

Fay, C.W., October, 1996*

Report of the ISOM Working Group on Legal Responsibilities and Liabilities for the Deployment of Autonomous Underwater Vehicles (AUV) in the Seas

*NERC-Research Vessel Services, Southampton Oceanography Centre, Southampton, UK

1. Introduction

The International Research Ship Operators' Meeting (ISOM) in 1995 received a short presentation on the perceived future problems on the deployment of active oceanographic data acquisition systems (AODAS) from research ships at sea. ISOM requested that an ad hoc Working Group be set up to investigate "the legal responsibilities and liabilities for the deployment of Autonomous Underwater Vehicles (AUV) in the seas."

The Working Group met on 1 October 1996 at the Southampton Oceanography Centre, with the following invitees/attendees:

Dr Charles Fay Superintendent, NERC Research Vessel Services (Chairman)

Professor Dennis Nixon University of Rhode Island, Marine Legal Advisor to UNOLS

Professor Nick Gaskell Institute of Maritime Law, University of Southampton

(Professor Ed D Brown Cardiff University, Author Autosub Liabilities Review)

(Professor Dr A H A Soons University of Utrecht, Maritime Law Specialist)

Mr Christopher Adams Head, RVS Operations, Diplomatic Clearance Specialist

Mr Cok van Bergen Henegouw Secretary, ISOM, Netherlands Institute for Sea Research

Commander Roland Rodgers Royal Navy, DRA

Mr Nick Millard Ocean Technology Division, Autosub Specialist

(Dr Marco Weydert European Commission, Brussels)

() indicates Professors Brown and Soons and Dr Weydert were unable to attend subsequent to their invitation.

In addition, the meeting was attended by:

Dr Don Heinrichs National Science Foundation, USA

Professor Richard Shaw Institute of Maritime Law, University of Southampton

The brief of the Working Group was:

- To review the legal responsibilities of Masters deploying Active Oceanographic Data Acquisition Systems (AODAS) in the sea, both within claimed territorial waters and in the high seas;

- To review the potential problems in the operational deployment of intelligent Autonomous Underwater Vehicles;
- To recommend actions in order to minimise the liabilities to the Master and maximise the chances of safe operational deployment of Autonomous Underwater Vehicles in the sea;
- To report to the International Research Ship Operators Meeting.

2. Discussion

i) CF introduced the discussion by reviewing the work which the Institute of Oceanographic Sciences did, and now the SOC Ocean Technology Division is doing, on the development of DOLPHIN (Deep Ocean Long Path Hydrographic Instrument) and DOGGIE (Deep Ocean Geological and Geophysical Instrumented Equipment), now generically called AutoSub©. The group had the opportunity of viewing AutoSub 1 at SOC, and a short video clip of its operation at sea.

ii) As part of the development, Professor Brown of Cardiff University prepared a review in 1989: "Operational Constraints for Autonomous Submersible Vehicles - Report on Law, State Practice and Procedure". In this, the issue of the liabilities of deploying AODAS and ODAS in the Seas were reviewed.

iii) The potential operational problems for deploying Auto Subs seem to be twofold:

a) liability for causing accidental damage and pollution either directly or indirectly in the seas. It could be considered that a rogue Auto Sub might collide with another vessel, or cause it to collide with some third party/object and as a result cause an oil/chemical/radionuclide spill. This might occur if the actual "survey programme" of the Auto sub did not match the programmed pattern through some control fault. Or it might occur if another vessel inadvertently coincided with the Auto Sub correctly carrying out its survey pattern;

b) contravening diplomatic arrangements for the deployment of scientific instruments in waters of another coastal state, either by accident of malfunction of the Auto Sub control system, or through ignorance (or deliberately taking a chance).

iv) NM and DH advised the group that there were many (undefined) military AUVs under development and about 12 civilian AUVs. The majority of AUVs were small short range vehicles (the US was focusing on short range vehicles for local surveying); the UK's Auto Sub 1 was the only (?) vehicle designed ultimately for long range deep ocean surveying, with the potential to pass through foreign territorial waters. However NM advised that routine surveys in the ocean and into foreign territorial waters was some 5 years hence, although Auto Sub 1 had been in autonomous operation in the sea already (some 17 deployments).

v) Advice from the Brown (1989) review was to look carefully at the present, well proven, procedures for the deployment of static or free floating oceanographic instruments in the oceans and in foreign territorial waters, and to build on this experience. A Working Group of UNCLOS started work on definitions and rules concerning the deployment of ODAS, but did not meet again to complete the drafting. However, there is therefore the start of agreed regulations concerning the deployment of Auto Sub and other ODAS on which to build.

vi) In assessing the range of liabilities, the group identified the following categories:

a) Diplomatic Liability

b) Operational: Civil Liability

Criminal Liability

vii) To minimise Diplomatic Liability the procedures presently agreed for notification and seeking diplomatic clearance should be meticulously followed, taking into account:

- a) strictly following agreed diplomatic procedures for submission and the required documentation requesting permission;
- b) education of scientists within foreign territorial state to allay any fears and to explain to their Government officials the context of the work;
- c) involve observers from the foreign state in the deployment of AUVs;
- d) make the results freely available for subsequent use by the foreign state.

Work should be started now to educate the various components of the Government machine about the future deployment of such new instruments.

viii) RR informed the group of the potential benefits of involving the military concept of "Water Space Management" in the early deployments of AUVs, as well as ensuring wide notification to the marine community. AUVs would be tracked in their deployment through:

- a) known pre-planned survey pattern, and
- b) period position reporting.

DH advised this would be fine until an intelligent algorithm within the navigation started making decisions about future patterns of survey based on immediate data - and then the voyage may not be so easy to track.

ix) The current draft UNCLOS documentation on ODAS should be reviewed and updated in the light of the advent of real AUVs. Proposed modifications should be submitted to the relevant UNCLOS authorities for consideration. (Chairman's subsequent note: it is not clear to whom and how we achieve this.) The clear message was - raise the level of awareness through communications, since "Auto-anything" creates distrust initially!

x) The diplomatic constraints for deployment will depend on the AUV's mission and sampling capability. Sampling the water column only, according to UNCLOS, is permitted within EEZs and should not meet resistance. On the other hand, surveying below the seabed will be viewed more suspiciously as it could be construed as "exploitation" of a foreign State's EEZ.

xi) The issue of diplomatic liability will not become a reality for a few years, since it is not envisaged AUVs will be programmed to enter foreign territorial waters for some time. There is therefore a valuable period of time in which to address the diplomatic liability issues.

xii) Turning to Criminal Liability, Masters of reputable ships should be well aware of the legal constraints of their operations in foreign territorial waters and are unlikely to be criminally negligent in the deployment of AUVs - simply because the foreign state is unlikely to have laws specific to AUV deployment (as opposed to the generic deployment of ODAS) to cause a criminal offence.

Thus the only likely area of Criminal Liability on the High Seas is covered by the international pollution regulations, MARPOL, involving oil, hazardous chemicals or radionuclide spillage in the sea.

xiii) Civil Liability can be simply covered by appropriate Third Party Insurance. Civil liability is only valid if

fault or negligence can be proved, and these can be considerably reduced through a thorough Risk Assessment of the likely risks and for this assessment to be documented together with the practical precautions taken. From the legal standpoint, a generic risk assessment would be required before any legal framework could be established to cover the deployment of AUVs.

xiv) The Working Group concluded that a Code of Best Practice be established and, if agreed by such an international group as the ISOM, it would become adopted internationally as best practice.

xv) The Working Group further concluded that the following documented actions would ensure future acceptance of AUVs (or AODAS) in the same way in which ODAS are currently accepted and protected as part of UNCLOS. These actions are:

- a) A Statement of the Technology - its capability and scientific missions;
- b) A Generic Risk Assessment of the deployment of AUVs in the oceans and in State waters;
- c) A Code of Best Practice for deployment and recovery;
- d) A Mission-specific Risk Assessment procedure, including seeking diplomatic permissions.

xvi) The Working Group recommended that Professor Ed Brown should be invited to update his 1989 Review to establish the current situation on this topic. (Chairman's note - this rightly should be initiated by the SOC Ocean Technology division if they so wish, since the development of the UK AutoSub is their property, but with the encouragement of the Working Group.)

xvii) The Working Group recognised it had not achieved all the objectives in the Terms of Reference and agreed to reconvene at an appropriate occasion after ISOM 96 had received a summary report.

xviii) A short summary report was delivered to the 1996 International Research Ship Operators' Meeting, held on 2 October 1996 (the day after this meeting); ISOM 96 supported the continuance of this project.