National Educational Technology Solutions LLC

K-25 Oral History Interview

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Interviewee: Alfred Brooks

Interviewer: Bart Callan

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[1:00:08]

[Crew Talk]

Callan, B.: Okay. Let's start out with the hard question, and that's -- go ahead and state your name and spell your name so we have it preserved correctly on film.

Brooks, A.: Alfred Austin Brooks, Jr. A-L-F-R-E-D A-U-S-T-I-N B-R-O-O-K-S, J-R.

Callan, B.: Okay. And how old are you?

Brooks, A.: Eighty-three.

Callan, B.: And where were you born, and you can expand on your background if you want to.

[1:01:47]

Brooks, A.: I was born in Swampscott, Massachusetts and moved away at the ripe old age of nine months to upstate New York where I was raised.

Callan, B.: Okay. Where were you living prior to coming to work at K-25 and Oak Ridge?

Brooks, A.: Boy. That gets hard. I had been involved in the K-25 project on several occasions and the first one was the Manhattan Project and I was living in Niagara Falls, New York prior to that.

Callan, B.: Okay. And expand on that. What kind of work did you do working at K-25?

Brooks, A.: The Niagara Falls work was TNT manufacturing. We operated a TNT plant up there for about one year until the countryside was running low on toluene and also places to store it. They shut down four plants and I was on the market and was interviewed by the Columbia people.

Callan, B.: Okay. Let's see, did you -- what college did you attend and what degrees did you get?

[1:02:59]

Brooks, A.: I attended Hobart College in Geneva, New York for three years prior to the war and for a year after the war and then four years at Ohio State University. I got my bachelor's degree at Hobart and doctorate degree from Ohio State.

Callan, B.: Okay. Why did you come to work at K-25? What was it that attracted you to come? How did you hear about it?

Brooks, A.: Well, it was the summer of 1943. There was a war on. People were recruiting. Our plant was shutting down and the recruiters were there. They told us it was a class five project. It was of military importance. And that's all we knew about it. So, that's a very brief but accurate description.

Callan, B.: Okay. And the work that you were doing on the Manhattan Project, were you recruited directly to the military or were you --

Brooks, A.: No.

Callan, B.: -- recruited by Kellex or --

[1:04:12]

Brooks, A.: I was recruited by Columbia University. The project that Columbia was -- that I was involved in was the development of diffusion barrier. We went through about three or four different false leads before the good barrier was built and the really good barrier wasn't really built until years later at the K-25 proper. The Manhattan Project was interesting in that any reasonable person would never try to do it. There were too many questions to be answered in too short a time. Yet, the penalty for turning over the bomb to the Germans was so severe it was unthinkable. So, the country moved ahead in spite of all the obstacles. And they made it work.

Callan, B.: And so, I guess some of the work you were doing during the Manhattan Project with the barrier -- that was sort of the first stages of critical research that allowed this plant to --

Brooks, A.: As far as K-25 is concerned, barrier was the biggest question mark. There were other large question marks, but the barrier was the biggest question mark. And the first barrier was really not that well conceived.

[1:05:43]

We put an awful lot of effort into it before we went on a different path. We developed at least two more, possibly three more barriers at Columbia. Of course, the work -- there was work going on at other places, but information was somewhat compartmentalized. We weren't always aware of what was going on at all sites.

Callan, B.: At the time that you were working on this at the university, did you know where this material was going to be used or were you familiar with K-25?

Brooks, A.: As we came out of the project, we were not informed what the project was about, but everybody's curious. There were some clues and we knew it was gaseous diffusion barrier. That was pretty obvious. You knew it had to be resistive to fluorine. We knew it was of military importance. We knew that Harold Urey headed the project and we believed that the cyclotron was used in it. When you put all that together and look up what the volatile fluorides are, you come up with one thing; uranium hexafluoride, isotope separation, and atomic bomb.

[1:07:17]

After they decided so many of us had figured it out, they told us. It was sort of interesting session. Pat Willis, who had the job of telling us, sounded like he was explaining sex to his 16-year-old son. He couldn't quite bring himself to say atomic bomb. I think they felt that if they told us, we were much more likely to keep our mouths shut than if we figured it out. So, in that sense, we knew a big plant was being built and it was being built in Oak Ridge. We knew that our barrier was going to go into that plant, or at least some barrier would go into that plant.

Callan, B.: When was the first time that you saw K-25?

Brooks, A.: 1956.

Callan, B.: 1956?

Brooks, A.: See, I left in 1946 before that route out there had been turned, made available to the public.

[1:08:22]

Callan, B.: Okay. So at the time that you came out, I guess it was really no longer a secret city at that point. Was it still gated in?

Brooks, A.: No. It was no longer a secret city in 1956.

Callan, B.: Okay. What was your first recollection or your first thoughts when you arrived out here and saw the K-25 plant? What did you think about it?

Brooks, A.: Well, I'd seen a lot of pictures of it and I talked to people about it so it didn't come as a shock how big it was or anything. It was more or less what I expected to see. Not really all that big a thing, actually. You know, not new to me.

Callan, B.: Okay. For those who -- say that someone has never seen K-25. How would you describe it to them?

Brooks, A.: Several truly mammoth buildings which house mammoth equipment and they're using a mammoth amount of electricity.

Callan, B.: Why was so much electricity required?

[1:09:40]

Brooks, A.: Well, the separation of uranium isotopes by gaseous diffusion method is inherently inefficient because of the nature of the process. So, it requires a lot of energy to accomplish it. And, originally during the war, K-25 had its own power plant for the purpose of helping to control the cascade and after the way -- both during the way and after the war it used TVA power. Its own power plant was shut down.

Callan, B.: Okay.

Brooks, A.: That was one of the question marks of running a big cascade, is -- a cascade of four or five thousand units. Will it operate at a stable mode or will its pressure waves fluctuate back and forth causing it to be unstable and to mix up what you've already separated? Generally, surges like that are very detrimental. And it just -- there just wasn't known enough about control theory. When they started they asked those questions. The radical people did an excellent job of providing a basis. They built the plant so that it could be -- the speed of the generators in the power plant could be changed so they could control the whole plant in unison.

[1:11:24]

Callan, B.: Okay. Quick question about that I've been trying to formulate here. During the time that they were developing the process, I guess Groves was also trying to develop two other processes at the same time. Are you familiar with the other building he was working on the cyclotrons and there --

Brooks, A.: Yes, I --

Callan, B.: -- was a thermal process out here that was scrapped. Do you want to talk a little bit about that?

Brooks, A.: Let's talk first about the calutron, electromagnetic. That's what I worked on when I came to Oak Ridge. I worked on it for 13 months. It, too, had its problems. Could you scale up by a factor of a thousand or more of the beam density and all that kind of thing and would it still function? And they found solutions to the problems and yes it did function.

[1:12:23]

However, it was an inherently difficult process in that a mass spectrometer unit ran for 75 hours, we'll say. The charge material was spent. It had to be torn down. It had to be rebuilt. Even though electronically and physically it might still be running perfectly, it was going to run out of material. When you do that, rebuild a spectrometer every -- couple of times every week, it becomes iffy. You have your startup problems and leaks and so on. And, whereas the gaseous diffusion process was a continuous one and once it sits there running well, it's there running well but losing material. The thermal diffusion is interesting to me that early in the game, when the first tests were done in the single stage units, thermal diffusion showed up very good. Yet, it was the first to fail. The scaling up of the process from a laboratory scale to the production scale had many equipment failures that came with it. It was pushing the limits of temperature for the construction material. So, it failed. Incidentally, the problems with S-50, which was a thermal diffusion, were associated with K-25 by the Y-12 people. And they kept saying that K-25 will never put Y-12 out of business. Well, I knew better. I kept telling them, don't be too sure of that. And, eventually, K-25 did put Y-12 out of business.

[1:14:32]

Callan, B.: All three of the processes that they were researching, they were all very energy intensive. Was that requiring a lot of energy input?

Brooks, A.: Yes, I suppose you'd call them all energy intensive. Y-12, there was a lot of electrical energy into the magnets. The rest of it was not so intensive, but -- was this? I'm sorry. I didn't catch the question.

Callan, B.: I was just curious if they were all -- I don't know. I was just curious if they were all really as energy intensive as the gaseous diffusion process.

Brooks, A.: They were not as intensive. The other two were not as intensive as the gaseous diffusion process.

Callan, B.: Okay, but I guess at the time the gaseous diffusion process was more proficient or feasible, I guess?

[1:15:30]

Brooks, A.: As time went by and the best of the barriers which are now used were put into service, its efficiency rose to a point -- where its efficiency and reliability rose to a point where it just was the method of choice. The mass spectrometer, as I say, had a tremendous staff of people just tearing down mass spectrometers and putting them back together again. Not only that, it was my job during the war to form another group that tore them apart and cleaned the pieces and sent them over to the mechanical service where they put them back together again.

Callan, B.: What is a mass spectrometer? What can you tell me?

Brooks, A.: Briefly, this is what's known as the 180 degree mass spectrometer where a gas containing the material you wish to accelerate it ionized by an electric arc. And then it is accelerated by a high voltage, forty or fifty thousand, one hundred thousand volts depending on the mass spectrometer. It swings in an arc of 180 degrees and while the beam spreads in that process, it refocuses at the 180 degree point and is collected in a collector, which means you're processing one atom at a time. While the separation ratio was very, very good at low pressures, in order to get the beam pressure up enough to have a production level, it causes the beam to scatter and then your separation isn't as good. That's why they needed two stages an alpha stage and a beta stage. But, it is inherently a difficult production process.

[1:17:55]

Callan, B.: I don't know if you know this or not, but this is out of personal curiosity because I've been reading a little bit about what happened (indiscernible) and what not to get myself background. And I read somewhere roughly apparently the rating has the equivalent energy in it, potential energy in it as does a million gallons of gasoline. And my curiosity is, at least initially, in hearing about the amount of power that it took to run the facility, was really -- was it actually consuming more power in the form of electric power than, you know, basically the power that is potential out of the product?

[1:18:25]

Brooks, A.: Well, remember, the first use of this was not for power production.

Callan, B.: Understood.

Brooks, A.: So the purpose of the first uranium was to defeat the enemy, blow them to smithereens, to put it simply. And I don't really know what the balance of power was for that comparison or whether that is really meaningful. It's like, you know, how much energy is created by gunpowder to accelerate a bullet that goes through somebody's skull? It's not a -- really not a meaningful question.

Callan, B.: Okay. Let's see, go ahead and tell me, because you told me before, what year did you work at the K-25 site?

Brooks, A.: I came back to K-25 into the flow research department in the summer of 1956. And I worked there until October of '62, at which time I moved into the computer division and still at K-25. And the part of the computer division's responsibilities, were the computing necessary for K-25 so it isn't a complete break with things. The K-25's site was one of the major users in the computer systems.

[1:20:06]

Callan, B.: Okay. What was the -- what was the overall work atmosphere like at K-25? What were your coworkers like? Did everybody kind of work together? Was there an atmosphere of cooperation?

Brooks, A.: Yes. Yes. I think throughout the project there was an atmosphere of cooperation between individuals. Back when there was a lot of classification, that tended to narrow the group classified project; but within that project, there was a lot of cooperation.

Callan, B.: Okay. During your time working on the Manhattan Project did you meet any, I guess, any of the famous notable scientists? People like Oppenheimer or Einstein or Grove? Anything to do with those notable figures?

Brooks, A.: Well, Einstein didn't work on the project. [laughs]; yes, a couple. When you say met, you know, Grove talked to us after the bomb was dropped, thanking us, all that kind of thing. I met Harold Urey who was a Nobel laureate. And the -- at Columbia he was in charge of the Columbia, the entire Columbia effort. He was one of these people who gets out and sees what's going on and is (indiscernible). You never knew whether eleven o'clock at night he'd walk in or not.

[1:21:49]

Actually, I met more people after the war then during the war. I met Fermi at the University of Chicago; very, very impressive individual.

Callan, B.: Tell me about him.

Brooks, A.: Interestingly enough, I figured Fermi was a theoretical physicist. He classified himself as experimental physicist. He had marvelous command of the theory and he wasn't just an administrator, he kept his finger in the works. Every now and then you'd see him looking in the stock room for a piece of equipment. I audited a class that he taught while I was at Chicago. He was an excellent lecturer. He, he made things seem much easier than they were. He could talk to a group of lay people and they'd come out of it thinking they understood nuclear physics. Of course, the minute the door shut behind them there was nothing they could do about it, but he had a way of presenting things that made people feel they understood it. He was a very strong, dominant personality in a discussion. In a social situation he tended to be somewhat of a wallflower; but, a very impressive individual.

[1:23:47]

Callan, B.: Any other notable --

Brooks, A.: Well.

Callan, B.: -- figures that you ever met or talked to?

Brooks, A.: Very briefly Teller. I didn't really talk to him. He was, he was talking at Chicago and the research institutes had hosted the talk and went to him. Oh, there were a couple more. I can't think of who they are right now. If I think of them I'll --

Callan, B.: I'll ask you again a little bit later while you turn it around the back of your head.

Brooks, A.: We're talking about fifty or sixty years ago.

[1:24:35]

Callan, B.: It's in there though, I know. Let's see. If someone was to inquire, didn't know anything and was to ask what was the work that was done here, how would you describe it?

Brooks, A.: Well, depends on how much time I had.

Callan, B.: All the time you need.

Brooks, A.: Well, all the time I needed? I'd give a description of what gaseous diffusion and what the purpose is of U^{235} to produce, at that time, a nuclear explosion. Or, more recently, continuous chain reaction for power purposes. I'd describe each plant the same way as to briefly what it did. If I only had 30 seconds, I'd say we were making the ingredients for an atomic weapon.

Callan, B.: That's a good answer. What do you -- what are some of the most vivid recollections that you have of the time you spent at Oak Ridge and K-25?

[1:25:53]

Brooks, A.: Oh, the most vivid recollection I have is the day the bomb was dropped and the newspapers announced it. My wife and I were working the three to eleven shift. Of course it was August and it was hot and because they had a lot of funny rules somehow the boilers in our efficiency apartment was kept running. They had to run the heating system in order to produce hot water for us. So we were right over the boiler so we had a very hot apartment. So I was sleeping naked and all of the sudden I heard a voice go down the hallway and said "Oak Ridge Builds Atomic Bomb." Well, that was like in the vicinity after several years of classification and I jumped up out of bed and went over to the end of the bed and over to the door of the apartment, pulled it open about eight inches

before I realized I'm naked. [laughs]. I think that's my most vivid recollection is when the bomb -- and what it did.

Callan, B.: Well, we need to switch tapes real quick.

Brooks, A.: Okay.

[1:27:20]

Callan, B.: The tapes run for 30 minutes and then we got to switch tapes.

Brooks, A.: Okay.

[End of Tape 1, Begin Tape 2]

[2:00:11]

Brooks, A.: I've had a few years to think about that.

Callan, B.: That's kind of what prompted new thoughts in my head. Got to bring in new questions here from time to time. Okay. We're rolling again. We were talking about the Manhattan Project and you were talking about the day that the bomb was dropped. Prior to that, did you have a good idea of what this process was going to be used for?

Brooks, A.: Yes. We understood that it was an atomic bomb. The atmosphere at Columbia was different in the sense that more people knew and you knew that your coworkers knew and, of course, you talked about it. So, that was not as true at Y-12 in the production environment. Many people did not know, but it was enough.

[2:01:31]

So yes, we were aware it was to be an atomic bomb. It was going to be a big explosion. We didn't know how big. We thought it was going to be significant, obviously, and it turns out that it was.

Callan, B.: The -- on August 6, 1945, you told me your reaction to the news. What was the overall atmosphere like where you were at on that particular day?

Brooks, A.: Well, went into work at three o'clock, talked to other people. All kinds of different reactions. One newspaper boy sold papers "Oak Ridge Builds Atomic Bomb." We used to hate them but now we love them. Oak Ridge builds atomic bomb. Oak Ridgers and

Knoxvillians did not get along too well during the war because we placed a big load upon the retail supplies, especially food, and caused some shortages for people. We also got paid higher wages than they did. The usual kinds of competitive jealousies that occur when you have situations that existed like this. Where, it was a big secret city that -- people resented that.

[2:03:16]

To some of us that knew about it, that tried to find out as much as we could technically to see how we'd done and I guess we did as well or better than expected. Some people were absolutely amazed that they'd been working on such a thing and never known. Incidentally, there were some non-technical people who had figured out what we were working on. There was one man that worked in beta recovery and when he left he asked, but he figured it out for himself. He was a pretty sharp young man. So, there were non-technical people who had enough curiosity to find out. Incidentally, as far as public knowing is concerned, in one experience in New York City. Bob Dollar and I went down to the public library at Washington Square and went back in the stacks and the two or three books that had sections on nuclear energy and the like -- those sections of books were dirty from having been used so much. So, there was a fair number of people in the country that knew it. Some that weren't entitled to know it, a couple of newspaper reporters in New York, not newspaper reporters, radio commentators said more than they should have said and the next day they were on a completely different topic. They didn't get out of their buildings before the FBI got them. There was nothing to do but tell them don't say it. Stay away from that. If you'd made a big issue out of it there would have [been a] penalty and that would have been even worse. There were rumors around.

[2:05:34]

Callan, B.: It sounds like there was enough buzz going around that if you were maybe a student in college and you were into --

Brooks, A.: Well --

Callan, B.: -- engineering or physics that you --

Brooks, A.: One engineering professor explained things to his class. There were just breaches, but I think the government played them very well. They didn't make big issues out of anything. They played them down and then they died.

Callan, B.: Do you think that they were able to keep secrecy occurring pretty well --

Brooks, A.: I --

[2:06:14]

Callan, B.: -- what measures did they have to make the secrecy so effective? Or was it even effective?

Brooks, A.: I think it was effective. There were vague rumors. There was a rumor in the concrete industry that something big was going on in Oak Ridge, Tennessee and the reason they knew is we were using a hell of a lot of concrete. There was a rumor in the power industry that something new was going on, but they were very nonspecific except for a few instances. But I think the security was effective.

Callan, B.: Okay. And you had mentioned this -- we're jumping back and forth on topics, but it's good.

[Crew Talk]

Callan, B.:. You had mentioned earlier in the interview that working at K-25 and working at the university prior to that, that there were lots of funny rules that you had to follow. You want to talk about some of the, I guess, some of the funny rules or funny procedures they had maybe for security purposes or maybe they were just funny?

[2:07:32]

Brooks, A.: No. The -- I know I used those words. I'm trying to remember what context I used them in. All organizations develop rules which are peculiar. For instance, I had my folks ship my shotgun down to Oak Ridge so I could go hunting in the fall. And it came by railway express. I went over to pick it up and I couldn't get it until I had a permit from the police department. So, I went -- I'm riding the bus now. I ride the bus back to the police department and I can't get the permit to pick up the gun until I get its serial number. And, finally I had to negotiate we could open the package, I could get the serial number, come back, and pick up the permit and then pick up the gun. That's what I mean by funny things.

Callan, B.: Okay.

Brooks, A.: We went for a walk across the Clinch River on the railroad bridge out at Elsa Gate which was fine except we were planning to come back in at one of the other gates. There's a rule. You take a camera out one gate you have to bring it in the same gate. We didn't remember that rule until we had to go all the way back around.

[2:09:23]

There were strange rules. Not just in this organization. The TNT plant had strange rules. Well, when there's a war on, your friends are getting shot, sometimes strange rules are frustrating.

Callan, B.: Were you aware, you know, as far as communicating around the issue of secrecy, did everybody that you worked with, did they do a pretty good job of that? Communicating in the vaguest -- talking about stuff outside amongst each other?

Brooks, A.: I think it was very -- remember, I worked in research, development, environment, and production. That was the difference. Production environment at Y-12, there was a code word for uranium (indiscernible). And nobody ever said uranium. One of the foreman in the production department one day said uranium and it sounded like he had said an obscene word. So, uranium was just suppressed from your vocabulary almost automatically. But when it popped up, it was obscene.

[2:10:46]

Now, at the smaller level we would talk to people that we knew and we knew they knew and they knew we knew and you'd talk about things. We had enough information crossing our desk to figure production rates. And, you know, occasionally you'd calculate a production rate to see how things were going. When they found out we could do that they changed our security clearance.

Callan, B.: What about outside the plant or outside -- did you have a lot of people that were curious about what was going on? How would you respond to that curiosity?

Brooks, A.: Sorry, can't discuss it.

Callan, B.: Okay.

Brooks, A.: Never, never even went beyond that.

Callan, B.: Okay.

Brooks, A.: I had one occasion where a friend of mine who was a G2 in the Army. He caught me with my guard down. He said, "Al, are you working on the atomic bomb?" Well, I knew my expression gave it away. My response to that was, "Amos, if you ever hear those words again, take them to Army Intelligence or take them to the FBI. But, that's the only case that ever happened. I had a lot of people ask, you know, what are you working on? You couldn't tell them.

[2:12:32]

Callan, B.: Were you aware at the time that there were background checks being conducted on you?

Brooks, A.: Oh yes. Yeah, yeah. In fact, a rather humorous -- not really humorous, but another one of those funny things. My boss, when I came back, had gone to CCNY and there was another student of the same name and he had adopted a fake middle initial because his grades were getting mixed up and my Abe was a straight A student and the other one didn't even come close. Well, after the war we both went to Ohio State together. He came down here to work and his time to get his clearance dragged out and dragged out and dragged out and they finally told him what had happened. They know that going into the war they had two Abe Burns. One was an excellent student and the other one was of questionable vintage, not just as a student, but he was a member of several pink organizations and stuff like that. Coming out of the war they could only find one. So, which one do you have? Well, they suggested a polygraph and he insisted on it.

[2:14:12]

So, strange things can happen. You hear about the people that are coming, talking about you, asking questions about you. You usually don't hear about it for a few months. Somebody asks your mother or father, is Bobby in trouble? [laughs]. Why is the FBI talking about him?

Callan, B.: Interesting. Working at K-25, what did you like the most about working there?

Brooks, A.: I worked for an individual that I knew and had worked with prior and I knew that he and I had the same philosophy of carrying out such work. Since I had gone through a couple of companies where that had not been the case, I was extremely appreciative of having an environment that was -- really it was the raw empiricism, raw trial and error compared to trying to obtain some understanding of the process in order to make progress.

[2:15:46]

Callan, B.: So, what was your philosophy that you --

Brooks, A.: Well, the philosophy grew out of work at Columbia. We ran a big (indiscernible) plant. A lot of money had been spent on it. It was not producing good barrier. The head of it, immediate head of the plant once made the statement, well we made good barrier this way once and we're not going to change a single variable till we do it again. We didn't make the barrier while he was there. The process had better than one hundred variables, some of which we had poor control over and some of which we had big control over and some who didn't understand their role. And with something that complex, the chances of hitting just the right combination of variables that produces good barrier is very small. And as you investigate that process, you need to go in and study each place that you can and try to understand what's going on and do what that study indicates. This was apparent when the staff from Ohio State came out Ed Mack, Ed Lassiter, Press Harris, four or five of the graduate students. All -- they came out and they had this attitude of, let's find out what's happening.

[2:17:39]

Afterwards we started making big progress. The barrier was ill-conceived, the concept was not -- it did not turn out to be good barrier, but we made it a lot better than it was and we knew that we had gotten just about everything out of it you were going to get out of it and the weaknesses were inherent in it. So, this attitude towards research was changing just prior to World War II and during World War II. The bomb side of it, the reactor side of it went through this also. You just hit or miss. What were -- well, the first time we liked Fermi rather than the reactor side of it, you weren't going to do that. He was a man who understood what was the experiments he was doing; his very carefully designed and expensive big physics experiments. You don't do those instead of this. So, that was the biggest and that was a very personal gratification.

Callan, B.: Okay.

[2:19:08]

Brooks, A.: And I guess the second thing was to see the plant which I'd worked on a component of, to see how it had grown from K-25 up to K-31 and Paducah; to see the maturing technology.

Callan, B.: Okay. And also looking back and flip-flop that, was there anything that you disliked about the work or what did you dislike the most about working at K-25?

Brooks, A.: There was nothing unique at K-25 that I disliked. There were some things which are common to all plants that you -- all organizations that you like and don't like. Nothing that really stands out that --

Callan, B.: Okay. What were the physical working conditions like at the K-25 facility?

Brooks, A.: I think they were good. I'm talking now about the research floor. We had individual offices, although mine was on the pathway to the coffeepot. We had a joint laboratory which we shared, which is not uncommon in physical chemistry because the physical chemistry experiments are usually very clean so you're not -- don't need as much isolation as you might in an organic lab. I would say they were good.

[2:21:02]

Callan, B.: Okay. And, let's go back now to talking about World War II and the Manhattan Project. You've given me some of your reaction you had to the news and the overall atmosphere. This kind of leads into your question. I'm going to put it a little bit softer way, but I think it is sort of a similar type thing is that how do you think history will view the Manhattan Project and its outcome and I would lead into that asking you to follow-up with that, asking you do you think we should have made the bomb?

Brooks, A.: I find it hard to answer that first question of how --

Callan, B.: How do you think history should view it?

Brooks, A.: I can tell you how I view the project.

Callan, B.: Okay.

Brooks, A.: Because I've thought this through. And I worked for a year producing TNT and we produced quite a bit of it. And for a part of future comparison, about a month before the bomb was dropped, there was a combination of high explosives and incendiaries dropped on Tokyo. I believe it was Tokyo. They killed about seventy thousand people; very severe disastrous raid for the Japanese.

[2:22:42]

High explosives did that to a lot of cities. You look at pictures of Germany and so on. We tore our targets apart. In doing so, a typical heavy bomber delivers ten tons of TNT with a crew of ten people. So, you expose one person per ton of TNT. You expose them to the hazards of flying over the enemy territory. So, that kind of -- as far as the atomic bomb was concerned, you delivered ten megaton equivalents to TNT -- not megaton, kiloton. Ten thousand tons, ten people exposed. So you exposed one person for every thousand tons of TNT, the equivalent of TNT. Since I spent the whole war as the professional working on weapons, I had some occasion to worry about effectiveness and so on. To me, that was a weapon that was a thousand times more effective. We exposed a thousand times fewer. My side to that -- it was just another superior weapon.

[2:24:26]

Should we have used it? I've had a number of people over the years thank me for having worked on it. A truck man said, "I'm alive today because you people made the bomb." One of them in particular was in going to be in an assault wave, which was attacking the beach held by the Japanese imperial marines who were rated as some of the most efficient fighting people in the world. Their estimated casualty rate of the first wave was one hundred percent. He was in the first wave. So, I think the Japanese showed that they would fight to the death, no doubt about it. They did not surrender. It was Bushido, which is their military code, didn't deal with surrender. It was translated over to the public. There are many cases where the Japanese public committed suicide rather than be caught. The Japanese were arming with sticks and stones if that's what they had, but they were arming everybody. It is no doubt in my mind that we would not only have lost a few hundred thousand people of our own, but we

would have to kill several million Japanese before the war was over.

[2:26:12]

The atomic bombs gave them a reason for admitting defeat, for overcoming the strong influence of their military code. Then you ask yourself the question; what else could Truman have done? Could Truman have not used the bomb, killed ten million Japanese, seven hundred thousand American soldiers and then come out a year later and said, oh, we could have avoided all of that? We had an atomic bomb. We didn't have to do it. I don't think the American government would have -- it would have fallen. So I think Truman had no choice. Now, what's happened since the world has not done a good job of managing? They've not done a good job of managing terrible weapons. They don't even do a good job today, although we're better off than we were ten years ago. But, we had to build the bomb. I don't speak for the Japanese. I don't speak for the German. We had to build the bomb and we had to use it.

[2:27:46]

Callan, B.: Okay. We're going to go ahead and flip tapes right now so that way -- that was phenomenal. That's the best stuff --

[End of Tape 2, Begin Tape 3]

[3:00:10]

Brooks, A.: I've taken some -- I was never in the service. Although for the most of the time, the Army signed my permit. But I've taken a little guff over the early years from people who were in the service but never from somebody who'd seen combat; keep the munitions coming.

Callan, B.: Let me prompt you on that. As far as contributors to the Manhattan Project and people who contributed to World War II, be it military service or not, do you think that you're looked at differently because you didn't do military service? Is there resentment that occurs? I'm just re prompting you for that because we're rolling.

Brooks, A.: There's a spectrum. Are we rolling?

Callan, B.: Yes, sir.

[3:01:18]

Brooks, A.: There's a spectrum of how people felt. And, you know, for one thing there were the military people and you could almost guarantee if a military person found fault with the fact you were not drafted, they'd not been overseas. Because the one's that had been overseas, their net service, keep the munitions coming. They knew that their success was dependent on a good supply of munitions. And if you knew how to make munitions, that was okay. That was the thing for you to do. Then there was the people back at home. I was refused housing because I was of that, but you know, it's pretty small stuff. But, there were some people in New York City who took a beating over this. New Yorkers are outspoken in many places.

Callan, B.: Let's talk a little bit about the transition after World War II and after the Manhattan Project when you start to get into the Cold War era and, I guess, the mission of K-25 for the change. You want to talk about how that mission changed in the expansion program?

[3:03:06]

Brooks, A.: Well, of course, two parallel things came out of it. One was power, nuclear power. And that is another thing that I am disappointed in the handling as far as this country is concerned. Our disproportionate even ground was fears of nuclear energy. The worst we've done was Three Mile Island and nobody got a dose to amount to a hill of beans. One bad accident in the world, Chernobyl, and Chernobyl isn't as bad as the newspapers painted it. It was bad, but it was badly run reactor, badly run. They were running an experiment. They had controls tied off. It was just terrible. The other parallel thing was the hydrogen bomb. Once the atomic bomb was possible, then the question of, is the fusion bomb possible? And the answer is, of course, yes. Again, you had to do it. You could've let Russia do it and have it. They would rule the world. The disappointment is that Russia and the United States didn't find a way to make that arms race unnecessary. And I'm a person who swung with the pendulum both ways. After war, I felt that the United States and Russia would learn to cooperate. But, we had shared enough grief in the war to propel us to cooperate so I was over on that side. And then, as it became clear over the next ten years that there was an ideological difference that was not ever going to be healed by rational means but only by the

irrational approach of mutually shared destruction, I swung back to the other side where I was happy to come back to Oak Ridge and go to work again.

[3:05:38]

Callan, B.: What was, what was the role at Oak Ridge here? What was the role at K-25 during the Cold War? What kind of work was being done here?

Brooks, A.: Well, the biggest change from the war to the Cold War at Oak Ridge was Y-12. The Y-12 process was gone, but the plant, you know, was still there and it was converted to a production facility for weapons parts and has done an excellent job over the years of producing excellent weapons parts. I differentiate between the technical excellence of a weapon and its moral excellence. K-25? We lost the political race. We, they moved one plant up to Paducah, another one up to Portsmouth. The know-how was here and the centrifuge. We took the centrifuge from so high, way up there and then they gave it to Portsmouth. So, that's a little bit disappointing.

[3:07:05]

Then the subsequent closure of the plant, it's a little bit disappointing to see the organization which pioneered -- remember, many of the people here, they were up at Columbia. They pioneered the barrier. They came down here and they pioneered getting that plant into production and running. They grew it up to many times its original size. To see, to see that lose out in the big picture is a little bit sad. X-10 rules changed. They were a research development facility in order to make plutonium. They did a good job, but they then became a broad-spectrum research laboratory and they did an equally good job. So --

Callan, B.: So, what was K-25 doing in its operation until it was put on standby, I understand, in 1964?

Brooks, A.: We were making -- all the three plants were tied together. The material was shipped between plants so it was contributing to the overall production effort for first bomb grade uranium and then reactor grade uranium.

[3:08:46]

Callan, B.: Okay. You've given me quite a bit of thoughts now, but I'm just going to stab at it one more time to see if there's anything else you want to say about that. What are your thoughts now about how the activities accomplished at K-25 or how they revolutionized the world?

Brooks, A.: Well, for -- it's pretty clear that we helped contribute to the revolutionizing of warfare. We've helped create a military system that can literally destroy the world or civilization or society as we know it; a destructive system which we frankly do not know how to control. We do not have the political apparatus which should properly manage that weapon. Which was really proper management of it is to nullify it. We've recently moved to a very, very dangerous position. For a couple hundred years we had no preemptive strikes. And four years ago we went to preemptive strike. God, what happens when you go to preemptive strike with nuclear weapons? It's unthinkable. Yes, where does it say that the human race lives forever?

[3:10:48]

The other way we've changed the world, and strangely enough we didn't change our world as much as we changed other people's world, and that is nuclear power. Nuclear power has given the third world an opportunity to get out of poverty. Yet, we can't seem to embrace it in this country. But it has changed the world. France produces eighty percent of its power from nuclear power. Other European countries are the same.

Callan, B.: Why do you think there's so much comprehension and resistance in this country?

Brooks, A.: When you're first news release is that you've killed a hundred forty thousand people, there's no way to go but up. It was a -- it left the, it left the public with a great fear of the unknown, namely radioactivity.

Callan, B.: Thank you. Let's talk about your job specifically now. And, let's see, give me the spectrum of jobs that you had --

[3:12:16]

Brooks, A.: [laughs]

Callan, B.: -- that you were associated with K-25 on?

Brooks, A.: Okay. Associated with K-25. Well, one associated with K-25 was barrier development at Columbia for installation at K-25. And I can't go into many details on that because there's still aspects of barrier that are classified. Let me just say that we went through several ideas before -- and we. That is very much the organizational we. Not me. They finally came up with a good one. Then at K-25 when I came back in '56, I worked on what was known as floor research. We did -- we had a very small group that did work on the flow of gasses through porous media under conditions that would reveal something about the gaseous diffusion process. We also consulted with the barrier development people, other people, production people -- we were sort of the go up and see what the floor research people can tell us about any theory that might help, you know. And that was fun and interesting. I spent more time working on other people's problem than I did my own and actually got into something which changed my entire career.

[3:14:14]

One thing I did is to take all the pieces of gaseous flow through porous material and put it together, one set of assumptions and one set of nomenclature and so on and to see how it agreed with our barrier. And the first -- that took one week to calculate one point. I don't think my fingers have ever gotten over that. So, I decided, maybe these new things called high-speed computers might be worthwhile. So, I got a programmer to program them and they did a pretty good job. And then we wanted to fancy up the program, put a front end on where we could do what-if calculations. This programmer wasn't as good as the first one. The first one was very, very good. This one I learned how to program before he learned what a variable of integration was. So, I found myself doing my own programming and the guy down the hall would want something and it was quicker to write the program than it was to teach him how. So, I was programming full time, and some fun things. And then the computer center offered me a job in '62 with the objective of putting together the best scientific programming group in the southeastern United States. That sounded like fun so I moved into computer. Then later I moved into management; had a lot of fun doing that too.

[3:16:18]

Callan, B.: We need to hold on a second. We got the fire truck going by --

Brooks, A.: Yeah.

Callan, B.: -- and it'll pick up on your audio. Think we're good.

Brooks, A.: And then the computer game was an interesting game. It was brand new. And it was growing, growing by leaps and bounds. Growing not only in the magnitude of computers but the kinds of problems we can solve and help that we could give people. An opportunity to see computing as a technology replace other technologies along the way. We could do a good enough job with simulation that removed the necessity for a great deal of experimental work.

[3:17:20]

Callan, B.: Give people -- you know, you've worked with computers for so many years and technology for so many years, can you think of a way to put in perspective or maybe describe, I guess, the maybe arcane type computers you worked with for people, like myself, that really -- well, I worked on DOS a lot. The most arcane thing I worked on was DOS. But, I used to do a little bit of programming in basic, but talk about the difference between the way computers are today and the type of, I guess, labor that was involved in working on computers way back then.

Brooks, A.: Well --

Callan, B.: Punch cards and stuff like that.

Brooks, A.: Yes. I like to describe computers to people years ago as a computer was the equivalent of a very accurate, very fast, very faithful technician that you could [tell] him what to do and he would carry it through completion without fail. And today's computers are just a million times faster. But, it turns out that -- first of all, engineering and science are largely described by mathematical equations which are good approximations for the solution to any problems. You can compute what will happen rather than do the experiments. And the area that I referred to was nucleonics calculations. High-speed computers were first used to reduce the data points, the experimental data points. Then they were used to extrapolate or interpolate the clean data points. And then, as we became more competent -- and I say we. It was not myself personally, but other people that I've worked with -- they could then extrapolate and then it went the other step of simulation and they started closing down criticality locations in the country because they didn't have to run the experiments any more. Finally, we asked them to start up a criticality operation in order to get more input data. So, we went through the whole cycle, a period of

about 20 years, of putting the criticality people out of business. And that's without -- you have to get into some technical details, but there are large classes [of] problems which we know how to solve if we have better problems. That's why you see this emphasis on parallel processors and high-speed, hundred teraflops and all these kinds of things.

That the ability is there; it's the computing that is still not cheap enough.

[3:20:44]

Callan, B.: That's an excellent explanation, I guess, of how the computing contributes to the big picture there. I appreciate that. Through your career, what would you say was your most challenging assignment as an individual or as a group?

Brooks, A.: Oh, good Lord; the most challenging assignment. Either I haven't had any challenging assignments or I've had so many I can't differentiate. [laughs]

Callan, B.: Can you think of one that was kind of – clicked; kind of sticks out. Was kind of -- you had to rack your brain on it for a while.

Brooks, A.: Well, I guess it was trying to figure out how to best manage an applications programming department. How to create an environment where people enjoyed their work, felt challenged by their work, did their best job, and generally produced things.

[3:22:05]

You do that pretty easily in a research environment by just leaving them the freedom to choose their own problems. In a production environment, applications environment, you don't have that freedom of choice. You have to create an environment which solves the problems that people need solved in a way, that the people who are solving the problems enjoy doing it. And I think it's -- it really is not all that difficult. It's --

Callan, B.: More difficult to manage thinkers, I guess, kind of?

Brooks, A.: Well, those guys you just turn lose. You don't manage thinkers. Nobody ever managed Einstein. Einstein worked as a patent clerk while he did his most serious stuff. Nobody ever managed him. He managed himself. He managed himself at Princeton. Really good people in research free to choose their own sides, they

manage themselves. The tough part of applied science is [to] do a good job of reaching a target where the target is not, you know, (indiscernible) to choose.

[3:23:34]

And basically, I think in the computing area, I know that it came about by choosing a working staff which related to people who had the problems and did the problems. In other words, you didn't hire mathematicians to solve mathematical problems. You hired physicists to solve physical problems on a high-speed computer. And those physicists related to their customers who were also physicists. They related to the problems, which are problems in physics. And they worked like hell for you. Recognize their work and stand out of their way. The same method works pretty well for everybody, but incidentally, not all laboratories went that route. Argon National Laboratory hired primarily mathematicians. They found out they had a staff of very competent mathematicians who weren't really interested in solving their customer's problems. That came to me directly from the head of the Argon Computer Center.

[3:24:54]

Callan, B.: What would you say is your most significant accomplishment --

Brooks, A.: Oh God.

Callan, B.: -- in your career?

Brooks, A.: I don't know.

Callan, B.: You want to come back to that? Or do you --

Brooks, A.: Yeah. Let my head grind --

Callan, B.: Okay. But, just talk a little bit about management. Did you ever run into any -- how many people did you manage?

Brooks, A.: The organization grew up to about three hundred people.

Callan, B.: Okay.

Brooks, A.: And it was up and down, up and down.

Callan, B.: How many -- did you run into any sort of management difficulties?

[3:25:38]

Brooks, A.: Well, company management had some funny ideas that [laughs] I had trouble with. One of them was just mentioned to me last night. We ran what is known as theory why management, McGregor's open participative management. And we made that choice when we were created as a department. Two weeks later we had salary administration. We sat down. We made a choice. How are we going to administer salaries? Open and participative? Or in secret like it's usually done? We decided, we got nuts enough, to try open and participative. So, I locked up the board and I wrote down my salary and I wrote down the salary of every department, of every section, every department at the time; five or six of them. And we went from there. And the corporate didn't even have any rules for this. They had no rules about how you talked to people about salary problems. I had an open -- I had a meeting each year where we -- it was the -- the subtitle was everything you wanted to know about salary and were scared to ask. Are you old enough to recognize that title? Everything you ever wanted to know about sex and were scared to ask?

[3:27:23]

Callan, B.: Yes.

Brooks, A.: Okay. So, this -- any question about salary is open, okay, except individual salaries. And it made a tremendous difference in the atmosphere in the organization. The trust level rose rapidly when you did that. The company had all kinds of hang-ups on salary.

Callan, B.: Okay. Was there any unionization period or was there any conflicts that ever occurred between union leaders and management?

Brooks, A.: Well, we were never unionized. And, of course, the union had its jurisdiction and the nonunion people had theirs and they pretty much all knew what they were and respected them. And there were the usual kinds of labor management problems that occur in organizations. I've been a member of the union at one time. I was a member of a professional union that was organized to protect the professional people against the labor union. I've a strong feeling that unions have the right to exist and that management needs to learn to work with them.

[3:28:52]

Callan, B.: Okay. We're going to go ahead and switch out the tape one more time. The questions that I have left, they're pretty much just some wrap up type, broader perspective questions --

[End of Tape 3, Begin Tape 4]
[4:00:10]

Callan, B.: -- you know, exploring, looking into nuclear power in this country a lot more is something we need to do now before we run into an energy crisis to where we need to do another ten, fifteen years of research to get things where they need to be over an idea, you know?

Brooks, A.: The worst of this is if we don't, then as the cost of fossil power goes up and up for us, nuclear power will be the preferred favorite throughout the world; preferred for economic reasons. It's low cost. And we'll slowly become a less efficient nation. We won't be the leader. Cost production will be less in other countries and we'll out source more. It's a downhill path.

[4:01:18]

The -- it's the best answer right now for global warming. Global warming is real, but people mistake the debate over the details of global warming for a major question. Global warming is real. There are satellite photographs taken that show thousands of square miles where ice has disappeared from the arctic. The ice is thinner. The polar bears are skinnier. The reason polar bears are skinnier and relate to global warming, they get pushed off the ice a month or two earlier and can't go on until a month or two later. See, polar bears don't eat during the summer. They live off the fat. There's just no doubt about it. And yet, we sit by with technology and we don't even -- we're afraid of it. The safest technology in the world as far as power is concerned. By the way, I grew up as a power brat. My dad was an engineer in the turbine business. I used to hear, as a little kid, all the horror stories of boilers that blew up and turbines that blew up and all those things. I think I recognize that any technology, whether it's young or new, you have infantile problems and you have some, some bad things. But you have to live through those. Can we depend now on coal mining? One of the most dangerous occupations in the world; so, I've run down on that one.

[4:03:37]

Callan, B.: Okay. [laughter]

It's just your flow of talking was so well I don't want to say anything to interrupt you, your train of thought because you really create so many good connections and good perspectives. Let's see. Let's go to, I guess just broader perspective questions here. Describe to me what future generations should remember about K-25. You kind of see overall, but specifically about K-25. What should future generations remember about its significance?

Brooks, A.: Well, that it is an outstanding example of what a technology can accomplish when the human race puts its mind to it. We build the biggest buildings in the world. We built the biggest equipment in the world. We got over almost impossible barriers to make it work. We worked in close cooperation with other similar parts of the project. The bomb worked. It closed out the war in a hurry. I don't say it won the war, but it closed it out. But it is an outstanding example and needs to be studied as an example of how to do accelerated technological development. And there's -- we could never -- right now we couldn't do it. Right now we couldn't do it.

[4:05:53]

Callan, B.: If you were writing a story, and I think you almost have with this interview. If you were writing a story about Oak Ridge and K-25, what key topics would you cover?

Brooks, A.: What key topics would I cover? One is the, of course a lot of this has been written and done and I don't have to do it. I would cover the technical background of what it did, as well as the organization of the kinds of things that it accomplished.

Callan, B.: Okay.

[4:06:42]

Brooks, A.: As much as possible I'd try to tell the truth. The good with the bad. There's some bad in that.

Callan, B.: Okay. That's really all the questions that I have for you. Is there anything that you would like to discuss? Oh, did you want to go back to -- let's go back to what you think your most significant accomplishment was over the course of your career out here.

Brooks, A.: I guess I'd have to pick the management of the programming groups. I managed a group that started out at five; five failures, as a matter of fact. I inherited five failures, one of which became the head of the mathematics department at North Carolina. He wasn't a failure, he just wasn't managed right. We put together a philosophy of solving problems on computers, which I think is probably the biggest contribution -- There's two aspects -- We wrote software then solved the well defined mathematical problem, or simulated a well-defined physical phenomenon. And these programs were carefully defined to do what they did and did what they were supposed to do. The error rate in them was very small for that reason. We put those pieces together in increasingly larger blocks and solved increasingly more complex problems.

[4:08:49]

That, plus the management of the people, I think is -- incidentally, Lager tried it with two hundred people out of the information department; about half financial information, the other half I would call project information management (that management of information supporting a project). And the same philosophy works better the same way dealing with people work better. But I think enabling those people to do their best job enabled my department to look like I knew what I was doing. [laughs]. And I think we accomplished some things. It's all been disbanded now.

Callan, B.: Okay. Is there any other thing that you wish to discuss or tell us about or anything before we wrap up the interview?

Brooks, A.: No, except that Oak Ridge was, in a sense, a great experiment and I give a great deal of credit to the people who made Oak Ridge successful in the large like Groves, General Nichols – No, General Groves and Colonel Nichols.

[4:10:30]

To the big leaders of the Manhattan Project who -- we made leaps and bounds and extrapolations so big that I don't think anybody could claim that they really understood whether it'd work or not. I think we made the leap and then we worked to make the leap come true. I think that's true of not just K-25, but it's true of Y-12, it was true of the reactor projects, it was true of the bomb itself. That's about it. I thank you for the opportunity.

Callan, B.: I thank you for coming and interviewing with us. I tell you, I think that we just got down -- Okay, during the construction, you know,

the operation of K-25 and all the laboratories and support facilities out here, I guess the city of Oak Ridge sort of evolved out of nothing. Do you want to talk about that, that evolution of this city out here?

[4:11:48]

Brooks, A.: Yes, I've always found the city of Oak Ridge to be a very interesting history. As you say, it evolved out of nothing. There were around twelve hundred, fifteen hundred people who lived in the area whose land was seized. They were paid for it, whether they were paid properly or not, I don't know. But then the city was built. But there were communities here. There was a small community college out at Wheat. There were a few other small communities, but Wheat is probably the most interesting of them. As the city grew it became a true boomtown as much as any mining town in the west in the gold rush was a boomtown. It had all the moral lapses a boomtown has which lead to some interesting stories. We used to say at the Crossroads Tavern, which was a converted grocery store over in Groves Center, on a Saturday night they used to send the ambulance there every half hour because by the time it got there it would be needed. It was the hangout, if you can use that word, for the construction crews. The most common weapon was a Stilson wrench or broken beer bottle and they knew how to use them.

[4:13:34]

It was an area that did not have a high percentage of what I would call highly skilled trades, but they had a population of people who were easily trained and took on the job. As most wartime things are concerned, there were a few men and a lot of women, particularly a lot of young women. And by young I mean, well they said they were eighteen, but some of them were only fifteen or sixteen because they, frankly they lied about their age to get a job. And there was their first job and their first time away from home and the community of children. The wife of a friend of mine thought she was pregnant. She went to the Oak Ridge Hospital and they asked for her name and then they asked her if she was married. She was insulted. And the doctor said, "I'm sorry, madam, but last month thirty-five percent of the babies born in the Oak Ridge Hospital were illegitimate." She says, "Now I see why you asked the question." But that was an interesting aspect. And there's more stories.

[4:15:09]

You either had to have a job in Oak Ridge to live here or be related to somebody that had a job or you couldn't get in; closed city. And the, consequently, since prostitution wasn't a recognized job category and was somewhat frowned on by the Army, there were few prostitutes in Oak Ridge until they realized they could get a job as taxicab drivers. And with a taxicab you have a rolling house of ill repute all of your own. So, prostitutes flooded in, taking jobs as taxicab drivers one month. Next month they were all gone. They couldn't stand the free competition. It was a boomtown. It was a boomtown. I've heard Oak Ridge described as the only city in the country where you can seduce a girl in the mud and still be considered a gentleman. And I won't regale you with any more of the stories, but it was a boomtown. And bootleggers, all kinds of things. There was also a tremendous impact on the food supply. We had friends that came here a few months before we did and complain about food. We came down. The first day we went shopping, boy, we bought little lamb roast and a pound of butter and all these things and thought what are the Dollars talking about? That was the last red meat we bought in the store. It was the last butter we bought, too. The rest of it was all Oleo.

[4:17:16]

There was a dearth of good food supplies. Out at Y-12 they would deliver on Thursday case after case of rose fish, which is not the highest quality edible fish, but still good fish. On Friday they sold halibut. But, I learned after six or eight months the young ladies that worked for me could get all kinds of meat and stuff outside of Oak Ridge and they did. But Oak Ridge itself was a boomtown. Scarcities -- it had its -- the organized religion was interesting. We had one church during the war and between the churches and the school auditoriums and other spaces the churches all got along. They shared what they had available.

The healthcare was very good and dirt-cheap. We paid twenty-four dollars a year for full coverage healthcare. Obviously it was subsidized.

[4:18:45]

The Oak Ridge school system was different than a boomtown. They recognized in order to get good technical help here that they would have to provide good education for their worker's children and they did. The Oak Ridge school system was truly excellent

and it remained -- that influence lasted for perhaps thirty or forty years.

But we, in the same way that a new community is not completely developed, we had no places to vote. We voted in Clinton. We had a liquor referendum in Clinton. And the ballot boxes went out to lunch when the election grew. The polls were closed down at 3:30 when the Oak Ridgers started to show up. They were supposed to be open until six. People testified that they saw ballots pushed under the ballot box instead of in. One man was accused of buying twelve hundred poll tax receipts at two dollars each and he says he didn't do it and I actually believe him, but Oak Ridge was disfranchised. The next election we had our own polling places. So, Oak Ridge went through a process where it was run by the Army and I think they did a good job. God, to think putting together a city of fifty to seventy thousand people almost overnight. It was a good job.

[4:20:55]

But that origin lasted for a long time and is still recognizable in Oak Ridge. We still don't have the normal number of retail outlets. We still have the pattern of shopping districts that closed during the war. We had the racial problem. The Army had the policy, we do not undertake social reform. So, they built a segregated city.

Callan, B.: Gamble Valley?

Brooks, A.: Not the first. The first was a colored hutment area in what is now Woodland. And that was -- I was never in it. I'd been in the white hutment areas, which were pretty bad. But I heard I believe accurate descriptions of colored hutment area and it was very, very bad. They Army always promised good housing in the east end of town to the blacks, but by the time they got around to start building it, there the pressure for more white housing had grown. So, after the war, Gamble Valley, what is now called Scarborough, was a white trailer camp originally. Then shortly after the war they didn't need the trailers any more so they tore them down and built Scarborough community at that location with --

[4:22:54]

Callan, B.: I've always read the --

Brooks, A.: The school was de facto segregated. Oak Ridge had local grammar school districts so they were de facto segregated. The older students had been going to school over in this old Scarborough school, what is now the -- was the Carnel (phonetic sp.) Laboratory, over at the corner of Scarborough Road in the valley. They then, after the decision in '54, the school integration decision, the following year they integrated the high school and one of the junior high schools. Not a lot of trouble, but there were incidents. Tom Dunnigan, who was the high school principal, was labeled a communist and everything. The White Citizens' Council -- it wasn't the Klan, it was the White Citizens' Council, published a tract called Tyranny in Oak Ridge, but they were never able to stir up the public very much. There was no really overt problems. There were, of course, little local problems. What do you do when you teach dancing in the gym classes and you run out of the right number of black and white pairs of people? You send them to the study hall.

[4:24:35]

We had integrated football team, but it was only integrated for the home games. So, that whole aspect got established and developed and changed, but it was -- the best thing to compare it to was a boomtown.

Callan, B.: We've got so many different accounts of what life was like in Oak Ridge and so many different pictures painted to where, you know, just how boring and simple it was and there wasn't really much going on here and oh, yeah, we had some social activities and yet the best thing was dances on the tennis courts. The picture that you paint, which is like this boomtown type picture, and it's just -- there is so contrast -- do you think that maybe -- the only thing I can think of is maybe, depending on the level of worker that you were at the plant would sort of vary what section of town you lived in. Because you can paint a picture of a town I haven't even heard of before to where it would be kind of a rough place.

[4:25:46]

Brooks, A.: Well, I didn't say it was rough. I don't mean that it was a lot of interpersonal violence. But it was rough in the sense that having a brand new community with no moral heritage. Having thousands of young, largely women, come in to work here without any supervision. Those, those have an impact on a population and we had it. It extended out into the plants.

Callan, B.: It's strange that, you know, I think that pretty much everybody, when they came out here, was in their twenties, their early twenties, and you say a lot of the women were even younger than that. It was just such a contrast that when people went to work and they're working around all this secrecy and that, that they had to be very mature and responsible when dealing with their work, but at the same time, when you get off of work, you're still at a maturity level where your behavior is still juvenile. It just seems like, I guess there was a strange contrast that occurred there between work responsibilities and --

[4:27:09]

Brooks, A.: Well, yes, it was. It was a city of contrast. No doubt about it. And a very young city, as far as age groups are concerned. But as far as having something to do, I was married when I was here. Lived in the efficiency apartments right above the tennis courts. But there were rec halls located along the valley that every -- at least every Saturday night and I think every Friday night too had a dance and they were pretty crowded and noisy, but they were there. But there were a lot of smaller social groups. Oak Ridge today has some four hundred and fifty organizations in it. A lot of them were formed back during the war as a substitute for, you know, regular commercial social outlets. So, I can't agree that there wasn't anything to do at Oak Ridge. There was always something to do in Oak Ridge if you wanted to look a little bit. And, there were a great bunch of people.

[4:28:36]

You may not realize it, but I'm a northern hillbilly. I was raised in Alleghany County in New York State. It was one of two most northern -- the two northernmost disadvantaged, Appalachia counties. I got along with the people great. Some northerners didn't and some northerners asked for the dislike that they got. But, no, I think Oak Ridge was a great place.

Callan, B.: Are you still here?

Brooks, A.: Yeah. Came back.

[laughter]

But, that doesn't change the fact that it's a -- what happened to it. The -- it was a boomtown.

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Callan, B.: Okay.

[End of Interview]