Discussion on the changes of ship VHF reporting system at VTS area

Dong Zhaoxi*, Tang Mengyu**

*Yantai MSA of China, Yantai, Shandong, 264000 China

**The Navigation Administration Of Yantai, Yantai, Shandong, 264000 China

Key words: Report System; VTS; VHF; Radio communicate

Abstract

With the development of shipping industry, the number of ships entering and leaving the port is increa sing, Maritime Safety Administration shall ensure the safe navigation by improving VTS service quality. According to the statistics of ship's entering and leaving the Yantai port of Shandong, this paper puts forward that some VHF reports shall be exempted from ships entering and leaving the port frequently, and break through the limitation of the current ship reporting system, so as to optimize the VTS repor ting system, and promote the friendship between VTS and ships.

1.Background

According to the IALA VTS user guide, the report items of ships sailing in port waters are specified in detail. The report items mainly include ship traffic management, ship report, ship traffic service, etc. According to the above provisions, when the ship arrives at the VTS area report line, it shall report the ship name, position, navigation dynamics and other items to VTS. The ships carrying dangerous goods and towing have additional items to report, and there are other special items to report during berthing or anchoring, berthing or lighterage operation.

In the working practice of VTS, many ships are familiar with port area, channel, berth and other information due to frequent access to the same port, and the communication with VTS is smooth. Taking the waters of Yantai port area of Shandong Port Group as an example, the statistical data of single vessel entering and leaving the port on October 31, 2019: "M" vessel entered and left Zhifu port pool 29 times and 30 times respectively, "T" vessel entered and left Longkou Port pool 13 times and 12 times respectively. On the other hand, with the increase of the number of ships entering and leaving the port in the VTS area of the Yantai MSA, the number of VTS receiving various reports has also increased significantly. VTS operators have to devote more energy to passively receiving a large number of ship VHF reports, resulting in the reduction of the accuracy of VTS management and service objectives. How to reduce the labor intensity of the crew and VTS operators by adjusting the ship reporting mode, improve the supervision and service quality of VTS operators, so as to ensure the safety of ship navigation, is worth VTS practitioners' in-depth thinking.

For the repeated and numerous VHF reports of ships, an important way to solve this problem is to effectively implement the traffic organization of the whole voyage from the beginning to the end of the voyage within the jurisdiction, realize the "one-time report and full passage" of ships, and comprehensively improve the coordination of water traffic organization. Based on the concept of "one-time report and full passage", this paper analyzes the implementation status and existing problems of VTS ship reporting system, and then puts forward reform suggestions.

In this paper, the change of ship VHF report mode is only discussed within the scope of "ship report", excluding special circumstances such as exemption from all reports and special reports required for ships that meet the conditions authorized by VTS under certain conditions.

2.Problems in current VTS ship reporting system

According to the requirements of the existing reporting system, ship import and export ports generally need to

report relevant matters to the VTS center of the local maritime administrations for many times. Most of the ship VHF reports are not necessary and important. For example, the ships that enter and leave a reporting line twice a day need to report to the VTS twice under the current management mode, which not only increases the navigation duty intensity of ship drivers, but also increases the load of VHF communication channel. Subject to the limited human resources and the increase in the refined management of ship communication, the current management mode of receiving reports by VTS without any preconditions and orders is obviously unreasonable.

According to the report nodes, take the hypothetical passenger ship "A" entering and leaving Yantai Zhifu Bay passenger berth as an example for statistical analysis of the report times. Under normal circumstances, the number of reports is 10. The details are as follows: the first report is to report the dynamics when driving into the first reporting line, and the second report is to report the dynamics when driving into the second reporting line, and the third report is to report the dynamics when entering the channel near the mountain called “Xiaoshanzi”, and the fourth report is to report the dynamics when leaving the channel near the passenger berth, and the fifth report is to report the dynamics after berthing the passenger berth, and the sixth report is to report the dynamics of departure plan and standby application before leaving the passenger berth, and the seventh report is to report the dynamics of departure when leaving the passenger berth, and the eighth report is to report the dynamics when entering the channel near the passenger berth, and the ninth report is to report the dynamics when leaving the channel near “Xiaoshanzi”, and the tenth report is to report the dynamics when driving out of the second reporting line. In addition, the number of vessel reports and communications will increase significantly when there are coordination and command situations such as vessel encounter and avoidance. The "Table 1" for detailed statistical data:

Report Area	Zhifu	Xigang	Muping	Penglai	Changdao	Longkou	Laizhou
Key report nodes	First report line	First report line	First report line	East or west report line	East/west or Zhenzhumen report line	Report line of Longkou	Report line of Laizhou
	Second report line	Second report line	Second report line	Anchorage area	Anchorage area	Anchorage area	Anchorage area
	Anchorage area	Anchorage area	Report line of Muping or anchorage area	Entering or leaving the channel	Entering or leaving the channel	Entering or leaving the channel	Entering or leaving the channel
	Entering or leaving the channel	Entering or leaving the channel	Entering or leaving the channel	Berthing or leaving	Berthing or leaving	Berthing or leaving	Berthing or leaving
	Berthing or leaving the port	Berthing or leaving	Berthing or leaving				
Minimum number of reports of	5	5	6	4	4	4	4

entering the port							
Minimum number of reports of leaving the port	5	5	6	4	4	4	4

Table 1: Statistics of the number of inbound and outbound reports of a single ship

According to the statistics of the number of voyages of ships entering and leaving the port in October 2019, the number of voyages of ships entering and leaving the Yantai area in that month was 5940 and 5724 respectively, of which 4569 and 4353 were voyages of ships entering and leaving the port not less than 5 voyages this month, and the number of reports of ships not less than 5 voyages accounted for about 75.6% of the total number of reports of ships. The "Table 2" for detailed statistical data.

Items		Zhifu	Xiaga ng	Mupi ng	Pengla i	Changd ao	Longk ou	Laizh ou	Total
Number of in or out reports of a single vessel		5	5	6	4	4	4	4	
Inb ound	Number of ships with no less than 5 voyages	92	42	0	31	31	50	12	258
	Number of voyages not less than 5	1400	322	0	860	1094	697	196	4569
	Number of vessel reports not less than 5 voyages	7000	1610	0	3440	4376	2788	784	19998
	Total number of vessels	345	237	28	150	45	270	111	1186
	Total number of voyages	1787	614	45	1010	1118	1026	340	5940
	Total number of reports	8935	3070	270	4040	4472	4104	1360	26251
Out boun d	Number of ships with no less than 5 voyages	80	39	0	33	31	51	11	245
	Number of voyages not less than 5	1147	304	0	916	1092	705	189	4353
	Number of vessel reports not less than 5 voyages	5735	1520	0	3664	4368	2820	756	18863
	Total number of	340	238	27	142	42	265	117	1171

	vessels								
	Total number of voyages	1541	602	46	1049	1113	1025	348	5724
	Total number of reports	7705	3010	276	4196	4452	4100	1392	25131
Total	Number of vessel reports not less than 5 voyages	12735	3130	0	7104	8744	5608	1540	38861
	Total of reports	16640	6080	546	8236	8926	8204	2752	51382
	Proportion	76.5%	51.5%	0	86.3%	98.0%	68.4%	56.0%	75.6%

Table 2: Statistics of VHF report quantity of ships

With the popularization of ship AIS and the improvement of crew's ability to use AIS, VTS can actively understand the dynamics of ships in the VTS covered waters through the identification of AIS. According to the statistics and analysis of the above data, many ship reports without practical safety significance in the current VTS reporting system mainly lead to the following problems:

(1)Increased the labor intensity of the navigation duty officers, repeated reports for many times, reduced the Navigators' awareness of important information, and increased the risk of ship navigation safety.

(2)VTS operators receive a large number of vessel reports passively, which greatly reduces VTS service quality.

(3)Increasing VHF channel load will increase VHF communication interference between ships and between ships and VTS, and reduce communication efficiency and quality.

In order to further improve the VTS management and service level, improve the VTS operation energy efficiency, realize the transformation from "passively receiving vessel reports" to "actively providing management and services", innovate the VTS management mode, discuss the vessel VTS reporting mode, and hope to reduce unnecessary reports and improve the VTS management and service level by providing reporting exemption for specific vessels according to the application, but not exempt the reporting of key information.

3 Reduce vessel reporting to VHF without safety significance to VTS

3.1 Conditions for reducing the frequency of vessel reporting to VTS

According to the provisions of the IALA VTS user guide, the relevant ships need to actively report the ship dynamics to the VTS, so it must not be unconditional for the VTS center to exempt the VHF report of the ship. The implementation conditions for changing the VTS ship reporting method are discussed in detail below:

(1)Chinese ships entering and leaving the port no less than 5 voyages per month, or other voyages that are considered more appropriate, apply to the VTS center through the ship agency, port dispatcher, shipping company and other units to obtain the exemption from ship reporting or change the reporting method (such as submitting the reporting information through telephone, wechat and other means). At the same time, the applicant is designated as the guarantee unit to undertake the responsibility of guaranteeing the violation of VHF duty.

(2)Within the reporting line, the ship shall be on duty at VHF as required, and record effective telephone contact information to VTS to maintain smooth contact with VTS.

(3)The cancellation of the agreed exemption, including but not limited to the VTS center's failure to establish communication with the exempted ship in the VTS coverage waters through VHF, and causing adverse effects.

(4)According to the requirements of the superior, VTS cancels the exemption from VHF report of the ship and notifies the guarantee unit, the ship owner and the person in charge.

(5)During the period when the maritime search and rescue center at or above the county level issues the early warning of severe meteorological maritime risks such as high winds and poor visibility, the VHF report exemption is suspended, and it will be restored immediately after the early warning is lifted or cancelled.

(6)VHF report exemption is only limited to port type VTS report, and sea area type VTS report is not within the scope of exemption.

(7)In principle, VHF report exemption will not operate in highly sensitive waters such as complex navigation environment, accident prone waters and narrow waterways, unless VTS authorities have conducted a comprehensive risk and disposal capacity assessment on the procedure and consider it feasible.

(8)Other contents that should be specified.

3.2 Procedures and measures for reducing ship to VTS VHF communication without safety significance

(1)Intention survey, including internal staff discussion and external shipping companies and ships investigation.

(2)Internally evaluate the operation effect, such as VHF recovery efficiency, channel occupation time, signal interference, etc.

(3)External evaluation of operation effect, such as spot check of VHF duty and telephone communication efficiency.

(4)Evaluate the operation energy efficiency after changing the VTS ship reporting mode, summarize the experience, and further improve and optimize the scheme.

(5)Sign trial operation protocol.

(6)Daytime commissioning.

4 Conclusion

With the increase of ship flow in the VTS coverage area and the improvement of VTS service quality requirements in the shipping industry under the new situation, VTS must improve its working mode, maritime monitoring and service quality. By analyzing the characteristics and frequency statistics of ships entering and leaving the port waters of Shandong Yantai Port Group, this paper evaluates the VTS reporting mode of ships, and puts forward a method to reduce the non-safety VHF connection between VTS and ships on the premise of ensuring that VTS effectively controls the ship information in the coverage area, so as to reduce the labor intensity of VHF reporting between VTS operators and the on duty drivers of ships entering and leaving the port, promote the development of ship VTS report management mode towards a more friendly direction, which is conducive to improving the VTS service quality and ensuring the navigation safety of ships within the VTS coverage area.

References

（1）IALA VTS MANUAL 2021-EDITION 8

（2）烟台船舶交通管理系统安全监督管理细则,2019 年 12 月

Author's Biography

First author name:Dong Zhaoxi, June 1988, Male，Graduated from Dalian Marine University, Working for Yantai MSA of China, Intermediate Engineer, Mainly engaged in ship traffic management and maritime emergency search and rescue, Phone: 15953548093

Second author name:Tang Mengyu, March 1988, Female，Graduated from Wuhan University of Technology, Working for The Navigation Administration Of Yantai, Intermediate Engineer, Mainly engaged in Buoy business management, Phone: 18553560589