Unique Problems Associated with Response to a Transportation Incident Overseas

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ABSTRACT
Following the completion of spent fuel loading in Argentina for shipment to the U.S., ancillary cask handling equipment was packaged for return to NAC. During transport of the equipment from the reactor to the port of departure, under control of the reactor operator, the transport vehicle overturned damaging the ISO box, IP-2 packaging and handling equipment. The incident raised issues associated with responsibility, customs, insurance, and logistics during the recovery of the equipment. The experience has relevance to businesses which lease their equipment for use in international transport.

Introduction

The safe transport of irradiated material is of utmost concern to businesses specializing in movement of high risk nuclear shipments under US and international regulations. Any incident involving transport is subject to careful investigation and deliberate follow-up action. When such an incident occurs in a foreign country, 10,000 miles from the company's engineering base, the usual problems of dealing with the incident are magnified. One confronts a collection of issues unique to the circumstances of distance and foreign sovereignty. A transportation accident occurring during a recent shipment from Argentina has helped NAC International (NAC) refine its own preparedness functions, and has yielded enlightening "lessons learned" for consideration in future shipments.

Background

The shipment in question involved the return of research reactor fuel from the CNEA facilities in Argentina. For this particular shipment, the Department of Energy (DOE) had elected to use NAC-LWT casks and to utilize NAC for fuel inspection, preparation and loading support. They elected to use a second contractor for management of transportation back to the U.S. NAC personnel had completed their scope of work and had returned to the Norcross, Georgia office. The loaded casks had been safely transported to the port awaiting shipment. What remained was a collection of specialized handling equipment used for cropping and loading the fuel. The equipment was packed in a set of "strong tight" containers and over-packed in an ISO container. The use of the ISO greatly facilitates the handling required during an international shipment campaign.

During the motor transport of the ISO to the port facility, the driver became distracted and rolled the shipment. The tractor and trailer were heavily damaged and the ISO container lay on its side, having broken loose from the trailer. The accident occurred very early in the morning of December 12, 2000, after DOE and the transportation contractor personnel had left the CNEA site. Although NAC had no contractual role in the equipment transportation back to the U.S., a representative of NAC's transportation logistics contractor, Schenker International, was contacted by the trucking company. He notified NAC who then notified DOE and DOE's transportation contractor of the event.

The equipment involved included a transfer cask, and an assortment of tools and specialized fixtures for cask and fuel handling. Much of the equipment exhibited modest levels of contamination, and hence the need for the IP-2 "strong tight" packaging. Initial surveys demonstrated there was no contamination spread so the incident assessment shifted to issues of long term recovery.

Tractor trailer and ISO container in the "post accident" condition

Issues and Their Resolution

Responsibility-The first issue was one of responsibility. NAC's equipment was involved and damaged to an unknown extent, but NAC had no contractual responsibility in the activity that precipitated the accident. DOE had separate contracts with its transportation services contractor and with CNEA. However, NAC's services were needed to assess equipment damage and determine what corrective action was necessary before further transport was permissible. In the short term, it was decided to continue with Robert Frasier of Schenker as on scene point of contact, since he was available. This allowed action to move forward while the broader issue of financial responsibility was resolved.

Insurance Coverage-This proved to be one of the more complex of the issues involved in incident recovery. DOE is the common client for all of the contracted entities associated with the shipment but DOE is self-insured; i.e. it has no insurance carrier that could interact with the carriers of the other participants. Foreign motor carriers have significantly different coverage than mandated in the U.S. by the Department of Transportation. Often, the equipment being transported has insufficient coverage to provide for its replacement. Liability coverage is often minimal. As a matter of routine, NAC carries its own coverage enveloping equipment replacement costs when performing transportation services around the globe. Because of the split nature of the DOE contract, the validity of the coverage was not entirely clear.

In the aftermath of the accident and initial discussions with DOE, NAC had its insurance carrier contact that of the Argentine motor transport company and a meeting of the three parties, NAC and the two carriers, was held in Argentina. It was concluded that the most expedient approach was for NAC to incur the cost of reclamation of the shipment, transport it to the U.S., inspect and repair it, and file a claim with its carrier. NAC's insurance carrier would then file with the other parties for the appropriate share of damages. This process is still underway so the eventual resolution remains to be seen.

Customs-The NAC equipment was imported into Argentina under an ATA Carnet, a form of bonding that guarantees the equipment will be exported by a given date. The original Carnet for 90 days would expire in mid-February. It became clear that the inspection and repair to the packages would take longer than the Carnet permitted. The situation required an extension to the Carnet, neither the certainty or the cost of which is assured. Schenker was able to obtain a 30 day extension but that approached expiration. A second extension of 90 days was obtained to allow completion of repairs and export to the U.S.

Package Inspection and Repair-The NAC equipment has a slight amount of fixed contamination requiring it to be shipped in IP-2 "strong tight" packages. "Strong tight" implies that the package is able to protect the contents from the normal rigors of transportation including vibration, shifting, transfers, etc. However, a "strong tight" package is not designed, nor expected, to survive a significant accident intact. If it is sufficiently damaged, it no longer meets the criteria for "strong tight" and is not suitable for continued transport, absent repair. As the photographs demonstrate, the NAC equipment was subjected significant accident forces. The IP-2 packages suffered considerable damage as did the ISO container. The packages and the ISO required repaired prior to shipping back to the U.S. This required an NAC representative qualified in DOT transportation regulations go to Argentina to supervise the repairs.

Damage to NAC IP-2 "Strong tight" Package

The NAC representative arrived on site toward the end of January and remained for 11 days. The first day, a Monday, was utilized to assess the damage to the packages and assure that they could be repaired. Otherwise replacement would have been necessary. A local welder was hired on a cash basis, credit or purchase orders would not be acceptable. NAC had to arrange for sufficient local currency in order to complete the process. The welder arrived on Wednesday and took measurements so that he could order the appropriate repair materials.

While awaiting repairs, the NAC representative removed the equipment from the packages so that a photographic record could be made, and dirt and mud could be removed. This formed the basis for the preliminary report to the insurance carrier. The Welder returned the following Monday and worked through Friday completing the repairs. All repairs were completed at the CNEA site, partially explaining their extended duration. The location away from the welder's shop, compounded by heat and humidity, were complicating factors. The Monday following completion of repairs, Schenker was able to obtain a customs clearance allowing the ISO to be transported to the port where it would it would sit awaiting export.

Return Shipment-Finding an ocean carrier willing to accept the return shipment proved very difficult. The single ISO package represented a relatively modest revenue to the carriers (it would normally have been transported back to the U.S. on the dedicated vessel with the casks and other equipment.) While NAC always pays a surcharge for Class 7 cargo, it remains an unpopular commodity with ocean carriers. The ship's captain has the final say as to acceptance of a particular container. For 7 weeks, Schenker was able to obtain carrier bookings only to have the captains refuse the container. Eventually, as the 90 day Carmet extension neared expiration, Schenker had to draw on its corporate strength to gain passage. The ISO returned to the U.S. at the end of May, 5 ½months after the accident.

View into IP-2 Showing Damage to Transfer Cask Operator

Equipment Assessment-the assessment of the equipment is currently underway at a licensed inspection and repair facility. While all of the equipment was contained within the IP-2 packages, the heavier objects broke loose from their fasteners and sustained damage. The basic shielding elements of the equipment sustained little damage. The operating parts of shield gates, lead screws, bearings, and other equipment having little protection will require repair or replacement. We project that several more months before the repairs are complete, the equipment is returned to inventory, and the final accounting of the effects of the accident is complete.

Conclusions

The recovery from the accident in Argentina has taken a considerable length of time. The deliberate process of on-scene recovery, package assessment and repair, customs release, return shipment, and equipment repair has been made all the more difficult by the remote location and issues of foreign sovereignty. Eight months have passed since the accident and several months more will be required to complete repairs and final accounting. The recovery activities in Argentina would have been impossible without the in-country presence of the NAC representative and the continued involvement of Schenker.

The equipment was subjected to very significant accident forces yet containment was well maintained. The NAC practice of IP-2 packaging with the ISO overpack afforded the equipment with multiple layers of protection. None of the equipment, packages or fastenings involved in the accident was designed to sustain other than normal transport loads, so the displacements in the accident were consistent with what one would expect. Nevertheless, contamination spread was avoided and shielding components of the equipment sustained no damage that would have degraded their safety function. Operational components will require replacement, as will the ISO and IP-2 packages, but considering the extent of the accident, the shipment proved to be highly resistant to damage.

Administrative issues involving contracts, insurance coverage, customs, and logistics proved to be as demanding as the technical issues involved in accident recovery. The time and costs involved in dealing with these issues significantly exceeded NAC's initial estimates, even when supported by in-country resources and competent, qualified contractors.