Oral History Interview Transcript

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Interviewee: Vice Admiral R. St-G Stephens (Ret'd)

Interviewer: Tony Thatcher and CANDIB Committee

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Vice Admiral R. St-G Stephens

Interviewed 17 April 2008

By the CANDIB Committee

Tape 1, Side 1

INTERVIEWER: My name is Tony Thatcher, Chairman of the CANDIB Committee. This is a CANDIB oral history project interview with Admiral Stephens recorded on Thursday, the 17th of April 2008 at Ottawa, Ontario. The interview was taped during a General Meeting of the CANDIB Committee which Admiral Stephens attended. All members present were invited to take part in the questioning process and all participants have signed a legal release form. I would request that the participants please state their name when posing questions.

[CANDIB members present were Mike Saker, Tony Thatcher, Roger Chiasson, Jim Dean, Gord Smith, Brian McCullough, Colin Brown, Douglas Hearnshaw, Don Wilson, Pat Barnhouse]

We are indeed fortunate in having Admiral Stephens attend our meeting today and answer our questions concerning his interesting and extensive naval career, with particular reference to the several occasions on which he has been involved in contractual relationships with the defence industry of Canada. I would ask the Admiral to begin by giving us a brief statement about his naval career as it related to the defence industry matters and the topics which we want to discuss today.

STEPHENS: Well I first came to the Headquarters in 1951, when I came back from Korea. I came here as Head of the Boiler Section in the EinC Dept. We were building the DDEs [205/257/261 Class destroyers]. I think the order was for 7 at that time, then it got to 11, then it got to 14. Also we had the conversion of the frigate program. All the old frigates were being brought forward and we had the new minesweepers. EinC in those days as probably some of you may know were divided basically into two groups, what we called the Steam Section and the Diesel Section. The Steam Section was under E.B. Good, who was on loan from the RN [Royal Navy] and, if I remember correctly, the Diesel Section was under Commander Palmer. I was there for about 3 years before I was sent to the UK to the Canadian Joint Staff. During that period, of course, we were dealing with industry in a big way who knew very little about building warships or their equipment. I remember we used to have these big progress meetings in Montreal and you always tried to be invited because the lunches were very good. Rolly Baker [Commodore] always chaired those meetings, of course, because he was the Chief Constructor, I forget what [his title was]…. DNC, Director of Naval Construction, I think. And I will just tell you what he said. They were all running behind schedule and, I think, it was the Chairman of Vickers [Canadian Vickers Ltd, Montreal] who was chairing the meeting, co-chairing it with Rolly Baker. Baker all of a sudden got exasperated and he said, "The real trouble with you people is you don't know how to build ships." And the Chairman of Vickers said, "I wouldn't say that Commodore." He said, "I've said it." And that was the end of that discussion.

And it was true, you know, that nobody knew how to build ships and nobody knew how to make machinery, really. There was quite a lot of building, you remember, during the war. You probably knew that my father was Chief of Naval Engineering and Construction all during the war. I guess the Tribals [WW2 destroyers] were the biggest thing we ever built in that day and he was very much against this. I'm going back a little bit, but I think it is important on two grounds. One, we didn't really have the competence to do it without a lot of help. B. He thought we should be concentrating on smaller ships and that it took away particularly from the East coast from all the ability to do all the repair and maintenance and it was a waste of time, really, because those ships never came out until after the war. So, the only reason that I go back that far is because it showed there was not a great deal of competence in the industry, as I recall. Although, of course, people like Inglis [John Inglis Co, Toronto] had started to build the turbines for the old Tribals and so they had some experience there, as did Babcock's with regard to the boilers. Then we had this Organization called DDP, which was the Dept. of Defence Production [Department of Defence Production]. Well, you know, they used to do the ordering for us and they knew next to nothing. I had people who used to call me and say "What's an anchor?" - that wasn't very helpful. In those days, too, I'll tell you who used to help us a great deal, and that was Mines and Technical Services, because we knew so little ourselves about materials . Nobody taught you much about materials when you were at Keyham [Royal Naval Engineering College, Devonport.UK] as I recall, and we had to change everything anyway from British specifications to ASTM [American Society for Testing and Materials (international measurement standards)]. None of us had ever heard of ASTM, I didn't know what it stood for, let alone how to apply them.... Also we were starting to use a lot of American specs for different things in Canada because Canadian industry was much more akin to the American industry. On the electrical side EEC had gone totally to US design while the mechanical engineers fully adopted the British Y100 machinery, as we called it, which was similar to what was going into the RN ships. I am not talking electronics, I am talking electrical. This caused us a lot of problems, because you didn't get flanges that fitted together. Putting a British pump together with the American electrical system simply didn't fit. But I was concentrating basically, as it was my job, on the boilers. We and Babcock [Babcock and Wilcox Ltd.) were pretty good about their job and we had good relations with them. The people who were building the propellers up in …I forget … in Lake Superior, I think … or in Owen Sound …. can't remember the name of the firm [William Kennedy and Sons, Owen Sound ON] were basically starting from scratch…… but we were always in close touch with all of the British manufacturers who had done it for the Y100 ships, so this helped enormously

I am probably getting off the point, but when I went to London, that is to say on the Canadian Joint Staff, I found that was my job, to deal with the originators of the original design, so I spent a lot of time dealing with the British manufacturers and at Bath where the EinC [Engineer-in-Chief for the RN] had its headquarters.

In the '51- '54 period, we put together NEDIT [Naval Engineering Design Investigation Team] and NETE [Naval Engineering Test Establishment]. We recognized that the Yarrows Admiralty Research Department [Y-ARD] had done a lot of good work in the British Navy, particularly as we were moving, if you may recall, to much higher steam pressures and steam temperatures, and the Brits didn't have a research organization like this during the war. They were way behind the Americans on the design of their boilers and of their turbines. So again, these were new approaches and we recognized that we needed something similar. And we were very fortunate, I don't know if any of you remember the name of George Raper. He was very much involved with Y-ARD. He was one of the RN's brightest engineers. He became Engineer-in-

Chief much later in the Royal Navy. We managed to talk the British Admiralty and the Engineer-in-Chief over there of lending us Raper and he came over and put together NEDIT. At NEDIT, he was, the only naval officer. He was the leader and then after him, I guess, was Garston, again RN, and then I think it was Howie Minogue, and then Derry Dawson, so we started to change over to Canadians as we got more experienced. And that was the basic idea of NEDIT; we didn't think we had the design capabilities in the headquarters. It was better to leave this somewhat to a separate group. So they weren't only doing new designs but they were looking at problems in designs and that is where, to some degree, Don Nicholson and people came in, particularly to deal with noise and vibration, sound, propellers, all this thing, which Nicholson over the years developed into a fine art and probably knew more than many of his counterparts in the UK.

NETE we decided at the same time, we needed something to do testing where the "T" stood for Test establishment. We didn't know how to do shock testing, so we had to have shock machines. We wanted to make sure that the performance of the feed pumps was up to scratch and although the contractors had to do this when they were doing a multiple supply, at the beginning if you had problems we would check things out at NETE. I can't remember what else we used to do, but it was every kind of testing imaginable. And it grew. There again, I think we had a naval officer in charge of NETE, but all the others were civilians from Peacock [Peacock Brothers Ltd, Montreal]. We purposely put it there because NEDIT was there and we thought NEDIT and NETE could work together in a nice, tidy package.

I don't know whether I can say much more about my time in the St Laurent [ship design office]. They weren't finished by the time I went to the UK. I think the first [ship] came out in 1955, something like that. So I don't know whether you want me to say much more about that period. Oh I know another interesting thing; just an amusing thing. Chauvin … I don't remember his Christian name … John Chauvin … he was the overseer in Montreal (we got on very well) and he discovered what we were doing with the auxiliary boiler designs. The auxiliary boilers in the DEs [205 class destroyer escorts] were very similar - they were like a miniature Y100 boiler, you know with drums and everything. He thought this was crazy, and he found this boiler in some big laundry place in Montreal which was a straight through coil boiler, you know you put water in one end and it came out hot the other. I remember we decided on that for the Frigates and I don't know how many times I used to go to Chicago, because it was an American design. They got so fed up with us because I used to go down there and we used to do the testing and find it didn't meet the specs. So I said, "No, no good, you know, you have to do …" and it used to be called the boilers for the Frigging Frigates. They were very unhappy with me going down there and doing it. Anyway … enough of that. I don't know if that's what you wanted me to talk about.

Okay. That was very interesting, I forgot about the gearboxes. I wasn't really involved in the turbine gearboxes, that was E.B. Good's side of the show. But we went for a MAAG [MAAG Gear AG Switzerland] ground gears and this was a totally new innovation. And it was Dominion Engineering [Montreal] who did this and we had an overseer there, you may remember Slim Inglis He was a crackerjack! He was as good as any, better than most engineers as I far as I was concerned. I forget how many machines we bought. Most people in Europe and England would have one or two machines; I think we had five or seven. It was almost more than almost the whole world put together. This was MAAG gearing, Swiss gearing, and we had quite a lot of problems there again, because I think we had the problem, of a dimensional thing, you know whether you made it to the…, and I can't remember which way we went, whether we made it to the original MAAG European dimensions which was all

metric or whether we tried to, you know, be clever and come over to what we call the other one, you know the Imperial. I guess we were probably most advanced as anywhere in the world in the use of hardened and ground gears. I don't know if I can say much more than that…and again that is where Nicholson came in a lot to do with noise, because of the, you know, the gearing noise being picked up by submarines and so on.

THATCHER: [Could you] explore the relationship then between NEDIT and NETE and the design team in Ottawa?

STEPHENS: Yeah, well ah, I mean we controlled them. They, you know, if it was by joint arrangement but they worked on things that was agreed together. They were a separate unit, but they came under the Engineer-in-Chief, so he or his delegate, namely ourselves, would decide on what projects they would work on. And the same thing to do even with NETE what machinery would be brought into NETE. So it was by agreement but we would look to them to make suggestions. We didn't try and stop them coming up with ideas.

SMITH: What was our relationship with Y-ARD during this period?

STEPHENS: Well, NEDIT was based on Y-ARD really. Y-ARD stood for Yarrows Admiralty Research Department and it was a … they were all, if I remember correctly, all of them were civilians but many of them had been, or some of them had been ex-Navy, but most of them were very talented civilian engineers, were being brought either from Bath, from the Engineer-in-Chief's department, or from industry in Britain. And I will tell you more about that when I get to the nuclear side, which is where I worked with them much later on. But it was very much, we used them very much as our, what is the word I want? "Model", thank you.

THATCHER: NETE and NEDIT were resident or located in Montreal, as I recall.

STEPHENS: At Peacock

THATCHER: At Peacock. Presumably, rather than in Ottawa where the design …

STEPHENS: Well, I think we wanted to keep them separate. And this was always done, too, and Y-ARD was not at Bath. You know, if you are going to have … if something is going to be separate, it has to be separate, to give them a chance to grow and come up with their good ideas. If you put them together, then who is … you know … they are just going to be part of you and it's not a good idea.

BARNHOUSE: I presume, also, that your location of NETE and NEDIT had something to do with where most of the industry that was involved in the particular technologies was located and that was in Montreal.

STEPHENS: Well, that is not entirely true, because the boiler people were down in Galt and the turbine people were in Toronto [John Inglis Ltd]. The industry was all over the blooming place, mostly in Ontario, admittedly … mostly in Ontario. In fact, I can't think of anything that was …….

WILSON: Dominion Engineering at Ville la Salle [QC]. Just down the road from Peacock.

STEPHENS: But I am saying … sorry, I should have said – correction - Ontario and Quebec. Pardon, I have to be careful.

SAKER: You have mentioned NEDIT and you have mentioned NETE. I am wondering if you could give us an overview of the sort of full structure of the naval people in Ottawa [NDHQ] driving this DDE program and covering things like NCDO and that sort of aspect.

STEPHENS: Well, as you know, the project was really run by Baker who was the actual designer of that ship. Very new design, … very different even from the RN ships. And, of course, so there was the constructors and then the Electrical Engineer-in-Chief and EinC. And I think we may have had a CNTS by then. And they all sort of came together under this technical services. But each of us looked after our own part of the ship, you know, as for mechanical equipment- Ein C, electrical equipment obvious -EEC, and then the constructors,-DNC after the actual ship design. But we would all work together, or try to. There was a thing called the NCDO, the Naval Central Drawing Office in Montreal, under Vickers, because Vickers was the lead yard. Theirs was supposed to be the first ship so it was the lead yard in everything- not just with the drawings, but it was supposed to be the lead yard in the actual manufacture and building of the ship, so everybody else could follow. It sometimes got out of whack that way, as I recall, but … it was sort of divided, you know, the engineering drawings as were needed and based of course to a great deal on the British design, because we were using the British machinery design. But again changes, because particularly as we put some different machinery in, but also again going back to Imperial measurements versus metric and so on. So there was an electrical section and a mechanical section and the construction section in part of the NCDO all under one head, but they had three separate assistant directors, or whatever you want to call them. All civilians, of course. We used to have a very close relationship. I mean, I don't know how many times I used to go to NCDO and so did the other people in the steam section. I don't know if that gives you some idea.

HEARNSHAW: Do you recall any of the names of the people in NCDO?

STEPHENS: Well, King was the guy that was our honcho and ran the mechanical section and there was a guy called Stephenson, who was his assistant who was very good. King and Stephenson.

BROWN: Adam Stephenson

STEPHENS: Thank you.

WILSON: I was there.

STEPHENS: Were you?

WILSON: '65 to '68.

STEPHENS – Yeah. But you see when you told me about NEDIT collapsing, I was moving out of engineering by that time. In '65 I was at the IDC [Imperial Defence College, UK] and then I came back to the dockyard, first of all I as Manager Ship Repair and then Commodore of the Dockyard [Halifax]. So I don't mean when I say I was out of engineering, I was out of detail engineering and so I can't help about the timings of when things came and went. Sorry.

WILSON – You mentioned, I think you started to mention something about the RCN standards. Did you at NCDO I think they were doing …because I was involved subsequently in some naval standards work?

STEPHENS: We tried desperately to develop standard designs of valves and it was very difficult. The valve industry didn't want any part of it really and that was one typical thing. And the same things like boiler bricks, I don't know how successful but we tried. And lagging and you know, what do you call it … all the flanges … insulation flange between the flange … I've forgotten what we called it.

WILSON: Gaskets.

STEPHENS: Sorry. Gaskets!! Thank you very much. (chuckle). It is a long time since I had a gasket. (Laughter). Well, I am blowing them all the time.

DEAN: You mentioned that the electrical system for the DDEs represented a great departure from what we had been used to and as I recall, most RN ships were primarily Direct Current and we went to the American Alternating Current system. You mentioned the interface problems. Did NETE have a role in interfacing equipment from the RN to the…..

STEPHENS: I am sorry I can't answer that because I don't remember. I don't remember what we did about that. I was going to say we had a lot of trouble with the electrical people, but I don't know that that is fair. They were much more … there was a guy called Riddell or Riddens. Riddell I think. He was a super perfectionist. Everything was always running behind schedule. I remember we had a lot of trouble between EinC and EEinC in those days. Not purposeful, if you know what I mean but it just was … they were difficult times. He was a civilian, but he was very good. That was the trouble he was probably too good.

DEAN: Was the electrical design an industrial design in Canada or …

STEPHENS: I think they were mostly US Navy design, if I recall. Yeah, I think so. Because we didn't put commercial stuff into the ships at all, as I recall. Except for that once through boiler, which was a laundry design.

CHIASSON: I am interested in the ship level or systems integration aspect in those days. You know, we divided the ship into mechanical, electrical and hull or construction. How was the integration of those aspects done in those days, down to the basics of, you know, real estate in the ship when pipe and ventilation trunking…who won out?

STEPHENS: I don't know if I am answering your question, but of course, much of this was left to the overseers. At Vickers, for instance, we had a PNO, a Principal Naval Overseer, and then we would have overseers under him, electrical, engineers and constructors. And it was his job to do… I don't know whether I am answering your question… but to do a great deal of the integration. I don't think we had problems. We weren't really … I don't want to give any impression we were fighting each other all the time; we weren't trying to anyway.

CHIASSON: As a follow-up, would NCDO have played an important part in that? In other words, did the problems get resolved primarily on the drawing before it went into production?

STEPHENS: I guess all I could say I would hope so. I don't remember. Of course, you have to remember I was a very junior officer, I was a Lieutenant. I was in the Boiler Section. I didn't have the whole ship or anything to worry about.

WILSON: I was at NCDO for about 3 years and as I recall, the As-Fitteds [drawings] were very distinct from one ship to the next. So if that suggests that the ships were not carbon copies of each other by any means.

STEPHENS: This was one of the big problems, of course.

THATCHER: Was there any sort of land based test facility? You mentioned NETE, but, I mean, were any major systems on board ship tested ashore first and then put together?

STEPHENS: No, not that I recall. I mean you'd test your feed pumps, at whoever built them. I think Weir/Peacock were building the feed pumps, so you would test them on site. That was industry's problem, not NETE's problem, by and large. Unless we thought we had a problem. They weren't the test machine for doing the tests as a production run. I don't know whether that is answering your question …

THATCHER: I understand that there was a nuclear submarine survey team set up by Canada and perhaps you could tell us a bit about that.

STEPHENS: You will forgive me, because I have to go back a little bit. I was in London, as the engineer on the Canadian Joint Staff, '54 to '58. In '56, as I recall, out of the blue, I received a message that said I was to go to Harwell [Atomic Energy Research Establishment near Harwell, UK] and do the six month nuclear engineering course. As far as I know, I was the first one to do any nuclear engineering. Then when I finished that course I went on the staff of Rear Admiral Nuclear Propulsion [RANP] at the Admiralty. By that time, the Brits had decided to accept the design of the American PWR, the Pressurized Water Reactor, for their submarines and had given up any idea of designing there own reactor. That put us in a very difficult position. Because part of the agreement between the US and any second party was that you can't have a third party. But nobody paid any attention to this, so I was on RANP staff. But anytime Rickover came over I was sent on leave for 3 days.

Now before this, I had gone to the EinC in Britain and I can't remember exactly when, and tried to convince… before they decided to go with the Americans, and tried to say, "Look could we not join with you and get into this nuclear game together?" And, of course, it all blew up because once they decided to go American; no, it wasn't on. So, then by this time, as I say, I had done my nuclear course and went to work with this Admiral (RANP) and then I was sent to Y-ARD and we brought three more guys over –Ogle a constructor, Kastner an electrical officer and Mitchell from NEDIT, a civilian. They went and did the nuclear course and then they came to Y-ARD with me. Now, we were there and Y-ARD was not working on submarines, they were working on the idea of using nuclear power in surface ships. And particularly, we were looking mostly at putting it into a tanker replenishment ship with the idea being that the tanker could stay at sea, not using its own oil and could keep a fleet of destroyers at sea for about twice the length of time. And out of the blue one day, as I recall, I got a message from, I think, it was from CNTS, rather than EinC, from Admiral Spencer, saying he wanted to come over and talk about nuclear. So 'fix it all up to go to Harwell to do this and to do that'. And three days before, the visit I got a message that says 'skip the surface ships we are interested in nuclear submarines'. Totally different, I mean, quite out of the blue rearrange the visit and who he was going to talk to and so on. And so this was the first inclination that I had that anybody was interested in nuclear submarines. This is how I recall it. I don't know whether you know they(Director of History), are working on a third volume now of the history from '45 to '68. I have been talking to their young people, and they tell me they were talking a lot about nuclear submarines and things over here at the headquarters in the 1950s. Nobody said a word to me about this, so all this came out of the blue.

Anyway, Spencer came over, I can't remember if he brought anybody with him or not, to be honest, and we went around and met people and so on. And, I remember, and this is a little story which will amuse you, I can't remember the individual's name, but he had worked with Cockcroft [first director of the atomic energy establishment at Harwell in 1946] and was running the organization responsible for the development of nuclear power stations that were going to be built in Britain for commercial use. And we went in to see him, almost before Admiral Spencer was introduced to him, he said "You'll never be able to do that, you are not smart enough." So that meeting didn't go on very long and so off we went.

And then obviously, I can't remember how this happened, because I guess Spencer must have said to me something about "you know we are very interested, we must look into this and so on". So he said, "Stephens, you better give me your ideas of how we would go about this." or

something to that effect. Because, and I haven't seen it since, I wrote a long dissertation on how we should put a NSST [Nuclear Submarine Survey Team] together. Forgive me for this is going to sound very egotistical and I don't mean it to, but I knew I was too junior to run it. I was a Commander and we needed somebody anyway who knew about boats, you know, about construction and I had worked for Sam Davis before, and with him, and I thought now that's a guy who was one of the brightest constructors and the best constructor we had. So I talked the Navy into putting Sam as our boss and we put together the team. And you don't want me to tell you who was on the team because you can find that out if you want. We put together a team of constructors, electrical … well I will tell you Bill Christie, Buzz Nixon, for electronics Hoppy Hopkins, on my side for engineering and, of course, Sam and then we had one other …. not Brown … I can't remember … we had one other constructor … began with "A" I think. Anyway, it doesn't really matter for the moment.

And we had this team that we put together and we worked for a year looking at building nuclear submarines, not just looking at them, but looking at how we would train our engineers, put them through conventional boats and then through nuclear boats and things in the USN and so on. Had a lot of trouble, lot of trouble with the United States because of [Adm] Rickover. He didn't really want to be very helpful and despite trying to get him to understand …Oh we had one chap from AECL. I won't go into him because you can see why I don't want to talk about him because he wasn't much use. Anyway, we tried to explain to Rickover that we had helped him in the days of the building of [USS] NAUTILUS that he had done a lot of experiments using the reactors, because they are high flux reactors up at Chalk River. But that didn't work, because they kept saying to us "Well, if we tell you Canadians we will have to tell the French and we don't want to tell the French". So we had a hell of a lot of trouble on that front.

But we came to the conclusion we could build the boats here … the boats …we could build most of the machinery except the reactor, particularly the pressure vessel because people weren't into building strong pressure vessels as that in Canada at the time. And we could probably do all the control mechanisms for the reactor and that sort of thing and all the other machinery that went with it …the turbines and so on. But most of the fighting equipment would have had to come from the States but that was not abnormal anyway. So we struggled with this for about a year and we visited all over the States, both looking down at Pascagoula [Ingalls Shipbuilding] and places … looking at their boat construction and talking to people about reactors and then looked at the Canadian industry; who were capable of doing what? And so on. We put together a report after about a year. And it was going to be about 70 million … I think it was [USS] SKIPJACK we were looking at … and it was going to be about $70 million a throw, which today is peanuts, but it went forward from the naval staff to the government and it was turned down and the government said right we will give you three O-boats, I think, conventional boats and you can build the GP frigate … a GP frigate [General Purpose]. So the Navy didn't have much choice, I guess, but to accept. The government wasn't going to put up the money for the nuclear boats. So that's what happened, except they never gave us the GP frigate. And we did a lot of work on the GP frigates, too, with Hutchins as Project Manager and other staff. That was about '58, '59, '60. And then we were bringing in more people all the time – Hopkins, Knox and I forget who else started to get into the nuclear game but it never came to anything and it all fizzled out. And why they ever started with it the next time around I don't know. I could have told them they weren't going to get it anyway.

SMITH: I was doing the dagger course in ’61 to ’63 when they wanted me to go and do the nuclear course the Polaris program and I couldn’t because the Royal Navy could not train a third country.

STEPHENS: That’s right

SMITH: … because of Rickover. So I came back and Stan Hopkins and I went down to the University of Michigan in Ann Arbor to do a nuclear course.

STEPHENS: I was talking to Hoppy this week about that. But I never knew he couldn’t … the same thing he told me … Was he your time?

SMITH: No he was … he was much … he was a dagger about ’53 or so.

STEPHENS: That’s true … I don’t know what happened. Then they started sending some DRB guys I think over to Harwell but because they weren’t naval and they weren’t getting into the submarine program they were just learning about nuclear they let them go, I think. Somebody told me this yesterday. But Rickover was very difficult. He wouldn’t even talk to my boss who was Rear Admiral Nuclear Propulsion. He used to say he never had enough fire in his belly and he would talk to Mountbatten and the Queen. That was the only two people he would ever talk to, as far as I know, when he came to England….

THATCHER: Admiral, can you explain some of the experiences you had in DMEE [NDHQ] particularly with regards to the merits of gas turbines.

STEPHENS: Yeah. DMEE … What year was that now? It was before, I guess … excuse me. I think it must have been “61 to ’64, something like that. Derry Dawson was head of NEDIT when I was head of DMEE and we recognized with the oncoming and the importance of gas turbines we ought to have a look at that. And so it was agreed, with Sam Davis, who was DG Ships that Dawson and I should go to Europe and have a look around. And we went to Britain and to France and to Germany and talked to everybody we could. We looked at COSAG and CODAG and COGAG and all the combinations. And then we came back and wrote a report. And we were convinced that was the way ahead. And I think, I guess the DDH’s were the first to get the gas turbine, weren’t they? So, you know, by that time, I’d left. Never got any credit for anything in my life, (laugh) … not really. But that was the start of the gas turbine and I can’t remember because I didn’t take part in the DDH [program]. That all gas turbine, wasn’t it? And even the alternators were gas turbines, weren’t they?

SAKER: Actually the hydrofoil was the first gas turbine ship.

STEPHENS: Was it?

SAKER: Yes. A question about when you went over to Europe and toured, back in those days they had a lot of what we called industrial gas turbines, not aero gas turbines. Do you recall discussing that or looking at that difference?

STEPHENS: I am sorry, I don’t, I mean, we might have but I don’t recall.

SAKER: Because the Brits were for sure into what I call industrial land based gas turbines.

STEPHENS: But they’d started to move into gas turbines for ships though hadn’t they?

SAKER: Yes, but they were industrial and they had a bad experience with them.

STEPHENS: You mean they used industrial gas turbines?

SAKER: They weren't aerospace. And it wasn't until people switched to aerospace high reliability engines that gas turbines really started to succeed.

STEPHENS: I am sorry, I just don't remember.

SAKER: But that would have been further down the line.

STEPHENS: Yeah, I don't remember.

BROWN: I can recall actually you saying at the time of the GP Frigate, about the machinery plant you were going through; better the one you know than the one you don't know. So I am curious to hear you say that went over subsequently to do this gas turbine thing. Was that the thing that changed your mind?

STEPHENS: I can't comment because I don't remember. Like all of us, you know, you want to be on the edge of developing technology and it was the same thing with nuclear, the same thing with gas turbines and you know, we needed to know. And so, I am sorry, I can't be more specific.

CHIASSON: I heard, or it was my impression at the time, that we made the decision to go COGAG, you know, completely gas turbine that the Brits, of course, were in a similar, moving in a similar direction, but they didn't trust COGAG and went COSAG. Did you have any insight into that at the time?

STEPHENS: We looked at them all, but as I say, I guess we were looking at them, I don't mean academically, but I wasn't involved in the ship design or the DHH, so I don't know what happened, how it came to, why that decision was made. I was out of it by then, because I went to the IDC.

CHIASSON: But it may have been related to what Mike Saker said earlier that they were dealing with industrial grade turbines and didn't feel there was sufficient reliability and, therefore, backed it up with steam.

STEPHENS: But the ones we put in the DDH [280 Class] were American, weren't they?

VOICES: Yes.

STEPHENS: We weren't looking at specific designs … that wasn't our job … we were looking at the whole idea of gas turbines and what people were doing and what were our options etc, etc. That was Derry Dawson's and my mandate really, not to look at a specific….

THATCHER: Admiral, I understand that you were involved in the build of HMCS PROVIDER. To what extent was the design of the ship, particularly as regards the Replenishment at Sea (RAS) equipment installed, left to the shipyard authorities?

End of Side 1

Tape 1, Side 2

[NOTE: Some of the dialogue at this point was not recorded.]

STEPHENS: I don't know- something went wrong. We had to take the ship back because the winches didn't work as they hadn't been machined properly; I can't remember what. We took the ship back to, I guess it was Newcastle [UK], where they [the winches] had been built and they had to fix it up anyway. And this was all being done at the company's expense, because it

was their fault and they agreed. After we came home, they said no it was our fault because we put the wrong oil in.

Sam Davis was away and I was told to go up and do the Acceptance conference and Caldwell, I think, must have been Engineering-in-Chief or CNTS, anyway, so he came up and I said, "Sir you would like to take the Chair, wouldn't you?" He said "No, no, Stephens, you take the Chair." "Yes sir". So we sat down. And Taki Valiotis, who was Managing Director or whatever he was with Davie [Shipyard, Levis QC] who built the ship, brought in the local MP to sit in on the Acceptance conference so we ruled that out of order, you see. And then he said "Point of order. I don't accept Captain Stephens presiding over this meeting. Our contract is with DDP." We looked around, we had never had this before; the Navy has always chaired Acceptance meetings. We had taken up a lawyer with us, I think, the other half from DDP. Anyway to cut a long story short, we somehow got over that and I think the lawyer explained that this was legally acceptable with the Navy on part of the government and DDP said that we don't mind (they had guys there) you (Stephens) chairing the meeting. So then we started, it must have been just after lunch, I guess. It went on until, I think, two in the morning and we had done about, I don't know, about 20 items and there must have been 200 items, or more. And we were getting nowhere, you know. And there would be an item to do with "Failed to put a second coat of paint on the heads in the forward something or other". And, Taki would say, "Have you measured the thickness of the paint? How do you know we didn't do a second coat?" And this sort of thing went on and on. And I remember Tommy Pullen had been nominated as the Captain of the ship, and we were trying to get the ship out of there, you know. Tommy and I were so … bad use of words … were so upset or frustrated, we said to Tommy, "Do you think you could take this ship out, you know, could we do that without tugs, take it away and we would find them in default. So this is what we were planning to do, without telling anybody, sail away to Halifax and find them in default and don't pay them for anything, because we were getting nowhere. Then finally, I don't know, Taki came to his senses and the next day we tended to get through it all eventually. But I remember this lawyer was very funny about it because he thought this was ridiculous-we should have just banged the table and said "This is unacceptable." He called it the "Charge of the Rabbits".

SAKER: Just a comment on these meetings that went on forever. Today, as we sit around this room, and it is absolutely smoke-free, people just don't recall, if you remember what it was like. To me it was an endurance...

STEPHENS: Oh, terrible, wasn't it?

SAKER: The air was absolutely thick with smoke at these things and that was part of the aim, was to fill up with smoke so that people would find it difficult.

SMITH: Did you get involved with the vibration problem with the PROVIDER? The first year of operation we had that very bad vibration.

STEPHENS: What year would that be, Gord?

SMITH: '64. '65.

STEPHENS: Well, if it was '65, see I would have been gone, because I went to the IDC. I got out in time, didn't I?

THATCHER: The next topic we'd like to explore a bit with you is your time as Manager of Ship Repair. And at that time we wondered if there was any significant co-operation or exchange of information between Ship Repair and other sort of non-service civilian industry side of it.

STEPHENS: That would have been '66 and I had come back from the IDC and I relieved Frank Harley. No, we didn't have much exchange with industry. I mean we did a lot of work in the yard ourselves, you know, then we had ships that went out to contract. I had a Contracts Officer, Farquarson, is that right?

SMITH: Jim Farquarson

STEPHENS: Yeah. Very good too, he was. And he sort of acted for all ships who were sent out to contract, where they were still under our control as Manager Ship Repair. And so, no I don't think any more than that … I think the most important thing they started to do was to … I can't remember when I was Manager of Ship Repair, 66-67 but this was just about the time when unification was starting and then I was promoted and took over from Commodore Clarke who was the Commander of the Dockyard. And they brought him up to MATCOM [National Defence Headquarters, Ottawa]. I guess one of the things that I remember most is we started on the development of the plans for improvements in the dockyard because it was in a pretty sorry state. We put in the synchrolift when I was there, so we could refit the submarines, bring them up and put them under cover so they could be repaired. We started on the whole master plan for the dockyards which came to fruition I think in later time. We put in a camera under the bridge so we could do better control of the ships coming in. All the workmen thought we were just putting it in so that we could watch them sitting on their ass on the dockside because they all used to wear different helmets so we could tell which shop they came from. I had a bit of trouble with that and so … but, you know, you get funny things like that. It was an excellent job I thought. I think the thing that impressed me the most … I had been led to believe that the workmen were all rather lazy and not very good. I didn't find that at all. I found that if you treated them well, they responded well.

I remember just a little bit of a joke. The day I took over. I didn't send it, I don't think, but I was going to send a message to Headquarters that said "Commodore Clarke struck his pennant at 1200. The dockyard struck at 12:01. I have assumed command." So I had a strike on my hands the first day I took over. And … you know… it was incredible. They came down … the personnel people came down … and it was all about wages, you know … and they came down, with I think six cents in their pocket, - that was going to be the maximum we could give away. And we spent days. I said. "Well, why don't we just offer the bloody six cents to finish it,. So I think that's where we ended up But you know … two … you know, three cents… it just went on and on, day after day. And I remember the MPs tried to get back in the act that day. I think Forrestal was the local MP. And I had him ejected from the yard, which didn't make me too popular. We became quite friendly later. But, you know, it's funny.

CHIASSON: I ran the Dockyard in Halifax from 1990 to 1994 and I was a benefactor, or we were the benefactors of your groundwork that you established, as you mentioned, and I would like to say that the work has continued since I left. While I was there we conceived a new building across from what was then the new dockyard building, just across the street, it is called the Combat Systems Facility and basically has taken up all of the shops that were on the Naval Armament Depot side. And as you know for decades the Naval Armament Depot was separate and there was an awful lot of lost time from the travelling back across the Dockyard. So we now have a very, very compact … it's big … but it's compact basically on the same footprint. I would also like to echo your comments about dockyard maties. To me their reputation at the time was a management problem, a leadership problem and I think it was a product of 240 years of anarchy or very, sort of hard-nosed leadership and management. When we started the management initiative we started to give credit to dockyard maties for

what they knew and you know, I don't think it is perfect but we certainly turned the place around and gave ownership of the work to the workers or at least we tried to. So we did achieve some manner of success there. But we often compared military to civilians, you know military were always well-led and, you know, you always looked on the civilians as the lesser or second-class citizens and I was never a believer of that, and I think in my four years at the dockyard I proved that we were all the same, we all need leadership.

STEPHENS: I agree with you entirely.

WILSON: I've got an interesting experience as well relating to Ship Repair Unit. I was the Planning Commander in the mid-'70's and at that time, the president of the dockyard union used to walk around the yard with the Criminal Code under his arm, because he was the sort of person that would talk about frequent harassments and the dockyard management really didn't quite have it together. But I do agree with Roger entirely that as the years went by we began to recognize that they were all human beings and we should work together.

CHIASSON: Just as an example of the improvements that we made in the four years that I was there, and I am not taking the credit for it, I mean, we had 1,500 people and we all joined hands. I used to sit and hear grievances every Tuesday morning from 8 o'clock until noon. And we would hear, I would hear, roughly one a day, in other words 350 to 400 a year. After 4 years we had reduced that to one a month.

STEPHENS: I'll tell you a little story. When I was there we had a thing, I guess in was when I was MSR [Manager Ship Repair Dockyard, Halifax], when I was a Commodore. We had this grievance committee or the management….

CHIASSON: Management Steering Committee. No… Management Relations Committee.

STEPHENS: Management Relations Committee which had the unions in it.

CHIASSON: Management Relations Committee

STEPHENS: I remember we wouldn't deal with various unions separately. They had a council of unions when I was there, I guess, which was the same thing. And we would say that we would only deal with you collectively. And this particular day, I found, we weren't getting anywhere because the union representatives, were arguing among themselves, you know, against each other. And so, I made a suggestion, what I thought would be constructive and then they said, "Excuse me", so the inference was "Mind you own business", you know. And I said something like, "I was only trying to help". They said "That's when we are in real trouble, when management tries to help."

WILSON: Yes, but that's the key. In the mid '70's, if the president of the council happened to be walking through the yard with the CO of the Ship Repair Unit, the next time he came up for re-election he was voted out. Because you didn't really want to be close to the management.

CHIASSON: Well, if I can add another war story. At the time that I was CO, the Irvings [J.D. Irving Ltd] were lobbying to take over the Dockyard [Halifax].

STEPHENS: Oh, were they?

CHIASSON: And we had set up a relationship with the union such that the president of the Chargehand's Association, which was a small but very influential union of about 110 people, came to me and he said "Captain I think we should set up a strategic alliance between management and unions." That came from him, not me.

STEPHENS: Well, I'll tell you another little story and you don't want to record this probably, but one person who understood this was my old man [Engineer Rear-Admiral G.L. Stephens]…..

[Tape recorder paused]

SMITH: Admiral, after you left in the dockyard, could you tell us what your career was until you left the Navy.

STEPHENS: Sure, very quickly. Cookie Clark came up as Chief of Staff of MATCOM when I relieved him in the Dockyard and I thought that was great, they promised me that I would be there for two or three years. After one year Cookie had enough of MATCOM… can't say I blame him entirely … and he quit. Who got the next nod? Stephens, 'Come up and take over from Cookie Clark'. So I came up and became Chief of Staff to General Rothschild. And I was there until MATCOM collapsed or something. And then I became A/CDS, Information Handling Agency which was the time we put all the computer things together and I ran the IT business. And so I did that for two years. Had Mel Gardner … Mel knew more about everything. We were very fortunate to have a guy like Mel on my staff. And I stayed there for about 2 years and I was getting very upset, I must tell you, because that was a time they were starting in re-organization … unification was on and they were doing all this thing of melding, you know, the civilian side and the naval side and my great colleague and friend Al Collins became the honcho with three stars. And they had no engineers in there at all at any high level, so I went to see Harry Porter and said, you know, "I think this is all wrong. I mean we're the engineers." I didn't think the technical side was properly represented in the hierarchy I had to be honest, I was thinking of retiring. I told Harry Porter this and I don't know what happened next. They offered me Training Command [Winnipeg]. So I thought that was pretty good, because I don't think anybody who was an engineer had ever been given a command in it before in their lives. So I went out to Training Command from '72 to '75, three years. Tremendous job; loved it, loved it. And then, to be honest, I would have liked to been, Chief of Personnel, but anyway, that wasn't to be. So they offered me a job in Brussels as either the Mil Rep [NATO] or as on the international staff as Head of Information Technology. I chose the Mil Rep. And so I finished off there as Mil Rep and then disappeared into the blue sky yonder. And here I am.

THATCHER: Well, thank you very much, Admiral Stephens, for that insight into those aspects of the Canadian Naval history. We are very pleased to have got that on record and thank you again, very, very much.

Interview with Admiral Stephen on the 17th of April 2008, interview ends.

TRANSCRIPTION ENDS