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The Benefits of Implementing a Central Monitoring Concept and Platforms in Ukraine

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ABSTRACT

A critical component of effective security enhancements for sites that use or store radioactive sources is the process of alarm monitoring and the associated response. Further, the use of off-site alarm monitoring may serve as an insider threat mitigation measure. Effective off-site alarm monitoring often involves connections to multiple sites and requires coordination, procedures, and training for all stakeholders. Traditionally, off-site alarm monitoring is accomplished by connecting each site to independent monitoring locations via separate contracts and duplicating the technical and training protocols and processes involved. This model has led to high sustainability costs for the system.

The U.S. National Nuclear Security Administration's Office of Radiological Security partnered with the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) to implement a "centralized" concept of alarm monitoring to leverage technology to accomplish a more robust response process, while lowering the overall costs. SNRIU was able to further leverage this capability by using information from the centralized monitoring system (CMS) to facilitate and prioritize regulatory duties. This feature is particularly beneficial for regulatory authorities with a limited number of security inspectors and a relatively high number of licensed sites with nuclear and other radioactive material.

This paper will provide an overview of the centralized monitoring concept as well as highlight some of the benefits and lessons learned with implementing this concept in Ukraine, including the following: enhancement of SNRIU capabilities to assess licensees' obligations regarding use of physical protection systems under current regulatory requirements; cost savings through economies of scale; contractual simplicity; insider threat mitigation; common method of training and procedure implementation for all stakeholders; ease of transitioning monitoring capability to a single government agency; increased coordination and relationship building among licensees, CMS, and response agency; increased probability of a timely and efficient response to an alarm event; and improved coordination and communications during an alarm event.

INTRODUCTION

While the concept of a central monitoring system (CMS) is not new and has been deployed in other countries in various ways, this paper addresses the specific dynamics and elements encountered by the U.S. Department of Energy's National Nuclear Security Administration's Office of Radiological Security (ORS) in Ukraine.

Since 2003, ORS has worked with the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) and law enforcement organizations to protect the large number of facilities that use or store high-activity radioactive sources throughout Ukraine. The bilateral cooperation between ORS and SNRIU included various levels of training on physical protection awareness, inspection of physical protection systems in a regulatory and compliance setting, implementation of ORS-funded physical protection upgrades, and response-oriented training and exercises.

A critical component of the physical protection upgrades for any site is the element of alarm monitoring and subsequent response. This provides the opportunity to broadcast alarm event information from facilities to on-site and off-site monitoring locations, adjudicate the alarms, and initiate a timely and adequate response to interrupt and neutralize any potential attack or unauthorized source removal from target sites. The ORS implementation process had the flexibility to recommend where each site is being monitored given a specific combination of on-site and off-site resources.

In an ideal situation, ORS would identify the appropriate law enforcement entity that would monitor, assess, and dispatch an appropriate response for all target facilities using alarm notification complemented by a video assessment capability, usually provided via an alarm management platform.

In Ukraine, this presented a challenge for a couple of reasons: 1) the large number of facilities that needed to be protected and monitored and 2) the regional compartmentalized structure of the National Police with jurisdiction to monitor and respond to alarms within individual regions. There are 27 oblasts (counties or regions) that operate independently and contain their own emergency monitoring and dispatch centers (equivalent to 911 in the United States or 112 in Europe).

While ORS still needed to connect each site to their corresponding local police monitoring station, the concept of providing a dedicated video assessment capability at each oblast dispatch location was not realistic and was cost prohibitive. An alternative solution was needed to bridge the lack of local National Police video assessment capability in one unified national platform.

SNRIU CENTRAL MONITORING SYSTEM

SNRIU agreed to host and operate such a monitoring platform at the same 24/7 location used to monitor other SNRIU operations. The subsequent ORS contract, installation, integration, deployment, and operation of this platform over a number of years formed the basis for most of the findings and conclusions in this paper.

Ultimately, there were three locations where an alarm event would be sent for any given site: the on-site central alarm station (CAS) operated by on-site security or facility staff; the local

dispatch center managed by the National Police via a subscription service; and the SNRIU CMS managed by SNRIU personnel. All locations are monitored 24/7/365.

The on-site CAS is only able to receive and assess alarm notifications and corresponding video from its own site, the National Police dispatch center can receive notification alarms without video from multiple sites in their region, and the SNRIU CMS is able to receive both alarm notifications and video from all sites in Ukraine.

ENHANCED RESPONSE COORDINATION AND COMMUNICATIONS

While the site is equipped with a CAS and can provide additional information to the police, the introduction of that capability at the SNRIU level adds credibility to information provided to the police from that location prior to and while the response is under way.

This can potentially provide actionable information to police prior to arriving on site, adversary characterization and movement, and containment as well as efficient and safe movement by police officers during the corresponding on-site event.

With the communication channels now opened, the National Police can communicate with SNRIU to request additional information and SNRIU can ensure that the National Police has initiated a response and determine if they need assistance.

INSIDER THREAT MITIGATION

One positive aspect of introducing a CMS with video assessment capability is the insider risk mitigation. Both site employees and the police responders know that alarms are being assessed at the SNRIU location and that anything suspicious will be investigated. One example would be a case of employees gaining access to facilities outside of normal business hours.

COMMUNICATION REDUNDANCY

The communication methods and formats are different for the CAS, National Police, and SNRIU CMS. This allows for redundancy in case any of the three fail or are attacked, decreasing the probability of total communication failure.

SIMPLIFIED AND UNIFORMED TRAINING OF DISPATCHERS

In a scenario where multiple off-site monitoring centers have to be deployed or contracted, the process for training and need for uniformity becomes more complex and more difficult to assure. This can also add to the overall contract management cost, requiring additional site visits, engagement, and corresponding documentation such as deliverable reports for each location.

With one central site this becomes more manageable and in the case of SNRIU we know they are already employing highly trained personnel at the CMS location.

REMOTE INSPECTION AND SITE INSPECTION SELECTION TOOL (SNRIU)

One of the more unexpected advantages of the CMS was quickly identified by SNRIU after operating for a number of months. SNRIU has limited funding and physical protection inspection personnel but they are responsible for more than 60 facilities around Ukraine.

Previously, the inspectorate employed a rotation or random process of selecting the sites they would travel to given that they only have the funds to travel to a limited number of sites per year. With the introduction of the CMS platform they can now leverage the data provided by the system to identify where compliance gaps may be more likely to occur. They can initially engage the site remotely via correspondence and later include sites that appear to have more challenges in the list of sites they would physically visit.

This new tool became a force multiplier for SNRIU, allowing them to monitor events and better understand the state of each site without necessarily traveling there.

TRANSITION-READY

While the fully centralized National Police location is not yet available, this platform can be easily moved to any location where the right communication and power infrastructure is available and at a minimal cost. This concept can apply to any country where the one government or law enforcement location has not yet been identified or confirmed.

SNRIU CMS CONTRACT SIMPLIFICATION

The contracting aspect was relatively simple as it targeted just one statement of work with maintenance and warranty for the SNRIU monitoring facility only. Additionally, we included verbiage for each site that had to be monitored to link to this platform as well.

A previous alternative would have been to seek private monitoring companies in various oblasts and contract with them individually for the sites that would be in their jurisdiction or service areas. This would add layers of contract and contract management labor.

CONCLUSION

The specific response dynamics encountered by ORS in Ukraine reflected how a CMS can complement and potentially enhance response, even with specific jurisdictional and technological limitations. This project also provided insight into how effective a CMS could be in other countries or regions, where the above limitations might not exist or are removed, with the response agency managing all aspects of monitoring, alarm assessment, alarm dispatch, and real-time management and coordination of the response event.

In the Ukraine case we know that response effectiveness and interagency coordination has improved based on ORS observations and feedback from the response stakeholders. Additionally, communication and cooperation between SNRIU and the National Police has

increased significantly because of this project and the operational presence/use of the integrated CMS/alarm management systems.

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