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FERNALD LIVING HISTORY PROJECT
Transcript

Name: Bob Gardner
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Tape FLHP0078

08:01:00
Q:
You're ready (laughs).

A:
I'm ready. You can edit this, so we don't have to worry about (both laughs) any lies or anything that I might tell (both laughing).

Q:
Well, our first question is always the hardest. If you could give us your name and then spell it just to make sure we have it right.

08:01:16
A:
Well, it's Bob Gardner, Robert Gardner; G-A-R-D-N-E-R. I always get that, I always get that one; first question (both laughing).

Q:
Um, if you could give us a little background, sort of pre-Fernald, where you were born, a little about your family, your previous jobs.

A:
Pre-Fernald. Um-hmm I can do that. I was uh, born here in Cincinnati, at Bethesda Hospital. And uh, on March 16, 1930. My parents, they were both born here. I think my mother was actually born in High Bridge, Kentucky. My father was born in Arlington Heights. As was my grandmother and grandfather were born in the valley, Carthage, or Arlington Heights.

08:02:07
A:
Um, grew up during the '30s. I think my parents had a pretty hard time, as most people did during the 1930s. But I didn't. I was not aware that we didn't have a lot o' things because nobody else had a lot o' things, (laughs) so we were all in the same boat. I can't recall that I was ever deprived of anything, really. But we were not materially oriented at that stage of our society. Anyway.

A:
Good life. Umm, went to school at Mary Dill; a grade school; Mary Dill School in Carthage. Same school my dad went to. And Mary Dill was a teacher in Cincinnati Schools, and indeed she taught my father in the early 1900s, so that was always a point of interest to me, that he actually was taught by Mary Dill.

08:03:12
A:
The building's gone now, and it's reverted back I think to Carthage School, which seems to me kind of a shame, and a commentary maybe on all fame is fleeting, I guess. Mary Dill is unknown; in fact I

recently just before um, our 50th reunion for our high school, ah, and I went, most, half the class in high school went to Mary Dill Grade School.

A:
And I called, I wanted a construction date and demolition of Mary Dill High School. And ah, nobody at the Board of Education, or anywhere in Cincinnati and Hamilton County, the authorities could tell me anything about Mary Dill. In fact, they had never heard of it. (Laughs) Which gives you kind of a strange feeling.

08:03:59
A:
But ah, eventually I did. Eventually I found out it was built in 1876 and demolished in 1950 something, I think. I went to Hartwell High School. It's still up there, Hartwell School, in Hartwell. At that time, it was a high school, just a grade school and a high school, now it's just a grade school.

A:
Um, was never athletic, even less so now. (Laughs) Not much interested in uh, in uh, athleticism, or physical exercise, uh, although I probably do more now than I did then. I mean, I'm pretty religiously walk now, 3 miles, 3 or 4 or 5 times a week, for my health. I didn't do that though, until I got to 60 or 58 or something when I figured that was an issue.

08:04:58
A:
I was always interested in um, (pauses) well, a lot o' things. I liked to read all my life. I was interested in adventure stories. Read an adventurers were big in the 1930s. People like Richard Haliburton traveled to Africa, and all these, and there was Frank Buck movies about capturin' wild animals in far away, exotic places.

A:
And I was interested at that, readin' that. Interested in airplanes and cars and motorcycles, mostly motorcycles. Uh, growing up, and uh, in high school, I, I got, was one o' the first people to have a car. Weren't many kids had cars. They were um, I had a, got a Model-T.

A:
And there were a lot o' Model-Ts around for fifty bucks or whatever, so I got a Model-T, and I was very popular on that aspect of it. It had no top, uh, it was a big ol' jalopy car. And we took it to school and uh, rode the kids around at lunchtime.

08:06:09
A:
Had a, so that was kind a in high school, I did that, and avoided. I did uh, was on the football team, and track team, and uh, undistinguished in both of them (laughs) for a couple o' years. And I got out a that. Um, motorcycles, cars, I liked to work after school then, that was kind o' rare, when I went to school.

A:
Most all these kids nowadays work somewhere, but I worked at Bluebird Pie Company, made little pies that they sold all over, after school. And uh, that's how I bought my old jalopy cars and motorcycles.

My best friend in school, or one of them, was Ned Wilkins, who was a very bright guy, president o' the Math Club and all that.

08:07:03
A:
And he was interested in flying; very interested, and he got me interested in it. He um, got his license at age 16; as soon as he could, he'd already had a couple hundred hours duo, by that time. So, we uh, during my high school years, we used to fly quite a bit, Ned and I.

A:
Um, he belonged to a uh, what, a flying club, where they had 3 or 4 airplanes that they rented. And we flew to Florida 2 or 3 times, and was a big deal, you know, and, in those days, in 1947, '48, for kids to be flying airplanes and doing that. So I was, that was big for me. Later on, I, he and I bought an airplane and had that for several years.

08:07:48
A:
Um, I went in the Army in 1951, drafted, the Korean War. I was, It was not unpleasant, because I didn't go to Korea, I eventually, I went to OCS down in _____, Oklahoma. Got about half way through that, and decided I didn't wanna continue with the Officer Candidate School, uh, so I resigned.

A:
A lot o' reasons, it would have added a year to my military service, and a lot of, a lot of ah, reserve time after that. And by that time, I, the military and I, I didn't like it at all. So I thought I'd just get outta this, serve my time, and they sent me to Alaska.

08:08:39
A:
And I uh, very, I spent a very pleasant year. Spectacular trip up, really, what they call the Inside Passage now, people pay big bucks for, in fact, I think next year, we'll take a trip back there. (Laughing) in general, I think my time in the Army was quite pleasant, and informative (laughs).

A:
I guess, when I got out o' the Army, I did a little more flying. I went back to my old job, which had been in a laboratory, just before I went to the Army, and after I got outta high school, I got a job at a place called Kentucky Chemical Company. Uh, I was a lab technician there, for a year and a half, and then they built next door to it, a refinery.

A:
Pulse columns, (smiles) like at Fernald and other things. Small, though, and it had to do with refining animal fats, which they sold to Procter & Gamble at that time, tallow, it's called. And most o' the soaps on the market at about that time, and this was 1950s, early 1950s, was um, made with animal fats, tallow.

08:09:53
A:
Um, that was just at the beginning of the detergent era, chemical production of laundry detergent. So I spent a couple of years there, before I sent in the Army, and um, by the time I got in the Army,

though, detergents, were in, becoming very popular, and the tallow market was going down the drain.
A:
And indeed, the Refine-All Incorporated was the name o' this place, I, decided I better find other employment. And I saw in the paper an ad. And it said, "Here's a job with a future." And it had uh, I guess the logo with a nucleus, and uh, electrons swirling along, and neutrons and, and it was National Lead Company of Ohio.

A:
And come out here and get a job. Sounded like a great idea to me. That's how I got started at Fernald. I went out and said I knew about pulse columns and other chemical process, and had worked in a laboratory. And uh, so on the basis of that, and I think they were just about hiring anybody (laughing) at that time when they first started, I got a job at Fernald.

08:11:13
Q:
Tell us about the day that you got interviewed. What was the interview like?

A:
Oh, wow. It's been a while, you know. This would have been in the summer of 1953. I started in October, in the fall, so during the summer 1953, I got out o' the Army. I went to my old job, saw everything was goin' down the tubes there, decided I better get another job, they called me out to uh,

A:
Ah, the present Ad Building, as a matter of fact, the very front where that little circle and flagpole, if that hasn't been torn down, in your, in your proce-, right now, I guess that's what you're doin', tearin' everything down and haulin' it away. If that's still there. The front part o' the Ad Building was there then.

08:12:03
A:
And uh, you walk in there, and there's a little room to the right as you walk in the main door. And uh, it's still there, even though that Ad. Building's been redone a couple o' times. Uh, A guy named uh, Walt Stratman was waiting for me on the morning I went out there, and we sat in that little room, they didn't take me to any special place that I recall.

A:
We sat in that little room there, and he had a clipboard, like yours, and uh, started askin' me what I'd been doin', and uh, he asked me some specifics about chemical processing, what I knew about that. Luckily, it was mostly in my field, um, as a chemical operator, that's by the way, what I started out as, a chemical operator, that was your basic factory guy,

08:12:57
A:
Although, there was a, you could start as a laborer, as an operator helper, in the production, uh, a chemical operator, or a lead man. There were four categories as I recall, so I started uh, based on my experience, as a chemical operator then.

A:
It took a couple months before the called me, basically told me what they were gonna do there, but not very much. It was all pretty hush-hush, and uh, we were warned about the security, and don't even tell your wife or anybody what you're doin'. It was very uh, security was really stressed.

Q:
Did you have to get a Q clearance?

08:13:46
A:
Uh, it seems to me, yes I did. From the very beginning. As a matter of fact that's what took the two months. I think they were hiring people like crazy but a, they wouldn't even let you in there without a Q clearance when I first started. And um yes, I had to have a Q clearance.

Q:
Tell us about the process of getting a Q Clearance. What, did you hear from your friends and family that the FBI folks have come in?

08:14:12
A:
Yes, I did.

Q:
Tell us a little bit about that.

08:14:15
A:
Well, I, I really don't know a whole lot about the process except that the people who I listed as references, um and some of them, fairly obscure it seems to me, at the time most of them, at one time or another said that uh they'd been interviewed. And some of them years later.

08:14:38
A:
I think uh some of them said that whoever interviewed them was FBI agents or whatever they were kind of uh, uh a little bit frightened maybe by the whole thing too and I think they told them don't say anything that you've even been interviewed. So for years people who I thought, gee, I guess they didn't go to see him 'cause they'd never said anything about it.

08:14:58
A:
Finally they said, Oh yeah, they uh came to ask about you but uh they told us don't say anything, (laughter) which is good I guess. At the time, people were pretty concerned about that.

08:15:14
Q:
Tell us about the early years, uh what, what was the plant like? Was is still under construction?

A:

Um hum.
Q:
Tell us about that.

08:15:19
A:
It was under construction. When I started in October of '53 uh I can still remember a clerk used to know his name but I can't, can't recall at the moment. He, they showed me how to change clothes and uh take all your clothes off. Pile them here (use of hand gestures). Walk through naked, which was a, well I'd been in the Army but uh it's just ya had to walk a long way this way and pick up all these clothes, underwear, socks, all this, and get dressed over here (use of hand gestures).

08:15:53
A:
Then the clerk took me out and now I can still remember as we emerged from the locker room and it's still pretty much that locker room although it has been expanded. Uh right in front of me was a great steel framework and uh that was uh Plant 7. Which is gone now. And uh the Pilot Plant was fully operable and where the Pilot Plant is now, if it's still there I don't know if they've demolished that yet.

08:16:23
A:
Uh it was up and operating and um they took me to Plant 8 my first day. The refinery area was still under construction um the metals plants were I think Plant 5 was under roof and operating but Plant 6 was not completed. There was still steel work visible and uh lot of construction people, a lot of mud uh there it was just messy in spots and other spots it wasn't. A lot of fencing up that later come down.

08:17:02
A:
Temporary fencing, very busy though, plenty of people. A ton of people, a ton of construction people, a ton of operations people. They had more people than you can imagine uh, more than they needed at first there. They were hiring (laughter) they were hiring big time.

08:17:21
Q:
About how many people worked there when you first started?

08:17:26
A:
Well, there again I really don't have much in the specific uh numbers but I'd say when I started there, somewhere around a thousand, twelve hundred, but it bega-, it, it built up every day where new people were coming in. Every day you could see 'em leading new candidates, all young men by the way you know, there were no women allowed in the process area.

08:17:53
A:
And uh I suppose it went on up in the first two or three years to over two thousand, seems to me twenty five hundred, something like that. Plenty of people on every job though. On almost every job there were two guys there, maybe three. Uh, to do the work.

Q:
What was a typical day for you as a Chemical Operator?

08:18:18
A:
Well, um, it evolved somewhat as the plant came on line. They started me out in Plant 8 and um at that time Plant 8 was a scrap plant they called it, and they were getting some real material in. They were up and operating and in some areas they were still installing equipment and others. Uh, I'd been hired for the refinery and it was still under construction, next door to Plant 8.

08:18:47
A:
So uh, they put me up stairs uh with a vacuum hose and I think I was there for six weeks, upstairs just vacuuming, all day every day. Uh, these white coveralls and goggles and I had all the equipment, uh respirator and uh some pretty boring days while we were waiting to get the refinery on line. But I guess after about uh two months or so over in Plant 8 I went over to the refinery and they were just beginning to start up the various, a number of various sections over there.

08:19:28
A:
They said you're going to work in denitration. And although they started me at the nitric acid recovery area, because that was operating. Or just about to operate at that time. So uh a day typical day was get me started at 8 on day shift and uh got off at 4:30 p.m. uh go in change your clothes uh, do all this stuff.

08:19:58
A:
Well at the beginning, vacuuming and so forth, but that, when I got over into nitric acid control and, and that well we got into a lot of testing. Filling tanks with water, calibrating the tanks, little machines uh that count the gallons going into these big tanks, it might take you two days to fill it. Uh every maybe every 500 gallon or so they'd shut the water off and they you can drop a line down and measure what the outage was.

08:20:28
A:
Outages were very important. That's how we measure most all of the volumes of these tanks. Um, we had gauges but gauges were not considered particularly accurate, and uh they weren't, (Laughter) and so, uh, what we did was produce charts then with outages with 500 gallons. There was a mark on the top of the tank that was cut in there by a maintenance man with a, some kind of tool, an X (gestures).

08:20:57
A:
You measured from that spot at 500 gallons, at 1000, 2000, 3000, 4000, it might take you days to get this data, record it all, and uh, engineers were wondering around. They would take all that and produce outage charts. So a lot of the early, the very early days in the plant had to do with that kind of stuff. Calibration, how much does this hold, how much does that hold. You know, precisely how much. Not what the design was.

08:21:29
A:
Um yeah, had a cafeteria, a good cafeteria, you know uh with all kinds of choices. A lot of cooks and people working up there, dishwashers and all that. Had a nice variety of food. All the fattening kind you know that were very popular then, not many salads and that but all kinds of hamburgers. I bought steak uh pork chops, a big variety. A big variety of food, I remember that.

08:21:59
A:
The cafeteria was uh pretty elaborate, I thought. And pretty good. There were people complained but uh you always get that. You know, uh but uh that was good. Uh everything was pretty relaxed. Uh, there were at this point, although there was a little nuclear material on site, there were very little controls other than there were MC guys and, and nuclear safety people around.

08:22:29
A:
But um, at the very onset not a whole lot of controls cause as we only really had it mostly in storage at that point and hadn't really started processing yet. So uh it was mostly all young men and uh when you get that uh why uh it was uh kind of fun really, uh I mean cause there was a lot of horseplay. I hesitate to use that word cause it has kind of a negative connotation in, I think. Uh, but it wasn't.

08:23:01
A:
I mean I thought it was, we had a good time. You know there were people with, early on one of the things everybody did, they had these plastic bottles we were all fascinated with. Four ounce sample bottle. Little cap, put a hole in it, fill it full of with water. Everybody had one, in the back of your pocket so that you know, you catch somebody looking the other way or whatever, ya a little water down the back of his leg here, he wouldn't feel it while he was standing there until he moved a little bit (laughter).

08:23:29
A:
And it even went on to more elaborate things. Where the safety showers began to get into operation all over the plants and so we, some of them required you walk underneath maybe on a door to get in and out so we'd wire, put a wire here (gestures up and right) up to there.

A:
And then run up here and maybe run it up to the second floor where you could see down there (gestures over and up) and have that wire there for when some unthinking soul would walk under there you could pull that safety shower and get 'em (gestures pulling down).

08:23:56
A:
So there was a lot of, there was a lot of, not that there wasn't good work going on, but it was a very relaxed, I thought, atmosphere, and everything was new. Clothes were new, your socks were new, equipment was new. And uh, we didn't feel that we were off on some kind a adventure of some kind, so, you know. So, it was very pleasant at that point, meeting new people. It was, it was very pleasant, I enjoyed it.

08:24:29
Q:
Now, by the time you left Fernald, how much did you know about the process?

A:
The process, I left Fernald? You mean after 40 years and 2 weeks?

Q:
Yeah, I mean, how much did you know actually about the process of ur-, refining uranium?

A:
Well, hopefully, I knew quite a bit (laughing).

Q:
Can you just go over exactly how it all worked or?

A:
At one point in, at one point in time, I was a manager of manufacturing. So although I don't have a technical degree, you know, I did have plenty of engineers and that, and they did their best to put me in a position to talk about it.

08:25:01
A:
Yeah, I could talk about that a little bit. Um, another interesting thing, you know, ah, when it first started, well, the point was, we were gonna do this, we were gonna take uranium ore, we were gonna dissolve it in nitric acid. Unfortunately, that ore had other things than uranium.

A:
It might, we had an assay on it, we knew the percentage of uranium was, and most of it was, early on, from South Africa. Other places, from Canada, and out, indeed out in western United States, but most of it, the richest mines in the early 1950s, late 40s, was South African ore.

A:
So the idea was to bring this ore in, um, dissolve the ore in nitric acid. Take this solution then, after you separated the solids out, now this solution, which had uranium in the solution; it had some other things, too.

08:26:01
A:
Ah, some exotic metals, gold and silver and, but mostly not exotic, other, potassium, any number of minerals, a whole, really a whole, uh, sphere of minerals. But once you got it into solution, run it through what we had was the extraction area in the refinery.

A:
The refinery, by the way, was uh, was in 3 sections: digestion, where you mixed it with the acid; extraction, where you lifted the uranium out of the solution, just the uranium. Dispose of the rest; and then finally, denitration, because this was a nitric acid solution then, with uranium, essentially, it, by

the time it got into the storage tanks in denitration, that's what you had; UNH, Uranyl Nitrous Hydrate.
08:26:52
A:
And uh, now, you wanted to get the uranium outta there and dispose of most of the nitrates and that portion that you didn't want. Bearing in mind then the extraction area had already gotten rid of the lead and the iron and the phosphates, and all o' that stuff.

A:
And a little bit o' gold and silver that had all been separated back there. Now, the process in denitration was to extract the, was to get just the uranium uh, and oxygen, really. The product coming out o' the refinery then, out a denitration was UO_3, orange oxide.

08:27:36
A:
Uh, this required cooking in a big denitration pots, they called 'em. Put 250 gallons o' this concentrated UNH; UNH itself, when ya got it from extraction was um, not very concentrated. It was a very think liqui-, kind a like lime juice, really. UNH, uh, it was not anything we were particularly ah, afraid of, either from a nuclear or acid, because of the last stage of th-, extraction neutralized it.

A:
And it was pretty near to pH of seven at that point. Not quite that, but it was on the acid side, but it was in the pH range, it was not highly acidic. We boiled it down upstairs (motioning above his head with his right hand) a series of tanks with just heat, made it thicker and thicker and thicker, up to like 1200 grams per liter.

08:28:34
A:
And then finally, put it into a denitration pot, 250 gallons of it, fire. Gas, gas-fired pots, just like a stove. Turn 'em on down there. Some safety devices, but, start cooking. It took about six hours or so, to make this thicker and thicker, in a very molten state until finally, it began to dough up and roll over just like dough, dough stage.

A:
And then eventually began to turn into a nice orange powder. Almost fluid then, when it was hot. Flow around in there, it almost looked like a liquid, but it was a very fine granular powder of UO_3. And that was the product.

08:29:19
Q:
We're gonna stop there just for a second to change tapes.

A:
Okay! Am I being too lengthy?

08:29:24
Q:
Oh, no, no, no! That's great!

(Tape change black-out)

Tape FLHP0079

09:01:15
Q:
Are we rollin' there? Okay, we were at orange oxide station.

A:
Ah. The orange oxide, when ya finished it in these pots, it had to be transferred from a pot to a hopper, because it had to be carried to a plant, uh, a couple o' hundred yards away, Plant 4. So we sucked it outta there with a great vacuum system, called a gulper, gulping system.

09:01:41
A:
And that was uh, one o' the, kind o' the tougher jobs in denitration was, (showing with his hands) big long pole with a 3-inch, or 4-inch uh, flexible, stainless steel hose on it, and, suck all this stuff outta there. Was, it was a hot job in the summer time, but we weren't interes-, we weren't involved in any air conditioning, anywhere.

A:
So, we got used to it, you know. But anyway, sucked those outa there into 10,000 pound hoppers. 10,000 pounds in a hopper. Weigh it, do some paperwork on it, pull it outside, park it there, wait for the analysis to come in. We had t-, It had to, the UO_3 had to go through a mill, a milling process, and during that process, we would sample the UO_3 in these glass bottles,

A:
And uh, send down to the lab, and park the hopper outside, and wait for the analysis to come in. Make sure that it was pure enough, was the main thing. Uh, that it was UO3, that it had very little iron, or melibdim-, melibdimum-, (waves hand).

09:02:52
A:
Um, sodium was a problem. All those things that the extraction area had taken out, we wanted t' make sure that they were at a low enough level so we'd have pure uranium from that point on. So we had to wait then until we got that back, the analysis.

A:
When the hoppers were okay to go, and on an everyday basis. We would uh, somebody would, out on the pad would hook up with a little tugger, maybe 2, 3, 4, 5 of these hoppers, and a guy with a tugger, big heavy duty puller, 10,000 pounds in each one, when you pulled 5, it was a lot o' weight. He'd hook up and pull 'em over to Plant 4.

09:03:37
A:
That was the next step. And in Plant 4, they converted the UO_3 into UF4. Um, uranium fluoride, green salt, they call it commonly. They did that uh, through a series of reactors, (pointing from side-to-side, zig-zagging downward) they were just screws, really, that passed HF gas con-concurrently. The gas started in the bottom and went up, and the UO_3 came down.

09:04:07
A:
(Continues to demonstrate with hands) Changed into brown oxide up at the top, and basically converted into eventually UF4 at the bottom. Through mills and grinders, similar to what you had in denitration, except now, comin' out here, hot and in the hoppers first, and then in the cans.

A:
They had drumming stations there, big hoppers overhead, a guy here at a drumming station with the 10-gallon cans. Put the can in there, and uh, actually, the cans were on a roller, you put them up on the rollers first, and turn on the lever, and this green salt, UF_4, uranium fluoride, hexa fluoride uh, came out, into these 10-gallon cans.

09:04:53
A:
They weighed, hmm. Around 100 pounds it seems to me. Heavy. All, that's one thing about workin' in the plant, everything is heavy when you're dealin' with uranium, even with the compounds of uranium. They tend to get heavier as they go along.

A:
Ah, UF_4, And, that was, in Plant 4, I worked there, too, as a supervisor later on in my career. First 15 years, I was a chemical operator, but, and worked in the plants, in most of the rest of 'em, either as a first line supervisor or something later on.

09:05:33
A:
UF_4 was a tough plant to work in because there was a lot of uh, there were a lot o' fumes in there. Uh, hydrofluoric acid, uh, and ammonia they also used in there. Although we used 'em only in a number of places, they were in my judgement, probably the most hazardous materials we handled out there.

A:
Probably ammonia, um, concentrated ammonia was the chemical that concerned me most in terms of safety and health throughout my career, really. It was not, uh, uranium, or all this (hand gestures with fingers hanging down) bug-a-boo about radiation that uh, most people have, and, in the United States at any rate, you don't find it in other countries where they're so terrorized.

09:06:20
A:
But we did handle chemicals in great bulk form, hazardous chemicals. Anhydrous HF, and uh, anhydrous ammonia, came in, in tank cars, and if one o' those cars ever got loose from you, you'd be, well you'd be in a lot o' trouble. And we had some problems like that over the years.

A:
Mainly because it stayed down on the ground, and uh, um, basically invisible until you walk around the corner and walked into ammonia, which is almost like somebody hittin' ya in the nose with a fist, you don't know it's there. So you gain a great sensitivity when ya worked in Plant 4, and s-, some extent in the Refinery, and in Plant 8.

09:07:08
A:
We had uh, a number of occurrences over the years, and although, I'd like to say I think the plant was run in a safe manner, for the times, always. Bear in mind, these were times when you didn't wear seatbelt. Hell, half the time, half the guys who drove racecars didn't wear seatbelts, so it was a different perspective.

A:
Too often now, I think people uh, try to take today's standards and apply it back then and say, oh, you people were terrible back then. We weren't terrible. We were, we were ahead of uh, most every, and I've worked in chemical plants before. Fernald was extremely safe. Fernald was extremely safety conscious, uh, compared to Refine-All Incorporated, and a lot o' my friends worked at Cincinnati Chemical.

A:
And, and I'd worked a, short periods in other places, um, Cincinnati Galvanizing Company durin' the war, and when I was goin' to high school durin' the war. And I think about all o' these punch presses and all that with no guards, and belts exposed (laughing). My God, Fernald was an age ahead of that, most of Cincinnati industry.

09:08:25
A:
But, having said that, uh, there were problems we had from time to time. When ammonia'd get away from you or something, unloading a tank car. And that was mostly when that happened, then, in the processes themselves, there were seals to keep the chemicals inside, but occasionally, you'd lose one o' those seals.

A:
And uh, in that case you had, get outta there as quick as you could. So there were a lot of emergency kind of escapes uh, from things like that. I, I don't recall anybody ever ah, I had some guys pass out, uh, night shift was particularly risky sometimes with ammonia and that sort of thing, because uh, even during the day, you might see a little something in the air, at night you wouldn't see anything.

09:09:15
A:
And uh, if the win-, if you were downwind, we were always aware of the wind. And there were windsocks there of course, to keep that. One o' the things you always checked when you came into work, was which way the wind was blowing whether you were gonna be coming from the tank farm or whether it was away.

A:
If it was gonna be coming from the tank farm, particularly on the night shifts. You had to keep that in mind and kind a (sniff-sniff) keep uh, up on what they were doing over there, because uh, unloading tank car, and that, there were occasions when it got away from 'em. And you had to know which way to run.

09:09:47
A:
One night on the night shift I can remember a little guy named Bob Bagley who was one of the guys who worked there early in time with me. He was out behind Plant 8 and they had lost, released some ammonia over there at the tank farm and it came rolling through unbeknownst to us in the dark. And you know you wouldn't know it until it hit ya.

09:10:10
A:
And at that time you better,, you had just a certain amount of time to run upwind (laughter) and he for, he didn't know which way the wind was blowing and so he started running toward the Pilot Plant and I remember hollering at him at the time to go left because the wind was behind him and uh but he got out there about half way to the Pilot Plant and plfuut (sound effect) he dropped like a rock (laughter) .

09:10:34
A:
And uh, which it would do to you and I've seen that before with us, but we got him dragged out of there and into the clear air, and uh, he came around again. But you could be overcome by these things. Luckily if you work around a chemical plant all your life as I have, even before I worked at Fernald, you know chronic exposure to a lot of things, dust and 'nat is uh.

09:10:58
A:
Whether it's uranium dust or lead or any number of these kinds of things is uh quite dangerous because it's insidious. It gets in your body and it's buildin' up in there and, and uh you can build up a load on your lungs and not even know it and the body doesn't easily dispel that.

09:11:08
A:
Chemicals like ammonia and anhydrous and HF and that sort of thing are you're very aware of them, and they can hit you like a ton of bricks but generally your body rejects them instantly. I mean ah, you'll you know your eyes close, your nose close, your throat closes (grasps throat). You might lose consciousness for a short period because of involuntary reaction there.

09:11:46
A:
But in my judgement anyway, my experience and probably we got people, lawyers probably would not agree, I don't think they have any permanent effect. Uh, blow your nose, go get a drink of water and sit down for a while and you're okay. So we had a lot of those kinds of things.

09:12:04
A:
And Plant 4 was one of those too with a lot of HF in there. And if you got caught up on the top when they lost a seal at the bottom, you ah, it was a very adventurous to get down the stairs as quick as you could to get outside, get upwind (laughter).

09:12:17
A:
Uh, 'nat didn't happen, I don't wish to imply that happened all the time. But uh we did probably tolerate in the early years, a lot more than was in the later years and just before the shut down when chemical and process safety became um, not just at Fernald but in other places, more in front you know of everyone.

09:12:40
A:
But as I say, other than an explosion at Plant 9 in the very early days where a couple of guys were killed over there, I don't uh recall and I don't think in my judgment that handling those chemicals was much of a problem. For one thing we had all these plants, they were highly ventilated, fans up stairs, blowing out the roof and you know uh it blew away and dispersed quite quickly.

09:13:12
A:
But anyway, we were talking about production in Plant 4. And uh, canning up down through the various reactors which were just big screws (hand gestures) at to one end of the building and came back to the other. And a lot of contact from the HF coming up in that process to be, to simply it you converted UO_3 into UF_4. Canned it at the bottom.

09:13:39
A:
Put it on skids, fork truck took it outside. Put it in a fairly large warehouse. We had thousands of cans of green salt waiting analysis again. At the end of each process, why we took a sample from a can and sometimes there were small contaminants in these certain batches but the guys over in the lab who made up the batches of each succeeding step they would match 'em.

09:14:09
A:
Sometimes you could match a high iron with a load over here and you would come out over in the next step over in Plant 5 with an unacceptable ingot. So okay, we started at the beginning with the uh, ore coming in and we separated the ore into the nitric acid (hand gestures), we got over into the end of Plant 4 now where we actually have green salt, where we had ore coming in.

09:14:37
A:
The green salt once it was approved, was taken into Plant 5 upstairs. They mixed uh, green salt with uh a material to cause it to burn inside. And uh enclosed bombs they called 'em. Uh, that was uh more physically demanding once you got over into that area because you had to handle all these 10-gallon cans. Remember before we had more pretty much big containers that were all automatically filled and tugged around.

09:15:20
A:
But over there they had 10-gallon cans and although they move them around on skids with fork trucks. Why it uh, you had to pull the can off with a little hoist 100, 110 pound cans, dump them physically, and mix these uh, this green salt with uh (clicking fingers) uh, magnesium.

09:15:49
A:
Um when you had a nice mixture of magnesium which under heat would instantly burn. When it reached a certain temperature, uh, and you had that homogeneously mixed with the green salt, in this bomb about this high and this big around (demonstrates with hands) heavy, thousand pounds a piece, it would in an instant (click fingers) make a derby of uranium in the bottom. All of that intense heat, when it fired, and that's what they called 'em, they put these things in electric furnaces over in Plant 5 after they were filled (hand gestures).

09:16:24
A:
Uh, heated up, and uh, you guys watched the temperatures several hours there and you could see a little blip on the temperature when it fired. And uh let it cool down a while lift the bomb out, set it in first an air cooled tank, then in a water cooled tank, uh you were then ready to separate, which you knew by this time was a derby they called 'em of, in the bottom.

09:16:53
A:
They called 'em derbies because the bottoms of this bomb is rounded and really kind of looks like a derby hat if you'd turn it over (hand gestures) like that. Derbies uh, they had a breakout upstairs in Plant 5 where ya, a guy would take the bolts out of the lid of this bomb, a big round steel lid with a handle on it.

09:17:17
A:
Take that off, had a machine to pick these things up, invert 'em, shake out all the slag and with that you had a lot of this magnesium oxide that after it fired, uh was mag-oxide and a bomb. The uranium, dumped it onto a grate where the magnesium oxide, mag-oxide all fell out through there. And uh, what would not fall out was the derby.

A:
That was then picked up, put on a conveyer, guys chipping hammers and that, clean it up ‘cause there was slag stuck to it, and if you had a good one, why, you’d have a nice shiny metal uranium derby, ready for the next step.

09:18:01
A:
The slag itself, went through a grinder, and reused, this mag-oxide slag. Um, to keep from burning up these bombs, in the earlier step there, you had to put a liner in there. And it was a liner of ground up magnes-, mag-oxide powder. S-, they put it in a jolter, and that was one o’ the noises that you always heard at Fernald (gesturing up and down with right hand) ka-pum, ka-pum, ka-pum.

A:
What they did was, take this um, bomb that you had and they’d put down a mandrel in it, which was a center metal piece, big tubular thing with a hook, heavy. Could center it in there, so that there was only about an inch around the sides, and (gesturing tapping or shaking with his right hand) they you’d start this slag into there while it’s pounding.

A:
And eventually, after you got it all full, and it pounded for a certain amount of time, you could lift this center part out, and that big bomb you had would be lined with this mag-oxide. That's what you put in the green salt and the mag. And that's why when the thing fired off, it wouldn't burn through that steel,

09:19:13
A:
Which it would have. That was an insulator in there. And each time, though, when they dumped that out, they would grind all that up again, shift it, sort it, grind it up, pieces of metal maybe in it, make it real fine again, and keep using it all over and over again. Of course, you were makin' more of it all the time, this slag.

A:
So that's how the pits got filled, with a lot o' mag-oxide out there, and haul it away as you got an excess. You're always usin' some, but you're always makin' more than you needed. So eventually, they filled those pits out there with magnesium oxide out there with some uranium in it.

A:
But that was an intrinsic part of the uh, process out there, the pits, the waste pits. Because when we brought all this ore in, we only wanted a small part of it, and the rest had to go somewhere. So one of the reason they put that place out there in the country at the time, was to dig pits.

09:19:59
A:
And one of the uh, when the death bell came, as the environmental concerns picked up, that was basically the end of Fernald. I saw that long before we shut down, that they wouldn't let us dump this, and there were vari-, there was slag mag-oxide, but there was other kinds of material, raffinate was a material way back in the refinery that we brought out in a liquid form.

A:
And dried it. Later on, we filtered it, but we made a cake then and put it, we used to dump it out in the pits. You couldn't do that any more, back about, in the early 1980s, so we began filling drums, thousands of drums. Fernald almost became synonymous with drums.

A:
That was because they closed the pits, with the concern about the environment. But any rate, we were talkin' about Plant 5 and makin' the derby. Plant 5 was divided into two areas, the A and the B area. A area, where you reduced this green salt and made a derby out of it, we talked about that.

09:21:09
A:
And the B area, uh, you then took a couple o' derbies, and some various scraps of uranium, and with the intention of making an ingot. It might, an ingot usually just consisted of maybe just four derbies, or two derbies and uh, briquettes they called them, which were little shards of uranium that came from the machining operation next door, over in Plant 6.

A:
They make 'em into little biscuits like, and bring it back over, and some guys would take another pot, similar to the other ones we had, furnace pots. And uh, put maybe uh, you'd have a recipe; two derbies and uh, maybe some scrap, some briquettes maybe uh, 20 briquettes, 30, and other scraps. Maybe sawed off sample pieces of metal from the lab, little metal pieces.

09:22:12
A:
There were other various chunks of uranium that you would produce throughout the process that you would put all into this one big pot. Usually then, they would put in a few chemicals that were carefully weighed and balanced to give the thing a certain amount of silicone, or melib-, melibdium-, or a number of things they wanted in that to affect the hardness or the overall physical characteristics of the ingot.

A:
And they put a lid on that thing and put it into another furnace. And uh, when that got melted out, it poured down into a mold made out of graphite, and then you had your ingot. That was the product of Plant 5. Guys would take these out from under these furnaces, and there was a separator where you could lift the ingot out, lay it down on a skid, take a sample off the end.

09:23:15
A:
And really, that was the uh, at one point, that was the final product, early on. And they got the machining goin' over there and the rolling mill and all that, and it became an interim product, but in later years, they shut the rolling mill down and it came back to an interim product again.

A:
But in the early days, when we were first started. The rolling mill was going, (clears throat). Take the ingot from Plant 5, they had a rolling mill which was a, rollers a long, probably the longest building out there, and they take an ingot that big around (showing an oval about 10 inches across with his hands).

09:23:50
A:
And, uh, and although I didn't work in there, ever, really, while it was running, and so I know the least about that of anything out there. I think it was a matter of heat, heating this ingot up and uh, start rolling it out, rolling it out, rolling it out until they got a diameter they wanted. And when they had that diameter.

A:
A big long rods, they would cut 'em off and eventually cut 'em off into, maybe that long (shows with his index fingers), 12, 14 inches long, fuel rods. And uh, that then was eventually uh, heat treated and machined down, to specifics to fit into reactors.

A:
They might be fairly long; they might be shorter. There were a number of reactors at Oak Ridge, and Hanford, and the Nautilus, one of the big things there, we machined rods for that, the submarine, the first nuclear submarine.

A:
Uh, so they would fit (demonstrates about an inch opening with his right index finger and thumb) the specific holes in the reactors. That's what the machining area did over there. Later on, why, they got away from that role and they got into an extrusion process that they did up in mostly up in northern Ohio, maybe you talked to some people about that.

09:25:17
Q:
Ashtabula?

A:
Uh-huh. That's right (clears throat). So we got outta that business.

Q:
So the rolling mill was not used in later years?

A:
Hm-um.

Q:
I didn't know that.

09:25:21
A:
It was only used, well, you know, it's a matter of what "later years" are. I mean, ah, I was there 40 years, and uh, I don't know how long it was used, maybe 20, 18. But it was not used later on, they did other things.

Q:
Now were you pretty aware of, obviously, you were very knowledgeable about the process, did you know anything about the processes of the other plants at all, what they were really gonna use the rods for, did you ever travel there?

A:
When I was an operator for 15 years, no. We didn't know what (clears throat). Occasionally came out with a little book or somethin', but uh, there was a lot of um. Although we had a pretty good time, and there were, oh, I don't know, it wasn't stringently uh, enforced and controlled the way you are now, let's say, with the concern about radiation and that.
09:26:35
A:
But, I'd say there was a lot o' plant discipline in that you were expected to be on your job. National Lead was a pretty tough company. Expected you to put out a day's work. In the, when we were starting up, it was fairly loose, but as we got into production, as the demand for uranium ah, increased in the early years, in the first decade, uh, when we had a lot o' funding, and the Cold War was building up.

A:

Um, when you went into your job, you were expected to be there, and if you took off to go somewhere, why, somebody would know about it in a hurry. Under no circumstances would you be allowed in another plant. You would walk, if you left the refinery and walk into Plant 4 over there, some supervisor would nail you right now (chuckles).

09:27:21
A:
And ask you what you were doin' there. You know, so it was not a casual atmosphere where you moved, you could have plenty of socializing with your own work mates, but uh, no, there was not much spreading of information at all. At all.

09:27:37
A:
You didn't know what was goin' on over there. We had a, as I say, there was an unfortunate accident over in Plant 9, in the early years. I forget what year it was, but they had an explosion over there with uh, with metal dust. And a couple o' guys got killed, and burned in there, but (laughing) I don't think we knew about it 'til the next day!

A:
There might 'a been some rumors goin' on, but it wasn't an era where there were company announcements about things like that. Um, you just did your job, and let other people take care o' their jobs, and that's, that was just an era, it was a time in the country, you know.

09:28:20
A:
Plus, you had all this security concerns at that time, I'd say, uh, later on there became a concern about the radiation levels and all that. I think in the early years, the obsession was security, about the same. About the same as it was in later years, about radiation.

A:
A lot o' guards, a lot o' checking of badges and rechecking, and a lot of uh, challenges, What're you doing here? You know, stay outta this area. Security clearance only. Even if you had a Q clearance, if you didn't have any business bein' there, on your way (laughs).

A:
So, yeah, it was, each plant was into itself a, almost like a community, but not between plants. It wasn't 'til I became a supervisor that I was assigned to several other plants that I really got familiar. Although, as an operator, I did work over in Plant 5, I mean I was transferred, they shut the refinery down one time, in the '60s for 3 years or so, and we were kind a caught up with that portion.

09:29:34
Q:
We need to switch tapes again (laughs).

A:
Okay

10:01:01
Q:
Very good, where were we (laughs)?

A:
Uh, Plant 5, I guess, we were talkin' about rolling mill and all that, it was, I suppose it was used quite a bit for almost 20 years, but ah, the last 20 years I was there, it was down. Process changed.

10:01:21
Q:
I wasn't aware of that.

A:
But I wanted to mention before ah you know ah we were talking about the ore coming from South Africa and later it came from out here. But uh one of the little sides we were talking about uh, horse play and having a little fun, you would get these drums, they come in drums, ore from South Africa. And you'd get strange things in those drums sometimes, snakes.

10:01:45
A:
I never saw any big ones but I saw some weird looking snakes, green, orange snakes. I'd seen snakes around here you know, but not like that. And we used to put 'em in a guy's locker or something. We had these little lockers where ye kept your gloves you know (hand gestures), and (laughter), so uh that was uh the kind of humor that went on there, find one of these wiggly little.

10:02:09
A:
Looking back on it I think geeze, it might have been poisonous as hell, some of these snakes, (laughter) seeing they came from Africa. Seems to me nobody thought about that. We kind of identified those that were more sensitive to snakes than others, you know and they could almost count on once in a while openin' up their glove locker and havin' a friend in there (laughter and gestures).

10:02:31
Q:
That's great! Now there's some other unusual and funny things you have in you, you mentioned during your um um (A: pre-interview), the pre-interview. And one of them was about a plant manager that wasn't so popular (A: Oh yea. Laughter Hm, hm, hm). Could you tell us that story?

10:02:52
A:
Yes, well uh that's right. We always had uh I suppose um a maybe a revolutionary faction out there, you know, some guys that uh felt constrained by all of this uh, but they would get even one way or another. And we did have one plant manager who was uh I suppose some people felt he was more dictatorial than most. Although in that era you know, there was just more discipline in the workforce there.

10:03:25
A:
And that's the way National Lead operated. It was a tough company to work for. Uh, which wasn't all bad. I kind of enjoyed knowing what I had to do and knowing that uh everything that everything was uh, everybody else was being required to do the same thing. There wasn't much difference. Anyway, uh and I said in the pre-interview I wouldn't uh mention the guy's name because uh we might have his family here yet.

10:03:50
A:
Uh, but we thought it was funny at the time. One night on the night shift uh when there had been all this talk about how bad the discipline was and it could have even been maybe during contract time or something. Sometimes you get a little friction built up there between management and the unions at that time, but um I goin' to use a synonym here I guess uh, rather than a blank.

10:04:14
A:
Uh, well we came in one morning, drove in the access road, still you have now. And uh one thing you looked at on the access road was uh (hand gestures waving back and forth). The roof of the Refinery was like this, and somebody during the night had got up there during the night with a paint brush and they painted on there "Jones' hell hole."

10:04:35
A:
And I mean it was in six-foot letters at least, maybe eight-foot letters. I mean it was all (sweeping hand gestures) the way across there (laughter). And that really got a lot of attention. And there was some of that kind of stuff went on. Um, some of it was probably ill advised.

10:04:52
A:
Uh, looking back uh it was, I think I'd also mentioned that some of the areas during the night shift, a lot of areas kept going just like daytime. There were other areas that were not operating during the night shift but the guards had to go through and punch their clocks.

10:05:12
A:
So there were guys who would get a set of coveralls over there in the locker room and stuff them full of newspapers and maybe a helmet on top of it and some gloves on the hands and 'nat. String it up maybe on a rope in some area where the guard had to come through here, and they knew (laughter) that he had to come around the corner.

10:05:31
A:
They might even make it look like this guy was hanging (hand gestures) from one of the rafters there you know. There was a lot of that kind of stuff went on there too. Uh, looking back on it, it probably could have caused some heart attack or something, but uh to me it uh was a little more relaxed and light hearted.

10:05:51
A:
I think there was a lot more tolerance back then than there is now for that sort of thing in the workplace. You know, now you'd probably have somebody suing, or, or taking you to EEOC or someplace, some terrible place (laughter) to get a beatin' up on. (Laughter) but in those days, it was pretty much wide open. You might get fired you know but uh there weren't any other repercussions.

10:06:15
A:
And not much of that, five days off or something. Uh.

10:06:19
Q:
Now you'd mentioned that women did not work on the process side until much later, (A: Yea.) Um, what, how did things change when women were allowed, or what was the first couple of weeks like when women were allowed to work on the process side.

10:06:36
A:
Well, it depended on where you were I guess. Um, as I said we didn't move around very much, so uh I think um I think uh, the, me, it was a more ruckus area before the women came, you know. Uh, guys started cleaning up their language and all that. You know the language has gone to hell in general uh, I think in our movies and all that, now-a days,

10:07:05
A:
But in real life, at that time at least, uh the profanity level and all that started dropping down. There were, you know most of these guys were uh, these were pretty substantial people that worked there. You had to go through a tough uh security check and uh you know you had a lot of God-fearing people from over in Indiana out on the farms and had a lot of respect for women and that's the way they were brought up.

10:07:30
A:
So I think the immediately uh, probably less fun when the women started, Yea, yeah. A lot of the free wheeling uh, uh more of the locker room kind of, and that's really what it was, you know. When it was all males out there it and it was kind of like the Army used to be it was more of in a way it is maybe in locker rooms and 'nat today in sports, where the sports are separated. You know football and 'nat.

10:08:00
A:
Uh there was more of that atmosphere, banter between the males and when women came in, why it became a little more like, like a mixed society is, you know more there were restrictions I think and a little, little dampening of some of the things that went on there.

10:08:17
(Background voice, gotta try it)

A:
You know you talk about high school and (hang on we got another roll here) okay, maybe I better not talk about anything (hand gesture and laughter all around). Okay.

10:08:28
Q:
Um, during your years at Fernald, we've talked just previously about the security clearance and those kinds of things. How did you communicate with your friends and family about your job?

A:
(Shakes head, "tisk") well I didn't, really. And um, (clears throat) not very much, you know unless something happened or whatever out of the ordinary, but uh, mostly the job was pretty boring. You know I have a, had a pretty good view of the whole thing, uh later on, but that's over a period of forty years. On any given time I worked for years in denitration, suckin' these pots out or whatever.

10:09:10
A:
Did the same thing every day. Uh, I just didn't talk about my job with my wife and kids and 'nat really. Uh, not and because of the security really, and who knows, it might a had some effect. We were urged over and over again not to talk about the job. But uh, uh I guess I still don't. I guess I'm just not interested in talkin' about it.

10:09:36
A:
I always had kind of a habit and maybe it was some discipline I had, and maybe a lot of people had and maybe most people still have, maybe uh, I can speak from myself. But um early on I felt uh for my own mental health an 'nat, why, when I left a job that was the last thing I wanted to think about and um, I did.

10:09:57
A:
Later on when I had more stressful jobs, in manager jobs and uh then I was more deliberate in that, an then when I leave here I'm not thinking about any of this. (Laughter) And uh so, I guess that's all I can say about it really. I just never had the urge and uh this is my second, marriage but neither of my wives had any interest in hearing about and I didn't really want to hear about a lot of their job when I got home either.

10:10:29
A:
You know, you got trouble with the kids an 'nat, you do yours and I'll do mine. Let's keep it to ourselves. I guess that's the way it was. It's a culture thing I guess (laughter).

10:10:38
A:
Last thing I wanted to hear, although you know, come through the door, "You know what Doug did today?" I had a few of those things you know but I think we agreed to dispense with that. So no, it was never an issue. Never uh much interest. I never felt my job was very interesting anyway, um to anybody but me, although I had, I had a lot of interest in what I was doing a number of times.

10:11:03
A:
Sometimes I had jobs that weren't so interesting. (Looks up and around) Going to run those birds out of here? (Laughter) There's probably a cat down there somewhere. (Laughter) Usually when they get excited like that there's a cat in the neighborhood. There was never an issue. I didn't like to talk about my job when I was not there and uh and I didn't for the most part.

10:11:21
A:
Unless there was an extraordinary, you know there were some people injured once in a while, or you know. Somebody got fired, or somethin'. You know. But never a part of my home life, tried to keep it away from them. Really.
10:11:39
Q:
Now, how do you feel Fernald contributed to America's mission during the Cold War?

A:
Hmm. Well, I guess you may have heard that before, but I take a great deal of satisfaction in uh, the part of um, that we did. Fernald, and other nuclear sites in the Cold War. You know, we uh, I'm very proud that how hard we worked. There was a great work ethic, particularly with National Lead. I mean, there was no messin' around, it was get in there and work.

A:
And uh, although, I think, work is becoming a dirty word with some people now-a-days, or at least I hear. I hear the government say, well, you can, not necessarily the Federal Government, but agencies, you know, well, these people have to work too hard, or this was a sweat shop. These people over in Asia are workin' too hard and not makin' enough money.

10:12:44
A:
Well, maybe that's the case, I don't know, but I always thought that work was the privilege. 'Course I came outa the 1930s, so uh, work was what I expected to do when I went there. So we produced a lot of uranium, and we produced it cheap. Cheap. Uh, certainly Fernald was a key, a beginning. Feed Material Production Center.

A:
You know, we fed material down to Oak Ridge and to Hanford, and those areas where the weapons were being made. And we fed it cheap, within budget to where they could make a lot of 'em. And so to that extent, it appears to me, with, in retrospect, from the viewpoint of history here, that uh, the nuclear threat, the nuclear deterrent, that strategy, I think it worked.

10:13:37
A:
Uh, we went through a lot o' years without a major conflict. Of course there was the Korean War, and the Vietnam War, which was a terrible thing, but a fairly small war (shrugs shoulders with his hands palm up) 10 years, and unfortunately, like 60,000 young people were killed over there. But um, we lose that many in other kinds o' accidents.

A:
I was readin' in the paper this morning, 40,000 people are killed in the United States by guns in accidents a year. So I think the nuclear deterrent worked, and I think uh, Fernald, uh in a nutshell, uh, our site at the very beginning was a major contributor. At this point in my life, certainly, I take a lot of satisfaction.

10:14:31
A:
How many people can say, I took down world Communism, or had a significant part in it? I feel it was a significant part. And uh, people, when I see people in Poland now, I saw an article on Poland the other day of how the good life is coming rapidly over there. It's not unfortunately, in Yugoslavia, I guess, and I see some o' those poor.

A:
But in many areas now in Europe now that were in (swallows) under Communism, had pretty sad lives from a standpoint of materialism, but also personal freedoms and that sort o' things. Now they're really startin' to flourish over there. And it's workin' well. I uh, don't wanna be immodest about it, but I uh, take a lot o' personal satisfaction in that I had a hand in that.

10:15:31
Q:
You mentioned the nuclear threat during the Cold War. Um, from your perspective, what was the typical American's mindset during the Cold War? Regarding nuclear obliteration, I guess.

A:
(Pauses to contemplate his answer; nods). Well, it was certainly something that was hammered on, talked about a lot. They sold fallout shelters. That was a big business at one time, I can remember that. People had them in their back yards. Uh, kind a like the same guys that're selling siding now, and that. (Laughing) I think. The sell nuclear, kids were.

A:
I see a film on it once in a while, kind of reminds me, but kids were taught how to get under their desks and hold their head. See if that's gonna really help much, but I guess it could help a little if you were far enough away, and flying glass were a problem. Uh, but you know, I think it went on for so long that people got used to it and I don't think there was any trauma, real trauma for normal people.

10:16:32
A:
Now, there are some people you know, that are the same people that maybe were terrorized because they lived within 10 miles of Fernald or something when the media began to focus on that. But I think the average person just kind of took it in stride after a while, and decided that if it's gonna happen, it's

gonna happen, you know.
A:
I see once in a while you know, some docu-drama that's crooked up. Uh, like the uh, Cuban Crisis. Uh, you know, Kennedy and they turned the ship, we told 'em to get their missiles out o' Cuba, and I can remember livin' through all o' that.

A:
And uh, when they have all these dramas on that, they show all these people that, they show all these people that are just, oh my God, they're terrified, you know, there's gonna be a nuclear holocaust any time. You know, I don't remember much o' that.

A:
I mean I remember comin' home at night and turnin' the 6:30 news to see what was goin' on down there, but it never, it never crossed my mind it was gonna get outta hand. I, and I don't know if that's due to my personal optimism or what, but I don't think so.

10:17:41
A:
I don't recall people I was workin' with being traumatized. Most o' this trauma that's shown in these uh, movies of that era, the actors that uh, they have in these movies, and they portray all o' this nail-biting (puts his finger tips to his mouth) and (laughs) pressure. I didn't see much o' that at the time. I think. I don't think the average American worried about it that much, until, until it happens, you know.

10:18:11
A:
But it was an interesting time, no doubt about that. You know, I can remember things happening over the years; certainly Kennedy's assassination was a, somethin' that really affected the nation, but I, I didn't see um, I don't recall the Cuban Missile Crisis or anything like that being a tremendous traumatic affair for the population in general.

Q:
Now you mentioned uh, ah, sort of the mid '80s, when a lot of the media attention came upon Fernald

A:
Um-hmm.

10:18:46
Q:
And the environmental problems that it may have caused. Those days before shutdown, and those days when they were shutting the plant down.

A:
Um-hmm.

Q:
Can you tell me your reaction to that as a Fernald worker, a long-time Fernald worker?

A:
Well, I used, talked about mid '80s and that um, ah, you know, we've had our ups and downs over the years. As far as the budget and Fernald and all that, although I was never laid off, and um, ah, I was, became a supervisor in '67, I think, and there were supervisors laid off from time to time, too.

10:19:27
A:
And we were up and down, and they would hire 'em back, but I was never laid off. Um, one thing was, I worked in so many plants as an operator, I had a pretty good overall knowledge. I never worried about being laid off.

A:
One of the things I enjoyed about my career at Fernald, I think, was that I worked there 40 years and I never expected to lose my job and to be laid off, and I never was. You know, and I, it was a stabilizing effect in my life. We got down pretty low, in the late '70s, it seems to me, but when Ronald Reagan was elected, when was that, I can't remember any more, early '80, somethin' like that.

10:20:4
A:
Any way, he came in with uh, buildin' up the armed forces, you know, we had gotten in through the uh, I guess, the Vietnam War and all that, and after that, there was kind of the rejection of the military and maybe even the things.
10:20:23
A:
But anyway, Reagan came in with the Evil Empire and all that, and boy, the things picked up. The Refinery, they threw money, I remember one time, um, we went back and tried to restart the Refinery, kind of on a shoestring. And we got it goin', and we, it did run a couple of years, uh, with a very modest number of people.

A:
But when Reagan got in, I can remember my boss called me one day and sayin', you know, I know you need a lot o' equipment over there. We need to know where we can spend, and I forget what it was, it was like five million dollars in the Refinery. And I need to know after lunch, what you want. Tell me what you want.

10:21:07
A:
(Chuckles, then laughs) And uh, I was a general supervisor in the Refinery at the time, so I got all my supervisors together and we tried to run down a list of what we'd like to have, dust collectors and all o' that. You know, more tanks, more pumps. We had uh, we could hardly think of things to get that much money (laughing) so we built up, you know.

A:
And uh, had a lot o' money, and I think that was when we really put our heel in the face of the Soviet Union. And, and then Reagan was even talkin' about Star Wars, and then uh, he was gonna be able to catch all these Russian missiles (laughing) comin' in, and all that and I think the Russians gave up.

A:
They thought, man, we can't, we haven't been able to produce enough uranium, and now they're gonna do this, you know. So uh, that was ah, that was a mixed emotions through, when we started shuttin' down, you say, well. My clue was when I was called on a very short notice.

10:22:11
And I was, best of my recollection, general supervisor over in the Refinery, and they said you're not gonna be able to pump any more raffinate out into the pit any more. Now, on any given day, we pumped thousands of gallons out into the pits.

A:
'Course, what happened out there, was the solids settled down and the water ran off. You know, and that was from the extraction area. That's when we separated those things we didn't want went into the pits out there. And boy, that was, what're we gonna do now? And ah, well, we got over there and just a hand full of people, three or four people, and we thought, well, we're gonna filter all o' this stuff.

10:22:50
A:
We had some equipment sittin' there, we weren't usin', big filters, oliver filters, over in the hot raffinate area, from an earlier era, been sittin' there 15 years, and ah, so we got out, over there and started runnin' those things, and had some good operators. I had operators that could run anything. I mean, I had guys in there, you know, guys with maybe not with formal education.

10:23:15
But could go into a building that was shut down for 10 years, that they'd worked there years before, turn on the lights, start pushin' buttons. If this didn't work, they could figure out how to get it fixed, or fix it themselves, which they weren't supposed to be doin' (laughing) but we had some amazingly talented hands-on people there, really.

A:
Glenn Blue, and Steinmetzes, and I can think of all these kinds of people, you know, that were really great, thinkin' back on, it's just really great to work with. But anyway, that was the beginning of the end, when they shut the pits down. Because we began collecting all these drums, and then ah, damn, the drums started rusting, and then all the more and more environmental concerns startin' to.

10:24:02
A:
People startin' to look at the drums themselves now, that's a big problem where it hadn't been before, and ah, and slowly but surely, we got into the environmental issues. It was a tough time, though, because most of us were brought up in an era where production was the key, and ah, if somethin' got spilled on the ground or whatever, why, we'd shovel it up, but it wasn't primary focus. It wasn't a big issue.

A:
Luckily, most o' the stuff we had out, the place was designed, well built. It was coverd with limestone. That was the material of choice, all over the ground and cement. If you had acid spills, and we had spills, ah, it was neutralized very quickly in the limestone and the cement. It wasn't a big problem. We had some airborn emissions, but most o' the gases, they dispersed pretty quickly.

10:24:57
A:
And as far as dust going out, uranium is very heavy, and I don't see, feel a whole lot of it cleared the site, most of it, (gestures overhead) plunked down on the ground on the site. That's why we're contaminated out there, and we're not much contaminated outside the site.

A:
But there were a lot of um, lot of ah, difficulties with a lot of the people focusing on the sensitivity to these things. The supervisors, managers like myself, at first you weren't sure they were serious about that, you know. And we'd get threats from the staff management, until we got the picture, then we had to get our supervisors focused, and uh, then we had to get the operators focused, you know.

10:25:46
A:
And it was a very difficult transition to get to where they are now. Uh, it terms of sensitivity to spills and airborne emissions and radiation areas and all that sort o' thing. And it was a stressful time, that was probably the most stressful time, during that transition period when we began to shut down, and focus on all o' this, ah.

A:
When the need for production simultaneously came about with the environmental concerns, it was tough, it was tough, tough to make that change, uh in mindset.

10:26:27
A:
And ah, we had people that, I had to ah, basically get involved with the termination, didn't terminate 'em, one of my supervisors, because of a spill at night. And ah, they, a small spill, but we got to where a spill that big, (shows area with hands about 10 inches around) was a spill. A lot of paperwork involved. A lot o' people didn't' wanna do a lot o' paperwork because of a spill.

A:
If it happened at 2 o'clock in the morning, it was only you and two other guys saw it, we can clean it up in two minutes. There's no problem, there was no harm done. There was no problem with it. And um, these guys cooked up a story, and um, and uh, but one of 'em talked on their separate interrogation, questioning, and the supervisor of course, ah, he was gone at that point.

10:27:23
A:
You can't lie, you know, we always had enough discipline in there that you could put up with a lot o'

(Tape runs out; continues with the next one)

Tape FLHP0081

11:01:00
Q:
Yeah, in fact I'm gonna, oh great, okay. How did the process years and cleanup years differ?

A:
(Nods) ah, I guess ah, the process years in my recollection were less stressful, ah, harder work, um, more fun, because, ah, lot o' the process, a lot of the processes and equipment as delivered, didn't work so well, and you could make it work.

11:01:33
A:
The, we had a lot of engineers, several, Al Cruzman, others who were really hands-on engineers at that time. And they probably had a uh, a kind of a freedom that ah, probably today, engineers don't have very much. Now today, they have to get on a computer and uh, do all kinds of calculations and make models before they do changes.

11:02:00
A:
We didn't do that. We had a welder there with a cutting torch, and a couple o' millwrights, and uh, we'd get new equipment in and try to make it work and sometimes it wouldn't. And uh, the engineer talked to operators and supervisors, well, maybe we need to do this or this. Cut the torch, cut half of it off. (Chuckles) get another thin, weld it on there, you know. Speed it up, put a new motor on it.

11:02:23
A:
And there was a lot of that hands on kind of stuff, and it made for a very interesting and kind of fun time. Um, as we were saying, we had guys come around with a tow motor ah, when it was hot in the afternoon, they had lemonade in the back and you could ah, you could buy a cup of lemonade there if you were hot, get out a few minutes.

11:02:47
A:
There were people that in their spare time went up to the barber shop, there were a couple of 'em I think. There was one in Plant 6, there was one in Boiler Plant, um, get a haircut (laughs). There was a, there was a clandestine business goin' on there, and the produciton was being put out there at a record rate at the same time thought.

11:03:07
A:
So, I think the freedom that uh, maybe lack of layers of control that later became a part of the cleanup here, um, made it more fun ah, really at that time. Kind of a better place to work. Cleanup era was, ah, by that time we became, ah, more obsessed with the control of nuclear materials and that sor of thing, and they were lowering, lowering standards.

11:03:40
A:
Those low level of contamination that were pretty much ignored at one point. 'Course you had, and one point I would want to make in our um, I don't mean to imply that safety and industrial health was ignored, or for that matter, radiation and nuclear safety. Um, we always had that. We had equipment when I started up there just as good, for the time, if not better, I think that what they have now.

11:04:13
A:
By that I mean, our goggles, we had chemical goggles (gestures with his hands around the sides of his eyes) rubber goggles that I think were basically World War II. Ah, like aviator goggles that were much better than the ones they got now as far, or than we had later on you know, in the, in the ah, process. Uh, we had essentially the same respirators from the very first day in 1953 that I started.

11:04:38
A:
No doubt quite a bit's been done with the filtration material in, in, in there, and a lot's been done with fitting and um, procedural use. But the equipment itself was there to use, from the beginning, and essentially the same equipment that they use now. Uh, they use more of it now because there's a concern about minor radiation. Uh, if we got contaminated on our coveralls or on our clothes, ah, you went over to the locker room and took 'em off and took a shower and put clean ones on.

11:05:16
A:
Now, they, slowly, while I was still working, it became a philosophy not to get 'em on your clothes. You know, so you put on um, disposable uh, coveralls or something like that so you didn't even get it on there. But it was not a big deal to get that kind of material we had.

11:05:35
A:
So, the further we got into the cleanup era, the cleaner it had to be. The more the focus was on um, not gettin' anything on you, the more the microscope was er, was out to find some a little bit of this a little bit of that, and to that extent, I think it made things harder. A lot of people, the cultural switch was tough when you were used to being covered with uranium.

11:06:02
A:
(Snickering between words) You know, lying inside of furnaces cleaning out black oxide, lying in there, in front of Plant 8, the furnaces the hearths (shows about 18 inches with his hands) were only that high. During our regular quarterly inventories ah, we rattled the furnace out, but you had to get in there with a brush, and brush all the uranium from one hearth down to the next to the next.

11:06:22
A:
Be in there and black, you know. You'd be covered with black oxide. (Chuckles) And it was difficult for those guys and a lot of us who by that time were supervisors or managers to ah, refocus on the importance of getting even a little bit on you or on the floor. So ah, that's what made the cleanup um, but on the other hand, I think the people were happy to still have a job.

11:06:46
A:
Ah, there were those that thought they, (laughs) everything would shut down and they'd walk away and they wouldn't have a job, you know. So ah, that was not the case, ah, it didn't happen, so it was decidedly less fun, the cleanup era.

Q:
How do you feel about ah, the cleanup efforts that're going on at Fernald now?

11:07:16
A:
Well, I can't say as I follow it too closely. Ah, I have been involved a little bit out there since I retired. And it looks to me like everybody's doin' a good job, under the *very stringent* rules there are today I'm amazed how um, I'm amazed at the patience everyone has, and this change in culture to be able to get the work done.

A:
You know, I think, when ah, that's one thing, my perception any way. I think in the early days of the cleanup, there was such a phobia about uh, handling nuclear material and how to handle it and what's acceptable and how much and, that we nearly came to a standstill at time. We would plan for months to move a drum from here to there practically.

11:08:04
A:
I do believe uh, that there's been an evolution that's gone on uh, in the years mostly since I've been retired, since '93. Where people probably have more specialized equipment, more specialized procedures, and uh, they probably can get more done more quickly, and my perception is, it's gettin' done. It seems to be moving right along now. Maybe.

Q:
One of the ah, new terms they're sort of talkin' about around, uh, on site a little bit is uh, folks like you who gave most of your career to Fernald, um, they're referring to you, people like you as the Cold War Warriors.

11:08:57
A:
(Laughs) I've hears some of that.

Q:
Uh, How does it make you feel to be called a Cold War Warrior?

11:09:02
A:
Well, I'll have to say it kinda ties in, as I say, I got satisfaction from workin' out there, and from what happened with the Soviet Union kinda tied together too, what I did may have had somethin' to do about that. Warrior is kind of a strong term I think.

11:09:24
A:
Uh, you know, it was an industry that was good at that time and uh, I was happy that I could put bread on the table and bring the kids up and that sort of thing there. There probably were some warriors out there, people probably who lost their lives um, in this thing over in Europe, in, in Communist areas and maybe CIA people.

11:09:52
A:
And certainly uh, Vietnam War, there were real warriors there, you know, and it was ah, had all to do, all this stuff tied together. Uh, so uh, I don't, I don't think it's, I don't think it fits very well tell you the truth. I mean, we, we were war workers, a very similar to the way people in the second World War were idealized to some extent.

11:10:19
A:
My mother worked at the Wright plant makin' airplane engines during the war. She could barely operate a can opener. She was a great mother, a great cook, and all that, but she was certainly not mechanically inclined, and yet, she went to school and learned to run an OD or an ID grinder of some kind and went out and made cylinders for airplane engines durin' the war.

11:10:40
A:
So uh, and that was really somethin'. So to that extent you know, there was some involvement, and it was very similar to those people there. And uh, I think warrior uh, is something of a misnomer you know. We were workers in the cause for the cause maybe but uh, I think there is a tendency to, there is tendency really to look back just as we were talkin' about the Cuban Crisis.

11:11:07
A:
And that, to place a little more drama on subjects that went by almost unnoticed to some of us. (Laughs) when you look back and specially, when you're makin' a docu-drama and you're tryin' to encourage people to watch the television. Although I did see a thing in the paper about Cold War Warrior, some kind of certificates that they're going to issue.

11:11:29
A:
If you apply for them, and um, as a matter of fact, I wrote away to a place, I never got an answer, in Washington, about that. Because I thought I'll get some of these certificates maybe for some of the over-the-hill gang when we have lunch once in a while. I'll make a presentation, at my lunch, but (laughs) for some reason, it must have fell in the crack, I didn't get any response on it.

A:
11:11:55
But uh, my personal feeling is, it's somewhat overdone. The terminology (laughs).

Q:
Now there's quite a bit of land of course that Fernald sits on.
A:
Hmm, 1200 acres.

Q:
Once the plant is torn down, what would you like, what would you personally like to see done with that land?

11:12:21
A:
Hmm, well, I think they would just put a fence around it and monitor the place, and uh, maybe put a little building up front with a, some description of what was there. We all like to be remembered for a short time anyway, nobody's remembered forever.

11:12:43
A:
But I think a lot of these ideas I see are uh, about makin' a park or (laughs) or uh, a playground, or uh, to me that's crazy. I mean uh my God, the, the liability. I think uh, no matter how good a job of cleanup people do, I think if somebody digs far enough, they'll be able to stumble across somethin' and sure as hell, they'll be down with Stan Chesley and suin' and uh, you know.

11:13:16
A:
I, when you can buy land up in Ohio here, and although we are havin' a problem with urban sprawl, and certainly a concern of mine. One of the things that I'm involved with now, tryin' to stop some uh, apartment buildings goin' up down the street here, there's still plenty of open country, and when you can buy an acre of land for $300 or so.

11:13:42
A:
I know right in around here it's, along Harrison Avenue, it's 30,000, but there are plenty of areas where you can buy acres of land relatively cheap. I can't imagine why you'd wanna spend millions and millions of dollars to clean up that site out there so it could be, so you could do the same thing on it you could do five miles away on some land some guy wants to sell anyway.

11:14:07
A:
You know, I think they need to monitor that, to clean it up pretty well, whatever the standards somebody had set. And unfortunately, it might seem like a waste of good land, but how much money are you gonna put into an area like that?

11:14:21
A:
You know, there are, you know it's a fairly small amount of land as far as I'm concerned. They can put a fence around it and just chalk it up to it was money well spent. Uh, you can drive into Chicago and you can go for miles alongside of places where steel mills were where there's not a blade of grass. Not a blade of grass. Pittsburgh's the same way.

11:14:44
A:
There are a lot of areas that're uh, that are just wastelands because of other industrial sites you know. And uh, I guess eventually, it doesn't have the stigma of the radioactive material though, so uh, I don't know what they're doin' in those places, probably, eventually it'll be used, but, nah, I think they ought to clean it up the best you can right now.

A:
And uh, put a fence around it, have some security out there, maybe have a little memorial thing to talk about what it was, and give it some benign neglect, as one of our statesmen said many years ago, for maybe 50 years, and then see. I think a lot of the concern about what they were concerned about here in this era, of uh, litigation and all that, a lot of that'll be passed away by that time.

11:15:43
A:
And maybe they can go in there uh, and build something, without all of this hysteria surrounding it. But I think, let's let it sit 50 years and think about it a little bit. I guess that's the best I could do with it (laughs).

Q:
Is there anything you'd like to add, anything that we didn't cover, any stories you wanted to tell, that I didn't ask the right question to get?

11:16:07
A:
Hmm (shakes his head) well, you know, the time, seemed like it took a long time but then it went by so fast. Um, I uh am losing a lot of my co-workers now, you know, for whatever reason, old age, something lettin' go, goin' south on 'em, and uh, I just have a lot of pleasant memories out there. Particularly before the uh, all the stress and the focus of uh, pop culture TV, uh got involved in it.

11:16:51
A:
I'm certainly glad that I cut that ad outta the paper. I couldn't think, I can't think of anything, I can think of the things I'd a rather done I guess maybe. At one time I wanted to be a pilot, I had a private license. My friend that I grew up with and that we owned an airplane together, he went on became a pilot, flew for 30 years, not with an airline, but corporate pilot.

11:17:26
A:
And uh, but he said that was the most boring job he had in his life, and the last 10 years before he retired, why, he was, he got uh, was workin' on software with computers, and uh, so that wasn't an exciting life either. And uh, you know a job's pretty much a job.

11:17:48
A:
Worked out fine for me, I get a nice pension now, you know. My medical's taken care of, we live in a nice place, kids're grown up, son went to Xavier, graduated. (Pauses) things worked out great, and I, I really, uh, I owe it to the job I had out there. And it was a good job, and I got a lot, was promoted far more than my ah, modest limited talents uh, deserved, just through the luck of the draw,
11:18:24
A:
Westinghouse came in particularly, uh, Bill Britton, I thought was a great leader, particularly was a mentor of mine, you know, he was very helpful, the perfect guy, I think for the time. He took a suit outta that transition. Many of the people from National Lead uh, quit at the time Westinghouse came in, and that was right in, because they could not change, culture change.

11:18:56
A:
Culture change is very difficult. We did see that, I didn't even know what it was, but I, I know what it is now because I had good, I had friends of mine that quit, when Westinghouse came in, and some of them were of retirement age.

11:19:18
A:
Some of them quit and went and got other jobs because they didn't like, procedures were changed, let's say. And, well, there was accounting, or you know, not just production, and they said, this is not the way to do it you know, and it was the way to do it, and they couldn't change (laughing). And I learned a lesson there though, uh, and certainly young people today.

A:
Uh, whatever you're learning today, I think, my advice would be, um, learn it well, and use your judgement and apply it, but remember at some point in time, somebody's gonna come along and say, that's not right. You didn't do it right. This is the way it's done.

11:19:55
A:
And before you start arguing with that person, find out if he's gonna be signing your paycheck. And learn very quickly that if this is the way he said it's gonna be done, and this was my motto, when Westinghouse came in, I said, how do you want it done? And that's what I'm gonna do. And uh, I and, those people that did that, it was great (chuckles).

11:20:16
A:
I mean, our compensation rose, benefits rose, those, workplace, the whole, I think there was a great improvement in, in everything out there in terms of the workplace. I mean it's stressful now no doubt with all the regulatory stuff, but uh, and I really feel sorry for a lot of the people, and I saw that inability to uh, change, to meet the cultural change as being a real, um problem for some people.

11:20:47
A:
And as quickly as things change now in this era, you know, anybody today needs to keep that in mind. Someone is gonna say, you did it all wrong. This is not the way to do it. Learn this and come in tomorrow ready to do it this way. And uh, and that won't be easy. It won't be easy (chuckles).

11:21:10
A:
But that's an important thing to file back into your repertoire of things that you can do; to change immediately directions and go the other way. 'Cause sure, sure, it'll come; it came to me.
11:21:25
Q:
Great, well, thanks so much for giving us the time, and.

A:

Well, thanks for coming.

Q:
And uh, doin' the interview.

A:
I hope I didn't bore you to death. I mean,

Q:
Heck no! Uh, you did a great job!

A:
I could talk for a week about Fernald. At some point you'd be bored to death. I would.

(Both laugh, birds loudly singing throughout this section)

11:21:39
Q:
Well, we need to get nat sound, so if we could just have quiet on the set for a second.

A:
All right.

Q:
We're just gonna get a little bit of natural sound, including the birds.

A:
Well, sometimes they're noisy, sometimes they're not. I don't know a whole lot about birds although I read about 'em a lot now more than I used to. I learned one thing like at 6 o'clock in the morning, was when it was just barely daylight, they're like this, (Joyce is laughing) they go crazy; wake you up. So that's why every night, the last thing I do is close the window.

11:22:08
A:
My wife says, I like to hear the bugs out buzzin' while I'm goin' to sleep. But I know at 6 o'clock, there's just, a cacophony a-goin' on out here with birds. But by 7 o'clock, they're quiet. I don't know what it is, whether they daylight comes, I don't know if they're establishin' their territory, or callin' their mates, or what they're doin', but now you see they're loud again.

A:
There'll be periods when there'll be not a damn sound here. But you can count on every morning at 6 o'clock, just about daylight or whenever. I think that's when it, does it get light at 6 o'clock? I don't get up 'til 8:30 (both laughing).

Q:
Just about that.

A:

Birds are noisy. But I've uh, you know, I've had a great retirement here, that's the main thing uh, I guess I'm happy about. Maybe if I went away with a sour feeling, why, but, we've done a lot of things, been to Europe a few times,
11:23:09
Q:
Wow.

A:
In October, buildin' ships, I got to buildin' wooden ships. I've built three of 'em, maybe.

(Tape ends during conversation)