



JORC (CRIRSCO) as the essential instrument of attraction of the investments

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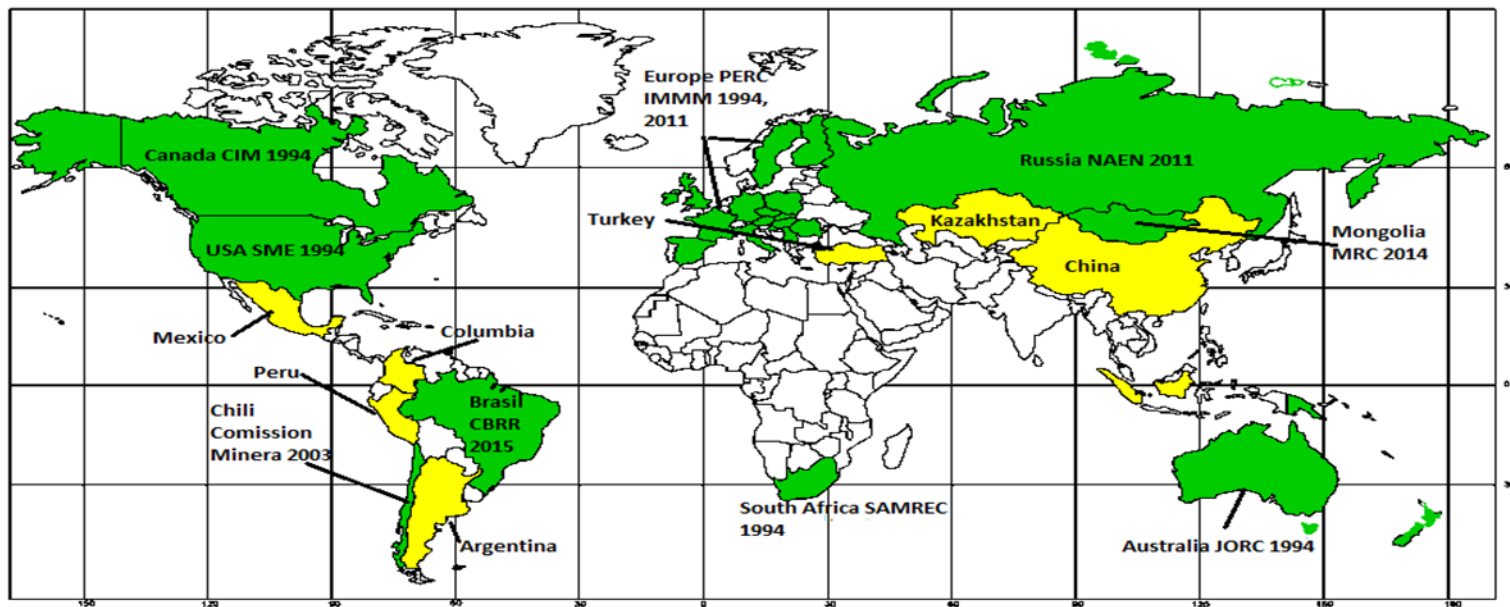
JORC (CRIRSCO) Code

- The global world with global economy and global financial market demands from mineral sector of industry a standard approach to evaluation of resources/reserves.
- JORC Code is the most popular system provides the standard procedures for each phase of exploration and reporting.
- CRIRSCO (the Committee for Mineral Reserves International Reporting Standards), initially a committee of the Council of Mining and Metallurgical Institutions (CMMI), has, since 1994, been working to create a set of standard international definitions for reporting Mineral Resources and Mineral (Ore) Reserves and JORC Code was taken as model.



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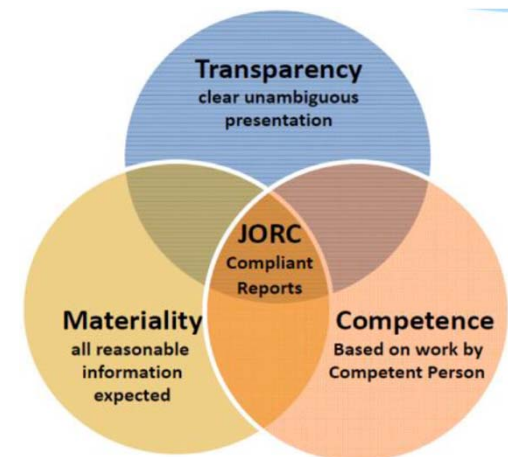
CRIRSCO distribution worldwide



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The main principles governing the operation and application of the JORC Code

- **Transparency** requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and is not misled, either intentionally or by omission of Material information that is known to the Competent Person.
- **Materiality** requires that a Public Report contains all the relevant information which investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgment regarding the Exploration Results, Mineral Resources or Ore Reserves being reported. Where relevant information is not supplied an explanation must be provided to explain its exclusion.
- **Competence** requires that the Public Report be based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics.



Competent Person

- A 'Competent Person' is a minerals industry professional who is Member or Fellow of The Australasian Institute of Mining and Metallurgy, or of the Australian Institute of Geoscientists, or of a 'Recognized Professional Organization' ('RPO'), as included in a list promulgated from time to time, with enforceable disciplinary processes including the powers to suspend or expel a member.
- A Competent Person must have a minimum of five years relevant experience in the style of mineralization or type of deposit under consideration and in the activity which that person is undertaking.
- If the Competent Person is preparing documentation on Exploration Results, the relevant experience must be in exploration. If the Competent Person is estimating, or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources. If the Competent Person is estimating, or supervising the estimation of Ore Reserves, the relevant experience must be in the estimation, assessment, evaluation and economic extraction of Ore Reserves.

Exploration Practice

QA/QC (quality assurance and quality control) as basis of correct exploration data and further interpretations and evaluations

“A careful owner, before buying shares, should: visit the mine and carefully examine the nature of the vein, as it is very important that he be on his guard, to avoid being the victim of dishonest sellers of shares seeking to defraud him”.
Georgius Agricola - “De Re Metallica” (1530)



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QA/QC (quality assurance and quality control)

- The QA/QC process is the core of JORC system because it allows to create an audit trail **from sample collection through assay to final database** preparation
- A company to have a robust QA/QC drilling program must be able to demonstrate that:
 - i. drill holes are accurately surveyed both on surface and downhole (core orientation preferable in structurally complex areas);
 - ii. core recovery is adequate and the drilling technique is fit for purpose;
 - iii. samples are collected correctly;
 - iv. handled properly;
 - v. sampled in an un-biased way;
 - vi. core photographed;
 - vii. properly cut with half cored stored in well labeled core boxes for future use;
 - viii. that the sample preparation facility is clean and that the samples are crushed and ground to the correct size fraction;
 - ix. that the samples are reduced in size using the correct splitting techniques;
 - x. duplicates are properly labeled and stored;
 - xi. that a certified laboratory is used with blanks and standards in every sample batch;
 - xii. external laboratories are used for check sampling.

QA/QC (quality assurance and quality control)

- Involvement of the Competent Person in Exploration process may guarantee exploration works QA/QC program implementation and exclude its duplication for confirmation of its reliability.
- Under JORC (VALMIN, SAMREC, etc.), resources are classified as Measured, Indicated and Inferred (decreasing level of confidence), but it is only Measured and Indicated resources that can be transferred to reserves (Proven and Probable) and Inferred resources can never be used in a reserve statement or Life of Mine schedule based on reserves.
- The Competent Person preparing the resource must be satisfied that a suitable QA/QC audit trail exists for the data, as if there are uncertainties, and then a resource may often only be classified as Inferred, even though drill spacing might be suitable for a higher classification.
- Otherwise test works are required in order to prove correctness of exploration data. It will need much time, not to speak of the expense.



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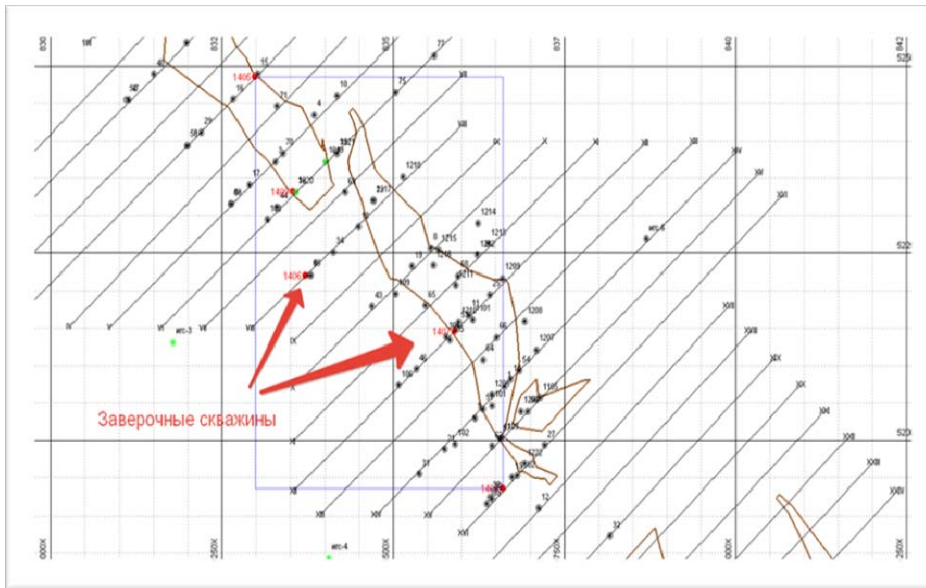
Absence QA/QC requires test works.

Positive example

- Copper-porphyry deposit in Central Kazakhstan.
- Exploration was carried in 1950-60. Major elements are gold (0.5-0.8 ppm) and copper (0.5-0.7%).
- The JORC Report was prepared for owner of deposit for presentation to EBRD.
- Totally drilling of five test DDH (twinning) was recommended by Competent Person (CP) in order to confirm resources/reserves.

Positive example

Test DDH



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Positive example

- Drilling was accompanied by QA/QC program under supervision of CP.
- Assaying was done in the certified laboratories – ASL and SGS.
- Global resource/reserve re-estimation was done after completion of test works.
- EBRD (European Bank of Reconstruction and Development) opened a Credit Line 100 million Euro for further development of the mine.

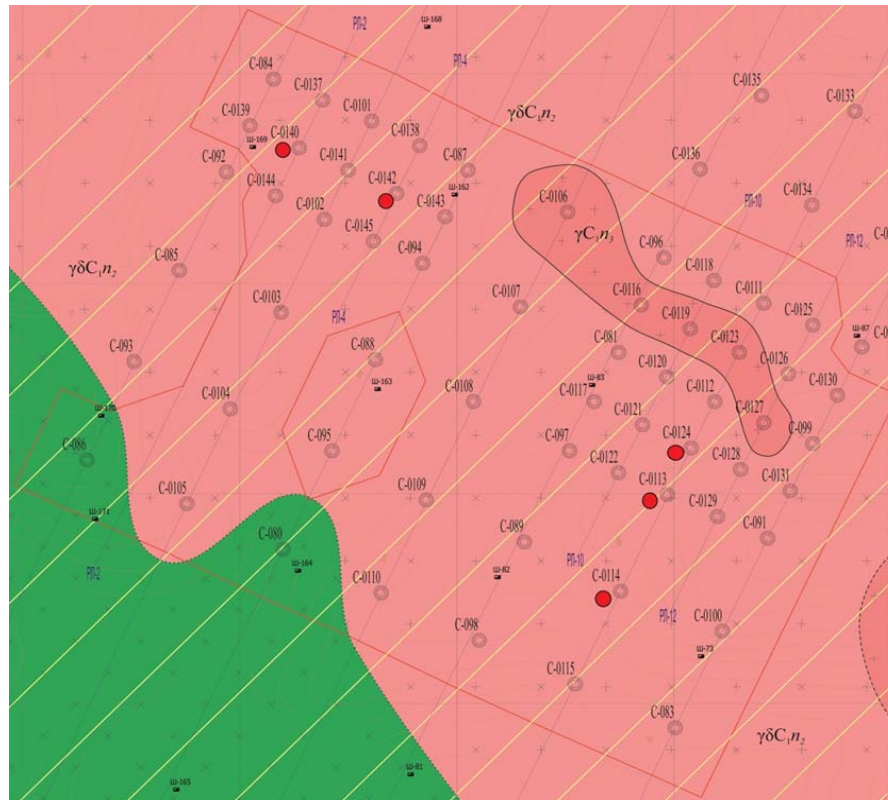
Absence QA/QC requires test works.

Negative example

- Gold deposit of oxide ores consisting from two areas ('weathering crust') in the Russia.
- Exploration was carried in 2000-10. Major element is gold (0.5-1.3 ppm).
- The JORC Report was prepared for owner of deposit for presentation to invite investors.
- Totally drilling of ten test DDH (twinning) was recommended by Competent Person (CP) in order to confirm resources/reserves. Five DDH from each area.

Negative example

Test DDH. Area 1



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Negative example

- Drilling was accompanied by QA/QC program under supervision of CP.
- According an information provided to the Competent Person by owners all drill holes intersected mineralization.
- Assaying was done in the certified laboratory – SGS.
- None of test DDH intersected any mineralization.

Conclusions

- Implementation of internationally recognized procedures of exploration on the basis of JORC (CRIRSCO) standards will provide resource/reserve evaluation of deposits clear and transparent for international and local investors and financial institutions.
- JORC (CRIRSCO) standards will minimized risks of investments into mining sector.
- JORC (CRIRSCO) standards will increase the capitalization of projects and companies.
- Implementation of JORC (CRIRSCO) standards will attract local and foreign investments.