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Why Transport Risk Management Makes a Difference?

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Abstract

Safe and efficient transportation of radioactive material is one of the main objectives in succeeding in our industry. Transport of radioactive and nuclear materials is inherently complex due to the nature of the material and its high visibility.

In the 2000s AREVA TN developed a transportation model, TRM™ “Transport Risk Management,” based on an extensive, international network of experts, which has been adapted and enhanced over the years to meet ever-more restrictive regulatory requirements, evolving customer needs, benefits from lessons learned, and to address public potential concerns. Today, the TRM™ model is deployed throughout the AREVA group to reduce transportation risks and to promote continuous improvement. The TRM™ program aims at guaranteeing that the safety and the physical protection of the transportation of radioactive and nuclear materials are ensured, and that the communication and operational aspects inherent to such transport are duly taken into account. Since 2007, the TRM™ has been separate from the AREVA TN Transport Operations Division to ensure independence and objectivity in audits.

The steps of the implementation and the different components of a successful radioactive and nuclear materials transportation program based on the TRM™ model will be described through concrete examples. This paper will focus on the different components of the TRM™ model, and in particular the Emergency Preparedness and the Global Acceptance program, which are two key components of an efficient, safe and secure radioactive and nuclear materials logistics program. Practical examples on the benefits of implementing a Transport Risk Management Program will be enumerated.

Introduction

The “Transport Risk Management” or TRM™ approach is part of AREVA TN’s DNA. Indeed, shipments of radioactive materials are key for AREVA: they maintain connections between the group’s facilities, its customers, and suppliers across the world. Even if the materials transported are sensitive, the transport operations must remain safe. Hence, the commitment to achieving the highest level of risk prevention at all stages of the logistics chain. This commitment applies to all of AREVA’s logistics activities, whether carried out by the group, or subcontracted.

In this paper, highlights of the TRM™ program will be developed which emphasize some of AREVA TN key interfaces:

- First: How to secure the subcontracted operations through the management of a dedicated panel of logistics suppliers involved at every stage of the transport of radioactive and nuclear materials
- Second: Communication with key stakeholders through a public acceptance program defined yearly, specifically exchanges with the Hamburg Port Authority
- Finally: Use of crisis drill feedback as a way of checking the efficiency of the AREVA TN emergency response program and the smooth interfaces with safety authorities as well as with local & central state representatives

Thanks to this proven experience and to the tools & processes developed for its own needs, AREVA TN has implemented new advisory services and a training catalogue for newcomers in the nuclear industry and for supporting new logistics schemes.

TRM™: How to Deal with Subcontractors to Secure Class 7 Transport Operations

Panel of class 7 transport suppliers

Since the TRM™ program was deployed some years ago, one of the key missions has been to better control the supply chain, meaning the various logistics suppliers involved in the operations for the transport of radioactive and nuclear materials. Logistics suppliers are not only the multi-modal carriers (road, rail, air, sea) but also the stevedores in the ports or surveillance companies who can impact the safety or security of our class 7 cargoes. The scope is quite extensive as it addresses our suppliers and also the suppliers of our suppliers.

In 2010, the entire panel of identified suppliers was composed of more than 400 companies worldwide. In order to better secure our operations, AREVA TN, with the support of the group’s

Supply Chain Department, reviewed this panel and rationalized it to increase the mastery of operations. The goal of the project was to reduce the size of the panel to keep only the best partners and also to optimize the cost of qualifying too numerous players. The idea was also to better mutualize the needs of operations amongst several of the group entities based in the same country or having similar flows.

It was important to find the right balance between operational needs of AREVA sites and of our final customers and, at the same time, optimization of this panel. On the one hand, a supplier must have regular activity in order to master the class 7 shipment regulations but on the other hand, it is also risky to have suppliers that are too dependent on our activity. Specific local requirements also had to be taken into account, such as in Kazakhstan where national regulations apply to the shareholders of class 7 carriers.

Several workshops with operations and supply chain were set up on a regular basis (monthly, then quarterly) to analyze the needs and the progress of this optimization plan. As a result, the global panel was divided by 2 within a period of 5 years and is currently composed of less than 200 logistics suppliers. This size is considered to be appropriate to meet both the need for safety and the current volume of operations.

However, this panel has to adapt regularly to the flows which evolve for some markets (mostly front-end needs) taking into account the findings issued during inspections by the team of dedicated TRM™ Division transport inspectors who conduct more than 300 audits worldwide per year at various stages of the shipments (loading, departure, arrival, transshipment...).

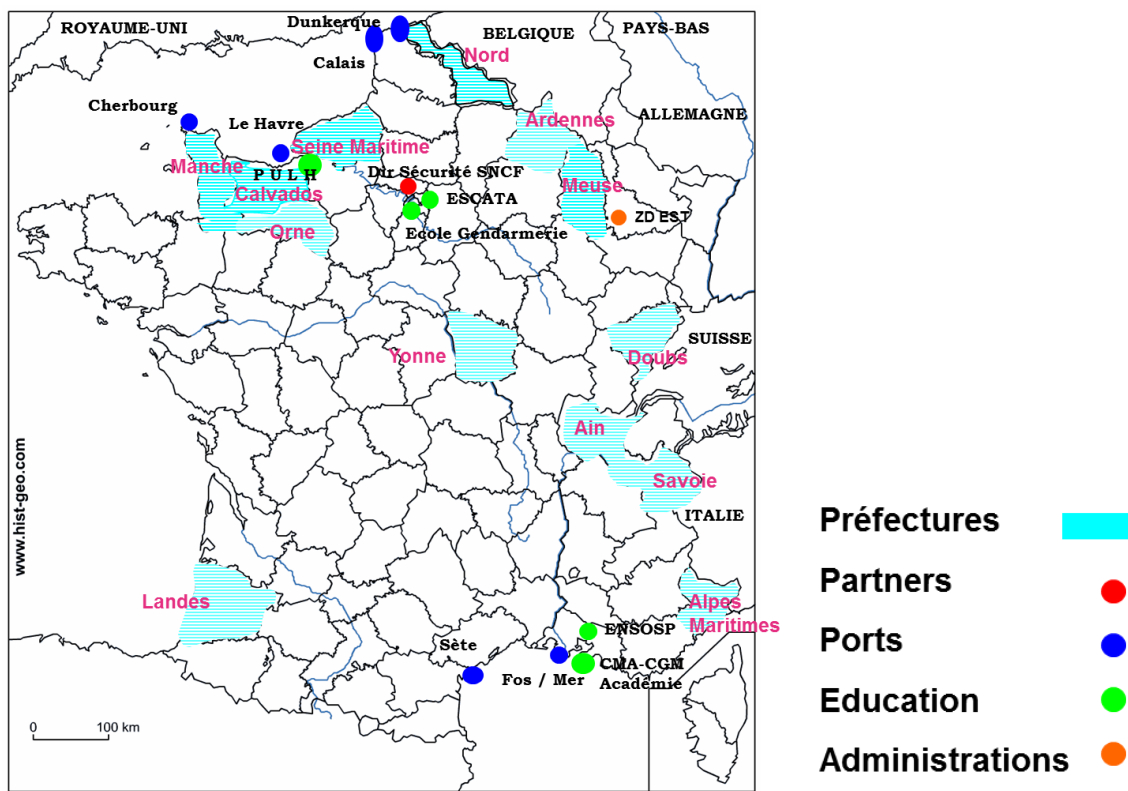
TRM™: How to Deal with Key Stakeholders to Keep “The Routes Open”

Public acceptance program

At the end of 1990s, a program of global acceptance was implemented worldwide for shipments between Europe and Japan. The main objective of such a program was to secure logistics and transportation of radioactive materials by effectively informing and educating key stakeholders to maintain “the routes open.” Providing data on our products and way of working has helped to mitigate opposition among the population and public administrations, usually reluctant to welcome our shipments due to lack of information. Except for details of dates and exact routes which shall remain confidential for security reasons, most of the information can be shared, especially all the provisions taken to ensure safety of the casks and safety of the multi-modal transport conveyances.

A similar program has been implemented in France and Europe to facilitate the performance of the AREVA TN transport schedules. Such “public acceptance program” is defined each year based on the most sensitive transport plans and the areas which are crossed by rail, road but also in the European ports of entry/departure of international shipments. In the meantime, awareness sessions are conducted with stakeholders involved in future shipments such as the Police and Firefighters academies, French railway regional management...

Indeed, this is a never-ending process as the players change regularly, and the same questions arise with potential blockings should a region not be visited regularly.



Public acceptance program in France for 2016

Specific case of the Hamburg Port

To facilitate the execution of transport operations and avoid demurrages of seafreight for international shipments, the actors based in the ports are key stakeholders. Long-term relationships with them are established to better understand their concerns and answer their questions. The improved relationship with the Dangerous Goods Port Authority (i.e. the Water Police in Hamburg Port) is one example developed below.

Following an incident which occurred at the Hamburg port in October 2013 where a 40' flat rack carrying six 48Y packages of UF6 dropped on a dock (due to an abrupt stop, the tie down system was disengaged and the flat fell from a height of about 50 cm from a van carrier without safety consequences). AREVA TN took the opportunity to meet with the Dangerous Goods Port Authority involved during the crisis, and to share with them the lessons learned from the incident and the way AREVA TN is organized, as well as to exchange about each other's constraints.



Picture of the flat involved in the incident of October 2013 in Hamburg

When meeting the port authority the first time in early 2014, the political context and high pressure put on the port by opponents and local administrators became obvious, knowing that another German port in Bremerhaven had banned class 7 fissile shipments (case brought to Federal court, not finalized yet). Moreover, the Hamburg Port is governed by the Senate of Hamburg which monitors such flows carefully.

Since 2010, the Senate of Hamburg has entitled the Water Police to conduct systematic inspections of any container of radioactive cargo. Indeed, the class 7 container inspection rate is very high compared to other dangerous goods. The Hamburg Senate requires the inspection results and expects remediation actions in the event of observed deviations.



Picture of inspections in Hamburg port

The Hamburg Water Police shared their concern with us about damaged containers arriving regularly in the port from various countries, giving a poor image to class 7 cargoes, which should be even more faultless than other cargoes. The identified containers were mostly carrying Uranium Ore Concentrate, coming from, for example Namibia, Kazakhstan or Russia. The main significant deficiencies recorded during the past inspections mainly concerned the poor condition of flat racks/containers and Stowing/Labelling/Marking errors.

AREVA TN informed the Water Police that it may sometimes be difficult to ensure that all players are aware of the consequences at the end of the shipment due to the fact that there are numerous players all along the supply chain, especially in the mining activity situated in remote places, some in landlocked countries where container supply can be challenging and local regulations very different from those in Europe.

To increase the awareness of the different players of the impact at the end of the supply chain and to improve the condition of containers, AREVA TN issued a very practical and widely distributed guide (see figure hereafter).

Technical specification for container selection
Visual criteria



Caption
 Fair, could be used
 Poor, should be avoided
 Bad must be excluded

Picture of the Technical specifications for container selection (visual criteria)

Furthermore, AREVA TN underlined the difficulties of changing the stowage and fastening practices: for example all former USSR states use the DOPOG (equivalent of the RID) when shipping by rail and this regulation stipulates that class 7 cargo must be secured to resist a 10g vertical solicitation, whereas IAEA (in SSG 26, appendix IV) requires only a 2g Up/Down for rail transport. AREVA TN and the Hamburg Water Police agreed to share these practices so as not to consider them as deviations in future audits.

Thanks to these open exchanges, the general feeling of the Hamburg Water Police about class 7 transport compliance is positive. The Hamburg Water Police noticed an important improvement in container conditions with a reduction of CSC (Convention for Safe Containers) infringements and a general improvement of the container overall. Over the first quarter of 2016, no serious safety non conformity was detected on AREVA TN shipments (either on outbound or inbound flows).

This port is important for existing flows but also for potential new flows, especially for Asian lines. Aat stake for the nuclear industry is the influence of political pressure to keep ports closed to class 7 shipments. AREVA TN is striving to assist local authorities in justifying the robustness of its transport schemes so that the ports remain open to class 7 despite political pressure.

But nothing is done forever: Maintaining the dialogue and improving the local track records is a continuous effort.

TRM™: How to Be Prepared should an Incident or Accident Occur

Emergency response preparedness

One pillar of the TRM™ program is the emergency response preparedness organization. That means implementing beforehand the appropriate tools, procedures and organization to bring effective and relevant support minimizing the impact on people and the environment should an incident or accident occur during one of our shipments.

Testing the organization through regular drills is a good way to prepare the various involved stakeholders from industry and the authorities, both locally and at the headquarters. For example, 3 major level-4 transport safety drills (highest level involving all actors and authorities) were conducted in France in the first semester of 2016 (first time with so many drills in such a short period) to meet the French Authorities requirement to train more prefectures, especially those where no nuclear site is located but which may be crossed by class 7 shipments.

The aim of these drills was to familiarize these prefectures with the risks and associated communication related to the transport of radioactive or nuclear materials: it also implies an effort for AREVA TN to explain in simple words the potential physical phenomenon and mitigation plans which can be proposed.

Scenarios were set up in cooperation with the French Safety Authority team (IRSN) to be as realistic as possible, for instance taking examples of existing shipments crossing the regions. Even if these

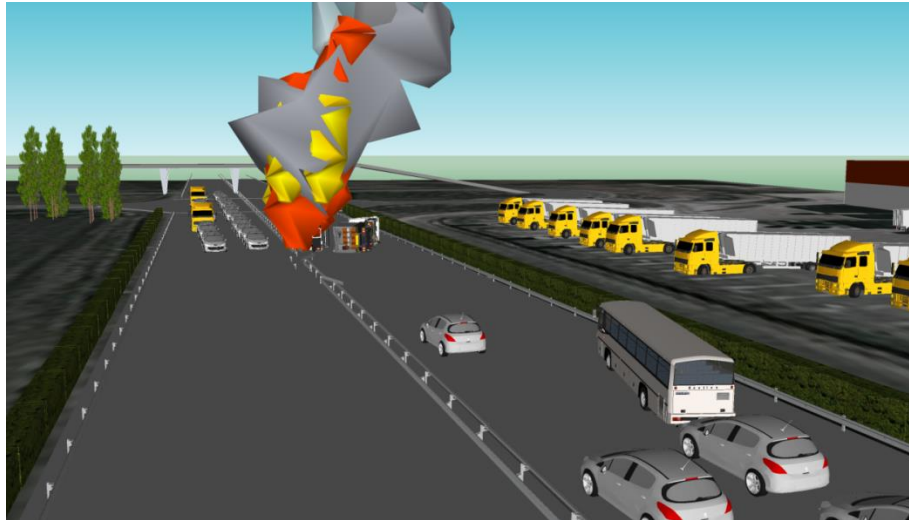
were tabletop drills, more than 100 people altogether were mobilized during the preparation and realization phases.

Despite very positive feedback from drill participants, there is always a room for improvement for better coordination on communication with the public with the accurate and clear information. The time needed for validating our messages and sharing it among the stakeholders remains a challenge in a world where social networking and real-time information channels are changing the rules of communication.

Thanks to AREVA TN experience in organizing drills for its internal needs, it is now possible to offer customers a customized program to help them implement an effective emergency response program adapted to their own stakes.



1st Safety Drill in Doubs Prefecture (March 2016)
Crash between an Enriched UF6 Transport and a Gas Truck



2nd Safety Drill in Landes Prefecture (March 2016)

Crash between a UO2 powder transport with a public works truck generating a fire



3rd Safety Drill in Alpes-Maritimes Prefecture (May 2016)

Spent fuel wagon trapped in a mudslide

AREVA TN Advisory Services Including Training

Advisory TN is part of the AREVA group and relies on the support of the AREVA network, consultants and experts. The AREVA international community of experts gathers recognized specialists in all subjects related to transport and logistics of radioactive materials. These experts, who are well integrated into operational teams, develop their skills during their assignments and use these skills in increasingly qualified jobs. Experts are recognized for their capabilities, their

A catalogue of Training programs is available upon request

Conclusion

Over the last 50 years, AREVA TN has been proud of its performance in mastering the transport of radioactive and nuclear materials around the world thanks to the know-how of its experts and the continuous deployment of the TRM™ program to the benefit of its customers both internally and externally.

The TRM™ approach, quite unique in the nuclear industry, is a competitive advantage for our customers in continuously shipping safe and secure class 7 materials in the public domain in a more and more complex legal and political environment. Advisory TN is fully committed to keeping reliability at the highest level by regularly updating methods integrating the feedback from our operations.

This is why, after improving this program for our own needs, AREVA TN is now offering worldwide services: Suppliers Surveillance Program, Global Acceptance Awareness, Emergency Response Preparedness Methods, and customized studies and training.