

Report of the Bonn Agreement Seminar on Remote Sensing, Legal Regulations and Initiating Proceedings

Background, participants and presentations

1. Over the past few years the BONN OTSOPA working group discussed issues concerning aerial surveillance and guidance to response vessels. One of the main reasons for the discussion was the increasing number of observations of other harmful substances than oil (HNS discharges), and detections (Side Looking Airborne Radar-SLAR) made at night or in bad visibility without visual verification possibility, noted as “unknowns”. Also in mechanical response operations in oil slicks by surface vessels, the guidance by the existing aircraft was hampered in darkness and poor visibility. This could lead to further spreading of the oil slick and, consequentially, to a further impact on the marine environment.
2. To address these issues in depth, OTSOPA 2014 agreed to invite the Netherlands to consider hosting a 2-day seminar in spring 2015, to which the industry involved in sensor development would also be invited (OTSOPA 14/3/1, §3.2) .
3. Following-up of OTSOPA conclusion, the Netherlands started preparations by sending the invitation letter to the Seminar, dated 10 December 2014, to Bonn Agreement Contracting Parties, North Sea Network of Investigators and Prosecutors (NSN), HELCOM Contracting Parties, EMSA Consultative Technical Group and EMSA Clean Sea Net. Industry was also contacted to seek their contribution. This resulted in a firm programme for the Seminar.
4. The Bonn Agreement Seminar on Remote Sensing, Legal Regulation and Initiating Proceedings took place on 14-16 April 2015 in Middelburg (the Netherlands). The Seminar was organised by Sjon Huisman and chaired by Kees Polderman.
5. A total number of 70 participants attended, including representatives from Bonn Agreement Contracting Parties but also from Canada, Saudi-Arabia and Brazil and Observers. Manufacturers of sensors and sensor-systems, satellite experts and representatives of Protection and Indemnity (P&I) Clubs contributed to the Seminar. This clearly reflects the major interest in exchanging information on (products, capacities and developments in) remote sensing.
6. The number of speakers and the perspective of the presentations covered a wide range of topics. The satellite status and developments, but also aerial sensors and shipborne applications besides legal aspects were brought to the attention of the audience.
7. Participants were invited to fill out an evaluation form every day and from the scores received (28 forms per day) it could be concluded that: the presentations were at least sufficient if not good, the meeting arrangements were good and the time for questions and discussions was sufficient too.
8. More important in the evaluation forms were the additional comments and recommendations. Participants noted that the meeting provided a wide range of information; left sufficient time in breaks and evening program for exchange of information and sharing experiences. Many respondents suggested similar future events, each concentrating on a specific topic.
9. A group photograph was taken on the first day in excellent sunny weather. The presentations (in PDF), the evaluation forms and the photo were uploaded onto www.bonnagreement.org

Opening of the Seminar and scene-sitting

10. Mr. Martin Oosse, head of the department welcomed participants to the Roosevelt Conference Center. He explained that the Center is part of University College Roosevelt/ Utrecht University and is housed in the former late gothic-style city hall of Middelburg. He mentioned that the College commemorates every year the Four Freedom Awards. He concluded by wishing the delegates a successful and enjoyable meeting.

11. In their introduction (*MARPOL Regulations and Initiating Legal Proceedings: Setting the Scene*), Sjon Huisman and Ronny Schallier described the current status in those EU Members States that make use of EMSA Clean Sea Net satellite imagery and operate aircraft at national level. They provided an overview of the results of the flight operations in BONN and HELCOM, noting that detection and observation of releases of mineral oil had gone down drastically since the year 2000. However, at the same time there has been a clear increase in the number of detections noted as “other substance” or “unknowns” because the substances could not be identified with sensors or the naked eye. Shipborne sensors currently installed on board response vessels were briefly mentioned.

12. To frame discussion, the presentation concluded by identifying the key issues to be addressed by the seminar regarding spills of harmful substances and “unknowns”: (a) what should we do?, (b) what can we do?, and (c) how can we do it? and suggested a list of concrete issues for discussion ranging from technological to legal to others. These included further consideration to ongoing developments in oil spill detection satellite, possible changes to explore the legal landscape (IMO instruments/national regulations) to address enforcement challenges and exploration of market mechanisms. In a general discussion, participants proposed the addition of some other issues (e.g. specific problems in ice/snow-covered areas, waste water resulting from the use of sulphur dioxide scrubbers, pollution caused by paraffin wax and satellite coverage issues).

Brief overview of presentations

13. The legal framework and the way proceedings are initiated based on the collection of data considered as pieces of evidence was explained by Ann Jakobsen the Chair of NSN (*Remote Sensing and Legislation*) and Ron Faber from the Netherlands National Police Agency, Maritime Police (*Remote Sensing, MARPOL Regulations and Initiating Legal Proceedings*) The two presentations offered a good overview of the many legal and practical constraints in collecting and validating evidence to court, including for instance the pros and cons of sampling.

14. On the use of sampling buoys, a miscellaneous picture emerged with legal and practical constraints varying by country, depending on the national legal system. For example, in Denmark, for safety reasons, aircrafts are not allowed to drop buoys at night or under foggy conditions. In these cases, remote sensing systems to spill detection (i.e. SLAR) provide an effective alternative to sample buoy. In the Netherlands, surveillance flights based on sensor imagery are combined with satellite surveillance as methods to obtain evidence by night.

15. It became apparent that providing oil samples as evidence to secure convictions is not a simple or straightforward task. A presentation from Joakim Rinaldo from the Swedish Coast Guard Flight Division showed the practical challenges of the use of a drop buoy for sampling a surface slick. Challenges faced in sampling increase when dealing with HNS discharges.

16. In this context, another presentation from Marc Journal (EMSA) referred to the EMSA Publication Addressing Illegal Discharges in the Marine Environment, which is intended to support authorities involved in the enforcement chain addressing illegal pollution. This Manual builds upon and complements existing international manual and guidelines, such as the North Sea Manual.

17. Satellite capabilities and use in the Clean Sea Net, foreseen developments and improvements in the software applications for MS were highlighted by EMSA (*Clean Sea Net Products and Requirements*). It was highlighted that with Clean Sea Net even very thin oil films can be detected. Nevertheless, Clean Sea Net does not detect “oil spills” but “possible oil spills”. Action by Clean Sea Net to support polluter identification was explained in detail, including the new approach implemented at service providers’. A pollution case in Croatian waters (22 March 2013) was used to illustrate the whole chain in action. The presentation from EMSA triggered discussion about the difficulties in classifying spills involving HNS.

18. The coming developments in satellite constellations and techniques and coming applications with the possibilities of stacking of data and the need for a “system of systems” was addressed by Ramon Hanssen, from Delft University Technology (*Opportunities for advance Remote Sensing: an outsider’s perspective*) and – by the suggestion that there may be merit in making better use of existing systems and data- steered the audience in the direction of seeking connections with another communities using similar types of data and addressing issues related to the validation of data.

19. Representatives of five manufacturers of remote sensing equipment (APTOMAR, OPTIMARE, RUTTER/OCEAN WAVES, S&T Airborne Systems, SeaDarQ,) presented the state of the art and foreseen developments in capabilities and use of sensor systems for aerial operations and/or shipborne applications, each with their specific advantages and limitations. Among the highlights of the presentations were system integration, software enhancements and data fusion, and the use of communication networks for bringing data together in a command centre.

20. Other presentations included: (1) the potential capabilities and use of the hyperspectral camera for the detection of harmful substances (Christian Cosse, Actimar, LOOPE-Oil); (2) the MARPOL Annex VI and ECA related development and testing of systems for measuring ships’ emissions to the air, in particular sulphur contents in ship fuel and other particles (Johan Mellqvist, Chalmers University of Technology); (3) the remote sensing operator’s perspective (Marinefliegergeschwader 3); (4) developments in remotely piloted aircraft systems (RAPS) and their possible capabilities and use for surveillance over sea areas (LUMEN); (5) the status of the “Polluproof” project, aiming for reduction of HNS pollution by improved airborne radar and optical facilities (CEDRE).

21. A final presentation offered the perspective and possible role of P&I Clubs (*Remote Sensing: Environmental Issues from a P&I perspective*), including an overview of the many conventions related to civil liability and limitation of liability of ships. From the general introduction on the operation of P&I Clubs it appeared that, although fines for non-compliance with environmental regulations are basically covered by P&I arrangements, the P&I Clubs have at the same time arranged for “self-regulating” mechanisms to drive back non-compliance.

Discussion and conclusions

22. On the morning of the third day, the final part of the Seminar was used for a discussion on the key issues of the seminar (why?-what?-how?), taking account of both the information presented and views expressed during the first two days. The main aim of the discussion was to identify possible actions for the way ahead. The discussion was structured by categorizing possible follow-up

actions in terms of *technological, legal and other*, while acknowledging that there would be a clear interrelation between the various categories.¹

23. As part of the general discussion, participants voiced their disappointment about the developments or improvements by industry as it all seem to focus (still) on oil pollution. Industry representatives responded by suggesting that a well-defined functional demand could well result in appropriate technological solutions. The meeting further acknowledged that developments such as the Microwave Radio Meter, the Laser-Fluorosensor and the Hyperspectral Camera are movements in the right direction.

24. With regards to *technological issues* the Seminar concluded that:

- a. Coming (constellations of) satellites, new types of small satellites, special tasking of satellites and different analyses software for obtained data may provide additional tools for detection of pollution. Additional software features for the user community could lead to added value.
- b. Actively seeking connection/cooperation with other satellite communities could lead to cross fertilization with possible advantages for pollution detection.
- c. The Hyperspectral Camera is a promising development, which warrants further attention and practical evaluation.
- d. The use of sampling buoys is another promising development, further trials are however needed to identify and solve practical problems.
- e. In view of the many substances and characteristics involved the issue of detection and identification of discharged harmful substances is a very complex matter; the design/development of a dedicated sensor for the detection and/or identification of (all) discharged HNS is therefore unfeasible.

25. With regards to *legal issues* the Seminar concluded that:

- a. There is no reason to review or revise the international regulatory framework; for reasons of enforcement MARPOL Annex II is clear and unambiguous.
- b. The legal aspects of marine pollution are not only governed by the MARPOL annexes, but also by the national implementation of MARPOL and the national systems for initiating proceedings and national requirements for bringing evidence to court.
- c. The EMSA Guideline on Addressing Illegal Discharges in the Marine Environment and other publications sufficiently describe the many aspects of enforcement of the regulations regarding prevention of marine pollution; enforcement procedures should however be streamlined, either at regional level, or – preferably – at European level.
- d. The accessibility and exchange of data collected for reasons of evidence should be improved, for instance by establishing a secured “maritime cloud”.
- e. The pros and cons of an Annex II Special Area status – and a possible (joint) proposal to the International Maritime Organization – are worth further consideration.

¹ As host, the author takes the liberty to start with a general remark made by a participant and very valid but recognized when preparing the seminar. Remote Sensing is a broad term even if it is confined to marine pollution. Improving the interface between the technical side and the legal level calls for a special seminar. Also a clear definition of various aspects is required, specifically where it concerns “substance description” e.g. detection; identification; categorization.

- f. In the same context there would be value in seeking the views of ship owners on a “zero tolerance” policy in European waters.
 - g. Fundamental changes in national legal systems will be unfeasible or will take a long time; it is nevertheless recommended to make an effort to review national legal requirements and practices that hamper the proper enforcement of regulations and/or prosecution of offenders; such a review may include the possibility of reversing the burden of proof in the case of HNS discharges.
26. With regards to *other issues* the Seminar concluded that:
- a. The problem of HNS should be further defined and specified. A study of transport flows in European waters could assist in identifying most frequently carried substances. GESAMP X, Y and Z substances should be studied in depth to identify which of those substances are floaters (and so can be measured by a sensor from an aircraft) and the likelihood of their release. The results of such studies should put more focus on the enforcement challenges and on the possible tools and practices to be used in meeting those challenges.
 - b. Co-operation with other enforcers (PSC; Water police etc) should be improved for timely exchange of information and for more coordinated/integrated efforts in collecting evidence.
 - c. Besides repression (initiating proceedings) that always starts when the alleged violation is observed, other (market) mechanisms should be explored. Consultation with ship-owners, P&I clubs and other stakeholders are of interest as environmental awareness is shared amongst communities.
 - d. Sufficient and effective Port Reception Facilities should be ready available for the reception of waste from the shipping industry. Consideration should be given to selective use of notifications and reports under the EU Directive on Port Reception Facilities for the identification and prosecution of illegal discharges at sea.
 - e. Besides the detection and identification of (groups) of chemical substances to be solved by sensor techniques, it is essential to also consider how to guide response measures deployed for combating chemical spills.

Recommendations

27. The meeting recommends that **BONN**:
- a. considers scheduling similar seminars for specific topics on a regular basis, either intersessionally or back to back with regular meetings of OTSOPA;
 - b. considers initiating studies to further define and identify the problem of HNS discharges and related issues, such as the most frequently carried cargoes, the characteristics and behaviour of those cargoes, the practises in releasing substances from vessels, and assessment of the threats to the marine environment;
 - c. considers the establishment of a working group that actively seeks links with other satellite user communities with the aim of possible synergies and more effective use of existing satellite data, and of orientation on possible use of future developments;
 - d. considers initiating, in cooperation with NSN, a comprehensive evaluation of the current collection of evidence, legal requirements and technical capabilities, with involvement of

all relevant parties, including sensor designers, sensor operators, investigators and prosecutors;

- e. considers initiating a feasibility study on the establishment of an Annex II Special Area in European waters (including consultation of relevant stakeholders such as ship owners) and, eventually, the preparation of a joint proposal for submission to the IMO;
- f. considers arrangements for further studies, experiments and/or trials regarding the use of new tools such as the hyperspectral camera and the sampling buoy.

28. The meeting recommends that **NSN**:

- a. considers possibilities to further harmonize and streamline enforcement procedures, either at regional or at European level;
- b. considers possibilities to improve accessibility and exchange of evidence information and data;
- c. considers possibilities to improve (regional and/or national) cooperation and exchange of information with other involved parties, such as Port State Control and Port Authorities;
- d. considers exploring alternatives for repressive measures, such as (incentives for) self-regulation and other market mechanisms;
- e. considers encouraging its members to make efforts in reviewing national requirements hampering the investigation and prosecution of illegal discharges.