

INTERNATIONAL COURT OF JUSTICE

**REQUEST FOR INTERPRETATION OF THE JUDGMENT OF 23 MAY 2008 IN THE CASE
CONCERNING *SOVEREIGNTY OVER PEDRA BRANCA/PULAU BATU PUTEH, MIDDLE
ROCKS AND SOUTH LEDGE (MALAYSIA/SINGAPORE)* (MALAYSIA V. SINGAPORE)**

**WRITTEN OBSERVATIONS OF
THE REPUBLIC OF SINGAPORE**

VOLUME 6

(Annexes 69 to 78)

30 OCTOBER 2017

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Annex 69

*Twelfth Sub-Committee Meeting on the Joint Survey Works in and
around Pedra Branca, Middle Rocks and South Ledge, 14-15
February 2011, Singapore, Record of Discussion*

(Appendices F and G have been omitted due to their length)

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TWELFTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

14 – 15 FEBRUARY 2011
SINGAPORE

RECORD OF DISCUSSION

1. The Twelfth Meeting of the Sub-Committee on the Joint Survey Works in and around Pedra Branca, Middle Rocks and South Ledge between Malaysia and the Republic of Singapore ('the Meeting') was held in Singapore from 14 to 15 February 2011.
2. The Singapore Delegation was led by Mr. Lionel Yee, Second Solicitor-General and Director-General, International Affairs Division, Attorney-General's Chambers, Singapore.
3. The Malaysian Delegation was led by Dato' Prof. Sr Dr. Abdul Kadir bin Taib, Director General of Survey and Mapping, Department of Survey and Mapping, Malaysia.
4. The lists of the Singapore and Malaysian Delegations are appended as Appendix A and Appendix B respectively.

AGENDA ITEM 1: OPENING REMARKS

5. The Opening Remarks by the Head of the Singapore Delegation is appended as Appendix C.
6. The Opening Remarks by the Head of the Malaysian Delegation is appended as Appendix D.

AGENDA ITEM 2: ADOPTION OF AGENDA

7. The Agenda for the Meeting, which was adopted by both Delegations, is appended as Appendix E.

AGENDA ITEM 3: CONSIDERATION OF THE TECHNICAL AND FINANCIAL PROPOSALS FROM THE SHORTLISTED INDEPENDENT SERVICE PROVIDERS TO CONDUCT THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

8. The Meeting noted that both sides had shortlisted the same two potential Independent Service Providers ('ISPs'): Applied Hydrography and Oceanography Academy Sdn Bhd ('AHOA') and Geometra International (Private) Limited ('Geometra').

9. On the first day of the Meeting, representatives from both AHOA and Geometra gave presentations and responded to queries from both sides, on the Technical and Financial Proposals that they had submitted. The presentations of AHOA and Geometra are appended as Appendix F and Appendix G respectively.

10. Following the presentations, the Meeting formed a working group to consider and evaluate the Proposals according to the evaluation criteria listed in Appendix B of Annex 3 to the Letter of Invitation. The working group prepared a table entitled 'Evaluation of Tenders Submitted by the Shortlisted ISPs for Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks', which is appended as Appendix H.

11. After the working group presented its evaluation of the tenders, the Meeting considered and agreed that, for reasons of cost as well as the uncertainties in Geometra's proposal regarding the accommodation for the survey team and the tide gauge equipment to be used during the Joint Hydrographic Survey, the Letter of Intent would be issued to AHOA.

12. As regards the concerns about the accuracy of using the tilted multi-beam echo sounder to determine the low water line and low-tide elevation features as proposed by AHOA, the Meeting noted the assurances given by AHOA at its presentation that it would use conventional methods to verify the bathymetric data

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obtained from using the tilted multi-beam echo sounder and if the results do not satisfy the Government Hydrographic Surveyors on board, conventional methods would be used to determine the low water line and low-tide elevations. The Meeting further agreed that the Dynascan equipment offered by AHOA would not be required and that the tide gauge calibration would be based on tidal level observations over a 26-hour period. The above points would be reflected in the written clarifications to AHOA's Technical and Financial Proposal after the issuance of the Letter of Intent.

13. The Meeting agreed to work towards having the Letter of Intent signed and issued to AHOA in the week of 21 February 2011. The agreed draft Letter of Intent is appended as **Appendix J**.

AGENDA ITEM 4: DISCUSSION ON THE TECHNICAL DETAILS PRIOR TO THE CONDUCT OF GLOBAL POSITIONING SYSTEM (GPS) SURVEYING FOR THE JOINT ESTABLISHMENT OF GEODETIC CONTROL STATIONS BETWEEN MALAYSIA AND SINGAPORE IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS – STANDARD OPERATING PROCEDURE

14. The Meeting discussed Singapore's counter-proposal for the Technical Details On The Conduct Of Global Positioning System (GPS) Survey For The Joint Establishment Of Geodetic Control Stations Pursuant To Paragraph 9 Of The Memorandum Of Understanding Between The Government Of Malaysia And The Government Of The Republic Singapore With Regard To The Joint Hydrographic Survey In And Around Pedra Branca And Middle Rocks – Standard Operating Procedure ('the **Geodetic Control Survey SOP**'), which it had forwarded by diplomatic channels to Malaysia on 10 February 2011, as well as Malaysia's proposed amendments to Singapore's counter-proposal.

15. After further discussion, the Meeting agreed on the text of the Geodetic Control Survey SOP, which is appended as **Appendix K**.

AGENDA ITEM 5: ANY OTHER MATTERS

16. The Meeting agreed to update the milestone chart of activities set out in Appendix L to the Record of Discussion of the 10th Sub-Committee Meeting. The updated milestone chart is at **Appendix L**.

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17. The Meeting noted that Malaysia and Singapore had exchanged three months tidal records (from October to December 2008) at Middle Rocks and Pedra Branca, respectively. Both sides will analyse the data and provide comments through correspondence. The Meeting agreed to use any one year's continuous tidal data at Pedra Branca obtained in the period of the last three years to establish the Lowest Astronomical Tide ('LAT') for use in the Joint Hydrographic Survey.

18. The Meeting agreed that the next meeting will be held from 18 to 19 March 2011 in Kuala Lumpur, Malaysia, in order to meet and discuss with AHOA to finalise the Contract Documents for the Joint Hydrographic Survey. Further details of the Meeting will be communicated through diplomatic channels. Malaysia would inform AHOA of the venue and time of the meeting on 18 March 2011.

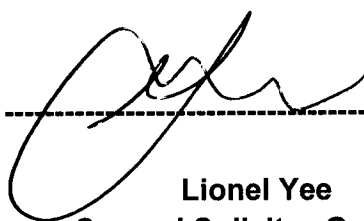
AGENDA ITEM 6: CLOSING REMARKS

19. The Head of the Malaysian Delegation expressed his gratitude to all the members of the Sub-Committee, and thanked the Singapore Delegation for hosting this Meeting.

20. The Head of the Singapore Delegation also expressed his appreciation to all the members of the Sub-Committee for their cooperation and for the progress made during this Meeting.

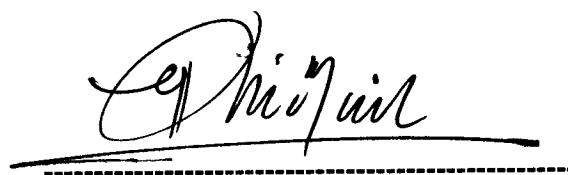
Done in duplicate in Singapore on 15 February 2011.

Head of the Singapore Delegation



**Lionel Yee
Second Solicitor-General
and
Director-General
International Affairs Division
Attorney-General's Chambers
Singapore**

Head of the Malaysian Delegation



**Dato' Prof. Sr Dr. Abdul Kadir bin Taib
Director General of Survey and
Mapping
Department of Survey and Mapping
Malaysia**



TWELFTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

14-15 FEBRUARY 2011
SINGAPORE

SINGAPORE DELEGATION LIST

1. **Mr Lionel Yee** - Co-chairman
Second Solicitor-General
Director-General, International Affairs Division
Attorney-General's Chambers
2. **Ms Davinia Aziz**
Deputy Senior State Counsel
Attorney-General's Chambers
3. **Mr David Low**
State Counsel
Attorney-General's Chambers
4. **Dr Parry Oei**
Chief Hydrographer
Maritime and Port Authority of Singapore
5. **Mr Lim Wee Kiat**
Deputy Chief Hydrographer
Maritime and Port Authority of Singapore
6. **Mr Jamie Chen**
Deputy Chief Hydrographer
Maritime and Port Authority of Singapore
7. **Mr Lee Weng Choy**
Assistant Hydrographer
Maritime and Port Authority of Singapore
8. **Mr Soh Kheng Peng**
Chief Surveyor
Singapore Land Authority
9. **Dr Victor Khoo**
Senior Principal Surveyor
Singapore Land Authority

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10. **Mr Derick Tan**
Senior Surveyor
Singapore Land Authority

11. **Ms Iris Chen**
Deputy Director
Southeast Asia Directorate
Ministry of Foreign Affairs

12. **Mr Tan Tah Jiun**
Country Officer
Southeast Asia Directorate
Ministry of Foreign Affairs

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**TWELFTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**14 - 15 FEBRUARY 2011
SINGAPORE**

MALAYSIAN DELEGATION LIST

1. **Dato' Prof. Sr Dr. Abdul Kadir bin Taib** - Co-Chairman
Director General
Department of Survey and Mapping
2. **Dato' Sr Mohd Noor bin Isa**
Director of Survey (Mapping Division)
Department of Survey and Mapping
3. **Mr. Hasnan Zahedi bin Ahmad Zakaria**
Under Secretary
National Security Council
Primes Minister's Department
4. **First Admiral Zaa'im bin Hasan**
Director General
National Hydrographic Centre
Royal Malaysian Navy
5. **First Admiral Dato' Fadzilah bin Mohd Salleh**
Research Officer
Attorney General's Chambers
6. **Sr Tan Ah Bah**
Director of Survey (Boundary Affairs)
Boundary Affairs Section
Department of Survey and Mapping
7. **Mrs. Wan Fatihat binti Mohamad Jafar**
Principal Assistant Secretary
Land, Survey and Mapping Division
Ministry of Natural Resources and Environment
8. **Mrs. Suraya binti Harun**
Senior Federal Counsel
Research Division
Attorney General's Chambers



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9. **Mr. Mohammed Ridha bin Dato' Abdul Kadir**
Principal Assistant Director
Lands and Mines Office
State Government of Johor
10. **Mr. Shaharuddin bin Onn**
Principal Assistant Secretary
Department of Research, Treaty and International Law
Ministry of Foreign Affairs
11. **Mr. Nik Ady Arman**
Second Secretary
High Commission of Malaysia
Singapore
12. **Sr Zulkifli bin Sidek**
Principal Assistant Director of Survey
Boundary Affairs Section
Department of Survey and Mapping
13. **Sr Chang Leng Hua**
Principal Assistant Director of Survey (Geodesy)
Department of Survey and Mapping
14. **Cmdr. Ramli bin Johari**
Staff Officer I
National Hydrographic Centre
Royal Malaysian Navy
15. **Ms. Nor'airin binti Abd Rashid**
Assistant Secretary
Department of Research, Treaty and International Law
Ministry of Foreign Affairs
16. **Sr Zakaria bin Abdullah**
Assistant Director of Survey
Boundary Affairs Section
Department of Survey and Mapping



**TWELFTH MEETING OF THE MSJTC SUB-COMMITTEE ON
THE JOINT SURVEY WORKS
IN AND AROUND PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**14-15 FEBRUARY 2011
SINGAPORE**

**OPENING REMARKS BY
THE HEAD OF THE SINGAPORE DELEGATION**

**MR. LIONEL YEE,
SECOND SOLICITOR-GENERAL
AND
DIRECTOR-GENERAL, INTERNATIONAL AFFAIRS DIVISION,
ATTORNEY-GENERAL'S CHAMBERS**

Your Excellency, Dato' Professor Sr. Dr. Abdul Kadir bin Taib, Director-General, Department of Survey and Mapping, and my fellow co-chairman of this Sub-Committee; and all the members of the Malaysian Delegation:

2. A very good morning to all of you. On behalf of the members of the Singapore Delegation, I would like to welcome you to Singapore once again, for the 12th Meeting of our Sub-Committee. I hope that you have had a comfortable journey here, and a good rest last night, for those of you who arrived in Singapore last evening.

3. You will recall that we had made quite significant progress on the contractual documents for the Joint Survey at our previous Meeting in Johor Bahru in December last year. We finalised the texts of most of the contractual documents, with only one clause which was left outstanding. This last issue was also eventually resolved through further correspondence between both sides. This allowed us to issue Letters of Invitation to ten potential Independent Service Providers ('ISPs') on 27 December 2010.

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4. In the case of your side, 6 ISPs, and in the case of our side, 5 ISPs, submitted proposals. I am glad that we are in agreement as to which two proposals appear the most promising, since we both shortlisted the same two potential ISPs: Applied Hydrography and Oceanography Academy Sdn Bhd and Geometra International (Private) Ltd.

5. We have therefore invited these two potential ISPs to make presentations to the Sub-Committee this afternoon, and to answer any queries that we may have on the proposals that they submitted. This will enable us to evaluate the proposals and give us the opportunity to seek technical and other clarifications from the two ISPs. Hopefully, after hearing from them, we will be able to make further progress with a view to the issue of a Letter of Intent in due course.

6. At our last Meeting, we also began discussions on the SOP for the conduct of the geodetic control survey, which is an important step in our preparations for the Joint Hydrographic Survey. We had, by diplomatic note last week on the 10th February 2011, conveyed our comments on and responses to the draft SOP which Malaysia had previously tabled. We will explain our comments and amendments in greater detail during this Meeting. I hope that we can finalise the SOP at this Meeting, and pave the way for the geodetic control survey to be carried out in good time before the commencement of the Joint Hydrographic Survey.

7. Let me end by reaffirming my Delegation's commitment to our common goal of completing the Joint Survey as soon as possible. I am confident that, given the excellent working relations which we have established through many past meetings, we will be able to make significant progress on all aspects of our work at this Meeting.

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**TWELFTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**14 - 15 FEBRUARY 2011
SINGAPORE**

**OPENING REMARKS BY
THE HEAD OF THE MALAYSIAN DELEGATION**

**Y. BHG. DATO' PROF. SR DR. ABDUL KADIR BIN TAIB
DIRECTOR GENERAL
DEPARTMENT OF SURVEY AND MAPPING MALAYSIA**

Your Excellency Mr. Lionel Yee, Second Solicitor-General, Director-General International Affairs Division, Attorney General's Chambers, Singapore, co-chairman of this Sub-Committee and distinguished members of Singapore and Malaysian delegations

A very good morning to Your Excellency and members of Singapore and Malaysian Delegations. Let me first wish everybody a happy and prosperous Chinese New Year and may all our wishes come through in this new year. I would like to thank the Singapore side for hosting this meeting here today and for making all the arrangements to make this meeting possible and for your kind hospitality.

I noted that my co-chairman is now the Second Solicitor-General and I would like to congratulate you on your appointment and certainly this Chinese New Year is a year to be cherished very much by you.

Your Excellency and distinguished delegates

I am happy to note that, as agreed during our last meeting in Johor Bahru, Malaysia on 13 December 2010, the Letters of Invitation was successfully issued to the potential Independent Service Providers to conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks on 27 December 2010.



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I would also like to inform that after the closing date on 24 January 2011, at 4.00 pm the Malaysian side had received six (6) Technical and Financial Proposals from potential Independent Service Providers. After carrying out the necessary evaluation on the technical and financial proposals submitted by the six (6) potential Independent Service Providers (ISP) we had shortlisted two (2) potential ISPs which was then forwarded to the Singapore side through diplomatic channels. The Singapore side also forwarded to the Malaysian side two (2) shortlisted potential ISPs through diplomatic channels.

In this regard, I believe our next action is to discuss the evaluation criteria and shortlisting of the preferred ISP to conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks which is to be forwarded to the Malaysia-Singapore Joint Technical Committee for approval.

Your Excellency and distinguished delegates

During our meeting in Johor Bahru, we also agreed that discussion on the SOP involved in the Geodetic Control Survey be carried out during this meeting and I would like to inform that the Malaysian side had received the counter proposal from the Singapore side on the draft Technical details prior to the conduct of GPS for the joint establishment of Geodetic Control Stations between Malaysia and Singapore in and around Pedra Branca and Middle Rocks - Standard Operating Procedure through diplomatic channels on 10 February 2011.

I am optimistic that, with the close cooperation and good will that has long existed between our two countries, this meeting would proceed smoothly and with Your Excellency's able leadership, we would eventually achieve the desired objectives that had been set out.

I look forward to a fruitful discussion with your delegation in the spirit of friendliness and good cooperation to achieve an amicable outcome for this morning's meeting.

Thank you.



**TWELFTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**14-15 FEBRUARY 2011
SINGAPORE**

AGENDA

1. Opening remarks
2. Adoption of Agenda
3. Consideration of the Technical and Financial Proposals from the Shortlisted Independent Service Providers to Conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks
4. Discussion on the Technical Details Prior to the Conduct of Global Positioning System (GPS) Surveying for the Joint Establishment of Geodetic Control Stations between Malaysia and Singapore in and around Pedra Branca and Middle Rocks – Standard Operating Procedure
5. Any other matters
6. Closing remarks

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TWELFTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

14-15 FEBRUARY 2011
SINGAPORE

APPENDIX F

PRESENTATION BY

APPLIED HYDROGRAPHY AND OCEANOGRAPHY ACADEMY SDN BHD

ON 14 FEBRUARY 2011

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Appendix F has been omitted.

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TWELFTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

14-15 FEBRUARY 2011
SINGAPORE

APPENDIX G

PRESENTATION BY

GEOMETRA INTERNATIONAL (PRIVATE) LIMITED

ON 14 FEBRUARY 2011





Appendix G has been omitted.

**EVALUATION OF TENDERS SUBMITTED BY THE SHORTLISTED
INDEPENDENT SERVICE PROVIDERS FOR JOINT HYDROGRAPHIC
SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS**

No.	Evaluation Criteria	Applied Hydrography and Oceanography Academy Sdn Bhd	Geometra International (Private) Limited
1	Contract Sum (USD)	\$59,300.00	\$76,405.00
2	Compliance with Technical Specifications	Met	Met
3	Relevant Experience and Track Records including Qualification of Crew and Survey Team	Met	Met
4	Compliance with Terms and Conditions	Met	Met
5	Breakdown of Components and Contract Sum	Complied.	Complied.
6	Time for Completion	Met	Met

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NO	ITEM DESCRIPTION	Applied Hydrography and Oceanography Academy Sdn Bhd		Geometra International (Private) Limited	
		Details	Cost (US\$)	Details	Cost (US\$)
	Vessel Platforms				
1	Survey boat mobilisation for survey launch and dinghy (Briefly describe type of launch)	1 x 10m Fiberglass Survey Launch Passenger Capacity = 8	800	1 x 14.8m Aluminum Survey Launch Passenger Capacity = 12	1125
2	Survey boat chartering fees for launch and dinghy (including crew and fuel)	-	14,500	-	25000
3	Survey boat demobilisation	-	800	-	1125
	Equipment				
4	Multibeam	Kongsberg EM3002	9500	Reson 7101	7500
5	Motion Sensor	Kongsberg Seatex MRU-H & TSS DMS-H Heave Sensor	2200	Ixsea Octans Gyrocompass and Motion Sensor	1650
6	DGPS	Veripos DGPS System	2500	Veripos DGPS & Trimble GPS System	1660
7	SVP/CTD probe	Valeport Monitor CTD	750	SV Plus V2 SVP & Mirco Sound velocity Sensor	475
8	Tide Gauge	Valeport Tide Master	450	Nortek Aquadopp Profiler	17000
9	Singlebeam	Reson 215D	1100	Odom Echo Trac MKIII Echo Sounder	600
	Survey Acquisition and Processing Software & hardware				
10	Survey Acquistiion System	QinSy V8	2500	QinSy and Hydro Pro	2500

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11	Data Processing System	QinSy Qloud	2500	Qinsy Qloud & NavEdit	10000
12	Consumables	-	1200	-	600
	Manpower				
13	Technical Personnel for surveying, testing and demobilisation	System Engineer	3800	Included in Item 2	-
14	Cat A Hydrographer	-	5700	-	2200
15	Cat B hydrographer	-	4700	-	2170
16	Surveyor on board	-	4700	-	2800
	Others				
17	Equipment delivery to site (if any)	-	-	Included in Item 2 to 9	-
18	Equipment insurance	-	1600	Included in Item 2 to 9	-
19	Technical Personnel (if any)	-	-	-	-




25 February 2011

Applied Hydrography and Oceanography Academy Sdn Bhd
No C1-M, Jalan Selaman 1, Dataran Palma
68000 Ampang, Selangor
Malaysia

Dear Sir,

**LETTER OF INTENT – APPOINTMENT AS INDEPENDENT SERVICE PROVIDER
TO CONDUCT THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA
BRANCA AND MIDDLE ROCKS**

1. The Governments of Malaysia and Singapore (“the Governments”) refer to the Letter of Invitation dated 27 December 2010 sent to Applied Hydrography and Oceanography Academy Sdn Bhd and the Technical and Financial Proposal (“Proposal”) dated 24 January 2011 submitted by Applied Hydrography and Oceanography Academy Sdn Bhd to the Governments.
2. To facilitate the consideration of your Proposal, the Governments request that you attend a meeting on 18 March 2011 in Kuala Lumpur, Malaysia (the time and venue to be confirmed later) at which further clarifications will be sought on your Proposal, including on the proposed methodology and approach of the Survey Work.

Yours faithfully,

**FOR THE GOVERNMENT OF
MALAYSIA**

**FOR THE GOVERNMENT OF THE
REPUBLIC OF SINGAPORE**

.....
**Datuk Mohd Radzi Abdul Rahman
Secretary-General
Ministry of Foreign Affairs
Malaysia**

.....
**Mr. Bilahari Kausikan
Permanent Secretary
Ministry of Foreign Affairs
Republic of Singapore**



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TWELFTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

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SINGAPORE

APPENDIX K

TECHNICAL DETAILS ON THE CONDUCT OF GLOBAL POSITIONING SYSTEM
(GPS) SURVEY FOR THE JOINT ESTABLISHMENT OF GEODETIC CONTROL
STATIONS PURSUANT TO PARAGRAPH 9 OF THE ANNEX OF THE
MEMORANDUM OF UNDERSTANDING BETWEEN THE GOVERNMENT OF
MALAYSIA AND THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE WITH
REGARD TO THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA
BRANCA AND MIDDLE ROCKS

STANDARD OPERATING PROCEDURE

TECHNICAL DETAILS ON THE CONDUCT OF GLOBAL POSITIONING SYSTEM (GPS) SURVEY FOR THE JOINT ESTABLISHMENT OF GEODETIC CONTROL STATIONS PURSUANT TO PARAGRAPH 9 OF THE ANNEX OF THE MEMORANDUM OF UNDERSTANDING BETWEEN THE GOVERNMENT OF MALAYSIA AND THE GOVERNMENT OF THE REPUBLIC OF SINGAPORE WITH REGARD TO THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

STANDARD OPERATING PROCEDURE

1. OBJECTIVE

The objective of this Standard Operating Procedure is to provide guidelines and procedures in carrying out the Global Positioning System (GPS) survey for the joint establishment of Geodetic Control Stations pursuant to paragraph 9 of the Annex of the Memorandum of Understanding between the Government of Malaysia and the Government of the Republic of Singapore with regard to the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks ("the General Scope of Works").

2. SPECIFICATIONS FOR PLANNING THE GLOBAL POSITIONING SYSTEM (GPS) SURVEY

2.1 The proposed GPS Survey Network shall be designed as follows:

- (a) A Primary GPS network comprising two (2) Malaysia Real-Time Kinematic GNSS Network (MyRTKnet) Stations, two (2) Peninsular Malaysia Primary Geodetic Network Stations, four (4) Singapore Satellite Positioning Reference Network (SiReNT) Permanent GPS Stations and one (1) geodetic control station at Middle Rocks.
- (b) A Secondary GPS network comprising of four (4) geodetic control stations, two (2) each at Pedra Branca and Middle Rocks.
- (c) The diagram of the Networks is attached as **Appendix A**.

2.2 Reconnaissance

2.2.1 Reconnaissance shall be carried out jointly by both countries for the following tasks:

- (a) Investigation and identification of the geodetic control stations.
- (b) Survey sites clearance.

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2.2.2 Schedule and logistics

- (a) The schedule for reconnaissance is as **Appendix B**.
- (b) Each country must form survey teams each comprising two (2) authorised land surveyors (one of whom shall be designated the team leader) and three (3) support personnel for the reconnaissance sites located in its territory as follows:
 - (i) Malaysian survey team A (for JHJY, TGPG, GP52 and P111);
 - (ii) Malaysian survey team B (for SRTP and TRTP5);
 - (iii) Singapore survey team A (for SSEK, SNTU, SNYP and SLOY); and
 - (iv) Singapore survey team B (for PB01 and PB02).
- (c) During the reconnaissance, one observer from the other country shall be allowed to be present as part of each team at each respective reconnaissance site. That country shall furnish to the other the passport number, full name (as in passport), date and place of birth, and nationality of such observer by 22 February 2011. The observers will not take with them any instruments or equipment for the task of reconnaissance, or recording devices such as cameras, mobile phone cameras or video recorders.
- (d) Each survey team will be responsible for providing the following instruments and equipment for the task of reconnaissance:
 - (i) appropriate communication device;
 - (ii) appropriate power supply;
 - (iii) compass;
 - (iv) hand held GPS;
 - (v) location map; and
 - (vi) digital camera.

2.2.3 For each reconnaissance site, the survey team of the country where the reconnaissance site is located shall complete the Reconnaissance Report as in **Appendix C**.



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3. TESTING OF GPS EQUIPMENT

3.1 General Requirements

- (a) The testing of all rover GPS equipment to be used in the project shall be carried out at the following calibration sites:
 - (i) Johor GPS Electronic Distance Measurement (EDM) Baseline Calibration Site, Malaysia, and/or
 - (ii) Singapore EDM Baseline Calibration Site, Singapore
- (b) Each country shall carry out their own equipment testing in their own country, in the presence of the observer from the counterpart country.
- (c) The schedule for the testing of equipment is as **Appendix D**.
- (d) The instrumentation and equipment for the task of testing of equipment by both countries are as **Appendix E**.

3.2 Testing Procedures

The testing of the GPS equipment shall be carried out as follows:

3.2.1 Zero Baseline Test

- (a) The test can be carried out by connecting two (2) GPS receivers to the same antenna, using an antenna cable-splitter appropriate for the brand of receiver/antenna (as recommended by the GPS equipment manufacturer).
- (b) Alternatively, if integrated antenna-receiver GPS equipment is used, an indoor re-radiating antenna can be used to carry out the Zero Baseline Test for the GPS receivers.
- (c) The experimental setup of the zero baseline test as described in **Appendix F-1** should be followed.
- (d) The test should be performed for a minimum of ten (10) minutes observation session, with at least 15 seconds recording interval.
- (e) The resulting (computed) slope distance between the two (2) receivers being tested must be less than **three (3) millimetres**. If this tolerance is not met, the test should be repeated using a longer observation period, and if the tolerance is not met again, the receiver must be sent to the GPS receiver agent for further testing.

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- (f) The test should be carried out for all GPS receivers and antennas.
- (g) The results of the test shall be documented with the appropriate details using the Calibration Form in **Appendix F-2**.

3.2.2 Short Baseline Test

- (a) The GPS receivers should be tested against the established EDM baseline lengths (between pillars), varying from twenty (20) metres to about 500 metres.
- (b) The experimental setup of the short baseline test as described in **Appendix G-1** should be followed.
- (c) The test should be performed for a minimum of ten (10) minutes observation sessions.
- (d) The resulting difference in slope distance between the GPS measurement and the standard must be less than **ten (10) millimetres**. If this tolerance is not met the test should be repeated using a longer observation period, and if the tolerance is not met again the receiver must be sent to the GPS receiver agent for further testing.
- (e) The results of the test shall be documented with the appropriate details using the Calibration Form in **Appendix G-2**.

3.2.3 Tribrach Test

- (a) A tribrach test should be performed jointly to ensure the deviation of its line-of-sight from the vertical for the optical plummet is correct.
- (b) The experimental setup of the tribrach test as described in **Appendix H** should be followed.

4. GPS OBSERVATION

- 4.1 The GPS observation shall be carried out in accordance with paragraph 9 of the General Scope of Works.
- 4.2 Schedule and logistics
 - (a) Each country shall carry out GPS observation at its own geodetic



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control stations.

- (b) The schedule for the GPS observation is as **Appendix I**.
- (c) Each country must form survey teams each comprising one (1) authorised land surveyor (who shall be designated the team leader) and at least one (1) support personnel for each GPS observation site located in its territory as follows:
 - (i) Malaysian survey team A (for SRTP and TRTP5);
 - (ii) Malaysian survey team B (for GP52);
 - (iii) Malaysian survey team C (for P111); and
 - (iv) Singapore survey team (for PB01 and PB02).
- (d) During the conduct of the GPS observation, one observer from the other country shall be allowed to be present as part of each team at each respective geodetic control station. That country shall furnish to the other the passport number, full name (as in passport), date and place of birth, and nationality of such observer by 7 March 2011. The observers will not take with them any instruments or equipment for the task of GPS observation, or recording devices such as cameras, mobile phone cameras or video recorders.
- (e) Each survey team will be responsible for providing the following instruments and equipment for the task of GPS observation:
 - (i) GPS receiver;
 - (ii) GPS antenna;
 - (iii) tribrach;
 - (iv) adaptor;
 - (v) antenna cable (optional);
 - (vi) geodetic tripod;
 - (vii) field forms;
 - (viii) camping gear (optional);
 - (ix) *parang* (optional);
 - (x) appropriate communication device;
 - (xi) appropriate power supply; and
 - (xii) laptop computer or equivalent.

4.3 Raw observational data downloading and backup

- (a) The raw observational data from each observation session shall be transferred from the GPS receiver or controller to external media on the same day of the observation session.
- (b) The downloaded raw observational data shall be archived and



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backed up on at least two (2) different media, which may be a hard disk drive, CD, pen-drive or others.

5. EXCHANGE OF RAW OBSERVATIONAL DATA

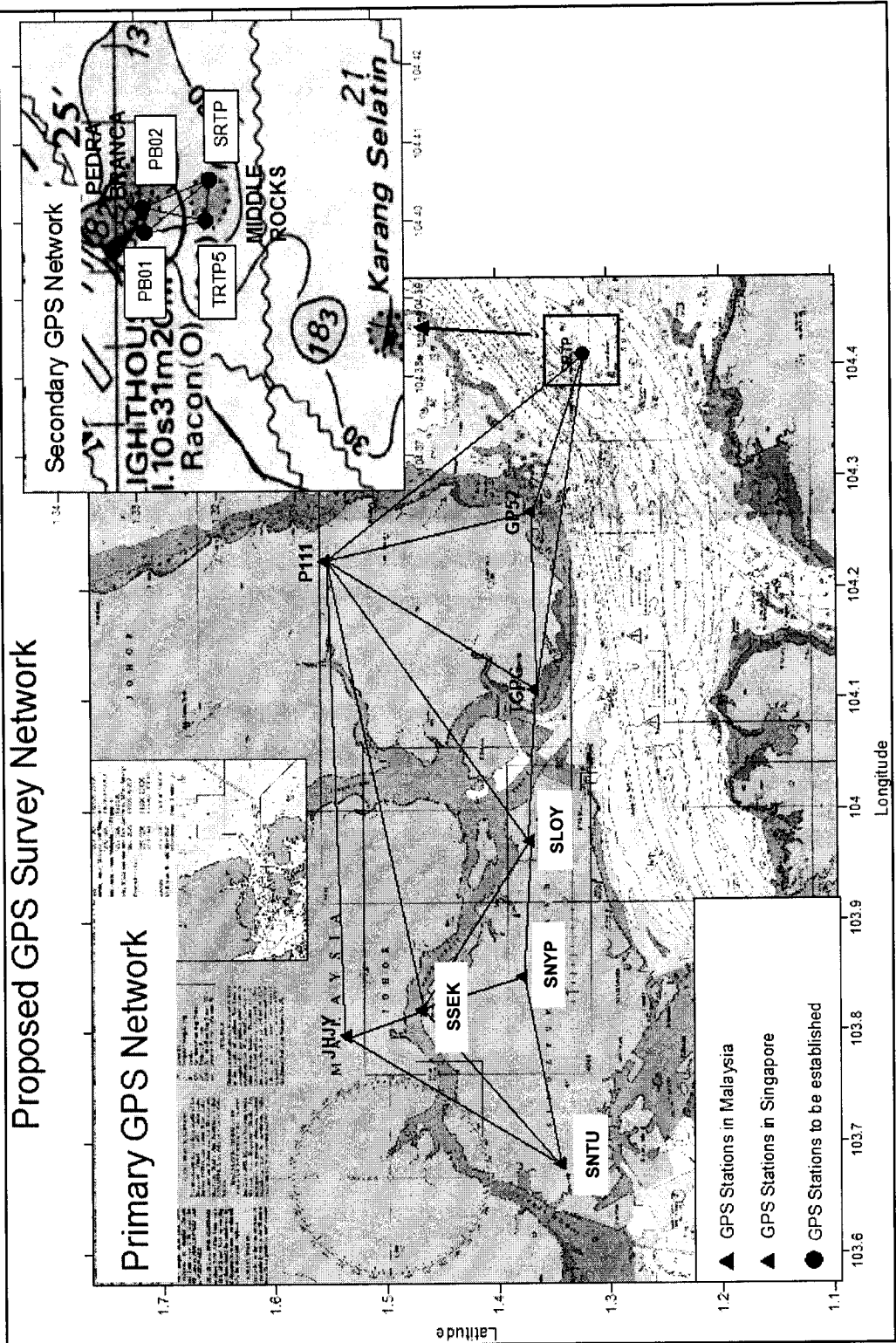
Pursuant to paragraph 9.1.10 of the General Scope of Works, all raw observational data shall be exchanged in Receiver Independent Exchange (RINEX) format between both countries at the end of the GPS observation at locations to be agreed upon, or within five (5) days of the GPS observation through a communication channel to be agreed upon.



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APPENDIX A

PROPOSED GEODETIC CONTROL STATIONS



SCHEDULE FOR JOINT RECONNAISSANCE

DATE	TIME	TEAM	ACTIVITIES / TASKS	TRANSPORTATION	REMARKS
8 March 2011 9:00 am		Malaysian survey team A (with Singapore observer)	<ol style="list-style-type: none"> Briefing by Malaysian team leader at appropriate location in Malaysia Travelling to the Malaysian stations (JHJY, TGPG, GP52 and P111). Preparation, clearance, investigation and reconnaissance 	Land transport (Malaysian Vehicle)	The total number of days will depend on actual progress.
		Singapore survey team A (with Malaysian observer)	<ol style="list-style-type: none"> Briefing by Singapore team leader at appropriate location in Singapore Travelling to the Singapore stations (SSEK, SNTU, SNYP and SLOY) Preparation, clearance, investigation and reconnaissance 	Land transport (Singapore Vehicle)	

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APPENDIX B

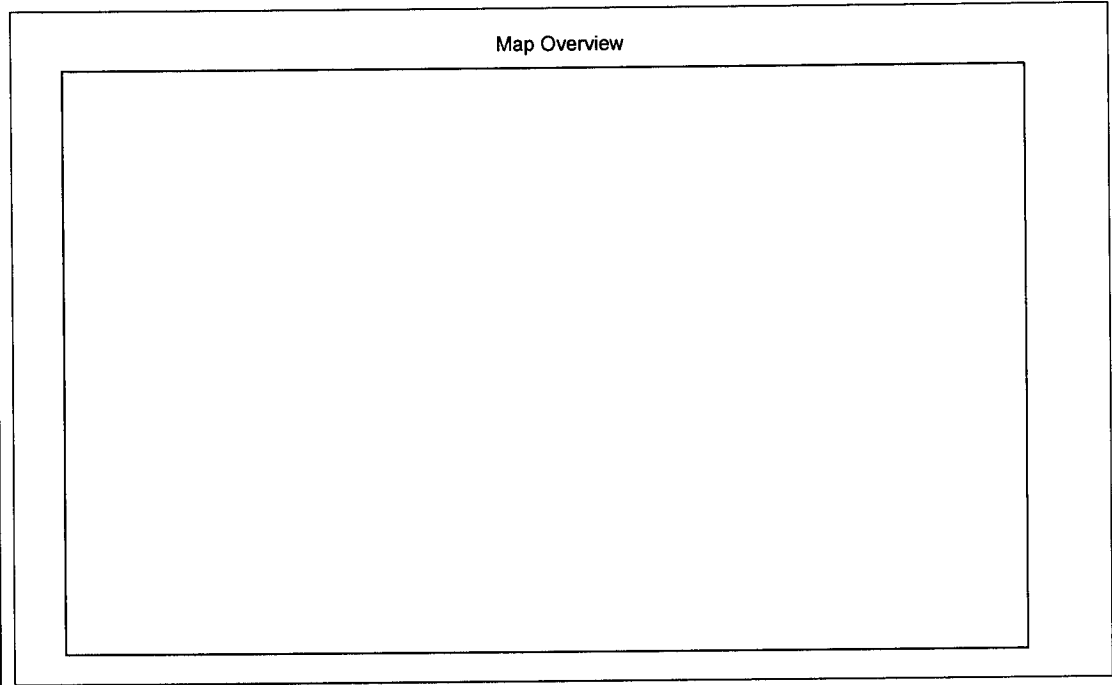
DATE	TIME	TEAM	ACTIVITIES / TASKS	TRANSPORTATION	REMARKS
<p>9 March 2011 7:00 am</p> <p><i>(Note: In the event that weather and sea conditions do not permit sea transport on 9 March 2011, this segment of the reconnaissance will be carried out on 10 March 2011.)</i></p>	<p>Malaysian survey team B (with Singapore observer)</p>	<ol style="list-style-type: none"> 1. Depart from Customs Jetty Tanjung Pengelih for Malaysian stations SRTP and TRTP5 2. Preparation, clearance, investigation and reconnaissance 3. Preparation of Reconnaissance Report and travelling back 	<p>Sea transport (Malaysian vessel)</p>	<p>The total number of days will depend on actual progress.</p>	
	<p>Singapore survey team B (with Malaysian observer)</p>	<ol style="list-style-type: none"> 1. Depart from Marina South Pier for Singapore stations PB01 and PB02. 2. Preparation, clearance, investigation and reconnaissance 3. Preparation of Reconnaissance Report and travelling back 	<p>Sea transport (Singapore vessel)</p>		

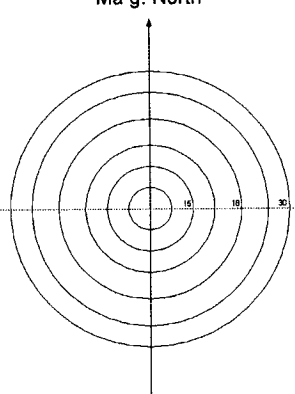
Site Documentation

Project : _____
Station Name : _____ 4-Char ID : _____ Station No : _____
Location : _____ City : _____ Country : _____
Type of Monument : (Inscription) _____ Date of Monumentation : _____

Approx Coordinates : _____
Latitude : _____ Longitude : _____ Height : _____ Meter
Geodetic Datum : _____ Source : _____

On Site Facilities : _____	Environment : _____
Nearest Site Facilities : _____	Danger of Damage : _____
To Find : _____	Visibility : _____
Local Access : _____	Geodetic Sites : _____
Ownership, Permission : _____	Adverse Conditions : _____



Site Documentation					
Verbal Site Description , Geological Situation :			Station Name : _____ Station No : _____		
Practical Information :					
private property, authorization obtained from	YES	NO	(name)		
person to contact	YES	NO	(who, how)		
access restricted	YES	NO	(distance)		
telephone nearby	YES	NO	(distance)		
electric power nearby	YES	NO	(where)		
equipment storage available	YES	NO	(by who)		
possibility of leaving the equipment without watching	YES	NO	(which)		
possibility of having the equipment watched over	YES	NO	(which)		
special equipment	YES	NO			
Restriction of Horizon :			Station Name : _____ Station No : _____		
Ma g. North			Adverse Conditions , Danger of Damages		
					
Coordinates of Reference Points (where applicable):					
Station Short Name	Station ID	Latitude (° ' ")	Longitude (° ' ")	Height (m) (ortho.)	Height (m) (ellip.)
Page 2 of 5					




Site Documentation

Station Name :

Station No :

Site Sketch

Map

PK

Dr

Site Documentation	
Photos (with comment and Number)	Station Name : Station No :
View from North Direction	View from South Direction
View from East Direction	View from West Direction

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TEAM LEADER (MALAYSIA/SINGAPORE*)	OBSERVER (MALAYSIA/SINGAPORE*)
*Delete where inapplicable	*Delete where inapplicable

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SCHEDULE FOR TESTING OF GPS EQUIPMENT

DATE	TIME	TEAM	ACTIVITIES / TASKS	TRANSPORTATION	REMARKS
7 March 2011	9:00 am	Malaysian survey team (with Singapore observer)	<ul style="list-style-type: none"> Travelling to Malaysian GPS/EDM Baseline Calibration Site Briefing by Malaysian team leader at the Calibration Site 	Land Transport (Malaysian Vehicle)	Equipment to be tested by both countries as listed in Appendix E.
			<ol style="list-style-type: none"> Zero Baseline Test Short Baseline Test Tribrach Test 		
7 March 2011	9:00 am	Singapore survey team (with Malaysian observer)	<ul style="list-style-type: none"> Travelling to Singapore GPS/EDM Baseline Calibration Site Briefing by Singapore team leader at the Calibration Site 	Land Transport (Singapore Vehicle)	

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APPENDIX D

DATE	TIME	TEAM	ACTIVITIES / TASKS	TRANSPORTATION	REMARKS
7 March 2011	Upon completion of testing	Both Countries	1. Zero Baseline Test 2. Short Baseline Test 3. Tribrach Test Preparation of Report and Travelling Back		

LIST OF EQUIPMENT FOR CALIBRATION

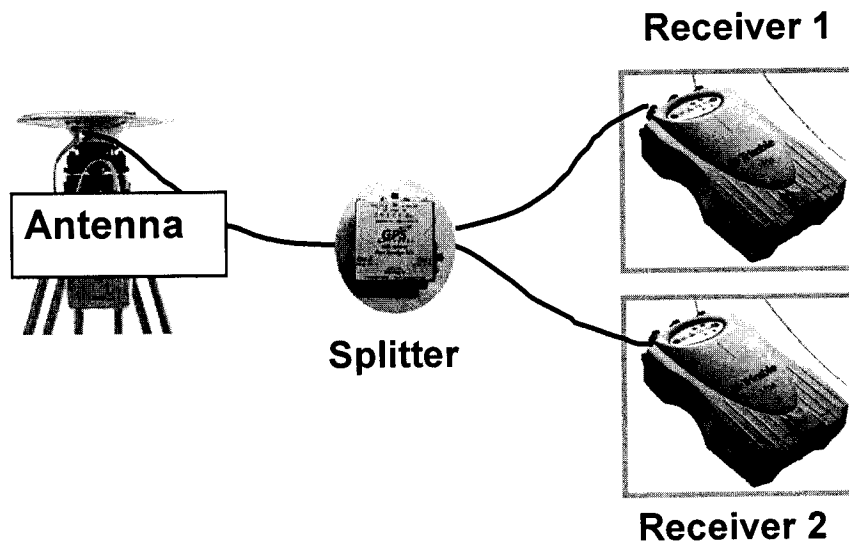
NO	LIST	COUNTRY		TOTAL
		MALAYSIA	SINGAPORE	
1	GPS Receiver	4	2	6
2	GPS Antenna	4	2	6
3	Tribrach	4	2	6
4	Adaptor	4	2	6
5	Antenna Cable (optional)	4	2	6
6	Splitter (optional)	2	1	3
7	Geodetic Tripod	4	2	6
8	Computer Notebook	1	1	2
9	GPS Software	1	1	2
10	Field Form	1	1	2
Total		4 sets of equipment with full accessories	2 sets of equipment with full accessories	

ZERO BASELINE TEST

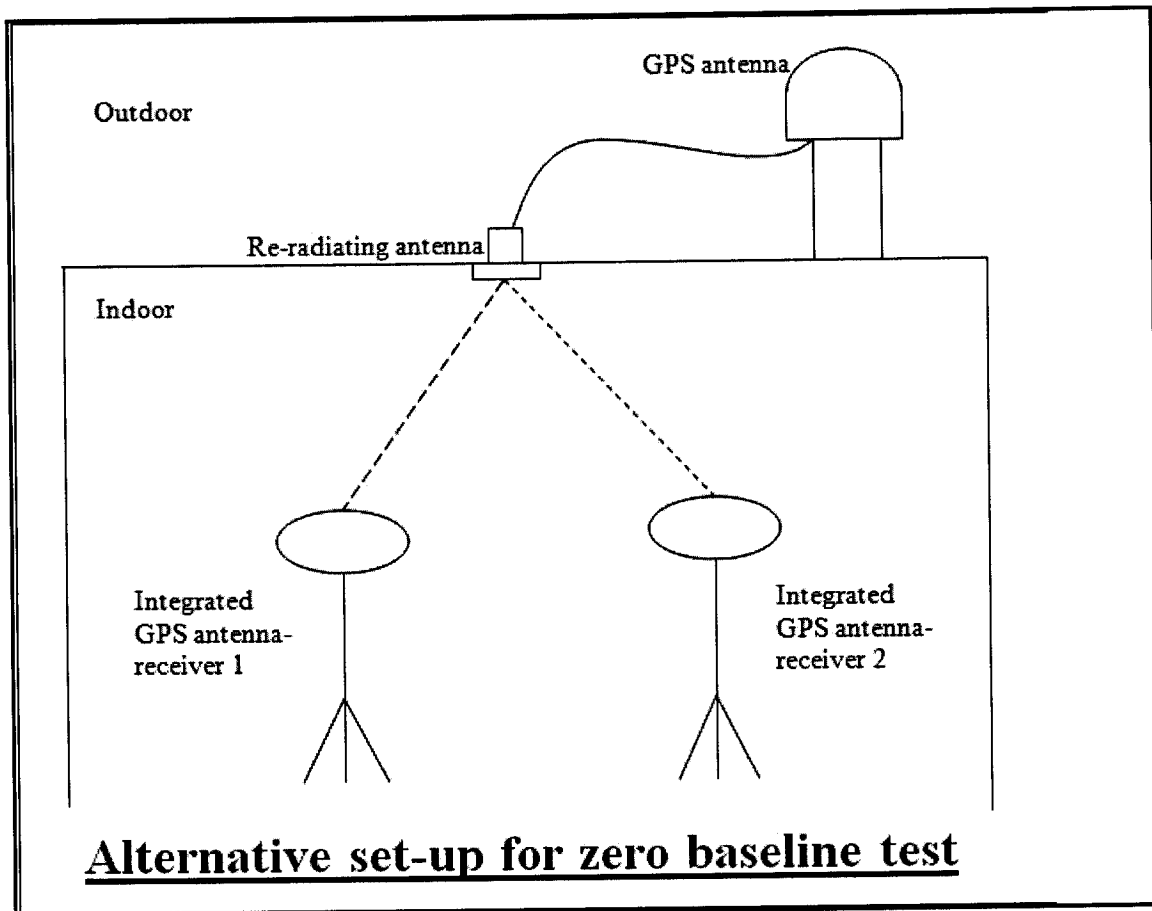
A **zero baseline test** is performed in order to ensure the correct operation of a pair of GPS receivers, associated antennas and cabling, and data processing software.

The test is carried out by connecting two (2) GPS receivers to the same antenna, using an antenna cable-splitter appropriate for the brand of receiver/antenna (as recommended by the GPS receiver manufacturer).

ZERO BASELINE TEST SET-UP



Alternatively, the test may be carried out as depicted below:



The test may be carried out any place where it is convenient. Typically, this would be in a park like area, or on the site of the survey. The test is used to verify the precision of the receiver measurements (and hence its correct operation), as well as validate the data processing software. The following criteria are used when performing the zero baseline test:

Observation length	10 minutes
Number of satellite	≥ 5
GDOP	< 6
Sky clearance	$\geq 90\%$
Cut of angle	15°
Recording interval	15 seconds
Ambiguity Resolution	Fixed
Frequency used	(L1) or (L1 and L2)

Once the data files have been downloaded from the receivers, the data may be processed using the standard baseline processing procedures and processing options (for example, maintaining a cut-off angle of 15°). An ambiguity-fixed (or "bias-fixed") solution should be obtained. If this is not the case, the test should be redone, with a longer observation session.

The resulting (computed) slope distance between the two (2) receivers being tested must be less than **three (3) millimetres**. If this tolerance is not met, the test should be repeated using a longer observation period, and if the tolerance is not met again, the receiver must be sent to the GPS receiver agent for further testing. The test should be applied twice, for all antennas.

JOINT ESTABLISHMENT OF
GEODETIC CONTROL STATIONS
MALAYSIA AND SINGAPORE

CALIBRATION FORM
(ZERO BASELINE TEST)

1. RECEIVER AND ANTENNA DESCRIPTION

	SET 1	SET 2
Receiver	(R1)	(R2)
Serial No.		
Model/Type		
Dual Frequency		
Antenna	(A1)	(A2)
Serial No.		
Model/Type		
Observer Name		
Test Area		

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APPENDIX F-2

2. ZERO BASELINE TEST – ANTENNA COMBINATION 1

RECEIVER 1 SERIAL NO.		RECEIVER 2 SERIAL NO.			ANTENNA 1 SERIAL NO.		OBS. INTERVAL (SEC)	OBS TIME (m)
RECEIVER COMBINATION	FILE NAME	SATELLITE DOP		SATELLITE AVAILABILITY (SV NO.)		ANTENNA HEIGHT	CUT-OFF ANGLE	COMMENTS
		GDOP	PDOP					
R1								
R2								

ZERO BASELINE TEST – ANTENNA COMBINATION 2

RECEIVER 1 SERIAL NO.		RECEIVER 2 SERIAL NO.			ANTENNA 2 SERIAL NO.		OBS. INTERVAL (SEC)	OBS TIME (m)
RECEIVER COMBINATION	FILE NAME	SATELLITE DOP		SATELLITE AVAILABILITY (SV NO.)		ANTENNA HEIGHT	CUT-OFF ANGLE	COMMENTS
		GDOP	PDOP					
R1								
R2								

3. ZERO BASELINE TEST RESULTS

RECEIVERS/ANTENNA COMBINATION	BASELINE RESULTS	AMBIGUITY FIXED	RMS
TEST 1			
TEST 2			

Calibrated by

Signature : _____

Name : _____

Date : _____

Calibration Site : Malaysia/Singapore*

TEAM LEADER
(MALAYSIA/SINGAPORE*)

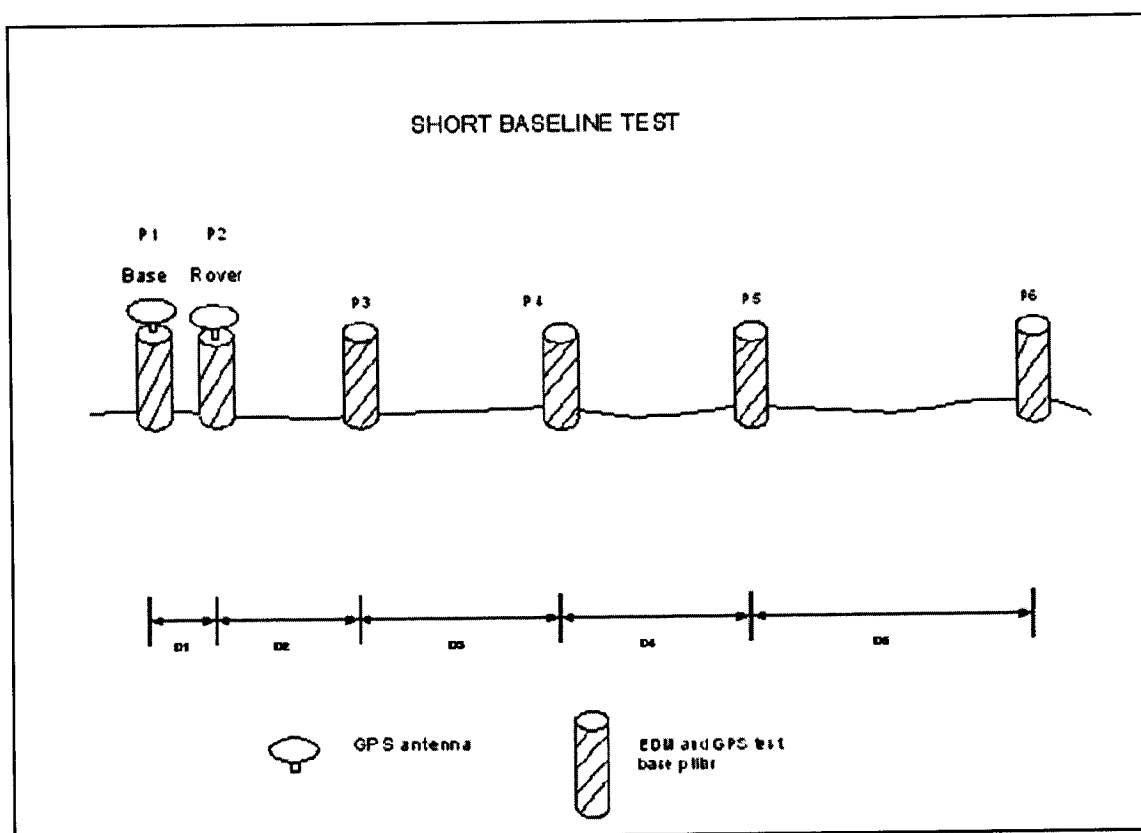
OBSERVER (MALAYSIA/SINGAPORE*)
(IF PRESENT)

*Delete where inapplicable

SHORT BASELINE TEST

The purpose of the short baseline test is to compare GPS observed distances with their corresponding established values measured by the EDM. It is to ensure the correct operation of a pair of GPS receivers (and data processing software) that will be used for baseline measurement.

The EDM test site comprises of six (6) pillars separated at specified interval with the longest baseline of about 500 metres for Malaysia and 350 metres for Singapore. The length between pillars has been routinely measured and documented as the published true values.



The test has been carried out using GPS *rapid static* technique. One receiver will remain at Pillar 1 during the entire observations while the others are roving.

Each GPS receiver is to be connected to its designated antenna (mounted on the pillar) using the same antenna cable used during surveys. The following criteria are used for the baseline test observations and baseline processing requirements:

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APPENDIX G-1

Observation length	10 minutes
Number of satellite	≥ 5
GDOP	< 6
Sky clearance	$\geq 90\%$
Cut of angle	15°
Recording interval	15 seconds
Ambiguity Resolution	Fixed
Frequency used	L1 and L2

The resulting difference in slope distance between the GPS measurement and the standard must be less than **ten (10) millimetres**. If this tolerance is not met, the test should be repeated using a longer observation period, and if the tolerance is not met again, the receiver must be sent to the GPS receiver agent for further testing.

JOINT ESTABLISHMENT OF
GEODETIC CONTROL STATIONS
MALAYSIA AND SINGAPORE

CALIBRATION FORM
(SHORT BASELINE TEST)

1. RECEIVER AND ANTENNA DESCRIPTION

	SET 1	SET 2
Receiver	(R1)	(R2)
Serial No.		
Model/Type		
Dual Frequency		
Antenna	(A1)	(A2)
Serial No.		
Model/Type		
Observer Name		
Test Area		

JOINT ESTABLISHMENT OF
GEODETIC CONTROL STATIONS

MALAYSIA AND SINGAPORE

SHORT BASELINE TEST

2. TEST RESULTS

Baseline Pillar	Distances		
	Receiver	EDM	Differences
1 - 2			
1 - 3			
1 - 4			
1 - 5			
1 - 6			

Baseline Pillar	Distances		
	Receiver	EDM	Differences
1 - 2			
1 - 3			
1 - 4			
1 - 5			
1 - 6			

Baseline Pillar	Distances		
	Receiver	EDM	Differences
1 - 2			
1 - 3			
1 - 4			
1 - 5			
1 - 6			

Calibrated by

Signature : _____

Name : _____

Date : _____

Calibration Site : Malaysia/Singapore*

**TEAM LEADER
(MALAYSIA/SINGAPORE*)**

**OBSERVER (MALAYSIA/SINGAPORE*)
(IF PRESENT)**

*Delete where inapplicable

TRIBRACH TEST

There are two steps for the test, namely:

1. Adjustment of the circular level (or "spot bubble") of the tribrach.
 2. Adjustment of the verticality of the optical plummet.
-
1. Circular Level Adjustment:
 - 1.1 Setup a theodolite in the tribrach, on a tripod, and level up using the plate level.
 - 1.2 Use the adjustment screws of the circular level to centre the circular bubble, making sure that all the adjustment screws are "firm" (noting that the bubble has four adjusting screws surrounding it, hence as one screw is loosened, the opposite screw must be tightened).
 2. Optical Adjustment:
 - 2.1 Setup a theodolite in the tribrach, on a tripod, on a level and sheltered area, and level up using the plate level.
 - 2.2 Use a sharp pencil to trace the outline of the tribrach base plate on the tripod head (this can be erased later with solvent or water).
 - 2.3 Secure a piece of graph paper on the floor, and mark the position of the plummet's cross-hairs on the graph paper.
 - 2.4 Loosen the fixing screw and carefully turn the tribrach 120° and fit into the outline previously traced. Tighten the central fixing screw, level up the instrument, and mark the new position of the plummet's cross-hairs on the graph paper.
 - 2.5 Repeat the process for the third position of the tribrach. If all three marks coincide, the optical plummet is properly adjusted; if not, adjust the cross-hairs to the point which is the centroid of the three points obtained.
 3. The results of the test shall be documented with the appropriate details in the "GPS Calibration – Plummet Test" chart that appears at the end of this Appendix.

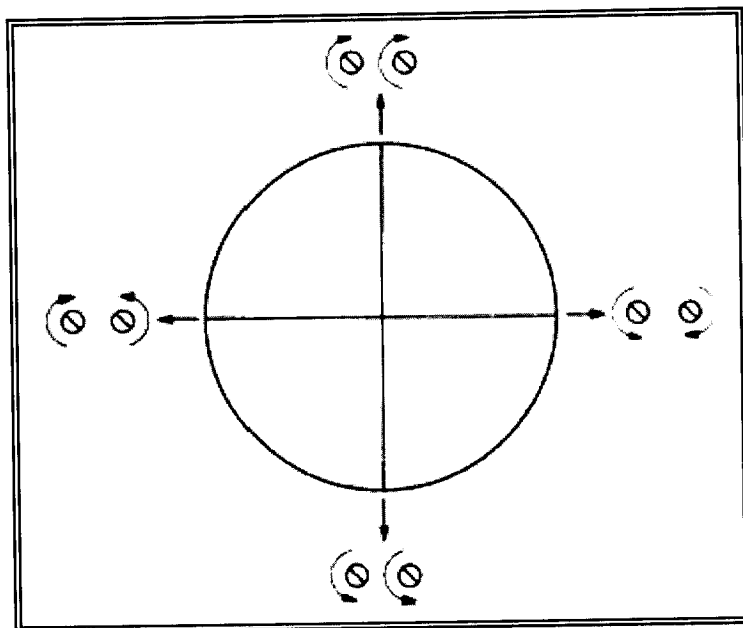


Figure 1: To adjust, turn the adjustment screws as shown to move the cross-hairs in the direction indicated by the straight arrows.

GPS CALIBRATION - PLUMMET TEST

TRIPOD AND TRIBRACH POSITION	POSITION		DIAGRAM (ON GRAPH PAPER)	REMARKS
	TRIPOD	TRIBRACH		
	A B C	A B C		
	A B C	C A B		
	A B C	B C A		

SCHEDULE FOR GPS OBSERVATION

DATE	TIME	TEAM	ACTIVITIES / TASKS	TRANSPORTATION	REMARKS
21 March 2011	3:00 am	Singapore survey team (with Malaysian observer)	Departure from Marina South Pier to travel to PB01 and PB02.	Sea transport (Singapore vessel)	Simultaneous GPS observation of two (2) independent sessions of three (3) hours observation between the hours of 10:00 am and 5:00 pm (Note: In the event that weather and sea conditions do not permit sea transport on 21 March 2011, the GPS observation will be carried out on 22 March 2011.)
	6:00 am	Malaysian survey team A (with Singapore observer)	Departure from Customs Jetty Tanjung Pengelih to travel to SRTP and TRTP5.	Sea transport (Malaysian vessel)	
21 March 2011	8:00 am	Malaysian survey team B (with Singapore observer)	Departure from Sungai Rengit to travel to GP52.	Land transport (Malaysian vessel)	
	8:00 am	Malaysian survey team C (with Singapore observer)	Departure from Sungai Rengit to travel to P111	Land transport (Malaysian vessel)	
	End of observation	All teams (Both countries)	Travelling back	Respective modes of transport	

Milestone Chart for the Joint Hydrographic Survey in and Around Pedra Branca and Middle Rocks

	Activity	2010		2011										
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug			
1	a) Signing of MOU b) Finalisation of Contractual Documents		13											
2	Issuing Letter of Invitation (Open for 3 weeks)		20											
3	Deadline for Submission of Technical and Financial Proposal		10											
4	Evaluation of Technical and Financial Proposals		15											
5	Meeting between Malaysia & Singapore (in S'pore) a) Presentations by Shortlisted ISPs b) Shortlisting of preferred ISP c) Submission of preferred ISP to PS for approval				14-15									
6	Issue of Letter of Intent to ISP				22									
7	Geodetic Control Survey a) Testing of GPS equipment b) Reconnaissance c) GPS Observation d) Data Processing and Submission of Report					7	8-9 (10)	21 (22)	26 to 8					
8	Meeting between Malaysia & Singapore (in KL) a) Status of Geodetic Survey b) Discussion with successful ISP					18-19								
9	Issue of Letter of Appointment to ISP													
10	Conduct of hydrographic survey by ISP a) Mobilisation b) Conduct of Survey (Start date) c) Post Processing (Joint) d) Submission of Report of Survey END									11	18	25 to 9 (est.)		

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Annex 70

Thirteenth Sub-Committee Meeting on the Joint Survey Works in and around Pedra Branca, Middle Rocks and South Ledge, Kuala Lumpur, Malaysia, 18-19 March 2011, Record of Discussion

THIRTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

KUALA LUMPUR, MALAYSIA
18 - 19 MARCH 2011

RECORD OF DISCUSSION

1. The Thirteenth Meeting of the Sub-Committee on the Joint Survey Works in and around Pedra Branca, Middle Rocks and South Ledge between Malaysia and the Republic of Singapore was held in Kuala Lumpur, Malaysia on 18 - 19 March 2011.
2. The Malaysian Delegation was led by Dato' Prof. Sr Dr. Abdul Kadir bin Taib, Director General of Survey and Mapping, Department of Survey and Mapping, Malaysia.
3. The Singapore Delegation was led by Mr. Lionel Yee, Second Solicitor-General and Director-General, International Affairs Division, Attorney-General's Chambers, Singapore.
4. The lists of the Malaysian and Singapore Delegations are appended as Appendix A and Appendix B respectively.

AGENDA ITEM 1: OPENING REMARKS

5. The Opening Remarks by the Head of the Malaysian Delegation is appended as Appendix C.
6. The Opening Remarks by the Head of the Singapore Delegation is appended as Appendix D.

AGENDA ITEM 2: ADOPTION OF AGENDA

7. The Agenda for the Meeting, which was adopted by both Delegations, is appended as Appendix E.

AGENDA ITEM 3: CONDUCT OF GLOBAL POSITIONING SYSTEM (GPS) SURVEYING FOR THE JOINT ESTABLISHMENT OF GEODETIC CONTROL STATIONS BETWEEN MALAYSIA AND SINGAPORE IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

8 Sr Dr. Azhari bin Mohamed, Director of Survey (Geodesy), Department of Survey and Mapping Malaysia and Dr. Victor Khoo, Senior Principal Surveyor, Singapore Land Authority (SLA) briefed the Meeting on the progress of the geodetic control survey. The Meeting was informed of the following:

- (i) the testing of GPS equipment to be used in the geodetic control survey namely Zero Baseline Test, Short Baseline Test and Tribrach Test, was carried out successfully as scheduled at Johor GNSS EDM Baseline Calibration site, Malaysia and Singapore EDM Baseline Calibration site, Singapore on 7 March 2011.
- (ii) the joint reconnaissance survey was carried out successfully on Malaysian primary stations namely JHJY, TGPG, GP52 and P111 and Singapore primary stations namely SSEK, SNTU, SNYP and SLOY as scheduled on 8 March 2011.
- (iii) the joint reconnaissance survey was carried out successfully on Malaysian secondary stations namely SRTP and TRTP5 and Singapore secondary stations namely PB01 and PB02 as scheduled on 9 March 2011.
- (iv) the representatives from both sides were present during the testing of GPS equipment and the joint reconnaissance survey for the joint establishment of geodetic control stations.

9. The Meeting took note that both sides had checked and signed the equipment calibration forms and joint reconnaissance survey forms. The reports on the testing of GPS equipment and the joint reconnaissance survey will be attached to the final Geodetic Control Survey Report after the completion of the GPS observation, data processing and adjustment.

10. The Meeting also took note that the GPS observation will be carried out as scheduled on 21 March 2011 in the presence of representatives from both sides. Both sides agreed to delay the departure time of the survey team to Pedra Branca from 3.00 am to 4.00 am and move the start time of GPS observation an hour earlier from 10.00 am to 9.00 am. The GPS observation would end at 4.00 pm.

11. The Meeting deliberated and agreed to the Data Processing and Adjustment Strategy for GPS Observation as attached in ~~Appendix F~~.

12. The Meeting also agreed to use GPS technique to relate the benchmarks for tidal measurement between Pedra Branca and Middle Rocks. In this regard, second class levelling with an accuracy of $12 \text{ mm } \sqrt{K}$ (where K is the distance in kilometre) would be carried out between respective benchmarks and selected geodetic control stations at Pedra Branca and Middle Rocks during the GPS observation on 21 March 2011. The schematic diagram that shows the relationship between the current benchmarks at Pedra Branca and Middle Rocks is attached in Appendix G.

AGENDA ITEM 4: DISCUSSION ON THE CONTRACT DOCUMENTS FOR APPOINTMENT AS INDEPENDENT SERVICE PROVIDER TO CONDUCT THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS AND MEETING WITH APPLIED HYDROGRAPHY AND OCEANOGRAPHY ACADEMY SDN BHD

13. The Meeting was informed that the Letter of Intent to conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks was issued to Applied Hydrography and Oceanography Academy Sdn Bhd (AHOA) on 25 February 2011. The Meeting was also informed that Singapore had forwarded to the Malaysian side through Diplomatic Notes SHC 019/2011 and SHC 020/2011 dated 17 March 2011 their proposed issues with regard to the Technical and Financial Proposal submitted by AHOA dated 24 January 2011. The Meeting then agreed to discuss with AHOA to seek further clarification on the said Technical and Financial Proposal.

14. On the first day of the Meeting, representatives from AHOA were invited to provide further clarification on the said Technical and Financial Proposal and subsequently thereto, the Meeting and AHOA agreed on the text of Annex 4 to the Letter of Appointment as the Independent Service Provider to conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks – Amendments to the Technical and Financial Proposal dated 24 January 2011 submitted by AHOA. The agreed text dated 19 March 2011 is appended as Appendix H.

15. The Meeting discussed the date of commencement, the time for completion and the final contract sum as well as the issuance of the Letter of Appointment to AHOA.

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16. The Meeting agreed that the date of commencement and the time for completion for the Survey Works would be 1 April 2011 and 31 May 2011 respectively.

17. The Meeting also agreed that the contract sum for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks is USD59,300.00.

18. The Meeting agreed to work towards having the Letter of Appointment signed and issued to AHOA in the week of 21 March 2011. The agreed draft Letter of Appointment is appended as **Appendix J**.

AGENDA ITEM 5: ANY OTHER MATTERS

19. The Meeting noted that the tidal records at the Pedra Branca tide gauge for the year 2010 had been provided by Singapore to Malaysia on 2 March 2011. Both sides agreed to adopt the Lowest Astronomical Tide (LAT) value of 0.12 metres below the zero mark of the Pedra Branca tide gauge. The zero mark of the tide gauge is 5.541 metres below the benchmark on Pedra Branca, which was transferred from the 1978 Four Nations-Joint Survey Benchmark.

20. Singapore informed Malaysia that the requirements applicable to observers in Paragraph 4.2.2(d) of the Technical Details on the Conduct of Global Positioning System (GPS) Survey would also apply to the Hydrographic Surveyors of the two Governments on the Survey Acquisition Team. The relevant particulars were to be provided no later than 14 days before the commencement of the survey acquisition.

21. The Meeting agreed that the next meeting will be held in Singapore tentatively on 16 - 17 June 2011. The Hydrographers of Malaysia and Singapore will meet a day earlier to sign the Report of Survey (ROS) and Fair Sheets after which the ROS and Fair Sheets will be submitted to the Sub-Committee for approval. The date and venue will be communicated through diplomatic channels.

AGENDA ITEM 6: CLOSING REMARKS

22. The Head of the Singapore Delegation expressed his gratitude to all the members of the Sub-Committee, and thanked the Malaysian Delegation for hosting this Meeting.

23. The Head of the Malaysian Delegation also expressed his appreciation to all the members of the Sub-Committee for their co-operation and for the progress made during this Meeting.

Done in duplicate in Kuala Lumpur, Malaysia on 19 March 2011.

Head of the Malaysian Delegation



Dato' Prof. Sr Dr. Abdul Kadir bin Taib
Director General of Survey and
Mapping
Department of Survey and Mapping
Malaysia

Head of the Singapore Delegation



Lionel Yee
Second Solicitor-General
Director-General
International Affairs Division
Attorney-General's Chambers
Singapore



APPENDIX A

THIRTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

KUALA LUMPUR, MALAYSIA
18 - 19 MARCH 2011

LIST OF MALAYSIAN DELEGATION

1. **Dato' Prof. Sr Dr. Abdul Kadir bin Taib** - Co-Chairman
Director General
Department of Survey and Mapping
2. **Dato' Sr Mohd Noor bin Isa**
Director of Survey (Mapping Division)
Department of Survey and Mapping
3. **First Admiral Zaaim bin Hasan**
Director General
National Hydrographic Centre
Royal Malaysian Navy
4. **First Admiral Dato' Fadzilah bin Mohd Salleh**
Research Officer
Attorney General's Chambers
5. **Sr Tan Ah Bah**
Director of Survey (Boundary Affairs)
Boundary Affairs Section
Department of Survey and Mapping
6. **Sr Dr Azhari bin Mohamed**
Director of Survey (Geodesy)
Department of Survey and Mapping
7. **Mrs. Wan Fatihat binti Muhamad Jafar**
Principal Assistant Secretary
Land, Survey and Mapping Division
Ministry of Natural Resources and Environment
8. **Mrs. Suraya binti Harun**
Senior Federal Counsel
Research Division
Attorney General's Chambers
9. **Mr. Mohammed Ridha bin Dato' Abdul Kadir**
Principal Assistant Director
Lands and Mines Office
State Government of Johor

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10. **Cmdr. Hanafiah bin Hassan**
Director of Hydrography
National Hydrographic Centre
Royal Malaysian Navy
11. **Sr Zulkifli bin Sidek**
Principal Assistant Director of Survey
Boundary Affairs Section
Department of Survey and Mapping
12. **Sr Chang Leng Hua**
Principal Assistant Director of Survey (Geodesy)
Department of Survey and Mapping
13. **Cmdr. Ramli bin Johari**
Staff Officer I
National Hydrographic Centre
Royal Malaysian Navy
14. **Mrs. Zarina binti Abd Razak**
Assistant Secretary
National Security Council
Prime Minister's Department
15. **Ms. Nor'airin Binti Abd Rashid**
Assistant Secretary
Department of Research, Treaty and International Law
Ministry of Foreign Affairs
16. **Ms. Hanizah binti Mohd Izzuddin**
Assistant Secretary
Department of Research, Treaty and International Law
Ministry of Foreign Affairs
17. **Mr. Zakaria bin Abdullah**
Assistant Director of Survey
Boundary Affairs Section
Department of Survey and Mapping
18. **Mr. Muhammad Asyran bin Che Amat**
Assistant Director of Survey (Geodesy)
Department of Survey and Mapping

APPENDIX B

**THIRTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**KUALA LUMPUR, MALAYSIA
8 - 19 MARCH 2011**

SINGAPORE DELEGATION LIST

1. **Mr Lionel Yee** - Co-chairman
Second Solicitor-General
Director-General, International Affairs Division
Attorney-General's Chambers

2. **Mr Daren Tang**
Deputy Senior State Counsel
Attorney-General's Chambers

3. **Mr David Low**
State Counsel
Attorney-General's Chambers

4. **Dr Parry Oei**
Chief Hydrographer
Maritime and Port Authority of Singapore

5. **Mr Jamie Chen**
Deputy Chief Hydrographer
Maritime and Port Authority of Singapore

6. **Mr Lee Weng Choy**
Assistant Hydrographer
Maritime and Port Authority of Singapore

7. **Dr Victor Khoo**
Senior Principal Surveyor
Singapore Land Authority

APPENDIX C

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**THIRTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**KUALA LUMPUR, MALAYSIA
18 - 19 MARCH 2011**

**OPENING REMARKS BY
THE HEAD OF THE MALAYSIAN DELEGATION**

**Y. BHG. DATO' PROF. SR DR. ABDUL KADIR BIN TAIB
DIRECTOR GENERAL
DEPARTMENT OF SURVEY AND MAPPING MALAYSIA**

Your Excellency Mr. Lionel Yee, Second Solicitor-General, Director-General International Affairs Division, Attorney General's Chambers, Singapore, co-chairman of this Sub-Committee and distinguished members of Singapore and Malaysian delegations

A very good morning to Your Excellency and members of Singapore and Malaysian Delegations. On behalf of the Malaysian Sub-Committee members, it gives me great pleasure to extend our warm welcome to my counterpart and Singapore Sub-Committee members to Kuala Lumpur once again.

Your Excellency and distinguished delegates

I am happy to note that, as agreed during our last meeting in Singapore on 14 - 15 February 2011, the Letter of Intent to conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks was successfully issued to Applied Hydrography and Oceanography Academy Sdn Bhd (AHOA) on 25 February 2011.

In this regard, we have invited AHOA to this meeting to gather further clarifications on the Technical and Financial Proposal submitted by AHOA including on the proposed methodology and approach for the Joint Hydrographic Survey today.

I hope we would be able to finalise the Contract Documents and the Letter of Appointment in this meeting so that we would be able to forward the said documents

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to the respective Chairman of the Malaysia-Singapore Joint Technical Committee for approval through diplomatic channels and I am optimistic that the actual joint survey could commence as schedule on 11 April 2011.

With regard to the joint investigation and identification of the geodetic stations and the clearance of the survey sites, I was informed that the task had been carried out successfully on 8 & 9 March 2011. The testing of the GPS equipment was also carried out as intended and I hope that the GPS observation would proceed smoothly as planned.

Your Excellency and distinguished delegates

I am optimistic that, with the close cooperation and good will that has long existed between our two countries, this meeting would proceed smoothly and with Your Excellency's able leadership, we would eventually achieve the desired objectives that had been set out.

I look forward to a fruitful discussion with your delegation in the spirit of friendliness and good cooperation to achieve an amicable outcome for this morning's meeting.

Thank you.

APPENDIX D

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**THIRTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**KUALA LUMPUR, MALAYSIA
18 - 19 MARCH 2011**

**OPENING REMARKS BY
THE HEAD OF THE SINGAPORE DELEGATION**

**MR. LIONEL YEE,
SECOND SOLICITOR-GENERAL
AND
DIRECTOR-GENERAL, INTERNATIONAL AFFAIRS DIVISION,
ATTORNEY-GENERAL'S CHAMBERS**

Your Excellency, Dato' Professor Sr. Dr. Abdul Kadir bin Taib, Director-General, Department of Survey and Mapping, and my fellow co-chairman of this Sub-Committee; members of the Malaysian Delegation:

2. Good morning to all of you. On behalf of the Singapore Delegation, I would like to thank you for your warm welcome and kind hospitality, and for making the arrangements for our meeting here at the Grand Millennium Hotel in Kuala Lumpur.

3. I agree with you that we have made considerable progress, since the establishment of our Sub-Committee in June 2008, and now we are very near the start of the actual hydrographic survey.

4. At our last Meeting in Singapore last month, we heard presentations from two shortlisted Independent Service Providers, and we agreed, following those presentations, that on the basis of its stronger proposal, we would look to awarding the contract for the Joint Survey to Applied Hydrography and Oceanography Academy Sdn Bhd. Thank you for facilitating the issue of the Letter of Intent to Applied Hydrography on 25 February 2011. As you mentioned, we had also requested that the company meet with us today to further discuss its proposal.

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5. We will need to finalise the contract documents with Applied Hydrography at this Meeting. A number of clarifications which we sought and obtained from Applied Hydrography at our last Meeting will need to be documented. Some additional clarifications, the ones that we conveyed to you in our diplomatic note yesterday, will also be sought from them this afternoon. These will need to be documented as well. We will also need to tie down details such as the date of commencement of the contract, time for completion, and the contract sum, so that all these can be filled into the Letter of Appointment. I hope that we will, at the end of this Meeting, be in a position to issue a Letter of Appointment, together with all its accompanying documents, so that work can start on schedule.

6. At our last Meeting, we also managed to finalise the SOP for the conduct of the geodetic control survey. We are going to hear updates from the surveyors involved, but I agree with your observation that the testing of equipment and reconnaissance for the geodetic control survey has been smoothly carried out, and we are well on course for the geodetic control survey to be carried out on 21 March 2011.

7. Let me conclude by reaffirming my Delegation's commitment to our common objective of completing the Joint Survey as soon as possible. I have no doubt that, given our close working relationship, we will be able to make excellent progress on all aspects of our work at this Meeting.

APPENDIX E

**THIRTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**KUALA LUMPUR, MALAYSIA
18 - 19 MARCH 2011**

AGENDA

1. Opening remarks
2. Adoption of Agenda
3. Conduct of Global Positioning System (GPS) Surveying for the Joint Establishment of Geodetic Control Stations between Malaysia and Singapore in and around Pedra Branca and Middle Rocks
4. Discussion on the Contract Documents for Appointment as Independent Service Provider to conduct the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks and meeting with Applied Hydrography and Oceanography Academy Sdn Bhd
5. Any other matters
6. Closing remarks

APPENDIX F

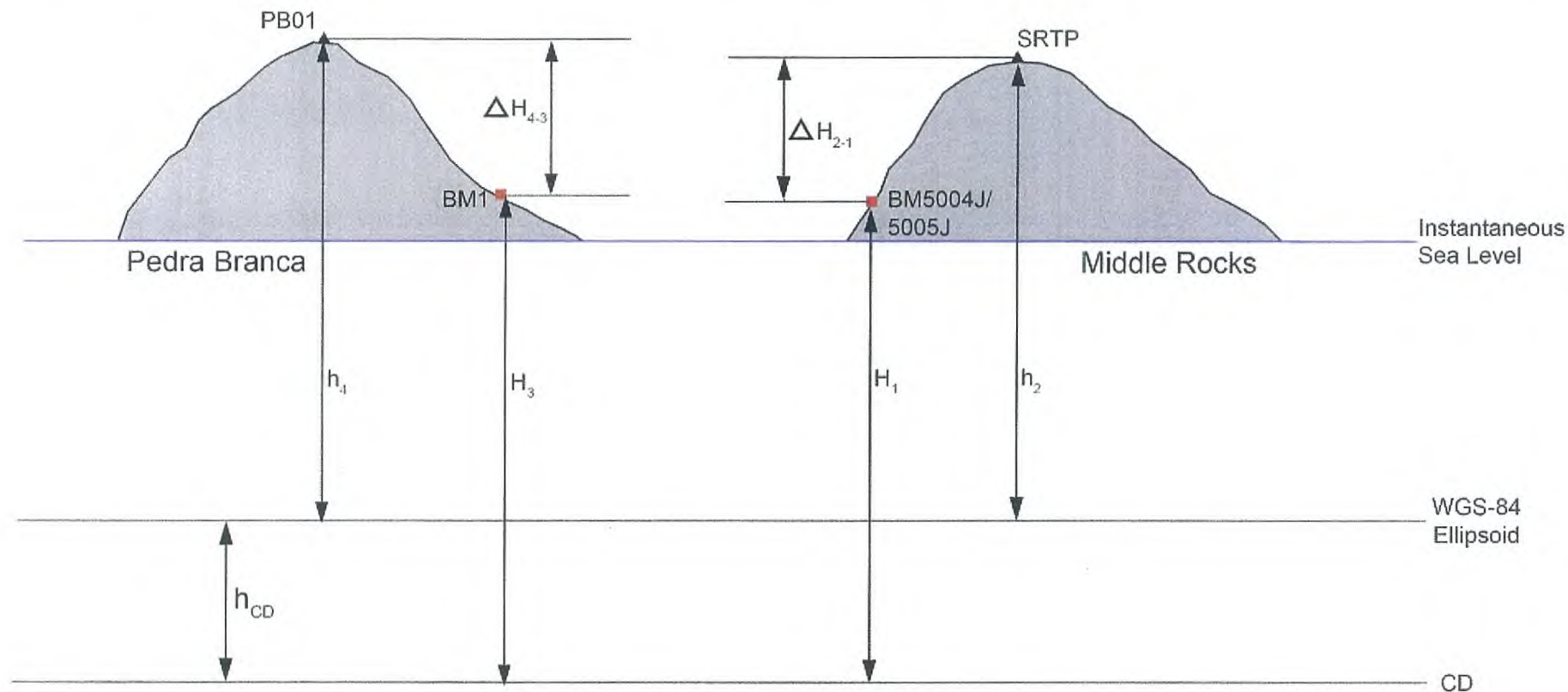
DATA PROCESSING AND ADJUSTMENT STRATEGY FOR GPS OBSERVATION

The strategy for the data processing and adjustment shall be as follows:

No.	Item	Strategy
1.	Processing Package	Appropriate GPS Processing Software
2.	Processing Strategy	Double Difference
3.	GPS Observable	Ionosphere Free (Lc)
4.	Orbits	IGS Rapid / UltraRapid orbit
5.	Elevation Cut-Off Angle	15 degrees
6.	Sampling Rate	30 seconds
7.	Troposphere Mapping	Hopfield tropospheric model / default model of software
8.	Ambiguity Fixed / Free	Fixed
9.	ITRF2000 Mapping Process	<p>a. Three (3) stations i.e. JHJY, TGPG and NTUS in ITRF2000 @ 2000.0 will be used to map the Primary GPS Network in ITRF2000 Reference Frame</p> <p>b. NTUS is adopted as it is one of the IGS Global stations in this region which can function as a quality control to the Primary GPS Network</p> <p>c. Subsequently, the Secondary GPS Network will be established through station SRTP's coordinates</p>

APPENDIX G

SCHEMATIC DIAGRAM - RELATIONSHIP BETWEEN BENCHMARKS AT PEDRA BRANCA AND MIDDLE ROCKS



The height of BM5004J/5005J is given by:

$$h_{CD} = [H_3 + \Delta H_{4.3} - h_4]$$

$$H_1 = h_{CD} + h_2 - \Delta H_{2.1}$$

Note: CD - Chart Datum

H_1 - Height of BM5004J/5005J above Chart Datum

H_3 - Height of BM1 above Chart Datum

h_2 - Ellipsoidal Height of SRTM

h_4 - Ellipsoidal Height of PB01

h_{CD} - Ellipsoidal Height of Chart Datum

$\Delta H_{2.1}$ - Difference in Levelling Height between SRTM and BM 5004J/5005J

$\Delta H_{4.3}$ - Difference in Levelling Height between PB01 and BM1

APPENDIX H

AMENDMENTS TO THE TECHNICAL AND FINANCIAL PROPOSAL DATED 24 JANUARY 2011 SUBMITTED BY APPLIED HYDROGRAPHY AND OCEANOGRAPHY ACADEMY SDN BHD (“AHOA”)

1. General

AHOA has submitted two documents both carrying the reference MGH/QUO-299/10/Technical:

- a. One document entitled, “Technical Proposal”; and
- b. One document entitled, “Commercial Proposal”.

Both documents are identical except for Section 11.0 (Contract Sum – Annex 3 to the Letter of Invitation). For the purposes of the Contract, the Technical and Financial Proposal submitted by AHOA shall refer to the document entitled “Commercial Proposal”.

2. Page 12, Section 2.8.2

Under the section entitled “Vertical Datum”, AHOA clarified that:

- Its tide gauge will be installed at the Pedra Branca jetty.
- The primary tidal data will be obtained from Singapore’s existing tide gauge at the jetty, and data from AHOA’s tide gauge will only be used as a back-up. AHOA will then only need to get access to its tide gauge to download data at the end of the survey acquisition.

3. Page 14, Section 3.1

Under the section entitled “Multi-Beam Sonar Survey”, AHOA clarified that the detailed survey plan will be submitted to the Governments for approval within 7 calendar days of its appointment as the Independent Service Provider (“ISP”).

4. Page 15, Section 3.3

Under the section entitled “Multi-Beam Echo Sounder”:

- AHOA’s schematic plans for the running of survey lines and cross lines

Annex 4 to the Letter of Appointment

will be provided in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of its appointment as the ISP.

- The same multi-beam echo sounder used to cover the low-water line will also cover deeper waters.

5. **Page 18, Section 4.1**

Under the section entitled "General", AHOA will be ready to immediately process the acquired survey data after demobilisation following data acquisition. The post processing will take place at AHOA's office in Ampang, Malaysia, and the methodology will be set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.

6. **Page 23, Section 5**

Under the section entitled "Survey Platform And Personnel", AHOA will furnish to the Governments the passport numbers, full names (as stated in the passports), date and place of birth, and nationality of all personnel involved in the survey acquisition no later than two weeks before the commencement of the survey acquisition.

These personnel will not have with them during the survey acquisition any instruments, equipment or recording devices (such as cameras, mobile phone cameras or video recorders) other than what is necessary for the conduct of the survey acquisition.

7. **Page 23, Section 5**

Under the section entitled "Survey Platform And Personnel", AHOA clarified that the following arrangements will be made in relation to accommodation, meals and drinking water for the Hydrographic Surveyors from Malaysia and Singapore during the entire duration of the survey acquisition:

Accommodation: At Tai Hoe Hotel, Sungai Rengit

Meals: Breakfast and dinner at the hotel and packed lunch

Drinking water: Bottled water will be provided on board the vessel.

Annex 4 to the Letter of Appointment

8. **Page 23, Section 5**

Under the section entitled "Survey Platform And Personnel", AHOA was reminded that, as set out in Paragraph 13.2 of the Technical Specifications for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks (Annex 1 to the Letter of Appointment), AHOA must comply with directions given by the Hydrographic Surveyors of Malaysia and Singapore and where there are differences in views between the two Hydrographic Surveyors, work shall be suspended pending resolution of the matter by the two Governments.

9. **Page 23, Section 5.1**

After the section entitled "Communication Facilities", a new Section 5.2 is to be included as follows:

"5.2 Safety Operating Procedures, Backup Plans and Emergency Response Plan

The following shall be provided by AHOA in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP:

- (a) Safety measures for surveyors
- (b) Daily reporting and communication
- (c) Vessel breakdown plan
- (d) Personnel rotation plan
- (e) Evacuation plan

A standby vessel sourced from Sungai Rengit will be deployed by AHOA which will also be used as a med-evac vessel. AHOA will provide both Governments with the dimensions of this vessel in its detailed survey plan. The detailed survey plan will also cover safety measures for the surveyors when they are working on land."

10. **Page 27, Section 7.1**

Under the section entitled "Survey Method Statement", AHOA clarified that:

- The dates of installation of the tide gauge and the tidal observation will be set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.

Annex 4 to the Letter of Appointment

- The tidal observation will be conducted over a 26-hour period and any manual verification will be confined to daylight hours. Observations can be made for up to 14 days.
- Details on the methodology for the calibration of the gauge and verification of the acquired data will be set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.
- In order for the relationship with Singapore's existing tide gauge at Pedra Branca to be established, AHOA will be provided by the Governments with the benchmark value, which needs to be reduced to Lowest Astronomical Tide ("LAT").
- "IHO-certified QPS QINSy" is to be read as "ISO-certified QPS QINSy".

11. **Page 28, Section 7.2**

Under the section entitled "Survey Enhancement", to delete the entire last sentence of the 1st paragraph ("Single-beam echo sounding survey at the coastal areas would not be necessary.") and to replace it with:

"Data processing will be done on the first day of the survey in order to determine the accuracy of the acquired low water hydrographic survey data from the tilted multibeam sonar head, including by using the Single-Beam Echo Sounder at high tide concurrently and comparing data acquired by both echo sounders."

In the event that the Hydrographic Surveyors of Malaysia and Singapore are not satisfied with the acquired data, AHOA will use single-beam and other conventional methods to determine the low water line and low-tide elevations, as set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.

12. **Page 28, Section 7.2**

Under the section entitled "Survey Enhancement", to omit the entire 3rd and 4th paragraphs (beginning with, "In addition to the above, subjected to the approval of the Governments, AHOA proposes to use the MDL DynaScan long range single-head laser scanner system..." and ending with, "...digital terrain model for geo-spatial mapping and analysis.").

Annex 4 to the Letter of Appointment

DynaScan is not to be used.

13. **Page 40, Section 7.3.5**

Under the section entitled, "Kongsberg EM 3002 Multibeam Echo Sounder", the Governments accept the option of imaging of objects in the water column with the multi-beam echo sounder, at no additional cost.

14. **Page 55, Section 8.3.2**

Under the section entitled "Project Manager – Lt (R) Heng Weng De, RMN H1 Surveyor, IHO Cat A", AHOA clarified that:

- Mr Heng is both the Project Manager and, as set out in the Project Organisational Chart on page 54, the QC Manager. As Project Manager, he reports to the Project Director and has oversight of both the survey vessel and the QPS Office.
- Mr Heng is an IHO Category B Surveyor.

15. **Page 55, Section 8.3.4**

Under the section entitled "Manning Personnel", "party chief" and "Officer-in-Charge" both refer to the IHO Category A Hydrographic Surveyor, Lt Cdr (R) Ahmad Roslan.

16. **Page 57, Section 9.1**

Under the section "Preparation and Mobilisation", AHOA confirmed that the two Governments will each be supplied with a complete Project Quality Manual.

17. **Page 59, Section 9.2**

Under the section entitled "Mobilisation on Site", AHOA clarified that "the Client's representative" refers to the Hydrographic Surveyors of Malaysia and Singapore.

18. **Page 59, Section 9.3**

Under the section entitled, "DGPS Verifications", AHOA clarified that the

Annex 4 to the Letter of Appointment

"Governments supplied survey station" refers to the geodetic control stations on Pedra Branca or Middle Rocks selected by AHOA prior to the data acquisition, the coordinates of which will be provided by the relevant Government to AHOA. The DGPS verification will be used as a confidence check.

19. **Page 59, Section 9.5**

Under the section entitled "Calibration of Survey Gyro", AHOA clarified that calibration of the TSS Meridian Surveyor gyrocompass will be carried out once after installation using a moving base RTK receiver. AHOA will submit to the Governments the calibration results.

20. **Page 59, Section 9.6**

Under the section entitled "Calibration of Single Beam Echo Sounder", AHOA clarified that calibration of the single beam echo sounder will be carried out at the survey acquisition site immediately after installation and thereafter daily using the bar check method.

21. **Page 59, Section 9.7**

Under the section entitled "Functional Tests Of Multibeam Echo Sounder", AHOA clarified that the patch test and full calibration of the multibeam echo sounder will be carried out on the first day of the survey acquisition at a site to be proposed by AHOA in its detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP. Calibration will also be carried out if the angle of the multi-beam sonar head is altered.

22. **Page 64, Section 10**

Under the section entitled "Work Programme & Schedule Of Survey Work", AHOA clarified that where data acquired by use of the tilted multibeam sonar head is unsatisfactory and single-beam or other conventional methods have to be used to acquire data, there would be an additional 9 days added to the schedule and the total accumulated days would increase from 29 days to 38 days.

APPENDIX J

Date: 21 March 2011

Applied Hydrography and Oceanography Academy Sdn Bhd
No. C1-M, Jalan Selaman, Dataran Palma
68000 Ampang
Selangor
Malaysia

Dear Sir,

**LETTER OF APPOINTMENT AS INDEPENDENT SERVICE PROVIDER TO
CONDUCT THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA
BRANCA AND MIDDLE ROCKS**

1. Pursuant to the Memorandum of Understanding between the Government of Malaysia and the Government of the Republic of Singapore with regard to the Joint Hydrographic Survey In and Around Pedra Branca and Middle Rocks signed on 30 November 2010, the Governments of Malaysia and Singapore ("the Governments") have agreed to conduct a joint hydrographic survey in and around Pedra Branca and Middle Rocks using a single platform (including survey vessel, crew, equipment, acquisition software as well as processing software) to be provided by an independent service provider jointly appointed by the Governments ("the Independent Service Provider").

2. The Governments hereby appoint Applied Hydrography and Oceanography Academy Sdn Bhd as the Independent Service Provider. The Contract Documents stating the terms and conditions of your appointment consist of this letter and the following documents:

- a. The Technical Specifications for the Joint Hydrographic Survey In and Around Pedra Branca and Middle Rocks, at **Annex 1**;
- b. Additional Terms and Conditions for the Appointment of the Independent Service Provider to Conduct the Joint Hydrographic Survey In and Around Pedra Branca and Middle Rocks, at **Annex 2**;
- c. The Technical and Financial Proposal, dated 24 January 2011, as submitted by Applied Hydrography and Oceanography Academy Sdn Bhd, at **Annex 3**; and
- d. Amendments to The Technical and Financial Proposal, dated 19 March 2011, agreed between Applied Hydrography and Oceanography Academy Sdn Bhd and the Governments, at **Annex 4**.

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3. The Contract Documents are intended to be read consistently with each other. In the event that there is any inconsistency between the terms and conditions stated in the above Contract Documents, the following shall apply:

- a. the Technical and Financial Proposal (Annex 3) shall be considered as having been amended by the Amendments to the Technical and Financial Proposal agreed between Applied Hydrography and Oceanography Academy Sdn Bhd and the Governments (Annex 4);
- b. the Technical and Financial Proposal as amended shall prevail over the Technical Specifications (Annex 1); and
- c. the Technical and Financial Proposal as amended and the Technical Specifications shall prevail over the Additional Terms and Conditions (Annex 2).

4. The date of commencement of the Contract is 1 April 2011, the Time for Completion is 31 May 2011 and the Contract Sum is USD59,300.00.

5. Please confirm in writing the acceptance of your appointment in accordance with the above terms by return fax through the following fax numbers:

For Malaysia:

Secretary-General
Ministry of Foreign Affairs Malaysia
Fax no.: +60388895751

For Singapore:

Permanent Secretary
Ministry of Foreign Affairs Republic of Singapore
Fax no.: +6563798128

Yours faithfully,

**FOR THE GOVERNMENT OF
MALAYSIA**

**FOR THE GOVERNMENT OF THE
REPUBLIC OF SINGAPORE**

.....
Datuk Mohd Radzi Abdul Rahman
Secretary-General
Ministry of Foreign Affairs
Malaysia

.....
Mr. Bilahari Kausikan
Permanent Secretary
Ministry of Foreign Affairs
Republic of Singapore

TECHNICAL SPECIFICATIONS
FOR THE
JOINT HYDROGRAPHIC SURVEY
IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

1. PURPOSE

The purpose of the Joint Survey Works in and around Pedra Branca and Middle Rocks ("Survey") is to acquire comprehensive and accurate hydrographic data in the area as defined in paragraph 2 ("Survey Area") in particular to determine the low-water mark of the features and low tide elevations.

2. AREA TO BE SURVEYED

The Survey Area is bounded by the following coordinates in World Geodetic System 1984 (WGS84):

POINT	WGS84	
	LATITUDE (N)	LONGITUDE (E)
1	01° 20' 22.5"	104° 24' 23.7"
2	01° 19' 26.8"	104° 25' 17.6"
3	01° 18' 37.6"	104° 24' 21.1"
4	01° 19' 33.1"	104° 23' 27.2"

The diagram of the Survey Area is shown in the **APPENDIX**.

3. DURATION AND TIMELINE OF THE SURVEY

The Survey shall commence on a date to be indicated in the Letter of Appointment of the Independent Service Provider. The Survey operation is estimated to take about 10 calendar days to complete including patch test, accuracy test and resounding (if deemed necessary). The sounding will be conducted at an appropriate sounding speed.

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4. WEATHER AND SEA STATE

The Survey shall be stopped temporarily if the Hydrographic Surveyors of Malaysia and Singapore referred to in Paragraph 13 jointly determine that the weather has deteriorated, i.e. World Meteorological Organization (WMO) sea state more than 3 (wave height >1.25m), or that there is inclement weather which will affect the accuracy of survey or safety of boat crews.

5. SCALE OF SURVEY

The Fair Sheet for Survey Area shall be plotted on a scale of:

- (a) For the whole Survey Area - 1:2,500; and
- (b) Around Pedra Branca and Middle Rocks - 1:1,000

6. STANDARD OF SURVEY

All hydrographic works shall comply with the International Hydrographic Organization (IHO) standard and meet the minimum standard for hydrographic survey in accordance with *IHO Standard for Hydrographic Surveys SP 44 5th Edition, February 2008, Order 1B.*

7. DATUM

7.1 Horizontal Datum, Projection and Grid

The Survey shall be carried out in World Geodetic System 1984 (WGS84) and plotted based on the following geodetic parameters:

Ellipsoid	: WGS84
Semi Major Axis (a)	: 6378137.0 m
Flattening (f)	: 1/298.25722
Projection	: Universal Transverse Mercator (UTM)
Zone	: 48

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False Northing	: 0.0m
False Easting	: 500000.0m
Scale Factor at Central Meridian	: 0.9996
Central Meridian	: Centre of Zone 48

7.2 Vertical Datum

7.2.1 The datum used for the sounding reduction shall be Lowest Astronomical Tide (LAT), which is the lowest water plane to which soundings are reduced and above which drying heights are shown in the Fair Sheet and other survey records. The Benchmark values related to the LAT shall be provided by both Governments to the Independent Service Provider for the conduct of the Survey.

7.2.2 Both Governments shall provide observed tidal records of not more than 6 minute intervals and any actual tidal observation curves will be smoothened. The Independent Service Provider shall use these records for reduction of soundings and depths will be inked in metres and decimetres.

7.3 The Independent Service Provider may consider installing a tide gauge during the Survey if he deems it necessary.

8. POSITIONING

8.1 Use of Differential Global Positioning System (DGPS) for Hydrographic Positioning

8.1.1 Positioning data shall be obtained using Differential GPS (DGPS). The following criteria shall apply:

- (i) The DGPS receivers shall be configured such that only satellites in view above the altitude 10 degrees are to be used in the position computation;
- (ii) The age of pseudo-range corrections used in the position computation shall not exceed 10 seconds;

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- (iii) A minimum of four satellites shall be used to compute positioning;
- (iv) The Horizontal Dilution of Precision (HDOP) of the position shall be continuously monitored, recorded and shall not exceed 3.0;
- (v) Dead Reckoning is not permitted; and
- (vi) Horizontal and vertical offsets between Global Positioning System (GPS) antenna and transducers shall be observed and applied in no coarser than 0.1 m increments.

8.1.2 For the purpose of offline post processing of DGPS data, DGPS equipment shall be set up by the Independent Service Provider at any of the 4 geodetic control stations (2 on Pedra Branca and 2 on Middle Rocks) that have been established by both Governments. The coordinates of the 4 geodetic control stations shall be provided to the Independent Service Provider.

8.2 Identification of Fixes

Fixes are to be identified by calendar date of the year and the Universal Time Coordinated (UTC).

9. SURVEY METHODOLOGY

9.1 The Survey shall consist of Multi-beam sonar surveys. In areas where Multi-beam sonar surveys are not feasible, Single-beam and other conventional methods shall be used. The field survey planning shall be carried out and agreed upon by the respective Survey Acquisition Teams prior to the commencement of survey operations, amongst others, to determine the areas for Multi-beam and Single-beam sonar surveys. The Independent Service Provider shall propose and present a detailed survey plan for approval within 7 calendar days of appointment. The survey works shall be carried out during daylight hours only.

9.2 Hydrographic Data Acquisition System (HDAS)

9.2.1 The HDAS shall comprise hardware and software configured to control, manage, acquire and store digital data in survey format

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from the positioning system and Single-beam and Multi-beam echo sounder systems.

9.2.2 The HDAS software shall include helmsman display facilities indicating vessel steering in a preplanned survey line, with digital displays showing information on position, depth, Course Over Ground (COG), heading, Speed Over Ground (SOG), line and fix number, and distance from start and end lines.

9.2.3 The online Quality Control (QC) for positioning and depth shall be monitored to ensure positional accuracy standard. Daily QC reports shall be included as an annex to the Survey Report referred to in paragraph 12.

9.2.4 The automated logging system shall be set at the following intervals:

Navigation Cycle Time	:	2 sec or better
Depth Cycle Time	:	2 sec or better
Position Logging Interval	:	2 sec or better

9.2.5 Daily back-up of data shall be carried out at the Survey platform.

9.3 The shallow water Multi-beam echo sounder at a frequency of 200 to 400 kHz is to be utilised for the sounding operation. The methodology for Multi-beam sonar survey encompasses the following:

(i) Sounding Units

Depths shall be recorded in metres and tenths of metres.

(ii) Depth Accuracy

The total sounding uncertainty for swath widths of at least three times the average water depth shall be in compliance, at the 95% confidence level, with the allowable Total Vertical Uncertainty (TVU) of $\pm \sqrt{[0.25 + (0.013 \times d)^2]}$ where d = depth.

(iii) Line Orientation

Sounding track lines shall be generally parallel to the general configuration of the depth contour lines.

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(iv) Position

The total uncertainties in the position of soundings and all other significant features shall not exceed ± 2 metres at 95% confidence level.

(v) Vessel Motion Data

All Multi-beam data shall be corrected for settlement and squat, heave, pitch, roll and the heading of the vessel.

(vi) Velocity of Sound in the Water Column

The velocity of sound through water shall be determined at least daily during Multi-beam sonar operations. The velocity profile shall be determined to a minimum of 95% of anticipated water depth. Velocity corrections shall be based on the data obtained from profile and not on an averaged sound velocity reading for the water column.

(vii) Survey coverage

The survey lines shall be run to achieve 100% seabed coverage, ie with 50% overlap on each side. The line spacing shall not exceed 3 times the water depth.

(viii) Cross Lines

In addition, cross lines shall be run at angles of 45 to 90 degrees to the main scheme lines. At least 5 cross lines shall be run in the survey area.

(ix) Drying Lines (Low Water Marks) and Drying Features

All drying lines and drying features shall be delineated accurately and measured from LAT, where applicable. In the event that the drying lines cannot be measured using the Multi-beam sonar survey method, then they shall be determined using the Single-beam sonar method or conventional method.

(x) Accuracy Test

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- (a) Accuracy tests shall be conducted on the Multi-beam Echo Sounder System (MBES) and DGPS sensors.
- (b) Prior to commencing Multi-beam operation, a system accuracy test (patch test) shall be conducted to quantify the accuracy, precision and alignment of the MBES. The patch test shall include determination of roll, pitch, heading and time latency. Depth accuracy testing shall also include testing of MBES against Single-beam echo sounder system. Details of the test shall be included in an annex to the Survey Report.
- (c) Accuracy check for DGPS system shall be conducted using at least two different reference stations. Positional differences should be less than ± 2 metres. Details of the test shall be included in an annex to the said Survey Report.

9.4 The methodology for Single-beam sonar survey encompasses the following:

(i) Echo Sounder

A Single-beam echo sounder at a frequency of about 200 kHz providing a depth accuracy of ± 0.1 metre shall be used for the sounding survey. The echo sounder shall be calibrated daily either by bar-check or sound velocity probe up to the maximum depth of the Survey Area, before and after sounding.

(ii) Reduction of Soundings

Actual tidal observation curves will be smoothed and used for reduction of soundings. Depths will be inked in metres and decimeters.

(iii) Horizontal Accuracy

The following accuracies will be maintained:

Position of soundings - ± 2 metre

(iv) Sounding Line Intervals

Sounding lines at 5 m intervals . Where irregularities or shoals are

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detected, closer sounded sounding lines and/or cross lines shall be run over these areas.

(v) Drying Lines (Low Water Marks) and Drying Features

The Independent Service Provider shall propose the survey methodology to determine drying lines and drying features. All these shall be delineated accurately and measured from LAT.

- 9.5 In the event where a hydrographic survey cannot be carried out, the drying lines shall be determined using the conventional method i.e., using geodetic DGPS positioning and offline post processing. For the purpose of offline post processing of DGPS data, the Independent Service Provider shall use any of the 4 established geodetic control stations at Pedra Branca and Middle Rocks referred to in Paragraph 8.1.2.

10. DATA PROCESSING

- 10.1 Data processing for the survey acquired from both the Multi-beam and Single-beam surveys shall be carried out at a venue to be determined by Malaysia and Singapore. The estimated time taken for data processing is 14 working days.

10.2 Hydrographic Data Processing System (HDPS)

10.2.1 The HDPS software shall include facilities for editing and reducing depth based on shoal bias, smoothing and filtering, sound velocity corrections, common format conversion, QC analysis for depth and positioning and be able to generate the final survey product presentations i.e. fair sheet with hydrographic symbology in accordance with IHO standards. The software shall also be able to handle and manage huge amount of raw and processed digital bathymetric data systematically. The workflow of the "Data Processing model" utilised by the software shall be included in the Survey Report.

10.2.2 The HDPS software shall be able to perform area based and line by line editing with automatic and/or manual removal of outliers. The survey data shall be able to be displayed in plan, spread sheet, profile and 3-dimensional digital terrain model views. All methods used for data editing shall be recorded and included in the Survey

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Report. The degree of depth contour smoothening and suppression of depths will be determined by Malaysia and Singapore.

10.2.3 The software shall be able to perform QC for the depths between main lines and cross lines/check lines. The depth and positional data QC test result shall be included as an annex to the Survey Report to define the reliability of the Survey.

10.2.4 The software shall be able to generate colour-coded soundings, contours, and smooth sheet plotting capabilities.

11. OUTPUT

11.1 Field Records

All data gathered during the Survey shall be recorded as annexes to the Survey Report. This includes the following:

- (i) Tidal observation records
- (ii) Benchmarks descriptions
- (iii) Results of tidal analysis
- (iv) Geodetic Control Station
- (v) Accuracy Test for DGPS
- (vi) Patch Test Records for MBES
- (vii) Daily QC Test
- (viii) Echo-sounder graphs
- (ix) Field sheets showing sounding tracks with fix numbers
- (x) Other miscellaneous records and sheets used for submission of survey

11.2 Fair Sheet

- (i) Fair Sheet shall be drawn at scale of 1:1,000 or larger for coastal features and low-water line, and at scale of 1:2,500 for general bathymetric information of surrounding waters in Universal Transverse Mercator Zone 48 projection and WGS84 ellipsoid.
- (ii) Fair Sheet shall be submitted by the Independent Service Provider for endorsement and signature by the Hydrographers of Malaysia and Singapore.

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12. SURVEY REPORT

- 12.1 The Survey Report shall be prepared and submitted by the Independent Service Provider for endorsement and signature by the Hydrographers of Malaysia and Singapore. The estimated time for preparation of the Survey Report is 5 working days.
- 12.2 The Survey Report shall be prepared in soft and hard copies.
- 12.3 The Survey Report is to be rendered with the following documents (in soft and hard copies) upon completion of the Survey:
- (i) All raw survey data;
 - (ii) Fair Sheet (the soft copy format of which shall be in ascii format);
and
 - (iii) Daily Progress Reports.

13. SURVEY PLATFORM AND PERSONNEL

- 13.1 The Independent Service Provider shall provide a survey platform complete with crew and a hydrographic survey team headed by one IHO Cat A Hydrographic Surveyor.
- 13.2 One Hydrographic Surveyor each from Malaysia and Singapore will be present throughout the survey acquisition and data processing to supervise the Independent Service Provider. The Independent Service Provider shall comply with directions given by the Hydrographic Surveyors of Malaysia and Singapore. Where there are differences in views between the two Hydrographic Surveyors, work shall be suspended pending resolution of the matter by Malaysia and Singapore.
- 13.3 The Independent Service Provider shall provide adequate accommodation, meals and drinking water to the Malaysia and Singapore Hydrographic Surveyors during the survey acquisition.

14. COMMUNICATION

For the purpose of communication with the Royal Malaysian Navy and Maritime and Port Authority of Singapore offices and for emergencies, the Independent

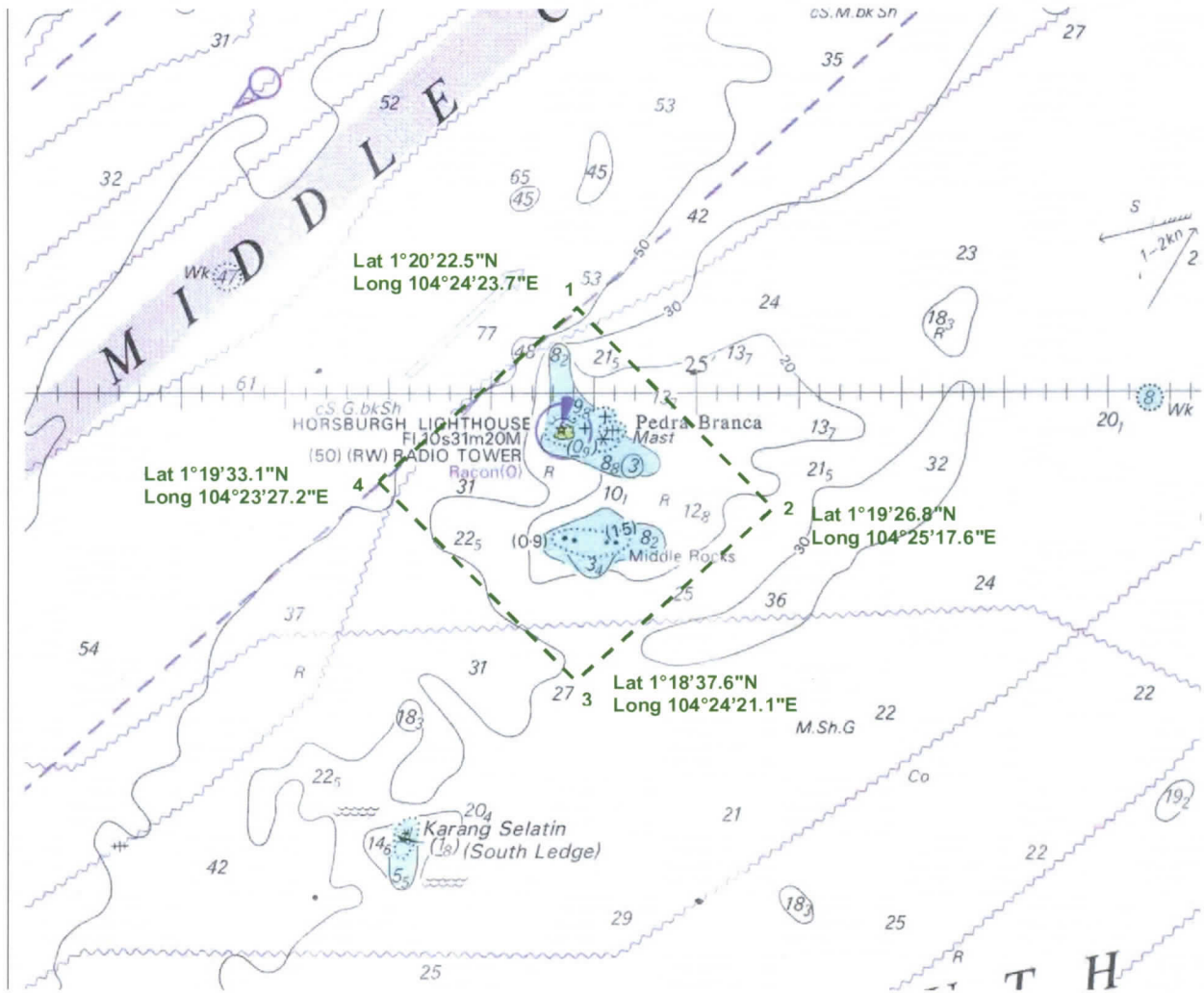
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Service Provider shall provide VHF or other communication sets deemed necessary to communicate with the aforesaid offices and a mobile phone with roaming facilities to each of the Hydrographic Surveyors from Malaysia and Singapore throughout the course of the Survey.

15. CONFIDENTIALITY, CUSTODY AND SECURITY OF DATA

- 15.1 The Independent Service Provider is responsible for the security and safe keeping of data provided by either Government for the purposes of carrying out the Survey.
- 15.2 Digital data logged in real time must be backed up to CD/DVD and handed over to each of the Hydrographic Surveyors of Malaysia and Singapore on board the survey platform on a daily basis. The Independent Service Provider is prohibited from making copies of such data in any form without the permission of both Governments.
- 15.3 All digital data stored on any computer must be erased by the Independent Service Provider on completion of the Survey under the supervision of both Hydrographic Surveyors of Malaysia and Singapore.

SURVEY AREA



ADDITIONAL TERMS AND CONDITIONS FOR THE APPOINTMENT OF THE INDEPENDENT SERVICE PROVIDER TO CONDUCT THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

1. INTERPRETATION AND DEFINITIONS

1.1 All Contract Documents To Be Read As A Whole

The Contract Documents are to be read as a whole and the effect or operation of any article or clause in these Additional Terms and Conditions must therefore, unless otherwise specifically stated, be read subject to any relevant qualification or modification in any other article or any of the clauses in the Contract Documents.

1.2 Definitions

The following words and expressions shall have the meanings hereby assigned to the Contract (as hereinafter defined) except where the context otherwise requires:

<u>Word or Phrase</u>	<u>Meaning</u>
Confidential Information:	Means all documents, drawings, information, materials and data (whether commercial, financial, technical or otherwise) and other data disclosed to, derived or otherwise obtained by the Independent Service Provider under, in connection with or as a result of this Agreement.
Contract:	Means the Letter of Appointment and the documents identified as Contract Documents in the Letter of Appointment and all such documents together shall be deemed to form the Contract.
Contract Sum:	Means the total fees payable by the Governments for the Survey Work, as stated in the Letter of Appointment.
Government:	Means either the Government of Malaysia or the Government of Singapore, as the case may be, and any other person/s appointed by the Government in question to act on its behalf.

Governments:	Means the Governments of Malaysia and Singapore and/or any other person/s appointed by the Governments of Malaysia and Singapore to act on their behalf.
Independent Service Provider:	Means the person who or firm or corporation which has been appointed as such in the Letter of Appointment by the Governments and includes the Independent Service Provider's legal personal representatives and permitted assigns.
Parties:	Means the Governments and the Independent Service Provider.
Party:	Means any one of the Parties.
Security Deposit:	Means the cash deposit referred to in Clause 19.1 or the guarantee in lieu of the cash deposit referred to in Clause 19.2.
Survey Work:	Means the joint hydrographic survey in and around Pedra Branca and Middle Rocks and other services to be undertaken by the Independent Service Provider as specified in the Contract.
Time for Completion:	Means the Time for Completion as stated in the Letter of Appointment or the date or dates on which such extension or extensions of time (if any) as the Independent Service Provider may be allowed under the Contract shall expire.

2. RELATIONSHIP BETWEEN THE PARTIES

Nothing contained herein shall be construed as establishing or creating a relationship of master and servant or principal and agent between the Governments and the Independent Service Provider, or between either Government and the Independent Service Provider.

3. CONFORMITY WITH PROVISIONS OF LAWS

3.1 The Independent Service Provider shall conform in all respects with

the provisions of applicable laws of Malaysia and Singapore when carrying out the Survey Work and shall keep the Governments indemnified against all penalties and liabilities of every kind for the breach of any such laws. The Independent Service Provider when carrying out the Survey Work shall comply with such departmental rules and restrictions in respect of access, restricted areas, dues, conduct of safety and working conditions as applicable to each particular place of work.

- 3.2 The Governments give no warranty in any manner whatsoever for all documents, drawings, information, materials and data supplied to the Independent Service Provider either as to their accuracy or sufficiency or as to how the same shall be interpreted and the Independent Service Provider, when making use of and interpreting the same, shall do so entirely at his own risk.

4. CONFIDENTIALITY OF INFORMATION

- 4.1 The Independent Service Provider shall at all times:

- a. hold confidential;
- b. cause its employees, subcontractors or subcontractors' employees or any other person engaged by the Independent Service Provider to carry out the whole or any part of the Survey Work to hold confidential; and
- c. prevent its employees, subcontractors or subcontractors' employees or any other person engaged by the Independent Service Provider from divulging, directly or indirectly, to third parties, or use in any other way than for the purposes of accomplishing the Survey Work, without the Governments' prior written approval

any Confidential Information

- 4.2 The Independent Service Provider shall take sufficient and appropriate action to ensure that the provisions of this Clause are adhered to by its employees, subcontractors or subcontractor's employees or any other person engaged by the Independent Service Provider to carry out the whole or any part of the Survey Work and shall notify promptly the Governments upon discovery of any instance where the requirements of this Clause have not been complied with.

- 4.3 Within seven (7) days of the commencement date, the Independent Service Provider shall submit to each Government a signed Undertaking of Confidentiality in the form set out in **Form A** attached to these Additional Terms and Conditions.

- 4.4 Without prejudice to the provisions of Clause 13, the Independent Service Provider shall, before he engages or permits the engagement of any sub-contractor for any part of the Survey Work, procure from that sub-contractor a signed Undertaking of Confidentiality to each Government in terms identical to the said Undertaking of Confidentiality set out in **Form A**.

5. REMUNERATION

- 5.1 Each Government shall pay to the Independent Service Provider for the Survey Work one half of the fees specified in the Contract. Each Government shall not be obliged and will not pay for any other expenses or costs of whatsoever nature other than that set forth in the Contract. Payment or payments shall be made in the manner specified in the Contract.
- 5.2 The Independent Service Provider shall submit to each Government an invoice showing the fees due from that Government. Payment due to the Independent Service Provider shall be paid within forty-five (45) days of the receipt of the invoice. The Independent Service Provider shall provide a copy of the said invoice to the other Government.
- 5.3 Subject to the Government's right to suspend or withhold generally under the terms of the Contract, if any item or part of an invoice submitted by the Independent Service Provider is disputed or subject to question by that Government, the Government shall be entitled to withhold payment in receipt of the same but the payment by that Government of that part of the invoice which is not disputed or subject to question shall not be withheld on those grounds.
- 5.4 For the avoidance of doubt, the fees agreed shall include the provision of the following services and expenses for purposes of carrying out the Survey Work and the Independent Service Provider shall not be entitled to any extra payment therefor:
- a. Overseas travelling and accommodation expenses and other similar disbursements incurred by the Independent Service Provider or any employee, servant or agent of the Independent Service Provider.
 - b. All services in connection with the replacement of any work damaged by fire, storm, tempest, lightning, earthquake, aircraft or anything dropped therefrom, aerial objects, flood, riot and civil commotion.
 - c. All services rendered as a result of the Governments instructing minor modifications to the scope of the Survey Work.
- 5.5 If in the opinion of the Governments, the Independent Service Provider

is in breach of any of the provisions of the Contract, the Governments shall be entitled to withhold any payment or part thereof as may be due or become payable to the Independent Service Provider without prejudice to any right of action that may have accrued to the Governments and to the continuance in force of the Contract unless otherwise terminated by the Governments.

6. PROGRAMME OF WORK, TIME SCHEDULE, COMPLETION PERIOD AND DELAYS

- 6.1 The Independent Service Provider shall plan, execute and complete the Survey Work within the Time for Completion. The Independent Service Provider shall also comply with any time schedules stipulated in the Contract.
- 6.2 The Independent Service Provider shall in writing notify the Governments daily of all delays and their likely effect on the overall period of completion of the Survey Work. The Independent Service Provider shall also propose to the Governments recovery actions to be taken to regain the original schedule.
- 6.3 The approval by the Governments of the Independent Service Provider's recovery action, any revised schedule and further details and information provided pursuant to this Clause shall not in any way affect the Independent Service Provider's liabilities and obligations under the Contract.
- 6.4 The Independent Service Provider is required to proceed with due diligence and in an expeditious manner for the Survey Work required under the Contract. If the Governments consider that the Independent Service Provider has failed to carry out the Survey Work under this Contract with due diligence, the Governments reserve the right to terminate the Contract without paying the Independent Service Provider for the work of the phase, or of the part of the phase, which has commenced but has not been totally completed.

7. COMMENCEMENT TIME AND EXTENSION OF TIME

- 7.1 The Independent Service Provider shall commence the Survey Work on the date or dates specified in the Governments' Letter of Appointment and shall proceed with the Survey Work with due expedition and without delay to achieve completion in accordance with the Contract.
- 7.2 The Time for Completion shall be extended in accordance with this Clause if the delay in completion is due to any of the following causes:
- a. Force majeure;

- b. War, hostilities, insurgency, terrorism, civil commotion or riots;
- c. The Independent Service Provider has not received from the Governments, within a reasonable time, necessary instructions or other information regarding the Survey Work;
- d. Acts or omissions of employees, contractors or agents engaged by the Governments;
- e. Any act of prevention or breach of Contract by the Governments or their employees, contractors or agents;
- f. Any other ground for extension of time expressly prescribed in the Contract.

provided that the Independent Service Provider has taken all reasonable steps to avoid or reduce the delay and the delay is not due to any act, negligence, default, omission or breach of the Contract by the Independent Service Provider.

- 7.3 It shall be a condition precedent to an extension of time by the Governments in the events falling within paragraphs (a), (b) or (f) of Clause 7.2 that the Independent Service Provider shall, within 7 days of the event relied upon, notify the Governments in writing together with a short statement of the reasons why delay to completion will result.
- 7.4 In the event of any act or omission of the Governments or their employees, contractors or agents giving rise to any delay falling within paragraphs (c) to (e) of Clause 7.2, then the Independent Service Provider shall, within 7 days of the commencement of any acts or omissions relied upon, notify the Governments in writing of such delay.
- 7.5 If, in the opinion of the Governments, completion of the Survey Work was delayed by any of the causes specified in Clause 7.2 and provided that the Independent Service Provider has duly complied with the requirements of Clauses 7.3 and 7.4, then the Governments shall, at the completion of the Survey Work or within a reasonable time thereafter or at such earlier time as the Governments may at their discretion deem necessary or appropriate, certify a fair and reasonable extension of time for the completion of the Survey Work.
- 7.6 The Independent Service Provider shall not be entitled to and is deemed to have waived any claim for loss, expenses, costs or damages caused by or arising from any extension of time properly given under the provision of this Clause.

8. OWNERSHIP OF DOCUMENTS, DRAWINGS, INFORMATION, MATERIALS, DATA AND INTELLECTUAL PROPERTY RIGHTS

8.1 All documents, drawings, information, materials and data prepared by the Independent Service Provider in connection with the Survey Work pursuant to the Contract shall be co-owned by the Governments in equal undivided shares. The Independent Service Provider hereby assigns to the Governments the intellectual property rights pertaining to all such documents, drawings, information, materials and data either in their original form or in a form which is the result of modifications made to the original form. For the avoidance of doubt, this shall apply even if the Independent Service Provider's appointment is terminated by the Governments.

8.2 Notwithstanding the provisions of Clause 8.1, each Government shall have independent rights to use such documents, drawings, information, materials and data.

9. ASSIGNMENT AND TERMINATION OF AGREEMENT

9.1 The Independent Service Provider shall not have the right to assign or transfer the benefits of the Contract or any part thereof without the prior written consent of the Governments.

9.2 In the event that a Party defaults in the performance of or breaches any of the terms and provisions of the Contract,

- a. the Governments, if they are not the defaulting parties, may:
 - i. if such default or breach is capable of being remedied, terminate the Contract after giving written notice of such default or breach to the Independent Service Provider and such default or breach has not been remedied within the time period as specified by the Government in the written notice; and
 - ii. if such default or breach is not capable of being remedied, terminate the Contract at any point at their absolute discretion; and
- b. the Independent Service Provider, if he is not the defaulting party, may terminate the Contract after giving written notice of such default or breach to the Governments and such default or breach has not been remedied within 14 days of the giving of the written notice.

9.3 Notwithstanding Clause 9.2 above, in the event that the Independent Service Provider becomes bankrupt or has a bankruptcy petition filed against him or (being a company) goes into liquidation (other than for

the purposes of amalgamation or reconstruction) or has a winding-up petition filed against it, or if the Independent Service Provider becomes insolvent or compounds or makes an arrangement with creditors, or execution is levied against the Independent Service Provider's assets, or if the Governments certify in writing that in their opinion the Independent Service Provider :

- a. has abandoned the Contract; or
- b. without reasonable excuse has failed to commence the Survey Work in accordance with Clause 7 of these Additional Terms and Conditions; or
- c. despite previous warning by the Governments in writing, has failed to proceed with the Survey Work with due expedition and without delay or has otherwise persistently or fundamentally been in breach of his obligations under the Contract; or
- d. has assigned to another person or firm or corporation or permits vicarious performance by another person or firm or corporation of his duties or functions or has assigned or transferred any benefit or interest in the Contract or any part thereof without the prior written consent of the Governments; or
- e. has previously received a valid and justified warning under paragraph (c) hereof with which he complied at the time but at any time thereafter has again failed to proceed with the Survey Work with due expedition and without delay or has again been persistently or fundamentally in breach of his obligations under the Contract; or
- f. has, without the prior written approval of the Governments to the contrary, engaged or permitted the engagement of any sub-contractor or any other person for any part of the Contract; or
- g. has offered or attempted to offer a bribe, commission or gift to any employee, contractor, or agent of either Government; or
- h. has breached the obligation of confidentiality of information as set out in the Contract;

then the Governments may, after giving 7 days' notice in writing to the Independent Service Provider, terminate the Contract without waiving either Government's rights or releasing the Independent Service Provider from any of his liabilities or obligations under the Contract and may themselves complete the Survey Work or may employ any other persons to complete the Survey Work.

- 9.4 If the Governments terminate the Contract pursuant to this Clause, neither of them shall be liable to pay to the Independent Service

Provider any money on account of the Contract until the costs of completion and damages for delay in completion (if any) and all other expenses incurred by the Governments have been ascertained. The Independent Service Provider shall then be entitled to receive only such sum or sums (if any) as the Governments may certify are due to him after deducting the said ascertained amount of costs, damages and expenses. If such amount shall exceed the sum which is due to the Independent Service Provider, then the Independent Service Provider shall upon demand pay to the Governments the amount of such excess and it shall be deemed a debt due by the Independent Service Provider to the Governments and shall be recoverable accordingly.

- 9.5 In the event of termination of the Contract pursuant to this Clause, all documents, drawings, information, materials and data prepared by the Independent Service Provider pursuant to and for use under the Contract shall be promptly handed over to the Governments.

10. LUMP SUM CONTRACT

- 10.1 The Contract is awarded on a lump sum basis and the Contract Sum as accepted by the Governments shall remain fixed for the duration of the Contract. Save as otherwise provided in the Contract, there shall be no change in the fees payable by the Governments to the Independent Service Provider for the services to be provided.
- 10.2 Save as otherwise expressly provided in the Contract, the Contract Sum shall be inclusive of all ancillary and other work and expenditures and disbursements, whether separately or specifically mentioned or described in the Contract or not, which are either necessary to carry out and bring to completion the Survey Work described in the Contract, or which may become necessary to overcome difficulties or delays before completion.

11. LIQUIDATED DAMAGES

If the Survey Work shall not have been substantially completed within the Time for Completion, the Independent Service Provider shall pay or allow each Government liquidated damages at the rate of United States Dollars 250 per day, subject to a maximum of five (5) percent of the Contract Sum.

12. GOVERNING LAW

The Contract shall in all respect be governed by and its terms construed in accordance with the laws of England. For the avoidance of doubt, the Independent Service Provider shall conform to the applicable laws of Malaysia and Singapore as set out in Clause 3.1.

13. ENGAGEMENT OF SUB-CONTRACTORS OR ANY OTHER PERSONS

Except where otherwise specified in the Contract, the Independent Service Provider shall not engage or permit the engagement of any sub-contractor or any other person for any part of the Survey Work without the prior written approval of the Governments, which approval, if given, shall not relieve the Independent Service Provider of any of his liabilities or obligations under the Contract.

14. VARIATIONS

14.1 The term "variation" shall mean any change in the original Contract as a whole describing or defining the Survey Work to be carried out and shall include but is not restricted to:

- a. an increase or decrease in the quantity of any part of the Survey Work;
- b. an addition to or omission from the Survey Work;
- c. a change in the character, quality or nature of any part of the Survey Work;
- d. a requirement to complete the Survey Work earlier than the Time for Completion or any phase or part of the Survey Work by a date earlier than that stipulated in the Contract.

For the avoidance of doubt, the term "variation" shall include any changes as aforesaid which may be designed to alter the use to which the Survey Work will be put, but shall exclude any instruction (which would otherwise be a variation) which has arisen due to or is necessitated by or is intended to cure any default of or breach of contract by the Independent Service Provider.

14.2 The Governments may at any time issue an instruction in writing requiring a variation. If or to the extent that an instruction does not state that it requires a variation but the Independent Service Provider considers that it does require a variation, the Independent Service Provider shall within 7 days from the date of receipt of the instruction notify in writing the Governments who may, if they think fit, within 7 days from the date of receipt of the Independent Service Provider's notification, confirm, modify, rescind or contradict in writing the instruction and the Independent Service Provider shall then comply forthwith.

14.3 The Governments may, before issuing an instruction for any variation, require the Independent Service Provider to submit a quotation for any

proposed variation and the Independent Service Provider shall be obliged to submit such quotation in writing at his own cost. The Governments, may before or after issuing an instruction, accept in writing the Independent Service Provider's quotation and the provisions of Clause 15 shall not apply to the valuation of that variation nor shall the Independent Service Provider be entitled to any loss and expense in respect of that instruction or any other compensation, damages or other amount whatsoever other than a value in accordance with the accepted quotation. An instruction requiring a variation shall not be treated as an acceptance of any quotation.

- 14.4 The Governments may, before issuing an instruction for any variation, require the Independent Service Provider to submit a proposed extension of the Time for Completion for any proposed variation and the Independent Service Provider shall be obliged to submit such proposed extension in writing at his own cost. The Governments, may before or after issuing an instruction, accept in writing the Independent Service Provider's proposed extension and the Independent Service Provider shall not be entitled to any other extension of the Time for Completion other than in accordance with the accepted proposed extension or for any loss, expenses, costs or damages caused by or arising from the said extension. An instruction requiring a variation shall not be treated as an acceptance of any proposed extension of the Time for Completion.

15. VALUATION OF VARIATIONS

15.1 Valuation Methods

Subject to Clause 14.3, all variations shall be valued based on the fair market rate. The unit rate for time spent on additional work to be used to value the variation may be agreed upon by the Independent Service Provider and the Governments. The Independent Service Provider will be required to justify the time spent on the additional work. The Governments shall have the right to reject the Independent Service Provider's time spent claim if it is found to be unreasonably high.

15.2 Agreement on Valuation

a. The Independent Service Provider shall carry out all variations instructed by the Governments pending the valuation of the variation.

b. The Independent Service Provider shall provide the Governments with such details and particulars, including invoices and receipts as the Governments may require, for the purpose of valuing the variation. The Governments shall make such valuation as shall in their opinion be reasonable and shall notify the Independent Service Provider in writing of the value of the variation. The Independent Service Provider shall, within 7 days of the receipt of the notice of the

value of the variation, give notice of any disagreement in writing to the Governments and shall at the same time set out the valuation which he considers should have been made, giving full details and particulars and the appropriate Contract references. If the Independent Service Provider does not give notice of his disagreement with the valuation of the Governments as aforesaid, he shall be deemed to have accepted the valuation and such valuation shall be final and binding on the Independent Service Provider and shall not thereafter be disputed or questioned by the Independent Service Provider in any way whatsoever.

16. THIRD PARTIES RIGHTS

Any person, firm, corporation or organisation who is not a Party to the Contract shall acquire no rights whatsoever under the Contract by virtue of the Contracts (Rights of Third Parties) Act 1999 of England and any equivalent laws in Malaysia and Singapore.

17. MEDIATION

17.1 The Governments and the Independent Service Provider shall try to resolve disputes or differences arising from and/or in connection with the Contract amicably. If, after a reasonable time of at least one month, one or more Parties conclude that it is not possible to resolve a dispute or difference amicably, the Parties shall agree that before referring any dispute or difference to arbitration, they shall consider resolving the dispute or difference through formal mediation.

17.2 For avoidance of doubt, the provision herein shall not amount to any legal obligation on the part of any Party to attempt mediation or the extent to which they shall do so, as a means of resolving their dispute or difference.

18. ARBITRATION

18.1 Any dispute or difference between the Parties arising out of or relating to or in connection with the Contract, including any question regarding its existence, validity or termination, shall be resolved by reference to arbitration.

18.2 The arbitral tribunal shall consist of one arbitrator to be agreed upon by the Parties. Any Party may propose to the other the name or names of one or more persons, one of whom will serve as the arbitrator. If no agreement is reached within thirty (30) days after the receipt by the other Party of such a proposal, the arbitrator shall be appointed by the Appointing Authority. The Appointing Authority shall be the International Chamber of Commerce ("ICC") International Court of

Arbitration acting in accordance with the rules adopted by the ICC for this purpose.

- 18.3 Where a dispute or difference is to be resolved by arbitration, the tribunal shall not enter on the reference until the completion or alleged completion of the Survey Work unless with the written consent of the Governments.
- 18.4 For purposes of this Clause, the two Governments shall be treated as a single Party.

19. SECURITY DEPOSIT

- 19.1 Within 14 days of the date of commencement of the Contract, the Independent Service Provider shall deposit with each Government 2.5% of the Contract Sum by way of security for the due performance of and observance by the Independent Service Provider of his obligations under the Contract.
- 19.2 The Independent Service Provider may, in lieu of the cash deposit in Clause 19.1 and for the same purposes, provide a guarantee for an equivalent amount from a bank or insurer approved by the relevant Government and in the form set out in **Form B** attached to these Additional Terms and Conditions.
- 19.3 Each Government may utilise the Security Deposit to make good any loss or damage sustained or likely to be sustained as a result of any breach of contract whatsoever by the Independent Service Provider, including any liquidated damages. If the amount of the Security Deposit utilised by the Government to make good any such loss or damage is found to be greater than the amount of loss or damage actually sustained by the Government, then the Government shall pay the balance of the amount utilised by the Government without interest to the Independent Service Provider or to the bank or insurer, as the case may be, upon the completion of the Survey Work. Where the Security Deposit is made in cash, the Government shall pay to the Independent Service Provider the unutilised amount without interest upon the completion of the Survey Work.
- 19.4 The provisions of this Clause shall not affect the rights and remedies expressly reserved herein to either Government or bar each Government from claiming losses, expenses, costs or damages incurred or sustained or likely to be sustained by the Government as a result of any breach of contract by the Independent Service Provider.

20. INJURY TO PERSONS AND DAMAGE TO PROPERTY

20.1 Injury to Persons

The Independent Service Provider shall be solely liable for and shall indemnify the Governments in respect of all liabilities, losses, claims, costs, charges, expenses and proceedings arising under any statute or at common law in respect of personal injury to or the death of any person arising out of the execution of the Survey Work.

20.2 Damage to Property

The Independent Service Provider shall be solely liable for and shall indemnify the Governments in respect of all liabilities, losses, claims, costs, charges, expenses and proceedings arising under any statute or at common law in respect of any injury or damage to property, real or personal, arising out of the execution of the Survey Work and provided always that the same is due to any negligence, omission or default of the Independent Service Provider, his servants or agents or any sub-contractor or any circumstances within the Independent Service Provider's control.

20.3 Policy of Insurance

The Independent Service Provider shall before the commencement of any work under the Contract ensure that there is in force a policy or policies of insurance indemnifying each Government, the Independent Service Provider and all sub-contractors against the aforesaid risks or matters. Such insurance, including All-Risks Policy, shall be effected by the Independent Service Provider with such company or companies and on such terms as may be approved by the Governments. Neither of the Governments shall be under any liability to the Independent Service Provider for any loss, injury or damage to the Independent Service Provider that may arise from the failure to effect such insurance or from any deficiency in any insurance taken hereunder. The Independent Service Provider shall be liable for all "excess" under the policy or policies.

The Independent Service Provider shall submit copies of the insurance policy or policies as required to the Governments before commencing any Survey Work under the Contract.

21. WITHHOLDING OF TAX

The Governments shall deduct from every payment due to the Independent Service Provider the amount of withholding tax at the rate applicable to the Independent Service Provider under their respective Income Tax Acts for the gross fees/income derived from services performed in their respective countries. This provision is only applicable if the Independent Service Provider is a non-resident of the country in question.

22. WARRANTIES

The Independent Service Provider warrants that the personnel performing the tasks under the Contract are suitably qualified and competent to carry out the Survey Work. The Independent Service Provider further warrants that the Survey Work will be carried out in a professional and diligent manner.

FORM A

UNDERTAKING OF CONFIDENTIALITY

To: The Governments of Malaysia and Singapore

In consideration of your appointing us as the Independent Service Provider to conduct the Joint Hydrographic Survey In and Around Pedra Branca and Middle Rocks, we, [XX], hereby agree and undertake to treat all data and information we obtain or derive in relation to the Survey Work, including its results and recommendations, ("Information") with utmost confidentiality at all times and further agree and undertake as follows:

1. We will not, without the prior written consent of the Governments of Malaysia and Singapore, use, publish or disclose or allow to be used, published or disclosed all or any of the Information to any person at any time.
2. We will not use the Information for any purpose unrelated to the Survey Work, unless otherwise agreed to in writing by the Governments of Malaysia and Singapore.
3. We will take all reasonable precautions in dealing with the Information so as to prevent any unauthorised person from gaining access to it.
4. We will take all steps to ensure that our employees, servants, agents and sub-contractors, will strictly comply with the obligations of confidentiality as contained in this Undertaking.
5. We will, before we engage any sub-contractor for any part of the Survey Work (the engagement of which shall be approved by the Governments of Malaysia and Singapore) procure from that sub-contractor a signed Undertaking of Confidentiality to each Government in terms identical to this Undertaking.
6. We will fully indemnify the Governments of Malaysia and Singapore and keep each Government fully indemnified at all times against any losses, costs, expenses or damages that each Government may sustain or incur as a result of any breach of confidentiality by us, our employees, servants, agents and /or sub-contractors.
7. We will return to the Governments of Malaysia and Singapore all Information (whether in the form of documents or otherwise) given to us by either Government and any copies thereof or otherwise dispose of or delete the same in such manner as may be directed by the relevant Government.
8. The obligations of confidentiality as contained in this Undertaking shall survive the termination of the Contract, howsoever caused.

Date:

For and on behalf of [XX]



FORM B

PERFORMANCE GUARANTEE

THIS GUARANTEE is given on the _____ day
 _____ 2011 (Two Thousand and Eleven) BY
 _____ (name of
 Guarantor) _____ of

 ([Address, etc.]) (hereinafter called "the Guarantor").

IN FAVOUR OF the Government of [Malaysia] [Singapore] (hereinafter called
 the "Government"), including its Assigns and Successors in law, of
 _____ (address).

WHEREAS

1. The Government has entered into a contract (hereinafter called the
 "Contract") _____ with
 _____ of

 _____ (hereinafter called "the Independent Service
 Provider") for the conduct of a joint hydrographic survey in and around Pedra Branca
 and Middle Rocks (hereinafter called "the Survey Work").

2. The Guarantor has agreed to guarantee the due performance of the Contract
 in the manner hereinafter appearing.

THE GUARANTOR HEREBY AGREES with the Government as follows:

In consideration of the Government not insisting on the Independent Service Provider paying cash as a Security Deposit for the Contract, the Guarantor hereby undertakes as follows:

1. The Guarantor unconditionally and irrevocably undertakes and covenants to pay the Government forthwith upon demand in writing any sum or sums that may from time to time be demanded by the Government up to a maximum aggregate sum of _____ (\$ _____) without requiring any proof that the Government is entitled to such sum or sums under the Contract or that the Independent Service Provider has failed to execute the Contract or is otherwise in breach of the Contract. Any sum or sums so demanded shall be paid forthwith by the Guarantor unconditionally, without any deductions whatsoever and notwithstanding the existence of any differences or disputes between the Government and the Independent Service Provider arising under or out of or in connection with the Contract or the carrying out of work thereunder or as to any amount or amounts payable thereunder and notwithstanding that differences or disputes have been referred to arbitration or are the subject of proceedings in Court or are in the midst of any other means of dispute resolution.
2. The Guarantor shall not be discharged or released from this Guarantee by any arrangement made between the Independent Service Provider and the Government without the assent of the Guarantor or by any alteration in the obligations undertaken by the Independent Service Provider or in the Survey Work to be done thereunder or by any forbearance whether as to payment, time, performance or otherwise or by any other indulgence or matter of whatever nature accorded by the Government to the Independent Service Provider.
3. The Guarantee shall take effect from the date hereof and shall remain in full force and effect until all the Survey Work has been completed to the satisfaction of the Government.

CLIENT

THE GOVERNMENTS OF



MALAYSIA

REPUBLIC OF
SINGAPORETECHNICAL PROPOSALJOINT HYDROGRAPHIC SURVEY
IN AND AROUND
PEDRA BRANCA AND MIDDLE ROCKS

Proposal: MGH/QUO-299/10/Technical
 Issue Rev.: 0
 Issue Date: 24 January 2011

PREPARED FOR:

THE GOVERNMENT OF

MALAYSIA

Director General
 Department of Survey and Mapping Malaysia
 11th Floor Wisma JUPEM
 Jalan Semarak
 50578 Kuala Lumpur
 Malaysia

REPUBLIC OF SINGAPORE

The Chief Executive
 Maritime and Port Authority of Singapore
 460 Alexandra Road
 #18-00 PSA Building
 Singapore 119963

PREPARED BY:

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 68000 Ampang, Selangor Darul Ehsan,
 Malaysia.
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 Fax: +60 3 – 4270 1265
 Website: www.ahoa.com.my

AMENDMENTS TO THE TECHNICAL AND FINANCIAL PROPOSAL DATED 24 JANUARY 2011 SUBMITTED BY APPLIED HYDROGRAPHY AND OCEANOGRAPHY ACADEMY SDN BHD (“AHOA”)

1. General

AHOA has submitted two documents both carrying the reference MGH/QUO-299/10/Technical:

- a. One document entitled, “Technical Proposal”; and
- b. One document entitled, “Commercial Proposal”.

Both documents are identical except for Section 11.0 (Contract Sum – Annex 3 to the Letter of Invitation). For the purposes of the Contract, the Technical and Financial Proposal submitted by AHOA shall refer to the document entitled “Commercial Proposal”.

2. Page 12, Section 2.8.2

Under the section entitled “Vertical Datum”, AHOA clarified that:

- Its tide gauge will be installed at the Pedra Branca jetty.
- The primary tidal data will be obtained from Singapore’s existing tide gauge at the jetty, and data from AHOA’s tide gauge will only be used as a back-up. AHOA will then only need to get access to its tide gauge to download data at the end of the survey acquisition.

3. Page 14, Section 3.1

Under the section entitled “Multi-Beam Sonar Survey”, AHOA clarified that the detailed survey plan will be submitted to the Governments for approval within 7 calendar days of its appointment as the Independent Service Provider (“ISP”).

4. Page 15, Section 3.3

Under the section entitled “Multi-Beam Echo Sounder”:

- AHOA’s schematic plans for the running of survey lines and cross lines

will be provided in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of its appointment as the ISP.

- The same multi-beam echo sounder used to cover the low-water line will also cover deeper waters.

5. **Page 18, Section 4.1**

Under the section entitled "General", AHOA will be ready to immediately process the acquired survey data after demobilisation following data acquisition. The post processing will take place at AHOA's office in Ampang, Malaysia, and the methodology will be set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.

6. **Page 23, Section 5**

Under the section entitled "Survey Platform And Personnel", AHOA will furnish to the Governments the passport numbers, full names (as stated in the passports), date and place of birth, and nationality of all personnel involved in the survey acquisition no later than two weeks before the commencement of the survey acquisition.

These personnel will not have with them during the survey acquisition any instruments, equipment or recording devices (such as cameras, mobile phone cameras or video recorders) other than what is necessary for the conduct of the survey acquisition.

7. **Page 23, Section 5**

Under the section entitled "Survey Platform And Personnel", AHOA clarified that the following arrangements will be made in relation to accommodation, meals and drinking water for the Hydrographic Surveyors from Malaysia and Singapore during the entire duration of the survey acquisition:

Accommodation: At Tai Hoe Hotel, Sungai Rengit

Meals: Breakfast and dinner at the hotel and packed lunch

Drinking water: Bottled water will be provided on board the vessel.

8. **Page 23, Section 5**

Under the section entitled "Survey Platform And Personnel", AHOA was reminded that, as set out in Paragraph 13.2 of the Technical Specifications for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks (Annex 1 to the Letter of Appointment), AHOA must comply with directions given by the Hydrographic Surveyors of Malaysia and Singapore and where there are differences in views between the two Hydrographic Surveyors, work shall be suspended pending resolution of the matter by the two Governments.

9. **Page 23, Section 5.1**

After the section entitled "Communication Facilities", a new Section 5.2 is to be included as follows:

"5.2 Safety Operating Procedures, Backup Plans and Emergency Response Plan

The following shall be provided by AHOA in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP:

- (a) Safety measures for surveyors
- (b) Daily reporting and communication
- (c) Vessel breakdown plan
- (d) Personnel rotation plan
- (e) Evacuation plan

A standby vessel sourced from Sungai Rengit will be deployed by AHOA which will also be used as a medi-vac vessel. AHOA will provide both Governments with the dimensions of this vessel in its detailed survey plan. The detailed survey plan will also cover safety measures for the surveyors when they are working on land."

10. **Page 27, Section 7.1**

Under the section entitled "Survey Method Statement", AHOA clarified that:

- The dates of installation of the tide gauge and the tidal observation will be set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.

- The tidal observation will be conducted over a 26-hour period and any manual verification will be confined to daylight hours. Observations can be made for up to 14 days.
- Details on the methodology for the calibration of the gauge and verification of the acquired data will be set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.
- In order for the relationship with Singapore's existing tide gauge at Pedra Branca to be established, AHOA will be provided by the Governments with the benchmark value, which needs to be reduced to Lowest Astronomical Tide ("LAT").
- "IHO-certified QPS QINSy" is to be read as "ISO-certified QPS QINSy"

11. Page 28, Section 7.2

Under the section entitled "Survey Enhancement", to delete the entire last sentence of the 1st paragraph ("Single-beam echo sounding survey at the coastal areas would not be necessary.") and to replace it with:

"Data processing will be done on the first day of the survey in order to determine the accuracy of the acquired low water hydrographic survey data from the tilted multibeam sonar head, including by using the Single-Beam Echo Sounder at high tide concurrently and comparing data acquired by both echo sounders."

In the event that the Hydrographic Surveyors of Malaysia and Singapore are not satisfied with the acquired data, AHOA will use single-beam and other conventional methods to determine the low water line and low-tide elevations, as set out in the detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA's appointment as the ISP.

12. Page 28, Section 7.2

Under the section entitled "Survey Enhancement", to omit the entire 3rd and 4th paragraphs (beginning with, "In addition to the above, subjected to the approval of the Governments, AHOA proposes to use the MDL DynaScan long range single-head laser scanner system..." and ending with, "...digital terrain model for geo-spatial mapping and analysis.").

DynaScan is not to be used.

13. **Page 40, Section 7.3.5**

Under the section entitled, "Kongsberg EM 3002 Multibeam Echo Sounder", the Governments accept the option of imaging of objects in the water column with the multi-beam echo sounder, at no additional cost.

14. **Page 55, Section 8.3.2**

Under the section entitled "Project Manager – Lt (R) Heng Weng De, RMN H1 Surveyor, IHO Cat A", AHOA clarified that:

- Mr Heng is both the Project Manager and, as set out in the Project Organisational Chart on page 54, the QC Manager. As Project Manager, he reports to the Project Director and has oversight of both the survey vessel and the QPS Office.
- Mr Heng is an IHO Category B Surveyor.

15. **Page 55, Section 8.3.4**

Under the section entitled "Manning Personnel", "party chief" and "Officer-in-Charge" both refer to the IHO Category A Hydrographic Surveyor, Lt Cdr (R) Ahmad Roslan.

16. **Page 57, Section 9.1**

Under the section "Preparation and Mobilisation", AHOA confirmed that the two Governments will each be supplied with a complete Project Quality Manual.

17. **Page 59, Section 9.2**

Under the section entitled "Mobilisation on Site", AHOA clarified that "the Client's representative" refers to the Hydrographic Surveyors of Malaysia and Singapore.

18. **Page 59, Section 9.3**

Under the section entitled, "DGPS Verifications", AHOA clarified that the

“Governments supplied survey station” refers to the geodetic control stations on Pedra Branca or Middle Rocks selected by AHOA prior to the data acquisition, the coordinates of which will be provided by the relevant Government to AHOA. The DGPS verification will be used as a confidence check.

19. **Page 59, Section 9.5**

Under the section entitled “Calibration of Survey Gyro”, AHOA clarified that calibration of the TSS Meridian Surveyor gyrocompass will be carried out once after installation using a moving base RTK receiver. AHOA will submit to the Governments the calibration results.

20. **Page 59, Section 9.6**

Under the section entitled “Calibration of Single Beam Echo Sounder”, AHOA clarified that calibration of the single beam echo sounder will be carried out at the survey acquisition site immediately after installation and thereafter daily using the bar check method.

21. **Page 59, Section 9.7**

Under the section entitled “Functional Tests Of Multibeam Echo Sounder”, AHOA clarified that the patch test and full calibration of the multibeam echo sounder will be carried out on the first day of the survey acquisition at a site to be proposed by AHOA in its detailed survey plan to be submitted to the Governments for approval within 7 calendar days of AHOA’s appointment as the ISP. Calibration will also be carried out if the angle of the multi-beam sonar head is altered.

22. **Page 64, Section 10**

Under the section entitled “Work Programme & Schedule Of Survey Work”, AHOA clarified that where data acquired by use of the tilted multibeam sonar head is unsatisfactory and single-beam or other conventional methods have to be used to acquire data, there would be an additional 9 days added to the schedule and the total accumulated days would increase from 29 days to 38 days.

Annex 71

Fourteenth Sub-Committee Meeting on the Joint Survey Works in and around Pedra Branca, Middle Rocks and South Ledge, Singapore, 20 July 2011, Record of Discussion

(Appendices F, G, H and J have been omitted due to their length)

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**FOURTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**SINGAPORE
20 JULY 2011**

RECORD OF DISCUSSION

1. The Fourteenth Meeting of the Sub-Committee on the Joint Survey Works in and around Pedra Branca, Middle Rocks and South Ledge between Malaysia and the Republic of Singapore ('the Meeting') was held in Singapore on 20 July 2011.
2. The Singapore Delegation was led by Mr. Lionel Yee, Second Solicitor-General and Director-General, International Affairs Division, Attorney-General's Chambers, Singapore.
3. The Malaysian Delegation was led by Datuk Prof. Sr Dr. Abdul Kadir bin Taib, Director General of Survey and Mapping, Department of Survey and Mapping, Malaysia.
4. The lists of the Singapore and Malaysian Delegations are appended as **Appendix A** and **Appendix B** respectively.

AGENDA ITEM 1: OPENING REMARKS

5. The Opening Remarks by the Head of the Singapore Delegation is appended as **Appendix C**.
6. The Opening Remarks by the Head of the Malaysian Delegation is appended as **Appendix D**.

AGENDA ITEM 2: ADOPTION OF AGENDA

7. The Agenda for the Meeting, which was adopted by both Delegations, is appended as **Appendix E**.

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AGENDA ITEM 3: PRESENTATION ON THE CONDUCT OF GLOBAL POSITIONING SYSTEM (GPS) SURVEYING FOR THE JOINT ESTABLISHMENT OF GEODETIC CONTROL STATIONS BETWEEN MALAYSIA AND SINGAPORE IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

8. The Surveyors of both sides gave a joint presentation on the conduct of the Global Positioning System (GPS) Survey for the joint establishment of geodetic control stations pursuant to Paragraph 9 of the Annex to the Memorandum of Understanding between the Government of Malaysia and the Government of the Republic of Singapore with regard to the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks ('the MOU'), which had been carried out on 21 and 28 March 2011.

9. The presentation is appended as **Appendix F**. The Joint Report on the Conduct of Global Positioning System (GPS) Surveying for the Joint Establishment of Geodetic Control Stations between Malaysia and Singapore with regard to the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks is appended as **Appendix G**.

10. The Meeting commended the Surveyors of both sides for their hard work and contribution to the successful completion of the Geodetic Control Survey.

AGENDA ITEM 4: PRESENTATION ON THE FINALISED REPORT OF SURVEY (ROS) AND FAIR SHEETS FOR THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

11. The Hydrographers of both sides gave a joint presentation on the conduct of the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks. The presentation is appended as **Appendix H**.

12. The Hydrographers informed the Meeting that they had signed the finalised Survey Report and fair sheets submitted by the Independent Service Provider, Applied Hydrography and Oceanography Academy Sdn Bhd ('AHOA') on 19 July 2011.

13. The Meeting approved the Report of Survey (ROS) and fair sheets submitted by the Hydrographers to the Sub-Committee pursuant to paragraph 13 of the Annex to the MOU. The approved ROS is appended as **Appendix J**.

14. The Meeting expressed its appreciation to the Hydrographers of both sides for their hard work and contribution to the successful completion of the Joint Hydrographic Survey.



AGENDA ITEM 5: ANY OTHER MATTERS

15. The Meeting agreed that both sides would prepare a bound copy of the ROS, with an executive summary, which would be forwarded to the Malaysia-Singapore Joint Technical Committee (MSJTC) for its consideration and endorsement. Both sides would make arrangements for the preparation of this bound copy before the next meeting of the MSJTC.

16. The Meeting noted that the following administrative matters would have to be settled with AHOA:

- a. Erasing of all digital data stored on any computer under the supervision of the Hydrographic Surveyors of Malaysia and Singapore, pursuant to Clause 15.3 of Annex 1 (Technical Specifications) to the Letter of Appointment for the Joint Hydrographic Survey, which would be done prior to the payment of the Contract Sum to AHOA;
- b. Payment to AHOA of the Contract Sum, pursuant to Clause 5 of Annex 2 (Additional Terms and Conditions) to the Letter of Appointment for the Joint Hydrographic Survey; and
- c. Return of the Security Deposit to AHOA pursuant to Clause 19 of Annex 2 (Additional Terms and Conditions) to the Letter of Appointment for the Joint Hydrographic Survey.

17. The Meeting further noted that, under the Contract with the Governments of Singapore and Malaysia for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks, the Time for Completion was 31 May 2011. Both sides had been of the view that the Survey Report and fair sheets submitted by AHOA on 31 May 2011 were inadequate and needed further improvement and additional information. In this regard, both sides agreed to approve the revised schedule proposed by AHOA in its letter dated 1 July 2011, according to which AHOA was to submit the finalised Survey Report and fair sheets by 8 July 2011. Since AHOA has submitted the finalised Survey Report and fair sheets by 8 July 2011, both sides agreed that both Governments would not be seeking liquidated damages from AHOA. The Meeting agreed to send a joint reply to AHOA's letters dated 10 June 2011 and 1 July 2011. The text of the joint reply is appended as **Appendix K**.

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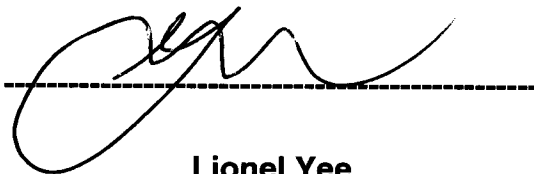
AGENDA ITEM 6: CLOSING REMARKS

18. The Head of the Malaysian Delegation expressed his gratitude to all the members of the Sub-Committee, and thanked the Singapore Delegation for hosting this Meeting.

19. The Head of the Singapore Delegation also expressed his appreciation to all the members of the Sub-Committee for their hard work and cooperation in successfully completing the work of the Sub-Committee.

Done in duplicate in Singapore on 20 July 2011.

Head of the Singapore Delegation



**Lionel Yee
Second Solicitor-General
and
Director-General
International Affairs Division
Attorney-General's Chambers
Singapore**

Head of the Malaysian Delegation



**Datuk Prof. Sr Dr. Abdul Kadir bin
Taib
Director General of Survey and
Mapping
Department of Survey and Mapping
Malaysia**

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FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX A



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**FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**SINGAPORE
20 JULY 2011**

SINGAPORE DELEGATION LIST

1. **Mr Lionel Yee – Co-chair of Sub-Committee**
Second Solicitor-General and
Director-General, International Affairs Division
Attorney-General's Chambers
2. **Mr David Low**
State Counsel
Attorney-General's Chambers
3. **Mr Louis Lim**
Manager
Attorney-General's Chambers
4. **Mr David Zhang**
Manager
Attorney-General's Chambers
5. **Dr Parry Oei**
Chief Hydrographer
Maritime and Port Authority of Singapore
6. **Mr Jamie Chen**
Deputy Chief Hydrographer
Maritime and Port Authority of Singapore
7. **Mr Lee Weng Choy**
Assistant Hydrographer
Maritime and Port Authority of Singapore
8. **Dr Victor Khoo**
Senior Principal Surveyor
Singapore Land Authority
9. **Mr Derick Tan**
Senior Surveyor
Singapore Land Authority



10. **Mr Ian Mak**
Deputy Director
Southeast Asia Directorate
Ministry of Foreign Affairs

11. **Ms Chay Yuen Ting**
Country Officer
Southeast Asia Directorate
Ministry of Foreign Affairs

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FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX B



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**FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**SINGAPORE
20 JULY 2011**

MALAYSIAN DELEGATION LIST

1. **Datuk Prof. Sr Dr. Abdul Kadir bin Taib** - Co-Chairman
Director General
Department of Survey and Mapping
2. **Dato' Sr Mohd Noor bin Isa**
Director of Survey (Mapping Division)
Department of Survey and Mapping
3. **First Admiral Dato' Pahlawan Zaaim bin Hasan**
Director General
National Hydrographic Centre
Royal Malaysian Navy
4. **First Admiral Dato' Fadzilah bin Mohd Salleh**
Research Officer
Attorney General's Chambers
5. **Sr Tan Ah Bah**
Director of Survey (Boundary Affairs)
Boundary Affairs Section
Department of Survey and Mapping
6. **Mrs. Suraya binti Harun**
Senior Federal Counsel
Research Division
Attorney General's Chambers
7. **Mr. Mohammed Ridha bin Dato' Abdul Kadir**
Land Administrator
Johor State Secretary Office
State Government of Johor



8. **Mr. Shaharuddin bin Onn**
Principal Assistant Secretary
Department of Research, Treaties and International Law
Ministry of Foreign Affairs
9. **Sr Zulkifli bin Sidek**
Principal Assistant Director of Survey
Boundary Affairs Section
Department of Survey and Mapping
10. **Sr Chang Leng Hua**
Principal Assistant Director of Survey (Geodesy)
Department of Survey and Mapping
11. **Cmdr. Ramli bin Johari**
Staff Officer I
National Hydrographic Centre
Royal Malaysian Navy
12. **Mr. Ady Arman Nik Mohd Kamil**
Second Secretary
High Commission of Malaysia, Singapore
13. **Ms. Rosmilawati Abd Dzulkifli**
Assistant Secretary
National Security Council
Prime Minister's Department
14. **Ms. Nor'airin binti Abd Rashid**
Assistant Secretary
Department of Research, Treaties and International Law
Ministry of Foreign Affairs
15. **Sr Zakaria bin Abdullah**
Assistant Director of Survey
Boundary Affairs Section
Department of Survey and Mapping



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FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX C

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**FOURTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**SINGAPORE
20 JULY 2011**

**OPENING REMARKS BY
THE HEAD OF THE SINGAPORE DELEGATION**

**MR. LIONEL YEE,
SECOND SOLICITOR-GENERAL
AND
DIRECTOR-GENERAL, INTERNATIONAL AFFAIRS DIVISION,
ATTORNEY-GENERAL'S CHAMBERS**

Your Excellency, Datuk Professor Sr. Dr. Abdul Kadir bin Taib, Director-General, Department of Survey and Mapping, and my fellow co-chairman of this Sub-Committee; members of the Malaysian Delegation:

2. A very good morning to all of you. On behalf of the Singapore Delegation, welcome to Singapore once again. I hope that you have had a comfortable journey from Malaysia to Singapore. I understand that almost all of you arrived yesterday, whether earlier in the morning or in the evening, and that many of you have already had some preparatory meetings with your counterparts from Singapore. I hope that all of you have had a pleasant stay and a good rest last night.

3. At our previous meeting, we finalised the contract documents and agreed on various logistical arrangements for the carrying out of the Joint Hydrographic Survey. We also finalised the arrangements for the appointment of AHOA as the independent service provider for the survey. In the months since we last met, the survey has been successfully carried out. Although the survey was originally expected to complete by the end of May, there were some delays but the good news is that I understand that our hydrographers yesterday approved and endorsed the final report of the hydrographic



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survey and the fair sheets which were prepared by the independent service provider. We will be hearing updates from the hydrographers on this shortly.

4. You will also recall that at our last Meeting, we heard updates from the surveyors on the geodetic control survey, which was ongoing at that time and which was a necessary step in preparation for the conduct of the hydrographic survey. I understand that the surveyors, too, had a meeting yesterday, during which they finalised the geodetic control survey report. We will also hear more about this in the course of our meeting today.

5. The successful completion of the joint hydrographic survey could not have been possible without the hard work and close cooperation between the technical experts from both sides, and I wish to commend our respective technical experts for their very significant involvement in ensuring the success of this exercise. I look forward to our Sub-Committee approving at this Meeting the Report of Survey, and to forward the results of the survey to the Malaysia-Singapore Joint Technical Committee, for its consideration and endorsement.

6. It now remains for me to ask the members of my delegation to introduce themselves.

Page 2 of 2

CONFIDENTIAL



CONFIDENTIAL

FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX D

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**FOURTEENTH SUB-COMMITTEE MEETING
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**SINGAPORE
20 JULY 2011**

**OPENING REMARKS BY
THE HEAD OF THE MALAYSIAN DELEGATION**

**Y. BHG. DATUK PROF. SR DR. ABDUL KADIR BIN TAIB
DIRECTOR GENERAL
DEPARTMENT OF SURVEY AND MAPPING MALAYSIA**

Your Excellency Mr. Lionel Yee, Second Solicitor-General, Director-General International Affairs Division, Attorney General's Chambers, Singapore, co-chairman of this Sub-Committee and distinguished members of Singapore and Malaysian delegations

A very good morning to Your Excellency and members of Singapore and Malaysian Delegations. On behalf of the Malaysian Delegation, I would like to take this opportunity to thank the Singapore side for hosting this meeting here today and for making all the arrangements to make this meeting possible and for your kind hospitality.

I am happy to note that, the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks was successfully carried out by the appointed Independent Service Provider (ISP), Applied Hydrography and Oceanography Academy Sdn Bhd from 15 - 23 April 2011 without any untowards incidence.

With regard to the joint GPS observation for the joint establishment of Geodetic Control Stations, due to bad weather and the rough sea condition the task which was scheduled to be carried out on 21 March 2011 was rescheduled to 28 March 2011 and was carried out successfully as planned in the present of representatives from both sides.

CONFIDENTIAL

In this regard, I would like to thank all the government agencies from both sides for the assistance and cooperation extended to the survey teams, hydrographic surveyors of Malaysia and Singapore and the ISP during the conduct of the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks.

Your Excellency and distinguished delegates

At our last meeting in Kuala Lumpur on 18 - 19 March 2011, we agreed that the Hydrographers of Malaysia and Singapore would meet a day earlier to sign the Report of Survey (ROS) and Fair Sheets after which the ROS and Fair Sheets would be submitted to the Sub-Committee for approval. I was informed that the Hydrographers from both sides had discussed and finalised the ROS and Fair Sheets together with AHOA and I believe the ROS and Fair Sheets are in order and that we will be able to consider and approve the ROS and Fair Sheets during our meeting.

I am optimistic that, given our close cooperation and good will, this meeting would proceed smoothly and with Your Excellency's able leadership, we would eventually achieve the desired objectives that had been set out.

I hope that with the approval of the ROS and Fair Sheets, we will be able to report back to the Technical Meeting between Malaysia and the Republic of Singapore on the Implementation of the International Court of Justice Judgment on Pedra Branca, Middle Rocks and South Ledge on the results of the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks.

I look forward to a fruitful discussion with your delegation in the spirit of friendliness and good cooperation to achieve an amicable outcome for this morning's meeting.

Thank you.



CONFIDENTIAL

FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX E



CONFIDENTIAL

**FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE**

**SINGAPORE
20 JULY 2011**

AGENDA

1. Opening remarks
2. Adoption of Agenda
3. Presentation on the Conduct of Global Positioning System (GPS) Surveying for the Joint Establishment of Geodetic Control Stations between Malaysia and Singapore in and around Pedra Branca and Middle Rocks
4. Presentation on the finalised Report of Survey (ROS) and fair sheets for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks
5. Any other matters
6. Closing remarks



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FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

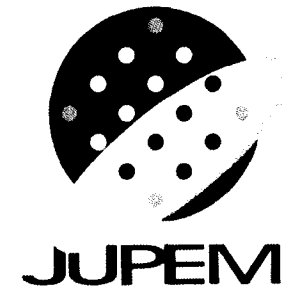
SINGAPORE
20 JULY 2011

APPENDIX F

REPORT ON THE JOINT GEODETIC CONTROL SURVEY

20 July 2011

Singapore



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The remainder of Appendix F has been omitted.

CONFIDENTIAL

FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX G



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JOINT REPORT
ON THE CONDUCT OF
GLOBAL POSITIONING SYSTEM (GPS) SURVEYING
FOR THE JOINT ESTABLISHMENT OF
GEODETIC CONTROL STATIONS
BETWEEN
MALAYSIA AND SINGAPORE
WITH REGARD TO
THE JOINT HYDROGRAPHIC SURVEY IN AND
AROUND PEDRA BRANCA AND MIDDLE ROCKS



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The remainder of Appendix G has been omitted.

CONFIDENTIAL

FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX H

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**PRESENTATION ON THE JOINT
HYDROGRAPHIC SURVEY OF PEDRA
BRANCA AND MIDDLE ROCKS**

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The remainder of Appendix H has been omitted.

CONFIDENTIAL

FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX J



CONFIDENTIAL

19 July 2011

Co-Chairmen
Sub-Committee On The Joint Survey Works In and Around Pedra Branca,
Middle Rocks And South Ledge

**REPORT OF SURVEY (ROS) FOR THE JOINT HYDROGRAPHIC SURVEY IN
AND AROUND PEDRA BRANCA AND MIDDLE ROCKS**

1. In accordance with paragraph 13 of the Annex to the Memorandum of Understanding between the Government of Malaysia and the Government of the Republic of Singapore with regard to the Joint Hydrographic Survey In and Around Pedra Branca and Middle Rocks signed on 30 November 2010, we, the Hydrographers of Malaysia and Singapore have jointly prepared a Report of Survey (ROS) for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks.
2. The said ROS is submitted for your consideration and approval.

Yours faithfully,



.....
**First Admiral Dato' Pahlawan Zaaim
Bin Hasan
Director General
National Hydrographic Center
Royal Malaysian Navy
Malaysia**



.....
**Dr. Parry Oei
Chief Hydrographer
Maritime And Port Authority Of
Singapore
Republic of Singapore**



CLIENT

THE GOVERNMENTS OF



MALAYSIA



REPUBLIC OF SINGAPORE

SURVEY CONTRACTOR



APPLIED HYDROGRAPHY & OCEANOGRAPHY ACADEMY SDN BHD

PROJECT NAME

**JOINT HYDROGRAPHIC SURVEY
IN AND AROUND
PEDRA BRANCA AND MIDDLE ROCKS**

VESSEL

MG SURVEYOR II

DOCUMENT TITLE

**REPORT OF SURVEY
JOINT HYDROGRAPHIC SURVEY
IN AND AROUND
PEDRA BRANCA AND MIDDLE ROCKS**

DOCUMENT REF. NO.:

SR/AHOA/1117/11

DATE & REVISION NO.:

8TH JULY 2011 / REV 2

PREPARED BY:

APPLIED HYDROGRAPHY & OCEANOGRAPHY ACADEMY SDN BHD
NO. C1-M, JALAN SELAMAN 1, DATARAN PALMA,
68000 AMPANG, SELANGOR DARUL EHSAN
MALAYSIA.

PREPARED FOR:

THE GOVERNMENTS OF
MALAYSIA & THE REPUBLIC OF SINGAPORE

The remainder of Appendix J has been omitted.

CONFIDENTIAL

FOURTEENTH MEETING OF THE SUB-COMMITTEE
ON THE JOINT SURVEY WORKS IN AND AROUND
PEDRA BRANCA, MIDDLE ROCKS AND SOUTH LEDGE

SINGAPORE
20 JULY 2011

APPENDIX K



Date: xx July 2011

Applied Hydrography and Oceanography Academy Sdn Bhd
No. C1-M, Jalan Selaman, Dataran Palma
68000 Ampang
Selangor
Malaysia

Dear Sir,

REQUEST FOR EXTENSION OF CONTRACT FOR THE JOINT HYDROGRAPHIC SURVEY IN AND AROUND PEDRA BRANCA AND MIDDLE ROCKS

We refer to your letters dated 10 June 2011 (Ref. no.: AHOA/JUPSURVEY/2011-(026)) and 1 July 2011 (Ref. no.: AHOA/JUPSURVEY/2011-(027)), in which Applied Hydrography and Oceanography Academy Sdn Bhd ('AHOA') had submitted revised schedules for the submission of the final Report of Survey (ROS) and fair sheets for the survey work under the Contract with the Governments of Singapore and Malaysia for the Joint Hydrographic Survey in and around Pedra Branca and Middle Rocks.

2. Both Governments note that, under the said Contract, the Time for Completion is 31 May 2011. Both Governments were of the view that the ROS and fair sheets submitted by AHOA on 31 May 2011 were inadequate and needed further improvement and additional information. In this regard, both Governments approve the revised schedule proposed by AHOA in its letter dated 1 July 2011, according to which AHOA is to submit the finalised ROS and fair sheets by 8 July 2011. Since AHOA has submitted the finalised ROS and fair sheets by 8 July 2011, both Governments will not be seeking liquidated damages.

3. Both Governments also wish to remind AHOA of its obligations under Clause 15 (Confidentiality, Custody and Security of Data) of Annex 1 to the Letter of Appointment and Clause 4 (Confidentiality of Information) of Annex 2 to the Letter of Appointment.

Yours faithfully,



**FOR THE GOVERNMENT OF
MALAYSIA**

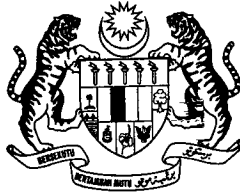
**FOR THE GOVERNMENT OF THE
REPUBLIC OF SINGAPORE**

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Annex 72

Diplomatic note from Malaysia to Singapore, EC 105/2011, dated
7 July 2011



EC 105 / 2011

The Ministry of Foreign Affairs Malaysia presents its compliments to the High Commission of the Republic of Singapore and strongly protests the violation of Malaysia's airspace over its territory and waters off the coast of the State of Johor by Singapore government aircraft, including but not limited to the following incidents:

- i. Between 1410 hrs to 1459 hrs on 18 April 2011 by Singapore government aircraft SQUAQWK Mode 3 0074;
- ii. Between 1613 hrs to 1707 hrs on 18 April 2011 by Singapore government aircraft SQUAQWK Mode 3 0064; and
- iii. Between 1516 hrs to 1542 hrs on 25 April 2011 by Singapore government aircraft SQUAQWK Mode 3 0056.

In view of the above, the Government of Malaysia reiterates its strong objection to the presence of aircraft belonging to the Government of the Republic of Singapore in Malaysia's airspace off the coast of the State of Johor.

The Government of Malaysia further wishes to reiterate its categorical rejection of Singapore's designation of Restricted Area WSR 31 within Malaysia's airspace, over its territory and waters off the coast of the State of Johor, without the prior consent of the Government of Malaysia. The designation by the Republic of Singapore of the said airspace as a Restricted Area without the prior consent of the Government of Malaysia is inconsistent with international law, in particular the Convention on International Civil Aviation (Chicago Convention) 1944, and is in fact an abuse of Singapore's administrative powers as the Flight Information Region

authority. This act by the Government of the Republic of Singapore is therefore inconsistent with the principles adopted in Singapore's own published Aeronautical Information Publication and also goes against the principles of good neighbourliness and that of ASEAN solidarity and understanding.

The Government of Malaysia further reaffirms its categorical objection and rejection of Singapore's daily issuance of Notice to Airmen (NOTAM) which encroaches into Malaysian airspace above the Malaysian territory of Middle Rocks and its maritime area. The issuance of the said NOTAM without prior consent from Malaysia is inconsistent with international law, in particular the Convention on International Civil Aviation (Chicago Convention) 1944 and is in fact an abuse of Singapore's administrative powers as the Flight Information Region authority. This act by Singapore again goes against the spirit of good neighbourliness and that of ASEAN solidarity and understanding.

The Government of Malaysia calls upon the Government of the Republic of Singapore to withdraw the designation of Restricted Area WSR 31 and issuance of NOTAM with immediate effect. The Government of Malaysia further calls upon the Government of the Republic of Singapore to refrain from designating any Restricted Areas which encroach into Malaysian airspace and from further issuing any NOTAMs which encroach into Malaysian airspace above the Malaysian territory of Middle Rocks and its maritime areas.

Due to the proximity of South Ledge to the mainland of Johor and Middle Rocks, it is clear that South Ledge is located within the territorial waters of Malaysia. It naturally follows that sovereignty over South Ledge belongs to Malaysia in accordance with the Judgment of the ICJ. As such, the Government of Malaysia wishes to remind the Government of the Republic of Singapore that the airspace above South Ledge is part of Malaysia's airspace following the Judgment of the International Court of Justice (ICJ) of 23 May 2008 whereby the ICJ reaffirms Malaysia's sovereignty over Middle Rocks and further stated that "*sovereignty over South Ledge, as a low tide elevation, belongs to the State in the territorial waters of which it is located*".

The Government of Malaysia wishes to also remind the Government of the Republic of Singapore that the airspace over the waters around Batu Puteh, which is located within the territorial waters of Malaysia is part of Malaysia's airspace, in accordance with the principles of international law as well as the Judgment of the ICJ.

The Government of Malaysia further reiterates that any and all activities undertaken by Malaysia in its territory; including activities pertaining to and surrounding the abovementioned airspace and its maritime areas are legitimate exercises of its sovereignty and jurisdiction. As such, Malaysian government vessels and aircraft have and will continue to patrol and conduct their activities in the territorial waters, maritime areas and airspace of Malaysia.

The Government of Malaysia therefore calls upon the Government of the Republic of Singapore to cease and refrain from intruding into Malaysian territory, territorial waters and the airspace over its territory and waters.

The Ministry of Foreign Affairs of Malaysia avails itself of this opportunity to renew to the High Commission of the Republic of Singapore the assurances of its highest consideration.



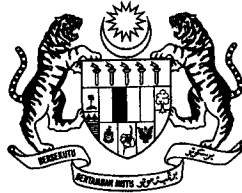
Putrajaya, 7 July 2011

**High Commission of the Republic of Singapore
Kuala Lumpur**

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Annex 73

Diplomatic note from Malaysia to Singapore, EC 106/2011, dated
7 July 2011



EC 106 / 2011

The Ministry of Foreign Affairs Malaysia presents its compliments to the High Commission of the Republic of Singapore and strongly protests the violation of Malaysia's airspace over its territory and waters off the coast of the State of Johor by Singapore government aircraft, including but not limited to the following incidents:

- i. Between 1415 hrs to 1424 hrs on 12 May 2011 by Singapore government aircraft SQUAQWK Mode 3 0011; and
- ii. Between 1549 hrs to 1644 hrs on 24 May 2011 by Singapore government aircraft SQUAQWK Mode 3 4635.

In view of the above, the Government of Malaysia reiterates its strong objection to the presence of aircraft belonging to the Government of the Republic of Singapore in Malaysia's airspace off the coast of the State of Johor.

The Government of Malaysia further wishes to reiterate its categorical rejection of Singapore's designation of Restricted Area WSR 31 within Malaysia's airspace, over its territory and waters off the coast of the State of Johor, without the prior consent of the Government of Malaysia. The designation by the Republic of Singapore of the said airspace as a Restricted Area without the prior consent of the Government of Malaysia is inconsistent with international law, in particular the Convention on International Civil Aviation (Chicago Convention) 1944, and is in fact an abuse of Singapore's administrative powers as the Flight Information Region authority. This act by the Government of the Republic of Singapore is therefore inconsistent with the principles adopted in Singapore's own published Aeronautical

Information Publication and also goes against the principles of good neighbourliness and that of ASEAN solidarity and understanding.

The Government of Malaysia further reaffirms its categorical objection and rejection of Singapore's daily issuance of Notice to Airmen (NOTAM) which encroaches into Malaysian airspace above the Malaysian territory of Middle Rocks and its maritime area. The issuance of the said NOTAM without prior consent from Malaysia is inconsistent with international law, in particular the Convention on International Civil Aviation (Chicago Convention) 1944 and is in fact an abuse of Singapore's administrative powers as the Flight Information Region authority. This act by Singapore again goes against the spirit of good neighbourliness and that of ASEAN solidarity and understanding.

The Government of Malaysia calls upon the Government of the Republic of Singapore to withdraw the designation of Restricted Area WSR 31 and issuance of NOTAM with immediate effect. The Government of Malaysia further calls upon the Government of the Republic of Singapore to refrain from designating any Restricted Areas which encroach into Malaysian airspace and from further issuing any NOTAMs which encroach into Malaysian airspace above the Malaysian territory of Middle Rocks and its maritime areas.

Due to the proximity of South Ledge to the mainland of Johor and Middle Rocks, it is clear that South Ledge is located within the territorial waters of Malaysia. It naturally follows that sovereignty over South Ledge belongs to Malaysia in accordance with the Judgment of the ICJ. As such, the Government of Malaysia wishes to remind the Government of the Republic of Singapore that the airspace above South Ledge is part of Malaysia's airspace following the Judgment of the International Court of Justice (ICJ) of 23 May 2008 whereby the ICJ reaffirms Malaysia's sovereignty over Middle Rocks and further stated that "*sovereignty over South Ledge, as a low tide elevation, belongs to the State in the territorial waters of which it is located*".

The Government of Malaysia wishes to also remind the Government of the Republic of Singapore that the airspace over the waters around Batu Puteh, which is

located within the territorial waters of Malaysia is part of Malaysia's airspace, in accordance with the principles of international law as well as the Judgment of the ICJ.

The Government of Malaysia further reiterates that any and all activities undertaken by Malaysia in its territory; including activities pertaining to and surrounding the abovementioned airspace and its maritime areas are legitimate exercises of its sovereignty and jurisdiction. As such, Malaysian government vessels and aircraft have and will continue to patrol and conduct their activities in the territorial waters, maritime areas and airspace of Malaysia.

The Government of Malaysia therefore calls upon the Government of the Republic of Singapore to cease and refrain from intruding into Malaysian territory, territorial waters and the airspace over its territory and waters.

The Ministry of Foreign Affairs of Malaysia avails itself of this opportunity to renew to the High Commission of the Republic of Singapore the assurances of its highest consideration.



Putrajaya, 7 July 2011

**High Commission of the Republic of Singapore
Kuala Lumpur**

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Annex 74

Diplomatic note from Singapore to Malaysia, MFA/SEA/00015/2011,
dated 15 July 2011



MFA/SEA/00015/2011

The Ministry of Foreign Affairs of the Republic of Singapore presents its compliments to the High Commission of Malaysia and has the honour to refer to the Judgment of the International Court of Justice (ICJ) of 23 May 2008, wherein the ICJ ruled that sovereignty over South Ledge belongs to the State in the territorial waters of which it is located.

Following the ICJ Judgment, the governments of both countries established a Joint Technical Committee on the Implementation of the ICJ Judgment on Pedra Branca, Middle Rocks and South Ledge for the purpose of fully implementing the ICJ Judgment in the spirit of good relations and cooperation.

The Singapore Government therefore notes with regret that Malaysia has been acting in disregard of the ICJ Judgment by unilaterally sending Royal Malaysian Air Force ("RMAF") B-200T aircraft to fly over and around South Ledge. We refer to the following dates and incidents:

- i. On 6 March 2011 at 1648 hrs, an RMAF B-200T aircraft was observed to be operating in the airspace near South Ledge at a height of approximately 500 feet. The aircraft overflew South Ledge.
- ii. On 13 March 2011 at 0944 hrs, an RMAF B-200T aircraft was observed to be operating in the airspace near South Ledge at a height of approximately 500 feet. The aircraft came within 0.2 nm of South Ledge.

iii. On 27 March 2011 at 0909 hrs, an RMAF B-200T aircraft was observed to be operating in the airspace near South Ledge at a height of approximately 300 feet. The aircraft overflew South Ledge.

iv. On 10 April 2011 at 0843 hrs, an RMAF B-200T aircraft was observed to be operating in the airspace near South Ledge at a height of approximately 300 feet. The aircraft overflew South Ledge.

v. On 18 April 2011 at 1533 hrs, an RMAF B-200T aircraft was observed to be operating in the airspace near South Ledge at a height of approximately 200 feet. The aircraft came within 0.3 nm of South Ledge.

vi. On 28 April 2011 at 1327 hrs, an RMAF B-200T aircraft was observed to be operating in the airspace near South Ledge at a height of approximately 200 feet. The aircraft came within 0.1 nm of South Ledge.

The Singapore Government protests Malaysia's unilateral actions in the airspace over and around South Ledge, which go against the spirit of the Malaysia-Singapore Joint Technical Committee and are inconsistent with the mutual agreement to honour and abide by the ICJ Judgment. Malaysia's actions in respect of South Ledge are not helpful in reaching a peaceful and amicable resolution of the issues relating to the ICJ Judgment.

The Singapore Government seeks the cooperation of the Malaysia Government to ensure the immediate cessation of its current activities in the airspace over and around South Ledge and to refrain from conducting further activities there until the status of South Ledge has been determined through the process of maritime boundary delimitation between our two countries.

Singapore remains fully committed to implementing the Judgment of the ICJ, and to maintaining continued good relations and cooperation with Malaysia.

The Ministry of Foreign Affairs of the Republic of Singapore avails itself of this opportunity to renew to the High Commission of Malaysia the assurances of its highest consideration.

SINGAPORE

15 July 2011

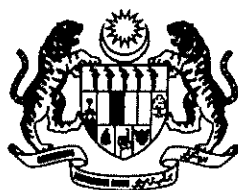


High Commission of Malaysia
Singapore

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Annex 75

Diplomatic note from Malaysia to Singapore, EC 115/2011, dated
4 August 2011



EC 115 / 2011

The Ministry of Foreign Affairs Malaysia presents its compliments to the High Commission of the Republic of Singapore and strongly protests the violation of Malaysia's airspace over its territory and waters off the coast of the State of Johor by Singapore government aircraft, including but not limited to the following incidents:

- i. Between 2039 hrs to 2048 hrs on 14 June 2011 by Singapore government aircraft SQUAQWK Mode 3 4656; and
- ii. Between 1157 hrs to 1226 hrs on 17 June 2011 by Singapore government aircraft SQUAQWK Mode 3 4613;
- iii. Between 1359 hrs to 1432 hrs on 17 June 2011 by Singapore government aircraft SQUAQWK Mode 3 4607; and
- iv. Between 0913 hrs to 1020 hrs on 21 June 2011 by Singapore government aircraft SQUAQWK Mode 3 4204.

In view of the above, the Government of Malaysia reiterates its strong objection to the presence of aircraft belonging to the Government of the Republic of Singapore in Malaysia's airspace off the coast of the State of Johor.

The Government of Malaysia further wishes to reiterate its categorical rejection of Singapore's designation of Restricted Area WSR 31 within Malaysia's airspace, over its territory and waters off the coast of the State of Johor, without the prior consent of the Government of Malaysia. The designation by the Republic of Singapore of the said airspace as a Restricted Area without the prior consent of the

Government of Malaysia is inconsistent with international law, in particular the Convention on International Civil Aviation (Chicago Convention) 1944, and is in fact an abuse of Singapore's administrative powers as the Flight Information Region authority. This act by the Government of the Republic of Singapore is therefore inconsistent with the principles adopted in Singapore's own published Aeronautical Information Publication and also goes against the principles of good neighbourliness and that of ASEAN solidarity and understanding.

The Government of Malaysia further reaffirms its categorical objection and rejection of Singapore's daily issuance of Notice to Airmen (NOTAM) which encroaches into Malaysian airspace above the Malaysian territory of Middle Rocks and its maritime area. The issuance of the said NOTAM without prior consent from Malaysia is inconsistent with international law, in particular the Convention on International Civil Aviation (Chicago Convention) 1944 and is in fact an abuse of Singapore's administrative powers as the Flight Information Region authority. This act by Singapore again goes against the spirit of good neighbourliness and that of ASEAN solidarity and understanding.

The Government of Malaysia calls upon the Government of the Republic of Singapore to withdraw the designation of Restricted Area WSR 31 and issuance of NOTAM with immediate effect. The Government of Malaysia further calls upon the Government of the Republic of Singapore to refrain from designating any Restricted Areas which encroach into Malaysian airspace and from further issuing any NOTAMs which encroach into Malaysian airspace above the Malaysian territory of Middle Rocks and its maritime areas.

Due to the proximity of South Ledge to the mainland of Johor and Middle Rocks, it is clear that South Ledge is located within the territorial waters of Malaysia. It naturally follows that sovereignty over South Ledge belongs to Malaysia in accordance with the Judgment of the ICJ. As such, the Government of Malaysia wishes to remind the Government of the Republic of Singapore that the airspace above South Ledge is part of Malaysia's airspace following the Judgment of the International Court of Justice (ICJ) of 23 May 2008 whereby the ICJ reaffirms Malaysia's sovereignty over Middle Rocks and further stated that "*sovereignty over*

South Ledge, as a low tide elevation, belongs to the State in the territorial waters of which it is located".

The Government of Malaysia wishes to also remind the Government of the Republic of Singapore that the airspace over the waters around Batu Puteh, which is located within the territorial waters of Malaysia is part of Malaysia's airspace, in accordance with the principles of international law as well as the Judgment of the ICJ.

The Government of Malaysia further reiterates that any and all activities undertaken by Malaysia in its territory; including activities pertaining to and surrounding the abovementioned airspace and its maritime areas are legitimate exercises of its sovereignty and jurisdiction. As such, Malaysian government vessels and aircraft have and will continue to patrol and conduct their activities in the territorial waters, maritime areas and airspace of Malaysia.

The Government of Malaysia therefore calls upon the Government of the Republic of Singapore to cease and refrain from intruding into Malaysian territory, territorial waters and the airspace over its territory and waters.

The Ministry of Foreign Affairs of Malaysia avails itself of this opportunity to renew to the High Commission of the Republic of Singapore the assurances of its highest consideration.



Putrajaya, 4 August 2011

**High Commission of the Republic of Singapore
Kuala Lumpur**

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Annex 76

Diplomatic note from Malaysia to Singapore, EC 123/2011, dated
22 August 2011



EC 123 / 2011

The Ministry of Foreign Affairs of Malaysia presents its compliments to the High Commission of the Republic of Singapore in Kuala Lumpur and with reference to the Note Verbale MFA/SEA/00013/2011 dated 15 July 2011 of the Ministry of Foreign Affairs of the Republic of Singapore, the Government of Malaysia reiterates its position that its activities near and over South Ledge are not inconsistent with the Judgment of the International Court of Justice of 23 May 2008 which had ruled that *"sovereignty over South Ledge belongs to the State in the territorial waters of which it is located"*.

As South Ledge is located only 1.7 nautical miles from Middle Rocks, as compared to the distance of 2.2 nautical miles between South Ledge and Pedra Branca, it is therefore an undeniable geographical fact that South Ledge lies within the territorial waters of Middle Rocks which belongs to Malaysia.

The Government of Malaysia further reiterates that all and any activities undertaken by Malaysia in its territory; including activities pertaining to and surrounding the abovementioned airspace and its maritime areas are legitimate exercises of its sovereignty and jurisdiction. As such, Malaysian government vessels and aircraft have and will continue to patrol and conduct their activities in the territorial waters, maritime areas and airspace of Malaysia.

The Government of Malaysia further reiterates that its activities near and over South Ledge will not preclude both countries from undertaking maritime boundary delimitation in respect of the area around the abovementioned features as agreed by the Malaysia-Singapore Joint Technical Committee on the Implementation of the International Court of Justice (ICJ) Judgment on Pedra Branca, Middle Rocks and South Ledge.

The Ministry of Foreign Affairs of Malaysia avails itself of this opportunity to renew to the High Commission of the Republic of Singapore in Kuala Lumpur the assurances of its highest consideration.



Putrajaya, 22 August 2011

**High Commission of the Republic of Singapore
Kuala Lumpur**

Annex 77

Diplomatic note from Malaysia to Singapore, EC 125/2011, dated
22 August 2011



EC 125 / 2011

The Ministry of Foreign Affairs of Malaysia presents its compliments to the High Commission of the Republic of Singapore in Kuala Lumpur and with reference to the Note Verbale MFA/SEA/00015/2011 dated 15 July 2011 of the Ministry of Foreign Affairs of the Republic of Singapore, the Government of Malaysia reiterates its position that its activities near and over South Ledge are not inconsistent with the Judgment of the International Court of Justice of 23 May 2008 which had ruled that *"sovereignty over South Ledge belongs to the State in the territorial waters of which it is located"*.

As South Ledge is located only 1.7 nautical miles from Middle Rocks, as compared to the distance of 2.2 nautical miles between South Ledge and Pedra Branca, it is therefore an undeniable geographical fact that South Ledge lies within the territorial waters of Middle Rocks which belongs to Malaysia.

The Government of Malaysia further reiterates that all and any activities undertaken by Malaysia in its territory; including activities pertaining to and surrounding the abovementioned airspace and its maritime areas are legitimate exercises of its sovereignty and jurisdiction. As such, Malaysian government vessels and aircraft have and will continue to patrol and conduct their activities in the territorial waters, maritime areas and airspace of Malaysia.

The Government of Malaysia further reiterates that its activities near and over South Ledge will not preclude both countries from undertaking maritime boundary delimitation in respect of the area around the abovementioned features as agreed by the Malaysia-Singapore Joint Technical Committee on the Implementation of the International Court of Justice (ICJ) Judgment on Pedra Branca, Middle Rocks and South Ledge.

The Ministry of Foreign Affairs of Malaysia avails itself of this opportunity to renew to the High Commission of the Republic of Singapore in Kuala Lumpur the assurances of its highest consideration.

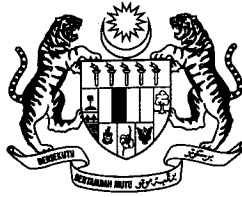


Putrajaya, 22 August 2011

**High Commission of the Republic of Singapore
Kuala Lumpur**

Annex 78

Diplomatic note from Malaysia to Singapore, EC 147/2011, dated
30 September 2011



EC 147 / 2011

The Ministry of Foreign Affairs of Malaysia presents its compliments to the High Commission of the Republic of Singapore in Kuala Lumpur and with reference to the Note Verbale MFA/SEA/00036/2011 dated 6 September 2011 of the Ministry of Foreign Affairs of the Republic of Singapore, the Government of Malaysia has the honour to reiterate its position that its activities near and over South Ledge are not inconsistent with the Judgment of the International Court of Justice of 23 May 2008 which had ruled that "*sovereignty over South Ledge belongs to the State in the territorial waters of which it is located*".

As South Ledge is located only 1.7 nautical miles from Middle Rocks, as compared to the distance of 2.2 nautical miles between South Ledge and Pedra Branca, it is therefore an undeniable geographical fact that South Ledge lies within the territorial waters of Middle Rocks which belongs to Malaysia.

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The Ministry of Foreign Affairs of Malaysia avails itself of this opportunity to renew to the High Commission of the Republic of Singapore in Kuala Lumpur the assurances of its highest consideration.



Putrajaya, 30 September 2011

High Commission of the Republic of Singapore
Kuala Lumpur