



ORAL HISTORY INTERVIEW TRANSCRIPT

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INTERVIEWEE: Bill van Dinther

INTERVIEWER: Sid Jorna

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Bill Van Dinther

Interviewed 17 March 2010

By Sid Jorna

Tape 1, Side 1

Interview starts

INTERVIEWER: This is a CANDIB Oral History interview with Bill van Dinther recorded at his office in Victoria Shipyards on the 17th of March 2010. The interview was conducted by Sid Jorna. The interview focuses on Victoria Shipyards, the contract and build of the ORCA Class auxiliary vessel. Eight ORCA Class vessels have been built and are currently in service providing watchkeeping and navigational training to junior officers and officer cadets. The vessels operate from HMC Dockyard in Esquimalt B.C. Now Bill I'd just like you to identify yourself please and to verify that we have signed the release statement.

VAN DINTHER: That's Bill van Dinther and I have both signed the copyright release form.

INTERVIEWER: Okay. Okay Bill can you tell us in capsulated version what is Victoria Shipyards all about, what do you do, what's happening, what are the prospects etc.

VAN DINTHER: Victoria Shipyards is located at the Esquimalt Graving Dock in Victoria, British Columbia. It's one of several private enterprises located on Federal Government Graving Dock. We are one of the three shipyards that belong to the Washington Marine Group, the other two being Vancouver Dry Dock and Vancouver Shipyards. Victoria Shipyards typically has about 300 to 500 employees working on this site. Right now we are involved in new construction, ship repair and also submarine repair; those being the three largest programs currently on the go. Ship repair is the FELEX which is the Frigate Life Extension program, the submarine work is the VISC or the Victoria In-Service Class Support Contract which we do with CSMG and the new construction program is the 47 foot motor lifeboat, which we're building five vessels.

INTERVIEWER: Very good. Can you tell us how you relate to that, Bill, what's your relationship in the organization?

VAN DINTHER: My role in the organization as the senior program manager actually the only program manager, new construction is I basically look after all the estimates, the technical work, the construction, the post delivery support of all new vessels constructed at Victoria Shipyards.

INTERVIEWER: Can you tell us something about how Victoria Shipyards got involved with the ORCA project, some of the aspects of that contract?

VAN DINTHER: Um back in I believe it was 2003 Victoria Shipyards started to notice that the workforce was significantly greying and saw a strong need to bring in a lot of new apprentices and a lot of new trainees. The only way a shipyard can effectively do that is with long term employment through new construction so they bid on the ORCA Class construction project for DND and they were awarded a contract in, I believe, it was November 2004 - November 27th or 28th and I started with the company November the 30th, 2004.

INTERVIEWER: So were you hired specifically for the ORCA project?

VAN DINTHER: I was hired specifically for the ORCA project, initially as Contract Manager, purchasing manager and eventually became Project Manager for the ORCA [and I] also did a lot of technical work as well.

INTERVIEWER: Was the ORCA vessel designed by Victoria Shipyards?

VAN DINTHER: The ORCA vessel is actually a TENIX based design, TENIX being an Australian company. They've undergone a name change I believe now they're part of the BAE Systems group. It's an all-steel vessel. It is a geosim ... the design was stretched to the maximum allowed by the contract. [Note: A geosim is a scaled up or down version where the form factors of the vessel are preserved but every dimension is scaled equally, in this case 5% in all dimensions.]

INTERVIEWER: What do you mean by a geosim?

VAN DINTHER: The vessel was actually allowed to be a geosim of an existing design and as such it was allowed to stretch 5% in any dimension, but all dimensions have to stretch the same amount and the volume had to be within, I believe it was 15%. So in other words we took say a 30 metre vessel and it became 5% larger at 31.5 metres. Now that's not the actual dimensions, I can get you the actual dimensions I don't know them off the top of my head.

INTERVIEWER: Oh that's okay. I heard from somebody that it was based on the Mercator Class ships?

VAN DINTHER: It is based on the Seahorse Mercator which is an Australian Naval training vessel. That vessel is slow speed, I believe it's 12 knots and to get through the contractual requirements we've used, or Victoria Shipyards used [the speed and performance of] the Hong Kong [Police Patrol] Boat which is a high speed [vessel which] TENIX built for the Hong Kong harbour police. I believe that was a 35 knot [Maximum Speed].

INTERVIEWER: Okay.

VAN DINTHER: Whereas the Mercator as a 12 or 15 knot [maximum speed].

INTERVIEWER: Okay so did that mean that you took the basic Mercator hull design and then added the machinery [of] the Hong Kong [Patrol] Boat?

VAN DINTHER: No, no what it really meant was that we, the vessels, the hull performance which had to be proven at 18 knots was proven using the Hong Kong patrol craft. What ended up happening was the entire inside of the vessel is different from either of those.

INTERVIEWER: Right.

VAN DINTHER: Propulsion equipment, layout, it's just totally different from both.

INTERVIEWER: Oh I see, okay.

VAN DINTHER: So it's essentially a new design but within a proven hull form.

INTERVIEWER: Hull form, stretched 5% every critical dimension.

VAN DINTHER: Stretched 5% every dimension.

INTERVIEWER: Every dimension.

VAN DINTHER: Every dimension.

INTERVIEWER: Now when you say it was proven using the Hong Kong Patrol Vessel what do you mean by that?

VAN DINTHER: Basically when you do your speed power calculations you're trying to see whether or not the power that you're saying will be provided is enough to push the vessel through the water at the required speed.

INTERVIEWER: Yes.

VAN DINTHER: So the required speed here being 18 knots I believe it was; you just wanted to say okay if we're going to install 5,000 horse power that it will push you through the water at 18 knots and that was the final requirement, mandatory requirement of the contract so that's how you did that.

INTERVIEWER: I see so this was based on calculation.

VAN DINTHER: You had trial data and you had calculations that you could use that for.

INTERVIEWER: Okay and how did the ship actually perform when you actually got it out there, did you have any problems?

VAN DINTHER: It did actually typically it was 18 knots, at 80% MCR which is 80% full power and we generally achieved somewhere between, around 18.3 - 18.4.

INTERVIEWER: Okay.

VAN DINTHER: And the top speed of the vessel, the top that we ever saw I think was around 23 ½.

INTERVIEWER: That's pretty [good].

VAN DINTHER: It's a planing hull so once you get it up on plane it, it goes quite well.

INTERVIEWER: Okay. You mentioned initials MCR what did they actually stand for?

VAN DINTHER: It's I believe it's machinery control, I'm not sure what the R stands for response... [actually Maximum Unrestricted Continuous Rating Better]

INTERVIEWER: Okay.

VAN DINTHER: ...but it's basically how much of your power you're using... request, request.

INTERVIEWER: Your request, Machinery Control Request. [Actually it is Maximum Unrestricted Continuous Rating as noted above]

VAN DINTHER: I believe that's what it stands for.

INTERVIEWER: Okay.

VAN DINTHER: it's one of those terms we all use.

INTERVIEWER: I see.

VAN DINTHER: Nobody knows.

INTERVIEWER: Yes. Well when we're dealing with the Department of History there're many folks that don't understand...

VAN DINTHER: Absolutely.

INTERVIEWER: Okay so the design of the 5% increase in all the dimensions and the, what it means in terms of cutting metal and etc, that was all done here by Vic Ships?

VAN DINTHER: All the, yeah we set up a design team here at Victoria Shipyards and it was a fairly small group of about 15 to 20 people in fact closer to 15, getting up to 20 when you join the procurement end and that team worked for about six to nine months through two design phases, a preliminary design phase and the contract design phase.

INTERVIEWER: Is that team still intact or was that an ad hoc team just for the ORCA?

VAN DINTHER: There are some members of that team still here but it was largely an ad hoc team made up to do that work so it was made up of probably half contractors, half staff.

INTERVIEWER: Okay. Okay Bill we've heard about the hull etc, but we've also heard that all of the machinery had changed from its predecessors in order to get the kind of speed and other performance out of the vessel that wasn't there in the prototypes. Can you tell me a little bit about the machinery changes how they were designed ...critical things?

VAN DINTHER: I can certainly give some information. There was some stringent requirements on machinery. Of course the entire [delete: hull or the] vessel had to pass through a Failure Mode Effects Analysis or an FMEA which meant there could be no single point of failure on the vessel that would leave it dead in the water. As a result of that of course we went for a twin shaft propulsion layout and resulted in selecting the Caterpillar 3196.

INTERVIEWER: Alright.

VAN DINTHER: Actually in the ORCA project we have 3516s which is a six cylinder Caterpillar Diesel rated for 3000 hours heavy duty use per year, there's two of those. The control system for that was bought through L3 communications which when the initial purchase order was let was still part of CAE out of Montreal. The Caterpillars have about 2500 horsepower each and they drive through a [8 degree down angle] reduction gear box which is a ZF 7550A gear box and I can get you the number if you need that.

INTERVIEWER: What does ZF stand for, is that a company?

VAN DINTHER: That's a company, its called ZF, ZF Marine.

INTERVIEWER: ZF Marine.

VAN DINTHER: ZF Marine, it's a German company with support throughout North America. The shaft I think is about, if memory serves me right, a 5 inch shaft driving two five bladed propellers six pitch about 1.3 metres and I can give you a fact sheet on that Sid.

INTERVIEWER: Well, that's okay. Now I understand from speaking to people on the ORCA that it has a very elaborate alarm system because it is essentially unmanned until a certain time until they have to go look at it, they don't want it to sink beside the jetty.

VAN DINTHER: Basically because they wanted to leave the boat alongside unmanned for a long, long periods of time they asked that the control system to have both full body facilities so all the, there's a lot of data logging on all the alarms the bilge alarms, the fire alarms, the smoke alarms, etc. There's also an unmanned mode in which the operators can basically leave the vessel but if there's an incident then the system sets off a blue warning light and a horn, on the vessel.

INTERVIEWER: Okay so this isn't attached to some office anywhere, it just blasts from....

VAN DINTHER: I know that when we were asked to build it we recommended they not do this and that they actually tie in to the standard DND alongside plug-ins...

INTERVIEWER: Right.

VAN DINTHER: ...and I believe that they are in the process if they haven't already completed that on all the vessels. [Post interview note: This change has now been completed]

INTERVIEWER: Okay.

VAN DINTHER: Yeah it's a much better way to go so that the firefighters just get an alarm in the fire hall.

INTERVIEWER: Yes.

VAN DINTHER: Cause you've probably heard the alarm in Victoria.

INTERVIEWER: No I haven't.

VAN DINTHER: One went off this morning over there somewhere.

INTERVIEWER: Did it, yeah. Well I'm from Sooke and that's a bit far.

VAN DINTHER: You know when they first, when we first built it we had it here and of course we had some alarms when the labourers would go in they would short out one of the sensors or something at night and in the middle of the morning the alarm would go off. We had people as far away as Bear Mountain, [report a horn to CFA]X]

INTERVIEWER: Bear Mountain.

VAN DINTHER: which is a good four or five miles from here calling CFA]X radio saying what's that horn that's going off in the night?

INTERVIEWER: So it's making itself heard.

VAN DINTHER: I only live 400 yards away so I used to wake up at night, come in and turn it off.

INTERVIEWER: Right. One of the things that impressed me when I went onboard to have a look in preparation for this interview was the bridge. What a magnificent bridge, it's better than the old class destroyers.

VAN DINTHER: A lot of attention was paid to making it an excellent training platform so in other words we maximized the size of the bridge, it's a much larger bridge than on the Seahorse Mercator for instance - much, much larger. The other thing of course on top of the bridge we built you know a very large training room for up to 16 trainees that sit down at one time and with overhead projection and TV screens so that they could be instructed on the vessel itself and I think that's been one of the largest successes. What you don't see when you walk the vessel is, and you get a sense when its underway is the solidness, for lack of a better term. There is about four maybe five inches of alternating acoustic insulation and flooring treatment between the machinery space and the training room and again between the training room and the bridge so when you're underway at full speed on the bridge you can have a conversation just like this and in the training room as well I mean and even though you're sitting on top of 5000 shaft horsepower. So we paid a lot of attention to getting the sound and keeping the sound in the machinery space.

INTERVIEWER: Oh very good.

VAN DINTHER: ...which makes it a good vessel.

INTERVIEWER: Bill unfortunately I've had a little glitch with the machine and we have to redo some of it. I'm not sure where we left off but I'd like to talk again about the construction of the vessel. I think you just finished telling me about the solid feel of the vessel because of the insulation between machinery spaces and classroom spaces but there's other aspects on the seakeeping for example.

VAN DINTHER: Right and the vessel was built to the ABS that's the American Bureau of Shipping High Speed Guide, High Speed Naval Guide and we were actually the first vessel to be built to that,

the first vessel of this size. I believe there was one frigate under construction in the U.S. [prior] to that. The steel we used was 350WT which is essentially the same steel that was used on the Canadian Patrol Frigate program. Thicknesses varied from about four to six millimetres, its consistent throughout and the reason for the selection of that steel was obviously to keep the weight of the vessel as low as reasonably possible and also to have the temperature resistance to brittle fatigue, brittle fracture, at low temperatures [resistance]. The vessel, one of the things we were quite proud of was during the design of course we did detailed weight estimates, calculations. By the time we finished we were within 600 kg of our detailed weight estimate.

A couple of other things on the structure of the vessel, the internal structure is quite a bit different from the Seahorse Mercator obviously we had different propulsion system, different gear boxes, different framing, different bulkheads, a lot of the vessel being a hard [chine] vessel. We rearranged the structure so that it would be easier for Victoria Shipyards to construct so we did a producibility exercise on that. Other things about the vessel on the hydrodynamic side is... Of course first I should say one of the big issues we did have was the engines were quite a bit heavier. When actually delivered they, I believe, they were about a ton and a half over each, so one of the things that went on the hydrodynamic side was a forward bulwark, which we were going to use to keep the water off the, forward deck and the bridge windows. When that went, we definitely had to put in the spray rails something that our tests showed would eat two to three percent of the propulsion efficiency of the vessel. We did put those spray rails in. To get back some of that we added a stern flap which actually increases the effective length of the vessel and the ORCA of course is a short fat ship, very low length to beam ratio, sorry, I think its about three, three and a half which is certainly not the slender warship which is usually typically around eight or nine.

A couple of other things that we succeeded in on the structure, on the seakeeping [side] was the vessel when she goes through the water of course also has this snow plough like effect which is something we inherited of course from the proven hull design and there was very little if anything we could do about that, and that was another reason of course that we had to fit the spray rail to keep the upper decks dry, especially at high speeds. Other things on seakeeping, We have a twin shaft five bladed propellers. We did actually want to go to six bladed propellers. DND thought this was too different from the contracted design and I think that issue will come up a couple of times during the contractual discussions where basically even though it was potentially a benefit to DND, [they would not go for it as] it strayed too far from the proven hull form and the whole contract was based and awarded on a proven hull form. I'm not sure we got the proven hull form information in some of [our discussion on] the earlier tapes. So the vessel is based on the Seahorse Mercator which is an Australian Naval training vessel. Top speed around 12-13 knots, uses a 3512 so that's a 12 cylinder diesel and that was for basically the function and the form of the vessel. We then based the performance assessment of the vessel on the Hong Kong Patrol Craft which is used by the harbour police in Hong Kong and I believe that vessel had the same engines 3516s but rated [at a] much higher output than ours and also had a speed I believe it was top speed of 35 knots. Those two together were used to, to validate the known or proven hull form design.

INTERVIEWER: I was told when I was talking to some of the Naval people that the vessel was really capable of say day running maybe a couple of days but there're things missing such as water making capability. Would you care to comment on that?

VAN DINTHER: Yeah again you mention that the proven design [was] the Seahorse Mercator. The spec called for two, five ton water tanks. It would have been a much better solution had we

ended up with one three or four ton water tank and a pair of water makers with reverse osmosis ...they're very small. Part of the rationale for that though was that the vessel does operate in confined and restricted waters a lot of the time and there are some potential health issues with running reverse osmosis plants in confined waters where the guys were to do their navigation training so there is you know there are good reasons, bad reasons for everything that was done. What else? Should we go over the engines?

INTERVIEWER: I think we've mentioned the engines. I think...

VAN DINTHER: 3516 Caterpillar, 2500 horsepower, make sure that's on there.

INTERVIEWER: 3516 Caterpillar. Yup.

VAN DINTHER: And that it has gear boxes.

INTERVIEWER: Oh yeah we might, we should just talk about the gear boxes again.

VAN DINTHER: Okay. The only thing special about the gear boxes is that they were down angled gear boxes.

INTERVIEWER: Oh.

VAN DINTHER: So that means that it comes in at a certain say, say level from the engines and then out of the gear box the output is canted eight degrees downward. That allows you to shorten up your shaftline and get better propeller immersion which of course enhances, enhances deck head clearance...

INTERVIEWER: Right.

VAN DINTHER: ...and, and also gives you better propulsion coefficient that allows you to go faster because the propeller is slightly deeper in the water.

INTERVIEWER: Is there an elbow at the bottom?

VAN DINTHER: No, no, no the propeller is actually pointed slightly down at eight degrees.

INTERVIEWER: Okay.

VAN DINTHER: Remembering that it is a planing hull so when it's on plane...

INTERVIEWER: ...forces...

VAN DINTHER: ...and it just gets to plane, it forces it slightly different angle.

INTERVIEWER: Okay.

VAN DINTHER: ... and the hull has actually got a kick plate in it so the last, I would say about the last four or five feet is angled down at three degrees.

INTERVIEWER: ...feet...

VAN DINTHER: ...and that angled down was carried through in to the stern flap so we've got about a six foot sort of trim tab at the end.

INTERVIEWER: Okay.

VAN DINTHER: which is forcing the bow down so that when she's on plane she runs more efficiently.

INTERVIEWER: Alright.

VAN DINTHER: Like I say she's twin shaft very stable, twin steering motors bought from Jastram which is a company out of Vancouver; it's a local company. Jastram supplied us a lot of stuff not only steering but a lot of the lighting and the idea there, I believe we ended up with two, two horsepower motors on the steering. The vessel is extremely responsive, but not twitchy. Initially the design sort of pointed towards a five horsepower motor each side for the steering which not only would have driven the installed power or the electrical generating capacity way up but would have, would have made the vessel very, very twitchy indeed. It turns out that Jastram did a lot of calculations for us and came up with the right speed for the steering system. That brings actually a point that we haven't really discussed before which I should get into which is the three generator layout.

INTERVIEWER: Yes.

VAN DINTHER: ORCA is fairly unique in that it has a three genset [generator set for power generation] layout. Throughout the process of course, especially a DND design, everybody works to extremes so designing a vessel to extremes doesn't lend to a balanced solution and especially on the [electrical] power where we had to design not only to the maximum load all being connected at any given time but on top of that a 20% margin, so what you calculated out as a 150 kilowatt (KW) load on paper actually became say a 70 KW load in real life.

INTERVIEWER: Yes.

VAN DINTHER: Now you don't want to run a 150 KW generator at 70 KW or less during its life cause that's not good for a diesel engine so we came up, through a lot of discussion, with a three generator set up of 99 KW a piece so now they can basically run on one generator which is fairly nicely loaded and then cycle through each generator. To do that we traded off and got a lot of approvals to get the third generator as the emergency generator. Normally in ship designs through Transport Canada and through ABS the third generator or the emergency generator has to be above the waterline and in a different space. That was one of the, I think more successful and unique design features of the machinery layout in the ORCA.

INTERVIEWER: I understand also that the connection, there's an external connection so that you can actually daisy chain ships in getting power to ...

VAN DINTHER: Yeah again DND looked at the berthing right and they'd been looking at the berthing of the ORCAs for a long time trying to figure out how they could store eight extra vessels at CFB Esquimalt and even when in a small harbour like Ganges where you know it's much easier for one generator to be running and keeping the hotel load going on two or three vessels daisy chained together so that we have full shore power export capability from one vessel to another.

INTERVIEWER: Great.

VAN DINTHER: I think its 100 amp capability.

INTERVIEWER: You mention the trade offs and the discussions that you had with DND, can you comment about the relationship between the two, between DND contractual team and Vic Ships?

VAN DINTHER: Yeah I mean clearly the first vessel was delivered on time, in fact to the day, each succeeding vessel was delivered early as we went through the process. Probably one of the only ship construction projects in Canada that's delivered on budget and on time [if not that] we actually delivered early. A lot of that goes to the team work and the successful [cooperation] between the government and the shipyard team. It really was a very cooperative environment.

We did have our differences and at times you know we were told what to do but there was an excellent, excellent relationship between the technical team on the government side, the inspection team on the government side, and the contractual managers on the government side. Having said that of course one of the beauties of that was the team on the government side was very small, consisting of essentially four maybe five individuals that did a lot of the leg work on the government side. To counter that other than the design phase, the project team, staff-wise on the Victoria Shipyard side, not including the technical, was similarly sized about five, four to five people.

INTERVIEWER: Did the DND team operate in Ottawa or locally?

VAN DINTHER: The DND was split four, or three of the people were out of Ottawa so all the technical evaluations, all the technical assessments were done through the [DND Engineering Support] matrix up in Louis St. Laurent. The inspection was done through DGQA at the time with one inspector located here on site.

INTERVIEWER: So this was not a major crown project?

VAN DINTHER: It was not a major crown project because we were, we finished it under a hundred million dollars. Final contract came in at about ninety million dollars and again going back to the cooperation between the two sides there were very, very few extras to the work. Each ship of course had a limited number of extras because there was fuel onboard and certain things that we had to carry and there was one large extra to provide training services to the crews which was expanded considerably during the process but we had, well, I believe it was under a million dollars of extras on a ninety million dollar contract so being a fixed price contract it was good for both sides.

INTERVIEWER: Yes. So as a fixed price contract that meant the initial decisions to base it on say the Mercator Class and all that would have been from Vic Ships.

VAN DINTHER: Oh yeah no I mean this was a public tender and I believe there were four responses or four bids for the work. Victoria Shipyards was selected obviously late 2004 to do the work and the contract was awarded as I mentioned in November, November 28th so in 2004 and yeahI've lost my train of thought there.

INTERVIEWER: Right, well that's okay. Were there any Industrial Benefit requirements?

VAN DINTHER: No Industrial Benefits, no IRBs, Industrial Benefit requirements. We did have Aboriginal set-asides. Fortunately for us we had some previous experience working with Northern Transportation Co. Limited which is a wholly Inuit owned company that does own pretty much all the shipping up the Mackenzie River out of Hay River. Very, very large company not well known outside their area but again very well respected. We also hired as much as possible local, when I say local B.C. based companies to help us improve our facilities wherever possible we tried to find you know existing companies and help them out.

INTERVIEWER: So what did the Northern Transportation Company really do for you actually?

VAN DINTHER: Northern Transportation Company did some a lot of supply work for us. They're, how can I put it, they're dealers in, in cable, they're dealers in piping and so they did a lot of sourcing and supply material, piping, mostly piping and cable.

INTERVIEWER: Okay well technology transfer, did you receive any technology transfers from the Mercator Class ship?

VAN DINTHER: Of course we paid a royalty to Tenix to, to buy the basic design. We were allowed to stretch the design 5% each direction as part of the contract which we did while maintaining no increase in the displacement greater than 15%. We also got the basic drawings from Tenix. These are fairly basic drawings because Tenix of course being a [series] constructor of vessels of this size 10 metres longer, 10 metres shorter didn't need a lot of drawings. They also kept their vessels very simple and basic on the inside. The Mercator being very simple and basic, so yes we do have all their drawings. If we were to build new vessels those would have to be licensed through a royalty fee from Tenix and Canada would have to do the same. Canada does however have the right to basically use all the drawings to repair, maintain and, what would you call it, alter the existing vessels but not the right to build another one.

INTERVIEWER: I see.

VAN DINTHER: And we got those rights on some of the other unique issues. The control system we got from L3 communications which used to be CAE, another was a Canadian company [whereas] L3 communications [is] not Canadian. They had to give up those sorts of rights as well.

INTERVIEWER: Okay. Okay now the, the effect of this contract on Victoria Shipyards could you talk about that a little bit, how did it help the business?

VAN DINTHER: Okay well, first off of course it solidified our entry into new construction. - The entry into new construction started back in the late 1990's with building some small 22 foot boats for the RCMP and then went into a 24 [vessel 47] foot [Motor Life Boat] build for the Canadian Coast Guard then the ORCA [which] was roughly a 110 foot vessel and eventually we would hope to end up with a Midshore Patrol Vessel which was about 150 foot vessel and at each stage we hired more staff. Each stage we trained more people to get more experience in designing vessels so it was very much a, an evolution, evolutionary process you know training project managers, training production managers, training engineers and technologists, purchasing and all that, so that really is the first part of that.

That really helped us out then of course the second part is the workforce in Victoria Shipyards was definitely greying. I think the average age was 48 and there seemed to be a real need to try and get some young apprentices. To do that, you have to have stable employment. To get stable employment ship repair is not that easy. You get a vessel in you work hard like crazy for two to three weeks or a week and then the vessel is gone and the guys are out of work and so you need new construction to balance that. During the ORCA I think we had at times over fifty apprentices working on the vessel, welding, pipe fitters, sheet metal, lots and lots of apprentices working on the project. Many of those apprentices have gone on either to FMF Cape Breton or other industries and we like to think that we kept the best of them here and are now working on the current new construction project and like I say several of the guys now are my senior charge hands that were trained as apprentices four or five years ago. So you know a big part of that was to re-invigorate the marine industry on the southern tip of Vancouver Island - to leave a bit of a legacy I think.

INTERVIEWER: So that's a very successful project all the way around.

VAN DINTHER: It was a very successful project because it did exactly what it was supposed to do. It did not lose money, it did not deliver late. We think it enhanced our reputation. It definitely delivered a vessel that the Navy can use, for instance two of the ORCAs, were recently modified for security patrol during the Olympics.

INTERVIEWER: Indeed.

VAN DINTHER: Put a 50 cal, a fully automatic 50 cal on. All the power to them. No, no shots were fired during the Olympics so that was good.

INTERVIEWER: Excellent news for that. Yes.

VAN DINTHER: Some of the other things that we did? You want some of the technical innovations or what would you like?

INTERVIEWER: Sure oh please yes. I'll just ask you, what are some of the technical innovations?

VAN DINTHER: Well there are several things we did. Again being a training vessel we have of course a large bridge - I think that may have been lost on the tape.

INTERVIEWER: Yes.

VAN DINTHER: ...a large bridge with expansive views all around and that was to ensure the safety of the vessel and also to enhance the training capability. The vessel also has a sixteen seat training room which doubles as a, well actually triples as a training room, mess area and medical area. The seating was designed here in Victoria to be reconfigurable so you could actually have desks, hospital beds or a lecture hall, you know, theatre style seating with full overhead and what we had at the time multi-media capabilities on the vessel, and all that from what we hear seems to be working very well. The other issue of course, that's a big space on a small vessel.

INTERVIEWER: Yes.

VAN DINTHER: so it sits right on top of 5,000 shaft horsepower so to isolate that space from, from the machinery space we installed a multi-component acoustic system of varying densities and absorbent material. I think its about 4½, 5 inches thick both on the training room and on the bridge [decks] so even at full power in the training room we can have a conversation like this and on the bridge you, other than a little bit of wind from the turbos at full power that is from the turbos you can, you can barely hear the machinery on the vessel.

INTERVIEWER: Yes.

VAN DINTHER: ...and that I find is really phenomenal. It lends a sense of solidity to the whole boat and gives you the sense yeah this is solid and well built. Other things that we are kind of unique on the vessel we used anti-condensation paint.

INTERVIEWER: Right.

VAN DINTHER: Not used on any other DND vessels. It's a product by Delta T. It's called Mascoat and it's used in the machinery space and in the steering gear department, basically to and, sorry, in all the bilge areas as well to, to stop sweating. And it's a spray-on coating and I think its about 80 mil thick, mil, [a mil being] about a sixteenth I guess and it really has proven to be very, very effective and we're trying to use that product wherever possible. It replaces three inches of pinned on insulation, is very much lighter weight, very much easier to maintain and it works, if you put your hand on untreated steel next to treated steel in the sun you can feel the temperature [difference], you can honestly tell the difference.

Other..., you need to..., I'm just trying to think, yeah can you stop it for a second I gotta think, sorry.

INTERVIEWER: Alright we're still talking about innovation busy telling me about the stern flap on the ship.

VAN DINTHER: Right, the stern flap, I mean one of the things we were trying to do when [designing the vessel was] to make sure that we got the speed and to stay within the legal description of not increasing the length overall of the vessel was we added an appendage which, the stern flap appendage about two and a half feet long at the end of the vessel and the same three degree down angle as the existing kick at the end of the hull and that stern flaps have been shown to increase the efficiency of a vessel at speed up to ten, twelve, fifteen percent so that was a significant...

INTERVIEWER: Yes.

VAN DINTHER: ...betterment. While we can't say exactly how much it did because we didn't model test it, all indications are that it does work because at speed the top of the stern flap which is normally probably about two feet below the water you could stand on it, it's completely dry...

INTERVIEWER: Yes.

VAN DINTHER: ...and it has basically lengthened the vessel probably by a good twenty percent I would say about five or six feet making sure that we could meet our speed. Hoping that you got that in your bit now, our speed requirement is 18 knots...

INTERVIEWER: 18 knots.

VAN DINTHER: ...at 80% MCR which is machinery control request... [actually Maximum Continuous Rating]

INTERVIEWER: Yes.

VAN DINTHER: ...and the top speed on the vessel that we saw on trials was about twenty three and a half knots.

INTERVIEWER: Which is pretty impressive.

VAN DINTHER: Yeah basically the government said, "make sure that we do 18 knots at 80%" and anything we get after that is a bonus. Being a planing hull of course you get a lot of bonus.

INTERVIEWER: Yeah.

VAN DINTHER: In a normal displacement hull form you wouldn't have gotten anywhere near that increase.

INTERVIEWER: Right. Okay are there any other features that we should highlight here?

VAN DINTHER: Oh the three generators.

INTERVIEWER: I think we got that.

VAN DINTHER: Did we?

INTERVIEWER: Oh well let's do it again.

VAN DINTHER: Alright yeah, sorry because yeah sorry the tape confused me.

We got three generators on board which was quite, quite a unique solution which required special approval from the owner and also from ABS because normally the emergency generator is located above the water line in a separate compartment. The issue with many of DND requirements is that

they tend to over specify margins and extreme conditions so if you're trying to design an AC air conditioning system to plus 30 and minus 30 it can lead to a high power demand and then on top of that you have a twenty percent growth margin. You've really increased your power demand and the best what you end up then is a highly calculated load but a very lightly loaded generator and these engines don't like to run lightly loaded. So what we did was we recommended that they go for three gensets roughly the same size and normal steaming one genset can comfortably carry the entire load of the vessel; so then they can maintain an hour balance by running one then the other, then the other.

Switchboard, switchboard was manufactured by Thompson Technologies out of Langley, a company called TTI, since changed hands it used to be a wholly Canadian owned company. I believe its now owned by maybe Siemens I'm not certain it's, it's recently been sold - when I say recent, about two or three years ago. They manufactured for us a custom designed switchboard to fit in the space.

A couple of other interesting things is, the vessel is designed with all the tankage down the middle so all fuel tanks, lube oil tanks, sewage tanks, grey water tanks, sorry not the sewage tank, the grey water tanks and fresh water tanks are located inside the middle sixty percent of the vessel and this all has to do with damage control and floodable length calculations. Yeah, she has two very, very large grey water tanks, sorry one very large grey water tank about 15 ton capacity.

INTERVIEWER: There's no problem with load shifting or that kind of thing?

VAN DINTHER: No, no again the tanks are very narrow...

INTERVIEWER: Yeah.

VAN DINTHER: ...and long which from a stability point of view is good so you don't have a lot of free surface effect. The vessel of course has a vacuum black water system.

It's fully mixed gender capable which means it can take males and females...

INTERVIEWER: Okay.

VAN DINTHER: ... and there's separate washroom facilities, shower facilities downstairs, 'downstairs!!' below [on] the lower deck that can be put up for male or female.

INTERVIEWER: Right.

VAN DINTHER: The vessel was designed to hold up to 16 trainees so there's 16 bunks for the trainees. There's one, two, three, four bunks for officers for lack of a better term and four bunks for crew, yet when we designed the vessel it was really only designed for a crew of three.

INTERVIEWER: Right.

VAN DINTHER: All the others are bonus spaces.

INTERVIEWER: Okay.

VAN DINTHER: There's a small, small arms locker onboard as well but, but again there's a ton of empty and available space on the vessel, both to increase tankage and to increase storage on the vessel but the specification said four, four days at sea.

INTERVIEWER: Four days.

VAN DINTHER: It's a four day endurance and they didn't want to go above four days.

INTERVIEWER: Is there a sea state...?

VAN DINTHER: She I think, the limitation of course is what the master will want to put it into certainly no problem with sea state five at all, it's fully designed for sea state five to be fully capable.

INTERVIEWER: Very good. Well Bill I think we've pretty much exhausted talking about the ORCA except that I'd like to

End Side one

Start Side two

Missing dialogue

...It's a huge advance I'm sure, and a lot cheaper than running the destroyer squadron and training squadron I'm sure so the Navy I think is getting real good value for its money on this project and industry. I'd like to talk a little bit about yourself. Here you are a project manager in Vic Ships and how did you get here? What is your background?

VAN DINTHER: Well a very long route to get here, basically a local B.C. guy. I attended University of British Columbia and became a Mechanical Engineer took a lot of Naval Architectural courses in my final couple of years there so that wetted my appetite. 1976 for those of us that remember was the bad times for the oil embargo. Jobs were tough, Bill joined the Navy. I spent twenty, just over twenty years in the Navy getting out in 1996 Taking advantage of the last [Force Reduction Plan] (FRP). In those twenty years I became a Marine Engineer. I also got my Masters degree in Naval Architecture from UCL. That's University College London in the U.K. I worked on the CPF project. I was the Naval Architect on site during the construction of HMCS Halifax, Vancouver etc Regina, Calgary in Saint John New Brunswick. I ran a design and technical office, the Naval Architectural end at Naval Engineering Atlantic at [CFB Halifax] and I also spent some time as Deputy Ship Systems Manager on the TRUMP project during the closing phases and eventually coming back to B.C. in the mid nineties as the Detachment Commander for the final test of trials on the TRUMP vessels and then I got out into the private world with the FRP program in 1996- with the rank of Lieutenant Commander, then after a year on my own I got into Public Works and Government Services as a Technical Inspector and Contract Officer so I wrote contracts and did technical inspections on a lot of Coast Guard vessels and also the first docking work periods for the CPFs with which I was quite familiar and I did five of those for Public Works and then eventually I became the lead onsite inspector for the 24, vessel [47 ft] Motor Lifeboat contract here in Victoria Shipyards and when that was almost over the ORCA project was going on at Victoria Shipyards and they came and said might be time to come over and try to work for us because they needed somebody with Federal Government experience and fairly broad technical background...

INTERVIEWER: Okay.

VAN DINTHER: ...and also some procurement purchasing experience. Of course every single person that worked on the ORCA except the techie guy was multitasked as much as possible. Certainly the senior staff did a lot of contractual, a lot of purchasing, a lot of technical work. There were two of us that did 90% of the oversight on, on that vessel.

INTERVIEWER: Well it sounds like your Naval experience and subsequent has certainly stood you in good standing.

VAN DINTHER: Absolutely, the best experience one could get.

INTERVIEWER: Yeah, I would like to congratulate you on obvious success.

VAN DINTHER: Well thank you.

INTERVIEWER: So, I think at this point...

VAN DINTHER: You got everything?

INTERVIEWER: At this point we're pretty well finished the interview.

VAN DINTHER: Okay.

INTERVIEWER: We've gone through all the points that I can think of, well thank you very much.

VAN DINTHER: Your welcome, good luck.

INTERVIEWER: Okay.

Interview ends

ABBREVIATIONS AND ACRONYMS

ABS	American Bureau of Shipping
CAE	Canadian Aviation Electronics
Cal	Calibre
CPF	Canadian Patrol Frigate
CSMG	Canadian Submarine Management Group
DGQA	Director General Quality Assurance
DND	Department of National Defence
FELEX	Frigate Life Extension program
FMEA	Failure Mode Effects Analysis
FMF	Fleet Maintenance Facility
FRP	Forces Reduction Program
Genset	Generator set
IRB	Industrial and Regional Benefits
MCR	Maximum Continuous Rating [Also Machinery Control Request]
PWGSC	Public Works and Government Services
RFP	Request for Proposal
TTI	Thompson Technologies Inc
TRUMP	Tribal Class Modernization Project
UCL	University College London
VISC	Victoria Submarine In-Service Support Contract