



K-25 Oral History Interview

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Interviewee: Seymour Levin

Interviewer: Connie Callan

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[1:1:00:07]

[crew talk]

Callan, C.: Today is March 11th. This is Connie Callan. I'll be doing the interview and my first question to you is state your name and spell your name and just give a general idea of what you did at K-25. Just title (laughs) wise.

Levin, Seymour: Okay. My name is Seymour Levin. S-E-Y-M-O-U-R. That's Seymour. Levin, L-E-V-I-N. And what I did at K-25 was quite varied. Actually, I was -- the group was Operations Analysis and we did evaluation of separation processes. And I came to Oak Ridge from New York. I was working on what they called the Manhattan Project, that's what -- and I was -- the work there was finished and so I was transferred to Oak Ridge. That was 1946. And I said I was working in what was called the Operations Analysis Department at that time. And we -- we worked on the gaseous diffusion plant optimizations, trying to get the -- at that time, K-25 was finished. That was in 1946. Did I say that -- I don't remember whether I did or not. (laughs)

[1:03:09]

And the first job was to look at optimizing the operating conditions of the gaseous diffusion plant. That would be -- in this case, there was -- it what pressures should run the different stages, and they get the maximum production from the facility. So we worked on that a fair amount and then we were starting to expand the plant to different -- additional facilities. The first one was K-29, and I was involved in the process design of the plant. We -- we did that and then we proceeded on to K-31, which was another addition and then to K-33, which was the final addition at Oak Ridge. But then we designed the Portsmouth plants and the Paducah plants as well.

[1:04:59]

We then started to -- it took some time to do all of this! (laughs) But we finally got into looking at the alternative processes for uranium isotope separation, and in particular, was the centrifuge process. But there were other ones, too, that we looked at. The chemical processes. After -- in the meantime, we did another job there for the Y-12 plant, that they were going to separate lithium isotopes. And -- and there were actually 2 processes people were looking at. And we were given the job to look -- decide which one

was the better process. Which we did do and it turned out to be Y-12 process.

[1:06:31]

We went through all that for quite a while. And then we started in looking at various processes for -- to see what could be done by different countries that we were concerned about, which was -- the idea being to keep these certain countries from developing a uranium isotope separation process. And one way of doing it was looking at all the special equipment you needed to be able to have in the plant.

And so, at this point, I was sort of in charge of the K-25 work on that project which was to develop a -- a list of imports that would be restricted to other countries. And that involved cooperating with other countries that already had a separation process, so we all would agree on what items would be restricted. It would be -- if we developed a list for ourselves, by ourselves, and didn't include other countries, then we'd all have -- you have to agree that the other countries weren't going to ship 'em, either. (laughs) So we did a lot of traveling over to -- actually, all these countries got together in Paris so I guess I've been to Paris, maybe, a dozen times. (laughs) And let's see.

[1:09:10]

And that was about the -- all of this took a long period of time (laughs) (indiscernible) and that was the last thing I did was working on that, the processes, import restriction list.

Callan, C.:

Let's go into specific questions that maybe will bring back some recollections as we go through them, that list of questions. I'm going way back in time (laughs), which is let's talk about where you were born and give your date of birth if you don't mind and what your age is. And if you want to talk about where you were born and your childhood.

Levin, Seymour:

What was the last thing you said?

Callan, C.:

Your age, if you don't mind.

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[1:09:59]

Levin, Seymour:

Oh, my age is 82. I was born in Newark, New Jersey (laughs) and -- but my father's job required him to travel around a lot, getting different jobs. And so I've lived in -- actually, understand, I only spent 2 weeks in Newark, New Jersey (laughs) before my family lived to New -- Brooklyn, New -- Brooklyn. And then from there, we went to Philadelphia, and then to Baltimore, and then from Baltimore, I went up to New York to work at Columbia University.

One of my professors was going up there and he took some of us along. And up there, I worked on boron isotope separation. This was the Manhattan Project, now. And I worked on a pilot plant for gaseous diffusion. Then I went to Oak Ridge and worked on -- as I have already described to you what I already did there.

Callan, C.:

Talk about what work did you do and what did you do right before you started on the Manhattan Project.

Levin, Seymour:

I was -- I had -- had -- had -- was going to school at the university. I was at Johns Hopkins University in Baltimore.

[1:11:58]

Callan, C.:

And what kind of degrees did you get from Johns Hopkins?

Levin, Seymour:

Huh?

Callan, C.:

What kinds of degrees did you get?

Levin, Seymour:

I'm a chemical engineer.

Callan, C.:

John Hopkins. And your place of origin of your family? Did you want to talk about where they originally came from?

Levin, Seymour:

Well, my parents were both born in the United States. I guess my - - on my father's side, his mother came from England and on my mother's side, her father came from Romania. (laughs) That makes for much difference.

Callan, C.:

We're just trying to get kind of a life history about all these people we're interviewing, too, but now we're going to go into some -- I know you've covered some of this in a real general statement, but now we're going to into trying to recall again general questions

about working at K-25. And I think you've already kind of mentioned the work at the Manhattan Project, but talk about why you came to K-25, what attracted you here, and maybe even your first recollections when you came to K-25.

[1:13:31]

Levin, Seymour:

Well, I came to -- see, I was working on the Manhattan Project. I was being deferred from military service because I was working on a critical activity, and so when I came to Oak Ridge, the war was essentially over, but I've still had to work on that critical -- they were still drafting people, I guess. And they sent me to -- to Oak Ridge to work on the gaseous diffusion process. And 'course I had worked on the pilot plant up at univer -- at Columbia University, and I was thinking I was having a great time in New York. (laughs) So I was unhappy to leave New York (laughs) and go to Oak Ridge. But I didn't have much choice.

[1:14:51]

And so when I came to Oak Ridge, it looked pretty primitive. (laughs) There was like some of the pavements were boardwalks like. But it -- it was -- it was really a turning point when I came. Things were getting developed around the city. And. I met my wife here. And so that was one big occasion. (laughs)

Anyway, where we lived was in dormitories they had. They had dormitories. And they had -- I don't know if they were still building houses or not, but they had built a lot of houses for people with families to live in. Not individuals. (laughs) And so, that's where I finally wound up was in a house. (laughs) Government house. And after a while, we -- they -- they allowed the people to build their own houses soon. At a later point, we -- we built a house which I'm still living in. (laughs) And at the west part of town. And it's on top of the hill there on Arrow Drive. I know -- do you know where Arrow Drive is?

Callan, C.:

I guess I don't. No.

[1:17:15]

Levin, Seymour:

Huh?

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Callan, C.:

I don't.

Levin, Seymour:

You have to go up the hill. It's the last. It's sort of parallel with the Oak Ridge Turnpike. Based at the top and the houses are like. And there are houses all the way down the hill, streets going across like that.

Callan, C.:

Let's talk about when you were at K-25 and people would ask you, "Well, what are you doing at K-25?" What would you tell them you were doing there?

Levin, Seymour:

You couldn't -- you couldn't discuss the -- the -- what you were doing. Except with people who had reason to know. But, 'course I -- I (indiscernible) working at K-25. And they knew that at that point, it was a gaseous diffusion plant. That was no secret.

Callan, C.:

And by the time you came, the secret was pretty well -- .

Levin, Seymour:

Yeah.

Callan, C.:

Yeah. Everyone knew.

[1:18:27]

These are two questions, but I put them together which is: what you liked most about working at K-25 and what you liked least about working there?

Levin, Seymour:

I thought -- well, I liked -- I had what I thought was a pretty good job there. I've sort of moved up the line. I finally became a -- a head of a department, you might say. And the -- I thought that the people -- I was working with my peers so it was -- I found that interesting. There were a lot of people who were very smart and helpful and we -- it was -- it was -- I never -- it was always interesting the work there. We did -- we -- I was in the organization that was doing different things all the time. Now, I've discussed some of those things with you.

Callan, C.:

How did you all communicate with your fellow workers in the secret facility?

Levin, Seymour:

There was no problem. We -- we knew what to do -- and your own organization, it was pretty freely to talk about the work, you know. What were you -- we communicated because we were all working

on the -- on the project, and we'd look at each -- we'd have different parts of the project and we'd discuss how you put it together and stuff like that.

[1:20:36]

And we -- now I sort of had a group of people working under me and we had meetings in which we discussed the work.

Callan, C.: Since you couldn't talk to your family or friends about what your work, much of your work, most of your whole lifetime has been about, has that been difficult to not be able to?

Levin, Seymour: No. (laughs) Family, we were going to talk about.

Callan, C.: No problem! (laughs) What about the physical conditions of the plant? Was it comfortable to work there?

Levin, Seymour: Yeah. It was -- at first, it was -- we had window air conditioners (laughs) and stuff like that, but eventually, they had central air conditioning. They had a cafeteria that was not too bad (laughs) to eat in. Had medical facilities at the plants. You got examinations there. So, didn't have any -- I didn't have anything to complain about. Let's put it that way.

[1:22:06]

Callan, C.: What were some rules that were essential for everyone to follow, that you could think of.

Levin, Seymour: You had a -- you weren't supposed to talk about classified work outside of the plant.

Callan, C.: What about your co-workers? Did everyone pull their weight would you say?

Levin, Seymour: Yeah, right. I thought it was -- it was a good group of people. They were quite capable.

Callan, C.: I always group these into health conditions. Just talk about what kinds of health facilities were available to you at Oak Ridge and K-25 and was there an emphasis by the company on safety and health? Were you ever hurt there? Or what kind of

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radiological/chemical monitoring? So just basically, I'm asking you to talk about health and safety issues at the plant.

[1:23:08]

Levin, Seymour:

Well, I didn't --

[crew talk]

Okay, well, let's see.

Callan, C.:

We're talking about health and safety at the plant.

Levin, Seymour:

Yeah, well, I did go out into the plant occasionally. People would come in, I would take them around the plant, stuff -- stuff like that. But most of the time, I had my -- was working in my own office. So there's no problem as far as anything -- any plant op or difficulty. The -- we had a medical facility at the plant where you got examined periodically. And that was to see how you -- your health was. And that was very nice. And then as far as outside the plant, Oak Ridge had a -- had a hospital. And I had my appendix taken out at the hospital. (laughs) And -- but -- so if you were sick, you know, you went to -- you went to -- we had a medical doctors there were we could go to. And if you were sick, you could go to a doctor and get it taken care of. That is still the way it is today.

[1:25:20]

Callan, C.:

This is specifically talking about the Manhattan Project recollections, being '43 to '45 and you talked some about it, but I'm going to try to get into more detail with these specific questions. During the war, did you have any idea what the enriched Uranium 235 -- that was being separated -- would be used for? And also do you remember August 6, 1945 and the atomic bomb and that day and how history will view that day. All this relates to the Manhattan Project. I know you said you were in New York. Let's talk about that period.

Levin, Seymour:

I -- I -- I knew what the -- you know, I -- they didn't give us a lot of information necessarily, but I figured out what was happening. (laughs) And -- and I felt pretty good about the fact that we were -- we had developed the atomic bomb, which was -- such as ended the war with the Japanese, anyway. And so, it was -- I felt pretty

good about that. And so going to Oak Ridge -- I was there -- I was in New York from '43 to '46, working on the Manhattan Project. Doing those -- I don't want to describe what I did there. And so, like I said, I liked living in New York (laughs). It was a great place. And -- so I wasn't -- wasn't happy going to Oak Ridge, but once I got there, I didn't -- I didn't mind it at all.

Callan, C.: But do you remember the exact day, August 6, 1945 and what happened that day? Do you remember anything about that particular day?

Levin, Seymour: Well, it was in the paper, of course. And I -- I didn't know that it was going to happen. It was a big surprise to me. But it was -- it was nice to know. (laughs)

Callan, C.: So many people have told me they figured out what they were doing, but did you all kind of communicate between each other that you were kind of figuring out the big picture, or did you all just keep it to yourselves?

Levin, Seymour: We sort of kept it to ourselves, yeah.

[1:28:31]

Callan, C.: You did?

Levin, Seymour: Right. But everybody knew (laughs) that. You could tell who knew -- knew something and who didn't. (laughter)

Callan, C.: Did you meet any famous people during that time at the Manhattan Project?

Levin, Seymour: Yeah. I met Urey, who was -- developed some of the separation processes. And working -- working in the -- in Oak Ridge, got together with some of the other people I thought were pretty prominent. For -- we'd have 'em -- we'd have -- they'd be consultants or something like that who would help us.

Callan, C.: I think we're ready to change tape here. It's 30 minutes, so we gotta kind of -- .

[End tape 1, begin tape 2]

[2:00:05]

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[crew talk]

Callan, C.: So we've covered everything pretty much?

Levin, Seymour: Just -- just about.

Callan, C.: Let's -- as soon as we start up --

[crew talk]

Let's just start up with what you want to make sure you cover before we go on.

Levin, Seymour: Yeah. Okay. I looked at it. It -- there's one -- a couple -- a couple of things we -- we did was, for instance, the French were developing a process, a separation process, which they had already built. They -- gaseous diffusion plant, which -- but they were also working on another process for separating isotopes. And they had -- they had talked about it and we -- we got together with them to look at their process. So, went over there to -- and we met several times to look at their process and it looked -- it looked feasible. And we could -- we could see ways to improve it, even, (laughs) but we didn't tell them. But they -- the powers -- the powers that be decided that we needed to -- to talk to them and find out more about their process, and so we did do that.

[2:02:22]

The same thing with the Japanese that they had -- that they were developing a process. So we got together with the Japanese and looked at their process. And so that was interesting work.

Callan, C.: Now, what years did you go to France and Japan?

Levin, Seymour: I'm bad about times, (laughs) I tell you, but it was --

Callan, C.: -- was it before?

Levin, Seymour: -- 1970 something.

Callan, C.: Oh, okay. Way off in that direction. Okay. This is kind of a hard question, but I've seen the gaseous diffusion process described real briefly in a book. It can be described real simply. Do you want to take a shot describing the gaseous diffusion process at K-25?

[2:03:28]

Levin, Seymour:

Yeah, okay. Yeah, it. What -- what you needed to do was you had these stages that -- which you had barrier tubes and you'd pass the gas through those tubes and the lighter isotopes would go through the pores of the barrier and the heavier ones would stay in. It wasn't a complete separation in one stage. You needed a lot of stages to get it to the -- move on up and the heavier ones would move on down. And -- and so -- what you -- what you -- well, that is, as you went up to the top, the stages got smaller and as it comes down at the feed port, (indiscernible), also they'd get smaller as they went down to the waste point where you were getting rid of the depleted material. And so there's like a diamond. Like that. (laughs) That was -- that was -- that was what we did when we did the processors on, we'd determine how many stages you needed to accomplish the separation you needed and what the sizes were.

[2:05:10]

And -- the Portsmouth plant was very similar to the one we had at Oak Ridge. The Paducah plant was mainly bigger stages -- didn't go to -- didn't separate all the way up to the desired assay we wanted and so we would take the product from the Paducah plant, some of it would go to the K-25 plant; the other would go to the Portsmouth plant for further separation. And that's about -- that's about it, I guess. (laughs)

[2:06:07]

Callan, C.:

When you're talking about -- and I guess we're talking about after the Manhattan Project, there was from '45 to '48, they call that the transition period where there's a change of mission and expansion of the program. Do you want to talk a bit about that period 'cause that's really when you first came to K-25.

Levin, Seymour:

Yeah. But what -- what finally happened was that we were producing material for reactors instead of for weapons. Nuclear reactors never used -- we're producing -- and then the nuclear reactors were power generators, you know. So instead of coal, you use uranium. And it's really -- there's -- it's the best form of energy you can have 'cause nothing -- nothing goes into the atmosphere. And it's all self-contained.

[2:07:41]

But there is -- we had this incident at -- trying to think of the name of that -- where -- where -- where there was a reactor that got hot because of -- I guess because it was not operated correctly. But that was -- that was taken care of. 'Course all the reactor was contained in a big steel shell. Nothing -- nothing got out. It was -- it was not any -- any health problem really, at all. What it was was a -- unfortunately, was a -- was a question of the -- lost quite a bit of the equipment. (laughs) Had it -- take that out. It was monetary problem.

[2:09:05]

Callan, C.: Well, let's go to '48 to '64. You actually were talking about going to France off in the '70s.

Levin, Seymour: Well, I -- maybe it was before that.

Callan, C.: Yeah. You said they sent you out to their countries to look at their gaseous diffusion processes. You were trying to refine and improve their (indiscernible)?

[2:09:33]

Levin, Seymour: Well, the French had a gaseous diffusion plant and we saw that one. But that was something we knew -- knew all about. As far as -- 'course we had one, too. (laughs) But they also had another process they were developing. And that was one I was talking about that we were working with them on. To find out what they were doing.

Callan, C.: Do you remember any interesting stories during this period, from '48 to '64 that you can relate? I know that's not going to cue you for any memory, just interesting stories. Let me go on to another question. (laughs)

Talk about your thoughts now about how the activities accomplished at K-25 revolutionized the world.

Levin, Seymour: Well, I -- I think the French have taken more -- done more with what ha -- with the -- utilizing the gaseous diffusion uranium isotope separation for power plants. In -- in France, it's probably

being -- their -- their power by uranium probably about 75% of it is produced by nuclear reactors.

[2:11:13]

Unfortunately, as a result of that accident I told you -- trying to think of the name that they -- that -- it's a name where it occurred - - they stopped building reactors, which was a mistake, but people, you know, was just a question -- people weren't educated. They didn't realize that nothing -- that it was complete safety. It had been tested by that accident; nothing got out. It was just a big show! (laughs) Contained everything. So unfortunately, we -- we -- we stopped building nuclear reactors, so facilities we have now for producing enriched uranium sufficed -- no -- no reason to build any more of those. But, I mean, in my estimation, we want to build more reactors and more separation facilities, isotope separation facilities. The process that people are centering on now for -- if they were to go ahead is -- for separating the isotopes -- is gas -- is gas centrifuge facility. And we built a pilot plant -- I want to say a pilot plant, but more than a pilot plant, but a fairly sizable facilities containing gaseous diffusion -- gas centrifuge facilities. And we -- that -- that's so that you -- you could -- it's a good process. And it probably would be the one we would use.

[2:13:28]

The other processes that we've looked at haven't been developed to that extent. It might be some that would be better, but we haven't gone on that -- we haven't done any more work on it.

Callan, C.:

Can you talk about any kinds of products like technology transfer or products that have come out of K-25 that you are familiar with as a result of the research and development that was done at K-25?

Levin, Seymour:

Well, we've done -- I say we've done work on other processes. But none of that work has -- has -- except for the centrifuge, has come out. And, you know, the -- if we started building the reactors, then it'd be a. See, right now, we've shut down the -- the plants at -- here at Oak Ridge. We -- we -- we don't have an operating gaseous diffusion plant here anymore. It's been shut down. In fact, it's been dismantled. (laughs)

[2:15:04]

And I -- I think -- as I said before, I -- I think that unfortunately, I think that the administration knows that that's the way to go, but they're -- they're -- they don't wanna deal with the people be worried about doing that, building gaseous diffusion plants, building reactors. And that's -- that's too bad, but maybe -- but I think they're starting to think now that they will build. For one thing, we don't have 'em. If you're running a -- a -- wanted to get power, electrical power, right now, the main way we're doing it is with gas power, you know, natural gas that they -- they run the turbines with, dev -- get power out of. But that -- that source is -- if you heat your house with gas now, you know that (laughs) the price of gas is going up. And it's very expensive now. And there's only a limited supply. It's not going to last. So it could be forced to go to nuclear power, I think.

[2:16:52]

Callan, C.:

In this job area, you pretty well talked about the jobs and job categories and what you did in those, but can you talk to what you feel was your most challenging assignment as an individual and as a member of the group? And your most significant accomplishment as an individual and in a group?

Levin, Seymour:

Well, I think the -- gas centrifuge facilities which I think were a good accomplishment. And surely that you could -- could separate the uranium isotopes with -- with that process and it would be -- it would be a good way to do it. Probably the cheapest way to do it at this point. And -- so that -- that -- that's -- we're -- we're sort of at a standstill right now, I think. We're not -- we're not going ahead with what we need to -- what we need to do. I think we -- we want to be building nuclear reactors for power and -- and we wouldn't have to worry about getting oil or gas, natural gas, for -- for power. We really need to do that. Right now, you -- you can see that the price of gasoline is going up. The price of natural gas for heating your house -- the price is going up, and there's already limited supplies. You have to go -- you're gonna have to go to nuclear reactors.

[2:19:26]

Callan, C.:

Even if public opinion were to say go for it today, what is your estimate of how much time it would take to actually get going on this?

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Levin, Seymour: Well, it's going to take a number of years to -- to get things up. I'd say at least 10 years to get the first ones up.

Callan, C.: So there might be a new crunch in the future of K-25, who knows? (laughter)

Levin, Seymour: Yeah.

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

Levin, Seymour: Time -- one time I was figuring out how many gaseous diffusion plants we needed. 'Course we thought -- our estimates have the power, the nuclear power we're -- sky high. So, but unfortunately, we can follow that curve that we had developed. (laughs)

[2:20:49]

Callan, C.: And what do you think --?

Levin, Seymour: Three Mile Island is -- is the one I'm talking about there.

Callan, C.: Oh, okay. Is that what you were talking about there?

Levin, Seymour: That -- that (indiscernible). (laughs)

But the -- the -- the fact is that there is no -- no problem with what happened with Three Mile Island as far as getting out into the atmosphere.

Callan, C.: Going back to K-25, do you remember any conflicts between management, the workers, and the unions when you were there?

Levin, Seymour: Just normal --.

[crew talk]

Just normal things that other industries have with workers and unions and so forth. The unions want more money (laughs) and the people in charge at the plants don't want to give 'em too much money. (laughs) That's just -- it's just normal business activities.

[2:22:14]

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Callan, C.: What sort of roles did women have working at K-25 and how were they treated there?

Levin, Seymour: Well, the women, they were -- we had an electromagnetic plant for separating isotopes here, as well as a gaseous diffusion plant. And, in particular, in those, there's a lot of hand -- hands on work that was needed doing and women did a lot of that work. And eventually, women did more technical work. At this point in time, I'd say that there's -- woman could be hired instead of a man at any time. (laughs) No difference.

Callan, C.: Did you remember any African-Americans or minorities and how were they treated at the K-25?

[2:23:46]

Levin, Seymour: Well, we had -- we had a limited number Afro-Americans. And we had some minority our -- our particular organization. We were more -- in our work, we had a few -- few of them that could do the work that we did and we hired them. But it was still a very small number. And today, I don't figure there's any big number of Afro-Americans working in -- in Oak Ridge.

Callan, C.: Talk about your family life in general in Oak Ridge, your wife and family and just what you did in your off hours in the secret city. What kinds of recreation were there? What did you do after work? What was it like here?

Levin, Seymour: Well, you know, when I was -- they had dances and things like that in Oak Ridge. That's how I met my wife. And -- and that -- after a while, all of Oak Ridge developed their own -- you know, we have a symphony orchestra. We have an arts center. We have a playhouse. Any -- anything anybody else has, we have here now. (laughs) So it's all developed now and it's very -- a lot of talent in Oak Ridge because for people that want to -- we have a lot of our own Oak Ridge Community Orchestra who are quite capable.

[2:26:26]

Callan, C.: Let's get to the final questions and these are supposed to be really succinct. Describe what future generations should remember about K-25. You're going to say it in one or two sentences.

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Levin, Seymour: That was a -- the gaseous diffusion plant was one of the biggest facilities ever built. And used more power there (laughs) to run the equipment than -- than had been used before at any particular plant. And it was a tremendous accomplishment.

Callan, C.: Is there anything else you want to say? We got about 2 more minutes left on this tape. Anything you haven't mentioned or what you might include in a book or a document or any of the topics? Your final words on this tape? I think we have 2 minutes.

[2:27:38]

Levin, Seymour: I would just say that the -- we are still looking at these countries that we don't want them to have separation facilities, and we're still want to develop nuclear power for the good of the country. And we hope that these things will keep being done. And for the good of the country.

Callan, C.: I think we're done!

Levin, Seymour: Okay.

Callan, C.: (laughs) Well, I hope you found that enjoyable. (laughs)

[End of Interview]