

# **Role and Responsibilities of the Operator**

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## **Abstract**

As the world leader in the maritime transport of radioactive material (RAM) International Nuclear Service (INS) and its subsidiary, Pacific Nuclear Transport Limited (PNTL) have pioneered the standards for safe and secure transport operations.

This paper will highlight these standards from an operator's perspective and provide an overview of how the company would respond to a safety or security related incident.

In matching these standards against the national and international maritime regulations, INS will continue to lead the way on the worldwide transport of RAM thus supporting the nuclear fuel cycle and overall global threat reduction.

## **Introduction**

A previous paper presented at the International Atomic Energy Agency (IAEA) Conference on the Safety of Transport of RAM (Fox, 2003) [1] covered the PNTL emergency response arrangements from both a conventional and radiological safety perspective. Similarly, (Booker & Barnwell, 2004) [2] covered both the national and international security requirements associated with these high profile transports in their paper to the International Symposium on the Packaging and Transport of Radioactive Materials.

As the most experienced maritime carrier of RAM, INS and PNTL has the challenging role of balancing these safety and security requirements and have been doing so, successfully, for over 40 years. During this time the transport fleet of specialist INF Nuclear Fuel Carriers [3] has covered over five million miles without a single incident resulting in the release of radioactivity, the company has a safety and security record second to none.

In the unlikely event that a serious safety or security related incident were to occur during a voyage then INS would initiate its dedicated incident management arrangements and work in partnership with the relevant authorities to both respond and recover in a swift, combined and co-ordinated manner.

## **Safety Framework**

In order to operate the fleet, INS is required to meet the safety obligations set out in the following:

- ISM Code – International Safety Management Code [4]
- IMDG Code – International Maritime Dangerous Goods Code [5];
- INF Code – The Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships [3];
- Regulations for the Safe Transport of Radioactive Material [6]; and
- Planning & Preparing for Emergency Response to Transport Accidents Involving RAM [7].

The ISM Code requires INS / PNTL to have a safety management system that is approved and audited by the Maritime and Coastguard Agency (MCA) as the UK Administration and safety regulator. All transport operations are carried out in accordance with the safety management system and where security issues could impact upon the safe operation of a vessel or the safety of the crew then discussion would be held between the MCA and the Office for Nuclear Security (ONR) as the UK nuclear security regulator. Any changes to the safety management system or formal dispensations such as changes to the operation of the Automatic Information Systems (AIS) would be agreed between both regulators before being implemented by INS as the carrier and operator of the vessel.

The IMDG and INF Codes set out the safety obligations that must be met by INS / PNTL for every voyage involving an INF cargo and also covers a link to the security requirements defined by UK as the Flag State.

The IAEA Safety Regulations re-enforce the safety requirements imposed by the member States and again, these are administered by the UK Department for Transport (DfT) Radioactive Materials Transport Division (due to become part of ONR) and the MCA.

## **Security Framework**

In the same way as safety, INS is required to meet a number of key security obligations in order to operate the fleet, these include the following:

- ISPS Code – International Ship and Port Facilities Security Code [8];
- Nuclear Industry Security Regulations 2003 [9]; and
- Anti-Terrorism Crime and Security Act 2001 [10].

The ISPS Code requirements are now administered by the UK DfT Maritime Security section (formerly TRANSEC) and are already covered by Booker & Barnwell (2004) [2].

The Nuclear Industry Security Regulations 2003 (NISR) are now regulated on behalf of the Secretary for State by the ONR (formerly the Office for Civil Nuclear Security) and are also covered in the above paper. Under the regulations INS / PNTL are regulated as a ‘Class A Carrier’ and hold transport security statements and plans that are approved by ONR. The effective regulation of NISR covers carrier, personnel, information and physical security and ensures that the UK meets its obligation under the IAEA Nuclear Security Recommendations on Physical Protection of Nuclear Facilities and Nuclear Material [11]. It also covers the

credible threats posed to RAM transports through the Nuclear Industries Malicious Capabilities Planning Assumptions (formerly the UK Design Basis Threat).

The Anti-Terrorism Crime and Security Act states that:

*'a person is guilty of an offence if he discloses any information or thing the disclosure of which might prejudice the security of any nuclear site or of any nuclear material...anywhere in the world which is being transported to or from a nuclear site or carried on board a British ship'* [10].

In relation to this section of the act a "British ship" means a ship (including a ship belonging to Her Majesty the Queen) which is registered in the UK and applies to acts done outside the United Kingdom, but only if they are done by a UK person.

With regard to the international transport of RAM, the ONR play a vital role in negotiating the arrangements for the formal transfer of security from the UK Government to the receiving or transit State. These arrangements are documented in the INS / PNTL Transport Security Plans and the actual handovers are recorded onboard.

### **Management System**

Whilst the operation of the vessels are covered by the ISM Management System (including Ship Operations Handbook, Shipboard Marine Emergency Plan (SMEP) and Ship Security Plan) the remainder of the operations including transport security and armed physical protection arrangements form part of the INS and PNTL Management System. The system is independently certified by Lloyds Register for Quality Assurance and regularly audited by the UK DfT Radioactive Materials Transport Division. The INS and PNTL system includes the Environment, Health and Safety Manual, Transport Security Statement, Transport Security Plans, Transportation Plans, transport incident response arrangements and manuals for the security and physical protection of CAT I and II material.

The two management systems dovetail to ensure a seamless response between the Captain and Crew onboard a vessel and the shore based organisations. The safety of all voyages is monitored throughout by a dedicated 24 hours, INS monitoring facility. The security of CAT I and II material is co-ordinated at a separate 24 hour, secure command centre.

### **Specific Scenarios**

Under the INF Code the INS / PNTL emergency management arrangements are required to cover a number of specific safety and security related scenarios, including acts of piracy and terrorism. This said the plans, procedures and training include a generic element to encompass the safety and security response to any incident, regardless of the cause.

In relation to security, the specific threat of terrorism and the maritime shipment of RAM was covered in the paper by Doctor Ron Smith (Smith, 2006) [12] who concluded that there was little prospect of an attack having any serious consequences.

### **Incident Response and Initial Decision Making**

In the unlikely event of a serious incident during the transport of RAM, INS / PNTL would utilise the specific management systems to respond to, and recover from, the specific circumstances. Onboard the Captain would use his Shipboard Marine Emergency Plan, Ship Security Plan and / or the physical protection arrangements to deal with the effects of the incident, be it safety or security related. This said, it should be noted that the principles of the safety of life at sea are enshrined in the International Convention for the Safety of Life at Sea (SOLSAS) [13]. Also, what could, initially be viewed as a pure safety issue (e.g. an unplanned main engine stoppage), could actually be a security issue, leaving the vessel without full propulsion. It could even have been caused by malicious intent by an 'inside' adversary, undetected by the Government's national security vetting and aftercare regime. It is therefore vital for the incident responders to accurately interpret the initial (and often limited) information available during a safety incident to quickly rule out any security related implications.

Another example of this could be a fast approaching craft (such as a rigid inflatable boat) that is failing to make its intentions known to the Captain. Again the INS / PNTL vessel would rely upon their training, experience and dedicated management systems to quickly decide if the approaching craft is a credible safety or security risk, in order to deploy the required countermeasures. At worst, and in relation to the protection of the RAM, these measures could ultimately include lethal options, in accordance with the UK rules of engagement.

### **Command and Control**

The command and control of any incident will usually start onboard the vessel with the Captain or his Chief Officer in operational command. The Captain can utilise the SMEP to alert the nearest Coastal State, the INS 24 hour monitoring facility and the designated person ashore. This in turn will initiate the INS incident management arrangements which could include the activation of the INS emergency control centre; the deployment of response teams; utilisation of media arrangements; and the strategic management cell, in accordance with the integrated emergency management approach adopted by INS [14]

In terms of international assistance then the nearest Coastal State would take primacy in accordance with the International Convention on Maritime Search and Rescue (SAR) [15].

The INS / PNTL response to the incident would be managed by the duty Incident Manager, with strategic aims and direction from the INS Duty Director. From a conventional safety perspective the Incident Manager would be able to call upon dedicated support including ship management experts, naval architects and a team of salvage masters.

In the extreme event that the incident included radiological implications then INS would be able to utilise the skills and experience of a team of dangerous goods advisors, package engineers, licensing and design authority staff, and health physical professionals.

If the incident had security implications then the ONR duty officer would be informed and the secure command centre could be utilised to provide support from the UK Government and the Ministry of Defence in terms of the national security arrangements and military aid to a UK flagged vessel.

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The ONR could also request international security assistance from other member States in accordance with the Convention for the Protection of Nuclear Material [16].

### **Training and Exercising**

The INS / PNTL safety and security arrangements have evolved over time to take account of previous experience and the ever changing, national and international, requirements. All plans, procedures and personnel are continuously tested through a programme of training and exercise activities. This programme forms part of the planning cycle (Fox, 2004) [17] and includes live scale, desk top, seminar and control post activities. In a similar manner to the management systems, this programme of activities can be witnessed and audited by the MCA, DfT and ONR.

### **Prior Notification**

INS has a number of legal obligations under the INF Code, SOLAS and the International Convention for the Prevention of Pollution from Ships [18] to report a number of different types of incidents to the nearest Coastal State. These include both safety and security related incidents.

Coastal States have also raised an aspiration for Shipping States such as the UK, France and Japan to enter into voluntary or regulatory prior notification of the transport of RAM. Their main argument has been that they require prior notification of shipments of RAM in order to properly prepare their arrangements for the response to an accident or emergency.

All States face the risk of some form of transport hazard in the same way that they are all at risk of the deliberate release of radiological or nuclear material. In accordance with the fundamental principles of Integrated Emergency Management their emergency response agencies should therefore be adequately prepared to respond to any transport or radiological incident regardless of the cause.

The issue of prior notification was covered in more detail at the 2003, Safety of Transport Conference [19] and the IAEA and Shipping States should continue to resist these requests for notification of shipments in advance.

### **Conclusion**

In order to maintain its lead in the world wide transport of RAM, INS as an operator, faces a number of unique challenges created by balancing the national and international safety and security obligations. It is only by working in partnership with its customers, partners, regulators and stakeholders that INS will continue to pioneer these standards.

Whilst extremely proud of their heritage and reputation it is important to note that INS and PNTL are committed to the continuous improvement of their safety and security culture thus supporting the nuclear fuel cycle and the wider global threat reduction programme [20].

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**Further Reading**

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International Nuclear Services	<a href="http://www.innuserv.com">http://www.innuserv.com</a>
Pacific Nuclear Transport Limited	<a href="http://www.pntl.co.uk">http://www.pntl.co.uk</a>
Nuclear Decommissioning Authority	<a href="http://www.nda.gov.uk">http://www.nda.gov.uk</a>