

SHIPMENT SECURITY UPDATE - 2003

John Patterson
Site Transportation Services
NAC International
227 Gateway Drive
Aiken, SC 29803
USA

and

Catherine Anne
Site Transportation Services
NAC International
3930 E. Jones Bridge Road
Norcross, GA 30092
USA

ABSTRACT

At the 2002 RERTR, NAC reported on the interim measures taken by the U.S. Nuclear Regulatory Commission to enhance the security afforded to shipments of spent nuclear fuel. Since that time, there have been a number of additional actions focused on shipment security including training programs sponsored by the U.S. Department of Transportation and the Electric Power Research Council, investigation by the Government Accounting Office, and individual measures taken by shippers and transportation agents. The paper will present a status update regarding this dynamic set of events and provide an objective assessment of the cost, schedule and technical implications of the changing security landscape.

Introduction

At the 2002 RERTR, NAC International reported on the interim actions taken by NRC to enhance security following 9-11. The assessment of the adequacy of security applied to the shipment of spent fuel and radioactive contents has continued since that time. The regulatory framework for transport of spent nuclear fuel in the United States is contained in the US Code of Federal Regulations, Title 10 for the Nuclear Regulatory Commission (NRC) and Title 49 for the Department of Transportation (DOT). NRC security upgrades were promulgated in 2002 as a set of interim measures to be implemented pending rule making. In 2003, formal changes to the DOT Title 49 regulations have been promulgated dealing with security for hazardous goods shipments including route controlled quantities of nuclear material. In addition, a number of studies, investigations, and international meetings have been held to establish a general standard for shipment security.

Nuclear Regulatory Commission

The Nuclear Regulatory Commission (NRC) continues to impose the security requirements of 10CFR73, augmented by Interim Compensatory Measures (ICMs) promulgated in 2002. The 10CFR73 regulations are available to the public while the ICMs remain safeguarded information accessible only to those with a need to know. The 10CFR73 regulations include such factors and notifications, communications, and escorting requirements imposed on spent fuel shipments.

Department of Transportation Regulations

In contrast to the approach taken by the NRC, the Department of Transportation (DOT) has been very open in its approach to transportation security enhancement. The process and requirements have been given a high public visibility. In 2003, DOT promulgated HM-232 Hazardous Materials Security Regulatory Requirements (Final Rule (68 FR 14510) Effective Date: March 25, 2003). The specific wording of the new requirements can be obtained over the internet by accessing the Federal Register internet site. There are three elements to the new requirements:

Security Awareness Training Requirement (49 CFR Section 172.704(a)(4))

Each hazmat employee must receive training that provides an awareness of security risks associated with hazardous materials transportation, and methods designed to enhance transportation security. Training must be provided by the hazmat (or Dangerous Good) employer no later than the date of the first scheduled DOT recurrent training given after March 25, 2003, and in no case later than March 25, 2006.

Security Plans Requirement (49 CFR Part 172 *new* Subpart I)

By September 25, 2003, each hazardous materials shipper and each hazardous materials transporter that is subject to DOT Shipper/Carrier Registration Requirements (49 CFR Section 107.601) must develop and adhere to a Security Plan for hazardous materials in accordance with Section 172.802. Any shipper and/or carrier of a select agent or toxin regulated by the Centers for Disease Control and Prevention under 42 CFR Part 73, is also subject to DOT Security Plan Requirements.

In-depth Security Training Requirement (49 CFR Section 172.704(a)(5))

By December 22, 2003, each hazmat employee of a shipper/carrier required to have a Security Plan in accordance with Part 172 Subpart I, must be trained concerning the Security Plan and its implementation (Security Plan Implementation Training).

These Security Plans addressed by the regulations include the following elements:

- A ***Risk Assessment*** to determine possible transportation security risks for shipments of hazardous materials.
- ***Personnel Security*** to “confirm information provided by job applicants hired for positions that involve access to and handling of the hazardous materials covered by the security plan.”
- ***Unauthorized Access*** to indicate measures taken to reduce the “risk that unauthorized persons may gain access to the hazardous materials covered by the security plan.
- ***En Route Security*** to ensure the security of “hazardous materials covered by the security plan en route from origin to destination, including shipments stored incidental to movement.”

In addition to these measures, DOT has initiated a series of research programs to look at more advanced measures for assuring security of transportation. NAC participates in one of these programs under the National Consortium on Safety, Hazards, and Disaster Assessment for Transportation Lifelines directed at use of remote sensing (aerial, satellite, active and passive transmission) applied to shipment planning, accident assessment, and emergency response.

DOT has been very proactive in dealing with the new requirements. A Web based training program has been made available to shippers, carriers and receivers of hazardous waste called HAZMAT Transportation Security Awareness Training. In addition, checklists for each have been provided. Copies of the three checklists are shown below.

Security Checklist for the Shipper of Hazmat



U.S. Department of Transportation
Research and Special Programs
Administration

Question	Response	Recommendation
Hazmat Storage and Handling		
1. How are hazardous materials secured?		
2. Does your company protect hazardous materials using alarms and/or other security systems?		
3. How are unauthorized personnel restricted from area?		
4. How are untrained personnel restricted from the area?		
5. What records are maintained to inventory hazmat?		
6. How often is the inventory audited?		
7. What is the reporting procedure if material is missing from the inventory?		
8. Do your employees have a checklist for packaging and transferring hazmat?		
9. Do they use the checklists effectively?		
10. Does your company implement routine security inspections?		

Security Checklist for the Carrier of Hazmat



U.S. Department of Transportation
Research and Special Programs
Administration

Question	Response	Recommendation
Hazmat Transportation and Handling		
1. How are vehicles with hazardous materials secured?		
2. How are unauthorized personnel restricted from the area?		
3. How are untrained personnel restricted from area?		
Training and Personnel		
4. How are your drivers/operators trained?		
5. How are your maintenance people trained?		
6. How are training records kept?		
7. How do you verify that personnel meet all federal requirements for handling and transporting hazmat?		
8. Are personnel trained in inspecting packages and recognizing suspect packages prior to accepting them for shipment?		
9. Are all personnel trained in recognizing and dealing with aberrant behavior?		
10. Are drivers/operators trained in marking, labeling, placarding, and packaging requirements?		
11. Are employee background checks being conducted?		
12. Are background checks periodically reviewed and/or updated? How often?		

Security Checklist for the Carrier of Hazmat

Question	Response	Recommendation
Carrier Safety		
13. Do your operators/drivers carry the proper identification?		
14. What procedure do you have to verify if your operator/driver is authorized to carry hazmat?		
15. How is the equipment checked for safety?		
16. Are security spot checks of personnel and vehicles conducted?		
17. What monitoring and tracking equipment have you added to your fleet?		
18. What procedures are in place for safeguarding hazardous materials during en route breakdowns and/or emergencies.		
Transport		
19. Are local law enforcement familiar with what you carry?		
20. What procedure do you use to review a driver/operator's planned routes, layovers and equipment changes?		
21. How does your driver/operator verify the site is expecting a pickup or delivery?		
22. Is the driver/operator provided with a delivery point-of-contact and contact information?		
23. Do you have a way to contact the driver 24 hours a day?		
24. What procedure do you have to follow-up on the safe arrival of hazmat?		

Security Checklist for the Receiver of Hazmat



U.S. Department of Transportation
Research and Special Programs
Administration

Question	Response	Recommendation
Hazmat Storage and Handling		
1. How are hazardous materials secured and stored after receipt?		
2. Does your company protect hazardous materials using alarms and/or other security systems?		
3. How do you verify that authorized personnel are available to receive and promptly store hazmat?		
4. How are unauthorized personnel restricted from the area?		
5. How are untrained personnel restricted from the area?		
6. What procedure do you have to refuse receipt of suspect packages?		
7. How often is the inventory audited?		
8. What is the reporting procedure if material is missing from the inventory?		
9. Do your employees have a checklist for receipt and temporary storage of hazmat?		
10. Do they use the checklists effectively?		
Training and Personnel		
11. How are personnel trained?		

Security Checklist for the Receiver of Hazmat

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Question	Response	Recommendation
12. How are training records kept?		
13. Are handlers of hazardous materials trained in the recognition and disposal of suspect packages?		
14. Are all personnel trained in recognizing and dealing with abnormal behavior?		
15. Are employee background checks being conducted?		
16. Are background checks periodically reviewed and/or updated? How often?		
Receiving a Delivery		
17. What procedure do you have to verify if the carrier's delivery is expected?		
18. How is the carrier's identification matched to shipping records?		
19. How is the carrier's equipment checked for safety and security?		
Unloading and Securing Shipments		
20. What procedures do you have to verify that your hazmat is securely unloaded and stored?		
21. How do you notify the shipper on receipt of a shipment?		
22. What procedures are in place to inspect packages and shipping documents?		
23. How do you notify the shipper of missing or damaged items?		

IAEA

The IAEA has also initiated reviews of the safety and security of nuclear materials transportation. The IAEA technical recommendations will be a factor in transport of spent fuel from foreign reactor sites to the United States. The International Conference on the Safety of Transport of Radioactive Material held in July 2003 addressed a broad set of packaging and transport issues but also touched on transportation security measures. The IAEA and other United Nations bodies have developed recommended security requirements for transportation of radioactive materials. A draft of provisional security standard has been issued in June 2003. The objective of the provisional security standard is to provide international organizations and national authorities with model requirements for security to apply to consignors, carriers, consignee in order to minimize the risk of theft or other malevolent acts. Two levels of security have been defined (**activity related** – For other than Special Form - Level 1 Consignments larger than 3000A2 – Level 2 Consignments larger than 100A2 but less than 3000A2). Security measures are recommended for each level. A technical meeting to further address guidelines for security in the transport of radioactive material will be held in Vienna, 20-24 October 2003. For those that are interested the agenda and materials for that meeting can be accessed at ftp://ftp.iaea.org/dist/nsrw/Transport/TransSEC_TM25898/. Included is the draft of a TECDOC, which is the intended eventual output of the meeting.

NAC

Following NRC's issuance of the ICMs in 2002, NAC moved swiftly to put in place the enhanced capabilities. As noted in last year's presentation, the work performed by NAC under the Foreign Research Reactor returns program provided a great advantage in terms of preparedness for the additional measures. The first NAC shipment following the issuance of the ICMs, a shipment of a single cask of MTR fuel from Brookhaven National Laboratory to the Savannah River Site, provided an excellent opportunity to test our new procedures and equipment. The shipment, although officially a DOE shipment not regulated by NRC, was performed to all of the 10CFR**73** and ICM requirements. The route included parts of New York City and populous areas of the East Coast. NAC's transportation center was activated for the duration of the shipment, and all authorization, training, and procedural requirements that had been put in place were followed. NAC found the cooperation of New York City and State officials to be excellent in meeting the requirements of the new protective measures.

Following completion of the shipment, a detailed lesson learned evaluation was performed and additional upgrades to the NAC procedures were implemented. Subsequent to their implementation, NRC's Safeguards Office and Atlanta Regional Office were requested to perform an informal audit of the measures that NAC had put in place to assure they were compliant with NRC expectations. The NAC implementation measures passed muster and are now in place as approved systems. Since the NRC review, the measures have been applied to two additional shipments including one through Las Vegas, Nevada. This is particularly significant given Nevada's opposition to nuclear transport as part of its Yucca Mountain opposition.

In assessing the impact of the new requirements on shipment planning, it is our conclusion that they can be implemented within the normal planning horizon for a spent fuel shipment. Implementation of the additional requirements should not impact shipment's schedule however impact on cost is another matter with the requirements adding 5% to 10% of the shipment cost, depending on complexity.