



ORAL HISTORY INTERVIEW TRANSCRIPT

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INTERVIEWEE: Chris Arnold

INTERVIEWER: Tony Thatcher and Pat Barnhouse

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Chris Arnold
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Interviewed By Tony Thatcher and Pat Barnhouse

Interview starts

INTERVIEWER: This is a CANDIB Oral History Project interview with Chris Arnold. It was recorded in Ottawa on the 13th of January 2011 and interviewed by Tony Thatcher and Pat Barnhouse. Both participants have signed the interview release form. The subject of this interview is the effect that Naval procurement of various projects including ship procurements had on the Canadian companies that Chris was involved with, and I'd ask Chris to introduce himself and describe his career as it relates to the subject of the interview.

ARNOLD: Very good Tony. I think I should start perhaps, my parents were Canadians but I was raised in Bermuda and as you all know Bermuda was a headquarters of the Royal Navy for the Caribbean so I became very interested in the Royal Navy from a very early age. Being Canadian my parents sent me to school in Canada at Ridley College and I wasn't a very good student so I decided to leave early. I left after grade eleven and joined the Navy when I was seventeen years old as a stoker second class and I went through the normal training exercises. I took my basic training in Saskatoon, *HMCS UNICORN* and then I took the steam course at *[HMCS] CORNWALLIS*. Following that I went to boiler cleaning in Sydney, Nova Scotia and I was awaiting assignment to an escort vessel for convoys when I received word that I had been nominated for the engine room artificer course. I started that off in Windsor and after proceeding there spent some time in both *[HMCS] STADACONA* and *[HMCS] ESQUIMALT* and so part of my training was on land and part at sea. I served in *HMCS NEW LISGARD* which was a Bangor Class minesweeper and *HMCS CHARLOTTETOWN* which was not the original *CHARLOTTETOWN* which was a corvette but the frigate and I also served in the *HMS SHEFFIELD* so I could learn turbines and then I was assigned to *HMCS WARRIOR* which is the first fleet class carrier built by the Canadian Navy at Harland and Wolff in Belfast, Northern Ireland.

Following the war I demobilized in 1946, January, and took six months at the Brockville Rehabilitation School to gain my grades twelve and thirteen with honours. I was accepted by the University of Toronto in mechanical engineering, class of 1950. I took the first three years in mechanical engineering and decided that I wanted to learn a little about the business side because in terms of practical experience in mechanical engineering I knew more than some of the professors so I switched to industrial engineering. I graduated in industrial engineering in 1950 and worked for a couple of years with the Square D company in systems engineering.

I had an offer of an MBA scholarship at Western so I accepted that, completed that, and my first job after my MBA was with Alcan and assigned to Northern Quebec, Arvida where I was a Supervisor Industrial Engineering. I had an opportunity to work throughout the whole complex,

which is one of the biggest aluminum smelters in the world. We started introducing planned maintenance at that time, which is about 1954, and planned maintenance was really at its early stages of development at that point in time. I was in charge of planned maintenance in the chemical plants. From there I was transferred to a purchasing department in Montreal and my team was working on buying all the major equipment purchases for Kitimat at that time and quite a bit of that was purchased in England which was very competitive. But the problem with supplies from England they didn't really understand the North American philosophy of doing business; that you had to deliver when you promised to deliver. So there was a lot of expediting required including a number of trips over there to personally kick asses.

After my period with Alcan one of my suppliers for Kitimat was Electric Tamper [bought by ABB], which was a division of Canron [Canadian Iron Foundries Ltd] which is a very large and complex Canadian engineering company, engineering products, that is. My first experience as a supplier to the Canadian Government was through the Coast Guard. At that point in time all the Coast Guard vessels being built in Canada, the below[deck] engineering equipment was all contracted as a turnkey to Fairbanks Morse because they were the main suppliers of the diesel engines [used by WW II submarines]. I worked with Fairbanks Morse and we supplied all the electrical motors and generators for all of the Coast Guard vessels built during that period of four years. I guess that was my only experience at Tamper with the Forces.

After Tamper I accepted a position with Onan [in Minneapolis], generators and diesel engines. Onan is one of the principle contractors to the U.S. military, all military, navy, army, air forces, particularly army, marines for small generating sets. At that point in time Onan was doing a complete package of engines, generators and controls for, up to a certain size. I think it was 25 KVA. Above that they would build all the electrics, but they would buy the engines to match. So I did that for two years as a sales manager across Canada and one of my major negotiations was supplying generating sets to the Canadian military; small generating sets mostly for the Signal Corps. From Canada I was the only French speaking engineer that they had employed in the States or anywhere else in the world. They were opening up an office in Geneva, Switzerland to cover Europe, Africa and the Middle East and I was the natural candidate for that and I accepted the position. I was over there for two years and during that period the main thrust of Onan throughout that whole geography was military. One of our biggest projects was communication project CENTO, which I think you're aware of between Turkey, Iran and Pakistan and Onan supplied all the prime power and emergency generating sets for the communications sites. It was about 150 sites I believe. That was our major military contracts at the time. Other than that we were military suppliers to people like Israel, Ethiopia, Iran, Turkey; it just goes on and on. None of the big countries like Germany or France or Sweden, because they were so nationalistic they wanted only source from their own people. We did supply the British military that's particularly the Army and the Air Force with small generating sets and engines because I had an excellent distributor in the U.K that was well connected to the military himself. So I guess that, in summary, is the two years in Europe with Onan.

I had four years with Onan altogether, two in North America and two in Europe and at that point in time I was offered a position with Canadian Controllers in Toronto as the Director of Marketing for Canada. Canadian Controllers were a subsidiary of Clark Controllers in Cleveland.

Clark, in turn, were a subsidiary of A.O. Smith in Milwaukee so they were a very large American conglomerate. My experience at Canadian Controllers is appropriate, was that we supplied all of the electrical controllers for the self unloading vessels built in Canada. We had a liaison with all the shipyards and we worked through Stephen Adamson as an OEM; they were located in Belleville. There were a lot of self unloaders being built at that time by both Canada Steamships and Algoma Steamships. I don't know how many vessels there were, must have been a dozen or more. Other than that Canadian Controllers supplied all the crane controls for dockyards and heavy industrial, like steel and aluminum etc, etc. Canadian Controllers, they were changing the general manager so often; they were always Americans. I should have had that position, but they insisted on having an American so I figured it was time for me to look for a new employment.

At that point in time the Canadian government were looking for someone with my experience and so I signed on with Trade and Commerce and as a Director of - there were about three Directors in Trade and Commerce responsible for all product lines in Canada and the one I had because I was the only engineer was all the engineering product lines including consulting engineers and architects to assist them in obtaining export business.

INTERVIEWER: May I just break in for a second Chris. You mentioned a number of companies there and it would be good just to get the spelling or understand their names better. The first one you mentioned was Tamper.

ARNOLD: Electric Tamper and Electric Tamper was bought out by ABB in Switzerland.

INTERVIEWER: And that would be TAMPER?

ARNOLD: Yes because one of their product lines was electric tampers for railroads. They do [place] all the ties and lay the rails and all that sort of stuff on a semi automatic basis.

INTERVIEWER: The next one you mention was Onan is it?

ARNOLD: Onan, ONAN. Their headquarters in Milwaukee, no not Milwaukee pardon me Minneapolis.

INTERVIEWER: You mentioned CENTO.

ARNOLD: CENTO. I can't remember the, that's the acronym, I can't remember the full name for that.

INTERVIEWER: And you mentioned Canadian Controls.

ARNOLD: Controllers.

INTERVIEWER: Controllers and it had a parent plant.

ARNOLD: The parent company of Canadian Controllers was Clark Controllers in Cleveland, Ohio and the parent company of Clark was A.O. Smith in Milwaukee.

INTERVIEWER: Thank you.

ARNOLD: So, in 1968 I joined the government of Canada in the Department of Trade and Commerce and I was made the Director of Manufacturing Industries and Engineering Services which is one of the three Directorates in the department responsible for all product manufactured in Canada. I was in that position for six months and really enjoying it and the government decided at that point in time in their wisdom to merge Trade and Commerce with Industry. It became the Department of Industry Trade and Commerce. My position disappeared and my new position was Director of the Transportation Industries branch and I guess the relevant point there is that it contained all shipbuilding. I had a branch, a group headed up by Graham Loughheed who was a Scot, very familiar with shipyards and ship buildings from his home and he was the Chief of that division. Other military exposure I had in that branch was with Atco. Atco at that point in time were very interested in R & D contracts and production contracts with the U.S. military so I worked with Ron Southern, President and son of the founder of Atco to help him obtain these R & D contracts. We were very successful in doing that.

Also we in that department we had all the automobiles and trucks so we were interested in military trucks when that procurement cycle came up. That's all I can think of off hand. My Director General, my immediate superior in that department was Doug Arthur who also held the position I think of Lieutenant Colonel of the Foot Guards here and of course Deputy Minister at that time was Jake Warren who was an ex Lieutenant [~~or Lieutenant Commander~~] in the Navy. He was torpedoed in *VALLEYFIELD* or one of those ships, destroyers. Between the two of them, they decided that I should be the candidate for the National Defence College for which Industry and Commerce had a position so I was seconded to the National Defence College for a year and when I came back of course my position had been filled by somebody else.

So I was looking around for what I should do next and it has nothing to do with defence what so ever but I was chosen to represent Canada for the Olympic games and the Olympic Coin program for United States and Mexico so I was posted to the Canadian Consular General in New York city which is the largest Canadian Consular General in the United States of the twelve that existed at that time and I worked through all the Counsellor Generals and, and the Embassy in Washington to publicize these programs. It wasn't very successful because the Americans weren't aware of where the Olympics was being held. The ??? [missing word] didn't know Montreal and so we did what we could, but we were limited by budget. The Hunts, if you recall, at that time were cornering the silver market so it was very profitable for us to be selling silver coins at the start of the program, it just ran out because the cost of silver went beyond the means that we could get for it so fortunately the government allowed us to do a gold coin and the gold coin sales were very successful.

After that I decided it was time to return to private industry and [Doug] Bryden was an active businessman in this area, a former, a former ADM in DREE asked me if I wouldn't join him. He had a whole bunch of companies and I became President of a Public Relations company and

Vice President of several others including a consulting engineering firm within his purview. Also Systems House which is a big company under his wing at that point in time and Director of a Holding Company.

That leads me to one of the clients that I was a consultant to was Wilson Machinery in Montreal and what that evolved to was a full time position with Wilson as Executive Vice President. Wilson is the largest manufacturer of gearing and gearing reducers in the country located in Lasalle, Quebec which is the subsidiary in Montreal and a wonderful manufacturing capability. Gord Wilson himself was an [graduate] apprentice machinist, just amazing man, can do anything with his machines run [~~all them, ???~~] them all but he had no PR or sales capabilities. So up to that point in time all their marketing had been done sort of let the other guy come to them. The old British tradition of selling and so I was required to turn this around and get a sales force up and a marketing force up and augment their engineering facilities and start relations with the Canadian government. This worked out very well. The company doubled in just a couple of years. We bought some excellent equipment from Switzerland, gear inspection equipment and there's only one other machine of this type in the country and that's in Toronto and it's used to measure all the helicopter gears that are produced in Toronto. When their machine broke down Wilson took on that job of inspecting all the helicopter gears. These are million dollar machines; I mean they're not peanuts. That was I guess our first insight into the military.

Another one was with Linamar. Linamar at that point in time were not so heavily orientated towards the automotive industry, but were doing quite a bit of defence work; quite a bit of gearing. Some of the gearing they didn't have the equipment to complete. So I made this contact, they were doing work for the American I think 150's or 155 Howitzers, and so we got the subcontract done on doing that work. The company was located in north Pennsylvania, I can't remember the name of it now but our contract was through Linamar.

Then I guess our real breakthrough came when Raytheon were given the contract on the frigates and they were looking for offsets in Canada and Pete Peterson who was their purchasing agent in charge of this program had just returned from Europe where he had done the same thing on the NATO program. He really knew his business and we were really fortunate that he was there. We made the contact through an exhibit in one of their plants in Massachusetts and this led up to us getting a contract for the SPS 49 mechanical work. They supplied all the funding necessary to do the prototypes. This other gear inspection machine that we bought from Switzerland was required for inspection of these parts and that wasn't a million dollars that was only about a half a million dollars. We got some... I think we were the first probably only today, the only company in Canada with profile gear cutters. That's what you need in the navy gears. So we got those and used those on the Raytheon contract. As you know the way the U.S. Defense works they have two suppliers; one gets sixty percent and the other gets forty percent of the contracts. So we started off; we did a short run for them, I think a few dozen sets and they were very pleased with it. I guess our prices and our workmanship was better than their other supplier so before you knew it we were up to sixty percent on the contract. The next part of our work with Raytheon was when they were given the contracts for the airports across the country and at that point in time there was nothing on the radar that we could do, but they gave us all the dishes. We built all the dishes for the airports across Canada under Raytheon as the OEM. Then we

built a lot of equipment for them for the U.S. Signal Corps and many other contracts After a year or two Raytheon became their largest contractor.

INTERVIEWER: So it would it would seem then that the original contact and contract that you acquired I guess through the sort of by the sound of it the IRB offset program for CPF gave you an opportunity to get these follow-on contracts. Sounds like a very successful...

ARNOLD: Very and I had a lot of experience with Wilson on other contracts like the Leopard tanks that they bought from Germany and all kinds of other things where there was really zilch Canadian offset you know provided. It might have provided some steel for the tank or something like that but very basic you know nothing upscale at all.

Now that was Raytheon, another thing that we got involved with was for the U.S. Coast Guard. We made a contact in the Boston area again; a company that supplied all the deck machinery to the U.S. Coast Guard. They didn't manufacture any gearing themselves, they outsourced that so I said why not give us an opportunity, we'd like to put a proposal in on the gearing. We got to work out a contract - 100% that time. So all the U.S. Coast Guard cutters where these people supplied the deck machinery, we got the gearing. I guess that's about as far as it went with the U.S. Navy except for you know the SPS 49. Practically all the U.S. ships had this on their masts.

The other thing that Wilson became involved in, not the Navy synchrolift in Halifax, but a synchrolift required for a shipyard in Newfoundland. Can't remember the name of it off hand but they bought a synchrolift and I contacted the synchrolift people and wondered if we could supply the gear reducers. They said no we're sorry we've had such a long time exposure and good experience with our U.S. supplier that we don't want to change that. However we would like to get an opportunity solicitation from you on the wheels of the carriages, so I gave them a proposal on that. There was an option of ductile or steel and we found a very excellent supplier of ductile castings; Dorr Oliver Long in Orillia which was since bought by this company in Quebec. It's listed on the Toronto stock exchange LVG, [~~I think it is the ???~~] [Groupe Laperrière & Verreault Inc] something like that and it's in Trois-Rivières.

INTERVIEWER: Can I interject? The company you mentioned before that, the one in Orillia.

ARNOLD: DORR OLIVER LONG and they were purchased by the other company in Trois-Rivières. So that's that. Also we supplied gear reducers for a lot of the marine railroads particularly in the east coast and New Brunswick. You know what that is, that's just to pull the ships out of the water. We were quite successful in really monopolizing that market. These were good size gearings so enjoyed that business. Most were electric power, but some were diesel powered and so we would work with the shipyards either way. Also Wilson supplied all the gearing for the self propelled ship motors through Stephens-Adamson again, so that was a very nice contract as so many ships were being built. There were about more than a dozen unloaders being built at two or three Canadian shipyards.

INTERVIEWER: That was Stephens-Adamson?

ARNOLD: Yes Stephens-Adamson, the same company that I worked through Canadian Controllers with for the motor controls. I guess that's the main defence work we did at Wilson.

The other thing we tried to put a proposal in on the main gearing for the frigates and you probably remember Williamson [actually Don Nicholson] who was with DND at the time. He's a gearing expert and for reasons that I suppose were justifiable he wanted to get a tried and proven gear manufacturer so he got the Dutch shipyard to build them for him. The Dutch shipyard had gone bankrupt two or three times and each time was bailed out by the government of the Netherlands so really it was a non competitive proposal. We had proposed to work for the Germans who had supplied all the gearing to the German destroyers and frigates. I don't know where the pricing came out, I never asked for that, never found it out but it was a multi million dollar order and we could have done it in Canada. Just like previous destroyers [e.g. Saint Laurent Class et al] had been built at Dominion Engineering and the government supplied all the gear cutting machinery. We didn't ask for a cent for any machinery; we did that ourselves, but in the end our bid wasn't considered. That was a real letdown and a lost opportunity to supply this capability to Canada which didn't exist at that time. We could have done all the gearing here except the largest [post] main gear which we could have brought in from Germany.

INTERVIEWER: That's a shame because the gearing for the 205, the steam destroyers anyway during the years were made in Dominion Engineering as you mentioned there,

ARNOLD: Right, yes.

INTERVIEWER: and the equipment presumably procured for them either didn't exist by the time you were talking here or wasn't available when the next contract came up.

ARNOLD: It was all sold in the United States except one machine was bought by NRC. I did a lot of work with Dutton who was a Vice President of mechanical engineering at NRC and we used to sub contract to him for gear cutting on that machine. We could have used that machine for the new gearing.

INTERVIEWER: I seem to recall it had to be hobbled gearing, does that make sense?

ARNOLD: Yes.

INTERVIEWER: and that was one of the key...

ARNOLD: Another good contract we lost out on; we supplied a lot of the racks and pinions for the ship tow tanks at NRC and when the government bought a ship towing tank for Newfoundland we bid on that with DEW Engineering. We put a joint proposal in and our proposal was five percent above the Japanese price. Of course the Japanese were subsidizing it to get the order and we weren't given consideration so you know I got sort of fed up with politics in Ottawa and it is all politics. I mean procurement I know from the inside having been in Ottawa that politics outfoxes reality.

INTERVIEWER: How do you spell, can I go back to two names you mentioned? First of all you mentioned a gearing expert in DND as Williamson. I think you meant Don Nicholson.

ARNOLD: Nicholson. That's right.

INTERVIEWER: He's now deceased but Don was the, would be....

ARNOLD: Yes that's right, that's the one.

INTERVIEWER: The second name you mentioned was the man from Raytheon, Peterson.

ARNOLD: Yes.

INTERVIEWER: Interesting fellow. He was their, Raytheon's, European rep when they were doing the NATO Sea Sparrow [missile].

ARNOLD: That's right.

INTERVIEWER: And when Raytheon got involved with a thing called NAAWS, NATO Anti-Air Warfare System they put in a very poor bid to take part in the, what was it, the design phase of the system anyway - Preliminary Design phase. They called back Peterson from somewhere and with all his international experience and dealing with various countries he got Raytheon back into that project.

ARNOLD: Yes oh yes.

INTERVIEWER: He was an amazing fellow, he really was.

ARNOLD: Certainly was. If it hadn't been for him we wouldn't have got those contracts from Raytheon.

INTERVIEWER: He was their internationalist, he understood international business.

ARNOLD: Yes he sure did yes. That's very unusual for American companies. Now another thing that we did, it wasn't military but it could have been was with Bombardier. I don't know if you recall or not but Bombardier at this time, this must be going back fifteen, twenty years ago were building their own locomotives in Montreal and they also built their own diesel engines. At that point in time Wilson was supplying all the pistons and gearing for their diesel engines so again when the diesel engines were sourced for the frigates from France and I think Germany, we could have supplied that equipment. Now but again this was not under consideration at all.

INTERVIEWER: That's interesting because diesels, I think that capability is completely gone now,

ARNOLD: Yes.

INTERVIEWER: in Canada.

ARNOLD: That's right.

INTERVIEWER: We seem to be sourcing them outside the country entirely.

ARNOLD: Yes we don't build diesel engines here.

I was with Wilson about ten years, really enjoyed the work and at that time I was approached by CBCL in Halifax, Canadian British Consulting Engineers. They're the largest local firm of consulting engineers in, in Nova Scotia and one of the largest throughout the Maritimes but the head office was in Halifax. They had branches in Sydney, Nova Scotia, St John's, Newfoundland, Fredericton, New Brunswick, Ottawa and Toronto. They had been losing money for five years and looking for someone to turn the company around so they approached me and I said sure I'd be interested. They said we'll offer you [me] only a one year contract and you can commute from Ottawa and we'll see how it goes at the end of one year. Well I did what they didn't want to do themselves. I had to cut the company back. They'd lost money for five years. Had to cut the company back, closed the Ottawa office, closed the Fredericton office and let a lot of good engineers go because we just didn't have work for them and they were just kept on because of sentimentality. As you know engineering firm their main cost is engineers so I got it down to a rock bottom.

We started to make money and the thing they had lacked really not only was how to manage an engineering firm, but how to get new contracts. Fifty percent of consulting engineering work in the Maritimes as you know comes from government at one level or another; federal, municipal, provincial. One of the contracts I was able to help them get was the SRU building in *STADACONA* [Dockyard]. That's a very large building and so we designed the whole thing and we also did a lot of work in the Halifax Dockyard like electrical work and mechanical work. Also I was able to get them a number of multimillion dollar contracts with CIDA which they'd never had before.

So the end of the year came and we sat down and talked and I said well I really wasn't interested in moving to Halifax and they said well how about if we keep you on and let you stay in Ottawa and work with the government; give you another year contract. I said that's fine and so I lost the title of President and CEO but they made me the Vice Chairman. All my job was to solicit work in Ottawa. We were quite successful at doing that and as you know it's just a matter of getting to know all the MPs and the Ministers and the civil servants that are involved in these kinds of things. Unless you've been in the government you really can't comprehend how the system works. It's quite different. So after my second year with them I was wanting to retire, so I said I didn't need the money and I retired at that point in time.

INTERVIEWER: I'd like to ask you a question. You mentioned a number of companies histories, some successful, some not in getting A government contracts and B military industrial base type contracts - missing those. Would you like to make some observations about that?

ARNOLD: Yes I think the best experience we ever had at Wilson Machinery was dealing with Raytheon and as we discussed this Pete Peterson was just an outstanding person. He'd had this experience in doing offsets in Europe on the NATO program and he brought this experience to the Canadian Frigate Program (CPF) and subsequent programs with the Canadian Air Force. You really need the right person in the American or foreign company that understands what an offset is all about. Also you need the same kind of knowledge within the Canadian government both the civil servant level and at the ministerial level and too often this is just let go.

INTERVIEWER: Chris perhaps you could talk about the linkages that companies experience from an initial bid or winning, like in the gearing side of it; what linkages came out of that?

ARNOLD: Well in gearing you need castings, you need forgings, you need steel to build your gearing enclosures. You need the steel for shafts, you need bearings so there's you know there's a chain of subcontracts that you give out and all those things can be obtained in Canada at competitive prices and so it's providing work down the chain.

INTERVIEWER: So we have, it would seem, the project management ability to put it all together, it's just the original getting started and a lot of the industries involved and all the linkages are already there on the ground.

ARNOLD: That's right. You're doing this with in many cases for commercial business already. You've all your sub-suppliers established. You know their capabilities and you know the same people you use for military work.

INTERVIEWER: So the a position say of military standards or government contracting or other aspects that make it perhaps more difficult than in the commercial world or different shall we say; are all can be overcome?

ARNOLD: Yes very definitely by you know you get the best testing machines for your gears after the cut from countries like Switzerland and Germany. Germany is probably renowned throughout the world for its machine tools. When Germany was East and West, [Wien] German gear manufacturing machinery is [was] located in Berlin, East Berlin, so when Germany split they started up another gear manufacturer in West Germany. We looked at both of them when we were sourcing gear cutting machines and the price of the machines in West Germany was about twice those in East Germany and really no better in quality on the mechanical side. So what we ended up doing was buying our machines in East Germany minus all electrics and we put the electrics on ourselves in Montreal.

INTERVIEWER: You mentioned before where the government observation was that they wanted a proven company or an equipment that was off the shelf and yet you've mentioned some success stories in getting a product that wasn't off the shelf necessarily but still a product which should've really been considered perhaps and maybe the off the shelf policy isn't a valid one because it's restricting our industries.

ARNOLD: Very definitely. Contract for the frigates did I mention that we, Wilson had received a deck machinery contract for all the twelve frigates?

INTERVIEWER: I think at one point, but carry on.

ARNOLD: Although Wilson had designed all kinds of winches for overhead cranes and container loading cranes and this sort of thing we didn't have the engineering capability to design deck machinery. What we did in that case we went to our colleagues in the Boston area that we supplied the gears for their deck machinery for the Coast Guard and said would you like to work with us on this contract and give us the designs to the specifications to the Canadian Navy and we'll build everything in Montreal? They said sure. We were very surprised at the very low prices they charged us for the engineering so that gave us the capability of the package.

INTERVIEWER: Although that provided the mechanism to provide, to deliver machinery for the CPF did that prove to be a lasting capability?

ARNOLD: Well there was nothing new required in terms of what we could do in-house. All the machines were there etc, etc so we didn't need to go out and buy anything new. It was just sort of a little different from what we normally do but not enough so we couldn't do it.

INTERVIEWER: [Was *HMCS LABRADOR*] ??? one of those?

ARNOLD: I don't remember the ships...

INTERVIEWER: Well this was a Navy icebreaker.

ARNOLD: Yes this was back in the...

INTERVIEWER: It was built about the early fifties.

ARNOLD: ...in the late fifties.

INTERVIEWER: So you were the later ??? [missing word], you were after that?

ARNOLD: Yes.

INTERVIEWER: Then okay so, sure.

ARNOLD: Replacing ships, it's very long and of course if you had the expertise twelve years ago like Dominion Engineering you don't have it twelve years hence.

INTERVIEWER: Yes you need opportunities and I wondered whether the part of the reason is of course Canadian shipbuilding cycle but also is it that there's boundaries set up to sell to other countries cause they're all trying to,

ARNOLD: All nationalistic particularly the Europeans you know and well the Asians, the Japanese and the Chinese, they do everything in house. So do the Germans, so do the French, so do the Dutch, the Italians, you know. It costs them more just like it costs us more. It cost the Americans a lot more to build their destroyers you know whatever. Of course no one else can build their carriers [or submarines] because they're the only ones that have a carrier like that.

INTERVIEWER: Yes; and so perhaps part of that is that we haven't decided to pay that premium to make sure that Canadian industry is selected I guess originally and,

ARNOLD: Yes, you can mothball things and be ready for the next cycle but probably the next cycle of technology has changed so much that, like the gearing in the frigates, is much more modern than the previous class of destroyers and noise level is much lower so probably the next ones that are in a different league altogether technically; so many mistakes in major procurements over the last twenty years or whatever. Whichever Liberal party it is or the Conservatives they give an order and the next government comes in and cancels it and five hundred million dollars cancellation charges or whatever goes on and it goes on. It's all politics. Then we're buying stuff that no one else has bought yet or we're having it modified to our own standards and it's again new, brand new to the manufacturer and so he has to go through all the debugging of this new equipment. It's more costly, takes more time and you never get what you want at the time or at the right cost. So I don't know there's a lot to be changed in our procurement policy.

INTERVIEWER: That's how you see ... what should happen I guess to reinforce a naval industrial base, shall we say, requires a change,

ARNOLD: It's not easy because we don't build that many ships. Not like the Americans I mean, their shipyards are... you know they launch one ship and they got another one in there. They've got a six hundred ship Navy something like that.

INTERVIEWER: It's come down somewhat from what it was.

ARNOLD: Here ours is about sixty at the most plus every tug you got.

INTERVIEWER: Well Chris I'd like to thank you very much for that insight into....,

ARNOLD: Pleasure Tony. I wanted to get it off my mind. What good it'll do I don't know, but I'm sure a lot of people think the same way.

INTERVIEWER: Yes it's a common theme we're finding.

Interview ends

ABBREVIATIONS AND ACRONYMS

ADM	Assistant Deputy Minister
CBCL	Canadian British Consulting Engineers Ltd
CENTO	Central Treaty Organization
DREE	Department of Regional Economic Expansion
CEO	Chief Executive Officer
CIDA	Canadian International Development Agency
CPF	Canadian Patrol Frigate
DND	Department of National Defence
IRB	Industrial & Regional Benefits
MBA	Master of Business Administration
MP	Member of Parliament
R&D	Research and Development
NAAWS	NATO Anti-Air Warfare System
NATO	North Atlantic Treaty Organization
NRC	National Research Council
OEM	Original Equipment Manufacturer
PR	Public Relations
SRU	Ship Repair Unit