

Interview with John Lucas, Int
Date of interview: 4 April, 1
Transcriber: Susanne Starkwea
Begin Tape 1, Side 1.

penciled #1's in
blank spots correlate
what do these refer
to?

LUCAS: We did the North
worked with 002
people there. V
of all of the ex

worked on some of the Nike missile sites
out there and the antiaircraft gun sites
and so forth. So that kind of stuff.

MODERATOR: All right. I'm talking to Jonathan Lucas
on April 4th, 1996. So tell me, about
when did you start working?

LUCAS: I started working out at N Reactor,
March 19th, 1981.

MODERATOR: And what was your job?

LUCAS: Hired in as fuel operator in the fuel
section of the N Reactor with the intent
of going into the reactor operator
training program.

MODERATOR: So what does a fuels operator do?

LUCAS: Basic duties are the -- Well, it would be
the fuel section, which is preparation

Interview with John Lucas, Interview 1.

Date of interview: 4 April, 1996.

Transcriber: Susanne Starkweather.

Begin Tape 1, Side 1.

LUCAS: We did the North slope, ERA project. I worked with 002 and some of the other people there. We did some interviewing of all of the ex-military people that worked on some of the Nike missile sites out there and the antiaircraft gun sites and so forth. So that kind of stuff.

MODERATOR: All right. I'm talking to Jonathan Lucas on April 4th, 1996. So tell me, about when did you start working?

LUCAS: I started working out at N Reactor, March 19th, 1981.

MODERATOR: And what was your job?

LUCAS: Hired in as fuel operator in the fuel section of the N Reactor with the intent of going into the reactor operator training program.

MODERATOR: So what does a fuels operator do?

LUCAS: Basic duties are the -- Well, it would be the fuel section, which is preparation

LUCAS: for receiving of green fuel from the 300 Area, preparation of the process tube fuel bundles that are stored in that section; and those are loaded with the appropriate fuel arrangements.

And then, let's see, what else. Also, the basin, itself, as far as the routine procedures of handling of the spent fuels that comes off the discharge ⁰¹⁶ reactor where it's put in off the trampoline into the little underwater carts.

And then that gets sent out to the basin and then repackaging in refuel cannisters in operation of the various cranes out there, lifting and putting the spent fuel in casks, after it has been there a year in the basin. It was transferred into casks, these big casks, and those were --

MODERATOR: Over there ⁰²¹ got there?

LUCAS: Yeah. I'd have to go take a look at what you got over there. But they're big railroad cars. And those were loaded into the railroad cars.

MODERATOR: You're not talking about the cannisters?

LUCAS: Well, we dealt with those. And then those were loaded into casks, into these big, big casks, shielded casks. They were lifted with a 60-ton crane. And then those were loaded into railroad cars that had water inside those. And then those railroad cars were sent over to K.

MODERATOR: So the PUREX was closed?

LUCAS: Right. We were just shipping everything over to K where it sat over there.

MODERATOR: All right. So anything to do with handling fuels --

LUCAS: Right.

MODERATOR: -- as a fuel operator? And what union was that?

LUCAS: That would be the Oil Chemical Atomic Workers. And that was the union I was in for that job.

MODERATOR: On a shift, how many fuel operators did you have, typically?

LUCAS: Let me think here.

MODERATOR: Or I guess it would depend on -- You're not usually doing all of those activities at once; right?

LUCAS: No. It just depends on what was going on. Like I said, we were just doing fuel handling, things out in the basin, probably re-packaging. When the reactor was up and running, we were just doing some of that stuff.

And also preparation of new loads of fuel for the reactor; and those were loaded on the walls where that charge-discharge machine was, and that kind of stuff. So there's probably, I'm guessing here, maybe ten guys on our crew on our side of the deal.

The supervisor I had at the time, was this guy named Bob Dorsik. That was the person who was my supervisor in A Shift; and we worked a rotating shift, graveyard, day, swing.

MODERATOR: All three shifts?

LUCAS: Uh-huh.

MODERATOR: Around the clock?

LUCAS: Yeah. We just did that. And we had our long change off.

MODERATOR: So it was a good job?

LUCAS: Yeah. I enjoyed it. It was an

LUCAS: interesting experience. Graveyard was kind of tough. A lot of times I was coming home from the first night of graveyard because you wouldn't get much sleep, you'd think. You know, you just come home; you're pretty tired, you've been up for awhile.

And you think, "God, I got to do something." Just because of the shift work. But long change was nice and had a good crew of people working there. I enjoyed it.

MODERATOR: So do you work graveyard for awhile and then you, after awhile go --

LUCAS: Yeah. Well, you worked a week of each: like a week of days, and a week of swing shift, and then a week of graveyard.

And then right after graveyard, you'd have, like, a Friday through a Wednesday off; and you'd come back on to swing shift, if I recall.

MODERATOR: For one week? And then the next week you'd --

LUCAS: Yeah. You'd be off Friday morning, you'd be done. And then you'd be off like

LUCAS: about four days, you'd have off. That was kind of nice.

MODERATOR: But to change shifts every week?

LUCAS: Yeah. You'd work a shift a week.

MODERATOR: Your body could never really recover.

LUCAS: Yeah. It was tough. On swing shift you get home, like, at 1:00 in the morning; and then you'd stay up for, you know, awhile.

Just kind of wind down for a little bit and go to bed. And get back up, I don't know, around 10:00 or so. And get ready for your next shift when you'd be picked up by the bus like around 3:30 in the afternoon.

And take about a half hour to get out there. And our shift started at 4:00 in the afternoon and then went until midnight.

MODERATOR: Were some of the jobs, I don't know, more interesting or intense?

LUCAS: Oh, as far as the --

MODERATOR: I mean, step me through kind of the different --

LUCAS: Well, just the fuels portion?

MODERATOR: Yeah. The fuels, start with the fuels.

LUCAS: Okay. Let's see. Fuels. Some that were more interesting than others. Let me think here. It was kind of fun running the cranes. I enjoyed running the cranes.

They had a big 60-ton crane you had to pick these casks up. So you couldn't be, you know, just --

MODERATOR: Out of the basin?

LUCAS: Yeah. You're picking these casks up out of the basin, and so you couldn't really be goofing around. You had to know what you were doing.

And so that was pretty challenging running the 60-ton. And loading the fuel tubes for the charge-discharge machine there was just a casing.

If that didn't go on there, then you had to set up so many tubes ready for charge-discharging, spacers, what we call the Purfs, and then the fuel elements.

MODERATOR: When you're doing that, I mean, the rafter's up and running?

LUCAS: Yeah. You can do all this kind of

LUCAS: stuff, just prep work.

MODERATOR: Delivery or loading the --

LUCAS: Right. And, as you recall, we're inspecting fuel that came in; and there's the example of that fuel just like one of those.

MODERATOR: Inspecting it?

LUCAS: Yeah. Just looking at it to make sure --

MODERATOR: Do a visual inspection?

LUCAS: Yeah. Just looking at things that we receive. And I remember we had to wear the little, white cotton gloves just because you didn't want your fingerprints on there.

I think the oils in your hands could cause some damage to the zerfloid, as I remember, that was on the outside of that, fuel element.

MODERATOR: Otherwise, there's no hazard of fuel?

LUCAS: No. We had to wear a typical a dosimetry. I don't recall. I'd have to find out what the -- If you had a fuel element next to your desk or how much. It wouldn't be that much to speak of,

LUCAS: you know.

And so we worked with that; and we loaded those into the, like I said, into these tubes.

MODERATOR: A number of tubes?

LUCAS: And they were designated for a certain process tube.

MODERATOR: Is that a different length?

LUCAS: Right. 1,003 process tubes in there. And as far as that goes, we did that part. Now, the Grade 23s, which would be the reactor operators, they ran the charge-discharge machine off of it.

MODERATOR: What the other guys were seeing in the video?

LUCAS: Right. Those were like Grade 23s. Or in training, you'd be like grading teams, Grade 21s, Grade 23s. It depends on how far along you're at. Grade 23 was a certified reactor operator.

MODERATOR: So when you have it planned out, it's to charge or discharge. What would you be doing, then?

LUCAS: If I was a fuels operator? Like I said, just --

MODERATOR: Run the machine?

LUCAS: No. Well, no, they would be doing that if you were just a fuels operator. The reactor operators, they ran the charge-discharge machine that would hold the fuel, the appropriate ones off the bundle, and get it through the correct hole where they were doing that part.

But as far as our end of it, we would be, if we were in a charge-discharge mode, the fuels section would be in the basin. And we'd be getting the spent fuel that came off the back of the reactor and hit the trampoline.

And then it would go into these underwater railroad cars. And then we'd have to operate the cart system and get everything in there.

So just basically keeping the spent fuel going out of the discharge chute and getting it into the basin where it needs to go.

So we were picking up the -- if you want to say the empties -- the hot fuel.

LUCAS: And did that part of it and processed it there.

MODERATOR: So how long did you do that?

LUCAS: I was a fuels operator for about, let's see, six months, as I recall; something like that. I believe it was six months.

Look though my notes here. I can tell you a little bit better. Let's see. Yeah, it was about six months. I was there in that portion for about six months. Actually, it was about four months or so that I got here. About four months I was there doing that portion.

And then in July of '81, I got into the reactor operator training program in that year of Grade 18. And you start going to classes. And doing hands-on training; you know, just learning the ropes.

And in a sense, you're kind of mentored by certified operators. And plus going to classes. Lots of classes.

MODERATOR: So what types of activities do reactor operators do?

LUCAS: Okay. Well, let's just say if you're a

LUCAS: certified operator, one of the things that we did, like I said, as far as the control room duties, if we were up and running, you'd take turns at different consoles in there rotating around, like the new console was your control room.

The rods, pulling the rods and reactor and watching the flux monitors in that part. So, basically, you were just kind of in the driver's seat in that part of it, just running that.

And then there was a Double A Console. That's where your primary cooling pumps were controlled from and you watched your pressurizer water, water level for the pressurizer that kept the -- as far as you can see what the water level was in the primary cooling room.

Observing the levels of the steam generators, you're kind of in control of that portion of the reactor. And also injection water, if you needed to add any water to the reactor. There was a cost, kind of a feed and bleed to the primary

LUCAS: coolant. And the bleed would go out to one of the cribs out there.

And let's see. Then band console, that's where it's kind of the secondary system, you're keeping an eye on the secondary system steam pressure.

Also the dump condensers, operation of those. That's where the excess steam that wasn't sent over to -- If we were sending steam over to the Hanford Generating Facility, any excess steam that they would not take, would be dumped and condensed in dump condensers.

And let's see. So dump condensers. Also, you're circulating around water pumps provided that that was another closed loop that went through the dump condensers. And that was just the raw water pumps off the river, that portion.

And then there's also the ruptured monitoring system. That was behind. You'd watch for fuel ruptures. Let's see, what else.

MODERATOR: So how many guys are in the control room?

LUCAS: Let's see. You had one on the new

LUCAS: console, one on the Double A, one on the BN Console. We had one on communications. Also the BN Console operator would take care of any heating and ventilation needs. And that was down towards the -- if you're familiar with the BN simulator -- that was in the back there.

Like here was where the new console was, and here's where the Double A was. And the end console was back along here. Here's heating and vent here. And then there's a communication console here. And here's where the reactor operator, what would be the control room supervisor staff.

Well, like I said, one, two, three, four, about five guys were in the control room. And then another person would be out doing building control. And so you'd have a whole shift, you know, eight hours to go out. You'd have to go make the rounds.

There was a certain list of things you had to go check, see what would go

LUCAS: in the rod rooms, check various gauges, make sure things were okay in there as far as the rod room. Let's see, what else. 117 Building was where the --

MODERATOR: They're monitoring?

LUCAS: Well, that was for the Zone 1, where your primary piping was. Your various air would finally end up out 117 Building out stack; but it would go through various filters and things.

One of your duties was to go in there and make sure all of your filters were working okay as far as you check Delta pressures across the filters, make sure things are okay there. Let's see here.

Check both rod rooms, left and right rod rooms. Check the 117 Building. You also go out to the control room to see. Let me think what else there on the building control we had to do.

We had to do, also, your heating and ventilation for the buildings, for the 105 Building. Check the various fans and so forth. Make sure those were for

LUCAS:

your air plenums. I can probably think of some more but I can't think of anything else.

So you'd be doing that. There would be one operator doing that. And so you'd have people in the control room, person doing patrol, and maybe somebody doing some training; things like that.

So that was basically while the reactor was running. And so basically the reactor would be on cruise control, just be going along. You'd be running about -- Equilibrium would be about 4,000 megawatts you'd be running. And just doing those various duties.

And keep an eye on the annunciators, the annunciator panel interfering; if there are any problems come up, you take care of it.

Or, too, maybe if there was any minor maintenance going on that didn't have to do with reactor operation as far as directly tied to it, something could be done while you were still up and running. We wouldn't go assist

LUCAS: maintenance because you had to go turn it on and off for breaker, that was our jurisdictional duty. Things like that.

MODERATOR: So there were undoubtedly unusual occurrences when you were working the control room?

LUCAS: Yeah. There was things that would happen. Let's see. I wasn't in the control room at the time, but I remember they had an air loss and one time. I think that was kind of exciting.

And that would be instrument air loss. And that was controlled from the auxiliary-sited power ¹⁷⁴. But other than that, I can't think of anything offhand.

MODERATOR: Minor little things?

LUCAS: Yeah. Things that you got to just do. And things like that.

MODERATOR: Gauge starts reading, and then you check it out.

LUCAS: And you do your thing. Just keeping an eye on your gauge. Just going down the highway, looking at your --

MODERATOR: So no strands in there?

LUCAS:

Let's see. It's near strands. I remember one year when we -- I think something to do with one of the turbines. Or it wasn't a turbine, it was one of the steam turbines. I think it sped up. So it cooled things down.

And so we had a little spike in reactivity so it would give -- cooler water causes more neutrons to be thermalized, so you get more of an advantage. And so I think we had that. Just some various ¹⁸⁹. But on the whole, it was good.

MODERATOR:

Was it hard to get certified?

LUCAS:

It was a long training process, a lot of classes. What I was telling you about the other day, we had to get training on the trigger reactor and submerge pool reactor that was over in the 300 Area.

I don't know if they're still operating that or not. But we had to go through a training program on that. And start it up and shut it down about ten times. And that was one of the things that we had. And then tests along the

LUCAS: way.

And then our final test was we had an eight-hour written exam. And then we had oral interviews with some of the main guys that knew their stuff about it, that were --

They'd ask you questions about various things to see whether you had been paying attention to training and see how you're going to do.

MODERATOR: And then how often do you have to get recertified?

LUCAS: Once a year you had to go to get recertification, a refresher kind of a deal; go through class. So it was a continual education, schooling process and stuff.

MODERATOR: Were you there when Chernobyl --

LUCAS: '86, yeah. Like I said, I was there. And from '81 through '89. I remember when Chernobyl was. And then there was all this talk about, "N Reactor is like Chernobyl and stuff."

So I think that was kind of the start of some of the demise and some of

LUCAS: that kind of reactor operation. And then after that, they started doing a lot of safety upgrades.

MODERATOR: Yeah. I know this area went to procedure writer.

LUCAS: Yeah. In '86.

MODERATOR: So a lot of new procedures?

LUCAS: Yeah. Well, they had a procedures group already; and now there's just the maintenance of the provision procedures, and so forth, that we utilize for operations.

And I mainly got into procedures just because I wanted to get off shift work, and it was just a day job. And I already knew everybody there. And I'd just go out and talk to them, and try to get procedures approved.

And I worked on procedures for various safety upgrades they did, hydrogen monitoring system. And I wrote procedures for that. Let's see. Also new hydraulic system for the valving off the dump condensers, did that.

New hydraulics they put in there,

LUCAS: we did procedures on that. All other aspects of the facility there towards operation skills, I did that.

So I did that from '86 or '89, and then they shut the reactor down in '87. And then I got a job in July of '89 with Westinghouse Environmental Engineering Group because of just things were kind of -- Any decline out there, and things --

It just wasn't looking good for trying to stick around out there. So that helped me out there on the deal.

MODERATOR: Well, the image of control room operators is that it may be boring --

LUCAS: It can be.

MODERATOR: -- because there's not much happening; right? You're just waiting for something --

LUCAS: Right. You're waiting for something to happen and you hope something doesn't happen.

MODERATOR: Is it a hard job in that respect?

LUCAS: Well, it has its exciting moments and then it has boring moments, too, just

LUCAS: because nothing's going on.

You're just kind of making sure things are just going along okay and watching your ²³¹, watching your gauges, and just everybody working together to keep it going along in producing the plutonium. So it has its dull moments.

MODERATOR: When something does start going a little ²³³.

LUCAS: Yeah. Then you got to start thinking kind of -- it's sometimes easy to kind of relax because nothing's happened for awhile and stuff like that. But you just deal with it.

MODERATOR: So I hear a lot about the camaraderie and it's a great place to work. So that's the way it was in the '80's?

LUCAS: Yeah. I enjoyed it. We had a good team. Like I said, we were on the A Team, called A Team or A Shift, and we had a good crew of people. I enjoyed it. It was a good experience.

Like I said, it was a good running reactor. It's too bad it shut down,

LUCAS: but that's just how things were and how things happened. And like I said, it was a good experience.

Some of the unfun jobs were, what was it, when you had to recycle balls from the ball hoppers. There was 180 ball hoppers on the top of that.

Are you aware of what the functions, what those are?

MODERATOR: Uh-huh.

LUCAS: Okay. And if you need to recycle hoppers, as the balls would drop down into the channel, you got to recycle them from the bottom back up to the top. And so that's kind of a process.

And if you're up on top, you're in with whites with plastics on and all sealed up and stuff. And it's hot up there on top of the reactor, and the ball hoppers are kind of dark and stuff.

You got these big hoses, like these gasoline hoses that the tanker trucks fill up their tanks at the gas station with. And you attach those down on to the filler spout for these ball hoppers

LUCAS: and you get cycled up. We're going on ball hopper number whatever, there's 108 of them.

And sometimes those balls would kind of ridge up in there and you'd be shaking that hose trying to get those balls down the hose and so it would give you kind of a workout. That wasn't one of the funner jobs, the recycling balls.

MODERATOR: Well, they sometimes kind of went into the reactor unplanned?

LUCAS: The balls? Let's see here. Sometimes we'd have to do a normal recycling of them. And then kind of my faux pas is, I was a green reactor operator -- I don't know, maybe one of the other guys told you of this -- what was it, we were getting ready for a start-up, we had to do various checks of the systems and stuff.

And I was in the control room there, and we had reactors down; we were doing various things trying to get started up. And so we were doing some system checks on the intermediate range

LUCAS: flux monitors, and so I hadn't really done it actually much or worked with anybody much on it, so I kind of worked with one of the guys a little bit on it. And I knew the process.

But what you do is you put in checks. If there was three monitors, and if they indicated a high flux level of neutrons for a certain amount of time, it was for five minutes. And you input that into the system.

You've got to do a two out of three trip on it. And if it saw after five minutes, it will trip all the ball hoppers.

Well, anyway, we had put in the system trips. But for some reason, like I said, I didn't think it was going to actually trip it and it left it on there. And we had those two trips in there get left on for five minutes, so it dumped all the ball hoppers.

And this is before start-up. So that was kind of my operating faux pas. I got a lot of razzing about that one.

MODERATOR: Because how long would it take?

LUCAS: Well, I told him, I said, "Well, it did put the reactor into a safer condition than it was." And, then, too, it took probably about four days because we had to recycle all the balls back up to the hopper again and load them back up.

But one good thing about it, there was some problems. There was a panel conveyer down at the bottom of the reactor, is where all the balls drop down into the ball room, what's called the ball room there; anyway, underneath there, there's a paddle-wheel type of a conveyer deal.

And, anyway, there was problems with that that hadn't been really taken care of. So that got repaired, if it needed repairs done with it; that had been kind of a deal that happened before. It got those repairs done, and then we were able to get those.

So there was one good -- But it did delay the start-up for about three or four more days or so.

MODERATOR: Well, was start-up, is that like the most exciting time for a control room operator?

LUCAS: It's just hectic because you're trying to get everything -- You have to go through and make sure all the systems are ready, make sure all your backup systems are ready, and it's just everybody's preparing for a trip or something.

Go through all these checklists trying to -- and testing out safety systems and making sure that they're all going to work properly. So when you're up and running, they'll function properly.

MODERATOR: And pretty much they're always successful when you were doing it?

LUCAS: Yeah. Uh-huh.

MODERATOR: What about shutdown, was that pretty easy?

LUCAS: Shutdown is busy because you're helping me, while you're doing charge-discharge, while you're helping maintenance out, so you're going around doing various valving, turning, setting.

LUCAS: If you have to go into Zone 1, where the primary piping was, to align valves up in certain arrangements for maintenance, or doing the same thing in preparation for start-up.

So that was one of the jobs was to do that. That was in our jurisdiction, in a sense. We had opening and closing breakers, opening and closing valves; things like that.

MODERATOR: So to shut down, you just started putting in the control room rods? Is that what you were doing?

LUCAS: To shut down, it would be just a controlled shutdown; and you'd just take it down to a certain sequence and bring it down. And then you'd ³¹⁶ it the rest of the way, as I recall on that.

MODERATOR: How about security? Any thoughts about security? Because in the '80's, now, it should be --

LUCAS: Well, when I first got out there in '81, they didn't have all the double fencing out there that you saw out there. And then they started putting that up, I was

LUCAS: maybe like, I'm guessing '82 or '83, something like that.

I remember we had a volleyball court out there in the main court area where that main guard shack is now. When I first got out there, there wasn't the security out there.

They had security, but it wasn't the real intense security with the razor wire and the cameras and all that kind of stuff out there.

MODERATOR: How about the guys in 105, in the corner?

LUCAS: The little cubicles there? Yeah. When the security started increasing out there due to various things that happened, like, in the world going on at the time. And they started beefing up security out there, putting, you know, the razor wire and the cameras and so forth.

And plus having the metal cubicles in the hallways where the guards were. It would be in there with their automatic weapons and stuff. It would just kind of like --

MODERATOR: Just got used to it?

LUCAS: Used to it. Just kind of. They're there and you just said "Hi" to them and stuff.

MODERATOR: You could see the guys in there?

LUCAS: Yeah, you could see them in through there through that little deal. And then we had a guard there at the front door going into the control room. And you'd show them your badge getting in and out of there. They were just part of the deal out there.

MODERATOR: Do they have dogs?

LUCAS: Yeah, they had dogs that would go around occasionally.

MODERATOR: And then guard tower?

LUCAS: The guard towers and all that kind of stuff. So, yeah, the security increased out there a lot. And the metal detectors and all that kind of stuff.

And then they put up the jersey barriers, those concrete barriers, one like when they had some terrorist bombings going on, like that, after that bombing of that Marine base in Lebanon.

I remember that they started putting those type of deals in there, so

LUCAS: a truck with bombs in it, explosives in it, couldn't just go and run straight up there; you'd have to negotiate through these jersey barriers.

MODERATOR: Any other stories we should get down?

LUCAS: I can't think of anything else.

And then, too, when we do decon of the reactor.

MODERATOR: No. I don't know much about that.

LUCAS: It was just, they run stuff called Turco through there; and you'd have to get -- It was just like a cleaner. Because, periodically, the various little traps in low spots, and the pipes would get high levels of contamination in them, they would just build up there. And you'd have to flush all that out.

So they do, in a sense, a flushing of the ³⁵⁷ piping. And then that would all end up out in the golf ball, what's called the golf ball ³⁵⁸ .

MODERATOR: So how often would they do decon, about once a year; something like that?

LUCAS: Might have been a little longer than that. I don't recall right off the

LUCAS: particular schedule.

And it would be indicated, too, just by -- I know the various health physics people out there, they do their various monitoring.

And when we were down, the piping out there and locating where our hot spots were and things like that. But they're probably on some sort of a schedule also, I would think, too.

MODERATOR: And fuel, charge-discharge, that was pretty regular every, what, month or so?

LUCAS: No. It was like -- Let me think. I kind of forgot. Three months, something like that. I forget exactly. It was fairly periodic.

MODERATOR: Okay. It would take a couple of weeks?

LUCAS: Yeah. Within that time period.

MODERATOR: Maintenance or whatever of the plant?

LUCAS: Yeah. And you'd be on the charge-discharge crew. Either you're running the charge-discharge machine or you're on the front of the reactor like we were looking at. And that was on the C elevator there, and your plastics, and

LUCAS: popping off the process tubes. And taking off the caps. The tubes get in there.

And we'd have competitions between the shifts who could do the most process tubes, and that type of deal. Or you'd be on the rear.

If you were doing the charge discharge, it was kind of nice, because in those suits, you're pretty hot and the water running on you will kind of cool you down.

Or if you're on the rear there when you're waiting for the -- Obviously, you couldn't be in there when you were discharging, you'd get a major dose of radiation. So you'd be outside there. You'd be waiting for them to do that.

So you'd go out and lie out on the concrete floor out there to stay cool in your plastic.

MODERATOR: But someone's got to go in and take the cap off for the discharge, right?

LUCAS: Right.

MODERATOR: So that's okay?

LUCAS: Yeah. You do that because there's no problem there.

MODERATOR: And then you go away?

LUCAS: Yeah. You go in there and you take the caps off the various tubes that are going to be discharged and you put what's called tip-offs on them.

MODERATOR: Is the water flowing out like it was on the front of the face there?

LUCAS: But they put it on low flow. See, they put the reactor on low flow, and so it won't come out. You've also got several spacers.

MODERATOR: Before you get to the inner reactor?

LUCAS: The actual fuel. So that wasn't a problem.

MODERATOR: So you take the caps off and people leave?

LUCAS: Right.

MODERATOR: And then they push through the ³⁹⁷ of the new tube?

LUCAS: Right. You take the caps off, put tip-offs on, and then you go ahead and get the elevator positioned up away from there so that it is discharging into the

LUCAS: chute.

And then they discharge those tubes and the guys would be on the front, you know, pushing through the discharge machine.

MODERATOR: Come back and put the caps on?

LUCAS: Yeah. Come back and put the caps on and then go to the next setup, you know. They had a list of tubes that you were supposed to do.

MODERATOR: Any union issues while you were there?

LUCAS: Union issues?

MODERATOR: No strikes?

LUCAS: Nothing in particular I remember. I wasn't real active, per se. I went to one union meeting at the time. And that was the only time I've been in the union. Nothing in particular I can think of offhand.

But I enjoyed my time there, it was an interesting experience. I learned a lot of new stuff and things like that. So it was a good opportunity. And like I said, sometimes I miss being out there. It was an interesting place to work.

MODERATOR: Yeah. The whole shutdown thing, that's when I got here, because I remember, it must have been real emotional out there waiting every day to find out whether there's going to be a shutdown or not.

Well, thanks, John; that was great.

LUCAS: You're welcome. (End of interview).