

Satellite-Based Vessel Monitoring Systems for Fisheries Management: International Legal Aspects

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ABSTRACT

Satellite-based vessel monitoring systems (VMS) are a relatively new technology that assist fisheries management authorities in data-gathering and ensuring compliance with management objectives. In comparison with traditional means of data-gathering and monitoring, control and surveillance (MCS), satellite-based VMS offer considerable advantages in cost-effectiveness, especially if applied at the regional level. Before opting for a satellite-based VMS, however, fisheries management authorities should realise that a number of limitations exist, that it may not be the most cost-effective in all circumstances and that the issue of the confidentiality and security of information will be crucial to co-operation and compliance. The main focus of the article are the relevant rights and obligations of states under international law. The analysis concludes, among other things, that significant legal restrictions exist in the exercise of jurisdiction by port and coastal states with respect to foreign fishing vessels in lateral passage, conditions for entry into port and foreign vessels engaged in bunkering of fishing vessels.

Introduction

The conservation and management of marine living resources has been fraught with problems for decades and nothing indicates that this is likely to change in

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the near future. To set hopes high would also be unrealistic due to the fundamental characteristics of marine fish, namely that they are a common property and renewable natural resource incapable of being spatially confined.¹ The 1998 United Nations General Assembly report, "Oceans and the Law of the Sea. Report of the Secretary-General", identifies as key factors responsible for the current global over-exploitation and economically inefficient fisheries:

"the lack of political will to make difficult adjustments, particularly in respect of access to fishery resources and fishing rights, persistence of direct and indirect subsidies, lack of control of fishing fleets by flag States, resistance of the fishing industry to changes, lack of participation of traditional fishing communities in the decision-making process and continued use of destructive fishing practices."²

This enumeration is by no means exhaustive and a range of more specific defects could be mentioned as well. This article does not single out one of these factors, although the core issues all relate to the lack of flag state control. Rather than focusing on efforts aimed at strengthening flag state control directly, the focus will be on one particular tool: satellite-based vessel monitoring systems (VMS), and its use in fisheries management.³ However, as will be clarified, it would be incorrect to regard this tool exclusively from the perspective of enforcement.

The purpose of this article is to analyse a state's rights and obligations under international law with respect to satellite-based VMS for fisheries management. Appropriate account will be paid to relevant provisions in global instruments relating to marine fisheries management, namely, the United Nations Convention on the Law of the Sea (LOS Convention),⁴ Chapter 17 of Agenda 21,⁵ the 1993 FAO Compliance Agreement,⁶ the 1995 Fish Stocks Agreement,⁷

¹ Cf. R.R. Churchill, *EEC Fisheries Law* (Dordrecht, Boston and Lancaster, Martinus Nijhoff Publishers, 1987), p. 3, who identifies four consequences for the regulation of marine fisheries: (1) a tendency for fish stocks to be fished above biologically optimum levels; (2) a tendency for more fishermen to engage in a fishery than is economically justified; (3) a likelihood of competition and conflict between different groups of fishermen; and (4) the necessity for any regulation of marine fisheries to have a substantial international component.

² UN Doc. A/53/456, para. 261.

³ Improving flag state performance in high seas fisheries is the main objective of the 1993 Compliance Agreement (see below). For definitions of flag, port and coastal states, see below.

⁴ Montego Bay, 10 December 1982, in force 16 November 1994, (1982) 20 ILM 1245. As at the end of November 1999, 132 states and the European Community were parties to the LOS Convention.

⁵ Agenda 21, Annex II to the Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, UN Doc. A/CONF.151/26. Particularly relevant are paras 17.44–17.96.

⁶ Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, Rome, 24 November 1993, not in force, (1994) 33 ILM 969. As at October 1999, fourteen acceptances were received (twenty-five are needed).

⁷ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 4 August 1995, not in force, *UN Law of the Sea Bulletin* 29 (1995), p. 25. As at the end of November 1999 there were twenty-four states parties (thirty are needed).

and the 1995 FAO Code of Conduct⁸ and its Technical Guidelines.⁹ The article begins by explaining the operational aspects of satellite-based VMS in the next section and its place in fisheries management in the third section. The fourth section is devoted to the relationship between satellite-based VMS and the law of the sea. This forms the brunt of the legal analysis. The following section briefly discusses aspects of space law; and the final section formulates concluding remarks.

Satellite-Based VMS: How It Works

In laymen terms, a satellite-based VMS involves the monitoring of vessels within certain areas for the purpose of, *inter alia*, ascertaining the vessels' locations and/or the type of activity in which they are engaged. In the context of this article, this activity will of course be fishing. Conventional types of VMS do not rely on satellites but on vessel movement reports by radio, aerial or surface surveillance, land-based radar, sea-based sonar, observer programmes or incidental reports by other (fishing) vessels or airplanes.¹⁰

A preliminary distinction which has to be made is that between vessels that have or have not installed so-called automatic location communicators (ALCs).¹¹ This equipment is capable of automatically transmitting a signal with position and other information to a satellite or other type of receiving station.¹² Currently, various satellite systems exist, namely, Inmarsat-C, Argos and

⁸ Code of Conduct for Responsible Fisheries, Rome, 31 October 1995, www.fao.org/WAICENT/FAOINFO/FISHERY/fishery.htm (FAO Fisheries Department's website). According to FAO Conference Resolution 15.93, para. (3), the 1993 FAO Compliance Agreement forms an integral part of the 1995 FAO Code of Conduct.

⁹ Technical Guidelines in Support of the Implementation of the Code of Conduct on Responsible Fisheries. So far, the FAO Fisheries Department has published the following Technical Guidelines: No. 1: Fishing Operations; No. 2: Precautionary Approach to Capture Fisheries and Species Introductions; No. 3: Integration of Fisheries into Coastal Area Management; No. 4: Fisheries Management; No. 5: Aquaculture Development; and No. 6: Inland Fisheries (all available on the FAO Fisheries Department's website (see note 8 above)). Other Technical Guidelines are still under preparation. Particularly relevant here is: *Fishing Operations. 1. Vessel Monitoring Systems* (Rome, FAO, 1998), which is Supplement No. 1 to the Technical Guidelines No. 1 (further referred to as FAO VMS Guidelines).

¹⁰ Certain states, for instance Mozambique, have adopted a system of "self-surveillance" under which licensed fishing vessels are required to report on (alleged) illegal fishing activities (noted in FAO Doc. GCP/INT/606/NOR, *Report of a Regional Workshop on Fisheries Monitoring, Control and Surveillance (Albion, Mauritius, 16–20 December 1996)* (Rome, FAO, 1997), p. 10). This therefore imposes an obligation on those who would already have an incentive to oppose free-riders.

¹¹ These are transmitters or transceivers integrated with a global positioning system (GPS) and an automated reporting system (cf. FAO VMS Guidelines, note 9 above, p. 8). Terminology used instead of ALCs includes "vessel location device" (VLD, used by the FAO VMS Guidelines) and "vessel tracking device" (used by EC Commission Regulation No. 1489/97 of 29 July 1997, OJ 1997 No. L202/18). See also the developments on automatic identification systems (AIS) within the International Maritime Organization (IMO) discussed below.

¹² For example, by radio.

Eutelsat,¹³ which can be used for this purpose in addition to a variety of other purposes.¹⁴

With the instalment of ALCs, it will first of all be easy to determine the location of (identified) vessels at any given time or, in addition to that, all other information transmitted by the signal. It is of course not possible to verify whether vessels that have not installed such equipment are engaging in illegal activities. This is possible through what is, for the purpose of this article, called satellite remote sensing (SRS). SRS involves the use of satellites for the collection of all kinds of data relating to the earth's surface and even subsurface conditions. Currently, there are only two satellites using Synthetic Aperture Radar (SAR) technology, namely, RadarSat-1 and ERS-2, which are capable not only of locating a vessel, but also of ascertaining with some degree of certainty that a vessel is engaged in fishing.¹⁵ A possible alternative for the rather expensive SRS is the use of over-the-horizon radar (OHR).¹⁶

With respect to vessels equipped with ALCs, information will, at certain intervals, be automatically transmitted to a satellite before ultimately ending up at a fishery monitoring centre (FMC). Here it can be checked if a fishing vessel is allowed to fish in the area where it is located and how long it stays there. Based on the vessel's speed and navigation patterns, which reveal a so-called "fishing signature", it can even be determined if it is engaged in fishing. This can even be used for multiple-licence (multiple-species) fishing as most types of fishing have a more or less unique fishing signature. ALCs can, to some extent, also be remotely controlled by "polling", for example by changing the duration between vessel position reports if analysis indicates that a vessel should be more or less closely monitored. The polling function can be carried out by "decision engines" which are also capable of automatically generating recommendations on the necessary steps of enforcement.

In addition to transmitting identification and location data, the technology is already, or will soon be, available to transmit a wide range of other voluntarily

¹³ Quite recently, Argos also became capable of two-way communications. Inmarsat is operated by the International Maritime Satellite Organization. Eutelsat stands for the European Telecommunications Satellite Organization (J. Fitzpatrick, "Satellite Data Communication Systems, Remote Sensing and Other Techniques as an Aid to Monitoring, Control, Surveillance and Enforcement", in 1996 *Mauritius Workshop*, note 10 above, pp. 131-132).

¹⁴ See below.

¹⁵ In their current application, however, these systems still have many deficiencies. For example, accuracy is affected by the vessel's speed and size, and sea surface conditions; it is relatively expensive; and the revisit time of the satellite could be considerable. This is not to say that in certain situations it could already be used as an addition to tracking ships equipped with ALCs. Other relevant satellites include Envisat (launched in 1999) and Palsar (to be launched in 2002) (information based on F. Jansen, *Satellite Surveillance in Support of Sustainable Fisheries Management* (unpublished paper, 1999); Fitzpatrick, note 13 above, p. 132; and FAO VMS Guidelines, note 9 above, pp. 9-10).

¹⁶ As suggested by R.G. Lovingfoss at the International Conference on Satellite Technology in Fisheries, Cairns, Queensland, 15-18 August 1999.

provided information (such as catch reports) or automatically generated evidence that a vessel is engaged in fishing. On-board sensors could, for example, indicate not only the vessel's speed and direction but also information on the operation of the engine(s) or the hydraulic boom used for the fishing gear.¹⁷ Sensors could also be used to transmit information valuable to fisheries management, for example sea temperature and salinity.¹⁸ The possibility of integrating all this information with data obtained by other means (SRS, sea depth, catch reports/statistics) can create a powerful tool in enhancing not only compliance but fisheries management in a broad sense. Insight in the spatial distribution of biomass, both overall and near real-time, facilitates tailored management measures and deters illegal behaviour.

Information on a vessel's identity and location, or even whether it is engaged in fishing or not, is of great value when linked to certain management measures, such as closed areas or seasons (in general or for specific ships), "exclusion zones",¹⁹ or restricted fishing effort through fixed fishing days. In the absence of such management measures, the main objective is limited to verification of catch-reporting requirements. Collected data are then checked with the vessel's logbook in which entries should be made of all catches and their location, and/or tracking and logbook information of other vessels operating simultaneously in the same area.²⁰

A satellite-based VMS which is only capable of monitoring vessels equipped with ALCs, obviously has an inherently limited scope of application. SRS or OHR could therefore be used to locate vessels that have not installed ALCs or that tamper with them and, based on speed and navigation patterns, ascertain if the vessel is engaged in fishing. As such systems are unable to assess a vessel's identification, it will subsequently be necessary to contact and identify the potential offender by aircraft or patrol boats. Aircraft will confront the operator/owner of the ship with the offence, take photographs which can be used as proof in further enforcement steps, or give other directions. Patrol boats will intercept the alleged offender and take appropriate enforcement measures.

Interception and/or photographs will, in many cases, also be necessary in relation to vessels equipped with ALCs. This will be the only way to order or bring the vessel into port. In addition, the judiciary may not accept the transmitted information as sufficient evidence to establish that a violation has

¹⁷ See Fitzpatrick, note 13 above, pp. 141–143.

¹⁸ The VMS used by the Maldives already has this feature. Peru is contemplating this as well.

¹⁹ See below.

²⁰ It can probably often be argued that (1) even though the ship was located somewhere for a certain time, and (2) speed and navigation patterns indicate that it was engaged in fishing, it simply did not catch that much. Catch estimates with a certain margin of error will therefore have to be established.

taken place.²¹ There are several factors that should be taken into account when assessing the cost-effectiveness of the most optimal mix of forms of surveillance. This is addressed in the discussion below. While the discussion below looks at the law of the sea in relation to international legal aspects of satellite-based VMS through ALCs, the discussion below looks at aspects in space law which are more relevant to SRS.

Satellite-Based VMS and Fisheries Management

Current international law recognises that the marine living resources in a coastal state's maritime zones are within its sovereignty or sovereign rights and can in principle be managed, explored and exploited to the exclusion of other states.²² However, rather than giving the coastal state a *carte blanche* to do whatever it sees fit, a wide range of obligations seek to safeguard the interests of the international community. Depending, *inter alia*, on the type of species, coastal states are to ensure through sustainable management that their resources are not over-exploited, that appropriate account is taken of the objective of optimum utilisation and that they co-operate with other states in relation to transboundary stocks.²³ Furthermore, while the LOS Convention already subjected freedom of fishing on the high seas to obligations on conservation and co-operation,²⁴ flag states have in the 1990s witnessed various global efforts to develop obligations that are both more stringent and more specific.²⁵ Clearly discernible in the evolution of the international law relating to fisheries management is the continuously increasing attention to the fact that in many, if not all, instances,

²¹ Cf. FAO VMS Guidelines, note 9 above, p. 5. Such hesitation is still evident in *P. Bagnato v Australian Fisheries Management Authority (Bagnato v AFMA case)* Administrative Appeals Tribunal, Australia, General Administrative Division, Case No. N97/929, Decision of 30 January 1998, para. 36. In *DA Lane (Fisheries Investigator) v MP Wallace (GPS case)*, Auckland District Court, New Zealand, Case No. CRN 7004055329, Decision of 11 September 1998, the quality of evidence provided by GPS was recognised (GPS is "a notorious scientific instrument": *ibid.*, pp. 26 and 33).

²² See below for a discussion on maritime zones.

²³ The importance of co-operation was most recently confirmed in the *Southern Bluefin Tuna (Provisional Measures)* cases (*Southern Bluefin Tuna cases* (Nos 3 and 4) (*New Zealand v Japan; Australia v Japan*)), Requests for Provisional Measures, Order of 27 August 1999, www.un.org/Depts/los before the International Tribunal for the Law of the Sea (ITLOS). For the purpose of this article, management is regarded as comprising both conservation and use (see the definitions of "conservation" and "management" used by S.N. Nandan, S. Rosenne (volume editors) and N.R. Grandy (assistant editor), *United Nations Convention on the Law of the Sea 1982, A Commentary* (The Hague, London and Boston, Martinus Nijhoff Publishers, 1995), Vol. III, p. 29). The objective of sustainability (Art. 2 of the 1995 Fish Stocks Agreement) is used instead of the qualification "proper" (Art. 61(2) of the LOS Convention). The 1995 FAO Code of Conduct uses "responsible fisheries" (Art. 2(c)), "effective conservation and management" (s. 6.1), "sustainable utilisation" (ss. 6.3 and 7.2.1), or "long-term conservation and sustainable use" (s. 7.1.1).

²⁴ See Art. 87(1)(e) in conjunction with Arts 116–120.

²⁵ All the global instruments mentioned above are meant here. For an analysis, see E. Hey, "Global Fisheries Regulations in the First Half of the 1990s", (1996) 11 *International Journal of Marine and Coastal Law* 459–490.

sustainable fisheries management presupposes efforts in two key fields: data-gathering and ensuring compliance with its management objectives.²⁶ Satellite-based VMS assist states in both.

Data-Gathering

As a first step, sustainable fisheries management should gather reliable data on the effects of harvesting on the targeted species which, after analysis, should lead to the adoption of sustainable management measures. Decades of experience in fisheries management have nevertheless shown that, rather than this single-species approach, it is necessary to adopt a multi-species approach in which the effects of harvesting on both targeted species and associated or dependent species should be taken into account.²⁷ More recent even is the advent of the ecosystem approach, which encompasses not only the effects of harvesting on both targeted species and associated or dependent species, but also of associated activities such as pollution.²⁸ Although perhaps not true management approaches, community-based management²⁹ and precautionary approaches³⁰ provide for further refinements to fisheries management.

Whichever management approach is pursued, the relevant global instruments all recognise the key role of data-gathering by obliging states to undertake such data-gathering³¹ and by stipulating that in taking management measures, account shall be taken of the “best scientific evidence available”.³² It is worth realising that data-gathering is not limited to biological/resources assessment data (including fishing trends, patterns, interdependencies of stocks, and environmental aspects) but extends to data on fishery capacity (fishermen, boats and gear) and social and economic data on the harvesting, processing and

²⁶ These two objectives are the core of the “System of Observation and Inspection” within the framework of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR Convention), Canberra, 20 May 1980, in force 7 April 1981, www.ccamlr.org. For a discussion, see R. Rayfuse, “Enforcement of High Seas Fisheries Agreements: Observation and Inspection under the Convention on the Conservation of Antarctic Marine Living Resources”, (1998) 13 *International Journal of Marine and Coastal Law* 579–605, in particular p. 588.

²⁷ See, for example, Art. 61(3) of the LOS Convention; and Art. 5(b) of the 1995 Fish Stocks Agreement. W.T. Burke, *The New International Law of Fisheries, UNCLOS 1982 and Beyond* (Oxford, Clarendon Press, 1994), p. 58, regards associated species as including “incidental catches or by-catches” and dependent species as including “predator-prey or more distant food, or other biological relationships”. However, Arts 5(f), 6(3)(d) and 6(5) of the 1995 Fish Stocks Agreement clearly treat “non-target” species distinct from associated or dependent species.

²⁸ See, for example, Art. 5(d) of the 1995 Fish Stocks Agreement; and para. 17.71 of Agenda 21.

²⁹ See *The State of the World Fisheries and Aquaculture, 1998* (Rome, FAO, 1999) (SOFIA 1998), at Box 11.

³⁰ See Arts 5(c) and 6 (Annex II) of the 1995 Fish Stocks Agreement; and ss. 6.5 and 7.5 of the 1995 FAO Code of Conduct.

³¹ For example, Arts 5(j) and (k), 9(d), 10(d), (e), (f) and (g) and 14 of, and Annex I to the 1995 Fish Stocks Agreement; and s. 7.4 and Art. 12 of the 1995 FAO Code of Conduct.

³² For example, Art. 61(3) of the LOS Convention; Art. 5(b) of the 1995 Fish Stocks Agreement; and ss. 6.4, 7.1.1 and 7.4.1 of the 1995 FAO Code of Conduct.

marketing sections of fisheries.³³ As should be clear from this enumeration, data-gathering necessitates conducting scientific research in many cases, but not all.³⁴

The standard which scientific evidence should meet is commonly set at “best ... available”, which recognises the difficulty of data-gathering for the purpose of fisheries management. These difficulties not only originate from humanity’s limited knowledge of the marine environment or the technical and economic aspects of fishing practices, but point to any constraint, be it time, financial or capacity, which is experienced by fisheries management authorities. Uncertain, unreliable or inadequate scientific data necessitates at any rate that proper account should be taken of the precautionary principle.³⁵ Obviously, assessing whether a fisheries management authority adequately complies with its data-gathering duties is an extremely difficult task for any management approach but above all for ecosystem management.³⁶

It is also worth pointing out that in deciding upon certain management measures, all gathered data must be weighed simultaneously, without any guidance on the weight of each individual data category. Closely related thereto is the fact that, although restrained by obligations to prevent over-exploitation and to promote optimum utilisation (where relevant), fisheries management authorities are still left with a wide discretion in deciding upon the preferred management objective.³⁷

Through the monitoring of vessel movements, the ability to cross-check these data with catch statistics and the wide range of other information which can be

³³ Art. 61(5) of the LOS Convention enumerates “scientific information, catch and fishing effort statistics and other data relevant to the conservation of fish stocks”. See also paras (3) and (4) of the same provision. Art. 14(1)(a) of the 1995 Fish Stocks Agreement refers to “scientific, technical and statistical data” (see also Arts 1(1), 3 and 4 of Annex I). The Introduction to the 1995 FAO Code of Conduct refers to “the nutritional, economic, social, environmental and cultural importance of fisheries” (see also Art. 2(a)).

³⁴ The term “scientific research” is preferred to “marine scientific research” (MSR). The latter term, which is *inter alia* governed by Part XIII of the LOS Convention, is defined by A.H.A. Soons, *Marine Scientific Research and the Law of the Sea* (The Hague, T.M.C. Asser Institute and Deventer, Kluwer Law and Taxation Publishers, 1982), at p. 6 as “any study or related experimental work designed to increase man’s knowledge of the marine environment. Thus, it encompasses any scientific work, wherever carried out, having the marine environment as object” (footnote omitted; see also pp. 118–125 thereof).

³⁵ Art. 6(2) of the 1995 Fish Stocks Agreement. This certainly does not automatically mean that fishing is not allowed.

³⁶ Cf. Burke, note 27 above, p. 57.

³⁷ This is, *inter alia*, reflected in the words “as qualified by ... economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States” in Art. 61(3) of the LOS Convention. Instead of aiming for maximum sustainable yield, it could therefore be decided to strive for straight economic need or protein need (cf. P. Flewweling, *An Introduction to Monitoring, Control and Surveillance Systems for Capture Fisheries* (FAO Fisheries Technical Paper No. 338, Rome, FAO, 1994), p. 30; see also Art. 24 of the 1995 Fish Stocks Agreement). The fact that Art. 61(2) of the LOS Convention links scientific data to an obligation of “taking into account” also reflects the predominance of the wider management context (cf. Burke, note 27 above, p. 56).

transmitted, satellite-based VMS thus assists management authorities in complying with their data-gathering obligations under international law.

Ensuring Compliance and MCS

In light of the already identified tendency of marine capture fisheries to lead to over-exploitation and economic inefficiency, the significance of ensuring compliance with fisheries management can hardly be overstated. Ensuring compliance is generally associated with “monitoring, control and surveillance” (MCS). Although many instruments make standard reference to the MCS of fisheries, definitions of the individual elements are often lacking. Although the term “monitoring” is not defined in the LOS Convention, it nevertheless appears in Articles 202, 204, 205 and 206. Article 204, entitled “Monitoring of the risks or effects of pollution”, is particularly interesting since paragraph (1) mentions several possible methods by which environmental impact can be monitored, namely, observing, measuring, evaluating and analysing. Paragraph (2) stipulates furthermore that states shall keep the effects of certain activities “under surveillance”, which could be interpreted as meaning that surveillance is (sometimes) part of the monitoring effort. The leading commentary on the LOS Convention cites an official of the Intergovernmental Oceanographic Commission who indicates that “monitoring is understood as repeated observations following the same methods at given sites”.³⁸

Specifically in the context of fisheries the following definitions have been suggested:

- “monitoring” means the continuing requirement for the measurement of fishing effort characteristics and catches;
- “control” means the legal framework within which the resource must be exploited, i.e., management schemes; and
- “surveillance” means the those measures required to ensure compliance with the regulations formulated under “control”.³⁹

The “measures required to ensure compliance” are presumably intended to cover the whole range of enforcement measures, namely, boarding, (physical)

³⁸ Cited by S. Rosenne and A. Yankov (volume editors), N.R. Grandy (assistant editor) and M.H. Nordquist (editor-in-chief), *United Nations Convention on the Law of the Sea 1982. A Commentary* (Dordrecht, Boston and London, Martinus Nijhoff Publishers, 1991), Vol. IV, p. 111, n. 2.

³⁹ FAO Doc. CECAF/TECH/81/35, *Report of the Consultation on Monitoring, Control and Surveillance, Dakar* (FAO, 1981) (as cited by M. Cirelli and A. Van Houtte, “Legal Aspects of Co-operation in Monitoring, Control and Surveillance in the Southwestern Indian Ocean”, in 1996 Mauritius Workshop, note 10 above, p. 77). Slightly different definitions are used in FAO Doc. FAO/GCP/INT/344/NOR, *Report on an Expert Consultation on MCS for Fisheries Management* (Rome, FAO, 1981) (as cited by Flewweling, note 37 above, p. 7; note that elsewhere (*ibid.*, p. 9), Flewweling seems to follow the other definitions). See also Art. 5(1) of the 1995 Fish Stocks Agreement which, in relation to MCS, simply refers to implementation and enforcement. However, s. 7.1.7 of the 1995 FAO Code of Conduct refers to “fisheries monitoring, surveillance, control and enforcement” (ss. 7.7.3 and 8.1.4 are more or less identical).

inspection, arrest and judicial proceedings.⁴⁰ Not too much emphasis should be put on distinguishing between the different components of MCS, if only because they do not fit to specific circumstances.⁴¹ As the purpose of MCS is "to ensure that management measures, once agreed and adopted by a competent authority, are implemented fully and expeditiously",⁴² MCS should properly be regarded as covering the whole range of measures aimed at the implementation of fisheries management goals.⁴³ Moreover, even if a competent fisheries authority would succeed in reaching consensus on a distinction, there is always a risk that over-rigid adherence thereto would negatively affect co-operation and, consequently, would lead to duplication of effort and/or inefficiency.

Satellite-based VMSs are therefore an important tool in efforts on MCS and, as the discussion above indicated, also contribute to data-gathering. Whereas devoting adequate effort to MCS is in principle in the own interest of a fisheries management authority, there may be a multitude of reasons behind a failure to do so. Limited financial resources could be one of these but also, for instance, the fact that coastal states managing fisheries in their own maritime zones may not perceive this "own interest" in the same way as flag states involved in a loosely operating regional high seas fisheries management mechanism. Partly for this reason, the relevant global instruments impose obligations on states to engage in MCS in general⁴⁴ and (satellite-based) VMS in particular.⁴⁵

The surveillance component of MCS can be conducted in a variety of ways. In addition to satellite-based VMS and the more traditional forms of VMS mentioned in the discussion above, surveillance could, for example, take place in ports of landing, at auctions, or by tracing fish and fish products. Singling out one of these forms of surveillance will never be successful as each has its pros and

⁴⁰ See Art. 73(1) of the LOS Convention.

⁴¹ For example, the preamble to EC Council Regulation No. 2847/93 of 12 October 1993, establishing a control system applicable to the common fisheries policy (OJ 1993 No. L261/1, consolidated text at europa.eu.int/eur-lex/en/index.html), appears to give "control" a meaning which is more oriented towards enforcement (see the 5th and 9th "Whereas" recitals). This could be due to the fact that, in Community law, "control" is generally associated with enforcement.

⁴² FAO Doc. COFI/97-INF.6, *Essential Role of Monitoring, Control and Surveillance in Fisheries Management* (December 1996).

⁴³ Cf. B. Hersoug and O. Paulsen, *Monitoring, Control and Surveillance in Fisheries Management* (Windhoek, University of Namibia, 1996), p. 1. Flewelling, note 37 above, p. 7, submits that MCS "includes the implementation of operations necessary to effect an agreed policy and plan for oceans and fisheries management". The abbreviation "MCS" would therefore seem to perform a similar function to the phrase "prevent, reduce and control pollution" which recurs continuously in the LOS Convention, leading E.J. Molenaar, *Coastal State Jurisdiction over Vessel-Source Pollution* (The Hague, Boston and London, Kluwer Law International, 1998), p. 2, n. 5, to observe that: "As a whole this phrase is probably intended to cover all possible measures to combat pollution, in whatever phase."

⁴⁴ See, for instance, para. 17.67 of Agenda 21; Arts 5(l), 10(h) and 18 and Art. 6 (Annex I) of the 1995 Fish Stocks Agreement; and ss. 6.10, 7.1.7, 7.7.3 and 8.1.4 of the 1995 FAO Code of Conduct.

⁴⁵ *Inter alia* in Arts 5(j) and 18(3)(e) and (g)(iii) and Arts 5 and 6 (Annex I) of the 1995 Fish Stocks Agreement; and s. 7.7.3 of the 1995 FAO Code of Conduct.

cons. For example, on-board inspections at sea are costly and can be dangerous due to weather circumstances or aggressive fishing crews. In contrast with in-port inspections, however, the fish actually on board or in the process of being caught, the handling of the gear, the processing and storage and verification of the processes for handling waste can all be much better monitored.⁴⁶ Therefore, a mix of various forms of surveillance will have to be used that is tailored to the regulatory area. For that purpose the following factors could be taken into account:⁴⁷

- the size of the regulatory area, the part in which the actual fishing takes place and the topography of the coastline;
- the type of stocks and their level of exploitation;
- the type and size of fishery, i.e. industrial/artisanal or domestic/foreign;
- the nature and extent of infringements and the effectiveness of flag state control (if relevant);
- other social and economic considerations, such as the human and financial resources available for enforcement in relation to the fisheries' revenue in social and economic terms;
- the (lack of) support of stakeholders in fisheries for certain types of VMS;⁴⁸
- the potential for successful co-operation with other states at a regional or sub-regional level; and
- the political will and commitment to make optimal use of the chosen VMS.

The cost-effectiveness assessment of these and perhaps a number of other considerations⁴⁹ should ultimately lead to the optimum surveillance mix. Sadly enough, it so appears that an accurate assessment is only feasible with information obtained through MCS. At least potentially, choices could therefore be guided by unfounded perceptions of the causes of identified problems, for example by exclusively accusing foreign, and not national, fishermen of over-fishing or illegal fishing.⁵⁰ As a rule of thumb, it seems safe to say that satellite-based VMSs are more appropriate for industrial than for artisanal fishing, as the latter commonly involves a large number of fishers, mixed gears and landing points.

Arguably, a successfully operating satellite-based VMS (with or without SRS or OHR) will work as a deterrent, thereby permitting diminished use of

⁴⁶ Cf. Flewweling, note 37 above, p. 39.

⁴⁷ Predominantly based on FAO Doc. COFI/97/INF.6, para. 2 (note 42 above).

⁴⁸ A relevant factor in relation to satellite-based VMS is the possibility of other applications (see below).

⁴⁹ A rather sensitive issue in relation to satellite-based VMS is the aspect of security of information. Not only will those actually involved in fishing fear unfair competition but, if applied between two or more states, this would also more clearly reveal those states' enforcement commitment. For a cost-effectiveness assessment of VMS, see the *Bagnato v AFMA* case, note 21 above.

⁵⁰ Cf. Flewweling, note 37 above, p. 4.

traditional means of surveillance.⁵¹ Enhanced peer pressure by those having to install ALCs could also improve overall compliance. Appropriate consideration should likewise be given to other applications of satellite-based VMSs than those under discussion. The use of ALCs will often also enable two-way communication and thereby provide fishing operators with applications such as SafetyNET (designed to promulgate maritime safety information) or FleetNET (news and weather broadcasts, market quotations etc.).⁵² Moreover, SRS could be used for a wide range of military and non-military uses, for example vessel detection for other purposes (smuggling), detection of marine pollution or algae blooms, coastal zone and forest management and collating climate and meteorological information.⁵³

Integrating Satellite-Based VMS in Fisheries Management

Once a fisheries management authority has taken the decision to use a satellite-based VMS, it will be necessary to tailor the system to its needs. A primary consideration would be the system's purpose: data-gathering; ensuring compliance; or both. This choice will be decisive for the way in which the system is to be integrated into the framework of fisheries management. Subsequently, the operational requirements of the satellite-based VMS will have to be determined, for example the type of system (ARGOS, Inmarsat-C etc.), the scope of application (geographically and type(s) of ships) and the type of information transmitted (identity, location, frequency, addressee, etc.).

Secondly, apart from complementing satellite-based VMS with other forms of enforcement, it will have to be incorporated in the legal framework of fisheries management, or the control component in MCS. This would require for example:

- licensing;
- requirements on vessel marking and identification;
- catch reporting by logbook or otherwise;
- prescribing fixed ports of landings; and
- controlling transshipments.⁵⁴

⁵¹ FAO VMS Guidelines, note 9 above, pp. 6–7. The EC believes it will lead to “an increase of 20 per cent in the effectiveness of marine surveillance, which has an estimated cost of MEuro 100” (Effective Monitoring to Ensure Sustainable Fisheries, europa.eu.int/comm/dg14/info/control_en.htm, 19 May 1999, p. 10). Similarly, M.W. Lodge, “The South Pacific Forum Fisheries Agency and Legal Aspects of Fisheries Monitoring, Control and Surveillance”, in 1996 Mauritius Workshop, note 10 above, p. 162, observes that: “Capital costs are much lower than the cost of a surface patrol vessel or aircraft.”

⁵² Cf. Fitzpatrick, note 13 above, p. 125. A variety of regional systems exist as well, for example Euteltracs and Boatracs in Europe and the United States respectively.

⁵³ Jansen, note 15 above, p. 6.

⁵⁴ For transshipments see below.

Without overstepping the limits set by applicable international law,⁵⁵ enactments should be unambiguous, regarded as acceptable by those regulated⁵⁶ and conducive to effective and easy enforcement. Penalties should be sufficiently severe to deter violations. More specifically related to satellite-based VMSs, the use of logbooks and ALCs should be underpinned by a number of obligations aimed at avoiding obstruction of regulatory efforts.⁵⁷ Not observing these obligations could be regarded as separate offences. In addition, a responsible use could be made of a rebuttable presumption of guilt, requiring the alleged offender to establish its innocence.⁵⁸ Closely related thereto is the recommendation that due consideration should be given to the categorisation of regulatory offences. In many legal systems criminal law usually demands a heavier standard of proof in comparison with civil or administrative law.⁵⁹

Finally, the pivotal role of one particular aspect cannot be emphasised enough: confidentiality and security of information is essential for the success of satellite-based VMS. In many fisheries, the possibility that near real-time location and/or catch data ends up in the hands of (non-participating) competitors is bound to have enormous impact on acceptance and, if already in operation, on compliance and co-operation. Confidentiality and security risks will in general increase when the VMS information is shared by more parties, and appropriate measures will have to be taken to address these risks. The aforementioned risks exist in every phase of transmission and all those involved – States, companies and organisations alike – should exercise the utmost diligence on this issue. This may, for instance, require the enactment of legislation to counter breaches of confidentiality or security.

This does not necessarily mean that fisheries management authorities should have exclusive access to the information transmitted by ALCs. The applicable legal framework may guarantee others a right of access as well. One situation which springs to mind is where location data are essential in criminal

⁵⁵ See, for example, the restrictions discussed below.

⁵⁶ See s. 7.1.10 of the 1995 FAO Code of Conduct.

⁵⁷ The FAO VMS Guidelines, note 9 above, pp. 24–27, discuss the following ways of obstructing satellite-based VMSs: blocking transmission at the antenna; disruption of the power supply; physical removal of the ALC; duplication of the ALC; and the transmission of false position.

⁵⁸ See D. Freestone, *The Burden of Proof in Natural Resources Legislation. Some Critical Issues for Fisheries Law* (FAO Legislative Study No. 63, Rome, FAO, 1998). Freestone refers on p. 8 to s. 15(1) of the 1979 Control of Foreign Fishing Vessels Decree of the Seychelles, which provides that fish found on board a vessel within its maritime zones is presumed to have been caught therein. Under subsection (2), this presumption can be rebutted if, prior to entry into the EEZ, the fishing vessel makes a radio call in which it indicates that it is exercising its right of free navigation through the EEZ, and notifies its proposed route and quantity of fish on board. On p. 23, Freestone argues that this kind of presumption gives reason for concern. See also the use of a reversal of burden of proof in Arts 13(5a) and 28(g) of EC Regulation No. 2847/93 (consolidated text; note 41 above). See also W.T. Burke, *Fisheries Regulations under Extended Jurisdiction and International Law* (Rome, FAO Fisheries Technical Paper No. 223, 1982), p. 15.

⁵⁹ For example, in the United States. We are grateful to Mr P. Ortiz from the United States National Oceanographic and Atmospheric Administration (NOAA) for his views on this point.

investigations for non-fisheries offences, for example smuggling.⁶⁰ Moreover, it may not always be objectionable that operators whose vessels participate in the VMS have access to certain information as well. While access to near real-time data will in many types of fisheries be out of the question, periodical access to the overall results of the analysis of transmitted information could assist in more effective fishing (more catch in fewer or shorter fishing trips). Disclosure of the latter information is of course only recommended if adequate measures to prevent over-fishing are in place. Again, it is imperative for the success of a satellite-based VMS that fishing operators accept and have faith in the issue of access to information.

Satellite-Based VMS and the Law of the Sea

Flag, Coastal and Port States

An analysis of the scope of application of a satellite-based VMS should commence with clarifying the distinction between the different actors involved in the exercise of jurisdiction over fisheries. Within this domain, international law allocates jurisdiction to states acting in different capacities: as flag, coastal or port states. It is of course very rare for states to exercise jurisdiction in one single capacity only, e.g. as a flag state. They will commonly exercise jurisdiction in all three capacities, even though their rights and obligations will vary for each different capacity.⁶¹

While several definitions for the term “flag state” can be chosen, the definition used here is the state whose nationality a particular vessel has.⁶² Unfortunately, the LOS Convention does not define “port” or “coastal” state.⁶³ Drawing on the definitions used in relation to vessel-source pollution,⁶⁴ it is submitted that the exercise of jurisdiction by coastal states concerns foreign ships that engage in fishing activities⁶⁵ in that coastal state’s maritime zones, whether or not this foreign ship makes a call at one of that coastal state’s ports or anchorages.

⁶⁰ One of the reasons contributing to the establishment of the New Zealand VMS was the inability to trace trawlers that violated no-go areas and thereby caused enormous damage to submarine telephone cables.

⁶¹ A state’s rights and obligations with respect to its own ships (flag state) is therefore potentially different in case its ships fish on the high seas, compared to when they fish in the flag state’s maritime zones (coastal state). See the discussion after this footnote in the main text.

⁶² Cf. R.R. Churchill and A.V. Lowe, *The Law of the Sea* (Manchester, Manchester University Press, 3rd ed., 1999), p. 257. The right to fly a flag and the ship’s nationality are linked in Art. 91(1) of the LOS Convention which, *inter alia*, provides: “Ships have the nationality of the state whose flag they are entitled to fly”. Art. 91(1) mentions another possible definition, namely, the state in whose territory the ship is registered.

⁶³ In the LOS Convention, “coastal state” appears only in relation to the territorial sea, the contiguous zone, the EEZ and the continental shelf, but not with respect to straits, archipelagos, the high seas, the regime of islands, enclosed or semi-enclosed seas, the right of access of landlocked states to and from sea, and freedom of transit.

⁶⁴ See Molenaar, note 43 above, pp. 91–95.

⁶⁵ See below.

Jurisdiction by port states, on the other hand, concerns activities that take place beyond the maritime zones of the coastal state in which it is situated, namely, on the high seas or in another coastal state's maritime zones. This type of activity affects the interests of the coastal state (merely) indirectly. It is worth emphasising that port or coastal state jurisdiction always implies jurisdiction over foreign vessels. Jurisdiction over a state's own vessel implies acting in the capacity as flag state.

With the relevant actors more clearly defined, the discussion will now proceed to flag, coastal and port state approaches towards satellite-based VMS.

Flag State Approaches

A flag state approach relies on the flag state's competence to exercise jurisdiction over ships that have chosen to bear that state's nationality. As a condition for granting a ship its nationality, the flag state can require it to install the necessary equipment for a satellite-based VMS.⁶⁶ The particular manner or extent in which flag states exercise their rights or competences remains largely within their own discretion. The benchmark is therefore commonly the flag state's own constitutional framework and not so much international law.⁶⁷

Rather than being only characterised in terms of competence, however, international law also imposes a wide range of obligations on the flag state. Pursuant to Article 94 of the LOS Convention, a flag state has the obligation to exercise effective jurisdiction and control over ships flying its flag.⁶⁸ Although the ship's location is essentially irrelevant, the spatial scope of coastal state jurisdiction (which leads to concurrent jurisdiction) implies that the high seas are of paramount importance. Neither this general norm nor the norms identified in the discussion above that more specifically relate to MCS, amount to a requirement to ensure that ships install ALCs.⁶⁹ Whether support for such an obligation at the global level might materialise in the future is difficult to say. While global coverage would have the advantage of minimising unfair competition, securing agreement on an acceptable measure of uniformity in performance standards, including data formats, may turn out to be an enormous task. Not only are ARGOS, Eutelsat and Inmarsat-C equipment currently not

⁶⁶ See Art. 91(1) of the LOS Convention.

⁶⁷ See, for example, the *Bagnato v AFMA* case, note 21 above, in which the applicant contested the need for a VMS. After a cost-effectiveness analysis of VMS, Deputy President McMahon decided that the requirement to install ALCs "is the correct and preferable decision" (para. 52).

⁶⁸ Specifically in relation to fisheries, see Art. III of the 1993 FAO Compliance Agreement; Art. 18(2) of the 1995 Fish Stocks Agreement; and s. 6.11 of the 1995 FAO Code of Conduct.

⁶⁹ For example, Art. 18(g)(iii) of the 1995 Fish Stocks Agreement, which lists MCS as one of the measures which flag states should take, refers to "the development and implementation of vessel monitoring systems, including, *as appropriate*, satellite transmitter systems" (emphasis added). Similarly, the 1995 FAO Code of Conduct's Technical Guideline No. 1 (Fishing Operations), which is of course voluntary, confirms this by observing that the flag state "authorisation to fish" "should contain" conditions with regard to vessel position reporting and "could include a requirement" to install ALCs (at pp. 7 and 9, paras 22 and 34).

exactly compatible,⁷⁰ deciding which types of vessels and/or fisheries should be covered would be particularly difficult.

Just how difficult such decisions are can be seen in the ongoing efforts of the Maritime Safety Committee (MSC) and its Sub-Committee on the Safety of Navigation (NAV) of the International Maritime Organization (IMO), which is in the process of securing agreement on the carriage requirements of a universal automatic identification system (AIS). This system is aimed at enhancing the safety of navigation and pollution prevention,⁷¹ and could rely on any kind of communication, including satellite. The MSC agreed that “only one universal AIS should be implemented on a long-term basis”, but it is not yet near to this objective.⁷²

In this context mention should also be made of the 1993 Protocol to the International Convention for the Safety of Fishing Vessels (Torremolinos Convention).⁷³ Its Chapter IX, “Radiocommunications”, contains regulations for fishing vessels of 45 metres in length and over, including provisions for equipment that makes use of certain satellite communications systems, such as Inmarsat and COSPAS-SARSAT, which could be used or adapted for the purpose under discussion. However, for this to happen the 1993 Protocol would first have to enter into force and this will take some time yet.⁷⁴ In fact, one of the reasons that the Torremolinos Convention never entered into force was the great differences in design and operation between ships. Nevertheless, many flag states have already voluntarily proceeded to implement parts of the 1993 Protocol.

A satellite-based VMS would, in principle, enable flag states to follow their ships anywhere on the globe.⁷⁵ As this guarantees continuous monitoring, it would constitute a particularly strong commitment to the flag state’s duty to exercise effective jurisdiction and control. However, if the transmitted information is much more extensive than identification and location data and its vessels

⁷⁰ Cf. Fitzpatrick, note 13 above, pp. 128 and 138.

⁷¹ AIS would *inter alia* facilitate identification of ships suspected of discharge violations. See IMO Docs MSC 67/7/11 and MEPC 39/12.

⁷² IMO Docs NAV 43/15, paras 7.36–7.46; MSC 67/22, paras 7.64–7.68; MSC 69/22/Add.1, paras 5.77–5.81 and Annex 12 (Resolution MSC.74(69) and Annex 3). By Resolution MSC.74(69), the MSC *inter alia* adopted a “Recommendation on Performance Standards for a Universal Shipborne Automatic Identification System (AIS)”. Carriage requirements for AISs were discussed in NAV 45 (September 1999) and were included in Chapter V of SOLAS 74 as Regulation 19(1.5) (see IMO Doc. NAV 45/14/Add.1, Annex 6). The revised Chapter V is expected to enter into force on 1 July 2002. Information kindly obtained from V. Lebedev, IMO.

⁷³ The Convention was adopted in Torremolinos, on 2 April 1977. The 1993 Protocol was also adopted in Torremolinos, on 2 April 1993.

⁷⁴ As at 20 June 1999, the 1993 Protocol had been ratified by five states. Entry into force will take place one year after fifteen states with at least an aggregate fleet of 14,000 vessels equivalent to approximately 50 per cent of today’s world fishing fleet of vessels of 24 metres in length and over, have ratified the Protocol. See www.imo.org.

⁷⁵ This approach is pursued by the EC.

operate in another state's maritime zones, the consent of that coastal state may have to be sought. The use of on-board sensors, for example to measure sea temperature or salinity, could at a certain point effectively amount to marine scientific research (MSR) and thus be subject to Part XIII of the LOS Convention.⁷⁶ Moreover, even where it concerns merely position reports, the flag state and the coastal state can agree that these data will be forwarded to the coastal state.

Enforcement by the flag state (with respect to its own ships) could, in principle, be undertaken anywhere on the high seas and also within another state's exclusive economic zone (EEZ).⁷⁷ In case a vessel is located within the sovereignty of another state,⁷⁸ its flag state is either required, but in any case advised, to consult that coastal state on the appropriateness of action taken.

Coastal State Approaches

The key issue which this section seeks to address is to what extent coastal states can require foreign vessels that engage in certain activities in their maritime zones to install ALCs and to what extent enforcement would be permissive. The main emphasis will be on the territorial sea, archipelagic waters, EEZ and continental shelf. No attention will be paid to the contiguous zone as Article 33 of the LOS Convention does not permit the exercise of prescriptive jurisdiction within its spatial limits. The wide enforcement powers over fisheries to which the coastal state is entitled in the EEZ, would also render separate attention to the contiguous zone in this context unnecessary. Finally, apart from the right of hot pursuit under Article 111 of the LOS Convention, no attention is given to coastal state enforcement powers on the high seas.⁷⁹

A distinction is first of all made between prescription (legislative jurisdiction) and enforcement. The discussion on prescription is then further subdivided into foreign fishing vessels with licences, foreign fishing vessels in lateral passage (without licences), foreign fishing support vessels and general limits to prescription. The first three of these subsections investigate scenarios in which coastal states might wish to use their prescriptive powers over foreign vessels. The fourth subsection deals more generally with limits to prescription. Lastly, even though safeguards such as those incorporated in paragraphs (2), (3) and (4) of Article 73 of the LOS Convention are part and parcel of the jurisdictional balance in the LOS Convention, their discussion is omitted as it would take up too much space.

⁷⁶ See below.

⁷⁷ See Art. 92(1) of the LOS Convention, which applies through Art. 58(2) of the LOS Convention to the EEZ as it is not "incompatible with [Part V on the EEZ]".

⁷⁸ For the maritime zones which fall under a state's sovereignty, see below.

⁷⁹ For a global instrument which deals with this issue, see Arts 19(1)(a), 20(6), 21 and 22 of the 1995 Fish Stocks Agreement. For a more general discussion, see M. Hayashi, "Enforcement by Non-Flag States on the High Seas under the 1995 Agreement on Straddling and Highly Migratory Fish Stocks", (1996) 9 *Georgetown International Environmental Law Review* 1 36.

Prescription

Foreign Fishing Vessels with Licences

In its territorial sea, a coastal state exercises sovereignty and has pursuant to Article 21(1)(d) of the LOS Convention prescriptive jurisdiction with respect to “the conservation of the living resources of the sea”. In addition, Article 19(2)(i) of the LOS Convention provides that a foreign ship which engages in “any fishing activities” in the territorial sea loses its right of innocent passage.⁸⁰ Obviously, this does not apply to those ships which have been authorised to fish. These two provisions indicate that the coastal state is permitted to impose any reasonable type of requirement as a pre-condition for fishing in the territorial sea, including the fitting of ALCs.

The situation with respect to the archipelagic waters which can be established in accordance with Article 47 of the LOS Convention, is quite similar to the regime in the territorial sea. Articles 2(1) and 49(1) of the LOS Convention recognise the archipelagic state’s sovereignty over its archipelagic waters, while Article 52(1) upholds the right of innocent passage in accordance with Part II, Section 3 (the regime of innocent passage in the territorial sea). The observations and conclusions in relation to Articles 19(2)(i) and 21(1)(d) made in the previous paragraph would therefore apply in principle *mutatis mutandis*. However, whereas Article 49(2) provides that sovereignty extends to the resources in the archipelagic waters, Article 51(1) emphasises that:

“Without prejudice to article 49, an archipelagic State shall respect existing agreements with other States and shall recognise traditional fishing rights and other legitimate activities of the immediately adjacent neighbouring States in certain areas falling within archipelagic waters. The terms and conditions for the exercise of such rights and activities, including the nature, the extent and the areas to which they apply, shall, at the request of any of the States concerned, be regulated by bilateral agreements between them. Such rights shall not be transferred to or shared with third States or their nationals.”⁸¹

The archipelagic state is thus held to respect traditional fishing rights and barred from unilaterally regulating fishing by foreign fishing vessels that exercise such rights. However, once the archipelagic state has made a request for regulation through bilateral agreements, Article 51(1) does not give the other states concerned much room to ignore such a request, provided of course the demands of the archipelagic state are reasonable. Much in this context will also depend on what the states concerned regard as “traditional fishing rights”. In case the states

⁸⁰ See also the discussion below.

⁸¹ See also Art. 47(6).

agree it is a more or less static concept, the catches will presumably not be substantial and the need for ALCs questionable.

Apart from the regime of innocent passage, the LOS Convention contains two other regimes which grant rights of navigation through areas under state sovereignty, namely, the regimes of transit passage and archipelagic sea lanes (ASLs) passage.⁸² Although ships of all states enjoy these navigational rights, they do not affect the sovereignty of strait states and archipelagic states over the resources in such areas.⁸³ When exercising their rights of transit or ASLs passage, ships shall comply with the various requirements enumerated in Article 39(1) and (2). Relevant to our subject is the obligation to “refrain from any activities other than those incident to their normal modes of continuous and expeditious transit”.⁸⁴ It is widely accepted that the reference to the “normal mode” was explicitly included for military purposes, e.g. formation steaming and submarines proceeding submerged. No support exists for the view that the “normal mode” would allow foreign fishing vessels to engage in fishing without having to obtain licences. This would also be inconsistent with the strait and archipelagic states’ competence to adopt laws and regulations relating to transit and ASLs passage “with respect to fishing vessels, the prevention of fishing, including the stowage of fishing gear”.⁸⁵ Consequently, the rights of transit and ASLs passage do not affect the strait or archipelagic state’s sovereignty with respect to regulating fisheries, including the requirement to install ALCs.

In its EEZ a coastal state has “sovereign rights for the purpose of exploring and exploiting, conserving and managing”⁸⁶ the living resources therein. In return for granting foreign fishing vessels access to the surplus in the total allowable catch (TAC), Article 62(4) of the LOS Convention permits a coastal state to set “terms and conditions”.⁸⁷ Subparagraph (c) recognises that this would cover ALCs by explicitly permitting the coastal state to enact laws and regulations which require foreign vessels to provide “vessel position reports”.⁸⁸

⁸² The regime of transit passage is incorporated in Section 2 of Part III, which is concerned with straits used for international navigation. ASLs passage is included in Part IV on archipelagic states.

⁸³ Arts 34(1) and 49(4). The regimes of transit and ASLs passage also grant rights of overflight to aircraft.

⁸⁴ Art. 54 in Part IV makes Art. 39, *mutatis mutandis*, applicable. Art. 53(3) also uses “the normal mode”.

⁸⁵ Arts 42(1)(c) and Art. 54 (the latter by cross-reference).

⁸⁶ Art. 56(1)(a).

⁸⁷ A right to the surplus in the TAC does not exist in relation to the other maritime zones. In fact, the obligations on conservation and utilisation of marine living resources incorporated in Arts 61 and 62 are only explicitly applicable to the EEZ.

⁸⁸ Cf. the view of the UN Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs (DOALOS) in IMO Doc. LEG 70/7, para. 27; and the view of the United States in IMO Doc. LEG 70/7/1, para. 7. See the discussion in the 70th session of the IMO’s Legal Committee (LEG) in IMO Doc. LEG 70/10, paras 90–91.

A special situation arises in relation to “living organisms belonging to sedentary species” on the coastal state’s continental shelf.⁸⁹ The regime for such species is a *lex specialis* to the regime of other marine living resources in a coastal state’s EEZ.⁹⁰ Due to the possibility of a legal continental shelf which extends beyond the EEZ,⁹¹ a coastal state’s sovereign rights for the purpose of exploring and exploiting these species would extend with it. These sovereign rights give coastal states the authority to require that foreign vessels licensed to harvest these species carry ALCs.

A regulatory measure with considerable potential for satellite-based VMSs are so-called “exclusion zones” for the purpose of fisheries management. Within exclusion zones, the mere presence of fishing vessels subject to VMS constitutes an offence, unless justified by *force majeure* or the like.⁹² Exclusion zones are thus considerably more onerous but also more effective than closed areas, as it is unnecessary to prove fishing activity. This could of course lead to a separate conviction if such evidence were also available. Since the prohibition to transit exclusion zones, except through designated corridors, applies only to a specified group of licensed fishing vessels, domestic or foreign, the navigational rights and freedoms of other vessels remain unaffected. Such movement restrictions on licensed vessels would normally be within the coastal or flag state’s competence.

Foreign Fishing Vessels in Lateral Passage

The situation for foreign fishing vessels not authorised to fish in a coastal state’s maritime zones is, from the perspective of prescription, altogether different from ships with licences. It may be evident that upon violating the coastal state’s laws and regulations by fishing in either the territorial sea, the archipelagic waters or the EEZ, the ship will be subject to enforcement action. This aspect will be

⁸⁹ Art. 77(4) of the LOS Convention defines these as “organisms which, at the harvestable stage, either are immobile on or under the sea-bed or are unable to move except in constant physical contact with the sea-bed or the subsoil”. While agreement exists that this includes species such as oysters, clams and abalone, whether it also covers crabs and lobsters remains controversial (Churchill and Lowe, note 62 above, p. 142).

⁹⁰ See Arts 56(3) and 77 of the LOS Convention. This also means that the coastal state obligations to prevent over-exploitation and to promote the objective of optimum sustainable yield pursuant to Arts 61 and 62 respectively, are not applicable either; at least not based on the LOS Convention. This means *inter alia* that other states have no right to access to a surplus, if any (cf. E. Hey, *The Regime for the Exploitation of Transboundary Marine Fisheries Resources* (Dordrecht, Martinus Nijhoff Publishers, 1989), p. 49).

⁹¹ See Art. 76 of the LOS Convention.

⁹² This regulatory measure is already in operation in Australia (Commonwealth, Queensland and Western Australia; Tasmania is preparing to have it incorporated in its legislative framework). At the end of 1999, the Australian Fisheries Management Authority was preparing to go to court for a case in which a fishing vessel was located in an exclusion zone. The fact that its navigation pattern suggests that it was engaged in fishing will probably be used to justify steeper penalties but not to prove a separate violation of fishing (information kindly provided by P. Gallagher, Australian Fisheries Management Authority, November 1999).

discussed below. Rather, the question to be addressed here is whether or not ships without a licence can be required to install ALCs as a pre-condition for the mere transit (lateral passage) through maritime zones, as such a requirement could be inconsistent with applicable rights of navigation.⁹³

The competence of coastal states in the territorial sea pursuant to Article 21(1)(d) of the LOS Convention has already been cited above. Foreign ships are, under paragraph (4) of that provision, held to comply with these laws and regulations when exercising their right of innocent passage. However, paragraph (2) contains an important restriction on the coastal state's legislative powers by stipulating that "laws and regulations shall not apply to the design, construction, manning or equipment [CDEM] of foreign ships unless they are giving effect to generally accepted international rules or standards". It is important to note that this limitation applies to all CDEM standards, irrespective of the purpose of regulation.⁹⁴

The situation in archipelagic waters (beyond ASLs) is, due to the applicability of the regime of innocent passage, essentially identical to that in the territorial sea. With respect to areas subject to transit or ASLs passage, the LOS Convention does not contain a provision similar to Article 21(2) which would restrict strait and archipelagic state jurisdiction to "generally accepted" CDEM standards. However, in view of the underlying rationale of these regimes, which ensures more extensive rights of navigation in comparison with the territorial sea *sec*, such a restriction must be presumed. The strait and archipelagic state prescriptive jurisdiction "with respect to fishing vessels, the prevention of fishing, including the stowage of fishing gear" cannot therefore be interpreted as conferring wider powers compared to what coastal states would have under the regime of innocent passage.⁹⁵

Within the EEZ a coastal state has the sovereign rights as cited above. Its legislative competence with regard to equipment standards is, pursuant to Article 211(5) of the LOS Convention, only possible "for the prevention, reduction and control of pollution from vessels". In the absence of other provisions on equipment standards, it must be presumed that coastal state powers are at any rate not more extensive than in the territorial sea.

In light of what has just been discussed, it is clear that the question which must be answered is whether or not the requirement to install ALCs must be regarded

⁹³ The phrase "rights of navigation" is used here in the widest sense: of comprising all the passage rights defined in the LOS Convention.

⁹⁴ This is an important distinction to Art. 211(5) of the LOS Convention which only concerns the "prevention, reduction and control of pollution from vessels". Similarly, the extensive coastal state powers under Art. 234 of the LOS Convention within ice-covered areas can only be exercised with respect to vessel-source pollution.

⁹⁵ Art. 42(1)(c) of the LOS Convention. See also Art. 39(2) which requires ships in transit passage to comply with generally accepted international regulations, procedures and practices for safety at sea and the prevention, reduction and control of pollution. This is a wider obligation in comparison with Art. 21(4).

as an equipment (CDEM) standard. If this is answered in the positive,⁹⁶ this implies that coastal states cannot interfere with foreign ships merely exercising their rights of navigation through that coastal state's maritime zones. This would be different if initiatives at the international level have led this requirement to become "generally accepted", but the discussion above already noted that this situation has not yet materialised.⁹⁷ For ships transiting the EEZ, the LOS Convention does not even contain a basis for imposing a "generally accepted" equipment standard for the purpose of fisheries management.

An argument in support of the view that the ALC requirement is not an equipment standard, is that all an ALC really does is facilitate the verification of compliance with lawful national and/or international regulatory efforts. Moreover, although installing ALCs brings along certain costs, they do not genuinely constrain the behaviour or movement of ships; thereby leaving the essence of navigational rights unaffected. Apart from the costs aspect, the requirement to install ALCs is largely similar to asking unlicensed foreign fishing vessels to give prior notification of entry into a coastal state's maritime zones even if they merely intend to transit.⁹⁸ However, the coastal state's power to request prior notification is an issue fraught with controversy, particularly in relation to warships and ships carrying hazardous cargo.⁹⁹ Flag states are likely to oppose prior notification in the sphere of fisheries for the simple reason that it might "spill over" to other areas.¹⁰⁰ In the sphere of vessel safety and pollution prevention, developments at the IMO now enable coastal states to operate mandatory ship reporting systems beyond the territorial sea, provided IMO approval is obtained. Arguably, this implies that mandatory ship reporting systems that *do not extend beyond the territorial sea* can be adopted without IMO

⁹⁶ This view is *inter alia* held by Burke, note 58 above, p. 14.

⁹⁷ For a discussion on the possibility of standards becoming "generally accepted" without the involvement of a competent international organisation or general diplomatic conference (Arts 21(2) and 211(6)(c) of the LOS Convention), see Molenaar, note 43 above, pp. 158–161.

⁹⁸ Prior notification has to be distinguished from an incidental request for information as part of the exercise of enforcement (see below). Fitzpatrick, note 13 above, p. 133, regards prior notification or the requirement to install ALCs as unproblematic, even going as far as submitting that "[t]he coastal state should not unreasonably refuse permission for a foreign fishing vessel intent on innocent passage". He goes on by observing that "[f]urther requirements would be applicable in the case of vessels carrying harpoon guns". Relevant state practice already exists (see, for example, the requirement to give prior notification of entry under s. 15(1) of the 1979 Control of Foreign Fishing Vessels Decree of the Seychelles (note 58 above)). Burke, note 58 above, p. 13, submits that prior notification is reasonable whereas he considers regulating navigating of fishing vessels in lateral passage by sea lanes or designated areas commonly more objectionable (p. 12). France requires all fishing vessels and vessels carrying fish that wish to transit the EEZs around its *Terres australes*, to notify entry and declare the amount of fish on board (Law No. 96-609 of 5 July 1996, Art. 11-I; Ordinance No. 98-523 of 24 June 1998, Art. 2).

⁹⁹ See E.J. Molenaar, "Navigational Rights and Freedoms in a European Regional Context", in D.R. Rothwell and S. Bateman (eds), *Navigational Rights and Freedoms and the New Law of the Sea* (The Hague, London and Boston, Kluwer Law International, forthcoming).

¹⁰⁰ Cf. Burke, note 58 above, p. 1.

approval.¹⁰¹ There seem to be no reason why this conclusion would not also apply if a ship reporting system would serve the purpose of fisheries management.

In the context of fisheries, there may be considerations which allow for a balance of jurisdiction which is even more favourable to the coastal state. With respect to the issue of prior notification exclusively, account should first of all be taken of the fact that the coastal state's power to board foreign fishing vessels in its maritime zones, is not as limited as the powers it would have in relation to vessel-source pollution. This is particularly true for the EEZ. Secondly, poaching poses great difficulties not only to developing states but also more generally to states that have extensive ocean surfaces to monitor. Therefore, when the impact on navigation caused by the requirement to give prior notification or the costs for installing ALCs¹⁰² is balanced with the coastal state's loss of income in fisheries, appropriate weight should be given to the consideration that the ultimate objective is that of ensuring compliance with lawful national and/or international regulatory efforts.¹⁰³

But while a case might with considerable difficulty be made for prior notification, whether or not within the framework of ship reporting systems, just the costs dimension of ALCs already constitutes an unsurpassable hurdle. Finally, even a prior notification approach would be treated by many states as excessive, and coastal states wishing to adopt it would therefore have to count on resistance.

Foreign Fishing Support Vessels

In addition to the distinction between national and foreign ships, and ships with or without a licence, the issue of the type of ships also needs to be addressed. While it remains within the coastal state's discretion to impose the ALC requirement on certain specific types of fishing vessels exclusively, or more generally on all fishing vessels engaged in a specific fishery, this is not necessarily the same with ships that are not themselves engaged in fishing but which give support to ships that do. As these ships could be used to evade fisheries management regulation, not covering them would be a weak spot in the compliance effort. Conversely, a definition of "fishing support vessels" which is too broad risks being in conflict with rights of other states in the maritime zones of the coastal state.

¹⁰¹ Cf. Molenaar, note 43 above, pp. 212–216. See also the discussion in note 131 below.

¹⁰² Account should in fact be given to relative costs, which are considerably higher for artisanal fisheries in comparison to industrial fisheries.

¹⁰³ It is noteworthy that S.N. Nandan, S. Rosenne (volume editors) and M.H. Nordquist (editor-in-chief), *United Nations Convention on the Law of the Sea 1982, A Commentary* (Dordrecht, Boston and London: Martinus Nijhoff Publishers, 1993), Vol. II, p. 565, submit that the problem of illegal fishing "may require the coastal state to take protective measures that unavoidably impact on passing vessels".

Rather than targeting fishing support vessels, however, the coastal state always has another option, namely, to require that fishing vessels, while in the coastal state's maritime zones, shall not be assisted by fishing support vessels unless these latter vessels also comply with certain requirements (e.g. installing ALCs).¹⁰⁴ While it cannot be denied that this stretches coastal state sovereignty or sovereign rights considerably, this does not necessarily happen to the extent of amounting to an abuse of rights.¹⁰⁵ Provided applicable requirements such as necessity are met, the fact that this activity occurs within the coastal state's maritime zones and affects its sovereignty or sovereign rights seems to be a key consideration.

Each of the global instruments relevant to marine fisheries that has been adopted in the 1990s recognises in one way or another that flag state obligations also extend to vessels that are not engaged in fishing as such. Only the 1993 FAO Compliance Agreement goes as far as incorporating a definition. Article I(a) defines fishing vessel as "any vessel used or intended for use for the purposes of the commercial exploitation of living marine resources, including mother ships and any other vessels directly engaged in such fishing operations". Although sections 6.10, 6.11 and 7.8.1 of the 1995 FAO Code of Conduct distinguish "fishing vessels" from "fishing support vessels", definitions are not provided. Elsewhere the 1995 FAO Code of Conduct uses either "fishing operations" or "fishing activities".¹⁰⁶ The 1995 Fish Stocks Agreement contains references to both "fishing operations" and "fishing activities".¹⁰⁷

The approaches in each of these global instruments clearly vary from each other. For that reason and due to the dissimilar scopes of application of these instruments, their nature and their interrelationships,¹⁰⁸ it is difficult to arrive at a uniform definition. Ships used for the processing of fish (so-called "klondykers") would fall under the rather narrow definition in Article I(a) of the 1993 Compliance Agreement either pursuant to "fishing operations" or to "mother ships". And, even though ships used for the transshipment of fish seem at first sight not covered by this definition, the preamble to the 1993 FAO Compliance Agreement explicitly mentions that flag state duties extend to such

¹⁰⁴ The Guinean regulatory approach scrutinised in the *Saiga* cases (notes 115 and 120 below) before the ITLOS did in fact *also* prohibit licensed fishing vessels from receiving fuel (Art. 4 of Law L/94/007 of Guinea, cited in the *M/V Saiga (Merits)* case, Judgment, para. 112; note 115 below). Judge Warioba, in his Dissenting Opinion in the *M/V Saiga (Merits)* case, even held that Art. 62(4)(a) and (h) of the LOS Convention would allow regulation for customs (smuggling) purposes (see para. 76). Note that Art. 111(4) of the LOS Convention also envisages that enforcement action can be taken against a mother ship.

¹⁰⁵ See the discussion on abuse of rights below.

¹⁰⁶ For "operations", see, for example, s. 1.3 and Art. 8; for "activities", see, for example, ss. 6.11, 6.15 and 7.5.2. Note that s. 8.1.4 refers to "and related activities".

¹⁰⁷ For "operations", see, for example, the preamble and Arts 10(c), 16(2) and 17(2); for "activities", see, for example, Arts 5(j), 6(3)(c) and 17(3).

¹⁰⁸ See, for example, Arts 1 and 3 of the 1995 FAO Code of Conduct.

vessels.¹⁰⁹ Of some relevance also is the fact that at least one regional fisheries mechanism subjects ships used for the transshipment of fish to the ALC requirement, albeit on an *inter se* basis only.¹¹⁰

In the present context, however, the extent of coastal state powers is presumably more relevant than ascertaining the precise scope of application of flag state obligations. Appropriate weight should therefore be given to the distribution of jurisdiction between flag and coastal states in the LOS Convention. While the LOS Convention often uses “fishing vessels” or “fishing”¹¹¹ without offering definitions, it also refers to “fishing activities” in Article 19(2)(i) and simply “vessels” in Article 73; the latter being the central coastal state enforcement provision for fisheries already cited. Consequently, coastal state powers over vessels not engaged in fishing as such should not *a priori* be ruled out.

One possible point of departure for a more thorough examination of the issue is to examine the navigational rights of fishing support vessels. To avoid too much complexity, discussion will be limited to the territorial sea and the EEZ.¹¹²

Persuasive support appears to exist for the view that transshipment (of fish) cannot be regarded as an exercise of the right of innocent passage for failure to meet the requirements of passage in Article 18(2) of the LOS Convention. Transshipment disqualifies passage as being “continuous and expeditious” and neither can it be classified as “incidental to ordinary navigation” or “*force majeure*”. As klondykers are also involved in transshipment they can be treated on the same footing.¹¹³ The same applies where an even wider definition of “fishing support vessel” is pursued, namely, by including ships that provide support that is essentially unrelated to fishing proper, for example food, water and other goods for the crew or fuel for the vessel. For the purpose of this analysis we will call this activity “bunkering”. In conclusion, on the grounds just submitted, both transshipment and bunkering are already disqualified as exercises

¹⁰⁹ W. Edson, “Towards Long-Term Sustainable Use: Some Recent Developments in the Legal Regime of Fisheries”, in A. Boyle and D. Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford, Oxford University Press, 1999), pp. 165–203 at p. 171, observes that the definition of “fishing vessels” proved to be rather contentious during the negotiations for the 1993 FAO Compliance Agreement. In his view the definition “excludes support vessels not directly engaged in fishing operations”. On p. 174 he submits that the use of “fishing support vessels” in the 1995 FAO Code of Conduct “stands in contrast to the much more restricted definition” in the 1993 FAO Compliance Agreement.

¹¹⁰ Art. 1(d) of the North-East Atlantic Fisheries Commission (NEAFC) Scheme of Control and Enforcement in Respect of Fishing Vessels Fishing in Areas Beyond the Limits of National Fisheries Jurisdiction in the Convention Area (NEAFC Scheme: www.neafc.org). See also s. 2 of the Coastal Fisheries Protection Act of Canada (www.ncr.dfo.ca).

¹¹¹ For “fishing vessels”, see, for instance, Arts 42(1)(c) and 62(4); for “fishing” see, for instance, Art. 62(4).

¹¹² The situation in archipelagic waters beyond ASLs would, however, be essentially identical to the territorial sea.

¹¹³ In addition, the processing of fish on board of klondykers could be regarded as a “fishing activity” under Art. 19(2)(i).

of innocent passage. This renders it in principle unnecessary to determine the precise meaning of the phrases “any fishing activities” or “any other activity not having a direct bearing on passage” in subparagraphs (i) and (l) of Article 19(2) of the LOS Convention respectively.

With respect to the EEZ, the question which must be answered is if transshipment or bunkering is covered by relevant flag state rights. In view of Article 58(1) of the LOS Convention, it is clear that only the clauses “freedom of navigation” or “other internationally lawful uses of the sea related to these freedoms, such as those associated with the operation of ships” would be relevant. A positive answer to this question would put such vessels basically under the same regime as foreign fishing vessels without licences. Unfortunately, the LOS Convention does not offer definitions for these clauses and no other guidance is readily at hand.¹¹⁴ It will therefore be up to institutions like the International Tribunal for the Law of the Sea (ITLOS)¹¹⁵ to resolve these issues of interpretation.

But even if bunkering or transshipment could not be classified as “freedom of navigation” or “uses associated with a ship’s operation” (further: associated uses), it would still be necessary to determine if international law provides coastal states with the competence to regulate (including to prohibit) this behaviour. This approach is primarily relevant for the EEZ because within a state’s territorial sovereignty restrictions are not to be presumed and no right of innocent passage exists *in casu*. Also, it should be emphasised again that transshipment or bunkering would be regulated for the purpose of fisheries management.¹¹⁶ The broad way in

¹¹⁴ Arguably, the regime of innocent passage distinguishes between an element of movement (Art. 18) and activities undertaken during movement (Art. 19(2); see in particular subpara. (g)). However, this distinction is not necessarily the appropriate one for the EEZ.

¹¹⁵ In the *M/V Saiga (Merits)* case (No. 2) (*Saint Vincent and the Grenadines v Guinea*), Judgment of 1 July 1999, before the ITLOS, Guinea argued that bunkering cannot be regarded as freedom of navigation or an associated use, but rather as “commerce” or a “commercial activity” (Verbatim Records, ITLOS/PV.99/14, p. 24, English version; Judgment, para. 124). Judge Zhao, in his Separate Opinion in the *M/V Saiga (Merits)* case, largely supports the Guinean view. *Contra* the Separate Opinion of Judge Vukas, para. 17. The Separate Opinion of Judge Anderson refrains from taking a stand but emphasises that the issue depends on the specific situation in which bunkering takes place. The text of Judgment, the Separate and Dissenting Opinions and the Verbatim Records are available at www.un.org/Depts/los. D. Attard, *The Exclusive Economic Zone in International Law* (Oxford, Clarendon Press, 1987), p. 64, submits that, due to the lack of guidance in the LOS Convention, “whether a given activity, such as offshore servicing, is to be considered as a ‘related’ lawful use or not, will depend largely on the coastal State”. *Prima facie*, Attard seems to suggest that coastal states are reserved an interpretative role, but the context in which this phrase is placed renders it rather ambiguous.

¹¹⁶ Conversely, the main issue in the *M/V Saiga (Merits)* case is the exercise of jurisdiction by Guinea which regulates bunkering (mainly, but not necessarily exclusively, of fishing vessels) for fiscal or customs purposes. Jurisdiction was not asserted for the purpose of fisheries management, even though the Judgment of the ITLOS in the *M/V Saiga (Prompt Release)* case asserted this, if only in the particular context of the prompt release procedure (see below in main text; see also the explicit rejection of this regulatory purpose by Guinea in its Counter-Memorial in the *M/V Saiga (Merits)* case (paras 106 and 108)). As the LOS Convention does not explicitly refer to relevant coastal state rights or jurisdiction in the EEZ, Guinea was (in the *M/V Saiga (Merits)* case) forced to rely on extensive interpretations of Art. 56(1)(a) and on “the

which Article 56(1)(a) of the LOS Convention defines a coastal state's sovereign rights in relation to marine living resources would not seem to raise problems for transshipment (and thereby klondykers) as its link with fisheries is evident.¹¹⁷ Support for this exists in state practice in which foreign ships used for the transshipment of fish are also made subject to the ALC requirement.¹¹⁸

The matter of bunkering is more complicated because its link with fisheries is less obvious. This has not stopped some states from regulating bunkering for the purpose of fisheries management.¹¹⁹ In the *M/V Saiga (Prompt Release)* case,¹²⁰ the ITLOS concluded that “for the purpose of the present proceedings, the action of Guinea [the prohibition of bunkering] can be seen within the framework of” Article 73 of the LOS Convention.¹²¹ Although this view has been severely criticised directly or indirectly in all its Dissenting Opinions, it falls somewhat short of actually classifying bunkering as falling under a coastal state's “sovereign rights to explore, exploit, conserve and manage the living resources” in its EEZ.¹²² One indication of the scope of coastal state prescriptive jurisdiction

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customary principle of the protection of its public interest against grave disadvantages” (the latter based on the reference to “other rules of international law” in Art. 58(3) of the LOS Convention; see Verbatim Records, ITLOS/PV.99/15, p. 6, English version, remarks by Professor Lagoni, Counsel for Guinea). The ITLOS eventually held that the exercise of jurisdiction for the purpose of customs in the EEZ (beyond the contiguous zone) is not empowered by the LOS Convention, nor by the “other rules of international law” in Art. 58(3) of the LOS Convention (Judgment, paras 127–136). Judge Warioba, in his Dissenting Opinion, fully supports the Guinean view in all its extremes, even though a distinction between delivering and receiving fuel is not consistently made (paras 62–91).

¹¹⁷ See also Art. 62(4)(h) of the LOS Convention which allows the coastal state to regulate the landing of all or part of the catch in one of its ports. This would implicitly allow the coastal state to take a less onerous measure on transshipment.

¹¹⁸ E.g., Arts 11 and 28a of EC Regulation No. 2847/93 (consolidated text; note 41 above).

¹¹⁹ See, for instance, the definition of “related activities” in s. 1(xlix)(c) of the 1998 Marine Living Resources Act of South Africa (No. 18 of 27 May 1998, *Government Gazette*, No. 18930; text also available at www.gov.za/acts), which reads: “refuelling or supplying fishing vessels, selling or supplying fishing equipment or performing any other activity in support of fishing”. In addition, “fishing” is defined in s. 1(xviii)(d) as “any operation in support or in preparation of any activity described in this definition”. See also the definition of “fishing” in s. 2(1) of the 1983 Fisheries Act of New Zealand (Fisheries Act, No. 14 of 1 October 1983, www.gplegislation-co.nz) which reads (in part): “and also includes any operation in support of or in preparation for any activities described in this definition”. Foreign vessels intending to engage in bunkering within the EEZ of New Zealand must register and apply for a licence under s. 57(1) of the 1983 Fisheries Act (see also s. 60) and could be subject to the ALC requirement. More or less the same situation exists under the 1991 Fisheries Management Act of Australia (Cth; Act No. 162 of 10 November 1991, www.austlii.edu.au/au/legis/cth/consol_act). For the definition of fishing, see s. 4 under (e) and the need to have a fishing licence under s. 100.

¹²⁰ *M/V Saiga (Saint Vincent and the Grenadines v Guinea)*, Judgment, 4 December 1997, www.un.org/Depts/los.

¹²¹ *Ibid.*, para. 71.

¹²² Art. 73(1) of the LOS Convention. Note that what the ITLOS defines in para. 56 of its Judgment as the question which must be considered before the application for the Art. 292 procedure is admissible, comes far closer to attributing bunkering as belonging under the coastal state's sovereign rights under Art. 73. See also the Dissenting Opinions of President Mensah, para. 21, and of Vice-President Wolfrum and Judge Yamamoto, para. 20.

for fisheries purposes is given by the non-exhaustive list of issues which coastal states may regulate under Article 62(4) of the LOS Convention. On this issue Vice-President Wolfrum and Judge Yamamoto observed in their Dissenting Opinion in the *M/V Saiga (Prompt Release)* case:

“Although this list is not meant to be fully comprehensive, it gives no indication that the competences of the coastal State concerning fishing might encompass activities of merchant ships, associated with the freedom of navigation, for the sole reason that they service fishing vessels.”¹²³

An important consideration in support of this view would seem to be that the obligation to comply with these coastal state laws and regulations in the *chapeau* of subparagraph (4), is only directed at “[n]ationals of other states *fishing*” (emphasis added). And even though the LOS Convention does not define this term, it has at any rate not opted for “fishing activities”, as in Article 19(2)(i). On the other hand, while it cannot be denied that the list in Article 62(4) does not refer to services rendered to fishing vessels, this is not necessarily conclusive in light of its non-exhaustive character. Moreover, Vice-President Wolfrum and Judge Yamamoto’s view is linked to the classification of bunkering as being “associated with the freedom of navigation”, which is disputable. Finally, this view cannot be isolated from the context of the *Saiga* cases, which is jurisdiction for fiscal or customs purposes. It is also for that reason that in giving its judgment in the *M/V Saiga (Merits)* case, the ITLOS did not issue an *obiter dictum* to resolve the controversy.¹²⁴

If bunkering cannot be regarded as an activity which is an exercise of freedom of navigation or an associated use, and is not covered by the coastal state’s jurisdiction under the LOS Convention either, the issue becomes one of so-called “residual rights”. To address this situation, Article 59 of the LOS Convention observes:

“In cases where this Convention does not attribute rights or jurisdiction to the coastal State or to other States within the exclusive economic zone, and a conflict arises between the interests of the coastal State and any other State or States, the conflict should be resolved on the basis of equity and in the light of all the relevant circumstances, taking into account the respective importance of the interests involved to the parties as well as to the international community as a whole.”

One way of resolving such a conflict would be through an international tribunal like the ITLOS. Guidance on the possible outcome of such a conflict is given by the leading commentary on the LOS Convention:

¹²³ Para. 22.

¹²⁴ Judgment, paras 137–138. If only because, according to the minority in the *M/V Saiga (Prompt Release)* case, that Judgment already contained too many *obiter dictums*. See also the observations by Judge Anderson in his Separate Opinion in the *M/V Saiga (Merits)* case (under “Arrest of the *Saiga*”).

“Given the functional nature of the exclusive economic zone, where economic interests are the principal concern this formula would normally favour the coastal State. Where conflicts arise on issues not involving the exploration for and exploitation of resources, the formula would tend to favour the interests of other States or of the international community as a whole.”¹²⁵

If this view would be adhered to, coastal states would certainly be granted jurisdiction to regulate bunkering for the purpose of fisheries management.¹²⁶

General Limits to Prescription

Even though coastal states are, based on either sovereignty or sovereign rights, thus expressly permitted to impose terms and conditions on foreign vessels that wish to fish in their waters or on their continental shelf, this regulatory competence cannot but have its limits as well. In addition to the more general principle of abuse of rights already mentioned, a limit is constituted by behaviour occurring prior to entering the maritime zones of the coastal state. Examples are discharge or fishing violations¹²⁷ or, more directly relevant to this discussion, having the ALC switched on well in advance to entry.¹²⁸

It is submitted that coastal state prescription cannot extend to prior behaviour unless international law recognises the existence of a sufficiently close or substantial connection with the coastal state.¹²⁹ Such a basis of jurisdiction should be applicable between the states involved. This could be a conventional norm or one which is based on customary international law, for example under the effects or impact doctrine.¹³⁰ With regard to the requirement that ALCs are to be switched on well in advance of entering a coastal state’s maritime zones,

¹²⁵ Nandan and Rosenne, note 103 above, p. 569.

¹²⁶ See also the Separate Opinions in the *M/V Saiga (Merits)* case of Judges Vukas (para. 21) and Laing (paras 55–56). Another interesting example is the regulation of anchoring beyond the territorial sea, by the United States in the Flower Garden Banks National Marine Sanctuary, which is around 115 nautical miles from its coasts (15 *Code of Federal Regulations* § 922.122(2)). This raises a number of questions, for example if anchoring is to be regarded as pollution in the sense of Art. 1(4) of the LOS Convention, and would thus have to be considered in the framework of Art. 211(5) of the LOS Convention and the concept of “generally accepted”. The United States, however, argues that regulatory action serves the purpose of resource protection and should be dealt with in the light of Arts 59 and 78 of the LOS Convention (see also Molenaar, note 43 above, pp. 417–418).

¹²⁷ On discharge and fishing violations, see below.

¹²⁸ South Africa is currently applying such a requirement. We are not here referring to the requirement to comply with certain CDEM standards, which is dealt with under port state jurisdiction below.

¹²⁹ See, for example, the Norwegian statement at the 17th meeting of CCAMLR (1998), which expressed concern over the undermining of flag state jurisdiction and advocated caution with respect to giving laws extraterritorial application (CCAMLR-XVII, para. 5.8).

¹³⁰ Under this doctrine, a state exercises jurisdiction over extraterritorial acts that have “significant effects” within its territory (see Molenaar, note 43 above, pp. 81–83).

current international law does not seem to recognise such a basis¹³¹ and the effects or impact doctrine would not seem suitable to such cases. The same arguments would apply, *mutatis mutandis*, to a requirement to have ALCs switched on for a considerable period of time after leaving a coastal state's maritime zones.

Under these circumstances, therefore, the right to impose licence conditions is the only basis of jurisdiction. Arguably, this basis is in principle insufficient and would amount to an abuse of rights on account of the absence of necessity. However, were it just a matter of a relatively short period of time or a short distance before or after entry in order to prevent "border-hopping", the absence of necessity would be much harder to prove.

In addition to having to be in compliance with the more specific international norms just discussed, coastal state laws and regulations should also observe the principle of non-discrimination. No relevant differences should therefore exist between foreign ships of different nationality.¹³² A related issue is whether or not the principle of national treatment applies, namely, the prohibition differentiating substantially between regulations imposed on national ships (acting as a flag state) and foreign ships that fish in the same area.¹³³ It is submitted that as a corollary to the coastal state's competence to deny foreign vessels access to its EEZ altogether,¹³⁴ a less onerous use of its powers by ensuring more favourable conditions for the coastal state's own ships, would *a fortiori* be possible.¹³⁵ However, even in the absence of a legally binding and applicable principle of national treatment, it is certainly not illusory that coastal state regulations are regarded as unfair and lead to responses by other states. This could for instance occur in the form of special conditions being imposed on that coastal state's fishing ships or through (trade) sanctions imposed directly on that state.

Another issue is that of a coastal state's discretion in determining the type of satellite system (e.g. Inmarsat-C or ARGOS) or ALC that foreign ships operating

¹³¹ Noteworthy in this context is the recent development within the IMO where mandatory ship reporting systems which apply beyond the territorial sea can be adopted by the IMO's Maritime Safety Committee (MSC). Adoption by the MSC thus provides the basis in international law (see Regulation V/8-1 of the International Convention for the Safety of Life at Sea, London, 1 November 1974 (SOLAS 74), as amended, entry into force on 25 May 1980, adopted by IMO Resolution MSC.31(63) and entered into force on 1 January 1996).

¹³² See, for example, Arts 24(1)(b), 42(2), 54 and 119(3) of the LOS Convention.

¹³³ The LOS Convention does not contain a directly relevant principle of national treatment, except for Art. 227 which basically applies exclusively to Part XII on the protection and preservation of the marine environment (as Art. 227 uses "against", it is better to speak of national treatment instead of non-discrimination, which concerns essentially differences *between* foreign ships).

¹³⁴ Although third states would, pursuant to Art. 62(2) of the LOS Convention, in principle have access to a surplus of the TAC in the EEZ, the relevant factors which the coastal state is obliged to take into account under para. (3) of the same provision, would easily enable it to deny access altogether. See also Art. 297(3)(b).

¹³⁵ For example, Canada and the United States deny access to foreign flagged vessels altogether. On the other hand, Australia, New Zealand and South Africa impose the requirement to install ALCs on all (licensed) foreign vessels, while only certain national vessels are covered.

in its maritime zones should use. This is understandably a concern for flag states as they are eager to avoid a situation in which their vessels have to install more than one ALC if they wish to operate in several coastal states. Although the trade-related aspects cannot be addressed here, a choice for a preferred VMS would seem to be within a coastal state's discretion. On the other hand, it would generally be unreasonable and also unnecessary to accept only one type of ALC, as long as its performance standards are satisfactory to the coastal state.¹³⁶ Coastal states are at any rate urged to co-operate with flag states to minimise duplication. Developments in technology will it is hoped soon enable the use of a single ALC for more than one satellite system or a VMS using more than one satellite system.¹³⁷

Something which needs to be addressed is the extent to which coastal states that determine terms and conditions for access are likely to observe the international legal restraints that have been identified. A key factor could be the growing worldwide demand for access to fish stocks coupled to constantly shrinking catches. Under such circumstances coastal states have considerable leverage and flag states will be anxious to avoid emphasising conflict with international law as this might risk denial of access altogether. In case access agreements are negotiated directly with foreign fishing operators, the willingness to compromise in order to secure access may be even stronger, *inter alia* due to the absence of concern on the impact of their behaviour on the formation of customary international law.¹³⁸

Enforcement

In taking enforcement action against foreign ships, a coastal state has to take account of applicable rights of navigation. While ships of all nations enjoy a right of innocent passage through the territorial sea and archipelagic waters under Articles 17 and 52(1) of the LOS Convention, they lose this right if they engage in unauthorised fishing.¹³⁹ This loss gives the coastal state in principle

¹³⁶ State practice confirms this. See E.J. Molenaar and M. Tsamenyi, *Satellite-Based Vessel Monitoring Systems (VMSs) for Fisheries Management: International Legal Aspects and Developments in State Practice* (FAO Legal Paper, forthcoming).

¹³⁷ Argos has offered the latter option to the South Pacific Forum Fisheries Agency (FFA) member countries.

¹³⁸ A good example is that of several fishing vessels from Taiwan that faced steep penalties for violations committed in the maritime zones of the United States. They therefore decided to accept the United States' offer for lower penalties if they would have ALCs installed and switched on anywhere and at all times (information kindly obtained from Mr P. Ortiz of the NOAA).

¹³⁹ It is worth noting that the 1958 Convention on the Territorial Sea and the Contiguous Zone, Geneva, 29 April 1958, in force 10 September 1964, 526 UNTS 205, provides in Art. 14(5): "Passage of foreign fishing vessels shall not be considered innocent if they do not observe such laws and regulations as the coastal state may make and publish in order to prevent these vessels from fishing in the territorial sea." In the view of two commentators, "Such laws could deal not only with actual fishing but also with, for example, storage of nets while the vessel was in transit" (Churchill and Lowe, note 62 above, p. 84). During the Third United Nations Conference on the Law of the Sea (UNCLOS III) a similar provision was included in proposals for Art. 19, but never made it to the final text (see Nandan and Rosenne, note 103 above,

unlimited enforcement powers, subject to relevant principles of international law, such as necessity and proportionality.¹⁴⁰

Even if a fishing vessel is not caught in the act of unauthorised fishing in the territorial sea or archipelagic waters, the coastal state is allowed to take certain enforcement measures. Boarding could for instance be undertaken to verify if the ALC is functioning properly. Unlike Article 73 of the LOS Convention in relation to the EEZ, the LOS Convention does not explicitly refer to such powers over fishing in the territorial sea or archipelagic waters. However, similar powers to those in the EEZ would *a fortiori* be available in these areas as the coastal state has sovereignty and not “merely” relevant sovereign rights.¹⁴¹ Article 73 provides that:

“The coastal State may, in the exercise of its sovereign rights to explore, exploit, conserve and manage the living resources in the exclusive economic zone, take such measures, including boarding, inspection, arrest and judicial proceedings, as may be necessary to ensure compliance with the laws and regulations adopted by it in conformity with this Convention.”

Such powers can therefore in principle be used against fishing vessels exercising the right of innocent passage in the territorial sea and archipelagic waters or the freedom of navigation in the EEZ. Also, both licensed and unlicensed foreign vessels can be targeted, whether or not they are engaged in fishing. Whether the coastal state has taken proper account of the applicable rights and freedoms of navigation is decisive for the lawfulness of the enforcement action. The LOS Convention does not provide much guidance on that issue. All it in fact says is that innocent passage should not be unreasonably hampered and that the exercise of freedom of navigation in the EEZ should not be unnecessarily interfered with.¹⁴² Unlike the corresponding provisions relating to vessel-source

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pp. 164–183). Thus, although coastal states may prescribe that a vessel stows its nets while in lateral passage, a violation of such a regulation does not render passage non-innocent (see, for instance, s. 49(1) of the 1998 Marine Living Resources Act of South Africa (note 119 above)). The newly agreed situation under the LOS Convention also implies that the non-stowage of fishing nets cannot be interpreted as a “fishing activity” within the meaning of Art. 19(2)(i). However, as will become clear from the ensuing discussion, this does not prevent coastal states from taking appropriate enforcement measures.

¹⁴⁰ Art. 25(1) of the LOS Convention allows the coastal state to “take the necessary steps in its territorial sea to prevent passage which is not innocent”. While “no-force strategies” are often promoted, this does not prejudice a state’s right to take measures that involve the use of force. See also the observations by the ITLOS on the use of force in the *M/V Saiga (Merits)* case, which basically reaffirm the substance of Art. 22(1)(f) of the 1995 Fish Stocks Agreement (Judgment, para. 156). See also the Chinese statement upon signature of the 1995 Fish Stocks Agreement, www.un.org/Depts/los.

¹⁴¹ Art. 2(1) of the LOS Convention. See also Arts 21(1)(e) and 27 (note in particular paras (1)(a) and (5)).

¹⁴² Arts 24(1), 56(2) and 58(1) of the LOS Convention. The term “unreasonably” is used to differentiate, because all enforcement in fact hampers innocent passage (see Molenaar, note 43 above, p. 245; note that Art. 232 of the LOS Convention uses the qualification “reasonably” in

pollution,¹⁴³ no mention is made of a requirement that enforcement cannot be undertaken unless certain evidence exists that a violation has taken place.¹⁴⁴ Ultimately, however, if coastal states fail to meet these tests, they run the risk of being held liable for damage caused. With respect to foreign fishing vessels authorised to fish, special provisions on enforcement could of course be included in their licences, thereby avoiding liability (in certain cases) from occurring.¹⁴⁵

Coastal state enforcement powers in areas subject to the regimes of transit and ASLs passage are not treated very straightforwardly in the LOS Convention. With respect to fishing vessels engaged in unauthorised fishing, it has already been argued that they cannot claim to be in “normal mode”.¹⁴⁶ Consequently, unauthorised fishing is classified as what Article 38(3) defines “an activity which is not an exercise of the right of transit [or ASLs] passage” and becomes subject to “the other applicable provisions” of the LOS Convention.¹⁴⁷ Arguably, such vessels should be treated on the same footing as vessels in non-innocent passage.

By applying for licences to fish in areas subject to transit or ASLs passage, foreign fishing vessels would seem to consent in advance to be subject to the same enforcement powers as they would be in an area subject to innocent passage. A more difficult question is whether foreign fishing vessels without licences which are not engaged in fishing can be subjected to enforcement action. Neither Part III nor Part IV contains a provision which explicitly recognises strait and archipelagic state enforcement powers, other than Article 38(3). Article 44 (and Article 54 by cross-reference) explicitly stipulates that transit and ASLs passage shall not be hampered or suspended. *Prima facie*, the prescriptive powers “with respect to fishing vessels, the prevention of fishing, including the stowage of fishing gear” under Article 42(1)(c) would presume the existence of enforcement powers. However, this would mean that subparagraphs (a) and

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relation to the prevention, reduction and control of marine pollution). The qualification “unnecessarily” is drawn from Art. 73(1). The words “should not” in Art. 27(1) are widely regarded as denoting something less than a full obligation under international law, being dependent on the comity and goodwill of the coastal state.

¹⁴³ See, for example, Art. 220(2) of the LOS Convention.

¹⁴⁴ However, Nandan and Rosenne, note 103 above, p. 565, submit that fishing vessels with their gear stowed can only be subjected to visual inspection to check that they are not engaged in fishing. Note that Art. 21(1) of the 1995 Fish Stocks Agreement does not require “clear grounds” before boarding and inspection but in para. (5) only if further enforcement steps are being taken. But see the safeguards in para. (10). However, para. (14) requires “clear grounds” in a different situation. The similarity presents itself with the practice of the “initial control” under regional memoranda of understanding (MOUs) on port state control, for example the Paris MOU (Memorandum of Understanding on Port State Control, Paris, 26 January 1982, in effect 1 July 1982, www.parismou.org; see s. 3.6.2).

¹⁴⁵ See Art. 62(4)(k) of the LOS Convention. Again, coastal states should take account of the general limits to prescription discussed above.

¹⁴⁶ See the text accompanying note 84 above.

¹⁴⁷ Part IV on archipelagic states does not explicitly contain a similar provision but for several reasons it should be presumed to apply (cf. Molenaar, note 43 above, pp. 341–342).

(b) in relation to the safety of navigation and vessel-source pollution could be approached in a similar fashion. Quite contrary to such an interpretation, Article 233 has been explicitly incorporated to grant strait states limited enforcement powers. As a provision linked to Article 42(1)(c) has not been included in the LOS Convention, no related enforcement powers can be presumed. Ignoring this conclusion would lead to the erosion of the special character of the regimes of transit and ASLs passage.

Another enforcement option is included in Article 111 of the LOS Convention, which gives coastal states the right of hot pursuit when a foreign ship has violated their laws and regulations. Finally, in addition to enforcement at sea in relation to violations committed in their maritime zones, coastal states may of course also take the less onerous decision to take enforcement measures while the foreign fishing vessel has voluntarily called at one of their ports or anchorages.

Port State Approaches

As ports lie commonly wholly within a state's territory¹⁴⁸ and fall on that account under its territorial sovereignty, general international law acknowledges in principle full coastal (port) state jurisdiction within ports. This allows a port state not only to deny foreign (fishing) vessels in principle access to port but also to prescribe non-discriminatory laws and regulations that determine conditions for the entry into its ports.¹⁴⁹ While it could be argued that state practice indicates that ports are commonly open, this does not imply the existence of a legal right of access to ports under general international law. Access cannot, however, be denied under all circumstances. While ships in distress should in most cases be given access to ports, there are circumstances in which the port (or coastal) state's interests override those of the ship.¹⁵⁰

Article 25(2) of the LOS Convention confirms the customary port state right to prescribe conditions for admission into ports and to take the necessary steps to prevent the breach of these conditions.¹⁵¹ Nevertheless, limitations on port state jurisdiction may arise from bilateral or multilateral treaties relevant to access to ports, if it concerns matters essentially internal to a vessel, or from general international law.

¹⁴⁸ See Arts 11, 12 and 121(1) of the LOS Convention.

¹⁴⁹ Cf. A.V. Lowe, "The Right of Entry into Maritime Ports in International Law", (1977) 14 *San Diego Law Review* 597-622 at 608. G. Plant, "Navigation Regime in the Turkish Straits for Merchant Ships in Peacetime", (1996) 20 *Marine Policy* 15-27 at 17, speaks in this context of jurisdiction based on the "destination principle". Australia has used its right to refuse entry in its ports to Japanese vessels as a retaliatory measure against the failure to reach agreement in the context of the southern bluefin tuna fishery (see Separate Opinion by Judges Yamamoto and Park in the *Southern Bluefin Tuna (Provisional Measures)* cases (note 23 above)).

¹⁵⁰ See Molenaar, note 43 above, p. 101, n. 125, who discusses so-called "leper ships".

¹⁵¹ See also Art. 211(3) of the LOS Convention, which essentially reaffirms Art. 25(2) in the area of the prevention, reduction and control of vessel-source marine pollution.

Prescription

The issue which needs to be addressed here is the extent of port state powers to prescribe conditions for the entry into port in the form of CDEM standards, namely, ALCs. This would be relevant for foreign fishing vessels not authorised to fish in that state's maritime zones, but that nevertheless want to call into one of its ports, for instance for the purpose of landing catch.¹⁵² A crucial consideration is that the obligation incorporated in Article 21(2) of the LOS Convention not to prescribe CDEM standards other than those that have become generally accepted, applies only to ships in lateral passage. This does not therefore constitute a departure from general international law and Article 25(2) of the LOS Convention.¹⁵³

¹⁵² Under s. 102 of the 1991 Fisheries Management Act of Australia (note 119 above), foreign fishing vessels not authorised to fish in the Australian EEZ need a permit to enter an Australian port. Obtaining a port permit can, under s. 94(5), be made subject to certain conditions. These powers were used to require certain fishing vessels registered in New Zealand to have ALCs on board and switched on as a condition for entry into port (information obtained from M. Sachse and J. Harford of the Australian Fisheries Management Authority). In the framework of the CCAMLR, Australia also proposed to require non-contracting party vessels to install ALCs as a condition for landing or transshipping catch in port (CCAMLR-XVII, paras 5.65–5.69 and Annex 5, paras 2.68–2.70; see also the strong objections by Chile in para. 5.69; text of Report and Conservation Measures available at www.ccamlr.org). CCAMLR Conservation Measure 118/XVII, entitled "Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures", was ultimately amended to read in para. (5) that:

"Landing and transshipments of all fish from a non-Contracting Party vessel, which has been inspected pursuant to paragraph 4, shall be prohibited in all Contracting Party ports if such inspection reveals that the vessel has on board species subject to CCAMLR Conservation Measures, unless the vessel establishes that the fish were caught outside the Convention Area or in compliance with all relevant CCAMLR Conservation Measures and requirements under the Convention."

The evidence produced by the vessel could include information from a VMS (see para. (4) of Conservation Measure 118/XVII). For example, South Africa requires that fishing vessels with certain species on board (including Patagonian toothfish and orange roughy) are in possession of or apply for a permit upon entry into one of South Africa's ports. A condition of such a permit is that the authorities need to be satisfied that the fish concerned have not been illegally taken in the maritime zones of South Africa or another state. A declaration of catch by another coastal state or the fact that the vessel uses an ALC or an observer under South African control is sufficient. Otherwise, South Africa reserves the right to refuse the vessel future entry except for *force majeure* (Annex 12 of Regulation R.1111 of 2 September 1998, under the Marine Living Resources Act 1998 (Act 18 of 1998); information kindly obtained from Mr D. Miller). See also the South African statements in CCAMLR-XVII, para. 5.11, which reveal a strong commitment to exercise port state jurisdiction.

¹⁵³ However, the New Zealand Court of Appeal in *Sellers v Maritime Safety Inspector*, Case No. CA104/98, Judgment of 5 November 1998, concludes that "a port state has no general power to unilaterally impose its own requirements on foreign ships relating to their construction, their safety and other equipment and their crewing if the requirements are to have an effect on the high seas. Any requirements cannot go beyond those generally accepted, especially in the maritime conventions and regulations" (at p. 17; see also J.S. Davidson, "Freedom of Navigation on the High Seas: *Sellers v Maritime Safety Inspector*", (1999) 14 *International Journal of Marine and Coastal Law* 435–439). Cf. D.H. Anderson, "Port States and Environmental Protection", in Boyle and Freestone, note 109 above, pp. 325–344, who argues, *inter alia*, on p. 344 that "[t]he prescription of standards must remain an international task". In his view, the policy of restraint exercised by states generally, including through arrangements such as the Paris MOU (note 144 above), makes unilateral approaches increasingly harder to justify.

As was already observed in the discussion above, requiring compliance with a CDEM standard has extraterritorial effects. These extraterritorial effects should in principle be regarded as incidental rather than the very object of these conditions, unless of course the opposite is proven.¹⁵⁴ This is not to say that international law imposes no restraints on the port state.¹⁵⁵ One such restraint is couched in the obligation that the exercise of jurisdiction, rights or freedoms shall not constitute an abuse of rights.¹⁵⁶ The following observations by Lauterpacht help to clarify the meaning of this principle:

“As legal rights are conferred by the community, the latter cannot countenance their anti-social use by individuals; that the exercise of a hitherto legal right becomes unlawful when it degenerates into an abuse of rights; and that there is such an abuse of rights each time the general interest of the community is injuriously affected as the result of the sacrifice of an important social or individual interest to a less important, though hitherto legally recognised, individual right.”¹⁵⁷

In acknowledging that every right has its limitations, the notion of abuse of rights involves in many instances the balancing of conflicting rights. This approach was, *inter alia*, pursued in the *North Atlantic Fisheries Arbitration*.¹⁵⁸ Here the Permanent Court of Arbitration observed with regard to the right of Great Britain to legislate for the protection and preservation of fisheries that:

“Regulations which are (1) appropriate or necessary for the protection and preservation of such fisheries, or (2) desirable or necessary on grounds of public order and morals without unnecessarily interfering with the fishery itself, and in both cases equitable and fair as between local and American fishermen, and not so framed as to give unfairly an advantage to the former over the latter class, are not inconsistent with the obligation to execute the treaty in good faith and are therefore reasonable and not in violation of the treaty.”¹⁵⁹

Applying these considerations to the requirement to install ALCs as a condition for entry into port, involves difficult assessments of elements such as

¹⁵⁴ See the *International Association of Independent Tanker Owners v Lowry (or Locke) et al. (Intertanko)* case (United States District Court, Western District of Washington at Seattle, Case No. C95-1096C, Order of 8 November 1996, 947 F. Supp. 1484), at p. 32.

¹⁵⁵ However, E.J. Molenaar, “Residual Jurisdiction under IMO Regulatory Conventions”, in H. Ringbom (ed.), *Competing Norms in the Law of Marine Environmental Protection* (London, The Hague and Boston, Kluwer Law International, 1997), pp. 201–216, even considers that the fact that a state is party to IMO conventions does not necessarily restrict its exercise of port state jurisdiction.

¹⁵⁶ See Art. 300 of the LOS Convention.

¹⁵⁷ H. Lauterpacht, *The Function of Law in the International Community* (Oxford, Clarendon Press, 1933), p. 286.

¹⁵⁸ *North Atlantic Coast Fisheries (Great Britain v United States of America)* arbitration, Permanent Court of Arbitration, 1910, J.B. Scott, *The Hague Court Reports*, Vol. 1, p. 141.

¹⁵⁹ *Ibid.*, p. 171.

appropriateness, necessity or desirability. Arguably, the element of national treatment would be less problematic, as it is not fully applicable in relation to fisheries management in areas under national jurisdiction.¹⁶⁰ Nevertheless, if this requirement is exclusively imposed for the purpose of fisheries management, this would arguably indicate a presumption of good faith and would make it harder to prove an abuse of rights.

But, even if it would be permitted to formulate the fitting of ALCs as a condition of entry into port, this would be useless if not linked to an obligation to have it also switched on to allow the transmission of information. This complementary obligation cannot convincingly be regarded as a CDEM standard itself or as being part and parcel of it. Conversely, it should be regarded as independent behaviour. As the analysis above already revealed, general international law is extremely reluctant in accepting jurisdiction over prior behaviour. From a port state perspective, the requirement to have the ALC switched on in its (coastal state's) maritime zones would be essentially similar to regulating behaviour that occurs beyond its maritime zones. This conclusion is inevitable when it is assumed, as the discussion above does, that foreign vessels without licences cannot be required to install ALCs and have them switched on while they navigate through a coastal state's maritime zones.

Although ships subject themselves to port state jurisdiction by their voluntary presence in port, such jurisdiction cannot extend to prior behaviour unless international law recognises the existence of a sufficiently close or substantial connection with the port state. Although this issue could be pursued from the perspective of prescription, the relevant international instruments treat it commonly in the sphere of enforcement. Discussion is therefore deferred to the next section.

Enforcement

Port state enforcement is always in-port enforcement. It is based on the vessel's voluntary presence in port and can only extend to issues for which international law authorises the port state to prescribe.¹⁶¹ While enforcement to verify compliance with lawfully prescribed CDEM standards is not controversial, quite the opposite is true with respect to behaviour that occurred before a vessel enters the maritime zones of the coastal state. Nevertheless, international law provides some possibilities to exercise enforcement over prior behaviour, for example with respect to illegal discharges.¹⁶²

¹⁶⁰ See above. Conversely, the citation from the *North Atlantic Fisheries* arbitration deals not with general international law but with bilateral treaty relations.

¹⁶¹ A case of non-voluntary presence exists where a vessel has violated coastal state enactments while in its maritime zones and has subsequently been directed to one of that coastal state's ports. This is therefore more properly dealt with under coastal state enforcement.

¹⁶² Art. 218 of the LOS Convention. See the reference to Art. 218 and the efforts by regional MOUs on port state control in s. 8.3.2 of the 1995 FAO Code of Conduct. Also noteworthy is that the way in which the United States regulates anchoring in certain parts of its EEZ (note 126 above)

The global instruments on fisheries that were adopted in the 1990s all address port state enforcement. Article V(2) of the 1993 FAO Compliance Agreement contains an obligation for port states to notify the flag state if it has “reasonable grounds for believing” that a fishing vessel voluntarily in their port “has been used for an activity that undermines the effectiveness of international conservation and management measures”.¹⁶³ No mention is made of the power to conduct inspections. However, as this would be necessary to obtain “reasonable grounds for believing”, this power is to be inferred (see below). It is important to note that the obligation is limited to notifying the flag state and does not extend to the inspection,¹⁶⁴ and is in any case only applicable between states parties to the 1993 FAO Compliance Agreement.

Section 8.3 of the 1995 FAO Code of Conduct does not give the port state more powers in comparison with the 1993 FAO Compliance Agreement, nor does it impose more (stringent) obligations. Undoubtedly due to its voluntary nature, it calls upon port states to take measures but emphasises that these should be “in accordance with international law, including applicable international agreements or arrangements”, or upon the request of the flag state.

The 1995 Fish Stocks Agreement, which is of course in principle only concerned with straddling and highly migratory stocks, deals with port state enforcement in Article 23, which provides:

- “1. A port State has the right and the duty to take measures, in accordance with international law, to promote the effectiveness of subregional, regional and global conservation and management measures. When taking such measures a port State shall not discriminate in form or in fact against the vessels of any State.
2. A port State may, *inter alia*, inspect documents, fishing gear and catch on board fishing vessels, when such vessels are voluntarily in its ports or at its offshore terminals.
3. States may adopt regulations empowering the relevant national authorities to prohibit landings and transshipments where it has been established that the catch has been taken in a manner which undermines the effectiveness of subregional, regional or global conservation and management measures on the high seas.

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was preferred above formulating it as a condition for the entry into port (cf. W.T. Burke, “Changes Made in the Rules of Navigation and Maritime Trade by the 1982 Convention on the Law of the Sea”, in R.B. Krueger and S.A. Riesenfeld (eds), *The Developing Order of the Oceans* (Proceedings of the Law of the Sea Institute 18th Annual Conference, San Francisco, 1984 (Honolulu, Law of the Sea Institute, University of Hawaii, 1985)), pp. 662-677 at p. 669).

¹⁶³ Although this provision does not explicitly mention that these measures are intended to apply to high seas fishing, this can be inferred from the full title of the 1993 FAO Compliance Agreement and from the scope of application in Art. II(1). However, the definition of “international conservation and management measures” in Art. I(b) does not refer to the high seas.

¹⁶⁴ This is different for regional MOUs on port state control, which contain specified inspection targets.

4. Nothing in this article affects the exercise by States of their sovereignty over ports in their territory in accordance with international law.”

First of all, the fact that port states have both a “right and a duty” to take the measures referred to, is innovatory due to its inclusion in a legally binding instrument. However, whether paragraph (2) is to be regarded as innovatory is more difficult to answer. To some extent, this is due to the uncertain meaning of the words “*inter alia*”. Leaving that aside, it seems that, based on its territorial sovereignty, a port state would surely have the right to inspect vessels that wish to call on its ports. It is uncertain if this would also allow the port state to carry out an inspection to verify what happened beyond its maritime zones. The absence of any reference to inspection in Article V(2) of the 1993 FAO Compliance Agreement (discussed above) suggests this should be answered positively. Moreover, in practice it may be quite difficult to make such a distinction in the inspection phase. It is admitted, however, that the opposite could be argued as well: the fact that the port state would not, in the absence of an explicit basis, be permitted to impose penalties if the inspection reveals illegal behaviour, presumably implies that general international law would simply not allow such an inspection.

In case the inspection reveals that “the catch has been taken in a manner which undermines the effectiveness of subregional, regional or global conservation and management measures on the high seas”, paragraph (3) explicitly authorises the port state to prohibit landings and transshipments. No mention is made of the power to detain or to institute proceedings.¹⁶⁵ Again, it could be argued that a port state’s right to deny entry into port under general international law would include such less intrusive measures as the prohibition of landings and transshipments. However, contrary to such an opinion, it seems that none of these powers could be used in relation to issues for which the port state has no authority to prescribe (under general international law). On the basis of the above, the conclusion would be that the exercise of the general right to prescribe conditions for the entry into port amounts to an abuse of rights if it relates to prior behaviour for which the port state has no explicit legal basis to prescribe.

¹⁶⁵ M. Hayashi, “The 1995 UN Fish Stocks Agreement and the Law of the Sea”, in D. Vidas and W. Østreg (eds), *Order for the Oceans at the Turn of the Century* (The Hague, London and Boston, Kluwer Law International, 1999), pp. 37–53 at p. 46, mentions that the power to detain did not make it through the negotiation phase. See in this respect the Uruguayan declaration upon signature of the 1995 Fish Stocks Agreement (No. 5). Note that Art. 218 of the LOS Convention explicitly allows the institution of proceedings and implicitly the power to detain (cf. Molenaar, note 43 above, p. 462). Moreover, s. 4.3, para. 49 of Technical Guidelines No. 1 (Fishing Operations) to the 1995 FAO Code of Conduct, seems to allow detention for violations of “international agreements for the conservation and management of living marine resources and protection of the environment” (para. 48(e)(ii)). This could be careless drafting, as much of the substance of these paragraphs is concerned with safety requirements (CDEM standards).

In spite of the view taken here, due to the complexity of the issue it is more than likely that varying views on the matter can be expected to persist.¹⁶⁶ A clear indication of the contentious nature of port state enforcement, and implicitly prescription, is paragraph (4) of Article 23 which contains a non-prejudicial clause. Several regional fisheries management mechanisms have adopted the approach taken in Article 23 of the 1995 Fish Stocks Agreement, but also apply it towards vessels flying the flag of a non-contracting state without taking account of that state's adherence to the 1995 Fish Stocks Agreement.¹⁶⁷ Moreover, the practice of several states seems to go well beyond even that.¹⁶⁸

Satellite Remote Sensing and Space Law

Outer space is similar to the high seas in the sense that neither of them can be subjected to the sovereignty of states and are thus *res communis*.¹⁶⁹ As will be

¹⁶⁶ See the practice by Australia and South Africa in note 152 above. See also Anderson, note 153 above, pp. 338–341, for a discussion of the conflicting views during the negotiations on the 1995 Fish Stocks Agreement. Edeson, note 109 above, p. 179, submits that the provisions in the global instruments discussed in the main text “do not have any significant difference in potential application in view of the fact that port states already can do what they want in respect of vessels in their ports (voluntarily or otherwise), subject only to certain very general limitations imposed by international law or specific limitations derived from treaties”. Cf. P. Örebeck, K. Sigurjonsson and T.L. McDorman, “The 1995 United Nations Straddling and Highly Migratory Fish Stocks Agreement: Management, Enforcement and Dispute Settlement”, (1998) 13 *International Journal of Marine and Coastal Law* 119–141 at 132. However, M. Hayashi, “The 1995 Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention”, (1995) 29 *Ocean and Coastal Management* 51–69 at 63, treats Art. 23 of the 1995 Fish Stocks Agreement as an innovation modelled on Art. 218 of the LOS Convention. Cf. Anderson, note 153 above. R. Barston, “United Nations Conference on Straddling and Highly Migratory Fish Stocks”, (1995) 19 *Marine Policy* 159–166 at 166, who regards Art. 23 of the 1995 Fish Stocks Agreement as a “misapplication of the port state concept”, would probably also consider it to be innovative.

¹⁶⁷ For example, CCAMLR Conservation Measure 118/XVII (note 152 above), in particular paras (4) and (5); NAFO's (Northwest Atlantic Fisheries Organization) “Scheme to Promote Compliance by Non-Contracting Party Vessels with the Conservation and Enforcement Measures Established by NAFO” (NAFO/GC Doc. 97/6, www.nafo.ca; in particular paras (9) and (10)); and Art. 14 of the Draft SEAFO (South East Atlantic Fisheries Organization) Convention (5th meeting). A proposal by the United States at the 4th meeting to revise Art. 14 would have even allowed the port state to “detain the vessels for such reasonable period of time as necessary for enforcement purposes” (para. (3); see para. (6) for the application, *mutatis mutandis*, to fishing vessels of non-parties).

¹⁶⁸ The United States Lacey Act (Public Law 97-79, effective 16 November 1981, 16 *United States Code* §§ 3371–3378, in particular § 3372) permits the (in-port) inspection of foreign vessels to verify if fishing has taken place in contravention of other states' enactments, and the imposition of fines and confiscation of the catch if a violation has been ascertained (see Lodge, note 51 above, p. 163). Section 75(2) of the 1998 Fisheries Management Act of Papua New Guinea appears to take a similar approach. Anderson, note 153 above, pp. 338 and 341, discusses legislation of Iceland and Norway which permits denial of entry in case of undermining of internationally agreed conservation measures committed beyond their maritime zones.

¹⁶⁹ See Art. 89 of the LOS Convention and Art. II of the Space Treaty (below).

clarified, this categorisation influences the rights and obligations of states towards satellite remote sensing (SRS) considerably. The principal international instrument which governs the rights and obligations of states engaging in activities in outer space is the Space Treaty.¹⁷⁰ The main points of relevance for the purpose of this article are laid down in Articles I and III. Article I recognises that “[o]uter space . . . shall be free for exploration and use by all states without discrimination of any kind, on a basis of equality and in accordance with international law” and that “[t]here shall be freedom of scientific investigation in outer space”.

These two freedoms (the freedom of exploration and use, and the freedom of scientific investigation) are subject to Article III, under which states parties to the Space Treaty “shall carry on activities in the exploration and use of outer space . . . in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding”. In other words, these freedoms can only be exercised for “peaceful purposes”.¹⁷¹ Articles IV and IX further reinforce the overarching objective of the peaceful use of outer space. The issue of ownership, jurisdiction and control is governed by Article VIII, which basically says that the state who launches an object into outer space shall retain ownership, jurisdiction and control over such object.

It is worth observing here that the Space Treaty does not define the limit between outer space and air space. This is not insignificant as aircraft (or other objects) do not have a right of overflight in the air space above areas which fall under state sovereignty, namely, landward of the outer limit of the territorial sea.¹⁷² A suggestion for a sensible limit would be the lowest technically desirable altitude above the earth sufficient to permit free orbit of spacecraft, therefore around 100 (regular) miles.¹⁷³

There can be little doubt that SRS involves the “use of space” in the sense of Article III, even though it is strongly earth-oriented.¹⁷⁴ Apart from the Space Treaty, however, there is to this date no legally binding international instrument specifically relating to SRS. All there is are the Principles on Remote Sensing

¹⁷⁰ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, New York, 19 December 1966, in force 10 October 1967, (1967) 61 *American Journal of International Law* 644.

¹⁷¹ See also Art. IV which deals with military activities; and Art. 88 of the LOS Convention which stipulates that: “The high seas shall be reserved for peaceful purposes.”

¹⁷² See Arts 2(2), 19, 86 and 87 of the LOS Convention. Art. 2(2) provides that a state’s sovereignty extends to the air space over its territory (which includes the territorial sea). Arts 38(2) and 53(3) of the LOS Convention contain exceptions by granting a right of overflight over areas subject to transit and ASLs passage.

¹⁷³ I. Brownlie, *Principles of Public International Law* (Oxford, Clarendon Press, 4th ed., 1990), p. 268.

¹⁷⁴ Cf. I.H.P. Diederiks-Verschoor, *An Introduction to Space Law* (Deventer and Boston, Kluwer Law and Taxation Publishers, 1993), p. 65.

(SRS Principles), adopted in 1986 by the United Nations General Assembly.¹⁷⁵ These govern SRS undertaken for the limited number of purposes listed in Principle I, one of which is “improving natural resources management”.

SRS for the purpose of monitoring compliance with fishery regulations will not quickly raise the issue of third states. A costly undertaking such as this is likely to be limited to the maritime zones of the state(s) paying for it. Even if the satellite would be in orbit above and therefore able to “sense” the maritime zones of a state not formally participating, the costs would often be prohibitive. This would be quite different if, for instance, SRS would be used to locate fish stocks. For this purpose, the rights of non-participating states are briefly addressed.

Principle IV of the SRS Principles establishes the general rule that SRS shall not be “detrimental” to the sensed states. In addition, some special situations are covered by Principles X and XI, which stipulate that if states participating in remote sensing activities have information relating to natural disasters or other phenomena harmful to the Earth’s natural environment, they “shall” disclose or transmit such information to states concerned. Of particular relevance is the situation where SRS relates to areas under the jurisdiction of non-participating states. Although some states were in favour of a right to require prior consent, Principle XIII takes a prior consultation approach pursuant to which:

“a State carrying out remote sensing of the earth from space shall, upon request, enter into consultation with a State whose territory is sensed in order to make available opportunities for participation and enhance the mutual benefits to be derived therefrom.”

This obligation relates only to the “territory” of the other state and excludes therefore maritime zones seaward of the territorial sea. It may be clear from the wording that the sensed state is not in a particularly strong negotiating position. This contrasts sharply with the regime of marine scientific research (MSR) in Part XIII of the LOS Convention, which recognises practically exclusive coastal state controls for such research carried out in its maritime zones.¹⁷⁶ Once SRS has been engaged in, with or without the involvement of the “sensed state”, Principle XII provides that with respect to information¹⁷⁷ relating to a state’s

¹⁷⁵ Adopted unanimously by Resolution 41/65 on 11 December 1986, UN. Doc. A/Res/41/65 (1987).

¹⁷⁶ P. Birnie, “Law of the Sea and Ocean Resources: Implications for Marine Scientific Research”, (1995) 10 *International Journal of Marine and Coastal Law* 229–251 at 247, observes that Part XIII does not specifically cover or restrict MSR carried out by SRS. At any rate, SRS used for the purpose of monitoring of vessels cannot be categorised under MSR because, in view of Soons’ definition of MSR (note 34 above), it is not the marine environment but the vessels which are the object. Churchill and Lowe, note 62 above, p. 412, observe that the LOS Convention provisions on MSR may to some extent become obsolete due to the expected increase in remote sensing.

¹⁷⁷ The terms “primary data”, “processed data” and “analysed information” are defined in Principle I. In essence, they indicate stages in which raw data is transferred into usable information.

territory, the “sensed state” “shall have access . . . on a non-discriminatory basis and on reasonable cost terms”. In conclusion, therefore, international law does not substantially restrain states wishing to engage in SRS.

Conclusions

Satellite-based vessel monitoring systems (VMS) are but one example of applied modern technology which have the potential for profoundly changing fisheries management in the immediate future. The availability of near real-time information on fishing activities within enormous ocean surfaces opens up almost unimagined management options, particularly for those concerned with data-gathering and ensuring compliance. The recognition of this potential is reflected in the rapidly expanding use by states, regional fisheries management mechanisms (RFMMs) and ship operators alike.¹⁷⁸ Ongoing developments indicate that the obligatory use of automatic location communicators (ALCs) as part of a VMS is likely to be applied in all major industrial fisheries within the next few years.¹⁷⁹

This article purports to identify some of the main policy and legal considerations which states and RFMMs should take into account when developing satellite-based VMS for fisheries management.¹⁸⁰ From a policy perspective it is first essential that the principal limitations are fully understood.

- (1) Vessels not equipped with ALCs, or whose ALCs are not functioning properly, cannot be located. Complementary means of surveillance will therefore always be necessary. Satellite remote sensing (SRS) is one option although it is not yet operational at either the national or the regional level.
- (2) Traditional means of surveillance by sea or air will generally be required to bring or order offenders to port and thus ensure prosecution.
- (3) A satellite-based VMS is most effective in conjunction with management based on measures such as closed areas, exclusion zones, closed seasons or restricted fishing days.

¹⁷⁸ Initiatives on satellite-based VMS are currently undertaken by CCAMLR, the International Commission for the Conservation of Atlantic Tunas (ICCAT), NAFO and the NEAFC. The regional fisheries management organisation for the central and western Pacific, which is currently under negotiation, will also adopt a satellite-based VMS. Moreover, the European Community and the FFA are strong supporters of VMS. A large range of states, either independently and/or as a result of initiatives from the previous bodies, use satellite-based VMS on a flag and/or coastal state basis. For more information on these developments see Molenaar and Tsamenyi, note 136 above.

¹⁷⁹ FAO Doc. COFI/97/INF.6, note 42 above, p. 2.

¹⁸⁰ Account should also be taken of the various technical difficulties in ensuring that a VMS functions satisfactorily.

Secondly, it is critical that thorough assessment ascertains that a satellite-based VMS is in fact the most cost-effective compared to other means of data-gathering and monitoring, control and surveillance (MCS). Thirdly, crucial to the success of the system is the way in which it guarantees the confidentiality and security of the information transmitted to the management authority. Insufficient emphasis on this aspect is bound to have severe repercussions for co-operation and compliance.

A more general policy aspect is the observation that satellite-based VMS will in many situations be the most cost-effective if applied on a regional basis. Although state practice reflects a growing number of states that use satellite-tracking either independently or through a RFMM, global coverage has by no means been achieved yet. In this situation, the existence of non-compatible VMS technology and a wide range of policy options calls for global strategies and harmonisation.¹⁸¹

In addition to policy considerations, a fisheries management authority will have to accept that the scope of application of its satellite-based VMS will have to comply with applicable rules of international law. The ensuing restrictions are particularly apparent if it takes a coastal or port state approach, as defined above. Rather than exercising jurisdiction over ships that bear their own nationality, which the discussion above categorises under flag states, jurisdiction exercised by coastal and port states relates to foreign vessels that engage in certain activities in the coastal state's maritime zones or even beyond. The main conclusions which can be derived from the complex analysis are:

- Foreign vessels that wish to engage in fishing, fish processing or fish transshipments in a coastal state's maritime zones can be required to install ALCs.
- Foreign fishing vessels with fishing licences cannot be required to have the ALC switched on for a considerable time in advance of entering the coastal state's maritime zones, or after departure therefrom. The flag state may of course require its vessels to have the ALC switched on continuously and thereby alleviate the coastal state's concerns. Likewise, RFMMs may impose such a requirement on ships operating in the high seas adjacent to a coastal state's maritime zones.
- Foreign vessels without fishing licences cannot be asked to install ALCs or to have them switched on if they merely exercise rights of navigation in a coastal state's maritime zones. Arguably, it would not necessarily amount to an abuse of rights to require such vessels to install ALCs as a condition for entry into port. However, as port states would not have a basis of jurisdiction to require such ships to have the ALC switched on prior to entry into port, this previous requirement appears useless.

¹⁸¹ See Molenaar and Tsamenyi, note 136 above.

- The situation with regard to foreign fishing support vessels that engage in bunkering of fishing vessels in EEZs might be the most controversial. The resolution of this conflict in use will depend on classifying bunkering as freedom of navigation or as a use associated therewith under Article 58(1) of the LOS Convention and the extent of coastal state jurisdiction under Article 62(4). In the end, the matter may have to be treated as a residual right under Article 59 and necessitate resolution by a body like the International Tribunal for the Law of the Sea (ITLOS), even though the ITLOS did not resolve the issue in the *Saiga (Merits)* case.

All four of these conclusions relate to the way in which the law of the sea, as laid down in the LOS Convention and occasionally elaborated by the recently adopted global instruments relevant to fisheries management, defines the distribution of jurisdiction between flag states on the one hand and coastal and port states on the other. States and RFMMs are held to respect this jurisdictional balance and to abstain from unilateral exercises of extraterritorial jurisdiction if this would be inconsistent with the *pacta tertiis* principle. Nevertheless, various indications exist that states and RFMMs are probing the limits of international law, in particular with regard to port state jurisdiction. The fact that the use of satellite-based VMS and ALCs is likely to have spread widely in the near future will certainly be to their advantage.