Q. **Volume I: Holyrood Projected Operating Maintenance Expenditures**

Hydro states on page 3, line 15, that "Since 2008, the Preventive Maintenance Program has been enhanced to include the extra costs associated with plant cleaning in areas where asbestos and heavy metals have been identified as potential health hazards."

In Order No. P.U. 2(2005) the Board approved an Asbestos Abatement Plan. According to the *Asbestos Abatement Plan for Holyrood Thermal Generating Station – November 2004* report, the purpose of the program was to "remove all friable asbestos piping and ductwork insulation and asbestos dust and debris in a three-year period."

How much asbestos is still present at the Holyrood Thermal Generating Station?

A. The original program was completed as planned with all identified asbestos remediated to practical limits. There have been and continue to be cases where pockets of asbestos dust are uncovered and need to be remediated on a small scale level, such as amongst the multiple electrical cables inside of some cable trays. In 2016, Hydro hired a qualified consultant to conduct an asbestos materials reassessment of the Holyrood Thermal Generating Station. The resulting report (see attached copy) documents the locations of asbestos containing material in the plant and builds on the earlier similar work done in 2004 and 2012.

Asbestos Materials Reassessment

Holyrood Thermal Generating Station
Holyrood, Newfoundland and Labrador

Prepared for:

NL Hydro
P.O Box 29
Holyrood, NL A0A 2R0

Attention: Mr. Wade Kelloway

January 29, 2016

Pinchin File: 02-02-01506

Issued to:	**NL Hydro**
Contact:	**Mr. Wade Kelloway**
Issued on:	**January 29, 2016**
Pinchin file:	**02-02-01506**
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EXECUTIVE SUMMARY

NL Hydro (Client) retained Pinchin LeBlanc Environmental Limited (Pinchin) to conduct an asbestos materials reassessment of the Holyrood Thermal Generating Station (Site Building) located in Holyrood, Newfoundland and Labrador. The Site Building was originally assessed by Pinchin in 2004. The reassessment described herein was conducted to assess and update the condition, location, and quantity of asbestos-containing materials (ACM) as identified in the last reassessment completed by Pinchin in October 2012.

The reassessment was conducted by Jason Lewis of Pinchin on October 25, 2015, with a follow-up site visit on December 17, 2015 to complete roof sampling.

Summary of Findings

The following friable ACM were observed within the Site Building:

- Settled asbestos-containing dust/debris, (friable asbestos material) is present on horizontal structural steel, piping systems and cable trays in elevated, inaccessible areas (i.e. access with scaffold or ladder) throughout the Site Building. These areas would not be routinely accessed by general building users. However, they may be encountered or accessed during plant outages or maintenance activities.
- Friable asbestos containing material remains concealed in the redundant central plant vacuum system (i.e. vacuum pipes). The system remains properly sealed with clearly visible asbestos warning signs posted on the system at appropriate locations throughout the plant.
- Refractory debris, settled on boiler buckstays on Unit #1 and Unit #2.
- Refractory debris inside boiler Unit #1 and Unit #2 penthouses.

The following non-friable ACM were observed within the Site Building:

- Trowelled applied refractory material (hard cementitious) remains present behind metal clad boiler sheeting on internal buckstays of boiler unit #1 and unit #2
- Transite sheeting located underneath the 3rd floor MCC.
- Underground asbestos piping.
- Galbestos exterior sheeting located on the boiler plant.
- Tar mastic on exterior piping located on the north side of the plant.

Details regarding locations and conditions are presented within the body of this report.

Summary of Immediate Recommendations

Based on the findings of this reassessment, immediate action recommendations are as follows:

- Remove fallen friable refractory debris settled on the buckstays located throughout all elevations of Unit #1 and Unit #2. The work should be completed following the plant cleaning procedure as set forth in the Asbestos Management Plan (AMP) for the Site Building.

Summary of Recommendations

The following is a summary of significant recommendations; refer to the body of the report for detailed recommendations.

1. Maintain a copy of this reassessment report in the Site Building to provide a record of the location of ACM;
2. Advise workers who may disturb ACM of the presence of the asbestos, including retained contractors;
3. Continue to provide asbestos related training to any employee who may disturb asbestos or work in close proximity to it;
4. Continue reassessments of all ACM to check on condition, at a minimum annually;
5. Repair or remove deteriorated or damaged ACM as it occurs between reassessments;
6. Remove all ACM prior to deconstruction or renovations. It is recommended that all asbestos materials be removed prior to any significant disturbance due to maintenance, deconstruction, or renovation;
7. Develop plans and specifications as required detailing the scope and procedures for the handling and disposal of ACM;
8. For the removal of non-friable with the potential to become friable manufactured products containing asbestos, such as, refractory material from the buckstays, follow the detailed cleaning procedure as set forth in the Asbestos Management Plan (AMP) for the Site Building, and;
9. For the removal of non-friable, manufactured products containing asbestos, such as Transite sheeting, cement pipe and tar mastics, follow Type I asbestos procedures.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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APPENDICES

1.0 INTRODUCTION AND SCOPE

NL Hydro (Client) retained Pinchin LeBlanc Environmental Limited (Pinchin) to conduct an asbestos materials reassessment of the Holyrood Thermal Generating Station (Site Building) located in Holyrood, Newfoundland and Labrador. The Site Building was originally assessed by Pinchin in 2004. The reassessment described herein was conducted to assess and update the condition, location, and quantity of asbestos-containing materials (ACM) as identified in the last reassessment completed by Pinchin in October 2012.

The reassessment was conducted by Jason Lewis of Pinchin on October 25, 2015

2.0 SCOPE OF REASSESSMENT

The reassessment involved inspecting, and where required, updating the condition and quantity of ACM identified in the original assessment. Field inspections were performed for the ACM identified in the original assessment. The condition and approximate quantity of ACM present were noted for each item. The reassessment involved the verification of existing data, and modification to reflect changes to material quantity, and condition. All information collected has been updated and presented in this report.

During the reassessment friable, non-friable and non-friable with the potential to become friable asbestos materials were examined. Upon the request of the Client, Pinchin completed sampling of roof membranes located on multiple levels of the plant roof system. Sampling included all elevations not already included in the 2015 re-roofing project of roofs A, B and D. The findings of the sampling program are included in this report.

3.0 REASSESSMENT LIMITATIONS

The reassessment described herein involved only a visual reassessment of existing site conditions. Sampling for verification of existing data was not undertaken.

Assessment of possible settled dust on surfaces or in ventilation systems was not undertaken.

4.0 EVALUATION CRITERIA

This reassessment provides accurate information regarding the location and condition of the ACM used within the Site Building. In order to make recommendations for compliance with current regulations, Pinchin developed the following ACM evaluation criteria based on the conclusion of previous published studies, particularly the "Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario" and our experience with structures containing ACM. The same criteria that was initially employed has been utilized for the reassessment.

4.1 Evaluation of Condition

4.1.1 Non-Friable

The condition of non-friable ACM, such as floor tiles are evaluated as follows:

GOOD Significant damage not present. Material may be cracked or broken but is stable and not likely to become friable upon casual contact.

POOR Significant deterioration or breaking apart of the material. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material has deteriorated to a point it has become friable. Normally potentially friable ACM in Poor condition is not repairable and requires at least localized removal and replacement. Loose **DEBRIS** is present or binder has disintegrated to the point where contact will cause the material to become friable.

If the ACM is damaged but stable, and there is no friable **DEBRIS** present, the condition is rated as **GOOD**.

4.1.2 Non-Friable with the potential to become friable are evaluated as follows:

The condition of non-friable, with the potential to become friable ACM, such as drywall joint compound, are evaluated as follows:

GOOD Significant damage not present.

FAIR Material may be cracked or broken but is stable and not likely to become friable upon casual contact.

POOR Significant deterioration or breaking apart of the material. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material has deteriorated to a point it has become friable. Normally potentially friable ACM in Poor condition is not repairable and requires at least localized removal and replacement. Loose **DEBRIS** is present or binder has disintegrated to the point where contact will cause the material to become friable.

4.1.5 Friable are evaluated as follows:

The condition of non-friable, with the potential to become friable ACM, such as drywall joint compound, are evaluated as follows:

GOOD Significant damage not present.

FAIR Material may be cracked or broken but is stable and not likely to become friable upon casual contact.

POOR Significant deterioration or breaking apart of the material. Material has deteriorated to the point it is not serving its intended use as building material or finish. Material has deteriorated to a point it has become friable. Normally potentially friable ACM in Poor condition is not repairable and requires at least localized removal and replacement. Loose DEBRIS is present or binder has disintegrated to the point where contact will cause the material to become friable.

4.2 Evaluation of ACM DEBRIS

*4.2.1 **DEBRIS** from Friable ACM*

The presence of fallen ACM is noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as **DEBRIS**.

4.2.2 DEBRIS from Damaged Non-Friable ACM

The presence of fallen ACM from damaged non-friable ACM is also reported separately from the non-friable ACM source.

The identification of the exact location or presence of **DEBRIS** throughout the plant is limited by the number of observations made at floor level and are not inclusive of conditions that are concealed (i.e. inside boiler penthouses) or at height (i.e. structural steel, cable trays, etc.). Workers are advised to be watchful for the presence of **DEBRIS** prior to accessing boiler penthouses, working around cable trays or in areas with ACM regardless of the reported presence or absence of **DEBRIS.**

5.0 REASSESSMENT FINDINGS

The following summarizes the locations, approximate quantities, and updated conditions of ACM identified in the Site Building. Results for the samples collected during this reassessment have been included in Appendix I.

5.1 Mechanical Insulations

All known friable asbestos-containing mechanical pipe insulation has been removed from the site.

5.1.1 Mechanical Debris and Dust

Asbestos-containing refractory materials are confirmed present on the buckstays of Boiler Unit #1 and Boiler Unit #2 including the internal buckstays at the penthouse level of both units. The following table summarizes mechanical debris and dust observed around Boiler Unit #1 and Boiler Unit #2:

Table 3.4.2.1 – Asbestos Debris Summary Tables Boiler Unit #1 and Boiler Unit #2

BOILER UNIT #1 Observations 2015			
Elevation	**Unit**	**Area**	**Material / Observation**
Top	1	Top side	Sprayed fireproofing overspray material on underside of beams and associated debris on boiler top surface encountered during the reassessment in 2012 have been cleaned. An asbestos warning sign is posted as an additional precaution in this area. No immediate concerns were observed.
10	1	Penthouse	Asbestos-containing insulation on internal buckstay in **POOR** condition observed during the 2012 reassessment has been cleaned. Minor debris was observed in this area during this reassessment.
10	1	North side	Minor debris
10	1	South end	Debris along buckstay requires cleaning; **POOR** condition.
10	1	East end	Debris on buckstay near soot blower requires cleaning; **POOR** condition.
9	1	North side	Light debris on buckstay requires cleaning; **POOR** condition.
9	1	North west	Light debris on corner requires cleaning; **POOR** condition
9	1	West side	Light debris along buckstays; **POOR** condition.
8	1	West side	Light debris by hatches requires cleaning; **POOR** condition.
8	1	South East	Debris observed during the 2012 reassessment has been cleaned. No further concerns were observed; **GOOD** condition.
8	1	Northwest corner	Light debris on pipe adjacent boiler; **POOR** condition.

BOILER UNIT #1 Observations 2015

Elevation	Unit	Area	Material / Observation
8	1	North of soot blowers	**GOOD** condition.
7	1	West and East Side	**GOOD** condition.
7	1	South and North Side	**GOOD** condition.
6	1	North side	Debris encountered during the 2012 reassessment has been cleaned. No further deficiencies were observed; **GOOD** condition.
4	1	West corner	Light debris requires cleaning; **POOR** condition.
4	1	North, South, and East sides	**GOOD** condition.
3	1	South side	No deficiencies observed; **GOOD** condition.
3	1	North side west corner	No deficiencies observed; **GOOD** condition.
2	1	Northeast Corner	Light debris requires cleaning; **POOR** condition.
2	1	South buckstay	Light debris requires cleaning; **POOR** condition.

BOILER UNIT #2 Observations 2015

Elevation	Unit	Area	Material / Observation
Top	2	Top side	Overspray material on underside of beams and associated debris on boiler top surface observed during the 2012 reassessment have been cleaned. Light debris is still present in this area; **POOR** condition.
Penthouse	2	Penthouse	Asbestos containing insulation on internal buckstay in **POOR** condition. Restrict access and follow AMP entry procedure.

BOILER UNIT #2 Observations 2015

Elevation	Unit	Area	Material / Observation
10	2	Southwest corner	Debris requires cleaning; **POOR** condition
9	2	South side	Cladding requires cleaning; **POOR** condition
9	2	West side	Light with areas of heavy debris (southwest corner) require cleaning; **POOR** condition.
9	2	North and East sides	Light debris requires cleaning; **POOR** condition.
8	2	Northeast corner	Light debris encountered along the buckstay, NE requires repair; **POOR** condition.
8	2	West side	**GOOD** condition.
7	2	West side	Minor debris requires cleaning; **POOR** condition.
7	2	Northeast corner	Light debris requires cleaning; **POOR** condition.
7	2	South end	Light debris requires cleaning; **POOR** condition.
6	2	North, South and East sides	**GOOD** condition.
6	2	West Side	Light debris in northwest corner and debris around viewport requires cleaning: **POOR** condition
5	2	All sides	**GOOD** condition.
4	2	West and East Sides	Light debris observed throughout this area requires repair; **POOR** condition.
4	2	North and South Sides	**GOOD** condition.
3	2	North end	Repairs to cladding recommended in the 2012 reassessment have been completed. No further deficiencies observed; **GOOD** condition.

BOILER UNIT #2 Observations 2015			
Elevation	**Unit**	**Area**	**Material / Observation**
2	2	West side	Lowest buckstay under 2nd Floor north side requires repairs. All of lowest buckstay need repairs.
	1&2	East and west	Structural steel over east and west boiler feed pumps has debris in **POOR** condition. Caution is advised in this area
Ground Floor	1	Buckstay	Debris present throughout the buckstay requires cleaning; **POOR** condition.

5.2 Settled Dust

Settled asbestos-containing dust/debris, (friable asbestos material) is present on structural steel, piping systems and cable trays in elevated, inaccessible areas (i.e. access with scaffold or ladder) throughout the Site Building. In particular, heavy dust is also present along the north end of turbines under the 3rd floor and also in cable trays on the 5th floor (Boiler Unit #2). Obvious settled dust and **DEBRIS** located in these areas should be managed as asbestos containing until the area has been properly cleaned or sampling indicates otherwise. Settled dust and **DEBRIS** is considered friable and is classified as **POOR** condition.

It should be noted that light cleaning was conducted on the top of most cables trays in the past, however; cables were not moved or lifted to provide acceptable cleaning due to safety reasons. Cable trays throughout the Site should still be considered contaminated with asbestos-containing dust. Dust and **DEBRIS** in cable trays are classified as **POOR** condition.

Asbestos-containing dust and **DEBRIS** is also confirmed present within the piping system associated with the redundant plant vacuum system. All asbestos warning labels and sealed openings of the system remain intact and in **GOOD** condition.

5.3 Asbestos Cement Products

Asbestos cement (Transite) sheets are present on the 3rd floor under the MCC where the cables enter through the floor. Transite is a non-friable building product which typically contains 25-50% chrysotile asbestos. Transite can be readily identified visually in these locations and all Transite is in **GOOD** condition.

Asbestos cement piping is still present at the Site. The asbestos cement is present in the form underground piping. It should be noted that all underground piping is still present as identified in the original survey, excluding the piping under the roadway which has been removed in recent years. Underground remaining piping was not visibly accessible for evaluation of condition.

5.4 Non-Friable Tar Mastic

Tar mastic, used as water proofing on exterior piping, has been removed from the outside piping at the tank farm and jetty. A quantity of the material was also removed from piping in the day tank area (north side of the plant) however the tar mastic is still present on piping located under the metal sheeting in the area. All tar mastics were observed in **GOOD** condition.

5.5 Galbestos Siding

The main plant building (above the 8 foot elevation), the stage 2 pump house (above the 15 foot elevation) and the warehouse (underlying more recently installed exterior clad) are covered with a metal sheet material called Galbestos. Analysis of this material during the initial survey indicated that the backing of the non-friable tarpaper contained chrysotile asbestos. It was noted during the reassessment that the exterior siding is deteriorating and beginning to rust in multiple areas on the Site Building. This is especially evident on roof elevations on the 7th and 5th floors. These areas would be considered in **FAIR** condition. All other siding is present in **GOOD** condition.

5.6 Roofing Materials

Roofing throughout the Site Building consists of an Ethylene Propylene Diene Monomer (EPDM) membrane atop various insulations, papers, mastics and sealants. A total of seventeen (17) samples of such materials were collected as part of this year's reassessment, none of which were found to contain asbestos. The following is a list of materials sampled on December 17, 2015:

- Roofing material was sampled from the South side of roof elevation B1 (reference sample 02-02-01506-S001). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the North side of roof elevation B1 (reference sample 02-02-01506-S002). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the muffler support on roof U3 (reference sample 02-02-01506-S003). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the center of roof elevation A1 (reference sample 02-02-01506-S004). Analysis of the sample did not identify the presence of asbestos.

- Roofing material was sampled from roof E on the 9th floor roof elevation (reference sample 02-02-01506-S005). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the center of roof E on the 9th floor roof elevation (reference sample 02-02-01506-S006). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the center of roof E1 on the 9th floor roof elevation (reference sample 02-02-01506-S007). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the G1-H expansion joint (reference sample 02-02-01506-S008). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the F1-H expansion joint (reference sample 02-02-01506-S009). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from roof F1 on the 7th floor (reference sample 02-02-01506-S010). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled at the wall on roof I (reference sample 02-02-01506-S011). Analysis of the sample did not identify the presence of asbestos.
- Roofing mastic was sampled from the vent on roof I (reference sample 02-02-01506-S012). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the center of roof I (reference sample 02-02-01506-S013). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from the roof L, L-G expansion joint on the 5th floor (reference sample 02-02-01506-S014). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from roof L on the 5th floor (reference sample 02-02-01506-S015). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from roof G2 on the 5th floor (reference sample 02-02-01506-S016). Analysis of the sample did not identify the presence of asbestos.
- Roofing material was sampled from west of the hatch on roof C1 (reference sample 02-02-01506-S017). Analysis of the sample did not identify the presence of asbestos.

The analytical certificate for these analyses is presented in Appendix I.

6.0 RECOMMENDATIONS

6.1 Specific Recommendations

Based on the findings of this reassessment, the following specific recommendations are made:

- **DEBRIS** identified present on the buckstays of Unit #1 and Unit #2 should be cleaned. Cleaning should be completed using the plant cleaning procedure as outlined in the site AMP.
- **DEBRIS** easily accessible to plant personnel during normal plant operations (i.e. buckstay debris), as noted throughout the site, should be cleaned and removed following the established plant cleaning procedure (as outline in the site AMP) or Type 2 (moderate risk) asbestos abatement procedures. Type 3 (high risk) asbestos abatement procedures should be used in areas where extensive amounts of **DEBRIS** is present.
- ACM are present in the penthouses of both Boiler Unit #1 and Boiler Unit #2. For inspection purposes only, access into the penthouses of both boilers should only be completed following the safe entry procedures as included in the Sites asbestos management plan for these spaces. Construction related work, such as outage related activities, should only be completed following a thorough cleaning of the space following the appropriate Type 2 or Type 3 asbestos abatement procedures.

6.2 General Recommendations

As a minimum the following actions should be implemented for this Site Building as ACM has been identified:

- Maintain a copy of this reassessment report in the Site Building to provide a record of the location of ACM;
- Advise workers who may disturb ACM of the presence of the asbestos, including retained contractors;
- Provide asbestos related training to any employee who may disturb asbestos or work in close proximity to it;
- Continue reassessments of all ACM to check on condition, at a minimum annually;
- Repair or remove deteriorated or damaged ACM as it occurs between reassessments;
- Remove all ACM prior to deconstruction or refit. It is recommended that asbestos materials be removed prior to any significant disturbance due to maintenance, deconstruction, or renovation;

- Develop plans and specifications as required detailing the scope and procedures for the handling and disposal of ACM;
- Dust and **DEBRIS**, as noted throughout the Site, should be cleaned and removed following the established cleaning and work procedures set forth in the Site's Asbestos Management Plan. Additionally this work is to comply with the Newfoundland and Labrador Asbestos Abatement Regulation 111/98;
- Use Type 1 asbestos abatement procedures should asbestos-cement and tar mastic covering materials at the Site be required to be removed or repaired. Wet the material and use only hand-held, non-powered tools; and
- Galbestos siding should be repaired or removed following Type 1 (low risk) asbestos abatement procedures.

7.0 LIMITATIONS

The work performed by Pinchin was conducted in accordance with generally accepted engineering or scientific practices current in this geographical area at the time the work was performed. No warranty is either expressed or implied by furnishing written reports or findings. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. Pinchin can only comment on the environmental conditions observed on the date(s) the assessment is performed. The work is limited to those materials or areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issue, regulatory statutes are subject to interpretation and these interpretations may change over time. Pinchin accepts no responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The liability of Pinchin or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin is only liable for damages resulting from the negligence of Pinchin. All claims by the Client shall be deemed relinquished if not made within two years after last date of services provided.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties.

Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

Template: Master Report for Hazardous Materials Assessment Report, Haz, December 10, 2014

APPENDIX I

Asbestos Analytical Certificate 2015

PINCHIN LEBLANC ENVIRONMENTAL

MEMBER OF PG THE PINCHIN GROUP

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

December 17, 2015

Pinchin LeBlanc Environmental Limited
27 Austin Street, St. John's, NL

Attention:	**Curtis Snelgrove**
Lab Reference No.:	**Db7019-2015**
Project Name:	**Holyrood Thermal Generating Station**
Project No.:	**02-02-01506**
Date Received:	**December 17, 2015**
Date Analyzed:	**December 17, 2015**
Analyst(s):	**Jason Stapleton**
# Samples submitted:	**17**
# Phases analyzed:	**26**

Method of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared with representative portions of material and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence, and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with all provincial regulatory requirements (NIOSH 9002, I.R.S.S.T. 244-3). Multiple phases within a sample are analyzed and reported separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Nova Scotia	0.5%, presence/absence in vermiculite	Newfoundland and Labrador, PEI, New Brunswick, NWT, Alberta, Yukon, Nunavut	1%
Quebec	0.1%	Saskatchewan, Manitoba	0.1% friable, 1% non-friable
Ontario, British Columbia	0.5%		

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin LeBlanc Environmental Limited is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 201032-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples' and 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'.

This report relates only to the items tested. If you have any questions, please feel free to contact me.

Yours truly,

Digital Signed by Jason Stapleton
jstapleton@pinchinleblanc.com
Laboratory Manager, Environmental Asbestos Services
Pinchin LeBlanc Environmental Limited

PINCHIN LEBLANC ENVIRONMENTAL

MEMBER OF PG THE PINCHIN GROUP

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

Project Name: Holyrood Thermal Generating Station

Project No.: 02-02-01506
Prepared For: Curtis Snelgrove

Lab Reference No.: Db7019-2015
Date Analyzed: December 17, 2015

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
02-02-01506-S001 Roofing Material / Roof Elevation B1 South	Homogenous, black, tar mastic	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%
02-02-01506-S002 Roofing Material / Roof Elevation B1 North	Homogenous, black tar	None detected	Glass fibres 1-5% Tar and other non-fibrous material >75%
02-02-01506-S003 Roofing Material / Roof U3 Muffler Support	Homogenous, black, tar mastic	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%
02-02-01506-S004 Roofing Material / Roof Elevation A1 - Center	2 phases: a) Homogenous, black tar	None detected	Tar and other non-fibrous material >75%
	b) Homogenous, black, tar impregnated paper	None detected	Cellulose 50-75% Tar and other non-fibrous material 25-50%
02-02-01506-S005 Roofing Material / Roof Elevation 9th Floor Roof E	Homogenous, black, tar mastic	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%
02-02-01506-S006 Roofing Material / 9th Roof E Center	2 phases: a) Homogenous, black tar	None detected	Glass fibres 1-5% Tar and other non-fibrous material >75%
	b) Homogenous, black tar	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%

ANALYST

PINCHIN LEBLANC ENVIRONMENTAL

MEMBER OF PG THE PINCHIN GROUP

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

Project Name: Holyrood Thermal Generating Station

Project No.: 02-02-01506
Prepared For: Curtis Snelgrove

Lab Reference No.: Db7019-2015
Date Analyzed: December 17, 2015

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
02-02-01506-S007 Roofing Material / 9th Floor Roof E1 Center	2 phases:		
	a) Homogenous, black, tar impregnated paper	None detected	Glass fibres 25-50% Tar and other non-fibrous material 50-75%
	b) Homogenous, black tar	None detected	Tar and other non-fibrous material >75%
02-02-01506-S008 Roofing Material / G1 - H Expansion Joint	2 phases:		
	a) Homogenous, black, tar impregnated paper	None detected	Synthetic fibres 10-25% Tar and other non-fibrous material >75%
	b) Homogenous, black tar	None detected	Tar and other non-fibrous material >75%
02-02-01506-S009 Roofing Material / F1-H Expansion Joint	2 phases:		
	a) Homogenous, black, tar impregnated paper	None detected	Synthetic fibres 10-25% Tar and other non-fibrous material >75%
	b) Homogenous, black tar	None detected	Tar and other non-fibrous material >75%
02-02-01506-S010 Roofing Material / 7th Floor Roof F1	2 phases:		
	a) Homogenous, black tar	None detected	Tar and other non-fibrous material >75%
	b) Homogenous, black, tar impregnated paper	None detected	Glass fibres 25-50% Tar and other non-fibrous material 50-75%

ANALYST

PINCHIN LEBLANC ENVIRONMENTAL

MEMBER OF PG THE PINCHIN GROUP

Pinchin LeBlanc Environmental Asbestos Laboratory

Certificate of Analysis

Project Name: Holyrood Thermal Generating Station

Project No.: 02-02-01506
Prepared For: Curtis Snelgrove

Lab Reference No.: Db7019-2015
Date Analyzed: December 17, 2015

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
02-02-01506-S011 Roofing Material / Roof I at Wall	Homogenous, black, tar mastic	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%
02-02-01506-S012 Roofing Mastic / Vent Only Roof I	Homogenous, black, tar mastic	None detected	Cellulose 25-50% Tar and other non-fibrous material 50-75%
02-02-01506-S013 Roofing Material / Roof I Center	Homogenous, black tar	None detected	Glass fibres 5-10% Tar and other non-fibrous material >75%
02-02-01506-S014 Roof Material / 5th Floor, L-Roof L-G Expansion Joint	Homogenous, black, tar mastic	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%
02-02-01506-S015 Roofing Material / Roof L - 5th Floor	2 phases: a) Homogenous, black, tar impregnated paper	None detected	Glass fibres 25-50% Tar and other non-fibrous material 50-75%
	b) Homogenous, black tar	None detected	Tar and other non-fibrous material >75%
	c) Homogenous, silver, hardened tar impregnated material	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%
02-02-01506-S016 Roofing Material / Roof G2 - 5th Floor	Homogenous, black, tar impregnated paper	None detected	Glass fibres 25-50% Tar and other non-fibrous material 50-75%

ANALYST

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BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
02-02-01506-S017 Roofing Material / Roof C1 West of Hatch	2 phases:		
	a) Homogenous, black, tar impregnated paper	None detected	Cellulose 50-75% Tar and other non-fibrous material 25-50%
	b) Homogenous, black tar	None detected	Cellulose 1-5% Tar and other non-fibrous material >75%

ANALYST

APPENDIX II

Photographs

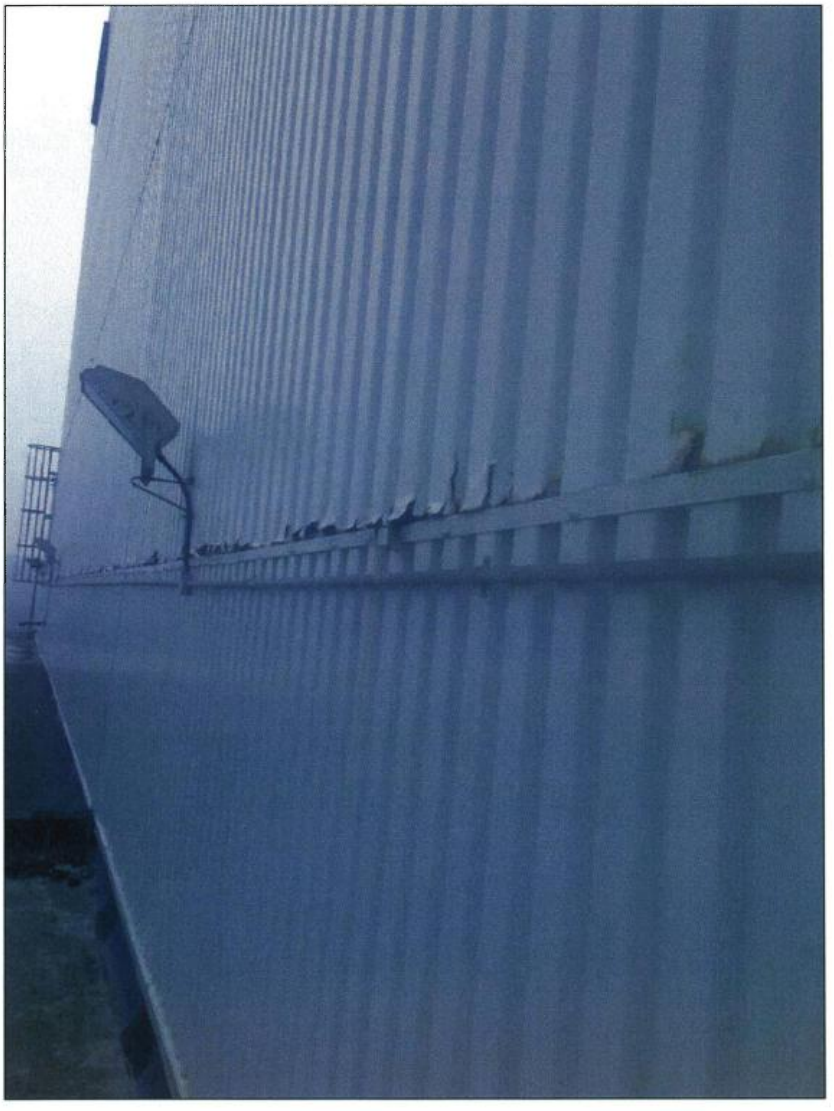

Photo 1: Galbestos siding in **FAIR** condition.