



MARCH 20, 2020

CONFIDENTIAL

CANADIAN COAST GUARD  
520 Exmouth Road  
Sarnia, ON  
N7T 8B1

**Attention:** Ms. Leslie Anne Veldman, Project Officer, Marine Engineering, Central and Arctic

**Subject:** Lead and Mercury Sampling Report – CCGS Limnos, CCIW, Burlington, Ontario

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## INTRODUCTION

WSP was retained by the Canadian Coast Guard to collect and submit lead and mercury bulk paint and air samples from select areas throughout the Canadian Coast Guard Vessel Limnos, which was stationed at the Canadian Center for Inland Waters (CCIW) in Burlington, ON at the time of the assessment. The samples were collected at the request of the Canadian Coast Guard prior to scheduled maintenance aboard the vessel. Mr. Joey Mainwaring from WSP visited the site to collect samples on February 19<sup>th</sup>, 20<sup>th</sup> and 21<sup>th</sup>, 2020.

The purpose of this survey is to determine the presence/absence of lead and mercury within the paint finishes identified throughout the vessel in order to provide information pertaining to lead and mercury to any contractors at the time of tender to ensure complete and correct removal or handling of materials prior to any renovations to the vessel.

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## SAMPLING METHODOLOGY

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### LEAD

Bulk paint samples (paint chips) were collected from areas pre-selected by the client. Samples were collected with the aid of a thin-bladed knife, which was cleaned prior to each sampling event. Each paint chip sample was placed in a clear bag with a tight closure, uniquely labelled and then placed in a second, similar bag. A chain of custody form was completed and accompanied the bulk samples to an accredited, independent laboratory for analysis of lead content. Lead analysis was performed using the ICP/OES technique following the EPA SW 846 3050B & 6010C method.

Lead air samples were also collected from areas pre-selected by the client. Lead air samples were submitted to EMSL Canada (EMSL) for analysis of lead via analytical method National Institute for Occupational Safety and Health (NIOSH) 7303 (analytical certificates are attached).

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### MERCURY

Bulk paint samples (paint chips) were collected from areas pre-selected by the client. Samples were collected with the aid of a thin-bladed knife, which was cleaned prior to each sampling event. Each paint chip sample was placed in a clear bag with a tight closure, uniquely labelled and then placed in a second, similar bag. A chain of custody form was completed and accompanied the bulk samples to AGAT Laboratories for analysis of mercury content. Mercury analysis was performed using the Cold Vapor Atomic Absorption Spectrometry (CVAAS) technique following the EPA SW 846 7471A & 245.5.



Mercury air samples were also collected from areas pre-selected by the client. Mercury air samples were submitted to EMSL Canada (EMSL) for Mercury Analysis.

## SAMPLING AND ANALYSIS

### LEAD BULK SAMPLES

The Ontario Ministry of Labour (MOL) has not prescribed specific criteria for classification of lead-containing paints or other surface coatings and construction materials. The Surface Coating Materials Regulation (SOR/2016-193) made under the federal Hazardous Products Act (HPA) prescribes an acceptable level of 90 µg/g (90 ppm) lead by dry weight or less, as determined by bulk chemical analysis in accordance with good laboratory practises. Under the Surface Coating Materials Regulation (SOR/2005-109) Section 4.2, the following paints and surface coatings are excluded from the above noted acceptable lead level:

- 1 as an anti-corrosive or an anti-weathering coating applied on the interior or exterior surface of any building or equipment that is used for an agricultural or industrial purpose;
- 2 as an anti-corrosive or an anti-weathering coating applied on any structure other than a building, that is used for an agricultural, industrial or public purpose;
- 3 as a touch-up coating for metal surfaces;
- 4 on traffic signs;
- 5 for graphic art on billboards or similar displays;
- 6 for identification marks in industrial buildings; or
- 7 as materials for the purposes of arts, crafts or hobbies, other than material for use by children.

Based on a recent publication (EACO Lead Guideline For Construction, Renovation, Maintenance or Repair dated October 2014) from the Environmental Abatement Council of Ontario (EACO), an industry group representing consultants and contractors in the Ontario abatement industry, various control measures should be put in place when disturbing or removing “lead-containing paints”.

For the purpose of this sampling report, WSP has classified any material containing over 90 µg/g or 90 ppm of lead as “lead-containing” materials and recommends that all disturbances to these materials be conducted in accordance with the EACO or MOL document Guidelines, Lead on Construction Projects.

WSP collected a total of forty-nine (49) bulk lead sample from the surveyed areas and submitted them for laboratory analysis. Please refer to Table 1 below for the laboratory analytical results:

**Table 1 Summary of Bulk Lead Sampling Results**

MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
Red paint – Monkey’s Island deck	Sample ID: 0001 Concentration: 223 µg/g Condition: Good	2	In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications:  – Follow Type 1 – if the coating is to be removed with a chemical gel or paste; – Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or
Yellow paint – Monkey’s Island main mast	Sample ID: 0002 Concentration: 28400 µg/g Condition: Good	3	



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
Red paint – Deckhead throughout the ship	Sample ID: 0003 Concentration: 25700 µg/g Condition: Good	-	manual demolition of lead-painted building components by striking with sledgehammer or similar tool; — Follow Type 3a – if the coating is to be removed using power tools; or, — Follow Type 3b – if the coating is to be removed by abrasive blasting.  If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.
Red paint – Bridge deck (exterior deck)	Sample ID: 0004 Concentration: 117 µg/g Condition: Good	-	
White paint – Bridge deck (exterior bulkhead)	Sample ID: 0005 Concentration: 92 µg/g Condition: Good	-	
White paint – Bridge deck – Aft stair tower	Sample ID: 0006 Concentration: 37 µg/g Condition: Good	4	The concentration of lead was below 90 µg/g. Therefore, no further action is required.
White paint – Focsle deck (bulkhead)	Sample ID: 0007 Concentration: 30 µg/g Condition: Good	5	
White paint – Focsle deck linen locker	Sample ID: 0008 Concentration: 893 µg/g Condition: Good	-	In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications: — Follow Type 1 – if the coating is to be removed with a chemical gel or paste; — Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted building components by striking with sledgehammer or similar tool; — Follow Type 3a – if the coating is to be removed using power tools; or, — Follow Type 3b – if the coating is to be removed by abrasive blasting.  If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.
White paint – Focsle deck electronics room	Sample ID: 0009 Concentration: 262 µg/g Condition: Good	-	



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>	
White paint – Focsle deck stair tower	Sample ID: 0010 Concentration: 19 µg/g Condition: Good	6	The concentration of lead was below 90 µg/g. Therefore, no further action is required.	
White paint – Focsle deck Egen Compartment (Inboard)	Sample ID: 0011 Concentration: 6780 µg/g Condition: Good	-	<p>In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications:</p> <ul style="list-style-type: none"> <li>— Follow Type 1 – if the coating is to be removed with a chemical gel or paste;</li> <li>— Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted building components by striking with sledgehammer or similar tool;</li> <li>— Follow Type 3a – if the coating is to be removed using power tools; or,</li> <li>— Follow Type 3b – if the coating is to be removed by abrasive blasting.</li> </ul> <p>If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.</p>	
White paint – Focsle deck Egen compartment (Outboard)	Sample ID: 0012 Concentration: 11100 µg/g Condition: Good	-		
White paint – Focsle deck lamp locker	Sample ID: 0013 Concentration: 9900 µg/g Condition: Good	-		
White paint – Focsle deck bulkhead (port)	Sample ID: 0014 Concentration: 120 µg/g Condition: Good	-		
White paint – Focsle deck bulkhead (starboard)	Sample ID: 0015 Concentration: 70 µg/g Condition: Good	-		The concentration of lead was below 90 µg/g. Therefore, no further action is required.
White paint – Focsle deck exterior bulwarks (port)	Sample ID: 0016 Concentration: 6360 µg/g Condition: Good	-		
White paint – Focsle deck exterior bulwarks (starboard)	Sample ID: 0017 Concentration: 25100 µg/g Condition: Good	-		
Red paint – Focsle deck, FWD deck	Sample ID: 0018 Concentration: 275 µg/g Condition: Good	-		



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
Red paint – Focсле deck, AFT deck	Sample ID: 0019 Concentration: 9640 µg/g Condition: Good	-	<p>– Follow Type 3b – if the coating is to be removed by abrasive blasting.</p> <p>If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.</p>
Yellow paint – Focсле deck FWD mast	Sample ID: 0020 Concentration: 13800 µg/g Condition: Good	7	
Red paint – Main deck (AFT)	Sample ID: 0021 Concentration: 285 µg/g Condition: Good	-	
Red paint – Main deck (FWD)	Sample ID: 0022 Concentration: 1090 µg/g Condition: Good	-	
White paint – Main deck, Exterior funnel	Sample ID: 0023 Concentration: 9860 µg/g Condition: Good	8	
White paint – Main deck bulworks (port)	Sample ID: 0024 Concentration: <10 µg/g Condition: Good	-	<p>The concentration of lead was below 90 µg/g. Therefore, no further action is required.</p>
White paint – Main deck bulworks (starboard)	Sample ID: 0025 Concentration: 12 µg/g Condition: Good	-	



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
White paint – Main deck, deck lockers	Sample ID: 0026 Concentration: 2230 µg/g Condition: Good	-	In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications: <ul style="list-style-type: none"> <li>– Follow Type 1 – if the coating is to be removed with a chemical gel or paste;</li> <li>– Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted building components by striking with sledgehammer or similar tool;</li> <li>– Follow Type 3a – if the coating is to be removed using power tools; or,</li> <li>– Follow Type 3b – if the coating is to be removed by abrasive blasting.</li> </ul> If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.
Yellow paint – Arva crane	Sample ID: 0027 Concentration: 27 µg/g Condition: Good	9	The analyte was below 90 µg/g. Therefore, no further action is required.
White paint – Main deck bulkhead	Sample ID: 0028 Concentration: 60 µg/g Condition: Good	-	
White paint – AFT deck houseworks	Sample ID: 0029 Concentration: 9320 µg/g Condition: Good	-	In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications: <ul style="list-style-type: none"> <li>– Follow Type 1 – if the coating is to be removed with a chemical gel or paste;</li> <li>– Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted building components by striking with sledgehammer or similar tool;</li> <li>– Follow Type 3a – if the coating is to be removed using power tools; or,</li> <li>– Follow Type 3b – if the coating is to be removed by abrasive blasting.</li> </ul>
White paint – Sewage compartment (bulkhead)	Sample ID: 0030 Concentration: 825 µg/g Condition: Good	10	
White paint – Sewage compartment (deckhead)	Sample ID: 0031 Concentration: 6890 µg/g Condition: Good	-	



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
Grey paint – Sewage compartment (deck)	Sample ID: 0032 Concentration: 332 µg/g Condition: Good	11	If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.
White paint – Sewage compartment (grey water tank)	Sample ID: 0033 Concentration: 67 µg/g Condition: Good	12	The concentration of lead was below 90 µg/g. Therefore, no further action is required.
White paint – Tank top stair tower	Sample ID: 0034 Concentration: 82 µg/g Condition: Good	-	
White paint – Tank top (cleaning locker)	Sample ID: 0035 Concentration: 33 µg/g Condition: Good	13	
White paint – Tank top (incinerator room)	Sample ID: 0036 Concentration: 20 µg/g Condition: Good	14	
White paint – Tank top (heads)	Sample ID: 0037 Concentration: 113 µg/g Condition: Good	15	
Grey paint – FWD void space	Sample ID: 0038 Concentration: 1420 µg/g Condition: Good	16	<p>In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications:</p> <ul style="list-style-type: none"> <li>– Follow Type 1 – if the coating is to be removed with a chemical gel or paste;</li> <li>– Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted building components by striking with sledgehammer or similar tool;</li> <li>– Follow Type 3a – if the coating is to be removed using power tools; or,</li> <li>– Follow Type 3b – if the coating is to be removed by abrasive blasting.</li> </ul>
Red paint – AFT void space	Sample ID: 0039 Concentration: 5040 µg/g Condition: Good	17	
Red paint – AFT cofferdam	Sample ID: 0040 Concentration: 27600 µg/g Condition: Good	18	



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
Red paint – Echo sounder compartment	Sample ID: 0041 Concentration: 62500 µg/g Condition: Good	19	ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.
White paint – Engine room (port deckhead)	Sample ID: 0042 Concentration: 955 µg/g Condition: Good	-	
White paint – Engine room (starboard deckhead)	Sample ID: 0043 Concentration: 454 µg/g Condition: Good	-	
White paint – Engine room (bulkhead port)	Sample ID: 0044 Concentration: 3260 µg/g Condition: Good	-	
White paint – Engine room (bulkhead starboard)	Sample ID: 0045 Concentration: 7460 µg/g Condition: Good	-	
Old exhaust lagging	Sample ID: 0046 Concentration: <10 µg/g Condition: Good	20	The concentration of lead was below 90 µg/g. Therefore, no further action is required.
Green paint – MCR bulkhead	Sample ID: 0047 Concentration: 10700 µg/g Condition: Good	-	In general, the following procedures are recommended if/when removing lead-containing materials, coatings and paint applications: — Follow Type 1 – if the coating is to be removed with a chemical gel or paste;
White paint – Thrustmaster bulkhead (port)	Sample ID: 0048 Concentration: 2550 µg/g Condition: Good	-	



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO <sup>2</sup>	ACTION <sup>1</sup>
White paint – Thrustmaster bulkhead (starboard)	Sample ID: 0049 Concentration: 3920 µg/g Condition: Good	-	<ul style="list-style-type: none"> <li>– Follow Type 2a – if the coating is to be removed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted building components by striking with sledgehammer or similar tool;</li> <li>– Follow Type 3a – if the coating is to be removed using power tools; or,</li> <li>– Follow Type 3b – if the coating is to be removed by abrasive blasting.</li> </ul> <p>If lead-containing paint applications and surface coatings are not removed prior to demolition, ensure that demolition waste complies with the requirements of General – Waste Management Regulation, R.R.O. 1990, Regulation 347.</p>

1 For sample ID and concentration levels refer to Appendix A: Analytical Results – Lead and Mercury.

2 For relevant photographs taken during the survey refer to Appendix B: Site Photographs, where available

Based on the laboratory results, thirty-six (36) of the forty-nine (49) paint samples collected and analyzed have detectable concentrations of lead.

## LEAD AIR SAMPLING

In accordance with Ontario Regulation (O.Reg.) 833 and O. Reg. 490/09, WSP collected five (5) lead air samples, as well as one (1) field blanks from within the vessel. Lead air samples were submitted to EMSL Canada (EMSL) for analysis of lead by method NIOSH 7303 (analytical certificates are attached). A summary of the analytical results from the recent representative sampling program is summarized in **Table 2**.

**Table 2 Summary of Lead Air Sampling Results**

SAMPLE ID	LOCATION	SAMPLE VOLUME	LEAD CONCENTRATION <sup>1</sup>
Blank	Field Blank	N/A	<0.0040 mg/m <sup>3</sup>
L-AS-01	Main Engine Room	1000L	<0.0040 mg/m <sup>3</sup>
L-AS-02	Control Room	1000L	<0.0040 mg/m <sup>3</sup>
L-AS-03	Tank Top Deck	1000L	<0.0040 mg/m <sup>3</sup>
L-AS-04	Focsle Deck	1000L	<0.0040 mg/m <sup>3</sup>
L-AS-05	Bridge Deck	1000L	<0.0040 mg/m <sup>3</sup>

1 For sample ID and concentration levels refer to Appendix A: Analytical Results – Lead and Mercury



Based on the laboratory results, all five (5) lead samples were observed to be below the analytical method's limit of detection and the regulatory limit of 0.05 mg/m<sup>3</sup> as outlined in Ontario Regulation 833.

### MERCURY BULK SAMPLING AND ANALYSIS

As per the Surface Coating Material Regulations (SOR/2016-193), a surface coating material (i.e. paint) must not contain more than 10 µg/g of mercury content. WSP collected a total of forty-nine (49) bulk mercury samples from the surveyed areas and submitted them to AGAT Laboratories for analysis.

Please refer to Table 3 below for the laboratory analytical results:

**Table 3 Summary of Bulk Mercury Sampling Results**

MATERIAL DESCRIPTION	ASSESSMENT	PHOTO	ACTION
Red paint – Monkey's Island deck	Sample ID: 0001 Concentration: 0.04 µg/g Condition: Good	2	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Yellow paint – Monkey's Island main mast	Sample ID: 0002 Concentration: 0.04 µg/g Condition: Good	3	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – Deckhead throughout the ship	Sample ID: 0003 Concentration: 1.4 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – Bridge deck (exterior deck)	Sample ID: 0004 Concentration: 0.05 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Bridge deck (exterior bulkhead)	Sample ID: 0005 Concentration: 0.02 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Bridge deck – Aft stair tower	Sample ID: 0006 Concentration: 0.21 µg/g Condition: Good	4	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsl deck (bulkhead)	Sample ID: 0007 Concentration: 0.07 µg/g Condition: Good	5	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO	ACTION
White paint – Focsle deck linen locker	Sample ID: 0008 Concentration: 0.55 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck electronics room	Sample ID: 0009 Concentration: 0.36 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck stair tower	Sample ID: 0010 Concentration: 0.04 µg/g Condition: Good	6	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck Egen Compartment (Inboard)	Sample ID: 0011 Concentration: 0.94 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck Egen compartment (Outboard)	Sample ID: 0012 Concentration: 0.94 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck lamp locker	Sample ID: 0013 Concentration: 0.14 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck bulkhead (port)	Sample ID: 0014 Concentration: 0.02 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck bulkhead (starboard)	Sample ID: 0015 Concentration: <0.01 µg/g Condition: Good	-	Mercury was not detected in the sample.
White paint – Focsle deck exterior bulwarks (port)	Sample ID: 0016 Concentration: 0.63 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Focsle deck exterior bulwarks (starboard)	Sample ID: 0017 Concentration: 1.5 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO	ACTION
Red paint – Focsle deck, FWD deck	Sample ID: 0018 Concentration: 0.04 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – Focsle deck, AFT deck	Sample ID: 0019 Concentration: 3.0 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Yellow paint – Focsle deck FWD mast	Sample ID: 0020 Concentration: 0.05 µg/g Condition: Good	7	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – Main deck (AFT)	Sample ID: 0021 Concentration: 0.11 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – Main deck (FWD)	Sample ID: 0022 Concentration: 0.03 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Main deck, Exterior funnel	Sample ID: 0023 Concentration: 0.09 µg/g Condition: Good	8	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Main deck bulworks (port)	Sample ID: 0024 Concentration: 0.04 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Main deck bulworks (starboard)	Sample ID: 0025 Concentration: 0.02 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Main deck, deck lockers	Sample ID: 0026 Concentration: 0.83 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Yellow paint – Arva crane	Sample ID: 0027 Concentration: 0.07 µg/g Condition: Good	9	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO	ACTION
White paint – Main deck bulkhead	Sample ID: 0028 Concentration: 0.29 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – AFT deck houseworks	Sample ID: 0029 Concentration: 0.71 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Sewage compartment (bulkhead)	Sample ID: 0030 Concentration: 1.2 µg/g Condition: Good	10	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Sewage compartment (deckhead)	Sample ID: 0031 Concentration: 2.2 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Grey paint – Sewage compartment (deck)	Sample ID: 0032 Concentration: 0.08 µg/g Condition: Good	11	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Sewage compartment (grey water tank)	Sample ID: 0033 Concentration: 0.15 µg/g Condition: Good	12	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Tank top stair tower	Sample ID: 0034 Concentration: 0.09 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Tank top (cleaning locker)	Sample ID: 0035 Concentration: 0.08 µg/g Condition: Good	13	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Tank top (incinerator room)	Sample ID: 0036 Concentration: 0.03 µg/g Condition: Good	14	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Tank top (heads)	Sample ID: 0037 Concentration: 0.10 µg/g Condition: Good	15	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO	ACTION
Grey paint – FWD void space	Sample ID: 0038 Concentration: 0.16 µg/g Condition: Good	16	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – AFT void space	Sample ID: 0039 Concentration: 1.5 µg/g Condition: Good	17	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – AFT cofferdam	Sample ID: 0040 Concentration: 0.25 µg/g Condition: Good	18	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Red paint – Echo sounder compartment	Sample ID: 0041 Concentration: 0.49 µg/g Condition: Good	19	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Engine room (port deckhead)	Sample ID: 0042 Concentration: 1.8 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Engine room (starboard deckhead)	Sample ID: 0043 Concentration: 8.7 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Engine room (bulkhead port)	Sample ID: 0044 Concentration: 2.0 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Engine room (bulkhead starboard)	Sample ID: 0045 Concentration: 3.8 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Old exhaust lagging	Sample ID: 0046 Concentration: 0.10 µg/g Condition: Good	20	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
Green paint – MCR bulkhead	Sample ID: 0047 Concentration: 7.4 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.



MATERIAL DESCRIPTION	ASSESSMENT	PHOTO	ACTION
White paint – Thrustmaster bulkhead (port)	Sample ID: 0048 Concentration: 2.7 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.
White paint – Thrustmaster bulkhead (starboard)	Sample ID: 0049 Concentration: 7.3 µg/g Condition: Good	-	Mercury is present, but below the 10µg/g regulatory limit. As such, no further action is recommended.

- 1 For sample ID and concentration levels refer to Appendix A: Analytical Results – Lead and Mercury
- 2 For relevant photographs taken during the survey refer to Appendix B: Site Photographs, where available

Based on the laboratory results, mercury was detected in all samples collected with the exception of one. However, the concentration of mercury all the samples were well below the prescribed limit of 10 µg/g outlined in SOR/2016-193. Therefore, no further action is recommended.

## MERCURY AIR SAMPLING AND ANALYSIS

WSP collected five (5) mercury air samples, as well as one (1) field blank from within the vessel. Mercury air samples were submitted to EMSL Canada (EMSL) for analysis of mercury by OSHA Method ID-145 (analytical certificates are attached). A summary of the analytical results from the recent representative sampling program is summarized in **Table 4**.

**Table 4 Summary of Mercury Air Sampling Results**

SAMPLE ID	LOCATION	SAMPLE VOLUME	LEAD CONCENTRATION <sup>1</sup>
Blank	Field Blank	N/A	<0.0208 mg/m <sup>3</sup>
M-AS-01	Main Engine Room	480L	<0.0208 mg/m <sup>3</sup>
M-AS-02	Control Room	480L	<0.0208 mg/m <sup>3</sup>
M-AS-03	Tank Top Deck	480L	<0.0208 mg/m <sup>3</sup>
M-AS-04	Focsle Deck	480L	<0.0208 mg/m <sup>3</sup>
M-AS-05	Bridge Deck	480L	<0.0208 mg/m <sup>3</sup>

- 1 For sample ID and concentration levels refer to Appendix A: Analytical Results – Lead and Mercury

Based on the laboratory results, all five (5) mercury air samples were observed to be below the laboratory limit of detection and the occupational exposure limit of 0.025 mg/m<sup>3</sup> as outlined in O. Reg. 833.



---

## CONCLUSIONS/RECOMMENDATIONS

Based on the laboratory results, thirty-six (36) of the forty-nine (49) paint samples collected and analyzed have concentrations of lead above the recommended 90 µg/g criteria. These materials were observed to be in good condition.

Work that will disrupt and/or pulverize (including drilling, cutting, grinding or abrading) confirmed or suspected lead-containing materials must follow the recommendations provided in the EACO Lead Abatement Guidelines (dated 2014) or Ministry of Labour Guideline for Lead on Construction Projects, dated September 2004 (Revised April 2011). In addition, the aforementioned painted surfaces (containing lead) should be handled with appropriate health and safety precautions so as to comply with requirements of the Designated Substances regulation, O. Reg. 490/09, and disposal of these materials must also comply with the requirements of O. Reg. 347 – General – Waste Management.

Based on the laboratory results, mercury was detected in all samples collected with the exception of one. However, the concentration of mercury in each of the samples was well below the prescribed limit of 10 µg/g outlined in SOR/2016-193. Therefore, no further action is recommended.

Based on the laboratory results, all five (5) mercury air samples were observed to be below the laboratory limit of detection and the occupational exposure limit of 0.025 mg/m<sup>3</sup> as outlined in O. Reg. 833.

---

## LIMITATIONS

This report is prepared for the sole use of the Canadian Coast Guard. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. The conclusions and recommendations contained in this letter report are based upon professional opinions with regard to the subject matter. These opinions are in accordance with currently accepted industry practices for asbestos surveys, regulatory requirements for sampling and identifying lead-containing materials and are subject to the following inherent limitations:

- 2 The data and findings presented in this report are valid as of the date(s) of the investigation only. The passage of time, manifestation of latent conditions or occurrence of future events may warrant further exploration of the Site, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.
- 3 The findings, observations, conclusions, and recommendations expressed by WSP in this report do not represent an opinion concerning compliance of any past or present owner or operator of the Site with any federal, provincial or local laws or regulations.
- 4 WSP's assessment presents professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental and occupational health & safety laws and regulations, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental and occupational health and safety laws, rules, regulations or policies of federal, provincial, or local governmental agencies. WSP's liability extends only to its client and not to other parties who may obtain this assessment report. Issues raised by the report should be reviewed by appropriate legal counsel.



We trust that the above is satisfactory for your purposes at this time. Please contact the undersigned should you have any questions or concerns.

Yours Truly,

A handwritten signature in black ink, appearing to read 'J. Mainwaring'.

Joey Mainwaring, B.A.  
Project Coordinator, Built Environment

A handwritten signature in black ink, appearing to read 'J. Bosnjak'.

Josip Bosnjak, B.Sc.  
Project Manager, Built Environment

A handwritten signature in blue ink, appearing to read 'E. Kennealy'.

Erin Kennealy, CIH  
Team Lead, Built Environment

# APPENDIX

# A

## LABORATORY RESULTS





**CLIENT NAME: WSP CANADA INC.  
100 COMMERCE VALLEY DRIVE WEST  
THORNHILL, ON L3T0A1  
(905) 882-1100**

**ATTENTION TO: Marc St.Germain  
PROJECT: CCGS Limnos/171-09529-62**

**AGAT WORK ORDER: 20T576548**

**OCCUPATIONAL HYGIENE REVIEWED BY: Yris Verastegui, Report Reviewer**

**DATE REPORTED: Feb 28, 2020**

**PAGES (INCLUDING COVER): 11**

**VERSION\*: 1**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

\*Notes

**Disclaimer:**

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This report shall not be reproduced or distributed, in whole or in part, without the prior written consent of AGAT Laboratories.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the information contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



## Certificate of Analysis

AGAT WORK ORDER: 20T576548

PROJECT: CCGS Limnos/171-09529-62

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Marc St.Germain

SAMPLING SITE:

SAMPLED BY:

### Lead and Mercury in Paint by ICP-OES

DATE RECEIVED: 2020-02-20

DATE REPORTED: 2020-02-28

Parameter	Unit	0001-Red paint-Monkeys island deck		0002-Yellow paint-Monkeys island main mast		0003-Red paint-Deckhead Paint		0004-Red paint-Bridge deck Paint		0005-White paint-Exterior Bulkhead Bridge Paint		0006-White paint-Bridge AFT stair Tower Paint		0007-White panit-Focsle Deck-Bulkhead Paint		0008-White paint-Focsle Deck-Irnen locker Paint	
		G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL
Lead	µg/g		10	223	28400	25700	117	92	37	30	893						
Mercury	µg/g		0.01	0.04	0.04	1.4	0.05	0.02	0.21	0.07	0.55						
Parameter	Unit	0009-White paint-Focsle Deck- Electronics Rm		0010-White paint-Focsle Deck-Stair Tower		0011-White paint-Focsle Deck-Egen compartment- inboard		0012-White paint-Focsle Deck-Egen compartment- outboard		0013-White paint-Focsle Deck-Lamp Locker		0014-White paint-Focsle Deck-part bulkhead		0015-White paint-Focsle Deck-STBD Bulkhead		0016-White paint-Focsle Deck-exterior bulworks (port) Paint	
		G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL
Lead	µg/g		10	262	19	6780	11100	9900	120	70	6360						
Mercury	µg/g		0.01	0.36	0.04	0.94	0.94	0.14	0.02	<0.01	0.63						
Parameter	Unit	0017-White paint-Focsle Deck-exterior bulworks (stbd)		0018-Red paint-Focsle Deck-Fwd Deck		0019-Red paint-Focsle Deck-Aft Deck		0020-Yellow paint-Focsle Deck-FWD mast		0021-Red paint-Main Deck-AFT		0022-Red paint-Main Deck-FWD		0023-White paint-Main Deck-Funnel- Ext.		0024-White paint-Main Deck-Bulworks (port) Paint	
		G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL
Lead	µg/g		10	25100	275	9640	13800	285	1090	9860	<10						
Mercury	µg/g		0.01	1.5	0.04	3.0	0.05	0.11	0.03	0.09	0.04						

Certified By:

*Jris Veraestegui*



## Certificate of Analysis

AGAT WORK ORDER: 20T576548

PROJECT: CCGS Limnos/171-09529-62

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Marc St.Germain

SAMPLING SITE:

SAMPLED BY:

### Lead and Mercury in Paint by ICP-OES

DATE RECEIVED: 2020-02-20

DATE REPORTED: 2020-02-28

Parameter	Unit	G / S		0025-White paint-Main Deck-Bulworks		0026-White paint-Main Deck-Deck Lockers		0027-Yellow paint-Arva Crane		0028-White paint-Main Deck-Bulkhead		0029-White paint-AFT Deck houseworks		0030-White paint-sewage compartment bulkhead		0031-White paint-sewage compartment deckhead		0032-Grey paint-sewage compartment Deck	
		RDL		958700	958701	958702	958703	958704	958705	958706	958707								
Lead	µg/g	10	12	2230	27	60	9320	825	6890	332									
Mercury	µg/g	0.01	0.02	0.83	0.07	0.29	0.71	1.2	2.2	0.08									
Parameter	Unit	G / S		0033-White paint-sewage compartment- grey water tank		0034-White paint-Tank Top-stair Tower		0035-White paint-Tank Top-cleaning Locker		0036-White paint-Tank Top-Incinerator Rm		0037-White paint-Tank Top-Heads		0038-Grey paint-FWD Void Space		0039-Red paint-AFT Void Space		0040-Red paint-AFT coffer dom	
		RDL		958708	958789	958790	958791	958792	958793	958794	958795								
Lead	µg/g	10	67	82	33	20	113	1420	5040	27600									
Mercury	µg/g	0.01	0.15	0.09	0.08	0.03	0.10	0.16	1.5	0.25									
Parameter	Unit	G / S		0041-Red paint-Echo sounder compartment		0042-White paint-Engine Rm-Deck head (port)		0043-White paint-Engine Room-Deck head (STBD)		0044-White paint-Engine Room-Bulkhead (port)		0045-White paint-Engine Room-Bulkhead (STBD)		0046-old Exhaust lagging		0047-Green paint-MCR Bulkhead		0048-White paint-Thrust Master Bulkhead (port)	
		RDL		958796	958797	958798	958799	958807	958808	958809	958810								
Lead	µg/g	10	62500	955	454	3260	7460	<10	10700	2550									
Mercury	µg/g	0.01	0.49	1.8	8.7	2.0	3.8	0.10	7.4	2.7									

Certified By:

*Jris Veraestegui*



## Certificate of Analysis

AGAT WORK ORDER: 20T576548

PROJECT: CCGS Limnos/171-09529-62

5835 COOPERS AVENUE  
 MISSISSAUGA, ONTARIO  
 CANADA L4Z 1Y2  
 TEL (905)712-5100  
 FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

ATTENTION TO: Marc St.Germain

SAMPLING SITE:

SAMPLED BY:

### Lead and Mercury in Paint by ICP-OES

DATE RECEIVED: 2020-02-20

DATE REPORTED: 2020-02-28

0049-White  
 paint-Thrust  
 Master  
 Bulkhead

SAMPLE DESCRIPTION: (STBD)  
 SAMPLE TYPE: Paint  
 DATE SAMPLED: 2020-02-20

Parameter	Unit	G / S	RDL	958811
Lead	µg/g		10	3920
Mercury	µg/g		0.01	7.3

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard  
 Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:

*Jris Veraístequi*

## Quality Assurance

**CLIENT NAME:** WSP CANADA INC.  
**PROJECT:** CCGS Limnos/171-09529-62  
**SAMPLING SITE:**

**AGAT WORK ORDER:** 20T576548  
**ATTENTION TO:** Marc St.Germain  
**SAMPLED BY:**

### Occupational Hygiene Analysis

RPT Date: Feb 28, 2020			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
<b>Lead and Mercury in Paint by ICP-OES</b>																
Lead	958623	958623	223	259	14.9%	< 10	89%	80%	120%	91%	80%	120%	107%	70%	130%	
Mercury	958623	958623	0.04	0.04	NA	< 0.01	103%	90%	110%	101%	80%	120%	100%	70%	130%	
<b>Lead and Mercury in Paint by ICP-OES</b>																
Lead	958707	958707	332	368	10.3%	< 10	89%	80%	120%	94%	80%	120%	108%	70%	130%	
Mercury	958797	958797	1.8	1.6	11.8%	< 0.01	101%	90%	110%	99%	80%	120%	116%	70%	130%	
<b>Lead and Mercury in Paint by ICP-OES</b>																
Lead	966556		<10	<10	NA	< 10	89%	80%	120%	104%	80%	120%	104%	70%	130%	
Mercury	958698	958698	0.09	0.09	0.0%	< 0.01	97%	90%	110%	99%	80%	120%	103%	70%	130%	

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: \_\_\_\_\_

*Yris Veraestegui*



## Method Summary

CLIENT NAME: WSP CANADA INC.

AGAT WORK ORDER: 20T576548

PROJECT: CCGS Limnos/171-09529-62

ATTENTION TO: Marc St.Germain

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Occupational Hygiene Analysis</b>			
Lead	MET-93-6106	EPA SW 846 3050B & 6010C	ICP/OES
Mercury	MET-93-6101	EPA SW 846 7471A & 245.5	CVAAS





# AGAT Laboratories

5835 Coopers Avenue  
Mississauga, Ontario L4Z 1Y2  
Ph: 905.712.5100 Fax: 905.712.5122  
webearth.agatlabs.com

## Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

### Report Information:

Company: WSP Canada Inc  
Contact: Joey Mainwaring  
Address: 100 Commerce Valley Dr W,  
Thornhill ON  
Phone: 437-928-5596 Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: joey.mainwaring@wsp.com  
2. Email: \_\_\_\_\_

### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

Regulation 153/04  Sewer Use  Regulation 558  
Table Indicate One  
 Ind/Com  Sanitary  CCME  
 Res/Park  Storm  Prov. Water Quality Objectives (PWQO)  
 Agriculture  Other  
Soil Texture (Check One) Region \_\_\_\_\_  
 Coarse  MISA  Fine Indicate One

### Laboratory Use Only

Work Order #: \_\_\_\_\_  
Cooler Quantity: \_\_\_\_\_  
Arrival Temperatures: \_\_\_\_\_  
Custody Seal Intact:  Yes  No  N/A  
Notes: \_\_\_\_\_

### Project Information:

Project: CCGS Limnos 171-09529-62  
Site Location: CCIW  
Sampled By: Joey Mainwaring  
AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_

Please note: If quotation number is not provided, client will be billed full price for analysis.

### Invoice Information:

Bill To Same: Yes  No

Company: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Email: \_\_\_\_\_

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### Sample Matrix Legend

**B** Biota  
**GW** Ground Water  
**O** Oil  
**P** Paint  
**S** Soil  
**SD** Sediment  
**SW** Surface Water

Field Filtered - Metals, Hg, CVI

### O. Reg 153

Metals and Inorganics  
 All Metals  153 Metals (excl. Hydrides)  
 Hydride Metals  153 Metals (Incl. Hydrides)  
ORPs:  B-HWS  Cl  CN  
 Cr<sup>6+</sup>  EC  FOC  Hg  
 pH  SAR  
Full Metals Scan  
Regulation/Custom Metals  
Nutrients:  TP  NH<sub>4</sub>  TKN  
 NO<sub>3</sub>  NO<sub>2</sub>  NO<sub>3</sub>+NO<sub>2</sub>  
Volatiles:  VOC  BTEX  THM  
PHCs F1 - F4  
ABNs  
PAHs  
PCBs:  Total  Aroclors  
Organochlorine Pesticides  
TCLP:  M&I  VOCs  ABNs  Bi(a)P  PCBs  
Sewer Use  
Lead + Mercury

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Field Filtered - Metals, Hg, CVI	O. Reg 153	Metals and Inorganics	ORPs	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use	Potentially Hazardous or High Concentration (Y/N)
0012- White paint - Focale Deck - Egen	Feb 20/20	N/A	1	P																		
0013- White paint - Focale Deck - Lamp Locker	"	"	"	"																		
0014- White paint - Focale Deck - Focale Bulwark	"	"	"	"																		
0015- White paint - Focale Deck - STD Bulwark	"	"	"	"																		
0016- White paint - Focale Deck - Exterior Bulwarks (part)	"	"	"	"																		
0017- White paint - Focale Deck - Exterior Bulwarks (std)	"	"	"	"																		
0018- Red paint - Focale Deck - Fwd Deck	"	"	"	"																		
0019- Red Paint - Focale Deck - PFT Deck	"	"	"	"																		
0020- Yellow Paint - Focale Deck - Fwd Mast	"	"	"	"																		
0021- Red Paint - Main Deck - AFT	"	"	"	"																		
0022- Red Paint - Main Deck - FWD	"	"	"	"																		

Samples Relinquished By (Print Name and Sign): <u>Joey Mainwaring</u>	Date: <u>Feb 20/20</u>	Time: <u>15:30</u>	Samples Received By (Print Name and Sign): <u>Neri Ramnaraj</u>	Date: <u>'20 FEB 20</u>	Time: <u>3:39 PM</u>
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Page 2 of 5  
Nº: **T099984**



# AGAT Laboratories

5835 Coopers Avenue  
Mississauga, Ontario L4Z 1Y2  
Ph: 905.712.5100 Fax: 905.712.5122  
webearth.agatlabs.com

## Laboratory Use Only

Work Order #: \_\_\_\_\_

Cooler Quantity: \_\_\_\_\_

Arrival Temperatures: \_\_\_\_\_

Custody Seal Intact:  Yes  No  N/A

Notes: \_\_\_\_\_

## Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

### Report Information:

Company: WSP Canada Inc

Contact: Jocelyne Mainwaring

Address: 100 Commerce Valley Drw,  
Thornhill ON  
437-928-5596 Fax: \_\_\_\_\_

Phone: \_\_\_\_\_

Reports to be sent to:

1. Email: jocelyne.mainwaring@wsp.com

2. Email: \_\_\_\_\_

### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

Regulation 153/04  Sewer Use  Regulation 558

Table Indicate One

Ind/Com  Sanitary  CCME

Res/Park  Storm  Prov. Water Quality Objectives (PWQO)

Agriculture  Other

Soil Texture (Check One) Region Indicate One

Coarse  MISA  \_\_\_\_\_ Indicate One

Fine

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### Turnaround Time (TAT) Required:

Regular TAT  5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

3 Business Days  2 Business Days  Next Business Day

OR Date Required (Rush Surcharges May Apply): \_\_\_\_\_

Please provide prior notification for rush TAT  
\*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

### Project Information:

Project: CCGS Lynnos / 171-09529-62

Site Location: CCIW

Sampled By: Jocelyne Mainwaring

AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_

Please note: If quotation number is not provided, client will be billed full price for analysis.

### Invoice Information:

Bill To Same: Yes  No

Company: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

### Sample Matrix Legend

- B Biota
- GW Ground Water
- O Oil
- P Paint
- S Soil
- SD Sediment
- SW Surface Water

Field Filtered - Metals, Hg, CrVI

### 0. Reg 153

Metals and Inorganics	Field Filtered - Metals, Hg, CrVI	Potentially Hazardous or High Concentration (Y/N)
<input type="checkbox"/> All Metals <input type="checkbox"/> 153 Metals (excl. Hydrides)		
<input type="checkbox"/> Hydride Metals <input type="checkbox"/> 153 Metals (incl. Hydrides)		
ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl <input type="checkbox"/> CN		
<input type="checkbox"/> Cr <sup>6+</sup> <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> Hg		
<input type="checkbox"/> pH <input type="checkbox"/> SAR		
Full Metals Scan		
Regulation/Custom Metals		
Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <input type="checkbox"/> TKN		
<input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>3</sub> +NO <sub>2</sub>		
Volatiles: <input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM		
PHCs F1 - F4		
ABNS		
PAHs		
PCBs: <input type="checkbox"/> Total <input type="checkbox"/> Aroclors		
Organochlorine Pesticides		
TCLP: <input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNS <input type="checkbox"/> B(a)P <input type="checkbox"/> PCBs		
Sewer Use		
<u>Lead &amp; Mercury</u>		

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N
0023- White Paint- main Deck Funnel-Ext.	Feb.20	N/A	1	P		
0024- White Paint- main Deck Bulkheads (Paint)	"	"	"	"		
0025- White Paint- main Deck Bulkheads (TBD)	"	"	"	"		
0026- White Paint- main Deck Deck Lockers	"	"	"	"		
0027- Yellow Paint - Arva Crane	"	"	"	"		
0028- White Paint- main Deck Bulkhead	"	"	"	"		
<del>0029- White Paint- main Deck Bulkhead</del>	<del>"</del>	<del>"</del>	<del>"</del>	<del>"</del>		
0029- White Paint- AFT Deck housework	"	"	"	"		
0030- White Paint- sewage compartment Bulkhead	"	"	"	"		
0031- White Paint- sewage compartment deck head	"	"	"	"		
0032- Gray Paint- sewage compartment deck	"	"	"	"		

Samples Relinquished By (Print Name and Sign): <u>Jocelyne Mainwaring</u>	Date: <u>Feb.20/20</u> Time: <u>15:30</u>	Samples Received By (Print Name and Sign): <u>Neil Namrajia</u>	Date: _____ Time: _____
Samples Relinquished By (Print Name and Sign):	Date: _____ Time: _____	Samples Received By (Print Name and Sign):	Date: _____ Time: _____
Samples Relinquished By (Print Name and Sign):	Date: _____ Time: _____	Samples Received By (Print Name and Sign):	Date: _____ Time: _____

'20 FEB 20 3:40 PM  
Page 3 of 5  
N<sup>o</sup>: T099985

### Laboratory Use Only

Work Order #: \_\_\_\_\_

Cooler Quantity: \_\_\_\_\_

Arrival Temperatures: \_\_\_\_\_

Custody Seal Intact:  Yes  No  N/A

Notes: \_\_\_\_\_

## Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

### Report Information:

Company: WSP Canada Inc

Contact: Jocely Mainwaring

Address: 100 Commerce Valley Drw  
Thornhill ON  
437-928-5596 Fax: \_\_\_\_\_

Phone: \_\_\_\_\_

Reports to be sent to:

1. Email: jocely.mainwaring@wsp.com

2. Email: \_\_\_\_\_

### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

Regulation 153/04  Sewer Use  Regulation 558

Table Indicate One

Ind/Com  Sanitary  CCME

Res/Park  Storm  Prov. Water Quality Objectives (PWQO)

Agriculture  Other

Soil Texture (Check One)  Coarse  Fine  MISA  Other

Region Indicate One

### Turnaround Time (TAT) Required:

**Regular TAT**  5 to 7 Business Days

**Rush TAT (Rush Surcharges Apply)**

3 Business Days  2 Business Days  Next Business Day

**OR Date Required (Rush Surcharges May Apply):** \_\_\_\_\_

### Project Information:

Project: CCGS Limnos/171-09529-62

Site Location: CCIW

Sampled By: Jocely Mainwaring

AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

Please provide prior notification for rush TAT  
\*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

### Invoice Information:

Bill To Same:  Yes  No

Company: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

### Sample Matrix Legend

- B Biota
- GW Ground Water
- O Oil
- P Paint
- S Soil
- SD Sediment
- SW Surface Water

Field Filtered - Metals, Hg, CrVI

Metals and Inorganics	O. Reg 153	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNS	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use	Potentially Hazardous or High Concentration (Y/N)
<input type="checkbox"/> All Metals <input type="checkbox"/> 153 Metals (excl. Hydrides)	<input type="checkbox"/> Hydride Metals <input type="checkbox"/> 153 Metals (incl. Hydrides)	<input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN	<input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>3</sub> +NO <sub>2</sub>	<input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM				<input type="checkbox"/> Total <input type="checkbox"/> Aroclors	<input type="checkbox"/> Organochlorine Pesticides	<input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNS <input type="checkbox"/> B(e)P <input type="checkbox"/> PCBs	<input type="checkbox"/> Sewer Use	
<input type="checkbox"/> ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl <input type="checkbox"/> ON	<input type="checkbox"/> Cr <sup>6+</sup> <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> Hg	<input type="checkbox"/> pH <input type="checkbox"/> SAR										
<input type="checkbox"/> Full Metals Scan												

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/Special Instructions	Y / N
0033 - White Paint - Sewage compartment - greywater tank		N/A	1	P		
0034 - White Paint - Tank K Top - Spill Tower	Feb 20	"	"	"		
0035 - White Paint - Tank Top - Cleaning Locker	"	"	"	"		
0036 - White Paint - Tank Top - Incinerator RM	"	"	"	"		
0037 - White Paint - Tank Top - Heads	"	"	"	"		
0038 - Grey Paint - FVD Void Space	"	"	"	"		
0039 - Red Paint - AFT Void Space	"	"	"	"		
0040 - Red Paint - AFT Cofferdam	"	"	"	"		
0041 - Red Paint - Echo Sounder Compartment	"	"	"	"		
0042 - White Paint - Engine RM - Deck Head (Port)	"	"	"	"		
0043 - White Paint - Engine Room - Deck Head (Starboard)	"	"	"	"		

20 FEB 20 3:40 PM

Samples Relinquished By (Print Name and Sign): <u>Jocely Mainwaring</u>	Date: <u>Feb 20/20</u> Time: <u>15:30</u>	Samples Received By (Print Name and Sign): <u>Jocely Mainwaring</u>	Date: _____ Time: _____
Samples Relinquished By (Print Name and Sign):	Date: _____ Time: _____	Samples Received By (Print Name and Sign):	Date: _____ Time: _____
Samples Relinquished By (Print Name and Sign):	Date: _____ Time: _____	Samples Received By (Print Name and Sign):	Date: _____ Time: _____

Page 4 of 5

No: **T099986**



**EMSL Canada Inc.**

2756 Slough Street, Mississauga, ON L4T 1G3

Phone/Fax: (289) 997-4602 / (289) 997-4607

<http://www.EMSL.com>[torontolab@emsl.com](mailto:torontolab@emsl.com)

EMSL Canada Or	552002032
CustomerID:	55WPTH42
CustomerPO:	171-09529-62
ProjectID:	

Attn: **Joey Mainwaring**  
**WSP Canada, Inc.**  
**100 Commerce Valley Road**  
**Thornhill, ON L3T 0A1**

Phone: (905) 882-1100  
 Fax:  
 Received: 02/20/20 4:26 PM  
 Collected: 2/20/2020

Project: **CCGS Limnos / 171-09529-62****Test Report: Lead in Air by Flame AAS (NIOSH 7082)\***

<i>Client SampleDescription</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Volume</i>	<i>RDL</i>	<i>Lead Concentration</i>
Blank	2/20/2020	2/24/2020	N/A	0.0040 mg/filter	<0.0040 mg/filter
552002032-0001	Site: Field Blank				
L-AS-01 552002032-0002	2/20/2020	2/24/2020	1000 L	0.0040 mg/m <sup>3</sup>	<0.0040 mg/m <sup>3</sup>
	Site: Main Engine Room				
L-AS-02 552002032-0003	2/20/2020	2/24/2020	1000 L	0.0040 mg/m <sup>3</sup>	<0.0040 mg/m <sup>3</sup>
	Site: Control Room				
L-AS-03 552002032-0004	2/20/2020	2/24/2020	1000 L	0.0040 mg/m <sup>3</sup>	<0.0040 mg/m <sup>3</sup>
	Site: Tank Top Deck				
L-AS-04 552002032-0005	2/20/2020	2/24/2020	1000 L	0.0040 mg/m <sup>3</sup>	<0.0040 mg/m <sup>3</sup>
	Site: Focsle Deck				
L-AS-05 552002032-0006	2/20/2020	2/24/2020	1000 L	0.0040 mg/m <sup>3</sup>	<0.0040 mg/m <sup>3</sup>
	Site: Bridge Deck				

Rowena Fanto, Lead Supervisor  
 or other approved signatory

\*Analysis following Lead in Air by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 4 µg/filter. ug/filter = µg/m<sup>3</sup> x volume sampled (m<sup>3</sup>). OSHA PEL - 50 µg/m<sup>3</sup>. OSHA action level - 30 µg/m<sup>3</sup>. Unless otherwise noted, results in this report are not blank corrected. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the results, it will be noted on the report. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Initial report from 02/27/2020 10:32:25



**EMSL Analytical, Inc.**

6340 CastlePlace Dr., Indianapolis, IN 46250

Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislaboratory@emsl.com

---

Attn: **Joey Mainwaring**  
**WSP Canada, Inc.**  
**100 Commerce Valley Road**  
**Thornhill, ON L3T 0A1**  
Phone: (905) 882-1100  
Fax:

2/28/2020

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 2/21/2020. The results are tabulated on the attached data pages for the following client designated project:

**171-09529-62**

The reference number for these samples is EMSL Order #162003697. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (317) 803-2997.

Approved By:

---

Doug Wiegand, Laboratory Manager

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements unless specifically indicated. The final results are not blank corrected unless specifically indicated. The laboratory is not responsible for final results calculated using air volumes that have been provided by non-laboratory personnel. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

**EMSL Analytical, Inc.**

6340 CastlePlace Dr., Indianapolis, IN 46250

Phone/Fax: (317) 803-2997 / (317) 803-3047

<http://www.EMSL.com>[indianapolislab@emsl.com](mailto:indianapolislab@emsl.com)

EMSL Order:	162003697
CustomerID:	WPTH42
CustomerPO:	171-09529-62
ProjectID:	

Attn: **Joey Mainwaring**  
**WSP Canada, Inc.**  
**100 Commerce Valley Road**  
**Thornhill, ON L3T 0A1**

Phone: (905) 882-1100  
 Fax:  
 Received: 02/21/20 10:00 AM  
 Collected: 2/19/2020

Project: 171-09529-62

**Analytical Results**

**Client Sample Description** BLANK  
FIELD BLANK  
**Collected:** 2/19/2020  
**Lab ID:** 162003697-0001

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

**METALS**

ID-145	Mercury	<0.0208	0.0208	µg/m <sup>3</sup>	2/27/2020 WF	2/27/2020 WF
--------	---------	---------	--------	-------------------	--------------	--------------

**Client Sample Description** M-AS-01  
MAIN ENGINE ROOM  
**Collected:** 2/19/2020  
**Lab ID:** 162003697-0002

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

**METALS**

ID-145	Mercury	<0.0208	0.0208	µg/m <sup>3</sup>	2/27/2020 WF	2/27/2020 WF
--------	---------	---------	--------	-------------------	--------------	--------------

**Client Sample Description** M-AS-02  
CONTROL ROOM  
**Collected:** 2/19/2020  
**Lab ID:** 162003697-0003

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

**METALS**

ID-145	Mercury	<0.0208	0.0208	µg/m <sup>3</sup>	2/27/2020 WF	2/27/2020 WF
--------	---------	---------	--------	-------------------	--------------	--------------

**Client Sample Description** M-AS-03  
TANK TOP DECK  
**Collected:** 2/19/2020  
**Lab ID:** 162003697-0004

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

**METALS**

ID-145	Mercury	<0.0208	0.0208	µg/m <sup>3</sup>	2/27/2020 WF	2/27/2020 WF
--------	---------	---------	--------	-------------------	--------------	--------------

**Client Sample Description** M-AS-04  
FOCSLE DECK  
**Collected:** 2/19/2020  
**Lab ID:** 162003697-0005

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

**METALS**

ID-145	Mercury	<0.0208	0.0208	µg/m <sup>3</sup>	2/27/2020 WF	2/27/2020 WF
--------	---------	---------	--------	-------------------	--------------	--------------

**Client Sample Description** M-AS-05  
BRIDGE DECK  
**Collected:** 2/19/2020  
**Lab ID:** 162003697-0006

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
--------	-----------	--------	----	-------	---------------------	-------------------------

**METALS**



# EMSL Analytical, Inc.

6340 CastlePlace Dr., Indianapolis, IN 46250  
Phone/Fax: (317) 803-2997 / (317) 803-3047  
<http://www.EMSL.com> [indianapolislab@emsl.com](mailto:indianapolislab@emsl.com)

EMSL Order: 162003697  
CustomerID: WPTH42  
CustomerPO: 171-09529-62  
ProjectID:

Attn: **Joey Mainwaring**  
**WSP Canada, Inc.**  
**100 Commerce Valley Road**  
**Thornhill, ON L3T 0A1**

Phone: (905) 882-1100  
Fax:  
Received: 02/21/20 10:00 AM  
Collected: 2/19/2020

Project: 171-09529-62

## Analytical Results

**Client Sample Description** M-AS-05 **Collected:** 2/19/2020 **Lab ID:** 162003697-0006  
BRIDGE DECK

Method	Parameter	Result	RL	Units	Prep Date & Analyst	Analysis Date & Analyst
<b>METALS</b>						
ID-145	Mercury	<0.0208	0.0208	µg/m <sup>3</sup>	2/27/2020 WF	2/27/2020 WF

### Definitions:

- MDL - method detection limit
- J - Result was below the reporting limit, but at or above the MDL
- ND - indicates that the analyte was not detected at the reporting limit
- RL - Reporting Limit (Analytical)
- D - Dilution Sample required a dilution which was used to calculate final results

# APPENDIX

# B

## SITE PHOTOGRAPHS



PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
1	Representative photo of the CCGS Limnos docked at the Canadian Centre for Inland Waters (CCIW) in Burlington ON.	
2	Representative photo of red paint observed on the Monkey's Island deck.	

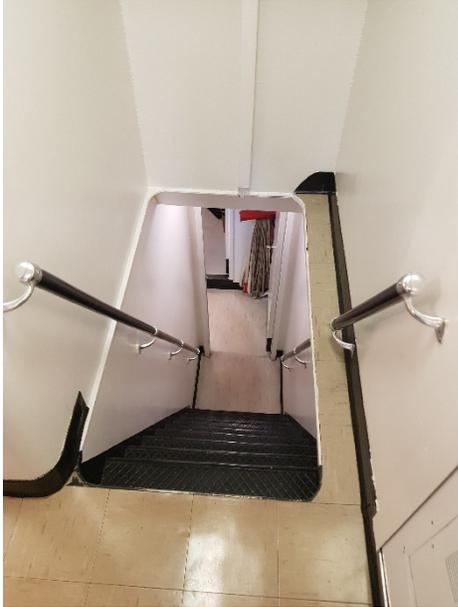
PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
3	Representative photo of yellow paint observed on the Monkey's Island main mast.	
4	Representative photo of white paint observed on the bridge deck, AFT stair tower.	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
5	Representative photo of white paint observed on the Focsle deck bulkhead.	
6	Representative photo of white paint observed on the Focsle deck stair tower.	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
7	Representative photo of yellow paint on the Focsle deck FWD mast.	
8	Representative photo of white paint observed on the main deck exterior funnel.	

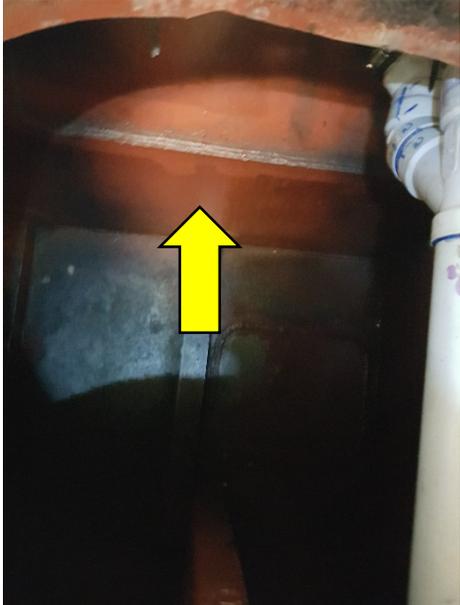
PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
9	Representative photo of the yellow paint observed on the Arva crane.	
10	Representative photo of white paint observed on the sewage compartment bulkhead.	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
11	Representative photo of the grey paint observed on the sewage compartment deck.	
12	Representative photo of the white paint observed on the grey water tank in the sewage compartment.	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
13	Representative photo of the white paint observed in the tank top cleaning locker.	
14	Representative photo of the white paint observed in the tank top incinerator room.	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
15	Representative photo of the white paint observed in the tank top heads (washrooms).	
16	Representative photo of the grey paint in the FWD void space.	

PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
17	Representative photo of the red paint in the AFT void space.	
18	Representative photo of the red paint in the AFT cofferdam.	

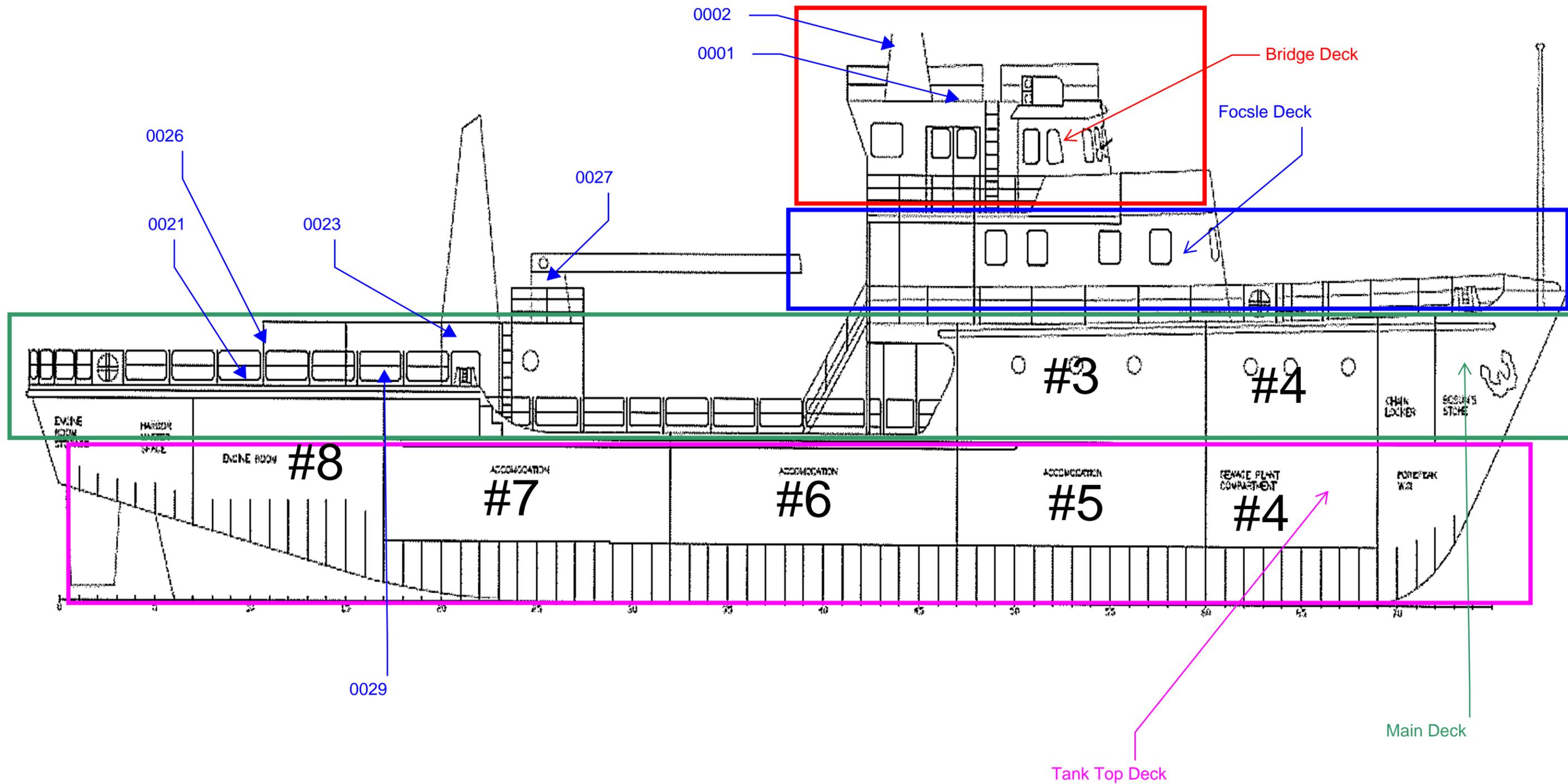
PHOTO NO.	MATERIAL DESCRIPTION & LOCATION	PHOTO
19	Representative photo of the red paint observed in the Echo Sounder Compartment.	
20	Representative photo of the old exhaust lagging.	

# APPENDIX

# C

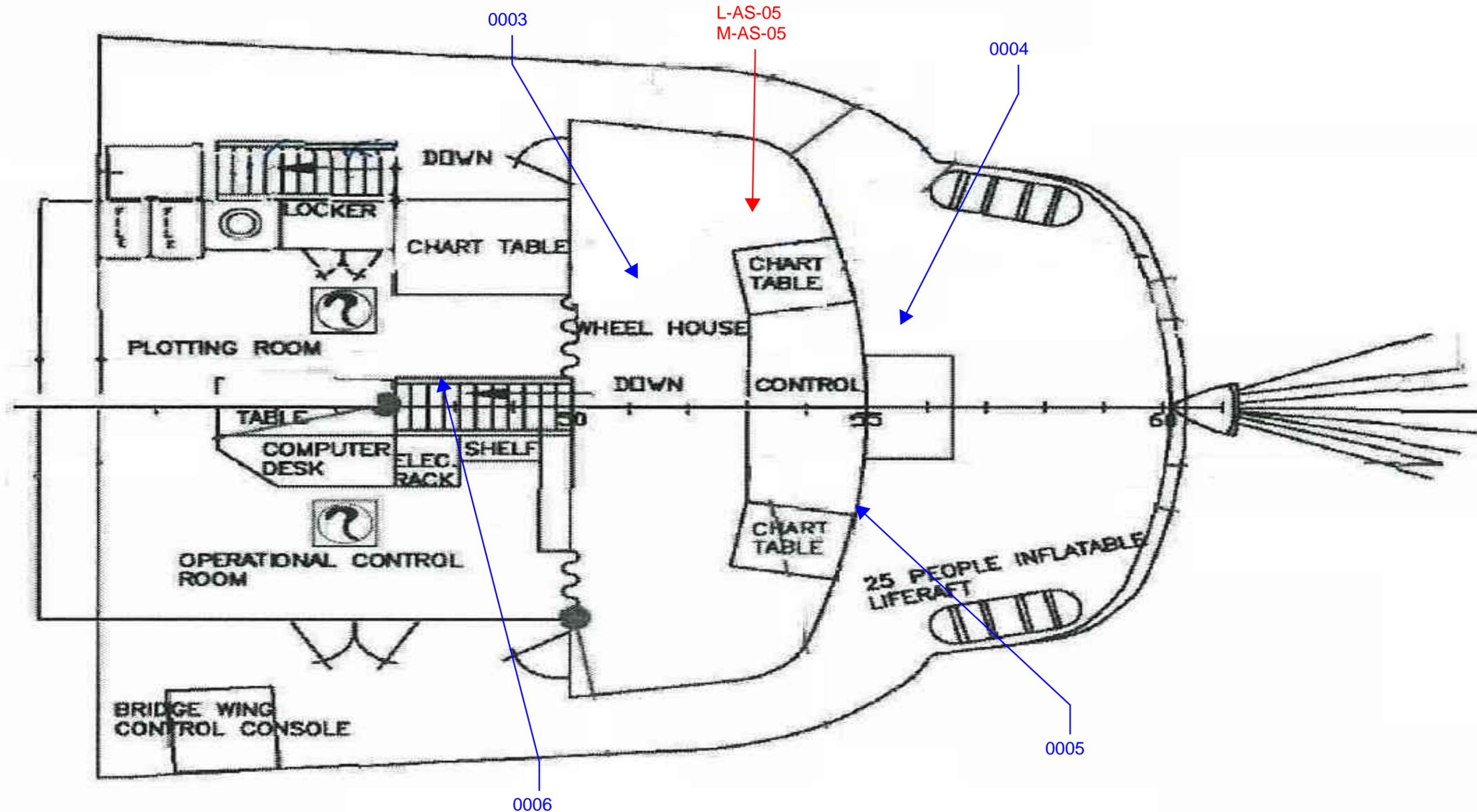
## DRAWINGS





- NOTES
1. Drawing provided by client.
  2. This drawing must be read in conjunction with associated report.

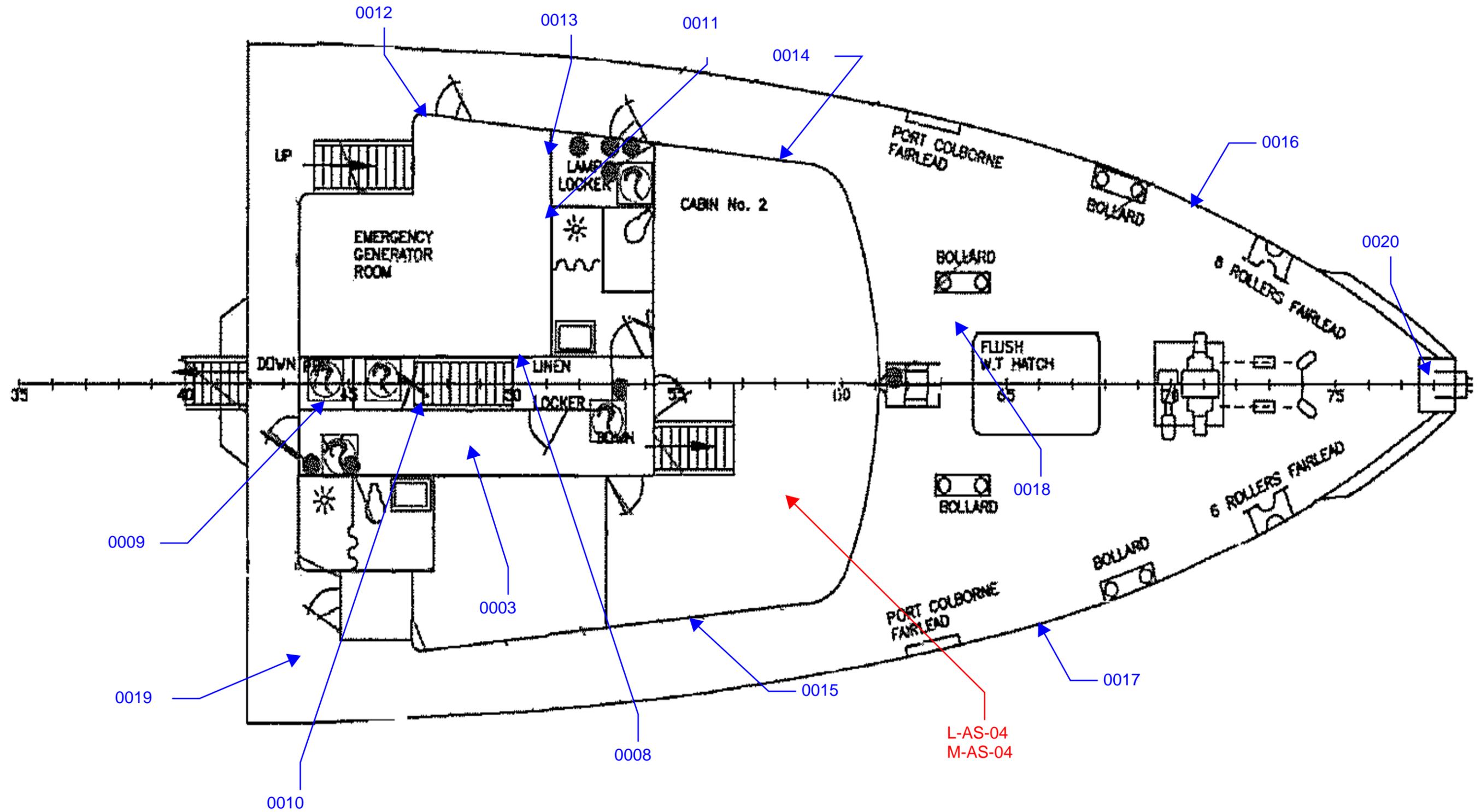
<b>LEGEND</b> LEAD / MERCURY BULK SAMPLE LOCATION LEAD / MERCURY AIR SAMPLE LOCATION  	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWCGS	Lead and Mercury Sampling Assessment - CCGS Limnos  <h2>Cross-Section of Ship</h2>	DRAWING: 1
	DATE: March 2020	ADDRESS: Canadian Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			



NOTES

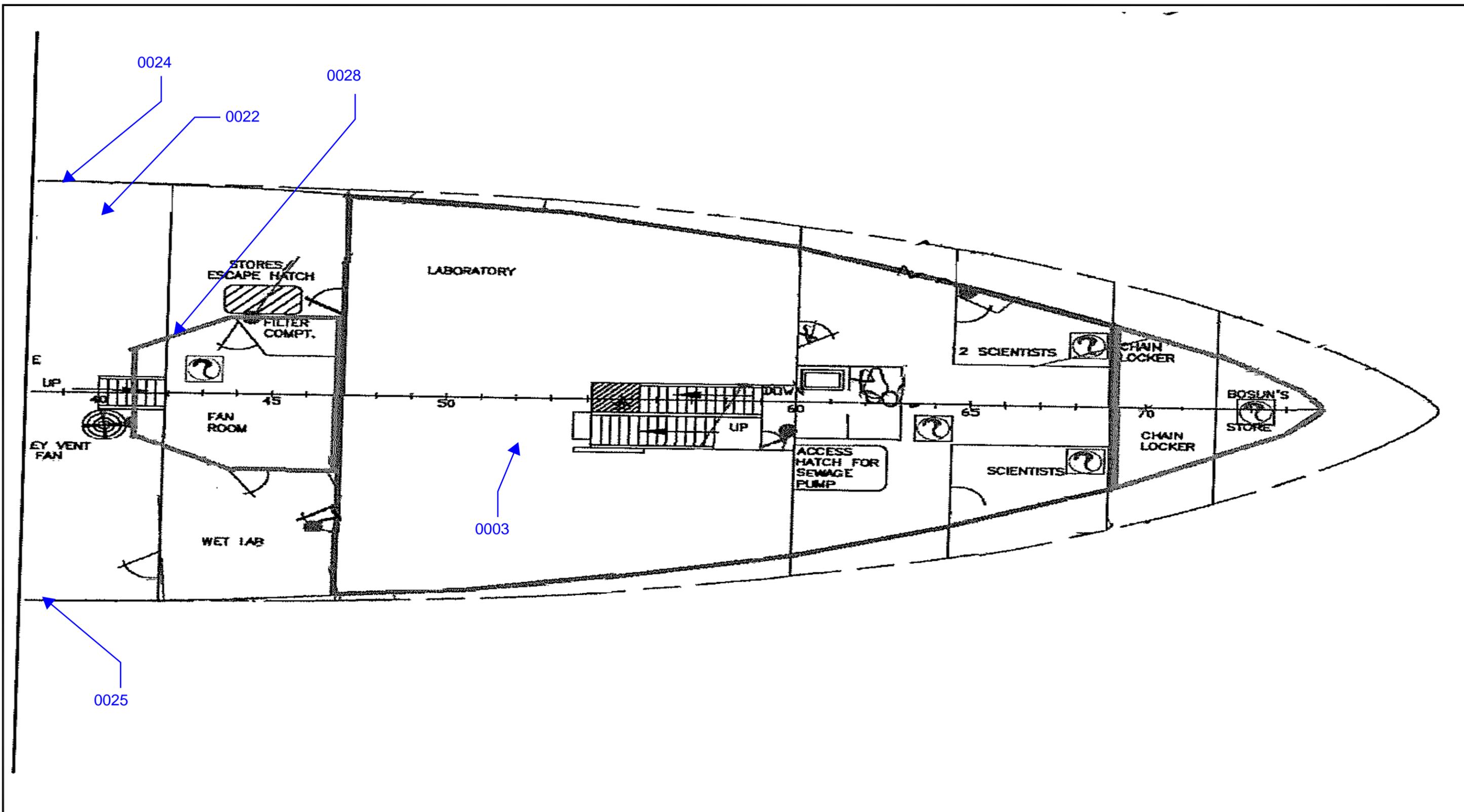
1. Drawing provided by client.
2. This drawing must be read in conjunction with associated report.

<b>LEGEND</b> ▲ LEAD / MERCURY BULK SAMPLE LOCATION ▲ LEAD / MERCURY AIR SAMPLE LOCATION □ □	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <h2 style="text-align: center;">Bridge Deck</h2>	DRAWING: 2
	DATE: March 2020	ADDRESS: Canada Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			



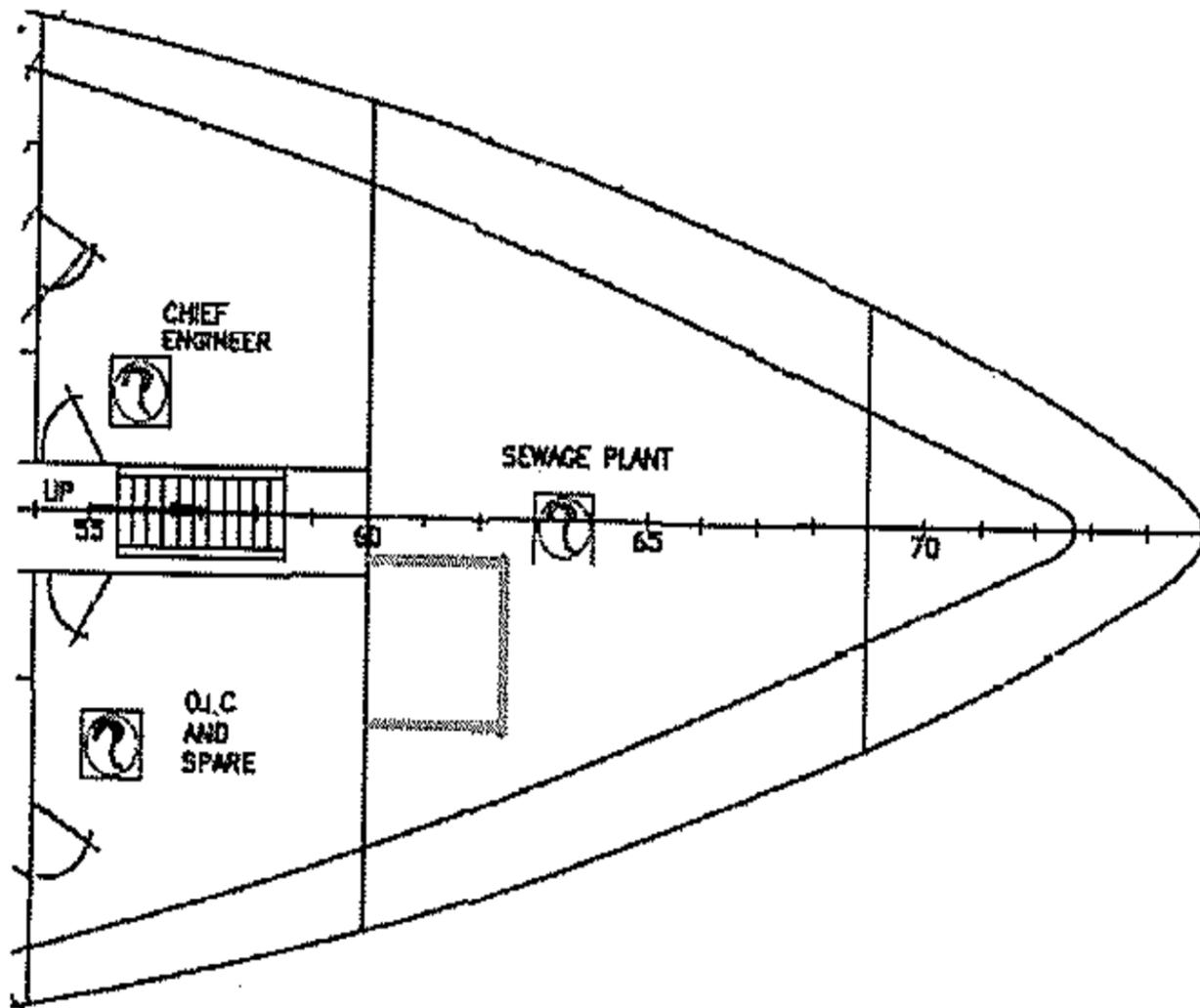
- NOTES
1. Drawing provided by client.
  2. This drawing must be read in conjunction with associated report.

<b>LEGEND</b> MERCURY BULK SAMPLE LOCATION MERCURY AIR SAMPLE LOCATION LEAD BULK SAMPLE LOCATION LEAD AIR SAMPLE LOCATION	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <h2 style="text-align: center;">Focsle Deck</h2>	DRAWING: <h1 style="text-align: center;">3</h1>
	DATE: March 2020	ADDRESS: Canada Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			

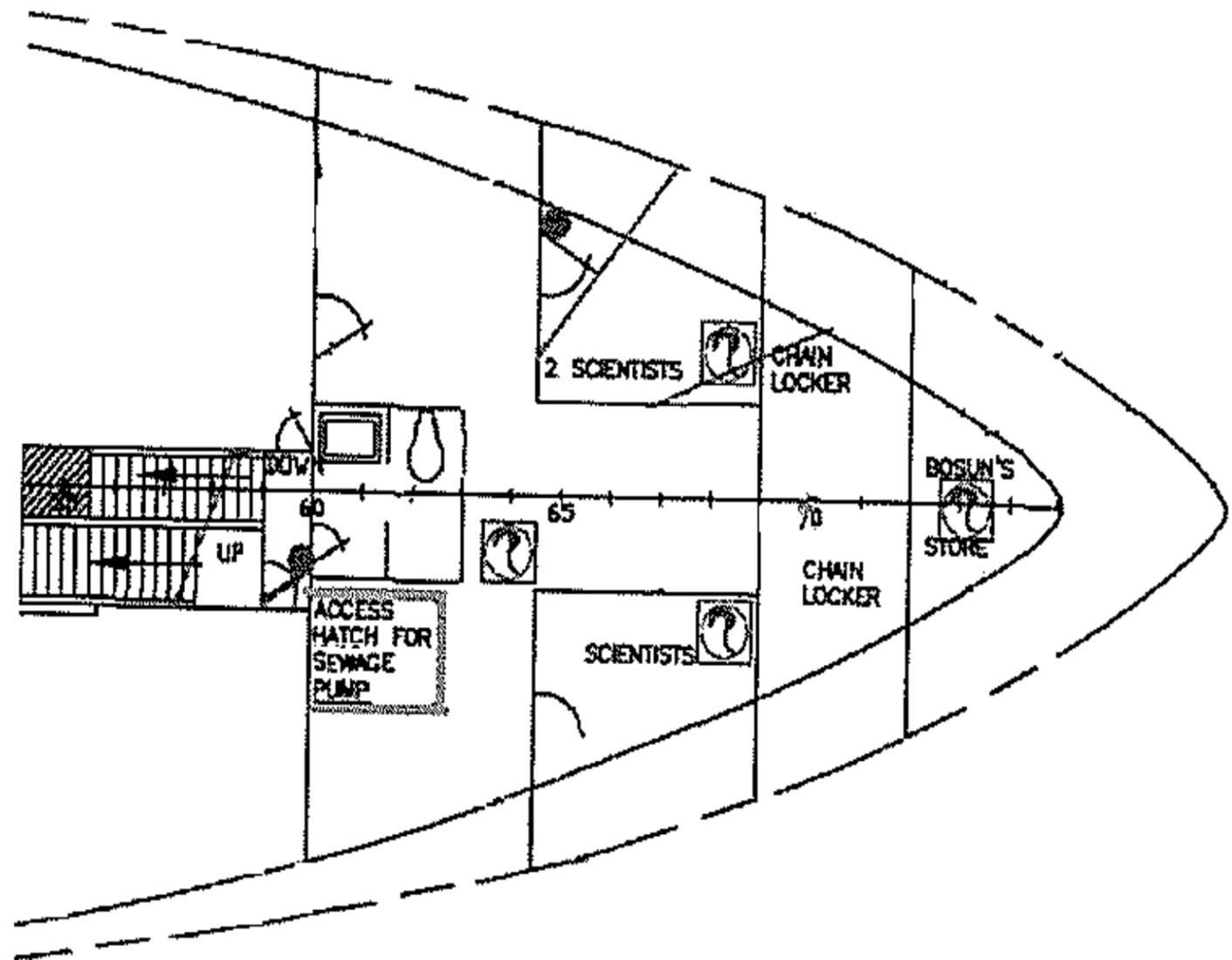


NOTES  
 1. Drawing provided by client.  
 2. This drawing must be read in conjunction with associated report.

<b>LEGEND</b> ▲ MERCURY BULK SAMPLE LOCATION ▲ MERCURY AIR SAMPLE LOCATION □ LEAD BULK SAMPLE LOCATION □ LEAD AIR SAMPLE LOCATION	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <h3>Main Deck Lab #3</h3>	DRAWING: 4
	DATE: March 2020	ADDRESS: Canadian Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			



TANK TOP



MAIN DECK

NOTES

1. Drawing provided by client.
2. This drawing must be read in conjunction with associated report.

LEGEND

- ▲ MERCURY BULK SAMPLE LOCATION
- ▲ MERCURY AIR SAMPLE LOCATION
- LEAD BULK SAMPLE LOCATION
- LEAD AIR SAMPLE LOCATION

WSP PROJECT NUMBER:  
171-09529-62

DATE:  
March 2020

DRAWN BY: JM

APPROVED BY: JB

CLIENT:

PWGSC

ADDRESS:

Canadian Centre for Inland Waters (CCIW)

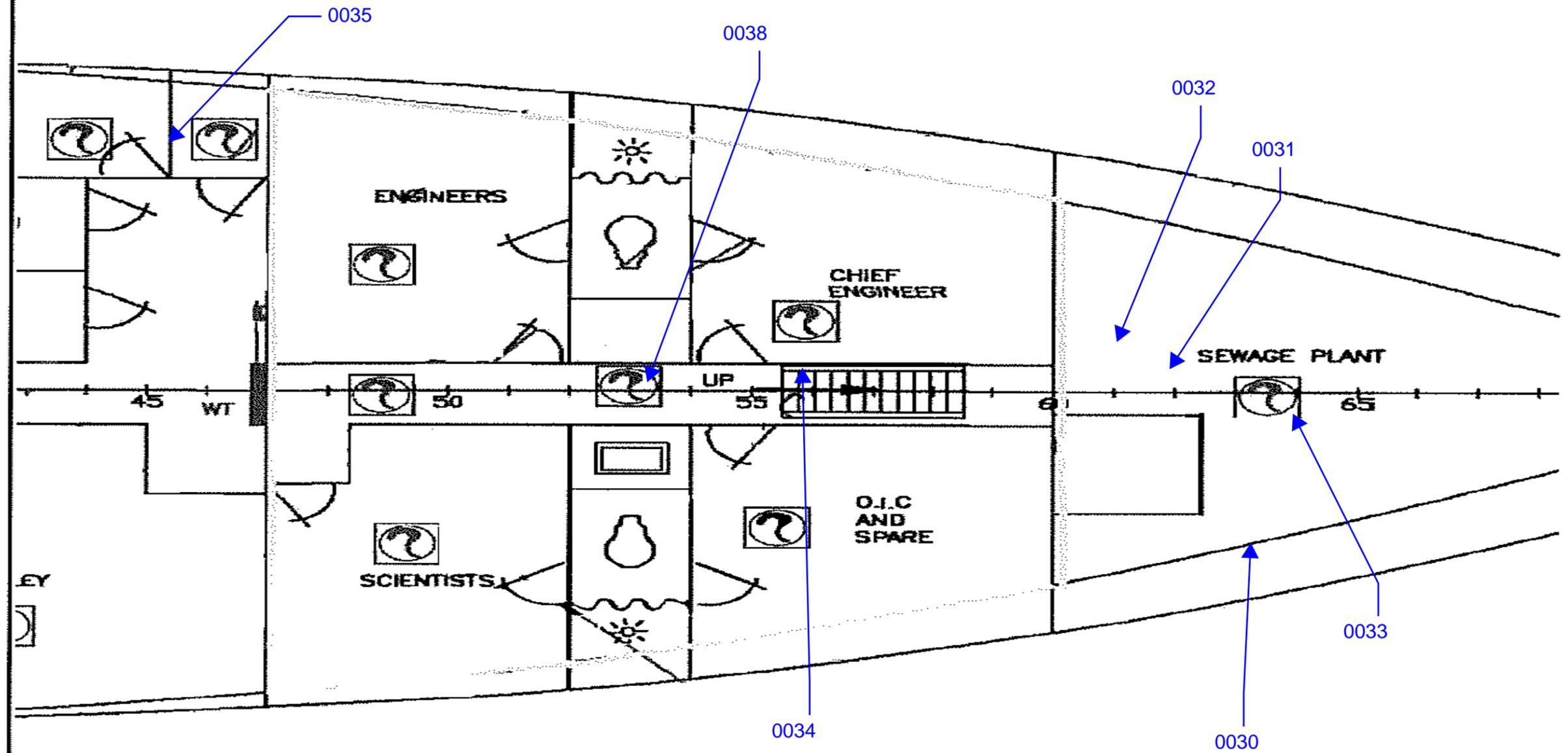
Lead and Mercury Sampling Assessment - CCGS Limnos

FWD #4

DRAWING:

5

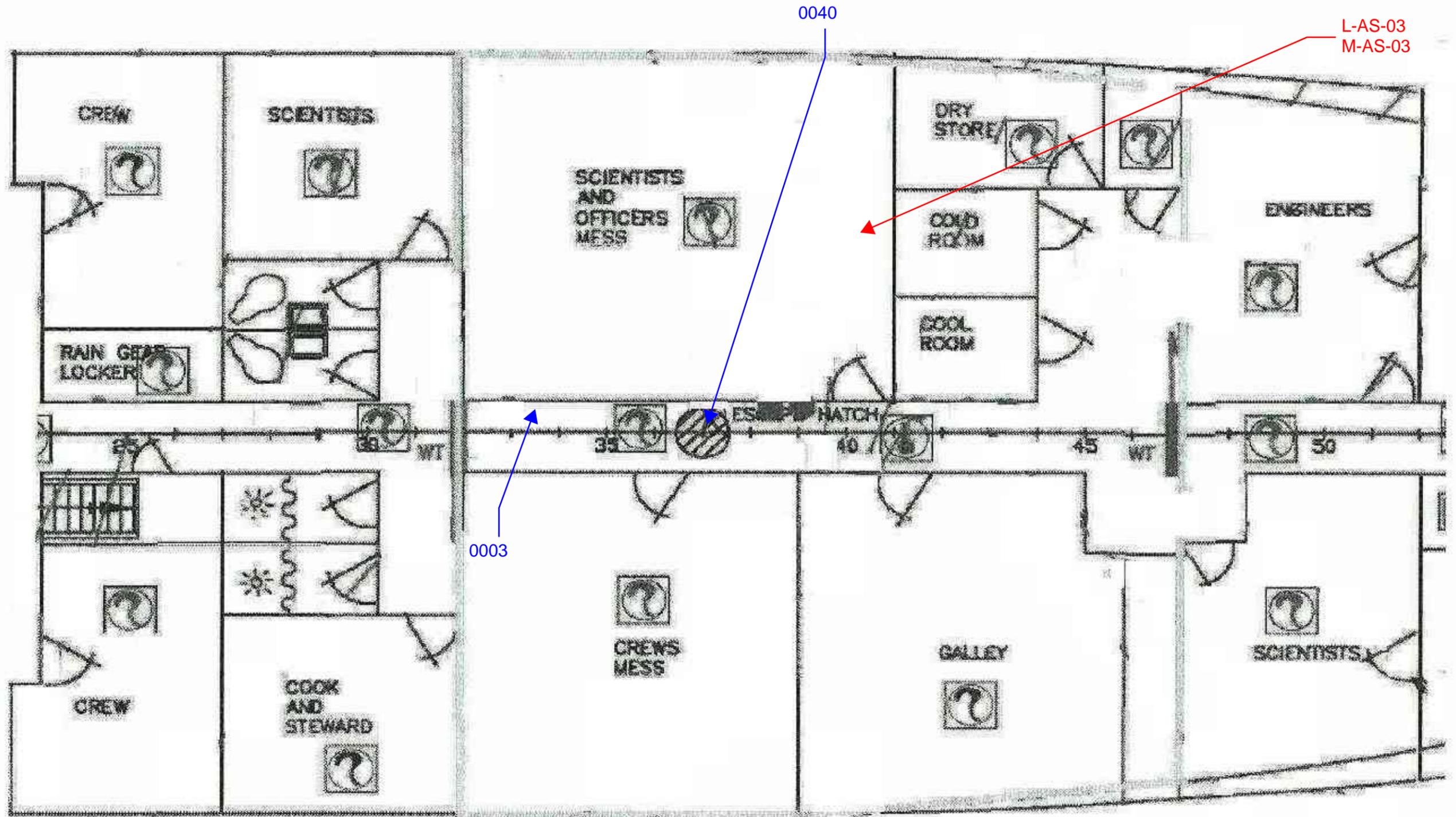




**NOTES**

1. Drawing provided by client.
2. This drawing must be read in conjunction with associated report.

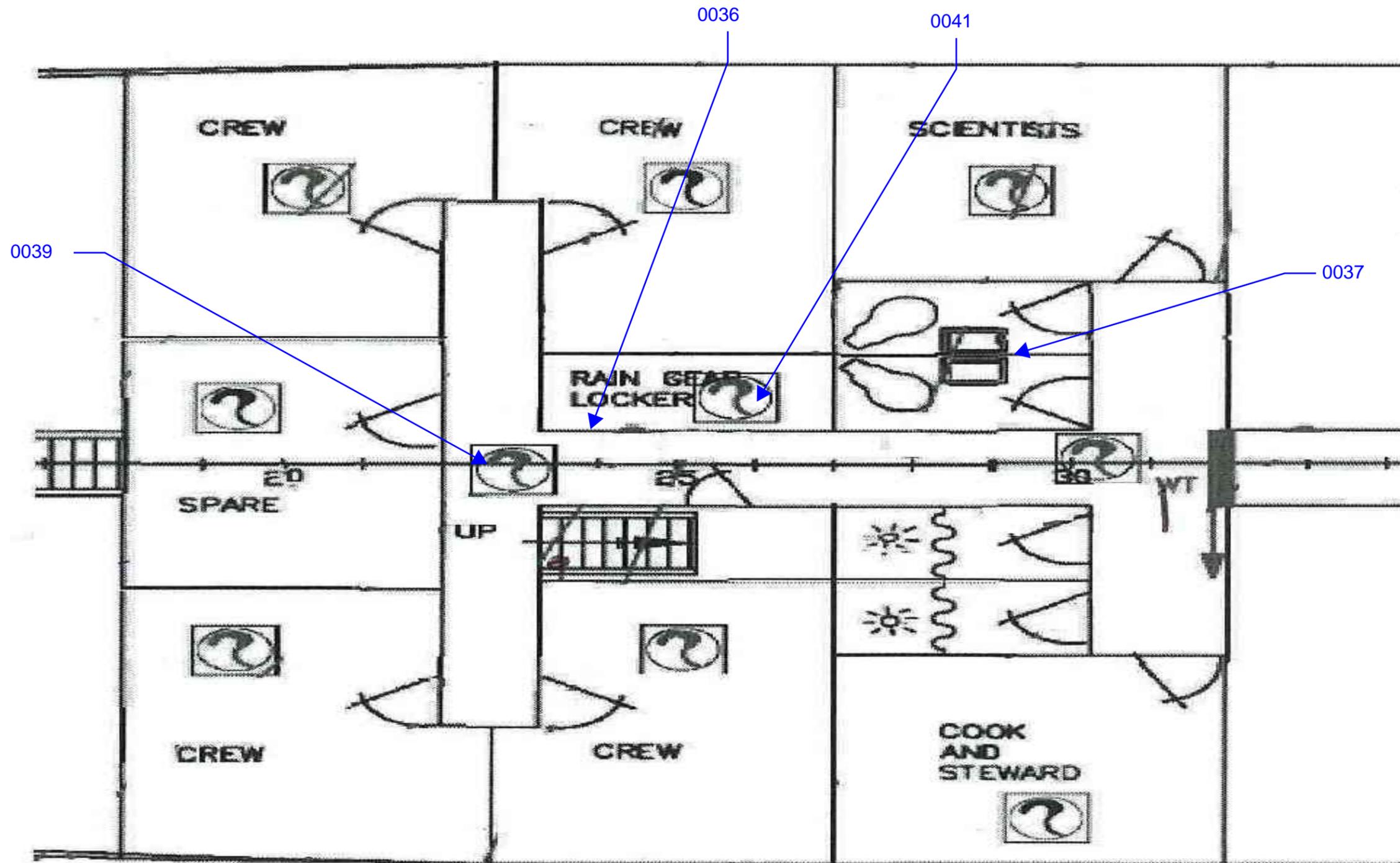
<b>LEGEND</b> MERCURY BULK SAMPLE LOCATION MERCURY AIR SAMPLE LOCATION LEAD BULK SAMPLE LOCATION LEAD AIR SAMPLE LOCATION	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <h2>Tank Top FWD #5</h2>	DRAWING: 6
	DATE: March 2020	ADDRESS: Canadian Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			



**NOTES**

1. Drawing provided by client.
2. This drawing must be read in conjunction with associated report.

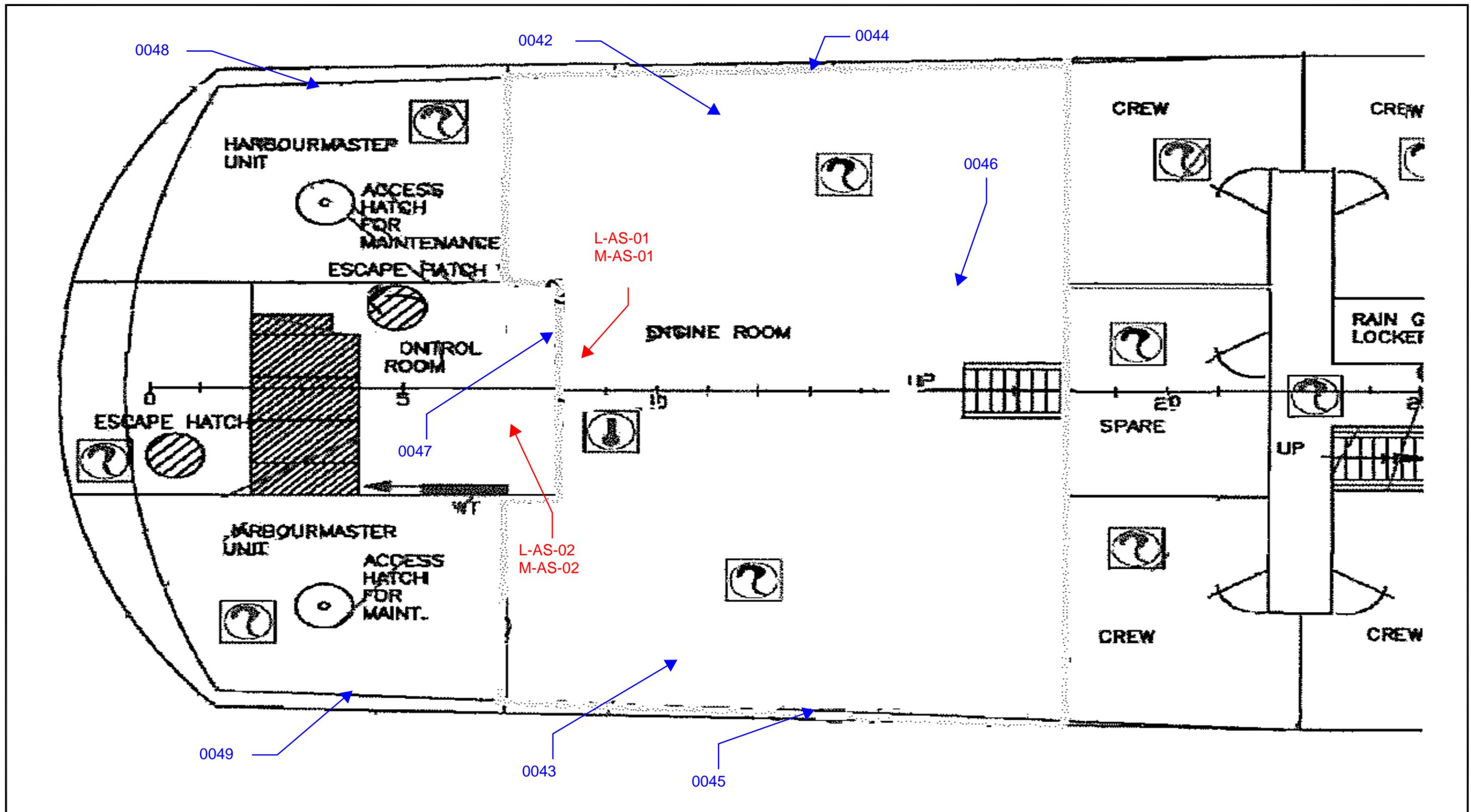
<b>LEGEND</b> MERCURY BULK SAMPLE LOCATION MERCURY AIR SAMPLE LOCATION LEAD BULK SAMPLE LOCATION LEAD AIR SAMPLE LOCATION	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <h2>Tank Top Midship #6</h2>	DRAWING: 7
	DATE: March 2020	ADDRESS: Canadian Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			



**NOTES**

1. Drawing provided by client.
2. This drawing must be read in conjunction with associated report.

<b>LEGEND</b> MERCURY BULK SAMPLE LOCATION MERCURY AIR SAMPLE LOCATION LEAD BULK SAMPLE LOCATION LEAD AIR SAMPLE LOCATION	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <h2>Tank Top #7</h2>	DRAWING: 8
	DATE: March 2020	ADDRESS: Canadian Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			



- NOTES
1. Drawing provided by client.
  2. This drawing must be read in conjunction with associated report.

<b>LEGEND</b> MERCURY BULK SAMPLE LOCATION MERCURY AIR SAMPLE LOCATION LEAD BULK SAMPLE LOCATION LEAD AIR SAMPLE LOCATION	WSP PROJECT NUMBER: 171-09529-62	CLIENT: PWGSC	Lead and Mercury Sampling Assessment - CCGS Limnos  <b>Tank Top #8 - Engine Room</b>	DRAWING: 9
	DATE: March 2020	ADDRESS: Canadian Centre for Inland Waters (CCIW)		
	DRAWN BY: JM			
	APPROVED BY: JB			