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TRAINING PROGRAMME FOR THE INTERNATIONAL SEABED AUTHORITY
AS REQUIRED OF PIONEER INVESTORS

Proposal submitted by the delegation of the Republic of Korea

1. Pursuant to paragraph 12 (a) (ii) of resolution II governing preparatory investment in pioneer activities relating to polymetallic nodules and to the understanding on the fulfilment of obligations (LOS/PCN/L.115/Rev.1, annex), the Government of the Republic of Korea is prepared to receive four trainees for a training period of approximately 10 months beginning in March 1996, in the following disciplines:

Marine Geology (2 trainees);

Marine Geophysics (1 trainee);

Electronic Engineering (1 trainee).

The number of trainees in each discipline may be adjusted upon the recommendation of the Training Panel, but the total number of trainees should not exceed four. Details of the training programmes for each discipline are presented in the annex to the present proposal.

2. The training will be carried out in the following four stages:

Stage 1 (approximately 5 weeks). General orientation including a Korean language course provided by a university or institute. The training will be carried out in English, but acquisition of basic Korean language by trainees will help them not only to adapt themselves to their stay in the Republic of Korea but also to improve the efficiency of the training;

Stage 2 (approximately 16 weeks). Practical and theoretical training at designated institutes. In principle, the trainees in all disciplines will undertake the training programmes offered by the Korea Ocean Research and Development Institute (KORDI). During this stage, trainees may also visit the Korea Institute of Geology, Mining and Materials (KIGMM) and the Korea Mining Promotion Corporation (KMPC) to participate in training courses on selected topics. The lectures and laboratory experiments during the training will be carried out by the scientists of each institute and invited lecturers, utilizing the state-of-the-art facilities of each institute;

Stage 3 (approximately 6 weeks). Practical on-board training through participation in the polymetallic nodule survey in the pioneer area. The trainees in all disciplines will board the KORDI research vessel Onnuri at Honolulu (or Los Angeles) and return to Honolulu (or Los Angeles);

Stage 4 (approximately 13 weeks). Continuation of the second stage of training and preparation of a report. Each trainee can select a research subject of interest based on the outcome of the training in stages 2 and 3. Each trainee is expected to prepare a report on the training, which will be submitted to the Training Panel together with a full description of the training provided.

3. Qualifications of applicants. Applicants should:

- Be not more than 40 years of age;
- Be nominated by both their Government and the International Seabed Authority;
- Have a Master's degree or its equivalent in marine geology, marine geophysics, electronic engineering or a related field from a university or institute;
- Have more than two years' experience in the respective area of specialization;
- Have a sufficient command of spoken and written English;
- Be in good health, both physically and mentally, to undergo training.

4. Allowances and expenses:

- Return air tickets (economy class) between a main international airport in the trainee's country or a neighbouring country and Seoul;
- Return air tickets (economy class) between Seoul and Hawaii (or Los Angeles) for on-board practical training;

- Accommodation and travel expenses necessary for the training;
- Board and per diem;
- Medical care during the training period.

Annex

THE TRAINING PROGRAMMES

Profile 1

Marine geology

In this discipline, the trainees are expected to acquire the scientific knowledge and techniques necessary to carry out the following functions:

- Analysis and summary of geological data obtained during the survey cruises;
- Establishment and management of a geological database;
- Evaluation of polymetallic nodule resources and target area.

To achieve this end, theoretical and practical training will be offered to the trainees in the following fields:

During stage 2:

- Introduction to basic marine geology;
- Petrography, mineralogy, and geochemistry of polymetallic nodules;
- Mineralogy and geochemistry of deep-seabed sediments;
- Occurrence and genesis of polymetallic nodules;
- Sampling and analytical methods used in exploring polymetallic nodules;
- Interpretation and evaluation of sea-bottom photographs;
- Evaluation methods for the polymetallic nodule resources;
- Setting up and management of marine geology databases.

During stage 3 (on-board training):

- Planning of exploration cruise;
- Operation of equipment for sampling of polymetallic nodules;
- Operation of equipment for sampling of deep-seabed sediments;
- Operation of deep-towed underwater camera system;
- Statistical analysis of polymetallic nodule data;

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- Determination of polymetallic nodule abundance.

During stage 4:

- Integration of the geological data obtained from the exploration cruise;
- Research on the subject chosen by the trainee on the basis of the outcome of the previous stages of the training programme;
- Preparation of a training report.

Candidates are expected to have basic knowledge in marine geology, geochemistry, mineralogy, sedimentology, and personal computer operation.

Profile 2

Marine geophysics

In this discipline, the trainee is expected to acquire the scientific knowledge and techniques necessary to carry out the following functions:

- Theoretical and practical understanding of various types of geophysical equipment used for polymetallic nodule exploration;
- Evaluation, selection and operation of appropriate geophysical survey systems at different stages of exploration;
- Computer processing and comprehensive quantitative and qualitative interpretation of geophysical data.

To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

During stage 2:

- Basic introduction to marine geology and geophysics;
- Systematic methods for exploring polymetallic nodules;
- Processing and interpretation of geophysical data, such as those from the Global Positioning System (GPS) and precision-depth echo-sounding;
- Interpretation of sub-bottom profiling (SBP) data;
- Interpretation of multibeam swath echo-sounder (Seabeam 2000) data.

During stage 3 (on board training):

- Planning of exploration cruise;

- Familiarization with positioning technique using the GPS system;
- Operation of precision-depth echo-sounder and sub-bottom profiler;
- Topographical data acquisition using multibeam swath echo-sounder (Seabeam 2000);
- Computer processing and plotting of geophysical data.

During stage 4:

- Integration of the geophysical data obtained from the exploration cruise;
- Research on the subjects chosen by the trainee based on the outcome of the previous stages of the training programme;
- Preparation of a training report.

Candidates are expected to have basic knowledge in marine geology, geophysics, acoustics, and signal and data processing.

Profile 3

Electronic engineering

In this discipline, the trainee is expected to acquire the basic knowledge and techniques necessary to operate and maintain on-board equipment for polymetallic nodule exploration, such as the following:

- Differential global positioning and navigation system;
- Multibeam echo-sounder (Seabeam 2000);
- Precision-depth echo-sounder;
- Sub-bottom profiler;
- CTD (conductivity, temperature and depth) system;
- Deep-tow underwater camera system.

To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

During stage 2:

- Programme similar to that offered in stage 2 of Profile 2, based on the qualifications of the trainee;

- Instrumentation and electronics of geophysical instruments and deep-towed underwater camera system for polymetallic nodule exploration;
- Operation and maintenance of various pieces of on-board geophysical equipment through in-port visits to the KORDI research vessel Onnuri.

During stage 3 (on-board training):

- Planning of exploration cruise;
- Familiarization with and operation of acoustic instruments, deep-towed underwater camera system, CTD system and positioning system;
- Maintenance of the above equipment;
- Maintenance of the on-board data management system.

During stage 4:

- Integration of the knowledge of the electronics and techniques of geophysical instruments acquired during the training;
- Research on the instrumentation of equipment chosen by the trainee based on the outcome of the previous stages of the training programme;
- Preparation of a training report.

Candidates are expected to have basic knowledge of electrical and electronic engineering. In addition, candidates are expected to be familiar with the basics of geophysics and data processing.
