

Case No.: 2007-18
Decision No.: OHSTC-08-015

Canada Labour Code
Part II
Occupational Health and Safety

Xstrata Coal Donkin Management Limited
appellant

and

Workforce Health and Safety Representative
respondent

July 5, 2008

This case was decided by Appeals Officer Richard Lafrance.

For the appellant

John MacPherson, Q.C.,

For the respondent

The Workforce Health and Safety Representative

Index

I. Nature of the appeal.....3

II. Background3

III. Facts and evidence retained regarding contravention no. 14

IV. Arguments presented by the appellant regarding contravention no. 110

V. Facts and evidence retained regarding contravention no. 2.....12

VI. Arguments presented by the appellant regarding contravention no. 215

VII. Arguments presented by the respondent regarding contraventions no. 1 and no. 2.....17

VIII. Relevant statutory provisions.....17

IX. Analysis18

X. Decision22

APPENDIX A.....24

I. Nature of the appeal

- [1] This is an appeal made under subsection 146(1) of the *Canada Labour Code*, Part II, (the *Code*), regarding two contraventions stated in a direction issued by William Gallant, Health and Safety Officer (HSO) on May 10, 2007, under subsection 145(1) of the *Code* and pursuant to the *Coal Mines Occupational Safety and Health Regulations* (the *Regulations*). A hearing was held in North Sydney, Nova Scotia, on November 22, 2007.
- [2] The issue to be decided in this matter is whether the employer, Xstrata, contravened paragraph 125(1)(v) of the *Canada Labour Code*, Part II and the prescribed regulations, section 167 of the *Coal Mines Occupational Health and Safety Regulations*, as HSO Gallant alleges in the direction under items no. 1 and no. 2.

II. Background

- [3] The circumstances relate to work being undertaken by the employer, Xstrata Coal Donkin Management Limited (Xstrata), at an underground subsea coal mine located in Donkin, Cape Breton County, Nova Scotia and known as the Donkin mine.
- [4] The mine was initially developed by the Cape Breton Development Corporation (Devco). In the early 1990s, a decision was made to discontinue the project, the tunnel was sealed and the process of natural flooding commenced. In December 2005, Xstrata was the successful applicant for the rights to operate this site. It is currently engaged in the process of determining the feasibility of re-opening the Donkin mine. The initial phase of the project has been completed and Xstrata is proceeding with the second phase, which consists of dewatering and rehabilitating tunnels 2 and 3.
- [5] Prior to re-entering the mine and in accordance sections 167 and 168 of the *Regulations*, Xstrata submitted and subsequently received approval of a *Safety Code/Code of Practice* (COP). The COP was approved by the Senior Director of Occupational Health and Safety and Injury Compensation.
- [6] On May 9, 2007, HSO Gallant conducted an inspection of the Donkin mine. On May 10, 2007, HSO Gallant issued a direction to Xstrata, the employer, pursuant to subsection 145(1) of the *Code* and pursuant to the *Regulations*.
- [7] The two contraventions of the direction stated the following:

No. 1

Paragraph 125(1)(v) – *Canada Labour Code* Part II, section 167 – *Coal Mines Occupational Health and Safety Regulations*, Appendix 31 – *Safety Code A 2006-02*.

The area No. 3 tunnel from the end of the steel sets, approximately at the 1780 meter chainage mark, to the intersection of No. 3 tunnel and the 1st cross cut, approximately at the 1820 meter chainage mark, was not inspected as set out in the Appendix 31 “THE ROUTINE METHOD THE WORKERS WILL USE TO TEST / ASSESS THE ROOF” of the approved safety code (A 2006

– 02). The area was approximately 6 m high; it was not inspected from the work platform of the LHD.

No. 2

Paragraph 125(1)(v) – *Canada Labour Code* Part II, section 167 – *Coal Mines Occupational Health and Safety Regulations*, section 5.1 – *Safety Code A 2006-02*.

In No. 3 tunnel, at a point located approximately at the 1780 meter chainage mark, workers had gone beyond the area where additional support was required, before the roof support, as laid out in (sic) the roof support plan “General Arrangement Roof Recovery System” had been installed. The last inbye steel sets did not have cribbing / chocks completed and there were 5 additional steel sets to install.

The violations occurred in tunnel no. 3, in the area of the roof fall that begins, at approximately the 1780 metre mark to a point where tunnel no. 3 intersects the 1st cross, cut, at approximately the 1820 metre chainage mark.

III. Facts and evidence retained regarding contravention no. 1

- [8] In item no. 1 of the direction HSO Gallant alleged that a violation existed because an inspection of a specific area of the tunnel roof was not conducted in accordance with procedures in the *Code of Practice* (COP). Specifically, HSO Gallant noted that an area of the tunnel above 3.5 metres was not inspected from a work platform of a machine called a scooptram, also known as a load haul dump (LHD).
- [9] Prior to issuing the direction on May 10, 2007, HSO Gallant conducted an inspection at the Donkin mine on February 27, 2007 that is relevant to this matter.
- [10] Following his inspection on February 27, 2007 HSO Gallant did not issue a direction for contraventions he observed, instead, he received an *Assurance of Voluntary Compliance* (AVC) from Xstrata.
- [11] The AVC process involves listing, on a form, the contraventions observed by the HSO following an intervention involving either an employer or employee. The form is subsequently signed by the employer or employee. The document becomes an “assurance” or “promise” from the employer or employee to the HSO that the item will be corrected. Compliance with the *Code* and *Regulations* is therefore achieved in this manner.
- [12] The AVC process is not referenced in the *Code* as a method or mechanism to terminate a contravention. In effect, it emanates from a Labour Program policy. It is therefore an administrative tool or option that, under certain circumstances as described in the policy, an HSO may use to obtain compliance.
- [13] The AVC of February 27, 2007 was signed by the Project Engineer representing the employer. Item no. 5 of the AVC describes the following contravention :

The COP set out the requirement to test / assess ground conditions in the document entitled “THE ROUTINE METHOD THE WORKERS WILL USE TO TEST / ASSESS THE ROOF” The testing had not been conducted using the LHD and work platform as described in that document of the approved *Safety Code*.

(my underline)

- [14] The Project Engineer thereafter replied in writing to HSO Gallant stating the remedial action taken regarding item no. 5 of the AVC. The Project Engineer stated the following:

The roof and high ribs of the accessible portions of No. 3 tunnel above 3.5 metres in height have been checked using the LHD and manbasket (...) a copy of the report is attached (...)

(my underline)

- [15] The report referred to by the Project Engineer was written by the Project Engineering Coordinator, and stated the following:

The roof in Tunnel #3, from the surface down to the roof fall area at 1765 meters (*sic*), was inspected along its entirety over the course of three consecutive dayshifts. The roof and high ribs over 3.5 metres in height were inspected using the Wagner LHD and the certified manbasket combination. The roof was visually inspected and sounded using a stone bar.

(my underline)

- [16] With regard to the May 9, 2007 inspection, this was the day that HSO Gallant noted that work was underway on cleaning up a roof fall in tunnel no. 3 at the 1747 metre mark. A total of twenty-one steel sets were erected for roof support. Wooden cribbing/chocks were erected above all the steel sets making contact with the roof except for the last few three or four steel sets on the inbye¹ side of the cavity in the roof created by the fall. The fall cavity was up to 20 feet above the original profile of the tunnel. A fifty-eight horsepower pump was operating and located 40 metres inbye the last steel set at the intersection of tunnel no. 3 and the first crosscut.

- [17] HSO Gallant stated that the Project Engineer informed him that the ground conditions past the twenty-first steel set had been visually inspected from the ground by a supervisor but not from the work platform of a Load Haul Dump (LHD).

- [18] HSO Gallant stated that the requirements described in Appendix 31, *The Routine Method the Workers Will Use To Test/Assess the Roof*’ of the approved *Safety Code* (A 2006 – 02), (Appendix 31), are mandatory requirements and not practical guidelines, and thus if not implemented as written are contraventions. (Refer to attached Appendix A)

¹ **Inbye** is a term used in underground mining to identify the direction towards the interior of the mine that is towards under ground whereas the term **outbye** refers to the opposite direction towards the exterior of the mine that is towards the outside or surface

- [19] The wording of Appendix 31 that HSO Gallant relied upon to establish that a contravention existed were stated in section 1.0 – Purpose and in section 3.0 – Standard. These sections did not make specific reference to conducting inspections from a work platform on a LHD. Nevertheless, he relied heavily on the fact that it stated that it should never be assumed that the ground in a workplace is safe and that this statement forms a preamble for the next steps described later in the document.
- [20] HSO Gallant stated that he interpreted that the requirement to use the LHD and work platform as stated in contravention no. 1 was based on the wording in Appendix 31, section 3.1 - Sound. The wording used in describing “Sound” states:
- (...) strike the rock with the tip on the bar and listen to the sound the rock makes.
- [21] From that sentence, the term “the bar”, then led him to section 3.2 – Scaling Equipment which describes how tools known as scaling bars are used in workplaces more than 3.5 metres high. The third paragraph stated:
- In ALL workplaces more than 3.5 m high the LHD and Work Platform will be used and to access the roof and high ribs for testing/assessment, scaling and remedial work.
- [22] Based on the above, HSO Gallant interpreted that all inspections, testing or assessing of a roof higher than 3.5 metres shall be performed from the work platform on the LHD.
- [23] HSO Gallant stated that since the violation in item no. 5 of the AVC on February 27, 2007 was repeated on May 9, 2007 and related to ground control, it was therefore a serious repeat violation requiring issuance of a direction.
- [24] HSO Gallant stated that he would not have come to the same conclusion regarding the contraventions observed on May 9, 2007 if the wording of Appendix 31 had been as amended and approved by HRSDC on May 25, 2007.
- [25] The appellant counsel requested that a witness be qualified as an expert.
- [26] The witness stated, referring to his resume, that he is an experienced manager, administrator, consultant and professional engineer. He received his PhD in Mining Engineering from the University of Nottingham, England, in 1974. He qualified as a Chartered Engineer in the United Kingdom in Civil in 1976 and Mining in 1982, and as a Professional Engineer in Nova Scotia in 1989. He had worked in a wide variety of fields in Canada and overseas. His principal areas of expertise were management, project management, engineering (mining, environment and civil/municipal) occupational safety and health, research & development and corporate services. Other fields included senior management, projects, construction, operational research and total quality.
- [27] The witness also stated that he was currently active with Earth Tech on the remediation of old mines, on ground assessment and training for Xstrata Coal Donkin Exploration Project, as technical advisor for the Part 36 Review Committee of Alberta Employment,

Industry and Immigration, and as technical advisor for Underground Coal Mining Safety Research Collaboration. He was also Senior Research Fellow at Cape Breton University, having recently conducted executive training certificates in industrial *Code of Practice* training in coal mine occupational health and safety. He was also the principal consultant for DJF Consultant Limited, his personal consulting firm, which enables him to provide his services as a practicing professional engineering and occupational safety and health trainer. He had testified as an expert witness in previous litigations involving coal mining. He began his practical experience in coal mining in 1967.

- [28] The respondent did not question the witness or object to the presented qualifications. Therefore, following the presentation of the above qualifications, the witness was qualified as an expert and will be identified from this point forward as the Expert Engineer.
- [29] The Expert Engineer was first involved with the Donkin mine in various capacities through the 1982 feasibility and viability studies with Devco, and he has extensive background in the Donkin mine.
- [30] The Expert Engineer was retained by Xstrata in the summer of 2006 to work on finalizing the *Code of Practice* (COP) that was approved in October 2006 and to prepare and provide occupational health and safety training relating to the COP to all staff working underground at Donkin mine. He provided technical and professional services as part of his consulting duties. He assisted in documentation and compliance issues pertaining to ground control requirements of the COP.
- [31] The Expert Engineer stated that his duties consisted of conducting inspections. He has conducted approximately forty-five inspections in the mine to date. Section 5.1 - Ground Control Plan of the COP requires weekly inspections for ground and strata² control, which he was tasked to do. All the inspections were conducted from the floor/ground level and not on the work platform of a LHD. He considers the ground inspections to be absolutely adequate.
- [32] The Expert Engineer certified Appendix 31 of the COP. He prepared the COP document at the request of the Project Manager, and drafts of the document went back and forth between them. Once he was comfortable with the changes, the document was finalized, stamped and signed. The COP was then submitted for approval to HRSDC, which approved it in October 2006.
- [33] The Expert Engineer's opinion was that the intention behind Appendix 31 as stated in section 1.0 - Purpose was for it to be used as a practical guideline forming part of the whole COP. The standard method described in Appendix 31 was based on risk assessment and management systems, therefore providing a practical guideline for testing and assessing ground conditions.

² **Strata** as defined by the Canadian Oxford Dictionary, Second Edition, are the plural of, stratum, a layer or set of successive layers of any deposited substance.

- [34] The Expert Engineer explained that the four key steps outlined in Appendix 31, section 3.0 - Standard are intended to address how to assess the ground before you work under it. The four key steps are:
- 1) to assess the ground (section 3.1)
 - 2) the scaling equipment to be used (section 3.2)
 - 3) the act of manual scaling (section 3.3)
 - 4) the procedures for performing scaling (section 3.4).
- [35] The Expert Engineer explained four steps outlined in Appendix 31, under section 3.1 - Testing/assessing Ground Conditions, specifically: 1) Sight, 2) Sound, 3) Evaluate and 4) Act. This section was intended to explain how to assess roof conditions.
- [36] The Expert Engineer stated that the procedures are to first look at the rock and listen at the same time, and then if necessary test the rock by striking it with a scale bar while listening again. The evaluation is based on what is observed and heard. The last step would be to act on the conclusion to ensure the safety of the workers. The first three steps were intended to be performed from the floor/ground level, and to be done by an experienced person. Judgement is key in this process.
- [37] The Expert Engineer stated that it was never the intention to do the testing and assessing described in Appendix 31, section 3.1 - Testing/assessing Ground Conditions from the work platform of the LHD. The LHD and work platform are to be used only when scaling procedures have been deemed to be necessary to access the roof following assessment and testing from the floor/ground. It is precisely for this reason that the LHD is mentioned in connection with the conditions described in section 3.2 - Scaling Equipment.
- [38] The Expert Engineer stated that the LHD and platform were to be used to perform the scaling, not to inspect the roof. Scaling is only required and performed on exposed rock. The roof area described in contravention no. 1 is supported with wire mesh and surrounded by circular steel arches/rings. This being the case, the roof had very little exposed rock except for the sides of the tunnel, so scaling activities would not be appropriate. There was no benefit to sounding the mesh using a scaling bar when assessing and testing.
- [39] The Expert Engineer stated that on May 9, 2007, the day HSO Gallant conducted his inspection, he was in the mine conducting his weekly inspections and taking photos.
- [40] In the opinion of the Expert Engineer, the conditions on May 9, 2007, as depicted in a photo taken by him and presented as evidence did not indicate that scaling work had to be performed on the roof by workers prior to being under the roof area between the 1780 and 1820 metre marks.
- [41] The Expert Engineer provided his opinion in writing, in a response to HSO Gallant regarding contravention no. 1. The correspondence dated May 14, 2007 to the Project Manager stated the following:

The ground from the fall area to the first cross-cut is essentially supported by original circular steel arches/mesh and can generally be routinely assessed visually without use of a suitable work platform. Under HSEC SS.020, should the Sight-Sound-Evaluate steps deem that scaling is necessary in areas that are over 3.5 m above the ground, then use of the LHD work platform would be required for such scaling activities. This has not yet been considered necessary.

- [42] The Expert Engineer stated that he was involved in the development of the revisions to Appendix 31 that were subsequently submitted and approved by HRSDC on May 25, 2007. He reviewed and changed the document as required, and then stamped and signed it. The change stated the following:

The roof and ribs will be assessed in all areas of the tunnels that workers access prior to them venturing into that area. Close visual inspection of the roof will typically be conducted from the raft in flooded areas of No. 3 tunnel and from the ground in other areas.

(my underline)

- [43] The Expert Engineer stated that the changes were needed to provide clarification given the direction and the debate surrounding the issue of inspections. Principally, these changes clarified any ambiguity about whether visual inspections were permitted from the floor/ground, particularly under steel support, and clarified the use of the LHD and platform.
- [44] In the opinion of the Expert Engineer, the direction regarding contravention no. 1 would not have been issued had the revised Appendix 31 been in place, which describes the standard method for workers to use in testing/assessing the roof. The change was in the wording of the procedure and not in the process for inspections.
- [45] The Project Manager appeared as a witness for the appellant. He had been on this project since March 2005. His role was to safely and effectively dewater the Donkin mine. He had been employed with Xstrata since 1998 and possessed extensive professional experience and qualifications in coal mining. He was deemed to be the employer's occupation health and safety representative at this workplace.
- [46] The Project Manager and Expert Engineer developed and submitted Xstrata's *Code of Practice* (COP) in accordance with section 167 of the *Regulations*, a document in excess of five hundred pages. The document identifies the scope of work to be performed by employees using an internally developed system and approach to risk management. In this case, six core hazards were identified as needing to be addressed and managed. Safety systems and controls were developed and the document went back and forth between the company and regulators until HRSDC approved the *Safety Code* entitled *Code of Practice to Dewater & Rehabilitate Donkin Tunnels No. 2 and No. 3 Version 5 dated 2006-10-26*, the *Code of Practice* (COP).

- [47] The Project Manager stated the COP was developed when the mine was underwater and therefore not every condition could be foreseen. A roof fall situation was foreseen as one of the possible major core hazards, and was therefore addressed in the COP. This COP is specific to the conditions for the work to be performed at this stage of the project. A COP is developed for each element or phase.
- [48] The Project Manager stated that the first stage requiring a COP was the opening of the mine, after which other COPs are developed for other stages, such as for the taking of samples and drilling.
- [49] Xstrata has developed a practical risk management policy to determine the level of risk control for their operations and all aspects of this project. The Project Manager detailed the three basic methods of risk control used on a day to day basis by the company and employees.
- [50] The Project Manager explained the significance of Appendix 31 from Xstrata's perspective. He stated that the "Standard method" in Appendix 31 was certified by the Expert Engineer and developed as a guideline because it was produced prior to seeing the actual conditions of the Donkin mine and thus was based on similar past situations.
- [51] The Project Manager stated that the Expert Engineer was hired by Xstrata in a consultancy capacity for the project as a professional engineer under the *Nova Scotia Professional Engineers Act*. The Expert Engineer was used as an independent resource for strata control evaluation and had been with the company since day one. The Expert Engineer conducted strata inspections of the tunnel and reports at least once a week.
- [52] The Project Manager stated that, since the approval of the COP in October 2006, numerous inspections had been conducted by Xstrata in accordance with the COP. The normal practice is to inspect the roof from ground/floor level.
- [53] The Project Manager stated that in his opinion the direction would not have been issued under the revised wording in the amended Appendix 31 that was submitted and approved by HRSDC on May 25, 2007.
- [54] The Project Manager explained Xstrata's actions regarding item no. 5 from the AVC following the inspection of HSO Gallant on February 27, 2007. Xstrata had previously inspected the roof from the floor but for the sake of argument re-inspected the roof again from the LHD work platform to comply with the AVC.

IV. Arguments presented by the appellant regarding contravention no. 1

- [55] John MacPherson, counsel for the appellant submitted that Xstrata was faced with some difficulty in developing the current *Code of Practice* (COP) because the company had to put in place a comprehensive framework to govern occupational health and safety without detailed knowledge of the conditions it would face in completing this work. For this reason, it is the appellant's position that the COP refers to "guidelines", "routine methods" and uses terms such as "practical guide".

- [56] J. MacPherson argued that the COP and the attached appendices were intended to be and are guidelines to protect the health and safety of Xstrata's employees at the workplace. They are supplemented and supported by Xstrata's sophisticated approach to risk management under its corporate policy. The contents of the COP and appendices are not intended to be "rigid rules".
- [57] Xstrata submitted that HSO Gallant failed to appreciate the nature of the documents on which he based his direction, which led to the direction being improperly issued.
- [58] Xstrata submitted that HSO Gallant issued the direction regarding contravention no. 1 based on his interpretation of the wording of Appendix 31.
- [59] Xstrata submitted that a plain reading of Appendix 31 inevitably leads to the conclusion that it does not have to be inspected from the LHD.
- [60] Xstrata submitted that the provisions of Appendix 31 must be set in context when being interpreted. Section 1.0 reads:

The purpose of this document is to give a practical guideline on testing/assessing ground conditions in the roof, ribs and face and on barring down and scaling exposed rock for the Dewatering & Rehabilitation Phase of the Xstrata Coal Donkin Exploration Project of Xstrata Coal Donkin Management (XCDM).

- [61] Xstrata submitted that both the Project Manager and the Expert Engineer intended that the four key steps specified in Appendix 31, section 3.0 - Standard were intended to be distinct and specific. The steps are a natural progression from more general testing/assessing to more specific tasks required to scale the roof.
- [62] Xstrata submitted that Appendix 31, section 3.1 - Testing/assessing Ground Conditions describes four simple steps to be used to test/assess ground conditions using the "Sight, Sound, Evaluate and Act" method. Nowhere in this section—which specifically relates to inspections—is there a reference to inspection of the roof from the work platform on the LHD. In particular, the following is indicated under "Evaluate":

(...) close up inspection of the area (...).

There is no reference in this provision to the use of the LHD.

- [63] Additionally, regarding Appendix 31, section 3.2 - Scaling Equipment, the initial paragraph of the section describes various types of scaling bars. The second paragraph deals with another aspect of the equipment, the nature of the end or tip of the bar. Finally, the third paragraph states:

In ALL workplaces more than 3.5 m high the LHD and Work Platform will be used and to access the roof and high ribs for testing/assessing, scaling and remedial work.

- [64] Xstrata submitted that a plain reading of that provision leads to the conclusion that “testing/assessing”, as used in the above paragraph, relates to the work to be undertaken when it has been determined that an area of the roof must be scaled.
- [65] Xstrata submitted that it should be noted that section 3.2 refers to “testing/assessing” rather than to “inspection”. This is because “inspection” falls under section 3.1.
- [66] Xstrata submitted that the above conclusion was confirmed by the Expert Engineer in a letter to the Project Manager dated May 14, 2007, which stated that the requirements of Appendix 31 had been followed.
- [67] Xstrata submitted that apart from the above analysis of the wording in Appendix 31, it was apparent that assessment of the roof from the floor/ground was a safe and adequate method for such inspection on this project.
- [68] Xstrata submitted that the Expert Engineer had indicated that on approximately 40 occasions he had undertaken inspections of the mine from the ground. He was qualified as an expert for the purpose of his testimony at this hearing. He testified that he had no problem inspecting the roof by way of a visual inspection from the floor/ground.
- [69] Xstrata submitted that the Expert Engineer was the author of Appendix 31. He testified that it was not his intent—nor the intent of others within Xstrata who had reviewed and approved the document—that the roof be inspected from the work platform of the LHD.
- [70] Xstrata submitted that it was acknowledged by all witnesses, HSO Gallant, the Project Manager and the Expert Engineer, that failure to inspect the roof from the work platform of the LHD would not have been a violation under the provisions of the revised Appendix 31. Given the approval of the revised Appendix 31 by HRSDC, it was apparent that the methods of roof inspections contained therein were safe and did not endanger the health and safety of workers at the workplace. This was the practice that Xstrata had used throughout.
- [71] Xstrata submitted that it was not in violation of Appendix 31 on its plain wording. Moreover, the practicalities of the situation were such that the direction should not have been issued and should now be rescinded. Xstrata requested that contravention no. 1 in the direction be rescinded.

V. Facts and evidence retained regarding contravention no. 2

- [72] In item no. 2 of the direction HSO Gallant alleged that a violation existed because workers had gone beyond an area of the tunnel where a roof fall had occurred, where additional support was therefore required for safety. The fall had caused a cavity in the roof, thereby requiring support to control the hazard.
- [73] The specific support referred to by HSO Gallant was to be provided by a structure called a steel set that, under certain conditions, is additionally supported with wooden cribbing/chocks on the top and sides of the steel set. The steel set, in simple terms, is a structure made of three large steel beams. One piece on each side connected at the top by

a third piece. The structure is designed, constructed, installed and certified by professional engineers.

- [74] HSO Gallant stated that on May 9, 2007 he was informed by the Project Engineer, while they were conducting the inspection underground, that an additional five steel sets would be erected beyond the last (21st) steel set.
- [75] HSO Gallant stated that to determine contravention no. 2, he consulted a drawing providing information relating to the roof fall recovery of tunnel no. 3 at the 1780 metre mark. The drawing was entitled *General Arrangement Roof Recovery System*, and dated February 27, 2007.
- [76] HSO Gallant stated that the drawing provided details related to the steel set installation and wooden cribbing/chocks for roof support of the fall area. The extent of the fall was not known at the time the drawing was produced, therefore it was general in nature and indicated principles to be used and the manner in which the roof should be supported.
- [77] HSO Gallant stated that he did not refer to the written recovery plan entitled *Roof Fall Recovery Tunnel 3 1780 m Mark* when considering contravention no. 2 of the direction.
- [78] HSO Gallant referred to the drawing as the basis for his direction because it showed cribbing on top of the steel sets, and he based the requirement for the five additional steel sets on the Project Engineer's statement that they were to be installed.
- [79] HSO Gallant stated that if a professional engineer said that the three steel sets that were present were more than adequate he would not be in a position to disagree with him.
- [80] HSO Gallant stated that cribbing was required on the final three steel sets even though this was not indicated on the drawing because the diagram only depicted principles and was a generic plan, not an as built diagram.
- [81] The Project Manager stated that Xstrata had formed a group to develop a roof recovery plan to address the roof fall. The group consisted of employer and employee representatives and mining and structural engineers. Consultation involved at least two shift meetings with employees and discussions until the plan was completed. The Expert Engineer, mining engineer and a structural engineer all signed off on the final written plan and drawing.
- [82] The Project Manager entered into evidence the written plan entitled *Roof Fall Recovery Tunnel 3 1780m Mark, Xstrata Coal Donkin Exploration Project*, dated February 23, 2007.
- [83] The Project Manager stated that the written plan and diagram had been developed and were to be applied together i.e. one being a written explanation and the other a visual one.
- [84] The Project Manager stated that after the planning and consultation stages were concluded, the employees started work on recovering the fall by first working on competent and solid ground and installing five steel sets before coming to the fall cavity

in order to become comfortable with the process. When they reached the fall area employees began removing the broken rock by placing the debris into the LHD and removing it from the mine. Once enough rock had been removed, another steel set was erected, and the procedure continued this way until a total of twenty-one steel sets had been erected. This work had been completed by May 9, 2007.

[85] The Project Manager stated that the drawing indicated that wooden cribbing was to be installed above all steel sets within the cavity area. The first steel set past the cavity did not have cribbing installed because it was demonstrated that it was not necessary to install cribbing from that steel set forward, that is, past the inbye lip of the cavity.

[86] The Project Manager referred to note “no. 4” on the drawing which states:

Nothing on this drawing shall stop workers from erecting additional supports.

This conveys to workers or any person that they have the absolute right to exceed the minimum standard outlined on the drawing. Also, note “no. 5” on the drawing states:

No person is to expose themselves to unsupported roof conditions.

[87] The Project Manager stated that all employees were past the cavity area and not under any unsupported area when the inspection by HSO Gallant on May 9, 2007 was conducted. Temporary support was always used ahead of every employee. Employees had no complaint about the safety of the roof and the direction was not as a result of a complaint by employees.

[88] The Project Manager stated that when the specified area was reached, everyone involved could be consulted to decide how many more steel sets would be added.

[89] The Project Manager stated that the written plan never contemplated—nor was it intended by Xstrata—that a total of eight steel sets past the fall be installed. He was not aware of any indication or any direction given to anyone that the eight steel sets were to be installed past the cavity of the fall.

[90] The Project Manager entered into evidence a shift supervisor log that provides a chronology of the events that occurred at the site. He stated that the log clearly indicated that the recovery was completed on May 6, 2007 and that no more risk regarding the fall existed from that date forward. The chock/cribbing installed for steel sets nos. 18 and 19 were deemed sufficient to eliminate the fall hazard.

[91] The Expert Engineer entered into evidence a photo he had taken on May 9, 2007 depicting steel set no. 18 installed under the lip of the fall at the very edge of the cavity. This indicated that the support under the fall area was complete and therefore safe to be under from that point inbye.

[92] The Expert Engineer was involved in the development of the written roof recovery plan in the same manner as he was in developing the COP. He had reviewed and changed the document as required, and then stamped and signed it.

[93] The Expert Engineer stated that in his opinion, in response to contravention no. 2, there was no requirement for a total of eight steel sets past the cavity of the fall, which was in accordance with the roof recovery plan. The written plan states the following:

And so the process of installing a steel square set is complete, the process is repetitious and so shall repeat until the full length of the cavity is covered and for a distance in by of the roof fall for a distance of 3 steel sets or as the roof dictates.

(my underline)

[94] The Expert Engineer interpreted “3 steel sets or as the roof dictates” as being the maximum number of steel sets required. That is, three steel sets past the final steel set, no. 18, as shown on the roof recovery diagram.

[95] The Expert Engineer inspected the roof on May 9, 2007, and he was satisfied that the existing support, the wooden cribbing between steel sets nos. 18 and 19 covering the west rib, which is the wall of the walkway, was sufficient and adequate.

[96] In the opinion of the Expert Engineer, based on the conditions, the installation was safe for the workers in relation to the tasks they were performing at May 9, 2007.

[97] The Expert Engineer stated that no steel sets or cribbing above them were required past steel set no. 18. Because the material was there, the steel sets and cribbing above them were installed and completed. The target maximum of three steel sets was stated in the written plan and the material was there in the event that it might be needed.

[98] The Expert Engineer stated that subsequent to his mine inspection on May 9, 2007, he provided the same opinion in writing on May 14, 2007 in response to the issue raised by HSO Gallant in the direction under contravention no. 2.

VI. Arguments presented by the appellant regarding contravention no. 2

[99] Xstrata submitted that the Roof Recovery Plan was developed by the Project Manager with the assistance of the Expert Engineer, the mining engineer and a structural engineer employed by CBCL Pty Ltd. The *Roof Recovery Plan* clearly stated the following:

At no time is a person to expose themselves to unsupported roof (...)

[100] Xstrata submitted that the essence of contravention no. 2 is that workers had entered an area where additional support was required. In particular contravention no. 2 of the direction states:

The last inbye steel sets did not have cribbage/chocks completed and there are five additional steel sets to install.

[101] Xstrata submitted that, dealing with the latter portion of the sentence, it is clear, beyond doubt, that “five additional steel sets”, i.e. eight steel sets past the end of the roof fall, were neither required by the *Roof Recovery Plan* nor contemplated at any time in regard to the roof recovery. The *Roof Recovery Plan* provides as follows:

And so the process of installing a steel square set is complete, the process is repetitious and so shall repeat until the full length of the cavity is covered and for a distance in by of the roof fall for a distance of 3 steel sets or as the roof dictates

[102] Xstrata submitted that the Expert Engineer had explained that the term “as the roof dictates” relates to the condition in which the roof is found. As matters transpired, it was the Expert Engineer’s view that, in fact, no steel sets were required inbye of the fall. However, the three steel sets in the *Roof Recovery Plan* were constructed in any event. There was no requirement for eight additional steel sets as that area of the roof was, in fact, supported by the original steel supports for the work required to be undertaken at that time.

[103] Xstrata submitted that in regard to the second element of the contravention, it was apparent that the *General Arrangement Drawing* did not contemplate any additional cribbing being built over those steel sets which were inbye the end of the fall. This is reasonable given that those steel sets would be inbye the lip/rim of the fall and, therefore, under the original arches.

[104] Xstrata submitted that the only possible violation which could support a direction in the nature of that found in contravention no. 2 would be if workers had entered under unsupported ground. The Expert Engineer was clear and unequivocal in his opinion that it was safe for workers to be present under the three steel sets inbye the fall, i.e. steel sets no. 19 to 21. Therefore, the cribbing of those steel sets was sufficient to meet both the requirements of the *Roof Recovery Plan* together with the more overarching concern of maintaining the health and safety of workers at the workplace.

[105] Xstrata submitted that, to summarize this point, there is simply no requirement in either the *Roof Recovery Plan* or *General Arrangement Drawing* for additional cribbing or steel sets. There has therefore been no violation. In his letter of May 14, 2007 to the Project Manager, the Expert Engineer states the following:

– It was confirmed that in accord with the text accompanying the plan entitled “General Arrangement Roof Recovery System” Ref. # S01, March 14, 2007, these roof conditions allow safe access to the inbye side of the fall area, keeping to the west-side.

[106] Xstrata therefore requested that contravention no. 2 be rescinded as there had been no violation of either the *Roof Recovery Plan* or the *General Arrangement Drawing*. Simply put, HSO Gallant misread those documents. More significantly, the roof support system in place on May 9, 2007, was sufficient to protect the health and safety of the workers in that area.

VII. Arguments presented by the respondent regarding contraventions no. 1 and no. 2

- [107] The Workforce Health and Safety Representative represented the respondent in this matter. He was employed by the contractor, Ligan Technical Services, Xstrata Donkin Exploration Project.
- [108] The WHSR was present during the inspection conducted by the HSO on May 9, 2007.
- [109] The WHSR attended the appeal hearing held at North Sydney, Nova Scotia on November 22, 2007 in respect to Xstrata's appeal of the direction and contraventions no. 1 and no. 2. He did not call witnesses nor did he cross examine the appellant's witnesses or challenge any of the evidence presented during the hearing.
- [110] The WHSR was asked to make a representation on the post hearing submission of Xstrata, but no response was received from the respondent.

VIII. Relevant statutory provisions

- [111] The appeal was filed pursuant to subsection 146(1) of the *Canada Labour Code* which states:
146. (1) An employer, employee or trade union that feels aggrieved by a direction issued by a health and safety officer under this Part may appeal the direction in writing to an appeals officer within thirty days after the date of the direction being issued or confirmed in writing.
- [112] Subsection 146.1(1) provides the Appeals Officer with the following powers in respect of the decision rendered following the hearing of the appeal:
- 146.1(1) If an appeal brought under subsection 129(7) or section 146, the appeals officer shall, in a summary way and without delay, inquire into the circumstances of the decision or direction, as the case may be, and the reasons for it and may
- (a) vary, rescind or confirm the decision or direction; and
- (b) issue any direction that the appeals officer considers appropriate under subsection 145(2) or (2.1).
- [113] The regulatory framework governing entering a closed coal mine differs from the general regulatory rule pursuant to the *Code*. Its origin lies in the *Code*, section 125(1)(v) which states the following:
- 125(1)(v) adopt and implement prescribed safety codes and safety standards.
- [114] The prescribed standard in regard to the required safety code in this instance is found in the *Coal Mines Occupational Safety and Health Regulations*, sections 167 and 168, which read as follows:

167. If an employer proposes to enter a mine that has been closed but does not intend to significantly disturb the ground, the employer shall, in accordance with paragraph 125(1)(v) of the Act, adopt and implement a safety code that contains information relevant to the health and safety of employees entering the mine and that is approved by the Senior Director, Occupational Health and Safety and Injury Compensation.

168. The Senior Director, Occupational Health and Safety and Injury Compensation , shall approve the safety code if

- (a) it is filed at least 30 days before the proposed day of entry into the mine;
- (b) it contains provisions having substantially the purpose and effect as these *Regulations*; and
- (c) **it includes**

- (i) the name and geographical location of the proposed entry,
- (ii) a description of the work to be done and its duration,
- (iii) a description of safety and control measures that will be used when entering the mine, including a description of**

(A) how

- (I) the mine will be ventilated
- (II) ground control will be managed ...**

(my emphasis)

IX. Analysis

[115] As stated in paragraph [2], the issue to be decided in this matter is whether the employer, Xstrata, contravened paragraph 125(1)(v) of the *Canada Labour Code*, Part II and the prescribed regulations, Section 167 of the *Coal Mines Occupational Health and Safety Regulations* as HSO Gallant alleged in the direction under contraventions no. 1 and no. 2.

[116] HSO Gallant stated that the *Code of Practice* (COP) was the standard of safety to be used during his inspection. He would therefore consider the COP to be the minimum requirements, and interpret any violation of it as being a contravention of the *Code* and *Regulations*. During this inspection HSO Gallant observed what he considered at the time to be two violations of what were in his view the regulatory requirements.

[117] Following his inspection HSO Gallant decided to issue a direction for the two contraventions rather than use the past compliance method of an AVC. This was his prerogative. In HSO Gallant's opinion, he believed that provisions of the *Code* and *Regulations* were being contravened.

Contravention no. 1

- [118] On the issue regarding contravention no.1, it is for me to determine whether HSO Gallant correctly interpreted Appendix 31, *THE ROUTINE METHOD THE WORKERS WILL USE TO TEST / ASSESS THE ROOF* of the approved *Safety Code* (A 2006 – 02).
- [119] I must decide whether or not an inspection of the specified area in the direction was required to be performed from the work platform on the LHD.
- [120] HSO Gallant decided that a contravention existed as stated in the direction, item no.1, based on his interpretation of Appendix 31. He noted this was a repeat violation that was addressed by an AVC during an inspection on February 27, 2007. Although he worded the description of the violation slightly differently, HSO Gallant applied the same provisions from that occasion, i.e. the employer was in contravention of Appendix 31 because testing of the roof was not performed using the work platform of the LHD.
- [121] Xstrata complied with the item on the AVC of February 27, 2007 relating to the roof inspection. They performed the inspection using the LHD and work platform. They did this with some trepidation because they objected to HSO Gallant's interpretation of Appendix 31. Nevertheless they re-inspected the area.
- [122] The wording and terminology used in the wording of the contravention in his direction is to be noted and the key words used by HSO Gallant to describe contravention no. 1 are "was not inspected". Therefore, I must decide whether the intent of Appendix 31 is to perform "inspections" from the work platform of the LHD.
- [123] HSO Gallant testified that he considered the provisions stated within Appendix 31 to be mandatory requirements and not guidelines. He agreed that if something is mandatory then this should be clearly stated. Based on HSO Gallant's testimony, Appendix 31 requires that inspecting, testing and assessing of the roof when higher than 3.5 metres be performed from the work platform of the LHD. He stated that he relied on the wording of sections 1.0 – Purpose, 3.0 – Standard, 3.1 – Testing/assessing Ground Conditions and 3.2 – Scaling Equipment as the basis for this direction.
- [124] I find that Appendix 31 does not clearly state that an inspection must be performed from the work platform on an LHD when working at 3.5 metres or higher. However, I must point out that the standard method described in Appendix 31 on how to inspect, test and assess the roof is explained using terminology that can lead to confusion. I have been presented with various terminologies during the hearing and in reviewing the evidence, including "inspect", "check", "examine", "test" and "assess". These terms are interchanged and used by different people under different circumstances and conditions, which is confusing.
- [125] In his inspection of February 27, 2007, HSO Gallant describes the violation in paragraph [13], item no. 5 using the word "testing" as opposed to "inspected" in his direction on May 10, 2007. Employer representatives respond, in, paragraph [14], using the term "checked" and in other correspondence also use "inspected" in paragraph [15] for the

same situation. The employer's response also stipulated that the "visual inspection" involved "sounding using a stone bar". During the hearing the term "examine" was also used for similar situations.

- [126] I could decide the issue by delving into the meaning and dictionary definitions of the words and then analyze the differences between each word to then make my own interpretation of the document. In my opinion, this would not shed more light onto the matter. My view is that if there is an interpretation to be made on the wording and terminology it is best that it come from the source of the document, the authors of Appendix 31. In this case we have the rare opportunity to obtain the precise intent and interpretation of the regulations from the point of view of the writers, i.e. the Project Manager and the Expert Engineer.
- [127] I find the Project Manager to be a competent and experienced manager, with considerable knowledge in the field of coal mining.
- [128] The Expert Engineer was qualified as an industry expert and I will attach the necessary weight to the facts and opinions from his testimony relating to coal mining and the Donkin mine.
- [129] The *Safety Code/Code of Practice (COP)* is a document legislated to be produced by the employer. Therefore, much if not all of the accountability and responsibility stemming from it rests with the employer representatives who are its authors. It is not in the best interest of the employer to produce standards and procedures that would go against the everyday application of what they state in their COP.
- [130] I accept that both the Project Manager and the Expert Engineer consider that Appendix 31 was intended to be used in the context of a practical guideline. This is important because it allows a certain degree of flexibility in the application of the standards. That being the case, I must give considerable weight to their opinions regarding the application of the document.
- [131] I accept that they intentionally did not make reference to the use of the LHD in sections, 1.0, 3.0 and 3.1 for the tasks relating to inspecting, testing and assessing. I accept their testimony that the use of the LHD and work platform is intended to only be required for the task of scaling. The use of the LHD and work platform is referenced in sections 3.2 and 3.5 respectively of Appendix 31.
- [132] My understanding from their evidence is that the act or task of inspecting ground conditions at roof level always involves listening while taking a look at the roof from the floor/ground. The inspection may at times require the need to strike the rock with a scaling bar to get a sound, the test, in order to make an evaluation of the ground condition, the assessment. The act or task of testing and assessing in this context is not to be confused with the more exertive or intensive act of scaling the ground. It is only

following the first step, the inspection/test/assessment, that it is then determined whether scaling is required. I accept and understand the rationale and examples they used to support this procedure.

Contravention no. 2

- [133] HSO Gallant stated that the basis for the violation was that an employer representative stated during the inspection that five steel sets would be erected beyond the twenty-first steel set. Another factor in identifying the violation was his interpretation of a drawing entitled, *General Arrangement Roof Recovery System*.
- [134] The particular aspects of the plan that HSO Gallant referenced were the details it provided regarding the steel sets and the wooden cribbing / chocks proposed for the fall area and the areas outbye and inbye the cavity of the fall. He acknowledges that the drawing was general in nature and provided general principles since the extent of the fall was not known at the time the plan was drawn by the engineer.
- [135] HSO Gallant stated that he did not consult the written plan entitled *Roof Fall Recovery Tunnel 3 1780 m Mark*. In particular, he was not aware of what was stated regarding the number of steel sets required inbye the roof fall where it stated:
- And so the process of installing a steel square set is complete, the process is repetitious and so shall repeat until the full length of the cavity is covered and for a distance in bye of the roof fall for a distance of 3 steel sets or as the roof dictates.
- (my underline)
- [136] HSO Gallant did not consult with the Project Manager or the Expert Engineer, the co-authors of the written plan and drawing, between the times he observed the violation and the time he issued the direction.
- [137] It is reasonable to conclude, in my view, that the written plan and drawings must be analyzed together—and not one in isolation of the other—in order to obtain a clear perspective of the measures Xstrata put into place to address the health and safety requirements regarding the roof fall.
- [138] The Project Manager, a co-author, stated that the written plan and the drawing were developed together and were to be applied together. They are a written and visual explanation of what was required to safely recover the roof fall.
- [139] It is also important that I take into account that the employees had participated in the development of the overall plan. It was clearly stated on the drawings that any employee having concerns regarding any aspect of the plan or conditions that may be encountered at any point would take priority over what is proposed in the plan.
- [140] I find that Xstrata took all the reasonable and necessary planning measures to ensure the roof fall was recovered safely. They provided ample flexibility within the plan to enable anyone at any time to request the application of a higher safety standard. The plans were

conceived and approved by experienced and competent structural and mining professional engineers.

- [141] Both the Project Manager and the Expert Engineer testified that no person was ever under an unsupported area. The employees always used temporary support ahead of themselves in the fall area. The wooden cribbing / chocks were installed above all steel sets of the fall cavity as required by the drawing.
- [142] I accept from the Expert Engineer that the number of steel sets and cribbing inbye and outbye the fall cavity were optional, and that it was not a safety hazard for any person under those steel sets, nor was there a hazard to any person beyond the twenty-first steel set.

X. Decision

- [143] The safety codes quoted in the direction by HSO Gallant were submitted by Xstrata and approved by the Senior Director, Occupational Health and Safety and Injury Compensation on October 31, 2006. This type of legislative regime was mandated for the re-entry of a closed mine because neither the general occupational health and safety regime pursuant to the *Code*, nor the other provisions of the *Regulations* were considered to provide the appropriate regulatory regime in these circumstances.
- [144] This particular structure was developed because the circumstances faced when re-opening a closed mine are unique in each situation based upon particular conditions encountered during the operation of that mine. Moreover, those conditions may from time to time change depending on the nature of the operation being undertaken.
- [145] The purpose of the *Code* is to prevent accidents and injuries to employees and all persons at the workplace. The duty of the HSO is to ensure that hazards that come to their attention are identified and eliminated in the course of an intervention in order to protect the health and safety of everyone at the workplace.
- [146] I have no doubt that HSO Gallant fulfilled this duty to the best of his abilities when he inspected the Donkin mine. He observed what he perceived to be contraventions on May 9, 2007 and then proceeded to obtain compliance by issuing a direction on May 10, 2007.
- [147] I decide that HSO Gallant erred in his interpretation of Appendix 31 of the *Code of Practice* and the *Roof Recovery Plan* relating to contraventions no. 1 and no. 2 in the direction issued by him on May 10, 2007 to Xstrata.
- [148] It was an error to have based his opinion without communicating with the personnel who developed and were responsible and accountable for the implementation of the policies and procedures. HSO Gallant was made aware by the Project Manager and Project Engineering Coordinator that Xstrata disagreed with the HSO's interpretation, but he did not proceed to discuss the issue further with the Project Manager and/or the Expert Engineer.

- [149] I was left with some unease regarding the fact that contravention no. 1 was rectified by simply changing the wording in the procedure and not the method itself, and this weighed on my decision. What is convincing to me is that the actual application of the procedures by Xstrata was consistent with the intent on how to conduct a safe inspection of the roof irrespective of the ambiguous wording of Appendix 31.
- [150] Had HSO Gallant discussed the issues with the Project Manager and the Expert Engineer the situation could have become clearer to him. Specifically, he would have had an opportunity to be informed by the authors of their intent and the rationale pertaining to the application of the requirements of Appendix 31 and the *Roof Recovery Plan* regarding both contraventions.
- [151] Communication with the Workforce Health and Safety Representative who participated on behalf of the employees might also contributed to a better understanding of the circumstances by providing the employee perspective on the matter.
- [152] I conclude that the contraventions stated in the direction did not exist as HSO Gallant perceived them to be on May 9, 2007 at the Donkin Mine.
- [153] For the reasons stated above and with the power afforded me under subsection 146.1(1), I hereby rescind the direction issued by HSO Gallant on May 10, 2007.

Richard Lafrance
Appeals Officer

APPENDIX A

CODE OF PRACTICE - APPENDIX 31 - HSEC.SS.020 THE ROUTINE METHOD THE WORKERS WILL USE TO TEST/ASSESS THE ROOF

1.0 Purpose

The purpose of this document is to give a practical guideline on testing/assessing ground conditions in the roof, ribs and face and on barring down and scaling exposed rock for the Dewatering & Rehabilitation Phase of the Xstrata Coal Donkin Exploration Project of Xstrata

Coal Donkin Management (XCDM).

2.0 Scope

This document applies to all persons who perform rehabilitation work underground on the XCDM site.

3.0 Standard

It should never be assumed that the ground in a workplace is safe, unless those working in the area using correct testing/assessment and scaling procedures have checked it. Such correct procedures are outlined in this document which is based on the *Underground Barring Down & Scaling Guideline* of the Department of Industry & Resources of Western Australia, Document No. ZMT723RK.

The key steps outlined are:

- Testing/assessing the ground conditions
- scaling equipment
- manual scaling procedures
- scaling in high areas.

3.1 Testing/assessing Ground Conditions

Four simple steps are used to test/assess ground conditions— Sight, Sound, Evaluate, Act:

- Sight
 - see if the rock looks to be stable — look for intersecting joints, cracks, zones of weakness in the rock and any loose lumps or slabs of rock;
- Sound
 - listen for rock noise caused by high stress;
 - strike the rock with the tip on the bar and listen to the sound the rock makes;

- Evaluate

close-up inspection of the area is required to adequately inspect the ground conditions to determine if the conditions are appropriate for scaling or if other action is required; and

- Act

Take appropriate action to remove the unstable rock by scaling or arrange for other action to be taken, see sections 3.3, 3.4 & 3.5 below.

The following factors are also taken into consideration. Ground stability is controlled by a number of factors including:

- Natural planes of weakness, bedding planes and/or joints in the rock;
- Rock stress levels;
- Rock mass strength; and
- Rock deterioration around the perimeter of the opening above passive supports.

Natural planes of weakness, bedding planes or joints, in the rock play a very important part in forming the potentially unstable blocks, wedges and slabs that should be removed by scaling. Before scaling it is vital that the ground be observed for an appropriate period of time to determine the orientation, length, spacing and roughness of the exposed trace of the joints or cracks in the roof, ribs or face.

The intersection of two or more joints, rock fractures due to deterioration and/or intact rock failure can form potentially unstable wedges or slabs of varying shapes and sizes. Some of these wedges or slabs may be unstable and on the verge of falling or sliding. These potentially unstable wedges or slabs can be located by sounding the rock with the bar during scaling.

Key slabs or wedges may be holding a number of other slabs and wedges in place behind or above the exposed face. The removal of the key slab may “free up” other slabs or wedges, that were previously held in place by the key slabs, thus triggering the fall of a number of other slabs.

The use of a cap lamp light held from the side and directed at the rock face may provide shadows that highlight the outline of a potentially unstable block or slab that can be removed by scaling.

3.2 Scaling Equipment

Scaling bars come in a variety of lengths and materials. The bar type commonly used is the Solid steel hexagonal bar, 1.2 m to 2.4 m long, with tips forged at each end.

One end or tip of the bar has a straight chisel point, the other end has a heel and chisel point toe to give greater leverage.

In ALL workplaces more than 3.5 m high the LHD and Work Platform will be used and to access the roof and high ribs for testing/assessment, scaling and remedial work.

3.3 Manual Scaling Procedures

Before commencing manual scaling all personnel should have and be using, where appropriate, the required personal protective equipment including: gloves, safety glasses, safety helmet, cap lamp, self rescuer, protective clothing (long sleeved), safety boots, hearing protection and safety rope and harness if there is a potential for the person to slip or fall. It is also necessary to ensure that the workplace ventilation is operating and is adequate to dilute and disperse fumes and dust and that the area has been well watered down particularly if dry and dusty.

Using the procedures, summarized below, loose potentially unstable rock can be removed with the minimum risk to the person involved.

Scaling bars are used to lever or prise loose rocks and slabs off the roof, ribs or face. The tip is inserted into joints or cracks in the rock.

The rock surface is regularly tapped firmly with the bar tip (sounded) to identify loose rock.

Good ground will tend to make a high pitched ringing sound when tapped with the bar.

Bad or suspect ground will generally tend to make a hollow, lower pitched, dull thud or “drummy” sound when struck with the bar tip.

3.3.1 Progressive scaling and support

Systematic scaling with the progressive installation of rock support and reinforcement are considered to be one of the basic fundamentals of sound mining practice.

Excavations should be scaled and supported progressively in a systematic manner having due regard for the prevailing ground conditions. Large areas of unsupported roofs ahead of supported ground should not be scaled before the installation of appropriate roof support and reinforcement commences. The removal of key slab(s) or block(s) during the scaling process may result in major falls of ground, particularly in wide excavations. The progressive installation of rock support and reinforcement promotes the development of arching forces that assist in stabilizing the rock and plays a vital role in limiting movement on planes of weakness in the rock mass.

3.3.2 Raveling Ground Conditions

Some ground conditions are such that they can be scaled for a very long time before they may ultimately reach a stable arch shape. Extreme caution should be exercised under these circumstances and should this be encountered inform the Shift Supervisor or Project Manager of this situation.

3.3.3 Large potentially unstable slabs

In some extreme circumstances, very large, potentially unstable, slab(s) or wedge(s) may NOT make a hollow or “drummy” sound when vigorously struck with a bar tip. In these situations the prudent course of action should be to:

- Install adequate ground support and reinforcement into the potentially unstable block using more closely spaced progressive scaling and support (typically bolts and/or mesh).

3.4 Scaling Procedures

When using a scaling bar always follow the correct procedures which can be summarized in the following five points:

- USE OF A BAR
- HAVE A FIRM FOOTING AND A CLEAR SAFE RETREAT
- SCALE FROM GOOD GROUND TO BAD GROUND
- WATCH FOR UNEXPECTED FALLS
- TAKE EVASIVE ACTION (DROP THE BAR IF A ROCK FALLS TOWARDS YOU)

If the area cannot be made safe by manual scaling or if the suspect area cannot be reached effectively using the longest bar available, barricade access to the area by use of appropriate warning signs and report to the Shift Supervisor so that alternative means of making safe can be used, eg ground support and reinforcement.

3.4.1 Use of a Bar

Use a bar of the correct length, in good condition, straight and with sharp tips for scaling. The bar should be long enough to safely reach the area to be scaled. In workplaces less than 3.5 m high manual scaling can be done by most people of average height using a 2.4 m long scaling bar.

When scaling, NEVER hold the bar in front of you when scaling. A sudden fall of rock could result in the bar being pushed against you and cause an injury. When levering a rock from the roof or ribs, it is better to push or pull the bar in an upward direction as there is less chance of losing your balance and stumbling into the danger area if the rock falls suddenly.

Similarly, when levering a rock from the side walls or face, it is better to push or pull the bar in an upward direction where ever possible to minimize a loss of balance.

3.4.2 Have a Firm Footing and a Clear Safe Retreat

Have a firm footing and a clear safe retreat. Have a firm footing before starting to scale.

Always plan the scaling of the suspect area. Never just “barge in” make sure you SLAM it (Stop — Look — Assess — Manage).

Know where you are standing and ensure the immediate area is clear of obstacles:

- Check that the area behind you is clear so that you can move back quickly if required.
- Remember when scaling, rocks that have come down may become obstacles in your retreat path, so continuously observe and plan your retreat route.

3.4.3 Scaling direction

ALWAYS scale from good ground to bad ground.

3.4.4 Watch for Unexpected falls

Watch for unexpected falls .Never assume an area will remain stable after it has been scaled. Regularly check the working area before commencing work and during the working shift.

Exposure of the ground to air, water and changing rock pressure or stress, caused for example by drilling activities or the installation of rock reinforcement, will tend to loosen the ground. Loose ground may fail without warning.

3.4.5 Take Evasive Action

Drop the bar if a rock fails toward you. Be prepared for rock falls to happen at any time when scaling. If this does occur, be prepared to drop the bar and retreat quickly to avoid injury from the bar, the rock or obstacles on the floor.

3.5 Scaling in High Areas - Manual scaling from a work platform

When manual scaling is to be done in areas where the roof or ribs cannot be reached comfortably when standing on the floor, other safe means should be used to permit inspection and scaling to be carried out. A high area situation is considered to exist when the standard length bar (usually 1.8 to 2.4 m long) cannot be used effectively and comfortably to scale the roof and high ribs when standing on the floor, typically if 3.5m or more high. In these circumstances the roof or rib must be accessed from the work platform.

Working out of the LHD Bucket, instead of the Work Platform, is not allowed.

When scaling near operating diesel powered equipment the noise from the engine or engines will tend to make sounding the rock much more difficult due to the higher noise levels. Precautions should be taken to ensure a minimum level of equipment noise when sounding the roof.

Prior to conducting manual scaling from a work platform it is recommended that the following issues should be addressed:

- Ground conditions
- Position and chock-blocking of the loader when it is parked in an excavation
- Duties and training of the operator at the controls of the vehicle
- Means of communication to be used by the people involved
- Means of entry to and exit from the work platform (via platform gate, to be kept shut when working)
- Maximum number of people permitted in the work platform at one time (2)
- Scaling procedures and rules that will apply when scaling from the work platform
- Position of person in the work platform whilst it is being raised or lowered
- Condition of the work platform floor.

4.0 Accountabilities

The Project Manager is accountable for ensuring that people are fully trained, qualified and competent to perform all tasks involved in rehabilitation of the tunnels, especially testing/assessment of ground, barring down and scaling.

The Shift Supervisor is responsible for safety of the workplace and assigning and supervising testing/assessment, scaling and rehabilitation work tasks.

All operators doing the testing/assessment and scaling are responsible for following this standard and for the safety of both themselves and their fellow workers.

5.0 References

XCDM *Code of Practice* Dewatering & Rehabilitation Phase - Strata Control TARP 001.

Guideline of the Department of Industry & Resources of Western Australia, Document No. ZMT723RK.

6.0 Approvals

Project Manager, signed

Expert Engineer, signed and stamped

Dewatering & Rehabilitation Phase

Issued: October 17, 2006