INTERVIEW WITH BOB HALSTEAD

BY JOHN WALKER

EUREKA COUNTY, NEVADA
YUCCA MOUNTAIN LESSONS LEARNED PROJECT

held in

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MS. CLANCY: My name is Gwen Clancy. I’ll be videotaping this interview. It’s March 31st. We’re in Carson City, Nevada.

MR. WALKER: Hi. I’m John Walker. I’m with the Eureka County Oversight Office. We’re here doing the Eureka County Lessons Learned video project, and I’m here today with Mr. Bob Halstead, who is a long-time consultant for the State of Nevada, the Nuclear Waste Project Office, or commonly known as the Agency for Nuclear projects.

Bob, you’re obviously aware of the Fukushima Daiichi problem in Japan, the reactor melt downs, the spent fuel pool problems. What are your impressions of what’s happening there now?

MR. HALSTEAD: Well, I’ve been thinking a lot, John, about that nuclear disaster in Japan, and putting aside the immediate implications for the people who live near the site, for the power company, which is going to lose those reactors, the Japanese government, which has lost credibility, I’ve been thinking about what the implications of the Japanese nuclear crisis are for the way that we do risk assessment, and the way that affects the work that we’ve done here on transportation and risk assessment for Yucca Mountain.

There are three areas in which I think there are important implications. The first is that I’m much less
certain now that we have a good handle on our ability to predict severe future events like earthquakes based on the historical record. I think when we do earthquake forecasting, for example, now, we’ll have to assume that a future earthquake could easily be greater by a factor of ten than an earthquake that has occurred over the last 1000 or 1500 years in any particular area we’re concerned about.

A second area in which I think there are direct implications has to do with the way that we attempt to estimate the probability of combined events, or multiple sequence events. In this case, for example, you had an earthquake combined with a tsunami combined with a number of human errors, both in the way the facility was configured and the way the emergency response was carried out.

Let’s just take two of those factors and consider how we would look at a transportation accident. The way that the professional risk assessment community would look, for example, at the combination of a severe accident with a severe human error would be to say well, the probability of the accident is ten to the minus six per year, and the probability of a human error that would cause a considerable exacerbation of an accident is, say, ten to the minus three. We multiply those together, we get ten to the minus nine, or one in a billion probability, and that’s way below the limit at which we have a legal obligation under the Council of
Environmental Quality Guidelines to actually do an analysis. So, we’re not required to analyze an event like that. We probably don’t analyze an event like that, and that’s precisely the kind of an event that we’re concerned about, as we have now found out painfully in Japan.

And, a third area in which I think there are some new implications--I’m sorry, you’re going to have to edit this part. A third area in which there are some implications that are directly transferable have to do with the way we assess the potential economic impacts of a severe nuclear accident. Now, we’ve done a lot of work on severe transportation accidents and successful terrorist events, and we know from a range of models that an accident could cost up to $10 billion in clean-up costs, and a terrorist incident could cost hundreds of billions of dollars.

And, now, we’re actually seeing unfold in Japan an event where we certainly think already that the combined loss of property, clean-up costs, and compensation costs are going to be in the $10 to $20 billion range, and they could well far exceed that, $50 billion.

So, those three areas, our ability to forecast severe events based on the historical record, our ability to accurately assign probabilities for a combination of events, and our ability to accurately assess the maximum economic impact of a nuclear accident, these are all aspects of the
Fukushima Daiichi nuclear disaster that I believe are going to be studied by risk analysts for the next ten years. They are going to have a direct impact on the work that we do for the State of Nevada, and the effected counties that are concerned about transportation risks that would result from shipping spent nuclear fuel and high-level waste to Yucca Mountain.

MR. WALKER: Thanks, Bob. Let’s move on to the next question.

Bob, you’ve been in this business for a long time now. What’s the most important thing that you’ve learned about transportation and nuclear waste?

MR. HALSTEAD: John, I think the most important thing that we’ve learned through the 30 years of studies for the repository program generally, and Yucca Mountain specifically, is that the transportation impacts are going to occur nationally over perhaps as long as half a century. They’re going to affect an enormous number of communities and people. Looking at the specific routes that might be used for shipments to Yucca Mountain, we know that more than 40 states will be affected, 30 to 50 Indian nations would be affected, 800 to 900 counties would be affected, somewhere in the neighborhood of 160 million people live in those affected counties. 10 to 12 million people actually live within half a mile of one of the shipping routes, and about 330
Congressional districts are affected by these routes to Yucca Mountain. The routes to other sites might vary slightly, but probably not by more than about 10 percent.

So, the lesson we’ve learned from Yucca Mountain, which is that transportation will have national impacts for a long time, is not only part of the Yucca Mountain lesson learned, but it’s a lesson learned for any future effort at siting a repository anywhere in the country.

And, then, what does that mean for the way transportation has to be approached as part of a larger national nuclear waste program? It means transportation has to be given the same level of attention that storage and disposal are, because the transportation component of the waste management program is going to impact so many people and so many political jurisdictions, and it’s certainly going to be politically controversial for a number of decades, possibly half a century.

Does that seem to be a good point to take a break?

MR. WALKER: Bob, you know this transportation issue, you’ve talked about how important it is, and maybe it hasn’t been treated that way in the regulatory process, and I’m not sure exactly what you mean there. I mean, why doesn’t it have the stature and importance that, say, the repository itself does and the design of the repository or the examination of a repository site? Why was transportation
not part of that process, at least in terms of priority, and will become part of that process in terms of priority in a licensing hearing?

MR. HALSTEAD: Well, John, let’s break that down into--I need to get my thoughts again here. I’m sorry. Well, John, there are really three aspects of the repository siting, environmental approval, and licensing process where transportation is critically important. In the selection of sites for the first repository, going back to 1982 when the Nuclear Waste Policy Act was passed, certain sites that had already been studied were grandfathered in, and then in 1986, the Department of Energy completed Environmental Assessments for those sites, of which Yucca Mountain was one. And, there were site selection guidelines pertaining to transportation that were very important.

And, at that stage in the game, the Department of Energy had done a pretty good job of demonstrating that compared to the other sites for the first repository, Yucca Mountain was the worst of all those sites in terms of rail access, highway access, cost of building access, distance from the load center where the waste was stored, and so forth. That information, of course, was ignored by the Congress in 1987, so Yucca Mountain was selected as the only candidate site for the repository project after 1987, completely ignoring the information that showed it was a poor
site from a transportation planning standpoint.

Now, in the Environmental Assessment process, the Department of Energy evaluated rail and truck transportation nationally and in Nevada for Yucca Mountain, and they addressed this in a number of documents, planning documents, that were completed before they actually produced their EIS. But, most importantly, these transportation matters are addressed in the 2002 Final Environmental Impact Statement, the 2008 Supplemental Environmental Impact Statement, and then there’s also a separate Rail Alignment Environmental Impact Statement. And, in those three Environmental Impact Statements, the Department of Energy devoted about 4600 pages to transportation. So, you would think that they would have gotten it right.

Unfortunately, my view is that for a variety of reasons, they allowed themselves to become biased in the process of picking highway routes and rail routes. They convinced themselves that they would go with highway routes that went through Clark County and directly impacted the Las Vegas Valley, and they selected a preferred rail route, so-called Caliente corridor, without really a good NEPA justification.

And, so, in this second phase of evaluating transportation, the Department of Energy I believe had a defective process, both in evaluating the highway and rail
routes, that they perhaps thought they would get away with in licensing.

But, then, in the third area of licensing, I think it’s fair to say that the Department’s position coming into licensing, filing a license application and a Safety Analysis Report with the NRC, they felt that they had fulfilled their NEPA obligations that the NRC staff, after reviewing their EIS’s, would adopt them and decide that the NRC did not have to do its own independent assessment of how they had done transportation.

And, of course, this was challenged in contentions filed by the State of Nevada, by the State of California, by the affected counties, and Indian tribes. And, I believe it was quite a surprise to the Department of Energy that the construction authorization boards not only accepted the vast majority of the transportation contentions that were filed, but in fact took a general position that off-site transportation was as much a part of the license application as the repository site itself. That what is called the geologic repository operations area not only is one focus of licensing, but then all of the transportation access that’s necessary to get spent fuel and high-level waste to the repository operating area is as much within the purview of the NRC administrative law judges in this case in evaluating the adequacy of the environmental analysis that was done.
So, had the Department of Energy had the benefit of knowing how the construction authorization boards would have come down on this issue, (a) transportation is an essential part of the repository, and (b) specific issues that really covered the water front of transportation impact and risk assessment would be specifically admitted into the licensing proceeding. Had the Department of Energy known how that decision would come down from the NRC, perhaps they would have started their consideration of Yucca Mountain differently.

But, that said, it really was the Congress that made a fatal error in their failure to consider transportation in 1987 when they decided to go ahead with Yucca Mountain, when DOE’s evidence showed that it was going to be very difficult to achieve transportation access, and that there would be both environmental impacts and there would be public health and safety risks that would be peculiar to Yucca Mountain, far beyond the issues that involved the other sites that had been considered for the first repository.

MR. WALKER: Excellent, Bob. Let’s move onto the next question.

Now, Bob, why is it so important to have a railroad access to a repository?

MR. HALSTEAD: It’s critically important to have
rail access because the rail casks, depending on a number of other factors—let’s start that over again. I need to give a better answer. It’s important to have rail access to the repository, first, because rail casks have a much larger capacity than truck casks, and all other things being equal, it can reduce the number of shipments, the number of cask shipments by perhaps a factor of five or six. And then by putting more than one cask in a train, it can reduce the total number of shipments perhaps by another factor of three or four or five. So, instead of having perhaps 100,000 truck cask shipments, if you move most of the spent fuel by rail, you can get that down to less than 20,000 rail casks and perhaps a few thousand truck shipments.

A second reason for having rail access is that now many of the utilities are moving towards dry cask storage systems in which spent fuel is put into welded canisters. Those canisters, if they have to be reloaded into truck casks, would result in a lot of worker exposures at the shipping sites. And, so, while this was not the case when these decisions were made back in the mid 1980’s, the major reason then in favor of rail was simply the larger capacity of the rail casks, it’s now a combination of the larger capacities and the fact that rail transportation is more compatible. It’s able to interface directly with the canisters that are used increasingly in dry storage systems.
Now, let me go to the map and show you the way that the Department of Energy began to assess transportation access to Yucca Mountain.

In the early 1980’s when the Department of Energy began looking at the Yucca Mountain site as one of the nine sites that were originally considered for the first repository, their assumption was that a railroad could be built either from dike siting or valley siting on the north side of Las Vegas, out along the southern edge of the test site, basically along U.S. 95, out to Yucca Mountain.

Their backup rail site, and again, we’re talking about the 1984, 1985, 1986 period, was to come down from Hawthorne using an existing Southern Pacific line, which was subsequently abandoned and again, largely following U.S. 95.

In the early 1990’s, after Yucca Mountain became the sole candidate site, for a variety of reasons, some just good planning, to look at what were seen as other technically feasible routes in Nevada, and also, frankly, because some local governments, in particular the City of Caliente and Lincoln County were actually lobbying for routes that would go through the city and through the county, the Department of Energy looked at really all of southern and central Nevada and identified a number of potential corridors. And, these sites were winnowed down in a number of studies that were prepared between about 1990 and 1997. And, then, going into
the preparation for the 2002 Environmental Impact Statement, the routes that you see here, although there were some variations, these basically were the routes that DOE decided to do intensive study on between 1997 and 2002. Some of these routes would have directly impacted highly populated areas in Clark County. There were several variations on the Caliente route. Interestingly, the original Caliente route, which would have followed U.S. 93, gone through Hiko Canyon, gone through some difficult mountainous terrain here at Hancock Summit, and then gone through Warm Springs, for reasons that were never clearly explained, that Caliente route was abandoned in favor of one that ran 40 to 100 miles north through largely undisturbed rural areas. And, I think looking back on this, that is certainly an area where I would question DOE’s judgment. They actually did a comparative study of the what was the old route and the new route for Caliente, and they had assigned Route A and Route B, and then in the end, they decided to call the B route the base route, and the A route, the alternative route to kind of cover their tracks. And, that was one of the first decisions that they made where I thought they were being overly swayed by political considerations, maybe by input from landowners and were not actually following either engineering criteria or environmental
Similarly, there were a number of different approaches to basically what I would call the central north/south corridor in Nevada, which ended up of course being of great concern to the people in Eureka County as the final versions of the Carlin corridor evolved. Originally, there was consideration of a number of routes, routes that would have come through the Reese River Valley, routes that would have come from the east through Pine Valley, for example. There also were some routes that would have come in from more easterly destinations. One of these was called the Cherry Creek Option.

But, by the time that the Draft EIS came out in 1999, the central corridor that was still under active consideration are these variations that you see here of Crescent Valley.

In general, there were concerns on where this corridor should originate from the Union Pacific. And, you may recall there were earlier, some consideration of locations over closer to Carlin, one at Palisade, and these were from both an engineering and an environmental standpoint, very difficult because they involved steep inclines in order to get out of the Humboldt River Valley. And, so, eventually, they looked at the Beowawe area, I think primarily because there weren’t the mountainous terrain
issues there, although there were some issues with greater impact on private lands and existing residences, businesses, ranches, and so forth.

Then, there were some options that were considered again, Pine Valley and Crescent Valley, but by the time the planning was in place for the Draft EIS, the decision was made to go through Crescent Valley, with a couple of variations, both at the northern end and at the southern end of that corridor. And, primary concerns here were impacts on valleys that really had not had extensive industrial or commercial or even agricultural development.

There were some issues with the terrain, the Roberts Creek Mountain here and the Roberts Creek Range poses a real challenge, and you can go to the east of it, you can go to the west of it, but you’re not going to go through it. Then, there were questions here whether to go through Monitor Valley or not because of the potential impacts on ranching. And, in the end, the Department of Energy looked very closely at the Caliente route, a Caliente option that involved going through Air Force lands was generally not seriously considered because of the opposition of the Air Force. Then, of course, Crescent Valley was seriously considered, and then there was consideration of the Valley modified and Jean corridors through the southeastern part of the state. But, again, there were serious concerns from the beginning about
the impacts on Clark County and populated areas here.

I think it’s fair to say that by the time that the decisions were being made from the Draft EIS in 1999 to the Final EIS when political factors were considered along with environmental and engineering factors, it really came down to a choice of the Caliente corridor or the Carlin corridor. And, at that point, the Mina corridor, which had been considered early on and was later to be considered, at that point, the Mina corridor was not under consideration.

MR. WALKER: So, Bob, continuing on, what’s going to happen if licensing is resumed, and what does that mean to the whole transportation question with moving the waste to a place like Yucca Mountain?

MR. HALSTEAD: I think it’s safe to say that if licensing resumes, there will be major changes in the repository design. There will be major changes in the storage and transportation system that has to serve the repository. And, I think that as that occurs, the entire transportation analysis will be redone. And to put it bluntly, I think the entire Environmental Impact Statement will be redone, and I think it will be redone in two parts. I think there will be a new Environmental Impact Statement for the repository itself, and I think there will be a new Environmental Impact Statement for rail access, given the importance of rail access.
Now, it’s a little speculative to say exactly what corridors would likely be reconsidered and which new corridors might go into consideration. In terms of my knowledge of the past studies in the State of Nevada, and that includes the DOE studies and the studies that have been done for the State of Nevada and the studies that have been done by the counties, I would certainly expect some reconsideration of the Caliente corridor, but very broadly defined. I think the original Caliente route that goes along U.S. 93 and 375 might be reconsidered. I certainly would expect the central corridor, which is the Caliente corridor more broadly defined, to be reconsidered. In particular, I think an area 50 miles east and 50 miles west, centered on this corridor, would likely be re-examined.

It’s possible, but unlikely, that corridors coming out of Clark County would be reconsidered. I just think the land use conflicts and the political conflicts are very inhospitable to any rail development there. But, I certainly think the Mina corridor would also be reconsidered. And, again, just as we’ve said, if Carlin were reconsidered, we would look at something like a 100 mile corridor centered on what was identified in the 2002 EIS. I’d similarly see something like that happening with Mina, looking at options that both go across the Walker River Reservation and options that bypass the reservation.
MR. WALKER: Excellent. Let’s go down to another question.

MR. HALSTEAD: Now, let me return to the Carlin corridor, broadly defined. I think perhaps a 100 mile corridor centered on the corridors that were identified in the Draft and Final EIS between 1999 and 2002, I believe that this corridor would be seriously re-evaluated. Both the corridor options that were actually identified in those DOE documents, but also variations that might come through Pine Valley on the east, variations that might come through the Reese River Valley on the west, coupled with various options for the southern half of that corridor, I think it would receive serious consideration because of the generally favorable topography and because of the generally low population density, even though there are some communities where population density and impacts on existing land uses would be a concern.

MR. WALKER: Bob, in December of 1999, there was an EIS hearing in Eureka County, up in Eureka County in Crescent Valley. It’s my understanding you attended that meeting. What do you remember from that experience?

MR. HALSTEAD: I have very vivid memories of going to that public meeting. I remember getting onto State Route 306 and immediately being aware of what a beautiful area it was. Trees, water, you know, we say there’s a secret about
Nevada, just add water, and this was obviously a water-rich portion of Nevada. And, then, I drove a little further and I saw these peculiar signs that seemed to have some relation to the hearing I was going to. The ones that I remember most were like a cartoon caricature of a two-headed miner, and I thought umm, it would appear that some organizing has been going on in preparation for this public meeting where the Department of Energy is going to take input from the affected local people.

And, my strongest recollection of this meeting was the large number of attendees, given that this was a rural area, the fact that there were old people and that there were young people, the fact that there were very well prepared people speaking on virtually every aspect of the railroad and the way that it might affect the valley. Now, there also were comments about Yucca Mountain and comments about nuclear power and comments about alternative energy sources. But, there really was a very good focus on the proposed rail line and the rail line impacts.

And, I’ve been to many, many, many public meetings, not only all over Nevada, but all over the states of Wisconsin and Tennessee and New Mexico and California and Colorado and Utah, and there are a lot of those meetings, frankly, that I don’t remember, but I have a very sharp recollection of this meeting, first because of the large
turnout and the cross-cutting nature of the turnout, reflecting all the segments of that community.

And, then, secondly I have a very specific recollection of the commonality of interest expressed by the Shoshone ranchers and the non-Shoshone ranchers. And, I think it’s important to put it in that context of not necessarily being a Native American versus a non-Native American presence, but these were people who were all engaged in ranching. And, so, they had a commonality of interests there, and they expressed that, and yet at the same time, there was an acknowledgement of some long-running historical conflicts and the cultural diversity that existed in that area.

And, I particularly remember a long and eloquent, but of course unintelligible to me, since I don’t speak or understand the Shoshone language, but there was a beautiful statement made by an older Shoshone woman, and she also made a point of asking the Department of Energy, you know, why they didn’t have Shoshone speakers there, and how they would handle her testimony given in her native language.

A third thing that I remember about that trip was the way that it enhanced my own knowledge about what planners like to call “unique local conditions,” things that planners don’t learn about unless they go and actually talk to the people who live on the land that they’re talking about.
developing in one way or another. And, it had never occurred
to me that the presence of the rail line, both the right-of-
way for the rail line and the construction and operation of
the rail line, might adversely affect the development of what
is, you know, now rather commonly known as the Carlin Trend
Gold Deposits, but I think that at the time in 1999, these
were more speculative certainly than they are today.

And, at that meeting, there were people who talked
about the way in which the right-of-way for the railroad
would adversely impact mineral exploration and mineral
development, and that indeed the actual existence of an
operating rail line there running from north to south would
complicate the east/west movement of ores and concentrates
from the deposits to mills.

So, I left there not only being very much impressed
with the way the local residents had organized themselves and
prepared themselves to represent their interests in this
hearing, I left there not only impressed by the way that,
without in any way sugar coating the historical conflicts
between the Shoshone and non-Shoshone communities, they had
expressed a commonality of interest in ranching and in
protecting themselves from the impact of the railroad.

And, then, I also left with this specific new
knowledge about unique local conditions, and the fact that I
had gone into this meeting thinking that the mining community
and the mining population would welcome the railroad, that
they would see this as either an economic development
opportunity in general or that it would be specifically
beneficial for mining operations, and I left realizing that I
had completely misunderstood what those impacts would be.

MR. WALKER: So, Bob, how would this transportation
system work getting spent fuel to Yucca Mountain?

MR. HALSTEAD: Well, first of all, let’s remember
that about 90 percent of the waste is currently stored east
of the Mississippi River. And, so, the vast majority of
shipments would be coming from the east to the west. Yucca
Mountain is over here. There is certainly a major Federal
site in Washington and another in Idaho that would ship
defense high-level waste and some spent fuel.

But, in terms of the overall flow, you’re talking
about a flow from the east to the west, and you’re talking,
therefore, about a lot of long distance shipments in excess
of 2000 miles, whether they come by truck or by rail. In
fact, the average shipment overall is about 2100 miles,
whether you’re talking about rail or by truck.

Now, in theory, according to DOE thinking, only
about seven reactor sites would have to ship by truck. And,
the other 65 sites would ship almost exclusively by rail.
But, of those sites, about 24 of them either don’t have rail
access or don’t have the capability to handle large rail
casks, generally because of limitations on the crane capacity in their loading facilities, but in other cases, because they have lost their rail spurs, most often through abandonment proceedings. So, there is a gray area here.

DOE is confident that they can move 90 percent of the spent fuel and high-level waste by rail. In fact, they would move 100 percent of the high-level waste by rail and 95 percent of the spent fuel.

The State of Nevada has done its own analyses and we think it’s very optimistic to think you can get up to 95 percent. We think it’s more likely that 25 to 35 percent of the spent fuel would be moved by truck. So, the first issue is the majority of the waste can be moved by rail, assuming that you can build a railroad to Yucca Mountain.

Now, the second thing that we want to talk about, looking at the national system, if we look at the rail linkages, is that under current assumptions about how the rail routes would be chosen, and how the rail contracts would be drawn up, and that’s an important part of this, because the contracts assume that the first railroad to pick up the spent fuel keeps it on their system as long as possible in order to maximize the tariff. So, you aren’t necessarily picking the shortest route from A to B when you’re determining the rail routes.

And, then, there’s also a matter of whether general
freight service or dedicated trains would be used. That has implications for safety. It has implications for economics. It has implications for routing. In the past, the Department of Energy, over the last 30 years, adamantly opposed mandatory use of dedicated trains, which means shipping the spent fuel and high-level waste in its own short trains rather than putting them in mixed freight trains. And, it’s only in the last eight years or so that the Department has grudgingly said that it would voluntarily make its shipments of commercial spent fuel in dedicated trains. It reserves the right to ship Naval reactor fuel in mixed freight trains if it so desires, although those shipments have often been made in dedicated trains.

So, there’s still a little bit of a gray area there as to whether dedicated trains would actually be used, because there’s no regulation that requires it. The railroads strongly favor the use of dedicated trains. And, we should say that the commercial utilities have been using dedicated trains for all of their rail shipments.

Now, looking at the rail routes, the conventional thinking all along has been that the majority of rail shipments would move through a northern corridor, basically running between Chicago or St. Louis, and Denver or Salt Lake on the Union Pacific. The exact estimates of that flow vary somewhat. Generally speaking, I think we’re talking about
upwards of two-thirds of the rail shipments of spent fuel coming across this northern corridor. Most of it, in fact, on the Union Pacific through Nebraska and Wyoming, although the Union Pacific has said differently than DOE’s studies, that they do not want to use a section of track that’s called the Red X here, which basically connects at Gibbon, Nebraska and is a very heavily used line for eastbound shipments of coal from the Powder River Basin and also a lot of shipments of box traffic of freight, a lot of it originating at West Coast ports, coming to the east.

So, the Union Pacific has said they do not want to use the lines that DOE has identified in their routing studies as being the most heavily used for spent fuel. About 15 percent of the rail shipments would come down from the Pacific Northwest on the Union Pacific. And, then, about 10 percent would come from east to west, either on the Burlington Northern or the Union Pacific, coming into California, coming through San Bernardino and Barstow. These are the shipments that are of great concern in Nevada, because those are the shipments that would go through downtown Las Vegas on the Union Pacific mainline.

The State of Nevada has done some routing studies that look at alternative arrangements, and it is conceivable, depending on the way the contracts were carried out, that in fact the vast majority of all the spent fuel and high-level
waste in the east might be routed on the southern routes, and end up coming through Las Vegas. And, indeed, some of the modeling that we’ve done shows that perhaps only 15 percent, or so, of the rail shipments would come from the Pacific Northwest through Utah, entering Nevada at a place called Uvada on the Union Pacific mainline. And, that as much as 85 percent of the rail shipments could actually come into California and then go through Las Vegas on the way to the proposed Caliente rail spur.

And, that’s a very great concern precisely because DOE has said that they would not accept any restrictions on the numbers of shipments that would go through Las Vegas. Basically, they have left it up in the air by saying six to eight percent of the shipments would likely go through Las Vegas, but our argument is if you allow six to eight percent, and there’s no way to cap that, then we need to consider a worse case national routing scenario, which would heavily impact Las Vegas. And, that’s a major problem for the state with the selection of the Caliente rail corridor.

The truck routes primarily break down into an I-80 to I-15 route across the north central part of the country, and then an I-10 to I-40 east/west route coming across the southern corridor. Again, these shipments would go into Barstow and then catch I-15 and come into the Las Vegas area, that is, the shipments from Florida, Texas, Arizona and
California. And, then, the shipments from the northeast and
the north central states would come down through Salt Lake
and would enter the northern portion of the Las Vegas Valley
on I-15.

DOE’s plan is to use the new beltway around Las
Vegas to then connect with U.S. 95, and have those truck
shipments continue out through Mercury to Yucca Mountain.
There is some uncertainty about the legal status of DOE’s
plans to use the Las Vegas beltway.

Now, there is also a possibility that large numbers
of these shipments could be made by truck and that just as it
could be either financially from an institutional impact
standpoint, preferable to consolidate those shipments on the
southern routes. Remember, we talked about the possibility
that the rail routes might all be taken on a southerly
approach, which only increases the overall distance by 10 to
15 percent, but allows you to avoid a lot of highly congested
rail lines that are of concern to the rail industry.

Similarly, large numbers of truck shipments could be brought
down to connect with I-40, come into California and then find
their way to Yucca Mountain, again around the I-215 beltway.

Now, is there anything else here that we want to
say about the base case routing, as it has been set forth in
the 2008 Supplemental EIS? I think we want to mention that
there are some highway routes not shown on this map,
potential alternatives that could be designated by the State of Nevada, which would, I think the most likely one would be to come down U.S. 93 and U.S. 6 to connection with 95 near Tonopah, and that would eliminate shipments through the Las Vegas area for most of these shipments coming from the east.

There are less clear alternatives for the shipments that would come from California because of the concerns that California has expressed about using California State Route 127.

And, I think now we might want to go and consider the way that the national rail shipment routing might change if a Central Nevada corridor such as the Carlin corridor were to be developed. Remember, we said if licensing were to be resumed, we think it would be likely that some variations of the Caliente corridor would be considered. Some variations of the Mina corridor would be reconsidered, and I would certainly expect variations of the Caliente corridor to be reconsidered.

I think this would be a good time to take a break and go look at the map, another map that would show how development of rail access along the Carlin corridor would, in effect, allow those shipments to bypass Las Vegas.

MR. WALKER: Bob, let’s go back and take a look at the Nevada map and tell us what’s happening.

MR. HALSTEAD: Well, you will remember we were
talking about the national flow of rail shipments if the
Caliente corridor were developed, and the concerns that the
State of Nevada had that up to 85 percent of the rail
shipments to Caliente could, under some circumstances, be
routed from east to west into California, and then come back
through Nevada, entering from the west going through downtown
Las Vegas on the UP mainline, and then going up to Caliente
in order to catch the rail spur to Yucca Mountain.

It’s quite a different situation if rail access
were to be constructed along the Carlin corridor, no matter
which variation of the Carlin corridor were chosen, the
routing from the east would then come in on the Union Pacific
from the Salt Lake City area primarily, coming from the east.
And, then, for those shipments coming from the west, there is
actually an option on the Federal River Canyon Line that goes
into Winnemucca, so that those shipments could conceivably be
routed in such a way as to avoid Reno. Because certainly
just as rail shipments through downtown Las Vegas are
politically controversial in Nevada, those types of shipments
through Reno would also be controversial. And this is a
route that has been used, for example, for return shipment of
foreign research reactor fuel from California through Nevada
on its way to Idaho.

Now, there’s no way to know for sure how that
routing would actually end up. It’s possible that there
could be some shipments through Reno, but it would be such a long and circuitous route for the majority of shipments, that that concern that Nevada had that the Caliente route could result in massive shipments coming through Las Vegas, that seems much less likely to occur. The maximum number of rail shipments that might enter Nevada from California, if a north and central corridor like Carlin were to be created, would probably be capped at somewhere in the neighborhood of 10 to 15 percent of the rail shipments.

So, a reason why the Carlin corridor, along with the Mina corridor, would likely receive very strong reconsideration in any new assessment of the transportation options if Yucca Mountain re-licensing should be reopened, is precisely because the rail routing could largely, or even completely, avoid the Las Vegas Metropolitan Area.

Now, there also are some options to consider in terms of impacts in Nevada of truck shipments. Remember, we said that the base case for truck shipments would be about 5000 over 50 years in the event that there’s no second repository, and all the truck shipping sites actually shipped by truck and the rail shipping sites shipped by rail. We’ve also said it’s possible that there could be four or five, even six or seven times as many truck shipments because of those reactors that have difficulty achieving rail access.

So, truck shipment impacts are not trivial in any
event, and they could be considerably larger than the
Department of Energy has considered in its Supplemental EIS.
And, as we said, under DOE’s base case, most of those
shipments would come into the Las Vegas area on I-15, take
the beltway around Las Vegas, and then continue out U.S. 95.
It’s important to remember, however, that there are some
sites that might ship on I-80. It’s possible that those
shipments could come down 95 and connect with Yucca Mountain
from the north off of I-80, in which case, those shipments,
either from the east or from the west, could travel this
section of I-80.

I’d also possible that shipments that would
normally have shorter distances and shorter travel times
using I-15 might, for various reasons, be routed onto I-80.
The most obvious reason, I think, is that every six to eight
years, you would have cycles of major maintenance on the
interstate highway, not just in Nevada, but in the connecting
interstate routes. And, so, it certainly seems to me that in
reality, this truck transportation routing would be
considerably more complicated than the almost cartoon
caricature simplistic approach that DOE has presented in its
Supplemental EIS. And, that’s even assuming that you don’t
have alternate routes designated by the State of Nevada.

To further complicate the situation, it is possible
that the State of Nevada might designate alternative routes
to keep those shipments out of the Las Vegas Valley. It’s also possible that states to the east and west of us will designate alternate routes. And, one of the routes that has been previously studied would be a route in which truck shipments enter Nevada on I-80 and turn south at Wendover on 93 to Ely, and then take U.S. 6 to Tonopah and pick up 95. That’s the so-called B-route from about half a dozen routes that were seriously studied by the Nevada Department of Transportation in the late 1980’s and Nineties.

There also have been some variations on that route, including shipments coming off at Wells. I don’t know of any other routes that would affect Eureka County directly. It seems to me unlikely that there would be shipments on U.S. Highway 50, particularly because of the difficult mountain crossing at Austin. But, again, there are, even there, there are some circumstances where either due to emergency closures of other routes or maintenance closures of other routes, where really all of these routes could potentially be used for small numbers of shipments for limited periods of time under certain circumstances.

Now, what about safety, you ask. The State of Nevada, and the affected counties have raised a lot of concerns about safety and security about both rail and truck transportation over the last 30 years. And, the brightest spot in that three decades discussion of safety occurred in
2006 when the National Academy of Sciences Special Study Group on Nuclear Waste Transportation came out with a report called “Going the Distance” where they basically adopted about 90 percent of the safety and security recommendations that Nevada and the affected counties had made. The only problem, of course, is that there’s no guarantee that the Department of Energy will voluntarily adopt those safety recommendations, and because the Department of Energy shipments would not be regulated by the Nuclear Regulatory Commission under the current legal setup, it isn’t clear that those safety and security recommendations, which have now been adopted by the National Academy of Sciences, will actually be implemented. And, that’s really an important issue for safety and security.

MR. WALKER: Well, thank you very much, Bob. It has been a pleasure having you.

MR. HALSTEAD: Thank you.

(Whereupon, the interview was concluded.)
TRANSCRIBER’S CERTIFICATE

I hereby certify that the foregoing has been transcribed by me to the best of my ability and constitutes a true and accurate transcript of the mechanically recorded proceedings in this matter.

Dated at Aurora, Colorado, this 19th day of April, 2011.

s/ Mary Chevalier

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