

**MINUTES  
of the  
THIRD MEETING  
of the  
RADIOACTIVE AND HAZARDOUS MATERIALS COMMITTEE**

**September 5-6, 2012  
Multipurpose Room, Bob Moran Building  
New Mexico Junior College  
Hobbs**

The third meeting of the Radioactive and Hazardous Materials Committee was called to order by Senator Richard C. Martinez, vice chair, at 10:16 a.m. on Wednesday, September 5, 2012, in the Multipurpose Room at the Bob Moran Building at New Mexico Junior College in Hobbs.

**Present**

Sen. Richard C. Martinez, Vice Chair (9/5)  
Rep. Thomas A. Anderson  
Rep. Cathrynn N. Brown (9/5)  
Sen. Carroll H. Leavell  
Sen. John Pinto (9/5)  
Rep. Jim R. Trujillo  
Rep. Shirley A. Tyler (9/5)  
Sen. David Ulibarri

**Absent**

Rep. Antonio Lujan, Chair  
Sen. Vernon D. Asbill  
Rep. Brian F. Egolf, Jr.  
Sen. Stephen H. Fischmann

**Advisory Members**

Rep. Eliseo Lee Alcon  
Rep. Donald E. Bratton (9/5)  
Rep. Jim W. Hall (9/5)  
Sen. Gay G. Kernan (9/5)  
Sen. Lynda M. Lovejoy (9/5)

Sen. Rod Adair  
Sen. William F. Burt  
Sen. Eric G. Griego  
Sen. William H. Payne  
Sen. Nancy Rodriguez  
Rep. Nick L. Salazar  
Sen. Bernadette M. Sanchez

**Guest Legislators**

Rep. Richard D. Vigil (9/5)  
Sen. Tim Eichenberg (9/6)

(Attendance dates are noted for members not present for the entire meeting.)

**Staff**

Gordon Meeks, Legislative Council Service (LCS)  
Renée Gregorio, LCS  
Cassandra Jones, LCS

**Guests**

The guest list is in the meeting file.

**Handouts**

Handouts and other written testimony are in the meeting file.

**Wednesday, September 5**

Committee members introduced themselves to the audience after Senator Martinez thanked New Mexico Junior College (NMJC) for hosting the committee, and he assigned Senator Leavell as acting vice chair for the meeting. Matt White, mayor of Eunice, welcomed the committee and wished the committee well on its tour the following day, adding that URENCO USA is a wonderful corporate neighbor that has brought in other businesses as well, which helps the local communities. Next, Dr. Steve McCleery, president, NMJC, welcomed the committee to Lea County and reviewed a few housekeeping items and introduced key staff. He noted the college's appreciation for the committee's choice of coming to Hobbs and, in general, to travel the state to see "the good things going on". He thanked committee members for the day-to-day work that they do as volunteer legislators and praised the bipartisan effort required to pass budgets. In response to questions about the college, Dr. McCleery stated that there are 3,900 students as well as 4,000 participants in the work force training program. He also mentioned the college's partnerships with corporate sponsors, such as Ford, and stated: "We look and feel a bit different than other community colleges across the state.". He also said that a new partnership is beginning with Sacred Power, which is a green energy and wind and solar project slated for the west end of the campus. He added that this is in addition to a nuclear energy technology program partnership the college has with Lockheed Martin.

**Waste Isolation Pilot Plant (WIPP) Status Report**

Bill Mackie, institutional affairs manager at the Carlsbad Field Office of the U.S. Department of Energy (DOE), and Joe Franco, manager of the Carlsbad Field Office, gave a status update on WIPP. Mr. Mackie spoke of the WIPP team's seven associates, with the DOE leading the transuranic waste (TRU) program and science program, and the associates, including the URS Corporation, Los Alamos National Laboratory (LANL), Sandia National Laboratories, Carlsbad Field Office Technical Assistance Contractor, Transcom, Visionary Solutions and CAST Specialty Transportation, in supporting roles. (See handout for what each associate company is responsible for.) He added that WIPP's contract was renewed on April 20 of this year. He spoke of the diversity of WIPP's work force, which includes personnel in the fields of engineering, chemistry, geology, physics, safety, mining, emergency management and more. He said that the work force has broad experience from the nuclear industry, which includes other DOE sites, nuclear power plants and the military.

He reminded the committee that WIPP is a national solution for the disposal of nuclear waste, and that WIPP is a repository only for TRU, which is left over from the research and production of nuclear weapons and includes clothing, tools, rags, debris and other items contaminated with man-made radioactivity. To answer the question of why WIPP is in Carlsbad, Mr. Mackie plainly stated that this is because of salt and the stable geology, lack of water, ease of mining and the plastic quality of salt that allows it to close in on the waste over time. He gave details on WIPP's underground panels, saying that panels 1-5 are enclosed, panel 6 is currently being filled and panel 7 has been mined and is ready to start accepting waste. He added that panel 8 has not yet been started, but it will be after waste is placed into panel 7.

Mr. Mackie went on to speak about the safety of WIPP's transportation system, and he said that over 10,000 shipments have been made over more than 12 million loaded miles without an accident that has resulted in a fatality or a release of radiation. He spoke of the stringent requirements to drive for WIPP and noted that WIPP uses some of the safest shipping containers on the road today. In addition, he said that since 1988, over 31,000 first responders have been trained both at WIPP and throughout the states affected by WIPP. Mr. Mackie said that he spends 60% of his time doing outreach across the country so that others understand what WIPP does.

He reiterated that the main concern at WIPP is safety. He defined the waste received at WIPP to be primarily contact-handled (CH) waste, which makes up about 96% of the disposed waste at the site and does not require additional shielding beyond the container itself because its radiation emission is less penetrating as compared with the remote-handled (RH) waste disposed of at WIPP. WIPP started receiving RH waste in 2007, he added. Other facts Mr. Mackie cited included that trucks cannot exceed 80,000 pounds of waste, that waste cannot be moved on weekends or at night and that trucks stop every three hours for 30 minutes at a time for a walk-in safety check—for fuel, for food and for comfort. Regarding cleanup of legacy waste across the U.S., Mr. Mackie indicated that 22 sites have been cleaned up, which include both Lovelace Respiratory Research Institute and Sandia National Laboratories in New Mexico.

On a regulatory note, Mr. Mackie said that WIPP is recertified by the federal Environmental Protection Agency (EPA) every five years and will continue to go through this process until WIPP is closed. As well, New Mexico's Department of Environment's (NMED) hazardous waste facility permit, which is required for the disposal of TRU mixed with hazardous materials, was renewed on November 30, 2010 and is a 10-year permit.

He spoke of the funds awarded to the Carlsbad Field Office through the American Recovery and Reinvestment Act of 2009 (ARRA), which amounted to \$172 million. With that, the office's goal was to create 400 new positions; in actuality, 696 new positions were created as a result of ARRA funding. In addition, ARRA accomplishments included the aforementioned completion of legacy cleanup at many sites as well as the shipments out of Los Alamos more than doubling between fiscal year (FY) 2008 and FY 2010. Due to ARRA funding, WIPP was able to meet national cleanup goals by completing needed construction purchasing necessary equipment, he added.

Mr. Mackie discussed changes in the routing near the WIPP site that involves using Texas Route 176 through Andrews to Eunice, which later became an alternate route. WIPP employees began using this road on August 1, 2012, and the new route reduces the mileage to the site by 92 miles, he said. WIPP continues to maintain the original route, but until that route is certified and it is assured that the brine well will not become a sinkhole, WIPP will not use that route, he added. Also, in January of next year, the Department of Transportation will do a 4.2-mile reconstruction of the WIPP relief route going around the north side of WIPP.

Mr. Mackie indicated that the execution of the FY 2013 budget will be a challenge, that cleanup of waste at LANL needs to be accelerated and that the WIPP facility must be maintained above and below ground.

Committee member questions and ensuing discussion included:

- an initiative is afoot to store surface plutonium and dispose of it at WIPP, and although such plutonium may come in as CH waste stored in 55-gallon drums, if it contains isotopes, it would be put in an RH cask;
- two routes have been deactivated: from Southern California, Interstate 5 out of Lawrence Livermore across Interstate 40 and a portion of the route out of Buffalo, New York; also the route from Interstate 40 to Clines Corners will be deactivated after cleanup at Sandia National Laboratories is complete;
- the current evaluation for closure of WIPP is to start closure in 2030 or 2032; this would include five years to complete the closure;
- the blue ribbon commission came out with a proposal regarding putting high-level waste into WIPP and will come up with recommendations;
- there is no engineering reason not to greatly expand WIPP's underground area;
- there is a contingency system in place if the Transcom satellite tracking system ever becomes compromised that includes an alternate site that would allow tracking to be running again within two hours;
- a safety corridor is defined as an area of increased patrol, reduced speed and double fines in place;
- concern over the handling of surface plutonium and the production of mixed oxide (MOX) fuel and the fact that nuclear plants are not interested in re-engineering to do this;
- the question of pushing for plutonium to be buried at WIPP rather than turning it into fuel;
- a suggestion that a letter be written from the committee to the DOE urging a decision on the production of MOX fuel and the burial of plutonium versus turning it into fuel;
- shipments to WIPP travel continually from the generator site all the way to WIPP, with the exception of stopping for inspections, fuel and comfort, and driving is done in teams, with each driver having an 11-hour shift;
- after the ARRA funding expired and with attrition, current employment is down by 200 employees;

- the Interstate 40 corridor first responder safety training is still in process; prior to opening a route, the whole corridor is trained;
- there is an 86% turnover in first responder personnel in the U.S. today; the 16-hour course for first responders is continually provided and a compressed refresher course of eight hours is also available;
- a request to see documentation of the training provided by county across the state;
- one problem with the first responder training is that although it is offered, people cannot be forced to attend training;
- success in first responder training in the San Miguel County area has not been that high;
- both federal and state governments cannot mandate people to be trained;
- training can always be made available by WIPP for first responders;
- the state fire marshal will be contacted and asked to testify relative to certification requirements for volunteer first responders to get clarification on this issue; and
- shipments are tracked by a satellite system that tracks commercial vehicles, with operators at a central monitoring room at the WIPP site.

On a motion by Senator Leavell seconded by Representative Anderson, then Senator Ulibarri, the committee unanimously approved the minutes from the June and July meetings.

### **Carlsbad Environmental Monitoring Research Center — History, Mission and Status Report**

Russell Hardy, director, Carlsbad Environmental Monitoring Research Center (CEMRC), began by giving an overview of his own work history and then the center's history. He described the CEMRC as a division of the Waste Management Education and Research Consortium, which is a subunit of the College of Engineering at New Mexico State University. He added that the CEMRC is a service-oriented research center that monitors air quality, and that the center was established to respond to any health and environmental needs occurring because of WIPP. The CEMRC began its work about two years before the WIPP site was established, and Mr. Hardy indicated that the CEMRC has not seen an impact on the environment as a result of WIPP.

He reviewed the CEMRC's organizational chart, which shows its 19 full-time employees and their positions, all of which report to the College of Engineering. Because the CEMRC also leases space to LANL, approximately 35 to 40 people work at the center on any given day, he said.

In reviewing the CEMRC's finances, Mr. Hardy stated that the organization has a financial assistance grant from the DOE's Carlsbad Field Office that accounts for about 70% of all funding. He added that the CEMRC has to produce an annual report by the end of October, and he will make sure each committee member gets one. Other contracts in place include one with URENCO USA, LANL and other companies. (See handout for DOE funding to the CEMRC by category.)

In describing the CEMRC's operations, Mr. Hardy said that field technicians collect filters from two stations. The first, Station A, is the main exhaust shed for the facility at WIPP, which indicates any presence of plutonium or any leakages. Data from Station A are collected by the CEMRC's technicians on Monday through Friday, and WIPP personnel collects these data on Saturday and Sunday. He said that on Wednesdays, technicians pull filters from Station B. In addition, lakes are checked and soil samples are taken from about 16 sites annually, he stated. Through water and air sampling and trace metal analysis, the Environmental Chemistry Group determines what is present in the waste that WIPP receives in order to be sure contaminants are not being released back into the environment, he explained. Also, drinking water is collected from local water sources and in that analysis, he reiterated that concentrations of potentially toxic metals are all well below EPA limits. (See handout for charts that show specific concentration of metals.)

Mr. Hardy said that plutonium 238 is present because of a satellite that disintegrated in 1968 and broke apart, spewing its load of plutonium 238, which was its fuel source, and giving the air this background level. He described the "whole body count" eight-detector array that the CEMRC owns and uses to test radiation. The CEMRC offers this service free-of-charge to anyone in a 110-mile radius of the WIPP site. He added that other equipment, a four-detector array for lung counting, looks at the energy ranges for low-lung and high-lung activity. He stated that this capability of seeing such a wide spectrum was not present before the CEMRC existed. Mr. Hardy indicated that the number of tests done using the whole body count detector is declining due to the safety of the environment and the lack of fear at present. Mr. Hardy advocated for promoting this program nevertheless and said that the CEMRC also owns a mobile whole body count lab that could be used at remote locations in the case of a catastrophic nuclear event.

He spoke next in detail of the analysis done by the Organic Chemistry (OC) Group at the CEMRC, which provides an analysis of volatile organic compounds, hydrogen and methane present in WIPP's underground air. He said that 1,000 to 1,200 samples per year are counted. He also stated that the OC lab assisted Mosaic Potash by doing gas sampling and analysis in March of this year, following a significant collapse of a portion of one of its mines.

The radiochemistry program at the CEMRC monitors radionuclides in the vicinity of WIPP by taking samples of air, soil, sediment, surface water and drinking water and analyzing them, Mr. Hardy said. Although four instances of plutonium were detected from composite samples in 2003, 2008, 2009 and 2010, these were identified quickly, and the magnitude has been below compliance levels and was likely due to windy conditions. He said that the presence of plutonium is a result of fallout from global weapons testing, not from a leak at the WIPP site. He stated that to date, there is no evidence of any release from WIPP contributing to radionuclide concentrations in the environment.

Mr. Hardy said that the CEMRC has seen fallout from the Fukushima-Daiichi nuclear power plant in Japan beginning in March 2011, and that cesium and iodine were detected from March through May. He stated that the amounts were minor and 10,000 miles away, and the fact

that the equipment could pick it up and report on it gives the CEMRC validity that its processes, sampling techniques and monitoring are accurate.

In reviewing the CEMRC's short- and long-term plans, Mr. Hardy said that a proposal has been submitted to the DOE to bring a gas analysis project back to Carlsbad that is now in Idaho, adding that the CEMRC can accomplish the project with less people and money. The CEMRC is also applying to the NMED for an upgrade to its radiation license. He said the CEMRC is refining its procedures in support of a future high-level waste facility. The CEMRC is also continuing to promote the "lie-down-and-be-counted program" to local residents, he said. In conclusion, Mr. Hardy reviewed the CEMRC's short- and long-term needs for equipment, facilities and staff.

Committee member questions and ensuing discussion included:

- the array of capabilities that the CEMRC has is unique in the industry; and
- the CEMRC operates under a five-year grant whose cycle begins again in 2014, and it will be funded until WIPP no longer accepts waste.

### **Carlsbad Brine Well Status Report**

Jim Griswold, senior hydrologist, and Gabrielle Berholt, deputy counsel, Oil Conservation Division (OCD), Energy, Minerals and Natural Resources Department, gave a status update for the Carlsbad brine well that included the history of the brine well. Mr. Griswold spoke of the original brine well that went into production in 1978, then of the addition of a subsequent well completed the following year that enabled brine to be produced at three times the original rate. Due to failures, brine ended up being produced only in one well, and historic production of brine has been estimated at between six and eight million barrels, which is equal to an underground mined cavern volume of that same number of cubic feet, he said.

Mr. Griswold described the location of the top of the salt cavern, which is approximately 450 feet below the surface of the ground. The main issue is that catastrophic failure of the cavern could result in a large sinkhole and cracks in the surrounding earth, or gradual failure that results in surface subsidence of only inches, which could also cause significant problems. One of the main problems is the critical location of the cavern, which is close to a rail spur, major roadways, the Carlsbad Irrigation District canal and various private properties as well as fuel tanks.

Mr. Griswold pointed out the footprint of the cavern in one of the drawings in the handout, which was measured using a magnetotelluric geophysical technique. The approximate north/south dimension is 1,700 feet and east/west is about 1,000 feet. The current working theory is that the cavern is trumpet-shaped and structurally not very stable. In the graphs in the handout, Mr. Griswold indicated that the dashed vertical yellow line corresponds to the date of last year's October committee meeting and all data points to the right of the vertical line represent information gathered since that time. (Refer to the handouts for graph details.) He explained a graph that shows subsidence or elevation levels (measured twice each month) and indicates a downward trend; a graph of surface tiltplates (measured weekly) that shows two

tiltmeters that appear to be accelerating in their movement; a graph of borehole tiltmeters that is a crucial piece in the early warning system that continues to show movement at variable rates; a graph of ground water levels in the aquifer situated several hundred feet above the brine cavern that vary based on precipitation, regional pumping and canal losses; and a graph of cavern pressure that shows continual growth in pressure, which indicates that the cavern is not in equilibrium with its environment. He said that if the brine cavern were to fail, the upward movement of brine into this freshwater aquifer would render a large amount of the ground water unusable. Also, due to regional drought conditions, water levels in the Carlsbad area have declined more than 17 feet since the winter of 2010 and 4.5 feet since this spring, he concluded.

Ms. Berholt reviewed the professional and technical services contract, and she indicated that after receiving much good feedback from the pre-proposal conference, there was a unanimous decision made to award AMEC the contract, which is now nearly finalized. She reviewed the scope of work in the contract, which includes site monitoring and an early warning system, geophysical characterization and a feasibility study. She added that the contractor will use all of this information to structurally characterize the cavern and reinterpret existing surveys. She said that stakeholders will be a key part of the feasibility study, such as the City of Carlsbad, the Carlsbad Irrigation District and the potash companies, and this study will be provided no later than April 2014.

Mr. Griswold then spoke about a microseismicity monitoring station as a means of supplanting the early warning system currently in place in Carlsbad. He feels that this technique can lend a lot to the process of locating seismic sources that are subsurface; it allows for direct detection of patterns of fluid movement, fracture development and compaction. This equipment monitors microseismic events to provide early warning of such failure and to develop structural imaging of the cavern itself so that remedial actions can be taken, he explained.

Committee member questions and ensuing discussion included:

- tiltmeters are placed outside the cavern area to get baseline data that are not connected to the cavern itself to ensure that any tilt is not more widespread;
- the importance of distinguishing that a tilt is not the result of a period of drought but is associated with the cavern, since sinkholes are often the result of drought periods;
- there is a significant need for brine in the oil and gas industry and it is clear that the depth increases from west to east;
- professional associations have looked at brine wells post-collapse to see differences; corrective actions, such as refilling the holes, are not possible, but microseismicity is; and
- no brine wells have been licensed in the past three years, and although a six-month moratorium was placed on any new brine wells after the second collapse in Carlsbad, the OCD has no intent to prohibit brine production.

### **Alternative Energy Innovations**

Paul Laur, president, Eldorado Biofuels, presented the biofuel alternative for energy production. Eldorado Biofuels, a private company based in New Mexico, specializes in

cost-effective treatment of industrial wastewater and the production of renewable algal-derived biofuel and bioproducts for a clean source of energy, food and water. The company treats oil and gas company-produced water and uses it for cultivating algae. Mr. Laur said that New Mexico is ideal for growing algae because of its sunshine and a surface area that consists of flat, non-arable land. In producing water, Mr. Laur said, the method used is to reinject water after the oil and gas is separated from it, and then to provide the oil producer with a disposal method of taking the water, treating it and diverting it into open ponds. He spoke of the tremendous infrastructure, including pipelines, electricity in the fields, nutrients for dairy farms and potash mines for potassium, for this process. He said that there is a training program at NMJC for technicians and other personnel needed for maintaining the facility. He added that it is permitted by the OCD for the use of produced water and by the NMED for growing algae and discharging treated water. The company's trademark algae is "Jalgae", from which it can extract about 30% oil and 70% biomass that can be converted to ethanol or put into the food chain or used for fertilizer. He ended by saying that algae farms could generate jobs.

Committee member questions and ensuing discussion included:

- to treat 10,000 barrels of water per day would require a facility of one square mile;
- the water to be treated needs to have a 30,000 parts per million salinity, and in looking for a suitable site, Eldorado Biofuels tested water from Farmington to Jal, in Artesia, West Texas, Durango and the Coyote Gulch area and settled on Jal because the salinity was 10,000 parts per million in one well and 21,000 parts per million in another;
- there are both freshwater and saltwater algae, and it is necessary to develop the competency to design a water treatment system that fits the available water to develop a large selection of algae strains;
- as there are not any statutes in place or precedence for this industry, there is a need for legislation based on science that addresses the algae industry; and
- New Mexico has natural advantages in this competitive arena, and the committee could look at ways to ensure that the state is competitive and environmentally sensitive.

Representative Brown made a motion for the committee to write a letter concerning the disposal of surplus plutonium at WIPP, and Representative Trujillo seconded the motion. The committee voted unanimously to have the letter drafted and to then consider it after final approval by the committee.

The committee recessed at 4:10 p.m.

### **Thursday, September 6**

Committee members toured the URENCO USA facility after being introduced to the operations and technology there by Jay Laughlin, chief nuclear officer and head of technical services. Mr. Laughlin stated that URENCO USA holds the vision that the future needs nuclear power to meet the demands of sustainable global energy. He emphasized that safety is a priority

at URENCO USA, and that the facility is both classified and secure. He spoke of the technologies used to separate uranium 235 and uranium 238 and said that uranium enrichment at the facility is done with centrifuges. URENCO USA is owned by the British and Dutch governments and two large German utility companies.

**Adjournment**

There being no further business, the committee adjourned at 12:35 p.m.