UK Seabed Resources

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 km^2
- One contiguous area on eastern edge of Clarion Clipperton Zone
- 4000 metres deep

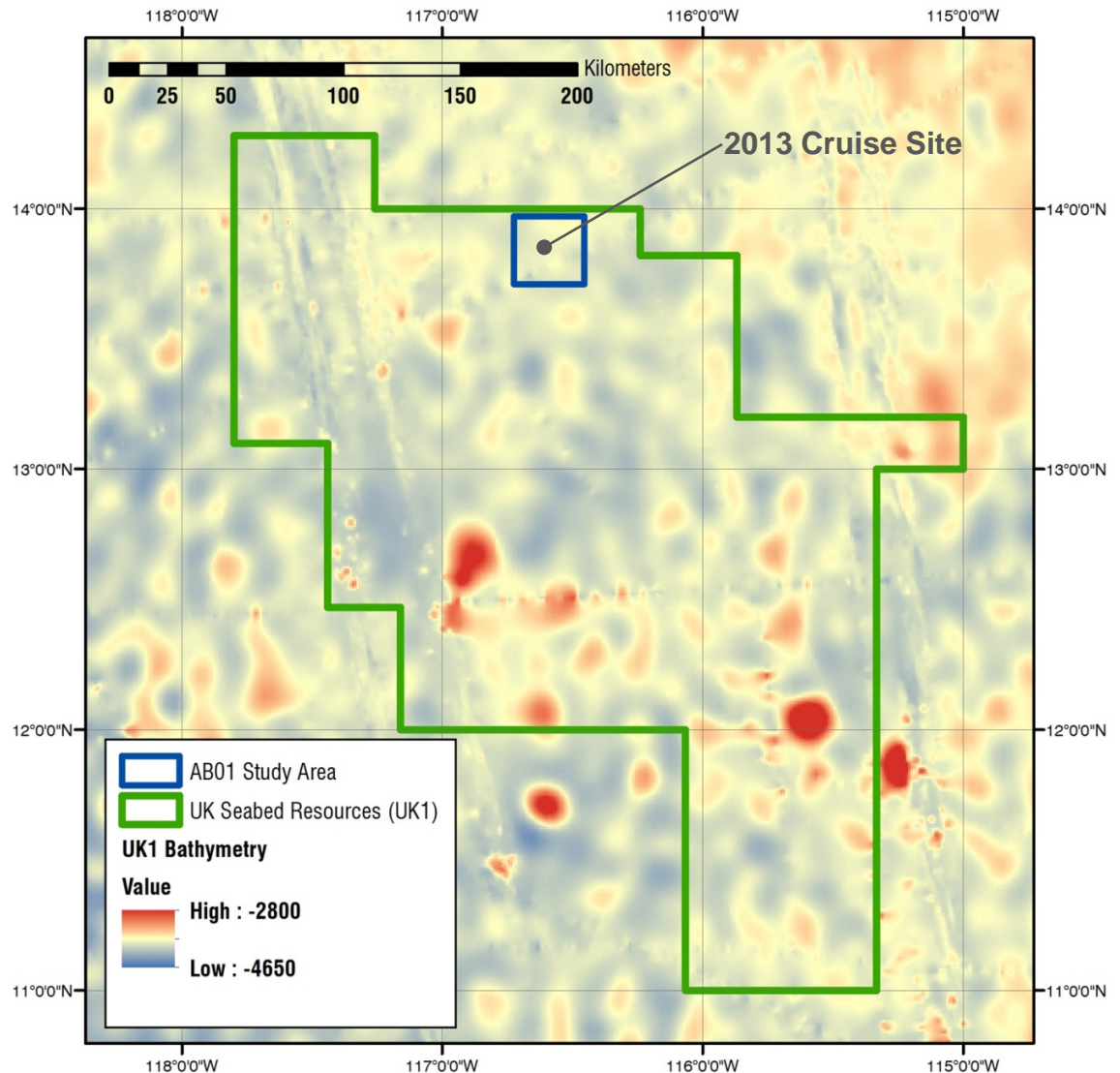**ISA Exploration contract signed 8 February 2013**

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Best Currently Available Bathymetry Data

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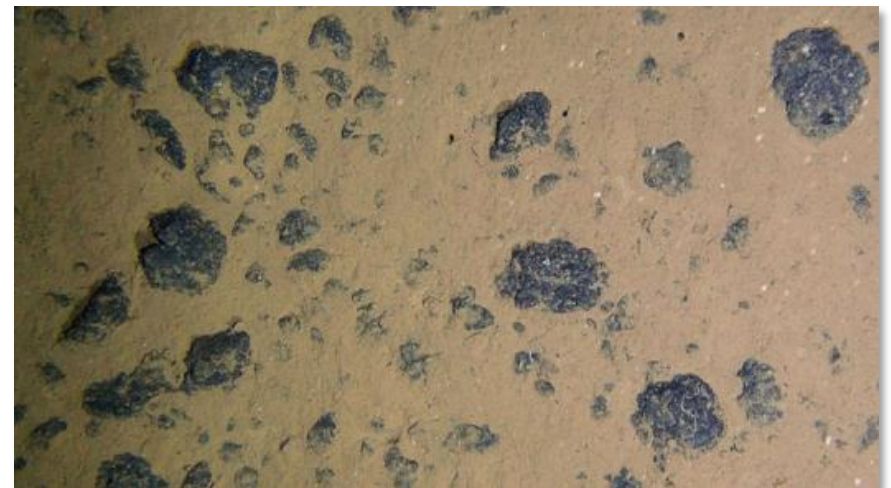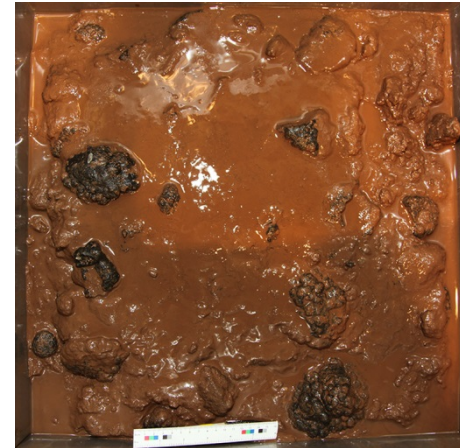- **Contract Area has seabed variations of 2,000m**

  - 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

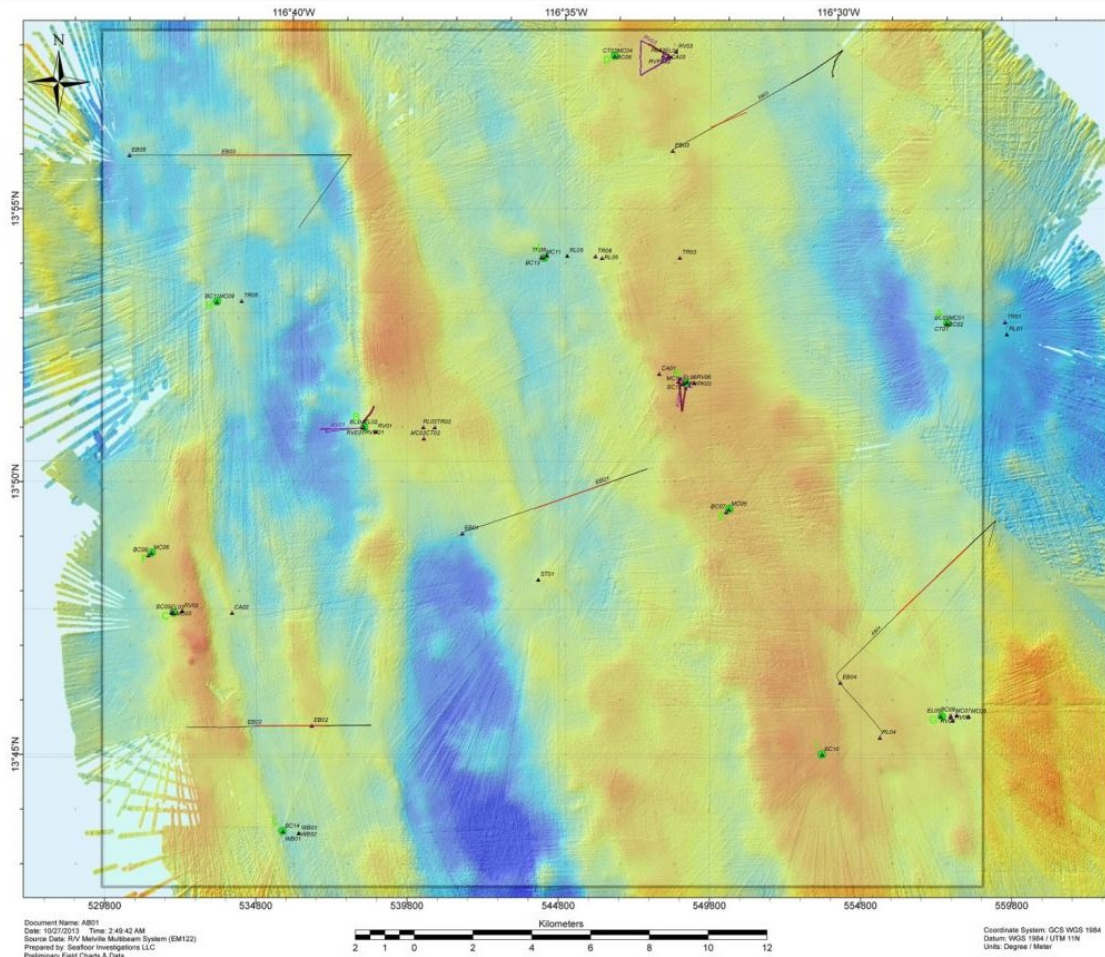 - Secondary objective to test geophysical mapping techniques

2013 Cruise Site

Legend:
- AB01 Study Area
- UK Seabed Resources (UK1)

UK1 Bathymetry
Value
- High : -2800
- Low : -4650

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)
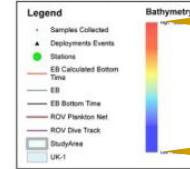
UKSR plans further environmental baseline and nodule sampling work

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Geophysical data collected

2013 Cruise 30 km x 30 km Map (25m resolution)
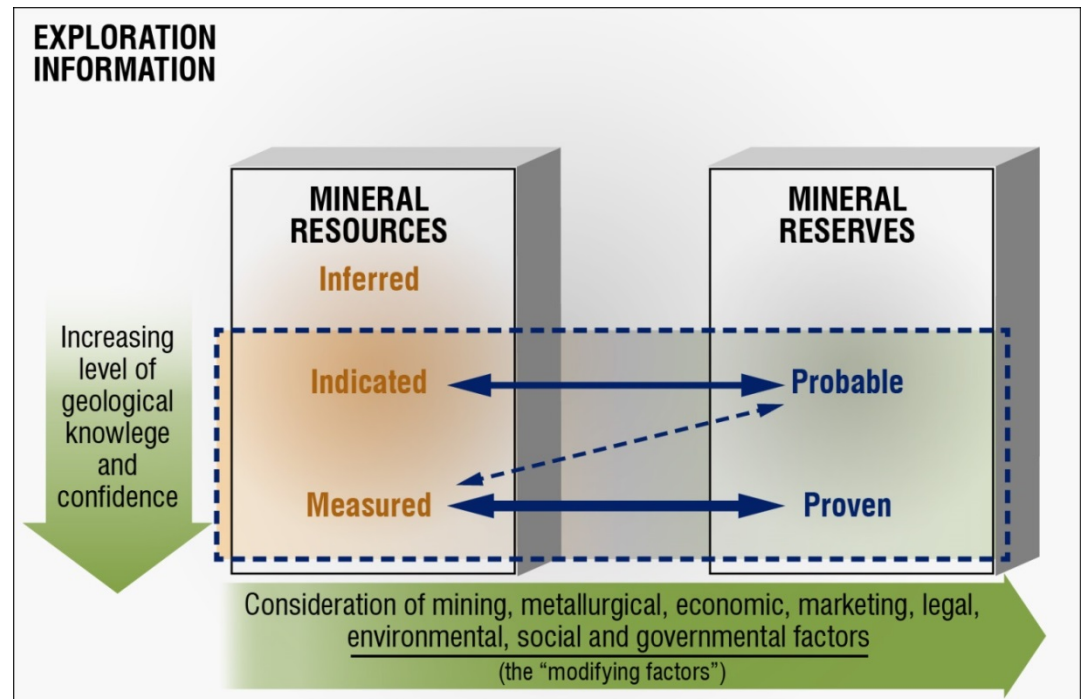
Ship-based sonar data collected over 30 km x 30 km area

– 600m high mesas with >35° slopes

– Revised available bathymetry

– Important seabed features observed

– Impact to mining concept of operations under evaluation

More cruises required to further map seabed in Contract Area

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UKSR Resource Assessment Plan

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- **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.**

EXPLORATION INFORMATION

Increasing level of geological knowlege and confidence

MINERAL RESOURCES
- Inferred
- Indicated
- Measured

MINERAL RESERVES
- Probable
- Proven

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the "modifying factors")

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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

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- **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 <u>known, estimated or interpreted from specific geological evidence and knowledge, including sampling</u>."

- **Resources are classified according to:**

  – Accuracy of reported Grade and Tonnage

  – Extraction methods defined and demonstrated

	Inferred	Measured
Deposit Data	Interpolated	Indisputable
Commercial Extraction	Reasonable, Conceptual	Well-tested Method Demonstrated

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