

## **RESUMING THE SPENT FUEL TRANSPORTS BETWEEN FRANCE AND GERMANY**

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### **ABSTRACT**

Further to the spent fuel transports suspension in May 1998, the German Authorities, the German Utilities, and COGEMA have defined the conditions for the resumption of the transports to COGEMA La Hague plant.

It was the role of COGEMA, Transnucléaire and ACTA Technologien to implement the technical means and administrative procedures regarding control of radiological non-contamination that should apply for spent fuel transports from for spent fuel transports from Germany to La Hague.

The flasks types which are selected for these transports are: TN 12/2, TN 13/1, TN 13/2 and TN 17/2. Once the independent expertise of GRS confirmed that their design was not the source of contamination problems, the flasks licenses have been renewed and revalidated in Germany, and the first transport authorizations were granted.

The resumption of transports takes place in three phases:

- Phase I: on-site non-active tests with empty flasks to check the procedures implementation
- Phase II: performance of 3 to 5 transports per flask and site, with optimization of the procedures at the end of this phase
- Phase III: routine phase under optimized procedures.

The first transport of 5 spent fuel flasks took place in April 2001.

21 spent fuel flasks have been received at COGEMA La Hague plant, since this resumption of the transport.

### **INTRODUCTION**

The spent fuel transports from the German Nuclear Power Plants (GNPP) to the COGEMA reprocessing plant at La Hague were suspended by the German and French Authorities in May 1998. The reason for that ban was, that they recognized, that since several years, some transport packagings and vehicles utilized for these transports had shown some non-fixed contamination in excess of limiting values, defined for initiation of decontamination measures.

The industrial companies involved in the transport:

- The nuclear power plant operators

- The reprocessors
- The transporters

cooperated for nearly 2 years to define the improvements to be implemented into the transport cycle to obtain the authorization from the Competent Authorities to resume spent fuel transports.

The technical and administrative measures taken are covering several fields:

- Restructuring of the transport management with a clear split of responsibilities
- Technical protection measures to prevent the outer surfaces of the packaging and of the transport vehicles from contamination during loading and unloading operations
- Non contamination controls with improved measurements methods
- Documentation and transport data bank
- Reporting to the Authorities

These measures are detailed in the third paragraph.

In the second paragraph the main events having finally led to the resumption of the spent fuel transports from Germany to France are recalled.

## **NUCLEAR TRANSPORT RESUMPTION BACKGROUND**

In May 1998, took place the stop of the spent fuel transports between Germany and France.

Then, two phases can be distinguished:

- until June 2000, date of the consensus between the German Government and the German Utilities about the future use of the nuclear energy with allowance of spent fuel transports to La Hague till mid 2005.

September 1998: new political majority in Germany: the Government coalition between the Social-Democratic Party and the Green Party declared their will to step out of nuclear power generation and consequently to stop the spent fuel reprocessing and therefore the spent fuel transports to reprocessing plants.

December 1998: start of the negotiations between the German Government and the German Utilities about the termination of commercial electricity generation by nuclear power.

April 2000: agreement of the independent experts appointed by the German Government to the technical and administrative improvements proposed by the industrial partners in the nuclear fuel cycle for restart of spent fuel transports.

- until April 2001, date of the transports of five spent fuel flasks from three German Nuclear Power Plants to la Hague:

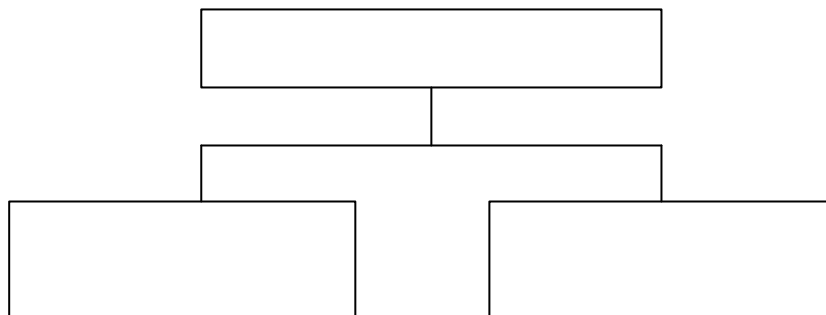
- September 2000: issuing of the first transport permits of loaded flasks by the Bundesamt für Strahlenschutz (German Competent Authority).
- October 2000: Loading of the first flask with spent fuel since May 1998...but no spent fuel transport allowed by the French Government before the next vitrified residues transport from France to Germany.
- January 2001: agreement between French and German Governments on the next transports between both countries (vitrified residues and spent fuel).
- March 2001: transport of six vitrified residues flasks from La Hague to Gorleben (Germany).

## **IMPROVEMENTS**

### **Industrial Organization**

The technical assistance to the Utilities for preparation and loading of flasks on the German NPP's on one side and the organization of transports in Germany on the other side are now performed by two independent companies:

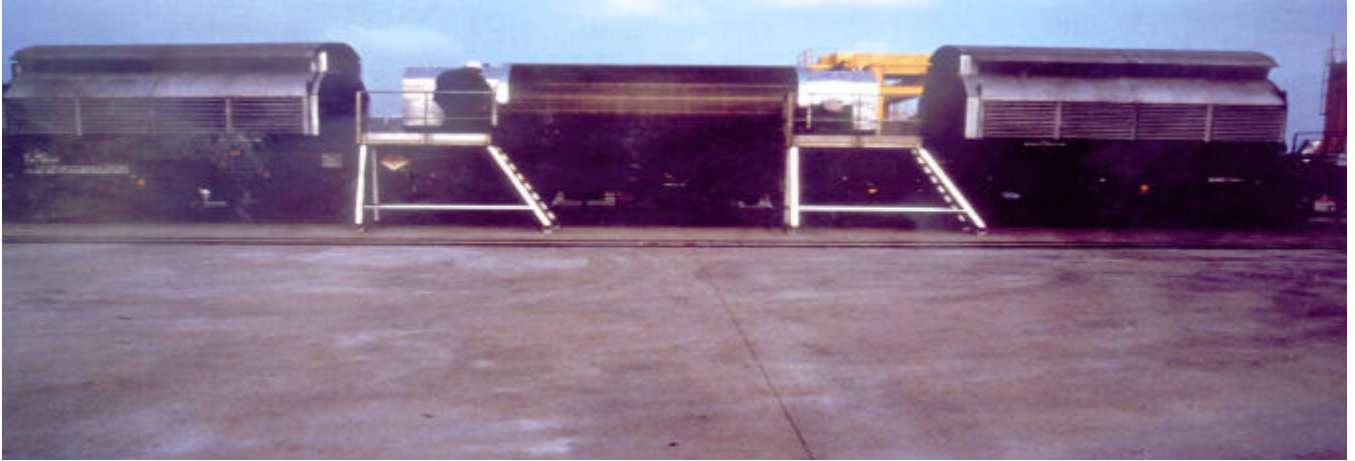
- Acta Technologiën GmbH created in 1999 as a joint company of TRANSNUCLEAIRE and BNFL for the technical assistance on power plant sites and NCS GmbH a subsidiary of DB Cargo for the transport management in Germany.



- both companies perform their duties based on agreements signed with TRANSNUCLEAIRE SA.

### **Transport preparation**

The flasks used for the spent fuel transports to La Hague are of the following types: TN 12/2, TN 13/1, TN 13/2 and TN 17/2.



Picture 1

A TN 12/2 flask on a rail-wagon is illustrated here-before (Picture 1).

These flasks are now subject of to a specific treatment at La Hague before their use on the German market:

- High pressure water cleaning of the outer flask surfaces, of flask cavity and of its inner structure (basket)
- Extensive non-contamination control of the cooling spike zone
- Protection of any sensitive part of the flask with adhesive tape

The purpose of this preparation is to guarantee that each flask allocated for transports of spent fuel from German NPP's is clean before leaving the COGEMA plant.

All these operations can be witnessed by the German Authorities or their representatives.

**Non-contamination controls during transport:**

Non-contamination checks are performed at each step of the transport cycle (transport of empty and of loaded flask)

- Flask alone
- Vehicle (wagon and or semi trailer) alone
- Flask tied down on the vehicle
- Tarpaulin of the vehicle (inner and outer surface)

Specific measurement methods such as large area smear tests (screening) before the regulatory required dry swabs on the flask's outer surface in the preparation for flask dispatch,  $\gamma$ -spectrometric analysis of water samples from the fuel pond, from the sump of the drip trays on rail-wagons and of the filtrate of the water-fill of the metallic skirt protecting the flask cooling zone in power plants from contact with fuel pond water.

All the operations can be witnessed by the German Authorities or their representatives either in the COGEMA plant or in the GNPP.

In addition an independent company performs non-contamination controls before each transport by rail. No transport can be carried out without these measurements, confirming the radiological cleanliness of package and rail-wagon.

### **Documentation:**

All radiological measurements performed at each step of the transport cycle are recorded in a transport documentation file (TDF) that accompanies the flasks.

The data contained in the TDF are logged into a computerized data bank for ease of access by the authorized organizations and the Competent Authorities.

### **Reporting to the Authorities:**

During their witness of the operations the German Authorities have access to any information. In addition, a specific information process has been defined in case of deviation.

### **RESUMPTION OF TRANSPORTS**

Since April 2000 the administrative and technical conditions required for the resumption of spent fuel transports as described here above are defined.

The restart takes place in three phases:

Phase I: on site non-active tests with empty flasks to check the correct implementation of the new procedures and of their effectiveness and efficiency in preventing non-fixed flask surface contamination in order to assure a proper margin with respect to limiting values. End of August 2001, eight GNPP and the COGEMA plants have successfully passed the Phase I test, with most of the flask types in use by TN.

Phase II: performance of three to five transports per flask type and power plant site, with optimization of the procedures at the end of this phase. Until end of July 2001, all transports have been performed under Phase II conditions, i.e. twenty two loaded flasks have been shipped to the La Hague reprocessing plant including corresponding number of empty flasks transports to the GNPP's. All transports have been in "clean" conditions, i.e. with no contamination findings and considerable margins to limiting values.

Phase III: "routine" transports with flask loadings and transports in optimized procedures: work is currently underway to enter into this phase with the first plants until end of 2001.

### **CONCLUSION**

After almost three years interruption, the spent fuel transports between Germany and France have been successfully resumed in 2001.

The conditions for performance of these transports have been largely renewed to reduce the risk of contamination. Thanks to the efforts of every party involved in these transports, no contamination above the criteria has been found on the 21 loaded flasks already transported to La Hague.

COGEMA, TRANSNUCLEAIRE and all their industrial partners have committed themselves to keep this high level of safety for every spent fuel transport from Germany to France until mid 2005, the deadline for spent fuel transports to the reprocessing plants according to the German Consensus on termination of commercial electricity generation by nuclear power.