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Introduction

China is a major maritime nation with 18,000 km of mainland coastline.[1] The marine environment is of fundamental importance for China's economic development and environmental protection. According to the National Report on Social and Economic Development, in 2010, China imported 239.31 million tonnes of crude oil and 36.88 million tonnes of refined oil.[2] Approximately 95 percent of oil imports are carried by maritime transportation. This creates significant risk of marine pollution such as oil, oily wastes and invasive species from ballast water. Globally, maritime transport is responsible for 12 percent of total marine pollution.[3] The United Nations Convention on the Law of Sea (UNCLOS) deals with vessel-source pollution through Part XII on Protection and Preservation of the Marine Environment, Part II on the Territorial Sea and Contiguous Zone, and Part V on the Exclusive Economic Zone.[4] Under UNCLOS, the legislative or enforcement jurisdiction that a State may exercise in respect of a particular vessel varies according to whether it is a flag, coastal or port State.[5] UNCLOS creates a jurisdictional regime for the prevention of

† The author would like to thank two anonymous reviewers for their comments on an earlier draft.

1 As of 1 January 2013, Chinese ownership of vessels was ranked third in the world. Chinese shipowners control 11.78 percent of the total world deadweight tonnage. See United Nations Conference on Trade and Development (UNCTAD), *Review of Maritime Transport 2013* (Geneva: UNCTAD, 2013), p. 43.

2 See Table 9, *2010 National Report on Economic and Social Development Statistics*, National Bureau of Statistics of China, available online: <http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20110228_402705692.htm> (in Chinese).

3 International Shipping Facts and Figures – Information Resources on Trade, Safety, Security, Environment, Maritime Knowledge Center, International Maritime Organization, 2011, p. 24.

4 United Nations Convention on the Law of the Sea, *International Legal Materials* 21, no. 6 (1982): 1261–1354.

5 R. Churchill and A. Lowe, *The Law of the Sea*, 3rd ed. (Manchester: Manchester University Press, 1999), p. 344. Flag State is the State whose nationality a particular vessel has. The UNCLOS

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vessel-source pollution. Furthermore, UNCLOS has designated the International Maritime Organization (IMO) as the competent international organization to deal with vessel-source pollution. Under the auspices of the IMO, a number of conventions have been adopted to tackle the aforementioned problems such as the International Convention for the Prevention of Pollution from Ships (MARPOL) and the International Convention for the Safety of Life at Sea (SOLAS).[6]

China signed UNCLOS in 1982 and ratified it in 1996. As early as 1983, China ratified MARPOL and its Annex I and II. China has also ratified MARPOL Annex III (in 1994), Annex IV and VI (in 2006), Annex V (in 1988), and SOLAS (in 1994). Most recently, China ratified the Anti-Fouling Convention in 2011, which came into force on 17 June 2011.[7]

However, in practice, how China implements and enforces UNCLOS and the IMO's conventions is to a large extent unknown. There is also limited public information that can be collected from desk-based research alone. In China, the prevention of vessel-source pollution has attracted little interest from academics to date. In addition, government decision-making processes are not widely available to the public. Although more may currently be known about China's policy deliberations and governmental administration than at any previous time, it remains difficult to find sufficient information for analysis. Without a comprehensive understanding of China's social system and culture, it can be challenging for outsiders to fully understand the complex structure of Chinese legislation and how it is implemented.[8]

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does not define 'port' or 'coastal' State. According to Churchill and Lowe, coastal State is the state in one of whose maritime zones a particular vessel lies; port State is the state in one of whose ports a particular vessel lies. However, Molenaar suggests that account should not only be taken of the type of enforcement (in port or at sea), but also the locus of the violation and the type of standard subject to enforcement. What should nevertheless be clear is that port or coastal State jurisdiction always implies jurisdiction over foreign vessels. See E.J. Molenaar, *Coastal State Jurisdiction over Vessel-Source Pollution* (The Hague: Kluwer Law International, 1998), pp. 92–93.

6 International Convention for the Prevention of Pollution from Ships, *International Legal Materials* 12, no. 6 (1973): 1319–1444; International Convention for the Safety of Life at Sea, 1974, *International Legal Materials* 14, no. 4 (1975): 959–978.

7 International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001, IMO Doc. AFS/CONF/26, 18 October 2001; Announcement of the Ministry of Transport, No. 22, 22 April 2011, the Entry into Force of the IMO Anti-Fouling Convention in P.R. China (in Chinese).

8 G. Xue, *China and International Fisheries Law and Policy* (Leiden: Martinus Nijhoff, 2005), p. 10.

In response to the limited literature on the prevention of vessel-source pollution under Chinese law, the author conducted semi-structured interviews in ten major port cities along China's coast between August 2011 and February 2012 (Dalian, Guangzhou, Haikou, Tianjin, Ningbo, Qinhuangdao, Qingdao, Shanghai, Shenzhen, and Yantai). Interviews were mainly conducted with representatives from China's Maritime Safety Administration (MSA), the competent authority for the prevention of vessel-source pollution in China. Additionally, unpublished (internally published) documents from China's MSA were collected and analysed.

Based on the literature and interview findings, this article focuses on the effectiveness of China's law and practice on the prevention of vessel-source pollution as a coastal State. The article first provides a brief overview of Chinese legislation on the prevention of vessel-source pollution. It then introduces the structure and function of the MSA and concludes by covering two major issues relating to China's role as a coastal State, namely, the identification of illegal discharge at sea and ship routeing/ship reporting systems. Flag State and port State measures are beyond the scope of the article and will not be considered.

Legislation

In order to implement UNCLOS and the IMO's conventions for the prevention of vessel-source pollution, China has promulgated the 1982 *Marine Environmental Protection Law* (MEPL), as amended in 1999.[9] The adoption of the MEPL in 1982 and amendments in 1999 can be seen as domestic responses to legal developments at the international level.[10] In 2010, the State Council of China enacted the Regulation on the Prevention and Control of Marine Pollution from Vessels (2010 Regulation),[11] which replaced the 1983 Regulation on Prevention of Pollution from Ships at Sea. The Ministry of Transport also

9 Decree of the President of the P.R. China (No. 26), Marine Environment Protection Law (revised), Standing Committee of National People's Congress Gazette, Issue No. 7, 1999.

10 For detailed discussions about MEPL and 2010 Regulation, see N. Liu and F. Maes, "Prevention of Vessel-Source Marine Pollution: A Note on the Challenges and Prospects for Chinese Practice under International Law," *Ocean Development and International Law* 42, no. 4 (2011): 356–367.

11 State Council of P.R. China, Order No. 561, 9 September 2009.

plays an important role for initiating and drafting the 2010 Regulation on the Prevention and Control of Marine Pollution from Vessels due to their superior institutional capacities. This is a common phenomenon in the Chinese system of law-making and is known as 'departmentalism' (*bumen lifa*).[12]

Under the framework set out by the 2010 Regulation, the Ministry of Transport adopted a set of supplementary rules of judicial practice between 2010 and 2012.[13] These include the Implementing Rules on the Insurance for Civil Liability of Damage by Vessel-Source Oil Pollution,[14] the Rules on the Prevention and Control of Marine Pollution from Ships and Relevant Operating Activities (Rule No. 7, 2010),[15] the Rules on the Contingency Plan and Contingency Response of Vessel-Source Marine Pollution,[16] and the Rules on the Investigation of Vessel-Source Pollution Accidents at Sea.[17]

Maritime Safety Administration

Both the 1999 MEPL and the 2010 Regulations designated the MSA as the responsible institution for marine pollution caused by non-military vessels:

> Art. 5 (3), 1999 MEPL: The State administrative department in charge of maritime affairs shall be responsible for the supervision and control over marine environment pollution caused by non-military vessels inside the port waters under its jurisdiction and non-fishery vessels and non-military vessels outside the said port waters, and be responsible for the investigation and treatment of the pollution accidents. In the event of a pollution accident caused by a foreign vessel navigating, berthing or operating in the sea under the jurisdiction of the People's Republic of

12 Y.N. Cho, "The Politics of Lawmaking in Chinese Local People's Congresses," *China Quarterly* 187, no. 3 (2006): 596–602.

13 For details about those supplementary rules, see B. Dong, L. Zhu and M. Luo, "Current Legal Developments: China: Combating Marine Pollution from Vessels: China's New Legislation," *International Journal of Marine and Coastal Law* 29, no. 1 (2014): 158–172. Rules play an important role in the Chinese legal system since they provide more details and guidelines for understanding and enforcement of laws and regulations. Until 30 November 2009, there are 596 valid implementing rules issued by MSA (Decree of the Ministry of Transport, No. 3, 2010 (in Chinese)).

14 Decree of the Ministry of Transport, No. 3, 2010 (in Chinese).

15 Decree of the Ministry of Transport, No. 7, 2010 (in Chinese).

16 Decree of the Ministry of Transport, No. 4, 2011 (in Chinese).

17 Decree of the Ministry of Transport, No. 10, 2011 (in Chinese).

China, inspection and treatment shall be conducted on board the vessel in question. Where the pollution accident caused by a vessel results in fishery damages, the competent fishery administrative department shall be invited to take part in the investigation and treatment.

Art. 4, 2010 Regulation: The State administrative department in charge of maritime affairs shall be responsible for the supervision and control over marine environment pollution caused by non-military vessels inside the port waters under its jurisdiction and non-fishery vessels and non-military vessels outside the said port waters. According to this Regulation, the maritime safety administration is responsible for specific supervision and administration of vessel-source pollution and relevant activities.

Although China established its new Coast Guard in 2013,[18] the MSA's capacity to enforce vessel-source pollution legislation was unaffected. The MSA is affiliated with the Ministry of Transport. The MSA's central authority is based in Beijing. There are 12 provincial MSAs along the coastline, under which approximately 90 local branches have been established. The MSA has a working team consisting of 25,000 officials, other working staff, and a patrol force of 1,300 vessels and crafts of various types.[19] Generally, each coastal province has its own provincial MSA, which is directly led by the MSA central authority based in Beijing.[20] These provincial MSAs are normally based in the capital city or the most important port city of that coastal province. Additionally, major port cities feature MSAs. City-level MSAs have several units (Maritime Safety Unit or *Haishichu*) responsible for enforcement and on-site inspections.

18 In 2013, the 12th National People's Congress adopted the Institutional Reform and Functional Change Plan for State Council. According to the Plan, a new China Coast Guard has been established, which incorporates the Sea Police, State Fisheries Administration, China Marine Surveillance (State Oceanic Administration), and Bureau of Anti-Smuggling at Sea. See Standing Committee of National People's Congress Gazette, Issue No. 2, 2013 (in Chinese).

19 Official website of the China MSA, available online: <http://en.msa.gov.cn>.

20 Along China's coastline, there are 12 provincial MSAs: Tianjin, Hebei Province MSA (based at Qinghuangdao), Shandong Province MSA (based at Qingdao), Liaoning Province MSA (based at Dalian), Jiangsu Province MSA (based at Nanjing), Shanghai MSA, Zhejiang Province MSA (based at Hangzhou however, the most important port in Zhejiang Province is Ningbo-Zhoushan port, which ranks as one of top ten busiest ports in the world), Fujian Province MSA (based at Fuzhou, however, the most important port in Fujian Province is the Xiamen Port), Shenzhen MSA, Guangdong Province MSA (based at Guangzhou), Guangxi Province MSA (based at Nanning), and Hainan Province MSA (based at Haikou).

The MSA has its own enforcement power at sea – the China Sea Patrol (*Zhongguo Haixun*).

Faure et al. refer to recent studies on the effects of decentralization on environmental management in developing countries that increasingly demonstrate the capture of decision-making processes by local elites. These studies suggest that in such cases local end-users are better off where there is direct intervention from the central government to enforce the law against local elites.[21] The MSA system is centralized (*chuizhi guanli*), and in the author's opinion, it generally functions effectively.

It has long been identified that local protectionism is a major problem for effective implementation of Chinese environmental legislation.[22] This does not appear to be the case with regards to the prevention of vessel-source pollution due to the fact that local governments have limited influence on the MSA. Local governments cannot directly control MSA personnel,[23] nor can they control budgetary or other related MSA arrangements at the provincial and city level. Individual offices within MSA bureaucracies are not responsible to superiors within local governments (*kuai*); rather, they are directly controlled by their functional administrative superiors (*tiao*) and have only consultative relationships with local government.[24] The provincial MSAs operate as relatively independent organizations under the control of the MSA central authority in Beijing.[25]

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21 M. Faure, M. Goodwin and F. Weber, "Bucking the Kuznets Curve: Designing Effective Environmental Regulation in Developing Countries," *Virginia Journal of International Law* 51, no. 1 (2010): 121–122.

22 B. Van Rooij, "Implementing Chinese Environmental Law through Enforcement," in *Implementation of Law in the People's Republic of China*, eds. J. Chen, Y. Li and J.M. Otto (The Hague: Kluwer Law International, 2002), 162–163.

23 It is worth mentioning that the workforce of the MSA is made up of graduates from China's dedicated maritime universities (e.g., Dalian Maritime University and Shanghai Maritime University).

24 A.C. Mertha, "China's 'Soft' Centralization: Shifting Tiao/Kuai Authority Relations," *China Quarterly* 184 (December 2005): 791–810, 792.

25 Chinese administrative units generally distinguish between two types of political relationships: those governed by binding orders, and those based on non-binding instructions. Any political unit in China has the second type of relationship with any number of other units. But it has the first type of relationship with only one, its direct 'superior'. A relationship based upon such binding orders is referred to as 'leadership relations' or *lingdao guanxi*. The other type is based on 'professional relations' or *yewu guanxi*. Mertha, id., p. 797.

The MSA central authority is required to conduct an inspection of national legislation enforcement at least once every two years. Due to limits on the number of staff working in the central office, the inspection of legislation enforcement is carried out by a delegation consisting of staff from the central authority as well as one staff member from the provincial authority. The inspection requires overseeing the work of local MSA branches.[26] Provincial MSAs are required to inspect the work of local branches within their jurisdiction once annually.[27]

One successful case concerning the enforcement of legislation by the MSA is illustrated by their implementation of a zero discharge policy in the Bohai Sea. The Bohai Sea is a semi-enclosed body of water that borders China's coastline and is claimed as its internal waters.[28] It has a total area of 77,284 km^2, spans 3,784 km of coastline and has an average depth of 18 m. The Bohai Sea is the most polluted sea under China's jurisdiction. According to the Bulletin of China's Marine Environmental Status for 2010, 32,730 km^2 of the Bohai Sea is polluted during the summer months,[29] representing 40 percent of its total area. In 2001, to protect the marine environment of the Bohai Sea, the Chinese government adopted an Action Plan for Cleaning up the Bohai Sea.[30] The Ministry of Transport enacted the 2003 Procedural Rules on the Zero Discharge from Vessels (*Qianfeng*) in the Bohai Sea,[31] which provided that vessels (except for military and fishing vessels) docking, sailing or operating in the Bohai Sea for more than one month must seal their discharge facilities and discharge pollutants to reception facilities onshore.[32] The zero discharge measure has limited impact on vessels engaged in international voyages since these vessels rarely stay in the Bohai Sea for more than one month. The effectiveness of the zero discharge measure also depends on several factors such as sufficient

26 Interview with MSA staff (Qinghuangdao, Hebei Provincial MSA).

27 Rules on the Supervision of Maritime Administrative Law Enforcement, MSA, 1 May 2011 (in Chinese), Art. 40.

28 1958 Declaration on Territorial Sea by the Government of People's Republic of China (in Chinese).

29 Part 2, Marine Environmental Quality Status, Bulletin of China's Marine Environmental Status for the year 2010.

30 Circular on Adoption of Bohai Clean Sea Action Plan, No. 181, 2001, Ministry of Environmental Protection (in Chinese).

31 Circular on the Adoption of Procedural Rules on the Zero Discharge from Vessels (Qianfeng) in Bohai Sea, No. 32, 2003, Ministry of Transport (in Chinese). This was replaced by 2007 Rules on the Zero Discharge from Vessels (*Qianfeng*) in Coastal Sea Areas, No. 165, 2007, Ministry of Transport.

32 Procedural Rules on the Zero Discharge from Vessels (*Qianfeng*) in the Bohai Sea, Art. 3.

reception facilities onshore and effective inspection from the MSA. During interviews with MSA officers around the Bohai Sea (Dalian, Qinhuangdao and Tianjin), the MSA staff always referred to the 'Qianfeng' measures as a success.

Although in general the MSA system functions well, minor weaknesses exist that warrant mention. For example, unlike organizations in developed countries, such as the European Maritime Safety Agency (EMSA), which has hundreds of staff working on monitoring the work of EU Member States, the central authority of the MSA has fewer than ten personnel responsible for monitoring the work of the organization's provincial branches. Moreover, the effectiveness of internal monitoring is still unknown. According to Andrew Mertha, an associate professor of government specializing in Chinese politics, centrally managed administrative units are usually geographically distant from their functional and administrative superiors, and therefore difficult to supervise. It is easy for centrally managed units to establish a 'father-son relationship'; when the higher level unit discovers a problem, it might be reluctant to be overly strict with its subordinate unit.[33]

Practice

The Identification of Illegal Discharges at Sea

The identification of illegal discharges from vessels at sea is a difficult issue for practically all countries. The MSA's China Sea Patrol (*Zhongguo Haixun*) is responsible for this task. In 2000, the MSA adopted the Rules on the Administration of Patrols at Sea. The MSA replaced these rules in 2011 with a new set which provided that the MSA shall cruise in seas under China's jurisdiction to ensure compliance with maritime safety standards and prevent vessel-source pollution.[34] The Rules on the Administration of Patrols at Sea allocates MSA vessels over 80 meters in length to the control of the MSA's central authority, with MSA vessels less than 80 meters allocated to provincial MSAs.[35] To date, there are 207 MSA patrol vessels over 20 meters in length. Only three patrol vessels of 100 meters or longer (*Haixun 31, 21* and *11*) are responsible for patrol and emergency response operations outside the

33 See Mertha, n. 24 above, p. 804.

34 Rules on the Administration of Patrols at Sea, Art. 1.

35 Rules on the Administration of Patrols at Sea, Art. 3.

50-nautical mile offshore limit.[36] According to the Guiding Principles for the Development of Chinese Maritime Affairs (2005–2020) published by the Ministry of Transport, MSA vessels only expanded their patrol areas to 200 nautical miles from China's coastline since 2010.[37] The majority of MSA vessels cannot travel long distances. Consequently, MSA patrols have traditionally been confined to port or coastal areas. For example, the Wu Song Unit of the Shanghai MSA is responsible for patrolling the estuary of the Yangtze River. The unit has 11 vessels, the largest of which is 55 meters long.[38] Their main function is to maintain traffic order in the shipping routes of the Yangtze River estuary. The constraints faced by MSA vessels in terms of limited cruising range and competing functions demonstrate that the China Sea Patrol faces obstacles in enforcing vessel-source pollution regulations at sea.

The China Sea Patrol (*Zhongguo Haixun*) has, however, developed very rapidly over the past five years. Before the establishment of China's new Coast Guard, there was competition between the MSA and the State Oceanic Administration (SOA) for a dominant role in the Coast Guard. Therefore, both *Zhongguo Haixun* and China Marine Surveillance, the SOA's enforcement power at sea, were building more vessels to strengthen their capacity. These developments were therefore not strictly driven by the Chinese government's desire to enforce national and international legislation for the prevention of vessel-source pollution at sea. Rather, they have resulted from tensions in disputed sea areas between China and its neighbors, such as Japan (Diaoyu Islands, East China Sea), Vietnam, Malaysia and Philippines (South China Sea), as well as from the government's desire to strengthen its control and non-military presence in these disputed areas. The 2011 Rules on the Administration of Patrols at Sea also declare that one of the key reasons for MSA's patrol at sea is to protect China's sovereignty and national ocean interests,[39] which was not included in the 2000 Rules on the Administration of Patrols at Sea.

The MSA lacks its own satellites and as a consequence it lacks the internal capacity to indirectly monitor illegal discharges by vessels at sea. For indirect monitoring, the MSA relies on the SOA, which manages China's ocean satellites. This relationship requires the MSA to purchase satellite images in the

36 China MSA official website, "Maritime Equipment," available online: <http://www.msa.gov.cn/Static/zbjs> (in Chinese).

37 G. Liu, "Achievements of China Maritime Safety Administration in the 11th Five Years Plan Period," *China Water Transport* 2 (2006): 8–9 (in Chinese).

38 "Introduction to the Wusong Unit of Shanghai MSA," available online: <http://www.shwsmsa.cn/nr.aspx?id=1> (in Chinese).

39 Rules on the Administration of Patrols at Sea, Art. 1.

aftermath of oil spills to aid investigations. For example, in 2010, a pipeline explosion occurred at the northeast port of Dalian, causing oil to spread over an area of 430 km^2 and prompting a clean-up mission along the coast.[40] In order to facilitate the mission, the MSA purchased satellite images from the SOA.[41] This functions as an effective means for the MSA to perform indirect monitoring. However, one limitation stems from the fact that it is possible to do so only after serious oil spills have occurred rather than before due to the significant cost associated with SOA-provided satellite images. This was described as a constraint to the MSA discharging its duty of monitoring vessel-source pollution during the interviews.

Furthermore, the Rules on the Reward of Providing Information about Vessel-Source Pollution and Vessels Carrying Hazardous Goods provide that individuals who inform the MSA about illegal discharges from vessels will receive a financial reward. The effectiveness of this reward system is doubtful. The amount of the reward cannot exceed ten percent of the fine imposed on the vessel.[42] The maximum fine that can be imposed on illegal discharge from vessels is 100,000 Yuan (Chinese currency).[43]

> Art. 73, 1999 MEPL: In case of any of the following acts, in violation of the provisions of this Law, the department empowered by this Law to conduct marine environment supervision and control shall order a correction and impose a fine in accordance with the provisions of this Law: (1) discharging into the sea any pollutants or any other substances the discharge of which is prohibited by this Law; (2) discharging pollutants into the sea in a way inconsistent with the provisions of this Law, or discharging pollutants in excess of standards; (3) dumping wastes in the sea without obtaining a permit for dumping; and (4) failing to take prompt measures for a treatment in the event of an accident or any other contingency that has caused pollution to the marine environment. For any violation as mentioned in (1) and (3) of the preceding paragraph, a fine of

40 "China's worst-ever oil spill threatens wildlife as volunteers assist in clean-up," *Guardian*, 21 July 2010, available online: <http://www.guardian.co.uk/environment/2010/jul/21/china-oil-spill-disaster-wildlife>.

41 "High Technology Assists in Marine Cleaning," *China Maritime Safety* 8 (2010): 17 (in Chinese).

42 Rules on the Reward of Providing Information about Vessel-Source Pollution and Vessels Carrying Hazardous Goods, Circular on the Adoption of Rules on the Reward of Providing Information about Vessel-Source Pollution and Vessels Carrying Hazardous Goods, No. 63, 2011, Ministry of Transport (in Chinese), Art. 10.

43 Approximately US$16,000 under current exchange rates.

not less than RMB 30,000 yuan but not more than 200,000 yuan shall be imposed; for any violation as mentioned in (2) and (4) of the preceding paragraph, a fine not less than 20,000 yuan but not more than 100,000 yuan shall be imposed.

It is questioned to what extent seafarers, as employees, can refuse to obey their employer, or implicate them by reporting them to an authority that they know in the end may likely detain the ship, which is their instrument of contract and livelihood with that employer.[44]

Ship Routeing and Ship Reporting

The first shipping route in sea areas under China's jurisdiction was designated in 1984 (Da Sanshan, Dalian Port). Since that time, China has established 16 mandatory shipping routes along its coastal waters, of which 15 shipping routes are traffic separation schemes (TSS).[45] In 2011, the Ministry of Transport published the National Plan for Ship Routeing in Coastal Sea Areas. In the next decade, a total of 26 shipping routes will be designated. This includes six trunk lines (Laotieshan Shuidao, Cheng Shan Jiao, Estuary of Yangtze River, Taiwan Strait, Estuary of Pearl River and Qiongzhou Strait), five port areas (Dalian, Qingdao, Rizhao, Ningbo and Xiamen), and 15 other lines.[46] All these shipping routes are within China's territorial sea or in its internal waters or port areas. Considering the political situation between mainland China and Taiwan, the shipping routes designated in the Taiwan Strait by the People's Republic of China are within the sea areas under China's control.[47] To date, China has been modest in designating shipping routes and has not done so in sea areas disputed with its neighboring countries.

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44 O.G. Anthony, "Criminalization of Seafarers for Accidental Discharge of Oil: Is there Justification in International Law for Criminal Sanction for Negligent or Accidental Pollution of the Sea?" *Journal of Maritime Law and Commerce* 37, no. 2 (2006): 219–232.

45 M. Wang, "The Urgent Need to Implement Ship Routeing System in the Coastal Waters of China," *China Maritime Safety* 11 (2011): 6 (in Chinese), 6–10.

46 "Ship Routeing will be Designated in Busy Traffic Sea Areas in the Coming 3–5 Years," available online: <http://www.moc.gov.cn/zhuzhan/jiaotongxinwen/xinwenredian/201112xinwen/201112/t20111223_1175907.html> (in Chinese).

47 "Taiwan Straits and coastal sea areas eastwards [to] Taiwan Island are both China's coastal waters. However, considering the current situation, the national plan only applied to sea areas of the Taiwan Straits bordering with the mainland China," Special Interpretation of the National Plan for Ship Routeing in Coastal Sea Areas, available online: <http://www.moc.gov.cn/zhuzhan/wangshangzhibo/11zhuantifbh/zhibozhaiyao/201112/t20111222_1174902.html> (in Chinese).

SOLAS Chapter V (Safety of Navigation) states that governments may establish vessel traffic service (VTS) systems when, in their opinion, the volume of traffic or the degree of risk justifies such services.[48] The MSA is keen to establish a national VTS system. To date, there are 30 VTS systems operating along China's coastline. These VTS systems control 73,620 km^2 of sea area.[49] The MSA is responsible for vessel traffic while the VTS Centre affiliated with the MSA is responsible for the operation of the VTS system. In 1997, the MSA adopted the Rules for Vessel Traffic System Safety Management and the Rules for Vessel Traffic System Operation Management. Vessels in the VTS area must report to the MSA following the VTS User Guidelines published by the MSA.[50] Furthermore, when there is an accident, the vessel shall report to the VTS Centre as well.[51]

Regulation 19 of SOLAS Chapter V – Carriage Requirements for Shipborne Navigational Systems and Equipment – sets out navigational equipment to be carried onboard ships, according to ship type. In 2000, the IMO adopted a new requirement as part of a revised Chapter V for all ships to carry automatic identification systems (AIS) capable of automatically providing information about the ship to other ships and to coastal authorities.[52] The requirement came into force on 1 July 2002. The MSA issued a circular on 18 December 2001,[53] which requires three classes of Chinese ships to be fitted with AIS transponders: ships of 300 gross tonnage (gt) and upwards engaged in international voyages; cargo ships of 500 gt and upwards not engaged in international voyages; and all passenger ships. In 2010, the MSA adopted the Rules on AIS Equipment for Chinese Vessels engaged in domestic voyages.[54] This rule expanded the use of AIS to domestic shipping.

Conclusion

China has adopted a substantial amount of legislation to implement UNCLOS and the IMO's conventions for the prevention of vessel-source pollution. The MSA is the competent law-enforcement institution. On the whole, China's

48 IMO, "Vessel Traffic Services," available online: <http://www.imo.org/OurWork/Safety/Navigation/Pages/VesselTrafficServices.aspx>.

49 "The MSA's First National Conference on Ship Traffic Management held in Ningbo," *China Maritime Safety* 12 (2011): 16. (in Chinese).

50 Rules for Vessel Traffic System Safety Management, Art. 4.

51 Rules for Vessel Traffic System Safety Management, Art. 5.

52 IMO, "AIS Transponders," available online: <http://www.imo.org/ourwork/safety/navigation/pages/ais.aspx>.

53 Announcement on AIS Equipment, No. 2, 2001, MSA (in Chinese).

54 Circular on the Adoption of Rules on AIS Equipment for Chinese Vessels engaged in domestic voyages, No. 156, 2010, MSA (in Chinese).

centralized MSA system functions effectively. The highly educated workforce of the MSA, composed of graduates from China's dedicated maritime universities (e.g., Dalian Maritime University and Shanghai Maritime University), the international and technical nature of shipping issues, as well as the limited influence of and interaction with local government all contribute to the independence of the MSA. The relatively uncomplicated administrative structure enhances the efficiency and effectiveness of this system. As a coastal State, a current limitation of law enforcement by the MSA stems from the lack of infrastructure for patrol purposes. The MSA has not yet acquired sufficient capacity to identify illegal discharges in China's EEZ. China therefore needs to catch up and increase its procurement of ships and technology for this purpose.