

**Fourteenth International Research Ship Operators Meeting
10-12 October 2000, Amsterdam, The Netherlands**

Attendees

Country	Representative	Organisation
Australia	Dr. John Wallace	CSIRO, Hobart
Belgium	Mr. Andre Pollentier	MUMM, Oostende
Chile	Mr. Enrique Aranda	IFOP, Valparaíso
Denmark	Cpt. Frode R. Larsen	DFU, Copenhagen
EU	Mr. Gilles Ollier	CEC-DG XII, Brussels
Finland	Ms. Eila Lahdes	FIMR, Helsinki
France	Cpt. Armel Le Strat	GENAVIR, Paris
	Mr. Jean-Xavier Castrec	IFREMER, Brest
Germany	Prof.dr. Gerhard Kortum	IfM, Kiel
	Dr. Dieter Strohm	RF, Bremen
	Cpt. Caspar Graf Von Spee	RF, Bremen
Ireland	Mr. Michael Gillooly	Marine Institute, Galway
Italy	Cpt. Massimiliano di Bitetto	IGM-CNR
Japan	Mr. Masato Chijiya	JAMSTEC, Yokosuka
	Mr. Katsura Shibata	JAMSTEC, Yokosuka
	Cpt. Masataka Zaitzu	JAMSTEC, Yokosuka
	Cpt. Akio Nakagawa	GODI, Yokosuka
	Mr. Masatake Okawara	NME, Yokosuka
	Mr. Yutaka Matsuo	NME, Yokosuka
Netherlands	Ms. Marieke J. Rietveld	NIOZ, Texel – Chair and Secretary
	Mr. Theo Buisman	NIOZ, Texel
	Ms. Carmen Blaauboer	NIOZ, Texel – minutes secretary
New Zealand	Mr. Fred Smits	NIWA, Wellington
Norway	Mr. Per Nieuwejaar	IMR, Bergen
	Mr. Eivind Noreboe	IMR, Bergen
Scotland - UK	Mr. John Morrison	SEERAD, Aberdeen
South-Africa	Mr. Eric Walker	Smit Pentow Marine, Cape Town
	Mr. Gerald Hagemann	Meihuizen Int, Cape Town
	Mr. Zahid Hassan	Meihuizen Int, Cape Town
Spain	Mr. José I. Diaz	CSIC/UGBOIP, Barcelona
Sweden	Cpt. Per.O. Bengtson	U/F ARGOS, Gothenburg
UK	Dr. Charles W. Fay	
	Mr. Andrew Mitchell	LR, London
	Mr. Edward Cooper	SOC/UKORS, Southampton
	Mr. Paul Stone	SOC/RSU, Southampton
USA	Ms. Dolly Dieter	NSF, Arlington
	Prof. Dennis Nixon	URI, Kingston
	Mr. Douglas White	OCEANIC, Delaware

Apologies for absence

Country	Representative	Organisation
Canada	Mr. Steve Peck	DFO-CCG, Ottawa
Chile	Ms. Catalina Gallardo	SSP, Valparaíso
France	Mr. Allan Cressard	IFREMER, Paris
	Mr. Laurent d'Ozouville	ESF, Strassbourg
Indonesia	Mr. Kemal Sinatra	BPPT, Jakarta
NATO	Dr. Chris Gobey	NATO, Ispra – La Spezia
South Africa	Mr. J.C. Smith	SFRI, Cape Town
UK	Dr. Caroline Harper	NERC, Swindon
	Cpt. Brian Kay	CEFAS, Lowestoft
USA	Ms. Sujata Millick	ONR, Arlington
	Commander Elisabeth White	NOAA, Silver Springs

1. Welcome

Ms Marieke Rietveld, executive officer of the Netherlands Institute for Sea Research (NIOZ), and this year's Chair, welcomed all 38 participants from 19 countries and 1 international organisation to the fourteenth ISO-Meeting organised by NIOZ. She expressed her appreciation of seeing many old and new members. On behalf of Prof. Dr. Jan W. de Leeuw, the director of NIOZ, she invited all participants to visit the NIOZ institute on 12 October.

Ms Marieke Rietveld, brought forward the apologies for absence of a number of members. Mr Steve Peck of DFO-CCG, Canada had submitted a written report. This report will be incorporated in the minutes. She invited all participants to briefly introduce themselves.

2. Review of Minutes of thirteenth Meeting

With some adjustments the minutes were accepted as a true record of the thirteenth meeting held in Mutsu City, Japan, 11 - 13 October 1999. The final version of the minutes will be made available on the ISOM web site. (<http://www.nioz.nl/isom/>)

3. Delegates Reports of Activities

3.1. Fleet Activities and Changes (incl. major facilities)

Mr. Pollentier (Belgium) reported on the activity of R/V BELGICA operated by MUMM – RBINS Belgian Federal Office for Scientific, Technical and Cultural Affairs. The R/V BELGICA 2000 programme is fully occupied by some 32 cruises conducted mainly in the Southern Bight of the North Sea and the English Channel (11 geological, 4 fisheries, 7 environmental, 10 biochemical). One geological cruise combined with a study on biodiversity has been conducted in the Porcupine Seabight. At the end of 1999 some equipment and the data acquisition system (Unix based with PC clients) have been upgraded to be year 2000 compliant, no problems have occurred. Furthermore a new SATCOM B system with HSD link has been installed and the Kongsberg-Simrad EM 1002 multibeam echo sounder installed at the end of 1999 has become fully operational. The cruise schedule for 2001 was distributed as a hand-out

From *Mr. Peck (Canada)* a written report was received:

The Canadian Coast Guard (CCG) merged with the Department of Fisheries and Oceans (DFO) in 1995. It manages and operates a combined Fleet of 115 vessels, from five heavy icebreakers to small patrol, research and Search and Rescue boats, in support of CCG's Icebreaking, Marine Navigational Aids, and Search and Rescue programs as well as DFO's Marine Research and Fisheries Conservation and Protection programs.

In 2000, the Coast Guard is operating seven offshore research vessels (three oceanography and four fisheries research trawlers) for a total of 1300 days, four coastal research and hydrographic survey ships for 500 days, and thirteen day boats (including one SWATH and two catamarans) for 2150 days.

In addition, five other Coast Guard units (including an Arctic icebreaker) are providing an additional 90 days in support of marine research.

The sea days listed above are in support of Department of Fisheries and Oceans' Science activities in Fisheries Research, Chemical and Physical Oceanography, and Hydrographic Surveys, plus support to other federal departments and Canadian universities engaged in limnological research and Marine Geophysics.

In recent years, Coast Guard has supported major international Arctic research programs, from its fleet of icebreakers.

These have included the Surface Heat Budget of the Arctic Ocean (SHEBA), from October, 1997 to October, 1998; Northwater Project (NOW) in 1997, 1998, 1999; and Tundra 1999 (July/August, 1999). To the extent that our northern operations will permit, there may be further opportunities involving the CASE program in the western Arctic.

Following several years of budget reductions, which have had a significant impact on the Fleet (composition and sea time on the remaining units), we are now in the process of revising our major capital replacement plan, which has been integrated into the Department of Fisheries and Oceans' departmental capital plan. Many of our ships are nearing the end of their useful lives, and their replacements will be defined in terms of the Department's Programs in Marine Services, Science and Fisheries Conservation and Protection.

Mr. Aranda (Chile) reported on the Chilean scientific ship fleet composed of the vessels ABATE MOLINA, CARLOS PORTER and AGOR VIDAL GORMAZ. These operated during the present year exclusively along the extensive national coast.

The scientific ship ABATE MOLINA was at sea for 154 effective days, realising 7 cruises. These investigations correspond to a contract financed by the Fund of Fishing Investigation (FIP) and some funds from the National Commission of Scientific Investigation and Technology (CONICYT) on the recruitment of commercial fish.

R/V CARLOS PORTER remained in the North zone of the country, with base in the port of Iquique and developing a total of 7 cruises in this year.

The Navy vessel AGOR VIDAL GORMÁZ participated with the scientific community for 40 days in October/November 2000.

Mr. Diaz (Spain) explained the activities of the R/V HESPERIDES from October 1999 to October 2000. As in previous years the vessel's activity is mainly related to the yearly national expedition to Antarctica. On the two Atlantic transit legs a couple of cruises funded by the National Marine Science and Technology Programme were developed. The Antarctic operation of this year, apart from providing logistic support for the 2 Spanish bases and the Bulgarian one, included various activities. During the first half of the Antarctic season she was monitoring the volcano of Deception Island where the Spanish and an Argentinean base are located, because during the past season the volcanic activity increased. Also an oceanographic cruise was developed with young scientists without Antarctic experience, and to bring the Press to the area. During the second half of the Antarctic season an oceanographic cruise was developed that lasted almost 40 days. The National Antarctic Programme funded all these activities.

After the Antarctic season the vessel returned to Spain for 3 geophysical cruises in areas surrounding the Iberian Peninsula. The EU funded one of the cruises with scientists from Italy and Portugal, while the National Marine Science and Technology Programme supported the other. The last cruise developed was for the Economic Exclusive Zone Programme in the Canary Islands area.

The main modifications of this year were the improvement of the vessel's scientific capabilities including the increase of the height of the stern A-frame and the installation of a new laboratory for geophysics and the replacement of the old DFS-V seismic acquisition system for a modern one.

Regarding future projects Mr. Diaz announced that from next Antarctic season on the Spanish Navy is going to provide a second vessel to support the logistic operations. This should allow the R/V HESPERIDES to focus on the scientific research without sending the vessel to the south every year to support the bases.

The Instituto Español de Oceanografía (national fishery research organisation) completed the building of a new 50 m long oceanographic research vessel. The vessel is built with both multipurpose and fishery research capabilities and has a drop keel for several scientific transducers. The "VIZCONDE DE EZA", will start its first trials this month.

The new UGBOIP organization, being IP the capitals of Instalaciones Polares (Polar Installations) has been operational since November last year when it started the 1999-2000 Antarctic season.

Ms Lahdes (Finland) reported that R/V ARANDA operated by FIMR, performed 15 research cruises in the Baltic Sea in 2000. The programme includes cruises of biological and chemical monitoring (HELCOM), sediment chemistry, physical oceanography (BALTEX/BRIDGE), plankton biodiversity, microbiology during blue-green algal bloom, phytoplankton toxins and CO₂ balance of the Baltic Sea. One week was used to test and calibrate the CTD- and ADCP-instrumentation. Most of the cruises collected scientists from other Finnish institutions and had a substantial international participation as well. Samples for other institutes were collected by the FIMR staff (e.g. water and sediment for the radioactivity monitoring). The halone fire fighting system was replaced by a new system based on CO₂ and was installed to the engine room and compartment. A new U-TOW with several sensors and water and plankton collection equipment was tested during several cruises in co-operation with the manufacturer. A major improvement in the sediment studies was achieved by the purchase of a digital, high resolution echo sounder system, MD DSS (Meridata Oy), together with the UASP signal processing unit and connection to the Magellan DGPS navigation equipment. The new system is partly using the earlier acoustic equipment of the vessel. The internal ISM Code audit was passed in May and the external audit will be in November.

Mr. Castrec (IFREMER France) reported on operations of four high-sea vessels of Ifremer R/V's L'ATALANTE, NADIR, LE SUROIT and THALASSA and major facilities : Nautile ROV/VICTOR 6000.

There have been no changes in the fleet.

R/V L'ATALANTE is in September and October 2000 in Brest for a shipyard time (every 3 years).

R/V LE SUROIT: the upgrading of the vessel was finished in December and the trials were in January-February and also in June for coring.

R/V THALASSA: She has been equipped with a new system: CUFES/Continuous Underway Fish Egg Sampler.

A study is on the way between IFREMER and Navy to built jointly a new ship for 2003 and R/V NADIR will be take off the fleet.

The manned Nautile submersible is stopped from September 2000 to December 2001 for technical refit (every 5 years).

The ROV/VICTOR 6000 has realized his trials cruises in August and the first scientific cruise will begin in December 3rd 2000.

For the new seismic digital acquisition system on R/V NADIR it was the first year (4 cruises).

IFREMER wished to sell its existing analogic seismic equipment. A fiche will be prepared and send to the members of ISOM by Email.

During 2000, IFREMER has run 40 cruises on the four high-sea vessels with disciplines roughly divide as follows:

7 geology, 4 physic and biology, 3 fisheries, 14 technology and equipment trials.

Among those cruises we have had one cruise for our Spanish partner of IEO (Instituto Español de Oceanografía)

according to our THALASSA's agreement, 3 charter and 8 for scientific co-operation.

2000 has seen R/V L'ATALANTE operating for 12 months (included 2 months for technical refit) from the Pacific Ocean to the Atlantic Ocean via Indian Ocean and the Mediterranean Sea, R/V NADIR for ten months from Africa Coast (the Atlantic) to Japan and back in France via Ecuador, R/V LE SUROIT for eleven months in the Atlantic Ocean and R/V THALASSA eleven months (included one month of technical refit) in the North Sea and the Atlantic Ocean.

Dr. Wallace (Australia) reported on the 55m RV FRANKLIN and the 66m RV SOUTHERN SURVEYOR, owned and operated by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) through its Division of Marine Research (CMR), based in Hobart, Tasmania.

The FRANKLIN is a National Facility, available for 180 days per annum to Australian scientists and their international collaborators through a competitive bidding process. It is scheduled 18 months in advance for operation in designated parts of Australia's EEZ and adjacent waters. The vessel was purpose built for oceanographic research but in recent years has undertaken "light" geoscience work following disposal of the Australian Government Survey Organisation's RV Rig Seismic. In the past year FRANKLIN has operated in the tropical waters of the Coral and Timor Seas, between the Solomon Islands and New Guinea, and in the Indian Ocean south of Indonesia.

The SOUTHERN SURVEYOR is a multi-purpose, dynamically positioned vessel used for Divisional fisheries and environmental research (130 days p.a.) and chartered to the Defence Science and Technology Organisation for 50 days p.a. Following conclusion of this charter, it has become increasingly difficult to fund the ship and utilisation has shrunk considerably. Cruises in the past year have included habitat mapping and acoustic biomass assessments in temperate SE Australian waters, sub-Antarctic carbon cycling research and a benthic faunal survey around Macquarie Island (53 – 56°S). Further details on CMR and its vessels are available from: www.marine.csiro.au

CSIRO is currently considering options for the future. One possibility is the sale of SOUTHERN SURVEYOR and its partial lease-back for research. Another is for the National Facility role to transfer to the more versatile SOUTHERN SURVEYOR, and for FRANKLIN to be sold.

A feature of CSIRO's fleet management is the out-sourcing of certain functions to the shipping industry. The reasoning is that our core business is research and that with a "fleet" of only two vessels, it is impractical to directly employ personnel with the full range of expertise required. Out-sourcing provides access to experts in fleet operations and insulates the research agency from excessive dependence upon individuals. The following functions are out-sourced: crewing, victualling, stores, repairs and maintenance, dry docking, insurance, and charter. A recent example of the benefit of this arrangement involved absorption of the crew of SOUTHERN SURVEYOR into the commercial fleet during an extended period of lay-up, thereby saving crew wages, our biggest single fixed cost.

Prof. Kortum (Germany) reported on the activities of the three big research ships RV POLARSTERN, METEOR, SONNE and the middle sized ships POSEIDON, ALKOR, HEINCKE, and ALEXANDER Von HUMBOLDT. The latter will be replaced. There is also the military vessel PLANET, that will be replaced in the near future.

The German authorities in charge for the medium-sized research fleet (Federal Ministry for Research, ministries of the coastal states and the Scientific Community) will replace two medium-sized research vessels during the next five years. These are the research ships A. v. HUMBOLDT and POSEIDON. The first newbuilding (the next A. v. HUMBOLDT) will be ice strengthened, and much longer than the present one. Funding is still a problem, and thus far the 110 million DEM for the building costs will be split over the Federal Government (75%), 12.5% for the local Government (the Land) and 12.5% for the other coastal states. The ship will work in northern Atlantic areas, the Norwegian Sea, the Labrador Sea, Beringer Sea. She will have Roscoff as her base. It is planned to realise newbuilding in 2002/2003.

In Germany the central reviewing system for the medium-sized vessels was introduced successfully three years ago. However, the formation of a centralised logistic and planning pool need more negotiations between the Bund and coastal Länder. These administrative and financial constraints do not impede close co-operation of the marine operation officers in Kiel (IfM: POSEIDON and ALKOR), Warnemünde (IOW: HUMBOLDT) and Bremer-haven: (HEINCKE). For the newbuilding of the second medium sized ship a private consultant is studying the possibility of a partnership with France and UK. The ship should be as compatible as possible for use by the three different partners. A Tripartite meeting will be held in Bonn in June 2001.

R/V SONNE has been used mainly for geological work in the Pacific and Indian Ocean. Sometimes the ship is used by biologists. The ship will be back in the North Atlantic for the CLIVAR and PIRATA cruise in the Equatorial area this November. Then she will re-enter the Pacific via the Panama Canal for a cruise for a French team in exchange for the use of the French ROV VICTOR by AWI in 2001.

Mr. Gillooly (Ireland), gave an introduction on the Irish situation. Ireland is a new member of ISOM. The marine research situation changed considerably since early 1990. In 1994 the Marine Institute was founded, which played a key role in the development of the ocean sciences. The interest in the Irish marine resources accelerates considerably, and in early 1995 approval was given for the building of a new 31 m multi purpose R/V "The Celtic Voyager" that succeeded the 21 m "Lough Beltra". Most of the work at sea relates to fisheries research, stock assessment and fisheries impact studies. The vessel is also involved in weather buoy deployment. R/V CELTIC VOYAGER operated for a total of 290 days at sea in 2000. In 1999 the Marine Institute opened a new Technical Support Base combining the services of RV operations, the Marine Technology Programme and MTDS Ltd. Marine Technical & Development Services Ltd. is a joint venture company between the Marine Institute and Marine Technology Ltd. MTDS provides the superintendency service for the R/V CELTIC VOYAGER, and technical and logistic support for the scientific cruises. The Marine Institute manages a continually expanding pool of scientific equipment which is available to scientists. The Government approved the building of a new 65 m R/V (CELTIC EXPLORER) for fisheries research and seabed surveys. The Irish EEZ has a tremendous exploration potential, and R/V CELTIC VOYAGER has only 60 days spare capacity in 2002 for seabed surveys, hence commercial ships will be used for this purpose. The specifications of the CELTIC EXPLORER are:

Lloyds+100A1 Ice Class 1D LMC UMS Research Vessel. Length OA 65.5 m, Beam 14.8 m, Draft 5.7 m. Compliment 12 regular crew, 1-2 technicians, 16 – 18 scientific crew. ICES 209 compliant.

Mr. di Bitetto (Italy), reported on the operations of the 60 m R/V URANIA built in 1991. R/V URANIA completed 40 cruises (10 geological, 15 physics/biological, 7 multibeam surveys with related work, and 8 technological cruises). Italy is a member since last year. R/V URANIA is designed as a multidisciplinary oceanographic vessel and is equipped with dynamic and acoustic positioning systems that make her one of the most up-to-date research vessels in Europe. Her endurance is 45 days with 25 scientists on board. The operation and planning of the ship is co-ordinated by the CNR, the Italian Research Council. The operational centre is the International Marine Centre (IMC) in Oristano on Sardinia. The IMC - International Marine Centre is a non profit Association for research, training and transfer of innovation, promoted by prominent institutions. Since 1995 the IMC is an NGO - Non Governmental Organization, in the framework of the UNEP - MAP programme. The IMC originated in 1988, with the concept to create an international marine station to develop several complementary lines of research on marine life and environment. The mission of the IMC is to contribute to socio-economic development, to support innovation and to promote research and international co-operation.

The IMC has advanced laboratories, library, aquaria, meeting rooms and lodging, and is located in an area of outstanding natural beauty in the west coast of Sardinia. At present, 25 researchers from several countries study marine organisms and their environment. Fields of activity include the genetic and physiological adaptive mechanisms of sensory systems, the dynamics of coastal ecosystems, oceanography, ocean modelling, virtual ecology, predator-prey relationships in marine animals, fish behaviour and biomechanics, and sustainable management of marine bioresources.

The IMC provides junior researches with competitive training and the opportunity to collaborate with top level institutions around the world. The IMC also supports small and medium enterprises (SMEs) supplying technological innovation and assistance.

R/V URANIA is owned and managed as to the daily operations by the private company SO.PRO.MAR based in Naples and Rome.

Mr. Smits (New Zealand) introduced the National Institute of Water and Atmospheric Research (NIWA) based in Wellington. NIWA is for 100 percent Government owned, but the Government funding is limited to 50 percent. As a result NIWA is very active in the acquisition of contract research funded by third parties. NIWA Vessel Management Ltd. operates two research vessels, R/V TANGAROA (70 m) and R/V KAHAROA (30 m). TANGAROA (Maori for God of the Sea), built in 1992, is a purpose-built research ship, ice strengthened with an endurance of 70 days, and a capacity of 40 people. The ship can work both in tropical and Antarctic waters. It has a 48 channel high resolution seismic profiling system, and is used for geological and geophysical, biological, fisheries and physical research. It is available for charter, also to the commercial market. 2000 was a successful year. R/V TANGAROA made 18 voyages, 6 for fisheries research, 3 for geological research, 3 for physical oceanography and 2 for marine biology. Work is done on the New Zealand continental shelf (which is very vast) during 35 and 38 day cruises, and a special cruise of 40 days was done to Antarctica on a contract with Environment Australia, successfully demonstrating her capability to operate in Antarctic conditions. TANGAROA was at sea for 300 days in total.

R/V KAHAROA is mostly committed to coastal work. She was at sea for 180 days for stock assessment, as a support vessel for a large hydrographic survey, and for two Sea and Learn projects for school kids, which were highly successful. These projects are aimed to raise the profile of sea research in New Zealand.

As to the equipment, since 1995 every year upgrading takes place to make TANGAROA more multi purpose. Especially the Simrad EK 500 Echosounders, and HPR tracker for acoustic determination as well as the complete multichannel seismic system with automatic streamer are worth mentioning.

As to future policy, New Zealand is going away from the hard tendering policy, and aims at a more open approach.

Mr. Nieuwejaar (Norway) introduced the Institute of Marine Research (IMR) in Bergen, Norway, which operates the Norwegian research fleet consisting of 7 research ships. IMR is the largest Norwegian marine research institution with over 500 employees. IMR is also the research arm for the Ministry of Fisheries. Some of the RVs IMR manages are owned by the University of Bergen (R/V HAKON MOSBY – LOA 47 m, built 1980 mostly used for geological and seismic surveys) and NORAD (Norwegian Agency for Foreign Aid) (R/V DR.FRIDJOF NANSEN – LOA 57 m, built 1993, so far year round committed to working off the West Coast of Africa between Marocco and South Africa, having Walvis Bay, Namibia as her 'home base').

The research ships owned and managed by IMR are: R/V JOHAN HJORT- LOA 64.4 m built 1990, R/V G.O. SARS – LOA 70 m built 1970, to be replaced soon, R/V MICHAEL SARS – LOA 47.5 m, built 1978/79 for coastal surveys, and R/V DANNEVIG – LOA 28 m, shallow draft, built 1979 stationed in Arendal,. Further IMR manages the small R/V FANGST - LOA 15 m, built 2000, for coastal fisheries research, which is commercially owned, and rents approx. 1000 days per year of commercial fishing vessels.

IMR also supplies and maintains the scientific equipment and fishing gear for the sea-going research. Standard scientific equipment comprises fisheries acoustics (sonar, echosounders and postprocessing computer system), CTD rosette samplers, ADCP, Thermosalinographs, Multinet plankton samplers and automatic weather stations.

Most ships have a drop keel. The main research area is Northern North Atlantic up to 80° N and 40° E. After the Koersk incident the Russian situation as to the Eastern boundary might change.

Together with the University of Bergen plans are developed to replace the R/V G.O. SARS. Upgrading is not cost-efficient. Tasks to be performed by the new vessel: surveying of marine resources, marine environment, seismic surveys, bottom contour mapping and oceanography. Characteristics: LOA 77.5 m, width 16.4 m, 3800 GRT, speed 17 knots, 50 tons pull, diesel-electric propulsion, low noise to meet the ICES requirements, and multi-functional. Offers have been received from several Norwegian ship yards. IMR is now awaiting the results of the parliamentary budget process. The contract awarding can probably be foreseen in Spring 2001.

On behalf of *Mr. Walker (South Africa)* Mr. Hagemann reported on the new situation regarding the operational management of the South African research vessels (AFRICANA, ALGOA and SARDINOPS), and the Antarctic supply vessel S.A. AGULHAS. Following the tender operations for private manning, Smit Pentow Marine Pty Ltd. has taken over the operations of the South African Government (Department of Environmental Affairs and Tourism - DEA: Marine & Coastal Management) owned RVs.

R/V AFRICANA is still under repair. The R/V ALGOA and SARDINOPS are mainly involved in coastal research. S.A. AGULHAS is committed to the Antarctic and the islands in the Southern Atlantic. Thanks to the new management system, it became possible to charter out S.A. AGULHAS to the Netherlands in July/August for a CLIVAR related cruise of a Dutch research team. This work is done in close co-operation with the University of Cape Town.

Mr. Morrison (Scotland - UK) reported on the Fisheries Research Services (FRS) fleet activity 1999-2000. FRS has two fishery research vessels - the 68m FRV SCOTIA and the 32 m FRV CLUPEA.

FRV SCOTIA has carried out a total of thirty-four cruises between coming into service in March 1998 and the end of March 2000 - and spent 287 days at sea in 1999-2000. The cruises undertaken have included standard and deepwater fishing surveys in the North Sea and to the West of Scotland, mackerel egg surveys extending as far as the Celtic Sea, and chemical, hydrographic and biological surveys in the North Sea, Faeroe/Shetland and also in Norwegian waters. Herring acoustic surveys were carried out in the North Sea - and in addition in summer 1999, FRS conducted the first full open-water trials with an autonomous submarine belonging to NERC. The autosub was deployed and recovered from the vessel in a joint project to compare acoustic survey results obtained by the submarine with results obtained using identical equipment aboard FRV SCOTIA. The ease of deployment and recovery of the autosub and the ready deployment of acoustic transponders on the drop keel for communicating with the autosub during this project readily demonstrated aspects of the great versatility of the new vessel. This versatility will play a major part in enhancing the quality of the scientific programme that can be undertaken by FRS in the years to come.

FRV CLUPEA was built in 1969 and is now very outdated by modern standards. There is still a major demand for a work platform of this size in FRS however - and accordingly FRV CLUPEA spent 246 days at sea in 1999 - 2000. Most of this time was spent on shellfish and species interaction surveys in inshore waters round Scotland, but FRV CLUPEA also carried out selectivity trials on trawl gear and chemical and hydrographic surveys in sea lochs - the latter mainly in connection with the possible impacts of fish farming on the environment.

It is planned to replace FRV CLUPEA with a slightly larger vessel over the next few years and a Statement of Requirement for the replacement vessel has now been drawn up. A full business case for this replacement vessel will be presented during 2000 - 2001.

Mr. Larsen (Denmark) reported on the Danish R/V DANA. R/V DANA is a 78 m ice strengthened research ship that was at sea for 190 days in 2000; 140 for fisheries research in the North Sea and Baltic Sea, and 50 for research of universities mainly in the framework of the Global Change Programme and climate research. Seismic work was performed West of Greenland.

Cpt. Bengtsson (Sweden) reported on the activities of the R/V ARGOS, LOA 61 m built 1974, reconstructed in 1993. Though designed for working world wide the ship is mainly working in the Skagerrak and Baltic Sea for meteorological and hydrographic work for the Swedish Meteorological and Hydrological Institute (SMHI). The ship is also committed to stock assessment in the same area, and is used for extensive oceanographic monitoring of the waters from the Eastern part of the North Sea to the Bay of Bothnia.

Ms Dieter (USA/ NSF) reported on the US Academic Research Fleet funded by NSF.

The fleet is composed of 29 ships operated by 21 US institutions and range in size from 21 to 86 meters. The ships are owned by the Federal government, state institutions and private institutions with the majority of the funding for operations, maintenance and upgrade provided by NSF. Of the six large ships 5 are owned by the Navy and own is NSF owned. The upgrade of the US University National Oceanographic Laboratory System (UNOLS) fleet is on-going. A long range fleet plan is being developed and is expected to be ready in May 2001. Quality improvement of both the ship operations and the scientific support is the major goal. The plan recognizes that there is a tendency towards larger and quieter ships as current vessels are planned or replaced. For an overview of the UNOLS fleet and recommendations for improvement *Ms. Dieter* referred to the "Academic Research Fleet Report", of which a copy was available for all members.

The Office of Naval Research (ONR) is supporting the design and construction of a large (LOA 65 M, 28m beam) SWATH, AGOR 26, to be operated by the University of Hawaii. The building of the ship has been delayed. She will be commissioned R/V KILO MOANA and will enter service in 2002.

NSF is supporting the design of an acoustically quiet, ice capable vessel to replace the 35 year old ALPHA HELIX operated by the University of Alaska. The ship is expected to be approximately 75 meters overall and work in the marginal ice zone.

The US Coast Guard Icebreaker HEALY is currently undergoing operational and ice tests and will become fully operational for Arctic science in 2001.

The NOAA fleet is composed of 15 ships for fisheries, oceanographic and hydrographic research requirements. The R/V RONALD H. BROWN, scheduled with the UNOLS ships, has been working in the Pacific together with the R/V MIRAI of JAMSTEC. R/V KA'IMI MOANA of the University of Hawaii has been working for NOAA. Information on the NOAA fleet and marine operations can be obtained from the NOAA web site at: <http://www.moc.noaa.gov/> and at <http://www.oma.noaa.gov/fleet.html>.

In regards to the administrative structure of NSF/OCE and the UNOLS Office several changes are taking place.

The UNOLS Office has moved from Rhode Island to Moss Landing Marine Laboratory in Moss Landing, CA. The new web site for the UNOLS fleet is: <http://www.unols.org/vessels.htm>

Within the Directorate of Ocean Sciences (GEO/OCE) at NSF Don Heinrichs has retired and Mike Reeve is the new Section Head for facilities. The OCE Director, Mike Purdy, will be leaving and will become the Director of the Lamont-Doherty Earth Observatory at Columbia University in New York on 1 December. Changes will also be taking place in OCE/ ship operations. Ms Dieter's position will be split into Oceanographic Facilities Program and Ship Operations Program. Ms Dieter will be in charge of ship construction and design, ship inspections, shipboard equipment and other related programs. A person to be hired will take over the ship operations and ship scheduling.

Mr. Chijiya of JAMSTEC (Japan) introduced the reports on the JAMSTEC fleet, consisting of five ships. These are the deep sea vessel KAIREI and the oceanographic research vessel MIRAI. The support vessel YOKOSUKA, the research vessel KAIYO and the Support vessel NATSUSHIMA. Construction has started on the OD21 deep sea drilling ship, and the development has been completed of the URASHIMA, an Autonomous Underwater Vehicle (AUV) with a range of 300 kilometre and a working depth of 3500 m. These new developments will be presented later during the ISOM. R/V MIRAI has for the first time made a cruise in Russian waters in close co-operation with Russian partners. JAMSTEC has signed an agreement with the National Institute of Oceanography in India, for co-operative work in the Indian Ocean. The JAMSTEC Mutsu office has got a new name: the Institute for Oceanography, in relation to fast developments of the future plans to build JAMSTEC into a Center of Excellence (COE), with a focus on the Frontier Research Programmes and Systems and Frontier Observational Research System for Global Change in particular.

In Washington DC (USA) a new office for the co-operation of Japan and USA will be opened this November.

Mr. Okawara of NME (Japan) reported on the JAMSTEC fleet activities in 2000. Nippon Marine Enterprises manages the operation of four research vessels.

The support vessel NATSUSHIMA supported the dives of ROV SHINKAI 2000 and ROV DOLPHIN-3K is going to conduct about 50 dives as a pre-survey for SHINKAI 2000 and as research survey. R/V NATSUSHIMA is scheduled to carry out SCS survey at the seismic centre off Itape in Papua New Guinea in February 2001.

R/V KAIYO installed the machinery and equipment for the operation of the new ROV HYPER-DOLPHIN. HYPER-DOLPHIN has completed some remarkable dives, and has recovered the three OBS which were deployed in fishing grounds, as part of an array of hundred, and remained unrecovered. According to regulations and following the request of fisheries co-operations no instrumentation may be left on the seabed.

KAIYO cruised to the Western Tropical Pacific for TOCS and to the Central Equatorial Pacific for the recovery of TRITON buoys from August till October 2000.

The support vessel YOKOSUKA supported the dive of SHINKAI 6500 in Japanese waters. She is scheduled to conduct a geophysics study in the waters off Sunda Islands, Indonesia in February 2001.

In the first half of the year the deep sea research vessel KAIREI supported the dives of ROV KAIKO and alternately performed surveys with the 120 channel Multi Channel Seismic instrument (MCS).

In the Indian Ocean a deep sea survey was carried out using the Deep Tow Seismic Instrument. The work was seriously hampered by heavy stormy weather, especially during the second leg.

The original schedule was changed to perform a MCS/OBS and Deeptow survey by KAIYO, KAIREI and YOKOSUKA together, from end of October till December in the waters around Miyake and Kouzu Islands, in order to probe into the cause of the volcanic eruption and earthquakes that have occurred thousands of times since Spring this year.

The Operations Schedule of the fiscal year 2000 of the research fleet was made available as a hand-out.

Cpt. Nakagawa of GODI (Japan) reported on the large R/V MIRAI that is managed by GODI. MIRAI will be at sea for over 300 days per year and with a variety of advanced observation equipment, is contributing to many kind of collaborative research activities which are executed by scientists from both JAMSTEC and other institutes. In September 2000, MIRAI concluded for the third time an Arctic Sea Cruise. Underway port calls were made at Seattle (USA) and Victoria (Canada). In both ports she was open to the public. At Victoria the Canadian Coast Guard vessel R/V TULLY joined in at this 'Open Day' event. In both ports there was extensive public attention. Though MIRAI is mainly in the Pacific Ocean and the Arctic Seas, she will be operating in the Indian Ocean in November 2000 for the deployment of

TRITON buoys. This will be her first voyage to the Indian Ocean. In total seven cruises were performed in fiscal year 2000.

Ms. Rietveld (Netherlands) reported on the operations of the multi purpose R/V PELAGIA. The first half of 2000 R/V PELAGIA cruised for 156 days (24 weeks) around Africa for the Pelagia Around Africa 2000 programme: 13 legs, pillar projects/programmes: MARE-0/MARE-1 and ACSEX (CLimate VARIability) and PASS (Palaeoceanography: Sapropels, gashydrates and mudvolcanoes in the Mediterranean), further combinations with EU projects (ACES- cold corals in the Atlantic, HIC/TBT – antifowling effect on ecosystem), and other multidisciplinary projects in biological oceanography, marine chemistry, pelaeoceanography, marine ecology, physical oceanography. The Program had much public attention, and enjoyed a lot of publicity. Clearance problems only with Egypt and Libya. In the 2nd half of 2000 cruises were performed in the North Sea and North Atlantic. Sailing days: 134 (22 weeks) For the Dutch national programme, for CLIVAR and for the EU programmes SEEPS and STRATAGEM. Pelagia was on display for the INMARTECH 2000 on 22 September.

In November PELAGIA will be docked for her extensive 10 years (midlife) survey.

In total she was sailing the year round with a docking period in November. No chartering out to other organizations. No student courses, no testing instruments cruise.

Next year another Pelagia Around Africa cruise will take place, starting 3rd January until 5th June. The second half year of 2001 will be committed for North Sea and North Atlantic until mid December, with a co-operative cruise in October for IFREMER (France), recovering the POMME, SARA and METEO moorings.

Mayor equipment/changes: A new deep sea winch and cable is still under development, and an ambitious moveable lander proposal has been submitted again. A new XRF Core Scanner (CORTEX) is in the planning.

Other Dutch R/V's: The NAVY has decommissioned two smaller ships, which means that the blue ocean ship HMs TYDEMAN was commissioned fully to North Sea tasks.

Peer Review follow up: The organisational imbedding within the funding agency NWO has been changed, which will become effective as of next fiscal year. An advisory committee will be installed to advice NWO on the long term policy as to Marine research facilities and equipment. For the Dutch National Programme R/V PELAGIA will be the main research platform. NIOZ, as shipowner of R/V PELAGIA, will have the sole operational – and financial – responsibility for the ship.

Mr. Stone (RSU-NERC/SOC UK) and *Mr. Cooper (UKORS-NERC/SOC UK)* reported on Fleet activities and changes including major facilities. The year has been one of substantial change, there have been some significant retirements, reorganisations and the reduction in the size of the fleet by one vessel with the sale of RRS Challenger.

Organisational changes have been and continue to be implemented since the beginning of April when Research Vessel Services ceased to exist. The modified remit of the former RVS is now performed by two distinct organisations both still based at the Southampton Oceanography Centre but with differing management lines.

The responsibilities of the NERC Research Ship Unit will concentrate on research ship infrastructure, operations, communications and chartering. RRS Discovery and RRS Charles Darwin are the main assets. RSU was formed by combining RVS Marine and RVS Operations. The NERC Research Ship Unit reports directly to the NERC in Swindon as the vessel owners.

The technical support and the associated equipment pool now termed the National Marine Equipment Pool are activities provided by the UK Ocean Research Services (UKORS). The staff available to UKORS are drawn from a new division at the Southampton Oceanography Centre entitled the Ocean Engineering Division. This division has been formed by the amalgamation of previous entities within SOC namely RVS Scientific, Ocean Technology Division and the survey team of the George Deacon Division.

It will be the responsibility of OED to provide the seagoing technical services in support of the UK marine science community, with this goes the management and provision of the NERC National Marine Equipment Pool on behalf of the UK marine science community, plus the development of new sensors and platforms.

The Ocean Engineering Division under the leadership of Mr Gwyn Griffiths reports to the Director (Dr Howard Roe) of Southampton Oceanography Centre and is thus under the management of the University of Southampton.

Cruise planning will continue to be managed by NERC Marine Planning in Swindon, the contact at present is Dr Mike Webb. Tel + 44 1793 411520, E-mail mweb@nerc.ac.uk

The primary funding for both RSU and UKORS continues to be from the NERC although by differing paths. A review of funding arrangements in order to properly utilise vessels as a national facility, trying to reduce the dependence on commercial work is underway.

The NERC Research Vessel Advisory Panel, which is comprised primarily of experienced sea-going scientists from UK universities and NERC Centre/Surveys, will monitor the provision of service and the development of the National Marine Equipment Pool under the new management structure. The emphasis will be on the provision of high quality equipment and technical support to the whole UK sea-going research community.

Dr Charles Fay, Superintendent Research Vessel Services and Mr Christopher Adams, MBE, Head of Operations, Research Vessel Services have retired from NERC. Dr Caroline Harper resigned her position in the Swindon Marine Planning Group to pursue ambitions external to NERC with effect from the middle of last month (September 2000).

All the vessels were deliberately programmed alongside for the rollover period between 2000 and 2001 to minimise the potential risk associated with the Millennium Bug. As it turned out there were only a few minor defects which were corrected without incident.

RRS Discovery has conducted the following 9 exercises: South of the Canaries with the objective of examining the distribution and interaction of different species of deep sea animals using new technologies to identify and elucidate the biological systems in which the animals live. A film crew from BBC Bristol was also embarked to film the work on board for a proposed documentary on deep sea biology; in the Gulf of Cadiz using a variety of corers and TOBI to investigate the interaction between alongslope sediment transport processes in the Gulf of Cadiz and the Lisbon Canyon; a cruise to undertake a series of hydrographic lines from the Sound of Mull north-westwards towards Rockall and then on towards Iceland. The exercise was disrupted by severe weather with almost 11 days lost to the weather and an average wind speed for the cruise of 42 knots (Beaufort Force 9, Severe Gale). in the Celtic Sea. to quantify and model the interface between physical processes and biological production in contrasting pelagic shelf waters; in the NE Rockall for further investigation of the "Darwin Mounds Field", an area of particular biological and geological interest; performing Giant Piston Corer work in the Gulf of Cadiz. - achieved the longest core (18.5m) by a British ship; in the Porcupine Seabight utilising lander technology supplemented by analysis of trawl caught specimens
Further RRS Discovery was committed for a charter party for the UK Defence Evaluation Research Agency (DERA), and under barter arrangements with NSF for a hydrographic study within the Faeroe Bank Channel.

RRS Charles Darwin has conducted 11 exercises, including some instrument trials, and ship refitting. Cruises were performed on the Mid Atlantic Ridge, where for the first time the optical fibre in the 9000m Electro-Optical Deep Tow Cable was fully utilised, in the Clyde Sea, on the Norwegian Shelf with TOBI in conjunction with the University of Bergen, near the Farroes with TOBI, and on the Continental Margin for seismic surveys and mooring deployment, and for environmental baseline studies and biogeochemical cycling.

RRS Challenger - not programmed for science in the 2000 Programme with the few application activities which indicated a preference for the vessel being accommodated on either RRS Discovery or RRS Charles Darwin. In February 2000 a decision to offer RRS Challenger for sale was taken by the NERC with the vessel being disposed of in mid summer.

Regarding the future currently there is not a published programme for RRS Discovery & RRS Charles Darwin as the results of Scientific Peer Reviews not yet having been completed. However, subject to confirmation it should be anticipated that RRS Discovery will operate in the NE Atlantic and RRS Charles Darwin will undertake a campaign in the Indian Ocean including a hydrographic transect at 32° S from South Africa to Australia.

Two major tranches of funding will start to contribute to the National Marine Equipment Pool and the activities of marine scientists in the UK. The first being an award of funds to purchase modern fundamental equipment in support of Marine Physics and Chemistry. The other award of funds will provide an ROV facility with deep ocean capability.

RRS Charles Darwin Replacement - an outline specification of the scientific facilities required of the desired (74m) vessel was completed in October 1999 and subsequently forwarded via NERC as a proposal to the Treasury Comprehensive Spending Review. The detailed outcomes of the review have yet to be announced.

3.2. Ship Time Barter/Exchange

Mr. Cooper (SOC/UKORS - UK) reported that RRS Discovery undertook an approximate 30 day exercise on behalf of the US National Science Foundation in June (D247 - Dr J Price, Woods Hole Oceanographic Institution, Dr T Sanford, University of Washington, Dr C Mauritzen, Woods Hole Oceanographic Institution and Dr M Prater, University of Rhode Island).

Ms Rietveld (Netherlands) mentioned that the South African S.A. AGULHAS has been chartered for a three week cruise for MARE-2 (CLIVAR), West off South Africa/Namibia. A Dutch scientific party will join the Antarctic cruise of R/V POLARSTERN for the EISENEX/CARUSO programme (leg 18/1 and 18/2)

Mr. Castrec (IFREMER - France) reported that in 2000 there is no ship time exchange but for 2001 we have 3 projects:
- One with NIOZ, the Netherlands, the compensation of a Mediterranean cruise, 24 days of R/V PELAGIA for a French team in October 2001 in the Atlantic Ocean.
- Two with Germany: R/V L'ATALANTE with ROV/VICTOR 6000 In the North Sea in September 2001 for AWI., and R/V SONNE in the Pacific Ocean for a French team.

3.3. Staff Exchanges

Dr. Wallace (Australia) reported that staff exchanges had not occurred but that CSIRO would welcome participation in this scheme in future.

Mr. Castrec (IFREMER - France) reported that Superintendent Charles Fay, (NERC), has made a cruise of 4 days (1/4 February 2000) on R/V THALASSA.

Mr. Cooper (SOC/UKORS - UK) said that there were none to report although it is appropriate to report on three events that staff from UK Ocean Research Services attended with many thanks to those that organised and hosted the events.

- Developing Submergence Science for the Next Decade "DESCEND" Workshop
- Winch and Wire Symposium
- INMARTECH 2000

Mr. Smits (New Zealand) reported the exchange of some crew members to train for Antarctic work on the Australian R/V AURORA AUSTRALIS managed by P&O. Also some Canadian participants from the Canadian Hydrographic Service working as trainees on R/V TANGAROA. A marine technician participated in the INMARTECH workshop.

Dr. Strohm (Germany) reported on the on going staff exchanges between IFREMER and Alfred-Wegener-Institut for Polar and Marine Research (AWI) in Bremerhaven. Technical personnel from RV POLARSTERN are incorporated in the IFREMER fleet and vice versa.

Mr. Diaz (Spain) had none to report, but mentioned the success of INMARTECH as an exchange of knowledge and problem solving platform for UGBOIP technicians. Four UGBOIP technicians attended the workshop.

3.4. Equipment lost

Dr. Wallace (Australia) reported the loss of a deep video camera and 2000m of armoured conducting tow cable while RV Franklin was surveying a steeply rising slope at a depth of 1000m on the Muirfield Seamount (Cocos Islands). The cable parted at the main towing block on the aft A-frame after the altimeter and weight became wedged. Assessment of the problem revealed that the oceanographic towing winch had previously only been used for mid-water deployments. Its brake and hydraulic systems should have been adjusted to ensure maximum tensions below the breaking strength of the cable, especially prior to deploying gear with any chance of snagging the ocean floor.

(The replacement video system has a 100m umbilical, increasing altimeter clearance from 15m to 40m, and will be deployed using a portable constant tension winch adjusted in accordance with the strength of the cable).

Cpt. Zaitzu (JAMSTEC - Japan) reported three losses between October 1999 ~ September 2000

1. 1 set of Intermediate water ADCP Mooring Buoy System

In February 1999, at the equator of 147°E, with R/V MIRAI, we tried to recover an Intermediate-water ADCP mooring buoy system that had been moored on January 1998 by R/V KAIYO. However, we got no signal response from its acoustic releaser and we failed to recover it. On October 29th 1999, we tried to release it again by R/V MIRAI. However, it ended in failure. Eventually, we abandoned that buoy system.

2. An acoustic releaser of an Intermediate-water ADCP Mooring Buoy System

On November 12th 1999, at the equator of 138° E, with R/V KAIYO, we tried to recover an Intermediate-water ADCP mooring buoy system that had been moored on September 1998 by R/V KAIYO. However, we got no signal response from its lower acoustic releaser. Then we sent a release signal to its upper releaser and we succeeded to retrieve the buoy system. However, it ended up that we left a lower acoustic releaser on the sea floor.

3. Meteorological sensors on the TRITON buoy No.13

On December 7th 1999, at the equator of 138° E, communication with the TRITON buoy No.13 was cut off. Later on, we confirmed meteorological sensors and the data transmission antenna had been stolen.

Ms Rietveld (Netherlands) reported that during the MARE cruise with S.A. AGULHAS a cable broke during mooring deployment, and as a consequence a mooring is deployed with only 4 instead of 20 buoyancy spheres West of South Africa. It may rest on the sea floor for ever, but next year R/V PELAGIA will probably try to recover the mooring by dredging. NIOZ would welcome any possibility from colleague ship operators who pass or work in that neighbourhood for recovery by ROV for instance. Co-ordinates: 29° 51' 35" South and 02° 21' 88" East; depth 2700 metres (Mooring MST-14).

Mr. Cooper (SOC/UKORS - UK) had none to report directly from the activities of RSU or UKORS but resulting from CD124 a number of OBS units (10) were not recovered before they were time triggered and further units (8) which were not primed to time trigger remain on the seabed for recovery at a future date.

In June Autosub failed to surface from a 22 hour mission studying the physics of the overflow from the eastern to western Mediterranean Sea in the Strait of Sicily. The vehicle was located using acoustics and subsequently released in early July from under an overhang cliff with the assistance of a commercial ROV.

Dr Strohm (Germany) mentioned that last year besides the 'normal' losses there was one outstanding loss and recovery. The loss took place in 1999, when R/V SONNE launched an autoclave corer (for gas hydrate research) for the first time, West of Oregon. The corer was recovered by R/V SONNE one year later. A really outstanding operation using an ROV

(the Canadian ROPOS). The ROV connected the cable of the corer to the ship. The worst part was getting it out of the sediment.

Mr. Castrec of IFREMER (France) reported that Ifremer lost a Japanese deep tow manipulator in the Indian Ocean during a cruise with R/V L'ATALANTE.

Mr. Diaz (Spain) reported the loss of 4 Ocean Bottom Seismometers of 20 deployed in the North Atlantic Ocean.

Mr. Smits (New Zealand) reported the loss of some fishing nets, and the Chelsea Instruments' Undulator.

4. Shipping Agents

4.1. Data Base set-up

Cpt. Le Strat (IFREMER-GENAVIR, France) introduced the idea of setting up a data base for recommendable shipping agents around the world. The data base would be accessible for all ISOM members.

The idea originated when Genavir, the operator of the Ifremer ships, started to deal directly with agents, after a history of having just one co-ordinating intermediate organisation (CGM) for the port call activities. The often high, and uncontrollable costs involved with this system were the incentive to the change. The draw back is that Genavir lacks experience with shipping agents.

Keeping such a data base up-to-date would mean quite some effort. From the comments of other ISOM members it could be learned that the person of the agent or its clerk who takes care of the ship is crucial for the quality of the services rendered. Still it is known that some shipping agents are favoured by more than one ISOM member because of the quality and expedience of the services. ISOM members are encouraged to send the co-ordinates of recommendable shipping agents, with the name of the contact-person, to Cpt. Le Strat.

4.2. Japanese contribution

Cpt. Nagakawa (GODI - Japan) contributed to the issue, and distributed a list of specific shipping agents made up by NME/GODI per country/region. He also made clear that in small ports there often is no choice. With the list there is a map showing per region the various harbours that are covered by different agents.

4.3. Complete logistical support service to Research Vessels

On the subject of what services a shipping agent can and should provide to research vessels *Gerald Hagemann of Meihuizen International, Cape Town*, gave a presentation. Meihuizen International acts as shipping agent for a number of research vessel operators. With their experience as shipping agents, internationally represented by well established agents world wide, and a specific experience for the needs of Antarctic works, the research vessel clients are characterised by their specific needs, demanding quality service with respect to change of crew, scientific party, and – often expensive – scientific equipment. Establishing a data base could provide an opportunity for educating other agents and creating a world-wide network of recommendable shipping agents. An 'ISOM star' for recommendation. A brochure with a list of the specific services to be rendered by Meihuizen International was distributed.

5. EurOCEAN: Large Marine Facilities in Europe

Mr. Ollier (EU-CEC, Brussels) reported on the EurOCEAN Conference organized by the European Union on Marine Science and Technology, held in Hamburg from 30 August to 3 September 2000. The Conference dealt with strategic issues in marine research. The objective regarding the Large Marine Facilities session was to explore a collaborative approach for the use and development of the marine research infrastructure in Europe, resulting in better access for researchers.

Highlights of the discussion regarded how to match needs and resources, where the tripartite agreement (De/Fr/UK) and the UNOLS system were presented as examples; the needs for long-term monitoring/observing systems, touching the problem of EC funding periods – not exceeding 3 years; a more active application of new technologies, like IT, for marine research – for example the Neptune project (fibre optics); and AUV's and satellites as key technologies. Relevant initiatives are the European Research Area (ERA) regarding Infrastructure and E-science, the pilot study on European research infrastructure on physics and oceanography, and the E-Europe initiative. The conclusions can be summarized as follows: Better visibility of the European marine infrastructure; Contribution to the definition of the European policy for research infrastructure. Key elements are: funding schemes for operation and construction, decision making priorities, incentives for collaboration between facility owners, global research programmes.

A full report of the EurOCEAN Conference and on the ERA initiative can be found on the EU website:

<http://europa.eu.int/comm/research/>

6. European RV Operators Workshop - an initiative of the European Science Foundation Marine Board

Mr. Gillooly (Ireland) reported on the ERVO meeting held in Galway 27-28 April 2000. This initiative by ESF was taken to establish a forum for operators of small to medium sized (25-50 m) research vessels. A first pilot meeting was held in 1999, which confirmed the interest in formation of ERVO, which status should remain informal, with a meeting once a year (in Spring) organized and hosted by one of the participants at a research vessel base. Though a number of differences can be discerned between the various countries as to size, gross tonnage, age, operator, sea days, planning procedures and such, there also is a number of common issues. In the last meeting these were discussed, such as R/V Classification, ISM accreditation, insurance policies. As a follow up to the discussions Lloyd's Register created a new notation "100 A1 research vessel" with immediate effect. It is anticipated that the other class societies will follow suit. This may help to designate R/V's as a specific class. Further to the dialogue on the ISM implementation, a course is being run mid October 2001. It will focus on the research vessel operator's perspective. Next ERVO meeting will be held in Rome in Spring 2001, hosted by Italy. Subjects will be: technical problems/equipment, ISM update, review of trends and requirements, performance indicators, exchange of personnel, equipment pool, safety management. The meeting is open to all European R/V operators, though the main focus remains on the small-medium sized ships, and European research areas.

Ms Dieter (UNOLS/NSF-USA) commended the initiative and mentioned that UNOLS came out of the RVOC (Research Vessel Operators Committee).

7. Insurance and Liability - Update on world Insurance and Legal and Liability issues

Prof. Nixon (USA), the Risk Manager and Legal Advisor for the US UNOLS fleet, gave a presentation on Marine Insurance World Outlook. The marine and aviation insurance is linked together, which is reflected in the insurance costs. The loss ratio still is at about 150-160%. The P&I insurance is for 90% covered by twelve P&I Clubs. The Club system is under severe stress because of heavy losses on pollution claims and container ships. Price increases are inevitable. UNOLS is the world's biggest buyer of P&I insurance for R/V's. The objective was to come to a group insurance program with one insurance product for all 29 UNOLS ships. The difficulty is that UNOLS ships have different owners. Only half is owned by NSF. It came out that efficiency not always is politically attractive, and greater dispersion offers more public and political support. The total costs now are over 900 thousand USD per year. 47% of the costs are for six vessels, an average of 90,000 USD per vessel per year. For the smaller vessels the average is about 20,000 USD. Per person on board the costs are about equal for larger and smaller ships. Overall prices will go upwards, and the increasing developments of ROV's and AUVs invigorates this trend.

8. Update on Piracy Problems

Mr. Okawara (NME, Japan) gave an update on the experiences, policy and preventive measures regarding the problems with piracy. According to the reports of the International Maritime Bureau (IMB) the number of incidents is increasing, with the South East Asia region having the highest number of attacks in 1999 with an increase of 60%. Major problem area is the Indonesian archipel especially the Malakka Strait, North East Java and East Borneo/West Celebes. Up-to-date information on piracy can be obtained from the IMB and the Commercial Crime Services website. JAMSTEC ships report incidents simultaneously to NME/JAMSTEC and the Maritime Safety Agency in Japan, the Rescue Co-ordination Centre in the adjacent coastal state, and the IMB in Malaysia. NME informs the Nippon Foundation, the Japanese Shipowners Association and the insurance company. In the cruise planning procedure the JAMSTEC and NME Safety Committees discuss the possible piracy risks of a cruise plan and advises the directorate before approval is given to go ahead. Sometimes this results in an alternative transit route to the research area. As preventive measures the following is applicable: Special instructions for Shipboard operations in the framework of ISM; specially developed alarm devices as TORANOMON (on the MIRAI) and SHIPLOC; barbed wire around upper deck, five 50 (old) ropes from stern behind ship, and all other measures as recommended by the IMB. As to insurance a special war risk insurance covering piracy is procured.

9. Recent developments in Research Vessel law

Prof. Nixon (USA) gave an overview of recent cases with regard to oceanographic research vessel law. Research vessel operators face virtually all of the liability problems experienced by commercial vessel operators, plus a few additional issues unique to oceanographic research. He discussed those liability issues, and some additional changes in national and international law that affect research vessel operations. Research vessels have evolved substantially since the major build-up of the fleet in the 1960's created the need for the Oceanographic Research Vessels Act. As their technical competence has increased, so has the complexity of the legal problems they generate. Many types of vessels use the "RV" designation: privately owned and operated, publicly owned and operated, and publicly owned but under charter to a private party. Some claim public vessel status, some cannot, and some refuse to even though they can. In recent years, a publicly owned vessel, chartered to a private non-profit institution at no cost, was in turn subchartered to a private corporation. The charter parties involved set a new standard for complexity. It may be time to consider whether the legal regime established in 1965 to cover research vessel operations is still appropriate to address the issues of today.

As to whether or not the seamen status is applicable to scientists on board the US court held that a person will be considered a seaman for purposes of seamen's remedies so long as the person claiming seaman status was more or less permanently assigned to a vessel in navigation and the person contributed to the "function of the vessel in navigation." That time factor is of critical importance for the scientist-seamen of the academic research vessel fleet, most of whom only go to sea for one cruise per year, and most for far less than the 30% standard established by the court. Although technicians permanently assigned to the vessel have clearly maintained their status as seamen after these two cases, it seems clear that the scientist who only occasionally ventures out to sea will no longer be entitled to the remedies reserved for seamen.

In response to the loss of the Exxon Valdez, US Congress passed the Oil Pollution Act of 1990. The law dramatically increased limits of liability and the kinds of damages a vessel operator is responsible for if a spill occurs. Contrary to popular opinion, although a tanker casualty inspired the law, it does not apply to tank vessels alone. New limits were established for all vessels that carry oil. It prohibits the discharge of oil on the navigable waters of the United States in a harmful quantity – which has been defined as simply producing a visible sheen. Those who discharge oil are responsible for its removal costs and six types of damage claims: (1) loss of, or loss of use of natural resources; (2) damage to, or economic losses resulting from damage to real or personal property; (3) damages for the loss of subsistence use of natural resources; (4) damages for the loss of revenues to the federal or state governments; (5) damages equal to the loss of profits or earning capacity; and (6) damages for the cost of providing increased public service activities after a discharge of oil. Strict liability is imposed, and the only defences are that the discharge was caused solely by an act of God, act of war, negligence on the part of the United States Government, or an act or omission of a third party. The practical impacts of the law are that pollution insurance, and the requirement to demonstrate that insurance exists through a Certificate of Financial Responsibility, has made vessel insurance more expensive and crews operating in shallow water even more cautious.

One concern that has been raised about the operation of the ISM Code is that the routine safety audits may discover problems that could then be used in a subsequent action against the vessel operator. The "transparent" paper trail could be seen as a virtual invitation to litigation. Some have argued, with support from industry, that ISM documents should have a privileged, confidential status to shield them from discovery – otherwise the safety benefit of learning from near-misses will never be achieved because they never will be reported.

One of the most interesting aspects of research vessel law is the impact of new research technologies on the existing legal system. For example, British scientists at the Southampton Institute of Oceanography have developed a new research tool they have named "autosub." Approximately 25 feet long with a diameter of four feet, autosub can be programmed in an advance to go to sea for weeks at a time, collect data and samples on the bottom, return daily to the surface to telemeter data back to the lab, and eventually return "home." It is a truly autonomous undersea vehicle, since it follows its own cruise path without human intervention for weeks at a time. Although it is certainly a significant technical innovation, its deployment in international waters raises a number of difficult legal questions. The most obvious problem is the requirement of the International Rules of the Road that all vessels maintain a proper lookout. Can a proper lookout be a sonar collision avoidance system? What if autosub surfaces underneath another vessel, perhaps a high-speed ferry with hundreds aboard? Or more likely, is the lab prepared to buy a new net when the sub is towed to the surface by a North Sea trawler?

A related issue is the increased use of buoys left on station for long periods to record and transmit sea surface and atmospheric information. These are typically large, well moored systems that are placed where scientists want data – whether or not that location might also be in shipping lanes or fishing grounds. JAMSTEC, the Japanese Marine Science and Technology Center, has seen several of their buoys mysteriously damaged, presumably after being struck by a vessel. Ocean acoustical research has become problematic as well because of perceived impacts on marine mammal populations. The charter of publicly owned research vessels by private corporations raises complex questions of insurance, liability, and indemnification agreements. International joint ventures may make sense from a science and clearance standpoint but present even more legal challenges regarding jurisdiction and venue if and when a contract dispute or a personal injury occurs.

Ms Rietveld (Netherlands) enquired after the possibilities of the success of claiming damage for a cooled sea container filled with seabed samples (box- and piston- cores) from a cruise on board S.A. Agulhas off South Africa. The container was unloaded by a transport company on the quay of Rotterdam without connecting it to electricity, which caused the temperature to rise over the weekend and made the samples worthless. As cargo and transport law would apply Prof. Nixon characterized the chance of success as futile.

10. Winch and Wire symposium: report and proposed further actions

Ms. Dieter (NSF – USA) reported on the UNOLS Winch and Wire symposium that was held 1-3 December 1999 in New Orleans. As a start a panel had made an inventory of the scientists wishes. It came out that these wishes would lead to excessive requirements. Scientists increasingly need to take larger, heavier packages to greater depths, at greater speeds, with higher bandwidth telemetry and requiring more power transmission. The experiences so far lead to ever further pushing the limits of what the standard oceanographic cables will hold. Both for the 0.322 and 0.68 inch cables. The biggest concern is about the 0.322 inch cables. Safe working loads are a major issue, and require clarification. Further there is the issue about lubrication or not, and the use of synthetic wire.

Ms. Dieter encouraged all ISOM members to join in on the issue.

As a follow-up UNOLS has put together a small group consisting of RVOC and RVTEC members and a couple of cable engineers to work out a proposal for a 'new' cable and 'smart' winch systems. It is planned that a revised UNOLS Manual on Oceanographic Winch, Wire and Cable technology will be ready by April 2001.

11. INMARTECH

11.1. Report on Workshop 2000

Ms. Rietveld (Netherlands) reported on the INMARTECH 2000 Workshop that was organized and hosted by the Netherlands Institute for Sea Research (NIOZ) and held from 20-22 September on the island of Texel. The INMARTECH goal is to create and maintain a permanent international network of skilled technological support and key operators for sea-going marine research. Financial support was given by the European Union for the invitation of five foreign speakers. The programme can be found on the website <http://www.nioz.nl/inmartech2000>, where also the proceedings of the 98 and 96 Workshops are posted. Topics included Cable and Winch Technology, Lander Technology, ADCP and CTD Technology, Handling heavy and large equipment – including deck operations in high latitudes - , Coring and High pressure sampling, Mooring technology and Lab container/Van technology. There were about 110 participants of 15 nationalities. The set-up was aimed at easy interaction between technicians. A participants booklet was made with photo's, co-ordinates, and short specifications on interests and expertise. There was a poster session and demonstrations of equipment and a tour around the NIOZ technical facilities and R/V PELAGIA. From the turned in appraisal forms it can be concluded that the workshop was a success. Suggestions of topics and general comments were given for future INMARTECH Workshops. One of the wishes of the marine technicians is an INMARTECH website with pinboard for swift communication on trouble shooting. To facilitate the completion of the proceedings a simpler set-up will be used in combination with providing the complete material on the Web.

11.2 INMARTECH 2002

Ms. Rietveld raised the issue of the organization of next INMARTECH. *Mr. Chijiya (JAMSTEC - Japan)* kindly offered that JAMSTEC will organize and host the INMARTECH Workshop in 2002. The offer was gratefully accepted by all ISOM members.

Mr. Cooper (SOC/UKORS - UK) announced that for 2004 the British Antarctic Survey (BAS) together with the Southampton Oceanographic Centre will join to organize and host INMARTECH.

12. OD21 Progress (JAMSTEC)

Cpt. Zaitzu (JAMSTEC - Japan) informed the attendees on the progress of the OD21 - the follow-up of ODP - and the building of the Japanese riser deep sea drilling vessel for the IODP (Integrated Ocean Drilling Program) that will start from 2003 onward. The specifications of the OD21 ship are LOA 210 m, Width 38 m, draft 9.2 m, GRT 57,500, capacity 150 persons. Maximum operating water depth of the riser drilling 2,500 m in the first phase and 4,000 m in the final stage. Target drilling depth of the drill pipe 10,000 m in the first phase and 12,000 m in the final phase. The detailed drawing of the ship started in April 2000. The construction will go ahead in May 2001 and the launching is planned in November 2001. Then the outfitting will start to be completed in August 2003, when the ship is planned to be ready for sea trials. In April 2004 delivery to JAMSTEC is planned. International operations will start in 2006.

The planning activities for IODP are in the hands of the IWG (International Working Group) consisting of representatives of the funding agencies of the countries/international organizations that have declared to participate. The IWG is co-chaired by both Japan-STA and US-NSF. There will be a Japan/US shared management office with an independent legal status in Japan or USA. The interim Scientific Advisory Structure (iSAS) will be based in JAMSTEC Yokosuka, Japan. The implementation of IODP will be in the hands of JAMSTEC and the post JOI organization. The NSF-managed part of the IODP will start in 2004 with the converted US Non-Riser Vessel

13. OCEANIC Database: New set-up and Update

Mr. White (OCEANIC - USA) has taken over the activities of Katherine Bouton on the OCEANIC data base, and explained and demonstrated the new set-up of the research ship info and schedules data base. Flyers and banners are banned from the site, because of the time these consume. Ship schedules are per year. 366 research ships and schedules of 50 different countries are taken up. Specifications should be updated and a cross reference system plus specifications search will be developed. This will lead to a more dynamic instead of static data base. *Mr. White* solicits for input and updates. Also smaller ships are welcome. A data entry form will be available on the website. All ISOM members are encouraged to check their data in the OCEANIC data base and send in the updates. If time is lacking to fill in the forms OCEANIC will do so. Information in whatever format can be sent/copied, and OCEANIC will take care of proper insertion. So far only R/V's are included. Future thoughts can be given to widening the scope to include survey ships of private companies. In relation to the shipping agents issue *Mr. White* suggested that OCEANIC could add this to the data base with a 'ISOM ranking'.

14. Deep submergence Facilities

14.1 Developments in the US on manned submersible and remotely operated vehicle

Ms Dieter (NSF – USA) gave an overview of the developments within the US. ONR and NOAA have joined in with NSF to form a National Deep Submergence Facility group within UNOLS that is now trying to investigate the need for deep submergence facilities to support science for the next ten years. From the DESCEND Workshop organized by UNOLS in October 1999 it became clear that the wishes of scientists are many and have no budget reality. And unfortunately there still not is a report.

At Woods Hole (WHOI) the UNOLS Deep Submergence Facility started the overhaul of the manned Sub ALVIN, with an option to combine the old ALVIN 4500 and 6000 m SEA CLIFF, that was decommissioned by the Navy and handed over to ONR, and try to construct 1 new manned sub out of 2 old ones, with a capacity to dive to 6000 m. Just changing to SEA CLIFF was not an option as this was not built for scientific research and has several draw-backs compared with the ALVIN type of manned sub such as that it is too big and expensive to be used on the research ships. As a consequence there is the obvious request from science to build a new ALVIN with a diving capacity of 6500 m. This is under study at the moment. However, there are severe financial constraints to be overcome first.

The frequency of upgrades on ALVIN is envisaged as once per two years. During next year's upgrade only the ROV JASON will be available. JASON has a operating capability of 6000 m.

When the ALVIN upgrade is completed, JASON will be upgraded to a new JASON II with increased power and manipulative capabilities. This upgrade is mainly funded by NSF with support from ONR for the operational costs. There exists a difference in operational days between ROV's (like JASON/ROPOS) and manned Subs (like ALVIN). The number of requests for ROV is considerably less than that of the manned subs (180 against over 300 operation days) Regarding the AUV's there are no upgrades planned so far. The ABE (Autonomous Benthic Explorer) is a WHOI project. More extensive information on the above can be found on the UNOLS website: <http://www.unols.org>

14.2 Development on AUV in JAMSTEC

Mr. Shibata (JAMSTEC – Japan) gave a presentation on the Deep Sea Cruising AUV "URASHIMA" that became operational for trials in 2000. Specifications are: LOA 9.7 m, width 1.3 m, height 1.5 m, displacement 7.5 t, working depth 3500 m, range 300 km, cruising speed 3 knots, max speed 4 knots. At the moment is powered by Lithium-ion batteries, which gives it a range of 50 km. These will be replaced in the coming year by a fuel cell with oxygen and hydrogen tanks to expand the range to 300 km. There are various navigation modes possible. Using the support ship YOKOSUKA, it can be used in UROV mode with the help of an optical fiber cable, or in acoustic remote control mode with acoustic homing sonar. It can also be used in self navigation mode using acoustic beacons every 30-50 km, where it uses obstacle avoidance sonar. In September 2000 the first trials were executed, 13 launch & recovery trials, 7 dives with a max depth of 744 m. Cruising speed 2.5 knots, and good tools operation. As shown on the video of the trials the weak point in the operations is the recovery, where swimmers have to connect the recovery lines. JAMSTEC is trying to get the swimmers out of the recovery procedure, because this is a hazardous and dangerous factor in the operation.

Developments in other countries:

Mr. Cooper (SOC/UKORS - UK) reported that SOC has submitted a proposal for procurement of a ROV, and funding is being sought for an (AUV) Autosub. He has the impression that the commercial market is far ahead in this field.

Mr. Nieuwejaar (Norway) informed ISOM that Norway has an AUV programme initiated by the Defence Research. The Science Board is partner in this programme and takes over part of the funding. Main interest is from oil companies for the inspection of oil pipes at sea.

Mr. White (OCEANIC) mentioned that OCEANIC is working to get the ROV's and AUV's in the database.

14.3 Deep Ocean Technology Centre for AutoMERS in Scotland

Mr. Morrison (SEERAD – Scotland, UK) informed the ISOM on the joint initiative between the universities of Aberdeen, Bristol and St Andrews, the Scottish Association for Marine Science (SAMS) and the NERC Centre for Coastal and Marine Sciences Dunstaffnage Marine Laboratory to build and equip two shore-based Research Centres. One of these will be at the University of Aberdeen's field station at Culterty (near Aberdeen), and the other at SAMS near Oban. With the aid of 4 million GBP funding from the Wellcome Foundation and U.K. government Joint Infrastructure Fund a UK fleet of unmanned autonomous sub-sea lander platforms will be established, capable of undertaking research missions at depths down to 6000 m for periods of up to twelve months in a range of scientific disciplines. AutoMERS will support research in physical, chemical, biological, and environmental sciences in the deep sea. Funding will support onshore design, development, assembly and test facilities, sub-sea, ship-borne and shore-based hardware, and professional engineering and technical support.

The centre at the University of Aberdeen will serve basic design testing and integration of autonomous platforms. The complementary facility at the SAMS will have direct access to ships and coastal deep test and research sites. There will be a three-year build-up period with recruitment of staff and building of facilities between now and 2003.

15. Vandalism on TRITON buoy

Cpt. Zaitzu (JAMSTEC - Japan) gave an overview of the damage to the TRITON buoy arrays in the Western Pacific Ocean. TRITON (Triangle Trans-Ocean Buoy Network) focuses on understanding the basin scale heat transports with emphasis on the El Niño/Southern Oscillation (ENSO) and the Asian Monsoon, which show large seasonal to inter annual variations, and on the decadal oceanic variations, all of which influence global climate. In total 10 buoys were damaged, which means a loss of USD 400,000 and loss of scientific data. Most damage was in the Eastern part of the West Pacific Array. Damage was done intentionally (destruction/robbery) and by accident (twining of tuna fishing long line), or was caused by malfunctioning of the equipment (communication control unit failure). JAMSTEC has formed a project team, chaired by Mr. Chijiya, which proposed the following measures: to use a special type of nut that can only be turned by a special wrench, to use a flat type of antenna that is less vulnerable, to add a transmitter to the inside of the buoy for back-up position marking, to improve the strength of the tower by using stainless steel instead of aluminum, and widening the top of the tower, to replace the cabtyre signal cable with a jacketed wire signal cable. Cpt. Zaitzu indicated on a displayed map which TRITON buoys would be (re)deployed from October 2000 – October 2001.

16. ISM Code – A practical approach

Mr. Mitchell of Marine Quality Services of Lloyd's Register (UK) gave a concise overview of the ISM Code at its implications and implementation. He was aware that most ISOM members already started the procedure and some were certified already. The question Why ISM, What is ISM, and Who has to comply can be shortly answered by: to prevent calamities (public concern); the ISM Code is a set of guidelines (system framework), and “all” shipping companies have, whereas unfortunately “Government ships for non commercial purposes” are not obliged, to comply. The ISM Code is clearly intended to provide a framework that will lead to the adoption by all ship operators of effective management methods that will lead to an enhancement of marine safety and pollution prevention.

What are the experiences so far? Of the 3000 Documents of Compliance -DOC (14000 Safety Management Certificates -SMC) that are issued within industry, about 15% are for “the good”, 75% for “the bad” and 10% for “the ugly”. The good to be characterized as big, well resourced organizations, the bad as those who do the minimum necessary to comply, but not really benefit from the system, and the ugly as the disbelievers who have to be enforced to live up to the ISM Code by threats of withdrawal of the DOC. It is evident that the ISM Code has teeth! Evident is also that the top management should be involved in the set-up of the system, and should be present at the audit; “wish list” documentation that do not fit the reality of the activities should be avoided. Not technical solutions, but the human factor is essential, so a broad base within the company is a prerequisite to succeed.

Insurance companies are more and more interested, and try to get the information on ISM performance from the auditor. This puts the question of the legal status of ISM documents. The issue was raised already by Prof. Nixon under the agenda item on recent developments in Research Vessel Law. The legal profession is looking into that. This might lead to changes accepted by the MSC on the interpretation of the ISM Code foreseen to be in force by July 2001. A frequency of 1 audit in 3 years apparently does not provide an effective mechanism to monitor the management of maintenance on board a vessel.

A point of concern regards the ship/shore link. This link should be a solid one, and the qualifications of the DPA (Designated Person Ashore) should be outstanding. Master and crew should be well aware and good informed. To check this a set of questions has been drafted by the IMO. [N.B. This “checklist” of 11 crucial questions, listed by the IMO, for use by the Port State Control Official (Officer) when inspecting a vessel on ISM Code compliance, was traced by *Prof. Nixon*, and distributed to ISOM members in November 2001 (paper A 21/Res.882)].

What are the keys to success when implementing the ISM Code? 1) Keep the SMS (Safety Management System) practical. 2) Involve the staff ashore and afloat. 3) Maintain the improvement process. 4) Develop the “culture”. The “culture” can be summarised in three key-words: conformance – doing as others do and copy; compliance – do blindly as it is a legal requirement; internalisation – you know it does you good.

Together with a clear policy - people know what they have to do -, allocation of resources – people know their responsibilities -, and effective communication ISM will be considered as common sense.

In his written contribution *Mr. Peck (Canada)* reported that the Canadian Coast Guard fleet is a non-commercial operation, and as such the CCG is exempt under Regulation 2 of Chapter IX of the 1974 SOLAS Convention. However, the Canadian Coast Guard has decided to comply with the requirements of the Code, beginning with ships of 500 tonnes or more GRT.

In October 1999, CCG Headquarters and its five regional offices received their Document of Compliance (DOC) from Lloyds.

17. Update on Diplomatic Clearance

Ms. Rietveld (Netherlands) came back on the diplomatic clearance issue, and mentioned that for the Pelagia Around Africa cruise most clearance procedures proceeded smoothly even for remote countries as Mauritania and Madagascar, with the exception of Egypt and Libya. Egypt just bluntly refused permission on the last moment without explanation, and Libya at first had given a verbal permission but came up at the last moment with new requirements for a number of observers, which was not possible to accommodate at such short notice, and then withdraw the permission. There is uncertainty about the claim of Libya regarding the EEZ. Formally Libya only claims jurisdiction in the territorial waters and in the Gulf of Sirta

(the 30th latitude being called “the line of death”). For next year the approach will be that the P.I. will contact his Libyan counterparts at the University of Tripoli in a very early stage, to involve them in the scientific programme and invite them on board as observers. The same approach will be chosen for Egypt. She agreed with *Mr. Ollier (EU-CEC – Brussels)* and *Mr. Diaz (Spain)*, that the development of a collaborative project would be an important help.

18. IMO regulations in high latitudes

Ms. Dieter (NSF – USA) submitted the question before ISOM members how to deal with the newly developed IMO regulations in high latitudes (Antarctic/Arctic Rules). The guidelines are intended for ships operating in ice-covered waters. The guidelines cover hull-strength, anti-pollution, communications, rescue equipment etc. *Mr. Nieuwejaar (Norway)* had seen a draft that was brought out in April this year regarding Antarctic. He offered to try and get more information from the Norwegian representative in IMO. ISOM would appreciate his help, and decided to put the issue on the agenda of next year’s ISOM.

19. Any Other Business

19.1. Investigation for the H-2 rocket

Dr. Chijiya (JAMSTEC – Japan) gave an illustrated presentation complete with an interesting video show on the successful recovery of a lost H II rocket that fell into the Pacific Ocean after a failed launch on 15 November 1999. This was a collaborative action of NASDA and NASA. The recovery was meant as a fact-finding mission to find out the cause of the failure of the main engine of the rocket. JAMSTEC immediately started the investigations after NASA had provided the co-ordinates of the location to be searched. The search was done in three phases. Phase 1 from November 19 – December 2, 1999 using the R/V KAIREI with the ROV KAIKO. The ship started with a multi narrow beam survey, followed with a 3D Image map of the sea floor. Then a side scan sonar survey with the KAIKO launcher, which revealed a shadowed object on the sea floor that later was detected by KAIKO as the engine section with the accumulator reservoir.

For Phase 2 (December 19 – December 26, 1999) R/V YOKOSUKA was assigned with the Deep Tow sonar and the Deep Tow camera. After the Deep Tow sonar got a response on what might be the main engine, the Deep Tow camera detected the main engine indeed. In the third Phase, R/V NATSUSHIMA was assigned with the ROV DOLPHIN 3-K, which after detailed observations confirmed the detection of the main engine and the nozzle skirt. DOLPHIN 3-K succeeded in picking up some parts with its manipulators. A professional salvage company brought the main engine on board.

The Japanese STA (Science and Technology Agency), who had been reluctant to this operation at first, because it would seem impossible and disrupt the schedule for scientific work, finally approved under the condition of agreement by the scientific community.

19.2. “Checkpoint Charlie”

Ms Rietveld (Netherlands) introduced this coded issue that regards the retirement of Dr. Charlie Fay from RVS/SOC – UK and his retirement as a member of ISOM. She memorized the important role that was fulfilled by Dr. Fay as one of the founding fathers of ISOM fourteen years ago, and thanked him for his ever inspiring and generous contribution to ISOM’s success as a world wide platform for Research Vessel Operators. *Prof. Kortum* spoke to him on behalf of all ISOM members, and expressed their thanks with a goodbye present that Dr. Fay greatly appreciated.

20. Date and Place of Next Meeting

All ISOM members present were in favour of continuation of ISOM.

Dr. Wallace (Australia) invited all members to next ISOM at CSIRO in Hobart, Australia. Dates would be second half of September 2001. Having felt the time pressure of this meeting *Dr. Wallace* suggested to extend the meeting to two full days. All members were in favour, and accepted the kind offer. Dates will be announced as soon as they can be fixed. For 2002 *Ms. Lahdes (Finland)* announced that probably Finland would offer to host the meeting in Helsinki.

For next ISOM *Ms. Dieter* proposed to have the standardization of laboratory vans/containers on board research ships on the agenda to exchange experiences with ISOM members, now the US have to cope with the US Coast Guard safety rules.

Mr. Gillooly (Ireland) spoke on behalf of all ISOM members and thanked the Netherlands host for her kind hospitality and expressed their appreciation of a well organized and informative meeting.

The meeting was adjourned. A visit to the NIOZ Institute and Marine Research Facilities on the island of Texel was planned for the following day.