing control room crew performance, interacting with simulator instructors following simulator exercises to determine appropriate feedback, and then effectively providing feedback (or facilitating discussion) on performance to crew during postscenario critiquing. |
| 32.3 | Structured exercise involving a review of the history of performance of (mock) operator to identify potential knowledge and performance weaknesses and provide appropriate feedback to training in the manner described by practices and policies. |
| 33.1 | Review (reading and self-study) and discuss methods, skills, and techniques for effectively facilitating discussions and self-critiques of performance by operating crews with an experienced on-the-job, laboratory, or simulator instructor as appropriate. |

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- 34.1 Review (reading and self-study) and discuss with an operations training representative and experienced shift supervisor those expectations and processes for monitoring the content and quality of training provided to personnel, and provide feedback or suggestions for improvement to training.
- 34.2 Structured exercise to observe mock or actual training session, identify training weaknesses, and provide feedback to training in the manner described by practices and policies.

**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

- ALL Qualitative evaluation of student responses and discussion.
- ALL Review products from structured exercises.

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Recognition of Human Performance Problems and Contributing Factors

Module: Analytical Process

Outline Number: AN—2

Terminal Learning Objective:

35. Demonstrate a broad understanding of facility policies and expectations governing the conduct of work and those factors that contribute to human performance problems.
36. Recognize and correct individual behaviors that could contribute to human performance problems.

Enabling Learning Objectives:

- 35.1 Discuss senior management and facility philosophies/expectations regarding the following:
 - C self-checking
 - C peer checking
 - C independent verification
 - C verbal communications
 - C procedure use and compliance
 - C limitations of activities or distractions during critical evolutions within the control room and in the facility
 - C ensuring against concurrent conflicting activities
 - C supervisory oversight during critical evolutions
 - C pressures (perceived or actual) to complete tasks quickly
 - C equipment and component labeling
 - C pre-evolution briefings and preparations
 - C assignment of tasks to qualified individuals
 - C oversight of trainees.
- 35.2 Identify and describe how those factors could affect human performance.
- 35.3 Conduct control room observations and facility tours with operators to identify personnel performance weaknesses and strengths in the above listed areas.

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- 36.1** Describe how to observe, recognize, or otherwise identify individual or crew performance weaknesses in complying with facility policies or management expectations for communications, self-checking, procedure use and other performance factors. Discuss appropriate methods for correcting individual and crew performance weaknesses and reinforcing appropriate behaviors.

References:

1. Appropriate company conduct of operations guidance.

**Enabling
Learning
Objectives**

Suggested Learning Activities:

- 35.1 Review (reading and self-study) and discuss with the operations manager and experienced shift supervisor those expectations and facility policies governing the following:
- C self-checking
 - C peer checking
 - C independent verification
 - C verbal communications
 - C procedure use and compliance
 - C limitations of activities or distractions during critical evolutions within the control room and in the field
 - C ensuring against concurrent conflicting activities
 - C supervisory oversight during critical evolutions
 - C pressures (perceived or actual) to complete tasks quickly
 - C equipment and component labeling
 - C pre-evolution briefings and preparations
 - C assignment of tasks to qualified individuals
 - C oversight of trainees.

Emphasize responsibilities of the shift supervisor in ensuring the understanding and compliance of these policies and expectations through consistent reinforcement to personnel. Also, stress the importance of instilling a cautious, questioning approach within themselves and crew personnel.

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- 35.2, 35.3 Discuss the importance of addressing near-misses and nonconsequential or lower threshold human performance problems as a means for preventing future potentially significant performance problems. Additionally, emphasize the recognition and reinforcement of desired behaviors, when demonstrated by crew personnel, as a means for promoting good performance.
- 36.1 Use a case study approach to industry and in-house events attributed to human performance problems, factors involved, and how the problems could have been prevented.

**Enabling
Learning
Objectives**

Suggested Evaluation Activities:

ALL Qualitative evaluation of student responses and discussion.

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Work Controls

Module: Administrative Procedures

Outline Number: AD—8

Terminal Learning Objective:

37. Apply administrative procedure requirements for work controls.

Enabling Learning Objectives:

- 37.1 Given an actual or mock work package, describe considerations of the shift supervisor or designee when approving the package and authorizing work.
- 37.2 Describe what potential problems may occur from insufficient review and inappropriate authorization.
- 37.3 Describe the responsibility and authority of the shift supervisor as it relates to the work control process.

References:

1. Appropriate facility administrative procedures and policies governing the work control programs.
2. Descriptions of facility work control programs including duties and responsibilities of involved personnel.

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**Enabling
Learning
Objectives**

37.1, 37.2

Suggested Learning Activities:

Review (reading and self-study) and discuss with the maintenance manager, operations manager, and experienced shift supervisor responsibilities and considerations of shift supervisors when reviewing work packages prior to and when authorizing work on safety-related equipment and systems and other equipment and systems important to facility operation. Additionally, discuss potential effects on design bases of changing configurations when troubleshooting and the need to ensure appropriate reviews are conducted prior to these activities. Include outage and nonoutage-related processes within these reviews and discussions.

37.1, 37.2

Discuss the interface and coordination expectations between the planning and scheduling group and operations.

37.3

Attend both the planning and scheduling and maintenance groups' planning/status meetings to observe interaction and interfacing of involved personnel and effects of emergent activities and work on schedules.

**Enabling
Learning
Objectives**

ALL

Suggested Evaluation Activities:

Qualitative evaluation of student responses and discussion.

**APPENDIX B
SHIFT SUPERVISOR PROFESSIONAL
DEVELOPMENT SEMINAR**

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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:

- C Planning Facility Operations—predicting complications to facility operation and developing plans to avoid or mitigate those complications.
- C 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.
- C Applying Facility Resources—developing time-efficient strategies, constructing alternative strategies for task completion, delegating tasks, and developing priorities.
- C Managing the Shift Team—techniques for managing the direction of a team's efforts in accomplishing goals.
- C Promoting Team Communication—application of team communication skills and the shift supervisor's role in promoting good communications.
- C 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.

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- C 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.

- C 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.)

- C 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.

- C Conducting Group Presentations or Meetings—preparing for presentations, directing and facilitating discussion, and responding to questions.

- C 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 Activity:

<u>DOE</u>	<u>Operations Offices</u>
HR	AL
DP	CH
EH	FN
EM	ID
ER	NV
FM	OR
NE	RF
	RL
	OAK
	SR

Preparing Activity:

DOE-EH-31

Project Number:

TRNG-0009

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