

**The Secretary of Energy**

Washington, DC 20585

October 21, 1994

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

Dear Mr. Conway:

Your letter of May 6, 1994, requested that the Department prepare a report on the Department's nuclear health and safety management program, as well as nuclear safety responsibilities and organizational arrangements.

The enclosed report provides a detailed exposition of our nuclear health and safety management program specifically addressing the functions the Department deems necessary for an effective program. I am committed to strengthening this program through a comprehensive management system that ensures full accountability for safety. A necessary component to ensuring accountability is the clear articulation of responsibilities and authorities. These are documented in the Department's Manual of Functions, Assignments and Responsibilities for Nuclear Safety. I intend to see that these responsibilities are fully discharged. To this end, the Department will tie the appraisals of its senior managers to the discharge of their environment, safety, and health responsibilities. In addition, the Department is initiating a vigorous independent oversight program.

The report also addresses your specific concerns on potential conflicts of interest. The Department is committed to maintaining a demonstrable separation of the independent oversight and enforcement functions from line management and from the technical assistance activities conducted by the Office of the Assistant Secretary for Environment, Safety and Health. This increase in technical assistance is a near-term action to help remedy the existing shortage of qualified safety personnel in the line organizations. The Department will also use its special hiring authority to help remedy this shortage.

Sincerely,

A handwritten signature in cursive script that reads "Hazel R. O'Leary".

Hazel R. O'Leary

Enclosure

U. S. Department of Energy
Response to
Defense Nuclear Facilities Safety Board
Letter of May 6, 1994



October 3, 1994

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CROSS-REFERENCE INDEX

Reference in Letter	Description	Section in Response
I.A	Provide a comprehensive exposition of the functions DOE deems necessary for an effective nuclear safety management program.	2.1
I.B	Provide a brief summary description of the basic safety management system that the DOE currently has in place for satisfying its responsibilities under the Atomic Energy Act "to protect or to minimize danger to life and property."	2.2-2.6
I.B.1	Provide a flow diagram that depicts the considerations of safety during the life cycle of a defense nuclear facility through the major stages of design, construction, operation, decontamination and decommissioning, and environmental restoration.	2.1-2.2
I.B.2	Describe the DOE process for establishing the safety management plans for specific facilities, including a discussion of how the management plan is adjusted as a facility transitions from one stage to the next.	2.3
I.B.3	Describe the principal safety elements (rules, regulations, Orders, standards, and other requirements) that are applicable at each of the life cycle stages in I.B.1.	2.4
I.B.4	Describe the relationship between Orders and standards identified in Requirements Identification Documents (RIDs) and nuclear safety regulations enforceable under the Price-Anderson Act Amendments; indicate how compliance and enforcement will be assured for both types of requirements.	2.5
I.B.5	Describe the adaptation of the basic safety management system for defense nuclear facilities to the assembly and disassembly of weapons and the conduct of weapons testing.	2.6
I.C	Provide views on the advisability and feasibility of establishing a DOE complex-wide self-appraisal capability modelled on that used by the Institute of Nuclear Power Operations (INPO).	2.7

CROSS-REFERENCE INDEX (Continued)

Reference in Letter	Description	Section in Response
II.A	Define the safety responsibilities of all organizations which have such responsibilities for defense nuclear facilities, including DOE Headquarters, field offices, contractors, and oversight organizations. Where safety responsibility has been assigned and then delegated, this should be indicated.	2.8
II.B	State the principles embodied in assignments of safety responsibility for defense nuclear facilities, and compare them to parallel principles applied in commercial nuclear practice. Examples of such principles are: clear separation of line management responsibilities and functions from independent oversight functions and responsibilities; quality assurance group reporting directly to high-level management.	2.9
II.C	Identify potential conflicts of interest in existing safety assignments, and what actions (if any) are planned to eliminate these conflicts. For example, analyze the inherent problems, whether real or perceived, of having a single organizational element (ES&H) provide both technical support to the line and also conduct independent oversight of DOE compliance and enforcement programs. Another typical conflict of interest is the assignment of both line management and quality assurance functions to the same individual or group.	2.10
II.D	Describe in detail how the Office of Environment, Safety and Health will carry out independent oversight functions in light of its assigned functions to assist line organizations. Indicate how the Office will simultaneously assist line management, assess performance, and conduct enforcement actions at the same facility. Explain the actions to be taken by this office in performance-based safety compliance assessments at defense nuclear facilities, where performance is measured against DOE safety Orders, regulations, and other standards and requirements of the contract.	2.10
II.E	List special measures, if any, which have been taken or will be taken to ensure that safety in executing safety responsibilities for defense nuclear facilities are well-defined and understood throughout the Department, and its contractor organizations.	2.11
II.F	Differentiate the relative roles of the contractor, DOE, line management, and DOE oversight in executive safety management functions such as development and issuance of safety policies, rules, Orders, standards and guides.	2.12
II.G	Provide an appraisal of the Department's current organization and capabilities relative to the safety functions identified in Item I.A and delineate changes needed to strengthen the nuclear safety management program.	2.13

LIST OF ACRONYMS

ADS-FM	Associate Deputy Secretary for Field Management
AERO	Association for Excellence in Reactor Operations
ASESH	Assistant Secretary for Environment, Safety and Health
CFR	Code of Federal Regulations
CSO	Cognizant Secretarial Officer
DEAR	Department of Energy Acquisition Regulation
D&D	Decommissioning and Decontamination
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
EEI	Edison Electric Institute
EFCOG	Energy Facility Contractor Operating Group
EPRI	Electric Power Research Institute
ERMC	Environmental Restoration Management Contractor
ES&H	Environment, Safety and Health
FAR	<i>Manual of Functions, Assignments, and Responsibilities for Nuclear Safety</i>
INPO	Institute of Nuclear Power Operations
M&O	Management and Operating
NEI	Nuclear Energy Institute
NUMARC	Nuclear Utility Management Resource Council
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
PAAA	Price-Anderson Amendments Act
RID	Requirement Identification Document
S/RID	Standard/Requirement Identification Document
SAR	(Nuclear) Safety Analysis Reports
SQIG	Supplier Quality Information Group
TRADE	Training Resources and Data Exchange
USQ	Unreviewed Safety Questions

SECTION 1

INTRODUCTION

1.1 BACKGROUND AND SCOPE

In a 6 May 1994 letter addressed to Secretary of Energy Hazel R. O'Leary from John T. Conway, Chairman of the Defense Nuclear Facilities Safety Board (DNFSB), the U.S. Department of Energy (DOE) was formally requested to provide detailed information on certain aspects of its recent reorganization. The information sought from the Department is relevant to the Board's need to keep apprised of changes affecting safety in the DOE defense nuclear complex under the purview of the Defense Nuclear Facilities Safety Board. Although the discussion in this document focuses on the Department's nuclear safety requirements in response to the DNFSB letter, it is also generally applicable to the DOE's nonnuclear environment, safety, and health (ES&H) requirements.

1.2 ORGANIZATION OF REPORT

Section 2 of this report provides the information requested by the DNFSB. The Board's request covers several topical areas that are closely related and can cause responses to overlap. Although attempts were made to avoid this duplication, in some instances duplication was necessary in order to be responsive.

To help ensure responsiveness and facilitate correlation of this document to the information requested, the report is organized according to the subject areas listed in the Board's letter. Sections 2.1 through 2.7 of the report address subject areas I.A, I.B., and I.C. Subject areas II.A through II.G are discussed in report sections 2.8 through 2.13. Additionally, a cross-reference index is provided at the beginning of this document (see pages iii and iv) that indicates where in the report the Department's response to each question may be found.

SECTION 2

RESPONSES TO QUESTIONS

2.1 RESPONSE TO QUESTION I.A

The Department of Energy is responsible to the public and the Congress for assuring that all DOE and DOE-controlled operations are performed in a manner that will minimize risk to the safety and health of operating personnel and to the general public. The practices to safely operate nuclear facilities have been developed and refined over a period of more than 35 years. The Department of Energy considered these practices in establishing its Nuclear Safety Policy, which was issued on 9 September 1991. This Policy establishes the path by which the Department implements its mandate under the Atomic Energy Act to protect or to minimize danger to life, health, and property.

Five guiding principles constitute the basis for establishing a safety management program to fulfill the Department's mandate under the Atomic Energy Act. These are:

- Line Management Responsibility for Safety
- Comprehensive Requirements
- Competence Commensurate with Responsibilities
- Independent Oversight
- Enforcement

Each of these principles is crucial to the effectiveness of a safety management program.

2.1.1 Line Management Responsibility for Safety

Clear, unambiguous lines of authority and responsibility for ensuring safety must be established and maintained at all organizational levels. The fundamental principle governing safety management is that line management has full responsibility and authority for the safety of facilities.

Safety management, as used in this document, is the descriptive term for the measures required to ensure that an acceptable level of safety is maintained throughout the life of an installation. The starting point for the management of safety is with the senior managers of all organizations involved. The role of each organization is to be specifically defined, and that definition may extend through the life of the project or be limited to a particular phase of the project. Whichever the case, it is a management responsibility to recognize the safety significance of the organization's activities. Management must ensure that its organization is well-structured, with clear lines of authority, communication, and well-defined responsibilities; and that its safety policies, requirements, and procedures are established, understood, and practiced by all involved. However, the assignment of responsibilities among different organizations must not reduce or dilute the prime responsibility for safety, which lies with the line organization.

The line organizations have the responsibility to ensure itself of and to maintain the quality of its operations throughout the entire life-cycle of the facility - i.e., that the facility is designed, constructed, operated, maintained, decommissioned, decontaminated, and environmentally restored in accordance with safety requirements, design specifications, and safety analyses. Thus, the line organizations do the following:

- . Implement safety policy
- . Have a clear division of responsibilities with corresponding lines of authority and communication
- . Ensure that they have sufficient staff with the necessary levels of education and training
- . Develop and strictly adhere to sound systematic plans and procedures
- . Review, monitor, and audit all safety-related matters on a regular basis
- . Resolve findings from oversight activities

The sum of these measures is intended to create an atmosphere of rigor and thoroughness throughout the line organization to ensure that all safety objectives are achieved. Management of safety at an installation will not be effective unless the line organization has a very high level of commitment to safety. The lead must come from the highest levels of management. Their safety policies and attitudes need to permeate every level of the operating organization and extend into other organizations performing delegated tasks. There can be no complacency at any level as to the continuous attention demanded by safety. Safety management implies a learning attitude in safety matters and the open exchange of information both upwards and downwards in an organization.

The line organization will usually delegate operating authority of an installation to the on-site management who has the direct day-to-day control. Accordingly, the line organization is responsible for the effectiveness of safety management at the installation, and to take necessary measures to ensure that safety is maintained at the desired level.

2.1.2 Comprehensive Requirements

The enabling legislation for the Department requires that there is reasonable assurance that the safety and health of the public will be protected as a result of Department activities. This legislation sets the stage for the Department to develop the nuclear safety policy, requirements, and associated technical standards and guidance for its operations.

Under the Atomic Energy Act, the Department is authorized to "Establish by rule, regulation or Order such standards and instructions to govern the possession and use of special nuclear material and by-product material...to

protect or to minimize danger to life or property" and furthermore, to "...prescribe such regulations or Orders as it may deem necessary ... to govern any activity authorized pursuant to this Act... in order to protect health and to minimize danger to life or property..." By implication, the Department is obligated to establish safety objectives and standards for its contractors since the contractors are obligated "...to comply with all safety regulations prescribed by the [Atomic Energy] Commission." Adherence to appropriate national and international standards in the design, construction, operation and maintenance, decommissioning and decontamination (D&D), and environmental restoration of DOE's nuclear facilities and activities is mandated by Department policy and requirements.

Department of Energy nuclear safety Orders are being converted to rules. The rules are intended to be consistent with existing DOE Orders. During this transition, DOE Orders will remain effective until rules are established in the Code of Federal Regulations (CFR) and implemented in accordance with the provisions of the rules. The Department will, as necessary, invoke the provisions of the Price-Anderson Amendments Act (PAAA), thereby subjecting DOE contractors to potential civil and criminal penalties for violations of the Department's nuclear safety rules.

A set of requirements is necessary to implement the Department's policy that its nuclear facilities be designed, constructed, operated, maintained, decommissioned, decontaminated, and environmentally restored with a) appropriate barriers to prevent or minimize potential radioactive releases; b) engineered safety features to minimize potential releases; and c) procedural controls to mitigate the effects of potential releases. Conceptually, the development of these requirements is illustrated in Figure 1.

Federal law establishes basic requirements for the Department of Energy. In response to such law, the Department of Energy establishes internal requirements - rules and Orders - to follow Federal statutes and DOE safety policy. The rules and Orders are designed to ensure the safety of DOE nuclear facilities and related activities. Technical guidance and standards are used to facilitate compliance with DOE rules and Orders. Site-specific implementation plans and associated operating procedures define standards that will be used to comply with the Department's nuclear safety requirements.

All elements of the life cycle, from design to environmental restoration, are linked together. Therefore, requirements must cover the entire life-cycle of a DOE activity. These requirements may be seamless, i.e., separate requirements need not be established for each phase of the life-cycle. However, the relative significance and application of each requirement may vary throughout the life-cycle. The five phases of the life cycle and their associated activities are presented in Figure 2. An integrated approach is important because the design phase must consider the entire life cycle of the facility and the safety basis must be kept current in the later phases of the facility with traceability to design. The safety basis is intended to be maintained through change control requirements and standards, such as configuration management. However, the Department has not yet achieved implementation of such practices throughout the DOE complex.

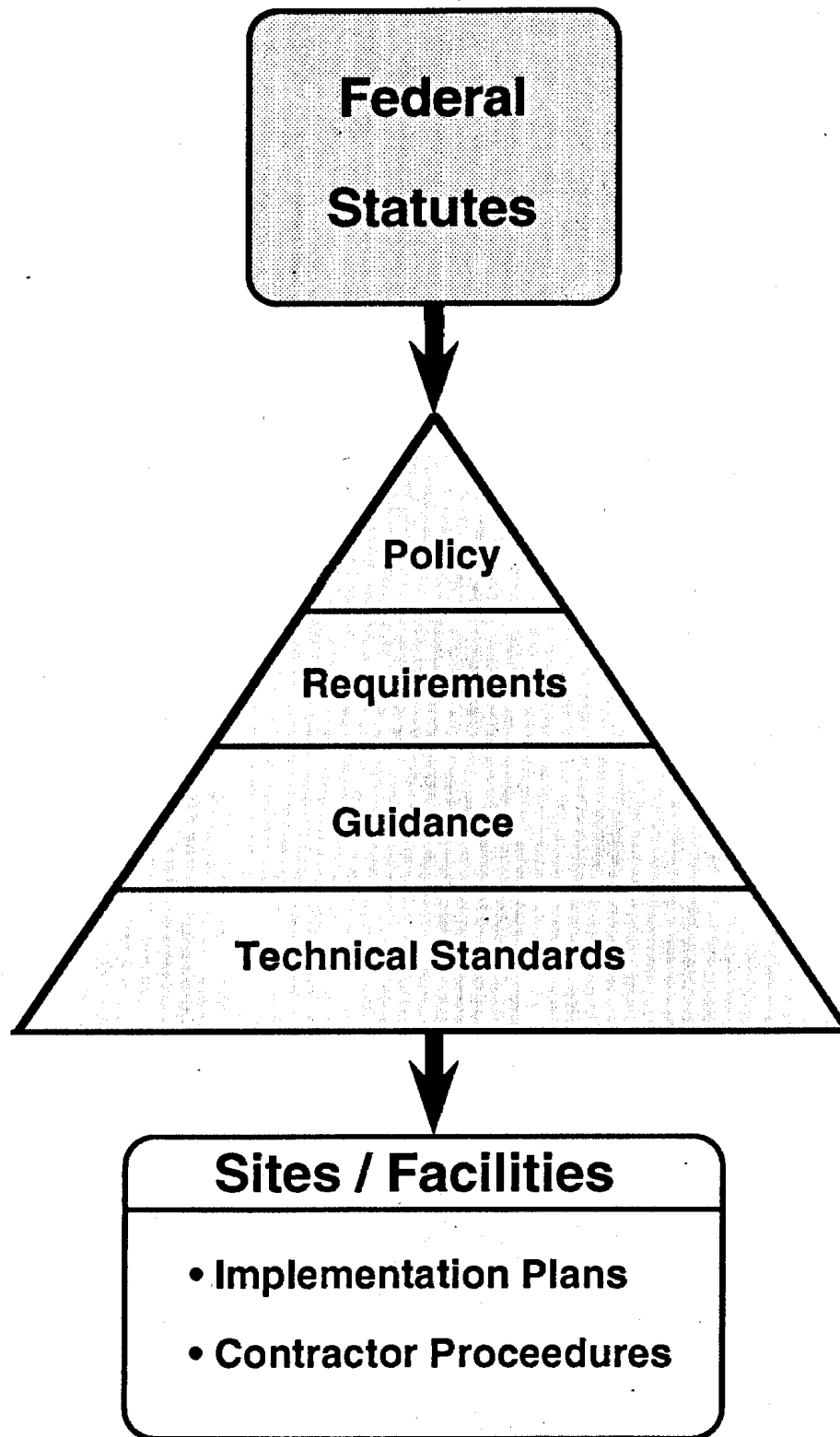


Figure 1. Conceptual Structure of Nuclear Safety Standards

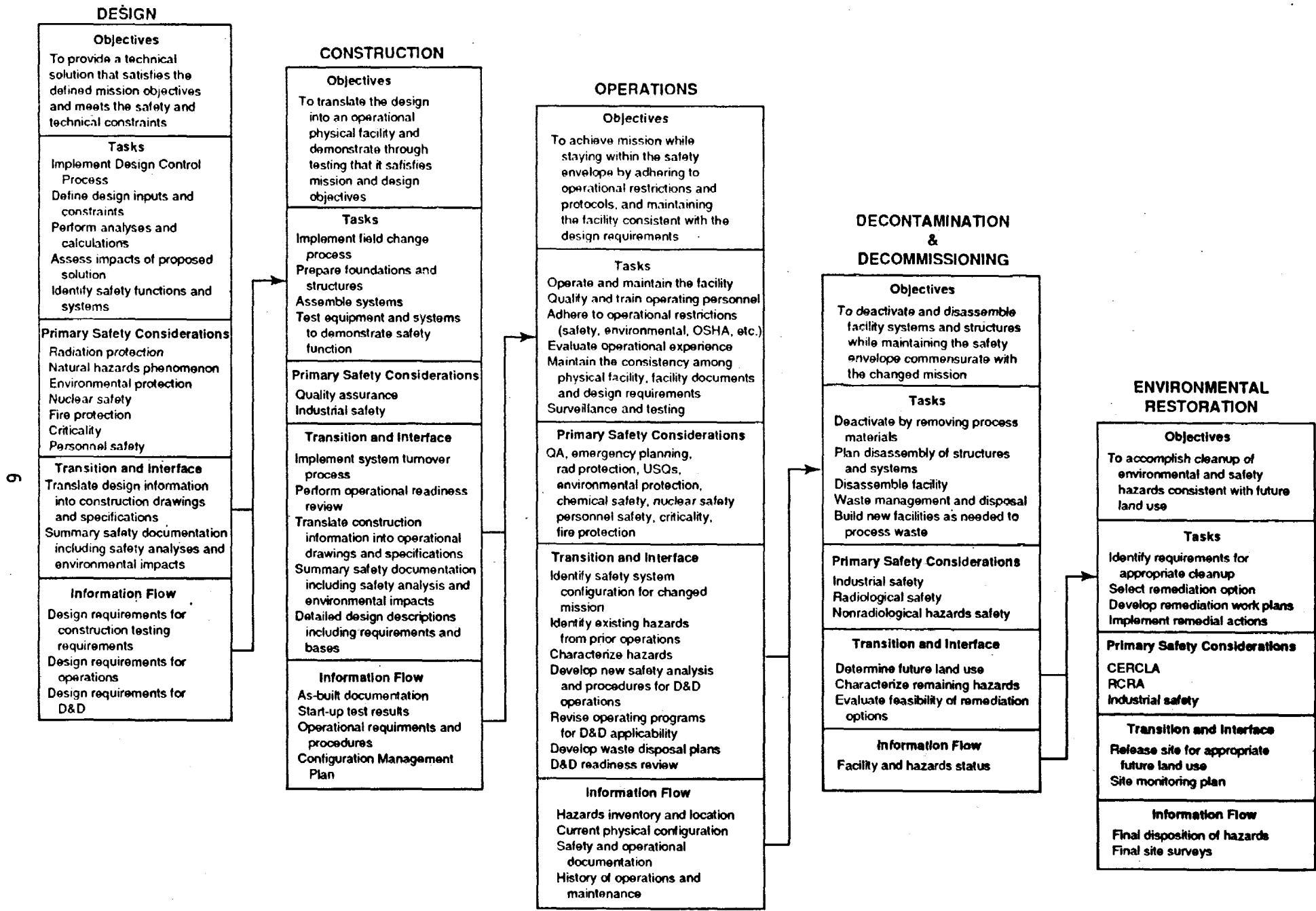


Figure 2. Life Cycle Phases and Associated Activities

An integrated approach to safety management embraces people and property that potentially can be affected in the present and in the future. The use of systems engineering techniques help ensure that long term safety and health concerns are identified and addressed in a timely manner. Radiological as well as non-radiological risks to on-site and off-site populations and properties need to be addressed in a safety management program. Comprehensiveness is, therefore, an important characteristic of a systems engineering-based safety management program. All radiological and non-radiological safety and health concerns, regardless of incidence, need to be internalized into one safety management program. This will facilitate effective coordination among all affected parties and permit appropriate action to be taken at any life cycle phase.

The importance of Department requirements and standards was reemphasized by the Congress in 1988. Public Law 100-456 established the Defense Nuclear Facilities Safety Board. The Board is required to review and evaluate the content and implementation of safety and health standards, including DOE's rules, Orders, and other safety requirements, relating to the design, construction, operation and maintenance, D&D, and environmental restoration of the Department's defense nuclear facilities.

In response to Board Recommendation 91-1, the Department prepared and submitted to the DNFSB on 14 August 1992, *Action Plan to Strengthen DOE Nuclear Safety Standards*. The Plan represents the Department's commitment to establish a revitalized nuclear safety standards program.

2.1.3 Competence Commensurate with Responsibilities

The safety and health of workers and the public depend on a technically competent workforce accomplishing tasks in a formal, deliberate fashion in accordance with approved standards. A level of staffing and competence must be provided that is commensurate with discharging the responsibilities of the program. Safe operation of a facility is contingent upon timely availability of personnel who are qualified by technical education and experience to provide the type of management, direction, and guidance essential for safe operation of that facility. Engineering and technical personnel, competent in all disciplines important to safety, must be available throughout the life cycle of the facility. Organizations responsible for Department operations need to have the ability to recruit, train, and qualify personnel who possess technical competence, commitment, discipline, and high standards of professional and personal excellence. Execution of this requires the following:

- Leadership to ensure continual improvement in the technical capability of DOE employees and contractors
- Strategies for recruitment and retention of DOE personnel
- Formal and structured training and qualification programs

Many of the Board's recommendations identify concerns regarding the technical capabilities of DOE and contractor personnel involved with the Department's

nuclear activities. Board Recommendations 90-2, 91-6, 92-2, 92-7, and 93-3 address the need to improve training and the assignment of competent technical personnel. Recommendation 93-3 urged the Department to take dramatic action to attract and retain scientific and technical personnel of exceptional quality. To address the overlapping elements of these recommendations, a single, comprehensive implementation plan was developed in November 1993. Commitments contained in the implementation plan are scheduled for completion in December 1995.

2.1.4 Oversight* - Independent Verification to Conformance with Established Requirements

A fundamental nuclear safety management principle is that a strong and effective internally independent safety oversight system exist to verify conformance to established requirements. This oversight system must be structured so the Secretary maintains the ability to reconcile the priorities of the Department's safety and program missions.

The safety oversight program must be independent of other Department programs, including self-assessments by line organizations and any technical assistance functions. The organization, functions, and responsibilities of oversight must be separate, distinct, and clearly defined. The oversight organization must not directly support or participate in programmatic activities, nor should it prescribe program solutions to safety issues. The function of oversight must be to provide independent confirmation of the safety of DOE facilities and programs. It must also identify problems, including mandating actions, when necessary, and timely follow-up. Oversight that is separate from line management serves as an independent source of information for senior management. This system of checks and balances is intended to promote early identification and resolution of problems encountered by line management. Oversight is not a substitute for line management's responsibility to perform reviews and self-assessments of its activities to ensure the effectiveness of its operations.

The responsibilities, authorities, and functions relating to safety oversight must be established to ensure that line management is responsible for achieving safety and is held accountable for safety. The safety oversight program needs to encourage safety excellence, the strengthening of line management safety functions, and self-regulation within programs. However, its independence can be compromised if it is used by top management as a surrogate for executing improvements in line organizations.

*Throughout this document, oversight refers to the responsibility and authority assigned to the Assistant Secretary for Environment, Safety and Health to independently assess the adequacy of DOE and contractor performance. Oversight, as used in this report, is separate and distinct from line management activities, including self-assessments.

A balance must be maintained between a strong line management safety system and a strong, independent safety oversight function. If this balance is lost, the result will be that top management will be forced to depend principally on one organization for helping them meet their safety responsibilities. Such a singular mode of dependence is unbalanced and contrary to sound safety principles - top management is deprived of the twofold means (i.e., line management review and independent oversight) by which to meet their safety responsibilities. Also, the deliberate redundancy provided by strong, balanced line, and oversight organizations will be vitiated.

The safety oversight program must address all aspects of DOE facility safety. The scope of this oversight program must include the design and construction of new facilities, safety adequacy of existing facilities, safety analysis, operations, quality assurance and control, the organization and management of facility activities, and facility personnel competence and training. Oversight must encompass all elements of the line organization: Headquarters program offices, Operations Offices, Field Offices, and contractors. The safety oversight program must review the effectiveness of line management's implementation of, and compliance with, the Department's nuclear safety requirements, as well as directly assess the performance of Headquarters program offices, Operations Offices, Field Offices, and contractors. It must carry out its functions in a timely, responsive, and decisive fashion. The program must be capable of uncovering safety problems through inspection, monitoring, and appraisal of performance.

2.1.5 Enforcement

Strong enforcement is a key nuclear safety guiding principle that helps fortify and bind together the other four principles. A comprehensive system of enforcement provides a foundation that can help ensure that nuclear safety responsibilities are fulfilled according to applicable requirements and by competent personnel. Similarly, independent oversight efforts are enhanced by the existence of precise, swift, and effective enforcement mechanisms. Accountability for all aspects of a safety management program is facilitated by effective enforcement.

The Atomic Energy Act and the Department of Energy Organization Act give the Department broad authority to achieve the goal of protecting the safety and health of its workers and the public. Within any safety management system, enforcement authority must have a clear and well-understood basis, and must be tied to unambiguous policy, management objectives, and associated requirements. Department of Energy rules and Orders are the prevailing means by which nuclear safety activities are governed and assessed.

An effective program to ensure compliance with nuclear safety requirements must include meaningful penalties and formal procedures for imposing an appropriate remedy. It is important that enforcement policy address not only noncompliant conditions, but also the process deficiencies that resulted in the noncompliance.

Enforcement actions must accurately reflect the seriousness of the violation. Imposition of administrative penalties, including stop work orders, award fee reductions, contract modifications, and contract revocations can be considered and applied separately from civil and criminal penalties.

As with oversight, enforcement authority must be performed fully independent of other Department programs. Organizational functions, assignments, and responsibilities for enforcement must be separate and distinct from other DOE programs and functions.

Enforcement authority needs to be exercised with reasonableness and discretion in order to create incentives and promote a safety-conscious culture. This will help facilitate, support, and encourage initiatives for prompt identification and correction of problems by line personnel.

The Department further recognizes the need to separate the development of enforcement policy and enforcement assistance activities from the enforcement adjudication activities described in 10 CFR 820, *Procedural Rules for DOE Nuclear Activities*. Under the proposed reorganization, enforcement policy development and assistance are to report to the Deputy Assistant Secretary for Nuclear and Facility Safety. Enforcement adjudication will report to the Assistant Secretary for Environment, Safety and Health (ASESH) pending a final determination of the placement and functions of this activity.

2.2 RESPONSE TO QUESTION I.B.1

The Department's efforts to ensure the safety and health of DOE workers, the public, and the environment are continuous throughout the life cycle of a project or facility. As noted in Section 2.1, the relative significance and application of each DOE safety requirement may vary throughout the life cycle of a project or facility.

The primary safety elements considered by the DOE as a project or facility evolves from design through construction, operation and maintenance, D&D, and environmental restoration phases were depicted in Figure 1. Contractor implementation plans identify the primary technical standards that will be used at each phase to comply with a specific DOE safety requirement. For example, the specific technical standards and associated techniques and procedures to achieve radiation protection in the operations phase are not necessarily the same as those needed to ensure radiation protection during decommissioning and decontamination. Although safety is a consideration at all life cycle phases, discrete efforts are undertaken during each phase to protect workers, the public, and the environment.

2.3 RESPONSE TO QUESTION I.B.2

In creating the Department's regulatory structure, most of the safety programs were developed topically or according to discipline. This initial activity resulted in defining and upgrading specific requirements under which the Department's facilities operate. While a necessary step, this was only the beginning of establishing a cohesive safety management system.

An overall regulatory structure requires control of the interfaces among the safety programs and among the life-cycle phases through which the DOE facilities will transition. The Department is moving towards an identifiable facility-specific safety structure through its process of requiring facility-specific implementation plans in response to its requirements.

A contractor responsible for the design, construction, or operation of a DOE nuclear facility is required to perform a safety analysis to develop and evaluate the adequacy of the safety basis for the facility. The safety basis is the combination of information relating to the control of hazards at the facility (e.g., design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that facility activities can be conducted safely. Safety analyses document the logic by which safety commitments were derived in order to facilitate future reassessments of safety commitments in light of new information, proposed changes, or modifications to management, design, or operations. Contractors will be held responsible for adhering to assumptions and commitments set forth in the safety analyses.

Contractors must prepare, and submit for DOE approval, Safety Analysis Reports (SARs) documenting these safety analyses for each DOE nuclear facility under its cognizance. The SAR should identify the facility life cycle stage or stages for which it has been prepared and for which DOE authorization is sought. To support advance planning, the SAR needs to anticipate ways in which the facility can be operated, maintained, and shut down safely. It must identify mechanisms for the control of modifications to the design, construction, or operation of the facility, including configuration and document control.

Contractor-prepared SARs identify how the generic safety requirements of the Department apply to the specific facility. The SARs also contain proposed commitments under which the contractor will design, build, and operate the facility in order to be in conformance with the applicable statutes, Federal rules, and DOE directives pertaining to facility safety. The Department reviews the Safety Analysis Reports and decides whether to authorize the facility (or to approve the SAR, if the facility is already authorized). In authorizing the facility or approving its SAR, the Department may require modified or alternative commitments. In this way, the Department and the contractor responsible for the facility or operation arrive at a common understanding of how the Department's safety policies, rules, and Orders apply to the current life cycle phase. Facility operation is required to be in compliance with the resulting commitments in approved SARs.

Safety Analysis Reports are required to be kept up-to-date to reflect current designs, operations, and management information. The process of

preparing, submitting, reviewing, modifying, or approving SARs establishes a major component of the compliance basis for the nuclear safety program at each facility or operation. Likewise, the process for updating, upgrading, or amending Safety Analysis Reports following DOE's initial authorization is a vehicle by which the contractor may amend and update its commitments to DOE that ensure the safety of the facility or operations. Department of Energy contractors are now required to annually review and update, as necessary, their SARs to ensure that the information in each SAR is current and remains applicable. In the interval between updates, DOE's requirements for unreviewed safety questions (USQs) govern activities. Changes in design or operations, approved by DOE pursuant to the USQ process, are considered as addenda to the SAR until the information is incorporated into the annual SAR update. Thus, SARs and the USQ process serve to define and control the safety basis and commitments to ensure safety throughout the life cycle of a facility.

For much of its history, DOE and its predecessors did not routinely require contractors to update safety analyses as facility operations or designs were changed or new information became available. As a result, Safety Analysis Reports for some older DOE facilities do not fully reflect the as-built and operated conditions. In addition, the safety analyses of older DOE nuclear facilities are not as comprehensive, in many cases, as those for newer facilities or commercial nuclear activities. The Department and many of its operating contractors have recognized the need to upgrade the safety analyses of DOE nuclear facilities, and to keep them up-to-date so that they constitute a current, valid basis for judging the acceptability of the safety provisions at DOE nuclear facilities.

In April 1992, DOE issued a new Order for SARs – Order 5480.23, *Nuclear Safety Analysis Reports* – that incorporates the above requirements and procedures. The Order requires each contractor to develop a transition plan to implement these new requirements and procedures. This transition is underway.

2.4 RESPONSE TO QUESTION I.B.3

The five guiding principles of the Department's nuclear safety management program are applied by fulfilling requirements contained in DOE rules, Orders, and implementation plans. These DOE documents embrace the following:

- General provisions that are typically applicable to more than one phase of the life cycle of a system or project
- Design requirements
- Operations, which includes maintenance
- Material management, which includes control of byproduct, source, and special nuclear materials, decommissioning and decontamination, and waste management

Collectively, DOE rules, Orders, implementation plans, technical standards, and qualified personnel enable the Department to manage the safety of its workers, the public, and the environment.

Department of Energy Orders address administrative, managerial, and technical areas pertaining to safety, and include all life cycle phases and activities. Appropriately, the practice of conforming to DOE requirements is continuous. However, there are instances where the focus of a DOE Order is very specific and consequently its applicability is limited to only one or several life cycle phases, associated activities, and parts thereof. For example, Order 5480.1B, *Environment, Safety, and Health Program for Department of Energy Operations*, applies to all life cycle phases and associated systems engineering activities, whereas, Order 6430.1A, *General Design Criteria*, focuses on the design phase of a system or project. As noted above, not all elements of an Order are necessarily appropriate to all life cycle phases and activities. Managerial and engineering judgement are required to apply DOE Orders, either in whole or in part, to ensure the safety of nuclear facilities. The applicability of principal DOE rules and Orders to system life cycle phases and associated engineering activities is summarized in Table 1.

The majority of DOE nuclear safety-related Orders were initially prepared prior to the emphasis on environmental restoration. Although revisions and additions to existing requirements and technical standards address concerns germane to the latter life cycle phases of a nuclear facility, an increasingly aggressive approach is needed to ensure that sound engineering judgement and the basic nuclear safety principles developed in the more than 35 years of nuclear experience are applied as nuclear facilities are decommissioned, decontaminated, and environmentally restored.

Table 1. Applicability of Principal Department of Energy Rules and Orders

Systems Engineering Activity	Life Cycle Phase									
	Design		Construction		Operation and Maintenance		Decommissioning and Decontamination		Environmental Restoration	
Planning	5480.1B	4700.1	5480.1B	4700.1	5480.1B	4700.1	5480.1B	4330.4B	5480.1B	4700.1
	5400.1	5440.1E	5400.1	5400.3	4330.4B	5400.1	4700.1	5400.1	5400.1	5400.3
	5400.3	5480.6	5440.1E	5480.6	5400.3	5440.1E	5400.3	5700.6C	5440.1E	5480.6
	5480.19	6430.1A	5700.6C	5480.19	5480.6	6430.1A	5440.1E	5480.6	5700.6C	5480.19
	5480.28	5700.6C	5400.5	5480.24	5480.19	5480.31	5480.19	5400.5	5400.5	5480.24
	5480.7A	5480.3	5480.30	5480.20	5480.7A	5700.6C	5480.24	5480.30	5480.30	
	5400.5	5480.24			5400.5	5480.24				
	5480.30	5480.20			5480.30	5480.20				
	10 CFR 830.330				10 CFR 830.330					
	10 CFR 830.210				10 CFR 830.215		10 CFR 830.330			
	10 CFR 830.360		10 CFR 830.330		10 CFR 830.360		10 CFR 830.215		10 CFR 830.330	
	10 CFR 834		10 CFR 830.210		10 CFR 834		10 CFR 830.360		10 CFR 830.215	
	10 CFR 830.215		10 CFR 830.360		10 CFR 830.340		10 CFR 830.340		10 CFR 830.360	
	10 CFR 830.310		10 CFR 834		10 CFR 830.120		10 CFR 830.120		10 CFR 834	
10 CFR 830.120		10 CFR 830.310		10 CFR 835		10 CFR 835		10 CFR 830.120		
10 CFR 835		10 CFR 830.120		10 CFR 830.310		10 CFR 830.310		10 CFR 835		
10 CFR 830.213		10 CFR 835		10 CFR 830.213		10 CFR 834		10 CFR 830.310		
Performing	5480.1B	1300.2A	5480.1B	1300.2A	5480.1B	1300.2A	5480.1B	1300.2A	5480.1B	1300.2A
	1360.2B	4700.1	4700.1	5400.1	1360.2B	1540.4	5632.11	4330.4B	5632.11	5480.6
	5400.1	5400.4	5400.4	5440.1E	4330.4B	4700.1	4700.1	5400.1	4330.4B	4700.1
	5440.1E	5480.6	5700.6C	5480.6	5400.1	5400.4	5400.4	5480.3	5400.1	5400.4
	5480.19	6430.1A	5480.19	5400.5	5440.1E	5480.6	5440.1E	5480.19	5440.1E	5480.3
	5700.6C	5400.5	5480.24	5480.20	5480.3	5480.19	5700.6C	5480.6	5480.19	5483.1A
	5480.24	5480.20			5700.6C	5400.5	5400.5	5480.24	5700.6C	5820.2A
					5480.24	5480.20			5400.5	5480.24
	10 CFR 830.330		10 CFR 830.330		10 CFR 830.330		10 CFR 830.330		10 CFR 830.330	
	10 CFR 830.122		10 CFR 830.122		10 CFR 830.122		10 CFR 830.122		10 CFR 830.122	
	10 CFR 830.360		10 CFR 830.360		10 CFR 830.360		10 CFR 830.360		10 CFR 830.360	
	10 CFR 834		10 CFR 834		10 CFR 834		10 CFR 834		10 CFR 834	
	10 CFR 830.310		10 CFR 830.310		10 CFR 830.340		10 CFR 830.340		10 CFR 830.340	
	10 CFR 830.120		10 CFR 830.120		10 CFR 830.120		10 CFR 830.120		10 CFR 830.120	
10 CFR 835		10 CFR 835		10 835		10 CFR 835		10 CFR 835		
10 CFR 835		10 CFR 835		10 CFR 830.310		10 CFR 830.310		10 CFR 830.310		

Table 1. Applicability of Principal Department of Energy Rules and Orders (Continued)

Systems Engineering Activity	Design		Construction		Operation and Maintenance		Decommissioning and Decontamination		Environmental Restoration	
Checking and Measuring	5480.1B 5480.22 5700.6C 5480.20	4700.1 5480.23 5400.5	5480.1B 5480.22 5700.6C 5480.20	4700.1 5480.23 5400.5	5480.1B 5440.1E 5700.6C 5400.5	4700.1 5480.22 5480.23 5480.20	5480.1B 4700.1 5000.3B 5440.1E 5480.22 5480.23 5700.6C 5400.5	4700.1 5440.1E 5480.22 5480.23 5700.6C 5400.5	5480.1B 5440.1E 5480.22 5700.6C 5400.5	4700.1 5400.1 5480.23 5400.5
	10 CFR 830.330 10 CFR 834 10 CFR 830.320 10 CFR 830.120 10 CFR 835 10 CFR 830.110		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.320 10 CFR 830.120 10 CFR 835 10 CFR 830.110		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.320 10 CFR 830.120 10 CFR 835 10 CFR 830.110		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.350 10 CFR 830.120 10 CFR 835 10 CFR 830.320 10 CFR 830.110		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.120 10 CFR 835 10 CFR 830.320 10 CFR 830.110	
Assessing and Providing Feedback	5480.1B 5000.3B 5400.3 5440.1E 5480.6 5700.6C 5480.20	4700.1 5400.1 5400. 5480.4 5480.7A 5400.5	5480.1B 5000.3B 5400.1 5440.1E 5480.6 5700.6C 5480.20	4700.1 5400.3 5400.4 5480.4 5480.7A 5400.5	5480.1B 4700.1 5400.1 5400.4 5480.4 5700.6C 5400.5	4330.4B 5000.3B 5400.3 5440.1E 5480.6 5480.7A 5480.20	5480.1B 4700.1 5400.1 5400.4 5480.4 5700.6C 5400.5	4330.4B 5000.3B 5400.3 5440.1E 5480.6 5480.7A 5400.5	5480.1B 4700.1 5400.1 5400.4 5480.4 5700.6C 5400.5	4330.4B 5000.3B 5400.3 5440.1E 5480.6 5480.7A 5400.5
	10 CFR 830.330 10 CFR 834 10 CFR 830.350 10 CFR 830.120 10 CFR 830.213		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.350 10 CFR 830.120 10 CFR 830.213		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.340 10 CFR 830.120 10 CFR 830.350 10 CFR 830.213		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.340 10 CFR 830.120 10 CFR 830.350 10 CFR 830.213		10 CFR 830.330 10 CFR 830.122 10 CFR 834 10 CFR 830.340 10 CFR 830.120 10 CFR 830.350 10 CFR 830.213	

The Nuclear Regulatory Commission Materials Regulatory Review Task Force has proposed a method for regulating major material licensees - *Proposed Method for Regulating Major Materials Licensees* (NUREG-1324). Included in this proposal is a set of licensing review topics that are similar to the Department of Energy rules and Orders used to ensure the safety of DOE's nuclear facilities. This similarity is presented in Figure 3. The shaded portions of the boxes in Figure 3 represent topic areas contained in NUREG-1324. The unshaded portions of each box contain the principal DOE rules and Orders corresponding to the topic area. As indicated in the figure, the set of requirements documents used by the Department to manage the safety and health of its workers, the public, and the environment correlate to NUREG-1324. Also shown in Figure 3 are the four subparts, described earlier, of Title 10, Code of Federal Regulations, Part 830 (10 CFR 830) that address Department of Energy Nuclear Safety Management. These four subparts are: Subpart A - General Provisions, Subpart B - Design, Subpart C - Operations, and Subpart D - Material Management.

DOE and NRC Safety Management Systems

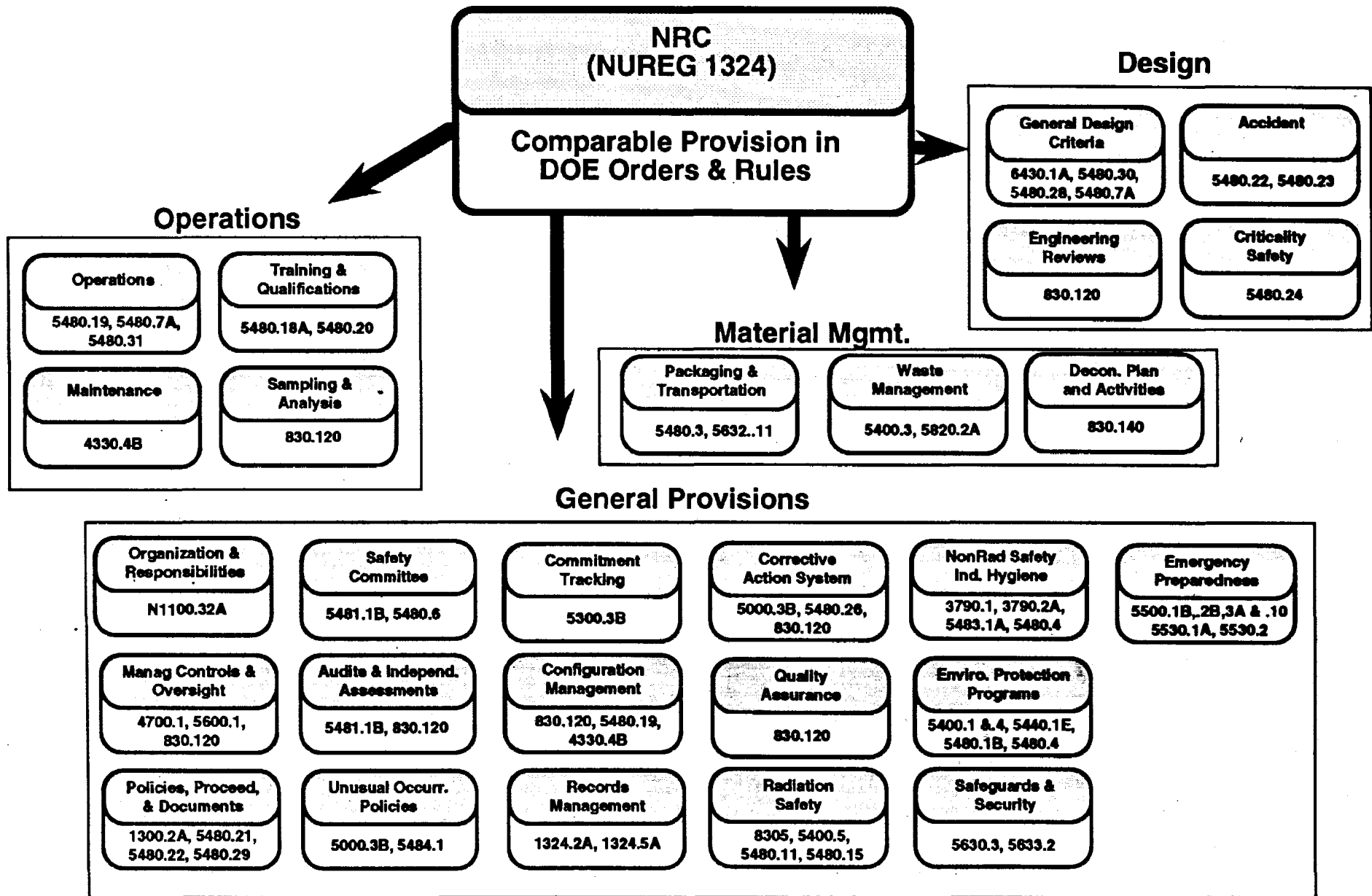


Figure 3. Comparison of Department of Energy Principal Nuclear Safety Rules and Orders to NUREG-1324

2.5 RESPONSE TO QUESTION I.B.4

The Department's environment, safety, and health requirements are identified in rules and Orders. While this discussion focuses on the Department's nuclear safety requirements, the discussion is also generally applicable to the Department's nonnuclear safety and health requirements.

Department of Energy Orders are the prevailing means by which the Department identifies management objectives that are requirements for its personnel and, when incorporated into contracts, requirements for DOE contractors. Rules are the documents by which DOE establishes binding requirements of general applicability and are adopted pursuant to the Administrative Procedures Act.

In response to DNFSB Recommendation 91-1, the Department strengthened the infrastructure of its standards activities and accelerated the development of nuclear safety Orders. Nuclear safety Orders were updated in two major phases during the period 1991 through early 1993. Most DOE nuclear safety Orders are in the process of being replaced by rules. *Occupational Radiation Protection* (10 CFR 835) was issued in December 1993. *Quality Assurance* (10 CFR 830 Part 120) was issued in April 1994, and another group of rules is expected to be finalized by January 1995. Converting additional Orders to rules from the two phase campaign is expected to be completed by June 1996. The status of converting DOE nuclear safety Orders to rules is summarized in Table 2.

Contractors are expected to comply with a rule or Order when it becomes effective. The Department recognizes, however, that it may be necessary to phase-in full compliance with certain requirements. To phase in the requirements of an updated Order or rule, a contractor could typically submit an implementation plan. That implementation plan often invokes specific technical standards in addition to schedules. When an implementation plan for a nuclear safety rule is accepted by the Department, that commitment becomes a requirement and is enforceable under the Price-Anderson Amendments Act (PAAA). Similarly, when an implementation plan for a nuclear safety Order is accepted by the Department, that commitment also becomes a requirement and is enforceable under the provisions of the contract.

For nuclear safety requirements for which there is no regulatory provision for an implementation plan or schedule, DOE may grant an exemption to establish an implementation plan that reasonably demonstrates that full compliance with the requirement will be achieved within two years of the effective date of the requirement.

Department of Energy Order 5480.23, *Nuclear Safety Analysis Reports*, requires the identification of applicable statutes, rules, and DOE Orders binding upon the safety basis and operation of the facility.

Table 2. Order-to-Rule Conversion

DOE Order Number	Citation Number	Topic Area	Projected Effective Date of Rule
None	820	Procedural Rules for DOE Nuclear Activities	September 16, 1993
5480.11	835	Occupational Radiation Protection	January 13, 1994
5700.6C	830.120	Quality Assurance	May 5, 1994
None	830.122	Defect Identification	February 1995
4330.4B	830.340	Maintenance Management Program	February 1995
5000.3B	830.350	Occurrence Reporting and Processing of Operations Information	February 1995
5480.19	830.310	Conduct of Operations Requirements for DOE Facilities	February 1995
5480.20	830.330	Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Nonreactor Nuclear Facilities	February 1995
5480.21	830.112	Unreviewed Safety Questions	February 1995

* Cell entry refers to appropriate Part of Title 10, Code of Federal Regulations

** Rules are effective 30 days after publication in the Federal Register. Department of Energy contractors are expected to comply with a rule when it becomes effective.

Table 2. Status of Order-to-Rule Conversion (Continued)

DOE Order Number	Citation Number	Topic Area	Effective Date of Rule
5480.22	830.320	Technical Safety Requirements	February 1995
5480.23	830.110	Nuclear Safety Analysis Reports	February 1995
5480.7A	830.213	Fire Protection	July 1996
5480.24	830.360	Nuclear Criticality Safety	July 1996
5480.28	830.215	Natural Phenomena Hazard Mitigation for DOE-Owned Facilities	July 1996
5480.30	830.210	General Design for Nuclear Reactors	June 1996
5400.5	834	Radiation Protection of the Public and the Environment	February 1995

* Cell entry refers to appropriate Part of Title 10, Code of Federal Regulations

** Rules are effective 30 days after publication in the Federal Register. Department of Energy contractors are expected to comply with a rule when it becomes effective.

Standards/Requirements Identification Documents (S/RIDs) are management tools developed by the Offices of Defense Programs and Environmental Management, in response to DNFSB Recommendation 90-2, to compile facility-specific requirements. They identify requirements contained in applicable legislation, rules, Orders, technical standards, and other directives necessary to operate facilities or conduct DOE activities with adequate protection of workers and the general public throughout the life cycle of the facility. Standards/Requirements Identification Documents are proposed by the contractors, approved by the Department, and provide a basis for assessments and appropriate enforcement actions. Thus, they must be consistent with DOE policies, rules, and Orders.

The Department's line managers are required to ensure compliance with applicable ES&H requirements, including rules, Orders, approved implementation plans and S/RIDs. Enforcement mechanisms under the provisions of the Price Anderson Amendments Act, as stated in *Procedural Rules for DOE Nuclear Activities*, 10 CFR 820, include notices of violation, compliance orders, consent orders, and civil and criminal penalties. Contract clauses contained in the Department of Energy Acquisition Regulation (DEAR) require contractors to comply with applicable environment, safety, and health requirements.

Two principle enforcement mechanisms are provided under the DEAR: cost-plus-award fee and contract termination. Department of Energy Acquisition Regulation provides that at the beginning of each fiscal year under the contract, the parties are to negotiate the basic fee and available award fee. Contractor performance is evaluated in accordance with a Performance Evaluation Plan, which the Department has the right to establish unilaterally and which includes the criteria to be considered and the award fee available in each area to be evaluated. Department of Energy Performance Evaluation Plans generally assign significant weight to environment, safety, and health factors. In addition, the DEAR provides that in any evaluation period, up to 50 percent of the basic fee is "at risk" if the contractor's performance is determined to be marginal or unsatisfactory.

Department of Energy Acquisition Regulation also provides that the Government may, in whole or in part, terminate work under the contract for default in performance or whenever, for any reason, the contracting officer determines that termination is in the best interest of the Government. In addition, the safety and health clauses described above provide an immediate remedy through stop work orders to address contractor non-performance in these areas. The contracting officer may issue an order to stop all or a part of the work under contract. The Office of the General Council is reviewing contract mechanisms to address contractor compliance with ES&H requirements.

Contract reform is another key mechanism by which the Department intends to hold management accountable. As DOE-wide contract reform is established, contractual language will be put in place that specifies environment, safety, and health performance criteria to which contractors will be held accountable.

2.6 RESPONSE TO QUESTION I.B.5

The Department has issued new and revised nuclear safety standards applicable to most of its nuclear facilities. However, facilities that assemble, disassemble, and test nuclear weapons have been exempted from a number of nuclear safety Orders.

The Department, in response to the Defense Nuclear Facilities Safety Board Recommendation 93-1, is committed to an action plan to upgrade the standards applicable to facilities that assemble, disassemble, and test nuclear weapons. The focus of the action plan is to adopt, by reference, the Department's nuclear safety standards (e.g., 5400 series of Orders) into nuclear explosive safety Orders (5600 series of Orders). This mechanism will utilize the nuclear safety Orders with appropriate augmentation for unique nuclear explosive considerations. In addition, the adequacy of existing guidance and technical standards for these facilities will be reviewed and revised, as appropriate, to achieve consistency in the Department's overall safety management program.

The Department has completed an evaluation of the level of nuclear safety assurance provided by the Orders and directives applicable to facilities that assemble, disassemble and test nuclear weapons and compared it to the level of safety assurance provided by DOE Orders and directives applicable to other DOE nuclear facilities. As a result of this evaluation, the Department developed an action plan to strengthen and upgrade the directives applicable to facilities that assemble, disassemble and test nuclear weapons. This action plan has the following goals:

- Develop a uniform means to conduct audits and assessments
- Establish a commitment tracking system
- Provide programmatic guidance for performance indicators
- Develop a uniform quality assurance program
- Evaluate existing safety review programs and determine needed improvements
- Develop a uniform staffing and personnel training and qualification program
- Develop uniform guidance for human factors programs for nuclear explosive activities
- Develop a uniform criticality safety program.
- Integrate the principles of the DOE defense nuclear facility safety program with the Nuclear Explosive Safety Study program.
- Develop a uniform means to conduct safety analyses and to develop technical safety requirements.

- Develop a uniform approach to identify and process unreviewed safety questions
- Develop an integrated configuration management program
- Develop a design criteria program for tooling and special equipment
- Modify the applicability of maintenance programs
- Develop on-site packaging and transportation requirements for transport of nuclear components
- Develop a consistent process for starting and restarting nuclear explosive operations and facilities

Requirements for activities conducted under the Nuclear Explosives and Weapons Safety Program relating to the prevention of accidental or unauthorized nuclear detonations will continue to be identified in DOE Orders.

To ensure future comparability of nuclear safety requirements at facilities that assemble, disassemble, and test nuclear weapons to other Department nuclear activities, the action plan commits the Department to issue a policy document to define the scope of the 5400 series and the 5600 series Orders, establish organizational responsibilities, and establish a process to coordinate future development of nuclear safety requirements.

2.7 RESPONSE TO QUESTION I.C

The commercial nuclear power industry has institutionalized a self-appraisal and self-improvement process to promote safety excellence through the Institute of Nuclear Power Operations (INPO) and its associated organizations. The Department and its contractors have begun a number of initiatives focused on self-improvement. These include the following:

The Energy Facility Contractor Operating Group (EFCOG) is a self-directed group of Management and Operating (M&O) contractors and Environmental Restoration Management Contractors (ERMC) working for the Department. The purpose of the EFCOG is to promote excellence in all aspects of operation and management of DOE facilities in a safe, environmentally sound, and more efficient manner through the ongoing exchange of information. The objectives of EFCOG are to:

- Promote, coordinate, and facilitate the active exchange of successful programs, practices, procedures, lessons learned, and other pertinent information of common interest that have been effectively utilized by M&O contractors and ERMCs, and can be adapted to enhance operational excellence and cost effectiveness for continual performance improvement by other M&O contractors and ERMCs
- Focus on the active personal exchange of management and technical information among contractors through such mechanisms as workshops, working groups, and conferences
- Utilize interfaces with organizations, including the Edison Electric Institute (EEI), the Electric Power Research Institute (EPRI), INPO, the Training Resources and Data Exchange (TRADE), the Association for Excellence in Reactor Operations (AERO), and the Nuclear Energy Institute (NEI) [formerly the Nuclear Utility Management Resources Council (NUMARC)] in order to promote cooperation and exchange information, as appropriate, and minimize duplication of efforts

The Department currently has a complex-wide contractor-level program for self-improvement. The Training Resources and Data Exchange (TRADE) network is focused on facilitating information exchange in several limited areas of operational safety. However, a broader-based system is needed to address other functional areas, such as operations, maintenance, radiation protection, quality assurance, and criticality safety

The Association for Excellence in Reactor Operations (AERO) includes the DOE contractors that operate Category A nuclear reactors. AERO meets periodically for exchange of information and lessons learned. AERO forms special working groups to address relevant issues

The Supplier Quality Information Group (SQIG) is a contractor initiative to promote excellence. SQIG meets periodically to exchange information on suspect and counterfeit parts and disposition of such parts

In addition, the Department has a cooperative agreement with INPO through which DOE and its contractors routinely obtain access to commercial industry methodologies, reports, and operating experience. The Department and INPO exchange information on training and accreditation activities. In addition, DOE and contractor personnel can attend INPO workshops and participate in appraisal and evaluation activities conducted by INPO. The Institute of Nuclear Power Operations has also provided direct technical assistance to selected operating contractors.

It is important that the self-assessment and self-improvement functions are performed. However, both functions need not be done by one organization, although this might be the simplest approach. The important thing is that these functions be done.

2.8 RESPONSE TO QUESTION II.A

The DOE assigns primary responsibility for assuring effective performance of its ES&H protection program requirements to line management. The principles which the Department follows to discharge these management responsibilities are described below.

The DOE management system offers a unique process for developing an ES&H program that enhances safe operation of facilities and encourages identification and resolution of safety issues through shared, clearly identified, discrete responsibilities.

2.8.1 Overall Departmental Approach

Line management responsibility for ES&H flows from the Office of the Secretary of Energy to the Cognizant Secretarial Officers (CSOs) and then to the managers of the Operations Offices. Additionally, the Assistant Secretary for Environment, Safety and Health is responsible to the Secretary for providing internal independent oversight of line management's implementation of the Department's ES&H requirements.

The Assistant Secretary for Defense Programs and the Assistant Secretary for Environmental Management have primary responsibility for activities under the cognizance of the Defense Nuclear Facilities Safety Board. This responsibility includes assuring that DOE and federal environmental protection, safety, quality assurance, and health protection policies, directives, and Orders are adhered to continuously and vigorously, at all levels, in all Department operations. Department of Energy activities are conducted in accordance with a series of rules and Orders and other Federal regulations.

Managers of Operations Offices are responsible to the CSOs for execution of assigned DOE programs. Environmental protection, safety, and health protection are considered to be integral parts of such programs. While organizational arrangements vary in detail from one Operations Office to another, in general, they include a line management group and a separate environment, safety, and health group responsible for reviewing performance. The Cognizant Secretarial Officer has the responsibility to the Operations Office to define its expectations as to how the Operations Office will execute its ES&H responsibilities.

Department of Energy contractors are charged with executing the work assigned to them in accordance with the provisions of the contract. The operating contractor has immediate responsibility for ES&H protection of a given facility or activity. Specific clauses are included in contracts between the Department and contractors that require all activities to be conducted in a safe manner and in accordance with DOE ES&H requirements. Contractors are required to have a comprehensive, documented system for assuring the safety of their operations. This includes, for example, safety analyses and reviews of activities by operating personnel and separate internal appraisals conducted by persons not directly responsible for performing the activities being appraised. Since the operating contractor has

immediate "hands on" responsibility, most of the resources devoted to ensuring the safe operation of DOE facilities resides in contractor organizations. The contractor, using Department policies, rules, and Orders, supplemented by guidance and direction from the contracting officer's technical representative, develops and implements a specific program for its ES&H activities.

2.8.2 Organization and Approach

Delegation of ES&H safety authority to the Operations Office manager does not relieve the CSO of that responsibility. For activities under the cognizance of the DNFSB, the CSO remains accountable to the Under Secretary and the Operations Office manager is accountable to the Cognizant Secretarial Officer. The CSO will review the Operations Office ES&H activities in a manner similar to that used by the CSO in overseeing its other programmatic responsibilities.

Cognizant Secretarial Officer Line Responsibility

Responsibility for the safe conduct of programs, projects, or other activities flows from the CSO to the appropriate Deputy Assistant Secretary or major Office Director. The CSOs will ensure that proper attention is given to ES&H matters in a project, program, or activity during its entire life cycle. They are responsible for, among other duties, the following functions:

- Providing clear and explicit written delegation of line program authority and responsibility consistent with the principles above
- Taking management actions to ensure that ES&H performance is considered in all personnel actions
- Ensuring that appropriate provisions for ES&H are incorporated into program plans and proposals, including adequate funding
- Ensuring that applicable ES&H requirements are included in contracts, that these requirements are executed, and that execution is verified
- Ensuring that sufficient financial resources are provided to contractors to enable them to discharge their ES&H responsibilities
- Ensuring that appropriate guidance and consultation are provided to and maintained with the Operations Office to enable the Operations Offices to perform their assigned responsibilities
- Taking necessary management actions to ensure appropriate visibility into contractor operations while respecting the responsibilities and authorities of the Operations Offices involved with these contractors

- Taking necessary management actions to ensure that the Department's oversight organization has full visibility into its operations to promote effective oversight

- Ensuring that personnel are qualified and management assignments are adequate

Field Management Coordination and Development of Operations Office Strategic Planning

The free flow of communications as well as the sharing of visions and goals among the Operations Offices, Headquarters Program Offices, and appropriate contractor officials is necessary for full implementation of the Department's policies, rules, and Orders. The Associate Deputy Secretary for Field Management (ADS-FM) reports to the Deputy Secretary with responsibility for coordination of the Field and Operations Offices' point of view at Headquarters and development of strategic plans for the Department's entire field structure. In this capacity, Field Management seeks to ensure that field input is considered in policy development (including strategic planning) and to eliminate barriers to successful performance. Acting in an ombudsman-like role, ADS-FM assists the Managers of Operations and Field Office Managers in the resolution of issues that arise as they respond to direction from the Program Offices. Program Offices continue to run their programs and retain line responsibility for the success or failure of those programs. The Office of Field Management has not been empowered by the Secretary with oversight or line responsibility for nuclear safety. Responsibility for and reporting on nuclear safety matters for an individual facility or site, are in the following order of priority: contractor, DOE Operations Office Manager, Cognizant Secretarial Officer.

2.9 RESPONSE TO QUESTION II.B

The nuclear safety management program guiding principles identified in Section 2.1 form the foundation for and are embodied in the assignments of safety responsibility for defense nuclear facilities within the Department of Energy. These principles are as follows:

Personnel at all levels and in all positions are to be qualified and trained appropriately

Responsibilities and authorities for safety are to be clearly delineated and unambiguous

Safety goals and objectives are to be achieved by executing responsibilities and authorities in conformance with safety requirements

Line management has primary responsibility for ensuring safety

Safety and quality oversight responsibilities are to be assumed by individuals independent and separate from line management

These principles, as reflected in assignment of safety responsibilities and authorities within the Department, help ensure that DOE nuclear facilities will be designed, constructed, operated and maintained, decommissioned and decontaminated, and environmentally restored in such a manner that they will protect workers, the public, and the environment. The DOE commitment to ensure such protection is demonstrated by incorporating these principles in executing its Nuclear Safety Policy as follows:

Personnel: DOE personnel must be qualified, trained, and certified with respect to their responsibilities and assignments

Requirements and Standards: DOE management ensures the specification, development, and control of a coherent and cohesive set of nuclear safety requirements and standards for activities at DOE nuclear facilities

DOE Line Responsibility: DOE line management approves major activities related to nuclear safety on the basis of appropriate safety assessments

DOE Oversight: DOE management establishes and maintains a capability, independent of the line organization, to assess all aspects of its ES&H performance

Quality Assurance: DOE line management ensures that all items, services, and processes meet specified requirements

Policy Implementation: DOE management ensures that the DOE Nuclear Safety Policy and associated requirements are effectively implemented by DOE and contractor personnel

- Safety Culture: DOE and contractor management establish effective and appropriate motivations to develop a positive safety culture – characterized by a pervasive dedication to the continuous improvement of nuclear safety – to govern the actions and interactions of all individuals and organizations engaged in activities related to DOE nuclear facilities

- Operating Contractor Responsibility: Operating contractor management is responsible for daily operations of a nuclear activity; this is in no way diluted by the separate activities and responsibilities of designers, suppliers, constructors, and DOE line management review and oversight

- Operating Experience Feedback: DOE and contractor management are responsible for establishing a process for the reporting, review, analysis, and communication of operating experience and similar information relevant to safety and for actions to use the lessons learned

- DOE Line Management Reviews: DOE line management checks, assesses, and ensures the adequacy of contractor activities

These principles, as reflected in DOE Nuclear Safety Policy, are also embraced by commercial nuclear operations.

Department of Energy nuclear projects and facilities are, for the most part, unlike existing commercial nuclear facilities. The safety risks confronted by commercial entities tend to be relatively homogeneous whereas DOE nuclear activities vary among and within facilities and sites, and accordingly present a diverse set of safety risks. Common to both environments, however, is the requirement to protect the safety and health of workers, the public, and the environment.

The *Manual of Functions, Assignments, and Responsibilities for Nuclear Safety* (FAR) plays an important role in the Department's safety management program. It defines the responsibilities and authorities of Department personnel pertaining to DOE nuclear safety. In the commercial nuclear industry, specific responsibilities to ensure the safety of a commercial nuclear facility are also carefully delineated and are generally described in plant-specific administrative procedures documents. Similarly, safety goals and objectives of commercial nuclear operations are achieved by following a standards-based approach not unlike the rules, Orders, and technical standards, used by the Department. Furthermore, for the Department and the commercial nuclear industry, primary responsibility for nuclear safety rests with the line.

For both DOE and commercial nuclear operations, assessments of all aspects of performance, especially nuclear safety, are accomplished by organizations and associated personnel who are independent and separate from the line. Within the Department this oversight function is performed by personnel assigned to the Office of the Assistant Secretary for Environment, Safety and Health. As presented in Section 2.1.4 and 2.1.5, organizational

functions, assignments, and responsibilities for oversight and enforcement must be separate and distinct from other programmatic functions. Nuclear Regulatory Commission personnel perform independent assessment and enforcement roles in the private sector.

2.10 RESPONSE TO QUESTIONS II.C and II.D

A major Department concern is the lack of a sufficient number of qualified technical personnel to manage the Department's nuclear safety activities. This has also been a concern to the Board and the Congress. Nowhere is this more apparent than in the lack of an adequate number of personnel trained in the Occupational Safety and Health Administration-type safety and health disciplines, e.g., radiation protection, industrial hygiene, and standards-related activities. The highest concentration of trained DOE personnel in these disciplines resides within the Office of the Assistant Secretary for Environment, Safety and Health. This office is increasing its technical assistance to line organizations as an immediate near term solution to the need for enhanced technical expertise. Providing guidance and assistance to line organization personnel concerning ES&H programs has for many years been a responsibility of the Office of the Assistant Secretary for Environment, Safety and Health (see Order 5480.1B, *Environment, Safety and Health Program for Department of Energy Operations*). The Department is, however, sensitive to the need to ensure that the Office of the Assistant Secretary for Environment, Safety and Health not be used as a substitute for DOE line management and to maintain a clear separation of line management review and oversight responsibilities to avoid any potential conflicts of interest. Therefore, DOE ES&H oversight activities are being concentrated under the Deputy Assistant Secretary for Oversight who reports to the Secretary through the ASESH. This is to ensure that those persons responsible for overseeing ES&H activities report to a management level that affords sufficient independence from any cost or schedule considerations. The Deputy Assistant Secretary for Oversight will periodically report to DOE management and outside authorities, such as Congress and the Board, on the status of safety and environmental protection at Department facilities.

The credibility of ES&H oversight within the DOE depends on maintaining demonstrable separation of the oversight function from line management, and from those functions within the Office of the Assistant Secretary for Environment, Safety and Health that support policy development and technical assistance to line management. To this end, the ASESH is establishing policies that provide a high level of assurance that oversight is independent of both line management and the ES&H offices that perform policy development and technical assistance. These policies are being incorporated into protocols and procedures, the basic framework of which is outlined below.

The basic premise underlying these policies is that the DOE Office of Oversight will maintain an open interchange of information with offices performing technical assistance and policy development only to the extent that it does not compromise its independence and objectivity. Furthermore, the management and staff working for the technical assistance and policy development offices cannot inspect or assess their own work as part of oversight. Despite this functional separation of oversight staff from technical assistance and policy development staff, limited exceptions must be made in certain highly specialized areas where the Department has limited resources. In those circumstances, a case-by-case review will be conducted by the Deputy Assistant Secretary for Oversight to ensure that there is no real or perceived conflict of interest.

Staff conducting oversight activities will be independent of both line management and technical assistance efforts and will be free of conflicts of interest that would compromise their independence.

- Staff of the Office of Oversight may not serve on assistance task teams, response teams, or similar groups that provide assistance to line management in correcting environment, safety, health, or safeguards and security deficiencies where those staff have previously performed oversight functions.
- Staff of the Office of Oversight will not perform functions involving policy development, excluding the review and critique of draft and issued policy documents.
- In such areas as transportation and packaging, aviation safety, and occupational medicine, the uniqueness of the activities and limited availability of discipline experts may sometimes require that these experts be used for both oversight and technical assistance. In those cases that require the use of these experts for oversight, a case-by-case review will be made by the Deputy Assistant Secretary for Oversight to ensure that the individual involved has not provided technical assistance to the facility to be evaluated. If an individual has provided assistance to the facility, he or she will not be chosen for oversight work at the same facility. The timeframe since the last assistance work will also be considered. Generally, work over two years old will not be considered a conflict. The use of outside experts will also be sought, as required. If all experts appear to have a conflict, the issue will be resolved by the ASESH.
- The Office of Oversight will evaluate contractor selection on a case-by-case basis. Individuals who have provided technical assistance at a given facility or facilities will not be assigned oversight activities at the same facility or facilities.
- New Federal staff in the Office of Oversight will be evaluated for conflict of interest to avoid actual or perceived conflicts between oversight duties and previous Federal or consultant duties in technical assistance, policy, or line management. Office of Oversight management will determine whether any potential conflict exists, and will resolve any concerns.

Oversight will select facilities for assessments based on identified priorities and protection needs, without undue constraints.

- The Office of Oversight will develop its schedule of assessments and other oversight activities independently based on reviews of the available information and management priorities. Oversight will conduct reviews on short notice, as needed. In all cases, line management retains primary responsibility for environment, safety, health, and safeguards and security performance, regardless of the presence of oversight staff.

When oversight and technical assistance activities take place concurrently at a site, both offices will coordinate their activities to preclude interference or conflicting activities. Oversight will be informed of ongoing technical assistance efforts, such as mentor programs, to ensure that those efforts are considered when assessment activities are scheduled and conducted. Similarly, oversight will inform technical assistance functions of the oversight schedule and any possible conflicting activities that may be planned.

To ensure independence and objectivity, the Office of Oversight will not be responsible for policy development or interpretation.

The Office of Oversight will formally request any policy interpretations or expert technical analyses requested from policy or assistance groups.

To avoid differences in interpretation between oversight and offices responsible for technical assistance, performance standards and evaluation criteria will be closely coordinated by both offices. Staff involved in oversight will review and critique draft and issued policy documents to ensure that the provisions can be objectively evaluated, provided all comments and feedback are formally transmitted to the appropriate policy development offices. However, the Office of Oversight is not responsible for issuing or approving policy or policy documents.

The Office of Oversight and offices responsible for technical assistance will provide copies of reports and other issuances to each office. However, oversight will not be responsible for approving the reports or products of offices responsible for technical assistance. Similarly, offices responsible for technical assistance will not be responsible for approving the reports or products issued by oversight.

If differences occur in the technical positions or other matters, then the issues will be resolved by the ASESH.

The ASESH reports directly to the Secretary of Energy on the status and adequacy of line management performance of its ES&H responsibilities at DOE facilities.

2.11 RESPONSE TO QUESTION II.E

The Department's Nuclear Safety Policy states that "DOE line managers report to the Secretary and are directly responsible and accountable for safety of their activities. Clear lines of authority and responsibility for ensuring safety will be established and maintained at all levels of DOE and contractor organizations...." The DOE has compiled a *Manual of Functions, Assignments, and Responsibilities for Nuclear Safety* (FAR) to ensure that clear lines of authority and responsibility are well-defined and understood at all levels of the Department.

The FAR presents, in a single volume, the functions, assignments, responsibilities, and authorities for Headquarters and field managers relating to nuclear safety activities. The basis for the FAR is contained in current DOE requirements documents, including Orders and other directives. The FAR is designed as a living document and will be revised to reflect changing conditions.

Department of Energy managers are accountable for executing their respective responsibilities and authorities as delineated in the FAR. Line management activities, including self-assessments, in addition to independent oversight, will assess implementation of the FAR by DOE managers. Personnel performance evaluations will include consideration of the results of these assessments.

2.12 RESPONSE TO QUESTION II.F

The Department's Nuclear Safety Policy clearly differentiates the responsibilities of the contractors and the Department. DOE line managers must provide adequate guidance to their contractors. DOE line management is responsible for defining appropriate safety objectives for its facilities, and contractor management is responsible for meeting those objectives. To ensure full responsibility for nuclear safety, DOE must require that all contractors' activities be conducted in accordance with DOE rules and Orders relating to nuclear safety.

Policy Statements

Safety policy statements are top-level statements of safety philosophy and values. All other requirements and guidance documents flow from and must be consistent with the policy. These policy statements apply equally to the work of DOE elements and to the work of contractors and subcontractors conducting activities in DOE nuclear facilities. These responsibilities are summarized in Table 3.

Table 3. Summary of Organizational Policy Responsibilities

Organization	Prepare	Comment	Implement	Verify
DOE Oversight		X		X
DOE Nuclear Safety Policy	X			
DOE Line		X	X	X
Contractor				

Requirements

The Department's safety requirements are identified in rules and Orders. DOE Orders are the prevailing means by which DOE identifies management objectives which are requirements for DOE personnel and, when incorporated into contracts, are requirements for DOE contractors. Rules are the documents by which DOE establishes binding requirements of general applicability. Most DOE nuclear safety Orders are in the process of being converted to rules (see Table 2). Department of Energy rules are adopted pursuant to the Administrative Procedures Act. When promulgated and published in the Code of Federal Regulations, these rules will be subject to the enforcement provisions of 10 CFR Part 820, *Procedural Rules for DOE Nuclear Activities*.

Department of Energy line managers are directly responsible for the safety of DOE facilities. DOE line managers ensure that safety is fully integrated into every level of activity, and are responsible for defining appropriate safety objectives. Contractor management is responsible for meeting the safety objectives. Safety rules and Orders are developed by the Department with extensive input from the DOE line and oversight organizations. The role of contractors is limited to public participation during the comment process on rules and the equivalent, if any, on Departmental Orders. These responsibilities are summarized in Table 4.

Table 4. Summary of Organizational Responsibilities for Requirements

Organization	Prepare	Comment	Implement	Verify
DOE Oversight		X		X
DOE Nuclear Safety Policy	X			
DOE Line		X	X	X
Contractor		X	X	X

Guidance

Department of Energy safety and implementation guides are issued to provide supplemental information regarding the Department's expectations on specific provisions of regulations and Orders and may identify acceptable methods for implementing those provisions. Guides may identify acceptable implementation of requirements by referencing Government or non-Government standards. Safety and implementation guides are not substitutes for rules and Orders. Although implementation guides must be considered in establishing the safety basis for a facility, reasonable opportunity is given to demonstrate compliance by actions other than those set forth in the guide.

The development of guidance is the responsibility of the Department; extensive input comes from DOE line organizations. Since guidance may identify acceptable means of implementing requirements, the extensive expertise within the DOE complex, including that of the contractors, provides valuable insight on mechanisms for implementing requirements.

Technical Standards

Technical standards are established practices, including test methods, procedures, processes, codes, and safety characteristics for single items or families of items. Technical standards are used by the Department to provide consistent guidance to the contractors and DOE personnel on the levels of quality, safety, and reliability required for acceptable performance. Technical standards may be adopted from other sources or, in the absence of adequate existing standards, will be developed by DOE and its contractors. Since technical standards are established practices, their development by both contractors and the Department is strongly encouraged. These responsibilities are summarized in Table 5.

Table 5. Summary of Organizational Responsibilities for Technical Standards

Organization	Prepare	Comment	Implement	Verify
DOE Oversight				X
DOE Nuclear Safety Policy	X			
DOE Line	X	X	X	X
Contractor	X	X	X	X

2.13 RESPONSE TO QUESTION II.G

Achieving nuclear safety requires adequate control over all aspects of nuclear activities. This requirement has been identified in major studies relating to the safety of the commercial nuclear industry. The *Ford Amendment Study*, conducted by the Nuclear Regulatory Commission in response to a Congressional mandate, found that the principal reason that nuclear construction projects developed significant quality-related problems in their design or construction was the failure of utility management to effectively implement a management system that ensured adequate control over all aspects of the project. The same conclusion was reached for operations in a subsequent study by the Commission. In essence, this has also been the conclusion of different groups that have studied the Department's operations.

To achieve adequate control over all aspects of its nuclear activities, the Department needs to implement a comprehensive management system that ensures accountability for nuclear safety. Steps have not existed to ensure accountability for effective execution of managers' nuclear safety responsibilities. As a result, requirements are not implemented consistently across the Department. A management system that creates a visible oversight and enforcement environment is needed to ensure this accountability. To be effective, oversight must be independent and specific with precise, meaningful, and swift enforcement authority.

Strengthening the nuclear safety management program can best be accomplished by the full and effective execution of the responsibilities, functions, and authorities delineated in the FAR. A three-step approach to ensure execution is:

- Step 1: Clearly Identify Functions, Assignments and Responsibilities – Issuance of the *Manual of Functions, Assignments, and Responsibilities for Nuclear Safety* establishes unambiguous lines of authority and responsibilities for ensuring nuclear safety.
- Step 2: Obtain Acknowledgement of Responsibilities – Senior DOE program office and field managers will acknowledge that they comply with their responsibilities as delineated in the FAR. As part of this process, senior DOE managers may identify and request deviations from responsibilities in specific areas as delineated in the FAR, along with a remedial action plan. The remedial action plan must bring the manager into compliance with responsibilities as delineated in the FAR within 12 months from the certification date. Any remedial action plan that does not bring the manager into compliance with the FAR within 12 months must be approved by the appropriate Cognizant Secretarial Officer, the Under Secretary, or the Secretary, as appropriate.
- Step 3: Create a Visible Enforcement Environment – Management audits will be conducted to ensure that DOE managers are implementing their responsibilities in accordance with the FAR and

approved remedial action plans. The results of management audits will be incorporated into the performance appraisals and bonus awards for DOE senior managers. Enforcement penalty procedures will be established addressing contract award fee, contract modifications and revocations; stop work orders; and fines.

The Department's plan to execute these actions is summarized in Table 6.

Table 6. Department of Energy Nuclear Safety Implementation Plan

Principal Action Item	Implementation Date
Ensure line management responsibility and accountability for safety - Issue the <i>Manual of Functions, Assignments, and Responsibilities for Nuclear Safety</i> (FAR)	October 15, 1994
Obtain DOE managers' acknowledgement of compliance with their responsibilities as delineated in the FAR - Perform management audits to verify that DOE managers are implementing their responsibilities in accordance with the FAR	December 31, 1994
Create a visible enforcement environment - Establish enforcement penalty procedures addressing contract award fees, contract modifications and revocations; stop work orders; and fines - Incorporate the results of management audits in personnel performance appraisals of DOE managers	June 30, 1995