NEWSLETTER

DECONTAMINATION, DECOMMISSIONING, AND REUTILIZATION DIVISION

OCTOBER 2003

NEWSLETTER CONTENTS

CHAIR'S MESSAGE

Welcome to the American Nuclear Society's Decommissioning, Decontamination and Reutilization (DD&R) Division's Winter Newsletter.

We have an interesting agenda planned for the joint ANS/ENS Winter Meeting in New Orleans (Nov 16-20, 2003). In addition to what is happening in the United States we have a session on Clean-up in the former Soviet Union which with the help of the Department of Energy and our European Friends will have several Russian participants. Additionally our Tuesday sessions on Decommissioning Projects and Technology will have several papers, which describe work underway in Korea and France.

CHAIR'S MESSAGE (Continued)

Over the next year, in addition to the 2004 ANS Annual Meeting in Pittsburgh, PA (June 13-17), DD&R will be sponsoring two sessions at the Pacific Basin Nuclear Conference in Honolulu, HI (March 21- 25, 2004). Details on these meetings can be found at http://www.ans.org/meetings. We are also supporting the Fuel Cycle and Waste Management Division in putting together the program for Spectrum 2004 in Atlanta, GA, August 22-26, 2004. The call for papers for Spectrum is at, http://www.ans.org/meetings/docs/2004/spectrum04-cfp.pdf. Finally a DD&R sponsored Topical Meeting is being planned for August 2005 in conjunction with the Colorado Section of ANS.

DD&R is also in the process of reviewing the responses to our members questionnaire so that we can improve member service. A summary of the results of the questionnaire are contained elsewhere in this newsletter and have been posted on the DD&R website including what DD&R plans to do to address the results.

What can you do to support DD&R? Participate!

DD&R publishes this newsletter twice per year. The questionnaire results indicate that you like what Vince Likar our beloved editor is doing and would like to see more. Therefore if you have something to contribute contact Vince, Vincebldr@aol.com. We are especially interested in what is happening outside of the United States so that we can learn from each other's experiences. If you have a paper you think is suitable in an ANS Magazine or Journal contact me and I will work with you and ANS to get it published. If the sessions we are sponsoring at ANS Meetings don't meet your needs contact Mark Price, pricemj@songs.sce.com, our Program Committee Chair with your suggestions for sessions that meet your needs.

If you have any suggestions to improve how DD&R supports its members please e-mail me, jbyrne@gpu.com. We are always looking for input from our members to improve how the Division operates.

Jim Byrne

MEETINGS AND CONFERENCES

2003 ANS/ENS International Winter Meeting and Nuclear Technology Expo in New Orleans, LA – November 6-20

DD&R supports the meeting theme of "Nuclear Science and Technology: Meeting the Global Industrial and R&D Challenges of the 21st Century" with 4 panel sessions and 1 paper/panel session planned in Track 5 "Decommissioning and Reutilization".

Nuclear Cleanup in the Former Soviet Union – Panel, Mon. p.m.
Research Reactors and Other Small Nuclear Facility. Decommissioning-I: Projects – Papers/Panel, Tues. a.m.
Research Reactors and Other Small Nuclear Facility Decommissioning-II: Technology - Panel, Tues. p.m.
Dose Modeling and Final Status Survey for Decommissioning-I – Panel, Wed. a.m.
Dose Modeling and Final Status Survey for Decommissioning-II – Panel, Wed. p.m.

MEETINGS AND CONFERENCES (Continued)

For more information, check the Preliminary Program that was recently issued or consult the ANS website at http://www.ans.org/meetings/docs/2003/wm2003-prelim.pdf.

14th Pacific Basin Nuclear Conference and Technology Exhibit "New Technologies for a New Era" in Honolulu, Hawaii – March 21-25, 2004

The American Nuclear Society is hosting the PBNC under the auspices of the Pacific Nuclear Council. Jim Rang at jsrang@chartermi.net and Steve Bossart, representing DD&R, are soliciting papers on D&D topics. For conference specifics and additional information, check out the website at www.ans.org/meetings.

2004 Annual Meeting "International Congress on Advances in Nuclear Power Plants" in Pittsburgh, PA – June 13-17, 2004

ANS will be celebrating its 50th anniversary at the Annual Meeting. In addition, 2004 is the 25th anniversary of the TMI-2 Accident. DD&R will be supporting the conference theme with several sessions TBD. There are five sessions planned with the organizers noted as follows:

TMI-2: 25 Years After the Accident – What Are the Lessons We Need to Remember? Organizer - Jim Byrne
Regulatory Interfaces - Organizer - Tracy Goble
Clearance of Solid Materials: Federal and Industry Update Organizer - Jas Devgun/Art Desrosiers
Human Legacy of Site Closures Organizer - Steve Bossart
Hot Topics and Emerging Issues – Organizer - Joe Carignan

Consult the ANS website at http://www.ans.org/meetings/docs/2004/am2004-cfp.pdf for info on call for papers.

Spectrum 2004 "Closure of Cold War Legacy Sites" in Atlanta, GA – August 22-26, 2004

Spectrum 2004, co-sponsored by DD&R, is an international conference intended to highlight the technical challenge and successes involved in closing cold war legacy sites and reducing public risk. For conference specifics, the call for papers, and additional information, check out the web site at www.ans.org/spectrum.

RECENT PAST MEETING

2003 Annual Meeting in San Diego California – June 1-5 at the Town and Country Resort and Convention Center

DD&R sponsored an embedded topical, along with co-sponsor FCWM, entitled "Decommissioning and Spent-Fuel Management" at the 2003 Annual Meeting which was a resounding success. We had an exceptional turnout of 75 papers submitted with eleven one half-day concurrent sessions scheduled over 3 days. Rich St. Onge, Southern California Edison, TPC, wishes to pass on his personal thank you to all who participated in the planning and organizing as well as those who attended the sessions.

LEGACY MANAGEMENT

As proposed in the May Newsletter, DD&R incorporated Long Term Surveillance and Maintenance (LTSM), i.e. long-term stewardship, into the activities of the DD&R Division. LTSM seems to strengthen the "R" or "Reutilization" part of the division's charter. Long Term Surveillance and Maintenance protects people and the environment from residual contamination until such time that additional cleanup can occur or until hazards have been lessened through radioactive decay, isolation of hazards, or destruction of the hazards by natural processes. LTSM can be an important link between the ceasing of operations and reutilization of the site and facility. DD&R will include the human legacy issues associated with the shutdown of sites and reduced work force needed at shutdown sites, and the impact to the workforce and local community to a greater extent than previously covered.

MEMBERSHIP QUESTIONAIRE

A DD&R Questionaire was developed earlier this year to solicit input from DD&R members. The purpose of the questionnaire is to identify areas where the DD&R division could more effectively serve its members, increase enrollment and serve the nuclear community. The questionnaire was placed on the DD&R website for approximately one month with over 230 members participating. The questionnaire was completed in early July 2003.

The survey addressed a number of areas including members' areas of interest, type of conferences members were attending, as well as information as to how members felt about the effectiveness of the division. They were also asked to provide comments on what the future DD&R division should focus on as well as how to increase membership.

As expected, the results noted the majority of the respondents are active in the decommissioning field and regularly participate in at least one ANS sponsored meeting per year. The area that stood out as being a roadblock to increased participation by members in DD&R related activities or conferences appears to be either a lack of funding or lack of available time. Since upper levels of management set the tone as well as approve budgets, travel and schedules for most company activities, the DD&R division should ensure the benefits of involvement by the nuclear community are clearly communicated. DD&R will address this issue in future meetings.

The DD&R committee has discussed the possibility of merging with another division if our membership falls off due to reduction in D&D activities in the industry. The respondents were almost evenly divided to either merge with the Fuel Cycle & Waste Management Division or to increase membership by recruiting more members from research reactors, DOD facilities, Army Corp., as well as DOE facilities. There also were comments noting that commercial operating power plants should show more interest and support for decommissioning since it is an inevitable they will need to address the issue in the future.

MEMBERSHIP QUESTIONAIRE (Continued)

In the area of improving DD&R division, there is overwhelming support of the DD&R newsletter. In addition, many comments suggested that Email be used more to communicate with members on a routine bases. There were various comments noting the DD&R could take a more active role in; expand scope of division to include plant and facility design for decommissioning; increase participation to more members by promoting regional activities and providing ANS(DD&R) member contact information to other members; and update the world wide decommissioning status periodically as well as encourage international participation.

The questionnaire also provided information on those participants interested in volunteering to support DD&R committees. The DD&R division will follow-up on these items and use the results in our future planning efforts. Personnel who expressed an interest in volunteering in various areas will be contacted shortly.

Thank all of you who participated in the survey. The results can be found on the DD&R website at http://ddrd.ans.org/index_objectives.html.

DD&R COMMITTEE MEETINGS

The schedule and location of all of the DD&R Division Committee Meetings at the ANS Winter Meeting in New Orleans are provided below. These meetings are open to all members of the division. If you are in New Orleans for the ANS Winter Meeting please stop in, we would like to meet you.

Sunday November 16, 2003, 1:00 – 3:00 PM – Program Committee (Loyola A)
Sunday November 16, 2003, 3:00 – 5:30 PM – Executive Committee (Loyola A)
Tuesday November 18, 2003, 7:00-8:30 AM- ANS-23 DD&R Standards Subcommittee (Oak Manor)

DD&R DIVISION SCHOLARSHIP

Cindy Fung of the University of Florida, this year's DD&R Scholarship winner, plans to attend the New Orleans meeting including the DD&R Executive Committee meeting. We look forward to her participation.

Solicitations for applicants for next year's scholarship will be distributed early in December. The deadline for applications is February 1, 2004. Details are given on the ANS web site under the Honors and Awards link.

NUCLEAR MATERIALS CLEARANCE

The SCRS (ANS) drafted a position on the clearance of materials from nuclear facilities late last year. This was approved by the ANS Board of Directors in March and is on the ANS website as Position Statement No. 50

AWARDS AND HONORS

Tom LaGuardia was the winner of the Best Paper at the DD&R Embedded Topical Meeting during the ANS Annual Meeting in June.

DECOMMISSIONING STANDARDS COMMITTEE

The following information provides the latest on the ANS Decommissioning and Site Remediation Standards.

3.12.1	Defueled Security Plan – The Department of Homeland Security (DHS) and the NRC have earmarked this "postponed" standard to combine it with Emergency Planning and involve ANS to work with DHS and the NRC to elevate the focus of security on decommissioned sites. Special attention will be given to onsite spent fuel storage.
3.12.2	Decommissioning of Nuclear Production and Utilization Facilities: Defueled Safety Analysis and Emergency Plan - A volunteer is needed to take this standard on and complete a final draft based on comments received. Steve Shepherd cannot continue in this role.
3.12.3	Decommissioning of Nuclear Production and Utilization Facilities: Operator Training - A final re-written draft is earmarked by the end of October.
41.5	Validation of Data from Radiological Analyses for Use in Environmental Remediation - The 41.5 Working Group had a meeting in August to review /resolve comments received. A final draft is still anticipated by the ANS Nov meeting
41.6 & 41.7	These standards are nearly complete. The NRC is considering converting these two standards from prescriptive standards to performance based standards. An answer is expected by the ANS Nov meeting

Standards that provide a “dose approach” to site remediation standards including the consideration of developing a standard on Automated Survey Scanning Technology for Site Characterization is needed. In conjunction, two new topics with identified Working Group Chairs is earmarked by the ANS November meeting. The DD&R Division's input is needed.

The ANS NFSC is still looking for ways to expand the development of ANS standards as joint US/International standards. The US Nuclear Technical Advisory Group (NTAG) still needs volunteer experts to develop and maintain international standards on nuclear fuel technology, radiation protection, and radiation processing. An effort to identify a minimum of six technical experts in support of this effort by the ANS November meeting is earmarked.

Manpower is needed in the following areas:

Nuclear Fuel Technology
Fuels Fabrication
Soil Contamination
Waste Conditioning
Environmental Cleanup
Radiation Protection
Waste disposition
International transport of radioactive material
Fission yields
Portal detection of radioactive material
Processing Plutonium
Cask design
MOX fuels

Anyone who is interested in providing support to these important Standards activities should contact Don Eggett at dreggett@aesengineering.com

SAXTON DECOMMISSIONING UPDATE

Since publication of the last newsletter Saxton has completed the Final Status Survey of the below grade portions of the Containment Vessel (CV). Following NRC acceptance of the Final Status Survey Report for the CV we will begin backfilling the CV to about 5 feet below the existing grade in preparation for removal of the upper portions of the CV late this year.

In addition to work in the CV, in conjunction with Shonka Research Associates (SRA) we have completed the survey project of approximately 11,185 tons of building debris and 5300 tons of soil to be used as backfill at the site. In addition SRA has used their large array scanning technology to help us perform the Final Status Survey of approximately 1000 feet of underground tunnels and the basement of the excavated steam station which was located next to the nuclear plant during plant operations but had been demolished in 1975.

Additionally Saxton was recently approved as an American Nuclear Society Nuclear Historic Landmark.

RANCHO SECO DECOMMISSIONING UPDATE

Spent Fuel Pool – Liner removal is in progress by use of a milling apparatus that cuts the welds between panels and wall embeds. All remaining water on-site with significant boron or tritium has been processed and released. Current radioactive water generation is being evaporated with drum dryers. Planning for sampling under the pool is in progress.

System Dismantlement - System dismantlement continues in the Auxiliary and Reactor Buildings. Auxiliary Building work includes remaining electrical systems in contaminated areas and general area preparation for characterization surveys. Planning is in progress for embedded piping decontamination. Structural steel, electrical and small-bore piping systems continue to be removed in the Reactor Building.

Large Components – Cutting of the vessel head is scheduled to begin in mid October. Cut into five pieces, the head can be shipped and disposed of for significantly less than an intact shipment. The pressurizer is scheduled to ship to Envirocare first quarter of 2004. Preparation of these components is in progress. The steam generators should go to Envirocare by rail in 2005 but will require cutting in half. Steam Generator penetration closures are being installed and the necessary transportation exemptions are being pursued. Detailed characterization of the vessel and internals is complete. An RFP has been issued for internals segmentation with an October 15th pre-bid meeting scheduled. The current plan calls for vessel segmentation as well.

Outside Components - Work is nearly complete on dismantlement of the large outside tanks and remaining contaminated outside systems. These include the Borated Water Storage Tank, the Demineralized Reactor Coolant Storage Tank and the Spent Fuel Cooler. Underground piping removal will begin next spring.

License Termination Plan – Work has begun on the LTP. Initial meetings with the NRC are planned for spring. Characterization work is ongoing to support this effort.

RANCHO SECO DECOMMISSIONING UPDATE (Continued)

Site Re-Powering – SMUD has received final state approval for a 500 MW natural gas fired plant on utility property south of the current security fence. The plant will make use of the switchyard and site water supply. Plant components are arriving daily.

Cutting the Spent Fuel Pool Liner

Cutting a Core Flood Tank

Removing the Borated Water Storage Tank

RANCHO SECO DECOMMISSIONING UPDATE (Continued)

A Possible Faster Way

CONNECTICUT YANKEE DECOMMISSIONING UPDATE

Decommissioning - Connecticut Yankee's excellent safety record continues with more than 1160 days and 2.5 million hours worked without a lost time accident as of September 2003. On June 13, CY notified Bechtel Power Corporation that it was terminating Bechtel's contract to decommission the Connecticut Yankee plant. That notification initiated a 30-day 'cure period' during which Bechtel had an opportunity to resolve its contract defaults. The termination became effective July 13, 2003. An orderly transition of the project back to CY was initiated on July 14, 2003. New agreements with project subcontractors were executed, CY procedures for decommissioning activities were issued and CY assumed direct supervision of the project. The transition was successfully completed in August and major decommissioning activities resumed.

Wayne Norton, former president of Maine Yankee, became the new president of Connecticut Yankee on August 1, 2003.

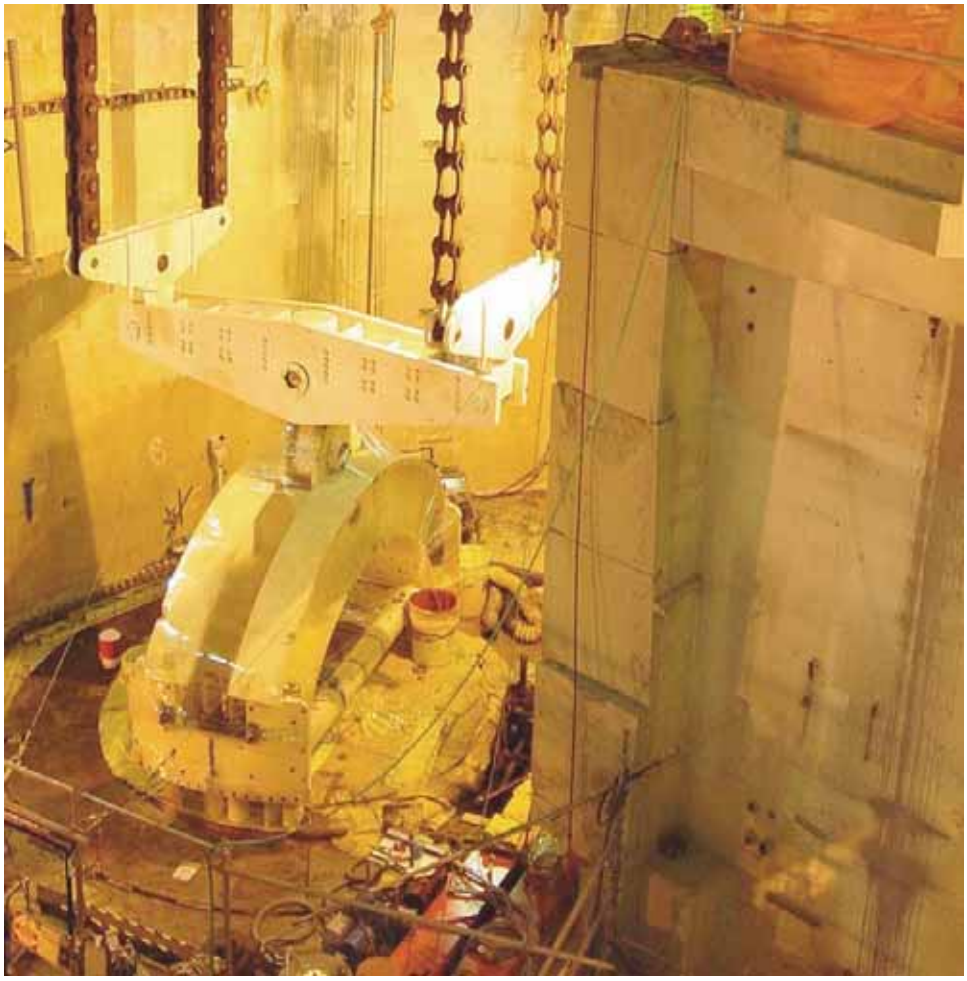
Preparations for removing the reactor vessel from containment are underway. The RPV was secured and the final two nozzles cut and removed in September. Lifting of the RPV and its placement into the shipping canister is scheduled to occur at the end of September. Removal of the RPV from containment is planned for early November. Shipment to the Barnwell low-level radioactive waste disposal facility is scheduled for December. Work continues on tank farm demolition activities. Removal of the remaining tanks and soil remediation in the tank farm area is scheduled to be completed by the end of the year.

CONNECTICUT YANKEE DECOMMISSIONING UPDATE (Continued)

On July 2, 2003, the NRC issued a Memorandum and Order denying the petition of the Citizens Awareness Network (CAN) which asked the Commission to reconsider the radiation dose standard set out in 10 C.F.R. §20.1402. The Commission further denied CAN's request that the Commission direct the Atomic Safety and Licensing Board (ASLB) for this proceeding to accept CAN's Amended Contention 6.1. The Commission also directed the ASLB to reject CAN's Amended Contention 6.1. A ruling by the ASLB and final order on CY's LTP is expected fall 2003.

Dry Fuel Storage - ISFSI site work is nearly complete. Construction of the monitoring facility building is complete, outside power has been routed to the ISFSI site and electrical and security modifications are nearing completion. Vendors are onsite mobilizing for fuel transfer operations. Dry fuel run one and two are in progress. Fuel reconstitution is also complete. In the Spent fuel pool building the set up and testing of equipment and systems to support fuel transfer operations continues. Fuel transfer operations are expected to begin in the first quarter of 2004.

Lower Canister being Towed into Containment



Inside RPV Lift System

YANKEE ROWE DECOMMISSIONING UPDATE

Decommissioning - Site safety performance remains excellent at Yankee Rowe with more than 1,102,000 safe hours worked as of September 2003. Rick Kacich, interim president of Yankee Atomic Electric Co., was appointed president in the spring of 2003. Physical D&D is scheduled to be completed by June of 2005. An integrated schedule has been developed to effectively coordinate demolition, regulatory and environmental activities and expedite site closure.

Yankee's License Termination Plan will be submitted to the NRC this fall. In addition, Yankee has prepared a 'living document' called a Site Closure Plan for non-radiological site closure efforts. The Site Closure Plan will be integrated with the LTP and capture the final requirements and processes for releasing the site. The Plan and associated documents, permits, and applications will be updated on a regular basis and available to all stakeholders on Yankee's web site at www.yankee.com.

YANKEE ROWE DECOMMISSIONING UPDATE (Continued)

Demolition Underway -DEMCO, Inc., a decommissioning and environmental management company based in West Seneca, New York, is mobilized on site and has begun taking down structures on the secondary side of the plant. The Warehouse, Service Building Annex and Administration building were demolished in August and September. Abatement activities on the Turbine Building are underway. Demolition of the Turbine building is scheduled to be completed by the end of the year. Yankee's signature Horton Sphere, along with other structures in the RCA, will be demolished next year. Demolition of all above grade structures is scheduled to be completed by the end of 2004.

Transfer to Dry Fuel Storage Complete - Yankee Rowe completed the transfer from wet to dry fuel storage on June 21, 2003, when the 16th and final storage cask, containing Greater Than Class C (GTCC) waste, was placed on the ISFSI. The 15th and final storage cask containing spent fuel was placed on the ISFSI on May 31, 2003. The drain down of the 150,000 gallons of water in the spent fuel pool was completed on Friday, September 12, 2003, marking a significant milestone in the preparation of the spent fuel pool building for demolition.

16 Loaded Casks in the ISFSI, 15 with fuel, 1 with GTCC

MAINE YANKEE DECOMMISSIONING UPDATE

Maine Yankee's decommissioning began in 1997 and is scheduled to be finished in spring 2005. The project is about 80 per cent complete. Visitors to the site are now struck by the difference in appearance as a number of structures have been demolished and removed in the past few months.

Safety is the number one priority and remains strong. With a workforce of about 390 and approximately 4.6 million hours worked on the project there have been just seven lost time injuries. The last occurred in May 2002. Additionally, the annual OSHA recordable incident rate is 1.1 per 200,000 hours worked, significantly below the construction/demolition industry average of about 7.8. In the area of worker dose, the project is at 43.5 per cent of the NRC limit of 1115 person-REM which compares favorably with the work being 80 per cent complete.

Major milestones since last spring include: safe shipment and disposal of the reactor pressure vessel, transfer of more than half the spent nuclear fuel to dry cask storage, demolition and removal of numerous structures, good progress on containment demolition both inside and out, and near completion of the remediation of the plant's former discharge area known as the forebay. Additionally, about 55 percent of the expected waste from the project has been shipped, most of it by rail.

Key challenges in the coming months include removal of the neutron shield tank which is the last large radiological component, completing remediation, final status survey and backfill of the forebay, reducing waste backlog and fuel transfer which is scheduled to be complete by the end of February or early March.

For additional information, please contact Maine Yankee Public and Government Affairs Director Eric Howes at howese@myapc.com.

Turbine Building Demolition Sequence

ROCKY FLATS DECOMMISSIONING UPDATE

Rocky Flats achieved an historic milestone in August by removing the last remaining weapons-usable nuclear material, allowing closure of the final high security plutonium handling and storage operation on site.

This achievement decreases the level of risk for the site and surrounding communities while saving nearly $2 million in monthly security costs that now can be applied directly to cleanup projects.

More than 2,000 special shipping containers carrying packages of plutonium metals, oxides and composites and several hundred containers of enriched uranium were packaged and shipped to other DOE Weapons Complex sites over an eight-year period. Receiver sites for the Rocky Flats inventory included the Savannah River Site, Pantex, the Y-12 Plant at Oak Ridge and the Lawrence Livermore and Los Alamos National Laboratories.

Completing the last plutonium packaging and shipping project beat a state of Colorado and Environmental Protection Agency milestone by 12 years. Rocky Flats cleanup and closure is currently progressing under budget and ahead of schedule for the December 2006 closure date.

While new technology was developed to process, package and transport the site's special nuclear material, many of Rocky Flats' most successful achievements resulted from adapting existing technology to the site's needs.

A recent example involved modifying a lifting device commonly used by the aviation industry to ease D&D waste removal from the second floor of Building 776/777.

Building 776/777 has only one elevator that can be used to move waste from the second to the first floor, so the project set out to find better a way for the waste team to keep up with D&D waste generation.

Although cranes could be used to pick up cargo containers from a stationary platform, limited space, overhead obstructions, cost and potential hoisting and rigging risks combined to convince the Building 776/777 Project to look for a better solution.

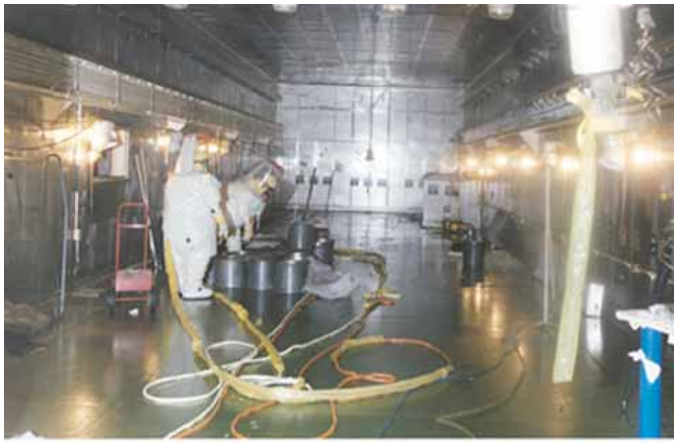
The project identified the Main Deck Loader 40 (MDL-40) hydraulic loading platform commonly used at airports as a potential solution. By working with the manufacturer and the Department of Energy's Office of Science and Technology (EM-50), the project was able to modify the 40,000-pound capacity lifting platform to safely handle cargo containers that could be loaded through a hole cut in the wall on the building's second floor.

By loading D&D waste directly into cargo containers, then lowering them to the ground and removing them by fork truck, the project was able to increase worker safety and drastically cut the time required to remove waste from the second floor.

Rocky Flats continues to accelerate the pace of D&D and to date has demolished 302 out of more than 800 structures scheduled for demolition.

Since Jan. 1995, the site has shipped nearly 105,000 m^3 of low-level, more than 40,000 m^3 of low-level mixed and 8,000 m^3 of transuranic and TRU-mixed waste. Recently Rocky Flats set a new record by sending 111 waste shipments off site in one week.

ROCKY FLATS DECOMMISSIONING UPDATE (Continued)



Left Picture – (Before) The XY Retriever was one of several highly contaminated plutonium vaults that now stand empty

Right Picture – (After) Removing the site's weapons usable nuclear material allowed D&D of the XY Retriever

The modified MDL-40 allows crews to load waste directly into a cargo container from the 2nd floor

SONGS UNIT 1 DECOMMISSIONING UPDATE

The following is an update to the San Onofre Nuclear Generating Station Unit 1 (SONGS 1) Decommissioning Project activities since the last input in October 2002. After the successful removal of the large components from containment in October 2002, the project focused its attention on three specific areas:

- Preparing for transporting the reactor pressure vessel to the Barnwell, SC LLRW disposal facility,
- Completing the construction of the independent spent fuel storage installation for dry cask storage of SONGS 1 fuel and initiation of movement of fuel into storage, and
- Demolishing the Sphere Enclosure Building, the concrete structure built around the SONGS 1 containment sphere.

Reactor Pressure Vessel (RPV) Transport - All large components except the RPV were transported to Envirocare of Utah for burial late in the fourth quarter of 2002. The RPV remained on site until preparations for its transport to Barnwell were completed. The RPV is currently scheduled for delivery to Barnwell in 2004.

Independent Spent Fuel Storage Installation (ISFSI) - The ISFSI will initially hold 19 concrete Advanced Horizontal Storage Modules. Each module weighs about 200 tons and will contain a fuel canister with 24 fuel assemblies. SCE plans to remove all the Unit 1 spent fuel from Unit 1, 2 and 3 spent fuel pools by the spring of 2005 and store it in the ISFSI until the DOE removes the fuel from the SONGS site. The first canister is scheduled to be loaded by the end of September 2003.

Sphere Enclosure Building (SEB) Demolition - In early summer 2003, the project began another major phase with the planned demolition of the unit's sphere enclosure building. Due to the close proximity of the SEB to the SONGS 1 fuel storage building and the height of the top of the SEB outer wall above ground level, the demolition plan for the SEB required numerous specific precautions to ensure the safety of personnel, the spent fuel building, and its contents. The SEB is being cut, using a diamond wire, into blocks weighing an average of 18,000 pounds. Each block is seismically restrained until lifted from its cut location to the ground by a specially configured crane. Approximately 338 blocks, representing about 25% of the SEB by weight, will be cut from the SEB wall in areas near the SONGS 1 fuel storage building. The remaining SEB will be removed by more traditional demolition techniques.

Looking Ahead - During the next twelve months, the project will focus on completing the following decommissioning activities:

- Transporting the RPV to its burial site
- Update on the movement on Unit 1 spent fuel to the ISFSI
- Demolishing and removing the Sphere Enclosure Building

SONGS UNIT 1 DECOMMISSIONING UPDATE (Continued)

ISFSI Construction

RPV Loading

Crane Lift

BIG ROCK POINT RESTORATION PROJECT UPDATE

The transfer of the reactor vessel from its long-time location in the containment sphere into its shipping container highlighted 3rd quarter progress at Big Rock Point Restoration Project.

After 41 years in its concrete cavity, the 235,000 pound reactor vessel was gently moved up, across the reactor deck, and down into the 25-foot tall steel shipping container. The move took more than 8 hours and was declared complete at 10:11 p.m. on Aug. 25 when the top cover plate of the reactor was lowered into the container.

Welding the top cover plate in place began shortly after the reactor move was completed. Electric heating blankets were used to warm the top three feet of the reactor to 200 F. During the heating period, 15 employees from PCI, the welding contractor, were busy setting up their custom designed remote welding system. This unique system consisted of a rail attached to the top plate of the container and 3 remote controlled welding machines. Each machine traveled 10 feet along the rail, covering the entire 30-foot circumference in 120-degree arcs. Each machine's work was remotely controlled and monitored through machine mounted miniature cameras that sent live video to control stations.

The weld area traveled all 360 degrees around the container; is 4 inches tall and ice cream cone shaped, and ranges from 1/8 inch wide at the bottom to 4.5 inches wide at the top.
A total of 1,200 pounds of weld material was fed from spools located on both sides of each machine as they traveled back and forth covering 5 feet on either side of their respective center points. Argon gas was used to ensure impurities didn't interact with the weld. The machines laid down a 1/8-inch thick weld on each pass and covered about 3.5 inches per minute.

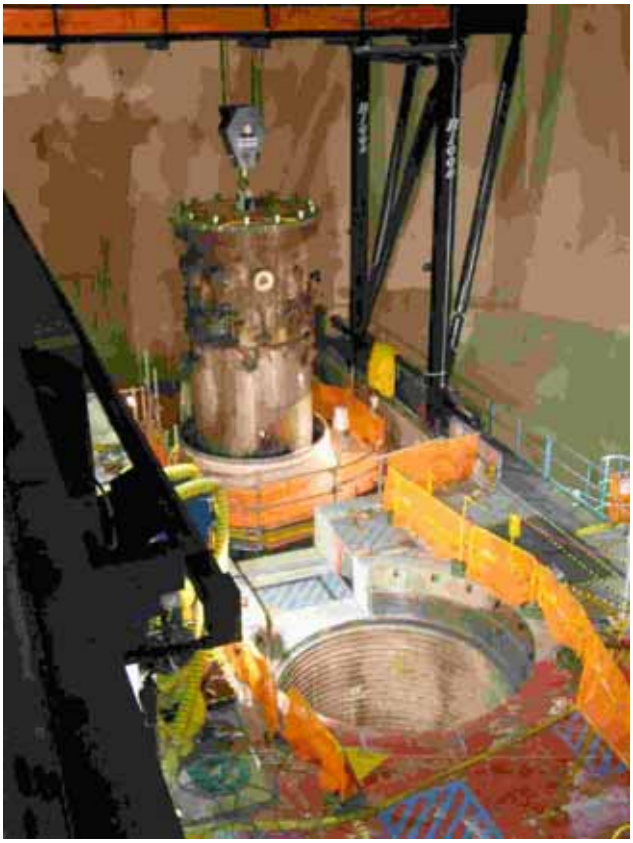
Once the welding was completed, filling of the reactor vessel and container with low-density concrete began. Concrete was injected into the reactor in four-foot layers. Once each four-foot layer cured, another four-foot layer was injected until the reactor was filled. The process was then moved to filling the voids around the reactor and inside of the container. The process created one solid, monolithic package for shipping.

The reactor is scheduled for shipment by heavy hauler and rail to Barnwell in October 2003.

The U.S. Nuclear Regulatory Commission held a public meeting in August to solicit public comment concerning the plant's License Termination Plan. No objections were raised concerning the plan to release the site for unrestricted use.

Also, the plant's turbine building was declared cold and dark on Sept. 11 and the former administration building was surveyed and declared clean of contamination. Both buildings are scheduled to be dismantled next year with clean building material shipped for disposal to a local industrial landfill.

BIG ROCK POINT RESTORATION PROJECT UPDATE (Continued)



RPV Movement to Shipping Container

RPV Shipping Container Top Weld

WEST VALLEY DEMONSTRATION PROJECT UPDATE

The West Valley Demonstration Project - The West Valley Demonstration Project (WVDP) is a U.S. Department of Energy led radioactive waste management and environmental cleanup project located in Western New York State. It is the location of the nation's only operational commercial spent nuclear fuel reprocessing facility. A primary mission of the Project – Vitrification of approximately 600,000 gallons of highly radioactive liquid waste – was completed in 2002. The Project is now focusing on decontamination activities. The WVDP is managed by West Valley Nuclear Services Company, a member of Washington Group International's Government Services Division, and is owned by the State of New York.

West Valley Maintains Excellent Safety Record - The WVDP, a Star site (the highest recognition given for safety performance) under the U.S. Department of Energy's Voluntary Protection Program, achieved 1 million consecutive hours worked without a lost-time accident on August 31, 2003.

Spent Nuclear Fuel Shipment and Fuel Pool Decontamination - Spent nuclear fuel stored at the WVDP was shipped off-site to the Idaho National Engineering and Environmental Laboratory for storage in July 2003, concluding more than 35 years of spent fuel storage at the West Valley site. The shipment of the 125 spent nuclear fuel assemblies took two years to plan.

Decontamination of the former Fuel Receiving and Storage Facility was completed in May 2003. The facility, comprised of adjoining pools with depths of 29' and 45', held approximately 800,000 gallons of water and several pieces of equipment and debris associated with spent fuel handling and storage. High radiation levels complicated the project, along with portions of materials that required repeated decontamination and special shielding requirements upon removal from the pool. The Fuel Receiving and Storage decontamination project was completed safely, five weeks ahead of schedule.

Decontamination of the Product Purification Cell-South - Decontamination of the Product Purification Cell-South (PPC-S), a reinforced concrete cell in the Main Process Plant, was completed in August 2003. The cell was used during former nuclear fuel reprocessing operations to complete the polishing of uranium and plutonium nitrate streams. Decontamination of the PPC-S significantly reduced the radiological hazards posed by contaminated equipment and debris remaining in the cell. The difficulty in completing this task was attributed to the cell's location in the plant—spanning four levels—the amount of vessels and piping contained in the cell, and contamination levels of 50 to 70 million dpm/cm^2 alpha with dose rates from 0.5 to 25 mR/hour.

The Product Purification Cell-South decon team removed 28 vessels, including tanks and ion exchange columns, and 3,202 feet of piping ranging in size from 1/8 inch to 1-1/2 inches, from the cell. Despite several engineering challenges, the project was completed safely, within budget, and ahead of schedule. The project required more than 47,000 man-hours and more than 240 entries were made into the cell, which were accomplished with no skin contaminations, no uptakes of radioactive material, no unplanned exposures greater than administrative control levels, and no airborne events exceeding permissible levels.

WEST VALLEY DEMONSTRTION PROJECT UPDATE (Continued)

Rail Shipment of Spent Fuel Cask

49 foot Level, Cask Loading Pool Being Emptied (Blue Area is fixative for contamination)

TROJAN NUCLEAR PLANT DECOMMISSIONING UPDATE

After just over nine months of fuel loading activities, the Trojan Nuclear Plant dry fuel storage project was successfully completed. Loading of the first Multi-Purpose Canister (MPC) began on December 30, 2002. Fuel loading was temporarily suspended after loading the 33rd MPC to allow for the spent fuel racks to be removed from the spent fuel pool. The rack removal effort included vacuuming and removing the spent fuel racks, preparing the racks for shipment to the US Ecology low-level radioactive waste disposal facility near Richland, Washington, and cleaning and inspecting the spent fuel pool. Rack removal activities took approximately four weeks to complete. The 34th (final) MPC was subsequently loaded and placed on the ISFSI pad on the evening of September 3, 2003.

During the course of the ISFSI loading campaign, two MPCs were loaded in less than 5 days and about half of the MPCs were loaded in the 5- to 6-day range. The project was completed safely and within budget and ahead of schedule.

The spent fuel pool is being drained in preparation for decontamination and ultimate removal of the spent fuel pool liner. The liner is expected to be removed by the end of 2003.

MPC Removal from Cask Load Pit

Trojan ISFSI with 34 Loaded Casks

FERMI 1 NUCLEAR PLANT DECOMMISSIONING UPDATE

The Fermi 1 Decommissioning Project team successfully reacted the sodium and NaK residues in two vapor trap systems this summer. This effort followed months of setup of the necessary piping systems and preparation and review of procedures. The team used steam in a nitrogen atmosphere to convert the sodium and NaK to sodium hydroxide, potassium hydroxide and hydrogen. The nitrogen and hydrogen effluent was scrubbed of particulates, filtered, monitored and released. The hydroxide was neutralized. Processing of primary sodium containing pipe in a reaction chamber also commenced this summer. The team has successfully processed more than a dozen tanks and other large components containing sodium product residues to date. Preparations continue for future sodium processing.

One group is cutting sheathing from around the primary sodium system piping in the Reactor Building basement and another is fabricating the next processing system components. A third group is working on processing using the reaction chamber and a fourth is removing gravel from under the floor and cutting a hole in the maintenance pit wall, so that a safer access can be installed to a room containing two sodium tanks underneath the floor. Considerable work has and is being performed to improve access to the equipment being processed or removed. Much of the equipment at Fermi 1 is located in shielded compartments underneath the operating floor or behind concrete walls. These features provided good shielding and isolation from a sodium mishap during plant operation, but make the decommissioning challenging. Typically, the only access is through a top manhole. Safer access and exit pathways are being installed in several work locations.

Other highlights include completing the cutting of the reactor machinery dome. Its paint included both PCBs and lead. We were happy to wave the last pieces goodbye. The majority of cables were removed from the Reactor Building. We are proceeding with the license termination planning, including the site historical assessment and hope to drill ground water monitoring wells this fall.

Abating Paint from the Reactor Machinery Dome

COMMERCIAL POWER STATION DECOMMISSIONING IN THE UK

Background

The commercial nuclear power stations in the UK are owned by two utilities: BNFL (with Magnox Electric as its operating arm) and British Energy. BNFL owns 26 gas-cooled, graphite moderated Magnox reactors of which 14 have been permanently shutdown. The rest will all be shutdown by 2010. British Energy owns 14 Advanced Gas-Cooled reactors and one PWR. These are all operational and there are no immediate plans for shutdown. The prototype nuclear stations are owned by UKAEA: these are all shutdown.

Decommissioning Strategy

The UK does not have a disposal site for the activated radioactive wastes that will be generated from reactor decommissioning, and is unlikely to have one for many decades. Magnox reactors are huge. The steel pressure vessel and graphite core together weigh around 5000 te and were built on site. British Energy's AGRs are even larger: they have pre-stressed concrete pressure vessels. The Magnox reactor fleet is constructed primarily from low cobalt carbon steel so dose rates drop rapidly after shutdown to the point where personnel access inside the bioshield is safe some 85 years after shutdown. Gas-cooled reactors must be dismantled on site and personnel access would greatly help this process.

Significant quantities of activated radwaste originating from fuel components are stored on UK gas-cooled reactor sites. This volume reduction minimises fuel transport movements to the Sellafield reprocessing plant.

The UK has nuclear fuel reprocessing facilities and, as a signatory to the OSPAR Treaty, the Government requires all Magnox fuel (but not oxide fuel from the AGRs and PWR) to have been reprocessed by 2012.

As a result, the UK's decommissioning strategy is to defuel the reactors to meet our OSPAR commitments, dismantle all power station buildings except the reactor buildings, then Safestore the reactors for a period of up to 100 years. The more chemically reactive operational wastes will be retrieved, packaged and stored on site awaiting a final disposal route. The Hanford River Corridor reactors are being placed into Safestore on a similar strategy.

Physical Decommissioning Progress

Six of the BNFL Magnox reactors have been fully defuelled and defuelling of another four is underway. Each reactor contains around 25,000 fuel rods, each of which must be handled individually, so the process takes around three years. Meeting our international treaty obligations is the Company's top priority.

Significant strides have been made in deplanting and demolition at Berkeley in England, Trawsfynydd in Wales and Hunterston A in Scotland. Design work is now complete on operational waste retrieval systems and stores with 100-year lifetime capability. Large quantities of this operational waste has already been retrieved at Trawsfynydd and has been placed in an interim store awaiting planning permission for the long term store.

COMMERCIAL POWER STATION DECOMMISSIONING IN THE UK (Continued)

Considerable progress is being made by BNFL, under contract to UKAEA, in the complete demonstration dismantling of the Windscale AGR. The entire reactor is being dismantled, packaged and stored at Sellafield awaiting a final disposal route.

Public Inquiry at Trawsfynydd

The nuclear power station at Trawsfynydd in Wales is unique in being built in a National Park. This construction was sanctioned in the 1950s against a backdrop of massive regional unemployment and power shortages. The absence of a radwaste disposal route means this station, like the others, will be put into Safestore for a 100-year period and that a store for the operational waste must be built. The UK's stringent land use (zoning) legislation lead to the National Assembly for Wales, together with the UK Government, calling a Public Inquiry into this proposal on the grounds of national interest.

Because of the unique National Park location, BNFL Magnox Electric proposed lowering the reactor buildings by 20m and constructing a curved roof to blend into the surrounding mountain landscape. The pictures show the power station's location in the Park and the proposed 100-year Safestore envelope.

The Inquiry was held in November/December of 2002 and planning permission for the work was granted jointly by the National Assembly and UK Government in July 2003.

Future Liabilities Management in the UK

The UK Government intends to set up the Nuclear Decommissioning Authority (NDA). All of BNFL's and UKAEA's assets and liabilities, including the reprocessing facilities at Sellafield and Dounraey, will be transferred to the NDA. The NDA will let M&O contracts for each site and the M&O contractors will, in turn, let decommissioning contracts for their sites. The NDA will negotiate with Treasury for decommissioning funds and will take the income from electricity sales. This new arrangement does not include British Energy, which is not owned by Government; neither does it include Defence sites.

The proposal requires primary legislation and Parliamentary time has been timetabled for the Autumn of 2003 with aim that the NDA will be up and running by April 2005.

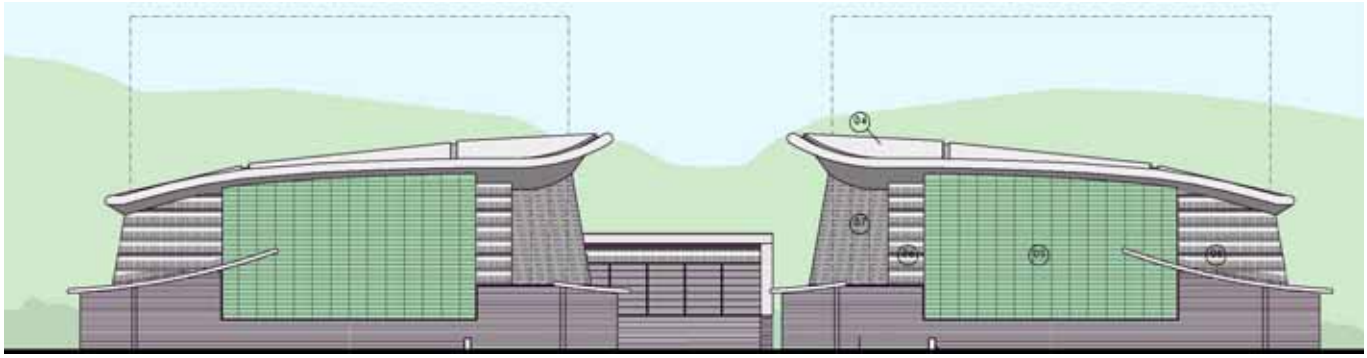
This major change to the way UK nuclear industry does business requires a completely new way of managing the businesses. Both BNFL and UKAEA are currently engaged in developing a common series of programme controls to achieve this goal.

COMMERCIAL POWER STATION DECOMMISSIONING IN THE UK (Continued)

Trawsfynydd Nuclear Power Station's Location in the Snowdonia National Park

<u>Trawsfynydd Safestore Elevations</u>

The dotted line shows the original building height that will be reduced by 20m. The curved roof is designed to blend into the surrounding mountain landscape.



INTERNATIONAL DECOMMISSIONING ACTIVITIES

We are attempting to obtain addition input to our DD&R Newsletters relative to international decommissioning activities. Special thanks to Paul Woollam, Decommissioning Manager, Magnox Electric plc for his interesting input on Commercial Power Station Decommissioning in the UK in this issue.

Also, there is some information available on international decommissioning activities on the web site at http://www-pub.iaea.org/MTCD/publications/PDF/rwmst3/IAEA-WMDB-ST-3-Part-2.pdf

RADWASTE SOLUTIONS MAGAZINE