

**Department of Energy**

Washington, DC 20585

February 28, 1994

The Honorable John T. Conway  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, N.W.  
Suite 700  
Washington, D.C. 20004

Dear Mr. Conway:

The enclosed report entitled, "The Order Compliance Special Assessment at Technical Area-55," is provided to meet our previous commitment to provide a report evaluating the Order compliance deficiencies identified during the special assessment at the Technical Area-55 Plutonium Facility.

Sincerely,

A handwritten signature in cursive script that reads "Donald F. Knuth".

Donald F. Knuth  
Deputy Assistant Secretary for  
Facility Transition &  
Technical Support  
Defense Programs

Enclosure

cc w/encl:  
Office of the Department Representative to the  
Defense Nuclear Facility Safety Board, EH-6

## THE ORDER COMPLIANCE SPECIAL ASSESSMENT AT TECHNICAL AREA-55

### I. Introduction

In late November 1993, the Department of Energy (DOE) asked the Los Alamos National Laboratory to perform an initial evaluation of Technical Area (TA)-55 operations across a small number of training and safety Orders. The intention of this effort was to perform a quick, less rigorous assessment to gain a level of confidence of being in compliance with the selected Orders. This was to be done prior to completing the more detailed, rigorous Order Compliance Self-Assessment (OCSA) that will document the baseline state of compliance. This approach is recommended in the DOE Standards Implementation Assessment Instruction, Revision 3 Draft, dated December 6, 1993. Because the Department has been hosting a Conduct of Operations Mentor Program during the past ten months, six DOE Orders related to mentor activities and the DOE Radiological Control (RADCON) Manual were selected for the special assessment. The six Orders include DOE Order 5480.5, "Safety of Nuclear Facilities," DOE Order 5480.11, "Radiation Protection for Occupational Workers," DOE Order 5480.18A, "Accreditation of Performance-Based Training," DOE Order 5480.19, "Conduct of Operations," DOE Order 5480.20, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Nuclear Facilities," and DOE Order 5480.24, "Criticality Safety." These Orders, combined with the DOE RADCON Manual, cover a broad base of operations of importance to TA-55.

### II. Description of the Process

The process used in performing the assessment involved a number of features. Each of the six Orders, as well as the DOE RADCON Manual, had unique challenges in understanding the specific requirements. Consequently, the assessment basis for each Order was somewhat unique. The Laboratory contacted a number of other DOE and contractor organizations and discussed lessons learned and recommendations. To the extent possible, lessons learned were incorporated. In fact, during the progress of the assessment, changes were incorporated. The Laboratory selected expert personnel for performing each assessment. These personnel came from both within TA-55 as well as from elsewhere within the Laboratory. At the end of the assessment, an additional evaluation was performed to judge the significance of each area of deficiency. A procedure was prepared and used to rank all of the issues of noncompliance, deficiency, or correction. Details of this process are as follows:

#### A. Basis for Assessment

In general, the basis for assessing compliance was the DOE Requirements Self-Assessment Database (RSAD) that includes all of the requirements statements from the DOE Orders. There were deviations from this database as stated below.

With regard to Conduct of Operations (DOE Order 5480.19), a requirements matrix used by Oak Ridge Y-12 for their compliance assessment was obtained. The matrix was modified to reflect TA-55 operations. All of the Order requirements are included within the matrix, although there is not a specific line-by-line correlation.

With regard to Criticality Safety (DOE Order 5480.24), the Order contains numerous secondary references such as standards of the American Nuclear Standards (ANS) Institute. In evaluating these references, the Laboratory discovered that the number of requirements grew by a factor of ten over that stated in RSAD and, therefore, chose to prepare a requirement's matrix that included the secondary references. This made the evaluation of DOE Order 5480.24 much more rigorous than simply reviewing the Order.

With regard to Radiation Protection for Occupational Workers (DOE Order 5480.11 and the RADCON Manual), an RSAD listing was not available. Also, the Laboratory currently has an approved implementation plan for radiation protection. At TA-55, an RSAD type listing of requirements was prepared, and the assessment was performed against this list. The results have been reported both as line-by-line findings as well as impact against the implementation plan.

With regard to Accreditation of Performance Based Training (DOE Order 5480.18A), TA-55 is the only facility at the Laboratory required to have a Training Accreditation Program. The assessment was based on the performance of the program against the Order.

Both the Nuclear Facility Safety Order (DOE Order 5480.5) and Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Nuclear Facilities (DOE Order 5480.20) were assessed against the RSAD listings.

#### B. Personnel Selection

All personnel were selected by the Laboratory based on their extensive experience both within the field of interest as well as their experience and familiarity with TA-55. The individuals included:

- o The TA-55 Facility Safety Manager,
- o Deputy Group Leader for Laboratory Industrial Safety,
- o Laboratory and Facility Criticality Safety Committee Chairman,
- o Group Leader for Nuclear Criticality Safety,
- o Group Leader and Deputy Group Leader for TA-55 Training,
- o Facility Manager for TA-55, and
- o Section Leader for TA-55 Facility Radiation Protection

Each of these individuals involved a significant number of other people in gathering information and in performing the assessment. The additional people came from within the operations at TA-55 as well as from the Offices of Primary Responsibility from throughout the Laboratory.

### C. Assessment

The individuals performing the assessment first took the Order Requirement Statements (or matrix statements) and identified the appropriate Policies, Program Requirement Documents, and Procedures that indicated compliance with each statement. They noted the information and gathered the appropriate documents. These documents are currently being compiled in a Document Control and Records Management (DCRM) center for the facility. These documents will become the nucleus for a formal DCRM center for the facility as the more extensive OCSA proceeds throughout the Laboratory.

The assessors then listed the evidence documents for each of the Order Requirement Statements (or matrix statements). For those issues found to be inadequate, the following points were noted: the level of compliance, any issues associated with compliance, and disposition of issues, including a Hazards Consequence Ranking.

### D. Hazards Consequence Ranking

All statements found not to fully address the RSAD requirements were evaluated against a Hazards Consequence Ranking. This was done in order to determine how serious any deviation was and, thereby minimize the impact of previously unreviewed risks. The process for evaluating the Hazard Ranking is described in a procedure and includes a consequence of occurrence and a probability of occurrence features. The two dimensions are synthesized into the overall Hazard Ranking. Hazard rankings range from level 1, which is most severe, down to level 4, which is considered an item whose correction is to be planned and scheduled. Each hazard area is tested against both the Unreviewed Safety Question Order (DOE Order 5480.21) and the Occurrence Reporting Order (DOE Order 5000.3B) criteria.

### E. Management Review of Hazards

All statements that went through the Hazards Consequence Ranking were systematically reviewed by a number of levels of Laboratory and DOE management. First, every statement was reviewed by the DOE mentors for consistency and suitability of ranking. The DOE mentors questioned the assessors concerning their use of the criteria and their rationale for categorization. After the mentors completed their review, all statements were again reviewed by the Nuclear Materials Division Director and Deputy Division Director. Again, assessors were questioned concerning the use of the criteria and the rationale for categorization. Finally a number of DOE/Defense Programs (DP) managers, representing the Los Alamos Area Office (LAAO), the Albuquerque Operations Office (AL), and Headquarters reviewed a significant sampling of the statements. During the review process, some of the hazard ranks were changed.

### III. Results

The results of the assessment are listed on an Order-by-Order basis. Note that the radiological protection Order and RADCON Manual are discussed together as well as are the two training related Orders.

#### A. Safety of Nuclear Facilities (DOE Order 5480.5)

In the evaluation of this Order, seven areas did not completely meet requirements. The hazards consequence ranking of these were all found to be low level (level 3 and 4).

The first and second areas relate to the lack of an approved configuration management (CM) plan. A draft plan covering TA-55 CM requirements has been written and incorporates (a) existing TA-55 procedures and (b) all required CM procedures that are currently being drafted. This document will be issued as soon as it undergoes appropriate review and approval.

The third area is the lack of an approved standards development procedure. Necessary standards existed in TA-55 but actual documentation is lacking. Resolution requires institutional attention and, therefore, it is being transferred to the formal OCSA. It will be fully addressed when that process is completed.

The fourth area is the lack of a formal document control and records management system and plan. Technical Area-55 has commissioned the preparation of a Document Control and Records Management system and plan. The plan will be issued as soon as practical and the system implemented thereafter. It will be utilized to support the formal OCSA.

The fifth area is that TA-55 and the Laboratory do not meet all requirements of the contractor independent safety review system (ISRS). The Laboratory will meet this requirement when the following two requirements are met:

The fifth and sixth areas involve the use of qualified personnel (e.g., professional safety disciplines, engineers, and scientific peer reviewers) in the review of facility changes and new or changed experiments. The charters of committees performing such reviews will be changed to reflect the requirement for the use of appropriate qualified personnel in such reviews.

The Laboratory has recently assigned a number of additional safety discipline personnel to TA-55. These people include an industrial hygienist, an industrial safety specialist, a fire protection engineer, a criticality safety expert, and an occupational medicine specialist. These persons are in addition to the resident health physics personnel.

The seventh area is the lack of the required triennial review of the effectiveness of the ISRS. Resolution of this matter is not limited to TA-55, and thus, it is being transferred to the formal OCSA. It will be fully addressed when that process is completed.

B. DOE Order 5480.20, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Nuclear Facilities"

In the evaluation of this Order, 21 areas were found where the Laboratory does not have procedures for performing training. The hazards consequence ranking of these were all found to be low level (levels 3 and 4). In 13 areas, the Laboratory is currently performing the training and incorporating the required training features into existing procedures. To do this, the Laboratory is changing TA-55 Administrative Procedures. Generally, these changes are an extension of existing information. In a few cases, the information is new.

The impact of the other eight areas is not limited to TA-55, and thus they are being transferred to the formal OCSA. They will be fully addressed when that process is completed.

C. DOE Order 5480.18A, "Accreditation of Performance-Based Training"

Technical Area-55 compliance with this Order is being managed under a DOE-approved accreditation plan and implementation schedule. This implementation plan simply builds on an already strong performance-based training program at TA-55. The Laboratory is currently up to date with their implementation according to the schedule and is, therefore, deemed to be fully compliant according to the provisions of DP-AP-202.

D. DOE Order 5480.19, "Conduct of Operations"

In the evaluation of this Order, the Laboratory found 127 areas where they do not completely meet requirements. In almost all cases, work within the facility was found to be appropriate while the documentation was insufficient. Hazards Consequence Rankings associated with these areas were found to be in low-level categories.

The 127 areas were evaluated using a Pareto analysis to group common topics so that corrective actions could be focused on broad "emphasis areas." The Pareto analysis found 21 emphasis areas each addressing a major TA-55 functional or process area. Corrective action plans (CAPs) were developed for each of the 21 emphasis areas. Each emphasis was then prioritized.

Corrective Action Plan implementation has begun in the six emphasis areas deemed most important. Areas affected by the CAPs include TA-55 Operations Manual, document control and records management, and lockout/tagout procedures. For example, new red-lock procedures have been approved that should correct problems identified in existing procedures.

The balance of the emphasis areas will be prioritized and scheduled and then completed as resources permit. Some of these may be completed through the OCSA process.

E. DOE Order 5480.24, "Criticality Safety"

This Order contains 43 RSAD requirement statements. In addition, it references a large number of standards of the ANS Institute which increase the number of requirements up to 203. Of these 203 requirements, the Laboratory found 150 to be applicable to TA-55. In reviewing those requirements, they found five RSAD areas where they could not fully demonstrate Phase I compliance. These five areas include lack of formal procedures for testing systems and material measurement control, not fully defining "in process" requirements for movement of special nuclear materials, not having formality in documentation of computer codes for criticality calculations, and not having documented sound volume levels for alarms.

To date, the Laboratory has issued procedures for testing of systems, prepared a configuration plan for computer code management, started planning on how to measure and document both evacuation alarm and ambient sound levels within the facility, and prepared information for the draft FSAR concerning material measurement control. The Laboratory will be submitting a deviation request concerning the strict definition of the terms "in-process" and "not in-process" in order to clarify how they control the movement of special nuclear materials. Once these actions are complete, they will be in full compliance with this Order.

F. DOE Order 5480.11, "Radiation Protection"

There are 238 requirement statements in the RSAD for this Order. All statements were assessed, and 20 areas were identified where requirements are not completely met. In all cases, documentation did not specifically address or restate the requirement statements. In almost all instances, actual actions are in place to support the requirement request. As a result, Hazards Consequence Rankings associated with these areas were found to be in the lowest level category (level 4).

All of these areas are also fully addressed in the RADCON Implementation Plan. This plan addresses a broader requirement for Radiation Protection throughout the Laboratory. This plan describes improvements in an already existing Radiation Protection Program and has been accepted by the DOE as the approved path for RADCON Implementation. Since these areas are part of the RADCON Implementation Plan, no further compliance assessment is appropriate here.

#### G. DOE Radiological Control Manual

The Laboratory has a DOE approved Implementation Plan for the RADCON Manual. This manual contains 3,000+ statements relative to facility and institutional radiation protection. The Laboratory has prepared a Los Alamos National Laboratory RADCON Manual which provides adequate objective evidence for most of the requirement statements. Completion of the Implementation Plan will fully provide acceptable radiation protection for the operations at both TA-55 as well as other facilities at Los Alamos. The Laboratory is current with the implementation of the RADCON Manual. Therefore, per the provisions of DP-AP-202, Los Alamos is fully compliant with the DOE RADCON Manual.

Despite this, the Laboratory performed a line-by-line assessment of TA-55 operations against the DOE RADCON Manual. They found that they had 455 areas of improvement. They fell in areas such as Documentation, Administrative Controls, Postings, Entry Control, CoMingling, Training, and Records Management. All of the issues are identified in the Implementation Plan. All of the issues were categorized using the Hazards Consequence Ranking criteria and were assessed to be in the Level 3 and 4 categories. Since the correction of these items is already planned and resource loaded, no further action is appropriate at this time.

#### IV. Conclusions

The completion of the Order Compliance Special Assessment at TA-55 achieved its intended objective to gain a level of confidence as to the status of Order compliance at TA-55. This involved a sampling of Order compliance by facility personnel and subject matter experts using a selected set of Orders. The Laboratory and DP line management, including AL and LAAO, reviewed the results of the special assessment and concluded that the discrepancies identified in Laboratory programs, policies, and procedures do not indicate any safety concerns, and further, that the special assessment had reverified that operations at TA-55 are being conducted in a safe manner.

While the special assessment did identify a large number (600+) of discrepancies between DOE Order requirements and Laboratory programs, policies and procedures, it should be noted that in the vast majority of these documentation deficiencies, one or more of the following conditions exist:

1. A Laboratory program, policy, or procedure does exist which meets the basic safety intent of the Order requirement, but it did not specifically and fully satisfy the requirement. To be conservative, the special assessment did not take partial credit in these cases. In most of these instances of partial compliance, the facility personnel and subject matter experts, based on their expert knowledge of facility operations, are aware that actual practice fully meets or substantially meets the Order requirement.
2. A very large number of these deficiencies (400+) were in the area of radiological controls and training (DOE Order 5480.18A) where the Laboratory has a DOE approved implementation schedule. The Laboratory is on schedule with implementation of these plans. The approved DOE standard, DP-AP-202, for Order compliance, does not require any further action under these conditions. Accordingly, these 400+ discrepancies should not be viewed as noncompliances. As long as implementation is on schedule, the Laboratory is considered to be in compliance by DOE. However, to be conservative and to revalidate implementation plans, the special assessment reviewed these areas of radiological controls and training.
3. Many of the 600+ discrepancies had already been identified by the Laboratory through other assessment activities or as part of the TA-55 management efforts to improve operations. The support efforts of the DOE mentors at this facility have also focussed on improving operations and meeting the requirements of DOE Orders. Therefore, TA-55 facility management had already prepared the outline, and in some cases, details have been prepared of a plan to upgrade TA-55 programs, policies, and procedures to improve operations in accordance with requirements. In some cases, draft procedures and programs have been developed and partially implemented to accelerate this effort. Again, the special assessment was very conservative, and no credit was taken for draft documentation or partially implemented programs in the special Phase 1 assessment.

As stated earlier, DP line management and Laboratory facility management separately evaluated the 600+ discrepancies and concluded that there are no safety issues which require corrective action or compensatory measures at this time. To the contrary and as stated before, most of these discrepancies were previously identified by the Laboratory and incorporated into the TA-55 Integrated Program Plan and RADCON Manual and Training Implementation Plan. Implementation of this Implementation Plan will resolve a majority of the discrepancies identified during the special assessment. The recommended disposition for the remaining discrepancies, i.e., those not included in an approved implementation plan, is to provide the results of the special assessment to the team conducting the rigorous Order Compliance Self-Assessment for further review, validation, and subsequent preparation of appropriate Request for DOE Approval. In some cases, the subject matter experts have recommended more immediate action such as approval of a policy, program, or procedure currently in draft form as an expeditious means to resolve a discrepancy.

The special assessment at TA-55 and the more rigorous, ongoing Order Compliance Self-Assessment were closely coordinated. The special assessment has served as a valuable learning experience. The lessons learned from the Special Assessment have been incorporated in the development and improvement of the assessment methodology, training, and quality programs for the rigorous program of Order compliance.

The Laboratory and DP consider the special assessment at TA-55 to be completed, and future Order compliance efforts at TA-55 will be conducted as part of the approved Order Compliance Self-Assessment program. The special assessment did reconfirm that while there are a large number of minor discrepancies between DOE Order requirements and Laboratory programs, policies and procedures, that operating practices at TA-55 are being conducted in a safe manner, and that no additional compensatory measures are required. However, the Laboratory and DP are mindful that as the Order Compliance Self-Assessment proceeds, all discrepancies will be evaluated for safety significance to determine if prompt action is warranted to enhance the safety of operations at TA-55.