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Maritime Engineering Journal

69
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Canada's Naval Technical Forum

Summer 2012

Getting rid of the 'boom & bust' in federal shipbuilding — An inside look at the National Shipbuilding Procurement Strategy

CNTHA News Inside!

Also in this Issue:

- An introduction to naval classification and regulation for surface ships
- A proposal to improve lube oil monitoring in main refrigeration compressors

Canada

GOLDEN ANNIVERSARY

The Royal Canadian Navy's *Maritime Engineering Journal*
wishes the Canadian Coast Guard a ***'Happy 50th!'***

Director General
Maritime Equipment Program Management

Commodore Patrick T. Finn
OMM, CD

Maritime Engineering Journal

69

(Established 1982)
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HMCS *Toronto* and Canadian Coast Guard Ship *Pierre Radisson* sail in the Hudson Strait during Operation Nanook 08. Canada's federal fleets will benefit from the stability of the National Shipbuilding Procurement Strategy.

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COMMODORE'S CORNER

By Commodore Patrick T. Finn, OMM, CD, Director General Maritime Equipment Program Management

Fleet Materiel Support – Progress both exciting and a challenge

The Commander of the Royal Canadian Navy, VAdm Paul Maddison, stated at the recent Navy Outlook that the RCN has arrived at a moment of strategic opportunity that is all but unprecedented in our history due to the increasing importance being placed on maritime trade and security. The speech made by Prime Minister Stephen Harper at the unveiling of the Naval Monument at Richmond Landing in Ottawa certainly supports that view and, by extension, supports the need for a Canadian Navy that is capable of responding to missions assigned by the Government of Canada both today and tomorrow. The good news is that many components of the current fleet are being modernized, and a plan is in place to acquire the next one. Both of these initiatives will ensure that the RCN has the platforms required to serve the people of Canada. The challenge will continue to be having sufficient capacity to support the current fleet while delivering the next one.

All of our major projects continue to move forward apace. The *Victoria*-class submarines are advancing toward steady state with HMCS *Victoria* having fired torpedoes early this year, and with HMCS *Windsor* now back in the water and preparing to complete her refit. The first two *Halifax*-class frigates have completed the shipyard portions of their mid-life refits and are returning to our dockyards to complete the integration of weapons and sensors. All of the remaining ship replacement projects are also progressing toward implementation, and several have engaged the shipyards selected by the National Shipbuilding Procurement Strategy. That progress is certainly exciting, but is also a significant challenge as it draws our attention away from ensuring that the current fleet is materially ready to respond as directed.

Various activities over the last fifteen years have made our internal organizations much leaner. We now have single entities within our Formations that handle all engineering and maintenance; we have also combined almost all our materiel support capacity at the strategic level into one organization in the Materiel Group, the Maritime Equipment Program Management division. Leaner brings some efficiency, but it also brings capacity challenges and some risk with respect to experience and knowledge, which is the biggest challenge we face today in providing materiel support to the fleet.

Photo by Brian McCullough

The senior leadership recognizes the need for a navy that is capable of responding to missions assigned by the Government of Canada both today and tomorrow.

The fifteen-year transition to a leaner support organization has arguably been possible because we have not been in the throes of executing multiple ship replacement projects. It has also been possible due to the evolving relationship with industry. Many would perhaps argue that the relationship has evolved too slowly, a point of view that I would not refute, but evolved it has. We have moved toward greater industry support from design agents, have adopted the use of Engineering, Logistics, and Management Support contractors for our Major Crown Projects, and have taken steps toward creating long-term in-service support contracts.

That reliance on industry will continue to be key to our success in keeping the fleet ready. Many of our key allies have faced similar situations and have responded by adopting the use of classification societies and the use of naval ship rules. Canada is now following a similar path with the adoption of the Naval Ship Code and a system of Naval Classification and Regulation for Surface Ships, which is describe by Cdr David Peer within this edition. We have a long journey ahead to put a regime in place that is appropriate for our navy, but put it in place we must to ensure that we can perform our ongoing duty of keeping the ships of the RCN technically ready and safe for their crews. There are many lessons in our history that highlight what can happen when we get so busy that we forget the basics of naval materiel assurance – lessons that we do not want to learn again. We are in exciting times, but we must be ever vigilant.

FORUM

TITANIC CENTENARY: A TRIBUTE AND A CALL FOR RENEWED COMMITMENT

By Cdr (ret.) Robert Jones

"GREATER LOVE HATH NO MAN THAN THIS. THAT A MAN LAY DOWN HIS LIFE FOR HIS FRIENDS"

TO THE MEMORY OF THE ENGINEER OFFICERS OF THE R.M.S. "**TITANIC**" WHO SHOWED THEIR HIGH CONCEPTION OF DUTY AND THEIR HEROISM BY REMAINING AT THEIR POSTS 15TH APRIL 1912.

ERECTED BY THEIR FELLOW ENGINEERS AND FRIENDS THROUGHOUT THE WORLD

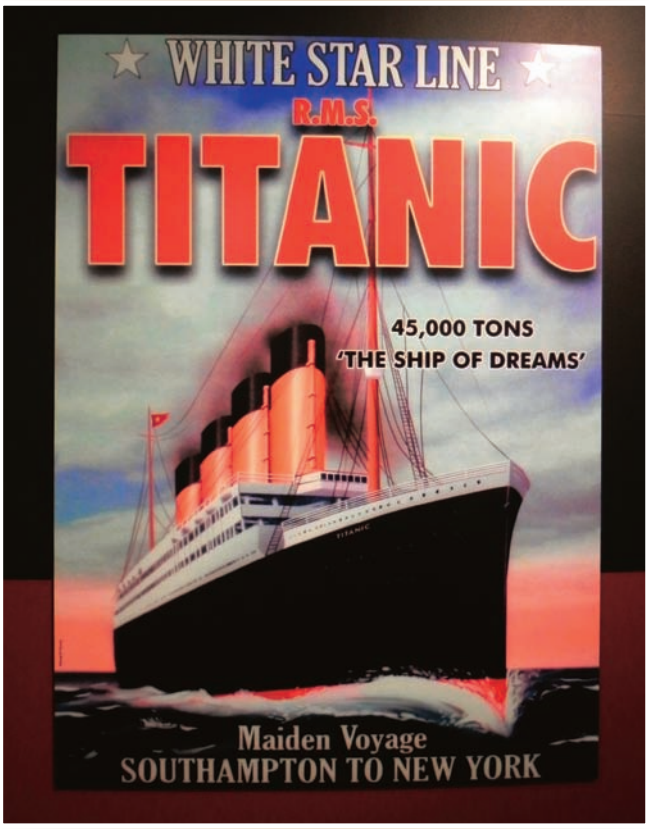


Photo by Brian McCullough

Titanic poster at the Canada Science and Technology Museum, Ottawa.

The verse above, taken from the 15th Chapter of the Gospel of John, is inscribed on the Titanic Engineer's Memorial, located in Southampton, United Kingdom. As the world recently commemorated the 100th anniversary of the sinking of the RMS *Titanic*, it is appropriate that the members of the Royal Canadian Navy's technical community pause and reflect upon the ultimate sacrifice made by the members of *Titanic*'s engineering department. There is no doubt that lives were saved that night because of the engineers' dedicated efforts to maintain power generation, progressively shut down boilers, and continue pumping operations until the ship's final breakup and sinking.

The causes of the disaster have been explored in numerous books and articles, yet from a personal perspective the memory of the loss of the *Titanic* is even more horrific given that she and her sister ship (RMS *Olympic*) represented the height of technological achievement at that time. One could argue that the risk assessment determined that the probability of the event occurring was seen as remote, but that the consequences were deemed to be critical or significant – certainly not 'catastrophic.' After all, it was the Edwardian age, where advancement in marine safety, speed, and comfort on the North Atlantic seemingly had no bounds. Added to this knowledge is the fact that a mere

Photo by Brian McCullough

An empty deck chair on display at the Maritime Museum of the Atlantic in Halifax remains a powerful symbol of the human story in the loss of the Royal Mail Ship *Titanic* on the night of April 14/15, 1912.

Photo by Brian McCullough

This framed and water-stained 1912 Tichnor Brothers lithograph has been handed down through the Pretty family of Dildo, Newfoundland, and now hangs in the home of descendant Christine Emery and her husband Michel Gravel in St-Félix de Valois, Quebec. It was produced so quickly that it contains errors regarding the number of passengers and the time of the collision with the iceberg. Still, it remains a poignant reminder of the tremendous impact that was felt by Canadians over the shocking loss of life and ship when *Titanic* was lost.

matter of seconds made the difference between the deaths of over 1,500 souls as a result of a collision with a gigantic iceberg, or moving on from a near-miss experience. It should give us pause as we develop and mature the concepts and practice of Naval Material Assurance within our naval profession.

As a junior officer I watched our navy internalize and apply the lessons learned from the gearbox explosion in HMCS *Kootenay* on October 23, 1969. As a senior officer, I witnessed the same sense of commitment to re-examine safety and make changes in the wake of the October 5, 2004 fire in HMCS *Chicoutimi*. The inspiration embedded within these tragic events is the realization that our own navy's engineering department personnel embodied the same virtues of duty, heroism, professionalism and sacrifice that were demonstrated on the North Atlantic during the night of April 14/15, 1912.

The loss of the *Titanic* has a deep connection with Canada and Canadians. History has recorded that, once the scope of the tragedy was understood, recovery ships sailed from Halifax to carry out a heart-breaking duty. Consequently three Halifax cemeteries contain the graves of 150 victims of the *Titanic*. Listed among those interred are some 20 members of the ship's engineering department.

As the year 2012 marks the 100th anniversary of the loss of the RMS *Titanic*, let us again pay tribute to the sacrifice of those who ignored personal danger in order to keep the ship operational as long as possible. May the memory of their actions inspire us to embody a greater sense of professionalism and duty and a renewed commitment to improving our understanding of the 'dangers of the sea.'*

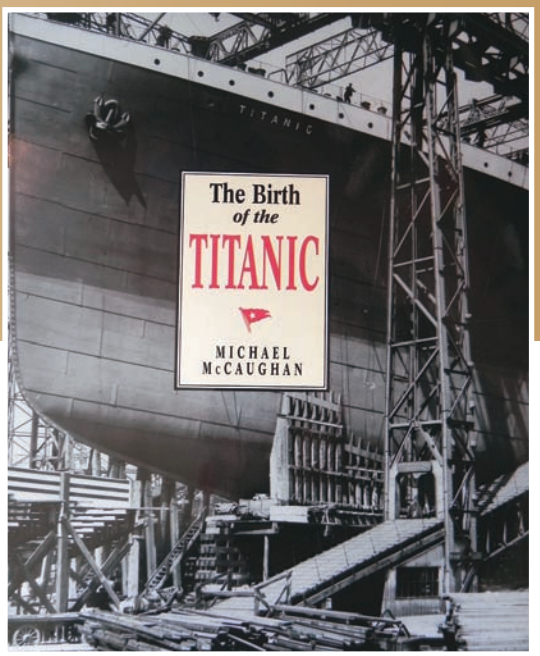
Cdr Bob Jones is the author of our October 1996 article, Titanic's Engineers – Heroes of a Disaster. *Bob retired from the Navy on September 30, 2011 with more than 35 years of service as a marine systems engineer.*

** From The Naval Prayer*

The Birth of the Titanic

Reviewed by Brian McCullough

The Birth of the Titanic
Michael McCaughan
©1998
McGill-Queen's University Press (Montreal & Kingston)
ISBN 0-7735 1864-9
183 pages; Illustrated; $49.95



It's not every day that we review a book that has been on the market for a decade-and-a-half. Then again, it's not every day we look for a book to review as a companion piece for another article – in this case, Cdr (ret.) Bob Jones' thoughtful Forum commentary on the relevance of the *Titanic* tragedy to a modern Canadian naval technical community.

As those who know him could tell you, Cdr Jones is passionate about all aspects – human and technical – of the great ship's sad demise in the North Atlantic a century of springtimes ago. His 1996 *Journal* article, 'Titanic's Engineers – Heroes of a Disaster,' stands as an eloquent memorial to the role played by the ship's engineering professionals who rose nobly to the occasion to maintain power and so save life even as their charge sank beneath them.

Make no mistake, this centenary year of the *Titanic* disaster has seen a number of very fine books published on the subject. And yet, it is author Michael McCaughan's superb 1998 book, *The Birth of the Titanic* , which seems to resonate best with the spirit of Bob Jones' short essay. As a curator at the Ulster Folk and Transport Museum (not far from the Harland & Wolff shipyard in Belfast where the RMS *Titanic* was built), McCaughan focused much of his work on the study and interpretation of Irish maritime history. This beautifully illustrated book reflects his wonderful attention to detail, and also the excellence of the information sources and photo archives he drew upon.

As you would expect from the title, *The Birth of the Titanic* documents the ship's construction, her extensive fitting out with everything from funnels to furnishings, and her very short sea trial. Throughout most of the book, McCaughan chooses to tell the story through wonderfully captioned photos and illustrations. The technique is very effective in maintaining the all-important human connection to the technical story of the great liner. The book closes, as it must, with a measured description of the once mighty ship's death throes – including a log of the poignant CQD/SOS radio traffic that filled the ether in *Titanic*'s last hours. For all of McCaughan's 'curator's calm' in his telling of the tragic events, which by now we know so well, the story remains deeply moving with just the right blend of technical and human drama.

It is this that is the starting point for Cdr Bob Jones' equally affecting tribute to the engineering heroes of *Titanic*, and for his call for "a greater sense of professionalism and duty" among those who serve today as the Navy's professional technical community. Together, the engineer Jones and the curator McCaughan create a powerful reminder that the perils of the sea lie just on the other side of the hull plates.

As a former Maritime Surface navigation officer, LCdr (ret.) Brian McCullough was taught to heed the lessons of Titanic from a bridge watchkeeper's perspective when operating in or near ice.

FEATURE ARTICLE

BEYOND "BOOM AND BUST" AN INSIDE LOOK AT CANADA'S NATIONAL SHIPBUILDING PROCUREMENT STRATEGY

By LCdr Rohit Gulati, LCdr Ted Summers and LCdr Jean-François Séguin

"Our Government made the decision to support the Canadian marine industry, to revitalize Canadian shipyards and to build ships for the Navy and Coast Guard here in Canada. The Strategy will bring predictability to federal ship procurement and eliminate cycles of boom and bust, providing benefits to the entire marine industry."

– Hon. Rona Ambrose, Minister of Public Works and Government Services, June 3, 2010

DND photo by MCpl Blake Rodgers, Formation Imaging Services Halifax

The National Shipbuilding Procurement Strategy has committed $33 billion for two separate work packages to build federal ships over 1,000 tonnes. Irving Shipbuilding Inc. of Halifax will build the Navy's combat ships, while Vancouver Shipyards Co. Ltd. will build the non-combat vessels.

The announcement of the launch of the National Shipbuilding Procurement Strategy (NSPS) two years ago by Public Works Minister Rona Ambrose came at a critical time when a significant portion of the current fleets of the Royal Canadian Navy and the Canadian Coast Guard were reaching the end of their operational lives. Through the NSPS, Canada is preparing for the urgent requirement for fleet replacement and thus the strategy represents a historically important step in Canada's commitment to rebuild the Royal Canadian Navy and the Canadian Coast Guard fleets.

Originally a Department of National Defence initiative, the NSPS evolved into a multi-departmental secretariat with participation from the Department of National Defence, the Department of Fisheries and Oceans (Canadian Coast Guard), Industry Canada and Public Works and Government Services Canada. The NSPS was developed after consultations with industry stakeholders, and encompasses all current federal fleet requirements. Furthermore, this strategy is aimed at creating jobs and generating significant economic benefits in shipbuilding and related industries across Canada.

The strategy has three elements:

1. Two work packages, valued at $33 billion, to build large vessels (greater than 1,000 tonnes), one for combat ships and the other for non-combat ships;
2. Small vessel construction valued at $2 billion for shipyards not selected for the large vessels; and
3. Ongoing refit and repair work valued at $500 million annually, which will be open to all shipyards through the normal procurement processes.

The NSPS accounts for the fact that there has not been significant federal shipbuilding effort in the past decades, and it does this in two distinct ways. First, as part of the Request for Proposal (RFP), the shipyards agreed to be assessed by an independent third party (First Marine International) to determine their current state when compared against an internationally recognized benchmark. From that, and as part of the RFP, the shipyards had to devise plans that would allow them to close the technology and capability gaps existing between their current state and what was determined to be a target state that would allow for efficient build of the federal fleet. These gaps will have to be closed within three years for elements which have high impact, and six years for the remainder.

The second way to account for a period of reduced federal shipbuilding work is that, as shipyards move from current to target state, they will also be required to invest in a Value Proposition commitment. This commitment, which represents 0.5% of total awarded shipbuilding contract value, is aimed at providing tangible benefits to the broader Canadian marine sector in the areas of Human Resource Development, Technology Investment and Industrial Development Activities.

The NSPS RFP was the result of extensive consultations with the five shortlisted shipyards and independent third party experts. This consultative approach and selection process represents a distinct and innovative way of conducting large procurements in a competitive, fair, open and transparent manner. As a result, the proponents themselves helped shape the selection process by participating in the selection and weighting of the evaluation criteria. By the end of the RFP, two shipyards had either removed themselves from the process or did not submit a bid. Five bids were received from the remaining three shipyards – two bids for the combat package and three bids for the non-combat package.

On October 19, 2011 the National Shipbuilding Procurement Strategy Secretariat announced that **Irving Shipbuilding Inc.** had been selected for the combat package, and that **Vancouver Shipyards Co. Ltd.** had been selected for the non-combat package.

The NSPS Process

The first step to help realize the NSPS was to create a shortlist of shipyards that would have the ability to participate meaningfully in the RFP. This was achieved through a Solicitation of Interest and Qualification (SOIQ) that allowed shipyards to state their interest and, after acceptance, participate in the NSPS process. The following five shipyards met the criteria and were deemed Short Listed Respondents:

- Kiewit Offshore Services (Marystown, NL)
- Irving Shipbuilding Inc. (Halifax, NS)
- Davie Shipyards (Lévis, QC)
- Seaway Marine (St. Catharines, ON)
- Vancouver Shipyards (Vancouver, BC)

Once the shipyards had been shortlisted, the NSPS Secretariat set out to establish an RFP that would shape the shipyards' responses. This was done in consultation with:

- the five shipyards;
- the four government departments involved; and
- third party experts.

The shipyards were involved in shaping the RFP, which was accomplished through consultation on evaluation, timelines and shipyard plans. For example, based on their input, the RFP was kept open for a longer time frame and the number of items required to be addressed in their bid submission was reduced. The four departments involved helped establish the areas requiring evaluation and the relative weights of these categories, both of which were guided by the departments' different areas of responsibility.

Of particular interest in this process was the use of third party experts during the development of the RFP. Their unique and expert knowledge helped lend credibility, legitimacy and defensibility to the process. First Marine International, a UK-based shipbuilding expert, contributed by conducting an in-depth evaluation of the existent state of the yards and defined the target state, based on international benchmarks. KPMG, a professional services company, assisted in the development of the procurement process and evaluation plan to ensure it was fair, open and transparent. Providing oversight on the entire process was a 'fairness monitor' from Knowles Inc. who, as an independent observer, ensured that the procurement was conducted with integrity and accountability in a fair, open, transparent and compliant manner.

After the five bid responses were received, a team was brought in to conduct an evaluation of the submissions. The evaluation team was made of individuals from the government departments who were selected based on their

"NSPS designed a hands-off evaluation process. For the shipbuilding contracts we launched the most open, fair and transparent competition ever held. We made sure that everyone understood the rules, participated in developing the rules. Lobbyists were told to stay away, slick advertising campaigns were ignored by the judges. And then the bids were evaluated on merit and merit alone"

– Rt. Hon. Stephen Harper, January 12, 2012 in Halifax

particular knowledge and experience. To ensure impartiality, individuals who were responsible for the creation of the RFP were excluded. In the weeks prior to bid closing, the evaluation team was assembled and briefed on their individual areas of responsibility so that the evaluation could begin quickly once the RFP closed.

As outlined in the RFP, the evaluation focused on the following areas:

- Mandatory Criteria (administrative, legal and financial);
- Shipyard Current State and Shipyard Improvement Plans to reach target state;
- Cost to Canada for Shipyard Improvement Plans;
- Shipyard Financial Capability and Source of Funds; and
- Shipyard Value Proposition to improve the greater Canadian marine industry.

In total, some 40 individuals were involved in evaluating the five areas listed above. FMI and PricewaterhouseCoopers were on hand to assist in evaluating specific areas of the submissions, namely the shipyard improvement plans and financial information. Throughout the procedure the fairness monitor was present to ensure continued adherence to the integrity of the process.

In an effort to guarantee fairness and transparency, the received bids were coded to ensure no one could know which shipyards had been selected until the official announcement was made in the House of Commons. This coding system was the means by which the results were presented to the various levels of review. Once the teams had completed their task, an evaluation review board, made up of director-general level members from the four departments, examined the coded results in detail to verify that the process laid out in the RFP had been followed and that there were no outstanding questions. With the approval of these departments, the coded results were presented to both the DND assistant deputy minister and the deputy minister-level governance committees for their endorsement of the shipyard selection process.

DND photo by Cpl Malcolm Byers, MARPAC Imaging Services

With the Navy's major surface combatants now entering their third decade of service, the NSPS comes at the right time to eliminate the 'boom & bust' cycle that has traditionally plagued federal shipbuilding.

Umbrella Agreement (UA) and Ensuing Contracts

Following the announcement of the evaluation results, the NSPS Secretariat began negotiations with the two selected shipyards to finalize umbrella agreements designed to provide the framework for the ensuing shipbuilding contracts. The UAs are not a contract to build ships, but are to set parameters for negotiating the ensuing shipbuilding contracts. Each shipyard has its own umbrella agreement which captures the principles and general intent of their relationship with Canada. It describes certain pre-conditions prior to contract award and other specific terms that are to be included in the shipbuilding contracts – such as the shipyard's value proposition commitments. The UA also outlines Canada's liability in cases of delays or cancellation.

Charting the Course…

With a solid procurement selection process executed and UAs in place with the selected shipyards, it is now time for key players involved in DND's Major Project Delivery division to make headway on this new course. The nature of the agreements reached with the shipyards will allow

Table 1. Shipbuilding Paradigm Shift

From:	To:
Rigid process centred around a Request for Proposal	Consultative process centred around dialogue and exchange of information
Government designer	Designer, shipyard and government work together on design
Shipyard assumes product performance risk	Discussions and risk sharing allow for cost reductions
Shipyard supply chain does not contribute to design, risk management and cost savings until after contract award	Conducting trade-offs early by examining design options, alternate solutions, risk reduction strategy, and potential production cost savings

Canada to move from a highly formalized RFP-focused approach to one in which early collaboration offers the opportunity for the government to save time and money, and for the shipyard to offer better support through open communication and more relevant consultation.

This transition, however, will not occur without a realization from everyone involved that a new era is upon us that requires renewed and strengthened communication channels and a willingness to be open to change. The opportunity for early project engagement with shipyards to discuss specifics – such as timeline, scheduling, resource loading, system selection and even build strategy and detailed design – is unprecedented in federal shipbuilding, and holds much promise. Good stewardship in terms of the principles of the NSPS will be critical in the coming years to ensure that we transition effectively from individual positions to a situation where early collaboration is able to bring equal benefits to the shipyard and Canada.

From an individual shipbuilding project perspective, the collaborative process enabled by the NSPS acts as a catalyst for a potential paradigm shift. Some of the possible changes are outlined in Table 1. Their implementation will require the solid leadership and stewardship provided by the various governance structures, namely the NSPS governance structure, the structure in place in the project, and the various structures in place in the Department of Public Works and Government Services.

From an uncertainty and risk reduction perspective, the NSPS allows shipyards and government to:

1. Reduce uncertainty and risk through consultation and collaboration that:
   a. addresses drivers such as design, cost, schedule and risk before they have a significant impact; and
   b. devises risk mitigation strategies to address residual risks by allocating such risks to the parties;
2. Reduce contractual and administrative overhead to use resources more efficiently; and
3. Streamline the process under the 'open book' accounting environment by favouring a bilateral commitment on schedule and costs.

The first tangible example of how the NSPS will play out is the establishment of the ancillary contracts for such things as engineering studies and equipment trade-offs. These contracts are designed to encompass work that is concomitant to shipbuilding activities. Under the previous RFP process, projects and potential shipbuilders would go through several rounds of back and forth formal information exchanges during which both sides would try to understand the other's perspective. The ancillary contracts will now allow the shipyard to participate in the design process so that the final design is optimized for construction. This process allows for a collaborative environment, which will benefit not only the federal government, but also the full scope of the Canadian marine sector.

While the shipyard selection process and the finalization of both UAs have been completed, much work remains to be done to prepare the project offices for knowledgeable entry into shipbuilding contract negotiations. Significant experience has been gained in the NSPS Secretariat, and thus the change process being undertaken inside the projects and procurement arms of government will benefit from the knowledge transfer that is currently occurring.

The long-term management of the NSPS is now at the centre of discussions involving the four federal departments. These discussions are critical to the strategy and the government's fleet renewal efforts. Issues such as the monitoring of the achievement of target state, the inclusion of future projects and the alignment of the various project timelines need to be considered from a pan-government perspective. While departments are already reducing their participation in the Secretariat, it is important that the lines of communication created with the strategy remain open, perhaps through the use of the NSPS governance structure in combination with the collaboration mechanisms embedded into both umbrella agreements.

Much remains to be done…

The NSPS process and the ensuing shipbuilding contracts represent a generational opportunity for change. The NSPS was based on moving away from boom and bust practices in order to provide the shipbuilding industry with a stable and predictable order book, and to provide government with modern and efficient shipyards with whom it can work. What has occurred so far represents only the first critical steps in ensuring that the strategic shipbuilding industry is positioned for success.

Photo courtesy Irving Shipbuilding Inc. and the NSPS Secretariat

A sea of documentation! To guarantee fairness and transparency, the bids were coded to ensure no one could know which shipyards had been selected until the official announcement was made.

The shipyard improvements intrinsic to the NSPS will enable Irving Shipbuilding Inc. and Vancouver Shipyards Co. Ltd. to bring their facilities up to a recognized international benchmark. This represents an opportunity to increase the skill and capabilities of the entire Canadian marine sector. While these two shipyards have been selected to build the large vessel components of the NSPS, it is important to keep in mind that the strategy also encompasses smaller vessel builds and the entire refit and repair work normally associated with the government's current fleet. This latter component of the strategy will be competed among the rest of the Canadian marine sector, hence widening the influence of NSPS.

As with any project this size, there are opportunities but also challenges. In the case of the NSPS, these challenges have been overcome by the leadership and determination present at all levels of government and, perhaps much more so than in previous times, that of the shipbuilding industry and the Canadian defence sector. With this in mind, the impetus is now on maintaining the momentum acquired by the successes enjoyed so far and moving into the next phase – which should bring Canada one step closer to cutting steel and launching new vessels.

LCdr Rohit (Roh) Gulati has been the Infrastructure Requirements Manager with the NSPS Secretariat since 2009. He assisted in setting up the Government Shipbuilding Forum, NSPS Industry Day, developing the RFP evaluations and finalizing the umbrella agreements with selected shipyards.

LCdr Ted Summers has been the Evaluation Manager at the NSPS Secretariat since 2010, and has been involved throughout the entire RFP process.

LCdr J-F Séguin has been the Requirements Manager at the NSPS Secretariat since September of 2011. He participated in the finalization of the umbrella agreements with both shipyards.

For more information:

http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/snacn-nsps-eng.html

http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/snacn-nsps-fra.html

FEATURE ARTICLE

CANADIAN FORCES NAVAL ENGINEERING SCHOOL HALIFAX

A MAR ENG QL6A TECHNICAL SERVICE PAPER ADAPTATION

PROPOSAL TO IMPROVE LUBE OIL MONITORING IN MAIN REFRIGERATION COMPRESSORS

By PO2 Charles I. Paulin, Illustrations courtesy the author

[Text references and cost analyses are contained in the author's source document.]

The aim of this technical service paper is to propose a modification to the current configuration of the oil sight glass fitted on the main refrigeration compressors on board *Halifax*-class ships to facilitate lube-oil monitoring. It is noted that this proposal would require evaluation by other specialists before implementation.

Introduction

The lubrication system for the refrigeration compressors differs from other types of compressors in that there is refrigerant in the system. The current refrigerant used in the main refrigeration system on board *Halifax*-class ships is tetrafluoroethane (R134a). Classified as a halocarbon substance (HFC), R134a is not an ozone-depleting substance but has a global warming potential much higher than that of carbon dioxide. Any releases to the atmosphere must therefore be kept to a minimum.

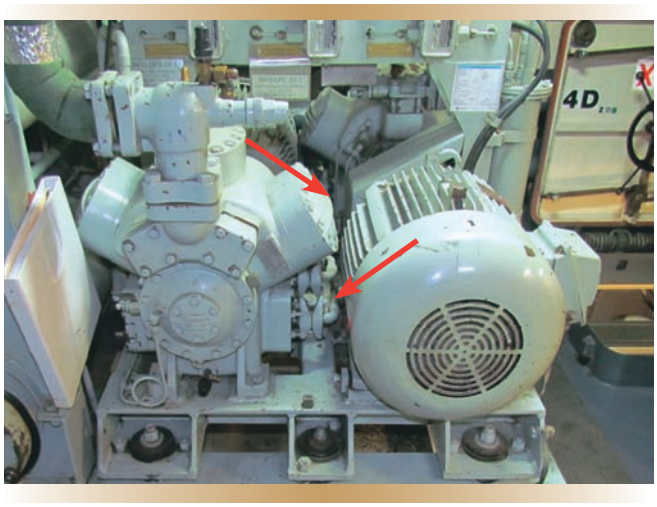


Figure 1. The refrigeration compressor configuration on board the *Halifax*-class frigates. The location of the two oil-monitoring sight glasses is indicated by the arrows.

With HFCs, due diligence is vital as stated in the Safety and Environment Management System Manual: "In the course of their action or duty, all individuals shall maintain a reasonable standard of care for the environment and for the health and safety of others." If an oil leak is present, there is also a refrigerant leak. The integrity and monitoring of the lubrication oil system is therefore critical in terms of both mechanical failures and environmental consequences.

Technical Background

The main refrigeration system on board *Halifax*-class ships maintains low temperatures in refrigerated storerooms in order to preserve perishable food for extended periods. *Halifax*-class ships are fitted with two refrigeration compressors driven by an electrical motor. Both assemblies are similar and fitted side-by-side on a bedplate with the compressors placed in opposite directions. The sight glasses are located on cover plates on the compressors' sumps facing inboard. Figure 1 shows the current configuration and location of the sight glasses (arrows).

SYMPTOM	CAUSE
Compressor will not start	No lube oil
Compressor is noisy, knocking	Lack of oil
Oil in sight glass shows presence of foaming	Excessive liquid refrigerant returning to compressor

Table 1. Troubleshooting: Symptoms and Causes

Source: C-29-354-000/MS-001 Main Refrigeration System, 5-14, 5-18, 5-24

The sight glasses are monitored hourly at sea by the engineering roundsman, and during pre-watch rounds by the machinery control room watchkeeper when the ship is alongside. The visual inspection is necessary to ensure the proper supply of oil for lubrication purposes. The oil quality can also be an indication to the roundsman that there is a problem with the system. According to Chapter 5 of the Main Refrigeration System Manual, several problems are linked to lube oil and are shown in Table 1.

Problems Associated with Oil Monitoring

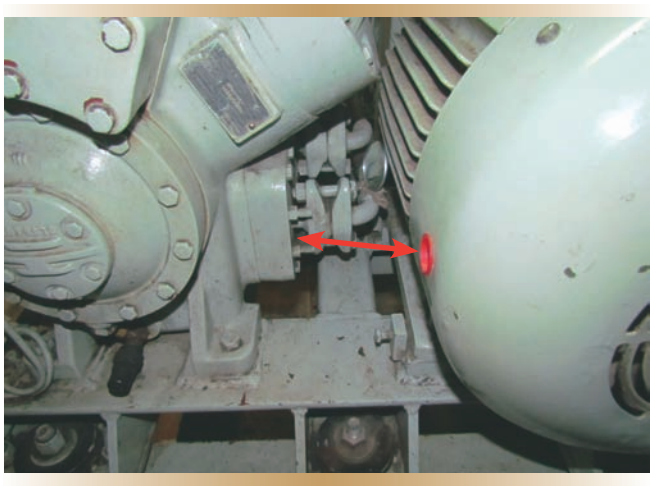


Figure 2. Close-up view of the limited space between the motor and compressor. The oil sight glass is to the left.

Figure 2 illustrates how the current configuration leaves the roundsman with very limited space – five inches (12.7 cm) – in which to read the sight glass accurately. The oil sight glass is 1½ inches (4 cm) in diameter and is screwed into the middle of the rectangular-shaped cover plate. In addition to a half-inch recess, the sight glass is partially obstructed by the oil and gas equalizing lines. The person monitoring the oil level therefore requires a mirror and flashlight to effectively obtain a visual reading. This method can lead to a false observation if the roundsman is inexperienced with the procedure.

In 2008, the author was second-in-charge of the outside space machinery section of HMCS *Charlottetown* and was required to investigate the failure of a refrigeration compressor. The initial action was to check the oil level, and with the mirror and flashlight method, a normal operating level was observed. However, there was no actual level as the mechanical seal on the compressor had failed. Further investigation showed that the sight glass was stained and thus indicated a false reading. It was also discovered that the seal had only a minimal leak.

A better way of monitoring the oil level – one that gives the roundsman an indication of decreasing lube oil level – could have caught the oil and refrigerant leaks earlier during periodic rounds.

Proposed Solutions

In order to rectify the problem, two solutions are proposed:

- Option A – Install Esco Products Inc. 3-D BullsEye sight glasses
- Option B – Reconfigure the compressor-motor assemblies

The proposed options would improve lube oil monitoring in the main refrigeration compressors on board *Halifax*-class ships by:

- increasing sight glass accessibility; and
- improving visual reading accuracy.

(Both options meet equipment specifications for 300-psi maximum operating pressure.)

Option A – Install 3-D Sight Glasses

An alternative to the current window-type sight glass is a three-dimensional one. This innovative solution allows the roundsman to quickly and effectively obtain a visual reading of the oil quality and level in the compressor. Figure 3 shows before and after pictures following the installation of an Esco 3-D BullsEye sight glass.

Esco Product Inc. manufactures the 3-D sight glass from a solid piece of high impact acrylic. (Each Esco 3-D sight glass costs about $30.) Considering that the refrigerant inside the system does not have to be recovered before the installation, the sight glasses could be replaced during the 24-monthly planned maintenance routine when the oil is changed and the compressor sump covers are removed.

The replacement sight glass has many advantages:

- Excellent visibility
- Excellent stain-resistance
- Great compatibility with refrigeration oil
- Part-for-part replacement
- Great cost-effectiveness

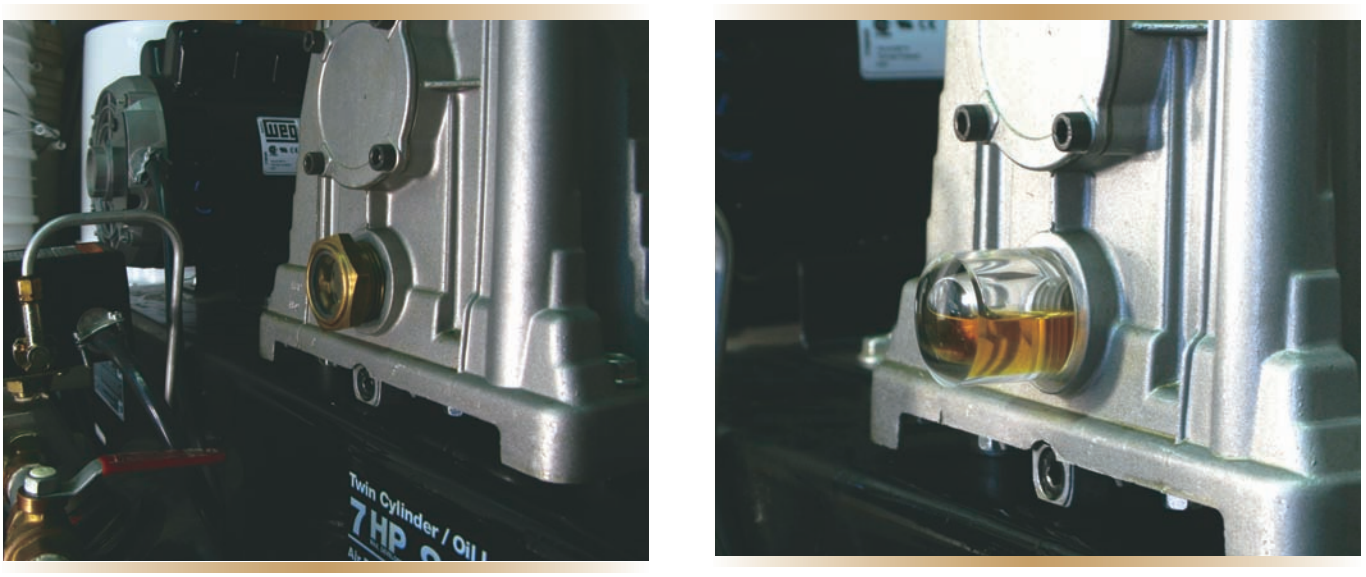


Figure 3. Before and after: The Esco 3-D BullsEye Sight Glass offers a much clearer view of the oil in the system.
Source: Esco Products Inc. http://www.escopro.com/3d-bullseye.html

The only disadvantages of this solution would be the addition of this item in the Department of National Defence inventory for parts, and minor changes to the service manual.

Option B – Reconfigure the Compressor Assemblies

Another solution is to reconfigure the compressor assemblies by interchanging compressor assembly No. 1 with assembly No. 2, and vice-versa (Figure 4).

This proposed solution would require work by electricians, fridge shop workers, mechanical fitters, riggers, pipe fitters, and welders. Electrically, the motors and sump heater wiring would need to be disconnected and reinstalled. The bedplate would require new mounts for the compressors and motors. The suctions, discharges, gauges, and equalizing lines would need to be rerouted to accommodate the new locations of the compressor assemblies.

This option has the following advantages:

- Improved sight glass accessibility
- No need for a new parts inventory
- No document modifications

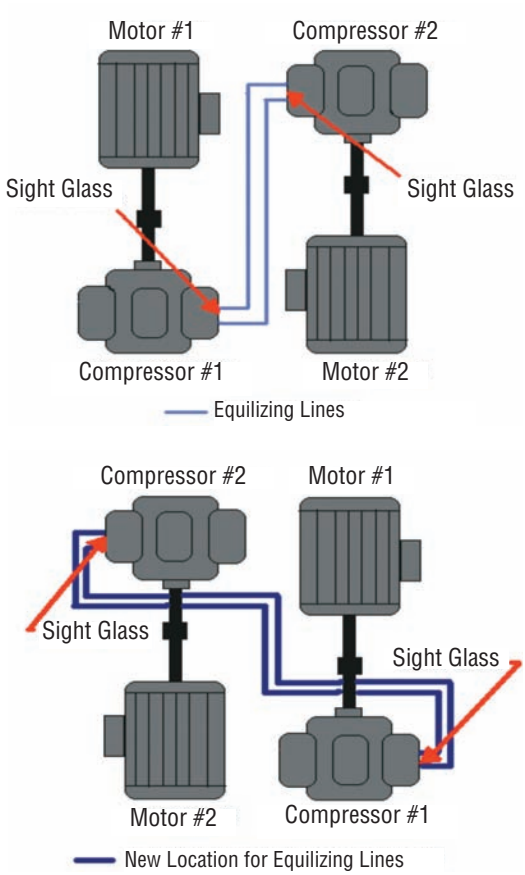


Figure 4. Compressor-motor assemblies before and after reconfiguration

The application of this reconfiguration, however, would require a complete refrigerant evacuation as suction and discharge lines from the compressors would have to be modified. This option also has the following disadvantages:

- The fridge spaces would need to be emptied
- It is time-consuming and expensive

Option analysis

The proposed options both meet the criteria, allowing a roundsman to read the sight glasses more effectively. The 3-D sight glass increases the reading accuracy with its design, while the reconfiguration of compressor-motor assemblies improves accuracy because the sight glasses are now located outboard where lighting is sufficient and there is no need for a mirror.

The cost analyses contained in the author's source document suggest that Option A (approximately $1,500) is by far more cost-effective than Option B (approximately $18,000). Table 2 summarizes both options for easy comparison.

Features	Install a 3-D Sight Glass	Reconfigure Compressor-motor Assemblies
Cost effective	Yes	No
Increased visibility	Yes	Yes
Increased accessibility	Yes	Yes
New part requirements	Yes	No
Meet system requirements	Yes	Yes
Document modification	Yes	No
Time consuming	No	Yes

Table 2. Option Comparison

Conclusion and recommendation

The lube oil monitoring of the compressors is an important aspect of preventive maintenance in order for the system to achieve its purpose. Of the two proposed solutions, Option A is preferred due to its simplicity and minimal cost of installation. The Esco 3-D BullsEye sight glass offers much greater visibility than the current sight glass, even if the latter were to be relocated as suggested in Option B. Improving the visibility and accessibility of the oil sight glass would prevent mechanical failure and environmental repercussions in the event of a refrigerant leak, and increase the effectiveness of troubleshooting procedures. It is recommended that an unsatisfactory condition report be submitted for an engineering change proposal to replace the currently fitted sight glass with a 3-D type.

Petty Officer 2nd Class Charles Paulin is a marine engineering technician in the Above Water section of the Fifth Maritime Operations Group Headquarters in Halifax.

Acknowledgment

The author would like to thank CPO2 Jeff Lacey, CPO2 Ryan Hatcher, PO1Richard Cenerini and PO2 Glenn Gale for their advice during the preparation of the original technical service paper on this subject.

Reference

Petty Officer 2nd Class Charles I. Paulin, "Proposal to Improve Lube Oil Monitoring in Main Refrigeration Compressors," Mar Eng QL6A Course Technical Service Paper, Canadian Forces Naval Engineering School Halifax, November 29, 2010.

FEATURE ARTICLE

NAVAL CLASSIFICATION AND REGULATION FOR SURFACE SHIPS: AN INTRODUCTION

By Cdr David Peer

Naval classification and regulation for surface ships are two new concepts resulting from a shift in naval maintenance, acquisition and support to commercially available standards for ship design. They become integral to how the Royal Canadian Navy (RCN) will design, build and support its ships and auxiliaries. This article introduces these two concepts and explores their connection to merchant ship classification and regulation.

The Origins of Naval Classification and Naval Regulation

After the end of the Cold War, western nations looked for a peace dividend. In Canada, that call was coupled with the Government's drive to control spending – resulting in a 40-percent reduction of DND expertise in the naval materiel acquisition and support organization in NDHQ. The cuts hit resources associated with new acquisition particularly hard.

Within the last decade we have again begun a major renewal of the RCN, with a significantly different naval materiel acquisition and support organization. Ship acquisition projects now have fewer than 50 people instead of the previous 200 to 300. The smaller numbers, coupled with almost no experience, present significant challenges. Few people have any design and build experience and we have almost no ability to keep national standards current.

The project offices set up to procure and deliver new ships for the RCN identified the challenges early and decided to engage the support of class societies and use commercially available classification society rules. Unfortunately most people in naval materiel acquisition and support do not have any experience with classification societies or their rules. As the Arctic Offshore Patrol Ship (AOPS) and Joint Support Ship (JSS) projects progressed through initial design, our collective gaps in understanding became evident.

Photo by Brian McCullough

The dual concepts of naval classification and regulation for surface ships are integral to how the Royal Canadian Navy (RCN) will design, build and support its ships and auxiliaries.

Fortunately, the experience of other western navies can offer solutions to Canada. In the late 1990s, the United Kingdom's Ministry of Defence (MOD UK) began work with Lloyd's Register to explore ways to use Lloyd's in the design, construction, and maintenance of naval vessels. By 2000, MOD UK had adopted policy to harmonize naval standards and safety practices with the standards and safety regimes for merchant vessels. Other western navies and classification societies took heed and now many classification societies offer naval ship rules. The International Naval Safety Association (INSA) sponsors an international naval safety standard.

Merchant Ship Classification and Regulation

Classification societies classify ships, and nations regulate ships. The two functions are distinctly different but complementary. The former ensures that ships meet the international conventions for safety; the latter demonstrates that owners operate ships suitable for their intended service.

Merchant ship classification can trace its origins to the 18th century. The first entry in the earliest of Lloyd's *Register Books* is dated 1764.[i] Classification began as a way of assessing the seaworthiness of ships for cargo-shipping merchants and their insurance underwriters. In those days, ships and cargoes were frequently lost. Today, merchant ships are classified according to the type of cargo they carry, their size and the voyages they undertake. The original purpose of classification remains the same, but the assurance that classification provides now serves many more functions.

Regulation is more recent. The loss of the RMS *Titanic* illustrated that more needed to be done to ensure the safety of crew and passengers. The first version of the International Convention for the Safety of Life at Sea (SOLAS) was adopted in 1914, setting requirements for lifeboats, other emergency equipment, safety procedures, and continuous radio watches. All merchant vessels must meet SOLAS and classification requirements. The most recent SOLAS convention was adopted in 1974. It requires nations, referred to as flag states, to ensure that their ships comply with minimum safety standards in construction, equipment and operation.

Civil statutory requirements and merchant ship classification are now closely aligned. IMO resolution A739 authorizes classification societies to set rules and verify and manage the strength of ships to SOLAS.[ii] Nationally, Transport Canada has authorized five classification societies to certify compliance with SOLAS.[iii] The Canada Shipping Act and the Canada Labour Code contain the statutory requirements for Canadian-flagged vessels. The Canada Shipping Act is how Canada incorporates SOLAS requirements into law.

The Canada Shipping Act is consistent with international practice and exempts naval vessels. The merchant vessel classification regime and SOLAS are neither sufficiently flexible nor appropriate to the missions of warships and auxiliaries; they do not consider the unique operating requirements of naval ships nor the skill and capability of naval crews. Nevertheless, they provide a benchmark for acceptable levels of safety and suggest a means to demonstrate that naval vessels are appropriate for their intended missions.

Naval Classification and Regulation

Naval classification and regulation closely parallel the model and intent of civil practice. They remain distinct functions complementing each other, but do not exist in isolation. Classification societies classify naval ships and auxiliaries to demonstrate their suitability for their intended service. Regulation is the function of a national authority, which ensures naval vessels meet a recognized national standard for safety.

While naval safety requirements are unique to each nation, classification societies can incorporate national safety regulations within their naval rules so that ship designers and maintainers only have to refer to one set of standards.

Naval classification follows the approach for merchant vessels – an approach unique to each classification society. The classification regime is typically described in the opening parts of a classification society's rules. Figure 1 shows

Mandatory Notations		Optional Notations		
Ship Type	**Service Area**	**Hull Strength**	**Military Distinction**	**Others**
NS1 Cruiser Helicopter Carrier Aircraft Carrier Destroyer Assault Ship **NS2** Frigate Corvette Patrol Vessel **NS3** **NSA** Oiler RoRo Logistic	**SA1** **SA2** **SA3** **SA4** **SAR**	**ESA** Extreme Strength Assessment **RSA** Residual Strength Assessment **TLA** Total Load Assessment **SDA** Structural Design Assessment **FDA** Fatigue Design Assessment	**IB** Internal Air Blast **EB** External Air Blast **SH** Shock Enhancement **WH** Whipping Assessment **FP** Fragmentation Protection **SP** Small Arms Protection	**LA/LA(N)** Lifting Appliances **CM** Construction Monitoring **ES** Enhanced Scantlings **POL** Pollution Prevention **Ice Class** Navigation in Ice **EP** Environmental Protection

Figure 1. Lloyd's Register Naval Rules Hull Notations

notations used by Lloyd's Register to classify the hull of naval vessels. (Notations covering machinery, and equipment and arrangement also exist.) Notations are a convenient way to summarize the intended service of a ship and thus are often safely guarded.

Classification is particularly advantageous for navies with reduced capacity and capability for ship design, construction, and maintenance. Tapping into a worldwide market for ship support relieves nations from maintaining national standards and the associated support resources and infrastructure.

Naval classification works like its civil equivalent but with more flexibility. Rather than relying on predetermined ship types, naval classification takes a customized approach ensuring the rules used in design are uniquely suitable for the intended employment. Classification societies will adapt their naval rules for design, construction and maintenance to allow a naval vessel to be purpose-built for any operational requirement.

National authorities regulate. To avoid an excess of unique diverging national regulations, INSA maintains an international standard for the safety of naval vessels called the Naval Ship Code (NSC) – also called ANEP 77, an Allied Naval Publication with NATO origins.

The Naval Ship Code establishes minimum safety levels for naval vessels, which are comparable to SOLAS. Like SOLAS, the Naval Ship Code is structured so that classification societies can integrate safety requirements into their rules. This allows naval classification to demonstrate suitability for intended service and meet minimum safety levels.

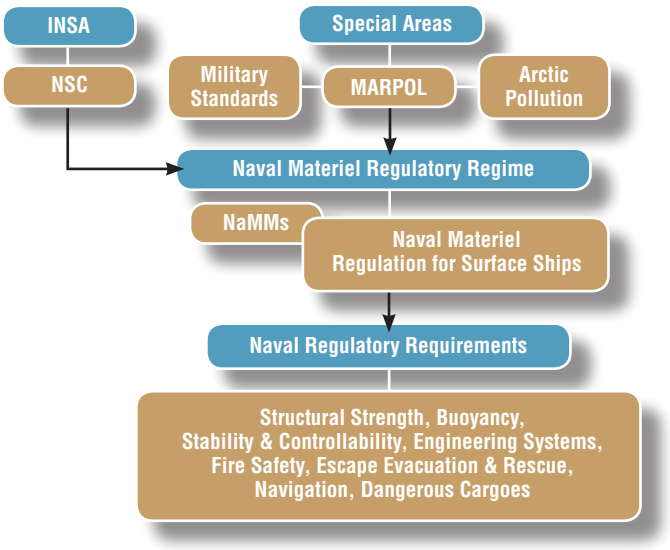
Canada is a founding member of INSA, which manages and maintains the Naval Ship Code for NATO and the world's navies. DGMEPM will soon start regulating naval vessels in Canada and has adopted the NSC as the standard for materiel safety on ships.

Naval regulation will apply to all naval vessels, but cannot rely on naval classification for implementation. The RCN will need to account for legacy ships built and maintained to national standards. As existing ships are brought into the regulatory regime without the benefit of naval classification, work will be required to determine how best to integrate existing ships into the regulatory framework. Naval regulation will need to be able to operate independently from naval classification until the time that all vessels are classed.

How Regulation and Classification will function in the RCN

DGMEPM formally stood up the Naval Materiel Regulatory Authority (NMRA) on April 1, 2012. The NMRA sets the standards for naval surface ship safety and maintains a regulatory system to provide assurance of compliance. Figure 2 shows the Naval Materiel Regulatory regime. The NMRA will regulate naval safety and be independent of the cost, schedule, and mission concerns of the fleet.

Figure 2. Canadian Naval Materiel Regulatory Regime



Three key functions exist within any regulatory regime, represented by the regulatory authority, the owner, and the operator:

a. The NMRA will be the regulatory authority, setting the standards for regulation and certifying compliance based on a review of evidence provided by the owner.

b. The class program manager in DGMEPM or the project manager of a ship acquisition project will function as the owner. The owner is responsible for working with the regulatory authority and the operator to establish the particular regulatory criteria for a ship or class of ships and for ensuring that ship compliance is verified on a regular basis.

c. The operational authority will function as the operator, taking responsibility for operating the ship within previously agreed limits of safety and for maintaining the ship in compliance with regulations and the direction of the owner.

Every ship or class of ship in the naval regulatory system will have tailored safety requirement criteria based on the design intent of the vessel. This is vital. Unlike merchant vessels where standardized roles and rules embed appropriate safety requirements, naval vessels must undergo an assessment to ensure that the safety requirements are appropriate to the intended missions. This flexibility is one of the key features of the Naval Ship Code.

To achieve the full benefit of commercially available naval ship rules and the resources of the classification societies that support them, naval regulation and classification must work seamlessly. There are a number of views on how this could work in the RCN, but opinions are converging on a few key points. Classification societies that offer naval classification will:

a. provide rules and standards incorporating the safety requirements of the Naval Ship Code;

b. provide independent review of ship design plans to ensure compliance with rules;

c. provide an independent survey of ship construction to ensure compliance with plans; and

d. conduct periodic independent surveys to ensure continuing compliance to rules during operation.

Collecting survey evidence is a key component of classification societies. When classification integrates regulatory requirements, owners can use evidence for classification to demonstrate compliance to regulatory requirements.

This process should work effectively for ships maintained to naval classification with in-service support contracts. Ships in naval class will have a classification society to provide independent third party oversight and certification of compliance to class for the class program manager. This evidence will support regulatory submissions to the NMRA.

For ships not maintained in class, work will be required to identify the appropriate regulatory criteria and the internal processes to verify compliance.

The naval operator community has been generally receptive to a regulatory framework supporting risk-based decision-making and the operator's imperative to accept any risk. An informed understanding of the minimum requirements to proceed safely to sea will be valuable for operators.

Why is this important and necessary?

The RCN and DND no longer have the resources, nor, in some areas, the expertise to write and maintain standards. Technical standards, specifications and criteria are the foundation for materiel performance and safety. This has become critical for new ship construction. Our major crown projects now consider commercially available naval ship rules the best option for design and build standards.

Resources to perform maintenance for our in-service ships are also a challenge. Ships might be called to undertake missions with ship systems unavailable, or to sail when the safety of the ship to operate may be questioned. Naval regulation operates within a broader risk management framework that establishes appropriate materiel states for operations and missions. Our inability to identify and prioritize key maintenance represents a known, but unquantified, risk to our missions, people and materiel. Regulation will play a part in measuring risk by identifying a baseline safety level and creating a framework for prioritizing resources to maintain an appropriate materiel state to assure ship safety.

Twenty-five years ago, sufficient resources existed for robust naval standards far exceeding 'minimum' safety requirements. Current resource constraints are forcing innovative methods to support the future fleet. The Navy is developing policy and direction on regulation and on classification; change must occur if we are to design, construct, and operate our ships safely in the resource-constrained world of the future.

Cdr David Peer is a Defence Fellow at Dalhousie University in Halifax, NS. Prior to his current appointment, Cdr Peer worked in DGMEPM as the Ship Systems Engineer.

[i] Watson, Nigel. *Lloyd's Register 250 years of service*. London: Amadeus Press, 2010, p 8.

[ii] Resolution A739(18) was adopted on Nov. 4, 1993 http://www.tc.gc.ca/media/documents/marinesafety/a18-res-739.pdf

[iii] Lloyd's Register, Germanischer Lloyd, Bureau Veritas, and Det norske Veritas, and the American Bureau of Shipping. http://www.tc.gc.ca/eng/marinesafety/dvro-fsc-dspi-1781.htm

MARI-TECH 2012 CONFERENCE, OTTAWA

Photo by Brian McCullough

Cmdre Pat Finn, DGMEPM, was the keynote speaker on Day 2 of the Mari-Tech 2012 conference held in Ottawa on April 10-11. His presentation on the challenges and opportunities associated with supporting the Navy's current and future fleets emphasized the importance of the maritime industry to the Royal Canadian Navy. "Building the Navy is a series of fifty-year decisions," he told the mainly civilian audience.

(For more Mari-Tech 2012 highlights and photos, turn to the *CNTHA News* section in this issue.)

RCN Monument named in Ottawa

Story and photos by Brian McCullough

With a swing of a champagne bottle, a spritely 89-year-old Women's Royal Canadian Naval Service veteran, **Miss Elsa Lessard**, christened the "final piece" of the RCN's 2010 centennial celebration at Richmond Landing on the Ottawa River on May 3.

The Royal Canadian Navy Monument – a gleaming white granite 'sail' topped by a golden sphere representing the celestial bodies and the RCN's global reach – was being dedicated to all those who have served, or who are currently serving in Canada's navy.

During a formal ceremony conducted under grey skies made lighter by the music of the Stadacona Band and the colourful flags of the cadets from Royal Canadian Sea Cadet Corps Falkland, **Prime Minister Stephen Harper** praised the unique design of the monument, declaring that it "speaks" to the meaning of naval service.

"This monument," he said, "demands that the Navy's full story be told and understood, and serve as a reminder to all Canadians that the Navy is always there – over the horizon – today as in the past, at the first sign of trouble, to say 'Ready Aye Ready' in the service of our great country."

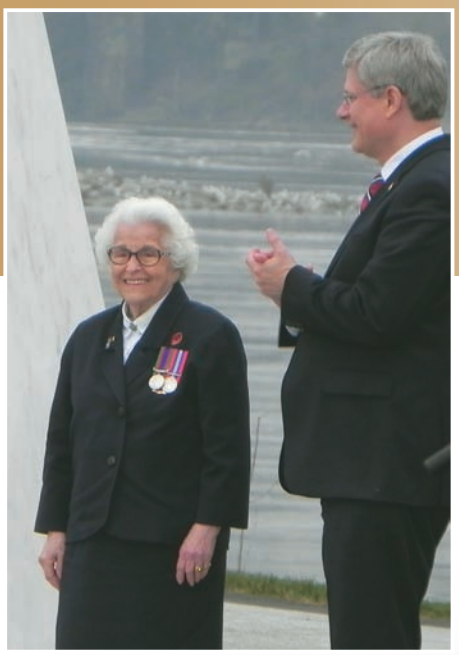
The monument was designed by the team of artist-sculptor **Al McWilliams**, and architects **Joost Bakker** and **Bruce Haden**. The Vancouver-based trio won a national design competition co-sponsored by the RCN and the National Capital Commission in 2009. Carved into the west side of the sail is the Navy's motto, Ready Aye Ready, while the east side carries the names and dates of the Navy's operational theatre honours. An inlay of black granite in the shape of a fouled anchor decorates the multi-level base.

VAdm Paul Maddison, the Navy's Chief of the Maritime Staff, spoke of "the ceaseless vigil that successive generations of Canadians have maintained these 100-plus years at sea and ashore." The monument, he said, brought to mind the "strength and flair" of one of Canada's warships, "crewed by ordinary Canadians doing extraordinary things."

The official party of sponsor Elsa Lessard, Prime Minister Stephen Harper, Chief of the Defence Staff General Walter Natynczyk, Defence Minister Peter MacKay and Chief of the Maritime Staff VAdm Paul Maddison arrives through the ranks of a smart-looking colour party of Royal Canadian Sea Cadets.

The RCN Centennial Bell held waters from Canada's three oceans for the naming ceremony. Afterward, the waters were poured into the Ottawa River.

NEWS BRIEFS



Prime Minister Stephen Harper applauds 89-year-old sponsor Elsa Lessard who has just christened the Royal Canadian Navy Monument.

With the Parliament Buildings as a backdrop, the designers of the Royal Canadian Navy Monument interpret their creation for a sea of guests and media.

Officer Awards

AWARDS

2011 NAVAL TECHNICAL OFFICER AWARDS

Naval Officers Association of Canada (NOAC) Award

SLt Dale Molenaar was unable to receive his award in person, so Lt(N) René Blais and CFNES Commandant Cdr Lou Carosielli stepped in to lend NOAC representative Cmdre (ret.) Mike Cooper a hand.

Mexican Navy Award

SLt David Hogenbirk took home this beautiful naval dirk, presented to him by Mexican Naval Attaché Jaime Herrera Romo.

L-3 MAPPS – Saunders Memorial Award

SLt Andres Giraldo-Mejia did the heavy lifting for L-3 MAPPS Marketing Director Wendy Allerton. He received a personal copy of the two-volume *Modern Marine Engineer's Manual*.

MacDonald Dettwiler and Associates Award

Lt(N) Bobby Gilpin accepts a naval officer's sword from MDA Business Development Manager Richard Billard.

Weir Canada Award

Lt(N) Dean Caldwell also took home a naval sword, presented to him by Weir Canada's Peter Southern.

Lockheed Martin Canada Award

Lt(N) Dominic Dupuis accepts a naval sword from Lockheed Martin president Thomas E. Digan.

Photographs by Cpl Martin Roy, Formation Imaging Services Halifax

The 2011 NTO Award Winners and Runners-up

Back Row:
SLt Douglas Priestly,
SLt Andres Giraldo-Mejia,
SLt Andre Filliol,
SLt David Hogenbirk,
Lt(N) Brent Limbeek,
Lt(N) Mark Bartek

Front Row:
Lt(N) Robert Gilpin,
Lt(N) Simon Parent,
Lt(N) Dominic Dupuis,
SLt Natalie Mailhot-Montgrain,
Lt(N) Thierry Periard-Fournier,
Lt(N) Dean Caldwell,
Lt(N) Lee Pothier

The 2012 NTO Spirit Award

Photo by Brian McCullough

The National Capital Region naval technical mess dinner in Ottawa on Feb. 9 was another grand affair this year, with VAdm (ret.) Bruce MacLean as guest of honour. In what is now an annual tradition, the evening kicked off at HMCS *Bytown* mess with the presentation of the Naval Technical Officer branch Spirit Award. Sponsored by RAdm (ret.) Ian Mack, Director General (Land & Sea) for Major Project Delivery, the award recognizes NTOs who demonstrate "uncommon spirit or character."

This year's award went to last year's runner-up – Combat Systems Engineer **Lt(N) John Faurbo** (right), the assistant head of the CSE department in HMCS *Iroquois* (DDH-280). **Lt(N) Bobby Gilpin** (HCM/FELEX project) took away second place honours. RAdm Mack praised both officers for the "spark of spirit" they bring to the naval technical community.

PRESERVING CANADA'S NAVAL TECHNICAL HERITAGE

CNTHA News

Canadian Naval Technical History Association

CNTHA's message clear at Mari-Tech 2012

"Should the past guide the future?"

That was the question CNTHA Executive Director Tony Thatcher put to an audience of marine engineering industry professionals at the Mari-Tech 2012 conference in Ottawa in early April. The question might have been rhetorical, but with the fledgling National Shipbuilding Procurement Strategy (NSPS) hot in everyone's mind, it was a gentle reminder that Canada's experience with naval technical procurement since the end of the Second World War has been a veritable primer of acquisition do's and don'ts.

The paper Thatcher was presenting – 'The Navy's Technical History: Should the Past Guide the Future?' (written by CNTHA member, Capt(N) (ret.) James G. Dean) – showed how successive procurement strategies over the years have evolved, and not always for the better.

"Lessons learned from past procurement strategies have been reflected in new project management and contracting approaches," Thatcher said. "Some of the changes can be considered improvements, whereas others have not necessarily improved the process, but have generated new types of problems that have resulted in overall higher cost to Canada.

"The CNTHA believes that as implementation contracts begin under NSPS, the lessons of the past in system technology development and ship acquisition management...must continue to guide the design, construction and project management of the new ships."

The annual Mari-Tech conference was the perfect venue to reach a focused group of engaged industry players. Co-hosted this year by the Society of Naval Architects and Marine Engineers, Eastern Canadian Section (Chair, Glenn Walters), and the Ottawa Branch of the Canadian Institute of Marine Engineering (National Council Chair, Jeffrey Smith), Mari-Tech 2012 had as its theme, 'Re-birth of the Marine Technical Community.' The two-day conference program included a solid lineup of keynote speakers, panel discussions and paper presentations on topics that covered the spectrum of technical, business, and regulatory developments in marine technology.

James Dean, CNTHA Executive Director Tony Thatcher, Chairman Pat Barnhouse, and Webmaster Don Wilson.

A bustling hall of 50-plus international exhibitors offered a perfect counterbalance, with quality product demonstrations, focused one-on-one discussions, and the odd free pen. In the 'What were they thinking?' department, one exhibitor really had the sparks flying as brave volunteers stepped forward to don safety gear and grind away welds on a piece of steel. For a bunch of marine engineers, it just didn't get any better than this.

The conference wrapped up with a short, lively session from closing keynote speaker Tom Ring, the Assistant Deputy Minister (Acquisitions Branch) for Public Works and Government Services. Mr. Ring delivered a spirited and entertaining endorsement of the National Shipbuilding Procurement Strategy. "We did an awful lot to get to the start line in good shape," he said. "We worked around the clock to get it right."

The *Maritime Engineering Journal* and *CNTHA News* gratefully acknowledge the full conference access afforded to us by Mari-Tech 2012.

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