Oral History Interview Transcript

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Interviewee: Joseph Struthers

Interviewer: Roger Chiasson

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Joseph Struthers

Interviewed 18 April 2007

By Roger Chiasson

INTERVIEWER: This is a CANDIB oral history project interview with Mr. Joseph Struthers that was recorded in Halifax on Wednesday April 18th 2007. Mr. Struthers was interviewed by Roger Chiasson; both participants have signed the copyright release form.

Tape 1 Side 1.

The subject of this interview is the project management of the Canadian Patrol Frigate, or CPF project, from the perspective of the prime contractor, Saint John Shipbuilding Limited, or SJSL, located in Saint John, New Brunswick. The CPF project was the first Canadian naval procurement initiative to employ a turnkey approach, in which the prime contractor had total systems responsibility for delivery of twelve Canadian Patrol Frigates, complete with integrated logistic support, or ILS, to the Canadian Navy. SJSL was therefore breaking new ground in its management of the project, which included the creation of the large project management office, or PMO, in Saint John, New Brunswick. Mr. Struthers was employed by SJSL as Deputy Project Manager during the CPF project.

The purpose of this interview is to capture his knowledge and perspective of this major pioneer project management effort in the history of Canadian naval procurement. I will therefore first ask Mr. Struthers to introduce himself and to provide a brief biography prior to employment in the project management office.

STRUTHERS: Yes, good morning. Joe Struthers…um, background wise I guess I will say I'm at least a third generation shipbuilder coming from the Glasgow area in Scotland and there may in fact be a forth generation element there too. Anyways, it's sufficient to say that I've spent a long time in shipbuilding. I joined Yarrow Shipbuilders which was building naval vessels for the Royal Navy and for several export navies in 1964. I had a co-op arrangement, working partly in the shipyard and part-time studies. Background there was a complete immersion in shipbuilding, all the commercial and technical aspects of it and latterly specializing more in the sales and estimating office there, and from there into contract management. I tended to become the person handling the export contracts; going back to Malaysia/Thailand/Iran/Ghana. These were various contracts, which were being preformed by Yarrow at the time.

A few reorganizations underplay and I progressed into specific management training in Yarrow and in 1979 I was project manager during the review of the facilities there with a view to finding ways to increase productivity (particularly in construction and material management aspects). Also in '79 I was approached by Irving and invited to come and have a look to see what preparations were being made there for involvement in the Canadian Patrol Frigate project. I did come over to Canada, had a look, and decided to accept the offer of employment and arrived on the 27th of July 1980 in Saint John, New Brunswick, complete with family and mother-in-law. At that time Sperry Systems Management was down as the prime for the group that we were working with, and in December, I believe, there was a

speech from the Throne and a decision that there was a requirement for more Canadian visibility. So in December 1980, when the invitation for negotiation came along I was Contracts Manager at the subsequent Contract Definition contract, which was over twenty million dollars.

In 1983, we were successful in securing the contract after a long bid preparation process and was instrumental in setting up the entire organization from virtually nothing. We had about twelve people working at Saint John Shipbuilding at the time of contract award dedicated to the project and we had to very rapidly expand and move on. So I fulfilled quite a few specific duties within the project, Contracts Manager, Contracts and Procurement Manager covering Industrial Benefits (always an emphasis on Cost Schedule Control aspects of it) and ultimately developing into actual project management and running the program office. My specialty tended to be on the shipbuilding side for the ships being built in Saint John Shipbuilding, but also three of the ships had been sub-contracted to MIL in Quebec - partly as a satisfaction of the Industrial Benefits requirements and of course political requirements, in order to get the contract.

So that continued to the delivery of the first ships and of course the expansion of the contract from 6 ships to 12 ships and eventually into steady state production. In the early 90s I, in fact, moved into the export marketing of the vessels themselves. We had a technological lead over the rest of the world in CPF and in about ’93 I was heavily involved in export marketing to Saudi Arabia/Kuwait/UAE and after that even to Thailand and other countries throughout the world.

INTERVIEWER: Well thank you very much Mr. Struthers for that lead in, but I just have a specific question; over what period were you Deputy Project Manager for the CPF project?

STRUTHERS: There were various organizational changes to meet the demands of the project; I believe that the formal title came in around about 1987 through to 1991.

INTERVIEWER: Ok thank you. First question on the project management aspects of the CPF project I have is; can you describe for us, or outline the contractual project management requirements? In other words there were lots of performance requirements, technical requirements, but what were the project management requirements in the contract and to what extent were you driven by those contractual requirements and to what extent were you driven by just the requirements of managing such a huge project?

STRUTHERS: The program management requirements formed its own section of specification, it was a very specific statement of work for the project management and it was comprised of a series of project management plans. The obvious one being Cost Schedule Control and also for Configuration Management/ Risk Management/ Data Management/ preparation and control/ reports and views/ and the reporting of progress to the client. At the early stages, all of these plans were foreign to Saint John Shipbuilding. It was like any other shipyard; design was done more or less by the seat of its pants, and this was the first real structuring of the requirement for project management. The plans were written at the Contract Definition phase and submitted to the Crown as part of our bid, competitive bid, and in the clarification process which preceded the contract, there was a clarification and the opportunity to modify these plans to prevent clarifications and streamline them a bit. Eventually there were specific plans for each of the functions and these were subject to audit by the Crown at various times through the life of the contract.

Cost Schedule Control was an aspect which provided a bit of a challenge. We had a Work Package system running within the shipyard itself for the construction of vessels, but there was a need to expand that concept of "Earned Value" right across the entire project including the subcontractors and the various suppliers. So there was a huge expansion here, and the amount of detail that we had committed to in the Contract was reporting down to Level 4 with variance analysis for cost and schedule variances and it was just too big. We spent millions of dollars developing the Cost Schedule Control System and trying to satisfy the contractual requirements for detailed reports, and we found that there was more of an industry being set up just to generate the papers than to actually use the information that was coming through. Eventually later on in the project, into the second phase of the project, there was a severe rationalization of the information and it became more focused on the management information that we were comfortable using, rather then what the Contract required.

The same could be said about the other plans, in lesser degree, these were very helpful in structuring the approach we had for project management in the project. From these plans we developed quality procedures and in fact it helped us develop the basis for future work within the company - giving us a very good structure. It was an expensive structure, and would have applied beautifully to continuing naval work. In the end, when naval work no longer came to Saint John Shipbuilding it was of course one of the items that had to be reviewed and radically changed – radically reduced in order to meet cost constraints.

INTERVIEWER: Well, that's very interesting. I think your last comment basically refers to the lack of an amortization period for the investment that you put into all of these management plans. More specifically on this cost schedule control challenge that you also highlighted, I suppose and I'm not trying to put words in your mouth but please comment perhaps on my comment, that cost schedule control as required by the Crown was probably exceedingly challenging partly due to the fact that you were designing the ship as you were producing it. Because I think it's a well known fact that in any major construction project there's always a tendency to cut steel earlier rather than when it's appropriate. Would you care to comment on that?

STRUTHERS: Yes the schedule for the project was very challenging; there were some critical milestones that had to be met. Of course one was QA. As it happens the design was not ready. It was discovered that in fact we had to [do] a major review of the entire general arrangement because the combat system spaces allocated was not big enough for the combat system. So we had to do a big review there. However yes, there were several times when control of budget and costs were a severe challenge and required rebaselining a couple of times in order to keep the data being produced relevant and meaningful. It very easy to be reporting against new and bad schedule information and there was a constant struggle to keep the cost and schedule plans in line so that the variance analysis could be meaningful.

INTERVIEWER: Now, I understand that the project management office within Saint John Shipbuilding grew to upwards of a thousand people. I wonder if you could confirm that figure, and also talk a bit about the project management organization. Where were the resources spread? What sort of structure did the project management office have?

STRUTHERS: A thousand people is too high. That included all the engineering people and all the non-production people in Saint John and of course there were others in the Combat

Systems integrator, Paramax, and also the engineering subcontractors that we had, and that included JJMA and Y-ard.

INTERVIEWER: JJMA being?

STRUTHERS: J.J. McMullen based in the States. They were brought in after a while to help with the detailed design of the machinery spaces, particularly the composite drawings, because the compactness of the machinery spaces was getting to be a challenge and we needed specific help there.

INTERVIEWER: So how many people do you estimate would have been employed by the prime contractor SJSL in project management because the figure of a thousand has been bandied about and I am happy that we have demystified that figure.

STRUTHERS: Project Management office excluding the technical integration people probably peaked at about two hundred people perhaps it was more towards the hundred and twenty but at its peak was about two hundred.

INTERVIEWER: And where were most of these people employed?

STRUTHERS: Most of these people were established in Saint John in a dedicated Project Management Office actually within the Irving Headquarters building which was separate from the shipyard itself.

INTERVIEWER: And could you describe your personal responsibilities within the Project Management Office?

STRUTHERS: Yes. The personal responsibilities I reported to the project manager and specific responsibilities earlier in the project included procurement which was interesting from its flowdown of terms and conditions from the prime contract to subcontractors, and there were some specific challenges particularly Intellectual Property, which made that period of time very interesting. I had responsibilities for the Cost Schedule Control (CSCS) reporting and that meant the gathering of the information, and the interfacing with the mirror CSCS project control organizations in each of the major subcontractors. Because of our desire to spread the risk of the project, we had flowed down the essence of the prime contract conditions to the subcontractors and that required their mirroring of a lot of the organization that we had - Paramax being the biggest single organization there. So my responsibilities were to cover off the planning, schedule and cost schedule control, configuration management and data management, procurement and the reporting and interfacing with the Crown. On that aspect the division of responsibilities was towards the shipbuilding aspect of the work rather than the combat system. The combat system was managed by a colleague, Doug Collins

INTERVIEWER: Okay there are various ways of slicing the pie as far as project management goes. In some organizations depending on the size of the project, the Project Manager is given the budget as the well as the responsibility for maintaining schedule. I believe things were a little different in this project. So am I right in saying that the Project Management Office was responsible for its own budget associated with the one hundred and twenty plus people that it had plus the activities that it managed but that the budgetary control for the remainder of the project was delegated amongst the various functions whether engineering or production or whatever. Is that correct?

STRUTHERS: Each department, each subcontractor had its own budget and that budget was controlled by the project manager and allocated to them and the cost schedule control system monitored the expenditure of these budgets. The whole project was essentially based on a cost basis with an incentive which meant that the Crown paid on a bi-weekly basis for costs incurred. So the costs had to be legitimate costs, they had to be within the budget confines and they had to be certified to be accurate for payment purposes from the Crown, but each Director and Deputy Project Manager had a budget and he was responsible for the delegation of that and for reporting the progress against these budgets. Budgets were controlled, as I say, by the Project Manager and he, probably in association with the Irving family themselves, was responsible for allocating any additional budgets that might be required. But essentially each individual management section had its own Management Reserve to manage as they saw fit within the overall budget, always with the ultimate Management Reserve being maintained by the project office.

INTERVIEWER: So just to clarify that, probably the largest component, financially, would have been the production (yard) activities?

STRUTHERS: Yes

INTERVIEWER: That budget was controlled by the Project Manager, but delegated to the Vice President Production, am I correct?

STRUTHERS: That is right. He had his budget; he was instrumental putting the placement together with Public Works, and he was responsible for the overall performance. Every ship, of course being prototype in nature ran considerably over-budget and the latter ships, once we get into steady state, and have advantages of the learning curves come in under-budget so overall the production effort was just on-target.

INTERVIEWER: Okay thank you. I think we touched on it a bit so far, but I'd like to focus now on the challenges and the frustrations of a large project management organization. This obviously was quite large if you compare it to any other previous naval procurement activity. Certainly in previous procurement contracts the Navy had provided an awful lot of that project management and the oversight with the shipyard responsible for production which was totally different. I mean the total systems responsibility vested in the prime contractor Saint John Shipbuilding, but I wondered if you could outline the major challenges and frustrations that you faced within the Project Management Office from that project management prospective.

STRUTHERS: Yes. The total systems responsibility aspect of it was very interesting. It put total responsibility onto the contactor to produce performance at the highest level and this meant that this was understood and intended at the earlier stages to give the contractor certain latitude to make changes to the contract design so long as it ensured that the contracted performance was met. Saint John Shipbuilding understood this to provide them with a degree of latitude and the ability to make changes unilaterally but still keeping the Crown notified of the development of the design and changes as they were made; Class one and two changes. Class one changes required fundamental changes to stated performance, undertakings or to our contract equipment list which was a listing of all the major equipment that we had said that we would include in the design. As it happened we found that in fact we did not have this latitude: the Navy components of DND had the opportunity to review the specification before the contract was signed and to satisfy themselves that that was what was required and thereafter they were supposed to be supervisory role only with little

influence over the design really, they had approval rights on changes. That did not go down the way it was understood to be intended and we found in fact that the change process became a little bit of a barter system, but changes that we found necessary in order to meet the contract performance were being approved by the Crown perhaps only if we made some other changes elsewhere in the specification and it became a little bit of a barter system. Very little actual change in money between the contractor and the Crown but in fact the design was changed considerably as it progressed. That was one of the biggest frustrations there - trying to ensure that the engineers adhered to the Contract, also adhered to the contract plan - to say no. Other aspects, yes, we ran into problems in recruiting, it was a huge project we had milestones that we had to meet. We had to find people very, very quickly and that meant shot gunning right across Canada and internationally to bring people into the project. While at the same time performing the work, and that was one of the other biggest challenges here. Eventually we got it under control and there were some people available from within DND as well as the use of consultants and subcontractors elsewhere including from the UK.

INTERVIEWER: Would you go into the challenges and frustrations associated with dealings with major subcontractors? You mentioned earlier on that there had been political pressure or direction actually, to Canadianize the prime contractor i.e. it went from Sperry to Saint John Shipbuilding. I presume that that presented its project management challenges. Would you expand on that?

STRUTHERS: The change to make Saint John Shipbuilding prime contractor came very shortly before the invitation for negotiations in December 1980, and I am sure that at that time Sperry thought that it was a paper change only and that they would continue as per normal and that we would continue to do as we were told. I guess that's certainly not the way it worked out and we found ourselves taking very a strong hold on the project management. We had some real ding dong battles with Sperry during the life of the project as you would normally expect. Canadian Industrial Benefits was a requirement on the contract. A hundred percent of the value of the contract had to be Canadian either direct or offsets. Another political aspect or political influence in the distribution of the work was in fact on the announcement that Saint John Shipbuilding had won the first ship, the implementation contract for the first six ships. And that announcement in Ottawa it was announced that MIL and a shipyard in Quebec which had been partnered with SCAN Marine, the opposition, would in fact share in the Quebec shipbuilding content. We had planned to build three ships in Montreal, in the Vickers yard there. The complication posed by the politicians in putting one and half ships then into one shipyard in Quebec – uh, one ship in Montreal and one and a half ships into the Quebec City shipyard was certainly a challenge; one which resolved itself because in fact the Davie facility [Vickers] disappeared from the scene and all three ships were eventually built in Quebec City. But that was an example. Yes I should clarify that, because I think I said that Davie shipyard disappeared from the scene that was in fact the Vickers shipyard disappeared from the scene so all of three ships were eventually built by MIL.

INTERVIEWER: So the project management challenges were primarily in the oversight of Paramax, or Sperry, the Canadian version being Paramax, having been moved from the prime contractor to the major subcontractor, and the fact that you were now overseeing as well the construction of ships in two ship yards in follow yards.

STRUTHERS: Yes, the initial change from Sperry to Saint John shipbuilding wasn't a step change; it appeared before we actually put the design together, and the project plans together. We relied a lot on Sperry to help us put these plans together, but nonetheless they were Saint John Shipbuilding plans. The challenges of managing all of the work across various locations including the large subcontractors with developmental work, was a big part of the challenge of program management.

INTERVIEWER: Okay, we've perhaps touched on this a little bit, but I'd like to highlight the interrelationships that you lived as part of the project management office, and in this I would like you to highlight the interrelationships between the project management office and the other Saint John Shipbuilding organizations, such as engineering and production. Also between the project management office and the external contacts such as the Government, the Navy, and obviously your major subcontractors.

STRUTHERS: The internal organization meant that there were directors or senior managers in charge of each of the functions and they were firmly under the management of the project manager. So he had the ability to review the work on sometimes a daily basis, and these were round table discussions with everyone involved. The integration of action where across the project was very wide ranging - an engineering change decided on the drawing board had ricochet effects right through the integrated logistics support aspects of it, and also the Industrial Benefits obligations that we had and configuration management. So the integration of the progress of the work and the communication across the aspects of project management engineering production was very very important and very critical. The interface with the Crown was the primary responsibility of the project office in order to try to streamline and control the agreements that were made between the parties; there was a similar arrangement in place with PWGSC in fact was the authorized point of contact between DND and the Industrial Benefits authority and the company. We tried very hard to ensure that the formal communications between the company and PWGSC was similarly through the Project Management Office and Contracts Manager in particular.

INTERVIEWER: Now, I think as I understand it, the Project Manager actually had budgetary control but also authority over all elements of the project. In other words production, the production vice president de facto answered to the Project Manager and the engineering head reported to the Project Manager, is that correct?

STRUTHERS: The CPF project went through various iterations and indeed went through various Project Managers. The first Project Manager, John Sheppard, was already a senior Vice President in the company when CPF came along. He spearheaded the effort to secure the work and was the first Project Manager for the work. He certainly had absolute control delegated to him from the Irvings. He was a very trusted individual and I wouldn't doubt that he spent a lot of his time keeping the Irving family, the private Irving company, fully informed as to where the project was going. As the project developed each organization became, or each section within the organization, the production side, the engineering side and the program management side, tended to consolidate within themselves. The engineering and shipbuilding people inevitably, because of the schedule constraints, became at odds with each other because of the requirement to get final design information onto the shop floor and the ship had to be built and the design was still being developed so that caused a huge number of changes, which impacted the configuration management side - the project management side. It also generated conflicts and in fact there were some changes

made to the organization in the management of the project - the Project Manager, in particular, changed several times. The allegiances within the company still remained. The Project Manager John Sheppard was always there. Maybe not in the role of Project Manager but he was still senior vice president and inevitably again there was some difference of opinion between the new project managers and John Sheppard who's specialty was in production. So things tended to polarize at some point. People had their allocated budgets and they would work to their project budgets and became very defensive when other people started, from outside the production environment for instance, started asking for explanations of costs and scheduled variance. So at one point things get very strained within the organization with each department head in engineering and production regarding their aspect, their portion of the CPF project as there domain and resisting subsequent attempts by various program managers to get in and indeed perform as a fully authorized project manager should with total responsibility and authority to direct the work.

INTERVIEWER: CANDIB oral interview with Joseph Struthers

END OF TAPE ONE, SIDE ONE

Tape 1, Side 2

INTERVIEWER: Joe that was a very good outline of the major challenges that you faced within the project management office just as any major project would. It's now time to focus on the good news, not that any of what we have spoken about was bad news, but I would like you to reflect on the successes and the achievements of the CPF project that in particular those which you think are attributable to the project management effort.

STRUTHERS: It's of course difficult to isolate the project management effort as being responsible and you can claim that it was responsible for the entire project and yet it was the people on the coal face that were performing the work and putting the effort in and using their ingenuity to come up with solutions for the many problems there. CPF project was a tremendous project in my opinion. It was the first time that Canada had put so much responsibility onto industry and I believe industry rose to the challenge and the project was a success from a cost and schedule point of view overall and there were certainly challenges, overruns at the early stage, but overall budget and schedule all things considered, it was a huge success. The ship itself was second to none and I had the privilege of being able to tell people overseas about the ship and with the cooperation of the Navy actually to demonstrate the ship overseas so it was a success story technically. Even our cousins to the south acknowledge that it was the best ship in its class. So it wasn't until we got that sort of statement from the States in fact that the Canadian public started to realize that we had something really good, something really advanced in the CPF Project. The other advantages generated by project management; I think that the introduction of structure into the management of an industry which had the reputation of being run by a bunch of cowboys by the seats of their pants, provided a lot more stability. I think it makes contracting easier for the Government. I think that it can give them some confidence on the types of things to ask for in a contract, and also what they can be expected to have. It's a two way street- it requires discipline and understanding and trust between the contractor and the client PWGSC or DND which ever way to want to look at it.

INTERVIEWER: Joseph, I wonder if you could dwell on one particular aspect of the ship or the project or a technical requirement that presented an unusual challenge and how the project

management effort may have assisted in resolving whatever issues were associated with that.

STRUTHERS: The specifications for equipment of the applicable documents the standards that the equipment had to be built to, were contained in a whole mass of documentations, and in the bidding process for prices to various suppliers of major equipment and new equipment in some cases; I'm sure that these suppliers did not delve into these applicable documents to the degree that they should've, and they under-estimated the need to comply specifically with shock and noise and vibration requirements, thinking of what they had provided before was good enough before and now good enough this time around. So we as part of the procurement aspect of project management had the task of enforcing these requirements on suppliers and convincing them, in fact, that we were serious and we would not accept anything less than the specified standards. We knew that these would be demanded of us by the Crown so there was no point in accepting anything that was second best from the subcontractors. Sperry or Paramax I think was complacent when it went into the Contract expecting that the Canadian requirements could be met by something which was dusted down from the U.S. stable. In fact the commitment that we had in the Contract was for a very, very sophisticated state of the art integrated system - far more integrated than anything the States were running there. So again Paramax was a subcontractor. It was from a technical aspect, management by the project office, a technical integration group there, and we enforced the requirement to comply with the specification on Paramax and found ourselves siding with the client, with DND, on many of the aspects. An example is the software requirements document where in order to certify the documentation we had to identify the performance aspects of the combat system which we would satisfy through software. And to demonstrate the performance of that software; and that was a huge effort in itself which we required Paramax to undertake; to analyze the entire combat system and then to cross refer to components of the software that had been written for the project; and thereafter to demonstrate it to the satisfaction of the Crown. So its main compliance contribution if you like from the project management office was just convincing suppliers and subcontractors that we were serious in the requirements that we had stated and that what was good enough before was not necessarily going to be good enough this time.

INTERVIEWER: I think that's really interesting, and in the context of successes and achievements which started off this particular question, what I am sensing out of your comments is that unlike previous procurements strategies where the Navy had been responsible for total systems responsibility this was now vested in the contractor and we found ourselves in a position where certainly in the aspect that you just described in dealing with Paramax and perhaps other suppliers with respect to shock, noise, vibration and software, that the project management office was acting as an ombudsman organization for the client which was DND and the Government of Canada. Is that a fair statement?

STRUTHERS: Yes, the ombudsman referral there is a little bit kind, I think. We knew that we were contractually bound to provide that information or that aspect of the specification. It wasn't as if we were mediating between the two, we had the responsibility. We probably drove contractors to performance perhaps a bit more than DND management would have done. We had firm contracts in place and we held contractors to the letters of their contracts. Whereas perhaps under the DND supplier's situation there would have been some more wiggle room in there. So yes, we controlled cost while ensuring that the specification was met, and the contract and the subcontract management aspects were reported.

INTERVIEWER: Thank you for both clarifying comments. I wasn't trying to put words in your mouth and I think you certainly explained very carefully that you were doing it because it was a contractual requirement not because we were pushing, or the Crown was pushing. Last question Mr. Struthers has to do with lessons learned. I wonder if you could cast back on your knowledge and experience of the project from a project management perspective and give us any lessons learned that might be applied to other or future major capital acquisition projects.

STRUTHERS: Yes, the main lessons learned is I acknowledge a great value in the structuring of management plans and project management approach to these big projects. However we must be careful to ensure that we don't go beyond what is useful to the contractor in the performance of the work. I refer again to the Cost Schedule Control System where we were in a situation where we were going through the motions purely to satisfy the contract rather than to produce useful information.

Other aspects related to the visibility that DND engineers demanded into the developing design. I think more reliance has to be put on industry to come up with solutions. I understand the need for DND to understand, and DND engineers to understand, what the solutions are, but to slow down the design process to the speed of the slowest comprehension within DND has an impact. We couldn't go fast enough because we had to explain everything that we were doing as we were going along. So there is a lesson there that you have to distil your requirements down to performance aspects in a contract I think, and then rely more on industry to supply these performance measures. There is a challenge to develop a means to demonstrate the performance, but there has to be more trust between DND and the contractor in how that performance is achieved and that can be done within preset parameters so that the DND's concerns are satisfied.

Other lessons learned on the project - total systems responsibility, again it borders on what I just finished saying. It's a great concept but the project office within the Government side has to continue to run interference between the aspirations of the working level within DND and the requirements of the contract itself. Sometimes these don't match, but in fact the contract has to prevail and perhaps we should take more effort in ensuring that the Government project office does say no on more occasions to their operators.

INTERVIEWER: Well Mr. Struthers, thank you very much for imparting your knowledge and experience and your perspective on the Canadian Patrol Frigate project, from the perspective of project management.

END OF INTERVIEW