

Transcript of Oral History Interview of Quinn Eskelsen

Interviewed by Kathy Bradford on April 10, 2007

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Kathy Bradford: Today is Tuesday, April 10, 2007. I'm speaking with Quinn Eskelsen at his home in Brigham City. This is a second interview I'm doing with Quinn. I want to ask him about his experiences working at Thiokol, which is now called ATK, and also about his volunteer work at the Bear River Migratory Bird Refuge. Why don't you start with Thiokol, how you came to be there and maybe a little bit about your educational background that relates to that.

Quinn Eskelsen: My education background really wasn't related to the defense industry. I was really trained as a geologist, and I worked as a geologist for about eight years.

KB: Well, that involved a lot of chemistry, math and physics – a lot of the same things you needed at Thiokol.

QE: Yes, that's right. I came to work for Thiokol in July of 1961. We were living in Colorado, and I was riffed from the oil industry. There were no real jobs in the oil industry at the time because things were in bad shape, and so I ended up in the defense industry and went to work out here at Thiokol in the test department.

KB: And this was closer to your home.

QE: Yes, and the job was all right. I thought it would be just a temporary thing until I could get back into the field where I was educated, but most of the geologist jobs are pretty tough with a young family. It involves a lot of travel and time away from home.

KB: Were you married with children at that point?

QE: Yes.

KB: What were your duties in testing?

QE: Well, most of the things we did involved the planning for the technicians to set the test article (mostly the rocket motors) -- to set those up and instrument them and then test fire them. In the test firing we measured several parameters. Probably the most important thing was to measure the chamber pressure that was built in the motor while it was firing and then measure the thrust output. There were a lot of other things – measuring the temperature on the various parts of the motor. From that they would calculate what the performance of that motor would be.

KB: Were these all small motors or the booster motors?

QE: When I first went out there, most of them were for the first stage of the Minuteman. We tested a lot of those. There to start with, we probably tested one a month as the qualification motor. We got the contract for the third stage, and we tested several of those back in Telahoma, Tennessee in the Arnold Test Center. They would test the motor in a vacuum so that they could get an idea of what the

performance was like when it was actually fired in space. I spent several weeks there at various times while we were testing those motors back there.

KB: Would you explain what the Minuteman was designed and used for?

QE: Well, the Minuteman was a three-stage motor. There were actually three motors. The first stage would lift the missile off the ground, and the first-stage Minuteman burned for about a minute. I don't know what altitude it would get. Then the second stage would ignite and carry the missile on, and then the third stage would ignite after that. It would carry the payload, whatever it was. Most of the Minutemen were armed with atomic warheads.

KB: Did they ever use them in war?

QE: No, they never used them. It was never used for that. Right now they're redoing them. They're making more of them because of the life of those things. They don't know how long they last.

KB: Because they don't know if the old ones are still functional?

QE: Yes, so that's was a big thing there for a long time. Then in the 70s we started on the Space Shuttle. I just about worked my whole career on the Shuttle. I worked on that when we first made the proposal. The Shuttle was an exciting thing to do because nobody had ever made anything like that. Our mission in the test area there was that it would come to us in four different segments. I can't remember what each one of them weighed, but all told, there were about a million pounds of propellant in that motor. When it was all together, it looked almost like a freight train. It was built to assemble vertically, but when we tested it, we had to do it horizontally. We had to develop the tooling to be able to handle each of those segments.

KB: Were they all different?

QE: Well, the forward section was different. Then were the two center sections which were exactly the same, and then was the aft segment. It came all pretty much assembled except for the joints between each one of them. Then the exit cone on the nozzle was a separate thing. We had to install that. There were several things we had to do to put that segment together and keep it from leaking. In fact, that's what happened on one of the motors that caused the Challenger incident. They determined that one of those joints leaked.

KB: Were you working on that when it happened?

QE: Yes, it was very bad!

KB: Did you know it might happen?

QE: Oh, yes. It's a risky business. There's no question about that. None of those missiles that we fired were all 100%. We did have some leakage on those joints, but they had been minor. It was a pretty exciting time really, but that part wasn't good.

KB: I remember that during the qualitative testing of the motors, I was covering that for the *Deseret News*. I remember that sometimes astronauts would come and busloads of school children. I thought it

was very exciting to be there for those tests.

QE: Yes, I was the test conductor on the first seven motors that we fired. All the work was more or less done by the time we tested, and we'd just follow the script to make sure everything was going according to Hoyle. It was amazing on the first ones we tested. They would burn for two minutes, and we were used to testing the Minuteman motor which would go for about a minute, so two minutes seemed like it was forever.

KB: If I remember it right, you had a development stage, and then you had to qualify before you started production. Is that how it went?

QE: Yes. It took a long time. I think we flew the first one in 1981, and we started in the early 70s on the program. There were quite a few successful launches before the Challenger.

KB: Were you watching the launch of Challenger from Thiokol?

QE: Yes, most of us that were on the team would go into the conference room and watch it from there. I did have another good thing happen to me. On the first flight I was able to go down the Cape and watch it.

KB: What a thrill that must have been!

QE: Oh yes. I'll say it was! That was funny. They had to delay it a day. I don't remember what the problem was, but we would have still been on the bus trying to get there. There was really a crowd of people trying to get there, and they just didn't have it planned well enough to handle all the traffic.

KB: After the Challenger disaster, were you still involved in the Shuttle trying to fix it?

QE: Yes. They redesigned the joint that they believed failed. They did several things to insure that it didn't open up again like it did then. We did a lot of testing the joint with the temperature conditioning to see exactly what the problem was.

KB: Was the problem that the temperature was too cold which made the rubber on the O-rings too stiff?

QE: Yes, that's what they came up with was that it was the cold that made that happen. Of course, there were several things we had done on our motors that we would actually test those joints. We weren't able to test them under the real conditions, but there were two O-rings. They were redundant seals, and we would just test the pressure in between these seals, which would load the one O-ring the opposite way than the motor would load them when it fired. We did have to take some joints apart because they leaked.

KB: Was this after the Challenger or before?

QE: This was before. We knew that was a critical thing, but we'd never tested it with the temperature that they experienced there at the Cape that time. We did test those joints afterwards.

KB: On launches since that time, they haven't had any problems with the booster motors, have they?

QE: Not on the motors, no. On the Columbia there was a re-entry problem. They think that the foam that covered that big tank damaged a tile that protected the vehicle when it re-entered. Of course, we didn't have any direct involvement in that.

KB: Were there major changes after the Challenger?

QE: Well, there were a lot of changes in the organization. NASA had Thiokol redo the way that they managed it. Before that happened, the program management there was a little bit different from most of them. They had program managers who would take care of the business end of it. Then they had the project engineers who would take care of the engineering, but when they organized the Shuttle, the program managers were engineers and they took care of the project engineering and the managing. It worked well because in some programs the project engineer was the driving force, depending on the personality. Sometimes it was the program manager. These guys they had there were all very competent people. Bob Ebeling worked in the program office. Then before they reorganized in the nozzle part there was one project engineer. He had one or two people helping him. After they reorganized that, they made a program manager, and he had about seven or eight people helping him. The project engineer for the nozzle had about five engineers working for him.

KB: Did your job change at that time?

QE: Actually I did transfer about that time to project engineering. I worked on the nozzle as project engineer. Several things were changed. There was some work on the nozzle they had to do, and they're still doing that. One of the things that happens from the original design is that you qualify all your suppliers. Then some of the suppliers go out of business, and you can't get the same materials so then you have to requalify the whole thing. There was a lot of coordinating between the design people and the manufacturing people.

KB: Were you in the Shuttle program until you retired?

QE: Yes, I retired in '89. It's been a long time. I can hardly believe it's been that long. My son is now working in the manufacturing part of the shuttle nozzle, but I don't know many of the people out there anymore.

KB: Don't you feel good about the quality of Thiokol's work?

QE: Oh yes. I think they really did well. It was a pretty good place to work. I looked around a little bit for other jobs, but there wasn't anything that paid as well and had comparable benefits. I didn't have to travel very much, which was a good thing because we still had young children. I was really kind of surprised that I stayed there until I retired, but I did.

KB: How is job security out there now?

QE: Well, right now they can't hire enough experienced people for the jobs they've got. They're having a difficult time getting people who have the experience to come. They've got some new contract that will probably last a long time.

KB: Let's talk about the Bird Refuge now. How soon did you get involved in that project?

QE: After I retired I was looking around for something to do, and I think I worked out there for about two years after I retired. I worked as a volunteer. I think it was Bob Ebeling who recruited me. The Great Salt Lake flooded in 1983, and then Al Trout came here to be Manager in 1989. They just sent him here with an old broken-down truck. That was about all he had. I knew Ebeling and Tom Walker and Norm Layton. They were some of the first ones that volunteered to help.

KB: Did you go to the Bird Refuge much before the flood?

QE: Yes. In fact Dad used to take us out there fishing on the Bird Refuge to catch carp out there. We'd catch a lot of fish, but it was mostly carp and sometimes suckers.

KB: Did your mother like to cook the carp?

QE: Oh, we did have it once in a while, but not very often. My dad hunted out there, and that was my first experience hunting ducks. The first time I hunted out there was when I was 12 years old. One time he took me out there before I was old enough to hunt. I went out with him, and I just had on a pair of his boots that were too big for me. I couldn't wade and follow him out there, and so he sent me back to the Bird Refuge to wait for him. While I was there, Wallace Beery came in there and was checking out of the Bird Refuge. I didn't talk to him. My dad came in, and he talked to him a little bit.

KB: That must have been exciting for you as a kid to see a movie star.

QE: Oh yes. Actually he built a little cabin out there next to the Bird Refuge to stay in so he didn't have to drive in and out. The last year I was in high school my dad was in the Army, and I went out there with some of my friends to the same area where Dad used to take me hunting. It was quite a walk out there, but we used to do that. We walked from Headquarters. It was two miles you had to walk out on the Refuge dike. They wouldn't let you drive a car out there then. We'd walk another mile or so out through the marsh. I went out there a couple of times with guys with boats hunting ducks. After the war I didn't hunt out there very often. I don't think I've hunted out there a dozen times since then.

My dad leased a duck club. He had leased a couple of them there, and then he leased another one that was called the Lakeside Duck Club. It was owned by a man named Charlie Fredericksen who had a farm out there. After he passed away, his widow wanted to sell that duck club. We were thinking about buying it, but it didn't have any water right to it. He got the water off his farm. That's the way they did that. It finally ended up that there were 40 acres detached from that. Half of it was underwater from the lake from the Bear River Duck Club, so we bought that 40 acres. We've had that as a family duck club ever since. It was started by my dad, his friend Dennis Johnson who had the Brigham Implement, my brother and I – the four of us. When Denny died, Dad bought his share, and my brother Dick and I inherited the rest of it. There were just two of us who owned it then. Now we've transferred it to four of our kids – two of his and two of mine.

KB: You have a long history at the Bird Refuge.

QE: When I started working out there developing that thing, one of the things I was able to do, because of my surveying experience, was to run levels along the dikes to see where we needed to fill them. This was after the flood when they started to rebuild that in '89.

KB: Before you talk about the rebuilding, explain how developed it was out there before the flood.

QE: Oh, before the flood probably the most conspicuous thing there was a large tower, which was probably over 100 feet tall. Then there were several people who used to live out there. There were residences for them and there was an office building. In the early days you used to have to check in and out of the office when you went out there to hunt. There was a Visitors Center where they had a little display. Then they had a laboratory where they studied bird diseases. They had a botulism problem, which they still have. They had some other pens there with some birds. You could go look at birds – besides the ones that were wild. We'd go out there quite often just to drive around. It was surprising the people you'd run into out there from other places.

KB: That flood pretty much wiped out all that development, didn't it?

QE: Well, all the buildings were completely destroyed. There was nothing salvageable in them at all. In that area where the Headquarters of the Refuge was, it was just a mess. We cleaned that up. I think we more or less burned all the lumber, and we buried all the concrete stuff. Sometime somebody will dig that up and wonder what in the world all that was.

KB: I interrupted you in speaking about your survey work.

QE: Well, that's one of the things that I did. I ran levels along the dikes to see where they had to be built up. They were pretty much intact. There were a few places that we hauled quite a few loads of gravel to fill. The dikes were still there and most of the water structures were okay. One of the things that the ice had caused where the bridge went over the river there – those large concrete slabs had fallen down in the river. That was one of Tom Walker's jobs. I'm sure he told you about that. He got a crane out there and lifted them back up. They're still the original ones -- those water-control structures.

KB: Were they able to pay for things like that crane or did people donate the use of it?

QE: I don't know about that. They probably had a little government money to do that, but a lot of it was donated. That was one of Ebeling's things. He'd go get money and materials from all over the country here. The water-control structures were made out of concrete, and they were pretty much intact except the wooden logs that they'd put in there to regulate the water. They had all disappeared and were gone. We didn't have enough money to buy the large timbers that they did, but we did build some things out of mostly 2x8s or 2x6s. We'd put them together and put into those water-control structures so that we could control water. We finally did get a lot of those operating.

KB: Was that the part that you were in charge of?

QE: Yes. We built a lot of those things, and then we'd go manage the water level in those structures.

KB: That sounds like an impossible task. How many people would you say were working out there?

QE: Oh, sometimes there were as many as ten people, and sometimes there would be four or five.

KB: Did all of those people have a history with the Bird Refuge like you did?

QE: Actually Bob Ebeling was working in Southern California, and he came up here on vacation one time and went out there and camped at the Headquarters. He had his kids fishing out there, and he

couldn't believe it. That's one of the reasons he came here – because of the Refuge. He couldn't believe it. Tom Walker said he couldn't believe it either. He said when he first came here, he drove out to Thiokol past those marshes and there were birds all over the place. He couldn't believe it either.

It really is an asset to the community although one thing that has been so disgusting about that is the county road out there. The County Commissioners have never taken an interest in repairing it. They finally got federal money to do it, but now they have to do it to federal specs. I guess they're going to start building it this year.

KB: I hope they do it soon so people can be out there enjoying it more. That road puts me off.

QE: I don't know what they're going to spend on that. There's going to be a fortune spent before they get it done. If the county had just redone that road like it was before, it would probably have cost them \$10 or 12 million if they'd done a little bit every year. We couldn't interest them too much in the Refuge.

One day when we were out there, a man and his wife came out to the Refuge in their motor home. She was a photographer. It was in the springtime. At that time there were very few places for the birds to nest, and they were all nesting on the dikes. You could hardly walk because of all the bird nests. There were all kinds of bird nests – ducks, geese, avocets and seagulls. He was from back East someplace. I told him what we were doing as volunteers. He said, “You mean you can't get money to do this. That's ridiculous.”

Apparently he had some connections there, and he said he was going to go back there and raise Cain in Washington. I don't know whether he ever did or not, but they stayed there for two or three days while she did a lot of photography work.

KB: Well, maybe he got some money that you never knew about. That's what amazes me that you did all that without any money – all volunteer service – and made those dikes as good or better than the old ones. How long did it take to get them functioning?

QE: Oh, we had those dikes functioning the first year, and then the second year was just kind of cleaning up mostly. I've done a little work out there since. One of the things I did for the Refuge was to serve on the Tourism Council to get the State to put up the signs, I don't know what the holdup is there. The last year or so I worked with Al to get them for that new Visitor Center, but they haven't got them up yet. Al and Bob Valentine had some connections with the State people, so I don't know what's happened there.

KB: I appreciate so much what you men did there. A lot of people come here from other places to enjoy the Refuge – sometimes more than the ones who live here.

QE: When I was in the Army people would ask me, “How far are you from the Great Salt Lake?”

I'd say, “Oh, just a few miles.”

They'd say, “What's it like swimming in there?”

I said, "Well, I've never been swimming in it." It's funny that Ruth's sister and her family used to stop here and visit with us and one time I took them out to the Golden Spike. At that time all they had was an obelisk out there, and I showed them a few places. I could show them where the railroad was. The one daughter was quite impressed with that. In fact, once she wrote a paper on that after she got back in school and got a good grade on it. Even now every once in a while when she comes by, she wants to go out there again. I took them out there in the morning, and brought them in and had a hamburger there at Mim's in Corinne and then took them out to the Bird Refuge in the afternoon. This was before the flood. They did enjoy that. When I tell local people that I did that, they say, "I'll bet they never come to see you again."

KB: I can't figure that out.

QE: I can't either.

KB: Maybe they've never been there.

QE: That could be it. Before we were married, I took Ruth out there one time. She was really excited about it. I saw this avocet that had stopped there and was doing the wounded bird trick, I said, "Let me show you something." I went and found the baby and showed it to her. She'd never seen that before. She really enjoyed that.

She'd say, "Oh, what's that?"

I'd look up in the sky, and I couldn't see anything, but what it was were pelicans up there. When they'd turn a certain way, the reflection off their wings was just bright, and when they'd turn the other way you couldn't see them.

I've known people that can hardly get out to the Refuge because they stop so much on the way when it's flooded and there are a lot of birds in the flooded areas.

KB: My family likes the Refuge a lot.

QE: I went out there with my grandfather one time. He had some cattle out there, and he had a two-wheeled cart pulled behind a single horse. He went all over out in the area between Brigham and the Bird Refuge. I can't remember whether we went across that ferry or not. The road didn't go out there, but right at the end of the Iowa String Road. It goes south all the way to the Bear River, and there used to be a ferry at the end of that road where you could cross over there. When they were building the Bear River Club, Paul Merrell told me that they had a load of lumber and put it on that ferry. When they got out with that load, it sunk. On the old maps, it locates that ferry that used to cross the Bear River there. Of course, they discontinued that after they built the road out there.

That was built by the CCCs in the 30s. That camp that was down by Pioneer Park – those guys were the ones that built the Refuge. They drove the trucks and that sort of thing. I think Van Wilson was the first manager out there. Margaret Call is his daughter. Her husband is Wayne, and they live right here on 6th East. They lived out there for a while.

KB: I'll give her a call.

QE: She's probably a year or two older than me. I don't know where his son is now. He had a son named Budge. She would know where he is.

KB: How do you feel about being part of that redevelopment?

QE: Oh, I think it was important to get that done, and it was a good thing to get to know Ebeling and Walker a little better than when I worked with them and to get acquainted with Al Trout. One of his boys who was still in high school helped me do the survey. That was a good thing to help me ease into retirement. You need to take time like that doing something. It was an interesting thing to be doing.

KB: That's part of your heritage with your grandfather and your dad. You have deep roots in this area. You do it for that, for the people who are still here and the ones who will come in the future. That's a great legacy you've left. I appreciate that, and I'm sure many other people do. Thank you for your time.