Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

Bid Receiving - PWGSC / Réception des soumissions - TPSGC
11 Laurier St. / 11, rue Laurier
Place du Portage, Phase III
Core 0B2 / Noyau 0B2
Gatineau
Quebec
K1A 0S5
Bid Fax: (819) 997-9776

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

In-Service Support Marine / Soutien en Service Maritime
11 Laurier St. / 11, rue Laurier
Place du Portage, Phase III
6C2
Gatineau
Quebec
K1A 0S5

Title - Sujet Disposal of former PRE and QUEST	
Solicitation No. - N° de l'invitation W8482-171396/A	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client W8482-171396	**Date** 2017-04-10
GETS Reference No. - N° de référence de SEAG PW-$ISM-010-26234	
File No. - N° de dossier 010ism.W8482-171396	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2017-05-10**	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Passmore, Russ	**Buyer Id - Id de l'acheteur** 010ism
Telephone No. - N° de téléphone (819) 420-2917 ( )	**FAX No. - N° de FAX** ( ) -
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:**	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
Vendor/Firm Name and Address **Raison sociale et adresse du fournisseur/de l'entrepreneur** **Telephone No. - N° de téléphone** **Facsimile No. - N° de télécopieur**	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) **Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)** **Signature**	**Date**

Canada

Amendment 001

Amendment 001 is raised to make the following changes:

1) Please see the front page of the solicitation for the updated bid closing date and time.

2) *Delete* **Annex "I" Bidder Questions and CANADA Responses** in its entirety *and replace with* **Annex "I" Bidder Questions and CANADA Responses as of April 9, 2017** attached.

3) In Annex "A" Statement of Work, *add* **Appendix 1 to Annex "A" – Statement of Work Reference Documents and Critical Documentation, Reports that form part of this Statement of Work** as attached.

4) In **Annex "H" - Bidders' Conference and Site Visit Information** *add* **Appendix 1 to Annex "H" – Bidder Conference Minutes** as attached.

5) In **PART 3 - BID PREPARATION INSTRUCTIONS,** section **3.2.1 Ship Breaking Experience ,** *delete* **3.2.1 Ship Breaking Experience** in its entirety *and replace with*:

3.2.1 Ship Breaking Experience

The Bidder must demonstrate their experience and understanding of Ship Breaking by:

1) Describing in writing its experience in Ship Breaking projects of similar size and complexity to the former HMCS PRESERVER or CFAV QUEST which have been completed in the last 10 years; and by
2) Providing a disposal plan for a Ship Breaking project completed in the last 10 years. The disposal plan must have included, at minimum, 5 of the following elements:

a. Sequencing Plan: Detailing the sequencing plan for sectional/compartmental deconstruction and Breaking (dismantling and disposal or recycling) of the entire ship. Detail must include the timelines from arrival to the demolition site to project

b. Use of Subcontractors: Describe all of the work that was completed by subcontractors;

c. Conditions Monitoring Procedures: Describe the processes that were in place for monitoring conditions as they related to worker safety and procedures used for addressing and rectifying identified issues (i.e., air quality monitoring, ventilation procedures, fire and first aid procedures);

d. Hazardous Materials: Describe the procedures and control plans used, including how and where the materials were disposed or recycled;

e. Permits and Record keeping: describe the process for attaining the appropriate permits and describe the record keeping processes that were in place; and

f. Destruction of Metals: Detail the processes and equipment used for the dismantling and disposal or recycling of metals.

NOTE: Ship Breaking is defined as the process of systematically scrapping the entire infrastructure of an obsolete vessel by dismantling and disposing or recycling of all its component parts and hazardous materials.

NOTE: Experience in Ship Breaking projects of similar size and complexity to the former HMCS PRESERVER or CFAV QUEST is defined as a Ship Breaking project for a vessel with a displacement of not less than 1800 Long Tons.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

Annex "I"
BIDDER QUESTIONS AND CANADA RESPONSES
as of April 9, 2017

Q1. Can CANADA please provide for both former Preserver and Quest the ship's "Liquid Load Report"?
A1. Please see ***Appendix 1 to Annex "A" – Statement of Work Reference Documents and Critical Documentation, Reports that form part of this Statement of Work*** as attached.

Q2. Note 1 "Removal of Existing Tiles" on Sheet 1 of Drawing 9659200 refers to DWG reference 9 which is listed as drawing : AGOR 172-H-26-20076 in the list of Reference Documents, can CANADA please supply a copy of the noted drawing # AGOR 172-H-26-20076?

A2. Canada is attempting to locate this achieved drawing. If it is available Canada will notify Bidders in a solicitation amendment.

Q3. Can Canada please provide a table/list of weights for the equipment/non-liquid cargo that has been loaded aboard former Preserver? Our understanding from today's ship visit is that weights for this equipment/cargo have been tallied by stowage location – i.e. hangar total, ammo stowage #2 deck, #3 deck, & #4 deck, dry cargo stowage #2 deck, #3 deck, and #4 deck.

A3. Please see ***Appendix 1 to Annex "A" – Statement of Work Reference Documents and Critical Documentation, Reports that form part of this Statement of Work*** as attached.

Q4. Can CANADA please provide hull valve plans for both Preserver and Quest that were referred to in the bidder conference meeting?

A4. Please see ***Appendix 1 to Annex "A" – Statement of Work Reference Documents and Critical Documentation, Reports that form part of this Statement of Work*** as attached.

Q5. Does CANADA have specific DMC requirements for the controlled goods present on the former QUEST other than those outlined in pages 22-23 of Annex A – Statement of Work, item 8.10 Controlled Goods?

A5. This information will be provided to the contractor in the Master Equipment List for the former CFAV QUEST.

Q6. In the RFP, mandatory criteria Item 3.2.1 states:

> The bidder must demonstrate their experience and understanding of Ship Breaking by:
> 1) Describing in writing its experience in Ship Breaking projects of similar size and complexity to the former HMCS PRESERVER or CFAV QUEST which have been completed in the last 10 years.

It might be interpreted that the Crown is insisting that Bidders need experience with a ship at least the size of the Preserver. Can you verify that Ship Breaking of former Canadian Naval vessels within the last ten years qualifies and the exact ship size of the Preserver is not necessary?

A6. There is no intent for only exact ship characteristics to meet the requirement of "similar in size and complexity." There is also no requirement for experience to encompass only former Canadian Naval Vessels. The intent is to ensure that the winning bidder has Ship Breaking experience commensurate with the complexity of the Work as described in **Annex "A" – Statement of Work** for this solicitation and any resulting contract. To alleviate any confusion, please see Solicitation Amendment 001 to this

solicitation where experience in Ship Breaking projects of similar size and complexity to the former HMCS PRESERVER or CFAV QUEST is defined. This definition is as below:

NOTE: Experience in Ship Breaking projects of similar size and complexity to the former HMCS PRESERVER or CFAV QUEST is defined as a Ship Breaking project for a vessel with a displacement of not less than 1800 Long Tons.

Q7. Our company believes that any firm that has experience in the handling of, and the conduct of, ship repair work has the experience to safely carry out this work. Canada can cover its risk adequately by selecting a ship repair contractor with ship repairers insurance and requiring the firm carry additional liability insurance. Will Canada amend the mandatory requirements to allow firms without Ship Breaking experience (as defined in the RFP) to meet the experience criteria with ship repair or ship construction experience?

A7. Canada will not amend the mandatory requirement for Ship Breaking experience. Canada has a right to set requirements in a solicitation that are based on Canada's legitimate operational requirements and in setting those requirements, does not have to compromise its legitimate operational requirements to accommodate the capacities of a particular supplier. Based on complexity of the work required for the Disposal of the former HMCS PRESERVER and CFAV QUEST, and the fact that adequate competition exists amongst Canadian companies with Ship Breaking experience, the mandatory requirements remain unchanged.

Q8. Grouping a large vessel such as the HMCS Preserver with a smaller vessel like the CFAV Quest has the effect of lessening the competition and as a result increasing the cost of the work. Contractors who have the capability and facilities to handle the Quest might not have the facility to address the Preserver. Would the Government consider splitting the requirement?

A8. Both vessels offer complexity and similarities, beyond simply comparing their size. Bidders are not required to own the facilities they use to complete the Work, however bidders are reminded that they must meet each of the mandatory requirements to be awarded a contract. Canada has determined that combining the requirement for the disposal of the former HMCS PRESERVER and the former CFAV QUEST offers the best value for money to the Canadian tax payer. The requirement will not be split into two separate requirements.

Q9. Will the Government confirm that part of the evaluation will include an assessment of the contractor’s ability to start and complete the work within the specified work period?

A9. Canada will be evaluating all Bidders based on the mandatory evaluation criteria contained in the solicitation. This includes a Bidder’s schedule and the availability of appropriate facilities to conduct the required Work. A bidder must meet all mandatory criteria in order to be deemed complaint.

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

<u>Provided on USB Key to Bidders upon request:</u>

For the former CFAV QUEST:

Environmental Assessment Report-QUEST	08/03/2017 10:42 ...	File folder	
GHS - 116 Itmes	10/02/2017 10:39 ...	File folder	
201-H02-4200, Docking Plan - 3 Shts	21/03/2017 7:21 A...	Adobe Acrobat D...	1,618 KB
9659165 - General Arrangement	13/02/2017 11:25 ...	Adobe Acrobat D...	7,704 KB
9659230 Fire Fighting Arrangement	24/02/2017 6:30 A...	Adobe Acrobat D...	169 KB
AUX 0335, Structural Mods - 2 Shts	21/03/2017 7:18 A...	Adobe Acrobat D...	18,943 KB
AVOR-MTS-01, Quest Stability Data_Dra...	13/02/2017 11:28 ...	Adobe Acrobat D...	11,108 KB

For the former HMCS PRESERVER:

Anchor and towing gear_PAC	08/03/2017 10:32 ...	File folder	
Environmental Assessment Report - PRESERVER	21/03/2017 9:38 A...	File folder	
GHS files - 48 items	09/02/2017 7:41 A...	File folder	
GLM files - 43 items	09/02/2017 7:41 A...	File folder	
509-H-0-251430-01_PTR Class Docking Plan	24/02/2017 6:32 A...	Adobe Acrobat D...	1,192 KB
509-H-27-41297-01, PRE_Mooring and Towing_Fr 1 of 2	10/02/2017 8:14 A...	Adobe Acrobat D...	265 KB
509-H-27-41297-01, PRE_Mooring and Towing_Fr 2 of 2	10/02/2017 8:15 A...	Adobe Acrobat D...	385 KB
9251641 PRE-General Arrangement_Sht-1	24/02/2017 5:55 A...	Adobe Acrobat D...	228 KB
9251641 PRE-General Arrangement_Sht-2	24/02/2017 5:58 A...	Adobe Acrobat D...	181 KB
9251641 PRE-General Arrangement_Sht-3	24/02/2017 6:07 A...	Adobe Acrobat D...	316 KB
9251641 PRE-General Arrangement_Sht-4	24/02/2017 6:17 A...	Adobe Acrobat D...	377 KB
9251641 PRE-General Arrangement_Sht-5	24/02/2017 6:17 A...	Adobe Acrobat D...	220 KB
9251641 PRE-General Arrangement_Sht-6	24/02/2017 6:18 A...	Adobe Acrobat D...	163 KB
9665018 PTR CLASS Incident Board	10/02/2017 8:06 A...	Adobe Acrobat D...	2,863 KB
HMCS PRESEVER Stability DATA_DWG	10/02/2017 8:17 A...	Adobe Acrobat D...	59,975 KB

<u>Additional information provided in hard copy to Bidders upon request and attached hereto:</u>

For the former CFAV QUEST:

9659200 - Hull Damping

9659214 - Tank Plan & Capacities

9659234 - Damping Tiles on Main Machinery Raft

Estimated Liquid Loads for PRE for the former CFAV QUEST

Valve Plan for the former CFAV QUEST

For the former HMCS PRESERVER:

Estimated Liquid Loads for the former HMCS PRESERVER

Sea Water Circulating System Drawing for the former HMCS PRESERVER

Bilge and Ballast System Drawing for the former HMCS PRESERVER

Estimated on-load weights and locations for the former HMCS PRESERVER

Valve Plan for the former HMCS PRESERVER

Environmental Assessment of HMCS PRESERVER FINAL REPORT

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

for the former CFAV QUEST:

9659200 - Hull Damping

GENERAL NOTES

FOR THE PURPOSE OF RETAINING INFORMATION, THE FOLLOWING NOTES HAVE BEEN COPIED FROM THE ORIGINAL DRAWING ISSUE AND ARE NOT APPLICABLE TO THE MID LIFE REFIT PROJECT.

APPLICATION

ALL STEEL SURFACES APPLIED WITH HULL DAMPING TILES HAVE RECEIVED ONE COAT OF CARBO ZINC II, 1-GP-171 (3.5 MIL.), AS SUPPLIED BY CORROSION SERVICES CO.

PRIOR TO APPLICATION OF THE TILING, THE SURFACES OF THE CARBO ZINC II WERE CLEANED FREE OF ALL DIRT AND DUST BY SWEEPING. OIL AND GREASE HAVE BEEN REMOVED WITH CLEAN RAGS SOAKED IN CARBOLINE CLEANER #2 (CORROSION SERVICE CO., MANUF.), AND THE SURFACES ALLOWED TO DRY COMPLETELY.

THE TILES ARE APPLIED USING XA-53 ADHESIVE (CORROSION SERVICE CO., MANUF.), MIXED WITH XA-53 CATALYST IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO FORM A COMPLETELY HOMOGENEOUS MIXTURE OF LIGHT GREY COLOR WITHOUT STRIATION. THE ADHESIVE WAS APPLIED TO A UNIFORM FILM THICKNESS OVER THE CLEANED CARBO ZINC II SURFACE ON THE STEEL AND THE CLEANED DAMPING TILE SURFACE, AND THE TILES WERE PRESSED FIRMLY IN PLACE SO AS TO EXCLUDE ALL AIR ENTRAPMENTS AND ENSURE FIRM AND UNIFORM CONTACT BETWEEN BOTH SURFACES OVER THE TILES ENTIRE AREA WITH A MINIMUM OF ADHESIVE BUILD. THE TILES WERE APPLIED WITHIN 20 MIN. OF APPLICATION OF ADHESIVE ON BOTH SURFACES AND WERE KEPT FIRMLY PRESSED WITH CAREFULLY APPLIED SHORING FOR A MINIMUM OF 4 HOURS.

THE TEMPERATURE OF THE TILES WAS MAINTAINED WITHIN 60°F AND 90°F AND THE STEEL SURFACE TEMPERATURE WAS NOT LESS THAN 50°F OR MORE THAN 80°F, DURING TILE APPLICATION AND SUBSEQUENT CURING OF THE ADHESIVE.

EXPOSED SURFACES OF TILING ARE LEFT UNPAINTED.

TILING MATERIAL

ALL HULL DAMPING TILES WERE MANUFACTURED TO MIL SPEC P-23653A, CLASS II, BY LORD MANUFACTURING CO. AND BURKE RUBBER CO. OF 3/8" AND 5/8" THK'S AS REQUIRED FOR THE PARTICULAR HULL AREAS.

REPLACING TILING

IF IT IS FOUND NECESSARY TO REPLACE ANY TILES, THESE ARE TO BE REPLACED BY TILES MANUFACTURED BY LORD MANUFACTURING CO. AND TO BE APPLIED STRICTLY IN ACCORDANCE WITH THE AFOREMENTIONED APPLICATION PROCEDURE WITH SURFACES CLEANED TO BARE STEEL. ALL PARTICALS OF PREVIOUS TILING, ADHESIVE AND PRIMING COAT REMOVED PRIOR TO RE-PRIMING. THE PRIMING COAT SHOULD HAVE A MAXIMUM CURING TIME AND IN ANY EVENT NOT LESS THAN FIVE DAYS.

R.A.L. TILING

STEEL SURFACES APPLIED WITH R.A.L. SOUNDAMP TILE HAVE BEEN PREPARED AND PRIMED SIMILAR AS FOR SURFACES WITH HULL DAMPING TILES, AND THE R.A.L. SOUNDAMP TILES WERE INSTALLED USING AN IDENTICAL APPLICATION PROCEDURE. IN ADDITION A ONE INCH DIAMETER HOLE WAS DRILLED IN EACH TILE, THE STEEL SURFACE WITHIN THE HOLE CLEANED AND A 1/4" DIA. BY 1" STAINLESS STEEL STUD WELDED IN PLACE. THE HOLES WERE FILLED UP WITH TREMCO AND 14 GA. BY 1-1/2" STAINLESS STEEL STRAPS WERE PLACED OVER GROUPS OF TILES AND FASTENED WITH STAINLESS STEEL LOCKWASHERS AND NUTS.

EXPOSED SURFACES OF R.A.L. TILING WERE WASHED AND CLEANED WITH FRESH WATER, AND WHEN DRY, APPLIED WITH TWO COATS OF FORMULA 133 RUBBER TILE COATS TO MIL SPEC 22299 AND TWO COATS OF FORMULA 134 RUBBER ANTI-FOULING TO MIL SPEC 22299.

THE R.A.L. SOUNDAMP TILES WERE MANUFACTURED TO MIL SPEC R-23074-A (SHIPS) BY BURKE RUBBER CO. OF 1/2" THK'S.

ANY REPLACEMENTS ARE TO BE BY IRVING B. MOORE CORPORATION MANUFACTURER, AND TO BE APPLIED USING A SIMILAR METHOD OF APPLICATION.

NOTES PERTAINING TO QUEST MID LIFE REFIT

1. REMOVAL OF EXISTING TILES

   SPECIAL CARE AND ATTENTION SHALL BE TAKEN WHEN REMOVING EXISTING BONDED HULL DAMPING TILES FOR MACHINERY REMOVAL ETC. (SEE DWG REF 9). TILES SHALL BE REMOVED UNDER THE PRESENCE OF M.S.L. SAFETY OFFICER. EXCESSIVE HEATING OF TILES AND ADHESIVE MAY PRODUCE TOXIC FUMES.

2. SURFACE PREPARATION

   STRUCTURE TO BE SANDBLASTED TO WHITE METAL. PRIMING AND PAINTING TO BE CARRIED OUT AS PER REF DWG 4 & 8. MAXIMUM CURING TIME SHALL BE ALLOWED FOR PAINT. SURFACES TO BE CLEANED USING A SOLVENT SOLUTION.

3. REPLACING DAMAGED TILES

   A 'DEFECTIVE TILE REPORT' SHALL BE PROVIDED AND SUBMITTED TO THE CROWN INSPECTION AUTHORITY (QAR), ALONG WITH RECOMMENDATIONS FOR REPLACEMENTS. REPAIRS SHALL BE CONSIDERED AS 'WORK ARISING'. TILES SHALL BE 5/8" OR 3/8" THICK AS PRESENTLY FITTED. CLASS 1 FOR LOW TEMPERATURE AREAS (HULL), AND CLASS 2 FOR MID-RANGE TEMPERATURE AREAS (SEATS AND INTERIOR STRUCTURE). DAMPING OF AUXILIARY SEATS SHALL BE INDICATED ON REF DWG NO. 7.

4. INSTALLATION OF NEW TILES -A.C. COMPT.

   A. NEW TILES SHALL BE MIL-P-23653C (SHIPS) VIBRATION DAMPING TILES, CLASS II, 5/8" THICK, CONSISTING OF POLYVINYL CHLORIDE AND FLAKE GRAPHITE.

   B. ADHESIVE TYPE 'BOSTIK 2-COMP PU-ADHESIVE 2943' SHALL BE USED. FOR INSTALLATION PROCEDURES, REFER TO REF 8.

   C. ALL SAFETY PRECAUTIONS ARE TO BE ADHERED TO AS PER ADHESIVE MATERIAL DATA SHEET. APPLICATIONS ARE TO BE IN THE PRESENCE OF M.S.L.'S SAFETY OFFICER.

5. ACOUSTIC TILE INSTALLATION INSTUCTIONS

   ALL ACOUSTIC TILES ARE TO BE INSTALLED I.A.W. QUALITY WORK INSTRUCTION No. P4340-QWI-008.

REFERENCE DOCUMENTS

REF NO.	DWG NO.	DESCRIPTION
1.	(201-H02-4000) 9659165	GENERAL ARRANGEMENT
2.	(PL-204-H26-1122-00) PL9659200	MATERIEL LIST
3.	(201-H26-0020) 9659179	KEY PLAN FOR OUTFIT STRIPOUT
4.	(204-H26-1700) 9659201	PAINTING SCHEDULE
5.	(602-H26-0610) 9659234	DAMPING TILES ON SUB-BASE
6.	(213-H26-0160) 9659213	ANTI-ROLLING TANK STRUCTURE
7.	(201-H26-0600) 9659181	AUXILIARY/INTERIOR SEATS
8.	(201-H26-0013) 9659173	STRUCTURAL STEEL STRIPOUT
9.	AGOR 172-H-26-20076	HULL DAMPING

UNCLASSIFIED
MODIFICATION

ZONE	LTR LET	REVISION	DATE	DWN DES	CKD VER	APPVL APP
–	–	AS-FITTED	98-11-18	DF	FD	CL

Défense nationale / National Defence — Canada

STAMP

PRIME SOLUTIONS NEWFOUNDLAND LIMITED
MANUFACTURING NEWFOUNDLAND
TEL 579-1500 FAX 579-2512
E-MAIL Spotted.owl@nf.net
WEB www.newfoundland.net/fgs

UNLESS OTHERWISE SPECIFIED/SAUF INDICATION CONTRAIRE:
1. DIMENSIONS ARE IN/DIMENSIONS SONT EN FT./IN.
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   FRACTIONS ±
   DECIMALS XXX ±
   DECIMALES XX ±
   X ±
3. ANGLES
   SURFACE FINISH
   FINIS DE SURFACES √

INTERPRETATION/INTERPRETER — OF STD D-01-400-001/SG-000 LEVEL/NIVEAU 2

APPLICATION/USAGE: C.F.A.V. QUEST M.L.R. 4340 AGOR 172

SCALE/ECHELLE: 1/8"=1'-0"

DWN/DESS: D. MUSICK — CKD/VER: F. DONAGHER — SECT LEADER/CHIEF D'EQUIPE: F. DONAGHER — OF APPVL/APP FC: DMCM/AUX

DESIGN AGENT/CONCEPT: M.S.L. — SYS ENG/GENIE SYS: C. LAIDLAW — NSCM/CACF: 36219 — DWG. DATE DU DESSIN: 97-06-06 — AO

TITLE / TITRE: HULL DAMPING

MSL NO. DU DESSIN: 204-H26-1122
DND DWG REF. DU DESSIN: 9659200
SHEET FEUILLE: 1 OF DE 4

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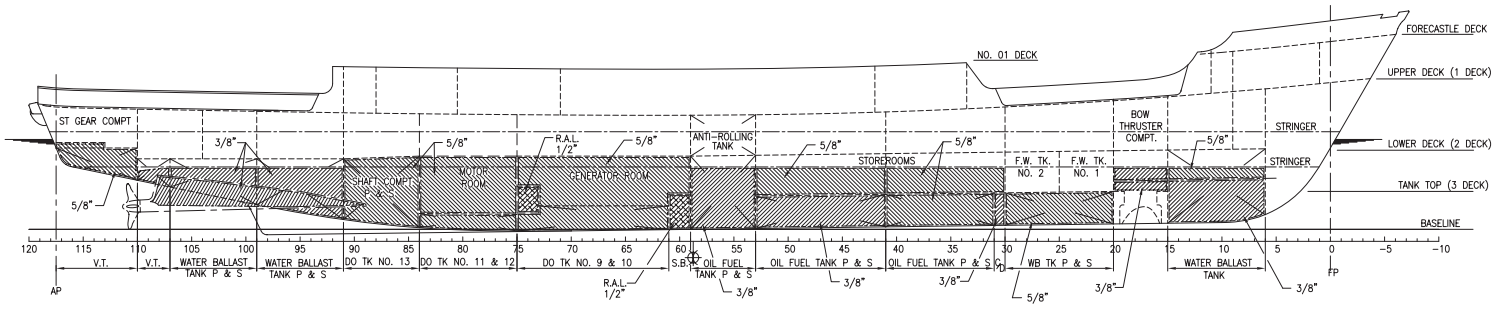
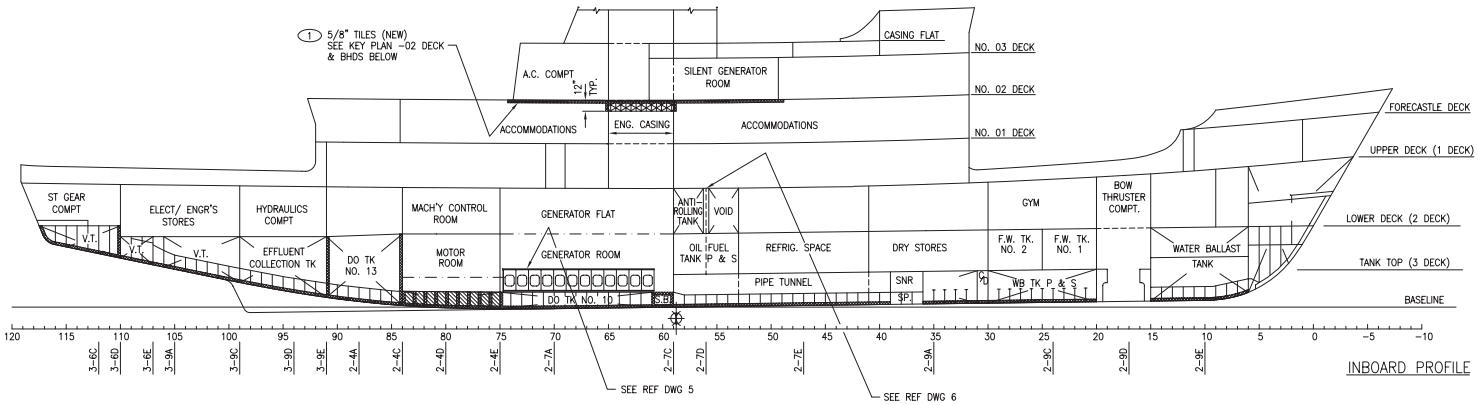


OUTBOARD PROFILE

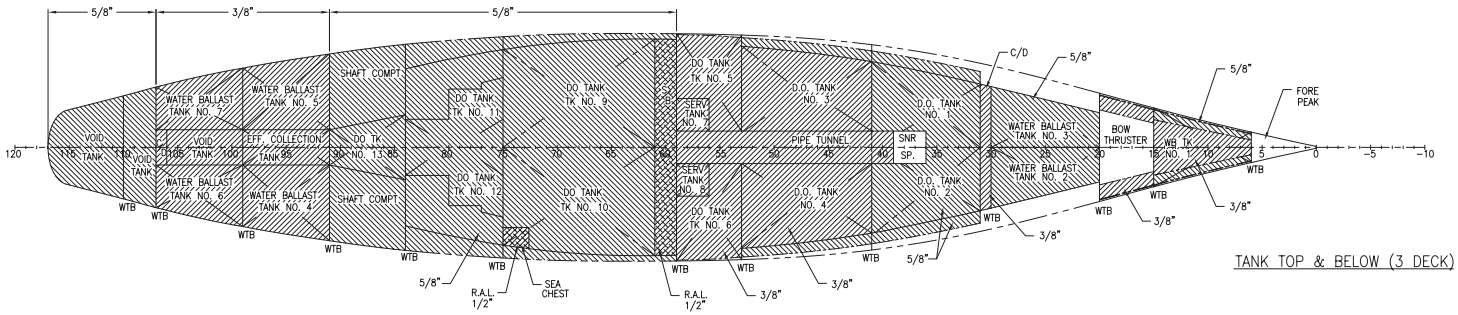


INBOARD PROFILE

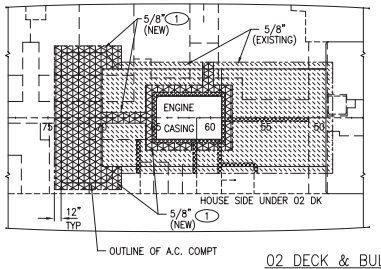
ALL TILES SHOWN ARE EXISTING EXCEPT WHERE OTHERWISE NOTED

- 3/8" HULL DAMPING TILES (EXISTING)
- 5/8" HULL DAMPING TILES (EXISTING)
- 1/2" R.A.L. SOUNDAMP TILES (EXISTING)
- 5/8" HULL DAMPING TILES (NEW) (UNDERSIDE OF A.C. COMPT.)

NOTE:
VARIOUS AREAS OF THE HULL DAMPING TREATMENT REQUIRED TILE REPLACEMENT DURING M.L.R. DUE TO STEEL REPLACEMENT. HOWEVER, CERTAIN AREAS OF HULL DAMPING TREATMENT, CONTRARY TO WHAT IS INDICATED ON THIS DRAWING, HAVE BEEN OMITTED BY F.G.N. AS DIRECTED BY D.N.D. DUE TO FINANCIAL CONSIDERATIONS. THIS DRAWING REPRESENTS POST M.L.R. STATUS. SEE D.N.D'S CF1148 LIST FOR AREAS OF TILE DAMPING OMITTED DURING M.L.R.



TANK TOP & BELOW (3 DECK)



02 DECK & BULKHEADS BELOW

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ZONE	LTR LET	REVISION	DATE	DWN DES	CKD VER	APPVL APP
–	–	AS-FITTED	98-11-18	DF	FD	CL

Défense nationale / National Defence — Canada

DWN/DESS	CKD/VER	SECT LEADER/CHEF, D'EQUIPE	OF APPVL/APP FC
D. MUSICK	F. DONAGHER	F. DONAGHER	DMCM/AUX

DESIGN AGENT/CONCEPT	SYS ENG/GENIE SYS	NSCM/CACF	DWG. DATE DU DESSIN	
M.S.L.	C. LAIDLAW	36219	97-06-06	AO

TITLE / TITRE: HULL DAMPING

MSL NO. DU DESSIN: 204-H26-1122
DND DWG REF. DU DESSIN: 9659200
SHEET FEUILLE: 2 OF DE 4

STAMP

PUBLIC SHIPYARD PERTICIPATION LIMITED
MARYSTOWN NEWFOUNDLAND
TEL 279-1302 FAX 279-3818
E-MAIL Spatten@psplmy.com
WEB www.psnewfoundland.ca/psp

UNLESS OTHERWISE SPECIFIED/SAUF INDICATION CONTRAIRE:
1. DIMENSIONS ARE IN/DIMENSIONS SONT EN FT./IN.
2. TOLERANCES
FRACTIONS ±
DECIMALS XXX ±
DECIMALES XX ±
X ±
3. ANGLES
SURFACE FINISH
FINS DE SURFACES

INTERPRETATION/INTERPRETER — CF STD D-01-400-001/SG-000 LEVEL/NIVEAU 2

APPLICATION/USAGE: C.F.A.V. QUEST M.L.R. 4340 AGOR 172

SCALE/ECHELLE: 1/8"=1'-0"

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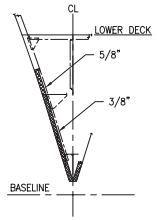
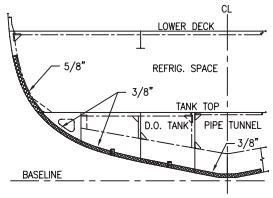
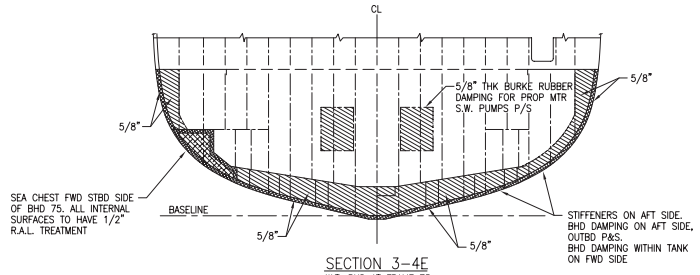


SECTION 3–9E
FRAME 10



SECTION 3–7E
FRAME 47



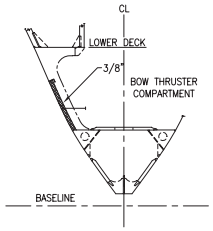
SECTION 3–4E
W.T. BHD AT FRAME 75

ALL TILES SHOWN ARE EXISTING EXCEPT WHERE OTHERWISE NOTED

3/8" HULL DAMPING TILES (EXISTING)

5/8" HULL DAMPING TILES (EXISTING)

1/2" R.A.L. SOUNDAMP TILES (EXISTING)



SECTION 3–9D
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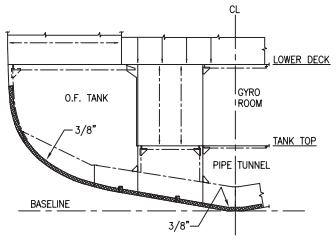
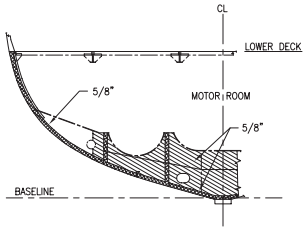


SECTION 3–7D
FRAME 56



SECTION 3–4D
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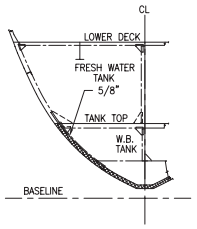
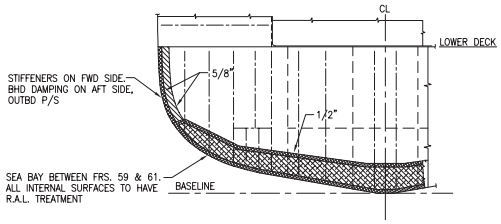


SECTION 3–9C
FRAME 24



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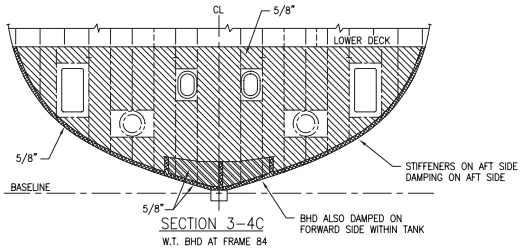
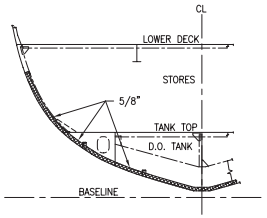
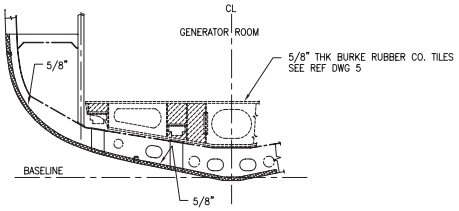


SECTION 3–4C
W.T. BHD AT FRAME 84



SECTION 3–9A
FRAME 35



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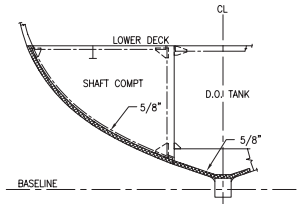

SECTION 3–4A
FRAME 88

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MODIFICATION

ZONE	LTR LET	REVISION	DATE	DWN DES	CKD VER	APPV'L APP
–	–	AS–FITTED	98–11–18	DF	FD	CL

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PERRY DOUCET FITZPATRICK LIMITED
MARYSTOWN NEWFOUNDLAND
TEL 279-1500 FAX 279-1513
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DECIMALS XX ±
X ±
3. ANGLES
SURFACE FINISH
FINS DE SURFACES √

INTERPRETATION/INTERPRETER
OF STD D–01–400–001/SG–000 LEVEL/NIVEAU 2

APPLICATION/USAGE
C.F.A.V.
QUEST
M.L.R.
4340
AGOR 172

SCALE/ ECHELLE 1/4"=1'–0"

Défense nationale National Defence

Canada

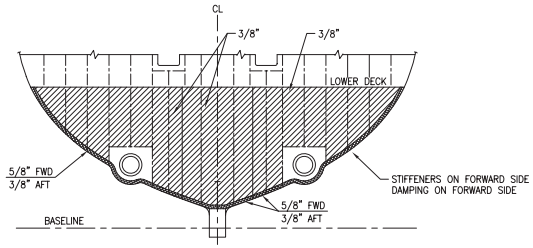
DWN/DESS.	CKD/VER	SECT LEADER/CHIEF, D'EQUIPE	OF APPV'L/APP FC
D. MUSICK	F. DONAGHER	F. DONAGHER	DMCM/AUX

DESIGN AGENT/CONCEPT	SYS ENG/GENIE SYS	NSCM/CACF	DWG. DATE	DU DESSIN
M.S.L.	C. LAIDLAW	36219	97–06–06	AO

TITLE / TITRE
HULL DAMPING

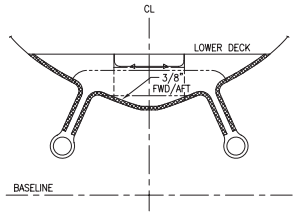
MSL NO. DU DESSIN 204–H26–1122
DND DWG REF. DU DESSIN 9659200
SHEET FEUILLE 3 OF DE 4

FILE F:\434A\OUTPUT\ASFITTED\011220SZ



SECTION 4–9E

W.T. BHD AT FRAME 91



SECTION 4–6E

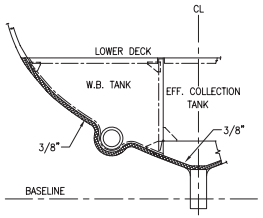
FRAME 107

ALL TILES SHOWN ARE EXISTING EXCEPT WHERE OTHERWISE NOTED

3/8" HULL DAMPING TILES (EXISTING)

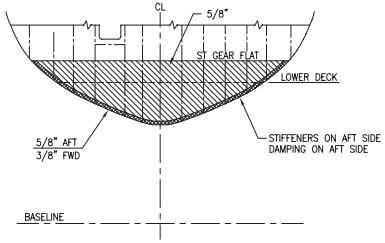
5/8" HULL DAMPING TILES (EXISTING)

1/2" R.A.L. SOUNDAMP TILES (EXISTING)



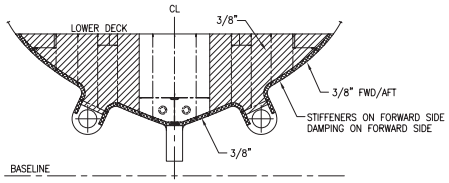
SECTION 4–9D

FRAME 94



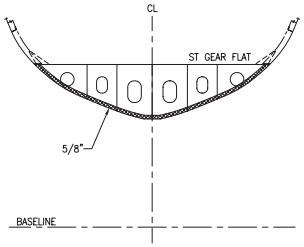
SECTION 4–6D

FRAME 110



SECTION 4–9C

FRAME 99



SECTION 4–6C

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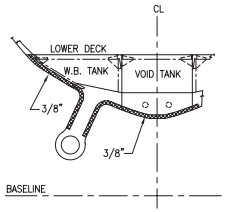
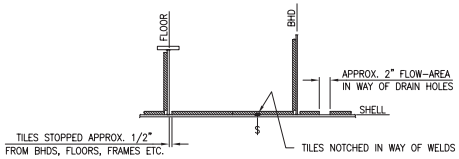


SECTION 4–9A

FRAME 105



DETAIL 4–6A

SCALE: 1–1/2"=1'–0"

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MODIFICATION

ZONE	LTR LET	REVISION	DATE	DWN DES	CKD VER	APPV'L APP
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FRACTIONS ±
DECIMALS XXX ±
DECIMALES XX ±
X ±
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SURFACE FINISH
FINS DE SURFACES √

INTERPRETATION/INTERPRETER
CF STD D–01–400–001/SG–000 LEVEL/NIVEAU 2

APPLICATION/USAGE
C.F.A.V.
QUEST
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4340
AGOR 172

SCALE/ ECHELLE 1/4"=1'–0"

Défense nationale / National Defence — Canada

DWN/DESS.	CKD/VER	SECT LEADER/CHIEF, D'EQUIPE	OF APPV'L/APP FC
D. MUSICK	F. DONAGHER	F. DONAGHER	DMCM/AUX

DESIGN AGENT/CONCEPT	SYS ENG/GENIE SYS	NSCM/CACF	DWG. DATE DU DESSIN	
M.S.L.	C. LAIDLAW	36219	97–06–06	AO

TITLE / TITRE: HULL DAMPING

MSL NO. DU DESSIN 204–H26–1122

DND DWG REF. DU DESSIN 9659200

SHEET FEUILLE 4 OF DE 4

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Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

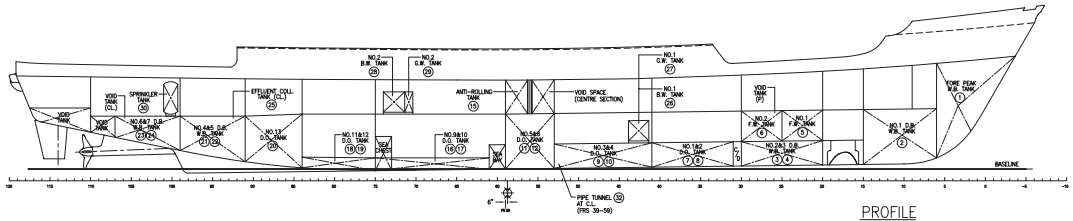
that form part of this Statement of Work

Additional information

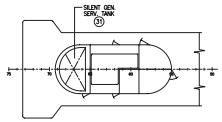
for the former CFAV QUEST:

9659214 - Tank Plan & Capacities

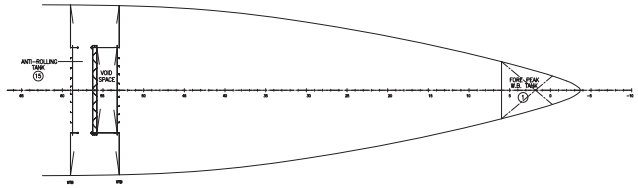
TANK NO.	TANK DESCRIPTION	FRAMES	CONTENTS	DENSITY CU.FT/L.T.	VOLUME IMP. GALS	WEIGHT LONG TONS	LCG FROM MIDSHIPS	VCG FROM BL.	TCG FROM CL.	F.S.M. FT–L.T.
1	FORE PEAK WATER BALLAST	6–FWD	W.B.	34.45	6843	31.38	111.14f	20.61	0.00	34.1
2	NO.1 D.B. WATER BALLAST	6–15	W.B.	34.45	7986	36.62	94.88f	9.97	0.00	46.9
3	NO.2 D.B. WATER BALLAST (S)	20–30	W.B.	34.45	4010	18.39	66.54f	4.57	3.30s	33.7
4	NO.3 D.B. WATER BALLAST (P)	20–30	W.B.	34.45	4010	18.39	66.54f	4.57	3.30p	33.7
5	NO.1 FRESH WATER (S)	20–25	F.W.	35.31	4381	19.60	72.26f	10.94	4.89s	33.0
6	NO.2 FRESH WATER (S)	25–30	F.W.	35.31	5519	24.69	62.32f	10.76	6.15s	59.9
7	NO.1 DIESEL OIL (P)	31–41	D.O./W.B.	41.30/34.45	5118	19.58/23.47	45.77f	4.31	5.93p	78.5/94.1
8	NO.2 DIESEL OIL (S)	31–41	D.O./W.B.	41.30/34.45	5118	19.58/23.47	45.77f	4.31	5.93s	78.5/94.1
9	NO.3 DIESEL OIL (P)	41–53	D.O./W.B.	41.30/34.45	7453	28.51/34.18	22.89f	4.13	8.60p	112.7/135.1
10	NO.4 DIESEL OIL (S)	41–53	D.O./W.B.	41.30/34.45	7453	28.51/34.18	22.89f	4.13	8.60s	112.7/135.1
11	NO.5 DIESEL OIL (P)	53–59	D.O./W.B.	41.30/34.45	12087	46.24/55.43	5.85f	7.70	11.57p	93.3/111.8
12	NO.6 DIESEL OIL (S)	53–59	D.O./W.B.	41.30/34.45	11817	45.21/54.19	5.79f	7.65	11.76s	80.0/96.0
13	NO.7 DIESEL OIL SERVICE (P)	56–59	D.O	41.30	1626	6.15	2.50f	9.76	6.00p	2.5
14	NO.8 DIESEL OIL SERVICE (S)	56–59	D.O.	41.30	1626	6.15	2.50f	9.76	6.00s	2.5
15	ANTI–ROLLING TANK (FULL)	53–59	F.W.	35.31	17950	80.31	4.65f	17.53	0.00	–
	ANTI–ROLLING TANK (3' LEVEL)	53–59	F.W.	35.31	6638	29.73	4.65f	14.99	0.00	1873
16	NO.9 DIESEL OIL (P)	61–75	D.O./W.B.	41.30/34.45	5616	21.48/25.75	18.34a	2.17	6.18p	115.3/138.2
17	NO.10 DIESEL OIL (S)	61–75	D.O./W.B.	41.30/34.45	5616	21.48/25.75	18.34a	2.17	6.18s	115.3/138.2
18	NO.11 DIESEL OIL (P)	75–84	D.O./W.B.	41.30/34.45	2126	8.13/9.75	39.65a	2.02	4.35p	31.6/37.9
19	NO.12 DIESEL OIL (S)	75–84	D.O./W.B.	41.30/34.45	2126	8.13/9.75	39.65a	2.02	4.35s	31.6/37.9
20	NO.13 DIESEL OIL	84–91	D.O./W.B.	41.30/34.45	9029	34.54/41.41	56.58a	7.36	0.00	21.2/25.4
21	NO.4 D.B. WATER BALLAST (S)	91–99	W.B.	34.45	7044	32.30	71.75a	9.63	7.89s	80.3
22	NO.5 D.B. WATER BALLAST (P)	91–99	W.B.	34.45	7044	32.30	71.75a	9.63	7.89p	80.3
23	NO.6 D.B. WATER BALLAST (S)	99–107	W.B.	34.45	3462	15.88	87.28a	10.80	6.67s	37.2
24	NO.7 D.B. WATER BALLAST (P)	99–107	W.B.	34.45	3462	15.88	87.28a	10.80	6.67p	37.2
25	EFFLUENT COLLECTION	91–99	EFF.	34.45	5556	25.48	72.10a	8.18	0.00	8.0
26	NO.1 BLACK WATER (P)	41–44	B.W.	34.45	1246	5.71	32.25f	9.42	8.50p	6.1
27	NO.1 GREY WATER (P)	41–44	G.W.	35.88	467	2.09	32.25f	9.42	14.00p	0.3
28	NO.2 BLACK WATER (S)	70–75	B.W.	34.45	600	2.75	27.71a	16.68	17.75s	0.6
29	NO.2 GREY WATER (S)	70–75	G.W.	35.31	228	1.02	23.85a	16.68	17.75s	0.2
30	SPRINKLER TANK	99–101	F.W.	35.31	200	0.89	82.50a	15.50	7.00s	0.2
31	SILENT GEN. DIESEL OIL SERVICE	66–69	D.O.	41.30	1246	4.77	17.49a	51.85	0.00	5.5
32	PIPE TUNNEL	39–69	F.W.	41.30	7319	4.77	19.37f	3.29	0.00	17.5



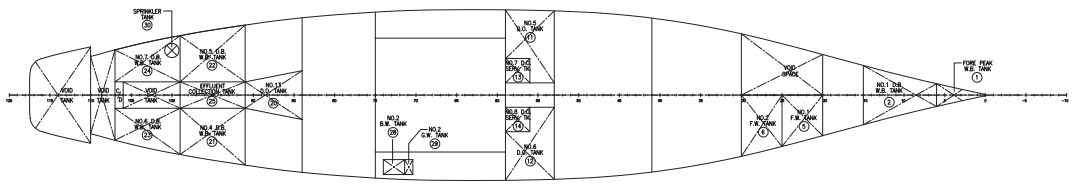
PROFILE



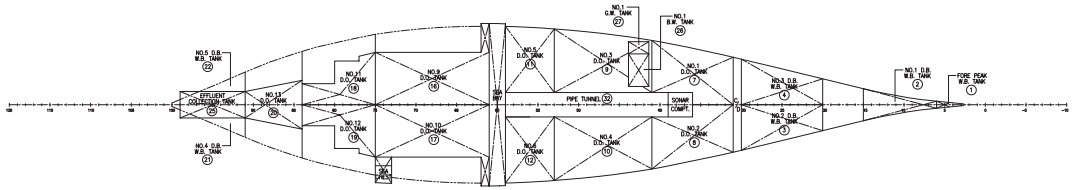
ABOVE CASING TOP



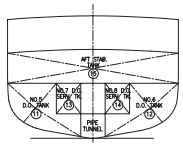
BELOW UPPER DECK (1 DECK)



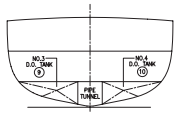
BELOW LOWER DECK (2 DECK)



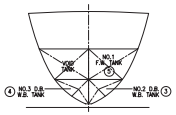
BELOW TANK TOP (3 DECK)



FRAME 58
LOOKING FWD



FRAME 47
LOOKING FWD



FRAME 24
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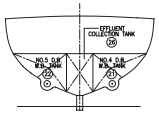

FRAME 94
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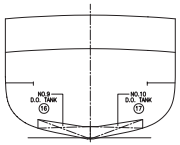

FRAME 70
LOOKING FWD

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MODIFICATION

ZONE	LTR LET	REVISION	DATE	DWN DES	CKD VER	APPVL APP
–	–	AS–FITTED	98–11–18	DF	FD	CL

Défense nationale / National Defence — Canada

DWN/DESS: T.H. NEWBURY; CKD/VER: F. DONAGHER; SECT LEADER/CHIEF, D'EQUIPE: F. DONAGHER; OF APPVL/APP FC: DMCM/AUX

DESIGN AGENT/CONCEPT: M.S.L.; SYS ENG/GENIE SYS: C. LAIDLAW; NSCM/CAGF: 36219

TITLE / TITRE: TANK PLAN & CAPACITIES

DWG. DATE DU DESSIN: 97–04–15; AO

MSL NO. DU DESSIN: 214–H26–4100

DND DWG REF. DU DESSIN: 9659214

SHEET FEUILLE: 1 OF DE 1

STAMP

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MAINSTORM NEWFOUNDLAND
TEL 579-1300 FAX 579-3813
E-MAIL fgp@mail.nwcomm.ca
WEB www.nwcomm.ca/fgp

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2. TOLERANCES
FRACTIONS ±
DECIMALS XXX ±
DECIMALES XX ±
X ±
3. ANGLES
SURFACE FINISH
FINIS DE SURFACES √

INTERPRETATION/INTERPRETER: CF STD D-01-400-001/SG-000 LEVEL/NIVEAU 2

APPLICATION/USAGE: C.F.A.V. QUEST M.L.R. 4340 AGOR 172

SCALE/ECHELLE: 3/32"=1'-0"

FILE F:\4340\OUTFIT\AS_FITTED\D4100001Z

Appendix 1 to Annex "A" – Statement of Work

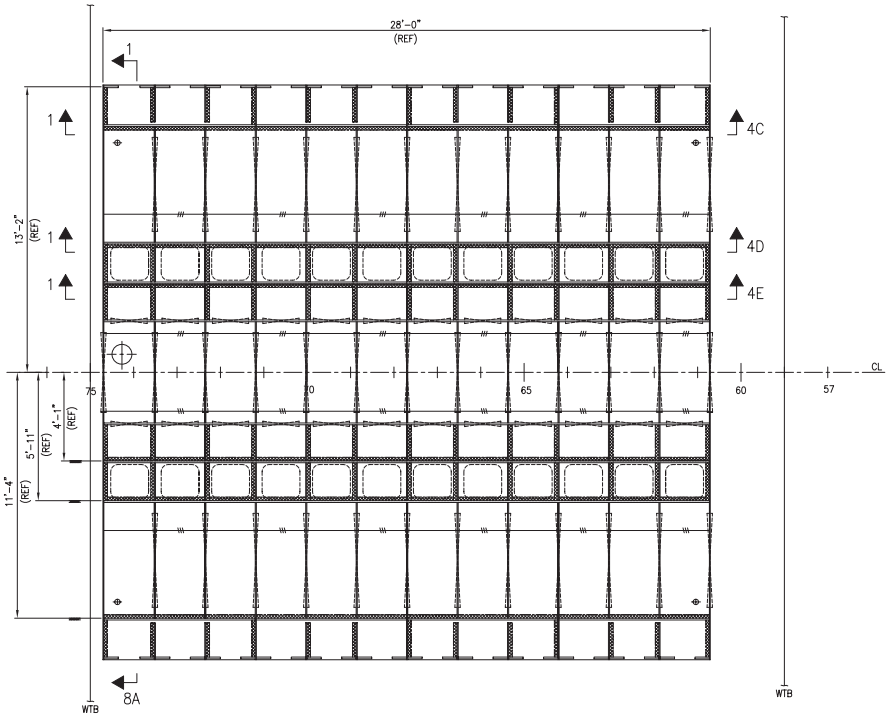
Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

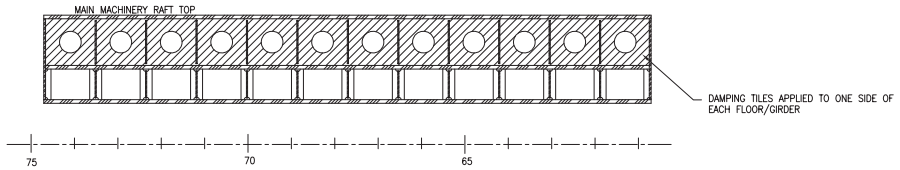
Additional information

for the former CFAV QUEST:

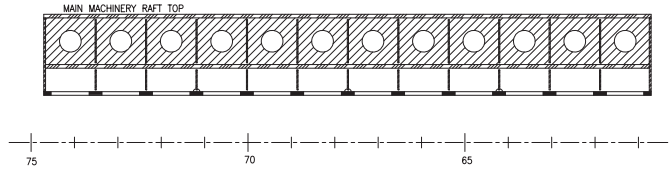
9659234 - Damping Tiles on Main Machinery Raft



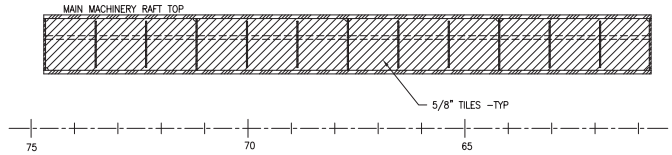
PLAN 1-8C
PLAN VIEW OF MAIN MACHINERY RAFT BOTTOM PLATE



ELEVATION 1-4E
GIRDER 4'-1" OFF C.L.



ELEVATION 1-4D
GIRDER 5'-11" OFF C.L.



ELEVATION 1-4C
GIRDER 11'-4" OFF C.L.

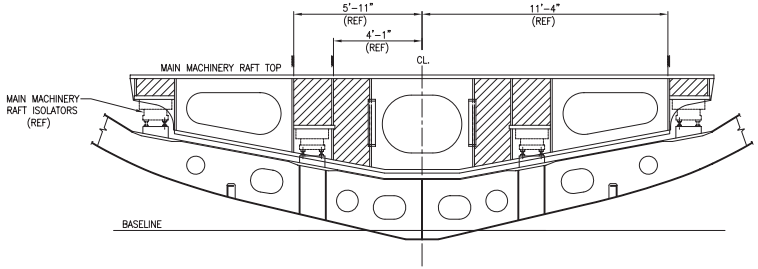
GENERAL NOTES

THIS DRAWING REFLECTS EXISTING DAMPING OF RAFT AND THEREFORE HAS NO NEW TILES OR MATERIEL LIST SHOWN. IF ANY TILES ARE FOUND TO REQUIRE REPAIRS OR REPLACEMENT, THEN IT SHALL BE CARRIED OUT AS DESCRIBED ON REF DWG 2 GENERAL NOTES.

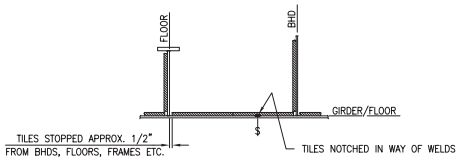
5/8" DAMPING TILES (EXISTING)

REFERENCE DRAWINGS

REF NO.	DWG NO.	DESCRIPTION
1.	(201-H02-4000) 9659165	GENERAL ARRANGEMENT
2.	(204-H26-1122) 9659200	HULL DAMPING
3.	(201-H26-0015) 9659175	WORK METHODS RAFT ISOLATORS
3.	AGOR 172-H-26-20015	COMPARTMENT TREATMENT



SECTION 1-8A
FRAME 74
LOOKING AFT
-TYPICAL-



DETAIL 1-5A
SCALE: 1-1/2"=1'-0"

UNCLASSIFIED
MODIFICATION

ZONE	LTR LET	REVISION	DATE	DWN DES	CKD VER	APPVL APP
–	–	AS-FITTED	98-11-18	DF	FD	CL

Défense nationale / National Defence — Canada

DWN/DESS	CKD/VER	SECT LEADER/CHEF D'EQUIPE	OF APPVL/APP FC
D. MUSICK	F. DONAGHER	F. DONAGHER	DMCM/AUX

DESIGN AGENT/CONCEPT	SYS ENG/GENIE SYS	NSCM/CAGF	DWG. DATE	DU DESSIN
M.S.L.	C. LAIDLAW	36219	97-06-06	AO

TITLE / TITRE: DAMPING TILES ON MAIN MACHINERY RAFT.

MSL NO. DU DESSIN: 602-H26-0610
DND DWG NO. DU DESSIN: 9659234
SHEET FEUILLE 1 OF DE 1

STAMP

MARYSTOWN SHIPYARD LIMITED
MARYSTOWN NEWFOUNDLAND
TEL.279-2506 FAX.279-1405
TLX.016-3148

DOUGLAS HYDROAUTICS LTD
DESIGN, DEVELOPMENT, MANUFACTURE, INSTALLATION, SERVICE
1500 STEELES AVENUE WEST
RICHMOND HILL, ONTARIO
CANADA, L4B 4G8

UNLESS OTHERWISE SPECIFIED/SAUF INDICATION CONTRAIRE:
1. DIMENSIONS ARE IN/DIMENSIONS SONT EN FT./IN.
2. TOLERANCES
FRACTIONS ±
DECIMALS XXX ±
DECIMALES XX ±
X ±
3. ANGLES
SURFACE FINISH
FINIS DE SURFACES ✓

INTERPRETATION/INTERPRETER: CF STD D-01-400-001/SG-000
LEVEL/NIVEAU 2

APPLICATION/USAGE: C.F.A.V. QUEST M.L.R. 4340 AGOR 172

SCALE/ECHELLE: 1/2"=1'-0"

NOTICE
THE DEPARTMENT OF NATIONAL DEFENCE DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR ACCURACY OF THE INFORMATION CONTAINED IN THIS DOCUMENT FOR OTHER THAN OFFICIAL DEFENCE PURPOSES. THE DEPARTMENT OF NATIONAL DEFENCE DOES NOT GRANT ANY LICENCE, CONVEY ANY INTELLECTUAL PROPERTY RIGHTS, OR GIVE PERMISSION FOR ANY USE IN WHOLE OR IN PART BY ANY RECIPIENT, HOLDER OR USER OF THIS DOCUMENT, AND ANY SUCH PERSON USING THIS DOCUMENT OR THE INFORMATION THEREIN DOES SO AT THEIR OWN RISK.

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Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

for the former CFAV QUEST:

Estimated Liquid Loads for the former CFAV QUEST

Estimated Liquid Load and HAZMAT remaining on the former CFAV QUEST

The following are estimates as of March 29, 2017:

- Acetylene Bottle (Flight Deck) to be removed prior to Contract Award
- Oxygen Bottle (x2)(Flight Deck) to be removed prior to Contract Award
- Overpac (Yellow) (Flight Deck) Oily Rags 95 gal capicity
- Overpac (Red) (Flight Deck) Varsol/Water 10 gal
- #1 and #2 LP Air Comp 5 liters of oil in each
- Cat Emerg Diesel (silent gen compt) 30 liters oil, 50 Liters coolant
- Two Batteries for Cat Emerg Diesel
- Batteries for IMCS, required to de-fuel
- Acid and Storage Corrosive Cabinet 70 liters of Hydrofloric Acid Solution
- One MCR Hazmat Cabinet is still full of small items such as spray lubricants
- 20 Liters of hydraulic fluid

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

for the former CFAV QUEST:

Valve Plan for the former CFAV QUEST

Shell Valves List

by: Les Cattral & Colin Tancock
date: 01-Mar-17

No.	Description	System	Name	Size	Type	Frame	Location	Comment
1	Fwd Hydraulic Cooling Supply	Fwd Hydraulic Piping System	FH-1	2"	Gate Valve	15+200mm	Bow Thruster Compt. - fwd stbd side	Hull mounted
2	Fwd Hydraulic Cooling Discharge	Fwd Hydraulic Piping System	FH-4	1 1/2"	SDNR	10	Rope Store - Fwd Stbd Side	Side shell mounted
3	Bow Thruster Housing Cavity Vent			1 1/2"		10	Bow Thruster Compt. - fwd port side	Hull mounted
4	Fwd Sewage Plant	Scupper & Sewage Disposal System	SD-99	4"	Storm Valve	51+300mm	General Store - stbd side	Side shell mounted
5	Port Main Engine Supply	SW & FW Cooling System	SW-1	5"	Butterfly	60	Sea Bay fwd of acoustic enclosure - mid ship	Hull mounted, extended spindel
6	Port Main Engine Discharge	SW & FW Cooling System	SW-17	5"	Butterfly	73+175mm	Sea Chest lower generator room - aft stbd side	Hull mounted
7	Port Main Engine Recirc	SW & FW Cooling System	SW-23	5"	Butterfly	60	Sea Bay fwd of acoustic enclosure behind waste oil tank - port side	Hull mounted
8	Stbd Main Engine Supply	SW & FW Cooling System	SW-2	5"	Butterfly	60	Sea Bay fwd of acoustic enclosure - mid ship	Hull mounted, extended spindel
9	Stbd Main Engine Discharge	SW & FW Cooling System	SW-18	5"	Butterfly	73+175mm	Sea Chest lower generator room - aft stbd side	Hull mounted
10	Stbd Main Engine Recirc	SW & FW Cooling System	SW-24	5"	Butterfly	60	Sea Bay fwd of acoustic enclosure behind waste oil tank - stbd side	Hull mounted
11	Fwd Service Generator Supply	SW & FW Cooling System	SW-3	2 1/2"	Butterfly	59+450mm	Sea bay fwd of acoustic enclosure - port side	Hull mounted, extended spindel
12	Fwd Service Generator Discharge	SW & FW Cooling System	SW-19	2 1/2"	Butterfly	73+450mm	Sea Chest lower generator room - aft stbd side	Hull mounted
13	Aft Service Generator Supply	SW & FW Cooling System	SW-4	2 1/2"	Butterfly	60+50mm	Sea bay fwd of acoustic enclosure - stbd side	Hull mounted, extended spindel
14	Aft Service Generator Discharge	SW & FW Cooling System	SW-20	2 1/2"	Butterfly	74+75mm	Sea Chest lower generator room - aft stbd side	Hull mounted
15	Fwd Bilge & Ballast Pump Supply	Bilge and Ballast System	BB-108	3 1/2"	Angle SDNR	60	Sea bay fwd of acoustic enclosure - port side	Hull mounted, extended spindel
16	Fwd Bilge & Ballast Pump Discharge	Bilge and Ballast System	BB-110	3 1/2"	SDNR	61	Lower generator room between domestic fresh water - fwd stbd side	Side shell mounted
17	Fwd Fire Pump Supply	Firemain and Sprinkler System	FM-1	2 1/2"	Screw Lift	60-75mm	Sea bay fwd of acoustic enclosure - port side	Hull mounted, extended spindel
18	Aft Fire Pump Supply	Firemain and Sprinkler System	FM-3	2 1/2"	Screw Lift	82	Propulsion motor room - aft stbd side	Hull mounted
19	Oily Water Seperator Discharge	Bilge and Ballast System	BB-98	2 1/2"	SDNR	61	Lower generator room between domestic fresh water & sanitary sea water pressure tanks - fwd stbd side	Side shell mounted
20	RODP Sea Water Pump Suction	Sanitary & Domestic Cold Water Mist System	RU-100	1 1/2"	Gate Valve	70	Sea bay fwd of acoustic enclosure - stbd side	Hull mounted, extended spindel
21	RODP Sea Water Pump Discharge	Sanitary & Domestic Cold Water Mist System	DF-163	1/2"	Gate Valve	73	Sea Chest lower generator room - aft stbd side	Hull mounted
22	Sanitary Seawater Feed Pump Supply	Sanitary & Domestic Cold Water Mist System	SN-1	1 1/2"	Gate Valve	60	Sea bay fwd of acoustic enclosure - stbd side	Hull mounted, extended spindel
23	Propulsion Motor Sea Water pump Supply	SW & FW Cooling System	SW-5	4"	Butterfly	60	Sea bay fwd of acoustic enclosure - stbd side	Hull mounted
24	Propulsion Motor Sea Water pump Discharge	SW & FW Cooling System	SW-21	3"	Butterfly	74	Sea Chest lower generator room - aft stbd side	Hull mounted
25	Steering Gear Hydraulic Oil Cooler / Propulsion Air cooler Discharge	SW & FW Cooling System	SW-22 / 25	1 1/2"	Butterfly	74	Sea Chest lower generator room - aft stbd side	Hull mounted
26	Air Conditioning Sea Water Pump Supply	AC unit Sea Water Cooling System	AC-1	4"	Butterfly	60	Sea bay fwd of acoustic enclosure - stbd side	Hull mounted
27	Air Conditioning Sea Water Pump Discharge	AC unit Sea Water Cooling System	AC-4	4"	Butterfly	74	Sea Chest lower generator room - aft stbd side	Hull mounted
28	Sea Bay Vent Port	Air and Sounding System	VS1	3"	Butterfly	60	Sea bay fwd of acoustic enclosure behind waste oil tank - port side	Hull mounted
29	Sea Bay Vent Stbd	Air and Sounding System	VS1	3"	Butterfly	60	Sea bay fwd of acoustic enclosure behind domestic fresh water pressure tank - stbd side	Hull mounted
30	Aft Sea Chest	Air and Sounding System	VS1	3"	Butterfly	74	Sea Chest lower generator room - aft stbd side	Hull mounted
31	Aft Sewage Plant discharge	Scupper & Sewage Disposal System	SD-99A	4"	Storm Valve	72+300mm	Lower generator room - aft stbd side	Side shell mounted
32	Aft Bilge & Ballast Pump Supply	Bilge and Ballast System	BB-109	3 1/2"	Angle SDNR	83+300mm	Propulsion motor room - aft port side	Hull mounted
33	Aft Bilge & Ballast Pump Discharge	Bilge and Ballast System	BB-112	3 1/2"	SDNR	83	Propulsion motor room - aft stbd side	Side shell mounted
34	Aft Fire Pump Supply	Firemain and Sprinkler System	FM-3	2 1/2"	Angle SDNR	83	Propulsion motor room - aft stbd side	Hull mounted
35	Aft Hydraulic Unit Supply	Aft Hydraulic Piping System	AC-34	3"	Gate Valve	93	Aft hydraulic room - fwd mid-ship	Deck level mounted
36	Aft Hydraulic Unit Discharge	Aft Hydraulic Piping System	AC-40	2"	Gate Valve	94	Aft hydraulic room - fwd stbd side	Side shell mounted

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

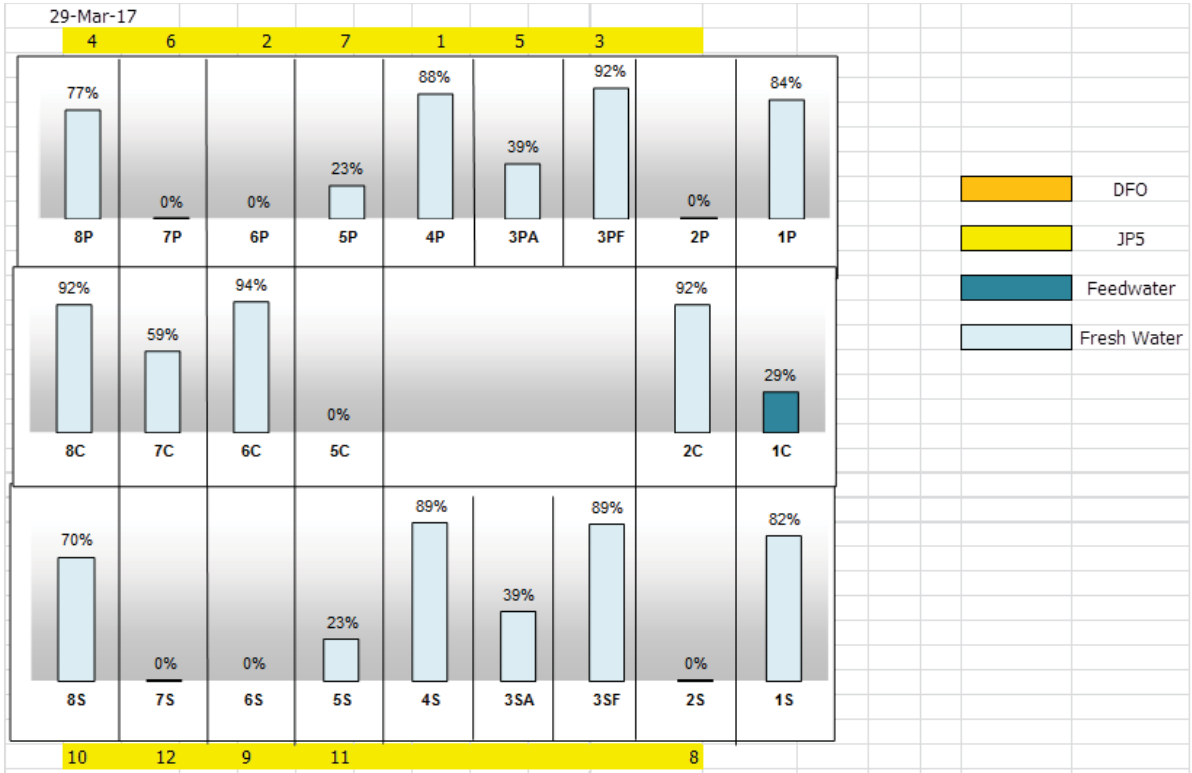
for the former HMCS PRESERVER:

Estimated Liquid Loads for the former HMCS PRESERVER

Appendix 1 to Annex "A" – Statement of Work

Estimated Liquid Loads for the former HMCS PRESERVER

Estimated FFO cargo system for the former HMCS PRESERVER as of March 29, 2017:



Tank Quantity (m³)

8P	7P	6P	5P	4P	3PA	3PF	2P	1P
505	0	0	151	553	221	447	1	289
8C	7C	6C	5C				2C	1C
868	613	979	0				1014	86
8S	7S	6S	5S	4S	3SA	3SF	2S	1S
462	0	0	153	560	221	431	1	283

Total Cargo

DFO	0	m³	0%
JP5	0	m³	0%
FreshWater	8008	m³	59%

Snapshot of the Engine Room/Boiler Room DFO system containing approx. 139.1m^3 on the former HMCS PRESERVER as of March 29, 2017:

Distillate Fuel	@ 100 %	Brls. Rem	% Rem							
Port Bunker	3340	171.0	5.1%			Total Fuel Wt (Short Tons)				
Stbd Bunker	3340	640.0	19.2%	Port	25.1	StbD	103.5	Dif.	-78.4	
Port Settling	1251	0.0	0.0%							
Stbd Settling	1251	0.0	0.0%	Received From Bunkering:			0.0	BBLS/	0.0	cuM
Total (BBLS)	9182	811.0	8.8%	Expended Since Last Report			0.0	BBLS/	0.0	cuM
Diesel Fuel	@ 100 %	Brls Rem	% Rem	Expended Since Last Report			0.0	BBLS/	0.0	cuM
Port ER DB Tk	317	0.0	0.0%	Total Fuel						
Stbd ER DB Tk	317	64.0	20.2%		875.0	BBLS	9.0%		139.1	cuM
Total (BBLs)	634	64.0	10.1%							

Estimated additional tank information for the former HMCS PRESERVER as at April 7, 2017:

Fore Peak Tank: 129LT Capacity – 0Lt

Water Ballast Tank Fr.38-50: 339LT Capacity – 0LT

#3 Double Bottom Water Ballast Tank Fr.69-75: 374LT Capacity – 373.79LT 100% Saltwater

#4 Double Bottom Water Ballast Tank Fr.75-78: 210LT Capacity – 210.15LT 100% Saltwater

Aft Peak Tank: 368LT Capacity – 93.94LT 25.5% Saltwater

Boiler Room Double Bottom Fr.93-97 (Port): 69.47LT Capacity – 0LT

Boiler Room Double Bottom Fr.93-97 (Stbd): 70.29LT Capacity – 0LT

#5 FFO DB CL 203.46LT 100% Fresh Water

#6 FFO DB CL 193.01LT 100% Fresh Water

#7 FFO DB CL 195.54LT 100% Fresh Water

#8 FFO DB CL 193.03Lt 100% Fresh Water

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

for the former HMCS PRESERVER:

Sea Water Circulating System Drawing for the former HMCS PRESERVER

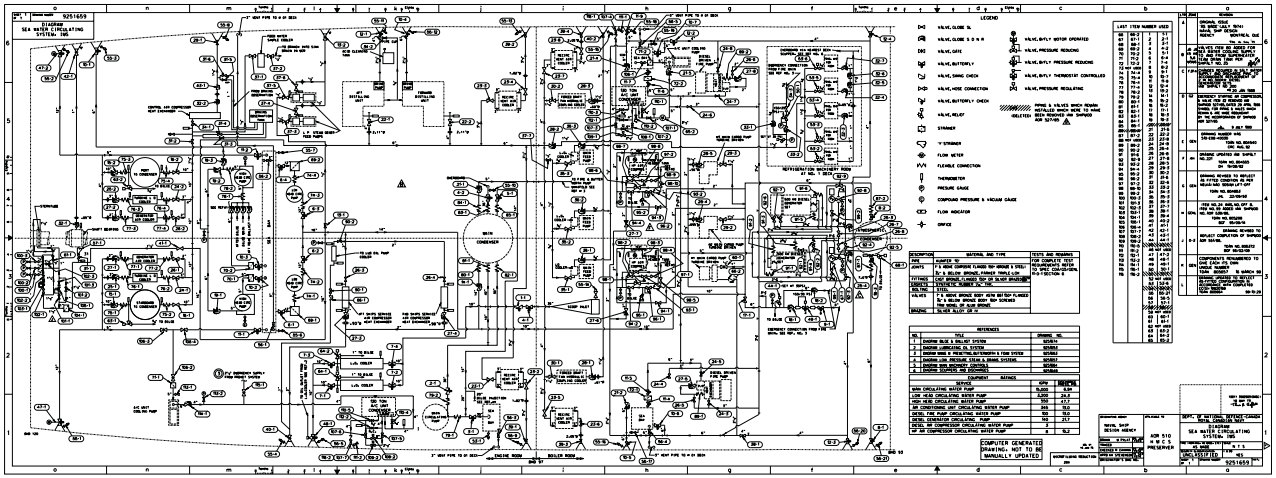


DIAGRAM
SEA WATER CIRCULATING
SYSTEM 100
9251659
LEGEND
VALVE, GLOBE SL
VALVE, GLOBE S O N R
VALVE, GATE
VALVE, BUTTERFLY
VALVE, SWING CHECK
VALVE, HOSE CONNECTION
VALVE, BUTTERFLY CHECK
VALVE, RELIEF
STRAINER
"Y" STRAINER
FLOW METER
FLEXIBLE CONNECTION
THERMOMETER
PRESSURE GAUGE
COMPOUND PRESSURE & VACUUM GAUGE
FLOW INDICATOR
ORIFICE
VALVE, BUTFLY MOTOR OPERATED
VALVE, PRESSURE REDUCING
VALVE, BUTFLY PRESSURE REDUCING
VALVE, BUTFLY THERMOSTAT CONTROLLED
VALVE, PRESSURE REGULATING
PIPING & VALVES WHICH REMAIN INSTALLED WHICH MUST BE WIRED OR WELDED SHUT OR SHROUD AND SECURED
(DELETED)
LAST ITEM NUMBER USED
REVISIONS
COMPUTER GENERATED DRAWING- NOT TO BE MANUALLY UPDATED
NAVAL SHIP DESIGN AGENCY
SEA WATER CIRCULATING SYSTEM
AOR 510
H R C S
PRESERVER
DEPT. OF NATIONAL DEFENCE
NAVAL CONSULTING GROUP
9251659

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

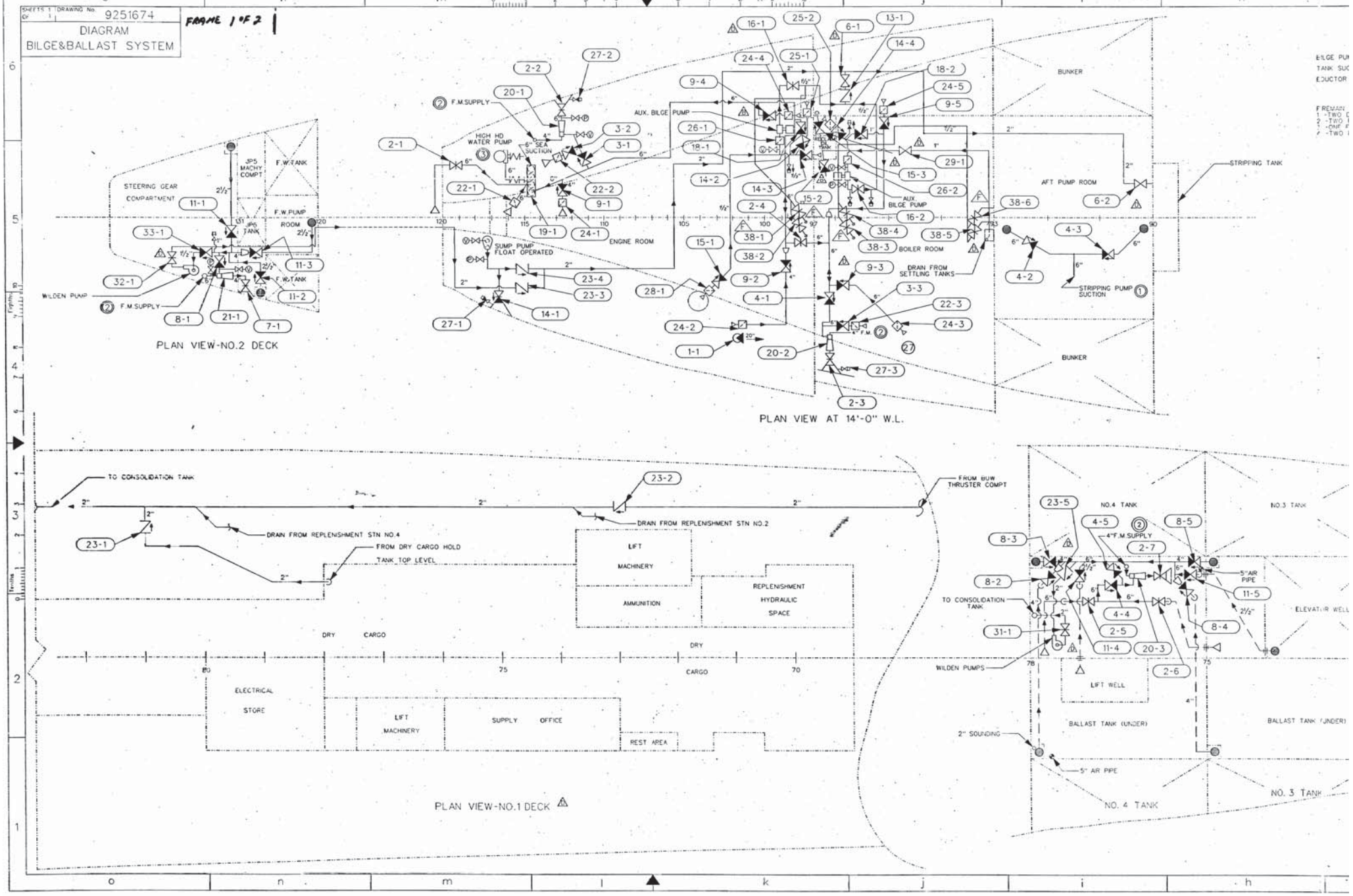
for the former HMCS PRESERVER:

Bilge and Ballast System Drawing for the former HMCS PRESERVER

SHEETS 1 OF 1 DRAWING No. 9251674

DIAGRAM
BILGE&BALLAST SYSTEM

FRAME 1 OF 2



BILGE PUMPS ARE LOCALLY CONTROLLED.
TANK SUCTIONS ARE 2" FROM TANK BOTTOM
EDUCTOR DRIVING WATER FROM FIREMAIN

FIREMAIN SERVED BY THE FOLLOWING PUMPS:-
1 -TWO DIESEL DRIVEN FIRE PUMPS (3000 I.G.P.M.)
2 -TWO FIRE PUMPS (1000 I.G.P.M.)
3 -ONE FIRE PUMP
4 -TWO FIRE & FLUSHING PUMPS (150 I/G/P/M/)

LEGEND

- OVERBOARD DISCHARGE
- GLOBE VALVE
- S.D.N.R. VALVE
- GATE VALVE
- SWING CHECK VALVE
- ANGLE VALVE
- BALL VALVE
- HOSE ADAPTER
- EDUCTOR
- STRAINER
- STRUM BOX
- PRESSURE GAUGE
- VACUUM GAUGE
- REDUCER
- BELLMOUTH
- (X) REFERENCE DRAWING No.

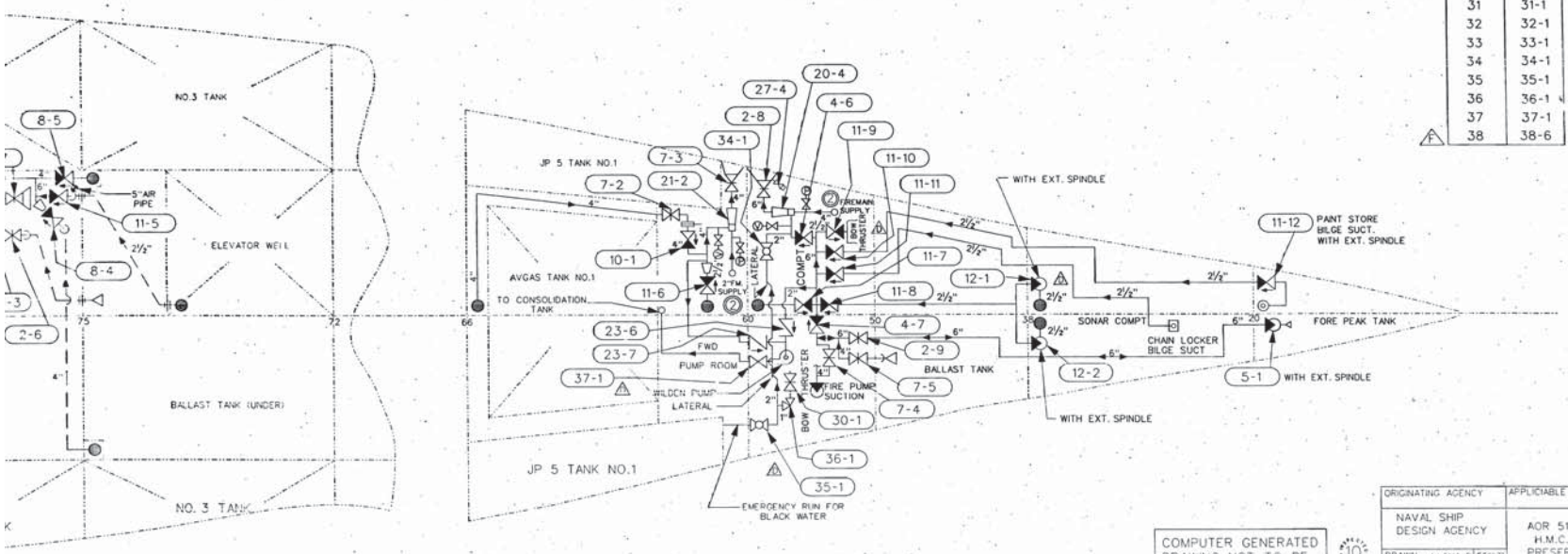
MATERIAL		TESTS AND REMARKS
DESCRIPTION	MATERIAL	
TUBING	COPPER NICKEL/IRON ADM'Y SPEC.DGS 8558	
FLANGES	COMPOSITE/DRYDOCK STANDARD	
VALVES	BRONZE,ASTMB.61,150# FLANGED,MONEL OR ALUM BRZ TRIM	
FITTINGS	CAST BRONZE-150# FLANGED OR SILVER BRAZING	
GASKETS	SYNTHETIC RUBBER	
BOLTING	STUD BOLTS,STUDS & NUTS,STEEL	

REFERENCES		
NO.	TITLE	DRAWING NUMBER
1	CARGO OIL SYSTEM DIAGRAM	9251671
2	DIAGRAM-MAIN SEAWATER, PREWETTING BUTTERWORTH & FOAM SYSTEM	9251663
3	DIAGRAM-CIRCULATING AND COOLING WATER SYSTEM	9251659

EQUIPMENT RATINGS		
SERVICE	IGPM	PRESSURE
EDUCTOR-STEERING GEAR COMPARTMENT	200	125 PSI
EDUCTOR-ENGINE ROOM	400	125 PSI
EDUCTOR-BOILER ROOM	400	125 PSI
EDUCTOR-CARGO HOLD	400	125 PSI
EDUCTOR-AFT PUMP ROOM	400	125 PSI
EDUCTOR-FORWARD BALLAST TANKS	400	125 PSI
EDUCTOR-AVGAS COFFERDAM	80	125 PSI
AUXILIARY BILGE PUMP (2 OFF)	80	
SUMP PUMP	40	

LAST ITEM NUMBER	ISSUED
1	1-1
2	2-9
3	3-3
4	4-7
5	5-1
6	6-2
7	7-5
8	8-5
9	9-5
10	10-1
11	11-12
12	12-2
13	13-1
14	14-4
15	15-3
16	16-2
17 NOT ALLOCATED	
18	18-2
19	19-1
20	20-5
21	21-2
22	22-3
23	23-7
24	24-4
25	25-2
26	26-2
27	27-4
28	28-1
29	29-1
30	30-1
31	31-1
32	32-1
33	33-1
34	34-1
35	35-1
36	36-1
37	37-1
38	38-6

LTR	ZONE	REVISION
A		ORIGINAL ISSUE "AS MADE"(JULY1973) NAVAL SHIP DESIGN AGENCY,MONTREAL,QUEBEC 16 JAN 75
B	K5,J5	AUXILARY BILGE PUMP REPLACEMENT AS PER SHIPALT 209 DATED JUNE 85 7 FEB 1988
C		DRAWING NO. WAS 510-E36-40001-01 TDAN 804540 CRC AUG 92
D		DRAWING REVISED IAW NEUA/NAO/SDSM LIFT-OFF TDAN No. 804903 PN 93-12-14
E		COMPONENTS RENUMBERED TO GIVE EACH ITS OWN UNIQUE NUMBER TDAN 805657 18 FEB 99
F	—	DRAWING UPDATED TO REFLECT AS-FITTED CONFIGURATION IN ACCORDANCE WITH COMPLETED EC 19910402 TDAN 805664 99-10-29



PLAN VIEW-TANK TOP

COMPUTER GENERATED DRAWING, NOT TO BE MANUALLY UPDATED

MICROFILMING REDUCTION 28x

ORIGINATING AGENCY	APPLICABLE TO	DEPT. OF NATIONAL DEFENCE-CANADA ROYAL CANADIAN NAVY
NAVAL SHIP DESIGN AGENCY	AOR 510 H.M.C.S. PRESERVER	DIAGRAM BILGE AND BALLAST SYSTEM
DRAWN J. KENAUD 5 SEP 73		TYPE(WORKING,AS MADE,ETC.) AS MADE — SCALE NONE
TRACED		SECURITY CLASSIFICATION UNCLASSIFIED — I & B.M. YES
CHECKED J. MAXWELL 8 APR 74		SHEET 1 OF 1 — DRAWING No. 9251674 — REV.
APPD. 16 SEP 74		
ORIGINATOR'S DWG NO.		

CERTIFIED
FILE 1001-3602003(DMSE)
DATE 18 MAY 73
for DGMEM

FRAME 2 OF 2

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

Additional information

for the former HMCS PRESERVER:

Estimated on-load weights and locations for the former HMCS PRESERVER

Estimated on-load weights and locations
for the former HMCS PRESERVER
as of March 29, 2017

Hangar 205,381 Lbs
Main Magazine 2 Deck 58,100 Lbs
Main Magazine 3 Deck 54,424 Lbs
Main Magazine 4 Deck 98,494 Lbs

Appendix 1 to Annex "A" – Statement of Work

Reference Documents and Critical Documentation, Reports

that form part of this Statement of Work

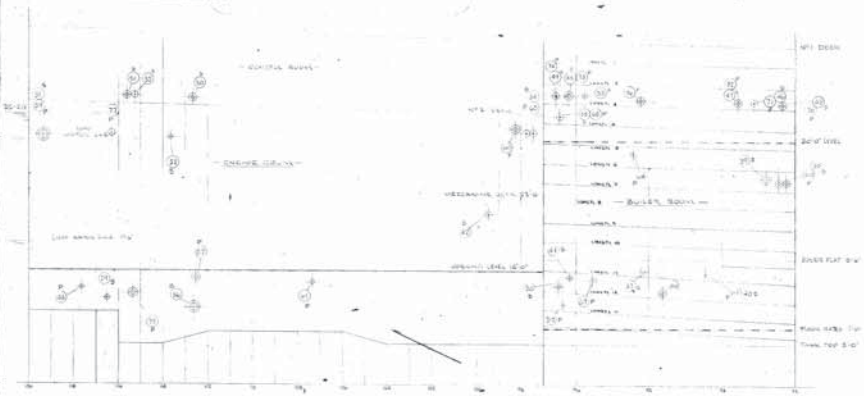
Additional information

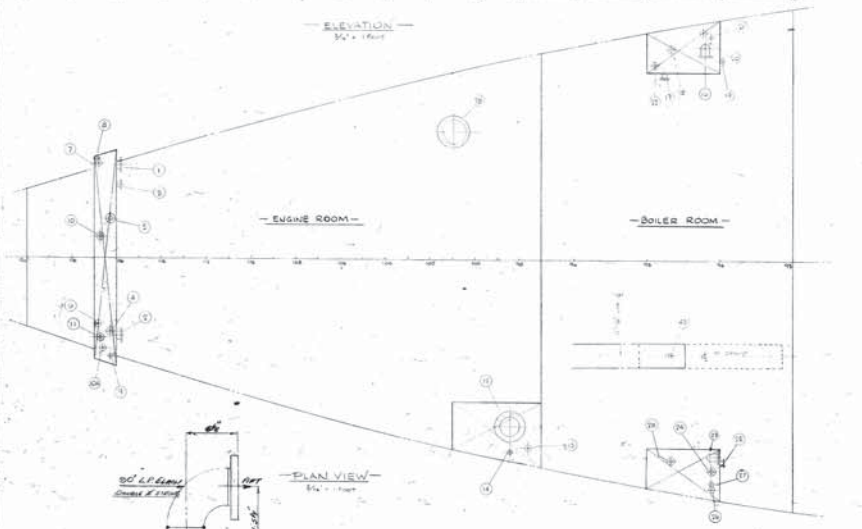
for the former HMCS PRESERVER:

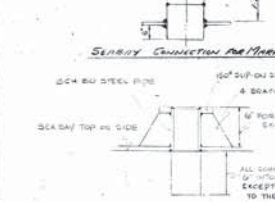
Valve Plan for the former HMCS PRESERVER

SHEET 1 OF 1 — CURATOR'S DRAWING NO. 509-E-02-40039-01

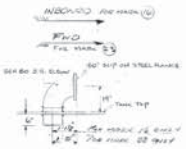
TITLE: ARRANGEMENT OF SEA VALVES-I.M.S.





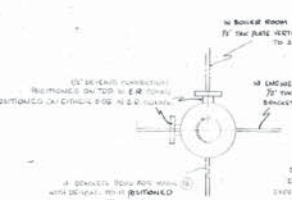


— STANDARD SEA BAY CONNECTION —
DETAIL 'B' NOT TO SCALE

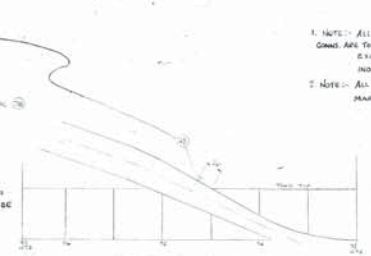


— DETAIL 'E' —
NOT TO SCALE

PLAN AT 9'-6" W.L.
— DETAIL 'D' —
NOT TO SCALE
ALL OTHER DETAILS AS FOR DETAIL 'A'



— DETAIL 'A' - SHIP SIDE CONNECTIONS —



— ELEVATION THRU ℄ OF DECOY —
— DETAIL 'C' —
1/4" = 1 FOOT

1. NOTE:- ALL INLET CONNECTIONS AND OVERBOARD DISCHARGE CONNS. ARE TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION. EXCEPT THE AREAS THAT ARE COATED WITH INORGANIC ZINC SILICATE.
2. NOTE:- ALL FLANGES TO BE FLAT FACE EXCEPT MARK Nos 40-42-69

— SEA BAY CONNECTIONS —

DWG MARK	QUY NO	DRAWING REF NO	NOM SIZE	DESCRIPTION	DISTANCE FROM ℄	DISTANCE ABOVE BASE	DISTANCE FWD FR	REMARKS
1	5	[illegible]	12"	PORT L.P. PUMP SUCTION	11'-2"	1'-6"	ON FR	DETAIL 'C'
2	5	[illegible]	12"	STBD " " "	11'-2"	1'-6"	"	"
3	2	[illegible]	4"	PORT A.R. " " "	11'-10"	1'-6"	"	"
4	2	[illegible]	4"	STBD " " "	11'-10"	—	3'-0"-117	"
5	4	[illegible]	6"	1000 I.G.P.M. FIRE PUMP	8'-0½"	—	[illegible]	"
6	4	[illegible]	3"	ISO " " "	8'-0"	—	[illegible]	"
7	5	[illegible]	8"	AIR VENT PORT	11'-8"	—	[illegible]	"
8	1+4	[illegible]	1½"	STEAM + AIR CONN. PORT	11'-5"	—	[illegible]	"
9	1+4	[illegible]	1½"	STEAM + AIR CONN. STBD.	12'-0"	—	[illegible]	"
10	5	[illegible]	2"	TURBO GEN. PRESS. WASHING UP PORT	1'-8"	—	[illegible]	"
10S	5	[illegible]	1"	AIR VENT STBD	11'-0"	—	[illegible]	"
11	5	[illegible]	2½"	TURBO GEN. PRESS. WASHING UP STBD	11'-11"	—	[illegible]	"
12	5	[illegible]	3½"	MAIN COOL PUMP SUCTION	22'-4"	—	1'-6"	"
13	5	[illegible]	2"	AIR VENT	22'-0"	—	[illegible]	"
14	1+4	[illegible]	1½"	STEAM + AIR CONNECTION	22'-6"	—	[illegible]	"
16	4	[illegible]	10"	DIESEL FIRE PUMP SUCTION PORT	24-1½"	—	9'-8"-115	DETAIL 'C'
17	4	[illegible]	5"	BUTTERWORTH PUMP SUCTION	—	4'-10"	3'-0"-112	DETAIL 'B'
18	5	[illegible]	8"	PORT AIR UNIT SUCTION	23'-0"	—	3'-0"-112	"
19	5	[illegible]	10"	DIESEL ENGINES COOLING PUMPS SUCTION	24'-7"	5'-6"	[illegible]	"
20	2	[illegible]	2"	AIR VENT	23'-0"	—	[illegible]	"
21	1+4	[illegible]	1½"	STEAM + AIR CONNECTION	27'-4"	—	8'-0"-115	"
22	5	[illegible]	4"	PORT S.R. SEA LAV. VENTING CLEAN	24'-[illegible]	—	[illegible]	"
23	4	[illegible]	10"	DIESEL FIRE PUMP SUCTION STBD	24'-0"	—	8'-0"-115	DETAIL 'C'
24	5	[illegible]	8"	STBD AIR UNIT SUCTION	22'-9"	—	8'-0"-115	DETAIL 'B'
25	5	[illegible]	10"	DIESEL ENGINES COOLING PUMPS SUCTION	24'-7"	5'-6"	—	"
26	2	[illegible]	2"	AIR VENT	28'-0"	—	8'-0"-116	"
27	1+4	[illegible]	1½"	STEAM + AIR CONNECTION	27'-4"	—	8'-0"-116	"
28	2	[illegible]	6"	STBD S.R. SEA BAY VENTING CLEAN	24'-6"	—	[illegible]	"

— SHIP SIDE CONNECTIONS —

DWG MARK	QUY NO	DRAWING REF NO	NOM SIZE	DESCRIPTION	DISTANCE FROM ℄	DISTANCE ABOVE BASE	DISTANCE FWD FR	REMARKS
29	6	[illegible]	2"	BILGE PUMP O/B	—	10'-8"	1'-4"-117	DETAIL 'A'
30	6	[illegible]	4"	S.R. EDUCTOR STBD O/B	—	12'-5"	1'-6"-97	"
31	5	[illegible]	12"	STBD TURBO GEN. O/B	—	20'-0"	[illegible]	"
31	5	[illegible]	5"	D.G. AIR COMPRESSORS O/B	—	20'-0"	[illegible]	"
33								
34	5	[illegible]	8½"	STBD A.R. AIR COOLER O/B	—	21'-0"	[illegible]	"
35	5	[illegible]	8½"	STBD A.R. AIR COOLER O/B	—	22'-0"	[illegible]	"
36	5	[illegible]	10"	M.E. LUB. OIL COOLER O/B	—	19'-0"	[illegible]	DETAIL 'D' & 'A'
37	5	[illegible]	6"	STBD A/C UNIT O/B	—	14'-6"	8'-0"-94	DETAIL 'A'
38	5	[illegible]	4"	STBD DIESEL GEN. O/B	—	19'-0"	8'-0"-94	"
39	5	[illegible]	8"	ATMOSPHERIC CONDENSER O/B	—	19'-0"	[illegible]	"
40	1	[illegible]	1½"	STBD MAIN BOILER BLOW DOWN	—	17'-11"	[illegible]	"
41	1	[illegible]	1½"	AUX BOILER BLOW DOWN	—	19'-4"	[illegible]	"
42	1	[illegible]	2"	STEAM STEAM GEN. BLOW DOWN	—	21'-0"	[illegible]	"
43	1+4	[illegible]	1½"	GOOP STEAM + AIR CONN	—	—	—	DETAIL 'C'
44	2	[illegible]	1"	SHAFT ENGINE CLEAN	—	12'-0"	[illegible]	"
45	2	[illegible]	4"	DECK SCUPPER	—	24'-0"	7'-6"-96	DETAIL 'A'
46	2	[illegible]	2½"	WASH ROOM DRAIN	—	24'-0"	[illegible]	"
47	2	[illegible]	4"	SOIL DISCHARGE	—	—	[illegible]	"
48	2	[illegible]	8"	DECK SCUPPER	—	3'-0"	[illegible]	"
49	2	—	8"	" "	—	—	[illegible]	"
50	2	[illegible]	4"	" "	—	25'-7½"	[illegible]	"
51	2	—	4"	SOIL DISCHARGE	—	25'-6"	[illegible]	"
52	2	—	3"	DECK SCUPPER	—	—	[illegible]	"
53	2	—	2"	EVAPORATOR O/B	—	25'-5"	[illegible]	"
57	6	[illegible]	6"	S.R. BILGE EDUCTOR O/B	—	[illegible]	[illegible]	"
58	6	[illegible]	8½"	OILY WATER SEPARATOR O/B	—	[illegible]	[illegible]	"
59	5	[illegible]	12"	PORT TURBO GEN. O/B	—	20'-0"	[illegible]	"
60	5	[illegible]	6"	FWD. EVAPORATOR O/B	—	21'-0"	[illegible]	"
61	5	[illegible]	2½"	STEAM COUT FWD PIP BONGINE O/B	—	12'-1"	[illegible]	"
62	5	[illegible]	4"	AFT. EVAPORATOR O/B	—	—	—	"
63	5	[illegible]	8½"	PORT S.R. AIR COOLER O/B	—	21'-0"	[illegible]	"
64	5	[illegible]	8"	F.D. FANS COOLER O/B	—	28'-6"	[illegible]	"
65	5	[illegible]	8½"	PORT F.R. AIR COOLER O/B	—	21'-0"	[illegible]	"
66	5	[illegible]	1½"	CONTROL AIR COMPRESSOR O/B	—	—	—	"
67	5	[illegible]	5"	PORT A/C UNIT O/B	—	[illegible]	[illegible]	"
68	5	[illegible]	4"	PORT DIESEL GEN. O/B	—	28'-0"	[illegible]	"
69	1	[illegible]	1½"	PORT MAIN BOILER BLOW DOWN	—	17'-11"	[illegible]	"
70	2	[illegible]	4"	DECK SCUPPER	—	24'-8"	[illegible]	"
71	2	[illegible]	2½"	WASHROOM DRAIN	—	24'-0"	[illegible]	"
72	2	[illegible]	4"	SOIL DISCHARGE	—	[illegible]	[illegible]	"
73	2	[illegible]	3"	DK SCUPPER	—	[illegible]	[illegible]	"
74	2	—	3"	DK SCUPPER	—	[illegible]	[illegible]	"
75				WASHROOM DRAIN	—	[illegible]	[illegible]	"
76	2	[illegible]	4"	DECK SCUPPER	—	25'-0"	8'-0"-96	"
77				DECK SCUPPER			[illegible]	"
78	5	[illegible]	24"	MAIN CONDENSER O/B	[illegible]	—	[illegible]	PLACE THE CONN. AS PER DETAIL 'A'
79	5	[illegible]	12"	H.P. PUMP O/B	—	[illegible]	[illegible]	DETAIL 'A'
80	4	[illegible]	4"	BUTTERWORTH PUMP O/B	—	[illegible]	[illegible]	"

REF NO	CURATOR'S DWG Nº	DEE PLAN TITLE
1	509-H-26-21558	SEA INLET GRIDS
2	509-H-26-21553	SOUNDERS + DISCHARGE
3	509-E-02-40038	AIR + SOUNDING ARTICLE
4	509-E-12-40080	FIRE MAIN + FIRE HYDRANTS
5	509-E-08-40090	SEA WATER CIRC.
6	509-E-26-20061	BILGE + BALLAST SYS.
7	509-E-15-20071	COMPRESSED AIR SYS.
8	509-E-29-20016	EVAPORATOR STATION
9	509-E-06-20069	STEAM HOT SYSTEM

LET.	ZONE	REVISION	AUTH	DATE
		"A"		

ORIGINATING AGENCY: SAINT JOHN SHIPBUILDING & DRY DOCK CO. LTD.
DRAWN BY: Cooper
TRACED BY:
CHECKED BY:
APPD BY:
ORIGINATOR'S DWG. NO. 1091-903-9

APPLICABLE TO: OPERATIONAL SUPPORT SHIPS (ASR 501 & 510)
HULL NOS. 1200 & 1201

DEPT. OF NATIONAL DEFENCE-CANADA
ROYAL CANADIAN NAVY

TITLE: ARRANGEMENT OF SEA VALVES I.M.S.

TYPE OF DRAWING: A.S. MADE
SCALE: AS NOTED
SECURITY CLASSIFICATION: UNCLASSIFIED
S. NO. 1091-903-9 Rev 1
SHEET Nº 1 OF 1
CURATOR'S DRAWING NO. 509-E-02-40039-01

509-E02-40039-01
SHEET

Appendix 1 to Annex "A" – Statement of Work
Reference Documents and Critical Documentation, Reports
that form part of this Statement of Work

Additional information
for the former HMCS PRESERVER:

Environmental Assessment of HMCS PRESERVER FINAL REPORT

Environmental Assessment of HMCS PRESERVER FINAL REPORT

Task Number: IRO(D)-294

REPORT NUMBER: RPT-IRO294-02-01

24 Mar 2015

Prepared for

ISSC (IRO) PM

Department of National Defence

by

Fleetway Inc.

NOTICE

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AVIS

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Requested by:	Mr. M. Stege, ISSC(IRO) PM	Dated:	27 Jun 12
Prepared by:	R.J. Skinner, P.Eng	Dated:	16 Mar 15
Reviewed by:	S.Brake, P.Eng	Dated:	24 Mar 15

REPORT REVISION

REV	DATE	SECTION	PAGE	AUTHORITY	DESCRIPTION
-		All	N/A	M. Soper	Final Report

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Environmental Assessment - HMCS PRESERVER

1.0 PROJECT IDENTIFICATION & VESSEL REGISTRATION

1.1 Project Title: Environmental Assessment - HMCS PRESERVER
1.2 Project Schedule: 14 Jul 2012 - 28 Mar 2015
1.3 Project Location: Halifax, NS
1.4 Originating Directorate: DGMEPM/ISSC(IRO) PM
1.5 EA Start Date: 14 Jul 2012
1.6 Project Summary: **Project Type - "Other (non-CEAA)"** **Project Trigger - "Proponent"**
1.7 OPI's EA / Project File Ref #: W8482-4500952056
1.8 Other Responsible Federal Authorities: N/A
1.9 Federal Environmental Assessment Coordinator: N/A
1.10 Contacts: **Project OPI - Mr. M. Stege, ISSC(IRO) PM** **Ship Disposal / Dismantling** **DMEPM MWVA 5-5** **LSTL , 4th Floor** **National Defence** **Ottawa, Canada** **K1A 0K2** **(819) 939-3499** **Fleetway Inc. OPI (EA) - Mr. R.J. Skinner, EP, P.Eng** **Suite 250-825 Broughton St.** **Victoria, BC** **V8W 1E5** **(250)-480-3344**
1.11 Public Notification: N/A

2.0 ASSESSMENT SUMMARY - ENVIRONMENTAL EFFECTS, CONCLUSIONS AND RECOMMENDATIONS

2.1 EXECUTIVE SUMMARY

Under ISSC (IRO) task IRO - 294, an environmental assessment (EA) was conducted in HMCS PRESERVER in support of DNDs intent to decommission, divest and dispose of the ship in 2016. The EA was conducted in three phases: 1. a review of existing, relevant documentation and on-site survey, 2., on-site sampling of compartments, systems, equipment, cabling and cable transits for specific HAZMATs and substances of concern (SOCs), and 3., laboratory analysis and preparation of the assessment report. Phase 1 was conducted July-Aug 2012. Phase 2 was conducted between Aug 2014 and Oct 2014. Phase 3 started in Oct 2014 and concluded 27 Mar 2015. Sampling for specific HAZMATs included: asbestos, lead and other metals in paints and claddings, PCBs in cables, paints and insulation. The project is considered substantially complete. Follow-on sampling and analysis for arsenic, asbestos, metals in paint and PCBs as well as tributyl and triphenyltin is required for a complete assessment of the significance of these materials in general and recommendations for mitigation, removal and/remediation of PCBs in particular.

As of the date of preparation of this report, sampling for certain HAZMAT, particularly PCBs, asbestos, tributyl and triphenyltin was either incomplete or not considered. As a result the sampling and analysis database is not considered complete. If further sampling for these or other HAZMATs is requested by DND, the database will be updated and the data transferred to the master MEL data base once the results of laboratory analysis have been obtained from ALS. If further sampling is not requested, the data 'in-hand' as of the date of preparation of this report will be considered final and transferred as-is to the master MEL data base.

2.2 EA DETERMINATION

PCBs were detected in samples in concentrations exceeding levels specified in applicable federal regulations. This results in a determination that the disposal of HMCS PRESERVER represents a significant risk to the VECs identified in this report. Further testing for arsenic, metals in paint, PCBs, tributy and triphenyltin is recommended following the ship's decommissioning.

2.3 FOLLOW-UP

Section 4.10 of this report details the recommended follow-up program with respect to the disposal of HMCS PRESERVER.

2.4 GLOSSARY & DEFINITIONS

Applicable laws and regulations. For the purposes of this report, the term *Applicable laws and regulations* includes all DND, international, federal, provincial and municipal laws, regulations, bylaws, codes and/ or guidelines applicable to the specific circumstance (e.g. handling, removal, transport, storage or disposal) of a particular HAZMAT or substance of concern.

Bioaccumulation. A general term describing a process by which chemicals are taken up by an organism either directly from exposure to a contaminated medium or by consumption of food

containing the chemical (US EPA). In essence, a substance that bioaccumulates will generally be found in higher concentrations in a predator than in a prey organism. In the context of the food chain, humans are considered predatory organisms.

Bioconcentration. A process leading to a higher concentration of a substance in an organism than in environmental media to which it is exposed (WHO-1979). In essence particular organs and tissues in some organisms will tend to concentrate a given substance. For example, a lipophillic (fat loving) substance e.g. hexane will tend to accumulate and therefore concentrate in the fatty tissues in exposed animals and humans. Both bioaccumulation and bioconcentration are important considerations in assessing the toxicity of a substance to humans or other species.

Carcinogen. A cancer causing substance or agent. [note 1]

Contaminant. A biological, chemical, physical or radiological substance, normally not found in the environment which, in sufficient concentration, can adversely affect living organisms through its presence in air, water, soil, or food. [note 1]

Mutagen. An agent including a chemical, energy source, or radioactive element that can induce or increase the frequency of mutation in an organism. [note 1]

Persistent Organic Pollutant (POP). Toxic chemicals that adversely affect human health and the environment because they can be transported by air and water currents.

Physical Disposal Phase: For the purposes of this report, physical disposal is the phase in PRESERVER's disposal process where the physical handling, dismantling, deconstruction, removal, transport and storage of equipment, materials and structures occur. It is assumed that this phase will be conducted by a competent, qualified contractor (disposal facility or shipyard) that is compliant with applicable Canadian laws, regulations and permits as well as any applicable international accords.

Pollutant. A substance or energy introduced into the environment that has undesired effects, or adversely affects the usefulness of a resource. A pollutant may cause acute or chronic damage to living organisms (including humans) by changing the growth rate, interference with normal biological functions (see: mutagen, carcinogen, teratogen), or by interfering with human amenities, comfort, health, or property values. Pollutants can be classified by: 1.) origin (natural or synthetic), 2.) their effect on an organ, specie, or an entire ecosystem, 3.) their mobility, persistence or toxicity, and 4.) ease or difficulty of removal. [note 1]

Teratogen. An agent such as a virus, drug or radiation that causes malformation of an embryo or fetus. [note 1]

Toxicant. A man-made (synthetic substance) that presents a risk of death, disease, injury, or birth defects in living organisms through absorption, adsorption, ingestion, inhalation, or by altering the organism's environment. A **Toxin**, on the other hand, is produced in nature by a living animal or plant. [note 1]

Note 1: Glossary Source: *The Free Dictionary* at http://www.the freedictionary.com

3.0 PART III RECOMMENDATIONS AND SIGN - OFF

3.1 EA Report prepared by: _____ R.J. Skinner, P.Eng, EP, 16 March, 2013
3.2 EA Report reviewed by; _____ S. Brake, P.Eng, Project Manager, March,2013
3.3 EA Report accepted and approved by; _____ M. Stege, ISSC(IRO) PM Date:

4.0 PART IV DETAILED ASSESSMENT OF ENVIRONMENTAL EFFECTS

4.1 PROJECT DESCRIPTION AND SCOPE

Boundaries

HMCS PRESERVER (AOR 510) is currently operational and is based out of CFB Halifax, Halifax, Nova Scotia. As of the report date, the ship is planned for de-commissioning sometime in 2016. For the purposes of this assessment, it is presumed, that disposal activities will fall into the following broad phases:

- Pre-decommissioning phase: general de-storing and de-ammunitioning.
- Decommissioning & divestiture from the list of Crown assets.
- Pre-disposal phase: removal de-fuelling/watering and removal of remaining ITAR and controlled goods. It is suggested this phase should include a docking where a follow-on environmental survey and sampling activity could occur to assess areas of the ship not accessible during the operational phase, and
- Physical disposal phase: physical removal, dismantling, deconstruction and scrapping of the structure, materials, systems and equipment. It is assumed that physical disposal will be undertaken by a suitably qualified disposal facility / commercial shipyard.

It is also assumed that ex-HMCS PRESERVER will remain on DND property until the transfer of ownership to the disposal facility / commercial shipyard has been completed. The information contained in this report is applicable to the vessel regardless of its location.

Vessel Disposition

Following divestiture and sale to the disposal facility, the disposal facility will be responsible for respecting all federal, provincial and municipal environmental statutes, laws, policies and regulations governing the scrapping of vessels in Canada.

Valued Ecosystem Components

16 valued ecosystem components (VECs) were considered for the disposal of HMCS PRESERVER:

- Atmosphere
- Marine Surface Waters [Note 2]
- Ground Water
- Soils
- Terrain
- Noise
- Terrestrial Biota
- Terrestrial habitats
- Marine Biota
- Marine Habitats
- Heritage / Historical
- Recreation / Aesthetic
- Human Health & Safety
- Economy
- Services
- Land Use

Note 2: Marine surface waters include fresh water lakes and river systems as well as their biota and habitats.

The potential for an environmental effect on one VEC may have related, secondary effects on other areas. This EA is focused on the readily apparent, immediate and primary effects on each VEC. The significance of each HAZMAT / SOCs and the affected VEC, related to the disposal of HMCS PRESEVER has been determined by evaluating the following factors:

- The extent to which the HAZMAT/SOC is present in PRESERVER and level of contamination known or suspected at individual sites. (i.e. How widespread is the HAZMAT/SOC and at what level(s)?)
- Environmental availability (i.e. How likely is the HAZMAT/SOC to affect one or more VECs without mitigation through the typical disposal activities?)
- Probability of occurrence. A qualitative assessment of the likelihood the HAZMAT / SOC will affect one or more VECs if appropriate mitigation is possible and undertaken prior to or during disposal.

The environmental significance of each HAZMAT / SOC is summarized in section 4.4 as follows:

HAZMAT / SOC Significance	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely		
Significant or Likely		
Unknown		

Annex A depicts the relationship between the hazardous materials and substances of concern (SOC) and the VECs listed above.

4.2 REFERENCES

The following legislation, policies, guidelines and regulations were used in support of the Environmental Assessment of HMCS PRESERVER:

A. Canadian Environmental Assessment Act (CEAA)
B. Canadian Environmental Protection Act (CEPA)
C. Fisheries Act (FA)
D. Transportation of Dangerous Goods Act (TDGA)
E. Hazardous Products Act
F. Canada Labour Code and Canada Occupational Health and Safety Regulations
G. Canadian Council of Ministers of the Environment (CCME) Guideline for the Management of Polychlorinated Biphenyls (PCB) wastes
H. Nova Scotia OHS Act - Guideline for Maintenance Operations involving Asbestos
I. Nova Scotia Environment Act - Asbestos Waste Management Regulations
J. DGE Directive, DAOD 4003-0 Environmental Protection and Stewardship
K. DGE Directives DAOD 4003-1 Hazardous Materials Management
L. DGE Directive DAOD 4003-2 Environmental Assessment
M. DGMEPM Divisional Instructions 01/2001-TEC
N. HMCS PRESERVER Ship Hazardous Material Portfolio (SHMP) V3.8.5_07 Aug 2009
O. PROTECTEUR Class Asbestos Report Rev0.0_Aug 2005
P. DGMEPM NON-Obsolete PCB-Containing Items_13 Mar 2009
Q. ISSC W8482-049989/001MC
R. Fleetway Work Instruction: Eng-WI-540288-001 (11 May 2012)
S. Fleetway Work Instruction Eng-WI-540294-001 (22 Aug 2012)
T. Fleetway Risk Management Plan - Environmental Assessments (22 Aug 2012)

4.3 CONSULTATION AND SITE VISITS

The environmental assessment of HMCS PRESERVER was conducted in three phases:

Phase 1 Preliminary Site Inspection & Environmental Survey.

A preliminary site inspection was conducted by the Fleetway Task Lead and the ISSC(IRO) PM in April 2012. Meetings with the ship's command team were held at this time to confirm availability of the ship, accessibility of compartments and any special requirements for the EA. The Environmental Survey was conducted during two periods: 03 Apr - 08 May 2012, and 14 Jul - 07 Sep 2012. During the survey, PRESERVER's Ship's Hazardous Materials Portfolio (SHMP, Aug 2009) and the PROTECTEUR Class asbestos survey results (Aug 2005) were used to identify candidate compartments, systems and equipment for physical sampling and laboratory analysis.

Phase 2. On Site Sampling.

On site work to collect the material samples identified in Phase 1, was conducted from 15 Aug Jan - 24 Sep 2014. Samples were collected in accordance with the applicable occupational health and safety guideline references. Samples were shipped in batches from the ship's location (Halifax, NS) to *ALS Environmental* laboratories in Burnaby, BC for processing and analysis. Analysis results were compiled by ALS and delivered to the Task Lead in Victoria BC

for review and assessment. Samples were collected, packaged and shipped in accordance with chain-of-custody protocols established by ALS Environmental.

Phase 3. Review of Analysis Results and EA Report.

Analysis results were reviewed by the Task lead between Oct 2014 and Mar 2015. This report presents the summary of the analytical results. HAZMAT and Substances of Concern (SOCs) identified during Phase 1 as well as sampling data and the analytical results for each sample are contained within the EA section of the PRESERVER, SQL data base which was developed under a separate Fleetway task.

4.4 ENVIRONMENTAL EFFECTS - VESSEL SURVEY, SAMPLING AND ANALYSIS RESULTS

Following review of the survey data gathered during phase 1, it was determined through consultation with ISSS(IRO) PM, that the presences of following HAZMAT required confirmation through sampling and laboratory analysis:

- Asbestos, Bulk (e.g. floor tiling, pipe insulation, etc.)
- Metals in Paint, Swab (e.g. distributed piping systems)
- Lead in Paint, Swab (e.g. decks and bulkheads)
- PCBs in Paint, Swab (e.g. paint in the proximity of equipment known or suspected to contain PCBs.)
- PCBs in insulation, Bulk (e.g. insulating materials and coatings in the vicinity of equipment known or suspected to contain PCBs)
- PCBs in Cabling, Swab (e.g. cables connected to equipment known or suspected to contain PCBs.)

In addition to the confirmatory sampling noted above, the presence of the remaining HAZMAT/SOC identified in annex A in was established through the existing reference records (SHMP, etc.). The following sections detail the potential environmental effects of the HAZMAT / SOC listed at annex A.

4.5 HAZMAT / SOC - SPECIFIC ASSESSMENT OF EFFECTS

The following sections summarize the assessment of effects for each specific HAZMAT / SOC.

4.5.1 ARSENIC

Valued Ecosystem Components:

Marine Surface Waters	Terrestrial Biota & Habitats
Ground Water	Marine Biota & Habitats
Atmosphere	Human Health & Safety
Soils	

Effect(s):
Arsenic was used as an anti-fouling additive to marine hull coatings until as late as the 1960s. Its use was discontinued by industry in favour of the tin-based additives including tributyltin and triphenyltin which have since been replaced by copper and zinc-based systems.
Arsenic is one of the most toxic elements in nature. Marine and terrestrial animals, including humans may be exposed to arsenic through food, water and air. Exposure may also occur through skin contact with soil or water that contains arsenic. Exposure to inorganic arsenic can cause various health effects, such as irritation of the stomach and intestines, decreased production of red and white blood cells, skin changes and lung irritation. It is suggested that the uptake of significant amounts of inorganic arsenic can intensify the chances of cancer development, especially the chances of development of skin cancer, lung cancer, liver cancer and lymphatic cancer.
A very high exposure to inorganic arsenic can cause infertility and miscarriages with women, and it can cause skin disturbances, declined resistance to infections, heart disruptions and brain damage with both men and women. Finally, inorganic arsenic can damage DNA.

Survey Results:
Due to operational consideration, the U/W hull and tank interiors could not be directly surveyed or sampled. Although it is unlikely the current U/W and tank interior coatings in the ship contain significant concentrations of arsenic, this should be confirmed with specific sampling and analysis once these surfaces are accessible following decommissioning.

Mitigation Measures:
Materials containing arsenic (e.g. anti-fouling coatings) should either be removed or sequestered and rendered non bio-available so as to minimize or eliminate the risk of arsenic release into the environment.

Significance:
Subject to confirmatory survey and sampling of the U/W hull and tank interiors, Arsenic is not likely significant provided effective mitigation measures are followed.

Significance: **Arsenic**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
Disposal of arsenic must be conducted in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware that some anti-fouling coatings and paint systems may contain arsenic although this cannot be confirmed without further sampling and analysis.

4.5.2 ASBESTOS

Valued Ecosystem Components:

Human Health & Safety

Effect(s):
Asbestos is a mineral used for primarily for thermal insulation, fireproofing and acoustic absorption purposes. Common forms of asbestos found in materials used in HMC Ships may include: *Actinolite, Amosite, Anthophyllite, Chrysotile, Crocidolite,and Tremolite*. Asbestos that is entrained into other materials such as tiling, paints does not normally present a hazard to the environment or human health. However, when these materials are damaged or disturbed through activities that would be common during disposal (sawing, drilling, breaking, etc.) asbestos fibres can be released into the atmosphere where they can be inhaled. Inhalation of asbestos fibres is a known cause of certain lung cancers including mesothelioma.

Survey Results:
With reference to the SHMP and PROTECTEUR Class Asbestos survey (Ref O.), asbestos is a common constituent in: fittings, gaskets, valves and a variety of machinery components in the ship. As neither reference specifically indicates the presence of asbestos in floor tiling or pipe insulation, samples of these materials were taken and submitted for laboratory analysis.

45 samples were taken to identify possible asbestos or asbestos contamination of compartment insulation. 110 samples were taken to identify possible asbestos or asbestos contamination of piping system insulation. These were sent to the ALS Laboratory in Burnaby, BC for analysis. Samples were shipped, prepared and analysed in accordance with the ALS reference information following each Certificate of Analysis at Annex B.
Three samples returned positive results for chrysotile asbestos in concentrations ranging from 0.1% to 0.5% These were located in the floor tiling presently located in Air Maintenance Coordinators Office (AMCO). 21 samples returned positive results for mica at <1%. All other samples returned no significant results.

Mitigation Measures:
Materials containing asbestos (e.g. gaskets, fittings, valves etc.) should either be removed or sequestered so as to minimize or eliminate the risk of asbestos release into the environment and/or human exposure. The presence of asbestos in AMCO should not be considered exceptional. Further sampling and analysis should be conducted especially of floor tiling of the other office and maintenance spaces in the hangar area.

Significance:
Asbestos is assumed to be present in gaskets, fittings and valves, etc. by virtue of notations in the SHMP and Asbestos survey documents. Survey and analysis has also confirmed the presence of asbestos fibres in the floor tiling in AMCO. The possibility remains that there are materials that are not identified in the reference documentation and that have not been sampled in the ship that do contain significant levels of asbestos. Asbestos is not considered significant with appropriate and effective mitigation measures are implemented prior to and maintained during the disposal phase.

Significance: **Asbestos**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
Disposal of asbestos must be conducted in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of materials and equipment in the ship that are known to contain asbestos and that these materials and equipment must be handled and disposed of in accordance with all applicable laws and regulations. The disposal contractor / shipyard should also be made aware that the ship may also contain latent materials and equipment containing asbestos beyond that listed in the SHMP and Asbestos survey and that further confirmatory testing in accordance with applicable laws and regulations may be warranted prior to removal, deconstruction or disposal of these items.

4.5.3 COMPRESSED GASES

Valued Ecosystem Components:

Atmosphere | Human Health & Safety

Effect(s):
Compressed gases pose a variety of risks to the environment and human health and safety. The environmental effects of HALON and halo-carbon derivatives will be discussed in more detail in section 4.5.8. The remaining gases pose the following risks to human health and safety:

- Rupture or catastrophic failure of pressure vessels
- Fire hazard (acetylene, Oxygen), and
- Toxic effects (acetylene, carbon dioxide, carbon monoxide, anaesthetics)

Survey Results:
The presence of compressed gases in the ship was confirmed through visual survey without resort to any confirmatory sampling. The ship possesses a variety of compressed gases in fixed and portable high-pressure (HP) cylinders. These include:

- Compressed air (breathing apparatus, equipment and machinery)
- Helium & nitrogen (meteorological and drying)
- Argon, oxygen & acetylene (welding)
- Medical oxygen and anaesthetics (sickbay & dental surgery)
- Carbon dioxide (fire extinguishing)
- HALON and halo-carbon derivatives (fire extinguishing & refrigerants)

Mitigation Measures:
Where practical, all portable compressed cylinders should be removed from the ship and returned to the CFSS or disposed of in accordance with applicable DND and overarching regulations. Fixed compressed air cylinders and systems deemed impractical for removal prior to disposal should be safely drained and rendered permanently incapable of pressurization. Mitigation measures applicable to HALON and halo-carbon systems will be discussed in section 4.5.8

Significance:
Compressed gases are not likely to be significant if appropriate and effective mitigation measures are implemented prior to and maintained during the disposal phase.

Significance: **Compressed Gases**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
The removal, transportation, storage and removal of all portable compressed gas cylinders must be conducted in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any remaining compressed gases on board the vessel at the beginning of the disposal phase. It is recommended that DND either prepare internally or secure a qualified contractor to prepare suitable specifications for the draining and rendering inoperable, fitted compressed air systems in the ship either prior to, or during the physical disposal phase.

4.5.4 GENERAL PETROLEUM, OIL AND LUBRICANTS

Valued Ecosystem Components:

Marine Surface Waters	Marine Biota
Ground Water	Marine Habitats
Soils	Recreational / Aesthetic
Terrestrial Biota	Human Health & Safety
Terrestrial Habitats	Land Use

Effect(s):
In general, the majority of the materials in this category are natural or synthetic petroleum by-products typically mixed with other organic and/or inorganic compounds. Most POL materials are to some extent, harmful to humans and the environment as contaminants, pollutants and/or toxicants.

Survey Results:
The SHMP lists of the types of POL that are normally found in the the ship. During the survey, a variety of POL in consumable containers were noted. In addition, the ship has a number fitted tanks, located throughout the vessel, most of which were at least partially filled with fuel or lubricating oils. Specific surveys and sampling of POL was not conducted during this assessment. The possible presence of POL was noted in a variety of locations present as a residue of an apparent spill or maintenance activity particularly on the RAS Machinery deck and in the vicinity of all four fueling positions.

Due to her operational status, the ship was also found to have significant fluid accumulation in the vessel's bilges and various save-alls. The contents of these are likely contaminated with fuel oil, POL and/or other potential HAZMAT

Mitigation Measures:
Where practical, all consumable POL should be removed from the ship and returned to the CFSS or disposed of in accordance with applicable DND and overarching regulations. Fixed tanks and other systems containing POL (e.g. fuel and lubricating oil tanks, etc.) deemed impractical for removal prior to disposal should be safely drained and rendered permanently incapable of containing fluids. Bilges and save-alls should be emptied, flushed and the surfaces cleaned in accordance with applicable DND regulations prior to disposal. Removed liquids from bilges and save-alls must be stored, transported and disposed of in accordance with applicable laws and regulations.

Significance:
General POLs are not likely to be significant if appropriate and effective mitigation measures are implemented prior to and maintained during the disposal phase.

Significance: **General POL**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
The removal, transportation, storage and removal of all general POL must be conducted in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any POL in consumable containers on board the vessel at the beginning of the disposal phase. It is recommended that DND either prepare internally or secure a qualified contractor to prepare suitable specifications for the draining and rendering inoperable, fitted tanks and systems in the ship either prior to, or during the physical disposal phase. Removal fluids, flushing and cleaning of bilges and save-alls should be conducted prior to the physical disposal phase.

4.5.5 IONIZIING RADIATION SOURCES (RADIOISOTOPES)

Valued Ecosystem Components:

Atmosphere	Marine Biota
Marine Surface Waters	Marine Habitats
Ground Water	Recreation / Aesthetic
Soils	Human Health & Safety
Terrestrial Biota	Land Use
Terrestrial Habitats	

Effect(s):
Ionizing radiation sources (radioisotopes) spontaneously emit radiation in specific forms including: neutrons, protons, α, and β- particles, x-rays and γ-rays. All of these forms of radiation are capable of ionizing other materials (i.e. producing radioactive ions) rendering them radioactive in turn. Ionizing radiation sources, in sufficient quantity and level of radioactivity present a serious environmental and human health hazard.

Survey Results:
PRESERVER's SHMP lists the following radioisotopes:

- Americium-241 (smoke detectors)
- Cobalt-60 (TACAN)
- Nickel-63 (RAID-S)
- Tritium-3 (LIROD, Laser Ceilometer, optical sights)

A radiation survey of the ship was not conducted during this assessment. With the exception of the ship's smoke detectors that contain microgram quantities of americium, the remaining radioisotopes are contained within shielding inside equipment. It is not known whether a previous radiation survey of the ship was conducted or whether a Radiation Compliance Certificate was issued.

Mitigation Measures:
It is recommended that all the radio-isotope containing equipment except for the ship's smoke detectors be removed from the ship and returned to the CFSS prior to physical disposal phase. The smoke detectors must be removed, transported, stored and disposed of in accordance with applicable laws and regulations. It is suggested that this be undertaken prior to the physical disposal phase as soon as they are no longer required for ship's safety purposes.

Significance:
Ionizing radiation sources are not likely significant if appropriate and effective mitigation measures are implemented prior to and maintained during the disposal phase.

Significance: **Ionizing Radiation**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring: Any radioactive material must be removed, transported and disposed of in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any radioactive materials prior to the physical disposal phase

Does not contain controlled goods

4.5.6 METALS

Valued Ecosystem Components:

Marine Surface Waters	Terrestrial Habitats
Ground Water	Marine Biota
Soils	Marine Habitats
Terrestrial Biota	Human Health & Safety

Effect(s):
Beryllium (Be) is an alkali-earth metal. It can be alloyed with copper as a hardening agent. Beryllium Oxide is also used as an insulator in high -power transistors and RF transmitters. Beryllium and its compounds are generally toxic and are particularly hazardous to humans if inhaled in dust form.

Cadmium (Cd), a metal, is commonly used in corrosion resistant coatings on steel hardware. Cadmium is a primary component in nickel cadmium ('NiCd') batteries. Cadmium is also found in a variety of materials used in brazing and welding processes. Cadmium vapour, emitted from burning or welding cadmium-coated metals, is toxic and hazardous to humans if inhaled.

Chromium (Cr) in metallic form is used to plate steel and brass for corrosion resistance and aesthetic purposes. Metallic chromium (Chrome) is not generally considered to be a significant environmental or human health hazard. Inorganic chromium occurs in two common valences Cr(III) and Cr(VI). Chromates consisting of the Cr(VI) ion are used in the manufacture of zinc chromate which is used as an additive in primers for metal paints. Cr(VI) is highly toxic to humans and most marine biota and bioaccumulates through the food chain.

Copper (Cu), in its metallic state, is ubiquitous in ships in the form of electrical conductors. Copper and copper alloys are also used extensively in piping systems. Metallic copper and copper alloys are not generally considered toxic to the environment or humans unless ingested or inhaled in dust form. Inorganic copper (cupric or cuprous) salts and organic copper compounds (e.g. copper thiocyananates) are still used in ablative anti-fouling coatings in U/W hull paint systems. the preference for copper dissolved in marine environments to bind to silts and mud has resulted in some evidence for bioaccumulation of copper in certain shellfish and other aquatic organisms. Copper's use as an anti-fouling ablative is facing stricter regulation in an number of jurisdictions including some U.S. states.

Lead (Pb) is a soft, dense metal. In metallic form, Lead is most commonly found in ships as ballast, ammunition, diving weights and some radiation shielding applications. Metallic lead is also used in lead-acid batteries and for various soldering purposes. Inorganic lead salts are used as corrosion inhibitors in a variety of paint systems (primers and top-coats). Lead is used for radiation shielding in some CRT displays. Lead is a known neuro-toxin in humans and is toxic to humans when absorbed through the skin, ingested or inhaled in vapour form. Lead is also toxic to a variety of marine organisms and bioaccumulates through the food chain.

Mercury (Hg) is liquid metal at room temperature. In this form it is used in thermometers and related temperature and pressure sensing instruments and transducers. Mercury in vapour form is present in florescent light bulbs. Mercury is also used in some battery applications. Inorganic mercuric salts and organic mercury compounds were used in some anti-fouling

applications but its use appears to have been discontinued around 1950. Mercury is toxic to humans and many other organisms. There is some evidence that the material used in poured, EMI-type transits in some HMC ships contains trace amounts of mercury to facilitate grounding of the cables penetrating the transit. This mercury is likely in the form of a metallic amalgam. Mercury is highly toxic to humans. Organic (Methyl) Mercury is particularly toxic. It was the cause of 'Minimata Disease' in Japan as an example. Mercury is also toxic to most other life forms and bioaccumulates through most food chains.

Tin (Sn), in Inorganic and organic compounds (e.g. tributyl- and triphenyl-tin) was used extensively in ablative, anti-fouling coatings of the U/W hulls in ships until the 1960's. Organic tin compounds including TBT and TPT was discontinued by industry for environmental reasons. Inorganic and organic tin compounds are toxic and can bioaccumulate in marine organisms and humans who ingest contaminated species e.g. shellfish. Metallic tin is used in solders but is not generally considered to pose a significant environmental or human health risk in this form unless ingested or inhaled.

Zinc (Zn) in metallic form is a commonly used as a sacrificial material for the protection of ship's hulls, condensers and pump casings, etc. due to its position on the galvanic scale. Inorganic and organic zinc compounds are also used extensively in various paint systems as primers and anti-fouling additives. Zinc, particularly inorganic zinc compounds, are toxic to a variety of marine organisms and can bioaccumulate through the food chain.

Survey Results:
Confirmatory testing was not conducted when sufficient evidence existed in the ship's SHMP and/or other sources that positively indicated the presence of the following metals in specific applications in the ship:

- Beryllium (e.g. Beryllium Oxide - Radars, antennas and similar equipment.)
- Cadmium (e.g. NiCd batteries, platted fasteners, welding rods)
- Chromium (e.g. various platting applications, zinc chromate paint primers)
- Copper (e.g. wiring, piping systems, anti-fouling paints.)
- Lead (e.g. ammunition, diving weights, shielding)
- Mercury (e.g. thermometers, instruments, fluorescent bulbs, batteries)
- Tin (e.g. solder, anti-fouling paints)
- Zinc (e.g. sacrificial anodes, zinc chromate paint primers.)

Confirmatory testing was conducted when lack of information or uncertainty indicated the potential presence of the following metals in certain applications in the ship:

Lead in Paint

149 paint samples were taken in the ship. These were sent to the ALS Laboratory in Burnaby, BC for analysis. Samples were shipped, prepared and analysed in accordance with the ALS reference information following each Certificate of Analysis at Annex B. The analysis results are as follows:

Category 1 (<1,000 mg/Kg). 55 Samples (37%)
Average: 375.4.2 mg/Kg

Max: 901 mg/Kg
Min: 6.9 mg/Kg

Category 2 (1,000 - 10,000 mg/Kg). 60 Samples (40%)
Average: 4343.5 mg/Kg)
Max 8800 mg/Kg
Min 1010 mg/Kg

Category 3 (>10,000 mg/Kg). 34 Samples (23%)
Average: 16,202.9 mg/Kg
Max: 34,400 mg/Kg
Min: 10,200 mg/Kg

Summary

The highest concentrations of lead were found in samples from the ship's interior compartments with lower concentrations more typically associated with the exterior hull or supper structure. This is most likely due to lead-based primers used during the ships construction. Whereas the exterior hull and superstructure is frequently ground or sandblasted to bare steel or aluminium prior to re-painting, this is not as frequent a practice within the ship's interior.

Mitigation Measures:
It is not practical to remove lead from painted surfaces prior to disposal. During the disposal phase, the disposal facility /shipyard should institute all necessary containment measures and utilize equipment and processes required by applicable laws and regulations to prevent the release lead into the environment and reduce the risk of human exposure.

Significance:

Lead in Paint
The disposal facility / shipyard should be made aware that significant that lead-bearing paints can be found throughout the ship with lead concentrations as high as 34,000 mg/Kg. Grinding, scaling, or burning operations during the physical disposal phase will release lead particles and/or vapour into the atmosphere. Lead in paints is not considered significant if appropriate and effective mitigation measures are implemented prior to and maintained during the physical disposal phase.

Significance: **Lead in Paint**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Metals (Cd, Cr Cu, Pb, Sn and Zn in piping system coatings)
59 samples of the paints and coatings used to clad various distributed piping systems were taken (e.g. Fuel Oil Service System, FW Systems, etc.). These were sent to the ALS Laboratory in Burnaby, BC for analysis. Samples were shipped, prepared and analysed in accordance with the ALS reference information following each Certificate of Analysis at Annex B. Trace amounts

of most of the metals of interest were found in almost every sample analysed. However, the levels detected were order 10 ug to 100 ug which is not considered significant. With effective mitigation metals in the paints and coatings used to protect piping systems are not considered significant. Because of the nature of the sampling and analysis methods used in this study only absolute quantities of metals in samples were calculated. In order to determine concentrations bulk sampling and analysis would is required.

Significance: **Metals (Cd, Cr, Cu, Pb, Sn & Zn in piping system coatings)**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Metals (copper, tin and chromium-based anti-fouling paints)
Review of the SHMP indicates, paints and primers that contain zinc chromate, organic tin or copper additives are likely present in the ship as part of ablative anti-fouling coatings or the coatings of internal fuel or seawater ballast tanks. Further sampling for these metals is warranted following de-commissioning when these surfaces are accessible. A risk and significance determination should be made based on analysis of samples from these areas.

Monitoring:
The removal, transport, storage and disposal of equipment containing hazardous metals must be conducted in accordance with all applicable laws. The hull, superstructure and materials coated with paint systems containing hazardous metals must be handled in accordance with applicable laws. The residues from grinding or stripping operations must also be handled, transported and disposed of in accordance with all applicable laws. Once tank interiors and the U/W hull sections are accessible further testing is suggested for the presence of Cu, Cr, TBT or TPT-based paints. The disposal contractor/shipyard should be made aware of the presence of any hazardous metals prior to the physical disposal phase.

4.5.7 ORGANOCHLORINES & CARBAMATES

Valued Ecosystem Components:

Marine Surface Waters	Terrestrial Habitats
Ground Water	Marine Biota
Soils	Marine Habitats
Terrestrial Biota	Human Health & Safety

Effect(s):
Organochlorines and carbamates were in common use as pesticides (e.g. DDT) in North America until the late 1960's - early 70's when their use was discontinued through various forms of legislation. Both substances are highly toxic to variety of terrestrial and aquatic species. DDT in particular is known to cause egg-shell thinning in birds. It's toxicity to humans is more controversial. Many organochlorines including DDT are POPs.

Survey Results:
While it is entirely possible organochlorine or carbamate-based pesticides were used in the ship early in its operational lifetime, no evidence of either substance was found during this assessment.

Mitigation Measures: While the probability that organochlorine or carbamate-based pesticides are present in the ship is very low, it is possible some material may be encountered when the ship is de-stored. During this phase of the ship's disposal, careful watch should be taken for any substance containing organochlorines or carbamates (particularly DDT).

Significance:
With appropriate mitigation measures in effect, organochlorines and carbamates are not considered significant.

Significance: **Organochlorines and carbamates**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring: Careful surveillance for any organochlorine or carbamate-based pesticide should be maintained during the de-storing phase of the ship's disposal. Any actual or suspect material must be handled, removed, transported and disposed of in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any organochlorines or carbamates prior to the physical disposal phase.

4.5.8 OZONE DEPLETING SUBSTANCES

Valued Ecosystem Components:
Atmosphere

Effect(s):
CFCs and HCFCs are ozone depleting substances and green house gases. Many of the specific formulations including some in the ship have been regulated out manufacture and have been phased out of commercial and industrial use. HFCs have been used as substitutes for most CFC applications. HFCs are not ozone depleting substances but are green house gases.

Survey Results:
Review of the SHMP and the results of the physical survey conducted on board determined that CFCs and HCFCs are contained in various ship's systems. Specific sampling for ODS was not conducted during this assessment. The following CFCs and HCFCs are presently contained in ship's systems in PRESERVER:

- HALON 1301 (HCFC - monobromotrifluoromethane, fixed fire suppression systems, various locations)
- Refrigerant R-12 (CFC - dichlorodifluoromethane, water coolers, pop machines, domestic refrigerators)
- Refrigerant R-22 (HCFC - chlorofluoromethane, domestic dehumidifiers, juice dispensers)
- Refrigerant R-134A (HFC - tetrafluoroethane, main refrigeration system, main A/C chiller units, pop machines, ice machines, domestic refrigerators)

Mitigation Measures:
Removal of ODS and other refrigerants should commence prior to or at the outset of the physical disposal phase.

Significance: With proper mitigation measures, Ozone Depleting Substances and non-ODS refrigerants (R-134A) are not considered significant.

Significance: **Ozone Depleting Substances**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	X	X
Significant or Likely		
Unknown		

Monitoring:
HCFCs are ozone depleting substances and green house gases and must be handled, stored, transported and disposed of in accordance with applicable laws and regulations. HFCs are green houses gases and should also be recovered, transported and stored in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any ODS prior to the physical disposal phase.

4.5.9 OXIDIZING AND REDUCING AGENTS

Valued Ecosystem Components:

Ground Water
Soils
Terrestrial Biota
Marine Biota
Human Health & Safety

Effect(s): Oxidizing and reducing agents are a broad range of chemicals that include some acids and alkalis. Chemicals in this category are typically highly reactive and can produce noxious or toxic fumes when in contact with air, water, metals or other chemicals. Burns or and other health hazards may also result from exposure to oxidizing or reducing agents or their reaction by-products. Due to their chemical properties (e.g. reactivity, pH, etc.), they are often detrimental to marine and terrestrial biota and habitats and can persist in soils. While generally considered HAZMAT, specific laws and regulations will apply to each chemical based on its composition, environmental and human health/safety-related effects as well as the quantity involved in some cases.

Survey Results:
The following chemicals, grouped under the category oxidizing and reducing agents, were either observed during the vessel survey, or noted in the ship's SHMP:

- Potassium superoxide, (MSA Chemox canisters. various locations. These are being phased out of service but it is not known if they will be entirely removed from the ship prior to decommissioning.)
- Sodium chlorate, (EEBDs, various locations)
- Sulphuric Acid, (Lead acid batteries, various locations)
- Sodium hypochlorite, (Bleach solution, VLS system)
- Sodium metabisulphate, (ROD units)
- Citric acid, (Hydromem - OWS)

Mitigation Measures:
The chemicals noted in the survey results are packed in consumable containers, disposable cartridges or within sealed batteries. It is recommended that these materials be removed from the ship and returned to the CFSS for reuse or disposal.

Significance:
With appropriate mitigation measures in place, oxidizing, reducing agents and related chemicals are not considered significant.

Significance: **Oxidizing & Reducing Agents**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
Removal of oxidizing and reducing agents and related chemicals from the ship should commence as soon as practical and before the physical disposal phase. Removal, transport, disposal and disposal of oxidizing and reducing agents and related chemicals must be conducted in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any oxidizing or reducing agents prior to the physical disposal phase.

4.5.10 POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

Valued Ecosystem Components

Atmosphere
Terrestrial Biota
Marine Biota
Human Health & Safety
Land Use

Effect(s):
PAHs include a large list of chemicals both manufactured and as by-products from industrial processes and combustion. The acute toxicity of PAHs is not well understood. Chronic exposure to humans has been documented to include adverse: pulmonary, gastrointestinal, renal and dermatological effects in humans. Many PAHs are mutagenic and carcinogenic. Adverse effects from human exposure to contaminated soils has also been documented. The environmental effect of PAHs on marine and terrestrial biota is somewhat less certain.

Survey Results:
Specific sampling for PAHs was not conducted during this assessment. Review of the SHMP and on-site survey results indicate the presence of at least three sources of PAHs in the ship: Naphthalene (in the form of 'cookies' used in urinals as deodorants), Coal Tar (listed in the SHMP as a base coating in some interior paint systems.) and waste lubricating oils from internal combustion engines.

Mitigation Measures:
Mitigation of naphthalene effects is best accomplished by removal and disposal of all napthalene from lockers and storerooms prior to the physical disposal phase. The coal tar-base coatings in painted structures have been largely mitigated by over-layering with various finish coats. The disposal facility / shipyard should institute appropriate precautions prior to stripping, scaling, grinding or burning structural materials treated with coal tar base coats. Bulk coal tar should be removed from the ship and returned to the CFSS for disposal. Any waste oils removed from internal combustion engines prior to or during the physical disposal phase.

Significance:
With appropriate mitigation measures in place PAHs are not considered significant.

Significance: **PAHs**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
Removal of PAHs from the ship should be conducted in accordance with the proposed mitigation measures. Removal, transport, disposal and disposal of PAHs must be conducted in accordance with applicable laws. The disposal contractor / shipyard should be made aware of the presence of any PAHs prior to the physical disposal phase.

4.5.11 POLYCHLORINATED BIPHENYLS

Valued Ecosystem Components:

Ground Water	Marine Biota
Soils	Marine Habitats
Terrestrial Biota	Human Health & Safety
Terrestrial Habitats	Land Use

Effect(s):
PCBs were produced in the US and Canada until 1977. They were commonly used in transformers and capacitors as dielectrics. Other commercial applications included: hydraulic fluids, dyes, adhesives, and as a plasticizer in paints. They were also used in older fluorescent lights, refrigerators and television sets. PCBs are known carcinogens in both humans and animal species. PCBs also cause adverse effects on human and animal: immune, reproductive, neurological and endocrine systems. PCBs are persistent contaminants since they do not break down readily. Many PCBs are POPs and can bioaccumulate and/or bioconcentrate. They are particularly harmful to marine species as they tend to concentrate in rivers, lakes and estuaries from contaminated run-off.

Survey Results:
Specific survey and sampling in the ship included suspected PCB-contaminated cables and the deck coatings immediately below equipment identified as having components that contain PCBs. These sites consisted primarily of transformer banks and other electronic equipment. Survey and sampling of equipment interiors including cables in close proximity to PCB components (e.g. internal transformers, capacitors etc.) could not be conducted due to the ship's operational status.

PCBs in Paint
324 paint samples (swabs) were taken in the ship. Samples were typically taken from the deck material underneath transformers, power panels, etc. These were sent to the ALS Laboratory in Burnaby, BC for analysis. Samples were shipped, prepared and analysed in accordance with the ALS reference information following each Certificate of Analysis at Annex B. 308 samples (95%) analysed negative (i.e. PCB concentrations were <0.20 µg, the test detection limit.) 15 Samples (5%) had trace amounts of PCBs (>0.20 µg <10.0 µg). In this group PCB congeners 1242, 1250, 1254, 1260 and 1262 were detected. All of these congeners are typical of insulating and dielectric oils used in RCN prior to 1977. The majority of these samples were taken in the TACAN Equipment Room and CCR Annex. One sample (0.3%) taken from the CCR annex had a significant concentration of PCB 1262 (16.0 µg). Because of the nature of the sampling and analysis methods, concentrations of PCBs could not be calculated, only absolute quantities. Further, bulk sampling and analysis would be required to determine if any of these locations have PCB contamination in excess of the federal limit of 50 mg/Kg.

PCBs in Cables
101 cable insulation samples (swabs from cable cladding) were taken in the ship. Samples were taken from the cable cladding as close as practical to the equipment chassis. These were sent to the ALS Laboratory in Burnaby, BC for analysis. Samples were shipped, prepared and analysed in accordance with the ALS reference information following each Certificate of Analysis at Annex B.96 samples (95%) analysed negative (i.e. PCB concentrations were <0.20

µg, the test detection limit.) 5 Samples (5%) had trace amounts of PCB 1262 (>0.20 µg <10.0 µg). This congener, AROCLOR™ is typical of insulating and dielectric oils used in RCN prior to 1977. These samples were all taken from cabling located in the 400 Cycle compartment. Because of the nature of the sampling and analysis methods, concentrations of PCBs could not be calculated, only absolute quantities. Further, bulk sampling and analysis would be required to determine if any of these locations have PCB contamination in excess of the federal limit of 50 mg/Kg.

PCBs in Insulation
78 paint samples (bulk) were taken in the ship. Samples were typically taken from shell and bulkhead insulating material. These were sent to the ALS Laboratory in Burnaby, BC for analysis. Samples were shipped, prepared and analysed in accordance with the ALS reference information following each Certificate of Analysis at Annex B. 63 samples (81%) analysed negative (i.e. PCB concentrations below the test detection limit.) 8 Samples (10%) had low concentrations of PCB 1254 (<10.0 mg/Kg). This congener is typical of insulating and dielectric oils used in RCN prior to 1977. These samples were taken in the Dispersal Area, GTG compartment, FF workshop, SWHC and No. 6 Stores. Three samples (4%) taken from the 400 Cycle compartment, Dispersal Area and Probe Shop had significant concentrations of PCBs 1254 and 1262 (>10.0 mg/Kg <50 mg/Kg). Four samples (5%) taken from the Dispersal Area, Probe Shop and Air RU Stores had high concentrations of PCB 1254 (>50 mg/Kg) exceeding the federal limit for PCB contamination. The highest detected concentration (255 mg/Kg) was found in the Probe Shop.

Mitigation Measures:
Compartments with PCB concentrations exceeding 50 mg/Kg should be quarantined to prevent further risk of environmental release or human exposure. Compartments with high concentrations of PCBs (>10.0 mg/Kg <50 mg/Kg) should also be considered for quarantine and immediate re-sampling. A competent HAZMAT specialist should be consulted for preferred methods to remove, sequester and/or remediate PCBs from contaminated compartments. Swab and bulk sampling for PCBs in the ship should also be continued.

Significance:
PCB contamination in the ship is significant. In at least three areas of the ship, measured PCB concentrations exceed limits specified in the CEPA and PCB Waste Export Regulations (1996). These and related federal and provincial regulations concern the handling, remediation, transport, export and disposal of materials contaminated with PCBs.

Significance: **PCBs**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely		
Significant or Likely	**X**	**X**
Unknown		

Monitoring:
Further sampling and analysis as indicated above and consultation with a competent HAZMAT specialist is recommended to better determine appropriate monitoring measures.

4.5.12 SURFACTANTS

Valued Ecosystem Components:

Marine Surface Waters
Ground Water
Marine Biota
Marine Habitats
Human Health & Safety

Effect(s):
Surfactants are chemicals or substances that reduce the surface tension of water. This effect is typically by design as it increases the effectiveness of soaps and detergents. Surfactants by themselves have generally low acute toxicity in humans. However, if ingested, they can reduce the permeability of protective mucous membranes and therefore facilitate the uptake of other toxicants or contaminants. Marine organisms that depend upon surface tension for mobility or reproduction are also adversely affected by habitat contamination by surfactants.

Survey Results:
No specific sampling or analysis for surfactants was conducted. The SHMP lists a variety of soaps and detergents in consumable containers. The exact types and quantities were not noted as both are variable in an operational ship. Aqueous Film Forming Foam (AFFF) is stored in the ship in both portable containers and fixed tanks. The AFFF (surfactant) concentration in these containers ranges from 3-7% by volume.

Mitigation Measures:
Surfactants are not generally considered HAZMAT in low volumes. However, large numbers of portable containers and fixed tanks contain enough surfactant concentration to cause serious environmental damage, particularly to marine habitats, if spilled. All consumable cleaning products and portable AFFF containers should be removed and returned to the CFSS following decommissioning as soon as safely practicable. Fitted AFFF tanks should be drained, cleaned and the contents disposed of in accordance with the applicable rules. Fitted tanks should be rendered permanently incapable of containing fluid prior to the physical disposal phase.

Significance:
With appropriate mitigation measures in place, surfactants are not considered significant

Significance: **Surfactants**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
Removal of surfactants from the ship should be conducted in accordance with the proposed mitigation measures. Removal, transport, disposal and disposal of surfactants must be conducted in accordance with the applicable laws and regulations. The contractor/shipyard should be made aware of the presence of any surfactants prior to the physical disposal phase.

4.5.13 PYROTECHNICS

Valued Ecosystem Components:

Terrestrial Habitats
Terrestrial Biota
Marine Biota
Human Health & Safety
Land Use

Effect(s):
Pyrotechnics includes marine signal flares, explosive and smoke simulators, detonators, explosives, ammunition, missile and rocket motors and warheads as well as torpedo warheads, etc. For the purposes of this assessment, OTTO fuel II, a liquid torpedo propellant is included in this category. The chemicals and substances that are used in pyrotechnics vary widely in composition. The significance of their impact on valued ecosystem components is therefore difficult to assess reliably. Apart from their combustible and/or explosive characteristics, some (e.g. cordite, mercury fulminate, etc.) are either toxic or produce toxic by-products when ignited.

Survey Results:
Specific survey and sampling of pyrotechnics was not conducted during this assessment. The SHMP provides a comprehensive list of materials in this category and includes but is not limited to:

- Flares, smoke signals, smoke pots, thunderflashes (Bridge and bridge wings, Pyro Locker)
- Small arms ammunition, location markers, blasting fuses, marine sound signals (Small Arms Magazine)
- Electric and non-electric detonators (Det Locker)
- 100mm Chaff Rockets (Shield II RU Locker)
- Mk 46 Torpedoes, DM 211 Depth Charges (Torpedo magazine)
- 57mm, 76mm ammunition (ammunition magazines)

Mitigation Measures:
All pyrotechnics and ammunition will presumably be removed from the ship during de-ammunitioning and returned to CFAD for storage and further disposition.

Significance:
With appropriate mitigation in place, pyrotechnics are not considered significant.

Significance: **Pyrotechnics**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
The handling, removal, transport, storage and disposal of pyrotechnics and ammunition must be conducted in accordance with all applicable laws, rules and regulations. The disposal contractor should be made aware of the presence of any pyrotechnics (including ammunition) prior to the physical disposal phase.

4.5.14 VOLATILE ORGANIC COMPOUNDS (VOCS)

Valued Ecosystem Components:
Atmosphere | Human Health & Safety | Ground Water

Effect(s):
VOCs include a large number of organic chemical compounds. They are emitted from certain solids and liquids. The toxicity of VOCs in humans includes both acute and chronic adverse effects. Examples include: paints, lacquers, strippers, adhesives, photographic materials, building materials, office equipment, household furnishings and some pesticides. Adverse effects in humans include: eye and respiratory tract irritation, central nervous system disorders and cancers. Some VOCs are known to cause cancer in animals.

Survey Results:
Specific survey and sampling of VOCs in the ship was not conducted. Many of the primers, paints, varnishes and lacquers used in the ship contain VOCs. In particular review of the SHMP and on-site survey results indicated the presence of the following VOCs in consumable containers:

- vinyl chloride
- mineral spirits
- gasoline
- petroleum spirits
- xylene
- epoxy, urethane, polyurethane, vinyl, acrylic and alkyd-based paints and primers

Mitigation Measures:
The VOCs entrained in various paints tend to off gas. Over time, these chemicals are released to the environment and therefore should present a decreasing risk to humans of direct exposure over time. VOC laden materials, paints, thinners, primers, solvents, etc in portable containers present a greater risk and should be removed and returned to the CFSS for further disposition in accordance with applicable laws, rules and regulations.

Significance:
The significance of VOCs entrained in paint systems is considered negligible to moderate depending on the age of the paint system. Generally speaking, fresh coatings present a higher environmental / human health & safety risk than older, legacy coatings. VOCs in consumable containers (paints, primers, solvents, etc.) are not considered significant with appropriate and effective mitigation measures in place.

Significance: **VOCs**	Operational Vessel	Vessel Disposal & Scrapping
Negligible or Not Likely	**X**	**X**
Significant or Likely		
Unknown		

Monitoring:
Removal of VOCs from the ship should be conducted in accordance with the proposed mitigation measures. Removal, transport, disposal and disposal of VOCs must be conducted in accordance with applicable laws and regulations. The disposal contractor / shipyard should be made aware of the presence of any VOCs prior to the physical disposal phase.

4.6 DISCUSSION OF EFFECTS AND MITIGATION

4.6.1 GENERAL

None of the HAZMAT / SOCs assessed in the ship, with the exception of PCBs, are considered significant with respect to disposal of the vessel assuming proper mitigation measures are followed. The most effective mitigation involves removal of equipment containing HAZMAT / SOCs as soon as possible following de-commissioning and return to the CFSS or CFAD as appropriate. Other materials should be removed and disposed off in accordance with applicable laws and regulations at the beginning of the physical disposal phase. Mitigation of metals and VOCs entrained in paint systems will need to be carefully considered by the disposal contractor / shipyard during the physical disposal phase. It is assumed that most painted steel and aluminium structure will ultimately be scrapped for future smelting. Therefore, mitigation of these HAZMATs may only be required for the protection of VECs during deconstruction operations. Effective mitigation measures for PCBs cannot be fully determined without further sampling and analysis following PRESERVER's decommissioning when the target systems and compartments are accessible.

4.6.2 PCBS

Compartments and areas of the ship where sample results indicate the presence of high levels of PCB contamination require special consideration. Compartments where reported levels of PCBs exceed federal regulatory limits should be immediately quarantined to prevent or reduce the risk of environmental contamination and human exposure. A competent HAZMAT expert should be consulted to determine appropriate measures and procedures to remove, remediate and/or sequester PCBs in these areas. Further testing and analysis for PCB contamination of paint surfaces, insulation and cabling is warranted.

4.7 CUMULATIVE EFFECTS

4.7.1 GENERAL

It is assumed that the bulk of the ship's materials collectively will be recycled in smelting operations and that the majority of HAZMATs / SOCs in portable forms will be recycled or re-used by the applicable CFSS, CFAD inventory management processes. That said, some materials will require landfill or other forms of destruction that will add incrementally to the national waste storage burden as well as GHG output. These contributions are not likely to be significant in comparison to other medium to large-scale material disposals e.g. older municipal office buildings, etc. Some deconstruction activities will inevitably result in minor consequential releases of some HAZMATs to the environment e.g. during the physical disposal phase, the cutting of a steel structure coated with a lead-based primer will result in some atmospheric release of lead. However, consequential releases are very unlikely to exceed applicable national, provincial or municipal limits or standards as long as appropriate and effective mitigation measures are implemented.

4.7.2 PCBS

Due to the presence of high concentrations of PCBs in the ship, the ship is deemed at this time to have a significant overall impact on the important VECs, the cumulative effects of disposal of the entire class (two ships) as well as other obsolete Canadian warships pose a significant potential risk to important VECs.

4.8 ACCIDENTS AND MALFUNCTIONS

Following decommissioning, the activities associated with preparation of the ship for disposal (de-fuelling, de-ammunitioning, etc.) involve a small but not insignificant risk of accident (e.g. spill, injury, fire, etc.) It is acknowledged that DND and the RCN have robust processes in place for these operations. DND and the RCN also have an excellent environmental, health and safety track record to date. The risk of an accident or malfunction during these operations will therefore substantially mitigated by DND's and the RCN's ownership and husbandry of this phase of the disposal.

The risk of accidents or malfunctions leading to fugitive release of HAZMATs, spills, injury or death during the physical disposal phase is considered to be largely dependent upon the competence and experience of the disposal contractor / shipyard. In order to mitigate this risk, DND should vet potential contractors/shipyards against the following broad criteria:

- Possession of current, valid licenses and permits relevant to the handling, removal, transport and storage of all known and suspected HAZMATs and SOCs under all applicable laws and regulations.
- A satisfactory track record with respect to any civil or criminal charges, fines, infraction notices, stop work orders, or observations made by any authority with jurisdiction.
- Satisfactory objective quality evidence of any remediation or clean up activity undertaken voluntarily or as directed by an authority with jurisdiction.
- A robust environmental management system that includes relevant internal and external audit programmes.
- Current and relevant experience with the disposal activities and requirements associated with warship disposal.

4.9 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

Apart from natural disasters (hurricanes, earthquakes, etc.), the environment and climate are not likely to have a significant effect on the project.

4.10 FOLLOW-UP PROGRAM

In view of the comments made under significance, mitigation and monitoring with respect to arsenic, asbestos, metals in paints, and PCBs, follow-up sampling and analysis is recommended. The majority of this sampling is best accomplished following de-commissioning and after the ship has been de-stored, -fuelled and -ammunitioned. Equipment and spaces must also be made safe and accessible for survey purposes. In view of the requirement for sampling of the U/W hull, the ship should be docked for this purpose.

In addition to the HAZMATs / SOCs surveyed and assessed, three additional materials should be considered by DND for attention prior to or during the physical disposal phase and/or specific survey, sampling and analysis. These materials were not listed in the SHMP:

- Raw sewage (Black water tanks, pumps and systems)
- Perflurooctane sulfonate (PFOS).
- Industrial grime and organic accumulations in ventilation trunking.
- Toxic Mold and mildew in carpets and upholstery

4.11 CONCLUSIONS

With the exception of requirements for additional survey and sampling noted previously and specific concerns related to PCBs, the disposal of HMCS PRESERVER is not deemed a significant risk for adverse effects to the listed VECs if appropriate and effective mitigation measures (detailed throughout section 4.5) are implemented and maintained prior to and during the physical disposal phase.

4.12 RECOMMENDATIONS

Four recommendations are germane to this assessment:

1. Compartments where reported levels of PCBs exceed federal regulatory limits should be immediately quarantined to prevent or reduce the risk of environmental contamination and human exposure. A competent HAZMAT expert should be consulted to determine appropriate measures and procedures to remove, remediate and/or sequester PCBs in these areas. Further testing and analysis for PCB contamination of paint surfaces, insulation and cabling is warranted.

2. Further survey and sampling for arsenic, asbestos, metals, PCBs, tributyl and triphenyltin should be conducted following de-commissioning once all areas, compartments, equipment and systems can be safely accessed. In view of the requirement for sampling of the U/W hull a docking is recommended.

3. DND create or engage a competent contractor to create a suitable list of detailed criteria and / or assist with DNDs selection of the disposal facility / shipyard.

4. DND consider a supplemental assessment in PRESERVER of raw sewage, PFOS and industrial grim and dust accumulations in ventilation trunking and the presence of toxic molds or mildews in carpeting and upholstery. DND should also consider the addition of these materials in future disposal environmental assessments. This assessment should be conducted during and would be applicable to the remaining operational life of the ship.

ANNEX A - RELATIONSHIP MATRIX: HAZMAT/SOC & VALUED ECOSYSTEM COMPONENTS

Final Disposal - HMCS PRESERVER	Valued Ecosystem Components Legend: (Blank) No Appreciable Effect (E) Potential Effect (U) Unknown Effect															
	PHYSICAL						BIOLOGICAL				SOCIAL					
	Atmosphere	Marine Surface Waters	Ground Water	Soils	Terrain	Noise	Terrestrial Biota	Terrestrial Habitats	Marine Biota	Marine Habitats	Heritage / Historical	Recreation / Aesthetic	Human Health & Safety	Economy	Services	Land Use
Arsenic - Inorganic (e.g. anti-fouling coatings)		E	E	E			E	E	E	E			E			
Asbestos (e.g. thermal insulation materials)													E			
Compressed gases (e.g. acetylene)	E												E			
General Petroleum, Oil and Lubricants (POL)		E	E	E			E	E	E	E		E	E			E
Ionizing radiation sources (radioisotopes)	E	E	E	E			E	E	E	E		E	E			E
Metals including: Be, Cd, Cu, Cr, Hg, Pb, etc.		E	E	E			E	E	E	E			E			
Organochlories (e.g. pesticides)	U	E	E	E			E	E	E	E			E			
Ozone Depleting Substances (e.g. HCFCs)	E															
Oxidizing and reducing agents			E	E			E	U	E	U			E			
Polycyclic Aromatic Hydrocarbons (PAHs)	E	U	U	E			E	U	E	U			E			E
Polycholorinated Biphenyls (PCBs)		E	E	E			E	E	E	E			E			E
Surfactants		E	E				U	U	E	E			E			
Pyrotechnics (e.g. marine flares)			U				E	U	E	U			E			E
Volatile Organic Compounds (VOCs)	E	U	E	U			U	U	U	U			E			

Does not contain controlled goods

ANNEX B - CERTIFICATES OF ANALYSIS, ALS ENVIRONMENTAL

Lab Work Order No.	Sample Type(s)	Report Date
L1515882	PCBs in Paint (PRE-PCB-PAINTxxx)	22 Sep 2014
L1515894	PCBs in Paint (PRE-PCB-PAINT-xxx)	25 Sep 2014
L1522523	Asbestos in Systems (PRE-ASB-SYS-xxx)	02 Oct 2014
L1515905	PCBs in Paint (PRE-PCB-PAINT-xxx)	07 Oct 2014
L1515906	Metals in Pain (PRE-MET-xxx) PCBs in Paint (PRE-PCB-PAINT-xxx)	08 Oct 2014
L1516565	PCBs in Paint (PRE-PCB-PAINT-xxx) PCBs in Cabling (PRE-PCB-CBL-xxx)	16 Oct 2014
L1522532	Asbestos in Systems (PRE-ASB-SYS-xxx)	17 Oct 2014
L1522550	Asbestos in Systems (PRE-ASB-SYS-xxx)	31 Oct 2014
L1516580	PCBs in Paint (PRE-PCB-PAINT-xxx)	31 Oct 2014
L1522572	Asbestos (PRE-ASB-xxx) Lead in Paint (PRE-Pb-xxx)	03 Nov 2014
L1516616	PCBs in Insulation (PRE-PCB-Insu-xxx)	17 Nov 2014

Appendix 1 to Annex “H” – Bidder Conference Minutes

Bidder Conference
Disposal of the former HMCS PRESERVER and CFAV QUEST
Solicitation W8482-171396/A

A Bidder Conference for the Disposal of the former HMCS PRESERVER and CFAV QUEST, Solicitation W8482-171396/A, was held at the CFB Halifax – Halifax Dockyard on March 27, 2017 at 08:30 local**.**

Companies and their representatives in attendance were:

Company Name	**Representative**
[redacted]	
R.J. MacIsaac Construction Ltd.	Darren John Luke Webster
R.J. MacIsaac Construction Ltd.	Ronald Mark MacIsaac
[redacted]	
Chantier Davie Canada Inc.	Andrzej Marasinski
[redacted]	
Marine Recycling Corporation	Jordan Elliott
Marine Recycling Corporation	Mark DiBartolomeo
Marine Recycling Corporation	Richard Diplock
[redacted]	
Capital Demolition & Environmental Services Inc.	Colton Roma
[redacted]	
Canadian Maritime Engineering Ltd.	Raymond Gallant
Canadian Maritime Engineering Ltd.	Dean Mitchell
Canadian Maritime Engineering Ltd.	Johannes de Rozari
[redacted]	
Sanexen Environmental Services Inc.	Mario Leathead
[redacted]	
Heddle Marine Services Inc.	Mike Reid
Heddle Marine Services Inc.	Dennis Thorne

The conference followed the agenda.

1- Opening remarks

The Contracting Authority for the Disposal of the former Disposal of the former HMCS PRESERVER and CFAV QUEST, Russ Passmore, welcomed all attendees to the Conference and introductions were made. The purpose of the Conference was to review all documents issued to date with respect to the Disposal of the former HMCS PRESERVER and CFAV QUEST and to discuss any contractual and technical issues related to the project. The following records summarize the issues and discussions held during the bidder conference.

2- Documentation issued to Bidders

The following documentation was issued to bidders:

- The Request for Proposal (RFP) No. Disposal of the former HMCS PRESERVER and CFAV QUEST Solicitation W8482-171396/A, dated 2017-04-14,114 pages;
- Hard copy of the Bidder Conference and Site Visit PowerPoint presentation; and
- Annex “A” Statement of Work – Reference Documents were distributed to a representative of each company on a USB key. Each representative signed a declaration as having received the USB key. The USB Key contained no Controlled Goods information. Bidders were informed that hard copies of the reference documents for ANNEX “A” Statement of Work are also available to bidders throughout the week.

3- Reminder on the Procurement Process

For the benefit of attendees, the Contracting Authority explained and provided additional information on the actual procurement process that is the RFP.

- This procurement process is competitive Request for Proposal as issued on BuyandSell.gc.ca;
- At the closing time and date, the RFP includes all questions and answers (Q&A), clarifications, minutes of the bidder’s conference and all solicitation amendments issued during the bidding period; and
- The solicitation period is the only time at which Bidder can request clarifications/changes to the RFP to the Public Works and Government Services Canada (PWGSC) Contracting Authority (CA). Only the PWGSC CA can amend the RFP through solicitation amendment(s).

4- Review of the Request for Proposal (RFP)

The Contracting Authority reviewed the RFP and highlighted specific areas of the solicitation that are particularly important with respect to this project. A copy of the PowerPoint presentation is included as an attachment to the Bidder Conference Minutes.

Key areas of Review included:

- 2003 (2016-04-04) Standard Instructions - Goods or Services - Competitive Requirements as it related to the Integrity Provisions and requirements for bid submission;
- Terms and Conditions of the Solicitation;
- Bid preparation;
- Detailed review of all evaluation criteria;
- Selection methodology;
- Terms and Conditions of the resulting Contract;
- Security;
- Contract Award and communications; and
- Communications throughout the solicitation process.

The Contracting Authority reminded bidders the importance of answering mandatory criteria in sufficient detail. The Contracting Authority reminded bidders that the evaluation team is not able to make assumptions or interpretations when evaluating their bids; only the information provided in their bid will be evaluated. All criteria must be met in order to be deemed compliant. The goal of the bidder conference is to ensure that all bidders understand the solicitation, and with that understanding submit a compliant bid.

5- Process for Questions and Answers

The Contracting Authority reviewed of the process for Questions and Answers. All questions raised at the Bidder Conference and Site Visits will be recorded and incorporated into the solicitation via a solicitation amendment. In accordance with the RFP, Bidders may ask questions through the Contracting Authority only. Any questions and/or answers that do not follow this process are not official and will not be included as part of the solicitation or resulting contract.

7- Statement of Work

The Project Authority for the Disposal of the former HMCS PRESERVER and CFAV QUEST, Solicitation W8482-171396/A, Mr. Michael Stege, provided a general overview of the project and its intent.

8 – Environmental Assessment

The Project Authority discussed the purpose of the Environmental Assessment for the ships. The Environmental Assessments completed by Fleetway on behalf of CANADA for the ship was reviewed by Mr. Rob Quaia. Bidders are to note that the EA for the former HMCS PRESERVER and CFAV QUEST is to be used as a guide only and is not an exhaustive listing of the type or quantity of Hazardous Materials onboard. The ships are as-is, where-is. Bidders may take any additional samples they deem necessary during the site visit in order to more accurately prepare their bid.

9 - Master Equipment List

The Project Authority discussed the purpose of the Master Equipment List. The Master Equipment List for the former HMCS PRESERVER was completed and is maintained by Fleetway on behalf of CANADA for the former HMCS PRESERVER. Mr. Rick Sideroff of Fleetway presented and discussed the Master Equipment List for the former HMCS PRESERVER database to aide bidders in their understanding of the demilitarization process for Controlled Goods.

10 – Department of National Defence Quality Assurance Representative

DNDQAR Quality Assurance Manager LCdr Chris Young was introduced by the Project Authority. LCdr Young detailed the process by which DNDQAR will sign off on the demilitarization of controlled goods at the winning bidder's facility.

11 – SOW Review Continued

The Project Authority resumed detailing the requirement. The Project Authority stressed to bidders the importance of communicating their disposal plan in their bid as well as ensuring they follow and address each and every mandatory evaluation criteria. If a bidder does not understand any aspect of the mandatory criteria for this solicitation, then they should ask questions as soon as possible.

The Project Authority stressed that there may still be equipment to be removed from the former HMCS PRESERVER and CFAV QUEST. Anything that is on the ships, with the exception of those items identified for removal, will become property of the contractor in accordance with the contractual terms and conditions.

The Project Authority again reminded bidders to ensure they answer, in detail, each and every mandatory criteria in the solicitation.

12– Schedule Review and wrap up

The Contracting Authority reviewed the schedule for the week and noted that the schedule is flexible. CANADA will make every effort to accommodate requests for schedule changes, either to advance or delay the schedule, so long as there is agreement among all bidders.

Bidders were again reminded of the question and answer process. Bidders were informed that minutes for the Bidder Conference and Site Visits will be distributed to all bidders.

Close of Bidder Conference

The Contracting Authority declared the Bidder Conference complete at 11:45am.

Bidder Conference
Solicitation W8482-171396
Disposal of the former HMCS PRESERVER and CFAV QUEST

March 27-31, 2017

CFB Halifax – Halifax Dockyard

Halifax, NS

Preamble

As noted in the RFP, the Bidder Conference **and** Site Visit(s) are Mandatory. Bidders who do not attend the Bidder Conference and Site Visit(s) will be found non-compliant.

Discussions held today will not form part of the RFP, nor are discussions to be interpreted as negotiations.

Any questions posed today will be answered to the best of our ability. Answers to all questions will be handled through the formal Q&A process and will be made official through a solicitation amendment available to all Bidders via BuyandSell.gc.ca.

Meeting minutes will be distributed to all potential Bidders who have attended the Bidder Conference and Site Visit(s). Minutes will be distributed in sufficient time to allow potential Bidders to prepare and submit responses in advance of the solicitation closing date.

Agenda

1) Administrative items
2) Team members
3) Bid Package Review
   - RFP
   - SOW
4) Site Visit Requirements
5) Questions

Administrative Items

1) Washrooms

2) Emergency exits

3) Health break(s)

Team members - Canada

Department of National Defence

- Project Authority: Michael Stege
- Procurement Authority: Gisele Russell

Department of National Defence Quality Assurance Representative (DNDQAR)

- Quality Assurance Manager: Chris Young

Public Works and Government Services Canada

- Contracting Authority: Russ Passmore

Project Objective

1) To ensure that the procurement process for this requirement is conducted in a fair, open and transparent manner;
2) To ensure that the vessel is disposed of in accordance with the applicable regulatory requirements and standards as identified in the SOW; and
3) To dispose of the vessel in a way that provides best value for money to CANADA.

Bidder Conference – Why?

1) Review key sections of the Request for Proposal
   - Bid preparation instructions
   - Evaluation Criteria
   - Key T&Cs
   - Statement of Work (SOW) and Technical Documentation
2) Vessel Site Visits – What to expect
3) Answering questions

Site Visits – Why?

Provide potential Bidders the opportunity to:

1) View the ship(s) and note the scope of work required; and
2) Note questions for CANADA regarding the work ; and
3) Discuss with CANADA any items that may not be specifically addressed in the SOW.

RFP Review

PART 1 - GENERAL INFORMATION

Summary

The Department of National Defence has a requirement dispose of the former HMCS PRESERVER, a Protecteur-class auxiliary oil replenishment (AOR) ship and the former CFAV QUEST, an Auxiliary General Oceanographic Research (US DoD) / Oceanographic Research Ship (DND), by Ship Breaking. The contractor will be required to prepare the ships for transfer, transfer each to the Approved Site(s), demilitarize the Controlled Goods, return any museum material, and subsequently Break (dismantle and dispose or recycle) the vessels in an efficient and environmentally responsible manner that is conforming to Canadian Laws and the terms of the contract.

NOTE: Ship Breaking is defined as the process of systematically scrapping the entire infrastructure of an obsolete vessel by dismantling and disposing or recycling of all its component parts and hazardous materials.

PART 2 - BIDDER INSTRUCTIONS

Standard Instructions, Clauses and Conditions

2003 (2016-04-04) Standard Instructions - Goods or Services - Competitive Requirements

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days

Insert: 120 days

Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 10 calendar days before the bid closing date. Enquiries received after that time may not be answered.

Work Period - PRESERVER

Commence: at contract award date.

Complete: 18 months from date of contract award.

The Contractor must remove the former HMCS PRESERVER from its current berth at CFB HALIFAX, Nova Scotia within 45 days from Contract award.

By submitting a bid, the Bidder certifies that they have sufficient material and human resources allocated or available and that the above work period is adequate to both complete the work.

Work Period - QUEST

Commence: Former CFAV QUEST will be made available to the Contractor on: SEPTEMBER 1, 2017.

Complete: 18 months from date the former CFAV QUEST is made available to the Contractor.

The Contractor must remove the vessel from the CFB HALIFAX DOCKYARD Jetty no later than 45 calendar days after the former CFAV QUEST has been made available to the Contractor.

Work at CFB HALIFAX

CANADA will only allow work to be completed at the vessels current berth which is required to prepare the vessel for a towing certificate, as required by the Contractors underwriters surveyor.

PART 3 - BID PREPARATION

Bid Prep – Suggested Format

1) Address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.
2) Bind volumes in a logical manner.

Mandatory Evaluation Criteria

1) Review of Mandatory Evaluation Criteria.
2) Annex J - Deliverables Checklist.
   - To be used as a guide only.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

Basis of Selection

A bid must comply with the requirements of the bid solicitation and meet all mandatory criteria, including the technical, management and financial evaluation criteria to be declared responsive.

The responsive bid with the lowest evaluated price will be recommended for award of a contract.

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Certifications Required with the Bid

Bidders **MUST** submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the *Ineligibility and Suspension Policy* (*http://www.tpsgc-pwgsc.gc.ca/ci-if/politiquepolicy-* eng.html), the Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

See **ANNEX "K" – Declaration Form**

Certifications Precedent to Contract Award and Additional Information

1) Integrity Provisions – Required Documentation
2) FCPEE - Bid Certification

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

Security for Performance

The Bidder must provide evidence with its bid that it can provide Contract Financial Security.

Letter issued by an approved surety or financial institution.

Insurance Requirements

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in **Annex "D" - Insurance Requirements.**

Workers Compensation Certification – Letter of Good Standing

A certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account.

Valid Labour Agreement

Where the Bidder has a labour agreement, or other suitable instrument, in place with its unionized labour, it must be valid for the proposed period of any resulting contract. Documentary evidence of the agreement or suitable instrument must be provided on or before bid closing date.

PART 7 - RESULTING CONTRACT CLAUSES

General Conditions

Incorporated by reference:

2030 (2016-04-04), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

Supplemental General Conditions

Incorporated by reference:

1028 (2010-08-16),Ship Construction – Firm Price, apply to and form part of the Contract, **as amended.**

Security Requirements

1) The Contractor must, at all times during the performance of the Contract hold a valid **Designated Organization Screening (DOS);**
2) The Contractor must be registered in the Controlled Goods Program;
3) The Contractor personnel requiring access to sensitive work site(s) must **EACH hold a valid RELIABILITY STATUS;**
4) Subcontracts which contain security requirements are **NOT to be awarded without the prior written** permission of CISD/PWGSC;
5) The Contractor must comply with the provisions of the:

   (a) Security Requirements Check List and security guide (if applicable), attached at Annex "**C";**

   (b) Industrial Security Manual (Latest Edition).

Environmental Protection

Must carry out the Work in compliance with applicable municipal, provincial and federal environmental laws, regulations and industry standards.

Must have detailed procedures and processes for identifying, removing, tracking, storing, transporting and disposing of all potential pollutants and hazardous material encountered.

All waste disposal activities are to be tracked and certificates are to be provided.

Compliance with municipal, provincial and federal environmental laws and regulations is to be furnished by the Contractor to the Contracting Authority when so requested.

The Contractor must have environmental emergency response plans and/or procedures in place.

Scrap and Waste Material

Despite any other provision of the Contract, scrap and waste materials other than accountable material, derived from the Contract, will revert to the Contractor as part of the Contract Price.

Hazardous Waste

The Contractor acknowledges that **sufficient information has been provided by Canada** with respect to the location and estimated amount of hazardous materials such as asbestos, lead PCBs, silica or other hazardous materials or toxic substances.

The price includes all costs associated with the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances on board the vessel, including those costs resulting from the need to comply with applicable laws and regulations in relation to the removal, handling, disposal or storage of hazardous materials or toxic substances.

The completion date for the Work takes into account the fact that the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances may be affected by the need to comply with applicable federal, provincial and municipal laws or regulations and that this will not be considered to be an excusable delay.

Hazardous Waste Disposal

The Contractor must dispose of any hazardous waste removed or uncovered in the performance of the Work in accordance with all applicable laws.

QAR

DND QAR will be a CANADA onsite representative during the course of the work.

DND QAR will sign off as witness to the demilitarization of controlled goods.

QA - Inspection and Acceptance

Contractor fully responsible and certifies conduct of work, work completion, and QA when Canada presented with documentation for sign-off.

Final sign-off by Canada signifies that Canada recognizes that the Contractor has guaranteed that the work has been done in accordance with the specifications or requirement and in accordance with the terms of the Contract and that Canada agrees to pay the Contractor for the work completed.

Rejected Work

At any time that any work is rejected for cause, no charge or payment must be made in regard to the rejected work. All rectification required by the Technical Authority or QAR must be performed by the Contractor at no charge to Canada.

Acceptance of work by the Project Authority or QAR shall not relieve the Contractor of any Quality Assurance responsibilities incumbent with all contracted work.

Contract - Communications

Winning Bidder requested to coordinate any announcements with Canada.

Insurance

In accordance with Annex “D.”

Contractors responsibility to determine if additional insurance is required.

Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process.

Questions

SOW Review

Statement of Work

Environmental Assessment

Master Equipment List

Site Visits - General

Only questions answered through the formal process are to be taken as official answers. Any questions answered outside of this process are not official or binding in any way.

Questions posed at viewings will be handled as enquiries and answered via an RFP Amendment.

An opportunity to reconvene at the end of the day will be made available where Bidders may pose questions to CANADA regarding the day's site visit.

Visitors must provide their own safety equipment.

Questions

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Please make enquiries 1 question per paragraph and please highlight the question.

Enquiries will be answered through the formal solicitation amendment process.