

Keynote speech: CIL-ISA Workshop on mineral exploitation in the Area. 16 &17 June 2015

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His Excellency Mr K Shanmugam, Minister of Foreign Affairs of Singapore, members of the senior management of Keppel, Ambassador Tommy Koh, Chairman of the Governing Board of the Centre for International Law, National University of Singapore, representatives of the Centre, distinguished guests, ladies and gentlemen,

It is an honour for me to be here today and to provide the keynote address at this event. Please allow me to take this opportunity to congratulate Ocean Minerals Singapore for the gargantuan step that it has taken to be part of this exciting adventure to make the common heritage of mankind a reality for generations to come. Our workshop is on the development of a regulatory framework for the exploitation of polymetallic nodules in the Area with the objective of providing a constructive discussion platform on the draft framework for the regulation of exploitation activities by the Legal and Technical Commission of the Authority and the discussion paper on the financial and payment terms mechanism.

The draft framework for the regulation of exploitation activities presently comprises 10 parts and two annexes that deal with a suggested structure for the Exploitation Regulations. These are as follows: **Preamble** (Objectives & overarching principles / purpose), **Part I** – Introduction(Use of terms and scope); **Part II** – Applications for approval of plans of work for exploitation in the form of contracts (General provisions, Content of applications, Form of applications, Certificate of sponsorship, Financial & technical capabilities, Previous

contracts with the Authority, Undertakings, Applications for approval of plans of work with respect to a reserved area, Equity interest in a joint venture arrangement, Data and information to be submitted for approval of the plan of work for exploitation, Feasibility study, Environmental impact statement, Environmental management plan, Social impact assessment and action plan, Financing plan, Closure plan, Size and location of exploitation area covered by the plan of work, Fees (fee for applications), Processing of applications (Receipt, acknowledgement and safe custody of applications, Public review of the Environmental impact statement, Environmental management plan, Social impact assessment and Closure plan), Consideration by the Legal and Technical Commission, Consideration and approval of plans of work for exploitation by the Council, and Independent technical expert working group(s) / sub-committees). **Part III – Contracts for exploitation** (The contract, Rights of the contractor, Obligations of the Authority, Legal title to minerals, Duration of contracts / renewal, Performance requirements, Conservation of the natural resources of the Area, Use of sub-contractors, Vessels operating in the Area, Protection of submarine cables and pipelines, Health and safety, Training, Periodic review of the implementation of the plan of work for exploitation, Termination of sponsorship and Responsibility and liability. **Part IV – Protection and preservation of the marine environment** (Protection and preservation of the marine environment, Environmental management, Emergency orders, Strategic environmental management plan, Rights of coastal States, Environmental bonds and performance guarantees, Restoration and rehabilitation of the marine environment, Adaptive management approach, Seabed sustainability fund, Environmental liability trust fund, Human remains and objects, and sites of an archaeological or historical nature. **Part V – Confidentiality** (confidentiality of data and information and Procedures to ensure confidentiality) **Part VI –**

General Procedures (Notice and general procedures, Recommendations for the guidance of contractors and Duty to cooperate). **Part VII – Enforcement, offences and penalties** (Inspection, Offences and penalties) **Part VIII – Settlement of disputes** (Disputes) **Part IX – Other mineral resource categories and Part X – Review.**

The two Annexes to the exploitation regulations are Annex I – Application for approval of a plan of work for exploitation to obtain a contract and Annex II – Standard clauses for exploitation contract plus schedules.

There are four areas of the regulatory framework that are not addressed in the draft exploitation regulations:

1. The payment mechanism which is under separate discussion and, a separate discussion paper on the development of a payment mechanism which has been issued by the Secretariat.
2. The development and resourcing of a mining inspectorate within the Secretariat functions. It is recommended that the administrative and enforcement functions of a “typical” mining regulator, environmental management agency and perhaps maritime security regime are benchmarked in due course;
3. Revenue management by the Authority, that is the allocation of monies received by the Authority from production proceeds; and
4. The operation and effective participation of the Enterprise.

It is not the intention of the Commission to undertake further work in respect of 2, 3 and 4 above at this time.

The discussion paper on the development of a payment mechanism, suggests that “In order to develop a more substantive and fruitful

discussion, the Authority needs financial projections and economic assumptions to model various economic and financial scenarios, using discounted cash flow techniques, to forecast cash flows to a “typical” contractor and royalty / profit share to the CHM”¹. This effort will introduce significant challenges since there have neither been collector tests at depth nor pilot mining studies. Many representatives of contractors have indicated that the annual outputs of their polymetallic nodule mining operations will be on the order of 1.0 to 3.0 million metric tons. Many contractors have also conducted collector tests in ponds up to a depth of 300 meters, a far cry from the 4,000 to 6,000 meters where their polymetallic nodule deposits are to be found. At the annual production rates being proposed, and assuming that mining will occur for 300 days a year, daily production of polymetallic nodules will be between approximately 3,333 and 10,000 tons per day. In the absence of any pilot mining tests there will be no precedent that can be used for the financial projections of polymetallic nodule mining in the Area.

As you are all well aware, the subject of the exploitation of marine mineral resources in the Area started during the Third United Nations Conference on the Law of the Sea. It was principally for polymetallic nodules which were the only marine minerals of the Area known at that time. Since that time two significant events related to technology for mining have occurred. The first was in 1974, when under a “cover story” that the Glomar Explorer, a 63,000 ton salvage vessel was a deep-sea mining ship to recover polymetallic nodules in 17,000 feet (approximately 5,200 meters) of water about 750 miles northwest of Hawaii in the Pacific Ocean was circulated. Although polymetallic nodules are real, the mining venture was actually an elaborate hoax since its true purpose was to recover a

¹ A discussion paper on the development and implementation of a payment mechanism in the Area for consideration by members of the Authority and all stakeholders – March 2015

sunken 2,000 ton Russian submarine. The engineering feat accomplished by this effort however was recognized and it spurred other companies on to begin to work on technology to recover polymetallic nodules from the deep ocean floor. In 2006, the prestigious **American Society of Mechanical Engineers (ASME)** designated the ship as a historical mechanical engineering landmark.² The second event was the pilot mining tests of the Ocean Management Incorporated (OMI) consortium. Ocean Management Incorporated comprised the International Nickel Company of Canada (INCO), SEDCO Incorporated of the USA, the AMR Group of the Federal Republic of Germany and the Deep Ocean Mining Company of Japan (DOMCO Ltd).

Early in 1978, OMI conducted a pilot mining test programme in the Eastern Equatorial Pacific Ocean and became the first in the world to mine nodules in the deep Pacific Ocean. Eight collector devices were tested each designed by the four different companies. Benthic impact experiments were also conducted. They were all tested on one vessel, the SEDCO 445. As a result of the tests, it was determined that hydraulic collectors were the most reliable and the technical feasibility of polymetallic nodule mining was proven (over 600 tons of nodules were delivered to the ship). Adverse metal market conditions ultimately resulted in the consortium not carrying on with its development programme.

Since this test, no other consortia/pioneer investors or contractors with the Authority have undertaken such a test. Although since that time there have been there have been significant electronic advances such as instrumentation, monitoring, data transfer, control capabilities and positioning systems that would result in reduced

costs of mining, no *in situ* pilot mining tests have been conducted by any of the Authority's contractors.

Two major design problems that were not resolved during the tests were the collector and the submersible pumps. The remoteness of the collector required that it be reliable in the long term and therefore as simple as possible. Redundancy of subsystems was also important so that a component failure did not necessarily affect the total system.

Tests of collector systems will also enable contractors to move the polymetallic nodule resources in their exploration areas from inferred/measured resources to reserves of the metals contained in polymetallic nodules.

It is proposed that during the period of extension of exploration contracts, a collaborative project among contractors should be conducted to enable a determination of whether or not a part of the common heritage of mankind is in a position to be mined at a profit. Simultaneously, this test would also shed some light on the environmental impact of polymetallic nodule mining and help to facilitate the formulation of regulations regarding environmental impact assessments.

His Excellency Mr K Shanmugam, distinguished guests, ladies and gentlemen, another consideration that I would like to introduce concerns the biodiversity associated with each of the mineral resources, especially polymetallic nodules. A little over two years ago, I had the opportunity to meet with representatives of contractors for polymetallic nodule exploration about the fauna that they had sampled and the taxonomy being used to name them. The contractors were kind enough to bring more samples and images of the fauna found in their exploration areas. Also present were expert

deep sea taxonomists from, inter alia, the U.K. Natural History Museum, IFREMER and Senckenberg Natural History Museum of Germany. After examining the samples and images and the taxonomy being used by the contractors, I was requested by the contractors to standardize the taxonomy being used for megafauna, macrofauna and meiofauna. The Authority has since started this work, and I am pleased to announce that the exercise has been completed for megafauna and macrofauna. At the workshop on macrofauna six of the fauna were determined to be new to science. The Authority will complete the third workshop on meiofauna at the end of the year in Belgium. Work has started on utilizing the standardized taxonomy for the megafauna and macrofauna that have been collected by contractors. After completion of the workshop on meiofauna, the standardized taxonomy as well as the procedures for collecting samples and analysing them will be submitted to the Legal and Technical Commission for it to make its recommendation to the Council. These recommendations will be made available to prospectors, contractors and marine researching organizations on the Authority's website to enable the Authority to set up a rigorous database for use by the Legal and Technical Commission to make decisions on areas suitable for mining. Indeed, this work will also enable the Authority to have standardized data and information for use in the environmental Management plan for the CCZ in the Pacific Ocean. Many of the contractors undertook peospecting in the areas designated as part of the Environmental Management Plan. Without standardization of the taxonomy of the fauna to be found there, it will be impossible to compare and determine what is to be found in these areas. With the dearth of taxonomists globally, the contractor representatives as well as the expert taxonomists have made a number of recommendations as to how the taxonomic work can be accomplished. These recommendations will also be made available

to the Legal and Technical Commission to enable it to make its own recommendation to Council.

The Secretariat has started work on producing a geographical atlas on the first two groups of fauna and will continue to expand these atlases as more information is made available to the Authority. Again, it would be useful to have this work completed before licenses are issued for polymetallic nodule mining.

His Excellency, distinguished guests, ladies and gentlemen, similar work will have to be undertaken for polymetallic sulphides and cobalt-rich ferromanganese crusts. Since these are relatively new minerals to mankind, the earlier this work can be accomplished for them, the more prepared the Authority will be in the protection and preservation of the marine environment for activities in the Area.

I look forward to the results of this workshop in particular to its assistance in facilitating a constructive discussion platform on the draft framework for the regulation of exploitation activities as crafted by the Legal and Technical Commission of the Authority and the discussion paper on the financial and payment terms mechanism.

Thank you very much.