



## 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 sulphides by the Government of the Republic of Korea**

#### **I. Introduction**

1. On 21 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 sulphides in the Area. The application was submitted, pursuant to the Regulations on prospecting and exploration for polymetallic sulphides in the Area (ISBA/16/A/12/Rev.1, annex), by the Government of the Republic of Korea.

2. On 25 May 2012, in accordance with regulation 22 (c) of the Regulations, the Secretary-General issued a note verbale to notify 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 and 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 15 of the Regulations; and 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 Authority. The Commission is then required to determine, in accordance with regulation 23 (4) of the Regulations 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 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 23 (5) of the Regulations goes on to provide 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 sulphides, 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 of 10 December 1982.

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

5. The Commission considered the application in closed meetings on 9, 11, 12, 16 and 17 July 2012.

6. Prior to commencing a detailed examination of the application, the Commission invited a delegation to make a presentation of the application. The delegation included the Permanent Representative of the Republic of Korea to the Authority, Kimo Lim; the Director of the Marine Development for New Growth Division of the Ministry of Land, Transport and Maritime Affairs, Lim Hyun Taek; and Hyung Myung Woo of the Ministry of Land, Transport and Maritime Affairs. Joining them, from the Korea Ocean Research and Development Institute, were Moon Jai-Woon, the Director of the Deep Sea and Marine Georesources Research Department; Park Seong Wook, the Director of Ocean Policy Research Department; Son Seung Kyu and Ju Se Jong, principal research scientists of the Deep Sea and Marine Georesources Research Department; and Kim Jonguk, Pak Sang Joon and Yang Hee Cheol, senior research scientists of the Deep Sea and Marine Georesources Research Department. 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.

## **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: Government of the Republic of Korea, represented by the Ministry of Land, Transport and Maritime Affairs;

- (b) Street address: 47 Gwanmun-ro, Gwacheon-city, Gyunggi-do, 427-712, Republic of Korea;
- (c) Postal address: same as above;
- (d) Telephone number: 82 2 2110 8452;
- (e) Fax Number: 82 2 502 0341;
- (f) E-mail address: pado21@korea.kr.
8. The applicant's designated representative is:
- (a) Name: Do-youp Kwon, Minister for Land, Transport and Maritime Affairs;
- (b) Street address: same as above;
- (c) Postal address: same as above;
- (d) Telephone number: same as above;
- (e) Fax number: same as above;
- (f) E-mail address: same as above.
9. The applicant's place of registration and principal place of business/domicile is: 47 Gwanmun-ro, Gwacheon-city, Gyunggi-do, 427-712, Republic of Korea.
10. The applicant is a State party to the Convention.
11. The date of deposit of the instrument of ratification of the United Nations Convention on the Law of the Sea by the Republic of Korea is 29 January 1996; the date of ratification of the Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 is 29 January 1996.

## **B. Area of application**

12. The area under application is located in the Central Indian Ocean between latitudes 8.01257 and 15.6549 South and between longitudes 65.9108 and 68.10195 East (decimal degrees, geodetic datum WGS84). It consists of 100 blocks measuring approximately 10 km by 10 km each, which are grouped into eight clusters, each containing from 5 to 34 blocks. The application area covers a total of 10,000 km<sup>2</sup>. The application area is confined within a rectangular area not exceeding 300,000 km<sup>2</sup> in size and where the longest size does not exceed 1,000 km in length. The coordinates and general location of the area under application are shown in the annexes to the present document. The application area is in the international seabed area.

## **C. Other information**

13. The application was received on 21 May 2012.
14. The previous contracts with the Authority are as follows:
- (a) The Government of the Republic of Korea and the Authority signed a contract for exploration for polymetallic nodules in the Area on 27 April 2001 in Seoul;

(b) The reports submitted to the Authority in connection with the contract for exploration for polymetallic nodules are listed in the application;

(c) The date of expiration of the contract is 26 April 2016.

15. The applicant attached a written undertaking signed by the applicant's designated representative, in compliance with regulation 15 of the Regulations.

16. The applicant elects to offer an equity interest in a joint venture arrangement in accordance with regulation 19 of the Regulations.

17. The applicant has paid a fee of \$500,000 in accordance with regulation 21 (1) (a) of the Regulations.

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

18. The following technical documents and information were submitted in the application:

(a) Information relating to the area under application:

(i) Charts of the location of the blocks;

(ii) A list of the coordinates of the corners of blocks under application;

(b) A certificate of sponsorship;

(c) Information to enable the Council to determine whether the applicant is financially capable of carrying out the proposed plan of work for exploration;

(d) Information to enable the Council to determine whether the applicant is technically capable of carrying out the proposed plan of work for exploration;

(e) Plan of work for exploration;

(f) Training programme;

(g) Written undertakings by the applicant.

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

##### **A. Financial capacity**

19. The applicant declared its financial capacity to carry out the proposed plan of work for exploration and fulfil its financial obligations to the Authority.

20. In evaluating the financial capacity of the applicant, the Commission noted that, in accordance with regulation 13 (3) of the Regulations, it had been provided with a statement signed by the applicant's designated representative certifying that the applicant would have the necessary funds to meet the estimated minimum expenditure under the proposed plan of work for exploration and would fulfil its financial obligations to the Authority.

## **B. Technical capacity**

21. In evaluating the technical capacity of the applicant, the Commission noted that the applicant provided information in relation to relevant activities, including marine scientific research in the Central Indian Ocean for the past three years in the vicinity of the application area and exploration for polymetallic sulphide deposits within the exclusive economic zone of Tonga and Fiji. The applicant indicated that two Korean research institutes (Korea Ocean Research and Development Institute and Korea Institute of Geoscience and Mineral Resources) had been actively engaged in marine scientific studies on polymetallic sulphides for more than 10 years. The applicant also stated that it was a contractor for manganese nodules in the Area and had been fulfilling its contract with the Authority obligations satisfactorily.

22. The applicant provided information related to the prevention, reduction and control of hazards and possible impacts to 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. The applicant stated that the proposed environmental study programme was in accordance with the regulations of the Authority and was designed mainly on the basis of the recommendations made by the Authority's workshop on environmental baselines and monitoring programmes for exploration for polymetallic sulphides and cobalt crusts. The applicant further stated that all proposed activities were classified as activities not requiring an environmental impact assessment by the Commission. The drilling of prospective mine sites would be carried out during the last five years of the contract and, at that point, appropriate environmental monitoring would be performed prior, during and after the execution of those activities, as required by the environmental guidelines. The applicant also stated that it would apply the precautionary approach and employ the most appropriate equipment available for the survey to ensure effective protection for the marine environment, especially active hydrothermal vent areas. The applicant indicated that it would conduct any mining tests away from active vents, but would carry out scientific studies within the actively venting fields in order to provide a scientific basis for protecting the active hydrothermal vent ecosystems.

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

23. In accordance with regulation 20 of the Regulations, the applicant submitted 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 of activities for the immediate 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, including, but not restricted to,

the impact on biodiversity 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 as required by regulation 13, paragraph 1;

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

## **VII. Training programme**

24. The Commission noted that in a letter dated 9 May 2012 from the Minister of Land, Transport and Maritime Affairs to the Secretary-General, the applicant stated that, in accordance with regulation 29 and section 8 of annex 4 to the Regulations, the contractor would draw up a training programme in cooperation with the Authority.

## **VIII. Conclusion and recommendations**

25. Having examined the particulars submitted by the applicant, summarized in sections III to VII above, the Commission is satisfied that the application has been duly submitted in accordance with the Regulations and that the applicant is a qualified applicant within the meaning of annex III, article 4, of the Convention. The Commission is further satisfied that the applicant:

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

(b) Has given the undertakings and assurances specified in regulation 15 of the Regulations;

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

26. The Commission states that none of the conditions in regulation 23 (6) of the Regulations apply.

27. 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.

28. Accordingly, pursuant to regulation 23 (5), the Commission recommends to the Council approval of the plan of work for exploration for polymetallic sulphides submitted by the Government of the Republic of Korea.

## Annex I

<i>Block No.</i>			<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD) (WGS84), (E)</i>	<i>Lat. (DD) (WGS84), (S)</i>
Cluster 1	Cluster 1-1	1	391016.618	9114181.402	68.011	-8.013
			391040.798	9104188.285	68.011	-8.103
			401056.689	9104211.535	68.102	-8.103
			401034.732	9114204.399	68.102	-8.013
	Cluster 1-2	2	401034.732	9114204.399	68.102	-8.013
			401056.689	9104211.535	68.102	-8.103
			411072.339	9104232.544	68.193	-8.103
			411052.606	9114225.180	68.193	-8.013
	Cluster 1-3	3	386032.755	9104175.820	67.966	-8.103
			386058.328	9094182.525	67.966	-8.193
			396072.100	9094207.160	68.057	-8.193
			396048.775	9104200.191	68.057	-8.103
	Cluster 1-4	4	396048.775	9104200.191	68.057	-8.103
			396072.100	9094207.160	68.057	-8.193
			406085.620	9094229.530	68.147	-8.193
			406064.543	9104222.320	68.147	-8.103
	Cluster 1-5	5	406064.543	9104222.320	68.147	-8.103
			406085.620	9094229.530	68.147	-8.193
			416098.911	9094249.634	68.238	-8.193
			416080.081	9104242.209	68.238	-8.103
	Cluster 1-6	6	396072.100	9094207.160	68.057	-8.193
			396095.683	9084214.087	68.057	-8.284
			406106.929	9084236.696	68.147	-8.284
			406085.620	9094229.530	68.147	-8.193
	Cluster 1-7	7	406085.620	9094229.530	68.147	-8.193
			406106.929	9084236.696	68.147	-8.284
			416117.948	9084257.016	68.238	-8.284
			416098.911	9094249.634	68.238	-8.193
Cluster 2	Cluster 2-1	8	246858.180	8928601.241	66.693	-9.685
			246926.267	8918600.976	66.693	-9.775
			256902.650	8918667.867	66.784	-9.775
			256837.252	8928667.538	66.784	-9.685
	Cluster 2-2	9	241937.851	8918566.519	66.648	-9.775
			242007.922	8908565.904	66.648	-9.865
			251981.889	8908634.749	66.738	-9.865
			251914.533	8918634.759	66.738	-9.775



<i>Block No.</i>			<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>	
Cluster 2-3	10		251914.533	8918634.759	66.738	-9.775	
			251981.889	8908634.749	66.738	-9.865	
			261955.264	8908700.875	66.829	-9.865	
			261890.621	8918700.303	66.829	-9.775	
Cluster 2-4	11		242007.922	8908565.904	66.648	-9.865	
			242078.633	8898565.244	66.648	-9.956	
			252049.860	8898634.695	66.738	-9.956	
			251981.889	8908634.749	66.738	-9.865	
Cluster 2-5	12		251981.889	8908634.749	66.738	-9.865	
			252049.860	8898634.695	66.738	-9.956	
			262020.497	8898701.402	66.829	-9.956	
			261955.264	8908700.875	66.829	-9.865	
Cluster 3	Cluster 3-1	13	227663.288	8828443.387	66.511	-10.588	
			227743.884	8818394.934	66.511	-10.679	
			237716.199	8818473.785	66.602	-10.679	
			237638.561	8828521.599	66.602	-10.588	
	Cluster 3-2	14		217770.924	8818313.134	66.420	-10.679
				217855.185	8808263.971	66.420	-10.770
				227825.161	8808346.434	66.511	-10.770
				227743.884	8818394.934	66.511	-10.679
	Cluster 3-3	15		227743.884	8818394.934	66.511	-10.679
				227825.161	8808346.434	66.511	-10.770
				237794.491	8808425.924	66.602	-10.770
				237716.199	8818473.785	66.602	-10.679
	Cluster 3-4	16		237716.199	8818473.785	66.602	-10.679
				237794.491	8808425.924	66.602	-10.770
				247763.200	8808502.441	66.693	-10.770
				247687.891	8818549.688	66.693	-10.679
	Cluster 3-5	17		217855.185	8808263.971	66.420	-10.770
				217940.153	8798214.761	66.420	-10.861
				227907.118	8798297.886	66.511	-10.861
				227825.161	8808346.434	66.511	-10.770
	Cluster 3-6	18		227825.161	8808346.434	66.511	-10.770
				227907.118	8798297.886	66.511	-10.861
				237873.440	8798378.014	66.602	-10.861
				237794.491	8808425.924	66.602	-10.770
Cluster 3-7	19		237794.491	8808425.924	66.602	-10.770	
			237873.440	8798378.014	66.602	-10.861	
			247839.141	8798455.145	66.693	-10.861	
			247763.200	8808502.441	66.693	-10.770	

<i>Block No.</i>		<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>
Cluster 3-8	20	217940.153	8798214.761	66.420	-10.861
		218025.825	8788165.504	66.420	-10.952
		227989.755	8788249.290	66.511	-10.952
		227907.118	8798297.886	66.511	-10.861
Cluster 3-9	21	227907.118	8798297.886	66.511	-10.861
		227989.755	8788249.290	66.511	-10.952
		237953.043	8788330.055	66.602	-10.952
		237873.440	8798378.014	66.602	-10.861
Cluster 3-10	22	237873.440	8798378.014	66.602	-10.861
		237953.043	8788330.055	66.602	-10.952
		247915.711	8788407.800	66.693	-10.952
		247839.141	8798455.145	66.693	-10.861
Cluster 3-11	23	208107.164	8788079.103	66.329	-10.952
		208196.588	8778029.118	66.329	-11.042
		218135.162	8778116.398	66.420	-11.042
		218048.791	8788165.701	66.420	-10.952
Cluster 3-12	24	218025.825	8788165.504	66.420	-10.952
		218112.202	8778116.200	66.420	-11.042
		228073.073	8778200.646	66.511	-11.042
		227989.755	8788249.290	66.511	-10.952
Cluster 3-13	25	227989.755	8788249.290	66.511	-10.952
		228073.073	8778200.646	66.511	-11.042
		238033.301	8778282.047	66.602	-11.042
		237953.043	8788330.055	66.602	-10.952
Cluster 3-14	26	237953.043	8788330.055	66.602	-10.952
		238033.301	8778282.047	66.602	-11.042
		247992.912	8778360.404	66.693	-11.042
		247915.711	8788407.800	66.693	-10.952
Cluster 3-15	27	208196.588	8778029.118	66.329	-11.042
		208286.741	8767979.086	66.329	-11.133
		218222.236	8768067.047	66.420	-11.133
		218135.162	8778116.398	66.420	-11.042
Cluster 3-16	28	218112.202	8778116.200	66.420	-11.042
		218199.284	8768066.847	66.420	-11.133
		228157.070	8768151.953	66.511	-11.133
		228073.073	8778200.646	66.511	-11.042
Cluster 3-17	29	228073.073	8778200.646	66.511	-11.042
		228157.070	8768151.953	66.511	-11.133
		238114.215	8768233.990	66.602	-11.133
		238033.301	8778282.047	66.602	-11.042

<i>Block No.</i>		<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>
Cluster 3-18	30	238033.301	8778282.047	66.602	-11.042
		238114.215	8768233.990	66.602	-11.133
		248070.742	8768312.959	66.693	-11.133
		247992.912	8778360.404	66.693	-11.042
Cluster 3-19	31	203318.738	8767933.959	66.284	-11.133
		203411.174	8757883.530	66.284	-11.224
		213343.904	8757973.712	66.375	-11.224
		213254.573	8768023.448	66.375	-11.133
Cluster 3-20	32	213254.573	8768023.448	66.375	-11.133
		213343.904	8757973.712	66.375	-11.224
		223275.962	8758060.814	66.466	-11.224
		223189.734	8768109.882	66.466	-11.133
Cluster 3-21	33	223189.734	8768109.882	66.466	-11.133
		223275.962	8758060.814	66.466	-11.224
		233207.371	8758144.838	66.557	-11.224
		233124.246	8768193.260	66.557	-11.133
Cluster 3-22	34	233124.246	8768193.260	66.557	-11.133
		233207.371	8758144.838	66.557	-11.224
		243138.155	8758225.783	66.648	-11.224
		243058.131	8768273.584	66.648	-11.133
Cluster 3-23	35	243058.131	8768273.584	66.648	-11.133
		243138.155	8758225.783	66.648	-11.224
		253068.337	8758303.652	66.738	-11.224
		252991.413	8768350.856	66.738	-11.133
Cluster 3-24	36	208377.624	8757929.006	66.329	-11.224
		208469.236	8747878.879	66.329	-11.315
		218398.499	8747968.200	66.420	-11.315
		218310.016	8758017.648	66.420	-11.224
Cluster 3-25	37	218287.070	8758017.447	66.420	-11.224
		218375.561	8747967.997	66.420	-11.315
		228327.102	8748054.419	66.511	-11.315
		228241.746	8758103.211	66.511	-11.224
Cluster 3-26	38	228241.746	8758103.211	66.511	-11.224
		228327.102	8748054.419	66.511	-11.315
		238278.005	8748137.724	66.602	-11.315
		238195.783	8758185.882	66.602	-11.224
Cluster 3-27	39	238195.783	8758185.882	66.602	-11.224
		238278.005	8748137.724	66.602	-11.315
		248228.292	8748217.915	66.693	-11.315
		248149.202	8758265.462	66.693	-11.224

<i>Block No.</i>		<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD) (WGS84), (E)</i>	<i>Lat. (DD) (WGS84), (S)</i>	
Cluster 3-28	40	248103.320	8758265.102	66.693	-11.224	
		248182.424	8748217.552	66.693	-11.315	
		258109.189	8748294.468	66.784	-11.315	
		258033.210	8758341.434	66.784	-11.224	
Cluster 3-29	41	208469.236	8747878.879	66.329	-11.315	
		208561.577	8737828.703	66.329	-11.406	
		218487.687	8737918.703	66.420	-11.406	
		218398.499	8747968.200	66.420	-11.315	
Cluster 3-30	42	218375.561	8747967.997	66.420	-11.315	
		218464.756	8737918.499	66.420	-11.406	
		228413.138	8738005.577	66.511	-11.406	
		228327.102	8748054.419	66.511	-11.315	
Cluster 3-31	43	228327.102	8748054.419	66.511	-11.315	
		228413.138	8738005.577	66.511	-11.406	
		238360.881	8738089.516	66.602	-11.406	
		238278.005	8748137.724	66.602	-11.315	
Cluster 3-32	44	208561.577	8737828.703	66.329	-11.406	
		208654.647	8727778.479	66.329	-11.496	
		218577.578	8727869.157	66.420	-11.496	
		218487.687	8737918.703	66.420	-11.406	
Cluster 3-33	45	218464.756	8737918.499	66.420	-11.406	
		218554.654	8727868.951	66.420	-11.496	
		228499.852	8727956.685	66.511	-11.496	
		228413.138	8738005.577	66.511	-11.406	
Cluster 3-34	46	228413.138	8738005.577	66.511	-11.406	
		228499.852	8727956.685	66.511	-11.496	
		238444.412	8728041.256	66.602	-11.496	
		238360.881	8738089.516	66.602	-11.406	
Cluster 4	Cluster 4-1	47	169614.097	8618196.279	65.961	-12.483
			169730.399	8608098.222	65.961	-12.574
			179649.194	8608211.145	66.052	-12.574
			179536.398	8618308.436	66.052	-12.483
	Cluster 4-2	48	179536.398	8618308.436	66.052	-12.483
			179649.194	8608211.145	66.052	-12.574
			189567.249	8608320.613	66.143	-12.574
			189457.956	8618417.161	66.143	-12.483
	Cluster 4-3	49	189457.956	8618417.161	66.143	-12.483
			189567.249	8608320.613	66.143	-12.574
			199484.586	8608426.628	66.234	-12.574
			199378.795	8618522.457	66.234	-12.483

<i>Block No.</i>		<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>
Cluster 4-4	50	169730.399	8608098.222	65.961	-12.574
		169847.534	8598000.115	65.961	-12.665
		179762.799	8598113.803	66.052	-12.665
		179649.194	8608211.145	66.052	-12.574
Cluster 4-5	51	179649.194	8608211.145	66.052	-12.574
		179762.799	8598113.803	66.052	-12.665
		189677.325	8598224.014	66.143	-12.665
		189567.249	8608320.613	66.143	-12.574
Cluster 4-6	52	189567.249	8608320.613	66.143	-12.574
		189677.325	8598224.014	66.143	-12.665
		199591.135	8598330.747	66.234	-12.665
		199484.586	8608426.628	66.234	-12.574
Cluster 4-7	53	199484.586	8608426.628	66.234	-12.574
		199591.135	8598330.747	66.234	-12.665
		209504.251	8598434.006	66.326	-12.665
		209401.228	8608529.192	66.326	-12.574
Cluster 4-8	54	184720.153	8598169.343	66.098	-12.665
		184832.790	8588072.324	66.098	-12.756
		194743.402	8588181.525	66.189	-12.756
		194634.318	8598277.815	66.189	-12.665
Cluster 4-9	55	194634.318	8598277.815	66.189	-12.665
		194743.402	8588181.525	66.189	-12.756
		204653.310	8588287.227	66.280	-12.756
		204547.778	8598382.811	66.280	-12.665
Cluster 4-10	56	204547.778	8598382.811	66.280	-12.665
		204653.310	8588287.227	66.280	-12.756
		214562.537	8588389.431	66.371	-12.756
		214460.556	8598484.332	66.371	-12.665
Cluster 4-11	57	189788.185	8588127.362	66.143	-12.756
		189899.827	8578030.659	66.143	-12.847
		199806.507	8578138.826	66.234	-12.847
		199698.442	8588234.813	66.234	-12.756
Cluster 4-12	58	199698.442	8588234.813	66.234	-12.756
		199806.507	8578138.826	66.234	-12.847
		209712.496	8578243.472	66.326	-12.847
		209608.007	8588338.766	66.326	-12.756
Cluster 4-13	59	209608.007	8588338.766	66.326	-12.756
		209712.496	8578243.472	66.326	-12.847
		219617.817	8578344.597	66.417	-12.847
		219516.903	8588439.221	66.417	-12.756

<i>Block No.</i>			<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD) (WGS84), (E)</i>	<i>Lat. (DD) (WGS84), (S)</i>	
Cluster 4-14	60		199806.507	8578138.826	66.234	-12.847	
			199915.329	8568042.785	66.234	-12.939	
			209817.717	8568148.123	66.326	-12.939	
			209712.496	8578243.472	66.326	-12.847	
Cluster 4-15	61		209712.496	8578243.472	66.326	-12.847	
			209817.717	8568148.123	66.326	-12.939	
			219719.438	8568249.916	66.417	-12.939	
			219617.817	8578344.597	66.417	-12.847	
Cluster 5	Cluster 5-1	62	244640.887	8548293.491	66.645	-13.121	
			244735.620	8538182.495	66.645	-13.212	
			254641.588	8538273.816	66.736	-13.212	
			254550.539	8548384.225	66.736	-13.121	
	Cluster 5-2	63		254505.247	8553439.407	66.736	-13.075
				254595.986	8543329.028	66.736	-13.167
				264503.236	8543416.446	66.827	-13.167
				264416.168	8553526.261	66.827	-13.075
	Cluster 5-3	64		264416.168	8553526.261	66.827	-13.075
				264503.236	8543416.446	66.827	-13.167
				274409.946	8543500.255	66.919	-13.167
				274326.546	8553609.530	66.919	-13.075
	Cluster 5-4	65		244735.620	8538182.495	66.645	-13.212
				244830.999	8528071.440	66.645	-13.304
				254733.259	8528163.346	66.736	-13.304
				254641.588	8538273.816	66.736	-13.212
	Cluster 5-5	66		254595.986	8543329.028	66.736	-13.167
				254687.346	8533218.588	66.736	-13.258
				264590.901	8533306.569	66.827	-13.258
				264503.236	8543416.446	66.827	-13.167
	Cluster 5-6	67		264503.236	8543416.446	66.827	-13.167
				264590.901	8533306.569	66.827	-13.258
				274493.916	8533390.918	66.919	-13.258
				274409.946	8543500.255	66.919	-13.167
	Cluster 5-7	68		254687.346	8533218.588	66.736	-13.258
				254779.327	8523108.088	66.736	-13.349
				264679.161	8523196.631	66.827	-13.349
				264590.901	8533306.569	66.827	-13.258
Cluster 6	Cluster 6-1	69	181140.088	8447667.595	66.048	-14.024	
			181266.894	8437551.660	66.048	-14.115	
			191165.201	8437674.198	66.140	-14.115	
			191042.346	8447789.404	66.140	-14.024	

<i>Block No.</i>		<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>
Cluster 6-2	70	171367.863	8437425.243	65.957	-14.115
		171499.454	8427308.502	65.957	-14.206
		181394.507	8427435.669	66.048	-14.206
		181266.894	8437551.660	66.048	-14.115
Cluster 6-3	71	181266.894	8437551.660	66.048	-14.115
		181394.507	8427435.669	66.048	-14.206
		191288.838	8427558.934	66.140	-14.206
		191165.201	8437674.198	66.140	-14.115
Cluster 6-4	72	166551.649	8427243.455	65.911	-14.206
		166686.074	8417126.275	65.911	-14.298
		176577.493	8417256.154	66.002	-14.298
		176447.072	8427372.573	66.002	-14.206
Cluster 6-5	73	176447.072	8427372.573	66.002	-14.206
		176577.493	8417256.154	66.002	-14.298
		186468.181	8417382.108	66.094	-14.298
		186341.761	8427497.789	66.094	-14.206
Cluster 6-6	74	186341.761	8427497.789	66.094	-14.206
		186468.181	8417382.108	66.094	-14.298
		196358.159	8417504.137	66.186	-14.298
		196235.740	8427619.104	66.186	-14.206
Cluster 6-7	75	171631.876	8417191.706	65.957	-14.298
		171765.131	8407074.853	65.957	-14.389
		181652.154	8407203.517	66.048	-14.389
		181522.927	8417319.622	66.048	-14.298
Cluster 6-8	76	181522.927	8417319.622	66.048	-14.298
		181652.154	8407203.517	66.048	-14.389
		191538.458	8407328.233	66.140	-14.389
		191413.257	8417443.613	66.140	-14.298
Cluster 6-9	77	191413.257	8417443.613	66.140	-14.298
		191538.458	8407328.233	66.140	-14.389
		201424.066	8407449.003	66.231	-14.389
		201302.890	8417563.681	66.231	-14.298
Cluster 6-10	78	186595.394	8407266.368	66.094	-14.389
		186723.402	8397150.571	66.094	-14.480
		196605.305	8397274.026	66.186	-14.480
		196481.348	8407389.111	66.186	-14.389
Cluster 6-11	79	196481.348	8407389.111	66.186	-14.389
		196605.305	8397274.026	66.186	-14.480
		206486.524	8397393.513	66.277	-14.480
		206366.615	8407507.908	66.277	-14.389

<i>Block No.</i>			<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>
Cluster 7	Cluster 7-1	80	216926.600	8378941.519	66.372	-14.648
			217044.353	8368827.636	66.372	-14.740
			226934.183	8368941.111	66.464	-14.740
			226820.556	8379054.353	66.464	-14.648
	Cluster 7-2	81	226820.556	8379054.353	66.464	-14.648
			226934.183	8368941.111	66.464	-14.740
			236823.398	8369050.540	66.556	-14.740
			236713.896	8379163.164	66.556	-14.648
	Cluster 7-3	82	236713.896	8379163.164	66.556	-14.648
			236823.398	8369050.540	66.556	-14.740
			246712.021	8369155.923	66.647	-14.740
			246606.641	8379267.952	66.647	-14.648
	Cluster 7-4	83	217044.353	8368827.636	66.372	-14.740
			217162.823	8358713.690	66.372	-14.831
			227048.502	8358827.805	66.464	-14.831
			226934.183	8368941.111	66.464	-14.740
	Cluster 7-5	84	226934.183	8368941.111	66.464	-14.740
			227048.502	8358827.805	66.464	-14.831
			236933.567	8358937.850	66.556	-14.831
			236823.398	8369050.540	66.556	-14.740
	Cluster 7-6	85	236823.398	8369050.540	66.556	-14.740
			236933.567	8358937.850	66.556	-14.831
			246818.041	8359043.828	66.647	-14.831
			246712.021	8369155.923	66.647	-14.740
	Cluster 7-7	86	222105.741	8358771.256	66.418	-14.831
			222222.839	8348657.569	66.418	-14.922
			232104.032	8348770.276	66.510	-14.922
			231991.110	8358883.336	66.510	-14.831
	Cluster 7-8	87	231991.110	8358883.336	66.510	-14.831
			232104.032	8348770.276	66.510	-14.922
			241984.625	8348878.892	66.602	-14.922
			241875.877	8358991.348	66.602	-14.831
	Cluster 7-9	88	241875.877	8358991.348	66.602	-14.831
			241984.625	8348878.892	66.602	-14.922
			251864.639	8348983.418	66.693	-14.922
			251760.063	8359095.292	66.693	-14.831
	Cluster 7-10	89	232104.032	8348770.276	66.510	-14.922
			232217.633	8338657.151	66.510	-15.014
			242094.027	8338766.370	66.602	-15.014
			241984.625	8348878.892	66.602	-14.922



<i>Block No.</i>			<i>Long. (UTM)</i>	<i>Lat. (UTM)</i>	<i>Long. (DD)</i> <i>(WGS84), (E)</i>	<i>Lat. (DD)</i> <i>(WGS84), (S)</i>
Cluster 8	Cluster 8-1	90	300738.580	8298842.537	67.144	-15.380
			300826.162	8288684.058	67.144	-15.471
			310677.646	8288767.131	67.235	-15.471
			310594.403	8298925.166	67.235	-15.380
	Cluster 8-2	91	286048.099	8288551.537	67.006	-15.471
			286142.735	8278392.274	67.006	-15.563
			295990.527	8278482.154	67.098	-15.563
			295900.255	8288640.939	67.098	-15.471
	Cluster 8-3	92	295900.255	8288640.939	67.098	-15.471
			295990.527	8278482.154	67.098	-15.563
			305837.867	8278567.792	67.189	-15.563
			305751.958	8288726.122	67.189	-15.471
	Cluster 8-4	93	305751.958	8288726.122	67.189	-15.471
			305837.867	8278567.792	67.189	-15.563
			315684.777	8278649.189	67.281	-15.563
			315603.230	8288807.086	67.281	-15.471
	Cluster 8-5	94	315603.230	8288807.086	67.281	-15.471
			315684.777	8278649.189	67.281	-15.563
			325531.279	8278726.346	67.373	-15.563
			325454.093	8288883.833	67.373	-15.471
	Cluster 8-6	95	300738.580	8298842.537	67.144	-15.380
			300826.162	8288684.058	67.144	-15.471
			310677.646	8288767.131	67.235	-15.471
			310594.403	8298925.166	67.235	-15.380
	Cluster 8-7	96	286142.735	8278392.274	67.006	-15.563
			286237.917	8268232.937	67.006	-15.655
			296081.320	8268323.294	67.098	-15.655
			295990.527	8278482.154	67.098	-15.563
	Cluster 8-8	97	295990.527	8278482.154	67.098	-15.563
			296081.320	8268323.294	67.098	-15.655
			305924.272	8268409.386	67.189	-15.655
			305837.867	8278567.792	67.189	-15.563
	Cluster 8-9	98	305837.867	8278567.792	67.189	-15.563
			305924.272	8268409.386	67.189	-15.655
			315766.795	8268491.214	67.281	-15.655
			315684.777	8278649.189	67.281	-15.563
	Cluster 8-10	99	315684.777	8278649.189	67.281	-15.563
			315766.795	8268491.214	67.281	-15.655
			325608.911	8268568.781	67.373	-15.655
			325531.279	8278726.346	67.373	-15.563

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Cluster 8-11	100	325531.279	8278726.346	67.373	-15.563
		325608.911	8268568.781	67.373	-15.655
		335450.642	8268642.085	67.465	-15.655
		335377.396	8278799.264	67.465	-15.563

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Annex II

