



MACHC Training Course

Introduction to Hydrographic Surveying and Nautical Charting

***Antigua
30 May – 10 June 2011***

Report for MACHC

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SUMMARY SHEET

Course Title: Introduction to Hydrographic Surveying and Nautical Charting

Host: Antigua & Barbuda Department of Marine Services and Merchant Shipping (ADOMS)

Venue: Jolly Beach Resort, St Mary's, Antigua and practical demonstration in the Port of St John's, Antigua

Date: 30 May to 10 June 2011

Type: Regional

Organized by: ADOMS, Meso American and Caribbean Sea Hydrographic Commission (MACHC) and the United Kingdom Hydrographic Office (UKHO)

Supported by: CARIS, Fugro Pelagos, Kongsberg Maritime, UKHO

Number of participants: 12 full time + 2 part-time.

Number of countries: 9

Summary:

This two-week course brought together participants with a diverse range of background, age and experience, but who were united by their desire to develop a hydrographic capability in their own nations.

The course was primarily classroom based with a practical survey demonstration in the middle of the second week. The first week's presentations provided an understanding of the need for and benefits of a national hydrographic policy, an understanding of a national hydrographic framework and how to tailor the framework to individual national circumstances; an understanding of how to build and develop a national hydrographic service to meet individual country needs and finally an understanding of hydrographic and nautical cartographic methods.

The second week was devoted to acquiring an understanding of modern surveying equipment and data processing through to chart compilation.

A summary of the participants' feedback forms is included at Annex E, from which it is concluded that the course was successful in achieving its aims. Certainly the verbal enthusiasm from the participants, coupled with their stated intentions of pursuing the establishment of hydrographic capabilities, is encouraging.

Course Report

Introduction

The course was instigated as part of the MACHC capacity Building programme approved by the IHO Capacity Building Sub Committee for delivery in Antigua in 2011. The course was hosted in-country by ADOMS. The course was delivered, and students accommodated, at the Jolly Beach Resort, St Mary's, Antigua.

Students from nine countries (Antigua (4), Barbados, British Virgin Islands, Dominica, El Salvador, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines) attended the course. Course design and the majority of the delivery and in-country co-ordination were provided by UKHO. Three commercial companies (CARIS, Fugro Pelagos and Kongsberg Maritime) took an active and most effective part in the course. Kongsberg Maritime's contribution was particularly evident with the supply of surveying equipment and the delivery of a new survey of St John's Harbour and approaches.

Course Objectives

The principal course objectives were to:

- Acquire an understanding of the need for and benefits of a national hydrographic policy.
- Acquire an understanding of a national hydrographic framework and how to tailor the framework to individual national circumstances.
- Acquire an understanding of how to build and develop a national hydrographic service to meet individual country needs.
- Acquire an understanding of hydrographic and nautical cartographic methods.
- Acquire an understanding of modern surveying equipment their advantages and limitations.

Venue

The course was held at the Jolly Beach Resort, St Mary's, Antigua; although a tourist hotel its facilities were perfectly suited to hosting the course there being no reason to leave the site as all provisions were made as part of the hotel package. The facilities were excellent and hotel staff were most supportive in response to requests for assistance. Lectures were delivered in the Bougainvillea Room, a large, air-conditioned conference room equipped with projector, projection screen, flip-chart board and WIFI access.

Instructors

The lead Instructor and course co-ordinator, Mr Bob Wilson (International Hydrographic Projects' Manager, UKHO) was present for the entire course. Each of the commercial companies provided instructors as shown below and at Annex A to deliver specialist training during the second week:

- Mr Don Ventura Fugro Pelagos
- Mr Jan Haug Kristensen Kongsberg Maritime
- Mr Ståle Myklebust Kongsberg Maritime
- Mrs Karen Hart CARIS

The instructors worked cooperatively to ensure that all the students were actively engaged and participating. This interactive approach added greatly to the overall success of the course, as the training objectives were enhanced through a shared learning experience.

Participants

Participants were from the following nine countries: Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, El Salvador, Grenada, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines. A full list of participants is at Annex B.

The instructors were pleased with the enthusiasm and involvement of all the participants, who were clearly keen to learn and to derive full benefit from the course.

Activities and Proceedings

Pre-course Assignments

None provided.

Opening & Closing Ceremonies

The opening ceremony was coordinated by Lieutenant Commander Wayne Mykoo (ADOMS). The welcome address was given by Mr Dwight Gardiner (Director ADOMS), a further address was given by Mr Bob Wilson (UKHO) who outlined the rationale for the course and summarised the potential benefits to participants' nations in developing hydrographic capability and ultimately becoming members of IHO.

At the closing ceremony remarks were presented by the students' representatives (Captain Ian Noel – St Vincent and the Grenadines and Mr Ato Kentish - Antigua) the commercial representative (Mr Jan Haug Kristensen) and the lead instructor (Mr Bob

Wilson), who collectively thanked ADOMS and MACHC and expressed pleasure at the success of the course. Certificates were then presented by Mr Dwight Gardiner, after which Mr Gardiner gave a short speech to close the course.

Course Proceedings

The course began with a session in which the students and lead instructor introduced themselves. This was followed by a short session that outlined the aims and objectives of the course, covered administrative and domestic details and sought views from the participants as to what they hoped individually to achieve from the course. The remainder of the first week was devoted to PowerPoint-based lectures, flip-chart explanations and interactive group discussions covering the hydrographic programme detailed at Annex C, *Introduction to Hydrography and Nautical Cartography*.

The second week was devoted to presentations from the commercial companies represented, a practical demonstration of MBES surveying and a VIP Day discussed further in this report. A key element of the course for Antigua was the delivery of a new survey of St John's harbour and approaches discussed further in this report.

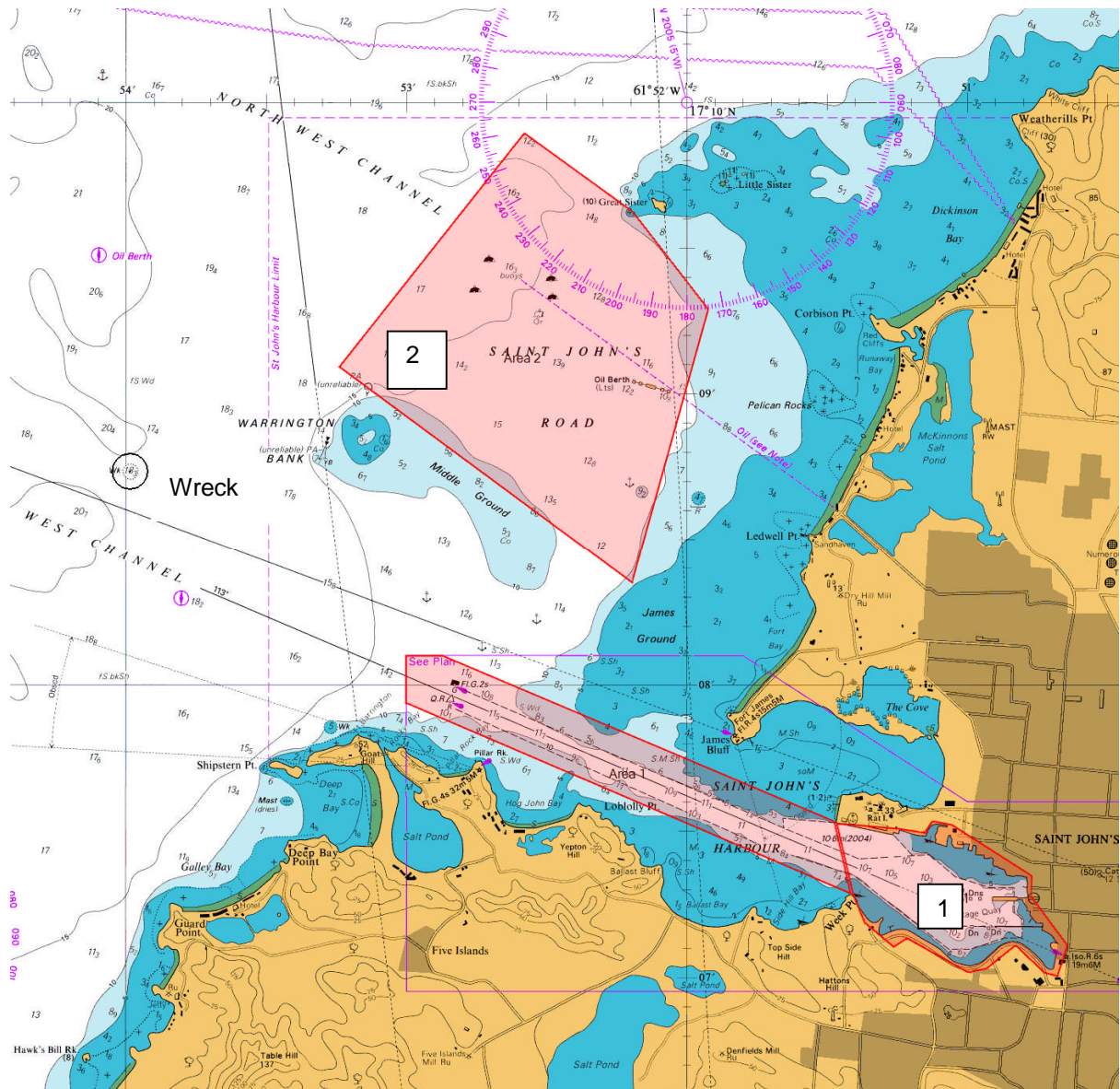
VIP Participation

The course was used by the MACHC Chairman (Rear Admiral Nick Lambert (UKHO)) as an opportunity to raise the profile of MACHC and hydrography in Antigua; as a result of this initiative a VIP day was arranged for the Wednesday of the second week with other meetings the following day. Admiral Lambert, following a call on Mr Dwight Gardiner (Director, ADOMS) accompanied him for a call on the Prime Minister of Antigua and Barbuda, the Honourable Dr Baldwin Spencer; details of Admiral Lambert's visit are at Annex D. A reception, hosted by MACHC and ADOMS took place at the hotel on the Wednesday evening at which the Prime Minister of Antigua and Barbuda was the guest of honour.

The British High Commissioner for Barbados and the Eastern Caribbean, Mr Paul Brummell visited the course on the second day, attended one lecture and joined the students for lunch. This visit was of particular significance to the students as there were representatives from all of the states to which he is accredited.

Antigua Surveys

Through the good offices and generosity of Kongsberg Maritime, supported by the Antigua and Barbuda Coastguard, it was possible to provide much needed modern surveys of St John's Harbour, St John's Roads (last surveyed in 1849) and the wreck in the approach to St John's Harbour. This survey was merged with the course programme and allowed some positive gain to be obtained from the practical demonstration of MBES techniques to the students. A drawing showing the areas surveyed is shown below.



Antigua Survey Areas

Assessment

The nature of the course did not permit formal examinations and thus the course assessment was achieved through feedback to the instructors and ADOMS staff during the course and course evaluation forms completed by the students at the end of the course. A summary of the course evaluation forms for all instructors is at Annex E.

Achievements

A good rapport was built between the instructors and participants, the latter being fully engaged and mostly stretched by the breadth of material covered in such a short course. All students commented on how much they had enjoyed the course and at the end were clearly enthused by hydrography, expressing a desire to return

for further enlightenment if the opportunity presented, or, in the case of one, to progress to an IHO Cat B course. The feedback at Annex E articulates the various thoughts on the practical aspect of this course, however, it is was stated at the start of the course that as this was an 'Introduction' the 'practical' element was merely a demonstration to allow consolidation of classroom instruction.

Conclusions

In conclusion it is felt that the aims of the course were met, in that all participants stated that they had gained a good grasp of the fundamentals of national hydrography and nautical charting, coupled with a desire to drive forward the quest to build or enhance national capability. Post course communication has borne out these intentions and is the clearest indication of the course's success.

ANNEX A - LIST OF INSTRUCTORS

Organization	Name	Position	E-Mail Address
CARIS	Mrs Karen Hart	Senior Hydrographic Consultant	Karen.hart@caris.com
Fugro Pelagos	Mr Don Ventura		
Kongsberg Maritime	Mr Jan Haug Kristensen		
Kongsberg Maritime	Mr Ståle Myklebust		
United Kingdom Hydrographic Office	Mr Bob Wilson	International Hydrographic Projects' Manager	Robert.wilson@ukho.gov.uk

ANNEX B - LIST OF PARTICIPANTS

Country	Name	Position	E-Mail Address
Antigua	Mr Ato Kentish	Land Surveyor	Ato_kentish@gmail.com
Antigua	Mr James Lee	Marine Officer	Generaljay28@hotmail.com
Antigua	Mr Kiyode Straker	Land Surveyor	kiyode@hotmail.com
Antigua	Sub Lieutenant Dorian Davis	Antigua and Barbuda Defence Force	decka95@hotmail.com
Barbados	Mr George Kent Fergusson	Chief Pilot Barbados Port Inc	kfergusson@barbadosport.com
British Virgin Islands	Mr Rasheed Frett	Marine Officer	rasheed_f@hotmail.com
Dominica	Mr James Gregoire	Surveyor	jamesgregoire@hotmail.com
El Salvador	Eng. Victor Shearle Pearce	Geodesist	vick_pearce@yahoo.com
Grenada	Mr Ian Noel	Pilot & Marine Surveyor	alluno@hotmail.com
St Kitts & Nevis	Captain Nigel Herbert	Chief Marine Pilot, St Kitts Air & Seaports Authority	Nigel507@hotmail.com maritimeaffairs@yahoo.com
St Lucia	Mr Peter Joseph	Marine Police	sweetsauce230@msn.com
St Vincent & Grenadines	Mr Ronald Joseph	Chief Pilot – Port Authority	rjoseph@svgpa.com

ANNEX C - COURSE PROGRAMME

Day	Start	End	Topic	Lecturer
1	0845	0930	Opening Ceremony	Bob Wilson UKHO
	0930	1015	Course Introduction	
	1015	1030	<i>Morning Break</i>	
	1030	1115	What is Hydrography?	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	International Obligations of a Maritime State	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	National Need for Hydrography		
2	0845	0930	Review	Bob Wilson UKHO
	0930	1015	National Need for Hydrography - Practical	
	1015	1030	<i>Morning Break</i>	
	1030	1115	The Continuing Need for Hydrography, its Values and Uses	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Considerations for a National Hydrographic Capability	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Roles and Functions of a Hydrographic Service		
3	0845	0930	Review	Bob Wilson UKHO
	0930	1015	The National Hydrographic Service	
	1015	1030	<i>Morning Break</i>	
	1030	1115	Overview of Hydrography - Start to Chart	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Data Gathering - The Problem	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Data - The Problem		
4	0845	0930	Review	Bob Wilson UKHO
	0930	1015	Introduction to hydrographic Surveying	
	1015	1030	<i>Morning Break</i>	
	1030	1115	Introduction to hydrographic Surveying	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Introduction to hydrographic Surveying	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Introduction to Hydrographic Surveying		
5	0845	0930	Review	Bob Wilson UKHO
	0930	1015	4 Practical	
	1015	1030	<i>Morning Break</i>	
	1030	1115	Hydrographic Survey Planning	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Hydrographic Survey Operations	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Antigua Survey		

Day	Start	End	Topic	Lecturer
6	0845	0930	Bathymetric LiDAR Theory	Don Ventura Fugro Pelagos
	0930	1015		
	1015	1030	<i>Morning Break</i>	
	1030	1115	Bathymetric LiDAR Theory	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Bathymetric LiDAR Operations	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Bathymetric LiDAR Operations		
7	0845	0930	MBES System Theory	Jan Haug Kristensen & Ståle Myklebust Kongsberg Maritime
	0930	1015		
	1015	1030	<i>Morning Break</i>	
	1030	1115	MBES System Theory	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	MBES System Operations	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
	1500	1600	MBES System Operations	
1600	1630	Meet Rear Admiral Nick Lambert MACHC Chairman		
8	0900	1700	Survey Demonstrations - St John's Harbour	Kongsberg Maritime
	0900	1700	Bathymetric LiDAR Operations	Don Ventura Fugro Pelagos
	1900	2130	VIP Reception hosted by MACHC and ADOMS Principal Guest the Prime Minister of Antigua & Barbuda	MACHC/ADOMS
9	0845	0930	Survey Data Management and Product Development	Mrs Karen Hart CARIS
	0930	1015		
	1015	1030	<i>Morning Break</i>	
	1030	1115	Survey Data Management and Product Development	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Survey Data Management and Product Development	
	1345	11430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Survey Data Management and Product Development		
1600	1630	Meet Rear Admiral Nick Lambert MACHC Chairman		
10	0845	0930	Survey Data Management and Product Development	Mrs Karen Hart CARIS
	0930	1015		
	1015	1030	<i>Morning Break</i>	
	1030	1115	Survey Data Management and Product Development	
	1115	1200		
	1200	1300	<i>Lunch Break</i>	
	1300	1345	Survey Data Management and Product Development	
	1345	1430		
	1430	1500	<i>Afternoon Break</i>	
1500	1600	Closing Ceremony		

ANNEX D – VIP PARTICIPATION

VIP PROGRAMME

Date	Time	Content	Remarks
31 May	1100	Mr Paul Brummell, British High Commissioner to Barbados and the Eastern Caribbean visited the course.	
7 June	1405	Rear Admiral Lambert, MACHC Chairman and United Kingdom National Hydrographer, and Mr Jeff Bryant, MACHC CB Coordinator arrived in Antigua.	
	1600	MACHC Chairman met the course participants at the Jolly Beach Resort.	Accompanied by Mr Jeff Bryant
8 June	0930 1000	Rear Admiral Lambert, MACHC Chairman, called on Mr. Dwight C.R. Gardiner, Director, ADOMS	Accompanied by Mr Jeff Bryant, Mr Bob Wilson
	1030 1100	Rear Admiral Lambert, MACHC Chairman, called on Hon. Dr Winston B. Spencer, Prime Minister of Antigua and Barbuda in the Prime Minister's Office	Accompanied by Mr Dwight Gardiner, Mr Jeff Bryant and Mr Bob Wilson
	1115 1230	Rear Admiral Lambert, MACHC Chairman witnessed the practical survey.	Accompanied by Mr Jeff Bryant and Mr Bob Wilson
	1900	VIP Reception at the Jolly Beach Resort. Guest of honour the Hon. Dr Winston B. Spencer, Prime Minister of Antigua and Barbuda	Co-hosted by MACHC and ADOMS
9 June	0930 1000	Rear Admiral Lambert, MACHC Chairman, called Colonel Trevor Thomas, Chief of Defence Staff, Antigua and Barbuda Defence Force.	Accompanied by Mr Jeff Bryant, the Acting Coast Guard Commander and ADOMS' officers.
	1015 1045	Rear Admiral Lambert, MACHC Chairman, called on Mrs Agatha Dublin, General Manager of the Antigua and Barbuda Port Authority.	Accompanied by Mr Jeff Bryant, and ADOMS' officers.
	1100	Rear Admiral Lambert, MACHC Chairman, called on Mr Nathan Dundas, President of the Antigua and Barbuda Cruise Tourism Association.	Accompanied by Mr Jeff Bryant, and ADOMS' officers.
	1130	Rear Admiral Lambert, MACHC Chairman, called on the Master of the cruise liner MV <i>Serenade of the Seas</i> .	Accompanied by Mr Jeff Bryant, and ADOMS' officers.
	1730	Rear Admiral Nick Lambert, MACHC Chairman and United Kingdom National Hydrographer, departed Antigua for UK	Accompanied by Mr Jeff Bryant

ANNEX E - COURSE EVALUATION

UKHO – Summary of End of Course Evaluation Questionnaires

		Strongly Disagree	Disagree	Agree	Strongly Agree	Comments
a	The subject matter was generally new to me.		1	2	4	1. Hydrography as a science is not new but the information on maritime obligations and standards was very new. 2. Especially the maritime section.
b	The pace of the instruction was appropriate to my needs.			3	4	Excellent
c	The level of instruction was appropriate to me.			5	2	
d	The time allocated for instruction was adequate.			5	2	
e	The sequence of instruction was logical.			3	4	
f	The balance between theory and practical was about right.		1	4	2	1. No real practical for this section but instructor was able to give vivid illustrations to underscore important points. 2. The actual surveying could have be longer.
g	I now feel more confident in my understanding of the subject matter.			2	5	
h	The equipment and facilities used were suitable for my needs.			2	5	
i	The handouts and supporting documents were useful.			1	6	
j	The quality of the delivery of instruction was good.			1	6	

General Comments:

- 1 Bob did an excellent job in delivering the information to the students. He was knowledgeable and experienced and could relate to the material that was delivered. I attended the course with no prior knowledge of hydrography and have become more aware of the need for hydrography especially in Antigua.
- 2 The programme has given me a better understanding of the importance of hydrography. More than that, the opportunities for training and the access to information and support has made the experience more than worthwhile.
- 3 Very good course.
- 4 The course was relatively new to me. Thanks to your team I now have a better understanding of hydrography, its necessity, and also the prospect of using it as a money earner in the tourist sector. Thanks guys.
- 5 The course was well structured and delivered. This allowed me to gain a better understanding of the subject, and this will ultimately enable better functionality, in terms of hydrography, in discharging my responsibilities.

CARIS – Summary of End of Course Evaluation Questionnaires

		Strongly Disagree	Disagree	Agree	Strongly Agree	Comments
a	The subject matter was generally new to me.		1	3	3	The software used is remarkable.
b	The pace of the instruction was appropriate to my needs.			4	3	
c	The level of instruction was appropriate to me.			5	2	
d	The time allocated for instruction was adequate.			6	1	
e	The sequence of instruction was logical.			3	4	
f	The balance between theory and practical was about right.		2	2	3	It was a very difficult module heavily laden in theory. Karen really tried her best but I think the theory was a little too detailed and as such went above the grasp of the class. The lecture need to combine more of the theory with the practical (manipulating of the software).
g	I now feel more confident in my understanding of the subject matter.			3	4	
h	The equipment and facilities used were suitable for my needs.			4	3	
i	The handouts and supporting documents were useful.			3	4	
j	The quality of the delivery of instruction was good.			4	3	

General Comments:

- 1 The instructor's easy going approach made it easy to follow
- 2 Very informative but the practical should be allotted more time
- 3 Amazing products and equally amazing ability. I like the end products

Fugro Pelagos – Summary of End of Course Evaluation Questionnaires

		Strongly Disagree	Disagree	Agree	Strongly Agree	Comments
a	The subject matter was generally new to me.		1	1	5	I was familiar with land based LiDAR systems.
b	The pace of the instruction was appropriate to my needs.			5	2	
c	The level of instruction was appropriate to me.			4	3	
d	The time allocated for instruction was adequate.			5	2	
e	The sequence of instruction was logical.			4	3	
f	The balance between theory and practical was about right.	1	1	3	2	I would love to see a practical but I understand the limitations.
g	I now feel more confident in my understanding of the subject matter.			3	4	
h	The equipment and facilities used were suitable for my needs.			3	4	
i	The handouts and supporting documents were useful.			3	4	
j	The quality of the delivery of instruction was good.			3	4	

General Comments:

- 1 The LiDAR information was very good and well presented. Of particular interest to me were the training opportunities that are available.
- 2 Lidar is a very interesting area of Hydrography, and we will definitely be considering its use on our reefy East coast, which is very treacherous.
- 3 This lecture gave me a better understanding with regard to Lidar utilisation: benefits; and limitations.

Kongsberg Maritime – Summary of End of Course Evaluation Questionnaires

		Strongly Disagree	Disagree	Agree	Strongly Agree	Comments
a	The subject matter was generally new to me.		1	3	3	1. The theory was not new but the new technologies employed were interesting. 2. Very informative.
b	The pace of the instruction was appropriate to my needs.			3	4	
c	The level of instruction was appropriate to me.			4	3	
d	The time allocated for instruction was adequate.		1	5	1	
e	The sequence of instruction was logical.			4	2	
f	The balance between theory and practical was about right.		2	1	4	
g	I now feel more confident in my understanding of the subject matter.			2	5	
h	The equipment and facilities used were suitable for my needs.			3	4	
i	The handouts and supporting documents were useful.			4	3	
j	The quality of the delivery of instruction was good.			4	3	

General Comments:

- 1 I missed a significant section of the presentation but I was still able to see the practical and understand the types of processes necessary to undertake a project. The practical in the port was particularly exciting.
- 2 Although the classroom instruction was adequate, am of the view that the students should have more time to see and observe the surveying process. The instructors were excellent in their delivery of the material
- 3 More time should be allotted for practical purposes
- 4 I am truly impressed on the equipment performed. As said it would it exceeded.
- 5 The assistance from industry not only aided in the practical aspect of the surveying, but also allowed participants to gain an understanding of the latest technology that are utilise in the industry nowadays.

ANNEX E - COURSE PHOTOGRAPHS



Training in progress - Mrs Karen hart (CARIS)



Training in progress - Mrs Karen hart (CARIS)



Students and ADOMS staff with the Prime Minister of Antigua and Barbuda (rear centre)



MACHC Chairman (right) with the Prime Minister of Antigua and Barbuda



Mr Dwight Gardener, Director ADOMS, presents the course certificate to Captain Kent Fergusson, Barbados.



Mr Dwight Gardener, Director ADOMS, delivering the closing speech.



Coastguard launch rigged with Kongsberg EM3002 MBES



MACHC Chairman viewing practical demonstration of EM3002