



Fleet Maintenance Facility CAPE BRETON

Local Maintenance and Repair Specification

EDN: XXXXXXXX
Related PMRS/SSMRS: N/A
Revision: ORIGINAL
Amendment: N/A

Title: **DOCKING AND UNDOCKING**

Platform: **HMCS CHICOUTIMI**

Location: **ESQUIMALT GRAVING DOCK (EGD)**

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Approved By: Lt Cdr James Riley Date March 2018

Revision 01

RELATED SPECIFICATIONS:

N/A

PURPOSE/BACKGROUND:

This specification states the work required for docking the HMCS CHICOUTIMI.

NAMEPLATE DATA:

N/A

NEI NUMBER:

N/A

This Spec expires when the SuperOrder is completed.

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Super Order:

REFERENCES:

- A. DOCKING PLAN – PROVIDED BY THE CONTRACTOR
- B. D-03-002-008/SG-011 - REQUIREMENTS FOR DOCKING AND UNDOCKING OF CF VESSELS
- C. C-03-005-033/AA-000 - CF 523 DOCKING REPORT
- D. SDN 1350001 – VIC CLASS DOCKING PLAN – CFB ESQUIMALT
- E. SDN 001279549 – DOCKING ARGUMENT (CONFIDENTIAL)

APPENDICES:

APPENDIX A - DOCKING CERTIFICATE
APPENDIX B - CHANGES OF WEIGHTS IN DOCK
APPENDIX C – UNDOCKING CERTIFICATE

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Super Order:

DESCRIPTION OF WORK REQUIRED:

QCP

1. The Contractor will have the overall responsibility for the docking and undocking of HMCS CHICOUTIMI at Esquimalt Graving Dock (EGD).
2. The submarine must be docked and undocked in accordance with (IAW) references A, B and this specification.

PRE-DOCKING DETAILS:

3. Principal Dimensions: The principal dimensions are:
 - a. Type: VICTORIA Class;
 - b. Construction: Steel;
 - c. Length O.A.: 70.250 M;
 - d. Length B.P.: 70.250 M;
 - e. Breadth Ext. (Hydroplanes): 11.46 M;
 - f. Depth Mld: 8.350 M;
 - g. Displacement (Approx.): 2100 Tonnes;
 - h. Mean Draughtst (Approx.): 7.36 M;
4. The Contractor must prepare and submit a detailed proposed docking plan based on the Docking Arrangement (provided by reference D, typical docking plan reference E). The docking plan must include:
 - a. Docking plan depicting block arrangements;
 - b. Material description for keel and bilge block fabrications;
 - c. Description, sizes, lengths and material for stern shores (if applicable)
 - d. Description, sizes, lengths and materials for bilge and side shores
 - e. Submarine's trim, forward and after draughts before suing during docking
5. The Contractor must prepare the dock in accordance with (IAW) the approved docking plan (Reference A). Keel and bilge blocks, associated cribbing and shoring must be positioned as detailed on the approved docking plan.
6. The Contractor must provide the certification of the docking facility that it can bear a minimum of 60 tonnes per meter keel block loading once the submarine is docked.
7. Keel and bilge blocks, capping and crushing pieces are to be in good condition, free of checks and splits that may detract from the load bearing capacity

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8. The docking plan must be approved by the Designated Engineering Authority (DEA), Naval Architecture Officer (NAO) of Engineering of Fleet Maintenance Facility (FMF) Cape Breton, IAW reference B, Part 2, paragraph 2; sub-paragraph b. Deviations to docking plan must be recorded and forwarded to the NAO for his approval.

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9. Keel and bilge block alignment tolerance shall be within 3.175 mm. This will be verified as part of the visual inspection by the DEA.

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10. 13 meter length is required aft of the propeller for removal (if required) of the propeller shaft. DEA shall be noted if this cannot be accommodated in the docking plan.

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11. The DEA, Contractor and the SS shall conduct a visual inspection of the docking arrangements prior to docking the submarine. However, the Contractor remains responsible for any error or defect in block arrangement that causes any incident or damage to the submarine during the entire docking, while docked and undocking evolution.

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12. The Contractor must provide containment facilities for all submarine overboard discharges as per item 8 in the Particularized Maintenance and Repair Specification that will be in use during the docking period. The Contractor must provide certifications that all environmental concerns are being undertaken IAW applicable Municipal, Provincial and Federal environmental regulations and legislations.

13. The Contractor must ensure that all hazardous / non-environmentally friendly wastes are disposed of IAW applicable Municipal, Provincial and Federal environmental regulations and legislation, and to provide the Quality Assurance Representative (QAR) with the copies of the disposal certificates

DURING DOCKING:

14. The Contractor must execute the docking evolution and provide engineering oversight during docking of the submarine. Contractor's Docking Officer will be duly appointed by the Contractor, based on experience and qualifications of the appointed individual

15. The Contractor must be responsible for the submarine's movements within the dock, as well as the safety and control of the dock pumping and flooding

16. Deleted.

17. The Contractor must provide crane services with operators for dock block arrangement

18. The Contractor must provide two brows (one forward and one aft) and stanchions on the casing when required

19. The Contractor must provide cranes and operators as required during docking evolution

20. The Contractor must provide required line handlers and mooring lines during

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docking evolution

21. The Contractor must provide diver services to check the submarine's position in relation to the keel and bilge blocks during docking evolution. The Contractor must maintain the lockout and tag out procedure while the divers are down in water

22. The submarine shall be manned by the sub's crew during docking and undocking operations

23. The submarine shall be docked and undocked in such a manner as to avoid the loss of sub's electrical power either by providing cooling water to the submarine's power generating unit(s) or by providing an alternate power source.

24. The Contractor must ground the ship electrically while in dock.

25. The Contractor must supply the following:

- a. Shore power supply ; as per item 2 in the Particularized Maintenance Repair Specification (PMRS)
- b. The means of communications (radios) among the Dock Master, Pump House, riggers, pilot, and line handlers;
- c. Guard rails / stanchions on boat (if required);
- d. Two 2½" diameter fire main hose connections to shore supply (one forward and one aft). This also may be used for the chillers;
- e. Three (3) Portable toilets on the dock bottom ();
- f. Compressed air at 80 to 100 psi;
- g. Telephone connections; and
- h. Black and grey water hook-ups.

26. The submarine's staff (SS) must blow around all main ballast tanks (MBT) with low-pressure (LP) air prior to entering dock with the direction of the Contractor

27. The vessel must have zero degree list prior to entering the dock and the draughts and trim state as per the docking calculations approved by the DEA.

28. Docking certificate at Annex A must be completed prior to the submarine entering dock and the following must be recorded:

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- a. Docking blocks are set IAW docking plan;
- b. Rudders are locked in a midship position;
- c. Propeller is locked and shroud is in place covering the propeller;

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- d. Forward hydroplanes have been retracted and are properly housed;
 - e. Aft hydroplanes are zeroed, hydraulics are isolated
 - f. All tanks, bilges, voids and boilers have been sounded and recorded;
 - g. Submarine is free from ammunition;
 - h. Torpedo tubes are to be flooded or fully drained;
 - i. MBTs are fully blown (or as per the RF's direction)
 - j. Exact location of weights added to correct list/trim are recorded;
 - k. Submarine is upright; and
 - l. Appropriate machinery has been locked out IAW lock out / tag out procedures.
 - m. Draughts are recorded forward and aft, port and starboard
29. The Contractor shall continue draining of the dock until the water level is 32 cm (1 foot) above the water level at which the submarine ceases to float. The Contractor must send the divers down to confirm that the submarine is going to sue on the keel & bilge blocks as per the approved docking plan and there is no concerning issue.
30. The DEA, Contractor and SS shall conduct a visual inspection of the docked submarine once the dock is dried out to check if the submarine has been docked IAW the approved docking plan.

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WHILE DOCKED

31. All liquid and solid weight movements above or equal to 10 KGs must be recorded by the Contractor on the Changes of Weights in Dock, Annex B while the submarine is docked. The Contractor must maintain a liquid and solid weight movement log on the brow of the submarine for the duration of the docking period. The Contractor shall provide the QAR with a copy of all recorded weight movements.
32. In the event the Contractor has to undertake the hydrostatic testing, the Contractor must ensure that the hydrostatic testing of the tanks are done uniformly so that excess strain shall not ensue. The Contractor must not test more than one tank at a time without symmetrical compensation on the other side of the submarine. The Contractor shall ensure that the keel block loading does not exceed 60 tonnes/m during hydrostatic testing of tanks. Additional shoring shall be fitted when required.

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PRE-UNDOCKING DETAILS

33. The Contractor must submit the undocking calculations IAW reference B to the DEA for approval no later than 48 hours to undocking the submarine
34. The Contractor must conduct a pre-undocking meeting no later than seven days

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prior to undocking the submarine and submit the undocking plan and agenda to the DEO

35. The Contractor must coordinate with SS in order to complete all undock related works

36. The vacuum test certificate shall be forwarded to the QAR prior to undocking

37. The Contractor must ensure that the dock is clear of all debris that may float and cause possible fouling / jamming of intake valves, domes etc. The Contractor along with the DEO and SS shall inspect the dock bottom prior to flooding for undocking evolution

38. The Contractor must recheck all keel and bilge blocks immediately prior to flooding the dock and shall ensure that they are in good condition and are at original position.

39. Undocking certificate at Annex C must be completed prior to flooding the dock and the following must be recorded:

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- a. Rudder is locked in the centered position;
- b. Propeller is locked and shroud is in place covering the propeller;
- c. Forward hydroplanes remain retracted and are properly housed;
- d. Aft hydroplanes are locked
- e. All tanks, bilges, and voids have been sounded and recorded;
- f. Submarine remains free from ammunition
- g. Torpedo tubes are to be fully flooded or fully drained
- h. Exact locations of weights added / removed are recorded and reported to the DEA
- i. Machinery shall be locked out and tagged out as required to permit dive operations

DURING UNDOCKING:

40. The Contractor must execute the undocking evolution and provide the engineering oversight during the undocking of the submarine

41. The Contractor must ensure that the mooring lines required for undocking are ready and are in good conditions

42. The Contractor must provide Line Handlers and mooring lines for the undocking evolution of the submarine

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43. The Contractor must provide diver services to check the submarine's position in relation to the keel and bilge blocks during undocking evolution. The Contractor must maintain the lock out and tag out procedure while the divers are down in water

44. The Contractor must provide required cranes and operators during undocking evolution

45. Flooding of the dock shall proceed until the water is 31 cm below the water level at which the submarine will float. Flooding of the dock shall be halted until all underwater fittings, stern glands etc. are proven to be watertight by the Contractor and the SS

MATERIAL REQUIREMENTS:

46. The Contractor is to determine material requirements and ensure that they are sufficient to comply with this specification.

SAFETY PRECAUTIONS

47. The Contractor is to comply with all applicable safety precautions as described in this specification.

DELIVERABLES:

- | | | |
|-----|---|---|
| 48. | Prior to submarine docking: | R |
| | a. Proposed docking plan | |
| | b. Report of dock block inspection | |
| | c. Docking calculations | |
| | d. A copy of signed docking certificate | |
| 49. | During docking: | R |
| | e. Environmental certificates | |
| | f. Defect reports (if any) | |
| 50. | Prior to submarine undocking: | R |
| | g. Change of weights in Annex B form | |
| | h. Undocking calculations | |
| | i. A copy of signed undocking certificates | |
| | j. A copy of signed material certificate (Mat-Cert) | |
| | k. Undocking requirements of "Safe to Dive" certificate | |
| 51. | Post-undocking: | R |
| | l. Report of submarine docking (Reference C) | |

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ANNEX A - DOCKING CERTIFICATE		
Submarine: _____ Location: _____		
1.	This is to certify that the following requirements have been completed in accordance with the applicable Repair Specification:	<input type="checkbox"/>
a.	Docking blocks are set in accordance with docking plan;	<input type="checkbox"/>
b.	Fixed projections and docking plugs have been allowed for by the omission of blocks and/or block caps;	<input type="checkbox"/>
c.	Rudders are locked in the centered position;	<input type="checkbox"/>
d.	Propeller is locked on docking marks;	<input type="checkbox"/>
e.	Propeller shroud is fitted;	<input type="checkbox"/>
f.	Forward hydroplanes are retracted / locked;	<input type="checkbox"/>
g.	Aft hydroplanes are zeroed, hydraulics are isolated	<input type="checkbox"/>
h.	All tanks, bilges, voids and boilers have been sounded and recorded (copy attached);	<input type="checkbox"/>
i.	Ship is free from ammunition (copy of Certificate attached);	<input type="checkbox"/>
j.	Exact location of weights added to correct list/trim are recorded (copy attached);	<input type="checkbox"/>
k.	Submarine is upright;	<input type="checkbox"/>
l.	Torpedo Tubes conditions: flooded / drained (F/D)	<input type="checkbox"/>
m.	MBTs conditions: <input type="checkbox"/> vented (No. _____) <input type="checkbox"/> blown (No. _____)	<input type="checkbox"/>
(1)	Draught Fwd. (Port) = _____ and Fwd. (Stbd) = _____	<input type="checkbox"/>
(2)	Draught Aft (Port) = _____ and Aft (Stbd) = _____	<input type="checkbox"/>
2.	Comments:	
3.	Vessel (Unmanned): _____	
a.	_____	b. _____
	Contractor Docking Master	DND Docking Officer
		Date
	Distribution: One Copy each to Repair Facility, DND Docking Officer, QAR	
4.	Vessel (Manned): _____	
a.	_____	b. _____
	Commanding Officer/Master	Engineering Officer
		Date
c.	_____	_____
	DND Docking Officer	Contractor Docking Master
		Date
	Distribution: One Copy each CO/Master, DND Docking Officer, QAR	

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ANNEX B - CHANGES OF WEIGHTS IN DOCK

Submarine:

Location:

1. The following items have been removed, shifted or added as indicated below:

NOTES

Weight in Kilograms.

Longitudinal Centre of Gravity (LCG) in meter from amidships or Frame No.

Vertical Centre of Gravity (VCG) in meter above base line or Deck No.

Transverse Centre of Gravity (TCG) in meter from centreline of ship.

For weight shift - count as weight off old position and a weight on in new position.

*Important: all Weight changes must be reported to the DND Docking Officer 24 hrs prior to undocking.

[illegible]

3. Vessel: _____

b. _____

Contractor Docking Officer

Commanding Officer/Master

Date

Distribution: One Copy each to Repair Facility, DND Docking Officer, QAR

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ANNEX C - UNDOCKING CERTIFICATE		
Submarine: _____		Location: _____
1.	This is to certify that the following requirements have been completed in accordance with the applicable Repair Specification:	<input type="checkbox"/>
a.	All weight changes have been recorded, changes of weight form attached;	<input type="checkbox"/>
b.	All underwater connections/openings are cleared, closed and in efficient working order;	<input type="checkbox"/>
c.	Personnel are stationed in spaces containing underwater openings;	<input type="checkbox"/>
d.	All gratings, rope guards and eddy plates are correctly secured;	<input type="checkbox"/>
e.	Anodes are free of paint and protection material and anodes are correctly secured;	<input type="checkbox"/>
f.	The cathodic protection continuity has been tested and certified acceptable;	<input type="checkbox"/>
g.	All tanks, bilges, and voids have been sounded and recorded (copy attached);	<input type="checkbox"/>
h.	All docking plugs are replaced and correctly secured;	<input type="checkbox"/>
i.	Rudders are locked in the centered position;	<input type="checkbox"/>
j.	Propeller is locked and shroud is in place covering the propeller;	<input type="checkbox"/>
k.	Dock is cleared of all unacceptable debris;	<input type="checkbox"/>
l.	Keel and bilge blocks are secure and bottom shores removed;	<input type="checkbox"/>
m.	Forward hydroplanes are retracted / locked	<input type="checkbox"/>
n.	Aft hydroplanes remain zero	
o.	MBTs conditions: <input type="checkbox"/> vented (No. _____) <input type="checkbox"/> blown (No. _____)	<input type="checkbox"/>
Comments:		
2.	Vessel (unmanned): _____	
a.	_____	b. _____
	Contractor Docking Officer	DND Docking Officer
		Date
Distribution: One Copy each to Repair Facility, DND Docking Officer, QAR		
3.	Vessel (manned): _____	
a.	_____	b. _____
	Commanding Officer/Master	Engineering Officer
		Date
c.	_____	_____
	Contractor Docking Officer	DND Docking Officer
		Date
Distribution: One Copy each CO/Master, DND Docking Officer, QAR		