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| From: VTS Committee | VTS47-13.2.4 |
| To: ARM Committee and IALA Steering Committee Cyber Security Workshop | 27 September 2019 |

LIAISON NOTE

VTS Committee response on IALA Workshop on Cyber Security

# INTRODUCTION

Input paper VTS47-3.1.5 requests feedback from the VTS Committee on themes, outputs, aims and objectives for the forthcoming IALA Cyber Security workshop in 2020 as well as to identify provisional levels of interest amongst VTS Committee participants in attending the workshop.

VTS Committee has considered the paper, together with a separate, but related, input paper from the China Maritime Safety Administration (VTS47-3.1.10).

# DISCUSSION

Both papers refer to the same overall theme (Cyber Security). However, whilst the 2020 Workshop aims to provide guidance on Cyber Security for Marine Aids to Navigation, the Chinese paper provides input to the scheduled task 2.1.2 on developing a Recommendation on Cyber Security lead by ARM. The VTS Committee is requested to support ARM on this task.

The VTS Committee has discussed these documents and we have made some adjustment to the China MSA paper, which could be relevant to the 2020 Workshop, see Annex which contains an extract with relevant feedback from the VTS Committee.

# ACTION REQUESTED

The ARM Committee and IALA Steering Committee of the Cyber Security Workshop are requested to consider the content of the Annex for possible topics during the Cyber Security Workshop as well as possible inclusion in the development of the Recommendation and Guideline on Cyber Security.

# ANNEX

# Revised extracts from input paper: VTS47-3.1.10

## Characteristics of Cyber Security related to VTS

1. VTS system involves the application of multi-source data such as radar, AIS, CCTV, VHF, etc. At the same time, except for the competent authorities, VTS system may link with other relevant organizations and allied services, including pilotage, port, search and rescue department, etc. As a result, VTS system has more network boundaries and data exchange interfaces, and consequently the Cyber Security risk is much higher than other common information systems.
2. As an important data source of VTS system, radar is equipped with special industrial communication protocol, which can be used to remotely control and parameters setting. Therefore the VTS system faces the risk of data leakage and network intrusion.
3. VTS contributes to safety of life at sea, safety and efficiency of navigation and protection of the marine environment, which base on the uninterrupted operation of VTS system. Once the system is damaged, the delivery of vessel traffic services will be suspended, which causes adverse effects on the functions of VTS and, consequently, the safety of participating ships.
4. The VTS system stores a large number of ship files, voyage data, and traffic data, some of which are confidential information. In the event of information leakage, some unpredictable consequences may be caused.
5. Encryption of communication to increase information security.
6. Disaster recovery to ensure quick recovery from virus attacks.

## Contents to be considered in developing Recommendation on Cyber Security related to VTS

In combination with China's VTS Cyber Security practices, the following matters are advised to take into consideration when establishing a Recommendation on Cyber Security related to VTS.

### Definition of Cyber Security scope related to VTS

Generally speaking, the scope of Cyber Security related to VTS mainly includes VTS centre, VTS sub-centre, radar stations, VHF base stations and other sensors (such as CCTV, meteorological and hydrological sensors, etc.). Servers, data storage devices, operation consoles, remote browsing terminals, AIS data source, remote maintenance interface, which process and display data, should also be included.

### VTS Cyber Security technical protection measures

1. Physical and environmental security. It mainly includes the physical environment security of the radar station and the VHF base station room. Security systems such as monitoring, access control, and alarm should also be considered.
2. Cyber and communication security. Cyber architecture, Cyber boundary protection (firewall), access control and intrusion prevention should be considered.
3. Equipment security. Consideration should be given to identity, strong password settings, remote access control, malicious code protection, etc.
4. Application (software) and data security. Login identification, access control, software fault tolerance, resource control, software fault tolerance, important data backup and recovery should be considered.

### VTS Cyber Security management protection measures

1. Cyber Security management regulation

A set of operating procedures needs to be established and published in a formal and effective manner, with version control and periodic review and revision.

1. Cyber Security related organizations and personnel

The department in charge of information security should be set up and empowered. The roles of system administrator, network administrator, security administrator and other posts should be established, combined with the clarification of corresponding responsibilities

1. Education and training on Cyber Security awareness

Education and skills training on Cyber Security awareness should be carried out for relevant personnel, including relevant responsibilities and disciplinary measures.

1. Security scheme design

The security plan should be designed according to the level of security protection, and the basic security measures should be defined, and implemented after verification by relevant experts.

1. Product procurement and use

The choice of service providers for various types of hard ware and software should be considered in accordance with relevant regulations.

1. Environmental management

The security management system should be established for VTS equipment room, radar stations and other places.

1. Storage media management

According to the protection requirements of different equipment, the use requirements, registration regulations and storage regulations of corresponding media (flash memory, CD, etc.) should be established.

1. Equipment maintenance management

The regulations on maintaining supporting facilities, software and hardware should be established to effectively manage the work procedure, including clarifying the responsibilities of maintenance personnel, the approval of third-party services, and the supervision and control of the maintenance process.

1. Vulnerability and risk management

Measures should be taken to identify security vulnerabilities and hidden dangers so as to evaluate and repair them.

1. Network and system security management

Establish a network and system security management system, including account management, configuration management, log management, upgrade and patch management, password cycle update, etc.

1. Backup and recovery management

The backup procedure, frequency, media, period and recovery procedures of the backup data should be specified.

1. Cyber Security incident response plan

The emergency plan should be designed to clarify the reporting, responding and recording process of different Cyber Security incidents.