

# JORC Seminar

Westpac House, Adelaide, South Australia  
10 December 2008

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**ASIC**  
Australian Securities & Investments Commission



# JORC Code matters

Peter Stoker Chairman JORC

- Companies Updates since May 2007
- International Reporting Developments
- Reporting of Uranium - Additional guidance available

# Companies Updates relevant to the JORC Code are now available (consolidated) with the Code on the JORC website

**These ASX Companies Updates provide guidance on the application of the JORC Code**

Since 2004, ASX, after extensive discussion with JORC, has issued four Companies Updates of relevance to interpreting the JORC Code and its use in Public Reporting. A copy of these ASX Companies Updates has been appended to both versions of the Code and will automatically download with them from the JORC website.

**Readers of the JORC Code are advised to consult these Updates.**

# Companies Updates relevant to Interpreting the JORC Code

How many of these updates are relevant to the use of the JORC Code in Public Reporting?

- Companies Update 05/04 in March 2004 dealt with non JORC Code compliant reporting,
- Companies Update 03/07 in May 2007 dealt with metal equivalents, reporting of Inferred Resources and Competent Persons Consent Forms, and
- Companies Update 11/07 in November 2007 dealt reporting of historical estimates.
- Companies Update 03/08

# Companies Update 03/08

Issued in May 2008, ASX reported on its monitoring of Public Reports and the deficiencies noted, highlighting the following:

- Reporting of “in ground or in situ” values
- Reporting historical or non-JORC compliant reporting of estimates
- Competent Person statements
- Reporting exploration targets
- Lack of drill hole information
- Combining categories of resources and reserves
- Incorrect use of reserves or resources to describe results.

There is significant new advice on the inappropriateness of reporting “in-ground” values.

# "In ground" values - discussion

Companies report 'in-ground value' apparently in an attempt to convey the significance of exploration results or deposits by converting the result or deposit to a dollar amount.

'In-ground value' has little to no relationship to economic viability, value or potential returns to investors.

It may therefore be misleading.

In determining project viability it is necessary to include all reasonable Modifying Factors (mining, metallurgical, economic, marketing, legal, environmental, social and governmental considerations) to determine the economic value that can be extracted from the mineralisation.

"In-ground" value ***implies*** economic viability without considering the application of these Modifying Factors.

# "In ground" values - discussion

The words 'ore' and 'reserves' must not be used in describing Mineral Resource Estimates as the terms imply economic viability and are only appropriate when all Modifying Factors have been considered (*JORC Code Clause 27*).

Inferred Resources cannot be directly converted to Ore Reserves.

It is possible that portions of Indicated and Measured Resources may not convert to Ore Reserves nor contribute to the Net Present Value of a given mineralised body at the time of evaluation.

# Do not report “in ground” value

Consequently use of the terms ‘in-ground value’ or ‘in situ value’ is contrary to the intent of Clause 27 of the Code, and

ASX has indicated ‘in-ground value’ or ‘in situ value’ should not be reported by companies.

# International Developments

*CRIRSCO - Committee for Mineral Reserves International Reporting Standards*

The umbrella organisation of national reporting organisations –

Australia, South Africa, Canada, UK, Ireland & Western Europe, USA and Chile

- *CRIRSCO now a taskforce of ICMM*
- *CRIRSCO & IASB definitions for IFRS*
- *CRIRSCO & SPE mapping minerals & oil and gas definitions*
- *CRIRSCO & UNECE mapping definitions*
- Other Codes and International Developments
- National & International Reporting Codes

# Uranium Reporting

## BULLETIN

General Article

## Resource Estimates for In Situ Leach Uranium Projects and Reporting Under the JORC Code

by A.D. McKay<sup>1</sup>, P. Stoker<sup>2</sup>, K.F. Bampton<sup>3</sup> & I.B. Lambert<sup>4</sup>

### 1. Introduction

The Uranium Industry Framework (UIF) was established in August 2005 by the Minister for Industry, Tourism and Resources, the Hon. Ian Macfarlane. The Steering Group comprised senior representatives of the uranium industry; the Commonwealth, South Australian and Northern Territory governments; and the Northern Land Council.

The report of the UIF Steering Group, was released by the Minister in November 2006 and made 20 recommendations

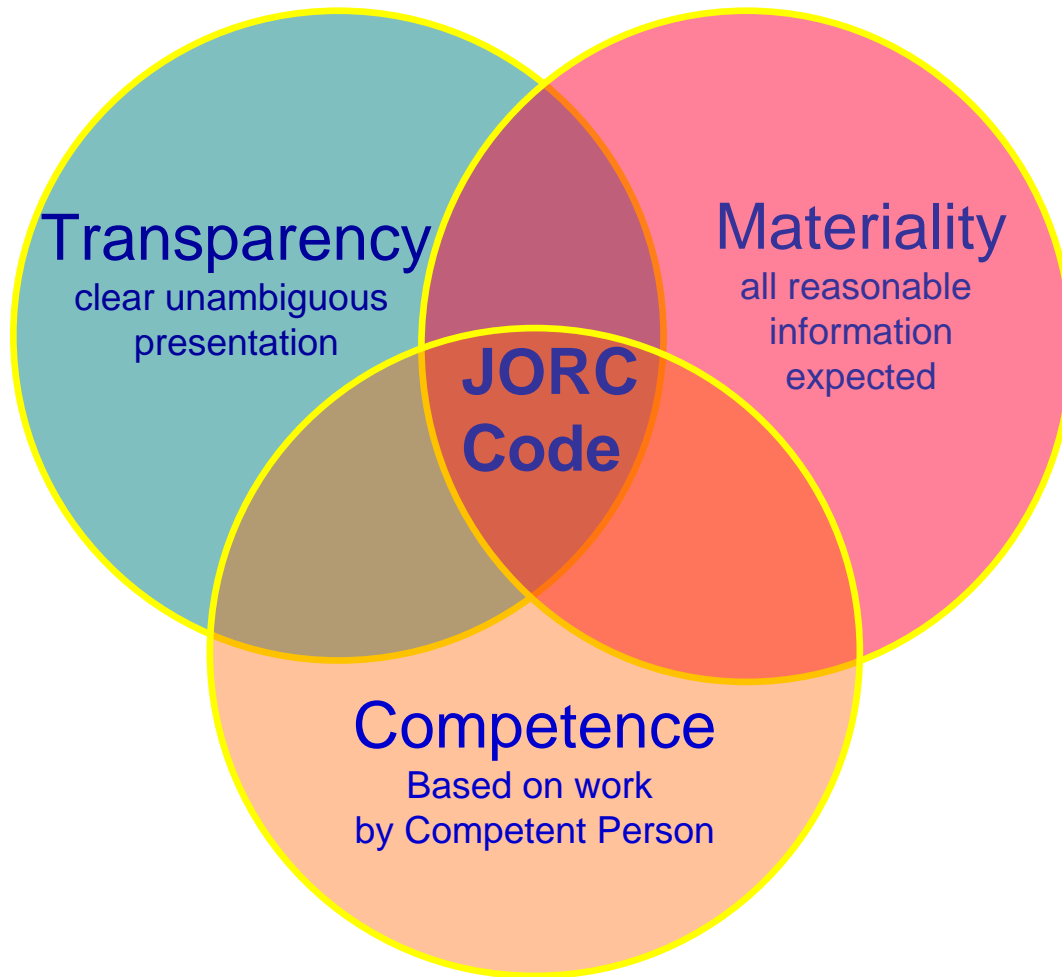
### Operation of the JORC Code

The JORC Code aims to ensure that **Public Reports**\* on Exploration Results, Mineral Resources and Ore Reserves contain all the information which investors and their advisers would reasonably require for the purpose of making a balanced judgement regarding the results and estimates being reported. It is important to note that the term Public Reports takes a wide meaning.

adherence to the JORC Code, which in Clause 8 requires the identification of the Competent Person who 'signs off' on resource and reserve disclosures. The company is required to obtain that person's consent to the use of the information provided for the report in the form in which it is issued. That gives a role of central and publicly visible responsibility to the reporting geologist or other mining professional. The JORC Code does not regulate the procedures used

# JORC Code - Principles based

JORC is a principles based Code not a prescriptive Code.  
The principles in Clause 4, 2004 JORC Code are:



# Uranium Reporting

The JORC Committee is of the view that if the Code principles are followed by Competent Persons and Companies then no special instructions are required as, if the Competent Person is competent, then there is no need for additional prescriptive reporting requirements for Uranium (or any other mineral for that matter).

As for all minerals, reporting of Uranium Exploration Results, Mineral Resources and Ore Reserves relies on a Competent Person having the required relevant experience and following the principles of the JORC Code when preparing the documentation on which companies base their Public Reports.

# Importance of the Competent Person

The JORC Code regulates the estimator - the Competent Person, not the estimation, therefore it relies on the Competent Person rather than prescribing how to estimate or precisely what to report

Requirement for membership of The AusIMM, AIG or ROPO provides mechanism to make Competent Person accountable.

# Uranium Reporting

## key points from Table 1

- JORC considers the current guidance adequate
  - to illustrate this an annotated version of Table 1 from the JORC Code with comments specific to Uranium has been prepared (it is available on the JORC website).
- Table 1 is necessarily generic
  - The table provided is an example of how this generic approach could be translated to specifically address some of the Uranium related issues.
- The Competent Person must judge the materiality of these issues.
- Apply common sense; if in doubt - discuss with peers.

# Public Reports

- There are examples of reports that may not appear to be in accordance with the JORC Code
- *'They should do something'* is the cry
- But who is "*they*" and how do we know if they are doing something?
- The most important *they* is ***YOU***.
- What should you do? Look on the JORC website for advice. But don't expect someone else to do it for you. It is our industry and we all must ensure the standards are kept high.

# Conclusions

The JORC Code is a principles based Code.

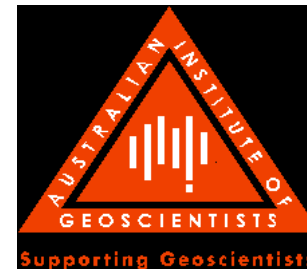
The initiatives contained in the ASX Companies Updates are based on better disclosure to ensure informed investors, they have resulted from cooperation between JORC and the ASX.

Australia is participating in attempts to globalise reporting standards and their application

The JORC Code Principles are adequate for the reporting of Uranium, what is required is for these to be applied by Competent Persons.

# Acknowledgements

To my JORC & CRIRSCO colleagues for assistance and support and the JORC parent bodies which are:



Preparing this talk and attending the workshop was supported by :



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## Example Report

# DETERMINED MINING NL ASX ANNOUNCEMENT CROWS FORREST REVISED OPERATIONAL PLANS AND RESERVES.

Determined Mining NL has completed an operational review of the Crows Forrest Gold Mine and as a result has finalised a number of changes to the operations and revised the resources and reserves statement for the mine.

A review and reinterpretation of the resource model for the Pirella Pit, combined with new economic cut-off grades based on lower operating costs has allowed a new optimised pit design to be defined. This pit is slightly smaller than that determined by the former owner of Crows Forrest.

The new pit design produces a significantly improved financial outcome from that previously defined by excluding essentially all of the high strip ratio, uneconomic ounces from the life of mine schedule. The overall stripping ratio for the ore to be mined has been reduced from around 4:1 to 1.8:1 giving rise to lower mining costs.

As a result of these changes a new reserve and resource statement for Crows Forrest has been completed and is tabulated below:

### Crows Forrest Mineral Resources and Ore Reserves as at 30 June 2004

Deposit	Reserves			Additional Resources			Total Resources		
	Tonnes (mt)	Grade (g/t)	Ounces (Oz)	Tonnes (mt)	Grade (g/t)	Ounces (Oz)	Tonnes (mt)	Grade (g/t)	Ounces (Oz)
Wrong Valley				10.5	2.9	971,969	10.5	2.9	971,969
Sydney Pit				7.4	1	245,667	7.4	1	245,667
Pirella Pit	34	0.9	1,024,931	23	1.2	906,777	57	1	1,931,708
Total	34	0.9	1,024,931	41	1.6	2,124,113	74.9	1.3	3,149,344

This statement differs from that prepared previously and released at the time of the acquisition of Crows Forrest. Total resources have increased by around 400,000 ounces. The current proven and probable reserves of 34.0 million tonnes grading 0.9 g/t for 1.024 million ounces compares to the previous stated reserves of 62.5 million tonnes grading 0.9 g/t for 1.729 million ounces.

**Proved**      **No separate categories**      **Added together!**

Infill drilling at Pirella and Sydney has recently been completed and metallurgical test work has commenced on the Wrong Valley ore with the aim of re-categorising some of the resources in these areas to reserves.

**And clearly**

Paul Tony  
Chief Executive Officer  
30 September 2004

*That's it!!*

*The information in this report as it relates to ore reserves, mineral resources or mineralisation is reported in accordance with the Aus.IMM "Australian Code for reporting of Identified Mineral Resources and Ore Reserves" and is based on information compiled by ES Lighthouse and S Grey, competent persons as defined by the Code. ES Lighthouse and S Grey have consented in writing to the inclusion in this report of the numbers based on the information in the form and context in which it appears.* **Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves**

**No Competent  
Person Statement!**

**Sorry! But lets look  
at it!**

# Why not use the guidance in Clause 8?

This report is loosely based on an actual report, in the form presented here it has several of the common deficiencies noted by ASX:

- Competent Person's statement – missing or deficient
- Failure to state resource category
- Failure to state reserve category also

# Supplementary Slides

# CRIRSCO and ICMM

- **CRIRSCO and the ICMM have reached agreement and CRIRSCO is now a taskforce of the ICMM**
- **This will allow CRIRSCO's International activities to continue as adequate funding to support the activities is assured for the next two years**

***ICMM- International Council on Mining and Metals***

# CRIRSCO and IASB

- CRIRSCO and the IASB Extractive Industries Working Group have been in close consultation for over three years seeking agreement on the definitions of Resources and Reserves the IASB may adopt in the new International Financial Reporting Standards.
- The IASB is hoping to adopt high level definitions that will encompass both Minerals and Oil and Gas, hence CRIRSCO's engagement with the SPE in mapping the CRIRSCO Template and the SPE PRMS systems' definitions.
- As a result of this engagement with IASB and SPE, it appears likely that the IASB will recommend adoption of the mapped CRIRSCO and SPE definitions and not the UNFC system.

***IASB - International Accounting Standards***

***SPE – Society of Petroleum Engineers***

***PRMS – Petroleum Reserves Management System***

***UNFC - United Nations Framework Classification***

# CRIRSCO and SPE

- CRIRSCO at the request of IASB Extractive Industries Working Group and the UN-ECE have worked jointly with the Society of Petroleum Engineers (SPE) on the possibility of convergence between resource / reserve definitions for the minerals and the petroleum industries and the development of a set of high common definitions.
- The outcome is a mapping document which maps the equivalence to the CRIRSCO Template with the SPE PRMS

***UN-ECE - United Nations Economic Commission for Europe***  
***PRMS – Petroleum Resources Management System***

# CRIRSCO & UNECE

- In 1999 CMMI/CRIRSCO reached agreement with UNECE that CMMI (CRIRSCO) definitions would be incorporated in UNFC for those categories of resources and reserves used for market-related reporting
- In 2003 an updated UNFC changed resource/reserve definitions with input from hydrocarbon industry, resulting in inconsistencies with the CRIRSCO definitions
- CRIRSCO has re-engaged with the UNECE to lead efforts to produce definitions and guidelines based on the CRIRSCO Template that are compatible with the needs of the users of the UNFC
- Few individual companies use UNFC, but it is accepted as a basis for reporting by some governments, sometimes with significant modification.

*CMMI - Council of Mining and Metallurgical Institutions – now defunct*

# National and International Reporting Standards

- JORC Code (Australasia) - 2004
- SAMREC Code (South Africa) - 2007 Updated Code issued
- The Reporting Code (UK/W Europe) - 2003, Exposure Draft revised PERC Code issued in June 2008.
- Chilean Code (Chile) - issued 2004, implemented fully 2008.
- Peruvian Code (Peru) - issued 2004
- CIM Definition Standards 2005 (with NI 43 -101 and best practices guidelines)
- Philippines PMRC - issued December 2007
- SME Guidelines (USA) - issued 2007
- CRIRSCO International Reporting Template - issued 2006
- Industry Guide 7 (USA - SEC) - completely different style
- Russia - Classification of Reserves of Mineral Deposits and Prognostic Resources of Solid Minerals - 11 Dec 2006 (in force from 1 Jan 2008), Protocol to map with CRIRSCO agreed
- China - Solid Mineral Reserve Classification 1999, being revised
- UN-ECE Framework Classification (International Governments)

# International Developments

- **USA**
  - **SME Reserves Working Group**  
*Recommendations Concerning Estimation and Reporting of Mineral Resources and Mineral Reserves*
  - **Aimed at resolving differences with SEC!!!**
  - **Issued Revised Guideline in 2007**
- **Chile & Peru**
  - **New JORC based codes**
- **Philippines**
  - **New JORC / CRIRSCO based PMRC Code has been issued and adopted by PSX.**
- **South Africa**
  - **2007 SAMREC Code released**
- **UK and Western Europe**
  - **Exposure draft of PERC Code issued in June 2008.**

# International Developments

- Mapping the **Russian** reporting classifications against the CRIRSCO Template, being undertaken by CRIRSCO and GKZ. A protocol outlining that process issued in October 2008
- New **Chinese** reporting system to be released shortly and CRIRSCO has proposed mapping these classifications against the CRIRSCO Template to be undertaken by CRIRSCO and representatives from China.

# Uranium - Data Collection

## key points from Table 1

- Data collection (QA/QC),
- Sample representivity
- Selection of measurement techniques
- Calibration of tools
- knowledge of what you are actually sampling and how this relates to the economically extractable mineral is critical,
- This is specific for the deposit and requires careful attention by the Competent Person

# Geology

## key points from Table 1

- As with all mineral deposits the geological interpretation, and the controls on the mineralisation is critical,
  - Basic structure, stratigraphy, continuity etc
- For uranium deposits mineralogy, geo-metallurgy and hydro-metallurgy are also critical,
- Where ISL is being considered the physical properties of the rock (including porosity and permeability) are also important,
- For potential ISL deposits the hydrogeological regime should be understood.

# Modifying Factors

## key points from Table 1

- Metallurgical characterisation is particularly pertinent to Uranium
  - Confirmation of the mineralogy, associations (eg acid consumers) and test the amenability to the chosen process and hence the recovery
- Mining design and recovery leading to cost/revenue assumption are equally critical
  - These will depend on the physical properties of the rock - the assumptions should be tested.

# Modifying Factors continued

- Market – including the political overlay
  - you may have a great *in situ* deposit but if the government will not let you develop it - is it a Resource?
  - The lack of Government approval would not allow demonstration “**at the time of reporting that extraction could reasonably be justified**”.

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