



August 26, 2005  
AET 05-0053

Mr. Jack Strosnider  
Director, Office of Nuclear Material Safety and Safeguards  
Attention: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**American Centrifuge Plant  
Docket Number 70-7004**

**Submittal of Additional Information Related to the Integrated Safety Analysis Summary for the American Centrifuge Plant (TAC Nos. L32306, L32307, and L320308) – Non-Proprietary and Export Controlled Information**

**INFORMATION TRANSMITTED HERewith IS PROTECTED FROM  
DISCLOSURE PURSUANT TO 10 CFR PART 810**

Dear Mr. Strosnider:

USEC Inc. (USEC) hereby submits to the U.S. Nuclear Regulatory Commission (NRC) additional information related to the Requests for Additional Information regarding the Integrated Safety Analysis (ISA) Summary for the American Centrifuge Plant.

Enclosure 1 provides USEC's responses to the additional questions noted on an NRC conference call regarding the topics of Electrical and Instrumentation and Controls (I&C). Enclosure 2 provides the revised responses, related to the topics of Electrical and I&C. Enclosure 3 provides responses to the additional questions noted on NRC conference calls regarding the topic of Fire Protection. Enclosure 4 provides a revised Codes and Standards Matrix. Changed pages for the License Application and ISA Summary will be submitted under separate cover that also incorporates USEC comprehensive review of the withheld information in accordance with Reference 1.

Enclosures 2 and 3 have been determined, in accordance with the guidance provided by the U.S. Department of Energy, to contain Export Controlled Information. This information must be protected from disclosure per the requirements of 10 CFR Part 810.

*MISSD*

Mr. Jack Strosnider  
August 26, 2005  
AET 05-0053, Page 2

If you have any questions regarding this matter, please contact Peter J. Miner at (301) 564-3470.

Sincerely,

A handwritten signature in black ink, appearing to read 'Steven A. Toelle', with a stylized flourish at the end.

Steven A. Toelle  
Director, Nuclear Regulatory Affairs

cc: F. Burrows, NRC HQ  
Y. Faraz, NRC HQ  
R. Shaffer, NRC HQ  
B. Smith, NRC HQ  
R. Wescott, NRC HQ

Enclosure: As Stated

Reference:

1. James W. Clifford (NRC) letter to Steven A. Toelle (USEC), Request for Resubmission of Documents Related to USEC Inc.'s (USEC's) License Application for the American Centrifuge Plant (ACP)," dated July 7, 2005.

**Enclosure 1 to AET 05-0053**

**Submittal of Additional Information Related to the Topics of Electrical  
and Instrumentation and Controls  
(Non-Proprietary Information)**

## **Enclosure 1 of AET 05-0053**

### **Electrical**

1. License Condition – Changes to codes/standards would undergo NRC prior review/approval.

### **USEC Response**

See the response to Instrumentation and Control item # 1 below.

2. IEEE 308, Section 8.1 – Revise response to state that applicable calculations/studies will be completed (Electrical Engineering calculations are required).

### **USEC Response**

In an effort to ensure that the American Centrifuge Plant (ACP) systems are designed adequately, USEC has committed to portions of Institute of Electrical and Electronics Engineers (IEEE) 308-2001. Portions of IEEE 308 are deemed not applicable to the ACP because the credible accident scenarios do not result in harsh environments and do not last for significant periods of time such that Class 1E requirements must be applied. USEC took exception to Section 8.1 of IEEE 308 because it requires specific minimal documentation for Class 1E power systems.

Previously, USEC had indicated in a response dated June 3, 2005 (AET 05-0041) that exception was being taken to the entire subsection. The intent of that exception was to indicate that the specific documentation and studies identified in IEEE 308 Section 8.1 would not be performed since they were unnecessary based on the accident scenario environments. However, it is our intention to conduct studies applicable to the ACP (i.e., electrical engineering calculations) and to document the results to demonstrate the adequacy of the ACP IROFS and the associated support systems.

Section 1.4.7, "Other Codes, Standards, and Guidance," of the ACP License Application (LA-3605-0001) has been revised to indicate our intended exception to Section 8.1 of IEEE 308-2001.

3. IEEE 323 – Clarify the response to cover non-Class 1E that affects the IROFS. How is IEEE 323 applied?

### **USEC Response**

USEC commits to IEEE 323 Clauses 1 (Scope), 3 (Definitions), 4 (Principles), and 7 (Documentation).

USEC takes exception to IEEE 323 Clause 2 (References), 5 (Methods), 6 (Program), and Annex A. Annex A provides only “informative” references (37), whereas, only certain portions of two IEEE standards (7-4.3.2 and 603) listed in Clause 2 (References) may be applicable to the ACP.

For the reference to this standard see Sections 2.6.4 and 2.6.7 of the ISA Summary.

Per Section 4.1, "For equipment located in a mild environment for meeting its functional requirements during normal environmental conditions and anticipated operational occurrences, the requirements shall be specified in the design/purchase specifications. A qualified life is not required for equipment located in a mild environment and which has no significant aging mechanisms." For the ACP, the equipment will be located in a mild environment in which no significant radiation exposure or aging mechanisms are identified or expected. The accident conditions anticipated at the ACP are mild in nature. The worst environmental conditions are due to fire scenarios which can produce high temperature, subsequent water spray exposure from the fire suppression system, and exposure to UF<sub>6</sub> due to a release.

Therefore, USEC will not classify any equipment as Class 1E in accordance with Sections 5 and 6, but will include the other applicable requirements identified in the IEEE standards, i.e., design control (additional design package rigor, equipment specifications, critical design characteristics, quality control inspection criteria, vendor testing requirements, special equipment storage and handling requirements), quality control, post-maintenance testing, preventive maintenance/testing, surveillances, and documentation control/retention.

The primary equipment that is required to fulfill the Items Relied On For Safety (IROFS) function, including necessary support system components back to the point of redundancy, is considered to be part of the IROFS boundary. All IROFS boundary components will be designed, installed, and maintained to the applicable IEEE requirements identified and committed to above and in accordance with the Quality Assurance Program Description (QAPD). In addition to meeting the above requirements, the ACP electrical IROFS systems will utilize commercial-grade equipment approved or rated by nationally recognized industry standards and reputable organizations such as IEEE, Underwriters Laboratory Inc. (UL), Factory Mutual (FM), NFPA, and National Electrical Manufacturers Association (NEMA).

Non-IROFS systems and equipment in the ACP will be evaluated during the final design process to determine their effects on IROFS systems and equipment. For non-IROFS systems and equipment that are determined to have adverse effects on the ability for IROFS

systems and equipment to perform their intended safety functions, appropriate adjustments will be made to eliminate those effects. Section 2.6.4 of the ISA Summary reflects this commitment.

4. What is USEC's definition of Class 1E – which component(s) will be equivalent to Class 1E?

#### **USEC Response**

In an effort to ensure that the ACP systems are designed adequately, USEC has committed to several IEEE standards that were established primarily for commercial nuclear power plants where accident scenarios produce harsh environments and last for relatively long periods of time. The result is that safety systems must function in the associated harsh environments for long durations to ensure the health and safety of the workforce and public. As a result of these operating requirements, the IEEE standards established stringent environmental requirements for the equipment to ensure associated safety functions could be carried out. These equipment requirements have been labeled as "Class 1E."

During several teleconferences between the NRC and USEC, applicability of "Class 1E" to the ACP has been discussed and questioned. After additional internal discussion, USEC has concluded that the "Class 1E" designation does not apply to the ACP. ACP IROFS systems and equipment will be designed and installed to ensure their availability and reliability as required by the regulations in 10 CFR Part 70. The appropriate management measures will be applied to IROFS systems and equipment to ensure their continued availability and reliability for the duration of the ACP operating life.

USEC has revised Section 1.4, "Application Codes, Standards, and Regulatory Guidance," of the ACP License Application (LA-3605-0001) to indicate that the "Class 1E" designation does not apply and to identify specific exceptions indicated in the appropriate IEEE standards. Also, Enclosure 2 to the USEC letter dated June 3, 2005 (AET 05-0042) has been revised and is being resubmitted to the NRC in Enclosure 2 of this letter.

5. Are the diesel generators, used for back-up power for the ventilation system, included within the boundary?

#### **USEC Response**

The ventilation system associated with the manufacturing effort will have back-up power. However, it is not necessary to include back-up power in the IROFS boundary because the normal power supply is adequately reliable and other IROFS are in place to ensure the affects of any explosions are minimized and the release of licensed material cannot occur.

## **Instrumentation and Controls**

1. Status of License Condition that would require USEC to obtain prior NRC approval for any change to a commitment to a code or standard.

### **USEC Response**

Section 1.4 of the ACP License Application has been revised to indicate that USEC will seek approval from the NRC for any changes to commitments to codes and standards identified in that section. Section 1.4 identifies the primary codes and standards applicable to the ACP and indicates any exceptions or clarifications taken regarding the applicability of those codes and standards. The change to Section 1.4 is provided in Revision 6 of the License Application.

2. Are the indications associated with the Material Control and Accountability scale within the IROFS boundary?

### **USEC Response**

The IROFS addressing the cylinder filling process identifies the Nuclear Material Control and Accountability (NMC&A) scales as the equipment that is relied upon to fulfill the requirement to demonstrate that cylinders are not overfilled prior to application of heat, transfer, or transport. The NMC&A scales ensure that proper void space or ullage is present. The indication associated with an NMC&A scale is within the IROFS boundary.

3. Related to the requirements of 10 CFR 70.62(a)(3), what is USEC's position on committing to periodically ensuring that the availability and reliability of IROFS are consistent with what is used in the ISA.

### **USEC Response**

USEC will revise Chapters 3 and 11 of the ACP License Application to identify a commitment to periodically review items relied on for safety (IROFS) per the requirements of 10 CFR 70.62(a)(3) to ensure their availability and reliability has not changed. The next revision to the License Application will address this commitment.

4. Concerning the baseline design criteria, USEC had indicated that it would follow the guidance contained in ISG-04-Rev 0.

### **USEC Response**

The appropriate documents have been revised to include the guidance contained in ISG-04. Specifically, the ACP License Application, ACP ISA Summary, and ISG-04 were reviewed to

determine if the License Application and ISA Summary adequately addressed the guidance provided in ISG-04. Revision 4 of the ACP ISA Summary ensures the baseline design criteria guidance of ISG-04 are adequately reflected. Changes were made to ISA Summary Sections 2.6.1, 2.6.4, 2.6.5, 2.6.7, 2.6.8, and 2.6.9. Other sections of the ISA Summary that address the ISG-04 guidance are Sections 2.5.1 and 6.1.1.7 (Natural Phenomena), and License Application Chapters 5.0 and 7.0, addressing Nuclear Criticality Safety and Fire Safety, respectively.

5. Concerning reliance of IROFS on software, such as the autoclave opening interlock, has USEC considered committing to IEEE standards in lieu of NQA-1 as the IEEE standard may be more rigorous.

#### **USEC Response**

The codes and standards provided by the NRC were reviewed with the conclusion that one IEEE standard for software would be committed to in addition to the QAPD and NQA-1. That standard is IEEE 7-4.3.2-1993, *Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations*. This commitment has been incorporated into Section 1.4.7 of the License Application for the ACP (Revision 6).



**Enclosure 4 to AET 05-0053**

**Submittal of Revised Standards and Guidelines Used in Response to the  
Topics of Electrical and Instrumentation and Controls**

**(Non-Proprietary Information)**

## Enclosure 4 of AET 05-0053

### Standards and Guidelines

This enclosure was previously submitted by USEC letter AET 05-0041 (Enclosure 2) dated June 3, 2005. It has been revised to indicate that the "Class 1E" designation does not apply and to identify specific exceptions indicated in the appropriate IEEE standards.

#### Response Table related to Instrumentation and Control: Request for Additional Information (RAI) Number/Standard Referenced <sup>1</sup>

RAI No.	APPLICABLE STANDARDS
IC-1	Institute of Electrical and Electronics Engineers (IEEE) 7-4.3.2, 308, 323, 338, 379, 384, 446, 603, 1050
IC-2	IEEE 7-4.3.2, 308, 323, 338, 379, 384, 446, 603, 1050
IC-3	ISA 67.04.01
IC-4	IEEE 7-4.3.2
IC-5	IEEE 308, 338
IC-7	IEEE 384, 603
IC-8	IEEE 384, 603
IC-10	IEEE 384, 603
IC-14	IEEE 7-4.3.2
IC-15	IEEE 603

#### Response Table related to Electrical: RAI Number/Standard Referenced <sup>1</sup>

RAI No.	APPLICABLE STANDARDS
ES-1	IEEE 7-4.3.2, 308, 323, 336, 338, 379, 384, 446, 603, 1050
ES-2	IEEE 7-4.3.2, 308, 446, 603, 1050
ES-3	IEEE 308, 446, 1050
ES-4	IEEE 7-4.3.2, 308, 323, 336, 338, 379, 384, 603, 1050

<sup>1</sup> See Section 1.4 of the License Application for USEC commitments to standards

Several of the IEEE standards identified include the term "Class 1E." USEC Inc. (USEC) is taking exception to utilizing the term "Class 1E." The term utilized by USEC for items relied on for safety (IROFS), per 10 *Code of Federal Regulations* (CFR) Part 70, is "IROFS." IROFS quality levels (i.e., QL-1 or QL-2) are established and defined in Section 2.0 of NR-3605-0001, Quality Assurance Program Description (QAPD) for the American Centrifuge Plant (ACP). The IROFS, including their quality class, are based on the analyzed, credible conditions identified in the Integrated Safety Analysis (ISA). IROFS (and non-IROFS that may directly affect the safety function of an IROFS) will be designed, procured, maintained, and documented in accordance with the requirements of the Configuration Management Program included in Chapter 11.0 of LA-3605-0001, License Application for the ACP.

**IEEE 7-4.3.2-1993 Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations**

IEEE 7-4.3.2 Clauses 1 (Scope), 3 (Definitions), and 7 (Execute Features); and portions of Clauses 5 (Safety System Criteria), 6 (Sense and Command Features), and 8 (Power Source Requirements) have useful content that may be applicable to the ACP. Note that IEEE-7.4.3.2 supplements IEEE 603.

The exceptions that USEC takes to the contents of IEEE 7-4.3.2 Clauses 5, 6, and 8 are:

Sections 5.3 and 5.3.1	USEC commits to ASME NQA-1-1994 Part II, Subpart 2.7, Basic Requirement 11 as defined in Section 1.4.3 of the license application.
Section 5.3.2	USEC does not intend to qualify existing commercial computers.
Section 5.15	Reliability analysis methods and calculations are as specified in the ISA for the ACP.

IEEE 7-4.3.2 Clauses 2 (References) and 4 (Safety System Design Basis) are not considered to be applicable or necessary due to their nuclear reactor content and redundancy with other IEEE standards and USEC's ISA.

Note that Annexes A through H provide only "informative" details and references.

**IEEE 308-2001 Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations**

USEC will commit to utilizing IEEE 308 Section 3 (Definitions) and portions of Sections 1 (Overview), 4 (Principle Design Criteria), 5 (Supplemental Design Criteria), 6 (Surveillance and Test Requirements), and 8 (Documentation).

USEC takes exception to IEEE 308 Sections 2 (References), and portions of Sections 1 (Overview), 4 (Principle Design Criteria), 5 (Supplemental Design Criteria), 6 (Surveillance and Test Requirements), and 8 (Documentation) for the following reasons:

- |                         |   |
|-------------------------|---|
| Section 1               | Figure 1 is not applicable to the ACP. USEC will provide reliable electrical power to all IROFS that require electrical power to function during postulated events analyzed in the ISA. Back-up power is required only as needed to provide the reliability of the IROFS as credited in the ISA. Note that IROFS that fail-safe on loss of power do not require back-up power systems.  |
| Section 2               | The ACP does not commit to all of the standards listed in this section.   |
| Section 4.2             | Figure 3 is not applicable to the ACP. USEC will provide reliable electrical power to all IROFS that require electrical power to function during postulated events analyzed in the ISA. Back-up power is required only as needed to provide the reliability of the IROFS as credited in the ISA. Note that IROFS that fail-safe on loss of power do not require back-up power systems.  |
| Section 4.7             | Documents will be identified and controlled in accordance with Sections 6.0 and 17.0 of the QAPD and plant procedures.  |
| Sections 4.10 and 5.2.1 | These Sections are not applicable to the ACP as written and are modified as follows: A back-up power supply may be utilized to provide reliable power to an IROFS that requires electrical power to function during postulated events analyzed in the ISA. The power circuits from the back-up power supply to the IROFS will be independent and redundant if necessary to provide the reliability of the IROFS as credited in the ISA. The control circuits from the control room to the IROFS will also be independent and redundant if necessary to provide the reliability of the IROFS as credited in the ISA. |
| Section 4.11            | A non-IROFS load that needs reliable standby power may be connected to an IROFS power system in accordance with portions of Figure 3 and IEEE 384.  |

Sections 5.2.4  
and 5.3.1

These Sections are not applicable to the ACP. The ACP will follow applicable portions of IEEE 446 for guidance related to standby power supplies and DC power systems.

Section 5.3.3.6

Battery systems for IROFS that are not fail-safe will be tested in accordance with approved ACP maintenance procedures.

Section 6.1

The "illustrative" continuous monitoring surveillance methods listed in Table 3 are optional (i.e., surveillance monitoring by a computer is not mandatory).

Section 7

This section does not apply to a uranium enrichment facility.

Section 8.1

The ACP does not commit to performing the studies listed as Items a through g; applicable studies will be conducted and documented.

The ACP electrical IROFS systems will utilize commercial-grade equipment approved or rated by nationally-recognized industry standards and reputable organizations such as IEEE, Underwriters Laboratory Inc. (UL), Factory Mutual (FM), NFPA, and National Electrical Manufacturers Association (NEMA). Procurement and installation will be in accordance with the QAPD.

For the reference to this standard see Sections 2.6.4 and 2.6.7 of the ISA Summary.

**IEEE 323-2003 Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations**

USEC will commit to IEEE 323 Clauses 1 (Scope), 3 (Definitions), 4 (Principles), and 7 (Documentation).

USEC takes exception to IEEE 323 Clause 2 (References), 5 (Methods), 6 (Program), and Annex A. Annex A provides only "informative" references (37), whereas, only certain portions of two IEEE standards (7-4.3.2 and 603) listed in Clause 2 (References) may be applicable to the ACP.

For the reference to this standard see Sections 2.6.4 and 2.6.7 of the ISA Summary.

Per Section 4.1, "For equipment located in a mild environment for meeting its functional requirements during normal environmental conditions and anticipated operational occurrences, the requirements shall be specified in the design/purchase specifications. A qualified life is not required for equipment located in a mild environment and which has no significant aging mechanisms." For purposes of the ACP, the equipment will be located in a mild environment in which no significant radiation exposure or aging mechanisms are identified or expected. The accident conditions anticipated at the ACP are mild in nature. The worst conditions are due to

fire scenarios which can produce high temperature, subsequent water spray exposure from the fire suppression system, and exposure to UF<sub>6</sub> due to a release.

Therefore, USEC will not classify any equipment as Class 1E in accordance with Sections 5 and 6, but will include the other applicable requirements identified in the IEEE standards, i.e., design control (additional design package rigor, equipment specifications, critical design characteristics, QC inspection criteria, vendor testing requirements, special equipment storage and handling requirements), quality control, post maintenance testing, preventive maintenance/testing, surveillances, and documentation control/retention.

The primary equipment that is required to fulfill the IROFS function, including necessary support system components back to the point of redundancy, is considered to be part of the IROFS boundary. All IROFS boundary components will be designed, installed, and maintained to the applicable IEEE requirements identified and committed to above and in accordance with the QAPD. In addition to meeting the above requirements, the ACP electrical IROFS systems will utilize commercial-grade equipment approved or rated by nationally recognized industry standards and reputable organizations such as IEEE, UL, FM, NFPA, and NEMA.

**IEEE 336-1985 Standard Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities**

This standard describes the basic requirements for installation, inspection and testing of power, instrumentation and control equipment in nuclear facilities. Additionally, applicable portions of Clauses 7, 8, 9, and 10 may be used in conjunction with Section 11.0 of the QAPD and applicable Maintenance Procedures for post-construction activities to assure that installed systems are functional.

The exception that USEC takes to the contents of IEEE 336 is:

Clause 2      The ACP does not commit to all of the standards listed in this clause.

**IEEE 338-1987 Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems**

This standard supplements IEEE 603 by providing guidance for the development of procedures and documentation for testing safety systems in nuclear power stations.

IEEE 338 Sections 1 (Scope), 2 (Definitions), 4 (Basis), and 5 (Design Requirements); and portions of Sections 3 (References) and 6 (Testing Program Requirements) have useful content that may be applicable to the ACP.

The exceptions that USEC takes to the contents of IEEE 338 Sections 3 and 6 are:

- |                  |  |
|------------------|--|
| Section 3        | The ACP operations procedures will govern plant operations in lieu of ANSI/ANS 3.2-1982.                           |
| Section 3        | In Section 3 (References) USEC commits to only the applicable portions of the IEEE Standards 7-4.3.2 and IEEE 603. |
| Section 6.1 (11) | The ACP operations procedures will govern plant operations in lieu of ANSI/ANS 3.2-1982.                           |

Note that Annex A provides only “informative” references.

**IEEE 379-2000 *Standard Application of the Single-Failure Criterion to Nuclear Power Generating Station Safety Systems***

USEC will commit to utilizing IEEE 379 Sections 1 (Overview), 3 (Definitions), 5 (Requirements), 6 (Design Analysis), and portions of Section 4 (Single-Failure Criterion). Applicable portions of IEEE 379 will be used as a guideline for the design of IROFS systems since this standard supplements IEEE 603 by providing guidance in the application of the single-failure criterion for safety systems in nuclear power stations.

USEC takes exception to the contents of IEEE 379 Sections 2 and 4 and Annex A. The exceptions that USEC takes to the contents of IEEE 379 are:

- |           |   |
|-----------|---|
| Section 2 | The ACP does not commit to all of the standards listed in this section.   |
| Section 4 | These sections are not applicable to the ACP as written and are modified as follows: a back-up power system may be utilized to provide reliable power to an IROFS that requires electrical power to function during postulated events analyzed in the ISA. The power circuits from the back-up power system to the IROFS will be independent and redundant if necessary to provide the reliability of the IROFS as credited in the ISA. The control circuits from the control room to the IROFS will also be independent and redundant if necessary to provide the reliability of the IROFS as credited in the ISA. |

Annex A provides only “informative” references.

For the reference to this standard see Sections 2.6.4 and 2.6.7 of the ISA Summary.

### **IEEE 384-1992 Standard Criteria for Independence of Class 1E Equipment and Circuits**

USEC will commit to utilizing IEEE 384 Clauses 1 (Scope), 2 (Purpose), 4 (Definitions), 5 (Independence Criteria), 6 (Separation Criteria), and 7 (Specific Isolation Criteria). Applicable portions of IEEE 384 will be used as a guideline for the design of IROFS systems since this standard supplements IEEE 603 by providing guidance criteria for implementation of the independence requirements for Class 1E systems.

USEC takes exception to the contents of IEEE 384 Clause 3 and Annex A. USEC does not commit to all the standards listed in Clause 3. Annex A provides only "informative" references.

The ACP electrical IROFS systems will utilize commercial-grade equipment approved or rated by nationally recognized industry standards and reputable organizations such as IEEE, UL, FM, NFPA, and NEMA. Procurement and installation will be in accordance with the QAPD.

For the reference to this standard see Sections 2.6.4 and 2.6.7 of the ISA Summary for the ACP.

### **IEEE 446-1995 Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications**

IEEE 446 Chapters 1 (Scope) and 2 (Definitions) and portions of Chapters 6 (Protection), 7 (Grounding), 8 (Maintenance), and 10 (Reliability) have useful content that may be applicable to the ACP.

The exceptions that USEC takes to the contents of IEEE 446 Chapters 6, 7, 8, and 10 are:

Section 6.11      The ACP does not commit to all of the standards listed in this section.

Section 7.14      The ACP does not commit to all of the standards listed in this section.

Section 8.1.3      Maintenance personnel will likely receive training on-site, not at the manufacturer's location. It is anticipated that ACP supervisory personnel will receive factory training and then develop an on-site training program to be utilized for on-site training of ACP maintenance personnel; additional on-site training provided by the manufacturer may be an option if deemed appropriate.

Section 8.4.3.a) 1) Battery charging system inspections are anticipated to be monthly in accordance with Table 8-1, not weekly.

Section 8.4.3.a) 2) The diesel-generator (D-G) system testing will not consist of full-load, weekly testing. A plant procedure for periodic testing of the D-G set will be developed in accordance with existing plant D-G testing



practices based upon nearly 50 years operating experience and the D-G manufacturer's recommendations.

- Section 8.5.2      Daily inspections of uninterruptible power supply (UPS) systems will not be required; inspections are anticipated to be monthly in accordance with Section 8.5.2.b.
- Section 8.5.2.a)    The listed UPS "weekly inspection" items are anticipated to be monthly and included in the routine inspections listed in Section 8.5.2.b).
- Section 8.6.1      A battery system maintenance procedure will be developed in accordance with existing plant battery system practices based upon nearly 50 years operating experience and the battery system manufacturer's recommendations. It is anticipated that general battery system inspections will be performed monthly in accordance with Table 8-1.
- Section 8.9        The ACP does not commit to all of the standards listed in this section.
- Section 10.4 a)    The UPS final factory testing steps will be based upon the capacity through c)      (size) of the system, the precise type of batteries, the system configuration, and the intended function of the installed system.
- Section 10.9      The ACP does not commit to all of the standards listed in this section.

IEEE 446 Chapters 3, 4, 5, and 9 are not considered to be applicable or necessary due to their content and/or redundancy with other IEEE standards and NFPA 70 *National Electrical Code*.

**IEEE 518-1982 Guide for the Installation of Electrical Equipment to Minimize Electrical Noise Inputs to Controllers from External Sources**

Commitment to IEEE 518 is not required because applicable portions of IEEE 1050 and accepted industry design practices will be utilized to minimize electrical noise in the ACP.

**IEEE 603-1998 Standard Criteria for Safety Systems for Nuclear Power Generating Stations**

USEC commits to utilizing IEEE 603 Clauses 1 (Scope), 3 (Definitions), and 7 (Execute Features); and portions of Clauses 5 (Safety System Criteria), 6 (Sense and Command Features), and 8 (Power Source Requirements).

USEC takes exception to the contents of IEEE 603 Clauses 2 (References), 4 (Safety System Design Basis), and Annexes A, B, and C. These clauses are not considered to be applicable or

necessary due to their nuclear reactor content and redundancy with other IEEE standards and USEC's ISA and ISA Summary. Annexes A, B, and C provide only "informative" details and references. In addition, USEC takes exception to portions of contents in IEEE 603 Clauses 5, 6, and 8 for the following reasons:

Sections 5 and 5.1	Single-failure criterion will be applied only where needed to provide the reliability of the IROFS credited in the ISA.
Sections 5.3 and 5.3.1	USEC commits to ASME NQA-1-1994 Part II, Subpart 2.7, Basic Requirement 11 as defined in Section 1.4.3 of the license application.
Section 5.4	Qualification - Use and qualification of equipment is specified in USEC's IEEE 323 commitment above.
Sections 5.6.1 and 5.6.2	USEC's goal is to design any safety system that might not survive all design basis events such that it is electrically fail-safe (i.e., does not require electrical power to perform its intended safety function).
Section 5.15	Reliability analysis methods and calculations are as specified in the ACP ISA and ISA Summary. The ACP condition notification system will be monitored and evaluated.
Section 6.2	Manual control requirements may not be applicable to all IROFS; the need will be evaluated during the final design phase.
Section 8.1	Safety systems that are fail-safe upon loss of electrical power will not require redundant power sources.

For the reference to this standard see Sections 2.6.4 and 2.6.7 of the ISA Summary for the ACP.

**IEEE 1050-1996 Guide for Instrumentation and Control Equipment Grounding in Generating Stations**

IEEE 1050 Clauses 1 (Overview), 3 (Definitions), 4 (Design), 5 (System Grounding), 6 (Shield Grounding), and 7 (Testing) have useful content that may be applicable to the ACP.

The exception that USEC takes to the contents of IEEE 1050 is:

Clause 2      The ACP does not commit to all of the standards listed in this clause.

Note that Annexes A and B provide only "informative" references.

### **NRC Regulatory Guide-1.75, Criteria for Independence of Electrical Safety Systems**

USEC has reviewed this Regulatory Guide and concluded the following standard(s) will be used for the ACP. Applicable portions of IEEE 384 and IEEE 603 will be used as guidance for complying with safety system independence criteria.

### **NRC Regulatory Guide-1.105, Setpoints for Safety-Related Instrumentation**

USEC has reviewed this Regulatory Guide and concluded the following standard(s) will be used for the ACP instead. The methodology for establishing IROFS setpoints will be in accordance with ANSI/ISA 67.04.01-2000. Setpoints will be established during the final design process.

### **NRC Regulatory Guide-1.118, Periodic Testing of Electric Power and Protection Systems**

USEC has reviewed this Regulatory Guide and concluded the following standard(s) will be used for the ACP instead. Applicable portions of IEEE 336, 338, and 603 in conjunction with ACP maintenance procedures will be used as guidance for testing electric power and protection systems.

### **NRC Regulatory Guide-1.180, Guidelines for Evaluating Electro-Magnetic and Radio Frequency Interference in Safety-Related Instrumentation and Control Systems**

USEC has reviewed this Regulatory Guide and concluded the following standard(s) will be used for the ACP instead. Regulatory Guide-1.180 provides guidance on additional methods for complying with various NRC regulations on design, installation, and testing practices for addressing the effects of Electro-Magnetic Interference (EMI)/Radio Frequency Interference (RFI) and power surges on safety-related instrumentation and control systems. It endorses IEEE 1050 (with one exception), C62.41 and C62.45; MIL-STD-461E; and the IEC 61000 Series (17 documents) while referencing IEEE 473, 518, 603, and 665, ten NUREG and three other documents. The IEEE C62.41 standard has been superseded by the "trilogy" ANSI/IEEE C62.41.1, C62.41.2, and C62.45.

The design, application, and environment of the ACP IROFS do not merit these additional, rigorous, complex, intensive, and costly EMI/RFI evaluations.

Applicable design and installation practices described in IEEE 1050 in conjunction with standard industrial engineering practices (such as separation, shielding, grounding, filtering and/or use of fiber optic cables) will be utilized to minimize EMI/RFI in the ACP. Applicable portions of IEEE 338 and IEEE 603 will be utilized for testing safety systems.

This standard supplements IEEE 603 by providing guidance for the development of procedures and documentation for testing safety systems in nuclear power stations.