

# **WMO-IMO Consultative Meeting**

Geneva, Switzerland, 12-13 February 2007

***FINAL REPORT***

**Meeting Report No. 48**





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## NOTE

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## GENERAL SUMMARY OF THE WORK OF THE MEETING

### 1. OPENING OF THE SESSION

1.1 The Joint World Meteorological Organization (WMO) – International Maritime Organization (IMO) High Level Dialogue Consultative Meeting was opened at 0930 hours on Monday, 12 February 2007, in the press room at the WMO Headquarters, Geneva, Switzerland, by the Director of the Applications Programme Department of WMO, Dr Georgi Kortchev.

1.2 On behalf of the Secretary-General of the WMO, Mr Michel Jarraud, and of the Secretary General of IMO, Mr. Efthimios Mitropoulos, Dr Kortchev welcomed the participants to the session, to the WMO Headquarters and to Geneva.

1.3 Dr Kortchev informed the Meeting that the purpose of the World Meteorological Organization's Marine Meteorology and Oceanography Programme (MMOP), was the provision of data, information, services and new capacity in support of the safety of life and property at sea, operations in the open and coastal ocean areas, the protection and sustainable development of the ocean and marine environment, and the efficient management of marine resources, based on the collection and integrated management of marine meteorological and oceanographic data.

1.4 Dr Kortchev recalled that the continued provision and coordination of global safety-related weather and oceanographic services was a fundamental activity of the Joint WMO-IOC Commission on Oceanography and Marine Meteorology (JCOMM). Products and services include: warnings of gales, storms, severe tropical weather systems such as typhoons, hurricanes and tropical cyclones, wind waves and storm surges, and other hazardous phenomena at sea, as well as information on sea ice conditions and other products disseminated through the Global Maritime Distress and Safety System (GMDSS).

1.5 Further, he also recalled that the WMO has provided a long-standing cooperation with the International Maritime Organization. One clear example in support of the mariners is the Maritime Safety Committee (MSC) Circular No. 1017 (MSC/Circ. 1017), whose purpose is to enhance the maritime safety at sea in support of the International Convention for the Safety Of Life At Sea (SOLAS). This works effectively thanks in part to the Voluntary Observing Ship (VOS) Scheme, which provides *in situ* observations regarding weather and sea conditions to the National Meteorological Services (NMS). These real-time observations are essential for the provision of weather forecast services to the mariner, including the Maritime Safety Information (MSI) forecasts and warnings issued by the international NAVTEX and SafetyNET systems.

1.6 Nevertheless, Dr Kortchev noted that because of piracy acts and other security issues in certain regions, some ship owners and masters have concerns regarding the availability of VOS ship's positions and identification on public websites not controlled by National Meteorological Services (NMS). Such information appears on the websites mainly because, according to the WMO data policy, marine data as an essential data need to be made available on a free and unrestricted basis to public. The WMO understands ship masters and owners concerns regarding availability of ship's identification and positions on public websites, addressed the issue at its fifty-eighth Executive Council (EC-LVIII), and decided to conduct a High Level Dialogue with the International Maritime Organization (IMO), the International Chamber of Shipping (ICS), as well as other relevant international organizations and affected Members. Currently, the WMO is taking steps to address these concerns, while making every effort to continue to deliver quality maritime safety products to the mariners.

1.7 In conclusion, Dr Kortchev thanked the participants and their respective Organization's efforts for the major contributions made over the years, and conveyed his confidence that they would continue to support the objectives of the WMO Marine Meteorology and Oceanography Programme, for the benefit of all Members. In conclusion, he finally expressed his thanks to the



participants and wished them a successful meeting and a very pleasant stay in Geneva. Shortly thereafter, he introduced the IMO Representative from the United Kingdom, Mr Hartmut Hesse.

1.8 Mr Hartmut Hesse, while welcoming participants to the meeting and thanking the WMO for organizing and hosting the meeting, referred to the brief debate in the margins of the MSC-82 (Istanbul, Turkey, November-December 2006) on the way forward regarding this matter. Mr Hesse referred to the history of actions taken by the IMO in adopting the MSC/Circ. 674 (December 2004) and the MSC/Circ. 1017 (May 2001) on the participation on the WMO VOS Scheme, particularly in view of the recommendations of the Report of the *Re-opened Formal Investigation of the Loss of the M.V. Derbyshire*, which had underlined the potential value of VOS observations to maritime safety and the need for updating the relevant circulars.

1.9 Further, Mr Hesse emphasized the essential contribution the VOS reports make to operational meteorology, marine meteorological services, weather routing services and global climate studies, amongst other issues.

1.10 The practical problems concerned VOS data availability on external websites vis-à-vis maritime security concerns. Thus, the substantial decline in the number of voluntary observing ships recruited by Member(s)/Member State(s) under the WMO VOS Scheme was cause for concern.

1.11 Therefore, the Meeting would need to consider this decline, which might be connected to the implementation of the SOLAS, Chapter XI-2, *Special Measures to Enhance Maritime Security and the International Ship and Port Security Code (ISPS)* and the need for ships to maintain access control at sea, hence their wish to keep their identities and locations confidential.

1.12 Mr Hesse was confident that the Meeting would find a mutually beneficial solution, which would be expected to be reported to the MSC in due course.

1.13 The participants elected Captain Gordon V. Mackie as the official Chairperson for the meeting. Captain Mackie introduced himself, and welcomed the participants to the meeting. He stressed that this was an important matter of concern to both WMO and IMO and to the shipping industry, with potential adverse implications regarding security and commercial activities, and invited the participants to work throughout the duration the meeting to finding appropriate solutions for the problems at hand. Captain Mackie invited the ICS Representative, Mr John Murray to introduce the concerns that the shipping industry were having with regard to VOS data exchange.

1.14 The Meeting then agreed upon its hours of work and other practical session arrangements and adopted the agenda for the session, as indicated in *Annex II*.

1.15 The WMO Secretariat introduced the relevant documentation regarding the session.

1.16 The list of participants in the session is provided herewith in *Annex I*.

## **2. Briefing on ship owners and masters concerns regarding VOS data exchange**

2.1 Mr Murray, explained that the ICS continued to be fully supportive of the Voluntary Observing Ship (VOS) Scheme of the WMO, and has taken every opportunity to encourage ship owners and seafarers to contribute to the vital data gathering that the scheme supports. The benefits of shipping's support for the VOS Scheme have been well documented, and the shipping industry itself gains both directly and indirectly from such active participation. It would certainly be regrettable if measures currently taken by the WMO that are of increasing concern to the shipping community disturbed this mutually beneficial relationship.

2.2 Mr Murray further explained that the International Ship and Port Facility Security Code (ISPS Code) was a comprehensive [set of mandatory measures intended to enhance the security of ships and port facilities](#) developed in response to the perceived threats to ships and port facilities

in the wake of the 9/11 attacks in the United States. The need to comply with the ISPS Code has required shipping to adopt many new measures and work practices. These changes have coincided with, and in some cases are linked to, the introduction of carriage requirements for new safety and security systems requiring shipping companies and seafarers to reassess much of their traditional approaches to shipping and the working environment. Such measures include the existing Automatic Identification System (AIS) system and the forthcoming Long-range Identification and Tracking of ships (LRIT) requirements. Much concern has been expressed regarding the acquisition and potential misuse of ship identifying AIS data by those who may wish to harm shipping and seafarers. Following a decision in the IMO's Maritime Safety Committee (MSC), measures have been taken to address concern in this regard, and the trend is very firmly away from public access to such information. There has also been much discussion regarding access to LRIT data, and in particular, access to potentially commercially sensitive ship information by those who may use the data for other than its intended security purpose. The recently adopted SOLAS amendment, which places the requirement on ships to transmit LRIT data from 1 January 2008, has also recognised the need to protect data that identifies and locates ships. The retention of such strategic data within the control of the governments authorised to receive it is implicit in the new regulation.

2.3 Mr Murray explained that in the environment described above, the existence of weather-related public access websites that hold sensitive ship details, can be seen to be a worrying anomaly. Furthermore, for both commercial and security reasons, the public website posting of ship identity information should be avoided unless it can be demonstrated that there is a compelling need to do so. No such compelling need has been identified thus far. The intent of those setting up and maintaining such websites is to benefit the wider community, including the shipping community, is of little consolation to those with responsibility for the security of ships and their crews. The potential misuse of the information held on the sites remains and is of genuine concern. Mr Murray concluded by stating that the ICS is committed to working with the WMO to find solutions that meet WMO need for verifiable data with the ICS need for the identity of the ship to be protected.

2.4 The WMO Secretariat provided background information on the Voluntary Observing Ship (VOS) Scheme, and regarding the ship owners and masters concerns regarding VOS data exchange, and reported on the results from the Fifty-eighth WMO Executive Council (EC-LVIII) discussions.

2.5 Ship owners and masters' concerns regarding the availability of VOS ship's positions on public websites, not controlled by National Meteorological and Hydrological Services (NMHS), is an issue that has been discussed in the WMO community since early 2005. Their concerns are justified due to acts of piracy in certain regions, as well as commercial competitiveness reasons (e.g., fisheries).

2.6 The VOS data appear on the websites due to the fact that VOS data are being distributed in real-time on the Global Telecommunication System (GTS) of the World Weather Watch (WWW) and made available to all NMHS. The VOS data which are assimilated in real-time by the NHMS from the GTS into Numerical Weather Prediction (NWP) models, are essential for the provision of services in support of the protection of life and property and the well-being of all nations, as well as critical for global climate studies.

2.7 Participation by maritime companies in the VOS Scheme is done on a voluntary basis. Ship owners and masters may withdraw their vessel(s) from the VOS Scheme because of the risks of having ship reports, including call signs and positions freely available on websites not controlled by NMHSs. Some vessels have already withdrawn from the reporting system in order to preserve the security of their route and position. The International Chamber of Shipping (ICS) recently explained that it would certainly prefer to find a solution that addresses ship owners' concerns, and at the same time continue to support the excellent work of the forecasting and weather reporting services.

2.8 This serious problem, and if not adequately addressed, could therefore ultimately lead to a substantial decline (more so than already recognized) in the number of recruited VOS ships and threaten the programme.

2.9 To address these concerns, at its Fifty-eighth Session of the WMO Executive Council (EC-LVIII, Geneva, Switzerland, June 2006), recommended the following actions:

- (a) Members which, in consultation with ship owners, wish to protect the identity of VOS may implement ship call sign masking, for a trial period of one year, a process which would facilitate open distribution of masked data on the GTS;
- (b) All Members implementing such a process to provide for the secure exchange of ship call signs and reports affected by the masking process, so as to assist in resolving real-time monitoring and climate analysis problems.

2.10 At the same time, the Council requested, *“the Secretary-General, as a high priority issue, to establish a High-Level Dialogue, involving affected Members, the International Maritime Organization (IMO), the International Chamber of Shipping (ICS), shipping companies, and relevant organizations and technical commissions (e.g., Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology and Commission for Basic Systems), in order to determine if there is indeed a link between VOS data availability on external websites and piracy and other ship security issues; to review the implementation and impact of masking; and to propose a general and universally acceptable solution to the issue that would address ship owners and masters’ concerns as well as the data monitoring and quality information feedback requirements, for consideration by the Fifty-Ninth Session of the Executive Council in 2007”*. The Council adopted Resolution 7 (EC-LVIII), which has been reproduced in Annex III of this report.

### **3. WMO Report**

#### **3.1 WMO data policy**

3.1.1 The WMO data policy based on the Resolution 40, adopted by the Twelfth WMO Congress (Cg-XII) was presented during the Session. Annex I to the Resolution, *“Data and Products to be Exchanged Without Charge and with No Conditions on Use”*, identifies a minimum set of meteorological data and products which are essential to support WMO Programmes, and which Members shall exchange without charge and with no conditions on use. The meteorological and related data and products which are essential to support WMO Programmes include, in general, the data from the Regional Basic Synoptic Networks (RBSN) and as much data as possible that will assist in defining the state of the atmosphere at least on a scale of the order of 200 km in the horizontal and six to twelve hours in time. In particular, the list includes all available *in situ* observations from the marine environment (e.g., data in SHIP, BUOY, BATHY, TESAC codes, etc.) VOS observations, which are therefore included in this category of essential data.

3.1.2 The Meeting agreed that any proposed scheme to address ship owners and masters concerns should be compliant with the Resolution 40 (Cg-XII), and that there was no need to recommend any changes in the terms of the Resolution nor to reclassify the VOS data.

#### **3.2 Requirements for quality monitoring and feedback**

3.2.1 The Meeting reviewed the requirements for quality monitoring of the VOS data and the need to relay detected problems back to the ship operators.

3.2.2 A relatively complex data collection, distribution and assimilation system has been put in place, and errors can appear at each step of the data production and delivery lines. The quality of the weather forecasts and maritime safety products will eventually depend upon the quality of the meteorological observations assimilated into the numerical models. Therefore, it is essential to ensure that the quality of the data is known in order to remove erroneous data and to correct errors,

so that the quality of the data assimilated in the meteorological models complies with the requirements. Operational quality control procedures have been implemented to detect and then withdraw erroneous data from the data streams and to correct systematic errors. On one hand, observations from platforms reporting systematic errors are automatically removed from data assimilation or the observational biases are automatically corrected, and on the other hand, the Port Meteorological Officers (PMO) visit VOS calling at their ports to check the instrumentation, calibrate the barometer, supply stationery such as barograph charts or logbooks as required, and discuss any observational problems with the Master and Officers. Several major meteorological centres, primarily the United Kingdom Met Office, routinely monitor the quality of the VOS reports. Results of this monitoring are compiled and distributed at monthly and six-monthly intervals to PMOs, who are expected to take follow-up actions to correct deficiencies, as appropriate.

3.2.3 The quality monitoring and quality information feedback activities substantially limit the risks of assimilating erroneous data and therefore permit the delivery of better marine meteorological services which are essential for: (i.) better ship routing, and (ii.) search and rescue operations.

3.2.4 WMO Members activities to deliver quality maritime safety products rely on unique ship's identification for monitoring the quality of the observations. During the Eighty-second Session of the Maritime Safety Committee (MSC-82, Istanbul, Turkey, 29 November to 8 December 2006), the WMO addressed these issues and looked forward for an appropriate set of clear recommendations that would address Masters and Owners's concerns, and at the same time preserve the quality of the maritime safety information delivered to them by the WMO Members via the GMDSS.

### **3.3 Requirements for climate applications**

3.3.1 Additionally, requirements for climate applications were reviewed and presented by Mr Omar Baddour, World Climate Programme (WCP) of WMO on behalf of the WMO Commission for Climatology (CCI).

3.3.2 VOS observations form a key part of the historical and ongoing marine climate record because, until recently, ships made meteorological observations that could not be made by any other means and climate studies required continuity without changing bias. Drifting buoy observations, for example, are most probably biased relative to ships particularly regarding air temperature and do not adequately measure the variety of variables required for climate analyses. In order to identify and remove these biases in ship observations, so that they can be incorporated in to the climate record, it is necessary to have, as a minimum, an ID which uniquely identifies the ship with its entry and associated metadata in WMO Publication Number 47, and its position. It is also essential that these observations are available in a timely manner. Although delayed-mode observations are eventually placed into the climate record, they often do so after several years have elapsed. The marine component of the global-average temperature diagram is based solely (after 1997), on marine observations from ships and buoys gathered in real-time from the GTS. Such indicators of change are monitored in near real-time and continually inform international policy on climate change (e.g., through the International Panel for Climate Change (IPCC)). The need to halt and preferably reverse the recent decline in the VOS fleet was identified as 'vital' at the Second International Workshop on Advances in the Use of Historical Marine Climate Data (MARCDAT-II), due to the unique record that the VOS fleet produces. The VOS observations can be used to validate satellite records for climate. Additionally, they can be used to test atmospheric reanalyses, assimilated into models, and used to validate them accordingly.

3.3.3 Climatological applications require additional information to be recorded (e.g., additional observations and information about the instruments). The marine meteorological observations are recorded on board most ships in special meteorological registers (logbooks) provided by national Meteorological Services. The logbooks are collected by the Port Meteorological Officer(s) (PMO(s)), of the recruiting country, and the observations are transferred from the logbooks to magnetic media, in a standard, internationally agreed format. Increasing numbers of ships are being equipped with personal computers and software, which stores the observations on diskette

in the internationally agreed format. This method avoids data transfer from logbook to magnetic media, a source of possible errors. The data is then sent, at approximately three-month intervals, to global collecting centres (GCCs) in Germany and the United Kingdom. These centres ensure that minimum quality control has been applied to the data, and then, every three months, supply data to eight responsible WMO Members (Germany, Hong Kong-China, India, Japan, Netherlands, Russian Federation, United Kingdom and the United States of America), each responsible for specific ocean areas for the preparation of climatological summaries.

3.3.4 The presentation by Mr Baddour provided several examples on the various applications of marine and ocean observations for long-term climate monitoring, as well as short-term climate applications such as monitoring ENSO and developing climate applications for various socio-economic sectors including -not exhaustive list- : Agriculture, fisheries, health, tourism, transport and energy. The presentation concluded that Marine metadata on the when, where and how observations were taken is essential for addressing homogeneity problem in climatology and adjusting the bias due to various methods of observations.

### **3.4 Trial solutions**

3.4.1 Following Resolution 7, adopted during the Fifty-eighth WMO Executive Congress (EC-LVIII), a number of trial technical solutions have been proposed and/or implemented by Australia, Canada, Japan (see also paragraph 5.6), and European Countries participating in the Surface Marine Programme of EUMETNET (EUCOS/E-SURFMAR), and USA (see also paragraph 5.7). These items are detailed further in Annex VI.

3.4.2 Other countries have indicated to the WMO Secretariat that they would not be using any masking scheme:

- New Zealand explained that they have presently no plans to implement a masking scheme, but that in case ship owners and masters of ships recruited by New Zealand would express concerns, they would favour implementing a masking scheme using unique identification numbers (i.e., alias call signs) allocated by the WMO Members in order to permit quality monitoring activities to be conducted properly.
- South Africa is following the similar principals as those of New Zealand.

## **4. IMO Report**

4.1 The IMO Representative, Mr Hesse, reported on Resolution MSC.202 (81) amending the SOLAS Convention and adding in particular the Regulation 19-1 "Long-range Identification and Tracking of ships" (LRIT). The new regulation, which will be enforced as of 1 January 2008, requires ships to transmit LRIT information.

4.2 Subject to the provisions of the regulation, contracting Governments shall be able to receive long-range identification and tracking information about ships, for security and other purposes as agreed by the Organization. According to this regulation, ships subject to the regulation shall automatically transmit the following long-range identification and tracking information: the identity of the ship, the position of the ship (latitude and longitude), and the date and time of the position provided.

4.3 The regulation also states that contracting governments shall at all times recognize and respect the commercial confidentiality and sensitivity of any long-range identification and tracking information they may receive, protect the information they may receive from unauthorized access or disclosure, and use the information they may receive in a manner consistent with international law.

4.4 The Meeting was informed that systems and equipment used to meet the requirements of this regulation shall conform to performance standards and functional requirements not inferior to those adopted by the Organization. Any shipboard equipment shall be of a type approved by the Administration.

4.5 Ms Sarah North, representing the United Kingdom, asked whether the LRIT could be used to transmit weather observations collected by ships. Mr Hesse explained that IMO Regulations provided for the minimal requirements, so in principle, this could be done without changing the performance standards. Cooperation of the SOT with appropriate MSC Sub-committee(s) could be established to explore this option.

4.6 Dr Peter E. Dexter, Co-president of JCOMM recalled that the VOS Scheme was presently using the International Telecommunication Union (ITU) call signs for the ship's identification of VOS observations distributed in real-time, but that such use was causing problems because the call signs can be occasionally reallocated to other ships. The Meeting agreed that the IMO identification numbers could be an option to consider in the future. Mr Hesse proposed to investigate whether the IMO number database could be made routinely available to the WMO community for such purpose and under what conditions.

## **5. National Reports**

5.1 The WMO Members represented at the meeting presented their national perspectives on the issue. Reports have been presented on behalf of Australia, Canada, France, Japan, the United Kingdom of Great Britain and Northern Ireland (UK), and the United States of America (USA). These reports have been reproduced and are provided in Annex IV.

5.2 The Meeting agreed that the perspectives and concerns expressed by the WMO Members differed in a number of instances. At the same time, it was recognized that ship owners and masters concerns were not necessarily related to security issues, but also to commercial activities, especially for bulk carriers.

5.3 The United Kingdom Representative, Ms Sarah North, thanked Japan for its efforts to provide for a trial solution that would permit to meet the requirements of marine meteorology and climatology. However, she raised concerns regarding the solution proposed by Japan, as it would adversely impact on the Met Office's role as the WMO Commission for Basic Systems (CBS) lead centre for the quality monitoring of marine data (i.e., the CBS Regional Specialized Monitoring Centre (RSMC), Exeter) and as the Real-Time Monitoring Centre (RTMC) for the Voluntary Observing Ships Climate Subset Project (VOSCLim). Substantial effort would be required to adjust the Met Office's data processing schemes to accommodate the Japanese solution. In addition to a system for the management of duplicates, there was also the issue(s) of degradation in the timeliness of the non-masked VOS report (20 minutes maximum according to the Japan Meteorological Agency (JMA)). Due to pressure of other related work and resource issues at the UK Met Office, it could take time, possibly into 2008, to implement such a solution based on the Japanese proposals. The Meeting recognized that there was also a risk that other countries may decide to adopt similar schemes to the JMA, and similarly put their data onto dedicated servers. The United Kingdom Representative pointed out that this would require National Met Services to make yet further changes to their data ingestion and processing systems.

5.4 The Met Office, as the Lead Centre for the quality monitoring of marine data, would therefore prefer that all countries adopt a common masking method similar to that of either E-SURFMAR or the Australia Bureau of Meteorology (BOM), with a unique masked identifier (i.e., an alias call sign) for each ship. Ms North also pointed out that if such an approach were to be adopted, that it would be preferable to have a single secure central server (possibly based at the JCOMM *in situ* Observing Platform, Support Centre (JCOMMOPS)) where all countries could register their lists of call signs and unique masked identifiers.

5.5 In discussing the various approaches, the Meeting generally agreed that it was preferable in the longer term to adopt a universally accepted solution using an agreed international system of masked call signs yet to be developed. Meanwhile, the meeting recommended that the JMA should take steps to substantially improve the data timeliness of the original data made available through its secured server and to directly discuss these issues with the United Kingdom Met Office how the technical procedures could be adjusted in order to minimize the impact of its trial solution on the RSMC, Exeter, and the VOSclim RTMC operations.

5.6 The CBS Representative, Professor Geerd Hoffmann, asked whether the data being sent via an FTP server should be regarded as additional data according to the WMO Resolution 40 (Cg-XII), as the data would otherwise be distributed on a free and unrestricted basis. The Meeting considered that such data could still be considered as essential provided that they reach their intended users in real-time in support of requirements expressed in Annex I of WMO Resolution 40 (Cg-XII). The US Representative, Mr Robert Masters, asked whether the call sign itself should be regarded as essential data, and suggested that masking the call sign completely was perhaps not absolutely necessary, and that there might be other solutions to address the ship owners and masters concerns. Professor Hoffmann explained that some unique ship identification number was necessary for automatic bias correction, for automatic removal of suspect observations, and for quality monitoring purposes. The unique identification number doesn't have to be the ship's call sign or the ship's name, and could be an alias. One approach could therefore be to consider that the ship's call sign does not necessarily have to be considered as an essential data, provided that any proposed scheme permits to meet the requirements expressed in Annex I of the WMO Resolution 40 (Cg-XII). The ICS Representative explained that a more secured numbering scheme could eventually be acceptable to the shipping industry, provided it addresses their concerns. The Meeting agreed that the ICS should also be invited to the upcoming Fourth Session of the JCOMM Ship Observations Team (SOT-IV, Geneva, Switzerland, 16-21 April 2007). The Meeting discussed this issue in more detail under Agenda Item 7.

5.7 The Japanese Representative, Mr Toshifumi Fujimoto, explained that the JMA trial solution was planned for implementation in April 2007. However, that the exact date of implementation has not been decided to date. Mr Fujimoto further explained that the name of the recruiting country (or the country of registration) should not be visible, as Japanese vessel crews are not carrying weapons onboard. The Japanese approach to the problem had permitted to resume the VOS recruitment as the number of recruited ships raised in 2006 (431 ships) as compared to the previous year (361 ships). The CBS, JCOMM, and ICS representatives suggested that the unique identification masking schemes proposed by Australia and E-SURFMAR could probably be easily adjusted in order to remove indication of the country from the identification number, as an indication of the country was perhaps not necessary. The meeting invited the SOT to work in that direction when designing unique identification schemes (or alias call sign schemes). Australia explained that it was prepared to change its numbering system accordingly, if necessary. The Meeting agreed that in case a unique identification, numbering scheme was adopted, some restrictions could eventually be applied to the WMO Publication No. 47 in order to avoid cross-referencing between a unique number and the ship's recruiting country.

5.8 The US Representative, Mr Masters suggested: (i.) making the data openly available according to WMO Resolution 40 (Cg-XII), and (ii.) selectively masking the ship's identification (when requested to do so by the ship owners and masters) could be an option to consider. In essence, this is the spirit of the US trial proposal, which is further detailed in the US Report in Annex IV. Using a lookup table of those who signed the agreement, only authorized users will receive the non-masked reports. The USA is proposing to start the Pilot trial as of 17 March 2007, and to inform the WMO community accordingly. The Meeting agreed that the US approach was acceptable. The Meeting also agreed that the JMA approach could be regarded as equivalent to the US one as the bulk selective masking scheme adopted by Japan for Japanese vessels follows a request by the Japanese maritime authorities. Mr Masters further explained that those using the data for tracking and other services were not represented at the meeting, and that solutions can be found to accommodate their use of the data in some measure while addressing the concerns

expressed in paragraph 2.3. Their services are useful to many in the shipping industry. He offered to investigate whether the private sector users of these data could help in reducing the cost or impact of a solution.

5.9 The Meeting asked the WMO Secretariat to liaise with USA and Japan in order to inform the WMO Members in advance about the implementation of their respective trial schemes.

5.10 The E-SURFMAR Representative, Mr Pierre Blouch explained that E-SURFMAR was now performing a trial initiated in mid-2006 (see item 3 of the E-SURFMAR report in Annex IV). Approximately 45 EUMETNET ships, including 38 AWS are presently reporting their observations in real-time on the GTS with masked call signs (unique identification numbers allocated by E-SURFMAR). This number continues to increase. For such ships, either of the following information is being submitted to the WMO Publication No. 47, depending upon the type of ship and/or recruiting country:

- the unique identifier allocated by E-SURFMAR (replacing the ITU call sign) as well as all the usual metadata excepted the ship's name and the IMO number;
- the usual metadata, including the ship's call sign but with no reference to the unique identifier allocated by E-SURFMAR.

Cross-referencing between the unique identifiers allocated by E-SURFMAR and the IMO numbers (or ship names) may be confidentially provided by the E-SURFMAR upon request. Practically, ship names having their call signs masked do not appear anymore the public websites.

## **6. Reports by other concerned Organizations**

6.1 The International Association of Independent Tanker Owners (INTERTANKO) and International Association of Dry Cargo Ship-owners (INTERCARGO) representative, Mr Xianyong Zhou provided a report on behalf of the two organizations representing the international wet and dry bulk carrier shipping sectors. Both organisations welcome and appreciate WMO's efforts to address the security concerns regarding the public availability of VOS ships real-time position. Such information in the public domain greatly undermines the efforts of the shipping industry in implementing and complying with the requirements of the ISPS Code by creating additional security concerns. The WMO initiative to involve the shipping industry in addressing these and other issues regarding VOS ships is not only proactive but appreciated and very welcomed. As providers of VOS information and also end users of the collated information INTERTANKO and INTERCARGO continue to support the work of WMO and will encourage the member ship owners of both Organisations to participate in the VOS system.

6.2 The WMO Secretariat Representative, Mr Cabrera, Chief of the Ocean Affairs Division, read the statement by the Ministry of Land, Infrastructure and Transport, JAPAN (MLIT). The full statement is reproduced herewith in Annex VII.

## **7. Discussion and possible solutions**

7.1 Mr Murray reiterated that the ICS was fully supportive of the VOS Scheme, and was willing to take every opportunity to encourage ship owners and seafarers to contribute to the vital data gathering that the scheme supports. One of the primary concerns of the ICS and the shipping industry in this regard was the availability of ship's information on public websites because of its potential implications with regard to ship security and/or commercial activities.

7.2 The Meeting agreed that unless the concerns expressed by the ICS were adequately addressed, it would be difficult to halt the current decline in numbers of ships participating in the VOS Scheme. The WMO stated that it recognized the concerns expressed by ICS, and was willing to work with ship owners to solve these problems. The ICS, INTERCARGO, and INTERTANKO encouraged the WMO community to work towards a global and standardized solution to the problem where the availability of ship identified data on public websites is recognized as causing



concern. The Meeting further recognized that better promotion of the VOS Scheme by the WMO Community and the SOT in particular (working closely with the shipping industry and their representatives) was necessary, as the unique contribution of shipping to gathering marine meteorological data was frequently not sufficiently recognized. All representatives agreed that the added value of VOS observations in support of marine meteorology and climatology and maritime safety should be better presented to the shipping industry. An improved understanding by the shipping industry of the value of its support for the collection of marine meteorology data could reinforce its commitment to participating in data collection.

7.3. Regarding the WMO Resolution 7 (EC-LVIII), requesting “*the Secretary-General, as a high priority issue, to establish a high level dialogue, involving affected Members, the International Maritime Organization, the International Chamber of Shipping, shipping companies, and relevant organizations and technical commissions (e.g. Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, Commission for Basic Systems), in order to determine if there is a link between VOS data availability on external Web sites and piracy and other ship security issues*”, the Meeting agreed that the demonstration of the link had not been made thus far, and that reaching this goal was going to be difficult to achieve. The ICS recalled that the shipping industry has to comply with the ISPS code, which is driving concerns because of potential misuse of information that could eventually appear on public websites. Nevertheless, the Meeting recognized that the perception that there is still a link existing in the shipping industry, and that such security concerns had to be addressed. The Meeting also recognized that different countries had different approaches to the security issue. This issue was more important for some Members than others, especially in their coastal regions. Nevertheless, the Meeting agreed that security issues had to be considered and a global approach eventually proposed. The ICS representative, Mr John Murray, explained that in addition to security concerns, to be equally considered were the concerns of commercial considerations amongst the shipping companies.

7.4. The Meeting also recognized that there were a number of specific issues to be addressed in any solution, including, but not limited to:

- IMO concerns related to the implementation of the LRIT system and the confidentiality of the ship data.
- Shipping industry concerns (ship security and commercial considerations amongst shipping companies), which have been taken into account in the development of the IMO LRIT system.
- Protecting the partnership of the WMO Members in the private sector, consistent with principles stated in WMO Resolution 40 (Cg-XII).
- Ensuring the Quality of the marine safety products, through appropriate quality monitoring activities (i.e., detection of systematic errors, bias correction, identification of suspect ship observations, and feedback of detected problems back to the recruiting country). Observations where the ship's identity is masked can be assimilated in the NWP models. However, the Meeting agreed that the identity of the ship was important to ensure the quality of the data assimilation. Therefore, the concerns are as follows: (i.) automatic bias correction and real-time removal of systematic errors becomes impossible, and (ii.) the weight given to such observations in the models would be smaller because the confidence in the quality of the data therefore becomes lower.
- Impact of possible solutions on the complexity of the data management systems to put in place (software, human resources and cost issues). The United Kingdom, for example, mentioned the impacts of implementing some of the trial solutions on the operations of the CBS RSMC, Exeter, and the VOSclim RTMC. The USA agreed that the complexity implied with regard to trial solutions was an appropriate question to ask for all options considered and for the long term.
- Both short term and long-term climate studies where information to relate the observational data to the ship metadata (WMO Publication Number 47) is essential.

7.5. The Meeting agreed that there was the potential for increased VOS data, if a cost-effective solution of collecting meteorological observations can be agreed upon, while at the same time preventing the unintended use of the information for tracking ships for the reasons stated in paragraph 2.3. The Meeting agreed that the main aspect of the problem was the presence of ship's information on public websites when this is not authorized by the ship master and/or owner and that solutions should be proposed. Three solutions consistent with WMO Resolution 40 (Cg.-XII) have been discussed and considered by the WMO Members thus far (see Annex VI for further details regarding these solutions):

- Australia and E-SURFMAR are proposing and implementing (on a trial basis), the use of unique identifiers, which would be managed by them.
- Japan is proposing and implementing (on a trial basis) an improved generic masking scheme with real-time access to the original reports via a secured server (within 20 minutes of the observations).
- USA is proposing and implementing (on a trial basis) a solution similar to the solution proposed by Japan. This would apply in case the shipping company is specifically asking for it.

7.6. The E-SURMAR programme manager, Mr Pierre Blouch, presented a table showing how well requirements are met for some applications, and/or how the concerns are addressed on one hand versus different security levels (low, medium, high) on the other hand. An example of this table is provided in Annex VIII. The Meeting agreed that this was an appropriate approach, and asked Mr Blouch, in consultation with the meeting's participants, to complete the proposed table in such a way to reflect as many possible concerns in the table, including those listed in paragraph 7.4 as mentioned above. The Meeting's participants will be invited to provide Mr Blouch with the list of concerns and/or applications they believe should be added in the table.

7.7. Regarding the WMO Resolution 7 (EC-LVIII), the Meeting noted that none of the trial solutions had been fully implemented yet, but were currently underway. However, it is unlikely to expect a clear understanding of the trial solutions' impact by the WMO Fifty-ninth Executive Council (EC-LIX). Therefore, the Meeting agreed that a review of the implementation impact of masking should be undertaken by the upcoming SOT session. It was agreed by all participants that it was premature to ascertain whether any of the proposed schemes were more appropriate than others to meet the various concerns expressed. Taking the different perspectives and expressed concerns into account, the Meeting recommended that the WMO Members represented at this meeting, consult nationally in the next two months in order to present a coherent and more focused proposals at the upcoming Fourth Session of the SOT (SOT-IV, Geneva, Switzerland, April 2007), that could be reviewed by the SOT and possibly endorsed. The SOT-IV will be invited to address these issues with the goal of tentatively proposing a unified solution. The ICS, IMO, CBS, and CCI will be invited to participate at the upcoming SOT-IV meeting. Regarding the proposed trial solutions, the Meeting agreed that the dialogue should continue on how each of the proposed solutions addresses the concerns being expressed by the ship owners, the data collectors, and the data users. Each solution should be evaluated on an objective basis considering a number of criteria, including cost, ease of implementation, timeliness, sustainability, etc. The meeting further agreed that all reasons for using a particular approach (including secondary ones), should be expressed so they can be considered by all.

7.8. As a general principle, the Meeting agreed that the meteorological report, including the date, time, position and the measured geo-physical variables from VOS reports was essential for time critical meteorological applications as far as the relevant shipping companies allow for the exchange of VOS reports with no conditions on use according to WMO Resolution 40 (Cg-XII). Other variables, such as some unique ship identification, and the name of the country recruiting the ship could also be considered as critical to various applications although it was considered that this should be addressed by the SOT. The ship's call sign was not considered as essential in the context of WMO Resolution 40 (Cg-XII) provided that the above variables are made available. To consider these issues, to review the current trial solutions and their implications, and to make

recommendations taking the Meeting's agreed principles into account, the Meeting recommended that the SOT establish, as soon as possible, an *ad hoc* Task Team on Call Sign Masking Schemes. The Team could work by email initially and then meet initially in conjunction with the fourth SOT meeting.

7.9. The Meeting identified possible long-term solutions such as the use of table driven code forms and encryption where the ship's call sign is "randomized" using variable information such as date/time so that two successive reports from the same ship would produce different encrypted values, hence making it impossible to track a given ship without access to the proper decryption key. Some Members are making it possible for ships to initiate their participation in the VOS Scheme without direct help from a PMO or VOS Programme operator (e.g., self-training by directly downloading the marine observation manual from the NMHS website). Any long-term solution should continue to provide for such options without unnecessary complication such as allocating alias or randomized call signs by the ship.

7.10. The Meeting further agreed that it was also premature to make any specific recommendation as far as the long-term solutions are concerned. It recommended that the upcoming SOT-IV Session address further the specific issues noted above.

7.11. Following the SOT-IV, the Secretariat should prepare a report to the Fifty-ninth WMO Executive Council (EC-LIX) proposing to maintain Resolution 7 (EC-LVIII) in force and to continue the trials for another year, on the basis of the recommendations from the SOT regarding a unified approach to call sign masking. The report should reflect that while the link between the VOS and piracy is not clear, the concern of the ship owners regarding the use of VOS for tracking of ships is clear.

7.12. A summary of the meeting's recommendations and/or agreed principles is provided in Annex V of this report.

## **8. Other issues for enhancing the cooperation between the WMO and IMO**

8.1. The Meeting addressed a number of issues of interest to the WMO and IMO Members. The Meeting recalled JCOMM's structure, in particular the JCOMM Services Programme Area (SPA) and its Expert Team on Maritime Safety Services (ETMSS) and Expert Team on Marine Accident Emergency Support (ETMAES), which deal with issues closely-related to IMO activities. The Meeting also recalled the main goal of the SPA, and its key challenge for the current intersessional period, as well as the Terms of Reference (ToR) of the ETMSS and ETMAES. The Meeting was informed that a new structure for the SPA for the remainder of this intersessional period is focusing all current Expert Teams (ETs) on a common theme of Maritime Met-ocean Support and Safety Services, in order to help the SPA ETs work more effectively together, was agreed during the third session of the SCG (SCG-III, Exeter, United Kingdom, from 7 to 10 November 2006).

### **8.2. Revision of MSC/Circ. 1017**

8.2.1. The Meeting discussed the possible revision of the IMO Maritime Safety Committee (MSC) Circular Number 1017, "Participation in the World Meteorological Organization Voluntary Observing Ship' (VOS) Scheme". The IMO representative, Mr Hartmut Hesse, welcomed this initiative and suggested how it could be revised. He recalled that the circular had been issued by the International Maritime Organization (IMO) on 11 June 2001, in response to a request sent from the WMO to the IMO. It revoked a previous MSC Circular (MSC/Circ. 674.) issued in 1994, regarding the same matter, and with the intent of enhancing the recruitment of merchant ships in the VOS Scheme. The MSC/Circ. No. 1017 includes a brochure describing the VOS Scheme and its goals.

8.2.2. The Meeting recommended to address the ship owners and masters concerns with regard to VOS data exchange in the revised circular and to indicate how the issue was being addressed by the WMO community, including some of the recommendations from this meeting. The revised

circular should enlighten the need for the VOS scheme participation of the shipping industry vis-a-vis the concerns expressed. It should also include references to the Regulation V/5 on Meteorological Services and Warnings of the SOLAS convention. The Meeting agreed that the revised draft circular should be considered by the Fourth SOT meeting for complementing it. Based on the SOT considerations, the WMO and IMO Secretariats will then liaise for finalizing the draft in order to submit it to Eighty-ninth Session of the MSC (MSC-89) for consideration.

8.2.3 The Meeting discussed whether it would be appropriate to promote an MSC Resolution in addition to the revised MSC Circular. The Meeting eventually agreed that this was premature as long as the WMO community is experimenting trial solutions to address the ship owners and masters concerns. It was suggested to wait for the outcome of the pilot trials for possibly proposing an IMO Assembly Resolutions.

### 8.3. Marine Meteorology and Oceanography Services

Regarding Maritime Safety Services (MSS), the Meeting was informed of the potential areas of collaboration with the IMO, ICS and other relevant organizations, and the WMO activities in these areas, such as: Graphical Weather Services, Tsunami Maritime Safety Information for Mariners, new potential Arctic NAV/METAREAs, the Global Maritime Distress and Safety System (GMDSS) website, Marine Pollution Emergency Support System (MPERSS), support to Search and Rescue (SAR) operations, services for HABS and other bio-chemical events, Operational Ocean Forecasting Systems, and users' feedback. The Meeting was also informed of the SPA website (<http://www.jcomm-services.org>), and the ETMSS and ETMAES recommendations that urged the WMO Secretariat to consider proposing a Resolution to the IMO on met-ocean services similar to A.706(17) for navigational warnings.

8.3.1 The IMO representative, Mr Hartmut Hesse, acknowledged the information provided and pointed out that the WMO interests are currently being considered by the IMO to enhance further collaboration between both organizations, which would be mutually beneficial. The Meeting noted that several of the topics presented by the WMO Representative are also under the responsibility of the IMO Maritime Safety Committee (MSC) or appropriate Sub-committees on Safety of Navigation (NAV) and Radiocommunications and Search and Rescue (COMSAR), and the IMO Marine Environment Protection Committee. The Meeting noted that the MPERSS and operational ocean forecasting systems are of interest to the IMO in a number of projects. The IMO representative noted with appreciation the GMDSS website, and expressed IMO's interest to collaborate on the improvement of this website. Mr Hesse thoroughly acknowledged the WMO suggestion to consider proposing a Resolution to the IMO on met-ocean services similar to A.706(17) for navigational warnings and suggested the steps to move toward the approval process to be presented during the upcoming IMO Assembly (proposed for late 2007). Mr Hesse also recommended that the WMO present the first proposal to the IMO Sub-committee on Safety of Navigation (NAV) (mid-2007) for endorsement.

8.3.2 The International Chamber of Shipping (ICS) also noted with appreciation the presentation by the WMO Representative, Mr Edgard Cabrera, and informed the Meeting of its willingness to collaborate with the WMO and IMO on related issues. The ICS also drew attention to the e-navigation project currently being undertaken by the IMO, and noted the potential relevance of this project to advanced electronic applications of the VOS Scheme. The ICS further offered to cooperate with both the IMO and the WMO in this regard.

8.3.3 The Meeting supported these activities and recommended that the WMO and IMO focus their common activities in specific topics to be considered as Pilot Projects (e.g., GMDSS website, SAR and MPERSS).

8.3.4 The United Kingdom representative, Ms Sarah North, also supported the need to enhance collaboration between the WMO and IMO, not only on marine meteorology and oceanography services, but also on training ship officers to comply with current observing practices.

## 9. Any other business

9.1 The United Kingdom Representative recommended to enhance the cooperation with the IMO in a number of matters, including, for example: (i.) including more information in the electronic charts and other products made available by the WMO Members to the ships, (ii.) training of ship officers to comply with the current observing practices, and the use of Automatic Weather Stations (AWS) onboard the ships. The Meeting agreed that the use of AWS should be encouraged as a means to increase the number of VOS observations made available in real-time to the WMO community. The AWS are now relatively inexpensive and the communication can be turned off in certain conditions in order to save cost. However, the Meeting noted that despite efforts made by some WMO Members to develop and test cost-effective shipboard AWS, considering the current VOS infrastructure of some NMHS, they are still far out of reach in a number of instances.

9.2 The INTERCARGO and INTERTANKO Representative supported the comments by the United Kingdom, and indicated that the two organizations would continue to support the WMO activities and will encourage Members to participate in the VOS Scheme.

9.3 The Meeting recalled that at its Third Session in Brest, France, 7-12 March 2005, the SOT had initiated work on the development of "generic" pre-installation design standards that could eventually be available to ship owners, ship builders and classification societies for the various categories of ships participating in the VOS Scheme. It was considered that these design requirements might perhaps form the basis of a series of 'weather ship' class notations that could be requested by ship owners when requesting their new buildings and advising their requirements to the classification societies. The requirements could be as simple as making provision for suitable space in the wheelhouse for siting meteorological instruments, or providing extra cabling capacity for remotely-sensed sea temperatures, or gyro output connections to provide compass data to our anemometers. Alternatively, ship owners may wish their vessels arrangements to be suitable for housing more complex meteorological or oceanographic equipment. By taking such factors into account at the design stage, it avoids the problems incurred when trying to find suitable space to locate meteorological equipment on existing ships, or when trying to retrofit more complex observing equipment. The basic idea is to provide a future "pool" of potential VOS, which could be available, with the support of ship owners and Masters, for recruitment into the VOS Scheme at a later stage.

9.4 The Meeting agreed that, provided a simple and generic design standards could be adopted, this could potentially facilitate the recruitment of ships in the VOS fleet and the installation and siting of meteorological instruments. The active support and assistance of ship owners and of the classification societies was required. The United Kingdom Representative suggested that the issued should be brought to the attention of the ship owner associations and classification societies for their consideration and response.

9.5 The INTERCARGO, INTERTANKO, and ICS Representatives expressed reservations regarding the ship design issue as this might have cost implications for the shipping industry. Further, they expressed reservations regarding the involvement of the IACS during the ship design stage to include some of the VOS requirements. It was noted that the current IACS system is mainly for ship classification and statutory inspection. The ship design and equipment installation to have VOS function are neither a classification element nor a mandatory requirement. In addition, most of the new buildings are not targeted to become VOS ships. Therefore, the involvement of the IACS to check ship design and equipment installation regarding VOS function may give the wrong perception to the shipping industry in terms of the voluntary nature of the VOS Scheme. The Chairperson recalled that participations in the VOS Scheme was primarily decided by the ship owner. It was noted that the VOS Scheme is based on the principle of, 'no cost to the shipowner'. The WMO proposal would presumably have cost implications during ship building and ICS considered that prior to it providing formal comment it would be necessary to study detailed proposals including details of how the current, no cost, principle would be maintained. The

Meeting agreed that in any case the ship owners eventually decide on what building standards they will use.

9.6 The Meeting recommended to focus on specific actions such as ship design. It recommended that the SOT draft a document describing the requirements for submission to the ICS. The Meeting recommended to use the opportunity of the IMO meetings in London to organize informal side meetings, involving the WMO/IMO/ICS and others, as appropriate, to address a number of possible joint pilot projects, such as this one.

9.7 The United Kingdom Representative explained that some ships are currently already using sophisticated meteorological instruments, so one of the first steps would be to have these instruments comply with the WMO requirements.

9.8 The IMO Representative indicated that the ship builders are represented in some of the IMO sub-committees, such as the sub-committee on ship design and equipment (DE) and that approaching them may be an option.

9.9 Regarding the promotion of the VOS programme, within the shipping industry in particular, the Meeting recommended the preparation of a DVD coordinated by the WMO Secretariat and asked the SOT to make recommendations in this regard. The DVD should focus on the usefulness of meteorological observations to be used nationally or internationally. The ICS Representative indicated that the ICS was very supportive of the scheme, and would therefore be very supportive of this initiative. The Representatives of Australia, Japan, United Kingdom, and USA indicated that existing materials they had already produced could be used as a starting point. The Japan Meteorological Agency (JMA) has, for example, produced a brochure on Marine Meteorological Information Services for Shipping and Fishing that was distributed to the meeting's participants.

## **10. Closure of the meeting**

10.1 The summary of the Meeting's Action Items is reproduced in Annex V.

10.2 In closing the meeting, the Chairperson expressed his appreciation to all participants for their very positive and valuable input to the discussions, to what had been a very successful meeting. He further concluded by thanking, on behalf of all participants, the Secretariat for their ongoing support, the WMO for hosting the meeting.

10.3 On behalf of the WMO Secretariat, Mr Cabrera, Chief of the Ocean Affairs Division, thanked the participants for their work and for their assistance in progressing on the ship owners and masters concerns with regard to VOS data exchange. He gave a special thanks to the IMO, ICS, INTERCARGO, INTERTANKO, the WMO Technical Commissions and the WMO Members represented at the meeting for their participation and continued support.

10.4 The WMO-IMO Consultative meeting closed at 1300 hours on Tuesday, 13 February 2007.

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## ANNEX I

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ANNEX I

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**ANNEX II**

**WMO-IMO High Level Consultative Meeting  
(Geneva Switzerland, 12-13 February)-**

**AGENDA**

1. Opening of the meeting
  2. Briefing on ship owners and masters concerns regarding VOS data exchange
  3. WMO Report
    - 3.1 WMO data policy
    - 3.2 Requirements for quality monitoring and feedback
    - 3.3 Requirements for climate applications
    - 3.4 Trial solutions
  4. IMO Report
  5. National Reports
  6. Reports by other concerned Organizations
  7. Discussion and possible solutions
  8. Other issues for enhancing the cooperation between WMO and IMO
    - 8.1 Revision of MSC/Circ. 1017
    - 8.2 Maritime Safety Information
    - 8.3 Marine Pollution Emergency Response Support System
    - 8.4 Support to Search and Rescue (SAR) Operations
    - 8.5 Operational Ocean Forecasting System
  9. Any other business
-

**ANNEX III**

**RESOLUTION 7 (EC-LVIII)**

**Res. 7 (EC-LVIII) – SHIP OWNERS AND MASTERS' CONCERNS WITH REGARD TO VOS DATA EXCHANGE**

**THE EXECUTIVE COUNCIL,**

**Recalling** the request made by EC-LVII for the JCOMM Ship Observations Team (SOT) to assess the risks associated with allowing Voluntary Observing Ships (VOS) call signs and position data being made freely available on external Websites not maintained by the National Meteorological or Hydrometeorological Services (NMHSs), and to provide options to address the problem, as appropriate,

**Noting** the proposals prepared by PMO-III and endorsed and submitted to the Executive Council by the JCOMM Co-presidents,

**Acknowledging;**

- (a) The seriousness of the problem which, if not adequately addressed, could ultimately lead to the disappearance of the majority of VOS reports available on the GTS,
- (b) The concerns on the issue expressed by ship owners and masters,

**Recommends:**

- (a) Members who, in consultation with ship-owners, wish to protect the identity of VOS may implement ship call sign masking, for a trial period of one year, a process which would facilitate open distribution of masked data on the GTS;
- (b) All Members implementing such a process to provide for the secure exchange of ship call signs and reports affected by the masking process, so as to assist in resolving real time monitoring and climate analysis problems;

**Requests** the Secretary-General, as a high priority issue, to establish a high level dialogue, involving affected Members, the International Maritime Organization, the International Chamber of Shipping, shipping companies, and relevant organizations and technical commissions (e.g. Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, Commission for Basic Systems), in order to determine if there is a link between VOS data availability on external Web sites and piracy and other ship security issues; to review the implementation and impact of masking; and to propose a general and universally acceptable solution to the issue that would address ship owners and masters' concerns as well as the data monitoring and quality information feedback requirements, for consideration by the fifty-ninth session of the Executive Council in 2007.

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## **ANNEX IV**

### **NATIONAL REPORTS**

#### **REPORT BY AUSTRALIA**

The problem of ship security, resulting from plotted ship positions based on BBXX reports, became an issue in Australia over five years ago, long before the issue was raised at the SOT-III (Brest, France, 2005) as a concern to all VOS fleets.

After this initial incident that caused the Bureau to remove over 5000 yearly BBXX reports from two ships from the GTS, another company with eight LNG tankers threatened to withdraw its vessels after seeing one of its vessels plotted on the same website (sailwx).

Many other countries have now experienced similar incidents with either threatened or seen the actual withdrawal of vessels of national VOS Fleets.

In response to the WMO recommendation arising from the Fifty-eighth Executive Council (EC-LVIII), the Bureau has developed a call sign masking scheme that provides each ship in the Australian Voluntary Observing Fleet (AVOF) with a unique masked call sign.

Whilst the scheme has been developed and satisfies our own requirements and at the same time does not infringe on any real call sign series allocated to a country by the ITU, the scheme has yet to be implemented across the fleet.

It is my intention as the Chair of the SOT to discuss the call sign masking issue at the upcoming SOT-IV Session (Geneva, Switzerland, 16-21 April 2007), and to propose the creation of a small team to endorse all call sign masking schemes proposed by national VOS Focal Points (VOS FPs) to: (1.) ensure uniqueness within and across schemes, and (2.) ensure there is no conflict with the ITU call sign series (as was the case with one a segment of the E-Surfmar solution).

Graeme Ball  
Manager, Marine Operations Group, Australian Bureau of Meteorology  
Chair of the JCOMM Ship Observations Team

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**REPORT BY CANADA**  
**SECURITY OF THE**  
**VOLUNTARY OBSERVING SHIP (VOS) PROGRAMME**

**International VOS Ship Security Issue**

Some ship owners and masters have concerns regarding availability of VOS ship's reports, which include call signs and positions, being made freely available on websites not controlled by National Meteorological and Hydrological Services (NMHSs). Due to the voluntary nature of the VOS scheme, ship owners and masters may withdraw their vessels completely from the Programme if they are concerned about this risk.

**Position**

The Meteorological Service of Canada (MSC) wishes that WMO Members and partners taking part in the VOS Programme will find a solution which will enable the continued free and unrestricted international exchange of meteorological information, as stated in Resolution 40, (Cg-XII) of the WMO, in support of safety, security and economic benefits.

One proposed solution in achieving this goal would be to allow call signs to be hidden, but still tracked and used for data quality monitoring. The identity of ships would therefore be hidden from the general public but still be available to NMHSs.

**Current Process in Canada to Address the Ship Security Issue**

The MSC addresses the security issue through a software/firmware upgrade in the automatic Voluntary observing Ship (AVOS) systems.

MSC has two groups of vessels which have, or plan to have, an automatic VOS systems installed:

1. Canadian Coast Guard (CCG) vessels used for the interception of criminal actions at sea

In this case, the CCG chooses not to have the AVOS installed on certain vessels. For those ships which do have the AVOS, the call sign transmitted is "SHIP". Also, there is a STEALTH-mode available for activation if the ship's master feels the necessity to use it. When Stealth-mode is activated, the AVOS continue to collect and store data but the data is not transmitted. Upon the deactivation of the Stealth mode, the AVOS resumes transmitting data from that time onward. The MSC is currently developing a process to accept all stored data for distribution to the international community after the fact.

2. Privately owned vessels

For those ships, the call signs are not be masked. STEALTH-mode will be made available for activation and deactivation upon an individual request of ship owners and masters. To date, this request has never been made.

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## REPORT BY FRANCE

### 1. Background

1.1 Météo-France did not receive any official complaints from companies, shipping authorities or master of the VOS about the display of ship's positions on the Web. However, Météo-France is operating a few special ships, which require a minimum of discreetness. The use of a unique mask for each ship, (MASK), was agreed by the parties.

1.2 Actually, no other method than a reclassification of ship data from "essential" to "additional" according to WMO Resolution 40 (Cg-XII), would address the concerns of ships operating in data sparse areas.

### 2. Meteo-France trial

2.1 Météo-France is convinced that, in addition to the security issue, the use of MASK instead of REAL call signs may help in the management of VOS fleets. Data monitoring (availability, timeliness and quality), quality information feedback, as well as computation of compensations for observations and communications could be made more efficient through this way.

2.2 Consequently, Météo-France is participating in the trial on the use of E-SURFMAR style MASK identifiers. By the end of January 2007, thirty-four French VOS equipped with AWS stations and four using TurboWin have had their identifiers changed and the deployment is continuing.

2.3 For an unknown reason, the plotting of positions disappeared from the main concerned website for simple French AWS after their identifiers were changed. A master asked us the possibility to have his ship plotted back. Other categories of ships still appear on the Web but, henceforth, they are no more identified with their names.

### 3. Data monitoring

3.1 Météo-France has been concerned by the near real-time monitoring of VOS data since, a set of Quality Control tools have been developed to manage the E-SURFMAR programme. These tools are used in addition to the monitoring products issued by the RSMC of Exeter. Available on the Web, they are also used by non-European VOS operators to monitor their fleets. It is essential to them that individual ships keep a unique identifier. Although no adaptation is required to correctly process the observations fitted with MASK identifiers instead of REAL, the removing of ambiguity for those fitted with SHIP masks would require significant efforts.

### 4. Conclusion

4.1 Météo-France recognizes the concerns being expressed by ship owners on the security issue and considers the E-SURFMAR proposal a good compromise between ship's security and data monitoring requirements. The use of MASK call signs allow to continue the providing of ship's data – considered as being "essential" – on a free and unrestricted basis according to WMO Resolution 40 (Cg-XII). Météo-France would like to see the E-SURFMAR proposal widely adopted.

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## REPORT BY JAPAN

### Japan Meteorological Agency

#### 1. VOS security issues in Japan

Owing to rampant piracy around Japan, including the South China Sea and the Malacca Strait, the Japanese ship owners are seriously obliged to reduce possible security risks of a number of ships navigating the area.

In September 2005, the VOS security issue was first raised from a strong appeal by the Japanese Ship-owners' Association (JSA) addressed to the Maritime Bureau of the Ministry of Land, Infrastructure and Transport (MLIT) concerning the possible security risks in shipping which are incurred by call signs and positions of VOS displayed on public websites (for example: <http://www.sailwx.info/shiptrack/shiplocations.phtml>).

Taking this emergent situation into consideration, the Maritime Bureau recommended the Company Security Officers (CSOs) to suspend weather reporting from ships. The Japan Meteorological Agency (JMA) discussed this issue with the Maritime Bureau, JSA and other-related organizations to seek the way out to resume weather reporting, which is indispensable to both safety navigation and weather monitoring. As a result, a tentative measure to replace original call sign with a dummy call sign "SHIP" was recommended to mariners until this problem is solved. As of January 2007, approximately two thirds (60-70%) of reports from Japanese VOS are using "SHIP" masking.

#### 2. Solution for VOS security and VOS data quality in Japan

In accordance with the Resolution 7 (EC-LVIII), the JMA, the Maritime Bureau, the JSA and other-related organizations exchanged views and consented to "generic masking" as a feasible option for all in September 2006.

#### 3. Generic masking in Japan

According to the above consent in Japan, a new measure as a trial basis will commence in April 2007. In this measure:

*(1.) The Japanese ships resume weather reporting with the original call sign;*

The ships which prefer "generic masking", will require registrations at the JMA. If the Japanese owners register their ships recruited by other countries on "generic masking" list, the JMA will duly inform each recruiting country of the ships names through Port Meteorological Officers (PMO).

*(2) The JMA replaces call signs with a dummy call sign "SHIP" before disseminating them on the Global Telecommunication System (GTS); and*

JMA replaces call signs in the weather reports received from registered ships through the Yamaguchi INMARSAT LES. The JMA will also replace call signs by "SHIP" upon receiving requests from foreign ships, in the same way as the VOS recruited by Japan.

If the U.S. starts to replace call signs in the weather reports through the Santa Paula LES and the Southbury LES, "generic masking" can cover all over the world.

*(3) The JMA provides the data with the original call signs to NMHSs for weather forecast, quality monitoring and climate analyses through a secured server installed at JMA.*

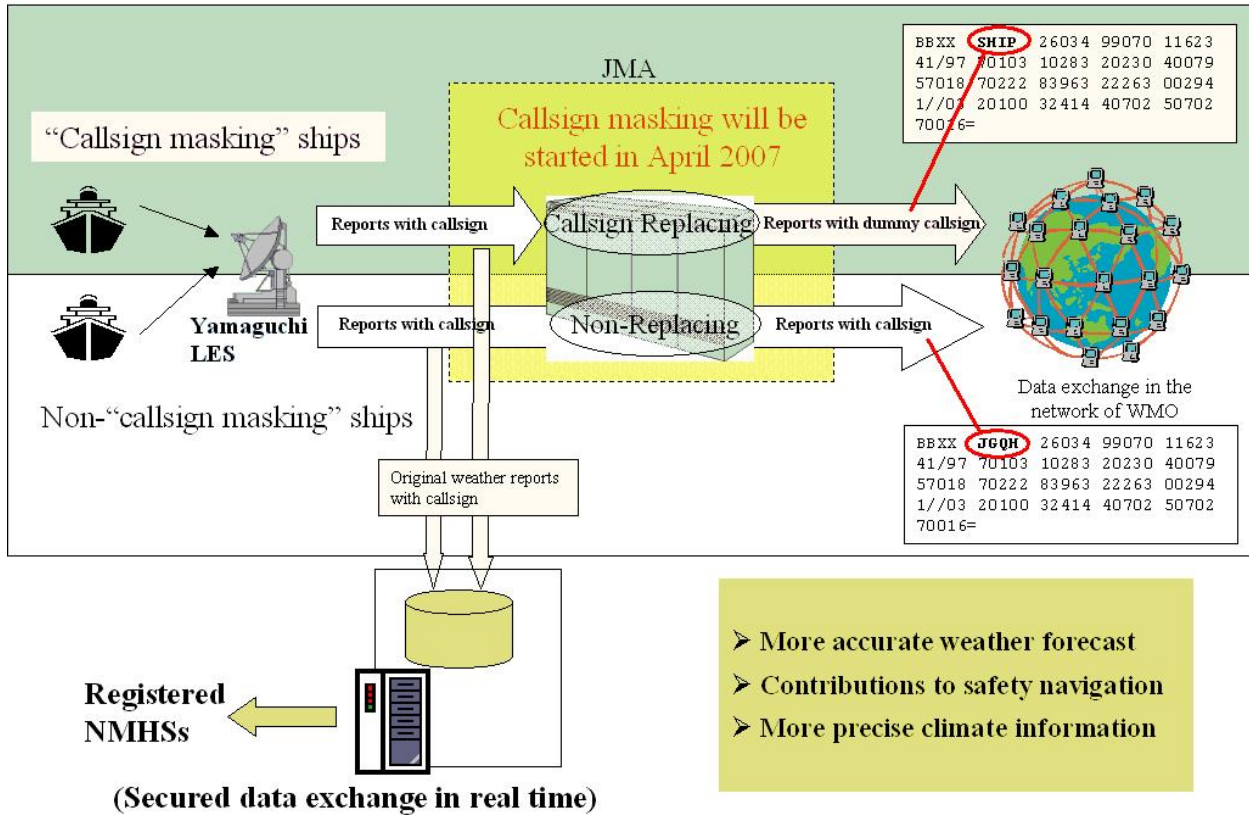
NMHSs who need the original call signs, should be registered at the JMA. The registered NMHSs shall not provide the original data to any third parties.

The security of the server will be assured by authentication and encryption system. The data with the original call signs becomes available within 20 minutes (at maximum) after the masked data are disseminated on GTS, which assures real-time provision of the data for operational use by NMHSs.

#### 4. Status of the implementation in Japan

On 20 December 2006, the Maritime Bureau announced the new measure to CSOs, while the Japan Meteorological Agency (JMA) has started the registration process for "generic masking." In April 2007, the JMA will start a "generic masking" and operation of the secured data server. The Japanese VOS is expected to resume weather reports with original call signs under the new measure.

## “Improved generic masking” onward April 2007





## REPORT BY THE UNITED KINGDOM

1. The Met Office fully appreciates the security concerns being expressed by some ship-owners, and being raised by the ICS, regarding the use of weather report data to identify the real-time positions of observing ships on external public websites. We also recognize the commercial sensitivity of such information being made widely available, and therefore seek a satisfactory resolution of the problem that will satisfy all parties.

2. The UK Voluntary Observing Fleet, operated by the Met Office, currently comprises over 380 observing ships drawn from almost 100 shipping companies operating on worldwide basis. The links between the Met Office and merchant shipping are long-standing, dating back over a century. This relationship continues to be mutually advantageous, as the Met Office benefits from the observed data, which drive our forecast models, while ship-owners benefit from the resultant Maritime Safety Information (MSI), such as the SafetyNET High Seas bulletin and the Navtex broadcasts.

3. Maritime forecasts are therefore an essential ingredient in ensuring the continued safety of all ships, their cargoes and crews. The ongoing quality of such forecast products is dependant upon our ability to promptly resolve any problems that may be identified by our observational monitoring procedures. Therefore, it is essential that the Met Office, as the lead monitoring centre for marine meteorological data, and as the real-time monitoring Centre for the VOS Climate Project, can easily identify any ships that are reporting suspect data. We can then contact the ship officers directly to correct the problem, or can arrange for a Port Meteorological Officer to visit the ship to correct any observational errors or arrange for instruments to be recalibrated, if necessary.

4. Whilst a number of ship-owners have raised their concerns with the Met Office in recent years over their ships' locations being made available to third parties, this number should be kept in perspective, as it represents only a small proportion of the UK observing fleet. (Shipping movement information for many UK observing ships, such as ferries, cruise ships and container ships on liner trades, are already readily available on company websites). Most of the concerns being raised appear to emanate from bulk carrier operators, who are possibly more conscious of the commercial implications. However, concerns over the security implications have also been expressed by one UK ship-owner engaged in carrying sensitive cargoes, and concerns have also been expressed on some ships engaged in government service, such as fishery protection service.

5. The Met Office is always receptive when such concerns are raised and has been largely successful in resolving all the cases that have arisen. This has usually been achieved by requesting the ships concerned to report using unique masked call signs that protect the ships true identity. This has been done in liaison with the ship-owners or managers, who we have generally found to be satisfied with this approach.

6. The issue of ship security has clearly gained prominence since the introduction of SOLAS Convention requirements for ships to carry Automatic Identification Systems (AIS). The increasing of use of the AIS data on commercial websites, and the forthcoming SOLAS requirements for Long Range Identification and Tracking (LRIT), highlight the need to have a responsible and secure approach to making such potentially sensitive data available.

7. Where meteorological data is concerned, the Met Office believes that ship-owners who wish to protect the identity of their ships, should offered the opportunity to adopt unique 'masked' calls signs, as recommended in the WMO's Resolution 7 (EC-LVIII). We are therefore supportive of the development of a common approach to masking call signs, such as that being proposed by the Eumetnet Surface Marine Programme (E-SURFMAR), which represents the overwhelming majority of European Voluntary Observing Ships, including our own. We already use this masking system for a number of our ships fitted with automatic weather stations.

8. This approach will nevertheless require the establishment of a secure repository for linking masked and unmasked call signs that is maintained up to date, and accessible by Meteorological Services' like the Met Office. This will enable us to carry out our quality monitoring procedures and also allow the real-time data to be linked to the detailed metadata we collect for all observing ships as well as the observational data that is collected in delayed-mode (i.e., the data collected in hardcopy or electronic meteorological logbooks).

9. New procedures will therefore need to be developed both internationally and within the Met Office in order to accommodate a unique masked call sign system. A start has already been made in this respect with the recent release of the TurboWin electronic logbook software (Version 4.0), which will be rolled out to all

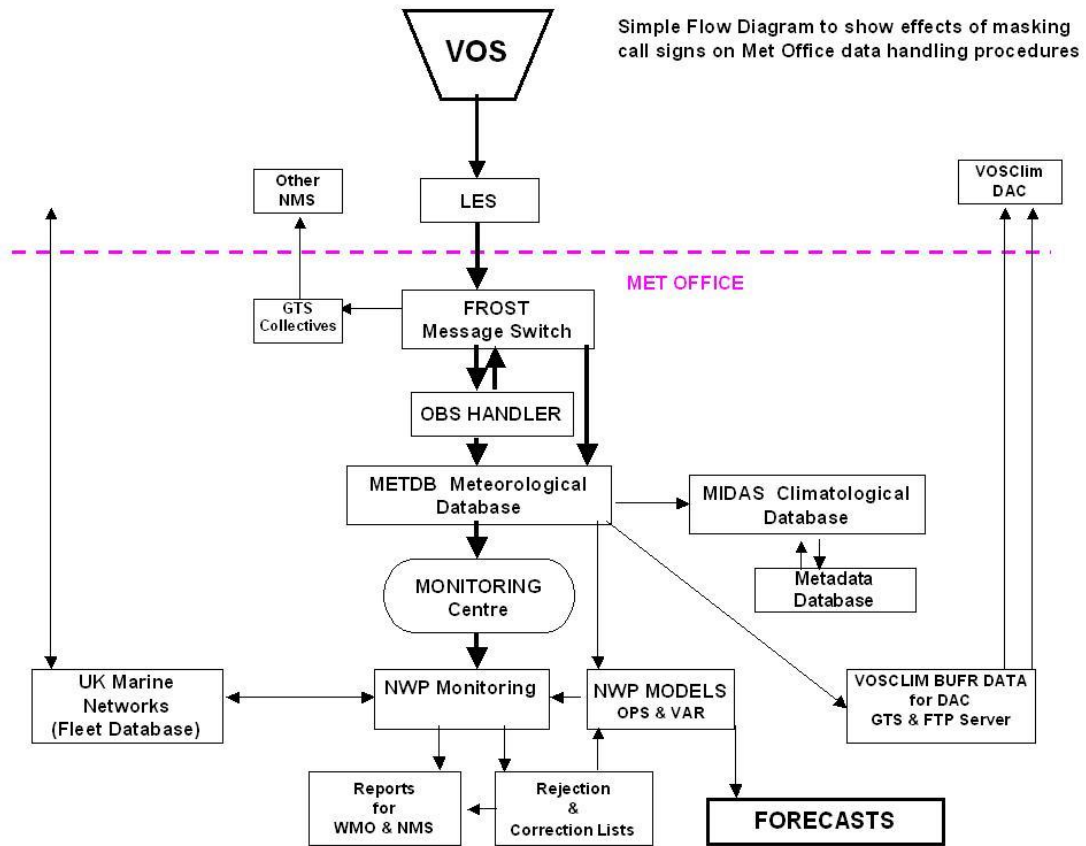
UK observing ships over the upcoming months. This software allows the observer to enter a masked call sign, or VOS identifier for transmitting real time messages, while the ITU registered call sign is stored in the computers delayed-mode log files for subsequent download by the Port Meteorological Officers.

10. Alternative proposals for solving this issue using non-unique masking system (i.e., anonymous 'SHIP' call signs) are not supported for the reasons expressed in paper (WMO-IMO Cons./Doc. 7), submitted in the Met Offices capacity as the CBS Lead Centre for quality monitoring of marine meteorological data. A simple schematic flow diagram to assist discussion on this issue and to show the impact of masked call signs on internal Met Office procedures are Annexed in this paper for background information.

11. In summary, observations submitted by officers serving on UK Voluntary Observing Ships are highly valued by the Met Office, as they enable us to provide quality marine forecasts and are of vital importance to global climate studies and research. Moreover, they are a key factor in helping to ensure safety of life at sea.

Therefore, we seek to work closely with ship-owners and their constituent associations to resolve these issues, and to also address other issues that will help to encourage the continued success of the WMO's Voluntary Observing Scheme.

Annex to the report by the United Kingdom



## REPORT BY THE UNITED STATES OF AMERICA

### U.S. Voluntary Observing Ship Project Pilot Project Overview: Masking Ship Identifiers (Call Signs)

In response to an agreement reached at the World Meteorological Organization (WMO) Executive Council Meeting EC58 (2006), NOAA will begin selectively "masking" ship identifiers or call signs before sending observations to the Global Telecommunications System (GTS) used by national meteorological services worldwide. The purpose of call sign masking is to enhance maritime security by limiting access to information about positions and routes of ships that report weather observations in real-time. Weather data will still be distributed to the worldwide meteorological community in real-time, but only authorized personnel will be able to match an observation with the ship that sent it. Ships that do not request "masking" will continue to have their call signs openly distributed with the associated weather data. This pilot project will be carried out consistent with WMO Resolution 40 which recognizes the essential nature of data collected by VOS partners.

The goal of this pilot project is to develop the mechanism within NOAA to mask call signs for individual ships that request it. The mechanism will be flexible enough to extend to all ships, if required in the future.

NOAA's masking of call signs will be limited to ship observations that originate from NOAA. This includes observations received by the two U.S. Land Earth Stations, observations sent to NOAA by electronic mail, and observations sent to NOAA through the USCG telecommunications system.

The VOS Project Office at NDBC will work with shipping companies, ship captains, and VOS programs in other countries to compile and maintain a list of call signs of ships that require call sign masking. NDBC will provide this authority list to the NWS Telecommunications Group and submit updates as it changes. NDBC will certify "authorized" recipients of the original data to the NWSTG and will require authorized recipients to sign a non-dissemination agreement.

The NWS Telecommunications Group will develop the mechanism for call sign masking and implement it within the NWS Telecommunications Gateway. Based on the authority file provided by NDBC, the NWSTG will:

- 1) Develop software to produce a set of collectives containing SHIP data ("ship collectives") for all regions and synoptic periods wherein call signs found in the authority list are replaced with the text "SHIP". This set of collectives will contain all the SHIP data received at the NWSTG, some of which will have the vessel call signs obfuscated (replaced with "SHIP").
- 2) Establish routing for the current set of ship collectives containing original observations such that those collectives are sent only to customers authorized to see the original data (NCEP, JMA, UKMET, etc.).
- 3) Remove routing for the current set of ship collectives containing original observations such that those collectives are NOT sent to any broadcast or public dissemination paths.
- 4) Establish routing for the new set of obfuscated ship collectives described in 1) such that those collectives are sent to all customers that require SHIP data, including broadcast and public dissemination paths.
- 5) Remove routing of all incoming collectives containing SHIP data to any NWSTG customers. This will insure that only the internally built collectives are disseminated.

The National Centers for Environmental Prediction (NCEP), and in particular, the Ocean Prediction Center (OPC) will remove call signs from the plot chart display upon commencement of this masking process.

NWSTG software development and routing changes will be completed by **March 17, 2007**, and the pilot project will run for one year from that date unless extended in coordination within the US Government, the WMO and other interested parties. NWSTG will announce the implementation 75 days in advance to meet NWSI 10-1805.

## REPORT BY THE EUCOS<sup>1</sup> SURFACE MARINE PROGRAMME<sup>2</sup> (E-SURFMAR)

### 1. Background

1.1 E-SURFMAR recognizes the concerns being expressed by ship owners on this issue, and seeks to find a solution that is satisfactory to them – and that, we believe, the E-SURFMAR proposal offers the best approach.

1.2 Within Europe, it appears that, with the exception of operators of special ships<sup>3</sup>, companies operating bulk carriers are the most concerned about weather observations being used to track their ships over the Internet. And this is mostly due to commercial rather than security concerns.

1.3 Most of the European VOS operators or the PMOs, including the DWD who is managing a huge number of VOS, never receive any complaints from companies or ship's masters regarding this issue.

1.4 Also, it must be noticed here that the most important companies operating container carriers are providing real-time information about the movement of their ships on the Web themselves (cf. Hapag Lloyd website for instance). Consequently, it seems, this category of ships is not concerned by the issue.

### 2. E-SURFMAR proposal

2.1 At the upcoming SOT-III, the E-SURFMAR Programme Manager proposed the use of unique masks for ship's identification in VOS weather reports (MASK scheme). The so called GTS identifiers include a prefix which identifies the aid-to-code software used by the ship (e.g., « TBW » for TurboWin) - or the type of Automated Weather Station (AWS) if any -, as well as two letters which identify the country of recruitment which are responsible for the quality of the data. The last characters, which distinguish each ship from another in a same category, are managed by the National Meteorological Services (NMHS) who recruit the ships.

2.2 The purpose is not only masking REAL call signs. It also serves to efficiently monitor the VOS fleets. For instance, thanks to the immediate knowledge of the data quality responsible for a ship, anomalies may be quickly reported by data users to the person(s) responsible for such actions. It is anticipated that quality monitoring and quality information feedbacks will be significantly improved.

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2.3 This practice has always been used by aircraft, which report AMDAR messages<sup>4</sup> onto the GTS. It has also been used by ships participating in the E-ASAP programme for several months. The proposed question is, why the VOS could not have a similar identification system?

### 3. E-SURFMAR trial

3.1 According to WMO Resolution 7 (EC-LVIII), a trial on the use of such GTS identifiers is performed within E-SURFMAR. For instance, all Automated Weather Stations (AWS) funded by the programme use masked identifiers. The E-SURFMAR participants support this practice for different reasons, which are not necessarily linked to security. By the end of January 2007, in addition to the three European AWS, masked identifiers have been used by the following participants:

- 1.1 34 French shipborne AWS;
- 1.2 4 French VOS using TurboWin;
- 1.3 3 UK shipborne AWS;
- 1.4 2 Dutch VOS using TurboWin;
- 1.5 1 Danish shipborne AWS.

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<sup>1</sup> EUCOS: EUMETNET Composite Observing System; EUMETNET: The network of European Meteorological Services.  
<sup>2</sup> Are participating in E-SURFMAR:  
<sup>3</sup> Fishery survey vessels or ships carrying materials potentially concerned by protestors or terrorists.  
<sup>4</sup> GTS identifiers are different from aircraft call signs. A prefix gives an indication on the data responsible.

**ANNEX V**

**RECOMMENDATIONS, AGREED PRINCIPLES, AND ACTION ITEMS**

**1) Recommendations or agreed principles**

<b>Recommendations or agreed principle</b>	<b>Ref.</b>
Any proposed scheme to address ship owners and masters concerns should be compliant with the Resolution 40 (Cg-XII), and there is no need to recommend any changes in the terms of the Resolution nor to reclassify VOS data.	3.1.2
A unique identification number is required for data assimilation (bias correction, automatic removal of suspect observations), quality monitoring, quality information feedback to Port Meteorological Officers, and climate studies. The ship's call sign does not necessarily have to be considered as an essential data provided that any proposed scheme permits to meet the requirements expressed in Annex I of WMO Resolution 40 (Cg-XII).	3.2.2 3.2.4 3.3.2 5.6
Ship's identification and location should not appear on public websites in real-time when this is not authorized by the ship-owners and masters.	4.3, 6.1 7.1, 7.2 7.3, 7.5
It is preferable for the longer term to adopt a universally accepted global and standardized solution using an agreed international system of masked call signs, yet to be developed.	5.5 7.2 7.3 7.7
In case a unique identification, numbering scheme was adopted, some restriction could eventually be applied to the WMO Publication Number 47 in order to avoid cross- reference between a unique number and the ship's recruiting country.	5.7
Identification of the country of recruitment in any unique identification scheme may not be necessary.	5.7
The following approach is acceptable: (i.) making the data openly available according to WMO Resolution 40 (Cg-XII), and (ii.) selectively masking the ship's identification when requested to do so by the ship owners and masters. Only users who sign an agreement are authorized to receive the non-masked reports.	5.8
It is difficult to establish the link between the availability of VOS observations on public websites and piracy. However, the perception that there is a link still exists in the shipping industry, and such security concerns have to be addressed. There are also concerns of commercial considerations amongst the shipping companies.	7.3, 7.4
Protecting the partnership of the WMO Members in the private sector, consistent with principles stated in WMO Resolution 40 (Cg-XII) is a matter of concern.	7.4
The meteorological report, including date, time, position and the measured geo-physical variables from VOS reports is essential for time critical meteorological applications, as far as the relevant shipping companies, allow for the exchange of VOS reports with no conditions on use according to WMO Resolution 40 (Cg-XII). Other variables such as some unique ship identification, and the name of the country recruiting the ship could be considered as critical to various applications although it was considered that this should be addressed by the SOT. The ship's call sign was not considered as essential in the context of WMO Resolution 40 (Cg-XII) provided that the above variables are made available.	7.8
Simple and generic design standards could potentially facilitate the recruitment of ships in the VOS fleet and the installation and siting of meteorological instruments. The active support and assistance of ship owners and of the classification societies was required. Reservations by INTERCAGO, INTERTANKO, and ICS were noted. Serious consideration must be made regarding new ship design requirements for the making of weather observations. The ship owners eventually decide on what building standards they will use.	9.4 9.5 9.8

**2) Action items**

<b>Action</b>	<b>By</b>	<b>Deadline</b>	<b>Ref.</b>
To investigate whether it would be feasible to routinely make the database of IMO numbers available to the WMO community and under what conditions	IMO	mid-2007	4.6
To cooperate with MSC sub-committee for investigating the use of LRIT to transmit weather observations	SOT, IMO	2008	4.5
To invite ICS, IMO, CBS, and CCI at the SOT-IV meeting	WMO	03/2007	5.6, 7.7
To improve timeliness of the original data and to directly discuss with the UK Met Office how the technical procedures could be adjusted in order to minimize the impact.	JMA, Met Office	04/2007	5.5
to investigate whether the private sector users of these data could help in reducing the cost or impact of a solution.	USA	mid-2007	5.8
To consider removing the country name from unique identification schemes	SOT	SOT-IV	5.7
To promote the added value of VOS observations in support of marine meteorology and climatology and maritime safety with the shipping industry	SOT	SOT-IV	7.2
To complete the proposed applications/concerns vs. security levels table in such a way to reflect as many possible concerns in the table	Pierre Blouch	EC-LIX	7.6
To undertake a review of the implementation impact of masking	SOT	2008	7.7
To consult nationally in order to present a coherent and more focused proposals at SOT-IV, that could be reviewed by the SOT and possibly endorsed	Australia, France, Japan, UK, USA	SOT-IV	7.7
To establish an ad hoc task team on call sign masking schemes	SOT	ASAP	7.8
To explore long term solutions	SOT	SOT-IV	7.9, 7.10
To prepare a report to EC-LIX proposing to maintain Resolution 7 (EC LVIII) in force and to continue the trials for another year, on the basis of the recommendations from the SOT regarding a unified approach to call sign masking.	SOT USA WMO	30/04/2007	7.11
to liaise with USA and Japan in order to inform the WMO Members in advance about the implementation of their respective trial schemes	WMO	ASAP	5.9
To draft new version of MSC 1017 and then submit it to MSC-89 for approval	SOT WMO and IMO	SOT-IV MSC-89	8.2.2
To consider proposing a Resolution to the IMO on met-ocean services similar to A.706(17) for navigational warnings. To present the first proposal to the appropriate IMO Sub-committee(s) for endorsement	WMO and IMO	mid-2007 IMO sub-comm. IMO Assembly	8.4
To focus WMO and IMO common activities in specific topics to be considered as Pilot Projects (e.g., GMDSS website).	WMO and IMO	mid-2007	8.6
To encourage the use of AWS	SOT	SOT-IV	9.1
To draft a document on ship design. ICS then to investigate impacts.	SOT ICS IACS	mid/late 2007	9.5 9.8
To prepare a promotional DVD	SOT WMO	mid/late 2007	9.9

## ANNEX VI

### TRIAL SOLUTIONS BEING IMPLEMENTED

1. There are different solutions proposed to mask the ship's identification, and the WMO Executive Council authorized national solutions to the problem. The following notation will be used in the text below:

**SHIP masking:** A generic call sign using the four letters "SHIP" is used in place of the ship's call sign in FM-13-XI Ext. SHIP reports that are distributed on the GTS.

**MASK:** the ship's call sign is masked using a unique identification number in place of the real ship's call sign in FM-13-XI Ext. SHIP reports that are distributed on the GTS. This unique identification number is allocated either nationally or regionally. Allocation of unique numbers is coordinated regionally in the case a group of countries from a region agrees to use the same scheme. The name of the NMHS recruiting country (i.e., not the country of the ship's registration) can be part of the masked call sign.

**REAL:** The actual (real) ship's call sign is used in FM-13-XI Ext. SHIP reports that are distributed on the GTS.

2. At the time of writing, the following masking schemes are being proposed in practice:

- (a) Australia: MASK. Unique identifier based on BOM numbering of its network of observing stations (i.e., AU9nnnn). Care was taken to avoid duplication with actual ship's call signs. See Australian report in annex IV for details.
- (b) Canada: SHIP masking for all Coast Guard vessels. Automated systems (AVOS) are being programmed to permit SHIP or MASK if requested by ship owners. See Canadian report in annex IV for details.
- (c) E-SURFMAR: MASK. Unique identifier is formatted as following: TTTCCnn where TTT are three letters describing the type of acquisition system being used, CC are two letters for the country (ISO code, or non-ISO code if more confidentiality required), and nn are two alphanumerical characters to provide for unique identification of the ship for the considered country and acquisition system. See E-SURFMAR report in annex IV for details.
- (d) Japan: Improved generic SHIP masking as of April 2007. Letters "SHIP" replace the actual ship's call sign in reports inserted on the GTS from Inmarsat Yamaguchi Land Earth Stations (LES) for: (i.) ships recruited by Japan, (ii.) ships recruited by a foreign country asking to SHIP mask the VOS reports, and (iii.) ships registered in Japan but recruited by foreign countries (countries informed in that case). In November 2006, about 2/3 of the ships recruited by Japan were using SHIP masking. The Japan Meteorological Agency is planning to make the original VOS reports routinely available in real-time (with a maximum 20 minute delay) through a secured server (authentication and encryption) as of April 2007. See Japan report in annex IV for details.
- (e) USA: Selective generic SHIP masking for one year as of 17 March 2007. Weather data will still be distributed to the worldwide meteorological community in real-time, but only authorized personnel will be able to match an observation with the ship that sent it. Ships that do not request "masking" will continue to have their call signs openly distributed with the associated weather data. Original reports are specially routed to authorized GTS users requiring ship's identification (e.g. RSMC, Exeter, JMA). NOAA's masking of call signs will be limited to ship observations that originate from NOAA unless requested by a foreign country for the ships they are recruiting. See US report in annex IV for details.



**ANNEX VII**

**STATEMENT BY THE MINISTRY OF LAND, INFRASTRUCTURE AND TRANSPORT JAPAN  
(MLIT)**

Letter to the Joint WMO-IMO consultative meeting (12-13 February 2007)

Ministry of Land, Infrastructure and Transport (MLIT) JAPAN

USS Cole in Port Aden on the Arabian Peninsula was attacked October 12, 2000 from a small inflatable boat in a terrorist act by suicide bombers, and the number of acts of piracy and armed robbery against ships, which were reported to the IMO to have occurred or to have been attempted in 2005, was 266 in the world.

In March 2005, a Japanese ship was attacked, by the pirates at the Malacca Strait and 3 crews were kidnapped. Though fortunately all kidnapped crews were released in safe, the Japanese ship owners, ship companies and government pay more attention to the piracy. MLIT recommended the ship companies to enhance self-defence capability of their ships again.

In September 2005, we recognized that some websites (ex. <http://www.sailwx.info/shiptrack/shiplocations.phtml>) are displaying call signs and positions of VOS on the internet. It is essential to reduce risks of tracing ships position as much as possible. Taking account of the situations above and the risk incurred from such websites, MLIT recommend the Company Security Officers (CSOs) to suspend weather reporting from ships. As weather reports from ships are vital for meteorological forecast, JMA, the Japanese Ship Owners' Association (JSA), MLIT and other related organizations discussed and agreed to resume weather reports using a tentative measure to replace call signs by "SHIP".

In discussing on this, MLIT ask you to take account of the situations in Asia region and our concerns mentioned above. In this regard, the JSA and MLIT support the "generic call sign masking" proposed by JMA.

Thank you very much for your kind understanding.

ANNEX VIII

AN EXAMPLE OF APPLICATION/CONCERNS VERSUS SECURITY LEVELS MATRIX

Level of Security	Method	Application						Should be...
		Forecast Real time data		Monitoring Real time data		Climatology Delayed mode data <sup>1</sup>		
		Manag <sup>t</sup>	Avail.	Manag <sup>t</sup>	Avail.	Manag <sup>t</sup>	Avail.	
<b>High</b>	No GTS distribution	Easy	At NMHS only	Easy	At NMHS only	Nominal	Likely to decrease	Limited to a few ships
<b>Medium</b>	SHIP	Nominal	Optimal	Difficult	Depend on Manag <sup>t</sup>	Nominal	Nominal excepted short term	Limited to a few areas
<b>Low</b>	MASK	Nominal	Acceptable	Nominal	Acceptable	Nominal	Acceptable	Acceptable for most of the ships
<b>Unsecured</b>	REAL	Nominal	Decreasing	Nominal	Decreasing	Nominal	Decreasing	Present situation

Note: This is only an example, other applications and/or concerns should be considered. Matrix entries provide for specific applications and a given security level (non masked original data, masked data using unique identification numbers, generic “SHIP” masking, or full restriction) the practical impact on the application (e.g., nominal, optimal, acceptable).

## ANNEX IX

### LIST OF ACRONYMS AND OTHER ABBREVIATION

AIS	Automatic Identification System
AWS	Automatic Weather Stations
BOM	Australia Bureau of Meteorology
CBS	WMO Commission for Basic Systems
CCI	WMO Commission for Climatology
DE	IMO Sub-committee on ship design and equipment
EUMETNET	Network of European Meteorological Services
E-SURFMAR	EUCOS Surface Marine programme
ETMAES	Expert Team on Marine Accident Emergency Support
ETMSS	Expert Team on Maritime Safety Services
EUCOS	EUMETNET Composite Observing System
GMDSS	Global Maritime Distress and Safety System
GMDSS	Global Maritime Distress and Safety System
IACS	International Association of Classification Societies
ICS	International Chamber of Shipping
IMO	International Maritime Organization
INTERCARGO	International Association of Dry Cargo Shipowners
INTERTANKO	International Association of Independent Tanker Owners
IPCC	International Panel for Climate Change
ISPS	International Ship and Port Security Code
ITU	International Telecommunication Union
JCOMM	Joint WMO-IOC Commission on Oceanography and Marine Meteorology
JCOMMOPS	JCOMM <i>in situ</i> Observing Platform, Support Centre
JMA	Japan Meteorological Agency
LRIT	Long-range identification and tracking of ships
MARCDAT-II	Second International Workshop on Advances in the Use of Historical Marine Climate Data
MLIT	Ministry of Land, Infrastructure and Transport JAPAN
MPERSS	Marine Pollution Emergency Support System
MSC	Maritime Safety Committee
MSI	Maritime Safety Information
MSS	Maritime Safety Services
NAVTEX	International system for reception of marine safety information
NMHS	National Meteorological and Hydrological Services
NMS	National Meteorological Services
NWP	Numerical Weather Prediction
PMO	Port Meteorological Officer
RBSN	Regional Basic Synoptic Network
RSMC	CBS Regional Specialized Monitoring Centre
RTMC	VOSclim Real Time Monitoring Centre
SafetyNET	System for the distribution of MSI by satellite using the Inmarsat-C EGC service
SAR	Search and Rescue
SOLAS	International Convention for the Safety Of Life At Sea
SOT	JCOMM Ship Observations Team
SOT-IV	Fourth Session of the SOT
SPA	JCOMM Services Programme Area
UK	United Kingdom of Great Britain and Northern Ireland
US	United States of America
USA	United States of America
VOSclim	Voluntary Observing Ships Climate Subset Project
WCP	World Climate Programme
WMO	World Meteorological Organization

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