Input paper: ENG16-3.1.2.10

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

**□** ARM **X** ENG **□** PAP X Input

**□** ENAV **□** VTS **□** Information

Agenda item [[1]](#footnote-1) n.n

Technical Domain / Task Number 2 ……WG2………………

Author(s) / Submitter(s) ……CHINA MSA……

Suggestions on Training the Maintainer of AtoN for Bridge

# Summary

According to the ENG Committee work Plan (2018-2023), task 4.1.1 on the development of new courses related to AtoN is under development. Up to now, IALA Global Academy has built up a number of courses, including the Level 1 course for AtoN managers and the Level 2 course for AtoN technicians. By now, the Level 2 course did not cover the training for bridge AtoN maintenance work. Thus, China MSA would like to suggest that adding a section of training technicians for maintaining AtoN for Bridge to Level 2 module course, so as to ensure the safety of bridges and navigable ships.

## Purpose of the document

Provide information on the practice of China MSA on the maintenance of AtoN for bridge and invite the Committee to evaluate the necessity and rationality of training the maintenance personnel.

## Related documents

S1050-Training and Certification;

R0141-Training and Certification of Marine AtoN Personnel;

G1020-Training Related to AtoN.

# Background

AtoN for bridge include buoys, pier warning signs, AtoN for bridge truss, etc. There are many bridges across water with AtoN .  Among them, the maintenance of bridge girder AtoN and their ancillary facilities is significantly different from that of conventional floating marks and fixed marks. So, maintainers need to have some special knowledge and ability, maintenance work facing some special requirements.

At present, maintainers of AtoN for bridge are in needs of necessary and uniform training.  The knowledge and skills mastered by ordinary AtoN maintenance is not enough for maintenance work of AtoN for bridge. To reduce risk and improve the quality of the maintenance work in this case, and for the safety of the bridge and ships within the bridge area, we advice regular training.

# Discussion

## The particularity of the maintenance of AtoN for bridge

With the development of road traffic, various sea-crossing and river-crossing bridges have been built one after another. Some bridges have changed the surrounding navigation environment of the waters, causing risks to maritime traffic. It is necessary to set up AtoN for cross-sea and cross-river bridges to ensure maritime safety. It is also very important to carry out the maintenance work to the AtoN for bridges to ensure the normal performance of navigation.

There are many constraints in carrying out AtoN maintenance operations on bridges, especially in railway bridges and highway bridges, where personnel, vehicles, and equipment’s access and maintenance operations are under stricter restrictions. The maintenance of AtoN for bridge is very different from the ordinary maintenance work. Firstly, this work cannot be completed independently by single department in many cases and requires the cooperation of multiple stakeholders. There are specific requirements for operation time. For railway bridges, the works need to be operated at night, the time window is short, and the on-site environment is bad. Secondly, the maintenance operation of AtoN for bridge is a high-altitude operation, and the space is narrow. Thirdly, most of the AtoN for bridge are powered by municipal power, which needs the maintenance personnel to have specific qualifications, including qualifications for high-altitude operations and electrician operation. In addition, the supporting facilities of AtoN for bridge also include power supply system and data transmission system, so maintenance personnel also need to master relevant knowledge and skills.

## 3.2 The practice of China MSA to carry out the maintenance of AtoN for bridge

The navigation service department under China MSA is responsible for the maintenance and management of several railway and highway bridges AtoN for bridge. In view of the particularity of the maintenance of these signals, they have adopted some targeted management measures and technical means. Taking the Fuzhou Aids to Navigation Department of Eastern Navigation Service Center as an example, they set specific job qualifications, select suitable members to form a special maintenance team, and carry out targeted training, such as training at heights, electrician operation training, road traffic regulations and system training, safety operation skills training, etc. Fuzhou Aids to Navigation Department has formulated a guideline for the maintenance of AtoN for bridge and standardize various operating procedures. They have established an effective communication and collaboration mechanism with road management departments (such as railway companies or highway companies), traffic police departments and other stakeholders. In addition, temporary operating platforms, lighting equipment, safety protection equipment, operating tools and other targeted equipment have been configured for maintenance people.

The maintenance work mainly includes routine inspection and fault repair. Maintenance people should check the sign, structure, lighting, energy system, telemetry equipment, radio equipment and other parts of the lights and signs one by one, then focus on cleaning the operation area after they complete the operation, to avoid potential safety hazards caused by leftovers to road traffic. After the maintenance work is completed, the maintenance personnel shall timely update the files and the data of the telemetry monitoring platform.

## 3.3 The abilities and qualities that should be possessed by bridge AtoN maintenance personnel

3.3.1 Physical and mental quality

The maintenance of AtoN for bridge is usually constructed on the bridge, the distance between the operation platform and the water surface is high. Also, the operation space is narrow, and there are vehicles passing on the bridge, so the operation time is limited, especially for the railway bridges, they can only be operate at night. Therefore, the maintenance personnel should have good physical quality, adaptability and psychological endurance. Therefore, the maintenance personnel should have good physical quality, adaptability and psychological endurance. People with high blood pressure, heart disease, fear of heights or poor psychological quality should not engage in this work.

3.3.2 Skill of aloft work

Maintenance personnel should have high working skills and be trained and certified by professional organizations.

3.3.3 Electrician operation skills

AtoN for bridge generally use municipal power as energy, so maintenance personnel need to be trained and certified by professional institutions.

3.3.4 Knowledge of AtoN for bridge

Maintenance personnel need to master relevant rules, such as the structure and energy allocation of AtoN for bridge, bridge telemetry system and other aspects of knowledge.

3.3.5 Safety regulations

Maintenance personnel need to master the laws and regulations of the road management authorities and traffic police department on bridge operation.

# PROPOSAL

The following proposals would like to be put forward to the Committee:

1. consider the necessity and rationality of training the maintenance personnel of bridge AtoN;

2. evaluate the rationality of the abilities and qualities that the bridge AtoN maintenance personnel should possess which mentioned in section 3.3.

3. develop modular courses for the training of maintainer of bridge AtoN.

# Action requested of the Committee

The committee is invited to take consideration of above proposals.

1. Leave open if uncertain [↑](#footnote-ref-1)