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

Interview with Fred Huckabee

January 21, 2005
Las Vegas, Nevada

Interview Conducted By
Joan Leavitt

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[00:00:00] Begin Track 2, Disc 1.

Fred Huckabee: Like I say, I going to be repetition, as far as I know, because I can't—maybe something will jump up.

Joan Leavitt: *OK. Well, maybe we could start with the story of how you hurt your foot.*

I really didn't hurt it. I just don't understand what she was talking about, hurting my foot.

What Frances [Guinn] is talking about.

Yeah. I can't think of anything, when the Russians was over here at our [Nevada] test site, of me hurting my foot in any way. But over at Semipalatinsk, when the C-5A aircraft was coming in—while we was loading the equipment on their trucks, to take to their test site—they loaded this semi-trailer of drill pipe, drill stems, that weighed fifty, sixty thousand pounds, probably; when it was on the truck, on this one truck, I seen a rope hanging down on the back tandems of the semi. Then everything was stationary, there wasn't anything moving, so I was going to reach under the bed of that semi and get that rope and throw it back up where it wouldn't get fouled up. And I stuck my right foot—I was up under, you know, about even with the tire, the back tires on that dual, and the guy pulled—they waved it on, you know, and he started up. And I grabbed that rope and about the time I grabbed the rope and threw it, well, he drove off. And those big tires and everything just run over my foot. And I had my steel-toed shoes on. And the tire wasn't far enough up to my ankle or where my leg started up, you know, and it went mostly—it took all the pressure on my steel-toed shoe. And two or three of the interpreters was there. The interpreters we had were all women out of Washington, D.C. And they said, Oh, my gosh! And so I just—when the truck rolled over, when the tire went on over, like I say, it was probably fifty thousand

pounds or something from the pressure of those tires when it rolled over my foot. They said, `Are you hurt? Are you hurt?` And I said, `I don't think so. Can't feel anything.` And so about fifteen minutes I said, `Well, I still can't feel anything like it's hurting or anything.` So I went over and sat down and took off my hard-toed shoes to see if it had mashed it down or if it had cut over or whatever it had done. Wasn't anything wrong. So it didn't hurt.

Wow! That shows how much of a protection those steel-toed boots are.

Oh, those safety shoes, they take a lot of force. Saves your toes and everything.

Yeah. Well, it sounds like the interpreters either hadn't seen anything like that before or—

Well, they just thought I'd really mashed my foot when they seen that tire on that back tandem just roll over my foot. And I just had to stand there until it went over it because it was on top of it, you know. They said, `Are you hurt?` And I said, `No, I don't think so. I don't feel anything.` Might've made it all numb. It might've just squashed it. So I walked around there a little bit and I said, `I believe I'll just take my shoe off and see if it didn't mash it and it's bleeding in there or whatever.`

So it doesn't sound like you ever had to check out the Soviet medical system, then.

Oh no. No. Well, when those aircraft were coming in, we had some—I forgot what they were called, but they come with the aircraft. We could not go in the C-5 aircraft until they got it unloaded and then we started loading the equipment on the trucks. And they had their own machinery and everything with the aircraft. And there was about nine guys, and I forgot what they called them, but they go around with the—they're transferred—I think at that time there was ten C-5A aircraft with the Air Force. It was all we had.

Wow! That's how many who came over?

No, no, there's five that come over to us, but overall the Air Force just had ten. And when there was big loads of equipment or whatever they were hauling, they would just go all over the United States as called. And each one of those aircraft working for us, for the DOE [Department of Energy] to get that equipment over there, it was a million dollars that we had to **[00:05:00]** pay the Air Force for each one of the aircraft that brought the equipment over, and there was five aircraft, so it cost five million dollars to get the equipment over there, for the aircraft, that we had to pay the Air Force.

Well, no wonder they didn't want to use C-5s to ship it back that same way.

Oh yeah, yeah, we shipped it back by ship. But I forgot what that crew was called. They didn't stay right with the pilots in that one C-5A aircraft. They were moved around to different sections for where they were hauling.

And these were military people who did this unloading.

Oh yes, they was military. So anyway, there was what we call "drill collars" come in on a load with some other equipment, and these drill collars were thirty foot long and all steel except the little hole in the center for the fluid and stuff to go through when you're drilling. But it was all steel and they were eight inches in diameter and each one of them weighed about eight thousand or nine thousand pounds of those drill collars. So the Air Force crew, well, they got them off the aircraft—we had some seals, what we call them, boards for them to set it on where another forklift could get under it and pick them up. You've seen how a forklift picks things up, so there has to be a little vacancy for the forks to get under there to pick things. So these four-by-four pieces of wood—their little forklift they had that come with the aircraft, they'd pick up one or two of those drill collars and then roll it onto these four-by-four seals so we and the Russians

could pick it up and put it on the trucks and everything. And those guys didn't understand heavy equipment and oil field-type drilling equipment—

The Russians? You're talking about the Russians?

No. No, the Air Force guys.

The Air Force guys didn't.

So they had three drill collars on this Air Force forklift from the C-5A and they went over to where we had the seals set up for them to roll them off of their forks on the forklift, roll them onto that timber. And so they rolled it off, and those timbers was about fifteen foot long or sixteen foot long so they—

Now are timbers pipes, again?

No, no, the timber is the four-by-four seals, four-by-four pieces of wood. And so they rolled those three drill collars off and they started rolling, so one of the Air Force guys run down to the other end—

Oh, to try to stop it?

—so it wouldn't go off of the—

Oh no!

—so it wouldn't go off of the four-by-fours, you know. And he just stuck his foot on the end of the four-by-four to stop it with his foot. He just put it crossways on that seal. And those drill collars was rolling on. Like I say, they weighed eight or nine thousand pounds apiece. And so when they rolled into his foot, well, they broke his ankle. They just kept going and hell, his foot wasn't going to stop that, you know. So we had to get the Russians to get their medical people down and everything, and they took him to their hospital and fixed his foot up, put a cast on it and everything. Then they stayed overnight at the Irtysh Hotel. And when the next C-5A aircraft

comes in, they had to stay overnight and there was another crew that has to fly the plane out because it's too long for them to fly at one time. So they had to stay overnight. The next C-5A that come in the next morning, well, they boarded them all up, plus the pilots, and took that C-5A out, and the crew that come in with the plane that brought the equipment, well, they stayed overnight till the next one come in, you know.

[Recording paused to answer door]

[00:09:20] End Track 2, Disc 1.

[00:00:00] Begin Track 3, Disc 1.

So I guess we finished the story on that.

We finished the story on the C-5 pilots. Now I'm curious because Nick [Aquilina] had said when he told these pilots where they were going, it was a real shock to them. Did you get to talk to any of these crewmembers about how they felt about doing this C-5 job, flying in?

Oh yeah. At night, all the pilots and the crew on the plane that unloaded the equipment off the C-5A, well, we'd all just talk and get in our rooms and everything and talk to them at night when we were just hanging around until the next morning. And it was exciting to them. They just couldn't understand all of it. And they never had hauled anything on the C-5A of a drill rig and the equipment, you know. And they said, `We just can't figure this out with all this equipment.` They said, `When you get that all together, can you send us a picture of what it looks like when it's all assembled?` And so one of our H&N [Holmes and Narver] guys took a picture and sent it to them. He got their address and sent it to them. But they were really thrilled with it. Yeah, we had to—they had to send a Russian navigator to Helsinki [Finland], and the C-5A left Indian Springs [Nevada] and made its route and finally landed at Helsinki and stayed overnight. And the Russian navigator would come to Helsinki and board the

plane with the American navigator, so when they got into Russian territory, they wouldn't be shot down. That navigator would be on board, telling them what route to take and everything. So it was pretty amazing the way all that was put together.

They probably knew that this was unheard of. They probably never would've dreamed that they would've flown into Soviet airspace like that.

Oh no.

Because if you did that, you got shot down.

That's right.

You want us to do what, *and take this* where*? And* what *is this stuff you taking? Did they get all that much in the way of explanations?*

Oh yeah, the drill crew, every time a plane would leave Indian Springs, there would be one of the drill crew that worked on the drill rigs that would board the plane and go over with the equipment, so they was in discussion on the way and probably different things was told to them. But they were explained some things in Helsinki, also.

Well, tell me what you remember about the Soviets' reaction to your drill equipment and some of the—

Well, when we went over with the twenty-man delegation to look at their test site and talk about the verification program and how things would be done—what things they had, [what] we might have to bring and everything, [what] we couldn't use over there—they set up a little compound out in the forward area of their down hole equipment to go down with the device and different trucks and different types of little cranes, which was all smaller stuff than we were used to because all of our stuff was more gigantic, *weighed* a lot more. Their biggest hole was a thirty-six-inch hole that they set their device off in, and ours was up to 120 inches, you know.

Wow! Thirty-six is what you guys started with, though, wasn't it? So they had never grown like you had.

Oh no, no, they hadn't grown into different sizes of holes. Thirty-six inches was their big hole, and that's what they set their devices in. And so they set everything up, and then we looked at their equipment and they toured us around, showing us the different things, and took us to a drill rig. It was, like I say, when we was over there, it was thirty below [zero] and they didn't drill in the wintertime. Their drill rig was shut down, but it was set up over a hole where they had been drilling, and they just shut it down because it was too cold. And so they took us by one of the drill rigs and showed us one of their drill rigs and their equipment like it was set **[00:05:00]** up. And during that process, it was about thirty-five miles, kind of about the same the way it is at the test site out to our forward area from Mercury, same way in Semipalatinsk at their test site. They had a main complex and then on out about thirty-five miles, well, they had their testing area. So we had one or two meetings in the main complex of Semipalatinsk where they housed us; and we ate and had different meetings there. Then they took us out to the site to show us all this different equipment they had and where we would be staying when our personnel went over there, in this two-story-type military barracks-looking thing. And then we just went out in the middle of *nowhere* in their testing area where they had done drilling around and shot devices off and they had a big old military tent. It was probably thirty by forty or something, and it had double doors in the tent where you come in, and it was cold; and then there was another set of borders or tent structures where you come into the little anteroom. Then you had to go through on into the tent. And they had chairs in there and everything where they was going to give us a presentation on how they tested, the process they went through and what all they done and everything.

And this is in January.

Right, it was in January.

Was it cold?

Yeah, it was thirty below, and there we was in that tent, and it had a canvas floor on it. We wasn't standing on the snow. It was a canvas floor on this big old tent. Heavy canvas tent. It was a military-type tent. And so they had seats in there and everything. And so our twenty-man delegation, we sat down, and up at the front, well, they had a little deal where they was going to give a presentation. Instead of using viewgraph machines, they didn't have those, they had a clothesline-type of deal across the front of us, looking at them where they was giving their presentation, and they would clip their—

Papers and graphs?

—their paper on there, like a clothesline and everything—

Oh! How interesting!

—and slide it across. It wasn't viewgraphs to show us on viewgraphs. And then they would talk off of those to us and the interpreter would interpret it to us. But they didn't have viewgraphs and everything. So it became lunchtime. And so they shut down, and over on one side of the tent they had a bunch of tables set up and it had satin-type—not satin but what am I trying to say? Tablecloths. Real nice. Red tablecloths. Not velvet. What am I trying to say?

Linen?

No, it wasn't linen. It was—

Fancier.

It was more fancy.

And elegant.

Yeah. And they had them all covered. And there was about five Jeeps come up and they'd brought lunch from thirty-five miles away in these Jeeps. There was about five girls. They brought all of that food into that tent, set it up for us to sit down at the table and eat. And it was silverware, it was sterling silverware and—

China? Did they have china?

It was china, had it all set out. They treated us pretty well. They thought they was doing a good thing. There we was, right in the middle of that testing area. And so that was exciting.

Do you remember what you thought of their food, their cooking? I mean did you like it?

Well, it was different, let me tell you that. If it was meat—most of their things was more of like a summer sausage, you know, the round summer sausage that you buy, that long? [Indicating length] A lot more fattier and greasier.

You said they served a lot of tongue.

Oh yeah, a *lot* of tongue in our complex when they'd cook, they had a *lot* of tongue. And then **[00:10:00]** their milk, we wasn't sure whether it was mare's milk from a horse, a mare. Milk from a horse or milk from a goat, because we never did see any cows around there. But I liked all of it. It was different. It was different. And they thought they was—it was all real elegant and everything every time they fed us, and with the twenty-man delegation when we was there, we had two or three dinners at night, and like I told you before, they had a little bar set up in this room where we ate and everything.

Now how long were you there for that initial—?

Fourteen days.

Two weeks! Oh, that was longer than they were—

Yeah, they was here about eight days or ten days or something like that. But we stayed in Moscow a couple of days where they took us on tours and took us into the Kremlin and went through their armory and where Ivan the Terrible, when he was a kid, lived in there. And then took us through the—I can't think of what it is, outside in Red Square, that big church?

The St. Basil?

Yeah, St. Basil, we went through all of that and to Lenin's tomb; then went inside the complex, and that's where I was telling you about the liberty bell-type bell they had in there, all cracked, and it was ten feet or twelve feet tall, big bell, and had a crack in it. And then they had a lot of, I called them missions but it was their different church, their Orthodox-type churches—

Kind of like monastery-type things?

Yeah, they were inside the Kremlin, on the grounds inside. That used to be a fort, I guess, because you got to go over a little bridge with water that runs—what do they call that? Like a castle?

The moat?

Yeah, moat; it had a moat that you had to go across. And then it's all red brick on the outside and I guess it's forty foot high or something, *all* the way around that complex of the Kremlin. Then when you get on the inside, for the grounds and everything, is where they had these monasteries, and we'd go through all of them. And there's one that had the gold domes on the top. Then we went inside the Kremlin, went into their armory.

Now are the monasteries just public buildings now, or are they, you know, being used or—?

No, I don't think they're being used. I can't tell you that. I don't know if they are or not.

Because it seemed like at Semipalatinsk there was a monastery there, too, wasn't there?

Yeah, we went to three or four places during my three times I was over there, to different monasteries at different little cities. And they're all over the country. Out by the University of Moscow, they've got seven or eight around the University of Moscow. And then we—

Did your interpreters ever do any explaining about these monasteries or anything?

Not really.

Because that's part of their history, I guess.

I didn't understand all of it but they would talk a little bit. They showed us where they had the Winter Olympics. It was pretty close to the University of Moscow. And they still had the ski slopes and everything that they'd ski off of, make their jumps and everything. Where they trained for the Winter Olympics back in the eighties sometime, '84 or '85 or '86. They had all of it still built up there right by the University of Moscow. And it was exciting. It was exciting.

Now tell me about some of your experiences with some of the Soviet technicians, whether it's at Semipalatinsk or whether it's at Geneva; what your impressions of them were, maybe some of the experiences you had with them?

Well, most of our experiences was just talking across the table as we was setting up these protocols and everything. And shaking hands every morning when we'd go into the meeting and then shake hands and then we'd go back to our mission. Every other day, well, we'd go to their mission once and then they would come to our mission.

Now there were several working groups, I guess.

Yes, there were about five or six groups putting these protocols together.

And what was your group called?

[00:15:00] I forgot what it was called. It was more on the scientific side of going down hole with the devices and the drilling activity.

Now, there was a question I had. How large, because you were talking before that the Soviet holes were thirty-six inches.

Right.

How large was the satellite hole? How large did that need to be?

Twelve-and-a-quarter.

OK, so it didn't need to be very large.

No, it was twelve-and-a-quarter. The only thing the satellite hole was to be straight and plumb and thirty meters away from the ground zero hole so it could be straight and parallel with it. And all that went into that was diagnostic cabling for our type of verification when a device went off. When the device would go off, well, the fireball would blow these diagnostic cables in two and electronically they'd go up to a trailer park and it would say where the ball of fire went up and cut the cable, and it would give them an idea of how large the device was, whether it was a twenty-megaton or a ten-kiloton or whatever of difference.

Now did they tell you what their concerns were about the Americans drilling the hole, if it would ruin their hole or what they were afraid would happen?

No, no. Over in Geneva, when we were putting the protocol together, we said the Americans on our verification program had to have the satellite hole, and it had to be straight and plumb and thirty meters away from the ground zero hole. And during those discussions, they said—we had gyro-type equipment that we used to keep our holes straight. We could change configurations of the drilling equipment with different equipment to keep the hole straight with a gyro in it and everything, and it would take pictures to see where we was at every sixty feet or something and see that we wasn't getting off the course of staying plumb and straight. And they said, We haven't got that expertise. That's where the discussion went in, Well, you probably

need to bring your U.S. equipment over to drill the hole. And then in the process, that being determined we was going to do it, I had told you that they tried one on their own and General [Arkadii D.] Il'enko had them to drill one, saying they could probably do it, but then in Geneva—

Now did they just try once, or did they try more than once?

No, one time.

Just one time.

One time. They had one hole and it wasn't equivalent, so they cemented that one off while we were drilling the other hole to be used. And in Geneva, we would meet on Saturdays or Sundays. We usually didn't work at the missions or work; we was on our own, you know. And we'd see them in a park when we was walking, or around Geneva, with them in a group and us in a group, and we'd stop and talk if we had an interpreter or something, shake hands, say hello and everything, but not too many discussions of various things.

Were you surprised at how willing they were to work together? Wasn't this quite a cultural shock?

Oh yes, it was. They're very smart people, I'll tell you that. But you could always tell that they wasn't sure that we were telling the truth as we were making the—

Kind of suspicious?

They was suspicious and everything. And we was probably as suspicious—

Yeah, that was my next question. Do you think the Americans were as suspicious?

Oh, yeah, we was suspicious of different things, when we'd try to change something in the protocol, No, we'll do it this way or we'll do it that way, or we need a little

more time frame, or whatever. Then there was arguing of coming up with the exact protocols—

Were there ever times when you felt like, All right, this isn't going to happen, when they were almost looked like they were being stonewalled? Close calls?

No. No, not really.

Never any close calls.

No, not really.

They were determined this was going to do it.

When we'd have a meeting and come up with things we were going to put in the protocol, then after we'd have our meeting, we'd go back and put all that together, and then transfer the papers **[00:20:00]** to each other to read. Then the next day, we'd go back over that, that that was right, or we'd make a few changes or something, just for that last day's conversation. And so it went on for a period of time, trying to get it straight and everything. And in Moscow, when we went over for the Batyr Guriya or whatever, I can't remember how to pronounce [it], then there was a lot of conversation putting that protocol together because of time frames of doing certain things going down hole with the equipment. Well, we need more days, or *they* needed more days, or we didn't need as many days, to do this particular project. And it was a lot of arguing and a lot of negotiating. And they would stand firm with theirs and we'd stand firm with ours. Roger Ide was our spokesman on our side, and then there was a group of us on each side that would discuss through *him*, he was the spokesman, and we'd work through that with one interpreter on the other side. And it was a lot of negotiating because they'd stand firm on what they thought, we'd stand firm on what we thought, and that might go on for three or four hours.

Do you remember how you felt the first time that you realized that you were selected to go over to Geneva?

My wife liked to went nuts.

Did she? I bet she was nervous.

Oh, she was nervous.

Was it nervous or was [it], How did they pick you?

I just couldn't figure out how they picked me. But they wanted somebody with drilling experience because we were going to go over and drill those satellite holes, and then I understood the testing operation we had at the test site and everything under my responsibility—

Now were you head of drilling? Is that what you were for—?

No, no. When I was with REECo [Reynolds Electrical and Engineering Company] before I went over with the government, I was the Project Manager of Drilling. And then when I went to the DOE or ERDA [Energy Research and Development Agency], we started with ERDA, Atomic Energy Commission [AEC], then ERDA, and then the DOE, then I was called Chief of Construction. And that was everything from Mercury to the forward area, and it was the tunneling and the drilling and the construction areas of going down hole and everything, you know, for LLL [Lawrence Livermore [National] Laboratory] and Los Alamos [National Laboratory] operations. So I was involved working with REECo construction people on the setting-up for device emplacement with Los Alamos and LLL on different aspects of doing different things. With the DoD [Department of Defense] for the tunneling operations. And then the feeding and the different construction projects we had, that was my responsibility. I had nine engineers working for me. The diagnostic cabling, one of my engineers was for diagnostic

cabling, for ordering that equipment and being sure it was set in the proper place and that REECo was doing the appropriate jobs.

Now how long had you been Chief of Construction, then, before the JVE [Joint Verification Experiment]?

From ‘77 till ‘88. Yeah, till ‘88. So I was Chief of Construction from ‘77 to ‘88 before I went to the JVE. Then I was with REECo when we started underground testing from ‘62 to ‘77. Thirty-one years overall at the test site.

You did. It’s amazing to me how the test site, the career people who took it when they knew nothing and grew with experience, and then—

Right. Oh yeah, everybody was dedicated. It was a dedicated bunch, from the laboratories right to the labor. I mean right on down the line. It was a great group. Good group.

[00:25:00] *And those that made it a career also kept improving the expertise, you know.*

Oh yes.

And once they stopped testing, some of that starts to get lost.

That’s correct. That’s correct. Like the *Evolution of Drilling* film I showed you the other day. Like we started like we knew in the oil industry of drilling holes, but the things they were wanting at the test site, we hadn’t done that particular thing before.

Was different. And you had to do—

They wanted bigger things.

And you had to design—

And so we had to make designs and go out and talk to different drilling companies that manufactured bits and pipe, because everything was larger. So that was the evolution, like you seen on that film.

Now was this in REECo that there was a drilling group that made the recommendations on the bits and the drill equipment? Was there a group, an organized group, or was this in the process of problem-solving?

No, in the Drilling Department we had engineers for design of what we wanted, but also we had Holmes and Narver and Fenix and Scisson, and they also had design people. And so when we'd come up with what we thought we needed, then those particular people would talk with each other and come up with a final design to go out for order and everything. So it was a big process. Everybody was really involved and dedicated to what they were doing.

Well, and it must've been really interesting, too, for you to be able to compare the progress and the drilling with the Soviets, you know. In drilling, they were, what, thirty years behind.

That's right. That's what I noticed when I went to Moscow, and when we looked at their equipment when I went with the delegation over there. Take a car. A car might look thirty years old from our designs, but it would be a brand-new car. So like a Ford car, next year there'll be a different model and a different look to that Ford car. The next year there'll be a different—they don't do that. They had a design and it might be twenty years old, and they just manufacture from year to year and call it a different year, maybe, but it looks the same. And they were about thirty years behind us.

If it ain't broke, don't fix it.

Don't fix it, that's right. That's right.

Now I was surprised to learn they had American products like Coca-Cola over there.

Pepsi-Cola. It was Pepsi-Cola. Yeah, it was in a Pepsi bottle and it had the Pepsi logo, but it was in Russian.

And I wondered who produced that.

Well, I'm not sure that Pepsi didn't have something to do with it. I think they probably did, or they went to Pepsi-Cola and got two or three of their people over how to make it and everything, but I think Pepsi was probably involved. When we took the drilling equipment over and when I come out of there back into Moscow, well, I think there was three of us coming out at that time. I was there sixty days and then we moved people around and everything. And so they took us on some tours in Moscow and as we were leaving—what was I going to say? Oh, while we were there, well, McDonald's had built a McDonald's in Moscow.

Really? This was before the fall of the Soviet Union? Or was this after the fall of the Soviet Union?

Well, let me think about it. No. No. In '88 when we went with the delegation, it wasn't there. And there was a pizza place there, too, an American—I can't remember which pizza it was.

Pizza Hut? Godfather's?

I think it was Pizza Hut. But this was in 1991 when we went back over for putting the protocols **[00:30:00]** together for their test that we were going to verify over there. And we had those meetings in Moscow. And so they had built this McDonald's downtown Moscow. It was probably six or eight blocks from the Kremlin. And so we was going to go get a McDonald's, see if it tasted like McDonald's. There was three or four of us together said let's go get a McDonald's and see how they taste. So we went down there, and it wasn't a McDonald's like the McDonald's are set up for—

Not the arches? Not the golden arches?

Well, they had an arch but they didn't have it set independent by itself. It was in a series of buildings, and some that they had modified from older buildings. They just put McDonald's in it,

with a bunch of storefronts and everything, they'd took three or four of those and made a McDonald's in it and then put the arch and everything on the outside, just up on the side of it.

So we went to McDonald's. And there was a little park or something and it was probably two blocks square of a park. And when we got there, there was people lined up in line to go into McDonald's that come all the way from McDonald's, went down the sidewalk, around that park, and around the *other* side of the park, and then down another sidewalk away. I'd say it was probably a mile long of people waiting to get into McDonald's. So we said, `Well, we'll just wait.` And it took us about, oh, pretty close to two hours of progressing in that line to get to McDonald's. And when we got in there, well, it was all in Russian and everything, but we could see what it was, and we had an interpreter with us, too. And I just wanted a Big Mac, you know, and French fries, they had French fries. And they way I understand it, McDonald's sent the meat over from the United States and they sent the potatoes over from the United States. It wasn't Russian, and I'm not sure that the lettuce and stuff wasn't from the United States. But the Russians was really—

They were really interested in it.

Oh, goodness gracious.

McDonald's. Do you remember if it was expensive, more expensive—?

No, it wasn't because the *kopek* was, I think to our dollar, we probably got five dollars or better of Russian money for one dollar of ours. So it was two-and-a-half or something like that. We had all Russian money, that we was using. We'd exchange our money to Russian money.

Well, you saw some really interesting changes, then, from '88 on, too, didn't you?

Oh, yeah. But anyway, when we finally got into the complex of McDonald's, they had about eight or ten girls – they had a cash register at each one – taking orders. And then it had a[n]

upstairs to it where you could go eat, and a downstairs with tables and everything. And I'd guess there was probably seventy-five to a hundred people in there eating. And they had these ten girls taking orders. And they was doing that fast. You know, you'd make your order and pay them and they'd get it back out of there pretty quick.

Boy, the Russians were a good market for McDonald's, then, weren't they?

Oh yeah. Then later on, well, we went to the Pizza Hut, and it didn't taste like our pizzas, but it was a Pizza Hut.

So they were trying to Americanize in some ways, then.

Oh yeah, they were. And that was in '91. That was after the—

JVE.

Well, after the JVE and the wall was broken down and everything in Germany and everything. So they were trying to Americanize. It was exciting.

Now do you remember that hamburger? Did it taste about the same?

Oh, oh yeah, it was good.

Oh good!

Yeah, it was good. It tasted good.

OK, then they were able to transfer their company secrets, then.

[00:35:00] Oh yeah. Yeah, it was good.

I understand that some of the drillers, when they were there, would pick up old tools on the drilling site, old Soviet tools and things, and there were some repercussions from that. Do you remember anything about that at all?

I don't. I don't recall any—I know we told them not to take anything, but I can't recall any—you mean like wrenches and stuff like that?

Oh yeah, just junk that was just kind of you know, and it didn't look like it had any value but it was one of the few souvenirs that they were able to just bring back.

Right. I don't recall any big repercussions. We talked to them about not taking a bunch of things, or ask could they have it or something like that.

OK. Yeah.

And then their pictures they would take, they wasn't like our pictures. I don't know if you've seen any of the Russian pictures or something, but they're kind of dull and everything.

Well, Chay McWilliam had an album that they had given to him of pictures that they had taken.

Yeah. Chuck McWilliam. Chay—you call him Chay?

Yeah, he calls—

His wife's changed him to Chay.

Yeah. Oh, it was his wife who changed him?

Yeah. Chuck is all I remember.

Yeah. And he showed me some pictures that he had, which was very interesting because they took pictures of—

Is that when we was given to Il'enko some presents and stuff? In front of the complex where we stayed and everything?

Yeah.

I've got those pictures somewhere. I don't know where they're at. I was hunting them. But I've got ten thousand pictures, not of just Russia but of everything, and I just hadn't sorted those.

A career's worth of memories.

Oh yeah. And I was trying to find some in particular for the JVE bunch when it was thirty below that they took a picture of us, the Russians and us together.

Oh, that'd be good.

We all went down where we was staying in Moscow and bought us one of the Russian—

Hats?

Hats, yeah.

The fur hats?

Oh yeah. I've got one downstairs. I'll go down and get it if you want to see it. You want to see it?

Oh sure! Yeah!

Bought it at the hotel we was staying at.

[00:37:36] End Track 3, Disc 1.

[00:00:00] Begin Track 4, Disc 1.

When we got on out to the test site, well, they—

OK, you're describing your Russian hat here. So how much did you pay for it?

I think it was about forty American dollars.

And this is what you got when you were one of the first twenty.

Right.

To sit in that tent.

Yeah, I'd wear it. When we got on out to Semipalatinsk at their site, well, the General asked anybody did they want a military one that the military uses, and two or three of them said yeah, I'll get one.

Is this a military one?

No, that's not the military one.

And how much did you pay for this?

Forty American dollars. Now it was more in Russian money, but I think it was equivalent to about forty dollars.

Oh, that is so beautiful.

It comes down, you know [demonstrating how to wear hat].

Oh gosh, what a souvenir!

Then you can take these flaps down and pull the flaps over your ears.

To put it over your ears.

Put them over your ears.

Now did you get to go into stores that were just for foreigners?

Oh yeah.

Is that what this was from?

No, that was a kiosk. Well, it was a kiosk of all Russia but it wasn't just for foreigners. Anybody could go in there and buy different things.

Now did you see their different stores, that there were some that were just for foreigners and some that were for regular people?

Oh yeah.

Can you remember what just the foreigners' stores looked like, or how they compared to the regular people's ones?

About the same.

They were about the same.

They looked about the same. It was right across from the Kremlin, and I can't remember the name of the building, but it was one of their more fancy stores. But it wasn't really fancy when

you got in it. But it was about four stories high, then you could go around to different things, you know, of clothing and everything.

Now were you able to pick things off from the rack, or did you have to take a number?

Oh yeah.

You were able—

No, no, you have to take a number.

You have to take a number.

You have to take a number. And then *they'd* go get it and then bring it back and then you'd pay for it. But you could go around and look, but not pick it up and take it. You had to get a number and *they* went and got it and brought it to you.

Did that seem strange?

Oh yeah. It was a little bit different.

We Americans just are so self-help, aren't we?

That's surely right.

And they're like, don't touch. You can look but you cannot touch.

Right. And their subway is beautiful.

Really?

Oh yeah, the subways are beautiful at Moscow. It goes all over the city. In '91, we traveled more by subway, when we was putting the protocol together for the verification for the two Russian tests. We went to the Russian circus and different places all over town, different restaurants that we'd heard of. We'd exchange with our interpreters. I couldn't read any of the Russian. But you'd go along in the subway down below and you'd have to get off and get on another one that went another direction underneath Moscow. But it's elaborate and pretty. It's all marble down

underneath, and I'd say the majority of it is over a hundred foot deep. And every time there was a station, they'd stop and board and get on and off. It's all marble. And people are just running everywhere, waiting on—

So it sounds like there are a couple of stories, then, to go up and down?

Oh yeah, they got escalators, and the escalators—our escalators might be thirty-five foot, to get on the next deal and then you'd go thirty-five foot more. These probably went seventy-five or a hundred feet, one escalator, and there was a toll to go in it. You'd put a *kopek* in to enter and then you'd paid for your ride. So you'd start down the escalator and you would be like this going down where your body was like this. And then right on the other side—

Is it a steep incline, is that what you're saying, very, very steep incline?

Oh, yeah, and so it made you feel like you were like this, and then you'd go look over to the other side of the one going back up, and those people looked like they was like this, you know [demonstrating a steep angle].

I hope they have something to hold onto.

[00:05:00] Oh yeah, it was a regular escalator-type deal. But they have an *elaborate* system and it—

Do you think Moscow's the only one that had that kind of thing, that kind of a—?

No, Semipalatinsk had—

They had subways, too?

Oh yes.

OK, so that was one way that they were very intent on modernizing, then.

Right. But Moscow was more elaborate than any of them.

Now Semipalatinsk, I was surprised that that was a million people. That was a very large city.

Yeah. Now the Irtysh River runs through Semipalatinsk.

For some reason I had thought that Semipalatinsk was a small town.

Oh no. Well, what we called their test site, I really don't know what their test site was called, but we called it Semipalatinsk. It was probably called something else, but we called it Semipalatinsk, and then about sixty miles was the big city of Semipalatinsk. And it was over a million people. It was a big city. And the Irtysh River that runs through that city, it's probably a quarter of a mile across that river.

Oh, it's a big river.

A *big* river. And it goes up towards the test site, or drains back down, or one way or another. And they use those air boats, foil boats or ever what you call them, the big boats where when you start traveling on the water, well, they'll raise and be on top of the water.

So are those kind of like a fancy motorboat, is that what they are?

No, they're bigger. They were probably thirty foot long and fifteen foot wide or something. Airfoil, I think they call them, airfoils.

Do they carry passengers?

Oh yeah.

Oh, they carry—for getting across the river?

Oh no, no, not to get across, just for going down that river and probably for tours and different things like that. They've got those in Moscow also, because we took a tour on the Moscow River with one of those airfoil boats and went down about five or ten miles and turned around and come back.

Now that's another thing they're proud of, then.

Oh yeah.

Now are those government-owned boats, then?

I don't know that. I don't know. More than likely, yes. More than likely. And the housing and everything, it's all seven or nine stories high.

Now are these like apartments or condos or—?

They're their homes. They're their homes.

Their homes. OK.

In Moscow. In the bigger cities, it's just all big buildings, and ever which tsar was in charge at that time, his was a seven-story type or a nine-story type. And they're all drab-looking. They're just square, you know. The architecture is not real good on them. They're kind of gray-looking. But they're seven stories or nine stories, and it's apartment houses or it's their homes. And the way I understood it, the government pays for their homes some way or another, and they get some kind of token or something for pay. I don't understand that. You know, their medical, the government pays for their medical and their homes, and they get some kind of tokens or something to buy their food and stuff. There's not a lot of money exchanged, the way I understand it. Or *then*. It was then. But, you know, it was awful drab-looking in January when we went in there because the snow was everywhere in Moscow and everywhere. And they've got big old wide streets, probably six or seven or eight lanes, going across the streets. And when the traffic goes, well, it throws the snow and the slush up on the sidewalks and on their windows and everything and it's just dirty-looking. But in the springtime, it's pretty. It's really a pretty place. It's pretty.

Well, I understand Viktor [Mikhailov] loved the trees that are around Moscow.

Oh yeah. It's pretty.

And that he was very interested in the trees that we had here, too.

Right. It's pretty. And then they've got a lot of things like we've got in Washington, D.C. They've got different places set up for when the Germans got nearly into Moscow—

Historical sites?

Yeah, the historical sites and everything.

Monuments and things.

Yeah, because the Germans just *nearly* overtook Moscow when they come across, and then they **[00:10:00]** diverted them back and sent them back the other direction.

Well, the French almost did, too. There's quite a heroic story about that, too.

Oh yeah, they've got a *lot* of memorials and sites and everything all over Moscow. All over *Russia*. All over Russia. But a little old guy from Brownfield, Texas, I didn't think I'd ever be in a place like Russia and Moscow.

It probably did make you feel, wow, how did I get here?

Oh goodness. Goodness. It was something else.

Quite a privilege, wasn't it?

It surely was. Surely was.

To be among the first twenty.

Yeah, it surely was.

And to participate in this international—good old Texas know-how.

Yeah. Right.

I like the way Nick says that. "Texas know-how." And it is. I find this interesting, the drilling aspect of the test site. I mean that has been a part of the story that has been very much of a surprise to me because I was aware of nuclear testing, but the miners and the drillers, of course

they used them because it was underground, but it really comes out, I believe, in the story of the JVE, how they were a very, very vital part of the whole team.

Oh yeah. Well, we were a vital part at the test site when underground testing started. If we didn't have the hole in the ground, they couldn't put a device off. So it all worked together and everything, and it was a full dedication from the laboratories right on down to the laborer, like I said. Everybody was dedicated for doing their portion..

Well, and what I think is interesting is the great respect of everybody bringing their pieces to the whole, you know, and that every part was necessary. You couldn't say that one part was more important than the other.

That's right.

There's more of a sense of equality, almost like Knights of the Round Table.

Yeah, that's right, it sure was.

Because you could not do that test without the labor. You could not do that test without the—

Without the electricians.

Yeah, without the engineers.

Right. Without the diagnostic cabling. Just right on down. We needed EG&G [Edgerton, Germeshausen, and Grier], their expertise for the electronics and everything, for getting all the information back through the trailer park and setting up that equipment.

Now did you see the growth of the organization at the test site through the years? I mean because towards the end, it was eighteen organizations working together to do a test.

Oh yeah.

And I don't know if it was that way when you first came or not.

Oh no, it was like a zoo when I first went out there because underground testing had just started and they wanted to get as many tests as possible off in the first year and the second year and the third year. I mean it was very critical to get as many tests as they could and to get all this information that they needed.

There must've been a lot of butting of heads there at first.

Oh, just drilling equipment. They didn't have drilling equipment at the test site. So the process had to go—they started going to these oil companies, saying, `Could we get a drill rig from you to come out, and can we lease this rig and bring your people with it and drill these various holes?`

But you saw, they progressed with order, then, and with organization, from the zoo.

Oh, oh yeah, but it was, like I say, this drilling equipment was coming in and it wasn't just one drill rig, it might've been seven or eight coming in through the gates at the same time with *all* this equipment that came with it, and trying to get it to the test site and get it organized. And at the same time, we were trying to test, also, with some equipment and some drill rigs that was there. We was short of equipment, so we'd go borrow or steal, ever what you want to say, some equipment from this—bits or subs to make the connections or whatever, so you could go ahead and do the job.

And also it seems like they learned how to use fewer drills.

Oh, yeah.

Fewer, fewer, so that they could do the same job—

Well, when we started, say, in the latter part of '62, I think we had thirty-eight different types of drill rigs out there. At night you could go out in the forward area and get up on Rainier Mesa **[00:15:00]** above Area 12 camp and it just looked like a big city out there of lights. It was all new construction where they were building locations for the drilling equipment and locations for

device emplacement and just all kind of construction going on. And that desert was dry and the wind would blow or the vehicles that was traveling, everybody was busy, and these vehicles was going every direction out there. You could just watch it from Rainier Mesa. And sand would just be everywhere, the dust and everything. Then as that progressed, well, it got more stable and everything and you didn't have as much dust and everything. But *then*, everything was new and you was cutting up bare ground and everything and the dust would be flying.

They probably were demanding a lot of holes, too.

Oh, they had work—there's times that I've went into the drilling office and they would have programs to do that you could just take your pick which one you wanted, there were so many to be done, to go get it done. And then as the evolution of drilling—when we first started, like we were drilling thirty-six-inch holes, and then it went to forty-eight like it told there, it was taking anywhere from thirty to forty-five days to drill one hole. Now this was thirty-six or forty-eight-inch holes, maybe forty-five days. When we finished out there in 1993, we were drilling 120-inch holes in ten to twelve days. So that's how far we had advanced. And doubled or tripled the size of the holes and everything. But it just took more design and looking at the type of fluids we were going to use to get the material out of the ground. It was just an every-day affair of doing something different to make it better and more efficient.

Now how many people are on a drill crew?

A drill crew is usually five people, and there's three shifts. That's the way it used to be in the oil industry. But that changed to what they call four shifts. You'd work what they call six-and-two. You'd work six days and then have two days off, and you'd do that with four crews instead of three. Now when I say three crews, I'm talking about eight till four of a daytime, four till twelve at midnight, for one crew, and midnight till eight the next morning, which that consists of three

different crews. And used to, they used to work seven days a week, eight hours a day, fifty-six hours a week, not have any time off. Then we went to a different crew and started working six-and-two, and so you'd work six days on and two days off, and that panned out that the ones that was off was coming back, taking the ones that went off, and it worked good with a six-and-two program. And there was a rig superintendent and five—a driller and a derrick man and a motorman and two helpers on a crew, and then a rig superintendent was over the whole thing for the twenty-four hours. Well, let me back off. When we started drilling with air, well, then we had an air compressor, so we could call it six people, if you wanted to. There was an air compressor man with the big air compressors we had when we were drilling with air and reverse circulation.

So who was the crew, then, at Semipalatinsk when you were the supervisor there?

How do you mean, who was the crew?

Well, Larry Neese—

They was off the test site. Oh. Oh.

Larry Neese. Yeah.

Oh. Larry Neese and Jerry Blevins, and then we took three more rig superintendents, and then there were five men for each crew. And we worked seven days a week with them. We didn't work the six-and-two over there. They worked seven days a week.

Was it twelve hours a day?

[00:20:00] No, it was eight hours a day. We had three shifts. And I know it wasn't six-and-two. No, it wasn't six-and-two over there. And it was the drill crews that we took off the test site. We didn't go out and hire them just for the—it was the expertise we put together out of the Drilling Department to go to the Soviet Union.

Do you remember the problems that the Americans ran into in trying to drill that geology?

Yeah, I remember some of it. They said we couldn't do things with different types of equipment, the Russians did. So we come up with some different types of bits that we wanted to take with us, and some different types of fluids to put in our—drill fluids to drill with, took it over on the planes and everything. And it was more of a shale [type]. We drilled with water and barrels of different types of chemicals and stuff that we took over with us because of the shale problem they had. And so when we started drilling, well, it was awful—we drilled pretty good for the first three hundred feet or something, and then it wouldn't drill just right where they said they had problems. Well, we started having the same problems, so we changed to what we call a DYNA drill. Instead of a certain rpm [rotations per minute] of drilling the hole of the bit turning, you know, the rpm, we put this DYNA drill on the bottom and the fluid made it go maybe four times faster, and we would cut through that. Instead of using a teeth-type bit, well, we put button-type bits on, which we had taken with us in case we run into a problem. And we did have a problem for a while but then we got to going right using the DYNA drill and started progressing. And then when we got down to, oh, eighteen hundred, two thousand feet or something, then we had to start taking cores and bringing cores out for the geology to look at, where the device was going to be. And taking a core about that big around [about 3 inches in diameter] that we would bring out, it would be a continuous core that we would drill. And we had problems with the diamond bits that we took over. A diamond bit looks like this [showing an example]. Those are black diamonds. That's really black diamonds in there. That was given to me years ago. But anyway, that's the way the core bit looked. And it would wear those black diamonds out, the way it was trying to drill, so we had to order some different type of coring equipment, and I can't think of what the name of it was. But we were having problems with those diamond bits, just wearing them out and couldn't get any core, until we ordered this different type, and it took about five

days or six days to finally get it over there. And so we started getting core out of the hole there. So we did perfect what was going wrong.

Boy, you sure had to do some problem-solving, didn't you?

Oh yeah.

[00:24:25] End Track 4, Disc 1.

[End of interview]