

Annual Report to the IHO
In accordance with Paragraphs 3.4 and 3.5
Of the Memorandum of Understanding dated 1 August 2013

By

Maxim F. van Norden

19 September 2016

Maxim F. van Norden, C.H.
Director,
Hydrographic Science Degree Programs
School of Ocean Science and Technology
The University of Southern Mississippi
1020 Balch Boulevard
Stennis Space Center, MS 39529-9904
tel: 228-688-7123; fax: 228-688-1121
email: maxim.vannorden@usm.edu

Annual Report for IHO - Korea Fund, Academic Year 2015 - 16

Four students sponsored by the IHO-Korea Fund completed the University of Southern Mississippi Hydrographic Science Master Degree/Category A Program. These students also received a Master's Degree in Hydrographic Science. Tables I and II below display the general calendar and specific courses of the program. These students were:

Babatunde Luqman Akanbi, Lt Cdr., Nigerian Navy – Bachelor of Technology, Federal University of Technology Yola, Nigeria, 2002.

Jasim Butaiba, Hydrographic Surveyor, Bahrain Survey & Lands Bureau – B.S. Survey Engineering, King Saud Univ., Saudi Arabia, 2011.

Lucian Dutu, Lt., Romanian Navy - B.S. Naval Engineering and Navigation, Romanian Navy Academy "Mircea cel Bătrân" 2011.

Devendra Madhow, Sen. Surveyor, Mauritius Min. of Housing & Lands – B.S. Spatial Science Tech., Univ. of South. Queensland AU, 2012; M.S. Proj. Management, 2010 & B.S. Management, 2003, Univ. of Mauritius.

The general calendar for Academic Year 2015 – 2016 is displayed below:

Table I. Hydrographic Science Program Calendar 2015 - 16	
Event	Date
Students arrive in Mississippi	3-Aug-15
Reviews and Orientations	6 -18 Aug
Fall Semester classes begin	19-Aug
Fall Semester exams	7 - 10 Dec 15
Christmas Break	14 Dec - 18 Jan
Spring Semester classes begin	19-Jan-16
Spring Semester exams	9 - 12 May
Summer session classes begin	16-May
Survey Project field begins	30-May
Survey Project field ends	8-Jul
Comprehensive exam	2-Aug
Graduation Recognition Ceremony	4-Aug-16

Table II. Hydrographic Science Master Degree Program for AY 2015 - 16

Official Courses	Credit Hours	Subject	Instructor	Instructor Rank
Fall (1st) Semester (15 credit hours, 16 weeks)				
MAR 668	3	Applied Ocean Acoustics	Dr. Wells	Contract Professor
HYD 600	3	Classical Geodesy	Dr. Howden	Associate Professor
HYD 607	3	Oceanography for Hydrographers	Dr. Church	Assistant Professor
HYD 608	2	Practical Hydrography	Mr. van Norden	Coordinator & Instructor
HYD 609	1	Nautical Science	RDML (ret) Barbor	Adjunct Instructor
HYD 620	3	Math Concepts for Hydrographers	Dr. Church	Assistant Professor

Spring (2nd) Semester (15 credit hours, 16 weeks)				
HYD 601	3	Hydrographic Data Management	Dr. Church	Assistant Professor
HYD 604	3	Kinematic Positioning	Dr. Wells	Contract Professor
HYD 605	3	Applied Bathymetry	Dr. Wells	Contract Professor
HYD 611	3	Remote Sensing for Hydrographers	Mr. van Norden	Coordinator & Instructor
HYD 612	3	Water Levels	Dr. Howden	Associate Professor

Summer (3rd) Term (6 credit hours, 11 weeks)				
HYD 606	2	Nautical Cartography and GIS	CARIS/Mr van Norden	Contract Instructors
HYD 603	1	Law and Policy for Hydrographic Science	Mr. van Norden	Coordinator & Instructor
HYD 610	3	Hydrographic Science Field Project	Mr. van Norden	Coordinator & Instructor

The International Board specifies in IHO S-5 that all students must complete a field program. These students completed this requirement by participating as team members on two student teams. Jasim Butaiba and Lucian Dutu were on Team Black that completed a survey of the Lake Pontchartrain North Shore Navigation Channel, Louisiana (see Figure 1). This is an area adjacent to a student survey conducted last year in the western Rigolets Passage. Babatunde Akanbi and Devendra Madhow were on Team Gold that surveyed the adjacent northern extension of the North Shore Navigation Channel and the Goose Point Fault in Lake Pontchartrain (see Figure 2). These areas were last surveyed by NOAA's predecessor, Coast and Geodetic Survey, in the 1930s. Both student surveys were Ellipsoid Referenced Surveys with student-established tide gages to determine ellipsoid-chart datum separation. Team Black used a Reson 7125 multibeam with an EdgeTech 4125 for target identification. Team Gold used a Kongsberg 2040C multibeam and an EdgeTech 4600 for target identification. Both teams successfully processed their data, completed all reports required by NOAA and USM, and produced the chart products below depicted in Figure 3.



Figure 23. Finalized 16USM01 surface

Figure 1. The Team Black Oder 1 survey of the North Shore Navigation Channel with 100% multibeam bottom search using the Reson 7125 multibeam and ellipsoid referencing.

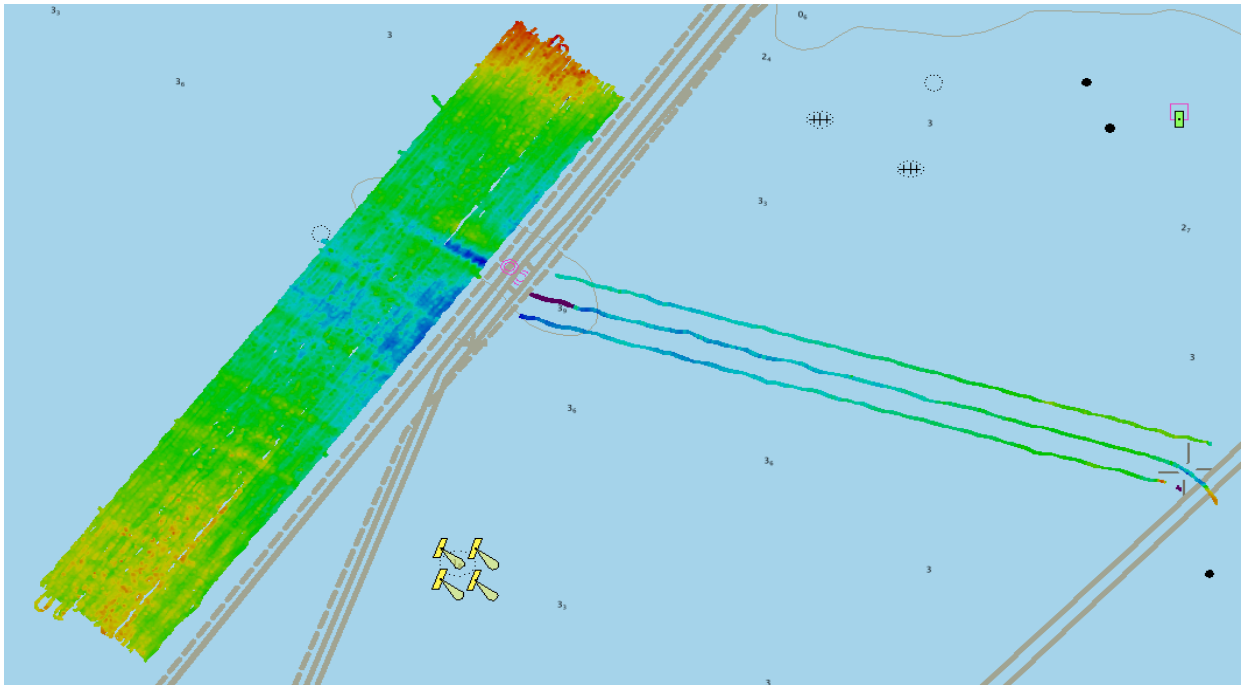


Figure 2. Team Gold Special Order Survey of the Goosepoint Fault area and a skunkstripe survey of the North Shore Navigation Channel Extension. Multibeam coverage was conducted with the Kongsberg 2040C and sidescan coverage (not shown) using the Edgetech 4600.

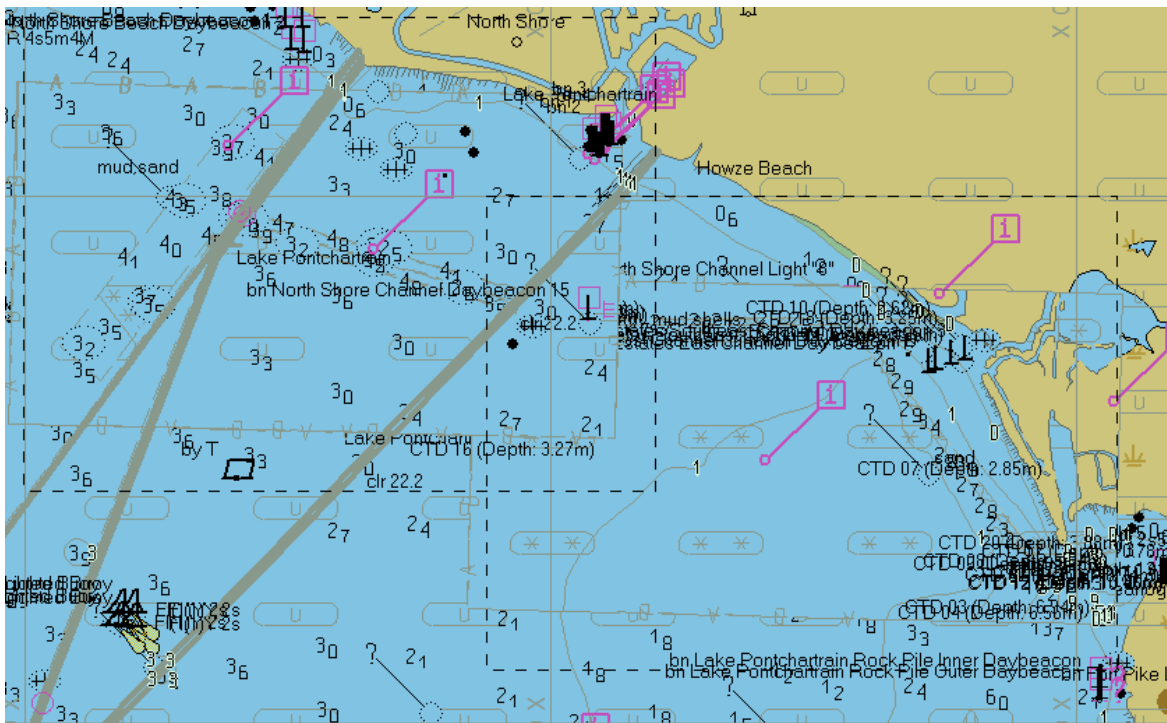


Figure 3. Student- built ENC using data collected from both teams

Disbursement of IHO-Korea funds

Table III lists the planned disbursement for Academic Year 2015 – 16 for the four listed IHO students. Payouts were done at the beginning of each semester of which only the funds for textbooks and stipends were sent directly to each student bank account for use at their discretion. Funds for vehicle charges and travel were retained in accounts setup to support student use of university vehicles and conference travel.

The students in this class chose not to travel to the selected annual professional conference - Offshore Technology Conference, held in Houston, Texas on 2 – 5 May 2016. They all cited fatigue from the academic program and a need to use the week to catchup with their studies. For that reason, the budgeted \$4800 for student conference travel was not used resulting in a total surplus of \$8,845 in the travel account. See Table IV for actual monthly expenditures for this grant. Note that an existing \$4,045 pre-existed in the travel account from the past three years.

Table V lists the planned budget for AY 16 – 17 for the two new supported students. The professional conference travel planned for this year is the U.S. Hydrographic Conference 2017 to be held in Galveston, Texas on 20 – 24 March. I am confident that this new class has the professional interest and desire to attend the U.S. Hydro Conference.

Student Alumni Feedback

Table VI lists all of the students supported by the IHO-Korea fund from 2013 to the present time. Also included is Attachment (A) which provided student feedback from the first two classes.

Recognition Ceremony

Attachment (B) is the information program for the Recognition Ceremony held on 4 August 2016 where each student was presented a Category A (Academic) Certificate. Students also received a Master's Degree in Hydrographic Science. [The M.S. in Hydrographic Science diploma is mailed to the student upon reconciliation of all university requirements]. Attachment (C) contains pictures of the Recognition Ceremony.

Table III. Academic Year 2015 – 16 Planned Disbursements of IHO-Korea Fund

AY 2015 - 2016	Fall Costs	Spring Costs	Summer Costs	Total/Student	4 Students	Comment
Tuition	4416	4416	2412	11244	44976	To be credited to student SOAR account
Course fees	750	1500	800	3050	12200	To be credited to student SOAR account
medical insurance	537	859		1396	5584	To be credited to student SOAR account
Clinic fees	150			150	600	To be credited to student SOAR account
International Fee	75	75		150	600	To be credited to student SOAR account
Graduation fee		60		60	240	To be credited to student SOAR account
Taxes with-held	1379	1841	0	3220	12880	Estimated Taxes. Students must file a tax form with IRS for each year to receive all or partial reimbursement of taxes paid.
Textbooks (est.)	650	650	0	1300	5200	Students may elect to purchase books and supplies through on-line purchases and not the USM bookstore.
Stipend (after tax with-hold)	8500	8500	3400	20400	81600	Sent to student personal bank account
Sub-Total	16457	17901	6612	40970	163880	
Below GR04896 funds are retained for PI allocations						
Dept. Marine Science Vehicle charges	500	500		1000	4000	Retained in GR04896; Expenditure requires PI Approval.
Student Travel/per diem for Prof. Conference		1200		1200	4800	E.g.,OTC Houston TX 2-5 May 16; Oceans Wash DC, 19-22 Oct15. Retained in GR04896; Expenditure requires PI Approval.
PI Travel to meet Sponsors					4000	Retained in GR04896; Expenditure requires PI Approval.
Total to USM	16957	19601	6612	43170	176680	Received by USM
Name of IHO Student		ID #				
Babtunde Luqman Akandi		965038				
Jasim Yusuf Butaiba		931307				
Lucian Dutu		963455				
Devendra Ragoonath Madhow		964867				

Table IV. Actual Disbursement of IHO-Korea Funds for Academic Year 2015 - 16

Fund Reconciliation and Projection		Project Period 8/1/13 - 7/31/16 - Year 3												Jul-16 Actual	Balance			
		Year 2	Additional	Jun-15 Actual	Award	Jul-15 Actual	Aug-15 Actual	Sep-15 Actual	Oct-15 Actual	Nov-15 Actual	Dec-15 Actual	Jan-16 Actual	Feb-16 Actual			Mar-16 Actual	Apr-16 Actual	May-16 Actual
16SOT-370002-01001-GR04896																		
	Budget as of 6/1/2015																	
Beginning Balance		21,286.95		187,391.59	178,382.95	112,524.93	112,524.93	112,524.93	112,524.93	112,524.93	112,524.93	40,920.93	38,076.48	36,927.27	36,927.27	35,293.18	22,069.18	8,845.18
Transfers In		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Revenue		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Expenditures		10,575.36	176,680.00	9,008.64	0.00	65,858.02	0.00	0.00	0.00	0.00	71,604.00	2,844.45	1,149.21	0.00	1,634.09	13,224.00	13,224.00	
Total Salaries		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Travel		1,702.95	12,800.00	0.00	0.00	30.02	0.00	0.00	0.00	0.00	0.00	2,844.45	1,149.21	0.00	1,634.09	0.00	0.00	8,845.18
Contractual		19,584.00	163,880.00	9,008.64	0.00	65,828.00	0.00	0.00	0.00	0.00	71,604.00	0.00	0.00	0.00	0.00	13,224.00	13,224.00	-
Commodities		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encumbrances		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Encumbrance		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending Balance		21,286.95	10,711.59	178,382.95	112,524.93	112,524.93	112,524.93	112,524.93	112,524.93	40,920.93	38,076.48	36,927.27	36,927.27	35,293.18	22,069.18	8,845.18	8,845.18	

Table V. Academic Year 2016 – 17 Planned Disbursements of IHO-Korea Fund

AY 2016 - 2017	Fall Costs	Spring Costs	Summer Costs	Total/Student	2 Students	Comment
Tuition	4557	4557	2489	11603	23206	To be credited to student SOAR account or Go Gold
Course fees	750	1500	800	3050	6100	To be credited to student SOAR account or Go Gold
medical insurance	859	859		1718	3436	To be credited to student SOAR account or Go Gold
Other fees	200	200		400	800	To be credited to student SOAR account or Go Gold
Taxes with-held (est)	1570	1660	0	3230	6460	To be credited to student SOAR account or Go Gold
Textbooks (est.)	650	650	0	1300	2600	To be credited to student SOAR account or Go Gold
Stipend (after tax with-hold)	8500	8500	3400	20400	40800	To be credited to student SOAR account or Go Gold
Sub-Total	17086	17926	6689	41701	83402	
Below GR04896 funds are retained for PI allocations						
Dept. Marine Science Vehicle charges	500	500		1000	2000	Retained in GR04896; Expenditure requires PI Approval.
Student Travel/per diem for Prof. Conference		1400		1400	2800	US Hydro Conf, Galveston TX, 20 -24 March 2017. Retained in GR04896; Expenditure requires PI Approval.
PI Travel to meet Sponsors					4000	Retained in GR04896; Expenditure requires PI Approval.
Total to USM	17586	19826	6689	44101	92202	Receipt pending (Tommy Hillman)

Name of IHO Student	ID #
Abdul Halim AHMAD NORDIN	981592
Gilbert Avila AVIOLA	980047

Table VI. IHO Student Summary

Class 2013 - 2014

Hembal TECKMUN	Mauritius
Mohammad Minhaz UDDIN	Bangladesh
Antonio Aitherando Kamau WILLIAMS	Jamaica

Class 2014 - 2015

Maylord DE CHAVEZ	Philippines
Uchechukwu EREGÉ	Nigeria
Shaikh Imtiaz Bin FIROZ	Bangladesh

Class 2015 - 2016

Babtunde Luqman AKANDI	Nigeria
Jasim Yusuf BUTAIBA	Bahrain
Lucian DUTU	Romania
Devendra Ragoonath MADHOW	Mauritius

Class 2016 - 2017

Abdul Halim AHMAD NORDIN	Malaysia
Gilbert Avila AVIOLA	Philippines

Enclosure A

IHO/KOREA SPONSORED STUDENT FEEDBACK ON USM CAT A PROGRAM

Six students sponsored by IHO/Korea who graduated in Summer 2014 and Summer 2015 were requested to reply to the ten questions in bold type. Their replies were received in July 2016 and are listed below each question in alphabetical order of family name and graduation year. Other than corrections of misspelled words, no other alterations were made to their responses.

1. What is the name of your organization and what is the name of your organization's parent (higher echelon) organization?

Teckmun14 (Mauritius) – *Hydrographic Unit, Ministry of Housing and Lands.*

Uddin14 (Bangladesh) - *Bangladesh Navy Hydrographic and Oceanographic Centre (BNHOC). Directorate of Hydrography at Naval Headquarters.*

Williams 14 (Jamaica) - *My organization is The National Land Agency, it falls under The Ministry of Water, Land, Environment and Climate Change.*

De Chavez15 (Philippines) - *National Mapping and Resource Information Authority (NAMRIA). It is an attached agency of the Department of Environment and Natural Resources (DENR)*

Erege15 (Nigeria) - *Nigerian Navy Hydrographic Office/Nigerian Navy.*

Bin Firoz15 (Bangladesh) - **Bangladesh** *Navy Hydrographic and Oceanographic Center. The organization is under Commander Chittagong Naval Area for administrative purpose and for operational purpose it is under Directorate of Hydrography, Naval Headquarters, and Bangladesh Navy.*

2. What was your position in your organization prior to attending our course?

Teckmun14 (Mauritius) - *Senior Surveyor*

Uddin14 (Bangladesh) - *Executive Officer and Senior Hydrographic officer on board a survey vessel.*

Williams 14 (Jamaica) - *Senior Surveyor*

De Chavez15 (Philippines) - *I was a staff officer of the Survey Support Division, Hydrography Branch.*

Erege15 (Nigeria) - *Officer in Charge- GIS Data Center (Navy Hydrographic Office).*

Bin Firoz15 (Bangladesh) - *I joined in this organization after attending the course. Before that I never served in this organization.*

3. What is your current position in your organization now?

Teckmun14 (Mauritius) - *Senior Surveyor*

Uddin14 (Bangladesh) – *Soon after returning from the course, I was appointed as the Commanding Officer of a hydrographic vessel and as a survey officer in charge tasked to carried out a full scale survey which covers approximately 18 thousands km run. Presently I am appointed as Officer in Charge Cartographic Centre at BNHOC to validate and verify bathymetric data and produce nautical charts.*

Williams 14 (Jamaica) - *Chief Hydrographer*

De Chavez15 (Philippines) - *I am currently assigned aboard BRP HYDROGRAPHER PRESBITERO as one of the survey officers.*

Erege15 (Nigeria) - *Instructor- Nigerian Navy Hydrographic School.*

Bin Firoz15 (Bangladesh) - *I am working as Officer in Charge, Cartographic and Chart Section as well as Executive Officer of the organization.*

4. How have you made a difference in improving hydrography and nautical charting in your country?

Teckmun14 (Mauritius) – *I have participated in various single beam surveys done within the lagoon. I also participated in the delimitation of the High Water Line of my country. After processing, the data are sent to India which is the chart producer nation for Mauritius. We are currently doing survey of all the passes located around Mauritius. I also participated in the SAIHC meeting held in 2015.*

Uddin14 (Bangladesh) - *Mostly, I tried to standardize the different aspects of survey steps such as levelling, instrument calibration, latency test, acquisition and processing software parameter set up, pre deployment checks of any survey equipment, sounding error budget etc.*

Williams 14 (Jamaica) - *Small changes in standardizing data collection procedures have been effected, required technological advancements including acquisition of SSS, portable tide gauges, MBES, motion sensors and a dedicated survey boat have not been done due to budget constraints.*

De Chavez15 (Philippines) - *I was able to echo the learnings I got from USM to fellow officers. As planned prior to my coming to USM, I was able to introduce my co-workers to the best practices in hydrographic survey, explain the sources of error in doing multibeam and single beam surveys, how to manage these errors and how to present data comprehensible to the chart compilers in the office.*

Just recently the command was able to dispatch all survey platforms available on board and we have completed the survey of Port of Coron earlier than planned. We plan to cultivate this culture of meeting the survey specifications set by the office by utilizing all resources available to us and keeping integrity of the data at the same time.

It is also presently practiced onboard to involve not only the survey officers but the support crew in hydrography. Since my assignment on board, we have continued holding briefings for our support crew on the basic concepts of hydrography and their roles in meeting all the requirements of the project. It is remarkable that since then we have minimized any incidents of missing or wrong or bad data acquired in the field.

My future plans for my team include conducting post-survey evaluation (which we will start for the recently concluded project) to review the points we were good at and points that need further improvement; adopt the USM practice of having living SOPs of all survey equipment and programs used in hydro survey; and sharing the good practices we have continuously been improving to other hydro teams and commands of NAMRIA.

Erege15 (Nigeria) - *I have proposed newer hydrographic survey softwares and concepts for acquisition and processing to improve quality of hydrographic data.*

Bin Firoz15 (Bangladesh) - *After coming back to Bangladesh Navy I conducted one Basic Hydrography CAT B course consists of total seven students. Among the students three were from Bangladesh Navy, two from Nigerian Navy and two from Bangladesh Inland Water Transport Authority. I was confident to teach the CAT B students and could share my knowledge gained in USM in many cases. At present I am helping my organization to improve nautical charting as well as to produce ENC.*

5. Do you believe your CAT A education has been a positive factor in making that improvement discussed in #4.

Teckmun14 (Mauritius) – *Yes*

Uddin14 (Bangladesh) - *I strongly believe that CAT A program has improved my decision making process in the survey planning and execution level and also has made me more confident in accomplishing critical survey tasks.*

Williams 14 (Jamaica) - *Yes*

De Chavez15 (Philippines) - *Yes, of course.*

Erege15 (Nigeria) - *Most definitely. I became exposed to the above software and concepts after my CAT AN education at USM.*

Bin Firoz15 (Bangladesh) - *Of course CATA education has been a positive factor in making those improvements.*

6. Do you perceive that the CAT A education will help your career?

Teckmun14 (Mauritius) – *Yes*

Uddin14 (Bangladesh) - *Definitely*

Williams 14 (Jamaica) - *Yes*

De Chavez15 (Philippines) - *Yes. Five years from now, I would like to see myself heading the Hydrographic Survey Division of the Branch with all units performing all activities linked to hydrographic surveying within IHO standards to support the nautical charting and other related needs of NAMRIA customers.*

Erege15 (Nigeria) - *It has already started helping my career. I have received positive recommendations after successfully completing the course at USM both from NOAA and the Nigerian Navy.*

Bin Firoz15 (Bangladesh)–*Yes. CAT A education will help to improve my career.*

7. What changes would you make to the USM CAT A program? Keep in mind that if your recommendation is to add an instructional module, you have to subtract something comparable in time because the overall constraint is a one-year program. Also the International Board has produced a new draft of competency requirements for CAT A programs which we at USM must follow.

Teckmun14 (Mauritius) – *Nothing to add.*

Uddin14 (Bangladesh) - *I believe few of the recommendations I made before my departure, already incorporated from the very next course. One is hydrography for oceanographers instead of physical oceanography and another is using CARIS cartographic software suit for chart production at the last stage of the course.*

In my opinion, in 'hydrography practice' module use of current meter profiler for measuring tidal stream and rate, wave period and wave height measurement technique and use of vibro corer may be incorporated.

Williams 14 (Jamaica) - *I am satisfied with the change to HYD 607 Oceanography for Hydrographers.*

De Chavez15 (Philippines) - *I checked the new draft for IHO website, and I think USM fulfills all the requirements required for the accreditation.*

Erege15 (Nigeria) - *Additional hydrographic survey platforms and equipment. This will ensure that every student participates maximally especially in the practical aspects.*

Bin Firoz15 (Bangladesh) - *For HYD 600 the book by Torge. W. and J. Muller (2012): Geodesy, 4rd Ed. de Gruyter, Berlin, New York can be changed. Because the book itself is very hard to understand. Overall to me the syllabus of the program is hard for one year program. But I think this the requirement of IHO so the syllabus cannot be compromised. Considering the on job requirement as hydrographic surveyors the practical issues can be given more priority over theoretical issue in terms of grade. Then the students will try learn the practical issues specially handling the software and equipment's more seriously and it will help them in future. I had a look on draft of competency requirements for CAT A programs. As per that I think USM has a similar program according to the requirement of IHO.*

8. I am also sensitive to some of the quality of life issues you may have had while you studied with us. Much of it is beyond my control but if you would relate those to me, I can at least address those within my control and mitigate those that are beyond my control to aid future students.

Teckmun14 (Mauritius) - *Most of the issues that were faced had already been resolved. The only issue I see is my tax refund which I am still awaiting. Maybe if IHO can send the money directly to the bank account of the IHO candidate, the latter would not have to go through the tax procedures as long as this is legally in order.*

Uddin14 (Bangladesh) - *I think the student's tax waiver is still a major issue, if possible you may look into this. I believe none of us from the first course received our second phase tax waiver. Even in the second course I came to know that Imtiaz he did not receive any tax waiver at all and it was quite a handsome amount more than \$ 2000.*

My second recommendation would be to disburse the initial grant in the quickest possible for smooth kick off if not taken care of yet

Williams 14 (Jamaica) - *The issues that I had were financial, personal and specific to that time, I probably should have waited until 2014 to start the program. Additionally, persons will attempt from time to time to take advantage of the students, case in point Yacout (overpriced motor vehicle) and our Waveland landlord (no intention to pay back the deposit on the apartments), any measure to prevent this is welcomed, you may assign a PhD or 2 year student to help/advise future students in that regard.*

De Chavez15 (Philippines) - *One problem I had (and I think Imtiaz as well) was the processing of Income Tax Return. We were not informed by the International Student Services during our orientation that we have to (personally) file for International TIN to have our refund. The batch before ours was able to apply for ITIN because they did that during their orientation in Hattiesburg with tax representative present during that time. During our time they opted to purchase program to supposedly assist international students with their tax refund filing. However, during the course of submission, there were issues not clearly addressed by the software/program, i.e. application of ITIN. This could have been avoided if we only had that orientation and personal interaction with tax reps like the batch before us had.*

On aspects of living in Mississippi, attending USM Hydro and studying inside NASA, I think you had a pretty good job of assisting us. Other than that I think it is up to the student to find his/her way of meeting the academic requirements of the program.

Erege15 (Nigeria) – *No response.*

Bin Firoz15 (Bangladesh) - *I think our life was good. I personally with my family passed quality time in USA. I can suggest you to guide the students to learn driving and collect driving license before coming to USA and also they must learn basics of MATLAB before coming to USA. Many of the students may not took it seriously but maximum of them will suffer for those issues. Also the syllabus of CAT A course can be sent early to the students then they will have an idea that what they will face after coming to USA. I am still struggling about the tax issue. I know you have nothing to do about it. I did my part but still I did not receive the money I paid for tax.*

9. How can the USM Hydro faculty assist you with improving hydrography in your country?

Teckmun14 (Mauritius) - *Help in term of advice and counselling on Hydrographic matters, especially when planning to acquire new equipment and software would be of great help*

Uddin14 (Bangladesh) - *I think student has to take a proactive role in this case. If they really have some grey areas, then they can directly sought assistance from USM faculty via email or by video conferencing.*

.

Williams 14 (Jamaica) - *We are interested in sending persons for the CAT B program*

De Chavez15 (Philippines) - *I think giving chance to applicants from my country is one. Keeping the communication channel will also help me get updated to new developments in USM and hydro community that may help me improve hydro in the Philippines.*

Erege15 (Nigeria) – *USM Hydro faculty can assist us by sharing new opportunities for capacity building in the field of hydrography. Also new concepts and processes in hydrography can be shared with us in Nigeria.*

Bin Firoz15 (Bangladesh) - *This is a very important issue. In many cases our hydrographic department is not yet very confident like using multi beam echo sounder. Still we could not start ellipsoid reference survey. So it will be great if any questions asked by us to the USM hydro faculty as expert opinion and then we get the feedback. We will be glad to receive your opinion. Also we are buying many new equipment's to improve our hydrographic equipment and software. In many times we are confused to choose the right one. In this issue also I think the USM Hydro faculty can assist us a lot.*

10. Additional comments are welcomed.

Teckmun14 (Mauritius) – *No response.*

Uddin14 (Bangladesh) – *No Response.*

Williams 14 (Jamaica) - *CAT A at USM was a wonderful and challenging experience for me academically, the lecturers are very knowledgeable and very helpful in answering students queries. Thank you very much Mr. Van Norden for all of your wonderful support during that year.*

De Chavez15 (Philippines) - *Just want to thank you all in USM especially the Hydro faculty. The opportunity and learnings I had from USM benefited me on the personal and career level. Thank you very much!*

Erege15 (Nigeria) – *Foreign students especially from developing countries should be given special attention at the beginning stages of the course. Allot of the concepts are new and would require catching up to their counterparts from developed countries.*

Bin Firoz15 (Bangladesh) - *Overall I am grateful to USM as well as USM Hydro faculty to give me full support during my stay in CAT A program. It is a wonderful course to attend by working under those qualified instructors. It is a life time achievement for me. It will be great if the ex-graduates gets the offers or notifications for PhD in USM and jobs in USA. Sir hope to see you again someday.*

Attachment B



THE UNIVERSITY OF
SOUTHERN
MISSISSIPPI.

Hydrographic Science
Class of 2016
Recognition Ceremony

Thursday, August 4, 2016

2 p.m.

Fleming Education Center Auditorium
Southern Miss Gulf Park

Hydrographic Science Graduate Candidates

Babatunde Luqman Akanbi, Lt Cdr., Nigerian Navy – Bachelor of Technology, Federal University of Technology Yola, Nigeria, 2002.

Karel Buizer; Lt., Royal Neth.Navy – B.S.. Maritime Science, Univ. of Plymouth, UK, 2012; M.S. Plant Biology, Utrecht Univ., Netherlands, 2005.

Jasim Butaiba, Hydrographic Surveyor, Bahrain Survey & Lands Bureau – B.S. Survey Engineering, King Saud Univ., Saudi Arabia, 2011.

Weston Robert Thomas Coby, LT, USN, Fleet Survey Team – M.S. Meteorology & Physical Oceanography, Naval Post Graduate School 2014; B.S. Oceanography, U.S. Naval Academy, 2007.

Clayton Hugh Dike, Marine Science PhD candidate – M.S. Marine Science (Geological Ocean.) USM, 2015; B.S. Biology, Univ. of Memphis, 1996.

Lucian Dutu, Romanian Navy – B.S. Naval Engineering and Navigation, Romanian Navy Academy “Mircea cel Bătrân” 2011.

Michael R. Emmer, Physical Scientist, Fleet Survey Team – B.S. Geography, University of Southern Mississippi, 2000.

Jocelyn Ashley Fox, LT, USN, Fleet Survey Team – B.S. English, United States Naval Academy, 2010.

Kenneth Richard Klinger – B.S. Chemistry, Gannon University, 1990.

Devendra Madhow, Sen. Surveyor, Mauritius Min. of Housing & Lands – B.S. Spatial Science Tech., Univ. of South. Queensland AU, 2012; M.S. Proj. Management, 2010 & B.S. Management, 2003, Univ. of Mauritius.

Alaa Anas Mufti, USM Marine Science PhD candidate – B.S. Hydrographic Surveying, King Abdulaziz University, Saudi Arabia, 2009.

Uchenna Chizaram Nwankwo, Marine Science PhD candidate – B.S. Surveying and Geoinformatics, University of Nigeria Enugu, Nigeria, 2013.

Anne Marie Stonestreet – B.S. Marine Science, Coastal Carolina Univ., 2014.

The University of Southern Mississippi
Hydrographic Science Class of 2016
Recognition Ceremony

WELCOME

Dr. Steve Miller, PhD
Vice President for Gulf Park Campus, The University of Southern Mississippi

REMARKS

Dr. Karen S. Coats, PhD
Dean of the Graduate School, The University of Southern Mississippi
Graduate Degree Program in Hydrographic Science

CAPT Raymond "Rich" Delgado III, USN
Chief of Staff, Naval Meteorology and Oceanography Command
Joint International Hydrographic Applied Science Program

RADM Mustafa Iptes, Turkish Navy (ret)
Director, International Hydrographic Bureau
Capacity Building

Dr. LIM Chaeho, PhD
Director, Nautical Chart Division, Korea Hydrographic and Oceanographic Agency
ROK Contributions to Capacity Building

KEYNOTE SPEAKER

CAPT Brian D. Connon, USN
Director, Maritime Safety Division, National Geospatial-Intelligence Agency
Importance of Hydrography

Presentation of Hydrographer of the Navy Education Award
CAPT Raymond "Rich" Delgado III, USN

Presentation of CAT A Certificates
Dr. Karen S. Coats, PhD
CAPT Rich Delgado, USN
Mr. Maxim F. van Norden, CH, Coordinator, Hydrographic Science Programs

Reception and Cake Cutting

Hydrographic Science Program at Southern Miss

This University of Southern Mississippi Masters of Science Degree in Hydrographic Science, approved by the Mississippi Board of Trustees of the State Institutions of Higher Learning in 1999, offers a rigorous, one-year Master of Science degree in Hydrographic Science. With the first class graduating in July 2000, the upcoming 2016 graduating class represents the successful completion of degree requirements by 187 students, including 32 international students from 24 different countries. This represents the 17th graduating class of a program that has matured into the foremost hydrographic program in North America.

Designed in cooperation with the U.S. Navy to meet Category A certification requirements by the Fédération Internationale des Géomètres, International Hydrographic Organization and International Cartographic Association (FIG/IHO/ICA) International Board, The University of Southern Mississippi was the first educational institution in the United States to receive this certification. In June 2011, the International Board recertified the program for an additional six years. The Hydrographic Science master's program is a demanding and intensive curriculum covering all aspects of geodesy and hydrographic science. It is core to the advanced educational requirements of the U.S. Navy and is sought out by government agencies and industry, worldwide, to meet their need for highly trained hydrographers.

In 2013, the IHO selected Southern Miss to educate hydrographers from Developing Nations. With the generous donations from the Republic of Korea to pay all costs, ten international graduates have benefitted from this program, including four this year and two are planned for Class 2016-17.

Vacancies and demands for personnel at sea have made hydrographic surveyors the most wanted profession in the offshore world. Due to recognized industry requirements, the geographic proximity to nearly 4000 offshore platforms, and the existing expertise with hydrographic academic programs, Southern Miss commenced a new undergraduate B.S. Marine Science degree program with a Hydrography emphasis at the Gulf Park campus last Fall. This is a 4-year, 124-credit hour degree program not found anywhere else in the USA. This new initiative will further enhance our national and international reputation for excellence in hydrographic science.

Attachment C Recognition Ceremony Pictures

□



2016 Hydrographic Science Graduating Class & Chief of Staff COMNAVMETOCCOM (L-R) CAPT Rich Delgado, Kenneth Klinger, LT Jocelyn Fox, Jasim Butaiba, Lt. Cdr. Babatunde Akanbi, Lt. Lucian Dutu, Lt. Karel Buizer, Michael Emmer, Anne Marie Stonestreet, LT Weston Coby, Clayton Dike, Devendra Madhow, Uchenna Nwankwo, Alaa Mufti



**IHO-Korea Fund Supported Students with IHO Director Mustafa Iptes
(L-R) Devendra Madhow Mauritius), LCDR. Babatunde Akanbi (Nigeria), Director Mustafa Iptes,
Jasim Butaiba (Bahrain), Lt. Lucian Dutu (Romania)**



**Dr. LIM Chaeho, PhD, Director Maritime Safety Division, KHOA
ROK Contributions to Capacity Building**



LCDR. Babatunde Luqman Akanbi (Nigeria) receiving his CAT A Academic Certificate from CAPT Delgado, USN and Dean Coats, PhD



Mr. Jasim Butaiba (Bahrain) receiving his CAT A Academic Certificate from CAPT Delgado, USN and Dean Coats, PhD



**Lt. Lucian Dutu (Romania) receiving his CAT A Academic Certificate from
CAPT Delgado, USN and Dean Coats, PhD**



**Mr. Devendra Madhow (Mauritius) receiving his CAT A Academic Certificate from
CAPT Delgado, USN and Dean Coats, PhD**