



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 8 February 2013, the Secretary-General of the International Seabed Authority received an application from UK Seabed Resources Ltd. (UKSRL) for the approval of a plan of work for exploration for polymetallic nodules in the Area (see [ISBA/19/LTC/9](#)). The application was submitted pursuant to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area ([ISBA/6/A/18](#), annex).

2. In accordance with regulation 20, paragraph 1 (c), of the Regulations, by a note verbale dated 5 March 2013, 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 on the agenda of the meeting of the Legal and Technical Commission held from 8 to 15 July 2013.

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; whether it had the necessary financial and technical capability to carry out the proposed plan of work for exploration; and, as appropriate, had satisfactorily discharged its obligations under any previous contract with the International Seabed Authority. The Commission is then required to determine, in accordance with regulation 21, paragraph 4, 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 of regulation 21 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, adopted in 1994.

B. Consideration of the application

5. The Commission considered the application in closed meetings on 9, 10 and 11 July 2013 during the nineteenth session and on 4, 5, 6, 7 and 10 February 2014 during the twentieth session.

6. Prior to commencing a detailed examination of the application, the Commission invited the applicant's designated representative, Stephen Ball, Chief Executive of UKSRL, to make a presentation of the application. He was accompanied by Duncan Cunningham, Director, UKSRL; Charles Morgan, consultant; Chris Whomersley, Head of the delegation of the United Kingdom of Great Britain and Northern Ireland and Deputy Legal Adviser to the Foreign and Commonwealth Office of the United Kingdom; and Horacio Licon, United Kingdom Trade and Investment. The following observers were also present: Vikram Verma, Lockheed Martin; Jennifer Warren, Lockheed Martin; John Stevens, Legal Counsel, UKSRL, and Lockheed Martin UK; and Ralph Spickermann, Chief Engineer, UKSRL. 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 decided to request the Chair of the Commission to transmit a list of questions to the applicant in writing. Responses were received from the applicant; however, the Commission did not have time to complete its consideration of the application and decided to defer it, to be taken up as a matter of priority at its next meeting, in February 2014.

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. (UKSRL);
 - (b) Street address: Cunard House, 15 Regent Street, London, SW1Y 4LR, United Kingdom;
 - (c) Postal address: as above;
 - (d) Telephone number: 44(0) 20 7979 8020;
 - (e) Facsimile number: 44(0) 20 7979 8090.
8. The applicant's designated representative is:
 - (a) Name: Stephen Ball;
 - (b) Street and postal addresses: 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.
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.
11. The date of deposit of the sponsoring State's instrument of accession to the United Nations Convention on the Law of the Sea and the date of its ratification of the Agreement relating to the implementation of Part XI of the Convention is 25 July 1997.
12. The certificate of sponsorship is dated 8 February 2013; it was issued by Vincent Cable, Secretary of State for Business, Innovation and Skills of the United Kingdom.
13. The certificate of sponsorship states that the United Kingdom assumes responsibility for the activities of the applicant, in accordance with article 139 and paragraph 4 of article 153 of the Convention and paragraph 4 of article 4 of annex III to 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 also states that the Chairman 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 8 February 2013, the applicant referred 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) Regulations 1984. In the aforementioned letter, the applicant stated that the sponsoring State had confirmed that UK Seabed Resources Ltd. met all requirements of an exploration licence under its domestic legislation, including requirements for 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 is in the eastern part of the Clarion-Clipperton zone. The application area is contiguous and divided into two parts, labelled part A and part B, which are contiguous and nested together. Part A comprises 74,919 km² and part B comprises 74,904 km². The water depths in the area under application vary between about 2,100 and 5,200 m, with the average depth being 4,800 m, and a majority of the slopes below 2 degrees. The coordinates and general location of the areas under application are shown in the annex to the present document.

D. Other information

16. The applicant has previously been awarded a contract with the Authority as follows:

- (a) UK Seabed Resources Ltd. and the Authority signed a contract for exploration for polymetallic nodules in the Area on 8 February 2013;
- (b) Given the recent date of signature of the contract, no reports have been required to date to be submitted to the Authority;
- (c) The date of expiry of the contract is 7 February 2028.

17. In accordance with regulation 14, the application includes a written undertaking dated 8 February 2013 and signed by the applicant's designated representative.

18. The applicant has paid a fee of \$500,000 in accordance with regulation 19 of the Regulations.

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) A list of geographical coordinates, in accordance with the World Geodetic System 1984, describing the boundaries of the area under application;
 - (ii) A chart of the location of the application area;
 - (iii) A list of the geographical coordinates of the boundary dividing the area into two parts of equal estimated commercial value;
 - (iv) Information, including data available to the applicant, 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:
 - a. Data on the location, survey and evaluation of the polymetallic nodules in the area under application, including:
 - i. A description of the technology related to the recovery and processing of polymetallic nodules;
 - ii. Maps of bathymetry and regional slope and information on the availability and reliability of the data shown on these maps;
 - iii. Data on the average density (abundance) of polymetallic nodules, with an associated abundance map showing the location of sampling sites;
 - iv. 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;
 - v. Combined maps of abundance and grade of polymetallic nodules;
 - vi. Calculations to determine the equal estimated commercial value, expressed as recoverable metals in mineable areas, of the two parts of the application area;
 - vii. A description of the techniques used by the applicant;
 - b. Information on wind speed and direction; wave height, period and direction; current; water temperature and salinity; 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; and
 - g. Training programmes.

V. Consideration of financial and technical qualifications of the applicant

A. Financial capacity

20. Given that the applicant is a newly formed entity, the Commission was provided with a certified pro forma balance sheet in order to inform its evaluation of the financial capacity of the applicant, in accordance with regulation 12, paragraph 5. The pro forma sheet was certified by the applicant's designated representative. The applicant also submitted the audited consolidated financial statements of LMUK, the applicant's parent company, in accordance with regulation 12, paragraph 7. In a letter describing the financial capabilities of the applicant, its designated representative stated that, should it be necessary, the applicant may seek to draw upon funds from Lockheed Martin Corporation (LMC), of which LMUK is a component.

B. Technical capacity

21. The applicant stated that it holds rights granting it access to certain data, resources and subject matter expertise of LMC related to polymetallic nodule resource surveying, analysis and recovery methods. The applicant notes that LMC was the prime contractor and the technology provider for the Ocean Minerals Company 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 company's extensive experience with polymetallic nodule mining and its technical capabilities, developed through its historical work, recent analyses and ongoing efforts.

22. In evaluating the technical capacity of the applicant, the Commission noted that the applicant had 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. In addition, the applicant stated that, in relation to the previously awarded contract, it had assembled a team of leading scientific experts to perform a baseline study of benthic biological communities during the first contract year. The applicant also indicated that an expedition planning workshop, that would include experts from industry and academia, had been scheduled to review and recommend tools and techniques for data collection and environmental baselining.

23. The applicant intends to complete its exploration activities within six years. However, if they are not completed by year 6, the applicant will adjust some of its activities to extend over some or all of the remaining years 7 to 15, in accordance with section 4 of annex IV. The applicant stated that the plan of work had a twofold objective: the identification of one or more sites as potential recovery sites that could be used for subsequent testing of commercial recovery systems; and the establishment of an environmental baseline for use in determining the environmental impact of the testing. The applicant provided extensive information

about the programme of work to be performed in the first five years of the contract, including details on the environmental activities to be conducted within a minimum of a 30 km x 30 km stratum on each cruise. The applicant stated that it would carry out environmental and surveying work on every cruise and that it intended to have biological and geophysical subject matter experts on every cruise, regardless of whether the cruise was focused on environmental or surveying work. Once a suitable site for preliminary testing of mining equipment has been located, after the third or fourth year of the plan of work, the applicant intends to collect local data on the water column, including its physics, chemistry and biological communities. The objectives of the survey cruises will be to obtain ore body delineation and prioritize commercial recovery operations. The applicant stated that any activities beyond the initial five-year period would not proceed without the necessary environmental studies and consultation. In addition, any at-sea testing of proposed commercial recovery systems will not occur without the approvals from the Authority and the sponsoring State or the regulatory transition from exploration to exploitation, as defined by the Authority.

24. The applicant provided information related to the prevention, reduction and control of hazards and possible impacts to the marine environment and stated that all proposed activities in the initial five-year period of the plan of work would be environmentally benign, with no potential for causing serious harm to the marine environment, and would not require environmental impact assessment. The applicant stated that, during the first five years of the plan of work, selected environmental data would be compiled for use in decisions regarding environmental safeguards and monitoring activities pertinent to subsequent exploration activities and commercial resource recovery.

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

25. 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 for the calculation of the estimated commercial value

26. 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 suggest that the key factors for the evaluation of a mine site are nodule abundance and nickel concentration, as well as maximum seafloor slope.

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

27. The Commission accepted the methodology presented by the applicant to classify parts A and B as two parts of equal estimated commercial value. Nodule abundance and copper concentration are comparable in both areas. Nickel concentration in the analysed samples is slightly higher in part A, contrary to what is observed for the manganese content, the latter being significantly higher in part B. In addition, the number of analysed nodules is considerably higher in part B, which increases the level of confidence for metal-grade estimates. Finally, seabed morphology in part B is characterized by lower slopes than in part A. Accordingly, the Commission recommends part B as the reserved area 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, the application included the following information for approval of the plan of work for exploration:

(a) A general description and 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 or 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 possible impacts, 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; and

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

VIII. Training programmes

29. The applicant provided details about the training programme, in accordance with regulation 27 and section 8 of annex IV. Over the duration of 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 bursaries 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 may be available on land in the areas of metallurgy, marine engineering, marine biology, business, finance and other relevant related fields. The Commission highlighted that, in developing the training programmes, the applicant and the Secretary-General should ensure that the training programmes are in line with the Recommendations for the guidance of contractors and sponsoring States relating to training programmes under plans of work for exploration, as developed by the Commission during the nineteenth session ([ISBA/19/LTC/14](#)).

IX. Conclusion and recommendations

30. Having examined the particulars submitted by the applicant, which are summarized in sections 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 is satisfied that none of the conditions in regulation 21, paragraph 6, of the Regulations apply.

32. 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 B within the application for approval of the plan of work for exploration as the area reserved for the Authority and to allocate part A to the applicant as its exploration area.

Annex I

List of coordinates of the reserved area (part B) and exploration area (part A) (in decimal degrees, in accordance with the World Geodetic System 1984)

	<i>Turning point</i>	<i>Latitude North</i>	<i>Longitude West</i>
Part A	1	14.00000	134.00000
	2	13.58010	133.83300
	3	13.50000	133.83300
	4	13.50000	134.75000
	5	13.18000	134.75000
	6	13.18000	135.07000
	7	12.73000	135.07000
	8	12.73000	134.89000
	9	12.37000	134.89000
	10	12.37000	135.44000
	11	12.10000	135.44000
	12	12.10000	135.89000
	13	12.23000	135.89000
	14	12.23000	136.77000
	15	12.12500	136.77000
	16	12.12500	137.34600
	17	11.20000	137.34600
	18	11.20000	136.58000
	19	10.83330	136.58000
	20	10.83330	137.50000
	21	9.98330	137.50000
	22	9.98330	136.83300
	23	9.61000	136.83300
	24	9.61000	138.62500
	25	9.87500	138.62500
	26	9.87500	138.87500
	27	10.12500	138.87500
	28	10.12500	138.62500
	29	10.83330	138.62500
	30	10.83330	138.37400
	31	11.63330	138.37400
	32	11.63330	137.83330
	33	12.50000	137.83330
	34	12.50000	136.00000
	35	13.50000	136.00000

	<i>Turning point</i>	<i>Latitude North</i>	<i>Longitude West</i>
Part B	36	13.50000	137.42000
	37	13.84000	137.42000
	38	13.84000	134.00000
	1	13.18000	134.75000
	2	11.50000	134.75000
	3	11.50000	133.83333
	4	11.66667	133.83333
	5	11.66667	133.66667
	6	11.00000	133.66667
	7	11.00000	133.50000
	8	10.50000	133.50000
	9	10.50000	132.58333
	10	10.03333	132.58333
	11	10.03333	133.16667
	12	9.79750	133.16667
	13	9.79750	134.12930
	14	10.98000	134.12930
	15	10.98000	135.00000
	16	11.25000	135.00000
	17	11.25000	135.33333
	18	10.83333	135.33333
	19	10.83333	135.25000
	20	10.66667	135.25000
	21	10.66667	134.56800
	22	10.09967	134.56800
	23	10.09967	135.25000
	24	9.61000	135.25000
	25	9.61000	136.00000
	26	10.50000	136.00000
	27	10.50000	135.83333
	28	10.33333	135.83333
	29	10.33333	135.41667
	30	10.45000	135.41667
	31	10.45000	135.33333
	32	10.66667	135.33333
	33	10.66667	135.50000
	34	10.83333	135.50000
	35	10.83333	135.75000
	36	10.91667	135.75000
	37	10.91667	136.00000

<i>Turning point</i>	<i>Latitude North</i>	<i>Longitude West</i>
38	10.83330	136.00000
39	10.83330	136.58000
40	11.20000	136.58000
41	11.20000	137.34600
42	12.12500	137.34600
43	12.12500	136.77000
44	12.23000	136.77000
45	12.23000	135.89000
46	12.10000	135.89000
47	12.10000	135.44000
48	12.37000	135.44000
49	12.37000	134.89000
50	12.73000	134.89000
51	12.73000	135.07000
52	13.18000	135.07000

Annex II

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

