



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 UK Seabed Resources Ltd.

I. Introduction

1. On 23 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 UK Seabed Resources Ltd. The application covers a total surface area of approximately 116,000 km² located in the eastern part of the Clarion-Clipperton Zone in the Pacific Ocean.

2. In accordance with regulation 20, paragraph 1 (c) of the Regulations, by a note verbale dated 28 May 2012, the Secretary-General notified the members of the International Seabed 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 and 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 and 17 July 2012.

6. Prior to commencing a detailed examination of the application, the Commission invited the applicant's designated representative, the Chairman and Chief Executive Officer, Stephen Ball, accompanied by the Director, Duncan Cunningham; the Deputy Legal Adviser, Foreign and Commonwealth Office of the United Kingdom of Great Britain and Northern Ireland, Christopher Whomersley; the Deputy Chief Scientific Adviser, Department for Business, Innovation and Skills, Rupert Lewis; Charles Morgan, environmental planner, Planning Solutions, Inc.; Ralph Spickermann, technical fellow; Vic Verma, Strategic Venture Development; Darren Hakeman, consultant, Technology and Economics; the Assistant General Counsel, John Stevens; and Jennifer Warren, Government and Regulatory Affairs, 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: UK Seabed Resources Ltd.;
 - (b) Street address: Cunard House, 15 Regent Street, London SW1Y 4LR, United Kingdom of Great Britain and Northern Ireland;
 - (c) Postal address: as above;
 - (d) Telephone number: +44(0) 20 7979 8020;
 - (e) Facsimile number: +44(0) 20 7979 8090;
 - (f) E-mail address: none.
8. The applicant's designated representative is:
 - (a) Name: Stephen Ball;
 - (b) Street address: as above;
 - (c) Telephone number: as above;
 - (d) Facsimile number: as above;
 - (e) E-mail address: Stephen.ball@ukseabedresources.co.uk;
 - (f) Applicant's place of registration and principal place of business/domicile: United Kingdom of Great Britain and Northern Ireland.
9. The applicant stated that it was a wholly-owned subsidiary of Lockheed Martin UK Holdings Ltd. (LMUK). Both UK Seabed Resources Ltd. and LMUK are companies formed under the laws of the United Kingdom and based in the United Kingdom.

B. Sponsorship

10. The sponsoring State is the United Kingdom of Great Britain and Northern Ireland.
11. Date of deposit of the instrument of accession of the United Kingdom to the United Nations Convention on the Law of the Sea and date of ratification of the Agreement relating to the implementation of Part XI of the Convention is 25 July 1997.
12. Date of the certificate of sponsorship is 11 May 2012, issued by Vincent Cable, Secretary of State for Business, Innovation and Skills of the Government of the United Kingdom of Great Britain and Northern Ireland. An updated certificate of sponsorship was provided on 11 July 2012.
13. The certificate of sponsorship states that the United Kingdom 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. The sponsoring State declares that the applicant is a duly incorporated and

registered company under the laws of the United Kingdom, with its registered office in the United Kingdom; as such it is a national of the United Kingdom. It further states that the Chairman and Chief Executive Officer is a national and resident of the United Kingdom and that the company will require a licence under the deep sea mining legislation of the United Kingdom. Accordingly, the sponsoring State declares that the company is subject to the effective control and supervision of the Government of the United Kingdom.

14. In a letter dated 18 May 2012, the applicant refers to domestic regulations as an important element of responsible sponsorship as clarified in the advisory opinion rendered on 1 February 2011 by the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea. In this respect, the sponsoring State has enacted deep sea mining legislation and has associated regulations in place including the Deep Sea Mining (Temporary Provisions) Act, 1981, and the Deep Sea Mining (Exploration Licences) Act, 1984. In that letter, the applicant states that the sponsoring State has confirmed that UK Seabed Resources Ltd. meets all requirements of an exploration licence under its domestic legislation, including requirements of technical and financial capability, effective control and environmentally responsible exploration. Consequently, the sponsoring State has granted an exploration licence to the applicant for the area under application, which will become effective upon the applicant entering into contract with the Authority.

C. Area of application

15. The application area covers a total of approximately 116,000 km² in the eastern part of the Clarion-Clipperton Zone. The application area is contiguous and divided into two parts labelled part A (58,280 km²) and part B (58,620 km²), which are contiguous and nested together. The water depths within the area under application vary between about 2,600 to 4,400 m, with most of the seafloor close to 4,000 m. The only significant seabed features in the general area consist of several seamounts to the west of the application area, including the Dowd Guyot, which rise to about 500 m water depth. The small seamounts within the application area only rise to water depths of about 2,500 m. The coordinates and general location of the areas under application are shown in the annex to the present document.

D. Other information

16. Date of receipt of the application is 23 May 2012.

17. The applicant has not been previously awarded any contract with the Authority.

18. The application includes a written undertaking signed by the applicant's designated representative declaring that he will comply with regulation 14 of the Regulations.

19. 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

20. The following technical documents and information were provided:

- (a) Information relating to the area under application:
 - (i) Boundaries of the area under application by 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. Maps of bathymetry and regional slope and information on the availability and reliability of 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. Calculation on the estimated commercial value of the division of the application area into two parts;
 - h. 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) A certificate 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

21. 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 pro forma sheet is certified by the applicant's designated representative. The applicant also submitted the audited consolidated financial statements of LMUK, the applicant's parent company, for 2009, 2010 and 2011, in accordance with regulation 12, paragraph 5 (b). In a letter describing the financial capabilities of the applicant, its designated representative states that should it be necessary, the applicant may seek to draw upon Lockheed Martin Corporation, of which LMUK is a component.

B. Technical capacity

22. The applicant stated that it held rights granting it access to certain data, resources and subject matter expertise of Lockheed Martin Corporation (LMC) related to polymetallic nodule resource surveying, analysis and recovery methods. The applicant stated that LMC was the prime contractor and the technology provider for the Ocean Minerals Company (OMCO) consortium, which was one of the leading participants in seabed minerals efforts in the 1970s and 1980s. In addition, LMC has more than 50 years of experience in large-scale ocean systems design and development, including multiple deep water efforts. Therefore, the applicant may seek to capitalize upon the extensive polymetallic nodule experience and technical capabilities developed through the historical work, recent analyses and ongoing efforts of LMC.

23. In evaluating the technical capacity of the applicant, the Commission noted that the applicant provided information related to its previous experience, knowledge, skills, technical qualifications and expertise relevant to the proposed plan of work, and related to the equipment, methods and technology needed in order to carry out the proposed plan of exploration. The applicant also provided information related to the prevention, reduction and control of hazards to and possible impact on the marine environment. The applicant further provided details of the activities to be performed in the first five years of the contract, including the identification of potential commercial recovery sites and the identification of a scientific team of ecologists and biologists with extensive benthic ecological experience in the abyssal Pacific Ocean, in particular in the Clarion-Clipperton Zone. The applicant submitted a preliminary impact assessment of the anticipated activities during the initial five-year period, which involve non-disruptive sensing and the taking of samples in very small quantities. The applicant also stated that during the first five years of the exploration programme it would compile selected environmental data (e.g., general benthic community characterization, baseline data collection and test monitoring), as well as other appropriate information for use in decisions regarding environmental safeguards and monitoring activities pertinent to subsequent exploration activities and commercial resource recovery. This would serve in particular to complete a comprehensive environmental impact assessment

for commercial resource recovery, including a programme for monitoring commercial recovery operations. When considering activities beyond the initial five-year period, the applicant indicated that these activities would not proceed without the relevant and necessary environmental studies and consultations. The applicant also stated that such activities would not occur without approvals by the sponsoring State and the Authority and without knowledge of the requirements of the future regulations on exploitation by the Authority.

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

24. The applicant indicated the coordinates dividing the area under application into two parts of equal estimated commercial value. The Council, on the recommendation of the Commission, shall designate one of these parts as the area reserved for the Authority. The other part will become the applicant's exploration area. The calculation of the estimated commercial value was done by the applicant in several steps.

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

25. The applicant provided both raw data and kriged block average abundance and grade for the area under application. The applicant also provided the basis for calculating the kriged values and the variogram analysis. Preliminary economic evaluation of conceptual mining and processing systems suggests that the key factors for the evaluation of a mine site are nodule abundance and nickel concentration, as well as maximum seafloor slope.

B. Evaluation

26. The data in the two areas (part A and part B) have been analysed by the Commission and the following observations are made with regard to the 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, which contains several seamounts in its central and southern areas;

(b) Part A (58,280 km²) and part B (58,620 km²) have an aggregate area of 116,000 km². The difference in size between the areas is 340 km²;

(c) Part A has a total of 283 sampling stations while part B has 242 stations (stations located on the boundaries between the two parts are counted twice). The applicant also included 322 sampling stations adjacent to the application area for the purpose of avoiding boundary effects from the interpolation between stations. The spatial distribution of metal content and abundances formed the basis for the estimation of commercial values of the two parts;

(d) The average abundance (from non-interpolated data) in part A is slightly higher (13.72 kg/m²) than in part B (13.45 kg/m²) with comparable standard deviation;

(e) Taking into account that nickel concentration in the nodules is mostly between 1.2 wt% and 1.5 wt% throughout the application area, the abundance is used as a proxy for the commercial value of the two parts, A and B. The frequency diagrams with regard to nickel content show that part A has a slightly higher frequency of nickel concentration above 1.2 wt% than part B;

(f) The spatial distribution of the nodule abundance data shows that part A has a larger number of pockets of high abundance (3) than part B (1).

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

27. Based on the data and analyses available, the Commission is of the view that both parts of the area 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.

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 includes 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, such as studies to be undertaken in respect of the environmental, technical, economic and other appropriate factors that must be taken into account in exploration;

(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, 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. The Commission further noted that the applicant had provided details about the proposed training programme. Over the proposed plan of work, the applicant will provide at least 10 trainees with valuable opportunities to participate in one of the following three training programmes: an at-sea exploration training programme (oceanographic, environmental, geological or geophysical activities); a bursary and fellowship programme (approximately 24 months each); and an engineering training programme (approximately 3 months). In addition, the applicant stated that, depending on the timing of the exploration programme and the qualifications of the candidate, other training opportunities might be available on land in the areas of metallurgy, marine engineering, marine biology, business, finance and other relevant related fields.

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 UK Seabed Resources Ltd.

34. 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.

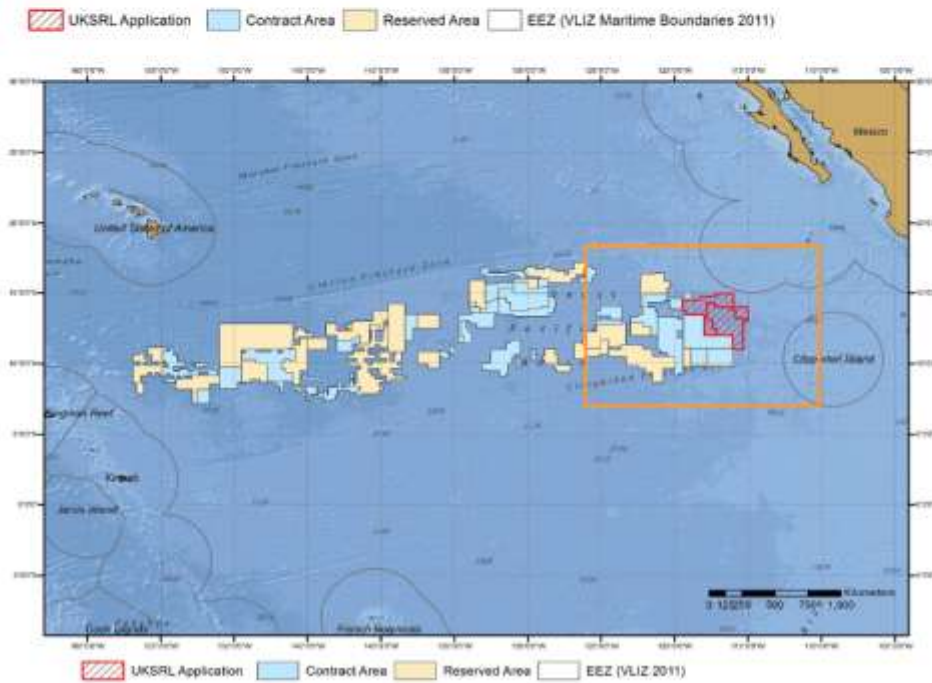
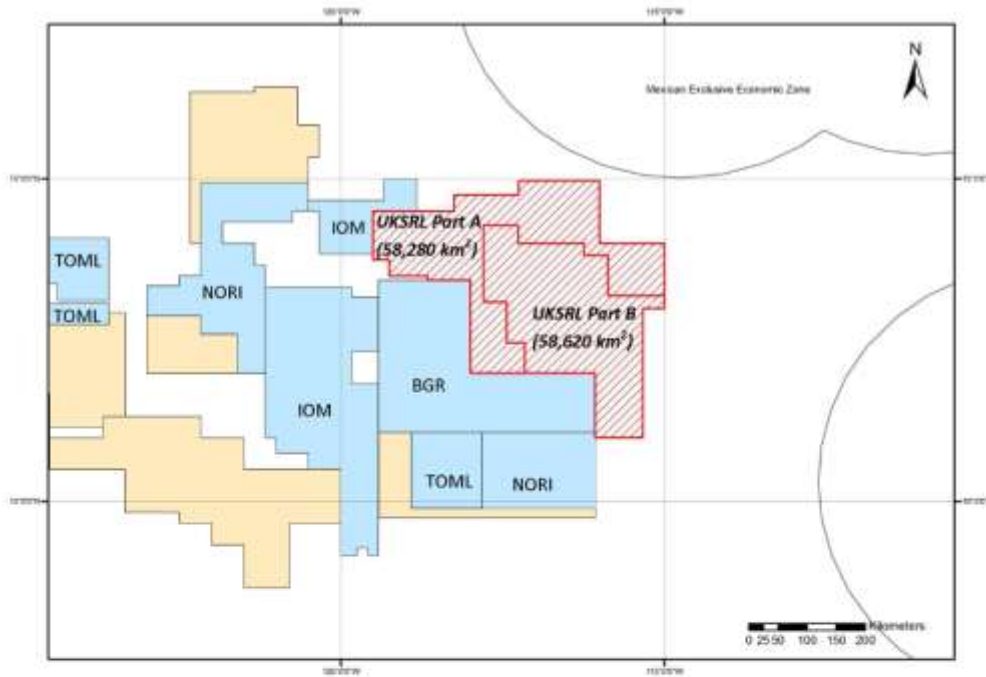
Annex

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

	<i>Turning point</i>	<i>Latitude (decimal degrees)</i>	<i>Longitude (decimal degrees)</i>
Part A	1	12.00000	-117.16000
	2	12.00000	-118.00000
	3	13.43333	-118.00000
	4	13.43333	-118.66667
	5	13.50000	-118.66667
	6	13.50000	-119.25000
	7	13.75000	-119.25000
	8	13.75000	-119.50000
	9	14.50000	-119.50000
	10	14.50000	-118.25000
	11	14.75000	-118.25000
	12	14.75000	-117.25000
	13	14.96667	-117.25000
	14	14.96667	-116.00000
	15	14.00000	-116.00000
	16	14.00000	-115.00000
	17	13.20000	-115.00000
	18	13.20000	-115.87000
	19	13.82000	-115.87000
	20	13.82000	-116.24000
	21	14.00000	-116.24000
	22	14.00000	-117.26000
	23	14.28000	-117.26000
	24	14.28000	-117.80000
	25	13.10000	-117.80000
	26	13.10000	-117.44000
	27	12.47000	-117.44000
	28	12.47000	-117.16000
Part B	1	11.00000	-116.06667
	2	12.00000	-116.06667
	3	12.00000	-117.16000
	4	12.47000	-117.16000
	5	12.47000	-117.44000
	6	13.10000	-117.44000

	<i>Turning point</i>	<i>Latitude (decimal degrees)</i>	<i>Longitude (decimal degrees)</i>
	7	13.10000	-117.80000
	8	14.28000	-117.80000
	9	14.28000	-117.26000
	10	14.00000	-117.26000
	11	14.00000	-116.24000
	12	13.82000	-116.24000
	13	13.82000	-115.87000
	14	13.20000	-115.87000
	15	13.20000	-115.00000
	16	13.00000	-115.00000
	17	13.00000	-115.33333
	18	11.00000	-115.33333

UK Seabed Resources Ltd Application Areas



Abbreviations: BGR, Federal Institute for Geosciences and Natural Resources of Germany; EEZ, Exclusive Economic Zone; IOM, InterOceanmetal Joint Organization; NORI, Nauru Ocean Resources, Inc.; TOML, Tonga Offshore Mining Limited; UKSRL: UK Seabed Resources Ltd.; VLIZ, Flanders Marine Institute.