PUBLIC STATEMENT OF BOB JEFFERSON

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MR. JEFFERSON: My name is Bob Jefferson. I'm an independent consultant in the area of the transportation of hazardous materials.

1... We've been transporting radioactive materials in this country since the late 1940s. In fact, the mid 1940s, the first regulations involving these were written in 1946.

We have, in the period since we've started shipping spent fuel, completed about 3,000 shipments of used fuel in this country. And as a matter of fact, we ship about 3 million packages of radioactive materials every year at the present time.

Those include all sorts of materials, not just the high-level materials we're talking about here. But, for example, every hospital in this country with a radiology department makes two shipments and receives two shipments every week. So this is not an activity that's new within our experience.

In the mid 1950s, the regulations concerning the transport of used fuel went international. The International Atomic Energy Agency took, basically, the regulations that existed in the United States at that time and made them the regulations for the entire world. Those regulations have been reviewed every ten years since that time and updated. And at the present time, the U.S. regulations are slightly more stringent than the international regulations, but are still very, very compatible.

The international regulations, therefore, make it possible for us to look at the experience worldwide as a basis for judging the safety of this activity. There have been tens of thousands of shipments worldwide. And of those shipments, there have been accidents.

There's been seven accidents in the United States involving shipments of used fuel. There has never been an accident severe enough to cause one of these containers to leak any of its radioactive materials.

And one of the reasons for that is the regulations themselves had two fundamental bases. The first bases was that the package itself was to provide all of the protection that was necessary; in other words, you don't depend upon assuring that there will never be accidents, but you, in fact, assure that if there are accidents, the package provides a second protection.

And therein lies the second condition; and that is: There are going to be accidents. There are going to be broken rails. There are going to be blowouts. There are going to be people who run red lights. There are going to be all kinds of things that happen, so there will be accidents. There's no question about that at all. The question is whether or not you put this material in a package that would survive the accident.

In the mid 1970s, this was a considerable concern to the Department of Energy, and I ran a program at Sandia labs to address that. It's been referred to a couple of times today. It's nice to have people who remember you. But the first question that we addressed is: How valid are the regulations? Do the regulations, in fact, encompass the population of possible accidents that might occur during the transportation of these materials?

The second one -- second question that came up was: Do we understand these containers to the point where we're confident that we can design them to survive the accidents? So we, at Sandia, conducted a series of tests starting off with scale model tests, ending up at least part way through with computer simulation, and then finally with full scale tests.

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The test program was to determine two things: First of all, what sort of environments do we see in accidents; and secondly, are our predictive -- our analytical tools accurate enough to predict what's going to happen given that you get into some sort of test? In other words, we wanted to make sure that our computer simulations were accurate.

When we got through with those tests -- and these were conducted with the public present -- what we did before each test was I got up in front of an audience of people and I said, "Here is what we predict is going to happen. Here's the damage you're going to see." Now, we predicted not only the damage to the cask, we predicted the damage to the vehicle. And in every case, our predictions were less -- were more severe than what actually happened.

And what we did, we -- in the first test, we had 900 people from the public there. And I explained what was going to happen. We went out and did the test. They went up and kicked the tires and said, "Yeah, it looks like it happened just like you said it was going to happen." But that wasn't the -- the bottom line. The bottom line was, we looked at it from an engineering standpoint: Did it, in fact, cover it?

Still, there were people who were concerned about regulatory coverage: Did we encompass the whole spectrum of accidents? And so we started another study where we looked at all of the severe accidents that have ever happened in transportation in this country. And the reason we use this country is we have higher speed limits here than anywhere else. You -- you think you're going faster in England, but that's because hedgerows and all this sort of stuff. But we -- we really do go faster in this country.

We looked at all the severe accidents. We looked at the Rosemead, California, accident. We looked at the Livingston, Louisiana, accident. We looked at the tunnel fire in Oakland. We looked at all of these kind of accidents, and we said, "Given that accident and the environment that it produced, if you had a cask involved, what would have been the results?" In every single case, the cask would not have been challenged. None of them would have created a condition where these shipping casks would have released their radioactive contents.

Now, in the EIS, they postulate a release, because it's required to postulate a release. It doesn't mean that there will be a release. That has no connection with reality whatsoever. And that's important to understand. That's part of the procedure of analyzing these activities.

Now, then the question comes up: How about sabotage? Well, we did those tests, too. And we started off subscale and we ended up full scale. We used eight different methodologies at Sandia to evaluate the effectiveness of means of opening up these casks intentionally by using a variety of means.

Now, I'm not at liberty to tell you how to do it. But given enough explosives, enough time, and enough access, I can blow one of them apart. But it takes -- those are -- those are things that saboteurs don't have. We worked very hard at limiting their access. We worked very hard at limiting their time. And there are certain -- certainly are limits to what they have available in the way of explosives.

We find that these casks are very large, very heavy, and very tough. And that means, for instance, since we have a tracking mechanism that tracks these things, and we can tell any time they deviate by more than 100 feet, you're not going to steal one of these 50,000-pound gadgets and take it off to your barn where you can experiment with it. It's just not there.

The other measures that improve the safety of moving these materials are legion. As I said, we track these things, so we know where they are at all times. That's part of the notification system -- someone

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complained about notification. We're required to notify -- the DOE is required to notify the states seven days in advance when one of these shipments is coming through.

They're further required by convention to notify the state 24 hours in advance. This is all done by this tracking system. The DOE will provide all the software and any state can put a computer up and -- with this software on it -- and access this tracking method -- tracking system. And you can see where every shipment in the world -- or in the United States is at any time. So the State knows exactly where these are as they're coming towards the state. So they have that.

Secondly, of all of the hazardous materials that are shipped in this country, the only one required to have these accident-proof containers are these high-level radioactive shipments. They're also the only ones required to have the vehicle inspected just prior to each trip. So the vehicle itself undergoes an inspection that includes brakes, tires, lights, wiring, the whole nine yards. It's a standard CVSA vehicle inspection.

And the same is true on the railroads. The railroads go through the -- FRA requires us to go through an inspection of the rail car before each shipment. That's the only material that's required to do that.

If we're talking about the highway -- now, in -- in the case of railways, those people who are involved in the rail system -- the engineers and the other professionals involved in moving these things on the railroad -- they do this all the time, and that is their primary business. And the railroad's very interested in having quality people. And if they find somebody who's a goof-off or a -- somebody who's always screwing up, they generally get rid of them.

In -- in the highway area, there's a lot of concern about drivers. One of the companies that will probably be moving these materials by highway have a very simple requirement for their drivers. I mean, one -- this is one of among many, but one of the requirements is they never have had a moving violation.

How many people in this room have never had a moving violation? I couldn't drive one of these vehicles, because I've been picked up for speeding. These guys, if they get a moving violation, they're fired. So we are talking about very, very, very good drivers.

So you take the fact that we're shipping in a system that's designed to survive accidents, we know where the shipment is and what condition it's in all the time -- and let me point out another little feature about this -- these trucks. They're kind of unusual. The trailer is what's unusual.

The trailer is designed such that if you disconnect the air, some lugs go into the rear axle. It takes four hours to take the axle apart to remove the lugs. For that four hours, you're not going to move that trailer. That trailer weighs 50,000 or sixty -- about 60,000 pounds. You haven't got a tractor big enough to -- to pull it with the brakes locked. And it's not just the brakes, it's the axle that's locked. So you've got that problem.

But they also can activate that from a button within the cab. All the driver's got to do is press that button and those lugs go in and you're not going to move that trailer. So it's very, very resistant to being stolen.

When you take all of these things together -- and I've only covered part of them. There's a number of them that have been alluded to in other conversations, but we don't have time to cover the whole nine yards -- when -- when you look at all those things, the bottom line is transportation is not the problem that people perceive it to be. I don't argue that people perceive it to be a problem, but it simply is not that level of a problem.

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So at the present time, given a choice on the highway -- and I don't get to drive on the railroads. They won't let me do that. But given the choice on the highway between driving alongside a fuel truck or one of these high-level waste shipments, I'll take the high-level waste shipment every time, because I know the safety level that's involved there. Thank you.