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K-25 Oral History Interview

Date: 3/09/05

Interviewee: Sheldon Jacobs

Interviewer: Bart Callan

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Name/Org: Sheldon Jacobs ETTP Date: 4 Nov 05  
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Exemption number and category: #2 Circumvention of a Statute

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Name/Org: Gary W. Snyder 721567

Date: June 8, 2005

Guidance (if applicable): CG-SS-4 September, 2000

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[1:1:00:09]

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[Crew Talk]

Callan, B.: So Basically, the questions I am going to be asking you are going to be focused around the K-25 complex and there are several different oral history teams that are different oral histories. I don't know if you've been interviewed by any of the other ones around here, but there are some teams that are doing histories focused on Oak Ridge. I think there's a team that's doing histories for Y-12. We're tasked and focused on K-25. There will be some overlap there a little bit and I have several different topics that I'm going to go through, you know, but please feel free to discuss whatever. If you feel there are topics that I'm missing or if there's a tangent you want to go off on, please do because we're trying to get as many different perspectives as possible.

Jacobs, S.: Okay.

Callan, B.: When we're talking, just pretend like it's just a conversation between you and me. You want to address me and not the camera.

**[1:02:02]**

Jacobs, S.: All right.

Callan, B.: Just pretend the camera isn't there whatsoever.

Jacobs, S.: Yep.

Callan, B.: And in the questions that I ask you, if you can -- and you don't have to do -- do the best you can to paraphrase your answer for me. So, if I were to ask you, you know, what's your date of birth and you say, you know, 03/28/77, that (indiscernible - talking together) you want to respond and say, well, I was born on March 28<sup>th</sup> of 1977.

Jacobs, S.: Right.

Callan, B.: Do the best you can to paraphrase your answers --

Jacobs, S.: Okay.

Callan, B.: That's really the only coaching I have for you. Do you have any questions for me before we get started here?

Jacobs, S.: No.

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[1:02:44]

Callan, B.: Okay.

Jacobs, S.: I don't think so.

Callan, B.: I guess we're ready to roll. Okay. We will start out with an easy question and that is just state your name and spell your name so we can have it preserved on the camera.

Jacobs, S.: Are we ready now?

Callan, B.: We're ready to go.

Jacobs, S.: Okay.

Callan, B.: Go ahead and start. Just state your name and spell it out, please.

Jacobs, S.: Okay. Hi. I'm Sheldon Jacobs. S-H-E-L-D-O-N J-A-C-O-B-S. Middle initial C.

Callan, B.: Okay, and there is any job title or salutation that you want to have go along with your name?

Jacobs, S.: No. No.

Callan, B.: Okay. And what's your date of birth and where were you born?

[1:03:27]

Jacobs, S.: I was born in Chicago in 1923 and, uh, that date of birth, well I think I -- April 16<sup>th</sup> 1923 is when I was born.

Callan, B.: Okay. And, where were you living prior to coming to work here at K-25 in Oak Ridge?

Jacobs, S.: I lived in Chicago and, uh, I came down here in 1951. I wasn't here for when they opened the gates, which was in 1949. I just missed that. So --

Callan, B.: Okay. And what type of work were you doing?

Jacobs, S.: I'm a chemical engineer. I worked in what they called "Operations Analysis" where we, uh, did most of the problems established -- to establish the configurations of the plant. There are three plants,

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really. There's K-25, K-29 -- well, in the K-25 area there's K-25, K-27, K-29, K-31, and K-33. I guess mostly we're going to talk about K-25 and, uh, what else? I'm sorry. What else did --

[1:04:40]

Callan, B.:

Oh, what kind of work did you do before coming to K-25 or to the K-25 complex?

Jacobs, S.:

Okay. Well, when I went to school I graduated in 1944 and I didn't even attend my graduation because I was interviewed and, uh, I was interviewed but there weren't too many jobs open at that time. Everybody was being drafted. Uh, Phillips Petroleum interviewed me and the salary was such that [laughs] I just couldn't accept it. And then somebody came along and said, "We'd like to interview you." And I said, fine, what's the company, and so forth. Turned out it was Houdaille Hershey which I had never heard of, Houdaille Hershey and I said what would I be doing? And, uh, the interviewer said, "I can't tell you." "You can't tell me? Well. Would be it chemical engineering type work?" "Oh yes, yes." And there weren't many other interviews so I accepted that, but he said "you would have to come as soon as you can" and so I really missed my graduation and I didn't attend my graduation services. And, the plant was located in Decatur, Illinois and I lived in Chicago. That's about, uh, hundred miles or 130 miles south in Illinois.

[1:06:04]

And I went there and, to make a long story short, I worked in -- Houdaille Hershey was an automobile manufacturing plant. But there was a little -- well, it's a rather large plant -- not an automobile manufacturer, but accessories like bumpers and fenders and so forth. And, uh, there was another little plant right next to it. I didn't know what it was. It turned out it was a pilot plant and they were making something and, of course, didn't know what it was. I saw -- I saw the material and, uh, it turned out that we were making something and I didn't know where it was going to go even. And I worked there for two years, almost two years and I never knew where the material was going. We heard rumors that whatever we were making was going to -- I think it was Chrysler in Detroit. That was the rumor, I mean, nobody -- at least the people that I knew there and worked with didn't know where it was going. And, uh, the plant closed in 1945 in November, I believe it was. Of course, then I found out that it was going to

someplace in Oak Ridge. That was when the bomb was announced -- they had dropped the atomic bomb.

**[1:07:38]**

So, I had a semblance that it was for that project, but I still didn't know exactly what or how it was going to be used. And the plant closed so I was out of a job and I was in the National Guard for a little while and then I interviewed again at my -- I went to Illinois Institute of Technology and I went there and looked in there to see what's opening -- job openings and there was one -- somebody, uh, wanted to interview me. It was union Carbide. And they were located in Oak Ridge. I didn't know where Oak -- well, I'd heard of it, of course, but didn't know anything about it. I had never been down there. To make a long story short, they hired me in Oak Ridge and lo and behold, when I came to Oak Ridge, I saw -- I think it was at least one person that had worked in Decatur with me who I hadn't seen for several years and another person was a fellow who went to school with me and I hadn't seen him since we graduated. And he was working here and we both looked at each other. How are -- he didn't know why I was there and I had no idea that he had come to Oak Ridge. So anyway, that's -- that was my beginning job at Oak Ridge.

**[1:09:08]**

I got into -- first I was working nights in what they called the barrier plant. And then I realized what we were making. I saw the -- I put the whole picture together and, you know, I got the idea of what we were doing in Decatur and what they were doing in Oak Ridge. And I worked there for a while, but it wasn't my cup of tea so I went -- they transferred me to Long Range Planning Group, which was -- they were supposed to determine the configuration of the plant and, uh, try to design it for maximum efficiency and it's a very complicated process and so a lot of mathematics involved and setting up the -- determining the configuration of the plant. And shortly thereafter, that was in 1951 when I came here, and that was -- I guess that was the beginning -- almost the beginning of the Cold War. K-25 was making highly enriched uranium for the weapons program. And, uh, then the Cold War I guess started and they were going to build new plants and they were building one -- going to build one in Paducah, Kentucky and another one in Portsmouth, Ohio.

**[1:10:48]**

And so, it was our task to tie these all together and see material from one plant was fed into another and then into another. And it's a complicated process so we had to configure it so it was operating at maximum efficiency. And --

Callan, B.: I just wanted to back up a little bit. I thought it was curious. You said that you were working for the Houdaille Hershey?

Jacobs, S.: Um-hmm.

Callan, B.: And that job stopped. You said that you -- was it Union Carbide that contacted you?

Jacobs, S.: No. I went to a placement office --

Callan, B.: Oh, okay.

Jacobs, S.: -- at Illinois Tech.

**[1:11:26]**

Callan, B.: I just thought it just seemed kind of ironic that you were --

Jacobs, S.: No, I --

Callan, B.: -- you were working with Houdaille Hershey on this one thing and then --

Jacobs, S.: No.

Callan, B.: -- the next thing you know you're working here -- So there's no --

Jacobs, S.: No, No. There's no connection.

Callan, B.: Oh, Okay.

Jacobs, S.: Yeah.

Callan, B.: When you first arrived at K-25, what were your first recollections or your first thoughts about the, you know -- just what was your first reaction when you got here?

Jacobs, S.: Well, turns out I got married in 1950. That was before I came down here. And we took a honeymoon and we were going to Florida. And the gates were open, like I said, then and we came

by here and happened to -- said, we've heard of Oak Ridge so we drove in and we saw the Garden Apartments. And we thought, oh that must be the plant area. Nah - didn't look right, but we had no idea. We couldn't get near the plant, see. There was still a fence around the outside of the plants -- quite a ways outside. So, I couldn't access the plant area and we had no idea that there was anything going on in there.

[1:12:33]

We looked around a little. Went to Florida and back and so forth. So, that was my first impression [laughs]. When I came down here -- you mean when I first started working, or?

Callan, B.:

Um-hmm.

Jacobs, S.:

Well, I came down and I stayed in a -- they had me in what they called the bull pen because you had to have clearance before you even had access to the plant area. So, we stayed in, like I said, a bull pen until the clearance came through. Clearance is what's called a Q-clearance so that you had access to the plant area. And we sat there and couldn't -- I was already on the payroll and that brings up something else. My wife, this happened to her later and this is out of sequence, but it's a good time to bring it up. She started working here some years later and she sat in the bull pen too until she got her clearance and she did nothing, worked crossword puzzles or whatever you wanted to do because you couldn't have access to any classified material. So, she got two raises sitting in the bull pen and then she got pregnant and never put in [laughs] -- never got to work. But, afterwards, when we had some children, she went back to work and had clearance and so -- I thought that was kind of strange. You had a couple raises not even showing up for work.

[1:14:09]

Callan, B.:

Tell me more about the bull pen and what that was like. What was it? Was it just a building where --

Jacobs, S.:

Yeah, oh -- it was just a room, maybe twice the size of this room, inside the plant but in an unclassified area. Just a room where -- we weren't alone in the bull pen. Whoever they were hiring, may have been half a dozen at different times. They finally called my wife Chief Bull. She was the last one in there. So, that's what it was. Just a holding area. So --

**[1:14:41]**

Callan, B.: You say you had to report for work everyday and just kind of hang out in this room until they got your clearance?

Jacobs, S.: That's right.

Callan, B.: Interesting. Okay. [laughs]. Sounds fun.

JACOBS, SHELDON:[laughs]. Well, yeah.

Callan, B.: Let's see. What was the span -- and again, what I'm talking about, we're focusing on K-25.

Jacobs, S.: Um-hmm.

Callan, B.: I'm talking about K-25, the entire complex, which includes supporting buildings around it.

Jacobs, S.: Okay.

Callan, B.: Not just what we think of the U, but this entire area.

Jacobs, S.: Okay.

**[1:15:09]**

Callan, B.: I just wanted to clarify on that.

Jacobs, S.: Okay.

Callan, B.: But, give me the span of years that you worked at K-25 and then after you worked there did you transfer to Y-12 or ORNL or where did you go?

Jacobs, S.: Well, uh, I worked -- I'm trying to remember the dates now. I got hired in in '51 and I had various jobs, but assigned really to the Long Range Planning Group, but we did work for other people. We did work for Y-12 and, uh, I guess -- not ORNL so much. Y-12, you know, people would call us and want to know something or could we help them could we -- they had a problem they needed solved. I didn't work there. None of use really worked over there. We were still on the K-25 payroll, but we helped people develop and solve some of the problems at Y-12. And in 1967 I transferred



to X-10, which is ORNL, Oak Ridge National Laboratory, and I worked there and then, strangely enough, I was in the Long Range Planning Group [laughs] at ORNL and I worked on different things like um, trying to solve the United States -- the whole electrical energy -- yeah, the energy problem; when we should bring in new reactors. At that time, you know, they had -- there were some reactors, of course, but when do we want to bring in the new advanced type reactors like the breeders, or the gas cooled reactor or whatever, and kind of phase them in.

[1:16:52]

We studied the whole electrical economy of the United States and tried to decide -- it sounds like a joke, really, but you do the best you can. We were trying to project out about 50 years or so for what would be required. Of course, nuclear energy was -- there wasn't a nuke plant built since 1977 there has never been a new plant built, a new nuclear plant built. Uh --

Callan, B.: How accurate were your predictions about --

Jacobs, S.: Horrible.

[laughter]

[1:17:20]

Callan, B.: (Indiscernible) the stuff that you got to the stage of where, you know, was it 50 years out or 20 years out that you were predicting, is it -- the predictions --

Jacobs, S.: No. No. But, you know, you do the best you can. They're still doing that, I'm sure, you know? You have to obviously try to predict the future. We thought nuclear energy was in, I mean, no problem. We're going to have new nuclear plants and there's not going to be any pollution 'cause they don't emit smoke. Um, didn't work. [laughs].

Callan, B.: Okay. Let's see. While you were working at K-25 or at the ORNL did you ever meet any of the famous people associated with the nuclear age? Folks like Einstein or Oppenheimer?

Jacobs, S.: No. No I didn't.

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Callan, B.: What sort of perceptions did you get about the K-25 site from acquaintance or friends that didn't work there? From other people around town -- did you ever get asked, what is it you do out there?

[1:18:39]

Jacobs, S.: Oh. Um, by that time I think people were relegated to [laughs] -- they're not gonna ask or -- No. I really didn't have a problem with people trying to find out what we were doing. But --

Callan, B.: But whoever did ask what was done --

Jacobs, S.: Well, my [laughs] -- my children wanted to know. I couldn't take 'em into the office, obviously. That's kind of unfortunate in way because my son now, he takes his daughter into his office and shows her around and keeps her there. He brings his dog in and [laughs] it's a little different than around here. But they never knew -- obviously never knew what I did. So --

Callan, B.: When they asked you, what did you tell them?

Jacobs, S.: I just -- I guess -- I don't remember. I can't tell you what I'm doing. Even Vivian, my wife, at times, although she was working at ORNL, I couldn't tell her what I was doing at K-25. So --

[1:19:53]

Callan, B.: Okay. What are some of your most vivid recollections or some of your favorite recollections of the time you spent at Oak Ridge and K-25?

Jacobs, S.: Well, I tell you -- it's an incident that happened. That sticks in my mind. We were in a fenced in area and an inner fenced in area and there were workers outside that apparently were cleared to work right around the plant but outside the fence. One of them, it was about lunch time, and one of them came up to me and said through the fence, "Hey, can you get me a sandwich?" Uh, they had a canteen inside. I said, "Yeah, what would you like?" And, uh, he told me and I went and got it and some milk or whatever it was, and [laughs] I started to give it him through the Platina and whistles, a guard came down [laughs] and really laid into me. "You can't do that." [laughs] So, that's something that sticks in my mind. Uh, what was the questions?

[1:21:02]

Callan, B.: Just any of your vivid memories. That's a really good one that you just gave me right there. Just, you know, any interesting stories or any interesting fun things you remember happening while you were working here.

Jacobs, S.: Yeah. We all had to take polygraph -- not, not all. The operators and pipe fitters, they were all cleared, but they didn't take polygraph, but, we did. We had to polygraphs every six months or so and I hated that. I -- because I have atomic energy pen in my pocket and they said, did you ever walk out with any -- the question was, of course, have you ever taken anything out of the plant and the first thing [laughs] I think of, I've got a pen or pencil. I just didn't like it, that test. I took 'em regularly, you know?

Callan, B.: Okay. Let's talk about what did you like most about working at K-25?

Jacobs, S.: I liked the area. I liked working -- it's a great place to bring up children. Even my children like that. Most of my friends do too and, uh, we said, this is it. This is where we're gonna live.

[1:22:20]

But then there were problems because -- budget problems. Y-12 was a weapons plant and we weren't -- they made weapons out of - - [laughs] -- they made all the parts for all the weapons in the arsenal of the United States. But, we just made enriched uranium and enriched it highly enough so that it was weapons grade material and, uh -- oh yeah, I was talking [laughs]. I lost track for a minute. I was talking about the budget problems, the government budget problem. It seemed like, you know, when weapons were in high demand and Y-12 population grew and, uh, it seemed like then the gaseous diffusion -- sort of the budget for gaseous diffusion went down and then at others times over the years there wasn't such a demand for weapons and so -- but then you get more enrichment. It seemed like they would kind of go opposite like that. One never knew what was gonna happen in the future. When I first came here we lived in what was called a K apartment. It's an apartment that has four units it in. Two on the lower level and two in the middle that are all attached or two-story apartments and we lived in one of the lower ones. And I would go to work -- I was working on the night shift at the time when we first came here, and my wife, she would call me and oh man this is terrible. Bugs were crawling out and everything was coal heated,

heated by coal and the furnace room was filthy with coal dust and she just couldn't take it.

[1:24:17]

We weren't gonna stay here at that time. You were assigned homes depending on your level of employment, you know. If you had one child you got a certain sized home. If you had two children you got a little bigger size. They were all cements and a cement is an asbestos transit type of material, I guess that's it. And so finally, after six months I guess it was, we moved out of this K apartment, which was really this bad, this one bedroom. We had no children. And we moved into what they call an East Village house. Some private contractors had decided to build -- one contracting group built, I think it was like five hundred homes in the east end of town called the East Village and another contractor built a similar number called West Village, I guess it was at the time, another three or five hundred homes, individual private homes. So we moved into one of those and that wasn't bad, but -- and it grew on us. We kind of liked Oak Ridge and had our own house.

[1:25:41]

And after that we moved into a brick apartment, which was what is now downtown, near downtown Oak Ridge, and it was a two-bedroom apartment, was nice and we had one child I guess there. Ultimately, in 1963, the town was open then and the town was -- I can't remember the date when the city council and the -- had a town council -- it got to be a city then, a city at the time. And, then contractors moved in and built really nice houses and we built our own in 1963, which we're still living in. It's 40 some years, so. Uh, as soon as we moved out of that K apartment we were much happier and decided this is probably very nice. At the time, of course, we didn't know it was going to be forever. [laughs]

[1:26:56]

We're still living there and we made lots of friends. Some of the friends were from our priv -- from our little group and we had -- what the planning group was, well it wasn't isolated -- it was an engineering group, really. I'm trying to recall exactly -- anyway, I made friends with a lot of people in our planning group. There were only 30 or so people in that group and we made other friends with other people in the other plants and, um, we got to like it

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here. Everybody seems friendly. Everybody's from someplace else. That's -- so we don't have any relatives. Nobody has relatives here. Well, I shouldn't say nobody, but, so, we're our own relatives. People that we came down here with.

Callan, B.: So, what about, I mean aside from the initial housing, is there any other dislikes or what did you like the least about working at K-25?

[1:28:09]

Jacobs, S.: Well, of course I didn't like shift work when I came here. That was a little less than a year.

Callan, B.: A lot of people said they didn't like shift work. [laughter] What was shift work?

Jacobs, S.: Um, rotated day shift for two weeks and then afternoon shift, which was I think like three to twelve or three to eleven for two weeks and then eleven to seven in the morning for two weeks. I never got used to it. Although, in Decatur we worked shift work, so, most of the time.

Callan, B.: Okay. He's going to switch tapes real quick here --

[END OF TAPE 1 - BEGIN TAPE 2]

[2:00:10]

Callan, B.: Right now I haven't gotten the authorization to do so.

[2:00:17]

Jacobs, S.: If you do, how long might that be? Years? [laughs]

Callan, B.: [Laughs]. Well, you've -- you worked for the government Department of Energy so I don't, you know -- I mean, you could probably want it to get first was to have us preserve as many oral histories, do as many interviews as possible and what happens after that, we haven't really been informed. I don't know what their plans are going to be after that, if they're going to give us the opportunity to assemble this into a documentary or not, but I hope that they will.

Jacobs, S.: Yeah.

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Callan, B.: And then, if that's the case, I'd assure that, you know, we would definitely make sure that those that were involved in the documentary making would have access and be able to take a look at it.

Jacobs, S.: How many are you interviewing for this?

**[2:01:06]**

Callan, B.: Oh, we have -- right now I have a list of prospects, about 65 people --

Jacobs, S.: Wow.

Callan, B.: -- that we want to get in this initial round of interviews here and after that we're going to have to review and see if that meets -- if we've got enough people to meet the different demographic objectives that needed to be met and, you know, that may be a sufficient amount of interviews, we may need to go back and interview more. It just really depends. But, back to the interview here.

Jacobs, S.: Okay.

Callan, B.: Let's see. We talked a little about working conditions and the work environment. We've talked a little bit about -- is there anything else that you wanted to add about what it was like to communicate amongst each other in a secret facility or what it was like to communicate around classified information?

**[2:02:00]**

Jacobs, S.: Yeah. You wouldn't talk about class - obviously about classified information. And even people in the plant had different clearances. I mean, you wouldn't -- you wouldn't technical details with people, even in the plant and certainly not outside the plant. Nobody, as far as I know, nobody knew other than people who were -- I'm trying to remember how many. I can't remember how many were employed at the time. I think there were like five -- I may be off a little -- about five thousand people at K-25 and similar amounts at the other two plants. So there were a lot of people working there, but we couldn't tell people at ORNL what we were doing, although some of them surely knew what we were doing. And Y-12 -- well I worked at Y-12 for part time too, so I knew what was going on there. I think I told you I worked at

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ORNL for three years in their planning group. And, uh, I did some work at Y-12 and helped them out.

Callan, B.: Okay.

[2:03:26]

Jacobs, S.: And, uh, our main, yeah, one of our main prob -- main objective was isotopes separation. Uranium, of course, or separating isotopes and trying to get the light isotope enriched to bomb grade material, which is what they call the HEU, High Enriched Uranium. And, uh, but we did other studies on other isotopes like boron, government used boron for something, and nitrogen and made studies of plants that may or may not have been built, but made studies of -- to see if it was practical. And some of the plants, I think, were built. I think that -- well, I wouldn't talk about that. But, uh, so we did a lot of that, isotope separation.

Callan, B.: Okay.

Jacobs, S.: And there was -- oops.

Callan, B.: I'm sorry.

Jacobs, S.: I'm sorry.

Callan, B.: Go ahead.

[2:04:32]

Jacobs, S.: Oh, they needed isotope separation at Y-12 too, so we did some of their work. It was in (indiscernible). That's what some of the work we did for Y-12.

Callan, B.: Okay.

Jacobs, S.: Enriched certain isotopes.

Callan, B.: Okay. What about the physical working conditions out there at the plant? Where they comfortable? What were the physical working conditions like?

Jacobs, S.: That's a good question. [laughs]. I came here, like I said, in 1951. I worked in the barrier plant for about nine months and then I got into this planning group and we all had desks, of course, and small

rooms maybe about the size of this, maybe about 15 by 12 or something like that. And two in a room and, uh, in the summer it does get a bit warm here. [laughs]. And there was no air conditioning. We had little floor fans under our desks and it didn't help very much. Papers stuck to our arms, trying to do some work and, oh darn paper stuck to your arm. And, in fact, they sprinkled the roof of the -- there were two story buildings -- they sprinkled the roof with water at times to try and help it cool down a little bit. Um, I can't remember exactly when they started air conditioning the offices.

[2:06:05]

Well, you asked about the physical -- of course they supplied us with everything we needed; desks, chairs, and it wasn't bad, but I'll tell you what shocked. I'm from the north and I came down here and when I went into actually K-25 proper -- I went into the others, but -- first thing I noticed, I had to go the bathroom there and "Whites Only" was the sign. "Whites Only" and over here there was another, I think they said "Colored." I don't remember if it said "Blacks" or "Colored." But, that upset me. And, you know, it's a government plant -- that changed shortly, I mean a year or two. And in that vein of thought -- they have a big very, very large swimming pool, one of the largest in the south, outside swimming pool, and we were swimming, my family and I one day, and a black boy, I guess, I don't remember, maybe twelve, fourteen years old, came in and jumped in the pool. It wasn't a minute later his dad came rushing in and said, "Ahh, <expletive>, get out of that pool!" A white man, "Get him out of that pool" you know. That upset me. But that changed too.

[2:07:46]

Jacobs, S.:

Then in 1955, I think it was, Clinton, which is about eight miles or so from Oak Ridge -- I'm trying to remember the name of the -- I can't remember his name -- uh, blew up the Clinton High School. Who knows why? They just blew it up. It was all race related and they had problems in Clinton, not like in Alabama, but over the years the problems were solved. There was an area in Oak Ridge that used to be called Gamble Valley, that's where the blacks lived, and it's being integrated, but very -- I mean, as far as people moving in, blacks in different areas, they are moving in. But when I sold my East Village house, I put it on the market and one of my neighbors came running over. They saw the "For Sale" sign, and he said, "I hope you're not gonna sell it to a black person." I



would've, you know, but somebody else bought it. I was afraid I'd be shot. [laughs].

**[2:09:18]**

Callan, B.: How long ago was this?

Jacobs, S.: Pardon?

Callan, B.: How long ago was this?

Jacobs, S.: Oh it's, that was, um, '53 maybe? Two or three. About that era.

Callan, B.: Since we're on the subject of minorities, what sort of job role did you see minorities serving or what sort of roles did they serve at the K-25 complex?

Jacobs, S.: Didn't see many blacks that I remember. Black engineers, for example, at K-25. I don't know about X-10. I use X-10 and ORNL. It's the same plant. I can't say about there. Not many.

Callan, B.: Did you see, I guess, they were treated kind of differently, from what it sounds like --

Jacobs, S.: Sorry?

**[2:10:12]**

Callan, B.: Different types of job roles and they were treated differently?

Jacobs, S.: You mean at -- yeah, there were black people, the operators, as they call 'em, and yeah, there was some. That's why they had the black toilets only. You know, cause there were black people there, but not in the upper level.

Callan, B.: Okay. What about women at K-25? What sort of jobs did they have and what was their role at K-25?

Jacobs, S.: Well, this is before my time, but I know what happened because I read about it and all my friends came here earlier, you know, 1942 or 3. And I've seen pictures and movies and I've talked to people. Oh, many, many, many, women were involved in starting up and running the plant, many women. But it was operator type, I mean, they'd be monitoring equipment -- and the building, by the way, it's a mile long, they rode bicycles around. That's how they

transported themselves. Couldn't walk it, you know, if they had to go -- if somebody called you or something or you had to go see something, you'd get on your bike and ride it over there. So, that's how they got around.

**[2:11:41]**

Callan, B.: Okay. Let's see. Getting back to -- you pretty much told me what sort of jobs you did associated with K-25, right? Are we pretty much covered on that or do you want to talk a bit more about that, like each job that you did in as much detail as you can?

Jacobs, S.: Well, I think you're interested, as far as what your note said when you asked me to be interviewed, was only through 1964. Is that right?

Callan, B.: That's when -- that's the history we're trying to cover is -- then you started up basically in the Cold War era, period. The Cold War period --

Jacobs, S.: Well that's early fifties. Yeah.

Callan, B.: Right. And, this spans from the Manhattan project up until when the facility was put in standby in 1964. So, I guess the span of jobs that you did during that time.

**[2:12:40]**

Jacobs, S.: Yeah, because I still worked there till '81.

Callan, B.: Okay. Yeah, you can go through the entire spectrum. I guess, the different jobs that you had -- you don't have to constrain yourself to that. That's what our focus is, but if you were still at the plant up until '81 or whatever --

Jacobs, S.: Well, the plant was closed, but there was a certain area that was -- in fact there was one or two, several buildings were still open. People worked in doing different type of work, highly classified work.

Callan, B.: Okay.

Jacobs, S.: What I was involved in, I don't know that I oughta discuss that.

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[2:13:27]

Callan, B.: Okay. Let's see. What was your most challenging assignment that you had to do as an individual or group during the time you worked there?

Jacobs, S.: One of the most was isotope separation for the process at Y-12. That was a challenging job. Um --

Callan, B.: What would you say was your most significant accomplishment?

Jacobs, S.: Helping design that plant.

Callan, B.: Okay.

Jacobs, S.: And, if I can throw in something else --

Callan, B.: Sure.

Jacobs, S.: Uh, things got kind of slow at times so, first there was the Russians, you have to worry about that. We need tons of highly enriched uranium so we were hard at work designing new plants. Well, we designed, helped design the Ports -- I think I mentioned that -- Portsmouth and Paducah plant.

[2:14:29]

I lost my train of thought. I was gonna -- I'm sorry. What was the question you said again?

Callan, B.: I guess we were talking about your most significant accomplishment --

Jacobs, S.: Oh yeah. I, I know. I'm sorry. I know what I was gonna talk about. Oh, like I said, I was rushed to make highly enriched uranium, but then at other times it slowed down over the years they didn't need so much of that and it got kind of slow and we had to do studies. One study I worked on was accounting for all the cars in K-25. We had to design a program to determine who had all the cars and were they useful and they were trying to save money, of course, but some people shouldn't have cars and where were they and how much were they used. So we had to design a program for that. Seems kind of silly, but almost like busy work, but there were other jobs. Oh, desalination. We worked on that for a while. So, that wasn't busy work. We were trying to design

a desalination plant. So, that's another thing we worked on. That's about it.

[2:15:53]

Callan, B.: Let's see. One thing that always comes to mind when I hear about that technical engineering work that was done here is probably initially when you started working there wasn't the same source of technology available today as there was back then. Do you want to talk a little about --

Jacobs, S.: Yeah, I could --

Callan, B.: -- the differences in technology versus all the luxuries that we have now with computers and whatnot versus how more difficult it was to --

Jacobs, S.: Oh, I can tell you about that.

Callan, B.: -- technology back then.

Jacobs, S.: Yeah, I'm glad you brought that up. When we first came down here, when I first came down here, anyway, there were no computers. They had -- we had a room full of women, maybe a dozen, I don't remember how many, that were working on calculators. I don't know if anybody's familiar anymore with these calculators that they had on the desk. They were called Marchant calculators or Friden calculators, and they would be working, making the big calculations on that, almost like one of these pocket calculators you have now, which have much more ability to make calculations than these things. And then over time, I think we went through all the generations of computers from the first one to the most, well, now their building them the fastest in the world here at ORNL, I think. So, we went through -- had to learn how to program for those and, uh, actually made trips -- went to New York to learn how a, it was a 707 they called it, I think, computer and then there was the 650, 707, the whole generation of 'em, and I guess their still developing new ones now, but -- and the plant was designed, they use the expression on the back of an envelope. It didn't have the capability of the high level calculations so design, like I said, with women who were given instructions and they would make the calculations, and it's amazing really, the work came off -- worked as well -- the plant worked as well as it did with these calculations you had, almost pencil and paper. So, it's a very complicated process. Yeah, that's a good point. I'm glad you brought that up.

[2:18:34]

Callan, B.: So, over the period of your career, it sounds like you probably had to learn several different programming languages --

Jacobs, S.: Oh, yeah. Yeah.

Callan, B.: Interesting. I missed all of my Manhattan Project questions. Where are they? Okay. So, when you came to work here, did you have a pretty good understanding of what the function of the facility was? Did they not -- they really didn't tell you what your work was --

Jacobs, S.: Oh, here? Yeah. Yeah, sure.

Callan, B.: Okay.

Jacobs, S.: Yeah.

Callan, B.: Let's see. And, I think you've already told me, but what specific type of work was being done at the facility after the Manhattan Project and during the Cold War?

[2:19:29]

Jacobs, S.: After -- during the Cold War?

Callan, B.: Yeah. During the Cold War.

Jacobs, S.: Oh, I think maybe I mentioned it, but that's when we designed -- early 50s, 51, 52, 53 -- that's when we designed Portsmouth. I guess, first Paducah and then Portsmouth was the last one to be designed. Portsmouth was what they called a TOP. That means, that's where -- K-25 enriched materials to about, I don't remember, 3 or 4 or 5 percent, and that material went to different plants and got enriched gradually higher and higher to these different plants. Portsmouth was at the top and they enriched it, I don't remember from say maybe 20 percent up to 90, whatever weapons grade material is.

Callan, B.: Okay. Let's see. What did you do -- the facility was put in standby sometime in the 60s, I guess 1964 -- what did you end up doing when the facility was put on standby?

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[2:20:45]

Jacobs, S.:

Well, there was -- we got into nuclear nonproliferation and worked on that for a long time after that. And, uh, that's about all I can say. It's in the papers today, you know, what people were doing and some of the people here, it was in the papers, we went to, it wasn't Russia, it was one of the satellites and came back with a lot of their enriched uranium. So, it's a big problem because the Russians didn't and don't account for all their enriched uranium and they're afraid terrorists groups are gonna get hold of it. Terrorist groups or countries like Bolivia or North Korea, Iran. It's in the papers today. Iran seems to be -- I don't have any inside information, just what I see in the papers. Iran seems to be building nuclear -- well, they're building a nuclear reactor and the Russians are helping 'em and they says its, well, we're only gonna enrich it to about three percent or whatever for a nuclear power plant, but that's about the level, three, four percent. That's not bomb grade material. It has to be higher than that. So, that's the type of problems that we worked on to try to see what other countries were doing and --

[2:22:25]

Callan, B.:

Good. Do you have any or do you remember any interesting stories or anything funny or amusing going on or anything that happened during the Cold War period? I've heard a few little interesting stories. I want to ask everybody if --

Jacobs, S.:

Huh. I'll think of 'em after this interview.

[laughter]

Jacobs, S.:

No. I can't --

Callan, B.:

Well, actually I just heard one. The one that I heard was I guess the Russians had sent over here to the engineers here a section of real thin wire filament like they, I guess, they had been developing thin wire, that's how they can make processors work better and better and better, and they sent the engineers over here a real, real thin section of wire.

[2:23:18]

Jacobs, S.:

I know what that was for.

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Callan, B.: Kind of to show off --

Jacobs, S.: Yeah.

Callan, B.: -- and say, look what it is that we can do over here in Russia. I guess the engineers over here, they kind of chucked it into a lathe of sorts and they bored a hole right through the center of this wire and then sent it back over to the Russians. [laughter] So, that's just one of the stories I heard. I was wondering if you heard --

Jacobs, S.: No. I didn't hear that one. [laughter]

Callan, B.: But, any thoughts about how the activities that happened here at K-25 revolutionized the world or changed the world?

[2:23:49]

Jacobs, S.: Oh, entirely. Yeah. When the bomb was -- the bombs were dropped, that changed the world right then and there. It'll never be the same. And, of course, I'm concerned like you and everybody else of what's gonna happen. I don't know. I see in the papers every day there's terrorists blowing something up and everyone's afraid that they'll get hold of enough material to create havoc. It doesn't have to be a nuclear bomb. They can have radioactive material around a conventional bomb and when it explodes, it's aspersion -- not good. Yeah, I think it's changed the world. Although there's other things to worry about too. I mean, bacteria and food -- if they poison the food. And you're worried about spies. I think there was a spy at K-25 that -- he's not here anymore and he's over -- he went to Europe or someplace, I don't know where, at the time. That certainly shortened the Russians ability to make nuclear weapons. Not just that one spy, but others. They took all the -- they saved them all the time in developing what we took years to do.

[2:25:33]

Callan, B.: So, you kind of observe like that going on whereas the technology that was being developed here was somewhat also, I guess simultaneously getting -- that information was given over to the Russians pretty quickly during the Cold War era?

Jacobs, S.: Yeah.

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Callan, B.: They were kind of using the same -- okay. That's interesting.

Jacobs, S.: Well, this was in the papers. There was different people. Some of them are convicted, but some of them weren't.

Callan, B.: Okay. Well, why don't you tell me what you think future generations should remember about K-25? What's important to preserve?

Jacobs, S.: Well, I think it's kind of sort of strange now when I tell my grand kids or when I hear people telling others of the next generation, Oh, I worked in Oak Ridge. They said, "Did you know the Oak Ridge Boys?" You know, they never heard of Oak Ridge. I mean, as -- when they hear of it, the Oak Ridge Boys. I guess it's a group of singers or -- but nobody's heard of it. I shouldn't say nobody, but how do the young kids hear about it? And I think it oughta be preserved for that reason. It's a new era, it was a new era.

[2:27:06]

So, that's -- definitely think it oughta be preserved, but there's different opinions of how and how much it's gonna cost and they're still thinking about it.

Callan, B.: Okay. Do you want to describe the great accomplishments that happened here? The accomplishments that happened here and what should be acknowledged in history? How should history recognize this place?

Jacobs, S.: Well, sort of like I remember it. I'd like to impose it in the younger minds that this was a generation that -- our generation that changed the world. It's like the industrial revolution, perhaps. Everybody talks about that one; the telephones and whatever was developed. This was a new era and it's changing so much; the new computers, the desk computers, they have the capability of doing much more than some of our big main frame computers were doing. This little computer sitting on the desk now.

[2:28:32]

A friend, not a friend, well, a friend of mine one time was a Ph.D. and very well respected and this was in -- it doesn't matter where it was -- he said you know, what's to be developed? There's no more to develop. He didn't say it in those words. What's developing?



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What's new? What can be developed? We've developed everything. Obviously wrong.

Callan, B.:

Okay. Is there any other topics that you'd like to cover, anything that I forgot to prompt you for that you think we can --

Jacobs, S.:

Um, no. Not off hand. No.

Callan, B.:

Okay. That's all the questions that I had for you.

Jacobs, S.:

Okay.

Callan, B.:

I really thank you for doing this interview.

**[End of Interview]**