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

Interview with Elmer Sowder

June 23, 2004
Las Vegas, Nevada

Interview Conducted By
Mary Palevsky

Oral history is a method of collecting historical information through recorded interviews conducted by an interviewer/researcher with an interviewee/narrator who possesses firsthand knowledge of historically significant events. The goal is to create an archive which adds relevant material to the existing historical record. Oral history recordings and transcripts are primary source material and do not represent the final, verified, or complete narrative of the events under discussion. Rather, oral history is a spoken remembrance or dialogue, reflecting the interviewee's memories, points of view and personal opinions about events in response to the interviewer's specific questions. Oral history interviews document each interviewee's personal engagement with the history in question. They are unique records, reflecting the particular meaning the interviewee draws from her/his individual life experience.

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[00:00:21] End Track 1, Disk 1.

Interview was recorded on audio and video.

Mary Palevsky*: OK, so in 1942 you're at Texas A&M?*

Elmer Sowder: Right. And in late '42, early '43, I got a draft notice. So I decided I didn't want to be a foot soldier, I didn't want to slog through the mud. Turns out that's exactly what I did most of the time, but so be it. So I went down to the recruiting office—well, the first thing, right after Pearl Harbor I went into the Army Air Corps recruiting office, told them I wanted to fly. Well, they wrote me down and signed me up and set me up for a physical, and a couple of weeks later I got a phone call, `Come in to see us.` And this doctor, he says, `Elmer, you're in good physical condition but you have one big problem. Your depth perception is not good and`, he said, `we don't want you landing a plane fifty feet in the air.` So I didn't get to go fly, at least at that time. So then I went down the street to the Navy-Marine recruiting and signed up for the Marines. And so they put me through all the rigmarole and then they sent me to El Paso to actually get sworn in and assigned to a boot camp. So I started in the Marines in early '43, mid-'43, went to boot camp.

And when I'd left college I was on probation because I was not doing very well. College at that time was not interesting to me. It was a place to try to have a good time. So I was on probation. So when I came out of the service, I finally got to go back to [Texas] A&M. But I was on probation, so I had to pass what they called "twelve-twelve probation." Twelve hours, twelve grade points. My first semester had to be that or I couldn't go back to stay in school. So I went in

there and did that. I managed to pass the probation and ended up—well, it took me ten years to get out of college. I graduated from high school in ‘40 and I graduated from college in ‘50.

Right. Well, you had this little thing called World War II get in your way.

Well, a little interference, yes. Well, I was not the best student in the world. However, one of my problems in the early days was physics. I could not—they had probably one of the best physics professors there could be, but he was a strict disciplinarian and his tests would be the old mimeographed half-a-dozen questions or so and a blank over to the right for the answer. And if you didn’t get that answer—it didn’t make any difference how you went about it—if you didn’t get the right answer, you didn’t succeed. So I flunked his physics course the first semester that I took it, but when I came back on probation I took physics again. But I didn’t get the same instructor, and it was obvious I had learned some physics from the first instructor. He was a Briton, English, and it was one of these things, you know, he didn’t believe in six weeks examinations; he believed that you go for half a year or whatever and you take an exam. If you passed, you can go ahead. After the next series of lectures and all, he gives you another test. If you pass that, you can go ahead. So I learned a lot of physics from him but didn’t realize it at the time. So when I came back on probation, took the physics, straight A in physics. So I passed my probation.

And at that time, of course my father was still working for the Santa Fe Railroad out of Amarillo, Texas, and in summers I would go—he helped get me a job with the field engineering people at the Santa Fe [Railroad]. So when I graduated from college he asked me, he said, **[00:05:00]** Do you want to continue to work for the railroad? I said, I don’t know. I’ll go talk to them. So I did, and they made me an offer of a permanent job, out in the field most of the time, and at the same time Silas Mason had come into Amarillo and was doing

the design work for remodeling Pantex, so I went out and applied to them as a young graduate engineer, applied to them for a job. They came back with an offer which was much better than what the railroad would offer me, so I went to work for Silas Mason at Pantex plant.

I don't remember if we got into it a whole lot last time, but what kinds of stuff was happening at Pantex then, right after—?

They were remodeling—see, that Pantex plant built five-hundred-pound bombs during World War II. So this was a remodel job. Of course none of us knew what we were remodeling for. There was a lot of speculation that it must be cups for flying saucers and all that kind of stuff.

But they were remodeling for the atomic weapons, is that right?

Right. They were remodeling to do what it does today, or what it did today. And then one day my boss at that time came in and he asked me if I would be willing to come and go to Las Vegas, because Silas Mason had gotten the architect-engineering contract out here [at the Nevada Test Site and they wanted to set up an office. So they were looking for young people to come out and help them set up the engineering office out here. So I said sure, I'd go to Las Vegas. I didn't know what Las Vegas was, other than it was in the middle of the desert.

Yes. Do you remember your boss's name at that time at Silas Mason?

No. No, I sure don't. I've probably got some paper in the file somewhere that might give me a clue but—

OK. That's all right. That's the kind of thing we can look up later.

But I came out, they sent me out here, and they said, `Well, it'll only be for like six months. We'll have an office set up and then`, they said, `you'll probably come back here.` Well, that was in, I'm trying to get the year straight.

Nineteen fifty-one?

Nineteen fifty-one, for a six months' tour of duty, and I've been here ever since.

Wow. And you retired from your position in 1990, is that right?

Yes, but I worked for Silas Mason from '51 to '57. Actually '55. And at that time Silas Mason lost the contract. At that time they were setting up the—REECo [Reynolds Electrical and Engineering Company] had come in, in like '52 or '53, and they were setting up an engineering department. I was a charter member of the REECo engineering department. So I just—since my family was here at the time and I didn't particularly want to leave, I just went to REECo. Worked for REECo from '55 to '57, and then I got a call from Bob Newman in Los Alamos who was J-6 group leader at that time, and asking me if I wanted to come to work for the lab. I said Sure, so they paid for my trip back to Los Alamos for an interview. And I went back to Los Alamos, and flew in the little planes from Albuquerque up to Los Alamos, and interviewed, and came back to Las Vegas, and got a call again, or a notice from the lab that I had been hired and the salary they were going to pay me. And Newman told me, he says, Don't you dare move from Las Vegas, he said, because I intend to put you to work at the test site, which he did. First job I had was out there at the [Project] Rover reactor testing area.

Yes. What was your position at Los Alamos at that time?

Engineer. Staff member, is what they call it. It was part of the University of California but the designation **[00:10:00]** was staff member. And that was part of my very fortunate life. Bob [Robert] Newman—of course I guess I did a job for him—he took care of me. I got promotions and salary increases, and I probably didn't deserve them all but I was sure glad to get them. But then I worked out here from—I was working at the reactor test area from '59—I'll have to stop and think, I'm not sure of the years. But anyway I was living here in town and working at the test site, commuting back and forth, and in those days there were no buses.

Oh, I was going to just ask—

This was you commuted on your own, carpools or whatever. And I was working on a fifty-four-hour week, which meant I was getting a lot of overtime, I was getting *per diem* because I was on assignment out here. And Bill Ogle, who was the J-Division leader at that time, as he [was] going through the records one day, he looked and he saw—here's this guy—he didn't know me from Adam, but he looked at the records and he said, Here's this guy getting *per diem*, living at home, and working a fifty-four-hour week. And he told Newman, he said, We got to change that. He said, Bring him back to Los Alamos. So they moved me—this was '59 when they moved me back to Los Alamos. Of course they paid all the expenses. They paid to move me, move the family, move furniture, all that. They took care of that.

So after that I was employed at Los Alamos. And before we moved, my family was still here and I was working in Los Alamos. At that time I had an old '49 Oldsmobile. Beautiful car, four hundred horsepower engine and it would really run. So I would leave Los Alamos at five o'clock on a Friday afternoon, drive straight through to Las Vegas, get there on Saturday morning sometime, and stay in Las Vegas with the family until Sunday evening, and then I'd do the reverse. I'd leave here about five o'clock in the afternoon and drive straight through to Los Alamos and go to work at eight o'clock in the morning.

Oh, when your family was still here. Wow. OK.

The family was still here. Yes, this was before we officially moved.

Right. Can I go back for a second to this rocket work that you were doing originally? That's the original work you do for Los Alamos? The reactor?

Yes.

That was the reactor to power the rocket, is that correct?

That's right. The goal at that time was to develop a nuclear reactor that would fly into outer space so that they could use it as an engine and an engine to fly to outer space. We did a lot of reactor testing out there, and they built a multimillion dollar engine test stand out there, thinking that they would eventually set up an engine and test it on this test stand, but it never got that far.

Yes. Do you remember what the problems were or—?

No, I probably wasn't on a level to really know what the problems were, or have a need to know. That was a lot of the—at that time there was a lot of this need-to-know bit. You don't—you can have a clearance but there are certain things that if you don't need to know, you aren't going to find out.

Right. I think that's one of the confusions there is about the Q-clearance. People then assumed if you had it, you could know everything, but that wasn't the case.

That wasn't the case.

And you couldn't go everywhere either?

Well, they designated certain areas. In the early days with Los Alamos, my badges had numbers on them which indicated the areas that I was able to go into, like the CP [control point], like up **[00:15:00]** to Area 12, certain areas. But of course also Area 51, although officially with the Air Force it doesn't exist, Area 51 came into service at that time. In fact, at night we used to see the shadow of the U-2 as it was flying over the test site. Of course we didn't know what the heck it was, but we saw this big plane flying over the test site, and it was the U-2 that they were developing or testing out of Area 51.

And is that correct that if I look at a map now, it looks like it's Area 15 up there to the north, is that—oh, you can show me right on your thing.

Well, it's up in this area [pointing to stained glass of NTS]. Area 51. Groom Lake is right off here [indicating on map] and Area 51 is right up off to the northeast corner of the test site.

So to the northeast corner of the test site.

But the Air Force, of course they needed a lot of help over there because the DOE [Department of Energy] or the AEC [Atomic Energy Commission] had their contractors there. But just because you had a Q-clearance with the AEC didn't mean you could get a clearance—the Air Force had their own clearance system, and if you didn't have one of their clearances, you didn't get near Area 51 or their test area.

Yes. So you had an inkling that something was happening there.

Well, we knew it was an air base. I mean we knew enough—my first experience with Area 51 was when, I guess this was about when they were doing the Smoky test. They were getting ready to do Smoky, and I guess it may've happened when I was going to look for this mining camp or little mining building, but I was driving in the government car across Groom Lake and the Air Force came in and was strafing in front of us. They didn't come close but it was obvious that the Air Force was there and they were armed.

Now, this shows my ignorance. They weren't strafing at *you. They were just doing something.*

Oh no, they were just telling us that we're around and don't get too far ahead, don't go too much further.

Oh, so it was a signal to you—

It was a warning. At least we took it as a warning.

Yes. Maybe you could tell that story again because when you told it to me earlier this morning, we didn't have the tape running. About the miner that you had to go see?

Yes. They were doing testing during that period, campaign testing. They would go out in the Pacific and test for one year or test during the year, and then the next year they'd come and test at the test site. And during the time that they were testing in the Pacific, the government would allow some of these little one-horse mining operations, they would allow those people to come in and operate their mine during the off-period of testing. And one of the jobs that I was assigned to was to go up—it was just a wooden building, it was just a wood—it wasn't a shack. I mean it was a pretty well-built building. My job was to go up there and look at it and see what we could do to protect it from damage from the Smoky test. So we went up there and boarded-up windows, boarded up the doors, did what bracing we thought was necessary, and then they did the Smoky test. So then we had to go back and evaluate what damage was done, and when we went back to look to see if our repair work had done any good, the whole building was gone. It had been blown to pieces.

Now was Smoky bigger than expected or it was just that—?

No, no. It was just something that people didn't anticipate. It was on the side of a hill, a seven-hundred-foot tower on the side of a hill, and I guess the initial impression was the blast, the **[00:20:00]** effects will all go up or bounce off of the mountain. But it didn't work that way. The shock wave went *over* this first hill, got to the hill behind it, and came back. That's when it got the building. It bounced. It ricocheted. Took the building. Oh, some of us engineers learned something from that. Of course, the whole test site activity was a learning—you learned every time you went to do anything, you learned something.

I was going to ask you about Smoky just because I was reading a little bit about it in the flyer you just gave me. What was it about that? It was a tower but there was—

Seven hundred foot tall. Tallest tower that was ever built on the test site. I mean as far as a weapons tower is concerned.

Yes. And that's also where they had—so the soldiers came in for that. I think they marched some soldiers in for—

I think they were around there at that time.

Where was that on the test site? Where was Smoky? Was it Frenchman Flat or Yucca Flat?

No, it was up in the northern end of the test site. It was way up on the northern end of the test site.

Of course, because then it went across the mountain like you explained to me. OK. Yes.

Yes. There was a series of rolling hills up there, and they had it on the down slope of one, and then over the top of that hill, beyond it, was another row of hills, and that's where they got in shock wave trouble.

Right. So that was a Los Alamos test, I assume?

Smoky? You know, I'm not—I think it was but I'm not sure of that. I was really Silas Mason or REECo engineering. That's how I first met Bob Campbell, when I was with Silas Mason. We had an office on Main Street in Las Vegas. It's where Silas Mason had their main office here in town. And Bob Campbell was J-6 group leader, and he and his crew of people would come in to the office there on Main Street and tell us what their plans were, what they needed built at the test site. And he was just—he was a firm old codger. I mean when he said he wanted something, that meant he wanted it and he didn't want anybody to tell him he needed something different. So that was my first experience with Bob Campbell. I never had any real problems with him, because when he'd come in and say, `I want this, this, and this`, we took notes and did what he wanted. Now one of the things—again, a little bit of trivia, but out there in Frenchman

Flat one time, I was with Silas Mason and J-6, Bob Campbell or one of his many people, said they wanted an underground bunker built in Frenchman for photographing some of the tests that were going to go on in Frenchman. So we drew the plans on the back of an envelope, literally on the back of an envelope, with elevations and enough information and we handed it to the contractor, which was REECo, or maybe it was REECo's predecessor, I don't know. Anyway, we handed this to them and they built this underground concrete—heavy concrete underground bunker. Well, in the spring or later, sometime later, the scientists in J-6 came out that were going to use the facility. Everything was fine except they had built it on top of the ground instead of burying it like it was supposed to be. It was supposed to be underground. So they ended up just **[00:25:00]** destroying that building and went out and built what the scientists wanted on the surface, or underground. Do it. It cost the taxpayers a few dollars.

But that was another thing. During the days when we were doing atmospheric testing and building towers out there and building places to lift balloons off with devices on them, money was kind of no object. I mean it was an object but you didn't worry about it because if you had something that had to be done and you were running short of money, somebody in the AEC would go back to Washington and say, `We need some more money`, so they'd send some more money out. So it was kind of a blank check operation. Not enough controls, but then it went from one way to the other and eventually got to the point where there were too many controls, but there was a balance finally, I guess.

But after Newman left the laboratory and I ended up—well, my first promotion with Newman was as associate group leader, and then from there I went on up to assistant group leader, and then became group leader. And between the two jobs, group leader of J-6 and test

director are the two best jobs in the laboratory. And I was fortunate enough to hold both of them at different times.

So what's the relationship then if you're the group leader of J-6, are you the group leader of J-6 at the time that Bob Campbell is the test director, is that right?

No. No, those two times didn't—

OK, did not coincide.

They didn't match. I was I guess an associate or an assistant group leader at the time Campbell was test director.

Because I asked because I think last time we spoke you were saying how he was your mentor in a sense of how to do that, so I was wondering how that worked.

Oh yes. Bob Campbell was my mentor and a good friend. And he was a tough old bird. There was one thing that was absolutely certain with him: Don't ever lie to him. Don't ever tell him a falsehood because he'll find out about it and if he does, you're in *deep* trouble. And if you make a mistake, tell him about it. That's one of the first things I learned about him. When he was test director and I would be out—see, I went back to the weapons testing side in the early sixties—'62, '63, somewhere in there—and I was J-6 and he was test director. And every once in a while he'd call me. He'd be on the test site but he'd call me and he'd say, `I saw this. I was touring the area today and`, he said, `I saw this kind of thing going on. Do you really want that to go on?` It'd be something that we really didn't want happening, like trenching or doing some construction work that we didn't know about. So he'd say, `Are you going to take care of it or do you want me to take care of it?` I said, `Bob, I'll take care of it.` So we had a pretty good relationship. I was fair with him and he was fair

with me. And he taught me an awful lot. As I said, I was the most fortunate person in the world, working for and with people like Bob Campbell.

But don't ever cross him. I remember, I guess one of the times that I saw him really upset was during post-shot operations, which was drilling back in to get samples of the bomb debris. **[00:30:00]** As it turned out—well, in the early stages, again in a learning phase, we were trying to learn one thing, is when you drill into a hot cavity, to control the gases so they won't vent out to the surface. And Campbell was test director and I—I wasn't doing post-shot operations at that time, but they had one of the health physicists from Los Alamos, which was on every post-shot operation to help the engineer take care of—to keep things under control. And Campbell was sound asleep one night in his dorm room in Mercury and the phone rang, and he picked it up, and as I heard the story, the only thing he heard was, `The damn thing blew up`, and hung up the phone. And Campbell didn't have the foggiest idea what was going on. So he was a little bit put out at that health physicist, and when he finally got under control and I guess went out to the area to see what was going on, that health physicist never came back on the test site. He was gone.

What had happened actually?

It was just a case that some of the containment features in the post-shot operation had failed and they were getting a little gas coming up out of there. They were not holding like they should have. But it was not anything like a blow-up.

Jeanie [Sowder] and I and—oh, names get away from me.

That's the least of our worries. We can always look up names.

But anyway, we were in Mercury one night, probably at the cafeteria or maybe at the bowling alley, maybe at the bar in the bowling alley, I don't remember. But we had a Net Five radio which was the Los Alamos net at that time. Oh, Gordon Jacks. You've heard of him. We were

there, and there was this Net Five radio—somebody had a portable—and this message comes over the radio, something to the effect that we had an explosion and there are people laying all over the ground. So we had a government car at that time, of course, and Gordon Jacks and I got in. I was driving. And we got out of Mercury heading up to the north, and I noticed after a few minutes after we had gotten over the first hill there, I noticed Gordon Jacks put on his seatbelt. I was moving, and hoping that a sheriff would come by and escort us into the area, but never did see a sheriff, but man, I was moving in that government car, and Gordon Jacks was fastening his seatbelt and holding on. And we got out to the area, and we had to lead the ambulance. They were parked alongside the road after we got over CP hill; they were parked alongside the road, so we led them into the area where this problem was. Well, as it turns out, it wasn't an explosion *per se*; it was some flammable gas was coming out of the post-shot hole, the drilled hole, and something igniting it so it was a big flash, not a blast. And there were people injured that had been caught in the blast, or in the heat. So the paramedics took care of that problem. And then Gordon and I looked for the guy that—I knew the guy that—you've probably heard his name. Jerry Tatum. He was the one that was on duty out there for J-6, and he's the one that had sent the message. Well, we got out there and as it turns out there wasn't anything serious. There were some flash burns. People got hair singed and this, that, and the other. But nobody was really injured. So it was a false crisis. It was all right to know that there was a problem but don't **[00:35:00]** exaggerate it. But anyway, that one—what was funny about it was in driving out there at the speed I was driving and Gordon Jacks put on his seatbelt. [laughter] I don't think I *ever* put my seatbelt on. But of course I was a young punk.

Yes. But in that business, I mean you've got to be really worried every time you hear a message like that.

Well, got to be concerned. Of course we had similar situations that happened over at Test Cell A in the reactor testing area.

Oh, Test Cell A. Yes.

Yes, we had two test cells. The laboratory at Los Alamos had two test cells, Test Cell A and Test Cell C. And then there was our MAD building [maintenance, assembly, and disassembly] where the reactors were assembled and disassembled after the test. And there was a lot of hydrogen gas involved in a test. Under control, supposedly, most of the time. But one day Harold Cunningham and I—he was running the REECo operation out there during the days when I was running the Los Alamos operation, and he and I worked together. And we were up at the CP, both of us were up at the CP one time, when we got a call from down there that there had been an explosion in the hydrogen system at Test Cell A. Well, as it turns out, what it was, was in the hydrogen packing, inside the test cell there was a big flange, and I mean big, like two-to-three-foot in diameter. And one of the pipe fitters had opened that flange and then when he did, there was a flash. So then Cunningham and I went down to the—when we heard what was going on, well, he and I went down to the test cell. And again it was a case of this pipe fitter had gotten flash burns. He had—his hair was gone, his eyebrows were singed, whatever. And every once in a while in that piping system—of course there was a big hydrogen storage tank out in front of the test cell, and every few minutes there would be a *BOOM!* inside the piping system. And so we scratched our head and stood out there and tried to figure what is causing that? Well, as it turns out, it was very simple. When they opened that flange inside the test cell, it let enough oxygen in there to create an explosive mixture. Well, of course our original concern was that we were afraid it might get to that hydrogen storage tank and blow the whole thing. But we weren't smart enough to realize that that couldn't—wasn't going to happen. But we kept getting these—every few

minutes we'd get this *BOOM!* inside the piping system. And finally somebody got smart, and I don't think it was me, but somebody got smart, trying to figure out how it was getting ignited. We recognized that an explosive mixture was coming in there, but how was it getting ignited? Well, we had put a flare up on top of the exhaust pipe. Whenever the explosive mixture got inside the pipe, that flare was enough to ignite it. So what we did after that, of course, was shut off the flare and then close all the valves to the hydrogen system, and got it under control without anybody getting seriously hurt. But we had some fun times out there.

Yes, I guess. You got so many factors going there, scientifically, physically. It's such a complex operation. You've got so many kinds of things. Like you, you're talking about something that has nothing to do with fission or fusion or atomic explosion, but it's a dangerous situation nonetheless, yes.

Right. It's dangerous. But we lived through them. Only got one—in the reactor testing I only recall one fatality and one serious injury, and this had to do with—we also used helium. We had **[00:40:00]** underground storage tanks where helium was buried out there by the test cell, and the piping, copper piping going to it, and then they'd come into a field station with the helium trucks and they'd hook them up and fill those storage tanks. Well, the pressure when they were pumping the helium into the storage tanks, the pressure was like thirty-five hundred pounds per square inch. Well again, we were in a learning phase and found out that the copper piping that we were using was only good for about two thousand p.s.i. [pounds per square inch]. So here we were, parading across the ground around all this pipe under thirty-five hundred pounds' pressure, and the piping was not that good. But we walked across there, and that could've been a disaster, you know, if that pipe had let go. But we got through that all right. But we had one case, the fatality as I recall, at the field station when a helium tanker came in and they hooked it up to

pump into the underground storage tanks, and the fitting connecting to the pipe—to the tank let go, and here you had this heavy copper piping flaying around like a snake, and it hit two people. It killed one of them and ricocheted off into a Los Alamos employee, and he was—well, excuse me, please.

OK.

[00:41:58] End Track 2, Disk 1.

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

I was curious when you said that about the copper piping being the wrong size for the pressure of the helium.

It was, I think, I don't remember specifically the type that it was called, but I think it was the type-K copper tubing that we were using, which we should've been using a different type, a higher pressure type. But it was just a lack of knowledge and the lack of good judgment.

Right. Did you eventually replace it all, or it just went—?

We quit putting thirty-five hundred pounds in it.

Thank you. That was my question. All right.

Yes, we reduced the pressure that went into the tank so that we didn't have to have that—

Right.

But this good friend of mine was badly injured. He worked for J-6, and when that pipe ricocheted off the first guy and hit him, it took out part of his skull. It took part of his skull, and he suffered through that for the rest of his life, which was another ten years or thereabouts. They replaced his skull with metal, and he struggled with that for years, for like ten years. And then as luck would have it he was killed in a car accident in Los Alamos. So he—it was—to me at the

time, although he was a good friend of mine, it was a blessing in disguise because he had been suffering terrifically from his head injuries.

In what sense? Pain, or was there a memory effect, or—?

Well, there was all kinds of—he lost a good part of his memory, he couldn't concentrate, but mostly it was the pain.

Gosh. What was his name?

Ralph Hanneman.

Were you there at the time of the accident?

I was down at the control point there for the test area, reactor testing area, and this about two miles away. It was about—

[Phone rings]

[00:02:37] End Track 3, Disk 1.

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

[Explaining telephone call]**:** No, those two guys, the president of the association and the maintenance man, if they don't see me sometime during the morning, they're wondering where I am.

Oh, if you're OK.

Yes**.**

That's nice.

So he was calling—he called to tell me that they were going to go down to Del Taco and get a burrito or a taco or something, then come back to the shop. Which I join them at times, but you heard what I said. Not today.

Yes. Yes. This is the maintenance for your little homeowners' association or—?

Yes. It's right down at the end of street, right by the adult swimming pool.

Yes, I think I saw it. I turned around there. That's nice, they look out for you.

Oh yes.

So, but you were saying you had been at the control point when this accident happened.

Yes. And somehow we got notified that something serious had happened, and as it turns out the medical doctor for the laboratory happened to be on site at the time. A fellow named Payne Harris. You may've heard the name somewhere. But he was a medical doctor, hired by the Los Alamos lab. And this Ralph Hanneman, they put him in a sedan and hauled him into town to get him to a hospital because there weren't enough facilities at the test site. And Payne Harris held him in his arms all the way into town, and was later credited with probably saving his life, because he knew what to do in the interim. But anyway, ten years later, Hanneman died in a car accident right there in Los Alamos. And it was his own fault, so there was speculation that it may've been his brain damage that had caused him to lose concentration when he was—he got off on the wrong road and the wrong—going the wrong way. And that was not normal for him in the past, so kind of speculation that his injury had at least contributed. But anyway, he was a good friend. He was a good engineer.

We had all kinds of fun doing stuff out at the reactor testing area. Test Cell A, which was the first test cell that was built to handle the—do the reactor test, and part of the design was they built a moveable shed out in front of the test cell on different rails than the train so when the reactor was sitting there, the shed could be moved in and [provide] weather protection for the reactor while they were working on it, for the people in—so again, another name you may or may not have heard: Bob Bradshaw. He and I, both J-6 at the time, and they had moved a reactor in the day before to get it ready for a reactor test, and they had moved the shed up over the

reactor, against the wall of the test cell. And it was common practice in those days to take glassware and put it where it would be exposed to the radiation and would color it. So Bradshaw and I had been up on the roof of the test cell and putting out some glassware to get it exposed to radiation, and then we had come down off the roof of the test cell and driven back up to the CP. Well, at the time, about the time we got out of the car at the CP, there was this sizeable explosion. So inside the CP there was some video coverage and instead of seeing a metal shed on **[00:05:00]** TV, all you saw was the framework, the structures. The siding was all gone. So Bradshaw and I jumped in our car again and went back down to the CP expecting to see—we knew there was a lot of people working inside, working on that reactor. We expected to see bodies laying all over. Well, when we got out at the test cell, there were people staggering around and there were some people laying on the concrete slab, but there was really no—the most serious injuries were ruptured eardrums and one fellow had his ankle broken. Apparently—of course I got to studying on explosive effects after that and discovered that with an explosion like that is that bodies, whether it's human or something else, will take the path of least resistance to get out of the way. So everybody apparently had been just blown out through—in between most of the structure's framework, the steel framework on that shed, been blown out between it. And this one guy apparently must've hit his ankle and broke his ankle as he went flying out. But again, the worst injuries were the broken ankle and ruptured eardrums. Everybody that was inside had ruptured eardrums. But as it turns out, what had happened was somebody in the control room had opened the wrong valve at the wrong time and let hydrogen get into that area, and then something—and they finally came up with the conclusion that what had triggered the explosion was a phone jack. Somebody had pulled a phone jack out of the wall—

Got a little spark?

And there it went [snapping fingers].

Wow. Safety. Unbelievable.

That was when—that finished Bradshaw as a J-6 engineer. Because we were trying to figure out the best thing to do to get that old busted-up shed out of there so they could get the reactor out and do something with it. It was not really damaged. One of the fellows' shoes, heavy-duty boots, was still sitting on the platform at the reactor, but he was gone. The boots were still there. But in trying to figure out what to do with the old shed and how to get the reactor out of there with the least problem, some of the scientists—and the *Las Vegas Review-Journal* at that time said, `You can tell the junior scientists because they all wear tennis shoes.` So some of these junior scientists were trying to tell us the best engineering procedure. They didn't know the first thing about engineering. They knew their science, but that was it. But anyway, Bradshaw got disgusted and said, `I'm not`—so he went into, I guess it was Newman at that time still, but he went in to him and said, `I quit`. And Newman said, `Don't you want to go work on weapons testing?` And Bradshaw went over to the weapons side then.

Yes. You've said that a couple of times and that's interesting to me because we outsiders tend to think of the test site as a monolith, but you're talking about the "weapons side" and the "reactor side." Are you talking about—?

Yes. Area 25, where the reactor test area was, and then it goes up into the weapons test areas. And the CP, CP Hill is in there in between. So the terminology used at that time was you go from the reactor side over the hill to the weapons side.

Ah, see, I was thinking of it metaphorically, like one type of work, but it's actually a physical side of the test site.

Yes, that's right.

That's interesting.

See, these are all the weapons test areas [indicating stained glass map] including Pahute Mesa.

[00:10:00] *Right. So this might be a good time. Why don't you talk a little bit about these stained glasses and what they are and how you got them, and then I'll ask you another question about your work.*

[00:10:26] End Track 4, Disk 1.

[00:00:00] Begin Track 5, Disk 1.

OK, so I was asking about these stained glasses of the test site.

Well, Area 19, Area 20, and from there on I'm not sure I can—I think that's Area 12 [indicating on map]. Area 1 and 3 and 7, and I'm not sure that's exactly right but these are the weapons test areas. Livermore was up in the northern part, Los Alamos was more in the central and southern part.

Yes. And these stained glasses themselves, why don't you tell the story of who made them and how you got them.

Bob Campbell, his hobby was leaded glass, and he and Bob Brownlee jointly built a leaded glass frame to put in an office door out of the test director's office in Los Alamos. I don't think that picture's still there. In fact I'm sure it isn't, but they built that jointly. They both liked leaded glass. And then Campbell surprised me. When I retired from the laboratory in 1990, up came this map of the test site, which he gave to me as a retirement gift. And of course I have handled it with extreme care, been trying to be very careful with it because it's not replaceable. Campbell says he can't do this work anymore. Now when [my wife] Jeanie retired in 1994, he came up with this one [indicating second stained glass NTS map]. He shipped that one out here. He came

up with that one. Same map except it's different colors, because he knew she was a "blue" person. She had worked for him for several years. In fact that was one of the things that, when she was working in the reactor area and Bob Beiler who was her immediate boss at that time, he told her one day, he says, Campbell wants you to come over to the other side of the hill, over into the weapons side. She said, I don't want to go work for Campbell. Because she had known Campbell in the reactor area. She didn't—not that she disliked him, she was just scared of him, like most of the people out there were. In fact I probably told you this before but I'll say it again. There was another secretary out there named Patsy Williams, and she was really a J-6 secretary there for a while, and one day she paraded up and down the hall in her stockinged feet, no shoes, just—and Campbell told her that she'd better get some shoes on. Well, he scared the heck out of her, so she ended up with one of these little shoeboxes with the little plastic film over the side of it and on it she had written, Open in case of Campbell. But he did, he frightened a few people. So Jeanie didn't want to go to work over the hill, but she went over there anyway and she spent, well, it was like thirty years there, running the test director's office.

And so the test director's office, was it physically at the control point or—?

Yes. It was physically at the control point, and of course the control point overlooks Frenchman and Yucca Flats. Most of the testing was in Yucca. But it was right there.

And that's the Los Alamos test director we're talking about.

Yes. Livermore was in that area too, but they were in a different building, across the little parking area and street.

[00:05:00]

I guess the one question that relates in my mind about going from one side to the other, are you thinking—to be working on the reactor is really different kind of work than to be working on the weapons. So is your mindset different? When you physically go from one side to the other, are you also thinking in different ways about what you're doing?

Well, I probably look at it differently from some people. I look at it strictly as an engineering-construction job, whether you're on one side or the other. I didn't worry about the physics of either the reactors or the weapons. That was other people's prerogative, not mine. But my job was to provide the support that was needed to do all these great things that the scientific side wanted to do. But to me, it made not a whole lot of difference. Just trying to comply with what the scientists wanted and what management of the laboratory wanted, and get the job done. That was one of the things that developed over many years out there at the test site, was the can-do attitude. I've got a pen in here somewhere, can-do pen, and that was the attitude of most of the people that worked out there. All the way from the lowest laborer, if you will, janitor, whatever, there was an attitude that if I can help you, I'll help you. Can-do. We can do this. And that's the thing that made it as successful as it was.

[00:07:31] End Track 5, Disk 1.

[00:00:00] Begin Track 6, Disk 1.

Being in the position I was in had very little to do with Jim Reeves. But then some of the others—well, getting into the test director business, the laboratory—the head of the J-Division, which was the test division for Los Alamos, would recommend and nominate one of their employees to be a test director. And John Hopkins, who was the division leader at that time, he nominated me to be a test director, and it came out here, the nomination, and it came out to the ERDA [Energy Research and Development Administration], DOE, whatever it was at the time,

and Tom Clark was the NVOO [Nevada Operations Office] manager at that time, and he's the one that actually officially dedicated me as a test director, based on the nomination from Los Alamos.

And what was John Hopkins's position at that time? I missed that.

He was J-Division leader, test division leader. He was over all of the J groups: J-6, J-3, J-8, J-9, whatever. He was J-Division leader and he, in conjunction with Campbell—I'm sure Campbell had something to do with it—but anyway, Hopkins nominated me and Tom Clark signed on the dotted line and I became officially a test group director for Los Alamos.

Wow. Were you expecting that or were you surprised or—?

No. I think—I was not totally surprised. I think—well, there were several people that—well, they kind of toyed with the idea for a while whether they should take a dumb old engineer or whether they should take a scientist. Well, they ended up taking a dumb old engineer and making him a test director. But probably part of the thinking was that I knew a little bit more about construction and readiness than maybe some of the scientific types did. But anyway, it came to pass. And again my best job at the laboratory I think was—I felt was J-6 group leader. I had a $50 million budget, you might say, that I controlled as group leader. And of course anybody that was group leader controlled it, but when I was controlling it, fifty million bucks on the average, plus the fact that I could tell a nuclear physicist to go to hell. We can't do that. We can't physically do that and get away with it, most of the time. But there was not many confrontations. I learned something from Campbell in that respect: Be firm but be fair. Yes. I used to be able to see the CP on here [looking at map] but I don't—

[00:04:05] End Track 6, Disk 1.

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

[00:00:21] End Track 1, Disk 2.

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

Of course this is the crater array in Yucca Flat [showing photograph] and this over here was at that time the Los Alamos REECo area camp for Los Alamos. That's where the construction troops, the labor forces and all that worked on Los Alamos projects, that's where they were housed. Not housed, but worked.

But they didn't stay there overnight. No.

No, no. Well, the Mercury Highway is over here somewhere [indicating on map]. I'm not sure I can pick it out.

So Mercury would be what direction from what we're seeing here?

Over in that direction [indicating direction on map].

OK. So we're looking south?

Essentially south, southwest, southeast, southwest, I don't know.

Yes, but essentially south. And so from someone from the outside, you've got people working and then you've got these craters so close around. These are subsidence craters from the underground tests.

Yes, right.

So it seems close to an outsider, but there's not particular danger there, to be working, from your guys' point of view.

No danger in underground tests at all. Now in the atmospheric days, my first atmospheric test, I was standing on the side of the hill up here by the CP and it was tested on a balloon or a tower, I don't remember which one, some five to six miles away, and that was my first experience with a nuclear test.

What was that like?

Well, that far away, when the thing went off, it felt like you'd opened the door to a blast furnace. It was hot. Then a few minutes later, the shock wave came through. And a bunch of us were standing on the side of the hill, you know, young energetic engineers, and the first thing we knew, we were sitting on our can on the side of the hill, and it wasn't voluntarily. The shock wave had knocked us down. And those were the days when we were testing that I personally got a little bit concerned about the so-called Cold War, because I realized at that time that of all of the national government leaders—Russian, American, Chinese, you name it—none of them had ever seen or felt the effects of a nuclear explosion. So how careful were they going to be if they didn't know what in the world it was going to do? And that was a concern to me. But trivial, didn't make any difference.

Well, trivial in a sense because you don't have the power to do anything about it, is that what you mean by trivial?

That's right. Right.

But in another sense—I can't remember if we talked about this last time but—so you're witnessing a test. This has to be the fifties, I imagine.

Yes. Starting in 1951. I was not out here for the first one in January of '51, but the next one that was done in '51; I was here for all of them from then on.

You were. Huh. That was that Ranger series, right?

Well, it was Ranger. There were several different—Plumbbob, Upshot-Knothole.

Right. I have two questions about what you just said. You talked about the heat and the shock wave. Visually, what was it like to see the first—?

Just a big flash. A big flash. Feeling like, as I said, that they opened a blast furnace door right in front of you. It was hot.

Yes. And I guess the other question that pops to my mind is your concern about whether the leaders had seen these tests. And then how does that fit in with your dedication? Because you've **[00:05:00]** *expressed a great deal of dedication to this work in both times I've talked to you. How does that fit together? Because you're making these weapons.*

Well, I had a strong feeling, even in those days, that what we were doing out there at the test site was probably preventing or at least deterring another major war. It was a deterrence that we were testing out there, that we were developing a nuclear capability, so in essence I'd say I was proud of what I was doing and working in that area. And I was joined by a lot of others that felt similar, the same way.

In case you haven't seen it, I've got a tape in here that shows how a subsidence crater is formed.

I haven't seen it.

Well, let me play with it a little bit and see if I can find it.

OK. All right. Well, we can—OK.

[00:06:51] End Track 2, Disk 2.

[00:00:00] Begin Track 3, Disk 2.

Where do you want me to start?

[Joe Thomson, videographer] Any interesting stories or anything you have to say about the images. You could start with the blasts on the left here [pointing to pictures].

[All questions following are asked by Mary Palevsky. Joe Thomson continues to record on videotape.]

You want to start with these pictures. Yes.

Unfortunately I can't give you the names of the tests.

[Mary Palevsky] That's OK.

[Identifying and describing photos in turn]

- An atmospheric test in the 1950s.
- Another atmospheric test in the fifties.
- And this was a high explosives [test] to learn something about seismic effects.
- The readiness aircraft which was used in the fifties and sixties in anticipation of being ready to resume testing sometimes. And they used that plane very heavily instrumented to monitor French nuclear tests.
- And President John F. Kennedy visiting Area 25 in the reactor testing area in December of 1962.
- And some of the old fogies, including me, Larry Rice, Duncan Curry, and I think that's President Kennedy's—one of his staff.
- This is the crew that participated in the Ledoux test in 1990.
- And this is one of the reactor flaring in Area 25.
- And we got visited by a few celebrities, one being Charlton Heston, and he was doing some narration for the DOE, and he came by the test director's office, and Jeanie always wanted that picture her scrubbed out of it because she didn't like it. But anyway he came into our office and spent a good part of the day.
- Another atmospheric test. Of course we haven't done any atmospheric since 1961.

What is the sign on the Ledoux? What does that say there?

"Will test bombs for food." The story behind that is right over here is where the entrance down into the Ledoux test area was. Went down an elevator and this crew of people [referring to Ledoux crew photograph] were most of the people that were involved in the preparation to get ready for it. And one day I called them, I got everybody together, and got a Los Alamos photographer to take their picture. I'm even in that picture. I didn't know that until lately. But anyway, he took a picture of all these people and I saw to it that every one of those individuals in that picture got a copy of this photograph. And one of them put the sign up. The sign was not there originally. Somebody took one of the prints and added that sign to it.

OK, so when you took it, that sign wasn't there.

No.

That's funny.

In the back of the pickup, there is a model that some of the miners had made on their own time, a model of this area all done in foam—I mean, you know, the foam stuff—including the crane. So **[00:05:00]** the original picture had the picture of that model and I suspect somewhere in all the stuff I've got stored around here, I probably have a picture that still shows that model. But anyway, that was the Ledoux crew, the working people, the one[s] that really did the work, doing the mining and all of that good stuff, the hard work.

What's this one [referring to another photograph], Elmer, with the LASL [Los Alamos Scientific Laboratory] on it? What is that there? Is that the reactor?

That is a Phoebus reactor that was tested out there. [Examining photograph] Yes, that's at Test Cell C, and that's one of the reactors that was tested out there. PH—Phoebus-2A. It was just a series, one of the series of reactor tests.

And then next to it is that picture like yours, but that's Bob Campbell's then, there.

That's Bob Campbell. He was one of the early test directors, one of the first Los Alamos test directors. Not *the* first but one of the early ones.

And what's that one next to Bob Campbell? What's that happening there? [Referring to another photograph]

That's when we blew up a reactor deliberately.

Really?

Yes. They just pushed it to failure.

To see what it would take?

Right, to see what it would do. I think I mentioned earlier, this is a plume from a reactor test [showing another photograph].

[Examining photograph] So it would plume like that as part of the test.

Yes, just come out the nozzle.

You know, if you want to sit here, then I think maybe what we can do is have you talk about some of the things that are on this back wall, but have a seat. You want to see what—?

I'd like to get this in here.

OK, let's do that.

[Indicating photograph] That's one of our late heavy-duty cranes for lowering device packages down hole, and that crane configured like that would pick up six hundred tons and walk across the desert with it.

[Examining photograph] Yes, look at the scale of that thing. This is a truck here [pointing to section on photograph]. Wow.

And these are the test weights that they used to load-test the crane [showing another photograph]. But this is the load hold [pointing to section on photograph]. Of course it's got a lot of suspension control support in there.

This crane right here [showing another photograph], this part of it, was one of our original emplacement cranes, and now it's used as counterweight for this one [referring to another photograph].

OK, then what I wanted to ask you about was this picture of Ledoux. I've been interested in how each test seemed to have, was it a certificate? What did you call it?

Certificate.

OK. And Ledoux was your last test, is that what you said?

That was mine [as test group director], yes, my last one.

Right, your last. So what's the story on these [certificates]? I've seen several of them now. They're all different.

Well, yes, each one is individual. This [referring caricature on Ledoux test certiciate] was the REECo **[00:10:00]** superintendent that handled all of the construction work and the mining work. [Chuck] Womack.

So that's a caricature of him, basically.

Yes. Right. And this is supposedly a caricature of a fellow named Kovac who was the Los Alamos manager, you might say. He was a J-6 employee. Got him dumping money down the hole [describing caricature].

Oh, that's what that is. So these are the different characters.

Some of the things that—see, underground down below, there was a pretty complicated vacuum system. And there were three guys that were primarily concerned with the vacuum system: Don

Sherman, Rafi Papagian, and I can't remember that one's name [pointing to certificate]. But they got pretty upset because the guys in the control room once in a while would overpressure the vacuum system and they'd have to go back in and repair it. And we had one of the scientists, and I've forgotten his name. Now I've really forgotten what that expression refers to. Nine hundred and sixty feet. And this was one of the cases when the elevator went out of service when there was like forty or fifty people down hole, so the only way for them to get out was either wait for an emergency chute cage to be lowered or to climb out. Of course it was not a vertical ladder; it was stairways.

Did anyone climb out?

Oh yes, there were several of them climbed out actually. And this refers to the fact that we got—well, the first thing that happened, after we got everything put together, all of the systems together, gas systems under control—there was a variety of laser gas systems down there. And after we got it all—after the tunnel was sealed up, and to seal it up they had actually grouted in the part of the drift, behind that area is where the gas systems were. And after they had it all sealed up, they discovered that somebody had left a gas valve open and the gas that was needed for the experiment had all leaked away, all gone. So they couldn't get into that area anymore. So we ended up mining another drift alongside the original one, and that's how we finally got the test off.

So that's why it's called [certificate reads] "Redoux - Neverdoux – Ledoux in '92."

Yes, "re-do, never do, going to do it in '92." We thought there for a while that we weren't going to be able to do it until '92 but—

Oh, I get it. You actually did it in 1990.

Yes, it actually was done in ‘90. Took hard work from a lot of people, and I’m talking about hard work from the people that had to dig the tunnel and put in the various systems. I’m not talking about people like me because I didn’t do hard work. I just did the thinking once in a while, and sometimes it was right and sometimes it was wrong.

This is Dick Owen [pointing to signature certificate]. Of course Jay Norman as the J-Division leader [signature on certificate. And this Dick Owen, we ended up when we fired the thing, we had two test directors. One of them was monitoring the gas systems, because in order for it to succeed the gas systems had to be doing certain things at the time the nuclear device went off. So he and I coordinated, talking on the telephone in essence, **[00:15:00]** and we managed to have a successful test. The scientists got what information they needed and the nuclear engineers got the information they needed, so I guess it had to be counted as successful.

This up here [pointing to certificate] was outside the shaft where everybody went up and down as the pipe fitters brought in a load of pipe and gas bottles. And you say, `The pipe fitters are at it again`. What they did was they loaded all of the heavy stuff in the front of the trailer so when they pulled the support away from the trailer, over it went.

“Pipe fitters are at it again.” For a layperson, how would you explain what you’re trying to figure out in this test, if you had to explain it to—?

You don’t want to hear it.

OK.

And this was the original J-6 caricature [showing another picture] “Every Man a Tiger.” [Pause] I’m all right.

OK.

Long as I was being a little careful.

[Joe Thomson] If you want, you can take a seat and you can talk and then I'll just kind of pan around the room.

[Mary Palevsky] Let's do that.

Well, I have to take some pride in those long pictures up there.

Yes, why don't you tell us what those are?

The one on the left was the high school ROTC [Reserve Officers Training Corps] that my father was in. I can find his picture in that picture, but in the long picture over here to the right, that is the United States Cavalry at the Santa Fe depot in Amarillo, Texas when they were getting ready to go into Mexico and try to find Pancho Villa. My father is in that picture somewhere but I have yet been unable to find him. I think he must be covered up by somebody else or whatever. But that's the Santa Fe depot in Amarillo, Texas. And when my father was in his latest stages of life, he was confined to a bed. So I found that cavalryman at a store in Albuquerque, so I took it and put it on the mantel in front of his bed so he could see it, and that was one of his pride and joys, I'll have to say. He enjoyed that about as much as anything, I think.

So now we're going up to the rifle and the sword.

You don't want to hear the whole story, do you?

No, but you can just say what the era is and then part of the story.

Well, let me say it right. The rifle is a 7.65-millimeter Japanese sniper rifle and underneath is the Japanese samurai sword, which both were recovered on the island of Okinawa in 1945.

OK, now we'll go over—I think, Joe, you can just take some pictures here of—this is—

This is my wife Jeanie's family pictures. Uppermost is a current picture of her mother, or a late **[00:20:00]** picture of her mother, and down the left side is her father and mother, and then we run into what she called were some risqué pictures of her in her twenties. And then in the middle,

the love of my life and I when we got married. And over on the right side are my family pictures with my father at the top, and then going down, my mother and father, and a picture of my father and mother at my father's retirement party. In the upper right, the elderly people up there are my great-grandparents on my mother's side. And then the young punk coming down. My boot camp platoon in San Diego. And then some memorabilia of my Marine Corps tour.

So this is your Purple Heart there.

Yes.

And then what's that next to it?

That's a Chinese Service Medal, which was given to all of us by General Chiang Kai-Shek when he was still the Nationalist leader of China. After the war was over, we were sent to occupation duty in China and the whole purpose of it was to try to help the Chinese Nationalists keep the Chinese Communists from taking over the capital city. And I suppose we helped with that because when we left in 1948, '49, immediately after that the Chinese Communists took over the country. But while we were there, Chiang Kai-Shek gave all of us, not only Marines but Army too, gave us service medals, Chinese Service Medals, and that's what the one next to the Purple Heart is. I got the Purple Heart on Okinawa.

So up at the top there, these are your children and grandchildren.

Yes. On the right side, that area in there is mostly my first family. Two sets of twins, which ended up with nine grandchildren. And I have pictures of some of the grandchildren. The one that's getting married this Saturday is not there. His picture's gone. But the big picture there kind of in the middle, that's the two oldest twin girls, and they're both going to be here. One of them is the mother of the boy that's getting married this week. And the other twins were a boy and a girl. And the pictures on the left there are Jeanie's son Mark, my stepson. First class. Great guy.

And then that's Jeanie's first husband [indicating another photograph] there and Mark in one of those pictures. That oil painting there was done by the same guy that did this caricature **[00:25:00]** of J-6. He is long since passed away, but he was a good friend and he worked for me in J-6. He was a draftsman in J-6.

Nice painting.

And when I left J-6, in I guess like early 1984, the group as a group gave me that picture that he had painted as a going-away gift. I always said they were glad to get rid of me so they—

This [referring to painting] looks like what? It looks like around the Los Alamos area.

Yes, it's the New Mexico mountains. Yes, that's one of those irreplaceable things because he's dead now. But he turned out to be a fairly famous artist around New Mexico anyway. His paintings were going for six, seven, eight hundred dollars at time. So I never asked him how much he'd sell that one for because he didn't sell it; he gave it to me, or they gave it to me.

[00:26:23] End Track 3, Disk 2.

[End of interview]