Meeting Summary
Pre-Application Meeting

DATE OF MEETING

Wednesday, April 11, 2012

PLACE

Nuclear Regulatory Commission (NRC) Headquarters, Executive Boulevard Building, 6003 Executive Boulevard, Rockville, Maryland.

PURPOSE

The purpose of the pre-application meeting was to convey the topics of information that the NRC staff expects in a license application. In this case, the licensee intends to submit a license application to allow four uncertified uranium hexafluoride (UF_6) cylinders to be processed. Westinghouse plans to process one additional certified cylinder under these arrangements, which has some damage and is borderline compliant.

LICENSEE

Westinghouse Columbia Fuel Fabrication Facility, Columbia, South Carolina.
Docket No. 70-1151
License No. SNM-1107

ATTENDEES

NRC		Westinghouse
Adams, Mary	Ryder, Christopher	Couture, Gerard
Damon, Dennis	Sippel, Timothy	Fanning, Leo
Downs, James	Thomas, Mary Lynne[1]	Farris, Robert[2]
Guardiola, Maria	Vera, John	Hudson, Chris[2]
Hammelman, James		Snyder, Carl[2]
		Underwood, Don[2]

BACKGROUND

The licensee intends to submit an application to amend special nuclear materials license SNM-1107. The implicit assumption of the initial license application, the Integrated Safety Analysis (ISA), and the NRC staff safety review is that the UF_6 cylinders arriving at the plant are certified, or have minor issues with valves that can readily be resolved. For the subject UF_6 cylinders, this assumption is no longer valid.

[1] Participated by Video Conference from Region II in Atlanta, Georgia.

[2] Participated by teleconference from the Westinghouse Columbia Fuel Fabrication Facility in Columbia, South Carolina.

DISCUSSION

The licensee stated that the processing was evaluated and determined that the uncertified cylinders could be processed without prior approval from the NRC staff under Title 10 of the *Code of Federal Regulations* Part 70.72. Nonetheless, the licensee wants the NRC staff to be fully informed and in agreement that the cylinders can be safety processed. Therefore, they intend to submit an amendment to their license to add a license condition for processing the five cylinders.

The NRC staff stated that their expectations of the information topics of an application to amend SNM-1107 are not necessarily exhaustive or final. Statements made by the NRC staff did not imply, in any way, any findings that the staff might make from a review of a license amendment application. The NRC staff did not make any regulatory decisions at the meeting.

After the public portion of the meeting, the NRC staff had a closed session with the licensee to discuss proprietary information.

The licensee discussed the points on their presentation, while the NRC staff asked clarifying questions.

About 1,000 Type 30B cylinders arrive at the Westinghouse Columbia plant each year. A small fraction of the cylinders arrive in a non-compliant state. During 2012, a large international delivery of UF_6 cylinders was received over several months that included 17 non-compliant cylinders. Most of the cylinders were non-compliant because of issues with the valves of the cylinders; after such valves are replaced the cylinders can be entered into the typical fuel manufacturing process. Four cylinders could not be processed as such for the following reasons:

- three cylinder have no U-stamp as required by the American Society of Mechanical Engineers (ASME) code
- one cylinder has a repaired weld, but no R-stamp as required by AMSE code

The enrichment of the subject UF_6 cylinders is not an issue.

In addition, the licensee has a fifth cylinder from years ago that has an 8-inch scratch and a dent. Standards allow for a dent or a scratch, but are silent in regards to a cylinder with both a dent and a scratch. The licensee had previously treated the cylinder in a conservative manner, deciding not to process it under normal arrangements to this point.

The NRC staff discussed the information topics that they expect to see in a license application. Topical areas were as follows:

- Equipment and processing
- ISA
- Criticality safety
- Chemical safety
- Fire safety
- Environmental protection
- Material properties and structural integrity of the UF_6 cylinders

Equipment and Processing

Per § 70.22(a)(7) and (8), the licensee will have to discuss the equipment and procedures that will ensure safety. A clear description of the autoclave and the operation of the autoclave are needed. The uncertified cylinders will be processed in Line 5, which uses a nitrogen-filled autoclave that has a containment capability. On Lines 1 through 4, cylinders are heated in a steam vaporizer that has only a confinement capability (i.e., they are not leak-tight). The autoclave is leak-tested at startup.

ISA

The current ISA is based on the assumption that certified UF_6 cylinders are processed. The ISA will be revised to account for uncertified UF_6 cylinders, demonstrating that the performance requirements of § 70.61 can be met. Additional items relied on for safety (IROFS) will be indentified. The NRC staff stated for information purposes that, given past experience with defects in UF_6 cylinder penetrations, such events would be considered credible in an ISA. The subject of weld quality was also mentioned.

Criticality Safety

The licensee should demonstrate that the processing of uncertified cylinders is bounded by the current nuclear criticality safety analysis.

Chemical Safety

The licensee should clearly explain autoclave operations, the controls applied for certified cylinder processing and the proposed controls for uncertified cylinder processing. The licensee should define the limits on damage or degradation of UF_6 cylinders that will be processed under this amendment. The licensee should explain the process for detecting leaking cylinders in the autoclave and Westinghouse experience in detecting leaks in the autoclave. When asked, the licensee said that a cylinder with a known hole would not be processed.

After discussing NRC staff's expectation for a license application, the licensee explained the operation of the autoclave. In the autoclave, UF_6 sublimes at the operating pressure that is slightly less than 20 psi. The pressure of the autoclave is higher than that in a UF_6 cylinder; thus, if a cylinder develops a leak, nitrogen would flow into the cylinder, instead of UF_6 flowing out of the cylinder into the autoclave. With a leaking cylinder, the UF_6 stream entering the hydrolysis column would contain nitrogen.

Fire Safety

The licensee should consider the storage and transportation of the uncertified UF_6 cylinders from the UF_6 pad to the entrance of the UF_6 bay inside the plant where the autoclave and vaporizers are located. If the cylinder carrier is powered by a fossil fuel, analysis must be done that considers a fuel leak with subsequent ignition. Because the five UF_6 cylinders are uncertified, they are in a weakened state, making them more susceptible to damage from heat should an accident occur.

Environmental Protection

For a categorical exclusion under §51.22(c)(11), four points have to be addressed: (i) significance of change in the types or amounts of any effluents that may be released offsite; (ii) significance of change in individual or cumulative occupational radiation exposure; (iii) significance in change of construction impact; and (iv), significance in change in the potential for or consequences from radiological accidents. Points (i) through (iii) appear to be straightforward to address. In point (iv), the licensee would have to demonstrate that the performance requirement of § 70.61 are still met. The licensee stated that processing five uncertified cylinders, out of 1,000 cylinders, is expected to result in a minor decrease in the initiating event frequency of an accident sequence.

Material Properties and Structural Integrity of the UF_6 Cylinders

The uncertified UF_6 cylinders are not owned by the licensee. The original manufacturing documents might be available. The licensee will have to document the specific defects in each of the uncertified UF_6 cylinders, and any expected effect of the defects on the processing. The NRC staff expects the licensee to state the condition of each uncertified UF_6 cylinder, the adverse event that can happen during processing, and the measures that will be taken if the event occurs. A deterministic analysis is unnecessary. Recovery measures are expected. A defect without the R-stamp is of concern; documentation will necessarily be incomplete; nonetheless, the NRC staff expects the licensee to make an effort to find whatever information is available.

Closing Remarks

Westinghouse submitted information for the April 11, 2012, meeting that is on the docket. The licensee can incorporate the information into the license application by referencing this information. The NRC staff will conduct a non-complex review, which is a 45-day acceptance review and a150-day technical review. The licensee stated that they expect to submit an application in May 2012 and inquired if the review could be completed by the end of the calendar year. The licensee would like to reduce the risk of the operation as much as possible by processing the cylinders during the December holidays when few people are at the plant. The NRC staff stated that they would make an effort to review the submittal in an expeditious manner.[3]

CLOSED SESSION

Redacted

RESULTS

Expectations of the NRC staff for the information in an application to amend the license were successfully communicated. Roundtable discussions allowed both the NRC staff and the licensee to discuss their concerns.

[3] Note: If a high-quality application is submitted by May 30, 2012, the NRC staff expects to complete their review by December 11, 2012.