



**DESIGNATED SUBSTANCE AND HAZARDOUS MATERIALS  
SURVEY  
HMCS HAIDA  
658 CATHARINE STREET NORTH  
HAMILTON, ONTARIO**

**For:**

**Parks Canada**

**Submitted to:  
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## EXECUTIVE SUMMARY

Superior Building Solutions, was retained by Heddles Marine Services Inc. to conduct a Designated Substance and Hazardous Materials Survey (DSHMS) of the HMCS Haida marine vessel located at Pier 9 Hamilton, Ontario .

The Client retained Superior Building Solutions to conduct a survey for designated substances and targeted hazardous materials including polychlorinated biphenyls (PCBs) and ozone depleting substances (ODSs) .

The objective of the DSHMS was to identify and quantify, where reasonably possible within the context of the project scope of work, designated substances in the marine vessel, as defined and regulated by Section 30 of the Ontario Occupational Health Safety and Safety Act (OHSA) Revised Statutes of Ontario 1990 (as amended), and enforced by the Ontario Ministry of Labour (MOL). The hazardous materials included in the survey are not regulated by Section 30 of the OSHA; however, these materials may impact the work and workers on the project.

## Findings

Based on Superior Buildings Solutions survey, visual identification and laboratory results, previous assessment report in 2002 by XCG Consultants identified materials included:

### Asbestos-Containing Materials (ACMs)

A total of fifty-five insulation, bulkhead, deckhead, joint compound, linoleum and vinyl floor tile samples were collected for asbestos analysis from previous and current assessments. Forty four of the samples were identified to contain amosite, chrysotile and crocidolite asbestos. Chrysotile was detected in six of the eight different types of vinyl floor tiles sampled. Other similar materials on the ship that were not analyzed were inferred to contain asbestos due to homogeneity and representation of the materials collected.

- Within the Engine Room, Gearing Room, Boiler room 1, Boiler Room 2 and Boiler room 3 was where the majority of the asbestos insulation was identified. These areas will require annual evaluation and condition assessment to assure their conditions are satisfactory.
- The remainder of the vessel represents locations of various asbestos materials ranging from vinyl floor tile, transite bulkhead and deckhead panels, fireproofing insulation on deckheads, cloth wrap and pipe insulation. Areas of damaged are identified in the room by room summary appendix A-1 .

### Lead

A total of eighteen paint samples were previously collected and analyzed for lead with an additional four paint samples collected in the update assessment. Nine of the paint samples analyzed were found to be lead based risk (i.e. lead concentration greater than 5000 ppm), including the grey bilge paint over red primer in the gearing room; green machine paint in the No. 1 boiler room, yellow paint from a lifeboat on the after deckhouse top and a ladder in No. 1 boiler room; red boiler paint in the No.2 boiler room; black gauge board paint; pale green wall paint from the engine room; White paint interior crew room; and Beige stipple ceiling deck paint in various locations(as determined by both Superior Building Solutions' current sampling program (and also the 2002 XCG Report).

There is no regulatory requirement for the removal of lead paint. It however should be managed and evaluated when conducting projects affecting the coating and its potential for lead exposure during renovation. Controls should be in place to assure that when retrofit work takes place lead exposure is prevented.

Lead is also present in the heavy duty batteries observed in the Gearing Room (starboard side) and the Low Power Room (lower deck).

### Silica

- Based on the visual inspection of the Vessels and the historical use of the Site, crystalline silica will be present in terrazzo flooring, concrete, concrete block, masonry mortar, ceramic tiles and ceiling tiles. The terrazzo type flooring was observed in the crews washrooms at port and stern, CPO/PO wash place, EM's wash place, Crews Wash Place Officers bath, Kitchen (upper deck).
- Should renovation or demolition including cutting and grinding of these materials appropriate precautions should take place to prevent inhalation of silica containing dust. Appropriate Silica Control Guidelines are published for preventative measures.

### Mercury

- Mercury vapour is present in fluorescent light fixtures throughout the Vessel within the Crew Space, Mechanics room (Upper deck), Fwd AC Switch Room, ships office ; engineers officer(lower deck) and the Chief PO Mess forecastle deck. Additionally, mercury may be present in radio equipment, which was observed in the radio room, FHC Storage, transmitting salon, sick bay (upper deck), the operations room, FWD WD room(signal deck) and radio room 2 (forecastle deck). It may be also be detected in specific gauges within the engine, gearing and boiler rooms.

### Polychlorinated Biphenyls (PCBs)

- It is unlikely that the vessel has been completely re-lamped and therefore may contain

PCB light ballasts. As light fixtures were not de-energized at the time of the survey and sampling event, for safety concerns Superior Building Solutions did not inspect light ballasts to assess for PCB content. Approximately 12 fluorescent light fixtures were located in the Vessel. The light ballasts should be checked when de-energized or required for removal and cross referenced through the Environment Canada document entitled "Identification of Lamp Ballasts Containing PCBs," dated August 1991.

- Transformers were observed in various cabins within the vessel; they appear to be all air-cooled and therefore non-PCB containing. Other equipment that may potentially contain PCB's (i.e. radio receivers, transmitters, capacitors, electrical equipment, amplifiers, supply switches) were observed in several areas of the vessel including the following: Upper Deck - Crew Space, Radio Room, FHC storage, Transmitting station, sick bay; Lower Deck - lobby; Hold Deck - A/S Compartment, forward slave room; Signal Deck - Operations room, ASDIC Control/Sonar Control room, and for WD Room - Stern Deck Forward AC switchboard and Low Power room; Forecastle Deck - Radio room 2, Directors Radar office. The radio equipment is operational and provides historic perspective, should the components be removed from operation they should be tested for PCB's.

#### Ozone Depleting Substances (ODSs)

- Ozone Depleting Substances can be found in refrigerants and halon fire extinguishing systems. There were no Halon fire extinguishing systems present on board the vessel. The potential refrigerant containing ODSs include domestic refrigerators in the crews galley, kitchen, engineers workshop of the Upper Deck, and Hallway/foyer of the lower deck. A domestic freezer inside the freezer storage of the upper deck along with an old water fountain with internal chilling in the Chief PO's Mess of the Forecastle deck. An unconnected window mount air conditioner in the vessel was also observed. Any repair, maintenance, or decommissioning of equipment containing halocarbons should be performed according to applicable regulation requirements along with contractors that have appropriate certification in dealing with this equipment.

Designated substances and hazardous materials included in this report may also be present in concealed locations within the Vessels.

#### **Recommendations**

Abatement and long-term recommendations are provided in Section 7.0 of this report. Appendix A of the report identifies condition assessment of the asbestos containing materials and allows further modification for future condition assessments.

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Figure 1	Deck Plan & Bulk Sample Locations – Asbestos
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## **APPENDICES**

Appendix A Room-by-Room Summary of Designated Substances

A1 – Asbestos Condition and Space by Space Assessment Summary

A2 – Lead Material Summary

Appendix B Photographic Log

Appendix C Laboratory Certificates of Analysis

Appendix D Drawing Figures

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## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

Superior Building Solutions, was retained by Heddles Marine Services Inc. (the Client) to conduct a Designated Substance and Hazardous Materials Survey (DSHMS) of the HMCS Haida located in Hamilton, Ontario. The scope of the assessment in this survey are as follows

HMCS HAIDA- Was constructed in 1941/1942 and commissioned in 1943 and decommissioned in 1963. The Haida has a length of 115 metres (377 feet), and a beam width of 11.4 meters (37.5 feet). It is a multi compartmentalized destroyer with various spaces on board.

The Client retained Superior Building Solutions to conduct a survey for designated substances and targeted hazardous materials including polychlorinated biphenyls (PCBs) and ozone depleting substances (ODSs) .

The objective of the DSHMS was to identify and quantify, where reasonably possible within the context of the project scope of work, designated substances in the vessel, as defined and regulated by Section 30 of the Ontario Occupational Health Safety and Safety Act (OHSA) Revised Statutes of Ontario 1990 (as amended), and enforced by the Ontario Ministry of Labour (MOL). The hazardous materials included in the survey are not regulated by Section 30 of the OSHA; however, these materials may impact the work and workers on the project.

### **1.2 SCOPE OF WORK**

The DSHMS was completed in accordance with the requirement to update the condition assessment of the HAIDA. The scope of work included the following activities:

- Review of previous designated substance, hazardous materials and environmental reports, abatement records, and building construction and renovation information, as made available by Client.
- Conduct a survey of all readily accessible areas within the vessel to identify vessel materials suspected to contain designated substances and hazardous materials including PCBs and ODSs. The survey included a description of the materials suspected to contain designated substances or hazardous materials, as well as their known locations, physical condition, and where possible a visual estimation of quantity. Digital photographs were taken of commonly identified or sampled building materials that contained or were suspected to contain designated substances or hazardous



materials.

- Collect bulk samples of building materials that were suspected to contain asbestos and paint samples potentially containing lead and/or PCB's and submit to an accredited laboratory for analyses where required.
- This report includes a description of sampling and analytical methods, interpretation of the analytical results, a discussion of findings and conclusions and recommendations for the management of the identified materials, as appropriate.

Superior Building Solutions conducted the above scope without any major deviations.

Further limitations of the survey are described in Section 8.0.

## **13 GENERAL DESCRIPTION OF VESSEL**

Based on discussions with the Client, as well as observations made at the time of the survey, Superior Building Solutions understands the following about the vessel:

The HAIDA was built in 1941/1942 and commissioned in 1943. The HAIDA has a length of 115 metres (377 feet), and a beam width of 11.4 metres (37.5 feet). During its operation the vessel had a total of 18 officers and 230 crew who occupied the vessel at sea. There are two decks below the upper deck (lower deck and hold). Above the upper deck is the forecastle deck, signal deck and deckhouse top. The vessel is currently maintained and managed by Parks Canada.

The layout of the vessel is identified in the drawing section of Figure 1.

## **20 REGULATORY REQUIREMENTS AND GUIDELINES**

### **2.1 DESIGNATED SUBSTANCES**

This designated substances report is made to fulfill the Owner's requirements under Section 30 of the OHSA. The building owner must provide this report to all contractors working on the Site. Subsequently, all contractors must furnish this report to their subcontractors. The designated substances defined under the OHSA and their corresponding regulations at the time of the survey are summarized below.

"Designated Substance" as defined by the OHSA means "*a biological, chemical or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled.*" The OHSA

has issued specific regulations under Section 30 of the Act for these substances. The Designated Substances Regulations identified under the Industrial Regulation of the OHSA, provide guidance on exposure and medical monitoring, permissible occupational exposure limits, etc.

The MOL issued a regulation and/or guideline associated with construction related activities for only three of the eleven designated substances and includes asbestos, lead, and silica.

There are eleven designated substances defined by the OHSA, which are regulated by O. Reg. 490/09 - *Designated Substances* in a workplace, as defined by these regulations (manufacturing/process). During manufacturing processes and work within a workplace, hygiene air monitoring could be performed to assess worker exposure levels.

## 21.1 ASBESTOS

The handling, identification, documentation, and removal of asbestos are regulated by O. Reg. 278/05. ACM is defined by O. Reg. 278/05 as being a material that contains 0.5 percent or more asbestos fibers by dry weight. As described in Section 8 of O. Reg. 278/05, a record of ACM must be developed as part of on-going asbestos management in buildings. The record of ACM includes, but is not limited to, the location and condition of ACM and whether it is considered friable or non-friable.

Asbestos is the name used for a group of fibrous minerals that occur naturally in soil and rock. There are over 3,000 products that may have contained asbestos, such as roofing shingles, ceiling tiles, floor tiles, asbestos cement products, gaskets, insulation, paper products, and other building and insulating products. ACMs are divided into the following two broad categories:

- **Friable ACM:** materials that, (a) when dry, can be crumbled, pulverized or powdered by hand pressure, or (b) is crumbled, pulverized or powdered (O. Reg. 278/05 definition). Typical friable materials include acoustical or decorative spray applications, fireproofing, and mechanical insulation.

ACM that is friable has a much greater potential than non-friable ACM to release airborne asbestos fibres when disturbed. The most common friable ACM used in the past are surfacing materials (usually sprayed fireproofing, texture, decorative or acoustic sprayed finishes) and thermal insulations on mechanical systems.

- **Non-friable ACM:** hard or manufactured products wherein the asbestos fibres are bound. Typical non-friable ACM includes; tar and floor tiles, pre-formed manufactured cement wallboards, pipes, and siding. Though many non-friable ACM products are considered non-friable when intact, they can become friable during demolition or renovation activities.

**Special considerations:** Some ACMs, such as plaster, and compressed fibre ceiling tiles

(and sometimes drywall compound) are considered non-friable materials when in-place and in good condition as the associated binding agent prevents the release of airborne fibres. These materials are non-friable in place, but can generate dust upon removal. These materials are referred to as potentially friable materials (or miscellaneous friable materials). Therefore, these materials can be handled as a non-friable if in good condition and undisturbed. However, the binding agent can be relatively weak, and if disturbed or damaged in any way, the material may act as a friable material with an increased risk of asbestos fibre release. These materials must be handled as friable materials in the event of any disturbance or damage. Drywall joint compound is a non-friable building material; however, due to general dust release and generation during removal additional measures to Type 1 or Type 2, as Regulated, may be required (addition of negative pressure, etc.). It is generally recommended that a competent asbestos professional be consulted and a site specific program be developed prior to any major disturbance.

**Vermiculite insulation** is an unconsolidated material and asbestos fibres may not be uniformly distributed in the material. As such, the standard Phase Light Microscopy (PLM) analytical method is not recommended for quantification and is used solely to determine the presence or absence of asbestos fibres. Any observation of asbestos fibres in the sample is reported as positive for asbestos, or negative (non-detect) if not observed.

The handling, identification, documentation, and removal of asbestos are regulated by O. Reg. 278/05.

### **2.1.2 LEAD**

In building construction, lead was frequently used for roofs, cornices, tank linings, electrical conduits, as a main component of soft solder alloy used to seal pipe joints and in caulking, ceramic glazing and other such materials. Lead was also used extensively for pigmentation, sealing, and as a drying agent in oil based paints up until the early 1950's. Exterior paints typically contained up to 60% lead by weight.

The MOL issued the "*Lead on Construction Projects*" guideline in September 2004 (revised in April 2011). The guideline includes legal requirements, health effects, control of the health hazard, classification of construction operations, and measures and procedures for working with the designated substance during operations that create lead dust or fumes.

The United States Department of Housing and Urban Development (the U.S. HUD) guideline of 1 milligram per square centimetre ( $\text{mg}/\text{cm}^2$ ), 0.5 percent lead by weight, or 5,000 parts per million (ppm) lead is used in the United States as a guideline for determining whether the use of safety precautions would be required during operations that create lead dust or fumes.

In 1976, the Canadian Federal Government introduced the Liquid Coating Materials Regulations under the Federal Hazardous Products Act (HPA), restricting the maximum total lead content of paints and other liquid coating materials used in or around premises attended by children or pregnant women to 0.5% by weight (5,000 mg/kg). In January 1991, Health Canada negotiated a voluntary reduction of lead content in all Canadian produced consumer

paint to a maximum of 0.06%. Recently the Canadian Federal Government revoked Part 1 of the HPA and enacted the Surface Coating Materials Regulations (SOR/2005-109) under the Canada Consumers Product Safety Act (S.C. 2010) which reduce the maximum total lead content of any new surface coatings for consumer products to 0.009% (90 mg/kg). This

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used for agricultural or industrial purposes or as an anti-weathering or anti-corrosive coating.

The OHSA does not set a regulatory limit on the concentration of lead in paint and based on discussions with the MOL, any concentration of lead in paint applications should be considered to be lead-containing. For this report, all paints with a lead concentration greater than the laboratory RDL (Reliable Detection Limit) for the analytical test method have been discussed. For the purposes of this survey where occupational exposures are considered during demolition or renovation, a surface coating containing greater than 0.5% or 5,000 mg/kg (5,000 µg/g) or 1 mg/cm<sup>2</sup> for XRF analysis is considered by Superior Building Solutions as presenting an increased potential for worker exposure and subject to controls. Materials with content of lead in any concentration may require special handling procedures and worker protection (i.e. >0.009%).

### **2.1.3 MERCURY**

Mercury can be used in fluorescent, compact fluorescent and high intensity discharge (HID) lamps, electrical switches, thermostats, thermometers, and certain batteries. All fluorescent and compact fluorescent lights contain mercury regardless of the date of manufacture.

The Canadian Council of Ministers of the Environment (CCME) “Canada-Wide Standard for Mercury-Containing Lamps” (2001) is largely geared towards reducing the amount of mercury in lamps at the manufacturing stage; however, they do recommend that the release of mercury can be minimized through the proper recycling and disposal of mercury-containing lamps.

### **2.1.4 SILICA**

Silica is used in the manufacture of glass, ceramics, abrasives, water treatment products and filtration systems. Crystalline silica materials also are used in the production of concrete or mortar-based building materials, cement, acoustic ceiling tiles, and ceramic tiles which are used for construction purposes. Common construction sand contains free crystalline silica and is present in ceiling tiles, concrete products, mortar, and brick.

The MOL issued the “*Silica on Construction Projects*” guideline in September 2004 (revised in April 2011). The guidelines include legal requirements, health effects, control of the health hazard, classification of construction operations, and measures and procedures for working with the designated substance during operations that create silica dust.

Silica may be present in many building materials and is therefore expected to be present in the vessel. As such, Superior Building Solutions did not specifically survey or sample for the

presence of silica, however it has been noted in this report.

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## **2.2 HAZARDOUS BUILDING MATERIALS**

### **2.2.1 POLYCHLORINATED BIPHENYLS (PCBs)**

PCB-containing products were manufactured for use in applications where stable, fire-resistant, and heat-transfer properties were demanded between 1926-29 and 1977. Most PCBs were sold for use as dielectric fluids (insulating liquids) in electric transformers and capacitors. Other uses included heat transfer fluid, hydraulic fluid, dye carriers in carbonless copy paper, plasticizers in paints, adhesives, and caulking compounds. In Canada, PCBs were prohibited from being used in products, equipment, machinery, electrical transformers and capacitors that were manufactured or imported into the country after July 1980. However, older equipment in use after this date may still contain PCBs if the equipment's fluid has not been changed, or if there was sufficient inventory of such equipment.

PCBs are also regulated under the Federal Canadian Environmental Protection Act, 1999, PCB Regulation SOR/2008-273 which came into force September 2008 and subsequent amendment regulation SOR 2010-57. The Federal PCB regulations generally establish deadlines for ending the use and long term storage of PCBs and products containing PCBs. PCB-containing equipment or any PCB-containing substance with a PCB concentration at or in excess of 2 ppm for liquids and 50 ppm for solids (including applied surface coatings such as paint) are subject to the above Federal regulations.

This survey is intended for assessment purposes only, and may not provide sufficient detail for long term management of PCBs or to determine end-of-use inventories as required in SOR/2008-273-PCB Regulation.

### **2.2.2 OZONE DEPLETING SUBSTANCES**

ODSs include any substances containing chlorofluorocarbon (CFC), hydrochlorofluorocarbon (HCFC), halon or any other material capable of destroying ozone in the atmosphere. ODSs have been used in rigid polyurethane foam and insulation, laminates, aerosols, air conditioners, fire extinguishers, cleaning solvents and the sterilization of medical equipment. Federal regulations introduced in 1995 required the elimination of production and import of CFCs by 1 January 1996 (subject to certain essential uses) and a freeze on the production and import of HCFC-22 by 1 January 1996. These regulations also require the complete elimination of HCFC-22 by the year 2020. ODSs and other halocarbons are regulated by Ontario Regulation 463/10 made under the Environmental Protection Act (EPA).

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This survey was limited to the visual identification of suspected ODS-containing equipment in accessible areas of the vessel. No sampling of suspected ODS-containing equipment was completed as part of this survey.

### **3.0 EXISTING INFORMATION**

The Client provided Superior Building Solutions with a previous designated substance survey (DSS) completed for the Site as follows:

*.Designated Substances and Hazardous Materials Survey, HCMS HAIDA Ontario Place 855 Lakeshore Blvd West Toronto, ON, prepared by XCG Consultants Ltd. and dated July 10, 2002 (2002 XCG Report).*

At the request of the Client, the key results of the 2002 XCG Report have been incorporated into this report.

### **4.0 METHODOLOGY**

On 28 December 2016, Superior Building Solutions visited the vessel. A walk-through of the vessel was performed, along with an inventory of materials that were to be sampled as part of the DSHMS. Confirmation of materials previously sampled as part of the 2002 XCG Consultants Ltd. was also performed at this time.

From 29 December 2016 to 11 January 2017, Superior Building Solutions performed the survey and sampling program of the HMCS HAIDA. A room-by-room survey of all known and accessible areas within the vessel was performed. Suspected designated substances and hazardous materials were visually identified by appearance, age, and knowledge of current and historical uses of the vessel materials. The survey included a detailed description of any suspected designated substances and hazardous materials identified within the vessel.

### **4.1 ASBESTOS-CONTAINING MATERIALS – STRATEGY AND SAMPLING FREQUENCY**

The survey included a detailed description of any suspected ACM identified within the rooms. The details on the location, type of building material and, where possible, an estimation of quantity, condition, and accessibility were recorded.

There has never been a complete ban on the use of asbestos products in Canada, although asbestos products are subject to various prohibitions and restrictions under Provincial and Federal legislation. While ACMs are still manufactured globally and are available for limited

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use in Canada, the building products available since the late 1980s tend to be low risk, non-friable materials. Buildings built between 1986 and 1990 are unlikely to contain high risk ACMs such as mechanical or spray applied insulation and newer buildings (post 1992) are less likely to contain non-friable ACMs.

There is no construction cut-off date in Provincial legislation for the provision of ACM surveys. Superior Building Solutions' sampling strategy is to focus on those materials most likely to contain regulated concentrations of asbestos (i.e. ACMs defined as having an asbestos concentration 0.5% or greater) based on knowledge of the use and manufacture of building materials. While no survey could ever fully eliminate the possible presence of all ACMs or more so the presence of asbestos in building materials, Superior Building Solutions believes this sampling strategy is appropriate and a prudent and responsible limitation.

Asbestos bulk samples were collected in groups in compliance with the requirements of O. Reg. 278/05 (the Regulation). The Regulation identifies the minimum number of samples to be collected and analyzed (1, 3, 5, or 7 depending on quantity, application and friability) from each homogeneous material, in order for the material to be considered non-asbestos. This frequency is indicated in Table 1 of the Regulation. A homogeneous material is defined in O. Reg. 278/05, as one that is uniform in colour and texture. The surveyor used information obtained on Site by visual examination and available information on the phases of the construction, and reported renovations, to determine the extent of each homogeneous area and the number of samples required. In addition, visual differences in applications were noted where possible.

Most vessels undergo renovations on a frequent basis, including the removal and replacement and installation of new partitions. Where various construction periods or visually similar products were present, Superior Building Solutions made a reasonable attempt to follow the Regulation with respect to sampling by collecting a minimum of three or up to seven samples for each visible different material, as outlined in Table 1 of O. Reg. 278/05.

In areas where finished surfaces required partial removal to inspect hidden materials (e.g., cloth or PVC jacketing over pipe or tank insulation), a small opening was cut to allow for



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inspection and sampling of the underlying materials. All openings were re-sealed with industrial adhesive tape.

Bulk samples of suspected ACM were submitted under chain of custody protocol to Carolina Environmental Laboratories Inc. in Charleston, South Carolina, USA. CEI is accredited for bulk asbestos fiber analysis by the National Voluntary Laboratory Accreditation Program (NVLAP). Samples were analyzed using polarized light microscopy (PLM) methodology (EPA/600/R-93/116). This method is specified by O. Reg. 278/05 for establishing whether the material is asbestos-containing and defining the content and type of asbestos. Results of <0.5% asbestos are considered to be non-asbestos. Note that small asbestos fibres may be missed by PLM due to resolution limitations of the optical microscope that can result in a false negative analytical result. Therefore, negative results (i.e. non-detect for asbestos fibres) cannot be guaranteed. Transmission Electron microscopy (TEM) can be used to confirm PLM results; however, this method is not included in this scope of work.

With exception of select products, the laboratory followed a “positive-stop” analysis methodology and stop analyzing a sample set if any one of the series of samples proves to be positive for the presence of asbestos. Therefore, duplicate samples taken in order to satisfy the requirements of O. Reg. 278/05 were not analyzed if the initial sample was identified as asbestos-containing. Only one result of greater than 0.5% asbestos content is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos (O. Reg. 278/05). The laboratory stopped analyzing samples from a homogeneous material once greater than 0.5% asbestos was detected in any of the samples of that material. All samples of a homogeneous material were analyzed if no asbestos was detected. Where building materials are described in this report as non-asbestos, or described as containing no asbestos, this is subject to the limitations of the analytical method used, and should be understood to mean no asbestos was detected by the laboratory but may remain bound in compounds or in a smaller size than detectable by the specified method.

Asbestos cement products and various other non-friable materials (e.g. ventilation vibration dampers) were visually identified as presumed ACM where present and where visual identification is reliable.

#### **4.1.1 BASIS OF EVALUATION AND RECOMMENDATION**

The condition and the potential for disturbance of any ACM observed were visually evaluated. The evaluation criteria were based on the conclusions of published studies, particularly the

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*“Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario”*, existing Ontario regulation, and our experience involving buildings that contain ACM.

An ACM was considered damaged, if it is sprayed material that is delaminating, mechanical insulation with damaged/missing insulation or jacketing, or non-friable materials that have been pulverized or damaged so that they may have become friable.

The priority for remedial action is not only based on the evaluation of condition, but also on several other factors which include:

- Accessibility or potential for direct contact and disturbance.
- Practicality of repair (e.g., will damage to the ACM continue after it is repaired).
  - Visibility/accessibility of the material.
  - Efficiency of the work (e.g., if damaged ACM is being removed in an area, it may be most practical to remove all ACM in the area even if it is in good condition).

#### **4.1.2 ACM EVALUATION – MATRIX ASSESSMENT OF CONDITION**

In evaluating the condition of ACMs, the following criteria are used for mechanical insulation:

<b>GOOD</b>	Insulation is completely covered in jacketing and/or exhibits no evidence of damage or deterioration. No insulation or friable ACM is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.
<b>FAIR</b>	Minor penetration damage to jacketed or covered surface (cuts, tears, nicks, deterioration, or delamination). Friable ACM is exposed but not showing surface disintegration. The extent of missing insulation should be minor to none and the damage should be readily repairable.
<b>POOR</b>	Original insulation jacket or surface cover is missing, damaged, deteriorated, or delaminated. Friable ACM is exposed and significant areas have been damaged. Damage cannot be readily repaired.

In evaluating the condition of ACMs, the following criteria are used for spray applied materials (fireproofing, texture finish):

<b>GOOD</b>	Material is completely adhered to substrate and/or exhibits no evidence of damage or deterioration. Exposed sprayed fireproofing (thermal insulation) is considered to be in good condition, where no fallout or debris is present
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below. Painted texture finishes are in good condition (unpainted texture is considered to be in fair condition).

**FAIR** Minor penetration damage to paint covered surface (cracks, dents, nicks, deterioration, water damage or delamination). Friable ACM is exposed but not showing surface disintegration. The extent of missing material should be minor to none and the damage should be readily repairable. Fireproofing is either Good or Poor condition.

**POOR** Materials is delaminating, falling or hanging from applied surface

Non-friable ACM was considered to be in poor condition if they have been pulverized or damaged so that they have become friable. Broken, cracked or loose materials are considered to be in fair condition.

Assessment of conditions, accessibility and other information is presented in the room-by-room sheets in Appendix A.

#### **4.1.3. ASBESTOS SAMPLING EXCLUSIONS**

A number of materials which may contain asbestos were not sampled during this survey including, but not limited to the following areas:

- Active, or potentially active, mechanical equipment (sampling of these materials may cause consequential damage to the building and mechanical systems);
- Materials that were present in such an inconsistent fashion that without complete removal of finishes, the extent of ACM cannot be determined (i.e. floor levelling compound);
- Interior cores of fire doors;
- Potential for asbestos-containing pipe and mechanical insulation to be present behind solid walls and above solid ceilings throughout the Vessels; and,
- Electrical equipment (sampling the material may have posed an electrical hazard to the surveyor).

Where present, these materials must be presumed to be asbestos-containing and sampling immediately prior to demolition is typically the best practice.

#### **4.2 LEAD AND LEAD-CONTAINING PAINT**

The survey included a description of Vessel materials suspected to contain lead. Details of location, description, and condition were recorded.

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Paint chip samples of primary paint colors potentially having greater than 0.5% lead by dry weight were collected and submitted to Paracel Laboratories Inc. for lead analysis. Paracel Laboratories is accredited for lead analysis by the Canadian Association for Laboratory Accreditation (CALA). The samples were subsequently analyzed using ICP –OES basedn on MOE E3470, ICP-OES.

Paint chip samples were generally collected of typical primary paint colours from common vessel materials which would be subject to maintenance or recycling during demolition, such as bulkhead walls, hull, deck floors, mechanical equipment and doors/trim. It was not Superior Building Solutions intent to sample minute colours (i.e. one random trim colour). Building materials with prefinished coating (i.e. metal siding), where a sample could not be obtained without extensive damage, where substrate interference may pose an issue or if the paint coating was inaccessible (i.e. height) were not collected. Given the limited paint sampling conducted, Table 3 and the room by room sheets indicate only those locations where actual sampling was completed.

Leachate samples of paints were not taken as the purpose of disposal of materials or demolition was not included as a part of the assessment. This analysis is best during extensive retrofit or demolition type projects where waste is required to be classified.

#### **4.21 BASIS FOR EVALUATION, CONDITION AND RECOMMENDATIONS**

The condition and the potential for disturbance of any lead-containing material observed were visually evaluated. The evaluation considered similar characteristics as outlined in Section 4.1.1 of this report for ACM and as summarized below for condition of lead:

##### **Condition**

- Good: no visible damage or exposed substrate material
- Fair: repairable damage with minor amounts of exposed or damaged material (peeling, flaking), minor removal required.
- Poor: extensive damage with missing or exposed paint or substantially damaged materials

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#### **4.3 MERCURY**

The survey included the visual identification of known mercury sources, which may include thermostats, switches, fluorescent and compact fluorescent lamps (CFL).

No sampling for mercury in paint was completed as part of this survey.

#### **4.4 POLYCHLORINATED BIPHENYLS**

As part of the survey, Superior Building Solutions assessed the Vessels for the presence of potential PCB-containing materials. Potential PCB-containing equipment or materials were identified by appearance, age and knowledge of current and historical uses of the Site and subject materials. Bulk sampling for PCBs was not performed with exception of identification in some paints.

Fluorescent light fixtures were not disassembled to examine ballasts during this survey. It is assumed in buildings of this era, that some of the light ballasts will contain PCB's if the buildings have not been re-lamped and all ballasts replaced.

#### **4.5 OZONE DEPLETING SUBSTANCES**

ODSs include any substances containing chlorofluorocarbon (CFC), hydrochlorofluorocarbon (HCFC), halon or any other material capable of destroying ozone in the atmosphere. ODSs have been used in rigid polyurethane foam and insulation, laminates, aerosols, air conditioners, fire extinguishers, cleaning solvents and the sterilization of medical equipment. Federal regulations introduced in 1995 required the elimination of production and import of CFCs by 1 January 1996 (subject to certain essential uses) and a freeze on the production and import of HCFC-22 by 1 January 1996. These regulations also require the complete elimination of HCFC-22 by the year 2020. ODSs and other halocarbons are regulated by Ontario Regulation 463/10 made under the Environmental Protection Act (EPA).

This survey was limited to the visual identification of suspected ODS-containing equipment in accessible areas of the Vessels. No sampling of suspected ODS-containing equipment was completed as part of this survey.

## 50 RESULTS

The following section provides an overview of the individual designated substances and hazardous materials present in the vessel identified during the time of the survey. A room-by-room summary of designated substances and hazardous materials is provided in Appendix A.

Superior Building Solutions analyzed an additional five bulk samples of suspected friable and non-friable ACMs from homogeneous building materials in various locations of the vessel to identify the presence, quantity where possible and type of asbestos. A summary of bulk samples found to contain asbestos is provided in Table 1,. A photographic log of select sampled asbestos materials is provided in Appendix B. The sample locations, sample IDs and room locations are shown on Figure 1.

ACM is present in the vessel based on the 2002 XCG Report, as well as the visual survey, sampling and laboratory analysis program and by visual comparison of sampled and analyzed materials to similar building materials observed throughout the subject vessel (i.e. suspected ACM). The room-by-room summary of ACM identified in the vessel is provided in Appendix A-1 Table1, which includes the location of the material, type of building material, estimated quantity, state of asbestos (e.g., friable or non-friable), description of condition and asbestos content and type. The summary of ACM includes both the sampled materials and the suspected materials based on comparison to sample results of similar building materials, the results of the 2002 XCG Report, as well as materials not sampled as part of the survey.

The following sections provide the findings of the survey.

The analytical laboratory results are provided in Appendix C.

**Table 1: Asbestos Homogeneous Materials**

Hom No.	Drawing Location	Material(s)	ACM	Sample No.
<b>FLOORING MATERIAL</b>				
FT-01		Steel	Non asbestos	-
FT-02		9"x9" green /brown Floor Tile	10-20% chrysotile	VT-2CS3-GRY
FT-03		9"x9" Red Floor Tile	10-20% chrysotile	VT-6-RR21- Red
FT-04		9"x9" Grey with black flex Floor tile	10-20% chrysotile	VT-2-CS3-Gry
FT-05		9"x9" blue/green with white flex Floor Tile	10-20% chrysotile	VT-2CS3-GRY
FT-06		9"x9" Grey floor tile	10-20% chrysotile	VT-7-RR21-GRY
FT-07		12"x12" Green with white flex Floor tile	10-20% chrysotile	VT-1-CS2-GRN
FT-08		12"x12" White Floor tile	1-3% chrysotile	VT-10-SMF68-WHT
FT-09		12"x12" Grey Floor tile	1-3% chrysotile	VT-4-CSC16-GRY
FT-10	UD-013	Brown Linoleum	Non Asbestos	LIN-9-FS33-GRN
FT-11	FDA-004	Terrazzo flooring	Non Asbestos	-
FT-12		12"x12" Pale Green Floor Tile	Non Asbestos	VT-5-OR17-PGRN
FT-13		9"x9" Red with white flex Floor Tile cut from 12"x12" tile	Non Asbestos	VT-3-HF-14-Red
FT-14		Green Counter Linoleum	Non Asbestos	LIN9-FS33-GRN
<b>WALL MATERIAL</b>				
WT-01		Steel	Non asbestos	-
WT-02		Transite Panel Rigid	15% Chrysotile	2017 T.01
WT-03		White Dot Transite 12"x12" Panel	15% Chrysotile	2016 S.01
WT-04		Fibreglass Insulation Pinned Canvas Jacket	Non asbestos	-
WT-05		Wood	Non asbestos	-
WT-06		Fireproofing Insulation	20% Chrysotile 50% Crocidolite	2016 S.05
<b>CEILING MATERIAL</b>				
CT-01		Steel	Non asbestos	-
CT-02		Texture Coated Ceiling	Non asbestos	2016.S.04
CT-03		Fibreglass Insulation Pinned canvas jacket	Non asbestos	-
CT-04		Wood	Non Asbestos	-
CT-05		Transite Panel Rigid	15% Chrysotile	2017. T.01
CT-06		Fireproofing Insulation	25% Chrysotile 40% Crocidolite	2016.S.02
<b>THERMAL INSULATION MATERIAL</b>				
HT-01		Tank Insulation	30% Chrysotile	S.01
HT-02		Expansion Coil Insulation	30% Chrysotile	S.02
HT-03		Pipe Insulation Boiler Rm 1 – Port lower level	30% Chrysotile	S.03
HT-04		Pipe Insulation Boiler Rm 2 – STBD	30% Chrysotile	S.04
HT-05		Pipe Insulation Boiler Rm 2 – Valve	30% Chrysotile	S.05
HT-06		Pipe Insulation Boiler Rm 3 – above mezz	30% Chrysotile	S.06
HT-07		Pipe Insulation Boiler Rm 3 – below mezz	30% Chrysotile	S.07
HT-08		Foam Glass Pipe Insulation	Non asbestos	-
HT-09		Fibreglass Pipe Insulation	Non asbestos	-
HT-10		Armaflex Pipe Insulation	Non asbestos	-
HT-11	ER-001	12" Pipe Insulation –white chalky supply to port Generator	10-25%Amosite 75% Chrysotile	ER-1-PI-12
HT-12	ER-001	12" Pipe Insulation –white chalky supply to port pressure cruising turbine	Chrysotile 75% Amosite 5%	ER-2-PI-12
HT-13	ER-001	32" Pipe elbow insulation white chalky High Pressure Turbine outlet	Chrysotile 5%	ER-3-PE-32
HT-14	ER-001	32 Pipe Insulation, white chalky, High pressure turbine outlet/discharge	25-50% Chrysotile	ER-4-PI-32

Hom No.	Drawing Location	Material(s)	ACM	Sample No.
		<b>THERMAL INSULATION MATERIAL Cont'd</b>		
HT-15	ER-001	Turbine jacket insulation, white chalky Back of port low pressure turbine throttle	5-10% Chrysotile 25-50% Amosite	ER-5-TJ-LP
HT-16	ER-001	Turbine Jacket Insulation, white chalky, High pressure turbine above 3 <sup>rd</sup> level	10-25% Chrysotile 10-25% Amosite	ER-6-TJ-HP
HT-17	ER-001	10" Pipe insulation, white chalky, high pressure feed to lower nozzles btw high and low pressure turbines 3 <sup>rd</sup> level	50-75% Amosite	ER-7-PI-10
HT-18	ER-001	10" Pipe elbows, white chalky, high pressure feed to lower nozzles btw high and low pressure turbines 3 <sup>rd</sup> level	5-10% Chrysotile 25-50% Amosite	ER-8-PE-10
HT-19	ER-001	6 ½" Pipe insulation, white chalky, Main steam to gear room port above 3 <sup>rd</sup> level	25-50% Chrysotile	ER-9-PI-6.5
HT-20	ER-001	6 ½" Pipe elbow insulation, white chalky, Main steam to gear room port above 3 <sup>rd</sup> level	5-10% Chrysotile 5-10% Amosite	ER-10-PE-6.5
HT-21	ER-001	3" Pipe Insulation, white fibrous, Auxiliary steam feed to gear room (condensate extraction pump near low pressure turbine port	75% Chrysotile 5% Amosite	ER-11-PI-3
HT-22	ER-001	2" Pipe Insulation grey/brown fibrous. Sanitary water supply	Non asbestos	ER-12-PI-2
HT-23	ER-001	1" Pipe Insulation grey/ brown fibrous, condensate return pipe adjacent to emergency bulkhead valves at bow.	25-50% Chrysotile	ER-13-PI-1
HT-24	ER-001	Duct wrap, brown fibrous, Engine room fresh air supply vent near hatch	75% Chrysotile	ER-14-DW-19x8
HT-25	BR3-001	1" Pipe insulation, white woven fabric, condensate return, port side near stern second level at shoulder height near heater and red box.	10% Chrysotile	BR3-15-PI-1
HT-26	BR3-001	4" pipe elbow insulation. grey/cream, woven fabric. Steam supply to port compressor, near bow. third level at thigh height. Fair condition.	Chrysotile 25-50%	BR3-16-PE-4
HT-27	BR3-001	8" pipe insulation, white. fibrous. Steam return from port turbo fan. near bow, third level at waist height. Several exposed areas noted.	Chrysotile 50-75% Amosite 5.10%	BR3-17-PI-8
HT-28	BR3-001	14" pipe elbow insulation, brownish, fibrous paper type material. Main steam Outlet, starboard side ,towards bow, third level above boiler.	Chrysotile 50-75%	BR3-18-PE-14
HT-29	BR3-001	5" pipe insulation. brownish, fibrous, air-cell type material. Steam supply to service water pump, starboard side towards stern.	Chrysotile >75%	BR3-19-PI-5
HT-30	BR3-001	Boiler gasket (door) insulation. brown. woven fabric.. Port side, middle of boiler. Some exposed areas.	Chrysotile >75%	BR3-20-BG
HT-31	BR3-001	32" boiler jacket (mud drum), brown, woven fabric. Starboard side, second level at hip height.	Chrysotile >75%	BR3-21-BJ
HT-32	BR3-001	55" boiler jacket, (steam drum), white, chalky. Starboard side, near centre, third level at chest height.	Chrysotile 25.50% Chrysotile 25-50%	BR3-22-BJ
HT-33	BR3-001	5.5" pipe insulation, grey, chalky. Steam drum outlet to auxiliary. centre towards bow past steam drum, third level.	Chrysotile 25-50% Amosite >75% Chrysotile 25-50%	BR3-23-PI-5.5
HT-34	BR3-001	19" pipe insulation, grey, fibrous. Steam auxiliary valve (blowdown valve), centre towards bow, third level.	Amosite: >75%	BR3-24-PI-19



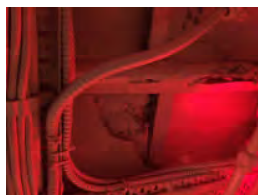
Hom No.	Drawing Location	Material(s)	ACM	Sample No.
		<b>THERMAL INSULATION MATERIAL Cont'd</b>		
HT-35	BR2-001	3.5" fresh water filling line, brown, fibrous. Line to starboard aft feed tank, towards stern. third level at shoulder height.	Non asbestos	BR2-25-PI-3.5
HT-36	BR2-001	6" pipe insulation white/grey, chalky. Part of auxiliary steam main (blow down), centre. third level, overtop of boiler.	Chrysotile - 50.75% Amosite 0.5.5%	BR2-26-PI-6
HT-37	BR2-001	11" pipe insulation, obits/grey, chalky. Recirculation from steam chest to mud drum, centre, third level, over top of boiler.	Chrysotile >75% Amosite 10-25%	BR2-27-PI-11
HT-38	BR2-001	13" pipe insulation, white/grey, chalky. Port side near cadre, steam main from No. 1 Boiler Room, third level.	Chrysotile >75% Amosite 0.5-5%	BR2-28-PI-13
HT-39	BR2-001	7" pipe insulation, brown, fibrous. Auxiliary steam main on starboard side, beneath third level catwalk.	Chrysotile 25-50% Amosite >75%	BR2-29-PI-7
HT-40	BR1-001	48" boiler jacket, donkey boiler (auxiliary boiler for comfort heating), grey, friable. Port side, towards stern, second level. Localized exposed areas.	Chrysotile 25-50%	BR1-30-BJ-48
HT-41	BR1-001	pipe elbow insulation, white, chalky. Main steam chest to mud drum, port side, towards bow, second level at head height.	Amosite 5-10% Chrysotile 0.5-5%	BR1-31-PE-11
HT-42	BR1-001	2.5" pipe insulation, brownish, fibrous. Steam heating line to gearing room (for steam rods), port side near bow, third level.	Chrysotile >75%	BR1-32-PI-2.5
HT-43	BR1-001	20" motor jacket, (turbo fan jacket), dark grey. non-friable. Port side near bow, third level. Exposed at ends.	Amosite 50-75%	BR1-33-MJ-20
HT-44	BR1-001	13" pipe insulation, white, chalky. Starboard main outlet from boiler, near centre, third level, above boiler.	Amosite 5-10%	BR1-34-PI-13
HT-45	GR-001	1.5" pipe insulation (rope wrap), cream. fibrous. General condensate return, port side near stern. first level.	Chrysotile 50-75%	GR-35-PI-1.5
HT-46	GR-001	6" pipe elbow insulation, grey, fibrous. Steam feed to port lube pump. towards stern.	Amosite >75% Chrysotile 50.75%	GR-36-PE-6
HT-47	GR-001	16" muffler jacket for diesel grommet. grey. fibrous. Starboard side, near stern (near voltage room).	Chrysotile 25-50% Chrysotile 10-25% Chrysotile 5-10%. Amosite 5-10%	GR-37-MUF-16
HT-48	EUD-001	7" Pipe Insulation grey fibrous- blowoff from safety valve in No. 3 Boiler Room	Chrysotile 75%	MD-38-PI-7
HT-49	UDM-002	Ceiling Insulation Grey, Fibrous, with rock wool	Crocidolite 25-50% Chrysotile .5% - 5%	MD-39-CI
HT-50	FDA-016	Mastic joint compound from base of toilet white	Non asbestos	MJC-40-CH57

**NOTE:**

Shaded rows indicate materials containing asbestos as determined by U.S EPA Method 600/ M4-82/ 020 for the analysis of asbestos in materials. Procedures described in EPA / 600/ R-13/ 116 were incorporated where applicable. Materials containing asbestos are required to be handled safely onboard the ship prior to any alteration or demolition construction work being performed.

**ACM – Asbestos Containing Material** means material that contains 0.5 per cent or more asbestos by dry weight. (O.Reg. 278/05 – Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations)

### 5.1.1 SPRAYED FIREPROOFING AND THERMAL INSULATION



Sprayed Parged fireproofing was identified in the assessment and found in the Signal deck – corridor, Upper Deck – lobby aft, and Lower deck lobby and gyro compass room, Lower Deck Aft staff office. This material contains Crocidolite asbestos and is recommend to be removed/enclosed from the vessel due to the nature of its condition on the signal deck level and Lower Deck Levels. It contains 25% chrysotile asbestos and 40% crocidolite asbestos.

### 5.1.2 TEXTURE FINISHES (ACOUSTIC/DECORATIVE)

Texture coating (painted surfaces) were identified on the vessel. The coating had a stipple finish. They were identified in various areas of the vessel. The texture coating was found to be non-detect for asbestos fibres.

### 5.1.3 PIPE AND MECHANICAL INSULATION MATERIALS

The majority of piping throughout the vessel was insulated with asbestos insulation. The primary location of this material was identified in the Gearing Room, Engine Room, Boiler Room 1, Boiler Room 2 and Boiler Room 3. The condition of these materials was varied ranging from fair to good.



Pipe insulation varied in asbestos content depending on the diameter and system it was associated with. Materials contained varied concentrations of Chrysotile, Amosite and Crocidolite asbestos minerals. A description of all locations, condition and quantities are identified in Appendix A-1.

The 2002 XCG Report details the presence of asbestos pipe insulation throughout the vessel where a majority of it was identified in the Engine Room, Gearing Room and Boiler Room spaces with some materials in various locations on the vessel. Additional materials were present within the Superior Building Solutions confirmed the presence of the asbestos insulation at the time of the survey.

#### **5.1.4 DUCT INSULATION**

Asbestos containing duct insulation was identified within the engine room of the vessel on the fresh air supply vent. The material was found to contain 75% chrysotile asbestos.

#### **5.1.5 MECHANICAL EQUIPMENT INSULATION**

No insulation on mechanical equipment such as operational machines was observed at the time of the survey. Engine room and boiler equipment was associated with the pipe insulation category

#### **5.1.6 VERMICULITE**

Vermiculite was not identified or would be suspect within the marine vessel.

#### **5.1.7 PLASTER**

Plaster was not identified or observed on board the vessel nor was it identified in the 2002 XCG Report.

#### **5.1.8 DRYWALL JOINT COMPOUND**

Drywall joint compound was not sampled or identified on board the vessel.

As part of the 2002 XCG Report, drywall joint compound was also not collected.

#### **5.1.9 CEILING TILES/ACOUSTICAL TILES**

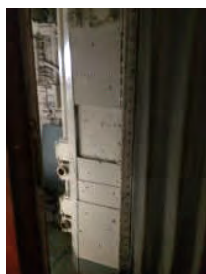
- There were no potential asbestos containing ceiling tiles present on board the vessel. Material surfaces were primarily steel, or wood within the associated cabins.

All ceiling tiles were found to be non-detect for asbestos fibres.

This was confirmed in the 2002 XCG Report.

#### **5.1.10 ASBESTOS CEMENT PRODUCTS (TRANSITE)**

Transite cement board was identified on board the vessel. It was found in various forms.



The first main form was a 12"x12" white dot tile like panel found in the Operations Room, Chart Room bulkhead walls. The second common form was a cement rigid board. This was identified in Lower Deck forward lobby 2m<sup>2</sup>. Gyro Compass Room 3m<sup>2</sup>, Low Power Room 9m<sup>2</sup>; Forecastle Deck Fwd – mess room chief petty officer 3 m<sup>2</sup>, Signal Deck –Captains Sea cabin 7m<sup>2</sup>. This material contains 15% chrysotile asbestos.

#### **5.1.11 VINYL SHEET FLOORING**

Asbestos Vinyl sheet flooring was not identified on the vessel during the investigation and was consistent with the 2002 XCG Report.

Currently there is no suspect asbestos containing vinyl sheet flooring present on the vessel.

This includes the brown linoleum in the crypt cabin and green counter.

#### 5.1.12 VINYL FLOOR TILE AND MASTIC

Vinyl floor tiles and associated mastics were observed and sampled from the Vessel as follows:

Description	Asbestos Content
9"x9" green /brown Floor Tile	10-20% chrysotile asbestos
9"x9" red Floor Tile	10-20% chrysotile asbestos
9"x9" Grey with white flex Floor tile	10-20% chrysotile asbestos
9"x9" blue/green with white flex Floor Tile	10-20% chrysotile asbestos
9"x9" Grey floor tile	10-20% chrysotile asbestos
12"x12" Green with white flex Floor tile	10-20% chrysotile asbestos
12"x12" White Floor tile	1-3% chrysotile asbestos
12"x12" Grey Floor tile	1-3% chrysotile asbestos

These materials are identified throughout various deck levels of the vessel and are identified in appendix A-1 of the report.

As part of the 2002 XCG Report, these materials were sampled and identified. Superior Building solutions confirmed their presence during the assessment.



#### 5.1.13 CAULKING/ADHESIVES/PUTTY/SEALANTS

No caulking/adhesives /putty or sealants were sampled or evaluated for asbestos content during the assessment. Samples were not collected on these materials due to the deterioration and integrity. These materials should be considered suspect asbestos and evaluated for content when removed.

#### **5.1.14 MASONRY MORTARS**

There were no masonry mortar materials a part of the ships structure or identifiable on the vessel that would have possible asbestos content. Should a material surface that is suspect it should be sampled and analyzed for content.

As part of the 2002 XCG Report, no suspect mortar related materials were observed as well.

#### **5.1.15 SINK UNDERCOATING**

No sink under coatings were observed or identified on the vessel.

#### **5.1.16 ROOFING MATERIALS**

There were no roofing materials a part of the ships structure or identifiable on the vessel

As part of the 2002 XCG Report, no roofing related materials were observed as well.

#### **5.1.17 PRESUMED ASBESTOS-CONTAINING MATERIALS**

ACMs may be present in forms that were not observed or sampled during the Site inspection including, but not limited to:

- Active, or potentially active, mechanical equipment (sampling of these materials may cause consequential damage to the building and mechanical systems);
- Materials that were present in such an inconsistent fashion that without complete removal of finishes, the extent of ACM cannot be determined (i.e. floor levelling compound);
- Interior cores of fire doors;
- Potential for asbestos-containing pipe and mechanical insulation to be present behind solid walls and above solid ceilings throughout the Vessels; and,
- Electrical equipment (sampling the material may have posed an electrical hazard to the surveyor).

For the purpose of renovation, demolition, or any other alteration or disturbance, all suspect ACMs, unless confirmed through sampling and analysis, should be considered to contain asbestos and handled in accordance with a written work plan as required by O. Reg. 278/05.

If present these materials must be presumed to be ACM and are best sampled immediately prior to commencing renovations or demolition of the affected materials.

## **52 LEAD-CONTAINING MATERIALS**

### **52.1 LEAD-CONTAINING PAINT**

Paint potentially containing lead was identified and sampled from within the vessel. Painted surfaces in more than a limited quantity included decks, bulkheads, deckheads, piping, systems, rails, and equipment.

A total of eighteen paint samples were previously collected and analyzed for lead with an additional four paint samples collected in the update assessment. Nine of the paint samples analyzed were found to be lead based risk (i.e. lead concentration greater than 5000 ppm), including the grey bilge paint over red primer in the gearing room; green machine paint in the No. 1 boiler room, yellow paint from a lifeboat on the after deckhouse top and a ladder in No. 1 boiler room; red boiler paint in the No.2 boiler room; black gauge board paint; pale green wall paint from the engine room; White paint interior crew room; and Beige stipple ceiling deck paint in various locations(as determined by both Superior Building Solutions current sampling program (and also the 2002 XCG Report).

During the Site inspection, many of the painted surfaces were in poor physical condition (i.e. peeling and flaking).

A summary of the paint chip samples collected, general description of the paint and the reported analytical results are provided in Table 2. A copy of the analytical report is provided in Appendix C. Photographs of the paint sample locations are provided in the Photographic Log in Appendix B.

Nine (9) samples of paints that were at or above the current Federal HPA of 0.05% by weight (as determined by both Superior Building Solutions current sampling program and also the 2002 XCG Report) .

**Table 2 – Lead Paint Coating Summary**

<b>Homogeneous Material Number</b>	<b>Paint Description</b>	<b>Lead Concentration ug/g (PPM)</b>	<b>Sample Reference</b>
HP.01	Yellow Paint Life Boat	15981	BOATP-4- ADHT
HP.02	Red Paint on Machinery	65761	BP-11-BR2-Red
HP.03	Silver Boiler Paint	3862	BP-14-BR2-Slvr
HP.04	Ceiling Paint Beige Upper Deck Fwd	1985	CP-1-CS1-BEIG
HP.05	Floor Paint Dark Grey Exterior Deck	139	FP-2-ADHT
HP.06	Floor Paint Light Grey exterior deck	171	FP-3-ADHT
HP.07	Black Paint over Green and Cream	8150	GBP-13-BR2-BLK
HP.08	Yellow Paint Machinery Parts and safety markings	41348	LP-17-BR-YLW
HP.09	Medium Green Paint Machinery Parts	13541	MP-16-BR1-GRN
HP.10	Pale Blue Paint Boiler Room	2939	PP-10-BR2-PBLY
HP.11	Grey /Green paint over cream Wall Paint Boiler room	1559	WP-15-BR2-GRYN
HP.12	Wall Paint Cream Upper Deck Fwd	1949	WP-6-ED48-CRM
HP.13	Grey Bilge Paint	5043	BLGP-18-GRY
HP.14	Pipe Paint Boiler Room Cream	1071	PP-12-BR2-CRM
HP.15	Wall Paint Cream Upper Deck FWD	2456	WP-7-PAN61-CRM
HP.16	Wall Paint Pale Green Engine Room	37580	WP-9-ER-PGRN
HP.17	Wall Paint Cream Upper Deck duplicate	2581	WP-7-PAN61-CRM
HP.18	Pale Blue Paint Engine Room	2437	PP-10-BR2-PBLU
HP.19	White Interior Paint Crews Mess Bulkhead	52600	P.01
HP.20	Beige Ceiling Stipple Coating	11100	P.02
HP.21	Blue Grey Paint Exterior Bulkhead	185	P.03
HP.22	Battle Ship Grey exterior floor deck	238	P.04

## **5.2.2 OTHER LEAD PRODUCTS**

Based on the apparent age of the Vessels, it should be assumed that all solder material associated with copper and cast-iron plumbing throughout the buildings contain lead.

Additionally, batteries in emergency lighting fixtures may contain lead. These materials were not sampled at the time of the survey. Lead is also present in the heavy duty batteries observed in the Gearing Room (starboard side) and the Low Power Room (both on lower deck). There were a total of 26 batteries identified in the Low Power Room and 6 in the gearing room.

## **5.3 MERCURY**

Mercury vapour is present in fluorescent light fixtures throughout the Vessel within the Crew Space, Mechanics room (Upper deck), Fwd AC Switch Room, ships office ; engineers officer(lower deck) and the Chief PO Mess forecastle deck. Additionally, mercury may be present in radio equipment, which was observed in the radio room, FHC Storage, transmitting salon, sick bay (upper deck), the operations room, FWD WD room(signal deck) and radio room 2 (forecastle deck). It may be also be detected in specific gauges within the engine, gearing and boiler rooms.

## **5.4 SILICA**

Based on the visual inspection of the Vessels and the historical use of the Site, crystalline silica will be present in terrazzo flooring, concrete, concrete block, masonry mortar, ceramic tiles and ceiling tiles. The terrazzo type flooring was observed in the crews washrooms at port and stern, CPO/PO wash place, EM's wash place, Crews Wash Place Officers bath, Kitchen (upper deck).

Should renovation or demolition including cutting and grinding of these materials appropriate precautions should take place to prevent inhalation of silica containing dust. Appropriate Silica Control Guidelines are published for preventative measures.

## **5.5 OTHER DESIGNATED SUBSTANCES**

No evidence suggesting the significant presence of acrylonitrile, arsenic, benzene, ethylene oxide, isocyanates, vinyl chloride, and coke oven emissions was observed in the vessel during the survey. These designated substances are not typically found in building materials in a composition/state that is hazardous. Therefore, these materials were not addressed in this survey.



## **5.6 POLYCHLORINATED BIPHENYLS**

It is unlikely that the vessel has been completely re-lamped and therefore may contain PCB light ballasts. As light fixtures were not de-energized at the time of the survey and sampling event, for safety concerns Superior Building Solutions did not inspect light ballasts to assess for PCB content. Approximately 12 fluorescent light fixtures were located in the Vessel. The light ballasts should be checked when de-energized or required for removal and cross referenced through the Environment Canada document entitled "Identification of Lamp Ballasts Containing PCBs," dated August 1991.

Transformers were observed in various cabins within the vessel; they appear to be all air-cooled and therefore non-PCB containing. Other equipment that may potentially contain PCB's (i.e. radio receivers, transmitters, capacitors, electrical equipment, amplifiers, supply switches) were observed in several areas of the vessel including the following: Upper Deck - Crew Space, Radio Room, FHC storage, Transmitting station, sick bay; Lower Deck - lobby; Hold Deck - A/S Compartment, forward slave room; Signal Deck - Operations room, ASDIC Control/Sonar Control room, and for WD Room - Stern Deck Forward AC switchboard and Low Power room; Forecastle Deck - Radio room 2, Directors Radar office. The radio equipment is operational and provides historic perspective, should the components be removed from operation they should be tested for PCB's.

## **5.7 OZONE DEPLETING SUBSTANCES**

Ozone Depleting Substances can be found in refrigerants and halon fire extinguishing systems. There were no Halon fire extinguishing systems present on board the vessel. The potential refrigerant containing ODSs include domestic refrigerators in the crews galley, kitchen, engineers workshop of the Upper Deck, and Hallway/foyer of the lower deck. A domestic freezer inside the freezer storage of the upper deck along with an old water fountain with internal chilling in the Chief PO's Mess of the Forecastle deck. An unconnected window mount air conditioner in the vessel was also observed. Any repair, maintenance, or decommissioning of equipment containing halocarbons should be performed according to applicable regulation requirements along with contractors that have appropriate certification in dealing with this equipment.

## 6.0 CONCLUSIONS

This DSHMS was completed as proposed by Superior Building Solutions. A room by room summary of identified designated substances is provided in Appendix A.

Confirmed and presumed designated substances and hazardous materials at the Site include:

- Parged pipe insulation , duct insulation, mechanical exhaust insulation, mud joint fittings, pipe insulation various diameter, 9"x9" red, green, grey, blue floor tile, 12"x12" white , green with white flex and grey floor tile, asbestos transite panels, fire proofing insulation, and boiler gasket.
- The 2002 XCG Report details the presence of these materials. Superior Building Solutions confirmed the presence of the parging cement insulation on the pipe fittings at the time of the survey.
- ACMs may also be present in forms that were not observed or sampled during the Site inspection including, but not limited to:
  - Active, or potentially active, mechanical equipment (sampling of these materials may cause consequential damage to the building and mechanical systems);
  - Materials that were present in such an inconsistent fashion that without complete removal of finishes, the extent of ACM cannot be determined (i.e. floor levelling compound);
  - Interior cores of fire doors;
  - Potential for asbestos-containing pipe and mechanical insulation to be present behind solid walls and above solid ceilings throughout the Vessels; and,
  - Electrical equipment (sampling the material may have posed an electrical hazard to the surveyor).

### Lead

A total of eighteen paint samples were previously collected and analyzed for lead with an additional four paint samples collected in the update assessment. Nine of the paint samples analyzed were found to be lead based risk (i.e. lead concentration greater than 5000 ppm), including the grey bilge paint over red primer in the gearing room; green machine paint in the No. 1 boiler room, yellow paint from a lifeboat on the after deckhouse top and a ladder in No. 1 boiler room; red boiler paint in the No.2 boiler room; black gauge board paint; pale green wall paint from the engine room; White paint interior crew room; and Beige stipple ceiling deck paint in various locations(as determined by both Superior Building Solutions current sampling program (and also the 2002 XCG Report).

There is no regulatory requirement for the removal of lead paint. It however should be managed and evaluated when conducting projects affecting the coating and its potential for lead exposure

during renovation. Controls should be in place to assure that when retrofit work takes place lead exposure is prevented.

Lead is also present in the heavy duty batteries observed in the Gearing Room (starboard side) and the Low Power Room (lower deck).

### *Silica*

- Based on the visual inspection of the Vessels and the historical use of the Site, crystalline silica will be present in terrazzo flooring, concrete, concrete block, masonry mortar, ceramic tiles and ceiling tiles. The terrazzo type flooring was observed in the crews washrooms at port and stern, CPO/PO wash place, EM's wash place, Crews Wash Place Officers bath, Kitchen (upper deck).
- Should renovation or demolition including cutting and grinding of these materials appropriate precautions should take place to prevent inhalation of silica containing dust. Appropriate Silica Control Guidelines are published for preventative measures.

### Mercury

- Mercury vapour is present in fluorescent light fixtures throughout the Vessel within the Crew Space, Mechanics room (Upper deck), Fwd AC Switch Room, ship's office ; engineer's officer (lower deck) and the Chief PO Mess forecastle deck. Additionally, mercury may be present in radio equipment, which was observed in the radio room, FHC Storage, transmitting salon, sick bay (upper deck), the operations room, FWD WD room (signal deck) and radio room 2 (forecastle deck). It may also be detected in specific gauges within the engine, gearing and boiler rooms.

### Polychlorinated Biphenyls (PCBs)

- It is unlikely that the vessel has been completely re-lamped and therefore may contain PCB light ballasts. As light fixtures were not de-energized at the time of the survey and sampling event, for safety concerns Superior Building Solutions did not inspect light ballasts to assess for PCB content. Approximately 12 fluorescent light fixtures were located in the Vessel. The light ballasts should be checked when de-energized or required for removal and cross referenced through the Environment Canada document entitled "Identification of Lamp Ballasts Containing PCBs," dated August 1991.
- Transformers were observed in various cabins within the vessel; they appear to be all air-cooled and therefore non-PCB containing. Other equipment that may potentially contain PCB's (i.e. radio receivers, transmitters, capacitors, electrical equipment,

amplifiers, supply switches) were observed in several areas of the vessel including the following: Upper Deck - Crew Space, Radio Room, FHC storage, Transmitting station, sick bay; Lower Deck – lobby; Hold Deck – A/S Compartment, forward slave room; Signal Deck – Operations room, ASDIC Control/Sonar Control room, and for WD Room – Stern Deck Forward AC switchboard and Low Power room; Forecastle Deck – Radio room 2, Directors Radar office. The radio equipment is operational and provides historic perspective, should the components be removed from operation they should be tested for PCB's.

#### Ozone Depleting Substances (ODSs)

- Ozone Depleting Substances can be found in refrigerants and halon fire extinguishing systems. There were no Halon fire extinguishing systems present on board the vessel. The potential refrigerant containing ODSs include domestic refrigerators in the crews galley, kitchen, engineers workshop of the Upper Deck, and Hallway/foyer of the lower deck. A domestic freezer inside the freezer storage of the upper deck along with an old water fountain with internal chilling in the Chief PO's Mess of the Forecastle deck. An unconnected window mount air conditioner in the vessel was also observed. Any repair, maintenance, or decommissioning of equipment containing halocarbons should be performed according to applicable regulation requirements along with contractors that have appropriate certification in dealing with this equipment.

Designated substances and hazardous materials included in this report may also be present in concealed locations within the Vessels.

Designated substances and hazardous materials included in this report may also be present in concealed locations within the Vessels.

## **7.0 RECOMMENDATIONS**

The following recommendations are provided based on the findings of this DSHMS as outlined in this report.

The presence of designated substances and hazardous materials during renovations or demolition projects require protective measures to be employed to minimize potential worker exposure in accordance with the OHSA, O. Reg. 278/05 and relevant Guidelines, as outlined in this report.

All waste handling is regulated by O. Reg. 347.

### **7.1 WORKER NOTIFICATION – DESIGNATED SUBSTANCES**

The building owner must notify all employees and contractors involved with building maintenance, renovations, and/or demolition activities, of the presence of designated substances, as required by the OHSA. A copy of this report should also be made available to the Joint Occupational Health and Safety Committee (JOHSC).

This report must be given to the constructor. In turn the constructor must provide this report to contractors and sub-contractors.

Prior to tendering project work in the vessel, the vessel owner or owner's agent must provide this report to constructors bidding on the project work. In turn, the constructor must provide this report to contractors and subcontractors prior to requesting bids. This report also fulfills the requirements of Section 10 of Ontario Regulation 278/05 - *Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations* (O. Reg. 278/05). This requires that owners report the presence of both friable and non-friable asbestos-containing materials (ACMs) to constructors as part of the tendering process or prior to arranging for work.

Constructors/Contractors must use the information in this report when filing a Notice of Project Form with the MOL. In Section 6 of the form, check all Designated Substances listed in this report that will be disturbed. The type of asbestos abatement operation (Type 1, 2, or 3) must be selected in Section 5 of the form. The type of asbestos abatement depends on what ACMs will be removed as part of the renovation project.

Dispose of waste containing hazardous materials as per the requirements of applicable waste handling regulations (waste handling facilities may also have site specific requirements).

## **7.2 ASBESTOS-CONTAINING MATERIALS (ACM)**

### **7.2.1 FRIABLE ACM**

Friable ACM in good condition that is not removed must be managed under an Asbestos

Management Plan (refer to Section 7.2.3). Damaged friable ACM can release airborne asbestos fibres under normal building conditions. Friable ACM that was identified to be damaged during the survey must be removed in accordance with O. Reg. 278/05. Abatement of ACM is described in Section 7.2.4. Friable ACM was identified at the time of the survey, and includes pipe and pipe fitting insulation, and fireproofing insulation. Some observed friable ACM (i.e. fireproofing and pipe insulation) was in fair to poor condition at the time of the survey. A complete condition assessment is in Appendix A-1 of the report.

## **7.2.2 NON-FRIABLE ACM**

Non-friable ACM that is not significantly damaged is not expected to release airborne asbestos fibres under normal conditions of building use. Non-friable ACM that was identified to be damaged during the survey must be removed in accordance with O. Reg. 278/05. Abatement of ACM is described in Section 7.2.4. Non-friable ACMs identified as part of the survey included a variety of vinyl floor tiles and transite panel materials. Some observed non-friable ACM was in fair to poor condition at the time of the survey. A complete condition assessment is in Appendix A-1 of the report.

## **7.2.3 MANAGEMENT (LONG-TERM)**

If all ACM is not removed, the ACM must be inspected at least every 12 months and be managed by an Asbestos Management Program (AMP) in accordance with O. Reg. 278/05. All ACM that remains in-place must be in good physical condition, and removal or repair is required when ACM becomes damaged (refer to Section 7.2.4).

As part of asbestos management, the Owner shall perform and/or include;

1. Prepare and maintain on the premises a record of the location of all identified ACM. The record shall contain whether the material is friable or non-friable and shall be updated at least once in each 12-month period. Appendix A-1 allows for this.
2. Regulatory Requirements and Client Policies.
3. Roles and Responsibilities.
4. Notifications to occupants and/or tenants. Give any other person who is an occupier of the building written notice of any information in the record that relates to the area they occupy or any work done by that person.
5. Establish and maintain an asbestos awareness program for all building personnel who are likely to work in close proximity to/or may potentially disturb the friable ACM in accordance with Section 8(3) of O. Reg. 278/05. The program should include: (i) the hazards of asbestos exposure; (ii) the use, care and disposal of protective equipment and clothing to be used and worn when doing the work; (iii)

personal hygiene to be observed when doing the work; and (iv) the measures and procedures prescribed in the regulations.

6. Emergency Reaction and Procedures.
7. Work Practices (Type 1, 2, 3 and Glove Bag work).
8. Record Keeping.
9. Contractor Requirements

## **7.2.4 ABATEMENT**

Asbestos abatement procedures are classified as Type 1 (low risk), Type 2 (moderate risk), and Type 3 (high risk) depending on type of ACM and quantity. Risk classifications are not included in the Regulation; however, have been included for comparison purposes and are based on general industry terminology. Asbestos abatement must be completed by qualified personnel and Type 3 operations by personnel that have completed Type 3 abatement certification training recognized by the MOL.

### **7.2.4.1 SPECIFIC PROCEDURES**

Type 1 procedures are typically required for non-friable material handling, using wet procedures and hand tools. Specific classifications are outlined in O.Reg. 278/05 for ACM drywall joint compound and acoustic ceiling tiles.

Type 2 procedures are typically required for removal of <1 sq. m of friable ACM, debris clean-up, repairs, and, entry into a contaminated ceiling space. Specification classifications are outlined in O.Reg. 278/05 for ACM drywall joint compound and acoustic ceiling tiles.

Type 3 procedures are typically required for removal of >1 sq. m of friable ACM, cleaning or alteration to HVAC and ducts in buildings with ACM sprayed fireproofing. Specific classifications are outlined in O.Reg. 278/05 for other procedures.

## **7.2.5 DEMOLITION AND RENOVATION PROJECTS**

All friable and non-friable ACM must be removed from the area of a renovation prior to renovations and demolition projects. Removal or abatement of ACM must be completed by a qualified asbestos abatement worker and in accordance with the requirements of O. Reg. 278/05. All suspect ACMs encountered during demolition or renovation projects, unless confirmed through sampling and analysis, should be treated as asbestos and handled in accordance with O. Reg. 278/05, until proven otherwise. Unforeseen discoveries of asbestos must be reported to the MOL, owner, etc., to remain in compliance with the Regulation.

If additional suspect ACM is identified during demolition or renovation projects, it should either be sampled and tested for asbestos content or assumed to be ACM (amphibole).

### **7.3 LEAD-CONTAINING MATERIALS**

Lead-containing products disturbed during construction may result in worker exposure to lead. Cutting, grinding, drilling, removing, stripping or demolition of materials containing or coated with lead should be completed only with respiratory protection, as outlined, and worker safety precautions as outlined in the *Ministry of Labour Guideline – Lead on Construction Projects, 2004, Revised 2011* (MOL Guideline). The Ministry has not established a lower limit for concentrations of lead in paint (or other materials) below which precautions do not need to be considered, and will not accept US EPA or HUD limits (0.5% lead) for this purpose. Therefore, the precautions and details of worker safety will need to be assessed on a project-by-project basis. We recommend that the building owner and contractor obtain advice to develop a site-specific safety plan (including air monitoring where required) that considers the factors that would affect potential lead exposure of workers. Performing an exposure assessment during work that disturbs reported lead-containing materials or coatings may be able to reduce the use of some of the precautions that are required. Paints and materials with concentrations lower than 0.5% lead may require modified or reduced procedures than those outlined in the Guideline, as exposures at any level may be a concern.

The vessel owner and/or contractor should develop (or have developed) site specific procedures for the MOL designated lead operations. These lead operations and procedures and practices are outlined in the MOL Guideline; however, site specific procedures should be considered.

The disposal of construction waste containing lead is controlled under O. Reg. 347 and may be subject to lead leachate analysis prior to disposal (Leachate Criteria, Schedule 4 of O. Reg. 347).

### **7.4 MERCURY**

Materials containing mercury were identified in the vessel. Typically a worker's exposure to mercury is considered low if the material surfaces/coatings or equipment remain intact (in good physical condition).

Do not break lamps or separate liquid mercury from components. Mercury-containing materials and lamps should be recycled to reclaim the mercury. Disposal in significant quantities would require mercury-containing materials to be disposed of as hazardous waste.

### **7.5 SILICA**

Crystalline silica is present in the terrazzo flooring and possibly (e.g., , ceramic tiles and ceiling tiles).

Construction disturbance of silica-containing products may result in exposures to airborne silica, especially if performed indoors and/or while dry. Cutting, grinding, drilling or demolition of silica-



containing materials should be completed with proper respiratory protection and worker safety precautions as outlined in the *Ministry of Labour Guideline – Silica on Construction Projects, 2004 (revised in 2011)*.

## **7.6 POLYCHLORINATED BIPHENYLS**

The possible presence of PCBs in fluorescent lamp ballasts can be determined based on a visual assessment of the ballast manufacturer labels and comparison of the information to the 1991 Environment Canada document entitled “*Identification of Lamp Ballasts Containing PCBs*” or through laboratory testing. The inspection should be performed while the equipment is de-energized and/or by a licensed electrician during renovation activities. PCB-containing lamp ballasts in good condition and still in service do not require removal or replacement. Leaking ballasts should be verified for PCB content (or assumed), and if found to be PCB containing, managed in accordance with MOE regulations regarding PCB wastes.

Where maintenance alteration, renovation, or demolition activities undertaken at a Site may result in the generation of more than 1.0 kg of PCB waste, it will be necessary to establish a secure licensed PCB storage facility at the Site or dispose of the wastes at an approved PCB disposal or destruction facility. PCB wastes totalling less than 1.0 kg may be disposed as non-hazardous waste at any licensed waste disposal site in accordance with applicable regulations.

## **7.7 OZONE DEPLETING SUBSTANCES**

Equipment containing ODSs were identified in the subject vessel. ODSs and other halocarbons are regulated by Ontario Regulation 463/10 made under the Environmental Protection Act (EPA). The disposal of equipment containing ODS is controlled under O. Reg. 347.

## **8.0 SURVEY LIMITATIONS**

Within the limitations of the agreed-upon scope of work, the field observations, measurements and analysis are considered sufficient to form a general inventory of designated substances and hazardous materials in the vessel. It should be noted that the data presented herein were collected at specific sampling locations, and depending on the homogeneity of the samples, the data may vary between these locations. Some inherent limitations exist as to the thoroughness of this assessment due to the nature of building construction. For example it may not practical to test all pipe insulation for asbestos content or all paint for lead content at the Site due to the amount and locations and being located under existing materials. Some reasonable extrapolation (e.g., sampling of similar materials) was required from the findings of the assessment. For example, samples of suspect ACM and LCP were not collected in each homogeneous area of the building when homogeneous materials of a similar nature, composition, and color were sampled in other homogeneous areas.

Within the limitations of the agreed-upon scope of work, the survey included building materials found within or forming part of the building envelope and building mechanical systems and equipment. The inspection did not include the identification of suspected designated substances and hazardous materials located in the interior of electrical, mechanical (i.e. interior surfaces of ventilation ducting, boilers, etc.), or process manufacturing equipment, inside wall cavities (e.g., pipe chases), inaccessible ceiling plenums, sub floors, underlying materials (e.g., underlying flooring and paint layers), and where sampling could have affected the integrity of the system (e.g., vibration gasket). Superior Building Solutions is not responsible for the repairs of building materials that were sampled during the survey.

Within the limitations of the agreed-upon scope of work, this assessment has been undertaken and performed in a professional manner in accordance with generally accepted practices, using the degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. Due to physical limitations inherent to this assessment, Superior Building Solutions expressly does not warrant that the vessel is free of designated substances or hazardous materials or that all designated substances and hazardous materials have been identified. No other warranties, expressed or implied, are made.

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## **9.0 CLOSURE**

Superior Building Solutions has prepared this report for the express use of Heddle Marine Services Inc. and may be relied upon by Heddle Marine Services Inc.. No other person or organization is entitled to rely upon any part of this report without the prior written consent of Superior Building Solutions. Heddles Marine Services Inc. may release all or part(s) of this report to third parties; however, such third party in using this report agrees that it shall have no legal recourse against Superior Building Solutions or its subsidiaries, and shall indemnify and defend Superior Building Solutions or its subsidiaries from and against all claims arising out of or in conjunction with such use or reliance. This report does not constitute legal advice. In addition, Superior Building Solutions makes no determination or recommendation regarding the decision to purchase, sell or provide financing for this property.

This report presents an overview of issues of concern with the specified designated substances and hazardous materials reflecting Superior Building Solutions' best judgment using information reasonably available at the time of Superior Building Solutions' Site survey. In preparing this report, Superior Building Solutions has relied upon certain information and representations provided by Heddle Marine Services Inc.. Superior Building Solutions did not attempt to independently verify the accuracy or completeness of that information. To the extent that the conclusions in this report are based in whole or in part on such information, those conclusions are contingent on its accuracy and validity. Superior Building Solutions assumes no responsibility for any consequence arising from any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to Superior Building Solutions.

No other warranty, expressed or implied, is made. The general limitations of the work are provided in Appendix D.

If you require any assistance or have any question, please contact the undersigned at (905) 984-5900.

Todd Jeffery

Business Services Manager  
Superior Building Solutions

## APPENDIX A

**A1 - Table - Room by Room Functional Space Assessment of Asbestos Containing Materials**

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
ER-001	Engine Room	Floor	Steel	-	-		Non asbestos	-	-
ER-001	Engine Room	Bulkhead	Steel	-	-		Non asbestos	-	-
ER-001	Engine Room	Deckhead	Steel	-	-		Non asbestos	-	-
ER-001	Engine Room	Thermal	12" pipe insulation, white, chalky. Supply to port steam turbine generator (adjacent to high pressure/cruising turbine), second level, at waist height.	Friable	Good		Phase 1: 10.25% Amosite Phase 2: >75% Chrysotile		17 m
ER-001	Engine Room	Thermal	12" pipe elbow insulation, white, chalky. Port high pressure cruising turbine lower nozzles, outboard side (adjacent to high pressure cruising turbine), second level, at thigh blight.	Friable	Good		Chrysotile >75% Amosite 0.5-5%		16 elbows
ER-001	Engine Room	Thermal	32" pipe elbow insulation (underside), white, chalky. High pressure turbine outlet/discharge, above port high pressure cruising turbine, near third level. Jacket already open from previous sampling.	Friable	Fair		Chrysotile 0.5-5%		4 elbows
ER-001	Engine Room	Thermal	32" pipe insulation, white, chalky. High pressure turbine outlet/discharge, above port high pressure/cruising turbine above third level.	Friable	Good		Chrysotile 25-50%		9 m
ER-001	Engine Room	Thermal	Turbine jacket insulation, white, chanty. Back of port low pressure turbine throttle (manifold), above third level. Some exposed friable materials noted.	Friable	Fair	Minor jacket repair	Phase 1: Chrysotile 5-1056 Phase 2: Amosite 25-50%		2 turbines 4.3m x 2 m x 2.6m
ER-001	Engine Room	Thermal	Turbine jacket insulation, white, chalky. High pressure turbine, above third level. Some exposed friable materials noted.	Friable	Good		Phase 1: Chrysotile 10.25% Phase 2: Amosite 10.25%		2 turbines @ 1.8m x 1.4m x 0.6m
ER-001	Engine Room	Thermal	10" pipe insulation, white, chalky. High pressure feed to lower nozzles, between port low and high pressure turbines, above third level. Some damage noted.	Friable	Good		Amosite 50-75%		19 in. and 1 T-joint
ER-001	Engine Room	Thermal	10" pipe elbow, white, chalky. High pressure feed to lower nozzles, between port low and high pressure turbines, above third level. Some damage noted.	Friable	Good		Phase 1: amosite 5-10% Phase 2: Amosite 25-50%		16 elbows
ER-001	Engine Room	Thermal	6.3" pipe insulation, white, chalky. Main steam to gear room (port), above third level. Some damage noted.	Friable	Good		Chrysotile 25-50%		7 m
ER-001	Engine Room	Thermal	6.5" pipe elbow insulation, white, chalky. Main steam to gear room (port), above third level. Some exposed pipe wrap noted.	Friable	Good		Amosite 5.10% Chrysotile 5.10%		8 elbows
ER-001	Engine Room	Thermal	3" pipe insulation, white, fibrous. Auxiliary steam feed to gear room (condensate extraction pump), near low pressure turbine, port side, third level.	Friable	Good		chrysotile >75% Amosite 0.5-5%		14 in and 14 elbows
ER-001	Engine Room	Thermal	2" pipe insulation, grey/brown, fibrous. Sanitary water supply, adjacent to starboard wall, near bow, third level at head height. Fair condition.	Friable	-		Non asbestos		42 m and 14 elbows
ER-001	Engine Room	Thermal	1" pipe insulation, grey/brown, fibrous. Condensate return pipe, adjacent to emergency bulkhead valves at bow wall (starboard side), third level at hip height. Exposed al ends.	Friable	Fair		Chrysotile 25-50%		or 17 and 3 elbows
ER-001	Engine Room	Thermal	Duct wrap, brown, fibrous. Engine room fresh air supply vent, third level, starboard side, near hatch and EXIT sign. Semi-exposed at joints.	Friable	Fair		Chrysotile >75%		8 m and 6 elbows
ER-001	Engine Room	Thermal	1.5" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		2 m and 2 elbows
ER-001	Engine Room	Thermal	2.5" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		12 m, 2 elbows, and 4 J-joints
ER-001	Engine Room	Thermal	3.5" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, Na 2, No. 3 Boiler Rooms, and Gearing Room.		5 m and 1 elbow
ER-001	Engine Room	Thermal	4" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, Na 3 Boiler Rooms, and Gearing Room.		52 m, 37 elbows, and 1 T-joint
ER-001	Engine Room	Thermal	4.5" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, Na 3 Boiler Rooms, and Gearing Room.		5 m, 4 elbows, and 2 J-joints

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
ER-001	Engine Room	Thermal	5.0" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Na 1, Na 2, Na 3 Boiler Rooms, and Gearing Room.		16 m and 20 elbows
ER-001	Engine Room	Thermal	6" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, Na 2, No. 3 Boiler Rooms, and Gearing Room.		88 m, 30 elbows, and 2 T-joints
ER-001	Engine Room	Thermal	7" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, Na 2, Na 3 Boiler Rooms, and Gearing Room.		8 m and 10 elbows
ER-001	Engine Room	Thermal	7.5" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		6 m, 5 elbows, and 11'-joint
ER-001	Engine Room	Thermal	8"- pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		60 m, 31 elbows, 5 T joints, 3 U joints, and 1 Y joint
ER-001	Engine Room	Thermal	9" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		19 m and 13 elbows
ER-001	Engine Room	Thermal	11" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		3 m and 3 elbows
ER-001	Engine Room	Thermal	13" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		1 m and 1 elbow
ER-001	Engine Room	Thermal	18" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		8 m and 4 elbows
ER-001	Engine Room	Thermal	19"- pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		9 m, 4 elbows and 1 T-joint
ER-001	Engine Room	Thermal	20" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		11 m, 4 elbows, and 1 U-joint
ER-001	Engine Room	Thermal	24" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		1 m
ER-001	Engine Room	Thermal	36" pipe insulation, various locations in Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		4 m
ER-001	Engine Room	Thermal	48" evaporator insulation, port side of Engine Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in No. 1, No. 2, No. 3 Boiler Rooms, and Gearing Room.		2 m
ER-001	Engine Room	Thermal	42" pipe insulation, attached to high pressure turbine, above third level. Some exposed friable materials noted.	Friable	Good		Inferred to contain asbestos, based on sample results from similar turbine insulation in Engine Room.		1 m

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
BR3-001	No. 3 Boiler	Floor	Steel	-	-		Non asbestos	-	-
	No. 3 Boiler	Bulkhead	Steel	-	-		Non asbestos	-	-
	No. 3 Boiler	Deckhead	Steel	-	-		Non asbestos	-	-
	No. 3 Boiler	Thermal	1" pipe insulation, whim, woven fabric. Condensate return. port side near stem, second level at shoulder height. near heater and red box.	Non-friable	Good		Chrysotile 5-10%		2 m, 2 elbows, and 4 U joints
	No. 3 Boiler	Thermal	4" pipe elbow insulation. grey/cream, woven fabric. Steam supply to port compressor, near bow. third level at thigh height. Fair condition.	Non-friable	Good		Chrysotile 25-50%		47 m. 20 elbows. and 1 U-joint
	No. 3 Boiler	Thermal	8" pipe insulation, white. fibrous. Steam return from port turbo fan. near bow, third level at waist height. Several exposed areas noted.	Friable	Fair	Minor encapsulation	Chrysotile 50-75% Amosite 5.10%		42 m. 29 elbows, 2 T-joint, 1U-joint, and 1 Y-joint
	No. 3 Boiler	Thermal	14" pipe elbow insulation, brownish, fibrous paper type material. Main steam Outlet, starboard side ,towards bow, third level above boiler.	Friable	Good		Chrysotile 50-75%		61 m, 18 elbows. 4 U-joints, and 1 Y-joint
	No. 3 Boiler	Thermal	5" pipe insulation. brownish, fibrous, air-cell type material. Steam supply to service water pump, starboard side towards stern.	Friable	Good		Chrysotile >75%		31 m, 19 elbows, and 4 T joints
	No. 3 Boiler	Thermal	Boiler gasket (door) insulation. brown. woven fabric.. Port side, middle of boiler. Some exposed areas.	Non-friable	Good		Chrysotile >75%		6.7m <sup>2</sup>
	No. 3 Boiler	Thermal	32" boiler jacket (mud drum), brown, woven fabric. Starboard side, second level at hip height.	Non-friable	Good		Chrysotile >75%		8m
	No. 3 Boiler	Thermal	55" boiler jacket, (steam drum), white, chalky. Starboard side, near centre, third level at chest height.	Friable	Good		Phase I: Chrysotile 25.50% Phase 2: Chrysotile 25-50%		1.5m
	No. 3 Boiler	Thermal	5.5" pipe insulation, grey, chalky. Steam drum outlet to auxiliary. centre towards bow past steam drum, third level.	Friable	Good		Phase 1: Chrysotile 25-50% Phase 2: Amosite >75% Phase 3: Chrysotile 25-50%		1 m, 3 elbows
	No. 3 Boiler	Thermal	19" pipe insulation, grey, fibrous. Steam auxiliary valve (blowdown valve), centre towards bow, third level.	Friable	Good		Amosite: >75%		1m
	No. 3 Boiler	Thermal	1.5" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. No. 1, and No. 2, Boiler Rooms, and Gearing Room.		7 m and 12 elbows
	No. 3 Boiler	Thermal	2" pipe insulation. various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1. and No. 2, Boiler Rooms, and Gearing Room.		74 m, 50 elbows, and 3 U-joints
	No. 3 Boiler	Thermal	2.5" pipe insulation, venous locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1. and No. 2, Boiler Rooms, and Gearing Roma.		18 m. 8 elbows, and 1 U-joint
	No. 3 Boiler	Thermal	3" pipe insulation, various locations in No3 Boiler Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 1, and No. 2, Boiler Rooms, and Gearing Room.		19 in and 11 elbows
	No. 3 Boiler	Thermal	3.5" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. No. 1. and No. 2, Boiler Rooms, and Gearing Room.		6 m, 6 elbows, and 1 T-joint
	No. 3 Boiler	Thermal	6" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from simile piping in Engine Room. No. 1. and No. 2. Boiler Rooms and Gearing Room.		32 m. 18 elbows, 7 T Joints and 4 U-joints
	No. 3 Boiler	Thermal	6.5" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. No. 1. and No. 2, Boiler Rooms, and Gearing Room.		12 m, 4 elbows, and 1 U-joint
	No. 3 Boiler	Thermal	7" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 2. Boiler Rooms, and Gearing Room.		16 m. 10 elbows, 2 T-joints, and 1 U-joint
	No. 3 Boiler	Thermal	7.5" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		inferred to coolant asbestos, based on sample results from similar piping in Engine Room. No. 1. and No. 2. Boiler Rooms, and Gearing Room.		20m, 10 elbows, 1T Joint, 3 U-Joints and 1 Y joint
	No. 3 Boiler	Thermal	9" pipe insulation. Various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 1. and No. 2. Boiler Rooms, and Gearing Room.		1 m and 1 elbow

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
	No. 3 Boiler	Thermal	10" pipe insulation various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. No. 1, and No. 2, Boiler Rooms, and Gearing Room.		8 in and 3 elbows
	No. 3 Boiler	Thermal	11" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. No. 1. and No. 2, Boiler Rooms, and Gearing Room.		12 mand 5 elbows
	No. 3 Boiler	Thermal	18" pipe insulation. various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 2, Boiler Rooms, and Gearing Room.		1m
	No. 3 Boiler	Thermal	20" pipe insulation, various locations in No.3 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. No. 1. and No. 2, Boiler Rooms, and Gearing Room.		1m



Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
BR2-001	No. 2 Boiler	Floor	Steel	-	-		Non asbestos	-	-
	No. 2 Boiler	Bulkhead	Steel	-	-		Non asbestos	-	-
	No. 2 Boiler	Deckhead	Steel	-	-		Non asbestos	-	-
	No. 2 Boiler	Thermal	3.5" fresh water filling line, brown, fibrous. Line to starboard aft feed tank, towards steam, third level at shoulder height.	Friable	-		Non asbestos	-	-
	No. 2 Boiler	Thermal	6" pipe insulation white/grey, chalky. Part of auxiliary steam main (blowdown), centre, third level, overtop of boiler.	Friable	Good		Chrysotile - 50.75% Amosite 0.5-5%		41 m, 27 elbows, 2 T-joints, and 3 U-joints
	No. 2 Boiler	Thermal	11" pipe insulation, obits/grey, chalky. Recirculation from steam chest to mud drum, centre, third level, overtop of boiler.	Friable	Good		Chrysotile >75% Amosite 10-25%		7 m and 2 elbows
	No. 2 Boiler	Thermal	13" pipe insulation, white/grey, chalky. Port side near cadre, steam main from No. 1 Boiler Room, third level.	Friable	Good		Chrysotile >75% Amosite 0.5-5%		12 m, 33 elbows, and 1 U-joint
	No. 2 Boiler	Thermal	7" pipe insulation, brown, fibrous. Auxiliary steam main on starboard side, beneath third level catwalk.	Friable	Fair		Phase 1: Chrysotile 25-50% Phase 2: Amosite >75%		18 m and 15 elbows
	No. 2 Boiler	Thermal	1" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No.1, and No.3, Boiler Rooms, and Gearing Room.		9 m and 24 elbows
	No. 2 Boiler	Thermal	1.5" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		8 m and 9 elbows
	No. 2 Boiler	Thermal	2" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		29 m, 18 elbows, 1 T joint, and 4 U-joints
	No. 2 Boiler	Thermal	2.5" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		10 m and 8 elbows
	No. 2 Boiler	Thermal	3" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		30 m, 28 elbows, and 1 U-joint
	No. 2 Boiler	Thermal	4" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		27 in, 13 elbows, and 4 U-joints
	No. 2 Boiler	Thermal	5" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No.1, and No.3, Boiler Rooms, and Gearing Room.		20 m and 9 elbows
	No. 2 Boiler	Thermal	8" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No.3, Boiler Rooms, and Gearing Room.		10 m, 6 elbows, and 3 U-joints
	No. 2 Boiler	Thermal	8.5" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No.1, and No.3, Boiler Rooms, and Gearing Room.		3 m and 2 elbows
	No. 2 Boiler	Thermal	pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No.1, and No.3, Boiler Rooms, and Gearing Room.		5 m and 5 elbows
	No. 2 Boiler	Thermal	pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No.1, and No.3, Boiler Rooms, and Gearing Room.		14 m and 7 elbows
	No. 2 Boiler	Thermal	14" pipe insulation, various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		5 m
	No. 2 Boiler	Thermal	15" pipe insulation. various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		8 m and 2 elbows
	No. 2 Boiler	Thermal	18" pipe insulation. various locations in No.2 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		1 m
	No. 2 Boiler	Thermal	32" boiler jacket (mud drum), adjacent to port and starboard sides of boiler.	Non-Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 1, and No. 3, Boiler Rooms, and Gearing Room.		8 m

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
BR2-001	No. 2 Boiler	Thermal	55" boiler jacket (warn drum). near centre of boiler.	Friable	Fair	Minor encapsulations	Inferred to contain asbestos, based on sample melts from similar piping in Engine Room. No. 1, and No. 3, Boiler Rooms. and Gearing Room.		13 m
	No. 2 Boiler	Thermal	Boiler gasket (door) insulation, on port and starboard sides of boiler. Some damage noted.	Non-friable	Good		Inferred to contain asbestos, based on sample melts from similar piping in Engine Room. No. 1. and No. 3, Boiler Rooms, and Gearing Room.		6.7 in'

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
BR1-001	No. 1 Boiler	Floor	Steel	-	-		Non asbestos	-	-
	No. 1 Boiler	Bulkhead	Steel	-	-		Non asbestos	-	-
	No. 1 Boiler	Deckhead	Steel	-	-		Non asbestos	-	-
	No.1 Boiler	Thermal	48" boiler jacket, donkey boiler (auxiliary boiler for comfort heating), grey, friable. Port side, towards stem, second level. Localized exposed areas.	Friable	Good	Recently repaired	Chrysotile 25-50%		3m
	No.1 Boiler	Thermal	pipe elbow insulation, white, chalky. Main steam chest to mud drum, port side, towards bow, second level at head height.	Friable	Good		Amosite 5-10% Chrysotile 0.5-5%		6 m and 2 elbows
	No.1 Boiler	Thermal	2.5" pipe insulation, brownish, fibrous. Steam heating line to gearing room (for steam rods), port side near bow, third level.	Friable.	Good		Chrysotile >75%		30 m. 19 elbows. And 2 U-joints
	No.1 Boiler	Thermal	20" motor jacket, (turbo fan jacket), dark grey. non-friable. Port side near bow, third level. Exposed at ends.	Friable	Fair	Requires repair	Amosite 50-75%		0.5 m
	No.1 Boiler	Thermal	13" pipe insulation, white. chalky. Starboard main outlet from boiler, near centre, third level, above boiler.	Friable	Good		Amosite 5-10%		15 m and 2 elbows
	No.1 Boiler	Thermal	1" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 2. and No. 3, Boiler Rooms, and Gearing Room.		11 m and 24 elbows
	No.1 Boiler	Thermal	1.5" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3. Boiler Rooms, and Gearing Room.		40 m, 57 elbows, 4 T-joints, and 1U-joint
	No.1 Boiler	Thermal	2" pipe insulation, various locations in No.1 Boiler Room. Some exposed wrap noted.	Friable	Fair		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3. Boiler Rooms, and Gearing Room.		50 m, 49 elbows, and 2 T-joints
	No.1 Boiler	Thermal	3" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No.3, Boiler Rooms, and Gearing Room.		30 m. 29 elbows, and 2 T-joints
	No.1 Boiler	Thermal	3.5" pipe insulation. various locations in No.1 Boiler Room. Some damage noted.	Friable	Fair		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2. and No. 3, Boiler Rooms, and Gearing Room.		21m, 21 elbows, and 4 T-joints
	No.1 Boiler	Thermal	4" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2 and No. 3, Boiler Rooms, and Gearing Room.		25 m, 15 elbows, and 1 T-joint
	No.1 Boiler	Thermal	4.5" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in &slat Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		6m and 7 elbows
	No.1 Boiler	Thermal	5" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2 and No. 3, Boiler Rooms, and Gearing Room.		22m, 13 elbows, 2 T-joints, 1 U joint and 1 Y-joint
	No.1 Boiler	Thermal	5.5" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		6 m, 4 elbows, and 1 T-joint
	No.1 Boiler	Thermal	6" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		44 m. 30 elbows, and 3 T-joints
	No.1 Boiler	Thermal	6.5" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample mulls from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		6 m and 3 elbows
	No.1 Boiler	Thermal	7" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		7 m and 5 elbows
	No.1 Boiler	Thermal	8" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		21 m and 9 elbows

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
	No.1 Boiler	Thermal	9" pipe insulation. various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		10m and 4 elbows
	No.1 Boiler	Thermal	10" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		17 m and 6 elbows
	No.1 Boiler	Thermal	12" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		15m and 8 elbows
	No.1 Boiler	Thermal	14" pipe insulation.. various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		3 m
	No.1 Boiler	Thermal	16" pipe insulation, various locations in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		2 m
	No.1 Boiler	Thermal	22" muffler insulation. starboard side in No.1 Boiler Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		2 m
	No.1 Boiler	Thermal	32" boiler jacket (mud drum), Amon to port and starboard sides of boiler.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		8 m
	No.1 Boiler	Thermal	55" boiler jacket. (steam drum), near centre of boiler.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		1.5 m
	No.1 Boiler	Thermal	Boiler gasket (door) insulation, on port and starboard sides of boiler.	Friable	Fair		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, No. 2, and No. 3, Boiler Rooms, and Gearing Room.		6.7m2

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
GR-001	Gearing Room	Floor	Steel	-	-		Non asbestos	-	-
	Gearing Room	Bulkhead	Steel	-	-		Non asbestos	-	-
	Gearing Room	Deckhead	Steel	-	-		Non asbestos	-	-
	Gearing Room	Thermal	1.5" pipe insulation (rope wrap), cream. fibrous. General condensate return, port side near stem. first level.	Friable	Good		Chrysotile 50-75%		18 m and 13 elbows
	Gearing Room	Thermal	6" pipe elbow insulation, grey. fibrous. Steam feed to port lube pump. towards stern.	Friable	Fair	repair	Phase 1: Amosite >75% Phase 2: Chrysotile 50.75%		42 to 43 elbows, and 2 11-joints
	Gearing Room	Thermal	16" muffler jacket for diesel grommet. grey. fibrous. Starboard side, near stern (near voltage room).	Friable	Good		Phase 1: Chrysotile 25-50% Phase 2: Chrysotile 10-25% Phase 3: Chrysotile 5-10%. Amosite 5-10%		1 m
	Gearing Room	Thermal	1- pipe insulation. various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room. and No. 1, No. 2. and No. 3. Boiler Rooms		21 m and 13 elbows
	Gearing Room	Thermal	pipe insulation, various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, and No.1, No. 2. and Na 3. Boiler Rooms		25 m and 23 elbows
	Gearing Room	Thermal	pipe insulation, various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room. and No.1 No. 2. and Na 3, Boiler Rooms		10 m and 4 elbows
	Gearing Room	Thermal	3.5" pipe insulation, various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, and No.1 No. 2. and Na 3, Boiler Rooms		8 m and 5 elbows
	Gearing Room	Thermal	5" pipe insulation, various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, and No.1. Na. 2. and Na 3, Boiler Rooms		12 m and 18 elbows
	Gearing Room	Thermal	pipe insulation. various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room, and No.1. No. 2, and No. 3. Boiler Rooms		3 in. 2 elbows, and 1 11-joint
	Gearing Room	Thermal	a 5" duct wrap, near cams of Gearing Room.	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping in Engine Room. and No.1. No. 2. and No. 3, Boiler Rooms		1 m and 3 elbows
	Gearing Room	Thermal	to- pipe insulation, various locations in Gearing Room.	Friable	Good		Inferred to contain asbestos. based on sample results from similar piping in Engine Room. and No.1. , No. 2, and No. 3. Boiler Rooms		5 m. 5 elbows. and 1 T-joint

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
<b>UPPER DECK</b>									
UD-001	Crew space	Floor	9"x9" Red Floor Tile (cut from 12x12 new tile )	Non Friable	Good		Non asbestos	New	-
	Mid Fwd	Floor	9"x9" Grey Floor Tile (cut from 12x12 new tile	Non Friable	Good		Non Asbestos	New	-
		Walls	Steel and Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Fibreglass Insulation /Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
UD-002	Crews Space FWD	Floor	9"x9" Red Floor Tile (cut from 12x12 new tile )	Non Friable	Good		Non asbestos	New	-
	Toward bow	Floor	9"x9" Grey Floor Tile (cut from 12x12 new tile	Non Friable	Good		Non Asbestos	New	-
		Walls	Steel and Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Fibreglass Insulation /Steel				Non asbestos		-
		Thermal	1" pipe insulation	Friable	Fair	Minor repair	Chrysotile asbestos		4 m, 8 elbows and 2 U Joints
		Thermal	1 1/2" pipe insulation	Friable	Good		Chrysotile asbestos		6.1m and 7 elbows
		Thermal	2" Pipe Insulation	Friable	Good		Chrysotile asbestos		4.3m and 5 elbows
		Thermal	3" Pipe Insulation	Friable	Good		Chrysotile asbestos		6.1 m and 3 elbows
		Thermal	3.5" Pipe Insulation	Friable	Good		Chrysotile asbestos		6.1m and 3 elbows
		Thermal	6" Pipe Insulation	Friable	Good		Chrysotile asbestos		1.2m
		Thermal	6.5" Pipe Insulation	Friable	Good		Chrysotile asbestos		6.7m and 1 elbow
UD-003	Lamp & paint stores	Floor	Steel				Non asbestos		-
		Walls	Steel				Non asbestos		-
		Ceiling	Steel with Texture paint coating				Non asbestos	-	-
UD-004	Canteen Stores	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-005	Stokers Wash place	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel				Non asbestos	-	-
UD-006	CPO's Washplace	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel				Non asbestos	-	-
UD-007	Serving Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-008	Lobby and Corridor	Floor	9"x9" Red Floor Tile (cut from 12x12 new tile )	Non Friable	Good		Non asbestos	New	-
		Floor	9"x9" Grey Floor Tile (cut from 12x12 new tile	Non Friable	Good		Non Asbestos	New	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
UD-009	Transmitting Station Room	Floor	12 x12 Green Floor tile with white flex	Non friable	Good		10-20% Chrysotile	VT-1-CS2-GRN	10m <sup>2</sup>
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
UD-010	Seamans Washplace	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-011	Seamans	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-012	Radio Office	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	11.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile (	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	11.5m <sup>2</sup>
		Walls	Wood				Non asbestos	-	-
		Ceiling	Wood				Non asbestos	-	-
UD-013	Crypt Office	Floor	Brown Linoleum				Non asbestos		-
		Walls	Wood				Non asbestos		-
		Ceiling	Wood				Non asbestos		-
UD-014	Provisions Room	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	3.5 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-015	Washroom		No access						
UD-016	Washroom		No access						
UD-017	Washroom		No access						
UD-018	Washroom		No access						
UD-019	General Mess Stores	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-020	203 Office	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6.5 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
UD-021	Crews Galley	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
<b>LOWER DECK</b>									
LD-001	Crews Space	Floor	12'x12' Green Floortile with white flex	Non friable	Good		10-20% Chrysotile	VT-1-CS2-GRN	62m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	Fibreglass Pipe insulation on radiator				Non asbestos		-
LD-002	Crews Space Bow	Floor	12'x12' Green Floortile with white flex	Non friable	Good		10-20% Chrysotile	VT-1-CS2-GRN	52m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	1" Pipe insulation	Friable	Good		Chrysotile asbestos		4m

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
LD-003	Central Stores	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
			Stipple texture paint				Non asbestos		-
		Thermal	1" pipe insulation	Friable	Fair	Minor repair 3 ends	Chrysotile asbestos		7m, 8 elbows 1 T joint
			1 1/2" pipe insulation	Friable	Good		Chrysotile asbestos		1.5 m and 5 elbows
			3" Pipe Insulation	Friable	Good		Chrysotile asbestos		11m and 5 elbows
			3.5" Pipe Insulation	Friable	Good		Chrysotile asbestos		4.3m and 1 elbow
			4" Pipe Insulation	Friable	Good		Chrysotile asbestos		4.6m and 6 elbows and 1 T Joint
LD-004	AS Compt	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel				Non asbestos	-	-
		Thermal	1" Steam pipe	Friable	Good		Chrysotile asbestos		10m
		Thermal	Cloth wrap	Friable	Good		Chrysotile asbestos	-	3 m
LD-005	Cable Locker	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel				Non asbestos	-	-
LD-006	Stokers mechanic Mess	Floor	12'x12' Green Floortile with white flex	Non friable	Good		10-20% Chrysotile	VT-1-CS2-GRN	44m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
			Stipple texture paint				Non asbestos	-	-
LD-007	Stokers PO Mess	Floor	12'x12' Green Floortile with white flex	Non friable	fair		10-20% Chrysotile	VT-1-CS2-GRN	8m <sup>2</sup>
			12'x12' Grey Floortile	Non Friable	fair		1-3% Chrysotile	VT-4-CSC16-GRY	4.5 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
			Stipple texture paint				Non asbestos	-	-
LD-008	OPS Mess	Floor	12'x12' Green Floortile with white flex	Non friable	poor	remove	10-20% Chrysotile	VT-1-CS2-GRN	10m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
			Stipple texture paint				Non asbestos	-	-
LD-009	Switchboard Electric Workshop	Floor	9'x9' Grey Floor Tile (	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	15m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
			Stipple texture paint				Non asbestos	-	-
		Thermal	4" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		3.6m 3 elbows
			5" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		3.6m 1 elbow
LD-010	Lobby	Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	15m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
			Fireproofing Insulation	Friable	Poor	Enclose	Chrysotile asbestos	2016-S.05	8 m <sup>2</sup>
		Ceiling Deck	Steel				Non asbestos	-	-
			Stipple texture paint				Non asbestos	-	-
		Thermal	4" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		1 m



Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
LD-011	Gyro Compass Room	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	3m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
			Fireproofing Insulation	Friable	Poor	Enclose	Chrysotile and Crocidolite asbestos	2016-S.05	8 m <sup>2</sup>
			Transite Rigid Panel	Non Friable	Poor	Encapsulate	Chrysotile asbestos	2016. T.01	8 m <sup>2</sup>
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	4" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		3m
LD-012	Low Power Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
			Transite Rigid Panel behind electrical panels	Non Friable	Poor	Encapsulate	Chrysotile asbestos	2016. T.01	8 m <sup>2</sup>
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	2" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		4 m and 4 elbows
			3" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		5 m and 2 elbows
			4" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		6 m and 9 elbows
			6" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		3.5 m
			7" Pipe Insulation Heating	Friable	Good		Chrysotile asbestos		.5 m
LD-013	Electrical Compartment	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	5.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	5.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	Fibreglass Duct Insulation				Non asbestos		-
<b>LOWER DECK AFT</b>	Steering Gear								
LDA-001		Floor	Steel				Non asbestos		-
		Walls	Steel				Non asbestos		-
		Ceiling	Steel with Texture paint coating				Non asbestos	-	-
		Electrical	Electrical wire wrap				suspect		
LDA-002	Hot Cabin	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-003	Stewards Mess	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	10.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	10.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	2.5" Pipe Insulation	Friable	Good		Chrysotile asbestos		3m 2 elbows
		Thermal	1" Insulation	Friable	Good		Chrysotile asbestos		6.7 m and 9 Elbows
		Thermal	2" Pipe Insulation	Friable	Good		Chrysotile asbestos		1.5 m and 5 elbows
		Thermal	4" Pipe Insulation	Friable	Good		Chrysotile asbestos		6.7 m and 2 elbows
LDA-004	Ward Room	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	49.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	49.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	Fibreglass Pipe Insulation				Non asbestos	-	

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
LDA-005	Pantry Ward Room	Floor	12"x12" Grey Floor tile	Non friable	Good		1-3 % Chrysotile		4 m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-006	Cabin #6	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	8.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-007	1 <sup>st</sup> Lieutenants Cabin	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	7.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-008	Cabin #4	Floor	12"x12" Green Floor tile	Non friable	Good		10-20 % Chrysotile	VT-1-CS2-GRN	7.5 m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-009	Cabin #2	Floor	12"x12" Green Floor tile	Non friable	Good		10-20 % Chrysotile	VT-1-CS2-GRN	7.5 m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-010	Ships Office	Floor	12"x12" Green Floor tile	Non friable	Good		10-20 % Chrysotile	VT-1-CS2-GRN	7.5 m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-011	Supply officer Cabin	Floor	12"x12" Green Floor tile	Non friable	Good		10-20 % Chrysotile	VT-1-CS2-GRN	7.5 m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-012	#1 Cabin Navigation Officer	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	8m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-013	#3 Cabin Officers	Floor	12"x12" Green Floor tile	Non friable	Good		10-20 % Chrysotile	VT-1-CS2-GRN	6.5 m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-014	#5 Cabin	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	7.5 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
LDA-015	Lobby stern	Floor	9'x9' Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	6.5m <sup>2</sup>
		Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6.5m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
LDA-016	Lobby officers	Floor	9'x9' Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	10.5m <sup>2</sup>
		Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	10.5m <sup>2</sup>
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel with texture spray				Non asbestos	-	-
LDA-017	Lobby for Officers	Floor	12'x12' Green Floor tile with white flex	Non friable	Good		10-20% Chrysotile	VT-1-CS2-GRN	15m <sup>2</sup>
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
LDA-018	Lobby Centre	Floor	9'x9' Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	6.5m <sup>2</sup>
		Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6.5m <sup>2</sup>
		Floor	9'x9' Green Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRN	6.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	2.5 `` Pipe Insulation	Friable	Good		Chrysotile asbestos		3m 3 elbows, 1 T joint
			1.5 `` Insulation	Friable	Good		Chrysotile asbestos		3m , 2 elbows
			2 `` Pipe Insulation	Friable	Good		Chrysotile asbestos		6.1 m and 2 elbows
LDA-019	Staff Office	Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non Asbestos	-	-
			Transite	Non Friable	Good		15% Chrysotile	2016.T.01	9 m2
		Ceiling	Steel				Non asbestos	-	-
			Fireproofing Insulation on Beam and deck	Friable	Good		20% Chrysotile 50% Chrysidolite	2016.S.05	12.3 m2
		Thermal	2" Cloth Wrap on Steam	Friable	Good		20% Chrysotile		1m
LDA-020	Radio Room II	Floor	12'x12' Green Floortile with white flex	Non friable	Good		10-20% Chrysotile	VT-1-CS2-GRN	7.5 m <sup>2</sup>
		Walls	Wood				Non asbestos	-	-
		Ceiling Deck	Wood				Non asbestos		-
LDA-021	Engineers Office	Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	13m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	2" Cloth Wrap on Steam	Friable	Good		20% Chrysotile		6.1m and 2 elbows
LDA-022	Switchboard Compartment / Elec Equipment	Floor	9'x9' Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	13m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	2" Cloth Wrap on Steam	Friable	Good		20% Chrysotile		6.1m and 3 elbows
LDA-023	Torpedo Warhead	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel				Non asbestos	-	-

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
HOLD DECK									
HL-001	Refrig Machinery Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	Foam Glass Pipe Insulation				Non asbestos	-	-
HL-002	Cooler Room	Floor	Fibreglass Resin				Non asbestos		
			Steel				Non asbestos		
		Walls	Fibreglass Resin				Non asbestos		
		Ceiling	Fibreglass Resin				Non asbestos		
HL-003	Cool Room	Floor	Fibreglass Resin				Non asbestos		
			Steel				Non asbestos		
		Walls	Fibreglass Resin				Non asbestos		
		Ceiling	Fibreglass Resin				Non asbestos		
HL-004	Provisions Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
HL-005	Central Stores	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
HL-006	AS Comp	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
HL-007	No.1. Magazine Port	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
HL-008	No.2 Provisions Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
		Thermal	1.5" Cloth Wrap on Steam	Friable	Good		20% Chrysotile		12.1m and 10 elbows
HL-009	FWD 50KVA Compt	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
		Thermal	1.5" Cloth Wrap on Steam	Friable	fair	Repair 2 Lf	20% Chrysotile		3m

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
HL-010	Magazine No.2	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
		Thermal	1.5" Cloth Wrap on Steam	Friable	fair	remove	20% Chrysotile		3m
<b>HOLD DECK AFT</b>									
HDA-001	Stores/Spirit Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
HDA-002	Ward Room Stores	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel with Texture Coated ceiling				Non asbestos		-
HDA-003	#4 magazine Squid	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel with Texture Coated ceiling				Non asbestos		-
HDA-005	Gland Compartment Port	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
HDA-006	Gland Compartment STBD	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
HDA-007	#3 Magazine	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
		Thermal	1.5" Cloth Wrap on Steam	Friable	Good		20% Chrysotile		3m
HDA-008	BOFORS	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
			Stipple texture paint				Non asbestos		-
HDA-009	Plumber block Compartment	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
HDA-010	Plumber Block Compartment	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
UPPER DECK AFT									
FDA-001	Captains Day Room	Floor	9'x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	6.5m <sup>2</sup>
		Floor	9'x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-002	Night Cabin Captain	Floor	9'x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	6.5m <sup>2</sup>
		Floor	9'x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6.5m <sup>2</sup>
			Steel				Non asbestos		
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-003	Captain Bathroom	Floor	Steel				Non asbestos	-	-
		Floor	Terrazzo				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	Fibreglass Pipe Insulation				Non asbestos	-	-
FDA-004	Officers Bath	Floor	Steel				Non asbestos	-	-
		Floor	Terrazzo				Non asbestos	-	-
							Non asbestos		
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	Armaflex Pipe Insulation				Non asbestos	-	-
FDA-005	Captains Pantry	Floor	12"x12" Grey Floor tile	Non friable	Good		1-3 % Chrysotile		4 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-006	Infirmiry Sick Bay	Floor	9'x9" Grey Floor tile	Non friable	Good		1-3 % Chrysotile	VT-7-RR21-GRY	11 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-007	Pistol Room	Floor	9'x9" Grey Floor tile	Non friable	Good		1-3 % Chrysotile	VT-7-RR21-GRY	4 m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-008	Officers Washroom	Floor	Steel				Non asbestos	-	-
		Floor	Terrazzo				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-009	Officers Washroom	Floor	Steel				Non asbestos	-	-
		Floor	Terrazzo				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
FDA-010	Officers Galley	Floor	Steel				Non asbestos	-	-
		Floor	Terrazzo				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-011	Lobby	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	55m <sup>2</sup>
		Floor	9"x9" Green Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	55m <sup>2</sup>
		Walls	Steel				Non asbestos		-
			Fireproofing Insulation	Friable	Good		Chrysotile and Crocidolite asbestos	2016-S.05	6 m <sup>2</sup>
		Ceiling	Steel				Non asbestos	-	-
FDA-012	Ampladyne Compt	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FDA-013	Torpedo room	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Texture Coating				Non asbestos	-	-
		Ceiling	Steel with Texture Coating				Non asbestos	-	-
FDA-014	Torpedo Stores	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos		-
		Thermal	Cloth Wrap Pipe Insulation	Friable	Good		Chrysotile Asbestos		3 m
FDA-015	Engineers Workshop	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
			Fireproofing Insulation	Friable	Fair	2m repair	Chrysotile and Crocidolite asbestos	2016-S.05	20 m <sup>2</sup>
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	11" Pipe Insulation Exhaust	Friable	Fair	Repair flange	Chrysotile Asbestos	-	2.4 m 2 elbows
FDA-016	Deck Washroom	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
FDA-017	Lobby Aft Fwd	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	22m <sup>2</sup>
		Floor	9"x9" Green Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	22m <sup>2</sup>
		Walls	Steel				Non asbestos		-
			Fireproofing Insulation	Friable	Good		Chrysotile and Crocidolite asbestos	2016-S.05	6 m <sup>2</sup>
		Ceiling	Steel				Non asbestos	-	-
			Fireproofing Insulation	Friable	Good		Chrysotile and Crocidolite asbestos	2016-S.05	22 m <sup>2</sup>
UPPER DECK MIDSHIP									
UDM-001	Engine Office	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
UDM-002	SRE Comp 1	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling Deck	Steel				Non asbestos	-	-
			Fireproofing Insulation	Friable	Good		Chrysotile and Crocidolite asbestos	2016-S.05	2 m <sup>2</sup>

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
<b>FORECASTLE DECK</b>									
FD-001	ERA Mess Room	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	8.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	8.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
			Transite Board Rigid stem wall	Non Friable	Good		Chrysotile asbestos	2017.T.01	3 m <sup>2</sup>
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FD-002	Chief Pantry	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	2.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	2.5m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
			Texture coated stipple finish						
FD-003	Lobby	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	7.5m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	7.5m <sup>2</sup>
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel				Non asbestos	-	-
			Fireproofing	Friable	Poor	Encapsulate or remove	Chrysotile and crocidolite Asbestos	2016.S.	3 m <sup>2</sup>
FD-004	Laundry Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FD-005	1 <sup>st</sup> Class Mess	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	9m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	9m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FD-006	Mess Room	Floor	9"x9" Red Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-6-RR21 Red	25m <sup>2</sup>
		Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	25m <sup>2</sup>
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
FD-007	Ship Wright Workshop	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	Fibreglass Duct Insulation				Non asbestos	-	-
FD-008	Radio Office	Floor	9"x9" Green/brown Floor Tile	Non Friable	poor		Chrysotile asbestos	VT-6-RR21 GRN	3m2
		Walls	wood				Non asbestos	-	-
		Ceiling Deck	wood				Non asbestos	-	-
FD-009	AN/SPS 12 SO	Floor	Steel				Non asbestos	-	-
		Walls	wood				Non asbestos	-	-
		Ceiling Deck	wood				Non asbestos	-	-



Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
<b>SIGNAL DECK</b>									
SD-001	Operations Room	Floor	12'x12' Green Floor tile with white flex	Non friable	fair	Minor repair	10-20% Chrysotile	VT-1-CS2-GRN	2.5m <sup>2</sup>
		Walls	Steel				Non asbestos	-	-
			Wood				Non asbestos	-	-
			White Dot Transite Board 12x12	Non Friable	Fair	Repair	Chrysotile asbestos	2016.S.01	3.3 m <sup>2</sup>
		Ceiling	Steel / Fibreglass Insulation				Non asbestos	-	-
		Thermal	Pipe Insulation	Friable	Good		Chrysotile asbestos		2.4 m and 2 elbows
SD-002	Captains Sea Cabin	Floor	12'x12' Green Floor tile with white flex	Non friable	fair	Minor repair	10-20% Chrysotile	VT-1-CS2-GRN	2.5m <sup>2</sup>
			12"x12" Pale Green Floor Tile	Non Friable			Non asbestos	VT-5-OR17-PGRN	-
		Walls	Steel				Non asbestos	-	-
			White Transite Board	Non Friable	Good		Chrysotile asbestos	2017.T.01	3. m <sup>2</sup>
		Ceiling	Steel / Fibreglass Insulation				Non asbestos	-	-
		Thermal	Cloth Wrap	Friable	Good		Chrysotile Asbestos		3 m
SD-003	Lobby	Floor	12"x12" Red Floor Tile	Non Friable			Non Asbestos	VT-3-HF-14-Red	
		Walls	Steel				Non asbestos	-	-
		Ceiling	Steel / Fibreglass Insulation				Non asbestos	-	-
			Fireproofing Insulation	Friable	Poor	Remove or encapsulate	Chrysotile and Crocidolite asbestos	2016-S.05	4 m <sup>2</sup>
		Thermal	Cloth Wrap	Friable	Good		Chrysotile Asbestos		1 m
SD-004	Chart Room	Floor	12'x12' Green Floor tile with white flex	Non friable	fair	Minor repair	10-20% Chrysotile	VT-1-CS2-GRN	7.5m <sup>2</sup>
	Gun Directive Room	Walls	Steel				Non asbestos	-	-
			Wood				Non asbestos	-	-
			White Dot Transite Board 12x12	Non Friable	Fair	Minor damage caulking around broken pieces	Chrysotile asbestos	2016.S.01	3.3 m <sup>2</sup>
		Ceiling	Steel / Fibreglass Insulation				Non asbestos	-	-
SD-005	Sonar Radio Control Room	Floor	12'x12' Green Floor tile with white flex	Non friable	fair	Minor repair	10-20% Chrysotile	VT-1-CS2-GRN	3.5m <sup>2</sup>
		Walls	Steel/ fibreglass				Non asbestos	-	-
			Wood				Non asbestos	-	-
		Ceiling	Steel / Fibreglass Insulation				Non asbestos	-	-
SD-006	Wheelhouse Helmsman	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
		Thermal	4" Cloth Wrap Pipe Insulation	Friable	Good		25-50% Chrysotile		1.2 m and 3 elbows
SD-007	FORWS Directors Office	Floor	Steel				Non asbestos	-	-
		Walls	wood				Non asbestos	-	-
		Ceiling Deck	wood				Non asbestos	-	-
SD-008	Top of Radio Office		No suspect materials						
SD-009	Radio 3 office	Floor	Steel				Non asbestos	-	-
		Walls	Steel				Non asbestos	-	-
		Ceiling	Fireproofing Insulation	Friable	Poor	Remove or encapsulate	Chrysotile and Crocidolite asbestos	2016-S.05	3 m <sup>2</sup>
			steel						

Functional Space ID	Room Name	System	Location & Description	Friability	Condition	Repair Comment	Asbestos Content	Sample Reference	Quantity
<b>AFTER DECKHOUSE TOP</b>									
ADT-001	RU Magazine Room	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
ADT-002	Radar Compartment Office	Floor	9"x9" Grey Floor Tile	Non Friable	Good		Chrysotile asbestos	VT-7-RR21-GRY	6m <sup>2</sup>
		Walls	wood / steel				Non asbestos	-	-
		Ceiling Deck	Wood/ steel and fibreglass insulation				Non asbestos		-
ADT-003	Weapons Workshop	Floor	Steel				Non asbestos	-	-
		Walls	Steel with Fibreglass Insulation				Non asbestos	-	-
		Ceiling	Steel with Fibreglass Insulation				Non asbestos	-	-
<b>OUTSIDE EXTERIOR UPPER DECK</b>	Exterior Deck	Floor	Steel				Non asbestos	-	-
		Bulkhead	Steel				Non asbestos	-	-
		Thermal	7" pipe insulation, grey, fibrous-blowoff from safety valve in No.3 Boiler Room. Exposed at ends. Adjacent to Engine office	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			1", pipe insulation. Adjacent to Engine office	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			2.5" pipe insulation. Adjacent to Engine office	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			3" pipe insulation. Adjacent to Engine office	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			1" pipe insulation. Outside towards bow	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			1.5" pipe insulation. Outside towards bow	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			2.5" pipe insulation. Outside towards bow	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			3" pipe insulation. Outside towards bow	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			3.5" pipe insulation. Outside towards bow	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			1.5" pipe insulation. Outside towards near stern	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			2" pipe insulation, Outside near stern	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		
			7" pipe insulation. Outside near stern	Friable	Good		Inferred to contain asbestos, based on sample results from similar piping is No. 1, Na 2, No.3 Boiler Rooms, and Gearing Room.		



## APPENDIX A-2 Lead Based Paint Summary Assessment




Location	Location and Description	Condition	Lead Paint Content (ppm)	Estimated Quantity Of Lead Paint Higher risk greater than 5000 ppm (m <sup>2</sup> )	Sample Reference
<b>Engine Room</b>					
Engine Room	Wall paint, pale Green, peeling	Poor	37,580	322	WP-9-ER-PGRN
Engine Room	Red Paint on machinery parts (limited quantity)	Fair	65,761	2	BP-11-BR2-Red
Engine Room	Medium Green Paint, (minor amounts on machinery parts)	Fair	13541	16	MP-16-BR1-GRN
Engine Room	Grey Bilge paint (on port and starboard bilges)	Poor	5043	240	BLGP-18-GRY
Engine Room	Yellow Paint (minor amounts on equipment, machinery and safety marking)	Fair	41348	2	LP-1-BR1-YLW
<b>NO.3 Boiler Room</b>					
No.3 Boiler Room	Medium Green Paint, (minor amounts on machinery parts)	Fair	13541	21	MP-16-BR1-GRN
No.3 Boiler Room	Grey Bilge paint (on port and starboard bilges)	Poor	5043	1	BLGP-18-GRY
No.3 Boiler Room	Yellow Paint (minor amounts on equipment, machinery and safety marking)	Fair	41348	100	LP-1-BR1-YLW
<b>NO. 2 Boiler Room</b>					
No. 2 Boiler Room	Pipe Paint (6" Auxillary paint), very pale blue, peeling port side of boiler room	Poor	2939	-	PP-10-BR2-PBLY
No. 2 Boiler Room	Pipe Paint (6" Auxillary paint), very pale blue, peeling port side of boiler room	Poor	2437	-	PP-10-BR2-PBLY duplicate
No. 2 Boiler Room	Boiler Paint , red peeling port side	Poor	65761	2	BP-11-BR2-Red
No. 2 Boiler Room	Pipe Paint (11" steam chest to mud drum) cracking on stbd side	Poor	1071	-	PP-12-BR2-CRM
No. 2 Boiler Room	Gauge board (adjacent to boiler) paint, black over green over cream (i.e. composite) peeling starboard side	Poor	8150	1	GBP-13-BR2-BLK
No. 2 Boiler Room	Boiler Paint, silver some peeling starboard side	Poor	3662	-	BP-14-BR2-SLVR
No. 2 Boiler Room	Wall paint, grey/green over cream, peeling port side toward stern	Poor	1559	-	WP-15-BR2-GRYN
No. 2 Boiler Room	Grey Bilge Paint (on port and starboard sides	Poor	5043	100	BLGP-18-GRY
<b>NO.1 Boiler Room</b>					
No. 1 Boiler Room	Medium Green Paint, (minor amounts on machinery parts)	Poor	13541	5	MP-16-BR1-GRN
	Grey Bilge paint (on port and starboard bilges)	Poor	5043	100	BLGP-18-GRY
	Red Paint on machinery parts (limited quantity)	Poor	65,761	2	BP-11-BR2-Red
	Black Paint Minor quantity	Poor	8150	1	GBP-13-BR2-BLK
	Yellow Paint on ladder peeling	Poor	41348	1	LP-17-BR1-YLW

Location	Location and Description	Condition	Lead Paint Content (ppm)	Estimated Quantity Of Lead Paint Higher risk greater than 5000 ppm (m <sup>2</sup> )	Sample Reference
<b>Gearing Room</b>					
Gearing Room	Medium Green Paint, (minor amounts on machinery parts)	Poor	13541	1	MP-16-BR1-GRN
	Grey Bilge paint (on port and starboard bilges)	Poor	5043	132	BLGP-18-GRY
	Red Paint on machinery parts (limited quantity)	Poor	65,761	2	BP-11-BR2-Red
	Black Paint Minor quantity	Poor	8150	1	GBP-13-BR2-BLK
<b>UPPER DECK</b>					
Room adjacent to forepeak	Ceiling paint beige	Poor	1985	-	CP-1-CS1-BEIG
Engine Office	Cream wall paint,	Poor	1949	-	WP-6-EO48-CRM
Engine Office	Red Paint accessories	Good	65,761	2	BP-11-BR2-Red
CO Pantry	Cream wall paint near stern	Good	2456	-	WP-7-PAN61-CRM
CO Pantry towards stern	Wall paint cream stern	Good	2581	-	WP-7-PAN61-CRM
FHC Storage towards bow	Pale green ceiling paint	Good	37580	3	WP-9-ER-PGRN
Crew Space towards bow	Medium Green Paint, (minor amounts on machinery parts)	Good	13541	12	MP-16-BR1-GRN
Crew Space towards bow	Red Paint on machinery parts (limited quantity)	Good	65,761	4	BP-11-BR2-Red
Crew Space towards bow	Black Paint Minor quantity	Good	8150	4	GBP-13-BR2-BLK
Throughout deck cabins	White Paint	Good	52600	250	P.01
<b>Lower Deck</b>					
Ships Office towards stern	Pale green ceiling paint Ceilings and walls	Good	37580	38.5	WP-9-ER-PGRN
Supply Officer towards stern	Pale green paint walls	Good	37580	31	WP-9-ER-PGRN
No. 4 Cabin (towards Stern)	Pale green paint walls	Good	37580	31	WP-9-ER-PGRN
No. 2 Cabin (towards Stern)	Pale green ceiling paint walls	Good	37580	31	WP-9-ER-PGRN
Hall / Foyer (towards Stern)	Pale green cabinet	Good	37580	2	WP-9-ER-PGRN
Staff office (towards stern	Pale green paint walls	Good	37580	31	WP-9-ER-PGRN
Engineers office	Pale green paint walls	Good	37580	40	WP-9-ER-PGRN
No. 1 Central storage at bow	Red Paint Bottom of wall	Good	65,761	4	BP-11-BR2-Red
No. 1 Central Storage at bow	Grey over red primer (floor)	Fair	5043	83	BLGP-18-GRY
Crew Space	Red Paint minor amounts over accessories	Good	65,761	2	BP-11-BR2-Red
Crew Space	Black Paint Minor quantity	Good	8150	2	GBP-13-BR2-BLK
Stewards Mess Foyer stern	Black Paint Floor	Good	8150	10.5	GBP-13-BR2-BLK
Accommodation areas of level	White Paint	Good	52600	250	P.01

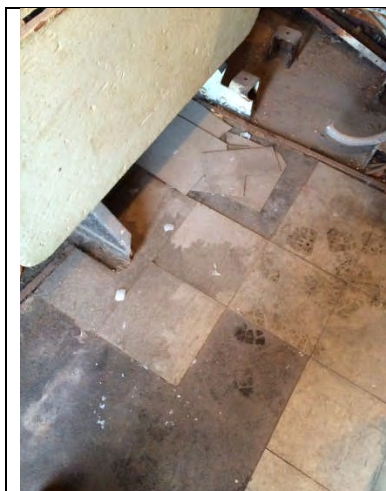
Location	Location and Description	Condition	Lead Paint Content (ppm)	Estimated Quantity Of Lead Paint Higher risk greater than 5000 ppm (m <sup>2</sup> )	Sample Reference
<b>Forecastle Deck</b>					
Radio Room 2	Pale green paint walls	Good	37580	5	WP-9-ER-PGRN
Accommodation area on level	White Paint	Good	52600	150	P.01
<b>Signal Deck</b>					
Captains Sea Cabin	Pale green paint walls and ceiling	Good	37580	42	WP-9-ER-PGRN
Steering Room	Crème over red paint on port walls	Good	65,761	2	BP-11-BR2-Red
After Deckhouse Top					
Adjacent to Fire Room (outside)	Floor Paint, light grey, from outside deck adjacent to fire room	Poor	171	-	FP-3-ADHT
Port side life boat	Yellow paint on life boat	Poor	15981	5	BOATP-4-ADHT
Adjacent to WT Ammo Handout room	Dark Grey floor paint on outside deck	Poor	139	-	FP-2-ADHT
Fire Room	Red Paint tool rack	Good	65,761	2	BP-11-BR2-Red
Directors Radar office	Pale green paint shelf	Good	37580	1	WP-9-ER-PGRN

## **APPENDIX B**

**PHOTO GALLERY**

	<p><b><u>Photo 1.0</u></b></p> <p>Description: Damaged asbestos containing Fireproofing insulation on walls within vessel</p> <p>Common White Paint Containing high lead concentrations throughout vessel.</p>
	<p><b><u>Photo 2.0</u></b></p> <p>Description: Asbestos containing Piping and cloth wrap insulation on mechanical systems of the engine room.</p>
	<p><b><u>Photo 3.0</u></b></p> <p>Description: Asbestos containing Piping and exhaust lines on exterior of vessel. Material is in fair to good condition</p>



**Photo 4.0****Description:**

Asbestos containing Floor tile identified in vessel. Material is in poor condition in former radio room Signal deck

**Photo 5.0****Description:**

Asbestos containing White Dot transite Panel in Operations room on signal deck. Material is in fair condition and requires minor repair to damaged and exposed edges

**Photo 6.0****Description:**

Asbestos containing Pipe Insulation with various pipe diameters and systems within engine room. Material is in fair to good condition within this space

**Photo 7.0****Description:**

Asbestos containing Floor tile identified in vessel. Material is in good condition in radio room on Upper Deck Fwd.

In addition equipment in space may contain lead and mercury within the electrical components

**Photo 8.0****Description:**

Asbestos containing circulating pump in engine room requiring repair in lower level. Material is in fair condition

**Photo 9.0****Description:**

Asbestos containing transite panel damaged and exposed fireproofing insulation behind in Lower deck level at lobby area.

## APPENDIX C



A Division of Agri-Service  
Laboratory Inc.

6820 Kilmat Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER # \_\_\_\_\_

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

Page ( 1 ) of ( )

Shipped

From: XCG Consultants Ltd.  
Oakville, Ontario

Client P.O.#:

Client Project #: 3-336-96-01

Client Contact: H/HW

Telephone #: 905-829-8880

Fax #: 905-829-8800.

Total # of Samples:

12

Anticipated health or chemical hazard:

### Analysis Required

Sample #	Client Sample I.D.	Date Sampled	Sampling Information		LEAD	Questions regarding samples please contact J. Ho at 416-209-2708. Thank you									
			Filtered Yes/No	Preserved Yes/No		Sample Matrix	Number of Containers	Lab Number							
1	BOATP-4-ADHT				X								PAINT	1	
2	BP-11-BR2-RED				X								PAINT	1	
3	BP-14-BR2-SLVR				X								PAINT	1	
4	CP-1-CSI-BEIG				X								PAINT	1	
5	FP-2-ADHT				X								PAINT	1	
6	FP-3-ADHT				X								PAINT	1	
7	GBP-13-BR-BLK				X								PAINT	1	
8	LP-17-BR1-YLW				X								PAINT	1	
9	MP-16-BR1-GRN				X								PAINT	1	
10	PP-10-BR2-PBLU				X								PAINT	1	
11	WP-15-BR2-GRYN				X								PAINT	1	
12	WP-6-ED48-CRM				X								PAINT	1	

**DUE DATE:**

REGULAR TURNAROUND

Relinquish to Entech (signature) \_\_\_\_\_

Received by Entech (signature) \_\_\_\_\_

Samples Logged By \_\_\_\_\_

1 HO

AS.

Date \_\_\_\_\_ Time \_\_\_\_\_ Method of Signature \_\_\_\_\_

Date 12/14 Time 5:10 Method of Signature DROP OFF

# ENTECH

A Division of Ag-Science  
Laboratory Inc.

6820 Kilmer Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER #

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

Shipped

From: XCG Consultants Ltd.  
Oakville, Ontario

Client P.O.#:

Client Project #: J-136-96-01

Client Contact: JH/DW

Telephone #: 905-829-8889

Fax #: 905-829-8890

Total # of Samples:

12

Anticipated health or chemical hazard:

### Analysis Required

LEAD  
ASBESTOS (PLM)  
ASBESTOS (TEM)

Questions regarding samples please contact J. Ho at 416-209-2768. Thank you

Sample #	Client	Date Sampled	Sampling Information Filtered Yes/No	Preserved Yes/No	LEAD	ASBESTOS (PLM)	ASBESTOS (TEM)	Matrix	Number of	Lab Number
1	HL-GP-18-GRY				X			PAINT	1	
2	MD-18-PL-7					X		INSULATION	1	
3	MD-10-CL157					X		Insulation	1	
4	PP-12-HR2-CRM				X			PAINT	1	
5	VT-10-SMF68-WHT						X	TILE	1	
6	VT-1-C52-GRN						X	TILE	1	
7	VT-2-C53-GRY						X	TILE	1	
8	VT-3-HF-15-RED						X	TILE	1	
9	VT-5-OK17-PGRN						X	TILE	1	
10	VT-7-RK21-GRY						X	TILE	1	
11	WP-7-PAN61-CRM				X			PAINT	1	
12	WP-9-ER-4-GRN				X			PAINT	1	
DUE DATE:								Base	1	
REGULAR TURNAROUND								Base	1	

Indemnity to Entech  
(Copy)  
Received by Entech  
(Copy)  
Sampled by

J. Ho

Base  
Kg 14

Time  
5:10

Method of Sampling  
DROPPING



6820 Kitchener Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

# WORK ORDER #

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

Page ( 3 ) of ( 3 )

Shipped From: XCG Consultants Ltd.  
Oakville, Ontario

Client P.O.#:  
Client Project #: 3-336-96-01  
Client Contact: J11/15W  
Telephone #: 905-829-8880  
Fax #: 905-829-8890.

Total # of Samples: 5  
Anticipated health or chemical hazard:

### Analysis Required

Sample #	Client Sample I.D.	Date Sampled	Sampling Information		Analysis Required		Sample Matrix	Number of Containers	Lab Number
			Filtered Yes/No	Preserved Yes/No	LEAD	ASBESTOS (PLM)			
1	MD-39-C1						Inoculation	1	
2	LIN-8-PH-224-TURN					X	Linoleum	1	
3	LIN-9-PS13-CURN					X	Linoleum	1	
4	VT-4-CSC16-CGRY					X	Vinyl Tile	1	
5	VT-6-RR21-RED					X	Vinyl Tile	1	
6									
7									
8									
9									
10									
11									
12									

Questions regarding samples please contact J. Ho at 416-209-2708. Thank you

Sample Time: 5:10  
Drop: 14  
Time: 5:10  
Date: 11/15/01  
Lab: 5-10  
Method of Storage: UNREFRIG  
Condition: Good

Relinquish to Labtech (Type):  
Received by Labtech (Type):  
Samples Logged By:

DUE DATE:

REGULAR TURNAROUND



A Division of Agri Service  
Laboratory Inc.

6820 Kitchin Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER # \_\_\_\_\_

TEL: (905) 821-1112  
FAX: (905) 821-2095

# CHAIN OF CUSTODY RECORD

Page ( 1 ) of ( 1 )

Shipped

From: XCG Consultants Ltd.  
Oakville, Ontario

Client P.O.#:

Client Project #: 3-336-96-01

Client Contact: JH/HW

Telephone #: 905-829-8880

Fax #: 905-829-8890

Total # of Samples: 5

Anticipated health or chemical hazard:

## Analysis Required

Questions regarding samples please contact J. Ho at 416-209-2708. Thank you

Sample #	Client Sample I.D.	Date Sampled	Sampling Information Filtered Yes/No	Preserved Yes/No	Asbestos (PLM)	Asbestos (TEM)							Sample Matrix	Number of Containers	Lab Number
1	BR2-25-PI-3.5				X								Insulation	1	
2	BR2-26-PI-6				X								Insulation	1	
3	BR2-27-PI-11				X								Insulation	1	
4	BR2-28-PI-13				X								Insulation	1	
5	BR2-29-PI-7				X								Insulation	1	
6															
7															
8															
9															
10															
11															
12															

**DUE DATE:**

REGULAR TURNAROUND

Relinquish to Entech (sign) \_\_\_\_\_

Received by Entech (sign) \_\_\_\_\_

Samples Logged By \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: May 14 Time: 5:10

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Method of Shipment: DROP OFF

Condition: \_\_\_\_\_



A Division of Applied Science  
Laboratory Inc.

6820 Kilham Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER # \_\_\_\_\_

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

Shipped

From: XCC Consultants Ltd.  
Oakville, Ontario

Client P.O.#:

Client Project #: 3-316-96-01

Client Contact: JH/BW

Telephone #: 905-829-8880

Fax #: 905-829-8890

Total # of Samples: 10

Anticipated health or chemical hazard:

Page ( 5 ) of ( )

### Analysis Required

Sample #	Client	Date Sampled	Sampling Information Filtered Yes/No	Preserved Yes/No	Asbestos (PLM)	Asbestos (TEM)	Questions regarding samples please contact J. Ho at 416-209-2708. Thank you
----------	--------	--------------	--------------------------------------	------------------	----------------	----------------	---

1	DR3-15-PI-1				X		Insulation	1	
2	BR3-16-PI-1				X		Insulation	1	
3	BR3-17-PI-8				X		Insulation	1	
4	BR3-18-PI-14				X		Insulation	1	
5	BR3-19-PI-5				X		Insulation	1	
6	BR3-20-BG				X		Insulation	1	
7	BR3-21-B1				X		Insulation	1	
8	BR3-22-B1				X		Insulation	1	
9	BR3-23-PI-5.5				X		Insulation	1	
10	BR3-24-PI-19				X		Insulation	1	
11									
12									

Due Date:

REGULAR TURNAROUND

Requisition to Enrich  
(Sign)  
Received by Enrich  
(Sign)  
Sampled by Enrich  
(Sign)

ad.

Date: May 14 Time: 5:10  
Method of Shipment: DR30 OFF





A Division of Agri-Service  
Laboratory Inc.

6820 Kitchin Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER # \_\_\_\_\_

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

Page ( 6 ) of ( 1 )

### Shipped

From: XCG Consultants Ltd.  
Oakville, Ontario

### Client P.O.#:

Client Project #: 3-336-96-01

Client Contact: JH/BW

Telephone #: 905-829-8880

Fax #: 905-829-8890

Total # of Samples: 14

Anticipated health or chemical hazard:

### Analysis Required

Questions regarding samples please contact J. Ho at 416-209-2708. Thank you

Sample #	Client Sample I.D.	Date Sampled	Sampling Information Filtered Yes/No	Preserved Yes/No	Asbestos (PLM)	Asbestos (TEM)	Sample Matrix	Number of Containers	Lab Number
1	ER-1-PI-12				X		insulation	1	
2	ER-2-PE-12				X		insulation	1	
13	ER-3-PE-32				X		insulation	1	
3	ER-4-PI-32				X		insulation	1	
4	ER-5-TJ-LP				X		insulation	1	
5	ER-6-TJ-HP				X		insulation	1	
6	ER-7-PI-10				X		insulation	1	
7	ER-8-PE-10				X		insulation	1	
8	ER-9-PI-6.5				X		insulation	1	
9	ER-10-PE-6.5				X		insulation	1	
10	ER-11-PI-3				X		insulation	1	
11	ER-12-PI-2				X		insulation	1	
12	ER-13-PI-1				X		insulation	1	
14	ER-14-DW-19X8				X		insulation	1	

**DUE DATE:**

Relinquish to Entech (Date) \_\_\_\_\_

Received by Entech (Date) \_\_\_\_\_

Sampler Logged By \_\_\_\_\_

J.HO

*Od.*

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Method of Storage: \_\_\_\_\_

Condition: \_\_\_\_\_

1/14/14 5:10

Date: \_\_\_\_\_ Time: \_\_\_\_\_



A Division of Agri-Service  
Laboratory Inc.

6820 Kitchin Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER # \_\_\_\_\_

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

Page 1 of 1

### Shipped

From: XCG Consultants Ltd.  
Oakville, Ontario

Client P.O.#:

Client Project #: 3-336-96-01

Client Contact: JH/HW

Telephone #: 905-829-8880

Fax #: 905-829-8890

Total # of Samples: 3

Anticipated health or chemical hazard:

### Analysis Required

Questions regarding samples please contact J. Ho at 416-209-2708. Thank you

Sample #	Client Sample I.D.	Date Sampled	Sampling Information		Analysis Required		Sample Matrix	Number of Containers	Lab Number
			Filtered Yes/No	Preserved Yes/No	Asbestos (PLM)	Asbestos (TEM)			
1	GR-35-PI-1.5				X		insulation	1	
2	GR-36-PE-6				X		insulation	1	
13	GR-37-MUF				X		insulation	1	
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

**DUE DATE:**

REGULAR TURNAROUND

Relinquish to Entech (sign)

Received by Entech (sign)

Samples Logged By

J. HO

ae

Date

Time

Method of Shipment: DROP OFF

Permit

Date May 14

Time 5:10

# ENTECH

A Division of AgriService  
Laboratory Inc.

6820 Midland Rd., Unit #4  
Mississauga, Ontario, Canada  
L5N 5M3

WORK ORDER #

TEL: (905) 821-1112  
FAX: (905) 821-2095

## CHAIN OF CUSTODY RECORD

### Shipped

From: NCC Consultants Ltd.  
Oakville, Ontario

### Client P.O. #:

Client Project #: 3-536-96-01

Client Contact: JBRW

Telephone #: 905-820-8880

Fax #: 905-820-8890

Total # of Samples: 5

Anticipated health or chemical hazard:

Page ( 5 ) of ( 5 )

### Analysis Required

Asbestos (PLM)  
Asbestos (TEM)

Questions regarding samples please contact J. Ho at 416-209-2708. Thank you

Sample #	Client	Date Sampled	Sampling Information Filtered Yes/No	Preserved Yes/No	Asbestos (PLM)	Asbestos (TEM)	Matrix	Number of Containers	Lab Number
1	BRI-30-11-48				X		Insulation	1	
2	BRI-31-11-11				X		Insulation	1	
3	BRI-32-11-25				X		Insulation	1	
4	BRI-33-MJ-20				X		Insulation	1	
5	BRI-34-11-13				X		Insulation	1	
6									
7									
8									
9									
10									
11									
12									

**Due Date:**

**Regular Turnaround**

Received by: *[Signature]* Date: *May 14*

Sample Accepted by: *[Signature]* Date: *5/10*

Method of Shipment: *HLCP OR?*

Condition: *[Blank]*

Client: XCG-Oakville  
 Attention: JH/BW  
 Project: 3-336-98-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

# ENTECH

A Division of Agri-Service Lab Inc.  
 6220 Kilmord Rd., Unit 84  
 Mississauga, ONT L5N 6M9  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095



Sam Sanyal, M. Sc., C. Chem.  
 Manager, Inorganic Analysis

## BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2038 ER-1-P1-12	2 Photos a) Homogeneous, white, chalky material with fibres  b) Homogeneous, gray, woven, fibrous material	Amosite 0-25%  Chrysotile >75%	Non-fibrous material >75%  Cotton 5-10% Non-fibrous material 5-10%	
2039 ER-2-PE-12	Homogeneous, white, woven, fibrous material	Chrysotile >75% Amosite 0.5-5%	Celulose 5-10% Non-fibrous material 5-10%	Perlite is present on the surface of this sample.
2040 ER-3-PE-32	Homogeneous, off-white, fibrous material	Chrysotile 0.5-5%	Mineral Wool 25-50% Non-fibrous material 50-75%	
2041 ER-4-P1-32	Homogeneous, off-white, woven, fibrous material	Chrysotile 25-50%	Cotton 50-75%	

Analyzed by: Pinchin Environmental

In compliance with codes issued by: Occupation Health and Safety Division of the Ontario Ministry of Labour dated 23 Aug 1985 and USEPA Method 600/R-93/116 dated - July 1993

Client: KCG-Oakville  
 Attention: JH/BW  
 Project: J-338-88-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

# ENTECH

A Division of Agri-Service Lab Inc.  
 6820 Kilmord Rd., Unit 04  
 Mississauga, ONT L5N 5M3  
 TEL: (905) 821-1117  
 FAX: (905) 821-2095



Sam Sanyal, M. Sc., C. Chem.  
 Manager, Inorganic Analysis.

## BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2042 ER-5-TJ-LP	2 Phases a) Homogeneous gray, soft cementitious material	Chrysotile 5-10%	Mineral Wool 50-75% Non-fibrous material 25-50%	
	b) Homogeneous, beige, fibrous material	Amosite 25-50%	Non-fibrous material 50-75%	
2043 ER-5-TJ-FP	2 Phases a) Homogeneous, beige, soft, cementitious material	Chrysotile 10-25%	Non-fibrous material >75%	
	b) Homogeneous, off-white, chalky material with fibres.	Amosite 10-25%	Non-fibrous material >75%	
2044 ER-7-PI-10	Homogeneous, beige, fibrous material	Amosite 50-75%	Non-fibrous material 25-50%	

Analysed by: Pinchin Environmental

In compliance with codes issued by: Occupation Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1985 and USEPA Method 800/R-03/118 dated - July 1993.



Client: XCG-Dakville  
 Attention: JH/BW  
 Project: 3-338-96-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

# ENTECH

A Division of Agri-Service Lab Inc.  
 8820 Kilmat Rd., Unit 04  
 Mississauga, ONT L6H 5M3  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095



Sam Sanyal M. Sc., C. Chem.  
 Manager, Inorganic Analysis.

## BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2048 ER-11-PI-3	Homogeneous, off-white, woven, fibrous material.	Chrysotile >75% Amosite 0.5-5%	Celulose 5-10% Non-fibrous material 5-10%	
2049 ER-12-PI-2	Homogeneous, brown, fibrous material.	None Detected	Hair Cotton >75% Non-fibrous material 0.5-5% 0.5-5%	
2050 ER-13-PI-1	Homogeneous, off-white, woven, fibrous material.	Chrysotile 25-50%	Cotton 50-75% Non-fibrous material 5-10%	
2051 ER-14-DW-19X8	Homogeneous, off-white, woven, fibrous material.	Chrysotile >75%	Non-fibrous material 5-10%	Hair is present on the surface of this sample.

None Detected = <0.5% (MDL)

Analysed by: Pinchin Environmental

In compliance with codes issued by: Occupation Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1985 and  
 USEPA Method: 800/R-93/118 dated - July 1993.

Client: XCG-Oakville  
 Attention: JHEW  
 Project: 3-326-96-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

Sam Samra, M.Sc., C. Chem.  
 Manager, Inorganic Analysis

*McLaughlin*

**ENTECH**  
 A Division of Applied Science Ltd Inc.  
 6600 Midland Rd., Unit 04  
 Scarborough, ONT M1V 5K2  
 TEL: (905) 821-1112  
 FAX: (905) 821-3035

**BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING**

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2028 BR3-15-P-1	Homogeneous, off-white, soft, cementitious material	Chrysotile 5-10%	Non-fibrous material >75%	
2029 BR3-16-P-E-4	Homogeneous, white, woven, fibrous material	Chrysotile 25-50%	Cotton Non-fibrous material 5-10%	
2030 BR3-17-P-8	Homogeneous, white, fibrous material	Chrysotile 50-75%	Cotton Non-fibrous material 5-10%	
2031 BR3-18-P-E-14	Homogeneous, beige, woven, fibrous material	Chrysotile 50-75%	Cotton Non-fibrous material 5-10%	
2032 BR3-19-P-15	Homogeneous, beige, woven, fibrous material	Chrysotile >75%	Celulose Non-fibrous material 13-25% 0.5-5%	

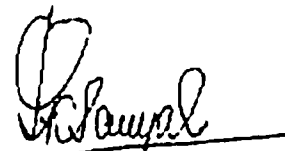
Analysed by: Phyllis Environmental  
 in accordance with codes issued by: Occupation Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1985 and  
 USEPA Method: 600/1-52115 dated - July 1993.



Client: XCG-Oakville  
 Attention: JH/BW  
 Project: 3-336-98-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

**ENTECH**

A Division of Agri-Service Lab Inc.  
 6820 Kitchmat Rd., Unit #4  
 Mississauga, ONT L5N 6M3  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095



Sam Sanyal, M. Sc., C. Chem.  
 Manager, Inorganic Analysis.

**BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING**

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2033 BR3-20-BG	Homogeneous, beige, woven, fibrous material.	Chrysotile >75%	Cellulose 10-25% Non-fibrous material 5-10%	
2034 BR3-21-BJ	Homogeneous, white, woven, fibrous material.	Chrysotile >75%	Non-fibrous material 5-10%	
2035 BR3-22-BJ	2 Phases: a) Homogeneous, grey, soft, cementitious material.  b) Homogeneous, white, woven, fibrous material.	Chrysotile 25-50%  Chrysotile 25-50%	Non-fibrous material 50-75%  Cotton 50-75% Non-fibrous material 5-10%	

**Analysed by: Pinchin Environmental**

In compliance with codes issued by: Occupation Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1985 and  
 USEPA Method: 600/R-93/116 dated - July 1993

Client: XCG-Oakville  
 Attention: JH/BW  
 Project : 3-338-96-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

# ENTECH

A Division of Agri-Service Ltd Inc.  
 6020 Kilmist Rd., Unit A4  
 Mississauga, ONT L5N 6M3  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095



Sam Sanyal, M. Sc., C. Chem  
 Manager, Inorganic Analysis.

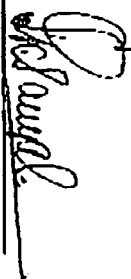
## BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)				COMMENTS
		ASBESTOS		OTHER		
2038 BR3-23-PI-5.5	3 Phases:					
	a) Homogeneous, grey, soft, cementitious material.	Chrysotile	25-50%	Non-fibrous material	50-75%	
	b) Homogeneous, beige, fibrous material.	Amosite	>75%	Non-fibrous material	10-25%	
	c) Homogeneous, white, woven, fibrous material.	Chrysotile	25-50%	Cotton Non-fibrous material	50-75% 5-10%	
2037 BR3-24-PI-19	Homogeneous, beige, fibrous material.	Amosite	>75%	Non-fibrous material	10-25%	

Analysed by: *Pinchin Environmental*

In compliance with codes issued by: Occupation Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1985 and  
 USEPA Method: 800/R-93/116 dated: July 1993.

Client: XCO-Oakville  
 Attention: JHBSW  
 Project: 3-318-08-01  
 P.O.  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

  
 Sam Sami, M.Sc., C. Chem.  
 Manager, Inorganic Analysis

**ENTECH**  
 A Division of Applied Sciences Ltd Inc  
 6070 Midland Ave., Unit 6N  
 Scarborough, Ont. M1V 4A3  
 TEL: (905) 671-1112  
 FAX: (905) 671-2085

**BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING**

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2023 BR2-25-P4-5	Homogeneous, tan fibrous material.	None Detected	Cellulose 75% 10-25%	Cellulose reinforcement is present on the surface of this sample
2024 BR2-26-P4-6	Homogeneous, white, fibrous material.	Chrysotile Amosite 50-75% 25-5%	Non-fibrous material 25-50%	Cellulose is present on the surface of this sample
2025 BR2-27-P4-11	2 Phases: a) Homogeneous, white, non-fibrous material. b) Homogeneous, white, chalky material with fibres.	Chrysotile Amosite >75% 10-25%	Non-fibrous material >75%	
2026 BR2-28-P4-13	Homogeneous, white, woven, fibrous material.	Chrysotile Amosite >75% 0.5-5%	Cellulose Non-fibrous material 5-10% 5-10%	
2027 BR2-29-P4-7	2 Phases: a) Homogeneous, white, woven fibrous material. b) Homogeneous, beige, fibrous material.	Chrysotile Amosite 25-50% >75%	Cellulose Non-fibrous material 60-75% 5-10% 10-25%	

None Detected < 0.5% (MCL)  
 Analyzed by: Pinedyn Environmental  
 in compliance with codes issued by: Occupational Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1989 and  
 USEPA Method 8003-4-03-1-B dated July 1993

Client: XCG-Oakville  
 Attention: JH/BW  
 Project: 3-338-88-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

# ENTECH

A Division of Agri-Service Lab Inc.  
 6820 Kilmist Rd., Unit 84  
 Mississauga, ONT L5N 3K3  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095

*Sample*

Sam Sanyal, M. Sc., C. Chem  
 Manager, Inorganic Analysis

## BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2055 BR1-30-BJ-48	Homogeneous, beige, consolidated, fibrous material on the back of vinyl sheet flooring	Chrysotile 25-50%	Non-fibrous material 50-75%	
2056 BR1-31-PF-11	Homogeneous, off-white, chalky material with fibres	Amosite 5-10% Chrysotile 0.5-5%	Non-fibrous material >75%	
2057 BR1-32-PI-2.5	Homogeneous, off-white, fibrous material	Chrysotile >75%	Non-fibrous material 0-25%	
2058 BR1-33-MJ-20	Homogeneous, tan, fibrous material	Amosite 50-75%	Non-fibrous material 25-50%	
2059 BR1-34-PI-13	Homogeneous, off-white, chalky material with fibres	Amosite 5-10% Crocidolite 0.5-5%	Non-fibrous material >75%	

Analysed by: Pinchin Environmental

In compliance with codes issued by Occupation Health and Safety Division of the Ontario Ministry of Labour, dated 23 Aug 1985 and  
 U.S.EPA Method 800/TR-93/118 dated - July 1993

Client: XCG-Oakville  
 Attention: JRBW  
 Project: 3-338-08-01  
 P.O.:  
 Sample Type: Insulation  
 Date Received: May 14/02  
 Date Reported: May 22/02

SE - Surpre, M. Sc., C. Chem.  
 Manager, Inorganic Analysis

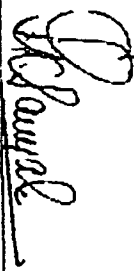
**ENTECH**  
 A Division of Applied Service Lab Inc.  
 6420 Kilmer Rd., Unit #4  
 Mississauga, ONT L4V 6B5  
 TEL: (905) 821-1112  
 FAX: (905) 821-2006

# BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2052 GR-35-PI-15	Homogeneous, off-white, layered paper	Chrysotile 50-75%	Synthetic Fibres Non-fibrous material 25-50% 5-10%	
2053 GR-30-PE-6	2 Phases: a) Homogeneous, tan, fibrous material b) Homogeneous, grey, soft, dentulous material.	Amosite >75% Chrysotile 50-75%	Non-fibrous material Elastic Non-fibrous material 10-25% 0-5-9% 25-50%	Cotton fabric reinforcement is present on the surface of this bagging.
2054 GR-37-MUF	3 Phases: a) Homogeneous, off-white woven fibrous material b) Homogeneous, beige fibrous material c) Homogeneous, white, clayey material with fibres.	Chrysotile 25-50% Chrysotile 10-25% Chrysotile 5-10% Amosite 5-10%	Synthetic Fibres Non-fibrous material Non-fibrous material Non-fibrous material 50-75% 0-5-5% 25-50% 25-50% >75%	

Client: KCG Oakville  
 Attention: JHBMW  
 Project: 3-336-09-01  
 P.O.  
 Sample Type: Insulation/Joint Compound/Underlayment  
 Date Received: May 14/02  
 Date Reported: May 22/02

Sam Samuels, M. Sc., C. Chem.  
 Manager, Inorganic Analysis



**ENTECH**  
 A Division of Applied Science Lab Inc.  
 4420 Richmond Rd., Unit 66  
 Richmond, BC V6V 1A9  
 TEL: (604) 871-1112  
 FAX: (604) 871-2036

# BULK SAMPLE ANALYSIS FOR ASBESTOS BY POLARIZED LIGHT MICROSCOPY AND DISPERSION STAINING

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		COMMENTS
		ASBESTOS	OTHER	
2007 MD-38-P-7 Insulation	Homogeneous beige woven, fibrous material	Chrysotile > 75%	Non-fibrous material 0.5-5%	
2008 MUE-40-CH15/ Joint Compound	Homogeneous green, soft, cementitious material	None Detected	Non-fibrous material > 75%	
2018 MD-39-CI Insulation	Homogeneous, dark blue fibrous material	Chrysotile 25-50% Chrysotile 0.5-5%	Non-fibrous material 50-75%	Fiberglass is present on the surface of this sample
2019 LIN-8-FHC22-BRN Underlayment	Homogeneous, tan, consolidated, fibrous material on the back of vinyl sheet flooring	None Detected	Cellulose > 75% Non-fibrous material 0.5-5%	
2020 LIN-9-FSS3-GRN Underlayment	Homogeneous, beige, consolidated, fibrous material on the back of vinyl sheet flooring	None Detected	Cellulose > 75% Non-fibrous material 0.5-5%	

None Detected < 0.5% (MDL)  
 Analyzed by: Pinchlin Environmental  
 in accordance with codes issued by: Occupational Health and Safety Division of the Ontario Ministry of Labour dated 23 Aug 1985 and  
 USEPA Method 500R-93/118 dated July 1993

**ENTECH**  
A Division of Agri-Service Lab Inc.  
6000 Highway 101, Unit 04  
Mississauga, ONT L4W 6L3  
TEL: (905) 871-1112  
FAX: (905) 871-2099

Client: XCG-Oakville  
Attention: JH/BW  
Project: 3-338-08-01  
P.O.:  
Sample Type: Tile  
Date Received: May 14/02  
Date Reported: May 22/02

## TFM Bulk Asbestos Analytical Report

### ANALYSIS DATA

Calibration Date: 05/02/2002  
EDXA Resolution: 165.8 eV  
Accelerating Voltage: 100 kV  
Magnification: 9,650 X  
Calibration Coefficient: 1 cm = 1.04 mm  
Camera Coefficient: 29.6 mm-Å

### SAMPLE ID

Field Sample ID	Client Sample ID
2010	VT-10-SMF68-WHT
2011	VT-11-MS24BRN
2012	VT-12-CX3-GRY
2013	VT-13-HR-15-RUD

### MACROSCOPIC EXAMINATION

Accepted/Rejected	Homogeneity	Color	Texture	Description
Accepted	Homogeneous	White	Compact	Flake Tile
Accepted	Homogeneous	Green	Compact	Flake Tile
Accepted	Homogeneous	Grey	Compact	Flake Tile
Accepted	Homogeneous	Red	Compact	Flake Tile

### ASBESTIFORM MINERALS

% Chrysotile	% Amosite	% Tremolite	% Actinolite	% Anthophyllite	% TOTAL ASBESTOS
<1%	ND	ND	ND	ND	<1%
>10-20	ND	ND	ND	ND	>10-20
>10-20	ND	ND	ND	ND	>10-20
>10-20	ND	ND	ND	ND	>10-20

Note:

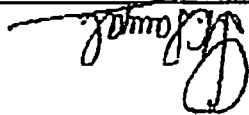
ND = None Detected

Trace... <0.50%

Method:

Samples Analyzed by Transmission Electron Microscopy (TEM) using the method, EPA/600/R-93/116

Sam Sanyal, M.Sc., C. Chem.  
Manager, Inorganic Analysis



Client: XCG-Oakville  
 Attention: JLBW  
 Project: 3-236-08-01  
 P.O.:  
 Sample Type: Tile  
 Date Received: May 16/02  
 Date Reported: May 22/02

A Division of Agri-Service Ltd Inc  
 6820 Highway 10, Unit 04  
 Mississauga, ONT L5N 6M3  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095

# TEMI Bulk Asbestos Analytical Report

## ANALYSIS DATA

Calibration Date: 03/02/2002  
 EDXA Resolution: 161.8 eV  
 Accelerating Voltage: 100 kV  
 Magnification: 9.650 X  
 Calibration Constant: 1 cm = 1.04 µm  
 Version Constant: 29.6 cm-A

SAMPLE ID			
Field Sample ID	Client Sample ID	Field Sample ID	Client Sample ID
2014	VT-5-OR17-PBRN	2015	VT-7-RH21-GRY
2021	VT-4-CSC16-GRY	2022	VT-6-RH21-RUD

## MACROSCOPIC EXAMINATION

Accepted/Rejected	Homogeneity	Color	Texture	Description
Accepted	Heterogeneous	Grey	Compact	Flame Tile
Accepted	Heterogeneous	Grey	Compact	Floor Tile
Accepted	Homogeneous	Brown	Compact	Floor Tile
Accepted	Heterogeneous	Red	Compact	Floor Tile

## ASBESTIFORM MINERALS

% Chrysotile	ND	>10-20	>15	>10-20
% Amosite	ND	ND	ND	ND
% Crocidolite	ND	ND	ND	ND
% Tremolite - Actinolite	ND	ND	ND	ND
% Anthophyllite	ND	ND	ND	ND
% TOTAL ASBESTOS	ND	>10-20	>15	>10-20

Note:  
 NTD = None Detected  
 Trace = <0.10%

Method:  
 Samples Analyzed by Transmission Electron Microscopy (TEM) using the method, EPA/600/M-93/116

Sam Sanyal, M. Sc., C. Chem.  
 Manager, Inorganic Analysis


*[Signature]*



Client: XCG-Oakville  
 Attention: JH/BW  
 Project: 3-338-98-01  
 P.O.:  
 Sample Type: Paint  
 Date Received: May 14/02  
 Date Analysed: May 15, 16, 17 & May 21/02  
 Date Reported: May 22/02

# ENTECH

A Division of Agri-Service Lab Inc.  
 6820 Kilmer Rd., Unit 64  
 Mississauga, ONT L5H 5A3  
 TEL: (905) 821-1112  
 FAX: (905) 821-2095

  
 Sam Banya, M.Sc., C. Chem  
 Manager, Inorganic Analysis

## Certificate of Analysis

PARAMETER	Method Detection Limit (µg/g)	Abatement Level (µg/g) Interim Guidelines for Hazard Identification & Abatement in Public & Indian Housing*	CONTROL SAMPLE			SAMPLE DATA (µg/g)							
			Expected Conc. (µg/g)	Found Conc. (µg/g)	Recovery %	Blank	2002 WP-10-BR1-GRN	2003 PP-10-BR2-PBLU	2004 WP-18-BR2-GRN	2005 WP-4-ED48-CRM	2006 BLGP-18-GRY	2009 PP-12-BR2-CRM	2016 WP-7-PAN81-CRM
Lead in Paint Chips	20	5000	3395	3178	94	<20	13541	2839	1559	1849	5043	1071	2450

Sample Disposal: 30 Days from the Reporting Date.

Analyst(s): NL, AV

Note: \* - Department of Housing and Urban Development, Sept. 1990 (USA).

Method:

Lead in Paint Chips - ICP-AES/Digestion

REV. 02 2002 10-10-02

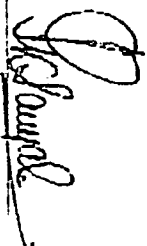
ENTECH

305 821 2095 10-10-02

Client: XCG-Qualivets  
 Attention: JH/BW  
 Project: 3-336-98-01  
 P.O.:

Sample Type: Paint  
 Data Received: May 14/02  
 Data Analyzed: May 15, 16, 17 & May 21/02  
 Data Recorded: May 22/02

**ENTECH**  
 A Division of Agri-Service Lab Inc.  
 6430 Kismet Rd., Unit C4  
 Mississauga, ONT L4W 5G7  
 TEL: (905) 821-1112  
 FAX: (905) 821-2096

  
 Sean Smyth, M.Sc., C. Chem  
 Manager, Inorganic Analysis

# Certificate of Analysis


PARAMETER	Method Detection Limit (µg/g)	Abatement Level (µg/g) Interim Guidelines for Hazard Identification & Abatement in Public & Indian Housing*	CONTROL SAMPLE			SAMPLE DATA (µg/g)							
			Expected Conc. (µg/g)	Found Conc. (µg/g)	Recovery %	1994 BOATP-4- ADHT	1995 BP-11(R)- Red	1996 BP-14-GR- SLVR	1997 CP-1-OS-1- BERD	1998 FP-2-ADHT	1999 FP-3-ADHT	2000 GBF-13-GR- BLK	2001 LP-17-GR- YLW
Lead in Paint Chips	20	5000	3385	3178	94	5581	85761	3862	1885	139	171	8150	41348

Sample Disposal: 30 Days from the Reporting Date.  
 Analytical: AL, AV  
 Note: - Department of Housing and Urban Development, Sept. 1990 (UBA).  
 Method: Lead in Paint Chips - ICP-AES/Digestion

# ENTECH

A Division of Agri-Service Lab Inc.  
6820 Kitchener Rd., Unit B4  
Mississauga, ONT L5N 5K3  
TEL: (905) 821-1112  
FAX: (905) 821-2095

Client: XCG-Oakville  
Attention: JH/BW  
Project: 3-336-98-01  
P.O.:  
Sample Type: Paint  
Date Received: May 14/02  
Date Analyzed: May 16, 18, 17 & May 21/02  
Date Reported: May 22/02

  
Sam Beryal, M.Sc., C. Chem  
Manager, Inorganic Analysis.

## Certificate of Analysis

PARAMETER	Method Detection  Limit (µg/g)	Abatement Level (µg/g)  Interim Guidelines for Hazard Identification & Abatement in Public & Indian Housing*	CONTROL SAMPLE			SAMPLE DATA (µg/g)						
			Expected	Found	Recovery	2017	2016	2003				
			Conc. (µg/g)	Conc. (µg/g)	%	WP-2-ER- PGRH	WP-7- PAN01-CRM Duplicate	PP-10-BR2- PBLU Duplicate				
Lead in Paint Chips	20	5000	3395	3178	94	37580	2581	2437				

Sample Disposal: 30 Days from the Reporting Date  
Analyst(s): NL, AV  
Note: \* - Department of Housing and Urban Development, Sept. 1990 (USA).

Method:  
Lead in Paint Chips - ICP-AES/Digestion

0001 0000

0001 0000 15:46

0001 0000

0001 0000 20:55

0001 0000

## Certificate of Analysis

### Superior Insulation Services Inc.

113-115 Cushman Road, Unit 30  
St. Catharines, ON L2M 6S9  
Attn: Todd Jeffery

Client PO: 16-291  
Project: HAIDA  
Custody: 29130

Report Date: 23-Jan-2017  
Order Date: 18-Jan-2017

**Order #: 1703286**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1703286-01	White Paint Interior Crew BH P.01
1703286-02	UD003 Beige - Ceiling Deck Stipple Coating P.02
1703286-03	Blue Grey Paint Exterior Bulkhead P.03
1703286-04	Battle Ship Grey Exterior Floor Deck P.04

Approved By:



Mark Foto, M.Sc.  
Lab Supervisor

Certificate of Analysis  
Client: Superior Insulation Services Inc.  
Client PO: 16-291

Report Date: 23-Jan-2017  
Order Date: 18-Jan-2017  
Project Description: HAIDA

### Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	20-Jan-17	20-Jan-17
PCBs, total	based on SW846 8082A - GC-ECD	20-Jan-17	20-Jan-17

Certificate of Analysis  
**Client: Superior Insulation Services Inc.**  
**Client PO: 16-291**

Report Date: 23-Jan-2017

Order Date: 18-Jan-2017

**Project Description: HAIDA**

<b>Client ID:</b>	White Paint Interior Crew BH P.01	UD003 Beige - Ceiling Deck Stipple Coating P.02	Blue Grey Paint Exterior Bulkhead P.03	Battle Ship Grey Exterior Floor Deck P.04
<b>Sample Date:</b>	11-Jan-17	11-Jan-17	11-Jan-17	11-Jan-17
<b>Sample ID:</b>	1703286-01	1703286-02	1703286-03	1703286-04
<b>MDL/Units</b>	Paint	Paint	Paint	Paint

**Metals**

Lead	20 ug/g	52600	11100	185	238
------	---------	-------	-------	-----	-----

**PCBs**

PCBs, total	0.2 ug/g	20.4	13.4	<0.2	<0.4 [1]
Decachlorobiphenyl	Surrogate	79.6%	74.4%	81.3%	72.1% [1]

Certificate of Analysis  
 Client: Superior Insulation Services Inc.  
 Client PO: 16-291

Report Date: 23-Jan-2017  
 Order Date: 18-Jan-2017  
 Project Description: HAIDA

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Lead	ND	20	ug/g						
<b>PCBs</b>									
PCBs, total	ND	0.2	ug/g						
Surrogate: Decachlorobiphenyl	0.181		ug/g		72.5	43-142			

Certificate of Analysis  
 Client: Superior Insulation Services Inc.  
 Client PO: 16-291

Report Date: 23-Jan-2017  
 Order Date: 18-Jan-2017  
 Project Description: HAIDA

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Lead	1390	20	ug/g	1740			22.0	30	
<b>PCBs</b>									
PCBs, total	22.6	0.2	ug/g	20.4			10.5	35	
Surrogate: Decachlorobiphenyl	0.222		ug/g		88.6	43-142			



Certificate of Analysis  
 Client: Superior Insulation Services Inc.  
 Client PO: 16-291

Report Date: 23-Jan-2017  
 Order Date: 18-Jan-2017  
 Project Description: HAIDA

### Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Lead	1120		ug/L	868	103	70-130			
<b>PCBs</b>									
PCBs, total	21.5	0.2	ug/g	20.4	109	58-147			
Surrogate: Decachlorobiphenyl	0.245		ug/g		97.9	43-142			

Certificate of Analysis  
Client: Superior Insulation Services Inc.  
Client PO: 16-291

Report Date: 23-Jan-2017  
Order Date: 18-Jan-2017  
Project Description: HAIDA

**Qualifier Notes:**

***Sample Qualifiers :***

1 : Elevated Reporting Limits due to limited sample volume.

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

n/a: not applicable  
ND: Not Detected  
MDL: Method Detection Limit  
Source Result: Data used as source for matrix and duplicate samples  
%REC: Percent recovery.  
RPD: Relative percent difference.

Client Name: <u>Superior Building Solutions</u>	Project Reference: <u>H1A10A</u>	<b>Turnaround Time:</b> <input type="checkbox"/> 1 Day <input checked="" type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Regular Date Required: _____
Contact Name: <u>Todd Jeffery</u>	Quote # _____	
Address: <u>113 CUSHMAN RD UNIT 30</u> <u>ST. CATHARINES ON</u>	PO # <u>16-291</u>	
Telephone: <u>905 984 5900</u>	Email Address: <u>todd@superiorgroup.ca</u>	

Criteria: ☐ O. Reg. 153/04 (As Amended) Table \_\_\_ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: \_\_\_\_\_ ☐ Other: \_\_\_\_\_

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

**Required Analyses**

Parcel Order Number:			Matrix	Air Volume	# of Containers	Sample Taken		Lead	Pb (if possible)											
Sample ID/Location Name						Date	Time													
1	White Paint Interior <sup>Crews</sup> Btl P.01		P	—	1	1/17/17		X	X											
2	Woods Beig-Ceiling <sup>Stipple</sup> Contn P.02		P		1	"		X	X											
3	Blue gray Paint Exterior <sup>BattleShip</sup> Btl P.03		P		1	"		X	X											
4	BattleShip grey <sup>Exterior</sup> Floor Deck P.04		P		1	"		X	X											
5																				
6																				
7																				
8																				
9																				
10																				

Comments:

Method of Delivery:

walk-in

Relinquished By (Sign): <u>[Signature]</u>	Received by Driver/Depot: <u>Nagana</u>	Received at Lab: <u>Rachel Subject</u>	Verified By: <u>Rachel Subject</u>
Relinquished By (Print): <u>Todd Jeffery</u>	Date/Time: <u>Jan 17 14:30</u>	Date/Time: <u>Jan 19 11:17</u>	Date/Time: <u>Jan 19 11:17</u>
Date/Time: <u>1/17/17</u>	Temperature: <u>NA</u> °C	Temperature: <u>10.20</u> °C	pH Verified [ ] By: <u>NA</u> 11:18

## Certificate of Analysis

**Superior Insulation Services Inc.**

113-115 Cushman Road, Unit 30  
St. Catharines, ON L2M 6S9  
Attn: Todd Jeffery

Client PO:  
Project: HMCS Haida  
Custody: 15404

Report Date: 10-Mar-2017  
Order Date: 10-Mar-2017

**Order #: 1710460**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1710460-01	Transite Panel T.01

Approved By:



Emma Diaz  
Senior Analyst

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Report Date: 10-Mar-2017

Client: Superior Insulation Services Inc.

Order Date: 10-Mar-2017

Client PO:

Project Description: HMCS Haida

**Asbestos, PLM Visual Estimation    \*\*MDL - 0.5%\*\***

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1710460-01	09-Mar-17	sample homogenized	Grey	Transite	Yes	Client ID: Transite Panel T.01	
						<b>Chrysotile</b>	20
						Non-Fibers	80

**\*\* Analytes in bold indicate asbestos mineral content.**

**Analysis Summary Table**

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code	*	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	1 - Mississauga	200863-0		10-Mar-17

\* Reference to the NVLAP term does not permit the user of this report to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

**Work Order Revisions / Comments**

None

Client Name: <b>SUPERbe Building Solutions</b>	Project Reference: <b>HMCS Hnda</b>	TAT: <input type="checkbox"/> Regular <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day <input checked="" type="checkbox"/> Same Day Date Required: _____
Contact Name: <b>TODD SEFFERS</b>	Quote #:	
Address: <b>113 Cashman Road Unit 30 St. Catharines ON</b>	PO #:	
Telephone: <b>905 941 0347</b>	Email Address: <b>todd@superiorgroup.ca</b>	

**ASBESTOS ANALYSIS**

Matrix: <input type="checkbox"/> Air <input type="checkbox"/> Other Regulatory Guideline: _____		Required Analyses: <input type="checkbox"/> PCM <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PLM 400PC <input type="checkbox"/> PLM 1000PC <input type="checkbox"/> Chatfield <input type="checkbox"/> TEM					
Paracel Order Number: <b>1710460</b>		Matrix Description	Sampling Date	Air Volume (L)	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
Sample ID							
1	<b>Transit Panel T.O1</b>	<b>Bulk -</b>	<b>1/17/5</b>	<b>✓</b>	<b>✓</b>		
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

\* Each layer is charged as a separate analysis \*\* Homogenize = Sample is combined to a uniform mixture

Comments:		Method of Delivery: <b>work IN</b>	
Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): <b>Todd Seffers</b>		Date/Time: <b>March 14/17 11:20</b>	Date/Time: <b>March 14/17 11:30</b>
Date/Time: <b>3/10/17</b>	Date/Time:		

January 25, 2017

Superior Building Solutions  
113 Cushman Road - Unit 30  
St. Catharines, ON L2M 6S9

**CLIENT PROJECT:** Haida; 16-291  
**CEI LAB CODE:** A17-0864


Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on January 19, 2017. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read "Tianbao Bai".

Tianbao Bai, Ph.D., CIH  
Laboratory Director



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## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Superior Building Solutions**

---

CLIENT PROJECT: Haida; 16-291

CEI LAB CODE: A17-0864

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 01/25/17

TOTAL SAMPLES ANALYZED: 5

# SAMPLES >1% ASBESTOS: 4

**TEL: 866-481-1412**

***www.ceilabs.com***





# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** Haida; 16-291

**CEI LAB CODE:** A17-0864

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
2016 S.01		A2304499	Gray	Transite Panel	Chrysotile 15%
2016 S.02		A2304500	Blue	Fireproofing	Chrysotile 25% Crocidolite 40%
2016 S.03		A2304501	Blue	Fireproofing	Chrysotile 20% Crocidolite 50%
2016 S.04		A2304502	White	Textured Ceiling	None Detected
2016 S.05		A2304503	Blue	Fireproofing	Chrysotile 20% Crocidolite 50%



# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Superior Building Solutions  
113 Cushman Road - Unit 30  
St. Catharines, ON L2M 6S9

**CEI Lab Code:** A17-0864

**Date Received:** 01-19-17

**Date Analyzed:** 01-25-17

**Date Reported:** 01-25-17

**Project:** Haida; 16-291

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
2016 S.01 A2304499	Transite Panel	Heterogeneous			80%	Silicates	15% Chrysotile
		Gray			5%	Binder	
		Fibrous					
		Bound					
2016 S.02 A2304500	Fireproofing	Heterogeneous			35%	Binder	25% Chrysotile 40% Crocidolite
		Blue					
		Fibrous					
		Loosely Bound					
2016 S.03 A2304501	Fireproofing	Heterogeneous			30%	Binder	20% Chrysotile 50% Crocidolite
		Blue					
		Fibrous					
		Loosely Bound					
2016 S.04 A2304502	Textured Ceiling	Heterogeneous	<1%	Cellulose	10%	Paint	None Detected
		White			90%	Binder	
		Fibrous					
		Bound					
2016 S.05 A2304503	Fireproofing	Heterogeneous			30%	Binder	20% Chrysotile 50% Crocidolite
		Blue					
		Fibrous					
		Loosely Bound					



---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                 Non-Trem      = Non-Asbestiform Tremolite  
                 Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

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**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

**ANALYST:**

A handwritten signature in black ink, appearing to read "Saithya Paikal", written over a horizontal line.

Saithya Paikal

**APPROVED BY:**

A handwritten signature in black ink, appearing to read "Tianbao Bai", written over a horizontal line.

Tianbao Bai, Ph.D., CIH  
Laboratory Director





730 SE Maynard Road, Cary, NC 27511  
Tel: 866-481-1412; Fax: 919-481-1442

# ASBESTOS CHAIN OF CUSTODY

⑤ A17-0864  
A2304499  
A2304503

LAB USE ONLY:

CEI Lab Code:

CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Todd Jeffery
Company: Superior Building Solutions	Email / Tel: todd@superiorgroup.ca
Address: 113 Cushman Rd. Unit 30	Project Name: H1A10A
St. CATHERINES ON L2m 659	Project ID#: 16-291
Email: todd@superiorgroup.ca	PO #:
Tel: 905 984 5900 Fax:	STATE SAMPLES COLLECTED IN:

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM BULK	CARB 435	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCM AIR	NIOSH 7400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ISO 10312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ASTM 6281-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST WIPE	ASTM D6480-05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST MICROVAC	ASTM D5755-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM SOIL	ASTM D7521-13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM VERMICULITE	CINCINNATI METHOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS / SPECIAL INSTRUCTIONS:



Accept Samples



Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
	11/17/17	A	11/17 9:10

Samples will be disposed of 30 days after analysis

Page \_\_\_\_ of \_\_\_\_



# ASBESTOS SAMPLING FORM



## COMPANY CONTACT INFORMATION

Company: Superior Building Solutions	Job Contact: Todd Jeffery
Project Name: H.A.D.A	
Project ID #: 16-	Tel: 905941-0347

[illegible]

## APPENDIX D

Hand-drawn site plan of a school campus. The plan shows three main buildings labeled ADT 001, ADT 002, and ADT 003. ADT 001 is a large rectangular building with a central entrance labeled 'ADT 001' and 'HARDWARE'. It has a 'MAGAZINE' section on the left and a 'RU' section on the right. ADT 002 is a smaller rectangular building with a central entrance labeled 'ADT 002' and 'NUTRITION OFFICE'. ADT 003 is a rectangular building with a central entrance labeled 'ADT 003' and 'WORKSHOP'. The plan includes a north arrow, a scale bar (0 to 150 feet), and various other labels like 'HARDWARE', 'MAGAZINE', 'NUTRITION OFFICE', and 'WORKSHOP'.

AFTER DECKHOUSE TOP

TITLE: ASBESTOS INVENTORY

CUSTOMER: HEDDLE MARINE SERVICES INC.

LOCATION: FORECASTLE DECK FWD

PD-001 FUNCTIONAL SPACE NUMBER ASSIGNED

ASBESTOS FLOOR TILE

ASBESTOS TRANSITE PANEL BOARD

ASBESTOS FIREPROOFING

ASBESTOS PIPE INSULATION

ASBESTOS MECHANICAL INSULATION

VESSEL NAME: HMCS HAIDA



INVENTORY OF HAZARDOUS MATERIALS

REVISION: 0 SCALE: N.T.S.

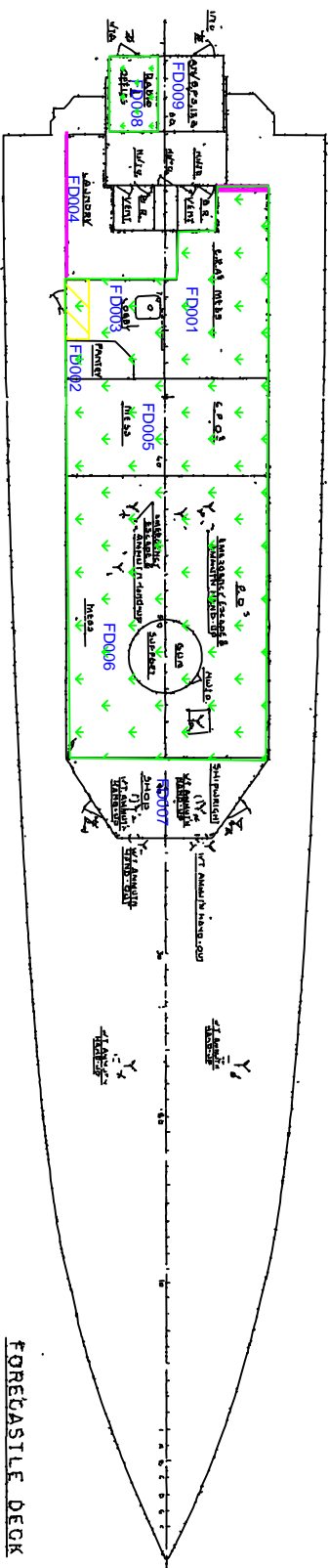
DRAWN BY: TMJ

CHECKED BY: TMJ

DATE: DEC 29, 2016

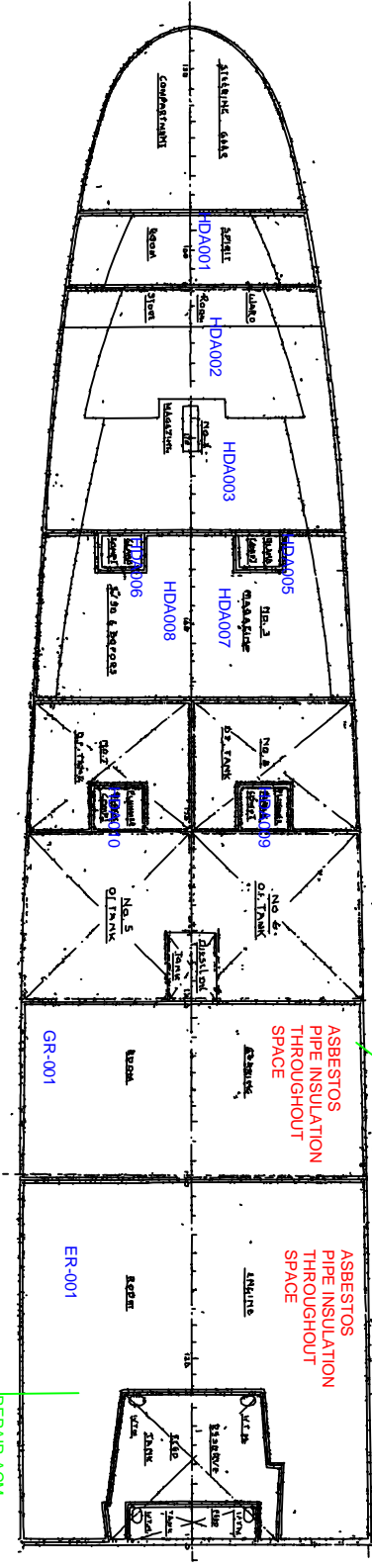
JOB NO: 16.291

DWG #: HAID-DSS-001



FORECASTLE DECK





REPAIR ACM  
INSULATION  
ON  
CIRCULATING  
PUMP 1M

REPAIR ACM  
PIPING 4  
METRES

ASBESTOS  
PIPE INSULATION  
THROUGHOUT  
SPACE

ASBESTOS  
PIPE INSULATION  
THROUGHOUT  
SPACE

TITLE: ASBESTOS INVENTORY

CUSTOMER: HEDDLE MARINE SERVICES INC.

LOCATION: HOLD DECK AFT

PD-001 FUNCTIONAL SPACE NUMBER ASSIGNED  
ASBESTOS FLOOR TILE

ASBESTOS TRANSITE PANEL BOARD

ASBESTOS FIREPROOFING

ASBESTOS PIPE INSULATION

ASBESTOS MECHANICAL INSULATION

VESSEL NAME: HMCS HAIDA

INVENTORY OF HAZARDOUS MATERIALS

REVISION: 0 SCALE: N.T.S.

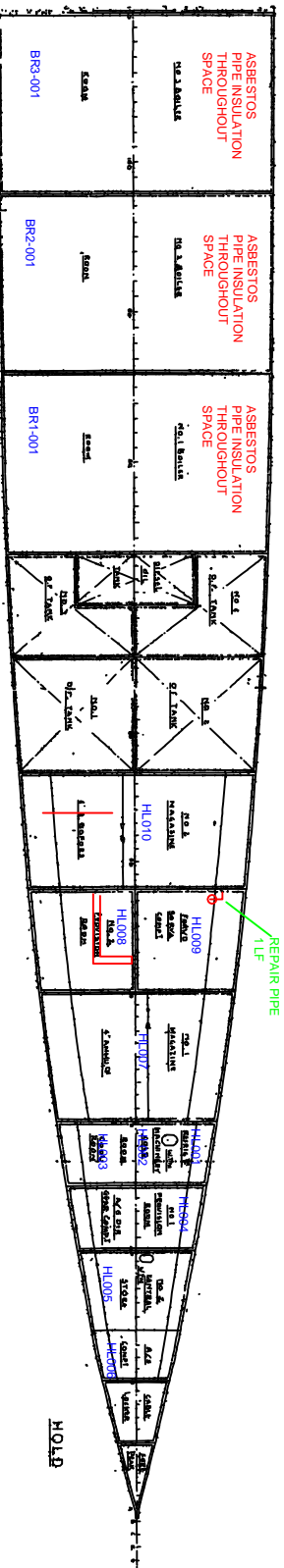
DRAWN BY: TMJ

CHECKED BY: TMJ

DATE: DEC 29, 2016

JOB NO: 16.291

DWG #: HAID-DSS-001



TITLE:

ASBESTOS  
INVENTORY

CUSTOMER:

HEDDLE MARINE SERVICES INC.

LOCATION:

HOLD DECK  
FWD

PD-001

FUNCTIONAL SPACE  
NUMBER ASSIGNED



ASBESTOS FLOOR TILE



ASBESTOS TRANSITE  
PANEL BOARD



ASBESTOS  
FIREPROOFING



ASBESTOS PIPE  
INSULATION



ASBESTOS MECHANICAL  
INSULATION

VESSEL NAME:

HMCS HAIDA



INVENTORY OF  
HAZARDOUS  
MATERIALS

REVISION:

0

SCALE:

N.T.S.

DRAWN BY:

TMJ

CHECKED BY:

TMJ

DATE

DEC 29, 2016

JOB NO:

16.291

DWG #:

HAID-DSS-001








**TITLE:**

**CUSTOMER:**

LOCATION

PD-001



1



VESSEL NAME:

HMCS HAIDA



# INVENTORY OF HAZARDOUS MATERIALS

REVISION:

DRAWN BY  
TMJ

CHECKED BY: TMJ

DATE: DEC 29, 2016

JOB NO: 16.291

DWG #:	HAID-DSS-001
--------	--------------

# ASBESTOS INVENTORY

CUSTOMER:  
HEDDLE MARINE SERVICES INC.

LOCATION  
UPPER DECK  
FWD

- PD-001 FUNCTIONAL SPACE NUMBER ASSIGNED
- ASBESTOS FLOOR TILE
- ASBESTOS TRANSITE PANEL BOARD
- ASBESTOS FIREPROOFING
- ASBESTOS PIPE INSULATION
- ASBESTOS MECHANICAL INSULATION

VESSEL NAME:

HIMCS HAIDA

## INVENTORY OF HAZARDOUS MATERIALS



REVISION: 0 SCALE: N.T.S.

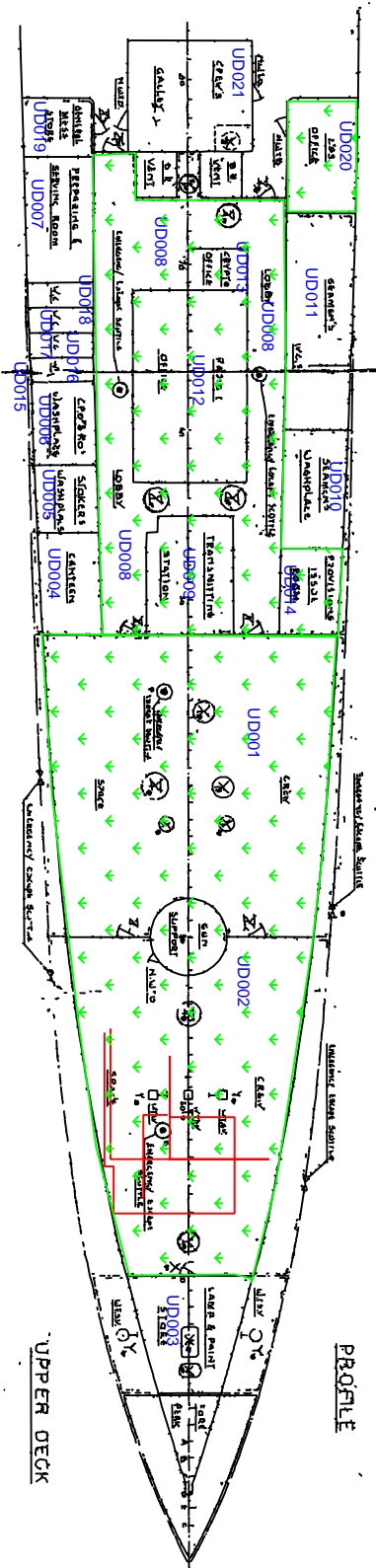
DRAWN BY: TMJ







CHECKED BY: TMJ

DATE: DEC 29, 2016

JOB NO.: 16.291

DWG #: HAID-DSS-001



<b>TITLE:</b> ASBESTOS INVENTORY	
<b>CUSTOMER:</b> HEDDLE MARINE SERVICES INC.	
<b>LOCATION:</b> UPPER DECK MIDSHIP	
<b>PD-001</b> FUNCTIONAL SPACE NUMBER ASSIGNED	
 ASBESTOS FLOOR TILE	
 ASBESTOS TRANSITE PANEL BOARD	
 ASBESTOS FIREPROOFING	
 ASBESTOS PIPE INSULATION	
 ASBESTOS MECHANICAL INSULATION	
<b>VESSEL NAME:</b> HMCS HAIDA	
	
<b>REVISION:</b> 0	<b>SCALE:</b> N.T.S.
<b>DRAWN BY:</b> TMJ	
<b>CHECKED BY:</b> TMJ	
<b>DATE:</b> DEC 29, 2016	
<b>JOB NO:</b> 16.291	
<b>DWG #:</b> HAID-DSS-001	

