

The Industry Commitment to Global Transport Safety Standards

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The regulator and the regulated

Standards and regulations have no intrinsic practical effect without taking into account those who are the object of such standards and regulations. Standards and regulations do not become operationally effective until they are implemented by the entities which are subject to them. Accordingly, there is a necessary synergy between the regulator and the regulated – the regulators whose task it is to make and enforce the rules for safe, efficient and reliable transport, and those whose job it is to transport within the rules. One has no full meaning without the other. Harmonisation issues which can impede efficient and timely implementation of regulations can occur at any stage of the process, starting with the timely publication of the International Atomic Energy Agency (IAEA) Regulations, incorporation by the modal organisations, adoption by national competent authorities and finally, rendered operational by industrial transport organisations. Both, the regulator and the transporter, can be more effective in achieving their purposes when they co-operate in the interest of mutual understanding. PATRAM provides one excellent opportunity for such exchange between the regulator and the regulated – there are other important opportunities within the IAEA and international modal organisations. I suggest, however, that more could be done between the regulators and the regulated collectively to share real-life experiences with actually implementing the regulations and operating within them, and to draw appropriate lessons.

In the case of the international transport safety regulatory regime, it is the nuclear transport industry, such as represented by the World Nuclear Transport Institute (WNTI), which is, of course, the object of transport safety standards and regulations. And as such, the nuclear transport industry is a principal stakeholder in the regime.

Regulatory compliance is a cornerstone of the nuclear transport industry. The international nature of the fuel cycle mandates transnational movement of radioactive materials on a regular basis; this means that a single shipment may fall

under the jurisdiction of numerous regional, national and local regulatory schemes, as well as the overarching international system. That is why, in the interest of safe and efficient transport, it is important to strive for maximum harmonisation.

The transport safety regulatory regime

As we well know, no sector of transport is regulated more stringently than the nuclear transport industry. The nuclear transport industry is subject to a long-standing, comprehensive, inter-connected regime of international, modal and national regulations and standards. Industry is fully committed to meeting its requirements within this regime. Transporters of radioactive materials have an outstanding safety record. Indeed, the transport of radioactive materials could be regarded as a model for the transport of other classes of dangerous goods. The underlying philosophy required safety to be ensured by the package holding the radioactive material whatever mode of transport was used – in contrast to the transport of many other hazardous cargoes where the mode of transport – the ship, plane, rail wagon or truck – is the only or primary safety measure.

The IAEA Transport Safety Conference in July of last year found that; “the current IAEA Transport Regulations provide safe packaging options for the entire spectrum of radioactive material” (1) and that “by following the requirements of the IAEA Transport Regulations, the designer of a package strives not only to meet the requirements of the regulatory tests, but also to produce a package that is safe under all conceivable conditions”(2). Current package test criteria set out in the IAEA Regulations (TS-R-1) are well-founded on safety grounds. It is in everyone’s interest that confidence be maintained in these tested and proven criteria.

There are two principal reasons for transport’s outstanding safety record. It is due primarily to well-founded regulations. It is due also to the professionalism of those in the industry. Industry has co-operated in the full implementation of this regime.

Conference paper

The industry role

There is a clear determination on the part of the nuclear transport industry and the key international organisations to exchange in dialogue, and the World Nuclear Transport Institute provides industry a dedicated vehicle for taking part in this dialogue. The very fact that companies are able and prepared to collaborate in this way in itself sends a powerful message of industry's commitment to safe transport. Valuable experience has been gained in working with the IAEA transport safety requirements and many users now are focused on addressing nuances, especially with regard to the interpretation of TS-R-1 provisions. Industry involvement by such bodies as the WNTI with the IAEA allows for a better understanding by industry of the regulatory framework and also helps ensure that the industry view is taken fully into account.

The WNTI has observer status in the IAEA and as such attends meetings of the Transport Safety Standards Committee (TRANSSC); and WNTI provides experts to assist in the technical work of IAEA consultant service meetings set up to develop positions. To cite one major example, we put forward a Scientific Expert to work on the important Co-ordinated Research Project on surface contamination. The Project led to a new model which links a unit surface contamination of each radionuclide with a potential dose to workers and members of the public, taking account of the very different radiological significance of the radionuclides. We believe there is an opportunity here for a more soundly based determination of contamination limits which will provide well-substantiated, safe limits that still can be easily measured.

The WNTI also has consultative status in the International Maritime Organization (IMO), and registers industry positions there in the appropriate committees and working groups. Matters of potentially serious consequence for transport of Class 7 materials can and do arise in the IMO – most recently issues related to ship and port security and the identification and tracking of ships. There is important overlap in the work of the several organisations, often with transferable experiences, information, and lessons to be learnt – the IMO and IAEA respective work programmes addressing transport security are one notable example; that is why we think it important to be engaged in these several processes.

In the interest of developing *consolidated* industry positions, companies collaborate within the World Nuclear Transport Institute to share information and ideas. For example, the WNTI TS-R-1 Industry Working Group addresses the whole range of regulation implementation and review issues. The HEXT Industry Working Group more particularly takes up issues related to uranium hexafluoride (UF₆) packaging. The WNTI Maritime Carriers Industry Working Group addresses liner and port access issues, an area of considerable and growing concern to our Members. Our members have been addressing denial and delay of shipment issues for several years, and so we were pleased to see them taken up by the IAEA in its Action Plan on

Transport. There is no single or simple solution to assuaging the concerns of those transport service providers and ports which have shown reluctance to handle Class 7 consignments. But anyone who has had the bull by the tail knows five or six times more than those who haven't. Therefore, building on past experiences, it is essential that we continue to work to educate, to dispel misperceptions, and to assist existing and potential transport service providers. I believe that the very characterisation of the issue has negative connotations – denial and delay of shipments – perhaps it would be more forward looking to rephrase the work as Assurance of Shipments.

In fact, much practical work already is being done in this area. For example, the WNTI undertook a major study of the industry experience with radiation dose exposure rates for transport workers to ensure that the radiation protection programme requirements of the IAEA transport safety regulations are well understood, and appropriately implemented within the transport industry. We have met with and provided information to transport service providers. There is room for more of this sort of educative effort.

Within WNTI, we have done a major study on the adequacy of existing package test criteria. The internationally agreed package test criteria were arrived at on the basis of a great deal of scientific study and analysis in several countries over many years. This study and analysis is well documented. Industry is committed to meeting the agreed test criteria and it is important that confidence is maintained in the validity of these well-founded, scientifically-based criteria.

WNTI has been actively engaged within the IAEA and in the International Maritime Organization in considering issues of transport security. In this regard, we do not think separate considerations of safety and security should be mixed up together.

All this kind of work within the WNTI is designed to support the work of the IAEA, and other essential stakeholders such as national competent authorities in ensuring safe, efficient and reliable transport. This kind of regulator and operator collaboration is a very important part of the process.

The bottom line of transport safety regulation is, of course, safety. But safety is not a factor exclusively of the wording of the regulatory provisions. Safety also is assured to the extent that there is stability in the regulatory regime. Safety is enhanced to the extent there is clarity within the regulations; to the extent there is consistency and uniformity in the interpretation of regulations and their application around the world, and to the extent that they provide for efficient operation. While recognising the requirements of particular modal and national circumstances, consistent interpretation and application of international regulations is important to the safe, efficient and reliable international movement of radioactive materials.

Harmonisation

Experience with the recent accelerated pace of regulation review has exposed several important harmonisation issues. Different time schedules for introduction of new regulations means that old and new regulations can be in operation in different jurisdictions at the same time, leading to greater complexity and potential delays. Regulations sometimes are interpreted differently by different competent authorities; the order in which package tests are carried out is one example of where there have been different interpretations, which in this case can cause delays in obtaining validation of new package designs and wasteful duplication of effort. Differing assumptions are used by different authorities in carrying out reviews of the criticality safety of packages. Sometimes there are considerable time intervals between the renewal of a package certificate in one country and the relevant re-validation in another country, occasioning delays in transports.

The July 2003 IAEA Transport Safety Conference saw calls for greater standardisation, harmonisation, global application and simplification. And to achieve such improvements, it was recognised that further exchanges between industry and competent authorities collectively could go some way to increasing understanding and potentially contribute to greater efficiencies for all concerned. We think there is room for continued improvement on all sides.

Implementation is the reverse side of the regulation coin; there is an intrinsic relationship between the two. Consistency and predictability assist in ensuring compliance, help to avoid confusion among all those involved in the transport chain, avoid any perception that differing applications of the regulations in various jurisdictions are somehow more or less stringent than others, and focus resources on safety considerations and compliance. I think there is room here for improvement by all the principal stakeholders. It should be possible to improve the style and ease of use of the Regulations. Existing documents such as TS-R-1 are cumbersome. Nor is it unreasonable to expect that comprehensive guidance documents should be made available at the same time as the Regulations.

Independent reviews of package designs and re-validation of approved packages carried out by the various national competent authorities can complicate international shipments. National authorities carry out independent reviews of the criticality safety of packages containing fissile materials but the underlying assumptions which are used in the calculations can differ and the outcome is that the requirements for implementation are not uniform. A single design may require preparation of multiple criticality analyses to obtain base approval and foreign validations. This process can be time consuming and resource rich. Within WNTI, we are working to develop industry views on this important subject so we are well placed to work with the other stakeholders, national competent authorities, and the intergovernmental organisations to improve the situation.

This is a good example where the various stakeholders could assist each other by sharing experiences, and drawing appropriate lessons to improve the situation.

Yes there is room for improvement by industry. For example, industry could and should seek to develop a system to ensure more structured, systematic and consistent procedures for the compilation, submission and approval of safety cases.

In the last two-year regulation review cycle some 200 proposals for changes to the IAEA regulations were submitted, notwithstanding the fact that the regulations had just gone through a previous two-year process of review and amendment. I understand this time round there still are well over 100 proposals on the IAEA table. The well known saying comes to mind – “If it isn’t broken, then don’t fix it”.

This periodic review is absolutely essential to assure safety, and industry is committed to contributing to the review process. However, does a periodic review have, of necessity, to *require* proposals for change, or rather, shouldn’t such proposals flow from a review first, and then be considered if deemed appropriate on the basis of the review? Quite a number of proposals seem to fall into the category of editorial changes for the sake of clarity or precision. These are important, but might there be a way of processing them outside the formal review process?

Public perceptions

It would be difficult to over-estimate the importance of public and political attitudes to nuclear transport, and the potential of these attitudes, if not heeded and not responded to sensitively and convincingly, to make life very much more difficult for those committed to the safe, efficient and reliable transport. It is not sufficient that the nuclear transport industry is conducted safely; it is necessary that that message be conveyed to far wider, and often very diffuse, audiences.

In the last 15 years or so, scientists have been told they must also be communicators. The new buzz word became ‘transparency’. No longer is it enough that the science should be right, it should be intelligible to all. I don’t know how highly scientists are esteemed today; a recent list of the one hundred greatest Germans of all time included only 18 in the category of science and economics. Up there with Einstein and Röntgen were Boris Becker and Michael Schumacher.

There is no question that accurate information plays a powerful part in allowing greater public understanding. ‘Understanding’, though, does not necessarily equate with ‘appreciation’. The responsibility is ours to ensure that the industry presentation of the facts takes as its starting point a sensitive appreciation of where the layperson is coming from. The scientist must be prepared to answer sometimes awkward questions of public concern. Science must be situated in its political and social context. Ultimately it is an issue of trust; how far can the public trust science to provide reliable, objective and the fullest possible knowledge.

Summary

There is a widespread recognition today that maintaining transport options in the interest of bringing the benefits of nuclear energy where they are wanted the world over requires open and sustained dialogue between regulator and the regulated. It also requires close collaboration among all parties in the industry. Industry recognises that it must continually educate itself to ensure full compliance with the international transport safety regulatory regime. Equally, industry must take the opportunities afforded it to inform the regulators and others of the context in which industry performs its essential services, and to be engaged in the regulation review and implementation processes. Practical, efficient and safe transport regulation should take account of its impact on those who do the transporting.

There is a powerful message to be told here – radioactive materials transport plays a vital role in bringing peaceful uses of the atom to the benefit of society. The nuclear transport industry operates within a highly stringent international transport safety regulatory regime; a regime subject to regular review to ensure safety. The transport of radioactive materials has an outstanding safety record over several decades. The nuclear transport industry takes its responsibilities seriously. The industry has come together, through the World Nuclear Transport Institute, to collaborate in ensuring that it continues to meet its commitments to safety. The industry is seeking every opportunity to increase mutual understanding among the major stakeholders through dialogue and collaboration.

References

- (1) International Atomic Energy Agency, International Conference on the Safe Transport of Radioactive Materials, Conference Findings paragraph Ref. 2.1, Vienna, 7-11 July 2003
- (2) Ibid, paragraph Ref.3.2

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