IALA GUIDELINE G1109

Acts of Vandalism and Assaults: a major threat to the AtoN

The optimal operability and full availability of the AtoNs is crucial to guarantee the safety of navigation. For this reason, acts of vandalism and theft of components committed at AtoN facilities compromise their good condition and correct operation, increasing the risk of incidents and, therefore, threatening maritime safety. From the MSM ACADEMY our main objective is the training of the colleagues from aids to navigation sector, to increase the efficiency and safety of maritime and river navigation worldwide. **IALA Guideline G1109** recommends protection and deterrent elements, but **at MSM we want to give special importance to education programs that prevent these incidents from occurring by involving the local population.**

Main strategies for deterrence: Education and Design

At MSM, as specialists in the aids to navigation sector, we believe that making the maritime community aware of the importance of AtoNs and the consequences that can be triggered due to their inoperability is essential to deter acts of vandalism and partial or total theft. On the other hand, as manufacturers of aids to navigation we consider design as a great ally to prevent this threat, and integrating elements conceived to protect the different equipment from the first design stage of the AtoN can be highly effective.

IALA Guideline G1109: Methods for the prevention of theft and vandalism

The **IALA** has also established a series of strategies and recommendations to prevent AtoN facilities and equipment from being assaulted and to continue to function properly to maintain navigation safety.

Torrevieja (Alicante)

1- ACCESS CONTROL TO ATON FACILITIES

To prevent potential criminals from accessing AtoN facilities, **perimeter fences** can be set up to restrict access to lighthouses or weather stations, hiring **security personnel**, installing **alarms, locking arrangements** (special padlocks, tamper-proof screws), considering accessories such as **ladders to be removable,** or incorporate **elements that make difficult to climb** a structure or fence.

2- DESIGN

During the design process of AtoN equipment, elements, mechanisms, and concepts can be integrated to protect them from possible acts of vandalism, without compromising the operation of the equipment. **Camouflaging the batteries** trying to make them as inconspicuous as possible, the use of **tamper-proof screws** that require special tools to remove them, **structures that protect the solar panels** from potential theft, or the **design of buoys** that prevent unauthorized access, are some of the measures that can be taken into account when projecting the design of an AtoN.

Remote monitoring

3- REMOTE MONITORING, SURVEILLANCE, AND SIGNAGE

Technology also provides new measures to stop this threat by **monitoring remote areas,** allowing us to identify when an AtoN equipment has stopped operating; Although it will be not possible to identify if this incident is the result of theft or vandalism, it can offer relevant information for further investigations. On the other hand, **video surveillance** is another deterrent measure that can work very well in areas where a fast response can be given to a possible assault. All these measures can also be reinforced with the incorporation of **warning signage** that advertises of the presence of these dissuasive systems indicating the penalties associated with certain criminal acts.

Video camera image
in real time: De la Doncella Lighthouse (Estepona)

Battery enclosure with anti-vandal security locks and built-in solar panels

4 - SELECTION OF APPROPRIATE ATON EQUIPMENT

One of the main targets of theft and vandalism are energy supply systems (batteries, solar panels) since they can be reused for other applications. For this reason, it is important to **select,** as far as possible, **equipment for an AtoN installation whose design makes difficult or discourages the theft** of those components that are most interesting to assailants. In this point, for example, self-contained lanterns with integrated batteries and solar panels are usually less attractive to assailants compared to stand-alone battery modules or solar panels that can be more easily removed.

5 - THEFT DETERRENT DEVICES

In those areas where remote monitoring or surveillance is not possible, engineering solutions as **metal frames or structures can be used for securing equipment such as batteries, solar panels, and beacons,** in order to enhance protection against possible assaults.

6 - AIS MONITORING

Another way of violating the correct operation of the AtoNs comes from the unreported damage from vessels colliding with buoys and beacons. These **unreported incidents can be investigated when there is AIS surveillance in the area,** since if the offending vessel has an AIS transponder it can be identified.

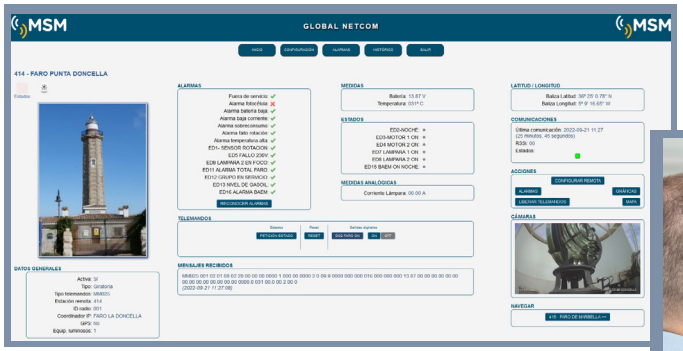
7 - PUBLIC AWARENESS AND COMMUNITY ENGAGEMENT

As we have already mentioned, the implementation of education programs to make fishing communities aware of the importance of respecting the integrity of AtoNs to their correct operation is crucial, since these types of initiatives aim to understand the consequences when AtoN are not operational due to vandalism. The case of Tanzania, which we will discuss in more detail below, reveals the improvement in the situation thanks to the implementation of these educational measures.

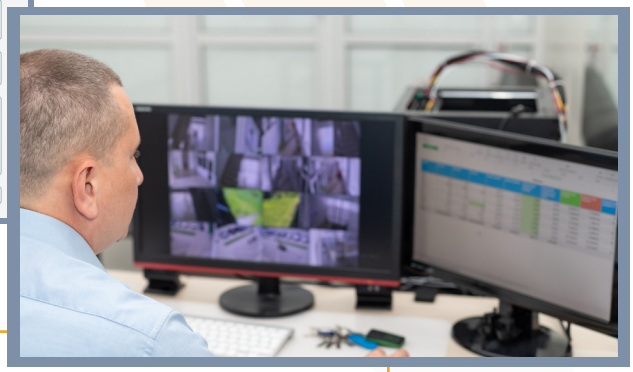
The case of Tanzania: the engagement of the fishing community with AtoN

There are many port authorities that are concerned about this issue that puts the security of their demarcation at risk, also generating a harmful impact both financially and environmentally. A good example of this can be found in

Tanzania, where the Port Authority has launched a Public Awareness and Engagement Program among local fishing communities to eradicate threats of vandalism and theft at AtoN facilities. Our Business Development Manager Anthony Parker was recently visiting one of the most important ports in Tanzania, where he could observe the good results that these educational plans have given to keep safe the aids to navigation network installed in the vicinity of the fishing community of the area, thanks to the awareness of this group about the potential consequences resulting of no operational AtoNs. Even so, these assaults continue to be one of the great challenges to be faced in other ports, that is why, after this experience, our colleague Anthony recommends that "each new Aids to Navigation project should also include a Public Engagement Program prior to installation of an Aids to Navigation network in order to minimize the impact that theft and acts of vandalism may have on the aids to navigation equipment". That is why the best preventive measure for this threat is certainly education, awareness, and engagement.



MSM Application capture, Global Netcom Monitoring and remote control of the AtoN.



Conclusion

The educational strategies among the maritime communities are highly useful and effective in eradicating the vandalism that threatens the operation of AtoN, as well as the commitment of all the parties involved in the aids to navigation sector, involving the fishing communities in the fight against this threat that compromises maritime security.

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