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Oak Ridge Form 5: Oral History, Deed of Gift Release for Interviewee

DEED OF GIFT RELEASE FOR INTERVIEWEE
K-25 ORAL HISTORY PROJECT
U.S DEPARTMENT OF ENERGY'S ORAL HISTORY PROGRAM

I, BILL TEWES *(Name of interviewee)* residing at 304 E. FORREST RD *(Address of interviewee)* do hereby permanently give, convey and assign to the United States Department of Energy (DOE) my interviews *(or oral memoirs)*, and the recordings, tapes *(audio and or video)*, and any transcripts of my interviews conducted on 3/8/05 *(date)* at 104 INN LANE, APT. 113 OAK RIDGE, TENN. *(location)*.

In doing so, I understand that my interviews *(or oral memoirs)* will be made available to researchers and the public and may be quoted from, published, and broadcast in any medium that DOE shall deem appropriate.

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I, CONNIE CALLAN, *(Name of interviewer or agent for or duly appointed representative of DOE)*, accept the interview *(or oral memoir)* with BILL TEWES *(Name of interviewee)* for inclusion into the DOE Oral History Program.

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Date: 3/8/05

Signature of Interviewer: Connie Callan
Date: 3/8/05

National Educational Technology Solutions LLC

K-25 Oral History Interview

Date: 3/08/05

Interviewee: William Edward Tewes

Interviewer: Connie Callan

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[1:00:06]

[crew talk]

Callan, C.: Can you hear me okay?

Tewes, B.: Yes.

Callan, C.: Okay. We're trying to evoke your recollections, so we have them ordered in a way to -- [crew talk].

Okay, we're ready to start and the first question is a real simple, short one, and that is just to state your name and spell your name so that we have that for the CG information.

Tewes, B.: Sure. My name is William Edward Tewes. And the last name is pronounced -- or is spelled -- T-E-W-E-S.

Callan, C.: Okay, and -- .

Tewes, B.: My friends call me Bill.

Callan, C.: Would you mind giving your age?

Tewes, B.: I was born on 10/10/22. I'm 82.

Callan, C.: I'm just going to say that I'm Connie Callan, and I am the interviewer today (laughing), and today's date is March 8, '05. Let's begin!

The first grouping of questions is your place of origin, so we're going to ask you where you were born.

[1:02:27]

Tewes, B.: I was born in Jersey City, New Jersey.

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

Tewes, B.: I was a member of the Special Engineer Detachment 9812, technical service unit, which was stationed at SAM Laboratories. Originally in Columbia University and later, I think it was on 134th Street and Broadway at an old Nash Car building, and we lived anywhere. At the time, my mother was terminal with cancer, for the year and a half or so, I was stationed there. I lived in Orange,

New Jersey, and I was a commuter; I commuted to -- by way of the Lackawanna and the ferry boat and the subway up to SAM Labs.

Callan, C.: What kind of work did you do prior to coming to K-25?

Tewes, B.: I worked on the development of the gaseous diffusion process. The prime location for that -- it started at Columbia University and eventually, Union Carbide, who was to become the contractor here at K-25, took over SAM Labs.

[1:04:36]

The work I did was mainly concerned with the evaluation of the gaseous diffusion barrier. And that evaluation, there was a small pilot plant up there that actually tested the barrier using uranium hexafluoride, but it was a very expensive and slow test, and so the approach to evaluating various experimental samples of the barrier was to determine the separation that was achieved not with the UF_6 isotopes, but rather, with an inert gas mixture. Usually, we used helium and CO_2.

[crew talk]

Callan, C.: Oh, well. Continue.

Tewes, B.: And when I first came there, and that would've been January of '44, why all we got were little tiny pieces of experimental barrier, and then it progressed to short lengths of barrier to -- then the problems of evaluating it became a lot more difficult. But that was essentially what I worked on up there the whole time.

[1:06:37]

Callan, C.: So that's what you did at the plant?

Tewes, B.: No, that's what I did --

Callan, C.: -- before.

Tewes, B.: -- before I came to K-25.

Callan, C.: I wanted to make sure I understood. Let's go into your educational background.

Tewes, B.: All right.

Callan, C.: Where did you attend high school and what year did you graduate?

Tewes, B.: I -- I was graduated from Orange High School in Orange, New Jersey. It's a suburb of Newark, which is a suburb of New York City, essentially. And I -- that -- I graduated in 1940. And went on to Upsala College, which is located in East Orange, New Jersey.

And in, I guess, November of 1942, I enlisted in the Army of the United States and was put on reserve status and allowed to complete my junior year. Called to active duty in June of '43, and went through infantry basic training at Fort McCook in Alabama. And then I was assigned to the ASTP, the Army Special Training Program, at the University of Illinois.

[1:08:43]

At that time, it was located at Champaign-Urbana and now, I hear it's at Urbana-Champaign. (laughing) And this was an army-wide program because there was a dearth of engineering and physical science graduates coming out of college. And I -- I stayed there until January of 1944. And I guess it would've been the 23rd of January. I was in the Student Union playing ping-pong and somebody came -- found me and told me, "Come on! You're about to ship out!" (laughing) And we -- they stopped a train -- it was the Broadway Limited -- and put about 20 of us on it with sealed orders, and we got to Grand Central Station and opened the orders, and they said we were to report to an address on 116th Street in Manhattan at 9:00 Monday morning. And that's when I started my career in the gaseous diffusion business.

[1:10:32]

Callan, C.: That's amazing! I've never heard that story. Is that how the Manhattan Project name came to be?

Tewes, B.: The Manhattan Project's name came from the Manhattan Engineer District, and early on, I believe that General Groves and his staff were located in New York City. And as a result, they -- they needed someplace to use for names, so it became the Manhattan Engineer District.

Callan, C.: That's what I had heard, but when you were telling me this other story, I thought maybe there was a connection with that.

Did your group that all got the orders that day, did you all stay together as friends?

Tewes, B.: We stayed together -- well, we had different -- different backgrounds, different kinds of engineering. We all stayed at Columbia; we were all assigned to Columbia. And, you know, I can't tell you how many people were there in the army, but I -- I would guess -- we got together once a month for a physical exam, and there were probably somewheres in the order of 100 of us there.

[1:12:17]

And it would've been in the spring of '45 that we -- the development work was -- was dropping off at the same time the construction work which proceeding down here in Oak Ridge. And at that time, they started, a few a month, shipping out people from SAM down to Oak Ridge. And -- I know several of my best friends were shipped out before me and.

I might mention, at Columbia, we knew what we were doing. We knew that we were separating uranium isotopes to make a bomb, and that was not common knowledge among most of the G.I.'s down here in Oak Ridge who had come from other places.

But I came down here on July 4th of 1945.

Callan, C.: Let's talk about family. Considering some of your previous answers, what was it like for your family that was with you during that period?

[1:14:20]

Tewes, B.: You mean my mother and stepfather? I was almost an only child. I had a half sister who was born about 16 years later than I was. And they were waiting, normal, wartime wives. Stepfather was working and my mother became ill at a fairly early age. I think she -- in her 50s when she eventually died of stomach cancer. The wife, you know, was affected by shortages, very definitely. New York City was a great place to be a G.I. They had -- rode down to 99 Park Avenue, got tickets to almost anything.

But -- but it's something that your generation has -- has never known of what it was like for the whole country to be at war. You know, it wasn't like the disagreement about Korea or Vietnam; the country's completely unified.

Callan, C.: Well, let's talk about working at K-25, and these are specific questions to that. Why did you come to work at K-25, and I think you kind of answered this --

Tewes, B.: (laughing)

Callan, C.: -- so we can skip over that.

[1:16:25]

Tewes, B.: Right.

Callan, C.: Go on to, what are your first recollections when you came to K-25? Do you remember that day?

Tewes, B.: Yes. I -- well, my first recollection when I got off the train -- took the Chattanooga choo-choo! -- and I was met by two -- two of my buddies from SAM, Larry Rourke (phonetic sp.) and Art Kellman (phonetic sp.), and I arrived with the barracks bag, and I had been well briefed about the situation down here. So I converted about $20 of my paycheck into liquor. (laughter) And they -- I had a barracks assignment with a group that had been together at K-25 -- and went out to work the next morning and had an interview with the Industrial Relations people. But I -- I pretty well knew where I was going because it's what happened to the other fellas that came down here.

At that time, they were -- construction of the plant was pretty well completed. You know, while they were building one part of it, another part was operating, and they were continuing to put buildings online and as soon as they had been leak tested. So, I spent, I guess, about the first 6 weeks there on a leak test crew. There were few of us G.I.'s, but it was -- it was mainly young women from the surrounding area.

[1:18:51]

The technique that was used, they would -- well, in -- in the beginning; they would just pressurize the cell and go around with soap suds and get the big leaks and prepare it. But then, they

would pump the cell -- that consisted of a half a dozen converters that contained the barrier -- they'd pump it down to a high vacuum, and the personnel would go around and squirt a little helium here or there or someplace else where a leak was detected. And the helium would be sucked in and a proportion of the -- the gas coming into the vacuum pump would be diverted to a near-type (phonetic sp.) helium detector.

And it wasn't a job that required great skill; it required, you know, decent intelligence and -- and the ability to be trained. But it required a lot of people. And -- and that continued until they got enough tested that I went back to Personnel, and by that time, I had learned a fair about -- amount about the organization of the plant.

[1:20:52]

And they -- they essentially asked me, they said, "Hey! What do you want to do next?" And I said, "Well, I'd like to go into Development." And I was assigned to Lab D and I worked on -- on various development projects, and did that -- I don't think I can go into the details of what I was working on specifically, but I did that till I was discharged, and that was in March of '46. I was discharged from Fort McPherson in Atlanta.

[1:22:02]

[crew talk]

Callan, C.: When we start up, do you want to mention your transfer to Y-12 or X-10? You had mentioned that as we walked in.

Tewes, B.: Yes. I -- I spent essentially the first half of my career at K-25. And I guess the official date was August 28th, but there was about a month or so where I was winding up at K-25 and moving over to Y-12.

[1:23:07]

And this -- this was a matter of the priorities of the Oak Ridge organization. At that time, all 3 plants worked for Union Carbide, so there was a -- it was fairly easy to move from one plant to another; you weren't moving to a different company the way you would be today if you moved ORNL to Y-12.

And the development work had essentially peaked at K-25. We had completed the development of the T-1 barrier, which was the basis for a multi-billion dollar improvement program. Essentially, all of the barrier tubes at the larger stages, the K-25, the K-29, K-31, K-33 building, and all of the stages at Paducah, all of the stages except for the top at Portsmouth. The barrier was replaced with this newer T-1-A barrier.

And while there was a lot of work to get it into production and get rid of some bugs, the basic development was done, and Y-12, on the other hand, was embarking on an -- a marked increase in their workload. In particular, in their development work. They were working on the -- the submarine missile, a bomb, and the -- the first of the anti-missile missile programs, the Spartan program, which never went into production, but we were involved in the exceedingly difficult number of technical challenges.

[1:25:58]

So I wasn't the only one, but I was one of the first that was transferred over to Y-12. And the work was entirely different, but it was still development work. I did developing work all my life. I was -- look back, and decided that I was basically a problem solver. And I had a terrific job. This was -- there was never a lack of problems that needed solving, and I worked with wonderful people, competent, and we had terrific facilities, so. I -- I left Y-12 in the end of June in 1985. Got a "V-RIF" there were having a layoff at K-25. Somebody who might've been laid off took my job, I got early retirement and few extra benefits, and I was ready to retire then.

Callan, C.: Let me ask you if people would ask you -- [crew talk] -- what you did there at K-25, how would you respond? What would be your answer?

[1:27:42]

Tewes, B.: Well, there were a number of standard responses. We made invisible submarines and shipped them down the river to the Gulf of Mexico, or we made the front ends of horses and shipped them to Washington for final assembly, but there was a great many questions among the surrounding communities because -- an awful lot of our people lived in -- did not live in the city of Oak Ridge, even with all the dormitories we had here. And they'd see all these people coming to work here and they'd -- they'd see all these trains

coming in, and trucks coming in, and never saw anything going out. (laughing) But by the time I got down here, why, you know, they -- they knew that there was some -- something important going on, but nobody was gonna tell 'em anything. And there weren't too many people here who knew what was going on and could tell them anything.

[1:29:29]

Callan, C.: I think we're ready to cut tape here, so he's going to have to change the tape 'cause it's 30 minutes.

Tewes, B.: Sure!

[End tape 1, begin tape 2]
[2:00:06]

Callan, C.:[crew talk]

Okay, we are ready. Now, one thing you did answer what you liked about, you liked the problem solving aspect. But what did you dislike? Did you dislike anything about working at K-25?

[2:00:56]

Tewes, B.: Well, the -- the early time I was there was -- see, I -- I came in July, and the bomb was dropped in August. And there was -- there was a period of drift for -- for the G.I.s, our main interest was getting a discharge and we did not have a high priority on that because we had not had combat experience. And at the plant, there was -- there was a period where the older people, and some of the older people aren't very old, were going through difficult decision making. Did they wanna stay on here in Oak Ridge, or did they want to go back to some other Carbide facility? The ones that came -- and there weren't too many of them that came down here from the universities -- most of them were up at Columbia, and they -- they had no question what they were going to do; they went back to their schools.

[2:03:02]

But we were fortunate at K-25 in that we knew that the plant was going to continue in existence because there had been 3 uranium separation facilities. S-50, which was quite small, and which relied

on thermal diffusion, and they -- they shut down very soon after the end of the war. And Y-12 was essential where there may have been a small contribution by the other two plants, but that essentially is where the fissi -- the U^{235} for the Hiroshima bomb was separated. But it was a horrendous power user. So looking toward the future and, I guess, the plant management here pretty well assumed that there would be a future for nuclear weapons, why the at -- at K-25, we knew that there's a chance of staying there if we wanted to.

[2:04:40]

My wife worked at -- at Y-12, and when she quit, which was a couple years after we got married, why, they were down to about 1,000 people there. And that's -- I don't know the precise number, but I think they'd had something like 12,000 -- but they were just starting to get into the weapon manufacturing business because the people at Los Alamos didn't want to make things; they didn't want to go into production. And that -- so the technology at Y-12 changed completely from what it had been during the war.

Callan, C.: Did you meet any famous people that you can recall, while you were working here?

Tewes, B.: No. The -- one -- I guess the most famous person I met was John Dunning, who really more than any other single person, was -- was probably the key developer of -- of the gaseous diffusion process. But that was up at Columbia and. But essentially the -- the people that you read about, they were first at Chicago. They -- they were mainly in the plutonium project. And they were at Chicago; they were at Los Alamos. And.

[2:06:52]

Callan, C.: The next topic is health. If you can talk a bit about what kind of health facilities were at K-25, and if the company was conscious and emphasized safety, and were you regularly monitored for health issues? Were you ever hurt there? Radiological/chemical testing? Anything you want to talk about in the area of health.

Tewes, B.: Sure. We -- well, let me talk about safety first. Safety at K-25 was emphasized very much. We had monthly safety meetings, and as you went in any of the gates, there was a sign up, how many days since the last lost-time accident. And every time that we achieved a million and a half man hours without a lost-time accident, we got

a safety award. And I think it was worth $6, which was pretty good back in those days. And we got a lot of them. Y-12, as I learned when I went over there, did an even better job on safety and got more, and eventually the DOE, in their wisdom, said, "Hey! These safety awards are working too well, so we're going to cut them out!" (laughing) But there -- there was always -- safety was considered a very important factor.

[2:09:29]

Now, the question of exposure is -- is something that gets a lot of attention today. And -- in the earlier portion of my experience, there was not as much knowledge of what exposure levels were safe, so you know, we would go to the literature and we would pick up whatever information we could, but for many materials, there was not an official government standard of what was a safe inhalation level for an 8-hour day, say. And I think the one -- the one thing that has -- has changed the most is the fact that -- I'm hard pressed to say this attitude last -- lasted, but it was for quite a long time -- that there was an expression that the solution to pollution is dilution. And with working with uranium hexafluoride, we -- we worked a lot with fluorine and with hydrogen fluoride, and we thought that -- that somewheres in the neighborhood of a part per million, perhaps, was a safe exposure level. And we knew you could smell that, so we usually would try to get it to where you couldn't smell it. But if we had (indiscernible) reactor that contained one of these materials, the first thing we would do is we would evacuate it through a soda line trap and we'd get rid of most of it, but there'd be traces left that we couldn't evacuate. And we would then go ahead and pressure these and check the concentration, and if it was low enough, we'd vent it. And I don't know that it hurt anything permanently. But it doesn't -- doesn't mesh with today's safety attitude.

[2:13:17]

As far as handling uranium is concerned, the -- there's a lot of argument about it. But essentially the feeling was if you don't inhale it or ingest it, if you get some on your body, as long as you wash it off, you're all right. And that's probably true. But -- I know the things I was personally associated with, we were very careful not to get any on our body.

Callan, C.: Well, let's go onto the Manhattan. Although you said you came one month before August 6, 1945, so talk about the reaction, what

it was like the day it happened. Do you remember being at the plant and what happened that day when the news hit?

[2:14:48]

Tewes, B.: I'm not -- I'm not sure what you're talking about.

Callan, C.: Your reaction to the dropping of the atomic bomb.

Tewes, B.: Oh! Oh. We heard about it in the barracks and someone had a rumor that we're all going to be confined to the barracks, so we all took off. And the group that, 3 or 4 of us that I went with, were, you know, we were -- we were just overjoyed and knew -- knew what had happened. But we didn't know the specific bomb design. We all used to have thoughts about how to put one together. But from what I -- I heard, the next day, most of the people got their information from the -- the newspaper, the Knoxville, both Knoxville papers; we had 2 at that time and they both published extras that morning. But my recollection was going to the A-2 apartments and partying all night long. (laughing) Celebrating.

[2:17:02]

Callan, C.: How do you think history will view the Manhattan Project and its outcome since it has?

Tewes, B.: Well, there is a very vocal group that thinks that we should have dropped a demonstration bomb and that we should've waited longer after the Hiroshima bomb before dropping the bomb at Nagasaki. And they had been able to command a certain audience in this country. The most specific thing I can think of is the refusal of the Smithsonian Institute to put the Enola Gay in the main display in Washington and consigning it out to the airport where its visib -- visibility is reduced tremendously.

My personal opinion is that anyone who considers whether we should've dropped the bomb or not needs to be aware of two things. One is they need to be aware of the last two invasions in the Pacific and the death toll, not just the American troops, 7 million -- or 7,000 troops died on Iwo Jima, and -- but there was a tremendous loss of Japanese lives. And it's my personal opinion that -- you know, there's no question but what we saved a great many American lives by using the atomic bomb.

[2:20:23]

I happened to see a program last night or the night before where they were interviewing Colonel Tibbets and they asked him about the relative relationship with the lives that were lost and served. And his remark was, "Well, I can tell you one thing. Every place I go, somebody comes up and says to me, 'You saved my life!' I was ready to invade Japan." But --

Callan, C.: Let's talk -- .

Tewes, B.: The other thing is, you know, we didn't have a lot of bombs to use for displays. I don't know what the rate was and -- but we needed to test the plutonium bomb at Trinity. We -- it was -- the bomb design was much more critical for the plutonium bomb. There -- there was -- no one in the bomb business felt the need for testing the uranium bomb. But that -- there's just every time -- it would've delayed the war another -- even -- even a matter of weeks. There was a lot of fighting going on in the Far East, outside the question of the invasion, over in China, for instance.

[2:22:33]

Callan, C.: Let's talk about after the Manhattan period. You talked a bit about that and you talked about research and development. Is there any more you want to talk about relative to the expansion program in the Cold War era, relative to your work?

Tewes, B.: Well. But things really got organized at K-25 back, oh, probably a year or two af -- after the end of the war. And from what I understand, they -- they also started moving forward at Los Alamos in nuclear weapons design, and at Y-12 manufacture. And all of a sudden, we had a market for our product. And -- and that market became a duel market in that if you look at the use of our separate -- separate work, probably more than half of it went into low levels of enrichment for power reactors. And -- but we were still making highly-enriched uranium for nuclear weapons and were as long as I was at K-25. And the demand when I left was great enough to support a -- an improvement program, which cost over $100 million. So the -- but -- really, what -- what resulted in the end of the -- of K-25 was a combination of the lack of -- of continued growth of fuel reactors and we reached a point where if -- if more enriched uranium was needed for weapons, it came from obsolete weapons coming back from the stockpile.

[2:25:45]

Callan, C.: If you wanted to talk about K-25, what was the most significant accomplishment as individuals and groups at K-25, what would you say that is?

Tewes, B.: You mean me?

Callan, C.: If you want to talk about it, what was your most significant accomplishment?

Tewes, B.: Well, partly organizational, eventually became a department head, and had the responsibility for the development of the production barrier and its protection and use in the cascade. I have a couple of the AEC equivalents of patents that were necessary for all of the barrier that has gone into the plant since K -- K-29 was started. And my group, together with a more fundamental barrier development group, were able to improve barrier quality sufficiently that we re -- retubed the original plant and did it a second time. I think that for everyone, the most significant accomplishments at K-25 were the improved stage design and the improved barrier that went into it, and these resulted in cost avoidances of many hundreds of millions of dollars. (laughing)

[2:28:27]

Callan, C.: That (indiscernible). I think we're ready to change tape.

[crew talk]

[End tape 2, begin tape 3]
[3:00:05]

Callan, C.: This next group of questions, people haven't expanded on too much. But what I'm going to ask you -- I guess I better wait -- okay -- is women and basically, what sort of roles women had at K-25 and how do you recall they were treated?

[3:00:44]

Tewes, B.: I'm -- I'm sorry, I was -- begin.

Callan, C.: Women.

Tewes, B.: Women.

Callan, C.: Talking about women working in the workforce at K-25, and if you remember what kinds of jobs they were in and how they were treated there.

Tewes, B.: Sure. During the war, there was probably, I'd guess, 80% women in Oak Ridge, a very high percentage of women. They were predominantly from the surrounding area, but by that, I mean, you know, a pretty good surrounding area. And they -- great many of them were high school graduates and were trained as operators in the plants. A number of them were college graduates. I met my wife down here at a Thanksgiving dinner and she graduated from Eastern Kentucky and worked a statistician at Y-12 for a couple years till. Back in those days, the norm was the woman came home and you had a family (laughing) that she raised.

[3:02:35]

And -- and I think that that meant that after K-25 was automated and Y-12's work changed, there weren't very many women working at the plants. The number -- the relative number was reduced.

We had an active affirmative action program. But, you know, we had a terrible time hiring good people because we couldn't tell them what they were going to do. And we sent our recruiters out to colleges in the surrounding area. Our -- our main recruiting was for technical personnel. And I can't recall a -- seeing a woman applicant in the chemical engineering field. We did have a few women who worked professionally. They're treated pretty much just like men. There was no discrimination against them. Now, when I moved to Y-12 in -- that's -- that's a (indiscernible) division for me -- we started getting more women applicants. We started hiring more women. And we had more women advance along the management ladder. And a -- among the women that worked in my department at Y-12, one of them, last I knew, was a division manager. Another one was a vice-president, but when this change occurred, she went to work for DOE. But I never saw any -- any discrimination against women.

[3:06:11]

Callan, C.: Let's talk about -- .

Tewes, B.: Would you like me to talk about blacks?

Callan, C.: Yes. That's the next question.

Tewes, B.: I thought it might be.

Callan, C.: Let's talk about that. African-American minorities....

Tewes, B.: This -- when I came to Oak Ridge, this was a segregated community. And to some extent, still is. But this -- this is, you know, there are blacks scattered all over the community as far as housing is concerned. We made a -- an -- a definite effort to hire blacks and I can place this about 19 -- early 1960s. I -- I got a black co-op student, Harold Conwer (phonetic sp.). Harold had finished his first year at UT and he co-op'ed with us till he graduated, went to work there, and ended up as a vice-president at K-25. And I never have found out what happened to him when Carbide left (laughing) and was replaced by Martin-Marietta.

[3:08:18]

Callan, C.: Let's talk about your recollections with your family and your children, your spouse, and your recollections about Oak Ridge in general, what it was like to live as a family in the secret city, the positive aspects, and some of your recollections of this town of Oak Ridge.

Tewes, B.: You know, the most important day of my life was Thanksgiving 1945. Department secretary had invited four of us from the SED for Thanksgiving dinner and it was there I met my wife. Her name was Olive Littleton, but. There was a comic book out, "Little Audrey," I don't know if you've ever seen it; well, she looked like Little Audrey. She was petite, jet-black hair and she wore it flipped up, and so somehow or other, she picked up -- she goes by Audrey now -- we, you know, I got a date for Saturday night and we've been together ever since except for six weeks where I had to go back and take a couple of required courses to get my degree. And Audrey worked for a couple years at Y-12, and then, we started our family and on March 19th, 1949, my elder daughters were born in the wee hours of the morning. As far as I know, they were the last two to be born behind the gate. That day, the vice-president and some movie stars came down; they had a great ceremony. Opened the gates and let everyone in.

[3:11:16]

Prior to that, we were in sort of an enviable position that somebody wanted to come visit (laughing) (indiscernible), you just didn't get 'em -- get 'em a pass. But I ended up with 4 daughters, 3 of them within 22 months and the other back in 1958, quite a bit later. And this was -- I'd say the street I lived on had an average of at least 3 -- 3 children per household. And we lived in what had become known as the Alphabet Houses, the cemesto houses and they went by A, B, C, or D depending upon the size and the number of bedrooms. And we still live on that street, remodeled and added to. This was a great place to raise children. We've always had an excellent school system. And as I -- I learned that this was a good recruiting factor, that even -- even young -- young kids, single and just out of school were thinking of the future and that was part of it.

[3:13:15]

Callan, C.: We're getting close to the end. If you were writing a documentary or a book about Oak Ridge and K-25, mainly, of course, K-25, what are the key topics if you thought in terms of an outline, what do you think are the key topics that need to be addressed? And if you don't want to answer that, it just might help us.

Tewes, B.: No, no, I'd like to answer that. You see, if I -- I were writing a history of K-25, I would want to go back -- I would want to change that to the history of the gaseous diffusion process. And I would want to describe the process. I would -- I would want to describe the development work that was done at -- at -- mainly at SAM at Columbia. But I would also want to describe the engineering work for designing the K-25 building, which was done by Kellex, and I would want to include the main suppliers for that -- that plant, the work that was done -- well, I think I can mention Chrysler, who made the converters. I'm not sure about saying who made the compressors or the company that made the barrier. But that's a key portion of the -- of the story.

And then there's the fantastic construction job. That building was built from a flat field to a completed plant in 18 months. In today's world, you couldn't do the paperwork in 18 months! And it's getting worse.

[3:16:08]

Callan, C.: Finally, we're just going to ask you final words about what you feel future generations should remember about K-25, or if you have anything to say that you feel you haven't covered, this is your last chance to make your final comment. (laughing)

Tewes, B.: Well, I would -- I would like to say something about my experience at Y-12. And I -- I guess one of my most significant accomplishments there was I led the effort to bring Fogbank (phonetic sp.) into production. It was the last new weapons material, and with the current situation, without testing, it will probably be the last new weapons material forever. But we were able to do it on time by starting production in a pilot plant which was field engineered and in today's world, that's an impossibility. There's the bounds between productive work and documentation has just plain gone overboard. And I -- I think that somewhere or other, this country's either going to have to figure out some way of -- of getting back to more emphasis on production, or it's going to pay for it with the standard of living.

[3:18:30]

As far as K-25, I'm a strong supporter of the thought of retaining the buildings that the end of the U and building a museum out there which covers not just the entire gaseous diffusion process but the city of Oak Ridge. I'd sure pick up some of the -- I think you can go to some of the surrounding towns and find some of the flat tops that were here. I think there's -- there's still a track at -- at Y-12 and I think the security future says that's never going to become available to the public and it might well be moved into K-25 to complete the -- essentially, a museum of -- of the Manhattan Project, which would compliment the existing Museum of Science and Industry very well. That's it!

[3:19:44]

Callan, C.: That's it! Thank you!

Tewes, B.: Thank you!

Callan, C.: I appreciate all this time with us.

[End of interview]