October 15, 1993

RULEMAKING ISSUE
(Notation Vote)

SECY-93-285

FOR: The Commissioners

FROM: James M. Taylor, Executive Director for Operations

SUBJECT: PROPOSED RULEMAKING - NEW PART 76, "CERTIFICATION OF GASEOUS DIFFUSION PLANTS"

PURPOSE:

To obtain Commission approval of a proposed regulation for the certification of the two Department of Energy uranium enrichment gaseous diffusion plants.

BACKGROUND:

The Energy Policy Act of 1992 (the Act) which was signed into law on October 24, 1992, has the following provisions:

- The Act established a new government corporation, United States Enrichment Corporation (USEC), for the purpose of managing and operating the two gaseous diffusion plants (GDPs) located at Portsmouth, Ohio and Paducah, Kentucky, previously operated by the Department of Energy (DOE). (USEC and DOE have since executed a lease, and USEC assumed operation of the plants on July 1, 1993.)

- The Act required the NRC to promulgate final standards by October 1994 that will apply to the gaseous diffusion plants, to protect the public health and safety from radiological hazard and provide for the common defense and security (see Enclosure 1).

- The Act requires the NRC to establish an annual certification process under which the two GDPs will be certified for compliance with the standards.

CONTACT:
C. Nilsen, RES
492-3834

NOTE: TO BE MADE PUBLICLY AVAILABLE AT THE COMMISSION MEETING ON OCTOBER 26, 1993.

DISCUSSION:

In order to implement the provisions of the Energy Policy Act, the staff has developed a new Part 76, "Certification of Gaseous Diffusion Plants." This new part includes both procedural and technical requirements. The format for the new part is based on and derived mainly from 10 CFR Part 70, which contains the regulations used for the licensing of major fuel cycle facilities. In addition, all or selected sections of certain existing Commission regulations would be applied to the GDPs. These include Parts 19, 20, 21, 26, 51, 70, 71, 73, 74, and 95.

The Office of the General Counsel's analysis of procedural options for certification of the GDPs is provided in Enclosure 2. The staff considered several options with respect to how the Commission or the staff could issue the annual certification and how to provide for public input. The staff prefers Option 2, whereby the certification decision would be issued by the Director of NMSS, with an opportunity for the public or the Corporation to petition the Commission for review of the Director's decision. This preferred option is set forth in §§ 76.62 and 76.64 of the accompanying rule.

The staff plans to meet the requirement of the Act to publish the final rule before the statutory deadline of October 1994, to receive the first USEC certification application in early 1995, and to issue the first certificate in late 1995 and annually thereafter. Prior to issuance of the first certificate, DOE will retain regulatory oversight of the Corporation's operation of the plants.

The proposed rule would require the Corporation to submit to the NRC a safety assessment of the plants and their sites that evaluates the potential consequences from a reasonable spectrum of postulated accidents. The statement of considerations that accompanies the proposed rule, but not the rule itself, includes numerical objectives to be used by the staff in evaluating the potential consequences from releases. It is intended that the Corporation's assessment of postulated accidents would be evaluated against the following guidelines: (a) an intake of 10 mg of soluble uranium from a UF_6 release, or (b) a whole body dose of 0.25 Sv (25 rems) from an accident other than a UF_6 release.

The staff is proposing use of a 10 mg objective in consideration of the chemical toxicity of uranium. The use of 10 mg intake of uranium is an amount that can be considered as equivalent in risk to a .25 Sv (25 rems) acute radiation dose in that there is little risk of permanent damage. The limited use of chemical toxicity considerations in Part 76 is consistent with its practice in 10 CFR 20.1201(e), and prevents any potential regulatory gap in public protection against the toxic effects of soluble uranium.

In developing the safeguards requirements, the staff noted that under the Act the gaseous diffusion plants are to produce only low enriched uranium (special nuclear material of low strategic significance). Therefore, safeguards requirements for only that grade of material apply to production activities. Nonetheless, the staff has included safeguards regulations for formula quantities of strategic special nuclear material and special nuclear material of moderate strategic significance because the Corporation might elect to engage in nonproduction activities that involve those materials. The fitness for duty regulations would apply only to those activities that involve formula quantities.

Based on current discussions, it is expected DOE will permanently administer the access authorization program for USEC operations. Consequently, the proposed rule imposes no requirements for access authorization, such as those of Part 25. NRC will permanently administer the program for security facility approval, safeguarding of restricted data and hardware. The proposed rule would implement this by imposing the requirements of Part 95 at the time NRC assumes regulatory oversight of USEC.

The Commission was briefed on June 1, 1993, by the NRC staff, DOE, and USEC on the transition efforts to implement the Act. As a result of that briefing the Commission requested the following in an SRM dated June 15, 1993:

- When the staff submits the proposed rule dealing with regulation of gaseous diffusion plants, it should provide an estimate of the plants' level of compliance with the proposed rule.

The staff has reviewed the DOE submittal to the NRC dated July 1993, entitled "Safety Basis and Framework for DOE Oversight of the Gaseous Diffusion Plants," and did not identify any reason why the Corporation would not be able to comply with the proposed rule. Enclosure 3 includes a copy of this oversight document. Also, as part of the process for developing the rule, a letter dated June 10, 1993, was sent to Mr. James C. Hall, Asst. Manager for Enrichment Operations, DOE, seeking information in several areas related to the development of the rule, since these plants have been operating under DOE oversight for many years. The DOE response to this request for information was considered in drafting the proposed rule. The USEC also submitted unsolicited comments and an unsolicited full text of its own proposed regulation. This draft regulation was also reviewed by the staff in developing the proposed rule and is included as Appendix A to the Federal Register Notice.

Neither of the above responses indicated a significant compliance problem. However, both DOE and USEC commented that the proposed numerical objectives for accident evaluations (10mg and 0.25 Sv) were inappropriate, because they would constitute siting criteria for existing facilities, and because similar criteria are not included in existing regulations applied to other licensed fuel cycle facilities. The staff agrees that numerical objectives should not be included in the rule itself. However, the staff believes that it should state the objectives that it will use in evaluating potential accidents and

determining whether adequate supplementary protective measures must be developed and implemented. The 10 mg and 0.25 Sv criteria are recognized objectives for accident evaluations, based on exposure levels at which it is believed that clinically observable effects would begin to occur. Therefore, the Statement of Consideration discusses these numerical criteria, and requests public comment on their suitability and whether they should be included in the rule itself.

It should be noted that USEC requested a "backfit rule" similar to 10 CFR 50.109, to assure that any future new requirements are appropriately justified. The staff considered including such a requirement and concluded that it is too early to determine how backfit restrictions would affect the NRC's ability to regulate safety at the two gaseous diffusion plants. However, when the NRC has gained regulatory experience at these plants, it may be appropriate to reopen this issue. In addition, it should also be noted, that the existing regulations used for the licensing of fuel cycle facilities do not have backfit provisions.

- The staff should provide information on status of the training accreditation program for the gaseous diffusion plants.

Enclosure 3 includes a response to this question. The response, dated June 14, 1993, was to the Secretary from W. E. Fields, Vice President, Uranium Enrichment, Martin Marietta Energy Systems, Inc., to whom the request was directed at the briefing. In summary, the response indicates that a training program is being developed and implemented to comply with DOE order, "Accreditation of Performance - Based Training for Category A Reactors and Nuclear Facilities."

RESOURCES:

All resources needed for the development and implementation of this rule, apart from those for the Part 95 security requirements are included in the FY 1994-1998 Internal Program/Budget Review document. Resources for implementation of the Part 95 requirements are not estimated to exceed a few FTEs and modest contract support. These resources will be made available by reprogramming from other activities.

COORDINATION:

The Office of the General Counsel has reviewed this proposed rulemaking and has no legal objection.

RECOMMENDATIONS:

That the Commission:

1. Approve the Notice of Proposed Rulemaking for publication (Enclosure 4).

2. Certify that this rule, if promulgated, will not have a negative economic impact on a substantial number of small entities in order to satisfy requirements of the Regulatory Flexibility Act, 5 U.S.C. 605(b).

3. Note:
   a. The rulemaking would be published in the Federal Register for a 60-day public comment period;

   b. A draft regulatory analysis will be available in the Public Document Room (Enclosure 5);

   c. A draft environmental assessment and a finding of no significant impact have been prepared (Enclosure 6);

   d. The proposed rule does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1980 (U.S.C. 3501 et seq.) because it only affects a single operator (USEC) of the two gaseous diffusion plants.

   e. A public announcement will be issued (Enclosure 7);

   f. The appropriate Congressional Committees will be informed (Enclosure 8); and

   g. Copies of the Federal Register Notice of proposed rulemaking will be sent to all interested parties.

James M. Taylor
Executive Director
for Operations

Enclosures:
1. Act Requirements
2. Procedural Options
3. DOE and USEC Correspondence
4. Federal Register Notice
5. Draft Regulatory Analysis
6. Draft Environmental Assessment
7. Draft Public Announcement
8. Draft Congressional Letters

Commissioners' comments or consent should be provided directly to the Office of the Secretary by COB Monday, November 1, 1993.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT OCTOBER 25, 1993, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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ENCLOSURE 1

Act Requirements

diction, licenses and permits for the operation, decontamination, decommissioning, and reclamation of sites, structures and equipment.

(5) The term "non-affiliated" refers to a seller who does not control, and is not controlled by or under common control with, the buyer.

(6) The term "overfeed" means to use uranium in the enrichment process in excess of the amount required at the transactional tails assay.

(7) The term "utility regulatory authority" means any State agency or Federal agency that has ratemaking authority with respect to the sale of electric energy by any electric utility or independent power producer. For purposes of this paragraph, the terms "electric utility", "State agency", "Federal agency", and "ratemaking authority" have the respective meanings given such terms in section 3 of the Public Utility Regulatory Policies Act of 1978.

Subtitle C—Remedial Action at Inactive Processing Sites

SEC. 1031. URANIUM MILL TAILINGS RADIATION CONTROL ACT EXTENSION.

Section 112(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. 7922(a)) is amended by striking "1994" and inserting "1996".

TITLE XI—URANIUM ENRICHMENT HEALTH, SAFETY, AND ENVIRONMENT ISSUES

SEC. 1101. URANIUM ENRICHMENT HEALTH, SAFETY, AND ENVIRONMENT ISSUES.

The Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), as amended by title IX of this Act, is further amended by adding at the end of title II the following:

"CHAPTER 27—LICENSING AND REGULATION OF URANIUM ENRICHMENT FACILITIES

"SEC. 1701. GASEOUS DIFFUSION FACILITIES.

42 USC 2297f.

Regulations.

"(a) ISSUANCE OF STANDARDS.—Within 2 years after the date of the enactment of this title, the Nuclear Regulatory Commission shall establish by regulation such standards as are necessary to govern the gaseous diffusion uranium enrichment facilities of the Department in order to protect the public health and safety from radiological hazard and provide for the common defense and security. Regulations promulgated pursuant to this subsection shall, among other things, require that adequate safeguards (within the meaning of section 147) are in place.

"(b) ANNUAL REPORT.—

"(1) IN GENERAL.—The Nuclear Regulatory Commission, in consultation with the Department and the Environmental

Protection Agency, shall report at least annually to the Congress on the status of health, safety, and environmental conditions at the gaseous diffusion uranium enrichment facilities of the Department.

"(2) REQUIRED DETERMINATION.—Such report shall include a determination regarding whether the gaseous diffusion uranium enrichment facilities of the Department are in compliance with the standards established under subsection (a) and all applicable laws.

"(c) CERTIFICATION PROCESS.—

"(1) ESTABLISHMENT.—The Nuclear Regulatory Commission shall establish a certification process to ensure that the Corporation complies with standards established under subsection (a).

"(2) ANNUAL APPLICATION FOR CERTIFICATE OF COMPLIANCE.—The Corporation shall apply at least annually to the Nuclear Regulatory Commission for a certificate of compliance under paragraph (1). The Nuclear Regulatory Commission, in consultation with the Environmental Protection Agency, shall review any such application and any determination made under subsection (b)(2) shall be based on the results of any such review.

"(3) TREATMENT OF CERTIFICATE OF COMPLIANCE.—The requirement for a certificate of compliance under paragraph (1) shall be in lieu of any requirement for a license for any gaseous diffusion facility of the Department leased by the Corporation.

"(4) NRC REVIEW.—

"(A) IN GENERAL.—The Nuclear Regulatory Commission, in consultation with the Environmental Protection Agency, shall review the operations of the Corporation with respect to any gaseous diffusion uranium enrichment facilities of the Department leased by the Corporation to ensure that public health and safety are adequately protected.

"(B) ACCESS TO FACILITIES AND INFORMATION.—The Corporation and the Department shall cooperate fully with the Nuclear Regulatory Commission and the Environmental Protection Agency and shall provide the Nuclear Regulatory Commission and the Environmental Protection Agency with the ready access to the facilities, personnel, and information the Nuclear Regulatory Commission and the Environmental Protection Agency consider necessary to carry out their responsibilities under this subsection. A contractor operating a Corporation facility for the Corporation shall provide the Nuclear Regulatory Commission and the Environmental Protection Agency with ready access to the facilities, personnel, and information of the contractor as the Nuclear Regulatory Commission and the Environmental Protection Agency consider necessary to carry out their responsibilities under this subsection.

"(C) LIMITATION.—The Nuclear Regulatory Commission shall limit its finding under subsection (b)(2) to a determination of whether the facilities are in compliance with the standards established under subsection (a).

"(d) REQUIREMENT FOR OPERATION.—The gaseous diffusion uranium enrichment facilities of the Department may not be operated

by the Corporation unless the Nuclear Regulatory Commission, in consultation with the Environmental Protection Agency, makes a determination of compliance under subsection (b) or approves a plan prepared by the Department for achieving compliance required under subsection (b).

"SEC. 1702. LICENSING OF OTHER TECHNOLOGIES. 42 USC 2297f-1.

"(a) IN GENERAL.—Corporation facilities using alternative technologies for uranium enrichment, other than AVLIS, shall be licensed under sections 53 and 63.

"(b) COSTS FOR DECONTAMINATION AND DECOMMISSIONING.—The Corporation shall provide for the costs of decontamination and decommissioning of any Corporation facilities described in subsection (a) in accordance with the requirements of the amendments made by section 5 of the Solar, Wind, Waste, and Geothermal Power Production Act of 1990.

"SEC. 1703. REGULATION OF RESTRICTED DATA. 42 USC 2297f-2.

"The Corporation shall be subject to this Act with respect to the use of, or access to, Restricted Data to the same extent as any private corporation.

"CHAPTER 28—DECONTAMINATION AND DECOMMISSIONING

"SEC. 1801. URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND. 42 USC 2297g.

"(a) ESTABLISHMENT.—There is established in the Treasury of the United States an account to be known as the Uranium Enrichment Decontamination and Decommissioning Fund (referred to in this chapter as the 'Fund'). The Fund, and any amounts deposited in it, including any interest earned thereon, shall be available to the Secretary subject to appropriations for the exclusive purpose of carrying out this chapter.

"(b) ADMINISTRATION.—

"(1) IN GENERAL.—The Secretary of the Treasury shall hold the Fund and, after consultation with the Secretary, annually report to the Congress on the financial condition and operations of the Fund during the preceding fiscal year.

"(2) INVESTMENTS.—The Secretary of the Treasury shall invest amounts contained within the Fund in obligations of the United States—

"(A) having maturities determined by the Secretary of the Treasury to be appropriate for what the Department determines to be the needs of the Fund; and

"(B) bearing interest at rates determined to be appropriate by the Secretary of the Treasury, taking into consideration the current average market yield on outstanding marketable obligations of the United States with remaining periods to maturity comparable to these obligations.

"SEC. 1802. DEPOSITS. 42 USC 2297g-1.

"(a) AMOUNT.—The Fund shall consist of deposits in the amount of $480,000,000 per fiscal year (to be annually adjusted for inflation using the Consumer Price Index for all-urban consumers published by the Department of Labor) as provided in this section.

"(b) SOURCE.—Deposits described in subsection (a) shall be from the following sources:

ENCLOSURE 2

Procedural Options

PROCEDURAL OPTIONS

Certification Procedures

As directed by Section 1701(c) of the AEA, as amended, the proposed rule contains procedures for the annual certification process. Apart from requiring an annual application for a certificate of compliance and a determination by the Commission, in consultation with EPA, of compliance with the NRC's standards, the amendments do not specify procedures for the certification process. Congress did not make the hearing requirement set forth in Section 189 of the Atomic Energy Act applicable. Rather, the amendments provide that the requirement of a certificate of compliance is in lieu of any requirement for a license. Moreover, the Administrative Procedure Act, 5 U.S.C. 551 et seq., does not specify procedures for informal agency adjudication. Thus, there is no statutory requirement that there be public participation and the NRC has substantial discretion in fashioning fair and efficient procedures for the certification process.

The staff notes that the USEC's proposed Part 76 provides for the application of notice and comment procedures, in accordance with 10 CFR 2.804(a) and 2.805(a) in the Commission's decision-making on the initial application for a certificate of compliance, as well annual renewals and proposed compliance plans. See letter dated July 15, 1993, from George P. Rifakes, Executive Vice President, USEC, to Robert M. Bernero, Attachment B at 5. USEC also recommends the use of informal hearing procedures in these matters in accordance with 10 CFR 2.805(b) if the Commission determines that such hearings are necessary.

The principal procedural options, and principal advantages and disadvantages of such options, have been identified as follows:

Option 1. The Commission or the Director of NMSS arguably could simply review the application for a certificate or a plan for compliance and issue its determinations without a public comment period or further procedure for reconsideration of the Commission's decision.

DISCUSSION: This option would impose the minimal procedural burden on the NRC as it would essentially require only review of the application and an explanatory decision. However, this option has not been pursued seriously for a number of reasons. First, failure to provide an opportunity for public comment would likely undermine Congressional, public and judicial acceptance of the NRC's decision-making process and ultimate determinations. Second, failure to provide any procedure for public participation or any procedure for review or reconsideration of an initial decision could prevent a full airing and consideration within the agency of the issues that could be important to the agency's decision and could become the subject of an expansive court hearing on the agency's decisions. Third, the potential gravity of the decisions for the Corporation (no authorization to operate the facilities without a certificate of compliance or approved compliance plan) weighs

strongly in favor of providing a procedure for review or reconsideration of the initial decision.

Various expressions of statutory intent that the Corporation be treated in many respects as a private business enterprise suggest that the Corporation may be entitled to a "due process" right to a hearing of some type should the Commission propose to disapprove its application or compliance plan. This can also be viewed as a matter of fundamental fairness. Of course, this could be a written hearing in the form of procedures set forth in the options provided below.

Option 2. Following public notice and opportunity for public comment regarding the application (and a public meeting on an application if the Director of NMSS determines that a meeting is in the public interest), the Director of NMSS would determine whether to grant the certificate or approve a compliance plan. The Director would advise the Corporation in writing of any areas of noncompliance and offer the Corporation an opportunity to submit a proposed compliance plan before denial of all or part of an application for a certificate of compliance. The Corporation or a person whose interest may be affected and who submitted written comments or provided oral comments at a public meeting could file with the Commission a petition for review of the Director's decision within a specified period (15 days) after publication of notice of the Director's decision. The Corporation or any interested person as described above could file a written response to the petition within a specified period (10 days) after the filing of the petition. The Director's decision would become final unless the Commission granted the petition or otherwise acted within a specified period after the Director's decision.

DISCUSSION: This is the staff's preferred option as set forth in the accompanying rule at §§ 76.62-64. The staff believes that an initial decision by the Director of NMSS, with an opportunity to petition the Commission for review of the Director's decision, is more efficient than options involving an initial decision by the Commission.

Under the Energy Policy Act of 1992, review of an application and public comments, and decision-making, is to occur in a relatively short period on an annual basis. The Director of NMSS will have the principal responsibility for the initial review of an application whether the Director makes the initial decision or submits recommendations to the Commission for its decision. In addition, an initial decision by the Director of NMSS would avoid the Commission's devotion of resources to decision-making on a long list of compliance requirements and issues. The Commission's involvement could be limited to review and resolution of those issues that remain in dispute after the initial decision of the Director of NMSS. However, if the Commission determined that a more extensive form of hearing should be conducted, it could order that the Licensing Board conduct such a hearing under procedures which in the Commission's judgment would best serve the purpose of the hearing.

The potential advantages of an initial decision by the Commission, rather than the Director of NMSS, are discussed under Option 3, below.

Option 3. Following public notice and opportunity for public comment regarding the application (and a public meeting on an application if the Director of NMSS determines that a meeting is in the public interest), the Commission would determine, after receiving staff recommendations, whether to issue a certificate of compliance or approve a compliance plan. The Commission would advise the Corporation in writing of any areas of noncompliance and offer the Corporation an opportunity to submit a proposed compliance plan before denial of all or part of an application for a certificate of compliance. The Commission would publish notice of its decision in the Federal Register. The Corporation or any person whose interest may be affected and who filed written comments or provided oral comments at a public meeting could petition the Commission for reconsideration within a specified period (15 days). The Corporation or any interested person as described above could file a written response to the petition within a specified period (10 days) after the filing of the petition. The initial decision of the Commission would become effective and final unless the Commission granted the petition for reconsideration or otherwise acted within a specified period (60 days) after filing of a petition for reconsideration.

DISCUSSION: This option would focus all key decision-making in one place, the Commission, as opposed to options which would involve initial decision-making by the Director of NMSS. The importance of the decisions at issue supports a high level of involvement by the Commission in the decision-making. Centralizing decision-making at the Commission level could increase public acceptance of the decision-making process.

The Commission could also adopt this option as applicable for handling of the initial application on a certificate of compliance only, with Option 2 as the applicable procedure for decision-making in subsequent years. This would provide the advantages of the Commission's involvement in the initial decision on an application for a certificate of compliance during the first and presumably most significant consideration of such an application, and provide in subsequent years the advantages of an initial decision by the Director of NMSS. Of course, the Commission can also reconsider the issue after gaining the experience of processing the initial application for a certificate of compliance.

Option 4. Same as Option 2, except that the Director would issue a tentative decision after review of the application or compliance plan, and invite public comment on the tentative decision before making a final decision.

DISCUSSION: This option could enhance the quality of public comment. However, its practicality is doubtful in light of the relatively short time-period in which each application must be decided. Requiring staff to develop a tentative decision in a short period after receipt of the application, to publish that tentative decision and then review comments and finalize the staff decision before any potential for review of the decision would likely require unreasonable deadlines and an inordinate amount of staff resources.

Option 5. Same as Option 2, except that upon full or partial denial of an application for a certificate or disapproval of a plan for compliance, the Corporation could request a Subpart L hearing before an Atomic Safety and Licensing Board (ASLB). Intervention could be granted as to issues identified as grounds for denial. Provision would be made for an expedited hearing.

DISCUSSION: This option gives special attention to the possibility of a denial of a certificate of compliance and establishes the informal adjudicatory procedures of Subpart L as available for a challenge by the Corporation to such a decision. It has the advantage of making available a mechanism for adjudication of factual disputes underpinning such a denial without the necessity of the Commission's involvement unless there was a need for review of a Licensing Board decision.

On the other hand, it holds the promise of a more lengthy and complicated process than may be necessary. A prolonged hearing could make it difficult or impossible for the agency to make annual certification decisions. If the Commission believes that a hearing is necessary, it can do so on a case-by-case basis, establishing hearing procedures by order.

Option 6. Same as Options 2 through 5, except that a public hearing would be required during consideration of the application in lieu of notice and comment. This option would avoid the costs in time and resources that would be devoted to soliciting and reviewing written comments and to response to significant written comments.

However, the opportunity for an oral hearing does not supplant the utility to the public and efficiency for the agency of written presentation of evidence and argument by members of the public. Thus, an oral hearing or meeting is traditionally viewed as a possible supplement to an opportunity for the filing of written comments by the public in an informal agency process. Section 76.37 of the proposed rule already provides that a public meeting on the application will be held if the Director of NMSS determines that there is sufficient demand for such a meeting or that a public meeting is in the public interest.

ENCLOSURE 3

DOE - USEC Correspondence

MARTIN MARIETTA ENERGY SYSTEMS, INC.

URANIUM ENRICHMENT
702 S. ILLINOIS AVENUE
SUITE S-201
OAK RIDGE, TENNESSEE 37830

June 14, 1993

Mr. Samuel J. Chilk, Secretary
U. S. Nuclear Regulatory Commission
One Whiteflint North
11555 Rockville Pike
Rockville, Maryland 20852

Dear Mr. Chilk:

Status of Uranium Enrichment (UE) Training Program Accreditation

In response to Commissioner Remick's question at the public meeting on Tuesday, June 1, 1993, at 10 a.m., the following information regarding the status of compliance of the gaseous diffusion plants with the Department of Energy (DOE) Order 5480.18, *Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities*, is provided.

The following is a summary of the status of the Uranium Enrichment training accreditation programs:

1. Job Analyses have been conducted for 17 UE job classifications.

2. The UE Health Physics Technician training program has been developed and is being implemented. Lessons learned from implementation are being incorporated into program materials and teaching practices (Evaluation Phase).

3. The UE Uranium Material Handler (UMH) program, Instrumentation & Control (I&C) Mechanic program, and the Cascade Operator program are being developed.

We understand that the training related requirements applicable to the U. S. Enrichment Corporation during DOE oversight and prior to NRC assumption of regulatory jurisdiction is contained in the document, *Safety Basis and Framework for DOE Oversight of the Gaseous Diffusion Plants*. This document was forwarded in draft to Mr. Robert Benereo from Mr. James Hall on June 7, 1993.

Sincerely,

W. E. Fields, Vice President
Uranium Enrichment

LCD:rjm

File:LCD

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To Chuck Tilson	From Wesley Fields
Co.	Co.
Dept.	Phone # 615-576-8320
Fax # 301-443-7804	Fax #

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 10 1993

Mr. James C. Hall
Asst. Manager for Enrichment
Operations
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831-8731

Dear Mr. Hall:

We have now received your submittal which describes the safety basis and framework for DOE oversight of the two DOE gaseous diffusion uranium enrichment plants (GDPs) at Portsmouth, OH and Paducah, KY. We will be proceeding with our review of this document. As you know, the Energy Policy Act of 1992 requires the NRC staff to develop standards by October 1994 for the GDPs. In developing these standards, the NRC staff is considering, in addition to your submittal, the potential applicability of existing NRC regulations that apply to other nuclear fuel cycle facilities regulated by NRC. In particular, the staff is considering whether specific NRC regulations identified below incorporate design assumptions (or other similar information) appropriate for the GDPs, given that the plants have been operating for many years. Hence, we are seeking information on this subject from DOE, the Agency most familiar with the design and operation of these plants. I am requesting your reply by July 16, 1993, so the NRC staff will be able to provide a proposed rule to the Commission in a timeframe to meet the Congressional mandate of having standards in place by October 1994.

Specifically, the staff is considering using the framework of 10 CFR Part 70 in developing the GDP standards and incorporating other existing NRC regulations governing major materials and fuel cycle activities licensed by NRC. The incorporated regulations could include 10 CFR Parts 19, 20, 21, 26, 71, the material control and accountability aspects of Parts 70 and 74, and the physical security requirements for nonreactor facilities of Part 73. We are therefore requesting any additional information that may be useful to the NRC staff in judging the feasibility of applying these requirements to the GDPs, considering the current design basis and operating procedures of the plants.

With regard to possible quality assurance requirements, the staff may consider two alternative models oriented toward future operation and maintenance of the GDPs. One possible model is the implementation of a quality assurance program based on the criteria of Appendix B to 10 CFR Part 50, appropriately tailored for the GDPs; the second model could be the more prescriptive requirements found in 10 CFR Part 72. We, therefore, request information on the QA program that is the basis for the current operation and maintenance of the GDPs to provide a reference point for the staff in formulating the QA provisions of the new GDP standards.

As another element of the standards for the GDPs, the staff is contemplating requirements for an analysis of anticipated occurrences and accidents, and directs your attention to the general model incorporated in 10 CFR Part 50 with a focus on mechanistic accidents and events. Such an analysis might include an operational safety objective of ensuring that no individual at the site boundary will receive (1) a total radiation dose to the whole body in excess of 25 rem (total effective dose equivalent) or (2) an intake of greater than 10 milligrams of uranium in soluble form. (The 25 rem value is used for Part 50 licensees and is addressed in 10 CFR Part 100. The 10 mg of uranium is an amount which can be considered as equivalent in risk to a 25 rem acute radiation dose.) Such an accident analysis might also consider credible external events and natural phenomena but not a postulated nonmechanistic hypothetical source term. The staff is also considering a requirement to conduct an integrated safety assessment of operations and incorporation of other requirements related to criticality accidents modeled after 10 CFR Part 70. Further, the analysis of anticipated occurrences and credible accidents, as well as the integrated safety assessment, could provide the basis for the staff's establishing limiting conditions for operation of the facilities. Again, we are requesting information that may be helpful to the staff in analyzing an approach along the above-described lines.

We appreciated your taking the time to make a presentation on your enrichment program at the Nuclear Regulatory Commission (NRC) meeting on June 1, 1993. Such dialogue has been constructive in addressing many of the issues assosciated with the rulemaking process. It may be useful to schedule a staff-level meeting in the near-term to discuss any questions you have on the issues raised in this letter. If you wish to schedule a meeting or have specific questions, please call me or have your staff contact Walt Schwink (301-504-2381) or Cheryl Trottier (301-492-3640).

Sincerely,

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Department of Energy
Oak Ridge Field Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

July 19, 1993

Mr. Robert N. Bernero, Director
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Bernero:

This is in response to your letter of June 10, 1993, requesting information from the Department of Energy (DOE) relating to the regulatory approach that the Nuclear Regulatory Commission (NRC) is considering in the development of nuclear safety standards for both the Paducah and Portsmouth Gaseous Diffusion Plants (GDP's). In particular, you requested additional information regarding three specific issues. First, you requested information regarding the use of the framework of 10 CFR Part 70 as well as information regarding the incorporation of existing NRC regulations governing major materials and fuel cycle activities licensed by NRC in developing the GDP standards. As you stated, the purpose of this additional information is to assist NRC staff in determining the feasibility of applying these requirements to the GDP's. Secondly, you requested information regarding the current QA program at the GDP's to aid NRC staff in drafting the QA provisions of the new GDP standards. Lastly, you requested information regarding requirements for an analysis of anticipated occurrences and accidents, focusing on 10 CFR Part 50, information related to conducting an integrated safety assessment of operations, as well as information related to incorporation of other requirements associated with criticality accidents modeled after 10 CFR Part 70.

In response to the first request, we have reviewed the regulatory approach which your letter indicates that NRC staff is considering and have identified no aspects of the design or operation of the GDP's that would preclude the use of 10 CFR Part 70 as a general framework for the development of GDP standards. DOE order requirements under which the GDP's have been operating incorporate many of the same standards mandated by the regulations cited in your letter. However, in many cases, NRC requirements mandate that the documents used to demonstrate compliance (e.g., the emergency plan and radiation exposure records) employ a different format than that specified by DOE orders. In the interest of a smooth transition, it would be appropriate for the GDP standards to incorporate these requirements in a manner that permits interim use of compliance documents in the DOE-mandated format until there is adequate time for an orderly revision to bring them into NRC-mandated format. We also note

that the procedural aspects of 10 CFR Part 70 (e.g., those relating to the application for and approval of licenses) may require modification to enhance the efficacy of the process of certifying compliance with the GDP standards or approving a DOE plan to achieve compliance with the GDP standards.

Existing NRC regulations governing major materials and fuel cycle activities licensed by NRC, particularly 10 CFR Parts 19, 20, and 21, appear to be appropriate for incorporation into NRC standards for the GDP's without substantive change. However, we note that the provisions of 10 CFR Part 26 are currently applied only to nuclear power reactors and that similar requirements will be applied to licensees authorized to possess and transport formula quantities of strategic special nuclear material effective November 30, 1993. It is not clear that the hazard posed by the GDP's is sufficiently great or unique to justify the incorporation of this regulation into the GDP standards. The occurrence reporting requirements in 10 CFR 70.50, 70.52, and 73.71; the special nuclear material status and transfer reporting requirements in 10 CFR 70.53 and 10 CFR 70.54; and the environmental monitoring reporting requirements in 10 CFR 70.59 appear to be appropriate for incorporation into NRC standards for the GDP's without substantive change. The standards in 10 CFR Part 71 are already mandated by DOE orders; however, DOE orders permit use of DOE-certified containers. Therefore, in the interest of a smooth transition, it would be appropriate for the GDP standards to incorporate 10 CFR Part 71 in a manner that permits use of DOE-certified containers for a transition period until any that are not NRC-certified can either be certified or be replaced with NRC-certified containers.

The special nuclear material control and accountability requirements in 10 CFR 70.22(b) appear appropriate for incorporation into the GDP standards without substantial change. The special nuclear material control and accountability requirements in 10 CFR 74.33 appear appropriate for application, without substantial change, to the Paducah GDP which will produce, possess, and use only special nuclear material of low strategic significance. The Portsmouth GDP may also, under the Energy Policy Act of 1992 and the Regulatory Oversight Agreement that is part of the lease agreement, produce, possess, or use special nuclear material of moderate strategic significance. The special nuclear material control and accountability requirements in 10 CFR 70.57 and 70.58 could be applied to the Portsmouth GDP if special nuclear materials (SNM) of moderate strategic significance were produced, possessed, or used there. However, under such circumstances, it would appear to be more appropriate to develop enrichment plant-specific requirements analogous to those in 10 CFR 74.33 with appropriate performance standards for an enrichment plant that produces, possesses, or uses special nuclear material of moderate strategic significance.

The physical security requirements of 10 CFR 73.67 appear to be appropriate for application to the GDP's to protect against theft or diversion of special nuclear material of low or moderate strategic significance that will be

produced and used at the GDP's. In addition to this material, the Portsmouth GDP will possess formula quantities of strategic special nuclear material (SSNM) in the form of residual deposits within process equipment. These individual deposits that contain only small amounts of SSNM (generally 10s to 100s of grams) are widely distributed throughout large items of process equipment and cannot be accessed without opening the process equipment, which, when the equipment is in operation, would release uranium hexafluoride gas and would be detected by process controls. Furthermore, the SSNM deposits are intermingled with, and not readily separable from, residual deposits of low enriched uranium, which makes theft or diversion of the SSNM even more difficult. As this process equipment continues to be used for the processing of low enriched uranium, the proportion of low enriched uranium in the residual deposits is expected to increase, further reducing the risk of theft or diversion of SSNM. DOE considers the SSNM residual deposits in the GDP process equipment to be of much lower safeguards significance than any SSNM found elsewhere in the licensed fuel cycle, with the possible exception of low concentration SSNM bearing wastes, and believes that any GDP safeguards standards established for such material in NRC rulemaking should reflect its relatively low safeguards significance and the reduction of the associated safeguards risk as the production of SSNM of low or moderate strategic significance continues at the Portsmouth GDP.

There are also two additional safeguards issues that the Commission may wish to address. The first of these is radiological sabotage. The GDP's may have sufficient inventory of special nuclear material in dispersible, toxic form that requirements for protection against radiological sabotage are appropriate, though not addressed within the current 10 CFR 73 requirements. The second potential issue is the protection of information concerning the physical security program at the GDP's. This material is currently protected as classified information or unclassified controlled nuclear information (UCNI). It is not clear that this information may remain in these categories now that the responsibility for the operation of the GDP's has been transferred to the U.S. Enrichment Corporation (USEC) and they are no longer associated with DOE defense activities. Therefore, it may be necessary and appropriate to protect some of the information concerning the physical security program at the GDP's as safeguards information. However, this is not possible under the current 10 CFR 73.21 requirements because the GDP's are neither power reactors nor facilities that possess or use formula quantities of strategic special nuclear material or irradiated reactor fuel. You may wish to address these issues in your rulemaking for the GDP's.

Secondly, you requested information regarding the current QA program at the GDP's in order to "provide a reference point for the staff in formulating the QA provisions of the new GDP standards." DOE recommends that the new GDP standards incorporate a more performance oriented approach to QA similar to the requirements of DOE Order 5700.6C, Quality Assurance, rather than either a less prescriptive regulatory approach based upon 10 CFR 50 Appendix B or a more prescriptive approach similar to that employed in 10 CFR 72. This graded approach should incorporate the philosophy that recognizes the purpose of

quality assurance is to provide management controls that provide confidence that measures taken to achieve safe, reliable facility operations remain effective and that operations remain safe. The DOE Order 5700.6C approach, which is consistent with the requirements of ASME NQA-1, "Quality Assurance Program Requirements for Nuclear Facilities," and 10 CFR 50 Appendix B, is designed to ensure that: (1) senior management provides planning, organization, direction, control, and support to achieve quality; (2) the line organization achieves quality; and (3) overall performance is reviewed and evaluated using a rigorous assessment process. If this approach is employed, the general requirements of DOE 5700.6C will need to be appropriately tailored to GDP's. The implementation requirements in Section 3.6.2 of Safety Basis and Framework for DOE Oversight of the Gaseous Diffusion Plants describe the manner that DOE believes appropriate for tailoring the first nine criteria of DOE Order 5700.6C to the design and operation of the GDP's. The tenth and final criterion, independent assessment, which is currently addressed through the DOE oversight program, can be incorporated into a standard similar to 10 CFR 20.1101(c), but it needs to be recast to address the effectiveness of programs and activities important to nuclear safety. DOE also concludes that such an approach would provide the USEC with the requisite operational flexibility to modify its quality assurance program in ways and areas where the modifications enhance operational effectiveness without decreasing facility safety. Even if a more prescriptive or less performance oriented set of regulations were based upon current practices at the GDP's, this could create unnecessary regulatory impediments to such modifications.

DOE also believes that the development of the quality assurance provisions of the GDP standards needs to recognize that the GDP's were constructed in the 1950's--more than 10 years before the formulation of ASME NQA-1 and the 10 CFR 50 Appendix B criteria. Therefore, the records relating to the initial facility design bases and quality assurance program, although adequate for their time, would not meet the current requirements. The full reconstruction of the GDP design bases is neither cost-effective nor required to achieve an acceptable level of safety, in light of the nearly 40 years of safe operation that the GDP's have exhibited. Thus, the quality assurance provisions of the GDP standards should require that design controls be applied only to the extent necessary to ensure that the plants continue to meet the design-related commitments made in the application for certification.

Last, you requested information regarding requirements for an analysis of anticipated occurrences and accidents, focusing on 10 CFR 50, information related to conducting an integrated safety assessment of operations, as well as information relating to incorporation of other requirements associated with criticality accidents modeled after 10 CFR 70. In requesting information regarding the formulation of requirements for an analysis of anticipated occurrences and accidents with a focus on 10 CFR 50, you stated that "such an analysis might include an operational safety objective of ensuring that no individual at the site boundary will receive (1) a total radiation dose to the whole body in excess of 25 rem (total effective dose equivalent) or (2) an

intake of greater than 10 milligrams of uranium in soluble form." In addition, you stated that "such an accident analysis might also consider credible external events and natural phenomena but not a postulated nonmechanistic hypothetical source term."

We have identified no aspects of the design or operation of the GDP's that would preclude the development of an integrated safety assessment to establish operating limits for the GDP's. We believe that the current effort to upgrade the GDP safety analyses and bases will provide all the information that should be required for such an integrated safety assessment. This effort includes analyses of the possible consequences of anticipated occurrences and possible accidents, including those involving natural phenomena and external events. The safety analysis approach focuses on credible events and the development of mechanistic accident sequences and source terms. The program also takes advantage of site-specific studies performed to define the hazards associated with seismic activity, wind, flooding, and other natural phenomena. These site-specific studies, adjusted based upon the risk reduction associated with the limited remaining operational life of the GDP's, provide a basis for establishing the credible natural phenomena events to be considered in such an integrated safety assessment.

DOE does not consider it appropriate for the certification standards to impose siting criteria, such as the 10 CFR 100 dose criterion of 25 rem or a maximum intake of 10 milligrams of soluble uranium, upon facilities that were sited, designed, and constructed decades before these criteria were established. The adequate safety of the GDP's has been continually confirmed since their design through: (1) the initial Atomic Energy Commission reviews and approvals of GDP design and construction; (2) the performance, review, and approval of numerous additional safety analyses and assessments performed to support continued operations under increasingly stringent standards; and (3) nearly 40 years of safe operation--a longer history of safe operation than any licensed facility. The combination of this continuing confirmation of adequate safety and the commitments to specific protective measures and safety programs in the application for certification provide a much more convincing demonstration of safety than would the comparison of very uncertain accident analysis modeling results with siting criteria.

Therefore, we recommend that the certification process for the GDP's be oriented toward the identification and evaluation of significant safety issues rather than the demonstration of compliance with siting criteria. We further recommend that, should the certification process identify areas in which safety enhancements may be desirable, the candidate enhancements should be evaluated using a structured backfit evaluation process similar to that established by 10 CFR 50.109. In our judgment, the certification process for the GDP's should more nearly resemble a backfitting process for an existing facility rather than the licensing process for a facility not yet completely designed or constructed.

We appreciate the opportunity to provide information to NRC in support of this rulemaking process and will be pleased to schedule staff-level meetings to provide any further explanation or supplementary information related to this response. Should you wish to schedule a meeting or have specific questions, please call me or J. Dale Jackson (615-576-4749). We are pleased that you find this interagency dialogue constructive and look forward to continuing to work with you and your staff throughout the rulemaking process.

Sincerely,

James C. Hall
Assistant Manager for
Enriching Operations

USEC

United States
Enrichment Corporation

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Tel: 202 466-8900
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July 15, 1993

Mr. Robert M. Bernero
Director
Office of Nuclear Material Safety
and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Bernero:

As you know, the United States Enrichment Corporation (USEC) assumed operating responsibility for the two Department of Energy (DOE) gaseous diffusion uranium enrichment plants (GDP) at Portsmouth, Ohio, and Paducah, Kentucky, on July 1, 1993, pursuant to the terms of the Lease Agreement between DOE and USEC and the statutory requirements imposed by the Energy Policy Act of 1992. We are in receipt of a copy of your June 10 letter to Mr. James Hall of DOE outlining the Nuclear Regulatory Commission (NRC) staff's proposed approach to the development of nuclear safety, safeguards, and security standards for NRC regulation of the GDPs. Since USEC has operating responsibility for the GDPs and a direct interest in the standards being developed by NRC, USEC has prepared this response to your June 10, 1993, letter. 1/

In order to provide meaningful recommendations to assist you in your standards development efforts, USEC personnel (assisted by Martin Marietta Utility Services (MMUS) personnel who operate the GDPs and are now under contract to USEC) have performed a review of the proposals contained in the June 10 letter. In particular, we have reviewed the necessity for and feasibility of utilizing the various NRC regulations referenced in your letter as the basis for NRC's regulatory standards as well as your proposals related to quality assurance (QA) requirements, accident analyses, and integrated safety assessments (ISA). The assistance provided by MMUS enabled us to employ site personnel in the review effort who are the most familiar with details of the operation of the GDPs.

Your June 10 letter states that NRC is "considering...the potential applicability of existing NRC regulations that apply to other nuclear fuel cycle facilities regulated by NRC"

1/ As you are aware, the requirements applicable to the GDPs with respect to nuclear safety, safeguards, and security during the interim period of DOE oversight and prior to NRC assumption of regulatory jurisdiction are set forth in the DOE Safety Basis and Framework for DOE Oversight of the GDPs, dated July 1, 1993 (Safety Basis).

and proposes, among other things, use of the "framework of 10 CFR Part 70" in conjunction with other existing NRC regulations in developing NRC's standards. Clearly, this acknowledges the similarity between the activities and operations of the GDPs, and activities and operations at operating NRC-licensed fuel cycle facilities, and indicates that the requirements to be applied to the GDPs can appropriately be drawn from the regulations applicable to such licensees.

USEC generally concurs and believes that the standards to be established governing operation of the GDPs should not impose greater regulatory requirements on the GDPs than are currently being imposed on operating NRC fuel cycle licensees. As a general matter, new requirements that are untested in the regulation of fuel cycle licensees and which, to date, have not been deemed necessary to assure such licensees' activities are adequately protective of public health and safety, should not be applied to USEC. A good example of such a requirement is the concept to conduct an ISA as a condition of certification. To date, NRC has not yet developed either the form or content of such an ISA. While we do not favor imposition of such new requirements on the GDPs as part of the initial NRC certification, we intend to actively participate in industry efforts related to the NRC's generic initiatives for fuel cycle licensees and to assure that the GDPs benefit, as appropriate, from the future safety improvements in this area planned by NRC.

Furthermore, the standards ultimately adopted by NRC should recognize that the GDPs were sited, designed, and constructed about 40 years ago and have been operating safely for over 35 years. Thus, the NRC standards should focus primarily on operational safety and not on matters traditionally associated with design or siting. For example, the numerical release limits discussed in the June 10 letter in the context of accident analyses were developed for, and used in, the siting and design of new facilities and should not be applied to the GDPs.

In addition, in developing the standards, it is important to bear in mind that USEC will operate the GDPs to enrich uranium to concentrations of less than 10 percent U^{235}. This operational limitation renders a number of existing NRC regulations inapplicable, particularly those relating to special nuclear material of greater than "low strategic significance."

The results of USEC's reviews are summarized in the attachments to this letter. Attachment A provides a cross-reference table between the current Part 70 and a proposed Part 76 to be applied to the GDPs. Attachment B summarizes the most significant changes proposed to Part 70 incorporated in our proposed Part 76. Attachment C provides the full text of our proposed Part 76.

As reflected in the attachments, by and large, we found that most of the regulations referenced in your June 10 letter (including 10 CFR Parts 19, 20, 21, 71, 73 and 74) generally would be suitable and appropriate for inclusion in NRC's standards so long as appropriate technical or conforming changes are made to accommodate, among other things, USEC's future status as an applicant for and holder of a "certificate of compliance," rather than as an applicant or holder of a traditional NRC "license." However, we recommend the following principal changes:

- The June 10 letter references 10 CFR Part 26 governing "Fitness for Duty Programs." Part 26 applies only to operators of nuclear power reactors and other licensees authorized to possess or transport Category I Material within the meaning of 10 CFR Part 70. While some Category I Material presently exists at the Portsmouth facility, responsibility for that material will be retained by DOE. Thus, application of Part 26 to the GDPs would treat USEC differently than NRC licensed fuel cycle facilities possessing radioactive materials of the type possessed by USEC. For those reasons, we do not believe it is necessary or appropriate to include 10 CFR Part 26 in the NRC's standards.

- The June 10 letter also identifies two "alternative models" for QA requirements: a program based on 10 CFR Part 50 Appendix B "appropriately tailored for the GDPs..." and the "more prescriptive requirements found in 10 CFR Part 72." Since a comprehensive and effective QA program already exists at the GDPs (as referenced in the July 1 Safety Basis document at Pages 3-10 to 3-13), USEC believes that it would be inappropriate to incorporate additional QA requirements into the initial NRC standards unless and until such requirements are imposed on other fuel cycle licensees. To the best of our knowledge, 10 CFR Part 50, Appendix B is not applied to existing fuel cycle licensees. Accordingly, we recommend that, at the present time, the proposed standards simply require an identification of the QA program that USEC will use for plant operation. USEC proposes to commit to continuing to implement that program on an agreed-upon schedule.

- Your letter states that NRC is "contemplating requirements for an analysis of anticipated occurrences and accidents" and refers to the "general model incorporated in 10 CFR Part 50...." It also identifies several proposed "operational safety objectives" in the form of numerical release limits. USEC proposes to provide updated versions of the analyses contained in the final safety analysis reports (FSAR) previously prepared for the GDPs to reflect facility and

procedure changes since the FSARs were originally prepared. These would be used to establish operational limits, support emergency plan implementation, and define the envelope against which proposed plant modifications would be evaluated. However, USEC does not believe it is necessary or appropriate to require operational safety objectives, in the form of numerical release limits, that have not been applied to existing NRC-licensed fuel cycle facilities. We concur with the staff that accident analyses need not and should not include consideration of a "postulated nonmechanistic hypothetical source term."

- The June 10 letter states that the staff is considering a requirement for an "integrated safety assessment of operations...." USEC believes it is unnecessary and premature to require an ISA as part of the NRC standards. NRC staff currently are considering incorporating an ISA requirement into a forthcoming revision of Part 70, has retained a contractor to develop detailed regulatory guidance, and is developing a chapter in a new Standard Review Plan that will describe what constitutes an acceptable ISA. However, as discussed at the NRC meeting on May 18, these efforts are at an early stage, there will be significant interchange between the NRC and Part 70 licensees (including at least two workshops) while these efforts are being undertaken, and even if current optimistic schedules are maintained, the resulting products are not expected to be available until late summer of 1994. (See Enclosure 2 to SECY-93-128) Furthermore, considering the wide variety of activities and operating conditions associated with various types of fuel cycle licensees, it is unclear to what extent such documents will be universally relevant to all such licensees, and in particular, whether they will provide any useful guidance for analyzing the GDPs. Accordingly, NRC should not impose an ISA requirement on USEC unless and until it has done so for fuel cycle licensees and has concluded that it is necessary to impose a similar requirement on the GDPs.

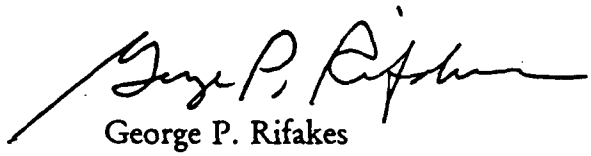
In addition to these recommended departures from the general approach set forth in your June 10 letter, USEC also proposes two significant additions to NRC's regulatory standards. First, we believe that it would be appropriate and beneficial to include a provision in the NRC standards similar to 10 CFR § 50.59 that would enable USEC to undertake certain changes in the GDP facilities and procedures or to conduct tests or experiments without prior NRC approval.

Second, it also would be appropriate and beneficial to include a regulation in the NRC standard similar to 10 CFR § 50.109 "Backfitting." Given the long history of safe operation

of the GDPs, once NRC establishes the standards for certification, it should utilize a procedure similar to Section 50.109 to assure that new regulatory requirements or staff interpretations creating backfits are appropriately justified.

We appreciate the opportunity to provide these general comments concerning the overall approach to be used in connection with the development of NRC's regulatory standards and hope that they will be useful. We look forward to active participation in the upcoming rulemaking proceeding. If you or your staff have any questions about any of these issues, please call John Adams at 202/835-7614.

Sincerely,



George P. Rifakes
Executive Vice President

3 Attachments

cc:
James C. Hall, DOE-OR

Attachment A

Cross-Reference Table

This table cross references the current version of 10 CFR 70 and the USEC's recommendations for a proposed 10 CFR 76. The first column lists the various sections in 10 CFR 70, and provides a brief summary of the contents of each section. Column two gives the corresponding number in the proposed 10 CFR 76. These sections do not always correspond on a one-to-one basis since some sections from 10 CFR 70 were deleted and several new sections were added. Column three provides some comments, mainly indicating the type of modification to each adopted section (i.e., "minor modification," "modification," or "substantial modification"), and the reason for its deletion or addition. Minor modifications generally involve grammar or semantics and include such text changes as deleting "the licensee" and adding "the Corporation." Changes denoted "modifications" typically involve either making the very general requirements of part 70 more specific or adding or deleting sections. A section is usually deleted because it covers requirements that are (1) not applicable to a government corporation, (2) specifically addressed in the Energy Policy Act of 1992 (EPA), (3) based on functions associated with higher-enriched materials, or (4) because the existing part 70 remains applicable. Substantial modifications are individually explained in Attachment B.

CROSS REFERENCE
10 CFR 70 VERSUS 10 CFR 76

10 CFR 70	10 CFR 76	COMMENTS
GENERAL PROVISIONS		
70.1(a) PURPOSE States purpose	76.1(a)	Minor modification
70.1(b) References AEA authority	76.1(b)	Minor modification
70.1(c) Cites other applicable regulations	76.1(c)	Substantial modification. Adds reference to other applicable regulations. Deletes references to part 72 ISFSI/HLW requirements.
	76.1(d)	Substantial modification. Adds section referencing other regulations that are applicable only to the extent they are referenced within part 76.
70.2 SCOPE States scope	76.2	Substantial modification. Applies part 76 to certification of GDP operation, not licensing of materials.
70.3 LICENSE REQUIREMENTS Requires license to use special nuclear material (SNM)	76.3	Minor modification
70.4 DEFINITIONS Definitions	76.4	Adds, modifies, or deletes various definitions. E.g., definitions added for "certificate of compliance" and "USEC." Definition of "decommissioning" is modified. Definition of "license" is deleted.
70.5(a) COMMUNICATIONS Provides addresses for communications with NRC	76.5(a)	No change
70.5(b) Delegates limited licensing authority to Regions	deleted.	
70.6 INTERPRETATIONS Requires binding interpretations of regulations to be in writing from General Counsel	76.6	No change

10 CFR 70	10 CFR 76	COMMENTS
70.7(a) EMPLOYEE PROTECTION Implements employee protection provisions of the Energy Reorganization Act	76.7(a)	Modifies 70.7 to be consistent with § 211 of the Energy Reorganization Act of 1974, as amended.
70.7(b) Same as 70.7(a)	76.7(b)	Same as 76.7(a)
70.7(c) Same as 70.7(a)	76.7(c)	Same as 76.7(a)
70.7(d) Same as 70.7(a)	76.7(d)	Same as 76.7(a)
70.7(e) Same as 70.7(a)	76.7(e)	Same as 76.7(a)
70.7(f) Same as 70.7(a)	76.7(f)	Same as 76.7(a)
70.8(a) INFORMATION COLLECTION REQUIREMENTS Cites Paperwork Reduction Act	deleted	Requires NRC action to identify requirements
70.8(b) Cites several sections within part 70	deleted	Requires NRC action to identify requirements
70.8(c) Cites 6 specific sections within part 70 that require completion of various forms.	deleted	Requires NRC action to identify requirements
70.9(a) COMPLETENESS AND ACCURACY OF INFORMATION Requirement to provide accurate information	76.9(a)	Minor modification
70.9(b) Reporting information having significant implications for public safety or common defense and security	76.9(b)	Minor modification
70.10(a) DELIBERATE MISCONDUCT Prohibits deliberate misconduct	76.10(a)	Minor modification

10 CFR 70	10 CFR 76	COMMENTS
70.10(b) Describes penalties	76.10(b)	Minor modification
70.10(c) Defines deliberate misconduct	76.10(c)	Minor modification
EXEMPTIONS		
70.11 UNDER DOE/NRC CONTRACTS Explains terms of exemptions for prime contractors of DOE	76.11	Minor modification
70.11 (a) Performance of work for the Department (including transportation) for (b) government on R&D on weapons or (c) operation of reactors or other nuclear devices in government vehicles or vessels	76.11(a) 76.11(b)	Minor modification Modification—separated requirements for clarity
70.12 CARRIERS Exemption for carriers	deleted	Covered by current section 70.12.
70.13 DOD Use directed by President	76.13	Minor modification
70.13(a) AIRCRAFT Foreign military aircraft	deleted	Not applicable to GDPs
70.14(a) SPECIFIC EXEMPTIONS Commission authority to grant specific exemptions	76.14(a)	Minor modification
70.14(b) Reserved	deleted	
	76.14(b)	Modified to exempt DOE as owner/lessor
70.14(c) DOE exempt to the extent subject to Part 60 (Disposal of high-level waste (HLW) in geological repositories)	deleted	HLW requirements not applicable to GDPs

10 CFR 70	10 CFR 76	COMMENTS
70.14(d) Licensees exempt to the extent subject to Part 61 (Land disposal of radioactive waste)	deleted	LLW requirements not applicable to GDPs
GENERAL LICENSES		
70.18 TYPES OF LICENSES Defines general and specific licenses	76.18	Modified to delete references to licenses and to address certification.
70.19(a) GENERAL LICENSE FOR CALIBRATION/ REFERENCE SOURCES Lists persons applicable for general license for calibration or reference sources	deleted	Under section 1701 of the Atomic Energy Act of 1954, as amended, the certificate of compliance is in lieu of any requirement for a license.
70.19(b) Basis for general license in 70.19(a)	deleted	See 76.19(a)
70.19(c) Cites part 70 requirements for 70.19(a)	deleted	See 76.19(a)
70.19(d) Excludes calibration or reference sources w/Pu	deleted	See 76.19(a)
70.20 GENERAL LICENSE TO OWN SNM Defines to "own" is not to "use"	deleted	See 76.19(a)
70.20a(a) GENERAL LICENSE TO POSSESS AND TRANSPORT SNM Refers to possession of formula SNM and irradiated fuel	deleted	See 76.19(a)
70.20a(b) Excludes activities under 30-35, 39, 40, 50, 72, 110	deleted	See 76.19(a)
70.20a(c) Limits duties of licensee to physical protection	deleted	See 76.19(a)

10 CFR 70	10 CFR 76	COMMENTS
70.20a(d) Requires a transportation security plan	deleted	See 76.19(a)
70.20a(e) Get certification from shipper of physical protection	deleted	See 76.19(a)
70.20b(a) GENERAL LICENSE FOR TRANSIENT SHIPMENT Authorizes transient shipment of formula, moderate, and low SNM		Covered by current section 70.20b.
70.20b(b) Exemption from Parts 19 and 20 and portions of Part 70		See 70.20b(a)
70.20b(c) Requires a physical protection plan for formula SNM per 73.20(a), 73.20(b), 73.25, and 73.71(b)	deleted	See 70.20b(a)
70.20b(d) Requires a physical protection plan for moderate and low SNM per 73.67 and 73.71(b)	deleted	See 70.20b(a)
70.20b(e) Requires a physical protection plan for IF per 73.37 and 73.71(b)	deleted	See 70.20b(a)
70.20b(f) Notification requirements for transient shipments	deleted	See 70.20b(a)
70.20b(g) Reporting requirements for unscheduled stops at US ports	deleted	See 70.20b(a)

10 CFR 70	10 CFR 76	COMMENTS
LICENSE APPLICATIONS		
70.21(a) FILING Describes requirements for filing for: (1) Pu process and fuel fabrication plant (25 copies) and (2) other facilities (6 copies) (3) Use of previous applications and statements or reports	76.21(a)	Minor modification
70.21(b) License applicants can request authorization for other defined activities	76.21(b)	Minor modification
70.21(c) Requires separation of Restricted Data from unclassified information	76.21(c)	Minor modification
70.21(d) Requires applications to be made available to the public	76.21(d)	Minor modification
70.21(e) Application shall be accompanied by fee per 170	76.21(e)	Minor modification
70.21(f) Requirements for ER if Commission finds significant impact to the quality of the environment per subpart A of part 51 prior to start of construction	deleted	Refers to ER prior to construction. See also 76.22(i).
70.21(g) Requires information per 75.11 (IAEA) upon written request by Commission	76.21(f)	Minor modification

10 CFR 70	10 CFR 76	COMMENTS
70.22(a) CONTENTS OF APPLICATION Provides general requirements for contents of an application (1) Name, address, etc. (2) Activities at plant (3) Period of time for license (4) Materials used in plant (5) Reserved (6) Technical qualifications (7) Equipment to protect health (8) Procedure to protect health (avoid criticalities, monitoring, emergencies) (9) Decommissioning plan	76.22(a) (1)=(1) (2)=(2) (3) deleted (4)=(3) (5) deleted (6)=(4) (7)=(5) (8)=(6) (9) deleted	Modified to correspond with the provisions of the Energy Policy Act of 1992 regarding term of certificate and decommissioning
70.22(b) Provides requirements for an MC&A for SNM per 70.58 [Strategic (S/SNM) or MS/SNM], 74.31 (low SS), 74.33 (Enrichment Facility), or 74.51 (S/SNM) as applicable	76.22(b)	Minor modification (deleted reference to SNM of MS/SNM and S/SNM)
70.22(c) Reserved	deleted	
70.22(d) Commission can request more information	76.22(c)	Minor modification
70.22(e) Requires complete and accurate disclosure	76.22(d)	Minor modification
70.22(f) Requires a description of plant site and safety assessment including natural phenomena and a quality assurance program	76.22(e)	Substantial modification

10 CFR 70	10 CFR 76	COMMENTS
70.22(g) (1) Requires a physical security plan for SNM in transit of MS/SNM and low SS SNM per 73.1(b)(2) as given by 73.20, 73.25, 73.26, 73.27, and 73.67(a), (e), and (g) for low SS SNM and 73.70(g) (2) Requires safeguards contingency plan for FQ/SNM (3) Requires retention of plans for 3 years	76.22(f) (1)=(1) (2) deleted (3)=(2)	Minor modification (deleted reference to MS/SNM and S/SNM)
70.22(h) (1) Requires a physical security plan for 20% or more enriched or Pu/U233/U235 combined (2) Requires retention of plan for 3 years	deleted	Refers to 20% and higher enrichment

10 CFR 70	10 CFR 76	COMMENTS
70.22(i)	76.22(g)	
(1) For plants requiring criticality alarms (e.g. with critical mass);	(1) deleted	Modification to delete option of demonstrating need for emergency plan (EP). An EP will be provided.
(i) Requires showing of limit to maximum dose from release of radioactive material or soluble U or	(i) deleted	Not required if EP is provided
(ii) An EP (13 items) to respond to such a release	(ii)=(1)	
(2) Allowable factors to show limits on maximum dose	(2) deleted	Not required if EP is provided.
(3) EPs shall contain: (i) Facility description (ii) Types of accidents (iii) Classification of accidents (iv) Detection of accidents (v) Mitigation of consequences (vi) Assessment of releases (vii) Responsibilities (viii) Notification and coordination (ix) Information to be communicated (x) Training (xi) Safe shutdown (xii) Exercises (xiii) Hazardous chemicals right-to-know	(3)=(2)	
(4) Must allow off-site organizations 60 days to comment on EP	delete	Modified. Emergency plan exists. State/local communities near GDPs presently implement emergency plans. Renewal applications, per proposed 76.33, will not include emergency plan revisions. Such revisions are addressed in 76.32(g).

10 CFR 70	10 CFR 76	COMMENTS
70.22(j) (1) Requires safeguards contingency plan for 20% or more enriched or $U^{233}/Pu/U^{235}$ combined (2) Requires Appendix C of part 73 information (3) Requires retention of plan for 3 years	deleted	Refers to 20% or higher enrichment
70.22(k) Requires physical security plan for mod or low enriched U235 per 73.67(d) (fixed site mod SS), (e) (in-transit mod SS), (f) (fixed site low SS), and (g) (in-transit low SS)	76.22(h)	Modified to delete reference to MS/SNM and S/SNM
70.22(l) Requires protection of physical security plan for transport of FQ/ or S/SNM against unauthorized disclosure	deleted	Refers to FQ/SNM and S/SNM
70.22(m) Requires an enrichment facility to protect against unauthorized viewing, disclosure, or theft of classified enrichment equipment	deleted	DOE has agreed to retain responsibility for these requirements.
70.22(n) Requires liability insurance for a licensed uranium enrichment facility	deleted	Not applicable to the GDPs. Energy Policy Act and Price-Anderson Act provide applicable requirements.
	76.22(i)	Added references for submission of appropriate environmental information.

10 CFR 70	10 CFR 76	COMMENTS
70.23(a) REQUIREMENTS FOR APPROVAL OF INITIAL APPLICATION Commission must make a determination on the following for approval of a license:	76.23(a)	Modified to delete need to show financial qualifications and pre-construction requirements.
(1) SNM is to be used for R&D	(1) deleted	Not applicable
(2) Applicant is qualified by training and experience	(2) = (1)	
(3) Equipment to protect safety is adequate	(3) = (2)	
(4) Procedures to protect safety adequate	(4) = (3)	
(5) Financial qualifications adequate	(5) deleted	Not applicable to the GDPs
(6) MC&A per 70.22(b) is adequate	(6) = (4)	
(7) EA per Appendix A part 51 adequate	(7) deleted	EA prior to construction is not applicable
(8) For Pu process and first fabrication, construction is in accordance with design per 70.23(b)	(8) deleted	Design basis approval prior to construction is not appliable
(9) Physical protection in transit per 70.22(g) is adequate	(9) = (5)	
(10)Physical security per 70.22(h) is adequate	(10)= (6)	
(11)Emergency plans are adquate	(11)= (7)	
70.23(b) States basis for Commission approval of construction of Pu processing and fuel fabrication facilities is finding of adequate design basis and QA (based on appendix B of part 50) in accordance with 70.22(f)	deleted	Applies to preconstruction activities
70.23a Describes hearing process for licensed uranium enrichment facilities	deleted	Not applicable to certification process. See § 76.31 below.
70.24 (a) CRITICALITY ACCIDENT REQUIREMENTS Requires monitoring systems for facilities with more than 700 grams of U^{235} or 1500 grams of U^{235} if 4% or less enriched.	76.24(a)	Minor modification

10 CFR 70	10 CFR 76	COMMENTS
70.24(b) (1) Requires capability to quickly identify individuals receiving 10 rads or more, and (2) Provision of adequate medical facilities	76.24(b) (1) (2)	Minor modification
70.24(c) Exempts holders of part 50 licenses	deleted	Applies to part 50 licensees
70.24(d) With showing of good cause can request exemption	76.24(c)	Minor modification
70.25(a) FINANCIAL ASSURANCE/RECORD FOR DECOMMISSIONING Provides formula for determining need for decommissioning funding plan (DFP)	76.25	Substantial modification
70.25(b) Provides for DFP or certification of financial assurance	deleted	Substantial modification
70.25(c) Provides criteria for determining final assurance	deleted	Substantial modification
70.25(d) Provides a table of required amounts of final assurance based on quantity of SNM	deleted	Substantial modification
70.25(e) Requires a decommissioning cost estimate with basis for cost adjustments	deleted	Substantial modification
70.25(f) Describes 4 acceptable methods of financial assurance (prepay, surety, external sink, government license statment of intent)	deleted	Substantial modification
70.25(g) Requires recordkeeping important to safe/effective decommissioning	deleted	Substantial modification

10 CFR 70	10 CFR 76	COMMENTS
LICENSES		
70.31(a) ISSUANCE OF LICENSES Commission will issue a license if applicant meets the Act and regulations	76.31(a)	Modified to be consistent with Energy Policy Act of 1992
70.31(b) Reserved	deleted	
70.31(c) States licensee rights subject to requirements in 70.41(b) regarding provisions of license and regulations in this part	76.31(b)	Minor modification.
70.31(d) No license if inimical to common defense and security	76.31(c)	Minor modification.
70.31(e) Requires hearing per 10 CFR Part 2 before issuing license	deleted	Applies to construction of a uranium enrichment facility
	76.31(d)	Substantial modification. Establishes procedures for consideration of application for certificate of compliance
70.32(a) CONDITIONS OF LICENSE Lists 9 conditions to each license	76.32(a)	Minor modification
(1) Reserved	(1) deleted	
(2) Non-conference	(2)=(1)	
(3) Not assignable	(3)=(2)	
(4) Recapture or control	(4) deleted	Not applicable to the GDPs
(5) No SNM use in production or utilization except per the Act	(5)=(3)	
(6) Non-weapon use	(6)=(4)	
(7) Hold US harmless	(7) deleted	Covered by Energy Policy Act.
(8) Subj to rules & regs of Comm	(8)=(5)	
(9) Bankruptcy notification	(9) deleted	Not applicable to the GDPs

10 CFR 70	10 CFR 76	COMMENTS
70.32(b) Provides 5 reasons Commission may add more conditions to a license: (1) Common defense & security (2) Protect health & minimize danger (3) Protect Restricted Data (4) Guard against loss or diversion (5) Reports and inspections	76.32(b)	Minor modification
70.32(c)(1) (i) Requires U enrichment facilities to maintain: MC&A of source material per 70.22(b), 70.58(l), 74.31(b), 74.33(b), or 74.561(c)(1) as appropriate, and (ii) Requires U enrichment facilities to maintain: a measurement control program per 70.57(c), 74.31(b), 74.33(b), or 74.59(e) as appropriate, and (iii) Such other programs as Commission deems necessary, and precludes modification of programs without Commission approval per 70.34	76.32(c)(1) (i) (ii) (iii)	Minor modification
70.32(c)(2) Requires recordkeeping of changes to the material control and accounting programs	76.32(c)(2)	Minor modification
70.32(d) Provides guidance on requests for changes (using 50.90 or 70.34) to physical security plans for S/, MS/, and low SNM in transit per 70.22(g) or 73.20(c) as appropriate	76.32(d)	Modified to delete references to MS/ and S/SNM
70.32(e) Provides guidance on requests for changes (using 70.34) to physical security plans for SNM per 70.22(h), 70.22(k), or 73.20(c) as appropriate	76.32(e)	Modified to delete references to MS/ and S/SNM

10 CFR 70	10 CFR 76	COMMENTS
70.32(f) Reserved	deleted	
70.32(g) Requires safeguards contingency plans per appendix C to part 73. Precludes changes to plans per 70.22(g) (Low SS), 70.22(j) (20%), 73.30(g) (no such number), or 73.40 (fixed site) without approval per 70.34	76.32(f)	Modified to delete references to MS/ and S/SNM
70.32(h) Reserved	deleted	
70.32(i) Requires licensee to follow approved emergency plan per 70.22(i)	76.32(g)	Minor modification
70.32(j) Requires physical security, safeguards contingency, and ground qualifications and training, and protection against unauthorized disclosure for FQ/ and S/SNM	deleted	Refers to FQ/ and S/SNM
70.32(k) Requires Commission inspection and verification of compliance with license requirements before operation.	deleted	Applies to construction of uranium enrichment facility
70.33(a) RENEWAL OF LICENSES Application for renewal per 70.21 and 70.22	76.33(a)	Substantial modification
70.33(b) Continue operation until Commission action on request for renewal	76.33(b)	Minor modification
	76.33(c)	Defines content of renewal applications.
70.34 AMENDMENT OF LICENSES Apply for amendment per 70.21(a)	70.34	Substantial modification.

10 CFR 70	10 CFR 76	COMMENTS
70.35 COMMISSION ACTION ON APPLICATION TO RENEW OR AMEND Commission will use criteria in 70.23 in consideration of application for renewal or amendment	76.35	Defines separate standards for action on renewals and amendments.
70.36 INALIENABLILITY OF LICENSES Requires written consent of Commission to transfer or assign license	76.36	Minor modification
70.37 DISCLAIMER OF WARRANTIES Exempts government and Commission from harm by SNM or use of SNM	76.37	Minor modification
70.38(a) EXPIRATION AND TERMINATION OF LICENSES Except per 70.33(b) and 70.38(e) license expires at end of D/M/Y in license	76.38(a)	Minor modification
70.38(b) Requires notification under 70.5 to request termination of license	76.38(b)	Substantial modification
70.38(c) Requires several actions regarding decontamination, disposal, survey, and reporting if no request for renewal is submitted per 70.33 before expiration date of license, and Requires submittal of plan for completion of decommissioning including several specific requirements	76.38(c)	Substantial modification
70.38(d) If the site is not suitable for unrestricted use, the Commission will inform licensee of further actions required	deleted	DOE responsibility covered under 76.38(b) and (c)

10 CFR 70	10 CFR 76	COMMENTS
70.38(e) License to "possess" continues past expiration date until Commission notifies licensee in writing of termination	deleted	DOE responsibility covered under 76.38(b) and (c)
70.38(f) Provides criteria for determination by Commission of final termination	deleted	DOE responsibility covered under 76.38(b) and (c)
70.39(a) SPEC LIC CALIBRATION OR REFERENCE SERVICE Provides requirements for approval of license to manufacture or initial transfer of calibration or refence sources containing Pu.	deleted	Not applicable to GDPs.
70.39(b) Labeling requirements for storage of sources	deleted	Not applicable to GDPs.
70.39(c) Wipe test requirements for sources	deleted	Not applicable to GDPs.
	76.39	Added provisions for review/approval of DOE Compliance Plans

10 CFR 70	10 CFR 76	COMMENTS
AQUISITION, USE, AND TRANSFER OF SNM, CREDITOR'S RIGHTS		
70.41(a) AUTHORIZED USE OF SNM Limits use of SNM to locations and purposes in license. Preparation for shipment and transportation will be per part 71	76.41(a)	Minor modification
70.41(b) Possession, use, and transfer will be subject to the provisions in license and regulations in this part	76.41(b)	Minor modification
70.42(a) TRANSFER OF SNM Limits transfer of SNM to as authorized by this section	76.42(a)	Minor modification
70.42(b) Except as specified in license and subject to (c) and (d), license can transfer SNM to DOE and 6 other specified persons or entities	76.42(b)	Minor modification
70.42(c) Requires licensee to verify that recipient is authorized to receive SNM	76.42(c)	Minor modification
70.42(d) Specifies acceptable methods for verifying authorization of recipients to receive SNM	76.42(d)	Minor modification
70.44(a) CREDITOR REGULATIONS Per Section 184 of the Act, the Commission consents to liens on SNM provided certain conditions are met	76.44(a)	Minor modification
70.44(b) Precludes this section from affecting any tax or other lien	76.44(b)	Minor modification
70.44(c) Defines creditor	76.44(c)	Minor modification

10 CFR 70	10 CFR 76	COMMENTS
SPECIAL NUCLEAR MATERIAL CONTROL, RECORDS, REPORTS, AND INSPECTIONS		
70.50(a) REPORTING REQUIREMENTS Requires a 4-hour report for events preventing immediate protective actions to avoid radiation or other exposure	76.50(a)	Minor modification
70.50(b) Requires 24-hour report of an unplanned contamination, or an event requiring medical treatment, equipment failure, or a fire or explosion affecting SNM	76.50(b)	Minor modification
70.50(c) Describes methods of submitting reports by telephone and written follow-up reports within 30 days	76.50(c)	Minor modification
70.51(a) MATERIAL BALANCE, INVENTORY, AND RECORDS REQUIREMENTS Definitions used in this section	76.51(a)	Minor modification
70.51(b) Requires record keeping per 6 instructions in this paragraph unless subject to 74.31, 74.33, and 74.59	76.51(b)	Minor modification
70.51(c) Requires written MC&A procedures and retention of same for 3 years	76.51(c)	Minor modification
70.51(d) Except as provided in (e) below, requires physical inventory of all SNM at least every 12 months	deleted	Addressed by 76.51(b)
70.51(e) Prescribes internal inventory procedures for S/SNM and MS/SNM	deleted	Refers to MS/ and S/SNM and IF

10 CFR 70	10 CFR 76	COMMENTS
70.51(f) Establishes physical inventory procedures for requirements in (e) above per 5 instructions with 17 sub-instructions	deleted	Refers to MS/ and S/SNM
70.51(g) Requires full description of program to accomplish (e) and (f)	deleted	Refers to MS/ and S/SNM
70.51(h) Allows extension of time to meet requirements in (e)	deleted	Outdated requirement
70.51(i) Requires record-keeping of MC&A but allows flexibility in media, also establishes procedure for resolution of conflicts	76.51(d)	Minor modification
70.52(a) REPORTS OF ACCIDENTAL CRITICALITY OR LOSS OR THEFT OR ATTEMPTED THEFT OF SNM Requires a report to NRC Operations Center within 1 hour of an accidental criticality or non-operative loss of SNM	76.52(a)	Minor modification
70.52(b) Requires a report to NRC Operations Center within 1 hour of a theft or attempted theft or diversion of SNM	76.52(b)	Minor modification
70.52(c) Describes means for notifying NRC	76.52(c)	Minor modification
70.52(d) Exempts reports if they are required under 73.71	76.52(d)	Minor modification
70.53(a) MATERIAL STATUS REPORTS Requires material balance report per 74.13(a)(1) for licencee with more than 350 grams of U^{235}, etc.	76.53(a)	Minor modification
70.53(b) Licensees subject to 70.51(e) must follow requirements in 74.13(b) and 74.17(b)	76.53(b)	Minor modification

10 CFR 70	10 CFR 76	COMMENTS
70.54(a) NUC MATL TRANSFER REPORTS Transf or receipt of SNM must be done per 74.15(a) and (b)	76.54(a)	Minor modification
70.54(b) Inventory changes submitted on DOE/NRC Form-741 per 75.34 shall follow requirements in 74.15(c)	76.54(b)	Minor modification
70.55(a) INSPECTIONS Must give Commission reasonable opportunity to inspect SNM and premises	76.55(a)	Minor modification
70.55(b) Must make records available to Commission	76.55(b)	Minor modification
70.55(c) Fuel fabrication facilities must provide rent-free office space and some services and access to NRC inspectors	76.55(c)	Minor modification
70.56 TESTS Requires licensee to perform tests per Commission instructions or allow Commission to perform tests needed to administer regulations	76.56	Minor modification
70.57(a) MEASURE CONTRL PROGRAM FOR SNM Definitions used in this section	deleted	Refers to MS/ and S/SNM
70.57(b) For S/ and MS/SNM requires, in accordance with 70.58(f), an MC&A program organized per 70.58(b)(2) with relationships in writing per 70.58(b)(3). There follows 12 instructions describing the required program.	deleted	Refers to MS/ and S/SNM
70.57(c) Requires submittal of plans for accomplishing (b) above	deleted	Refers to MS/ and S/SNM
70.57(d) Requires licensee to implement and follow plans submitted in (c) to accomplish (b)	deleted	Refers to MS/ and S/SNM

10 CFR 70	10 CFR 76	COMMENTS
70.58(a) FUNDING NUCLEAR MATERIAL CONTROLS Establishes fundamental requirements for MC&A for IF and MS/SNM per 10 elements (b) thru (k) below	deleted	Refers to MS/ and S/SNM
70.58(b) Planning, coordination, administration in one individual at adequate organization level for indep	deleted	Refers to MS/ and S/SNM
70.58(c) Establish management system	deleted	Refers to MS/ and S/SNM
70.58(d) Establish MBAs or ICAs	deleted	Refers to MS/ and S/SNM
70.58(e) Establish system for measurement of SNM received, produced, or tranferred between MBAs or from MBAs to ICAs	deleted	Refers to MS/ and S/SNM
70.58(f) Establish and maintain a program per 70.57(b) to determine and control systematic and random errors	deleted	Refers to MS/ and S/SNM
70.58(g) Establish and maintain shipper and transfer inventory controls and balances	deleted	Refers to MS/ and S/SNM
70.58(h) Establish a system of storage and internal handling	deleted	Refers to MS/ and S/SNM
70.58(i) Establish procedures for scrap SNM control	deleted	Refers to MS/ and S/SNM
70.58(j) Establish physical inventory procedures in compliance with 70.51	deleted	Refers to MS/ and S/SNM
70.58(k) Establish a system of records and reports per 70.51	deleted	Refers to MS/ and S/SNM

10 CFR 70	10 CFR 76	COMMENTS
70.58(l) Requires submittal of full description of MC&A program showing compliance with section (f).	deleted	Refers to MS/ and S/SNM
70.59(a) EFFLUENT MONITORING REPORTING REQUIREMENTS Requires semi-annual reports of radionuclide content of liquid and gaseous effluents to unrestricted areas.	76.59(a)	Minor modification
MODIFICATION AND REVOCATION OF LICENSES		
70.61(a) MODIFICATION AND REVISION OF LICENSES Licenses are subject to amendment, revision, or modification by changes in AEA or by rules, regulations, or orders in accord with AEA	76.61(a)	Minor modification
70.61(b) License may be revoked, suspended, or modified for material false statements per section 182 of the Act	76.61(b)	Section 70.61(b) refers to Section 182 of the Act governing licensees. A parallel material false statement provision has been added without reference to section 182.
70.61(c) Upon revocation, suspension, or modification, Commission can take possession of SNM. For extreme impact to national defense or security, Commission can take possession prior to procedures under section 551-558 of title 5 USC	76.61(c)	Minor modification
70.61(d) Revision, suspension, or modification requires proceedings unless wilful acts or public health and safety are at issue	76.61(d)	Minor modification
70.62(a) SUSPENSION OP/WAR OR NATIONAL EMERGENCY In war or national emergency can suspend license	76.62(a)	Minor modification

10 CFR 70	10 CFR 76	COMMENTS
70.62(b) In war or national emergency can recapture SNM	76.62(b)	Minor modification
70.62(c) In war or national emergency can order operation of a licensed facility	deleted	
70.62(d) In war or national emergency can order entry into plant	76.62(c)	Minor modification
ENFORCEMENT		
70.71 VIOLATIONS Allows injunction for violation of AEA or any regulation issued under the AEA or Title II of ERA of 74. 2. Allows court order to collect civil penalty under section 234 of the Act for violation of sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 or section 206 of ERA of 74. Wilful violation punishable by fine or prison.	76.71	Minor modification
70.72 CRIMINAL PENALTIES Describes criminal penalties for willful violations	76.72	No change
	76.73	Substantial modification. Added a section on Backfitting.

Attachment B

Summary of Bases for Substantial Modifications

Following is a discussion of the basis for the changes to 10 CFR 70 identified in Attachment A as substantial modifications:

1. <u>10 CFR 70.1</u>

10 CFR 70.1(c) specifies that 10 CFR 72 establishes regulations for materials (spent fuel and high-level waste) that the GDPs do not have, and therefore, this subsection was deleted.

In its place, other requirements of this title that apply without modification are identified in 10 CFR 76.1(c). Regulations from other parts of this title that apply in part or with modification are identified in 10 CFR 76.1(d). The regulations identified in 10 CFR 76.1(d) apply only to the extent specifically identified. Specific note should be taken of the following two recommended modifications to part 74 referenced in 76.1(d):

(a) 10 CFR 74.33(c)(4)(i)

10 CFR 74.33(c)(4)(i) is part of a series of related requirements in 10 CFR 74 intended to provide assurance that SNM is controlled and not diverted. The specific provision in 10 CFR 74.33(c)(4)(i) is to perform a dynamic material balance at least every 65 days for in-process inventories. The gaseous diffusion plants currently perform dynamic inventories similar to that required by 10 CFR 74.33(c)(4)(i) on the in-process inventory in gaseous form in the cascade.

Although GDP procedures that minimize the formation of solid accumulations and chemical treatments to return the deposits to the gas phase are used, the GDPs operate in a pressure regime where transient accumulations can and do occur. Such accumulations are dispersed throughout the process equipment. These accumulations have a weak radiation signature that is indistinguishable from that of the in-process gas, making determination of non-gaseous inventories almost impossible. Because of the large number of equipment items in the GDPs, and the sophisticated equipment required to measure accumulations, there is no realistic way to measure non-gaseous, in-process accumulations.

In-process inventories of the GDPs performed today rely on material in the gaseous phase. The quantity of solid SNM held up in cascade equipment is very small relative to the inventory difference of the gas phase of the cascade. Therefore, inclusion of

the material in holdup would not contribute to the facility's capability to detect the unauthorized removal of SNM from the process consisitent with the goal quantities associated with the control limits of the inventory difference.

10 CFR 74.33(c)(4)(i) is worded such that in-process inventories might be construed to include not only the inventory in the gaseous phase but also, transient accumulations of solids in the process equipment. To minimize the potential for misunderstanding about the requirements for conduct of dynamic in-process inventories, we have included in proposed 10 CFR 76.1(d)(iv) modified wording to clarify that only the gaseous inventories need be measured during the dynamic inventories.

(b) 10 CFR 74.33(c)(6)(ii)

10 CFR 74.33(c)(6)(ii) requires an item control program for SNM containers. Item control for SNM containers provides assurance that SNM is not diverted and normally involves the use of tamper indicating devices. As long as the SNM is in the form of UF_6 and contained in a cylinder of significant size, diversion of material would require either removal of the entire container or removal of material from the container. Both of these diversion scenarios would require equipment (cylinder transporter or heater, inerting equipment, cooling equipment, etc.) that would be easier to detect than would a broken tamper indicating device associated with an item control program.

Therefore section 74.33(c)(6)(ii), when applied to the GDPs, should be modified to allow another exemption to be added to the requirements for detection of the removal of 500 grams of U^{234}. Suggested language for the exemption is "Containers that are not man-portable (e.g., weigh more than 500 pounds) and contain uranium in the form of UF_6."

2. <u>10 CFR 70.2</u>

10 CFR 70.2 states that the regulations in Part 70 apply to, among other things, the possession and use of SNM in accordance with the purpose of Part 70, which is to provide for the licensing of SNM. Because the NRC's statutory role under the Energy Policy Act is to certify the "operation" of the GDPs rather than to license radioactive materials, section 76.2 refers to the "operation" of the GDPs and the ownership, acquisition, delivery, receipt, possession, use, processing, and transfer of source material and SNM "in connection with such operation...." Similar changes have been made in proposed section 76.3.

3. 10 CFR 70.22(f)

10 CFR 70.22(f) requires each applicant for a plutonium processing and fuel fabrication plant to submit a description and safety assessment of the design bases of the principal structures, systems, and components of the plant, including provisions for evaluation of the effects of natural phenomena, and a description of the quality assurance program. The gaseous diffusion plants (GDPs) are uranium enrichment facilities and are not either of these classes of facilities. Therefore, these requirements could be deleted. However, USEC proposes a modified version of 70.22(f) in 10 CFR 76.22(e).

Design basis analyses are typically performed during the design of a plant to test the design prior to construction. The plant design can therefore be modified prior to construction to optimize plant characteristics consistent with the results of the design basis analyses. The GDPs were designed and constructed 40 years ago. At that time there was little guidance on accident analyses for new plants. It would, therefore, be inappropriate to characterize accident analyses provided at this stage as an assessment of the design basis.

For certification of already sited, designed, and constructed facilities, realistic accident analysis is appropriate to identify scenarios whose frequency or severity can be reduced through operational limitations and to support the development and implementation of emergency plans which are required by 70.22(i). Such analyses also provide a basis for reviewing proposed plant changes. The proposed 10 CFR 76.22(e) calls for this type of accident analysis.

10 CFR 76.22(e) requires analyses of anticipated occurrences and accidents with a focus on mechanistic accidents rather than postulated hypothetical events. Such analyses have been performed and documented in the final safety analysis reports (FSARs) prepared for each gaseous diffusion plant in about 1985. These analyses also address external events and natural phenomena. The proposed 10 CFR 76.22(e) requires that these FSARs be revised to reflect the current configuration of the GDPs and be submitted as part of the application for a certificate of compliance.

The GDPs are currently operated within the limitations specified in the Operational Safety Requirements (OSRs) for each plant. While 10 CFR 70 does not require submittal of technical specifications or OSRs, OSRs are already in existence at the GDPs, and we have included a provision addressing operational safety limits in 10 CFR 76.22(e). The operational safety limits will be consistent with the revised FSARs.

As noted above, for plutonium processing and fabrication facilities, the existing 10 CFR 70.22(f) requires a description of the applicable quality assurance program. It further states, in a footnote, that the application should discuss how that program will meet the requirements in Appendix B to 10 CFR 50. Although the GDPs are not plutonium processing or fabrication facilities, a comprehensive and effective QA program already exists at the GDPs (as referenced in the July 1, 1993 Safety Basis document at pp. 3-10 to 3-13).

USEC believes that it would be inappropriate to incorporate additional QA requirements into the initial NRC Standards, unless and until such requirements are imposed on other fuel cycle licensees. To the best of our knowledge, 10 CFR Part 50 Appendix B is not applied to existing fuel cycle licensees. Accordingly, we recommend that, at the present time, the proposed Standards require an identification of the QA program which USEC will use for plant operation. USEC proposes to commit to continuing to implement that program on an agreed-upon schedule.

Therefore, the proposed 10 CFR 76.22(e) also requires the submittal of a description of the quality assurance program that will be applied to the safety related functions of plant operation.

4. <u>10 CFR 70.22(m)</u>

10 CFR 70.22(m) requires a description of a security program to protect against theft, unauthorized viewing and unauthorized disclosure in accordance with the requirements of 10 CFR 25 and 95. USEC understands that regulatory oversight in this area will be provided by DOE. USEC will comply with the DOE requirements in this area, and therefore this section was deleted from 10 CFR 76.

5. <u>10 CFR 70.25</u>

10 CFR 70.25, "Financial Assurance and Recordkeeping for Decommissioning," requires certain applicants for licenses under Part 70 to submit a decommissioning funding plan and to provide financial assurance for decommissioning in accordance with certain approved methods. In section 1801 of the Atomic Energy Act of 1954, as amended , Congress established a specific "Uranium Enrichment Decontamination and Decommissioning Fund" to be administered by the Secretary of Energy in order to assure that sufficient funds are available to provide for the decommissioning of the GDPs. In addition, pursuant to the Energy Policy Act and the Lease Agreement between DOE and USEC,

DOE is, with one minor exception[1/], responsible for and will pay the costs of all decontamination and decommissioning at the GDPs. Accordingly, it is not necessary to apply the financial assurance and recordkeeping provisions of section 70.25 to the GDPs. This provision has, therefore, been modified to reflect the requirements of the legislation.

6. 10 CFR 76.31

Proposed 10 CFR 76.31 provides for the application of notice and comment procedures, in accordance with 10 CFR §§ 2.804(a) and 2.805(a), with respect to the Commission's consideration of the application for the initial Certificate of Compliance, and for the use of informal hearing procedures, in accordance with 10 CFR § 2.805(b), if the Commission determines such hearings are necessary. Given the statutory requirement for the filing of annual applications by the Corporation and the corresponding need for expeditious processing by the Commission, the designated procedures will provide ample opportunity for public participation while enabling the Commission and the Corporation to fulfill their federal statutory mandates. Similar procedures are referenced in proposed 10 CFR 76.33 governing annual renewals and proposed 10 CFR 76.39 governing review of Department plans for achieving compliance.

7. 10 CFR 70.33

10 CFR 70.33(a) requires applications for renewal of licenses to be filed in accordance with §§ 70.21 and 70.22. This has been modified in 76.33(a) to require that, in addition to the requirement to file in accordance with 76.21, an application for annual renewal of a certificate shall contain an identification of significant changes in certain information required in the initial certificate application, and revisions to the FSAR and QA program description on a replacement page basis. Procedures to modify the programs for emergency planning, physical protection, safeguards contingency plans, and material control and accountability are routinely required by part 70 and these procedures have been included in part 76.

Under proposed 76.33, the first renewal application will be filed in the calendar year succeeding the year in which the initial Certificate is issued. Thereafter, renewal applications will be filed no later than 30 days prior to the end of each subsequent calendar year.

1/ USEC is responsible for any increase in decontamination and decommissioning costs arising out of the removal by USEC of any capital improvements.

8. 10 CFR 70.34

10 CFR 70.34 defines procedures for amendment of licenses. Proposed 10 CFR 76.34 has been modified to discuss procedures for amendment of a certificate of compliance. Language has also been added to allow certain modifications, tests, and experiments to be performed without amendment to the certificate, similar to that provided by 10 CFR 50.59.

9. 10 CFR 70.38

10 CFR 70.38, "Expiration and Termination of Certificate," requires applicants for licenses under part 70 to submit a plan for completion of decommissioning and to provide financial assurance for decommissioning in accordance with certain approved methods. Under the Energy Policy Act, DOE retains ownership of the facilities and, as discussed in paragraph 5 above, will be responsible for the decommissioning and decontamination of these facilities when operation of the facilities is terminated. A provision has been added to 76.38 to require that the USEC assure the GDPs are returned to the DOE.

10. 10 CFR 76.73

A section has been added addressing evaluations to justify the need for imposition of new requirements following issuance of the initial Certification of Compliance. The requirements were developed using language from 10 CFR 50.109 on backfitting with minor modifications to make these requirements applicable to the GDPs.

RECORDS, REPORTS AND INSPECTIONS

76.50 Reporting Requirements

(a) Immediate report. The Corporation shall notify the Commission as soon as possible but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits (events may include fires, explosions, toxic gas releases, etc.).

(b) Twenty-four hour report. The Corporation shall notify the Commission within 24 hours after the discovery of any of the following events involving byproduct material, source material, or SNM.

(1) An unplanned contamination event that:

(i) Requires access to the contaminated area, by workers or the public, to be restricted for more than 24 hours by imposing additional radiological controls or by prohibiting entry into the area,

(ii) Involves a quantity of material greater than five times the lowest annual limit on intake specified in Appendix B of 20.1001-20.2401 of 10 CFR 20 for the material, and

(iii) Has access to the area restricted for a reason other than to allow isotopes with a half-life of less than 24 hours to decay prior to decontamination.

(2) An event in which equipment is disabled or fails to function as designed when;

(i) The equipment is required by regulation or certificate condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident,

(ii) The equipment is required to be available and operable when it is disabled or fails to function, and

(iii) No redundant equipment is available and operable to perform the required safety function.

For Proposed USEC

Standards see Appendix A to Federal Register Notice

APPENDIX A

SAFETY BASIS AND FRAMEWORK FOR DOE OVERSIGHT OF THE GASEOUS DIFFUSION PLANTS

July 1, 1993

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FIGURES

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PREFACE

The Energy Policy Act of 1992 (the Act) transfers responsibility for the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky, from the Department of Energy (DOE) to the newly created United States Enrichment Corporation (USEC) effective July 1, 1993. The Act requires the Nuclear Regulatory Commission (NRC) to establish regulatory standards by October 1994 which the NRC will use to certify and regulate the GDPs. Until NRC assumes regulatory oversight for the GDPs, USEC will assume responsibility for the plants under DOE requirements and oversight for nuclear safety and safeguards and security.

DOE's nuclear safety and safeguards and security programs derive their authority from the DOE orders system. However, not all DOE orders have nuclear safety or safeguards and security implications for the GDPs. The primary purpose of this document is to define the critical set of nuclear safety and safeguards and security requirements and the bases for DOE regulatory oversight that are essential for the continued safe and secure operations of the GDPs. This document applies to DOE regulatory oversight from July 1, 1993, until the NRC issues regulatory standards, certifies compliance, and/or approves a plan for compliance and assumes regulatory oversight for the GDPs.

The document describes how the applicable requirements are implemented at the GDPs and how these requirements will continue to be met during the period of DOE oversight.

A secondary purpose of this document is to make information available to the NRC regarding the DOE safety and safeguards and security bases for the GDPs; these may be useful to the NRC in developing regulatory standards for the GDPs.

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LIST OF ACRONYMS

ACR	Area Control Room
AEA	Atomic Energy Act
AEC	Atomic Energy Commission
AHJ	Authority Having Jurisdiction
AIHA	American Industrial Hygiene Association
ALARA	As Low As Reasonably Achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CCR	Central Control Room
CFR	Code of Federal Regulations
CIP	Cascade Improvement Program
CoC	Certificate of Compliance
CUP	Cascade Uprating Program
DMR-QA	Discharge Monitoring Report—Quality Assurance
DOE	Department of Energy
DOE-HQ	Department of Energy—Headquarters
DOELAP	Department of Energy Laboratory Accreditation Program
DOE/ORO	DOE's Oak Ridge Operations Office
DOT	Department of Transportation
EAL	Emergency Action Level
EDE	Effective Dose Equivalent
EML	Environmental Measurements Laboratory
EMSL-LV	Environmental Measurements Systems Laboratory—Las Vegas
Energy Systems	Martin Marietta Energy Systems, Inc.
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERDA	Energy Research and Development Administration
ESH	Environment, Safety, and Health
ES&H	Environmental, Safety, and Health
ESO	Engineering Service Orders
FSAR	Final Safety Analysis Report
FY	Fiscal Year
GDP	Gaseous Diffusion Plant
HAUP	Higher Assay Upgrading Project
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEU	High Enriched Uranium
HQ	Headquarters
HSRC	Health and Safety Review Committee
IAEA	International Atomic Energy Agency
INPO	Institute of Nuclear Power operators
ISRC	Independent Safety Review Committee
K-25	Oak Ridge K-25 Site
LEU	Low Enriched Uranium
LLRW	Low Level Radioactive Waste
M&TE	Measuring and Test Equipment
MC&O	Management Controls and Oversight
M&O	Management and Operations

LIST OF ACRONYMS (Continued)

MIP	Maintenance Implementation Plan
MSDS	Material Safety Data Sheet
MSSA	Master Safeguards and Security Agreement
MTBF	Mean Time Between Failures
MW	MegaWatt
NCS	Nuclear Criticality Safety
NDA	Nondestructive Assay
NESHAP	National Emission Standard for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
NM	Nuclear Material
NMC&A	Nuclear Material Control and Accountability
NPDES	National Pollutant Discharge Elimination System
NQA-1	ASME National Consensus Quality Assurance Standard for Nuclear Facilities
NRC	Nuclear Regulatory Commission
NSI	Nuclear Safety Issue
NUREG	Prefix for Nuclear Regulatory Commission Issued Report
NVLAP	National Voluntary Laboratory Accreditation Program
ORO	Oak Ridge Operations
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
OSR	Operational Safety Requirement
PAT	Proficiency Analytical Testing
PCB	polychlorinated biphenyl
PEM	Process Equipment Modification
PEMP	PGDP Emergency Management Plan
PEP	PORTS Emergency Plan
PET	Proficiency Environmental Testing
PGA	Peak Ground Acceleration
PGDP	Paducah Gaseous Diffusion Plant
PORTS	Portsmouth Gaseous Diffusion Plant
PRA	Probabilistic Risk Assessment
PSAR	Preliminary Safety Analysis Report
PSE	Preliminary Safety Evaluation
PSR	Preliminary Safety Review
PSS	Plant Shift Superintendent
QA	Quality Assurance
QC	Quality Control
RadCon	Radiation Control
RCRA	Resource Conservation and Recovery Act
RCW	Recirculating Cooling Water
RWP	Radiation Work Permit
S&S	Safeguards and Security
SAA	Satellite Accumulation Area
SAR	Safety Analysis Report
SARP	Safety Analysis Report for Packaging

LIST OF ACRONYMS (Continued)

SEN	Secretary of Energy Notices
SNM	Special Nuclear Material
SPP	Standard Practice and Procedure
SSA	System Safety Analysis
SWU	Separative Work Unit
TDAG	Training Development and Administrative Guide
TLD	thermoluminescent dosimeter
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
UE	Uranium Enrichment
UEQPP	Uranium Enrichment Quality Program Plan
USAEC	United States Atomic Energy Commission
USEC	United States Enrichment Corporation
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
WAC	Waste Acceptance Criteria

EXECUTIVE SUMMARY

The Energy Policy Act of 1992 (the Act) transfers responsibility for the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky, from the Department of Energy (DOE) to the newly created United States Enrichment Corporation (USEC) effective July 1, 1993. The Act requires the Nuclear Regulatory Commission (NRC) to establish regulatory standards by October 1994 which the NRC will use to certify and regulate the GDPs. Until NRC assumes regulatory oversight for the GDPs, USEC will assume responsibility for the plants under DOE requirements and oversight for nuclear safety and safeguards and security. In support of this DOE oversight, this report

- defines the essential safety and safeguards and security requirements for GDP operations,
- defines a continuing framework of safety and safeguards and security requirements for DOE oversight of the GDPs until regulatory oversight for the GDPs is assumed by NRC.
- provides information with respect to overall GDP safety, and
- provides information that may be useful to NRC in the development of regulatory standards for the GDPs.

To accomplish these objectives, this report contains five chapters that present the following information:

- introduction and background;
- plant safety, safety analyses, and historical DOE oversight programs;
- safety and safeguards and security requirements and how they will be implemented during the period of DOE oversight;
- DOE's oversight plan for nuclear safety and safeguards and security at the GDPs; and
- conclusions.

The information contained in this report supports the following conclusions.

1. The plants are currently operating safely under DOE nuclear safety and safeguards and security management and oversight program. This conclusion is supported by the results of both routine DOE audits and appraisal programs and special assessments.

2. The proven safety of the original GDP design has been enhanced through upgrade projects and the application of lessons learned over the GDPs' operational lifetimes. This conclusion is reinforced by the 1985 Final Safety Analysis Reports (FSARs), revisions to the FSARs, and the Operational Safety Requirements(OSRs). (PGDP KY-374, KY-315, and upgrades; PORTS GAT/GDP 1073 and GAT/GDP-1074 Parts A through L).

3. The plants can continue to operate safely and securely under the Implementation Requirements set forth in Chapter 3.

4. The USEC's commitment to continue to meet these requirements coupled with DOE's regulatory oversight plan set forth in Chapter 4 provide adequate assurance that the plants will continue to meet the Implementation Requirements and operate safely under DOE regulatory oversight.

1. INTRODUCTION

1.1 GASEOUS DIFFUSION PROCESS

Two operating plants in the United States use gaseous diffusion technology to enrich uranium for government programs and commercial customers, primarily electric utilities that operate nuclear power plants. These are the Portsmouth Gaseous Diffusion Plant (PORTS), located on 3800 acres in Pike County, Ohio, and the Paducah Gaseous Diffusion Plant (PGDP), located on 3423 acres in McCracken County, Kentucky. Presently Martin Marietta Energy Systems, Inc., (Energy Systems) operates the two plants for the Department of Energy (DOE).

The gaseous diffusion enrichment process uses the UF_6 form of uranium, which is a white, crystalline solid at ambient conditions and a gas at process conditions. The enrichment method increases ^{235}U concentrations by physical processes; the UF_6 gas is not chemically altered.

The gaseous diffusion process employs a series of compressors and converters to enrich the ^{235}U isotope of the process gas. The fundamental building block of the process consists of a compressor and a converter and is known as a stage. Stages are grouped together in series to form cells. The cells are then interconnected to provide what is known as a cascade. The compressors, which are driven by electric motors, are used to circulate the process gas and maintain flow through the cascade. The converters contain porous tubes or barriers through which the process gas is diffused. In each converter, a portion of the process gas diffuses through the barrier and is fed to the next higher stage, with the undiffused gas being recycled to the next lower stage. The diffused stream is slightly enriched with respect to ^{235}U, while the undiffused stream is depleted of ^{235}U to the same degree. Each stage also contains a gas cooler to remove the heat of compression from the process gas and a control valve for process control. (See Figs. 1-1 and 1-2, which depict a stage and a cell, respectively.) The output of PGDP is now one of the feed streams to PORTS.

PORTS can produce 7.9 million separative work units (SWUs) annually at a rated power consumption of 2100 megawatts (MW), while PGDP can produce 11.3 million SWUs annually at its rated power consumption of 3040 MW. The maximum assay at PGDP is currently limited to 2 wt % ^{235}U. PORTS uses PGDP's product as enriched feed and can enrich product to nearly 20 wt % ^{235}U. Safety documentation has been submitted, and modifications are in progress to increase the maximum PGDP assay. When the regulating authority approves the safety documentation and when the modifications are completed, PGDP will be able to produce assay at up to 5 wt % ^{235}U. PORTS also produced fully enriched uranium until 1992.

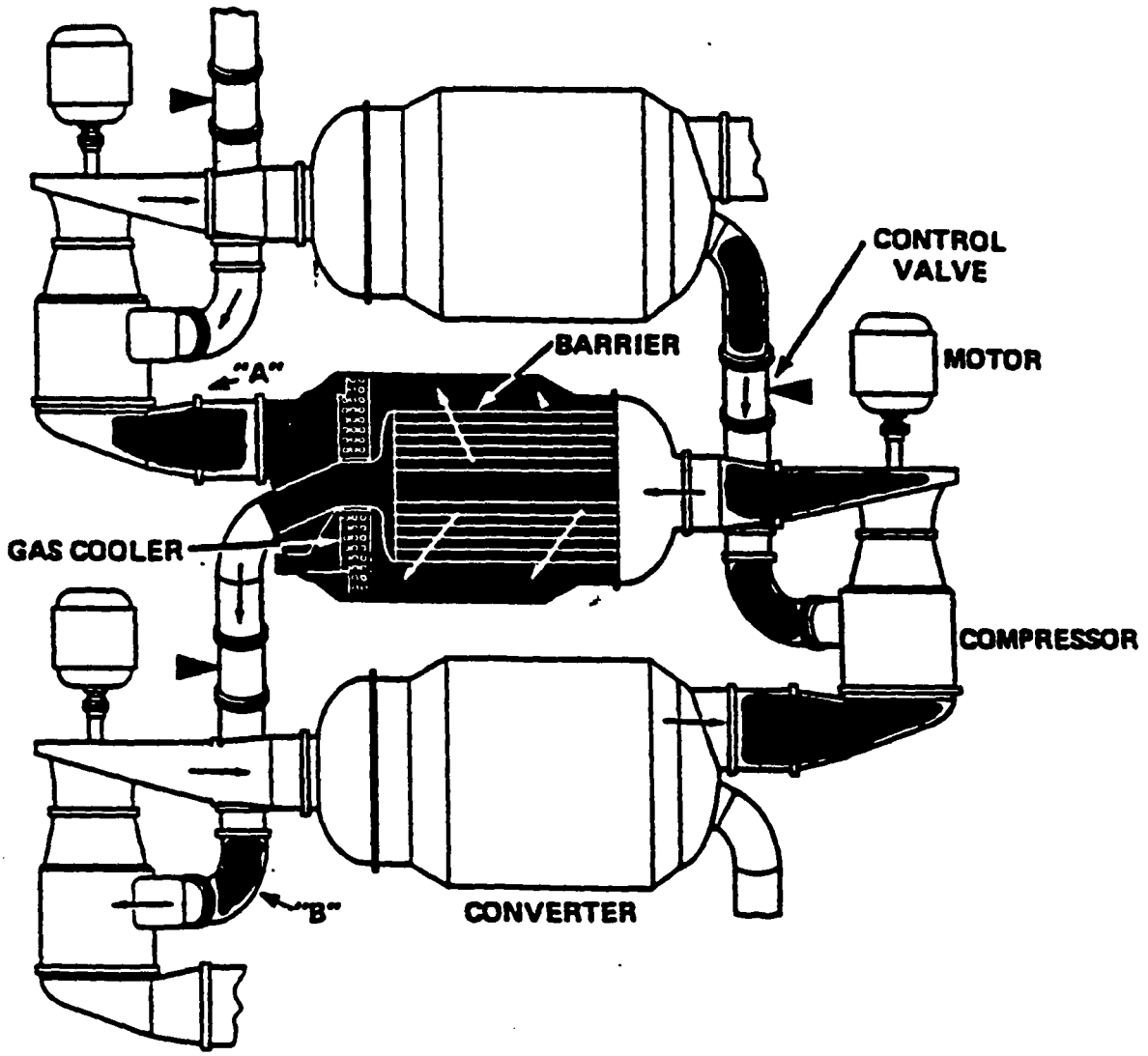

Fig. 1-1. Typical gaseous diffusion stage.

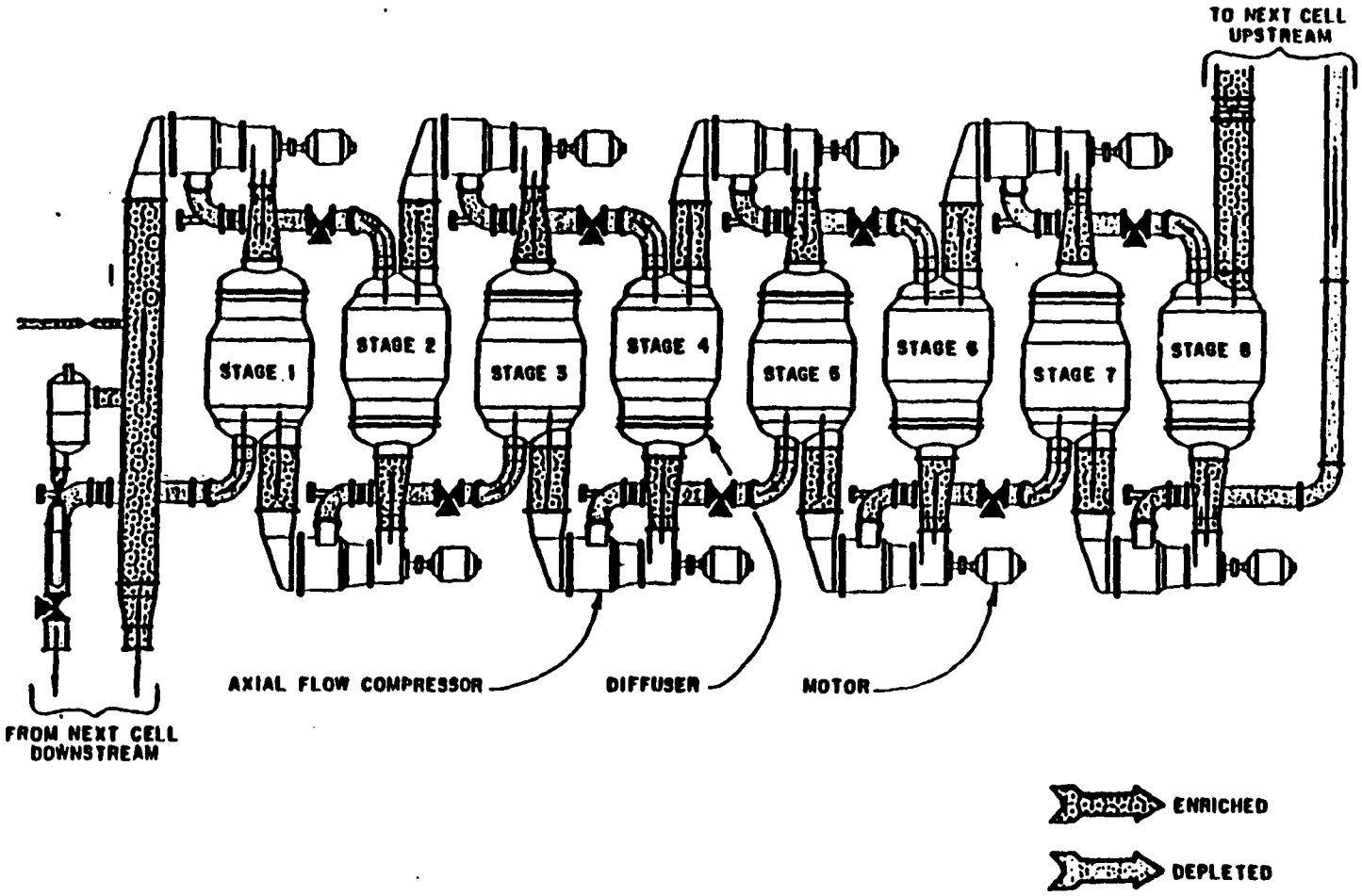

Fig. 1-2. Typical "000" gaseous diffusion cell.

1.2 BACKGROUND

The Energy Policy Act of 1992 transfers responsibility for the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky, from the Department of Energy (DOE) to the newly created United States Enrichment Corporation (USEC) effective July 1, 1993. The Act requires the Nuclear Regulatory Commission (NRC) to establish regulatory standards by October 1994 which the NRC will use to certify and regulate the GDPs. Until NRC assumes regulatory oversight for the GDPs, USEC will assume responsibility for the plants under DOE requirements and oversight for nuclear safety and safeguards and security.

DOE requirements for nuclear safety and safeguards and security are derived from the DOE Orders system. However, not all DOE Orders have nuclear safety or safeguards and security implications for the GDPs. Only those orders that address nuclear safety and safeguards and security requirements applicable to the GDPs are discussed in this report.

1.3 PURPOSE

The purpose of this report is to:

- define the essential nuclear safety and safeguards and security requirements for continued safe and secure GDP operations;
- outline the framework of nuclear safety and safeguards and security requirements for DOE oversight of GDP operations, which will continue until NRC assumes regulatory oversight of the GDPs;
- provide information to the NRC with respect to overall GDP safety; and
- provide information which may be useful to NRC in developing its regulatory standards for GDPs.

1.4 REPORT STRUCTURE

This report consists of five chapters including this introduction. Chapter 2 discusses the historically safe operation of the GDPs, the DOE oversight programs with respect to the GDPs and the safety characteristics of the plants as documented in safety analysis and hazards assessments. Chapter 3 defines safety objectives, Implementation Requirements to meet these objectives, the manner in which the Implementation Requirements are met and summarizes the status of conformance with these requirements. The GDPs will operate under DOE oversight with respect to these requirements until the NRC assumes regulatory oversight responsibility for the GDPs.

Chapter 4 describes the DOE oversight plan for nuclear safety and safeguards and security of the GDPs during the interim period, and Chapter 5 presents the conclusions drawn from the review.

2. SAFETY OF GDPs

The safety of PORTS and PGDP operations is demonstrated by the excellent nuclear and process safety record established by more than 40 years of operation at each of the plants and by the analysis of postulated accidents and anticipated operational incidents. In addition, through DOE's oversight and Energy Systems' corporate responsibility, numerous periodic and special reviews and assessments have been conducted to ensure continued safe operations. For safety significant incidents, internal and external investigations are systemically employed to ensure that incident precursors and root causes are identified and addressed to prevent recurrence.

This section describes the safety basis for current GDP operations through a discussion of the following:

- The early history of the DOE enrichment complex and the significant safety improvements at the plants, including those identified from analysis of significant incidents experienced within the complex;
- The low levels of off-site hazardous releases resulting from recent operating experience;
- The safety basis as described in the Safety Analysis Reports (SARs), including discussion of the hazards and accident scenarios;
- Maintenance of safety documentation;
- The limitations on plant operation contained within the Operational Safety Requirements (OSRs);
- The effects of plant aging on safety;
- Efforts to upgrade the safety documentation to meet current DOE requirements; and
- Historical DOE oversight of GDPs.

2.1 SAFETY DEMONSTRATED BY OPERATING HISTORY

PORTS and PGDP were constructed in the early 1950s to supply enriched uranium to both the United States Government Weapons Production Program and to the Atomic Energy Program. Through more than 100 years of collective operating experience (including the K-25 Site in Oak Ridge which operated from 1945 to 1985), the gaseous diffusion enrichment facilities have been characterized by an attention to process safety and have proven to be well designed for the wide variety of operating conditions that have been experienced.

During the more than 100 years of collective operating experience, no incidents at any of the GDPs have caused death or serious injury to plant personnel from exposure to radioactive materials or radiation. Likewise, no incidents at any of the GDPs have resulted in off-site releases of radiation or radioactive materials that could cause committed doses in excess of established limits. This excellent operating record attests to the quality of the safety measures designed into the GDPs and to the safety consciousness of facility personnel, particularly because much of this operating history occurred when the requirements for environmental protection, safety, and health protection were less stringent than they are today. The

safety consciousness during this period has also been enhanced by the incorporation into daily operations of the lessons learned from operating experience. Furthermore, DOE and the operating contractors have continually upgraded the technology at the GDPs to enhance safety, production capacity, and overall efficiency. These activities are described briefly in the following sections.

2.1.1 Early History

The first full-production-size GDP was built on the K-25 Site in Oak Ridge, Tennessee, as part of the original Manhattan Project in World War II. The gaseous diffusion processes at the K-25 Site are shut down and are no longer used to enrich uranium. Although the K-25 GDP performed safely throughout its entire operating life, the lessons learned from its early operations provided insights on design, construction, and operational improvements that were used to enhance safety at the two currently operating GDPs, built during the early 1950s. Examples of the enhancements incorporated in the design, construction, and operations of PORTS and PGDP include:

- surveys to detect uranium deposits in the process system,
- improvements in the handling of UF_6 cylinders;
- replacement of carbon chemical traps in the seal exhaust systems with alumina traps, eliminating a reaction threat; and
- installation of UF_6 containment autoclaves.

2.1.2 Cascade Improvement Program and Cascade Uprating Programs

Although the enrichment complex was originally constructed to produce nuclear weapons-grade enriched uranium, the 1960s brought an added mission for these plants, the production of low enriched uranium (LEU) for civilian nuclear power plants. To fulfill this mission in an era of increasing orders for new civilian nuclear power plants and increasing demand for enriched uranium, the efficiency and capacity of the three GDPs were increased. The $1.4 billion Cascade Improvement Plan (CIP) and Cascade Uprating Program (CUP) significantly increased efficiency and capacity; both were initiated in the early 1970s and completed in the early 1980s. The CIP increased the separative efficiency of the GDPs through installation of more efficient gaseous diffusion barriers and larger equipment and by improving the flow of the uranium hexafluoride gas. The CUP increased the production capacity of the plants. For each change, technological improvements were made to the original design and construction of the GDP. The design of these upgrades also incorporated appropriate safety improvements based, in part, upon the GDP operating experience between the 1950s, when the plants were initially built, and the early 1970s, when the upgrades were designed and installed. Ultimately, the combined effect of the CIP and CUP programs was to increase the overall separative capacity of the GDPs by 58% at substantially lower cost than would be expended on designing and constructing equivalent new facilities. As part of these modifications, the following safety improvements were made to the plants:

- UF_6 leak detectors,
- double-wall bellows on thermal expansion joints, and
- improvements to compressor seals.

2.1.3 Formal Review of Operating Experience

In addition to the early lessons learned at the K-25 Site, the sharing of operating experience and the investigation of incidents have further enhanced the safety programs at PORTS and PGDP. Significant incidents have typically been the subject of formal, structured reviews that included a detailed review of the circumstances surrounding the events, and the identification of the root or apparent causes of the events, the development of corrective action(s) to prevent the recurrence of the particular events and similar events. DOE has initiated and led reviews of the more significant events. In many other cases, DOE did not deem the event to be sufficiently significant to merit a DOE-led review, and the DOE Management and Operations (M&O) contractor for the sites (presently Martin Marietta Energy Systems, Inc., previously Union Carbide for PGDP and K-25 until 1984, and Goodyear Atomic for PORTS until 1986) conducted the reviews. Two significant incidents which were examined in this manner are described below as examples of this process.

Event	Corrective Action	Safety Improvement
Hydrocarbon oil reacted with liquid UF_6 in a cylinder at K-25 in 1975. The cylinder ruptured, but less than 20 pounds of UF_6 were released. No irreversible health effects to plant workers and no off-site releases above established limits occurred.	Use of hydrocarbon oil sealed pumps without an in-line trap which can hold the entire oil contents of the pump to purge cylinders was prohibited.	The risks of UF_6 reaction and of personnel exposure to UF_6 were reduced.
A 14-ton UF_6 cylinder (in liquid state) was dropped from a straddle carrier and ruptured at PORTS in 1978. No irreversible health effects to plant workers and no off-site releases above established limits occurred.	Maintenance practices for straddle carriers were improved, administrative controls to enhance the safety of cylinder moves were designed, and subsequently procedures were revised to prohibit moving UF_6 cylinders in the liquid state with straddle carriers.	The risk of cylinders being dropped during handling and of personnel exposure to UF_6 was reduced.

In addition to conducting formal reviews of specific incidents, representatives of the operating plants (including K-25 when gaseous diffusion operations were being conducted there) and technical experts have been meeting regularly to share the lessons learned from operating experiences related to safety and operational issues.

More recently, the DOE requirements have been changed to institute a more formal process of reporting safety significant occurrences throughout the DOE complex. These requirements, which include the investigation of root cause(s), the development of corrective actions, and the preparation of initial and follow-up reports, are described in Sect. 3.2.

2.1.4 Recent Operating Experience

Both sites have active programs to monitor and control environmental releases and personnel radiation exposures. These programs include extensive requirements for reporting to DOE (e.g.,

performance indicators and annual environmental reports) and responsible environmental protection agencies. As shown in the following paragraphs, PGDP and PORTS release only a minute quantity of the UF_6 handled every year and release minimum quantities of radionuclides; therefore, individual exposures are limited to extremely low doses of radioactivity.

2.1.4.1 Uranium Releases

The quantity of uranium released to the atmosphere has decreased significantly in recent years (as shown in Fig. 2-1) because procedure development, training, and conduct of operations have been emphasized. Aside from the 14-ton cylinder release at PORTS in 1978 (which is discussed in Sect. 2.2.2.2), the release data demonstrates the effectiveness of the application of lessons learned by the decreasing trend of the release quantities. More than 95% of the total releases occurred before 1970. Less than 1% of the total releases has occurred in the last 12 years.

2.1.4.2 Radionuclides

Radionuclide Releases

Radionuclide release monitoring programs are designed to comply with federal and state environmental regulatory requirements and DOE Orders. To ensure compliance, potential and actual sources of any releases must be identified, controls must be implemented to abate emissions within specified limits, and routine measurements must be taken to demonstrate compliance. Plant emissions must comply with National Emissions Standards for Hazardous Air Pollutants (NESHAP) as mandated by EPA. The NESHAP standard for air emission from plant operations at the GDPs is 10 mrem/year.

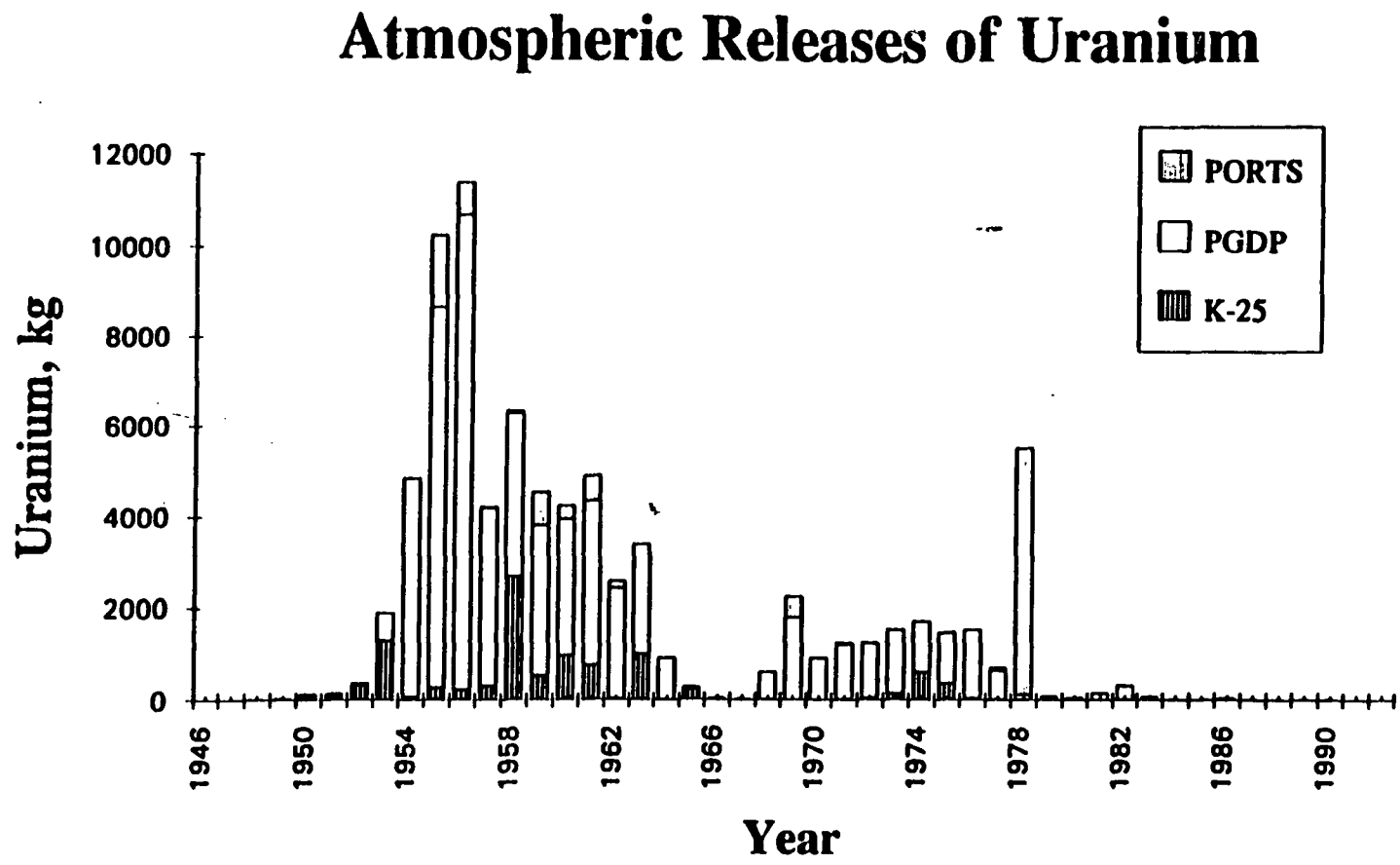

Fig. 2-1. Uranium releases to the atmosphere.

Air Releases

A risk-equivalent dose equivalent is used to estimate health effect risks to exposed persons and to the public from GDP operations. The effective dose equivalent (EDE) is a weighted sum of dose equivalents to specified organs. During the last several years, the maximum potential 50-year committed EDE to any individual from airborne emissions has been a fraction of a millirem in any one year. Thus, the releases to the public have been well below the NESHAP standard allowable limit of 10 mrem/year.

Waterborne Releases

Waterborne radionuclide emissions are monitored through the National Pollutant Discharge Elimination System (NPDES) process. Measured plant discharges have insignificant to no noticeable effect on radioactivity levels in the receiving waters. Conservative estimates of EDEs from waterborne discharges are much less than the Environmental Protection Agency (EPA) public drinking water limit of 4 mrem/year for beta-emitting radionuclides in a public water supply and are much less than the DOE limit of 100 mrem/year for all exposure pathways (waterborne plus airborne).

2.1.4.3 Exposure levels

Radiation levels at the GDPs are inherently low, and both sites include all on-site workers in personnel monitoring programs. As shown in Figs. 2-2 and 2-3 for PGDP and PORTS, respectively, the average doses for personnel are on the order of several mrem, and the cumulative dose received on-site by all personnel is normally less than 25 person-rem per quarter. The average dose per person on-site has been less than 10 mrem for both sites for the past 2 years and generally no more than a few tenths of mrem. The maximum annual deep penetrating dose for each plant is on the order of 250 mrem. This dose is inconsequential when compared to the current annual exposure limit, 5000 mrem for the DOE and the NRC per DOE Order 5480.11 and per 10 CFR Part 20 (NRC requirement). Note that typically PORTS personnel receive a higher dose than PGDP personnel. This is due to the handling of higher assay material at PORTS than PGDP.

2.2 SAFETY ANALYSIS SUMMARY FOR THE GASEOUS DIFFUSION PLANTS

Documented safety analyses of nuclear and nonnuclear operations and facilities have been required for many years. In response to these requirements, various safety analyses have been conducted in conjunction with overall plant evaluations, specific modifications, and operational occurrences. Since the initial requirements relating to safety analysis were issued, DOE has modified its requirements in this area to require increased documentation rigor and formality and to reflect the evolution of safety analysis techniques. The current requirements for the performance and documentation of safety analyses are described in Sect. 3.17.

This section (1) summarizes the types of potential hazards associated with GDPs that could affect public health and safety; (2) presents an overview of the analyses of postulated accidents and abnormal conditions presented in the Final Safety Analysis Reports (FSARs) for PORTS and PGDP, which demonstrate that the GDPs can be operated safely and which, in conjunction with the OSRs, provide an envelope for safe operations; and (3) discusses the measures employed to address the

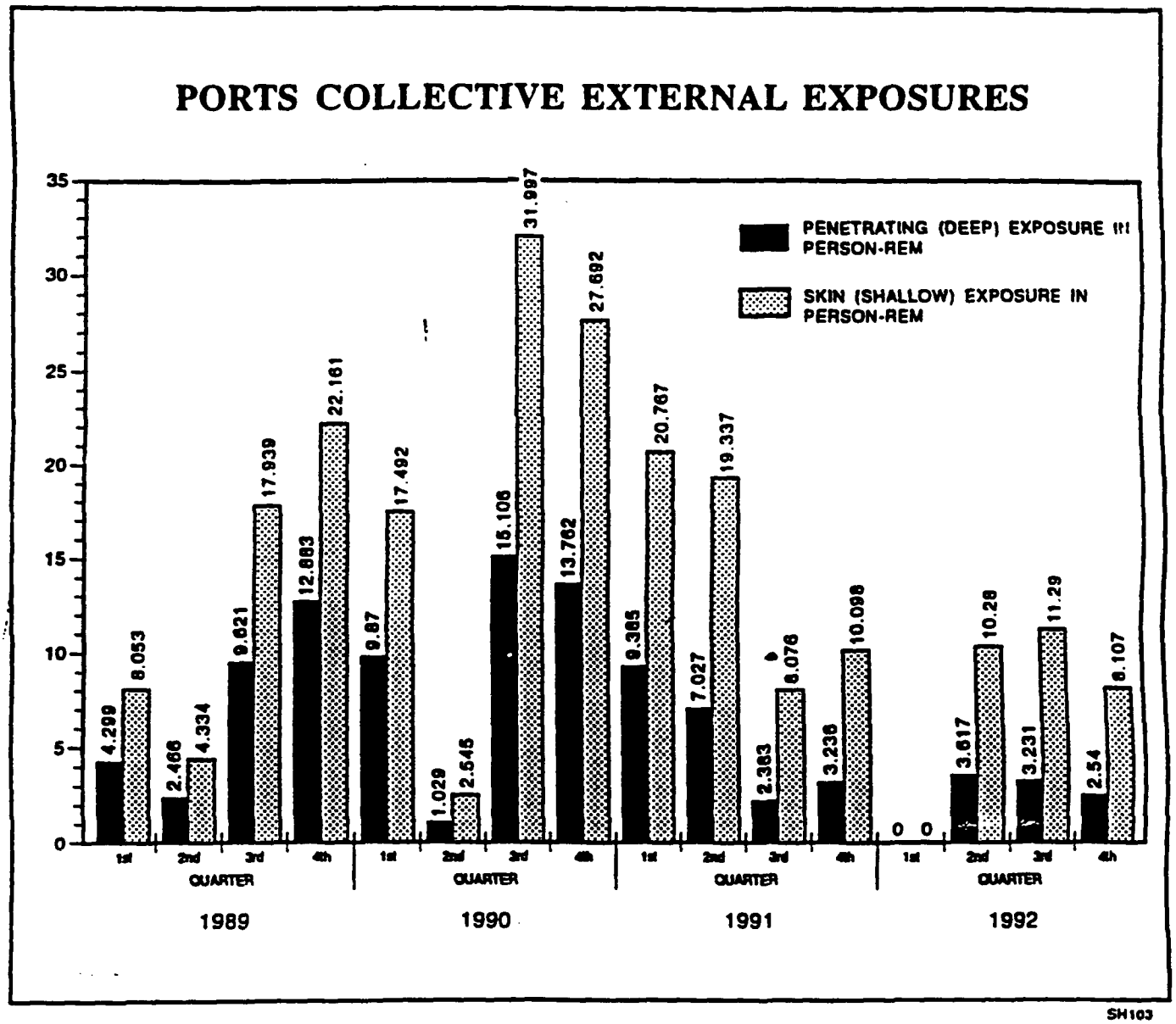

Fig. 2-2. PORTS Collective External Exposures.

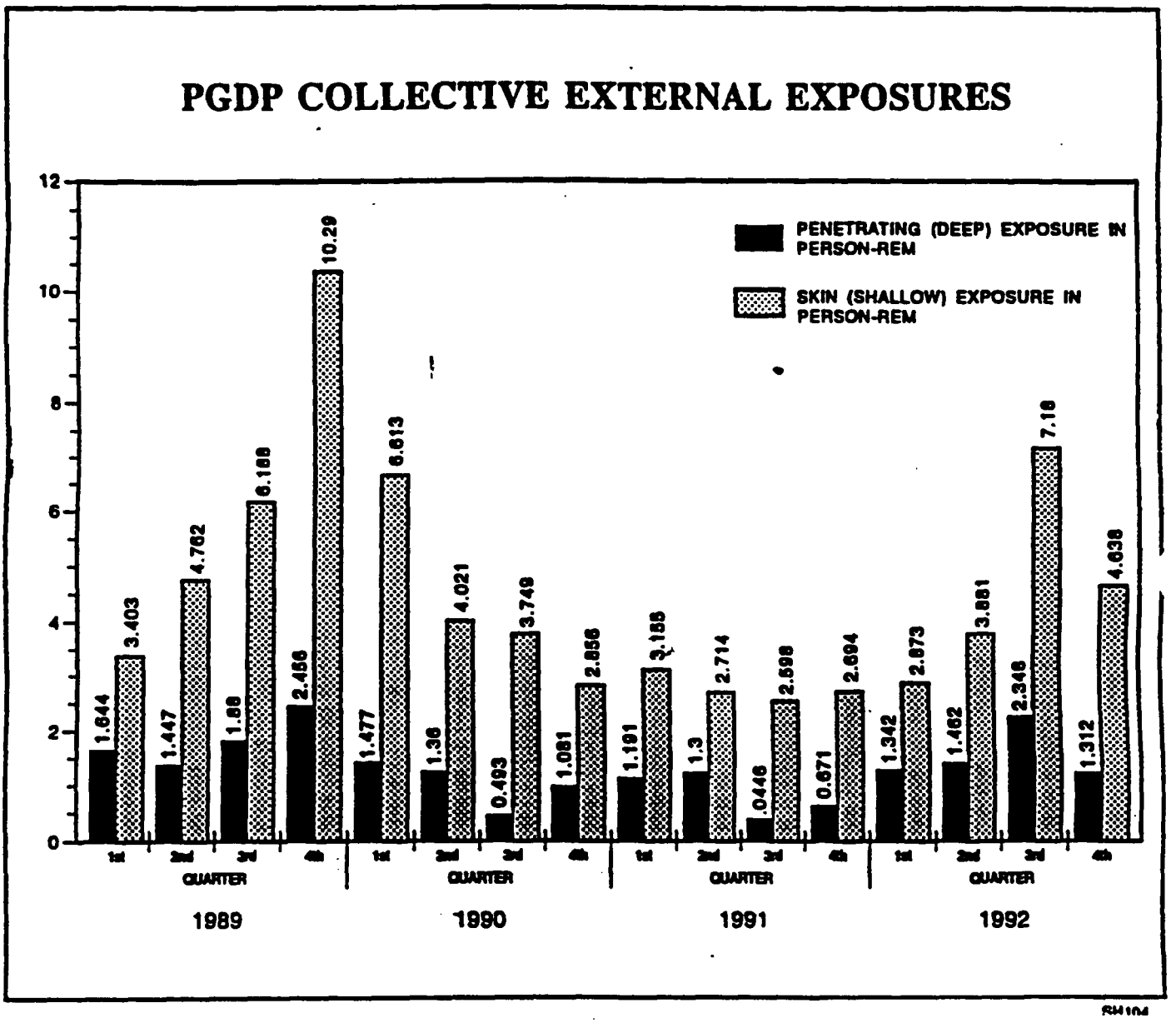

Fig. 2-3. PGDP Collective External Exposures.

potential impact of aging on plant safety. Because DOE's safety analysis requirements have changed since the issue of the FSARs, this section also includes a brief description of efforts underway to enhance these analyses to comply with the current DOE requirements.

2.2.1 Gaseous Diffusion Plant Hazards

UF_6 is the primary hazard of concern at the diffusion plants. Principally, this is because of the chemical toxicity of UF_6 and its reaction products and because of the radioactivity and toxicity of uranium. In addition, in a UF_6 release to the atmosphere, UF_6 reacts exothermically with water vapor in the air to create HF which is a highly toxic material. A previous NRC study compared the toxicity of uranium and HF to 10 CFR Part 100 off-site radiation guidelines, which NRC uses for reactor regulation. These comparisons and studies performed for releases of large quantities of UF_6 revealed that the primary concern to the health and safety of the public is the chemical toxicity of UF_6 and its reaction products. Thus, any significant risk to the health and safety of the public would arise from the chemical toxicity of the materials used in the operation of the GDPs rather than from their radioactive properties. Nevertheless, radioactive properties of uranium have been considered in the safety analyses.

Table 2-1 lists the major potential hazards involved in the current operations of the GDPs. These hazards represent a compilation of the hazards considered in each plant's SAR and the Justification for Continued Operation reports for each plant completed subsequent to the SARs.

Table 2-1. Major Potential Hazards at GDPs

Hazard	Initiator or operation	Consequence	Potential off-site Effects?[1]
Fire	Lube oil system	UF_6 release	Yes
	Transformer/capacitor	PCB release	Yes
Radiation Contamination	Normal operations	Uranium compounds	No
	Maintenance	Technetium	No
		Transuranics	No
	Inadvertent Criticality	Radiation burst	No[2]
Explosion	Equipment failure	acetylene in N_2 system (PORTS only)	No
	Support/control system failure	see chemicals below	Yes
	Operator error		
	Natural phenomena		
	Hydrocarbon oil liquid UF_6	UF_6 release	Yes
Chemicals	Equipment failure	ClF_3 release	No
	Support/control system failure	F_2 release	No
		HF release	Yes
	Operator error	Freon release	No
	Natural phenomena	UF_6 release	Yes
		Release of Uranium compounds	No

[1]The potential off-site effects column reflects a conservative assessment of unmitigated consequences for postulated bounding accidents involving the subject hazards.

[2]Criticality events do not result in direct radiation consequences off-site.

Criticality events are not considered to have a potential impact on the public. Because criticality produces primarily local radiation effects, the expected consequences are limited to the on-site workers with no off-site effects to the public health and safety. No significant fission product release and transport are anticipated from an inadvertent criticality event.

Each of the potential hazards is discussed further in the following sections.

2.2.2 Safety Analysis Reports

PGDP and PORTS each has produced a FSAR between 1980 and 1985, in accordance with DOE Orders 5480.1A and 5481.1A. These orders were the governing requirements for safety analysis at that time. (See Sect. 2.4.) These documents identify the major safety events (major hazards, initiators, and sequences) and establish an envelope for safe operations, which is defined in the OSRs. The FSARs analyzed the unique risks associated with the operation of the GDPs, examined the impact of these hazards during accident and process upset conditions, and evaluated the risk to both on- and off-site personnel.

During FSAR development, significant reliance was placed on operational experience, engineering judgment, an in-depth understanding of the overall operation and associated hazards, and senior staff with first-hand experience and understanding of the theory and operations. Credible accident scenarios were developed by (1) examination of previous accident reports and reports of significant events, (2) discussions with personnel possessing extensive practical knowledge of plant operations, and (3) engineering analyses of theoretical situations. Maximum credible consequences associated with on- and off-site personnel exposure to toxic materials and radionuclides were also analyzed. In the absence of comprehensive reliability data for GDP systems and components, many of which are unique to the GDPs, estimates of the likelihood of postulated accidents were made, based upon engineering judgment, to permit the qualitative evaluation of risks. The FSARs detail the rationale for these estimates.

The guidelines used for the qualitative risk determination are provided in Fig. 2-4 and Table 2-2. The risk of the individual events postulated is defined by the probability and consequence of each event.

2.2.2.1 Important operational parameters

The two most significant parameters related to safe operations of the GDPs are maximum cascade power level and ^{235}U assay. Power level principally determines the cascade operating pressure, in-process UF_6 inventory, and the production level of the plant. The maximum power levels are 3040 MW for PGDP and 2100 MW for PORTS. Assay levels also relate to the risk of an inadvertent criticality; as a general rule, the higher the assay, the smaller the amount of material required for criticality. The maximum assay production is 2% for PGDP and less than 20% for PORTS. PGDP is performing modifications and analyses to increase its maximum assay to 5%. PORTS, before the suspension of highly enriched uranium (HEU) production in 1992, could produce assays greater than 90%.

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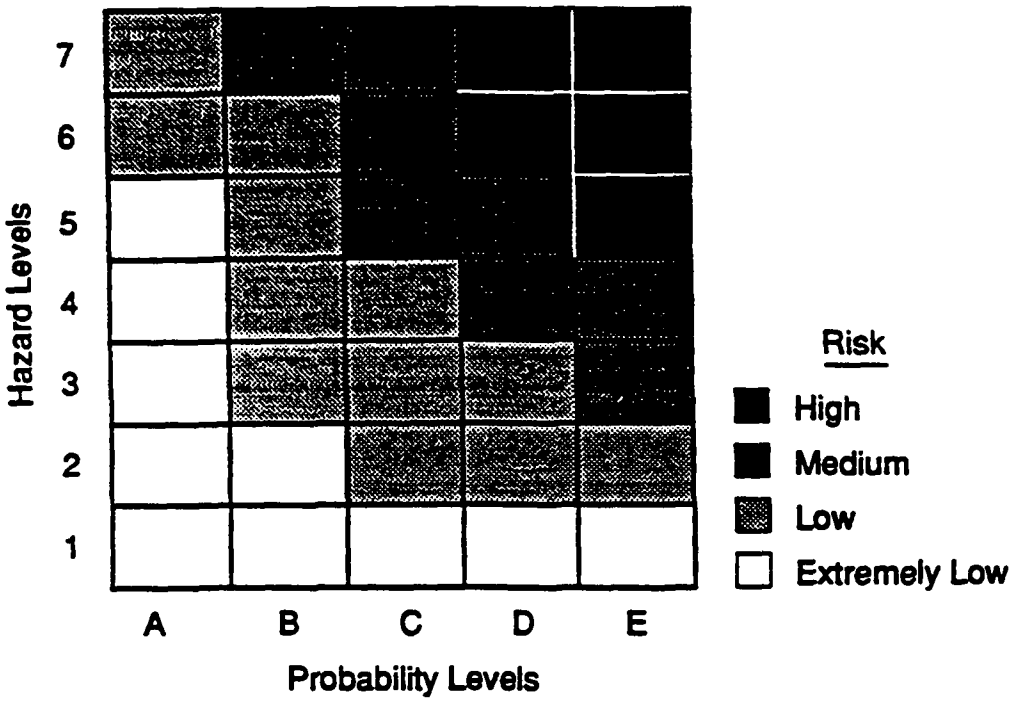


Probability Scale	Estimated Range of Probability of Accident Occurrence, per year
E Extremely high	$p \geq 1.0$
D High	$10^{-1} \leq p < 1.0$
C Medium	$10^{-2} \leq p < 10^{-1}$
B Low	$10^{-3} \leq p < 10^{-2}$
A Extremely low	$p < 10^{-3}$

Fig. 2-4. Risk matrix used in FSAR.

Table 2-2. Hazard rating scale[1]

Hazard Level	Maximum Consequence
7 CATASTROPHIC	Extremely serious on- and off-site impact for lengthy periods of time
	Large geographical areas and large population groups affected
	Large number of fatalities, both on- and off-site
6 EXTREMELY HIGH	Extremely serious on-site impact to large numbers of people and to the environment
	Many on-site fatalities and possible fatalities to the public located on adjacent properties
	Moderate impact beyond the exclusion area[2]
5 HIGH	Extremely serious on-site impact and considerable impact on the environment
	Multiple fatalities among operating and other on-site personnel
	Moderate health and safety concerns to the public located close to the site
	Minor impact off-site beyond the exclusion area
4 MEDIUM	Serious on-site impact and significant impact within the exclusion area and to the environment
	Fatality, severe injury, or severe illness to operating personnel
	Significant health concern to workers at nearby facilities
	Few people off-site seriously affected
3 LOW	Significant on-site but only minor off-site impact
	Moderate injury or creation of moderate health concerns for operating personnel
	Minor health and safety concerns for nearby facility workers
	Slight contamination of off-site environs
2 EXTREMELY LOW	Minor on-site but no off-site impact
	Slight injury or illness to operating personnel
	Local facility contamination requiring only routine procedures to control or correct
	No health and safety concerns for workers at nearby facilities
1 NEGLIGIBLE	Detectable on-site and no off-site impact
	No identifiable safety and health consequences
	Negligible contamination of the environment

[1]This is the hazard rating scale used in the PORTS and PGDP FSARs.

[2]Exclusion area is the area surrounding the facility in which the owner has the authority to determine all activities, including exclusion or removal of personnel and property from the area.

The operating pressure is important in the event of a process system boundary breach. Most stages of the cascade operate at pressures below atmospheric pressure. At operation above atmospheric pressure, leakage of UF_6 to the environment is possible. To estimate the potential for UF_6 releases from the cascade, the pressure distribution in the cascade should be understood.

The cascade pressure distribution is determined by power level, cascade configuration (number and location of on-stream cells), and, to a lesser extent, depleted and product withdrawal assay. To perform this process function, the compressors add significant amounts of energy to the UF_6 process gas. As a consequence, the process pressure in each stage is highest at the outlet of the compressors. Based on the overall cascade arrangement, the highest pressures within the cascade are in the larger equipment sections of the cascade. In a typical stage, the pressure drops significantly through the barrier for the "A" or enriched stream such that this portion of each stage throughout the cascade is less than atmospheric pressure up to the next higher compressor in the cascade. The "B" or depleted stream does not experience as significant a pressure drop through the converter as the "A" stream does. In some portions of the cascade, the "B" stream may be entirely above atmospheric pressure at higher power levels. For a typical stage operating above atmospheric pressure, approximately 30% of the process boundary surface area will experience this higher pressure, while the remaining 70% area will experience substantially less pressure and always remain subatmospheric. To illustrate this reaction, Fig. 2-5 shows a typical stage with representative high pressures. In this figure, the "B" stream pressure is approximately 18 psia while the "A" stream pressure is less than 4 psia. Even under maximum "B" stream pressure conditions of approximately 20 psia, significant portions of the cascade operate at subatmospheric pressures. Also, should the cascade be shut down, system pressure will fall to below atmospheric, regardless of initial operating power level.

To illustrate the power level conditions under which the plants typically operate, Fig. 2-6 shows the peak monthly power levels for each plant for the last several years. These data show that PGDP has operated well below its rated power level for this time period, and PORTS has operated near its rated power level. Figures 2-7 and 2-8 show the general arrangement of the cascades and representative average high-side pressures for rated power levels at PGDP (3040 MW) and PORTS (2100 MW), respectively. For PGDP, which has typically operated well below rated power, Fig. 2-9 shows the pressure for a representative power level (1600 MW) for operation during the last few years. At this power level, the typical pressure distribution shows that the entire cascade will likely be below atmospheric pressure. In fact, PGDP has not operated above atmospheric pressure since 1978. PORTS has operated portions of its cascade above atmospheric pressure; however, Fig. 2-10 shows that only a small portion of the cascade will be above atmospheric at 1900 MW, which is more typical of PORTS operation over the last 2 years.

If a breach in the process system boundary occurs during below-atmospheric-pressure operation, air will leak into the cascade. Air inleakage presents an operational upset condition which the operators are well trained to mitigate and correct. Upon recognition of excessive inleakage, the operators deenergize the compressor motors in, and isolate, the affected cell. Air inleakage will be noted by operators and indicated by changes in the compressor motor load and the highly sensitive line recorders. Operators in both the Area Control Room (ACR) and in the Central Control Room (CCR) have instrumentation to alert them to inleakage. Both ACR and CCR personnel can initiate shutdown.

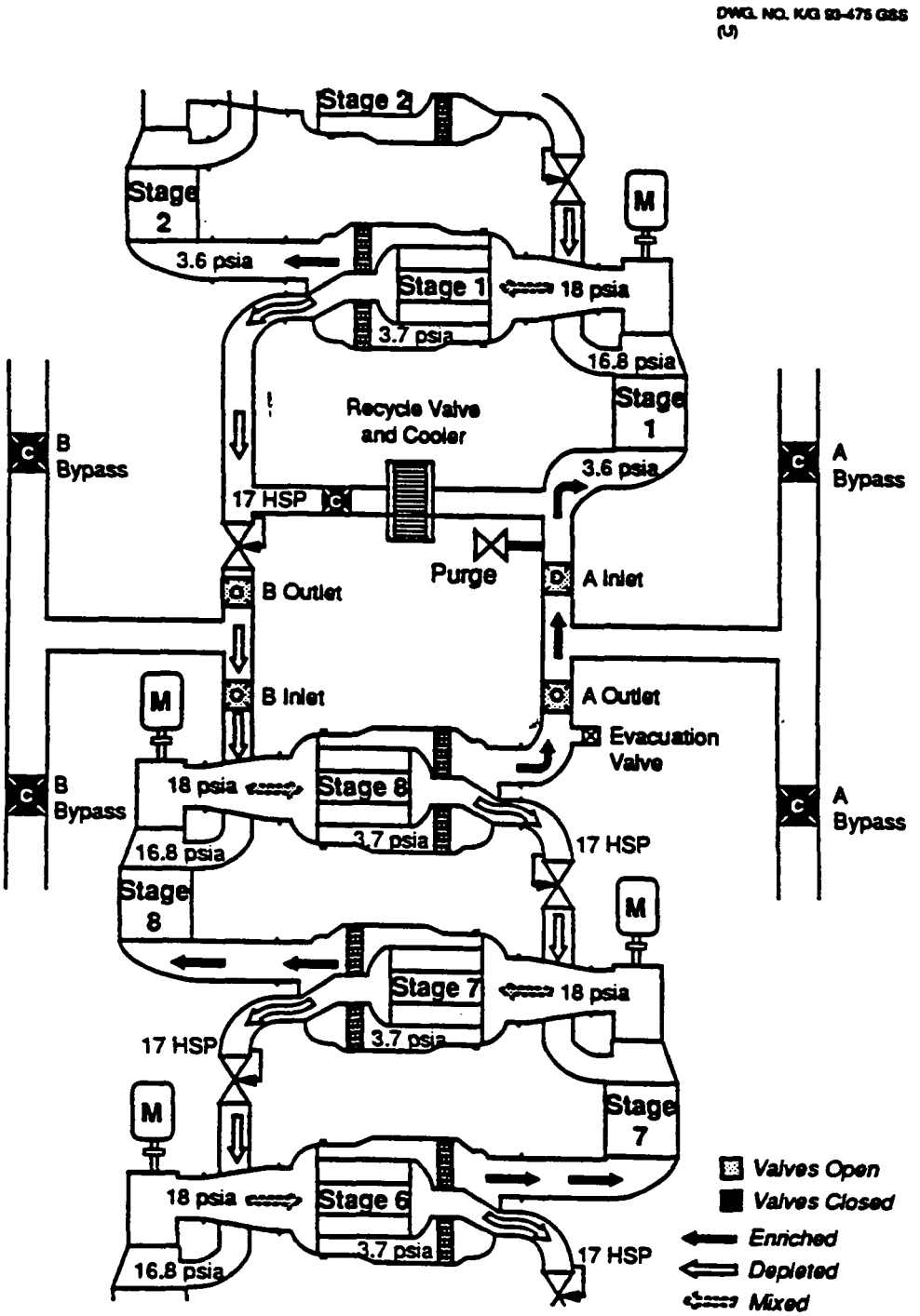


Fig. 2-5. Typical stage operating pressure.

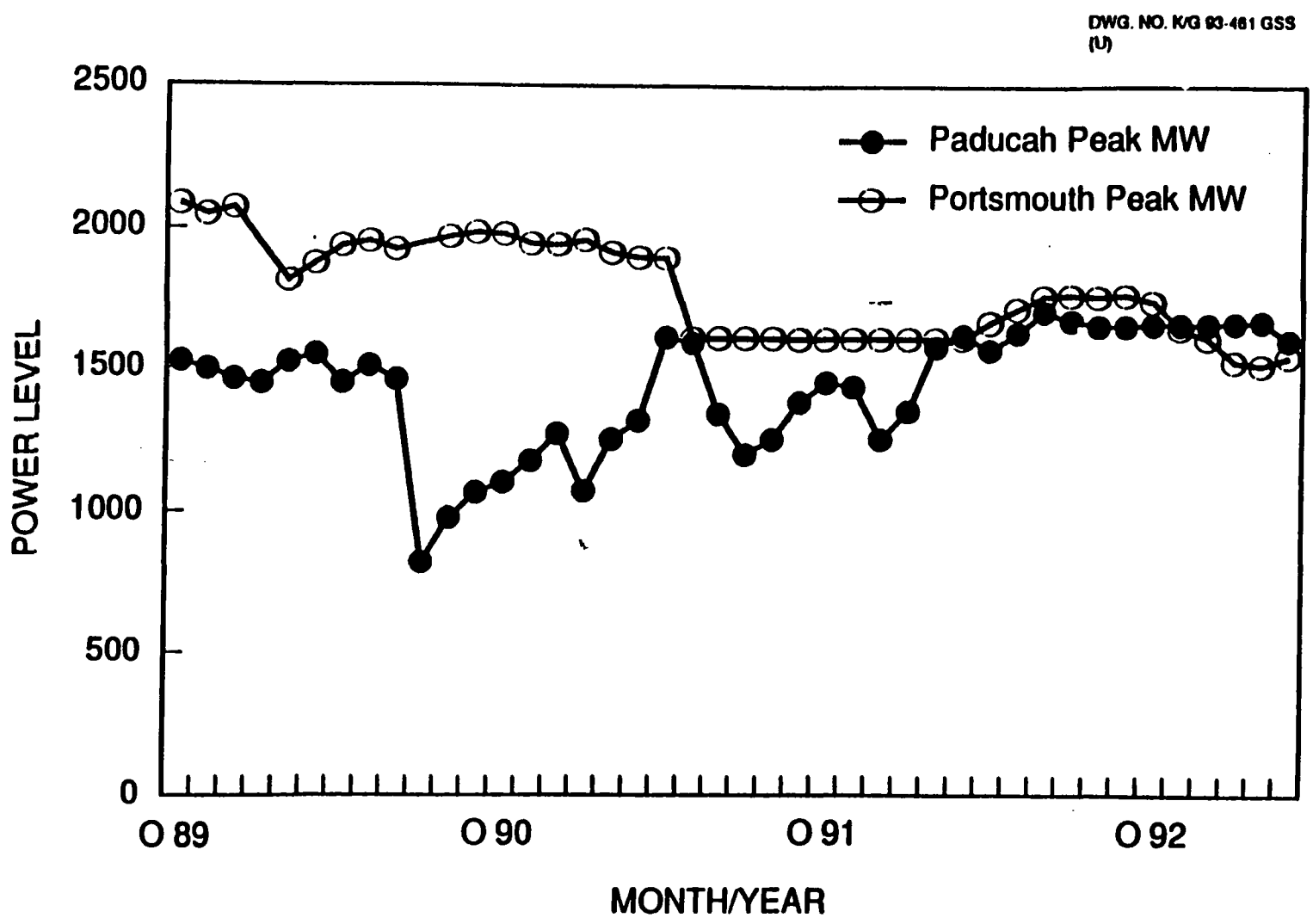


Fig. 2-6. Plant peak power usage.

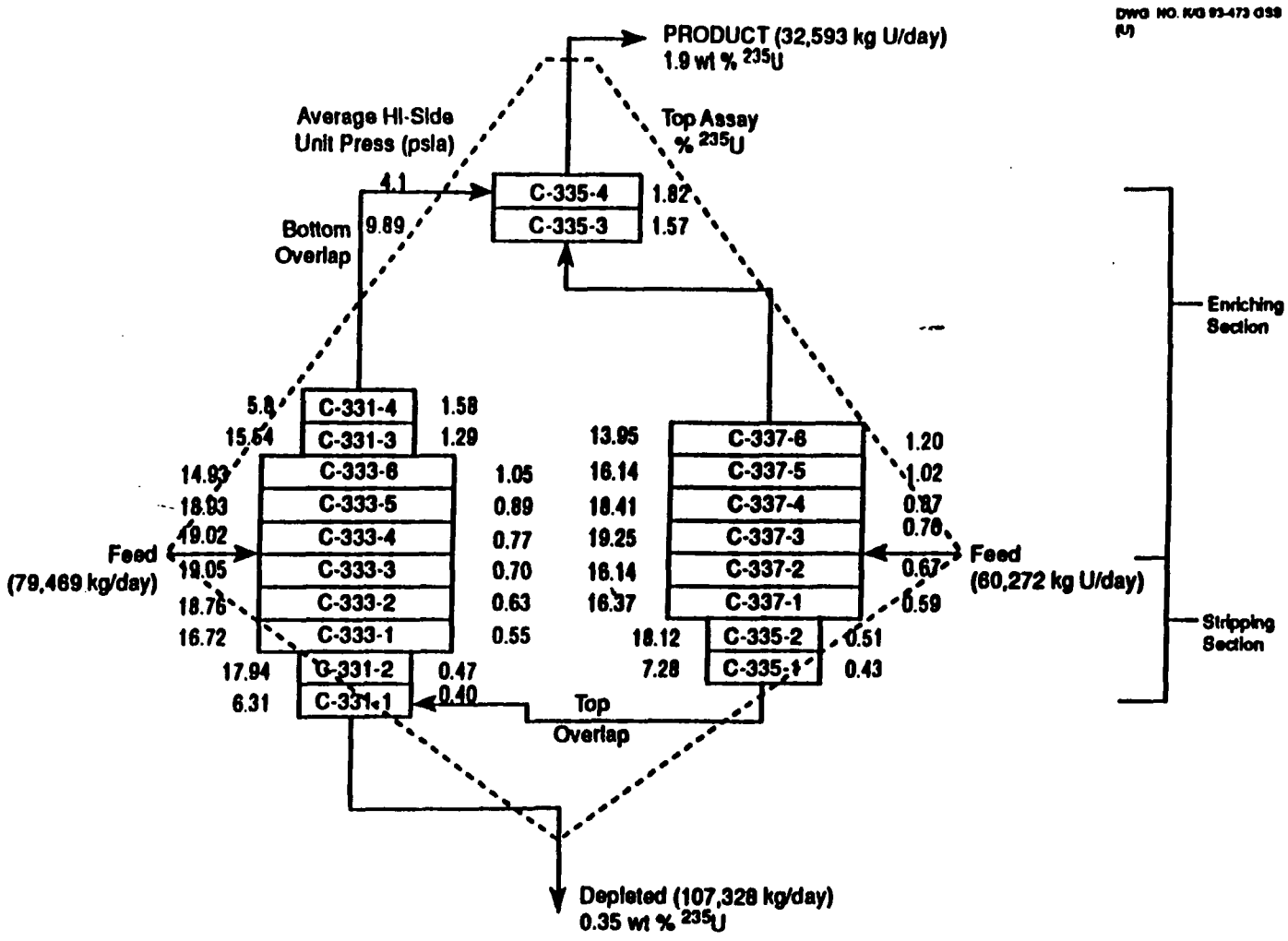
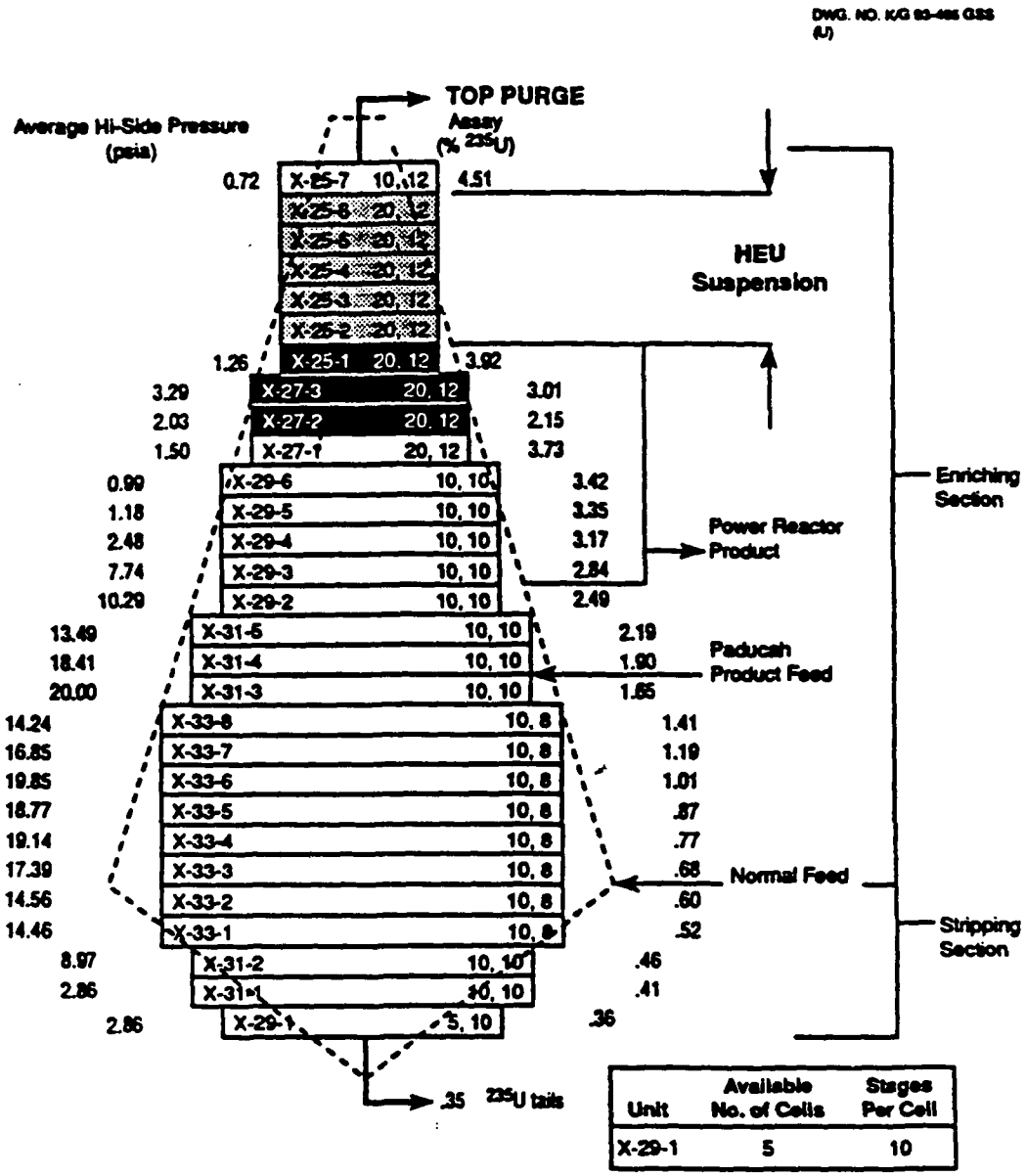


Fig. 2-7. Typical Paducah cascade configuration and conditions at 3040 MW2-17.



Unit	Available No. of Cells	Stages Per Cell
X-29-1	5	10

Fig. 2-8. PORTS typical cascade flow, pressure, and average assays at 2100 MW.

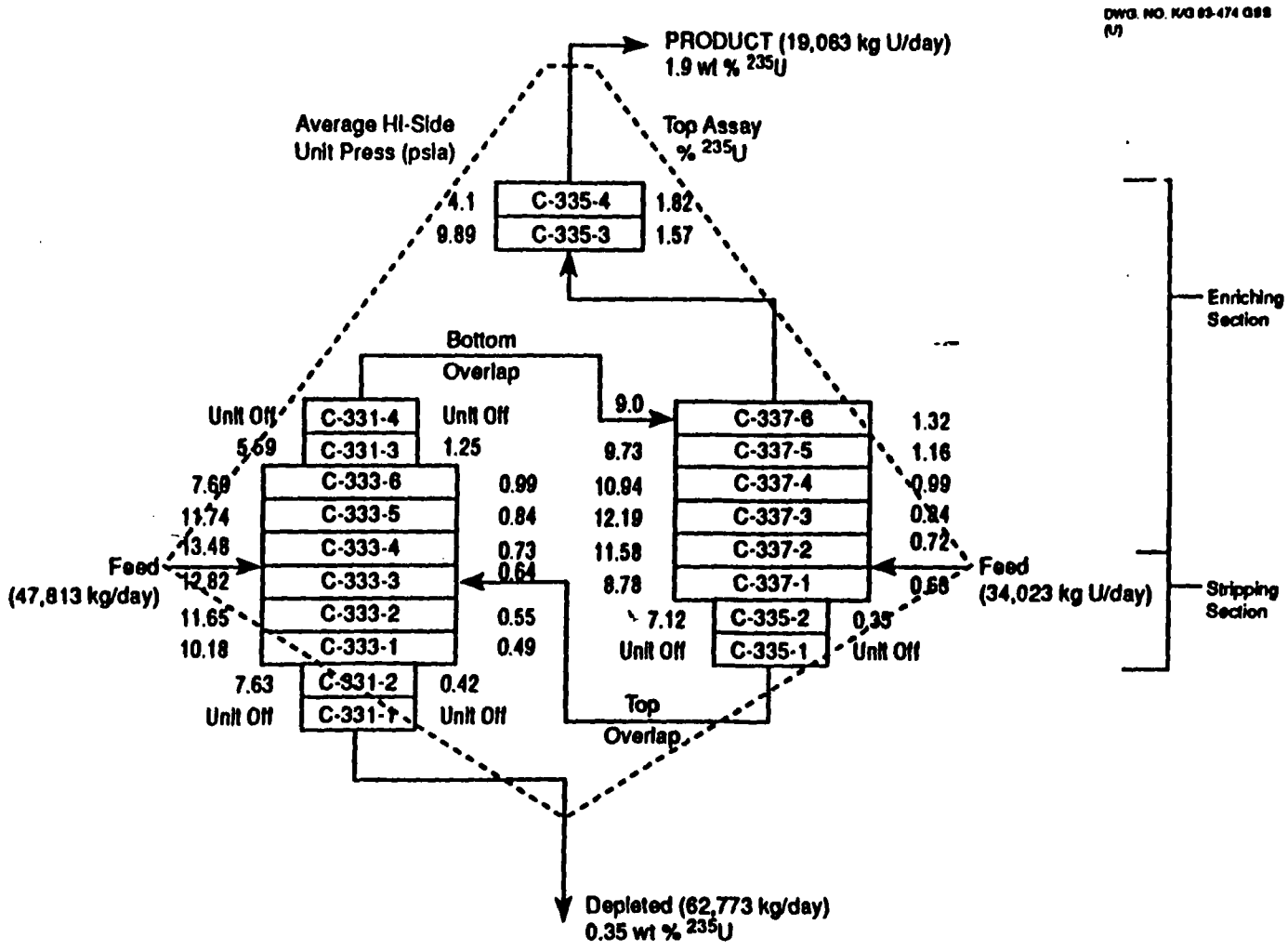
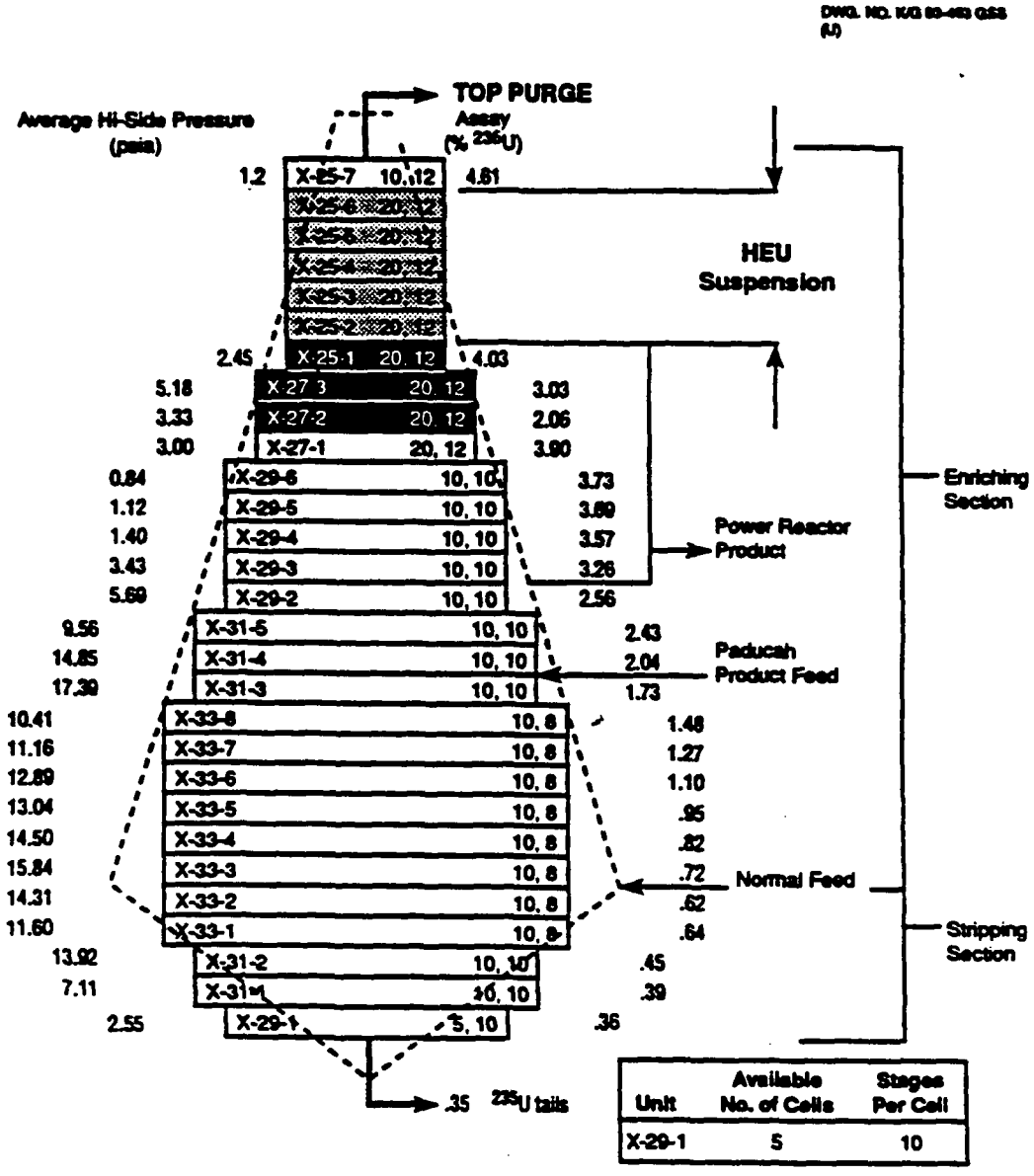


Fig. 2-9. Typical Paducah cascade configuration and conditions at 1600 MW.



Unit	Available No. of Cells	Stages Per Cell
X-29-1	5	10

Fig. 2-10. PORTS typical cascade flow, pressure, and average assays at 1900 MW

As further precautions against the release of UF_6, the plant design includes a secondary confinement scheme for potentially sensitive components in areas of the cascade that may be operated above atmospheric pressure. Specifically, the expansion joints, which are the most likely leakage points in the process piping, are double-bellows type designs; the space between the bellows is air pressurized with dry plant air to pressures greater than the process pressure, which ensures inleakage rather than UF_6 outleakage. Also, UF_6 leak detectors are provided in these areas; they alarm in the ACR and CCR to alert the operators if a UF_6 leak occurs. These detectors are provided in the cell enclosures and above the compressor discharge seals and must be operational or have other precautionary measures (e.g., operator watch) available in their place before the GDP can be operated at pressures above atmospheric.

Finally, in the event of leakage during operations at above atmospheric pressure, the operators must isolate the affected cell and deenergize the affected cell's compressor motors. This action immediately drops the pressure throughout the cell to below atmospheric pressure. The drive motors for the compressors in each cell are electrically connected so that when one compressor motor is tripped, all compressor motors in the cell are tripped. The expected UF_6 releases from a process system rupture are discussed in Sect. 2.2.2.2 under "Other UF_6 Releases."

2.2.2.2 Gaseous diffusion plant accident scenarios

The postulated accident scenarios developed in the existing FSARs were based on consideration of initiating events including (1) operator error, (2) equipment failure, (3) loss of support system, (4) fire, (5) explosion, (6) natural phenomena, and (7) the impact of events at adjacent facilities. Based on these considerations, the data in Tables 2-3 and 2-4 summarize the accident scenarios for the two plants and the relative risk of these accident scenarios. The accidents may be grouped by accident type or by facility. The more consequence-significant incidents will be discussed in the following paragraphs to provide the basis for risk categorization. These scenarios demonstrate the depth of analysis with regard to the subject hazards and scenarios.

UF_6 Release from Cylinder

The out-of-doors rupture of a 14-ton cylinder containing liquid UF_6 is generally regarded as the event that presents the highest risk. This highest risk status is caused by the rapid releases observed during previous events involving liquid cylinders and by the calculated consequences from a worse-case event. Since liquid UF_6 cannot exist at atmospheric pressure, when liquid UF_6 is released from a cylinder, approximately 70% of the liquid mass vaporizes and the remaining 30% solidifies. The UF_6 vapors then react with moisture in the air to generate HF. For every mole of UF_6 reacting, 4 moles of HF are formed. Both UF_6 and HF are toxic chemicals that potentially threaten on-site workers and the public health and safety.

Both plants typically allow liquid cylinders to cool out of doors because in-doors storage capacity is limited. When cylinders are transported from sampling or withdrawal operations to cooldown locations, liquid-filled cylinders with the valves protected are only handled by overhead cranes. Liquid-filled cylinders are moved, in general, at as low a height as possible, usually on the order of 1 foot, to minimize damage if the cylinder is dropped. Cylinders are placed on cradles and are appropriately spaced to ensure that no interference or contact between cylinders that might threaten cylinder

Table 2-3. Toxic material release accident scenario summary.

Accident Scenario[1]	Relative Risk[2]
UF_6 RELEASE SCENARIOS	
Enrichment Facilities	
Cell Overheat	
Loss of Instrument Air	Extremely Low
Loss of RCW	Extremely Low
Operator Drains Coolant	Extremely Low
Improper Manual Control of Coolant System	Extremely Low
Compressor Failure	Extremely Low
Cell Overpressure	
"B" Stream Block Valve Closure - Onstream	Extremely Low
Stage Control Valve Failure (non-trimmer valves) - Onstream	Extremely Low
Recycle Valve Failure - Offstream	Extremely Low
Pressure Instrument Failure or Instrument Line Freeze Out	Extremely Low
Mechanical Containment Breach	
Heavy Equipment Drop on "B" Line	Extremely Low
Vehicular Impact	Extremely Low
Fatigue Failure of Process Piping	Extremely Low
Motor Coupling Failure	Extremely Low
Compressor Seal Failure	Extremely Low
Treatment Gas Explosion	Extremely Low
Seismic Event	Low
Expansion Joint or Weld Joint Failure	Extremely Low
Local Fire	
Lube Oil Fire	Extremely Low
Operator Error	
Improper Purging of Process System	Extremely Low
Evacuation Jet Valving Error	Low
Purge Cascade	
Failure to Obtain UF_6 Negative	Low
Misvalving to Ejector Station	Low
Freezer/Sublimer Systems	
Stress Rupture of Freezer/Sublimer Vessels	Extremely Low
Cold Recovery (PORTS only)	
UF_6/ClF_3 Due to Overpressure by Plant Air	Low
UF_6/ClF_3 Through Jet Exhauster Misvalving	Extremely Low
ClF_3/Freon Explosion	Extremely Low
UF_6 Release from Al_2O_3 Traps	Extremely Low
UF_6 Release Due to Cold Trap Overpressure	Extremely Low
Explosion of ClF_3 Reaction Products	Extremely Low
UF_6 Release Due to Venting Holding Drums	Extremely Low

Table 2-3. (continued)

Accident Scenario[1]	Relative Risk[2]
UF_6 RELEASE SCENARIOS	
UF_6 Feed, Withdrawal, Sampling, and Handling Facilities	
14 Ton Cylinder Rupture - Inside/Outside Release	Low
Cylinder Pigtail Failure - Inside Release	Low
Cylinder Valve Failure - Inside/Outside Release	Extremely Low
UF_6-Hydrocarbon Oil Explosion	Extremely Low
Fatigue Failure in Withdrawal Area - Inside Release	Low
Compressor Seal Failure in Withdrawal - Inside Release	Extremely Low
Overpressure of Discharge Bellows on Normetex Pump - Inside Release (PGDP)	Extremely Low
Fatigue Failure on Discharge Side of Normetex Pump - Inside Release (PGDP)	Extremely Low
Compressor Failure Due to Thermal Reaction - Inside Release	Extremely Low
Fatigue Failure of Accumulator Drain Line - Inside Release	Extremely Low
Fatigue Failure of Accumulator Instrument Line - Inside Release	Extremely Low
HF OR F_2 RELEASE SCENARIOS	
Temporary HF Transfer Pipe Rupture	Low
HF Transfer Pipe Rupture	Low
HF Venting Error at X-344E (PORTS)	Extremely Low
Release at HF Vaporizer in X-342A (PORTS)	Low

[1]Note that in general these events apply to both plants. Each of these events, however, may not have been considered at both plants and documented in one or both of the respective FSARs.

[2]See Fig. 2-4.

Table 2-4. Criticality accident scenario summary.

Accident Scenario	Relative Risk
PORTS CRITICALITY SCENARIOS	
Enrichment Facilities	
A-Line Cooled Cell, Top Stage Freeze Out	Extremely Low
Lube Oil Inleakage Through the Labyrinths of Compressor Bearings and Process Seals	Extremely Low
UF_6 Freeze Out in Piping Elbows, B-Line Drops, and Building Tie Lines	Extremely Low
Wet Air Inleakage	Extremely Low
Prolonged Power Failure	Extremely Low
Water Control Valve Leak and Cell Block Valve Leak on Shutdown Cell	Extremely Low
UF_6 Freeze Out in Interbuilding Booster Station	Extremely Low
Equipment Removal for Maintenance	Extremely Low
Solid Mass in X-330 or X-333 Evacuation Booster Station	Extremely Low
Stage Compressor Vibration and X-Joint Rupture	Extremely Low
Exothermic Reactions Resulting in Uranium Compound Deposits	Extremely Low
Purge Cascade	
Dry Solid Mass of UF_6	Extremely Low
Dry Mass of UO_2F_2	Extremely Low
Moderated Solid Mass - UF_6 or UO_2F_2	Extremely Low
Cold Recovery	
Criticality in X-333 8" Cold Trap	Extremely Low
Criticality in X-330 5" Cold Trap	Low
Criticality in X-333 24" Al_2O_3 Trap	Extremely Low
Criticality in X-330 or X-333 Surge Drums	Extremely Low
Criticality in X-330 or X-333 Holding Drums	Extremely Low
UF_6 Cylinders in Storage	
Criticality in X-344A Due to Improper Cylinder Handling	Extremely Low
Chemical Operations	
Criticality at the Uranium Recovery Calciners	Low
PGDP CRITICALITY SCENARIO	
Uranium Solution in Geometrically Unfavorable Configuration	Extremely Low

integrity during movement occurs. All cylinders are allowed to cool 3 to 5 days, depending on cylinder size, to ensure that all of the UF_6 has solidified before they are moved again.

In support of the FSARs, DOE funded the development of a computer code to estimate the consequences of UF_6 releases. This code included models describing the unique chemistry of UF_6 and HF as well as the phenomena associated with dispersion of a gas cloud (e.g., atmospheric dispersion, cloud buoyancy, deposition of reaction products). Based on this code, representative UF_6 releases were analyzed, and the consequences to humans were estimated. These estimates considered conservative atmospheric wind conditions to maximize the consequences. In addition, data were assimilated to support the assessment of effects on human health from exposure to the toxic materials.

The bounding results presented in the SARs assumed conservative meteorological conditions in assessing both on- and off-site effects of a 14-ton liquid UF_6 cylinder rupture in the open atmosphere. Bounding on-site effects were obtained from an assumed windspeed of 15 mph and Class D stability with a temperature of 30°F and 60% relative humidity using a Gaussian dispersion model. Bounding off-site effects were obtained from 2-mph windspeed and stability Class F. The results of these analyses indicate potential lethal conditions for on-site individuals downwind of the release if no protective action is taken. Potential health effects were also calculated for persons located off-site. These health effects included the potential for renal injury due to uranium toxicity, mild health effects, and possible irritation. These off-site consequences were conservatively calculated to extend 5 miles from the release point. These consequence estimates reflect the cumulative exposure to any individual in a fixed location for the duration of the release. Therefore, the estimated consequences due to UF_6 and its reaction products may be characterized as very conservative by assuming (1) very conservative atmospheric conditions, (2) constant wind direction and velocity for the duration of the analysis, (3) that potentially affected individuals will take no protective actions despite the smell and irritation of HF, and (4) that conservative estimates are used for health effects threshold concentrations for the toxic chemicals. This calculation also estimated the committed dose, which was negligible in comparison with the chemical effects of the materials released.

To contrast the calculated results to actual events, comparisons were made with several large, accidental UF_6 releases which have occurred. The most significant event occurred in 1978 at PORTS when a liquid UF_6-filled 14-ton cylinder was dropped from a straddle carrier. The dropped cylinder ruptured and released more than 20,000 pounds of UF_6 in less than 5 minutes directly to the atmosphere. This event is notable in that no personnel, including the straddle carrier operator, suffered irreversible health effects. Environmental conditions were favorable since the temperature was 32°F, winds were approximately 5 mph, and precipitation was occurring at the time of release. Two other major UF_6 releases of note occurred in France, in which no one was injured, and at Kerr McGee's Sequoyah Uranium Conversion Plant. The accident at Kerr McGee involved the rupture of an overfilled UF_6 cylinder while it was being heated in an confined area. It resulted in the death of a plant worker who was trapped in the plume. There were no irreversible injuries to other workers or to anyone off-site. Note that unlike the Kerr McGee Sequoyah Plant and most fuel cycle facilities that handle UF_6 in cylinders, all cylinder heating at the GDPs is performed inside containment autoclaves in order to prevent the release of UF_6 in the event that an overfilled cylinder is heated. Therefore, an unmitigated release of UF_6 from the rupture of an overfilled cylinder during heating, like the one that occurred at the Kerr McGee Sequoyah Plant, could not occur at the GDPs.

The absence of actual health effects on exposed personnel within the GDP complex is an important piece of data in evaluating and interpreting calculated consequences. The straddle carrier operator did not have his gas mask with him at the time of the event. He identified the event and upon smelling HF, which has a very strong and distinctive odor, immediately left the scene and promptly notified appropriate management of the event. The emergency crews who responded and took action to stop the release

likewise received no irreversible health effects. The accident occurred shortly after a shift change, and personnel leaving the site unknowingly drove through the release plume. These individuals were identified and examined as well and demonstrated no irreversible health effects from the release. In comparison to calculated consequences, the most important variable is clearly the response of the human to the event. The operator was able to quickly vacate the affected area and avoid serious injury. The individuals who unknowingly drove through the plume were exposed for such a brief time period that any effects were minimized. Atmospheric conditions also minimized the release of any toxic materials off-site.

Following the event, an accident investigation team was formed to investigate the event, its causes, and to recommend corrective actions. The team's findings dealt mainly with the maintenance of straddle carriers. Subsequent to this investigation, the plants implemented new procedures which preclude the use of straddle carriers in moving liquid-filled cylinders as a further corrective action. All liquid cylinders are now moved only by overhead cranes and specially designed lifting fixtures.

As previously mentioned, a key difference between the GDPs and most fuel cycle facilities which handle UF_6 in cylinders is that all cylinder heating at the GDPs is performed inside containment autoclaves to prevent a release of UF_6 in the event an overfilled cylinder is heated. These autoclaves effectively preclude a catastrophic UF_6 release because an overfilled cylinder has been heated. As a result, the cylinder drop event is the only credible event for release of the entire contents of a UF_6 cylinder. The potential does exist for the valve to be knocked off a liquid cylinder during movement operations. However, the cylinder orientation is unlikely to be affected such that the boundary breach would be to the vapor space of the cylinder. A release from the vapor space will be limited by the area of the valve hole and the rate at which the liquid can vaporize. Because energy is required to vaporize the liquid, the release rate will be low in comparison to a ruptured cylinder, which would allow for mitigative actions.

One other cylinder scenario involves the reaction of hydrocarbon oil with liquid UF_6. These materials react exothermically and can rupture a cylinder. This event occurred at the K-25 GDP in 1975, resulting in the release of less than 20 pounds of UF_6. Corrective action from this event has been to disallow the use of hydrocarbon oil-sealed vacuum pumps without an in-line trap which can hold the entire contents of the pump when cylinders are being purged.

Natural Phenomena

The existing SARs considered the possibility of natural phenomena events with regard to plant safety. Both GDPs were analyzed for the potential safety implications of seismic events, flooding, and extreme winds. For seismic and wind, these analyses were predicated upon a recurrence interval judged to provide acceptable risk. This recurrence interval was determined by considering the remaining life of the GDP facilities and the probability of equaling or exceeding a certain peak ground acceleration (PGA) that would cause structural failure during this remaining life. Based on an exceedance probability of 10% and a remaining facility life of 25 years, the resulting recurrence interval was estimated to be about 250 years. This same recurrence interval was applied to the evaluation of extreme winds.

Seismic. Based on the evaluation return interval described above, both plants were analyzed to determine the PGA. These values were determined to be 0.18 g* for PGDP and 0.05 g for PORTS. The seismic criteria were based upon the nominal spectrum shape of USAEC Regulatory Guide 1.60, *Design Response Spectra for Seismic Design of Nuclear Power Plants*. Based on these values, facilities containing hazardous materials at each site were evaluated for integrity.

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*g equals the force resulting from acceleration due to gravity.

Irrespective of the acceleration used, the primary safety concern was associated with process piping thermal expansion joints located in portions of the plants potentially being operated at or above atmospheric pressure. To estimate the potential consequences of a seismic event, assumptions were developed based on the failure of these expansion joints. Test data developed in conjunction with the expansion joint manufacturer were used to estimate process boundary areas where breaches could occur during the evaluation basis event. From these areas, UF_6 source term estimates were developed based on the operating pressure distribution of the cascade.

For PGDP, two cases were considered, 3040 MW (rated power) and 2300 MW. For both cases, releases were assumed to occur only in locations in the cascade that would be operating above atmospheric pressure both at the time of the event and for the time required for operators to take mitigative action to deenergize the compressor motors. Stopping the compressors immediately reduces the cascade pressure to less than atmospheric pressure, effectively terminating the release.

For the 3040-MW case, approximately 64,000 pounds of UF_6 were estimated to be released within 8 minutes to the process buildings and, ultimately, to the atmosphere. For the 2300-MW case, approximately 9,000 pounds of UF_6 were estimated to be released within 8 minutes from the process system.

For PORTS, two cases were considered, 2260 MW (rated power condition prior to HEU suspension) and 1940 MW. Also, assumptions regarding releases similar to those used for PGDP were made. For 2260 MW, an estimated 20,000 pounds of UF_6 would be released. For 1940 MW, the release was estimated to be less than 3,000 pounds of UF_6.

Calculations were performed to estimate the health consequences of these events to on-site personnel and to the public. In all cases, the postulated 14-ton liquid UF_6 cylinder release bounds the effects of these events. This statement is true even for the large PGDP release because the distributed nature of the release means that the source for dispersion is not from a single location.

The release would not be entirely terminated as assumed in these analyses, because inleakage of air into the cascade would eventually equalize pressures within the process boundary with the atmosphere. At that time, a slow release of UF_6 and HF would be expected to occur for some extended period of time until the remaining UF_6 solidified as it cooled or until mitigative action was taken to reestablish containment. These release rates would be expected to be much less than that estimated above, which would allow for significant dispersion of the toxic materials.

Subsequent to publication of the FSARs, additional modifications were made to each plant to strengthen seismically vulnerable components. Particularly, the expansion joints assumed to fail in the above analysis were replaced with expansion joints designed to withstand the evaluation basis earthquake. The seismic analysis has not been revised to reflect these modifications.

Extreme Winds. Based on the approximately 250-year return interval, an evaluation basis windspeed was determined to be 70 mph. Based on this windspeed, the risk of an accident that resulted in a chemical release or an inadvertent nuclear criticality was judged to be low. Also, any chemical releases are bounded by other assumed events considered in the SAR. In extreme wind conditions, atmospheric dispersion would obviously be enhanced.

Floods. Both plants are sited above the historic maximum flood stages of record—120 feet for PORTS and 28 feet for PGDP. Thus, the probability of flooding was judged to be extremely low. Any flooding at either site as a result of extremely heavy precipitation would be expected to be minor and not to result in a toxic material release or in an inadvertent nuclear criticality.

Other UF_6 Releases

In addition to UF_6 releases from cylinder ruptures and seismic events, many other release scenarios were considered in the SARs. These events can be grouped into categories based on the amount of UF_6 released. There are four general categories of release amounts, 5 to 50 pounds; 100 to 1,000 pounds; 10,000 to 17,500 pounds; and greater than 20,000 pounds. The latter case obviously represents the 14-ton liquid UF_6 cylinder rupture and seismic events which have previously been considered. In all cases, the liquid UF_6 cylinder rupture bounds the consequences.

Based on dispersion and consequence evaluations performed for the SARs, the 10,000- to 17,500-pounds release category warrants discussion because releases of this size pose potential but non-severe off-site consequences. The events which result in a release this size are primarily associated with overpressurization of an onstream cell or with the motor coupling mechanical failure.

The overpressurization events are fundamentally the same event initiated by different events. This event is the closure of a cell block valve on the "B" stream without the associated recycle valve being opened, either as the result of operator error or control system failure. In the event no corrective action is taken, a rapid pressure rise occurs in the stages adjacent to the closed valve in the next upstream cell. Without operator action, the cell compressor motors will ordinarily be deenergized by their protective overload relay. For the SAR analysis, this action was conservatively ignored, and operator action was assumed to require 5 minutes from event initiation. Based on this time to operate and on an assumed breach of the process boundary in the highest pressure stage, a UF_6 release of 10,000 pounds was estimated. These assumptions are conservative because:

- the ACR operator would most likely respond by opening the affected valve or shutting down the compressors because he or she would be alerted by load alarms and valve position indicators, and the central control facility operator would be alerted by audible valve alarms when the B valve changes position;
- the resulting severe compressor motor overloads would likely deblade the compressors, terminating the pressure transient;
- the motor overloads would trip the electrical breakers; and
- the overpressure condition would more than likely result in a distortion of the cell components rather than a catastrophic rupture.

Another event in this release category is failure of a motor-compressor coupling. These couplings have sufficient kinetic energy to penetrate the process system containment boundary. The evaluation of this event estimated a release of 17,500 pounds of UF_6 from a breach of the process boundary equivalent in size to the coupling failure. This event, however, has never been experienced at the GDPs.

Other Chemical Releases

Other chemicals present on-site in quantities to be considered potentially significant hazards in the SAR include HF, F_2, and ClF_3. Each of these materials is highly toxic. Evaluation of these chemicals and potential release scenarios demonstrate that HF is the most significant of these chemicals and potentially poses an off-site hazard from the bounding release scenario. F_2 is stored in limited quantities and is such a strong fluorinating chemical that it will react rapidly with the air upon release and disperse quickly. ClF_3 is also a strong fluorinating chemical and is typically used in sub-atmospheric systems. Like F_2, a ClF_3 release would be of limited quantities and would quickly react with moisture in the air and disperse.

PCBs are also noted as a potential off-site hazard. PCBs are potential carcinogens found in transformers and capacitors. Release of this hazard in conjunction with a fire could potentially affect the public health and safety. Projects are developed to replace all PCB containing capacitors and transformers.

Another chemical present at each plant in quantities to pose potential on- and off-site hazards is chlorine, Cl_2. Cl_2 was not considered in the SARs because it is not a hazard unique to the GDPs and is common to many other industrial facilities. Cl_2 could potentially pose an off-site hazard to the public. This hazard will be analyzed in the SAR Upgrade Program described in Sect. 2.5.

Criticality

Nuclear criticality safety is achieved by exercising control over both the mass and distribution of all fissile material and the mass, distribution, and use of the nuclear properties of other materials with which fissile materials are associated. Typical controls of fissile materials include mass control, density control, geometry control, and spacing control. For non-fissile materials in contact with or in proximity to fissile material, moderation control, neutron reflection, and neutron absorbers may be employed to prevent inadvertent criticality. Many of these controls are implemented through administrative controls.

As stated previously, PGDP currently can produce a maximum assay of 2 wt % ^{235}U, while PORTS can produce a maximum assay of up to 20 wt % ^{235}U. The bulk of the uranium inventory within the process equipment is maintained in the gaseous phase which cannot be made critical. The liquid and solid phases of UF_6 can become critical if adequately moderated and if assembled in a favorable geometry. The above controls are employed in situations involving the handling of solid or liquid UF_6 to prevent inadvertent criticality events.

Both plants are equipped with instrumentation to detect an inadvertent criticality event; to sound a distinct, audible alarm in warning; and to initiate visual warning lights at entrances of the affected building. This instrumentation is strategically located throughout the plant wherever fissile material is handled.

The formation of solid masses of UF_6 within the cascade is effectively controlled by maintaining temperatures and pressures at levels that prevent UF_6 desublimation. Deposits of UO_2F_2 and other uranium compounds can accumulate within the cascade as a result of inleakage of wet air and other reactions within the cascade. To detect the potential buildup of large solid uranium masses, both plants employ gamma detection instrumentation to periodically survey the cascade equipment for significant deposits. Gamma surveys can indicate the size of the deposit but not with reliable accuracy. Non-destructive assay (NDA) technology was recently introduced at PORTS in conjunction with the HEU suspension effort. This technology allows for a direct estimate of the mass of deposits based on detection of ^{234}U decay. The amount of ^{234}U is proportional to the amount of ^{235}U, such that a mass of ^{235}U can be estimated. NDA has been used to prioritize cells for recovery treatment as part of the suspension effort and clean-up of X-326, the HEU portion of the cascade. PORTS will continue to use the NDA technique to monitor for deposits in the cascade. Because PGDP deals with a maximum of 2% ^{235}U, criticality concerns from cascade deposits are significantly less.

The criticality scenarios addressed in the SARs are much more extensive at PORTS than at PGDP because of the ^{235}U assays, and these scenarios conservatively reflect the pre-HEU suspension maximum assay of greater than 90 wt % ^{235}U. Table 2-4 summarizes the accident scenarios considered. To evaluate the potential consequences from an inadvertent criticality, representative calculations were performed to analyze the potential radiation doses resulting from several postulated nuclear excursion scenarios. These calculations show that the consequences of an inadvertent criticality event are limited to a finite region around the critical array. The effects generally only affect the building in which such

an event might occur, and no adverse off-site effects are predicted. With the operating scheme employed in these plants, namely a local control room in each process building and a central control facility, operators in the central control room can take the necessary actions to shut down equipment if an inadvertent criticality forces evacuation or incapacitation of the building operators.

2.2.3 Operational Safety Requirements

PGDP and PORTS both have OSRs documents which define operational safety limitations. These documents define safety systems, their limits and settings, limitations on conditions of operation, and equipment surveillance requirements.

2.2.4 Maintenance of Safety Basis

Both plants evaluate all plant changes for safety implications according to the operating authorization basis per the requirements of DOE Order 5480.21, "Unreviewed Safety Questions." The authorization basis includes the aspects of the facility design basis and operational requirements relied upon by DOE to authorize operation. The authorization basis is described in the FSARs and other safety analyses, OSRs, and facility-specific commitments made in order to comply with DOE orders or policies. Plant changes are evaluated with respect to this basis, and if there are no adverse impacts to this basis, the changes may be implemented without prior DOE approval. This process is similar to the 10 CFR 50.59 process by which commercial reactors evaluate all changes, tests, and experiments for potential "unreviewed safety questions."

This DOE Order 5480.21 process is relatively new. However, safety evaluations and safety assessments have been commonly employed at both plants for several years. These evaluations provide reasonable assurance that the safety analyses defined in the FSARs remain bounding.

2.3 EFFECTS OF PLANT AGING ON SAFETY

The existing FSARs do not explicitly consider the effects of plant aging on safety. Aging effects could potentially lead to many of the events considered in the safety analyses, particularly the UF_6 and other chemical releases. Aging effects could also result in additional challenges to safety systems and operators. To present a complete picture of the safety of the GDPs, the aspects of aging on plant safety must be examined. Thus, this section addresses the following facets of aging:

- material selection and potential corrosion effects,
- equipment reliability,
- equipment monitoring, and
- cylinder monitoring.

2.3.1 Process Boundary Materials and Corrosion

UF_6 is highly corrosive as are other chemicals (e.g., F_2, ClF_3) used in other operations at the GDPs. Due to the use of these chemicals, the materials of construction were carefully chosen in the design of the GDPs. As a result, the GDPs have not experienced any corrosion problems with properly chosen materials of construction for those systems in contact with UF_6. Equipment repairs and the CIP/CUP modifications have provided additional confirmation that corrosion due to UF_6 is not a problem. Equipment removed for repairs and modifications has shown little indication of corrosion.

2.3.2 Reliability Study Program

The GDPs have performed several reliability-related efforts to provide assurance that aging concerns for plant equipment and facilities are identified and appropriate corrective action is taken. This section will describe the more recent reliability effects.

Current reliability efforts are derived from the Reliability Core Study Program which was initiated in the late 1970's. This effort evaluated the general condition of principal production-related equipment, facilities, and systems and associated costs to repair or replace. The availability of replacement parts was also considered, given the age of the plants and potential obsolescence of some equipment. From this information, management prioritized repairs and/or replacements based on available resources. This effort was maintained until the late 1980's. A recent update to these assessments was conducted as part of the USEC transition effort. This assessment addressed the overall physical condition of property and specific conditions which could result in short-term financial burdens.

2.3.2.1 Preventive maintenance program

Both GDPs have Preventive Maintenance (PM) programs which are intended to preserve and extend the useful life of all plant real property. These programs implement positive measures to reduce unscheduled outages and extend the useful life of equipment. Computerized databases provide the capability to schedule PM work, to document its completion, and to assess future requirements. Of particular importance is the inclusion in the PM database of all OSR tests, calibrations, and inspections that are used to verify performance and availability of equipment required for safety.

2.3.2.2 Key process equipment monitoring

As the key active component in the enrichment process, the compressors form the basis for the reliability monitoring programs at the GDPs. Experience has indicated that the compressor seals and motors, and the converters are also worthy of reliability monitoring. Accordingly, the compressors, compressor seals, compressor motors, and converters are routinely monitored for reliability, predicted failures per year, and mean time between failures (MTBF). For the compressors and compressor seals, failure data are collected and input to compressor and seal failure databases which are accessible throughout the GDP operations. These databases are updated, and reports are generated monthly; the capability exists to assure 1-day turnaround on report evaluation.

Statistical analysis of past failure rates indicate that increases in power level and the corresponding number of cascade cells, which may be on- or off-stream as power levels are adjusted, may directly increase failure frequency. Accordingly, the current reliability monitoring analyses consider changes in power levels and actual on-stream time of compressors in establishing the failure history of the compressors. However, the Weibull analysis failure predictions do not consider these changes in severity of service, but, instead, rely solely on compressor age. Nonetheless, the predictions have been reasonably close to actual failure data, as indicated by the FY 1992 data (e.g., 14 actual failures vs 13 predicted failures).

As a result of CIP/CUP, pre-Process Equipment Modification (PEM) target failure rates for the compressors were established at 1.7% failures/stage-year for the 000 compressors and 5.1% failures/stage-year for the 00 compressors. These values were the average failure rates of the period 1960-1973. Failure rates for FY 1992 were 0.63% for 000 compressors and 0.58% for 00 compressors, much lower than the target values. Overall failure rates for the history of operation of the PORTS, PGDP, and Oak Ridge GDPs are 1.05% for the 000 compressors and 1.92% for 00 compressors, also considerably lower than the target values. The predicted MTBF for the compressors is many times the expected lifetime of the plant.

The results of this program are used as input to maintenance and modification activities and to plans for improvements in performance and, therefore, safety.

2.3.2.3 Cylinder Monitoring

Aging of cylinders is not considered a safety concern or issue because of the stringent requirements for inspections, tests, and rejections of cylinders used in the transportation and handling of UF_6. DOE ORO-651, *Uranium Hexafluoride: A Manual of Good Handling Practices*, invokes the requirements of ANSI N14.1 for new cylinders and provides guidance for the acceptable use of existing cylinders. This guidance includes inspections at various stages (i.e., before receipt, before filling, after maintenance or repair), instructions for rejecting cylinders based on visually observed indications of damage, and periodic tests. All cylinders must be inspected and tested at intervals not to exceed 5 years (except cylinders that were filled before the 5-year expiration date, which need not be tested until the cylinder has been emptied). A UF_6 cylinder shall be removed from service or repaired when it is found to have leaks, excessive corrosion, cracks, bulges, dents, gouges, defective valves, damaged stiffening rings or skirts, or other conditions which render the cylinder unsafe.

For cylinders used in long-term depleted assay storage, the Cylinder Integrity Management program has developed a risk based inspection program to monitor the condition of these cylinders. These cylinders, which are stored out-of-doors, are inspected on specific intervals according to location and previous corrosion. Since the material in these cylinders is solid UF_6, no significant release of UF_6 will result in the event of a breach in the cylinder wall.

2.4 UPGRADES TO EXISTING SAFETY ANALYSES

As discussed in Sects. 2.2 and 2.2.2, the DOE safety analysis requirements have been revised since the FSARs were issued in 1985. These revisions have added requirements for more formal analysis methods and rigorous documentation. There are no indications that the existing FSARs omitted any significant hazards or failed to provide a conservative estimate of their likelihood, consequences, and risk. However, the bases for the selection and elimination of some of the hazards are not well documented. The risk evaluation in the FSARs is primarily qualitative. Nevertheless, the GDPs were, when FSARs were issued, one of the few nonreactor nuclear facilities within DOE with such safety documentation.

The current SAR upgrade effort is based upon the requirements of DOE Order 5480.23, "Nuclear Safety Analysis Reports," and DOE/OR-901, *Guidance for Preparation of Safety Analysis Reports*, which provide format and content guidance for the development of a SAR based upon a comprehensive, risk-based safety analysis.

2.5 DOE OVERSIGHT AND MANAGEMENT OF THE GDP

DOE and its predecessor organizations have been responsible for the oversight and management of the two operating GDPs since their initial design and construction. Historically, the earliest guidance for oversight of DOE [then the Atomic Energy Commission (AEC)] facilities was provided by the AEC Manual, which was highly prescriptive. In the early 1970s, when the AEC was reorganized into the NRC and the Energy Research and Development Administration (ERDA), the AEC Manual became the ERDA Manual. The ERDA Manual retained the same general format, content, and prescriptive requirements as its predecessor.

When DOE was established in 1977, it codified the existing guidance on nuclear safety requirements for its facilities (contained in the AEC Manual) through a system of Departmental directives known as DOE orders. These orders typically promulgated detailed guidance on facility safety requirements. In

addition, the DOE orders contained DOE policies and requirements associated with protection of assets, environmental compliance, OSHA compliance, good practices, and other elements which would not apply directly to nuclear safety and safeguards and security.

The DOE orders present requirements for all DOE facilities. Thus, GDP compliance requirements are a subset of the requirements specified in DOE orders. For example, DOE Order 5480.11 requires a radiological control program which implements the provisions set forth in the *DOE Radiation Control (RadCon) Manual*. However, the RadCon Manual includes requirements for plutonium and accelerator facilities and for hot particles which are not applicable to the GDPs. Thus, compliance of the GDPs with the DOE orders for nuclear safety does not imply compliance with all elements of the orders. Therefore, the discussion of requirements presented in Chapter 3 focuses on those applicable requirements which are instrumental to supporting nuclear safety and safeguards and security and to providing commensurate protection to the public and environment specifically for the GDPs.

The requirements specified in DOE orders are also supplemented by DOE field organization orders and DOE notices, and more recently, DOE Standards and Guidelines. The field organization orders provide specific directions and define responsibilities within the field organizations for the implementation of a particular order. In general, the DOE notices provide specific directives for compliance with certain requirements and are valid for a specified time only (with the intent that any necessary changes in the requirements will be incorporated into the base order to provide for long-term compliance). DOE Standards and Guidelines provide accepted interpretations of DOE orders and notices.

2.5.1 Department of Energy Oversight Responsibilities

In the past, compliance with the order requirements has been a line management function because DOE was responsible for both management and oversight. As new standards were issued, DOE allocated the resources to achieve compliance based on an assessment of priority for achieving compliance with the new requirements and resource constraints. An integral relationship between DOE's oversight of compliance and management of the facilities was, therefore, essential for the success of the oversight program.

In 1989, the Secretary of Energy changed the DOE organization to improve the safety and management of DOE facilities because the implementation of the oversight function was considered ineffective. Thus, a key element of these changes was the increased emphasis on self-assessment and oversight activities. At the headquarters level, an oversight function was established to report directly to the Secretary of Energy to advise on the adequacy of line management and self-assessment functions. This function had no line authority, but it did have broad responsibilities to monitor and audit all aspects of nuclear safety through the examination of field office and contractor performance. This function was also responsible for identifying special circumstances indicative of deteriorating or poor performance that might warrant further in-depth appraisals. Such appraisals included special safety appraisals conducted with teams including outside expertise representing a bridge to experience in the commercial nuclear industry.

Additionally, separate offices within the DOE elements of Environmental, Safety & Health (ES&H) and S&S were established to conduct independent assessments of DOE and contractor performance. These offices were complemented by similar self-assessment organizations located in the field at DOE and contractor sites.

2.5.1.1 Environmental, safety and health oversight

DOE Order 5482.1B establishes the basic requirements for DOE Headquarters and field office oversight of DOE-contractor ES&H programs and includes requirements for the following types of appraisals.

1. Management Appraisals: a documented determination of managerial effectiveness in establishing and implementing ES&H program plans that conform to DOE policy requirements. It is based on an analysis of functional appraisals, internal appraisals, and other information. The appraisal covers all ES&H disciplines and management responsibilities to assure proper program balance.

2. Technical Safety Appraisals: a documented multi-discipline appraisal of selected DOE reactors and nuclear facilities conducted by a team representing the DOE Office of Environment Safety, Health and Quality (ESH&Q). The team assesses proper department-wide application of particular safety elements of the ES&H program, nuclear industry lessons learned, and comparability to licensed facility requirements.

3. Functional Appraisals: a documented review of an ES&H specialty discipline performed in accordance with written guidance and criteria to verify, by examination and evaluation of objective evidence at the facility or operation, that applicable elements of the program have been developed, documented, and effectively implemented in accordance with specific ES&H requirements and needs.

4. Internal Appraisals: an examination and evaluation by the operating level (either federal or contractor) of those portions of an organization's internal ES&H program, program plan implementation, and operations retained under direct control.

5. Environmental Surveys: a documented, multi-discipline assessment (with sampling and analysis) of a facility to determine environmental conditions and to identify problem areas of environmental risk requiring corrective action.

6. Environmental Audits: a documented assessment of a facility to monitor the progress of necessary corrective actions, to assure compliance with environmental laws and regulations, and to evaluate field organization practices and procedures.

This order requires the quality, frequency, and depth of appraisals to be commensurate with the hazard of the respective operating activities; consistent with both the DOE policy of comparability and equivalence with similar regulatory programs; and consistent with DOE policy of protection of personnel, property, and the environment. Independent of the hazard, this order requires management appraisals to be conducted as least every 3 years and the other appraisals to be conducted at sufficient frequencies to provide meaningful input to the management appraisals.

Although the DOE organization was modified to achieve more effective independent assessment and appraisal, the line organization still remains responsible for ensuring adequate ES&H performance, including reactor and nonreactor nuclear facility safety. Nuclear safety responsibility embraces all systems and activities that can influence the potential for uncontrolled release of fission products or for nuclear criticality. Certainty of nuclear safety involves not only verification that nuclear reactor and nonreactor nuclear facility designs comply with applicable standards but also verification that plant modifications, operations, maintenance, and plant material conditions meet nuclear safety requirements and that human performance facets which could potentially affect nuclear safety are receiving appropriate attention. DOE Order 5480.5, "Safety of Nuclear Facilities," delineates the basic requirements for

ensuring nuclear safety and includes, among other elements, the requirement for a contractor-independent safety and appraisal system.

2.5.1.2 Occurrence Reports and Lessons Learned

DOE Order 5000.3B identifies requirements for occurrence reporting and processing. One major purpose of this reporting system is to provide operational and safety feed-back from a facility Occurrence Report to other DOE nuclear facilities. Sect. 3.2 of this document discusses this aspect of the order and its use in the GDPs. This reporting system also provides a mechanism for DOE oversight of operations information. According to DOE Order 5000.3B, DOE must establish and maintain an unclassified, central DOE operational database containing unclassified Occurrence Reports entered into the database by the Facility Managers and must make the database available to all DOE operating contractors and departmental elements. DOE must review Occurrence Reports to identify circumstances that indicate deteriorating or poor program performance in the areas of nuclear safety, ES&H, and emergency planning to determine if further actions are warranted. Additionally, the DOE Facility Representative and DOE Program Manager, in conjunction with the Facility Manager, should review the database to identify good practices and lessons learned from other facilities that can be used in their facilities. Other DOE oversight responsibilities for Program Managers and Facility Representatives include:

- ensuring that lessons-learned and generic or programmatic implications are identified and elevated to the Headquarters or Operations Office head, as applicable, for appropriate action;
- ensuring that actions are taken to minimize or prevent recurrence;
- reviewing and assessing Reportable Occurrences information from facilities under their cognizance to assess significance, root causes, generic implications, and the need for corrective action; and
- ensuring that Occurrence Reports and operations information from other organizations are disseminated to appropriate DOE and contractor activities, are reviewed for generic implications, and are used to improve operations.

DOE Facility Representatives must also monitor day-to-day operations and performance of facilities and activities under their cognizance.

Before January 1993, DOE 5000.3A, implemented on September 1, 1990, was in force. Since September 1, 1990, the GDPs have reported and analyzed approximately 850 occurrences; related corrective actions have been submitted to DOE for approval.

DOE Order 5000.3A was implemented by Energy Systems through the issuance of a policy document (ES-OP-300) and Energy Systems Standard (ESS.OP.301). PGDP and PORTS sites then issued plant standard practice procedures to implement the order. These procedures are now being combined into a UE procedure format.

Per DOE Order 5000.3A, the GDPs created a site-specific reporting criteria based on the general criteria within the order. These site criteria were approved by DOE-HQ (NE-33) on December 28, 1992, and immediately implemented at both sites.

Additionally, the sites report less significant events through an internal Energy Systems reporting system per Energy Systems Standard ESS.OP.301. To date, the GDPs have reported and analyzed approximately 2,800 events under this system.

Individuals within the site line organizations who are trained and experienced in event root cause analysis investigate DOE Order 5000.3B occurrences. This process begins with the report of an event to the PSS who categorizes the event in the appropriate reporting level per the site reporting criteria.

If the event meets the DOE reporting threshold, a notification report is filed within 24 hours to DOE by way of the EG&G occurrence reporting and processing system (ORPS) database. Telephone notification is also required for those events classified as emergencies (within 15 minutes) or unusual occurrences (within 2 hours of classification).

Events not reportable to DOE are reported through the Energy Systems internal system for investigation.

For DOE reportable events, a follow-up report that further explains the event and updates the information in the notification report is required within ten working days. Within 45 calendar days, a final report, including corrective actions, must be issued to DOE for the approval of both the local site office and then DOE-HQ (NE-33).

Each event is analyzed to determine root, contributing, and direct casual factors for which corrective actions are created and scheduled. This analysis and its conclusions are validated independent of the line organization before the reports are transmitted to DOE.

The corrective actions are entered into the DOE and plant tracking systems. Corrective actions must be independently verified before official closure. Since September 1990, approximately 4000 actions have been directed at event casual factors.

The occurrence reporting system is supported by the Energy Systems Lessons Learned Systems, which captures lessons from various internal and external sources for review.

As a result of this operational information oversight, DOE may identify a Nuclear Safety Issue (NSI) which multiple facilities must address.

2.5.1.3 Safeguards and security oversight

DOE Order 5630.12A establishes the basic requirements for DOE Headquarters oversight of Safeguards and Security programs, while DOE Order 5634.1A establishes the basic requirements for DOE Field Office oversight of DOE-contractor Safeguards and Security programs. DOE Order 5630.12A requires a program of independent inspections, assessments, special studies, and other appropriate activities to determine the effectiveness of DOE's Safeguards and Security policies, programs, and implementation across the department. This inspection and assessment program must be independent of other line management responsibilities for protection program activities; however, it must also remain supplemental and complementary to the line management oversight responsibilities, including their self-assessment activities. DOE Order 5634.1A identifies the requirements for granting facility approvals before permitting Safeguards and Security interests on the premises and identifies the conduct of on-site security or nuclear material surveys of facilities with Safeguards and Security interests. Through these surveys, the adequacy and effectiveness of Safeguards and Security programs and the protection afforded DOE Safeguards and Security interests are evaluated at the facility level.

2.5.2 Special Oversight Activities

Tiger Team assessments were performed at PORTS in October—November 1989, and at PGDP in June—July 1990. The Tiger Team assessments reviewed three primary areas: ES&H, and Management. These assessments are related to the performance-based appraisals performed by Institute of Nuclear

Power Operators (INPO) on nuclear reactors. They are conducted by multidisciplinary teams appraising key functional elements in a coordinated fashion to provide an overall facility or site assessment.

The Safety and Health assessments were based on Technical Safety Appraisal performance objectives derived from DOE orders, Secretary of Energy Notices (SENs), and other policy statements, industry standards, and nuclear industry lessons learned. These Technical Safety Appraisals are operationally focused evaluations intended to appraise how safely a facility or site is operated and the condition of its equipment. The concerns identified by the Safety and Health assessment were obtained by (1) observing routine operations, emergency exercises, and the physical condition of the site and facilities; (2) interviewing management, staff, operators, and craft personnel; and (3) reviewing policy statements, records, procedures, and other relevant documents. The Safety and Health Appraisal findings were classified according to the following:

The Tiger Teams found that plant management had processes in place for improving plant safety performance. There were no Category I findings involving clear and present danger to workers or members of the public, and only four Category II findings "representing significant risk or substantial non-compliance with DOE orders but not involving clear and present danger." Two of the Category II findings were related to electrical safety and x-ray calibration and were corrected immediately. The other Category II findings were related to fire protection. One of these involved failure to comply with the life safety code. As discussed in Sect. 3.18.4, DOE has been asked for an exemption from this requirement because compliance would require replacement of the process buildings. Corrective actions in response to the other finding are mostly complete, with the last scheduled action not due to be completed until September 1993.

Most of the Tiger Team findings involved Category III actions that will be addressed in order of priority. Some of these findings included a lack of full compliance with DOE orders and mandatory standards. On the other hand, the Tiger Teams recognized the commitment of management and the efforts of the staffs to achieve full implementation of the Secretary of Energy's policies, directives, and initiatives. With respect to the Tiger Teams' findings of lack of full compliance with DOE orders, the following should be noted.

- The DOE orders contain more requirements than necessary to protect the health and safety of the public, employees, and environment, as discussed in the introduction and Sect. 2.5.
- The Technical Safety Appraisal criteria and objectives of the assessment, including the determination of compliance with DOE orders, include a broader scope than nuclear safety.

The GDPs have expended significant efforts and money to resolve the findings and issues identified by the Tiger Team assessments.

2.5.3 FY-1992 Oversight Activities

During fiscal year 1992, DOE conducted routine audits and appraisals of PGDP that involved approximately 3.25 staff-years of on-site effort. During the same year, DOE conducted routine audits and appraisals of PORTS, involving approximately 5 staff-years of on-site effort. Additionally, other agencies such as the EPA and state regulatory agencies conducted audits/inspections of PGDP and PORTS. Furthermore, DOE maintains resident site safety representatives at both PGDP and PORTS who also perform routine oversight activities.

2.6 COMPLIANCE WITH DEPARTMENT OF ENERGY ORDERS

The following information describes the means, identified in DOE orders, by which the field organizations and their contractors ensure compliance with the requirements of DOE orders related to public health and safety or Safeguards and Security programs.

2.6.1 Environment, Safety, and Health Compliance

DOE Order 5480.1B establishes the ES&H program for DOE operations. Paragraph 8.d of this order specifies that heads of field operations are responsible for assuring that all operations under their jurisdiction are carried out consistent with sound ES&H practices and in accordance with ES&H orders. To carry out these responsibilities, Paragraph 8.d requires, among other things, that the heads of field operations prepare implementation plans for DOE Order 5480.1B and other DOE Order 5480 series orders that include:

- the designation of ES&H responsibilities and authorities by the field organization and their contractors, and
- a concise description of the approach, resources, and time period planned for implementing orders that require such plans on a sitewide basis, including a description of the execution of ES&H responsibilities and authorities by the field organization and any proposed generic exemptions to parts of such orders.

2.6.2 Environmental Compliance

DOE Order 5400.1 establishes environmental protection program requirements, authorities, and responsibilities for DOE operations for assuring compliance with applicable federal, state, and local environmental protection laws and regulations, executive orders, and internal DOE policies. This order more specifically defines environmental protection requirements that are generally established in DOE Order 5480.1B. The provisions for developing and reviewing specific measures to comply with DOE environmental requirements are specified in Chapter III, Paragraph 2, "Implementation Plan," and Paragraph 3, "Long-Range Environmental Protection Plan."

The Implementation Plan section requires each field organization to prepare a plan for implementing the requirements of DOE Order 5400.1 for each facility or group of facilities. The purpose of the plan is to provide management direction, including assigning responsibilities and authorities, to ensure that all DOE facilities are operated and managed in a manner that will protect, maintain, and where necessary, restore environmental quality, minimize potential threats to the environment and the public health, and to comply with environmental regulations and DOE policies. Specifically, the implementation plan shall do the following.

1. Provide environmental protection goals and objectives for the organization and identify strategies and timetables for attaining them. Organization and staffing, including assignment of responsibilities for environmental activities, policies, facility operating procedures, and budgeting, will be described.
2. Provide an overall framework for the design and implementation of an environmental protection program for each DOE facility.
3. Assign responsibilities for complying with requirements under all federal, state, and local environmental laws and regulations for all DOE facilities.

As an element of ES&H long-range planning, each field organization must develop a long-range environmental protection plan that comprehensively defines specific environmental objectives and the means and schedules for attaining objectives and completing programs and projects at each facility or group of facilities. The plan serves as a mechanism for Headquarters and field organizations to coordinate strategies for addressing environmental needs.

2.6.3 Safeguards and Security Compliance

DOE Order 5630.13A, "Master Safeguards and Security Agreements (MSSA)," and DOE Order 5630.14, "Safeguards and Security Program Planning," identify the provisions for developing and reviewing specific measures to comply with DOE Safeguards and Security requirements. The MSSA establishes a formal agreement requiring the joint approval of Headquarters and field organizations for the levels of protection of graded Safeguards and Security interests from theft, sabotage, and other malevolent acts associated with SNM or vital assets which may adversely affect national security or the health and safety of the public. Such agreements take into account DOE policy applicable to specific sites and programs to achieve acceptable protection levels that minimize inherent risks on a cost-effective basis. The joint approval of the MSSA allows the responsible field organizations to develop plans for protecting Safeguards and Security interests which are acceptable to appropriate Headquarters personnel.

DOE Order 5630.14 establishes a standardized approach to protection program planning by consolidating various protection program plans, previously required reports, and planning-type documents into one planning document—the site Safeguards and Security Plan. The site Safeguards and Security Plan is composed of three volumes: (1) the MSSAs, (2) the Facility Descriptions and Operations Plans, and (3) the Resource Plans. The three volumes of the site Safeguards and Security Plan depict the existing condition of Safeguards and Security sitewide and by facility, establish improvement priorities, and provide for an estimate of resources required for making the necessary improvements. The site Safeguards and Security Plan must be reviewed and updated annually; modifications to the MSSAs are made per the requirements of DOE Order 5630.13.

3. OPERATIONAL REQUIREMENTS

This chapter describes the envelope of plant operating requirements that are being followed and are considered necessary to protect public health and safety and to assure adequate safeguards and security of the GDP facilities. These requirements and the implementation of these requirements will result in continued safe operation of the GDPs.

A number of sources, listed in the Bibliography (Chapter 6), have been reviewed to substantiate the basic content of these safety requirements. This review has confirmed that the current GDP safety requirements encompass the spectrum of essential nuclear safety and safeguards and security requirements contained in the referenced documents.

The basic objective of each of the topical areas is provided, followed by a set of Implementation Requirements that define what must be done to address the basic objective. These are followed by a description of how the GDPs are meeting the Implementation Requirements. Finally, the status of the conformance of GDP programs and practices with the Implementation Requirements is summarized for each topical area.

A reference is provided for each of the Implementation Requirements. The citation of a DOE Order, American National Standards Institute (ANSI) standard, or National Fire Protection Association (NFPA) standards does not imply that all requirements listed in the order or standard are a mandatory part of the safety basis for the GDPs. The DOE Order, ANSI standard, or NFPA standard is listed only to indicate the source of the implementation requirement.

The programs, procedures, and practices used by the GDPs to satisfy the Implementation Requirements at the time this report was prepared are described in the "How the Requirements Are Met" sections. The plant or Uranium Enrichment governing documents supporting the implementation of the requirement are shown at the end of each paragraph of the description of how the requirement is met. All implementation measures identified in such documents may not apply to the particular requirement in question or may not be fully implemented in the detail specified by the referenced document. The implementation of the requirements can, however, be audited against the descriptions provided in the "How The Requirements Are Met" sections.

This document often refers to safety systems and authorization basis. Safety systems or components are defined as "Systems, components, and structures, including portions of process systems, whose failure could adversely affect the safety and health of the public. These are necessary to prevent accidents or mitigate their consequences, or to monitor releases that could result in potential off-site exposures." Safety systems for the GDPs are identified in the respective OSR documents for each plant. The authorization basis is described in documents such as the facility Safety Analysis Report and other safety analyses; Hazard Classification Documents, the OSRs, DOE-issued safety evaluation reports, and facility-specific commitments made in order to comply with DOE Orders or policies.

3.1 ORGANIZATION PLAN

3.1.1 Basic Objective

Operation of the GDPs shall be organized in a manner to ensure that responsibility and authority for safe operations are clearly defined, and that critical safety functions such as Nuclear Criticality Safety (NCS), radiation protection, quality assurance, and preparation of USQDs are independent of production.

3.1.2 Implementation Requirements

1. Each plant shall have procedures or other appropriate documentation which clearly defines authority, responsibility, and accountability for safe operations. The documentation shall contain the following elements.

   a. Authority for safe operation shall be clearly defined for each position of responsibility (DOE Order 5480.5, DOE Order 5480.1B).

   b. Responsibility for safe operations shall be clearly delineated in each position description and in each "roles and responsibility" document (DOE Order 5480.1B, DOE Order 5480.20).

2. Quality assurance, radiation protection, NCS, and USQD preparation functions shall be independent of production and personnel assigned in these areas should be authorized to halt unsafe activities (DOE Order 5700.6C, DOE Order 5630.11A, DOE Order 5480.19).

3.1.3 How Requirements Are Met

1. The plants are organized in an hierarchical fashion. Each plant maintains an organization chart and written position descriptions. The plant manager is the senior Uranium Enrichment official with on-site responsibility for safe operations. There is a direct chain of command from the Plant Manager to the shift operating staff. On back-shifts and weekends, the plant shift superintendent represents the plant manager. Managers of all the line and support functions needed for the safe and efficient operation of the GDPs report to the plant manager.

   - Responsibility for safe operation and compliance with regulations resides with the plant management. The plant manager assigns responsibility for safe aspects of operations to all levels of management and supervision within the plant. These responsibilities are outlined in plant procedures describing specific operations.

   - Position descriptions and roles and responsibilities documents are prepared for managerial and supervisory positions. Periodic performance reviews are conducted to re-enforce desired supervisory behavior.

     - Each division manager has the authority and responsibility to enforce safe operations within his or her division.

     - Each department manager has the authority and responsibility to ensure safe operation within his or her department.

     - Each supervisor is charged with the safety of the personnel and the facility that he or she supervises.

     - Each worker has the authority to stop work if he or she recognizes an imminent danger that the worker cannot immediately address or correct.

2. Quality assurance, radiation protection, NCS, and USQD preparation are independent from production activities at both plants. Quality Assurance is the responsibility of the Management Systems and Compliance Divisions, which are also separate from production at both plants. Department and division managers for these functions have direct access to the plant manager. Department managers and personnel responsible for radiation protection, NCS, USQD preparation and Quality Assurance have the authority to halt activities they consider unsafe. Stop work actions

initiated for safety reasons can only be removed with the concurrence of the function manager responsible for the stop work order.

3.1.4 Status of Conformance

The requirements set forth in Section 3.1.2 are met as described in Section 3.1.3 with the following general exceptions:

- Some of the plant procedures and other documentation describing the organizational structure are not consistent with the organization as it currently exists and need to be updated.

3.2 MANAGERIAL CONTROLS AND OVERSIGHT

3.2.1 Basic Objective

Management Controls and Oversight (MC&O) shall ensure that activities directly relevant to nuclear safety and safeguards and security are conducted in an appropriately controlled manner that ensures protection of employee and public health and safety and protection of the national security interests.

3.2.2 Implementation Requirements

1. Procedures and documents important to nuclear safety and safeguards and security shall be developed, revised, reviewed, approved, distributed, and used in accordance with identified, written requirements and authorizations (DOE Order 5700.6C and DOE Order 5630.11A).

2. An internal and independent safety review process shall be established and maintained (DOE Order 5480.5).

3. Occurrences shall be reported and investigations conducted on events that could affect the health and safety of the public, or endanger the health and safety of workers (DOE Order 5000.3B and DOE Order 5480.21).

4. A commitment tracking system shall be maintained to monitor the status of formal commitments to improve nuclear safety and safeguards.

5. Administrative controls shall provide standard methods and requirements for creating, collecting, maintaining, and disposing of records related to nuclear safety and safeguards and security (DOE Order 1324.2A; DOE Order 1324.5A).

3.2.3 How Requirements Are Met

MC&O at the UE facilities is assured through implementation of applicable parts of the Uranium Enrichment Quality Program Plan (UEQPP). The UEQPP assigns accountability for quality attainment and assessment of performance of the management systems to the line organizations.

1. Management has established a procedure that defines the expectations for procedure use. Procedure use is consistent with a graded approach based on the significance of the activity (both plants, UE-SPP-PS-100, Sects. 1.0, 6.2, 6.3, and 6.4). Procedures exist at the UE and plant levels that define how safety and safeguards and security procedures are developed, revised, reviewed and approved, and distributed (UE-2-PS-PS1001; P-GP-1, Rev. 2; SPP-PS-001).

2. The Health and Safety Review Committee (HSRC) at PGDP and the Independent Safety Review Committee (ISRC) at PORTS, provide independent health and safety oversight to safety analysis documentation, (FSARs, OSRs) and Unreviewed Safety Questions (USQs).

3. Unusual Occurrence Reporting and investigation of abnormal events include identification and categorization of events as well as analysis of root cause, effectiveness of response to the occurrence, and impact or effect of the occurrence on nuclear safety, safeguards and security. Corrective actions are entered into the commitment tracking system, and their completion is independently validated, appropriately verified, and documented (both plants, UE2-MC-CI-1001, Chapters 2, 6.3, and 7). See also Section 2.5.1.2 for more detail concerning current practice on Unusual Occurrence Reporting.

4. Commitment tracking is provided through a dedicated database for tracking, trending, and managerial review. All corrective actions and commitments from the safety review committees actions, internal and external assessments, Lessons Learned, and unusual occurrences are independently validated, tracked, trended, appropriately verified, and documented (both plants, UE2-MC-CI-1001, Chapters 2, 6.3, and 7).

5. A records management process is established by documented administrative controls that provide standard methods and requirements for the creation, collection, maintenance, and disposition of records related to nuclear safety, safeguards and security. Designated retention times and storage requirements are provided (both plants, UEQPP, Criterion 4).

3.2.4 Status of Conformance

The requirements set forth in Section 3.2.2 are met as described in Section 3.2.3.

3.3 OPERATIONS

3.3.1 Basic Objective

Management shall ensure that plant operations are performed within the controls developed through the use of hazard analysis and safety reviews.

3.3.2 Implementation Requirements

1. Operating bounds for safety systems and components as established by OSRs shall be observed (DOE Order 5480.5, DOE Order 5480.22).

2. Safety system surveillance requirements, as established in the OSRs, shall be conducted as specified. Additional tests to verify proper operation of systems and integrity of confinement structures shall be conducted after significant maintenance as specified in post-maintenance testing procedures. Completed OSR surveillance tests and safety system check sheets shall be independently reviewed. (DOE Order 4330.4A, DOE Order 5480.19, and DOE Order 5700.6C).

3. Procedures shall be prepared to facilitate initial and periodic tests of safety-related equipment to ensure it operates and meets design objectives (DOE Order 5480.5, DOE Order 5480.21, and DOE Order 5700.6C).

4. Management shall assess plant operations and personnel performance through a program of monitoring and plant tours (DOE Order 5480.5, DOE Order 5480.21).

5. Turnovers conducted for selected shift stations shall ensure the effective and accurate transfer of information between shift personnel (DOE Order 5480.19).

6. Management shall ensure that proposed changes which involve an Unreviewed Safety Question or a change in the Authorization Basis or an Operational Safety Requirement are not implemented without DOE consent and written approval (DOE 5480.21).

7. Management shall ensure that "As Found" conditions which potentially involve an Unreviewed Safety Question or a change in the Authorization Basis or an Operational Safety Requirement that DOE is notified and that appropriate engineering reviews and safety assessments of the condition are performed and submitted to DOE for review (DOE 5000.3B, 5480.21).

3.3.3 How Requirements Are Met

1. The OSR (PORTS GAT/GDP-1074, Parts A through L; PGDP KY-315) provide safety limits, operating limits, surveillance requirements, bases, and administrative controls to ensure safe operations. The OSRs are implemented through site procedures, which are required to be used (both plants UE-SPP-PS-100).

2. System surveillance requirements are contained in the OSRs (PORTS GAT/GDP-1074, Parts A through L; PGDP KY-315). Post-maintenance testing and inspections are performed in accordance with procedures (PORTS OPS-13; PGDP OPS-13). Completed OSR surveillance tests and safety system check sheets are independently reviewed (PGDP P-GP-1).

3. Requirements for initial and periodic testing of safety-class systems are contained in the OSR (PORTS GAT/GDP-1074, Parts A through L; PGDP KY-315). The OSRs are implemented through site procedures, which are required to be used (both plants UE-SPP-PS-100). Completed OSR surveillance tests and safety system check sheets are independently reviewed (PGDP P-ESH-57; PGDP P-GP-1).

4. A management self-assessment program is currently being implemented to monitor the effectiveness of operational safety activities. Management personnel are walking their spaces (both plants, UE2-MC-CI 1003).

5. Shift turnovers are conducted in accordance with written procedures developed to ensure the effectiveness and accuracy of the transfer of information between shift personnel (PORTS OPS-11; PGDP P-GP-104).

6. Proposed changes that involve an Unreviewed Safety Question or a change in the Authorization Basis or an Operational Safety Requirement are not implemented without submission to DOE and without DOE consent and written approval (PORTS-SA-001, PGDP-P-ENG-4).

7. Engineering reviews and safety assessments of the "as found" conditions which potentially involve an Unreviewed Safety Question or a change in the authorization basis or an Operational Safety Requirement are performed and submitted to DOE. "As found" conditions are reported to DOE.

3.3.4 Status of Conformance

The requirements set forth in Section 3.3.2 are met as described in Section 3.3.3 with the following general exceptions:

- Reviews of OSR surveillance tests and safety-systems checks are not yet conducted at PORTS.

3.4 ENGINEERING REVIEWS

3.4.1 Basic Objectives

There shall be a documented review process to ensure (1) that all plant and procedure changes are reviewed to confirm that adequate nuclear safety, and safeguards are maintained and to identify Unreviewed Safety Questions and (2) that appropriate performance requirements are included in procurement specifications for safety system items.

3.4.2 Implementation Requirements

1. Procedures and controls shall be established to ensure appropriate reviews of the following.

- Each change to procedures and plant or equipment design impacting safety systems to ensure the adequacy of configuration control, radiation, criticality, nuclear safety and safeguards considerations and to maintain appropriate limits (DOE Order 5480.5, DOE Order 5480.21, DOE Order 5480.22, DOE Order 5480.23, and DOE Order 5700.6C).

- Each procurement document for safety systems to ensure that they contain appropriate information on established radiological and criticality safety requirements and to ensure that vendors shall supply equipment that will perform under expected service conditions (DOE Order 5480.5; DOE Order 5480.21; DOE Order 5480.22; DOE Order 5480.23; and DOE Order 5700.6C).

2. Listings of all changes to plant and equipment safety systems evaluated through the use of engineering reviews, safety assessments and USQDs shall be maintained for each calendar year. Appropriate documentation shall be made available for regulatory oversight review if requested (DOE Order 5480.21, DOE Order 5480.22, DOE Order 5480.23, and DOE Order 5700.6C).

3. Engineering reviews of proposed changes to the plant facilities, procedures, and or tests (or additional tests not included in the authorization basis) which involve an unreviewed safety question or a change in the authorization basis or an operational safety requirement are submitted to DOE for review and concurrence prior to implementation (DOE Order 5480.21).

3.4.3 How Requirements Are Met

1. Procedures and controls have been established as described below

The manager of each nuclear facility (building or operation) is required to notify the nuclear safety organization of any proposed changes to a safety system; any significant facility or process modification, tests, or experiments being performed without an Engineering Service Order (ESO); and any temporary modifications, as defined in plant procedures. The nuclear safety organization reviews these to confirm that adequate radiation protection, criticality safety, and safeguards are maintained and to identify Unreviewed Safety Questions. For significant facility or process modification, tests, or experiments being performed under an ESO, the nuclear safety organization reviews ESO to confirm that adequate radiation protection, criticality safety, and safeguards are maintained and to identify USQ (both plants UEQPP, Criterion 6; PORTS SPP-H-45, Sect. C, SA-001, Sect.6.2; PGDP SPP-P-ENG-4, Sect. 6.2.). Similarly, each procedure change request is screened by a qualified USQ reviewer to determine whether its implementation would involve a USQ (both plants UE2-PS-PS-001, Sect. 6.4). Procedure change requests are also required to be reviewed by a procedure configuration control board, which is required to have representation in sufficiently broad functional areas to enable it to confirm that adequate radiation protection, criticality safety, and safeguards are maintained (PORTS SPP-PS-001, SPP-PS-002; PGDP P-GP-92).

Specific measures have been implemented to require that the information within procurement documents for safety system components conforms to approved specifications. All safety system component purchase orders or bills of materials are required to be marked as requiring special inspections unless the requirement for special inspections is clearly identified on the engineering data sheets from which orders are made. Furthermore, engineering specifies the inspections and quality assurance documentation that are required from the vendors as a condition of purchase for safety system components prior to its acceptance for use within the plants (PORTS SPP-H-31, SPP-H-45; PGDP P-ESH 57, Sect.5.1). Procedures require that engineering approve all data sheets for safety system components before their actual procurement (PORTS SPP-H-31, SPP-H-45; PGDP P-ESH 57, Sect.5.2).

2. Appropriate documentation is maintained at both GDPs (PGDP: P-ESH-20; PORTS: SPP-H-30).

3. Engineering reviews of proposed changes as described in the Implementation Requirements are submitted to DOE for review and concurrence prior to implementation (PORTS-SA-001, PGDP-P-ENG-4).

3.4.4 Status of Conformance

The requirements set forth in Section 3.4.2 are met as described in Section 3.4.3 with the following general exceptions:

- The configuration control process (including as-built drawings) for safety systems is not fully implemented.

3.5 TRAINING AND QUALIFICATION

3.5.1 Basic Objective

Plant personnel must be aware of and trained to recognize and cope with safety hazards and safeguards requirements that they will encounter in their jobs, and they must be appropriately trained and qualified for nuclear safety-related functions they perform.

3.5.2 Implementation Requirements

1. Line managers are responsible for defining training needs and assuring completion of training and demonstration of performance proficiency (qualification) of their employees consistent with their job content (DOE Order 5480.18A, 5480.19, and 5480.20).

2. The independent training organization shall co-develop with line management a description of each organization's training requirements and record status in satisfying these requirements, thereby ensuring effective implementation and control of training activities (DOE Order 5480.20).

3. Plant personnel and visitors or contractors shall successfully complete training in the areas listed below before they are granted unescorted access to controlled areas (DOE 5480.11, and DOE Order 5480.20).

   - Plant radiological, chemical, criticality, and industrial safety hazards;
   - Plant safety rules; and
   - Plant evacuation procedures.

4. Plant personnel shall successfully complete radiation protection training before they are granted unescorted access to radiological areas (DOE 5480.11, and DOE Order 5480.20).

5. As required, personnel shall successfully complete performance based training for safety-related activities. (DOE Order 5480.19, and DOE Order 5480.20).

6. Personnel shall successfully complete nuclear safety and safeguards and security training, retraining and requalification at established intervals. (DOE Order 5480.19, and DOE Order 5480.20).

7. Training requirements shall be defined and training provided to all supervisors and managers with respect to their responsibilities in the areas of safety and safeguards and security (DOE Order 5480.18A, DOE Order 5480.19, and DOE Order 5480.20).

3.5.3 How Requirements Are Met

1. Line management establishes operating standards, communicates performance expectations to all personnel, approves training programs developed jointly with plant training organizations, and verifies successful completion of these programs (reference UE-SPP-TRN-1, 5.0).

2. Both GDPs have dedicated independent training organizations. These training departments serve the operations, production, and maintenance organizations but remain functionally separate. The training departments have dedicated facilities, equipment, and staff to support training functions. The training staff at both facilities is comprised of certified instructors, suitably qualified in their fields and experts in the subjects they teach.

   Both plant's training organizations document and track training requirements and completion using training data base software. The training organizations, together with line management, have developed a Training Development and Administrative Guide (TDAG) and Qualification Standard to describe and control training activities. Plant training procedures have recently been reviewed for detail, applicability, and usability.

3. The following safety and safeguard-related training is given to plant personnel and to visitors or contractors who require unescorted access to controlled areas. (Standard Practice and Procedure (SPPs) currently shown as DRAFT are expected to be final by July 1, 1993.)

   - General Topics: Following review of Martin Marietta-Uranium Enrichment (MM-UE) programs, the trainee is expected to be able to identify health and safety programs; employee and visitor responsibilities; and emergency programs, signals, and actions required [PGDP SPP P-ESH-1; PORTS SPP TQ-014 (draft)].

   - Hazard Communication: The purpose of this general overview, awareness-level course is to make every employee aware that hazardous chemicals are present in the workplace and to help them understand the function of warning labels and signs, MSDSs, and the written Hazard Communication Program (PGDP SPP P-ESH-30; PORTS H&S SPP H-58, Sect. J).

   - General Employee Radiation Training: The training covers the employee's responsibilities for maintaining exposures to radiation and radioactive materials as low as reasonably achievable (ALARA). It reviews natural background and man-made sources of radiation, the whole body radiation dose limit for nonradiological workers, the potential biological effects from chronic radiation doses, ALARA concepts and practices; and methods used to control radiological materials (UE-SPP-ESH-5, Sect. 6.2).

- Emergency Preparedness: Introduces the trainee to the basic Emergency Preparedness Program elements including: the definition of "emergency" plant safety objectives and priorities, ways to report emergencies, the recognition and correct responses to plant alarm signals, the correct response to evacuations caused by radiological and nonradiological emergencies, personnel accountability; and each employee's responsibilities related to emergencies (PGDP SPP P-ESH-500; PORTS H&S SPP-H-6, Sect. 5.12.4).

- General NCS: The training emphasizes the prevention of accidental nuclear criticality and describes the hazards and risks of a nuclear criticality accident, recall, and criticality safety responsibilities and identifies the proper response to a nuclear criticality alarm (PGDP SPP P-ESH-20; PORTS H&S SPP H-30, Sect. 2.C).

- Health and Safety Rights: Covers the employee's rights and responsibilities and employer duties (PGDP SPP P-ESH-1; PORTS H&S SPP H-24, B.2.).

4. Radiation Worker Training includes a comprehensive classroom and practical curriculum consisting of radiological theory and site-specific applications. Proper use of radiological protective clothing and equipment is stressed during the practical exercise (UE-SPP-ESH-5, Sect. 6.3).

5. Based on job assignment as specified in the TDAG or Qualification Standard, appropriate employees also attend higher level performance based training in the following areas.

   - Hazard Communication and Chemical Safety (PGDP SPP P-ESH-30; PORTS H&S SPP H-49, Sect. 6.1.1, SPP H-58, Sect. J).

   - Lockout/Tagout for Authorized Employee (PGDP SPP P-ESH-113, SPP P-ESH-116; PORTS H&S SPP M-4, Sect. 5.3.2).

   - Reproductive Hazards (UE SPP-ESH-3; PORTS H&S SPP H-64, Sect. 6.1.3.a).

The Emergency Response Training Program is designed to meet emergency response training needs for plant emergency response team personnel. Emergency response team members from key functional areas are trained. Training in these key functional areas is designed to meet the individual training requirements. Documentation of training is maintained within the Safeguards, Security, and Emergency Services Division records or in the plant central training records files.

The Maintenance training programs are designed to provide a skilled workforce that has the technical expertise and safety-related knowledge and skills necessary to ensure the integrity of plant safety systems and/or critical components during maintenance operations. Craft personnel and supervisors are trained in key maintenance functional positions. Training in these key functional positions is designed to meet the individual training requirements. Documentation of training is controlled by the Training Department and maintained by Records Management (UETRN-1, Sect. 1.2; UETRN-6, Sect. 6.2; and UETRN-7, Sect. 7.2).

The Operations training programs are designed to meet the operational training needs for plant operations personnel. Operators and supervisors are trained in key functional positions. Documentation of training is controlled by the Training Department and maintained by Records Management (UETRN-1, Sect. 1.2; UETRN-6, Sect. 6.2; UETRN-7, Sect. 7.2; PORTS PX-008, Sect. 5.2).

Mobile Equipment and Transportation Safety Training Program is designed to meet Mobile Equipment and Transportation training needs to support plant operations. Training in these key functional areas is designed to meet the individual training requirements. Documentation of training

will be maintained with Mobile Equipment and Transportation Safety Training or in the plant central training records files (PGDP SPP P-ESH-102; PORTS H&S SPP H-11).

6. Personnel complete nuclear safety and safeguards and security-related initial training, retraining, and requalification training at established intervals as described in the TDAG, Qualification Standard, or site-specific procedures and policies.

7. Supervisors and managers attend initial training as noted for radiological, chemical, criticality, and industrial safety. In addition, based on documented requirements regarding applicability, supervisors and managers attend additional classroom training on the following subjects.

   - NCS Training for Supervisors (PGDP SPP P-ESH-20; PORTS H&S SPP H-30, Sect. 2.C).
   - Hazard Communication Training for Supervisors (PGDP SPP P-ESH-30; PORTS H&S SPP H-58, Sect. J).
   - Lockout/Tagout Training Issuing Authorities (PGDP SPP P-ESH-113, SPP P-ESH-116; PORTS H&S SPP M-4, Sect. 5.3.2).

3.5.4 Status of Conformance

The requirements set forth in Section 3.5.2 are met as described in Section 3.5.3 with the following general exceptions:

- Performance-based training has not been implemented for all specialties.

3.6 QUALITY ASSURANCE

3.6.1 Basic Objective

A Quality Assurance program shall be established to ensure that planned and systematic actions will provide adequate confidence that nuclear safety and safeguards and security related structures, systems, and components will perform satisfactorily in service.

3.6.2 Implementation Requirements

For nuclear safety and safeguards and security-related systems, structures, components, and related operations, the Quality Assurance Program shall include, as a minimum, the following elements (ANSI/NQA-1, DOE Order 5700.6C).

1. A written Quality Assurance Program which describes the established QA organizational structure, functional responsibilities, levels of authority, duties, and interfaces shall be developed and maintained.

2. Personnel shall be trained and qualified to ensure that they can perform their assigned work and to ensure that job proficiency is maintained.

3. The organization shall establish and implement processes to detect and prevent quality problems. Items and processes that do not meet established requirements shall be identified, acceptably controlled, and corrected.

4. Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, and establish designs for items that can impact public health and safety. Related records shall be identified, prepared, reviewed, approved, and maintained.

5. Safety-related work shall be performed to established technical standards using appropriate administrative controls and under controlled conditions using approved instructions, procedures, or other appropriate specifications.

6. Safety-related items and processes shall be designed using appropriate standards. Design work, including changes, shall be conducted to applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be validated by individuals or groups other than those who perform the work. Verification and validation of work results shall be completed before the design is approved and implemented.

7. The organization shall ensure that procured safety-related items and services meet established requirements and perform as specified.

8. Inspection and acceptance testing of specified items and processes shall be conducted using established performance criteria.

9. Management at all levels shall periodically assess performance to the requirements of the integrated quality assurance program. Problems that hinder the organization from achieving its objectives shall be identified and corrected.

3.6.3 How the Requirements Are Met

For safety and safeguards and security systems, structures, components and related operations, the Quality Assurance Program for the GDPs includes the following elements.

1. The Uranium Enrichment Quality Program Plan (UE QPP) is described in UEO-221, Rev 0, *Quality Program Plan for Uranium Enrichment*. The Quality Assurance program is derived from the consensus standard ANSI/ASME NQA-1 (1989) and meets the requirements set forth in Section 3.6.2.

2. Persons performing Quality Assurance related activities are trained to ensure that they are sufficiently knowledgeable to perform assigned activities (both plants, UE2-MC-11001, UE4-MC-QI1001, and UE4-MC-QI1002).

3. A system of independent assessments to verify compliance with key aspects of the Quality Program and to determine the effectiveness of the program is in place and is implemented through plant policies and procedures (both plants, UE2-MC-11001). Controls for the identification and disposition of nonconforming items are implemented through plant and department policies and procedures [both plants, UE2-MC-CI 1002 (Draft)].

   A corrective action system is established to control management of identified deficiencies. Line management determines the root cause of the deficiency and develops a corrective action plan. Corrective actions for deficiencies identified in assessments, occurrence reporting, Health and Safety Review Committee (HSRC) reviews, nonconformance reports, and Lessons Learned are entered in a dedicated database for tracking, trending, and managerial review. Commitments made in connection with completion of corrective actions are entered in a commitment tracking data base. These are independently validated, tracked, trended, and, upon closure, verified with documentation of the complete process [both plants UE2-MC-CI 1001 and UE2-MC-CI 1005 (Draft)].

4. Development, review, approval, distribution, and change control of documents that specify quality requirements or prescribe activities affecting quality are implemented through plant policies and procedures (both plants, UE2-PS-PS1001).

5. Work on safety systems is controlled and performed through the use of approved procedures [both plants, UE2-MC-MC1001 (Draft)].

6. Design controls are implemented through plant and departmental policies and procedures.

   - Applicable design requirements are specified and translated into design documents (both plants, UE2-EN-1002).

   - Design interfaces are identified and controlled [both plants, UE2-EN-1001 (Draft)].

   - Independent reviews and supervisory reviews verify the adequacy of nuclear safety and safety-related designs prior to design implementation [both plants UE2-EN-1003 (Draft)].

   - Control measures commensurate with those applied to the original designs govern design changes, field changes, and nonconformance dispositions (both plants UE2-MC-CI 1002 and UE2-EN-1002).

7. Procurement documentation requirements are implemented through plant policies and procedures (PGDP P-GP-24; PORTS SOP 320.15, SPP-P-1). Controls for procurement of materials, parts, components, and services that are intended for use in designated safety systems are implemented through plant policies and procedures (PGDP P-GP-28, P-GP-48, P-PRO-3, Energy Systems Procurement Division Operating Manual, PORTS procedure required).

   Controls for shipping, handling, and storing materials, parts, and components intended for use in safety systems are implemented through plant and department policies and procedures (PGDP P-GP-23; PORTS procedure required).

8. Performance criteria for inspection and testing of work on safety systems are implemented through plant policies and procedures (both plants UE2-MC-QS1001 and UE2-MC-QI1002).

9. Management assessments are conducted considering performance to assigned objectives, trends reviews, performance observation in the workplace, deficiency review, and adequacy of management system documentation [both plants, UE2-MC-CI 1004 (Draft)].

3.6.4 Status of Conformance

The requirements set forth in Section 3.6.2 are met as described in Section 3.6.3 with the following general exceptions:

- Not all procedures required to support the quality assurance program have been prepared and approved.

- Records-management programs for nuclear safety, safeguards and security need to be fully implemented at both plants.

- However, certain compensatory and mitigating actions have been approved by DOE pending full implementation of the QA requirements set forth in section 3.6.2. These compensatory and mitigating actions are described in the following documents:

- PGDP, a letter to the DOE site office dated December 18, 1992. (Subject: Status of 21 Quality Management Systems), and

- for PORTS, a letter to DOE site office dated February 18, 1993. (Subject: Compensatory Actions, Portsmouth).

3.7 MAINTENANCE

3.7.1 Basic Objective

Nuclear safety and safeguards and security-related maintenance shall include effective programs for preventive maintenance, corrective maintenance, and calibration of instruments.

3.7.2 Implementation Requirements

1. A corrective maintenance program shall be implemented to ensure that prompt and effective maintenance is performed on malfunctioning nuclear safety systems, safeguards, and security equipment (DOE Order 4330.4A).

2 A preventive maintenance program shall be implemented to ensure the operability of nuclear safety systems, safeguards, and security equipment (DOE Order 4330.4A).

3. A documented instrument calibration program, employing standards traceable to the national standards system or to nationally accepted standards, shall be implemented for the calibration of equipment and monitoring devices necessary for the proper maintenance and operation of nuclear safety systems and safeguards equipment (DOE Order 4330.4A, DOE 5633.3A, and DOE 5700.6C).

4. Controls shall be established to ensure safety systems are not disabled or diminished by planned activities.

3.7. How Requirements Are Met

1. The corrective maintenance program ensures that facility systems, structures, and components are returned to their designed condition in a timely and effective manner (both plants; Maintenance Implementation Plan, Sect. 3, MAP-WC-001, MAP-CM-001, MAP-PSC-001, and MAP-PCU-001; PORTS SPP-M-1, SPP-PS-001, SPP-PS-002, SPP-PS-003, SPP-PS-004).

2. The operability of nuclear safety systems is ensured by proper application of surveillance testing and preventive maintenance program elements. The preventive maintenance program uses a computer data base to track and report program performance. Preventive maintenance schedules are derived from vendor recommendations, engineering analysis, and 40 years of operating experience (both plants, MAP-PM-001; PORTS/MAP-PM-002).

3. All nuclear safety-related measuring and test equipment standards are included in the plant recall system and are calibrated using procedures that provide for traceability to National Institute of Standards and Technology (NIST). Measurement control programs are in place to assure that equipment used to measure SNM is calibrated in a manner traceable to national standards (PORTS POEF 1197, Sect. 6.0; PGDP KY/D-3899, Sect. III.D).

4. A Safety System Permit is required at PGDP when a designed "safety system" will be disabled, diminished, or affected by planned tasks. At PORTS, work on safety systems is controlled by

marking the Safety System block on the Maintenance Service Request (MSR) when requesting maintenance for safety systems and using the Safety System Data Sheet to Document the work.

3.7.4 Status of Conformance

The requirements set forth in Section 3.7.2 are met as described in Section 3.7.3.

3.8 RADIATION PROTECTION PROGRAMS, SYSTEMS, DESIGNS, AND PERMITS

3.8.1 Basic Objective

The radiation exposure of employees, contractors, and visitors and the release of radioactive effluents to unrestricted areas shall be maintained as far below the regulatory limits as is reasonably achievable, economic and societal factors being taken into account.

3.8.2 Implementation Requirements

1. A radiation control program that defines steps to be taken to limit exposure of workers and the public shall be established (DOE Order 5480.5, DOE Order 5480.11).

2. Line management shall be responsible for radiation protection (DOE Order 5480.11).

3. A radiation protection organization, independent of production or operations, shall be provided to guide and assist line managers in fulfilling their radiation protection responsibilities (DOE Order 5480.11).

4. A radiation protection manager shall be provided to advise and consult with line managers and to guide the radiation protection activities (DOE Order 5480.11).

5. Instructions concerning all the activities of radiation protection technicians shall be provided. Radiation protection procedures for the control and use of radioactive materials and radiation-generating devices shall provide for safe operations (DOE Order 5480.11).

6. A formally structured, auditable ALARA program with established milestones to ensure that exposures are maintained at ALARA levels shall be in place (DOE Order 5480.11).

7. A respiratory protection program to limit the intake of airborne radioactive materials and to protect employees from potentially hazardous atmospheres shall be established (DOE Order 5480.11).

8. A bioassay system shall be established that will evaluate Committed Effective Dose Equivalents (CEDE) to personnel who are occupationally exposed to radiation with the likelihood to receive intakes of 100 mrem or more (CEDE) (DOE Order 5480.11).

9. Engineering and administrative controls and personal protective equipment shall be used to control the exposure of employees to internal radiation sources; occupational exposures shall be evaluated and recorded when the potential exposure could exceed 2% of the regulatory limit (DOE Order 5480.11).

10. Employee exposure to external radiation sources shall be controlled using postings, interlock systems, monitoring, and surveys. Occupational exposures shall be evaluated and recorded when the potential exposure could exceed 2% of the annual limit for effective dose equivalent. Exposure of extremities and the skin shall be evaluated as appropriate (DOE Order 5480.11).

11. Radiation areas, high radiation areas, very high radiation areas, contamination areas, high contamination areas, airborne radioactivity areas, and radioactive materials (storage) areas shall be prominently and distinctly marked to preclude inadvertent or unknowing entry by employees, visitors, and contractors (DOE Order 5480.11).

12. Plant alarms to alert personnel in and around facilities of emergency conditions or impending hazards shall be provided (DOE Order 5480.11).

13. The radiation monitoring and contamination control program shall ensure worker protection from radiation exposures. Sources of radioactive contamination shall be controlled at the source and steps shall be taken to limit the extent of contamination. The extent of contaminated areas shall be limited by vigorous decontamination efforts (DOE Order 5480.11, DOE Order 5480.1B).

14. Airborne radioactive materials, surface contamination, and external radiation exposures shall be monitored and surveyed to assure that employee internal accumulations of radioactive materials can be routinely estimated and to ensure that exposures are at ALARA levels (DOE Order 5480.11, DOE Order 5480.1B).

15. Personnel dosimetry shall be used and maintained so that results will be accurately determined (DOE Order 5480.15, DOE Order 5480.11).

16. A formal inventory program to account for nonexempt byproduct material sources and to provide for their control, movement, and leak testing shall be maintained (DOE N5400.10).

17. Provisions shall be made to provide for oversight of radiation protection programs. The audit program for both routine operations and unusual radiological occurrences shall provide for adequate assessment of performance (DOE Order 5480.11).

18. A Radiation Work Permit (RWP) system to ensure that radiation exposure and contamination controls are applied to all activities involving entry into radiation, airborne radioactivity, and contamination areas and to other work areas with radioactive materials shall be established (DOE Order 5480.11).

19. Radiation protection instructions to workers such as RWPs shall be available for review at the entry of the work area to which they apply (DOE Order 5480.11).

20. Radiation measuring instruments used to evaluate hazards or define employee exposure shall be subject to periodically scheduled maintenance and calibration in accordance with approved procedures; the sources of radiation measured will be NIST traceable (DOE Order 5480.11).

21. Employees shall be provided with an annual report of their occupational exposure history in accordance with Paragraph 9.n of DOE Order 5480.11, and visitors shall be provided with information with respect to their exposure in accordance with Paragraph IV.3.d of DOE Order 5484.1A. Summary exposure information containing the data specified in Paragraph IV.4.a of DOE Order 5484.1A shall be reported annually to DOE (DOE Order 5480.11 and DOE Order 5484.1A).

22. Records related to occupational radiation exposure shall be maintained in a manner that permits easy recovery of the data, allows for trend analysis, and aids in the protection of the individual and the control of radiation exposure (DOE Order 5480.11, DOE 1324.2A, and DOE 1324.5A).

23. An occupational health program shall be established to oversee, promote, and protect the radiological and nonradiological health of plant personnel.

3.8.3 How Requirements Are Met

1. A radiation protection program consisting of specific radiation protection procedures has been established (see UE-SPP-ESH-2-14).

2. Radiation Protection, Maintenance, and Operations procedures list and assign line managers' and supervisors' responsibilities for radiation protection.

3. Each GDP has a dedicated radiation protection organization that is separate from the GDP operations and production and maintenance operations.

4. Radiation Protection Managers have been designated at both plants.

5. Operating procedures and instructions concerning the activities of the Radiation Protection Technicians have been prepared and are incorporated in departmental procedures at both plants.

6. The approved ALARA program requires that the radiation protection staff review employee radiation exposures, the results of air and contamination monitoring, proposed operating procedures, and other technical documents used in pre-job planning, incident and occurrence reports, and other information pertinent to the reduction of exposure. Lessons learned from such reviews are distributed and made available throughout the plants. ALARA reviews are also conducted when new facilities are designed and when existing facilities and processes are modified (both plants, UE-SPP-ESH-3, Sect. 5.3; UE-SPP-ESH-6; UE-SPP-ESH-7, Sect. 7; UE-SPP-ESH-8, Sect. 5.3, 6, and 7).

7. A respiratory protection program has been established to govern the selection and use of respirators to reduce the internal exposure of employees. Procedures govern related training, define the medical qualifications and fit testing of employees, and ensure employee medical fitness to use respiratory protection (PGDP P-ESH-9; PORTS SPP-H-42).

8. Routine urinalysis programs are conducted to determine the uptake of uranium compounds. In vivo analysis is performed upon selected employees working in restricted (radiological) areas. Dose estimates, using standard programs, are made as required (both plants, UE-SPP-ESH-8, Sect. 5.3, 6, and 7).

9. Engineering controls, postings, personnel monitoring, and protective clothing are used to control the spread of radioactive materials in the workplace. Containment devices to control contamination at the source are being introduced at the two sites. Decontamination, where required, is being conducted and achieves ALARA objectives (both plants, UE-SPP-ESH-6).

10. All employees, contractors, and visitors who work within or who have reason to enter the restricted areas of the plant are provided with a TLD. Restricted areas within the plant are posted. Also see paragraphs 11, 12, 18, and 19.

11. Radiation Areas, High Radiation Areas, Airborne Activity Areas, High Airborne Radioactivity Areas, Contamination Areas, High Contamination Areas, Controlled Areas, Radiological Areas, and Radioactive Materials Storage Areas are posted with warning signs (both plants; UE-SPP-ESH-6, Sect. 6.1).

12. Alarm systems are installed to provide visual or audible warning signals to alert personnel to evacuate or to refrain from entering areas where high external radiation fields exist or where a criticality event may have occurred. These systems are periodically tested (both plants, UE-SPP-ESH-11, UEHP-E-2, UEHP-E-4.). (See also the Sect. on Nuclear Criticality.)

13. The contamination control program incorporates radiological monitoring, radiological survey inspections, audits, reviews, investigations, training, and the use of portable containment structures to maintain program effectiveness (both plants, UE-SPP-ESH-6).

14. Continuous and periodic air sampling and periodic contamination surveys are performed routinely using calibrated instruments in accordance with approved procedures. Material, tools, equipment, and personnel leaving contaminated areas are surveyed for contamination before release. Nonradiological areas are surveyed periodically. Personnel also perform self-monitoring when leaving radiological (restricted) areas (both plants, UE-SPP-ESH-6, Sect. 6.5).

15. The external dosimetry program at PGDP and PORTS are DOELAP accredited. DOELAP is DOE's accreditation program for dosimetry and is similar to NVLAP (both plants, UE-SPP-ESH-7, Sect. 5.22 and 7).

16. A source custodian is designated for each nonexempt, sealed, byproduct material source and for each radiation-producing machine. Central filing systems, computer inventories are maintained for radioactive materials sources, and radiation-generating machines. These inventories are validated by physical inventory. Leak testing of sealed sources is accomplished at specified intervals (both plants, UE-SPP-ESH-12, Sect. 5.9, 6.9, 6.11; UEHP-O-11, Sect. 8).

17. Audit teams conduct audits and surveillances of radiological activities to determine adequacy, compliance, and effectiveness of radiation protection programs by investigation, examination, and evaluation of established procedures, instructions, drawings, and other applicable documents. See also the sections on MC&O and Quality Assurance (both plants, UE-SPP-ESH-2, Attachment).

18. RWPs are completed in accordance with plant procedures (both plants, UE-SPP-ESH-9).

19. RWPs are posted at the entry of appropriate restricted areas, airborne radioactivity areas, and contamination areas. RWPs are also required for performing any task that involves exposure to radiation or to radioactive materials above established limits. The RWP specifies monitoring and entry and exit requirements and the level of personal protective equipment required (both plants, UE-SPP-ESH-9, Sect. 5).

20. Radiation protection instruments are calibrated and maintained periodically (both plants, UE-SPP-ESH-10, Sect. 5.6 and 6.1).

21. Employees are given annual dose summaries. Employee doses are trended and tracked. Other radiation protection-related operational-type records are also maintained (both plants, UE-SPP-ESH-2, Attachment; UE-SPP-ESH-3, Sect. 5.3; UE-SPP-ESH-7, Sect. 6 and 7; UE-SPP-ESH-8, Sect. 5.3, 6, and 7; UE-SPP-ESH-13). (See also the sections on MC&O and Quality Assurance.)

22. Records to document the conduct of monitoring activities and surveys of occupational doses received by employees, contractors, and visitors are prepared and maintained.

23. Medical staffs perform required medical examination, review records of occupational exposure, define biological monitoring requirements and interpret results, investigate overexposure, and otherwise support the occupational medicine programs at both plants.

3.8.4 Status of Conformance

The requirements set forth in Section 3.8.2 are met as described in Section 3.8.3 with the following general exceptions:

- The UE-SPP procedures and plant Health Physics procedures are not internally consistent.
- Prescribed survey frequencies are not consistently being met.
- The radiation protection record keeping procedures have not been fully implemented.
- Radiation warning signs and other signs need to be made consistent on a plant-wide basis.
- Issues with respect to the management of fixed and removable contamination need to be resolved.
- The in vivo counter at PGDP requires upgrade, new calibration phantoms, and upgraded software in order to be functional at a state-of-the-art level.
- Additional personnel contamination monitors, and other contamination control instrumentation are needed to support program activities.

3.9 NUCLEAR CRITICALITY SAFETY

3.9.1 Basic Objectives

A NCS Program shall provide the necessary elements to protect personnel from potentially dangerous effects of a nuclear criticality accident. This goal shall be accomplished by implementing administrative and engineered process controls. These controls will minimize the possibility of a nuclear criticality accident, and implementing emergency response plans will minimize personnel exposure if a nuclear criticality accident occurs.

3.9.2 Implementation Requirements

1. Management shall be responsible for the safety of operations. Responsibility for NCS shall be clearly defined and established. Management shall provide personnel skilled in the interpretation of data pertinent to NCS and familiar with operations to serve as advisors to supervision (ANSI 8.1, DOE Order 5480.24).

2. Before a new operation with fissionable materials is begun or before an existing operation is changed, the entire process must be shown to be subcritical under both normal and credible abnormal conditions. This demonstration includes a peer review of NCS evaluations. NCS evaluations shall determine and explicitly identify the controlled parameters and their associated limits upon which NCS depends (ANSI 8.1, DOE Order 5480.24).

3. Process designs shall, in general, incorporate sufficient factors of safety to require that at least two unlikely, independent, and concurrent changes in process conditions occur before a criticality accident is possible. A single means of preventing a nuclear criticality accident is acceptable, provided the process control is determined to be adequately reliable within an approved Final Safety Analysis Report. Where practicable, equipment design, in which dimensions are limited, rather than administrative controls shall be relied upon. Full advantage may be taken of any nuclear characteristics of the process materials and equipment. All dimensions and nuclear properties which are relied upon shall be verified before operations begin, and control shall be exercised to maintain them (ANSI 8.1, DOE Order 5480.24).

4. NCS training programs shall be established (ANSI 8.20, DOE Order 5480.20).

5. Fissile materials labeling and area posting, specifying material identification and all limits on parameters that are subject to procedural control, shall be maintained (ANSI 8.1, DOE Order 5480.24).

6. Operations to which NCS pertains shall be governed by written procedures. All persons participating in these operations shall understand and be familiar with these procedures. The procedures shall specify parameters which must to be controlled. The procedures shall be structured in such a way that no single departure from a procedure can cause a criticality accident (ANSI 8.1, DOE Order 5480.24).

7. Deviations from procedures and unforeseen alterations in process conditions that affect NCS shall be reported to appropriate management and shall be documented and investigated promptly. Action shall be taken to prevent recurrence (ANSI 8.1, DOE Order 5000.3B).

8. Operations shall be reviewed periodically to ascertain that procedures are being followed and that process conditions have not been altered so as to affect the NCS of the operation. Qualified individuals who are knowledgeable of the operation shall conduct these reviews, and they shall be documented (ANSI 8.1, DOE Order 5480.24).

9. Reliance may be placed on neutron-absorbing materials that are incorporated in process materials, or equipment, or both. When absorbers are used as a primary or secondary NCS control, appropriate precautions shall be exercised to maintain their continued presence with the intended distributions and concentrations (ANSI 8.5, DOE Order 5480.24).

10. Where applicable data are available, subcritical limits shall be established on bases derived from experiments, with adequate allowance for uncertainties in the data. In the absence of directly applicable experimental measurements, the limits may be derived from calculations made by a method validated by comparison with experimental data (ANSI 8.1, DOE Order 5480.5).

11. Criticality accident alarm systems shall comply with ANSI 8.3, 1986 (DOE Order 5480.24).

12. Emergency response planning for a criticality accident shall comply with ANSI 8.19, 1984 (DOE 6430.1A).

3.9.3 How Requirements Are Met

1. Plant procedures at the GDPs designate management responsibilities concerning NCS. A staff of NCS specialists within the Health and Safety Divisions at the GDPs provide the necessary technical oversight for implementing the NCS program. NCS staff members become qualified through on-the-job training under the supervision of experienced professionals. Qualification requirements have been established for NCS engineers and are used in selection of NCS engineers (PGDP P-ESH-20, Sect. 5.0; PORTS SPP-H-30) .

2. Documented NCS evaluations are used to determine and identify the limits and controls required to provide NCS for new or modified operations. NCS evaluations are peer reviewed before NCS approvals are issued and before an operation starts up (PGDP P-ESH-20, Sect. 5.3; PORTS SPP-H-30).

3. NCS engineers review the design of fissionable processes before new operations or modifications to existing operations are started up. Safe geometries have been used for NCS where practical. Physical controls, rather than administrative controls, are relied upon for NCS in fissionable material operations where practical. In general, process designs meet the double contingency principle. Approved exceptions to the double contingency principle adopted at the GDPs are

documented in approved Final Safety Analysis Reports and USQs (PGDP P-ESH-20, Sect. 6.0; PORTS SPP-H-30).

4. The Training Department administers NCS training. NCS staff members are directly involved in the NCS training program as subject matter experts and review and approve all lesson plans (PGDP P-ESH-20, Sect. 5.3.1; PORTS SPP-H-30).

5. Procedures are in place requiring the posting of permanent fissile material storage areas (PGDP P-ESH-20, Appendix B). (PGDP P-ESH-20, Sect. 5.1.3; PORTS SPP-H-30).

6. Operations involving fissile material have operational procedures which are marked "safety related" (PGDP P-GP-1, Sect. 6.5.3). The Nuclear Safety staff reviews safety-related procedures to ensure that NCS requirements are incorporated. NCS controls are implemented in plant operational procedures (PGDP P-ESH-20, Sect. 5.1.3; PORTS SPP-H-30).

7. Procedure violations and incidents which affect NCS are tracked within the NCS program as well as within the plant occurrence reporting program system. Corrective actions are generated within the occurrence reporting system to address programmatic and system deficiencies (PGDP P-GP-43, Sect. 5.6; PORTS SPP-H-30).

8. NCS specialists review fissionable material operations periodically in conjunction with other safety specialists. The reviews are conducted through a "walking the spaces" program as well as through a formal surveillance program to ensure that NCS controls are properly implemented (PGDP P-GP-46, Sect. 5.4.2; PORTS SPP-H-30).

9. Neutron absorbers materials are installed in accordance with applicable standards (ANSI 8.5, 1986).

10. NCS limits are based either directly or indirectly upon experimental data. Indirect methods such as computer software calculations are validated. The validation of computer software addresses the safety margin and calculational bias in accordance with ANSI 8.1.

11. The need for criticality accident alarm systems is evaluated for all activities in which the inventory of fissionable material in individual, unrelated areas exceeds 700 grams of ^{235}U. The design of the alarm system and procedural requirements reduce the frequency and impact of false alarms. The radiation detection systems and alarm signals are uniform within each GDP. (PGDP P-ESH-84, Sect. VII.B) The criticality alarm system is tested periodically to confirm continuing instrument performance. Tests are documented in accordance with plant procedures. When tests reveal inadequate performance of the criticality alarm system, corrective action is taken without unnecessary delay (PGDP P-ESH-84, Sect. VI; PORTS SPP-H-30). A design criteria waiver for this alarm system has been approved by DOE.

12. Both sites have emergency response plans which deal with criticality accidents. Employees who work in areas where exposure to radiation resulting from a criticality accident might occur receive annual training in emergency response to a criticality alarm system. Employees are familiarized with the sound of the alarm system through both training and periodic alarm system drills (PGDP P-ESH-84, Sect. VI; PORTS SPP-H-30).

3.9.4 Status of Conformance

The requirements set forth in Section 3.9.2 are met as described in Section 3.9.3 with the following general exceptions:

- The documentation of the application of the double contingency (or exemption waivers) for process designs in operation prior to 1992 is not adequate. Documentation is in the process of being upgraded by the GDPs in conjunction with the FSAR upgrade activities.
- Posting of operational limits and improved labeling for NCS are scheduled to be completed by June 1994.
- At PORTS, SPP-H-30, "Nuclear Criticality Safety," is being revised.
- Raschig rings used as a primary control meet the criteria of ANSI 8.5, 1986 at the time of installation, however surveillance requirements do not meet the criteria.
- Job-specific NCS training of maintenance personnel is being added to the training program at PGDP. The maintenance personnel will be fully trained by June 1994.

3.10 FIRE PROTECTION

3.10.1 Basic Objective

The Fire Protection Program shall ensure that no undue threats to the public or employees will result from fire and resultant perils.

3.10.2 Implementation Requirements

Requirements necessary to implement an adequate standard of protection include the following elements:

1. Strong management commitment to fire protection shall be provided along with policy statements that implement specific plant criteria (DOE 5480.7).
2. The Fire Protection Program shall be under the direction of an individual who has been assigned as Authority Having Jurisdiction (AHJ) commensurate with the responsibilities of the position (DOE 5480.7).
3. Fixed fire suppression systems, where provided, shall be tested and maintained such that fires in those areas are controlled promptly (DOE 5480.7).
4. Automatic fire suppression systems shall be provided for areas containing safety systems (DOE 5480.7).
5. A reliable water supply, with sectional isolation valves shall be maintained (DOE 5480.7).
6. Closing of valves supplying fire suppression systems shall be controlled by a written permit system (DOE 5480.7).
7. A fire department shall be maintained on-site as an acceptable means of redundant fire protection (DOE 5480.7).
8. Fire Department personnel shall be on-site at all times and shall be trained and equipped to handle anticipated types of fires and other emergencies (29 CFR 1910.156).
9. Mobile fire apparatus that is required to support fire fighting operations shall be provided and maintained (DOE 5480.7).

10. Manual fire suppression equipment and/or systems shall be provided in order that at least one effective hose stream can reach any area within an important building (DOE 5480.7).

11. Breathing air used in fire fighting shall meet a minimum quality of Grade D (29 CFR 1910.134).

12. On-site fire protection support shall be available to evaluate the fire hazards of changes to maintenance and process systems (DOE 5480.7).

13. A fire protection review of design documents for new facilities and for modifications to existing facilities shall be made to insure that fire protection issues have been properly addressed (DOE 5480.7).

14. Fire protection appraisals of important buildings shall be conducted periodically to identify changes that adversely impact existing fire protection levels. Means of emergency egress shall be regularly inspected for all areas that are normally occupied. Personnel who are trained and knowledgeable in detecting fire hazards shall conduct periodic inspections of all important buildings and other structures (DOE 5480.7).

15. All fires shall be investigated and root causes determined (DOE 5500.3A).

16. Portable fire extinguishers shall be available throughout the plant commensurate with the hazard (29 CFR 1910.157).

17. A fire alarm system that reports to a continuously manned location shall monitor fire alarms in all important buildings and structures (DOE 5480.7).

18. Welding/burning/hot work shall be controlled by a written permit system to minimize the fire hazards of open flame equipment (DOE 5480.7).

19. Emergency medical services shall be provide to assure proper emergency care of injured employees (29 CFR 1910.151).

3.10.3 How Requirements Are Met

The methodology employed in order to comply with requirements includes the following components:

1. Management commitment to fire protection as found in the GDPs Fire Protection Programs (PGDP P-ESH-21; PORTS SPP-S-20).

2. Direction of the Fire Protection Program has been delegated to the Fire Services Department manager at Paducah and the department head of Fire Services at Portsmouth as the AHJ for fire protection and egress issues.

3. Fixed fire suppression systems are tested and maintained in accordance with approved plant procedures.

4. Automatic fire suppression is provided for areas containing safety systems. Redundant fire suppression capability is provided by on-site fire departments at both GDPs.

5. A reliable water supply, with sectional isolation valves, is maintained. Reliability is established through the use of multiple pumps and an elevated water tank.

6. Closing of valves supplying fire suppression systems is controlled by a written permit system (PGDP P-ESH-17; PORTS FP 1.2, FP 1.3).

7. A fire department is maintained at both GDPs as a means of redundant fire protection.

8. Fire Department personnel are on site at all times and are trained and equipped in accordance with departmental procedures.

9. Mobile fire apparatus is provided and maintained in accordance with departmental procedures.

10. Manual fire suppression capability is provided by means of interior hose stations or connections or by the use of fire hoses from mobile fire apparatus such that one effective hose stream is capable of reaching any area within an important building.

11. Breathing air used for fire protection meets the minimum quality of Grade D and is sampled periodically (PGDP P-ESH-9; PORTS SPP-H-43).

12. On-site fire protection engineering support is provided to evaluate the fire hazards of changes in maintenance and process systems. Review by appropriate Fire Protection personnel of proposed changes is required by the charge control process.

13. Fire protection engineering reviews of the design documents for new facilities and modifications to existing facilities are routinely conducted (PGDP P-ESH-21; PORTS SPP-S-20).

14. Fire protection appraisals of important buildings and structures are conducted periodically to identify changes that adversely impact the level of fire protection provided. Means of egress for normally occupied areas are regularly inspected. Trained Fire Department personnel conduct these inspections (PGDP P-ESH-21, PORTS SPP-S-20). Means of emergency egress are regularly inspected in accordance with departmental procedures for all normally occupied areas.

15. All fires are investigated and the cause determined in accordance with departmental procedures.

16. Portable fire extinguishers are positioned throughout the GDPs commensurate with hazards present in the area.

17. A fire alarm system reporting to continuously manned locations which monitors fire alarms in all important buildings and structures is operational at both GDPs (PGDP P-ESH-21).

18. Welding/burning/hot work is controlled by a written permit system (PGDP P-ESH-64, PORTS SPP-M-4).

19. State-certified emergency medical technicians in the fire departments provide emergency medical response with transport capability to an off-site facility.

3.10.4 Status of Conformance

The requirements set forth in Section 3.10.2 are met as described in Section 3.10.3 with the following general exceptions:

- The process buildings do not conform to the life safety code requirements for emergency egress because travel distances are too long. An exemption for the travel distance requirements is currently pending DOE approval.

3.11 ENVIRONMENTAL PROTECTION

3.11.1 Basic Objective

Radioactive effluents released to the environment from USEC Operations shall be maintained as far below regulatory limits as is reasonably achievable, in order to protect the health and safety of the general public.

3.11.2 Implementation Requirements

1. A program of environmental surveillance monitoring shall be in place to determine the effects that on-site airborne radioactive emissions have on off-site environmental locations, natural resources, and the public health (DOE Order 5400.1, DOE Order 5400.5).

2. A program to obtain and maintain representative meteorological data to comply with regulations requiring the assessment of the impact of radioactive airborne releases shall be maintained (DOE Order 5400.1, DOE Order 5400.5).

3. Sampling and analysis of radionuclides in environmental media shall be conducted in such a way as to provide representative defensible data (DOE Order 5400.1, DOE Order 5400.5).

4. A program to estimate radiation dose limits for members of the public shall be maintained (DOE Order 5400.1; DOE Order 5400.5 40 CFR 61, Subpart H).

3.11.3 How Requirements Are Met

1. Air monitoring of radionuclides is conducted in accordance with the GDPs' environmental monitoring plans (PGDP KY-E-118; "PORTS Environmental Monitoring Plan," November 12, 1991). The results of the air monitoring programs are reported in the GDPs' annual Environmental Reports ("PGDP Environmental Report for 1992"; PORTS, "Portsmouth Gaseous Diffusion Plant Environmental Report for 1992" [Draft]). All atmospheric releases from sources which have the potential, with no controls, to produce an effective dose equivalent (EDE) to the most affected area resident greater than 0.10 mrem per year are continuously monitored for radionuclide effluents.

2. Each GDP is collecting meteorological data to document wind speed and direction, barometric pressure, relative humidity, and rainfall. This information is used to forecast atmospheric dispersion in the event of unplanned radioactive materials releases or other events causing concern for the public health and safety. Due to calibration difficulties and lightening damage at PORTS, the meteorological data may not be representative (PGDP KY-E-118; PORTS Environmental Monitoring Plan, November 12, 1991).

3. Air measurements of radionuclides are made in accordance with the GDPs Monitoring Plans and "Standard Methods" (PGDP KY-E-118; "PORTS; Environmental Monitoring Plan," November 1992).

4. Programs are implemented to determine radiation dose for members of the public near the facility (PGDP KY-E-118; PORTS Environmental Monitoring Plan, November 12, 1991).

3.11.4 Status of Conformance

The requirements set forth in Section 3.11.2 are met as described in Section 3.11.3 with the following general exceptions:

- The meteorological monitoring equipment at PORTS is difficult to calibrate, due to age and lightning damage, and may not be producing adequate data to support dispersion calculations and dose assessments. New equipment is being procured.

3.12 NUCLEAR MATERIAL SAFEGUARDS

3.12.1 Basic Objective

A documented program shall be implemented (1) to protect SNM from unauthorized removal, (2) to control and account for SNM using standard methods; and (3) to protect SNM facilities against radiological sabotage.

3.12.2 Implementation Requirements

The program for safeguarding and accounting for special nuclear material shall include the following elements:

1. Written plans and procedures that identify the strategies, mechanisms, and commitments to protect SNM from unauthorized removal, to account for SNM, and to protect SNM facilities against radiological sabotage, including:

   - Physical Security Protection Plans (DOE Order 5632.2A),
   - Protective Force Procedures (DOE Order 5632.7 and 5632.7.1), and
   - Nuclear Materials Control and Accountability Plans (DOE Order 5633.3A)

2. A system for tracking, accounting for, and reporting to the Nuclear Materials Management and Safeguards System (NMSS), all special nuclear material above threshold limits that has been received and is present on all plant sites (DOE Order 5633.3A, 5633.4, and 5633.5A).

3. A measurement control program for ensuring that equipment used to measure nuclear materials is properly calibrated using standards traceable to national standards and for supporting the estimation of the contribution of measurement uncertainty to inventory difference (DOE Order 5633.3A).

4. Physical barriers, vaults, intrusion detection systems, and access controls designed to protect SNM from access by unauthorized personnel or from unauthorized removal (DOE Order 5632.2A)

5. A trained protective force to respond to unauthorized attempts to gain access to, or to remove, SNM (DOE Orders 5632.2A, 5632.7, and 5632.7.1).

6. A fitness for entry program to reduce the likelihood of SNM theft or radiological sabotage by ensuring a drug-free and alcohol-free workplace (DOE Order 5480.8A).

7. A system of independent audits and assessments to verify the effectiveness of the elements of the NMC&A program, including measurement controls, material controls, and accounting systems (DOE 5633.3A).

8. A system of performance testing to verify the effectiveness of the SNM protection program (DOE Orders 5630.16 and 5632.8).

9. A program for providing such information about, and such access to, GDP facilities and operations as may be required to support the United States in meeting its obligations to the International Atomic Energy Agency (IAEA) relating to SNM safeguards at the GDPs (DOE Order 1270.2B).

3.12.3 How Requirements Are Met

1. The GDPs maintain written plans and procedures that identify the strategies, mechanisms, and commitments to protect SNM from unauthorized removal, to account for SNM, and to protect SNM facilities against radiological sabotage (PORTS POEF-1197; PGDP KY/D-3899), including

   a) Physical Security Protection Plans (classified reference);
   b) Protective Force Procedures (classified reference); and
   c) Nuclear Materials Control and Accountability Plans.

2. The GDPs maintain nuclear material accounting systems to track, to account for, and to report to the Nuclear Materials Management and Safeguards System (NMSS), all special nuclear material above threshold limits that has been received and is present on all plant sites (PORTS POEF 1197, PGDP KY/D-3899).

3. The GDPs maintain measurement control programs to assure that programs used to measure nuclear materials are calibrated in a manner that is traceable to national standards. These programs are capable of developing information to support the estimation of the contribution of measurement uncertainty to inventory differences (PORTS POEF 1197, Sect. 6.0; PGDP KY/D-3899, Sect. III.D).

4. The GDPs employ physical barriers, including fences and hardened structures; vaults; intrusion detection systems; and access controls to protect SNM from access by unauthorized personnel or from unauthorized removal (both sites' Site Safeguards and Security Plan).

5. The GDPs maintain trained protective forces to respond to unauthorized attempts to gain access to, or to remove, SNM (both sites' Site Safeguards and Security Plan).

6. The GDP fitness-for-duty program includes preemployment drug screening and for-cause drug testing. Positive test results, which are rare, are dealt with on a case-by-case basis. The fitness-for-duty program also includes an employee assistance program that is available to employees and members of their families.

7. Audits and assessments are performed to verify the effectiveness of the elements of the NMC&A program, including measurement controls, material controls, and accounting systems (PORTS POEF 1197, Sect. 9.0; PGDP KY/D-3899 Sect. II.F, P-GP-46).

8. The GDPs employ performance testing to verify the effectiveness of the SNM protection program (both sites' Site Safeguards and Security Plan).

9. The GDP nuclear material and accounting systems are capable of providing such information about the status of SNM at the GDPs as may be required to support the United States in meeting its obligations to the IAEA relating to SNM safeguards at the GDPs (PORTS POEF-1197, PGDP KY/D-3899).

3.12.4 Status Of Conformance

The requirements set forth in Section 3.12.2 are met as described in Section 3.12.3.

3.13 EMERGENCY PREPAREDNESS

3.13.1 Basic Objective

The Emergency Preparedness Program shall ensure that adequate protective measures can be taken in the event of an emergency.

3.13.2 Implementation Requirements

1. An individual shall be designated to administer the emergency management program. An emergency response organization shall be established, and responsibilities of all individuals supporting emergency response are clearly defined (DOE Order 5500.3A).

2. A hazards assessment shall be developed and maintained for use in emergency planning. This assessment shall consider the broad spectrum of events that could affect the facility and be used in the development of the Emergency Plan (DOE Order 5500.3A, DOE Order 5480.1B).

3. An Emergency Plan shall be developed and maintained as a controlled document. The Emergency Plan and its associated support documents shall be reviewed and updated as appropriate, annually (DOE Order 5500.3A).

4. Emergency planning support and coordination relationships with federal, state, and local organizations shall be developed and formally documented through plans, agreements, and memoranda of understanding (DOE Order 5500.3A).

5. An assured means of promptly notifying the federal, state, and local authorities of the details of an emergency shall be installed and maintained (DOE Order 5500.3A).

6. Emergency response activities shall be coordinated with federal, state, and local agencies and organizations and facility officials through continued communication during the event (DOE Order 5500.3A).

7. Facilities and equipment, adequate to support emergency response shall be established and maintained. An emergency operations center that it is capable of adequately supporting assessment, evaluation, and direction of emergency response organization activities shall be established (DOE Order 5500.3A).

8. The EOC shall be habitable in all postulated emergencies, or an alternate EOC shall be established and maintained (DOE Order 5500.3A).

9. Provisions shall be in place to adequately assess the actual or potential consequences of an emergency. Specific predetermined actions to be taken in response to postulated emergency conditions shall be developed (DOE Order 5500.3A).

10. An adequate record or log of emergency response actions shall be kept (DOE Order 5500.3A).

11. Arrangements for medical treatment for injuries sustained in postulated emergencies, including radiologically related injuries, shall be in place (DOE Order 5500.3A).

12. Provisions shall be made for recovery from an emergency and reentry into affected buildings. These provisions shall include specific procedures for termination of an emergency, dissemination of information, establishment of a recovery organization, and criteria for resumption of normal operations (DOE Order 5500.3A).

13. A public information program shall be established and integrated into the emergency management program (DOE Order 5500.3A, and DOE Order 5500.4).

14. Training for emergency response organization individuals on their duties in the emergency response plan shall be developed and delivered on an established schedule (DOE Order 5500.3A).

15. The emergency plan shall be exercised, including opportunities for off-site agency participation, at least annually (DOE Order 5500.3A, and DOE Order 5500.10).

3.13.3 How Requirements Are Met

1. At PGDP, the Emergency Management Department Manager is designated as the emergency management program administrator. Responsibilities for the administrator and emergency response organization members are described in the PGDP Emergency Management Plan (PEMP, KY/H-143, Sect. 3). The requirements of the PEMP are implemented by procedure SPP P-ESH-500. At PORTS, the Emergency Management Coordinator is the emergency management program administrator. Responsibilities for the administrator and emergency response organization members are described in Sect. 14 of the PORTS Emergency Plan (PEP), and the requirements are implemented by procedure SPP H-6.

2. Hazard analyses have been performed, and hazards have been identified and documented. (PGDP-PEMP, Sect. 2.0; PORTS-PEP, Sect. 6). Hazard analyses and impact analyses were performed for each facility using various available technical documents and reports. Emergency Action Levels are in place for the spectrum of emergencies identified in the hazard analyses. These EALs are described in the respective plant documents (PGDP-PEMP, Sect. 3, SPP P-ESH-500 series; PORTS-PEP, Sect. 7, SPP H-6).

3. At PGDP, the PEMP is the controlled document which describes the emergency management program. Plant emergency procedures which implement the program are in the SPP P-ESH-5XX Series. At PORTS, the PEP is the controlled document which describes the emergency management program. Plant emergency procedures which implement the program are in the associated appendices to the PEP.

4. Interface and coordination with federal, state and local agencies and organizations responsible for off-site response and protection of the public are in place (PGDP-PEMP, Sect. 3, App B; PORTS-PEP, Sect. 3, App B). Both sites maintain Memoranda of Understanding and Letters of Agreement which implement the requirements of the respective emergency plans.

5. Procedures for prompt notification of emergency response personnel and response organizations, including federal, state, and local organizations and for continuing communications among the various organizations are in place and described in the respective plant documents (PGDP-PEMP, Sect.3, P-ESH-505; PORTS-PEP, Sect. 5, and Appendix D).

6. Emergency response activities are coordinated with local, state, and federal officials through the use of continued communications during the event (PGDP, P-ESH-5XX Series; PORTS; PEP).

7. Emergency facilities, equipment, and materials necessary to adequately support emergency response activities are in place and described in the respective plant documents (PGDP PEMP; PORTS-PEP, Sect. 11).

8. Permanent EOCs have been established at each GDP. Alternate locations have also been established.

9. The capability for assessing the potential consequences of an emergency is in place. The details are described in the respective plant documents (PGDP-PEMP, Sect. 3, SPP P-ESH-505; PORTS, PEP, Sect. 6).

10. Logs of emergency response actions are maintained (PGDP KY/H-143: PORTS; PEP).

11. Resources for medical support provided to injured individuals, including those with radiological or hazardous material injuries, are in place. The specific arrangements are described in the respective plant documents (PGDP-PEMP, Sect. 4, SPP P-ESH 503, 511; PORTS PEP, Sect. 8, SPP H-6).

12. Procedures and criteria for recovery from an emergency and reentry into an affected facility are in place. The specific arrangements are described in the respective plant documents (PGDP- PEMP, Sect. 3, SPP P-ESH 519; PORTS-PEP Sect. 9, SPP S-30).

13. The emergency public information program is in place. The specific details are described in the respective plant documents (PGDP PEMP, Sect. 3, P-ESH-518).

14. Emergency response training programs for instruction and qualification of all emergency response personnel are in place for each facility. The specific details are described in the respective plant documents (PGDP- PEMP, Sect. 3, SPP P-ESH 521; PORTS-PEP Sect. 12).

15. The coordinated emergency drill and exercise program is in place at both facilities. The specific details are described in the respective plant documents (PGDP- PEMP, Sect. 3, SPP P-ESH 521; PORTS-PEP Sect. 13, Proc 923-P-014).

3.13.4 Status of Conformance

The requirements set forth in Section 3.13.2 are met as described in Section 3.13.3.

3.14 PACKAGING AND TRANSPORTING NUCLEAR MATERIALS

3.14.1 Basic Objective

The GDPs Packaging and Transportation Safety Program shall ensure that packaging and transportation activities for radioactive materials are conducted in accordance with applicable regulations to protect public health and safety.

3.14.2 Implementation Requirements

1. The shipper shall prepare proper shipping papers and shall appropriately package, label, and placard each shipment of radioactive material (DOE Order 1540.1A).

2. A Safety Analysis Report for Packaging (SARP) shall be prepared in the format specified by U.S. NRC Regulatory Guide 7.9 to support the issuance or renewal of a certificate of compliance (CoC), which permits a package to be used for shipment of quantities of fissile radioactive materials and materials exceeding the A_1/A_2 quantities, as defined in DOE and NRC regulations (DOE Order 1540.2).

3. Type A packaging, which may be used to ship quantities of radioactive materials less than the A_1/A_2 quantities as defined in DOE and NRC regulations, shall meet the design and structural standards in 49 CFR 173, Subpart I (DOE Order 1540.2, DOE Order 5480.3).

4. Type A packaging used to ship fissile materials shall be (1) designed, fabricated, inspected, tested, and marked in accordance with American National Standard N14.1; specifications for Class DOT-106A; or appropriate parts of the ASME Code (depending upon the manufacture date) and (2) evaluated against the requirements in 49 CFR 173 Subpart I and in 10 CFR 71 (DOE Order 1540.2, DOE Order 5480.3).

5. A Quality Assurance Program shall be established to assure that packaging for radioactive material is fabricated, maintained, and used in accordance with the applicable regulatory requirements and approved design features.

6. Before using a package, for shipment of radioactive or fissile materials, the shipper shall ascertain that the package satisfies specific inspection criteria (DOE Order 1540.2, DOE Order 5480.3).

7. The shipper shall maintain records of each shipment of fissile material for 2 years or more (DOE Order 5480.3).

8. Workers, involved in transportation and packaging of radioactive materials, who qualify as "hazardous material workers" under DOT regulations shall be provided with the training required by those regulations (DOE Order 1540.1A).

3.14.3 How Requirements Are Met

1. The GDPs prepare shipping papers and packaging, labeling, and placarding for shipments of radioactive material. In addition PORTS uses an extract from the regulations to identify the requirements that must be met in preparing various types of fissile materials for shipment.

2. The only package currently undergoing recertification review is the PGDP Tiger Overpack for Model 48X 10-ton UF_6 cylinders used to transport UF_6 enriched to between 1 and 4.5 wt % ^{235}U. The SARP for the PGDP Tiger Overpack, SARP KY-773, Revision 8, has been prepared in the format specified by U.S. NRC Regulatory Guide 7.9 and has been submitted to DOE for renewal of CoC USA/6553/AF, which expired on May 31, 1993. The NRC CoC expires on September 30, 1993. DOE is currently reviewing the SARP and the use of the package is being continued during the DOE review period.

3. Compliance with the structural standards for Type A packaging is achieved through use of Type A packages for which documentation that demonstrates compliance is known to exist.

4. Use of Type A packages to ship fissile material is limited to those packages for which documentation is known to exist that demonstrates that they have been: (1) designed, fabricated, inspected, tested, and marked in accordance with American National Standard N14.1; specifications for Class DOT-106A; or appropriate parts of the ASME Code (depending upon the manufacture date) and (2) evaluated against the requirements in 49 CFR 173 Subpart I and in 10 CFR 71.

5. The quality assurance program requirements for specific types of packages are documented in the SARP for the package type. These requirements for each type of package are met through the implementation of GDP site protocols for required inspection, maintenance, testing, and procurement of; control of design modifications to; and maintenance of records concerning; the specific package type.

6. Inspections are conducted prior to shipping radioactive material in specific packages to verify that the packages meet applicable regulatory requirements, SARP commitments, industry standards and site operating protocols.

7. Shipping records are maintained in accordance with 49 CFR 173.415 for DOT Specification 7A Type A packages and in accordance with SARP KY-773 quality assurance record retention requirements, which are taken from 10 CFR 71.19 for the PGDP Tiger Overpack.

8. Workers, involved in transportation and packaging of radioactive materials, who qualify as "hazardous material workers" under DOT regulations are trained in accordance with those regulations.

3.14.4 Status of Conformance

The requirements set forth in Section 3.14.2 are met as described in Section 3.14.3.

3.15 SAMPLING AND ANALYSIS

3.15.1 Basic Objective

Sampling and analysis for the radiation protection of employees and the public and for safeguards purposes shall be conducted in such a way as to provide representative, defensible data.

3.15.2 Implementation Requirements

1. All sampling and analysis activities shall be performed in accordance with documented and approved procedures which describe in detail the quality measures for that activity (DOE Order 5400.1, DOE Order 5480.10, and DOE Order 5633.3A).

   - Sampling shall be conducted in such a manner as to ensure collection of representative samples, and precautions shall be taken to maintain sample integrity.
   - Sample chains of custody shall be maintained for occupational health and environmental protection samples.
   - The frequency and types of QC samples, including replicate samples, shall be defined in controlled documents and procedures.
   - A formal program to control standards and reagents shall be implemented.
   - The reliability of the sampling technique shall be commensurate with the significance of the sample to safety and safeguards.

2. A sampling and analysis control program for assuring that equipment used to measure nuclear material is properly calibrated with standards traceable to NIST, where available, shall be established (DOE Order 5633.3A).

   - An instrument control program, including such requirements as preventative maintenance, efficiency, and functional and background checks, shall be established and maintained.
   - Logs of instrument usage shall be maintained.

3. Formal sampling and analysis programs shall be developed for the following:

   - Nuclear Materials Control and Accountability (DOE Order 5633.3A),
   - Radioactive and Air Contaminants (DOE Order 5480.11, DOE Order 5480.8A),

- Soils (DOE Order 5400.5, DOE Order 5400.1),
- Occupational and Environmental Health (DOE Order 5483.1B, DOE Order 5480.11, DOE Order 5400.5), and
- Surface Contamination Monitoring (DOE Order 5480.11, DOE Order 5400.5).

4. Laboratories shall be certified or accredited, as appropriate, with federal, state, and local agencies or professional societies (such as AIHA). (DOE Order 5400.1).

5. Laboratories shall participate in measurement control and performance evaluation programs. (DOE Order 5400.1 and DOE Order 5633.3A).

6. Samples that could potentially be contaminated with radionuclides shall be shipped to DOE or NRC licensed laboratories for analysis.

3.15.3 How Requirements Are Met

1. Sampling and analysis is performed in accordance with documented approved procedures or "Standard Methods."

   - The requirements, responsibilities, and actions used to implement a sound safeguards sampling and analysis program are outlined in specific NMC&A Plans and Procedures. Nuclear Material (NM) sampling methods used at GDPs are tailored to the material matrix to be sampled and to the type of analyses to be performed (PGDP KY/D-3899, *Environmental Monitoring Department Procedures Manual, and NMC&A Procedures Manual*, Sect. 5).
   - Sampling and analysis programs for air, surface water, ground water, and soils are covered in Sect. 3.11 describing environmental protection (PGDP Technical Services Division Measure Control Program and Measurement Control Procedures).
   - Surface contamination monitoring and air monitoring for radioactive materials are covered in the section describing Radiation Protection (both plants, UE-SPP-ESH-6).
   - Chain of custody is maintained for all personnel samples (PORTS SPP R-4, IH-002).

2. The GDPs have comprehensive Measurements Control Programs which include the analysis of parameters for NMC&A, Health Physics, and Environmental Protection. These programs include instrument control programs, control of standards and reagents, the use of NIST traceable calibration sources, frequency and type of quality control samples, instrument logs, etc.

   - Both site laboratories also participate in Measurements Control Programs internal to the plant.
   - Included in these programs are qualification programs for analysts and sampling personnel who perform job duties related to NMC&A activities, blind and double blind control sample programs, as well as QA/QC activities initiated by each laboratory group.
   - Control programs include the submission of samples, evaluation of sample results against control limits, a documented investigation and response system for nonconforming results, evaluation of control data, and reporting of results to management.

3. Formal Sampling and Analysis Programs have been developed for Nuclear Materials Control and Accountability, Radioactive Air Contaminants, Bioassay and Surface Contaminants Monitoring.

These are further outlined in other sections of this chapter. Special urine samples are collected after job activities with radionuclide exposure potential. Selected workers participate in a routine urinalysis program to evaluate the effectiveness of personal protective equipment. Analysis is provided on-site with the exception that, for PGDP, transuranics are analyzed off-site. Blind urine samples are periodically submitted to the laboratory for performance checks. Analyses involved in blind controls programs include uranium, alpha, ^{99}Tc, fluoride, and selected metals. Employees with elevated results are resampled, investigated, or restricted from exposure activities, as appropriate. At PGDP, a voluntary 24-hour urine sampling program is conducted for selected workers exposed to transuranic elements (PGDP P-ESH-7, P-ESH-53; PORTS SPP H-34, H-43).

4. The Analytical Laboratories are AIHA-accredited laboratories for certain procedures.

5. The laboratories participate in several performance evaluation programs, including the PAT Program administered for the NIOSH by the AIHA; the EML Program, administered by DOE; the EPA EMSL-LV Intercomparison Studies Program; the EPA DMR-QA Study; and the PET Program, a commercial A2LA-registered quality program administered by the Analytical Products Group of Belpre, Ohio. In addition, the PORTS participates in EPA's Water Pollution Laboratory Performance Evaluation Study and Water Supply Performance Evaluation Study and the NIST asbestos bulk materials analysis program, and PGDP participates in the Bulk Asbestos Round Robin Testing Program administered by AIHA.

6. All samples that could be potentially contaminated with radionuclides are shipped to DOE or NRC licensed laboratories for analysis. All laboratories are audited and approved. Samples are shipped in such a manner that maintains the sample integrity according to EPA regulations and guidelines. Samples are surveyed by Health Physics. Also, gross alpha and gross beta analyses are performed prior to shipping department, as required. The HP survey and radiochemical results are forwarded to Transportation and the contract laboratory (PGDP: Analytical Laboratory Department Manual). Samples are packaged in accordance with applicable requirements. The hazard class of each sample is taken into consideration when choosing the appropriately designated UN Standard package (PGDP: P-ESH-66, 67, and Traffic Section procedures).

3.15.4 Status of Conformance

The requirements set forth in Section 3.15.2 are met as described in Section 3.15.3.

3.16 WASTE MANAGEMENT PROGRAM

3.16.1 Basic Objective

Management of waste shall be conducted in accordance with applicable federal, state, and local laws and regulations. The management of radioactive and mixed waste shall be conducted in such a manner to ensure that the radioactive releases, should they occur, are below regulatory limits and ALARA.

3.16.2 Implementation Requirements

The regulatory requirements for mixed wastes (i.e., hazardous/radioactive and PCB/radioactive) are addressed in environmental law as well as under the Atomic Energy Act of 1954 as amended. The requirements under environmental law are codified in the Code of Federal Regulations of Title 40 Parts 260 through 272 in accordance with Subtitle C of the Resource Conservation and Recovery Act (RCRA). Polychlorinated biphenyls (PCBs) are governed by regulations codified in Title 40 Part 761 in accordance with the Toxic Substances Control Act (TSCA). The radioactive components for these and for all low-level radioactive wastes are subject to the following implementing requirements.

1. The safety and health of the public shall be protected by managing operations in a manner that provides for the safe handling, transportation, storage, of radioactive or mixed wastes generated. This is accomplished by managing according to the requirements of the Atomic Energy Act (AEA), and applicable state requirements (DOE Order 5400.3; DOE Order 5820.2A).

2. A Waste Minimization Program shall be in place to segregate, substitute, and minimize the amount of waste requiring disposal (DOE Order 5820.2A; DOE Order 5400.1).

3. All radioactive and mixed wastes shall be characterized with sufficient accuracy to permit segregation, handling, and transfer to treatment, storage, or disposal facilities (TSD). Additional characterization needed to ensure the actual physical, and radiological characteristics meet the waste acceptance criteria (WAC) of either a DOE or an off-site TSD facility shall be performed prior to shipment to the TSD (DOE Order 5400.3; DOE Order 5820.2A).

4. Off-site shipments of LLW and mixed waste shall be in accordance with all applicable DOT regulations and manifesting requirements (DOE Order 5400.3, DOE Order 5820.2A).

5. An operating record-keeping system shall be developed and maintained to document the following: (1) a historical record of waste generated, treated, stored, shipped, and/or disposed of; (2) data necessary to show that the waste was properly classified, treated, stored, shipped, and/or disposed of; and (3) waste manifests (DOE Order 5480.3, DOE Order 5820.2A).

6. A quality assurance program will be in place to inspect both on-site and off-site treatment storage and disposal facilities and practices (DOE Order 5700.6C).

3.16.3 How Requirements Are Met

Following July 1, for the near term, USEC will not store mixed waste on-site for greater than 90 days. DOE has agreed to store USEC mixed waste. A Memorandum of Agreement (MOA) is in place which discusses the respective roles and responsibilities between DOE and USEC. USEC's role in handling DOE's PCB/radioactive regulated waste will be confined to proper containers, labeling, and interim storage until the waste can be transferred to DOE.

1. The requirements for handling radioactive and mixed wastes are specified through a series of written policies and procedures, which are implemented in waste operations (PGDP SPP-ESH-28, PORTS SPP-R-2).

2. The waste minimization and pollution prevention programs meet the requirements of DOE Orders as well as federal and state regulations. Both sites have published waste minimization plans (PGDP SPP-ESH-45, "Waste Minimization"; PORTS SPP-R2).

3. Process knowledge and analytical data are used to ensure that TSD waste acceptance criteria and regulatory requirements are met (PGDP SPP-ESH-28, PORTS SPP-R-2).

4. Off-site shipments of LLW and mixed waste follow DOT criteria incorporated in plant level procedures and criteria discussed in Sect. 3.14, "Packaging and Transporting Nuclear Materials," of this document. The traffic departments at the GDPs are responsible for administering programs and procedures that implement these requirements. Off-site shipments of RCRA and PCB waste follow criteria established in 40 CFR 263 and 761 for RCRA and PCB wastes, respectively (PGDP SPP-ESH-28; PORTS SPP-R2).

5. A record-keeping system has been established that contains information regarding stored waste, such as container type, waste characteristics or classification, and disposal records including off-site

shipment manifests (MMES Policy ESH-14, V. Part II. B.3; PGDP SPP-ESH-28; PORTS SPP-R-2).

6. USEC will maintain an active quality assurance inspection program of its own program and of the TSD services it receives from DOE and other commercial vendors.

3.16.4 Status of Conformance

The requirements set forth in Section 3.16.2 are met as described in Section 3.16.3 with the following general exceptions:

- USEC will need to develop a program and procedures for transferring USEC-generated wastes to DOE facilities.
- Waste minimization plans are not fully implemented.

3.17 ACCIDENT ANALYSES

3.17.1 Basic Objective

A thorough evaluation of all operations shall be conducted to assure that hazards have been identified and that appropriate limits and controls exist to provide for safe operation under accident conditions. Hazards analyses, which are an integral part of safety analyses, shall examine the frequency and consequences of credible event sequences.

3.17.2 Implementation Requirements

1. Engineering analyses of each safety system and its components to determine failure modes and scenarios and consequences of failure shall be accomplished (DOE Order 5480.5, DOE Order 5480.23).

2. Each analysis shall be documented, and the documentation shall include the means used to protect against identified failure modes and effects (DOE Order 5480.5, DOE Order 5480.23).

3. The analysis shall include appropriate hazards that arise from outside the GDPs, such as natural phenomena and fire (DOE Order 5480.5, DOE Order 5480.23, and DOE 6430.1A).

4. USQDs are performed as necessary to assure that procedure, test or equipment modifications do not invalidate the results of accident analyses (DOE Order 5480.5 and DOE Order 5480.21).

3.17.3 How the Requirements Are Met

1. Safety analyses have been performed at both sites. The safety analyses are documented in the FSARs (PGDP FSAR, KY-734; PORTS FSAR, GAT/GDP-1073). Each site's FSAR is written to cover the entire plant, although under the leasing arrangement, the USEC will not lease all facilities at the plants. The OSRs (PGDP KY/S-15; PORTS GAT/GDP-1074, Parts A through L) are derived from the FSARs and provide a more concise listing of the safety limits, limiting safety system settings, surveillance requirements, administrative controls, limiting conditions of operation, and the bases for these limits. The FSARs and OSRs form the basis for operation of the facilities.

2. Safety analyses are performed on modifications and changes. The safety analysis results are documented and incorporated into the plant's OSRs and FSAR as appropriate. A listing of current

safety analysis documentation is maintained. NCS evaluations are performed in accordance with the NCS requirements identified and discussed in Sect. 3.9.

3. The types of hazards and accidents evaluated in the FSARs include natural phenomena and fire.

4. A summary of representative safety analysis activity for each plant since the completion of the 1985 FSAR is presented in the Attachment of this report.

3.17.4 Status of Conformance

The requirements set forth in Section 3.17.2 are met as described in Section 3.17.3 with the following general exceptions:

- The 1985 FSARs do not fully reflect the current plant configuration.
- A comprehensive revision and updating of the FSAR has not been accomplished.

3.18 SECURITY

3.18.1 Basic Objective

A documented program shall be implemented to protect DOE security interests other than SNM, including classified information and material and sensitive unclassified information and material.

3.18.2 Implementation Requirements

The program for protecting DOE security interests other than SNM shall include the following elements:

1. Measures to ensure effective management and implementation of the security program, including the following:

    a. a documented security program providing the level of protection mandated by DOE Orders (DOE Orders 5630.11A and 5632.1B);

    b. security program planning activities providing the level of protection mandated by DOE Orders (DOE Order 5630.14A);

    c. a security training program providing the level of protection mandated by DOE Orders (DOE Order 5630.15);

    d. a protective force, providing the level of protection mandated by DOE Order 5632.7, the armed members of which are trained and qualified under a program providing the level of protection mandated by DOE Orders (DOE Orders 5632.7 and 5632.7.1);

    e. measures to control the issuance and use of security badges, credentials, and shields, providing the level of control mandated by DOE Order 5632.9A;

    f. a program of security-system performance testing, providing the level of assurance of security program effectiveness mandated by DOE Orders (DOE Orders 5630.16 and 5632.8); and

g. a program for the investigation, and reporting to DOE, of violations of laws, losses, and incidents of security concern, providing the level of protection mandated by DOE Orders (DOE Order 5639.3).

2. Documented measures to protect classified information and materials from loss or unauthorized disclosure, including the following:

   a. measures to identify classified information, providing the level of protection mandated by DOE Orders (DOE Order 5650.2B);

   b. controls of classified documents and information, providing the level of protection mandated by DOE Orders (DOE Order 5635.1A);

   c. physical protection measures for classified information and material, providing the level of protection mandated by DOE Orders (DOE Order 5632.5);

   d. controls for hand-carrying of classified matter on air carriers, providing the level of protection mandated by DOE Orders (DOE Order 5635.3);

   e. a personnel security program, providing the level of protection mandated by DOE Orders, to limit access to classified information and materials to trustworthy individuals (DOE Order 5631.2C);

   f. a security education and awareness program, providing the level of protection mandated by DOE Orders (DOE Order 5631.1B);

   g. a telecommunications security program addressing emissions security (TEMPEST), communications security, and protected distribution systems, providing the level of protection mandated by DOE Orders (DOE Orders 5300.2D, 5300.3B, and 5300.4C);

   h. a classified computer security program, providing the level of protection mandated by DOE Orders (DOE Order 5639.6);

   i. controls on classified visits, providing the level of protection mandated by DOE Orders (DOE Order 5631.4A); and

   j. a technical surveillance countermeasures program, providing the level of protection mandated by DOE Orders (DOE Order 5639.5).

3. Documented measures to protect unclassified sensitive information and materials from loss or unauthorized disclosure, including the following:

   a. an operations security program, providing the level of protection mandated by DOE Orders (DOE Order 5639.7);

   b. an information security program, providing the level of protection mandated by DOE Orders (DOE Order 5639.1);

   c. a counterintelligence program, providing the level of protection mandated by DOE Orders (DOE Order 5670.3);

   d. measures to identify unclassified controlled nuclear information (UCNI), providing the level of protection mandated by DOE Orders (DOE Order 5650.3A);

e. measures to control and protect UCNI, providing the level of protection mandated by DOE Orders (DOE Order 5635.4);

f. an unclassified computer security program, providing the level of protection mandated by DOE Orders (DOE Order 1360.2B); and

g. a program to control unclassified visits and assignments by foreign nationals, providing the level of protection mandated by DOE Orders (DOE Order 1240.2B).

3.18.3 How Requirements Are Met

Described in the site Safeguards and Security Plans are measures employed by the GDPs to ensure the following:

(a) effective management and implementation of the security program,

(b) protection of classified information and materials from loss or unauthorized disclosure, and

(c) protection of sensitive unclassified information and materials from loss or unauthorized disclosure.

3.18.4 Status of Conformance

The requirements presented in Sect. 3.18.2 are satisfied as described in Sect. 3.18.3.

3.19 CHEMICAL SAFETY

3.19.1 Basic Objective

Chemical safety practices shall be such as (1) to prevent or minimize chemical releases potentially leading to the release of radioactive materials or increase radiation exposures in the work environment or offsite.

3.19.2 Implementation Requirements

Chemical safety programs shall be established and implemented to:

1. Ensure that the levels of air contaminants within the plant are less than established standards of OSHA (DOE Order 5483.1B).

2. Provide for the adequate storage of chemicals and other hazardous materials (29CFR1910, ANSI/NFPA 30.321, and 395, ANSI/UL 1275).

3.19.3 How Requirements Are Met

Chemical safety programs have been implemented as described below:

1. An active program exists for monitoring various chemical contaminants (e.g., solvents, gases, heavy and other metals, dusts) usually found in conjunction with radioactive materials in workplace environments. Plant procedures are not in place at PGDP, but departmental procedures define monitoring requirements (PORTS SPP-H-7).

2. Various storage areas are found at the facilities. Examples include designated hazardous material storage areas, compressed gas storage areas, UF_6 cylinder storage yards, and miscellaneous storage areas. These areas are well identified, assigned to a responsible individual/organization, and inspected regularly by a variety of organizations to assess compliance with the appropriate standards. The responsible person for each storage area is notified of any nonconformances and initiates needed corrective actions. Findings are tracked in an existing data base from inspection to abatement. Compensatory measures are provided for high and medium risk nonconformances that cannot be abated in the near term (PORTS SPP-H-22).

3.19.4 Status of Conformance

The requirements set forth in Section 3.19.3 are met as described in Section 3.19.4 with the following general exceptions:

- Deficiencies exist at both plants with respect to the content of implementing procedures and record keeping programs.
- Procedures and technical basis documents need to be completed to support the design of the workplace air monitoring program at PGDP.

4. DEPARTMENT OF ENERGY OVERSIGHT

This chapter describes the DOE oversight program as planned for the GDPs during the initial lease period. This program addresses two areas. The first is nuclear safety and safeguards for SNM. In this area the DOE will provide oversight until the NRC has assumed responsibility for regulatory oversight. The second oversight area is the protection of DOE security interests, other than special nuclear materials. DOE oversight in this area will also continue until the NRC specifically assumes regulatory oversight of the GDPs in this area as well.

The oversight required to ensure adequate compliance with applicable environmental laws and Environmental Protection Agency (EPA) regulations (e.g., Title 40 of the Code of Federal Regulations) will be performed by the EPA and is not addressed in this document. Similarly, the oversight required to ensure adequate compliance with applicable Occupational Safety and Health Administration (OSHA) regulation will be performed by the Department of Labor and is also not addressed in this document.

4.1 OVERSIGHT SCOPE

The Implementation Requirements presented in Chapter 3 represent the essential nuclear safety, safeguards and security requirements derived from the Orders presented in Table 4.1. DOE Orders addressing safeguards and security requirements are also included in Table 4.1.

Table 4.1. Department of Energy Orders Impacting Nuclear Safety and Safeguards and Security

Order	Title
DOE Order 1240.2B	"Unclassified Visits and Assignments by Foreign Nationals"
DOE Order 1270.2B	"Safeguards Agreement with the International Atomic Energy Agency"
DOE Order 1324.2A	"Records Disposition"
DOE Order 1324.5A	"Records Management Program"
DOE Order 1360.2B	"Materials Transportation and Traffic Management"
DOE Order 1540.1A	"Materials Transportation and Traffic Management"
DOE Order 1540.2	"Hazardous Material Packaging for Transportation - Administrative Process"
DOE Order 4330.4A	"Maintenance Management Program"
DOE Order 4700.1	"Project Management System"
DOE Order 5000.3B	"Occurrence Reporting" (replaces 5000.3A)
DOE Order 5300.2D	"Telecommunications: Emission Security (TEMPEST)"
DOE Order 5300.3B	"Telecommunications: Communication Security"
DOE Order 5300.4C	"Telecommunications: Protected Distribution Systems"
DOE Order 5400.1	"General Environmental Protection Program"
DOE Order 5400.3	"Hazardous and Mixed Waste Program"
DOE Order 5400.5	"Radiation Protection of the Public and the Environment"
DOE Order N5400.10	"Sealed Radioactive Source Accountability"
DOE Order 5480.1B	"Environment Safety and Health Program for DOE Operations"
DOE Order 5480.3	"Safety Requirements for Packaging and Transportation of Hazardous Materials"
DOE Order 5480.4	"Environmental Protection Safety and Health Protection Standards"

Table 4.1. Department of Energy Orders Impacting Nuclear Safety (continued)

Order	Title
DOE Order 5480.5	"Safety of Nuclear Facilities"
DOE Order 5480.7	"Fire Protection"
DOE Order 5480.8A	"Contractor Occupational Medical Program"
DOE Order 5480.9	"Construction Safety and Health Program"
DOE Order 5480.10	"Contractor Industrial Hygiene Program"
DOE Order 5480.11	"Radiation Protection for Occupational Workers" and change 1 and 2
DOE Order 5480.15	"DOE Laboratory Accreditation Program for Personal Dosimetry"
DOE Order 5480.16	"Firearms Safety"
DOE Order 5480.18A	"Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities"
DOE Order 5480.19	"Conduct of Operations Requirements for DOE Facilities"
DOE Order 5480.20	"Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Nonreactor Facilities"
DOE Order 5480.21	"Unreviewed Safety Questions"
DOE Order 5480.22	"Technical Safety Requirements"
DOE Order 5480.23	"Nuclear Safety Analysis Reports"
DOE Order 5480.24	"Nuclear Criticality Safety"
DOE Order 5482.1B	"Environment, Safety, & Health Appraisal Program"
DOE Order 5483.1B	"Occupational Safety & Health Program for DOE Contractor/Employees at Government-Owned Contractor-Operated Facilities"
DOE Order 5484.1A	"Environmental Protection Safety and Health Protection Information Reporting Requirements"
DOE Order 5500.1B	"Emergency Management Systems"
DOE Order 5500.2B	"Emergency Categories, Classes, Notification and Reporting"
DOE Order 5500.3A	"Planning and Preparedness for Operational Emergencies"
DOE Order 5500.4	"Public Affairs Policy and Planning Requirements for Emergencies"
DOE Order 5500.10	"Emergency Readiness Assurance Program"
DOE Order 5630.11A	"Safeguards and Security Program"
DOE Order 5630.12A	"Safeguards and Security Inspection and Evaluation Program"
DOE Order 5630.14A	"Safeguards and Security Program Planning"
DOE Order 5630.15	"Safeguards and Security Training Program"
DOE Order 5630.16	"Safeguards and Security Performance Test Program"
DOE Order 5631.1B	"Security Education Briefing and Awareness Program"
DOE Order 5631.2C	"Personnel Security Program"
DOE Order 5631.4A	"Control of Classified Visits"
DOE Order 5632.1B	"Protection Program Operations"
DOE Order 5632.2A	"Physical Protection of Special Nuclear Material and Vital Equipment"
DOE Order 5632.5	"Physical Protection of Classified Matter"
DOE Order 5632.7	"Protective Forces"
DOE Order 5632.7.1	"Firearms Qualification Courses Manual"
DOE Order 5632.8	"Protection program operations - Systems Performance Tests"
DOE Order 5632.9A	"Issuance and Control of Security Badges, Credentials, and Shields"
DOE Order 5633.2A	"Control and Accountability of Nuclear Materials: Responsibilities and Authorities"
DOE Order 5633.3A	"Control and Accountability of Nuclear Materials"
DOE Order 5633.4	"Nuclear Materials Transactions: Documentation and Reporting"
DOE Order 5633.5A	"Nuclear Materials Reporting and Data Submission"
DOE Order 5634.1B	"Facility Approval, Security Surveys, and Nuclear Materials Surveys"
DOE Order 5635.1A	"Control of Classified Documents and Information"
DOE Order 5635.3	"Hand Carrying Classified Matter on Air Carriers:"

Table 4.1. Department of Energy Orders Impacting Nuclear Safety (continued)

Order	Title
DOE Order 5635.4	"Protection of Unclassified Controlled Nuclear Information"
DOE Order 5639.1	"Information Security Program"
DOE Order 5639.3	"Violation of Laws, Losses, and Incidents of Security Concern"
DOE Order 5639.5	"Technical Surveillance Countermeasures Program"
DOE Order 5639.6	"Classified Computer Security Program"
DOE Order 5639.7	"Operations Security Program"
DOE Order 5650.2B	"Identification of Classified Information"
DOE Order 5650.3A	"Identification of Unclassified Controlled Nuclear Information"
DOE Order 5670.3	"Counterintelligence Program"
DOE Order 5700.6C	"Quality Assurance"
DOE Order 5820.2A	"Radioactive Waste Management"
DOE Order 6430.1A	"General Design Criteria"

4.2 PROGRAM FOR OVERSIGHT OF USEC

4.2.1 Regulatory Oversight Manager

The DOE program for nuclear safety and safeguards and security oversight of USEC operation of the GDPs is based on the program, described in Chapter 2, that has been used successfully to oversee past operation of the GDPs. However, the transition in the DOE role from GDP manager to regulator necessitates changes in the structure of the oversight program. The DOE Regulatory Oversight Manager will be the DOE manager for nuclear safety and safeguards and security oversight of the GDPs. In this role, the DOE Regulatory Oversight Manager is responsible for discharging those oversight responsibilities traditionally assigned to both the DOE headquarters and field organizations.

4.2.2 Audits and Appraisals

The DOE Regulatory Oversight Manager is responsible for scheduling and managing DOE appraisals and reviews to verify conformance with the Implementation Requirements in this document. Where appropriate, the DOE Regulatory Oversight Manager shall use qualified ORO personnel and DOE Headquarters personnel, including personnel from the Office of Environment, Safety, and Health (EH), to serve as appraisal team members. Independent reviews and appraisals by DOE Headquarters oversight groups responsible for nuclear safety will also be coordinated by the DOE Regulatory Oversight Manager.

DOE appraisals are currently conducted in accordance with an "Integrated Master Schedule for the GDPs." Consistent with DOE's Uranium Enrichment Self-Assessment Program, DOE appraisals addressing the Implementation Requirements in Chapter 3 shall be continued at the frequencies provided in Table 4.2. Changes in these frequencies may result from changed trends in occurrence reports, from the results of the USEC internal appraisals, when identified nuclear safety issues indicate that additional appraisals are required, or when the DOE determines that additional reviews are required to protect the public health and safety or to provide for the common defense and security. More than one topical area may be addressed in a single appraisal. DOE appraisals addressing the protection of security interests, other than special nuclear material shall be conducted annually. The DOE appraisals may be announced or unannounced. At least one unannounced appraisal, addressing one or more of the basic objectives in Chapter 3, will be performed annually. DOE may, at its discretion, conduct appraisals concurrent with USEC independent internal appraisal activities or observe and review these activities as a part of the appraisals addressing managerial controls and oversight or quality assurance. An independent review or appraisal by select DOE Headquarters oversight groups may be conducted on a quarterly basis addressing one or more of the topical areas. These reviews will be coordinated with the Regulatory Oversight Manager.

In addition to the DOE appraisals, USEC shall ensure that internal appraisals are conducted (i.e., self-assessments), which shall address all of the Implementation Requirements in Chapter 3 at least annually, with the Implementation Requirements for half of the basic objectives in Chapter 3 addressed during the first half of each fiscal year. At the beginning of each fiscal year, USEC shall submit to the Regulatory Oversight Manager its schedule for internal appraisals. USEC shall submit internal appraisal reports and planned corrective actions, including completion schedules, to DOE within 30 days of the completion of the internal appraisal field work.

4.2.3 Operational Oversight

DOE site safety representatives shall be assigned to each GDP and shall be provided office space by USEC. These site representatives will report to the DOE Regulatory Oversight Manger and continue oversight of day-to-day operations by maintaining a site presence for surveillance and inspection of operational activities to ensure that plant continues to meet the Implementation Requirements set forth in

Chapter 3. In addition, DOE shall conduct investigations of all events relating to nuclear safety or safeguards designated as requiring an investigation in DOE Order 5484.1A, "Environmental Protection, Safety, and Health Protection Information Reporting Requirements."

Table 4.2. DOE appraisal frequency

Chapter 3 Topical area	Appraisal frequency
3.1 Organization Plan	Every 2 Years
3.2 Managerial Controls and Oversight	Every 1 Year
3.3 Operations	Every 1 Years
3.4 Engineering Reviews	Every 1 Years
3.5 Training and Qualification	Every 2 Years
3.6 Quality Assurance	Every 1 Year
3.7 Maintenance	Every 2 Years
3.8 Radiation Protection Programs, Systems, Designs and Permits	Every 1 Year
3.9 Nuclear Criticality Safety	Every 1 Year
3.10 Fire Protection	Every 1 Year
3.11 Environmental Protection	Every 3 Years
3.12 Nuclear Material Safeguards	Every 1 Years
3.13 Emergency Preparedness	Every 1 Year
3.14 Packaging and Transporting Nuclear Materials	Every 2 years
3.15 Sampling and Analysis	Every 2 Years
3.16 Waste Management Program	Every 2 Years
3.17 Accident Analysis	Every 1 Year
3.18 Security	PORTS-1 Year PGDP-1.5 Year

5. CONCLUSIONS

The original GDP designs, which were based on technology and requirements existing when the GDPs were constructed, incorporated an adequate degree of safety as shown through 40 years of safe operation. The overall safety of the original designs has been improved through upgrade projects and through the application of lessons learned over the GDPs' operational lifetime. The conclusion the plants' original designs incorporated an adequate degree of safety is reinforced by the 1985 FSARs and subsequent upgrade analyses.

The plants are operating safely under the auspices of the DOE nuclear safety and safeguards and security framework. This conclusion is supported by the results of both the DOE audit and appraisal program and special assessments.

The plants can continue to be operated safely in accordance with the requirements in Chapter 3. USEC's commitments to continue to meet the Implementation Requirements set forth in Chapter 3 coupled with DOE's oversight plan in Chapter 4 provide adequate assurance that the plants will continue to be operated safely during the interim period.

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ES/ESH-22/V4, POEF-2090, "Portsmouth Gaseous Diffusion Plant Environmental Report for 1991," October 1992

ES/ESH-22/V2, "Paducah Gaseous Diffusion Plant Environmental Report for 1991," October 1992

Wilkerson and Workman, *Gaseous Diffusion Plant Reliability Study Program*, K/C-1375, Rev. 9, September 1988

Attachment

TYPICAL SAFETY ANALYSES ACTIVITIES SINCE COMPLETION OF THE 1985 FSAR

PORTSMOUTH:

FSAR Revisions

Revision 1: November 25, 1986: Changes to incorporate the addition of the freezer/sublimers.

Revision 2: November 25, 1986: Changes to incorporate the addition of the UF_6 containment projects at the feed and withdrawal areas and various administrative changes.

Revision 3: January 20, 1988; Various administrative changes.

Revision 4: June 26, 1989: Various administrative changes.

Revision 5: March 2, 1990: Changes to incorporate the X-705 waste water treatment system.

Revision 6: May 21, 1990: Changes to incorporate modifications to the X-705 truck alley sump pit, the X-705 pH adjustment system, and the X-705 small cylinder rise pit.

Revision 7: November 7, 1990: Various administrative changes.

Revision 8: April 26, 1991: Various administrative and editorial changes.

Revision 9: July 27, 1992: Changes to incorporate the modifications to the limiting safety system settings and safety limits for the X-705 microfiltration permeate bag filter pressure differential shutdown system.

Safety Analysis Activities Since 1985

1. Since 1985, approximately 250 safety assessments have been approved for plant modifications and testing. This number does not include assessments that are still in progress or awaiting approval.

2. On August 24, 1992, PORTS instituted the Unreviewed Safety Question Program. Since that time, 35 USQDs have been approved, and approximately 75 others are in progress or awaiting approval.

3. A detailed Safety System Analysis was performed for the Highly Enriched Uranium Suspension Project. This analysis included all modifications required to ensure the safety of the shutdown cells, piping modifications, and extended range product withdrawal modifications. It also included the necessary OSR changes. DOE approved this analysis.

4. A detailed PRA was performed for the liquid UF_6 handling facilities at PORTS. The PRA examined all aspects of the operations, design, and construction of the facilities and quantified the frequency of events.

Attachment (Continued)

TYPICAL SAFETY ANALYSES ACTIVITIES SINCE COMPLETION OF THE 1985 FSAR

OSR (GAT/GDP 1074 PARTS A THROUGH L) CHANGES SINCE 1985

PART A	08/86	General changes to reflect FSAR revisions.
	03/87	Added section on deviation from an OSR.
PART B	08/86	General changes to reflect FSAR revisions.
	10/92	HEU suspension modifications.
PART C	05/87	General changes to reflect FSAR revisions.
PART D	02/83	Dropped several safety systems.
	07/86	Changed high weight setting to 8200 pounds plus other general changes.
	09/87	Changed to show a valving modification for separating freon from UF_6.
PART E	02/87	General changes to reflect FSAR revisions.
PART F	10/86	General changes to reflect FSAR revisions.
	03/87	Changed section concerning deviation from OSRs.
	04/92	Changed cylinder low pressure safety system basis.
PART G		No changes.
PART H	11/89	Major changes to reflect new waste treatment systems.
	05/92	Changed bag filter pressure differential safety limit and limiting safety system setting.
PART I	09/87	General changes to reflect FSAR revisions.
PART J		No changes.
PART K	08/86	General changes to reflect FSAR revisions.
	10/92	Changed to reflect raising assay limit of 10-ton cylinders to 5%.
PART L	03/87	Changed to reflect concern over shaft seal lubrication pressure.

All PARTS are being revised during 1993.

Attachment (Continued)

TYPICAL SAFETY ANALYSES ACTIVITIES SINCE COMPLETION OF THE 1985 FSAR

Operational Safety Requirements

X-330 and X-333 Uranium Enrichment Cascades—Part A

X-326 Uranium Enrichment and Purge Cascades—Part B

Freon Degraders—Part C

Freezer/Sublimers—Part D

X-330 and X-333 Cold Recovery Systems—Part E

UF_6 Cylinder Heating Autoclaves—Part F

X-326 High Assay Sampling Facility—Part G

X-706 Decontamination Building—Part H

X-345 SNM Storage Facility—Part I

HF Tank Farm—Part J

ERP, LAW, and TAILS Withdrawal Facilities—Part K

X-345 High Assay Sampling Facility—Part L

PADUCAH:

FSAR Revisions

Revision 1: Issued approved September 6, 1985; C-340 Metal Casting Facility.

Revision 2: Issued approved March 31, 1986; Miscellaneous Changes.

Revision 3 (originally submitted as Revision 5): Issued approved May 15, 1989; PICS Freezer/Sublimer Relocates.

Revision 4: Approved April 19, 1989; Normetex Pump Additions.

Attachment (Continued)

TYPICAL SAFETY ANALYSES ACTIVITIES SINCE COMPLETION OF THE 1985 FSAR

Unapproved Submittals—Supporting Line Item Construction Projects (All Completed)

Revision 3: Chemical Operations.

Revision 6: Intermediate Gas Removal System and C-360 Toll Transfer and Sampling Facility Modifications.

Revision 7: Seismic Upgrade.

Safety Analysis Activities Since March 1985

1. Approximately 330 Safety Assessments (or PSRs) have been completed for plant modifications initiated by ESOs. Another 75 projects initiated through ESRs have also been assessed.

2. On September 27, 1991, a USQD program was instituted at PGDP. Since that time, 47 safety evaluations (or PSEs) of proposed changes, tests, or experiments have been completed. By September 1993, the USQD process will be integrated into PSRs in the form of a PSE to determine the applicability of the DOE order. Since September 1990, 92 safety evaluations have been made through the PSR process.

3. KY-792, *System Safety Analysis (SSA) for the Higher Assay Upgrading Project (HAUP)*, has been submitted to DOE for final approval following comment and resolution activities. This SSA will provide the authorization basis (including interim OSR) for PGDP operation at an assay of 5 wt %.

Operational Safety Requirements - Revisions

KY/D-3971, *Operational Safety Requirements for UF_6 Enrichment Cascade*

Issued: March 29, 1985.
Revision 1: April 28, 1986.
Revision 2: February 25, 1987.
Revision 3: November 1, 1991.
Revision 4: June 16, 1992.

Attachment (Continued)

TYPICAL SAFETY ANALYSES ACTIVITIES SINCE COMPLETION OF THE 1985 FSAR

KY/D-3972, *Operational Safety Requirements for C-360 Toll Transfer and Sampling Facilities*

Issued: March 29, 1985.
Revision 1: March 27, 1987.
Revision 2: December 10, 1990.
Revision 3: February 4, 1993.

KY/D-3973, *Operational Safety Requirements for Chemical Operations*

Issued: March 29, 1985.
Revision 1: February 27, 1987.
Revision 2: September 20, 1988.
Revision 3: April 6, 1992.

KY/D-3974, *Operational Safety Requirements for Product and Tails Withdrawal Facilities*

Issued: March 29, 1985.
Revision 1: June 30, 1986.
Revision 2: April 19, 1989.
Revision 3: June 9, 1992.

KY/D-4151, *Operational Safety Requirements for UF_6 Feed Facilities*

Issued: February 26, 1986.
Revision 1: June 23, 1989.
Revision 2: February 4, 1993.

Submitted but not Approved

KY/L-1493, *Operational Safety Requirements for the PGDP C-710 Facility*, submitted July 15, 1988.

KY/H-188, *Operational Safety Requirements for Criticality Accident Alarm System*, submitted July 1, 1992.

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ENCLOSURE 4

Federal Register Notice

[7590-01]

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 19, 20, 21, 26, 51, 70, 71, 73, 74, 76 and 95

RIN 3150-AE62

Certification of Gaseous Diffusion Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to add a new part that would include the requirements for certification and operation of the U.S. Department of Energy (DOE) owned gaseous diffusion plants that enrich uranium. These proposed regulations would protect the public health and safety from radiological hazards and would provide for the common defense and security, including adequate safeguards, in all uranium enrichment activities of the United States Enrichment Corporation (USEC) in its operation of the two gaseous diffusion plants that USEC is leasing from the DOE. These two plants are located in Paducah, Kentucky, and Portsmouth, Ohio. In addition to the proposed new part, a number of conforming amendments are also being proposed to NRC's Regulations.

DATES: Submit comments by (insert date 60 days after the date of publication in the Federal Register). Comments received after this date will be considered if it is practical to do so, but the Commission is able to assure consideration only for comments received on or before this date.

ADDRESSES: Mail written comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC, 20555. ATTN: Docketing and Service Branch.

Hand deliver comments to: 11555 Rockville Pike, Rockville, MD, 20852, between 7:45 am and 4:15 pm Federal workdays.

Copies of comments received, the environmental assessment, finding of no significant impact, and the regulatory analysis may be examined at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC.

FOR FURTHER INFORMATION CONTACT: Mr. C. W. Nilsen, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3834; Mr. S. R. Ruffin, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 504-2696; or Mr. C. B. Sawyer, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 504-2366.

SUPPLEMENTARY INFORMATION:

Background

The President signed H.R. 776, the "Energy Policy Act of 1992" (the Act), into law on October 24, 1992. The Act amended the Atomic Energy Act of 1954 ("AEA"), to establish a new government corporation, the U.S. Enrichment Corporation (the "Corporation"), for the purpose of managing and operating the uranium enrichment enterprise previously owned and operated by the Department of Energy. Section 1701 of the AEA, as amended, provides that within 2 years

after enactment of the legislation, the NRC is required to promulgate standards that will apply to the two operating gaseous diffusion plants to protect the public health and safety from radiological hazards, and to provide for the common defense and security. Section 1701(b)(2) of the AEA, as amended, directs the NRC to establish a certification process under which the two gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky, to be operated by the Corporation, will be annually certified by the NRC for compliance with those standards. Under the Act, a certificate of compliance will be issued in lieu of a requirement for a license for the Corporation. The NRC is proposing to establish requirements and procedures for the certification process by addition of a new part to Chapter I of Title 10 of the Code of Federal Regulations.

Proposed Action

The Commission is proposing to add a new 10 CFR Part 76 entitled "Certification of Gaseous Diffusion Plants." This new part will include procedural requirements, generally applicable NRC health and safety standards, technical safety requirements, and safeguards requirements specific to the gaseous diffusion plants. The Commission will use the requirements included in this new Part 76 to satisfy Energy Policy Act requirements. The certification requirements in this proposed rulemaking include actions that are either required by the Act or required by the Commission's own procedures to protect the public health and safety from radiological hazards, to provide for the common defense and security, and to ensure adequate safeguards.

A. General requirements.

The general requirements being proposed are based on and derived mainly from 10 CFR Part 70. Part 70 contains the regulations used by the Commission to license major fuel cycle facilities for which the NRC has regulatory responsibility for protecting public health and safety, and the common defense and security. Specific proposed sections in this new part, which are based on 10 CFR Part 70, as modified for the certification process, include the following:

Section 76.1 *Purpose*. This section defines the purpose of Part 76 to be limited to certification of the existing 40 year old gaseous diffusion plants previously operated by the Department of Energy. (Reference § 70.1).

Section 76.2 *Scope*. This section defines the scope of Part 76 to cover the operation of gaseous diffusion plants previously operated by DOE and leased to the Corporation, and clarifies the new part applies only to those plants. (Reference § 70.2).

Section 76.4 *Definitions*. This section contains definitions of terms as used in this part. (Reference § 70.4).

Section 76.5 *Communications*. This section describes requirements for oral and written submissions to the Commission. (Reference § 70.5).

Section 76.6 *Interpretations*. This section contains requirements for interpretations authorized by the Commission. (Reference § 70.6).

Section 76.7 *Employee protection*. This section indicates that discrimination is prohibited. (Reference § 70.7).

Section 76.8 *Information collection requirements: OMB approval not required*. This section indicates that the information collection requirements contained in this part need not be reviewed and approved by the Office of

Management and Budget in accordance with the paperwork Reduction Act (Reference § 70.8).

Section 76.9 *Completeness and accuracy of information.* This section specifies that all information must be complete and accurate. (Reference § 70.9).

Section 76.10 *Deliberate misconduct.* This section prohibits certain Corporation activities and describes resulting enforcement action. (Reference § 70.10).

Section 76.23 *Specific exemptions.* This section specifies that the Commission may grant exemptions. (Reference § 70.14).

Section 76.81 *Authorized use of radioactive material.* The section sets forth requirements for the Corporation's possession and use of radioactive material. (Reference § 70.41).

Section 76.83 *Transfer of radioactive material.* This section contains requirements for the Corporation's transfer of radioactive material. (Reference § 70.42).

Section 76.89 *Criticality accident requirements.* This section contains monitoring requirements for criticality accidents.

Section 76.91 *Emergency planning.* This section contains emergency planning requirements. In addition to the emergency planning requirements of Part 70, the proposed rule requires continuation of some current emergency preparedness practices at the plants. The Commission believes that this is appropriate considering their continuing operation and their longstanding arrangements with the surrounding community regarding offsite emergency response. (Reference §§ 70.24 and 70.22(i)).

Section 76.120 *Reporting requirements*. This section contains requirements for 1-hour notification, 4-hour notification, 24-hour notification, and for preparation and submission of reports. (Reference § 70.50, § 70.52, and § 74.11).

Section 76.121 *Inspections*. This section states that the Corporation shall afford the Commission opportunity for inspection and that office space for Commission inspection personnel must be provided. (Reference § 70.55).

Section 76.131 *Violations*. This section specifies actions the Commission may take, to include obtaining a court order to prevent a violation and contains civil penalty provisions. (Reference § 70.71).

Section 76.133 *Criminal Penalties*. This section specifies criminal sanctions for violations. For purposes of section 223 of the Atomic Energy Act of 1954, as amended, which provides for criminal sanctions, all regulations in Part 76 are issued under one or more of sections 161b, 161i, or 161o except for the sections listed in § 76.133(b). (Reference § 70.72).

B. Procedural requirements.

As directed by Section 1701(c) of the AEA, as amended, the proposed rule contains procedures for the annual certification process. Apart from requiring an annual application for a certificate of compliance and a determination by the Commission, in consultation with EPA, of compliance with the NRC's standards, the legislation does not specify procedures for the certification process. In addition, the amendments provide that the requirement for a certificate of compliance is in lieu of any requirement for a license. Thus, the NRC has substantial discretion in determining

appropriate procedures for the certification process. By providing for public notice and a written comment period with respect to an application for a certificate of compliance, as well as the opportunity for the Corporation and other interested parties to petition the Commission for review of the decision to grant or deny a certificate or request for approval of a compliance plan, the Commission believes that it is proposing a fair and efficient procedural scheme.

The procedural requirements being proposed for the certification process, to implement provisions of the Act and to constitute the Commission's proposed certification process, include:

Section 76.21 *Certificate required*. This section contains the requirement to obtain a certificate of compliance to operate the gaseous diffusion plants. (Reference the Act).

Section 76.31 *Annual application requirement*. This section specifies the annual application requirements for the certificate of compliance. (Reference the Act).

Section 76.33 *Application procedures*. This section contains filing requirements and specifies the required contents of the application.

Section 76.37 *Federal Register notice*. This section concerns public notice of the filing of an application and the opportunity for public comment.

Section 76.39 *Public meeting*. This section describes the procedures for a public meeting on the application to be held at the discretion of the Director, Office of Nuclear Material Safety and Safeguards (NMSS), NRC, and provisions for a transcript of a meeting. A public meeting will be held on the first certification application.

Section 76.41 *Record underlying decisions.* This section specifies that any decision must be based on information in the record and that significant information on any proceeding, with limited exceptions, must be part of the public docket. This is not intended to constitute a requirement of adjudication on the record after opportunity for agency hearing under the Administrative Procedure Act.

Section 76.43 *Annual date for decision.* This section describes the timing of the annual decision on the application by the Director, NMSS.

Section 76.45 *Application for amendment of certificate.* This section states the procedure for amending a certificate prior to the established date of the next application for a certificate.

Section 76.51 *Conditions of certification.* This section requires compliance by the Corporation with all requirements set forth and referenced in Part 76 or in a certificate of compliance or approved compliance plan.

Section 76.53 *Consultation with Environmental Protection Agency (EPA).* This section requires that the Commission will consult with the EPA in making the annual decision on the application for a certificate, including the provisions of any compliance plan.

Section 76.55 *Timely renewal.* This section states that timely and sufficient filing of an application for a certificate of compliance maintains in effect any existing certification or approved compliance plan until issuance of a final and effective decision on the application. This envisions the unlikely situation in which the Commission is unable to make its final, annual determinations regarding an application for a certificate of compliance despite the filing of a sufficient application. In this case, the Commission will deem its prior determinations regarding compliance to be its current and

effective determinations until final resolution of the subsequent application and will advise Congress accordingly in its annual report under section 1701(b) of the AEA, as amended. The Commission invites commenters to address this proposal.

Section 76.60 *Regulatory requirements which apply.* This section specifies the requirements which the NRC will apply for certification of the Corporation's operation of the gaseous diffusion plants.

Section 76.62 *Issuance of certificate or approval of compliance plan.* This section specifies that the Director, NMSS, may issue a certificate or approval of a compliance plan, requires notice of the decision in the Federal Register, and states that the Corporation or affected members of the public who have provided comments in the proceeding may seek the Commission's review of the Director's decision.

Section 76.64 *Denial of certificate or compliance plan.* This section states that the Director, NMSS, may deny a certificate or compliance plan and that the denial must be noticed in the Federal Register. This section also provides an opportunity for action by the Corporation before denial. It also states that the Corporation or affected members of the public who have provided comments on the application may seek the Commission's review of the Director's decision.

Section 76.68 *Plant changes.* This section describes plant or operational changes permitted by the Corporation without prior Commission approval. Documentation of revisions must be submitted to the NRC.

Section 76.70 *Post issuance.* This section specifies procedures for amendment, revocation, suspension, or amendment for cause of the certificate.

Section 76.72 *Miscellaneous procedural matters.* This section concerns

procedures for filing petitions, ruling on matters of procedure, and communication between Commission and staff. Additional guidance regarding the filing and service of petitions for review of the Director's decision and responses to such petitions may be provided in the Director's decision or by order of the Commission.

Except for proceedings under 10 CFR Part 2, Subpart G for imposition of a civil penalty, the Commission is not imposing restrictions on ex parte communications or on the ability of the NRC staff and the Commission to communicate with one another at any stage of this regulatory process. Staff would not participate in a review of the Director's decision as a party, but rather would serve as an advisor to the Commission. Congress has not required formal adjudication, and the Commission believes that informal processing without such formal restrictions on communication are best suited for resolution of applications for a certificate on an annual basis.

C. Technical safety requirements.

The major technical safety requirements proposed are found in the following sections:

Section 76.35 *Contents of applications.* This section specifies that applications must include a safety analysis report, a compliance status report which includes environmental and effluent monitoring data, a quality assurance program description, a description of use of radioactive material, a nuclear material control and accounting plan, a physical protection plan for special nuclear material in transit, a plant physical security plan, an emergency plan, a plan for security facility approval and protection of classified

information and hardware, a description of the Corporation's response necessary to implement International Atomic Energy Agency safeguards, and a description of the waste treatment and management program.

With respect to the proposed paragraphs 76.35(j) and (k), which would require a description of the depleted uranium and waste management programs, including funding plans to assure availability of funds to implement the programs, the Commission requests public comment on appropriate interpretation of the Energy Policy Act of 1992 (the Act). The Commission is inclined to interpret the Act to terminate NRC regulatory jurisdiction over the Department's gaseous diffusion plants if and when the Corporation ceases operations and the plants are brought to a cold shutdown condition. Oversight responsibility would then revert to DOE which will be responsible for the plants' decontamination and decommissioning including disposal of all wastes and disposition of any depleted uranium at the sites. Under this interpretation, the Corporation's plans for wastes and depleted uranium will therefore be matters for DOE, rather than NRC, to address. The Commission requests comments on this interpretation, and after taking into account any such comments, the Commission may eliminate the requirement under 76.35(j) and (k).

The proposed rule would require any application which contains Restricted Data to be prepared in such a manner that all Restricted Data is separated from the unclassified information.

Section 76.85 *Assessment of accidents*. This section contains the requirement for performance of a safety analysis of the potential for releases of radioactive material from accidents.

Specifically, the proposed rule requires that a safety analysis of the site activities be performed to evaluate the potential for releases of radiological material from the existing plants. The analysis would evaluate releases from a reasonable spectrum of postulated accident scenarios which may occur in the gaseous diffusion plants taking into account the existing systems in operation that are intended to mitigate the consequence of any release. Special attention must ensure that site activities will be conducted in a manner to prevent, reduce, or to mitigate the radiological consequences of internal and external events and natural phenomena. These potential releases, together with site characteristics, including meteorology, are to be used to evaluate the onsite and offsite radiological consequences.

The Corporation must provide a level of protection against accidents during plant operations sufficient to provide adequate protection of the public health and safety. In assessing the level of protection provided by the Corporation, the operational safety objectives to be used by the Commission will be that no individual at the site boundary would be likely to receive a total radiation dose to the whole body in excess of .25 Sv (25 rems) (total effective dose equivalent) or an intake of greater than 10 milligrams of uranium in soluble form in the event of an accidental release. The proposed .25 Sv (25 rems) objective is also used for Part 50 licensees and is addressed in 10 CFR Part 100. This goal will be used by NRC as a factor to assist in arriving at an overall public health and safety determination but it does not constitute a siting criterion for the uranium enrichment plants. Instead, it will be used by the Commission as an operational goal, and the Corporation should accordingly provide information pertaining to specifications for conducting plant operations that would result in this goal

and the goal on uranium intake being met or that adequate supplementary protective measures are developed and implemented. The use of 10 mg intake of uranium is an amount that can be considered as equivalent in risk to a .25 Sv (25 rems) acute radiation dose in that there is little risk of permanent damage.

The Commission is proposing the 10 mg objective in consideration of chemical toxicity which would be used as the limiting factor for soluble uranium in the accident analyses under this section. The Commission's limited use of chemical toxicity considerations in Part 76 is consistent with its practice elsewhere (e.g., 10 CFR 20.1201(e)), and prevents any potential regulatory gap in public protection against the toxic effects of soluble uranium.

The Commission is interested in comments on these safety objectives, including their magnitude, whether or not they should be included as part of the rule, and whether alternative values should be adopted.

In a related matter, the NRC staff recently announced that it is developing guidance and regulatory requirements on integrated safety analysis (ISA) of licensed fuel cycle facilities (58 FR 40167, July 27, 1993). An ISA is a systematic review process by which a licensee or applicant will analyze its facility and processes and will assemble essential information for the safety analysis report. It is too early to determine how this effort will affect the gaseous diffusion plants. However, when a determination is made in the future regarding any additional safety analysis requirements for licensed fuel cycle facilities or the methodology for implementing them, the applicability of these methodologies to gaseous diffusion plants will also be addressed.

Section 76.87 *Technical safety requirements*. This proposed section specifies that safety requirements must be included in the application. Safety topics to be considered are those mainly associated with the plant operations, management controls, and confinement of radioactive material.

The proposed rule requires the Corporation to include technical safety requirements derived from analyses and evaluations included in the safety analysis report. These safety requirements would include safety limits and limiting control settings within which process variables would be maintained for adequate control to guard against the uncontrolled release of radioactivity. The safety requirements would also include limiting conditions for operation, surveillance requirements, design features, and administrative controls. The requirements are similar to operating technical specifications or license conditions applied to nuclear fuel cycle plants to assure that operations are controlled as described in the safety analysis report.

Section 76.93 *Quality assurance*. This section requires a quality assurance program. The Commission recognizes that the GDPs are fuel cycle facilities and that the appropriate quality assurance (QA) for GDPs is not the same as for reactors. The GDPs are existing plants and they were designed, constructed, and assembled over 40 years ago. The QA requirements for the GDPs will be based on applying the applicable QA criteria in 10 CFR Part 50, Appendix B, in a graded approach and to an extent that is commensurate with the importance to safety.

D. Incorporation of existing regulations.

In addition, portions of other existing Commission regulations will be applicable for certification of the Corporation's operation of the gaseous diffusion plants (proposed § 76.60). They are contained in Title 10, Code of Federal Regulations as follows:

Requirements for notices, instructions, and reports to workers are contained in 10 CFR Part 19, **"Notices, Instructions, and Reports To Workers: Inspection and Investigations."** It is the purpose of Part 19 to establish requirements for notices, instructions, and reports by the Corporation to individuals participating in gaseous diffusion activities. It also sets forth the rights and responsibilities of the Commission and individuals during interviews on any matter within the Commission's jurisdiction.

Requirements for protection against ionizing radiation are contained in 10 CFR Part 20, **"Standards For Protection Against Radiation."** It is the purpose of Part 20 to control the receipt, possession, use, storage, transfer, and disposal of byproduct, source, and special nuclear material by the Corporation in such a manner that the total dose to an individual (including doses resulting from radioactive material and from radiation sources other than background radiation) does not exceed the standards for protection against radiation prescribed by the NRC for normal operating conditions and anticipated operational occurrences.

Requirements for reporting of defects and noncompliance are contained in 10 CFR Part 21, **"Reporting of Defects and Noncompliance."** It is the purpose of Part 21 to establish procedures and requirements for persons to notify the Commission immediately of component defects or failure to comply with regulatory requirements which could create a substantial safety hazard.

Requirements for fitness-for-duty programs are contained in 10 CFR Part 26, **"Fitness-for-Duty Programs."** It is the purpose of Part 26 to prescribe requirements and standards for establishment and maintenance of fitness-for-duty programs to reduce the likelihood of theft or diversion of strategic special nuclear material. The requirements of this part are relevant only to the extent that the Corporation elects to engage in activities which involve formula quantities of strategic special nuclear material.

Requirements for packaging and transportation are contained in 10 CFR Part 71, **"Packaging and Transportation of Radioactive Material."** It is the purpose of Part 71 to establish requirements and procedures for packaging, preparation for shipment, and transportation of radioactive material.

Requirements for physical security and material control and accounting are contained in 10 CFR Part 70, **"Domestic Licensing of Special Nuclear Material,"** Part 73, **"Physical Protection of Plants and Materials,"** and Part 74, **"Material Control and Accounting of Special Nuclear Material,"** as specified in Subpart E to this part. It is the purpose of Subpart E to identify the specific sections that establish the requirements and procedures for transfer, protection at fixed sites and in transit, and control and accounting of the various enrichments of U-235 covered under the certification.

Safeguards regulation of special nuclear material is conducted on a graded basis. The grades reflect the importance of specified kinds and quantities of material to the public safety and to the common defense and security. Three grades of material are defined in Commission regulations. In declining order of importance they are:

(1) Formula quantities of strategic special nuclear material (also referred to by the shorter phrase "Category I material");

(2) Special nuclear material of moderate strategic significance (Category II), and

(3) Special nuclear material of low strategic significance (Category III).

The gaseous diffusion plants are to produce only Category III material and only the safeguards for that grade of material need apply to production activities. Nonetheless, the Commission recognizes that the Corporation may need to or may opt to engage in nonproduction activities that involve the other categories of material. One reason stems from the fact that in the past, the Portsmouth plant has produced high enriched uranium hexafluoride (UF_6). As a result of this past production, there may be portions of the plant under lease by the Corporation or to which the Corporation will have access that will continue to have high enriched UF_6 fixed to interior surfaces of process equipment. Additionally, some areas, such as the analytical laboratory, may continue to have a high enriched inventory. A second reason stems from the possibility that the Corporation may elect to engage in nonproduction business activities that involve high enriched UF_6. To be responsive to the full range of possible Corporation activities, safeguards regulations for all three categories of material are listed in Subpart E and are to be applied in accordance with the categories of material the Corporation actually uses, possesses, or has access to.

Requirements for security facility approval and protection of classified information and hardware are contained in 10 CFR Part 95, "Security Facility

Approval and Safeguarding of National Security Information and Restricted Data." It is the purpose of Part 95 to establish requirements and procedures for the foregoing matters. DOE is expected to administer the access authorization program for the gaseous diffusion plants, and therefore the proposed rule does not contain access authorization requirements.

The Commission recognizes the gaseous diffusion plants were designed and constructed before the new certification requirement was established in the Energy Policy Act of 1992, and that they have operated safely for approximately 40 years. This proposed rule is based upon comparable NRC requirements that have been in place for a number of years, and that the staff believes are adequate and appropriate for the gaseous diffusion plants, and are at least as stringent as the DOE requirements under which the plants currently operate. However, in notice and comment rulemaking there is the potential that as a result of public comment on the proposed rule, the final rule may include different criteria. In this connection, commenters should be informed that the DOE has identified oversight operational requirements to be met by the gaseous diffusion plants for the transition period in which DOE continues to regulate the plants, until NRC assumes responsibility for regulatory oversight. The NRC will not assume regulatory oversight authority until after it establishes the final rule and completes the first certification process. The DOE submittal which describes oversight requirements may be reviewed in the NRC Public Document Room.

Also, the Corporation has submitted unsolicited proposed standards for the gaseous diffusion plants which are included as Appendix A to this notice. The Commission invites comments on whether some or all of the requirements proposed by the Corporation or contained in the DOE oversight requirements

should be used in lieu of those proposed by the Commission. Based on public comments, the Commission will consider whether it should adopt selected portions of them in the final rule. The Commission must determine that the certification process, including any modifications based on public comments, will provide an adequate level of protection of the public health and safety, the environment, and the common defense.

In addition to the proposed new Part 76, a number of conforming changes are also being proposed to the provisions of Chapter I of Title 10 of the Code of Federal Regulations. These changes would be necessary to implement the new part.

Submission of Comments in Electronic Format

Commenters are encouraged to submit, in addition to the original paper copy, a copy of the letter in electronic format on a DOS-formatted (IBM compatible) 5.25 or 3.5 inch computer diskette. Text files should be provided in WordPerfect format or unformatted ASCII code. The format and version should be identified on the diskette's external label.

Finding of No Significant Environmental Impact: Availability; Categorical Exclusion

The Commission has determined under the National Environmental Policy Act (NEPA) of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and

therefore, an environmental impact statement is not required. The two plants to be regulated by this rule have already been subject to evaluation in accordance with the National Environmental Policy Act. The Department of Energy has prepared an environmental impact statement for the gaseous diffusion plant in Portsmouth, Ohio[1], and an environmental assessment for the plant in Paducah, Kentucky[2]. The Commission's proposed certification requirements are intended to be at least as stringent as the existing requirements applicable to the two plants which are currently operating and have been operating for nearly 40 years. The promulgation of a rule governing these plants and their subsequent regulation by the NRC will not result in any environmental impacts beyond those which currently exist or would be expected to continue absent NRC regulatory oversight. The NRC environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC.

Similarly, subsequent certificates of compliance including amendments, modifications and renewals issued pursuant to this part will consist of findings of compliance with 10 CFR Part 76. Therefore, such actions will not result in any significant new environmental impacts. Part 51 of Title 10 of the Code of Federal Regulations is being amended to include a categorical exclusion for such certification actions pursuant to Part 76.

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[1] Final Environmental Impact Statement, Portsmouth Gaseous Diffusion Plant Site, May 1977, ERDA-1555; Final Environmental Statement, Portsmouth Gaseous Diffusion Plant Expansion, September 1977, ERDA-1549.

[2] Final Environmental Impact Assessment Of The Paducah Gaseous Diffusion Plant Site, August 1982, DOE/EA-0155.

Under its procedures implementing NEPA, the Commission may exclude from preparation of an environmental impact statement or an environmental assessment a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in NRC procedures. In this rulemaking, the Commission proposes to find that the issuance, amendment, modification and revision of a certificate of compliance for the Corporation comprise a category of actions which does not individually or cumulatively have a significant effect on the human environment. Actions within this category are similar in that they will be based on a finding by NRC that the Corporation has demonstrated compliance with the requirements in Part 76. As noted above, after conducting an environmental assessment for Part 76, the Commission made a finding of no significant environmental impact, and concluded that Part 76 requirements, if promulgated, would not allow the enrichment facilities to operate in such a way as to result in any adverse environmental effects greater than the existing impacts which have been already evaluated. Accordingly, a Commission finding of compliance with the Part 76 requirements would not have a significant effect on the human environment.

Paperwork Reduction Act Statement

The information collection requirements contained in this proposed rule of limited applicability apply only to a wholly-owned instrumentality of the United States and affect fewer than ten respondents. Therefore, Office of Management and Budget clearance is not required pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Draft Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC.

The Commission requests public comment on the draft analysis. Comments on the draft analysis may be submitted to the NRC as indicated under the ADDRESSES heading.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule, if adopted, will not have a significant economic impact upon a substantial number of small entities since it only addresses the Corporation's operation of two existing plants which do not fall into this category.

Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule, and therefore, a backfit analysis is not required.

List of Subjects

10 CFR Part 19

Criminal penalties, Environmental protection, Nuclear materials, Nuclear power plants and reactors, Occupational safety and health, Radiation protection, Reporting and recordkeeping requirements, Sex discrimination.

10 CFR Part 20

Byproduct material, Criminal penalties, Licensed material, Nuclear materials, Nuclear power plants and reactors, Occupational safety and health, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Special nuclear material, Source material, Waste treatment and disposal.

10 CFR Part 21

Nuclear power plants and reactors, Penalties, Radiation protection, Reporting and recordkeeping requirements.

10 CFR Part 26

Alcohol abuse, Alcohol testing, Appeals, Chemical testing, Drug abuse, Drug testing, Employee assistance programs, Fitness for duty, Management actions, Nuclear power reactors, Protection of information, Reporting and recordkeeping requirements.

10 CFR Part 51

Administrative practice and procedure, Environmental impact statement, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements.

10 CFR Part 70

Criminal penalties, Hazardous materials transportation, Material control and accounting, Nuclear materials, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

10 CFR Part 71

Criminal penalties, Hazardous materials transportation, Nuclear materials, Packaging and containers, Reporting and recordkeeping requirements.

10 CFR Part 73

Criminal penalties, Hazardous materials transportation, Export, Import, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements, Security measures.

10 CFR Part 74

Accounting, Criminal penalties, Hazardous materials transportation, Material control and accounting, Nuclear materials, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Special nuclear material.

10 CFR Part 76

Certification, Criminal penalties, Radiation protection, Reporting and recordkeeping requirements, Security measures, Special nuclear material, Uranium enrichment by gaseous diffusion.

10 CFR Part 95

Classified information, Criminal penalties, Reporting and recordkeeping requirements, Security measures.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 553; the NRC is proposing to adopt the following amendments to 10 CFR Parts 19, 20, 21, 26, 51, 70, 71, 73, 74, and 95 and the new 10 CFR Part 76.

PART 19--NOTICES, INSTRUCTIONS, AND REPORTS TO WORKERS: INSPECTION AND INVESTIGATIONS

1. The authority citation for Part 19 is revised to read as follows:

AUTHORITY: Secs. 53, 63, 81, 103, 104, 161, 186, 68 Stat. 930, 933, 935, 936, 937, 948, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C 2073, 2093, 2111, 2133, 2134, 2201, 2236, 2282); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841); Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851).

2. Section 19.2 is revised to read as follows:

§ 19.2 Scope.

The regulations in this part apply to all persons who receive, possess, use, or transfer material licensed by the Nuclear Regulatory Commission pursuant to the regulations in Parts 30 through 35, 39, 40, 60, 61, or Part 72 of this chapter, including persons licensed to operate a production or utilization facility pursuant to Part 50 of this chapter, persons licensed to possess power reactor spent fuel in an independent spent fuel storage installation (ISFSI) pursuant to Part 72 of this chapter, and persons required

to obtain a certificate of compliance or an approved compliance plan under Part 76 of this chapter. The regulations regarding interviews of individuals under subpoena apply to all investigations and inspections within the jurisdiction of the Nuclear Regulatory Commission other than those involving NRC employees or NRC contractors. The regulations in this part do not apply to subpoenas issued pursuant to 10 CFR 2.720.

PART 20--STANDARDS FOR PROTECTION AGAINST RADIATION

3. The authority citation for Part 20 is revised to read as follows:

Authority: Secs. 53, 63, 65, 81, 103, 104, 161, 182, 186, 68 Stat. 930, 933, 935, 936, 937, 948, 953, 955, as amended (42 U.S.C. 2073, 2093, 2095, 2111, 2133, 2134, 2201, 2232, 2236), secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

4. Section 20.1002 is revised to read as follows:

§ 20.2 Scope.

The regulations in this part apply to persons licensed by the Commission to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material or to operate a production or utilization facility under Parts 30 through 35, 39, 40, 50, 60, 61, 70, or 72 of this chapter, and to persons required to obtain a certificate of compliance or an approved compliance plan under Part 76 of this chapter. The limits in this part do not apply to doses due to background radiation, to exposure of patients to

radiation for the purpose of medical diagnosis or therapy, or to voluntary participation in medical research programs.

PART 21--REPORTING OF DEFECTS AND NONCOMPLIANCE

5. The authority citation for Part 21 is revised to read as follows:

AUTHORITY: Sec. 161, 68 Stat. 948, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2201, 2282); secs. 201, as amended,206, 88 Stat. 1242, as amended 1246 (42 U.S.C. 5841, 5846).

Section 21.2 also issued under secs. 135, 141, Pub. L.97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161).

6. Section 21.2 is amended by adding paragraph (e) to read as follows:

§ 21.2 Scope.

* * * * *

(e) The regulations in this part apply to each individual, partnership, corporation, or other entity required to obtain a certificate of compliance or an approved compliance plan under Part 76 of this chapter.

PART 26--FITNESS-FOR-DUTY PROGRAMS

7. The authority citation for Part 26 is revised to read as follows:

AUTHORITY: Secs. 53, 81, 103, 104, 107, 161, 68 Stat. 930, 935, 936, 937, 948, as amended (42 U.S.C. 2073, 2111, 2112, 2133, 2134, 2137, 2201);

secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846).

8. Section 26.2 is amended by adding paragraph (d) to read as follows:

§ 26.2 Scope.

* * * * *

(d) The regulations in this part apply to each individual, partnership, corporation, or other entity required to obtain a certificate of compliance or an approved compliance plan under Part 76 of this chapter.

PART 51--ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS

9. The authority citation for Part 51 is revised to read as follows:

AUTHORITY: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); secs. 201, as amended, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

10. Section 51.22 is amended by adding paragraph (c)(19) to read as follows:

§ 51.22 Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review.

* * * * *

(c) * * *

(19) Issuance, amendment, modification, or renewal of a certificate of compliance of gaseous diffusion enrichment facilities pursuant to 10 CFR Part 76.

PART 70--DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

11. The authority citation for Part 70 is revised to read as follows:

AUTHORITY: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246, (42 U.S.C. 5841, 5842, 5845, 5846).

Sections 70.1(c) and 70.20a(b) also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161). Section 70.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93-377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

12. Section 70.1 is amended by revising paragraph (a) and adding paragraph (d) to read as follows:

<u>§ 70.1 Purpose</u>.

(a) Except as provided in paragraphs (c) and (d) of this section, the regulations of this part establish procedures and criteria for the issuance of licenses to receive title to, own, acquire, deliver, receive, possess, use, and transfer special nuclear material; and establish and provide for the terms and conditions upon which the Commission will issue such licenses.

* * * * *

(d) As provided in Part 76 of this chapter, the regulations of this part establish procedures and criteria for physical security and material control and accounting for the issuance of a certificate of compliance or the approval of a plan for compliance.

PART 71--PACKAGING AND TRANSPORTATION OF RADIOACTIVE MATERIAL

13. The authority citation for Part 71 is revised to read as follows:

AUTHORITY: Secs. 53, 57, 62, 63, 81, 161, 182, 183, 68 Stat. 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2073, 2077, 2092, 2093, 2111, 2201, 2232, 2233); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 71.97 also issued under sec. 301, Pub. L. 96-295, 94 Stat. 789-790.

14. Section 71.0 is amended by adding paragraph (e) to read as follows:

<u>§ 71.0 Purpose and scope</u>.

* * * * *

(e) The regulations in this part apply to any person required to obtain a certificate of compliance or an approved compliance plan pursuant to Part 76 of this chapter if the person delivers radioactive material to a common or contract carrier for transport or transports the material outside the confines of the person's plant or other authorized place of use.

PART 73--PHYSICAL PROTECTION OF PLANTS AND MATERIALS

15. The authority citation for Part 73 is revised to read as follows:

AUTHORITY: Secs. 53, 161, 68 Stat. 930, 948, as amended, sec. 147, 94 Stat. 780 (42 U.S.C. 2073, 2167, 2201); sec. 201, as amended, 204, 88 Stat. 1242, as amended, 1245 (42 U.S.C. 5841, 5844).

Section 73.1 also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2241 (42 U.S.C. 10155, 10161). Section 73.37(f) also issued under sec. 301, Pub. L. 96-295, 94 Stat. 789 (42 U.S.C. 5841 note). Section 73.57 is issued under sec. 606, Pub. L. 99-399, 100 Stat. 876 (42 U.S.C. 2169).

16. Section 73.1 is amended by adding paragraph (b)(9) to read as follows:

§ 73.1 Purpose and scope.

* * * * *

(b) * * *

(9) As provided in Part 76 of this chapter, the regulations of this part establish procedures and criteria for physical security for the issuance of a certificate of compliance or the approval of a compliance plan.

PART 74--MATERIAL CONTROL AND ACCOUNTING OF SPECIAL NUCLEAR MATERIAL

17. The authority citation for Part 74 is revised to read as follows:

AUTHORITY: Secs. 53, 57, 161, 182, 183, 68 Stat. 930, 932, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2073, 2077, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

18. Section 74.2 is amended by adding paragraph (d) to read as follows:

§ 74.2 Scope.

* * * * *

(d) As provided in Part 76 of this chapter, the regulations of this part establish procedures and criteria for material control and accounting for the issuance of a certificate of compliance or the approval of a compliance plan.

19. A new Part 76 is added to 10 CFR Chapter I to read as follows:

PART 76--CERTIFICATION OF GASEOUS DIFFUSION PLANTS

Subpart A - General Provisions

Subpart B - Application

Subpart C - Certification

Sec.

Subpart D - Safety

Sec.

Subpart E - Safeguards and Security

Subpart F - Reports and Inspections

Subpart G - Enforcement

AUTHORITY: Secs. 161, 68 Stat. 948, as amended, secs. 1312, 1701, 106 Stat. 2392, 2951-53 (42 U.S.C. 2201, 2297b-11, 2297f); secs. 201, as amended,

206, 88 Stat. 1244, 1246 (42 U.S.C. 5841, 5842). Sec. 76.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851).

Subpart A - General Provisions

§ 76.1 Purpose.

(a) This part establishes requirements that will govern the operation of the gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky. These requirements are promulgated to protect the public health and safety from radiological hazards and provide for the common defense and security. This part also establishes the certification process that will be used to ensure compliance with the established requirements.

(b) The regulations contained in this part are issued pursuant to the Atomic Energy Act of 1954, as amended; Title II of the Energy Reorganization Act of 1974, as amended; and Title XI of the Energy Policy Act of 1992.

§ 76.2 Scope.

The regulations in this part apply only to the gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky leased by DOE to the Corporation. This part also gives notice to all persons who knowingly provide to the Corporation or any contractor, or subcontractor any components, equipment, materials, or other goods or services that relate to the activities subject to this part that they may be individually subject to NRC enforcement action for violation of § 76.10.

§ 76.4 Definitions.

As used in this part:

Act means the Atomic Energy Act of 1954 (68 Stat 919), and includes any amendments to the Act.

Administrative controls means the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to ensure operation of the plant in a safe manner.

Agreement State means any State with which the Commission has entered into an effective agreement under subsection 274b. of the Act. *Non-Agreement State* means any other State.

Atomic energy means all forms of energy released in the course of nuclear fission or nuclear transformation.

Certificate of compliance means a certificate of compliance issued pursuant to this part.

Commission means the Nuclear Regulatory Commission or its duly authorized representatives.

Common defense and security means the common defense and security of the United States.

Compliance plan means a plan for achieving compliance approved pursuant to this part.

Corporation means the United States Enrichment Corporation (USEC), a wholly-owned corporation of the United States that is authorized under lease from the Department of Energy to operate the gaseous diffusion enrichment plants in Paducah, Kentucky, and Portsmouth, Ohio.

Director means the Director, or his or her designee, of the Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission.

Department and *Department of Energy* (DOE) means the Department of Energy established by the Department of Energy Organization Act (Pub. L. 95-91, 91 Stat. 565, 42 U.S.C. 7101 et seq.), to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104(b), (c) and (d) of the Energy Reorganization Act of 1974, as amended, (Pub. L. 93-438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95-91, 91 Stat. 565 at 577-578, 42 U.S.C. 7151).

Depleted uranium means the byproduct residues from the uranium enrichment process in which the concentration of the isotope U_{235} is less than that occurring in natural uranium.

Effective dose equivalent means the sum of the products of the dose equivalent to the body organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated, as defined in 10 CFR Part 20 (§§ 20.1001-20.2402).

Effective kilograms of special nuclear material means:

(1) For uranium with an enrichment in the isotope U-235 of 0.01 (1 percent) and above, its element weight in kilograms multiplied by the square of its enrichment expressed as a decimal weight fraction; and

(2) For uranium with an enrichment in the isotope U-235 below 0.01 (1 percent), its element weight in kilograms multiplied by 0.0001.

Formula quantity means strategic special nuclear material in any combination in a quantity of 5000 grams or more computed by the formula, grams = (grams contained U-235) + 2.5(grams U-233+grams plutonium).

Limiting conditions for operation means the lowest functional capability or performance levels of equipment required for safe operation of the plant.

Limiting control settings means settings for automatic alarm or protective devices related to those variables having significant safety functions.

Person means:

(1) Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government Agency other than the Commission or the Department, except that the Department shall be considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to Section 202 of the Energy Reorganization Act of 1974, as amended, (88 Stat. 1244); any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and

(2) Any legal successor, representative, agent, or agency of the foregoing.

Process means a series of actions that achieves an end or result.

Produce, when used in relation to special nuclear material, means:

(1) To manufacture, make, produce, or refine special nuclear material;

(2) To separate special nuclear material from other substances in which such material may be contained; or

(3) To make or to produce new special nuclear material.

Restricted Data means all data concerning the production of special nuclear material but does not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Act.

Safety limits means those bounds within which the process variables must be maintained for adequate control of the operation and that must not be exceeded in order to protect the integrity of the physical system that is designed to guard against the uncontrolled release of radioactivity.

Sealed source means any radioactive material that is encased in a capsule designed to prevent leakage or escape of the radioactive material.

Security facility approval means that a determination has been made by the NRC that a facility is eligible to use, process, store, reproduce, transmit, or handle classified matter.

Source material means source material as defined in Section 11z. of the Act and in the regulations contained in Part 40 of this Chapter.

Special nuclear material means:

(1) Plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of Section 51 of the Act, determines to be special nuclear material, but does not include source material; or

(2) Any material artificially enriched in any of the foregoing, but does not include source material.

Special nuclear material of low strategic significance means:

(1) Less than an amount of special nuclear material of moderate strategic significance, as defined in this section, but more than 15 grams of uranium-235 (contained in uranium enriched to 20 percent or more in the U-235

isotope), or 15 grams of uranium-233, or 15 grams of plutonium, or the combination of 15 grams when computed by the equation, grams = (grams contained U-235) + (grams plutonium) + (grams U-233); or

(2) Less than 10,000 grams but more than 1000 grams of uranium-235 (contained in uranium enriched to 10 percent or more but less than 20 percent in the U-235 isotope), or

(3) 10,000 grams or more of uranium-235 (contained in uranium enriched above natural but less than 10 percent in the U-235 isotope).

Special nuclear material of moderate strategic significance means:

(1) Less than a formula quantity of strategic special nuclear material but more than 1000 grams of uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), or more than 500 grams of uranium-233 or plutonium, or in a combined quantity of more than 1000 grams when computed by the equation, grams = (grams contained U-235) + 2 (grams U-233 + grams plutonium); or

(2) 10,000 grams or more of uranium-235 (contained in uranium enriched to 10 percent or more but less than 20 percent in the U-235 isotope).

Special nuclear material scrap means the various forms of special nuclear material generated during chemical and mechanical processing, other than recycle material and normal process intermediates, which are unsuitable for use in their present form, but all or part of which will be used after further processing.

Strategic special nuclear material means uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233, or plutonium.

Surveillance requirements means requirements relating to test, calibration, or inspection to ensure that the necessary quality of systems and components is maintained, that plant operation will be within the safety limits, and that the limiting conditions of operation will be met.

United States, when used in a geographical sense, includes Puerto Rico and all territories and possessions of the United States.

Uranium enrichment plant means:

(1) Any plant used for separating the isotopes of uranium or enriching uranium in the isotope 235, using gaseous diffusion technology; or

(2) Any equipment or device, or important component part especially designed for such equipment or device, capable of separating the isotopes of uranium or enriching uranium in the isotope 235, using gaseous diffusion technology.

Work means the activity of a defined task; for example, research, development, operation, maintenance, repair, software development, software use, inspection, safeguards, security, data collection, and data analysis.

§ 76.5 Communications.

Except where otherwise specified, all correspondence, reports, applications, and other written communications submitted pursuant to 10 CFR Part 76 should be addressed to the Director, Office of Nuclear Material Safety and Safeguards, ATTN: Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and copies sent to the NRC Region III Office (shown in Appendix D of Part 20 of this Chapter) and Resident Inspector. Communications and reports may be delivered in person at the Commission's

offices at 11555 Rockville Pike, Rockville, Maryland, or at 2120 L Street, NW., Washington DC.

§ 76.6 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

§ 76.7 Employee protection.

(a) Discrimination by the Corporation, or a contractor or subcontractor of the Corporation against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, or privileges of employment. The protected activities are established in Section 211 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to:

(i) Providing the Commission or his or her employer information about alleged violations of either of the above statutes or possible violations of requirements imposed under either of the above statutes;

(ii) Refusing to engage in any practice made unlawful under either of the above statutes or under these requirements if the employee has identified the alleged illegality to the employer;

(iii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements;

(iv) Testifying in any Commission proceeding, or before Congress, or at any Federal or State proceeding regarding any provision (or proposed provision) of either of the above statutes.

(v) Assisting or participating in, or attempting to assist or participate in, the above activities.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 180 days after an alleged violation occurs by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraphs (a), (e), or (f) of this section by the Corporation, or a contractor or subcontractor of the Corporation may be grounds for:

(1) Denial, revocation, or suspension of the certificate.

(2) Other enforcement action.

(d) Actions taken by an employer, or others which adversely affect an employee may be predicated upon nondiscrimination grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

(e)(1) The Corporation shall prominently post the revision of NRC Form 3, "Notice to Employees," referenced in 10 CFR 19.11(c). This form must be posted at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the certificate, and for 30 days following certificate termination.

(2) The Corporation shall notify its contractors of the prohibition against discrimination for engaging in protected activities.

(3) Copies of NRC Form 3 may be obtained by writing to the NRC Region III Office listed in Appendix D to Part 20 of this chapter or by contacting the NRC Office of Information Resource Management, Division of Information Support Services, Information and Records Management Branch.

(f) No agreement affecting the compensation, terms, conditions, or privileges of employment, including an agreement to settle a complaint filed by an employee with the Department of Labor pursuant to Section 211 of the Energy Reorganization Act of 1974, as amended, may contain any provision which would prohibit, restrict, or otherwise discourage an employee from participating in protected activity as defined in paragraph (a)(1) of this section including, but not limited to, providing information to the NRC or to his or her employer on potential violations or other matters within NRC's regulatory responsibilities.

§ 76.8 Information collection requirements: OMB approval not required.

The information collection requirements contained in this part of limited applicability apply to a wholly-owned instrumentality of the United States and affect fewer than ten respondents. Therefore, Office of Management and Budget clearance is not required pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

§ 76.9 Completeness and accuracy of information.

(a) Information provided to the Commission or information required by statute or by the Commission's rules, regulations, standards, orders, or other conditions to be maintained by the Corporation must be complete and accurate in all material respects.

(b) The Corporation shall notify the Commission of information identified as having for the regulated activity a significant implication for public health and safety or common defense and security. The Corporation violates this paragraph only if the Corporation fails to notify the Commission

of information that the Corporation has identified as having a significant implication for public health and safety or common defense and security. Notification must be provided to the Administrator of NRC's Region III Office within 2 working days of identifying the information. This requirement is not applicable to information which is already required to be provided to the Commission by other reporting or updating requirements.

§ 76.10 Deliberate misconduct.

(a) The Corporation or any employee of the Corporation and any contractor (including a supplier or consultant), subcontractor, or any employee of a contractor or subcontractor, who knowingly provides to the Corporation, or any contractor or subcontractor, components, equipment, materials, or other goods or services, that relate to the Corporation's activities subject to this part; may not:

(1) Engage in deliberate misconduct that causes or, but for detection, would have caused, the Corporation to be in violation of any rule, regulation, or order, or any term, condition, or limitation of a certificate or approval issued by the Commission, or

(2) Deliberately submit to the NRC, the Corporation, or its contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the NRC.

(b) A person who violates paragraph (a)(1) or (a)(2) of this section may be subject to enforcement action in accordance with the procedures in 10 CFR Part 2, Subpart B.

(c) For purposes of paragraph (a)(1) of this section, deliberate misconduct by a person means an intentional act or omission that the person knows:

(1) Would cause the Corporation to be in violation of any rule, regulation, or order, or any term, condition, or limitation of a certificate or approved compliance plan issued by the Director, or

(2) Constitutes a violation of a requirement, procedure, instruction, contract, purchase order or policy of the Corporation, contractor, or subcontractor.

§ 76.21 Certificate required.

The Corporation or its contractors may not operate the gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky without the issuance of a certificate of compliance, or an approved compliance plan, pursuant to this part. Except as authorized by the NRC under other provisions of this chapter, no person other than the Corporation or its contractors may acquire, deliver, receive, possess, use, or transfer radioactive material at the gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky.

§ 76.23 Specific exemptions.

The Commission may, upon its own initiative or upon application of the Corporation, grant such exemptions from the requirements of the certification regulations as it determines are authorized by law and will not endanger life, or property, or the common defense and security, and are otherwise in the public interest.

Subpart B - Application

§ 76.31 Annual application requirement.

The Corporation shall apply to the Commission each year,[1] on or before April 15, for a certificate of compliance with the Commission's regulations for the gaseous diffusion plants leased from the Department.

§ 76.33 Application procedures.

(a) Filing requirements. An application for certificate of compliance shall be tendered by filing 20 copies of the application with the Director, Office of Nuclear Material Safety and Safeguards, with copies sent to the NRC Region III Office and Resident Inspector, in accordance with § 76.5 of this part.

(b) Oath or affirmation. An application for certificate of compliance must be executed in a signed original by a duly authorized officer of the Corporation under oath or affirmation.

(c) Contents of application. The annual application for a certificate of compliance must contain:

(1) The information set forth in § 76.35.

(2) A plan for achieving compliance with respect to any areas of noncompliance with the NRC's regulations that are identifiable by the Corporation at the time of the filing of the application, including:

(i) A description of the areas of noncompliance;

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[1] The initial filing for a certificate of compliance must be tendered no later than 6 months after the date this rule is published in the Federal Register or by April 15, 1995, whichever is earlier.

(ii) A plan of actions and schedules for achieving compliance;

(iii) A justification for continued operation with adequate safety and safeguards; and

(iv) Sufficient information for the Commission to prepare an environmental assessment.

(d) Pre-filing consultation. The Corporation may confer with the Commission's staff prior to filing an application.

(e) Additional information. At any time during the review of an application, the Corporation may be required to supply additional information to the Commission's staff in order to enable the Commission or the Director, as appropriate, to determine whether the certificate should be issued or denied, or to determine whether a compliance plan should be approved.

(f) Incorporation by reference. Information contained in previous applications, statements, or reports filed with the Commission may be incorporated by reference, provided that the reference is clear and specific.

§ 76.35 Contents of applications.

The application for a certificate of compliance must include the information identified in this section.

(a) A safety analysis report which must include the following information:

(1) The activities involving special nuclear material and the general plan for carrying out these activities;

(2) The name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the special nuclear material, source and byproduct material the Corporation proposes to use,

possess or produce, including any material held up in equipment from previous operations;

(3) The qualifications requirements, including training and experience, of the Corporation's management organization and key individuals responsible for safety in accordance with the regulations in this chapter;

(4) A description of equipment and facilities which will be used by the Corporation to protect health and minimize danger to life or property (such as handling devices, working areas, shields, measuring and monitoring instruments, devices for the treatment and disposal of radioactive effluent and wastes, storage facilities, provisions for protection against natural phenomena, fire protection systems, criticality accident alarm systems, etc.);

(5) A description of the management controls and oversight program to ensure that activities directly relevant to nuclear safety and safeguards and security are conducted in an appropriately controlled manner that ensures protection of employee and public health and safety and protection of the national security interests; and

(6) A description of the plant site, and a description of the principal structure, systems, and components of the plant.

(b) A quality assurance program that meets the requirements of § 76.93 of this part.

(c) Technical safety requirements in accordance with § 76.87 of this part. A summary statement of the bases or reasons for the requirements, other than those covering administrative controls, shall also be included in the application, but may not become part of the technical safety requirements.

(d) An emergency plan that meets the requirements of § 76.91 of this part.

(e) A fundamental nuclear material control plan which describes the measures used to control and account for special nuclear material that the Corporation uses, possesses, or has access to. The plan must describe, as appropriate:

(1) How formula quantities of strategic special nuclear material will be controlled and accounted for in accordance with the relevant requirements of Subpart E;

(2) How special nuclear material of moderate strategic significance will be controlled and accounted for in accordance with the relevant requirements of Subpart E; and

(3) How special nuclear material of low strategic significance will be controlled and accounted for in accordance with the relevant requirements of Subpart E.

(f) A transportation protection plan which describes the measures used to protect shipments of special nuclear material of low strategic significance in accordance with the relevant requirements of Subpart E when in transit off site.

(g) A physical protection plan which describes the measures used to protect special nuclear material that the Corporation uses, possesses, or has access to at fixed sites. The plan must describe, as appropriate:

(1) How formula quantities of special nuclear material will be protected against both theft and radiological sabotage in accordance with the relevant requirements of Subpart E;

(2) How special nuclear material of moderate strategic significance will be protected in accordance with the relevant requirements of Subpart E;

(3) How special nuclear material of low strategic significance will be protected in accordance with the relevant requirements of Subpart E; and

(4) The measures used to protect special nuclear material while in transit between protected areas, all of which are located on a single fixed site under the control of the applicant. The level of protection afforded the material while in transit must not be less than that afforded the same material while it was within the protected area from which transit began.

(h) A plan describing the facility's proposed security procedures and controls as set forth in § 95.15 (b) for protection of classified information and hardware.

(i) An application which contains Restricted Data, classified national security information, safeguards information, or proprietary data, must be prepared in such a manner that all such information or data are separated from the information to be made available to the public.

(j) In response to a written request by the Commission, the Corporation shall file with the Commission the installation information described in § 75.11 of this chapter on Form N-71. The Corporation shall also permit verification of this installation information by the International Atomic Energy Agency and take any other action necessary to implement the US/IAEA Safeguards Agreement, as set forth in Part 75.

(k) A description of the program, as appropriate, for processing, management, and disposal of mixed and radioactive wastes generated by operations and depleted uranium. The application must also include a description of the waste streams generated by enrichment operations, annual volumes of waste expected, identification of radioisotopes contained in the waste, physical and chemical forms, and plans for managing the waste.

(l) A description of the funding program to be established to ensure that funds will be set aside and available for the ultimate processing and disposition of depleted uranium and any waste generated. The Corporation shall establish financial surety arrangements to ensure that sufficient funds will be available to adequately cover conversion of depleted UF_6 to a stable form, as well as ultimate disposition. The financial mechanism, such as prepayment, surety, insurance, or external sinking fund, must ensure availability of funds. The funding program must contain a basis for cost estimates for conversion and disposition of depleted UF_6, and must include means of adjusting cost estimates and associated funding levels over the life of the plant. The Corporation shall ensure the adequacy of the financing mechanism, considering the volume of generated depleted uranium and any waste and estimates for future generation, in its annual application for certification.

(m) A compliance status report which includes the status of various state, local and Federal permits, licenses, approvals, and other entitlements, as described in § 51.45(d) of this chapter. The report must include environmental and effluent monitoring data.

<u>§ 76.37 Federal Register Notice</u>.

The Director shall publish in the Federal Register:

(a) A notice of the filing of an application (specifying that copies of the application, except for Restricted Data, classified national security information, safeguards information or proprietary data, will be made available for the public inspection in the Commission's Public Document Room

at 2120 L Street, NW. (Lower Level), Washington, DC, and in the local public document room at or near the location of the plant);

(b) A notice of opportunity for written public comment on the application; and

(c) The date of any scheduled public meeting regarding the application.

§ 76.39 Public meeting.

(a) A public meeting will be held on an application if the Director, in his or her discretion, determines that a meeting is in the public interest with respect to a decision on the application.

(b) Conduct of public meeting.

(1) The Director shall conduct any public meeting held on the application.

(2) Public meetings will take place near the locale of the subject plant, unless otherwise specified by the Director.

(3) A public meeting will be open to all interested members of the public and be conducted as deemed appropriate by the Director.

(4) Members of the public will be given an opportunity during a public meeting to make their views regarding the application known to the Director.

(5) A transcript will be kept of each public meeting.

§ 76.41 Record underlying decisions.

(a) Any decision of the Commission or its designee under this part in any proceeding regarding an application for a certificate must be based on information in the record and facts officially noticed in the proceeding.

(b) All public comments and correspondence in any proceeding regarding an application for a certificate must be made a part of the public docket of the proceeding, except as provided under 10 CFR 2.790.

§ 76.43 Annual date for decision.

The Director will render a decision on an application within 6 months of the receipt of the application unless the Director alters the date for decision and publishes notice of the new date in the Federal Register.

§ 76.45 Application for amendment of certificate.

In addition to the annual application for certification submitted pursuant to § 76.31, the Corporation may at any time apply for amendment of the certificate to cover proposed new or modified activities. The amendment application should contain sufficient information for the Director to make findings of compliance for the proposed activities as required for the original certificate.

Upon receipt of an application for amendment of the certificate, the Director will determine whether the proposed activities are significant, and if so, follow the procedures specified in §§ 76.37 and 76.39. If the Director determines that the activities are not significant the Director will, after appropriate review, issue a decision pursuant to Subpart C of this part.

Subpart C - Certification

§ 76.51 Conditions of certification.

The Corporation shall comply with all of the requirements set forth and referenced in this part or set forth in the certificate of compliance or in an approved compliance plan.

§ 76.53 Consultation with Environmental Protection Agency.

In reviewing an application for a certificate, including the provisions of any compliance plan, the Director shall consult with the Environmental Protection Agency and solicit the Environmental Protection Agency's written comments on the application .

§ 76.55 Timely renewal.

In any case in which the Corporation has timely filed a sufficient annual application for a certificate of compliance, the existing certificate of compliance or approved compliance plan does not expire until the Director has made a determination on the application for a certificate of compliance.

§ 76.60 Regulatory requirements which apply.

The Nuclear Regulatory Commission will use the following requirements for certification of the Corporation for operation of the gaseous diffusion plants:

(a) The Corporation shall provide for adequate protection of the public health and safety and common defense and security.

(b) The Corporation shall demonstrate compliance with the provisions of this part.

(c) The Corporation shall demonstrate compliance with the applicable provisions of 10 CFR Part 19, **"Notices, Instructions and Reports To Workers: Inspection and Investigations."**

(d) The Corporation shall demonstrate compliance with the applicable provisions of 10 CFR Part 20, **"Standards For Protection Against Radiation."**

(e) The Corporation shall demonstrate compliance with the applicable provisions of 10 CFR Part 21, **"Reporting of Defects and Noncompliance."**

(f) The Corporation shall demonstrate compliance with the applicable provisions of 10 CFR Part 26, **"Fitness-for-Duty Programs."** The requirements of this section apply only if the Corporation elects to engage in activities involving formula quantities of strategic special nuclear material. When applicable, the requirements apply only to the Corporation and personnel carrying out the activities specified in § 26.2(a)(1) through (5).

(g) The Corporation shall demonstrate compliance with the applicable provisions of 10 CFR Part 71, **"Packaging and Transportation of Radioactive Material."**

(h) The Corporation shall demonstrate compliance with the applicable provisions for physical security and material control and accounting as specified in Subpart E to this part and contained in 10 CFR Part 70, **"Domestic Licensing of Special Nuclear Material,"** Part 73, **"Physical Protection of Plants and Materials,"** and Part 74, **"Material Control and Accounting of Special Nuclear Material."** The requirements in these parts address safeguards for three different kinds of nuclear material: special nuclear material of low strategic significance (Category III), special nuclear material of moderate strategic significance (Category II), and formula quantities of strategic special nuclear material (Category I). The requirements for

Category III material apply to the production of low enriched uranium. The requirements for Category II and Category I material apply only if the Corporation elects to engage in activities that involve these kinds of material and then only to the situations and locations that involve these kinds of material.

(i) The Corporation shall demonstrate compliance with the applicable provisions for security facility approval and for safeguarding of classified information and hardware as specified in Subpart E to this part.

§ 76.62 Issuance of certificate or approval of compliance plan.

(a) Upon a finding of compliance with the Commission's regulations for issuance of a certificate or approval of a compliance plan, the Director shall issue a written decision explaining the decision. The Director may impose such terms and conditions as deemed appropriate.

(b) The Director shall publish notice of the decision in the Federal Register.

(c) The Corporation, or any person whose interest may be affected who submitted written comment in response to the Federal Register Notice on the application or compliance plan under § 76.37, or who provided oral comments at any meeting held on the application or compliance plan conducted under § 76.39, may file a petition, not to exceed 30 pages, requesting review of the Director's decision. This petition must be filed with the Commission not later than 15 days after publication of the Federal Register Notice. Any person described above may file a response to any petition for review, not to exceed 30 pages, within 10 days after the filing of the petition. Unless the Commission grants the petition for review or otherwise acts within 60 days after the publication of the Federal Register Notice, the Director's initial

decision on the certificate application or compliance plan becomes effective and final. The Commission may adopt by order such further procedures as in its judgment would serve the purpose of review of the Director's decision.

(d) The Commission may adopt, modify, or set aside the findings, conclusions, conditions or terms in the Director's decision and will state the basis of its action in writing.

§ 76.64 Denial of certificate or compliance plan.

(a) The Director may deny an application for a certificate of compliance or not approve a compliance plan upon a written finding that the application is in noncompliance with one or more of the Commission's requirements for the plant, or that the compliance plan is inadequate to protect the public health and safety or the common defense and security.

(b) The Director shall publish notice of the decision in the Federal Register.

(c) Before a denial of an application for a certificate of compliance, the Director shall advise the Corporation in writing of any areas of noncompliance with the Commission's regulations and offer the Corporation an opportunity to submit a proposed compliance plan regarding those areas of noncompliance identified.

(d) The Corporation, or any person whose interest may be affected and who submitted written comment in response to the Federal Register Notice on the application or compliance plan under § 76.37 or who provided oral comment at any meeting held on the application or compliance plan conducted under § 76.39, may file a petition, not to exceed 30 pages, requesting review of the

Director's decision. This petition must be filed with the Commission not later than 15 days after publication of the Federal Register notice. Any person described above may file a response to any petition for review, not to exceed 30 pages, within ten days after filing of the petition. Unless the Commission grants the petition for review or otherwise acts within 60 days after the publication of the Federal Register Notice, the Director's initial decision on the certificate application or compliance plan becomes effective and final. The Commission may adopt by order such further procedures as in its judgment would serve the purpose of review of the Director's decision.

(e) The Commission may adopt, modify, or set aside the findings, conclusions, conditions or terms in the Director's decision and will state the basis of its action in writing.

§ 76.68 Plant changes.

(a) The Corporation may make changes to the plant or to the plant's operations without prior Commission approval provided all the provisions of this section are met.

(1) The Corporation shall conduct a written safety analysis which demonstrates that the changes would not result in undue risk to public health and safety, the common defense and security, or to the environment.

(2) The changes must be authorized by responsible management and approved by the plant safety review committee.

(3) The changes must not decrease effectiveness of the plant's safety and safeguards programs.

(4) The changes must not cause projections of the annual individual or cumulative occupational radiation exposures to increase significantly.

(5) The changes must not significantly affect the types of or increase the amounts of effluent released offsite.

(6) The changes must not involve an unreviewed safety question.

(b) To ensure that the approved application remains current with respect to the actual site description and that the plant's programs, plans, policies, and operations are in place, the Corporation shall submit revised pages to the approved application and safety analysis report, marked and dated to indicate each change. These revisions must be submitted within 90 days of their adoption as specified in § 76.33 of this part.

(c) The Corporation shall maintain records of changes in the plant and of changes in the programs, plans, policies, procedures and operations described in the approved application, and copies of the safety analyses on which the changes were based. The records of plant changes must be retained until the end of the plant's life. The records of changes in procedures must be retained for a period of 2 years.

§ 76.70 Post issuance.

(a) Amendment of certificate terms and conditions. The terms and conditions of a certificate of compliance or an approved compliance plan are subject to modification by reason of amendments to the Act, or by reason of rules, regulations, or orders issued in accordance with the Act.

(b) Revocation, suspension, or amendments for cause. A certificate of compliance or a compliance plan may be revoked, suspended, or amended, in whole or in part for:

(1) Any material false statement in the application or statement of fact required by the Commission in connection with the application;

(2) Conditions revealed by the application, or any report, record, inspection, or other means which would warrant the Commission to refuse to grant a certificate or approve a compliance plan on an original application; and

(3) Violation of, or failure to observe any of, the applicable terms and conditions of the Act, or the certificate of compliance, the compliance plan, or of any rule, regulation, or order of the Commission.

(c) Procedures governing amendment, revocation, or suspension.

(1) Except in cases of willfulness or those in which the public health interest, common defense and security, or safety requires otherwise, no certificate of compliance or compliance plan may be amended, suspended, or revoked unless, before the institution of proceedings therefor, facts or conduct which may warrant the action must have been called to the attention of the Corporation in writing and the Corporation shall have been accorded an opportunity to demonstrate or achieve compliance with the lawful requirements related to such action.

(2) In any proceeding to amend, revoke, or suspend a certificate of compliance or compliance plan, the Commission shall provide the Corporation and other interested persons with an opportunity to provide written views to the Commission. The Commission shall consider these views and may adopt by order further procedures for a hearing of the issues before making a final enforcement decision.

(d) Additional information. At any time after the grant of a certificate of compliance or approval of a compliance plan, the Commission may require further statements from the Corporation in order to enable the

Commission to determine whether the certificate or approved compliance plan should be modified or revoked.

§ 76.72 Miscellaneous procedural matters.

(a) The filing of any petitions for review or any responses thereto shall be governed by the procedural requirements set forth in 10 CFR 2.701(a) and (c), 2.708, 2.709, 2.710, 2.711, and 2.712. Additional guidance regarding the filing and service of petitions for review of the Director's decision and responses to such petitions may be provided in the Director's decision or by order of the Commission.

(b) The Secretary of the Commission shall have the authority to rule on procedural matters set forth in 10 CFR 2.772.

(c) There are no restrictions on ex parte communications or on the ability of the NRC staff and the Commission to communicate with one another at any stage of the regulatory process, with the exception that the rules on ex parte communications and separation of functions set forth in 10 CFR 2.780 and 2.781 shall apply to proceedings under 10 CFR Part 2, Subpart G for imposition of a civil penalty.

(d) The procedures set forth in 2.205 of Subpart B, 10 CFR, and in 10 CFR Subpart G, shall be applied in connection with NRC action to impose a civil penalty pursuant to Section 206 of the Energy Reorganization Act of 1974 and the implementing regulations in 10 CFR Part 21 (Reporting of Defects and Noncompliance), as authorized by Section 1312(e) of the Atomic Energy Act of 1954, as amended;

(e) The procedures set forth in 10 CFR 2.206 shall apply to a request by any person to institute a proceeding pursuant to Section 76.70 to amend,

revoke, or suspend a certificate of compliance or approved compliance plan, or for such other action as may be proper.

Subpart D - Safety

§ 76.81 Authorized use of radioactive material.

The Corporation shall confine its possession and use of radioactive material to the locations and purposes covered by the certificate or approved compliance plan. Except as otherwise provided, the certificate or approved compliance plan issued pursuant to the requirements in this part entitles the Corporation to receive title to, own, acquire, receive, possess, and use radioactive material in accordance with the certificate.

§ 76.83 Transfer of radioactive material.

(a) The Corporation may not transfer radioactive material except as authorized pursuant to this section.

(b) Except as otherwise provided and subject to the provisions of paragraphs (c) and (d) of this section, the Corporation may transfer radioactive material:

(1) From one component of the Corporation to another;

(2) To the Department;

(3) To the agency in any Agreement State which regulates radioactive materials pursuant to an agreement with the Commission under Section 274 of the Act, if the quantity transferred is not sufficient to form a critical mass;

(4) To any person exempt from the licensing requirements of the Act and requirements in this part, to the extent permitted under such exemption;

(5) To any person in an Agreement State, subject to the jurisdiction of that State, who has been exempted from the licensing requirements and regulations of that State, to the extent permitted under the exemption;

(6) To any person authorized to receive such radioactive material under terms of a specific license or a general license or their equivalents issued by the Commission or an Agreement State;

(7) To any person abroad pursuant to an export license issued under Part 110 of this chapter; or

(8) As otherwise authorized by the Commission in writing.

(c) Before transferring radioactive material to any party specified in paragraph (b) of this section, the Corporation shall verify that the transferee is authorized to receive the type, form, and quantity of radioactive material to be transferred.

(d) The following methods for the verification required by paragraph (c) of this section are acceptable:

(1) The Corporation may have in its possession and read a current copy of the transferee's specific license or confirmation of registration. The Corporation shall retain a copy of each license or confirmation for 3 years from the date that it was obtained.

(2) The Corporation shall have in its possession a written confirmation by the transferee that the transferee is authorized by license or registration confirmation to receive the type, form, and quantity of special nuclear material to be transferred, specifying the license or registration confirmation number, issuing agency, and expiration date. The Corporation

shall retain the written confirmation as a record for 3 years from the date of receipt of the confirmation;

(3) For emergency shipments, the Corporation may accept a certification by the transferee that he or she is authorized by license or registration certification to receive the type, form, and quantity of special nuclear material to be transferred, specifying the license or registration number, issuing agency, and expiration date, provided that the oral confirmation is confirmed in writing within 10 days. The Corporation shall retain the written confirmation of the oral certification for 3 years from the date of receipt of the confirmation;

(4) The Corporation may obtain other sources of information compiled by a reporting service from official records of the Commission or the licensing agency of an Agreement State as to the identity of licensees and the scope and expiration dates of licenses and registrations. The Corporation shall retain the compilation of information as a record for 3 years from the date that it was obtained; or

(5) When none of the methods of verification described in paragraphs (d)(1) to (4) of this section are readily available or when the Corporation desires to verify that information received by one of these methods is correct or up-to-date, the Corporation may obtain and record confirmation from the Commission or the licensing agency of an Agreement State that the transferee is licensed to receive the special nuclear material. The Corporation shall retain the record of confirmation for 3 years from the date the record is made.

<u>§ 76.85 Assessment of accidents</u>.

The Corporation shall perform a safety analysis to establish the basis for limiting conditions for operation of the plant with respect to the potential for releases of radiological material. Special attention must be directed to assurance that plant operation will be conducted in a manner to prevent or to mitigate the radiological consequences from a reasonable spectrum of postulated accidents which include internal and external events and natural phenomena in order to ensure adequate protection of the public health and safety. Plant operating history relevant to the assessment should be included. In performing this assessment, the full range of operations should be considered including, but not necessarily limited to, operation at the maximum capacity contemplated. The assessment must be performed using an expected release rate resulting from anticipated operational occurrences and accidents with existing systems intended to mitigate the release consequences, along with site characteristics, including meteorology, to evaluate the offsite radiological consequences.

§ 76.87 Technical safety requirements.

(a) The Corporation shall establish technical safety requirements. In establishing the requirements, the Corporation shall consider the analyses and results of the safety analysis report submitted pursuant to § 76.35.

(b) The format for the technical safety requirements shall be appropriate for each individual requirement.

(c) Each of the following safety topics shall be considered under this section:

(1) Effects of natural phenomena;

(2) Building and process ventilation and offgas;

(3) Criticality prevention;

(4) Fire prevention;

(5) Radiation protection;

(6) Radioactive waste management;

(7) Maintenance;

(8) Environmental protection;

(9) Packaging and transporting nuclear materials;

(10) Accident analysis;

(11) Chemical safety;

(12) Sharing of facilities, structures, systems and components;

(13) Utilities essential to radiological safety; and

(14) Operations.

(d) Technical safety requirements shall include items in the following categories:

(1) Safety limits.

(i) If any safety limit is exceeded, corrective action must be taken as stated in the technical safety requirements or the affected part of the process must be shut down unless this action would further reduce the margin of safety.

(ii) The Corporation shall notify the Commission, review the matter, and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude recurrence.

(iii) The Corporation shall retain the record of the results of each review until the Commission no longer has certification authority.

(2) Limiting control settings.

(i) Where a limiting control setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that protective action, either automatic or manual, will correct the abnormal situation before a safety limit is exceeded. If, during operation, the automatic alarm or protective devices do not function as required, appropriate action must be taken to maintain the variables within the limiting control-setting values and to repair promptly the automatic devices or to shut down the affected part of the process.

(ii) The Corporation shall notify the Commission, review the matter, and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude recurrence.

(iii) The Corporation shall retain the record of the results of each review until the Commission no longer has certification authority.

(3) Limiting conditions for operation. When a limiting condition for operation of any process step in the system is not met, the Corporation shall shut down that part of the operation or follow any remedial action permitted by the technical requirements until the condition can be met.

(i) The Corporation shall notify the Commission, review the matter, and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude recurrence.

(ii) The Corporation shall retain the record of the results of each review until the Commission no longer has certification authority.

(4) Design features. Design features to be included are those systems, components, or structures of the plant which, if altered or modified, would have a significant effect on safety and are not covered in categories described in paragraphs(d)(1), (2), and (3) of this section.

(5) Surveillance requirement.

(6) Administrative controls.

(7) Initial notification. Reports made to the Commission in response to the requirements of this section must be made in accordance with § 76.120 of this part.

§ 76.89 Criticality accident requirements.

(a) Criticality accident requirements. The Corporation shall maintain in each area in which special nuclear material is handled, used, or stored, a monitoring system meeting the requirements of paragraph (b) of this section. The monitoring system must use gamma- or neutron-sensitive radiation detectors which will energize clearly audible alarm signals if criticality occurs. This section is not intended to require monitoring systems for transport of special nuclear material packaged in accordance with the requirements of Part 71 of this Chapter.

(b) The monitoring system must be capable of meeting the requirements of paragraph (b)(1) or (b)(2) below.

(1) The system must detect a criticality that produces an absorbed dose in soft tissue of 20 rads of combined neutron and gamma radiation at an unshielded distance of 2 meters from the reacting material within 1 minute. Coverage of all areas must be provided by two detectors.

(2) The system must detect a criticality which generates radiation levels of 300 rems per hour, 1 foot from the source of the radiation. The monitoring devices in the system must have a preset alarm point of not less than 5 millirems per hour (in order to avoid false alarms) nor more than 20 millirems per hour. In no event may any such device be farther than 120 feet

from the special nuclear material being handled, used, or stored; lesser distances may be necessary to meet the requirements of this paragraph on account of intervening shielding or other pertinent factors.

§ 76.91 Emergency planning.

(a) Emergency plan requirements. The Corporation shall establish, maintain, and be prepared to follow a written emergency plan. The plan must describe how the plant and offsite response organizations will respond to alerts, site area emergencies, and general emergencies. The plan must include the following information:

(1) Plant description. A description of the plant and area near the plant site.

(2) Types of accidents. An identification of each type of radioactive materials accident for which protective actions may be needed.

(3) Classification of accidents. A system for classifying accidents as alerts, site area emergencies, or general emergencies.

(4) Detection of accidents. Identification of the means of detecting each type of accident in a timely manner.

(5) Mitigation of consequences. A description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(6) Assessment of releases. A description of the methods and equipment to assess releases of radioactive materials. Specific predetermined responses to be taken in response to emergency conditions must be developed.

(7) Responsibilities. A description of the responsibilities of all individuals supporting emergency response should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC, as well as a description of responsibilities for developing, maintaining, and updating the plan. The plan and its supporting documents must be reviewed and updated, as appropriate.

(8) Notification and coordination. A commitment to and a description of the means to promptly notify and maintain continued communication throughout the event with offsite response organizations whenever an emergency is declared including the request for offsite assistance and medical assistance for the treatment of contaminated injured onsite workers, when appropriate. The notification and coordination must be planned so that unavailability of some personnel, parts of the plant, and some equipment will not prevent the notification and coordination.

(9) Emergency operations center. Provisions for an emergency operations center to be established and kept habitable for the duration of all postulated emergencies, or an alternate emergency center must be established. The emergency operations center must be capable of supporting assessment, evaluation, and direction of emergency response organization activities. The Corporation shall also notify the NRC Operations Center, as required in § 76.120, after notification of the appropriate offsite response organizations of an emergency. A record or log of emergency response actions must be maintained for a period of 2 years and made available for inspection as required by § 76.121.

(10) Information to be communicated. A description of the types of information on plant status, radioactive releases, and recommended protective

actions, which, if necessary, must be provided to offsite response organizations and to the NRC.

(11) Public notification. A description of the means of notifying the public located in emergency planning zones (EPZ), established by the plant, of basic emergency planning and information. The established EPZ at the plant shall be appropriate for planning and response to radiological hazards.

(12) Training. A description of the performance objectives and plans for the training that the Corporation will provide emergency response workers on how to respond to an emergency including any special instructions, briefings, and orientation tours the Corporation would offer to fire, police, medical, and other emergency personnel on an annual basis. The training must familiarize personnel with site-specific emergency procedures. The training must also prepare site personnel for their responsibilities for the accident scenarios postulated as most probable for the specific site, including the use of team training for these accident scenarios. Other site personnel must receive a general emergency preparedness course annually that describes the types of emergencies that could occur at their facility and the type of protective action required for each.

(13) Plant recovery. A description of the means of restoring the plant to a safe condition after an accident and of provisions for recovery and re-entry into affected buildings or site areas. The provisions must include procedures for termination of an emergency, dissemination of information, establishment of a recovery organization, and criteria for resumption of normal operations.

(14) Drills and exercises. Provisions for conducting quarterly communications checks with offsite response organizations and annual onsite

drills and exercises to test response to simulated emergencies. Communications checks with offsite response organizations shall include the check and update of all necessary telephone numbers. Drills must test the capability of individual plan elements. Exercises must test major portions of the emergency plan. The Corporation shall invite offsite response organizations to participate in the annual exercises. Exercises must use accident scenarios postulated as most probable for the specific site. The accident scenarios shall not be made known to most exercise participants in advance of the exercise. The Corporation shall critique each exercise using individuals that do not have direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques shall be corrected.

(15) Hazardous chemicals. Confirmation that the Corporation has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499, if applicable to the Corporation's activities at the proposed place of use of the special nuclear material.

§ 76.93 Quality assurance.

The Corporation shall establish, maintain, and execute a quality assurance program satisfying each of the applicable quality assurance criteria of Part 50, Appendix B. The Corporation shall execute the applicable criteria in a graded approach to an extent that is commensurate with the importance to safety.

Subpart E - Safeguards and Security

§ 76.111 Physical security and material control and accounting.

Nuclear Regulatory Commission regulations that will be used for certification of the Corporation[2] for physical security and material control and accounting are contained in Title 10 of the Code of Federal Regulations as described in this subpart. The regulations referenced in this subpart contain requirements for physical security and material control and accounting for formula quantities of strategic special nuclear material (Category I), special nuclear material of moderate strategic significance (Category II), and special nuclear material of low strategic significance (Category III).

§ 76.113 Formula quantities of strategic special nuclear material - Category I.

(a) The requirements for material control and accounting for formula quantities of strategic special nuclear material (Category I) are contained in §§ 70.51, 74.11, 74.13, 74.15, 74.17. 74.51, 74.53, 74.55, 74.57, 74.59, 74.81, and 74.82.

(b) The requirements for physical security for formula quantities of strategic special nuclear material (Category I) are contained in §§ 73.20, 73.21, 73.40, 73.45, 73.46, 73.70, and 73.71.

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[2]For the purpose of this subpart, the terms "licensee" or "license" used in Parts 70, 73, and 74 of this chapter, shall mean, respectively, the Corporation, or the certificate of compliance or approved compliance plan.

§ 76.115 Special nuclear material of moderate strategic significance - Category II.

(a) The requirements for material control and accounting for special nuclear material of moderate strategic significance (Category II) are contained in §§ 70.51, 70.52, 70.53, 70.54, 70.57, 70.58, 74.11. 74.13, 74.15, 74.17, 74.81, and 74.82.

(b) The requirements for physical security for special nuclear material of moderate strategic significance (Category II) are contained in §§ 73.21, 73.67, and 73.71.

§ 76.117 Special nuclear material of low strategic significance - Category III.

(a) The requirements for material control and accounting for special nuclear material of low strategic significance (Category III) are contained in §§ 70.51, 74.11, 74.13, 74.15, 74.17, 74.33, 74.81, and 74.82.

(b) The requirements for physical security for special nuclear material of low strategic significance (Category III) are contained in §§ 73.21, 73.67, 73.70. 73.71, and 73.74.

§ 76.119 Security facility approval and safeguarding of national security information and restricted data.

The requirements for security facility approval and for safeguarding of classified information and hardware are contained in Part 95 of this chapter.

Subpart F - Reports and Inspections

§ 76.120 Reporting requirements.

(a) Immediate report. The Corporation shall notify the NRC Operations Center[3] within one hour after discovery of:

(1) A criticality event;

(2) Any loss, other than normal operating loss, of special nuclear material;

(3) Any theft or unlawful diversion of special nuclear material which the Corporation is authorized to possess or any incident in which an attempt has been made or is believed to have been made to commit a theft or unlawful diversion of special nuclear material.

(4) An emergency condition that has been declared as an alert, site area emergency, or general emergency.

(b) Four-hour report. The Corporation shall notify the NRC Operations Center as soon as possible but not later than 4 hours after discovery of an event[4] that could prevent immediate protective actions necessary to avoid releases, or exposures to radiation or radioactive materials that could exceed regulatory limits.

(c) Twenty-four hour report. The Corporation shall notify the NRC Operations Center within 24 hours after the discovery of any of the following events involving radioactive material:

(1) An unplanned contamination event that:

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[3] The commercial telephone number for the NRC Operations Center is (301) 951-0550.

[4] Events may include fires, explosions, radiological releases, etc.

(i) Requires access to the contaminated area, by workers or the public, to be restricted for more than 24 hours by imposing additional radiological controls or by prohibiting entry into the area;

(ii) Involves a quantity of material greater than five times the lowest annual limit on intake specified in Appendix B to §§ 20.1001-20.2402 of 10 CFR Part 20 for the material; or

(iii) Causes access to the contaminated area to be restricted for any reason other than to allow isotopes with a half-life of less than 24 hours to decay to a level that would allow decontamination.

(2) An event in which equipment is disabled or fails to function as designed when:

(i) The equipment is required to prevent releases, prevent exposures to radiation and radioactive materials exceeding specified limits, mitigate the consequences of an accident, or restore this facility to a preestablished safe condition after an accident;

(ii) The equipment is required to be available and either should have been operating or should have operated on demand; or

(iii) No redundant equipment is available and operable to perform the required safety function.

(3) An event that requires unplanned medical treatment at a medical facility of an individual with radioactive contamination on the individual's clothing or body.

(4) A fire or explosion damaging any radioactive material or any device, container, or equipment containing radioactive material when:

(i) The quantity of material involved is greater than five times the lowest annual limit on intake specified in Appendix B to §§ 20.1001-20.2402 of 10 CFR Part 20 for the material; and

(ii) The damage affects the integrity of the radioactive material or its container.

(d) Record or log requirement. A record or log of all emergency actions carried out in response to an emergency plan shall be made and retained for a period of 2 years.

(e) Preparation and submission of reports. Reports made by the Corporation in response to the requirements of this section shall be made as follows:

(1) Operations Center reports. The Corporation shall make reports required by paragraphs (a), (b) and (c) of this section by telephone to the NRC Operations Center. To the extent that the information is available at the time of notification, the information provided in these reports must include:

(i) The caller's name and call back telephone number;

(ii) A description of the event, including date and time;

(iii) The exact location of the event;

(iv) The isotopes, quantities, and chemical and physical form of the material involved;

(v) Any personnel radiation exposure data available; and

(vi) A description of any actions taken in response to the event.

(2) Written report. A report required by paragraph (a),(b) or (c) of this section shall be followed by a written report within 30 days of the initial report. Written reports prepared pursuant to other regulations may be submitted to fulfill this requirement if the reports contain all of the

necessary information and the appropriate distribution is made. These written reports must be sent to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, DC. 20555, with a copy to the NRC Region III Office listed in Appendix D of Part 20 of this Chapter. The reports must include the following information:

(i) A description of the event, including the probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned;

(ii) The exact location of the event;

(iii) A description of isotopes, quantities and chemical and physical form of the material involved;

(iv) The date and time of the event;

(v) The causes, including the direct cause, the contributing cause, and the root cause;

(vi) Corrective actions taken or planned and the results of any evaluations or assessments;

(vii) The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name; and

(viii) Lessons learned from the event.

§ 76.121 Inspections.

(a) The Corporation shall afford to the Commission at all reasonable times opportunity to inspect the premises and plants where radioactive material is used, produced, or stored.

(b) The Corporation shall make available to the Commission for inspection, upon reasonable notice, records kept pertaining to receipt,

possession, use, acquisition, import, export, or transfer of radioactive material.

(c)(1) The Corporation shall provide rent-free office space for the exclusive use of Commission inspection personnel upon request by the Director, Office of Nuclear Material Safety and Safeguards or the NRC Region III Administrator. Heat, air conditioning, light, electrical outlets, and janitorial services must be furnished by the Corporation. The office must be convenient to and have full access to the plant, and must provide the inspector both visual and acoustic privacy.

(2) The space provided must be adequate to accommodate the NRC resident inspection staff, a part-time secretary, and transient NRC personnel. Space must be generally commensurate with other office facilities at the site. The office space that is provided must be subject to the approval of the Director, Office of Nuclear Material Safety and Safeguards or the NRC Region III Office. All furniture, supplies, and communication equipment will be furnished by the Commission.

(3) The Corporation shall afford any NRC resident inspector assigned to that site or other NRC inspectors identified by the Director, Office of Nuclear Material Safety and Safeguards, as likely to inspect the plant, immediate, unfettered access equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control measures for security, radiological protection, and personal safety.

<u>§ 76.123 Tests</u>.

The Corporation shall perform, or permit the Commission to perform, any tests the Commission deems appropriate or necessary for administration of the requirements in this part. These tests include tests of:

(a) Radioactive material;

(b) Facilities where radioactive material is utilized, produced or stored;

(c) Radiation detection and monitoring instruments; and

(d) Other equipment and devices used in connection with the production, utilization or storage of radioactive material.

Subpart G - Enforcement

§ 76.131 Violations.

(a) The Commission may obtain an injunction or other court order to prevent a violation of the provisions of:

(1) The Atomic Energy Act of 1954, as amended;

(2) Title II of the Energy Reorganization Act of 1974, as amended;

(3) Title XI of the Energy Policy Act of 1992, as amended;

(4) A regulation or order issued pursuant to those Acts.

(b) The Commission may obtain a court order for the payment of a civil penalty imposed under Section 1312(e) of the Atomic Energy Act of 1954, as amended and Section 206 of the Energy Reorganization Act of 1974, as amended, for a violation of Section 206 of the Energy Reorganization Act of 1974, as amended.

§ 76.133 Criminal penalties.

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under Sections 161b, 161i, or 161o of the Act. For purposes of Section 223, all the regulations in Part 76 are issued under one or more of Sections 161b, 161i, or 161o except for the sections listed in paragraph (b) of this section.

(b) The regulations in Part 76 that are not issued under Sections 161b, 161i, or 161o for the purposes of Section 223 are as follows; §§ 76.1, 76.2, 76.4, 76.5, 76.6, 76.23, 76.33, 76.35, 76.37, 76.39, 76.41, 76.43, 76.45, 76.53, 76.55, 76.60, 76.62, 76.64, 76.70, 76.72, 76.131, and 76.133.

PART 95--SECURITY FACILITY APPROVAL AND SAFEGUARDING OF NATIONAL SECURITY INFORMATION AND RESTRICTED DATA

20. The authority citation for Part 95 is revised to read as follows:

AUTHORITY: Secs. 145, 161, 68 Stat. 942, 948, AS AMENDED (42 U.S.C. 2165, 2201); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841); E.O. 10865, as amended, 3 CFR 1959-1963 COMP., p.398 (50 U.S.C. 401, note); E.O. 12356, 47 FR 14874, April 6, 1982.

21. Section 95.3 is revised to read as follows:

§ 95.3 Scope.

The regulations in this part apply to licensees and others regulated by the Commission, including persons required to obtain a certificate of compliance or an approved compliance plan under Part 76 of this chapter, who

may require access to National Security Information and/or Restricted Data used, processed, stored, reproduced, transmitted or handled in connection with a license or application for a license, or in connection with a certificate, application for a certificate or an approved compliance plan under Part 76 of this chapter.

Dated at Rockville, Maryland, this ____ day of _____, 1993.

For the Nuclear Regulatory Commission.

_____
Samuel J. Chilk
Secretary of the Commission.

Appendix A

USEC Proposed Standards

Attachment C

UNITED STATES ENRICHMENT CORPORATION RECOMMENDATIONS FOR

10 CFR PART 76

STANDARDS AND CERTIFICATION PROCESS

FOR

THE PADUCAH AND PORTSMOUTH GASEOUS DIFFUSION PLANTS

TABLE OF CONTENTS

GENERAL PROVISIONS

76.1 Purpose

(a) The regulations of this part: establish the standards necessary to protect the public health and safety from radiological hazard and provide for the common defense and security applicable to the gaseous diffusion uranium enrichment plants (GDPs) owned by the Department of Energy (the Department) and leased to the United States Enrichment Corporation (the Corporation); establish procedures and criteria governing the process for the issuance of Certificates of Compliance (Certificates) for the GDPs to the Corporation with respect to such standards; and establish and provide for the terms and conditions upon which the Commission will issue Certificates, or other approvals with respect to the GDPs. The regulations in this part also apply to any person to which transfer of ownership of the Corporation is made pursuant to section 1502 of the Atomic Energy Act of 1954, as amended.

(b) The regulations contained in this part are issued pursuant to the Atomic Energy Act of 1954, as amended (68 Stat. 919), Title II of the Energy Reorganization Act of 1974, as amended (88 Stat. 1242), and Title XI of the Energy Policy Act of 1992 (106 Stat. 2952).

(c) In addition to the regulations in this part, the additional standards set forth in the following regulations are specifically applicable to the GDPs in accordance with their terms and are incorporated by reference herein:

(i)	10 CFR Part 19	Notices, Instructions, and Reports to Workers; Inspections
(ii)	10 CFR Part 20	Standards for Protection Against Radiation
(iii)	10 CFR Part 21	Reporting of Defects and Noncompliance
(iv)	10 CFR Part 51	Environmental Protection Regulation for Domestic Licensing and Related Regulatory Functions
(vi)	10 CFR Part 71	Packaging and Transportation of Radioactive Material
(vii)	10 CFR Part 170	Fees for Facilities and Materials Licenses and Other Regulatory Services Under the Atomic Energy Act of 1954, as Amended.

(d) In addition to the regulations in this part and those cited in 76.1(c), the additional standards set forth in the following regulations, with the noted amendments, are specifically applicable to the GDPs to the extent they are referenced within this part.

(i)	10 CFR Part 30	Rules of General Applicability to Domestic Licensing of Byproduct Material 10 CFR 30.41(b) is amended to include the following: (8) To any person certified under 10 CFR 76.
(ii)	10 CFR Part 40	Domestic Licensing of Source Material 10 CFR 40.51(b) is amended to include the following: (8) To any person certified under 10 CFR 76.
(iii)	10 CFR Part 73	Physical Protection of Plants and Materials
(iv)	10 CFR Part 74	Material Control and Accounting of Special Nuclear Material For purposes of the requirements in this part, 10 CFR 74.33(c)(4)(i) is modified to read: "Performing, unless otherwise required to satisfy part 75 of this chapter, a dynamic (nonshutdown) physical inventory of in-process gaseous (e.g., in the enrichment equipment) uranium and U^{235} at least every 65 days, and performing a static physical inventory of all other uranium and total U^{235} contained in natural, depleted, and enriched uranium located outside of the enrichment processing equipment at least every 370 calendar days, with static physical inventories being conducted in conjunction with a dynamic physical inventory of in-process gaseous uranium and U^{235} so as to provide a total plant material balance at least every 370 calendar days; and" 10 CFR 74.33(c)(6)(ii) is modified to read: "Items are stored and handled, or subsequently measured, in a manner so that

unauthorized removal of 500 grams or more of U^{235}, as individual items or as uranium contained in items, will be detected. Exempted from the requirements of paragraph (c)(6) (i) and (ii) of this section are licensed-identified items each containing less than 500 grams U^{235} up to a cumulative total of 50 kilograms of U^{235} and items that exist for less than 14 calendar days; and containers that are not man portable (e.g., weigh more than 500 pounds) and contain uranium in the form of UF_6."

76.2 Scope

Except as provided in §§ 76.11 to 76.13, inclusive, the regulations in this part apply to the operation of the GDPs and the ownership, acquisition, delivery, receipt, possession, use, processing, and transfer of byproduct material, source material, and SNM in connection with such operation of the GDPs.

76.3 Certification Requirements

No person subject to the regulations in this part shall operate the GDPs , except as authorized pursuant to a Certificate or other approval issued by the Commission pursuant to these regulations.

76.4 Definitions

Act means the Atomic Energy Act of 1954 (68 Stat 919), including any amendments thereto;

Agreement State, as designated in part 150 of this chapter means any State with which the Commission has entered into an effective agreement under subsection 274b of the Act.

Non-agreement State means any other State.

Alert means events may occur, are in progress, or have occurred that could lead to a release of radioactive material[s] but that the release is not expected to require a response by an offsite response organization to protect persons offsite.

Atomic weapon means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of

which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

Byproduct material means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

Certificate of Compliance means a certificate issued by the Nuclear Regulatory Commission, in consultation with the Environmental Protection Agency, pursuant to section 1701 of the Atomic Energy Act of 1954, as amended, containing a finding of compliance with standards provided in this part and authorizing all activities approved under this certificate.

Commission means the Nuclear Regulatory Commission or its duly authorized representatives.

Common defense and security means the common defense and security of the United States.

Contiguous sites means corporation-controlled locations, deemed by the Commission to be close enough in proximity to each other that the SNM must be considered in the aggregate for the purpose of physical protection.

Decommission means to remove (as a facility) safely from service and reduce residual radioactivity in accordance with criteria in the lease agreement between the Department of Energy and the Corporation.

Department and Department of Energy means the Department of Energy Organization Act (i.e., Pub. L. 95-91,91 Stat. 565, 42 U.S.C. 7101 et seq.), to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S Atomic Energy Commission, its Chairman, member, officers and components and transferred to the U.S, Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104(b), (c) and (d) of the Energy Reorganization Act of 1974 (Pub.L. 93-438,88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95-91, 91 Stat. 565 at 577-578, 42 U.S.C.7151).

Effective dose equivalent means the sum of the products of the dose equivalent to the body organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated. Weighing factors are: 0.25 for gonads, 0.15 for breast, 0.12 for red bone

marrow, 0.12 for lungs, 0.03 for thyroid, 0.03 for bone surface, and 0.06 for each of the other five organs receiving the highest dose equivalent.

Effective kilograms of SNM means (1) for plutonium and uranium-233 their weight in kilograms; (2) For uranium with an enrichment in the isotope U-235 of 0.01 (1%) and above, its element weight in kilograms multiplied by the square of its enrichment expressed as a decimal weight fraction; and (3) For uranium with an enrichment in the isotope U-235 below 0.01 (1%), by its element weight in kilograms multiplied by 0.0001.

Formula quantity means strategic SNM in any combination in a quantity of 5000 grams or more computed by the formula, grams=(grams contained U^{235}) +2.5 (grams U^{233}+ grams plutonium). This class of material is sometimes referred to as a Category I quantity of material.

Government agency means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government.

Person means (1) any individual, corporation, partnership, firm, association, trust,estate, public or private institution, group, Government agency other than the Commission or the Department, any State or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

Produce, when used in relation to SNM, means (1) to manufacture, make, produce, or refine SNM; (2) to separate SNM from other substances in which such material may be contained; or (3) to make or to produce new SNM.

Restricted Data means all data concerning(1) design, manufacture or utilization of atomic weapons; (2) the production of SNM; or (3) the use of SNM in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Act.

Site Area emergency means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite.

Source material means source material as defined in section 11z. of the Act and in the regulations contained in part 40 of this chapter.

SNM means (1) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the act, determines to be SNM but does not include source material; or (2) any material artificially enriched by any of the foregoing but does not include source material.

SNM of low strategic significance means (1) Less than an amount of SNM of moderate strategic significance, as defined in paragraph 1 of the definition of SNM of moderate strategic significance in this section , but more that 15 grams of uranium-235 (contained in uranium enriched to 20 percent or more in the U^{235} isotope) or 15 grams of U^{233} or 15 grams of plutonium or the combination or 15 grams when computed by the equation, grams = (grams containing U^{235}) + (grams plutonium)+(grams U^{233}); or (2) Less than 10,000 grams but more than 1000 grams of U^{235} (contained in uranium enriched above natural but less than 10 percent in the U^{235} isotope). 10,000 grams or more of U^{235} (contained in uranium enriched above natural, but less than 10 percent in the U^{235} isotope). This class of material is sometimes referred to as a Category III quantity of material.

SNM of moderate strategic significance (MSS/SNM) means (1) Less than a formula quantity of strategic special nuclear material but more than 1,000 grams of U^{235} (contained in uranium enriched to 20 percent or more in the U^{235} isotope) or more than 500 grams of U^{233} or plutonium, or in a combined quantity of more than 1,000 grams when computed by the equation, grams=(grams contained U^{235})—2(grams U^{233} + grams plutonium); or (2) 10,000 grams or more of U^{235} (contained in uranium enriched to 10 percent or more, but less than 20 percent in the U^{235} isotope). This class of material is sometimes referred to as a Category II quantity of material.

SNM scrap means the various forms of SNM generated during chemical and mechanical processing, other than recycle material and normal process intermediates, which are unsuitable for use in their present form, but all or part of which will be used after further processing.

Strategic SNM means uranium-235 (contained in uranium enriched to 20 percent or more in U^{235} isotope), uranium-233, or plutonium.

Transient shipment means a shipment of nuclear material, originating and terminating in foreign countries, on a vessel or aircraft which stops at a United States port.

United States, when used in a geographical sense, means Puerto Rico and all territories and possessions of the United States.

United States Enrichment Corporation, Corporation, and USEC mean the corporation formed by section 1301 of the Atomic Energy Acto of 1954, as amended, to operate the gaseous diffusion plants at Portsmouth, Ohio and Paducah, Kentucky.

Uranium enrichment facility means (1) Any facility used for separating the isotopes of uranium or enriching uranium in the U^{235} isotope, except laboratory scale facilities designed or used for experimental or analytical purposes only; or

Any equipment or device, or important component part especially designed for such equipment or device, capable of separating the isotopes of uranium or enriching uranium in the U^{235} isotope.

76.5 Communications

(a) Any communication or report concerning the regulations in this part and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

(2) By delivery in person to the Commission's offices to the Director, Office of Nuclear Materials and Safeguards at:

(i) 2120 L Street NW., Washington, DC; or

(ii) 11555 Rockville Pike, One White Flint North, Rockville, MD.

76.6 Interpretations

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

76.7 Employee Protection

(a) Discrimination by the Corporation or a contractor or subcontractor of the Corporation against an employee for engaging in certain protected

activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, or privileges of employment. The protected activities are established in section 211 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to:

(i) Providing the Commission or his or her employer information about alleged violations of either of the above statutes or possible violations of requirements imposed under either of the above statutes;

(ii) Refusing to engage in any practice made unlawful under either of the above statutes or under these requirements if the employee has identified the alleged illegality to the employer;

(iii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements;

(iv) Testifying in any Commission proceeding, or before Congress, or at any proceeding, or before Congress, or at any General or State proceeding regarding any provision (or proposed provision) or either of the above statutes.

(v) Assisting or participating in, or is about to assist or participate in, these activities.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding

must be initiated within 180 days after an alleged violation occurs. The employee may do this by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraphs (a),(e), or (f) of this section by the Corporation or a contractor or subcontractor of the Corporation may be grounds for:

(1) Denial, revocation, or suspension of the Certificate of Compliance.

(2) Imposition of a civil penalty on the Corporation.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by non-prohibited considerations.

(e)(1) The Corporation shall prominently post the revision of NRC Form 3, "Notice to Employees," referenced in 10 CFR 19.11(c).

(2) The Corporation is expected to notify its contractors of the prohibition against discrimination for engaging in protected activities.

(3) The posting of NRC Form 3 must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

Note: Copies of NRC Form 3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D of Part 20 of this chapter or by contacting the NRC Information and Records Management Branch (telephone no. 301-492-8138).

(f) No agreement affecting the compensation, terms, conditions, or privileges of employment, including an agreement to settle a complaint filed by an employee with the Department of Labor pursuant to section 211 of the Energy Reorganization Act of 1974, as amended, may contain any provision which would prohibit, restrict, or otherwise discourage an employee from participating in protected activity as defined in paragraph (a)(1) of this section including, but not limited to, providing information to the Commission or to his or her employer on potential violations or the matters within the Commission's regulatory responsibilities.

76.9 Completeness and Accuracy of Information

(a) Information provided to the Commission by the Corporation or information required by statute or by the Commission's regulations, orders, or conditions of the certificate to be maintained by the Corporation shall be complete and accurate in all material respects.

(b) The Corporation shall notify the Commission of information identified by the Corporation as having, for the regulated activity, a significant implication for public health and safety or common defense and security. The Corporation violates this paragraph only if the Corporation fails to notify the Commission of information that the Corporation has identified as having a significant implication for public health and safety or common defense and security. Notification shall be provided to the Administrator of the appropriate Regional Office within two working days of identifying the information. This requirement is not applicable to information which is already required to be provided to the Commission by other reporting or updating requirements.

76.10 Deliberate Misconduct

(a) The Corporation, or any employee of the Corporation; and any contractor (including a supplier or consultant), subcontractor, or any employee of a contractor or subcontractor, of the Corporation, who knowingly provides to the Corporation, contractor, or subcontractor components, equipment, materials, or other goods or services, that relate to the Corporation's activities subject to this part; may not:

(1) Engage in deliberate misconduct that causes or, but for detection, would have caused, the Corporation to be in violation of any rule, regulation, or order, or any term, condition, or limitation of a certificate, issued by the Commission, or

(2) Deliberately submit to the Commission, the Corporation, or the Corporation's contractor or subcontractor, information that

the person submitting the information knows to be incomplete or inaccurate in some respect material to the Commission.

(b) A person who violates paragraph (a)(1) or (a)(2) of this section may be subject to enforcement action in accordance with the procedures in 10 CFR part 2, subpart B.

(c) For purposes of paragraph (a)(1) of this section, deliberate misconduct by a person means an intentional act or omission that the person knows;

(1) Would cause the Corporation to be in violation of any rule, regulation, or order, or any term, condition, or limitation, of any certificate issued by the Commission, or

(2) Constitutes a violation of a requirement, procedure, instruction, contract, purchase order or policy of the Corporation, it's contractor, or subcontractor.

EXEMPTIONS

76.11 Persons Providing Services Under Certain Department and Corporation Contracts

(a) Any prime contractor of the Corporation is exempt from the requirements for a license set forth in sections 53, 62, 63, 64, 81, and 82 of the Act and from the requirement for a Certificate set forth in this part to the extent that such contractor, under his prime contract with the Corporation, operates the GDPs or receives title to owns, acquires, delivers, receives, possesses, uses, or transfers byproduct material, source material, or SNM: (1) in connection with the operation of the GDPs on behalf of the Corporation; or (2) for the performance of other work for the Corporation with respect to the GDPs, including the transportation of byproduct material, source material, or SNM to or from a GDP site and the performance of contract services during temporary interruptions of such transportation.

(b) Any prime contractor or subcontractor of the Department is exempt from the requirements for a license set forth in sections 53, 62, 63, 64, 81, and 82 of the Act and from the regulations in this part to the extent that such prime contractor or subcontractor receives title to, owns, acquires, delivers, receives, possesses, uses, or transfers byproduct material, source material, or SNM at the GDPs under his prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontractor is authorized by law; and that, under the terms of the contract or subcontract there is adequate assurance that

the work thereunder can be accomplished without undue risk to the public health and safety.

76.13 Department of Defense

The regulations in this part do not apply to the Department of Defense to the extent that the Department receives, possesses, and uses SNM from the GDPs in accordance with the direction of the President pursuant to Section 91 of the Act.

76.14 Specific Exemptions

(a) The Commission may, upon application by the Corporation or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

(b) The Department is exempt from the requirements of the regulations in this part in its capacity as owner/lessor of the GDPs.

CERTIFICATE OF COMPLIANCE

76.18 Type of Certification

An initial Certificate of Compliance will be issued to the United States Enrichment Corporation (USEC) upon approval of an application filed pursuant to the regulations in this part as described in 10 CFR 76.21 below. Annual renewals of the Certificate of Compliance will be issued according to the requirements in 10 CFR 76.33, Annual Renewals.

APPLICATION FOR INITIAL CERTIFICATE OF COMPLIANCE

76.21 Filing

(a)(1) The Corporation may apply for an initial Certificate of Compliance to operate the GDPs by filing 25 copies of the application in accordance with the instructions in 10 CFR 76.5.

(2) Information contained in previous applications, statements, or reports filed with the Commission may be incorporated by reference if the references are clear and specific.

(b) An application for a Certificate of Compliance filed pursuant to the regulations in this part will be in lieu of an application authorizing other activities for which a license would otherwise be required.

(c) Any application which contains Restricted Data shall be prepared in such manner that all Restricted Data are separated from the unclassified information.

(d) Applications and documents submitted to the Commission in connection with applications may be made available for public inspection in accordance with the provisions of the regulations contained in part 2 of this chapter.

(e) The initial application for a Certificate shall be accompanied by the fee prescribed in § 170.31 of this chapter. No fee will be required to accompany an application for renewal or amendment of a Certificate, except as provided in § 170.31 of this chapter.

(f) In response to a written request by the Commission, the Corporation shall file with the Commission the installation information described in 10 CFR 75.11 of this chapter on Form N-71. The Corporation shall also permit verification of such installation information by the International Atomic Energy Agency and take such other action as may be necessary to implement the US/IAEA Safeguards Agreement, in the manner set forth in 75.6 and 75.11 through 75.14 of this chapter.

76.22 Contents of Initial Application

(a) The application for an initial Certificate of Compliance shall contain the following information:

(1) The full name of the corporation, the State where it was incorporated or organized, the location of the principal office, the names, addresses, and citizenship of its principal officers, and shall include information known to the applicant concerning the control or ownership, if any, exercised over the applicant by any alien, foreign corporation or foreign government,

(2) The activity, purpose, location, and plan of operation.

(3) The technical qualifications including training and experience of the applicant and members of his staff to engage in the proposed activities.

(4) A description of equipment to protect health and safety and environment including handling devices, working areas, shields, measuring and monitoring instruments, devices for the disposal of radioactive effluents and wastes, storage facilities, criticality accident alarm systems, etc.

(5) Proposed procedures to protect health and minimize danger to life or property (such as procedures to avoid accidental criticality, procedures for personnel monitoring and waste disposal, post-criticality accident emergency procedures, etc.).

(b) The application for a Certificate of Compliance must contain a full description of the Corporation's program for control and accounting of such SNM or enrichment equipment that will be in the Corporation's possession under the certificate to show how compliance with the requirements of 74.33 (Nuclear Material Control and Accounting for Uranium Enrichment Facilities Authorized to Produce SNM of Low Strategic Significance), of this chapter will be accomplished.

(c) The Commission may at any time after the filing of the original application, and before the expiration of the certificate, require further statements in order to enable the Commission to determine whether the certificate should be granted or denied or whether a certificate should be modified or revoked. All applications and statements shall be signed by a corporate officer of the Corporation.

(d) The application and statement shall contain complete and accurate disclosure as to all matters and things required to be disclosed.

(e) In addition to the other information required by this section, the application for a certificate of compliance shall contain mechanistic accidents and events and shall be a revision of the type of analysis in the final safety analysis reports (FSARs) prepared in 1985 that were relied on by the Department. These FSARs contain analyses of anticipated occurrences and accidents with a focus on mechanistic accidents and events. The FSAR analyses also address external events and natural phenomena. The FSAR shall be revised, as necessary, to include changes made in the facility or procedures as described in the FSAR since its preparation. The FSAR shall be current a maximum of 6 months prior to the date of filing the revision. Proposed operating limits based on the analyses in the FSARs shall also be submitted in the application in the form of revised operational safety limits. The application shall also contain a description of the quality assurance program to be applied to the safety related functions of plant operation.

(f)(1) The application for a Certificate of Compliance that would authorize the transport or delivery to a carrier for transport of SNM of moderate or low strategic significance (per 73.1(b)(2) of this chapter) must include (i) a description of the plan for physical protection of SNM in transit in accordance with 73.67(a), and (g) for 10 kg or more of SNM of low strategic significance, as appropriate, a plan for the selection, qualification, and training of armed escorts or the specification and design of a specially designed truck or trailer, and (ii) the Corporation's

safeguards contingency plan or response procedures, as appropriate, for dealing with threats, thefts, and radiological sabotage relating to the SNM in transit.

(2) The Corporation shall retain the description of the plan for physical protection of the SNM in transit and the safeguards contingency plan or safeguards response procedures and each change to the plan or procedures as a record for a period of three years following the date on which the Corporation last possessed the appropriate type and quantity of SNM requiring this record under each certificate.

(g)(1) The application for a Certificate of Compliance must contain an emergency plan for responding to the radiological hazards of an accidental release of SNM and to any associated chemical hazards directly related to the release of the SNM.

(2) Emergency plans submitted under paragraph (g)(1) of this section must include the following information:

(i) Facility description.

(ii) Types of accidents considered. An identification of each type of radioactive materials accident for which protective actions may be needed.

(iii) Classification of accidents. A classification system for classifying accidents as alerts or site area emergencies.

(iv) Detection of accidents. Identification of the means of detecting each type of accident in a timely manner.

(v) Mitigation of consequences. A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(vi) Assessment of releases. A brief description of the methods and equipment to assess releases of radioactive materials.

(vii) Responsibilities. A brief description of the responsibilities of the Corporation's staff, should an accident occur, including identification of personnel responsible for promptly notifying off-site response

organizations and the Commission; also responsibilities for developing, maintaining, and updating the plan.

(viii) Notification and coordination. A commitment to, and a brief description of, the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when appropriate. A control point must be established. The notification and coordination must be planned so that unavailability of some personnel, parts of the facility and some equipment will not prevent the notification and coordination. The Corporation shall also commit to notify the Commission operations center immediately after notification of the appropriate offsite response organizations and not later than one hour after the Corporation declares an emergency.

(ix) Information to be communicated. A brief description of the types of information on facility status, radioactive releases, and recommended protective actions, if necessary, to be given to offsite response organizations and to the Commission.

(x) Training. A brief description of the frequency, performance objectives and plans for the training that the Corporation will provide workers on how to respond to an emergency including any special instructions and orientation tours the Corporation would offer to fire, police, medical and other emergency personnel. The training shall familiarize personnel with site-specific emergency procedures. Also, the training shall thoroughly prepare site personnel for their responsibilities in the event of accident scenarios postulated as most probable for the specific site, including the use of team training for such scenarios.

(xi) Safe condition . A brief description of the means of restoring the facility to a safe condition after an accident.

(xii) Exercises. Provisions for conducting quarterly communications checks with offsite response organizations and biennial onsite exercises to test response to simulated emergencies. Quarterly communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The Corporation shall invite offsite response organizations to participate in the

biennial exercises. Participation of offsite response organizations in biennial exercises, although recommended, is not required. Exercises must use accident scenarios postulated as most probable for the specific site and the scenarios shall not be known to most exercise participants. The Corporation shall critique each exercise using individuals not having direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(xiii) Hazardous chemicals. A certification that the Corporation has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499, if applicable to the Corporation's activities at the proposed place of use of the SNM.

(h) The application for a Certificate of Compliance must include a fixed site physical security plan that demonstrates how the Corporation plans to meet the requirements of 73.67(f) and (g) as appropriate, of this chapter. The Corporation shall retain a copy of this physical security plan as a record for the period during which the certificant possesses the appropriate type and quantity of SNM requiring this record under the certificate and each change to the plan for three years after the change.

(i) The application for a Certificate of Compliance must include sufficient information pursuant to 51.41, to enable the Commission to prepare an environmental assessment in accordance with 51.30.

76.23 Requirements for the Approval of Initial Application

(a) An application for an initial Certificate of Compliance will be approved if the Commission determines that:

(1) The Corporation and it's staff is qualified by reason of training or experience to operate the GDPs in accordance with the regulations in this chapter,

(2) The Corporation's proposed equipment and facilities are adequate to protect health and minimize danger to life or property.

(3) The Corporation's proposed procedures to protect health and to minimize danger to life or property are adequate,

(4) Where the Corporation is required to submit a summary description of the fundamental material controls provided in his procedures for the control and accounting for SNM pursuant to 76.22(b), the Corporation's proposed controls are adequate,

(5) Where the Corporation is required to submit a physical security plan (for protection of SNM in transit) pursuant to 76.22(f) of this chapter, the Corporation's proposed plan is adequate,

(6) Where the Corporation is required to submit a physical security plan (for protection of SNM at a fixed site) pursuant to 76.22(h), the Corporation's proposed plan is adequate,

(7) The Corporation's proposed emergency plans are adequate.

76.24 Criticality Accident Requirements

(a) The application must include provisions to maintain, in each area in which over 700 grams of contained U^{235} is handled, used, or stored, a monitoring system meeting the requirements of either paragraph (a)(1) or (a)(2), as appropriate, and using gamma or neutron-sensitive radiation detectors which will energize clearly audible alarm signals if accidental criticality occurs. This section is not intended to require monitoring systems when SNM is being transported when packaged in accordance with the requirements of part 71 of this chapter.

(1) The monitoring system shall be capable of detecting a criticality that produces an absorbed dose in soft tissue of 20 rads of combined neutron and gamma radiation at an unshielded distance of 2 meters from the reacting material within one minute. Coverage of all areas shall be provided by two detectors, or

(2) Facilities in operation prior to December 6, 1974, in accordance with provisions of the Act (and operated for the Department), may maintain a monitoring system capable of detecting a criticality which generates radiation levels of 300 rems per hour one foot from the source of the radiation. The monitoring devices in the system shall have a preset alarm point of not less than 5 millirems per hour (in order to avoid false alarms) nor more than 20 millirems per hour. In no event may any such device be farther than 120 feet from the SNM being handled, used, or stored; lesser distances may be necessary to meet the

requirements of this paragraph (a)(2) on account of intervening shielding or other pertinent factors.

(3) The Corporation shall maintain emergency procedures for each area in which this SNM is handled, used, or stored to ensure that all personnel withdraw to an area of safety upon the sounding of the alarm. These procedures must include designation of responsible individual, the conduct of drills to familiarize personnel with the evacuation plan, and placement of radiation survey instruments in accessible locations for use in such an emergency. The Corporation shall retain a copy of current procedures for each area as a record for as long as SNM is handled, used, or stored in the area. The Corporation shall retain any superseded portion of the procedures for three years after the portion is superseded.

(b) The Corporation shall:

(1) Provide the means for identifying quickly which individuals have received doses of 10 rads or more,

(2) Maintain facilities and supplies at the site for decontamination of personnel, arrangements for the services of a physician and other medical personnel qualified to handle radiation emergencies, arrangements for transportation of injured or contaminated individuals to treatment facilities, and arrangements for treatment of individuals at treatment facilities outside the site boundary.

(c) Upon a showing by the Corporation that good cause exists for an exemption in whole or in part from the requirements of this section the Corporation may apply to the Commission for such exemption. Such application shall specify his reason for the relief requested.

76.25 Decontamination and Decommissioning

Decontamination and decommissioning of the GDPs shall be the responsibility of the Department in accordance with Sections 1801-1803 of the Atomic Energy Act, as amended . Funding for such activities shall be provided from the Uranium Enrichment Decontamination and Decommissioning Fund established in the Treasury of the United States pursuant to the provisions of such Act and pursuant to separate arrangements between the Department and the Corporation.

CERTIFICATES OF COMPLIANCE

76.31 Issuance of an Initial Certificate of Compliance

(a) Upon a determination by the Commission, in consultation with the Environmental Protection Agency, that an application submitted by the Corporation for a Certificate for the GDPs substantially meets the standards contained in this part, the Commission will issue a Certificate of Compliance for the GDPs with such conditions and limitations as the Commission deems necessary to effectuate the purposes of the Act.

(b) This Certificate shall [subject to the provision of § 76.41(b)] be deemed to authorize the Corporation to operate the GDPs and to receive title to, own, acquire, receive, possess, use, process, and transfer source, and SNM in connection with such operation.

(c) No Certificate will be issued by the Commission if the Commission finds that the issuance of such Certificate would be inimical to the common defense and security or would constitute an unreasonable risk to the health and safety of the public.

(d) The Commission will provide notice of each such application pursuant to 10 CFR § 2.804(a) and afford interested persons an opportunity to submit written comments on the application pursuant to 10 CFR § 2.805(a). Should the Commission determine that hearings on the application are necessary, such hearings shall be conducted in accordance with 10 CFR § 2.805(b).

76.32 Conditions of Initial Certificate

(a) The Certificate of Compliance shall contain and be subject to the following conditions:

(1) No right to the source material, byproduct material, or SNM used or produced shall be conferred by the Corporation except as defined by the certificate,

(2) Neither the certificate nor any right under the certificate shall be assigned or otherwise transferred in violation of the provisions of the Act,

(3) All SNM shall be subject to the right of recapture reserved by section 108 of the Act and to all other applicable provisions of the Act.

(4) No source material, byproduct material, or SNM may be used in any utilization or production facility except in accordance with the provisions of the Act,

(5) The Corporation shall not use the source material, byproduct material, or SNM to construct an atomic weapon or any component of an atomic weapon,

(6) The certificate shall be subject to, and the Corporation shall observe, the applicable rules, regulations and orders of the Commission referenced within this section.

(b) The Commission may incorporate in any certificate such additional conditions and requirements with respect to the Corporation's ownership, receipt, possession, use, and transfer of source material, byproduct material, or SNM in connection with the operation of the GDPs as it deems appropriate or necessary in order to;

(1) Promote the common defense and security,

(2) Protect health or to minimize danger to life or property,

(3) Guard against the loss or diversion of SNM,

(4) Require such reports and the keeping of such records, and to provide for such inspections of activities under the certificate as may be necessary or appropriate to effectuate the purposes of the act and regulations thereunder.

(c)(1) The Certificate of Compliance shall contain and be subject to a condition requiring the Corporation to maintain and follow;

(i) The program for control and accounting of uranium source material at a uranium enrichment facility or SNM and fundamental nuclear material controls implemented pursuant to 76.22(b), or 74.33(b), of this chapter, as appropriate,

(ii) The measurement control program for uranium source material at a uranium enrichment facility or SNM control and accounting implemented pursuant to 74.33(b) of this chapter, and

(iii) Such other material control procedures as the Commission determines to be essential for the safeguarding of uranium source materials at a uranium enrichment facility or of SNM and providing that the

Corporation shall make no change that would decrease the effectiveness of the material control and accounting program implemented pursuant to 76.22(b), or 74.33(b), of this chapter and the measurement control program implemented pursuant to 74.33(b), of this chapter without the prior approval of the Commission. A certificant desiring to make such changes shall submit an application for amendment to its certificate pursuant to 76.34.

(2) The Corporation shall maintain records of changes to the material control and accounting program made without prior Commission approval for a period of 5 years from the date of the change. The Corporation shall furnish to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, a report containing a description of each within six months of the change.

(d) The Corporation shall make no change which would decrease the effectiveness of the plan for physical protection of SNM in transit prepared pursuant to 76.22(f) of this chapter without the prior approval of the Commission.

(i) Should the Corporation desire to make such a change it shall submit an application for an amendment to the certificate pursuant to 76.34 of this chapter.

(ii) The Corporation may make changes to the plan for physical protection of SNM without prior Commission approval if these changes do not decrease the effectiveness of the plan.

(iii) A report containing a description of each change must be furnished to the Director of Nuclear Material Safety and Safeguards, U.S. NRC, Washington, DC 20555, with a copy to the appropriate NRC Regional Office within two months after the change.

(e) The Corporation shall make no change which would decrease the effectiveness of a fixed site security plan prepared pursuant to 76.22(h) without the prior approval of the Commission.

(i) Should the Corporation desire to make such a change, it shall submit an application for an amendment to its certificate pursuant to 76.34,

(ii) The Corporation shall maintain records of changes to the plan made without prior Commission approval, for three years from the effective date of the change,

(iii) A report containing a description of each change must be furnished the Director of Nuclear Material Safety and Safeguards, U.S. NRC, Washington, DC 20555, with a copy to the appropriate NRC Regional Office within two months after the change.

(f) The Corporation shall prepare and maintain safeguards contingency plan procedures in accordance with appendix C to part 73 of this chapter for effecting the actions and decisions contained in the Responsibility Matrix of its safeguard contingency plan. The Corporation shall retain a copy of the safeguards contingency plan procedures as a record for the period during which the Corporation possesses the appropriate type and quantity of SNM requiring this record under the certificate for which the procedures were developed and each change to the plan for three years from the effective date of the change. The Corporation shall make no change that would decrease the safeguards effectiveness of the first four categories of information (Background, Generic Planning Base, Licensee Planning Base, and Responsibility Matrix) contained in the Corporation's safeguards contingency plan prepared pursuant to 76.22(f) of this chapter without the prior approval of the Commission. Should the Corporation desire to make such a change it shall submit an application for amendment to its certificate pursuant to 76.34. The Corporation may make changes to its safeguards contingency plan without prior Commission approval if the changes do not decrease the safeguards effectiveness of the plan.

(g) The Corporation shall follow the emergency plan submitted in accordance with 76.22(g) as approved by the Commission. The Corporation may change the approved plan, without Commission approval, if the changes do not decrease the effectiveness of the plan. Proposed changes that decrease the effectiveness of the approved emergency plan may not be implemented without prior application to and prior approval by the Commission. The Corporation shall furnish the Director of NMSS and the appropriate NRC Regional Office and the affected offsite response organizations, a copy of each change within 60 days after the change is made.

76.33 Annual Renewals

(a) After issuance by the Commission of the initial Certificate, the Corporation shall file an annual application for renewal. Such annual applications shall be filed in accordance with § 76.21. The first renewal application shall be filed at least 30 days prior to the end of the calendar

year following the year of issuance of the initial certificate. Thereafter, renewal applications shall be filed no later than 30 days prior to the end of each subsequent calendar year. Renewal applications shall contain revisions to the FSAR on a replacement page basis and a list that identifies current pages of the FSAR following page replacement. This submittal shall bring the FSAR up to date as of a maximum of 6 months prior to the date of filing the revision. Information contained in previous applications, statements, or reports filed with the Commission may be incorporated by reference; provided that such references are clear and specific.

(b) In any case in which the Corporation has obtained a Certificate and has filed an application for renewal in accordance with subsection (a), the Corporation's existing Certificate shall not expire until the Corporation's most recent application has been evaluated and a final determination made by the Commission.

(c) An application for renewal shall be subject to §§ 76.22(c) and (d) and 76.31(d) and shall contain the following information:

(1) an identification of any significant changes since the prior application to the information required for the initial application by § 76.22(a);

(2) a revision of the FSAR, on a replacement page basis, reflecting, as necessary, changes in the facility or procedures since its last revision in accordance with § 76.22(e); and

(3) a revision of the description of its QA program to be applied to the safety related functions of plant operation, on a replacement page basis, in accordance with § 76.22(e).

76.34 Amendment of Certificates

(a) Applications for amendment of a Certificate of Compliance shall be filed in accordance with 76.21(a) and shall specify the respects in which the Corporation desires the certificate to be amended and the grounds for such amendment.

(b) The Corporation shall make no change to the Paducah or Portsmouth GDPs or procedures as described in the application, nor conduct tests or experiments not described in the application, without prior Commission approval unless such changes, tests or experiments do not reduce the safety or safeguards effectiveness of the facility.

(c) The safety effectiveness of the facility shall be deemed to be reduced if: (a) the probability of occurrence or the consequences of an accident or

malfunction of safety-related equipment previously evaluated in the application may be increased, (b) a possibility for an accident or malfunction of a different type than any evaluated previously in the application may be created, or (c) the margin of safety in any operating limit is reduced.

(d) The safeguards effectiveness of the facility shall be deemed to be reduced if: (a) the probability of unauthorized increased enrichment is increased, or (b) the probability of theft or diversion of SNM is increased.

(e) The Corporation shall maintain records of changes that are made to the facility without prior approval for a period of five years from the date of the change and shall furnish the Director, Office of Nuclear Material Safety and Safeguards, with a report summarizing each change every two years. Subsequent revisions shall reflect all changes up to a maximum of one year prior to the date of filing.

76.35 Commission Action on Applications to Renew or Amend

(a) In considering an application by the Corporation to renew the Certificate of Compliance, the Commission will apply the criteria set forth in 76.23(a)(1)–(3).

(b) In considering an application by the Corporation to amend the Certificate of Compliance, the Commission will apply the criteria set forth in 76.23 as applicable.

76.36 Inalienability of Certificates

The certificate granted under the regulations in this part, and no right to possess or utilize SNM granted by any certificate issued pursuant to the regulations in this part, shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any certificate to any person unless the Commission shall after securing full information, find that the transfer is in accordance with the provisions of the Act, and shall give its consent in writing.

76.37 Disclaimer of Warranties

Neither the Government nor the Commission makes any warranty or other representation that SNM (a) will not result in injury or damage when used for purposes approved by the Commission, (b) will accomplish the results for which it is requested and approved by the Commission, or (c) is safe for any other use.

76.38 Expiration and Termination of Certificates

(a) Except as provided in § 76.33(b), each Certificate or approval issued pursuant to this part expires at the end of the day, in the month and year stated in the Certificate or approval.

(b) The Corporation shall notify the Commission promptly, in writing under § 76.5 when the Corporation decides to terminate operation at either of the GDPs and other activities authorized under the Certificate. No later than the date specified for termination of operation in the Corporation's notice, the Corporation shall terminate operation of the GDPs and make appropriate arrangements with the Department to return the GDPs to the Department.

(c) If the Corporation does not submit an annual renewal application under § 76.33, the Corporation shall on or before the expiration date specified in the existing Certificate :

(1) Terminate operation of the GDPs and

(2) Make appropriate arrangements with the Department to return the GDPs to the Department.

76.39 Submission, Review , and Approval of Department Compliance Plans

(a) The Corporation may submit, in accordance with 76.21, a plan prepared by the Department for achieving compliance with the standards set forth in this part in conjunction with its initial application for a Certificate of Compliance or any renewal application or at any other time. Such plan shall contain such information as the Corporation deems necessary to enable the Commission to make the finding required by § 1701(d) of the Act.

(b) The Commission shall approve the plan, with such conditions and limitations as it deems necessary to effectuate the purposes of the Act, so long as it finds that the plan provides reasonable assurance that the GDPs will meet the standards in this part in a timely manner and that the GDPs can and will be operated in a manner that adequately protects public health and safety and provides for the common defense and security until such time as full compliance is achieved.

(c) Notice and comment on the plan will be provided in accordance with 76.31(d).

ACQUISITION, USE AND TRANSFER OF RADIOACTIVE MATERIAL, CREDITORS' RIGHTS

76.41 Authorized Use of Radioactive Material

(a) The Corporation shall confine its possession and use of byproduct material, source material, and SNM to the locations and purposes authorized in his certificate. Except as otherwise provided in the certificate, the certificate issued pursuant to the regulations in this part shall carry with it the right to receive title to, own, acquire, receive, possess and use byproduct material, source material, and SNM. Preparation for shipment and transport of such material shall be in accordance with the provisions of part 71 of this chapter.

(b) The possession, use and transfer of any byproduct material, source material, and SNM produced by the Corporation, in connection with or as a result of use of such materials received under this Certificate, shall be subject to the provisions of the Certificate and the regulations in this part.

76.42 Transfer of Radioactive Material

(a) The Corporation shall not transfer byproduct material, source material, or SNM except as authorized pursuant to this section.

(b) Except as otherwise provided in the certificate and subject to the provisions of paragraphs (c) and (d) of this section, the Corporation may transfer byproduct material, source material, and SNM:

(1) To the Department;

(2) To the agency in any Agreement State which regulates radioactive materials pursuant to an agreement with the Commission or the Atomic Energy Commission under section 274 of the Act, if authorized by such agreement;

(3) To any person exempt from the licensing requirements of the Act and regulations in parts 30, 40, and 70, to the extent permitted under such exemption;

(4) To any person in an Agreement State, subject to the jurisdiction of that State, who has been exempted from the licensing requirements and regulations of that State, to the extent permitted under such exemption;

(5) To any person authorized to receive such byproduct material, source material, or SNM under terms of a specific license or a

general license or their equivalents issued by the Commission or an Agreement State;

(6) To any person abroad pursuant to an export license issued under part 110 of this chapter; or

(7) As otherwise authorized by the Commission in writing.

(c) Before transferring byproduct material, source material, or SNM to a specific licensee of the Commission or an Agreement State or to a general licensee who is required to register with the Commission or with an Agreement State prior to receipt of the byproduct material, source material, or SNM the Corporation shall verify that the transferee's license authorized receipt of the type, form, and quantity of source or SNM to be transferred.

(d) The following methods for the verification required by paragraph (c) of this section are acceptable:

(1) The Corporation may have in its possession, and read, a current copy of the transferee's specific license or registration certificate, the Corporation shall retain a copy of each license or certificate for three years from the date that it was obtained.

(2) The Corporation may have in its possession a written certification by the transferee that the transferee is authorized by license or registration certificate to receive the type, form, and quantity of byproduct material, source material, or SNM to be transferred, specifying the license or registration certificate number, issuing agency, and expiration date. The Corporation shall retain the written certification as a record for three years from the date of receipt of the certification;

(3) For emergency shipments the Corporation may accept oral certification by the transferee that he or she is authorized by license or registration certification to receive the type, form, and quantity of byproduct material, source material, or SNM to be transferred, specifying the license or registration certificate number, issuing agency, and expiration date, provided that the oral certification is confirmed in writing within ten days. The Corporation shall retain the written confirmation of the oral certification for three years from the date of receipt of the confirmation;

(4) The Corporation may obtain other sources of information compiled by a reporting service from official records of the Commission or the licensing agency of an Agreement State as to

the identity of licensees and the scope and expiration dates of licenses and registrations. The Corporation shall retain the compilation of information as a record for three years from the date that it was obtained; or

(5) When none of the methods of verification described in paragraphs (d)(1) to (4) of this section are readily available or when the Corporation desires to verify that information received by one of these methods is correct or up-to-date, the Corporation may obtain and record confirmation from the Commission or the licensing agency of an Agreement State that the transferee is licensed to receive the material. The Corporation shall retain the record of confirmation for three years from the date the record is made.

76.44 Creditor Regulations

(a) The Commission consents, without individual application, to the creation of any mortgage, pledge, or other lien upon the Corporation's interest in the GDPs or any byproduct material, source material, or SNM not owned by the United States, used in connection with the operation of the GDPs. Providing:

(1) That the rights of any creditor so secured may be exercised only in compliance with and subject to the same requirements and restrictions as would apply to the Corporation pursuant to the provisions of the Certificate of Compliance issued by the Commission pursuant to this Part; and

(2) That no creditor so secured may take possession of the Corporation's interest pursuant to the provisions of this section without the prior approval of the Commission.

(b) Nothing contained in this section shall be deemed to affect the means of acquiring, or the priority of, any tax lien or other lien provided by law.

(c) As used in this section, *creditor* includes, without implied limitation, the trustee under any mortgage, pledge, or lien on the Corporations interest made to secure any creditor, any trustee, or receiver appointed by a court of competent jurisdiction in any action brought for the benefit of any creditor secured by such mortgage, interest pledge, or lien, any purchaser of such at the sale thereof upon foreclosure of such mortgage, pledge, or lien or upon exercise of any power of sale contained therein, or any assignee of any such purchaser.

RECORDS, REPORTS AND INSPECTIONS

76.50 Reporting Requirements

(a) Immediate report. The Corporation shall notify the Commission as soon as possible but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits (events may include fires, explosions, toxic gas releases, etc.).

(b) Twenty-four hour report. The Corporation shall notify the Commission within 24 hours after the discovery of any of the following events involving byproduct material, source material, or SNM.

(1) An unplanned contamination event that:

(i) Requires access to the contaminated area, by workers or the public, to be restricted for more than 24 hours by imposing additional radiological controls or by prohibiting entry into the area,

(ii) Involves a quantity of material greater than five times the lowest annual limit on intake specified in Appendix B of 20.1001-20.2401 of 10 CFR 20 for the material, and

(iii) Has access to the area restricted for a reason other than to allow isotopes with a half-life of less than 24 hours to decay prior to decontamination.

(2) An event in which equipment is disabled or fails to function as designed when;

(i) The equipment is required by regulation or certificate condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident,

(ii) The equipment is required to be available and operable when it is disabled or fails to function, and

(iii) No redundant equipment is available and operable to perform the required safety function.

(3) An event that requires unplanned medical treatment at a medical facility of an individual with spreadable radioactive contamination on the individual's clothing or body.

(4) An unplanned fire or explosion damaging any byproduct material, source material, or SNM or any device, container, or equipment containing such material when;

(i) The quantity of material involved is greater than five times the lowest annual limit on intake specified in appendix B of 20.1001-20.2401 of 10 CFR 20 for the material, and

(ii) The damage affects the integrity of the material or its container.

(c) Preparation and submission of reports. Reports made by the Corporation in response to the requirements of this section must be made as follows:

(1) The Corporation shall make reports required by paragraphs (a) and (b) of this section by telephone to the NRC Operations Center (Commercial telephone 301-951-0550). To the extent that the information is available at the time of notification, the information provided in these reports must include:

(i) The caller's name and call back telephone number,

(ii) A description of the event, including date and time,

(iii) The exact location of the event,

(iv) The isotopes, quantities, and chemical and physical form of the byproduct material, source material, or SNM involved, and

(v) Any personnel radiation exposure data available.

(2) Written report. For each report required by paragraph (a) or (b) of this section the Corporation shall submit a written follow-up report within 30 days of the initial report. Written reports prepared pursuant to other regulations may be submitted to fulfill this requirement if the reports contain all of the necessary information and the appropriate distribution is made. These written reports must be sent to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555,

with a copy to the appropriate Commission regional office. The reports must include the following:

(i) A description of the event, including the probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned,

(ii) The exact location of the event,

(iii) The isotopes, quantities and chemical and physical form of the material involved,

(iv) Date and time of the event,

(v) Corrective actions taken or planned and the results of any evaluations or assessments, and

(vi) The extent of exposure of individuals to radiation or to radioactive materials without identification of the individuals by name.

76.51 Material Balance, Inventory, and Records Requirements

(a) As used in this section:

(1) Additions to material in process means receipts that are opened except for receipts opened only for sampling and subsequently maintained under tamper-safing, and opened sealed sources.

(2) Enrichment category for uranium-235 means high-enrich uranium-that uranium whose isotope content is 20 percent or more uranium-235 by weight, and low-enriched uranium-that uranium whose isotope content is less than 20 percent uranium-235 by weight.

(3) Element means uranium.

(4) Fissile isotope means (i) uranium-233 or (ii) uranium-235 by enrichment category.

(5) Inventory difference (ID) means the quantity obtained by subtracting ending inventory (EI) and removals (R) from beginning inventory (BI) and additions to the inventory (A). Mathematically, item means any discrete quantity or container of SNM or source material, not undergoing processing, having an

unique identity and also having an assigned element and isotope quantity.

ID=BI+A-EI-R

ID is sometimes also referred to as "material unaccounted for" (MUF) in this chapter.

(6) Limit of error means the uncertainty component used in constructing a 95 percent confidence interval associated with a quantity after any recognized bias has been eliminated or its effect accounted for.

(7) Material balance means the determination of an ID.

(8) Material in process means any special nuclear material possessed by the licensee except in unopened receipts, sealed sources, and ultimate product maintained under tamper-safing.

(9) Physical inventory means determination on a measured basis of the quantity of SNM on hand at a given time. The methods of physical inventory and associated measurements will vary depending on the material to be inventoried and the process involved.[1]

(10) Removals from material in process includes measured quantities of SNM disposed of as discards, encapsulated as a sealed source, or in other ultimate product placed under tamper-safing or shipped offsite.

(11) Tamper-safing means the use of devices on containers or vaults in a manner and at a time that ensures a clear indication of any violation of the integrity of previously made measurements of SNM within the container of vault.

(12) Ultimate product means any SNM in the form of a product that would not be further processed at the GDPs .

(13) Unopened receipts means receipts not opened by the licensee, including receipts of sealed sources, and receipts opened only for sampling and subsequently maintained under tamper-safing.

(b) The Corporation is subject to the record-keeping requirements of 74.33 of this chapter.

(c) The Corporation shall establish, maintain and follow written material control and accounting procedures that are sufficient to enable it to account for the SNM in the Corporation's possession under certification. The Corporation shall retain these procedures until the certificate is terminated and retain any superseded portion of the procedures for three years after the portion is superseded.

(d)(1) Records which must be maintained pursuant to this part may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, specifications, must include all pertinent information such as stamps, initials, and signatures. The Corporation shall maintain adequate safeguards against tampering with and loss of record.

(2) If there is a conflict between the Commission's regulations in this part, certificate condition, or other written commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part for such records shall apply unless the Commission, pursuant to 70.14, has granted a specific exemption from the record retention requirements specified in the regulations in this part.

76.52 Reports of Accidental Criticality or Loss or Theft or Attempted Theft of Special Nuclear Material

(a) The Corporation shall notify the NRC Operations Center (commercial telephone number (301) 951-0550) within one hour after discovery of any case of accidental criticality or any loss, other than normal operating loss, of SNM.

(b) The Corporation shall notify the NRC Operations Center within one hour after discovery of any loss or theft or unlawful diversion of SNM which the Corporation is authorized to possess or any incident in which an attempt has been made or is believed to have been made to commit a theft or unlawful diversion of such material.

(c) This notification must be made to the Commission Operations Center via the Emergency Notification System if the Corporation is a party to that system. If the Emergency Notification System is unavailable, the Corporation shall make the required notification via commercial telephonic service or other dedicated telephonic system or any other

method that will ensure that a report is received by the Commission Operations Center within one hour. The exemption of 73.21(g)(3) applies to all telephonic reports required by this section.

(d) Reports required under 73.71 need not be duplicated under the requirements of this section.

76.53 Material Status Reports

(a)(1) The Corporation shall complete and submit material balance reports as required by 74.13 (a)(1) of this chapter.

(2) If required to submit routine material status reports pursuant to 75.35 of this chapter the Corporation shall follow the requirements set out in 74.13(a)(2) of this chapter.

(b) If subject to the requirements of 70.51(e) the Corporation shall follow the requirements set out in 74.13(b) and 74.17(b) of this chapter.

76.54 Nuclear Material Transfer Reports

(a) When transferring or receiving SNM the Corporation shall follow the requirements set out in 74.15(a) and (b) of this chapter.

(b) If required to submit inventory change reports on DOE/Commission Form-741 pursuant to 75.34 of this chapter the Corporation shall follow the requirements set out in 74.15(c) of this chapter.

76.55 Inspections

(a) The Corporation shall afford to the Commission at all reasonable times opportunity to inspect byproduct material, source material, or SNM and the premises and facilities wherein such material is used, produced, or stored.

(b) The Corporation shall make available to the Commission for inspection, upon reasonable notice, records kept by the Corporation pertaining to its receipt, possession, use, acquisition, import, export, or transfer of byproduct material, source material, and SNM.

(c)(1) The Corporation shall, upon request by the Director, Office of Nuclear Material Safety and Safeguards or the appropriate Commission Regional Administrator, provide rent-free office space for the exclusive use of Commission inspection personnel. Heat, air conditioning, light, electrical outlets and janitorial services shall be furnished by the Corporation. The office shall be convenient to and have full access to

the facility and, shall provide the inspector both visual and acoustic privacy.

(2) For each site, the space provided shall be adequate to accommodate a full-time secretary and transient Commission personnel and will be generally commensurate with other office facilities at the site. A space of 250 square feet either within the site's office complex or in an office trailer or other onsite space is suggested as a guide. The office space that is provided shall be subject to the approval of the Director, Office of Nuclear Material Safety and Safeguards or the appropriate Commission Regional Administrator. All furniture, supplies and communication equipment will be furnished by the Commission.

(3) The Corporation shall afford any Commission resident inspector assigned to that site or other Commission inspectors identified by the Director, Office of Nuclear Material Safety and Safeguards, as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control measures for security, radiological protection, and personal safety.

76.56 Tests

The Corporation shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or necessary for the administration of the regulations in this part, including tests of (a) byproduct material, (b) source material, (c) SNM, (d) facilities wherein such material is utilized, produced or stored, (e) radiation detection and monitoring instruments, and (f) other equipment and devices used in connection with the production, utilization, or storage of byproduct material, source material, and SNM.

76.59 Effluent Monitoring Reporting Requirements

(a) The Corporation shall:

(1) Submit a report to the appropriate Commission Regional Office, with copies to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, within 60 days after January 1 and July 1 of each year specifying the quantity of each of the principal radionuclides released to unrestricted areas in liquid and gaseous effluents during the previous six months of operation, and such other information as the Commission may require to estimate maximum potential annual radiation doses to the public resulting

from effluent releases. On the basis of such reports and any additional information the Commission may obtain from the Corporation or others, the Commission may from time to time require the Corporation to take such action as the Commission deems appropriate.

MODIFICATION AND REVOCATION OF CERTIFICATE

76.61 Modification and Revocation of Certificate

(a) The terms and conditions of the certificate shall be subject to amendment, revision, or modification by reason of amendments to the Atomic Energy Act of 1954, or by reason of rules, regulations or orders issued in accordance with the Act or any amendments thereto;

(b) Any Certificate may be revoked, suspended or modified for any material false statements in the application or any statement of fact required under this part or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a certificate on an original application, or for failure to operate a GDP in accordance with the terms of the certificate, the application, or for violation of, or failure to observe any of the terms and condition of the Act, or of any applicable regulation of the Commission.

(c) Upon revocation, suspension or modification of a certificate, the Commission may immediately advise the Department to retake possession of all byproduct material, source material, and SNM held by the Corporation . In cases found by the Commission to be of extreme importance to the national defense or security, or to the health and safety of the public, the Commission may recapture any SNM held by the Corporation prior to any of the procedures provided under section 551-558 of title 5 of the United States Code.

(d) Except in cases of willfulness or those in which the public health, interest or safety requires otherwise, no certificate shall be modified, suspended or revoked unless, facts or conduct which may warrant such action shall have been called to the attention of the Corporation in writing and the Corporation shall have been accorded opportunity to demonstrate or achieve compliance with all lawful requirements.

76.62 Suspension in War or National Emergency

Whenever Congress declares that a state of war or national emergency exists, the Commission, if it finds it necessary to the common defense and security may,

(a) Suspend any certificate it has issued.

(b) Order the recapture of SNM.

(c) Order entry into any plant or facility in order to recapture SNM. Just compensation shall be paid for any damages caused by recapture of SNM pursuant to this section.

76.71 Violations

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or Title II of the Energy Reorganization Act of 1974, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of the applicable section of the Act or the Energy Reorganization Act of 1974, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any Certificate issued thereunder. Any person who willfully violates any provision of the Act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

76.72 Criminal Penalties

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in part 76 are issued under one or more of sections 161b, 161i, or 161o, except for the sections listed in paragraph (b) of this section.

(b) The regulations in part 76 that are not issued under sections 161b, 161i, or 161o for the purposes of section 223 are as follows: §§ 76.1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 18, 23, 25, 31, 33, 34, 35, 37, 39, 61, 62, 71, 72, and 73.

76.73 Backfitting

(a)(1) Backfitting is defined as the modification of or addition to systems, structures, components, or design of a facility; or the procedures or organization required to design, construct, or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position after:

(i) The date of issuance of the initial Certificate of Compliance in accordance with 10 CFR 76 for the Paducah or Portsmouth Gaseous Diffusion Plant.

(2) Except as provided in paragraph (a)(4) of this section, the Commission shall require a systematic and documented analysis pursuant to paragraph (c) of this section for backfits which it seeks to impose.

(3) Except as provided in paragraph (a)(4) of this section, the Commission shall require the backfitting of a facility only when it determines, based on the analysis described in paragraph (c) of this section, that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for the facility are justified in view of this increased protection.

(4) The provisions of paragraphs (a)(2) and (a)(3) of this section are inapplicable and, therefore, backfit analysis is not required and the standards in paragraph (a)(3) of this section do not apply where the Commission or staff, as appropriate, finds and declares, with appropriate documented evaluation for its finding, either;

(i) That a modification is necessary to bring a facility into compliance with a certificate or the rules or orders of the Commission, or into conformance with written commitments by the Corporation; or

(ii) That regulatory action is necessary to ensure that the facility provides adequate protection to the health and safety of the public and is in accord with the common defense and security; or

(iii) That the regulatory action involves defining or redefining what level of protection to the public health and safety or common defense and security should be regarded as adequate.

(5) The Commission shall always require the backfitting of a facility if it determines that such regulatory action is necessary to ensure that the facility provides adequate protection to the health and safety or the public and is in accord with the common defense and security.

(6) The documented evaluation required by paragraph (a)(4) of this section shall include a statement of the objectives of and reasons for the modification and the basis for invoking the exception. If immediately effective regulatory action is required, then the documented evaluation may follow rather than precede the regulatory action.

(7) If there are two or more ways to achieve compliance with a certificate or the rules or orders of the Commission, or with written commitments by the Corporation, or there are two or more ways to reach a level of protection which is adequate, then ordinarily the Corporation is free to choose the way which best suits its purpose. However, should it be necessary or appropriate for the Commission to prescribe a specific way to comply with its requirements or to achieve adequate protection, then cost may be a factor in selecting the way, provided that the objective of compliance or adequate protection is met.

(b) In reaching the determination required by paragraph (a)(3) of this section, the Commission will consider how the backfit should be scheduled in light of other ongoing regulatory activities at the facility and, in addition, will consider information available concerning any of the following factors as may be appropriate and any other information relevant and material to the proposed backfit;

(1) Statement of the specific objectives that the proposed backfit is designed to achieve;

(2) General description of the activity that would be required by the Corporation in order to complete the backfit;

(3) Potential change in the risk to the public from the accidental off-site release of radioactive material;

(4) Potential impact on radiological exposure of facility employees;

(5) Installation and continuing costs associated with the backfit, including the cost of facility downtime or the cost of construction delay;

(6) The potential safety impact of changes in plant or operational complexity, including the relationship to proposed and existing regulatory requirements;

(7) The estimated resource burden on the NRC associated with the proposed backfit and the availability of such resources;

(8) The potential impact of differences in facility type, design or age on the relevancy and practicality of the proposed backfit;

(9) Whether the proposed backfit is interim or final and, if interim, the justification for imposing the proposed backfit on an interim basis.

(c) No certification action will be withheld during the pendency of backfit analyses required by the Commission's rules.

(d) The Executive Director for Operations shall be responsible for implementation of this section, and all analyses required by this section shall be approved by the Executive Director for Operations or his designee.

ENCLOSURE 5

Regulatory Analysis

DRAFT REGULATORY ANALYSIS

AMENDMENTS TO TITLE 10 CODE OF FEDERAL REGULATIONS
FOR CERTIFICATION OF DEPARTMENT OF ENERGY (DOE)
URANIUM ENRICHMENT GASEOUS DIFFUSION FACILITIES

1. Statement of Problem

The Energy Policy Act of 1992 (the "Act"), established a new government corporation, U.S. Enrichment Corporation (the "Corporation"), for the purpose of conducting a uranium enriching enterprise. The Act directs the NRC to issue standards, by rule, necessary to govern the gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky, in order to protect the public health and safety from radiological hazard and provide for the common defense and security, including adequate safeguards. The standards are to be issued by October 24, 1994. USEC is to annually apply for a certificate of compliance with the standards pursuant to a certification process to be established by NRC under this Act.

2. Objective

To satisfy statutory requirements the NRC must establish standards for the certification of the DOE gaseous diffusion plants. Certification standards will be promulgated through rulemaking by addition of a new part to Title 10 of the Code of Federal Regulations.

3. Alternatives

There are no current regulations which describe the process or establish the standards that will govern certification of the Corporation for operation of the gaseous diffusion facilities. Accordingly, to comply with the Act, the NRC must promulgate new standards for the gaseous diffusion plants.

4. Benefits and Costs

The chief benefit to the public, industry, and the NRC will be to have codified certification standards in Title 10 as required by the Act. This action is required for the process of certification of the DOE gaseous diffusion facilities and will provide the final regulatory base for that action.

This action should have no significant impact on industry or the public as there will be no change to the level of protection of public health and safety currently required for the plants by DOE. Certification will be mainly based on requirements which incorporate standards already used by NRC for regulating other nuclear fuel cycle activities of private industry, which are similar to safety practices used by DOE at its facilities.

5. Decision Rationale and Conclusion

Section 1701 of the Act provides that within 2 years after enactment of the legislation, the NRC is required to promulgate certification standards for

the gaseous diffusion plants at Portsmouth, Ohio and Paducah, Kentucky. The Commission's regulations must conform to this legislation.

A new part to Title 10 of the Code of Federal Regulations should be published for comment in the Federal Register and codified through the formal rulemaking process.

6. Implementation

6.1 Schedule for Implementation

The new part will be effective immediately after publication in the Federal Register. There are no persons currently covered under certification standards. Accordingly, there are no issues pertaining to implementation for existing facilities.

6.2 Relationship to Other Existing or Proposed Requirements

There are no known impacts on or conflicts with other existing or proposed requirements.

ENCLOSURE 6

Environmental Assessment

DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT PROPOSED NEW 10 CFR PART 76 CERTIFICATION OF GASEOUS DIFFUSION PLANTS

Proposed Action

The Nuclear Regulatory Commission is proposing to amend its regulations to add a Part 76 "Certification of Gaseous Diffusion Plants" to Title 10 of the Code of Federal Regulations. The new Part 76 would apply to the gaseous diffusion plants at Portsmouth, Ohio, and Paducah, Kentucky, in order to protect the public health and safety from radiological hazard and provide for the common defense and security, including adequate safeguards.

Background

The President signed H.R. 776, the "Energy Policy Act of 1992" (the Act), into law on October 24, 1992. The Act amended the Atomic Energy Act of 1954, to establish a new government corporation, U.S. Enrichment Corporation (USEC), for the purpose of conducting a uranium enrichment enterprise. Section 1701 provides that within 2 years after enactment of the legislation, the NRC is required to promulgate standards to protect the public health and safety from radiological hazard and provide for the common defense and security. Section 1702 directs NRC to establish a certification process under which the two gaseous diffusion plants at Portsmouth, Ohio and Paducah, Kentucky, to be operated by USEC, will be certified by NRC for compliance with those standards. The NRC will promulgate certification standards through

rulemaking by addition of a new part to Chapter I of Title 10 of the Code of Federal Regulations.

Need for Proposed Action

The NRC has no current regulations that establish standards or specifically apply to the process for certification of USEC for operation of the gaseous diffusion plants as established by the Act. The Nuclear Regulatory Commission must therefore meet its Congressional mandate for establishing standards for the certification process through rulemaking. Certification standards must be codified through the formal rulemaking process and be published in the Federal Register by October 24, 1994.

Environmental Impact of Proposed Action

The standards which the Nuclear Regulatory Commission is promulgating govern facilities that have been operating for nearly 40 years. The facilities have already been subject to evaluation under the National Environmental Policy Act. The Energy Research & Development Administration prepared two Environmental impact statements for the gaseous diffusion plant in Portsmouth, Ohio[1], and the Department of Energy prepared an Environmental Impact Assessment for the gaseous diffusion plant in Paducah, Kentucky[2]. The

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[1] Final Environmental Impact Statement, Portsmouth Gaseous Diffusion Plant Site, May 1977, ERDA-1555; Final Environmental Statement, Portsmouth Gaseous Diffusion Plant Expansion, September 1977, ERDA-1549.

[2] Final Environmental Impact Assessment Of The Paducah Gaseous Diffusion Plant Site, August 1982, DOE/EA-0155.

promulgation of standards governing those facilities, and the subsequent regulation of those facilities by the Nuclear Regulatory Commission, will not result in any environmental impacts in addition to those which currently exist or would be expected to continue absent NRC regulatory oversight.

The standards being promulgated will not allow the facilities to operate in such a way that any adverse environmental effects of their operation are greater than the impact which currently exists and have been previously evaluated. The standards are not intended to loosen the current practices and thereby allow an increase in any adverse environmental impact on the public or the environment. The Nuclear Regulatory Commission standards will therefore, at a minimum preserve the status quo.

Alternatives

There is no alternative to the codification of standards to implement the legislation, since codified standards are required by the Act.

Finding of No Significant Impact

Under the National Environmental Policy Act of 1969, as amended (NEPA), all Federal agencies must consider the effect of their actions on the environment. Section 102(2) of NEPA requires that the policies, regulations, and Public laws of United States be interpreted and administered in accordance with the policies set forth in NEPA. It is the intent of NEPA to have Federal agencies incorporate consideration of environmental issues into the decision-making process to assure thorough consideration of such issues. The

Commission has determined under the NEPA, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required.

This determination is based on the following:

1. The promulgation of standards governing these facilities will not create new or different environmental impacts in addition to those which currently exist or would be expected to continue absent NRC regulatory oversight.

2. The Commission's certification standards do not relax existing environmental constraints under which the plants currently operate.

3. These facilities have already been subject to evaluation under the National Environmental Policy Act.

4. The foregoing environmental assessment provides the required support.

In operating the gaseous diffusion facilities, the Corporation will be subject to, and must comply with, all Federal and State, interstate, and local environmental laws and requirements in the same manner and to the same extent as any person who is subject to such laws and requirements. In addition, a comprehensive environmental audit is being prepared to identify environmental conditions at the sites as a result of operation of the facilities by DOE.

ENCLOSURE 7

Draft Public Announcement

NRC PROPOSES NEW REGULATIONS FOR

DOE URANIUM ENRICHMENT PLANTS IN OHIO, KENTUCKY

The Nuclear Regulatory Commission is considering amending its regulations to provide standards for the U.S. Enrichment Corporation's operation of portions of uranium enrichment plants leased from the Department of Energy at Portsmouth, Ohio, and Paducah, Kentucky.

The plants, which enrich uranium by a gaseous diffusion process, were previously operated by a contractor for the Department of Energy and, prior to that, for the former Atomic Energy Commission. The Energy Policy Act of 1992 amended the Atomic Energy Act of 1954 to establish a new government corporation, U.S. Enrichment Corporation (USEC), for the purpose of conducting a uranium enrichment enterprise. USEC will have responsibility for operating the portions of the plant required for the production of low-enriched uranium for commercial uses, and for marketing of that uranium.

The Department of Energy (DOE) will continue to own the two gaseous diffusion enrichment plants and to control the portions of the plants that are not related to the production of low-enriched uranium for commercial purposes.

The Act also provides that, within two years after the law was passed on October 24, 1992, NRC is to issue standards to govern the portions of DOE's gaseous diffusion uranium enrichment facilities leased to USEC -- in order to protect the public

health and safety from radiological hazards, provide for the common defense and security, and ensure adequate safeguards. NRC is authorized to establish a process under which USEC's portions of the Portsmouth and Paducah gaseous diffusion plants are to be annually reviewed by NRC, in consultation with the Environmental Protection Agency, to determine whether they are in compliance with the standards. NRC, in consultation with DOE and EPA, will report at least annually to Congress on the status of compliance and on health, safety and environmental conditions at the plants. The DOE gaseous diffusion uranium enrichment facilities may not be operated, the Act states, unless NRC, in consultation with EPA, makes a determination of compliance or approves a plan prepared by USEC for achieving compliance.

Under a transition agreement reached between DOE and NRC, DOE will continue its regulatory oversight of nuclear safety, safeguards and security for the gaseous diffusion plants until NRC issues standards and certifies that the portion of the facilities to be taken over by USEC comply with the NRC standards or NRC approves a plan for achieving compliance.

In proposing certification standards for continued operation, NRC is emphasizing general performance objectives similar to those in the Commission's current regulations for major fuel cycle facilities. The rules would include, in a new Part 76 to the Commission's regulations, the procedural and technical standards that are required by the Act or by the Commission's own procedures. Under the procedural standards, NRC

would publish in the Federal Register a notice of the filing of the application for a certificate, and copies of the application would be made available for public inspection and comment. A public meeting will be held on the first certification application, but on future applications only if NRC determines that there is sufficient public interest or that a meeting is in the public interest.

The technical standards would include requirements regarding criticality safety, emergency procedures, employee protection against discrimination by USEC if the employee engages in certain protected activities (such as providing the NRC with information about alleged violations of the regulations), completeness and accuracy of information provided by USEC to NRC, sanctions for deliberate misconduct (such as knowingly engaging in an act that would cause USEC to be in violation of NRC rules), material control and accounting, reports required to be submitted to NRC and safeguards.

In addition, the new regulations would make applicable to the USEC portions of the DOE gaseous diffusion plants certain other general portions of NRC's regulations, including requirements for notices to workers, radiation protection, reporting of defects, and standards for packaging and transportation of radioactive material.

Interested persons are invited to submit written comments on the proposed regulations to the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention:

Docketing and Service Branch. The comments should be received by _____ (_____days after publication of a Federal Register notice on this subject on _____).

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ENCLOSURE 8

Congressional Letters

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

The Honorable Richard H. Lehman, Chairman
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Nuclear Regulatory Commission (NRC) is publishing in the Federal Register the enclosed proposed new Part 76, "Certification of Gaseous Diffusion Plants" to the Commission's regulations. This proposed amendment is in accordance with the provisions of the Energy Policy Act of 1992 (the "Act"), that authorized the establishment of a new government corporation, U.S. Enrichment Corporation (USEC) for the purpose of conducting a uranium enrichment enterprise. The Act directs the NRC to issue standards that are necessary to certify the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky, in order to protect the public health and safety from radiological hazard, to provide for the common defense and security, and to ensure adequate safeguards. The Act specifies that these standards are to be in effect within 2 years (by October 24, 1994). In addition to the proposed new Part 76, there are a number of minor conforming changes also being proposed to implement the new part. The Commission is allowing 60 days for public comment on the proposed rule, and has specifically requested comments with respect to the scope and level of specificity.

The NRC will assume its responsibility for the GDPs in late 1995, following initial certification of the plants. As required by the Act, the Corporation must apply annually to the NRC for a certificate of compliance. The Commission will report to Congress on the status of the GDPs annually.

Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Representative Barbara Vucanovich

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

The Honorable Philip R. Sharp, Chairman
Subcommittee on Energy and Power
Committee on Energy and Commerce
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Nuclear Regulatory Commission (NRC) is publishing in the Federal Register the enclosed proposed new Part 76, "Certification of Gaseous Diffusion Plants" to the Commission's regulations. This proposed amendment is in accordance with the provisions of the Energy Policy Act of 1992 (the "Act"), that authorized the establishment of a new government corporation, U.S. Enrichment Corporation (USEC) for the purpose of conducting a uranium enrichment enterprise. The Act directs the NRC to issue standards that are necessary to certify the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky, in order to protect the public health and safety from radiological hazard, to provide for the common defense and security, and to ensure adequate safeguards. The Act specifies that these standards are to be in effect within 2 years (by October 24, 1994). In addition to the proposed new Part 76, there are a number of minor conforming changes also being proposed to implement the new part. The Commission is allowing 60 days for public comment on the proposed rule, and has specifically requested comments with respect to the scope and level of specificity.

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Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Representative Michael Bilirakis

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

The Honorable Joseph I. Lieberman, Chairman
Subcommittee on Clean Air and Nuclear Regulation
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Nuclear Regulatory Commission (NRC) is publishing in the Federal Register the enclosed proposed new Part 76, "Certification of Gaseous Diffusion Plants" to the Commission's regulations. This proposed amendment is in accordance with the provisions of the Energy Policy Act of 1992 (the "Act"), that authorized the establishment of a new government corporation, U.S. Enrichment Corporation (USEC) for the purpose of conducting a uranium enrichment enterprise. The Act directs the NRC to issue standards that are necessary to certify the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky, in order to protect the public health and safety from radiological hazard, to provide for the common defense and security, and to ensure adequate safeguards. The Act specifies that these standards are to be in effect within 2 years (by October 24, 1994). In addition to the proposed new Part 76, there are a number of minor conforming changes also being proposed to implement the new part. The Commission is allowing 60 days for public comment on the proposed rule, and has specifically requested comments with respect to the scope and level of specificity.

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Sincerely,

Dennis K. Rathbun, Director
Office of Congressional Affairs

Enclosure:
Federal Register Notice

cc: Senator Alan K. Simpson