Input paper: [[1]](#footnote-1) VTS 50-10.3.2

Input paper for the following Committee(s): Purpose of paper:

**□**ARM **□**ENG **□**PAP **X** Input

**□**ENAV **X** VTS **□** Information

Agenda item[[2]](#footnote-2) 10.3

Technical Domain / Task Number2 2.3.1

Author(s) / Submitter(s) China Maritime Safety Administration

Proposal on Draft of VTS Digital Information Service Product Specification V0.6.3

# Summary

IALA VTS Task Plan 2018-2022 raises the task “*Develop a Product Specification under the S-100 framework for VTS*” (Task2.3.1). By analyzing the “*VTS49-12.2.2.4 VTS Digital Information Service Product Specification V0.6.3*”,“IHO S-100:*IHO Universal Hydrographic Data Model*”, draft on *Guidelines for Vessel Traffic Services*[IMO Resolution A.857(20)],“*Initial Descriptions of Maritime Services in the Context of E-navigation*”(IMO MSC.1/Circ.16 10) and other requirements for digital display of maritime services, this input paper provides some proposals on the draft of *VTS Digital Information Service Product Specification*.

**1.1 Purpose of the document**

The purpose of this paper is to provide an input paper for the consideration of the VTS Committee in developing the product specification under the S-100 framework for VTS (Task2.3.1).

## Related documents

The relevant documents of this proposal are as follows：

**VTS49-7.1.1:***From VTS48 - VTS Task Plan 2018-2022 (20191010);*

**IHO S-100:** *IHO Universal Hydrographic Data Model, Edition 4.0.0 (December 2018);*

**IHO S-100WG5-4.16:** *Proposal to Add S-100 Compliance Categories(20200306);*

**IMO Resolution A.857(20) :***Guidelines for Vessel Traffic Services(Draft，NCSR7 );*

**IMO MSC.1/Circ.1610****:***Initial Descriptions of Maritime Services in the Context of E-navigation(14 June 2019);*

**VTS49-8.2.2.1:** *From VTS48 - WP Draft Guideline on Maritime Services (VTS47-13.3.10);*

**VTS49-12.2.2.4 :***VTS Digital Information Service product specification V0.6.3(2020.10);*

**BMP5 :***Best Management Practices to Deter Piracy and Enhance Maritime Security in the Red Sea, Gulf of Aden, Indian Ocean and Arabian Sea(V5),Authors: BIMCO, ICS, IGP&I Clubs, INTERTANKO and OCIMF (published June 2018).*

# background

The backgrounds of this proposal are as follows:

**2.1**  The VTS Task Plan 2018-2022 raises the task “*Develop a Product Specification under the S-100 framework for VTS*”, and states that the expected outcome of this task is a VTS Product Specification, which will assist authorities to better implement VTS. On VTS49, the name of the expected outcome was adjusted to “*VTS Digital Information Service Product Specification*”.

**2. 2**  As is known that “IHO S-100: *IHO Universal Hydrographic Data Model*” and “*Guidelines for Vessel Traffic Services*” are under revision, drafts are available. IMO implemented “*Initial Descriptions of Maritime Services in the Context of E-navigation*”, defined sixteen kinds of Maritime Services. IALA VTS Committee is working on “*Guideline on Maritime Services*”, data required by the VTS service has been sorted out, and a draft with information requirements is available.

**2.3**  In terms of the content, “*VTS Digital Information Service Product Specification*” is closely related to “IHO S-100: *IHO Universal Hydrographic Data Model*”, information types defined in the revised draft of “*Guidelines for Vessel Traffic Services*”, “*Initial Descriptions of Maritime Services in the Context of E-navigation*” and digital display requirements in the “*Guideline on Maritime Services*”. Taking into account that the above documents have either been revised or issued for implementation, it is advised to modify some contents of the draft of “*VTS Digital Information Service product specification*”.

**2.4**  According to the current plan, the scope of VTS Digital Information Service Product Specification will be further expanded, and the scenarios involved will also be further revised. In the future, VTS Digital Information Service Product Specification will cover all existing information services, navigation assistance services and traffic organization services.

# PROPOSAL

**3.1 Discussion on the Items of Traffic Clearance and Enforcement**

In *"VTS Digital Information Service Product Specification V0.6.3*",some items such as Traffic Clearance and Enforcement are not clear. It is necessary to know the information about ships go through the bridge and ship lock. We have conducted research on above issues, combined with the newly draft of *Provision of a VTS*(IALA G1089 )and *Guidelines for Vessel Traffic Services*[IMO Resolution A.857(20)], and put forward suggestions as follows:

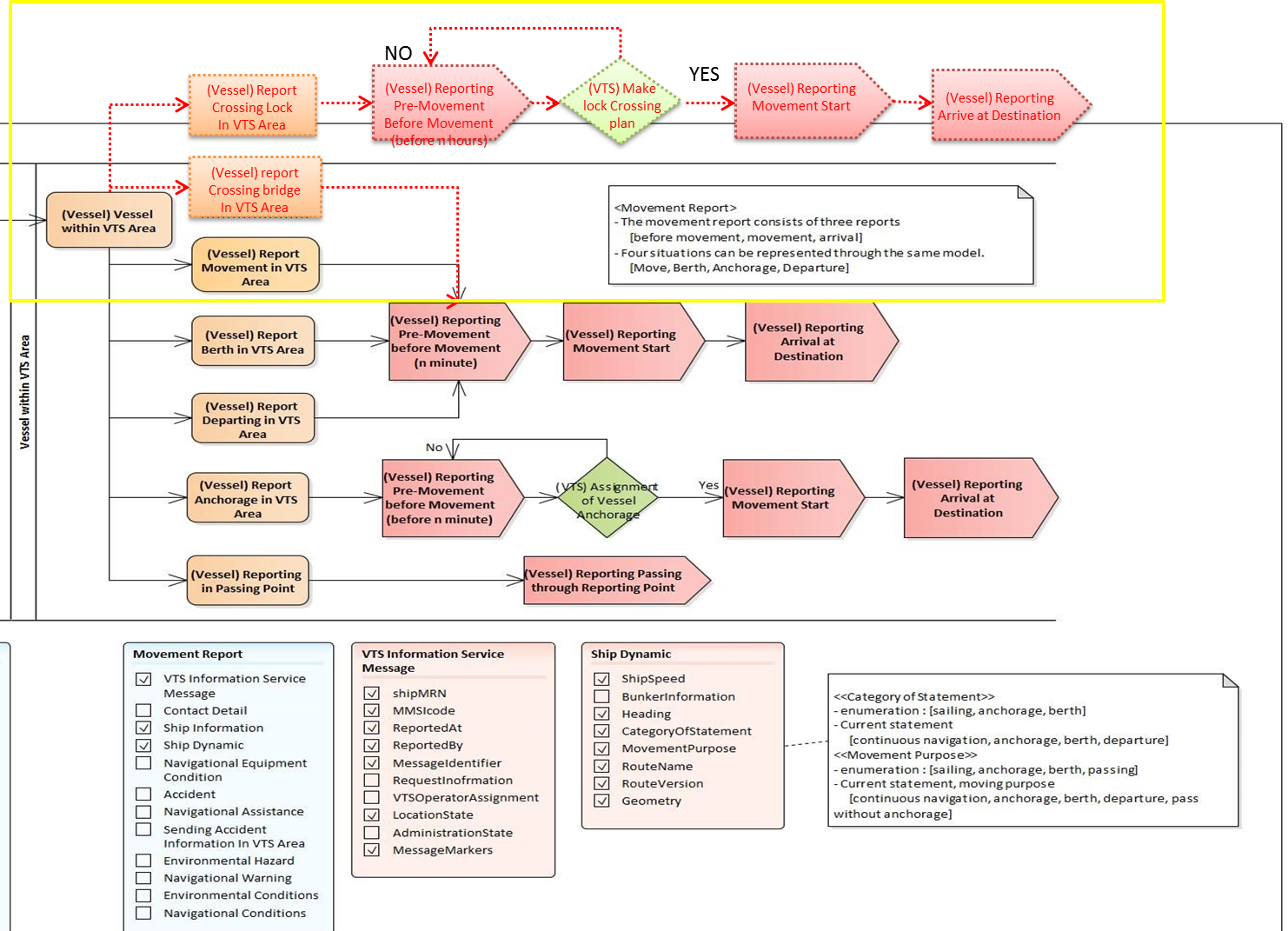
**3.1.1** Traffic Clearance which from *Guidelines for Vessel Traffic Services*（Draft，NCSR 7）, means a ship must get the permission before she enters the specific water area, such as the fairway or the anchorage.

**3.1.2**  According to the draft of *Provision of a VTS* （IALA G1089,VTS49-12.1.1）, the examples of Traffic Clearance are:

* On, or prior to, entering a VTS area.
* Departing from a berth or an anchorage within a VTS area.
* Entering into a fairway within a VTS area.
* Prior to commencing a manoeuvre that may be detrimental to safe navigation.

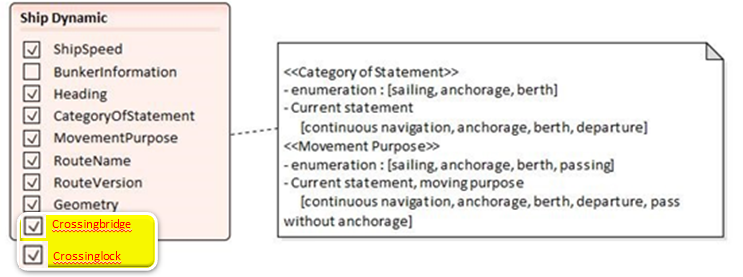
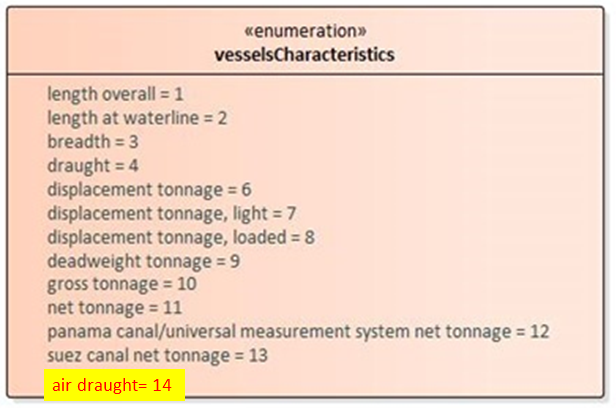
**3.1.3**  According to the draft of *Provision of a VTS* （IALA G1089,VTS49-12.1.1）, the examples of Enforcement are:

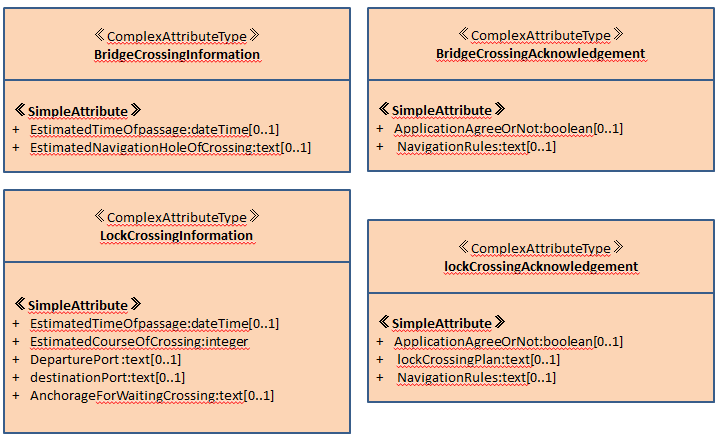
* Ensuring adherence to speed limits.
* Ensuring adherence to rules regarding traffic routeing measures.
* Ensuring adherence to pilotage requirements.
* Ensuring adherence to traffic regulations and local laws.



**3.1.4** **Add the data of bridge (overhead cable) and ship lock (ship lift)**

* By analyzing the data demand of Cross Bridge and Cross Ship Lock, taking the Donghai Grand Bridge of Shanghai port and the Three Gorges Ship Lock of Yangtze River in China as examples, the reporting process of Cross Bridge (overhead cable) is similar to berthing, the reporting process of Cross Ship Lock（ship lift is similar to ship lock ） is similar to anchorage.
* By analyzing the data of requirements for Traffic Clearance and Enforcement, and comparing the existing product specification models, it is recommended to add the data classification of Bridge (Overhead Cable) and Ship Lock（Ship Lift）, and include them in the Scenarios of the ship in the VTS area. See Annex A for details of Model for Bridge ，and Annex B for details of model for Ship Lock .
* By comparing with the current model, it is recommended to add the air draught (distance from waterline to highest point of vessel under the current loading condition) into vessels characteristics, add Crossing Bridge(Overhead Cable) and Crossing Ship Lock(Ship Lift) into ships dynamics, add Bridge(Overhead Cable) crossing information, Bridge(Overhead Cable) crossing confirmation information, Ship Lock(Ship Lift) crossing information and Ship Lock(Ship Lift) crossing confirmation information into the attribute description.





**3.2 Add the data of Ice and Piracy**

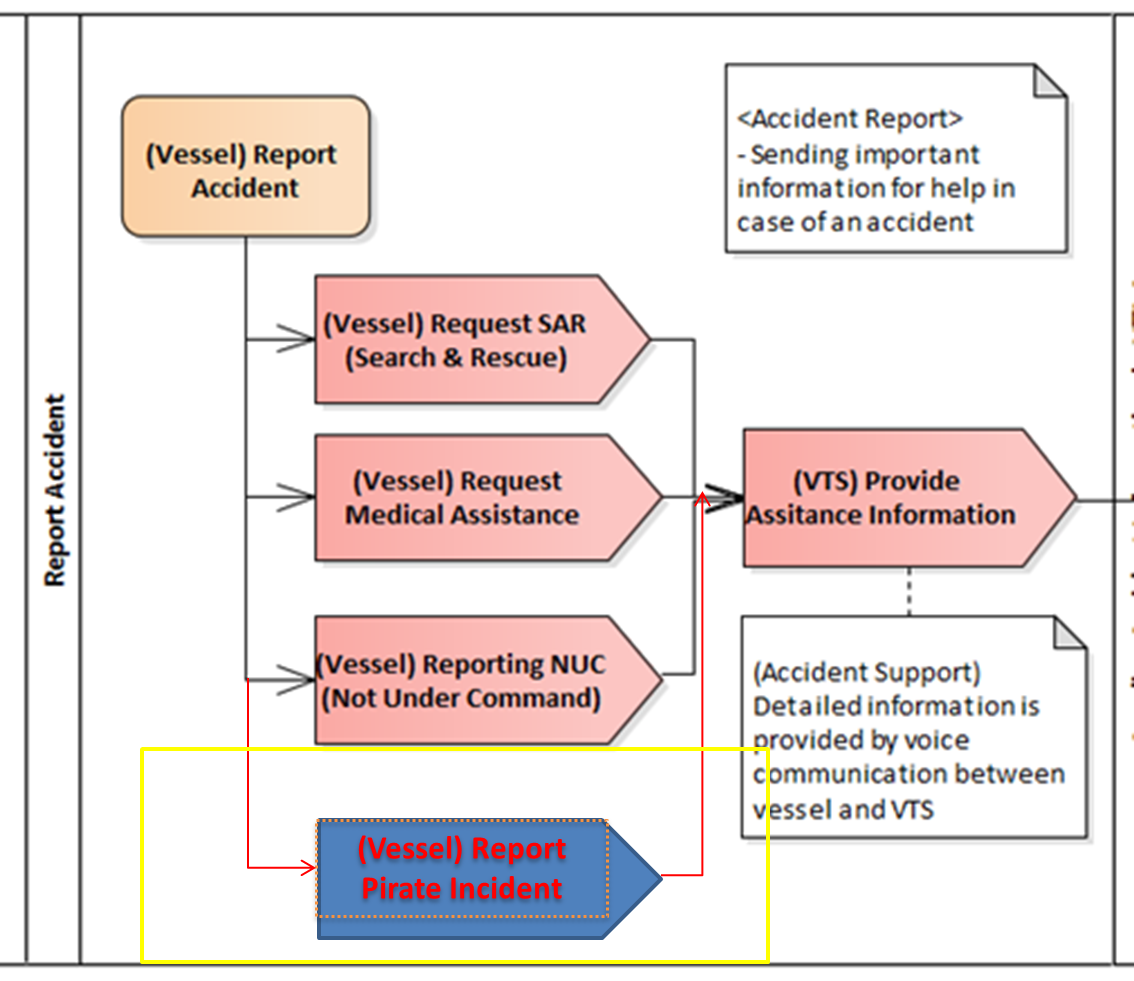
**3.2.1** The model in VTS Digital Information Service Product Specification V0.6.3 is good in structure, while some important information are not covered, such as:

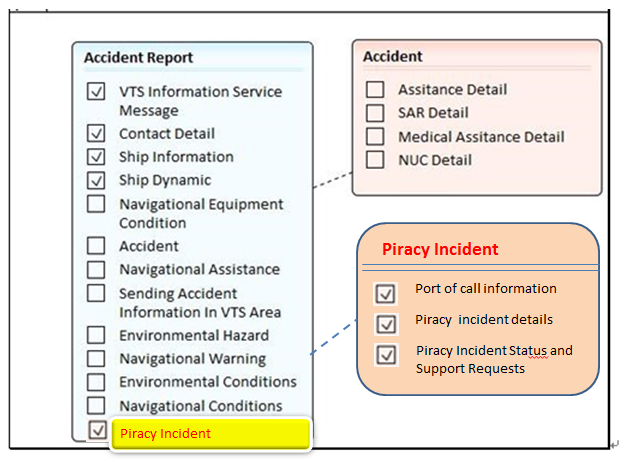
* Ice Service Information, which contains the information of Ice routing, Ice conditions, Ice chart, Icebreaker operations, Dynamic No-go areas and Iceberg bulletins.
* Security Information which contains the information of ISPS and Piracy.

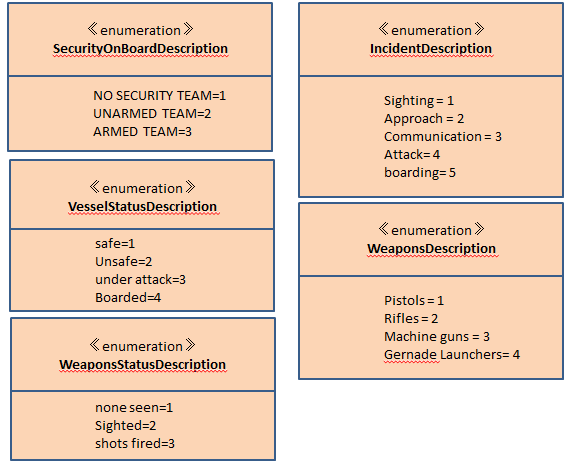
**3.2.2** Ice Service Information is an important part of the VTS information service in some waters. Its function is similar to the Environmental Conditions in the current model. This information is included in the maritime service set MSP13 Ice Navigation Service. The relevant specification is IHO S-411: *Ice Information Product Specification, VTS Digital Information Service Product Specification* can directly quote the data.

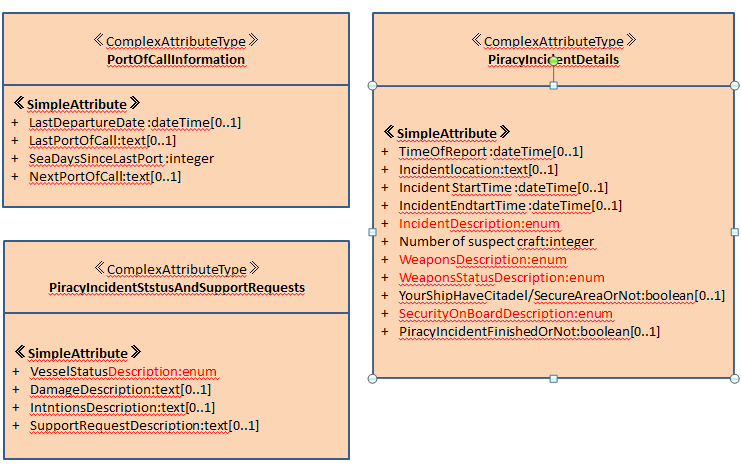
**3.2.3** Since May 2020, there have been more than 100 piracy incidents recorded by the IMO. Now days, the piracy has attracted widespread attention from the international community. Appendix of *WP Draft Guideline on Maritime Services*(VTS49-8.2.2.1) considers that pirate information is also an important part of VTS information services, and classifies it as security information together with ISPS information. Suggestions about piracy are as follows:

* Add data requirement model in accordance with BMP5 and accident reporting process, see Annex C for details.
* Add piracy incident in the accident report.
* Add port of call information, piracy incidents details, piracy incident status and assistance required in the attribute description.
* Add enumeration of security on board description, incident description, vessel status description, weapon description and weapon status description.









**3.3 Combined with the IHO S-100: *IHO Universal Hydrographic Data Model* and its revision proposal, the following suggestions are proposed：**

IHO has released “S-121*: Maritime Limits and Boundaries Product Specification*”,” S-122: *Marine Protected Areas*”,” S-123: *Marine Radio Services*”,” S-129: *Under Keel Clearance Management*” and “S-411: *Ice Information Product Specification*”. It is suggested to add “S-121 *Maritime Limits and Boundaries Product Specification, Ed. 1.0.0-October 2019*”,” S-122 *Marine Protected Areas, Ed. 1.0.0-Jannuary 2019*”,” S-123 *Marine Radio Services, Ed. 1.0.0-Jannuary 2019*”,”S-129 *Under Keel Clearance Management, Ed. 1.0.0-June 2019*”and”S-411 *Ice Information Product Specification,ED1.1.0-June 2014*”after”IHO S-101 *IHO Electronic Navigational Chart (ENC), Edition 1.0.0–December 2018*”.

# ACTION REQUESTED OF THE COMMITTEE

The Committee is requested to consider the suggestions above.

Annex A

Data required for ship to cross the bridge

The “ bridge crossing” scenario is greatly affected by the traffic environment and navigation rules. This research selects Donghai Bridge,in Shanghai of China, as a sample, which is a 32.5 km long sea-crossing bridge with 4 navigation holes of different specifications. The navigation rules have restrictions on wind power, visibility, ship types, and cargo conditions. This research sample can more comprehensively reflect the type of data required because of its complex traffic environment and navigation rules.

1. **Pre-entry report**

***1.1 What data is exchanged in VTS？***

1.1.1 Ship/Company/Agent

1.1.1.1 Vessel information

* Ship name/call sign/MMSI/IMO number
* Draught
* Deadweight tonnage
* Gross tonnage
* Length overall
* Breadth
* Ship’s air Draught (distance from waterline to highest point of vessel under the current loading condition)
* Ship type
* Category of cargo
* Towing method and scale

1.1.1.2 bridge crossing information

* Estimated time of crossing
* Estimated Navigation hole of crossing

1.1.2 VTS Centre

1.1.2.1 Acknowledge information

* agree/disagree (the reason for disagreement)

1.1.2.2 Navigation rules

* Wind force requirements
* Visibility requirements
* Deadweight tonnage requirements
* Maximum height requirements above water
* Ship type requirements
* Cargo load requirements
* Towing method requirements
* Navigation hole requirements
* Crossing time requirements

***1.2who is the data sender/receiver?***

* Vessels on the international voyages
* Passenger vessels;
* Towboat fleets or composite units of pushing vessel and barge
* Oil tankers, bulk chemical tankers and liquefied gas carriers above 500GT
* Other vessels of 1000 gross tons and more on the domestic voyages

***1.3 When do vessels send this data?***

* one day earlier before 1600 local time.

***1.4 Where do vessels send this data？***

* No requirement

***1.5 Why this data is sent?***

* Judging whether it can meet the passing requirements

***1.6 How do vessel and VTS exchange this data?？***

* Written form such as fax, website, mail, etc.

1. **Crossing report（30 minutes in advance ）**

***2.1 What data is exchanged in VTS？***

2.1.1 Ship

2.1.1.1 Vessel information

* Ship name/call sign/MMSI/IMO number
* Draught
* Deadweight tonnage
* Gross tonnage
* Length overall
* Breadth
* Ship’s air Draught (distance from waterline to highest point of vessel under the current loading condition)
* Ship type
* Category of cargo
* Towing method and scale

2.1.1.2 bridge crossing information

* Estimated time of crossing
* Estimated Navigation hole of crossing

2.1.2 VTS Centre

2.1.2.1 Acknowledge information

* agree/disagree (the reason for disagreement)

2.1.2.2 Other Information

* Wind power
* Visibility
* Traffic conditions
* Other matters needing attention

***2.2 Who is the data sender/receiver?***

* Passenger vessel
* Other vessels of more than 500 gross tonnage or with a length of more than 60 meters

***2.3 When do vessels send this data?***

* 30 minutes in advance

***2.4 Where do vessels send this data？***

* Before entering the safe waters of the bridge area

***2.5 Why this data is sent?***

* Judging whether it can meet the passing requirements

***2.6 How do vessel and VTS exchange this data?***

* VHF

Annex B

Data required for ship to cross the lock

The Three Gorges Ship Lock of Yangtze River of China is one of the largest ship locks in the world, with a total length of 6442 meters and a total of 5 levels of lock chambers, each of which is 280 meters long and 34 meters wide. It can pass a 10,000-ton fleet, with a designed one-way annual passing capacity of 50 million tons. In 2019, the volume of freight passing through the gate reached 146 million tons, which made a brand new record. The dispatch of the Three Gorges ship lock is guaranteed by complete laws and regulations, and an automatic information interaction system based on the network has also been developed. It is of strong reference significance to build a model by using it as a sample.

***1.1 What data is exchanged in VTS？（24 hours in advance ）***

1.1.1 Ship/Company/Agent

1.1.1.1 Ship information

* Ship name/call sign/MMSI/IMO number
* Ship type
* Cargo type
* Cargo loading capacity
* Formation
* The maximum scale of the ship (Maximum length, Maximum width, ship’s air draught, Maximum draft)
* Actual displacement

1.1.1.2 lock crossing information

* Estimate course of crossing
* Departure port and destination port
* Estimate time of crossing
* Anchorage

1.1.2 VTS Centre

1.1.2.1 lock Acknowledge information

* agree/disagree (the reason for disagreement)
* lock crossing plan （ every 4 hours, published on the website and reporting system)）

1.1.2.2 Navigation rules

* Wind force requirements
* Visibility requirements
* Deadweight tonnage requirements
* The maximum scale of the ship
* Ship type requirements
* Cargo load requirements

***1.2who is the data sender/receiver?***

* All ships that have applied for the ship lock

***1.3 When do vessels send this data?***

* 24hours before crossing

***1.4 Where do vessels send this data？***

* No requirement

***1.5 Why this data is sent?***

* Judging whether it can meet the passing requirements

***1.6 How do vessel and VTS exchange this data?***

* Written form or website

Annex C

Data required for piracy incident reporting

Since May 2020, there have been more than 100 piracy incidents recorded by the IMO. In particular, recent frequent piracy activities in the Malacca Strait and other waters have attracted widespread attention from the international community. At present, the best international guidance document for dealing with piracy is BMP5. This document lists the information that should be reported in the event of a piracy attack or armed hijacking in the form of an attached table, which can be used as an important reference.

***1.1 What data is exchanged in VTS？***

1.1.1 Ship/Company/Agent

1.1.1.1 Vessel details

* Ship name/call sign/MMSI/IMO number
* Crew number
* Crew member list
* Cargo type
* Cargo loading capacity

1.1.1.2 Port of call information

* Last port of call
* Last departure date
* Next port of call
* sea days since last port

1.1.1.3 Piracy incident details

* Time of report
* Incident location
* Speed and heading at time of incident
* sea days since last port
* Incident start time
* Incident end time
* Incident(sighting/approach/communication/attack/boarding) (choice)
* Number of suspect craft
* Weapons(none seen/sighted/shots fired)/(pistols/rifles/machine guns/grenade launchers)
* Your vessel (citadel/secure area)(yes/no)
* Your vessel( no security team/ unarmed team/armed team) (select)
* (incident status(incident finished /on going)(select)
  + - 1. Status and support requests
* (Vessel status(safe/unsafe/under attack/boarded) (select)
* Damage/Medical (text)
* Intentions
* Support request

1.1.2 VTS centre

1.1.2.1 Acknowledge information

* Received acknowledge

***1.2who is the data sender/receiver?***

* Ships encountering pirate attacks/armed hijacking

***1.3 When do vessels send this data?***

* When/after the incident

***1.4 Where do vessels send this data？***

* No requirement

***1.5 Why this data is sent?***

* Provide timely rescue

***1.6 How do vessel and VTS exchange this data?***

* Any feasible way

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2. Leave open if uncertain [↑](#footnote-ref-2)