

TRIP REPORT
TRAINING SPONSORED BY SPANISH NUCLEAR SAFETY COUNCIL
“DISMANTLEMENT OF NUCLEAR AND RADIOACTIVE FACILITIES”

Subject

Staff participation in the Spanish Nuclear Safety Council course entitled “Dismantlement of Nuclear and Radioactive Facilities” on June 9-13, 2003

Dates of Travel and Countries/Organizations Visited

June 9-13, 2003

Madrid, Spain

Consejo de Seguridad Nuclear (Spanish Nuclear Safety Council) (CSN)

Empresa Nacional de Residuos Radiactivos (Spanish National Radioactive Waste Company)(ENRESA)

Centro de Investigaciones Energeticas Medioambientales y Tecnolgicas (Spanish Center for Energy-Related, Environmental and Technological Research) (CIEMAT)

Author, Title, and Agency Affiliation

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Sensitivity

Unclassified, not for public disclosure. Sensitive information - limited to NRC unless the Commission determines otherwise

Background/Purpose

As part of the Division of Waste Management's ongoing international activities associated with the decommissioning of nuclear facilities, staff from the Decommissioning Branch (DCB) participate in the Nuclear Energy Agency's Working Party on Decommissioning and Dismantlement (WPDD). The WPDD also includes staff from the Consejo de Seguridad Nuclear (the Spanish Nuclear Safety Council or CSN). In December 2002 DCB staff were contacted by CSN staff on the WPDD and were requested to participate as a guest foreign lecturer in the third training session offered to CSN staff and others on the decommissioning of nuclear facilities. The focus of the lectures were to provide information to the Spanish regulatory and industry staff on the NRC decommissioning program's regulatory framework and status of the U.S. decommissioning program for commercial facilities, as well as to discuss “lessons learned” from the decommissioning of sites in the U.S. Subsequent to my agreeing to participate in the training, I was requested to provide a seminar to CSN senior managers and industry representatives on the lessons learned in the NRC's decommissioning program. As part of the training and trip I was invited to tour the El Cabril low-level waste disposal facility and participate in a site visit with the class to the Vandellos 1 nuclear power reactor. Spain has 9 nuclear reactor facilities. Vandellos 1 facility is currently completing decontamination and decommissioning.

Abstract: Summary of Pertinent Points/Issues

On June 9-13, 2003, I participated in training for staff of the Spanish nuclear regulatory and waste management authority, made a presentation to the Spanish Nuclear Safety Council (CSN), and visited the El Cabril waste disposal facility and the Vandellos 1 nuclear power reactor. Staff from the Spanish nuclear industry also attended the training. Spain is currently completing the decommissioning of the Vandellos 1 nuclear power reactor and expects to begin decommissioning the Jose Cabrera plant in about 2006. This trip was beneficial to both NRC staff and CSN staff as it provided an overview of each country's decommissioning approaches for materials and reactor facilities, and allowed the staffs to interact on technical issues, such as cleanup criteria and public outreach activities.

Based on discussions with CSN and ENRESA staff, Spain does not face many of the same decommissioning challenges as the NRC. First, they use the European Commission standards for cleanup and clearance, which precludes the need to develop site-specific dose models and assessments. Second, Spain has a national radioactive waste and decommissioning authority, ENRESA, that assumes responsibility for, and does, the actual cleanup of nuclear sites. ENRESA is funded through fees to licensees, and thus, the financial assurance issues faced by NRC licensees undergoing decommissioning are not seen in Spain. ENRESA also operates the national low-level radioactive waste (LLW) disposal site for all LLW in Spain, the El Cabril site near Cordoba.

According to the CSN staff, they do face similar challenges in human resource needs (i.e., finding adequately trained staff) and institutional controls for sites that have restrictions on future site use. In addition, based on discussions with ENRESA staff, it appears that the low-level waste disposal capacity at El Cabril may be inadequate for the total expected volume of waste that could be generated by operational facilities and decommissioning activities, although this shortfall may not be seen for many years. The CSN and ENRESA are developing facility siting and management policies and procedures for the disposal of high-level waste, but the decision to actually develop a high-level waste disposal site will not be made until 2010.

Discussion

On June 9 and 10, I made presentations to the CSN, ENRESA and industry staff at the CIEMAT center located on the Madrid University campus. Attachment 1 is the list of class attendees. Attachment 2 is the course syllabus. The slides used for the 2 classes entitled "The USNRC's Decommissioning Regulatory Framework" and "Status of the USNRC's Decommissioning Program" and the presentation to CSN/Industry managers on June 12 entitled "Lessons Learned in the USNRC's Decommissioning Program", were provided to the Commission on May 29, 2003 (ML031420463). In addition, I observed presentations by the remainder of the class presenters. I also discussed the class, the Spanish decommissioning approach, the status of NRC's clearance efforts and revisions to the reactor decommissioning approach with CSN Commissioner Julio Barcelo', CSN Project Manager Jose-Luis Revilla, Marisa Marco, head of training for CIEMAT and Fernando Mir of IBERDROLA, one of the afternoon presenters. In addition to the slides, I provided Mr. Revilla with a compact disc containing the laws, regulations, NUREGS, SECY papers and other documents discussed in my presentations. All of these documents were downloaded from NRC's or other Federal agency public websites.

In Spain, responsibility for decommissioning rests with ENRESA with oversight by the CSN. The management of decommissioning and radioactive waste in Spain is administered through the General Radioactive Waste Plan, which is currently in its 5th edition. The CSN, which was formed in 1980, has regulatory oversight and licensing responsibility in Spain and reports to the Spanish Parliament. ENRESA, which is a national non-profit making organization was formed in 1984 and has responsibility for: the collection, transport, treatment disposal and control of radioactive waste generated in Spain; the dismantling of nuclear and radioactive installations; the restoration of uranium mines; and, research and development. ENRESA employs about 300 full time employees but collaborates with 600+ outside experts from industry and academia in order to fulfill its mission. ENRESA reports to the Ministries of Finance, and Science and Technology through the Spanish State Industrial Holding Company and the CIEMAT. This arrangement ensures that the decommissioning licensing authority remains separate from the implementation authority. Attachments 3 and 4 are brochures on ENRESA and its mission/capabilities.

During the class it became apparent that there was a general misunderstanding within the class that the U.S. Environmental Protection Agency (EPA) was not in agreement with the NRC on the appropriate cleanup criteria for facility decommissioning and had promulgated regulations governing the cleanup of licensed sites that were lower than the NRC criteria in 10 CFR 20.1401. I explained that, while EPA had issued guidance in 1997 concerning the use of 10 CFR 20.1401 as a cleanup level under the Comprehensive Response Compensation and Liability Act (CERCLA or Superfund), they had not promulgated regulations concerning a criteria for decommissioning. In addition, I explained that, with the requirement to keep potential doses to the public as low as reasonably achievable, EPA had acknowledged that the differences in the NRC regulations and EPA guidance were, in most instances, negligible. The class was also interested in the recently published Memorandum of Understanding on decommissioning in the context of this misunderstanding.

In addition, the CSN staff indicated that they were unsure how they would be implementing the institutional controls at a site in the near future. Currently, in Spain, all the disposal facilities for residual materials which have been treated (conditioned) and closed belong to the front end of the nuclear fuel cycle (i.e., tailings from mining and uranium mills). These disposal installations are currently in, what is termed in Spain as the "period of compliance," a surveillance phase pending a closure statement from the facility that will free the licensee from his responsibilities as the operator of the installations.

The period of compliance is established by the Administration in order to verify, in the short term, the suitability of the conditioning performed on the disposed of wastes and the structural and functional maintenance of the engineered barriers. During the period of compliance, the facility remains under the responsibility of the licensee and is subjected to regulatory control.

The period of compliance of a Spanish facility (La Haba) will end next year and the institutional control that might foreseeably be imposed in order to restrict the use of the site following the closure of this facility will need to be included in the closure statement. The institutional controls, which are to be specified in the closure statement, are not yet defined with respect to the organizations that will be responsible for long-term control. It is expected that shared responsibilities will be assigned depending on the different objectives of the institutional controls imposed.

On June 11, I visited the El Cabril waste disposal facility. Attachment 5 is a brochure on the facility and the facility visitor's center. The facility is located near Cordoba, at a decommissioned uranium mine site. The facility accepts low and intermediate level waste for conditioning (treatment) and disposal. The site consists of 28 above ground storage/disposal cells on 2 platforms (12 and 16 cells respectively). Wastes are either accepted in a treated form from the licensee or may be treated on site. Primary waste containers (drums and boxes) are filled with the waste and cement and placed in concrete storage units, which are numbered. Each of the storage/disposal cells can hold 320 of the concrete disposal units. The facility also includes laboratories, administration, security, and storage unit construction facilities and a visitors center. Currently, the facility is accepting about 2,000 m³ per year and has capacity to accept waste until about 2026. El Cabril staff indicated that ENRESA had applied to the CSN to construct a very low-level waste unit on site which may increase the ability of the facility to accept waste past the current expected closure date. El Cabril staff indicated that when completely filled the facility wastes would be about 70% from decommissioning activities and 23% from operational power plants. At the completion of the operational life of the facility, the disposal cells will be covered with earth and the site will be restored to a natural condition consistent with the surrounding area. The site will be monitored for 300 years, post-closure. ENRESA also has responsibility for developing the capability to dispose of Spain's high-level waste. Currently spent fuel is being stored on-site at the various reactors throughout Spain. ENRESA is conducting experiments in Switzerland to support the siting and design of a Spanish high-level waste repository. The goal is to provide sufficient information to allow the government to decide in 2010 if it intends to proceed with the development of a geologic repository

Of particular note is the considerable public acceptance/outreach efforts undertaken by ENRESA for this site. They host about 1 tour per day ranging from school children to foreign visitors and elected officials and have a very modern visitor's center on the site. In addition they provide about 150 jobs for local residents and their procurement approach is to purchase as many commodities as possible locally.

On June 12, 2003, I made a presentation to CSN, ENRESA and industry managers on the lessons learned in the NRC's decommissioning program. This presentation went well with only a few clarifying questions being raised by the audience. At the request of Mr. Revilla, I included an overview of the materials and reactor decommissioning approaches used in the US using slides 15-29 of the presentation entitled "The USNRC's Decommissioning Regulatory Framework." I also discussed the recent revision to the transfer process for power reactors undergoing decommissioning and issues and recommendations in SECY-03-0069 pertaining to restricted release/institutional controls, realistic exposure scenarios, preventing future legacy sites and intentional mixing, although I did not use any slides during these discussions as they had not been provided to the Commission on May 29, 2003. Attachment 6 is a list of the presentation attendees.

On June 13 I visited the Vandellos 1 power reactor near Barcelona. Vandellos 1 is a 497 MW graphite-gas reactor that was shut down in 1990 following a fire in a turbine generator unit. The plant owner, Hispano-Francesa de Energia Nuclear (HIFRENSA), performed preparatory decommissioning activities from 1990-1997 when responsibility for the decommissioning was transferred to ENRESA. When completed later in 2003 or 2004, 80% of the site will be released for unrestricted use with the remainder being controlled for 25 years by ENRESA, to allow for decay of material in the reactor pile. The reactor pile is being housed in a newly constructed containment structure. At the completion of this latency period in about 2027 the

remaining structures will be dismantled and the site will be returned to HIFRENSA. The project is expected to result in the generation of 2,000 tons of radioactive waste and 294,000 of cleared and uncontaminated waste. ENRESA is using the European Commission cleanup and clearance criteria and consider the project to be the basis for future plant decommissioning projects in Spain. The estimated cost of the decommissioning to ENRESA is approximately 50M pesetas. Attachments 7 and 8 are brochures describing the site and decommissioning activities. During the tour, I visited the container counting area, the closed reactor pile containment structure, the decontaminated fuel storage buildings and attended a briefing on the site, and the decommissioning activities.

Attachment 9 is copies of business cards collected during trip.

Pending Actions/Planned Next Steps for NRC

Follow-up to provide technical information and provide answers to questions raised by CSN staff that I was unable to address during the trip (e.g., where the GTCC waste from the Shoreham decommissioning was sent)

Points for Commission Consideration/Items of Interest

None

Attachments

1. Class Attendee List
2. Course Syllabus
3. Brochure entitled "Technological Capabilities of ENRESA"
4. Brochure entitled "Technology Applied to the Environmental Protection"
5. Brochure entitled "Environmental Management at the El Cabril Disposal Facility"
6. List of attendees at June 12, 2003 staff presentation
7. Brochure entitled "Dismantling of the Vandellos 1 Nuclear Power Plant"
8. Brochure entitled "Vandellos 1 Nuclear Power Plant Dismantling Project"
9. Copies of business cards collected during trip

"On the Margins"

None

List of attendant CSN Workshop - 12 September 2003

CSN

J. Barceló Commissioner
J.C. Lentijo General Director for Radiological Protection
L. Ramos Deputy Director for Environmental Radiological Protection
F. Rodrigo Head Decommissioning Branch
J.L. Revilla Project Manager for the Decommissioning Program of Vandellós 1 NPP

ENRESA

J.M. Graválos
P. Carboneras
J.L. Santiago

UNIÓN FENOSA

J. M. Lumpiañez
P. Diaz

CIEMAT

M. A. Sanchez de Mora
C. Roldán
C. Sancho Llerandi

SOLUZIONA INGENIERÍA

P. Ortega