

INSPECTION REPORT

1. LICENSEE OR CERTIFICATE HOLDER/LOCATION INSPECTED:

AREVA NP, Inc.
2101 Horn Rapids Road
Richland, WA 99352-0130

2. NRC/REGIONAL OFFICE:

U.S. Nuclear Regulatory Commission
Region II
245 Peachtree Center Avenue NE, Suite 1200
Atlanta, GA 30303-1257

REPORT NO:

2010-005

3. DOCKET NUMBER:

70-1257

4. LICENSE OR CERTIFICATE NUMBER:

SNM-1227

5. DATE(S) OF INSPECTION:

June 7 – 10, 2010

LICENSEE OR CERTIFICATE HOLDER:

The inspection was an examination of the activities conducted under your license or certificate as they relate to safety and/or safeguards and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license or certificate. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

- 1. Based on the inspection findings, no violations were identified.
- 2. Previous violation(s) closed.
- 3. Reported events reviewed
- 4. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, to exercise discretion, were satisfied.
Non-Cited Violation(s) was/were discussed involving the following requirement(s) and Corrective Action(s):

- 5. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.
(Violations and Corrective Actions)

LICENSEE OR CERTIFICATE HOLDER STATEMENT OF CORRECTIVE ACTIONS FOR ITEM 5, ABOVE

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violation(s) identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to the NRC will be required, unless specifically requested.

| Title | Printed Name | Signature | Date |
|--|--------------------|-----------|--------|
| LICENSEE/CERTIFICATE HOLDER REPRESENTATIVE | | | |
| NRC INSPECTOR | P. Startz/M.Thomas | /RA/ | 7/7/10 |

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6. INSPECTOR(S): P. Startz, M. Thomas

7. INSPECTION PROCEDURES USED: 88070 Permanent Plant Modifications

EXECUTIVE SUMMARY

Summary of Plant Status

The Areva NP facility converts uranium hexafluoride into uranium dioxide and fabricates fuel assemblies for use in commercial nuclear power reactors. During the inspection period, normal production activities were ongoing in the manufacturing areas. This routine, announced inspection focused on the evaluation of a new permanent plant modification referred to as the supercritical carbon dioxide uranium recovery process, or the acronym (SCCO₂). The inspectors conducted reviews of design documents, discussed design and safety functions with design engineers, performed field inspections of safety related equipment, observed work activities, and reviewed safety equipment test records.

Permanent Plant Modifications (IP 88070)

- On June 12, 2008, AREVA submitted to the NRC a request to amend its license SNM-1227 under 10 CFR Part 70 to authorize the installation and operation of a new process that will use supercritical carbon dioxide (SCCO₂) to extract uranium from waste material that contains a relatively low percentage of uranium, Engineering Change Notice 8445C. The process has been built in AREVA's existing Uranium Dioxide (UO₂) building within its Richland, Washington, facility.
- During the week of June 7, 2010, two inspectors from the Region II office performed a plant modification inspection of the SCCO₂ system. The inspectors reviewed a selection of IROFS; operating procedures; functional tests; piping and instrumentation drawings; automation system programming; and problems identified during functional testing along with their proposed solutions. The inspectors reviewed the main project guidance document MCP-30499 for consistency with the installed SCCO₂ system. The inspectors performed numerous targeted walk downs of the system. Based upon a review of IROFS, the inspectors focused the inspection on nine IROFS that involved interlocks and two personnel safety alarm IROFS. The inspectors reviewed the available safety analyses and determined that the SCCO₂ system was compliant with 10 CFR 70.62, the baseline design criteria of 70.64, and that safety system designs would meet the performance requirements of 10 CFR 70.61.
- Inspectors reviewed the functional aspects of the following active engineering controls designated as IROFS interlocks for consistency with the main project guidance document MCP-30499, adequacy of design and implementation, validity of design assumptions, and adequacy of management measures that will assure capability and reliability.

EXECUTIVE SUMMARY (Continued)

- IROFS 6902 Mass control: Backflow prevention from the process feed tank back to the bulk storage tank is achieved using a differential pressure sensor to operate a fail-safe shut-off control valve, FV-101. The interlock will actuate when the differential pressure between the process feed tank and the bulk supply tank becomes less than the setpoint. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6905 Mass control: Another method of backflow prevention from the process feed tank back to the bulk storage tank is achieved using a differential pressure sensor to operate a fail-safe shut-off control valve, FV-101. The interlock will actuate when the differential pressure between the CO₂ supply pump and the process feed tank becomes less than the setpoint. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6906 Mass control: Another method of backflow prevention from the process feed tank back to the bulk storage tank is achieved using a high level sensor in the process feed tank to operate shut-off control valve FV-103. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6911 Mass control: The interlock ensures compliance with the 43 kilograms (kg) in-process batch limit using the weight scales interlock to prevent operation of the container lift motor, preventing additional process additions above the limit. The licensee's nuclear criticality safety (NCS) staff established the batch limit of 43 kg. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6912 Mass control: The interlock ensures compliance with the 43 kg NCS batch limit. The bar code on the container is read and the information must match the Material Control and Accountability database information. This second interlock prevents operation of the container lift motor, preventing additional process additions above the limit. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6915 Mass control: The automated assay of residual uranium in a basket of material from the extraction process prevents the transfer of the containers' contents to the basket dump barrel should the setpoint mass be exceeded. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6923 Pressure Control: Extraction system over-pressure interlock shuts the system down prior to pressure relief valve functions. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6943 Personnel Safety: Position sensors on extractor vessel lids prevent pressurization of the extractor vessels if the lids are not properly closed. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- IROFS 6949 Mass Control: Uranium solution density sensor prevents transfer of uranium solutions through valve FV-151-3 to solution storage drums should the uranium density exceed the set limit. The inspectors confirmed IROFS hardware and references on P&ID CSA-611/186. No findings of significance were identified.
- The inspectors also reviewed other SCCO₂ IROFS and no findings of significance were identified.

EXECUTIVE SUMMARY (Continued)

- The inspectors determined that the management measures and associated preventative maintenance had been established for ensuring that the nine IROFS involving interlocks and the two personnel safety alarm IROFS would be available and reliable and had been implemented at the time of the inspection. The inspectors reviewed records of functional tests performed on the IROFS and determined that the tests included check lines and acceptance criteria. No findings of significance were identified.
- The inspectors also observed the hoist that is used to move the extraction vessel baskets of solid waste and reviewed the hoist load test. No findings of significance were identified.
- The inspectors observed that gloves were used at various stations of the SCCO2 system. The inspectors asked how often are the gloves inspected for integrity and contamination. After reviewing Standard Operating Procedure 40207, General Instructions - Radiation Protection plant personnel determined that the gloves for the SCCO2 system had not been included in the procedure. The licensee generated condition report 2010-4602 and revised preventative maintenance task PM005080 to include the inspection of SCCO2 system gloves. No findings of significance were identified.
- At the time of the inspection only one operator had been trained on SCCO2 system. The inspectors interviewed the operator and determined that he had received two weeks of hands on training from the design engineer that covered proper implementation and response to the safety controls. The inspectors also determined that the operator had assisted in the development of training aides for the SCCO2 system. Additional operator training, including instructor guides were being developed by the training department based on job task analyses. No findings of significance were identified.

Personnel Safety Alarms

- The SCCO2 system was in a separate room from other process areas in the UO2 building. The inspectors determined that there were only local control panels to operate the system and that the personnel safety alarms, IROFS 6903 and 6904, high CO2 and loss of [HVAC] Heating, Ventilation, and Air Conditioning were also local alarms. The inspectors reviewed the drawings for the high CO2 concentration and loss of HVAC, and walked down the electrical distribution system for these alarms. The inspectors reviewed the functional testing protocols for the alarms, the associated uninterruptible power supply (UPS), and the batteries for the UPS. The UPS six month preventative maintenance had been performed on the UPS on April 2, 2010. The battery biennial replacement had been performed on October 5, 2008. The inspectors observed that the high CO2/loss of HVAC alarm annunciators and lights, and emergency stop buttons were located at each of the standard entrances/exits of the SCCO2 system room.
- Based upon the inspectors' observations, post-installation testing, for the SCCO2 system maintained the plant in a safe configuration during testing, and the testing assured adequate implementation of design and safety system functions.

Problem Identification and Resolution

- The inspectors observed that problems identified during system installation and functional testing were documented in CO2 Weekly Status Reports.

EXECUTIVE SUMMARY (Continued)

Programmatic Preview

- The Supercritical CO2 system was implemented within the licensee's safety configuration management and change control programs. The licensee followed its engineering change notice procedure MCP-30369, performed a 70.72 analysis, and developed baseline design criteria in accordance with MCP-30544.

Exit Meeting Summary

The inspection scope and results were summarized on Thursday, June 10, 2010, with Charles Perkins, and members of his staff.

Key Points of Contact

| <u>Name</u> | <u>Title</u> |
|--------------|------------------------------------|
| C. Perkins | Site Manager |
| C. Manning | Nuclear Criticality Safety Manager |
| A. Allen | Project Engineer |
| S. Powers | Engineering |
| H. Clemetson | Operations |