Nevada Test Site Oral History Project
University of Nevada, Las Vegas

Interview with Stephen Ronshaugen

November 26, 2004
Las Vegas, Nevada

Interview Conducted By
Joan Leavitt

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The material in the *Nevada Test Site Oral History Project* archive is based upon work supported by the U.S. Dept. of Energy under award number DEFG52-03NV99203 and the U.S. Dept. of Education under award number P116Z040093.

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Joan Leavitt: *Let's start with some of your background, maybe your mother and your father's family background?*

Stephen Ronshaugen: My mother is from Wisconsin originally and moved to North Dakota with her father, my grandfather, who worked on the railroad as a section chief for a piece of the railroad in a small town. My father was born in this country but his father immigrated into South Dakota.

From where?

From Norway, and he moved to Minot and my grandmother and grandfather homesteaded a small piece of land south of Minot.

Now was this when the railroad came together?

Yes.

So you're talking the 1880s?

Well, they moved up there in the early 1900s, and were farmers. My father and mother met and there was a fairly large age difference, I think eight or ten years between them, but they eventually married.

My father and his brother started working building roads in the summertime, gravel roads and things in the prairies, with team-drawn horses and road equipment. [He] eventually became a mechanic. He worked forty-two years for the county before he passed away.

I have seven brothers and sisters.

Oh, a large family!

All of the families up there were relatively large. I was the youngest of that group of people.

Were there a lot of Norwegians up there?

Oh, yes. Norwegians, very *largely* Scandinavian in *that* area, and then there was German sections and Russian places.

Well, this is the Laura Ingalls Wilder country, too, isn't it, so was Little House on the Prairie *your life?*

No, we lived in town. *I* did. My brothers, who were both older than I am, went to either grandfathers' farms in the summertime. By the time I was old enough to know what was going on, they had long since passed away and were gone. I always lived in Minot, a small town in the prairies there. I *knew* where the farms were, but I didn't go up there to the farms much.

My father died when I was thirteen. And then it was my mother and my sister, youngest sister, she's three years older than I am, that were at home.

So you were one of the younger kids.

Yes, and everyone else had long since moved out and were married and living lives of their own.

I finished high school there and then went to college while I was in Minot. During the summers, I'd go to Seattle. My brother had gotten me a job with the place that *he* was working out of in Seattle. I would work there in the summer, take all my money and save it, and then come back so I could pay to go to college. Finished college and went to graduate school down at North Dakota State University. This would be about 1970.

What I can remember from my childhood at that time of interest into *this* process is that we used to have daily strontium readings for strontium in milk.

What does that mean?

At that time, both Russia *and* the United States were doing atmospheric testing, and fallout would come typically over the area. The state would monitor how much of this fallout was

getting into the milk. They would measure the strontium that was in the milk levels and you would hear that number on the news. It meant nothing to me as a child, but we would hear it. Also, in ’57, with *Sputnik* going up, I can remember that as a very dramatic thing, standing outside and, in fact, watching it pass overhead, seeing the blinking light in the stars in the prairie which was quite easy to view. Kind of perked my interest in the science field. I can remember the school system had a science teacher that would go from elementary school to elementary school once a week, and they started a program to try to interest people in science. That’s kind of where my science interest came from. I went on to study chemistry and did some graduate work at North Dakota State, and then went back and taught in Minot for three years.

Now what level were you teaching at?

The first year, I taught junior high level, which was seventh, eighth, and ninth. Then they shifted the way the schools were and ninth grade, tenth grade, eleventh and twelfth grade went into one school with a split campus. I went downtown to the old school and, in fact, taught in the same room that was my homeroom for six years while I was going to junior high and high school. I taught for two years in that school. At that time I had applied for a job with the government, hadn’t heard anything, and I got a call out of the blue from the EPA [Environmental Protection Agency], which is on the university campus. I accepted a position as a chemist in the summer of ’73 and we moved here.

Now is that what your Bachelor of Science was in, chemistry?

Yes. At our school, it was a Bachelor of Arts degree, not Bachelor of Science, and it really holds true that chemistry is more of an art than a science anyway.

So I moved down here in ’73 and went to work. The work I was doing was air monitoring for the [Nevada] test site. The laboratory at EPA got its start as a [U.S.] Public Health Service

laboratory in association with monitoring activities that were at the test site. We did air monitoring and water monitoring and soils and a number of other things for environmental levels. This is not the kind of activities you get that the national labs would study for yield from a device, but these were environmental samples around the site to monitor what was getting out and what was getting into the air.

So that was '73.

That was '73. *They* had been doing that for a number of years. In fact, they had been doing that since the mid-sixties.

Can you say what acceptable levels that you were looking at?

Well, the acceptable levels were all whatever the federal government had established at the time. Drinking water standards for tritium were like twenty thousand pico curies [pCi] per liter, which is a relatively high number. Noble gases is what we were principally looking at, krypton and xenon. Those are gases that are given off by the activity at the site, and also by reactors. We were monitoring those for any number of years. We were monitoring the tests around the test site and at that time, of course, everything was underground tests.

The unique thing that the tests have is high-and-low-pressure weather systems that move across the test site. As the low pressure comes across, gases emanate from the earth. High pressure tends to keep the gases in. And as the number of shots that we had out there, certain portions of the test site were more permeable than others, and krypton and xenon would leak to the surface. If you had a *very* high number, that was indicative of having a leaking test, something that went wrong with the *containment* of the test at the site. Very seldom did we have that, but we had some fifteen stations, a couple on the test site and several around the test site,

that we would monitor weekly. We'd bring in the air, we'd test it and get the results, and that was kind of a routine process week after week after week.

Well, I know weather was really important whether or not a shot would go off.

Right.

And was it important it be high pressure or was it important it be low pressure?

No, no. No, the importance of that was not the concern. What I'm trying to say is that was what *drove* the release of the material from underground. You do a shot, you have a cavity underground, it generates these materials, they're twelve to fifteen hundred feet below the surface, but eventually this stuff percolates to the surface.

How long does it take for it to percolate?

Well, it goes on forever, but I can't tell you what it takes for one to go from here to there. It depends on what the weather was like for the past ten or fifteen years. It's *long*-term process. It's not something that happens immediately. As I say, if you get a *real* large reading right away, then there's some *pathway* that's allowed it to move quickly from the shot cavity to the surface. A *few* shots during that period of time *did* generate some leaks.

Baneberry being one of them?

Well, Baneberry was in '70 or '71, in that time frame, and post-Baneberry there was a *significant* amount of work done by the Department and the laboratories on changing methodologies for analyzing the containment program.

The Containment Evaluation Panel [CEP] being one of them?

Right. Right. And so the Containment Evaluation Panel, they did a *lot* of work in changing the way you designed containment and stuff. What we did have was a couple of unique activities. One particular test was Agrini, in which we had a collapse after the test which was almost like a

post-hole, which is very unusual, and that did have some off-gassing. Now it didn't leak like Baneberry, but it did have some off-gassing that was higher than normal. There was a couple of others, and they slip my mind right now.

So I did this kind of monitoring, and in fact we started what was called community monitoring stations [Community Environmental Monitoring Program, or CEMP]. There's one on the campus of the university right in front of the EPA office. We started putting those in around and employing, through Desert Research Institute [DRI], high school teachers to run the equipment, explain what was going on to the local citizenry and their town, and so there was about fifteen of these community monitoring stations around Nevada and southern Utah, I think one in California at Shoshone at one time. And they still exist today, but not to the level that we did when we had an active testing program.

During that time period, we also did what was called the High Yield Series. Realizing that the Threshold Test Ban Treaty, or TTBT, was about to be approved, the United States went to work very rapidly on conducting the final few large tests that we were to do, you know, upwards of a megaton of yield, and then post the passing of that treaty, we moved into the "no test larger than a 150 kilotons," and that's what led into the JVE [Joint Verification Experiment] processes.

About '83, I left EPA and went to work at DOE [Department of Energy] direct. Let me try to explain this relationship. It started out with the Public Health Service, and at one time it was called the Southwestern Radiological Research Institute. It changed to the National Environmental Research Center, NERC. EPA had many names. Currently I think it's EMSL, Environmental Monitoring [Systems] Lab. But about that time also, you remember, AEC [Atomic Energy Commission] changed into ERDA [Energy Research and Development Agency]

and then from ERDA into DOE. And the EPA came into existence and took over a lot of what the Public Health Service was doing, and they had this lab out here. Then as government changed the way they organized, you had kind of EPA in lockstep, moving with DOE. The interesting thing was there was what was called an interagency agreement between DOE and EPA in which DOE paid for a certain number of federal positions to be housed and worked for EPA.

So when I see an interagency meeting is this between DOE and EPA?

Not necessarily. It could be between any agency, and interagency agreements can be written between any agency. The DOE had—or ERDA, or the USGS [United States Geological Survey] was one of the people that they had an interagency agreement with because the GS provided geological services to the site. EPA provided environmental monitoring services. Oh, they had agreements with the FAA [Federal Aviation Administration] for airspace closures around the test site. They've had agreements with any number of other federal agencies that they worked with. And they have an agreement with Nellis [Air Force Base], of course, because they're right in the middle of the bombing and gunnery range.

Well, in order to do *an experiment, they had to work with eighteen different agencies.*

At least. So under this agreement, I was working for EPA in a DOE position, and eventually I went over and just worked directly for DOE for a position that was in a group called the Nuclear Systems Division. Now the Nuclear Systems Division really supported the *initial* programs of developing what was called at that time NEST, Nuclear Emergency Search Team.

Can you explain what that is?

The Nuclear Emergency Search Team at that time was a group of volunteers and federal people that were willing to go out if someone were to pose a nuclear threat to the U.S. or a threat to a U.S. reactor and try to neutralize that threat.

And how many individuals were a part of that?

Probably in the neighborhood of two hundred, two hundred and fifty people, various people, you know, groups, all of the national labs, Sandia [National Laboratories], Los Alamos [National Laboratory], [Lawrence] Livermore [National Laboratory]. They were DOE people, they were EPA people, and they were at that time REECo [Reynolds Electrical and Engineering Company] and EG&G [Edgerton, Germeshausen, and Grier] personnel.

Now this was a threat, or was it an accident, or just—?

No. No, this is a readiness program for emergency response to a potential threat. So if somebody threatened to do some harm, you would go out and respond to that.

Now is it on a national level or local level?

It was national.

OK, so it was a national response to a nuclear threat.

Right. And that program changed over several years. Of interest is when I was—I'm going to back up a little bit.

Because Troy Wade had mentioned NEST, too, and I didn't get very many details about that.

Right. And there's more written on the NEST team today than probably is necessary but this was the initial formation of those programs. I'm going to make one little sideline, which was an interesting vignette in my career, was that while we were doing the monitoring around the test site when I was working for the EPA, two rather large incidents happened that affected this

country. One was Three Mile Island and the other one was the Kosmos-954 crash in Canada. At Three Mile Island, we were called upon to go in and put in monitoring systems very similar to—

Now was this NEST who did this?

No. No, this is DOE and EPA jointly. It was a group of people that went. We took our resources that we normally used at the test site, made some modifications to them, and then went in to monitor around Three Mile Island.

And you did the measurements—?

We did air monitoring measurements, water quality measurements, we monitored oysters in the Chesapeake Bay, we did milk monitoring for the milk. You know, Hershey Chocolate was a very large employer and a very large distributor of food products back there at that time, and so they were very concerned that they might get contaminated. So we spent, you know, weekends building equipment and shipping it out there. I spent time at Harrisburg [Pennsylvania] in the state laboratory, running analysis back there. A little interesting sideline was when we were doing gas analysis, it's a manual process to separate pieces of this gas out and then monitor it with our machines. There was a national columnist by the name of Jack Anderson who used to comment on government and government efficiency and other things from time to time, sometimes tongue-in-cheek, sometimes very sarcastically. We did make his column one time when we were back at Three Mile Island. The question was whether the government was really telling anybody the truth on the data, because everybody said, you know, jeez, we're all going to die from radiation, and everything, and that was not the case, and it proved not to be the case. I had lost a sample in analysis. Of course, our numbers of analysis were being published for people to see, and when you don't hit the switches right, you lose the sample and you have to start over with a new sample. And so you write down, "Lost."

Oh. Well, you said it was a manual process.

Right. And so the result for that one was lost. And Jack Anderson's column says, `At least one government official is still telling the truth. He lost his analysis.` And it was true. We did lose it. It was kind of interesting, a little sideline, that we made the national papers.

We did that work and then it wasn't—you know, [Kosmos]-954 had come down also, and at that time, what was called the aerial monitoring systems, or the SANDS [Surveillance Accident Nuclear Detection] system—SANDS is just an acronym for remote detection of radiation—

Now was that to detect—?

Those were DOE assets and they were to detect radiation from aircraft or on-ground monitoring.

It wasn't just from Russia, then.

No, no, no. You know, radiation from Russia is the same as radiation in the United States. You can't tell one from the other. It's radiation.

So we were on standby to go up, and then of course a *large* contingency of people went up to Canada to help the Canadian government out with this Russian reactor that had fallen from the sky, crashed in the Great Northwest provinces of Canada.

Was it Canada who asked for help?

Yes, and we've had mutual agreements, obviously, with all kinds of at least Western-allied nations throughout the history, so those kinds of exchanges were not infrequent at all for us to help the Canadians, the Canadians to provide *us* with information. We would provide information to the Brits; the Brits would provide stuff to us. It's back and forth.

Now why was this so important to recover?

Well, it spread radioactive contamination all the way across the Canadian border and, of course, the Eskimos, the Native peoples, that lived there would traverse this land. And if they would happen to come upon something, you know, just like any curious soul, they would see a shiny object, maybe a metal piece of object, in the snow and they'd pick it up and take it with them, and all of a sudden now this person is sitting there holding a radioactive item and being exposed. So you needed to get in there, find it, clean it up, and recover it all.

So early on, I had two interesting experiences, one at Three Mile and one with the Kosmos-954 processes. Well, then I went over to work for DOE *in* this particular group. Anyway, I worked in that group for about a year-and-a-half, and then I was transferred into another job as the Director of Site Operations and Branch Chief. There was an operations at the test site and technical operations downtown, and I went out to work at the test site as the Director of that particular branch, or the Branch Chief for Operations at the site. I had offices at the control point, at CP-1 on the test site. Now the test site was structured at that time with a logistical office that ran Mercury and a site director, and a forward area posted CP that ran the operations that were conducted upon the test site.

So I'm working out there at the test site, and I'm still involved in other things that DOE is doing, but while we're out there we did a number of interesting things. Besides conducting nuclear tests, the test site has been used for *many other* wonderful and unusual scientific experiments because it provides –

I've learned about the rocket development site.

Yeah, it provides a place for that kind of activity, and so we took stuff—in fact, we took materials from the old rocket development site, tanks, and built a huge tank farm in Area 5, and

where we started at the initial suggestion of [Lawrence] Livermore National Laboratory, some folks over there, building what was called a Hazardous Material [HAZMAT] Spill Facility.

I remember seeing that when we toured it.

In Area 5, there's a Hazardous Material Spill Facility, and I worked in that program and getting it initially up, certified, and running, and doing tests. That was driven out of a process for emergency response to an accident that happened in Bhopal, India, in which they had a refinery and a gas line break there that killed hundreds of people. And we were trying to develop places where you could test anti-contamination suits for both chemical and other hazardous materials, where you could put people in these kind of suits, they could go in, and then make repairs or fix valves or turn things off to mitigate it, spray down systems, and things like that. One of the big tests we did was when you make gasoline in a refinery, you have a facility that uses hydrofluoric acid. Hydrofluoric acid is one of the most reactive acids, chemically, that we have. Very nasty stuff. And they use it to make high-octane fuel out of petroleum in refineries. And so we spilled tanker car loads of hydrofluoric acid and washed it down with different spray mechanisms and tried to neutralize the cloud, and we monitored how far the cloud went out and what concentrations it was so that you could determine how far you'd have to evacuate people to till it was safe, a number of things. And that was of interest because there were some problems with some refineries in Texas that were making gasoline and they had some issues on what kind of systems they could put in place, you know, almost like a sprinkler system in a house to prevent a fire, only these were sprinkler systems that if a pipe broke, you would wash the acid down and if it collected on the ground, you didn't have to worry about this big cloud of acid going out into the town and killing off all the citizens.

Now did this government research get put back into industry, then?

It was industry that really came to use our facility. DuPont. The National Gas Institute, which is a consortium of all of the private industry people that put together—they do joint research and then that research is disseminated back into the design community for facilities.

Did they help fund it, too?

They would pay for parts of their projects that would come out. They would provide materials. MSA is a company that develops like gas masks and clothing outfits and protective suits and things like that, and they would bring their equipment and we would do the tests on the site where it was safe to do the tests, because there's no population around there, and then test their equipment for leaks and those kinds of things. So we started that program when I was out there.

You saw a lot of non-nuclear testing things, then, didn't you?

A lot of things like that. The first Iraqi war under George I [President George H.W. Bush], we did some things through DTRA, which is the Defense Threat Reduction Agency now, at that time called DNA, Defense Nuclear Agency. We did some development of standard munitions, laser-guided bombs and things at the site on some hardened targets that we have out here. If you remember the first war in Iraq, there were concerns on dropping bombs into concrete-reinforced buried structures on the battlefield, and so we did some of that testing out here. We later went on to do some further development of that testing out here for now this current war. So when I'm sitting here watching television and seeing a laser-guided bomb, I can remember being the test controller on certain tests at the test site for the development of that weaponry. So it's kind of neat to watch that.

Well, this is just kind of a side note, but I was up in Alaska when that great big spill happened up at Valdez. Would any of the technology you were developing help with that cleanup?

Well, we did some monitoring, but in fact I know who headed up a large portion of that. It was a gentleman by the name of Chuck Costa, who was my boss at EPA here locally. Chuck went up to do a lot of that work up there with the [U.S.] Coast Guard for EPA on the cleanup of that oil spill. But the agents that they used up there and the things and the programs that they tried were not developed out here. They were developed elsewhere. One of the things they used was a bacteria that tends to eat oil. So they could fly over, spray this thing, and this little bug would go out and eat up the oil. And so they did a number of different experiments *and* real life cleanup studies like that. Chuck now works for Los Alamos National Lab and he's a test director for the lab out here, so I've worked with Chuck for thirty years. But he was one of the leads on the cleanup of that from this office here.

The interesting thing about this, I guess, is like with Troy Wade, who we mentioned, and running the NEST program and the aerial measuring system and things like that, the degree of capability that the test site had spawned into other areas that were used to address interests of international concern. Canada. Alaska. Three Mile Island. One other response that we did was—this was very unique, and I headed this program up, a very unique one was where a load of rebar went in the wrong gate at Los Alamos National Laboratory and it set off the radiation alarms. Well, the truck was going in the wrong gate, one. Two, why was it radioactive? The gate was there designed to monitor vehicles leaving so nobody could steal stuff and get out. Found that the material was contaminated. Tracked it back to a foundry in Chihuahua, Mexico. We followed up on that. There was a relationship that was developed between the Mexican government and the U.S. government. You've got to go through the State Department before you can go do anything [laughing]. Albeit time-consuming, they generally do help you. But it seems like the bureaucratic process just takes forever. Eventually what happened is we sent a helicopter and a radiation

monitoring crew to El Paso, Texas. Across the border from El Paso, Texas is Juarez. In Juarez, there was two locals who had been given, quote unquote, “salvage rights” for an old medical facility. They were cleaning it up. They took from it a cobalt-60 [Co-60] old X-ray unit that the doctor had had in his office there and were going to take it out to the metal yard and surplus it to get money for the metal. They threw it in the back of a pickup truck and broke it open. Commenced to drive around town. One of the problems that was a bit of a delay was one of these gentlemen, married, also had a girlfriend that he was seeing. And we followed his truck from the warehouse where this source was to his girlfriend’s house, because he kept dropping these little pellets along the way.

He got in trouble, didn’t he?

Yeah, he eventually died from the radiation. They took it to a salvage yard. Two other gentlemen were severely injured in the salvage yard from the radiation. They actually were sitting on it, eating their lunch. It was loaded from there onto a big semi truck, hauled to Chihuahua, which is well inland, turned into rebar for construction purposes, along with other metal scraps, sent back to the United States, and we found this truckload of this material at Los Alamos.

Well, that was quite a history to track to—

So we tracked this all the way back. We continued to follow that process for about two months. We collected material, some fifty thousand pounds of contaminated steel. We recovered it, brought it all the way back from Alaska and all the western United States. They had made patio tables out of it, had cast patio tables and chairs. And all of this stuff was brought back and then eventually buried in a repository in Mexico. So we had to work with Customs, we had to work with the Department of Transportation [DOT], we had to monitor that. We monitored the road between Chihuahua and Juarez, we monitored all the city of El Paso, and found all of these

places, cleaned them up, and we did that in about a month-and-a-half, and eventually this was all cleaned up.

Well, this is an example of contamination that did not *come from the test site or from a lab.*

Not at all. It had nothing to do with the test site whatsoever. Once again, though, the key point here was the capabilities and resources to do this kind of monitoring and do it very rapidly and accurately were brought to bear on this job.

I'm amazed you were able to track that, you know, with all those different stops.

Yeah. The material was the size of a pencil lead. They were one-centimeter right-circular cylinders, little tiny pencil lead types of things. And we found six of those in cracks in the pavement on that 150-mile or so road between Chihuahua and Juarez. I found them. I drove in a car with a meter on and we found them. The helicopter flew it, and we compared mileage on the car to where the helicopter said it was with its geoplacement navigation system, and we found those twelve places. They went back and cleaned them up and hauled them away. At least one little pellet was very hot, very radioactively hot. So we were able to find all those. We found the stuff in both towns, cleaned it up—we didn't clean it up, but we told the local officials what had to be done and cleaned up. And then surveyed after they cleaned it up to make sure it was gone.

So hot needles in haystacks can be found.

Yeah. Oh, yes, very easily. And so that was, as I say, just another one of these capabilities that we had. That was taking these aerial monitoring systems and programs that were developed in support of the test site. We would use these aircraft and other things in *case* you had a venting and you contaminated the ground around the State of Nevada and elsewhere, you could then go out and monitor it. The same stuff was used to monitor in the *background*, environmental monitoring, such as what I did early in my career with EPA, because you need to know what's

there to begin with to determine how much you've added to it from the contamination. Because there *are* natural places that are radioactive, and in fact one of the "hotter" places in *this* community, and that's a quote around that "hot" because it's not a biological concern or radiological concern, but the granite and rock that was used to build the overpass at Cheyenne on Interstate 15 out here, Cheyenne and going to Utah, has a large amount of natural-occurring potassium, so it's like twice background of what you would find elsewhere in the community. You find these things out as you're driving around doing background surveys and stuff. It's not anything of concern. It's just if you had a venting at the test site and somebody said gee, I'm twice background, you must've really dumped stuff on me, you'd go back and say, well, you know, you were twice background from natural sources, not from what we've done. So that's why you do that kind of background monitoring, so you have a baseline to determine what the baseline is around the site and then you can see what happened as a result of what *you* might've done.

Yes. Well, Tony Brooks came to the [Atomic Testing] museum and gave a presentation on the studies he had done on radiation, and he talked about a lot of the natural radiation that we're exposed to even without the test site, which was very interesting.

There have been programs at the site that have set baselines for a lot of research work that goes on throughout the country at all the major universities in regards to radiation. This research also helped establish the levels that EPA now imposes for public protection. There was a farm at the test site, the EPA ran a farm up there where they had cattle herds that they would monitor from time to time and feed them crops to measure uptakes of certain radioactive materials like iodine into the thyroid and other types of things that would pass through in the milk and then from milk into a calf and from the calf, you know, to see how that whole path would build. So there's been

numerous unique things that have happened out there. Those are just *some* of the things that I got to be part of or do over the period of time, both with the EPA and being associated with the test site.

As far as the NEST program, counterterrorism and things, I won't go into a lot of great details, but there have been, and I don't know what the current numbers are because they would probably have gone sky-high. But for the period of time up into the mid-eighties that I was there, there were seven to eight hundred threats that had been perpetrated to various entities of government in the United States.

Was this terrorist or nuclear? Both?

[They were things like] I'm going to contaminate the water supply with plutonium in the city of Boston. Or I'm going to blow up a nuclear device in El Paso if you don't give me all the money in the bank. Things like this. Some are credible. Some are obvious attempts at extortion.

And that was during the eighties?

Well, it's from the seventies to the eighties. The first one, where you started with one in Boston **[00:40:00]** in which the mayor received a letter and a little drawing of a bomb, and all of a sudden the mayor says what do I do? Here's this guy who's going to set a nuclear bomb off in my city. Who do I turn to? And so that really is what the program grew out of.

That's what NEST was all about, then: This is what we'll do.

And it started to grow that and how to respond to those kinds of things.

What happened to most of these seven or eight hundred? Did they find the guy who threatened or—?

No. They have found the perpetrators, you know, in conjunction and working very closely with the FBI [Federal Bureau of Investigation] and with local government law enforcement, and found most of those perpetrators, arrested them, incarcerated them.

Were most of them genuine? I mean genuine dangers or just—?

No. *Very* few. I wouldn't give a percentage of numbers but no, they were not credible threats.

But they kept you on your toes.

Certainly if you were the mayor of a small community or a large city and somebody threatened to do something to your water supply or blow up your subways, or as you see now, the current threat where if you had use of sarin gas in the subways in Japan or you've had people flying aircraft into the Twin Towers. The U.S. general population's awareness of terrorist threats has just been raised to a new level after 9/11. The DOE was working along with NRC [Nuclear Regulatory Commission] and FBI and others in that process for a number of years prior to that, twenty years prior to that. We had a nuclear counterterrorism strike force at the Olympics in L.A. [Los Angeles] in '88. We had one in Atlanta. We helped the Spanish when the Olympics were conducted in Spain. We helped when they were conducted in Korea. Provided security assistance along those lines and different thought processes so that no one could come in and *do* something radiological or nuclear at those sites. So we've been doing that for a number of years.

Yeah. Was the Soviet threat being perceived as becoming less and less all the time and the terrorist threat becoming more prominent?

No, it's two different concepts.

You just plain had to be ready for both of them?

It's just two different concepts. I don't know if I have a good analogy. The Soviet threat was one involving annihilation of the world, a war between the two governments. Theoretically, the

closest you came was the Cuban [missile] crisis. But that threat was one that said we could end up going to war and wiping each other totally out. A terrorist threat is one of concern, and I don't mean to put it lightly, but it is one of concern generally, to localized people, a group of people, like, We're going to do L.A. in, or, We're going to do New York in, or Chicago or London. The consequences of it could be just as significant to that person living in L.A. as an all-out global war. So it's two different kinds of things that you're trying to address.

Do you think that 9/11 was a different kind of warning, or just no warning at all that that was going to happen? Do you have any thoughts about 9/11 at all?

My association with the program led me to believe that something major was going to happen eventually in this country. We had slipped by either through luck or good fortune or good planning and prevention for a number of years, because these things were going on throughout the rest of the world. I think that was highlighted to me when I'm walking—I was on a program with the Brits and I'm over in London and going through and looking at the Crown jewels in the Tower of London, which is a relatively secure place, and on the floor is a plaque with a date that says on this date Irish Republican Army terrorists blew up a bomb and killed such a number of people in this facility. And you say to yourself, When a terrorist puts his mind to wanting to do something and then sets the plan in place and moves forward, it's almost impossible for them to prevent it.

To prevent all of them.

Yes. You just can't. It's tough. But 9/11 was shocking and clearly a major wakeup call for this country as to saying we're vulnerable, just like the rest of the world is vulnerable. The other side to that is this constant struggle of two nuclear powers and, quote unquote, "global domination" to their ideologies. And that, and all the environmental issues, led us into lowering yields of tests and eventually trying to get to the point of where, can I trust you and can you trust me? And we

know we each have weapons. Do we need to test any more or can we stop? Which led into the JVE stuff.

Well, since you're talking Three Mile Island and Chernobyl happened just before 1988, do you think Chernobyl made the Soviets more *willing than ever to discuss verification?*

No. I don't think—there is, in my opinion, probably no relationship between Chernobyl and verification. That's my opinion.

OK. I was just curious about that.

Now there is *concern*, obviously, that drove their society over radiation exposure to personnel resulting from Chernobyl and from others, and a *huge* amount of pressure put on them by the European community because of that.

Well, I understand there was an antinuclear movement politically that was against what they were doing.

Within the Soviet Union [Union of Soviet Socialist Republics, USSR] and within Europe. Probably the only ones, in my opinion, that don't have a *larger* significant antinuclear movement were the French, who generate most of their power by nuclear energy. But yeah, that resulted in a number of issues. An interesting but not long-lasting side effect was that we did a test during the same period of time that Chernobyl occurred. There was no relationship to the scheduling. We had our test scheduled, we executed the test, and then we had a problem with the test. The test was called Mighty Oak. Mighty Oak was a tunnel test that the containment did not work on. And local antinuclear establishment accused us of conducting that test *under* the guise of fallout coming from Chernobyl. And there was no relationship whatsoever. But what was happening was that as—the air circulates the earth *approximately* every seven days, and so we would get—we have radiation monitors throughout the western United States, and you would see this

Chernobyl fallout being monitored. And because the number of monitoring sites are intensified in and around the test site, you would get more active readings there. And so the judgment was said [that] something is going on at the test site, causing those things to react and give these readings, and so the government is trying to cover up stuff that they're doing at the test site under the guise of Chernobyl. And what it really was saying was that it was just Chernobyl clouds just coming around every seven days. The readings were being elevated and they were being elevated around the test site simply because that's where all of your measurements were being made. If you would have had all of those measurements in the middle of the State of Montana, you would probably have seen similar kinds of readings in Montana.

Well, has it been frustrating for you to see those kinds of accusations and not really be able to clarify them?

Well, you live with them. Eventually it was clarified and, you know, you state your case scientifically and you put the information out in an open fashion, and that's all you can do.

But isn't it by that time the public emotion has been already gotten their attention and they don't get the answer that—your response to that?

You bet. But as a scientist, you can only say, this is what the information is. No amount of information is going to change somebody's emotional issues. It just doesn't happen.

And that's one of the disadvantages of them being able to make the accusation first.

Yes. So I don't get involved in that much.

No, but you've had to live *with the results of one side getting more press than the other side.*

Surely. Surely. But that has been the way that information has been transcribed throughout this country, I would assume throughout history. You know, if I went back and said, what did Thomas Jefferson really say, and some press guy had written this story, I said, now how much do

I believe what this story is in this newspaper article? Or how much can I get from diaries and books and other things? Because everybody interprets things with some slant of their own, just like I'm probably doing now, as I interpret some of what I'm saying with my slant on it. But all I ask for is people to recognize that and stop and say wait a minute. Let me see what the issues and the facts really are and let me try to make some judgment based on that. And over and above that, you can't do much about it.

Have you ever felt like sometimes you don't get a fair shake, a fair hearing?

No, not really. I didn't feel that way. You get frustrated because you can't *do* things, you know. You want to calm people down, you want to *help* them, you want to say don't worry. I've done this. The *best* you could do, such as at Three Mile Island or with some of the things that happened in and around the State of Utah and Nevada during the testing, is to go and stand beside those people that are complaining and, in some cases, live and work with them.

Did you get to do that with some people?

The EPA monitors that used to monitor the test site did a lot of that kind of stuff. They would go out and visit weekly with these individual families and give them information, tell them what was going on, share with them the data, and that tended to calm a number of things down. Bruce Church from DOE has done an extensive amount of work with residents in southern Utah, and is now living back up there. That's where he grew up and there he is, back there living again. And I don't say that that's his *motive*, but that is one of the *things* that an individual can do, is to go back and live amongst the people that are suffering these consequences and show them it's OK to be here.

Well, one of the things that I've noticed is that the test site has been a very tight community, and it takes a great effort to share information outside of that community.

Some of that sharing can't go on because of what you're doing, because you do have adversaries in the world. And I tell you something and you make it *general* information, there's nothing that prevents that general information from being read by an adversary and then being used against you. So there was a number of things—there are obviously what we call "black" programs—there are a number of black programs that have occurred that information wasn't shared at the time, and rightfully so. It could not be shared. Eventually some of that information goes on. I think the U.S. government has done a *very* good job of releasing that over time as it becomes less and less of a threat to use against us.

Yeah, but there's even some information or even some associations that are not necessarily under classified kind of things. I mean—

You go to a bar and somebody says, `Where do you work?`

[And you say], `Well, I work at the site.`

[And he says], `Oh, you're up there with the aliens. You're up there with all of that other stuff.`

You say, `No, I work at the test site and I spill chemicals at the spill facility.`

I guess there's a lot you can't say, isn't it? Yeah. That makes it—

[I say], `I don't *do* that other stuff. This is what I do.`

Yes, it makes it very difficult.

And people, they have a tendency of [thinking], wait a minute. He's hiding something. And so one could *get* the notion that you're not being told a lot of things, and sometimes there's just nothing to tell, so when I tell you no, there's nothing happening, people wouldn't believe you because they're saying, `Well, you're covering something up or you just won't say.`

[And I say], OK, well, you can believe what you want to believe. It makes my life easier.

So you were really left in a position of not knowing. If you said anything, you were going to get into hot water. If you didn't say anything, you were just going to get into hot water. Well, were you able to talk about your work with your wife or your family?

Sure. Other than there were times that, you know, you went off to do something and all they knew was you were gone. But that was OK.

Yes.. Was it hard on your family?

Well, you miss things. You go off, and there have been about two or three years that maybe 60 or 75 percent of the time I was gone. I was just gone somewhere. So you miss like first dance recitals and birthdays and things like that but, you know, it all works out.

Some wives handle it better than other wives do.

Well, Bonnie works for the EPA, so she understands what's going on.

Well, that's been one way that makes it a little bit easier on marriage, is if you share that part of your life.

The second thing is Bonnie is cleared. She has a clearance just like mine. But having a clearance does not authorize you to tell people what you're doing because the basis of this whole process is on a do-you-have-a-need-to-know. If you don't have a need to know, we don't tell you. So two people at the test site could be working side-by-side and one might know something that the other doesn't, both of them having the same clearance levels, and that's not unusual. And so that also led a little bit to some of what you might call the suspicious nature of what people were doing out there. And, you know, the folks in the system, I think, by and large, learned to live with that and didn't say anything. They usually would [say], I don't need to know that, so I'm not going to ask any more questions. I'm just going about *my*

particular job. But people on the outside, in the community and elsewhere, looking into that, look at that and say, That's a very strange way. You should *know* what everybody is doing. And I have no *need* to know what everybody is doing. I only have the need to know what I'm doing.

Yes. Well, I noticed that the test site history is kind of in pieces and parts, and as you interview different people, you start to put these pieces and parts together, and that's one of the reasons why it's so intensely interesting.

And that's one of the reasons in classification purposes why you don't say certain things, because of its additive nature. If I'm a spy looking at something and if I can take piece A and tie it to piece B and then put it to piece C and link all of those together, I now have a pretty good idea of what you're doing. And so certain things were classified that in a normal business opportunity downtown or something like that would not be held in confidence, would be general knowledge. The only reason it *wasn't* general knowledge is because you can tie A to B to C and follow a chain to get to information that you really don't want somebody to know.

Well, and did you see times where a gap—where knowledge got into the wrong hands?

I don't recall any. I can't comment on that, no. *I* cannot. Not that I knew of.

All of this process was why we were doing testing, and I probably participated both through EPA in offsite monitoring and such and with DOE in, oh, maybe two hundred, two hundred and fifty nuclear tests. When we were doing the High Yield Series, we did a *whole* bunch of tests, and we were doing maybe twenty-five to thirty tests a year, and then it got down to fifteen, and then down to twelve and ten, and then we got down to where we were doing a couple of tests. International politics, in the U.S. versus Russia, my view is that the U.S. under [President Ronald] Reagan said, I'm either going to put in enough resources so that we have a national defense that is going to *address* this threat that you

[the USSR] keep giving us. And we moved ahead into that process, and then at the same time held out, quote, the "olive branch" of peace that says, If you wish, we will verify each other's activities. And eventually that occurred, and we move into now the verification process in the late eighties in which we have a treaty and processes in place now to monitor each other's tests. We move into the monitoring process and we start out with the Joint Verification Experiment program.

Let me go ahead and turn this over.

[Recording resumes midsentence]

—a group that knows each other well and, like I say, I didn't know you were with the EPA and, of course, you've had other experiences, too.

Yes, and being with the EPA, to me, was like just being with the system. Whether you were an EPA, USGS person, a laboratory contractor, you were all part of this system of folks that just worked out there.

Do you know how many people you would call being in the system?

Well, at the height of testing, we probably had well over ten thousand people involved in operations of various aspects out there. And so that was a significant—well, I can remember during the testing program when I was involved in it, you know, we were in the neighborhood of a billion dollars a year and ten thousand people, for a number of years. *Nothing* like that is ongoing today.

There were a lot of people that came for a little while and ended up making it a career, and so a lot of the knowledge in the field has been something that's been acquired over the process of a career.

To be able to meet and listen to lectures by, say, an Edward Teller, and I've had a couple of opportunities just to sit and listen to the gentleman speak. I was in Washington working for the Secretary [of Energy] and we had a meeting and Glenn Seaborg came. These are Nobel Prize winners, they were the scientists that I studied when I was in school. And now to see them face-to-face, listen to what they have to say, listen to the theories that they have, see how those theories become part of things that are implemented in the field, to listen to statesmen and politicians talk back and forth in *their* particular arenas, it's just been a glorious experience. Really neat. Really neat.

You were in an inner circle, weren't you?

You'd get an *opportunity* to get into it, yes.

It seemed like Paul Robinson got to go on and become an ambassador, and Troy Wade became Assistant to the Secretary of Energy, and these were opportunities that got opened up. I mean even Jim Magruder has talked about as an engineer the breadth of experience that he was able to get that he wouldn't have been able to have gotten anywhere else.

Jim did some things in working for the contractor before he came over to DOE and worked for DOE as an electrical engineer that today are still somewhat common practice in use. Some basic engineering that he put in place is still being used in certain things today out there. You know, your career changes; you don't always work in the same thing, but it's interesting to go back and see what kind of a mark you left behind, too, and [he] was able to do that. Interesting.

Tell me now about the JVE. Now did you stay there or did you get to go both places?

Let me see if I can recount all this. I've been thinking about this for a couple of days and I don't know if I got everything, but here's what went on. The original process was two tests were identified for each government to monitor. The Russians didn't typically name their tests, so it

developed a name called Shagan. Shagan was a name that was pinned on this. Shagan is the name of a lake, the lake on the test site that's over close to the Soviet test site in Kazakhstan. That lake was generated or made by doing a nuclear explosion, blowing out a crater, and then letting water fill back into that lake. We have a crater at the test site called Sedan Crater. Obviously we don't have any rivers out here, so we couldn't fill it back up and go swimming in it.

But they did.

But it was the same kind of things, and in fact the similarities between the two programs sometimes is just striking. Now whether that's because they were stealing our ideas or it's because all scientists think the same way and so they do stuff the same way, I wouldn't comment.

Yes. Interesting question.

I wouldn't comment on, but it was really interesting to see those similarities. So the two tests are identified, and then the Department [of Energy] starts to say, now how are we going to work this and what are we going to do? So, we get assigned to various functions and teams in this process. Negotiations are going on both in Geneva and elsewhere to determine how the implementation of the treaty will become. For the first JVE event, we went over to work the Shagan event, and I was fortunate to serve in the U.S. Embassy in Moscow in the liaison office there, and I worked six weeks in that liaison office. We rotated some people in and out of there.

Oh. So you were part of support?

During the month of June, I was the chief liaison to the State Department in Moscow.

Now Katie McWilliam also said she worked in Moscow as a part of support. I don't know if you were there at the same time she was.

No, we weren't. My team consisted of a communications and an interpreter. I had a communications person, was Dean Brogan [sp], who was a DOE person, and my interpreter was Orest Yavorsky I think it's spelled essentially the way you pronounce it, Yavorsky. If not that, very close. He's an EG&G employee, still here in town, and he's still doing some work. His wife's a schoolteacher here in town.

Was Yavorsky a Soviet?

No, no. He was an American.

He was an American that had a Russian name, then?

Certainly. In fact, his family—at the end of our process of what we were doing, he went and got permission to go down to Kiev and, as a tourist, look at where his relatives came from, his grandparents.

Now I understand it was really difficult for Americans to get good translators, interpreters.

I don't think we had a problem. Orest did quite well. We had a number of folks from other agencies, military and others, that provided translating services for us, and we had a number of independent contractors. And so, you know, *I* never suffered. What you want in a translator is not only the ability to translate the verbiage, but you want them to also read the tonal inflections and emotions that the words are being spoken with, and *that's* where you run into difficulty.

Technical language seems like it'd be its own obstacle.

Technical language for people with science backgrounds, that was not of a difficulty either. But they say things differently than *I* might say things, and so it's not—

So you were there for six weeks in Moscow?

We were there for six weeks in Moscow.

Now were you part of—?

Now what was going on was there was the finalization of the process being negotiated in Geneva—

JVE?

Of the JVE process.

But it was signed in May.

Oh, yes.

But it still was going on?

It was still going on. All right, now, signed at the end of May. I'm there in June. We have a party of people down at the site, and what we're doing is providing logistical support and relay for them because we're right in the middle, time-wise, of the test site and the test site. U.S. test site and Soviet test site. So we'd go into work in the morning at six and work till midnight.

Oh, long days.

All right? In the afternoon, you didn't have much to do, you know. Most of the time you spent trying to figure out where are we going to go eat because there aren't restaurants that you go eat at in Moscow at this time, you know, this is still under the Iron Curtain. So we're working and we're working in the U.S. Embassy and we're working in the quarters that had just been vacated by the United States Marine personnel who, if you remember at the time, were in trouble because of association with local Russian women who happened to be the cleaning ladies. There was some problems that they had in—

I didn't know Marines got to go to Moscow.

Marines provide the guards for all our embassies around the world.

OK. OK. Right, of course, if they're connected with embassies.

So that guard force had gotten into a problem and, you know, I don't know all the particulars, I don't care to remember, but we're working in these old quarters down by the laundry in a little booth. We've set up our own communications, we've got our processes in place, and what we're doing is, I could pick up a phone in Moscow and it was just like the phone in my office at the test site. I could call wherever I wanted to call. I could not speak classified over that phone. But I could make my calls and do what I needed to do, which later becomes an advantage because you now can use that phone to say certain things are wrong and you know it's being listened to because the next day they would be fixed.

Oh, you picked up on that real fast.

So now if you're smart, you know what to do.

So the first two weeks we're staying there and I'm staying in a large hotel called the Mezhdunarodnaya, which is a half-a-block away from what's called the Russian White House, which is the building for the governors of the Russias. In fact, when the revolution was on, this building was the one that was being moved on by all the tanks and then the Russian troops refused to fire on their own people. I walked by that building to the embassy about five blocks away every day.

Was that [Mikhail] Gorbachev's building, though?

Not Gorbachev. [Boris] Yeltsin was in there.

Dean Brogan is staying across the street in a room on a boat.

On a boat.

Yes, and there are several boats that cruise the river in Moscow, but a lot of times they'll just park them and use them as hotel rooms, because rooms are at a premium. You can't get any rooms. And Reagan had just come to the embassy for a visit, and he and the Secretary of State

over at Spaso House, which is the quarters for the Ambassador to the Soviet Union from the United States, had just signed the treaty agreements.

So I'm working and we're arranging for bananas and fruit to be flown in from Frankfurt [Germany]. We had an office in Frankfurt, we had one in Moscow, and we've got Semipalatinsk, and we've got equipment that needs to be transferred from the test site into country and sent down there to make sure. So we have Soviet military counterparts and us working out of the embassy, and we go to them and say we've got to get this package moved from the airport down there. And so the package would come in on a U.S. plane, we'd get it moved over to the Soviets. The Soviets would put it on a Soviet plane, and they'd fly it down to Semipalatinsk for that. And that's kind of what our role was. And in the mornings, then, we could talk to the U.S. and in the evenings we could talk to the U.S. In the mornings we could talk to the test site, and in the evenings we could talk to the test site, and you could get the information back and forth and you served as a conduit for that process.

So it sounds like that the supplies and things that Semipalatinsk needed, you made sure that they were received and that they were sent out.

Now if there were difficulties in the processes at the test site while we were down there, any of our personnel or anything, if there were medical issues or stuff, then we were at the embassy that we could arrange for people to be flown out for that kind of services.

Did you have medical problems?

No. In fact, we had doctors and people on board with our crews while we were down there at the test site. The issue that *did* come up, and I don't know if you've heard this or not before, but they were getting ready now, they're done with their inspections and they're getting packaged up, and some of the guys had picked up some articles on the site: a piece of barbed wire, a hammer. And

all of your stuff that's being shipped out gets inspected by the hosting country, and they found this, and they lodged a protest.

The Soviets lodged a protest?

The Soviets lodged a protest. This is where I get into trouble. Not—I get into the middle of a problematic issue.

That's a good way of saying it.

I don't get into trouble.

Yes, it wasn't your problem.

But I get called in to—in Moscow there's seven large buildings that were built called the Seven Sisters, tremendous towering buildings—and I get called in to meet with a gentleman who is a counterpart, kind of, to me. Now at this time, you have to remember that the ambassador and others don't want to have much to do with us. They don't know who we are. They don't want to mess with us. We're being housed in the embassy but you know, you're on your own, boys. We don't know where we're going with any of this stuff, so if you screw-up.

We're not on the same team, I guess.

Well, you are but you aren't. I mean, if you screw up we're not going to take the blame for what you've messed up.

That was a hot seat, wasn't it?

Well, see, they're not in control. The DOE was in control, and so now you have these bureaucratic issues that come between State and the agency and the Department of Energy and folks like that.

So I get called over to a gentleman's office who happens to be this Deputy Assistant Ambassador for these affairs in the Soviet Government. The gentleman's name is Boris

Mayarsky [sp]. And I've got my interpreter with me and I said, Boy this is going to be interesting to hear what he has to say. I meet the gentleman, and he speaks better English than I because he was a graduate of Cambridge [laughing]. And so he's a diplomat, and I'm not a diplomat; I'm a scientist.

And so I'm sitting there going, What's the issue? What's the problem?

And he starts into this thing, Your people have violated the agreement. You've made mistakes. This is not legal, what you're doing.

And I said, I don't have the agreement with me. I don't know what you—

And he said, Just a minute.

And he turns around and opens up the safe and pulls out *the* parchmented document that the Secretary and the Russian Ambassador had signed that evening before at the Spaso House and he lays it out on the table, opens it up, and he says, It's right here.

That's 103 pages!

And I'm sitting there going, My God, this guy's got the original document, so what am I going to do?

Did he read you chapter and verse?

Oh, yes. You will see that throughout this whole process on *all* of the verification activities, is that they *lived* by what those words are.

That sounds like they tried to be honorable.

And they are. But they also want you to do that, too, and you have to understand that most U.S. scientists, people in this country, tend to live by the spirit of what that law says but not by the letter of it.

Was it in there that they're not to pick up any—?

There were certain things that were not allowed to be removed. It wasn't specifically what they had picked up, but it says there's certain things you can't pick up and remove, and what was all this about, and he's laying this heavy case on me. Obviously, I'm getting from my interpreter that he's being very emotional about this, and so I had no other choices but [to say], Let me go back and I will make a call to Geneva, where they still had negotiations going on, and find out what the ultimate issue will be.

Now when you talked to Geneva, were you talking to Paul Robinson?

That group of people. Roger Ide was there. Roger's no longer with us, but he was with Livermore. Robinson's there. There's a number of other people that are there doing negotiations. Jeffries [sp].

I was just wondering who you would feel the most comfortable calling by name.

So I called back and I talked to Roger Ide and said, Roger, here's the issue. What am I going to say to this? And they're aware that something has come up at the test site, that somebody's tried to walk off with something, but it was by way of souvenirs, not by way of trying to get intelligence information and stuff like that.

Yes, there's a couple of tools sitting there.

They have a result, and so that afternoon I call up Mayarsky and I go back to visit with him again and I said, I've talked to Geneva. Here's the response.

He said, You've talked to Geneva?

And I said, Yes, there will be a formal process coming out.

And he says, Well, I won't get that.

And I said, What do you mean, you won't get that?

And he says, It takes a long time for that information to flow from the seventh floor down to the fifth.

And so what he was referring to is that as this stuff comes through, *he* has a bureaucracy to go through, and he was appalled that I was able to cut through that bureaucracy, call Geneva from my office at the embassy, talk to the negotiators on scene, get an end result, and come back with that answer.

You had more pull than he did.

Well, no, I didn't have any more pull. I had what we would consider to be normal access to issues: Here's the problem. Tell me what to do. We need to get it resolved. And that's the way we always dealt with things.

So that was kind of enlightening, that little process. We had some strange things that happened. We lived two weeks in this hotel and then for the next four weeks we had to move, and so we moved out to a place called the Star Hotel.

Did they tell you why you had to move?

No, other than I had outstayed my welcome at the hotel I was in.

Because there's a telemessage that says there's a law in Russia, you cannot spend more than thirty days in a hotel.

Yeah, and I could've stayed longer in that hotel had I slipped money under the table to the manager of the hotel. All I had to do was give him my American Express card and he would've charged me a little bit more and he would have put it in his pocket and everything would have been fine. But clearly I was not in a position to do that because if I made a mistake on the black market, if I'd made a mistake not obeying a street sign, or any of those kinds of things, then I would have been the next example that they could hold up to say, see? These people have no respect for what they're doing and they're a bunch of crooks. So you were very careful.

Well anyway, we move out to the Star, which is not a very nice hotel. It's located very close to what's called the Ostankino Tower. In Europe you'll see a lot of towers that have TV, radio antennas that service local areas. The Ostankino Tower is a fairly familiar landmark within the city of Moscow. And we're spending as little time in that place as we possibly can, maybe four or five hours. All we're doing is going in to sleep and leaving, because there's no water. There's no *hot* water, I should say; there is water. And the reason there's no hot water is because throughout the city of Moscow, it's centrally steam heated and so all this hot water provided, but every summer during certain periods and months, they cut off the hot water so they can clean the pipes. And we happened to be in a hotel within one of the regions for that month, they're not providing hot water service.

Oh. Oh, so you had cold water to—

So, you know, how are we going to get—? Well, we'll go to the embassy, we'll go to the gym, we'll shower at the gym, then we'll go in and do our work. And all this time, we're constantly trying to figure out where we're going to eat, and we finally find out about a week-and-a-half into this, because you can't go out to the local restaurant, you can't go into a hotel that has a restaurant unless you have business in the hotel. They have doormen on the front door. You couldn't get in. You know [they say], `Show me your room key.` [And I say], `I don't have a room key.`

Really? Boy, they're not traveler-friendly at all, are they?

It was not, no. But we found ways to work around that, too, because we had rented a car, and we'd rented a car within a hotel that had a car rental place, and so that hotel had restaurants, and so we would say, `We're going in to talk about our rental car.` And then we could get in and sneak in and eat.

So we're there during that period of time, and we believe, after being followed back and forth at these strange hours – and we worked seven days a week; we didn't take any time off – that finally our escorts had gotten tired of us. So they pulled us over one night at about midnight and wanted to arrest Orest, my interpreter, for drunk driving. So we left Dean with the car—

Had he been drinking?

No. We left Dean with the car, we got into the car, and we drove off to a medical station. Now this is like going down some back roads and then all of a sudden the policeman stops the car, he tells us to get out, we walk up to the stairs, he beats on the door, and finally this little old lady in a white nurse's outfit comes [and says], `What do you want?` They're arguing back and forth. `I have a drunk and you need to give him a breathalyzer test.` And so Orest goes in and he blows in the breathalyzer test, and she comes back about five minutes later just ranting and raving, `Why do you wake me up in the middle of the night? This man has not been drinking. There's no alcohol.` And so now he has to take us back to the car, and he's really irritated and he still wants to arrest us, detain us. And now he starts the, `You know if you give me a hundred dollars, I won't do anything.` And Orest looks at him and says, `I'm a working man.` He says, `I have no hundred dollars to give you. I have to work for a living.` What he really was looking for was some money, but what the *message* was that we took was that they were tired of waiting outside the embassy until midnight or one in the morning when we quit working and go. This is further confirmed by one Saturday, we asked that we needed a piece of equipment that was stuck at the airport, and so we had to go out to the airport warehouse and look for it. And the military people that were our escorts to do that looking made the comment that, `You know we fought a war so that we wouldn't`

have to work weekends. It was a reminder to us that they loved to have their weekends just like we would.

So did that slow you down at all?

Didn't stop. We just kept on working and doing our thing. Well, I finished that tour up and now almost everybody—there's five people still down at the test site in the Soviet Union in Kazakhstan, and I had made arrangements to go down to that test site for two reasons. One, to see the site as a familiarization trip, and two, to pick up some core samples of earth, ground, that we were bringing back to have studied—some concrete core samples that they had made as stemming material that was going to go back into *our* satellite hole, so we wanted to monitor that. So Joe Fiore—

They get to choose the stemming material?

Yeah.

Oh, that's right, it's Semipalatinsk.

But we got to agree to it. It's their test site. So Joe Fiore is still there. He's got a Holmes and Narver gal, and this is now July 1st. And I go out to the other airport. My little Soviet major that's taking care of me is a gentleman by the name of Sergei Inesian, Major in the Red Army, he's an Iranian fellow, a wonderful little man.

Inesian. With an "I" or an "A"?

Inesian, with an "I."

OK, I-N-E-S-I-A-N.

A-N. Sergei takes me to the airport, puts me on a Soviet plane, and I fly to Semipalatinsk. I'm on the plane and I never saw so much brass. There must've been four or five generals, several colonels, all kinds of people.

Going from Semipalatinsk to Moscow?

Going from Moscow to Semipalatinsk. I have no idea what's going on. The stewardess sits me in a chair and then he [Sergei Inesian] said, `You will be taken off when we land first.` OK, so we make the *long* journey, which is kind of awful but we eventually get there. The plane lands, pulls onto the tarmac, and I look out the window and there's newspaper people, television cameras, all kinds of stuff. An announcement comes on and nobody moves, and the stewardess comes out and she points at me and she wiggles with her finger, `Follow me.` So I get up, I follow her, I take my bag, and out the door, down the steps, and all of these cameras are down there. When I get to the bottom of the step, they put me in a vehicle and I drive off. And I'm looking over the back of my shoulder, and then finally the rest of the plane is starting to get off. What was happening was all of the local Communist Party officials were returning from the national Nineteenth Communist Party convention in Moscow, and I happened to be on the same plane. And all of the press was getting interviews on what had happened in Moscow during the Nineteenth Party Congress. And I often thought to myself, I wonder what they thought about this guy that got into the black limousine and drove off before *anybody* got off that airplane.

So we go out to the test site, I pick up my samples, I get my familiarization, and Joe and I—and now it's the Fourth of July, and the Soviets were kind enough to say, `We recognize it's your country's birthday. What could we do?` And so we asked, `Well, we'd like a barbeque grill, some charcoal, some watermelon if you could find it, some meat. We're going to have a barbeque and a picnic.` And what we got was a fifty-five gallon drum cut in half, a large stack of old siding off of a building, two big clumps of pork, and nothing else. We had free access to the kitchen, which was unusual. And the little cook that was there that was feeding the rest of the American people while we were over there, who the guys kind of called Mama, made us a huge marble chocolate and white cake and decorated it and it

said, “Happy Birthday, USA,” for our party. And so the gang of us, the five that were there, had saved our two Czechoslovakian beers for the past two days, and so we had some beer. We had a volleyball and a horseshoe game. We had a barbeque and we burned all of the wood down till just the charcoal remained. Then we made shish kabobs out of the pork. We made potato salad, and some homemade mustard and catsup for the barbeque sauce, and we had some honey and some other spices. So we had a nice little barbeque for our Fourth of July party, and had a couple of beers. I’d gotten a video so we went into the day room for the evening. We had asked for fireworks and got no fireworks and we went, `Oh, well, so that’s the way that’s going to be.`

Asking for the moon, and whether or not you got it.

Well, yeah, you can always try. So we cooked up some popcorn and we put in the movie, and the movie was *The Natural*, which is a baseball game for us, and the way the movie ends is when he hits this home run into the—and, you know, it blows up and all the fireworks are going.

Your fireworks.

That was our fireworks. At just about the stroke of midnight, the fireworks went off in the movie. I turned to Joe Fiore and said, `Happy Fourth of July, Joe. Good night.` And that was our Fourth of July celebration, in the middle of Semipalatinsk on the fourth of July.

Now was the American flag allowed to be flown at that time?

Well, we didn’t *fly* one but at the test site you’ll see pictures of the U.S. and Soviet flag. At our meetings, you had U.S.—not at the table, U.S. and Soviet flags, but we didn’t fly one out in front of our quarters then. But we had a nice Fourth of July celebration.

I left on the seventh and came out, and the trip out was quite unique. Got on the aircraft at Semipalatinsk airport. That’s maybe eighty miles south. It’s kind of like Las Vegas is to the test site. You have the test site remote and then you come into the *city* of Semipalatinsk, and quite a

large city in the middle of Kazakhstan. Wait at the airport, get on the plane, and then I got to fly back to Moscow. Well, I'm on the plane and we're waiting and it's the seventh of July and it's hot, and the air density is such that the plane can't take off. And we sat on that tarmac for six-and-a-half hours waiting for the weather to cool down enough so that airplane [could go]. Didn't go back to the airport. We just sat at the end of the runway. And most of the Soviet citizens were not well-versed in the use of deodorants, and so it was just a marvelous seven hours on that airplane, waiting in the middle of all that heat.

Was it as hot and stuffy as—?

Oh, yes, it was at least 110 degrees out there, and yeah, it was just awful. Anyway, finally the plane takes off, we get into Moscow, my man picks me up, we spend one more day in Moscow. Sergei and I had gotten relatively friendly and this is a story I tell a lot of the kids at our church, in our youth group and stuff. This is how I won the Cold War: There was a building across from the U.S. Embassy that at one time was an Orthodox church, and it was no longer a functioning facility but it had every shape, form, and kind of antenna that you could imagine on the church towers. And it's lovingly called "The Church of Our Lady of Perpetual Surveillance," right across from the embassy. I had been commenting to Sergei and says, `You know isn't there actually a functioning church anywhere in this community?` And he said, `Oh, you want to see a church?` So he took me out. We went up to the University of Moscow, up on a hill that overlooks the city and another one of the Seven Sisters buildings is the University of Moscow building. And he took me across the street into a small church. They were having a wedding and there was a couple of nuns there, and then he went in and bought candles from the nuns and he handed me a candle, and we both went in and went up to the altar, lit our candles, and we said prayers for peace. And it wasn't a couple of years later that the walls came down and

we had achieved peace. So I always say to the kids that this is how I won the Cold War. A Soviet major and I in the city of Moscow went into a church, said prayers, and the world came to a realization that it needed peace. That was kind of an interesting little story.

We came back. We conducted the test. Things went relatively well. Agreements were pretty much in place. But we were doing another test called Junction—

Now the test you just said that you did—

This was Shagan. [S.Ronshaugen1] They came back over and monitored Kearsarge, which was the test here, and during that period of time I was doing logistical support and stuff for the onsite. I ran the control room at the test site, and so we set up the places where the Soviets would be for control and the U.S. people would be for the control. And I'm sure that you've probably seen this picture of the control room with the Russians. [S.Ronshaugen2]

Oh, so this is the control room.

With the Russians and such, and these are some headquarters people that are out. This is me standing here. These folks that work—

So you're at that very, very top on the left there.

Yeah, I ran this facility.

OK, this is control point, then?

Yes, this was the control point. This is called the war room—

OK, because this picture is in Viktor Mikhailov's book.

Yeah, and this is—there's Viktor back in here. No, this is Paul Robinson. That's Jim Magruder, the test controller, and his scientific advisor. This is our guy talking to headquarters. These are Livermore people here. Leo McGurk is that guy's name. This is the doctor. This is Chuck Costa. This is the Weather Service folks. These are all Russian and U.S. dignitaries and diplomats

sitting back here watching the test. These are some headquarters people that I'm informing, and these are all support staff. A lot of these guys up here used to work for me as I ran this facility.

Now would you be one of those giving some of the briefings?

No. I'm just there to make sure that all of this stuff is working and all the people are where they belong and what they're doing. Briefings for information purposes were done by the Weather Service guys, his people. The scientists in the test back here, they briefed. Offsite was briefed by EPA people that worked for Costa.

This is Kearsarge?

This is Kearsarge.

And did you go back for Shagan?

No. On Shagan, what I did for Shagan was I ran for the manager at Nevada the emergency operations and coordination point here at our office and talked to Guy Allen who was in Shagan for the execution. So I was operating the node here and conversing back and forth and letting everybody in the building know why they kept on working. Then when it got time to zero time, they all came in to listen on the phone. We kept an open link between us. And they do their tests differently there than we do. They shoot their tests from trailers, and of course because of ground shock, they had to leave the trailer. And so Guy said, `It's one minute to go before zero time. I need to get out.` And they were about two-and-a-half miles away, or two miles away, from ground zero. So he left the trailer and the phone's dead, obviously. We're not hearing anything other than we can hear some rumbling.

And then we're not hearing anything and we're not hearing anything and zero time has come and gone and I'm wondering, is my good friend Guy still alive? Is he ever going to talk to me again?

Finally he comes back on and he says, I suppose you're wondering what happened to us.

I said, Yeah, we'd like to know.

And he says, Everything's gone fine.

But that was what we did here.

For the Junction event, I served a much different role in the Junction event. I was the Chief of Technical Operations for the Junction event. So what the treaty allows for is you spend thirty days negotiating the schedule of activities for the monitoring of the test.

Now is that Don Eilers?

[S.Ronshaugen3] This is Don. This is Ron Cosmi [sp] This is myself. This was Colonel West, who was the military lead in the negotiations for the Onsite Inspection Agency [OSIA]. At this time, now, you have this new group of people that come into place called this Onsite Inspection Agency and they're going to run all of these things.

The protocols for JVE.

Right, both at the seismic stations throughout the United States plus at the test site. And so I was whispering into his ear during all of these negotiations what we should and shouldn't do and how to do it. This is [Nikolai] Voloshin, and this is [Vladimir] Nechay, and that's their interpreter and this is our interpreter.

So the people on the left are the Soviets and the people on the right are the Americans.

Right. Clearly, you know, one of these guys is KGB—we knew that going in—or some kind of intelligence. These are our support people from the site, and then that's Huckabee. I don't know if you know Fred or have heard Fred Huckabee's name before.

I've heard Fred Huckabee.

And so Eilers and Voloshin got to be, oh, quite good friends with one another on measurements, CORRTEX measurements, and methods of monitoring things.

Now what year was this, does it say?

We started that negotiation the 23rd of May and that should've been around '88, '89, right after the JVE, OK? We ended that negotiation, let's see, the 23rd of May, thirty days later was in June.

It looks like you have a lot of Russian names there, then?

These are all the people that were at this. Nechay, which—our common name was "No tea." Chay is tea in Russian. We got our own Mr. Tea instead of Mr. Coffee. He was the head of the party. He was also the head of the lab. When the walls came down, he committed suicide. And the basic reason was that he felt so bad because he could not support his—he could not get the government to understand they needed to support his people at the laboratory, and so he did himself in. And Nikolai Voloshin is in there. These are my spellings. I hope they're all right.

Well, I'm sure they're about as close as a person could come.

Some of these folks did come back for the reunion—

Oh, the tenth anniversary of the JVE?

The tenth anniversary. And we took a picture of everybody outside of the DOE building [North Las Vegas]. And there you see Mikhailov and Voloshin, Troy, our manager and the ambassador, Paul [Robinson], folks back there. [S.Ronshaugen4]

Now is that Paul right there?

Yes.

He's real tall, isn't he?

Yeah, he's probably an inch or so taller than I. I'm sitting over here. This is the rest of our staff. And the Russians.

What a reunion.

Prior to the Junction event, we did the Kearsarge event here at the site, and one of the things I got to do was take the *military* group of people. Now in the Russian test site, their site was run by the Russian military. Here it was run by the civilians. They kept looking for the military: `Where's your military boss?` We don't have a military boss. This country doesn't have their weapons in the hands of the military. The design and stuff is under civilians. They couldn't understand that.

So Junction was done before Kearsarge?

No, no, Junction was done later. Now we're doing Kearsarge still. And they're going to conduct Kearsarge over here, and one of the things we wanted to give these folks a treat was take the military folks down to the coast. So we load up a busload and I'm kind of leading this group, this contingency of people, and we got all the military people, all the Department of Defense [DoD].

Would this have been like July or August or something like that?

Yes. And we're going to go to Disneyland. We're staying in Long Beach and we're going to go to the beach. So Grace Plummer and Frances Guinn and myself take this group of people and off we go. Down the road we go. Having a good time. They are interested in every aspect of the road going down: `Does that power line come from the dam?` As we're going by Yermo [California], which is the Marine base, and they want to know, `What's all that equipment from?` At that time, Yermo was just full of all the stuff that had come back from the Iraqi war. All the tanks and everything were out there and they were all painted in desert camo [camouflage], and I'm explaining this. They're taking pictures of oil wells and they have got cameras going out the windows of the bus, just having a great time.

Intensely curious, aren't they?

Well, they're seeing things. They're interested.

And they get to ask their questions.

Sure, and we answer the questions as best we can. Interesting about how open we are.

So we go to Disneyland, OK? And we broke up into a couple of groups because we knew we wanted to get moving around. So I took General [Arkadii] Il'enko, who was the head of the Soviet test site, and his staff, and we head over to the Pirates of the Caribbean and the Haunted House and the Bobsled Ride and, you know, we're doing rides and we're eating lunch and—

That is such a capitalistic place to take them, isn't it?

And you know we're just having a *wild* time.

We get done with this ride in the Haunted House and the guy says, `What's the purpose of that?`

And I said, `Well, you know, Halloween.`

[And he says], `Well, what's Halloween?`

[And I say], `Well, you know, scary movies and ghosts and all this.`

And they have, you know, it's a concept foreign to them.

Not a clue.

And then we're seeing a few of the shows and we're going over to Tom Sawyer. Now they understand because they're well-read. They read *Mark Twain* and *Tom Sawyer* and they understand these kinds of things. They listened to some of the Dixieland jazz and the New Orleans singers, and we're having a great time. Well, we have some supper and then, of course, Disneyland at that time had the Parade of Lights to finish up the evening at about nine o'clock and then they would close at ten. And so the Parade of Lights starts, and we get a prominent position on Main Street so these guys can take pictures and see everything. And the Parade of Lights is going on and the music's blaring, and the last float in the Parade of Lights, if you

haven't seen it, is a tremendously long float of an American bald eagle, and they play "God Bless America" over the loudspeakers, just blaring, and of course there's a big "God Bless America" thing on this float. And it's coming down and everybody's standing and singing "God Bless America." I'm sitting here with this Russian general and all of his staff and it goes by and he's just kind of looking, and I turned to him when the parade's over and I said, Sir, we have about a half-hour left. Would you like to go to some of the stores as we go out the main entrance of Disneyland and do a little souvenir shopping or something like that? And he turns to his interpreter and the interpreter looks at me and says, We go now. My people have been exposed to enough. So we head onto the buses and go out the door. The fireworks have all gone off, the parade's over, and I'm sitting there going to myself, you know, I probably did just blast this guy with more propaganda than he's seen in a long time.

We get back to Long Beach and we have a little reception set up out on the patio overlooking the *Queen Mary*. And we're having a few snacks before supper and a couple of drinks—

And this is still after ten o'clock at night.

Yes. And of course the *Queen Mary* has this tremendous fireworks display in the evening, and so we're out on the patio and the fireworks are going off over the *Queen Mary*. The interpreter comes up to me and he says, How can you afford to set up all that stuff for us? I just smiled at him and said, Nothing is too good for you. I hadn't a clue what he was talking about. I didn't have anything to do with the fireworks.

So they came back to the site. We did Kearsarge. Everything went well. And then we moved into now the next test, which is the Junction event, which is a Los Alamos test, and I was the Chief of Technical Operations for that. And so we spent thirty days in Washington, D.C. at

the Dulles Airport, at the Marriott, both parties. And every day we would meet and go over issues, day-by-day, putting together the schedule for what we're going to do on the Junction event. And then we came back and implemented that process out here.

Now this was another joint test.

This is a U.S. test, and the Soviets, and of course the U.S. government essentially paid for all of their participation to come and monitor this test. And so they—

Because it was over a certain kiloton.

Well, it didn't matter what it's over or not. They had the option. They chose to monitor it. This test was monitored both on the site with their CORRTEX stuff and offsite at the seismic stations, so we were operating both of them and we worked very closely now with the OSIA office of Onsite Inspection Agency, and Colonel West was the head negotiator. And we spent our time back there, we worked out a schedule, and really hard—

Was Chuck McWilliam part of this at that time?

No. At that time, Chuck was in Geneva, still working on some other issues. And the thing that we were still working on was something called the AI device, in which signals were transported between one group to another, and it's called an anti-intrusiveness device. Keith Alrick from the lab was the principal working on most of that.

But when you get all done with this thing, all right, then two people, myself and Voloshin and two interpreters sat down and took the documents, the Russian document—because you're passing documents back and forth. It's a negotiation. You finally end up with a set of documents. You take the Russian documents and the U.S. documents, side-by-side, and the two interpreters and you read through it line by line for conformance, and you got to go to through *every* page and every word. And they would say, `This is what this means to me`, and our guy would

say, `This is what it means`, and then our guy would say, `This is what it says in Russian`, and the Russian guy would say, `This is what it says in English`, to each of the parties, and then you'd say, `OK, that saying what we want to say.`

That was a long process.

Oh, it takes forever. Two days of gut-wrenching experience. What you find out of that was some notes that I wrote to myself. I'll just read you. "When you write all the procedures into an annex, you tend to move away from flexibility." So when you say we're going to agree to do this by this procedure, all of a sudden you have no flexibility left. It says we've got to do this. You can't do it any other way. This is the way you said you were going to do it. And the problem with that is that oftentimes what you're sitting at a table doing is not what's going to happen in the field. So that becomes difficult.

You can't use initiative or creativity, can you, to help solve any onsite problems?

No. And then the next one is, "When everything needs to be documented, the process is so slow and it increases our costs." And it *was* slow, and painfully slow, because it had to be done in both languages.

The next one that we found is that—and I think this held true for both parties: "Not everyone needs to know everything, but the responsible parties need to know enough."

Those are good thoughts.

"Others can just stand by and be ready to take orders. But everybody wanted to know everything." And then the last note to myself after this process is, "Anything you write ain't necessarily understood by the readers to be what you needed to intend to tell them."

Say that again. Say that one more time. That is so good.

If you intended to say something to somebody, and then you wrote it, they read it, they don't necessarily read what you just intended to tell them in your writing. And it was a process that was just unbelievable.

Interesting things. We came out. We did the Junction event. It went very smoothly. Again, there was good exchanges and different get-togethers and functions that folks did.

And that was at the test site.

And that was at the test site. And so all in all, that JVE experience, the thirty days negotiating and others, was kind of the culmination of the process. After that, it just kind of, you know, we moved into very little testing, no testing on the Russian side. The walls came down in the late eighties, you know, peace kind of broke out, and I think we won the Cold War. That's what we like to say. I'm not sure that there was a winner, but we certainly moved into no testing there and no testing on our side. Both the U.S. Citizens Alert and Nevada folks did not want to do the tests, and the Russians had a group of people not wanting to do testing. I think economically it just became infeasible to continue doing it.

Yes, and it's no doubt that the things that were done at the JVE paved the way after the fall of the Soviet Union.

My thought processes would say that our granting access to those individuals to see the way we did things, and to *see* how we did them, and to have them see the dollars that we were willing to commit and spend, and the time and effort and the quality of the people that were working on the program, *had* to have an impact on their position. Because from us seeing what *they* had and their ability to *produce* what they did under the constrained conditions that they had, we saw that economically they were in no position to compete. This country had made the choice that said

we were going to spend the dollars that were needed, and they could not compete economically and win.

Well, they did very well with what they had.

What they had were some terrific engineers. They had some machinists and people that built some things that were just astounding to us, that, you know, high quality. They also had some things that were very crummy. They knew how to do it. They just didn't invest the dollars in doing it.

Well, there was considerable mistrust and almost paranoia in what they expected Americans to be like.

Well, each party has had a picture and a thought process in their mind of what the other one was like. As I say, I think that over a period of time, those things went away and people treated each other on a man-to-man basis. I think Eilers and Voloshin had an understanding between each other based on science and each other's individual expertise and honor that was probably a very unique relationship between them. Those friendships and those kinds of things developed back and forth. The problem is it's still not as open as it was, but in the scientific community you oftentimes are sharing information but in *this* world, in the nuclear world, you didn't see that. Mikhailov, in my opinion, was very much like a number of U.S. senators and congressmen in this country that are hawkish. He thought that a very strong defense based on nuclear weapons was what the country needed. I think there are people in the United States that believe very much the same way. What's interesting is two different societies, both individuals having that kind of mental attitude. The problem is I don't think financially they could afford it and I don't think *we* could afford it; but we made the choice to put the money into it, and now have backed away and are putting those funds elsewhere.

And so it's just the difference in the way we went about our different stances. Once that wall came down and they moved from a united USSR into sixteen different principalities or states or countries, and all of these things that were suppressed under the Soviet Union came to the forefront. I saw some of that in talking just in my vision of the two majors that dealt with us as escorts when we were in Moscow, Big Sergei, a tall, blondish, what I call Scandinavian-descent Russian, Russian from the Ural Mountains, and Little Sergei from Armenia, short, dark-complected. They got along together but there was *definitely* a prejudice within the Soviet system for Russian Russians versus Armenians or Kazakhstanis or Turkmans or Georgians or, you know, so those kinds of things now came to the surface. And that's also why you see some of the things that you have in the Chechnya Republic and the wars that you have down there. These are long subverted problems that have been held down by a central government within the Soviet system that there is no Soviet system to hold those down, so they've boiled back up again. And we've had similar kinds of those things within the United States over time, with the American Indian, with the blacks, with others, that our system kind of holds at bay until a liberty comes about, and then it boils back up.

When they finally get to participate in the government themselves.

Right. And I think you're seeing some of that issue with the Muslim cultures. So it's an interesting time. But I would, you know—I don't know how many more stories I can come up with. I don't want to try to come up with any more. It just was *fun*. It was extremely interesting to be on or at the periphery of what was forming the decisions that were made now that puts the country into the position that the country's in, and seeing what the Soviets and what they were like.

Well, there was one story I heard, and you can confirm whether or not this happened to you, and one was that when you were accompanying the Soviets down to the beach—

Well, we were on our trip to Disneyland, and of course now we've worn the general out with how great the United States is by playing all of this music and having fireworks and everything. So we're going to the beach near Long Beach, and we get on the bus the next day, we go down to the beach, and we brought some beers and some snacks and hot dogs to cook and stuff. So the bus, the big bus, has to park in the back of the parking lot so we pick a beach. We carry all of our stuff out to the beach, and we're out there partying and we're having beers and the guys are swimming. I'm worried to death because two of the Russians have got to be a half-a-mile off the coast, swimming out in that ocean, and I'm going, oh, don't drown. Don't have any problems. I'm watching them and I'm playing a little volleyball on the beach, and I've got one eye looking over there and out of the corner of my eye, I see this sunglasses, cap on, uniformed police officer from the Long Beach Police Department, and he's face-to-face with one of the Russians. And he is going off, you know, it's like the Burt Reynolds movie, *Smoky and the Bandit.* This guy is going off just like one of these Southern policemen with the sunglasses on, and just really—and the Russian is sitting there. He hasn't got a clue what this guy's saying, but he's smiling and the cop is saying, `Wipe that smile off your face.`

And so I run over there and jump in between, and he looks at me and he says, `What are you doing?`

And I put my hands up and I'm going, `Now stop.`

And he said, `Don't raise your hand to me,` and he starts for his gun.

And I said, `Wait a minute. You don't understand. This man doesn't speak any English. You're yelling at him. What is your problem here?`

And he says, `Well, who are you?`

And I told him who I was and I said, I don't want to have an international incident, nor do I think do you. Your career might be short enough just with my report right now.

And he looks at me and he said, Who are you?

And so I walk him over to the bus, I get my badge, I show him my badge, I explain what's going on, and I said, Now what is it I can do for you?

And he says, Didn't you see that sign?

And I said, What sign?

And he points and he says, No alcoholic beverages beyond this point.

And what happened was the beach is divided. You can have alcoholic beverages on one part of the beach and then there's a piece that says you can't. That's where theoretically the families can go and enjoy themselves without having to worry about people drinking. Then there is the other part—so they segregate the drinking and the non-drinking. And I didn't see the sign. The bus was parked in a position that I wouldn't see the sign, and I had no idea.

I said, But tell you what I'll do. I will personally go over, collect up all of our drinks, put them back on the bus, and we will not have any drinks.

[And he says], Oh, OK.

I went over and collected everything, and I still don't to this day understand if that cop really believed me and what was going on or not, but I said, You know, I have no process here but to report you to the local FBI and let them know what's happened because this is a State Department issue. And I'm laying it on just as heavy as I can. *Trying to get him to back off.*

I finally got this guy out of my face and he drove off, but he would not leave that parking lot until I collected up all the beer. We were just having some beers and hot dogs and stuff, but we

got all the beer back on the bus, and I said, Folks, next time we come, we've got to make sure we look for these signs that says no alcoholic beverages. We couldn't have been forty paces between the place where we could've had a drink and not had a drink, and of course we chose the wrong side.

Now Chuck McWilliam calls that "getting busted on the beach," and he says that the Soviets thought you planned that and that you staged that.

And they may well believe that but, you know.

I was looking for that story.

We got it all hauled away and everything was fine and we came home, so they were happy. But that indeed is what happened. I was quite scared. I could just see this guy, you know, hauling one of my guys off in handcuffs, or pulling his gun and shooting me, or something, just over four or five guys sitting on the beach having a beer.

Yes. Oh, I was waiting for that one. Now one other question. What was the highlight of your life?

[Pause] I don't know if there's any one.

Oh, you can have more than one.

You know, I've had two opportunities to work for three-month stints in Washington, working for the Secretary direct. I worked for Admiral Watkins for three months and I worked under Joe Salgado who was the Deputy Secretary and later Secretary, and in fact was the person that Troy Wade—Troy swore Salgado in, in an aircraft over the Soviet air space, as the Secretary. I had those two opportunities in being in Washington and seeing what goes on and how things work, and those were very interesting times. I think being able to go to Moscow and work with those individuals there was quite exciting. Being in L.A. when Reagan was there and monitoring where Reagan went moment-to-moment, along with the folks back in—and how that whole

process came together and how we supported the Olympics both there and at Atlanta, I think were—

The DOE did?

Yes. It was a counterterrorism, nuclear counterterrorism program, and so being part of that was very special. So, you know, no one of those things—you know, Three Mile Island work was terrific. I'm not sure which any one of those would be the highlight.

You really had those moments of history, didn't you?

The most *enjoyable* experience I had is the following: Life in Moscow and at Semipalatinsk, and going through Customs carrying those soil samples in which we had had the argument about removing stuff from the test site.

And now I'm walking through and going up to the X-ray system and the lady says, `What is this?`

And I said, `It's soil samples.`

And you know, `Soil does not leave the mother country.`

[And I say], `No, no, I'm allowed. Here's my paperwork.`

[And she says], `I don't believe this paperwork.`

Well, you know, I finally get my stuff *through* Customs, *on* the plane. And on this Lufthansa Airline that we're flying, you could monitor when you crossed into German air space from East German and Russian control, and we're getting ready to land in Frankfurt [Germany]. And that was the most relaxing moment, I think, in my life, because I was no longer under that fear and oppression of what was going on. And it was just an experience that just—I don't know how to explain it, but you were always constantly worried that you were going to screw something up and embarrass your own government, you were going to screw something up and get hauled away under *their* system, or you would get in some other fracas that would just, you

know, and you didn't want to do it, obviously. And to have that relief: I'm back into a society in which I can make a mistake and then explain my mistake. It was just a tremendous relief and it was just an exhilarating experience, *plus* Bonnie and my daughter Kristi [Kristiana] met me at Frankfurt and we got to go around for a week-and-a-half as a relaxation, post that, in southern Germany. And we had just a tremendous time on that trip before we came back home and started over again on the Junction event and all the other work that we did.

Which one experience is the greatest? I don't know. Just meeting and working with some of these people, and just tremendous folks, of one mind, working on projects together and sharing and allowing *you* to participate or allowing *me* to participate, was just—the whole thing was tremendous. I couldn't pick one out over the other.

That's neat that you loved your work and found such satisfaction in it.

I'm still involved a little bit because I'm still doing consulting work and stuff. The responsibilities are not there but the fun is still there.

Is it with Yucca Mountain now?

No. No, I'm still doing testing, test readiness, operations on the test site, how to function, how to do different things, different programs.

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