



## Council

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### **Report and recommendations of the Legal and Technical Commission to the Council of the International Seabed Authority relating to an application for the approval of a plan of work for exploration for polymetallic nodules by G-TEC Sea Mineral Resources NV**

#### **I. Introduction**

1. On 31 May 2012, the Secretary-General of the International Seabed Authority received an application for the approval of a plan of work for exploration for polymetallic nodules in the Area. The application was submitted pursuant to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (ISBA/6/A/18, annex) by G-TEC Sea Mineral Resources NV. The application covers a total surface area of 148,665 km<sup>2</sup> and is located in the eastern-central part of the Clarion-Clipperton Fracture Zone in the Pacific Ocean.

2. In accordance with regulation 20, paragraph 1 (c) of the Regulations, by a note verbale dated 4 June 2012, the Secretary-General notified the members of the Authority of the receipt of the application and circulated information of a general nature concerning the application. The Secretary-General also placed consideration of the application as an item on the agenda of the Legal and Technical Commission at its meeting held from 9 to 19 July 2012.

#### **II. Methodology for consideration of the application by the Legal and Technical Commission**

##### **A. General methodology applied by the Commission in consideration of the application**

3. In its consideration of the application, the Commission noted that, in keeping with the scheme established in article 6 of annex III to the United Nations Convention on the Law of the Sea, it was first required to make an objective determination as to whether the applicant had fulfilled the requirements contained in



the Regulations, particularly with respect to the form of applications; whether the applicant had provided the necessary undertakings and assurances specified in regulation 14; and whether it had the necessary financial and technical capability to carry out the proposed plan of work for exploration. The Commission is then required to determine, in accordance with regulation 21, paragraph 4, and its procedures, whether the proposed plan of work will provide for effective protection of human health and safety, effective protection and preservation of the marine environment and will ensure that installations are not established where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity. Regulation 21, paragraph 5, provides that:

If the Commission makes the determinations specified in paragraph 3 and determines that the proposed plan of work for exploration meets the requirements of paragraph 4, the Commission shall recommend approval of the plan of work for exploration to the Council.

4. In considering the proposed plan of work for exploration for polymetallic nodules, the Commission took into account the principles, policies and objectives relating to activities in the Area as provided for in part XI and annex III of the Convention and in the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea.

## **B. Consideration of the application**

5. The Commission considered the application in closed meetings on 9, 10, 13, 16, 18 and 19 July 2012.

6. Prior to commencing a detailed examination of the application, the Commission invited the applicant's designated representative, the Managing Director of G-TEC Sea Mineral Resources NV, Jacques Paynjon, accompanied by an environmental consultant, Daniel Leggett; a senior adviser, Michel Hoffert; and the Founder and Director of G-TEC Sea Mineral Resources NV, Lucien Halleux, to make a presentation of the application. Members of the Commission then asked questions to clarify certain aspects of the application before convening in closed session to examine the application in detail. Following its initial consideration, the Commission also decided to request the Chair of the Commission to transmit a list of questions to the applicant in writing through the Secretary-General. The written responses provided by the applicant were taken into account by the Commission in its subsequent consideration of the application.

## **III. Summary of basic information regarding the application**

### **A. Identification of the applicant**

7. The name and address of the applicant are as follows:

- (a) Name: G-TEC Sea Mineral Resources NV (GSR);
- (b) Street address: Slijkensesteenweg 2, B-8400 Ostend, Belgium;
- (c) Postal address: as above;

- (d) Telephone number: +32 (0)3 666 26 60;
  - (e) Facsimile number: +32 (0)476 39 05 31;
  - (f) E-mail address: Paynjon.jacques@milan-int.be.
8. The applicant's designated representative is:
- (a) Name: Jacques Paynjon;
  - (b) Street address: Max Temmermanlaan 42, B-2920 Kalmthout, Belgium;
  - (c) Telephone number: as above;
  - (d) Facsimile number: as above;
  - (e) E-mail address: as above;
  - (f) Place of registration: Slijkensesteenweg 2, B-8400 Ostend, Belgium; place of business/domicile: Max Temmermanlaan 42, B-2920 Kalmthout, Belgium.
9. The applicant is a legal entity incorporated as of 23 April 2012 under Belgian law. A copy of the certificate of incorporation has been submitted. In the certificate of sponsorship, the sponsoring State declares that the applicant being a company incorporated under Belgian law is subject to Belgian law and is under the effective control of Belgian nationals.

## **B. Sponsorship**

10. The sponsoring State is Belgium.
11. The date of deposit of the instrument of ratification of the United Nations Convention on the Law of the Sea and date of the consent to be bound by the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea is 13 November 1998.
12. The first certificate of sponsorship is dated 8 May 2012, issued by the Deputy-Prime Minister and Minister for the Economy, Consumer Affairs and the North Sea, Johan Vande Lanotte. The second certificate of sponsorship is dated 21 June 2012 and is signed by the Deputy Prime Minister and Minister for Foreign Affairs, Didier Reynders and by the Deputy-Prime Minister and Minister for the Economy, Consumer Affairs and the North Sea, Johan Vande Lanotte.
13. The certificates of sponsorship state that Belgium assumes responsibilities for the activities of the applicant in accordance with article 139, article 153, paragraph 4, and annex III, article 4, paragraph 4, of the Convention, and fully supports the application. The sponsoring State declares that it is in the process of preparing legislation to assume its responsibility as sponsoring State. Belgium acknowledges the importance of the contract for exploration. It states that it has a vested historical interest and link to the Clarion-Clipperton Fracture Zone through the work of Professor Alphonse François Renard (1842-1903) and past exploration efforts by the Belgian corporation, Union Minière de Belgique. The sponsoring State declares that the contract for exploration would allow Belgian academics and industrials jointly to revisit the area and build on past exploration efforts.

**C. Area of application**

14. The area under application covers 148,665 km<sup>2</sup>. It is divided into parts, labelled part A and part B. The two parts are non-contiguous. They are numbered 1 to 6, the odd figures corresponding to subparts of part A, the even numbers corresponding to subparts of part B. The area under application is based on a part of the seabed where a licence was formerly granted by the United States of America to Ocean Mining Associates (OMA) in 1974 and was referred to as USA-3. OMA was composed of Tenneco (USA), US Steel (USA), Japan Mining Co. and Union Minière de Belgique (now Umicore).

**D. Other information**

15. The date of receipt of the application is 31 May 2012.
16. The applicant has not been previously awarded any contract with the Authority.
17. The application includes a written undertaking signed by the applicant's designated representative declaring that the applicant will comply with regulation 14 of the Regulations.
18. The applicant has paid a fee of \$250,000 in accordance with regulation 19.

**IV. Examination of information and technical data submitted by the applicant**

19. The following technical documents were provided:
- (a) Information relating to the area under application:
    - (i) Boundaries of the area under application, by attaching a list of geographic coordinates in accordance with the World Geodetic System 1984;
    - (ii) Chart and list of the coordinates dividing the area into two parts of equal estimated commercial value;
    - (iii) Information to enable the Council to designate a reserved area based on the estimated commercial value of the two parts of the area under application, including data available to the applicant, including:
      - a. Data on the location, survey and evaluation of the polymetallic nodules in the area under application;
      - b. A description of the technology related to the recovery and processing of polymetallic nodules;
      - c. A map of the physical and geological characteristics, such as seabed topography, bathymetry and bottom currents and information on the reliability of such data;
      - d. Data on the average density (abundance of polymetallic nodules with abundance map showing the location of sampling sites);

- e. Data on the average elemental content of metals of economic interest (grade) based on chemical assays in (dry) weight per cent and associated grade maps;
  - f. Combined maps of abundance and grade of polymetallic nodules;
  - g. A calculation based on the estimated commercial value of the division of the application area into two parts;
  - h. A description of the techniques used by the applicant;
- (b) Information on wind speed and direction, wave height, period and direction, current speed and direction, water salinity, temperature and biological communities;
- (c) Certificates of sponsorship issued by the sponsoring State;
- (d) Information to enable the Council to determine whether the applicant is financially capable of carrying out the proposed plan of work for exploration;
- (e) Information to enable the Council to determine whether the applicant is technically capable of carrying out the proposed plan of work for exploration;
- (f) Plan of work for exploration;
- (g) Training programmes.

## **V. Consideration of financial and technical qualifications of the applicant**

### **A. Financial capacity**

20. In evaluating the financial capacity of the applicant, the Commission was provided with a certified pro forma balance sheet in accordance with regulation 12, paragraph 5 (a) of the Regulations, given that the applicant is a newly formed entity. The applicant also submitted the audited consolidated group financial statements of G-TEC, the applicant's parent company, in accordance with regulation 12, paragraph 5 (b). The applicant submitted a declaration by Deloitte confirming that the application by G-TEC Sea Mineral Resources NV was part of an exclusive agreement with a Belgian industrial partner, which was not Umicore, whereby all costs incurred by the applicant for fulfilling its obligations under a contract for exploration with the Authority would be entirely borne by its Belgian industrial partner.

### **B. Technical capacity**

21. In evaluating the technical capacity of the applicant, the Commission noted that the applicant had stated that it had become an important player in leading companies towards mining authorization and had the support of many experts in the field of deep-sea exploration and polymetallic nodules. The applicant had also stated that its partners had significant technical, operational and financial resources and capabilities.

22. The applicant provided information related to the prevention, reduction and control of hazards to and possible impact on the marine environment. This included the description of a plan for a programme for oceanographic and environmental baseline studies to ensure that the exploration activities cause minimal impact on the marine environment. The applicant listed the main equipment that would be used for the proposed activities.

## **VI. Consideration of data and information submitted for the designation of a reserved area and determination of equal estimated commercial value**

23. The Commission noted that the applicant stated that the proposed division in two parts was based upon legacy and publically available data.

### **A. Methodology used by the applicant in calculation of the estimated commercial value**

24. The applicant stated it had had access to historical data from Umicore. The explanation of the area abundance and grade is based on published sources, including International Seabed Authority Technical Study No. 6, *A Geological Model of Polymetallic Nodule Deposits in the Clarion-Clipperton Fracture Zone* (2010), on a 2000 study by Charles Morgan and on data relating to the DOMES Site C, which falls within the application area. Abundance and grade have been presented in regional and local scales. On the basis of such data, the applicant created maps of abundance and grade to estimate the commercial value expressed as recoverable metals in mineable areas using the following procedure. The globally averaged nodule abundance shown on the maps is regridded using standard kriging in a geographical (latitude/longitude) coordinate system. The grid size is 0.1° longitude x 0.07° latitude. The nodule abundance on mineable fields is computed assuming the following hypotheses: the mineable areas represent 60 per cent of the total surface and the average nodule abundance of the non-mineable areas is estimated at 5 kg/m<sup>2</sup>. All the abundances, elemental content and values shown on the maps are expressed “per square km of mineable fields”, in other words, 60 per cent of the total surface only. The recoverable metals used for computation are nickel (Ni), cobalt (Co) and copper (Cu). Manganese (Mn) is not used for computation of the commercial value. Should manganese be recovered in the future, it is assumed that the corresponding commercial value will add equally to all parts of the area under application, and thus have no influence on the proposed division into two parts of equal estimated commercial value. The elemental content maps are regridded using the above-mentioned technique for nodule abundance. It is assumed that there is no significant difference between the elemental contents in mineable or non-mineable fields. Such differences would produce lower order variations only. The average nodule abundance on the mineable fields is multiplied by the elemental content in order to produce grids and maps of recoverable metal (Mn, Ni, Cu and Co) per m<sup>2</sup>. The metal content is expressed in g/m<sup>2</sup> or metric tons/km<sup>2</sup>, which is equivalent.

## **B. Evaluation**

25. The Commission noted that the data available for the determination of the estimated commercial value are from two sources:

- (a) Raw data from individual samples made available from the database of Ocean Mining Associates;
- (b) Digitized values based on various distribution maps from historic academic work.

The data were made available in digital format, the raw data were presented in Excel tables and the digitized historic data were provided in Surfer files. The latter may only be read by using Surfer software and is not fit for statistical analyses. Therefore, the Commission concentrated its statistical analyses of metal contents and abundances on the raw data from Ocean Mining Associates. In addition, the Commission had at its disposal the Shuttle Radar Topography Mission (SRTM) 30 minutes satellite bathymetric grid of Smith and Sandwell, for the purpose of making a general assessment of the gradient variability of the seafloor topography.

26. The raw data in parts A and B were analysed and the following observations were made with regard to nodule abundance, metal content and seafloor morphology:

- (a) The available bathymetric data indicate that the topography of the seafloor is less rough in part A than in part B; especially the easternmost sub-area of part B (B6) has a significantly rougher topography than the other sub-areas;
- (b) Part A has a total of 193 sampling stations while part B has 116 stations, all of which are concentrated in restricted areas extending across the northern parts of sub-areas A3, B4 and A5. Although the number of samples was restricted to only a minor part of the total area, the samples formed the basis for differentiating the potential of parts A and B;
- (c) The frequency diagrams with regard to nickel content show that part A has a higher frequency of nickel concentration above 1.5 wt% than part B.

## **C. Summary and conclusions relating to the determination of equal estimated commercial value**

27. On the basis of the data and analyses available, the Commission was of the view that both parts of the area under application offer similar potential in terms of finding competitive mine sites. However, based on the above considerations as to bathymetry, nodule abundance and nickel content, the Commission decided to recommend to the Council to designate part A as the area reserved for the Authority. The Commission expressed concern that the review of the application took longer than anticipated because of ambiguity in the information provided by the applicant, general misunderstanding and the applicant not providing clear answers to the Commission's questions in regard to making available data for the determination of parts A and B of the area under application.

## **VII. Consideration of data and information submitted for approval of the plan of work for exploration**

28. In accordance with regulation 18 of the Regulations, the application provided the following information for approval of the plan of work for exploration:

(a) A general description and a schedule of the proposed exploration programme, including the programme for the first five-year period;

(b) A description of the programme for oceanographic and environmental baseline studies in accordance with the Regulations and any environmental rules, regulations and procedures established by the Authority that would enable an assessment of the potential environmental impact of the proposed exploration activities, taking into account any recommendations issued by the Legal and Technical Commission;

(c) A preliminary assessment of the possible impact of the proposed exploration activities on the marine environment;

(d) A description of proposed measures for the prevention, reduction and control of pollution and other hazards, as well as any possible impact, to the marine environment;

(e) Data necessary for the Council to make the determination it is required to make in accordance with regulation 12, paragraph 1, of the Regulations;

(f) A schedule of anticipated yearly expenditures in respect of the programme of activities for the first five-year period.

## **VIII. Training programme**

29. The Commission noted that the applicant had stated that, in accordance with regulation 27 and section 8 of annex 4 to the Regulations, the contractor would draw up a training programme in cooperation with the Authority, which would become part of the contract.

## **IX. Conclusion and recommendations**

30. Having examined the particulars submitted by the applicant, which are summarized in parts III to VIII above, the Commission is satisfied that the application has been duly submitted in accordance with the Regulations and that the applicant:

(a) Has complied with the provisions of the Regulations;

(b) Has given the undertakings and assurances specified in regulation 14;

(c) Possesses the financial and technical capability to carry out the proposed plan of work for exploration.

31. The Commission states that none of the conditions in regulation 21, paragraph 6, of the Regulations apply.



32. With respect to the proposed plan of work for exploration, the Commission is satisfied that the proposed plan of work for exploration will:

- (a) Provide for effective protection of human health and safety;
- (b) Provide for effective protection and preservation of the marine environment;
- (c) Ensure that installations are not established where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity.

33. Accordingly, pursuant to regulation 21, paragraph 5, of the Regulations, the Commission recommends to the Council approval of the plan of work for exploration submitted by G-TEC Sea Mineral Resources NV. The Commission also recommends to the Council to designate part A within the application for approval of the plan of work for exploration as the area reserved for the Authority and to allocate part B to the applicant as its exploration area.

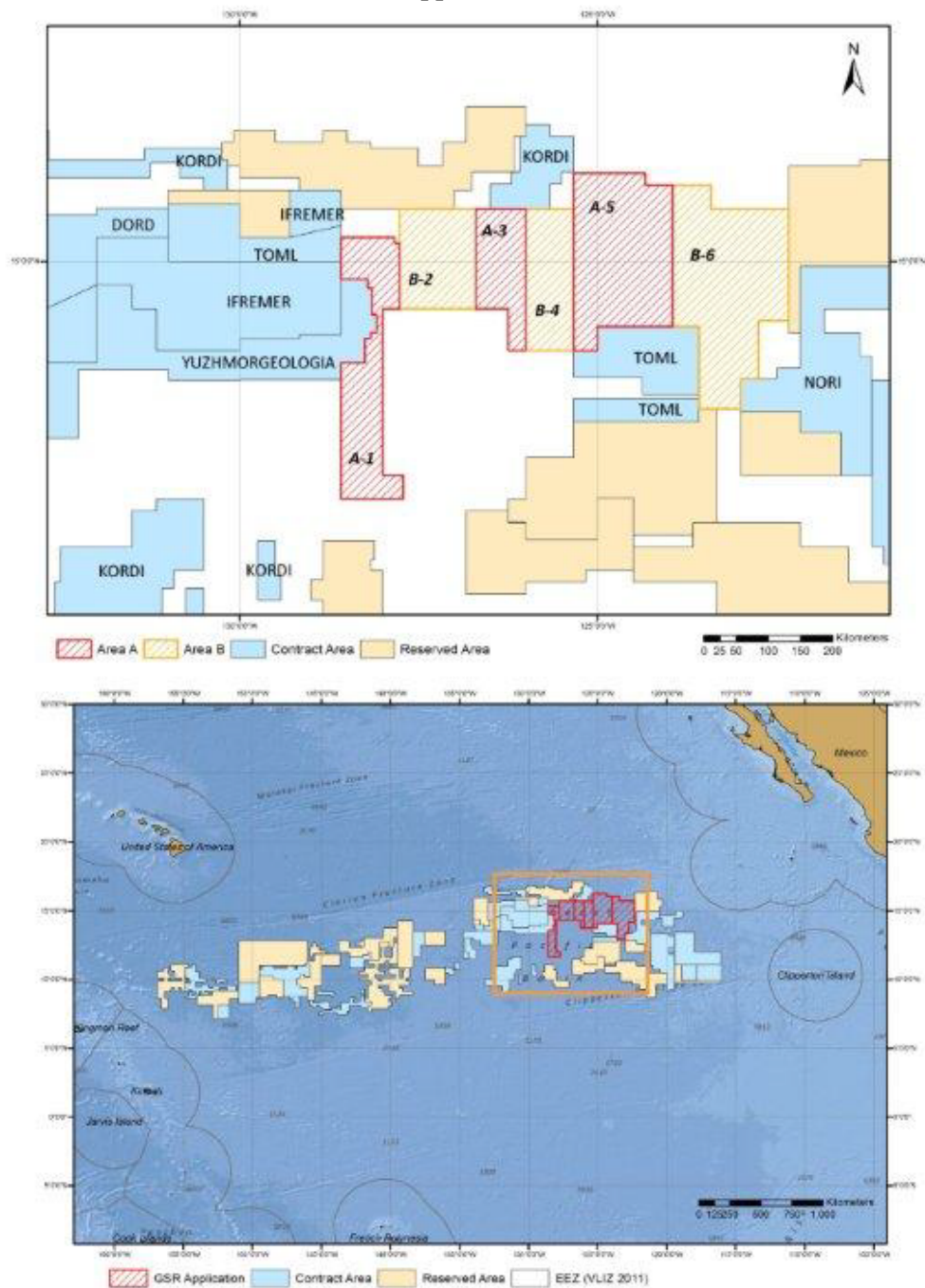
## Annex

**Coordinates and map of general location of proposed reserved area (part A) and exploration area (part B)**

<i>Turning point</i>	<i>Longitude West</i>	<i>Latitude North</i>
<b>Part A</b>		
<i>Sub-part A1</i>		
1	-128.58333	15.33333
2	-127.83333	15.33333
3	-127.83333	15.25000
4	-127.76667	15.25000
5	-127.76667	14.33333
6	-128.00000	14.33333
7	-128.00000	12.00000
8	-127.71667	12.00000
9	-127.71667	11.66667
10	-128.58333	11.66667
11	-128.58330	13.57600
12	-128.25000	13.57600
13	-128.25000	13.91670
14	-128.16670	13.91670
15	-128.16670	14.00000
16	-128.08330	14.00000
17	-128.08330	14.25000
18	-128.15220	14.25000
19	-128.15220	14.62500
20	-128.20830	14.62500
21	-128.20830	14.75000
22	-128.58330	14.75000
<i>Sub-part A3</i>		
1	-126.7000	15.7333
2	-126.0000	15.7333
3	-126.0000	13.7500
4	-126.2500	13.7500
5	-126.2500	14.3333
6	-126.7000	14.3333

<i>Turning point</i>	<i>Longitude West</i>	<i>Latitude North</i>
<i>Sub-part A5</i>		
1	-125.3333	16.2333
2	-124.3333	16.2333
3	-124.3333	16.0667
4	-123.9520	16.0667
5	-123.9520	14.0833
6	-125.0000	14.0833
7	-125.0000	13.7500
8	-125.3333	13.7500
<b>Part B</b>		
<i>Sub-part B2</i>		
1	-127.7667	15.2500
2	-127.7667	15.7333
3	-126.7000	15.7333
4	-126.7000	14.3333
5	-127.7667	14.3333
<i>Sub-part B4</i>		
1	-126.0000	15.7333
2	-125.3333	15.7333
3	-125.3333	13.7500
4	-126.0000	13.7500
<i>Sub-part B6</i>		
1	-123.9520	16.0667
2	-123.4167	16.0667
3	-123.4167	15.7333
4	-122.3333	15.7333
5	-122.3333	14.1667
6	-122.7500	14.1667
7	-122.7500	13.3500
8	-123.0000	13.3500
9	-123.0000	12.9333
10	-123.5833	12.9333
11	-123.5833	14.0833
12	-123.9520	14.0833

### G-TEC Sea Mineral Resources Application Areas



*Abbreviations:* DORD, Deep Ocean Resources Development Ltd.; EEZ, Exclusive Economic Zone; GSR, G-TEC Sea Mineral Resources NV; IFREMER, French Research Institute for Exploration of the Sea; KORDI, Korea Ocean Research & Development Institute; NORI, Nauru Ocean Resources, Inc.; TOML, Tonga Offshore Mining Limited; VLIZ, Flanders Marine Institute; YUZHMOREGEOLOGIA, Yuzhmorgeologiya.