



28th International Research Ship Operators (IRSO) Meeting

October 20 – 23, 2015

Scripps Institution of Oceanography

La Jolla, California, USA

Draft Minutes- 14 Mar 2016

IRSO 2015

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A. LIST OF ATTENDEES

First Name	Last Name	Organization
Jon	Alberts	UNOLS
Bruce	Appelgate	Scripps Institution of Oceanography
Kenneth	Boda	US Coast Guard
Edward	Bradley	NOAA/OMAO
Rob	Christie	NIWA
Riccardo	Codiglia	OGS
Juanjo	Danobeitia	CSIC-UTM
Annette	DeSilva	UNOLS
Martin	Ehrlich	INIDEP
Lee	Ellett	SIO
Eric	Engelbrecht	Art Anderson Associates
Aodhán	Fitzgerald	Marine Institute
Ken	FitzGerald	Glosten
Juha	Flinkman	Finnish Environment Institute, Marine Research Center
Greg	Foothead	NIWA
Timothy	Gates	ManTech
Jacqueline	Hams	PolarTREC/NOAA Teacher at Sea
Bob	Houtman	NSF
Yoshio	Isozaki	JAMSTEC
Barry	Kavanagh	P&O Maritime Services (Irl) Ltd
Zoltan	Kelety	Scripps Institution of Oceanography
Eric	King	Schmidt Ocean Institute
Erica	Koning	NIOZ
Dirk	Kristensen	Glosten
Stewart	Lamerdin	Oregon State University
Cecilia	Leotardi	CNR-INSEAN
Kazuhiro	Maeda	JAMSTEC
Giuseppe	Magnifico	National Research Council of Italy
Tim	McGovern	National Science Foundation/Polar Programs
Oystein	Mikelborg	Norwegian Polar Institute
John	Millett	Hawboldt Industry
Toni	Moate	CSIRO

Lieven	Naudts	RBINS-OD Nature
Ronald	Newhook	Marine Institute of Memorial University
Per Wilhelm	Nieuwejaar	Institute of Marine Research
Jakob	Nilsen	Rapp Marine
Jukka	Pajala	Finnish environment institute
Ronald	Plaschke	CSIRO
Jonathan M. (Mike)	Prince	ONR (MLML)
Olivier	Quédec	Ifremer
Megan	Raymond	NOAA/OAR/CPO/COD
Jonathan	Reeve	Australian Antarctic Division
John	Reeves	Elliott Bay Design Group
Balcon	Rémy	GENAVIR
Lana	Rjedkin	KPI Bridge Oil
Alberto	Rossi	FINSHIP SRL
Ian	Sage	CMRE - NATO
Justin	Sander	Glander International Bunkering
Tim	Schnoor	Office of Naval Research
David	Score	NOAA/OMAO
Johann	Sigurjonsson	Rapp Marine
Randolph	Sliester	British Antarctic Survey
Leigh	Storey	NOC
William	Storvik	Triplex
Woody	Sutherland	SIO
Robinson	Verdugo	KPI Bridge Oil
Pedro	Vergara	KPI Bridge Oil
Jennifer	Vollrath	Fisheries and Oceans Canada
Geraint	West	National Oceanography Centre
Masanobu	Yanagitani	JAMSTEC
Tetsuya	Yokota	Nippon Marine Enterprises, Ltd.

B. IRSO 2015 – AGENDA**IRSO 2015****Day 1 - Tuesday 20th October Workshop Polar Research - Research Vessel Operations in Polar Regions**

Time	Duration (Mins)	Theme	Topic	Owner	Comments
09:00	10	<i>Experiences on recent Polar science Cruises</i>	Workshop opening	Aodhan Fitzgerald/Bob Houtman	
09:10	30		2015 Arctic Research Operations Aboard SIKULIAQ	Peter F. Worcester	
09:40	20		The "Lance" winter expedition	Øystein Mikelborg	Norwegian Polar Institute cruise drifting with the ice north of Spitsbergen for several months
10:00	15	<i>Polar Co-operation</i>	A European approach for Marine Polar research	Juanjo Dañobeitia	
10:15	15		Establishing a Polar network or polar fraternity	Per Nieuwejaar	
10:30	30	Coffee			
11:00	15	<i>Polar Operations and the Polar Code</i>	Polar Code challenges	Karl Robert Røttingen	Captain of the new "Kronprins Haakon operating in both polar regions
11:15	15		Polar guidelines/code issues	Jono Reeve	
11:30	15		NSF Polar Programs	Tim Mc Govern	
11:45	30		R/V Aranda – comeback to the Polar Seas	Juha Flinkman	
12:15	15		USCG Polar Operations including DEEP FREEZE and Arctic Shield	Ken Boda	
12:30	30		Panel discussion on Polar RV Issues		Q & A session
13:00	45	Lunch			Provided in venue
Workshop end					
14:00	60	<i>Bus Pick up</i>	Transport to USS Midway		

15:00	120		Docent Tour USS Midway		
17:00	90		Reception on USS Midway		
18:30	120		Dinner at choice of Restaurants nearby USS Midway		
20:30	60	<i>Bus Pick up</i>	Bus transport back to La Jolla		

Day 2 – Wednesday 21st October

Time	Duration (Mins)	Theme	Topic	Owner	Comments
08:30	30	<i>Registration</i>	Registration and cash payment		
09:00	5	<i>Opening of 28th IRSO and Business</i>	Welcome and administrative matters	Aodhan Fitzgerald/Bob Houtman	
09:05	15		Round table introduction of participants	All	
09:20	5		Introduction to La Jolla and to hosts	Jon Alberts/Bruce Appelgate	
09:25	5		Adoption of agenda of 28 th IRSO	Aodhan Fitzgerald	Standing item
09:30	5		Review of minutes of 27 th IRSO	Bob Houtman	Standing item
09:35	5		Review of IRSO's Terms of Reference (ToR)	Bob Houtman	Standing item
09:40	5		Review of IRSO website	Aodhan Fitzgerald/Jon Alberts	
09:45	5		Dates for next IRSO in Europe 2016:	Aodhan Fitzgerald	Check your calendars
09:50	15		<i>Theme 1: Delegates Report of Activity</i>	OGS research vessels – overview, operation and plans for new vessels	Riccardo Codiglia
10:05	40	Coffee Break and Poster Session			
10:45	15	<i>Theme 1 continued</i>	Update on Canadian Research Vessel Build Program	Jennifer Vollrath	
11:00	15		National Research Council CNR (Italy)	Giuseppe Magnifico	New member introductory presentation
11:15	15		Bad and good news from Argentina	M. Ehrlich/ L. Machinandiarena	
11:30	25	<i>Theme 2: RV Builds, Modifications and</i>	Opening speaker Fisheries acoustics on	Dave Demer	

		<i>Performance</i>	Shimada and Lasker		
11:55	20		R/V Aranda refit – extension of life span working in the Baltic and Polar Seas	Jukka Pajala	
12:15	15		Update on New Dr. Fridtjof Nansen", and new 6000m ROV "Ægir 6000	Per Nieuwejaar	
12:30	15		Upgrade of Celtic Explorer Multibeam systems	Aodhan Fitzgerald	
12:45	60	Lunch			Provided in venue
13:45	15	<i>Theme 2 continued</i>	Update on RRS Discovery – managing the new vessel into service	Leigh Storey	
14:00	15		French Fleet Highlights and updates	Olivier Quedec	
14:15	20		NOAA fleet update – Rueben Lasker Delivery	David Score/Ted Bradley	
14:35	15		Investigator update	Toni Moate	
14:50	20		NSF Update	Bob Houtman	
15:10	15		New BAS Vessel	Randolph Sliester	
15:25	35		Coffee Break and Poster Session		
16:00	15	<i>Theme 2 continued</i>	Belgica: Damage, repairs and refit	Lieven Naudts	
16:15	15		New Ship 'KAIMEI' and the New Fleet	Kazuhiro Maeda	
16:30	15		Plans for the building and outfitting of Kronprins Haakon	Øystein Mikelborg/Karl Robert Røttingen Norwegian Polar Institute	
16:45	End of Day 2				
17:45		<i>Coach pick up for Conference Dinner</i>	Coach pick up at La Jolla Shores		

Day 3 – Thursday 22nd October

Time	Duration (Mins)	Theme	Topic	Owner	Comments
08:30	5	<i>Opening</i>	Administrative matters/logistics	Aodhan Fitzgerald/Bob Houtman	
08:35	20	<i>Theme 2 continued</i>	Update on the Ocean Class program	Tim Schnoor	
08:55	15		Ballast water management on existing vessels	Rémy Balcon	
09:10	15		Fuel Prices: future trends	Justin Harris Sander	
09:25	20		Interesting times on Tangaroa	Greg Foothead	
09:45	30	Poster Session including Coffee break			
10:15	15	<i>Theme 3: Manning, Safety and Training</i>	Introducing New Safety Standards- Challenges & Lessons Learned	Jon Alberts	
10:30	15		P&O Maritime approach to safety	Barry Kavanagh	
10:45	20	<i>Theme 6 Brought Forward</i>	OFEG update	Erica Koning	
11:05	20	<i>Theme 4: Scientific Technology</i>	Shinkai 6500' 25th Anniversary and JAMSTEC AUV/ROV	Masanobu Yanagitani	
11:25	20		New NERC/NIOZ Voyage Planning and Inventory Management System	Leigh Storey/Erica Koning	
11:45	15		Acoustic issues relevant to Research vessels	Tim Gates	
12:00	20	Group photo			
12.20	65	Lunch			<i>All presentations must be loaded to allow USB drives to be copied</i>
13:25	45	<i>Theme 4: Scientific Technology</i>	Keynote speaker: California Current Ecosystem - Long Term Ecological Research program	Mark Ohman	

14:10	20	<i>Theme 4: Scientific Technology</i>	Science deployment of a mixed fleet of unmanned surface and underwater vehicles	Geraint West		
14:30	30		Facility Tour	Tour of Scripps facilities		
15:00	30		Coffee break			
15:30	30		Ship Based UAS Science and Operations in Polar Regions	Wayne Perryman	Increase time	
16:00	20		Heave Compensation for existing winch systems	(TBC)		
16:20	15		Shipboard Technical Assistance in the Arctic	Woody Sutherland		
16:35	10		Inmartech 2016 Norway	Per Nieuwejaar		
16:45	15		Digital ship (Handling shipboard data)	Eric M. King		
17:00	15		Laying the Smart Bay Cable from Celtic Explorer	Aodhan Fitzgerald		
17:15	End of Day Three					

Day 4 – Friday 23rd October

Time	Duration (Mins)	Theme	Topic	Owner	Comments
08:30	5	<i>Opening of Day 4</i>	Administrative matters / logistics	Aodhan Fitzgerald/Bob Houtman	
08:35	55	<i>Theme 5: Legal and Insurance</i>	Recent Developments in Marine Law and Insurance Relevant to Research Vessels	Dennis Nixon	Includes discussion time
09:30	15	Guest Presentation	Marine Gas Oil opportunities in Patagonia	Pedro R. Vergara	
09:45	30	<i>Theme 6: Cooperation and Outreach</i>	Emergency Equipment recovery- establishment of an international co-operative approach?	Per Nieuwejaar	Discussion time follows
10:15	30	Coffee break			
10:45	15	<i>Theme 6: Cooperation and Outreach</i>	Communications strategy: working with	Eric M. King	

		<i>Outreach</i>	Chief Scientists		
11:00	15		In the Footsteps Of Roger Revelle	Debra Brice	
11:15	15		Cooperation in seismic operations	Juanjo Dañobeitia	
11:30	15		Multi-year ship scheduling	Ron Plaschke	
11:45	5		Near Real time Oceanographic data sharing	Aodhan Fitzgerald	
11:50	10		JCOMMOPS activities	Steve Diggs	
12:00	15				
12:15	60		Lunch		
13:15	15	<i>Theme 6: Cooperation and Outreach</i>	JASMTEC activities and international cooperation	Yoshio Isozaki	
13:30	20		Expanding the Reach of Ocean Exploration	David Lavolvo	
13:50	15		Teacher Researcher Experiences in Polar Regions	Jackie Hams	
14:05	10		ERVO	Olivier Quedec	
14:15	15		EUROFLEETS projects	Aodhan Fitzgerald	
14:30	20		Multiyear Campaigns: Coordinating Operations Among Multiple Platforms to Achieve Common Objectives	John McDonough	
14:50	10		RVOC	Jon Alberts	
15:00	30		Coffee break		
15:30	15		Introduction to venue for IRSO 2016	Giuseppe Magnifico	
15:45	15		Suggestions for 2016 workshop and meeting	Aodhan Fitzgerald	
16:00	5		Thanks to hosts,	Aodhan Fitzgerald	
16:05		<i>Closing of 28th IRSO</i>			

**2015 International Research Ship Operators Meeting
Minutes of the Polar Research Workshop and 2015 IRSO Meeting**

Tuesday, October 20, 2015

C. Workshop: Polar Research - Research Vessel Operations in Polar Regions

C.1. Experiences on recent Polar science Cruises

C.1.1. Workshop opening

Aodhan Fitzgerald welcomed the delegates to the 2015 IRSO Workshop and meeting. Jon Alberts provided a meeting introduction and thanked Bruce Appelgate for hosting IRSO and his help with arrangements at Scripps Institution of Oceanography. Aodhan introduced Bob Houtman, IRSO Vice Chair.

C.1.2. 2015 Arctic Research Operations Aboard *Sikuliaq*

Peter F. Worcester provided the science talk. His slides are available at:

http://www.irso.info/wp-content/uploads/2_Day1_Worcester_ArcticResearch_Sikuliaq.pdf

- Peter described the change in ice cover in the Arctic over years.
- The logistics of Arctic deployments and the challenges of dealing with the ice cover were described. SAR ice images were critically important.
- Requirements for environmental compliance were extensive, which included marine mammal observers.
- Peter showed a movie clip: CANAPE
- Discussion:
 - Tim Schnoor reported that the Office of Naval Research sponsored Peter's science. Next year the project will be on the USCGC *Healy*. In Washington, they don't like to do things at the last minute. They started the process early in terms of regulatory requirements. Sometimes it takes longer the first time around. There is a lesson there. It isn't all about the science, there is a lot involved. ONR and NSF assisted in meeting environmental compliance.
 - Ian Sage – Asked a question about high definition ice images. Peter - Steve Roberts (UAF) has a program that handles the SAR images. It was difficult to know where they would want the imagery 3 days in advance so they tended to order more than they needed.

C.1.3. The "Lance" winter expedition

Øystein Mikelborg provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/3_Day1_Mikelborg_LanceWinterExpedition_Low_Res_NoVideo.pdf

- Øystein discussed operation with the vessel *Lance*. This was a Norwegian sea ice cruise for 6 months to understand first year ice. The ship is ~60 m LOA and accommodates 30 scientists
- They had support from an Icebreaker – *Svalbard*
- Ice camps were set up
- Every 6 weeks they changed crew and other personnel
- Fuel depots were set up the summer before the operation.
- Øystein showed the drift flows
- Operational challenges included:
 - Darkness (fear of polar bear)
 - Ship solar lights

- IR camera
- Personal headlights
- Etc.
- Weather
- Temperature – this was the biggest challenge
 - Below -30C things get tricky
 - Even the helicopter could not operate
 - There is not much you could do at that temp.
- Ice conditions
 - They are quite variable
 - Spring ponds are difficult to work in
 - In March they had 5 meters of ice below the ship.
- Polar Bears
 - Luckily they stayed away during the very dark period.
 - They were around on a weekly / daily basis.
 - They chew on the equipment
 - There are dedicated polar bear guards (ex-military)
- Remoteness

C.2. Polar Co-operation

C.2.1. A European approach for Marine Polar research

Juanjo Dañoibeitia provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/4_Day1_Danobeitia_EuropeanApproachPolarResearch.pdf

- EuroFleets2 is aiming at integrating the European Research Vessels fleet
- They are working to strengthen collaboration between European through European Polar Board with USA, Canada, Japan
- They would like to hold a workshop for further collaboration to provide trans-national access to polar research vessels.

C.2.2. Establishing a Polar network or polar fraternity

Per Nieuwejaar provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/5_Day1_Nieuwejaar_EstablishingPolarNetwork_or_PolarFraternity.pdf

- Per discussed the International Code for ships operating in Polar Waters (Polar Code).
 - This will enter into force on 1 January 2017
 - The challenge is that they are building a polar ship as the code is being developed.
 - There is an enormous amount that has to be written to comply with the code.
- There are potential areas of common interest and collaboration for all research operators who plan work in the polar regions that include operational issues and technical issues.
- Per asked if there is an interest to form an IRSO Polar Code working group. IMR is happy to host the kick off meeting in early 2016, either in Norway or at shipyard in Italy.
- ACTION ITEM: It was agreed to establish a Polar Code Working Group and Per Nieuwejaar volunteered to be the Chair. Delegates interested in joining the group were asked to sign up by Friday.

C.3. Polar Operations and the Polar Code

C.3.1. Polar Code challenges

Øystein Mikelborg provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/6_Day1_Mikelborg_PolarCodeChallenges.pdf

- Øystein Mikelborg reported that training is a key element.
- An issue – life saving appliances are not sufficient in terms of the code.

C.3.2. Polar guidelines/code issues

Jono Reeve provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/7_Day1_Reeve_PolarGuidelines_PolarCode_Comparison.pdf

C.3.3. NSF Polar Programs

Tim McGovern provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/8_Day1_McGovern_NSF_PolarPrograms.pdf

- McMurdo Station – There are 200 people on station in the winter and 950 in summer
- South Pole Station is small with 200 people year around
- Palmer Station has ship access only and only 45 personnel are on station
- The USAP Antarctic field stations serve as both logistics hubs and science laboratories.

C.3.4. R/V Aranda – comeback to the Polar Seas

Juha Flinkman provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/9_Day1_Flinkman_Aranda.pdf

C.3.5. USCG Polar Operations including DEEP FREEZE and Arctic Shield

Ken Boda provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/10_Day1_Boda_USCG_PolarOps.pdf

- Polar Star:
 - Began operations in 1976
 - There is a 130-person crew
 - There was a retrofit for 2 years

C.3.6. Panel discussion on Polar RV Issues

- The challenges of building a ship while the code is being developed is very daunting. It can impact design changes.
 - How do we take steps to meet the Polar Code?
 - Tim McGovern – Industry was very involved with meeting the Polar Code.
 - Tim McGovern – the Antarctic treaty is even more stringent
 - Jono Reeve – Science requirements also have an impact.
 - Per – The difficult issue is with the ships that have to operate both in the lower latitudes as well as the higher latitudes. In the end common sense prevails. It is a complex task.
 - Tim McGovern – He thought that the Polar Code was intended to work within reason.
 - Per – it is better to be proactive than to sit back and wait to see what is decided for the final Code. The Classification groups need the feedback. Let them know what works and what is less than optimal.
 - Peter Worcester – He wonders what the implications to science will be.

- Ian Sage – What real-time data is available in the Arctic? The growing requirement for real-time data to send ship to shore. They are always struggling with this and the associated cost is huge.
- Per – In his country, they ask what data will be needed in the future. Then they can figure out what types of platforms are needed to gather that data. Make the ships for the areas that cannot be reached by other collection technologies.
- Peter Worcester – to get acoustic data you need a combination of platforms and technology.

Wednesday, October 21, 2015

D. 2015 International Research Ship Operators Meeting Proceedings

D.1. Opening of 28th IRSO and Business

D.1.1. Welcome and administrative matters

Aodhan Fitzgerald opened the 2015 IRSO Meeting and provided the introduction. He thanked the hosts.

D.1.2. Round table introduction of participants

D.1.3. Introduction to La Jolla and to hosts

Jon Alberts provided meeting logistics.

Bruce Appelgate welcomed the delegates to Scripps Institution of Oceanography (SIO) and provided an introduction to the campus. His slides are available at:

http://www.irso.info/wp-content/uploads/1_Day2_Appelgate_Welcome_to_SIO_LaJolla.pdf

Bruce provided a Google Earth tour of SIO. There are 650 scientists. The marine facility is under construction and it is equipped with a solar panel roof.

D.1.4. Adoption of agenda of 28th IRSO

A motion was made and passed to adopt the 2015 IRSO agenda (Houtman/Sage).

D.1.5. Review of minutes of 27th IRSO - Bob Houtman

A motion was made and passed to accept the minutes of the 27th IRSO meeting (??/Koning).

D.1.6. Review of IRSO's Terms of Reference (ToR)

Bob Houtman asked if there were any changes to ToR. He will leave this item open and if any adjustments needed, please bring them to Jon Alberts and Annette DeSilva before the end of the meeting.

D.1.7. Review of IRSO website –

Aodhan Fitzgerald and Jon Alberts reported that the new IRSO website was developed by Doug White at the University of Delaware.

- ACTION ITEM - Ian Sage suggested a refresh of the member list on the website. Send changes to Aodhán and Jon.

D.1.8. Dates for next IRSO in Europe 2016 –

Aodhan Fitzgerald proposes that we stick with mid October dates. Avoid October 3-7. Giuseppe said that these dates are good, Oct 10-14, 2016.

D.2. Theme 1: Delegates Report of Activity**D.2.1. OGS research vessels – overview, operation and plans for new vessels**

Riccardo Codiglia provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/2_Day2_Codiglia_OGS_Research_Vessels.pdf

Questions:

- Per – Why a Special Purpose Classification? Riccardo Codiglia – Commercial projects require strict rules.
- Ian Sage – what flag is the vessel. Riccardo - The Italian flag, which is a challenge. It can only be an Italian crew. These are Italian rules.

D.2.2. Update on Canadian Research Vessel Build Program

Jennifer Vollrath provided the report. Her slides are available at:

http://www.irso.info/wp-content/uploads/3_Day2_Vollrath_Overview_on_Shipbuilding_in_Canada.pdf

Jennifer is looking for ship charters on other ships while Canada is going through the ship building effort.

D.2.3. National Research Council CNR (Italy)

Giuseppe Magnifico provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/4_Day2_Magnifico_NationalResearchCouncil_CNR_Italy.pdf

- Aodhán – what is the long term plans for the *Urania* ship? Giuseppe – he doesn't have a good answer at this time.
- Are there plans to carry out the research that was scheduled on *Urania* for 2016? No information at this time.

D.2.4. Bad and good news from Argentina

Martin Ehrlich provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/5_Day2_Ehrlich_GoodBadNews_Argentina.pdf

D.3. Theme 2: RV Builds, Modifications and Performance**D.3.1. Opening speaker - Fisheries acoustics on NOAA ships *Shimada* and *Lasker***

Dave Demer provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/6_Day2_Demer_FisheriesAcoustics_on_Lasker.pdf

- Jennifer – have you noticed a difference in the new ships compared to the old in regard to quieting? Dave – there are been some published papers in this regard. The best advantage of the quiet vessel is the higher signal to noise ration.
- Jennifer – were there comparative studies between the vessels going off-line with the new ships? Dave – he doesn't think the studies are conclusive. Dave Score – they calibrated their old and new ships.
- Storey – were there major trade-offs between the quieting and the efficiency of the ships. Bradley – the ships are just so different, there is so much more capability with the new ships.

D.3.2. R/V Aranda refit – extension of life span working in the Baltic and Polar Seas

Jukka Pajala provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/7_Day2_Pajala_ArandaRefit.pdf

D.3.3. Update on New Dr. Fridtjof Nansen, and new 6000m ROV Aegir 6000

Per Nieuwejaar provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/8_Day2_Nieuwejaar_Update_6000mROV_AEgir6000.pdf

D.3.4. Upgrade on Celtic Explorer Multibeam systems

Aodhan Fitzgerald provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/9_Day2_Fitzgerald_Multibeam_upgrade_CelticExplorerer.pdf

D.3.5. Update on RRS Discovery – managing the new vessel into service

Leigh Storey provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/10_Day2_Storey_Update_on_Discovery.pdf

D.3.6. French Fleet Highlights and updates

Olivier Quedec provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/11a_Day2_Quedec_Refitting_RV_Thalassa.pdf

D.3.7. NOAA fleet update – Rueben Lasker Delivery

David Score and Ted Bradley provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/12_Day2_Score_Bradley_NOAA_FSV_Capabilites_and_Challenges.pdf

D.3.8. Investigator update

Toni Moate provided the report which highlighted a very effective outreach program. Her slides are available at:

http://www.irso.info/wp-content/uploads/13_Day2_Moate_Australia_RV_Investigator_low_res.pdf

D.3.9. National Science Foundation Update

Bob Houtman provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/14_Day2_Houtman_NSF_Update.pdf

D.3.10. New BAS Vessel

Randolph Sliester provided the report on British Antarctic Survey ships. His slides are available at:

http://www.irso.info/wp-content/uploads/15_Day2_Sleister_New_BAS_Vessel.pdf

D.3.11. Belgica: Damage, repairs and refit

Lieven Naudts provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/16_Day2_Naudts_Belgica_Damage_Repairs_Refits.pdf

D.3.12. New Ship 'KAIMEI' and the New Fleet

Kazuhiro Maeda provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/17_Day2_Maeda_JAMSTEC_NewResearchShip_and_Fleet.pdf

D.3.13. Update on the Ocean Class program

Tim Schnoor provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/1_Day3_Schnoor_Ocean_Class_RV_Update.pdf

D.3.14. Ballast water management on existing vessels

Rémy Balcon provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/2_Day3_Balcon_Ballast_Water_Management.pdf

D.3.15. Fuel Prices: future trends

Justin Harris Sander provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/3_Day3_Sanders_FuelPrices_Trends.pdf

D.3.16. Interesting times on Tangaroa

Greg Foothead provided the report.

D.4. Theme 3: Manning, Safety and Training**D.4.1. Introducing New Safety Standards- Challenges & Lessons Learned**

Jon Alberts provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/6_Day3_Alberts_RVSS_SafetyStandards_Challenges.pdf

D.4.2. P&O Maritime approach to safety

Barry Kavanagh provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/7_Day3_Kavanagh_PO_Approach_to_Safety.pdf

D.5. Theme 6 Brought Forward**D.5.1. Red Sea Cruise and Anti-piracy Measures**

Erica Koning provided the report on using a Dutch military detachment.

D.6. Theme 4: Scientific Technology**D.6.1. Shinkai 6500' 25th Anniversary and JAMSTEC AUV/ROV**

Masanobu Yanagitani provided the report.

D.6.2. New NERC/NIOZ Voyage Planning and Inventory Management System

Leigh Storey/Erica Koning provided the report. Their slides are available at:

http://www.irso.info/wp-content/uploads/9_Day3_Koning_Storey_VoyagePlanning_and_InventoryManagementSystem.pdf

D.6.3. Acoustic issues relevant to Research vessels

Tim Gates provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/10_Day3_Gates_Acoustic_Issues_Relevant_to_RVs.pdf

D.6.4. Keynote speaker: California Current Ecosystem - Long Term Ecological Research program

Mark Ohman provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/11_Day3_Ohman_Keynote_California_CUrrrent.pdf

D.6.5. **Science deployment of a mixed fleet of unmanned surface and underwater vehicles**
Geraint West provided the report.

D.6.6. **Ship Based UAS Science and Operations in Polar Regions**
Wayne Perryman provided the report.

D.6.7. **Shipboard Technical Assistance in the Arctic**
Woody Sutherland provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/14_Day3_Sutherland_STARC.pdf

D.6.8. **Inmartech 2016 Norway**
Per Nieuwejaar provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/15_Day3_Nieuwejaar_INMARTECH2016.pdf

D.6.9. **Digital ship (Handling shipboard data)**
Eric M. King provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/16_Day3_King_AVIT_Modernization_bySOI.pdf

D.6.10. **Laying the Smart Bay Cable from Celtic Explorer**
Aodhan Fitzgerald provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/17_Day3_CableLay_CelticExplorer.pdf

D.6.11. **Seismic Devices Upgrade Project on Hybrid ROV Ariane**
Olivier Quedec provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/19_Day3_Quedec_HROV.pdf

D.6.12. **Facility Tour**

D.7. **Theme 5: Legal and Insurance**

D.7.1. **Recent Developments in Marine Law and Insurance Relevant to Research Vessels**
Dennis Nixon provided the report via Webex. His slides are available at:
http://www.irso.info/wp-content/uploads/1_Day4_Nixon_MarineLaw.pdf

D.8. **Guest Presentation**

D.8.1. **Marine Gas Oil opportunities in Patagonia**
Pedro R. Vergara provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/2_Day4_Vergara_MarineGasOpportunities_in_Patagonia.pdf

D.9. **Theme 6: Cooperation and Outreach**

D.9.1. **Emergency Equipment recovery- establishment of an international co-operative approach?**
Per Nieuwejaar provided the report. His slides are available at:
http://www.irso.info/wp-content/uploads/3_Day4_Nieuwejaar_EmergencyEquipment.pdf

D.9.2. **Communications strategy: working with Chief Scientists**

Eric M. King provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/4_Day4_King_Scientist_and_Ship_Operator_Outreach_bySOI_low_resolution.pdf

D.9.3. In the Footsteps Of Roger Revelle

Debra Brice provided the report. Her slides are available at:

http://www.irso.info/wp-content/uploads/5_Day4_Brice_Footsteps_of_RogerRevelle.pdf

D.9.4. Introduction to venue for IRSO 2016

Giuseppe Magnifico provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/13_Day4_Magnifico_CNR-venue_IRSO_2016.pdf

D.9.5. Cooperation in seismic operations

Juanjo Dañobeitia provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/6_Day4_Danobeitia_Cooperation_Seismics.pdf

D.9.6. Multi-year ship scheduling

Ron Plaschke provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/7_Day4_Plaschke_Multi_Year_Ship_Scheduling.pdf

D.9.7. Near Real time Oceanographic data sharing

Aodhan Fitzgerald provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/8_Day4_Fitzgerald_EuroGOOS.pdf

D.9.8. JCOMMOPS activities

Steve Diggs provided the report.

D.9.9. JASMTEC activities and international cooperation

Yoshio Isozaki provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/9_Day4_Isozaki_JAMSTEC_Activities_and_InternationalCooperation.pdf

D.9.10. Teacher Researcher Experiences in Polar Regions

Jackie Hams provided the report.

D.9.11. ERVO

Olivier Quedec provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/10_Day4_Quedec_ERVO_way_ahead_WG_FirstResults.pdf

D.9.12. EUROFLEETS projects

Aodhan Fitzgerald provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/11_Day4_Fitzgerald_EUROFLEETS_TransNationalAccess.pdf

D.9.13. Plans for the building and outfitting of Kronprins Haakon

Øystein Mikelborg/ Norwegian Polar Institute provided the report. Their slides are

http://www.irso.info/wp-content/uploads/18_Day2_Mikelborg_Kronprins_Haakon_Low_res.pdf

D.9.14. Multiyear Campaigns: Coordinating Operations Among Multiple Platforms to Achieve Common Objectives

John McDonough provided the report.

D.9.15. **RVOC**

Jon Alberts provided the report. His slides are available at:

http://www.irso.info/wp-content/uploads/12_Day4_Alberts_UNOLS_report_RVOC2016.pdf

D.9.16. **Action Items**

Bob Houtman - reviewed the action items from the 2015 IRSO:

- It was agreed to establish a Polar Code Working Group and Per Nieuwejaar volunteered to be the Chair. Delegates were asked to sign up for the group by Friday.
- All delegates were asked to update their information on the IRSO website by 15 November 2015
- It was agreed there were no changes to the Code of Conduct document.
- It was agreed there were no changes to the Terms of Reference document.
- The delegates discussed the value of establishing a communications and outreach message on “Recovery of Equipment” to the science community on anticipating unplanned recovery of their equipment, such as a glider blown off course or a mooring that has broken loose.
- Yoshio Isozaki proposed future discussions and action on “International Cooperation on Cruise Operations” due to the pressures of decreasing budgets and increasing costs on national agencies and organizations. He also proposed future action for “Cooperation on International Information Exchange” because of increasing concern on marine Environmental protection and difficulties in addressing the Coastal States Environmental Compliance Regulations.
- It was agreed to add “Prioritizing and Scheduling Sea Time” as a standing Agenda item at future IRSO meetings.
- It was agreed to establish the IRSO Emeritus Membership Position and Geraint West was elected as the inaugural member.

D.9.17. **Suggestions for 2016 workshop and meeting**

Aodhan Fitzgerald welcomed suggestions for the 2016 meeting.

- The following topics for future meetings were identified:
 - Safety Training
 - Ship Scheduling
 - Barriers to Shiptime Exchange
 - MSR Applications – The United Nations is doing a review of all Country Clearance Procedures
 - Cost Control and Efficiency Measures
 - Update the Vessel Manning Requirements Data Base
 - Crewing Challenges
 - International Cooperatives and Frameworks.
 - Bench marking and Cost of Operating
- It was agreed future meetings would be three days:
 - Day 1 – Opening and Evening Reception
 - Day 2 – Evening Dinner
 - Day 3 – Close
- It was agreed there will not be a workshop at the 29th IRSO meeting.

D.9.18. **Thanks to hosts & Closing of 28th IRSO**

Aodhan Fitzgerald thanked the US hosts and SIO. The meeting was adjourned at 1500.