

I. ANNEX

ISA Contract for Exploration – Public Information Template

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|--|--|
|  | Type of resource: Polymetallic Nodules |
| | Name of Contractor: Deep Ocean Resources Development Co., Ltd. |
| | Contract Start: June 20, 2001 (Extension Start: June 20, 2016) |
| Sponsoring State: Japan | Contract End: June 19, 2016 (Extension End: June 19, 2021) |
| | Location: Clarion-Clipperton Fracture Zone |

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Introduction

The information contained in this ISA Contract for Exploration – Public Information Template is made available to the public in response to the request by the Council of the ISA to make contracts publicly available, subject to restrictions on confidential information, industrial secrets and proprietary data.

The content of the present template is in accordance with the Regulations on Prospecting and Exploration for [*Polymetallic Nodules in the Area*] [*ISBA/19/C/17*] (the “Regulations”).

1. Contract Information

Annex III of the Regulations.

| | |
|---------------------------------------|--|
| Type of resource | Polymetallic Nodules |
| Name of Contractor | Deep Ocean Resources Development Co., Ltd. |
| Contract Start | June 20, 2001 (Extension: June 20, 2016) |
| Contract End | June 19, 2016 (Extension: June 19, 2021) |
| Location | Clarion-Clipperton Fracture Zone |
| Contract Area (km²) | 75,000 |

2. Coordinates and Illustrative Chart of the Exploration Area

Schedule 1 of Annex III of the Regulations.

Exploration area located between [coordinates]

Exploration areas are located as follows:

West Area

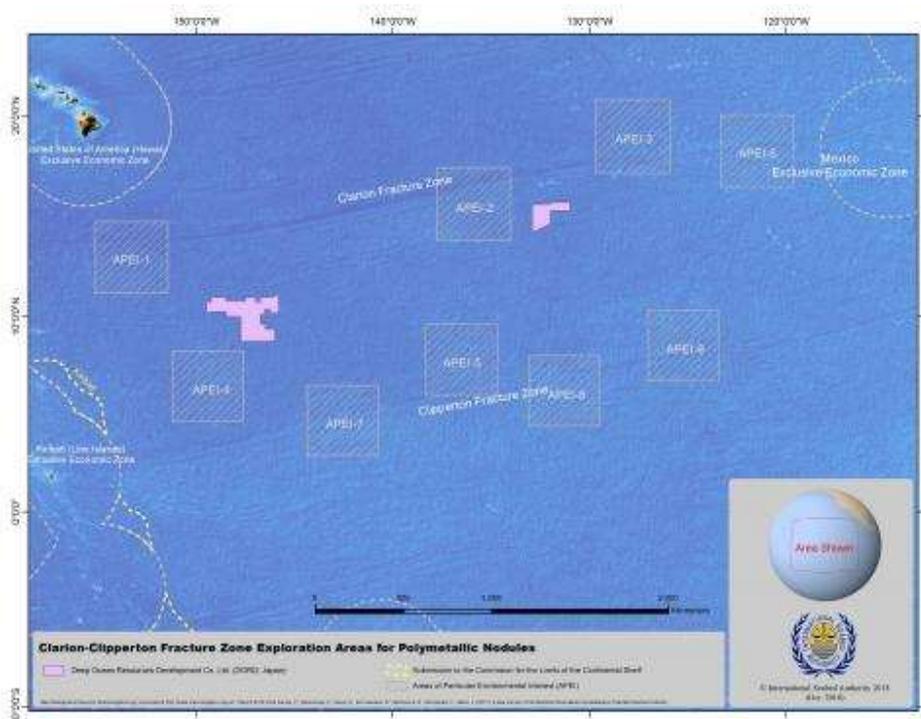
| <u>Turning Points</u> | <u>Latitude(N)</u> | <u>Longitude (W)</u> |
|-----------------------|--------------------|----------------------|
| 1 | 11° 00' | 149° 15' |
| 2 | 11° 00' | 148° 30' |
| 3 | 10° 48.75' | 148° 30' |
| 4 | 10° 48.75' | 147° 30' |
| 5 | 11° 00' | 147° 30' |
| 6 | 11° 00' | 147° 00' |
| 7 | 10° 45' | 147° 00' |
| 8 | 10° 45' | 146° 45' |
| 9 | 11° 00' | 146° 45' |
| 10 | 11° 00' | 146° 07.5' |
| 11 | 11° 03.75' | 146° 07.5' |
| 12 | 11° 03.75' | 145° 48.75' |
| 13 | 10° 11.25' | 145° 48.75' |
| 14 | 10° 11.25' | 146° 15' |
| 15 | 10° 22.5' | 146° 15' |
| 16 | 10° 22.5' | 146° 32' |
| 17 | 10° 07.5' | 146° 32' |
| 18 | 10° 07.5' | 146° 45' |
| 19 | 09° 37.5' | 146° 45' |
| 20 | 09° 37.5' | 146° 30' |
| 21 | 09° 22.5' | 146° 30' |
| 22 | 09° 22.5' | 146° 00' |
| 23 | 08° 45' | 146° 00' |
| 24 | 08° 45' | 147° 44.8' |
| 25 | 10° 00' | 147° 44.8' |
| 26 | 10° 00' | 148° 30' |
| 27 | 10° 15' | 148° 30' |
| 28 | 10° 15' | 149° 30' |
| 29 | 10° 45' | 149° 30' |
| 30 | 10° 45' | 149° 15' |
| 1 | 11° 00' | 149° 15' |

East Area

| <u>Turning Points</u> | <u>Latitude(N)</u> | <u>Longitude (W)</u> |
|-----------------------|--------------------|----------------------|
| 1 | 15° 39' | 132° 55' |
| 2 | 15° 39' | 132° 00' |
| 3 | 15° 45' | 132° 00' |
| 4 | 15° 45' | 131° 00' |
| 5 | 15° 20' | 131° 00' |
| 6 | 15° 20' | 132° 00' |
| 7 | 14° 40' | 132° 00' |
| 8 | 14° 17.4' | 132° 48' |
| 9 | 14° 17.4' | 132° 55' |
| 1 | 15° 39' | 132° 55' |

[insert shapefile format]

(shapefile format as shown in the ISA <https://www.isa.org.jm/maps>)



3. Plan of Work

Summary of Plan of Work for Exploration including the Programme of Activities for the first and/or the current 5-year period (Regulation 18).

Five survey cruises are scheduled during the extension period. These might be subject to change as DORD does not possess any research vessels of its own. They will also be subject to the fiscal and other conditions associated with the budget of the Japanese Government.

Resource surveys will involve further sampling by spade type box corer and, if possible, other equipment to take seafloor photographs in the High Abundance Area (first generation of mining sites, approximately 5,800km²) to obtain a detailed understanding of the characteristics of polymetallic nodule distribution in this area and, thereby, to obtain a more accurate estimate of resources, and to collect information about the physical properties of seafloor sediments for use in designing mining equipment.

Environmental surveys will involve data collection through further baseline surveys of the High Abundance Area and Preservation Reference Zone and additional samplings in the JET area, where a disturbance test on the seafloor was conducted in 1994. These surveys will be conducted in accordance with the Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area (hereafter to as "ISA environmental guidelines") and with ongoing advice from technical advisors from the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). Discussions regarding collaborative work are on-going with L'Institut francais de recherche pour l'exploitation da la mer (IFREMER) to undertake surveys more efficiently.

The results of resource and environmental surveys are stored on a GIS database and a full station list for each survey cruise will be submitted to the Authority.

In relation to mining and processing technology, more in-depth investigations will be undertaken through continued work including experiments on the important elements and technologies associated with system design and finding the optimal process. Consideration will also be given to preparing for ocean mining tests.

In relation to training activities, while contractual obligations have been fulfilled, in recognition of the strong demand for training from member States, technical training will be conducted in the latter half of the five-year extension period.

4. Programme of Activities

Section 4.1 of Annex IV of the Regulations and Schedule 2 of Annex III of the Regulations.

I. Agreed 5-year Programme of Activities

| 5-year Programme of Activities | First | Second | Third | Extension |
|--------------------------------|--|--------|--|-----------|
| General Objectives | Objective | | Description | |
| | <ul style="list-style-type: none"> • Five survey cruises • Resource surveys • Environmental surveys • In-depth investigations on mining and processing technology • Training activities (in the latter half of the 5-year extension period) | | <p><u>Resource surveys:</u></p> <ul style="list-style-type: none"> - Spade type box corer sampling - AUV survey - Piston corer and spade type box corer sampling - Bathymetric survey - Obtaining in-situ physical properties of seafloor sediments - Collection of samples for processing test <p><u>Environmental surveys:</u></p> <ul style="list-style-type: none"> - Environmental baseline survey of a preservation reference zone - Environmental baseline survey in the High Abundance Area - Sampling survey in the JET area <p><u>Study of mining system technology:</u></p> <ul style="list-style-type: none"> - Collection of in-situ physical properties of seafloor sediments (determine propulsion system for ore collector system) - Performance of the ore collector system (ore collection method, propulsion performance) - Characteristics of the flexible riser - The mining vessel system <p><u>Investigation of processing-related items:</u></p> <ul style="list-style-type: none"> - The potential for using existing processing equipment - The potential for sale as intermediate products rather than end products - Cost savings from locating processing site overseas - The marketability of manganese alloys likely to be present in large amounts - Associated technologies such as | |

| 5-year Programme of Activities | First | Second | Third | Extension |
|--------------------------------|-------|--------|---|-----------|
| | | | treatment methods for slag and wastewater Training Programme: <ul style="list-style-type: none"> - At-sea training consisting of on-board training programme in collaboration with JOGMEC's research cruise and pre- and post-cruise programmes - On-land training provided in cooperation with Japanese institutions relating to ocean resources development which are specialized in exploration technology and marine science | |

II. Results achieved during reported year [#]: [year]

| Annual objectives and activities | | | |
|----------------------------------|-----|--|---|
| Year | No. | Agreed Objectives | Objective: Completed, Modified, Postponed or Replaced |
| 2016/2017 | 1 | Conduct of resource and environmental surveys, and consideration of mining system and processing | Objective for 2016/2017 was completed |
| 2017/2018 | 2 | Conduct of resource and environmental surveys, and consideration of mining system and processing | Objective for 2017/2018 was completed |
| 2018/2019 | 3 | Conduct of resource and environmental surveys, and consideration of mining system and processing | Objective for 2018/2019 was completed |
| 2019/2020 | 4 | Conduct of resource and environmental surveys, consideration of mining system and processing, and implement training programme | Objective for 2019/2020 in under implementation |
| 2020/2021 | 5 | Conduct of resource and environmental surveys, consideration of mining system and processing, and implement training programme | N/A |

5. Training Programme

Schedule 3 of Annex III of the Regulations.

I. Training Programme

| Type of training | At-sea training programme | On-land training programme |
|---|---|---|
| Institutions providing training, other than the contractor | JOGMEC | Japanese institution(s) related to science of mineral resources of ocean |
| Duration | About 40 days | About 15 days |
| Scope | Capacity building of trainees from the Authority and developing states through on-board works and environmental survey | Capacity building of trainees from developing states through classroom lecture courses in the field of marine science and technology |
| Fields | Marine resources/ environmental survey technique | Research skills for ocean development |
| Qualification required | <ul style="list-style-type: none"> - Hold a graduate degree in science or engineering in the relevant field of geology, geophysics, mineral processing, mining or have an equivalent educational background; - Have at least one year of work experience in the relevant field; - Have sufficient knowledge of English for daily conversation and training; - Be less than 45 years of age; and - Have seagoing experience | <ul style="list-style-type: none"> - Hold a graduate degree in science or engineering in the relevant field of geology, geophysics, mineral processing, mining or have an equivalent educational background; - Have at least one year of work experience in the relevant field; - Have sufficient knowledge of English for daily conversation and training; - Be less than 45 years of age; and - Have seagoing experience |
| Financing | To be borne by DORD | To be borne by DORD |

II. Trainings conducted up to reported year [4]: 2019

| Start year | End Year | Name of Trainee | Nationality | Gender | Type of Programme | Details | Duration |
|------------|----------|----------------------------------|-------------|--------|---|---|--|
| 2019 | 2019 | Francisco Ponce-Nunez | Mexico | Male | Both at-sea training and on-land training | The training programme consisted of 26 days on land and 13 days at sea. As for on-land training, classroom lectures were primarily conducted in Tokyo, while practical training and facility visits were undertaken in Kochi and Ehime Prefectures in the southwest part of Japan, as well as Akita and Aomori Prefectures in the north. The at-sea training was conducted in the seas near Okinawa Prefecture with cooperation by the National Institute of Advanced Industrial Science and Technology (AIST) by using JOGMEC's research vessel Hakurei. | 39 days from 21 July to 28 August 2019 |
| | | Augustin Didier Pepogo Man-Mvele | Cameroon | Male | | | |
| | | Marika Ritova | Fiji | Male | | | |
| | | Juan Pablo Ormazabal | Argentina | Male | | | |
| | | Ajibola Oyebamiji | Nigeria | Female | | | |

III. Completed Trainings per Year

| | At-sea training programme | On-land training programme | [Name of the programme described in the Contract] |
|---------------|---------------------------|----------------------------|---|
| Year 1 | | | |
| Year 2 | | | |
| Year 3 | | | |
| Year 4 (2019) | Completed | Completed | |
| Year 5 | Under preparataion | Under preparation | |

6. Standard clauses

Annex IV of the Regulations.