



MP00141

October 12, 2005

Howard Bradley  
General Manager  
Mount Polley Mining Corporation  
Imperial Metals Corporation  
P.O. Box 12  
Likely, BC V0L 1N0

Dear Mr. Bradley

Please find enclosed the results of the Health and Safety Audit, which was conducted at the Mount Polley Mine, September 27 & 28, 2005.

I would like to take the opportunity on behalf of the Ministry of Energy and Mines to express our sincere thanks for the cooperation extended by yourself and the Senior Management at Mount Polley Mine. The response to requests for feedback and input was very much appreciated. Wherever possible the comments and suggestions have been incorporated in the audit document.

The audit elements have been scored with the maximum score noted beside the actual score achieved. A guideline for assessing the score has been incorporated into the introduction of the audit.

The various auditors have incorporated additional observations into the audit. These observations may be outside of the specific area being audited but were determined to be noteworthy items to be addressed.

It is required that you shall act on our audit and report back to us on your progress by November 30, 2005. We plan on returning to Mount Polley for a follow-up on this audit within the next three months and you can expect a follow-up audit within six months.

If you have any questions or would like to have further discussion, please contact me at your convenience.

Yours truly,

R. Booth P. Eng  
Director Health and Safety

**Ministry of Energy, Mines and Petroleum**  
**Resources**

***Health and Safety***

***Audit of***

***Imperial Metals Ltd.***

***Mount Polley Operation***

***September 27 & 28, 2005***

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# **Health and Safety Audit Mount Polley Operation September 27 & 28, 2005**

## **Introduction:**

### **Auditors:**

#### **Steve Rothman - Inspector of Mines, Health and Safety**

- Mine Design and Operations
- Geotechnical

#### **Caroline Nakasuka – Inspector of Mines, Occupational Health**

- Occupational Health

#### **Garry MacDonald – Inspector of Mines, Mechanical**

- Mechanical

#### **Richard Booth – Deputy Chief Inspector, Health and Safety**

- Records/ General

#### **Terry Paterson - Inspector of Mines, Electrical**

- Electrical

#### **Phil Pascuzzi – Inspector of Mines, Health and Safety**

- Health and Safety Program
- Mine Rescue and Emergency Procedures

#### **Bruce Milligan - Inspector of Mines, Health and Safety**

- Blasting

#### **David Morgan – Inspector of Mines, Health and Safety**

- Records/ Health and Safety Program

## Methodology

The auditors rated their respective areas by a combination of the following:

- Inspections
- Interviews with workers and supervisors
- Review of records

Each element within the area audited was then scored. The scoring was based on whether or not the element was present, was sufficient to meet the requirements of the Health, Safety and Reclamation Code, and was being followed by the affected workers. The scoring was then summarized as a percentage based on the following assessment.

## **Rating**

Safety and health program element <b>effective</b>	85 – 100%
Safety and health program <b>adequate</b>	65 – 84%
Program element meets <b>minimum standard</b> but needs attention in some areas.	50 – 64%
Program element requires <b>immediate attention</b> in several areas.	0 – 49%

## Summary:

The auditors were welcomed at the mine and everyone was open and cooperative and there did not appear to be any thing that was in any way concealed.

The mine reopened January 2005 and has been recruiting and developing its workforce since then.

An often-heard comment was, "We need to get the ore then we will correct the mistakes and housekeeping that has been ignored."

While it is important that the mine earns the money to survive it is important that the neglect of the housekeeping does not become too high of a debt load to correct in the future. There were many areas that showed this trend, from the narrow haul roads to the dirty conveyors to the lack of housekeeping in the maintenance areas. We do appreciate that some of this may be due to labor shortage but there is a need to emphasize that the work must be done correctly and tidily and that there is no one coming after them to clean up the mess. Therefore do it once and do it right and management must not walk past or accept non-compliance, and should lead by example.

The major areas for improvement are summarized below; please see the full report for information on the other sections.

### **Housekeeping.**

The auditors received an overall impression that there was a lot of work to be done in this area and that there is a potential that this safety hazard is larger than they can deal with in the future, and will never be corrected if not managed now.

The crusher area and the reclaim tunnels are all areas that require work to be of an adequate safety standard,

There were general housekeeping issues at all of the maintenance areas, the mill general working area was good, conveyors needed cleaning, but the shops were best described as cluttered with tool boxes and aerosol cans littered throughout the areas. Old damaged ladders were removed from several areas, something that should not require an inspector to have to do.

### **Training.**

The training records were quite good and readily available. However the training records did not fully reflect the depth of the training. The Orientation procedures said that training was provided on Dust Masks, however it was awareness training only and a picture was shown. We could not find any records or evidence that detailed training for the use of the dust mask existed. There was no fit testing, cleaning or use of appropriate filter training provided.

This was also reflected in the policy and procedures where the training on each procedure if not in the orientation was non-existent with the exception of the pit, which had comprehensive training on equipment.

The confined space training was non-existent and the policy does not follow the requirements of the code.

Training in accident investigation and the evaluation of unsafe acts and direct and indirect causes has commenced. We did not have time to sit in on this training and no procedure was provided for our evaluation. One suggestion is to use feedback to make use of the results of the investigation to prevent a reoccurrence. Providing a means for the comments from the persons reviewing the investigation get back to those involved, especially the individual and his supervisor, is essential.

## **Procedures for Work Areas**

Specific workplace procedures were missing in many cases, ones of concern to the auditors are:

- **Procedure for fly-spreading**
- **Procedure for cleaning berms when accumulation of rock builds up**
- **Procedures for dump monitoring and control of access below active dumps.**
- **Procedures for safety tour inspections**
- **No procedure for designating the Industrial First Aid attendant for the shift and delegating to them the responsibilities for the First Aid station.**
- **The lock and tag out procedure must be either brought into compliance with the code or a modified procedure must be submitted to the Chief Inspector for his approval, either way the procedure must then be followed throughout the entire minesite**
- **Many of the procedures in the plant are developed, a memo issued and placed in the plant log-book with a request to read and initial all procedures. This does not constitute a proper development of workplace procedures, there has been no review by the OHSC and no training in these procedures.**

These are only some of the procedures missing or in need of updating, the omission of a procedure from this list does not imply that they have less priority, these were commented on by the individual auditors

### **Crew Meetings.**

A review of the documentation showed that some 'on going items' seem to disappear from the 'bring forward' section without any noted resolution. The use of the short meeting at the beginning of each shift appears to be a good tool, however there does not seem to be a documented route for

follow-up items and this system is not reflected in the Policy and Procedure manual.

### **Accident Reporting.**

The code requires that the manager completes an investigation and identifies the primary and contributing causes of accidents, and identifies any unsafe conditions, acts, or procedures which contributed in any manner to the accident, and make recommendations which may prevent similar accidents, and is forwarded to the OHSC and the inspector.

Training in accident investigation and the evaluation of unsafe acts and direct and indirect causes should also be provided. The use of feedback to use of the results of the investigation to prevent a reoccurrence is paramount. The follow up and return of management comments to the report creator would benefit the safety by showing the person that they had read the report and that there was some value to their work.

The mine uses the Accident – Investigation Report for incident investigation. This form includes information that is not relevant to the basic accident information and should be confined to the factual basics as listed above. The comment seen on one accident report, that the person had been disciplined is not appropriate for this form it should be confined to the HR records.

These changes will serve the mine in many ways; it will focus the investigation on the incident causes and recommendations, and resolution. It will remove the perception that this form is used for discipline of the affected workers. It will show that management is following up on the accidents and that the accuracy of their report matters. It will allow management to see that the supervisors are evaluating the incidents correctly and provide some measure of due diligence.

### **Mine Rescue Room.**

The Mine rescue room was in transition to a new site. However even in the transition period the transfer should be orderly and equipment available if required without searching and sorting to find it.

### **First Aid Requirements.**

The code requires that the manager comply with the WCB requirements as a minimum, and the inspector may order an increase in standards as required.

The premises had dirty, rusty equipment, the O<sub>2</sub> Therapy unit had not been checked, equipment was hidden to ensure that the attendant had it when required, and there appeared to be a general lack of accountability. One



F.A. qualified person should be given the responsibility to order, manage and clean the FA room. There should also be a policy and procedure that addresses the attendant's attire whilst in the room, and the whereabouts of the attendant and how to locate them in an emergency.

**OHSC.**

The code requires that, where 20 or more workers are regularly employed, the manager shall arrange for a qualified person to provide the committee with training sessions on three occasions during the year. The committee is still in its formative stages and would benefit from training to focus its direction to provide the manager with constructive advice on safety and incidents, and provide a tool to ensure the Policy and Procedures Manual is current and being complied with.

**Scoring:**

<b><u>Activity Audited</u></b>	<b><u>Rating Percentage</u></b>	<b><u>Rating</u></b>
<b>Health and Safety Program</b>	51%	<i>Meets Minimum Standards needs attention</i>
<b>Occupational Health</b>	71%	<i>Adequate.</i>
<b>Mine Rescue / Emergency Procedures</b>	60%	<i>Meets Minimum Standards needs attention</i>
<b>Mechanical</b>	66%	<i>Adequate</i>
<b>Electrical</b>	75%	<i>Adequate</i>
<b>Mine Design and Operations</b>	63%	<i>Meets Minimum Standards needs attention</i>
<b>Blasting</b>	79%	<i>Adequate</i>
<b>Geotechnical</b>	81%	<i>Adequate</i>
<b>Employee Interviews</b>	57%	<i>Meets Minimum Standards needs attention</i>

## **Conclusion:**

The conclusions arrived at in the audit are that the various aspects of the Mine's Operations are all either adequate or meet minimum standards in achieving compliance with the Health, Safety and Reclamation Code.

The Activities ranked in the following order from best to worst:

1. Geotechnical
2. Blasting
3. Occupational Health
4. Electrical
5. Mechanical
6. Mine Design and Procedures
7. Personnel Safety and Emergency Procedures
8. Health and Safety Program

The results rank the Geotechnical program the highest, with Blasting and the Occupational Health sections next, however none of these reached the Effective level. The lowest ranked element was the Health and Safety program. The Policy and Procedures manual was out-of-date and there was a lack of training standards and records within the mine, mill and maintenance operations areas. The training in orientation is one of awareness, leaving specific training to the individual departments. The departments for the most part are under the impression that the training has been taken care of and they can get on with production. Management appears to have the same impression. While working hard, focus seems to be more on production and less on following Code requirements, maintaining high standards, and exercising due diligence. The latter is necessary to ensure that safe practices and procedures are followed and that everyone is fully aware of the safety standards expected at the mine.

### **How is the safety program working?**

The program is just getting started the Policy has been issued, the OHS Committee formed but there is still much to do. Policies and procedures require review by management and the OHS Committee. Specific worksite procedures require development, review, training, documentation and enforcement.

The Ministry looks forward to a follow-up to ensure that the programs presented are implemented effectively throughout the operation and that they achieve the expected improvements in safety for the employees.

## Section 10 Geotechnical for Mount Polley Audit

### *Element 10: Mine Plans*

	<i>Maximum Points</i>	<i>Points Earned</i>
<p>Does the mine have a permit authorizing the work from the chief inspector? Does it include information on the following</p> <ul style="list-style-type: none"> <li>• surface or underground development or production for coal and mineral mines, or major expansions or major modifications of existing producing coal and mineral mines of the buildings available on site,</li> <li>• underground exploration requiring excavation, large pilot projects, bulk samples, trial cargos or test shipments</li> <li>• has work proceeded without the chief inspector granting a permit or authorization</li> </ul> <p><b>Part 10.1.2</b>  <b>Comments: Mining of overburden in SE corner of Wight Pit (NE Zone). Design not submitted to Geo Tech in Victoria. Design due April 30, 2005 but not received. Work still in progress, but mining is taking place.</b></p>	5	3
<p>Does the mine have a plan that has the relevant information as requested by the code?</p> <ul style="list-style-type: none"> <li>• Baseline information</li> </ul> <p><b>Part 10.1.4(1) and (2)</b>  <b>Comments: Questions from MEMPR, Victoria, have not been answered yet, as mine has not received the request yet.</b></p>	5	3
<p>Does the mine plan have the requirements of Part 10.1.4(3)(f)</p> <ul style="list-style-type: none"> <li>• designs and details for dumps, open pits, impoundments, underground workings including areas that may be affected by subsidence, stockpiles, processing facilities, water management structures, water storage and/or water treatment facilities, haulage roads, road construction and significant transportation or utilities infrastructure, compatible with environmental protection, reclamation and mine closure</li> </ul> <p><b>Part 10.1.4(3)(f)</b>  <b>Comments: Questions from MEMPR, Victoria, have not been answered yet, as mine has not received the request yet.</b></p>	5	3
<p>Does the mine plan have the requirements of Part 10.1.4(3)(g)</p> <ul style="list-style-type: none"> <li>• designs for material handling and waste disposal procedures</li> </ul> <p><b>Part 10.1.4(3)(g)</b>  <b>Comments: Questions by from MEMPR, Victoria, have not been answered yet, as mine has not received the request yet.</b></p>	5	3

<p>Does the mine plan have the requirements of Part 10.1.4(3)(h)</p> <ul style="list-style-type: none"> <li>salvaging and stockpiling of surface soils and overburden materials,</li> </ul> <p><b>Part 10.1.4(3)(h)</b>  <b>Comments: Yes, but the toe of the Bell Pit dump has not been adequately stripped on of Growth Medium.</b></p>	5	3
<p>Does the mine plan have the requirements of Part 10.1.4(3)(i)</p> <ul style="list-style-type: none"> <li>source, use and water balance for any water required in the operation,</li> </ul> <p><b>Part 10.1.4(3)(i)</b>  <b>Comments: Yes, the mine has a good spread sheet with this information.</b></p>	5	5
<p>Does the mine plan have the requirements of Part 10.1.4(3)(j)</p> <ul style="list-style-type: none"> <li>overall site water balance,</li> </ul> <p><b>Part 10.1.4(3)(j)</b>  <b>Comments: Yes, the mine has a good spread sheet with this information.</b></p>	5	5
<p>Does the mine plan have the requirements of Part 10.1.4(4)(b) Plan for Environmental Protection that includes</p> <ul style="list-style-type: none"> <li>(b) erosion control and sediment retention,</li> </ul> <p><b>Part 10.1.4(4)(b)</b>  <b>Comments: Yes they have a plan but implementation is lacking, comment received was "will get to it after production is started"</b></p>	5	3
<p>Does the mine have an operational reclamation plans for the next five years that shows the progressive development of structures.</p> <p><b>Part 10.1.4(6)</b>  <b>Comments: Yes, however we did not see the plan.</b></p>	5	3

***Element 10B: Design Standards***

<p>Are the impoundments, water management facilities and dams designed in accordance with the criteria provided in the Canadian Dam Association, Dam Safety Guidelines?</p> <p><b>Part 10.1.5</b>  <b>Comments: Consultants designs meet the CDA guideline.</b></p>	5	5
<p>Are the dumps designed in accordance with the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee?</p> <p><b>Part 10.1.6</b>  <b>Comments: Yes, Meets Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee</b></p>	5	5

<p>Are the dumps designed in a design so as to allow for re-contouring such that final reclamation is consistent with the approved end land use?</p> <p><b>Part 10.1.7</b>  <b>Comments: Some of the dumps will be very costly to reclaim unless the construction method is revised, the 2 to 1 slopes will exceed the present logged area when the start dozing the final slope.</b></p>	5	4
<p>Are the Tailings impoundments, water management facilities, dams and waste dumps designed by a professional engineer?</p> <p><b>Part 10.1.8</b>  <b>Comments: Yes, Design by the independent consultant, including annual dam raises.</b></p>	5	5
<p>Are there plans for the prediction, and if necessary, the prevention, mitigation and management of metal leaching and acid rock drainage shall be prepared in accordance with the Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia?</p> <p><b>Part 10.1.9</b>  <b>Comments: Yes this is an ongoing project..</b></p>	5	5

***Element 10C: Departure from approval***

<p>Has the owner, agent or manager notified the chief inspector in writing of any intention to depart from the mine plan and reclamation program authorized under sections 10.1.1 or 10.1.2 of this code to any substantial degree.</p> <ul style="list-style-type: none"> <li>Has the manager received the written authorization of the chief inspector prior to implementing the proposed changes?</li> </ul> <p><b>Part 10.1.11</b>  <b>Comments: Yes, Applications for mine plan changes are submitted for approval.</b></p>	5	5
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***Element 10D: Operation***

<p>Did the operation of a tailings or water management facility commence prior to an "as-built" report prepared by a professional engineer certifying that the facility was designed and constructed according to section 10.1.5 of this code was submitted to the chief inspector and a permit to operate the facility was received.</p> <p><b>Part 10.5.1</b>  <b>Comment: Construction of the dam is on-going and as-built information reported in annual dam safety inspection report supervised by a P.Eng, from the independent consultant.</b></p>	5	5
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<p>Does the mine have an Operation, Maintenance and Surveillance (OMS) manual.</p> <ul style="list-style-type: none"> <li>Was this manual prepared and provided to an inspector and to all employees involved in the operation of a major dam or major impoundment, prior to commissioning.</li> <li>Is the manual revised regularly during operations, decommissioning and closure of the structure.</li> </ul> <p><b>Part 10.5.2</b>  <b>Comments: Last update December 2004. The OMS manual is provided to supervisors but not the employees working on the dam construction involved in operation of facility.</b></p>	5	4
<p>Has the manager submitted an annual dam safety inspection report prepared by a professional engineer on the operation, maintenance and surveillance of the tailings and water management facilities and associated dams to the chief inspector?</p> <p><b>Part 10.5.3</b>  <b>Comments: Report on 2004 inspection received February 2005. Next Dam Safety Inspection report due July 31, 2006. Dam Safety Review to be carried out in 2006.</b></p>	5	5
<p>Are dumps operated and monitored in accordance with the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee.</p> <p><b>Part 10.5.4</b>  <b>Comments: Waste dump construction and monitoring procedure due March 31, 2005. Work is in progress to produce this.</b></p>	5	4

**Totals            73/90**  
**Percentage:    81%**