

**Department of Energy**

Washington, DC 20585

April 5, 1996

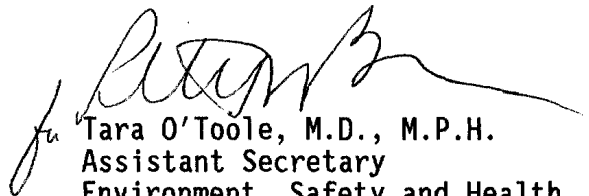
The Honorable John T. Conway
Chairman
Defense Nuclear Facilities
Safety Board
625 Indiana Avenue, NW
Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

The Department of Energy committed in revision 2 of its implementation plan for responding to the Defense Nuclear Facilities Safety Board (DNFSB) recommendation 91-6 to provide quarterly status reports to the DNFSB on the progress of completing commitments made in this implementation plan. The ninth quarterly report is enclosed.

Should you or your staff have any questions regarding this status report, please contact Mr. C. Rick Jones, Director, Office of Worker Protection Programs and Hazards Management, on 301-903-6061.

Sincerely,


Tara O'Toole, M.D., M.P.H.
Assistant Secretary
Environment, Safety and Health

Enclosure

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Department of Energy
Quarterly Status Report - Third and Fourth Quarters 1995
Defense Nuclear Facilities Safety Board
Recommendation 91-6 Implementation Plan

Executive Summary

This Executive Summary discusses progress made by the Department of Energy (Department) in achieving Implementation Plan commitments for Defense Nuclear Facilities Safety Board (Board) Recommendation 91-6 during the third and fourth quarters of 1995. A more detailed discussion on commitment status is provided in the Status Report following this Executive Summary.

Task 1: Develop and issue a Department of Energy policy statement on radiological health and safety.

Complete

The Statement was issued on June 21, 1993.

Task 2: Review existing radiation protection training programs at defense nuclear facilities, and develop and implement a plan for an expanded training program at these facilities.

Subtask 2.1: Radiological Control Training

Four original standardized core courses

Complete

The Department developed standardized training materials for four courses as follows: General Employee Radiological Training, Radiological Worker I and II Training, and Radiological Control Technician Training. Course materials were issued in October 1992.

The Office of Defense Programs (DP) and the Office of Environmental Management (EM) have sent letters to the Board, dated January 3, 1996, reporting that core training courses have been implemented. Since these letters document that training on these four core courses has been implemented at defense nuclear facilities, Department actions under this commitment are complete.

Status of Additional standardized courses

Complete

The training materials for six additional standardized courses were issued on November 11, 1994, and May 1, 1995. The Department no longer plans to develop any more additional standardized courses. All Department radiological activities are regulated by title 10, Code of Federal Regulations, part 835 (10 CFR 835), which requires that all radiological workers be trained commensurate with their assignments, including pertinent

procedures. Under Title 10, Code of Federal Regulations, Part 830.120, *Quality assurance requirements*, personnel must be trained and qualified to ensure they are capable of performing their assigned work.

The Board staff raised a concern regarding the adequacy of training courses for emergency responders and visitors. A review will be performed to determine the status and adequacy of existing requirements and training courses. The review is expected to be available in early 1996, but this activity should not be interpreted as required for closure of Department commitments under Board Recommendation 91-6. Department actions under this commitment are complete.

Status Report on core course implementation through the Annual Report on *Radiological Control Manual* implementation

Complete

The status of implementing the standardized core courses has been reported by letters dated January 3, 1996, to the Board independently by the Office of Environmental Management and the Office of Defense Programs. The training has been fully implemented and completed except for Radiological Control Technician Training at a few sites. As required by subpart J of 10 CFR 835, those workers not fully trained are not permitted to work unless accompanied by and under the direct supervision of a trained worker. Department actions under this commitment are complete.

Document basis for future courses and updates/revisions of ongoing courses

Complete

The training materials for the four original core courses include appropriate technical bases. The Program Management Manual for these courses requires periodic review of material and comparison of program elements with applicable industry standards. This process ensures update of the technical bases during future revisions. The technical basis for the additional courses was issued in April 1995. Department actions under this commitment are complete.

Implementation of post training evaluation and retention testing

Complete

The Department distributed guidelines to establish and conduct post-training evaluation and retention testing programs in December 1994. These guidelines include feedback into the training programs. The Office of Environmental Management and the Office of Defense Programs have provided status letters to the Board, dated January 3, 1996, reporting that post-training evaluation programs have been implemented at all defense nuclear facilities. The retention testing portion of the program has been implemented at most defense nuclear facilities, and will be implemented at the remaining defense nuclear facilities by February 1996. Department actions under this commitment are complete.

Annual review of course materials

Complete

Training materials for the four original standardized core courses contain a form soliciting changes to course material titled: *REQUEST FOR CHANGES TO STANDARDIZED CORE TRAINING MATERIALS*. Completed requests are forwarded to the Office of Worker Protection Programs and Hazards Management for review and necessary action. Two Standardized Training Oversight Groups have been formed to upgrade training material for the four core courses. One group addresses the Radiological Control Technician course and the other addresses General Employee Radiological Training and the Radiological Worker I/II courses. These groups meet at least yearly to upgrade course material, review implementation, and review input from the *REQUEST FOR CHANGES* forms and from course instructors.

Course material has been revised in accordance with comments from the field in 1994 and 1995. The 1994 revision was distributed in October 1994, and the 1995 revision was distributed in November 1995. Department actions under this commitment are complete.

Provide oversight of program implementation

Complete

A multi-faceted approach to oversight and management of radiation protection programs has been instituted. Oversight by the Office of Oversight and its site residents, Operations Offices, Program Offices, and contractor internal audits under 10 CFR 835.102 assure that the standardized radiological control training program will be adequately monitored and deficiencies in training identified and corrected.

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Subtask 2.2: Qualification and performance of radiation protection personnel

Federal Personnel Qualifications

Ready for Closure, Addressed by Department Response to Board Recommendation 93-3

The Office of Human Resources, Technical Personnel Program Office (HR-1.5) has developed the *Radiation Protection Qualification Standard; Defense Nuclear Facilities Technical Personnel* pertaining to qualification of Federal technical personnel in response to Defense Nuclear Facilities Safety Board Recommendation 93-3. This standard includes radiation protection professionals. The Department has implemented this standard and maintains that it is appropriate for Department radiological professionals and that it covers the necessary elements of a qualification program. Implementation of the Qualification Standards will serve to further the process of qualifying Radiological Protection Personnel commensurate with the needs of their duties

Contractor Personnel Qualifications

Open

The Department has formed a Focus Group to address 91-6 Implementation Plan commitments. The group consensus is that imposition of a prescriptive Knowledge, Skills and Abilities document (KSA) on existing contractor personnel systems is not appropriate. It is not implementable in an effective manner under the available Department contracting mechanisms and would be inconsistent with the Department's performance-based management policy. Implementation of a mandatory KSA would divert scarce resources away from maintaining worker safety and increase administrative overhead with little or no added value.

Contractor qualifications for technical personnel are covered under various other directives and guidance. Many of these directives have been upgraded or developed subsequent to the issuance of Board Recommendation 91-6, primarily in response to Board Recommendation 93-3. Implementation of the KSA as written appears to add little benefit in view of the current Department requirements developed and implemented in response to Board Recommendation 93-3. Board Recommendation 93-3 also addresses qualifications for contractor technical positions. Therefore, the implementation plan for Board Recommendation 93-3 covers contractor positions in a manner that was acceptable to both the Department and the Board. As currently written, the draft KSA for contractors conflicts with requirements promulgated in response to Board Recommendation 93-3. Radiological professional qualifications should be addressed in a manner consistent with other technical professionals. The Focus Group is conducting a review of present qualification requirements for contractor technical personnel. If the review establishes that compliance with current Department requirements provides adequate qualifications for contractor professionals, then the Focus Group will consider that Department commitments relative to promulgation of mandatory DOE KSAs for contractors are adequately met or are obviated. The Focus Group Review is anticipated to be completed in early 1996.

Task 3: Evaluate the adequacy of the Department of Energy infrastructure and resources dedicated to radiation protection at defense nuclear facilities.

Open

The *U.S. Department of Energy Management Action Plan in Response to Infrastructure Evaluation Team Recommendations* is expected to be issued in early 1996. At the Board's request, a briefing on the management action plan was provided to them on January 26, 1996.

Oversight of the implementation of this plan is integral to routine oversight activities conducted by the Office of Oversight (EH-2), and EH-2 has routinely assessed Department implementation of 91-6 related commitments. With issuance of the management action plan, Department actions under this commitment will be complete.

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Task 4: Analysis of reported occurrences and correction of radiation protection program deficiencies at defense nuclear facilities.

Complete. The final report was issued on August 14, 1995.

Task 5: Document technical basis for Department radiation protection standards and remedial actions during standards implementation at defense nuclear facilities.

Identify gaps in standards used to develop radiological related requirements

Complete

The Department documented the technical basis for developing the *Radiological Control Manual*, Department Order 5480.11, and 10 CFR 835, and found no gaps in the standards used in their development. The Department's Office of Worker Protection Programs and Hazards Management (EH-52) is responsible to review new national and international standards for applicability to radiological worker protection and ensure that Department regulations and requirements are revised accordingly. EH-52 is currently performing a formal review of Department radiological protection requirements to determine their adequacy for worker protection. Should the review determine that additional regulations are necessary, an amendment to 10 CFR 835 will be promulgated. Department actions under this commitment are complete.

Provide oversight of radiological protection programs based on current standards

Complete

The Office of Oversight utilizes the latest Department requirements in their oversight activities. Department actions under this commitment are complete.

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Develop target dates for implementation of *Radiological Control Manual*, Department Order 5480.11 and 10 CFR 835

Report on implementation of *Radiological Control Manual*, Department Order 5480.11 and 10 CFR 835

Overtaken by Events, Ready for Closure

Consistent with the Department's policy of adopting regulatory standards that are enforceable under the Department's Price-Anderson Amendments Act enforcement authority, Department Order 5480.11 has been superseded by 10 CFR 835, "Occupational Radiation Protection." The Department has reviewed and approved documented radiation protection plans from all defense nuclear facilities which establish programs, schedules, and other measures to ensure full compliance with 10 CFR 835 by January 1, 1996. The Department is processing a small number of requests for exemption from certain provisions of 10 CFR 835 under the processes established in 10 CFR 820, "Procedural Rules for Department of Energy Nuclear Activities." None of these exemptions sought relief from the compliance date for 10 CFR 835. Continued compliance will be assured through an established system of self-reporting, inspections, and enforcement activities.

With the advent of 10 CFR 835, the requirements within the *Radiological Control Manual* (RCM) have become largely redundant. The RCM will be retained as implementing guidance and, notably, many of the RCM requirements have already been implemented at defense nuclear facilities. The Department's position is that 10 CFR 835, as supplemented by Department Notice 441.1, *Radiological Protection For DOE Activities*, provides adequate worker protection. Therefore, the Department intends to concentrate its efforts on ensuring effective compliance with 10 CFR 835 and adding any additional requirements deemed necessary for adequate worker protection. The present status of 10 CFR 835, Department Notice 441.1, and the RCM thus constitutes full implementation of radiological directives in today's context.

The 1994 Annual Report to the Secretary on *Radiological Control Manual* implementation was issued December 1995 and is attached to this status report. However, the need to annually report on the progress of occupational radiation protection requirement implementation has been overtaken by the changes discussed above and is no longer relevant. With the publication of the 1994 report, no further reporting on RCM implementation is appropriate and Department actions under this commitment have been completed.

Status Report

Task 1: Develop and issue a Department of Energy policy statement on radiological health and safety. [*Responds to Board specific recommendation 1.*]

IMPLEMENTATION PLAN COMMITMENT 1.0:

On June 8, 1993, Secretary Hazel O'Leary issued the Department of Energy (Department) policy statement on radiological health and safety. This policy statement was promulgated under Department Notice 5480.8, sent to the Defense Nuclear Facilities Safety Board, and subsequently published in the *Federal Register* on June 21, 1993. The policy statement was included as a preface to Revision 1 of the *Radiological Control Manual*.

STATUS:

- 1.a. COMPLETE: The policy statement was issued as Department Notice 5480.8 on June 8, 1993.
- 1.b. COMPLETE: The signed policy statement was forwarded to the Board on June 9, 1993.
- 1.c. COMPLETE: The policy statement was published in the Federal Register on June 21, 1993.

No further action is planned on this task.

Task 2: Review existing radiation protection training programs at defense nuclear facilities, and develop and implement a plan for an expanded training program at these facilities.

Subtask 2.1: Radiological Control Training
[Responds to Board specific recommendations
2a and g]

IMPLEMENTATION PLAN COMMITMENT 2.1.1:

Based on the approved site-specific *Radiological Control Manual* implementation plans, the Department will provide the Board with a complete listing of standardized core training material implementation milestones by June 30, 1993. These milestones will identify when standardized core course materials will be fully implemented including development of the site-specific training materials. General Employee Radiological Training, Radiological Worker I and II Training, and Radiological Control Technician Training for all affected workers using the standardized core training material will be completed by December 1994. A brief explanation of the current development status, including milestones for development, use, and implementation, for each of the additional standardized core training courses will be provided to the Board by June 30, 1993. Since the Department is to update the Secretary on *Radiological Control Manual* implementation progress in an Annual Report that is expected to be issued at the end of each calendar year beginning in 1993, the Department will advise the Board of the status of efforts to fully implement the standardized core training courses during the first quarterly status report following the secretarial update.

Note: Although Secretarial Offices and Operations Offices were to provide recommendations for changes to training materials, the Training Committees have taken this responsibility for suggesting changes. This process is more efficient for the Department as the personnel working with these materials provide the recommendations for improving and updating these materials. Two layers of review of recommendations, which would provide minimal added value, are effectively removed. However, the Secretarial Offices and Operations Offices still have ample opportunity to suggest course material changes to EH-52 should they identify the need for any such changes. In addition, the course materials include a suggested change/revision form that may be submitted to the Department at any time.

STATUS:

- 2.1.1.a. **COMPLETE:** The Department provided a complete listing of standardized core training material implementation milestones for its defense nuclear facilities to the Board on June 30, 1993.
- 2.1.1.b. **COMPLETE:** The Department developed standardized training materials for four courses as follows: General Employee Radiological Training (GERT), Radiological Worker I and II Training (RW), and Radiological Control Technician Training (RCT). Course materials were issued in October 1992. Status letters dated January 3, 1996 documenting implementation of the four original core courses were provided independently to the Board by the Office of Environmental Management and the Office of Defense Programs. Because these letters document that training on these four core courses has been implemented at defense nuclear facilities, Department actions under this commitment are complete.

Note: • Mound has completed training for approximately fifty-eight percent of RCT's as of January 1, 1996. For those RCT's that were not fully trained by the end of 1995, the nature of work and the needed supervision will be tailored depending on their training stage.

- Lawrence Livermore National Laboratory has been granted a temporary exemption to complete RCT training by June 30, 1996.
- MK Ferguson at Y-12 has completed training for approximately fifty percent of RCT's as of January 1, 1996. Training is continuing for the other fifty percent and they are performing only functions for which they have been trained.

2.1.1.c. **COMPLETE:** The schedule for developing additional courses, which was originally provided to the Board, has been revised. The Department has issued five additional courses for use at defense nuclear facilities with one additional training guide (Radiological Support Personnel) to be issued in early 1996. These additional courses are:

- a. Higher Level Training for Supervisors;
- b. Plutonium Facilities Training;
- c. Radiological Control Manual Training for Managers;
- d. Radiological Assessor Training Fundamental Radiological Control; and
- e. Radiological Assessor Training Applied Radiological Control.

Further development of additional standardized courses is not planned under the Department 91-6 Implementation Plan Commitment. Sufficient requirements exist in Department regulations and Orders to require training for radiological workers in those cases where training in addition to the original four standardized core courses is appropriate:

- 10 CFR 835.902 *Radiological workers*, states: *The training shall include procedures specific to an individual's assignment. The level of training is to be commensurate with each worker's assignment.*
- Department Notice 441.1, section 6.c.(2) states: *Training requirements commensurate with the hazard within a posted area shall be completed prior to permitting an individual unescorted access to that area.*
- 10 CFR 830.120(c)(1)(ii) states: *Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained.*

The Board staff raised a concern regarding the adequacy of training courses for emergency responders and visitors. A review of this issue will be performed to determine the status and adequacy of existing requirements and training courses. The review is expected to be available in early 1996, but this activity should not be interpreted as required for closure of Department commitments under Board Recommendation 91-6. Department actions under this commitment have been completed.

- 2.1.1.d. **COMPLETE:** The status of implementing the standardized core courses has been reported independently by letters dated January 3, 1996, provided by the Office of Environmental Management and the Office of Defense Programs. Separate reporting of implementation status in the Annual Report to the Secretary on *Radiological Control Manual* implementation is no longer relevant. Department actions under this commitment have been completed.

IMPLEMENTATION PLAN COMMITMENT 2.1.2:

By December 1993, for each of the existing standardized core training courses, the Department will document each course's technical basis including a description of how pertinent references and standards were used or why certain documents were not used including, at a minimum, those references suggested by the Board in Recommendation 91-6 and its attachment. In addition to the technical basis for each training course, the basis for any identified refresher or continuing training requirements will also be documented.

Similar technical basis documentation will be included during the development of future courses, as well. As course materials are revised and updated, these technical bases will be updated as needed.

STATUS:

- 2.1.2.a. **COMPLETE:** The technical bases for the four original standardized core training courses have been developed. This information was provided to the Board staff on March 8, 1994.

- 2.1.2.b. **COMPLETE:** The basis for refresher and continuing training course material for the original four standardized core courses is included in the course material. These courses generally adopted industry standards which use similar requirements for refresher and continuing training.
- 2.1.2.c. **COMPLETE:** The lesson plans for additional standardized courses were transmitted for use on November 11, 1994, and May 1, 1995. In addition, a compilation titled *Basis for DOE Standardized Radiological Training Programs* was developed in April 1995. No further technical basis development is intended under the Department 91-6 Implementation Plan Commitment. Sites are expected to utilize the material as necessary to enhance their specific training programs. Department actions under this commitment are complete.

The technical basis for the original four core courses, General Employee Radiological Training, Radiological Worker I and II and Radiological Control Technician, is included as a part of the lesson plan. The Program Management Manuals for these courses include the requirement for periodic review of material and a comparison of program elements with applicable industry standards and requirements. However, it should be noted that to date there have been no revisions that required update of the technical basis. Department actions under this commitment are complete.

IMPLEMENTATION PLAN COMMITMENT 2.1.3:

The Department's defense nuclear facilities will also ensure the effectiveness of Department and contractor training provided to workers through post-training evaluations on a continuing basis. Post-training evaluations will be used to identify opportunities for improving course materials and upgrading instruction methods and techniques. These evaluations will also be used to identify needs for additional training. By October 1993, the Department will identify the criteria to be used for developing a post-training evaluation program. The post-training evaluation program will be developed and distributed to Department contractors by May 1994. Because not all defense nuclear facilities have fully implemented the standardized core training materials, contractors will be permitted six months to fully implement a post-training evaluation program following implementation of the standardized core training. Those defense nuclear facilities that have implemented the standardized core training materials prior to the availability of the post-training evaluation program must implement the program by December 1994.

At least annually, Cognizant Secretarial Officers and Operations Offices will request and coordinate contractor recommendations to the Office of Health Physics and Industrial Hygiene for upgrading and improving standardized core training materials. These recommendations will be evaluated and incorporated, as appropriate. Additionally, the post-training evaluations will be used to maintain and upgrade the site-specific portions of these training courses. Department oversight organizations will monitor program implementation and adequacy.

STATUS:

- 2.1.3.a. **COMPLETE:** Development of the post training evaluation program was completed on September 8, 1994.
- 2.1.3.b. **COMPLETE:** The post training evaluation program was distributed by EH-1 and the Office of Field Management to Department sites and contractors on December 9, 1994. The post training evaluation program includes the retention testing criteria discussed under commitment 2.2.7.
- 2.1.3.c. **COMPLETE:** The Department developed post training evaluation guidance which was distributed in December 1994. The status of implementing post training evaluation and retention testing has been reported independently by the Office of Environmental Management and the Office of Defense Programs by letter dated January 3, 1993. Since these letters document that this program has been implemented or is scheduled to be implemented by February 1996 at defense nuclear facilities, Department actions under this commitment are complete.
- 2.1.3.d. **COMPLETE:** Training materials for the four original standardized core course contain a form soliciting changes to course material titled: *REQUEST FOR CHANGES TO STANDARDIZED CORE TRAINING MATERIALS*. Completed requests are forwarded to EH-52 representatives for review and necessary action. This method for continuous feedback exceeds the commitment to seek feedback annually. Course material has been revised in accordance with comments from the field in 1994 and 1995. The 1994 revision was distributed in October 1994 and the 1995 revision was distributed in November 1995.

Efforts to maintain the course materials will continue as appropriate. Currently, two Standardized Training Oversight Groups have been formed to upgrade training material for the four core courses. One group addresses the Radiological Control Technician (RCT) course and the other addresses General Employee Radiological Training (GERT) and the Radiological Worker I/II (RW) courses. These groups meet periodically to upgrade course material and review implementation. The RCT group met during the weeks of February 27 and August 28, 1995. The RW/GERT group met during the weeks of December 12, 1994, and September 12, 1995, (although they did not address GERT at that time). GERT material was reviewed during the 1995 Annual TRADE meeting by the Radiation Protection Training Special Interest Group Steering Committee. These groups review user input from the *REQUEST FOR CHANGES* forms and from course instructors to develop revision recommendations. This process exceeds the commitment to Board; therefore, Department actions under this commitment are complete.

Note: The 1995 revision of the Radiological Worker Training courses concluded an effort to divide the training material into modules. The two courses have been combined into one, with the more advanced material available in modular form for those students who need it for their job scope [see 10 CFR 835.902

and Department Notice 441.1, Section 6.c.(2)]. This revision reduces administrative overhead while maintaining adequate worker training material.

- 2.1.3.e. **COMPLETE:** The Department developed post training evaluation guidance which was distributed in December 1994. The status of implementing post training evaluation and retention testing has been reported independently by the Office of Environmental Management and the Office of Defense Programs by letter dated January 3, 1996. Since these letters document that this program has been implemented or is scheduled to be implemented by February 1996 at defense nuclear facilities, Department actions under this commitment are complete.

Individual Department sites and contractors are responsible for improving course materials and upgrading instruction methods and techniques. Consequently, when adopting the standardized course material, site-specific information is required. Department sites and contractors are individually responsible for maintaining this site-specific material current. Line management retains responsibility and accountability for assuring that site-specific training material is current and accurate. Since maintenance of these site-specific materials is a local issue, Department Headquarters does not typically monitor progress or status at each defense nuclear facility.

Department actions under this commitment are complete.

- 2.1.3.f. **COMPLETE:**

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Oversight of radiological protection programs within the defense nuclear complex is comprised of two components: independent oversight conducted by the Office of Oversight in the Office of Environment, Safety and Health (EH-2) and oversight performed by line management (Headquarters and Field). EH-2 is responsible for independent programmatic evaluation of the adequacy of radiological protection requirements and standards used within the defense nuclear complex and the effectiveness of program implementation. While the EH-2 focus is on Departmental functions at the Headquarters and Field levels, line management retains responsibility for assuring adequate implementation by contractors.

EH-2 periodically conducts reviews of Department response to DNFSB Recommendation 91-6. The first review was conducted in March 1995 and EH-2 is currently completing a second review. These reviews were conducted with an emphasis on Headquarters progress towards achieving commitments made in response to DNFSB Recommendation 91-6. EH-2 site representatives also conduct routine surveillance at ten defense nuclear sites. These surveillance concentrate on the effectiveness of program implementation and performance. Where performance is not commensurate with requirements or standards, the

site representatives work with the cognizant line management personnel to determine what actions are being taken to correct identified deficiencies.

Although the execution of line management functions differs somewhat between DP and EM, in general the Headquarters elements are responsible for providing implementation policy, guidance, and performance objectives to the field elements. Field elements are responsible for assuring that contractors are effectively implementing radiological protection standards and requirements. As part of management of programs under their purview, field elements routinely conduct assessments of contractor performance and will be responsible for evaluating compliance with 10 CFR 835 beginning in January 1996. In turn, the Headquarters elements are responsible for assuring that the field elements are effectively executing their responsibilities.

The multi-faceted approach to oversight and management of radiation protection programs provides assurance that the standardized radiological control training program will be monitored for adequacy as follows:

1. Contractors conduct post-training evaluation and retention testing for each of the four standardized core courses. Should any deficiencies in course content be detected, the contractor will either upgrade site specific portions of the training or request changes through the Standardized Training Oversight Group and the Office of Worker Protection Programs and Hazards Management.
2. Line management monitors contractor performance in radiological protection through a variety of methods such as direct assessment, ORPS occurrence investigation, Operational Readiness Reviews, performance indicators, and others. When deficiencies in performance are identified, the root causes for deficient performance are determined. If training is deficient, the contractor will either upgrade site-specific portions of the training or request changes through the Standardized Training Oversight Group and the Office of Worker Protection Programs and Hazards Management.
3. EH-2 may identify programmatic deficiencies during their assessments, or through the EH-24 site rep program. If training is deficient then the line management will work with the contractor to either upgrade site specific portions of the training or request changes through the Standardized Training Oversight Group and the Office of Worker Protection Programs and Hazards Management.

Subtask 2.2: Qualification and Performance of
Radiation Protection Personnel [*Responds to Board
specific recommendations 2b through f*]

IMPLEMENTATION PLAN COMMITMENT 2.2.1:

The Department will determine the key radiation protection positions both as identified in the *Radiological Control Manual* and any additional positions with a discretionary decision-making role in radiological matters (e.g., Radiological Control Manager, Radiological Control Program Advisors, Health Physicists, Radiological Control/Health Physics Technicians, Dosimetrists, Facility Representatives, managers, and supervisors) at defense nuclear facilities by August 1993.

STATUS:

2.2.1. COMPLETE: The Department developed a definition for key radiation protection positions. The Board staff was provided with the definition and listings of key radiation protection positions on August 4, 1994.

IMPLEMENTATION PLAN COMMITMENT 2.2.2:

The Department will complete the identification of the level of knowledge, skills, abilities, and other qualifications needed for each key radiation protection position consistent with Office of Personnel Management and Department contracting procedures by February 1994. A comprehensive document describing the level of knowledge, skills, abilities, training and other qualifications for these key radiation protection positions will be developed by April 1994. Position descriptions and their corresponding training and qualification requirements for key radiation protection positions will be documented in the appropriate Department Order, Notice, and/or the *Radiological Control Manual* by August 1994. As provided in the Board's specific recommendations 2a and 2b, the identification of the level of knowledge, skills, and abilities will include comparison with guidance on training contained in "Guide to Good Practice in Radiation Protection Training," Training Resources and Data Exchange Oak Ridge Associated Universities 88/H-99 and "Guidelines for Training and Qualification of Radiological Protection Technicians," Institute of Nuclear Power Operations 87-008. The Department will base the identification of the level of knowledge, skills, abilities, and other qualifications on professional and industry standards. In defining the qualification requirements for radiation protection positions, consideration will be given to including association or interaction with professional health physics organizations, such as the Health Physics Society, the American Board of Health Physics certification, and the National Registry of Radiation Protection Technologists registration for appropriate professionals.

STATUS:

- 2.2.2.a. COMPLETE: The identification of the level of knowledge, skills, abilities, and other qualifications has been documented in qualification criteria for key radiation protection positions for Department Headquarters and field staff and contractor personnel. This document entitled *Levels of Knowledge, Skills, Abilities, and Other Qualifications for Key Radiation Protection Positions at DOE Defense Nuclear Facilities* (qualifications document), was forwarded for review and comment throughout the Department defense nuclear complex in November 1994. Comments received, as well as subsequent Program Office comments, were reviewed and addressed. The revised document was completed in July 1995.
- 2.2.2.b. OPEN: Please see discussion at end of Commitment Section 2.2
- 2.2.2.c. OPEN: Please see discussion at end of Commitment Section 2.2

IMPLEMENTATION PLAN COMMITMENT 2.2.3:

Radiological control performance criteria will be included in performance standards for each key position to provide management with measurable milestones to monitor the performance of individuals in key positions. Standardized radiological control performance criteria will be developed by April 1994 and incorporated into individual performance evaluation plans and standards by June 1994.

STATUS:

- 2.2.3.a. COMPLETE: Guidance for incorporating radiological control performance criteria into performance evaluations of individuals in key radiation protection positions is provided in *Levels of Knowledge, Skills, Abilities, and Other Qualifications for Key Radiation Protection Positions at DOE Defense Nuclear Facilities*. The approach contained in the qualifications document identifies standard performance indicators in use throughout the defense nuclear complex and how these indicators are to be used by management for monitoring the performance of individuals in key positions.
- 2.2.3.b. OPEN: Please see discussion at end of Commitment Section 2.2

IMPLEMENTATION PLAN COMMITMENT 2.2.4:

In response to the Board's specific recommendations 2c and 2d, consistent with Office of Personnel Management regulations for Federal employees and Department contracting practices for contractor employees, the Department or contractor, as applicable, will compare the level of knowledge, skills, and abilities of incumbents in key positions to the criteria identified in the previous commitment above. The comparison will include a list of training courses attended with dates, duration of course, and sponsor, as well as a list of any professional certifications and affiliations. The Department or contractor, as applicable, will also compare the existing training and/or training that is concurrently under

development for radiation protection positions against the level of knowledge, skills, abilities, and other qualifications and identify upgrades to the existing training, and/or the need for the development of supplemental training necessary to ensure that radiation protection personnel meet the qualifications for their respective positions. The comparison will be completed by August 1994. Based upon this comparison, the Department will develop and/or upgrade standardized core training courses, as necessary. New courses will be developed as needed and ongoing upgrades of the standardized core courses will be conducted on an annual basis.

STATUS:

2.2.4.a. OPEN: Please see discussion at end of Commitment Section 2.2

2.2.4.b. OPEN: Please see discussion at end of Commitment Section 2.2

2.2.4.c. OPEN: Please see discussion at end of Commitment Section 2.2

IMPLEMENTATION PLAN COMMITMENT 2.2.5:

As a matter of management prerogative, two options are available for cases where an incumbent does not meet the level of knowledge, skills, and abilities required of their position. First, the employee can be reassigned to another position of equal grade, if available, or second, the incumbent may be offered supplemental training to ensure that they develop the level of knowledge, skills, and abilities necessary for their position. Where the supplemental training option is chosen by management, the Department or contractor and affected incumbent will mutually identify the supplemental training necessary to upgrade their level of knowledge, skills, and abilities by December 1994. The identified supplemental training requirements will be provided to the incumbent's direct supervisor for incorporation in each incumbent's individual development plan established for Federal employees and similar contractor programs. Supplemental training must be completed within 2 years of identification for incumbents to continue in their position. The need for interim measures will be identified and implemented by management. The incumbent's knowledge, skills and abilities will be evaluated through appropriate written, oral, or practical examination at the conclusion of each supplemental training course to ensure that the course content is valid and effective for increasing the level of knowledge, skills, and abilities identified in the previous commitment number 2 above. The impact of the training on performance will be evaluated during the ongoing performance management process.

STATUS:

2.2.5.a. OPEN: Please see discussion at end of Commitment Section 2.2

2.2.5.b. OPEN: Please see discussion at end of Commitment Section 2.2

2.2.5.c. OPEN: Please see discussion at end of Commitment Section 2.2

2.2.5.d. OPEN: Please see discussion at end of Commitment Section 2.2

IMPLEMENTATION PLAN COMMITMENT 2.2.6:

The Department commits to have its oversight organizations specifically evaluate program performance to identify deficiencies in the knowledge, skills and abilities of key personnel. These evaluations will be used to identify specific areas where improvements in performance and training are needed.

STATUS:

2.2.6. OPEN: Please see discussion at end of Commitment Section 2.2

IMPLEMENTATION PLAN COMMITMENT 2.2.7:

The criteria for adequate retention of knowledge, skills, and abilities will be developed as part of a retention testing program to help identify when individual performance or testing fails to meet expectations. One of the methods that will be utilized in developing and conducting the retention testing program will be the use of the radiological performance goals provided in article 131 of the *Radiological Control Manual*. Both independent and management radiological performance assessments will also be used to provide management with a series of indicators that can assist in the identification of adverse trends in performance. The retention criteria will be disseminated to contractors by May 1994. Sites will begin retention testing 6 months following scheduled implementation of the standardized core training material. For sites that have already implemented the standardized core training, retention testing will begin by December 1994. Corrective actions for deficiencies detected as a result of the retention testing will be incorporated into the individual's development plan and the site's training program on an appropriate schedule.

STATUS:

2.2.7.a. COMPLETE: Retention testing is incorporated in the post-training evaluation program. Recognizing this is part of other commitments under commitment 2.1.3, progress related to development, dissemination, and implementation of the retention testing program has been incorporated into the status for post-training evaluation programs.

2.2.7.b. OPEN: Please see discussion at end of Commitment Section 2.2

2.2.7.c. OPEN: Please see discussion at end of Commitment Section 2.2

Discussion of Knowledge, Skills and Abilities Related Requirements Status

Federal Personnel Qualifications

Ready for Closure, Addressed by Department Response to Board Recommendation 93-3.

The Office of Human Resources, Technical Personnel Program Office (HR-1.5) has developed the *Radiation Protection Qualification Standard; Defense Nuclear Facilities Technical Personnel* pertaining to qualification of Federal technical personnel in response to Defense Nuclear Facilities Safety Board Recommendation 93-3. This standard includes radiation protection professionals. The Department has implemented this standard and maintains that it is appropriate for Department radiological professionals and that it covers the necessary elements of a qualification program.

Contractor Personnel Qualifications

Open

The Department has formed a Focus Group to address 91-6 Implementation Plan commitments. The group consensus is that imposition of a prescriptive Knowledge, Skills and Abilities Document (KSA) on existing contractor personnel systems is not appropriate. It is not implementable in an effective manner under the available Department contracting mechanisms and would be inconsistent with the Department's performance-based management policy. Implementation of a mandatory KSA would divert scarce resources away from maintaining worker safety and increase administrative overhead with little or no added value.

Contractor qualifications for technical personnel are covered under various other directives and guidance. Many of these directives have been upgraded or developed subsequent to the issuance of Board Recommendation 91-6, primarily in response to Board Recommendation 93-3. Implementation of the KSA as written appears to add little benefit in view of the current Department requirements developed and implemented in response to Board Recommendation 93-3. Board Recommendation 93-3 also addresses qualifications for contractor technical positions. Therefore, the implementation plan for Board Recommendation 93-3 covers contractor positions in a manner that was acceptable to both the Department and the Board. As currently written, the draft KSA document for contractors conflicts with requirements promulgated in response to Board Recommendation 93-3. Radiological professional qualifications should be addressed in a manner consistent with other technical professionals. The Focus Group is conducting a review of present qualification requirements for contractor technical personnel. If the review establishes that compliance with current Department requirements provides adequate qualifications for contractor professionals, then the Focus Group will consider that Department commitments relative to promulgation of mandatory DOE KSAs for contractors are adequately met or are obviated. The Focus Group Review is anticipated to be completed in early 1996.

Oversight of KSA Implementation

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Oversight of radiological protection programs within the defense nuclear complex is comprised of two components: independent oversight conducted by the Office of Oversight in the Office of Environment, Safety and Health (EH-2) and oversight performed by line management (Headquarters and Field). EH-2 is responsible for independent programmatic evaluation of the adequacy of radiological protection requirements and standards used within the defense nuclear complex and the effectiveness of program implementation. While the EH-2 focus is on Departmental functions at the Headquarters and Field levels, line management retains responsibility for assuring adequate implementation by contractors.

EH-2 periodically conducts reviews of Department response to DNFSB Recommendation 91-6. The first review was conducted in March 1995 and EH-2 is currently completing a second review. These reviews were conducted with an emphasis on Headquarters progress towards achieving commitments made in response to DNFSB Recommendation 91-6. EH-2 site representatives also conduct routine surveillance at ten defense nuclear sites. These surveillance concentrate on the effectiveness of program implementation and performance. Where performance is not commensurate with requirements or standards, the site representatives work with the cognizant line management personnel to determine what actions are being taken to correct identified deficiencies.

Although the execution of line management functions differs somewhat between DP and EM, in general the Headquarters elements are responsible for providing implementation policy, guidance, and performance objectives to the field elements. Field elements are responsible for assuring that contractors are effectively implementing radiological protection standards and requirements. As part of management of programs under their purview, field elements routinely conduct assessments of contractor performance and will be responsible for evaluating compliance with 10 CFR 835 beginning in January 1996. In turn, the Headquarters elements are responsible for assuring that the field elements are effectively executing their responsibilities.

The multi-faceted approach to oversight and management of radiation protection programs provides assurance that the qualifications and training of key Federal and contractor radiological protection personnel will be monitored for adequacy as follows:

1. Performance deficiencies in radiological control are identified through inspections by line management, surveillance by the Office of Oversight and its EH-24 Site Representatives, and line management analyses of the Occurrence Reporting and Processing System. Contributing causes can include deficiencies in the knowledge, skills and abilities of key personnel. When corrective actions cannot be immediately completed they are put into a formal tracking system.

2. Performance inspections by line management include training and training records as one of the functional elements, as do contractor self audits required by 10 CFR 835.102. Contractors have additional motivation to meet this requirement because civil penalties can be levied for violations.
3. Standardized core training, *Radiological Assessors Training*, is available for Radiological Auditors and Inspectors, and for DOE and contractor line management who manage, supervise or provide oversight of radiological control programs. The training emphasizes self assessment and external evaluations, including root causes, as specified in Article 651 of the Radiological Control Manual.

Thus, even though the KSA's have not been promulgated by DOE for key contractor radiation protection personnel, an adequate oversight program is in place for assuring adequate capabilities of contractor radiological personnel.

Task 3: Evaluate the adequacy of the Department infrastructure and resources dedicated to radiation protection at defense nuclear facilities. [*Responds to Board specific recommendations 3 and 4*]

IMPLEMENTATION PLAN COMMITMENT 3.1:

The Department will establish an Infrastructure Evaluation Team (IET) to conduct an independent, external evaluation of the Department Headquarters, Operations, and contractor radiation protection infrastructure and resources dedicated to radiation protection at defense nuclear facilities. The Evaluation Team is anticipated to be composed of members from other Federal agencies, private industry, and academia, with representation by the Department. The Team members will be appointed by September 1993. The Department will notify the Board of the Evaluation Team's membership.

Consistent with the Board's third specific recommendation, the Evaluation Team will be tasked with examining the existing infrastructure for radiation protection program development and implementation at Department Headquarters to determine if resource, organizational, or managerial changes are needed to:

- a. emphasize the priority and importance of the radiation protection program to assuring public health and safety;
- b. communicate the importance of the radiation protection program from the highest level of management to all appropriate Department personnel;
- c. expand the radiation protection program and increase program resources to facilitate the rapid development and implementation of radiological protection standards throughout the defense nuclear facility complex; and
- d. make other changes as warranted.

In response to the Board's fourth specific recommendation, the Evaluation Team will also be tasked with examining the corresponding radiological protection organization units at the Department's operations offices and contractor organizations to determine if those organizations' radiological protection programs' infrastructure and responsibilities can be strengthened to expedite implementation of radiological protection standards. A critical aspect of this review will be the assessment of management's involvement and effectiveness in implementing radiological protection programs and management's ability to communicate the steps to be taken to implement an effective radiological protection program to all levels within relevant Department and contractor units, particularly with line organizations.

STATUS:

- 3.1.a. COMPLETE: The Evaluation Team chairman and membership were identified in September 1993. Dr. John Poston (Texas A&M University) was appointed Chair. Dr. David Adcock (University of South Carolina), Dr. A. Ruttenber (University of Colorado), Dr. Marco Zaider (Columbia University), Mr. William Murray (NIOSH), and Mr. John Matuzak (N.Y. State) were appointed as members. Mr. Matuzak resigned from the team in May 1994.
- 3.1.b. COMPLETE: Evaluation Team membership was provided to the Board on October 26, 1993.

IMPLEMENTATION PLAN COMMITMENT 3.2:

The Evaluation Team will report directly to the Assistant Secretary for Environment, Safety and Health. The Evaluation Team will complete its evaluation by January 1994. As a result of their evaluation, the Team will prepare a report that summarizes their findings related to the organizations' radiological protection programs' infrastructure, resources, and delegation of responsibilities. Any recommendations made by the Team should include options to implement the recommendations, including necessary changes to implementing directives and taking into account available resources and identifying the need for additional resources. This report will be provided to the Assistant Secretary by March 1994 who will then submit a copy of the report to the Board by April 1994.

STATUS:

- 3.2. COMPLETE: The Evaluation Team completed their evaluation in December 1994 and provided their report with 11 specific recommendations to the Assistant Secretary for Environment, Safety and Health on January 10, 1995. A copy of the report was provided to the Board on February 16, 1995.

IMPLEMENTATION PLAN COMMITMENT 3.3:

The Assistant Secretary for Environment, Safety and Health will review the Evaluation Team's report and confer with the Radiological Control Coordinating Committee to obtain their views on the report. The Assistant Secretary will then identify those recommendations and options appropriate for the Office of Environment, Safety and Health to implement and those recommendations and options necessary for the Secretary's consideration. This review will be completed by April 1994. For those recommendations and options accepted by the Office of Environment, Safety and Health, the Assistant Secretary will develop corrective actions and schedules for completion by June 1994. Following consideration of the recommendations and options referred to the Secretary, corrective actions and schedules for those recommendations and options accepted will be developed by July 1994. For each corrective action accepted by either the Secretary or Assistant Secretary, aggressive schedules for identifying critical milestones to achieve successful implementation will be developed. To assure milestones in this Implementation Plan are achieved, the Department will conduct annual oversight assessments of progress towards implementing corrective actions. These assessments will be provided to the Secretary annually with a copy provided to the Board.

STATUS:

- 3.3.a. **COMPLETE:** The Evaluation Team provided their recommendations resulting from their review of the infrastructure and resources dedicated to radiation protection at Department defense nuclear facilities to the Assistant Secretary for Environment, Safety and Health on January 10, 1995. The Assistant Secretary for Environment, Safety and Health provided the Evaluation Team report to the Radiological Control Coordinating Committee (RCCC) for review and requested comments by March 1995. The RCCC provided their comments to EH-52 on April 7, 1995.
- 3.3.b. **COMPLETE:** At the Assistant Secretary's request, EH-52 reviewed the RCCC comments and incorporated recommendations for corrective actions and milestones into a management action plan. This plan was signed by the Assistant Secretary on June 28, 1995. A copy was forwarded to the Board staff in July 1995. A copy was also sent to the Board on August 23, 1995.
- 3.3.c. **OPEN:** The management action plan developed in response to the Evaluation Team's recommendations suggests specific actions responding to each recommendation. Many organizational changes recommended by the Evaluation Team have been addressed by the Office of Environment, Safety and Health reorganization. These have been addressed in the management action plan.

With respect to Evaluation Team recommendations which are beyond the control of the Office of Environment, Safety and Health, the management action plan committed to reviewing these against the results of the Department's Strategic Alignment Initiative. The Strategic Alignment Initiative was announced on August 3, 1995. Detailed staffing plans for individual offices were announced on September 18, 1995. The management action plan committed to review the

results of the Strategic Alignment Initiative. This review was completed in October 1995. The final action plan is expected to be issued in early 1996. This will fulfill Department actions under this commitment.

At the Board's request, a briefing on the management action plan was provided to explain the intention of commitments made in the plan and where appropriate, the schedule for completion.

- 3.3.d. **COMPLETE:** The Office of Environment, Safety and Health reorganized on December 18, 1994. At that time, the independent Office of Oversight was created.

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Oversight of radiological protection programs within the defense nuclear complex is comprised of two components: independent oversight conducted by the Office of Oversight in the Office of Environment, Safety and Health (EH-2) and oversight performed by line management (Headquarters and Field). EH-2 is responsible for independent programmatic evaluation of the adequacy of radiological protection requirements and standards used within the defense nuclear complex and the effectiveness of program implementation. While the EH-2 focus is on Departmental functions at the Headquarters and Field levels, line management retains responsibility for assuring adequate implementation by contractors.

EH-2 periodically conducts reviews of Department response to DNFSB Recommendation 91-6. The first review was conducted in March 1995 and EH-2 is currently completing a second review. These reviews were conducted with an emphasis on Headquarters progress towards achieving commitments made in response to DNFSB Recommendation 91-6. A review of the IET commitments is included in the second review.

Oversight of the implementation of the management action plan developed in response to the Evaluation Team recommendations is integral to routine oversight activities conducted by the Office of Oversight. Department actions under this commitment are complete.

IMPLEMENTATION PLAN COMMITMENT 3.4:

The Department will centralize current contractor *Radiological Control Manual* implementation plans for defense nuclear facilities of the Offices of Defense Programs and Environmental Restoration and Waste Management, and these plans will be provided to the Board by October 1993.

STATUS:

- 3.4. **COMPLETE:** *Radiological Control Manual* implementation plans have been centralized and are available through the Radiological Control Program Advisor in the Office of Environmental Management. These plans were forwarded to the Board on October 28, 1993.

IMPLEMENTATION PLAN COMMITMENT 3.5:

The Department commits to providing the Board with the credentials and qualifications of individuals currently conducting the Department internal oversight activities relating to radiological protection by October 1993.

STATUS:

- 3.5. **COMPLETE:** Credentials and qualifications of individuals conducting internal oversight activities related to radiation protection were provided to the Board on October 29, 1993. Additional resumes were subsequently provided by the Office of Environment, Safety and Health.

Task 4: Analysis of reported occurrences and correction of radiation protection program deficiencies at defense nuclear facilities.
[Responds to Board specific recommendation 5]

IMPLEMENTATION PLAN COMMITMENT 4.1:

By August 1993 meet with current Department Headquarters Occurrence Reporting and Processing System program manager to determine current Occurrence Reporting and Processing System capabilities.

STATUS:

- 4.1. **COMPLETE:** Occurrence Reporting and Processing Systems (ORPS) capabilities are adequately described in Department Order 5000.3B and supplemented in the "ORPS User's Manual."

A task force was appointed in October 1993 to evaluate the ORPS with the goal of identifying improvements for developing and using lessons learned, conducting operating experience feedback, and recommending other opportunities for communicating lessons learned and good practices across the Department complex. The final report acknowledges the extensive progress in ORPS usage throughout the Department complex since Board Recommendation 91-6 was issued and

recommends some measures and schedules to attain additional improvements. The final report was signed by the Assistant Secretary on August 14, 1995.

IMPLEMENTATION PLAN COMMITMENT 4.2:

By October 1993 complete an evaluation of defense nuclear facilities' use of the Occurrence Reporting and Processing System information, how useful is the information that is available, and solicit recommendations from users for improvement.

STATUS:

- 4.2. COMPLETE: A survey of users of ORPS for radiological occurrence data analysis was conducted by the task force described in commitment 4.3 in October and November 1993.

IMPLEMENTATION PLAN COMMITMENT 4.3:

By November 1993 convene a task force of Headquarters, Operations, and contractor personnel to evaluate the data regarding the current use and capabilities of the Occurrence Reporting and Processing System and make recommendations for improvement by February 1994. The Occurrence Reporting and Processing System management and the Radiological Control Coordinating Committee will evaluate these recommendations and develop a schedule with milestones for implementing corrective actions by June 1994. Goals of the task force evaluation and areas for recommended improvements will include the following:

- Develop lessons learned with supporting information from throughout the Department defense nuclear facilities complex that includes input from top management to worker level. Improve worker performance through awareness of previous related occurrences. Management should identify adverse trends in performance to prevent occurrences.
- Include lessons learned by management during training (both initial and periodic refresher), by safety committees, at meetings, and from reading files. Incorporate lessons learned into future assessments to ensure assessments are properly focused.
- Operating experience feedback--similar to a formalized program used in the commercial nuclear power industry to identify generic problems, apprise the industry of these problems, and document measures at individual sites to prevent problems from occurring and recurring.

Other opportunities for communicating lessons learned and good practices across the Department complex will be pursued, encouraged, and implemented.

STATUS:

- 4.3.a. **COMPLETE:** The task force was convened in November 1993. The task force was comprised of members from the Office of Health Physics and Industrial Hygiene (EH-411), ORPS program management, Office of Environmental Management, and the Fernald Field Office. Contractor personnel were contacted regarding specific questions identified by the task force.
- 4.3.b. **COMPLETE:** The task force initially issued a draft report for review by the RCCC in March 1994. The draft report contained ORPS program management input since they were represented on the task force.
- 4.3.c. **COMPLETE:** The completed report was issued on August 14, 1995, by the Assistant Secretary for Environment, Safety and Health.

Task 5: Document technical basis for departmental radiation protection standards and remedial actions during standards implementation at defense nuclear facilities. [*Responds to Board specific recommendations 6 and 7*]

IMPLEMENTATION PLAN COMMITMENT 5.1:

The Department will further document the technical basis for developing the *Radiological Control Manual* that will include a description of how pertinent references and standards were used or why certain documents were not used, including, at a minimum, those references suggested by the Board in Recommendation 91-6 and its attachment. This technical basis document will be completed and provided to the Board by December 1993.

STATUS:

- 5.1. **COMPLETE:** A technical basis data base for the *Radiological Control Manual* was developed and forwarded to the Board on December 31, 1993.

IMPLEMENTATION PLAN COMMITMENT 5.2:

In the event that the Department identifies any gaps in the standards used during the development of the *Radiological Control Manual*, Department Order 5480.11, or title 10 CFR 835, the affected document will be corrected. Future oversight assessments of the Department's radiological protection programs and practices at defense nuclear facilities will be conducted based upon these upgraded standards.

STATUS:

- 5.2.a. **COMPLETE:** The Department documented the technical basis for developing the *Radiological Control Manual*, Department Order 5480.11, and 10 CFR 835, and found no gaps in the standards used in their development. The Department's Office of Worker Protection Programs and Hazards Management is responsible to review new national and international standards for applicability to Department radiological worker protection and ensure that Department regulations and requirements are revised accordingly. Department actions under this commitment are complete.

However, the *Radiological Control Manual* is no longer mandatory and Department Order 5480.11 is no longer in effect. 10 CFR 835 and Department Notice 441.1 promulgate Department requirements concerning occupational radiation protection. Department Notice 441.1 covers any gaps in regulation left by the elimination of Department Order 5480.11 and the change in status of the *Radiological Control Manual* from mandatory to guidance. The actions committed to correct gaps in standards used to develop Department requirements are complete.

The Office of Worker Protection Programs and Hazards Management (EH-52) has developed a formal, documented process that will be used on an ongoing basis to evaluate the adequacy of, and direct revisions to, the Department's system of radiological protection requirements and guidance. The process in use consists of 6 basic steps as follows:

1. Compile a set of comprehensive references that will facilitate identification of:
 - The objectives of the occupational radiological protection program.
 - A list of candidate radiological protection standards under consideration for inclusion in Department requirements or guidance. These standards are referred to as program elements.
 - The criteria by which the candidate program elements may be evaluated and classified as policy, requirements, or guidance.
 - The criteria by which regulatory provisions may be evaluated for adequacy.

The identified references used in this process include Guidance to Federal Agencies approved by the President, Department and Nuclear Regulatory Commission regulations and guidance documents, International Council on Radiation Protection, National Council on Radiation Protection, and International Atomic Energy Agency publications, and consensus and commercial industry standards.

2. Convene an expert panel to perform evaluations of the candidate program elements and existing regulatory provisions to identify opportunities for improvements in the existing regulatory structure.
3. Identify the interfaces between the Department's occupational radiological protection program and related programs, including environmental protection, industrial safety, industrial hygiene, radioactive waste, and hazardous materials transportation programs.
4. Conduct reviews of Department operating history to identify any significant occurrences or trends that may indicate a shortcoming in the Department's system of requirements and guidance.
5. Using the results of steps 2, 3, and 4, develop appropriate amendments to existing requirements or promulgate new requirements to ensure the objectives identified in step 1 are met through implementation of a comprehensive occupational radiological protection program.
6. Document the results of all deliberations on these issues for use in the future.

In promulgating final rule 10 CFR 835, the Department indicated its intent to amend the rule to address additional issues such as sealed radioactive source controls and surface radioactivity values for tritium. EH-52 is implementing the process described above in development of the proposed amendment and intends to continue this process as necessary.

This process will document the adequacy of the current Department radiological protection regulatory regimen. With completion of this effort there is no need to compare existing requirements to superseded Department Orders and the *Radiological Control Manual* because the current regulations will be formally documented as adequate.

In addition, the Department Mission Statement for the Office of the Deputy Assistant Secretary for Worker Health and Safety, Office of Worker Protection Programs and Hazards Management, states: *The Office of Worker Protection Programs and Hazards Management establishes comprehensive and integrated programs for the protection of workers from hazards in the workplace and assists in the program implementation.....The Office also establishes and manages for the Department an integrated, comprehensive worker hazards management program. The Office maintains liaison with national and international standards setting organizations....*

The Functions Statements include:

1. *Identifies the need for and develops integrated Department of Energy field tested worker protection programs. Resultant program performance requirements and guidance integrate the requirements of the Department of*

Energy, other Federal agencies, and standards setting organization recommendations to establish comprehensive worker protection programs.

6. *Maintains liaison with national and international health physics, industrial hygiene, and hazardous waste activities standards setting organizations to facilitate development of integrated, comprehensive departmental worker protection policies, standards, and guidance.*

The Mission and Function statements for the Office of Worker Protection Programs and Hazards Management clearly empower it to review standards for applicability to the Department's regulations, standards, guidance, and requirements. As new standards become available, this Office is responsible to review and respond appropriately. This program is in place to ensure no gaps in standards applicable to the Department's radiological regulations will develop. Department actions under this commitment are complete.

5.2.b. COMPLETE:

Note: Specific questions regarding the details of independent oversight activities conducted by the Office of Oversight should be directed to Office of Oversight personnel.

Oversight of radiological protection programs within the defense nuclear complex is comprised of two components: independent oversight conducted by the Office of Oversight in the Office of Environment, Safety and Health (EH-2) and oversight performed by line management (Headquarters and Field). EH-2 is responsible for independent programmatic evaluation of the adequacy of radiological protection requirements and standards used within the defense nuclear complex and the effectiveness of program implementation. While the EH-2 focus is on Departmental functions at the Headquarters and Field levels, line management retains responsibility for assuring adequate implementation by contractors.

EH-2 periodically conducts reviews of Department response to DNFSB Recommendation 91-6. The first review was conducted in March 1995 and EH-2 is currently completing a second review. These reviews were conducted with an emphasis on Headquarters progress towards achieving commitments made in response to DNFSB Recommendation 91-6. EH-2 site representatives also conduct routine surveillance at ten defense nuclear sites. These surveillance concentrate on the effectiveness of program implementation and performance. Where performance is not commensurate with requirements or standards, the site representatives work with the cognizant line management personnel to determine what actions are being taken to correct identified deficiencies.

Although the execution of line management functions differs somewhat between DP and EM, in general the Headquarters elements are responsible for providing implementation policy, guidance, and performance objectives to the field elements. Field elements are responsible for assuring that contractors are effectively implementing radiological protection standards and requirements. As part of

management of programs under their purview, field elements routinely conduct assessments of contractor performance and will be responsible for evaluating compliance with 10 CFR 835 beginning in January 1996. In turn, the Headquarters elements are responsible for assuring that the field elements are effectively executing their responsibilities.

EH-2 and cognizant line organizations maintain an awareness of current radiological requirements and guidance, and use them as a basis for conducting oversight activities

IMPLEMENTATION PLAN COMMITMENT 5.3:

The Department will develop target dates for full implementation of the *Radiological Control Manual*, Department Order 5480.11, and title 10 CFR 835 at defense nuclear facilities. For all defense nuclear facilities except those listed in Appendix D (of the Implementation Plan), the Department commits to full implementation of these three documents by October 1996 unless specific exception has been approved by the proper authority and concurred in by the Assistant Secretary for Environment, Safety and Health. To ensure expeditious implementation, the Department will evaluate and report on progress towards full implementation of these documents on an annual basis. These progress reports will be provided to the Secretary annually. The Department will provide a copy of these progress reports to the Board in the first quarterly status report (see Task 6, below) following the briefing of the Secretary.

STATUS:

- 5.3.a. Overtaken by events, ready for closure: Please see discussion below.
- 5.3.b. Overtaken by events, ready for closure: Please see discussion below.
- 5.3.c. Overtaken by events, ready for closure: Please see discussion below.

Discussion of *Radiological Control Manual* and Department Order 5480.11 status

Commitment Items 5.3.a, 5.3.b, and 5.3.c have been overtaken by events, however, the intent of the items has been fulfilled and the item is ready for closure.

Consistent with the Department's policy of adopting regulatory standards that are enforceable under the Department's Price-Anderson Amendments Act enforcement authority, Department Order 5480.11 has been superseded by 10 CFR 835, "Occupational Radiation Protection." The Department has reviewed and approved documented radiation protection plans from all defense nuclear facilities which establish programs, schedules, and other measures to ensure full compliance with 10 CFR 835 by January 1, 1996. The Department is processing a small number of requests for exemption from certain provisions of 10 CFR 835 under the processes established in 10 CFR 820, "Procedural Rules for Department of Energy Nuclear Activities." None of these exemptions sought relief from the compliance date for 10 CFR 835. Continued compliance will be assured through an established system of self-reporting, inspections, and enforcement activities.

With the advent of 10 CFR 835, the requirements within the *Radiological Control Manual* (RCM) have become largely redundant. The RCM will be retained as implementing guidance, and notably, many of the RCM requirements have already been implemented at defense nuclear facilities. The Department's position is that 10 CFR 835, as supplemented by Department Notice 441.1, *Radiological Protection For DOE Activities*, provides adequate worker protection. Therefore, the Department intends to concentrate its efforts on ensuring effective compliance with 10 CFR 835 and adding any additional requirements deemed necessary for adequate worker protection. The present status of 10 CFR 835, Department Notice 441.1, and the RCM thus constitutes full implementation of radiological directives in today's context. A draft of the RCM, rewritten as guidance, should be available in early 1996.

Most defense nuclear facilities have achieved substantial compliance with the requirements of the DOE *Radiological Control Manual* (RCM). The Department's plans for achieving full implementation of the RCM have been affected by several events since development of the Recommendation 91-6 Implementation Plan, including:

1. The Department has developed a regulation-based system of radiological protection requirements subject to enforcement under the Department's Price-Anderson Amendments Act enforcement authority.
2. The Department has implemented the *Necessary and Sufficient* process to identify and implement a set of health and safety requirements (including occupational radiological protection requirements) that is tailored to each facility's hazards and operations.
3. The Department's resources have been restricted, making untenable the Department's position advocating the pursuit of excellence in accordance with the RCM.
4. The Department has recognized (and the Infrastructure Evaluation Team has affirmed) that full implementation of the RCM contradicts the Department's policy of implementing reasonable, risk-based health and safety requirements. Further concentration upon implementation of the RCM threatens to divert the Department's limited resources from more significant hazards that exist in defense nuclear facilities.

In consideration of the factors listed above, the Department has determined that further effort to mandate implementation of the RCM is counterproductive. Therefore, the Department intends to concentrate its efforts upon ensuring full compliance with 10 CFR 835 and performing the technical basis adequacy review (discussed in item 5.2.a) to ensure the Department's radiological protection requirements are comprehensive. All affected facilities have developed radiation protection programs (RPPs) that establish the plans, schedules, and other measures to be implemented to ensure compliance with 10 CFR 835. All of the required RPPs have been approved by the Department. Compliance with 10 CFR 835 is mandated by January 1, 1996, and will be assured through an established system of self-reporting, assessments, and enforcement activities.

The present status of 10 CFR 835, Department Notice 441.1, and the RCM thus constitutes full implementation of radiological directives in today's context. The need to annually report on the progress of occupational radiation protection requirement implementation has been overtaken by these changes and is no longer relevant.

No further action under this commitment is planned.

IMPLEMENTATION PLAN COMMITMENT 5.4:

The Radiological Control Coordinating Committee will become more involved in the evaluation of implementation plans for the *Radiological Control Manual*. Evaluations of the adequacy of interim actions being taken by contractors prior to full implementation are being performed by the Cognizant Secretarial Officers and supported by the Radiological Control Coordinating Committee based on the information provided in the implementation plans. The status of *Radiological Control Manual* implementation is provided by the Cognizant Secretarial Officers to the Secretary in an Annual Report that is expected to be issued at the end of each calendar year beginning in 1993. The Department will provide a copy of the next Annual Report to the Board in the first quarterly status report following the availability of the report.

STATUS:

- 5.4.a. **COMPLETE:** As discussed above, the implementation of the *Radiological Control Manual* is no longer mandated, although substantial implementation was accomplished. This commitment has been overtaken by changes in the Department requirements status.
- 5.4.b. **COMPLETE:** The 1993 Annual Report on *Radiological Control Manual* implementation was completed in January 1995. This report, issued by the cognizant Assistant Secretaries, discusses the status and adequacy of *Radiological Control Manual* implementation. As noted in the report, the RCCC facilitates the exchange of cost-effective implementation processes and discussion of proposed *Manual* changes that may enhance implementation. The Board was provided a copy of the report in February 1995. The 1994 Annual Report on *Radiological Control Manual* implementation was issued in December 1995.

Reporting the progress of implementing Department Order 5480.11 has been overtaken by subsequent events. First, Department Order 5480.11 was changed in 1993 to basically defer to the *Radiological Control Manual* for specifying the extent of an adequate radiological protection program at Department facilities. Progress on *Radiological Control Manual* implementation was reported annually. Next, all essential radiological protection requirements in Order 5480.11 were codified in 10 CFR 835, as supplemented by Department Notice 441.1, and compliance is mandatory by January 1, 1996. The Department has focused its resources on monitoring the progress of implementing 10 CFR 835 through review of documented radiation protection programs required by the rule. Finally, under the new directives system, Department Order 5480.11 has been deleted.

The change of status of the *Radiological Control Manual* and Department Order 5480.11 makes this element of the Department 91-6 Implementation Plan no longer relevant to current Department actions. With publication of the 1994 Annual Report on RCM implementation, no further reporting on this issue is anticipated.

Task 6: Status reports for the Board.

IMPLEMENTATION PLAN COMMITMENT 6:

The Department will provide quarterly status reports to the Board on the progress of completing commitments made in this implementation plan.

STATUS:

6. OPEN: It is expected that status reports will no longer be necessary when 91-6 Implementation Plan commitments are complete.



Department of Energy

Washington, DC 20585

December 6, 1995

MEMORANDUM FOR THE SECRETARY

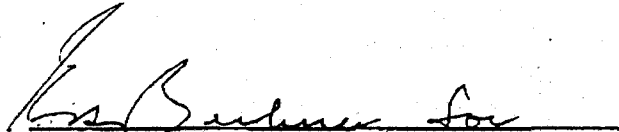
SUBJECT: INFORMATION: Radiological Control Manual Implementation Status, December 31, 1994

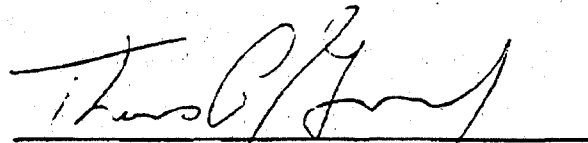
ISSUE: Attached is the 1994 status report on implementation of the Radiological Control Manual at the Department of Energy sites, provided to you as required by the Defense Nuclear Facilities Safety Board Recommendation 91-6 implementation plan. This report, developed by the Department of Energy Radiological Control Coordinating Committee, shows that:

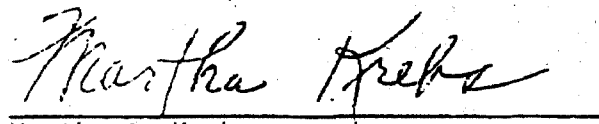
1. Many Department of Energy facilities, due to their diligent efforts, have advanced significantly in achieving the goals outlined in the Radiological Control Manual. Generally, the 1994 progress in implementing the Manual's requirements was slower than projected in 1993, mainly due to the focus placed by all radiation protection organizations on documenting their Radiation Protection Programs as required by 10 CFR 835, "Occupational Radiation Protection", rule that became effective in January 1994.
2. Between 1993 and 1997, the contractors operating DOE sites plan to spend \$200 million to bring their facilities into full compliance with the Manual's requirements and to sustain this level of compliance. For some sites, schedule commitments are listed as contingent on funding. Reprioritization of funding dollars mainly due to 10 CFR 835 implementation is the basis for significant revisions of the implementation plan schedules that appeared at the end of 1994.
3. The implementation plan for the Defense Nuclear Facilities Safety Board recommendation 91-6 commits to have core radiological training completed by December 31, 1994. This commitment was met at the majority of the defense nuclear facilities.
4. The Operations Offices are working with the contractors to improve the cost-effective implementation of the Manual. The Radiological Control Coordination Committee continues to facilitate the exchange of cost-effective implementation processes and discussion of proposed Manual changes that may enhance implementation.

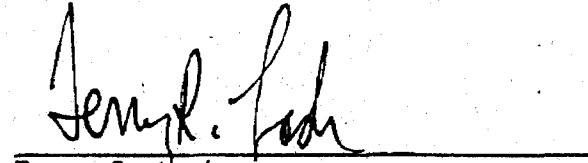


Presently, extensive work is in progress to fully implement 10 CFR 835 requirements by January 1, 1996, and to revise the Radiological Control Manual in order to become a part of the Department's Directive System.


Victor H. Reis
Assistant Secretary for
Defense Programs


Thomas P. Grumbly
Assistant Secretary for
Environmental Management


Martha A. Krebs
Director
Office of Energy Research


Terry R. Lash
Director
Office of Nuclear Energy

Attachment

cc:

Assistant Secretary for Environment, Safety and Health
Manager, Albuquerque Operations Office
Manager, Chicago Operations Office
Manager, Oak Ridge Operations Office
Manager, Richland Operations Office
Acting Manager, Oakland Operations Office
Acting Manager, Idaho Operations Office
Manager, Nevada Operations Office
Manager, Savannah River Operations Office
Acting Manager, Ohio Field Office
Manager, Rocky Flats Office

1994 Radiological Control Manual Implementation Status Report for Department of Energy Sites

1. Introduction

This report documents the progress made by DOE sites in the past year in implementation of the Radiological Control Manual. The report is based on the various contractor and operations office status reports and includes pertinent information gathered during visits to Fernald, Hanford, Oak Ridge, Rocky Flats, Nevada, Albuquerque, and Oakland. It reflects the Manual's implementation status as of December 31, 1994.

There are 51 Implementation Plans for the whole Department. Three of these plans are combined in a unique document for the Hanford site. Also at Hanford, Bechtel Hanford Inc. is writing its implementation plan. As a result of consolidation of contractors at INEL, Lockheed Idaho Technologies Company combined five of the INEL implementation plans in a single document which was submitted to the DOE Headquarters on June 1, 1995. Two Environmental Management facilities, Paducah and Portsmouth, due to their transitions in mission and ownership, do not have implementation plans. One Defense Program facility, Ross Aviation at Albuquerque, wrote their first implementation plan. One Environmental Management facility, Battelle Columbus Laboratories, which is regulated by the Nuclear Regulatory Commission, is applying for exemption from the Radiological Control Manual. There are a significant number of sites that have facilities under the Defense Nuclear Facilities Safety Board jurisdiction.

During 1994, the progress in implementing the Radiological Control Manual was affected by several events:

- In January 1994, 10 CFR 835 "Occupational Radiation Protection" became effective. This Rule requires that DOE contractors document their Radiation Protection Programs (RPPs) by January 1, 1995. Baseline Rule implementation status and generating the corresponding RPPs became the main component of DOE radiation protection organizations activities.
- In April 1994, Revision 1 of the Radiological Control Manual was informally issued. This Revision was meant to better tune the Manual with 10 CFR 835 Rule and to address some changes proposed by the DOE radiation protection community. In accomplishing these tasks, the new Revision included significant changes to the Manual.
- In July 1994, the Radiological Control Manual, Revision 1, was formally issued via DOE Notice 5480.10. This Notice mentioned for the first time that the Manual will be formally included in the new Departmental Directive System.

- During 1994, in establishing implementation strategies for 10 CFR 835, various DOE program and operations offices adopted, indirectly, new strategies on the Manual implementation.

Combined, these events resulted in reprioritization of the Radiological Control Manual compliance schedules, reassessment of the Manual's compliance status, and delays in performing the annual review/update of the corresponding implementation plans.

Environmental Management has updated the database summarizing some of the salient information from the Radiological Control Manual Implementation Plans. This database, updated to reflect the most recent status reports prepared by the DOE contractors, contains information for all Defense, Environmental Management, and Nuclear Energy facilities, and part of the Energy Research facilities. For each site, this database includes information on initial implementation status, the date on which full compliance was achieved or is planned to be achieved, the projected costs, and radiological training status. Based on this database, the trends were used to generate Table I. This Table has six parts: general information, implementation status, implementation schedule, implementation cost, core academic training status, and radiological control managers for each site. This Table was used for numerical illustrations included in this report.

2. General View of Radiological Control Manual Implementation Plans

Implementation Status

The majority of the actions taken during Radiological Control Manual implementation have to date been associated with establishing the infrastructure, policies, and procedures, and providing training needed to meet the goals of the Radiological Control Manual for an acceptable program. Many facilities focused on rigorous programmatic and field verification for 10 CFR 835 implementation. This effort translated into full documented verification of those Radiological Control Manual Articles directly related to Rule requirements through cross-references contained in the Radiation Protection Programs or in the associated matrices. As a result of this action, some sites changed many of the items identified as being in full compliance during previous assessments to partial or noncompliance.

For the Department of Energy facilities, the percentage of full compliance with the Articles of the Radiological Control Manual is 71% for an overall average, ranging from 18 to 100% (Figure 1). This represents a 29% improvement in the compliance status since it was first calculated in December of 1992 and a 7% improvement relative to the end of 1993. The percentages reported above would all be significantly higher if "partial compliance" with the Radiological Control Manual Articles were included in the calculation or if the compliance percent would be calculated based on the Manual requirements (about 1300) instead of Articles (total number of Articles is 184). If the present planning will be followed, the average DOE compliance with the Radiological Control Manual requirements will exceed 90% by the end of 1995 (Figure 3).

Implementation Schedules

The available information shows that, to date, the following sites are in full compliance or very close to it: Pinellas, TSD, UMTRA, WIPP, ANLE, INEL, WVDP, MKF-OR, ORISE, WSSRAP, and HEHF. Several other sites plan to reach full compliance by the end of 1995: GJPO, ROSS, EML, NDRL, RESL, LEHR, CEBAF, FUSRAP, and WHC. However, there are sites facing complex problems in implementing the Radiological Control Manual, in particular at facilities with extensive contaminated areas generated by past operations, and direct support by the line management is needed.

All facilities under the DNFSB jurisdiction are committed to implement the Manual by October 1996. The schedule for compliance could extend beyond this date for several major projects in progress at the defense nuclear facilities. The Oak Ridge Operations Office identifies the following projects as possibly going beyond October 1996 for full implementation of the Manual:

- Control of radioactive drains at ORNL and K-25 will require assessment, engineering, and construction. The sequential process may not be fully completed by October 1996.
- Site characterization and contamination control at Y-12 and K-25 may not be completed by 1996 because of the number of facilities and size of sites. First priority will be given to facility site characterization and control based on health and safety considerations.
- Protection requirements for records are also not likely to be completed by October 1996.

These projects reflect non-mandatory requirements. Technical equivalencies could be used to demonstrate that the intent of the Manual is being met even if a project has not been completed.

Implementation Costs

Contractors at Department of Energy sites used or project to use about \$200 million to bring their facilities into full compliance with the Radiological Control Manual. Almost 60% of these funds were spent or are planned to be spent by the end of the FY 1995. Almost \$130 million from these funds are required by the following eight sites: RFETS, Y-12, LANL, Fernald, SNL, MKF-OR, ORNL, and K-25. The cost for each individual site is given in Figure 2. Many sites report insignificant incremental cost for implementing 10 CFR 835 due to this budgeting effort for the Manual.

For many sites, budget information is at best representative. Budget quality numbers are not in some plans, and there is no assurance that the activities are funded to meet milestones. It is not possible from the information provided to evaluate the justification for the cost.

There are two areas of concern. First, there are sites caught in transition from one DOE program to another, for which timely availability of needed funds is critical (e.g., ETEC and Mound). Second, there are sites with multiple Secretarial Offices with differences in philosophies for funding radiation protection activities, and these differences could lead to confusion concerning sources of money to implement the Radiological Control Manual.

Radiological Training

Core radiological training, consisting of four courses (General Employee Radiological Training - GERT, Radiological Worker training - RW I and II, and Radiological Control Technician - RCT), began in January 1993. The Department of Energy sites have trained 87% in General Employee Radiological Training of the 111,000 personnel to be trained; 85% in Radiological Worker I of the 14,000 needing training; 84% in Radiological Worker II of the 44,000 needing training; and 64% in Radiological Control Technician of the 2700 requiring training.

The implementation plan for the DNFSB Recommendation 91-6 commits to have core radiological training completed by December 31, 1994. The available information shows that this commitment was met at the majority of the defense nuclear facilities. Mound expects to conclude the core training by November 15, 1995, and RFETS by September 30, 1995.

The cost for radiological training is one quarter of the total cost for Radiological Control Manual implementation. At some sites, e.g., Fernald, part of radiological worker training has been incorporated into Hazardous Waste Operations (HAZWOPER) as a cost-saving and streamlining effort.

3. Initiatives for Improving Safety and Saving Cost

Many sites have made diligent efforts to achieve cost savings for their sites while maintaining or improving radiation protection for their workers.

- Articles 113 and 371 of the Radiological Control Manual allow alternatives that are technically equivalent to be used in place of "should" statements in the Manual. Some sites have made use of the capabilities of the Technical Equivalency Determination provision under the above Articles to reduce costs without diminishing the quality of the radiation protection programs for the workers. These determinations are shown in Table II. The possibilities opened up by the above Articles should be better exploited, and the corresponding technical equivalency better documented.
- FERMCO requested authorization to post Contamination and High Contamination Areas based on the presence of removable contamination instead of basing the posting of these areas on both removable and total (fix plus removable) contamination. EH office granted an exemption to Article 235 requirements for posting of High Contamination Areas only. However, this exemption request highlights the significance of the posting criteria for contaminated areas (including soil) to the effective implementation of controls for radioactive contamination. Accordingly,

the EH Office included the change to the High Contamination Area posting criteria granted to Fernald, in the proposed amendment to 10 CFR 835.

- Fernald's internal dosimetry program has implemented a new analytical method for measuring uranium content in urine. The number of bioassay samples taken in 1994 is lower than that of 1993 due to purchase and use of a kinetic phosphorescence analysis system developed by Northwest Laboratory under DOE sponsorship that allows for less frequent, more precise evaluation of uranium in urine.
- At Fernald, radiological contamination compounds were established to provide physical barriers around areas of known contamination. This funded capital project provides a number of trailer complexes that incorporate men's and women's change areas and break areas at the compound entrances, modular change areas in some facilities, and installation of fencing for defining contamination areas.
- FERMO considers that the ability to stop the spread of contamination from within the compounds will be greatly enhanced by the construction of discrete satellite work stations for radiological technicians and construction/maintenance personnel inside each compound. This will allow routine activities for each group inside these areas without taking contaminated equipment outside the facilities for repair, calibration, cleaning, etc. By providing adequate equipment, work space, and utilities, affected personnel can increase efficiency as well. A study was performed to determine materials and labor for completion. Materials have been purchased, and installation of a centralized tool station and issue facility is in progress. Satellite tool lockers have been procured for tool storage in active contaminated areas.
- At Fernald, a computerized access control system has been developed and installed in several locations. This system ensures that personnel entering radiologically-controlled areas have been appropriately trained and are participating in required dosimetry programs. This is accomplished by electronically searching training and dosimetry files of every individual prior to permitting access to such areas.
- At Idaho, ICPP, a computer program was developed to aid in meeting requirements of Articles 311 and 312. The program is called Radiological Evaluation Decision Input (REDI). This software is a decision tree program that allows someone without a strong radiological background (i.e., planners) to develop radiological input to work control procedures. It asks questions such as "What is the radiation, contamination, and airborne in the area?" and then prints predetermined requirements for that category.
- At INEL, significant instrument upgrades have been made to enhance ability to protect personnel and environment.
- EG&G Idaho (now LMIT) organized a Health Physics Instrument Committee with large DOE contractor participation which is now actively working toward

standardization of instruments and calibration techniques at all DOE sites.

- At WVDP, personnel dosimeter badges were modified to include a picture of the individual for identification. This reduced the time expected for searches conducted by the dosimetry office and reduced the number of special dose evaluations conducted when badges are worn by the wrong individuals in radiological areas. The total savings demonstrated by this effort was estimated at about \$15,000 for a three-year interval.
- At WVDP, the extremity dosimeter program was revised and contracted out to the dosimetry service laboratory. Previously, extremity badges were processed onsite by using manual equipment that was becoming outdated and labor intensive. Again, by this subcontracting, a saving totaling about \$24,000 over a three-year period is expected.
- K-25 has installed an electronic Radiological Work Permit that provides consistency and saves time. The system uses a badge reader and eventually will be used to schedule the worker's bioassay program.
- At CEBAF, a computerized dose tracking database which will store dosimetry data and do limited analysis and report generation is being functionally tested.
- The Richland, Nevada, and Idaho contractors' Radiological Control Program managers meet at least monthly to address site-specific policy and issues with regard to the Department of Energy Radiological Control Manual. This helps achieve cost savings through standardization.
- Rocky Flats has developed a computer database for tracking and documenting compliance to all of the Manual's requirements. This database was updated to reflect the inclusion of 10 CFR 835 requirements and changes from Revision 1 of the Radiological Control Manual.
- At Rocky Flats, the Radiological Work Permits (RWP) were upgraded throughout Radiation Protection Organization. Computers were purchased for all the RWP Work Stations and a database was developed to reflect the RWP form. The database is currently in the process of being tested and validated, and local area network connections are in the process of being installed.
- The Pacific Northwest Laboratory has developed a computer program to generate radiological survey maps for use in documenting routine and special radiological surveys.
- Pacific Northwest Laboratories publishes a monthly radiation worker newsletter which emphasizes proper procedures and practices as well as radiological control lessons learned.

- The Westinghouse Savannah River Company estimates that \$650,000 in saving resulted from utilization of the self-study packages when compared to the cost of traditional classroom presentations for radiological training.
- The WHC developed and internally approved a statistical radiological release methodology.
- The WHC developed several programs: temporary shielding, fixed contamination area, and hot particle control.

4. Present Status of the Radiological Control Manual

DOE Notice 5480.10 that issued Revision 1 of the Radiological Control Manual, and which expired in January 1995, was renewed for another year (via DOE Notice 5480.11), time in which the Office of Environment, Safety, and Health will formally integrate the Radiological Control Manual into the Departmental Directive System. Presently, the Office of Environment, Safety, and Health prepared the second revision of the Manual meant to highlight those requirements that stem from 10 CFR 835 and DOE Order 5480.11 and to provide a greater flexibility in implementing these requirements. The status of the Radiological Control Manual as a mandatory document is being evaluated as part of the Environment, Safety and Health order revision process.

General View of the DOE Site-Specific Radiological Control Manual Implementation Plans Part 1: General Information

	Lead SO	Programmatic responsibilities						Sites with facilities under the DNFSB jurisdiction	The date of RCMIP presently available at the central collection	RCM Revision reflected in 1994 report	Abbreviation
		DP	EM	ER	NE	NN	RW				
AL Albuquerque Operations Office											
1		EM		○					11/19/93	Rev. 1	GJPO
2		ER		○	○				11/30/93	Rev. 0	ITRI
3		DP	○	○					12/10/93	Rev. 0	KCP
4		DP	○	○	○	○	Y		12/01/93		LANL
5		DP	○	○			Y		09/24/93	Rev. 1	PANTEX
6	@@	DP	○	○			Y		12/09/93	Rev. 1	PINELLAS
7		DP	○							Rev. 1	ROSS
8		DP	○	○	○	○	Y		12/01/93		SNL
9		DP	○						11/24/93	Rev. 1	TSD
10		EM		○					12/28/93	Rev. 0	UMTRA
11		EM		○			Y		12/28/93	Rev. 1	WIPP
CH Chicago Operations Office											
12		ER		○	○					Rev. 0	AMES
13		ER		○	○	○				Rev. 1	ANLE
14		NE		○		○					ANLW
15	@@@@	EM		○					11/08/93		BCL
16		ER		○	○	○			09/30/92		BNL
17		ER		○	○					Rev. 0	EML
18		ER		○	○					Rev. 0	FNAL
19		NN		○		○				Rev. 0	NBL
20		ER		○						Rev. 0	NDRL
21		ER		○	○						PPPL
ID Idaho Operations Office											
22	@@@	DP	○				Y		12/07/93	Rev. 1	B&WI
23	@@@	EM		○	○	○	Y		12/10/93	Rev. 1	EGG
24		EM		○					01/03/94	Rev. 1	RESL
25	@@@	EM		○			Y		12/31/93	Rev. 1	MKF
26	@@@	EM		○			Y		12/15/93	Rev. 1	PTI
27	@@@	EM		○			Y		12/23/93	Rev. 1	WINCO

NV Nevada Operations Office

28	- Nevada Test Site / Yucca Mountain Project	DP	0	0	0	Y	11/30/93 @	NTSYM
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OH Ohio Field Office

29	Fernald Environmental Management Project	EM	0			Y	01/09/95	Rev. 1 FERNALD
30	Mound Plant @@	DP	0	0	0	Y	11/23/93	Rev. 1 MOUND
31	West Valley Demonstration Project	EM	0			Y	12/15/93	Rev. 1 WVDP

OK Oakland Operations Office

32	Energy Technology Engineering Center	EM	0	0			12/03/93	Rev. 0 ETEC
33	Laboratory for Energy-Related Health Research	EM	0				12/30/93	Rev. 0 LEHR
34	Lawrence Berkeley Laboratory	ER	0	0				Rev. 0 LBL
35	Lawrence Livermore National Laboratory	DP	0	0	0	Y	11/29/93 @	Rev. 1 LLNL
36	Stanford Linear Accelerator Center	ER	0	0				Rev. ? SLAC

OR Oak Ridge Operations Office

37	Continuous Electron Beam Accelerator	ER		0			08/27/93 @	Rev. 0 CEBAF
38	Formerly Utilized Sites Remedial Action Program	EM	0				06/11/93	Rev. 1 FUSRAP
39	MK-Ferguson of Oak Ridge	EM	0	0		Y	10/05/93	Rev. 0 MKF
40	Oak Ridge Gaseous Diffusion Plant (K-25)	EM	0	0		Y	12/20/93	Rev. 0 K25
41	Oak Ridge Institute for Science and Education	ER	0	0			08/10/92	Rev. 0 ORISE
42	Oak Ridge National Laboratory	ER	0	0	0	Y	08/15/93	Rev. 0 ORNL
43	Oak Ridge Y-12 Plant	DP	0	0	0	Y	07/29/93 @	Rev. 0 Y12
44	Paducah Gaseous Diffusion Plant	NE	0	0				PADUCAH
45	Portsmouth Gaseous Diffusion Plant	NE	0	0				PORTSMOU
46	Weldon Spring Site Remedial Action Project	EM	0				01/15/93 @	Rev. 0 WSSRAP

RF Rocky Flats Field Office

47	Rocky Flats Plant	EM	0	0		Y	04/01/93 @	Rev. 1 RFETS
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RL Richland Operations Office

48	Hanford Site - HEHF	EM	0			Y	04/07/95 @	Rev. 1 HEHF
49	Hanford Site - PNL	ER	0	0		Y	04/07/95 @	Rev. 1 PNL
50	Hanford Site - WHC	EM	0	0	0	Y	04/07/95 @	Rev. 1 WHC

SR Savannah River Operations Office

51	Savannah River Site	EM	0	0	0	0	Y	09/09/94 @	Rev. 1 SRS
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@ This symbol shows that the RCMIP is a controlled document.

@@ Pinellas and Mound were transitioned to EM in June 1995.

@@@ On June 1, 1995, Lockheed Martin Idaho Technologies consolidated the five RCMIPs for the previous INEL contractors (BWI, EGG, MKF, PTI and WINCO). Data included in this Table will be revised accordingly for the 1995 annual report.

@@@@ BCL is in transition to Ohio Field Office.

General View of the DOE Site-Specific Radiological Control Manual Implementation Plans

Part 2: Implementation Status as of 12/31/94

Projected compliance at 12/31/95 based on data.

Percent of Articles in full compliance

Notations: F full compliance
N/A not applicable

		10/92		By 10/1/93			By 12/31/93			By 12/31/94			Additional Articles becoming F in 1995		
		Number of Articles		Number of Articles			Number of Articles			Number of Articles			F in 1995	%	
		N/A	F	N/A	F	%	N/A	F	%	N/A	F	%			
AL Albuquerque Operations Office															
1	GJPO	6	44	25	6	155	87	6	155	87	7	149	84	28	100
2	ITRI	17	40	24	17	107	64	17	56	34	24	53	33	30	52
3	KCP	46	103	75	46	135	98	46	134	97					
4	LANL	6	74	42	6	87	49	6	101	57	6	85	48	52	77
5	PANTEX	19	40	24	19	71	43	15	94	56	16	91	54	60	90
6	PINELLAS	25	116	73	25	136	86	32	128	84	26	158	100	0	100
7	ROSS										95	40	46	49	100
8	SNL	8	21	12	8			10	62	36	10	87	50	12	57
9	TSD	45	26	19	45	74	53	70	74	65	78	85	80	21	100
10	UMTRA	15	128	76	15	141	83	19	120	73	25	157	99	2	100
11	WIPP	29	74	48	29	121	78	30	144	94	28	155	99	0	99
CH Chicago Operations Office															
12	AMES							16	119	71	14	119	70	51	100
13	ANLE							6	171	96	6	178	100	0	100
14	ANLW	6	119	67	6	145	81	6	141	79	6	170	92	8	100
15	BCL	6	137	77				6	163	92					
16	BNL	10	36	21	10	93	53	10	71	41	10	105	61	60	95
17	EML							42	72	51	40	76	53	68	100
18	FNAL							19	86	52	19	128	78	37	100
19	NBL							20	98	60	20	98	60		
20	NDRL							85	96	97	85	96	97	3	100
21	PPPL							6	0	0					
ID Idaho Operations Office															
22	B&WI							22	51	31	6	177	99	1	100
23	EGG	14			14	134	79	14	139	82	14	149	88	11	94
24	RESL	22	112	69	22	123	76	25	129	81	6	167	94	11	100
25	MKF	49	125	93	49	134	99	49	134	99	47	136	99	1	100
26	PTI	39	9	6	39	52	36	39	51	35	95	88	99	1	100
27	WINCO	16	104	62	16	126	75	16	130	77	16	151	90	17	100

NV Nevada Operations Office

28	NTSYM	14	18	11	14	25	15	15	67	40	12	108	63	32	81
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OH Ohio Field Office

29	FERNALD	15	34	20	15	86	51	15	133	79	20	148	90	9	96
30	MOUND	11	77	45	11	120	69	11	87	50	13	84	49	67	88
31	WVDP	19	82	50	19	165	100	19	165	100	6	112	63	66	100

OK Oakland Operations Office

32	ETEC	14	33	19	14	38	22	14	147	86	14	147	86	11	93
33	LEHR	18	103	62	18	132	80	18	112	67	17	75	45	92	100
34	LBL										20	87	53	63	91
35	LLNL	8	87	49				8	98	56	8	128	73		
36	SLAC										6	48	27	130	100

OR Oak Ridge Operations Office

37	CEBAF	13	82	48	13	92	54	14	109	64	13	111	65	60	100
38	FUSRAP	30	104	68	30	125	81	29	128	83	29	147	95	8	100
39	MKF	6	3	2	6	3	2	12	51	30	11	171	99	2	100
40	K25	16	14	8	16	51	30	15	32	19	16	49	29	112	96
41	ORISE	6	153	86	6	178	100	7	159	90	16	162	96	6	100
42	ORNL	16	39	23	16	51	30	16	74	44	16	73	43	62	80
43	Y12	19	34	21	19	34	21	18	36	22	14	52	31	73	74
44	PADUCAH														
45	PORTSMOUTH														
46	WSSRAP	23			23	87	54	31	93	61	31	140	92	13	100

RF Rocky Flats Field Office

47	RFETS	7	32	18	7	36	20	7	31	18	7	32	18	118	85
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RL Richland Operations Office

48	HEHF	56	33	26	56	118	92	56	124	97	56	127	99	1	100
49	PNL	8	109	62	8	147	84	8	166	94	7	113	64	41	87
50	WHC	8	118	67	8	129	73	11	120	69	11	137	79	36	100

SR Savannah River Operations Office

51	SRS	10	48	28	10	125	72	10	142	82	11	112	65	59	99
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Average (%)		42				63				65			72		94
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**General View of the DOE Site-Specific
Radiological Control Manual Implementation Plans
Part 3: Implementation Schedule at 12/31/94**

		As of 10/1/93		As of 12/31/93		As of 12/31/94	
		Date for full compliance	Date for compliance w Chapter 6 (Training)	Date for full compliance	Date for compliance w Chapter 6 (Training)	Date for full compliance	Date for compliance w Chapter 6 (Training)
AL Albuquerque Operations Office							
1	GJPO	06/01/94	06/01/94	06/01/94	06/01/94	12/29/95	12/29/95
2	ITRI	12/31/96	12/31/96	08/01/97	12/31/96	08/01/97	12/31/96
3	KCP	06/01/94	06/01/94	12/30/94	12/30/94		
4	LANL	09/01/97	06/11/96	10/01/96	10/01/96	10/01/96	10/01/96
5	PANTEX	12/31/95	12/01/94	10/31/96	10/31/96	10/31/96	06/30/96
6	PINELLAS	10/30/93	10/30/93	06/01/94	06/01/94	Compliance	Compliance
7	ROSS					11/30/95	06/30/95
8	SNL	NG	NG	10/31/96	10/31/96	12/01/98	12/01/98
9	TSD	NG	NG	12/01/94	12/01/94	07/31/95	06/30/95
10	UMTRA	06/01/94	06/01/94	12/31/95	12/31/95	09/01/95	09/01/95
11	WIPP	04/01/94	12/01/93	04/01/94	03/01/94	10/01/96	Compliance
CH Chicago Operations Office							
12	AMES			01/01/96	07/01/94	12/31/95	12/31/95
13	ANLE			12/01/98	12/01/94	03/30/95	03/30/95
14	ANLW	06/30/98	12/31/94	06/30/98	06/01/95	12/31/95	06/01/95
15	BCL	NG	NG	NG	NG		
16	BNL	10/01/97	06/30/95	10/01/97	06/30/95	10/01/97	12/31/95
17	EML			06/01/94	06/01/94	12/31/95	06/30/95
18	FNAL			10/01/97	10/01/95	01/01/96	01/01/96
19	NBL			12/01/98	02/16/94	12/01/98	02/16/94
20	NDRL			12/31/95		12/31/95	12/31/95
21	PPPL					12/31/96	12/31/96
ID Idaho Operations Office							
22	B&WI	10/28/93	10/20/93	06/30/95	11/30/94	12/31/95	Compliance
23	EGG	12/31/96	12/01/94	10/01/96	12/01/94	10/01/96	10/01/96
24	RESL	06/01/94	06/01/94	02/01/96	06/01/94	12/31/95	12/31/95
25	MKF	01/01/94	compliance	01/01/94	12/01/93	Compliance	Compliance
26	PTI	12/31/93	12/31/93	12/31/94	12/31/94	12/31/95	12/31/95
27	WINCO	01/01/96	06/01/94	01/01/96	06/01/94	12/31/95	Compliance

NV Nevada Operations Office

28-	NTSYM	12/01/95	12/01/95	09/30/96	12/31/94	12/01/96	10/01/96
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OH Ohio Field Office

29.	FERNALD	06/01/94	06/01/94	07/31/95	12/01/94	07/01/96	07/01/96
30	MOUND	12/31/96	06/01/95	09/30/96	09/01/95	09/30/97	09/30/97
31	WVDP	07/16/93	07/01/93	07/16/93	07/01/93	07/01/95	04/01/95

OK Oakland Operations Office

32	ETEC	NG	NG	02/19/96	02/19/96	02/19/96	02/19/96
33	LEHR	12/01/93	12/01/93	06/30/94	04/30/94	12/31/95	12/31/95
34	LBL					12/01/96	12/01/96
35	LLNL	NG	NG	NG	NG	NG	NG
36	SLAC					12/31/95	12/31/95

OR Oak Ridge Operations Office

37	CEBAF	09/30/94	09/30/94	09/30/94	09/30/94	09/30/95	09/30/95
38	FUSRAP	04/01/94	01/01/94	12/31/94	12/31/94	12/31/95	compliance
39	MKF	06/01/94	06/01/94	06/30/94	06/30/94	04/30/95	04/30/95
40	K25	09/09/99	12/01/95	10/01/96	12/01/94	09/30/96	09/30/96
41	ORISE	12/31/92	12/31/92	12/31/94	12/31/94	03/31/95	03/31/95
42	ORNL	10/01/96	06/01/94	10/01/96	12/31/94	10/01/96	10/01/96
43	Y12	09/30/96	08/31/95			06/30/96	06/30/96
44	PADUCAH						
45	PORTSMOUTH						
46	WSSRAP	06/01/94	06/01/94	06/01/94	06/01/94	04/30/95	04/30/95

RF Rocky Flats Field Office

47	RFETS	12/01/96	09/01/95	12/01/96	09/01/95	10/01/96	03/16/96
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RL Richland Operations Office

48	HEHF	04/01/95	06/01/94	04/01/95	06/01/94	04/01/95	compliance
49	PNL	04/01/95	06/01/94	04/01/95	03/31/94	10/31/96	10/31/96
50	WHC	04/01/95	12/31/94	04/01/95	12/31/94	12/31/95	03/31/95

SR Savannah River Operations Office

51	SRS	09/09/99	12/31/93	09/30/96	10/31/94	09/30/96	09/01/95
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**General View of the DOE Site-Specific
Radiological Control Manual Implementation Plans
Part 4: Implementation Cost (real or projected) as of 12/31/94**

	10/1/93	12/31/93	12/31/94		Total to		
	Total,	Total,	Total, for	Total	be spent	Total for	
	for four	for four	1993-1996	spent by	in the	FY 1996	
	years	years	and	1/1/95	last 3Q of	and	
	1993-1996	1993-1996	beyond		FY1995	beyond	
AL Albuquerque Operations Office							
1	Grand Junction Projects	2.21	2.21	2.21	2.21	0.00	0.00
2	Inhalation Toxicology Research Institute	1.09	1.07	1.07	0.09	0.09	0.89
3	Kansas City Plant	0.39	0.00	0.00			
4	Los Alamos National Laboratory	89.02	35.08	25.08	8.16	1.91	15.01
5	Pantex Plant	4.35	1.73	1.73	0.38	0.22	1.13
6	Pinellas Plant	0.86	0.00	0.00	0.00	0.00	0.00
7	Ross Aviation			0.04	0.03	0.01	0.00
8	Sandia National Laboratories	8.87	13.68	13.68	2.55	1.29	9.75
9	Transportation Safeguards Division	1.43	0.02	0.02	0.01	0.01	0.00
10	Uranium Mill Tailings Remedial Action Project	8.75	4.93	3.41	3.28	0.14	0.00
11	Waste Isolation Pilot Plant	0.00	0.00	0.00	0.00	0.00	0.00
CH Chicago Operations Office							
12	Ames Laboratory	0.01	0.12	0.12	0.05	0.04	0.03
13	Argonne National Laboratory - East	0.60	4.05	4.05	0.03	0.03	0.03
14	Argonne National Laboratory - West	0.39	0.39	0.39	0.39	0.00	0.00
15	Battelle Columbus Laboratories	1.09	1.09	1.09			
16	Brookhaven National Laboratory	2.52	2.36	2.36	1.80	0.20	0.36
17	Environmental Measurements Laboratory	0.20	0.12	0.12			
18	Fermi National Accelerator Laboratory	5.40	2.24	2.24			
19	New Brunswick Laboratory	0.10	0.10	0.20			
20	Notre Dame Radiation Laboratory	0.00		0.01			
21	Princeton Plasma Physics Laboratory	0.20	0.80	0.80			
ID Idaho Operations Office							
22	INEL - BWI (SMC)	0.39	0.30	0.00	0.00	0.00	0.00
23	INEL - EGG	9.67	9.67	8.92	5.82	1.08	2.02
24	INEL - GOID (RESL)	1.12	1.12	0.00	0.00	0.00	0.00
25	INEL - MKF	0.15	0.15	0.15	0.15	0.00	0.00
26	INEL - PTI	0.30	0.29	0.60	0.60	0.00	0.00
27	INEL - WINCO (ICPP)	2.22	2.22	2.22	1.70	0.17	0.35

NV Nevada Operations Office

28	Nevada Test Site / Yucca Mountain Project	10.00	4.75	4.75	4.18	0.14	0.44
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OH Ohio Field Office

29	Fernald Environmental Management Project	15.70	19.01	19.01	14.61	4.26	0.14
30	Mound Plant	7.84	2.93	2.93	0.00	0.59	2.33
31	West Valley Demonstration Project	0.19	0.19	0.19	0.05	0.14	0.00

OK Oakland Operations Office

32	Energy Technology Engineering Center	3.35	0.49	0.49			
33	Laboratory for Energy-Related Health Research	0.78	0.86	0.86	0.27	0.41	0.19
34	Lawrence Berkeley Laboratory	6.60		8.42	3.41	2.55	2.47
35	Lawrence Livermore National Laboratory	17.05	15.98	15.98	**		
36	Stanford Linear Accelerator Center	1.10		1.55	0.00	1.23	0.32

OR Oak Ridge Operations Office

37	Continuous Electron Beam Accelerator	0.00	0.85	0.85	0.27	0.58	0.00
38	Formerly Utilized Sites Remedial Action Program	0.36	0.36	0.36	0.35	0.01	0.00
39	MK-Ferguson of Oak Ridge	3.20	7.36	12.46	12.37	0.09	0.00
40	Oak Ridge Gaseous Diffusion Plant (K-25)	15.03	12.06	10.70	1.23	8.41	1.06
41	Oak Ridge Institute for Science and Education	0.49	0.49	0.49	0.47	0.02	0.00
42	Oak Ridge National Laboratory	29.40	30.88	11.74	1.39	1.42	8.92
43	Oak Ridge Y-12 Plant	20.80	20.81	20.81	9.04	3.98	7.80
44	Paducah Gaseous Diffusion Plant						
45	Portsmouth Gaseous Diffusion Plant						
46	Weldon Spring Site Remedial Action Project	1.13	1.13	1.09	0.78	0.32	0.00

RF Rocky Flats Field Office

47	Rocky Flats Plant	24.71	24.71	24.71	7.38	5.83	11.50
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RL Richland Operations Office

48	Hanford Site - HEHF	0.00	0.00	0.00	0.00	0.00	0.00
49	Hanford Site - PNL	4.07	4.31	4.31	3.79	0.08	0.43
50	Hanford Site - WHC	10.19	4.56	5.56	3.76	1.29	0.51

SR Savannah River Operations Office

51	Savannah River Site	5.02	5.00	5.00	4.45	0.52	0.03
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Total (M)	318	240	223	95	37	66
Number of RCMIPs in Total	47	44	48	39	39	39

* Total cost is given for 1995-1997.

** The LLNL cost includes FTEs, at \$100,000 per FTE.

General View of the DOE Site-Specific Radiological Control Manual Implementation Plans

Part 5: Core Academic Training as of 12/31/94

		GERT			RW I			RW II			RCT		
		Number of persons			Number of persons			Number of persons			Number of persons		
		Requiring training	Trained to date	%	Requiring training	Trained to date	%	Requiring training	Trained to date	%	Requiring training	Trained to date	%
AL Albuquerque Operations Office													
1	GJPO	606	606	100	60	60	100	925	925	100	28	28	100
2	ITRI	198	198	100	98	98	100	6	6	100	1	0	0
3	KCP	--	--		118	118	100	--	--		2	2	100
4	LANL &&	8730	8730	100	1753	1753	100	3018	3018	100	127	66	52
5	PANTEX	2477	2477	100	493	493	100	1003	1003	100	39	39	100
6	PINELLAS	500	500	100	8	8	100	140	140	100	--	--	
7	ROSS												
8	SNL &&	8400	8400	100	1196	550	46	231	210	91	41	27	66
9	TSD	320	288	90	8	0	0	--	--		--	--	
10	UMTRA	8	8	100	--	--		900	225	25	100	65	65
11	WIPP	814	814	100	--	--		9	9	100	3	3	100
CH Chicago Operations Office													
12	AMES	35	0	0	--	--		130	130	100	2	0	0
13	ANLE	3800	3000	79	1176	1035	88	567	456	80	50	41	82
14	ANLW	189	184	97	202	192	95	544	532	98	33	17	52
15	BCL												
16	BNL	1525	225	15	3000	500	17	1000	270	27	28	0	0
17	EML	85	50	59	10	6	60	8	0	0	--	--	
18	FNAL	859	859	100	1050	500	48	1160	651	56	11	0	0
19	NBL	6	6	100	9	9	100	31	31	100	3	2	67
20	NDRL	7	1	14	--	--		22	14	64	--	--	
21	PPPL	780	690	88	400	244	61	39	39	100	9	7	78
ID Idaho Operations Office													
22	B&WI	94	94	100	30	30	100	225	225	100	9	9	100
23	EGG	1628	1628	100	485	485	100	1162	1162	100	63	63	100
24	RESL	285	285	100	48	48	100	22	22	100	--	--	
25	MKF	8	110		8	172		8	733		8	0	
26	PTI	88	88	100	307	307	100	--	--		--	--	
27	WINCO	1971	1971	100	466	466	100	994	994	100	54	54	100

NV Nevada Operations Office

28-	NTSYM &&	5000	5000	100	250	250	100	500	500	100	45	12	27
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OH Ohio Field Office

29	FERNALD	5703	5703	100	1053	1053	100	2847	2847	100	123	123	100
30	MOUND	600	400	67	--	--		730	190	26	44	0	0
31	WVDP	980	980	100	450	450	100	723	723	100	38	38	100

OK Oakland Operations Office

32	ETEC	--	--		45	45	100	54	54	100	7	0	0
33	LEHR	17	17	100	6	6	100	11	11	100	--	--	
34	LBL	3300	651	20	600	300	50	0	0		7	0	0
35	LLNL	9000	9000	100	2000	2000	100	200	116	58	37	0	0
36	SLAC	1160	863	74	424	406	96	115	115	100	13	0	0

OR Oak Ridge Operations Office

37	CEBAF	155	155	100	487	487	100	--	--		1	0	0
38	FUSRAP	80	80	100	--	--		150	99	66	35	25	71
39	MKF	2200	2200	100	--	--		1255	1255	100	9	7	78
40	K25 &&	2995	2995	100	--	--		1800	1800	100	129	125	97
41	ORISE	87	87	100	35	32	91	16	16	100	1	1	100
42	ORNL	5000	5000	100	200	200	100	1000	1000	100	106	106	100
43	Y12	3050	3050	100	--	--		1548	1548	100	79	79	100
44	PADUCAH												
45	PORTSMOUTH												
46	WSSRAP	900	875	97	--	--		490	225	46	--	--	

RF Rocky Flats Field Office

47	RFETS	2288	656	29	2500	99	4	2500	678	27	410	238	58
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RL Richland Operations Office

48	HEHF	175	175	100	8	8	100	30	30	100	--	--	
49	PNL &&&	257	257	100	389	389	100	821	821	100	54	54	100
50	WHC &&&	13137	13137	100	110	110	100	3539	3539	100	400	367	92

SR Savannah River Operations Office

51	SRS	20500	20500	100	1000	1000	100	13229	13229	100	338	337	100
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Total		109989	102993		20474	13909		43694	39591		2479	1935	
Average %				87				85			84		62

& Did not indicate whether "Trained" or "To be Trained".

&& Employees operating defence nuclear facilities are fully trained.

&&& Changes in status, new hires, and terminations affect the validity of the baseline and percentages.

**General View of the DOE Site-Specific
Radiological Control Manual Implementation Plans
Part 6: Radiological Control Managers**

	Radiological Control Manager	Tel	Fax	Location
AL Albuquerque Operations Office	Gene Runkle	(505) 845-5087	(505) 845-6195	
1 Grand Junction Projects	Michael Sandvig	(303) 248-6712	(303) 248-6040	CO Grand Junction
2 Inhalation Toxicology Research Institute	Stephen Rohrer	(505) 845-1049	(505) 845-1198	NM Albuquerque
3 Kansas City Plant	Mary Donahue	(816) 997-7179	(816) 997-5903	MO Kansas City
4 Los Alamos National Laboratory	Dr. Joe Graf	(505) 667-5296	(505) 667-9726	NM Los Alamos
5 Pantex Plant	Roby Enge	(806) 477-4435	(806) 477-4198	TX Amarillo
6 Pinellas Plant	Adam Weaver	(813) 541-8130	(813) 541-8909	FL Largo
7 Ross Aviation	Jerome Feery	(505) 845-5040	(505) 845-5023	NM Albuquerque
8 Sandia National Laboratories	Ross Miller	(805) 844-6806	(505) 844-6808	NM Albuquerque
9 Transportation Safeguards Division	Rich Richey	(505) 845-5886	(505) 845-4720	NM Albuquerque
10 Uranium Mill Tailings Remedial Action Project	John Coffman	(505) 845-5868	(505) 766-1813	NM Albuquerque
11 Waste Isolation Pilot Plant	Dave Kump	(505) 234-8468	(505) 885-4562	NM Carlsbad
CH Chicago Operations Office	Chuck Mansfield	(708) 252-2271	(708) 252-2836	
12 Ames Laboratory	Lowell Mathison	(515) 294-2153	(515) 294-2155	IA Ames
13 Argonne National Laboratory - East	Robert Wynveen	(708) 252-3325	(708) 252-5778	IL Argonne
14 Argonne National Laboratory - West	Debra Kirchner	(208) 533-7700	(208) 533-7344	ID Idaho Falls
15 Battelle Columbus Laboratories	Steve Layendecker	(614) 424-3885	(614) 424-3954	OH Columbus
16 Brookhaven National Laboratory	Robert Casey	(516) 282-4654	(516) 282-2618	NY Upton
17 Environmental Measurements Laboratory	Matthew Williamson	(212) 620-3793	(212) 620-3600	NY New York
18 Fermi National Accelerator Laboratory	J. Donald Cossairt	(708) 840-3390	(708) 840-3390	IL Batavia
19 New Brunswick Laboratory	Margaret Lachman	(708) 252-2492	(708) 252-6256	IL Argonne
20 Notre Dame Radiation Laboratory	John Bentley	(219) 631-6117	(219) 631-8068	IN South Bend
21 Princeton Plasma Physics Laboratory	Jerry Gilbert	(609) 243-3455	(609) 243-2525	NJ Princeton
ID Idaho Operations Office	Ken Whitham	(208) 526-4151	(208) 526-7245	
22 INEL - BWI (SMC)	Larrie Trent	(208) 526-9132	(208) 526-6361	ID Idaho Falls
23 INEL - EGG	Dr. James Barker	(208) 526-8621	(208) 526-8959	ID Idaho Falls
24 INEL - GOID (RESL)	Ken Whitham	(208) 526-4151	(208) 526-7245	ID Idaho Falls
25 INEL - MKF	Michael Findley	(208) 526-2769	(208) 526-2283	ID Idaho Falls
26 INEL - PTI	Ralph Clayton	(208) 526-2314	(208) 526-2676	ID Idaho Falls
27 INEL - WINCO (ICPP)	Thomas Pointer	(208) 526-5416	(208) 526-3787	ID Idaho Falls

NV Nevada Operations Office

Michael Marelli (702) 295-0991 (702) 295-1202

28 Nevada Test Site / Yucca Mountain Project

Tom Bastian (702) 295-3515 (702) 295-6835 NV Mercury

OH Ohio Field Office

Jack Zimmerman (513) 865-4640 (513) 865-4402

29 Fernald Environmental Management Project

Mike Tester (513) 738-6904 (513) 738-9532 OH Fernald

30 Mound Plant

Terry Vaughn (513) 865-3437 (513) 865-4239 OH Miamisburg

31 West Valley Demonstration Project

Mel Crotzer (716) 942-2153 (716) 942-4246 NY West Valley

OK Oakland Operations Office

Robert Teets (510) 637-1609 (510) 637-2001

32 Energy Technology Engineering Center

Phil Rutherford (818) 586-6140 (818) 586-6142 CA Santa Susana

33 Laboratory for Energy-Related Health Research

Down Mitchell (916) 752-4023 (916) 752-6918 CA Davis

34 Lawrence Berkeley Laboratory

Roger Kloepping (510) 486-7608 (510) 486-4776 CA Berkeley

35 Lawrence Livermore National Laboratory

George Campbell (510) 422-5217 (510) 422-3325 CA Livermore

36 Stanford Linear Accelerator Center

Kenneth R. Kase (415) 926-2045 (415) 926-3030 CA Merlo Park

OR Oak Ridge Operations Office

Mike Henderson (615) 576-0705 (615) 576-3725

37 Continuous Electron Beam Accelerator

Robert May (804) 249-7682 (804) 249-7363 VA Newport News

38 Formerly Utilized Sites Remedial Action Program

Ken Fleming (615) 241-5666 (617) 576-4898 TN Oak Ridge

39 MK-Ferguson of Oak Ridge

Laurence Friedman (615) 574-7770 (615) 576-3741 TN Oak Ridge

40 Oak Ridge Gaseous Diffusion Plant (K-25)

Jerry Jamison (615) 574-9620 (615) 576-2999 TN Oak Ridge

41 Oak Ridge Institute for Science and Education

Charles Scott (615) 576-3335 (615) 576-7047 TN Oak Ridge

42 Oak Ridge National Laboratory

John Swanks (615) 574-8447 (615) 574-8225 TN Oak Ridge

43 Oak Ridge Y-12 Plant

J.H. Barker (615) 574-3547 (615) 574-1770 TN Oak Ridge

44 Paducah Gaseous Diffusion Plant

KY Paducah

45 Portsmouth Gaseous Diffusion Plant

OH Portsmouth

46 Weldon Spring Site Remedial Action Project

Ken Meyer (314) 441-8086 (314) 447-1122 MO Weldon Spring

RF Rocky Flats Field Office

Bruce Wallin (303) 966-3096 (303) 966-4763

47 Rocky Flats Plant

Mark Spears (303) 966-6629 (303) 966-8123 CO Denver

RL Richland Operations Office

Danny Rice (509) 373-7388 (509) 373-6100

48 Hanford Site - HEHF

Sandra Gilchrist (509) 376-6469 (509) 376-9156 WA Richland

49 Hanford Site - PNL

David Higby (509) 376-3057 (509) 376-6663 WA Richland

50 Hanford Site - WHC

Denny Newland (509) 372-3132 (509) 372-3522 WA Richland

SR Savannah River Operations Office

John Anderson (803)-725-2042 (803)-725-7723

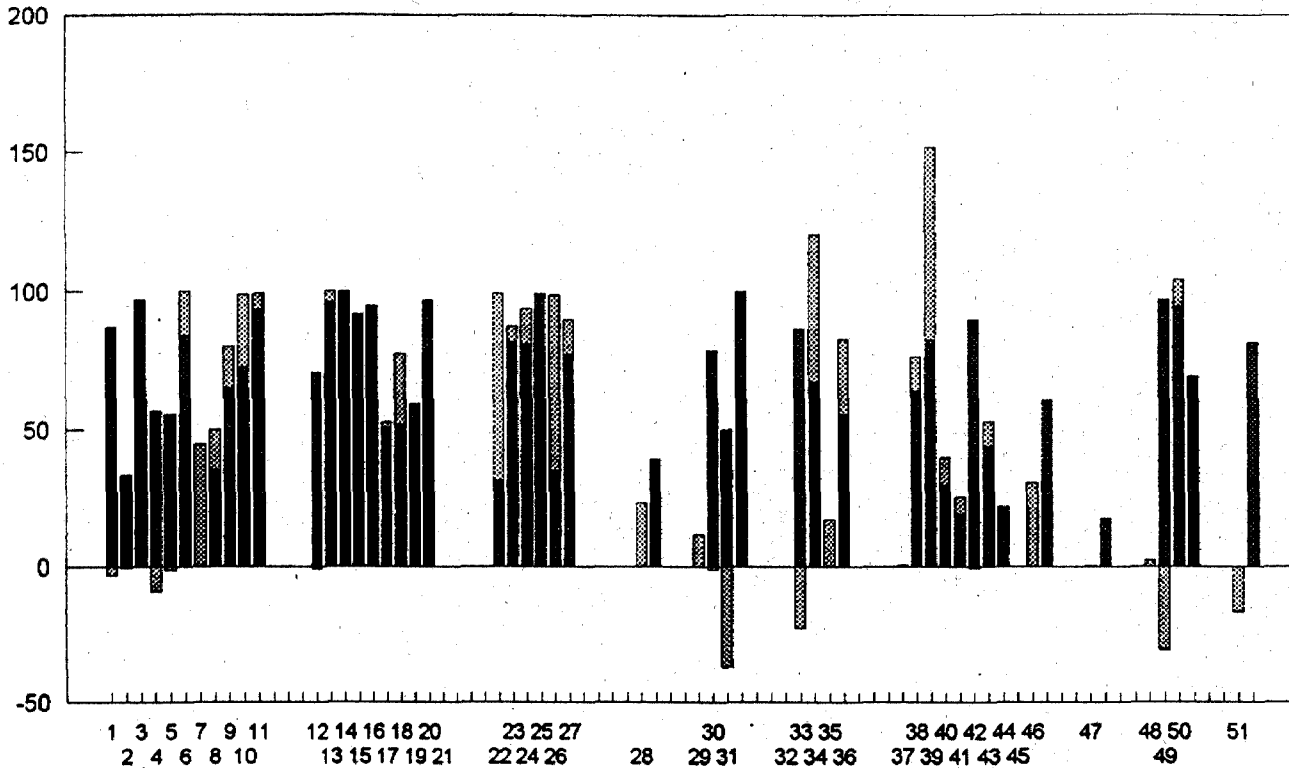
51 Savannah River Site

Norman Mins (803) 725-9716 (803) 725-7012 SC Aiken

Radiological Control Manual Implementation Plans Implementation status as of December 31, 1994

Implementation status in % of the applicable RCM Articles

light shade: progress in 1993 (RCM, Rev.0)
dark shade: progress in 1994 (RCM, Rev.0 or Rev.1)

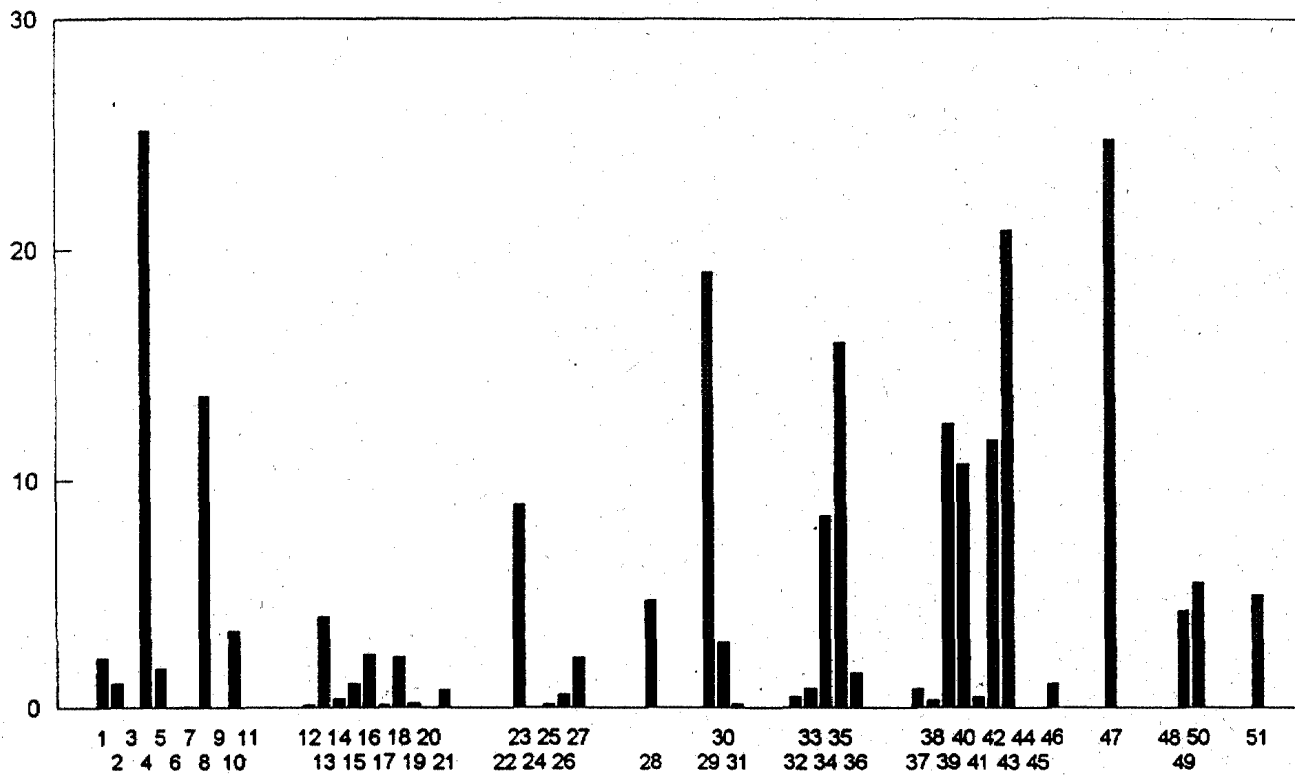


- o Negative values show the decrease in percent compliance due to new requirements introduced by the Rev. 1 or to more detailed assessments that indicated that more work is needed to reach full compliance.
- o For KCP, BCL and PPPL, the graph shows the implementation status as of 12/31/93

1	GJPO	18	FNAL	35	LLNL	
2	ITRI	19		0	36	SLAC
3	KCP	20	NDRL	37	CEBAF	
4	LANL	21	PPPL	38	FUSRAP	
5	PANTEX	22	B&WI	39	MKF	
6	PINELLAS	23	EGG	40	K25	
7	ROSS	24	RESL	41	ORISE	
8	SNL	25	MKF	42	ORNL	
9	TSD	26	PTI	43	Y12	
10	UMTRA	27	WINCO	44	PADUCAH	
11	WIPP	28	NTSYM	45	PORTSMOUTH	
12	AMES	29	FERNALD	46	WSSRAP	
13	ANLE	30	MOUND	47	RFETS	
14	ANLW	31	WVDP	48	HEHF	
15	BCL	32	ETEC	49	PNL	
16	BNL	33	LEHR	50	WHC	
17	EML	34	LBL	51	SRS	

**Radiological Control Manual Implementation Plans
Implementation status as of December 31, 1994**

Implementation cost in millions

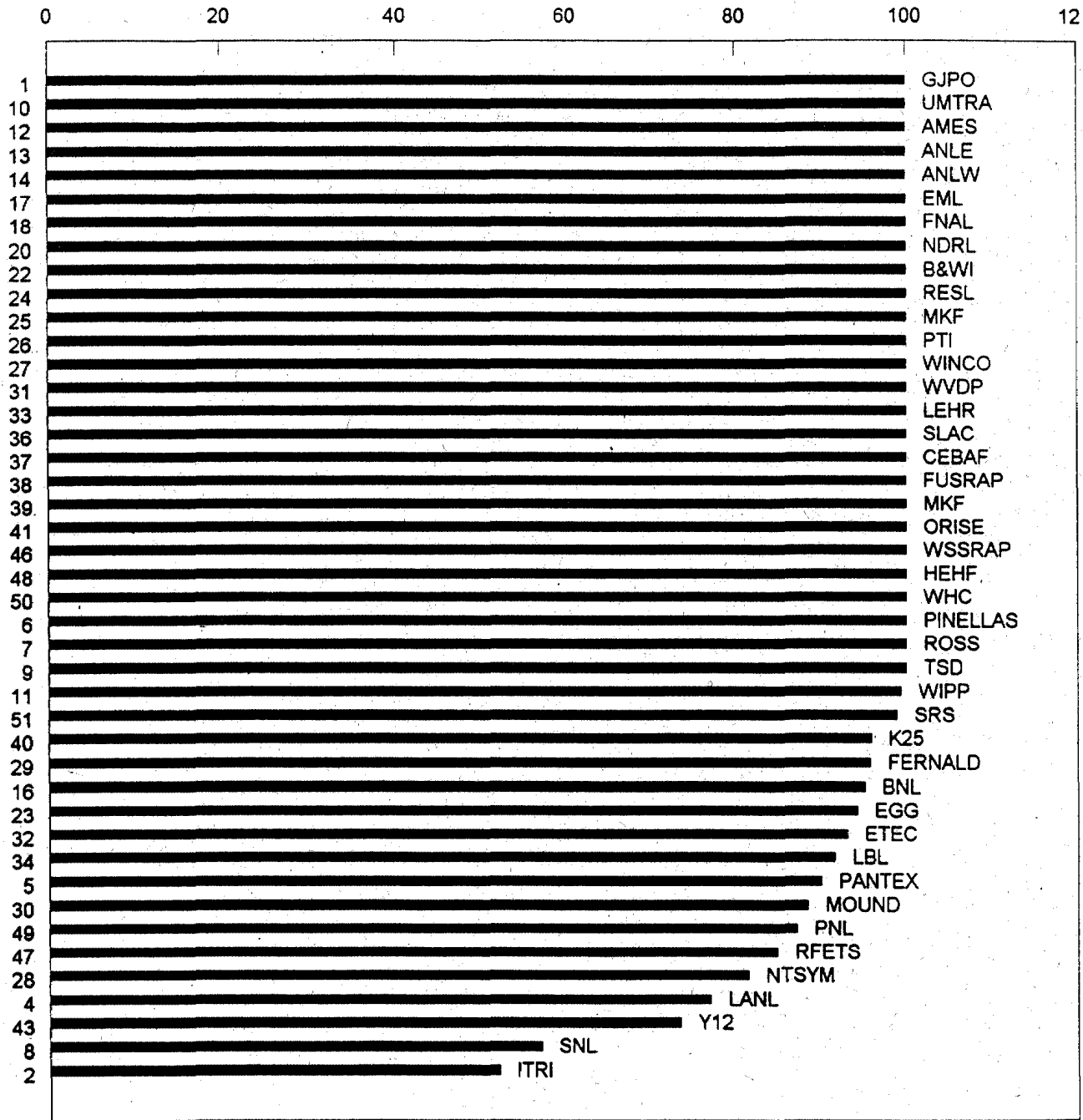


For KCP, BCL, and PPPL, the graph shows the projections as of 12/31/93

1	GJPO	18	FNAL	35	LLNL
2	ITRI	19	NBL	36	SLAC
3	KCP	20	NDRL	37	CEBAF
4	LANL	21	PPPL	38	FUSRAP
5	PANTEX	22	B&WI	39	MKF
6	PINELLAS	23	EGG	40	K25
7	ROSS	24	RESL	41	ORISE
8	SNL	25	MKF	42	ORNL
9	TSD	26	PTI	43	Y12
10	UMTRA	27	WINCO	44	PADUCAH
11	WIPP	28	NTSYM	45	PORTSMOUTH
13	ANLE	30	MOUND	47	RFETS
14	ANLW	31	WVDP	48	HEHF
15	BCL	32	ETEC	49	PNL
16	BNL	33	LEHR	50	WHC
17	EML	34	LBL	51	SRS

**Radiological Control Manual Implementation Plans
Implementation status projected for December 31, 1995**

Implementation status in % of the applicable RMC Articles



Projections not available for the following sites: BCL, KCP, LLNL, NBL, PADUCAH, PORTSMOUTH, AND PPPL.

**Technical Equivalency Determinations (Article 113)
List for Department of Energy Sites**

				RCM Article changed	RCM Article allowing this change (*)
1	1	AL	KCP	613	
2	2	AL	KCP	614	
3	1	AL	PANTEX	552	
4	2	AL	PANTEX	554	
5	1	AL	PINELLAS	346	
6	1	AL	UMTRA	222.6	371.9
7	2	AL	UMTRA	233	371.9
8	3	AL	UMTRA	316.6 b	371
9	4	AL	UMTRA	325.4	371.2
10	5	AL	UMTRA	335	113
11	6	AL	UMTRA	422	371.5
12	7	AL	UMTRA	461	371.2
13	8	CH	BNL	A 3C	113
14	1	CH	BNL	234.2	113
15	2	CH	BNL	312.3	113
16	3	CH	BNL	314.5	113
17	4	CH	BNL	315.3	113
18	5	CH	BNL	316.4	113
19	6	CH	BNL	316.5	113
20	7	CH	BNL	316.6	113
21	8	CH	BNL	322.8	113
22	9	CH	BNL	346.6	113
23	10	CH	BNL	347.2	113
24	11	CH	BNL	347.3	113
25	1	CH	EML	236.1	113
26	2	CH	EML	334.8	113
27	3	CH	EML	334.9	113
28	4	CH	EML	347.2 d	113
29	5	CH	EML	347.3 e	113
30	6	CH	EML	412.2 4	113
31	7	CH	EML	413.4	113
32	8	CH	EML	552.1	113
33	9	CH	EML	554.1	113
34	10	CH	EML	563.1	113
35	11	CH	EML	615.1	113
36	1	ID	EGG	322.6	
37	1	ID	ICPP	114.4	
38	2	ID	ICPP	141.1	
39	3	ID	ICPP	142.5	
40	4	ID	ICPP	325.3	
41	5	ID	ICPP	348.1	
42	6	ID	ICPP	412.4	

43	7	ID	ICPP	413.5	
44	8	ID	ICPP	461.4	
45	9	ID	ICPP	751.5	
46	1	OH	FERMCO	A 3C	113
47	2	OH	FERMCO	T3-1	113
48	3	OH	FERMCO	222.3 d	N/A
49	4	OH	FERMCO	222.3 e	113
50	5	OH	FERMCO	231.9	113
51	6	OH	FERMCO	234.5	113
52	7	OH	FERMCO	236.2	113
53	8	OH	FERMCO	325.5	113
54	9	OH	FERMCO	337	113
55	10	OH	FERMCO	337.3	113
56	11	OH	FERMCO	347.1	113
57	12	OH	FERMCO	451.5	113
58	13	OH	FERMCO	452.1	113
59	14	OH	FERMCO	452.2 c	113
60	15	OH	FERMCO	452.2 e	113
61	16	OH	FERMCO	461.5	113
62	17	OH	FERMCO	462.3	113
63	18	OH	FERMCO	552.1 a	113
64	19	OH	FERMCO	552.1 b	113
65	20	OH	FERMCO	552.1 d	113
66	21	OH	FERMCO	552.1 e	113
67	22	OH	FERMCO	552.1 f	113
68	23	OH	FERMCO	552.1 g	113
69	24	OH	FERMCO	554.1 a	113
70	25	OH	FERMCO	554.1 b	113
71	26	OH	FERMCO	554.1 c	113
72	27	OH	FERMCO	554.1 d	113
73	28	OH	FERMCO	554.1 e	113
74	29	OH	FERMCO	554.1 f	113
75	30	OH	FERMCO	554.1 g	113
76	31	OH	FERMCO	554.1 h	113
77	32	OH	FERMCO	554.1 i	113
78	33	OH	FERMCO	554.1 j	113
79	1	OH	WVDP	A 3C.5	113
80	2	OH	WVDP	121.10	113
81	3	OH	WVDP	133.1	113
82	4	OH	WVDP	222.3 e	113
83	5	OH	WVDP	231.7	113
84	6	OH	WVDP	312.2	113
85	7	OH	WVDP	321.4	113
86	8	OH	WVDP	321.8	113
87	9	OH	WVDP	322.6	113
88	10	OH	WVDP	347.1	113
89	11	OH	WVDP	413.4	113
90	12	OH	WVDP	414.11	113
91	13	OH	WVDP	452.3 a	113
92	14	OH	WVDP	551.10	113
93	15	OH	WVDP	554.3	113
94	16	OH	WVDP	651	113
95	1	OK	ETEC	113.3	
96	2	OK	ETEC	314	
97	3	OK	ETEC	322	
98	4	OK	ETEC	334	
99	5	OK	ETEC	342	

100	6	OK	ETEC	351	
101	7	OK	ETEC	352	
102	8	OK	ETEC	412.2 f	
103	9	OK	ETEC	552.1	
104	10	OK	ETEC	554.1	
105	11	OK	ETEC	721	
106	12	OK	ETEC	722	
107	13	OK	ETEC	723	
108	14	OK	ETEC	724	
109	15	OK	ETEC	725	
110	1	OK	LEHR	T 2-1	
111	2	OK	LEHR	T 2-2	
112	3	OK	LEHR	112.2	
113	4	OK	LEHR	123	
114	5	OK	LEHR	132.1	
115	6	OK	LEHR	132.3	
116	7	OK	LEHR	138.2	
117	8	OK	LEHR	157	
118	9	OK	LEHR	234.6	
119	10	OK	LEHR	321	
120	11	OK	LEHR	322.2 d	
121	12	OK	LEHR	342.1	
122	13	OK	LEHR	347.1	
123	14	OK	LEHR	351.4	
124	15	OK	LEHR	352	
125	16	OK	LEHR	411.4	
126	17	OK	LEHR	412.2 g	
127	18	OK	LEHR	414	
128	19	OK	LEHR	414.4	
129	20	OK	LEHR	414.7	
130	21	OK	LEHR	422.3	
131	22	OK	LEHR	423.3	
132	23	OK	LEHR	423.4	
133	24	OK	LEHR	521.4	
134	25	OK	LEHR	654.3	
135	26	OK	LEHR	654.4	
136	27	OK	LEHR	654.5	
137	28	OK	LEHR	713.3	
138	29	OK	LEHR	761.3	
139	1	OK	LLNL	A 3C	113
140	2	OK	LLNL	A 3C.5	113
141	3	OK	LLNL	A 3C.8	113
142	4	OK	LLNL	A 3D	113
143	5	OK	LLNL	114.4	113
144	6	OK	LLNL	115.1	113
145	7	OK	LLNL	123	113
146	8	OK	LLNL	124	113
147	9	OK	LLNL	127	113
148	10	OK	LLNL	132.4	113
149	11	OK	LLNL	133.3	113
150	12	OK	LLNL	135	113
151	13	OK	LLNL	137	113
152	14	OK	LLNL	141.2	113
153	15	OK	LLNL	212.2	113
154	16	OK	LLNL	222.3 e	113
155	17	OK	LLNL	222.3 g	113
156	18	OK	LLNL	231.10	113

157	19	OK	LLNL	231.11	113
158	20	OK	LLNL	231.2	113
159	21	OK	LLNL	231.5	113
160	22	OK	LLNL	231.7	113
161	23	OK	LLNL	231.8	113
162	24	OK	LLNL	231.9	113
163	25	OK	LLNL	233.3	113
164	26	OK	LLNL	234.5	113
165	27	OK	LLNL	234.6	113
166	28	OK	LLNL	235.2	113
167	29	OK	LLNL	236.1	113
168	30	OK	LLNL	312.3 c	113
169	31	OK	LLNL	312.6	113
170	32	OK	LLNL	313	113
171	33	OK	LLNL	313.3	113
172	34	OK	LLNL	314.1	113
173	35	OK	LLNL	315.1	113
174	36	OK	LLNL	316.5	113
175	37	OK	LLNL	321.5	113
176	38	OK	LLNL	322.2	113
177	39	OK	LLNL	322.4	113
178	40	OK	LLNL	322.6	113
179	41	OK	LLNL	322.8	113
180	42	OK	LLNL	324.2	113
181	43	OK	LLNL	324.3	113
182	44	OK	LLNL	324.5	113
183	45	OK	LLNL	325.6	113
184	46	OK	LLNL	325.7	113
185	47	OK	LLNL	325.8	113
186	48	OK	LLNL	332.2	113
187	49	OK	LLNL	334.6	113
188	50	OK	LLNL	334.8	113
189	51	OK	LLNL	334.9	113
190	52	OK	LLNL	335.4 b	113
191	53	OK	LLNL	335.4 c	113
192	54	OK	LLNL	335.5	113
193	55	OK	LLNL	338.8	113
194	56	OK	LLNL	342.3	113
195	57	OK	LLNL	342.5	113
196	58	OK	LLNL	344.3	113
197	59	OK	LLNL	346.2	113
198	60	OK	LLNL	347.2 d	113
199	61	OK	LLNL	347.3 e	113
200	62	OK	LLNL	347.4 f	113
201	63	OK	LLNL	351.1	113
202	64	OK	LLNL	351.2	113
203	65	OK	LLNL	351.3	113
204	66	OK	LLNL	352	113
205	67	OK	LLNL	361.2	113
206	68	OK	LLNL	362	113
207	69	OK	LLNL	363.4	113
208	70	OK	LLNL	364.1	113
209	71	OK	LLNL	365.5 a	113
210	72	OK	LLNL	412.4	113
211	73	OK	LLNL	413.3	113
212	74	OK	LLNL	413.4	113
213	75	OK	LLNL	414.4	113

214	76	OK	LLNL	414.5	113
215	77	OK	LLNL	414.9	113
216	78	OK	LLNL	423.3	113
217	79	OK	LLNL	423.9	113
218	80	OK	LLNL	442.1	113
219	81	OK	LLNL	442.2	113
220	82	OK	LLNL	442.5	113
221	83	OK	LLNL	442.7	113
222	84	OK	LLNL	443.5	113
223	85	OK	LLNL	461.5	113
224	86	OK	LLNL	511.10	113
225	87	OK	LLNL	514.2	113
226	88	OK	LLNL	514.3	113
227	89	OK	LLNL	522.3	113
228	90	OK	LLNL	541.3	113
229	91	OK	LLNL	541.4	113
230	92	OK	LLNL	551.5	113
231	93	OK	LLNL	552.1 b	113
232	94	OK	LLNL	552.1 d	113
233	95	OK	LLNL	552.1 e	113
234	96	OK	LLNL	552.1 f	113
235	97	OK	LLNL	552.1 g	113
236	98	OK	LLNL	554.1 c	113
237	99	OK	LLNL	554.1 d	113
238	100	OK	LLNL	554.1 e	113
239	101	OK	LLNL	554.1 f	113
240	102	OK	LLNL	554.1 g	113
241	103	OK	LLNL	554.1 h	113
242	104	OK	LLNL	555.7	113
243	105	OK	LLNL	555.8	113
244	106	OK	LLNL	555.9	113
245	107	OK	LLNL	562.4	113
246	108	OK	LLNL	562.7	113
247	109	OK	LLNL	613.1 e	113
248	110	OK	LLNL	613.3	113
249	111	OK	LLNL	613.6	113
250	112	OK	LLNL	632.3 a	113
251	113	OK	LLNL	632.3 b	113
252	114	OK	LLNL	642.4 b	113
253	115	OK	LLNL	642.4 c	113
254	116	OK	LLNL	651	113
255	117	OK	LLNL	652	113
256	118	OK	LLNL	653	113
257	119	OK	LLNL	655	113
258	120	OK	LLNL	711	113
259	121	OK	LLNL	712.1 m	113
260	122	OK	LLNL	713.1 a	113
261	123	OK	LLNL	713.1 c	113
262	124	OK	LLNL	721	113
263	125	OK	LLNL	721.3	113
264	126	OK	LLNL	722.10	113
265	127	OK	LLNL	722.9	113
266	128	OK	LLNL	742	113
267	129	OK	LLNL	751.5	113
268	1	OR	WSSRAP	334.1 b	113
269	2	OR	WSSRAP	335.1 b	113
270	3	OR	WSSRAP	335.1 c	113

271	4	OR	WSSRAP	A 3C	371.2
272	5	OR	WSSRAP	121.10	113
273	6	OR	WSSRAP	131.4	113
274	7	OR	WSSRAP	131.5	113
275	8	OR	WSSRAP	131.6	113
276	9	OR	WSSRAP	133.1	113
277	10	OR	WSSRAP	136.3	113
278	11	OR	WSSRAP	222.6	371.10
279	12	OR	WSSRAP	231.7	113
280	13	OR	WSSRAP	232.1	113
281	14	OR	WSSRAP	322.2	113
282	15	OR	WSSRAP	325.1	
283	16	OR	WSSRAP	325.2 a	371.2
284	17	OR	WSSRAP	325.3	113
285	18	OR	WSSRAP	325.5	113
286	19	OR	WSSRAP	325.7	113
287	20	OR	WSSRAP	335.3 a	371.2
288	21	OR	WSSRAP	335.4 b	113
289	22	OR	WSSRAP	335.4 c	113
290	23	OR	WSSRAP	338.2	113
291	24	OR	WSSRAP	338.3	371.2
292	25	OR	WSSRAP	338.8	113
293	26	OR	WSSRAP	342.11 c	113
294	27	OR	WSSRAP	342.3	113
295	28	OR	WSSRAP	347.2 d	113
296	29	OR	WSSRAP	413.4	113
297	30	OR	WSSRAP	414.11	113
298	31	OR	WSSRAP	414.9	371.9
299	32	OR	WSSRAP	442.5	113
300	33	OR	WSSRAP	451.7	371.2 & 371.5
301	34	OR	WSSRAP	453.1	371.3
302	35	OR	WSSRAP	461.1	371.2
303	36	OR	WSSRAP	461.2	371.2
304	37	OR	WSSRAP	511.9	113
305	38	OR	WSSRAP	514.3	113
306	39	OR	WSSRAP	543.2	113
307	40	OR	WSSRAP	552.1 f	113
308	41	OR	WSSRAP	554.1 a	113
309	42	OR	WSSRAP	554.1 b	113
310	43	OR	WSSRAP	554.1 c	113
311	44	OR	WSSRAP	554.1 g	113
312	45	OR	WSSRAP	554.3	113
313	46	OR	WSSRAP	554.4	113
314	47	OR	WSSRAP	555.3	371.3
315	48	OR	WSSRAP	612.1	113
316	49	OR	WSSRAP	613.4	113
317	50	OR	WSSRAP	633.1	371.2
318	51	OR	WSSRAP	654.3	113
319	52	OR	WSSRAP	657.4	113
320	53	OR	WSSRAP	662.1	113
321	1	SR	SRS	115	
322	2	SR	SRS	123	
323	3	SR	SRS	124	
324	4	SR	SRS	131	
325	5	SR	SRS	231	
326	6	SR	SRS	236	
327	7	SR	SRS	335	

328	8	SR	SRS	346
329	9	SR	SRS	414
330	10	SR	SRS	414
331	11	SR	SRS	553
332	12	SR	SRS	554
333	13	SR	SRS	613
334	14	SR	SRS	642
335	15	SR	SRS	751

(*) This information was available at DOE-HQ only for those Technical Equivalency Determinations with complete documentation

N/A: This TED is no longer necessary base on the February 1994 revision of the Radiological Control Manual