

NSTC

Netherlands Shipping Training Center

MARINE AWARENESS COURSE in the PHILIPPINES

**SEPTEMBER 27 – OCTOBER 1, 2010
PALOMPON INSTITUTE OF TECHNOLOGY
Palompon, Leyte**

Marine Awareness Course (MAC) in the Philippines

The International Maritime Organization (IMO), the specialized agency of the United Nations, is responsible for improving maritime safety and security and preventing pollution from ships. At present, the Philippines is one of the 133 IMO signatory countries in the world. In June 2010, the IMO amended the Standards of Training, Certification and Watchkeeping (STCW) Code. The STCW Code is principal for the content of training for seafarers worldwide and for the first time, knowledge and awareness about the marine environment and the impacts of shipping will be included. By January 2013, all maritime colleges worldwide, including the Philippines should comply.

The Netherlands has taken the initiative to develop an IMO model course and has engaged ProSea Foundation to do this. ProSea has been involved in the development of the first marine awareness course and has been doing these kinds of trainings since 1999. The model course - marine environmental awareness, will be submitted to the IMO and the IMO will offer the model course to the public.

To make an IMO model course, the course has to be applicable worldwide and ProSea partnered with Ocean Beacons International Inc. (OBI) and the Netherlands Shipping Training Centre (NSTC) in its development, concept-testing, and implementation of the course in the Philippines in the near future. From September 27 to October 1, 2010, ProSea and OBI (with the support and prodding of Lighthouse Foundation-LF) conducted a Trainers' and Students' Training with the faculty and students of the Palompon Institute of Technology (PIT) in Palompon, Leyte. The pilot classes involved Nautical and Marine Engineering major students from PIT. The purpose of the training is to develop the capacity of the maritime teachers and through the MAC, teach aspiring seafarers with marine environmental awareness, with ecological sustainability of the world's oceans as the end goal.

Among others, OBI assisted in discussing the concept outline and learning objectives of the model course, conduct participant's evaluation and marine camp-type excursions for the students with lectures on marine environmental conservation with focus on the fragile ecosystems such as seagrass, mangrove, and coral reefs. The course coincided with the Marine Awareness Week of PIT. It was formally launched during the flag-raising ceremony of the school.



Batch 1: III-A(NauticalScience Students) – September 27-28, 2010

1	AMIZONA	, Frances Lee	B.	24	ICAY	, Jason	D.
2	ANDRADE	, Denmark	O.	25	JIMENEZ	, Jifferson	J.
3	APOLINAR	, Rolf Jacob	P.	26	LATORRE	, Frankchar	C.
4	BACALLA	, Jan Vyr	R.	27	LIMPANGOG	, Scotch	S.
5	BAJADO	, Francis Xavier	M.	28	MAGLINTE	, Kenneth	F.
6	BANTUGAN	, Karl Lind	B.	29	MARQUEZ	, Gerardo Jr.	P.
7	BATING	, Isaias	D.	30	MATA	, Jovi	F.
8	BERAY	, Jeager	P.	31	MODESTO	, Jonrey	S.
9	BRITANIA	, Jose Julie	T.	32	MOLLEJON	, Rodolfo Jr.	V.
10	BUCOL	, Genaro Jr.	T.	33	MORALDE	, Martin	M.
11	CABALLERO	, Junrey	P.	34	MORQUIANOS	, Joseph Carl	D.
12	CALIPAYAN	, Norman	I.	35	NUDALO	, Jed	C.
13	DACAL	, Bernie Vincent	L.	36	PADAYAO	, Mark Kenneth	P.
14	DEVOTA	, Roy Cristopher	A.	37	PARRILLA	, Carl Christian	N.
15	DIANING	, Harjay	C.	38	PUNONG	, Medel Niño	C.
16	DUROTAN	, Mark	T.	39	RAYMUNDO	, Cyril	P.
17	ESCARPE	, Teofilo II	B.	40	REBECCA	, Neil Jay	A.
18	FILLAR	, Reimon Karl	C.	41	SANICA	, Carlos Roque	G.
19	GORDONAS	, Ian Eljan	M.	42	TROYO	, Jeffrey	A.
20	GORILLO	, Andy Khim	P.	43	UBAY	, Vincent	B.
21	GRATE	, Leo Jade Christian	P.	44	VERZOSA	, Junboy	R.
22	GUERZON	, Christopher	L.	45	VILLAMOR	, Ricky	G.
23	GUSTON	, Cyryl John	F.	46	VILLENA	, Vanice Gay	P.

Faculty:

Carmelito N. Valenzona
 Delfin T. Marquez
 Gilbert S. Sevilla
 Vicente P. Gaspan
 Gregorio S. Ochavillo
 Reynaldo D. Mepisa
 Raymundo Austin M. Paloma

Instructor, Marine Engineering
 Nautical Instructor
 STO, Instructor
 Instructor, Marine Engineering
 Marine Transportation
 Instructor, Marine Engineering
 Instructor, Marine Engineering

Local Government of Palompon:

Municipal Environment and Natural Resources Officer (Raoul Bacalla) and Tourism Consultant (Cleofe Paloma Rivera)

Resource Persons:

Erik Bogaard and Marieke Verweij – ProSea Foundation
 Terence Paul U. Dacles – Ocean Beacons International Inc. (OBI)
 Jan Wilhem Verhoff – Netherlands Shipping Training Center (NSTC)

Facilitators/Documenter:

Bayani Thaddeus U. Barcenas, Jesus A. Villardo III and Eduardo B. Cleofe – Ocean Beacons International Inc. (OBI)

DAY 1 (September 27, 2010)

- I. [Course Introduction](#) (ErikBogaard)
 - a. Shipping and the environment
 - b. Sustainable development – Balance of 3 P's
 1. People: Acceptable to Society
 2. Planet: Preservation of long term environmental quality and ecological values
 3. Profit: Profitability Companies
 - c. The Human Factor Sustainable: Development is not a fixed recipe. Technical innovations and political measures are important but if people don't buy in, it will not work. Everybody has his/her own role and responsibilities:
 1. Seafarers
 2. Shipping Companies
 3. Legislators
 4. Stakeholders
 - d. Introducing ProSea Foundation
 - e. Model Course Marine Environment Awareness: The Role of the Human Element (YOU!) in prevention of pollution
 - f. Personal Opinions Workshop (Workshop 1) – 1 hour

The objective of the workshop was to make a list (based on the items enumerated below) of the most important challenges in sustainable shipping. The participants were asked to rank 5 items based on what they perceive was of more importance.

- | | |
|-------------------------------------|--|
| i. Invasive species (ballast water) | ii. Antifouling paint |
| iii. Litter – plastic | iv. Climate change |
| v. Noise underwater | vi. Acid Rain |
| vii. Oil | viii. Health problems because of bad air |
| ix. Chemicals | x. Sewage |

The participants were then split into 6 groups. Groupings were pre-determined before the workshop and their respective group numbers were written on their identification cards.

- Each group was asked to appoint a discussion leader and a presenter
- They brainstormed on the issues enumerated (facilitators guided them) - (15 minutes)
- Using metacards (a technology of participation wherein the group members write their concise ideas on a 4X8 piece of paper in bold letters) they wrote down the top 5 on a Manila paper (15 minutes)
- All the groups were given time to present the results (30 minutes)



Above: Participants discussing during the workshop while a facilitator (Jesus A. Villardo III) guides them.

Workshop Outputs:

Group 1		Group 2	
Challenges	Explanation	Challenges	Explanation
Climate change	Pollution	Climate change	Result of all causes of pollution
Oil	Spills	Oil	Harmful
Garbage	Improper disposal	Chemicals	Hazardous and dangerous
Sewage	Untreated sewage	Sewage	Harmful to the marine environment
Invasive species	Invasion/cycle change	Health problems	Harmful to human health

Group 3		Group 4	
Challenges	Explanation	Challenges	Explanation
Oil spill from ships	Great extent of damage	Climate change	Weather alteration/ unbalanced ecosystem
Invasive species (ballast water)	Unbalanced ecosystem because of invasive species	Oil	Pollutes the seawater
Improper disposal of sewage	Sanitary problems	Chemical	Makes the seawater toxic
Health problems because of bad air	Respiratory diseases	Invasive species	Depletes the local marine species
Improper disposal of garbage from ships (garbage)	Non-biodegradable (400 years or more)	Litter or plastics	Pollutes oceans and beaches

Group 5		Group 6	
Challenges	Explanation	Challenges	Explanation
Oil spill	Largest effect in the marine environment/ Marine pollution	Climate change	Mother earth
Chemicals	Can cause casualties/ Marine pollution	Oil spill	Marine environment damage
Fumes	Can cause illness/ Casualties (in the long run)	Chemicals	
Sewage (human wastes)	Can destroy marine inhabitants	Plastics	400 years to decompose
Acid rain	Can cause damage to the environment	Bad air	Human being



Above: Designated group presenters explaining to the plenary their outputs.

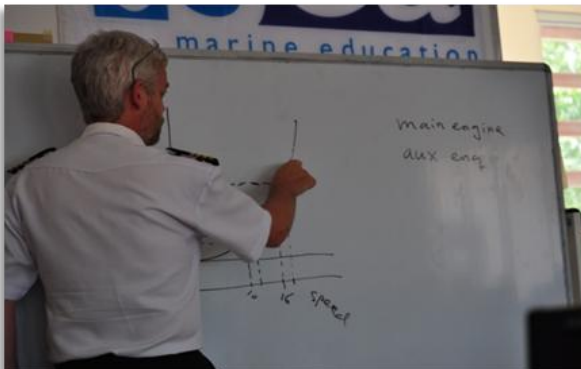
II. Marine Ecology (Marieke Verweij)

- a. Importance of the Oceans
- b. Personal Research in Marine Ecology
- c. Crash Course Basics of Marine Ecology
- d. Differences between open oceans and coasts
 1. Types of Plankton
 2. Levels of Primary Production
 3. Lengths of Food Chains
- e. Protected areas (PSSA's): An area of the marine environment that needs special protection from shipping through action by the International Maritime Organization (IMO)
 1. The area has ecological, social, cultural, economic, scientific or educational value;
 2. The area must be at risk from international shipping activities;
 3. There must be measures that can be adopted by IMO to provide protection to the area.
- f. Regional and Local Marine Area: Mangroves, Seagrass Beds and Coral Reefs

- III. [Climate Change](#) (Marieke Verweij)
 - a. What is Climate Change
 - b. Background: Our Atmosphere
 - c. Background: Our Climate and the Greenhouse Effect
 - d. What changes do we see? Is it getting hotter?
 - e. What's causing this? Man or Nature?
 - f. What are the Consequences?
 - g. What's the role of shipping?
 - 1. Contribution of shipping to the problem
 - 2. Contribution of shipping to the solution

- IV. [Challenges –Oil](#) (Erik Bogaard)
 - a. Introduction
 - b. Oil and Oil Products
 - c. What Happens to an Oil Spill?
 - d. Main Impacts
 - e. Main Impacts: Ecological and Economic
 - f. The Role of Shipping
 - g. Solutions

- V. Jan made some important contributions to the discussion by relating that the best way to reduce CO2 emissions is to increase efficiency of the engines. This will also be more economical as it saves fuel. Speed will also be a key component because at a certain speed the ship consumes more fuel and thus more emissions.



Above: Jan Verhoff explaining some ways to reduce emissions

- VI. [Introduction to Important Coastal Ecosystems](#)(Terence Paul U. Dacles)
 - a. The Coastal Zone
 - b. Coastal Wetlands
 - c. Mangrove Ecosystem: Ecological and Economic benefits
 - d. Beach Ecosystem
 - e. Seagrasses
 - f. Common Fishes
 - g. Coral Reefs
 - h. Risks to Coastal Ecosystem: What Can We Do?

VII. Excursion/Field Trip to Tabuk Island

The class was divided into two groups and each group taking a separate boat. Each group had to take turns because the area cannot accommodate all the participants at once. The first group went to the bamboo raft to snorkel while the second group was in the mangrove forest. The next stop for the first group was the stilt houses to further observe the marine life present in that area while the second group proceeded to the bamboo raft to snorkel. The last stop for the first group was the lighthouse leading to the walkway inside the mangrove forest.

Terence Dacles guided the first group of students in their snorkeling trip and Bayani Barcenas did the same for the second group. The Palompon Municipal Environment and Natural Resources Officer (MENRO) assisted in explaining to the first group the background of the sanctuary including the species that are found in the area. Jesus Villardo III guided the second group during the excursion to the mangrove forest.



DAY 2 (September 28, 2010)

VIII. Sharing of what was learned from Day 1 lectures and excursion Trip to Tabuk Island

The same groups convened again to write what they have learned on the 1st day. Each group assigned a presenter again and reported it to the class.

The students greatly appreciated the field trip to Tabuk Island including the snorkeling activity at the bamboo raft to observe the corals and the other marine creatures. It was a surprise to know that most of them have never experienced it before. The trip was a very good complement to the lectures on marine ecology and the coastal marine ecosystem. They were able realize the connection among the many factors that could have an impact on the fragile environment. It was for them a realization that the sea is alive and hosts a collection of wonderful creatures and as future officers and seafarers they can do something to protect this environment.

Workshop 2:

Group 1		Group 2	
Learn	How	Learn	How
Bats and migratory birds	Tower observation	Food chain	Snorkeling
Mangroves (Habitat of Philippine Mallards)	Excursion inside the mangrove area	Corals	
Corals (Brain and table corals)	Snorkeling	Clean environment	Lighthouse
Fishes	Picture-taking	Many kinds of animals	
Giant clams	Sharing from fishermen	Importance of mangroves	Walk and see
Seagrass and seaweeds	A trip around the island	Effects to fishermen	Experience



Above: Respective group presenters explaining their previous day learnings.

Group 3		Group 4	
Learn	Learn	Learn	How
Importance of protecting the marine environment	Interview of local fisherman	Corals	Learned its importance and how to protect it
Different species of mangroves	Lectures and observations	Bats	Learned the different kinds of bats, their food, dwelling and movements Learned their diversity, movements and “way of living” Learned how to do mangrove reforestation Learned how to propagate them and transform them into a marine sanctuary
Importance of mangroves		Fishes	
How migratory birds travel		Underwater/surface	
Seaweeds and seagrasses		Mangroves	
Coral reefs	Snorkeling and tour	Seagrass	Learned that they are not mere weeds but rather as a home to marine species
Tabuk Island			

Group 5		Group 6	
Learn	How	Learn	How
Difference between seaweeds and seagrass	Snorkeling	Corals	Experience
Different types of corals	Excursion	Mangrove	Knowledge
Species of bats	Bat viewing	Reef	Information
		Area	Equipment
Kinds of mangroves	Tour Guide	Seaweed	Lighthouse
		Food chain	Picture-taking

IX. Challenges Chemicals, Sewage and Solid Waste (Erik Bogaard and Marieke Verweij)

a. Environmental Impact of [Chemicals](#) and Sewage

1. Hazardous and Noxious Substances (HNS)
2. Fate in the environment
3. Judging the Effects
4. Role of Shipping and Solutions

I. Environmental Impact of [Solid Waste \(Marine Litter\)](#) - (A short video clip on the albatross suffering from solid waste ingestion was shown to the class)

1. Marine litter:
 - What is it?
 - Sources?
 - Where do we find it and how much?
2. Consequences of marine litter
 - Ecological, Economic and Safety Risks
3. The role of shipping
 - Contribution of Shipping to the Problems and Solutions

X. **Impacts of Noise** (Erik Bogaard)

- a. Introduction
- b. Use of sound underwater
- c. Sources of underwater noise
- d. Effects on marine mammals
- e. The role of shipping
- f. Solutions

XI. Jan talked about the existence of technology to prevent noise and vibration in ships through excellent design of propellers and use of electric engines and vibration reducing shock absorbers such as rubber mounts.



Above: Jan Verhoff sharing his knowhow on reducing noise.

XII. **Reputation of Shipping (the People P)** Lecture and Workshop - Erik Bogaard

- a. The People P
- b. Importance of shipping
- c. Workshop 2

Discussion in 6 groups (25')

- A. Each group appointed a discussion leader and a debater
- B. They were asked to share ideas and opinions on the four questions:
 1. What is the current image of shipping and seafarers?
 2. What determines this image
 - a. Media?
 - b. Greenpeace?
 - c. Pirates of the Caribbean?
 - d. Seafarers (from the past)?
 - e. YOU?
 3. Is a good image important?
 4. How can the image of shipping and seafarers be changed?
- C. Shared viewpoints with other groups (25')
- D. One group member represented each group and participated in a plenary discussion/debate

Erik served as the facilitator asking the panel of students who served as the representatives of their respective groups. He wrote the views on the board for everybody to see.



Above: Erik facilitating the panel discussion while the designated representatives share their respective group's comments.

Among the top answers were:

1. Seafaring is a money (dollar) earner for the sailors
2. Seafarers are hardworking, strong and tough guys
3. Seafaring is a dangerous/risky occupation
4. Seafarers must be obedient and should adhere to rules
5. Seafarers are immoral/womanizers (a girlfriend in every port)/ philanderers – not ideal for a close-knit family
6. Seafarers can see and visit different countries for free

XIII. Marine Invasive Species and The Contribution of Shipping and Film Showing: Invaders of the Sea (Ship Ballasting)

- a. Marine Invasive Species
- b. International Convention for the Control and Management of Ship's Ballast Water and Sediments – 2004
- c. Development of Ballast Water Management in the Oil Tanker Sector
- d. Invasive Species by Ships' Biofouling
- e. Examples of Introduced Marine Invasive Species by shipping

XIV. Air Emissions (Marieke Verweij)

- a. Introduction: The Problem Areas Related to Air Pollution
- b. Background and consequences:
 4. Depletion of the ozone layer
 5. Acidification
 6. Bad air quality (human health)
- c. The role of shipping
 1. Contribution of shipping to the problem
 2. Contribution of shipping to the solutions

XV. Pollution Prevention Measures Workshop (Workshop 3)

- a. TOP 5 revisited (10'): The participants were asked again to re-evaluate are the most important challenges in sustainable shipping.

- b. Solutions (30'): They were asked to select two challenges from the TOP 5 and make a list of solutions for these challenges. Part of the exercise was to identify who are responsible for these solutions.
- c. Presentations (40'): The outputs were presented and the faculty were asked to choose the best solution.



Above: Marieke of ProSea Foundation guiding the students during the workshop.

Workshop Output:

Group 1					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Climate change	Pollution	Climate change	<ul style="list-style-type: none"> • Long term effect • Biggest impact 		
Oil	Spills	Oil	<ul style="list-style-type: none"> • Unavoidable • Operational/accidental 	Oil-water separator	Management
Garbage	Improper disposal	Chemicals	Bigger impact to the marine environment	Crude oil washing	Officers onboard/ Marine engineers
Sewage	Untreated sewage	Invasive species	Unavoidable due to the necessity of ballasting	Oil record book	Port management
Invasive species	Invasion/ cycle change	Garbage	Amount of garbage onboard	Receiving facilities	

Group 2					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Climate change	Result of all causes of pollution	Climate change	Global effect	Recycling, reuse and reduce the production and use	Department of Natural Resources (DENR)- Government
Oil	Harmful	Garbage	Long-term effect		Maritime Industry Authority (MARINA) - Government Community
Chemicals	Hazardous and dangerous	Chemicals	Critical effect		
Sewage	Harmful to the marine environment	Oil	Difficult to treat		
Health problems	Harmful to human health	Invasive species	Difficult to deal with		



Above: Students focusing and discussing the re-evaluated priorities.

Group 3					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil spill from ships	Great extent of damage	Invasive species (ballast water)	Unbalanced ecosystem because of the invasive species	<ul style="list-style-type: none"> Water ballast treatment Equipment / New inventions 	Ship owners
Invasive species (ballast water)	Unbalanced ecosystem because of invasive species	Litter (plastics)	It takes a long time to decompose	<ul style="list-style-type: none"> Garbage compactor/ Incinerator Segregate garbage/ Crew behavior(training) 	Ship owner US
Improper disposal of sewage	Sanitary problems	Oil spill (ships)	Measures have been undertaken (reason why the group downgraded)		
Health problems because of bad air	Respiratory diseases	Chemicals	Toxic (low volume)		
Improper disposal of garbage from ships (garbage)	Non-biodegradable (400 years or more)	Health problems because of bad air	Respiratory diseases		



Above: Students intently listening to the reports of the various groups.

Group 4					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Climate change	Weather alteration/ unbalanced ecosystem	Invasive species	The problem affects all	Utilize the widely accepted solution	Port Authority, IMO, Government
Oil	Pollutes the seawater	Litters or plastics	These problem affects a wide area	Incinerate all solid wastes onboard or recycle them	Coast Guards and ship captains
Chemical	Makes the seawater toxic	Climate change	Causes abnormal global weather patterns		
Invasive species	Depletes the local marine species	Chemicals	Lesser effects compared to others for they just dissolve, evaporate, sink or float		
Litter or plastics	Pollutes oceans and beaches	Oil	Shipping is not the biggest contributor		



Above: A student explaining the change in priorities. He attributed the new rankings to new information absorbed from the succeeding lectures.

Group 5					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil spill	Largest effect in the marine environment/ Marine pollution	Ballasting/ De-ballasting operations	The rise of invasive species is greatly affecting the livelihood of fishermen		
Chemicals	Can cause casualties/ Marine pollution	Oil spills	Operations and other operations spills by unwanted/ unnecessary / accidental spills The world is in demand of fuel so the likelihood that spills will happen is high		
Fumes	Can cause illness/ Casualties (in the long run)	Chemical spills	In demand but not as much compared to fuel oil		
Sewage (human wastes)	Can destroy marine inhabitants	Fumes	Very hard to maintain because of the need for big equipment		
Acid rain	Can cause damage to the environment	Sewage	Personal necessities cannot be avoided but the main problem really is disposal		



Above: Jesus Villardo III and Terence Dacles of OBI giving inputs to the discussion. A group presenter explaining their output.

Group 6					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Climate change	Mother earth	Invasive species	Top contributor	Scrubber	Ship Owner
				Chlorine	Ship owner/ crew
				Heater/ Boiler	Ship owner/ crew
Oil spill	Marine environment damage	Bad air	Ships are synonymous to air pollution	Use ash-catcher	Ship owner
				Efficient engine	Ship owner/ crew
Chemicals		Climate change	Seafarers contribute less		Crew
Plastics	400 years to decompose	Plastic	It takes almost forever to decompose		
Bad air	Human being	Oil	Corrected and seafarers are more aware		



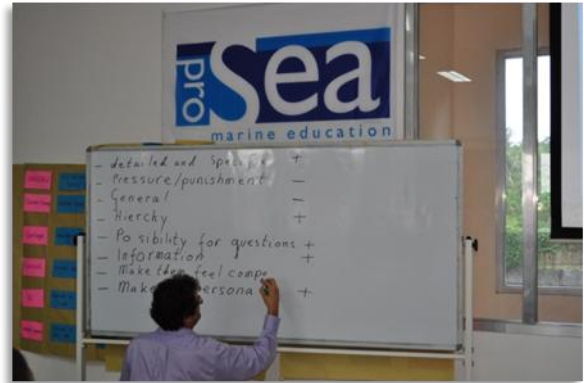
Above: A students suggesting ways and means to deal with the top two challenges listed on their presentations.

After some deliberations among the faculty present, the 3rd group was adjudged as the best among the presentations because of the way they explained how seafarers can be part of the solution to problems and challenges in marine pollution.

XVI. Personal Involvement Workshop (Workshop 4)

- a. Personal behavior
- b. Personal responsibility
- c. Leading Crew to Do the RIGHT Thing

The participants were grouped by twos. Each group had to discuss. The participants were asked to role-play as officers of the ship. Every speaker (“officer”) was given a maximum of two minutes to deliver their messages in front of the class acting as the crew. The participants who acted as the crew were then asked to share their reactions later.



Above: A students getting into the act as the officer in a marine vessel. Erik listing down the reactions later.

The reactions to how the messages were delivered include:

1. Detailed and specific/Good and complete information
2. Pressure/ threat of punishment
3. Hierarchical (demanding based on position and rank)
4. General: There are possibilities of more questions
5. Personal approach

XVII. Course Evaluation Workshop –Jesus Villardo III as facilitator

CONTENT	LOGISTICS	FACULTY/SPEAKERS/ PARTICIPANTS
Discussions were very good	Hard/soft copies of materials	Speakers and participants should speak clearly and loudly
Process – workshops encourage participation	No glasses for drinking water	More foreign speakers for more viewpoints
Everyone should be given an opportunity to speak	It will be better to use a microphone	Will the other sections attend the training as well?
Time is not enough	Lack of snorkeling gears during excursion	Organized/ interconnected topics
More excursions needed	Provide lunch for participants	Words/ concepts were not explained very clearly because the speakers talk too fast
	Have an idea/freedom box or wall where the participants can write their ideas/reactions/suggestions	Facilitators were very approachable/ handsome/ beautiful

XVIII. Written Evaluation, Awarding of Certificates and Picture-Taking



DAY 3 (September 29, 2010)

Marine Awareness Course Design Workshop for the Faculty

The workshop was a half-day activity with the PIT Marine Engineering and Nautical Science faculty who are envisioned to lecture on some of the topics in the course. The objective of the workshop was to expose the faculty in course design, methods and processes to effectively teach marine awareness to students.

They were also consulted (based on the 1st Batch experience) on what were the best topics and methods to create the most impact in terms of instilling marine awareness to the students.

Faculty:

Carmelito N. Valenzona	Instructor, Marine Engineering
Delfin T. Marquez	Nautical Instructor
Gilbert S. Sevilla	STO, Instructor
Vicente P. Gaspan	Instructor, Marine Engineering
Gregorio S. Ochavillo	Marine Transportation
Reynaldo D. Mepisa	Instructor, Marine Engineering

Local Government of Palompon

Cleofe Paloma Rivera – Tourism Consultant

Facilitators/Documenter:

Erik Bogaard and Marieke Verweij – ProSea Foundation

Jan Wilhem Verhoff – Netherlands Shipping Training Center (NSTC)

Terence P. U. Dacles, Bayani Thaddeus U. Barcnas, Atty. Jesus Villardo III and Eduardo B. Cleofe – Ocean Beacons Inc. (OBI)

Workshop 1:

The faculty were divided into two groups. Each group had to come up with an output using metacards pasted on the board. Terence and Bong helped in the facilitation. Each one having their own group to guide.

They were given 4 guide questions to start the evaluation of the course:

1. Five powerful facts that they remembered from the course
2. Which subjects did they like best
3. Which subjects did they like least
4. What subjects did they miss

For discussion of the content:

1. Choice of subjects
2. Facts used
3. The amount of information
4. Level of the presentations
5. Difficult or easy
6. Duplication with curriculum

Output of the workshop:

Group 1: Facilitator – Terence Paul U. Dacles

Liked Best	Liked Least	Missed
Marine Ecology/ Particularly Sensitive Sea Areas(PSSAs) (Marine Protected Areas)	Sustainable Development (more explanation and understanding needed)	Noise Pollution (the discussion and lecture were too short)
	Impact of Oil (regulations should be discussed)	Marine Ecology (a lot of topics to cover but not enough time considering that this is very important)
Importance of Oceans Environmental Impact of Transfer of Invasive Species Importance of Ecosystems		Needs more exposure to the actual marine environment (field trips/ excursion)
	Pollution Measures/ Impact of Emissions (Sox, NOx, VOC)/ Air Pollution (too technical)	Pollution Control Officers in the Shipping Industry
		Socio-economic impacts of marine pollution
		Measures to avoid shore areas pollution



Above: Terence Dacles of OBI facilitating the 1st group during the course evaluation workshop for the faculty.

Group 2: Facilitator – Jesus Villardo III

Liked Best	Liked Least	Missed
Ballast Water/ Invasive Species	Climate Change	Solutions on Air Pollution
Marine Litter/ Microplastics	Sewage	
Marine Ecosystem/ PSSAs	Air Pollution	
Oil Spill	Negative and Positive Reputation of Shipping	Environment-friendly procedures of dealing with the pollutants
Importance of Rules and Attitude	Money for Life	



Above: Jesus Villardo III (arranging the metacards on the board) acted as the facilitator of the 2nd group of faculty.

Workshop 2:

Using the same groupings, the faculty once again worked on these guides:

Connect the 7 principles to the model course

- How did we work on the principles
- Where do clearly see a principle at work
 - ✓ Content
 - ✓ Choice of teaching tools
 - ✓ Actions of the course leaders

ProSea approach

The ProSea approach is based on 7 main principles. ProSea considers each essential to attaining marine awareness. Because marine awareness is more than knowledge, raising that awareness and challenging attitudes requires a thorough and participatory approach.

1. Challenge not accuse
 - Respect professionalism of each sector; challenge to improve environmental performance
 - Show impacts and role of marine professionals
2. Examine how marine conservation and economic growth can be and are complements
3. Create a (personal) connection with the marine environment
4. Involve on a personal level
 - Use workshops and group work to involve individual participants and facilitate processing of information and ideas
5. Create a sense of responsibility
 - Indicate consequences of individual choices
 - Provide viable solutions to ecological and economic sustainability issues
 - Present individuals and companies as potential solutions
6. Stakeholder cooperation, participation and interaction
 - Bring stakeholders in contact with one another
 - Indicate advantages of cooperation and interaction
 - Provide various stakeholder views to enhance ability to cooperate
7. Provide broad, best and most accurate information possible
 - Provide interesting, relevant basic ecological background information
 - Use information from all stakeholders: commercial organizations, non-profit organizations, scientific institutes and governments
 - Cooperate with various stakeholders to provide the most accurate information possible



Output of the Workshop:

Group 1: Facilitator – Terence Dacles

Process/Methods	Principles	Actions of Course Leaders
Lectures	1, 2, 5, 7	<ul style="list-style-type: none"> • Varied presentations and not too boring • Very comprehensive information • Limited time • Add more “ice-breakers” • Provide handouts and reading materials
Workshops	1, 4, 6, 7	<ul style="list-style-type: none"> • Very effective • Interaction with participants • Secretariat to check attendance and other needs of the participants
Small Group Discussions	1, 4, 5, 6	<ul style="list-style-type: none"> • Give opportunity for others to share information
Field Excursions	3, 4, 6	<ul style="list-style-type: none"> • Hands-on experience is the best learning method • More interaction and observation in the mangrove forest
Group Presentations	1, 5, 4, 6	<ul style="list-style-type: none"> • Very effective • Informative
Open Forum (Questions and Answers)	1, 7, 6	<ul style="list-style-type: none"> • Good for exchange of ideas



Above: Instructor Gilbert Sevilla presenting their group output to the plenary. The group finds the course methods and processes to be very effective in delivering the objective of the course.

Group 2: Facilitator – Jesus Villardo III

Process/Methods	Principles	Actions of Course Leaders
Lectures	1 – 7	Effective and practical imparting of knowledge
Excursion	2, 3, 4, 5,	Presentations were clear and effective
Workshops/ Plenary Presentation	1, 4, 6	IMs were relevant
Small Group Discussions/ Interpersonal Interaction	1, 5, 6	Very apt and applicable
Evaluation	1, 3, 6, 7	“Ownership” of the actions through the Marine Awareness Course (MAC)



Above: The members of the 2nd group discussing their views on the choice of processes, teaching tools and actions of course leaders. They also found the processes and methods to be very apt, applicable and relevant to the conduct of the course.

Workshop 3:

Process and Content Balance: Each group was tasked to create a course design based on a topic assigned to them.

The first group got:

“Climate Change Awareness for Petronas (Malaysian Oil Company)”

The second group got:

“Dynamite Fishing Awareness for Fishermen in the Philippines”

The design should have:

1. Overall goal – what do you want to achieve
2. Course Program – time schedule
3. Short description of content for every part of the program
4. Choice of teaching tools and reason for the choice

Workshop Output:

Group 1: Facilitator – Terence Dacles

Overall Goal: Dynamite Fishing Awareness for Fishermen in the Philippines			
Schedule	Course Program	Course Description	Methodology/ Tools
12:00 - 1:00	Assembly Time/ Preparations		
1:00 - 1:15	Opening Program	Welcome Remarks/ Introduction of Speakers and Acknowledgement of Participants	“Ice-breakers”
1:15 – 1:30	Description of Course Content	Leveling of expectations/ Statement of Objectives	
1:30 – 2:00	Marine Ecology	Marine Biodiversity (importance) “The Sea, Fish and Man”	Lectures
2:00 – 2:15	Video Presentation on Dynamite Fishing	Effects of Dynamite Fishing on the Marine Environment	Video/ Film Showing
2:15 – 2:45	Views on the Effects of Dynamite Fishing	Consequences of Dynamite Fishing Activities	Workshops/ Small Group Discussions
2:45 – 3:15	Presentation of Outputs/ Working Break	Come-up with recommended solutions to stop/minimize dynamite fishing	Group Presentations
3:15 – 3:45	Questions and Answers		Open Forum (Questions and Answers)
3:45 – 4:00	Closing Program		Evaluation Sheets

As done in previous workshops, the 1st group employed the metacards technique for a more streamlined and efficient flow of ideas. The group decided to compress the course to 4 hours following the time constraints set in the conditions. Every minute was maximized to squeeze in the needed information and interaction among the participants. They employed a mix of lectures, video showing, workshops, presentations and an open forum to get across their topic.

The 2nd group employed the same technique to come up with their own output for the topic assigned to them. Their course duration was longer by 30 minutes but their methods was consistent with that of the 1st group.

Group 2: Facilitator – Jesus Villardo III

Overall Goal: For Petronas to be aware that Climate Change is profitable for the company				
Course Program				
Schedule	Topic	Description	Specific Objectives	Methodology/ Tools
7:30 – 8:00	Introduction	<ul style="list-style-type: none"> •Level-off/ Expectations •Introduction of participants •Rationale 	For better interaction and leveling-off of expectations	Individual introduction/ IDs/ Course Program
8:00 – 9:30	Climate Change	Environmental Effects Scientific Data/ Statistics	To be aware of the adverse effects of climate change	Lecture/ Video Clips
9:30 – 9:40	Break			
9:40 – 11:30	Policy Recommendations on the Management of Climate Change	Drafting of recommendations on addressing Climate Change Stakeholders (multisectoral) recommendations	To draft initial policies that are in line with existing standards	Small Group Discussions/ Workshops
11:30 – 12:00	Evaluation	Assess whether the overall goal was achieved		Evaluation sheets/ Plenary

The concluding part of the workshops was the assignment of topics for the next batch of MAC. Erik, Marieke and Jan assigned to a particular faculty specific topics outlined in the course for the 2nd Batch (Marine Engineering students).



Above: Erik discussing and consulting with the faculty on their assigned topics for the succeeding batch. Some of them were asked to handle specific portions of the course.

DAY 4 (September 29, 2010)

The 2nd Batch had a similar program as those of the 1st Batch but the main difference was that this course integrated the regular PIT Faculty. Some of the faculty handled subjects that they are teaching in the regular curriculum of the school. Some variations were also tried to improve on the content, methods and process done on the 1st Batch.

Batch 2:Participants: III-A (Marine Engineering)

1	AMABLE	,Micah Premne G.	21	MAQUILAN	,Orlando A.
2	AMORA	,Bryan Neil J.	22	MARQUEZ	,Francis Mark P.
3	ANTIVO	,Johnry C.	23	MENDOLA	,Charlie C.
4	APARICIO	,Jordan D.	24	MONTAJES	,Rainier N.
5	AYALA	,Christian V.	25	NEJUDNE	,Bet Alfon D.
6	BALORO	,Jerome B.	26	NGOHO	,Fritz Dave T.
7	BARING	,Erwin A.	27	OBALES	,Baldwin M.
8	BECERA	,Dave V.	28	PALAR	,Vicente S. Jr.
9	CABARDO	,Alexis R.	29	PUSAY	,Rainier H.
10	CALAPES	,Jonathan P.	30	ROLDAN	,Loreto B. Jr.
11	CALATRABA	,Leo N.	31	ROMERO	,Razzen V.
12	CALIWAN	,Grisjon T.	32	RONARIO	,Rockwell V.
13	CENTINAJE	,Marnil S.	33	SANICO	,Micheal Angelo B.
14	DECLAROS	,Peter Rey S.	34	SEVILLA	,LeevanClent B.
15	DULA	,Ruel A. II	35	SUMABON	,Ruben B. Jr.
16	ELLORANGO	,Jommel G.	36	SUNGAHID	,Carl Gabriel C.
17	EVARDONE	,Christian Jake A.	37	SURALTA	,Carmelo Q.
18	GINEMELO	,William C. Jr.	38	TADO	,Junrey C.
19	JADRAQUE	,Raymond Y.	39	TILA	,Jenel L.
20	JOMOC	,Noel B.	40	TOBISE	,Mark Gil S.

Faculty:

Maria Cresencia B. Gallardo
Anselmo A. Andanar Jr.
Eric C. Bonghanoy
Edward J. Yangco
Carmelito N. Valenzona
Delfin T. Marquez
Gilbert S. Sevilla
Vicente P. Gaspan
Gregorio S. Ochavillo
Reynaldo D. Mepisa
Raymundo Austin M. Paloma
Cesar M. Ramones

Instructor, Marine Engineering
Part-time Instructor, Marine Engineering
Instructor, Marine Engineering
Nautical Instructor
Instructor, Marine Engineering
Nautical Instructor
STO, Instructor
Instructor, Marine Engineering
Marine Transportation
Instructor, Marine Engineering
Instructor, Marine Engineering
NSTC Instructor, PIT Physician

Resource Persons:

Erik Bogaard and Marieke Verweij - ProSea Foundation
Terence Paul U. Dacles - Ocean Beacons International Inc.
Jan Wilhem Verhoff - Netherlands Shipping Training Center (NSTC)
Carmelito N. Valenzona -Instructor, Marine Engineering
Delfin T. Marquez -Nautical Instructor
Gilbert S. Sevilla -STO, Instructor
Gregorio S. Ochavillo -Marine Transportation
Reynaldo D. Mepisa -Instructor, Marine Engineering

Facilitators/Documenter:

Bayani Thaddeus U. Barcenas, Jesus A. Villardo III and Eduardo B. Cleofe – Ocean Beacons International Inc. (OBI)

DAY 1 (September 30, 2010)

II. Course Introduction (Erik Bogaard)

- a. Shipping and the environment
- b. Sustainable development – Balance of 3 P's
 1. People: Acceptable to Society
 2. Planet: Preservation of long term environmental quality and ecological values
 3. Profit: Profitability Companies
- c. The Human Factor Sustainable: Development is not a fixed recipe. Technical innovations and political measures are important but if people don't buy in, it will not work. Everybody has his/her own role and responsibilities:
 1. Seafarers
 2. Shipping Companies
 3. Legislators
 4. Stakeholders
- d. Introducing ProSea Foundation
- e. Model Course Marine Environment Awareness: The Role of the Human Element (YOU!) in prevention of pollution
- f. Personal Opinions Workshop (Workshop 1) – 1 hour

The objective of the workshop was to make a list (based on the items enumerated below) of the most important challenges in sustainable shipping. The participants were asked to rank 5 items based on what they perceive was of more importance.

- | | |
|--------------------------------------|---|
| xi. Invasive species (ballast water) | xii. Antifouling paint |
| xiii. Litter – plastic | xiv. Climate change |
| xv. Noise underwater | xvi. Acid Rain |
| xvii. Oil | xviii. Health problems because of bad air |
| xix. Chemicals | xx. Sewage |

The participants were then split into 6 groups. Groupings were pre-determined before the workshop and their respective group numbers were written on their identification cards.

- Each group was asked to appoint a discussion leader and a presenter
- They brainstormed on the issues enumerated (facilitators guided them) - (15 minutes)
- Using metacards, they wrote down the top 5 on a Manila paper (15 minutes)
- All the groups were given time to present the results (30 minutes)

Workshop Results:

Group 1		Group 2	
Challenges	Explanation	Challenges	Explanation
Oil	Marine pollutant	Oil	<ul style="list-style-type: none"> • Common to ships • Important to shipping • Difficult to clean
Climate change	Unpreventable human activities	Chemicals	Harmful but is a common cargo of ships
Air pollution	Exhaust gases can contribute to global warming	Invasive species (ballast water)	<ul style="list-style-type: none"> • Important to ships • Contaminants • Species
Litter (plastics, etc)	Non-biodegradable	Air pollution	<ul style="list-style-type: none"> • Common by-product of shipping • Minimize the effects
Ballast water	Pollutant	Litter (plastics)	<ul style="list-style-type: none"> • Widely used • Non-biodegradable • Controllable



Above: (left) Marine Engineering students focusing on the task at hand with the guidance of one of the PIT faculties. (right) One of the designated group presenters speaking in front of the group to explain their output.

Group 3		Group 4	
Challenges	Explanation	Challenges	Explanation
Climate change	Global warming	Oil	Difficult to remove from the sea
Air pollution	Greenhouse effect	Air pollution	Destroys/damages the ozone layer
Oil	Marine pollution	Chemicals	Poisons all marine living things/ life
Marine litter	Environmental pollution	Sewage	Harm and cause toxification
Sewage	Invasive specs	Garbage	Takes long time to decompose

Group 5		Group 6	
Challenges	Explanation	Challenges	Explanation
Oil	Affects marine life/ socio-economic aspects	Oil	Oil is essential for shipping
Air pollution	Affects ozone layer and man	Chemicals	Poisonous (comes from cleaning materials onboard)
Chemicals	Pollutes and destroys marine life	Plastics	Takes a long time to decompose
Sewage	Endangers marine and human habitat	Air pollution	NOx, Sox
Invasive species	Increase the population of alien marine species in a particular area	Sewage	Human waste

- III. [Marine Ecology](#) (Marieke Verweij)
- a. Importance of the Oceans
 - b. Personal Research in Marine Ecology
 - c. Crash Course Basics of Marine Ecology
 - d. Differences between open oceans and coasts
 1. Types of Plankton
 2. Levels of Primary Production
 3. Lengths of Food Chains

- e. Protected areas (PSSA's): An area of the marine environment that needs special protection from shipping through action by the International Maritime Organization (IMO)
 - 1. The area has ecological, social, cultural, economic, scientific or educational value;
 - 2. The area must be at risk from international shipping activities;
 - 3. There must be measures that can be adopted by IMO to provide protection to the area.
- f. Regional and Local Marine Area: Mangroves, Seagrass Beds and Coral Reefs
- g. [Introduction to Important Coastal Ecosystems](#) (Terence Paul Dacles)
 - 1. The Coastal Zone
 - 2. Coastal Wetlands
 - 3. Mangrove Ecosystem: Ecological and Economic benefits
 - 4. Beach Ecosystem
 - 5. Seagrasses
 - 6. Common Fishes
 - 7. Coral Reefs
 - 8. Risks to Coastal Ecosystem: What Can We Do?

IV. [Challenges –Oil](#) (Erik Bogaard/Gilbert Sevilla)

- a. Introduction
- b. Oil and Oil Products
- c. What Happens to an Oil Spill?
- d. Main Impacts
- e. Main Impacts: Ecological and Economic
- f. The Role of Shipping



Above: Instructor Gilbert Sevilla handling one portion of the challenges of oil in the marine environment while the class intently listens.

- V. Solutions: Jan shared some inputs including the X-Bow design to reduce drag/resistance so that ships can save on fuel. Less fuel means fewer emissions.

VI. Excursion/Field Trip to Tabuk Island

The arrangements were the same just like in the 1st Batch. The class was divided into two groups and each group took a separate boat. Each group had to take turns again because the area cannot accommodate all the participants at once. The first group went to the bamboo raft to snorkel while the second group was in the mangrove forest. The groups then changed places with the first group proceeding to the mangrove forest and the second group proceeding to the bamboo raft to snorkel.

Terence Dacles guided the first group of students in their snorkeling trip and Bayani Barcenas did the same for the second group. Terence guided and explained to the first group as well the species that are found in the mangrove area. Jesus Villardo III guided the second group during the excursion to the mangrove forest.

The two groups later converged on the stilt houses to observe more marine life and interview some local fishermen. The students asked them about the current condition of the fishing grounds as compared to the past.

Jesus Villardo III (a former member of the local municipal council) also shared the necessary actions that the local government has been doing to protect the marine environment including the passage of relevant local council resolutions and their enforcement.



Above: Snorkeling, exploring the inner mangrove area and learning from local fishermen during the excursion. Terence and Jesus of OBI were the guides during the mangrove tour (each one handling a different group).

DAY 2 (October 1, 2010)

VII. Sharing of what was learned from Day 1 lectures and excursion Trip to Tabuk Island

Groupings of the previous day's workshop were combined to form 3 groups. Each group assigned a presenter again and the presenter reported it to the class.

As expected, the Batch 2 students were also greatly appreciative of the field trip to Tabuk Island including the snorkeling activity at the bamboo raft to observe the corals and the other marine creatures. Most of them have never experienced it before so it was really exciting for them to be on the sanctuary. The trip was a very good complement to the lectures on marine ecology and the coastal marine ecosystem based on the comments received from the class. It was a realization for them that there is a connection among the many factors that will certainly have an impact on the fragile marine environment. They have come to feel and observe that the sea is indeed alive and hosts a collection of wonderful creatures. They know that as future officers and seafarers they will have a direct effect on this environment but they also know that they can do something to protect this environment.

Group 1& 2		Group 3 & 4		Group 5 & 6	
Learn	How	Learn	How	Learn	How
Relationship of corals and fish	Snorkeling A brief lecture from resource speakers Interview from fishermen Excursion (field trip)	Preserve coral reefs	Through snorkeling	Natural resources	Discussion
Importance of local ordinances in the preservation of fish species		Effects of oil spill	Excursion (group tour) to Tabuk Island and interview with fishermen	Types of mangroves	Lecture and actual field visit
Uses and importance of mangroves		Illegal fishing		Starfish	Information
Corals		Open and closed season for rabbitfish	Fish population	Information from fishermen while on field trip to the stilt houses	
Effects of oil spill and litter on marine resources		Proper throwing of garbage	Through lectures/ presentations	Laws and resolutions related to fishing	Fishermen relating their knowledge and a quick lecture on government laws and regulation on fisheries
	Kinds of mangroves				

VIII. Discharges to the Sea (ErikBogaard)

- a. **Environmental Impact of Chemicals, Sewage** – Dean Delfin Marquez/ Reynaldo Mepisa
- b. **Marine Litter** – Carmelito Valenzona

IX. Impacts of Noise (Erik Bogaard)

- a. Introduction
- b. Use of sound underwater
- c. Sources of underwater noise
- d. Effects on marine mammals
- e. The role of shipping
- f. Solutions



Above: Dean Delfin Marquez handling a portion of environmental impact of chemicals and sewage discharges to the sea.



Above: Instructor Reynaldo Mepisa explaining his part on environmental impact of chemicals and sewage discharges to the sea.



Above: Carmelito Valenzona handling the marine litter portion of the discharges to the sea and its impact on the marine environment.

X. Environmental Impact of Solid Wastes (A short video clip on the albatross suffering from solid waste ingestion was shown to the class)

XI. Reputation of Shipping Workshop (Workshop 2)

- a. The People P
- b. Importance of shipping
- c. Workshop 2

Discussion in 6 groups (25')

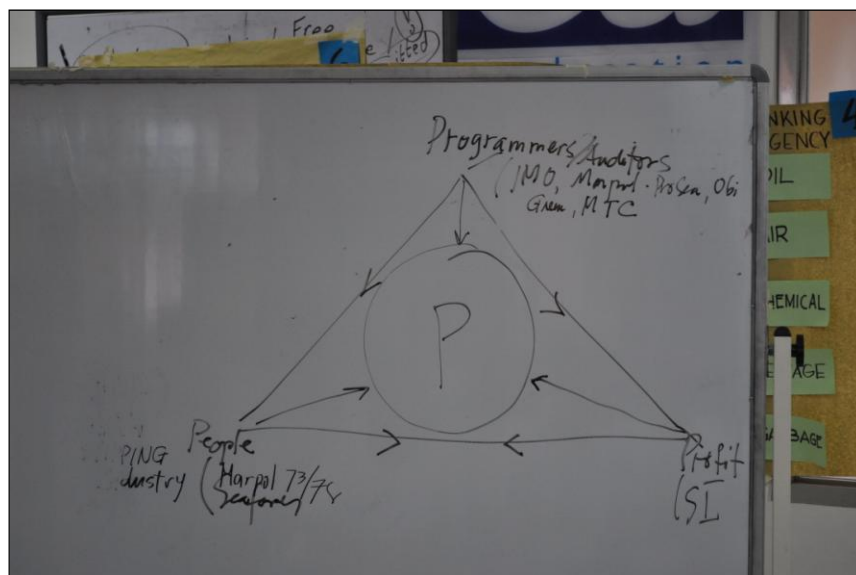
- A. Each group appointed a discussion leader and a debater
- B. They were asked to share ideas and opinions on the four questions:
 1. What is the current image of shipping and seafarers?
 2. What determines this image
 - a. Media?
 - b. Greenpeace?
 - c. Pirates of the Caribbean?
 - d. Seafarers (from the past)?
 - e. YOU?
 3. Is a good image important?
 4. How can the image of shipping and seafarers be changed?
- C. Shared viewpoints with other groups (25')
- D. One group member represented each group and participated in a plenary discussion/debate

Among the responses that were gathered include:

- a. Current image of shipping and seafarers:
- b. Shipping is the safest and easiest way of transport
- c. Contributors to marine pollution
- d. Breadwinners/Moneymaker

- e. In demand job and service
 - f. Complicated
 - g. Hardworking professionals
 - h. Competent/ Skillful
 - i. Disciplined/ Undisciplined
 - j. Womanizer
 - k. Disease carrier
 - l. Boastful
 - m. Drunkards
 - n. Are able to visit many places for free
 - o. Seafaring is a dangerous/risky job
2. What determines this image?
 - a. Seafarers
 - b. Family
 - c. Friends
 - d. Media
 - e. Movies
 3. Is good image important?
 - a. Yes, having good image means that shipping can be trusted and gains respect
 - b. Yes, having a good image encourages more people to consider seafaring as a career
 4. How can the image be changed?
 - a. Changing behaviors and more discipline

The faculty offered a solution on how the Ps of shipping should work. Cesar Ramones (PIT Faculty and Physician) summarized their viewpoint using the illustration below:



Above: The illustration drawn by Dr. Ramones showing how the system should work to protect the planet.

He explained that the three Ps which include People of the shipping industry (Marpol and Seafarers), Profit (shipowners) and Programmers (IMO, Marpol, OBI, ProSea, NSTC, Marine Training Centers) should work in a collaborative effort to protect the most important “P” which is the planet.

XII. [Introduction to Invasive Species](#) and Film Showing: Invaders of the Sea (Ship Ballasting)

XIII. **Air Pollution** –Marieke Verweij : Environmental Impact of Emissions (SO_x, NO_x, Particulate Matters (PM), VOC

XIV. Jan talked more about possible solutions to emissions and pollution

- i. Kite sailing as additional pulling power
- ii. Cross-Bow- showed a video clip of the difference between the two with X-Bow having lesser drag
- iii. Use of diesel electric and properly mounted engines to minimize vibrations
- iv. Cruise ships and cattle ships have a problem with sewage
- v. Improved hull forms and propulsion efficiency (propellers)
- vi. Marine freshwater scrubber system (NaOH is added for neutralization of SO_x)



Above: Jan Verhoff offering practical and realistic solutions to the challenges of emissions

XV. [Pollution Prevention Measures Lecture](#) and Workshop (Workshop 3)

- a. TOP 5 revisited (10'): The participants were asked again to re-evaluate are the most important challenges in sustainable shipping.
- b. Solutions (30'): They were asked to select two challenges from the TOP 5 and make a list of solutions for these challenges. Part of the exercise was to identify who are responsible for these solutions.
- c. Presentations (40'): The outputs were presented and the members of the faculty were asked to choose the best solution.

Workshop Results:

Group 1					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil	Marine pollutant	Oil	Major marine pollutant	<ul style="list-style-type: none"> • Stricter regulation • More care in handling oil • Safe bunkering • Training of the crew 	<ul style="list-style-type: none"> • Seafarers • IMO • Port Authorities (All are responsible)
Climate change	Unpreventable human activities	Climate Change	Greenhouse Effect		
Air pollution	Exhaust gases can contribute to global warming	Litter (Plastics, etc.)	Threat to Marine Life		
Litter (plastics, etc.)	Non-biodegradable	Ballast Water	Invasive Species		
Ballast water	Pollutant	Air Pollution	Enormous Effect		



Above: Group dynamics at work during a breakout session with the guidance of Bayani Barcenas of OBI

Group 2					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil	<ul style="list-style-type: none"> • Common to ships • Important to shipping • Difficult to clean 	Oil	Difficult to clean and harmful to the 3 Ps		
Chemicals	Harmful but is a common cargo of ships	Climate Change	Unpredictable/ easily triggered/ cause of calamities		
Invasive species (ballast water)	<ul style="list-style-type: none"> • Important to ships • Contaminants • Species 	Invasive Species (Ballast Water)	Imbalanced ecosystem/ harmful to the 3 Ps		
Air pollution	<ul style="list-style-type: none"> • Common by-product of shipping • Minimize the effects 	Air Pollution	Acidification/ Greenhouse effect/ Global Warming		
Litter (plastics)	<ul style="list-style-type: none"> • Widely used • Non-biodegradable • Controllable 	Chemicals	Harmful to the 3 Ps/ Common cargo but we need them	Incinerators/ Compactors/ Proper Waste Management	<ul style="list-style-type: none"> • YOU • IMO • Shipowners • Captain • Port Authorities



Above: Presenting their outputs to the class. There were changes in the rankings of what is more of importance due to the influence of succeeding lectures.

Group 3					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Climate change	Global warming	Oil	Destroy marine life and the economy	Reduce speed	Marine engineers
Air pollution	Greenhouse effect	Marine Litter	Depletion of marine life with the pollution	Adding H2O	Manufacturers
Oil	Marine pollution	Climate Change	Greenhouse effect		
Marine litter	Environmental pollution	Air Pollution	Smog/ acidification which may even lead to death	Recirculation	Manufacturers
Sewage	Invasive specs	Ballast (Invasive Species)	Affects the food chain causing economic breakdown	Other energy sources	Manufacturers



Above: A presenter of the 3rd Group emphasizing a case in point based on what they discussed during the breakout sessions.

Group 4					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil	Difficult to remove from the sea	Oil	Major hazard that shipping contributes	<p>Shipping crew and engineers should be responsible and knowledgeable on how to handle oil</p> <p>Proper measures in bunkering oil</p> <p>Proper separation of oil from water</p> <p>Follow the rules and regulations of IMO</p>	<p>Marine engineers and crew</p> <p>Oil separator and other devices</p> <p>Ship-owners and all crew</p>
Air pollution	Destroys/damages the ozone layer	Climate Change	Traps the heat from the earth and causes rise in temperature		
Chemicals	Poisons all marine living things/ life	Marine Litter	Entanglement and ingestion		
Sewage	Harm and cause toxification	Air Pollution	Causes smog from exhaust gas from ships		
Garbage	Takes long time to decompose	Chemicals	Evaporated gas will spread to coastal areas		

The changes in the rankings only show that the students were evidently influenced by the succeeding lectures and exercises. The added information were discussed within the group and incorporated in the revisions.

Group 5					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil	Affects marine life/ socio-economic aspects	Air Pollution	Common source		Every Individual and Society
Air pollution	Affects ozone layer and man	Oil	Momentarily occurs		
Chemicals	Pollutes and destroys marine life	Litter	Human negligence		
Sewage	Endangers marine and human habitat	Chemicals	Often happens		
Invasive species	Increase the population of alien marine species in a particular area	Invasive Species	Maintains as it is		

Group 6					
Challenges	Explanation	Revised Rankings	Why	Solutions	Person Responsible
Oil	Oil is essential for shipping	Oil			
Chemicals	Poisonous (comes from cleaning materials onboard)	Climate Change	Affects everybody		
Plastics	Takes a long time to decompose	Plastics			
Air pollution	NOx, SOx	Air Pollution		Minimize use of Sox and NOx	IMO, Shipping Company, Engineers, Government
Sewage	Human waste	Chemicals	Sewage has treatment		

Faculty		
Challenges	Solutions	Persons Responsible
Oil/Chemicals	Strict implementation of IMO, Marpol regulations	IMO, Marpol, Shipowners, seafarers, environmentalists, maritime institutions
Climate Change	Constant awareness through trainings and seminars Symposiums on Global Warming	IMO, Marpol, Shipowners, seafarers, environmentalists, training institutions
Litter	Strict regulations and implementation of IMO Awareness programs through seminars	
Air Pollution	Using alternative power	Researchers and seafarers
Invasive Species (Ballast Water)	Research Strict implementation of rules in changing ballast water	

XVI. Course Evaluation and Class Picture Taking

CONTENT	LOGISTICS	FACULTY/SPEAKERS/PARTICIPANTS
Topics were good/excellent	Excursion – learned the important relationships in the environment	Need handouts
We learned more	More time/ longer training period	Excellent, friendly, approachable, handsome, beautiful speakers/facilitators
Need more information on preventive measures	More video clips/pictures	More snacks/lunch
Need more time for “complicated” words	Team teaching with local faculty (capacitated them)	
Include “eco-speed” as a topic	Combination of methods helped in more knowledge	
	Interviews with “experts”	
	More “ice breakers”	



ASSESSMENT FROM OBI RESOURCE SPEAKERS AND FACILITATORS

Overall, the conduct of the first MAC at PIT was a definite success. It was a showcase of talents, knowledge, and skills among the speakers, facilitators, faculty and participants. The lectures, discussions and presentations were expertly handled to meet the objectives of the marine awareness course.

Adding to the success was the impeccable timing of good weather which was a big factor in the outdoor excursions. The field exposures definitely complemented and facilitated the deepening of knowledge learned during the lectures, film showing, Focus Group Discussions, among others. The plethora of methodologies used was apt for what the course wanted to achieve.

In terms of logistics, (including the venue, workshop materials, and visual aids) it was sufficiently good. The venue was comfortable and the nearby rooms were ideal for breakout sessions. Although the room was just the right size for the lectures and presentations, there were suggestions to use a microphone for more clarity. The students likewise wanted more handouts including other reading materials that they can bring home or for use later as reference materials.

A. Content/Topics: (What are the other topics that we need to include?)

- The topics included in the course are sufficient but we are thinking of giving the participants a pre-course assignment or some sort of pre-conditioning (i.e. orientation about the course content and methods to be used). This will better prepare the participants at the outset and they will be psyched up that the course will be done in a participatory and lively manner. They will also be made more aware that the modules/course will not be offered in a traditional sense which means that topics will not be given entirely in lectures and that Technology of Participation (TOP) will be used during discussions to give every participant a chance to be heard.
- The topics are enough, just need to emphasize their individual/collective roles and impacts on the overall marine conservation efforts.
- For the Teachers Training (Training of Trainers), we are thinking of including and focusing more on teaching techniques and facilitation skills, introduction to the use of methodologies ie. metacards, etc.
- Since Biology/Natural Science is not included in the curriculum, additional notes/readings related to this topic should be added.

B. Methods: (Lecture, Hands-on, Small Group Workshops)

- We think it should be mixture of the various methodologies
- Give enough time for student discussions, pose more case studies for them to analyze and discuss

- If possible, there must be an excursion or practical outings/visits to sites/marine protected areas/marine reserves/wildlife sanctuaries because these field activities will definitely add to the experience and praxis of the participants;
- More time for the excursions so that the students can really explore the different ecosystems and analyze its connection to the course;
- More hand-outs about the field trip, including safety tips;
- Small break out groups are very effective in encouraging participation and individual sharing; facilitators should however effectively guide the group so they have a sense of what should they do to get the needed output
- Posting of ideas on Manila paper and displaying on the walls are very effective method for recall of the students;
- A visit to the IMO website should also be encouraged to give the participants the idea of the level of commitment their country/state has vis-a-vis the set standards of the IMO.

C. Participants (what is the selection criteria; number of pax; year level; instructors)

- This should be taught in the higher years (preferably in the 3rd year after the students/participants have already taken units in Biology, Chemistry, Physics, MARPOL, and higher English (as active participation in the discussions are very much expected) or that the participants shall have experienced seafaring already to be able to share actual experiences at sea;
- Considering the need of better interaction and sharing of ideas, the number of participants should be kept to a maximum of 24 (3:8, 3 facilitators to 8 students/participants ratio). Otherwise, as the number of participants increase there should be a correlative increase in the number of facilitators;
- Instructors should have taken or experienced the MAC already.

D. Evaluation Methods: (Pre and Post Evaluation)

- As much as possible, a Training Needs Assessment should done to determine, tailor and focus/slant the MAC based on the needs of the participants and the teachers/trainers;
- A pre-test to evaluate their current knowledge and a post-test which is helpful in determining their acquired/new knowledge;
- An evaluation (creative = smileys or freedom wall) should be used during/after the conduct of the course

E. Duration: (Length/Time of MAC, Schedule of Activities)

- The entire course should be for at least 3 days with the topics spread out and to give participants more time to absorb/digest the lectures/discussions/materials and give them more time for interaction, open forum/question and answer portions for each topic. This is specifically necessary if the participants are experienced seafarers.
- If this will be integrated with the current curriculum, the course may be spread-out and incorporated with the different major subjects and culminated with a field visit.