

Sustaining Transport Options

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Introduction

Transport is intrinsic to the nuclear fuel cycle; transport is what makes the cycle go round. Impede or stop transport and the whole thing inevitably slows down or grinds to a halt. Over recent years the radioactive material transport industry has faced a reduced availability of transport routes and carriers as a result of decisions by commercial carriers, ports and handling facilities not to accept radioactive cargoes.

Background

In recent years there has been a growing recognition internationally of the problems created by denials and delays of shipments. At an International Atomic Energy Agency (IAEA) transport safety conference in 2003, attention was paid to the increasing difficulty consignors of radioactive materials were facing with denials and delays. While the focus was on air transport of Class 7 materials for medical applications, the World Nuclear Transport Institute (WNTI) argued, successfully, that the problem should be understood more widely to include fuel cycle transport. At a subsequent IAEA fact-finding forum, several participants recounted specific instances. WNTI was well placed to participate since it already had assembled an inventory of denial and delay issues encountered by its member companies and had created a Carriers Industry Working Group well before the 2003 Conference to address responses to the problems.

The problems

The reasons for carriers and ports to deny shipments are many and complicated, but they can be grouped loosely, into three categories – “fear”, “image” and “perception”. Nuclear fuel cycle materials in particular can generate a degree of discomfort for some. Notwithstanding

the industry’s excellent safety record, WNTI member companies sometimes have encountered among potential carriers a fear of accidents, a fear of repercussions from their regular clients, a fear of reactions from ports. And of course, the smallest incident in the nuclear industry, whether or not involving transport, and no matter the lack of any real or potential radiological consequences, has the potential to play to people’s fears. Recent concerns about security have added a new dimension.

Some potential carriers have expressed concern about possible repercussions from regular clients. It may be that in some instances, clients do not wish their cargoes to be transported next to radioactive cargoes due to uninformed and unfounded concerns regarding contamination. And so, some shipping companies may decide for commercial reasons not to carry Class 7 cargoes to avoid the risk of losing other business. It may be that shippers fear that protests from anti-nuclear groups may lead to delays to other consignments, and there may be a concern about the possibility of delays because of perceived special handling procedures for radioactive materials.

Perhaps some shippers believe that Class 7 carriage represents too much work for not enough commercial return. Other shippers have suggested that transport safety regulations are difficult and complex, requiring special training and handling, with the associated additional inconvenience and costs.

The decisions taken by shipping companies, airlines and ports are based on maximising profits. If the return from carrying or accepting Class 7 materials does not seem substantial enough, then some shipping companies will simply choose not to carry them.

As denials and delays increase, producers and shippers become constrained in their options for competitive choice of carrier services. Shippers too often are met by a lack of standardisation in documentation between

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ports and liner services. And of course, worst of all is when shipping lines deny or withdraw from service. This situation inevitably drives consignors to seek alternatives, possibly using less well established carriers, and carriers taking longer routes, which have implications in turn for security, cost and delivery schedules. Some consignors consider charter options but this is not a panacea. All this can result in increased overall inventory holdings on sites and increased total shipping and other related business costs. And of course, use of slower, smaller charter vessels increases the potential risk of piracy, and security breaches by diverting cargoes away from mainstream access terminals to smaller ports or terminals.

International responses

Determined to come up with some responses within its area of competence, the IAEA brought together a small group of consultants, including a WNTI expert, to develop recommendations for IAEA action. This group considered possibilities within the areas of education, communication and training. Specific proposals included possible development of a training programme addressing regional denial issues, including port and airline authorities, the insurance sector and the transport industry, greater IAEA public information efforts underlining the importance of Class 7 transports, and measures to ease administrative burdens related to package approvals and compliance assurance. The Agency has developed half-day training programmes for port authorities, customs, national security and cargo handlers. The IAEA now is developing guides on compliance assurance, radiation protection, and security which should go some way to improving clarity and thereby helping to simplify matters for potential shippers. The IAEA Transport Safety Standards Committee – the so-called TRANSSC – at its meeting in March of this year discussed next steps in addressing the denial and delay set of issues and the work was recommended to a subsequent Technical Meeting scheduled to take place soon. The WNTI has been very much a part of this process. In January, we met with the Radioactive Transport Study Group of national competent authorities from around the world to propose some specific international responses to the denial and delay issue for their consideration. In particular we suggested:

1. IAEA, and other education and training courses, including at the national level, to include encouragement and invitation as a matter of course, to participants and trainers from a wide cross-section of stakeholders, including for example, not only nuclear regulatory competent authorities, but also, other authorities from within government having a potential impact on Class 7 transports such as customs, security, health officials, and also, representatives from industry, including cargo handlers, ports and terminal officials and transport service providers.
2. Designation of a centralised entry, or access portal to the whole range of government interests when Class 7

transport issues arise; this might, for example, be an office designated within the national nuclear regulatory authority that would provide a centralised first access to customs, security and so on, depending on the particular issue, when a potential or actual denial or delay issue arises.

3. An intensified effort to harmonise and clarify elements of the international transport safety regulatory regime; perhaps including a more intensive formal exchange between the major institutions including the UN Sub-Committee of Experts on the Transport of Dangerous Goods, the modal organisations and the IAEA.
4. Continued efforts to incorporate international regulations into domestic regulations by using the same language, or by direct reference.
5. An IAEA list of national divergences in regulation would be helpful.
6. A more regular exchange between those whose job it is to develop the regulations and standards, and those whose job it is to operate within the regulations and standards, for example, a periodic meeting in advance of the IAEA two-year regulation review cycle to include intergovernmental organisations, national competent authorities including nuclear regulatory, but other authorities as well, and industry to exchange experiences with the existing regime.
7. A more deliberate strategy to carry the messages out to potential service providers through fuller participation in industry sector conferences, and articles in trade journals, outside the confines of the nuclear sector.

Industry responses

Apart from these suggestions which WNTI commended to the attention of national competent authorities, we have been working intensively within the WNTI Sustaining Shipments Task Force to develop industry-specific initiatives to obviate or ameliorate the problems of denials and delays. First and importantly, as I have indicated, we have supported the international efforts to address issues of denial and delay. We have participated in the IAEA fact-finding and consultancy processes to support development of IAEA efforts, and have put practical suggestions on the table. We have supported efforts in the modal organisations, including the International Maritime Organization and International Civil Aviation Organization, where we are represented, to give encouragement to unimpeded transports. WNTI has initiated exchanges with port authorities in a number of countries. We have made and continue to schedule presentations to meetings of key stakeholders beyond the nuclear industry including the insurance industry and maritime authorities. Indeed, even as we are meeting here in Hong Kong, a WNTI representative is addressing an international conference of harbour masters in Malta. Next month we will be discussing the issues at a dangerous goods conference in Liverpool, England.

WNTI Members will come together in a Sustaining Shipments Workshop later this month to develop other initiatives. For example, it will consider development of a WNTI Members Knowledge Base designed to prevent issues before they arise, or failing that, to allay concerns of potential service providers. The Knowledge Base would address such issues as insurance and liability, security, segregation distances, and radiation protection requirements.

There is no one remedy for the multitude of denial and delay problems, and adequate responses to them probably have to pursue different avenues by different entities at different levels, all at the same time.

Harmonisation

As transports of radioactive materials increase and become ever more international, harmonised regulations and standards become even more compelling, both to ensure safety and, to facilitate cost-efficient operations. Standards and regulations, however good, are not effective until they are implemented correctly at the operating level. It is the operator who experiences at first hand the differences of interpretation and approach from one national jurisdiction to another. Such differences can jeopardise safety and lead to confusion, duplication of effort, delays in obtaining approvals, and inefficiencies for both industry and national authorities.

For the transport of radioactive materials, safety is, of course, based on principles developed by the IAEA. These then are incorporated into the United Nations dangerous goods model regulations, the modal regulations for sea and air transport, and regional regulations for road, rail and inland waterway transport. Finally, they then are implemented nationally through processes specific to particular countries.

Overall, the nuclear transport industry experience of operating within the regulations has been positive. The issues which have arisen have related principally to differences in their interpretation by the UN, modal organisations and competent authorities, coupled with different time schedules for implementation.

Industry has a responsibility to collaborate in the development of consolidated industry positions, and to strive where possible to agree industry-wide standards; industry benefits when it is able to work together to resolve different approaches and to agree on consolidated approaches in such matters as criticality assessment, and package and handling procedures. That is one of the principal functions of the World Nuclear Transport Institute; to encourage the development of industry-wide positions and standards and also, to explain and promote them to other key stakeholders. Apart from the WNTI push on sustaining shipments within its industry Task Force, it currently has an industry-led Task Force exploring standardised industry approaches to criticality assessment, and yet another exploring possibilities for more harmonised

uranium concentrate packaging, packing and transport. All these efforts serve an industry agenda and address issues from a practical point of view. To illustrate:

Uranium concentrate transport standards

Although there is a standard way of transporting uranium concentrate, the methods employed in using drums and ISO containers vary considerably. For example, the drums themselves are not standard and have different lid fastenings. The drums are located and fastened in the ISO container in a variety of ways, and there is no standard for packaging the drum in the ISO container. The stowage of ISO containers on vessels varies considerably. Also, radiation dose and contamination control become sensitive with the introduction of portal detection equipment.

The WNTI Uranium Concentrate Transport Task Force is examining whether uranium producers and converters could agree a set of minimum standards acceptable to all. It is not the intention of the Task Force to change significantly the way uranium concentrate currently is transported, but rather to strive to agree industry standards for packaging, packing and shipping. The Task Force will host a workshop in Canada next month to carry these matters forward.

Uranium hexafluoride (Hex) packaging and transport

The WNTI HEXT Industry Working Group continues its deliberations to ensure that the technical bases for and requirements of Hex packaging and transport are well-understood, soundly based and properly implemented. A major challenge for industry has been the thermal test requirement for 48 inch Hex cylinders and, in particular, implementing the use of newly developed thermal protectors. Different systems for transporting 48 inch cylinders are currently being used. Compliance with the thermal requirement will continue to be a subject for further research and investigation.

Summary

WNTI has a focused, practical work programme determined by and driven forward by its Members. The work programme is positive in its objectives; it strives to be solutions-oriented. WNTI is the facilitator and catalyst to help industry develop consolidated positions on the important transport-related issues. If industry can agree consolidated industry positions that are constructive, and be convincing to national competent authorities and other stakeholders, it can enhance safety while helping to reduce delays and duplication of effort; and thereby improving efficiencies for all concerned. WNTI recognises that it is not good enough for industry to lay out the difficulties in Class 7 transport and then to expect others to come up with the solutions on their own. Industry through WNTI seeks to be a consistent and reliable partner with other stakeholders in safe, effective and secure transport. It follows that industry has responsibility to advance possibilities for improving situations where a need is identified.



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If there is an underlying theme to the WNTI work agenda it is harmonisation. In every case, whether it is addressing package requirements, safety assessments, packing and transport operations, safety and cost-effectiveness benefit from stability and predictability. The interests of all are best served when there is clarity and stability in a harmonised transport safety regime. The biggest and most important winner, of course, is safety. WNTI is committed to promoting its Members' interests in safety, and also, in cost-efficient transport.

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