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

# Interview with Robert Friedrichs

**February 25, 2004**
**Las Vegas, Nevada**

Interview Conducted By
Mary Palevsky

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**Mary Palevsky***: As I said I thought we would start maybe with a little bit of your family background. I understand that you sort of grew up in this general part of the universe known as the desert southwest.*

**Robert Friedrichs:** Let me step back a little bit and tell you about my father and mother first. My father was a first-generation American. His parents were both born and raised in Germany and then immigrated to the United States, settling in Wisconsin in the Sheboygan Falls area. My mother has English/Irish/Scot mixed background and her parents, although born in the United States, I believe they were first-generation American, and they were in southern Utah.

So my father worked for the railroad. In fact he was one of the founding officials for the union, the maintenance of way employees union here in Las Vegas with the Union Pacific Railroad, and was a union organizer in addition to his regular job. He in turn met my mother who was living with my aunt in Barstow, California at the time and my aunt, being the good matchmaker, made sure that her younger sister got a reliable man.

And so they hit it off and married and then lived in various locations both in southern Nevada and in California. So when I was born they were living in Desert, California which is just over the state line, right up a dirt road from Nipton, California, so people driving to and from **[00:05:00]** L.A. [Los Angeles] will recognize the name Nipton from the highway sign and the overpass and the road that goes off to nothing.

And so for the first six years of my life I also lived in Desert, California, but I was born in Las Vegas since that was the nearest city of any population. And in fact I was born in the Las Vegas General Hospital on 8th Street, which after being a hospital became an alcoholic rehab facility and then a seniors' retirement complex, and then in I believe 1993 or 1994 finally burned down. But it was a two-story building roughly one block off Fremont on 8th Street. And there were only two physicians in the hospital, and so when you walked in the front door you went to the doctor on the left or the doctor on the right and that was it. And anyone from that time period essentially was delivered by one of those two physicians. So it was a very small community at that time.

Then after making sure that everything was all right they took me to Desert and we would come in and out of Las Vegas probably once a month.

*So how long would the drive have been in those days and what were the roads like, do you remember?*

It was a two-lane paved road, not any kind of edges on it or anything, I mean it was essentially two-lane and you pulled off into the dirt and that was it. So the driving was routinely about fifty-five miles an hour so it was well over an hour to drive into Las Vegas. Well over.

And of course Las Vegas had a very small population then. Recognize I was born in 1943 and I can vaguely remember when the population broke fifty thousand people, and I mean that was just phenomenal to the individuals that had been here from the very early days. And the town, I watched that evolve from essentially just a few streets off Fremont and Main to what it is today.

*Yes, it's really unbelievable.*

But it's sort of strange to drive around and try to exactly pinpoint where certain things were. Different hotels early on, different ranches that have been totally swallowed up, no longer any trace whatsoever, and the city really grew rapidly. My father used to joke about the fact that he could buy the desert land at that time for five cents an acre that was well outside of town and had no value for grazing or anything like that, and it was the corner where the Sahara Hotel was built. And earlier that was actually an airport on that area.

*So before that whole thing happened there was gambling in Las Vegas in those days.*

Oh absolutely.

*It just wasn't what we know now, with the Strip and the whole bit.*

Well, as a kid I can remember the early hotels: the El Rancho Vegas, the other hotels that were along—of course the Flamingo, the Last Frontier Hotel, and the Western Village that was there. Later on the Castaway Hotel with the carved wooden temple that no one seems to know whatever happened to it when they tore the hotel down and built the new and improved hotels there.

And so it's interesting because of many of the experiences that I remember as a kid. Good example: the railroad community was very close, and so we would go to places like Sloan and visit friends, spend time in Bracken which was an area where they had section houses and a **[00:10:00]** section gang based at, which is now just across the railroad tracks on Flamingo, and there's no trace of it at all; it's all industrial now. But we used to go there and you could see the Flamingo tower at that point, the funny round thing in front with the bubbles on it, and you could watch that at night as you lay outside to sleep because that was just more comfortable than sleeping indoors where there were kerosene lamps, believe it or not, in the railroad houses. And

no air conditioning. You were lucky if you had a swamp cooler. So you'd spend a nice evening outside and you'd see things like that.

*Now your dad with his work was headquartered in Las Vegas or where did he work?*

Well, the union meetings were here in Las Vegas and he actually was at the time of my birth responsible for the pump house at Desert, and it was one of the locations where the steam engines refilled their water tanks. And he was considered the senior official at that location, and there were other railroad employees there. For instance, during World War II when there was a military contingent based at Desert to protect the railroad—a national guard unit from the Midwest somewhere, I don't remember where now—there was a fatality and he as the ranking local person had to go view the body, pronounce the individual dead and take charge until such time as the appropriate personnel arrived to then take over the investigation. So it was sort of a bizarre time.

*What was your father's first name?*

Elmer.

*Elmer. OK. And you know give me a sense of how many people lived in Desert at that time.*

Oh, I believe there were six houses and probably counting the dogs too there were twenty-four. I mean it was not a large number. In some cases like in my family there were three kids there all the time. Sometimes my oldest sister would be up to visit from California but normally three of us. The Ford family that lived nearby had more children than that but then some of the others had none or maybe one child.

*So basically the reason that you were in Desert was the railroad, but was that why everyone was there?*

Yes.

*And then where did you all go to school? Was there a schoolhouse there?*

Nipton, there was a two-room schoolhouse, and that's where my brothers went. The schoolteacher actually drove over from Searchlight, that taught my brothers, Minnie Peters who retired and moved to Boulder City to, you know, the big city when she retired. And I didn't start school until after we moved from Desert to Boulder City.

*OK. All right. So you're the youngest then.*

Yes. That was approximately 1949 when we moved, and so I had the benefit of actually going to school in a larger community. I had a class of maybe twenty-five in our first grade class. That was a lot of people.

*Yes, that is. Twenty-five is a good size first grade class for a small town.*

Yes. And the transition from my younger years of very few people, it was an adjustment to say the least.

*You were sort of shy or were you just not used to so many people around?*

I was shy. I was very reserved. I certainly had some social issues dealing with a large number of people.

*Social issues. Now you have to tell me what you mean by that. And I ask you because I found those transitions difficult. I mean I just moved from one village to another five miles apart and I remember how difficult that was so that's why I'm curious. Just the new people was difficult.*

**[00:15:00]** Well, to be very candid, between my outright dislike for school—because of the fact it was very uncomfortable—and then being snowed in on a train going back to Wisconsin for several days, going back to Wisconsin and then my brothers taking turns coming down with the measles and myself, I literally missed well over a month of school. So when I came back I had to repeat first grade. And I never really liked school, all the way through high school. I truly

disliked it and found other activities that were interesting and exciting and gave me the satisfaction I craved, and it was not with school.

*Well, what was the deal with school then, if you had a "because" for what—they just were not engaging you or it wasn't interesting or they were too strict or—?*

It had nothing to do with strictness. It was the fact I found it very boring. I learned to read at home. My father had a nice library and I read voraciously. I thoroughly enjoyed reading and I had quite an active imagination as a result of that. Then to go to school when you're learning basics and drills essentially, and I found absolutely no satisfaction in any of that, so I didn't do well.

*So what did you do instead that you said you found the reading.*

One of the things that I did as a fairly young person, I got into an organization called the Civil Air Patrol and was very active in that and had some remarkable opportunities as a result of doing reasonably well in that organization. I was able to participate in the International Air Cadet Exchange and toured eastern Canada. At seventeen I flew in a T-33 jet aircraft and at eighteen I flew in an F-100 and broke the speed of sound.

*At eighteen?*

Yes.

*Oh wow!*

So those are the kinds of things that grew out of that opportunity.

*Now did this opportunity exist for you because of—because you're really enlightening me about Las Vegas area history here—because the [Nellis] Air Force Base was close by, is that why you could do this Civil Air Patrol, or is that completely another thing?*

It's a program that's in many communities, totally unrelated to military bases, and they're all over the United States. And essentially the adult program is primarily focused on search and rescue. The cadet program is to increase awareness and knowledge of aviation.

*OK, so it really is educational in that sense.*

Yes. And you have to take tests on different subjects as you go along and, you know, much like Boy Scouts, you know, you have a series of steps that you must go through in order to end up an Eagle Scout, and that's what everyone's goal is hopefully. So I wanted to complete the CAP training, I wanted to do the activities, and as a result I had opportunities such as the ones I mentioned that simply weren't there for the average person.

*Do you remember the first time you flew a plane or went up in a plane?*

Actually it's kind of interesting. When we lived at Desert my parents had a friend in Las Vegas that owned his own aircraft, and periodically he would come down and buzz the house and then he'd go down and land on the dry lake bed. And my folks would grab me and my brothers, you know, in the car and drive down to where he was at, and then he'd give everybody flights. And so I was flying in my mother's arms as an infant and I have absolutely no recollection of the actual flights obviously. And so it was very natural for me when I got older to go up in little **[00:20:00]** single-engine aircraft, the L-5, L-16 aircraft that Civil Air Patrol had for training, and then the search and rescue.

*So you'd go up and how the training would work is the pilot would be there with you and then you'd take the controls, is that the kind of thing that would happen?*

We could do that. The intent when I went through was to be a qualified observer in order to let the pilot focus on flying safely and then the observer is scanning the ground for any sign of the aircraft crash site and survivors, or people who are lost. And so that was something that was the

focus but obviously you're going through and some people could go forward and actually get their pilot rating. I did not and I to this day question why I didn't. I should have because the opportunity was there and I just didn't see that far ahead so.

*It's hard when you're young, I think, to see far ahead at all in a lot of cases.*

Very true.

*Then tell me about this jet thing that you mentioned. By the time you were eighteen you had flown in this T-what?*

Well, the T-33 is a little two-seater trainer that is a modification of the F-80 Lockheed fighter. And every summer we'd go to summer camp which was on an actual air base. Some were at Luke Air Force Base in Arizona, some were at, for instance, McClellan Air Force Base near Sacramento. I had a couple out at Nellis, and people from all over the state, or in the case of the California one, we actually had kids from California and Nevada there. And you would learn the different types of activities that went on on an air base. You'd get classes, you'd get orientations, and you actually lived in a barracks and followed the rules and all of that. As part of that program they provided the opportunity to fly in T-33s for some of the people at the encampment, not certainly a majority but a small segment, as a reward for their performance.

And so I got a flight in the T-33 and then the following year when we were at Luke I got a flight in the F-100. And that was the first real supersonic, the first century series jet, and it was a significant difference from the T-33. In fact the T-33 to me was very similar to flying in a prop aircraft. I mean there was not a major difference. You went faster but everything was in a fairly close proportion. When we flew in the F-100 it was a significant difference because they could kick in an afterburner and that really puts you in the back of your seat, and it was just a far greater performance aircraft.

*And then you broke the sound barrier in that thing? What does that feel like?*

It's rather interesting because as you start to build up you can feel the air resistance on the aircraft itself and you can feel it through the stick. You don't really hear it as such in the cockpit but all of a sudden it's like on ice. Perfectly smooth. And then as you slow back down you transition fairly rapidly back through and you don't really think much about the shock wave effects, what have you, that you're coming back out of. But I can remember that it was just like being on glass, it was so smooth of a flight.

*How interesting. How amazing that must be.*

**[00:25:00]** And to think, you know, I did that in, oh, 1959, 1960, maybe 1961 time period. I'd have to go back and look now. And to think that it was essentially less than fifteen years before that the first person broke the sound barrier. And so it was still unique. But they made a big thing out of it because you got a certificate from North American Aviation, you got a pin to wear, and you know all kinds of things that really let you feel special.

*You still have those things, I imagine.*

Oh absolutely.

*But no, I was born in 1949 so you're about six years older than me and I was thinking as you were talking, when was that that the sound barrier was first broken? So you've answered that question. But I remember even as a kid that that was a big deal, you know. We had, you know, a neighbor who was a flyer and would talk about these things with my dad, and that was a big thing, if you'd been in a plane that had broken the sound barrier. Even then so yes, absolutely, that must have been really, really exciting.*

So that's the way I got the feeling of satisfaction and excitement in life.

*Well, you know, it's a real education. We have these ways of saying school and not school, but that sounds like where your real education and learning happened.*

There was a lot of learning there.

*Yes. Yes. And when you say that do you mean just about flying or other kinds of things, when you say there was a lot of learning?*

I learned a lot because, for instance when I went on the air cadet exchange, we stayed on military bases sometimes, sometimes in private homes, it just depended on where we were in Canada. And when we were on Prince Edward Island I actually stayed with a private family. I can remember vividly the father trying to convince me that what I should do after I graduated from school was to come to Prince Edward Island and start growing oysters. And he explained the whole process, how you get started and everything else, and how I'd really enjoy that. So you know I learned about oyster beds and oyster as a crop essentially, just through the opportunity to spend some time with someone that I would never have met in any other way.

*Right, and yes, thinking that you're a kid from the Nevada desert, that really is amazing that it's oysters. So there was this cultural exchange or this cultural learning happening.*

And then obviously in Quebec Province, going into a village store that was out of one of the big cities and having the older people in the store talking French and expecting me to talk French, and having no idea about French, and finally a young lady came out and talked to me and took my order in English. But I realized when the older people turned and started to walk away and they said a couple of things, a portion of which was in English, that by God, I was in their province and I was to speak French. So those kinds of things that the average person just would never have experienced. It was exciting. And of course at the time I was there, there was a very active separatist movement in Quebec and they had not all that long before broken into a military

munitions storage facility and taken weapons and ammunition. So it was a very, very strong feeling that the people had and, as I understand, have to this day.

*That is also my understanding, yes. French identity. So that puts you sort of, what, at the end of high school era.*

Actually I need to tell you more about school itself because I told you my first grade experience **[00:30:00]** and then really didn't talk anything about the rest of school. We had a great school which was in a single brick building in Boulder City. All of the six classes were there, and two-story. And while in grade school I started doing art work as part of the class work, and enjoyed that and got an award for one of the watercolors I had done, and so that was really fun. And there again that was something that although it was within the framework of school it really was different. It allowed you to have your own vision and then learn the techniques of putting that down on paper for someone else to see. And so I enjoyed art. And the opportunity, because it was a very stable community, to develop friendships that in some cases I still have today. Keep track of certain people I went to school with, and we've had the opportunity to work professionally in our adult lives, so that's been really pleasant, to know that person well enough that you can have total trust in them.

*Yes. That continuity must be interesting, that trust that you know from those early years and then translating into an adult work relationship.*

Yes. When I went to junior high school that was in a different school in Boulder City, and that's the point where I really got rebellious. I wore my leather jacket and I sneered and I was not a very nice person sometimes.

*So let's just get the cultural information here for the students who don't remember these years. When you're rebellious in those days you're looking toward, okay, you've got a leather jacket so it's sort of what kind of—like a biker thing?*

No, you'd have to see the movie *Rebel Without a Cause.*

*So* Rebel Without a Cause, *the James Dean thing.*

Yes.

*Thank you. So it wasn't a Marlon Brando on the bike. What's that one called where he rides into town on that bike? It was a James Dean thing. OK.*

Actually that whole culture, I'll give you a little flashback here. The whole biker culture came out of the fighter pilots of World War II who formed motorcycle clubs because it was the closest thing to flying and the independent spirit and everything else, and then through time evolved into the motorcycle gangs and all of that. But really the foundation of the motorcycle clubs in the United States were as a result of World War II and the fighter pilots getting a social organization together to ride together.

*That's interesting, and when you even look at the fact that it's leather jackets, of course you want leather when you're on a bike, and the hats with the logos and stuff. It's perfect. I actually never knew that.*

Well, there's another piece of trivia for you.

*Yes, that's interesting. OK, but that wasn't your thing. It was the James Dean thing, and that's right, that's about that era.*

And I had one schoolteacher that really made an impression on me. He had been a football star in college football and had come to Boulder City and originally taught athletics in addition to other formal classes. And then he contracted polio and he was wheelchair-bound but he had upper

body strength that was phenomenal. And he had this arrangement where he would roll the wheelchair into his desk and then he could take these arms that were like wrapped pipe and he could stand up. And he would stand there and lecture. And just a phenomenal individual. And he taught government and world affairs. And one of the things that was required of all the students was that you get a subscription to *U.S. News and World Report*. And we would discuss the magazine each week in great detail. I still have a subscription to this day. It's just one of the magazines I read but it's the one that historically I have felt had the most objective reporting. And I may be biased in that sense but it's certainly something that stuck with me from junior high school all the way through.

*What was this teacher's name?*

Robert Gettler, and in fact there is a school here in Las Vegas named after him.

*And there's a school named after him.*

Yes. He was an amazing person.

*And he was a junior high teacher to you.*

Yes. Well, and he was also a coach, believe it or not, even though he was in a wheelchair they allowed him to continue to teach, I believe it was track and field instead of football. But still he would be out there and just really working the kids to do the best they could.

*Yes, that's another piece of that era that people have forgotten about, that whole polio epidemic. But you think mostly of children, don't you, so for an adult to have lived a life to a certain extent and then contract the disease, it must have been a big challenge for him.*

Yes. He had a double pipe arrangement in his backyard that went from one end to the other and he would go out there and he would literally lift himself up and then walk from one end to the other, turn around, and walk back. And that's how he maintained the upper body strength, but I

mean—give you an example, I wasn't the only smartass in class. We had several. And one of the individuals lipped off to him one time. And he shot out from behind his desk and down the aisle, grabbed this kid with one hand, grabbed the front of his shirt, lifted him out of his seat and shook him, and slammed him back down, and then rolled back up behind the desk. And this kid never lipped off to him again. You learn very, very quickly. This man was incredibly strong and he was not handicapped. He had issues that he had learned how to effectively deal with, but he was not handicapped. And I'd never tell him to his face that he was.

*Yes. So would I be correct in drawing the conclusion that somehow with your own turmoil that you were going on at that point, that somehow he spoke to you as far as, what, that things can be difficult but you have to face them. I'm just trying to understand what it was.*

Well, he got me to look globally.

*OK. To look beyond Boulder City basically.*

Oh, absolutely. You have to understand that Boulder City was a government town. It had been built by the government, it was run by the government, and we had lived there several years before they essentially turned it over to the community to run. But as a kid, it was still a government town, government police, the whole thing. And there were essentially three categories of people in Boulder City. You had your government workers, and the higher your GS [government service] rating the more important you were. You had a heavy Mormon contingent, and if you happened to be a Mormon in government that was even better because you covered two bases. But the Church was extremely strong in Boulder City. And then you had essentially everybody else. And because my father worked for the railroad we were very low on the social ladder obviously, and there were a lot of other families like that. In fact there was an entire community that was built just outside of Boulder City called McKeeversville, and that's where

the really poor people lived. And essentially they didn't have houses built to code. They were **[00:40:00]** just very, very poor people. And I mean they were not part of the social community at all. As I got into high school I truly recognized that disparity and became a little more vocal on occasion. In fact, I can remember one time where there was a lot of dissension in school and so one of the teachers had us all come together to talk about why we felt there were issues. And I obviously was one of the few who had the outside position and talked to that fact. And it didn't alienate the kids of those family members that were in the social structure but they found it impossible to understand. So you know we weren't chastised and anything like that but you certainly knew your place in the community and you stayed in your place. And so that again reinforced my dislike for school. Because although I liked many of the people from any part of the community and it really made no difference to me, that was not necessarily a reciprocal situation.

*That's so interesting. So there's social stratification to such a degree that you couldn't be friends with or you couldn't have a girlfriend—?*

Our parents couldn't be friends.

*Your parents couldn't socialize.*

Now we snuck around and did a lot of things, but—

*Like kids do, crossing those social boundaries is one of the most fun things to do.*

Absolutely.

*But outwardly those social boundaries were clear to you?*

Absolutely. Absolutely. No doubt about it. And being a small town, and the fact my mother was a housekeeper or a maid, on many occasions if my brothers or I did anything inappropriate the phone rang at the home and my folks were told. And so when we would get home we would be

sat down and asked certain questions and if we didn't come up with the right answers then we got nailed for that in addition to whatever it was that was reported. But you know, things like running a stop sign. I can remember one of the community calling and telling my parents my next older brother had run a specific stop sign, specific location, specific time, and so when Carl got home he got hell for that because that wasn't something my parents, number one, appreciated because of the safety issue, but secondly, to have the community elders contacting to say, `This is not going to happen. Take care of it.` You know it was a strange community in very strange times.

*Yes. It's interesting you use the word "elders" because it's, I don't know if I'm jumping to a conclusion here, but the notion of this sort of—the Church piece, the Mormon piece, and then the government class issue combined—*

Oh, it was very unique.

*I mean a lot of times in other towns you'll have sort of the rich families, right, or the people that work at certain places and then people that work in other places. But from the outside I would never see a railroad position as being necessarily low on the social scale, but obviously if it wasn't a government position then—interesting. So your mom worked.*

Yes. Virtually all of her life in one form or another. She started out as a maid and then housekeeper for people, and then later on when we moved from Boulder City—well, she dabbled a little bit in Boulder City. But later on when we lived in Henderson she babysat children in order to have additional income, in particular after my father retired. So that was an interesting period, I'll tell you.

*What was your mother's name?*

**[00:45:00]** Well, it was Kathy to everyone that was close enough. Her actual name was Olive Katherine. And when we lived in California my mother used to laugh at some of the people who worked on the railroad because they referred to her as Olivia Katrina and she just rolled with it because you know that was her name in Spanish. She worked hard, she really did, and Dad worked hard and sacrificed tremendously for us. My oldest sister was raised in California by her mother, my father's first wife, and then my oldest brother was actually my half-brother and he was an infant when my father and mother married. In fact she divorced her first husband, then very shortly thereafter they married, and so Bill was significantly older than I was, roughly eight years older. And so I remember him in the home but he also left very early and in fact was in the Air Force and served in Korea. And so there are some bits and pieces of my brother being home, but then it was predominantly my next older brother and I for several years, even though he's only six years older. He didn't go in the service and he hung around longer until he got married. Stayed at home.

But living in Boulder City, we actually lived in a railroad section house just outside of town which now, by pure coincidence, is immediately north of where the railroad museum building is. And in fact I've taken the director out there across the railroad tracks and explained where various things were, just so he had an appreciation for the coincidence. But the actual major portion of the property is within a fence of a wrecking yard now so—

*And you moved to Boulder because your dad was doing something else for the railroad then at that point.*

He was reassigned. Essentially in 1949 they discontinued the steam locomotives and everything was diesel so there was very little reason except for a true section gang there at Desert to continue. They shut down the pump house and everything, and so he was then offered a position

in Boulder City to maintain the railroad yards there. There was an active depot and a couple of times, three times a week a freight train would come in and drop stuff off and then go back out. And so that was his function, along with the union portion that he continued through to his retirement. He was always active in the union in one way or another. But he maintained the yard and then if there was a significant problem, then they would call the section gang in from Bracken and they would come out on the motorized car and, you know, work whatever the problem was, if there was a washout or something, and he reported to the foreman at Bracken, so—

Having been raised in Boulder City essentially from 1949 through 1961, halfway through school in 1961, I got to see, although second-handed, the nuclear shots, the atmospheric shots, because we'd go out in the yard and we'd see the flash over the mountain. Unlike Las Vegas, where you could actually see the cloud on many of the shots, we had a mountain between ourselves and Las Vegas and so we'd see the flash but that was essentially it.

**[00:50:00]** But I can vividly remember that as a kid, and many of the things that the local community did obviously I would be a part of it. Because very early on they blood-typed every child in southern Nevada, and you actually got a dog tag with your name and your blood type on it that you were supposed to wear. I don't have my dog tag anymore and I have no clue where I lost it, but it went years ago. But I still have the certificate, and what's really funny, it's Bobby Friedrichs and the mailbox—they had the mailbox because we didn't have a street address—and the mailbox that we had was Box R. So you can see that it was a fairly small number of post office boxes there.

*So they were blood-typing for purposes of what?*

If there had been a massive fallout and you received extremely high doses and would require blood transfusions—

*They wanted to know what your blood type was fast.*

Yes.

*But you didn't wear this dog tag all the time, did you?*

As a kid you did.

*You did.*

Sure.

*OK.*

And I just lost it over the years. I have no clue where it went but because of course the certificate was filed away along with the other family documents, I still have that one. And it's quite odd, just when you see the name first of all, you know, they're using a child's name and then to see the address and such a simple address, but that's the way it was. That was Boulder City.

*Yes. Now did you make a connection when you were a kid between the explosions that you were seeing and, you know, these bombs are being tested out there and the fact that you've gotten your blood taken and you're wearing this little dog tag?*

No, not at all. You know, as a kid you're used to going to the doctor and, you know, they stick you with pins and needles and everything else and you don't think anything of it. Your parents told you to go do it and so, you know, it could've been an inoculation or anything else. I'd just, you know, go through the process.

*I have that a little bit with the duck-and-cover stuff. A lot of people remember how bizarre it was and how weird it was when we had to get under the desks. I was such a good kid, it was just OK, we do this and we get under the desks and it's a Civil Defense drill. And I, you know, but I think*

*it's because we all are sort of processing our childhood in really different ways. When people say, Don't you remember how scary that was? No. We just lined up and we did it. And so when you say that, that's what that's reminding me of. And there's talk about the sort of festive atmosphere sometimes in Las Vegas with watching the explosions. Anything like that that you remember?*

Obviously we didn't drive up to Mount Charleston and Angel's Peak or any of that and view it. But I'm certainly aware that that was a frequent practice by, number one, folks that were able to take off from work the following day if it was very, very early in the morning, and people who had the luxury of a nice car that would make the trip up the hill and money for gas. So yes, that went on but in our family that was not a part of the process because my father had to be up very early and working so, you know, if we wanted to we could stand in the yard and watch the sky light up and then go back to bed.

*Right. But you knew it was bombs being tested. You knew that much.*

Yes. I don't think we ever truly appreciated or discriminated as to what type of bomb. You know, a bomb's a bomb's a bomb when you're a kid and so we thought that was really fascinating that something would put out that bright of a light and a long distance away. Kind of hard to relate because I can't remember the first time I drove up the Tonopah highway, but I certainly was not a very young child going up that road. So I just knew it was somewhere **[00:55:00]** northwest of Las Vegas and that was it. Since there's no railroad track up there anymore, there was no reason to drive up that road.

*Interesting. Interesting. So then what age are you, what grade are you, when you move to Henderson? Are you still in school?*

Actually I was halfway through my junior year and they decided to shut down in Boulder City and they sold the depot and it was eventually moved to Henderson and sits in the museum yard there in Henderson. Our house was torn down. It was sold and the person bought it for the wood because it had large beams and everything in the construction. So he bought it for a very small amount and then got a tremendous amount of aged dry wood that he could use for construction of something else. And we moved into a conventional house in Henderson. I continued to finish out my junior year at Boulder City. It was kind of difficult because at that point in high school I was the school track manager for a couple of years and they wanted me to be the drum major because of my height, and it certainly wasn't because of my academic performance, but they said that I could get a college scholarship. And my thought was, I hate school. Why do I want to go to college? Plus it was something no one in the family had ever done. And so I never saw that as a real opportunity. To me it was, You get out of school, you get a *real* job, and you start earning an income. And that's the way it is. So I did not follow up on that but did do the track manager for a couple of years and then when I moved to Henderson that made it a little more difficult but the family worked around that so I could finish out my responsibilities on that.

And then my senior year I went to Basic High School in Henderson, and thank goodness through CAP, Civil Air Patrol, I had a lot of friends in Henderson and so I was right into the middle of the mix immediately and social life and it was a whole different community. Because that community existed in order to supply the work force for the BMI complex, the industrial complex where they manufactured chlorine gas, lime, titanium was the newest plant there—*BMI is*—

Basic Magnesium, Incorporated, I believe is what the BMI originally stood for. But it is mostly still there, although it's in the county and not in the city proper. I mean it's totally surrounded by Henderson. And it was built during the war specifically to produce materials for the war.

*From things that had been mined in the area?*

Yes. And you know it came into being in the 1940s and it produced and then after the war continued to produce. And it still exists today although it's got a different name and it's a real pretty name, environmentally friendly and everything else but certainly belies the history of there.

And so my father then was working *that* section of the railroad, in particular down in the plant area. And again when something would happen he'd call Bracken and they would come out, you know, on their little cart and they'd all get off and do whatever needed to be done and then go.

But I finished my senior year at Basic, and actually two things happened, both in my junior year at Boulder City and then my senior year at Basic High School in Henderson. The *Las Vegas Sun* newspaper had **[01:00:00]** an annual event where students from all of the high schools would attend and they would be on panels and they would discuss social issues. And so I got put on it for Boulder City, which kind of surprised me because of my attitude and my grades. But I also then as a senior at Basic was put on it, which I found quite flattering—new kid trying to pull his grade point up. And had I not changed high schools I probably would not have graduated. My oldest brother graduated from Boulder City. My next older brother did not. He dropped out and ended up getting a GED. But had I stayed in Boulder City I probably would've dropped out. Going to Basic High School allowed me essentially a fresh start, and there again I

enjoyed the art class, some of the other classes, but I just really did not like school in general. But I had a lot of friends there.

*But it sounds like what you're saying that the social situation in Henderson was more normal and so you weren't dealing with the same kind of issues as far as—*

Well, as an example, you didn't have the two-tier structure. In Boulder City there was one black family and that was Emery Lockette who was a draftsman, I believe, with the government. And I actually babysat his kids sometimes. So in Henderson there was an entire community of blacks. Now it was segregated. They were in Carver Park, which was a government housing complex, but Victory Village was the equivalent across the road for the whites. And so you know it was different in that sense. You still had certain segregation perspectives in southern Nevada which have always been there, but at least all of a sudden you were exposed to kids in your own class. You know, I've inappropriately joked that there were no blacks in the 1950s, because I never saw any. But that was Boulder City, of course. Then to move into an environment where you had blacks in the community and you were a working community was quite, quite different. It doesn't mean that I did not understand minorities and have a good working relationship or not, because having been raised with the railroad of course the majority of the people were at that time either minorities or from a social strata that was not the norm. They were hard-working labor, period. I mean their job was to haul track, haul ties, you know, work. And so I was always raised around minorities and never really thought much about it until when I got to Henderson. Then I could see that, you know, this is strange because the one black family in Boulder City lived at the edge of town but in a really nice house and were a part of one of the two social structures. In Henderson it wasn't that way. Here you've got people who are equal, doing equal

labor, but yet they live in a different complex of housing, you know. So that was sort of strange. And that was my first realization that that went on.

I'm glad I changed schools because it allowed me to graduate. As I say, I to this day believe I would not have if I'd stayed in Boulder City. But I was able to graduate with a 1.92 GPA [laughter] so I squeaked through there.

*Right. Excellent. You know, it's interesting I'm getting—I guess it's true of children in a sense* **[01:05:00]** *that we don't normally think about but one of the things I'm getting from what you're saying is this sense, and you can correct me if I'm wrong, this sense of justice that I think children have. It seems to me that you see injustice and it's terribly, terribly frustrating and disheartening because at Boulder City you're seeing this stratification that's not based on any sort of intrinsic value that any person has over another; it has to do with who your daddy is or who your boss is, and that can make you a* Rebel Without a Cause*-type of person because you know that you're right and yet what can you do about it? And then the same thing when you go to Henderson. You're seeing this and you're saying,* `Wait a minute. You know, in a rational world where things were fair and things were judged on sort of rational basis, well why would this be happening?` *So that's interesting. It's a piece of the narrative that comes through that I just wanted to comment upon.*

Well, my GPA was not known in certain circles and so as a result of the successes and opportunities I had experienced with the Civil Air Patrol, I got a nomination to the Air Force Academy.

*Oh my gosh! With a, what did you say, 1.92?*

Well, they didn't know that. And at that time Senator Alan Bible would nominate eight people for the one slot. And then you would go in and you would compete and they'd look at all of the things you'd ever done and, you know, your school and your physical conditions and all of that

kind of thing, and then make their final determination. And so I actually went down to Riverside to the air base there and took my physical for the Air Force Academy. And a very, very demanding physical, but I had no problem with that. And the one thing they said I had to do was have my wisdom teeth taken out. And so I went down one evening after school and I had all four of my wisdom teeth yanked at the same time and then my friends picked me up and we went out drinking and carousing while I had these big cotton wads in my mouth because of the hole where the teeth were, you know. But I didn't catch any illnesses or infections.

*You lucked out.*

Well no, the alcohol killed it. And so I got that done and of course got the clean bill of health physically. And they took one look at my high school transcript and thanked me very much. But it was just remarkable that I got the nomination, so I found that rather amusing.

*Well, it spoke to a whole bunch of other things you obviously were doing. You must have been disappointed or—?*

No.

*You weren't.*

No. I wanted to fly and be a pilot at that point. I'd finally woke up and said, Hey, this would really be neat and hey, if I go to the academy, I'll learn how to fly and I won't have to worry about money for school. And so I entertained the thought, enjoyed the thought, but really didn't expect it because I knew what my grades were, and I'd read and I knew what the expectation was. I certainly wasn't in that group. And it was through inadequate research on the part of the staffer that my name got on the list, so I didn't really expect nor was I truly disappointed. I just thought it'd be a neat thing if I had that opportunity, but again I wasn't focusing on the education and probably would've done horribly. And in fact an acquaintance of mine went to the Air Force Academy, I believe two years, maybe three years before, and he went

through his third year. But just before he was to start his fourth year he dropped out, because once you start your fourth year you then had requirements as to a length of time you would have to serve active duty. And he elected not to go down that path and ended up **[01:10:00]** working for a bank here in Las Vegas. So I was aware of that and really didn't think much about the academic aspects.

*Yes. This would be, let's see, what year would this be?*

Nineteen sixty-two.

*So is Vietnam on your radar at all?*

Not at that point. Not at that point. That was 1962. That came later. After I graduated and I had not gotten the appointment I still thought it would be great to learn how to fly, and so I had this revelation that if I went in the Army I could go to helicopter pilot's school, I'd get my pilot rating, and I'd come out as a warrant officer, and then I could go to Officer Candidate School and get my second lieutenant bars. And having been on the air bases during the summer, I knew the difference between enlisted and officer, and I liked the way we were treated when we were treated like officers. Because obviously after the first two or three encampments I was a cadet officer, and in fact the last encampment I was a lieutenant colonel in the program. And so we were treated quite differently and I liked that. See, I was being bought by the dark side, the elitist and that. So I went down and I talked to the Army recruiter and, you know, I told him I wanted to be a helicopter pilot.

No problem, you sign right here and we'll give you the test and I know you'll pass. There won't be a problem.

I said, No, no, no, you don't understand. I want to know that's where I'm going, guaranteed.

No, no problem, you sign right here, the enlistment form, and we'll give you the test.

And we went round and around and around about that. And he would not allow me to pre-test before signing. And so I walked out. And then things really heated up within a couple of years and I mean major, and the loss rate on helicopter pilots was significant early on in the war. And so it was obvious to me that had I gone in and become a helicopter pilot I would've been in that first wave and the odds were not in my favor. And so to this day I kiss the ground that recruiter walked on for not allowing me to take the test first.

*What a story.*

And then I married my high school sweetheart shortly after we graduated. It was essentially a year-and-a-half later. And we moved into an apartment here in Las Vegas and it wasn't a matter of just a few weeks after we married, I opened the mailbox one day and there was a notice to report for a physical, and I was going to be drafted. And I fired back a response that said I was no longer 1-A; I was 3-A because I was married. Forty-eight hours after I mailed that I had a letter in that mailbox demanding a copy of the marriage certificate.

*Unbelievable.*

Forty-eight hours. So they were ready for me. I was prime candidate. But I didn't go to Vietnam and I didn't serve in the military because I was married at that point, and went to work at the [test] site shortly after we married.

But after high school, the first thing I did, as a senior in high school I had a part-time job at Safeway, boxing and—you know, I'd had part-time jobs and what have you for years. And when I'd lived in Boulder City I actually worked for a photographer who owned a photo shop there in Boulder and he also did photography for *National Geographic*. William Belknap.

**[01:15:00]** And so, you know, I did whatever he wanted done: cleaning up the store, stocking, whatever. And then in Henderson I was working at the Safeway store, boxing.

And so as soon as I graduated I then went down and applied for a job at one of the industrial plants. Both my brothers worked there and, you know, that was just what was expected when you lived in Henderson and it was decent money for the time. And so they allowed me to take an aptitude test and because of the score I got on it they allowed me to go work in the laboratory, not down in the process plant. And no college, straight out of high school. It was a cushy environment, because many of my friends went to work in the plants or they went to work in construction, outdoors all the time, odd hours, *et cetera*, and there I was working inside a laboratory, doing essentially cookbook chemistry on the production. But that's how I transitioned into that.

*That's great. We're close to the end here so we can stop. This is a good transition point, perfect, with the laboratory bit.*

**[01:16:32]** End Track 2, Disk 1.

**[00:00:00]** Begin Track 2, Disk 2.

*OK, so we have you working in the lab at—is this at BMI that you went into the lab?*

I actually worked for Montrose Chemical which was a wholly-owned subsidiary of Stauffer Chemical.

*Stauffer. OK.*

Right. And Stauffer made chlorine and Montrose made monochlorobenzine and hydrochloric acid and some other stuff like that. Nasty stuff. And so I was working in the laboratory and the director, his last name was Bednar and he was German, a German chemist, and one of the other guys working in the laboratory had come over from Germany. So it was interesting to hear the

two of them talk in German, having been raised in a situation where my father would talk German with some of the older gentlemen in church. My dad was raised in an environment where you learned your catechism in German and, you know, the services were in German and all, so he spoke fluent German.

*Now was this Lutheran or—?*

Yes. Oh, absolutely. There is only one church in Germany.

*I was just checking.*

Martin Luther was very persuasive. Yes. And so I can pick up a word every once in a while and that's all. I wouldn't even pretend to say that I knew German.

But there was an older lady that was working there in the lab and then there were three of us that were young guys. And the boss and the older lady and the German guy all worked days, but the three of us that were the young guys all worked a rotation shift. And so each week you would shift. You would start on graveyard, the following week you would work swing, the following week you would work days, and then you'd go back to graveyard. And it was really, really physically draining because you're changing so fast your body clock doesn't adjust. And so we quite frankly would go in and run our samples and then go to sleep, and when the plant people would bring up the next batch of samples we'd run them and go back to sleep. And that's the only way you could survive when you worked the graveyard shift. And that was rough for me. It was just physically rough. And so that's why I decided I really needed to get another job. And I went out, and again there are strange things that happened and were possible then. My girlfriend was working at the test site at that time. She had originally gone to work for Anderson Dairy as a keypunch operator out of high school, and then she went to work for Reynolds Electric[al and Engineering Company (REECo)] as a keypunch operator on Wall Street in Las

Vegas and then out to the site. And so when I said I really needed to change jobs, she went ahead and she took my resumé and gave it to the secretary of the division director for radiation safety and made the comment, you know, `I understand this is a good employee`, so he in turn passed it along with others for a vacancy. And I also applied with TWA [Trans-World Airlines] to work at the airport, and there I would start out on graveyard, then I could move to swing, and **[00:05:00]** then I could move to days. And the statement that was made there was that it was frequently, or very common rather, that hardworking, bright young people were able to then move into ticket sales and then into management. And so if I were willing to work hard and go through the steps, in eight to ten years I could be in management at TWA. So I got a formal offer from them and I also got requests for an interview out at the test site. And I went out to the site and went in Building 155 and the lab was in the back half of it and the EPA [Environmental Protection Agency] had the front half, the laboratories and offices. And had an interview with three people. And one was Jay Brady, who was a senior health physicist at the end of his career, but ran the lab at that time. Then Garn Iverson, who ran the dosimetry laboratory. And he was incredible, absolutely incredible. And then the third person was an individual whose name is Omer Mullen, and Omer ran the counting laboratory. And so the three of them—you know—I had to go in this tiny little room with one desk in it and the three of them sitting there and fifty million questions. Then I had to go outside and wait a while and then they called me back in and told me they wanted to make an offer at that time. And so in looking at the two offers it was pretty clear to me I could go start working graveyard and then work through this evolution process, or I could start immediately on day shift and see the sun come up and go down. And guess which one I chose?

*And the rest is history.*

I look back at what happened to TWA and I know I made the right decision. So when Howard Hughes sold it, it did not hold up all that well and then of course they were absorbed by American [Airlines]. But it's just interesting that, you know, I had this fork in my life and I went down what I perceived to be the right path. Now I may have made a big mistake but at least I perceive that it is the right path.

*Yes. Now they're interviewing you, what's your understanding of what your work is going to be, a similar kind of—?*

Well, I knew I would do analytical chemistry. With no college I knew it would be cookbook chemistry just like I was doing at the plant in Henderson. Jay and I have become very, very close over the years, and as each of us have mellowed and he's told me many stories about that period, and he saw me as essentially one of the Seven Dwarfs. You have to appreciate, Lester Hartzell had white hair and so he was Snow White, and the seven laboratory technicians he had were the Seven Dwarfs. Made no difference what your height was. So he saw me fitting in well with the environment, and so that's why he was very supportive. Garn and Omer I never got a read on, but they obviously threw no violent objection. But they made the decision that yes, I would be a good one and so they made me the **[00:10:00]** offer and I accepted. And then they handed me the manual and told me to read it from beginning to end and understand it before I reported back to work two weeks later.

*So this is REECo who's doing health science?*

Yes. They had all of the field monitoring. We actually had the industrial hygienists there in a trailer behind our building, but that consisted of two IH-ers [industrial hygienists] and one secretary. That was the whole department.

*OK. Yes, I understand.*

And IH was a fairly new concept on the test site. But radiation safety, because of what the laboratories had brought out originally, they picked up and ran with that pretty, pretty close to the way Los Alamos originally did.

*And the year now is—?*

Nineteen sixty-three. Fall of 1963.

*Nineteen sixty-three. And so when they're telling you this is your job, you're going to be a lab technician and you going to—*

Actually a junior laboratory technician.

*OK. A Dwarf.*

You got a laboratory technician slot if you had experience or college. And I did not have any direct experience in radiation or radiochemistry, so that's why I got the junior laboratory technician designation. And so I put in my notice at my other job and transitioned gladly. And an interesting wrinkle that came out of that transition, I had been tested at my prior employer for benzene poisoning among other things and had a clean bill of health at the time they did it. And roughly six months later when I went for my physical to hire into REECo I had some symptomology that gave them great concern. And so I had to go in and talk to the physician and he wanted to know if I had certain illnesses, and I had not, and then in further discussions about what I had worked with it became obvious that I in fact had benzene poisoning. The whites of my eyes were yellow, my blood serum was very yellow, so there was a potential that my liver and kidneys were being affected. And I was actually hired provisional on those medical symptoms clearing up. And so for the first four months I worked, I would go over and get blood drawn and, you know, they'd give me a check until it finally cleared, and no follow-up symtomology.

*And so their concern is that if that doesn't clear up, then any other—then—why was it provisional, this is my question?*

Actually it's from a legal liability standpoint. They didn't want to hire somebody with a medical condition that they would have to pay for if it wasn't of their origin. And so it was provisional on that clearing up. Otherwise I could've been terminated at any time, and then I'd have to seek recourse through my prior employer. But fortunately it cleared. That was kind of scary, and I think that's probably the first time I ever really stopped and realized I wasn't immortal.

*Yes. But you had no symptoms.*

No.

*Then you didn't feel anything.*

No. Strictly by observation but not by sensation.

*Yes. Interesting. So you're living in Las Vegas—*

Actually I was living in Henderson with my parents, still.

*Oh, because you weren't married yet?*

Right. And my parents gave me an ultimatum. From the moment I went to work I was paying room and board, as it should be, and I used to complain about how much it cost me each week. And my mother very wisely said, `Anytime you can find it cheaper, take it.` And so when I went to work out at the test site, all of a sudden here we've got a cafeteria where you couldn't eat a dollar's worth of food, and I had a bed in a trailer where there were two of us in one end and two in the other and a shared bathroom, and that was dirt cheap. I mean we're **[00:15:00]** talking a few cents, and so that was cheaper, and so I would go out on Sunday night and I would be there all week and go home on Friday evening and then spend the weekend at

home. But it was not the full charge and I could beat the cost of living at home, so that's what I did.

I spent several months out there until my wife and I were going to get married, and at that point we went down and we put the money down for a house and that was all being processed with the expectation that it would be approved. And two days before the marriage, they came back and said, We can't approve you for that great of a loan, so therefore, you're going to have to settle for one of the smaller houses. And that was not something to our liking and so we literally got an apartment and lived in a very plush apartment for several months and then moved into a house in Henderson that we rented for a while. And then eventually bought a house in Las Vegas and moved in. But yes, that was one of a few things that happened right at the point of marriage that sort of made things awkward. We didn't have any furniture to speak of so, you know, we didn't have a big problem there. When we got the apartment it was fully furnished and it was a very, very nice two-bedroom, fireplace in the living room—

*Where was this?*

It's straight across from the Boulevard Mall now, the Fleur de Lis Apartments. So they were extremely high end at the time. And of course there was very little construction south of there and so we constantly had a problem with blow sand coming through the sliding glass doors. But you know you just vacuumed and took care of it.

*So then you both commuted to the site? She was working out at the site too?*

Yes.

*Every day?*

Yes. And then she worked downtown for a while after that. Actually worked swing shift downtown for a while.

*And her name?*

Darlene. Yes. My son's mother. But when she got pregnant then we moved to Henderson because my son was actually delivered in the hospital in Boulder City, which is no longer the hospital but that's a different story too. I think it's a nunnery now.

*Wow.*

Well, the other hospital that I was born in changed radically, so wouldn't it make sense that that one would?

*Right.*

And they built a new one on the south side of the town, but the original hospital sits up on top of the hill just to the right of the Bureau of Rec[lamation] building.

*I'll have to check that out.*

Yes.

*And so this is what, mid-1960s now your son is born?*

Yes. And so we were in Henderson and sort of moving around as things progressed but for a while we wanted to be closer to Boulder City in order to be able to get her to the hospital quickly and that. And chose the Boulder City Hospital because it was significantly less expensive than Southern Nevada Memorial [Hospital] and Rose de Lima in Henderson. But I didn't want to move back to Boulder City, although there are so many positive aspects of Boulder City, I was still in that mindset that it's a nice place to visit but I wouldn't want to live there. And certainly not subject my son to that. And plus it made for a really long day if I'd moved out there and worked at the site.

*The commute, yes. So what would a typical day look like? You'd get up, what, you'd have to get up early once you're living in Henderson with your wife?*

Fortunately we only worked an eight-hour day so we had to be at the site at eight and then left at 4:30 on the dot to go home. And so by 6:30 I was at home, have a nice dinner, what have you, go **[00:20:00]** to bed by nine, and then up 5:30 in the morning, get ready, and be out at the site by eight, Monday through Friday, and then the weekends off and then holidays. I was fortunate because I worked in Mercury. Now there were times when I would do an assignment out in the forward area but I never had a time where I actually had a reporting site in the forward area and had to be *there* at eight. Otherwise that would've *really* stretched the day out. But usually during that period, rode the bus and it was the LTR line, Las Vegas-Tonopah-Reno Stage Line, and the buses they had were standard buses with standard spacing on the seats and all, and so for twenty-one years I rode the bus. And in order to sleep enough I'd sit on an aisle seat, then twist sideways so I could lay my head on the back of the headrest and then put my legs out in the aisle and curve them back in underneath the seat in front of me. And I am convinced that that's what really messed up my neck.

*I wouldn't be surprised.*

It looks horrible on the radiographs, absolutely horrible.

*Really.*

Yes.

*Do you have pain?*

I have had serious pain and went in and had one disk repaired and a fusion on the next one up. And I still have a little discomfort once in a while with the one above it, and they said I might need to come back and have it repaired also. But it's not bad enough to do that. But the original

work that had to be done, I was in severe pain and there was *nothing* that they could do. They were doing the pain management injections and everything, and when those would wear off roughly a week, two weeks later, it was far worse than before, and it was one of those situations where I essentially either wanted to have it fixed or I wanted to kill myself, the pain was that severe. And I had a really good doctor who did a beautiful job and I have not had that discomfort since. And after one year, one year after the surgery, I sent him a thank-you card. He was shocked because I didn't lose very much mobility at all.

*That was going to be my question. Did you have trouble with your arms or anything?*

Well, primarily the rotation of the head. I had *very* minimal loss there, and I can actually touch my chin to my chest, which is very unusual after a fusion. And I was extremely pleased.

*So this happened sometime after your twenty-one years of riding that bus.*

Oh yes, that happened, oh I want to say 1995, 1996 when I went in and had the surgery.

But it just deteriorated very quickly.

*No, I think that that constant unalignment or whatever can really wreak havoc, obviously.*

Oh yes. But I rode the bus and then when we bought our home on the west side of Las Vegas and moved in there, then I would catch the bus from the corner. I mean literally the corner where I lived. I mean the network of buses were very thorough.

*That was what I wanted to ask you because I've heard about these buses, so it's not a matter where everyone's sort of meeting at a handful of locations. The bus is picking people up all over the city.*

All over.

*And all over Henderson obviously.*

Yes. And even drove out to Boulder City part of the time. And you'd have the waves of buses because the ones for the forward area would go through and then go out to Area 12 or what have you. Then a half-an-hour before my bus would come, the one would go through that went to the control point. And then you'd have the one that took you to Mercury. And so yes, there were *very* large numbers of buses going out there every day. And sometimes you'd have a situation where you'd have to drive a few blocks, and for a part of the time I literally walked out the front **[00:25:00]** door and right around the corner and stood there on the corner.

*And these buses were full of people.*

Yes. And so that was really convenient. And then for about, oh, two or three years I actually rode in car pools also, which was a whole different situation because they're people you work with and you could swap stories and tell what you did the night before, you know, the lies and exaggerations and everything. That got to be really interesting.

*I bet you have stories you'll never tell me.*

Well, there are some that need to be buried.

*OK. But to back up a little bit, when you first get the job, then obviously you must go through a clearance procedure. At this point are you cleared in some way to do that work?*

Well, you're uncleared and that certainly means, you know, you're restricted in what you could do, but your clearance was put in process immediately. And it was not OPM [Office of Personnel Management] or one of those organizations. It was actually an FBI [Federal Bureau of Investigation] investigation. But it was a full-blown FBI investigation and it took, if you were lucky, four months and more frequently six months, and some people went a year before they got their clearance, just depending on where they'd been and what they'd done. And so I got mine about four months out because essentially my whole life was right here.

*Right, and they must not have counted you going to, what, Canada as a youngster in the way they might count travel as an older person?*

Right.

*People have said that travel is a complicating issue for a clearance.*

It was a situation where the majority of the things that needed to be checked were right here so the field agents didn't have to run all over. The thing with Canada, it was a national program. The Civil Air Patrol was an auxiliary of the U.S. Air Force and still is today. We flew on military aircraft. When we were in Washington prior to departure we went down and toured the various key facilities in Washington and met Senator Hubert Humphrey who came out and talked to the group of us and, you know, things like that. So you know it was certainly different than the average tourist who you can't really double-check where they stayed on what given night. And so it went really, really fast for me. And then I could find out all those top secrets, you know.

*Now that's a question I had about the clearance. There are levels of clearance that you got at the test site?*

Yes.

*OK, so you start at a particular level that matches—?*

Essentially you had three levels, and depending on what type of activity you were doing dictated what you were put in for. And so because I had the potential of working with classified material, they put me in for a Q-clearance, which is the equivalent of a top secret. There was also an L-clearance, which was a secret, and then they had another level that is confidential material. And so you had those different categories, and although you were cleared for one, if they wanted to upgrade it they had to go all the way back through the process again because the first time through they only dig as deep as they are required to. But even to just go to work at the site with

no clearance, they had to go through a name check and stuff like that. Not that that stopped people from working out there who had checkered pasts, but if they had served their time and had not escaped, then they could work out there. And we had people at the test site in the labor force that had been convicted of robbery and murder and, you know, things like that but they'd served their time and they did good work. Yes, you know, that was the way the **[00:30:00]** process worked. And until *much* later, and I mean I'm talking 1993, thirty years later, I did not understand and appreciate that a top secret is not the end of the hunt, that you have SCI beyond that and—

*SCI stands for—?*

Secret Compartmentalized Information.

*OK.*

OK? And you have various categories of information. And so on the old badges—the new ones you can't tell anything. I mean these are essentially the most worthless badges in the world. The old ones, down the one side you had numbers that would be punched out that would indicate what *areas* you could go into, because you could not just automatically go anywhere on the test site. You could have a badge with a Q-clearance and not be able to go outside of Mercury. And then down the other side you had sigmas which identified types of information. And so you could see weapons designs, you could see result data, there were sigmas for the nuclear rocket programs so that you could know specific design information about the rockets, stuff like that. And all of that was on a badge. I mean you could tell immediately if a person could even sit in a meeting or if they had to get up and leave. And most of that is gone now. I mean it still exists, it's still out there, but it's not put out on the badge and I guess it's a new and enlightened approach where if you're not qualified to listen to the information you excuse yourself and leave

the room until they tell you you can come back. I don't know. But it seems strange after having been raised in a system, and I mean literally raised in a system, that was very clear-cut, and I mean from across a room you could tell because uncleared people had red badges and cleared people had green badges and L-clearances had yellow, and there was never a question. Now, even with this iteration of badges, they're so obscure that you have to go look up on a chart to see what any given color pattern is, and it's just not something that people are constantly reminded of.

*That's interesting. You raise a couple of questions here. Back to the way it was. So someone could be in Mercury doing Q-cleared work but would not be cleared to be out somewhere else doing the same level of work.*

They could not go past Gate 200 which was just on the hill north of Mercury. So they couldn't even look over into Frenchman's Flat.

*They couldn't literally let their eyes fall over that hill.*

Yes. They specifically put that gate there to prevent anyone from seeing the activities on Frenchman.

*And then—so you're seeing the badge and you're seeing the color, you're seeing the symbols on the side that show what kinds of things you can look at, and then does from that grow any sort of hierarchical stuff from that as far as what kind of punches you have out?*

Only in a game-playing way. It wasn't a status.

*That's my question.*

Yes. It wasn't that at all but it was fun to see if you could get something added without losing anything.

*So there was friendly competition about what you could have happen on your badge?*

Yes.

*But you don't have, for example, a Boulder City stratification of greens from reds from yellows, except for I guess what you could see and know.*

Yes, because essentially we all were involved in the same activities, you know, and so then it became a game, a one-upmanship game, and even when you got the clearance, nine out of ten times you never saw anything. You just didn't have it on a day-to-day basis, but you were cleared on those occasions where you *needed* that piece of information. I mean how often have I ever needed to know a specific weapon design?

**[00:35:00]** *Yes, that was going to be my next question. Without, you know, wandering over the border of what we're allowed to talk about here, when you're talking about what you could see, now you're either talking about a thing you can see but you also must be talking about sometimes documents and descriptions you can see, right?*

Yes.

*So—*

It was the philosophy of "need to know." Even after you had the clearance, you still could not see something just because you had the clearance. You had to have a job-related requirement to see a specific document.

*So, for example, generally speaking, you're in your lab and you're doing some kind of work. Some time there would be a document that you'd need to look at that would say something about weapons design, for example, or whatever.*

We got that one more from the standpoint of when we'd have to support the forward area and go out to a ground zero and they're lowering one down hole and you're going to see it there.

*You're going to physically see the device and you're cleared to actually lay your eyes on that device for this underground test that you've done some chemistry for or some—?*

Or, you know, we're supporting the monitors who were out there doing radiation control and we would be there at the time they're going to lower the rack. And so we got that just as an automatic because in many cases we actually interchanged, where you'd have people in the lab go work in the field and people in the field come work in the lab for whatever reason.

*And your basic function here is the monitoring of the radiation that results from these tests, is that right?*

Personnel monitoring to insure that any dose they receive was accurately documented and appropriately calculated and put in their records. Environmental monitoring to see what kind of releases were going on and what kind of uptakes were occurring in the vegetation, stuff like that, and in the water. And then air monitoring to determine what was released that could potentially go off-site and expose the general population off-site. But once it hit the boundary of the test site, the Public Health Service originally and then EPA picked it up from there and they interacted with all the farming and ranching communities near the test site and then tracked it from that point on out. And they had their own small aircraft to do air monitoring, following the clouds and that.

*So your basic clientele then is the people on the test site and the environment of the site.*

Yes. Not from the standpoint of getting a core sample and determining the yield, the efficiency of the weapon design, nothing like that. The labs did that. But we were there strictly for the protection of the worker and the public.

*Now I had a question, a sort of historical question, about the Public Health Service and since you brought it up, maybe you can answer it for me. The Public Health Service is brought there or created there at some point for that very function of the wider community?*

They did a little bit of work on-site early on and handled the off-site program. And then they transitioned over to essentially just doing the off-site, with one exception and that was the EPA farm. And that was there for many years. But the farm was up in Area 15. They had laboratory and office space in Building 155 there in Mercury but they would collect their samples and usually take them all the way back into southern Nevada or Southwest Radiological Laboratory is what it was then, and do their analyses there. So they were rarely in Building 155, but early on they would actually meet there on shot days and then go out to the farms and that prior to the **[00:40:00]** shots and positioned to go from there. And they came in very early in the program because there were mixed forces originally. You had military monitors and you had Public Health Service employees. But realize that many in the Public Health Service were in the Public Health Corps, I think is what it was called, and they actually wore a uniform, like the surgeon general, and the whole thing, and I don't think there are any left here in EPA. But for years after I came here to NNSA [National Nuclear Security Administration] there were still people that were now transitioned to EPA that still had that requirement, and once a month they would have to wear their uniform. And Chuck Costa with Los Alamos lab is a good example. So it was a constant reminder of the historical connection. And so that's how Public Health Service originally got on the site, to back up the laboratory and military contingent. And then evolved with the off-site program which for years was theirs and theirs alone.

*With the monitoring off-site.*

Yes.

*Right. Yes, that's all very interesting. With the military, when you've got soldiers going out in areas where testing is going on, how does clearance work there?*

They would have what they refer to as the joint task forces, which were a consolidation of the AEC [Atomic Energy Commission] and their contractors and then the military components. And the joint task force would be the umbrella that laid out the whole process. And they could operate in the same areas but operate under different rules. The amount of exposure is a good example. The military could get a greater exposure than a civilian contractor. And the way doses were calculated changed or was different. In some cases it was you couldn't have more than three Rem in a quarter and five in a year if you were on the civilian side, and on the military side you couldn't have more than five. Or if you were a pilot in certain cases you couldn't have more than twenty-five Rem.

*And what's the rationale there, do you think, from your knowledge?*

The stuff on the civilian side was driven by the Atomic Energy Act and the Code of Federal Regulations, where the military were not operating under those constraints and so they took the recommendations of the international community and interpreted them in different ways. See, on our side you could have an individual get twenty-five Rem in an emergency, you know. Recover a critical piece of valuable equipment or recover an injured person, even a body, a fatality, they could get, one time, twenty-five Rem. OK? On the military they looked at it slightly different and so they allowed the pilots to get those exposures where they needed critical information, but they wouldn't allow the ground troops to get that.

*Right. So the pilot is flying over a site and they—*

Penetrating the cloud, getting samples, tracking the cloud for long distances.

*But this is all us, this is all on the testing side that we're talking about. We're not talking about any sort of combat thing. It was just to do with the testing here?*

Right. Here and in the Pacific.

*Yes. OK.*

So you know if, for instance in the military you have somebody who you know is only going to **[00:45:00]** be there for a specific series and then there's no potential for their exposure for the rest of the year or years thereafter, they would go ahead and give them their annual dose, because they could have five Rem per year. OK. And so it was a matter of interpretation, you know, how does this apply to our situation? And they are different. They are apples and oranges. So you couldn't do a direct across the line, say, `Oh well this guy could only get 3,000 mRem in this ninety-day period and this guy over here got 5,000 mRem potentially in three weeks.` But that was going to be his entire annual exposure.

*Right. But it's interesting the way you put it, I mean to think of it in that way rather than—it's just interesting, the thinking that they can go up to this much because maybe the guy is going to transfer out of a place completely who's in the military and he'll never have any radiation exposure for the rest of his life. But the notion that it would be OK then he can have up to this much rather than let's try to have him have as little as possible, if there's a mission that needs to be done, OK , we can do that mission and get you all right to the edge. Do you know what I'm saying?*

You're looking at it through today's eyes, OK? You have to understand that the dose limits were recommendations that were provided by the national and international bodies of leading science, and they were extremely conservative where you couldn't even see any change in the blood until you got to twenty-five Rem. We're talking 20 percent of that in an annual exposure. So they were conservative from the beginning. Now we're looking at it from the standpoint of ALARA

(as low as reasonably achievable) and so what you want to do is keep the dose to any one individual as low as possible, and there are several ways to do that, one of which is spread it out over several people. But it's a whole different philosophy that came into play.

*Great. I'm really glad you clarified that because I didn't even know that there was this other regime called ALARA until you just said it.*

Oh yes.

*So it's interesting how numbers can, you know, when you record it, it's going to be on one side of the number or another as far as how you're looking at it, and that's really great that you clarified that for me. So the military's saying, OK, we need to do this work. This up to this point is safe. We go up to this point and then no more. So be it.*

Right. And they're out of there.

*And they're out of there. And it's really different than the philosophy of—next to zero is best so spread it out in different ways.*

See, and then you had the workers on the test site who wanted to continue to work for the entire year and they knew they had a 3,000 mRem limit and so you had what was quaintly referred to as "the bricks." You'd have two lead bricks with a half-sphere hollowed out on each one of them, and soon as you got your assignment and got in your vehicle and started driving down the road, you took off your dosimeter and put it into the hollow space in the lead bricks. So that way you never got an exposure recorded or you got minimal if you elected to wear it part of the time. And then they were never laid off because instead of giving them a different work assignment where there was no potential for exposure, they literally laid them off when they reached their three Rem limit for the quarter.

*OK, so back up, and so we're talking about what sort of group of people here, are we talking about?*

The radiation monitors.

*Oh, the radiation monitors themselves.*

Yes.

*Oh, OK. All right.*

So I have never seen that done but the old timers, when I went out there, certainly admitted to it because they wanted to work a full year. Makes sense. And so by the time I came along they were starting to get enlightened and understanding that the employees would work around these kinds of artificial situations. So that's when they started saying, `OK, if anyone were to have an exposure, they'll moved into Mercury and work in the lab or work in, you know, one of the other functions and not be out where they would have potential occupational exposure.` So yes.

**[00:50:00]** *So these are the radiation monitors themselves who would know a little bit more than maybe, I don't know, a miner or someone else who might not have the knowledge of what they're dealing with?*

But they already knew that the levels were artificially low and so they didn't worry about it.

*So if you're looking at dosimetry in any sort of historical way, you have to sort of know these little quirks and things that happened.*

Oh absolutely, absolutely. And you need to know the radionuclides, you need to know the physical form to do any kind of calculation on internal deposition, and so—

*"Internal deposition" means—what you do mean exactly by that?*

You've breathed in or you've ingested and it stayed in the body.

*As opposed to exposure from the outside, you're saying.*

Right.

*OK.*

And so if you have like a gamma exposure external, once that exposure goes through you it's over.

*It's not sitting there in your bloodstream.*

If you've taken and ingested or inhaled and you've got an accumulation of a radionuclide in the body, in a specific organ or evenly distributed, that exposure continues over time until the biological and radiological half-lifes drop it down and it decays out. And fortunately with most fission products, they decay fairly rapidly, but then you've got some like strontium-90 that are bone seekers and they're there for a while. So you know obviously one of the laboratory tests we did was strontium-90. You wanted to know what portion of the sample was that specific isotope, and at that point the only way to do that was through analytical radiochemistry, and so you separate the strontium and you let it grow in over a period of a week and multiple counts and that and then calculate.

*What is it growing in actually when you're watching it?*

You're looking at the ratio between yttrium and strontium-90, and so you're tracking that way to determine how much you're going to end up with, and the ratio varies with the time from separation.

*OK. And when you're physically doing this, what kind of things—just so I can get like a picture of the lab. You're working with chemistry so you're working with things in containers of certain kinds and—is that right or—?*

We worked with urine samples, fecal samples, nasal swabs, wound swabs, soil, fallout trays, air filters, gas cartridges, vegetation, water samples, did some animal work for a while—

*With live animals or—?*

Oh, not when we got them.

*They weren't alive. You were analyzing what had happened to them, is that right or—?*

Well, the uptake that they had. But they would have been collected and they would come in ready for analysis, OK? We wouldn't have to feed them and take care of them.

*You're not on the farm.*

No, and so when we were doing the field mice, that got kind of messy because they'd come in and the first thing you'd have to do is digest them down in boiling acid until they were broken down, you know, into the basic material. And we'd do them in a very strange flask that was real round on the bottom and a long neck, and it was a real problem at first during the digestion process because you'd have the fur and that and they would start to swell, the bubbling and all, and if it hit that neck then it was like a shotgun and they'd go *boom!* right out with the heat of the gases. So then you had to go in and clean the entire hood, so you hated that. You always made sure you kept the boil very low and took extra time. But that's one of the kinds of studies that we did. You needed to know what was happening out there on the ground. Long-term. And it sounds gross but, you know, some of the other samples were grosser. But that's just what part of the job was.

*Right. Right. Interesting.*

Now, fortunately we didn't have to do the sacrificing. I had occasion to go to the Armed Forces **[00:55:00]** Radio—Radio—can't remember the name of it now. It's in Bethesda [Maryland]. I want to say AFRI: Armed Forces Radiation—I can't remember the rest of it now [Armed Forces Radiobiology Research Institute (AFRRI)]. And that's where they did all the studies where they exposed the cats, rabbits, mice, and chimpanzees. And just to walk down the halls of that was very depressing, and then to walk in the room where they would strap the chimpanzees in and then give them the exposures to see the motor function deterioration and translate that to a pilot

and what they would experience, you know, that was *really* depressing. I went there once and I never want to go back there again. It was information that they needed to understand but I wish there had been a kinder and gentler way to get it.

*Wow. You were there for some sort of training or—?*

Actually that was much later in my career, where I was working with nuclear test participants review teams. This was in the late 1970s, early 1980s, and I had gone back for a team meeting in Washington and we went over there to see that facility as part of the meeting. But not the kind of job I would recommend anyone to have. You'd really have to insulate yourself to be able to do it day after day, and I know I couldn't.

*One of the things that's interesting and important about what you're saying is that—I'm not telling you anything you don't know—that understandings of the general population about the kinds of things that went on in the nuclear testing world to look at effects, do you think that some of the misunderstandings there are related to the fact that so much that happened at the test site was secret for a long time, that there's always this problem of mistrusting the government to do the right thing? But what you're describing is so much—your whole job was basically safety-related at this point, if I'm understanding you correctly, so you must have thought about that over the years, with different responses from the public.*

Well, it's frustrating because it is a matter of perception and it is fostered by the fact that so much was not publicly known. I don't think the fact that those programs went on needed to be classified, but certainly the results—I can see the logic in not wanting the enemy to know at what point that what exposure that a pilot would cease being able to function, that kind of thing. But I don't think the public would have accepted the program without understanding the result, the purpose of the program. People look at the film footage now, or the photographs of the pigs on

Frenchman's Flat, or the goats on board the ships in the Pacific and they think that is the most cruel and inhumane thing that any person could ever do. And the thinking at that time was it's a hell of a lot better to give up your breakfast bacon than a comrade in order to find out the effects, **[01:00:00]** where the thresholds are, and what the accumulation effects are. So we'd just come out of a war and we'd lost millions. Doesn't really seem all that serious to lose a pig. Just a different time. We don't have any immediate connection now. We have small numbers who are lost in Iraq, Afghanistan, other places around the world. We're not talking about look on your street and count how many places have the flag with the stars on it. That was World War II.

*So even when you're at the test site now, 1960s, you seem to be saying that that specter of the Second World War is something that people are still living with.*

You have a large number of people who were in World War II and were in Korea and you have the stories, the constant reliving that you're exposed to, and so yes, you have that carry-on, where that's not there now. There are very few veterans left that are in people's day-to-day lives and large numbers of people, and so you don't have the same type of feedback. But it was very much alive and the fact we had gone into a Cold War and, well, the Berlin crisis and then followed that by Korea and all the transition there. Then you go into Vietnam where we were fully indoctrinated in the domino effect, and if one nation fell all of Southeast Asia was gone, and then it would progress from there. That was the common perception that was the belief that people carried, and so yes, you know, they may have been the best of times but they were the worst of times, just like in Dickens. We had a good standard of living, we were doing fun things because we made good money, but we also had that underlying fear that it could be temporary and if we didn't solve the problems they wouldn't be over there, they would be here. So you had that kind of a mentality that drove you. And although I didn't go to Vietnam I felt very proud

that I had worked in the defense of our nation in a very different way. I don't begrudge the people who elected not to go and went to Canada. That was something they felt and they weren't committed to the defense of the nation. I understand that. I have acquaintances who did that. But I also had good friends that went and served. I had an individual that went to our school but was in an earlier grade who was killed very early in Vietnam and it was quite moving to see his name on the memorial and know that could've been me. But I had no one in my class who was killed in Vietnam and no one, because we had a graduating class at Basic of about a 150, and I know of none that were killed in Vietnam. I know some that were injured, got Purple Hearts. But you know it's a totally different experience from what people had in World War II and the mindset they came out of World War II with and that we heard on a day-to-day basis, the **[01:05:00]** sacrifices that were made. We weren't making sacrifices as a nation. Individuals sacrificed everything, but as a nation we were not making sacrifices, where in World War II the nation did.

*The way we had in World War II?*

Yes. I didn't see very many people giving up their aluminum pots in Vietnam, OK? And the rubber drives and the aluminum drives and all of that in World War II, you know, they're part of the lore. The home front sacrifice. But yes, that had a major influence on the way we thought as a kid in the 1950s and into the 1960s and Vietnam was different. It truly was.

*What's interesting is the way you're articulating because of the nature of the work at the site, the defense work that it was, that the way the legacy of the Second World War manifested itself in that particular environment, I know being of that generation what that was like in my community, but to hear you articulate it in terms of what, you know, and you're there working and you've got these guys, what, who probably served in various places or did defense work in*

*other ways and they're telling you and how that's carried forward in a different kind of way than it would be in more of a community setting.*

One of the bizarre things, I mentioned the Seven Dwarfs. One of the dwarfs that I actually worked with initially and taught me some of the procedures hands-on was Dan Stewart—Danny Stewart. And he left, oh, probably a year after I went to work there. And a couple of years later we had an FBI person show up and wanted to understand how a person who could be working in the nuclear weapons program with a top secret clearance was filing as a conscientious objector. And that's very easy to explain. We were dealing with the safety side of the house, making sure the workers were not injured in any way. Had nothing to do with carrying a rifle and shooting someone. And so it seemed perfectly natural for me. I had no problem understanding that but the FBI agent on the other hand thought he was trying to run a scam because he used to have this Q-clearance and work on nuclear weapons programs.

*Oh, I see what you're saying.*

So you know we were in a different category than many of the scientists and technicians who truly did the hands-on to perfect the design, improve the yields, things like that. Our philosophies were different. Doesn't make one right and the other one wrong. It's just that we approached our work somewhat differently. And from day one I always felt like I was looking out for the other people working there, and my focus was not in making sure that weapon worked right. So no, I'm not a weaponeer nor have I ever aspired to be a weaponeer because obviously I never had the education to get there to begin with, or the interest. But I did feel that it was critically important that the people who were out there taking the risks got the maximum protection possible. What they did was important too. Very important. I saw the value in that, but it didn't mean that I thought everyone should buy in automatically to the entire process, and **[01:10:00]** people

through good, in-depth searching could decide that no, they didn't want to go to Vietnam, carry a weapon, do things like that.

*It's a really interesting moment in history to think about what you're articulating and the ways the World War II generation, Vietnam generation, and what you say, making those kinds of decisions, feeling that you have a right to make that decision on your own. What do you think, when you say the different philosophies, I think you've articulated it though, you were saying you were there to look out for the protection of others and then you're not there—but that's what you mean by the difference in philosophies.*

Right.

*You're not there perfecting, making a super weapon kind of thing. But there must have been at the test site—we're getting close to the end, we'll pick this up next time—but I know that there must have also been among people there the whole deterrence notion, that we're doing this so that it won't be used sort of thing, at the same time that they're building things that will be used. Let me put it in the form of a question: Is that correct? People will tell you that now.*

Actually it was an evolutionary process because the first thoughts are we have this weapon and although other nations are acquiring it they're behind us, and we have to maintain the maximum capability to defend the nation. Now that's how it starts and then you evolve into the MAD [Mutually Assured Destruction] concept that although they've got the weapon too and it's as bad as our weapon, they're not going to use it because the first person to use it is going to wipe out the Earth. And then you evolve beyond that and you say that truly is insanity. Now we've got to find ways to get those weapons under control because we're dealing with thirty thousand in one country alone. We've run to the extreme. It's time for the pendulum to swing back closer to reality. How do we start working with our former enemy where both parties can trust one another

and reduce them down to the minimum size that's needed? And so then you go into all of the various treaty negotiations that occurred and all. But it's really a three-phase process or a developmental cycle where initially you're trying to build and maintain the absolute best, and then you go in for volume because you want to make sure nobody ever does it. Well, the fallacy of that thinking is there's some God-damned fool out there that doesn't care how soon he goes and meets Hell. And so you're not dealing with the same sets of values with all of the players, and that's why that can't be the answer. So you go to the next one. What is the minimum you can possibly have to maintain the capability and prevent the insanity?

*And you really do see it as developmental. In other words, people again with hindsight would look back and say, well, why wasn't it obvious that it was insane when you were somewhere in the middle of that process? But you just start thinking—*

Because you didn't have the third world rogue nations. And you knew enough about the Russian systems to know that there were certain checks and balances and one idiot sitting at a control panel couldn't bring down the world. On our side we had all of the psychological tests, the dual keys, and all the rest of that kind of thing to try to instill those kinds of controls. But you know there you got two parties peeking at each other's way of doing business and saying, OK, you know, it's different but it accomplishes basically the same kind of thing.

*And you're saying that at some level it's about politics and diplomacy and geopolitics, let's say.*

Oh, absolutely. Absolutely.

*Yes. And statesmen taking calculated risks about what they think this one enemy, in this case the Soviets, will do.*

**[01:15:00]** Yes. What's unfortunate, because neither one really has a clear vision, they miss things and so although in the Cuba crisis the ships turned around and went back with the long

range nukes, we did not know until *many* years later that the tactical nukes were already *in* Cuba. Totally missed it.

*Well, we're getting close to the end of this and unless there's some little—any sort of hangover thought that you'd like to express in the next two minutes, we can take a break.*

I want to quote one of the Seven Dwarfs, and he passed away about a year ago. He came here from east Texas and worked at the site and then went into the Army and then back to the site and then worked there from that point on. But he made the comment about the people that came in to work there and the youthful population. He said a whole generation of us were raised out there. That is so true because that was essentially our first experience out of high school, away from home, or fresh from college and able to go in and do something exciting, something, you know, a key program for your nation, good money, and you grew. There were some bizarre mistakes, you know, that we all make as part of that growing process, but the fact that we all came up at roughly the same time and shared many of the same values as a result, I think is really great.

*Thanks. That's an important sort of encapsulation of that process, so thanks for that.*

What I'd like to do when we start next time, I want to essentially pick up the detail of when I first started work and then start through some of the specifics. We've danced around a portion over time, but it's usually been in the context of talking about a concept, a philosophy, and then I'd give you examples. But I'd like to pick up at that point because I think you've got a better grasp of the philosophy that we worked under and certainly why I find it bizarre that I'm where I am today versus where I started at. So I'd like to do that and get down to the real detail there.

*Yes. Yes. Great. That would be great.*

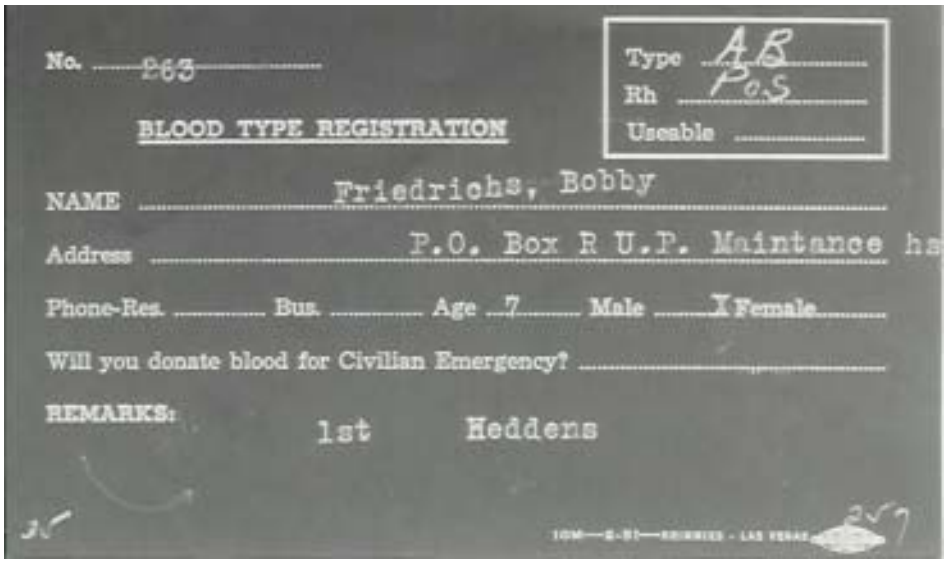
OK?

*Thank you.*

**[01:18:30]** End Track 2, Disk 2.

[End of interview]

1. This photo was taken when I was living at Desert, CA. My next older brother Carl is on the left and my oldest brother Bill is on the right. The photo was probably taken near Kelso, CA.



No. 263

Type AB
Rh Pos
Useable

BLOOD TYPE REGISTRATION

NAME Friedrichs, Bobby

Address P.O. Box R U.P. Maintance hs

Phone-Res. Bus. Age 7 Male X Female

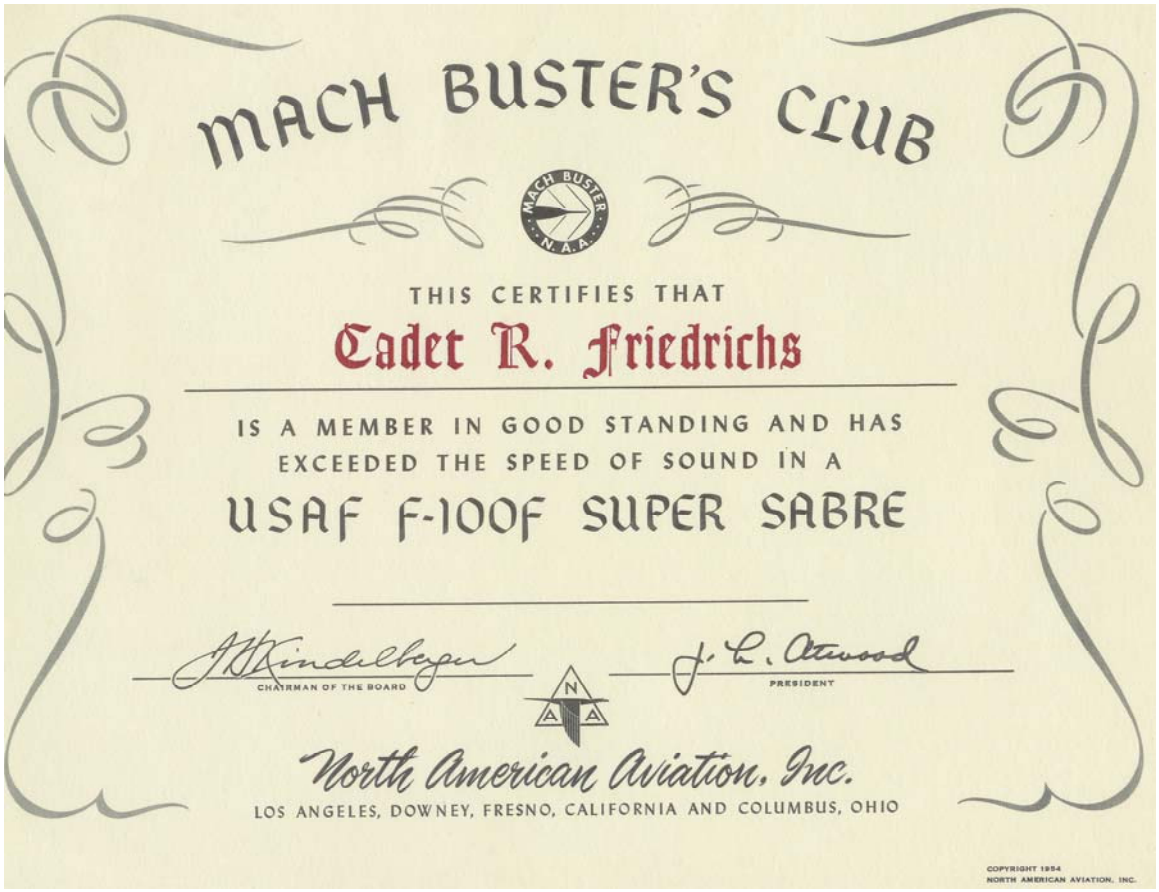
Will you donate blood for Civilian Emergency?

REMARKS: 1st Heddens

2. This document is the copy of my blood typing that was performed at the direction of the Civil Defense when I was in First Grade. All school children and most (if not all) adults in Southern Nevada were given blood tests as part of the nuclear testing program. Please note that my school grade and teacher's name are listed under the remarks section.


3. This photo was taken when I flew in a T-33 jet in 1959. I was a Civil Air Patrol Cadet at the time.


4. This photo was taken when I flew in an F-100F jet in 1960. I was one of two CAP Cadets that received the first such flights. The photo was taken at Luke Air Force Base, AZ.




5. The certificate was given to me by the North American Corp. for exceeding the speed of sound in the F-100F.

GRANT SAWYER
GOVERNOR

THE STATE OF NEVADA
EXECUTIVE CHAMBER
CARSON CITY
September 7, 1960

Mr. Robert Freidrichs
Union Pacific Station House
Boulder City, Nevada

Dear Bob:

I recently learned that you had completed a basic training program at Luke Air Force Base with a group of German pilots, thereby earning the distinction of becoming an honorary member of the German Air Force.

I am told that on your own initiative you arranged to take the course, and that you are the only American to have taken this training with the German pilots.

I wish to personally congratulate you for this accomplishment. You have demonstrated not only unusual resourcefulness, but have done something I would like to see more young Americans do - to cement relations between our country and one of the nations allied with us in the struggle against communism.

Cordially,

Grant

Grant Sawyer
Governor

GS:dpc

6. This letter from Nevada Governor Grant Sawyer was the result of my having been a guest of the German Air Force personnel stationed at Luke AFB.

7. This photo was taken when I was on the U.S. Delegation to the International Air Cadet Exchange program. The group of which I was a part went to Eastern Canada. Then Senator Hubert Humphrey is seated in the middle and I am on the top row with my head turned sideways (I think of this as my Forrest Gump Picture).

GOOD WILL AND UNDERSTANDING — Cadet Robert E. Friedrichs, son of Mr. and Mrs. Elmer A. Friedrichs, 572 Burton St., is one of 135 Civil Air Patrol cadets representing 50 states, Puerto Rico and the District of Columbia, participating in the 1961 International Air Cadet Exchange with 19 friendly foreign nations. Here Cadet Friedrichs receives a "key to international understanding and good will" prior to his departure from Washington, D.C.

☆ ☆ ☆ ☆ ☆ ☆

## Henderson Youth Honored During Air Cadet Exchange Ceremonies

Robert E. Friedrichs, one of 135 Civil Air Patrol cadets representing 50 states, Puerto Rico and the District of Columbia taking part in the 1961 International Air Cadet Exchange with 19 friendly foreign nations, received a "key to international understanding and good will" prior to his departure from Washington, D.C., last weekend.

In the form of a gold tie clasp and bearing the insignia of the Exchange — clasped hands across a winged globe—the keys were donated by the Yale and Towne Manufacturing Co.

The memento is a replica of a large silver ceremonial key to be presented to President Kennedy Aug. 9 when the contingent of foreign cadets — counterparts of the CAP cadets — visit the White House during their four-day tour of Washington.

Cadet Friedrichs, who left for Canada over the wekend, is the son of Mr. and Mrs. Elmer A. Friedrichs, 572 Barton.

Las Vegas Sun - 8/1/61

8. This news clipping was printed upon my return from the IACE trip.

CARL HAYDEN, ARIZ., CHAIRMAN

RICHARD B. RUSSELL, GA.
DENNIS CHAVEZ, N. MEX.
ALLEN J. ELLENDER, LA.
LISTER HILL, ALA.
JOHN L. MC CLELLAN, ARK.
A. WILLIS ROBERTSON, VA.
WARREN G. MAGNUSON, WASH.
SPESSARD L. HOLLAND, FLA.
JOHN STENNIS, MISS.
JOHN O. PASTORE, R.I.
ESTES KEFAUVER, TENN.
A. S. MIKE MONRONEY, OKLA.
ALAN BIBLE, NEV.
ROBERT C. BYRD, W. VA.
GALE W. MC GEE, WYO.
HUBERT H. HUMPHREY, MINN.

STYLES BRIDGES, N.H.
LEVERETT SALTONSTALL, MASS.
MILTON R. YOUNG, N. DAK.
KARL E. MUNDT, S. DAK.
MARGARET CHASE SMITH, MAINE
HENRY DWORSHAK, IDAHO
THOMAS H. KUCHEL, CALIF.
ROMAN L. HRUSKA, NEBR.
GORDON ALLOTT, COLO.
ANDREW F. SCHOEPPEL, KANS.

EVERARD H. SMITH, CLERK
THOMAS J. SCOTT, ASST. CLERK

# United States Senate

COMMITTEE ON APPROPRIATIONS

January 29, 1962

Mr. Robert E. Friedrichs
572 Burton Street
Henderson, Nevada

Dear Robert:

I am pleased to advise you I have today sent in my nomination of you to take the examinations for the United States Air Force Academy.

As you perhaps know, I use the competitive system to select my candidate, and this means you will be competing with my other ten nominees for my one vacancy.

Very shortly now you will receive instructions telling you where and when to report for the examinations.

Good luck!

Cordially,

Alan Bible

ALAN BIBLE

cc: Mrs. Lura S. Winall

9. This letter from Nevada Senator Allen Bible notified me that I had been nominated to the U.S. Air Force Academy. He routinely nominated 6-8 individuals each year and the one with the highest overall ranking received the appointment. I was nominated because of my activities related to the Civil Air Patrol. I did not receive the final appointment.


10. One of my early NTS assignments involved the analysis of samples from the Kiwi TNT nuclear reactor test. This photo shows the reactor at the time of destruction.


11. This certificate of participation was given to me for my involvement in the Kiwi TNT test. I had worked on loan to Los Alamos National Laboratory during this test.

12. The longest day I ever worked was when the Baneberry test was fired. This photo shows the venting that occurred during that test. I had started work at 7:45 that morning and got off at 5:00 the next morning. I returned to work at noon that day and routinely worked 12 hour days for several weeks thereafter.

**Reynolds Electrical & Engineering Co., Inc.**

**MEMORANDUM**

Date February 3, 1971

To R. Friedrichs

From L. S. Sygitowicz

Subject COMMENDATION - BANEBERRY SUPPORT

Bob, as you know, during the recent Baneberry event and subsequent cleanup it was necessary for the Environmental Sciences Analysis Branch to go into extended operations. Normally, a work load of 2000 analyses per month is encountered; during the operation 13,900 analyses were performed in a one-month period. The majority of analysis requests required the data to be reported prior to 8:00 o'clock the following morning. In all cases these deadlines were met, if not exceeded. All data reported was accurate, and the incidence of error was less than 0.5%.

I take this opportunity to commend you for your contribution in accomplishing this task. Your extra effort in completing large quantities of work while adapting to changing work assignments is a major factor which led to this success.

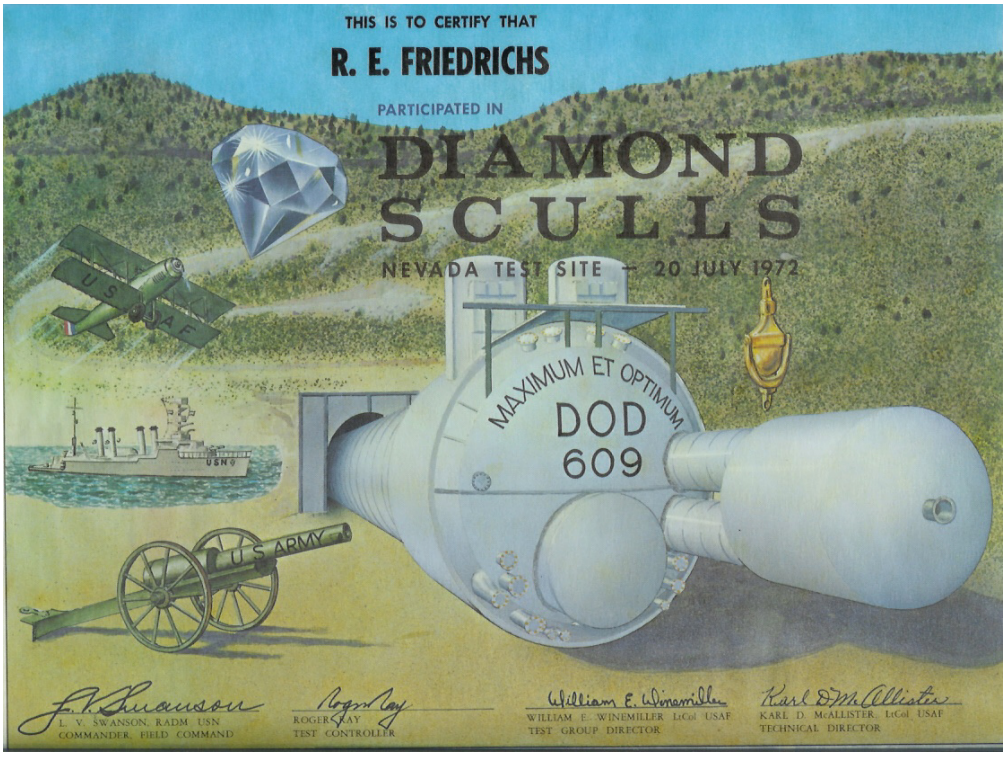
Thank you again for your outstanding performance.

LSS:mam

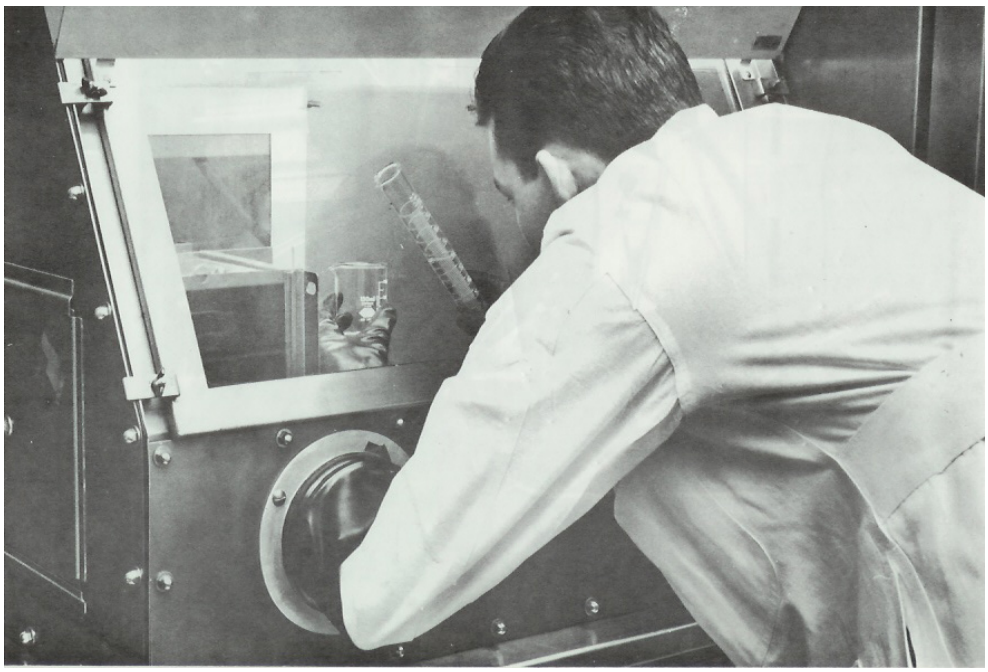
cc: A. E. Bicker
D. E. Engstrom
Personnel File



13. This letter of appreciation was given to me after we had wrapped up the sample analyses required for approval of personnel to return to work at the NTS.




14. This certificate of participation was given to me for my involvement in the Diamond Sculls event, the largest nuclear test ever fired at the NTS. I had worked on loan to Sandia National Laboratories during this test.



15. This photo was taken when I worked in the Reynolds Electrical Engineering Company, Inc. (REECo) Sample preparation Laboratory in Mercury, NV.

Department of Energy
Washington, D.C. 20545

NOV 14 1977

Mr. Robert E. Friedrichs
Reynolds Electrical &
Engineering Co., Inc.
M/S 705
P.O. Box 14400
Las Vegas, NV 89114

Dear Mr. Friedrichs:

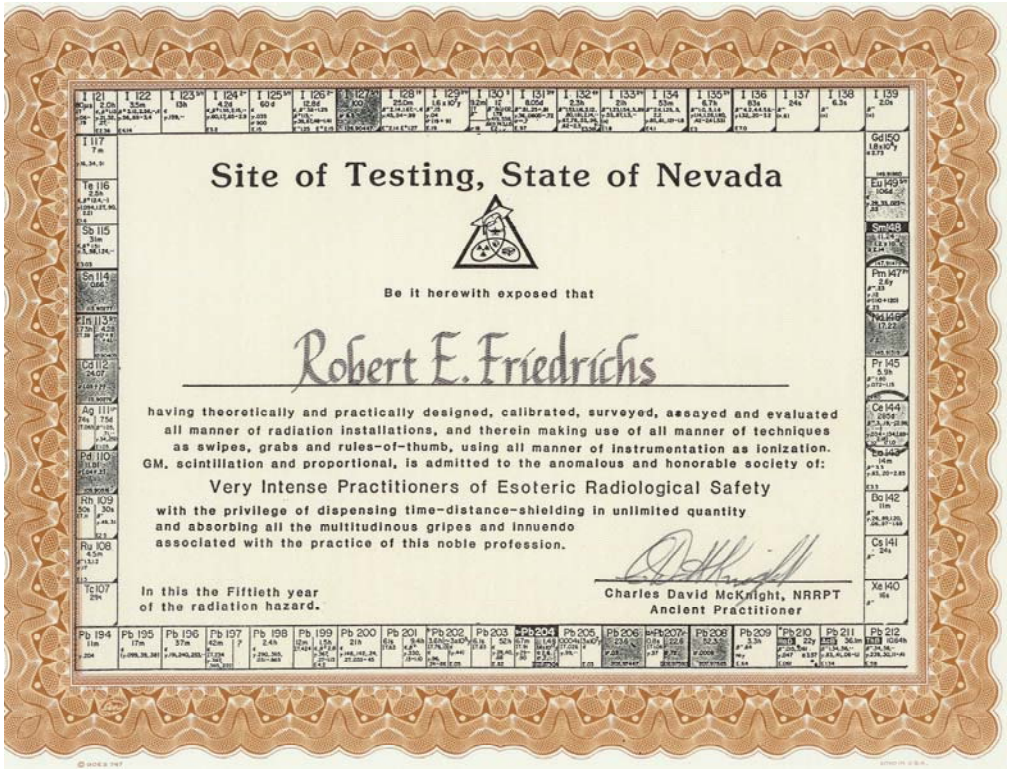
We have been advised by the Department of State that you have been officially nominated as a U.S. participant in the Symposium on National & International Standardization of Radiation Dosimetry, Atlanta, GA, December 5-9, 1977. If your plans change and you are unable to attend, please advise this Office so your nomination can be withdrawn.

Sincerely,

John H. Kane

John H. Kane
Special Assistant for Conferences
Office of Technical Information

16. This letter was the formal notification that I had been selected to be a U.S. participant in the International Atomic Energy Agency Symposium on the Standardization of Dosimetry that was to be held in Atlanta Georgia.



Site of Testing, State of Nevada

Be it herewith exposed that

Robert E. Friedrichs

having theoretically and practically designed, calibrated, surveyed, assayed and evaluated all manner of radiation installations, and therein making use of all manner of techniques as swipes, grabs and rules-of-thumb, using all manner of instrumentation as ionization. GM, scintillation and proportional, is admitted to the anomalous and honorable society of:

Very Intense Practitioners of Esoteric Radiological Safety

with the privilege of dispensing time-distance-shielding in unlimited quantity and absorbing all the multitudinous gripes and innuendo associated with the practice of this noble profession.

In this the Fiftieth year of the radiation hazard.

Charles David McKnight, NRRPT
Ancient Practitioner

17. This certificate was one of the less than 10 that Bama McKnight signed for old-timers in the RadSafe Group at NTS. I was honored to have been included.

18. This photo was taken at the luncheon when I received an award for having worked for REECo for 25 years. The photo includes Ed Weintraub, REECo Deputy General Manager, Tom Mehas, head of the Dosimetry Research Project, and Bernie Eubank, Technical Services Supervisor.

19. This photo was taken when I was initially involved in researching the XF-90 aircraft on the NTS during the 1990 time period.

20. This photo was taken as part of the annual EEO program for at risk students in Clark County. The lady in the photo is Marcella Guerra, the head of EEO at the Nevada Operations Office at that time.


21. This photo was taken as part of a ceremony where Nick Aqualina, NV Manager, presented me with an award.

22. This photo was taken upon my arrival at Johnston Atoll where I served as Deputy to the Commander in 1993. I am being presented to the staff by Col. Cornish, the Base Commander.

**DEPARTMENT OF ENERGY**
Washington, DC 20585

JUL 2 9 1994

MEMORANDUM FOR: CHARLES E. MCWILLIAM, DIRECTOR, ARMS CONTROL AND NONPROLIFERATION DIVISION, NV

FROM: GAIL L. BRADSHAW, ACTING DIRECTOR, NEGOTIATIONS AND ANALYSIS DIVISION

SUBJECT: PERFORMANCE OF ROBERT E. FRIEDRICHS

Bob Friedrichs has been detailed to this office for almost one year, and will soon return to the Nevada Operations Office (NV). I deeply regret that he cannot extend another year, but I recognize the undue financial hardship which would result. Robert has been extremely valuable to us and, I believe, to NV during his assignment here.

As we agreed, his primary role would be as liaison for NV and as Action Officer for the Threshold Test Ban Treaty related issues. However, his contribution has gone far beyond that. He has worked on Strategic Arms Reduction Treaty and Intermediate Nuclear Forces Treaty issues, on Comprehensive Test Ban negotiation issues, and a wide variety of fast breaking "crises" where he has been an All Star utility man. In addition, Robert has represented DOE in Nuclear Risk Reduction Center related activities.

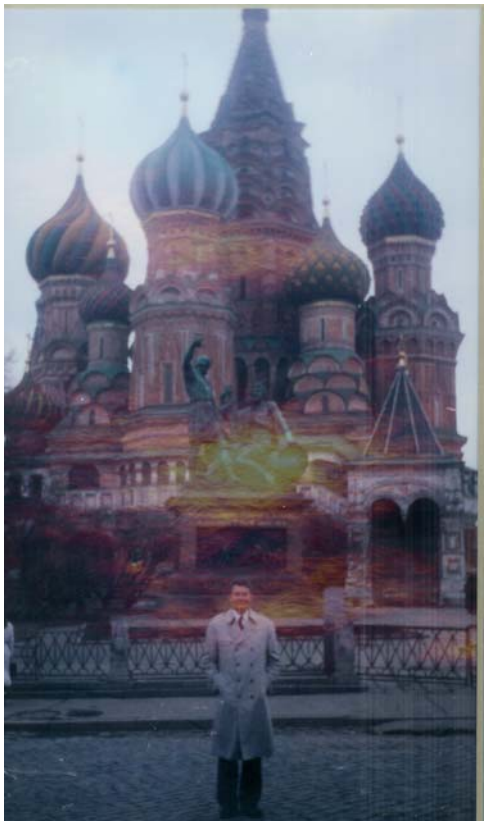
He has quietly injected a new perspective on many of the issues related to his primary assignments. His comments have been thoughtful and objective and, as a result, he has established a high level of credibility with other staff members, with me and with Tony Czajkowski. He has developed a similarly high credibility in the interagency. In his work with the interagency, he has looked after DOE interests without creating turmoil or continuing controversy with other agencies, a remarkable achievement in the Washington interagency environment.

Perhaps his most outstanding achievement, though, has been in his role as liaison with NV. In that, I believe he has brought important insights to both organizations in part because he has so often served as a conduit for getting us to talk to each other. His willingness to tackle any assignment, from compiling a video collection with an emphasis on foreign testing of nuclear weapons to coordinating development and presentation of an interagency tutorial on nuclear weapons testing, illustrates a crucial characteristic which has made him such a success in this office; he is a team player and takes initiative and responsibility. Robert is welcome in this Division anytime. Thank you for sending us such an outstanding individual.

cc: N. Aquilina
J. Magruder

Printed with soy ink on recycled paper

23. This letter from Carol Bradshaw, Director of the DOE Policy & Technical Analysis Division, was sent to my NV Supervisor to document my performance while serving on her staff at DOE/HQ.



24. This photo was taken of me when I was serving on the U.S. Delegation to the Nuclear Risk Reduction Centers Annual Consultations in Moscow, Russia.

25. This photo shows both the U.S. and Russian delegation members at the Old Ministry of Defense in Moscow.

26. This Photo shows the U.S. Delegation members at the GUM Department Store in Moscow.

27. This photo was taken at a sidewalk café on the Graben in Vienna, Austria while I was part of the U.S. Delegation to the United Nations Consultations on the Comprehensive Test Ban Treaty. Note that, because this is a serious discussion of complex technical issues, all of the drinks are hidden. The photo includes Gordon Macleod, Bechtel Nevada, Al Smith, Lawrence Livermore National Laboratory, Josh Segal, DOE/HQ, and me.

Certificate of Participation

This is to certify that

**Robert Friedrichs**

was a participant in the identification, recovery, decontamination, and preservation of the sole surviving Lockheed XF-90 aircraft from the National Nuclear Security Administration's Nevada Test Site during the period 1990-2003.

*Victoria Niemann*
Victoria Niemann
Project Manager

*Robert E. Friedrichs*
Robert E. Friedrichs
Senior Scientific Advisor

NNSA USAF Museum Fluid Tech, Inc

28. This certificate was the one that we prepared for those individuals that had participated in the identification and recovery of the XF-90 that was finally shipped to the U.S. Air Force Museum in Ohio. There were less than 30 that were awarded.

29. This photo was taken during the opening events for the Atomic Testing Museum. The photo includes the following people (going clockwise): Myself: Colleen Beck, Desert Research Institute; John Thorndal, Thorndal Armstrong Delk Balkenbush & Eisinger; Mrs. Thorndal; Ron Kalb, Desert Research Institute; Peter Ross, Desert Research Institute; Frank Tussing (standing left), Nevada Alliance; and my lovely wife Nancy.

30. This photo was taken by the Los Angeles Times for an article that was written about my search for “Miss Atomic Bomb.” It was published on January 2, 2005.