



MINUTES
Friday, October 19, 2012
12:30 p.m. – 5:00 p.m.
La Quinta Inn & Suites (539 Pole Line Road, Twin Falls, Idaho)

Commission Members in Attendance

Chairman Jeff Sayer, Dept. of Commerce	Bart Davis, Idaho State Senate
Jared Fuhriman, Mayor of Idaho Falls	John Grossenbacher, Idaho National Laboratory
John Kotek, Gallatin Public Affairs	Roger Madsen, Dept. of Labor
Larry Craig, Retired United States Senator	
John Chatburn, Office of Energy Resources	
Dwight Johnson, Dept. of Labor (proxy for Roger Madsen)	
Mark Rudin, Boise State University	
Sylvia Medina, Northwind	
Jeff Thompson, Idaho House of Representatives	
Willie Preacher, Shoshone-Bannock Tribes (proxy for Nathan Small)	
Richard Jacobsen, Idaho State University (proxy for Dr. Arthur Vailas)	

Welcome and Introductions

Chairman Sayer welcomed everyone to the LINE Commission meeting. He reminded the audience that there would be an opportunity for public comment, but they need to sign up on the sheets located outside the entrance. He acknowledged that we have proxies for this meeting: Dr. Richard Jacobsen is representing President Vailas, and Willie Preacher is representing Nathan Small.

Overview of Dynamics of Dry Storage

Chairman Sayer introduced Rod McCullum from the Nuclear Energy Institute. Mr. McCullum said as a nuclear engineer, he wondered why every state doesn't have a Commission like this. Marv Fertel came back after meeting with the LINE Commission in Idaho Falls and was enthused about what Idaho is doing. McCullum said he was asked to come and give a nuts and bolts discussion on dry cask storage.

NEI was formed in 1994 through a merger of the American Nuclear Energy Council, US Council on Energy Awareness, and the Nuclear Utility Management and Resources Council.

The dry cask storage part of the nuclear industry is probably the most competitive part of the business. Dry cask storage was an unanticipated solution to an unanticipated problem. And, we've found that we can safely store used fuel as long as we need to store it until we have a national program.

By way of background, nuclear fuel is made up of solid uranium oxide pellets inside metal tubes. If you took all the used fuel from the past 40 years of commercial operations, you could stack it on a single football field and it would be seven yards deep. You can produce a tremendously large amount of electricity with a small amount of material. All of the waste products are right where they are generated. They don't go out smokestacks, or end up in effluents, but that leaves you with the challenge of disposing of those assemblies.

In the typical reactor core there are many assemblies. Pressurized Water Reactors (PWR) have about 190 and Boiling Water Reactors (BWR) have about 750. The heat load right out of the reactor is high, and declines over three to five years. But, right out of the reactor, the assembly needs to be cooled which is done in wet storage. The water also shields the radiation.

Once sufficiently cooled, the assemblies are moved from wet storage into dry storage – usually in one of two casks: a vertical storage cask or a horizontal storage module. There are no moving parts in these casks. Air cooled without any fans or motors.

A dry cask is a system that provides for management for the fuel out of the pool, onto a pad and eventually onto the road. The NRC has licensed a dual purpose canister (DPC) – inner steel shell contains the fuel. It contains the radiation and the fuel. It doesn't provide shielding or heat management capabilities. The on-site transfer cask provides additional shielding. The metal walls of the DPC are not designed to shield all the radiation. DPC can go directly into a transportation cask. But for now, it goes into a storage cask. It will always remain in the DPC. You would not open that in open air, you would take it to a hot cell to open the DPC. Fuel sealed in the canister can be stored in an inert fashion for a long, long time.

The storage casks have baskets that are carefully designed with seismic and structural standard and criticality control. When the fuel comes out of the pool and we weld the canister lid, it is backfilled with Helium and vacuum tested. A crane lowers the canister into the storage cask.

With the horizontal system, the DPC is raised out of a slide out of the transfer cask and into the vault. Where you place these storage casks is dependent on your real estate. Some are "inside the fence," next to the reactor, and others have them placed some distance from the reactor.

You also have some "bare fuel system storage systems" that have metal bolted systems. It has a leak tightness monitoring system. The welds are made to be tighter than the base metals.

Two to three feet of concrete will provide the shielding. The steel shell provides the structure, baskets that hold the assemblies that meet seismic requirements.

90 percent of the casks are the DPC variety. All of the fuel (except at Zion) at shut down plants are in dry casks. Nine are on what are called "stranded" sites where the reactor has been decommissioned and demolished, and all you have left on the site are trees, grass and dry casks. Industry's position is that those should be moved to an interim storage or final repository first.

NRC waste confidence findings have not found any major issues with the long-term use of dry storage. Court did not find any deficiency with dry cask storage.

The risk is never zero, but quantitative numbers for dry cask storage are the smallest in the nuclear industry.

A 14-year cask was opened by INL, finding “Long-term storage has not caused detectable degradation of the spent fuel cladding or the release of gaseous fission products.”

INL has other opportunities to further verify performance and those opportunities are being pursued. We have had 3000 shipments in the US. There is a 10-1 ratio of shielding in the weight to the fuel. No release of the radioactive material.

Question: What about a natural disaster and/or terrorist attacks?

Response: All casks are designed to withstand just about anything nature can throw at them. Fukushima was hit by both an earthquake and tsunami, and their casks were fine. The vendor licenses systems and can store it anywhere. There is a lot of excess design for these. When you look at that much concrete, if you had a weapon to hurt a cask, why would you use that on a cask?

Question: What are the long-term capabilities?

Response: They are licensed for 80 years, but could withstand hundreds of years. This is stable, dry storage.

Question: Can/should used nuclear fuel be stored in buildings?

Response: The concrete is ASCM standards – vastly exceed loads. No added advantage to a building.

Question: The pictures you showed us have various bodies of water. Are any additional steps required to protect those water bodies?

Response: Nuclear plants are almost always on major bodies of water. All of them require a lot of water to cool them. They're all on some bodies of water like a lake, river or ocean. The design and safety protocol for dry storage assumes they will always be in proximity to people's drinking water. Where you place dry casks in comparison to the reactor is dependent on the reactors real estate and what they have available. Dry casks can be stored safely for the indefinite future. 1,600 of these dry casks have been loaded without incident – there has never been a safety accident or exposure by any of the workers involved with this process. The industry has had enough fuel in dry storage over the past decade that it has allowed us to see how the fuel ages in this environment – INL has played an important role in this process. It is their position that the orphaned fuel should be the first to be moved (where there is no operating reactor). There have been over 3,000 shipments without any harmful releases of radiation.

Question: In the basket, are all of the slots filled?

Response: Yes – that is the intent that the basket will ultimately be fully loaded.

Transportation of Nuclear Materials and Emergency Preparedness

Chairman Sayer welcomed Russell Neely with Edlow International Company. They have been focused on the transportation of nuclear material for over 50 years. The key element for transportation is the package. There has never been an accident where radioactive material has been released or breached.

Worldwide, there are 20 million shipments of radioactive material each year. Only 5% of those shipments are related to the nuclear fuel cycle. The rest are for medicine, agricultural research, manufacturing and exploration of ore minerals.

Type A packages are designed to withstand normal conditions of transport and minor accidents and are used for medium-activity materials such as medical or industrial radioisotopes, materials that would not result in significant health effects if they were released.

Type B packages are designed for high activity materials such as used (spent) fuel and must be able to survive severe transport accidents. These are very robust and secure packages and they maintain shielding from gamma and neutron radiation even under extreme conditions. Type B packages must have a Certificate of Compliance from the US Nuclear Regulatory Commission or a Certificate of Competent Authority from the US Department of Transportation.

Regulating the safety of radioactive material shipments in the U.S. is the joint responsibility of the U.S. Nuclear Regulatory Commission (NRC) and U.S. Department of Transportation (DOT). The NRC generally establishes requirements for the design and manufacture of packages for radioactive materials under Chapter I of Title 10, Energy, of the U.S. Code of Federal Regulations. The DOT generally regulates the shipments while they are in transit and sets standards for labeling (Title 49, Transportation, of the U.S. Code of Federal Regulations). NRC and DOT regulations are based on international regulations issued by the International Atomic Energy Agency (IAEA).

The NRC requires that Type B packages be able to withstand a series of tests that simulate severe accident conditions. These tests include:

- Free Drop: A 30-foot free drop onto a flat, unyielding surface so that the package's weakest point is struck;
- Puncture: A 40-inch free drop onto a 6-inch diameter steel rod at least 8 inches long, striking the package at its most vulnerable spot;
- Thermal: Exposure of the entire package to 1475°F for 30 minutes; and
- Immersion: Immersion of the package under 50 feet of water for at least 8 hours.

Eastern Snake River Plain Aquifer

Chairman Sayer welcomed Gerry Winter, a hydrogeologist with DEQ. Winter outlined the dynamics of the ground water under INL, including the ground water flows in the Eastern Snake River Plain Aquifer. King Hill marks the western terminus of the ESRPA. Regular monitoring takes place through monitoring well on the INL. Progress has been made with decreasing concentrations of a number of facilities throughout the site.

Sr-90 concentrations in ground water from past use of injection wells at INTEC are declining over time.

Summary:

- Trends generally show decreasing concentrations in ground water with time
- Ongoing remediation at TAN is reducing amount of TCE in aquifer
- Ongoing remedial strategy at INTEC is to reduce loss of water from piping and managing storm water to retain Sr-90 in perched aquifer allowing for decay
- Ongoing vapor extraction and sludge removal at RWMC
- Ground water monitoring continues across the INL
- Final CERCLA remedies are not in place at INTEC or RWMC

Question: It is safe to say that the clean-up effort has been successful. As we look ahead, what recommendations would you suggest?

Response: Don't inject waste into the aquifer which wouldn't be acceptable anymore anyway. Where we have had leaking pipe systems have been some of the biggest problems from a CERLA standpoint. Water is the big driver.

Question: We have not had a lot of activity in the Big Lost for many years, as it goes down the does aquifer follow down to TAN?

Response: The flow is opposite of the Big Lost.

Question: Is it correct to say the risk to the aquifer was created by injection wells? What risk to the calcine is posed by the calcine and the used nuclear fuel at the site?

Response: It's not part of CERLA and since water can't flow through it, there really wouldn't be much of a risk.

High Burn-Up Fuels

Chairman Sayer welcomed Steve Marschman. The INL Scientist talked about the potential for high burn-up fuel research at INL. (NOTE: Steve Marchman's presentation was unable to be posted on LINE Commission website).

Burn-up is a term used to express how much energy is extracted from nuclear fuel. It can be expressed as the energy released per mass of initial fuel in gigawatt-days/metric tonne heavy metal. As nuclear power has

evolved, there has been a continual drive to reduce operating costs and increase operating efficiency. One way to increase efficiency is to keep the nuclear fuel in the reactor longer.

Historically, reactors would have annual outages where some fuel was removed from the core, new fuel added, and some “shuffled” around for continued use. These were the days of “low” burn-up fuels being discharged from reactors. Today, most utilities are refueling every other year. The fuel is kept in the core longer, and as a result, the fuel achieves a “higher” burn-up. This allows the utility to get the same electrical output with a reduced tonnage of fissile material, fuel fabrication costs are reduced, and waste disposition costs are reduced.

The recent decision to no longer fund the development of a geologic repository at Yucca Mountain, Nevada for the disposal of high level waste necessitates storage of used nuclear fuel until a disposition pathway is available. The challenge is that there is limited dry storage data on high burn-up fuel, and that is the kind of fuel utilities now need to place in dry storage. Other challenges include that the NRC only issued license renewals for dry storage sites with fuels having burn-ups ≤ 45 GWd/tHM and several utilities high burn up fuel dry storage casks need to be relicensed around 2020.

To resolve this challenge more information is needed on: safety of dry storage of high burn-up used fuels, and; an understanding of the effects of extended dry storage on the used fuel to allow handling and transportation at the end of storage period to facilitate final disposition. This data can be obtained through experience by the utilities, small-scale and laboratory testing programs, and large-scale demonstrations similar to those conducted in the 1980s-1990s.

A long term dry-storage demonstration has been identified as a vital part of industry’s strategy to confirm that extended storage of used fuel is safe. Commission members highlighted that INL is an ideal location for this demonstration. A facility will be required to receive, open, and handle fuel from a large bolted-lid storage cask. It was noted that the INL has facilities that can be used for this purpose. INL has capabilities of receiving and opening casks and has a full suite of examination capabilities and skilled personnel to conduct the evaluation.

Idaho Industry Panel

International Isotopes, Steve Laflin – 16-year old company. Located in Idaho Falls, and produce isotopes for cancer therapy.

Use ATR to produce Cobalt 60, used for inoperable cancers in the brain. One of the most significant and overlooked facts of INL over the past 20 years is that the cobalt produced in ATR is used to treat 150,000 patients in the US.

Formation of LINE is good in these tough economic times. Mark Twain said if you hold a cat by the tail, you’ll learn things you can’t learn any other way.

Broad economic development based in collaboration with the INL. Two points that will strengthen and diversify the INL.

- 1) Take a broader view of nuclear energy opportunities
- 2) Improve the state’s attractiveness

INL has a long and wonderful history in fuel cycle research, nuclear energy has much broader opportunities. INL has ATR which is unique in the US and capable of performing a much more significant role in the production of isotopes. The Canadian reactor in Chalk River is slated to shut down in 2016 and there is no replacement for that reactor.

They have financed a shuttle system in the ATR which enhances capability of ATR. The INL has tremendous strength in other areas like battery, wireless, security, materials, etc. All those areas diversify the INL and offer the potential to collaborate with industry.

Improve the state's attractiveness to new businesses. Our company is planning to build the nation's first depleted uranium extraction facility. They just finished a four-year license process with NRC. We convert depleted uranium tails into a stable form that can be safely disposed. At the same time they are processing uranium, they produce fluoride, which is used in pharmaceuticals, etc. It's a \$115 million project. Unfortunately we are building in New Mexico. We conducted extensive site selection process of 8 locations in three states.

Idaho did not score well in five areas. Huge regional difference in natural gas and seismic issues play a huge cost in design and construction. That emphasizes you should focus on factors you can control.

Taxes, land, utilities. On taxes, other states offered incentives that added up to sizable savings over a 20 year period of time. Other states have a land transfer program if you make upgrades to the property. Utilities. Miles of costs for power and gas lines. The current situation in Idaho is that the first business into an area bears the burden of all the cost. If the state can offset a part of the cost, it would have helped with the cost, and created a 15 mile corridor attractive to economic development.

Success is like baseball two singles and a bunt are the same as a home run.

Diversified Metal Products, Nathan McMasters – They manufacture diversified metal products. 40 welders and fabricators. They are a nuclear fabricator, not selling widgets. We build what the customer wants. Build to print and design build. They have been in business for 24 years in Idaho Falls. 90 percent of the work is in the nuclear industry. AMWTP, NRF, INL. Doing more and more commercial work.

We're excited about SMR's, in that we can build it. We can fit it in our shop, we can do parts, anything you can bring to INL for SMR research is great. It's an advantage to fabricators like us who are near the research, and then you're more likely to be part of the production.

In eastern Idaho, we have support. We need more support in all of Idaho, if you can promote that it would be great. Workforce development training fund, it's made the difference in hiring people and in on the job training. OJT is about hiring someone who has been out of work for some time, and those programs should continue.

Suggestions:

Small Modular Reactors – what excites them about this is that they can do this in their current facility.

Interim storage/dry storage/reprocessing – there is no reason we shouldn't be a part of this

Nuclear research – as you move west in Idaho, the feeling is less supportive of nuclear and anything the LINE Commission can do to support that would be helpful.

Continue to work with Partnership for Science & Technology

Workforce Development Training Fund – this has been an important tool for them to hire people and provide on the job training. Continue to support and promote them.

Portage, Kevin Poor – Engineering and design, civil, mechanical, environmental, IT, among others. Have done a lot of remediation. Client base is DOE at a variety of sites throughout the country, along with DOD. Also do a lot of work for BLM, Forest Service, state and local governments, and NGOs. They do significant amount of nuclear work.

Energy security equals economic security. Current political discussion about expanding domestic carbon based fuel sources, we can't get too distracted from the value of nuclear power as being part of a viable energy mix.

Continue the remediation – this has been very positive for the economy.

Small business = small business participation is a strategic issue; sometimes the small players who have a broad client base, that means that the people they have must possess broad capability. Small business does have the infrastructure to support the nuclear industry

Premier Technology, Doug Sayer – Over 300 employees started in 1996. Partnered with CWI and have been very involved in the cleanup efforts in the state; largest share of the business is in the nuclear industry – service most of the national labs; also have a commercial nuclear industry including the baskets for commercial storage casks – they are the only domestic manufacturer of this product so it is bringing jobs back to the United States and Idaho. They manufactured the steam reforming equipment in IWTU. We now find ourselves in a position where the country is going to respond to the Blue Ribbon Commission report. Idaho might now be too late – other states are stepping up to support interim storage.

Does it make geological sense to do it here – a site that isn't over an aquifer?

Does it make social sense to do it?

Does it make economic sense?

If the answer is yes, then we should be diligent and do the project correctly. It should be state owned, state operated, and have state oversight on endowment land so that this can benefit our universities. Universities should have involvement in operation of their national lab like in California.

The monies that are coming to solve this problem come from the ratepayer – so they don't have to rely on federal appropriation. Blue Ribbon Commission has suggested that it should go to multiple sites – New Mexico is going after it all.

Question: If the answer is yes, how do we catch up?

Have an open dialogue. Right now there is not a point of contact in our state government to move forward. It's a chicken and egg question. Industry has done a great job on risks, but horrible job on benefits.

Question: Are there things you see other states doing in terms of workforce development and economic incentives that Idaho should consider.

Response: Other states have much more of a unified effort and this Commission is a step in the right direction. Other states do a good job recognizing a core of competency to support existing businesses in the state.

Question: What is your average industry income, level of education, and are we meeting the needs of workers in your pipeline?

Response:

\$30,000 Union hires their workers

\$78000 average, can't find skills locally. PHD

10% above average household income, Workforce development

Question: Part of our challenge is we're a flyover state, and if it weren't for the INL, we wouldn't have you here. SMR's Pete Lyons said it's huge.

Response: Power in numbers and power in clusters. How do we support you and let industry know we can be a player to get a piece of the action as the SMR industry grows? New Mexico Energy Plex concept. Urenco, and WIPP. Here it could be Areva, once you get one, they fit together.

Public Comments

Steve McMasters – asked to speak in response to the industry panel. If we were to consolidate the orphan waste, this would be a significant opportunity. While a state like Idaho might be behind, if we decide we want to pursue this we are already ahead. Boise State already has people working in the used fuel arena. We have people beyond the laboratory who are very active in the industry. The department is looking at how expensive the site examination facilities -- \$500M-\$1B are to construct. If you start to look at strategies to project our state and combine that with needs of civilian fuel, there is opportunity to recruit new businesses to the state.

Michelle Holt – Read a letter into the record on behalf of Butte County to express their support for the Idaho National Laboratory.

Bill Chisholm, Buhl – born and raised in the Magic Valley. His perception is different. We don't have the economic benefit here that you have in Idaho Falls. Private prison has an interest in incarcerating more people because it keeps them in business. I don't see many people representing the environmental aspect here in Idaho. I can almost anticipate what your recommendation will be. If you bring the waste in, it ain't going to leave. This stuff is going to last a lot longer than the 20, 40, or 80 years that it's licensed for. We have a long geologic history rather than the short term piece of action we're going to have here. Energy efficiency and conservation should be our first step. Then renewable, and if we're short on anything, then we can look at nukes. You'll have some serious opposition if you give a blank check to the industry. You need to expand the discussion beyond just a couple of good ol' boys.

Liz Woodruff, Snake River Alliance - when we spoke in June, we provided a firm case for refusing commercial waste. No means no. You will continue to hear us say that. You cannot recommend that Idaho renege on this agreement. Nuclear waste should be stored as safe as possible near its source. She highlighted safety lapses at INL, sharing a DOE October letter citing those lapses and fining the INL more than \$500,000. The materials suggested that come to Idaho are the materials that put these workers at risk. I shudder to think of the state overseeing these materials. The track record is short of what it should be. Idaho has already said no. Any recommendation supporting that would be unreasonable and irresponsible. You should take a step back. Nothing has changed from the discussions that we have had for decades before. Much of the testimony you have heard from the people of Idaho has encouraged you not to renege on the agreement. A lot of people are watching this closely. I have two questions: When will your draft be released? And will it be available for public comment?

Chairman Sayer indicated a draft will be available around November 19, and the comment period will go more than 30 days extending up to Christmas Eve.

Beatrice Brailsford, Snake River Alliance - she met with the DOE investigators and they said INL has lost the ability to handle plutonium. If Idaho's role is that we will always be the back end, we should acknowledge that. Are we too early or too late, it is a moving target. You're hearing a lot of proposals, and they're not all good. You're hearing bring the stranded fuel, bring two casks, they're not all good. All the plans about consolidating spent fuel, the only way it makes sense is if you consolidate and then reprocess. Reprocessing is the most damaging thing in the nuclear cycle. The reprocessor at INL was the cause of the biggest problems. Reprocessing is the source of 100 million gallons of the most dangerous nuclear waste that we've got. We only have 1 million gallons of that waste left to handle here in Idaho. We built a \$571 million facility to treat less than a million gallons of liquid waste. I was confident that was a happening thing, and it looks like it will be more difficult to open that facility and treat that waste than we had anticipated. We've said, No, not based on ignorance, Idahoans have said no because we have been dumped on for decades.

Betty Slifer, Filer – Why are you doing this on a Friday when people are working? I am a voice to represent all the people who aren't organized but who are concerned about the safety of this issue.

Peter Rickards, Twin Falls – I asked you to report back on the Stuxnet virus and my belief that is why you should not support any more nuclear in Idaho. Cyber does pose a threat, we get hacked every day. DOE says we can provide triple our electronic consumption and create millions of jobs with wind farms.

I asked you to report on the Dr. Sodderholm report. I asked you to do an economic analysis on a meltdown. I bet you will ignore that too. NRC penalized us for the cement cracking for TMI. You can't store safely what you have now. This is treason you are committing, and you need to correct the lies. It is treason to claim we have cleaned up the INL, when they have actually lost it.

Chairman Sayer asked for feedback on the September LINE Commission minutes by COB Monday. He also reminded Commissioners that the next meeting will be held November 16 in Moscow. Arrangements are being made from Boise to Moscow on the state plane; connections through the Idaho Education Network will also be set up in Idaho Falls (and possibly other locations).

The meeting is adjourned 5:04 PM.