

David Blee

As I mentioned Dave Huizenga is the perfect kickoff speaker here. He has been steeped in this area for over 25 years. He presently serves as senior advisor for environmental management for the U.S. Department of Energy. However, he really actually runs the environmental management directorate at the Department of Energy reporting to the undersecretary of energy. He is an internationally recognized expert in nonproliferation in nuclear energy waste issues. His career at the DOE is one in which of rapidly rising assignments and he originally started working in environmental management program at the Hanford site. I guess you never quite solved that one when you were there but it's ongoing and I'm sure he will tell us a little bit about it.

He is widely known in the international community having worked in the nuclear materials return program. He has served as a U.S. senior technical advisor in the international IAEA radioactive waste advisory committee and then working with the U.S. Department of State he led technical negotiations for the 1997 IAEA radioactive waste and spent fuel convention.

So to kick off our very first plenary speaker session, we want to welcome Dave Huizenga.

David Huizenga.

Thank you, David and welcome to San Francisco. It was a little foggy this morning, looks like it's burning off. Looks like we might have a good week. It's an honor to be here today with my distinguished colleagues to speak about something that's been very important to my career frankly at DOE.

Transportation and packaging. Many of you, actually there are a lot of familiar faces in the audience, we've been working together on safely and securely transporting nuclear materials of all types for quite some time now, millions of miles around the globe and I think that you all should in a sense be proud of what your professional and governmental efforts have led to in many accounts. It's a safety record, something we should all be proud of.

I have some experience actually specific with transportation in San Francisco and I don't know if any of the folks in the room were involved with this, but we had kind of a crazy idea as part of the effort to repatriate U.S. origin research reactor fuel from around the world. Most of the fuel goes to our Savannah River site in South Carolina. But some of it, the TRIGA fuel and some of the other fuels go up to our storage location in Idaho. We thought we should be fair to the people and share the burden and so bring some stuff into the east coast and some stuff into the west coast and so we had highly enriched uranium from one

of our partners, the Kori reactor in South Korea. We thought the shortest distance to Idaho is underneath the Golden Gate Bridge. So I spent quite a bit of time sometime in the late 1990s and I don't remember exactly when we made the shipment. Thanks, Chuck, 1998. Chuck remembers it well.

I can remember two oddities associated with that. The ship was coming across the sea, no problem. It gets underneath the Golden Gate Bridge and we were watching it. First of all they thought they were going to close the Golden Gate Bridge because we had to transport a couple of spent fuel casks underneath the bridge, and for safety reasons. We said no, that's ridiculous, don't do that. It turns out they didn't. They closed the pedestrian so the bicyclists and pedestrians probably were unhappy with us for a short period of time. But as the local news cameras were following the ship up the waterway on its way to the Concord Naval Weapons Station, the reporters were asking me, can you verify where the ship is. And of course we work with our energy colleagues and you don't tell people where the shipment is. I said no, I can't verify where the ship is. Of course they're beaming live pictures of asking me that question and the ship underneath the Golden Gate Bridge and telling people. So you find yourself in odd situations sometimes. The shipment successfully got to the Concord Naval Weapons Station and was offloaded and was supposed to leave at a certain time from a certain point. I went there to see the kickoff of the train starting on its way to Idaho. Me and a few protesters were there and the train wasn't there. I

asked my staff where was the train. Well that left a long time ago to ... .

Apparently I didn't get the memo on that.

The point is we figured out a way to move spent fuel underneath the Golden Gate Bridge safely and securely and successfully. You've been doing this for a long time and doing it well, so thank you. It's contributed to the success of our mission at DOE.

In that regard I would like to spend a little bit of time talking about both this environmental cleanup program that I manage now and also another activity at the Department of Energy that we're closely associated with from National Nuclear Security Administration gathering up nuclear materials around the globe and bringing them home. So first to environmental management and cleanup.

We have been generating radioactive waste and making nuclear materials for a long time as part of our Cold War efforts over probably five or six decades worth of efforts now, and including some nuclear energy research. But we have generated a lot of nuclear materials and wastes that need to be transported. So hence the importance of this symposium and making sure we get it right. This is a picture of a B reactor, one of the first reactors operating up at the Hanford site. There were many, many along the Columbia River back in that day.

For context to give you a sense of the magnitude of our effort and our need, in 1989 when we started our cleanup efforts we had over 100 sites in 35 states. We're now down to 17 sites in 11 states and basically a tenth of the footprint we had when we started our effort. We've invested over the last basically 24 years about \$120 billion U.S. in the cleanup effort. Much of which again I would emphasize involved as you can well imagine transportation because we didn't leave a lot of that radioactive material in those states that are cleaned up. We moved it to other disposal and storage locations. We needed to do that carefully and successfully.

We still have some large challenges up in the northwest at our Hanford site which was one of the original Manhattan project sites. We've got liquid wastes up there that we need to solidify and we're doing that. Similarly we're doing that kind of work in the South Carolina Savannah River site. But there will be more work for you people at some point because in the future we're generating high level waste canisters that are going to be transported to the future home and geological repository when we sort out where that is going to be. And don't save that question to ask me where it's going to be. I don't have that answer at the moment.

We guesstimate or estimate or forecast about \$250 billion into go costs over the next 40 years to finish those 17 sites. Largely the big sites, so there will be a number of opportunities for you to help us move waste and materials around.

I just put this up because I'm particularly proud of this. Alice Williams, one of my key senior deputies, worked with the people at West Valley to make this spent fuel shipment in 2002 timeframe if I remember right. I think this shipment was ready to go across country on three different rail lines shortly before 2001, the 9/11 event, and we postponed it, regrouped and made sure everything was in order. Again, this is just another evidence and proof that with these NRC certified casks and working with stakeholders and law enforcement along the way, we were able to move fuel across the U.S.

Another important part of our cleanup efforts and one that I know some of you in the audience are actually involved directly right now is moving our transuranic waste to the waste isolation pilot plant at our operating repository 2100 feet under the ground in southeastern New Mexico in a hundreds of millions of years old salt bed. You can see the storage vault down in the lower right hand corner. Of note is there's a hole in the wall there. That's actually a remote handled cylinder of transuranic waste that was 15-16 foot holes drilled in the salt bed in the wall and that cylinder is slid in and a shield plug put on the top to

keep the remote handled waste properly shielded. And the other is our contact handled waste drums.

We've shipped these wastes from many, many sites all around the complex, again in type B packages, safely and securely. You can see over 11,000 shipments and many, many hours on the road and no real issues. As a matter of fact this shows the sites that we have cleaned up, 22 of our 30 sites that have transuranic waste. For the international community I guess this might be thought of, it's plutonium bearing wastes that you might think of on an intermediate level waste if there's low, intermediate and something above that, high level waste. This is in the middle. There really are not many vision products in it other than some of that remote handled which is a lesser percentage of the waste.

We transport this material on the interstate highway system working closely with law enforcement and the state governments. These are notional routes, we don't publish directly all the routes and let people know exactly where we're going at any given time. Certainly the local officials understand this. This is extremely important, we recognize the need to communicate with people that once you put this material in a type B package, the ways that these packages have been tested and the extreme conditions under which they are required to perform provides the necessary safety envelope for making these transports very safely.

I can remember at one point being out on the road talking to people and having some concerned mothers at public meetings saying well, when the train is coming through or the trucks are coming through, you need to let us know and give us advance warning because we need to get our kids in out of the backyard. We need to explain it. I have kids, my kids would be in the backyard. I would not be afraid if the package was going through. And of course you can't see radiation so there's a fear factor there that we all have to try to overcome. But I think we are and we've demonstrated it day after day that we can do this.

Speaking of the packages, these are the suite of packages that we're currently using with the Trupact II in the upper left hand corner being the workhorse and the primary container and package that we're using. The remote handled 72B and the 160Bs are used for remote handled waste. And then our latest addition, this Trupact III, again trying to find a way to reach efficiencies in our cleanup efforts. If we don't have to cut large glove boxes and other large pieces of equipment into small packages or small pieces that fit in 55 gallon drums which is what is mostly in the Trupact II, they are smaller waste packages. If we can put them in larger waste packages we can save ourselves some money and some worker exposure issues. So we have recently deployed six of the new Trupact IIIs.



There's an urgency associated with this that it might not recognize in all instances, but the waste is packaged up and stored ready for shipment. A lot of this waste is at our Los Alamos site in New Mexico and they have been plagued with wildfires for about the last decade now. There was one more than a decade ago and another one more recently. And the fires are approaching the storage place on the mesa at Los Alamos so we're working with the State of New Mexico and with the governor and others there to as quickly as possible get the waste off the mesa and down into the waste isolation pilot plant safely and securely disposed of 2100 feet under the ground. We're making good progress there. But there is a sense of urgency and we're working to accomplish this mission every day.

I'll turn for a moment from transuranic waste to speak about the low level waste that we have to deal with and are moving around the complex. Also the next slide is going to show a lot of this low level waste has remained onsite over the years but some of it where we don't have a disposal site at all these locations, we move it to our Area 5 disposal. That's a picture of our shallow land burial site in the State of Nevada, they changed their name. It used to be the test site, it's the national nuclear security site, I think. Anyway, that's an important site for us and has been for quite some time. You can see the people packaging the material up at Los Alamos.

We so have some relatively small volumes of challenging waste. We've got a large melter at the West Valley site in the State of New York, and some other related equipment. Some of the more complicated materials remain to be shipped and we're going to work with the packaging industry to be able to move this waste as well.

The graphic indicates that again most of this low level waste, has over the years stayed onsite and some of it is being shipped to commercial facilities in Utah and now in Texas so we've worked with Energy Solutions in Clyde, Utah and Waste Control Specialists in Texas as an opportunity to use commercial disposal facilities and then we've got a TBD on some of our waste because some we don't quite have a home for yet. We're generating a lot of depleted uranium oxide material at our Portsmouth and Paducah sites in Kentucky and Ohio and that will ultimately require disposal at a location yet to be determined.

From a standpoint of our overall mission, I guess I put up time is not on our side. In the sense that's because the longer the materials stay in the drums and are not properly either dispositioned through disposal or treatment or in the ... waste tanks, liquid waste needs to be solidified. This is a picture of a building. Sadly before we completely tore the building down somebody fell through the roof of this K-25 facility in Oak Ridge. This is the picture of the before and after of the gaseous diffusion plant that was one of the Manhattan projects, workhorses to

enrich uranium. The facility was enormous, it was a mile long with a half mile long east and west sides and a north tower. We successfully tore most of it down in the last few months. We took one of the remaining towers down. So we're continuing to generate waste. This waste is actually disposed of onsite but it is transported from one location to another onsite.

The bottom line is we have demonstrated we can do the job. We do have responsibility to do this to the future generations to clean up the Cold War legacy and it's going to continue to need the help of the packaging and transportation community to get the job done.

So that's the first half of my message. Now if I could just turn briefly to another extremely important area that we're working in. One that involves a lot of our international partners. We have been working for several decades as you'll hear from Jack and some notes that I'll make as well, to repatriate U.S. origin HEU fuel from research reactors around the world. There are other materials, plutonium and other nuclear materials that we're also bringing back.

The fuel largely goes to the Savannah River site now. Some of it, as I mentioned, goes to Idaho, but the majority of the spent fuel from research reactors is going to the L-basin in the Savannah River site in South Carolina. From here we will

ultimately find a disposition path either using one of our processing technologies or looking to dry store some of this material as well.

In terms of history, it's actually 60 years ago. It looks like I got my 50s and 60s. Sixty years ago President Eisenhower initiated his Atoms for Peace vision at the United Nations basically and we have been successfully following up on his vision ever since. The Environmental Management Program, the Department of Energy has played a key role in this. You can see this is a picture of the first cask being returned in 1963 from Sweden as part of our repatriation efforts. We shipped highly enriched uranium out. We stopped doing that later on and started shipping low enriched uranium out to our partners. But in the ensuing years we've been working successfully to bring the fuel back.

We recently were able to share some time with Susan Eisenhower, the granddaughter of the President, at a meeting in Washington that was organized by Jack and others celebrating the 50<sup>th</sup> anniversary of the return of that fuel. And Jack, your dad is there. A picture of your dad and I wonder where are you Jack? You were a teenager. He took the picture, okay. I kind of doubt that, but you definitely knew what was going on there. That was an historic moment and we've been working diligently to followup on that ever since.

I just have kind of a series of pictures of transportation related events associated with repatriating the spent fuel.

I'll share just one or two other stories that come to mind. Most of this is done by truck overseas and then ships to the United States and then truck or rail in the United States. Sometimes you run into obstacles. We were transporting a shipment in Columbia from Bogota to Cartagena and the Fark rebels took over the road, so that posed a problem and we didn't want to ship the HEU through there under those conditions. Jack somehow miraculously found a Bogota [neper] Antonov 124 in Buenos Aires unloading cigarettes or something, I have no idea exactly what. We didn't ask all those questions. But I think our Russian partners are here as well. But they played a role. The plane flew up from Buenos Aires to Bogota and I remember telling this story not long ago. But I think it's humorous.

The Columbian truck driver was supposed to drive north to Cartagena with his payload and instead he was escorted to the airport and then the nose of the airplane was up and he drove onto the plane and somehow and basically they ended up going up to flying over the rebels and getting up safely to Cartagena and I can just imagine what stories he must have been telling his wife and kids when he got back about his adventure that day. It was not quite what he thought he was going to do when he woke up in the morning. But again, it's

another example of creatively figuring out a way to solve a problem and getting the job done.

And you can see there how many shipments we've actually made now, over and over and over making these shipments successfully. Loading and unloading in Charleston. And then the train, and now I think it's largely done by truck. Isn't it truck? How many packages depending on the shipment. But some of the larger initial shipments I remember going by train and lot of those are by truck now and it ends up there safely stored in the L-basin.

And we work with our international partners complying with the requirements in the operator country itself and then the transport across the high seas and ultimately working with the NRC and Department of Transportation and our own folks here in the U.S. to successfully complete the mission.

In summary, I really again want to come back to the importance of putting our heads together to solve these complicated but solvable problems. We have demonstrated a safety record that we all should be proud of and I think throughout the course of the week here today, this whole week in San Francisco, you're going to be able to share lessons learned with each other. I think that's important. We need to continue learning from each other and staying ever vigilant. We don't want to rest on our laurels, we've done a great

job but we've got a lot of great jobs to do in the future and I look forward to our continued partnership with the regulators and stakeholders and the private sector. Thank you for your interest.

David.

I think we've got time for a couple of questions. Thank you very much Dave, that was right on schedule. While people are thinking about their questions, David, we hear a lot sequestration and budget impacts and all that. How are you managing through all that?

David Huizenga.

It's not good for anybody. I certainly hope that the next budget gets passed and it doesn't involve the sequestration cut. Whether I'm going to get my wish or not will remain to be seen. But it's tough on the federal project managers and it's certainly tough on the people who are out there ready to go to work in the morning and aren't able to do so. Because we just can't pay them.

David.

Question? State your name and organization.

Question.

Sure. Kenny Fletcher with Weapons Complex Monitoring. I was hoping you could talk a little bit more about the proposed shipments of uranium 233 from Oak Ridge over to Nevada. I know there's been some opposition from the state and the Secretary of Energy met with the governor last week. When are you hoping to get a resolution on that issue? And have you looked at any alternatives for that material in case there is no resolution?

David Huizenga.

That's an important topic. And we had a successful meeting with the governor last week. It's at the stage I think for some continued discussions to clarify exactly what the material is and what it isn't, more importantly. Because I think there's a lot of misunderstandings about this. This is low level waste and we've done our due diligence to basically understand that it can be successfully and safely transported and disposed of at the Nevada site. Time will tell. We're committed to working with the governor and his technical staff to resolve the remaining issues.

We are not really looking at alternatives at the moment because we're going to hope that we're going to be successful in kind of opening up the communications and clarifying things at a more senior level. I think we're going to get the job done.



David.

One more question for you Dave. In terms of your planning with respect to, obviously there are a lot of us who were disappointed with the administration's decision to withdraw the Yuka Mountain licence application. But without getting into that decision, the political aspect of that, how has that affected your planning in the process in terms of presuming about 10,000 metric tons of your material is headed for a national repository of some type whether it be Yuka or somewhere else. How are you dealing with that in the interim in terms of a national repository and the need for that?

David Huizenga.

Well the spent fuel that we've got stored now, whether it's in the L-basin or in dry storage at Idaho and largely in Hanford is safely stored and can be stored for some period of time. So it doesn't have a near term impact on us. It will have a longer term impact on us if we are unable to obviously eventually ship our high level waste and spent fuel someplace. The high level waste, we're continuing to generate high level waste canisters. We'll have to build more and more canister storage buildings to the extent that ultimately a repository doesn't come online. But the material for the time being is safely stored.

David.

Another question? Is that Doug?

Question.

Doug Immerman from Sandia National Laboratories. Dave, I think that for most accounts people would say that the WIPP experience has been a tremendous success in operating a repository and transportation to that repository. Could you tell us about any pickups there have been in that successful path forward to that? Initially there were quite a few protests about transportation, but now several thousand shipments later, I think that's going pretty routine. Could you give us a little bit of background on that?

David Huizenga.

We had the ten year hiccup. Remember, I had a button that said we were open in '88. We missed that by 10 years. But once we sat down again with the law enforcement people and the state and local governments and the tribal members, I think we kind of basically established a way to make a project like that happen and hopefully the commercial repository people will learn some lessons from that. In terms of consensus, in the end those people's concerns and fears I think were overcome through a process of educating and spending time. We spent a lot of time on the road talking to people and trying to explain why this could be done safely and securely. And once we got the support of the local law enforcement and the state officials, people started listening. You trust the officer in your neighborhood or your jurisdiction perhaps more than the fed

that comes by and just tells you everything is going to be wonderful. We found a way, I think, to bring a larger community together to understand that we could actually do this and do it safely.