Meeting Summary
Public Meeting of the Nuclear Regulatory Commission
and General Electric Hitachi
February 8, 2011

PARTICIPANTS

U.S. Nuclear Regulatory Commission (NRC)

Dan Dorman	Robert Johnson	Tyrone Naquin	Thomas Pham
John Kinneman	Christopher Ryder	Roman Przygodzki	Blair Spitzberg*
Michael Tschiltz	Rafael Rodriguez	Kenneth Kline	Robert Evans*

GE Hitachi (GEH)

Jerald Head	James Ross	David Turner
Earl Saito	Patricia Campbell	Donald Krauss
Harold Neems	Scott Murray	Charles Vaughan**

Public
Keith Consani
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BACKGROUND

On September 30, 2010, General Electric Hitachi (GEH) submitted an application to renew special nuclear materials license SNM-960. During the acceptance review, the staff found that the application lacked sufficient detail to begin a technical review. GEH requested a public meeting to discuss the expectations of the NRC staff for an acceptable application. A public meeting was held on February 8, 2011.

INTRODUCTIONS

The public meeting convened at 8:30 AM (eastern). M. Tschiltz reiterated the purpose of the meeting as to establish a common understanding of the expectations for a revised application to renewal special nuclear material license SNM-960. He also emphasized that regulatory decisions will not be made during the meeting; the staff will not be approving any intentions conveyed or implied by the GEH presentation or discussions with the staff about the presentation.

E. Saito made introductory remarks. Difficulties had been encountered in moving from a 2-part license (that was previous submitted in 1989 and, by reference in 1999) to a 1-part license (per the Standard Review Plan NUREG-1520[1]), resulting in details being omitted. Challenges in writing an application stem from the uniqueness of the Vallecitos site compared to other fuel cycle facilities. The Vallecitos Nuclear Center is a research and development facilities, not a fabrication facility, where spent fuel is analyzed, not unirradiated fuel manufactured. For the SNM-960 license, an Integrated Safety Analysis is not required. E. Saito stated that efforts are being made to submit a high-quality license application that will allow the staff to accept. GEH

[1] U.S. Nuclear Regulatory Commission, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility", Rev. 1, NUREG-1520. May 2010. ADAMS accession number ML1013901100.

appreciated discussions with the NRC staff to establish a common understanding of expectations.

NRC PRESENTATION

C. Ryder introduced the NRC presentation. Each reviewer present at the meeting discussed their respective technical area. Typically, a slide consisted of the information that was in the application that was submitted in 1989, the corresponding information that was present in the September 2010 application to illustrate the reduced information content in the latter, the regulatory basis for more substantial information than provided in the September 2010 application, and issues raised by not having the design information.

C. Ryder summarized the acceptance review of the license application dated September 30, 2010. Of the 13 topics, the staff found that five topics were not acceptable for a detailed technical review. The regulatory requirements for the content of an application are stated in Title 10 of the *Code of Federal Regulations* (10 CFR) 70.22(a)(7) and (8); an application is to have a description of the equipment, facilities, and procedures, that will be used to protect health and minimize danger to life or property. The regulation gives examples of equipment and facilities. C. Ryder briefly compared the information content of the September 2010 application to a 2-part application that was made in 1989, showing the reduced detail in the former, each time referring to §70.22(a), and listing several issues that were identified by the staff.

T. Naquin discussed radiation protection. The September 2010 application lacks citations to specific portions of 10 CFR Part 20. Examples include surveys and monitoring addressed without commitment to §20.1501 or §20.1502; airborne contamination control references to NIOSH & applicable parts of Part 20 without §20.1703. After citing applicable portions of Part 20, the application should explain how those portions will be met. Changes in the Part 20 should not be a concern for having to file license amendments; Part 20 changes infrequently.

C. Ryder discussed chemical safety because the technical reviewer was unable to attend the meeting. The September 2010 application states that hazard evaluations are performed where hazardous chemicals could affect the licensed materials; typically chemicals are in small quantities necessary to perform analytical or inspection procedures. C. Ryder stated that the application must state types, quantities, concentrations of chemicals that can affect licensed materials. Even small quantities (e.g., anhydrous HF) are hazardous. The basis for asking for the information is a memorandum of understanding between NRC and Occupational Safety and Health Administration (OSHA) which states that NRC is responsible for chemicals that could affect the safety of NRC-licensed materials.

C. Ryder briefly discussed material control and accountability (MC&A). The September 2010 application does not discuss how, at a minimum, four sections of Part 74 are met:

- §74.11, Reports of loss or theft or attempted theft
- §74.13, Material status reports
- §74.15, Nuclear material transaction reports
- §74.19, Recordkeeping

R. Przygodzki discussed the deficiencies of the decommissioning funding plan (DFP) and cost estimate (CE). The cost estimates are summary figures, preventing the staff from evaluating

the estimates. Labor categories and decommissioning activities are not delineated. Slide 14 of the NRC presentation illustrates the disparity between the information in the submittal and the information recommended by the Standard Review Plan (SRP) guidance in NUREG-1757.[2]

C. Ryder stated that the licensee must find a balance between sufficient detail to allow the staff to perform a safety review and being general enough to avoid the need for a license amendment every time a minor change to the plant is made. D. Turner agreed with the concept of achieving a balance before beginning the presentation.

GEH PRESENTATION

D. Turner said that the Vallecitos site is a research and development facility. Under the SNM-960 license, spent fuel segments are analyzed to determine the performance characteristics of the fuel assemblies while in a reactor. The activities performed under the SNM-960 license are, at present, at a minimal level.

One reason for the confusion about the expectations for the content of a license application stems from the Vallecitos site itself being under multiple NRC licenses and a State license. For the Vallecitos site, the licensee has possession-only licenses for each three reactors. Only one reactor, under another NRC license, is operational for neutron radiography and activation experiments. In the application, the activities on spent fuel are conducted under the SNM-960 license. Activities under other licenses will be delineated from activities under the SNM-960 license to the extent that they can be. But this is not always possible. Thus, a modification to the facility for work being done under, for example, the State byproduct license may be the same equipment that is discussed in the SNM-960 license. The main hot cells are used for both fuel examination under the SNM-960 license and for byproduct work under the State license. The activities under the NRC license and State license are not co-mingled, but the equipment used is the same. Radiation protection applies to employees and contractors who perform activities under multiple licenses, not just the SNM-960 license. The other special nuclear material license, SNM-1270, is for transportation activities, not for site activities.

D. Turner stated that the design basis of the hot cell would be provided. C. Ryder clarified that the issue is that fuel burn-ups have been increasing since the Vallecitos facility was built. The licensee needs to state how the increased burn-ups are accommodated. D. Turner said that higher fuel burn-ups result is less fuel being transported to the Vallecitos site in Type B transportation casks. The burn-ups are not used directly to determine the amounts of fuel. The determination is based on radiation protection. If the fuel segments can be safely transported to the Vallecitos site, then the fuel segments can be accommodated by the equipment at the site.

D. Turner stated that figures in the revised license application will be revised to remove clutter and highlight features to comply with §70.22(a)(7). C. Ryder stated that, contrary to Slide 12, the staff did not ask for pictures. The license may describe the facility with descriptions, pictures, sketches, or piping and instrumentation drawings (P&IDs) to meet §70.22(a)(7). M. Tschiltz stated that there is no requirement to provide photographs of the facility, P&IDs, or other specific forms of information. C. Ryder said that the staff is not expecting fabrication drawings or engineering drawings. The licensee may choose the form of information that they believe will demonstrate that the work under SNM-960 can be done safely.

[2] U. S. Nuclear Regulatory Commission, "Consolidated NMSS Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness", NUREG-1757, Vol. 3, September 2003. ADAMS accession number ML0324714710.

The staff had also commented that the flow of material through the facility is unclear. C. Vaughan stated that a figure indicating the flow of material will be provided. D. Turner stated that the block diagram in the September 2010 application raised more questions than it answered. C. Ryder clarified that the staff does not need to know specific analytical tests; the staff wants to know the flow of material through the site, from the time that it comes onto the Vallecitos site to the time that it is placed in the Hillside Storage Facility.

D. Turner indicated that the storage pool was last used under the SNM-960 license about 15 years ago. It is used for activities under the State license. The upcoming revised application may not include the storage pool under the SNM-960 license. Later, if the storage pool is to be used for spent fuel, the SNM-960 license will be amended.

C. Ryder outlined methods to find the balance discussed during the NRC presentation to determine the level of design detail for a license application; these methods had been mentioned during previous NRC/GEH interactions. These methods allow the licensee to make changes to equipment and procedures that have been cited in the application, and hence, for the licensing basis, without prior NRC approval. Four methods were outlined:

- Bounding statements. The licensee may make general statements, such as “no greater than”, and “at least”.

- Descriptions and sketches.

- §70.72-like process.[3]

- Categorizing equipment by uniqueness.

No further discussion of bounding statements, descriptions and sketches occurred.

The §70.70-like process that is in the September 30, 2010, application is taken from §70.72, but without the annual reporting to NRC Headquarters. GEH stated that they do not see a need to report the changes to NRC headquarters. Documented facility changes would be retained for 2 years. NRC Region IV staff review the change report when semi-annual inspections are conducted. The inspectors are closer, both temporally and physically, to the reported changes. By sending a change-report to NRC Headquarters, the staff merely reviews the changes and gives recommendations to the NRC inspectors anyway, but only once a year.

About 80 changes, relevant to the SNM-960 license, are made each year. To GEH, sending the change report to the NRC Headquarters staff is an unnecessary burden. A letter has to be prepared, and then sent though concurrence. The Vallecitos staff is a small group of people. T. Naquin said that that the current process, being done by the inspectors, appears to be working adequately to keep the licensing basis current; he is indifferent to keeping the current system or revising the system to include the Headquarters staff.

[3] Note from C. Ryder: A §70.72-like process gives criteria for deciding when changes require and do not require prior NRC-approval in the form of a license amendment. Changes that do not require NRC approval are reported annually to NRC Headquarters.

R. Evans stated that other Part 70 licensees are required to report changes annually to NRC Headquarters. Other licensees report every six months. Under §50.59(d)(2), a power reactor licensee reports changes during a 2-year interval. The length of the interval seems to be of secondary importance relative to the changes being reported to NRC Headquarters, but he prefers annual reporting. R. Evans differentiated between a summary of the changes and a list of the changes themselves.

The NRC staff said that they would have to discuss annual report of facility changes amongst themselves. GEH stated that they may want a conference call with the staff because a common understanding, in this regard, has not been established.

C. Ryder asked if GEH intends to list the equipment that would be important to safety. Changes only to the equipment on the list would be reported to the staff. GEH said that such a list is difficult to compose.

C. Ryder discussed a categorizing method, which was mentioned previously[4], to decide on the amount of detail to describe. Engineered systems can be placed in three categories:

- Common unit systems. Systems are obtained as a unit. The system may be assembled at a site, but the unit is the same, regardless of the site. An example is a master-slave manipulator. Beyond information to orient a reviewer, only the safety-relevant aspects of the system need to be described. A description may focus on the through-wall connection, which can be either air-tight or not air-tight. The remainder of the system is typical of these systems. D. Turner said that the through-wall connection is not air tight; ventilation is relied upon to prevent contamination from passing though the connection.

- Common systems individually configured. Common components are configured, in a site-specific manner, to form a system. An example is a ventilation system that can configured in many different ways. The number of redundant fans that are operating and in standby, the dampers, and the location of filters, all can vary from one site to another. Some systems have supply fans, other do not. A description of a ventilation system should discuss how the configuration achieves the safety function of maintaining a pressure gradient between areas of potentially high contamination to areas of low contamination.

- Unique systems. Unique systems are systems that cannot be found, or found in a limited extent, in industry. The entire system may need to be described in sufficient detail for the staff to make a safety determination.

D. Turner stated that the ventilation system description will be revised to show the supply side as well as the exhaust side. C. Ryder stated that the relation between the supply side and the exhaust side should also be discussed. For example, if the fans on the exhaust side fail, do the supply side fans continue to operate, reversing the pressure gradient that is being relied upon to prevent contamination. GEH stated that the supply side has no fans. Air is drawn from the supply side through ducts, past dampers, to the exhaust side. C. Ryder stated that the entire ventilation systems of the various areas need to be described, for example, in the laboratory buildings, and the Hillside Storage Facility.

[4] Memorandum from C. Ryder, NRC, to P. Habighorst, NRC, "Meeting Summary of February 18, 2010, Pre-Licensing Meeting with GE Hitachi Nuclear Energy: Vallecitos Nuclear Center", March 8, 2010. ADAMS accession number ML100570319.

D. Turner stated that chemical in contact with special nuclear material will be described. He briefly discussed the inorganic and organic chemicals. The revised submittal will demonstrate how hazardous chemicals do not affect the safety of special nuclear material. C. Ryder clarified that the issue with the September 2010 application was the lack of specificity. For example, the amount of chemicals is given as small laboratory quantities. The word “small“ is subjective. That aside, even a small quantity of some chemicals can be hazardous. Prior to the meeting, an NRC staff member had described an incident at a Westinghouse laboratory where an employee dropped a liter bottle of fuming nitric acid, causing an evacuation of the laboratory.

D. Turner stated that only two systems require backup power, the ventilation equipment and the criticality alarms. C. Ryder asked if the criticality alarms need to be reset upon a loss of power and if the backup power system includes an uninterruptible power supply (UPS). D. Turner stated that the alarms need to be reset. The alarms have a UPS to ensure that power is not completely lost during the transition from the normal power to the backup diesel generator. C. Ryder suggested that the manner in which the electrical system functions, as described by D. Turner, be discussed.

S. Murray discussed the DFP and CE. This submittal in July 2009 was consolidation for the entire Vallecitos site. The NUREG-1757 guidance is relevant only to the SNM-960 license. Information relative to the SNM-960 license can be delineated. Information about decommissioning methods is in two places of the 2009 DFP submittal, Chapters 4 and 8; this information will be consolidated in the revised DFP submittal. Decommissioning costs are difficult determine by the 1757 model. Decommissioning will occur in about 20 years; by that time, decontamination technology and methods will likely change. The method for estimating the decommissioning costs were in place prior to the NUREG-1757 guidance. Following the format of the 1757-guidance is difficult given the GEH method. In the NUREG-1757 format, equipment that will be decommissioned is itemized. The length of ventilation ductwork that would have to be decontaminated is difficult to determine because the ductwork is not readily visible; in determining the lengths, any contamination present would result in unnecessary exposure. Instead, GEH used their own model, which consists of scaling factors that have been used for many years to estimate remediation costs at many sites; the same method is used to determine GEH liabilities of decommissioning for business purposes. The scaling model is based on NRC studies, documented as NUREGs, in the late 1970 - early 1980s timeframe. S. Murray asserted that the GEH model is adequate for estimating decommissioning costs in the context of the DFP.

R. Przygodzki stated that the decommissioning cost should be based on currently available technology, not on technology possible available 20 years from now. The NUREG-1757 method has been used by other applicants to estimate the cost of decommissioning; these facilities are also older, like the Vallecitos Nuclear Center (VNC). GEH is allowed to propose an alternate method to the NUREG-1757 method. But the SRP guidance states that if an alternate method is used, such as a model, the model must be described in enough detail for the staff to determine whether the model is adequate and appropriate given the characteristics of the VNC facility. The relevance of the model to the Vallecitos site must be established. The basis for the costs in the estimate, such as waste disposal, must be provided. The SRP is guidance, not requirements.

R. Przygodzki and the GEH staff discussed the decommissioning costs of the spent fuel that is at the Hillside Storage Facility. GEH contends that the costs are the responsibility of the Department of Energy (DOE), not GEH. GEH stated that it does not have financial assurance in

place for such material. The matter was not resolved during the meeting; the staff would have to discuss this amongst themselves before any further discussion with GEH.

From the September 2010 application, the staff could not understand how a safe-batch of nuclear material is determined to prevent an inadvertent criticality. The staff is not questioning the definition of a "safe batch" amount, as stated in the application, but instead, how the amount of material is determined to be a safe batch amount. D. Turner explained that the method is analytical, not by volume or weight. From calculations, a fuel segment is characterized; the amount of a segment that constitutes a safe batch is determined. For example, if calculations indicate that a safe batch is half the length of a fuel segment, then when working with the safe batch, only half of the segment is taken for analysis. C. Ryder acknowledged that he understood.

T. Pham and C. Vaughan discussed the requirements for MC&A in Part 74. T. Pham stated that the September 2009 application states only that a Fundamental Nuclear Material Control plan is not required for the SNM-960 license; the application is silent on how Part 74 is met. C. Vaughan did not understand what the staff wanted by listing the requirements of Part 74 during the NRC presentation. He asked if reference can be made to procedures in the section of the application on management measures. NRC responded that while this may be done, a separate section is preferable. GEH contends that the SRP guidance for reviewing an application, NUREG-1520, does not have a separate review section on MC&A. The staff responded that the licensee may still have a separate section on MC&A.

Some licensing information, such as physical security, is documented in other reports, not the SNM-960 license. The decommissioning funding plan and cost estimate is reported separately and redacted because the information is proprietary.

OPEN ITEMS

By letter from NRC[5], GEH was to have a revised application by February 28, 2011. At the meeting, GEH requested an extension of 60 days from the day of the meeting. The staff said that they would discuss this with NRC management.

GEH suggested that a conference call may be necessary to complete the discussion regarding the §70.72-like change process.

The NRC staff will develop a position on whether the spent fuel waste in the Hillside Storage Facility should be part of the decommissioning costs for GEH or for DOE.

CONCLUSION

The meeting was productive in communicating the NRC staff's expectations for the content of a resubmitted license application. The need for information per §70.22(a) (7) and (8) was articulated to GEH. Items requiring further discussion were identified.

[5] Letter from B. Smith, NRC, to S. Murray, "Public Meeting To Discuss The Renewal Application Of Special Nuclear Material License SNM-960: GE-Hitachi Vallecitos Facility", January 6, 2011. ADAMS accession number ML103640096.