

PART I: MARINE MAMMAL ENVIRONMENTAL POLICY

1.1. INTRODUCTION

Worldwide, concern is emerging about the influence of high level underwater sound on life in the sea. Most concern lies with possible effects on marine mammals and divers. Environmental responsibility and soft legislation potentially demands consideration and mitigation of these effects as well as a duty of care. The duty of care places the onus on the operator of sound generating systems, to show that the particular activity will not have an adverse impact on the environment. Those who utilize sonar and explosives in the course of their work at sea must now not only be concerned with the impact the marine environment has on sound propagation but also the impact such acoustic energy and explosive shock waves may have within the marine environment, especially on divers and marine mammals. Environmental complacency is no longer acceptable.

Since SACLANTCEN's research vessels generally operate in the Mediterranean and the Atlantic contiguous zone, there is an inevitable focus on those waters. The risk mitigation procedures, however, are applicable to all oceans of interest to NATO.

The Policy and Risk Mitigation Rules published herein will be reviewed in 12 months and modified as appropriate, to maintain currency with the best available techniques and environmental practices.

1.2. AIM

The aim of this SACLANTCEN Instruction is to provide the Policy (Part I) and Operational Rules (Part II) to Scientific Planners, Scientists-in-Charge, Researchers and the Masters of SACLANTCEN research vessels, so as to minimise any harmful impact sea trials concerned with high level underwater sound may have on the marine environment with special emphasis on marine mammals and divers.

1.3. BACKGROUND

Despite lack of knowledge over the precise nature of the behavioural response of marine mammals and human divers and the range, depth and specific circumstances when these effects may occur, some evidence from previous research, modelling and observation suggests that some high level sound, whether it be explosive, electro-mechanical or general ship noise in origin, may in some circumstances have an effect both on certain species of marine mammals and divers. Evidence regarding behavioural responses is often conflicting: some species show clear avoidance

tendencies while others exhibit no response at all or may even congregate in the vicinity of a sound source dependent on its characteristics and the prevailing oceanographic conditions. Marine mammals are acoustically diverse with wide variations in ear anatomy and hearing ranges and sensitivities.

Moreover, whale ears are simultaneously adapted to cope with moderately rapid and extreme pressure changes from natural sources and appear capable of accommodating acoustic power relationships several magnitudes greater than in air. It is possible that these adaptations may provide protective mechanisms that lessen the risk of injury from high level sound. However, very few behavioural studies are available and so it is necessary to implement mitigation procedures which err on the side of safety. The safe sound levels received at the whale are therefore conservative and may be modified in the light of any future studies undertaken.

Further information on marine mammal behaviour and a discussion of some problems and issues is contained at Annex AAA (in preparation).

1.4. POLICY

In the absence of any other overarching regulations, SACLANTCEN will conduct its at sea research operations in a responsible manner. This will include an Environmental Scoping Study (ESS), mitigation procedures and monitoring together with an associated auditable trail. To this end, all operations conducted on or off the two research vessel, ALLIANCE (German Flag) and T-Boat (US Flag) and/or from islands or beaches in the littoral, are to be conducted in accordance with applicable environmental laws, local regulations and accepted maritime practice.

Prudent precautions to minimise any impact on the marine environment and thus to circumvent the potential harm to human divers and to marine mammals from high level sound sources, whether of explosive or electro-mechanical origin, are to be followed.

Known diving sites, declared mammal sanctuaries and recognised breeding grounds should be avoided whenever possible. A database of these zones for the Mediterranean, will be developed over time at SACLANTCEN.

A search for available technology to support area assessment, monitoring and marine mammal identification will be conducted. If found, funding authority will be requested from appropriate NATO bodies.

1.5. APPLICABLE LAWS/REGULATIONS AND AGREEMENTS

There are two sets of international (and national) regulations that must be considered in development of policies and procedures to reduce risk to marine mammals. These are environmental protection and conservation.

As a general principle, International Conventions (even those that establish standards regulating activity) do not fall directly on individuals. States accept international obligations and implement these obligations through national legislation.

Extraterritorial effect of national legislation is based on citizenship or on the nationality (flag) of vessels and aircraft.

Since national legislation implementing International Conventions is derived from a common source, a level of standardization is achieved. For purposes Centre policy, international materials will be highlighted since they are generally accepted rules and standards in the community of nations.

Reference is made in this section to the UN Law of the Sea Convention, 1982 (hereinafter UNCLOS III) which includes provisions relating to pollution prevention. Not all NATO nations have ratified UNCLOS III and there are differing views on whether Military Marine Research is subject to the convention. There is, however, consistency within the Alliance in adoption of measures relating to prevention of substance pollution from ships. Even though State Vessels are generally exempt from international pollution regulations, Centre research vessels conform to pollution prevention standards relating to substances. Conservation Conventions generally do not exempt military activities from coverage.

During the course of research activity, Centre vessels will conform to national environmental and conservation rules that are applicable to the Armed Forces of the NATO nation while in the territorial seas or exclusive economic zones of NATO coastal states.

1.5.1. Environmental Protection.

There are a series of International Conventions that address environmental concerns and aim at preventing pollution in the marine environment. These Conventions include, among others, the UN Law of the Sea Convention, 1982 (hereinafter UNCLOS III) and the International Convention for the Prevention of Pollution from Ships (known as MARPOL 73/78). There are also a series of regional conventions for the protection of the marine environment, some of which are within the Regional Seas Programme of the UN Environmental Programme. In the area in which Centre research is usually conducted, the Baltic (Helsinki, 1974 superseded by Helsinki, 1992), Black Sea (Bucharest, 1992), Mediterranean (Barcelona, 1976) and Northeast Atlantic (Paris, 1992) are covered by Regional Conventions. Regional environmental arrangements sometimes include conservation aspects in action plans, or protocols, e.g., the "Protocol. (to the Mediterranean Regional Seas Convention) Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona, 1995)

The Baltic, Black Sea and Mediterranean are designated in whole or in part, as "special areas" and/or as "particularly sensitive sea areas" which have heighten standards to prevent substance pollution.

While conventions to protect the marine environment preceded UNCLOS III, recent conventions derive definitions from the Law of the Sea Convention (which itself adopted preexisting definitions). As a consequence, the definition of pollution has been standardized, as follows:

"Pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or energy into the marine environment,

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including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

Protection of the marine environment from pollution by substances from ship based sources has hardened into regulatory standards in MARPOL 73/78 and other relevant conventions. No similar standards, however, have been instituted for energy.

Although classified as a potential pollutant, no regulations are in effect governing the introduction of energy into the marine environment. Neither propulsion and other machinery noise nor emitters such as sonars, fathometers, or SWATH have rules regulating use, frequencies, or intensity.

The word energy in the definition of pollution does not have a precise meaning. Whether sound energy will come to be specifically classified as a pollutant depends upon future action, particularly in the IMO. If classification of energy pollutants parallels regulation of substances, it may be expected that types of energy subjected to regulation will be very specific.

The provisions of UNCLOS III that relate to protection and preservation of the marine environment do not apply “to any warship, naval auxiliary, other vessels and aircraft owned and operated by a state and used, for the time being, only on government non-commercial service”. The burden is placed on states to institute for ships in the described status “appropriate measures not impairing operations or operational capabilities, which are consistent, reasonable and practical. (Article 236, UNCLOS III). The recognition of sovereign immunity is carried into MAR POL 73/78 and other relevant conventions including regional ones that have conservation aspects. It may be expected that sovereign immunity will be respected in any future formulations dealing with regulation of energy as a potential pollutant.

In summary,

- International rules for the protection of the marine environment do not apply to Centre or other State vessels owned or used (under a bareboat or other form of charter) for non-commercial military research.
- While the definition of maritime pollution includes energy as a potential pollutant, the environmental goal is currently aspirational and precatory, not normative. Sound energy has not been specifically determined to be a pollutant, i.e., a form of energy established to result or likely to result in deleterious effects.

Since NATO nations aspire to prevent pollution in the marine environment and energy is classified as a potential pollutant, it must be used responsibly, i.e., potentially harmful effects must be mitigated consistent to operational objectives. Since sound energy is transient and does not accumulate, the test for environmental protection in marine research is the magnitude of the direct harmful effects “likely to result” which are deleterious to living resources and the ecosystem in the marine environment. Even though sound energy does not accumulate, deleterious effects, if any, could compound.

The difficulty, of course, is that the effect of sound or the likely effect of sound on marine mammals is undetermined. Nonetheless, even though a causal connection is uncertain and probable effects have not been proven, there are reasonable grounds for concern that high intensity sound (at the point of reception) in some frequencies could have unintended harmful effects. As a matter of policy, the Centre will take preventive measures, using the best practical means at its disposal, to circumvent harm to marine mammals from sound energy by institution of mitigation procedures (derived from: UNCLOS III, Article 194.1 and 194.5). The precautionary principle to achieve environmental protection is discussed further in "Technique" below.

1.5.2. Conservation.

There is a diverse range of international conventions addressing conservation and biodiversity in the marine environment. The "Convention on the Conservation of Migratory Species and Wild Animals (Bonn, 1979)," lists marine mammals among the classes identified for conservation and some species are identified as endangered for a special regime of protection. For the more limited area, the "Convention on the Conservation of European Wildlife and Natural Habitats (Berne, 1979)," is broader in coverage but overlaps in addressing marine mammals.

To implement the Bonn migratory species convention, three regional agreements have been adopted, i.e., (1) "Agreement on the Conservation of Seals in the Wadden Sea (1990)," (2) "Agreement on the Conservation of Small Cetaceans of the Baltic and North Sea (1992)," and (3) "Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996)."

Except for prohibition against taking of endangered species (which includes hunting, fishing, capturing, harassing, and deliberately killing and attempts to do such acts), conservation of marine mammals has not hardened into normative rules relevant to Centre activities. Actions that would constitute "harassing" are not specified and the meaning is elusive. Typically, harassment would be deliberate, repetitive and motivated by malice. Specialized meanings of harassment, however, have been adopted for specific areas of regulated conduct. For example, the United States Marine Mammal Protection Act includes the following definition:

The term "harassment" means any act of pursuit, torment, or annoyance which:

- i. has the potential to injure a marine mammal or marine mammal stock in the wild;
- or
- ii. has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

The U.S. definition is a workable tool for judgement when encountering marine mammals during the course of research.

In general design the Bonn and Berne Conservation Conventions generally give the highest level of protection to endangered species, protection to threatened (vulnerable) species and a general obligation to maintain a favourable conservation

status for all species. A different (but not inconsistent) approach is taken in Regional agreements. For example, the "Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean and Contiguous Atlantic Area (1996), all cetaceans in the region are treated identically with the objective being the achievement and maintenance of a favourable conservation status. "Deliberate taking" of any cetacean is to be prohibited by all the parties within the ambit of national jurisdiction.

Conservation principles can be achieved by avoiding research where endangered species are present and application of the precautionary principle (discussed further under Technique) to research planning and execution.

1.5.3. Conclusion.

General principles of environmental protection are focused on the conservation of marine mammals due to their dependence on sound, a form of energy. The discharge of energy (a potential pollutant) into the marine environment must be done prudently consistent with conservation objectives that co-exist with other values such as security.

Knowledge of the behavior of marine mammals and reaction to sound is limited. The Centre has a lengthy history of using sound for research in the Mediterranean without any deleterious effects having been demonstrated. Only in one occurrence, has there been a coincidence of the location of a sea trial and a stranding event. Nevertheless, a harmful effect is theoretically possible to mammals that are due special consideration in the international order. Even though a scientific prediction of likely harm cannot yet be accurately made, prudence requires efforts to avoid potentially harmful effects. The Centre has an affinity to the environment that is the subject of research and has an inherent interest in preservation.

1.5.4. Technique

The precautionary principle has emerged as the standard of conduct for compliance with duties of environmental protection in situations where reasonable grounds for concern that hazard, harm or damage may result. A description of the precautionary principle is contained in the Conventions on the Protection of the Marine Environment of the Baltic (1992) and North-East Atlantic (1992):

"The Contracting Parties shall apply the precautionary principle, i.e. to take preventive measurements when there is reason to assume that substances or energy introduced, directly or indirectly, into the marine environment may create hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea even when there is no conclusive evidence of a causal relationship between inputs and their alleged effects."

The description of the precautionary principle (which incorporates the definition of pollution) and corollary principles of "best available techniques" and "best environmental practice" have a current primary focus on substances. Application of these principles to energy, including the features relating to the balance of objectives and practicality is at present an analogue.

One conservation convention "Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area (1996), includes a requirement to apply the precautionary principle (which is not defined in the Agreement) to the protection of mammals and habitats.

Consideration of potential harm is accomplished by assessing the potential for deleterious effects "likely to result" from a sea trial, and taking action designed to avoid the effects while pursuing a legitimate use of the seas. Actions can include moving the location of a sea trial away from a known breeding ground during the season, avoiding known migration routes, pre-trial area surveys, or using a benign process to encourage mammals to leave the area of potential harm.