

Paper No.

**Maritime Back End Transport –A first of a Kind: an Overview of the Vitrified Waste
Transport from France to Australia**

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Abstract

This “First of the Kind” :nuclear material transport has presented always some challenge and require high professionalism of our experts. This contribution will give an overview of the various challenges that have been met for the preparation and performance of a vitrified waste transport from La Hague Facility (France) to ANSTO facility (Australia).

It will especially focus on the maritime transport. After reminder of the principal characteristics of the shipment to be performed, it will describe the different key components for a successful project::

- Regulatory constraints (packages, ship)
- Key criteria for selection of a maritime company
- Organization of the operations at the French port
- Internal and external controls performed at the French port before and during loading of the packages onto the ship
- Continuous communication throughout the transportation
- Organization of the operations at the Australian port

Finally, it will describe how setting up a joint ANSTO and AREVA-TN dedicated and strong team to address Public Acceptance and External communication with medias has been a pre-requisite for the success of this first of the kind transport. .

Introduction

The shipment of vitrified residues from France to Australia is a first-of-a-kind for several reasons:

First, it was the first time that residues were returned from France to Australia. Previous shipments had already been conducted in the other direction i.e., from Australia to France, with spent fuel shipped from ANSTO to La Hague Facility for reprocessing. FOAK 1

Secondly, the package that was used for the transportation of vitrified residues was unknown by the Australian Authorities and had to be certified first in France (specific extension for Australian content) and then in Australia. A specific extension was obtained from the French Authorities (ref. F/366/B(U)F-96 (Cj) and the validation was obtained from AMSA (ref. AUS/2015-57/B(U)-F-96). A new TN81 cask was manufactured. FOAK 2

Last but not least, this transport had some additional challenges for AREVA TN, as the date to be reached was not the date of departure from France, as commonly used, but the date of arrival at the port in Australia. FOAK 3

1. What was the content to be shipped back to Australia?

The spent fuel, coming mainly from medical radio-isotopes or from residues of industrial electronic irradiation and produced by HIFAR (High Flux Australian Reactor), arrived in France between 1999 and 2004 in four shipments.

Two types of packages were used for the return: the TN81 with a load of 20 canisters (for a total capacity of 28) containing the vitrified residues, the other one, the DV78, containing 6 CBFC2 packages for cemented waste.

Figures 1 and 2 show photographs of the TN81 and DV 78 packages.



Figure 1 AREVA TN TN81 package



Figure 2 AREVA TN DV 78 package

The return was to be done before December 31, 2015, according to a French-Australian governmental agreement.

The shipment of the content was classified as Class II irradiated.

2. Key criteria for selection of the ship

AREVA TN is an authorized transport Company which carried out the shipment from the French port (Cherbourg Port) to the Australian port (Port Kembla).

With a Class II irradiated classification, an INF 2 ship was required.

Several criteria were used for the selection of the ship:

- Classification of the ship by a well-known classification Company
- No restriction of use of the ship of any kind in any place in the world
- Flag of the chosen ship was to be on the list of the Paris memorandum which is the top flag list

These criteria, plus other specific criteria related to AREVA TN, were included in the technical conditions specifications and transmitted to several potential companies through an international call for bid, resulting in the selection of BBC Charting Company on December 2014.

In mid 2015, the ship was selected: the BBC Shanghai which is INF 2 certified by the Germanischer

Lloyd sailing under the Antigua and Barbuda flags (on the Paris Memorandum List).

During an inspection by the US Coast Guards in 2014, minor remarks were made and quickly addressed by the Briese Schifffahrt Group, owner of BBC Chartering GmbH and the ship. Indeed, the ship made some calls later in the USA. This point is of some importance, as opponents were informed of these remarks and used them to build opposition to the France-Australia shipment.



Figure 3 BBC Shanghai

3. Organization at the French port

A call at the French port is a routine activity for AREVA TN. The road convoy came from the La Hague reprocessing facility with two trucks: one of 178 metric tons for the TN81 package and one of 40 tons for the DV78 package.

The two packages were loaded on the private AREVA wharf with the gantry crane owned and maintained by AREVA TN.

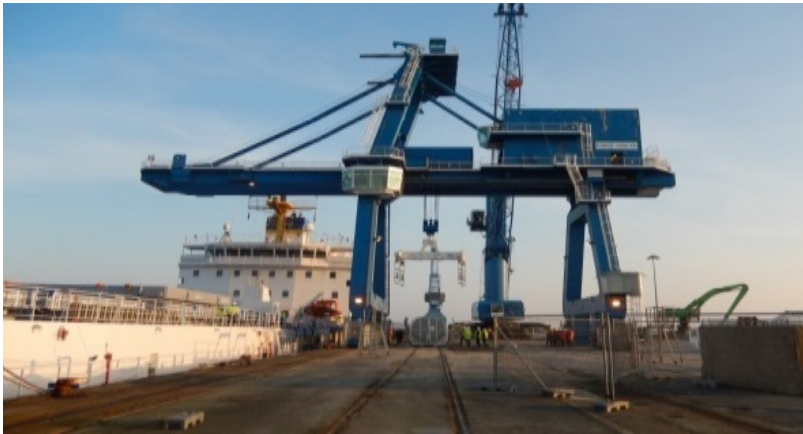


Figure 4 Gantry crane owned by AREVA TN at the Cherbourg Port???

Guarding, transport routes, protection means had been timely proposed by AREVA TN to the French Physical Protection Authorities ahead of the shipment date and approved by these Authorities.

4. Controls before and during the loading

Following the selection of the ship a complete documentation control was made by AREVA TN ahead of the arrival of the ship. Several calculation notes required by AREVA TN were submitted by BBC Charting and accepted by AREVA TN.

Due to the media campaign initiated by opponents (mainly Greenpeace) based on the claim that the US Coastguards had forbidden the ship from carrying US Government cargoes (this campaign echoing to the French National Parliament), the ship underwent several unusual controls by the French Authorities conducted by Customs, Port State Authority, and the Nuclear Safety Agency.

According to the ship captain these controls were unprecedented.

The French Green Party Vice-president, MR BAUPIN, who is also Vice-President of the French Parliament, even referred to the ship as a “dust ship,” further reinforcing the opposition to this shipment.

After all the controls, even those including the most detailed inspections, all remarks or comments were considered to be unfounded. Thanks to the professionalism of the AREVA TN and BBC Chartering teams, all doubts cast on this shipment were lifted and all difficulties were overcome so as to conclude all transport operations in a timely manner.

Additionally, a senior representative from ANSTO attended the loading operations onto the BBC

Shanghai.

5. Continuous communication throughout the transportation

The communication was of two kinds:

- The communication coming from the ship
- The communication between AREVA TN and ANSTO

In the technical condition specifications issued by AREVA TN, specific requests concerning communication were made to potential bidding companies. AREVA TN required a continuous communication system encrypted between the ship and the AREVA TN operating office in Paris. The position of the ship was continuously known in the AREVA TN control room.

The position was then communicated to French Authorities (upon respective arrangements made during the shipment preparation phase) and was subsequently sent to ANSTO twice a week, through encrypted mails.

A communication plan was also prepared in advance between ANSTO and AREVA TN, with specific timing corresponding to specific steps. This plan was essential in the acceptance of this shipment by the various stakeholders in both countries.

This continuous communication, well prepared in advance with BBC Chartering on one hand and with ANSTO on the other, enabled both ANSTO and AREVA TN to meet the FOAK 3.

Due to the requirement that the ship arrive at Port Kembla by December 054, 2015, , additional transit time was allowed, and needed, permitting the ship to arrive on time.

The end result was a timely ship berthing in Australia fully compliant with the date of arrival and contractual arrangements.

Conclusions

This FOAK shipment encompassing many other hidden challenges can serve as a reference for other similar operations, and the success is a direct result of the smooth, well-managed communication between AREVA TN and ANSTO but also of:

- Early and detailed preparation of all transport operations,

- Performance in line with contractual and technical requirements,
- Effective communication between teams and employees who flawlessly executed all assigned tasks.