



United States  
Enrichment Corporation

United States  
Enrichment Corporation

2 Democracy Center  
6903 Rockledge Drive  
Bethesda, MD 20817

Tel: (301) 564-3200  
Fax: (301) 564-3201

January 31, 1997

Mr. Robert C. Pierson  
Chief, Special Projects Branch  
Division of Fuel Cycle Safety  
and Safeguards, NMSS  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SERIAL: GDP 97-0009

**Paducah Gaseous Diffusion Plant (PGDP)**  
**Portsmouth Gaseous Diffusion Plant (PORTS)**  
**Docket Nos. 70-7001 & 70-7002**  
**Compliance Plan Issues C45/X41, Codes and Standards**

Dear Mr. Pierson:

Issue 45 of the Plan for Achieving Compliance With NRC Regulations at the Paducah Gaseous Diffusion Plant (Compliance Plan) and Issue 41 of the Portsmouth Compliance Plan contain a plan of action that states:

The documents referenced in Appendix A to SAR Chapter 1.0 will be reviewed, and a listing of specific sections of the codes, standards, and NRC regulatory guidance documents to which PGDP (PORTS) is committed will be compiled. The results will be transmitted to NRC at least 30 days prior to the date that the NRC assumes regulatory authority for PGDP (PORTS).

In accordance with these Compliance Plan issues, the documents listed in Chapter 1, Appendix A, to the PGDP and PORTS Safety Analysis Reports (SARs) have been reviewed to determine the extent of USEC's commitment. Appendix A to SAR Chapter 1 has been revised for both plants to incorporate the results of that review. Copies are provided in Enclosures 1 and 2. These changes to SAR Chapter 1, Appendix A, have been reviewed and approved in accordance with the requirements of 10 CFR 76.68 and have been determined not to require prior NRC approval. A description of documents added or deleted from SAR Chapter 1, Appendix A, is provided in Enclosure 3.

130026

**NRC FILE CENTER COPY**

9702130142 970131  
PDR ADOCK 07007001  
C PDR

Mr. Robert C. Pierson  
January 31, 1997  
GDP 97-0009 Page 2

Should you have any questions or require additional information, please contact me at (301) 564-3413 or Steve Routh at (301) 564-3251.

Sincerely,

*S.D. Routh for*

Robert L. Woolley  
Nuclear Regulatory Assurance and Policy Manager

Enclosures:      1.      Paducah Gaseous Diffusion Plant, SAR Chapter 1, Appendix A, RAC 97C0014 (R0), pages A-1 thru A-10  
                         2.      Portsmouth Gaseous Diffusion Plant, SAR Chapter 1, Appendix A, RAC 97X0007 (R0), pages A-1 thru A-12  
                         3.      Description of Changes to the Paducah and Portsmouth SAR Chapter 1, Appendix A (2 pages total)

cc:                NRC Region III Office  
                     NRC Resident Inspector - PGDP  
                     NRC Resident Inspector - PORTS  
                     DOE Regulatory Oversight Manager

Enclosure 1 to  
GDP 97-0009

**Paducah Gaseous Diffusion Plant**

**SAR Chapter 1, Appendix A  
RAC 97C0014 (R0)  
Pages A-1 thru A-10**

## Appendix A

### Applicable Codes, Standards, and Regulatory Guidance

This Appendix lists the various industry codes, standards, and regulatory guidance documents which have been referenced in certification correspondence. The extent to which PGDP satisfies each code, standard, and guidance document is identified below, subject to the completion of applicable actions required by the Compliance Plan.

#### 1.0 American National Standards Institute (ANSI)

##### 1.1 ANSI N14.1, Uranium Hexafluoride - Packaging for Transport, 1990 Edition

PGDP satisfies the requirements of this standard, except for those portions superseded by Federal Regulations, with the following clarifications:

New cylinders and associated valves - Entire standard

Cylinders and valves already owned and operated by PGDP that were not purchased to meet this edition of the standard - Satisfy only Sections 4, 5, 6.2.2 - 6.3.5, 7, and 8 of the standard. Cylinders purchased prior to 1990 were manufactured to meet the version of the ANSI standard or specification in effect at the time of the placement of the purchase order.

Section 5.2.1 - For U.S. Department of Transportation 7A Type A packaging, satisfy U.S. Department of Energy (DOE) evaluation document DOE/RL-96-57, Revision 0, Volume 1, which supersedes DOE/00053-H1.

See SAR Sections 3.7.1 and 4.3.1.5; the basis statements for TSR Sections 2.1, 2.2, and 2.3; and Section 2.2.2 of the Packaging and Transportation Quality Assurance Program (UEO-1041).

##### 1.2 ANSI/ANS 2.8, Determining Design Basis Flooding at Power Reactor Sites, 1981 Edition

The extent to which PGDP satisfies the requirements of this standard will be determined as part of the SAR Upgrade activity.

For references to this standard, see SAR Section 2.4.3.

##### 1.3 ANSI/ANS 3.1, Selection, Qualification, and Training of Personnel for Nuclear Power Plants, 1987 Edition

PGDP satisfies only the following section of this standard:

Section 4.3.3 - The qualifications of the Radiation Protection Manager identified in SAR Section 6.1 satisfy the requirements of this section of the standard.

- 1.4 ANSI/ANS 3.2, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants, 1994 Edition

The extent to which PGDP satisfies the requirements of this standard is outlined in SAR Section 6.11.1 and Appendix B to SAR Section 6.11.

- 1.5 ANSI/ANS 8.1, Nuclear Criticality Safety in Operations With Fissionable Materials Outside Reactors, 1983 Edition

PGDP satisfies the requirements of this standard.

For references to this standard, see SAR Sections 5.2.2.1, 5.2.2.3, 5.2.3.2, 5.2.4.1, and Table 6.9-1.

- 1.6 ANSI/ANS 8.3, Criticality Accident Alarm System, 1986 Edition

PGDP satisfies the requirements of this standard with the following exceptions:

Section 4.4.2 - An alarm signal with a complex sound wave or modulation is not provided.

Section 4.4.4 - A limit on the sound level emitted from the signal generator is not provided.

Section 4.5.3 - Emergency power supplies for AQ and NS alarm systems are not provided. A battery backup serves as the backup power supply for the cluster and local nitrogen horn.

Section 5.3 - The CAAS is not designed to withstand seismic stresses.

Section 6.3 - The testing frequency for the clusters is specified in the Technical Safety Requirements.

Section 7.2.3 - The testing frequency for the audible alarms is specified in the Technical Safety Requirements. Additionally, evacuation and familiarization drills are conducted in accordance with the Emergency Plan.

For references to this standard, see SAR Section 3.12.6.

- 1.7 ANSI/ANS 8.7 (N16.5), Guide for Nuclear Criticality Safety in the Storage of Fissile Material, 1975 Edition

PGDP satisfies the requirements of this standard with the following exceptions/clarifications:

Section 4.2.6 - Fire protection systems are installed throughout the process buildings where flammable liquids are used in operating equipment. Individual cell housings do not contain fire protection systems.

Section 5.1 - PGDP does not implement the unit mass limits described in this section. Mass limits are defined in Nuclear Criticality Safety Approvals (NCSAs) and Nuclear Criticality Safety Evaluations (NCSEs).

For references to this standard, see SAR Section 5.2.2.1.

- 1.8 ANSI/ANS 8.19, Administrative Practices for Nuclear Criticality Safety, 1984 Edition

PGDP satisfies the requirements of this standard.

For references to this standard, see SAR Section 5.2.2.1.

- 1.9 ANSI/ANS 8.20, American National Standard for Nuclear Criticality Safety Training, 1991 Edition

PGDP satisfies the requirements of this standard.

For references to this standard, see SAR Sections 6.6.5.2 and 6.6.6.1.

- 1.10 ANSI A17.1, Safety Codes for Elevators, 1974 Edition

PGDP satisfies only the following section of this standard as clarified below:

Section 1005.4 - The building C-360 hydraulic lifts (elevator and levelator) are designed and tested to the requirements of this section of the standard for direct-plunger type elevators.

For references to this standard, see the TSR Section 2.1.

- 1.11 ANSI B30.2, Overhead and Gantry Crane Design & Inspection, 1990 Edition (including Addenda A, 1991)

PGDP satisfies the requirements of the following sections of this standard for liquid UF<sub>6</sub> handling cranes:

Section 2-2.1.1 - all  
Section 2-2.1.2 - all  
Section 2-2.1.3 - all except for paragraphs (6), (8), and (9)  
Section 2-2.2.2 - only paragraphs (a), (b)(1), and (b)(4)  
Section 2-2.3.1 - all  
Section 2-2.4.1 - all

1.12 ANSI B30.9, Slings, 1990 Edition (including Addenda A, 1991)

PGDP satisfies the requirements of the following sections of this standard for lifting fixtures used to handle liquid UF<sub>6</sub> cylinders:

Section 9-1.6 - all  
Section 9-2.8.1 - all  
Section 9-2.8.2 - all

1.13 ANSI B30.10, Hooks, 1987 Edition (up through Addenda C, 1992)

PGDP satisfies the requirements of the following sections of this standard for lifting fixtures used to handle liquid UF<sub>6</sub> cylinders:

Section 10-1.2.1.1 - all  
Section 10-1.2.1.2 - all  
Section 10-1.2.1.3 - all

1.14 ANSI B30.20, Below the Hook Rigging Devices, 1992 Edition

PGDP satisfies the requirements of the following sections of this standard for lifting fixtures used to handle liquid UF<sub>6</sub> cylinders:

Section 20-1.3 - all  
Section 20-1.4.1 - only paragraphs (a) and (b)

1.15 ANSI NB-23, National Board Inspection Code, 1995 Edition

PGDP satisfies the requirements of this code as described below:

UF<sub>6</sub> accumulators and condensers are inspected at 5 year intervals in accordance with the 1995 edition of the National Board Inspection Code (NBIC).

For references to this standard, see SAR Sections 4.3.3.1.2 and 4.3.4.1.2 and TSR Section 2.3.

1.16 ANSI N323, Radiation Protection Instrumentation Test and Calibration, 1978 Edition

PGDP satisfies the requirements of this standard except as described in SAR Section 5.3.5.

1.17 ANSI N510, Testing of Nuclear Air Treatment Systems, 1989 Edition

PGDP satisfies the requirements of this standard for the periodic testing of HEPA systems that are relied upon for personnel protection or to meet environmental emissions limits with the following exceptions:

Section 11- The test gas specified will be an alternative but equivalent Halide gas,

Section 15 - Laboratory testing of the adsorbent will test for HF loading instead of radioiodine since HF is the gas of concern at PGDP.

For references to this standard, see SAR Sections 5.3.2.10 and 5.3.7.5.

2.0 American Society of Mechanical Engineers (ASME)

2.1 ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities, 1989 Edition

PGDP satisfies the requirements of this standard, including Basic and Supplementary Requirements, with exceptions and clarifications identified in the Quality Assurance Program Description. See also SAR Sections 6.6.13, 6.8.1, and 6.8.2 and Section 7.5 of the Emergency Plan.

2.2 ASME Boiler and Pressure Vessel Code, 1995 Edition

PGDP satisfies the following sections of this code as clarified below:

Section VIII - PGDP satisfies the requirements of Section VIII for the edition in effect at the time of fabrication of the following pressure components and systems: freezer/sublimator, condenser/reboiler, accumulator, autoclave, cell coolant condenser, nitrogen system (relief devices only), air system and dryer, cell coolant pressure relief, and UF<sub>6</sub> cylinders except that UF<sub>6</sub> cylinders do not have pressure relief devices.

Section IX - PGDP satisfies the requirements of Section IX for the components identified above for Section VIII.

For references to this code, see SAR Sections 3.2.3, 3.2.5.8, 3.3.4.5.1, 3.6.7.7, 3.7.1, 4.3.3.1.2, and 4.3.4.1.2 and the basis statements for TSR Sections 2.1, 2.2, 2.3, and 2.4.

**3.0 National Fire Protection Association (NFPA)**

**3.1 NFPA 10, Portable Fire Extinguishers, 1989 Edition**

As described in SAR Section 5.4.3, the requirements of this standard were used as guidance only in determining the size, selection, and distribution of portable fire extinguishers. PGDP will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the Authority Having Jurisdiction (AHJ).

For references to this standard, see SAR Sections 5.4.1 and 5.4.3.

**3.2 NFPA 13, Sprinkler Systems, 1989 Edition**

As described in SAR Section 5.4.1.1, the process buildings meet the definition of Ordinary Hazard Occupancies (Group 2) as stated in this standard and the fire protection system exceeds the sprinkler discharge of 0.15 gpm/sq. ft. for this type of occupancy. PGDP will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Sections 3.3.5.12, 5.4.1, and 5.4.1.1.

**3.3 NFPA 15, Water Spray Systems, 1990 Edition**

PGDP will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Section 5.4.1.

**3.4 NFPA 24, Private Fire Service Mains, 1992 Edition**

PGDP will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Section 5.4.1.

**3.5 NFPA 25, Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, 1995 Edition**

The 90-second response time criteria for the C-300 fire alarm is consistent with the requirements of this standard. See the basis statements for TSR Sections 2.3.4.8 and 2.4.4.5.

3.6 NFPA 30, Flammable Liquids, 1990 Edition

As described in SAR Section 5.4.1.1, the requirements of this standard are used as guidance only for procedures used to handle flammable liquids. PGDP will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard and year, see SAR Sections 5.4.1 and 5.4.1.1.

3.7 NFPA 72, National Fire Alarm Code, 1996 Edition

The 90-second response time criteria for the C-300 fire alarm is consistent with the requirements of this standard. See the basis statements for TSR Sections 2.3.4.8 and 2.4.4.5.

3.8 NFPA 101, Life Safety Code, 1991 Edition

PGDP uses the requirements of this standard as guidance only for the review of emergency egress paths.

For references to this standard, see SAR Section 5.4.1.2.

3.9 NFPA 232 (and 232 AM), Standard for the Protection of Records, 1986 Edition

As described in SAR Section 6.10.1.8, there are several acceptable methods for the storage of permanent records. If the NFPA 232 (or 232 AM) method of storage in 2-hour-rated containers is used, any exceptions to this standard will be documented and justified by the AHJ.

**4.0 NRC Regulatory Guidance**

4.1 Regulatory Guide 1.59, Design Basis Floods for Nuclear Power Plants

The extent to which PGDP satisfies the requirements of this regulatory guide will be determined as part of the SAR Upgrade activity.

For references to this regulatory guide, see SAR Sections 2.4.3 and 2.4.3.2.

4.2 Regulatory Guide 8.13, Instructions Concerning Prenatal Radiation Exposure, Revision 2

PGDP satisfies the requirements of this regulatory guide.

For references to this regulatory guide, see SAR Section 5.3.2.2.

4.3 Bulletin 91-01, Reporting Loss of Criticality Safety Controls

PGDP satisfies the requirements of this NRC Bulletin as identified in SAR Table 6.9-1.

5.0 Other Codes, Standards, and Guidance Documents

5.1 USEC-651, Uranium Hexafluoride: A Manual of Good Handling Practices, Revision 7, January 1995

USEC-651 supersedes ORO-651, Revision 6. PGDP satisfies the following sections of USEC-651 as clarified below:

Section 3.3 - all

Section 5.2 - all except for paragraph 5.2.2. Not all PGDP cylinders have internal volumes measured by the manufacturer.

Section 5.3 - all

Section 5.4 - all except for paragraph 5.4.4. Some cylinder valves in use at PGDP have less than 13 threads.

Section 10.0 - all except as follows:

First paragraph - Not all PGDP shipping cylinders meet the requirements of the most recent version of ANSI N14.1 (1990 Edition). These cylinders were manufactured prior to the date of ANSI N14.1-90. (See item 1.1, ANSI N14.1)

Fourth paragraph - Older PGDP cylinders may not have a measured volume that has been certified by the manufacturer. (See item 1.1, ANSI N14.1)

Section 13.1 - all

For references to this standard, see SAR Section 3.2.1; Table 3.2-1; Sections 3.2.6, 3.7.1; Figure 3.7-1; Sections 3.15.1.3, 3.15.1.4, 4.3.1.5; and TSX Sections 2.1, 2.2, 2.3, and 2.4.

5.2 NCRP 112, Calibration of Survey Instruments Used in Radiation Protection for the Assessment of Ionizing Radiation Fields and Radioactive Surface Contamination, 1991

NCRP 112 is an example of a nationally recognized guidance document that may be used to establish calibration requirements for radiological protection instruments. See SAR Section 5.3.5.

- 5.3 Federal Guidance Report No. 11, Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion, undated

The methodology outlined in this report is one method used to calculate internal dose. See SAR Section 5.3.2.3.

- 5.4 SNT-TC-1A, Qualification and Requalification of Nondestructive Examination Personnel, 1980 Edition

PGDP satisfies the requirements of this standard with clarifications identified in Section 2.2.4 of the Quality Assurance Program Description.

- 5.5 EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

PGDP satisfies the requirements of only Section 2.5 of this document.

For references to this standard, see Sections 3 and 5.5.1.2 of the Emergency Plan.

- 5.6 ICRP-30, Limits for Intakes of Radionuclides by Workers, 1978

PGDP uses the biokinetic model of this standard for internal dose calculations.

For references to this standard, see SAR Section 4.7.1.3.2 and 5.3.2.3.

- 5.7 ASTM C787, Specification for Uranium Hexafluoride for Enrichment, 1990 Edition

PGDP satisfies the requirements of this standard as described in SAR Tables 1-3 (footnote c) and 1-4 (footnote b) with the following clarification:

Production from the cascade is considered "material-in-process" and, on occasion, may be referred to the cascade; as such, it is not covered by the feed restrictions described in this standard.

- 5.8 ASTM C996, Standard Specification for Uranium Enriched to less than 5% <sup>235</sup>U, 1990 Edition

PGDP satisfies the requirements of this standard as described in SAR Tables 1-3 SAR Tables 1-3 (footnote c) and 1-4 (footnote b) with the following clarification:

Production from the cascade is considered "material-in-process" and, on occasion, may be referred to the cascade; as such, it is not covered by the feed restrictions described in this standard.

Blank Page

Enclosure 2 to  
GDP 97-0009

**Portsmouth Gaseous Diffusion Plant**

**SAR Chapter 1, Appendix A  
RAC 97X0007 (R0)  
Pages A-1 thru A-12**

## Appendix A

### Applicable Codes, Standards, and Regulatory Guidance

This Appendix lists the various industry codes, standards, and regulatory guidance documents which have been referenced in certification correspondence. The extent to which PORTS satisfies each code, standard, and guidance document is identified below, subject to the completion of applicable actions required by the Compliance Plan.

#### 1.0 American National Standards Institute (ANSI)

##### 1.1 ANSI N14.1, Uranium Hexafluoride - Packaging for Transport, 1990 Edition

PORTS satisfies the requirements of this standard, except for those portions superseded by Federal Regulations, with the following clarifications:

New cylinders and associated valves - Entire standard

Cylinders and valves already owned and operated by PORTS that were not purchased to meet this edition of the standard - Satisfy only Sections 4, 5, 6.2.2 - 6.3.5, 7, and 8 of the standard. Cylinders purchased prior to 1990 were manufactured to meet the version of the ANSI standard or specification in effect at the time of the placement of the purchase order.

Section 5.2.1 - For U.S. Department of Transportation 7A Type A packaging, satisfy U.S. Department of Energy (DOE) evaluation document DOE/RL-96-57, Revision 0, Volume 1, which supersedes DOE/00053-H1.

For references to this standard, see SAR Table 3.2-1, Section 3.8.1.9.1, 4.2.3.2 - Case R-30 and Section 2.2.2 of the Packaging and Transportation Quality Assurance Program (UEO-1041).

##### 1.2 ANSI/ANS 3.1, Selection, Qualification, and Training of Personnel for Nuclear Power Plants, 1987 Edition

PORTS satisfies only the following section of this standard:

Section 4.3.3 - The qualifications of the Radiation Protection Manager identified in SAR Section 6.1 satisfy the requirements of this section of the standard.

- 1.3 ANSI/ANS 3.2, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants, 1994 Edition

The extent to which PORTS satisfies the requirements of this standard is outlined in SAR Section 6.11.1 and Appendix B to SAR Section 6.11.

- 1.4 ANSI/ANS 6.4, Guidelines for Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants, 1977 Edition

PORTS satisfies the requirements of this standard for the Radiation Calibration (RADCAL) facility.

For references to this standard, see SAR Section 3.5.1.6.3.2.

- 1.5 ANSI/ANS 8.1, Nuclear Criticality Safety in Operations With Fissionable Materials Outside Reactors, 1983 Edition

PORTS satisfies the requirements of this standard.

For references to this standard, see SAR Sections 5.2.2.1, 5.2.2.3, 5.2.3.1 - Mass, 5.2.3.1 - Concentration, 5.2.3.2, 5.2.4.2, and Table 6.9-1.

- 1.6 ANSI/ANS 8.3, Criticality Accident Alarm System, 1986 Edition<sup>1</sup>

PORTS satisfies the requirements of this standard with the following exceptions:

Section 4.4.2 - An alarm signal with a complex sound wave or modulation is not provided.

Section 4.4.4 - A limit on the sound level emitted from the signal generator is not provided.

Section 4.5.3 - Emergency power supplies for AQ and NS alarm systems are not provided. A battery backup serves as the backup power supply for the cluster and local nitrogen horn.

Section 5.3 - The CAAS is not designed to withstand seismic stresses.

Section 5.7.2 - This section recommends that the alarm trip point be more than 10 mrad/hr above normal background. PORTS uses a lower value because normal neutron background is small.

---

<sup>1</sup> In describing criticality accident conditions, SAR Chapter 4 makes comparisons to ANSI/ANS 8.3, 1979 Edition. Commitments to the 1986 Edition bound these comparisons.

Section 6.3 - The testing frequency for the clusters is specified in the Technical Safety Requirements.

Section 6.4 - The testing frequency for the audible alarms is specified in the Technical Safety Requirements.

Section 7.1 - Posting in accordance with this section is not provided. Instructions to site personnel regarding response to alarm signals are provided in General Employee Training.

Section 7.2.3 - The testing frequency for the audible alarms is specified in the Technical Safety Requirements. Additionally, evacuation and familiarization drills are conducted in accordance with the Emergency Plan.

For references to this standard, see SAR Sections 3.6.2.2.1.1; 4.1.1.2.3.4; 4.1.1.2.3.8; 4.6.2.1.1 (1979 Edition); 4.6.2.1.2 (1979 Edition); 4.6.2.5; Chapter 4, Appendix C, C.1.3.2.4.

- 1.7 ANSI/ANS 8.5, Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material, 1986 Edition

PORTS satisfies the following sections of this standard:

Sections 4.1, 4.3, and 4.4 - Satisfy the requirements of these sections if raschig rings are replaced. See SAR Section 5.2.3.1 - Neutron Absorption.

Sections 4.1, 6.2.3, 6.3.2, and 6.4 - Satisfy the testing requirements in these sections if a release occurs exposing existing rings to a corrosive environment. See SAR Section 5.2.3.1 - Neutron Absorption.

Section 6.1 - Satisfy the surveillance requirements in this section as described in the Technical Safety Requirements, SAR Section 5.2, and Nuclear Criticality Safety Approvals (NCSAs). The inspection for raschig rings damage described in SAR Section 5.2 is accomplished by inspecting and replacing rings when the cumulative addition would become equal to 10% of the original loading.

- 1.8 ANSI/ANS 8.7 (N16.5), Guide for Nuclear Criticality Safety in the Storage of Fissile Material, 1975 Edition

PORTS satisfies the requirements of this standard with the following exceptions/clarifications:

Section 4.2.6 - Fire protection systems are installed throughout the process buildings where flammable liquids are used in operating equipment. Individual cell housings do not contain fire protection systems.

Section 5.1 - PORTS does not implement the unit mass limits described in this section. Mass limits are defined in Nuclear Criticality Safety Approvals (NCSAs) and Nuclear Criticality Safety Evaluations (NCSEs).

For references to this standard, see SAR Sections 5.2.2.1 and 5.2.4.2.

- 1.9 ANSI/ANS 8.19, Administrative Practices for Nuclear Criticality Safety, 1984 Edition

PORTS satisfies the requirements of this standard.

For references to this standard, see SAR Sections 5.2.2.1 and 5.2.4.2.

- 1.10 ANSI/ANS 8.20, American National Standard for Nuclear Criticality Safety Training, 1991 Edition

PORTS satisfies the requirements of this standard.

For references to this standard, see SAR Sections 6.6.1.1, 6.6.4.2, and 6.6.11.

- 1.11 ANSI N13.22, Bioassay Programs for Uranium, 1995 Draft

PORTS satisfies only Section 6.1.1 of this standard regarding the calculational method for action levels for the PORTS internal dosimetry program.

For references to this standard, see SAR Section 5.3.2.3.

- 1.12 ANSI B30.2, Overhead and Gantry Crane Design & Inspection, 1990 Edition (including Addenda A, 1991)

PORTS satisfies the requirements of the following sections of this standard for liquid  $UF_6$  handling cranes:

Section 2-2.1.1 - all

Section 2-2.1.2 - all

Section 2-2.1.3 - all except for paragraphs (6), (8), and (9)

Section 2-2.2.2 - only paragraphs (a), (b)(1), and (b)(4)

Section 2-2.3.1 - all

Section 2-2.4.1 - all

- 1.13 ANSI B30.9, Slings, 1990 Edition (including Addenda A, 1991)

PORTS satisfies the requirements of the following sections of this standard for lifting fixtures used to handle liquid  $UF_6$  cylinders:

Section 9-1.6 - all

Section 9-2.8.1 - all  
Section 9-2.8.2 - all

1.14 ANSI B30.10, Hooks, 1987 Edition (up through Addenda C, 1992)

PORTS satisfies the requirements of the following sections of this standard for lifting fixtures used to handle liquid  $UF_6$  cylinders:

Section 10-1.2.1.1 - all  
Section 10-1.2.1.2 - all  
Section 10-1.2.1.3 - all

1.15 ANSI B30.20, Below the Hook Rigging Devices, 1992 Edition

PORTS satisfies the requirements of the following sections of this standard for lifting fixtures used to handle liquid  $UF_6$  cylinders:

Section 20-1.3 - all  
Section 20-1.4.1 - only paragraphs (a) and (b)

1.16 ANSI NB-23, National Board Inspection Code, 1992 Edition

PORTS satisfies the requirements of this code as described below:

Autoclave shell and head are visually inspected to section U-110.1 of this standard in accordance with Technical Safety Requirement 2.1.4.5.

PORTS utilizes Chapter V of this code as guidance to develop the inspection program for ASME pressure vessels.

1.17 ANSI N323, Radiation Protection Instrumentation Test and Calibration, 1978 Edition

PORTS satisfies the requirements of this standard except as described in SAR Section 5.3.5.

For references to this standard, see SAR Sections 3.5.1.6.3.2 and 5.3.5.

1.18 ANSI N509, Nuclear Power Plant Air Cleaning Units and Components, 1989 Edition

New and existing fixed HEPA filter systems needed to ensure compliance with release limits or to control worker radiation exposure satisfy the requirements of this standard with the following exceptions and clarifications:

Section 5.2 - Do not satisfy. No credit is taken for adsorbers.

Section 5.5 - Do not satisfy requirements for air heaters.

Section 8.0 - Quality assurance requirements for applicable systems are identified in SAR Section 3.8 and the Quality Assurance Program Description

Appendix A - Do not sample adsorbents.

Appendix B - Do not use allowable leakage guidance.

Appendix C - Do not use manifold design guidelines.

Appendix D - The manifold qualification program uses this appendix as guidance only.

For references to this standard, see SAR Section 5.1.4.

1.19 ANSI N510, Testing of Nuclear Air Treatment Systems, 1989 Edition

New and existing fixed HEPA filter systems that satisfy the requirements of ANSI N509 and are needed to ensure compliance with release limits or to control worker radiation exposure satisfy the requirements of this standard with the following exceptions and clarifications:

Section 6.0 - Only satisfy this section for new seal-welded duct systems or for connections to a system where this section has been previously applied.

Section 7.0 - Do not use guidance for monitoring frame pressure leak tests.

Existing fixed HEPA filter systems that do not satisfy the requirements of ANSI N509 will be tested using the requirements of this standard or another industry accepted standard as guidance only.

For references to this standard, see SAR Sections 5.1.4 and 5.3.2.10.

1.20 ANSI N543, General Safety Standard for Installations Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10 MeV, 1974 Edition

PORTS satisfies Sections 3.2, 7, and 8.1.2 of this standard for the X-710 Radiographic Facility, as they apply to Enclosed Installations.

For references to this standard, see SAR Section 3.5.2.1.5.3.

2.0 American Society of Mechanical Engineers (ASME)

2.1 ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities, 1989 Edition

PORTS satisfies the requirements of this standard, including Basic and Supplementary Requirements, with exceptions and clarifications identified in the Quality Assurance Program

Description. See also SAR Sections 6.6.12, 6.8.1 and 6.8.2 and Section 7.5 of the Emergency Plan.

2.2 ASME Boiler and Pressure Vessel Code, 1995 Edition

PORTS satisfies the following sections of this code as clarified below:

Section VIII - The following pressure vessel components and systems satisfy the requirements of Section VIII of this code for the edition in effect at the time of fabrication: freezer/sublimator; condenser/reboiler; autoclave; cell coolant condenser; nitrogen system (relief devices only); cell coolant pressure relief;  $\text{ClF}_3$  and  $\text{F}_2$  tanks used in X-330/X-333 and X-342, respectively; and  $\text{UF}_6$  cylinders except that  $\text{UF}_6$  cylinders do not have pressure relief devices.

Section IX - PORTS satisfies the requirements of Section IX for the components identified above for Section VIII.

For references to this standard, see SAR Sections 3.1.3.2.1.1, 3.1.3.2.2.1, 3.2.1.1.1, 3.2.1.3.1.2, 3.2.4.2.4, 3.4.3.4, and 3.9.6, and the basis statements for TSR Sections 2.1, 2.2, 2.5, and 2.7.

3.0 National Fire Protection Association (NFPA)

3.1 NFPA 10, Portable Fire Extinguishers, 1989 Edition

As described in SAR Section 5.4.3, the requirements of this standard were used as guidance only in determining the size, selection, and distribution of portable fire extinguishers. PORTS will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the Authority Having Jurisdiction (AHJ).

For references to this standard, see SAR Sections 5.4.1 and 5.4.3.

3.2 NFPA 13, Sprinkler Systems, 1989 Edition

The requirements of this standard were used as guidance only for the design and installation of wet and dry pipe automatic sprinkler systems. In addition, the process buildings meet the definition of Ordinary Hazard Occupancies (Group 2) as stated in this standard and the fire protection system exceeds the sprinkler discharge of 0.15 gpm/sq.ft for this type of occupancy. PORTS will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Sections 3.3.1.8.5, 3.5.1.6.3.3, 3.6.1.2.1, 3.6.1.2.1.2, 4.6.1.6, and 5.4.1, 5.4.1.1.

3.3 NFPA 15, Water Spray Systems, 1990 Edition

PORTS will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Section 5.4.1.

3.4 NFPA 24, Private Fire Service Mains, 1992 Edition

As described in SAR Section 3.6.1.1.2.4, all underground piping for the high-pressure fire water system was installed and is maintained using the requirements of this standard for guidance only. PORTS will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Sections 3.6.1.1.2.4 and 5.4.1.

3.5 NFPA 30, Flammable Liquids, 1990 Edition

As identified in SAR Table 3.5.3-3, aboveground storage tanks were installed using the requirements of this standard for guidance only. In addition, as described in SAR Section 5.4.1.1, the requirements of this standard are used as guidance only for the handling of flammable liquids. PORTS will satisfy the requirements of this standard for modifications to the plant except as documented and justified by the AHJ.

For references to this standard, see SAR Table 3.5.3-3 and Sections 5.4.1 and 5.4.1.1.

3.6 NFPA 101, Life Safety Code, 1991 Edition

PORTS uses the requirements of this standard as guidance only for the review of emergency egress paths.

For references to this standard, see SAR Section 5.4.1.2.

3.7 NFPA 214, Standard for Water Cooling Tower, 1992 Edition

As described in SAR Section 3.6.1.2.4, the deluge systems for the cooling towers were installed and are maintained using this standard as guidance only. PORTS will satisfy the requirements of this standard for modifications to these systems except as documented and justified by the AHJ.

3.8 NFPA 232 (and 232 AM), Standard for the Protection of Records, 1986 Edition

As described in SAR Section 6.10.1.8, there are several acceptable methods for the storage of permanent records. If the NFPA 232 (or 232 AM) method of storage in 2-hour-rated

containers is used, any exceptions to this standard will be documented and justified by the AHJ.

#### **4.0 NRC Regulatory Guidance**

##### **4.1 Regulatory Guide 1.59, Design Basis Floods for Nuclear Power Plants, Revision 2, 1977**

The extent to which PORTS satisfies the requirements of this regulatory guide will be determined as part of the SAR Upgrade activity.

For references to this regulatory guide, see SAR Sections 2.4.3 and 2.4.3.2.

##### **4.2 Regulatory Guide 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I, October 1988**

PORTS uses the food chain models in this standard to evaluate public radiation dose due to waterborne radioactive effluent via potable water and aquatic food pathways, as described in SAR Section 5.1.3.2.

For references to this standard, see SAR Section 5.1.3.2.

##### **4.3 Regulatory Guide 3.34, Assumptions Used for Evaluating the Potential Radiological Consequences of Accidental Nuclear Criticality in a Uranium Fuel Fabrication Plant, Revision 1**

PORTS uses formulas from this document to calculate doses from criticality accidents, as described in SAR Section 4.1. Other methods may also be used to calculate these doses.

For references to this standard, see SAR Sections 4.1.1.2.1, 4.1.1.2.3, 4.1.1.2.3.6 (and footnote), Table 4.1.1-5 (note C), Table 4.3.1-3 (footnote).

##### **4.4 Regulatory Guide 8.13, Instructions Concerning Prenatal Radiation Exposure, Revision 2**

PORTS satisfies the requirements of this standard.

For references to this standard, see SAR Section 5.3.2.2.

##### **4.5 Bulletin 91-01, Reporting Loss of Criticality Safety Controls**

PORTS satisfies the requirements of this NRC Bulletin as identified in SAR Table 6.9-1.

**5.0 Other Codes, Standards, and Guidance Documents**

- 5.1 USEC-651, Uranium Hexafluoride: A Manual of Good Handling Practices, Revision 7, January 1995

USEC-651 supersedes ORO-651, Revision 6. PORTS satisfies only the following sections of USEC-651 as clarified below:

Section 3.3 - all; cylinders with heels greater than Table 3 limits are shipped in accordance with the requirements of 49 CFR 173.

Section 5.2 - all except for paragraph 5.2.2. Not all PORTS cylinders have internal volumes measured by the manufacturer.

Section 5.3 - all

Section 5.4 - all

Section 7.1 - only the sixth paragraph

Section 10.0 - all except as follows:

First paragraph - Not all PORTS shipping cylinders meet the requirements of the most recent version of ANSI N14.1 (1990 Edition). These cylinders were manufactured prior to the date of ANSI N14.1-90. (See item 1.1, ANSI N14.1)

Fourth paragraph - Older PORTS cylinders may not have a measured volume that has been certified by the manufacturer. (See item 1.1, ANSI N14.1).

Section 13.0 - all

For references to this document, see SAR Sections 3.2.2.6 - Cylinder Change; 3.8.1.9.1; Section 4.2.3.2 - Case R-30; the basis statements for T5Rs 2.1.3.8, 2.1.3.15, 2.5.3.11; and the Transportation Security Plan, Section 6.4.

- 5.2 NCRP 112, Calibration of Survey Instruments Used in Radiation Protection for the Assessment of Ionizing Radiation Fields and Radioactive Surface Contamination

NCRP 112 is an example of a nationally recognized guidance document that may be used to establish calibration requirements for radiological protection instruments. See SAR Section 5.3.5.

- 5.3 Federal Guidance Report No. 11, Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion, undated

PORTS uses the data contained in Tables 2-1 and 2-2 of this document to calculate dose conversion factors for radionuclides of concern. This data is also used to calculate the Derived Air Concentrations (DACs) listed in SAR Table 5.3-5.

For references to this standard, see SAR Section 5.3.2.3.

- 5.4 SNT-TC-1A, Qualification and Requalification of Nondestructive Examination Personnel, 1980 Edition

PORTS satisfies the requirements of this standard with clarifications identified in Section 2.2.4 of the Quality Assurance Program Description.

- 5.5 EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

PORTS satisfies the requirements of only Section 2.5 of this document.

For references to this standard, see Section 5.5.1.2 of the Emergency Plan.

- 5.6 ICRP-26, Internal Dose, 1977

The concepts described in this standard were used as guidance only in developing the PORTS radiation protection program described in SAR Section 5.3. PORTS is required to meet the requirements of 10 CFR 20.

For references to this standard, see SAR Section 5.3.2.3.

- 5.7 ICRP-30, Limits for Intakes of Radionuclides by Workers, 1978

The concepts described in this standard were used as guidance only in developing the PORTS radiation protection program described in SAR Section 5.3. PORTS is required to meet the requirements of 10 CFR 20.

For references to this standard, see SAR Chapter 4, Appendix A, Section A.2.3; Section 5.3.2.3, and Table 5.3-10.

- 5.8 ANSI/ISA-S67.04, Setpoints for Nuclear Safety Related Instrumentation, 1988 Edition

PORTS satisfies the requirements of this standard for setpoint calculations for Q systems.

For references to this standard, see the basis statements in TSR Sections 2.1, 2.3, and 2.6.

5.9 ASTM C787, Specification for Uranium Hexafluoride for Enrichment, 1990 Edition

PORTS satisfies the requirements of this standard as described in SAR Tables 1-3 (footnotes c and f) and 1-4 (footnote a) with the following clarification:

Production from the cascade is considered "material-in-process" and, on occasion, may be refeed to the cascade; as such, it is not covered by the feed restrictions described in this standard.

5.10 ASTM C996, Standard Specification for Uranium Enriched to less than 5%  $^{235}\text{U}$ , 1990 Edition

PORTS satisfies the requirements of this standard as described in SAR Tables 1-3 (footnotes c and f) and 1-4 (footnote a) with the following clarification:

Production from the cascade is considered "material-in-process" and, on occasion, may be refeed to the cascade; as such, it is not covered by the feed restrictions described in this standard.

**Description of Changes to the Paducah and Portsmouth  
SAR Chapter 1, Appendix A**

**Paducah**

The following documents were deleted from PGDP SAR Chapter 1, Appendix A, in RAC97C0014(R0):

<u>Document</u>	<u>Justification</u>
ANSI A17.2b	Notes 1 and 2
ANSI A17.3	Notes 1 and 2
ANSI B31.3	Notes 1 and 2. References to this standard have been deleted from SAR Chapter 3.
ANSI N13.22	Notes 1 and 2. SAR Section 5.3.2.3 and Table 5.3-1 no longer contain references to this standard.
ASME Unfired Pressure Vessel Code	Included with ASME B&PV (Section VIII).
NFPA 45	Notes 1 and 2
NFPA 51B	Notes 1 and 2
NFPA 220	Notes 1 and 2
NFPA 600	Notes 1 and 2
Regulatory Guide 8.34	Note 2. The discussion in SAR Section 5.3.2.3 only generally describes the consistency between ICRP 30 and Regulatory Guide 8.34.
ORO-651	Note 2. ORO-651 has been superseded by USEC-651.

The following documents were added to PGDP SAR Chapter 1, Appendix A, in RAC97C0014(R0):

<u>Document</u>	<u>Justification</u>
ANSI 3.1	Referenced in the response to NRC Question 5.3Q5.
NFPA 25	Referenced in the basis statements for TSRs 2.3.4.8 and 2.4.4.5.
ASTM C787	Referenced in SAR Tables 1-3 and 1-4.
ASTM C996	Referenced in SAR Tables 1-3 and 1-4.

---

Note 1: This document is not referenced in the certification application.

Note 2: USEC does not commit to satisfying the requirements of this document.

**Description of Changes to the Paducah and Portsmouth  
SAR Chapter 1, Appendix A**

**Portsmouth**

The following documents were deleted from PORTS SAR Chapter 1, Appendix A, in RAC 97X0007 (R0):

<u>Document</u>	<u>Justification</u>
ANSI A17.1	Notes 1 and 2
ANSI A17.2b	Notes 1 and 2
ANSI A17.3	Notes 1 and 2
ASME Unfired Pressure Vessel Code	Included with ASME B&PV (Section VIII).
NFPA 45	Notes 1 and 2
NFPA 51B	Notes 1 and 2
NFPA 72	Notes 1 and 2
NFPA 220	Notes 1 and 2
NFPA 600	Notes 1 and 2
Regulatory Guide 8.34	Notes 1 and 2
ORO-651	Note 2. ORO-651 has been superseded by USEC-651.
IEEE Standard 485	Note 2. The reference to this standard in the basis statement for TSR 2.2.3.14 is only to support a conclusion that "cell tripping represents a small instantaneous ampere-hour load on the total battery banks".

The following documents were added to PORTS SAR Chapter 1, Appendix A, in RAC 97X0007(R0):

<u>Document</u>	<u>Justification</u>
ANSI 3.1	Referenced in the response to NRC Question 5.3Q5.
ANSI 6.4	Referenced in SAR Section 3.5.1.6.3.2.
ANSI N543	Referenced in SAR Section 3.5.2.1.5.3.
NFPA 214	Referenced in SAR Section 3.6.1.2.4.
ASTM C787	Referenced in SAR Tables 1-3 and 1-4.

---

Note 1: This document is not referenced in the certification application.

Note 2: USEC does not commit to satisfying the requirements of this document.