Workshop on Polymetallic Nodules Resource Classification
Goa India, 15 October, 2014

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UK Seabed Resources
UK Seabed Resources (UKSR)
ISA Contract Area

- 58,000 km²
- One contiguous area on eastern edge of Clarion Clipperton Zone
- 4000 metres deep

ISA Exploration contract signed 8 February 2013
• Contract Area has seabed variations of 2,000m
  – Abyssal plains and Seamounts
  – Resolution limits ability to define exploitation areas

• UKSR operated cruise in 2013 to contract area to validate data
  – 30 km x 30 km Study Area
  – Primary objective to meet contractual environmental baseline work
  – Secondary objective to test geophysical mapping techniques
UKSR 2013 Exploration Cruise

- **ABYSSLINE 01 Cruise first stage to establishing a detailed environmental baseline**
  - Structured according to ISA Contractor Guidance document
  - Performed by a world class international scientific team
  - Collected a wide variety of specimens for taxonomic and genetic testing

- **Cruise also provided opportunity to validate available nodule data**
  - Collected 12 Box Core samples
  - Samples indicate abundance of nodules consistent with existing data (the data is proprietary and not published)

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**UKSR plans further environmental baseline and nodule sampling work**
Geophysical data collected

More cruises required to further map seabed in Contract Area

Ship-based sonar data collected over 30 km x 30 km area

- 600m high mesas with >35° slopes
- Revised available bathymetry
- Important seafloor features observed
- Impact to mining concept of operations under evaluation

2013 Cruise 30 km x 30 km Map (25m resolution)
Currently, UK1 Claim Area polymetallic nodule deposits are not certified.

UKSR objective: Carry out sufficient geophysical testing and sampling of these deposits to confirm a portion of the deposits as “indicated resources.”

UKSR is retaining independent experts from the mining industry to:

- Define the procedures and objectives to be employed in this effort
- Provide the third-party evaluation necessary to attain this designation

Testing of prototype commercial recovery and metallurgical extraction systems will be required before the deposits can be declared to be “measured” and then ultimately confirmed as mineral reserves.
UKSR has adopted NI43-101

• UKSR mineral resource assessment programme modeled after Canadian law and associated practices: “NI43-101”
  – Very familiar to banking and mining companies based in United Kingdom and North America

• NI43-101 was developed in response to fraudulent and misleading assertions made to attract investment in mineral development ventures

• It is prominent among and mostly consistent with several government-sponsored programmes that require third-party evaluation, clarity and transparency in the public release of information related to mineral prospects
  – The Pan-European Standard for Reporting of Exploration Results, Mineral Resources and Reserves for the European Union (PERC)
  – The Australasian Code for Reporting of Exploration Results
  – The South African Code for Reporting of Exploration Results, Mineral Resources and Mineral Resources (SAMREC)

UKSR Mineral Resource assessment designed for credible clarity
NI43-101 Explained

- Basic elements spell out a set of guidelines to establish credibility for assertions about the extent and value of mineral resources.

- Central is the definition of a mineral resource:

  “A ‘Mineral Resource’ is a concentration or occurrence of material of economic interest in or on the Earth’s crust in such form, grade/quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.”

- Resources are classified according to:
  - Accuracy of reported Grade and Tonnage
  - Extraction methods defined and demonstrated

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<td>Deposit Data</td>
<td>Interpolated</td>
<td>Indisputable</td>
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<td>Commercial Extraction</td>
<td>Reasonable, Conceptual</td>
<td>Well-tested Method Demonstrated</td>
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