SEASPAN VANCOUVER SHIPYARDS' INDUSTRY DAY

Tuesday, September 6, 2016

seaspan SHIPYARDS

SEASPAN OVERVIEW

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WHO WE ARE

- A privately-owned Canadian company, with roots on the west coast that trace back to 1886
- Over 2,300 employees passionately delivering the best marine solutions from the West Coast – safely, efficiently and with care for our customers and communities
- Contributing to a rebirth of Canada's shipbuilding and marine industrial sector
- Actively engaged within our communities
- Fostering strong and sustainable relationships with Aboriginal Community
- Contributing to the long-term conservation of Canada's marine habitat and the environment

We are proud to have won the opportunity to build vessels for the Canadian Coast Guard and the Royal Canadian Navy under NSS

A FULL-SERVICE MARINE PROVIDER

Seaspan Marine

38 Tugs, and 120 Barges: Ship docking and escorting (70% of all vessel traffic in/out of Port of Vancouver), and cargo services primarily in the forest products industry

Marine Petrobulk: Supplies bunker fuels to 70% of the vessels entering region

7 Ferries, and 5 Terminals: Supplies 50% of all cargo to Vancouver Island - $250M infrastructure investment on Fraser River

Seaspan Ferries

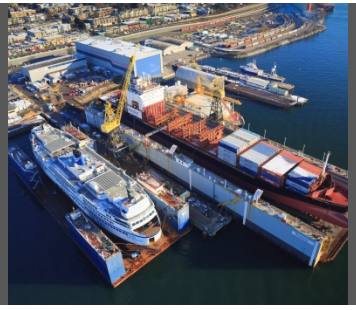
Seaspan Shipyards

Ship Repair, Overhaul, Maintenance: Public ferries, cruise ships, military, Coast Guard, commercial

Shipbuilding: Commercial, BC Ferries, military, Coast Guard

Vancouver Shipyards

Victoria Shipyards



Vancouver Drydock

VICTORIA SHIPYARDS (VSL)

VICTORIA SHIPYARDS (VSL)

Building on Success

Built and delivered 29 Motor Life Boats to CCG

Designed and built 8 Orca Class vessels for the RCN

Ongoing RCN Work

Victoria In-Service Support Contract (VISSC)

Halifax Class Frigate Life Extension (HCM) Program

Upcoming Int'l Work

New Zealand Frigate System Upgrade (FSU)

"Te Kaha" and "Te Mana"

VANCOUVER DRYDOCK (VDC)

VANCOUVER SHIPYARDS (VSY)

VANCOUVER SHIPYARDS (VSY)

NATIONAL SHIPBUILDING STRATEGY (NSS)

- A strategic partnership with two Canadian shipyards, for the re-capitalization of Canada's Navy and Coast Guard fleet requirements over the next 25 years
- Seaspan won the right to build the non-combat package vessels – Current Total Non-Combat Package includes **17 vessels valued at $8.3B**
- Long lead planning and production will avoid the boom and bust cycles of the past
- Build a sustainable shipbuilding and marine industrial base in Western Canada, protect our maritime domain and promote our sovereign interests.

Awarded October 2011

Official February 2012

Construction June 2015

VANCOUVER SHIPYARDS (VSY)

Canada's Key Industrial Capability for Non-Combat Vessels

3 x

Offshore Fisheries Science Vessel

2 x

Joint Support Ship

1 x

Offshore Oceanographic Science Vessel

1 x

Polar Ice Breaker

5 X Offshore Patrol Vessels

5 X Medium Endurance Multi-Tasked Vessels

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NON-COMBAT PROGRAM OVERVIEW

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OFFSHORE FISHERIES SCIENCE VESSEL (OFSV)

WHY OFSV?

To Replace:

CCGS WE Ricker
(1978 - 2013)

CCGS Alfred Needler
(1982 - 2014)

CCGS Teleost
(1988 - 2014)

Primary Role = Fisheries Science

Secondary Roles = Mission Readiness, Maritime Security, Aids to Navigation, Environmental Response, and Search & Rescue

SHIP SPECIFICATIONS

Length:	63 m (207 ft)
Breadth:	16 m (53 ft)
Draft:	6.1 m (20 ft)
Tonnage	3247 (loaded)
Speed:	12.5 knots
Crew:	21 + 14 additional accommodation = 35
Range:	6,400 nm
Endurance:	31 Days
Design Life:	30 Years


Canada
CCGS OFSV
Coast Garde
Guard Côtière

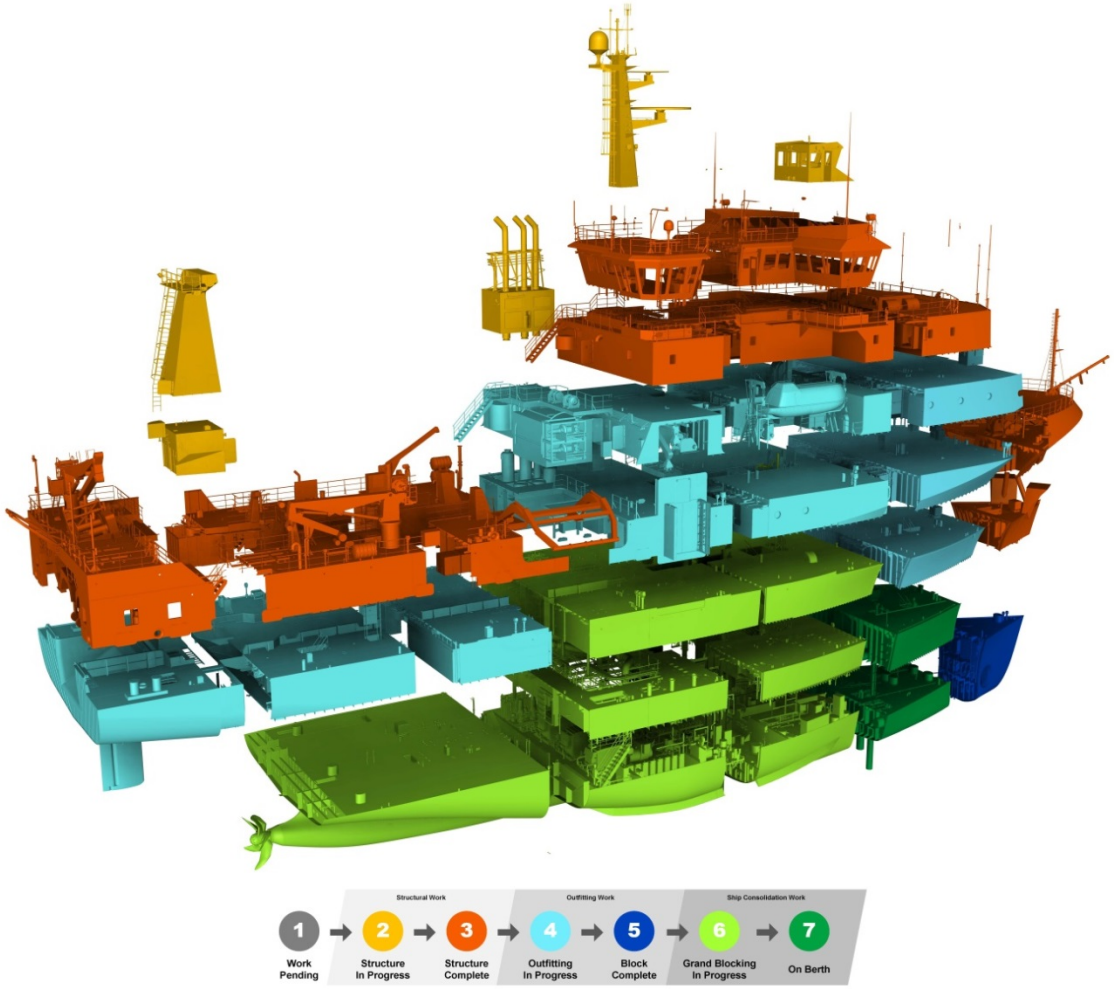
KEY STAKEHOLDERS

Canada: (CCG, PSPC, ISEDC, TC)

Tier 1 Sub-Contractors:

Vard Marine	Design Services Provider
Thales Canada	Mission Systems
Bronswerk Marine	HVAC
Techsol Marine	SCMS (IPMS)
L3 Communications	Propulsion
Trident Maritime Systems	Power Distribution
Computer Science Canada	Integrated Logistics Support

OFSV 1: SIR JOHN FRANKLIN



CONSTRUCTION PROGRESS

- Being built in 37 blocks
- OFSV 1 = 45% physically complete
- OFSV 2 = 8% physically complete
- 29 of 37 blocks painted

PROCUREMENT

- Procurement opportunities for OFSV, OOSV & JSS will be briefed separately
- But it is fair to say that Long lead Item (LLI) procurements for all 3 x OFSVs is finalized.

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OFFSHORE OCEANOGRAPHIC SCIENCE VESSEL (OOSV)

WHY OOSV?

To replace:

CCGS Hudson

Built – 1963
Length – 90.4m
Displacement – 3740 tonnes
Range – 23,100 nm
Endurance – 105 days

Primary Role = Oceanographic Science

Secondary Roles = Mission Readiness, Environmental Response, SAR, Aids to Navigation & Maritime Security

SHIP SPECIFICATIONS

- LR 100A1 Oceanographic Research Vessel, IACS PC6 Ice Class
- Length approximately 85.9 m
- Beam approximately 16m
- Draught 6.05m
- Displacement 4435 tonnes
- Diesel electric with Azimuthing Thrusters and single bow thruster
- Installed power of 3990 KW
- 13.4 knots
- Range 12000 nm @ 12 Knots
- Endurance of 84days (resupply of perishables after 42 days)
- Accommodation for 56
- Fuel capacity 648 m3
- Fresh water 106 m3
- Water ballast 661 m3

PROJECT PHASES

- **Basic Design Assessment**
  - Assessment of the contract design package provided by Canada is complete
  - Output of the design assessment Informs the focus of work during the follow on phases

- **Basic Design Development**
  - Selection of propulsion system, principle auxiliaries, major equipment that drives space and power
  - 3D modelling underway

- **Functional Design**
  - Systems design complete
  - Majority of equipment is selected
  - Drawings are approved by Class

- **Production Design**
  - 3D production model is complete
  - Detailed design complete
  - Shop work orders are ready for the first 12 weeks of build
  - Remaining Material and equipment purchasing underway

- **Build**
  - The build strategy for OOSV will follow a similar block construction methodology to OFSV
  - 39 Blocks, 11 Grand Blocks
  - Build will commence immediately following completion of the production design

PROCUREMENT STRATEGY DESIGN

- The primary design team is similar to OFSV, including VSY's Tier 1s:
  - VARD
  - Thales
  - CSC
  - Joiner
  - Lloyd's Register
- Additional Single System Integrators selection processes ready to start.
- SSI's will generally be providing design, equipment supply, and installation support services.
- Early focus will be on Electrical Design, Propulsion System, HVAC, Ships Control and Monitoring System (SCMS), and Science and Deck Machinery

PROCUREMENT STRATEGY EQUIPMENT

- In order to achieve as much design efficiency as possible, and to provide Coast Guard a level of standardization between the Science vessels, where appropriate, VSY will integrate equipment common to the OFSV in the OOSV design.

- Single System Integrators will be responsible for selection and procurement of equipment within their areas of design responsibility. The principle of best value to Canada will be applied to all procurements.

- VSY will be responsible for selection and procurement of all other equipment and material

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JOINT SUPPORT SHIP (JSS)

WHY JSS?

To Replace:

RCN Protecteur Class Replenishment Oilers

HMCS Protecteur (1969 - 2015)

Primary Role Core replenishment capability:

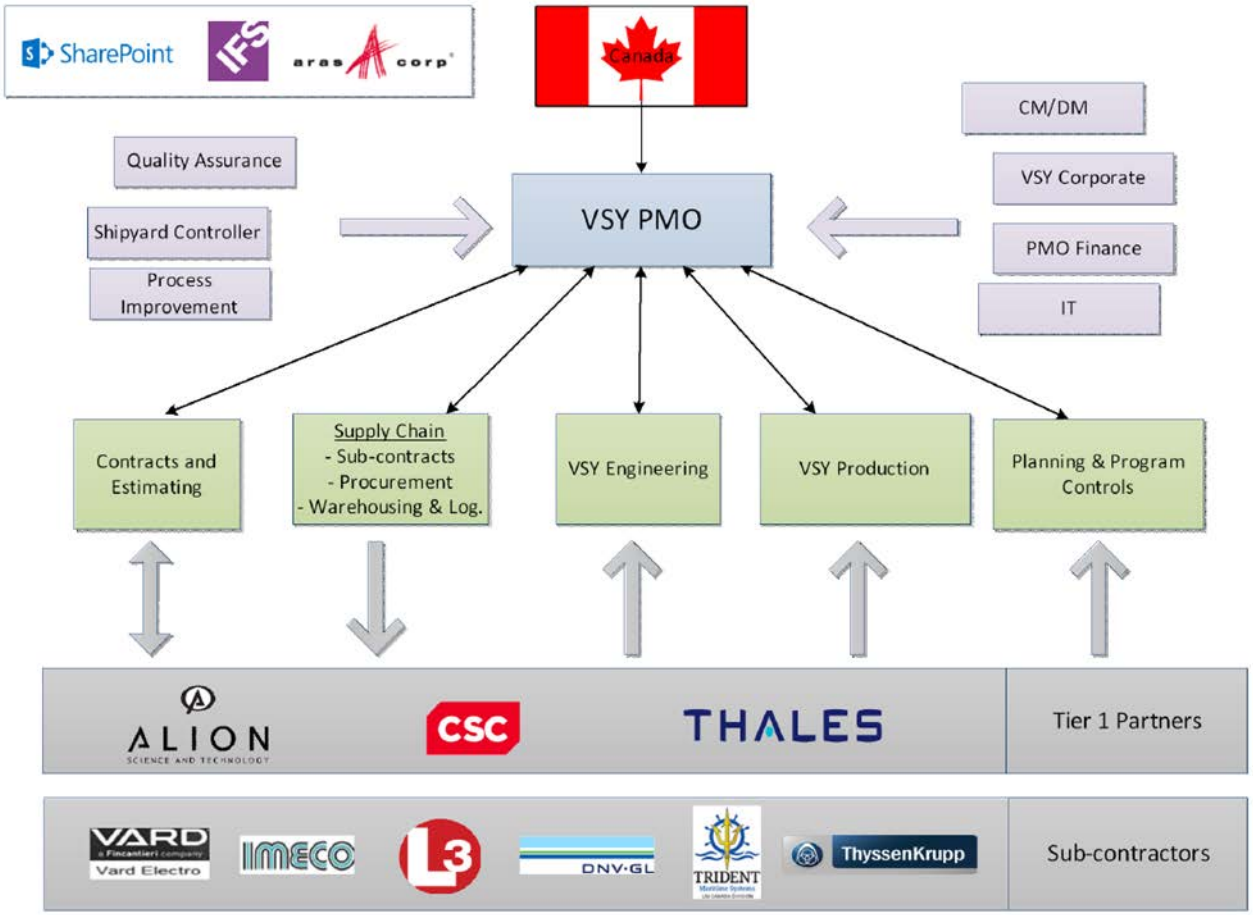
- Provision of fuel, ammunition, spare parts, food, and water, and other supplies; modern medical and dental care facilities, including an operating room;
- Repair facilities and expertise to keep helicopters and other equipment functioning;
- Basic self-defence functions

SHIP SPECIFICATIONS

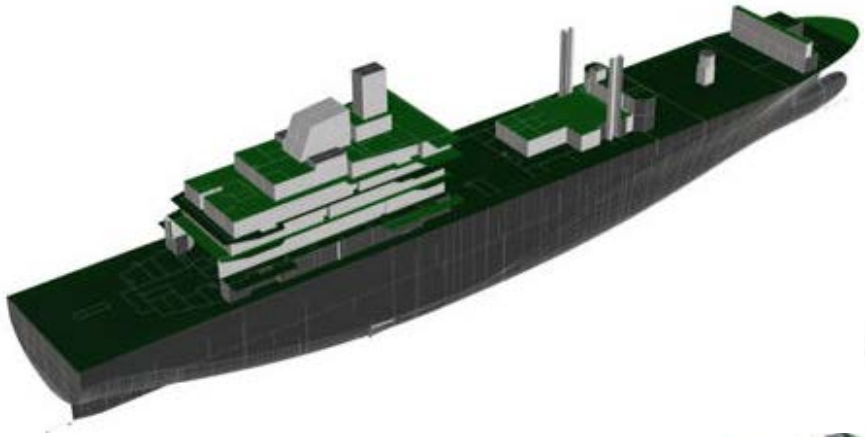
Length:	173.3 m
Breadth:	24 m
Draft:	7.6 m
Displacement:	20,240 tonnes
Speed:	20 knots
Crew:	239
Range:	16,000 km
Endurance:	45 days

KEY STAKEHOLDERS

Canada: (RCN, DND, PSPC, ISEDC)



JSS 1: HMCS QUEENSTON



193 Blocks

PROCUREMENT

- Long lead Item (LLI) selection for JSS is underway.
- Vendor Furnished Information (VFI) needed to support design in Design & Production Engineering
- Under the Build contract there will be opportunity to supply non-LLI equipment, such as Commercial-off-the-Shelf (COTS) items.
- Procurement opportunities for OFSV, OOSV & JSS will be briefed separately.

UPDATE ON PRE-BUILD DESIGN ACTIVITY

- The Initial Design Review (IDR) Task 1 ✓
- IDR Task 2: Preliminary Contract Design Completion (Pre - CDC)✓
- IDR Task 3: Contract Design Completion (CDC) - **Underway**
  - Changes incorporated into basic design
  - Modification of drawings and creation of the Contract Design Specification
  - Update the initial build strategy
  - Engineering analyses
- Design & Production Engineering -Functional Design - **Approved** -Starting Q4 2016
  - Complete design & engineering
  - Classification society approvals
  - Formal Design Review
  - Finalise equipment selection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