



Oral History Interview Transcript

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Interviewee: Bruce Wilson

Interviewer: Colin Brown

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Transcription of Interview Number 5-C2 WILSON

Bruce Wilson

Interviewed February 14, 2005-02-28

By Colin Brown

INTERVIEWER: CANDIB Oral History Project interview with Bruce Wilson. Recorded on the fourteenth of February 2005 in Ottawa. Interviewed by Colin Brown and Pat Barnhouse. Tape one, side one.

WILSON: My name is Bruce Wilson. That's Wilson, W i l s o n.

INTERVIEWER: Thanks Bruce. We have both signed the legal release. Is that correct, Bruce?

WILSON: That's correct.

INTERVIEWER: Good. Well, welcome Bruce. As you know, CANDIB is exploring the effect on Canada's industrial base of Canadian industry having supplied the Navy's ships and equipment from 1930 on. Given that the first ships to be designed and built in Canada for the RCN were the St. Laurent 205 Class in the early 1950s, some information of the ways and means the Navy used in securing the equipment for the 205s seems to be a good starting point. As you had some naval service associated with Canadian industry at that time, some record of your experience may be useful for future historians. What prompted you to join the Navy and what did your early training consist of?

WILSON: Well, we have to go back to 1942, in February of 1942. We were in the assembly at my high school. We were told in that assembly that all boys in the school had to join cadet corps. There were the sea cadets for the Navy. There were air cadets for the Air Force. And everybody else went into the Army cadets. My chum beside me gave me a poke in the ribs and said, "Let's go Navy." So that's where it all started.

In the sea cadets, I heard about Royal Roads. At that time, I was of an age that I looked as if I could go over to the war but I wasn't old enough. I was sixteen and a half. And yet, going to Royal Roads would be sort of getting me in as part of it and also furthering my education. So I applied for Royal Roads and I was accepted and went out there in 1944. That was a two-year course at Royal Roads, the Royal Canadian Naval College. And in our last – just at Christmas – at the end of the last year, a notice came out that they'd formed an Electrical Branch. And they came over to the College and asked for candidates. Five of us were successful of applying for the Electrical Branch.

So subsequently we graduated. We started our university training. During the summers we were back with the Navy doing Navy things. I graduated in 1949, which was followed with six months experience in Magnificent as an understudy in all the different branches. And then I went in to the long Electrical Officers Course at the Electrical School in Halifax, which carried us through part of 1950. Subsequent to that I spent some time in Magnificent as an electrical officer. Then later I went out and stood by the old Uganda that was being converted to the Quebec. And then I served in the Quebec.

INTERVIEWER: Where was the Uganda converted to be the Quebec?

WILSON: In the dockyard at the West Coast.

INTERVIEWER: Oh, OK.

WILSON: It was entirely within the dockyard.

INTERVIEWER: It was in the dockyard. I see. After your time in Magnificent and Quebec, where did the Navy send you?

WILSON: Well, I was a bachelor at the time. It so happened that there was an urgent job came up and a lot of pressure on people to fill the place with a live body. I was picked to go to Hamilton to augment the staff of the Resident Naval Overseer in Hamilton. I was told it would likely last for about a year and it did. I was there from November of '53 to February of '55, I guess. Yeah, it was when I was in Hamilton that I was working for the Resident Naval Overseer (RNO) that I got involved with the DDE 205 program in the electrical power equipment – the motors and motor starters, controllers and all the basic power stuff. Most of the stuff, in fact I think all the stuff that I worked with there was not classified.

INTERVIEWER: I see. Just so I understand the RNO a bit, what did the job actually consist of basically? Were you inspecting?

WILSON: To a certain extent. More testing than inspecting. We had Inspection Services there for inspecting. But the function of the RNO is to facilitate the delivery of the electrical equipment from Westinghouse so that it could be sent out and fitted in ships. The equipment was all designed to military specifications. It started off with the requirements being raised in the Naval Central Drawing Office at Vickers, which was completely government financed. They raised the requirements – depending on the design of the ship – and the specification to meet those requirements was done by the Electrical Engineer-in-Chief Sections in Ottawa. And then the Department of Defence Production contracted to ensure that those equipments were delivered. So as I remember it, the equipments for Halifax, for example, say twelve motors that were being delivered, would form one contract for 205 Class and they were built to the design and specifications that were laid down for them. They were delivered to the shipyards, each individual shipyard, as Government furnished equipment.

INTERVIEWER: Were there other Government people located in Westinghouse and what were they doing? You mentioned Inspection Services. Would you mind telling us?

WILSON: Well first of all, there was my boss, the Resident Naval Overseer, was Norm Simmons. I had a chap working with me, an electrical technologist, Jim Wallace and myself in the group with a secretary and a clerk. We were in offices supplied by the Canadian Westinghouse.

Our function was to ensure that the equipment that was designed by Westinghouse to meet the specifications was promptly forwarded to headquarters for the preliminary approval. Usually that gave rise to comments by headquarters, saying this should be changed and that should be changed. Headquarters was making sure that the equipment was going to do the job and it was going to fit the equipment for which it was designed. So the drawings would come back to Westinghouse again. They were updated with comments. Then generally, we were able to approve them right in our own office without sending them up to headquarters. After they got the final approval, the equipment was built. During the building, the Inspection Service would check the bits and pieces that were coming into it. Castings, for example, if they were bought outside, were checked. The equipment, when it was finally put together, -- for example, the motor – came under test. The first off on each of the productions was given what they call a

periodic test, which was a fairly extensive test. For example, it not only measured power outputs and that sort of thing but also did heat tests and the rest of it. It was our responsibility, on the RNO staff, to ensure that all the tests were properly carried out.

So the inspectors had inspected the bits and pieces that all went into it and we did the periodic test, gave final approval to the design and then the Inspection Services did the routine tests on all the production units. So we worked very closely with Westinghouse, with Inspection Service and with our own staff and, of course, with headquarters, keeping them informed.

The inspectors were housed in the same area we were, just across the hall. There were eight to ten of them. Most of them were well qualified. Some of them used to work in Westinghouse. Some of them were well qualified but not familiar, particularly with some of the gear that was being built by Westinghouse and not familiar with Westinghouse techniques. And of course, this tended to cause some friction from time to time.

INTERVIEWER: Eight to ten concerned with Naval work or were they also concerned with other Army or Air Force work?

WILSON: I don't remember there being any Army or Air Force work in there. No.

INTERVIEWER: Did Westinghouse have any difficulty in meeting the requirements that the Navy wanted?

WILSON: Well, you've got to remember that when the Navy -- especially in those days -- built equipment, they did it to all military specifications, which were really produced by the Bureau of Ships in the United States. Building to military specifications became a very, very big deal. First of all, all of the components, when they were being assembled to build the equipment, had to be inspected by Inspection Services. After they were inspected they went in to a quarantine to make sure they didn't get mixed up with the main run again. All the design of the motors had to be to MIL specs.

It meant that if Westinghouse had a particular way of doing things that didn't adapt well to MIL specs then they either had to change their way or get some sort of relief. And usually it meant that they had to change their ways. And that meant a training problem in their own staff to make sure that they could meet the MIL specs. It became a very, very difficult thing.

There was one incident when Inspection Services, perhaps with some chap that wasn't quite as familiar with the work as they should have been, turned down about fifty rotors because they'd been balanced -- they had to be balanced -- but they were balanced by drilling a little hole in the laminations to take out some of the metal. This was general practice at Westinghouse. Not necessarily practice at other places. But this chap was turning down about fifty rotors, saying that they couldn't be used because they had these little drill holes. The engineer came down to the office and I thought he was going to have a heart attack; he was as white as a sheet. He brought the thing into the RNO's office to try and get some relief because the inspector was standing firm on this. The solution was proposed by the RNO that, well, we'll put the motor under test and give it a severe test. If it passes then we'll accept them. If it isn't, then they'll have to be redone. I think everybody knew that the method was not going to affect the testing of the motor. So of course the thing was tested and it passed. But you notice the two things about that; the Inspection Services were taking the word of the RNO that they were acceptable and recognized the RNO's authority in that way. The other is that the RNO, when he found a solution, was to always try and ensure that the Inspection Services could save face. the Inspection Services

could now accept it because it had passed the test. So it was sort of a delicate balance between the two.

INTERVIEWER: As I hear it, you were sort of a diplomatic arbitrator in this whole game.

WILSON: In many cases. In many cases. But getting back to the Westinghouse experience, I think they learned an awful lot about their own equipment that they hadn't really realized before because we used to test the things to death, you know. From that point of view, I think it was good. But on the other hand, there was a lot of work that was carried out because of the rigorous MIL specs and the way that they were interpreted that cost money. And I'm not sure that Westinghouse made an awful lot out of the area of work that we were involved in.

The motors, of course, when they left us, as part of the periodic test also went down for shock tests. Not all the motors, just the ones for the more important applications. They went down to the installation at Peacocks for shock testing. Those tests were normally done by people from Ottawa because they could do it on a day trip when they were down there.

INTERVIEWER: Did the Electrical Engineer-in-Chief's specification include all the MIL specs?

WILSON: Well, yes they did but not directly. If you were talking about an electrical motor, for example, there would be a MIL spec for the motor and the kind of test that had to be done on it and a series of things like that. But called up in there would be that the windings, for example, would have to be to a certain MIL spec. If you go back to that MIL spec, it has another list of MIL specs. So it goes back and back and back and there are thousands of MIL specs involved. It goes right back to the Book of Genesis.

INTERVIEWER: Were there other people working in the area around Hamilton on Naval equipment? Other RNOs at all?

WILSON: Well, right in Westinghouse, we were at the main plant. That's where our offices were and where most of our activity was. But Westinghouse had a Beach Road plant. And there was no one on the RNO staff down there. It had a well-equipped test facility for the main generators – both the turbines and the diesels, as I remember it. I used to go down there quite often. No, I used to go down there from time to time on tests with the main generators. Usually those tests – because the generators have such importance – usually somebody from headquarters was also down there. I'd be doing the donkeywork for him.

That was the one area, at the Beach Road plant. The other was a west end plant. It was where Westinghouse did electronics and associated stuff. I used to really like to go in there and watch the light bulbs being made, as a matter of fact. Fascinating to see those machines. There was an electrical officer up there, a chap by the name of Ernie Gummer, who was actually appointed to the RNO Hamilton staff but he was working for a chap by the name of Jim Jeffries, who was an ordnance officer. And Jim Jeffries reported to Ottawa. In fact, I think he almost had an assistant at the plant. But you notice that the Electrical Branch and the Ordnance Branch didn't usually get along too well. The electrical officer was appointed to the RNO staff, which was electrical but he did the work for the Ordnance Branch, whose staff he should have been on. But you couldn't do that because they're mortal enemies at that stage.

The work at the Beach Road plant, at that time, was the mortar systems and torpedoes. They were Canadianizing an American torpedo design. So they had a complete drawing office, like the Naval Central Drawing Office, but just specifically for the torpedo program. So it was a major

effort, both in engineering and production. They also did all the electrics for the mortar systems there. Later on, that plant also was producing sonar systems for the Navy.

The other area that I'd like to mention is that the RNO Hamilton reported to PNO Toronto, a chap by the name of Ron Dyson. He was located at the Naval Turbine Plant, an installation that was specifically put in by Ingles – Ingles, the dishwasher people – they were put in by Ingles to build Naval turbines, both the main turbines and for the electrical generator turbines. It was hoped that the turbine plant would become a national treasure that would continue on and help Canadian industry compete with the world market. I'm not sure that they had any contract with anyone for a turbine, other than the DDE 205 Class ships. And that's one of the regrettable incidents that so many things were put in place for the DDE 205, hoping that Canada would be able to compete in the world markets for specifically, I think, naval ship design but also with some of these marine systems. But most of it did not happen unfortunately.

INTERVIEWER: You mentioned Boag. Was that an example of that?

WILSON: Well, I'm not sure that the contracts actually said things had to be built in Canada. But Boag produced the AC to DC generators for the ships, something that would have been down Canadian Westinghouse's line. And why Boag got it instead of Westinghouse, I assume it was because of a competitive tender. But Boag, an American firm, came to Canada and built it. They didn't build a plant; they took over a plant so that they could build those generators in Canada. I suspect that part of the contract said that the equipment had to be built in Canada.

INTERVIEWER: Pat, I believe that at one stage you were in Westinghouse. What sort of equipment items were you concerned with?

BARNHOUSE: Well, actually I spent a whole summer at Westinghouse. It had nothing to do with the Navy at all. It was under industrial training before my final university year and I worked for the Atomic Energy Division. But I did learn some things about what went on at Westinghouse at the West End plant, which is also called the Longwood Road plant. I was back there in the 1960s, when I was involved with the hydrofoil project. So once again, I knew what was going on there at that time.

Now – as Bruce mentioned – back in the early fifties, Westinghouse was working on a Canadianized version of the Mark 43 torpedo, which they built under contract, under license. They were building the SW mortar, called the Mark 10 mortar. They went on from there to develop a proximity fuse version called the NC 20 of that particular mortar, which was sold back to the original manufacturers in the UK. Also Westinghouse, later on, got very big into the sonar world and built the 505 sonar for the Canadian Navy. And there are still variants of that floating around. It's been upgraded now but it's still, that technology is still out there. What else did Westinghouse do? Another thing that Westinghouse did, they were involved in the development of the CANOES Electronic Warfare System. They were the prime contractor for the development contract. They did not win the production contract in the end. That was won by MEL from the United Kingdom, who had been a subcontractor to Westinghouse on the development. But they came up with a better offer to the Government as to how they would actually build something like twenty-five sets under contract to the Government. So Westinghouse lost out on that.

INTERVIEWER: How would you describe your relationship with Westinghouse? Friendly?

WILSON: Yeah, they were very friendly. I'm not sure whether they were making money or not but they did their job and we did ours. I respected them for theirs and they respected us for ours. And we usually worked together very well to get the job done.

There was one incident in particular that illustrates just how friendly we could be. There were some circuit breakers that were brought in. They were subcontracted down to the main plant in the United States. One day a chap came in to the office and said, "Come on, Bruce, have a look at this." And we went out to the shipping floor where they had just received these circuit breakers from the States. And there they were – maybe not all of them – most of them with little red tags on them and a sign attached to the red tags saying – the red tag, by the way, is rejection by Inspection Services – and the little tags said, 'These have been red tagged down here for the US Navy. Maybe we can pass them off on the Canadians'. So here's a Westinghouse man showing me what they had to contend with, eliciting my sympathy. I thought it was pretty friendly.

INTERVIEWER: Sounds as if Westinghouse people might have been in the Navy at one time.

WILSON: There were several in their management system that had been in the Navy. There was one chap, John Holding in particular. He was one of the 150 radar officers recruited from Canada to go over and run the radars for the Royal Navy because they'd run out of scientific people and they needed help. That group were very, very highly respected with the Royal Navy. John Holding came back from that war experience to a position – I think he was one of the vice presidents at Westinghouse at the time. And there were others in there that I know were very sympathetic to the Navy. They loved the Navy. And I think that might have influenced them in getting into the Navy business.

INTERVIEWER: Pat, did you know anybody at Westinghouse that was ex-Navy or associated with the Navy during the war or any time?

BARNHOUSE: Well, funny enough, Bruce mentioned John Holding. And when I went to work at Westinghouse for the summer in 1956 in the Atomic Energy Division, John Holding was heading that at that time. I believe he went from there to become head of RCA Victor, Canada. Also in the Atomic Energy Division, there was another managerial type who also was a radar officer in the war but unfortunately I've forgotten his name now.

INTERVIEWER: Was there a project when you were at Westinghouse that had your personal attention?

WILSON: Oh, yeah. My pet project. Yessiree. I used to get a report now and again of sort of when stuff was shipped and when things were on order and when they were expected to be shipped. And there was one motor showed up in there that kept coming up on the monthly report. And I'd see it and say, that shouldn't take too long, maybe an afternoon's work. And I can give the approval for that and get it out. So I started asking, whenever I'd have a free time, I'd ask, "Let's do that motor now." I kept getting put off. They'd say, "Well, not right now. Not right now." So I finally got them pinned down and asked what was going on.

Now the motor was a DC motor and it was built with high temperature varnish. Using high temperature varnish, you could build a much smaller motor for the same sort of horsepower. But one of the properties of the high temperature varnish was that it gave off some chemical component that tended to ruin the commutation on the DC motor. So headquarters felt, well, if we can get internal ventilation in that that protects the commutator, maybe we can use the high

temperature varnish with our DC applications. And the Navy still had a lot of DC applications. So they raised a little research job on this motor. It went for about 600 dollars, I think.

The motor was built, tested and they got everything out of it that headquarters needed but the motor failed on the test. They had to rewind the rotor of the thing. And while they were rewinding the rotor of the thing, they took the stator and they sent it down to Toronto to the Canadian National Exhibition as part of their display because that high temperature varnish really looked nice. So after the display, it came back from the CNE. They found that the part that they had to rebuild had been lost because they thought, well, the rest of it isn't here so we'll throw this out again. So they had to redo it again. So it ended up that they built two complete motors. The cost to them, of course, is now going up astronomically. And the sales people said, "Well, we don't want you to test it and ship it because it's going to look bad on our sales report. We don't have to report it until the thing's shipped. And if we ship it, it's going to look bad. So wait until we get a really good month and then we'll slip it in and we'll get rid of it." So two months later we slipped it in and got rid of it.

INTERVIEWER: . The start of the St. Laurent Class saw surely the big change from DC to AC, certainly in the generators. Was this a problem for you fellows when you were getting this equipment from Westinghouse and seeing it go into the ships and training different people?

WILSON: Not at all. Not at all. It wasn't, not only was it not a problem but it was a blessing. The amount of maintenance required for a DC motor is astronomical compared to AC motors. Not only that, our technicians were familiar with AC because they saw it at home. So it wasn't a major change over for them at all. The other thing is that we always had DC AC generators in the ship, so AC was available for some applications so they already had experience with that as well.

But the big drop in workload was one thing. The other thing was the difference in materials that were coming in at the time. Not necessarily related to the AC DC but, for example, lead cased cable, that was used within the ships was all being replaced with modern equipment, modern designs. It made it easier to maintain and also easier to get bits and pieces for. We could tap the North American market again. So it wasn't a real problem at all.

INTERVIEWER: And you were part of it, too, Pat ?

BARNHOUSE: Yeah, I was recalling one little episode, one aspect of DC motors in cruisers like HMCS Ontario or HMCS Quebec, that Bruce mentioned earlier. The Electrical Branch actually had a full time fan party that did nothing but change the brushes on the ventilation motors in the ship. They just went from one to the other, one end of the ship to the other and back to the other end again. They never stopped.

INTERVIEWER: Like painting the Forth Bridge in Scotland..

END OF SIDE ONE

INTERVIEWER: CANDIB Oral History Program interview with Bruce Wilson. Tape one, side two. Bruce, do you remember the name of any of the senior personnel in Westinghouse and whether or not they had a company library that might have a history? Do you recall any of these features?

WILSON: Well, there was John Holding, a radar officer during the war. He'd come to a very senior position in Westinghouse. Larry Sentance, I think his position was chief engineer. The chap that was handling our sales was John McCallum. In particular, his assistant that was working

on the equipment that I was worried about was Lorne Pulsiver. The secretary in their office was Helen Novasat. You might not be able to find her.

INTERVIEWER: Did they have a library?

WILSON: I can't remember whether they had a library or not. Certainly I never used it. But I would assume that they had. I know that a lot of those places used to have a so-called reference section or a research section. It used to be custodian of important materials and often a repository for anecdotal stuff, the sort of things that people want to keep for posterity. But whether Westinghouse had one or not, I don't know.

INTERVIEWER: Would you happen to have any old documents or file copies of correspondence of DND? Maybe you were a packrat and have some at home? Anything you might like to supply us for the CNTHA Library?

WILSON: I'm regretfully sorry that I don't. The only thing that I got was a thing that Ken Odell got for me. I was asking him about the function of the Naval Central Drawing Office. He put it into his computer and came out with a small biography for a chap named Richard Lowery, who was a Naval architect. Apparently he was the Vice President and Naval Architect at Canadian Vickers. And his first job was to build a Naval Central Drawing Office. He talked about employing from Great Britain and France, 300 draftsmen to produce working drawings for the first Royal Canadian Naval vessels designed for ABC warfare. Interesting thing that it comes up in his little biography but I had no personal connection with it.

INTERVIEWER: I think Jim Williams will be very interested in that. We'll see that this gets to him.

WILSON: Good.

INTERVIEWER: Thank you very much, Bruce and Pat, for all your good work in this. This is the end of the tape. The interview with Bruce Wilson ends at this point. Thank you.

TRANSCRIPTION ENDS