Micon International Limited

The JORC Code
2012 Edition

Cornish Institute of Engineers
11th October 2013
Outline

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The JORC Code

What is the JORC Code?

The ‘Joint Ore Reserves Committee’ (JORC) Code is a code of practice which sets minimum standards, recommendations, and guidelines for public reporting of Exploration Results, Mineral Resources and Ore Reserves.
Why is there a JORC Code?

Poseidon Boom – 1969 Report

<table>
<thead>
<tr>
<th>From – to in feet</th>
<th>Length in feet</th>
<th>Ni %</th>
<th>Cu %</th>
<th>Type of Ore</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 25</td>
<td>25</td>
<td>0.4</td>
<td>0.1</td>
<td>Leached ore</td>
</tr>
<tr>
<td>25 – 115</td>
<td>90</td>
<td>1.53</td>
<td>0.25</td>
<td>Oxide</td>
</tr>
<tr>
<td>115 – 145</td>
<td>30</td>
<td>1.6</td>
<td>0.4</td>
<td>Disseminated Sulphides</td>
</tr>
<tr>
<td>145 - 185</td>
<td>40</td>
<td>3.56</td>
<td>1.55</td>
<td>Massive Sulphides</td>
</tr>
</tbody>
</table>
What it Does and Doesn’t Do

• Sets minimum standards for public reporting of Exploration Results, Mineral Resources and Ore Reserves
• Requires that Public Reports be based on work undertaken by a Competent Person
• However, the JORC Code does not regulate the procedures used by Competent Persons to estimate mineral resources and ore reserves
• Nor does it regulate companies internal classification or reporting systems
• Breaches of the Code
Who is it for?

- Resource & Reserve Estimators (Consultants)
- Mining Company Management (Owner)
- Investment Community (Investors)
- Financing Community (Banks)
Fundamental Principles

Transparency
- Clear unambiguous presentation

Materiality
- All reasonable information expected

Competence
- Based on work by a Competent Person

JORC Code
Incorrect Terminology

The following terms have no meaning under the JORC Code

• “JORC compliant”
• “to JORC standards”
• “probable resources”
• “geological/mineable resources”
• “in situ reserves”
• “mining reserves”
• “mining inventory”
• “possible reserves”
New Terminology

The following terms have been introduced to the JORC Code, 2012 Edition:

- “Significant project”
- “Material change”
- “if not, why not”
“If not, why not”

“For the purposes of the JORC Code the phrase ‘if not, why not’ means that each item listed in the relevant section of Table 1 must be discussed and if it is not discussed then the Competent Person must explain why it has been omitted from the documentation.”
Latest Amendments

- Exploration Target – new definition
- A mineral resources must have *reasonable prospects for eventual economic extraction*;
- A mineral resource cannot be estimated in the absence of sampling information;
- Sufficient supporting information provided for investors to evaluate and assess the risk;
- Assumptions used for any reporting of metal equivalent values should be clearly stated;
- Pre-Feasibility required for an Ore Reserve;
- *In-situ* or *in ground* valuations not permitted; and
- Consent of Competent Persons (CP attributions).
Economic Extraction

“All reports of Mineral Resources must satisfy the requirements of clause 20 of the JORC Code, in particular, that there are reasonable prospects for eventual economic extraction.”
Modifying Factors

(Figure 1) General relationship between Exploration Results, Mineral Resources and Ore Reserves
Introduction to Table 1

- Table 1 is a checklist or reference.
- Comment on the relevant sections of Table 1 should be provided on an ‘if not, why not’ basis.

Sampling/drilling techniques, recovery, sample preparation, verification, database integrity, Estimation and modelling techniques, cut-off parameters, Mining factors, Bulk density
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling techniques</td>
<td>Nature and quality of sampling (These examples should not be taken as limiting the broad meaning of sampling) Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</td>
</tr>
<tr>
<td>Drilling techniques</td>
<td>Drill type and details</td>
</tr>
<tr>
<td>Drill sample recovery</td>
<td>Method of recording and assessing core and chip sample recoveries and results assessed.</td>
</tr>
<tr>
<td>Verification of sampling and assaying</td>
<td>The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Discuss any adjustment to assay data.</td>
</tr>
<tr>
<td>Data spacing and distribution</td>
<td>Data spacing for reporting Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the resource/reserve estimate</td>
</tr>
<tr>
<td>Geological interpretation</td>
<td>Confidence in (or conversely, the uncertainty) of the geological interpretation of the mineral deposit.</td>
</tr>
</tbody>
</table>
Competent Person

- Member or fellow of the AusIMM, AIG, or a Recognised Overseas Professional Organisation
- At least 5 years relevant experience

For the 2012 Edition

- Disclose any conflict of interest
- Disclose the details of the Competent Person
- Give explicit comment on all existing information (if not, why not’)
- Written consent form
In Summary

• The JORC Code is a *guide* to adhere to
• To provide a ‘level playing field’
• Produce a robust document that is:
  – Simple and legible;
  – Significant and relevant; and that
  – CP has ability and level of proficiency required.
• Essentially it is down to the CP preparing the document
The JORC Code
2012 Edition

Thank you