



**CFAV QUEST
General Information Brief
2010 – Research Vessel Operator Committee Meeting**

By Yves Perron, P.Eng. PMP
Manager / Technical Services
20-22 April 2010



Defence Research and
Development Canada

Recherche et développement
pour la défense Canada

Canada



Outline

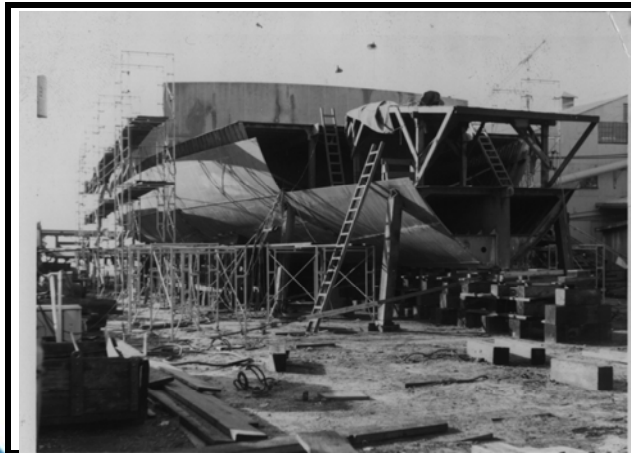
- Introduction
- CFAV QUEST – Ship Characteristics
- CFAV QUEST Employment Data
- Scenes from trial Q318
- Questions





Introduction

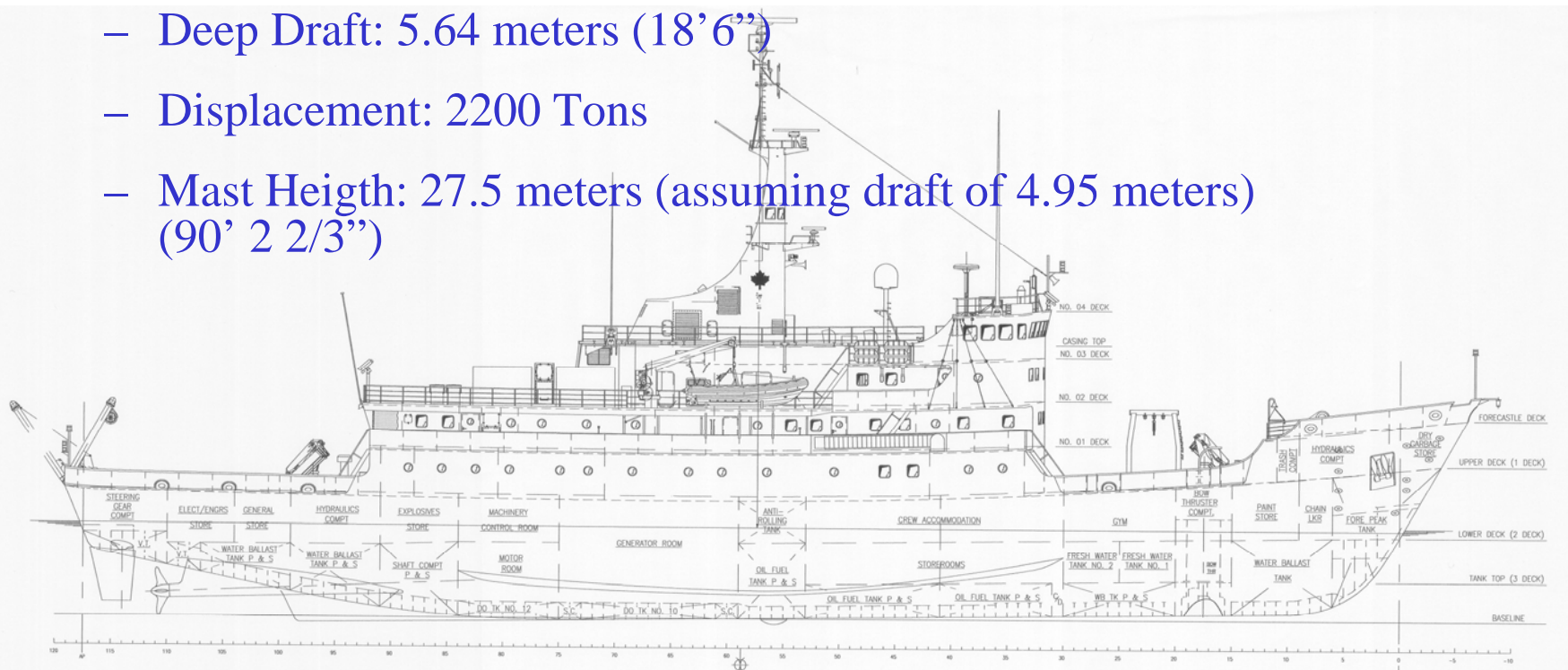
- Built as a Acoustic and Oceanographic Research Vessel in 1969 by Burrard Shipbuilding & Drydock Company Ltd., North Vancouver, B.C.
- Mid-Life Refit in 1997-1999 to upgrade platform system
 - competed by 4 shipyards - Friede Goldman Newfoundland Shipyard, Marystown, Nfld
- Docking Work Period (May – Oct 09)
 - Les Méchins, PQ
- Estimated Service Life - 2015





CFAV QUEST - Ship Characteristics

- Dimensions
 - Length Overall: 77.1 meters (252' 11 1/4")
 - Length Between Perpendiculars: 71.62 meters (235')
 - Breadth, Moulded: 12.8 meters (42')
 - Depth, Moulded to Upper Deck: 6.4 meters (21')
 - Deep Draft: 5.64 meters (18' 6")
 - Displacement: 2200 Tons
 - Mast Height: 27.5 meters (assuming draft of 4.95 meters) (90' 2 2/3")





CFAV QUEST - Ship Characteristics

- 24 Officers & crew, 20 scientific personnel
- Propulsion System
 - Diesel Electric, 2 in number 10 cylinder Fairbanks Morse opposed piston diesels 500-800 RPM, each generating 1775 BHP to drive 2 in number General Electric propulsion motors of 1740 HP each turning shafts
- Propellers
 - DRDC ATLANTIC designed 5 blade skewed 10 feet diameter propellers. The propellers are composed of Manganese-Aluminum-Nickle-Bronze
- Auxiliary Propulsion
 - 1 Solar Gas Turbine Model T1020S-31 driving 1 500KW A/C generator and 1 500KW D/C generator in tandem.






CFAV QUEST - Ship Characteristics

- Cruise and Maximum Speeds
 - Cruise: 12 Knots @ a rate of 14.4 cubic meters/day
 - Full Speed: 14.6 Knots @ a rate of 19.2 cubic meters/day
- Endurance
 - 10,000 miles at 12Knots. 30 days.
- Fuel Capacity
 - 352 cubic meters, water compensated for stability.
- Fresh Water
 - 44 Ton tank replenished by Reverse Osmosis Desalination Plant @ 10-15 Tons/Day





CFAV QUEST – Scientific Spaces

		
<p>Dry Lab:</p> <p>730 sq. ft. located forward of the Quarterdeck</p> <p>can hold 40 standard electronic racks</p>	<p>Forward Lab:</p> <p>200 sq. ft. located aft of the weld deck</p> <p>can hold 6 standard electronic racks</p>	<p>Wet Lab:</p> <p>180 sq. ft. located above Dry lab</p> <p>can hold 6 standard electronic racks</p>



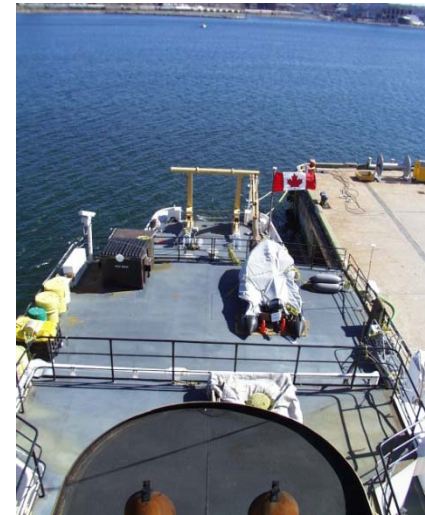
CFAV QUEST – Scientific Spaces



Quarter Deck:
Equipped with a retractable LAT (Lifting and Towing) Frame and a 7 ton articulated Palfinger Marine crane and service by hydraulic packs



Well Deck:
Equipped with a LAT Frame and a Hiab 2 ton Sea Crane and service by hydraulic power unit as well.



Flight Deck:
Can be fitted with up to two containerized portable labs



CFAV QUEST – Scientific Spaces



Typical Scientist cabin:

Double style cabin equipped working desk, typical bunk arrangements and access to lavatory (one for 2 cabins)



CFAV QUEST – Some Support Equipment

- Non Acoustic Data Acquisition System (NADAS), used for recording environmental data and ship operating status with remote displays in all labs.
- Simrad EA500 Scientific Echo Sounder, 12, 39, and 120 kHz transducers.
- Seatex MRU-H Motion Reference Unit.
- Rudder Angle indicators, port and starboard.
- GPS
- Ship's Speed (Doppler Log)
- Gyro Heading °True
- Standard navigation aids instrumentation
- Simrad Echo Sounder Echogram



CFAV QUEST – Some Support Equipment

- Motion Reference Unit (Pitch, Roll, Heading, etc...)
- TSK Wave Height Meter
- WaMos Wave Height and Direction indicator
- Iridium satellite phone.
- Fleet 77 Inmarsat Terminal
- KVH Tracvision G6 Satellite TV.
- Communications suite which includes Naval LF/MF/HF radios, Maritime VHF with portables, Naval UHF, INMARSAT, Modems and Terminals, RATT Message Handling system, Black Distribution System, fitted for but not with



CFAV QUEST – Features

Acoustically Quieting Features

- Anechoic tiles lining the interior of the hull in machinery spaces.
- A Solar Gas Turbine with 500kw AC and DC generators mounted high on the funnel deck of the ship allowing configuration of Quest into various operational quiet states. All rotating machinery is installed on resilient mounts to provide isolation from the hull.
- All piping is isolated from the hull.
- The main propulsion diesels and Ship Service diesels are double resiliently mounted and enclosed inside an acoustic hood.
- Fans are equipped with silencers and resiliently mounted.
- All fans and pumps are resiliently mounted and are equipped with low noise bearings and are balanced to reduce vibration.
- Heavily insulated doors, bulkheads and deckheads to reduce airborne noise inside the ship.
- Sperry Gyropilot Rotary Steering System.



Scene from Q318 – Signature Management Trial



Sea Water Injection System at work



Scene from Q318 – Signature Management Trial



View from CP-140 Maritime Patrol Aircraft on approach to QUEST for signature measurement



Scene from Q318 – Signature Management Trial



Quest through different lenses



Questions



DEFENCE



DÉFENSE