

### AMERICAN CENTRIFUGE OPERATING, LLC, GAS CENTRIFUGE FACILITY CONSTRUCTION AND PRE-OPERATIONAL READINESS REVIEW INSPECTION PROGRAM

#### 2694-01 PURPOSE

Under the provisions of 10 CFR 40.41(g) and 10 CFR 70.32(k) and its license, prior to the **American Centrifuge Operating, LLC's (ACO's)**, American Centrifuge Plant (ACP) being authorized to operate under its license, the U.S. Nuclear Regulatory Commission (NRC or Commission) must verify that the facility is constructed in accordance with the requirements of the license.

The purpose of this Inspection Manual Chapter (IMC) is to define the Construction Inspection Program (CIP) for the ACP. Specifically, the CIP will: (1) **provide reasonable assurance that the design, fabrication, construction/refurbishment and testing of safety significant design features such as structures, systems, components and equipment is completed in accordance with the license;** (2) provide reasonable assurance that the design, fabrication, construction/refurbishment, testing and implementation of items relied on for safety (IROFS) will protect against natural phenomena and the consequences of potential accidents; (3) verify **that** the quality assurance (QA) program is adequately implemented during construction; (4) verify that the construction/refurbishment of the IROFS is completed in accordance with the documents comprising the license application, the Integrated Safety Analysis (ISA), and the Integrated Safety Analysis Summary (ISAS); and (5) provide reasonable assurance that the licensee is adequately prepared to implement the policies, processes, programs and procedures described in the license application that are intended to protect health and minimize danger to life or property, protect the environment, physically secure the facility and transport of classified materials, and protect and secure classified and safeguards information.

The **ACP's** CIP applies to all construction activities including design, procurement, fabrication, construction, and pre-operational testing activities. The CIP also applies to the refurbishment of existing equipment and structures (i.e., fire suppression systems, component handling equipment, centrifuge mountings, etc.). Implementation of this IMC will begin at an applicable time as determined by the NRC and will continue through facility construction/refurbishment activities as noted above.

#### 2694-02 OBJECTIVES

The primary objective of this manual chapter is to establish a CIP for inspecting IROFS and associated activities that are conducted by the licensee and its consultants, contractors, and suppliers to support the decision to allow operation of the ACP. The following objectives are included in the CIP:

02.01 Provide reasonable assurance that regulatory requirements and licensee commitments for QA and management measures are adequately included in the design, fabrication, procurement, construction/refurbishment and pre-operational testing of the ACP.

02.02 Provide reasonable assurance that the ACP and associated IROFS are constructed/refurbished in accordance with the QA program, the license application, the ISA, and the ISAS.

02.03 Verify the effective implementation of a safety program that includes the following elements: 1) process safety information, 2) the ISA, and 3) management measures.

02.04 Verify the effective implementation of the QA program as specified in the ACP's Quality Assurance Program Description (QAPD). Verify that this includes timely implementation of organizational staffing, procedures, instructions, QA activities, and administrative controls necessary for USEC, Inc., its contractors and subcontractors to achieve quality objectives important to safety.

02.05 Identify conditions that may adversely affect public and worker safety so that appropriate corrective actions can be taken.

02.06 Conduct risk-informed and performance-based inspections across key functional areas (see Appendix B for a listing of these areas) to verify that the licensee is adequately prepared to implement the policies, processes, programs and procedures described in the license application that are intended to protect health and minimize danger to life or property, protect the environment, physically secure the facility and transport of classified materials, and protect and secure classified and safeguards information. NRC senior management will consider the results of these inspections when deciding whether to allow ACO to operate the ACP.

## 2694-03 DEFINITIONS

03.01 IROFS Boundary Packages. The IROFS boundary packages identify the specific functions to be performed by an IROFS and identify any items that may affect the function of the IROFS. The boundary packages include information on planned and preventive maintenance, functional testing and inspection, calibration, and support systems (including instrumentation, cooling, etc.). They also include information on applicable management measures and records requirements for the IROFS.

03.02 In-Office (or Field) Review. Assessments, audits, or reviews conducted to assess licensing related activities.

03.03 Inspection. Activities consisting of examinations, observations, or measurements to determine the conformance of materials, parts, structures, systems, components (SSCs), services, or processes to predetermined quality requirements. Activities include performing audits, inspections, surveillances, and observations.

03.04 Inspection Types. Inspections are classified as compliance-based or performance-based and are defined below.

- a. Compliance-based inspections emphasize inspection of compliance with prescriptive NRC requirements or regulatory commitments that specify IROFS, features, actions, or programmatic elements.
- b. Performance-based inspections emphasize inspection of actual activity and results. Performance-based inspections require measurable or calculable parameters and objective performance assessment criteria. Note that a performance-based approach does not change the need for compliance with NRC requirements. In addition, a performance-based approach is typically more applicable to an operating facility and may not be appropriate for certain construction/refurbishment or pre-operational inspections.

03.05 Items Relied on for Safety (IROFS). SSCs, equipment, and activities of personnel that are relied on to prevent potential accidents at a facility that could exceed the performance requirements in 10 CFR 70.61 or to mitigate their potential consequences. This does not limit the licensee from identifying additional SSCs, equipment, or activities of personnel (i.e., beyond those in the minimum set necessary for compliance with the performance requirements) as IROFS.

03.06 The License Application. The license application comprises a set of documents submitted by the licensee including the Environmental Report, the QAPD, and the Emergency Plan.

03.07 Management Measures. The functions performed by the licensee, generally on a continuing basis that are applied to IROFS to ensure the items are available and reliable to perform their intended functions when needed. Management measures include configuration management, maintenance, training and qualifications, procedures, audits and assessments, incident investigations, records management, and other QA elements.

03.08 ACP Start-up. Activities associated with the cold start-up, hot start-up, and initial phase of production of the ACP as defined below.

- a. Cold Start-up. Pre-operational inspection, testing, or measurement activities not involving the use of licensed material in ACP process systems or components.
- b. Hot Start-up. Pre-operational inspection, testing, or measurement activities involving the use of NRC licensed material in ACP systems or components. This would include centrifuge testing using uranium hexafluoride.
- c. Initial Phase of Production. Pre-operational inspection, testing, or measurement activities involving the use of NRC licensed material in ACP equipment as designed and installed.

03.09 Quality Assurance Program Description (QAPD). The program that defines the requirements to be followed by licensee management and personnel during the performance of activities affecting quality to ensure that QA requirements are consistently met.

03.10 Operational Readiness Review (ORR). An assessment review inspection performed by a multi-disciplined inspection team to assure that a facility, or a major modification to a previously approved facility, can be operated safely within the intended safety basis. In order to support a decision to allow operation of the facility, the NRC will review and assess the state of readiness of facility operation based on the results of the ORR inspection. The regulations in 10 CFR 40.41(g) and 10 CFR 70.32(k) require that “no person may commence operation of a uranium enrichment facility until the Commission verifies through inspection that the facility has been constructed/refurbished in accordance with the requirements of the license. The Commission shall publish notice of the inspection results in the Federal Register.”

03.11 Quality Assurance (QA) Program. The licensee’s overall program to be applied to the design, fabrication, construction, refurbishment, testing, and operation of the SSCs. This includes the ACP’s QAPD, QA procedures, and all supporting procedures and program activities. The QA program also provides a management control system to assure the attainment of quality objectives.

## 2694-04 RESPONSIBILITIES AND AUTHORITIES

### 04.01 Office of Nuclear Material Safety and Safeguards (NMSS).

- a. Responsible for regulatory oversight of the ACP.
- b. Responsible for the overall safety inspection program policy, guidance, and approval.
- c. Concurs on the approval of this IMC.

### 04.02 Region II Office.

- a. Ensures that adequate resources necessary to carry out the inspection process described in this IMC are provided to the staff.
- b. Responsible for the planning, performance, documentation, and enforcement associated with the construction and pre-operational readiness inspection program elements that are performed by Region II.
- c. Responsible for the planning, performance, documentation, and enforcement associated with criticality safety, information security, and material control and accounting (MC&A) inspection programs.
- d. Concurs on the approval of this IMC.

### 04.03 Office of Nuclear Security and Incident Response (NSIR).

- a. Responsible for policy, guidance, and approval for the physical security, classified material security, and transportation security inspection programs.
- b. Responsible for development of the inspection program for transportation of classified centrifuge components.

- c. Concurs on the approval of this IMC.

## 2694-05 BASIC REQUIREMENTS

05.01 General. The ACP CIP provides the inspection requirements for selectively assessing the adequacy of the IROFS and regulatory and safety-related programs. This includes the implementation of the licensee's QA program and other management measures used to ensure the availability and reliability of safety and safeguards IROFS. Substantial emphasis is to be placed on the inspection of the IROFS that are most important for reducing the likelihood of high and intermediate - consequence accidents through the implementation of commitments made by the licensee in the Environmental Report, the QAPD, and other documents that comprise the license application. Other documents to be referenced include the ISA and the ISAS. The Safety Evaluation Report (SER) may also provide insights and information regarding the NRC's evaluation of ACP's license application.

Emphasis is also to be placed on the licensee's oversight that assure principal contractors who are delegated authority to conduct activities related to safety are implementing an acceptable QA program in accordance with the licensee's QA program. The inspection program should include direct inspections as necessary to determine whether the elements of the licensee's QA program are being effectively implemented throughout all stages of construction including equipment fabrication, assembly and installation, refurbishment of existing structures and equipment, and structural construction activities.

05.02 Inspection Planning and Scheduling Considerations. The ACP construction phase inspection schedule should be based on the licensee's construction schedule and should be modified and updated periodically during the entire construction period.

Program inspections should be announced, coordinated, and scheduled with the licensee such that the efficiency and effectiveness of the inspection effort are enhanced and unnecessary burden to the licensee is minimized. To the extent practicable, the construction and pre-operational inspections should be coordinated with the licensee to ensure that key construction inspection activities are performed in accordance with the site construction project schedule. As appropriate, inspections of various construction/refurbishment activities may be scheduled as unannounced inspections.

Emphasis should be placed on early identification of problems. Inspections will be conducted periodically throughout construction. Inspections will be scheduled early in the process during implementation of individual construction/refurbishment activities to develop confidence that the specific activities are being adequately performed at all stages. Comprehensive construction program reviews aimed at determining underlying causes and extent of problem areas should be conducted if NRC management concludes significant deficiencies are occurring. Inspection depth and frequencies may be expanded to assure problem areas have been corrected. Corrective action programs are essential to effective resolution of individual deficiencies and programmatic issues. Inspection effort should be planned to specifically evaluate program effectiveness.

NRC Region II will develop, maintain and implement a Master Inspection Plan (MIP) and a schedule for the ACP construction inspection project. The MIP will be developed in coordination with the NMSS and NSIR for specific time frames related to licensing and construction milestones for the project. The MIP will include the scope and the inspection procedures (IPs) that will be used for the inspections. The list of procedures for conducting inspections is provided in Appendix A of this IMC. The MIP will provide flexibility to address emerging issues that require additional inspection effort including receipt of allegations or changes in scheduling activities by the licensee.

05.03 Inspection and Technical Personnel Considerations. Qualified inspectors will be assigned responsibility for the conduct of applicable inspection requirements consistent with their experience. In conducting this inspection program, it is necessary that inspectors be trained and/or experienced in the areas of QA, engineering, procurement, and construction/refurbishment activities applicable to the activities they are to inspect. Specialists may accompany or assist inspectors to provide expertise in specific areas to enhance or expand the inspection effort. To this aim, the inspectors may be from the region, NSIR, NMSS inspectors or other NRC and contractor organizations.

## 2694-06 GUIDANCE

06.01 General. The licensee is ultimately responsible for the safety of the nuclear facility. The NRC ensures, through a sample of inspection activities, that the responsibility is carried out in an effective manner during the activities of facility construction. The CIP presented in this IMC is considered the minimum necessary to achieve an acceptable level of confidence as to the adequacy of construction of the facility and the licensee's readiness to safely operate the facility.

This IMC emphasizes a systematic evaluation of the adequacy and effectiveness of the licensee's safety programs and their implementation. NRC will perform inspections of selected activities at the licensee's project offices at the ACP site and other project facilities. Inspections will also be performed, as necessary, at the facilities of the licensee's consultants, contractors, and suppliers. This IMC establishes priorities for inspection by planned sampling of IROFS and related activities consistent with their importance to safety and should consider the performance of the licensee in the areas inspected.

06.02 Program Areas. The specific areas to be inspected will include a sampling of the licensee's IROFS and of regulatory and safety commitments as identified in the approved license application, ISA, ISAS, and in the latest revision of the approved QAPD. IROFS for inspection will be chosen based on safety significance and evaluated with respect to multiple safety disciplines (criticality, fire, chemical, radiological, environmental) and engineering disciplines (civil, mechanical, electrical). The ACP's IROFS boundary packages should be used as a resource for these inspections.

The NRC will periodically inspect the licensee's programs for adequate assurance that IROFS are designed, procured, fabricated, and installed/refurbished in accordance with the ISAS and IROFS boundary packages. The inspections will also verify that as-built construction meets the approved design. In addition, the licensee's design change and design control process will be

reviewed to verify that the design process effectively implements NRC requirements and other commitments made by the licensee. These reviews may be accomplished by multi-disciplinary technical reviews and/or inspection teams to verify the quality of design products and, inferentially, the entire facility design. Inspections will verify that the environmental protection programs are consistent with the license application documentation, the ISA, the ISAS, and design specifications and drawings.

06.03 Inspection Procedures (IPs). The ACP CIP will use the Mixed Oxide QA and construction IPs, as applicable. These IPs are listed in Appendix A. Some IPs may cover more than one program area, and additional IPs may be used as necessary.

06.04 Implementation. Region II is responsible for managing and implementing the inspection program described in this IMC. The scheduling and conduct of inspections will be coordinated **between** Region II, NMSS, and NSIR, as appropriate, to ensure the effective and efficient completion of the inspection program.

This IMC is intended to provide the framework for managing the inspection effort. Where needed, sample sizes, frequencies of periodic inspections, and the time frame when certain inspection activities are to be performed are provided in the appropriate IP and/or inspection plan.

The inspection staff is expected to plan and conduct inspections based on safety considerations, current activities, and performance. Region II staff should develop, on at least an annual basis, a schedule of inspections to be conducted based on the anticipated site activities that are to be performed in the upcoming year. Region II staff should review and revise the schedule as needed to account for changes in site activities. The schedule will be maintained on a common drive, allowing NMSS and NSIR access to the schedule. Any changes in the schedule directly impacting inspections coordinated with NMSS and/or NSIR personnel should be communicated to the affected individuals in a timely manner as possible. The activities for conducting inspections should include the following:

- a. Developing and documenting detailed inspection plans.
- b. Scheduling and coordinating inspection activities in accordance with this IMC (see Sections 05.02 and 06.11 for more details).
- c. Communicating inspection results, findings, and open items to appropriate NRC and licensee management.
- d. Documenting completed inspections, findings, and open items.

Inspection issues related to occupational health and safety should be evaluated in accordance with IMC 1007, "Interaction Activities Between Regional Offices and OSHA".

Issues having potential impact on the Department of Energy (DOE) should be evaluated and referred in accordance with the memorandum of understanding (MOU) with DOE **for the ACP**.

06.05 Inspection and Technical Personnel Considerations. Inspectors and technical representatives will be assigned responsibility for performing inspections consistent with their qualifications. In addition, inspectors performing ACP inspection activities will either be provided familiarization training on this IMC and related procedures and/or become familiar with the requirements of this IMC and the applicable requirements of 10 CFR Parts 19, 20, 30, 40, 70, 73, 74, and 95, as appropriate. The inspectors will consider the jurisdictional aspects described in the MOU with DOE when conducting inspections to ensure that the areas inspected are under NRC jurisdiction at the time of the inspection.

06.06 Inspection Requirements. Inspections will be based on 10 CFR Parts 30, 40, 70, and other applicable regulations, commitments, and license conditions, included in the license application. Other documents to be referenced include the applicable ISA. Inspections will confirm that applicable regulations, requirements, and commitments have been met. Selection of inspection attributes will be based on safety considerations, status of work activities, and performance.

06.07 Focus of Inspections. In order to effectively and efficiently allocate inspection resources, the NRC will perform sampling-type inspections to verify that the licensee is in compliance with NRC regulations. A combination of IROFS sample selection, risk-based approaches, and inspections of the QA program will be used to help determine the necessary level of inspection effort.

Inspectors should use applicable risk-based information from the license submittals, process hazard analyses, and ISA to identify those IROFS whose failure would most greatly impact the ACP's risk profile. This approach would allow the more risk significant IROFS to be identified so that the construction/refurbishment and pre-operational inspection samples could be focused on those IROFS. The amount of activities selected for inspection should be consistent with the importance to safety of the IROFS and the performance of the licensee in those areas.

It should be noted that a performance-based approach is more directly applicable to an operating facility and may not be readily applied to construction/refurbishment or pre-operational inspections. In the early stages of the project, the majority of inspections may be compliance-based and will focus on QA program implementation. Inspection activities should emphasize the early identification of problem areas. It is important that inspectors evaluate whether noted problems represent isolated cases or are symptomatic of more systemic problems. To provide the perspective to perform this evaluation, inspectors should:

- a. Determine the extent and the effectiveness of licensee oversight of quality related activities;
- b. Determine compliance of previously identified problem areas and/or recurring problems;
- c. Focus inspection efforts on problems that indicate programmatic weaknesses;
- d. Periodically verify the adequacy of the licensee's corrective action program to identify, track, trend, resolve, and prevent problem recurrence;
- e. Review deficiencies, audit findings, and problems identified by the licensee or by its consultants, contractors, or suppliers to identify trends and/or problem areas; and,



- f. Ascertain whether additional NRC inspection effort is merited in the areas of concern.

06.08 Management Entrance and Exit Meetings. Inspectors are required to meet with licensee management as part of every inspection. Inspectors should hold an entrance meeting with the senior licensee representative who has responsibility for the areas to be inspected. At the conclusion of an inspection, inspectors must discuss their preliminary findings and inspection results with the licensee's management at a scheduled exit meeting. Management entrance and exit meetings with licensee personnel should be scheduled to minimize the impact on other licensee activities necessary to assure the safe and proper construction of the facility.

06.09 Inspection Reports. Inspection findings shall be documented in inspection reports in accordance with the applicable revision to IMC 0616, "Fuel Cycle Safety and Safeguards Inspection Reports." When possible, inspection findings should be integrated into a single inspection report to encompass findings from in-office reviews and/or one or more visits by regional or headquarters inspectors. Special inspections may be documented in a separate inspection report. Inspection issues that cannot be resolved at the time of the inspection will be documented as inspection follow-up items or unresolved items in accordance with IMC 0616. The NRC Region II will track open items in an inspection program information management system, and subsequent inspections will include resolution of these issues.

06.10 Findings Outside of Inspector's Qualifications. Inspectors sometimes identify issues or violations outside of the inspector's qualifications or expertise. In these cases, the inspector is responsible for: (1) determining if an immediate threat to the public or worker health or safety exists and, if one does exist, to notify licensee management immediately; and, (2) determining if the issue is better addressed by an inspector with different qualifications (i.e., a specialist inspector). Inspectors may follow up on issues outside of their qualifications or expertise with the concurrence of a regional manager responsible for the area associated with the issue and the inspector's supervisor.

06.11 Communication with Local Public Officials. As a matter of NRC philosophy, the NRC maintains an open door policy with regard to access by the public or federal, state, and local officials to the NRC staff and to publicly available electronic documentation concerning a licensee's performance. The degree of interaction that is considered necessary to enhance openness and transparency in how the NRC regulates is expected to vary widely depending upon the situation at each facility. Guidance pertaining to communication with stakeholders external to the NRC will be provided in a communication plan for the ACP and is also available in applicable regional office procedures.

06.12 Inspection Findings and Enforcement. All inspection findings identified during the construction and pre-operational periods will be documented in accordance with the applicable revision to IMC 0616, after they have been placed in context and assessed for safety significance. Potential violations from inspection activities will be processed in accordance with the NRC Enforcement Policy (available on the NRC public web site at <http://www.nrc.gov>), using traditional enforcement tools. During construction/refurbishment and pre-operational activities, the guidance in the Enforcement Policy, Supplement II, Part 50 Facility Construction, will apply along with other applicable supplements for determining the appropriate severity level for QA violations. The inspection findings (or open items) will then be categorized as violations, non-cited violations, apparent violations, deviations, non-conformances, unresolved items, or

inspector follow-up items. This includes the use of notices of violations for violations of severity level IV and above and civil penalties, as appropriate.

It is important to note that, if the NRC determines that the construction is not in accordance with the licensee's commitments, then permission to operate may be denied (see 10 CFR 40.41(g) and 10 CFR 70.32 (k)). The failure of the licensee to meet commitments specified in the license application or other ancillary documents (the ISA and ISAS), shall be documented in the inspection report(s) as noted above. It is imperative that open items are appropriately documented in the inspection reports so that subsequent inspections can verify whether or not the licensee took the appropriate corrective actions. The failure of the licensee to take the appropriate corrective actions to address the open items by the end of the construction phase could result in a denial by the NRC to allow operations.

To the extent possible, inspection reports will be written to limit the amount of classified and sensitive information contained within the reports. Inspection reports that do contain classified or sensitive information must be appropriately handled, marked and protected as required by the applicable NRC directives regarding classified information, safeguards information and sensitive unclassified non-safeguards information.

06.13 Assessment of Licensee Performance (ALP). Different types of construction and refurbishment activities may require certain levels of inspection effort to provide the same degree of assurance of quality work. Increases or decreases in inspection oversight will be based on an assessment of licensee performance. Periodic reviews of the licensee's performance of construction and pre-operational activities may be warranted to provide NRC management with an overview of the licensee's performance and provide feedback of NRC management's conclusions regarding the quality of the licensee's programs for protecting the public health and safety. An objective of the program is to provide a body of information that will be used as guidance to NRC management on changes that may be required in the ACP construction and pre-operational inspection programs. IMC 2604, "Licensee Performance Review," describes the program for conducting and documenting evaluations of licensee performance for operating fuel cycle facilities. Appendix B provides guidance to assess the licensee's performance in the construction phase of the ACP. The responsibilities and authorities, performance review scheduling, review process, and documentation guidelines specified in IMC 2604 should be used in conducting the ALP. Region II is responsible for adjusting the scope and frequency of the review during the construction and pre-operational phases, as needed, based on ACP construction schedules and inspection findings. An initial recommended frequency for this assessment is once per year, with the initial assessment occurring approximately one year after the start of construction activities.

06.14 Operational Readiness Reviews (ORRs). As stated earlier, 10 CFR 40.41(g) and 10 CFR 70.32 (k) do not allow operation of a uranium enrichment facility until the Commission verifies through inspection that the facility has been constructed in accordance with the requirements of the license. The NRC verifies that this requirement is met by performing ORRs. The NRC may consider the use of phased ORR inspections as a tool to provide input for NRC decisions regarding the operational readiness of ACP areas and processes. In order to support a decision to allow operations, NRC senior management reviews and assesses the state of readiness of facility operation based on the results of the ORR inspection(s). The status of previously identified inspection findings are also considered during the decision-making process.

END

## Appendix A

### AMERICAN CENTRIFUGE OPERATING, LLC's, AMERICAN CENTRIFUGE PLANT GAS CENTRIFUGE INSPECTION PROGRAM CONSTRUCTION AND PRE-OPERATIONAL INSPECTION PROCEDURES

See inspection manual chapter (IMC) 2683, "Material Control and Accounting Inspection of Fuel Cycle Facilities," for a complete list of material control and accounting inspection procedures (IPs).

IPs may be added or deleted as required. Portions of these IPs will not apply to American Centrifuge Plant (ACP).

See appropriate IMCs for a list of physical security and information security IPs.

#### QA Inspection Procedures

- IP 88106 Quality Assurance: Program Development and Implementation
- IP 88107 Quality Assurance: Design and Documentation Control
- IP 88108 Quality Assurance: Control of Materials, Equipment, and Services
- IP 88109 Quality Assurance: Inspection, Test Control, and Control of Measuring and Test Equipment
- IP 88110 Quality Assurance: Problem Identification, Resolution, and Corrective Action
- IP 88111 10 CFR Part 21 Inspection-Facility Construction
- IP 88112 Software Validation
- IP 88113 Control of the Electronic Management of Data
- IP 88114 Quality Affecting Item Procurement (10 CFR Part 21) and Commercial Grade Item Dedication Process (Reactive)
- IP 88115 Supplier/Vendor Inspection

#### Construction Inspection Procedures

- IP 55100 Structural Welding General Inspection Procedure

- IP 88131 Geotechnical/Foundation Activities
- IP 88132 Structural Concrete
- IP 88133 Structural Steel and Supports
- IP 88136 Mechanical Components
- IP 88137 Electric Cable
- IP 88138 Electrical Components and Systems
- IP 88139 Ventilation and Confinement Systems
- IP 88140 Instrumentation and Control Systems
- IP 88141 Procedures - Fire Prevention/Protection
- IP 88142 Underground Fire Water Loop and Equipment Installation

Pre-Operational Inspection Procedures

- IP 81815 Authorization for Access to National Security Information (NSI) & Restricted Data (RD)
- IP 81820 Physical Protection Facility Approval and Safeguarding of National Security Information (NSI) & Restricted Data (RD)
- IP 86740 Inspection of Transportation Activities
- IP 88005 Management Organization and Controls
- IP 88010 Operator Training/Retraining
- IP 88015 Nuclear Criticality Safety Program
- IP 88016 Nuclear Criticality Evaluations and Analyses
- IP 88017 Criticality Alarm Systems
- IP 88020 Operational Safety
- IP 88025 Maintenance and Surveillance Testing

- IP 88030 Radiation Protection
- IP 88035 Radioactive Waste Management
- IP 88045 Environmental Protection and Effluent Control
- IP 88050 Emergency Preparedness
- IP 88051 Evaluation of Exercises and Drills
- IP 88055 Fire Protection
- IP 88056 Process Safety Information
- IP 88070 Permanent Plant Modifications
- IP 88150 Training and Qualification of Plant Personnel
- IP 88151 Facility Changes and Change Process (10 CFR 70.72)
- IP 88152 Physical Protection Equipment and Barriers
- IP 88153 Material Control and Accounting
- IP 88154 Fire Safety and Protection Systems
- IP 88155 Functional Verification of IROFS
- IP 88156 Integrated Safety Analysis Implementation
- IP 88157 Waste Management Equipment and Systems
- IP 88158 Environmental Protection-Initial and Periodic Inspections
- IP 88159 Process Enclosures and Vessels
- IP 88160 Utilities and Bulk Chemicals

END

## Appendix B

### AMERICAN CENTRIFUGE OPERATING, LLC, AMERICAN CENTRIFUGE PLANT GAS CENTRIFUGE INSPECTION PROGRAM ASSESSMENT OF LICENSEE PERFORMANCE PROCESS

#### 1. PURPOSE

This appendix provides guidance for assessing the licensee's performance in the construction and pre-operational phases of the **American Centrifuge Operating, LLC (ACO)** American Centrifuge Plant (ACP) gas centrifuge and to provide feedback of U.S. Nuclear Regulatory Commission (NRC) management's conclusions regarding the quality of the licensee's construction and pre-operational programs. The responsibilities and authorities, performance review scheduling, review process, and documentation guidelines specified in inspection manual chapter (IMC) 2604, "Licensee Performance Review," should be used in conducting the Assessment of Licensee Performance (ALP). The results of such a review should:

- 1.1 Provide an assessment of licensee performance to NRC management.
- 1.2 Inform the licensee and the public how the NRC assesses facility performance.
- 1.3 Provide a basis for adjusting the construction and pre-operational inspection program including such areas as focus, frequency, and resources.

#### 2. OBJECTIVES

- 2.1. To describe the processes for assessing the licensee's performance.
- 2.2. To ensure that the assessments are performed in a timely, effective, and efficient manner.
- 2.3. To ensure that the assessments are focused on determining whether safety has been adequately and effectively maintained.

#### 3. DEFINITIONS

- 3.1 Functional Areas. The following definitions describe the program and functional areas that form the basis for the ALP. It should be noted that depending on the stage of the construction project, not all functional areas would be applicable during a given assessment period. Each functional area comprises two or more inspection program areas.
  - a. Management Measures. This includes activities involving implementation of the applicable management measures as described in the licensee's Quality Assurance Program Description (QAPD) and in Chapter 11 of the license application.

1. Quality Assurance (QA). Evaluate the effectiveness of the licensee's implementation of the controls as established in the ACP QAPD.
  2. Design Control. Evaluate the control of the designs for items relied on for safety (IROFS) and the control of activities associated with the preparation, review, approval, and verification of documents used for design, procurement, fabrication, and modification.
  3. Categorization of IROFS. Evaluate the implementation of a graded QA approach to the categorization of IROFS based on safety significance, if applicable. Note that "sole" IROFS are rated as Quality Level (QL)-1 and all other IROFS as QL-2.
  4. Configuration Management. Evaluate whether the licensee's configuration management system documented an established baseline configuration; that changes to IROFS were in conformance with 10 CFR 70.72 and controlled to preclude inadvertent degradation of safety; and that a system was established and implemented to evaluate, implement, document, and track changes to the site, IROFS, processes, equipment, computer programs, and activities of personnel.
  5. Procedures. Evaluate the control of management procedures with regard to distribution, version control, management review, and approval.
  6. Audits and Assessments. Evaluate the performance of audits and assessments required during construction.
  7. Records Management. Evaluate the records management system for the handling and storing of records generated or required in the design, construction, and operation phases of the facility.
- b. Facility Construction and Pre-Operation. This includes activities involving construction and pre-operational activities.
1. Construction Activities. Evaluate construction/refurbishment activities (foundation, structural concrete and steel, mechanical, electrical, and instrument components). Evaluate whether the activities were conducted in accordance with the license application, the Safety Evaluation Report, the Integrated Safety Analysis, and the Integrated Safety Analysis Summary. Evaluate whether the licensee recognized non-routine events affecting safety, used an internal reporting system, and identified and executed corrective actions to resolve deviations from commitments made in the ACP QAPD.
  2. Pre-Operational Activities. Evaluate whether the licensee's management measures provided for the safe startup testing of the facility during both routine and upset conditions, recognized non routine events affecting safety, used an internal reporting system, and identified and executed



corrective actions to return the facility to a safe and secure pre-operational condition after possible upsets. Evaluate pre-operational activities including whether the licensee has implemented an acceptable safety operations program (including chemical safety, criticality safety, operational safety, fire protection, and radiological controls programs).

- c. Facility Support. This includes management measures and systems including training, emergency preparedness, and maintenance.
  - 1. Training and Qualification of Plant Personnel. Evaluate the training and qualification of facility personnel for activities relied on for the development of safety controls including the training, testing, retesting, and qualification of managers, designers, technical staff, construction personnel, technicians, and other personnel whose actions are relied on for safety.
  - 2. Emergency Preparedness. Evaluate the effectiveness of the licensee's emergency management program in protecting the workers, public, and the environment during reasonably postulated events that could threaten the facility.
  - 3. Maintenance. Evaluate the effectiveness of the licensee's maintenance program to ensure the functionality and operability of IROFS during reasonably postulated events that could threaten the facility and surrounding population.
- d. Safeguards and Security. Evaluate activities involving implementation of the applicable safeguards and security measures to assure adequate accounting and protection of special nuclear material during receipt and transfer operations.
- e. Special Topics. These are issues that may arise on an occasional basis, but are not included in the review on a routine basis unless the significance of the issue rises to a level that is perceived to affect the quality of licensee performance. Examples include the quality of application and licensing submittals, labor-management issues, and contractor difficulties.

- 3.2 Areas Needing Improvement. Actual and/or potential risk-significant recurring performance issues (root causes or events) requiring resolution or corrective action. If a number of deficiencies occurred early in the period and the licensee's management corrected the problems as evidenced by no events for the last half of the cycle, then less weight should be given to those issues when evaluating the licensee's performance. On the other hand, more weight should be given to issues that are identified late in the assessment period.

#### 4. EVALUATION FACTORS

- 4.1 The ALP should review the licensee's performance in each of the applicable functional areas, using a common set of evaluation criteria. A suggested set of evaluation factors are provided below:

- a. Management involvement and control;
  - b. Approach to identification and resolution of technical issues from a safety and safeguards perspective;
  - c. Approach to (operational) events (including timeliness, analysis, reporting, effectiveness of corrective actions, and recognition of generic issues within the facility);
  - d. Staffing (considering experience, expertise, and availability of staff and management);
  - e. Aspects of performance that may reflect on the effectiveness of training and qualification programs relative to the specific functional area; and
  - f. Evidence of positive or negative performance trends.
- 4.2 NMSS and the Region II Branch Chiefs may confer occasionally to consider the suitability of the current evaluation factors and recommend any necessary changes.

## 5. IMPLEMENTATION

- 5.1 The responsibilities and authorities, performance review scheduling, review process, and documentation guidelines specified in IMC 2604 should be used in conducting the ALP.

END

Attachment 1

Revision History for IMC 2694

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number (Pre-Decisional, Non-Public)
N/A	ML071270569 05/16/07 CN-07-016	New document created to implement the construction and ORR inspection program at USEC, Inc. ACP.	None	ML071270550
N/A	ML15261A629 12/17/15 CN-15-030	Revision 1 – Correct editorials; updates information to address material license transfer; address change in responsibilities for NRC Region II, NSIR, and NMSS.	None	ML15261A632