SUMMARY OF TIGER TEAM ASSESSMENT AND TECHNICAL SAFETY APPRAISAL RECURRING CONCERNS IN THE TRAINING AREA

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Published January 1993

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Prepared for the
U.S. Department of Energy
Office of Nuclear Energy
Office of Nuclear Safety Policy and Standards
Under DOE Field Office, Idaho
Contract DE-AC07-76ID01570

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FOREWORD

The purpose of the Summary of Tiger Team Assessment and Technical Safety Appraisal Recurring Concerns in Training is to provide DOE contractor organizations with information that can be used in evaluating their training programs against identified concerns and noteworthy practices. This document can be a valuable tool in identifying and correcting training program weaknesses.

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SUMMARY OF TIGER TEAM ASSESSMENT AND TECHNICAL SAFETY APPRAISAL RECURRING CONCERNS IN THE TRAINING AREA

INTRODUCTION

Fourteen Tiger Team Assessment and eight Technical Safety Appraisal (TSA) final reports have been received and reviewed by the DOE Training Coordination Program during Fiscal Year 1992. These assessments and appraisals included both reactor and non-reactor nuclear facilities in their reports. The Tiger Team Assessments and TSA reports both used TSA performance objectives, and list "concerns" as a result of their findings. However, the TSA reports categorized concerns into the following functional areas: 1) Organization and Administration, 2) Radiation Protection, 3) Nuclear Criticality Safety, 4) Occupational Safety, 5) Engineering/Technical Support, 6) Emergency Preparedness, 7) Safety Assessments, 8) Quality Verification, 9) Fire Protection, 10) Environmental Protection, and 11) Energetic Materials Safety. Although these functional areas match most of the TSA performance objectives, not all of the TSA performance objectives are addressed. For example, the TSA reports did not include Training, Maintenance, and Operations as functional areas. Rather, they included concerns that related to these topics throughout the 11 functional areas identified above. For consistency, the Training concerns that were identified in each of the TSA report functional areas have been included in this summary with the corresponding TSA performance objective.

The Tiger Team Assessments and TSAs were reviewed and evaluated for concerns in the Training Area (TC). One hundred and ninety one (191) training concerns were identified by the Tiger Team Assessments and TSA reports. The concerns regarded as recurring concerns appear below. A summary of the Noteworthy Practices that were identified and a compilation of the training concerns for each performance objective that were not considered as recurring are also included. Where the Tiger Team Assessments and TSA reports identified the operating contractor or facility by name, the concern has been modified to remove the name while retaining the intent of the comment.

RECURRING CONCERNS

The following concerns are considered to be recurring (two or more facilities) and are categorized under their appropriate performance objective heading in order of decreasing frequency of observation.

TC.1 Organization and Administration

1. Training and qualification/requalification requirements and programs have not been established and implemented for operators, maintenance personnel, technical staff, supervisors, and managers based on DOE requirements (14).
2. Training records are not maintained in accordance with DOE Orders (7).
3. There are no site/laboratory-wide training plans, policies, standards, or requirements (4).
4. DOE Area/Operations Office training and qualification programs do not adequately document that personnel can safely and effectively carry out their oversight responsibilities (2).

TC.4 General Employee/Personnel Protection Training

1. Required OSHA training for employees and subcontractors is non-existent or inadequate (6).
2. Health and safety training for employees and subcontracted personnel is not adequate (7).
3. Personnel protection training programs are not fully developed and implemented (5).
4. Examinations do not ensure that learning objectives contained in training material have been mastered (2).
5. Worker understanding of safety and health information presented in the general employee training is not evaluated (2).

TC.5 Maintenance Personnel

1. Training and qualification programs for maintenance personnel have not been established (6).

TC.7 Training Facilities and Equipment

1. Training facilities and equipment generally do not effectively support training activities (8).

TC.8 Quality Control and Nondestructive Examination Technician Training

1. There is no formal training and qualification program for quality control personnel (4).

TC.9 Radiological Protection Personnel

1. Training for health physics personnel does not fully comply with DOE Orders (4).
2. A formal policy for accepting radiation worker training given by contractors of other DOE sites has not been developed and implemented (2).

TC.10 Training for Supervisors, Managers, and Technical Staff

1. Managers, supervisors, and technical staff personnel do not receive the training necessary to broaden their overall knowledge of processes and equipment and develop supervisory and management skills (7).

TC.11 Simulator Training/Facility Exercises

1. Exercises that cover the full range of facility-specific abnormal and emergency events are not conducted (2).

NOTEWORTHY PRACTICES

TC.7 TRAINING FACILITIES AND EQUIPMENT

Performance Objective: The training facilities, equipment, and materials should effectively support training activities.

LOS ALAMOS NATIONAL LABORATORY -- PLUTONIUM AND ENRICHED URANIUM OPERATIONS

Noteworthy Practice: A comprehensive glovebox training laboratory was included in the initial design and construction of the TA-55 Training Center. This training laboratory simulates typical conditions and capabilities found in a typical laboratory within Bldg. PF-4. There is a change room associated with the training laboratory, and access to the laboratory is gained through an airlock and a set of double swinging doors. The inside of the training

laboratory is authentically finished and equipped, and it appears that it would be difficult for a trainee to imagine that he or she is not actually within the operating facility upon entering the change room. This duplication extends to color schemes, operational eyewash stations and safety showers, hand and foot monitors, ceiling height, door size, corridor width, etc.

The training laboratory and installed gloveboxes are equipped with wet vacuum, dry vacuum, compressed air, chilled water, industrial water, and domestic water. Also included in the design is glovebox negative pressure of one-half inch water, accurately reflecting Zone 1 pressure conditions within Bldg. PF-4 gloveboxes. There are three parallel lines of gloveboxes in the training laboratory. Two overhead transfer trolleys are included, situated at 90-degree angles to one another, with drop boxes at appropriate locations, so transfers can be made between the trolleys and between glovebox lines. Capability exists to install an inert-atmosphere glovebox.

Training which is routinely conducted in the training laboratory includes general glovebox operational safety (e.g., working with sharp objects, working with power tools, handling wet glassware, etc.), bag-out operations, trolley operations, glove change-out, window change-out for the various types of windows in use at TA-55, and HEPA filter changeout. The five Bldg. PF-4 safety system alarms are all duplicated in the training laboratory and are used during routine training operations. These include ventilation failure, emergency evacuation, continuous air monitor, and the two fire alarms.

TC.10 TRAINING FOR SUPERVISORS, MANAGERS, AND TECHNICAL STAFF

Performance Objective: Training programs for supervisors, managers, and the technical staff should broaden overall knowledge of processes and equipment and develop supervisory and management skills.

IDAHO NATIONAL ENGINEERING LABORATORY

Noteworthy Practice: EG&G Idaho has established a mandatory Unit Manager Development Program. Unit managers are EG&G Idaho's first-line managers/supervisors. This program includes the Requirements Awareness Program (RAP), which is tailored to each individual manager's responsibilities. Managers of heavily regulated activities in nuclear and industrial environments participate in the advanced workshop (118 hours). The basic workshop (44 hours), typically conducted in an office environment, is designed for managers of lightly regulated activities. The eight disciplines covered by the RAP are:

Emergency Preparedness
Environmental Protection
Fire Safety
Industrial Hygiene

Industrial Safety
Nuclear Safety
Quality
Radiological Control

To ensure that all requirements are covered, the participants use a reference listing of requirements. As they review the requirements, the participants use the checklist to identify those requirements that apply to the activities they manage. As a result of this process, each manager creates a customized listing of requirements for his/her organization.

The Unit Manager Development Program is characterized by strong top management commitment to and involvement in the program. Courses are typically taught by the senior manager or cognizant professional in each discipline. For example, the topic on manager's responsibilities is typically taught by the General Manager.

OTHER IDENTIFIED CONCERNS

The following are training concerns from the Tiger Team Assessments and Technical Safety Appraisals that were not considered recurring. In instances where the concern referenced the facility, the words have been modified to remove the reference yet retain the intent of the concern.

TC.1 ORGANIZATION AND ADMINISTRATION

Performance Objective: The training organization and administration should ensure effective implementation and control of training activities.

- o The quality of the design, development, conduct, and evaluation of training programs does not meet generally accepted industry practices.
- o In some cases, the testing and certification process does not provide meaningful assessment of knowledge or performance.
- o The company-wide training tracking system is not being maintained as an effective tool for managers and supervisors.
- o The DOE Field Office has not established standards for the development, conduct, or evaluation of training.
- o The operating contractor training program is not comprehensive or formally implemented in areas including, but not limited to, fire protection, radiation protection, worker safety, emergency preparedness, quality verification, technical support, and packaging and transportation.
- o Analyses of job requirements are not routinely performed.
- o The level of training provided to all employees is not commensurate with the requirements of their jobs.

- o Health and safety training is not based on a training needs analysis.
- o The detail contained in lesson plans is insufficient to ensure quality training on a consistent basis.
- o The present staffing level for the DOE Field Office Training and Development Branch does not support the development of a quality training program.
- o The DOE Field Office training record system is out of date and not being used as an effective management tool for assessing training needs or documenting training.
- o The organization and administration of training does not ensure that employees meet safety and health training requirements based on job/task analysis.
- o The operating contractor does not ensure that all personnel working onsite satisfy safety and health training and job qualification requirements.
- o The operating contractor does not ensure that all subcontractors working on site satisfy safety and health training and job qualification requirements.
- o The DOE site office does not ensure that the operating contractor and its subcontractors are meeting the training requirements of DOE Orders and federal regulations.
- o Formal on-the-job training programs have not been established and documented for all technical and maintenance personnel.
- o Career-path tracking and training evaluations, as appropriate for the facility where they work, are not included in the training data base.
- o Ergonomics-related injuries have not been analyzed for trends, jobs have not been evaluated, training programs have not been developed, and engineering controls have not been implemented.
- o The ES&H instructor manning level is not appropriate.
- o ES&H training requirements have not been incorporated into the training data base so that training received and training required can be cross checked.
- o Required training documentation has not been communicated to the first-line supervisors and operational safety officers by management.
- o Training duties are not assigned to specific individuals.

- o Training assurance activities to perform independent oversight of the implementation of programs do not exist.
- o Basic hazards recognition training for all levels of management is not being conducted in a timely fashion.
- o In-depth root cause analysis training is not conducted for designated facility managers and facility representatives in order to better perform their required duties.
- o A centralized training organization is not being adequately considered by the operating contractor.
- o The selection, qualification, and training program for non-nuclear facilities is not based on the hazards involved and risks associated with the facility.
- o All organizations are not provided access to adequate facilities to support classroom training requirements.
- o Conduct Of Facility Operations (COFO) training is not structured to ensure that COFO principles are fully understood and applied by the work force.
- o The lessons learned system does not interface with the developmental training data base and action management system. Well-defined interfaces would establish a closed-loop training process that incorporates vital lessons learned information.
- o Supervisory personnel who process occurrence reports do not receive training to improve technical writing skills. The review and approval process is too complicated.
- o The operating contractor does not have a plan for referencing various job categories and defining the required training.
- o The operating contractor is not expediting the approval of appropriate documentation to augment the training space available.
- o The training guide used to identify mandatory training has not been reviewed periodically for completeness and accuracy with current requirements.
- o Define and implement a single sitewide lessons learned program that can inform and educate employees.
- o Training organizations have not received the resources necessary to produce lesson plans and to conduct planned training in a reasonable time frame.

- o A system does not exist to ensure that job and task analyses, safety assessments, and hazard analysis data, when developed, will be incorporated into training programs.
- o Oversight and control functions of training activities fail to meet DOE requirements, such as recordkeeping, auditability, verification of training, and so forth.
- o Training and qualification/certification requirements are not based on assigned job tasks for each work classification.
- o The organizational structure and training system, including responsibilities and authorities of personnel involved in managing, supervising, and implementing training, is neither well defined nor well understood by personnel.

TC.2 REACTOR OPERATIONS

Performance Objective: The operator and reactor supervisor training and certification programs should be based on DOE 5480.6, Section 8.e., as applicable, and should develop and improve the knowledge and skills necessary to perform assigned job functions.

- o Contrary to DOE requirements, general training classes conducted in the control room during reactor operation distract the operator from his or her primary function of "at the controls" operation of the reactor.
- o Examinations to certify operators do not ensure a consistent minimum level of expertise from one examination to the next.
- o The content of oral examinations is not documented.
- o All certified operators are not trained as required by DOE Orders and the facility training plan.
- o Formal lesson plans or class outlines that detail specific learning objectives do not exist for some training classes.

TC.3 NUCLEAR FACILITY OPERATIONS OTHER THAN REACTORS

Performance Objective: The nuclear facility operator and supervisor training and certification programs should be based on DOE 5480.5, as applicable, and should develop and improve the knowledge and skills necessary to perform assigned job functions.

- o The operator training program does not meet the criteria of DOE Orders.
- o Sitewide National Environmental Policy Act training has not been reviewed to ensure that training provides functional managers with adequate knowledge.
- o Training is not provided to personnel who may have to take protective actions regarding hazards in facilities adjacent to the one in which they are permanently assigned.
- o A formal selection process and a documented training program for duty officers does not exist.
- o A focused training program based on the requirements of the DOE hoisting and rigging manual and federal regulations is not in place for facilities that conduct lifting operations.
- o The OSHA Program Office has not reviewed the oversight inspection program to ensure that DOE requirements are used.
- o Operations personnel training has not been effective as evidenced by incorrect personnel actions and conduct of operations.
- o Job-specific training has not been fully implemented and documented.
- o Examinations are not always administered in such a way to ensure that trainees understand the course subject material.
- o Job-specific training does not ensure that all assigned workers have received training; for example, there is insufficient documentation of job-specific examinations, insufficient implementation of a formally documented training program, and so forth.
- o Certain technical staff positions are not being certified.
- o Examinations are not administered or controlled in a formal manner.
- o Not all subjects have been presented which are required in the training of certified operators by the new facility training plan; no schedule has been formulated to implement this training.

TC.4 GENERAL EMPLOYEE/PERSONNEL PROTECTION TRAINING

Performance Objective: General employee and personnel protection training programs should ensure that site/facility personnel, subcontractors, and visitors have an understanding of their responsibilities and expected safe work practices, and have the knowledge and practical abilities necessary to effectively implement personnel protection practices associated with their work.

- o During some training classes, safe work practices required by the operating contractor safety manual were neither consistently emphasized nor followed.
- o The equipment operator certification process does not ensure that certified personnel are proficient in all aspects of the relevant operation, or that recertification is properly conducted.
- o The operating contractor does not routinely use hands-on demonstrations or visual representations in general employee and personnel protection training.
- o Radiation workers have not received radiation safety training.
- o The operating contractor enforcement mechanism for programs that have refresher training requirements, especially for annual respirator training, is not adequate.
- o Users of airline respirators do not receive specific training in the hazards and protective measures, specifically with respect to compressor selection.
- o Employees are not properly fit tested and trained before using respirators.
- o The medical department does not have records to support the respirator medical and fit tests.
- o The general employee and personnel protection training program does not ensure the knowledge and practical abilities of all personnel who may work with, or be affected by, specific area hazards.
- o DOE Area Office safety training improvements are not being accomplished in a timely fashion.
- o The operating contractor has not established methods to ensure that individuals with limited proficiency in the english language have an understanding of the hazards associated with their work and expected safe work practices.

- o The operating contractor has not documented training provided to address workplace-specific hazardous chemical exposure.
- o General employee training currently does not include all general hazards that could be encountered.
- o A system is not in place to ensure that training required for subcontractor personnel is provided.
- o The training program accreditation status is in jeopardy if it must conform with the undeveloped sitewide training program.
- o The DOE Area Office has not enforced requirements to develop, conduct, or evaluate training for one facility.
- o The operating contractor has not fulfilled all the requirements for general employee training or radiation safety training.
- o The training expertise within the operating contractor organization is infrequently used for lessons learned or for assistance in solving other sitewide training issues.

TC.5 MAINTENANCE PERSONNEL

Performance Objective: The maintenance personnel training and qualification programs should develop and improve the knowledge and skills necessary to perform assigned job functions.

- o The maintenance department is not meeting its established schedule for implementation of performance-based training.
- o Oversight and control of training for maintenance personnel does not ensure that they possess adequate knowledge and skills to safely and correctly complete assigned tasks.
- o The subcontract evaluation process does not contain definite criteria and accountability for training.
- o The operating contractor has not developed and implemented training in electrical safety based on existing safety risks and federal regulations.

TC.6 CRITICALITY SAFETY

Performance Objective: Personnel should receive training in nuclear criticality safety consistent with their assigned tasks.

- o The operating contractor does not have a policy to specify the level of nuclear criticality safety training required for all individuals.
- o There is no documented program which ensures that all people who handle fissionable material receive appropriate, job-specific criticality safety training.

TC.7 TRAINING FACILITIES AND EQUIPMENT

Performance Objective: The training facilities, equipment, and materials should effectively support training activities.

- o Training facilities do not always provide a proper learning environment for training classes.
- o Training equipment and materials do not always correspond to that used at the site.
- o Some training aids are not always current.
- o A lack of dedicated training facilities and equipment inhibits the ability to conduct required environment, safety, and health training, including hands-on mastery of skills.

TC.9 RADIOLOGICAL PROTECTION PERSONNEL

Performance Objective: The radiological protection personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

- o The operating contractor does not have a training or retraining program for radiation protection personnel including As-Low-As-Reasonably-Achievable.
- o The DOE Area Office is not providing radiation protection training oversight.
- o The health physics training program does not include classroom training.
- o Observed frisking practices do not demonstrate that radiation worker training is effective.

- o A minimum set of selection criteria has not been established identifying formal academic/vocational health physics supervisor training requirements.
- o An appropriate training and management control program for visitors has not been developed to minimize the number of dosimeters not returned yearly.
- o The new radiation worker safety course submitted to plant training has not been approved and implemented in a timely manner.
- o The operating contractor has not developed and implemented a proficiency evaluation program for radiation workers to indicate satisfactory proficiency status for each employee.
- o Radiation protection personnel are not adequately involved in the development, implementation, and administration of training programs involving radiation safety.
- o The need for strong two-way communications between radiation protection staff and operations staff on safety-related issues has not been emphasized in the development of the radiation protection training program and site procedures.
- o A tracking system has not been developed that will allow radiation safety personnel to determine whether the proper training has been received prior to dosimeter issuance to site personnel.
- o Adequate resources have not been provided for a health physics technician training laboratory for the applied training as required by DOE and best industry practices.
- o The operating contractor has not reviewed its occupational worker orientation and health physics technician instructors qualifications to ensure that the instructors obtain site-specific and work area experience.
- o Visitors who may enter a controlled area are not provided with either a full or an abbreviated version of the existing occupational worker orientation.
- o The operating contractor has not documented either initial or continuing training programs for radiation protection technicians.
- o There is no documentation to assure that training for radiation protection personnel meets the needs of the facility or DOE requirements.

TC.10 TRAINING FOR SUPERVISORS, MANAGERS, AND TECHNICAL STAFF

Performance Objective: Training programs for supervisors, managers, and the technical staff should broaden overall knowledge of processes and equipment and develop supervisory and management skills.

- o Training requirements have not been developed and implemented for all technical support personnel whose job responsibilities directly affect the safety of operations.
- o Training programs in supervisory skills have not been developed for middle- and top-level supervision and technical staff personnel.
- o Some programs for initial and continuing training for supervisors, managers, and the technical staff does not broaden overall knowledge of processes and equipment and develop supervisory and management skills.

TC.11 SIMULATOR TRAINING/FACILITY EXERCISES

Performance Objective: Simulator training and/or facility exercises should be conducted utilizing methods and techniques that are effective in developing and maintaining team and individual knowledge and skills in responding to abnormal and emergency events and in integrated operations.

- o Personnel may not be capable of performing required tasks during off-normal situations due to a lack of training and drills.
- o Exercises to develop and maintain skills in responding to process and procedure abnormal and emergency events are not conducted.
- o Operators are not periodically evaluated to ensure proper operating team response to abnormal and emergency alarms.

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