

Paper No. 3026 **Implementing Specialist Security and Resilience
Arrangements for UK Material
Consolidated Transports**

Author: Mr Ben Whittard

Head of Security & Resilience
International Nuclear Services
Risley, Warrington
Cheshire
United Kingdom

Abstract (submitted by Mr Matt Fox, former Head of Security & Resilience)

Regarded as the world leader in the maritime transport of specialist nuclear cargos, International Nuclear Services (INS) has recently been working with the Civil Nuclear Constabulary (CNC) and its partners to safely deliver a number of high profile, Category I and Category II transports of Specialist Nuclear Material (SNM), by road, rail and sea in support of the UK's commitments at the 2014 Nuclear Security Summit.

Working with the CNC, Ministry of Defence Police, Sellafield Limited and Areva NC, INS led the successful road transport of SNM from an academic research reactor in Oxfordshire to the Sellafield site in Cumbria.

In respect of CAT I transports, INS and its partners supported a CAT I multi-modal transport in Scotland before completing the maritime leg to Cumbria and then led the final phase by rail, utilising Direct Rail Services to safely transfer the material from the ship to the Sellafield site.

This paper examines the work that INS, CNC and its partners undertook to plan and execute these specialist road, rail and sea transports with the aim of supporting global threat reduction and making the world a safer place.

It will discuss the ways in which INS and its partners integrate the International Atomic Energy Agency (IAEA) requirements of safety and security and works with key stakeholders and regulators, in order to ensure strict compliance with regulations.

Finally, the paper will cover the specialist emergency response and communications arrangements that the company and CNC put in place to truly deliver these Category I and II shipments for its customers in order to reduce the overall nuclear threat.

Introduction

Regarded as the world leading maritime transporter of specialist nuclear cargoes, International Nuclear Services (INS) has over 40 years' experience of safely and securely delivering Category I transports of nuclear materials with pride. In doing so, INS has worked in close cooperation with its key partners to develop a unique and specialist expertise in security and resilience. These high security, and often politically sensitive shipments, require the highest level of integrity, quality and cooperation; all of which INS deliver with the highest levels of expertise.

Over more recent years, INS has successfully completed a number of Category I transports of nuclear material in support of United Kingdom's (UK) consolidation activities; these transports were conducted in support of the UK's commitments made at the Nuclear Security Summit. More generally, INS has carried out a number of non-UK transports¹ of Category I nuclear materials in support of wider global threat reduction initiatives, making the world a safer and more secure place. These specialist transports involve extensive planning and cooperation with a range of stakeholders to ensure that they are completed with the highest levels of safety, security and resilience. Working closely with Government departments, fellow duty holders and a range of key supporting partners, INS has played a key role in the successful delivery of these transports and has cemented itself as the world's leading maritime transporter of specialist nuclear materials.

In support of this work, in 2014 INS established a dedicated Security and Resilience (SAR) Directorate that is responsible for managing and executing these important activities. This paper serves to describe the role and activities of SAR Directorate in the planning and execution of these transports and will discuss the interfaces and supporting activities that are completed to deliver this function. In doing so, it will consider international 'good practice' and discuss the role of the UK competent authority, the Office for Nuclear Regulation (ONR), and other key transport partners. Finally, it will discuss the synergies between security and resilience, and outline that they are never mutually exclusive and that working in harmony only serves to strengthen and improve these key transport enablers.

Security Arrangements

As an approved Class A carrier within the UK, INS is required to comply with the legal requirements of Part Three of the Nuclear Industries Security Regulations (NISR) 2003². These regulations incorporate the recommendations of the International Atomic Energy Agency's (IAEA) INFCIRC/225 Revision 5 and other supporting guides³, and ensure the UK's obligations under the Convention for the Physical Protection of Nuclear Materials (CPPNM) are fulfilled. The NISR 2003 is underpinned by a number of supporting regulatory documents, most notably the National Objectives, Requirements and Model Standards (NORMS) document that sets the regulatory objectives that are to be met for each transport of nuclear material and details a number of prescriptive requirements which approved carriers are to comply with. Failure to comply with these regulations is an offence under UK law and is punishable by imprisonment or fine.

¹ <http://www.innuserv.com/2016/03/ins-plays-another-key-role-in-international-non-proliferation-mission/>

² <http://www.legislation.gov.uk/uksi/2003/403/contents/made>

³ A range of IAEA guidance documents can be found at www.iaea.org

In line with these regulations and standards, all INS assets are designed with highest levels of security and incorporate a range of physical, technical, procedural and human security measures. All of the key principles of protective security including the 'graded approach', 'defence in depth' and 'need to access' are reflected in these arrangements and the security measures adopted are 'outcome-based' and quantitatively underpinned where possible. Further to this, the determination of trustworthiness of all seafarers is carried out using the UK's security clearance process and this process continues to monitor those with security clearances using an aftercare programme involving annual security appraisals. All transports of Category I nuclear materials are monitored by a Transport Control Centre (TCC) that is operated 24 hours a day. This TCC has the ability to communicate securely with the vessel(s) and is responsible for monitoring its progress against a transport schedule and for responding to any incident or duress signals. This centre is linked directly into the Integrated Emergency Response arrangements described later in this paper.

INS' strategic partner, UK's CNC Strategic Escort Group (SEG) provide a dedicated and specialist armed escort service during transports of Category I nuclear materials and has worked with INS for many years to safely and securely deliver sensitive nuclear materials. To put this into some perspective, between 2010 and 2014 the CNC SEG covered some 61,000 miles in four years escorting sensitive nuclear materials with INS⁴. All CNC SEG officers are authorised firearms officers in line with the UK's College of Policing guidelines and undergo continuous maritime specific training with the UK's Royal Navy. This, together with a robust and routine exercise programme, ensures that the skills and tactics utilised by the CNC SEG are continually developing and of the highest level. This unique and mature partnership is a testament to the UK's unique capability to safely and securely transport nuclear materials world-wide, making the world a safer place.

In addition to the training of each individual officer, INS in conjunction with its partners at the CNC, routinely carry out Maritime Integration Training (MIT). This training ensures that the ship's crew and CNC escort team work in collaboration with one another to monitor the maritime surface picture, detect unusual craft behaviour and potential threat actors, defend the safety and security of the vessel and, if necessary, deny access to the vessel and its material. The MIT can take place at sea or alongside via the use of a 'fast-cruise' which mimics the watch patterns and activities whilst at sea. The interoperability of the crew and its escort is vitally important to ensure that potential threats are identified and responded to in a timely manner. This interoperability is subsequently demonstrated in front of the ONR and the Royal Navy to provide independent scrutiny and oversight.

The planning of each transport of Category I nuclear materials involves a significant amount of cooperation with a range of stakeholders including local Police constabularies, emergency services, logistical organisations and port companies. This close cooperation ensures the continued safety and security of the material at all times, ensuring that roles and responsibilities are clearly defined and that any hand over of security responsibility between approved carriers is understood and documented. These arrangements are reflected in the Operational Order discussed later in this paper. For international transports of Category I nuclear materials, this planning phase is crucial; not least because it often involves the

⁴ <https://www.gov.uk/government/news/the-strategic-escort-group-61000-miles-in-4-years>

handover of security responsibility at the limit of territorial waters and involves the escalation/de-escalation of armed personnel. These international arrangements are captured and agreed in a formal 'Record of Discussion' (ROD) that is signed by each country involved.

In accordance with the UK's protective marking classification policy, planning information concerning the transport of Category I nuclear materials is considered Sensitive Nuclear Information (SNI) and is protectively marked as OFFICIAL SENSITIVE and/or SECRET according to the type of information concerned. This ensures that information is protected according to its impact should it be lost or compromised; for example, transport dates of Category I nuclear materials are protectively marked SECRET and thus attract the highest levels of security. The 'need to know' principle is strictly implemented when creating, discussing and sharing transport planning information without compromising the effectiveness of the planning regime. To support this, rules are agreed between stakeholders to ensure planning information is released to the public without compromising the security of the operation; whilst maximising openness and transparency where possible.

Prior to each transport of Category I nuclear material, regardless of whether it is a domestic or international transport, an operation specific threat assessment (TA) is carried out by the UK's Joint Terrorism Analysis Centre (JTAC) in conjunction with the CNC's Special Branch. This TA is used in conjunction with the UK's nuclear industry specific 'design basis threat', known as the Nuclear Industries Malicious Capabilities Planning Assumptions (NIMCA) document. Building an informed intelligence picture is an important assessment tool when planning a transport of this nature and helps understand and where possible reduce or remove risks to ensure the safe and secure completion of the transport. Should a credible threat be identified, the transport would almost certainly not proceed.

For each transport of Category I nuclear materials, INS is required to write and submit a Transport Security Plan (TSP) to the ONR for approval on behalf of the Secretary of State for Business, Energy and Industrial Strategy (BEIS). This document describes the arrangements discussed above so that an overall picture of the security regime can be obtained. This document is used by operational personnel to ensure that the levels of security described are continually implemented. INS conduct routine assurance activities against these arrangements and always conduct post-operational debriefs (both hot and cold) to ensure learning can be obtained and implemented. In addition to this, ONR also conduct no-notice inspections of INS operations providing an independent oversight.

Resilience Arrangements

In support of its transports operations, INS has a well-established and mature resilience function. This function, which used to be referred to as 'Emergency Response', is responsible for ensuring the highest levels of 'Integrated Emergency Management' (IEM), 'Business Continuity' (BC) and 'Disaster Recovery' (DR). However, in a similar vein to that between Security and Resilience, none of these disciplines can be considered in isolation and thus the term 'Resilience' is used to reflect this function.

INS utilises a number of international good practice documents to help shape and inform its Resilience plans and activities, these include the IAEA's 'Planning and Preparing for

Emergency Response to Transport Accidents involving Radioactive Material’ (TS-G-1.2)⁵, Joint Emergency Services Interoperability Programme (JESIP), the international standard ISO22301 – ‘Societal security – Business continuity management systems – Requirements’ and PAS200; A Guide to Crisis Management to name but a few. INS arrangements are routinely exercised and reviewed to ensure they remain effective and up-to-date.

Incident planning within INS is based on the agreed principles of IEM. The main principle being that emergency planning must be based upon the response to an incident and not the cause of an incident. Other key emergency planning stages include anticipate (horizon scanning), assessment, prevention, preparation, response and recovery management.

Table 1 – IEM Overview⁶

Integrated emergency management	Emergency Preparedness	Emergency Response and Recovery
Anticipation	√	
Assessment	√	
Prevention	√	
Preparation	√	
Response		√
Recovery management		√

Prior to each shipment of nuclear material, and in alignment with those planning meetings held for security purposes, a number of multi-agency planning meetings are held with the stakeholders involved. These meetings facilitate developing more bespoke emergency arrangements that may be required and result in the development of an operational specific ‘Operational Order’. These orders are designed to give the INS on-call staff at the strategic, tactical and operational level an overview of the transport and ensure the communication information of each stakeholder is shared. It ensures that overarching visibility of all the bespoke command and control arrangements are documented and understood by all involved. These procedures operate in conjunction with an Incident Response Structure that offers a 24 hour on-call rota which is described later in this paper.

The specific management procedures relating to Emergency Response and security incidents begin with the implementation of the Shipboard Marine Emergency Plans (SMEPs). These plans are held on all vessels and are approved by the Maritime and Coastguard Agency (MCA) and form part of the TSP submitted to the ONR. The SMEPs detail the initial actions to be taken and considered by the Ship’s Master in the event of an incident and cover a wide

⁵ International Atomic Energy Agency. (2002) *Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material, Safety Guide, Safety Series No TS-G-1.2(ST-3)*, Vienna, IAEA

⁶ Source – Cabinet Office (2012), Civil Contingencies Act Enhancement Programme, Chapter 1 – Introduction.

range of scenarios. Supporting these plans is the INS Emergency Response Procedures; these relate to any mode of transport and dovetail with the SMEPs for any maritime incident.

As described previously, INS has a mature and well exercised on-call structure consisting of several roles and specialisms that are designed to work with multi-agency partners within an established incident command system. It is a structured framework that ensures effective response at the appropriate strategic, tactical and operational level. The INS incident response structure has been designed to coordinate a variety of incidents and is comprised of a team of specialists who provide out-of-hours cover. A key component that supports the INS response structure is embracing the principles of the UK's Joint Emergency Services Interoperability Programme (JESIP)⁷, Joint Decision Model.

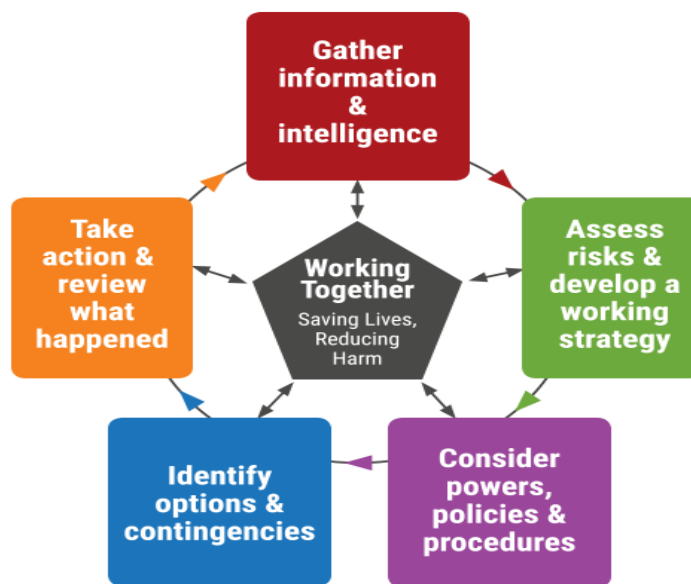


Figure 2 – JESIP, Joint Decision Making Model

The JESIP Joint Decision Making principles are adopted at a tactical level by the INS Duty Incident Manager (with support from their tactical advisors) and contextualised to the organisational requirements to ensure the appropriate response is executed.

What keeps INS resilience arrangements at the forefront of the industry are the external contracts they have in place with specialist third party providers. These include, Nuclear Engineering Services Company (Japan) who provide initial Emergency Response services for any of the ships in Japanese waters (from limit of EEZ). Each year at least one exercise is carried out in order to test and validate the ability of their teams to respond to an incident on board one of the ships, this relationship has been in place for over 20 years.

⁷ Source: - JESIP, Joint Decision Making Model (2015).
<http://www.jesip.org.uk/joint-decision-model> [Accessed 20 July 2016].

Ardent is employed to assist and provide expertise on any salvage related issue during pre-planning, response or recovery phases. Again, an annual exercise is carried out to test communications and capabilities. Ardent also maintain a number of equipment boxes on behalf of INS. These boxes carry equipment that may be sent to the scene of any incident to augment the Emergency Response equipment carried on the ships (if required). There are several of these strategically located around the world close to the major shipping routes that are used.

Team emergency transport requirements are provided by a dedicated air transport provider. They organise transport for response teams to anywhere in the world and have access to scheduled and private charter aircraft and helicopters. Annually, INS test their capabilities by requesting a transport schedule to a notional incident anywhere in the world. This year INS requested them to transport a team of six from INS Headquarters (HQ) to a remote island based off a coastal mainland. This no notice exercise on the day would have given us an arrival time for the team and equipment of just under six hours.

The assurance and validation of INS's security and resilience arrangements to ensure they are fit-for-purpose comes from executing an annual training and exercising programme. Over the annual period INS designs and delivers bespoke training and exercises to key stakeholders to ensure they remain competent and that the arrangements they have in place are designed to meet the required standards. Any learning from exercises is fed into the 'Learning from Experience' (LFE) system. This ensures that learning is recorded and tracked until tasks have been completed; LFE from exercises is audited annually.

Conclusion

The Security and Resilience arrangements completed prior to, during and after a transport operation are key enablers to the safe and secure delivery of nuclear material whilst in transport. In using the approach described, INS has consistently completed multiple Category I transports over the past four years with the highest levels of safety, security and quality to help deliver a number of important domestic and international consolidation programmes in support of commitments made at the Nuclear Security Summit. With the support of its key partners, particularly the CNC, the successful completion of these transports further strengthens INS's position as the world's leading maritime transporter of specialist nuclear materials.

In reading this paper, you will note that the synergies between security and resilience are such that they cannot be treated in isolation. To do so, in INS's experience, only serves to reduce the effectiveness of your transport arrangements. Whether it be contingency planning, the establishment of an effective command and control structure or actually responding to a real world incident, security and resilience as disciplines and the synergies that exist must be dealt with together. INS has found that an integrated and holistic approach to Security and Resilience through the creation of its SAR Directorate has been fundamental in ensuring that INS maintain the highest safety and security standards in all aspects of planning, preparation, response and recovery. By having a structured approach to both Security and Resilience disciplines INS have ensured that effective assurance measures and mechanisms continue to be fit-for-purpose.

Moving forward, INS will look to further strengthen this link by further exploring cross pollination of skills within the SAR Directorate, creating an environment where security and resilience is inherently resilient within the organisation to support future transport activities and allow for further synergies between these two disciplines to further integrate and strengthen.

Acknowledgments

INS would like to thank the IAEA, the UK Government (and in particular the Civil Contingencies Secretariat (CCS)), the Civil Nuclear Constabulary (CNC), the Office for Nuclear Regulation (ONR) and the Nuclear Decommissioning Authority (NDA) for their expertise and support in driving the safety and security for transporting nuclear materials, making the world a safer place.

References

Cabinet Office (2012), *Civil Contingencies Act Enhancement Programme, Chapter 1 Introduction, Revision to Emergency Preparedness*. [online] UK Cabinet Office. Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61024/Chapter-1-Introduction_amends_16042012.pdf [Accessed 20 July, 2016].

Civil Contingencies Secretariat (2015) JESIP – Joint Decision Model. [online]. Civil Contingencies Secretariat. Available at: <http://www.jesip.org.uk/joint-decision-model> [Accessed 20 July, 2016].

International Atomic Energy Agency. (2002) *Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material, Safety Guide, Safety Series No TS-G-1.2(ST-3)*, Vienna, IAEA.