

International Cyanide Management Institute

Review of Audit Verification Protocol and Audit Reports to Assess Consistency

Prepared for:

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Review of Audit Verification Protocol and Audit Reports to Assess Consistency

Executive Summary

The purpose of this review was to assess whether the evaluation of operations during Code verification audits, and the resulting certification decisions by the auditors are being done consistently. The material reviewed included the Gold Mining Operations Verification Protocol, the Auditor Guidance for Use of the Gold Mining Operations Verification Protocol and Detailed Audit Findings Reports. To conduct the review the Verification Protocol questions were first classified according to their structure (simple to complex) and according to the Cyanide Code management categories. Then 25 Verification Protocol questions and 12 Detailed Audit Findings Reports were selected for the assessment. The auditor responses to the 25 questions were evaluated from two perspectives. The first was to assess whether the auditor response adequately addressed the protocol question. The second was to compare the responses in the audit reports to each other to determine if the responses were consistent. Although some quantitative methods were used to assess the responses to the Verification Protocol questions and to tabulate the results, it needs to be recognized that the resulting analysis and observations presented in this review are subjective.

The primary conclusions drawn from the review are as follows:

- While there is a range in the quality of auditor responses to the protocol questions, the review did not find a pattern of inconsistency indicating a significant deficiency or concern about the overall ICMI audit program.
- The variability among auditor responses to any particular question is associated more with the range of clarity and completeness of the responses in the reports reviewed rather than a difference in understanding of the protocol question.
- The responses reviewed indicate that the auditors' understanding and interpretation of the Verification Protocol questions and the Auditor Guidance document appear to be consistent overall.
- The review did not find that any of the reports contained material flaws such that the validity of the audit or the certification of a site should be questioned.

Since no significant flaws were identified during this review, it is not evident that any immediate action is necessary to revise the Verification Protocol or Auditor Guidance document or revise the overall training program. The recommendations pertaining to potential revisions to the Code documents and training can be managed within the normal administration of the ICMI programs. At which time the ICMI decides to make modifications to the Code documents it is recommended that it consider obtaining input from the Code auditors and audited facilities to identify specific areas for improvement.

As a result of the review the following specific observations and recommendation were made:

- Overall the Verification Protocol questions are well written and clear. ICMI may want to consider modifying a few questions to focus the auditor on the key elements of the question that require a response.
- Overall the Auditor Guidance document provides sufficient information to guide an auditor as to the type of evidence and the observations that are to be made to support a conclusion. As with the protocol questions, a few of the guidance document sections could be edited to provide clarity that may assist auditors.
- Additional guidance and instruction for auditors regarding the collection of evidence for some of the procedural and administrative questions may be warranted at this point. For example, some audit reports cite management plans as evidence of agreements rather than indicating that the agreements themselves were reviewed. The ICMI should consider providing additional instruction to auditors about the type of documents that should be reviewed to satisfy documentation requirements.
- The writing of the audit reports could be improved by providing instruction to auditors as to how to present the evidence and the observations that support the audit finding.
- The Detailed Audit Findings Reports may be improved by standardizing the format or providing a Detailed Audit Findings Report template that could be used by auditors at their discretion. Generally, the table formats reviewed provided clearer and more complete responses to the protocol questions than did the narrative formats. Since the Detailed Audit Findings Reports are required to be in English, such a tool may be more beneficial for auditors whose native language is not English.
- It may be beneficial for ICMI to set up a communication forum to inform certified auditors about trends in audit reports and to report on audit techniques that are effective and pitfalls to avoid.
- It does not appear that the simple or complex structure of the Verification Protocol questions is a factor affecting the quality of the audit responses, e.g. the responses to the more complicated protocol questions did not have more variability than the responses to the simpler questions.
- Based on the sample selected for this review, there is an indication that responses to the Handling & Storage and the Operations questions are the most complete and most consistent. The responses to the Transportation and Emergency Response questions appear to not be as complete as other categories, but this observation is not conclusive because the sample selected for these cyanide management categories was small. Additional examination of the responses within these categories may be warranted to determine if additional training and guidance is needed.
- It is recommended that the completeness review of the Detailed Audit Findings Reports be continued as a mechanism to assure consistency in the Code verification process.

Review of Audit Verification Protocol and Audit Reports to Assess Consistency

1.0 Introduction

The International Cyanide Management Institute's (ICMI) Code Review and Revision Policy calls for an initial review of Code administration to be conducted to assess whether the evaluation of operations during the Code verification audits, and the resulting certification decision by the auditors are being done consistently across the globe. Mr. Fred Banta of Fred R. Banta, Inc. (FRBInc) was contracted to conduct this review.

Mr. Banta has extensive technical and public policy experience related to mining in general and gold mining in particular. His professional experience includes serving as Director of the Colorado Mined Land Reclamation Division, Director of Environmental Affairs for Amax Gold, and Manager of Compliance for Lac Minerals. He has been an independent consultant for the past decade providing a variety of environmental services for mining clients, including conducting environmental audits of several mining and mineral processing operations. In 2008 the ICMI retained Mr. Banta to provide support for a number of administrative activities, one of which was assisting in evaluating certification audit reports for completeness. As part of his orientation to the program, Mr. Banta attended the ICMI auditor training course and received detailed briefings on the Code's intent and ICMI's expectations for audit reports. Although Mr. Banta reviewed and evaluated a number of audit reports, he was not responsible for decisions on the content of the formal Completeness Reviews provided to Code auditors for any audit report, including those assessed in this Consistency Study¹.

This report presents the results of Mr. Banta's review of the Code verification audits. The review sought to determine if the audits are being conducted consistently and therefore if the certification decisions are consistent.

The review was initially conceived as a multi-phase investigation, with the initial phase designed to identify the range of variability of responses and their possible causes. If responses were not generally consistent within a range that supported the auditor's findings and certification decision, then subsequent phases would be added as needed to further evaluate the causes of the variability and develop recommendations to address them. However, no additional phases were necessary because the initial investigation concluded that the degree of variability was within an acceptable range, and that no reports were flawed such that the validity of the audit or the certification of the site should be questioned.

¹ ICMI's Completeness Review is a quality control procedure to assure that the basis for auditor's findings and subsequent certification decision are well documented. The Completeness Review of a Detailed Audit Findings Report is intended to confirm that all relevant questions have been answered fully, that the answers are responsive to the issues raised, and that sufficient details are provided in support of the auditor's findings. This review does not address substantive issues of Code compliance, which is the responsibility of the auditor. Reports that have gone through ICMI's Completeness Review process meet the minimum level of documentation necessary to establish an adequate record of the audit.

2.0 Review Procedure

The review was designed to assess the Code auditors' responses to the questions in the Gold Mining Operations Verification Protocol (Verification Protocol) to determine if the questions were eliciting the appropriate response, and then to compare the auditor responses to each other to assess consistency. The review examined four elements of the audit process: The structure of the Verification Protocol questions; the content of the Auditor Guidance for Use of the Gold Mining Operations Verification Protocol (Auditor Guidance); the clarity and completeness of auditor responses to the protocol questions; and the consistency of the responses among the auditors' responses.

The review evaluated final Detailed Audit Findings Reports that had gone through ICMI's Completeness Review process and met ICMI's minimum requirements for acceptability. While all these reports had been determined by ICMI to be complete, their level of description, detail, and clarity varied. In order to evaluate whether this variability resulted from problems with the Verification Protocol questions, ICMI guidance or training, a subjective ranking was made of the responses to a pre-selected list of questions in each of the reports reviewed. The report uses the term "minimally acceptable" for responses with a level of clarity or completeness below that of the average response to a protocol question or inconsistent with the other responses to a particular question. Although a minimally acceptable response still provides an adequate basis for the auditor's findings and certification decision, it is generally vaguer, does not respond fully or directly to a question, does not provide clear evidence, or may be inconsistent with the other responses when compared to the average response. This subjective judgment was made by comparing the auditor responses to each other and to the protocol and the guidance document. As noted below, two of the audit reports consistently provided good to excellent responses. These provided a benchmark for reviewing the reports.

2.1 Audit Question Review and Screening

All the questions in the Verification Protocol were reviewed to determine their relative complexity. There are 206 protocol questions including the sub-questions associated with a primary question. The questions were evaluated and placed in a category based upon the following classification:

- Type 1 – One question requiring a simple response and easily observed or obtained evidence, e.g. a yes or no response supported by an observation. The question does not require much interpretation by an auditor.
- Type 2 – Compound questions that require multiple simple responses to determine compliance.
- Type 3 – One question where the auditor must interpret the question and exercise professional judgment to arrive at a conclusion.
- Type 4 – Compound question that is a mixture of simple and more complex parts requiring the auditor to interpret the question and its parts, interpret the evidence provided and to exercise professional judgment to arrive at a conclusion.
- Type 5 – Compound question where the auditor must interpret the parts, interpret the evidence and exercise professional judgment to arrive at a determination, e.g. questions regarding water balance.

The assumption behind this approach is that one could expect that simple questions would produce consistent responses among auditors, and that the more complex questions are more likely to produce inconsistent responses due to the greater need to interpret the question and exercise judgment to determine compliance.

Once the questions were categorized they were sorted according to type (See Table 1 for the number of questions by classification). It needs to be noted that the classification of the question was a subjective exercise and some questions classified as one type by one reviewer may be classified as another type by another reviewer. One way to interpret the result below is that approximately 80% (172) of the questions are simple, straight-forward questions and 20% (34) are more complex requiring the exercise of greater professional judgment.

Table 1 Number of Verification Protocol Questions by Type	
Type 1	105
Type 2	67
Type 3	30
Type 4	1
Type 5	3
Total	206

Once categorized by type, a sample of each type of question was selected to be used to conduct the review. For the review there were 25 questions selected, some of which contained subparts. Twelve reports were reviewed, so the total number of responses reviewed was 300 (with the subparts the number of responses reviewed is 45x12, or 540). The number of each type of question selected is presented in Table 2. The questions selected are presented in Appendix 1 along with the classification for each.

Table 2 Total Number of Protocol Questions and the Number Selected for Review				
	Total Number of Protocol Questions	% of Total Protocol Questions	Number of Questions Selected for Review	Percentage of Questions Selected by Type
Type 1	105	51.0%	8	32.0%
Type 2	67	32.5%	9	36.0%
Type 3	30	14.6%	6	24.0%
Type 4	1	0.5%	1	4.0%
Type 5	3	1.5%	1	4.0%
Total	206		25	

2.2 Cyanide Management Categories

The Cyanide Management Code is organized into the following management categories:

1. Production
2. Transportation
3. Handling and Storage
4. Operations
5. Decommissioning
6. Worker Safety
7. Emergency Response
8. Training
9. Dialogue

Questions from each of the categories were selected. Table 3 presents the distribution and the number from the sample that fall within each management category. The distribution is skewed because during the review the focus was upon assessing the complexity of the questions rather than the subject matter. Observations made about the significance of the categories relative to the type of questions are discussed further below.

Production	1
Transportation	2
Handling and Storage	4
Operations	11
Decommissioning	1
Worker Safety	1
Emergency Response	1
Training	3
Dialogue	1
Total	25

2.3 Auditor Guidance Document

The guidance for each Protocol question included in the sample was reviewed to understand the information and the directions provided to the auditors to assist them with making their determinations of compliance.

2.4 Detailed Audit Findings Reports

ICMI provided 12 final Detailed Audit Findings Reports for review. The reports represented a variety of auditors and locations from around the world. Regions represented included North America, South America, Australia, Southeast Asia and Africa. The format of the reports varied

with some being more narrative in approach while others used a table format. ICMI does not prescribe a format for producing the Detailed Audit Findings Reports, so the variety of formats presented in the sample reports was instructive as to which formats provide a clearer presentation of auditor findings.

Final reports were assessed rather than the auditors' initial submissions so that ICMI's Completeness Review process would be taken into account. As previously noted, however, some reports had responses to Verification Protocol questions that were minimally acceptable, while other reports had responses that were average or above average with respect to their level of detail or clarity.

In alphabetical order the Detailed Audit Findings Reports for the following mines and mineral processing facilities were reviewed:

- Compañía Minera Maricunga, Maricunga District, Region III, Chile
- Chatree Gold Mine, Thapklor District, Phichit, Thailand
- Damang Gold Plant, New Damang, Ghana
- Denton-Rawhide Mine, Nevada, United States
- El Sauzal Mine, Chihuahua, Mexico
- Jundee Gold Mine, Western Australia, Australia
- Kopanang Gold Plant Vaal River South, North West Province, South Africa
- Mineração Serra Grande S.A., State of Goiás, Brazil
- Tucari Unit, Moquegua Region, Peru
- Tulawaka Gold Mine, Lake Victoria Goldfields District, Tanzania
- Twin Creeks Mine, Nevada, United States
- Veladero Mine, San Juan Province, Argentina

3.0 Results and Discussion

3.1 The Protocol Questions

One hypothesis for the review was that the responses to the simpler questions, types 1 and 2, would be more complete and consistent than responses to the more complex questions. At this point it is not evident or conclusive that the type of question is a significant factor affecting the clarity, completeness or consistency of the auditor responses. Part of this conclusion is based upon the results of the evaluation of the questions where it was determined that there are relatively few complex questions. Most of the minimally acceptable responses were associated with the more simple questions. As discussed further below, the minimally acceptable responses do not appear to be associated so much with the type of question, but rather with the cyanide management category and the quality of responses in the audit report. See the table below for the incidence of minimally acceptable responses and the distribution relative to the type of protocol question. It has to be emphasized that the determination that a response is minimally acceptable is subjective and not the result of an objective, statistical sample.

Table 4 Number of Questions Receiving More Than 3 Minimally Acceptable Responses* by Sample Type			
	Number of Questions in Sample	Number of Questions Receiving More Than 3 Minimally Acceptable Responses	% of Sample Questions Receiving More Than 3 Minimally Acceptable Responses
Type 1	8	2	25.0%
Type 2	9	6	66.7%
Type 3	6	2	33.3%
Type 4	1	0	0.0%
Type 5	1	0	0.0%
Total	25	10	
*A minimally acceptable response for this table means that a particular question received 3 or more minimally acceptable responses out of 12 responses.			

It needs to be stated here that during the course of the review no significant inconsistencies were identified in the interpretation or understanding of the protocol questions. The variability in the responses was mostly due to the range in clarity and completeness of the responses. There were some differences in how some protocol questions were handled, such as in instances where some responses referenced other sections of the Detailed Audit Findings Report to answer a question, whereas others provided a direct answer to the question. These differences, however, are not material and not judged to be inconsistent.

3.2 The Cyanide Management Categories

It is observed that the questions that had the most minimally acceptable responses may be correlated to the management categories. Responses with vague or incomplete answers or a failure to directly answer an element of a question were judged as minimally acceptable.

For example, for the Transportation protocol question 2.2.5, five of the auditors did not respond definitively to the part of the question that asks whether the operation audited has the chain of custody forms. Some indicated that the chain of custody forms existed within the transportation system, i.e. with the transporter or other entity, but did not affirm that the operation had copies of the chain of custody forms.

The categories that had the most minimally acceptable responses were Transportation (11 minimally acceptable responses out of 24 responses), Emergency Response (8 minimally acceptable responses out of 12) and Training (14.5 minimally acceptable responses out of 36).

It is observed that the two more technical categories, Handling & Storage and Operations, had generally good responses. These categories also comprised more than 50% of the questions and responses reviewed.

Table 5 Number of Minimally Acceptable Responses by Management Category			
	Number of Responses Reviewed	Number of Minimally Acceptable Responses	% of Minimally Acceptable Responses Within Each Management Category
Production	12	0	0.0%
Transportation	24	11	45.8%
Handling and Storage	48	6.5	13.5%
Operations	132	18	13.6%
Decommissioning	12	1	8.3%
Worker Safety	12	3.5	29.2%
Emergency Response	12	8	66.7%
Training	36	15.5	43.1%
Dialogue	12	0.5	4.2%
Total	300	64	21.3%

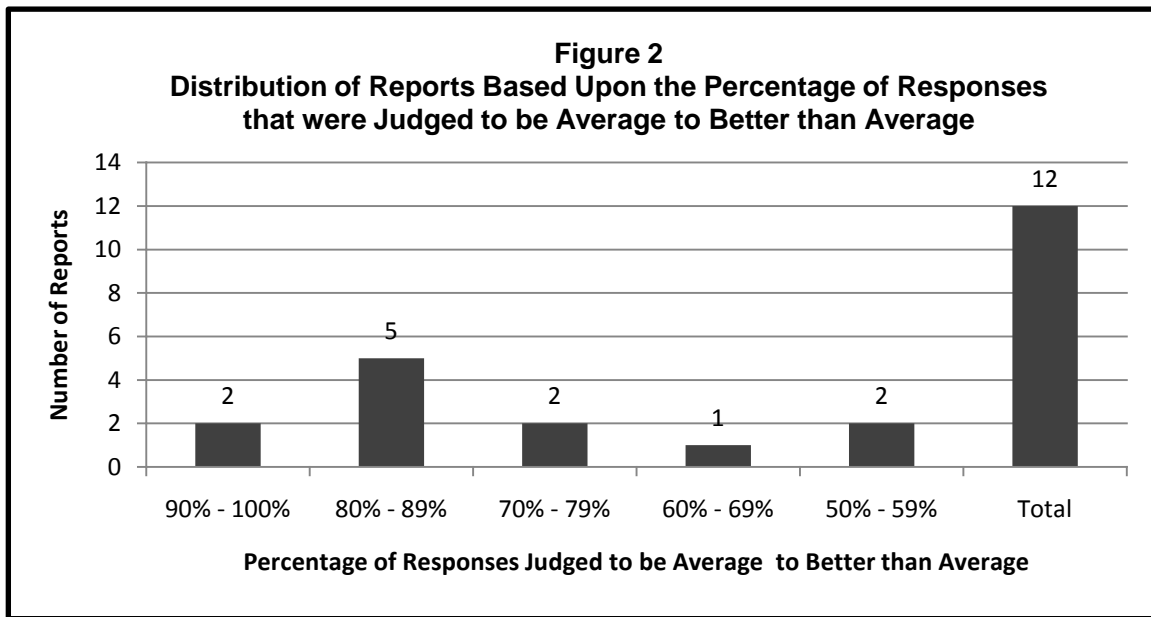
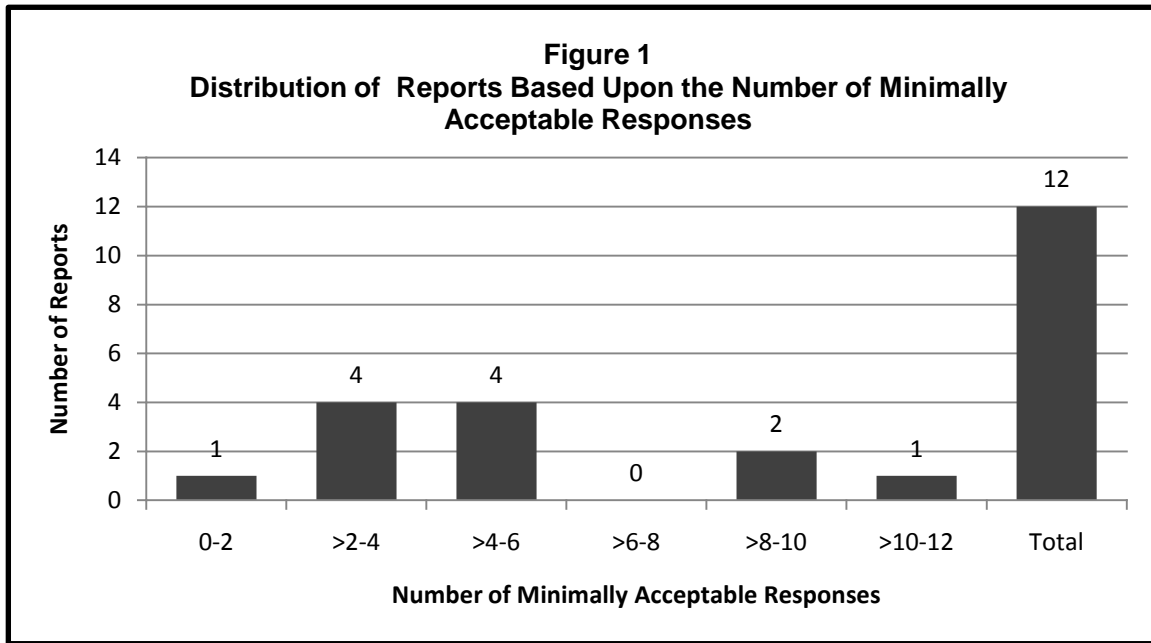
3.3 The Auditor Guidance Document

Overall the sections of the Auditor Guidance document provide auditors sufficient information about the purpose of a protocol question and the type of evidence to be reviewed. A few sections of the guidance document are less specific about the type of evidence that is to be reviewed for a particular protocol question and one section introduced information that did not appear germane to the primary focus of the protocol question. Although there may be some correlation to the minimally acceptable responses and the guidance provided, this possibility was not evaluated in depth due to the limited number of protocol questions evaluated.

3.4 The Detailed Audit Findings Reports

The format and quality of responses as presented in the Detailed Audit Findings Reports varied. One report is excellent. It provides a clear description of the evidence and well supported conclusions that respond directly to the protocol question. This report was easy to review and to understand. Another group of reports was average to very good. One group of reports in particular shares the same protocol format but the quality of the responses to the Verification Protocol questions varied.

The histogram in Figure 1 below provides the distribution of the reports based upon the number of minimally acceptable responses within the reports. Out of the 12 audit reports reviewed, nine had 6 or fewer minimally acceptable responses and three had eight to eleven responses that were judged to be minimally acceptable. Another way to describe the data is to state that nine of the audit reports had average to better than average responses for a great majority of the questions (75% or above), while three of the reports had 54%, 58% and 66% of the responses judged to be average or better than average, respectively (See Figure 2).



4.0 Observations and Discussion

4.1 Audit Verification Protocol Questions and Auditor Guidance Document

No pattern was observed to indicate that the Verification Protocol questions or the Auditor Guidance document is a factor in obtaining consistent responses. It is evident that some questions could be rewritten in a simpler form, which may elicit a more direct response from the auditor. There are also some guidance sections that could be re-written to provide greater clarity as to the purpose of the protocol question and the critical elements for consideration. It is noted that some auditors failed to respond to certain elements of some questions, and instead gave partial or indirect answers, or, in some cases, included the information in response to another

question. This indicates that instruction may be warranted to direct the auditor to the essential element(s) of a question.

It is possible that more guidance is needed for the management categories that are less technical, i.e. transportation, training and emergency response. These categories are more oriented toward making determinations about the acceptability of agreements and procedural documents. The auditors appear to handle the technical areas well, but appear to be weaker on identifying information to support conclusions about agreements and procedures.

4.2 Cyanide Management Categories

Auditor responses to the technical categories generally are stronger than procedural or administrative categories. This is likely because auditors tend to have field experience evaluating the physical structures and the operational requirements. The responses to procedural and administrative protocol questions are less strong which may reflect unfamiliarity, less experience, or more difficulty in obtaining the necessary evidence.

4.3 Detailed Audit Findings Reports

While the auditors appear to be technically competent, the quality of the responses and the reports of some of the auditing groups could be improved. Some additional training may be warranted to teach auditors to reply to each element of a question and to state clearly the basis for a determination.

The fact that some of the reports reviewed are very well written indicates that the audit structure, the protocols and the guidance documents can be followed competently; it also may be that these audit teams are exceptionally competent at presenting the information in a clear and well-written manner.

The format of the reports is an important element for understanding the auditor's report. Some of the formats were more difficult to review, which may have affected the results of this review where subjective judgments have been made about the relative strength or weakness of a response.

5.0 Conclusion and Recommendations

While there is a range in the quality of auditor responses to the protocol questions, the review did not find a pattern of inconsistency indicating a significant deficiency or concern about the overall ICMI audit program. Given the different auditors, the different regions in which the audits are conducted and the language differences, it is not unexpected that there would be variations among the reports. Differences in the quality of reports appears to result primarily from the different skill levels of the auditors in report writing, and is likely also influenced by the requirement that reports be in English, which is not the native language of all auditors.

It is also concluded that the variations observed in the reports selected for review do not indicate that the objectives of the Code are significantly compromised. Some reports are better organized, more detailed and more clearly written than others, but it is evident that the necessary information upon which to base audit conclusions is presented in all the Detailed Audit Findings Reports. This may be due in part to the influence of the completeness review that has been conducted by the ICMI for each report during the initial period of operation. It is recommended that the completeness review be continued as a mechanism to assure consistency in the Code verification process.

Since no significant flaws were identified during this review, it is not evident that any immediate action is necessary to revise the Verification Protocol or Auditor Guidance document or revise the overall training program. The recommendations pertaining to potential revisions to the Code documents and training can be managed within the normal administration of the ICMI programs. At which time the ICMI decides to make modifications to the Code documents it is recommended that it consider obtaining input from the Code auditors and audited facilities to identify specific areas of improvement.

The following specific observations and recommendations are drawn from this review:

- Overall the Verification Protocol questions are well written and clear. ICMI may want to consider modifying a few questions to focus the auditor on the key elements of the question that require a response.
- Overall the Auditor Guidance document provides sufficient information to guide an auditor as to the type of evidence and the observations that are to be made to support a conclusion. As with the Verification Protocol questions, a few of the guidance document sections could be edited to provide clarity that may assist auditors.
- Additional guidance and instruction for auditors regarding the collection of evidence for some of the procedural and administrative questions may be warranted at this point. For example, some audit reports cite management plans as evidence of agreements rather than indicating that the agreements themselves were reviewed. The ICMI should consider providing additional instruction to auditors about the type of documents that should be reviewed to satisfy documentation requirements.
- The writing of the audit reports could be improved by providing instruction to auditors as to how to present the evidence and the observations that support the audit finding.
- The Detailed Audit Findings Reports may be improved by standardizing the format or providing a Detailed Audit Findings Report template that could be used by auditors at their discretion. Generally, the table formats reviewed provided clearer and more complete responses to the protocol questions than did the narrative formats. Since the Detailed Audit Findings Reports are required to be in English, such a tool may be more beneficial for auditors whose native language is not English.
- It may be beneficial for ICMI to set up a communication forum to inform certified auditors about trends in audit reports and to report on audit techniques that are effective and pitfalls to avoid.
- It does not appear that the simple or complex structure of the Verification Protocol questions is a factor affecting the quality of the audit responses, e.g. the responses to the more complicated protocol questions did not have more variability than the responses to the simpler questions.
- Based on the sample selected for this review, there is an indication that responses to the Handling & Storage and the Operations questions are the most complete. The responses to the Transportation and Emergency Response questions appear to not be as complete as the other categories, but this observation is not conclusive because the sample selected for these categories was small. Additional examination of the responses within these categories may be warranted to determine if additional training and guidance is needed.

Appendix 1- Audit Verification Protocol Questions Reviewed

Selection Criteria: The 25 questions evaluated in this report were selected from the total of 206 in the Verification Protocol by Mr. Banta and Mr. Greenwald based on the criteria below. These questions were intended to demonstrate the greatest variability of responses to the Verification Protocol so that any problems with consistency would become apparent.

- Questions representing a broad range of complexity, including simple, direct questions, multi-part questions, questions that can be answered with data or facts, and questions requiring evaluation and/or interpretation of complex plans and procedures.
- Questions that, based on ICMI’s experience conducting Completeness Reviews, appeared to have the greatest variability of responses, often required additional information or clarification, and/or have required significant discussion and explanation during Code Training Workshops.

No effort was made to select questions from each Standard of Practice, although 16 of the 31 Standards of Practice are represented and at least one question was selected from each Principle. In part, this was due to the fact the ICMI’s experience reviewing responses under some Standards suggested that they were generally quite consistent both with the intent of the Code and the clarity of presentation.

Audit Verification Protocol Questions Reviewed			
Question Selected	Type	Question #	Audit Questions
		1	1. PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers that operate in a safe and environmentally protective manner.
		1.1	<i>Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.</i>
1	1	1.1.4	4. Was the audit(s) conducted within the past three years by an independent third-party meeting the qualifications established by ICMI?
		2	2. TRANSPORTATION: Protect communities and the environment during cyanide transport.
		2.1	<i>Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.</i>
1	2	2.1.1	1. Is there a written agreement between the operation, the cyanide producer, distributor, and transporter(s) designating responsibility for the following, as applicable?
included		2.1.1a	a) Packaging as required by the United Nations for international shipments and by the political jurisdiction(s) the shipment will pass through
included		2.1.1b	b) Labeling in languages necessary to identify the material in the political jurisdiction(s) the shipment will pass through, and as required by these jurisdiction(s) and by the United Nations (for international shipments)
included		2.1.1c	c) Storage prior to shipment

Audit Verification Protocol Questions Reviewed			
Question Selected	Type	Question #	Audit Questions
included		2.1.1d	d) Evaluation and selection of routes, including community involvement
included		2.1.1e	e) Storage and security at ports of entry
included		2.1.1f	f) Interim loading, storage and unloading during shipment
included		2.1.1g	g) Transport to the operation
included		2.1.1h	h) Unloading at the operation
included		2.1.1i	i) Safety and maintenance of the means of transportation (e.g., aircraft, vessels, vehicles, trains, etc.) throughout transport
included		2.1.1j	j) Task and safety training for transporters and handlers throughout transport
included		2.1.1k	k) Security throughout transport
included		2.1.1l	l) Emergency response throughout transport
		2.2	<i>Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.</i>
1	2	2.2.5	5. Does the operation have chain of custody records identifying all elements of the supply chain (producer, transporter(s), interim storage facilities) that handle the cyanide brought to its site? Have all identified transporters been included in the responses to questions 2 and/or 3 above?
		3	3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.
		3.1	<i>Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.</i>
1	3	3.1.1	1. Have facilities for unloading, storing and mixing cyanide been designed and constructed in accordance with cyanide producers' guidelines, applicable jurisdictional rules and/or other sound and accepted engineering practices for these facilities?
1	3	3.1.8	8. Is cyanide stored:
		3.1.8a	a) With adequate ventilation to prevent the build-up of hydrogen cyanide gas?
		3.2	<i>Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.</i>
	1	3.2.1	1. With respect to empty cyanide containers, are procedures in place and implemented to:
1	2	3.2.1b	b) Rinse empty cyanide drums, plastic bags and liners with water three times and add the rinse water to the cyanidation process or otherwise dispose of it in an environmentally sound manner?
		3.2.2	2. Has the operation developed and implemented plans or procedures to prevent exposures and releases during cyanide unloading and mixing activities such as:
1	1	3.2.2b	b) Handling cyanide containers without rupturing or puncturing;
		4	4. OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.

Audit Verification Protocol Questions Reviewed			
Question Selected	Type	Question #	Audit Questions
		4.1	<i>Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.</i>
1	2	4.1.1	1. Have written management and operating plans or procedures been developed for cyanide facilities including unloading, mixing and storage facilities, leach plants, heap leach operations, tailings impoundments, and cyanide treatment, regeneration and disposal systems?
1	2	4.1.5	5. Does the operation have cyanide management contingency procedures for situations when there is an upset in a facility's water balance, when inspections and monitoring identify a deviation from design or standard operating procedures, and/or when a temporary closure or cessation of operations may be necessary?
1	1	4.1.6	6. Does the operation inspect cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters?
		4.1.7	7. Does the operation inspect the following at unloading, storage, mixing and process areas, as applicable to the site?
1	2	4.1.7b	b) Secondary containments for their integrity, the presence of fluids and their available capacity, and to ensure that any drains are closed and, if necessary, locked, to prevent accidental releases to the environment
1	2	4.1.8	8. Are inspections documented, including the date of the inspection, the name of the inspector, and any observed deficiencies? Are the nature and date of corrective actions documented? Are records retained?
		4.3	<i>Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.</i>
1	3	4.3.2	2. Does the water balance consider the following in a reasonable manner and as appropriate for the facilities and environment?
included	5	4.3.2a	a) The rates at which solutions are applied to leach pads and tailings that are deposited into tailings storage facilities
included	5	4.3.2c	c) The quality of existing precipitation and evaporation data in representing actual site conditions
included	3	4.3.2f	f) Solution losses in addition to evaporation, such as the capacity of decant, drainage and recycling systems, allowable seepage to the subsurface, and allowable discharges to surface water
		4.5	<i>Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.</i>
1	1	4.5.1	1. Does the operation have a direct discharge to surface water and if so, is it no greater than 0.5 mg/l WAD cyanide?
		4.6	<i>Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.</i>
1	3	4.6.1	1. Does the operation implement specific water management or other measures to manage seepage to protect the beneficial use(s) of ground water beneath and/or immediately down gradient of the operation?
1	2	4.6.2	2. Are WAD cyanide concentrations (or other species of cyanide for which there is a numerical standard established by the applicable jurisdiction) in groundwater at compliance points below or down gradient of the facility at or below levels that are protective of identified beneficial uses of the groundwater?

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1	4	4.6.3	3. If the operation uses mill tailings as underground backfill, have the potential impacts to worker health and the beneficial uses of ground water been evaluated and have measures been implemented as necessary to address them?
		4.7	<i>Standard of Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.</i>
1	3	4.7.6	6. Have areas where cyanide pipelines present a risk to surface water been evaluated for special protection needs?
		5	5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.
		5.2	<i>Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.</i>
1	1	5.2.5	5. If the operation has established self-insurance or self-guarantee as a financial assurance mechanism, has the operation provided a statement by a qualified financial auditor that it has sufficient financial strength to fulfill this obligation as demonstrated by an accepted financial evaluation methodology?
		6	6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.
		6.2	<i>Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.</i>
1	3	6.2.9	9. Are procedures in place and being implemented to investigate and evaluate cyanide exposure incidents to determine if the operation's programs and procedures to protect worker health and safety, and to respond to cyanide exposures, are adequate or need revising?
		7	7. EMERGENCY RESPONSE: Protect communities and the environment through the development of emergency response strategies and capabilities.
		7.1	<i>Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.</i>
1	2	7.1.3	3. Has planning for response to transportation-related emergencies considered transportation route(s), physical and chemical form of the cyanide, method of transport (e.g., rail, truck), the condition of the road or railway, and the design of the transport vehicle (e.g., single or double walled, top or bottom unloading)?
		8	8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.
		8.2	<i>Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.</i>
1	3	8.2.1	1. Does the operation train workers to perform their normal production tasks, including unloading, mixing, production and maintenance, with minimum risk to worker health and safety and in a manner that prevents unplanned cyanide releases?

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1	1	8.2.5	5. Is refresher training on cyanide management provided to ensure that employees continue to perform their jobs in a safe and environmentally protective manner?
		8.3	<i>Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.</i>
1	1	8.3.1	1. Are all cyanide unloading, mixing, production and maintenance personnel trained in the procedures to be followed if cyanide is released?
		9	9 DIALOGUE: Engage in public consultation and disclosure.
		9.3	<i>Standard of Practice 9.3: Make appropriate operational and environmental information regarding cyanide available to stakeholders.</i>
1	1	9.3.3	3. Does the operation make information publicly available on the following confirmed cyanide release or exposure incidents?
included	1	9.3.3a	a) Cyanide exposure resulting in hospitalization or fatality
included	1	9.3.3b	b) Cyanide releases off the mine site requiring response or remediation
included	1	9.3.3c	c) Cyanide releases on or off the mine site resulting in significant adverse effects to health or the environment
included	1	9.3.3d	d) Cyanide releases on or off the mine site requiring reporting under applicable regulations
included	1	9.3.3e	e) Releases that are or that cause applicable limits for cyanide to be exceeded