CURRENT TRENDS

IN NUCLEAR MATERIAL TRANSPORTATION

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The business of radioactive material transportation has evolved considerably in the past 40 years. Current practices reflect extensive international experience in handling radioactive cargo within a mature and tested regulatory framework. Nevertheless, new developments continue to have an impact on how shipments of nuclear material are planned and carried out. Entities involved in the transport of radioactive materials must keep abreast of these developments and work together to find innovative solutions to ensure that safe, smooth transport activities may continue.

Several recent trends in the regulatory environment and political atmosphere require attention. There are four key trends that we'll be examining today: 1) the reduction in the pool of available commercial carriers; 2) routing restrictions; 3) package validation issues; and 4) increasing political sensitivities. Careful planning and cooperative measures are necessary to alleviate problems in each of these areas.

AVAILABLE CARRIERS

With each passing year, the pool of commercial carriers willing or able to handle radioactive material shipments decreases. While there are a number of possible reasons for this, two predominant causes are 1) increasing regulatory restrictions, and 2) nuclear liability and vessel insurance.

Regulations

Regulations for the transportation of radioactive materials are being continuously refined. While many steamship lines carry hazardous materials, radioactive material cargoes are still relatively uncommon. The steamship lines' hazardous materials specialists are trained and knowledgeable in the general hazardous materials regulations. The complexity and diversity of radioactive material regulations, however, make it difficult for these specialists to be well versed in the transportation of radioactive materials. Rather than invest in specific and costly specialized

training for a commodity which typically accounts for perhaps less than 1% of steamship line business, many lines are opting not to handle radioactive materials. With each new regulation or revision to the regulations, the likelihood of this increases.

Insurance

Nuclear Liability Insurance (NLI) is a major concern, not only to shippers and receivers, but carriers as well. NLI is a complex issue. For shipments between Paris Convention countries and the U.S., Paris Convention NLI will apply. For some shipments originating in the U.S. or where a U.S. government entity or contractor ships or receives radioactive materials, Price Anderson Act coverage will apply. None of the conventions or acts provide unlimited indemnification to vessel owners or operators. Some ocean carriers actually demand unlimited nuclear liability insurance.

In additional to nuclear liability insurance requirements, ocean carriers must also maintain Protection & Indemnity and hull insurance. It is quite common for radioactive cargo to be rejected by ocean carriers because their Protection & Indemnity insurance or hull insurance provider has excluded the carriage of radioactive material in the policy. This is another reason why there are so few lines that accept radioactive material.

The goal of any business is to earn a profit. The commercial carriers that currently accept radioactive material, do so at premium rates. Added together, the headaches associated with regulations, the costs of training personnel, operating costs, and insurance matters make radioactive materials an unattractive commodity.

ROUTING RESTRICTIONS

When transporting nuclear materials, one must comply not only with national and international regulations, but often local ordinances (some of which contradict or oppose national or international policies) must also be kept in mind. A case in point is the Port of Miami, Florida.

The port of Miami is a key point for the majority of shipments between east coast ports of North and South America. It is the policy of the Port of Miami to prohibit shipments of radioactive material from entering the port. Not only is this policy inconsistent with federal regulations, it is almost certainly illegal; it forces unconventional and sometimes costly alternatives for shipments.

Miami is by no means the only such "problem" port. There are a number of U.S. and foreign ports which severely restrict, or completely refuse to allow radioactive materials to transit their ports.

Another case is the Port of Portland, Oregon. Although the Port of Portland is identified as a candidate port of entry for foreign research reactor spent nuclear fuel in the Department of Energy’s Environmental Impact Statement (EIS), Portland currently does not allow the import or export of radioactive materials. In the past, the Port of Portland was used for shipments of

foreign research reactor spent fuel delivered to the DOE facility in Idaho Falls.

As part of the EIS for this program, DOE held several meetings with local communities on the east and west coasts of the U.S. In Portland, the reaction to the prospect of shipments being transported through their community was negative. In fact, the port labor union workers refuse to handle shipments of any radioactive material as a result of these meetings. We and others in the nuclear industry traveled to Portland and San Francisco to meet with union leaders in an attempt to overturn this policy. We were unsuccessful and learned that union policy was far more difficult to negate than state or local ordinances.

In addition to restrictions levied by ports, there are other regulatory concerns which can cause routing problems. A number of local and national authorities require shipment approvals and sometimes package approvals prior to allowing a consignment to transit, load, or discharge at their port.

Often these approvals require lengthy review periods - sometimes months, even for routine shipments. Many times these delays are understandable, as in the case of a new package design. However, some authorities require complete review of the package design while others rely on the background work of their Competent Authority counterparts.

These restrictions have a profound impact on the manner and modes of radioactive material shipments. When planning a shipment, vessel flag and transit ports play a pivotal role in routing and scheduling. Many times, the "easiest" and most practical shipping methods are not feasible or timely due to approvals required. It is common to charter aircraft and fly material because of the lack of alternatives.

PACKAGE VALIDATIONS

As indicated, package approvals occasionally require lengthy review periods - sometimes months, even for routine shipments. When new packages are designed, the Competent Authority in the originating country must perform a complete analysis of the package, including design and criticality analysis. The authority must ensure that packages fully comply with their regulatory requirements.

Type B packages, for example, require validation by any country in which the package will be used for import, export or transit. The designated Competent Authority in each country will provide the needed validations. It has been our experience in recent years that the Competent Authorities around the world are under-funded and understaffed. While some authorities charge a fee to provide validation of a package, others do not. In either case, the time required for a complete validation can be extremely long, sometimes years (as in the case of a couple of packages currently under review in the U.S.).

Many authorities provide Special Arrangement approval rather than a complete validation in order to reduce the time required to provide shipment approvals and to assist our industry in completing shipments in a timely manner. This type of approval normally authorizes a shipment

with defined parameters including specific contents and quantities.

In countries that will not provide Special Arrangement validations, a complete review of the package design is required. Often, the Competent Authority will provide validation with a very limited validity period for a specific content if the review is not completed in a timely manner. For example, the Competent Authority in the U.S. is the Dept. Of Transportation (DOT). The current policy of the DOT is to refer all Type A/F and Type B packages to the Nuclear Regulatory Commission (NRC) for a thorough review. The NRC is the governing agency responsible for the licensing of domestic packages. In many cases, the NRC is not able to provide a timely review due to a backlog of work. Fortunately, DOT will issue a validation which usually has a limited validity period and/or is specific to one or two contents.

POLITICAL ISSUES

Transportation of radioactive materials has become a primary focus of anti-nuclear advocates. Organizations such as Greenpeace are continuously calling for additional requirements in the transport regulations. A good example is the effort of the anti-nuclear community to promote new requirements in the International Maritime Organization (IMO) Dangerous Goods Code (IMDG). The shipment of irradiated fuel and plutonium are now regulated by the Irradiated Nuclear Fuel Code (INF Code), a supplement of the IMDG.

These same anti-nuclear groups are now calling for an expanded INF Code to include: requirements for voyage planning; requirements for prior notification and consultations regarding the transport route; and requirements for tracking INF ships through automated transponders. While some of these points may have merit, many of the proposals are impractical and unnecessary.

In addition to drives to add layers of regulation, these groups have played a role in increasing the reluctance and refusal of some carriers to handle radioactive shipments. As previously expressed, there are already a number of reasons that carriers are often reluctant to transport radioactive material. When you add small, but vocal, public demonstrations and accusations, it contributes to the carriers' idea that the problems associated with radioactive materials outweigh the potential revenue.

The industry needs to be equally vocal, especially when it comes to the promulgation of new regulations. Qualified technical representatives need to be involved in the regulatory process to answer the extremist calls for additional, redundant, and counterproductive regulations.

The transportation sector will face increasing attacks from anti-nuclear advocates. These assaults are not just problems for transporters. They are problems for the entire nuclear industry.

CONCLUSION

Based on the shrinking pool of available carriers, routing restrictions, package validation issues, and political sensitivities, the industry will need to look at alternatives for shipping radioactive materials. Vessel charters, consolidations of similar shipments from the same region, and other unconventional methods of shipment may be viable solutions. It will be necessary to begin shipment preparations well in advance in order to offset some of the problems discussed here. We must begin looking at the package validation requirements far in advance of an actual shipment as well.

We must keep abreast of the ever-changing regulations. We must ensure that political issues do not become the means for regulating our industry. We must challenge the attacks from anti-nuclear advocates. We must provide education to our communities and our service providers, such as the commercial steamship lines and insurance carriers, to help them to understand the nature of our business.

All of the issues we raised today could result in increased transportation costs. The industry must look at ways to keep these costs to a minimum. We therefore urge members of the industry to work together to continue to develop practical, efficient, and cost-effective solutions to the ever changing trends in our business. We look forward to working with all of you in this regard.

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