Impact Assessment Of Draft DOE Order 5820.2B

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EXECUTIVE SUMMARY

The Department of Energy (DOE) has prepared a revision to DOE Order 5820.2A, entitled "Radioactive Waste Management." DOE issued DOE Order 5820.2A in September 1988; it covered only radioactive waste forms. The proposed draft order, "Waste Management," addresses the management of both radioactive and nonradioactive waste forms. It also includes spent nuclear fuel, which DOE does not consider a waste.

The Radioactive Waste Technical Support Program (TSP) of Lockheed Idaho Technologies Company (LITCO) is facilitating the revision of this order. The EM Regulatory Compliance Division (EM-331) requested that TSP estimate the impacts and costs of compliance with the revised order. TSP requested Dames & Moore to aid in this assessment by comparing requirements in Draft Order 5820.2B to ones in DOE Order 5820.2A and other DOE orders and Federal regulations.

The approach used to assess the impacts of Draft DOE Order 5820.2B was to identify the differences between it and DOE Order 5820.2A. This included the following subtasks:

- A. Review both 5820.2A and 5820.2B and list waste management requirements from each.
- B. Compare the two lists and, where possible, match 5820.2A requirements with 5820.2B requirements. Decide whether the requirement was a new one or a restatement of an existing requirement.
- C. Drop from the list any requirement that is a reference to another DOE order or a Federal regulation.
- D. Sort the requirements to place them in order of relative cost impact.

The reviewers assumed that requirements in 5820.2A were funded, but did not assess current compliance with the requirements of DOE Order 5820.2A. Where the reviewers flagged an item as an impact, the requirement met one or more of the following criteria:

- Could incur potentially large design or hardware cost
- A new program must be set up
- An established program must be re-evaluated
- A study must be performed where none was required before
- A new, potentially time consuming task must be performed

- The current schedule/period of performance for tasks within the DOE system could be significantly affected.

A committee met on January 30, 1995, to discuss the work done thus far. Some key insights gained from this meeting and later discussions were: a) doing a detailed cost assessment of most of the impacts is not practical since many are very broad in scope; b) A major benefit of this study is to identify the requirements having the largest impacts to DOE operations; c) Some requirements identified as impacts could be dismissed by reference to requirements of an applicable Federal regulation.

An appendix contains the list of cost categorized impacts from the comparison of 5820.2A and 5820.2B. Assignment of specific costs resulting from requirement changes will be difficult, if not impossible. Yet cost is an important factor in reviewing and determining the relative impact of requirements. Therefore, the reviewers used a crude intuitive cost ranking to group the impacts, as follows:

Category A - High Impact - Estimated at greater than \$10,000,000 impact for all DOE sites, assuming 10-12 major sites are affected for up to 10 years.

Category B - Medium Impact - Estimated at between \$500,000 - \$10,000,000 impact for all DOE sites, assuming 10-12 major sites are affected for up to 10 years.

Category C - Low Impact - Estimated at less than \$500,000 impact for all DOE sites, assuming 10-12 major sites are affected for up to 10 years.

Table 1 identifies and discusses several high impact requirements. In at least three cases, 5820.2B is trying to impose requirements of other orders. Table 2 presents the remaining high impact items in the draft order that could have major cost impacts. Many items identified are well recognized programmatic issues that 5820.2A did not cover. The most significant change in overall waste management direction is to include low-level wastes disposed of before September 26, 1988, under the PA requirements of 5820.2B.

The reviewers found other less obvious impacts or costs associated with the order. The suitability or need to be highly prescriptive in the order is a debatable point. In some regards the order is prescriptive. However, it is laced with vague and undefined expressions. The use of such expressions, without providing or referencing criteria or a methodology to achieve the desired outcome, may lead to difficulties and irregularities in carrying out the order. Use of these phrases assumes a "good faith" effort. Though limited use of such expressions is necessary and appropriate, the extensive use of them is a source of concern.

Identification of nonprescriptive requirements that may present implementation difficulties and the discussion of the impact items in Tables 1 and 2 and Appendix A are the primary useful parts of this evaluation of new requirements in Draft DOE Order 5820.2B. These impacts range

from major programmatic implications to impacts that have relatively little associated cost, but are nevertheless worth noting.

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ACRONYMS

ALARA	as low as reasonably achievable
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	code of federal regulations
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
EM	Environmental Restoration and Waste Management
EPA	Environmental Protection Agency
HLW	high-level waste
LLW	low-level waste
NEPA	National Environmental Policy Act
PA	performance assessment
PSO	program secretarial officer
RCRA	Resource Conservation and Recovery Act
SAR	safety analysis report
TCLP	toxicity characteristic leaching procedure
TRU	transuranic
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
TSP	Radioactive Waste Technical Support Program
TSR	technical safety requirement
USQ	unaddressed safety question
WIPP	Waste Isolation Pilot Plant

Impact Assessment of Draft DOE Order 5820.2B

1. INTRODUCTION

The Department of Energy (DOE) has prepared a revision to DOE Order 5820.2A, entitled "Radioactive Waste Management." DOE issued DOE Order 5820.2A in September 1988 and, as the title implies, it covered only radioactive waste forms. The proposed draft order, entitled "Waste Management," addresses the management of both radioactive and nonradioactive waste forms. It also includes spent nuclear fuel, which DOE does not consider a waste. Waste forms covered include hazardous waste, high-level waste, transuranic (TRU) waste, low-level radioactive waste, uranium and thorium mill tailings, mixed waste, and sanitary waste.

The Radioactive Waste Technical Support Program (TSP) of Lockheed Idaho Technologies Company (LITCO) is facilitating the revision of this order. The EM Regulatory Compliance Division (EM-331) has requested that TSP estimate the impacts and costs of compliance with the revised order. TSP requested Dames & Moore to aid in this assessment by comparing requirements in Draft Order 5820.2B to ones in DOE Order 5820.2A and other DOE orders and Federal regulations. The assessment started with a draft version of 5820.2B dated January 14, 1994. DOE has released three updated versions of the draft order since then (dated May 20, 1994; August 26, 1994; and January 23, 1995). Each time DOE revised the order, Dames and Moore updated the assessment work to reflect the text changes. This report reflects the January 23, 1995 version of the draft order.

1.1 Purpose of the Assessment

The purpose of the assessment is to identify new requirements imposed by Draft DOE Order 5820.2B and to estimate the potential impact (cost or other) of the draft order's requirements.

2. ASSESSMENT APPROACH

The approach taken to assess the impacts imposed by the Draft DOE Order 5820.2B was to identify the differences between it and the existing DOE Order 5820.2A. This included the following subtasks:

- A. Review both DOE 5820.2A and draft 5820.2B and list waste management requirements from each. The reviewers read each order line-by-line and recorded each statement that was a requirement as a spreadsheet cell entry.

The line-by-line comparison did not include the 11 pages of text before Chapter 1. This text

mostly contains a discussion of "responsibilities and authorities." It also discusses such general topics as purpose, scope, exclusions, exemptions, resolution of conflicts, implementation, and clearance under the Paperwork Reduction Act of 1980. Of these topics, only implementation of this order has significant cost and schedule implications. We therefore discuss it at length in the Implementation Considerations Section of this report.

- B. The reviewers then compared the two lists and, where possible, matched 5820.2A requirements with 5820.2B requirements in the spreadsheet. Then the reviewers decided whether the requirement was a new one or a restatement of an existing requirement, such as from a DOE order or an EPA regulation. This determination was recorded in a spreadsheet. New requirements were identified in the spreadsheet as new impacts that should be assessed. Draft DOE Order 5820.2B addresses waste types that 5820.2A does not include (including mixed waste, hazardous waste, sanitary waste, and mill tailings). For these waste types no comparable text exists in 5820.2A. For high-level, transuranic, and low-level wastes, many requirements exist in both the existing and draft orders.
- C. The reviewers dropped from the list any new requirement that was merely a reference to another applicable DOE order or an applicable Federal regulation. This was justified because the reference to an existing requirement in another governing document was not a new requirement imposed by this draft order. Such citations are pointers to other applicable requirements and, therefore, did not represent a new requirement imposed by this order.
- D. Once the reviewers entered all impacts imposed by the draft order in the spreadsheet, the requirements were separated for further examination. Dames & Moore personnel initially sorted the identified impacts to place them in order of relative cost impact. This effort served as a "strawman" for a meeting with personnel from the TSP and Dames & Moore (called here the LITCO Committee). The meeting attendees reviewed the list and further discussed potential impacts of the identified requirements. The LITCO Committee was to decide how much cost analysis would be done for the list of impacts.

The reviewers assumed that requirements in 5820.2A were funded. For example, 5820.2A now requires performance assessments (PA) for low-level waste disposal facilities; Current DOE budgets fund these PAs. Requirements in 5820.2A were not considered to have cost impacts in this study. In nearly all instances where the reviewers flagged an item as an impact, the requirement met one or more of the following criteria:

- The requirement could incur potentially large design or hardware cost.
- A new program must be set up (for example, quality assurance, compliance, record-keeping).
- An established program must be reevaluated to find out if compliance with the newly

specified requirements is being achieved.

- A study must be performed (for example, a cost-benefit analysis or safety analysis report) where none was required before.
- A new, potentially time consuming task must be performed, such as the creation and maintenance of a database or the performance of an audit.
- The current schedule/period of performance for certain efforts within the DOE system could be significantly affected.

The comparison did not assess the current compliance status with the requirements of DOE Order 5820.2A. The comparison addressed only that the requirement did not exist before in 5820.2A or in other applicable orders or Federal regulations. The extent of compliance with 5820.2A is unknown. However, recently, the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-2 questioned the compliance status of low-level waste disposal facilities with the requirements of 5820.2A.

Many requirements identified in the General Requirements (Chapter 1) are also called out in later waste specific chapters. We have combined related requirements into one impact, usually the general requirement given in Chapter 1, with a reference to other applicable waste stream specific chapter sections. Thus, we often include the impact of all waste types in one requirement, although the mandate may impact one waste type more than another. For example, Chapter 1 requires that each Field Element set up a waste information system that includes waste characterization, packaging, and other data related to treatment, storage, and disposal. This general requirement is in each of the waste specific chapters, but we include only the Chapter 1 requirement in the impacts list, although this citation references the other waste specific requirements.

3. RESULTS OF LITCO COMMITTEE MEETING

The LITCO Committee met on January 30, 1995, to discuss the work done thus far by Dames & Moore. Some key insights gained from this meeting and later follow-on discussions were as follows:

- Doing a detailed cost assessment of most of the identified impacts is not practical since many are very broad in scope. A cost assessment would require a significant evaluation of specific DOE situations before traditional cost assessment methods could be applied. As already discussed in this report, the compliance status of DOE facilities with the requirements of DOE Order 5820.2A is unknown. This makes it harder to find out the costs to comply with 5820.2B.

Often, the cost savings or loss determination would be very much dependent on the

reviewer's assumptions. For example, Section 2d of Chapter 1 of 5820.2B states that sites may use non-DOE treatment and disposal facilities. However, before using non-DOE facilities, a DOE entity must assess future DOE liabilities and must also show that the facility meets applicable regulations. Further, the DOE entity must show that use of the facility is in the best interest of the DOE.

Some reviewers believe that this assessment would be a cost incurred by the DOE, especially since DOE now uses non-DOE TSDFs, although not specifically allowed by 5820.2A. Others argue that use of non-DOE facilities would be a cost savings to the DOE since it would eliminate the costs of building and operating DOE-owned facilities. This second argument assumes that the private sector could build and operate facilities more cheaply than the DOE.

- One major benefit of this study is to identify the requirements having the largest impacts to DOE operations. Once these high impact statements are identified, reviewers can determine if the draft revised order takes the correct philosophical approach to reach the goal. For example, Section 4c(1)(c) of Chapter 1 requires DOE facilities to assess compliance with DOE Order 6430.1A, "General Design Criteria" and to perform a cost-benefit analysis of compliance with the requirements of 6430.1A. The philosophical question here is: "Is 5820.2B the proper vehicle to impose (often retroactively) the requirements of DOE Order 6430.1A on waste management facilities?" Perhaps imposition of these design requirements is better left to 6430.1A or to the safety analysis process covered by DOE Orders 5480.23 and 5481.1B.
- Reviewers pointed out that some requirements identified as impacts could potentially be dismissed by reference to requirements of an existing applicable Federal regulation. Significant statements, with associated high costs, can be dropped from the impacts list if this is done to the maximum extent. An example is Section 4b(1)(c) of Chapter 1. This requires waste generator organizations to be sure "projected waste can be treated, stored, or disposed of in a safe, environmentally sound, efficient, and cost-effective manner or that a program is in place to find a solution to unresolved issues."

RCRA land disposal restriction regulations found in 40 CFR 268 already impose this requirement. It is the subject of major Federal Facility Compliance Agreements with the EPA about treatment, storage, and disposal of mixed, transuranic, and high-level wastes. This requirement mandates many multimillion dollar unfunded facilities. Therefore, we have left these major cost impact items on the list. The discussion then acknowledges that other regulatory drivers such as RCRA regulations impose these requirements.

The LITCO Committee meeting closed with a resolve to summarize the impacts in a final report, including discussion of the most significant ones. This will provide input to the DOE-HQ Steering Committee responsible for completing 5820.2B. Members of the committee agreed that detailed costing of the generic type requirements is not practical. However, the assignment of

Cost Categories (discussed in the next section) was useful in understanding the relative significance of each requirement. Appendix A of this report contains the complete impacts list, with assigned Cost Categories.

4. DETAILED STUDY RESULTS DISCUSSION

The discussion of the committee findings above does not mean that the new requirements in 5820.2B were difficult to identify. With only a few exceptions, the new requirements of Draft DOE Order 5820.2B that represent impacts to the DOE were obvious. Most of the impact items represent concrete labor and material expenses and are not speculative in nature.

Appendix A contains the list of cost categorized impacts resulting from the comparison of 5820.2A and 5820.2B. As already noted, assignment of specific costs resulting from requirement changes is clearly difficult, if not impossible. Yet cost is an important factor in reviewing and determining the relative impact of requirements. Therefore, reviewers used a crude intuitive cost ranking to group the impacts for use by others. We are aware that this ranking is debatable, but we present it here to aid the reader in placing the impacts into relative cost categories. The ranking of the impacts was based on the opinion of two Dames & Moore reviewers using both intuitive understanding of relative impact and an estimate of cost to DOE that each requirement would entail.

Category A - High Impact - Estimated at greater than \$10,000,000 impact for all DOE sites, assuming 10-12 major sites are affected for up to 10 years.

Category B - Medium Impact - Estimated at between \$500,000 - \$10,000,000 impact for all DOE sites, assuming 10-12 major sites are affected for up to 10 years.

Category C - Low Impact - Estimated at less than \$500,000 impact for all DOE sites, assuming 10-12 major sites are affected for up to 10 years.

Of those items shown in Appendix A, we believe the Category A items will have the most impact to the DOE system.

We discuss these Category A findings briefly below and present specifics in referenced tables for clarity and ease of use. The findings that the authors of this study believe are worthy of the consideration of the Steering Committee for the preparation of this order are presented and discussed briefly under three categories:

- Philosophical Considerations
- High Cost Requirements
- Implementation Considerations

4.1 Philosophical Considerations

Tables 1 and 2 contain discussions of the Category A items. Once the impacts of requirements in the draft order were recognized, the reviewers questioned several high impact requirements philosophically. Table 1 identifies and discusses several high impact requirements that the reviewers believe should be changed or dropped. In at least three cases, 5820.2B is trying to carry out the requirements of other orders, rather than citing them as other applicable orders that should be followed. In these cases, 5820.2B is trying to address requirements related to facility compliance with design standards or to environmental monitoring requirements. In one case (Table 1, Item #1) involving carrying out of DOE Order 6430.1A, the draft order is trying to make the design requirements of this order retroactively applicable to waste management facilities, whatever their initial date of construction and of the status of safety analysis documentation for the facility.

Although well intentioned, the draft order is setting up requirements that are the primary subject of other orders applicable to these facilities. These facilities routinely operate under programmatic requirements imposed by other orders, such as safety analysis reports and environmental monitoring programs, designed to ensure that the safety function is accomplished. We conclude that an order such as 5820.2B, dealing with the waste management, should cite other orders but not try to carry out the requirements of those orders. Thus, we recommend that the prescription of specific requirements associated with facility design, safety, and environmental monitoring be imposed by reference to applicable orders, rather than providing isolated and incomplete requirements for such activities.

4.2 High Cost Requirements

Table 2 presents the remaining high impact items that require large budgets to meet the requirements in the draft order. Many high impact items identified are well recognized programmatic issues that 5820.2A did not cover. These include such items as the treatment/disposal of TRU and of TRU-contaminated low-level wastes prohibited from near-surface disposal.

The most significant change in overall waste management direction is to include low-level wastes disposed of before September 26, 1988, under the PA requirements of 5820.2B. This waste was not subject to the requirements of 5820.2A. Inclusion of these wastes in performance assessments is reasonable. However, it may have a large programmatic influence, such as causing the results of updated performance assessments to be unacceptable and requiring some type of remediation. This new requirement could affect the operation of existing disposal facilities.

The last two requirements of Table 2 can be traced to RCRA requirements. These items require the DOE to find solutions to the treatment, storage, and disposal issues of mixed, TRU, and high-level wastes and to complete closure plans for high-level waste tanks. We include these requirements as impacts because they represent large programmatic issues for the DOE to meet RCRA-rooted closure and hazardous waste land disposal restriction requirements.

4.3 Implementation Considerations

Thus far, this report has focused primarily on the clear impacts associated with the new requirements contained in Draft DOE Order 5820.2B. The reviewers consider that other less obvious impacts or costs are associated with this order. The draft order has a problem that is common to many DOE orders. Draft DOE Order 5820.2B contains many statements that are open-ended or require subjective interpretation to carry out. So, the question "What constitutes compliance with 5820.2B" or "what does 5820.2B require of us in this instance?" will likely come up in trying to carry out various portions of the order.

The first page of 5820.2B states that the order's purpose is "to establish policies, guidelines, and minimum requirements...." Therefore, we recognize that the suitability or need to be highly prescriptive in the order is a moot point. We acknowledge that in some regards the order is prescriptive. Examples of this include the listings of the minimal aspects and informational requirements associated with (1) a waste management program; (2) a waste certification program; (3) treatment, storage, and disposal facilities; (4) an environmental monitoring program; (5) a waste information system; (6) transuranic waste characterization data; (7) a low-level waste facility performance assessment; (8) the waste acceptance criteria for a low-level waste management facility; and (9) the closure plan for a low-level waste disposal site. The draft order is also smartly prescriptive in that it often refers the reader to other applicable guidance or criteria documents.

Nevertheless, the order is laced with expressions such as "shall consider," "shall include consideration," "sufficient accuracy," "adequately address," "significantly change," "suitable facility," "appropriate," "applicable," "where necessary," "any necessary," "as needed," "attempts," "if practicable," "if practical," "in a manner," "expected period of time," "unlikely," "likely," "reasonably foreseeable," "reasonable assurance," and "reasonable activities." There are several points to be made related to the extensive use of these types of expressions.

- Sometimes, the use of these types of expressions, without providing or referencing criteria or a methodology to achieve the required outcome, will lead to difficulties and irregularities in carrying out Draft DOE Order 5820.2B.
- Use of these types of expressions implicitly acknowledges a "good faith" effort, which may not always be the case.
- Though use of these types of expressions occasionally is necessary and appropriate, the extensive use of them (estimated at 125 to 175 usages in 5820.2B) is a source of concern. Their total effect on the order may be significantly deleterious.
- The revised order does not give enough guidance to standardize certain activities (assuming that standardization is desirable for certain aspects of waste management, for example, standardize the waste management information system by standardizing the software and

data fields.)

Therefore, 5820.2B contains no clearly defined mechanism for achieving, much less uniformly achieving, throughout the DOE complex, some activities and outcomes required in the draft order. Several portions or statements in the order require guidance if DOE expects consistent implementation through the DOE complex. DOE will likely need to issue a DOE standard to assist the implementation of Draft DOE Order 5820.2B.

Section 11 of the order requires Field Elements to provide an implementation plan to EM-1 within six months of the order's approval and to comply with the order fully within two years. We recommend that DOE evaluate what has occurred with the 5480 Series of DOE orders issued in the past three years. Problems have been met in implementing and developing implementation plans for these recently issued orders. For example, DOE issued two standards associated with implementing 5480.23, one standard on how to prepare implementation plans for 5480.22 and 5480.23, extensive draft guidance on how to develop technical safety requirements (TSRs) according to 5480.22, and a temporary exemption to the submittal date associated with submitting draft TSRs to the program secretarial officer (PSO).

These orders required the issuance of DOE standards and exemptions because they contained vague requirements that required more explanation to receive somewhat consistent implementation by the various DOE sites. The writing and issuance of these guidance documents have cost millions of DOE dollars over the past three years, besides the costs to issue the initial orders. Therefore, a major impact of the order will be funds used in trying to respond to an insufficiently prescriptive (yet very high expectation) DOE order.

Appendix B lists and discusses some non-prescriptive requirements that may make implementation difficult or non-uniform due to the ambiguity of the requirement. Appendix B does not contain many instances of the expressions cited above. The chosen provisions from Draft DOE Order 5820.2B that Appendix B contains more concretely prove the point being made than many that were not chosen.

5. CONCLUSIONS

We found that comparing requirements in Draft DOE Order 5820.2B and DOE Order 5820.2A and showing the difference between the two was relatively straightforward, with only a few exceptions. The reviewers found it useful to place identified impact requirements into broad cost categories, to aid other readers in assessing the relative impacts of the proposed order. Detailed cost analysis of the new requirements of the draft order was not performed because conventional costing techniques cannot easily be applied to non-project-specific cost items like those represented by the order requirements.

Several high impact requirements were philosophically questioned by these reviewers. The draft order is written to enforce requirements that are the primary subject of other orders. Waste

management facilities routinely operate under programmatic requirements imposed by other orders, such as safety analysis reports and environmental monitoring programs designed to ensure that the safety function is accomplished. We conclude that an order such as 5820.2B, dealing with waste management, should cite other orders but not try to carry out the requirements of those orders. Thus, we recommend that prescription of specific requirements associated with facility design, safety, and environmental monitoring be imposed by reference to applicable orders, rather than providing isolated and incomplete requirements for such activities. Table 1 discusses the high impact requirements these reviewers recommend be rewritten to eliminate this practice.

Table 2 identifies the remaining high impact items identified by this evaluation. Many are well recognized programmatic issues that were not covered by 5820.2A. These include such items as the treatment/disposal of TRU and TRU-contaminated, low-level wastes prohibited from near-surface disposal. The most significant change in overall waste management direction is to make low-level wastes disposed of before September 26, 1988, subject to the PA requirements of 5820.2B. These wastes are not subject to the requirements of 5820.2A. Inclusion of these wastes in activities such as performance assessments is reasonable, but may have a large programmatic influence on low-level waste activities at some disposal sites.

The order contains many vaguely defined or open-ended requirements. These likely will lead to difficulty uniformly carrying out 5820.2B across the DOE complex. Appendix B presents the most significant examples of these ambiguous requirements. The reviewers believe that if these nonprescriptive requirements are left in the order, either implementation guidance documents will be required or each DOE field office or contractor will be left to exercise their "best judgement" for implementation.

Identification of nonprescriptive requirements that may present implementation difficulties and the discussion of the impact items in Tables 1 and 2 and Appendix A are the primary useful parts of this evaluation of new requirements in Draft DOE Order 5820.2B. These impacts range from major programmatic implications to impacts that have relatively little associated cost, but are nevertheless worth noting.

Table 1 Discussion of Significant Draft 5820.2B Impacts Which Might Be Implemented Differently

	2B Reference	Requirement	Discussion
1	Chapter 1 4c(1)(c)	<p>Existing facilities that do not satisfy requirements of DOE Order 6430.1A shall be considered for upgrade. The practicality of such upgrades will consider cost versus benefits. Upgrades of an existing facility shall be performed to improve or meet compliance with this order. Exemptions for not upgrading a facility to meet the requirements of this order must be approved by the appropriate Field Element manager and EM-1.</p> <p>{Related waste specific requirement is found in Chapter IX 3c(2)(b).}</p>	<p>Many existing DOE facilities do not meet the requirements of DOE Order 6430.1A. This is primarily because the DOE complex has many facilities built before 6430.1A was issued. Compliance with the 5820.2B statement requires each DOE site to perform an assessment of existing facilities to find out if they meet the requirements of 6430.1A. Facility owners must then perform a cost-benefit analysis to decide the practicality of the upgrades, for facilities not meeting the 6430.1A requirements. Facilities must then schedule and budget to upgrade facilities to meet the requirements of 6430.1A. If the facility cannot be upgraded, the facility owner must prepare a formal request for exemption and present it to the Field Element Manager and EM-1 for approval.</p> <p>If an evaluation identifies design deficiencies, the safety envelope of the facility may come into question, if the safety analysis report for the facility did not acknowledge the design deficiencies. An unreviewed safety question (USQ) may result and have to be handled according to the requirements of DOE Order 5480.21, "Unreviewed Safety Questions."</p> <p>Thus, the requirement will likely result in compliance and cost-benefit studies, recognizing required facility upgrades, USQ determinations, and potential impacts on scheduled operations of waste handling facilities.</p> <p>The value of scrutinizing the waste management facilities for design deficiencies may be small when compared with the potential cost. An approved safety analysis report should cover each waste handling operation and facility. Facility owners should already have corrected safety related deficiencies identified by that process. Perhaps a better requirement, that accomplishes the same purpose, is that the facility must have an approved safety analysis report as required by DOE Order 5480.23 or 5481.1B.</p>

Table 1 Discussion of Significant Draft 5820.2B Impacts Which Might Be Implemented Differently

	2B Reference	Requirement	Discussion
2	Chapter I 4b	Waste generator organizations shall implement a waste certification program to ensure that the waste acceptance criteria for receiving facilities are met.	<p>This statement does not represent a completely new requirement since 5820.2A requires certification plans for TRU and LLW, but a generic requirement does not exist for certification for other waste types. Many facilities have waste certification plans, but these plans may be of limited value if they do not address the certification needs of treatment and disposal, and also storage, facilities. For example, if the treatment for the waste form is incineration, the treatment facility may need to know total quantities of heavy metal or chlorides. Toxicity Characteristic Leaching Procedure (TCLP) results alone may not be enough to ensure meeting incineration emission requirements. Yet TCLP results may be adequate for the storage of the waste.</p> <p>Sometimes, addressing the characterization needs of future treatment or disposal facilities is a difficult, if not impossible, task. The waste acceptance criteria for yet undefined or changing treatment/disposal facilities are not now available. Often, current waste acceptance criteria and waste certification plans address only storage considerations because those are the only criteria known. In other cases the criteria for treatment or disposal facilities, such as WIPP, are potentially changing because of the current developmental stage of the facilities. This presents a difficult problem. Partial or complete recharacterization may be necessary later to meet treatment or disposal needs when waste acceptance criteria are defined for those facilities.</p> <p>Thus, effective certification programs depend on having waste acceptance criteria that address the certification needs of the treatment and disposal facilities where the waste will go. Additionally, waste owners must consider characterization needs of the storage facility where they will stage the waste until final treatment and storage can be scheduled. Recharacterization and recertification efforts can be costly and time consuming and result in increased personnel radiation and chemical exposure.</p> <p>Perhaps requiring that waste certification plans, where possible, address long range characterization needs for all phases of waste management, including storage, treatment, and disposal of waste would be useful. When characterization requirements (through disposal) are uncertain, changing, or unknown, the contractor should notify the DOE Field Element, so the Field Element can plan to meet the characterization needs when practical.</p>
3	Chapter II 3c(5)	HLW storage, treatment, and transportation facilities shall be monitored for chemical, physical, radiological, structural, and other changes that could indicate potential or actual failure of system containment, integrity, or safety that could indicate potential or actual unplanned events (e.g., potential chemical reactions or nuclear criticality).	<p>Some facilities may not now meet this requirement. An assessment of compliance will be necessary if the draft order is issued with this requirement. Each site with HLW should assess its storage, treatment, and transportation facilities to find out if they are monitored for chemical, physical, radiological, structural, and other changes that could show failure of system containment, integrity, or safety.</p> <p>The intent of this requirement may be to ensure facility safety. All waste handling operations and facilities should have an approved safety analysis report. Safety related deficiencies identified by that process should already have been corrected. Perhaps a better requirement, accomplishing the same purpose, is that the facility must have an approved safety analysis report as required by DOE Orders 5480.23 and 5481.1B, which addresses monitoring requirements to ensure facility safety. The new requirement might also state that the HLW storage facility must have an environmental monitoring plan that complies with DOE Orders 5400.1 and 5400.5.</p>

Table 1 Discussion of Significant Draft 5820.2B Impacts Which Might Be Implemented Differently

	2B Reference	Requirement	Discussion
4	Chapter IV 4c(5)(b)	The monitoring program shall be able to differentiate the effluents from each treatment, storage, or disposal facility.	<p>Detecting the source of an effluent among several nearby TSD facilities is not now possible at all DOE facilities. Some larger DOE sites can detect a release, but further investigation and reasoning would be necessary to find the exact facility responsible for the release.</p> <p>To ensure compliance with this requirement, all sites must evaluate their existing and planned environmental monitoring programs to find out if the program can differentiate the source of an environmental release among several nearby facilities. Sites may need to upgrade monitoring programs to be able to detect the source of an environmental release among closely positioned facilities.</p> <p>Perhaps such a requirement would be better incorporated in the cited guidance documents (DOE Orders 5400.1 and 5400.5), which cover effluent monitoring and environmental surveillance.</p>

Table 2 Discussion of Significant Impacts From Draft Order 5820.2B

	2B Reference	Requirement	Discussion
1	Chapter IV 3b	The requirements of this chapter (LLW) also apply to waste buried prior to September 26, 1988, unless the waste is being managed according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Resource Conservation and Recovery Act (RCRA).	LLW waste disposal sites containing waste buried before 9/26/88 will be subject to the requirements of 5820.2B, unlike 5820.2A. This change will require sites that contain waste buried before that date to include the waste in their performance assessments. The records for this waste are often poor or nonexistent. Thus, investigative work and possibly some physical characterization may be necessary to establish this additional source term for performance calculations. With this additional source term included in the performance assessment, the performance assessment results for existing LLW disposal sites may be unacceptable. This could affect the operational status of operating disposal facilities.
2	Chapter III 3b(1)(c) Chapter III 3c(4)(b)	<p>TRU waste that does not meet the requirements for disposal at the Waste Isolation Pilot Plant (WIPP) or does not fit into the management plans developed for TRU waste must be maintained in safe interim storage until a suitable TSD or transportation option becomes available.</p> <p>TRU waste that cannot be certified or otherwise approved for acceptance at WIPP may be disposed of by alternative methods. Alternative disposal methods shall be approved by the Deputy Assistant Secretary for Waste Management and shall comply with 40 CFR 191 and other applicable Federal, state, and local requirements.</p>	Much of the TRU waste in storage will not meet TRUPACT and WIPP acceptance requirements. Repackaging, treatment, or an alternative disposal site will be necessary before waste disposal can be completed. Therefore, waste owners will need alternative transportation, treatment, or disposal capabilities. Each site must assess its TRU waste inventories and determine which can be transported in the available Type B containers. Sites must also determine which wastes meet WIPP acceptance criteria. Sites must develop alternatives and maintain interim storage for those that they cannot ship to WIPP. Justifications for alternative disposal must be completed and approved by DOE and the EPA.
3	Chapter III 3c(4)(c)	TRU-contaminated waste and other waste forms that do not meet the definition of TRU waste but are precluded from near-surface disposal because of performance assessment limitations shall be evaluated for disposal at alternative disposal sites throughout DOE, including WIPP.	Each DOE site having waste that does not meet the definition of TRU waste, but is prohibited from near-surface disposal because of performance assessment limitations, should evaluate the waste for disposal at alternative disposal sites. Alternatively, a site could treat the waste form to make it acceptable for near-surface disposal. Waste owners should perform options/tradeoff studies to find the most cost effective disposal avenue. Needed treatment facilities will require long term budgeting.

Table 2 Discussion of Significant Impacts From Draft Order 5820.2B

	2B Reference	Requirement	Discussion
4	Chapter I 4d(2)(a) Chapter I 4d(1)	Each Field Element shall be responsible for establishing and maintaining a waste information system that includes waste characterization, packaging, and other data relating to treatment, storage, or disposal. Each Field Element Office shall be responsible for developing and maintaining an auditable record-keeping system, per DOE Order 1324.5A, for a historical record of waste generated, treated, stored, disposed of, or transported.	Experience with database systems for collecting and reporting waste information has been largely fragmented and uncoordinated. Multiple systems for collecting data exist on most DOE sites and the information has varying degrees of quality assurance associated with it. This has resulted in the release of conflicting information, causing embarrassment and loss of credibility to the DOE. Each site needs to have an auditable waste information system for all waste form information. This waste information system should be coordinated with the record keeping system requirement of Section 4d(1) Chapter I of 5820.2B. Each site must develop and maintain a waste information system that includes waste characterization, packaging, and other information related to treatment, storage, or disposal. Each site must set up an auditable record keeping system for all waste forms' records such as manifests and certificates of disposal. Each site must develop and maintain an auditable record keeping system for waste generation, treatment, storage, and disposal information in conformance with requirements of DOE 1324.5A. Personnel must be dedicated to the operation, quality assurance, and issuing of reports from both the waste information and record keeping systems.
5	Chapter III 3b(3)(f)	Methods selected for characterizing waste shall consider the radiation hazard and benefit gained. Methods or approaches used for characterizing hazardous constituents in waste shall provide data comparable to RCRA data quality requirements.	Past characterization data have been primarily based on process knowledge. Future characterization efforts may require more rigorous sampling and analysis using specialized techniques for analyzing radioactive samples. Cost-benefit studies must be performed to select methods for characterizing hazardous constituents in waste, with data results comparable to RCRA data quality requirements, while considering as-low-as-reasonably-achievable (ALARA) principles. Once a site establishes its methods, specialized laboratories may be required to complete the characterization of radioactive wastes, which is likely to be costly.
6	Chapter I 4b(1)(c)	Waste generator organizations shall ensure: c) Projected waste can be treated, stored, or disposed of in a safe, environmentally sound, efficient, and cost-effective manner or that a program is in place to find a solution to currently unresolved issues.	Many wastes are now in storage without available treatment and disposal options. These include mixed wastes, HLW wastes, TRU wastes, and radiological wastes. Many of these waste forms are the subject of Federal Facility Compliance Agreements being completed with the EPA now. To put programs in place to solve unresolved issues including the treatment of LLW-mixed, TRU-mixed, and HLW-mixed waste, DOE will incur major capital costs for research, design, and facility construction. Many needed processing facilities are now unidentified or unfunded. These include HLW-vitrification facilities, TRU-waste treatment facilities, and LLW-mixed waste treatment facilities.
7	Chapter II 3c(3)(f)	Each DOE site shall develop a closure strategy for the tank farms from which the HLW is removed. This strategy shall utilize waste characterization data and be based on potential dose to current and future populations.	Since most tank farms contain mixed waste, RCRA requires closure plans that must be completed quickly once DOE stops using the tanks (as required by 40 CFR 264.113). However, often, closure plans for existing HLW tanks are not complete, and the approach to closure is often uncertain because of the high radioactivity levels present in the tank. Closure strategies can vary from clean closure to decontamination and making the former tank farm site a landfill. Closure plans must be developed and approved for all DOE tank farm sites. Closure of many tank farms will likely require specialized design activities that include the use of robotics for decontamination of the tank systems. Long term budgeting will be required to meet commitments in the tank farm closure plans.

Appendix A

**Categorized List
of Impacts Resulting From Draft
DOE Order 5820.2B**

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
1	Chapter I 4b	A	Waste generator organizations shall implement a waste certification program to ensure that the waste acceptance criteria for receiving facilities are met.	Chapters II 3b; II 3b(5)b; III 3b; IV 4b; IV 4b(5)a; IV 4b(5)b; V 3b; VI 3b(6)a; VII 3b; VIII 3b; IX 3b.	N/A	N/A	5820.2A requires certification plans for TRU and LLW, but has no generic requirement for other types of waste. Varying qualities of certification exist at different sites and for different types of waste.	Each waste generator organization must create and carry out a waste certification program that meets the waste acceptance criteria for each type of waste generated.	Each waste certification program must be followed and periodically updated.
2	Chapter I 4b(1)(c)	A	Waste generator organizations shall ensure: c) Projected waste can be treated, stored, or disposed of in a safe, environmentally sound, efficient, and cost-effective manner or that a program is in place to find a solution to currently unresolved issues.	Chapters II 3a; III 3a; IV 4a; V 3a; VI 3a; VII 3a; VIII 3a.	N/A	N/A	Many wastes are now in storage without available treatment and disposal options. These include mixed wastes, HLW wastes, TRU wastes and radiological wastes.	Each site must identify wastes without treatment, storage, and disposal options and schedule and budget for developing needed technology to treat and dispose of the wastes properly.	Needed technology must be developed and implemented.
3	Chapter I 4c(1)(c)	A	Existing facilities that do not satisfy requirements of DOE Order 6430.1A shall be considered for upgrade. The practicability of such upgrades will consider cost versus benefits.	Chapter IX 3c(2)(b)	N/A	N/A	Many existing DOE facilities do not meet the requirements of DOE Order 6430.1A, primarily because the DOE complex has many facilities built before DOE issued 6430.1A.	Each site must determine if existing facilities meet the requirements of this order. Facilities not meeting the requirements must be identified and a cost-benefit analysis should be done for identified upgrade needs.	Upgrades that show a positive cost-benefit analysis should be budgeted and carried out.
			Upgrades of an existing facility shall be performed to improve or meet compliance with this Order. Exemptions for not upgrading a facility to meet the requirements of this Order must be approved by the appropriate Field Element manager and EM-1.		N/A	N/A		Facilities must schedule and budget to upgrade facilities to meet the requirements of this order or a formal request for exemption must be prepared and presented to the Field Element Manager and EM-1 for approval.	The facilities must be upgraded or the Field Element manager and EM-1 must approve the exemption not to upgrade the facilities.
4	Chapter I 4d(1)	A	Each Field Element Office shall be responsible for developing and maintaining an auditable record-keeping system, per DOE Order 1324.5A, for a historical record of waste generated, treated, stored, disposed of, or transported.	Chapters II 3d(1)(a); III 3d(1)(a); IV 4d(1)(a); VI 3b(5)(a); VI 3d(1); VII 3c(3)(e); VII 3d(1)(a); VII 3d(1)(b); VIII 3d(1); IX 3d(1).	N/A	N/A	An auditable record keeping system for all waste forms must be set up for each site's waste records such as manifests and certificates of disposal.	Each site must develop and maintain an auditable record keeping system for waste generation, treatment, storage, and disposal information in conformance with requirements of DOE 1324.5A.	The record keeping system must be used, maintained, and updated (as required).
5	Chapter I 4d(2)(a)	A	Each Field Element shall be responsible for establishing a waste information system that includes waste characterization, packaging, and other data relating to treatment, storage, or disposal.	Chapters II 3d(2); III 3d(2); IV 4d(2); V 3d(2); VI 3d(2); VII 3d(2); VIII 3d(2); IX 3d(2).	N/A	N/A	An auditable waste information system for all waste forms needs to be set up for each site's waste information. This waste information system should be coordinated with the record keeping system requirement of 4d(1).	Each site must develop and maintain a waste information system that includes waste characterization, packaging, and other data related to treatment, storage, or disposal.	The waste information system must be used, maintained, and updated (as required).

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
6	Chapter II 3c(3)f.	A	Each DOE site shall develop a closure strategy for the tank farms from which the HLW is removed. This strategy shall utilize waste characterization data and be based on potential dose to current and future populations. (See cited section for more details).				A new requirement is invoked to develop DOE-approved site closure plans for tank farms. Although closure plans are required by RCRA, they have not been prepared for all tank farm sites.	Closure plans must be developed and approved for all DOE tank farm sites.	Long term budgeting will need to be done to meet commitments in the tank farm closure plans.
7	Chapter II 3c(5).	A	HLW storage, treatment, and transportation facilities shall be monitored for chemical, physical, radiological, structural, and other changes that could indicate potential or actual failure of system containment, integrity, or safety which could indicate . . . unplanned events.				It is not obvious that this requirement is now being met by all facilities. An assessment of compliance may be needed.	Each site with HLW should perform an assessment to find out if its storage, treatment, and transp. facilities are monitored for chemical, physical, rad., structural, and other changes that could show failure of system containment, integrity, or safety.	Any monitoring deficiencies should be corrected.
8	Chapter III 3b(1)(c)	A	TRU waste that does not meet the requirements for disposal at WIPP or does not fit into the management plans developed for TRU waste must be maintained in safe interim storage until a suitable TSD or transportation option becomes available.		Chapter II 3c(2)	Uncertified TRU waste shall not be sent to WIPP except by special permission granted in response to a formal, documented request to the WIPP-Waste Acceptance Criteria Certification Committee and the WIPP Waste Operations.	Much of the waste in storage will not meet TRUPACT and WIPP acceptance requirements. Therefore, alternative transportation, treatment, or disposal capabilities will be needed.	Each site must assess its TRU waste inventories and determine those that can be transported in the available Type B containers and that meet WIPP acceptance criteria. Alternatives must be developed and interim storage maintained for those identified.	New shipping containers must be designed and constructed or treatment and disposal options must be implemented.
9	Chapter III 3b(3)(f)	A	Methods selected for characterizing waste shall consider the radiation hazard and benefit gained. Methods or approaches used for characterizing hazardous constituents in waste shall provide data comparable to RCRA data quality requirements.				Past characterization data have been primarily based on process knowledge. Future characterization efforts may require more rigorous sampling and analysis.	Cost-benefit studies must be performed to determine methods for characterizing hazardous constituents in waste, with data results comparable to RCRA data quality requirements, while considering ALARA principles.	TRU waste must be characterized using the methodologies required by the studies.
10	Chapter III 3c(4)(b)	A	TRU waste that cannot be certified or otherwise approved for acceptance at WIPP may be disposed of by alternative methods. Alternative disposal methods shall be approved by the Deputy Assistant Sec. for Waste Management and shall comply with 40 CFR 191 and . . .				No alternatives for disposal of TRU waste except WIPP currently are approved or have much recognition.	TRU waste generators must identify waste that cannot meet the WIPP acceptance criteria, identify or develop alternative disposal methods, and develop written justifications for use of these methods.	Justifications for alternative disposal must be completed and approved by DOE and the EPA.
11	Chapter III 3c(4)(c)	A	TRU-contaminated waste and other waste forms that do not meet the def. of TRU waste, but are precluded from near-surface disposal because of PA limitations, shall be evaluated for disposal at alternative disposal sites throughout DOE . . .					Each DOE site having waste that does not meet the def. of TRU waste, which is precluded from near-surface disposal because of PA limitations, should evaluate the waste for disposal at alternative disposal sites, including WIPP.	The disposal options evaluation must be formalized and a request made to the chosen disposal site to allow disposal of the waste.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
12	Chapter IV 3b	A	The requirements of this chapter (LLW) also apply to waste buried prior to 9-26-88, unless the waste is being managed according to the CERCLA or the RCRA.			DOE LLW disposed of after 9/26/88 shall be managed on schedule ... to accomplish the following: 1)Protect public health and safety ... 2)Assure that external exposure ... does not exceed 25 mrem/yr ...	LLW waste buried before 9-26-88 will be subject to the requirements of this order, unlike DOE Order 5820.2A. This opens some very old sites to new requirements, including PAs, site monitoring, and record keeping.	DOE sites with waste buried before 9-26-88 must include that waste in PAs and monitoring plans required by this draft Order.	Future PAs and monitoring activities must include the older buried waste, and more recent waste.
13	Chapter IV 4c(5)(b)	A	The monitoring program shall be able to differentiate the effluents from each treatment, storage, disposal facility.		Chapter III 3k(4)	The monitoring program shall be able to ascertain whether or not effluents from each treatment, storage, or disposal facility or disposal site meet the requirements of applicable EH Orders.	Differentiating the source of an effluent among several nearby TSD facilities is not now possible at all DOE facilities. This promises to affect monitoring programs significantly.	All sites must evaluate their existing and planned environmental monitoring programs and determine if the program can differentiate the source of an environmental release for several nearby facilities.	Monitoring programs must be upgraded as required to be able to differentiate the source of an environmental release between several close facilities.
14	Chapter I 2d	B	Except as provided in this Order, non-DOE waste treatment, storage, or disposal facilities may be used by DOE to manage DOE waste, or commercial waste that may be the responsibility of DOE, if: {criteria are stated below}		N/A	N/A	Statement of general policy.	Impacts shown in the following items.	Impacts shown in the following items.
			Such facilities comply with applicable Federal, State, and local statutes, and regulations, and have the necessary permits, licenses, and approvals for the specific waste(s) involved.	Chapter VII 3c(4)(b)	N/A	N/A		Before using a non-DOE TSD facility, an assessment must be done to show that the facility complies with all Federal, state, and local statutes, regulations, and requirements for the specific waste type as defined in this Order.	DOE waste generators must periodically assess non-DOE TSD facilities used for compliance with all Federal, state, and local statutes, regulations, and requirements.
			The DOE Field Element responsible for the waste demonstrates on a case-by-case basis, that the use of non-DOE treatment, storage, or disposal facilities is in the best interest of DOE and does not conflict with commercial interests;		N/A	N/A		The waste generator must formally assess the compliance status of the non-DOE TSD facility and show that the use of a non-DOE facility is in the best interest of DOE.	The waste generator must periodically assess the compliance status of the non-DOE facility for ongoing TSD operations involving DOE waste and periodically assess that continued use of the non-DOE facilities is still in DOE's best interest.
			The non-DOE facilities are reviewed by DOE and determined to have adequate operational and regulatory records of performance.	Chapter VII 3c(4)(b)	N/A	N/A		Before using any non-DOE commercial TSD facility, the facility must be reviewed by DOE to find out if it has adequate operational and regulatory records of performance.	Before using any non-DOE commercial TSD facility, DOE must review the facility to find out if it has adequate operational and regulatory records of performance.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
			The non-DOE facilities managing DOE waste are reviewed annually by DOE to assess performance and evaluate compliance with applicable requirements and regulations.	Chapters II 3a(7); III 3a(7); IV 4a(7); V 3a(7)(b); VI 3a(7); VII 3a(6); IX 3a(7).	N/A	N/A		The DOE must plan and budget to perform annual audits on all facilities that it uses for TSD activities to assess performance and evaluate compliance with applicable requirements and regulations.	Annual audits of all non-DOE treatment, storage, and disposal facilities must be performed.
15	Chapter I 2e	B	Potential institutional and long-term liabilities that may result from the use of non-DOE treatment or disposal facilities are to be considered before the transportation of waste to the non-DOE facility.		N/A	N/A		Before transporting waste to any non-DOE commercial TSD facility, an evaluation must be done that determines that significant institutional and long-term liabilities do not exist.	Before transporting waste to any commercial TSD facility, an evaluation must be performed that determines that significant institutional and long-term liabilities do not exist.
16	Chapter I 4a(1)(b)	B	Each Field Element shall define and document organizational relationships and responsibilities related to the site waste management.		N/A	N/A		Each site must define and document organizational relationships and responsibilities related to waste management. These relationships include both inner DOE and commercial relationships and relationships with regulators.	The relationship document must be periodically updated.
17	Chapter I 4a(8)(a)	B	Field Elements audits and assessments are performed at least annually to determine waste management program compliance.	Chapters II 3a(7); III 3a(7); IV 4a(7); V 3a(7)(b); VI 3a(7); VII 3a(6); VIII 3a(6); IX 3a(7).	N/A	N/A	Formal, documented audits of the waste management program must be performed annually by each Field Element to determine compliance with requirements.	Each Field Element must budget and schedule annual audits and assessments to determine compliance with the waste management program.	The scheduled annual audits must be performed and documented. Program corrections must be made as required by the audit findings.
18	Chapter I 4b	B	The receiving facilities shall assess the generator organizations' waste certification program for compliance.		N/A	N/A		Each DOE receiving facility must budget for and make plans to assess the generator organizations' waste certification program for compliance periodically.	Each DOE receiving facility must periodically assess the generator organizations' waste certification program for compliance.
19	Chapter I 4b(4)(a)	B	Criteria for determining that a material does not need to be managed for its radioactive content shall be in accordance with Federal, State, and local requirements and DOE policies, directives, and notices.	Chapter V 3b(1)(b)	N/A	N/A	DOE has no written criteria that establish radiation levels for releasing material as nonradioactive from DOE facilities.	DOE-HQ must identify needed written guidance for acceptable levels for release of radioactive materials.	DOE-HQ must establish written guidance for acceptable radiation levels for materials released as nonradioactive.
20	Chapter I 4c(1)(a)	B	Selection criteria for establishing a treatment, storage, or disposal facility shall be developed.		N/A	N/A	Siting criteria for TSD facilities are becoming more difficult as more environmental concerns are raised. Therefore, establishing practical siting criteria for DOE TSD facilities will likely represent a significant effort.	Each DOE site must establish siting criteria before selecting the site for a TSD facility.	The siting criteria must be used to pick the site and to the selected site in the NEPA process.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
21	Chapter III 3b(3)(h)	B	For process knowledge to be traceable and adequate, technical controls shall be present to ensure that all contributors to the waste stream are known.				Technical controls may require process modification that may involve both engineering and hardware expense.	Adequate technical controls must be put in place to ensure that all characteristic contributors are known and controlled when process knowledge is used for waste characterization.	Technical controls must be properly operated to ensure that waste characterization data are correct.
22	Chapter III 3b(5)(c)	B	Waste packages shall not be considered certified until the site-specific certification program(s) and appropriate quality assurance elements are approved by the receiving treatment, storage, or disposal facility.				Requirements for waste certification to WIPP are continually changing. Waste certification for WIPP and interim storage facilities must be approved by the receiving TSD facility.	Waste certification programs must be in place and approved by each receiving TSD facility.	Certification programs must be set up.
23	Chapter IV 4a	B	An organizational element outside of the waste management organization shall ensure the proper implementation of the waste management program and shall implement these responsibilities in instances where a conflict of interest exists.				Section 4a(1)(c) of Chapter I requires the site contractors to develop and implement waste management programs and activities.	The contractor, with DOE operations office concurrence, must assign an organizational element outside the waste management organization to ensure proper carrying out of the waste management program.	The independent implementation oversight must be continued as long as the waste management program is in existence.
24	Chapter IV 4a(3)(a)3	B	Compliance with the dose objectives shall be demonstrated for a period of 10,000 years after facility closure.		Chapter III 3a(3)	Ensure that the committed effective dose equivalents received by individuals who may inadvertently intrude into the facility after the loss of active institutional control (100 years) will not exceed 100 mrem/yr for continuous exposure or 500 mrem for ...	Compliance with dose objectives is now required for a minimum of 10,000 years, rather than the previous institution control period of 100 years. This may affect closure plans and approaches and require more transport and dose modeling.	Closure plans must include provisions to meet dose objectives for a minimum of 10,000 years after closure.	Closure plans must include provisions to meet dose objectives for a minimum of 10,000 years after closure.
25	Chapter IV 4a(3)(b)8	B	The PA shall consider potential contributions from nearby radioactive waste management facilities under DOE's control including environmental restoration activities, and provide reasonable assurance that the combined effects will meet the performance objectives.				This requires the environmental effects of nearby facilities to be considered cumulatively with the PA of the LLW facility.	Preparers of PAs must take into account the effects of other nearby nuclear facilities. Thus, the performance allowances for the LLW facility are affected by the other facilities' PAs.	The LLW facility PA must be periodically updated to include the effects of new surrounding facilities or changing conditions in nearby facilities.
26	Chapter IV 4a(3)(b)13	B	The PA for an existing facility ... shall be reviewed by ... and submitted to and approved by ... within 1 year of the effective date of this Order or the facility shall discontinue accepting waste for disposal.				Requirement for currently operating facilities to obtain approval of their PA or cease operation within one year of issuance of this Order.	Existing LLW disposal facilities must submit and obtain approval of their PAs within one year of issuance of this Order or cease operations.	Operations that do not obtain approval of their PA must begin closure of their disposal facilities.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
27	Chapter IV 4a(3)(b)18	B	PAs in review at the time of issuance of this Order shall continue to be reviewed for approval against the reqmts. of DOE 5820.2A. That approval shall be subject to the condition that the PA be expeditiously revised to include any reqmts. of this Order.					Contractors must budget to revise any PA in progress when the order is issued to meet the requirements of this Order.	PAs, for new facilities at the time of issuance of this order, done under the guidelines of 5820.2A must be revised to meet the guidelines of 5820.2B.
28	Chapter IV 4a(7)(b)	B	Each facility receiving LLW shall establish an auditable receipt and inspection program to verify that the facility's waste acceptance criteria are met.				Not all facilities that receive LLW have an auditable receipt inspection program.	Facility receiving LLW shall establish an auditable receipt and inspection program (if one does not already exist) to verify that its waste acceptance criteria are met.	Requirements of the inspection program must be set up and performed.
29	Chapter IV 4b(3)(a)	B	Generator characterization programs shall be approved by the waste receiving facility before each program is implemented.		Chapter III 3e(3)	Generators of waste shall set up a LLW certification program to provide assurance that the waste acceptance criteria for any LLW treatment, storage, or disposal facility used by the generator are met.	Characterization programs are initial plans to characterize the waste before certification, for large volumes of waste. The revised order requires the receiving facility to approve these programs before implementation.	Waste receiving facilities must budget and schedule to review and approve generator waste characterization programs before the plan is implemented.	Waste receiving facilities must review and approve generator waste characterization programs before the plan is implemented.
30	Chapter IV 4b(3)(i)1	B	For process knowledge to be traceable and adequate, technical controls shall be present to ensure that all contributors to the waste stream are known.					Technical controls must be set up in processes using process knowledge for characterization to ensure that the contributors to the waste stream are known.	Operations must create and carry out procedures for operation of technical process controls.
31	Chapter IV 4c(4)(h)	B	Closure plans for existing facilities shall be developed within one year following initial approval of the site-specific PA, except where CERCLA or other activities may preclude final closure plans.					Closure plans for existing facilities must be developed within one year of approval of the final site-specific PA for existing facilities.	Closure plans must be carried out as approved.
32	Chapter VI 3a(1)(b)	B	Contractors shall perform an internal audit of their mixed waste management program, including assurance, at least annually.		N/A	N/A	Formal annual audits of the mixed waste management programs are not now done at all DOE sites.	Contractors must budget and schedule annual audits of their mixed waste management program.	Scheduled annual audits of the contractor mixed waste management programs must be performed.
33	Chapter VI 3b(6)(b)	B	Where the receiving facilities are non-DOE owned or operated, DOE shall assess the waste certification programs of the generator organizations at least annually.		N/A	N/A	This requirement to appraise the certification program of non-DOE facilities is flagged in 3b(5) above.	DOE must budget and schedule to have the waste certification programs of its contractor waste generators sending waste to non-DOE facilities, assessed and updated at least annually.	Annual assessments must be performed.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
34	Chapter VII 3b(1)(a)	B	Before hazardous waste generation, all DOE facilities are required to have a documented waste generation and preplanning program. This program shall be developed by the waste management organization and implemented by the waste generator organization.		N/A	N/A		Each DOE facility is required to have a documented waste generation and preplanning program, which is set up by the waste generator before producing hazardous waste. This plan must be implemented by the effective date of this order.	The preplanning program must be continually updated and implemented by the waste generator.
35	Chapter IX 3b	B	The receiving facilities shall assess the generator organizations' certification program for compliance.		N/A	N/A		Receiving facilities must budget and plan to review the certification programs of generator organizations periodically to ensure that they are adequate.	Periodic reviews of the generator certification programs must be performed.
36	Chapter I 2g(2)	C	Field elements may authorize contracts with non-DOE laboratories under which DOE agrees to accept all or a portion of the waste generated during sample analysis and the residual sample material.		N/A	N/A		The DOE Field Element must approve contracts with non-DOE laboratories that will return residual sample materials to DOE facilities.	The DOE Field Element must approve contracts with non-DOE laboratories that will return residual sample materials to DOE facilities.
37	Chapter I 2g(2)	C	The contracts must be determined to be advantageous to the government and clearly describe how the waste will be managed.		N/A	N/A		Waste generators must prepare written justification when contracting with non-DOE laboratories that will return residual sample materials to DOE facilities and show that it is clearly more cost effective and describe how the waste will be managed.	Waste generators must prepare written justification when contracting with non-DOE laboratories that will return residual sample materials to DOE facilities, show that it is clearly more cost effective, and describe how the waste will be managed.
38	Chapter I 4b(2)	C	All DOE waste receiving facilities shall develop and document waste acceptance criteria that will be used to evaluate waste received by the facility.		N/A	N/A	Most facilities have approved waste acceptance criteria, but a few may need to be formalized and properly approved.	Facilities not already having approved and documented waste acceptance criteria must develop a waste acceptance criteria document in accordance with this Order.	Waste acceptance criteria must be periodically updated.
39	Chapter I 4b(4)(a)	C	Waste generating organizations shall have a formal program for determining and documenting that a material does not need to be managed for its radioactive content.		N/A	N/A		All waste management operations shall establish a written program and implementing procedures for determining and documenting that a material does not need to be managed for its radioactive content.	Each waste management organization must carry out the written program and procedures for documenting and releasing nonradioactive material.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
40	Chapter I 4b(4)(d)	C	Unconditional release of material containing radioactivity, not otherwise addressed in DOE policies, directives, or notices, shall require EH-1 approval in accordance with DOE 5400.5.		N/A	N/A		Waste generators must establish procedural requirements for obtaining DOE EH-1 approval, in accordance with DOE 5400.5, for unconditional release of material containing radioactivity not otherwise addressed in DOE policies, directives, or notices.	The procedural requirements for unconditional release of radioactive material must be followed and EH-1 approval obtained for the release.
41	Chapter II 2d.	C	The interfaces between the Office of Civilian Radioactive Waste Management and other Offices are to take place through formal agreements.					Formal agreements need to be established between the Office of Civilian Radioactive Waste Management and other DOE offices concerning disposal of HLW.	Commitments of the formal agreements between the offices must be performed.
42	Chapter IV 2b	C	DOE LLW is to be disposed of on the site where it is generated, if practical. If onsite disposal capacity is not available or cannot be practically developed from a risk and cost basis, the waste may be disposed of at another DOE or non-DOE disposal facility . . .		Chapter III 2c	DOE LLW shall be disposed of on the site at which it is generated, if practical, or if on-site disposal capability is not available, at another DOE disposal facility.	The revised order allows disposal of LLW at non-DOE facilities, if stringent criteria are satisfied.	Sites not having LLW disposal capability should evaluate the cost-benefit of using non-DOE, commercial disposal sites vs. developing disposal capability on their own site or use of other DOE sites.	Some DOE sites may use commercial LLW disposal sites. This may result in DOE financial liability if these sites are not managed properly, though liability assessments made before use will reduce this potential.
43	Chapter IV 4a(3)(b)10	C	Results from the PA shall be used to develop technical environmental requirements.				Statement of general policy to use the PA to develop technical environmental requirements.	LLW disposal sites must develop technical environmental requirements based on the PA and document them in the PA.	Technical requirements must be followed for LLW disposal operations.
44	Chapter IV 4a(3)(b)11	C	Disposal operations and performance shall be reviewed against technical environmental requirements on an annual basis. The results of the review shall be documented and provided to EM-30.					LLW disposal sites must budget and schedule annual reviews of the disposal operations and performance against technical environmental requirements and submit the results to EM-30.	LLW disposal sites must review disposal operations and performance against technical environmental requirements annually and document the results of the review.
45	Chapter IV 4a(3)(b)12	C	The preliminary PA for a new disposal facility shall be approved by the Head of the responsible Field Element and submitted to the Deputy Asst. Sec. for Waste Management for information . . . before construction begins.				Preliminary PAs are already submitted for approval, only the timing and approval level have changed.	New LLW disposal facilities must schedule to obtain approval of the preliminary PA before beginning construction.	New LLW disposal facilities must schedule to obtain approval of the preliminary PA before beginning construction.
46	Chapter IV 4a(3)(b)12	C	The final version of the PA shall be submitted to, and concurred by the Deputy Assistant Secretary for Waste Management, and approved by the Assist. Sec. for Environmental Management (or designee) before operation of the disposal facility begins.				Requirement to obtain approval of the final PA at the DOE-HQ level before operating the facility.	Sites building new LLW disposal facilities must budget and schedule to prepare and obtain approval of a final PA before beginning facility operation.	The final PA for new disposal facilities must be written, submitted, and approved by DOE-HQ before beginning operations.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
47	Chapter IV 4b(1)(c)	C	LLW management organizations shall provide a 3-year waste projection on a biannual basis to each facility anticipated to receive the waste.		Chapter III 3g(2)	Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the offsite disposal facility to which the waste is to be shipped.	The forecast requirements now include a 3-year projection of wastes to be sent to receiving facilities, instead of the previously required annual forecast.	LLW facilities must provide a 3-year waste forecast biannually to each facility anticipated to receive the waste.	3-year forecasts must be done biannually.
48	Chapter IV 4c(2)(d)	C	Each LLW storage facility shall establish waste package inspection and corrective action programs to ensure that package integrity is maintained throughout the storage period.					Each LLW storage facility must establish waste package inspection and corrective action programs to ensure that package integrity is maintained throughout the storage period.	The requirements of the program must be set up and performed during daily operations.
49	Chapter IV 4c(4)(h)	C	Closure plans for new facilities shall be completed before receipt of waste.					Schedule and budget resources must be made available to complete closure plans for new facilities before acceptance of waste.	Closure plans must be completed as scheduled.
50	Chapter IV 4c(4)(h)	C	Closure plans shall be updated as required during the operational life of the facility.					None	Budget must be allocated to review and update closure plans at some reasonable frequency.
51	Chapter IV 4d(1)(b)	C	At a minimum the waste manifest shall contain information to show compliance with the LLW management facility's waste acceptance criteria.		Chapter III 3m(2)	Records shall be kept and accompany each waste package from generator through final disposal. (see also the item above)	This places information requirements on the LLW manifest, which as defined in this order, includes the bill of lading under which LLW is normally shipped.	The waste manifest system must be modified to satisfy the requirement that data showing compliance with the waste acceptance criteria will be carried by the waste manifest.	The required waste acceptance criteria compliance information must be routinely entered in the manifest documentation.
52	Chapter V 3a(8)	C	Security programs shall include adequate controls to prevent unauthorized access to mill tailings management facilities to ensure protection of the public and to prevent disruption of operations.		N/A	N/A	Security of the mill tailing site will be an inherent part of the site ESandH and closure plan strategy.	Mill tailings sites must review the security of the tailings site to ensure that unauthorized access to the mill tailings management facilities is not possible.	Security deficiencies found must be corrected.
53	Chapter V 3c(5)(b)	C	Mill tailings disposal facilities closed after the effective date of this order shall develop and implement long-term environmental monitoring programs that are consistent with DOE guidance in UMTRA-DOE/AL-350125.0001 . . .		N/A	N/A		Each mill tailings site to be closed after the issuance of this order must develop and carry out long-term environmental monitoring programs consistent with UMTRA-DOE/AL-350125.0001.	Long-term monitoring must be continued as called for in the monitoring program.
54	Chapter VII 3a(6)	C	A corrective action mechanism with a root-cause analysis shall be in place to address problems found during assessment or during normal operations.		N/A	N/A		If not already in place, each DOE site must put a root-cause analysis corrective action mechanism in place to address problems found during assessment or during normal operations.	The root cause analysis mechanism shall be used whenever a problem is discovered.

Categorized List of Impacts Resulting From Draft DOE Order 5820.2B

Impact No.	2B Reference	Category	2B Requirement	See Also	2A Reference	2A Requirement	Difference/Discussion	Initial Impact	Ongoing Impact
55	Chapter VII 3a(6)	C	Waste generators shall be subject to periodic audits by the site waste management organization.		N/A	N/A	Uncertain if all sites are presently performing this task routinely as required.	Periodic waste generator audits must be budgeted and scheduled by the site waste management organization.	Audits shall be periodically performed of the waste generators by the site waste management organization.
56	Chapter VII 3b(4)(a)	C	Each site waste management organization shall develop an inspection program to ensure that waste packaging meets the applicable requirements for transportation from accumulation or storage areas.		N/A	N/A	This is normally done at DOE sites, but it is not always done under a formal and documented inspection program.	Each site waste management organization must develop a documented inspection program to ensure that waste packaging meets the applicable requirements for shipment from accumulation or storage areas for each shipment.	The inspection program must be carried out at each site.
57	Chapter VII 3b(5)(b)5	C	The waste certification plan and associated quality assurance plans shall be implemented through specific written operational procedures.		N/A	N/A		Implementing procedures must be written to carry out the written waste certification program.	Procedures for the waste certification program must be carried out.
58	Chapter VII 3b(6)(a)	C	Site waste management organizations shall develop and implement an inspection program to ensure compliance with applicable requirements.		N/A	N/A		Each site waste management organization not already having one must develop an inspection program that assures compliance with applicable transportation regulations for all manifested hazardous waste.	The transportation inspection program must be carried out.
59	Chapter VII 3c(2)(d)	C	All DOE facilities subject to RCRA and TSCA permitting requirements shall establish written procedures to ensure compliance with established permit conditions and the timely submission of permit modifications or permit applications by the site waste management organization.		N/A	N/A	See the Order for specific requirements of the procedures.	All facilities subject to RCRA and TSCA regulations that do not already have them must establish written procedures to ensure compliance with established permit conditions and the timely submission of permit modifications or permit applications.	Facilities must implement and comply with established procedures.
60	Chapter VIII 3a(8)	C	Safety Analysis. All sanitary waste treatment, storage, and disposal facilities that do not meet the requirements for exemptions given in DOE 5481.1B shall have a safety analysis prepared and approved in accordance with DOE 5481.1B.		N/A	N/A		Each DOE sanitary waste TSD facility must determine if it meets exception requirements of DOE 5481.1B for preparing a safety analysis. Facilities not meeting exception requirements must prepare a safety analysis report for their operations.	Facilities that require safety analysis reports must periodically update the document and obtain necessary approvals of the changes.
61	Chapter VIII 3b(6)	C	Procedures shall be developed to ensure that all transportation requirements such as packaging, labeling, and manifests are identified and implemented for transferring the sanitary waste to the treatment, storage, or disposal facility.		N/A	N/A		Waste generators must carry out procedures identifying transportation requirements for transferring the sanitary waste to the treatment/disposal facility.	The procedures must be periodically updated.

Appendix B

Requirements That May Make Implementation of DOE Order 5820.2B Difficult

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
1	11	Organizations shall begin to implement this Order upon receipt. DOE Field Elements are to provide a plan to EM-1 within six months of receipt for full implementation, and, except as otherwise required in this Order, to fully implement the Order within two years.	Full implementation within two years is deemed very unlikely. The writing of (useful, realistic, and if desired, standardized) implementation plans may require additional guidance. Example: DOE-STD-3011-94, dated August 1994, <i>Guidance for Preparation of DOE 5480.22 (TSR) and DOE 5480.23 (SAR) Implementation Plans</i> .
2	I-1	<p>... that the use of non-DOE treatment, storage, or disposal facilities is in the best interest of DOE and does not conflict with commercial interests;</p> <p>The non-DOE facilities are reviewed by DOE and determined to have adequate operational and regulatory records of performance;</p> <p>The DOE waste is sufficiently characterized and verified to meet the non-DOE facilities' waste acceptance criteria;</p>	<p>Many subjectively evaluated parameters are involved in determining what "is in the best interest of DOE and does not conflict with commercial interests." Additional guidance may be appropriate.</p> <p>What constitutes "adequate?"</p> <p>What constitutes "sufficiently characterized and verified?"</p>
3	I-2	Potential institutional impacts and long-term liabilities that may result from the use of non-DOE treatment or disposal facilities ...	This could be very difficult to evaluate without extensive analysis. Additional guidance may be appropriate.
4	I-3	A waste management program is a systematic approach ...	The Order states what a waste management program is and goes on to list select aspects of such a program. A document detailing the specifics of how to establish a waste management program may be desirable, especially if standardization of the program throughout the DOE complex is sought.
5	I-5	Each waste generating organization preparing a design for a process modification or a new process shall incorporate elements into that design that minimize the generation of waste.	What level of effort should be spent to "incorporate elements?" Should cost/benefit studies be performed? If so, to what extent and to what criteria?
6	I-6	... or that a program is in place to find a solution to currently unresolved issues;	Who has to have a program in place - DOE HQ, DOE Field Element, the waste generator organization? What is a legitimate and acceptable program?

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
7	I-7	<p>Waste characterization data shall be recorded in a DOE waste management information system.</p> <p>Waste generating organizations shall have a formal program for determining and documenting that a material does not need to be managed for its radioactive content.</p>	<p>Is this one DOE nationwide waste management information system or a system at the local DOE level? Is one type of software to be used by everybody with standardized data fields, or can the local level use "any old thing" to create their system?</p> <p>Though the Order lists four specific attributes of the formal program, standardizing this formal program could be particularly desirable and pragmatic in this instance.</p>
8	I-8	Waste management organizations shall actively pursue methods to manage waste that has been characterized but where no approved treatment, storage, or disposal options currently exist.	The efforts of the various waste management organizations should be coordinated to avoid duplicate efforts (and therefore a waste of funds). Perhaps a specific and defined mechanism or process to "actively pursue methods" should be provided.
9	I-9	<p>... that do not satisfy the requirements of the Order (6430.1A) shall be considered for upgrade.</p> <p>... shall consider costs versus benefits.</p> <p>... shall include consideration of the requirements for facility closure.</p> <p>Where necessary, waste shall be stored in a segregated manner to avoid ...</p> <p>... shall be stored in a manner unlikely to alter its certification status.</p> <p>... treated by appropriate methods so that the waste can meet applicable ...</p> <p>Waste shall be disposed of by methods appropriate to achieve the site disposal requirements.</p>	<p>"Consider" can mean a one page document that is then stuck in a file cabinet or it can mean a multimillion dollar study that goes to DOE-HQ.</p> <p>Who decides and what are the criteria for deciding "where necessary?" What is a "segregated manner?"</p> <p>"Unlikely" is a very indefinite term and therefore requires subjective interpretation.</p> <p>Who decides and what are the criteria for determining "appropriate methods?" (The Waste Experimental Reduction Facility [an incineration facility] seemed like an "appropriate method," but nontechnical matters have kept it shut down.)</p>

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
10	II-3	Waste generation and waste management systems that significantly change the chemical or physical forms of the waste shall be assessed . . .	What constitutes "significantly change?"
11	II-8	Canisters of solidified high-level waste awaiting transport to a repository shall be stored in a suitable facility, segregated and . . .	What is a "suitable facility?" (In this case, a suitable facility could be defined as a facility evaluated in a SAR as acceptable for that purpose.)
12	II-10	This strategy shall use waste characterization data and be based upon potential dose to current and future populations.	Extensive guidance could and should be written on performing analysis of tank farms from which the (vast majority of) high-level waste has been removed "based upon potential dose to current and future populations."
13	III-6	Methods selected for characterizing waste shall consider the radiation hazard and benefit gained.	Some criteria in this regard would be very helpful. Many senior technical personnel do not believe that facilities such as the Waste Characterization Facility should be built based on a cost-benefit analysis. (Costs include not only money, but radiation exposure resulting from normal operations and potential accident scenarios.)
14	III-8	Operators of DOE facilities with retrievably stored, earth-covered transuranic waste shall establish plans to retrieve these wastes and place them in storage and shall be designed to provide reasonable assurance that the package will maintain its integrity for the expected period of time that the waste is in storage.	No content, format or approval authority for these plans is specified. What is to prevent the plans from containing unacceptable content (for example, we will retrieve our earth-covered transuranic waste in 30 years, if money is available)? Who decides and what are the criteria for determining "reasonable assurance?" (It could be argued that DOE does not have a good track record at determining "reasonable.") From DOE history, we can deduce that an "expected period of time" may easily double, triple, or quadruple.
15	III-9	Transuranic-contaminated waste and other waste forms that do not meet the definition of transuranic waste, but are precluded from near-surface disposal because of performance assessment limitations, shall be evaluated for disposal at alternative disposal sites throughout DOE, including the WIPP.	Guidance in performing a meaningful evaluation may be desirable.

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
16	IV-2	<p>Disposal facilities shall be designed, constructed, operated, and closed so that only surveillance, minimal monitoring, and minor custodial care are required after closure of the facility.</p> <p>Disposal facilities shall be cited, designed, operated, closed, and controlled after closure so that under the assumption of reasonable foreseeable natural phenomena, the projection by . . .</p>	<p>What is minimal monitoring and minor custodial care?</p> <p>Millions have been spent in recent years on discussions and analysis by DOE and its management and operations contractors about what are "reasonable foreseeable natural phenomena." A consensus has not been reached.</p>
17	IV-3	<p>Compliance with the dose objectives shall be demonstrated for a period of 10,000 years after facility closure.</p> <p>Reasonable assurance that low-level waste management facilities will meet their respective performance objectives shall be documented in a safety analysis, a performance assessment, or a combination of both . . .</p> <p>The performance assessment analysis shall identify the likely natural processes and events that may affect the disposal system, examine the effects of these processes and events on the performance of the disposal system, and estimate potential exposures for a period of 10,000 years with consideration of the associated uncertainties.</p>	<p>There are only about 6,000 years of recorded human history. It could be argued that the uncertainties associated with extrapolating anything to 10,000 years are so high as to make the prediction altogether worthless, much less prove compliance with dose objectives. A highly prescriptive methodology for performing the dose assessment may greatly simplify accomplishment of this stipulation, or more specifically greatly simplify DOE in obtaining whatever the desired objective of this analysis is.</p> <p>Asking a safety analysis or performance assessment to provide reasonable assurance introduces a highly subjective evaluation factor into those documents. The DOE system has not been particularly good at closing out subjective issues.</p> <p>A consensus has not been reached about what are "likely natural processes and events," especially over 10,000 years.</p>

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
18	IV-4	The performance assessment shall consider potential contributions from nearby radioactive waste management facilities under DOE's control including environmental restoration activities, and provide reasonable assurance that the combined effects meet the performance objectives.	The idea of and methods for evaluating combined effects routinely are relatively new to the DOE system. Additional guidance is likely to be necessary, especially when trying to evaluate combined accident or intruder scenarios. For example, should it be considered that one person farms on three different low-level waste facilities, or drills a well on five different facilities? Apportionment effectively means substantially lowering performance objectives, which in turn can mean greatly increased costs. ("Lowering performance objectives" means smaller allowable doses.)
19	IV-11	Wastes containing free liquid in excess of these limits shall be converted into a form that meets these limits and contains as little freestanding and noncorrosive, pH greater than 2 and less than 12.5, liquid as is reasonably achievable.	Who decides "reasonably achievable?" Someone might think it is O.K. to leave some highly acidic or caustic solution in a waste package because for him, it's just not "reasonably achievable" to remove it.
20	IV-12	For this analysis, only reasonable future use scenarios shall be considered, along with reasonably foreseeable natural events and processes.	There is ample reason to believe, based on historical precedent, that a great deal of effort will be spent in identifying "reasonable future use scenarios" and "reasonably foreseeable natural events and processes."
21	IV-13	... shall be determined by an intruder agriculture scenario, as appropriate for a specific site. ... shall be determined by an intruder-driller scenario, as appropriate for a specific site.	Development of these scenarios is a subjective effort, exacerbated by the site specific characteristics. Additional guidance may be appropriate.
22	IV-14	The plan shall demonstrate that there is reasonable assurance that the performance objectives in this chapter will be met by the recommended disposal alternative if the waste is disposed of in a DOE low-level waste disposal facility.	Getting waste to go where it is hoped to go is already nearly impossible (for example, TRU to WIPP, high-level to Yucca Mountain, low-level to a low-level disposal site, spent fuel to anywhere). Yet this "plan" is to provide "reasonable assurance" for this "nonroutine low-level waste" that is not suitable for "routine near-surface disposal."
23	IV-25	Disposal facility records shall be maintained that document the final disposition or location of the waste.	What level of accuracy is needed in identifying the location of the waste? (For example, is it satisfactory to say the waste is over in "Burial Ground A," or does a specific row and column number from "Burial Ground A" need to be provided?) Is each waste package to be tracked in this manner or can several packages from the same waste generator source be tracked as one entity?

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
24	V-3	Generator organizations should use a graded approach for implementing waste certification programs . . .	Though "graded approach" is defined in Appendix B of DOE Order 5820.2B, experience in recent years with implementing the expression has been altogether unwieldy and nonuniform.
25	VI-9	The monitoring program shall be capable of identifying facility anomalies, deterioration, operator errors, and discharges in time to correct them before human health or the environment is harmed.	The statement may be too general. One would have to evaluate facility anomalies, deterioration, operator errors, and discharges that could occur before monitoring capabilities need to actuate to be in time to correct them before human health or the environment is harmed. Since "harmed" is undefined, this task seems particularly difficult and subjective.
26	VIII-1	A graded approach shall be used in implementing a quality assurance program consistent with the requirements of Chapter I.	Though "graded approach" is defined in Appendix B of DOE Order 5820.2B, experience in recent years with implementing the expression has been altogether unwieldy and nonuniform.
27	IX-1	A spent nuclear fuel management program is a systematic approach to . . .	The Order states what a spent nuclear fuel management program is and goes on to list select aspects of such a program. A document detailing the specifics of how to establish such a program may be desirable, especially if standardization of the program throughout the DOE complex is sought.
28	IX-2	Management and storage of spent nuclear fuel at facilities operated by DOE shall be conducted in a manner that provides reasonable assurance that any member of the public will not receive a combined annual dose equivalent greater than 25 mrem (0.25 mSv) to the whole body and 75 mrem (0.75 mSv) to any critical organ per 40 CFR 191.03(b).	This performance objective may require extensive analysis to prove. While demonstration of this objective may not be too difficult for normal operations, providing "reasonable assurance" of meeting this objective during all postulated accident scenarios may be very difficult, if not impossible. If accident scenarios are to be considered as part of this performance objective, 25 mrem/yr represents a dose level criterion that may not to have any precedent in DOE (accident) safety analysis for public safety.

Requirements That May Make Implementation Difficult and/or Non-Uniform

	5480.2B Page No.	Stipulation from 5820.2B	Commentary
29	IX-9	Existing facilities shall be reviewed against the content of DOE Order 6430.1A and deficiencies if any shall be noted. Deficiencies that could result in hazards shall be evaluated, eliminated, controlled, or mitigated through appropriate upgrading or other actions in keeping with criteria identified in DOE Order 6430.1A.	In theory, some older DOE facilities could have hundreds of deficiencies if rigorously compared with the requirements in DOE Order 6430.1A. Guidance on the extent, severity, or nature of deficiencies that should be further considered for cost-benefit analysis may have to be provided. Then, if it is assumed that these pre-screened deficiencies would receive a case-by-case cost-benefit analysis as opposed to "blind upgrading," criteria would need to be developed to determine corrective action items based on the results of the cost-benefit studies. However, this entire discussion may be moot since the Order goes on to state that 6430.1A deficient facilities that have an approved Safety Analysis Report can "continue in operation until replacement facilities can be established."