



EM UPDATE

Working Today To Protect Your Future

Summer 2006

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AMEM Corner

by Stephen Mellington

Now that we are more than halfway through fiscal year 2006, it is apparent that the Environmental Management Program at the Nevada Site Office is going to have another successful year of remediating contaminated sites and disposing of radioactive waste.

On April 11, the Area 5 Radioactive Waste Management Complex accepted its first off-site mixed low-level waste shipment since 1990. As previously reported in the EM Update, this is a result of an agreement between the Nevada Site Office and the State of Nevada which allows U.S. Department of Energy generators to dispose no more than 20,000 cubic meters of mixed low-level waste at the Nevada Test Site through the year 2010.

I am also pleased to announce the Community Advisory Board (CAB) has submitted a letter to the Nevada Site Office recommending locations for future wells. This recommendation comes to us as a result of an offer we made to the CAB to suggest a well location to help provide additional data to the Underground Test Area Project. The CAB's recommendation for a well focuses on the area of Pahute Mesa. We will continue to work with the CAB in regards to this recommendation and other Environmental Management projects.

In conclusion, I want to thank all of the Environmental Management federal and contractor staff at the Nevada Test Site for diligently working to meet our fiscal year 2006 milestones. Your outstanding work has led to a safe and productive 2006!



Stephen Mellington,
Assistant Manager for
Environmental Management
(AMEM)

Industrial Sites is Going Remote on the Tonopah Test Range

by Nick Duhe

For the safety of workers surveying and characterizing contaminated locations at the Tonopah Test Range (TTR) the Industrial Sites Sub-Project has decided to use a remote control vehicle. The vehicle, called Towbot, looks like a farm combine tractor which has been outfitted with a Sodium Iodide Array to detect radioactive contamination and tows geophysical instrumentation which detects unexploded ordnance (UXO) from historic weapons testing.

Towbot is controlled remotely by a technician who inputs coordinates via a computer which directs Towbot's location. A large antenna mounted on Towbot's roof receives the imputed data and maneuvers Towbot in a transect pattern over the designated area. Front and rear mounted cameras allow the operator to visually confirm Towbot's path. The operator, safely back at base, can manually drive Towbot using a joystick to avoid any obstacles.

"In the past, conducting geophysical and radiological surveys on the dry lake beds at the TTR meant using a manned vehicle carrying and towing the required equipment," explained Kevin Cabbie, Industrial Sites Federal Sub-Project Director. "That practice came to an end when safety for the vehicle driver became an issue due to the possibility of UXO in some sections of the lake bed."

A transect is a path along which one records and/or counts occurrences of the phenomenon of study. In this case they are looking for radioactive contamination and geophysical anomalies. It requires an observer to move along a fixed path and to count occurrences along the path and, at the same time, obtain the distance of the object from the path. This results in an estimate of the area covered, an estimate of the way in which detectability drops off from probability 1 to 0 as one moves away from the path. Using these two figures one can arrive at an estimate of the actual density of objects.

The Towbot came to the Nevada Site Office by way of Zapata Engineering, which was one of three companies who bid on the project. After extensive technical reviews by Bechtel Nevada and the Nevada Site Office the decision was made that the Towbot and Zapata

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Currently, the NSO uses a remote controlled vehicle called Towbot equipped with a KIWI Sodium Iodide Array which tows the EM-61 Geophysical instrumentation.



In the past a worker driven vehicle equipped with a KIWI Sodium Iodide Array towed the EM-61 Geophysical instrumentation which surveyed the area.

Industrial Sites is Going Remote on the Tonopah Test Range (continued)

were a good fit. When asked why Towbot was chosen, Kevin explained, “Based on Towbot’s remote control capabilities and the fact that Zapata Engineering had previous experience working in UXO situations, it seemed like a perfect fit.”

The Towbot will be busy at the TTR all summer and into the fall as the is scheduled to be complete the end of October 2006. More information is available on the [Industrial Site fact sheet](#).

In 1956, the Atomic Energy Commission, predecessor to the U. S. Department of Energy (DOE), began testing weapons, research rockets, and artillery on the TTR. As a result of these tests, contaminants were introduced to parts of the range. Some of the contaminants of concern include UXO and heavy metals, like Depleted Uranium.

Planning for Partial Closure of Area 5 Disposal Facility Underway

by Steve Hommel

Efforts have increased to close a 92-acre area at the Area 5 Radioactive Waste Management Complex (RWMC) which represents approximately 60 percent of the 160 acres currently used for the storage and permanent disposal of **low-level**, **mixed low-level**, and **transuranic waste** at the Nevada Test Site (NTS).

In 1961, low-level waste generated by the nuclear testing program at NTS was first disposed at what eventually became the Area 5 RWMC. Following the establishment of a formal Waste Management program at the NTS, the first U.S. Department of Energy off-site generated low-level waste shipment was disposed in 1978. More than 30 generators and nearly 15 million cubic feet later, low-level waste operations have virtually consumed all available space within existing disposal cells in the 92-acre area – necessitating its closure.

Closure of the 92 acres involves placing a “vegetated, monolayer evapotranspiration (ET) cover,” which is soil with native plants, over the disposal cells. The monolayer soil cover designed to meet the closure requirement of DOE Order 435.1 will provide the equivalent protection of a standard Resource Conservation and Recovery Act (RCRA) cover, while offering superior performance with respect to subsidence. Currently, a 13-foot thick monolayer soil cover is being proposed.

What is Evapotranspiration?

Evapotranspiration is the process through which extremely dry air pulls moisture from plants as well as from the desert soil. This process effectively prevents water from migrating to the groundwater. Evapotranspiration is critical to environmental protection in Area 5 since it ensures that any surface water does not infiltrate waste containers in disposal cells and transport contaminants to groundwater.

Because both low-level and mixed low-level disposal cells exist in the area, each individual cell must meet the requirements of U.S. Department of Energy Order 435.1 and associated manual M-435.1-1. Additionally, disposal cells that contain hazardous constituents (such as mixed low-level waste) are regulated by the NTS RCRA Part B Permit issued by the State of Nevada Division of Environmental Protection.

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Aerial view of the Area 5 Radioactive Waste Management Complex. The dashed line indicates the 92-acre area designated for closure by the year 2011.

Approximately 730 acres are designated for radioactive waste management activities in Area 5, of which approximately 160 acres are currently used for storage and disposal. Only nine of the 32 engineered disposal cells in Area 5 are active, three of which are within the area designated for closure by the year 2011. In general, disposal activities in Area 5 are conducted by placing drums and boxes in shallow, excavated disposal cells which range from 12 to 48 feet deep. Once delivered to the pre-designated disposal cell, waste containers are carefully stacked and methodically arranged in a grid system to facilitate tracking. Typically, as each disposal cell fills with waste, an 8-foot thick layer of native soil is placed over the waste. Depending on the specifics of the low-level waste, additional soil may be needed.

Planning for Partial Closure of Area 5 Disposal Facility Underway (continued)

In order to conform to these regulations, a characterization report is being prepared and will be completed by September 30, 2006. Once this report is accepted by the State of Nevada Division of Environmental Protection, a closure plan will be prepared. This plan will detail how closure is to occur and will include engineering drawings of the final closure cover and site drainage. Other information used to develop the closure plan will be based upon the results of the Area 5 RWMC Performance Assessment. The objective of this systematic analysis, which uses computer models, is to identify any potential releases of contamination due to the facility's geohydrologic disposal system performance over 1,000 years.

Following permanent closure of the area, maintenance and monitoring will continue to ensure the safety of the public and the environment.

Mixed Low-Level Waste Verification Process Improved

by Dona Merritt

The clock is ticking for **mixed low-level waste** disposal at the Nevada Test Site (NTS) and as generators begin to ship, the Nevada Site Office continues to examine and improve its acceptance procedures.

As of June 2006, three off-site generators have shipped approved mixed low-level waste streams to the NTS under the recently renewed State of Nevada permit. As a result of the lessons learned from the disposal of this waste, the Nevada Site Office initiated a review and enhancement of its already rigorous acceptance process. The review focused on acceptable methods to verify the contents of mixed low-level waste that has already been treated to meet Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions required by the NTS RCRA Part B Permit.

Approximately 20 percent of the mixed low-level waste Idaho National Laboratory plans to dispose at the NTS has already been treated to meet the standards of RCRA Land Disposal Restrictions. As the off-site generator to submit the largest five-year forecast projection (and the first to ship to the NTS since 1990), Idaho National Laboratory's estimated 9,400 cubic meter volume forecast will consume nearly half of the available mixed low-level waste disposal capacity at the NTS (see box to the right). Treatment of this waste was originally initiated in order to ship to the U.S. Department of Energy's disposal site at Hanford, Washington which began encountering regulatory obstacles that prevents off-site generated waste from being accepted in the foreseeable future.



A package containing mixed low-level waste is positioned in the real-time radiography vault where it will undergo an x-ray technology to verify contents are in compliance with the NTS Waste Acceptance Criteria.

Background on the Mixed Low-Level Waste Permit

Off-site generated mixed low-level disposal at the Nevada Test Site became a reality in December 2005 when the State of Nevada Division of Environmental Protection renewed the Resource Conservation and Recovery Act (RCRA) Part B Permit. Although the permit renewal lifted a previously issued off-site generated prohibition, it did limit the disposal volume to 20,000 cubic meters until December 2010, whichever came first.

Because of the time and volume limit, the Nevada Site Office has been working closely with all generators to ensure this capability is fully utilized. The permanent disposal path created by this capability is essential to the overall cleanup of U.S. Department of Energy sites across the United States. Currently, 10 generators have forecasted the disposal of approximately 15,000 cubic meters of mixed low-level waste during the five-year window of opportunity. It is anticipated that the volume will increase as more sites

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Mixed Low-Level Waste Verification Process Improved (continued)

To ensure that the mixed low-level waste shipped to the NTS conforms to the waste acceptance criteria and matches the extensive documentation which is necessary for waste disposal at the NTS, a minimum of five percent of each generator's approved waste stream must be visually verified. Methods used to visually verify waste include opening and inspecting waste containers at the generator's site and x-raying waste contents using real-time radiography at the NTS. Because the physical form (i.e., concrete monolith) of some treated waste inhibits the effectiveness of these processes, the Nevada Site Office worked with the State of Nevada Division of Environmental Protection to modify the Waste Analysis Plan (a condition of the NTS RCRA Part B Permit) to allow historic photos and videos as an acceptable method to visually verify the waste. The photos and/or videos could potentially provide a visual record of the individual components that comprised the mixed low-level waste stream at the point of generation and/or prior to treatment.

In addition to the visual inspections methods previously mentioned, the Radioactive Waste Acceptance Program team also requires that a minimum of 10 percent of the visually verified mixed low-level waste stream be validated through chemical screening. Chemical screening is the process by which a portion of the mixed low-level waste stream is tested in a laboratory under the guidelines set forth by the Waste Analysis Plan. The objective of all verification processes is to maintain the Nevada Site Office's commitments to the State of Nevada and its stakeholders by ensuring mixed low-level waste disposal at the NTS is performed safely and efficiently while protecting the environment, the public, and the workers.

Did You Know?

All generators must undergo a rigorous and detailed inspection of their waste characterization and certification program before the Nevada Site Office will grant it an approved status. In addition, each generator's individual low-level and mixed low-level waste streams must be reviewed for compliance to Nevada Test Site Waste Acceptance Criteria prior to shipment and disposal at the Nevada Test Site. Visit the [Waste Management webpage](#) to learn more about the Nevada Site Office Radioactive Waste Acceptance Program.

complete the characterization of legacy waste stored and generated by environmental restoration activities.

The Mixed Low-Level Waste Acceptance Guidelines fact sheet provides additional information and is available on the [Nevada Site Office website](#).

And The New CAB Members Are . . .

by Kelly Snyder

What do an attorney, a nurse, and a physicist have in common? They are among the 12 newly appointed members of the [Community Advisory Board for Nevada Test Site Programs \(CAB\)](#).

The CAB spent approximately three months conducting membership activities which included advertising vacancies, reviewing applications, interviewing candidates, and selecting the new slate of members. After the CAB completed their membership drive, a formal letter was sent to the U.S. Department of Energy Headquarters recommending membership to the selected candidates. The Assistant Secretary for Environmental Management approved the new members in June 2006.

In addition to the members, a new liaison position from the U.S. National Park Service was created. Liaison members, while not voting members, participate in CAB deliberations and contribute their institutional views. Other liaison members include: the State of Nevada; Nye County, Nevada; the Defense Threat Reduction Agency; and the U.S. Department of Energy Nevada Site Office's Environmental Management program.

Take a moment and get to know more about the new CAB members!

Bill Aldrich – Pahrump, Nevada

Upon retiring from the Air Force after 20 years of service, Mr. Aldrich worked as a contractor to the U.S. Department of Defense for base support, manufacturing and overhaul contracts. He has extensive knowledge of the Federal Acquisition Regulations, proposal preparation, and union negotiations.

Paul Adras – Las Vegas, Nevada

Mr. Adras is an attorney focusing on construction law and insurance defense. Previously, he worked for the Nevada Division of Environmental Protection, where he supervised the Division's Resource Conservation and Recovery Act compliance and enforcement program.

Robert Johnson – Beatty, Nevada

Mr. Johnson works for ESRI, a company specializing in Geographic Information Systems, as a Defense Account Manager, serving customers throughout the western United States and Asia/Pacific regions.

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What is a liaison member?

Liaison members, while not voting members, participate in CAB deliberations and contribute their institutional views by behalf of the organization they are representing.

And The New CAB Members Are . . . (continued)

Vernell McNeal – Las Vegas, Nevada

Mr. McNeal, a former U.S Marine, is an Assistant Manager for Walgreen Pharmacies. He serves as a member of the American Red Cross Disaster Action Team and as a Traffic and Parking Commissioner for the City of Las Vegas.

Ted Oom – Pahrump, Nevada

Prior to his retirement from The Boeing Company, Mr. Oom worked as an aerospace division engineer and engineering manager focusing on numerous projects, including the Minuteman missile system, the Supersonic Transport, the B-1 bomber, and Mobile Minuteman programs. He is also a U.S. Air Force veteran.

Warren Pawliuk – Pahrump, Nevada

Mr. Pawliuk, a registered nurse for 24 years, currently serves as an Air Force Reservist with 28 years of service. He currently serves as the secretary of the Pahrump Emergency Management and Homeland Security Advisory Board and is also a volunteer firefighter with the Crystal, Nevada Volunteer Fire Department.

Dr. David Rosin – Las Vegas, Nevada

Dr. Rosin is the State Medical Director for the Nevada Department of Mental Health and Developmental Disabilities. Prior to moving to Nevada, he directed a non-governmental organization Emergency Medical Strike Force in Africa following the genocide in Rwanda/Zaire.

Jan Spinato – Henderson, Nevada

Ms. Spinato is a licensed mortgage loan officer. Prior to moving to Nevada, she lived in Pennsylvania where she devoted more than twenty years to the fields of education and public relations. She is also a member of the Las Vegas Chamber of Commerce.

Stacy Standley – Las Vegas, Nevada

Mr. Standley is an advisor to the Aspen Institute-India. He was director of the Worldwide Fund for Nature Living Planet Campaign. As President of Earth Voices, he produced the summary of the 1992 Earth Summit. He served three terms as Mayor of Aspen, Colorado and was a director of the Aspen Center for Environmental Studies.

Harold Sullivan – Las Vegas, Nevada

Mr. Sullivan is a U.S. Army veteran who is pursuing a degree in Elementary Education at Sierra Nevada University.

James Weeks – Beatty, Nevada

Mr. Weeks is currently employed by the Beatty Water and Sanitation District. He has been the District Manager since 1990. Mr. Weeks has served on the Board of Directors of the Nevada Rural Water Association for nine years, as well as on the Board of Directors of Beatty Health and Welfare for fifteen years.

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And The New CAB Members Are . . . (continued)

Dr. Walter Wegst – Las Vegas, Nevada

Dr. Wegst is a health physicist with more than 35 years of experience in the radiation protection field, including more than 22 years spent managing comprehensive environmental, safety, and health programs at the California Institute of Technology and the University of California, Los Angeles.

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Environmental Management Expands its Public Outreach in Rural Nevada

by Chantelle LaGrow

This summer, two newly created displays have been given to the Central Nevada Museum and the Churchill County Library to provide the public with the opportunity to learn about the historic nuclear testing and current remediation activities conducted by the U.S. Department of Energy in Nevada.

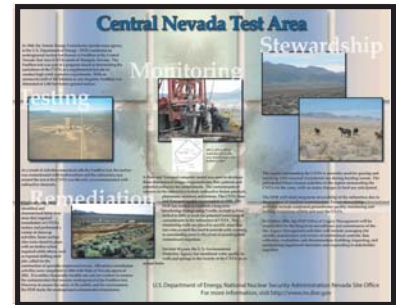
The Central Nevada Museum in Tonopah, Nevada is hosting the Central Nevada Test Area display produced by the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. The display depicts historic testing, remediation, monitoring, and stewardship activities. In addition to this new information source, the museum also offers patrons other U.S. Department of Energy displays including Radioactive Waste Disposal at the NTS in Historical Perspective, Groundwater at the NTS, and the NTS Area 5 Radioactive Waste Management Site three-dimensional model.

“[The displays] provide great information to our visitors and quite a few people spend extra time in that area of our museum,” according to Eva LaRue, the Central Nevada Museum Assistant Curator. “I have overheard visitors talking about the displays and I believe it is a great opportunity for not only tourists, but locals as well, to have a better understanding of some of the activities at [the] NTS. Many visitors to our museum are interested in the NTS and Yucca Mountain, while many others have no knowledge of either one.”

Interested members of the public can also view a new display focusing on the Project Shoal area by visiting the Churchill County Library in Fallon, Nevada. The Shoal display provides an overview of historic testing activities that were conducted near Fallon. Display viewers will also learn about specific remediation, monitoring and stewardship activities conducted by the U.S. Department of Energy.

“It seems to be received well by the library visitors,” said Barbara Mathews, the Churchill County Library Director. “People have shown interest in the display, many of the library employees have seen people stop and read the poster.

For more information on the Central Nevada Test Area and Project Shoal as well as other outreach material, visit <http://www.nv.doe.gov>.



Central Nevada Test Area and Project Shoal poster on following two pages.

The public is invited to visit the display at the Central Nevada Museum located at 1900 Logan Field Road, Tonopah, Nevada. The museum is open from 10:00 am – 5:00 pm Wednesday through Sunday. The museum closes for lunch from 1:00 pm – 2:00 pm. Admission into the museum is free while donations are welcome. Click [Central Nevada Museum](#) for more information.

Library guests are encouraged to visit the display at the Churchill County Library located at 553 S. Maine Street, Fallon, Nevada. The library is open Monday, Thursday, and Friday from 9:00 am – 6:00 pm, Tuesday and Wednesday from 9:00 am – 8:00 pm, Saturday from 9:00 am – 5:00 pm, and is closed on Sundays and State and Federal holidays. Click [Churchill County Library](#) for more information.

Central Nevada Test Area

In 1968, the Atomic Energy Commission (predecessor agency to the U.S. Department of Energy - DOE) conducted an underground nuclear test known as Faultless at the Central Nevada Test Area (CNTA) north of Tonopah, Nevada. The Faultless test was part of a program aimed at determining the usefulness of the CNTA as a supplemental test site to conduct high-yield explosive experiments. With an announced yield of 200 kilotons to one megaton, Faultless was detonated at 3,200 feet below ground surface

Testing



As a result of activities associated with the Faultless test, the surface was contaminated with hydrocarbons and the subsurface area around the test at the CNTA was the only area contaminated with radioactive elements.

Remediation

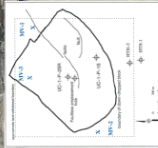
From 1997-1999, DOE identified and characterized thirty-four areas that required remediation at CNTA's surface and performed a variety of clean-up activities. Some surface sites were closed in place with no further action required while others, such as exposed drilling mud pits, called for the construction of specially-engineered covers. All surface remediation activities were completed in 2000 with State of Nevada approval 2001. It is neither financially feasible nor safe for workers to remove the contamination that remains underground at the Faultless test. However, to ensure the safety of the public, and the environment, the DOE tracks the underground contamination boundaries.



Monitoring



MV-1, MV-2, MV-3 mark the spot of the new monitoring wells drilled in 2005.



A Flow and Transport computer model was used to develop three-dimensional images of groundwater flow patterns and potential pathways for contaminants. The contaminants of concern for the subsurface include radioactive fission products, plutonium, uranium, and tritium. The CNTA Flow and Transport model was complete in 1999. The DOE has worked to establish a long-term monitoring strategy using 5 wells, including three drilled in 2005, to track the potential movement of contaminants in the subsurface at CNTA. The monitoring wells are placed in specific areas that take into account the need to provide early warning to surrounding areas in the event of unanticipated contaminant migration.

For over 30 years, the U. S. Environmental Protection Agency has monitored water quality in wells and springs in the vicinity of the CNTA on an annual basis.

Stewardship



The region surrounding the CNTA is currently used for grazing and ranching, with seasonal recreational use during hunting season. The anticipated future human activities in the region surrounding the CNTA are the same, with no major changes in land use anticipated.

The DOE will retain long-term stewardship of the subsurface due to the presence of residual contamination. Future stewardship activities include continued groundwater quality monitoring and drilling restrictions within and near the CNTA.

In October 2006, the DOE Office of Legacy Management will be responsible for the long-term surveillance and maintenance of the site. Legacy Management activities will include managing site records; maintenance and review of institutional controls; data collection, evaluation, and dissemination; building, inspecting, and maintaining engineered structures and responding to stakeholder inquiries.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
For more information, visit <http://www.nv.doe.gov>

Central Nevada Test Area poster on display at the Central Nevada Museum.

Project Shoal Area

Stewardship

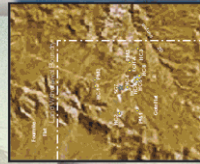
The subsurface source of contamination is the test cavity and includes radioactive fission products, uranium, plutonium, and tritium. In 1996, the NNSA/NSO installed four characterization wells at the Shoal site to better understand the area's groundwater system and to determine the potential migration paths of radionuclides that were introduced during the underground nuclear test. Sampling data from these wells was used to design what is called a Flow and Transport computer model, which produces a three-dimensional illustration of this groundwater system. Four additional wells were drilled in 1999 when preliminary model results indicated a need for further data.



The long-term monitoring of these wells will provide a means to assure the public and the regulators that public health is not compromised as well as minimize long-term risk of public exposure to contaminated groundwater. In addition, long-term monitoring will also evaluate the groundwater transport rates in model, provide a system for early detection of radionuclide migration rates in excess of what has been predicted by the model, provide compliance monitoring of physical parameters to demonstrate that groundwater conditions have not significantly changed from those simulated in the previous model, and achieve site closure.

In October 2006, the Department of Energy's Office of Legacy Management will be responsible for the long-term surveillance and maintenance of the site. Legacy Management activities will include managing site records; maintenance and review of institutional controls; data collection, evaluation, and dissemination; building, inspecting, and maintaining engineered structures and responding to stakeholder inquiries.

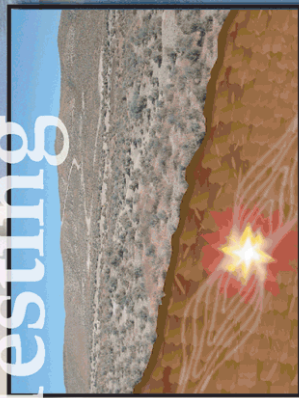
Monitoring



Based on data collected by the existing monitoring wells, it was decided that additional wells should be drilled to prevent or reduce exposure to groundwater contaminants of concern and to reduce the risk to human health and the environment to a feasible extent. These wells will monitor for potential movement of contamination to make sure that it does not go past site boundaries called compliance boundary. The distance between the monitoring wells and the boundary will take into account the need to provide early warning to allow time for reaction in the event of unanticipated contaminant migration.

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
For more information, visit <http://www.nv.doe.gov>

Testing



The Shoal test, conducted by the U.S. Atomic Energy Commission (AEC) and the U.S. Department of Defense (DoD) in October 1963, was conducted to improve the United States' ability to detect, identify, and locate underground nuclear detonations. The test, part of the Vela Uniform Program, consisted of detonating a 12-kiloton nuclear device at a depth of 1,204 feet underground in granitic rock to determine whether seismic waves produced by an underground nuclear test could be differentiated from seismic waves produced by a naturally occurring earthquake.

In 1996, what is now known as the U.S. Department of Energy (successor of the AEC) National Nuclear Security Administration Nevada Site Office (NNSA/NSO) began environmental restoration activities at the Shoal site to investigate and remediate potential environmental impacts from previous testing. The surface and subsurface areas at the Shoal site were to be considered separately.

Remediation



NNSA/NSO conducted surface characterization at Shoal and determined chemicals called hydrocarbons, which were deposited during drilling activities into a mud pit, remained in the soil. In 1997, NNSA/NSO removed and transported the contaminated material offsite to a designated disposal facility at the Nevada Test Site.

Project Shoal Area poster on display at the Churchill County Library

Project Shoal Drilling Activities Conclude Two Weeks Early

by Chantelle LaGrow

After nearly three months of hard work and determination, drilling activities at Project Shoal came to a close on June 16 with no accidents, under budget, and two weeks ahead of schedule.

In March, Stoller-Navarro Joint Venture (SNJV), a contractor for the U.S. Department of Energy (DOE), National Nuclear Security Administration Nevada Site Office (NSO) headed north to the Project Shoal Area near Fallon, Nevada to prepare for drilling what is believed to be the final three wells at the site. Following the successful completion of a safety walk-down, drilling commenced and the first well was completed on May 5. Less than 90 days later, all three wells had been drilled, installed, and developed. Now that drilling is complete, the Desert Research Institute will conduct hydrologic testing and monitoring.

The wells, which vary in depth from 1,670 to 2,020 feet, were drilled to support ongoing hydrogeologic investigation and monitoring activities at the site where a 1963 underground nuclear test was conducted by the U.S. Atomic Energy Commission. As part of the Federal Facility Agreement and Consent Order (FFACO) between the NSO and the State of Nevada, completion of the monitoring/validation (MV) wells will facilitate a five-year proof-of-concept period meant to validate the predictions of the groundwater model NSO submitted to the Nevada Division of Environmental Protection (NDEP) in 2003.

The DOE Office of Legacy Management is scheduled to assume responsibility of the site on October 1, 2006 and will continue to monitor the wells for a period of five years collecting geologic, geophysical and hydrologic data.

Current well drilling and monitoring activities at Project Shoal are not the only environmental activities conducted at the site. In 1996, the NSO began environmental restoration activities at Project Shoal to investigate potential environmental impacts from previous testing. In accordance with the FFACO, which outlined the investigation and cleanup strategy, the surface and subsurface areas at Shoal are considered separately. Thus, for the surface, NSO conducted characterization activities and determined that hydrocarbons deposited into a mud pit during drilling activities, remained in the soil. In 1997, the NSO removed and transported the contaminated material off-site to a



The Project Shoal Area is located in Northern Nevada – approximately 30 miles southeast of Fallon, in Churchill County. Shoal was part of the Vela Uniform Program, which was conducted to improve the United States' ability to detect, identify, and locate underground nuclear detonations. The test detonated a 12-kiloton nuclear device at a depth of 1,204 ft below ground surface in granitic rock to determine whether seismic waves produced by an underground nuclear test could be differentiated from seismic waves produced by a naturally occurring earthquake. The test was a joint effort conducted by the U.S. Atomic Energy Commission (predecessor to the DOE) and the DoD in October 1963.

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Project Shoal Drilling Activities Conclude Two Weeks Early (continued)

designated disposal facility at the Nevada Test Site. The NDEP approved the surface as “clean closed” in 1998.

Subsurface characterization also began in 1996 and it was determined that the subsurface source of contamination in the test cavity included radioactive fission products, uranium, plutonium, and tritium. The NSO installed four wells at the site to better understand the area groundwater system and to determine the potential migration paths of radionuclides that were introduced during the underground nuclear test. Sampling data from these wells was used to design a Flow and Transport model - a predictive tool indicating future movement of contamination through time.

Four additional wells were drilled in 1999 when preliminary model results indicated a need for further data. The additional data collected was used in producing the 2003 groundwater model.

The U.S. Department of the Interior – Bureau of Land Management maintains ownership of the site and a land withdrawal allows DOE and the U.S. Department of Defense (DoD) to manage the site. DOE maintains control over the subsurface at the Shoal site and has placed restrictions on the subsurface, including the use of groundwater. While the Shoal surface may be considered safe for unrestricted use, public access may still be restricted under the DoD land withdrawal.

EM Partner – Stoller-Navarro Joint Venture

by Dona Merritt

One of the key players behind the Nevada Site Office's mission of completing Environmental Restoration activities at the Nevada Test Site is the Stoller-Navarro Joint Venture (SNJV). But what exactly does SNJV do?!

Years of nuclear research, development, and testing left behind a legacy of environmental damage and contamination on the NTS. As a Nevada Site Office contractor, SNJV is responsible for assisting the U.S. Department of Energy in identifying the nature and extent of the contamination, determining the risk to the public and the environment, and acting to protect or restore natural resources adversely affected by historical activities at the Nevada Test Site (NTS).

The SNJV Preliminary Assessments team researches historical documents and contaminant release information, and travels to the NTS to record current conditions for each location affected. Preliminary Assessment findings are then provided to the Industrial Sites team to best prepare for the next step of the remediation process.

It is the responsibility of SNJV [Industrial Sites](#) workers to continue site characterization by traveling to the individual sites located on the NTS to gather additional information. This information may be in the form of soil samples, photographs, or other information which could aid in the development of corrective action alternatives. An analysis of these items leads to recommendations which are then provided to the Nevada Division of Environmental Protection and other NSO staff and contractors who work together to determine the future of each location.

In addition to NTS surface contamination, concerns about the potential for groundwater contamination provide SNJV staff another challenge to tackle – developing a groundwater model for the [Underground Test Area \(UGTA\) Sub-Project](#). In addition to supporting the acquisition of samples and data through well drilling activities, SNJV UGTA personnel are developing an extensive computer model that depicts where and how the groundwater system beneath the NTS functions. This is accomplished by inserting historical factors, such as the location, depth, and estimated radionuclides remaining from the 828

Continued on next page



A team of experienced companies comprise the Stoller-Navarro Joint Venture (SNJV), which took over as the Architectural and Engineering contractor for the Nevada Site Office Environmental Management program in October 2003. SNJV partners, [S.M. Stoller Corporation](#) and [Navarro Research and Engineering](#) along with key subcontract partners [Battelle Memorial Institute](#), [Intera](#), and [Weston Solutions](#), each bring their unique technical expertise to the contract along with an abundance of diverse resources. Additional information on SNJV's five-year contract can be obtained by visiting the [Nevada Site Office website](#).

EM Partner – Stoller-Navarro Joint Venture (continued)

underground nuclear tests conducted at the NTS and other information gathered through investigations such as sampling. SNJV UGTA modelers can then predict how quickly and to where groundwater is flowing and the potential for the migration of contaminants

The NTS is not the only area that SNJV is responsible for investigating. During the 1960's and 1970's, nuclear tests were conducted at various locations across the United States. SNJV's responsibilities include completing surface remediation and drilling monitoring wells at eight of these sites, which are located in Alaska, Colorado, Mississippi, New Mexico and Nevada. The recently completed wells at the Project Shoal Area in Central Nevada and completion of a cap inspection and repairs on Amchitka Island, Alaska are fine examples of the successful teamwork SNJV puts forth in all endeavors.

And teamwork is truly the key to the success of the NSO Environmental Management mission. Not only must SNJV work well with federal project leads and other contractors, but internally as well. SNJV's Program Integration team is the glue that holds the pieces together through the monitoring of regulatory drivers, communications, and planning efforts.

Each day, more than 100 SNJV team members perform essential Environmental Restoration mission activities with dedication and safety in mind. Program Manager Dave Taylor is proud of the quality work and commitment each employee puts forth. In fact, he believes that it is essential in order "to be the company and employer of choice for environmental services to the NSO."

Annual Workshop Updates Generators on NTS Disposal Operations

by Steve Hommel

As a way to ensure U.S. Department of Energy waste generator sites have the opportunity to share lessons learned, the Nevada Site Office hosted their annual Nevada Test Site Low-Level and Mixed Low-Level Waste Generator Workshop from April 24-27. The annual event, sponsored by the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office (NNSA/NSO), welcomed approximately 120 participants from around the country to Las Vegas.

Participants included representatives from approved and candidate low-level and mixed low-level radioactive waste generating sites across the U.S. Department of Energy (DOE) complex. In addition to these participants, staff from DOE's Environmental Management Headquarters and the State of Nevada Division of Environmental Protection also attended the four-day workshop. Activities included briefings by NSO Environmental Management staff, networking sessions to share information, and tours of Yucca Mountain and the Nevada Test Site (NTS).

Many generators expressed an interest in learning more about the [acceptance of mixed low-level waste \(MLLW\)](#) to the NTS. In December of 2005, the State of Nevada Division of Environmental Protection (NDEP) reissued the NTS Part B Permit which lifted the prohibition on accepting DOE MLLW generated outside the state of Nevada. In accordance with the Permit, the NSO is limited to accepting no more than 20,000 cubic meters of MLLW and to permanently close the NTS Mixed Waste Disposal Unit by December 2010. The first off-site DOE MLLW shipment in 16 years was accepted from Idaho National Laboratory two weeks before the Generator Workshop.

One of the most anticipated presentation topics was the [Nevada Test Site Waste Acceptance Criteria \(NTSWAC\)](#) update, which went into effect in December 2005. A briefing was also provided on Revision 6 of the NTSWAC which outlines the requirements all generators must follow in order to ship their waste to the NTS and addresses many of the questions posed by generators during the previous year's workshop. Compliance with the criteria described in the document is verified regularly by the Radioactive Waste Acceptance Program team.

Next year's workshop is currently scheduled for the week of April 23, 2007.



Workshop participants listen as Christine Gelles briefs them on U.S. Department of Energy's Environmental Management Program disposition efforts.



Workshop participants take a moment to network during a break between sessions.

Transuranic Waste Project Cleanup

by Nick Duhe

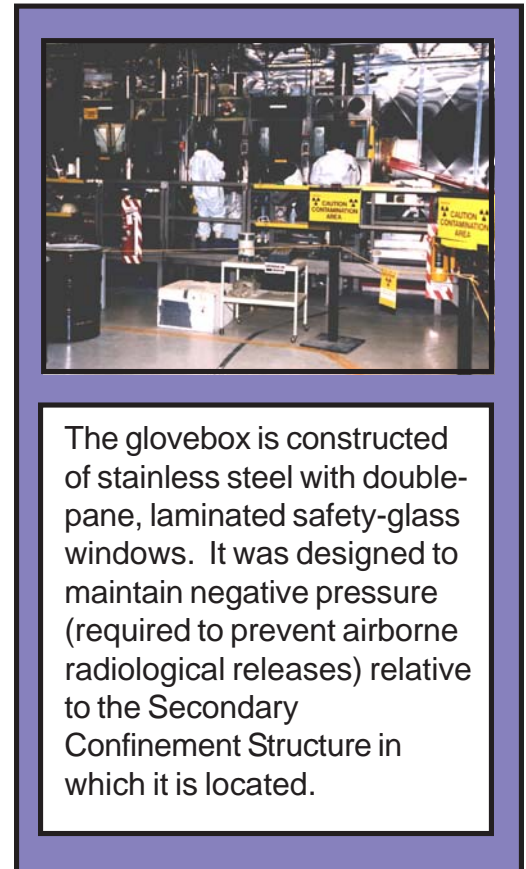
As the Transuranic (TRU) Waste Sub-Project gets closer to completion, the focus is shifting toward cleaning up the glovebox and associated space which was radioactively contaminated during characterization activities.

The glovebox, a sealed piece of equipment which allows the handling of waste without direct contact, and the Secondary Confinement Structure (SCS), a closed, secure environment in which the glovebox is located, are both housed within the Visual Examination and Repackaging Building (VERB) at the Area 5 Radioactive Waste Management Complex. Since the TRU Waste Sub-Project is anticipated to be completed by September 2007, there is no future use identified for the glovebox. Therefore, the glovebox is scheduled for dismantlement and disposal at a U.S. Department of Energy facility. However, since options are still being considered for the future uses of the VERB, the SCS will be decontaminated and left in place.

In order to achieve these objectives, waste handlers have commenced a process to identify, remove, and package potential radiological hazards from the glovebox. It is anticipated that the waste generated from these activities will be characterized as low-level and disposed on-site.

Once the initial cleanup of the glovebox is complete, the interior will be filled with a specialized foam that will minimize the release of airborne contaminants during dismantlement. Following the dismantlement and removal of the glovebox, SCS decontamination activities will begin. Prior to and throughout both processes, radiological surveys are conducted to focus and identify the level of effort required to complete cleanup.

Cleanup activities, which began mid-July, are scheduled for completion September 30, 2006. Please visit the [TRU webpage](#) for more information on TRU waste activities at the NTS.



The glovebox is constructed of stainless steel with double-pane, laminated safety-glass windows. It was designed to maintain negative pressure (required to prevent airborne radiological releases) relative to the Secondary Confinement Structure in which it is located.

Since 1966 the single-story sheet metal building now known as the Visual Examination and Repackaging Building (VERB) has been in use at the Nevada Test Site. Relocation and refurbishing of the building was completed in 1997 to include the addition of the glovebox. The glovebox was used for opening, examining, and repackaging drums containing transuranic waste as part of the characterization process. All transuranic waste must be characterized and certified in order to be shipped to the Waste Isolation Pilot Plant in Carlsbad, New Mexico for permanent disposal.

Through previous routine radiological surveys, inspections and process knowledge, it is known that the interior of the glovebox is highly contaminated from the repackaging of approximately 1,000 TRU waste drums. Since these drums were managed in a dedicated area of the VERB's Secondary Confinement Structure, it was posted as a contamination area, though most loose contamination found was regularly cleaned up.

Alpha and Beta and Gamma.....Oh No!!

by Carla Sanda

That title pretty much sums up the perspective of most stakeholders when dealing with the subject of radiation. Imagine, then, the daunting task of putting together a meaningful way to work with stakeholders across the country to address not only the issue of radiation – but the further complication of dealing with large areas of radioactive contamination that must be identified and remediated. Yet that is exactly what the U.S. Department of Energy (DOE) has been dedicated to since formalizing its national Environmental Management Program in 1989.

The story actually begins back in the early 1940s when the nation was in the midst of World War II. Leading scientists converged on facilities throughout the country to harness the power of the atom – nuclear reactors were designed and built, complicated experiments were conducted, and the United States developed an atomic weapon that would eventually help end the war. Shortly after World War II, relations between the United States and the former Soviet Union seriously deteriorated, and the Cold War ensued. As a result, the nuclear arms race was on! Sixteen federal facilities located throughout the country - including the states of Washington, California, Idaho, New Mexico, Texas, Kentucky, South Carolina, Florida, Colorado, Ohio, and Nevada – comprised a vast research, production, and testing network now known as the nuclear weapons complex. Tens of thousands of nuclear warheads were manufactured, and more than 1,000 were detonated in the atmosphere and underground.

Needless to say, due to national security concerns, much of the work conducted throughout the DOE complex was shrouded in secrecy. As a result, when DOE announced its plans for cleanup, concern was voiced by citizens – particularly those living near DOE facilities. Public meetings were held, local news channels focused on concerns related to the legacy remaining from the cold war, and a great deal of fear and mistrust rose to the forefront. It was clear that a major effort was needed to provide communities with factual information, education, and a mechanism to become involved in the complicated road that lay ahead.

While pursuing its environmental management mission objectives, DOE began to understand the importance of involving the public and understanding the concerns and priorities of citizens living near its facilities targeted for cleanup. In order to achieve the ultimate goal of bringing stakeholders to the table early in the process to gain knowledge and understanding of the environmental management problems and proposed solutions, major funding was provided to organize nationally chartered [Site-Specific Advisory Boards \(SSABs\)](#) at key DOE facilities throughout the country under the Federal Advisory Committee Act. The SSABs work together with DOE



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Alpha and Beta and Gamma.....Oh No!! (continued)

to provide stakeholder feedback on a broad spectrum of proposed environmental restoration activities at their respective sites.

Through most of fiscal year 2006, nine SSABs will continue at facilities in the states of Washington, Colorado, Georgia, Idaho, Nevada, New Mexico, Kentucky, Ohio, and Tennessee. However, with the closure of both the Rocky Flats and Fernald facilities this year, seven SSABs will continue to operate in fiscal year 2007. Since their formation, SSABs (including the Community Advisory Board for Nevada Test Site Programs) have weighed in on nearly every aspect of DOE's environmental management and restoration activities, to include everything from prioritizing cleanup schedules to discussions related to specific technologies that may be considered. Not only has this resulted in timely stakeholder feedback, but also has resulted in changes to proposed activities that have saved taxpayers hundreds of millions of dollars.

DOE also funds and convenes two national SSAB Chairs meetings each year. Representatives of each of the Boards are encouraged to provide insights into their Board's activities, describe their involvement at their respective site as well as the feedback they receive from their site's DOE liaisons, and discuss any problems or challenges that they may be addressing. These national meetings provide the Boards an opportunity to learn from one another, while providing a unique opportunity for DOE to assess the program to ensure that the Boards are receiving the support they need to remain involved and productive.

The DOE has committed millions of dollars to this effort and tens of thousands of hours working with stakeholders around the country to ensure that environmental management activities are conducted with an open, honest approach and sincere consideration of local community values. Sites are being cleaned up and closed, and work continues with stakeholders to develop and design programs for long-term stewardship activities.

The bottom line is this: stakeholder involvement can be a difficult, costly road to build and navigate; however, the ongoing success of DOE's approach to public participation has paved the way for stakeholders to be a part of the answer to solving the management and cleanup of complex environmental issues taking place within or near their communities.

Nevada Test Site Public Tours 2006 Schedule

August 29, 2006

September 13, 2006

October 25, 2006

November 29, 2006



Radioactive Waste Management Complex



Sedan Crater



Railroad Bridge



Apple II House

Tour participants will visit historic nuclear test locations, such as Sedan Crater, as well as observe areas where work activities are currently taking place, like the Radioactive Waste Management Complex. The tour covers approximately 250 miles. Call (702) 295-0944 for more information.



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