

PLUTONIUM BRIEFING: BELGIUM AND JAPAN

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A little known fact is that Belgium plays an important role in the proliferation of weapons-usable nuclear material. Through the operation of facilities at Dessel in the north of Belgium, weapons-usable plutonium fuel, or Mixed Oxide (MOX), is supplied to countries in Europe. In 1999, for the first time, Belgium will be providing weapons-usable plutonium to a region of the world where tensions remain high, and where proliferation of plutonium continues to risk nuclear conflict: Japan.

Given the environmental, transport safety, human health and nuclear proliferation implications of this transport, Greenpeace is providing details on the background to this story.

WHAT IS PLUTONIUM MOX ?

Plutonium that is separated from nuclear reactor spent fuel can be used either for nuclear weapons or as fuel for nuclear reactors. To use it in a reactor, the plutonium oxide powder in nearly all cases must be combined with uranium oxide to form a mixed fuel - the so called MOX fuel. For most MOX fuel currently in use the percentage of plutonium content is in the range 5-8%, the rest being a combination of low-enriched uranium and natural uranium. Thus for every 100 tonnes of plutonium MOX fuel, 5-8 tonnes will be plutonium - sufficient for almost 1000 nuclear warheads.

PLUTONIUM MOX FUEL FABRICATION IN BELGIUM

Two plutonium MOX fuel companies operate at the Dessel site, in the Mol region, near the Belgian border with the Netherlands. Firstly, the manufacture of the uranium/plutonium MOX pellets and fuel rods is conducted by Belgonucleaire. (Belgonucleaire is owned by Tractebel - Belgian engineering company; Electrabel - Belgian electrical utility, operator of the country's 7 nuclear reactors; CEN/SCK - Belgian nuclear research centre. Both Tractebel and Electrabel are part of the French holding Suez-Lyonaise des Eaux.

After pellet production and fuel rod production, the plutonium MOX is transported less than 1000 metres to the Franco-Belge de Fabrication de Combustible International assembly plant, where the fuel rods are put together to form a fuel element or assembly. This plant is wholly owned by FBFC, a subsidiary of French nuclear companies, Cogema and Framatome.

Belgonucleaires' production of plutonium MOX began in the early 1960's, with new capacity being added in 1973. The facility manufactured MOX fuel for Fast Breeder reactors, including France's military production reactor Phenix, as well as for Light Water reactors, though the actual amount remained relatively small until 1983/84. A total of ten tonnes of plutonium fuel was produced during this period.

In 1984, an initiative was launched between Cogema, the French plutonium reprocessing company, and Belgonucleaire, to form the MOX consortium COMMOX. The MOX plant at Dessel was refitted and renamed P0, with an eventual capacity of 35 tonnes plutonium MOX fuel each year. Plutonium MOX fabrication over the next years was largely for French (80%), as well as German and Swiss reactors. After 1996, the bulk of Belgonucleaire's fabrication was for German clients.

In 1993, Greenpeace mounted a legal challenge to Belgonucleaire's plans for the construction of a new MOX plant, the so-called P1. This facility was intended to increase MOX production capacity to 70 tonnes each year. Demonstrating that there had been inadequate public consultation before the construction license was granted, Greenpeace charged that the facility could not be built under the license granted by the Government. After more than five years, the Belgian Supreme Court finally ruled in late 1998 that license was invalid and forbade the construction of P1.

In the intervening years, Belgonucleaire did not attempt to obtain a new license. However, Belgonucleaire has been for a number of years offering to construct P1 facilities in Russia and the United States - to date without success.

JAPAN'S FIRST PLUTONIUM CONTRACT WITH BELGIUM

In 1995 a contract was signed between the Toshiba Corp. of Japan and COMMOX for the production of plutonium MOX for the Japanese utility Tokyo Electric Power Company (TEPCO). The Toshiba Corp. was the subcontractor for TEPCO, with COMMOX being the consortium representing Belgonucleaire. Fuel assembly fabrication was subcontracted to FBFC. The plutonium for the MOX fuel will come from Japan's stockpile of plutonium at the la Hague reprocessing plant, near the port of Cherbourg, Normandy. (see map)

The contract details are commercially confidential and despite calls for their disclosure have not been made public. However, it is known that 483 kg of total plutonium is to be fabricated for TEPCO, which on the basis of a concentration/enrichment of 5% (average) amounts to 9666 kg or just under 10 tonnes MOX. Approximately half of this, some 32 MOX fuel assemblies, is destined for transport during 1999 to Japan. In Japan it is to be loaded into the Boiling Water Reactor Fukushima I-3 in Fukui Prefecture on the Sea of Japan/East Sea coast, west of Kyoto.

This is the first commercial Japanese contract for plutonium fuel with COMMOX, and will be the first transport of plutonium MOX fuel from Europe to Japan (see brief on transport below).

In a confidential draft intergovernmental document obtained by Greenpeace, it was stated by the Japanese government, that the plutonium for the MOX was to be transported from the la Hague reprocessing plant in Normandy, northern France, in two batches. The first, some 221kg, was to be transported by truck between February 10 1997 and September 1997. The second was to be transported after March 1997 but no later than July 1998. Greenpeace understands that these transports were completed within schedule.

The natural and enriched uranium to be used in the MOX, 3,088 kg, was shipped from Japan between February 1997 and July 1998. This in itself highlights the absurdity of reprocessing: for every tonne of Japanese spent fuel reprocessed at la Hague, 960 kg of uranium is separated. The plutonium industry has argued that this uranium is then "recycled", when in actual fact the vast majority of the uranium is not re-used, but rather stockpiled. That the Japanese utility, and Government have gone to the trouble of shipping uranium from Japan to Belgium, is connected to their mistaken view that only Japanese nuclear material can be used in the MOX. Japanese designated uranium in France amounts to around 2,500 tonnes. This was raised as an issue a number of years when it became apparent that that Japanese plutonium at la Hague, did not necessarily originate in Japan, but rather had been flagged Japanese. It could as easily have come from German, Swiss, Belgian, Swedish, or even French spent fuel reprocessed at la Hague. This remains the case today.

TRANSPORT DETAILS AND ROUTES

The first plutonium MOX fuel transport to Japan, will be conducted in a number of stages.

Stage one: the delivery of the plutonium and uranium from France and Japan to Dessel, Belgium. This was completed during 1997-1998 (see above).

Stage two: the delivery of the completed 32 plutonium MOX fuel assemblies from Dessel to France. The remaining 28 assemblies will be transported also, though this material will not be included in the first sea shipment.

Stage three: transport by sea of the plutonium MOX fuel from Europe to Japan. In addition to the Belgian produced plutonium, a further 5 tonnes of plutonium MOX fuel produced for Japan at Sellafield in the UK, will be transported to Japan at the same time.

Stage four: delivery of the plutonium MOX fuel to reactors in Fukushima (TEPCO) and Takahama (Kansai).

BELGIUM TO FRANCE - LIKELY ROUTE(S) - see map

Plutonium MOX is transported from Dessel to France by armoured truck (see photograph). Greenpeace understands that the FS69 or TNB 176 containers are used for the transport to la Hague/ Cherbourg. Each of them can hold 2 assemblies and four containers can be carried on each truck.

Dessel lies near the town of Retie and the transport(s) will pass directly through the town centre. Thereafter the transport will take the 'auto-route' around the historic Belgian city of Antwerp. It could also head further east around the Belgian capital Brussels, but this is the less likely route. Traveling south-south-west, the plutonium will cross the border near the French city of Lille. The most likely route is then due south, towards the French capital, Paris, then west towards Normandy, around Caen, and then to Cherbourg. Either for storage at the la Hague plutonium reprocessing site, or the military arsenal in Cherbourg.

FRANCE TO JAPAN

No details on the planned route for the shipment, or even the names of the vessels have been officially disclosed. However, Greenpeace have compiled the following from official and unofficial sources.

Two British flagged transport vessels will be involved in the transport. The Pacific Pintail and Pacific Teal are operated by the UK/French/Japanese owned company, Pacific Nuclear Transport Limited (PNTL). They were built to carry spent fuel reactor fuel from Japan to the UK and France for reprocessing. Since October 1998 they have been undergoing refitting and arming at the port of Barrow-in-Furness. Due to the nature of the cargo - sufficient for around 100 nuclear weapons, the transport to Japan is required to have an armed military escort. To reduce cost and the profile of the transport, the Japanese plutonium industry, together with their French and UK plutonium collaborators, have opted for no dedicated escort vessel but rather armed police on each ship. In late March this year, a total of six guns were loaded onto the Pintail and Teal. Again, though there are no official details, Greenpeace believes the specifications to be the following:

- * six guns in total, three per ship, one bow mounted, two stern mounted (one each on port and starboard side approximately 22 metres above water line);
- * gun type: most likely they are DES/MSI 30mm cannon, mounted on DS30B structure, UK manufacture, or possibly they are Oerliken "B Mark" 30mm cannon, on GSM-AO3 structure, Swiss manufacture;
- * up to 900 rounds per minute firing capacity, 150 rounds before reloading'
- * ammunition cargo likely to be around 20,000 rounds for each vessel, giving 10 minutes total firing capacity for each gun- equal to 7 tonnes of explosive on each vessel;
- * manually operated with optical site and monitor;
- * not designed for countering missile attack, aircraft or large surface/sub-surface vessel attack.

The security arrangements for the transport have been strongly criticised as inadequate given the threat posed by enough plutonium for over 55 nuclear weapons.

CONCLUSION

Belgium has played a central role in the proliferation of weapons-usable plutonium for many years. In 1999, that role will take on a new and dangerous dimension with the shipment of plutonium MOX fuel from Europe to Japan. Given this new role, Greenpeace believe that Belgian authorities should be asked to clarify their involvement in this trade in bomb material, and the extent to which they have assessed the safety/security and proliferation implications of such plutonium trade. A number of issues arise out of this expected transport that must be addressed by the Belgian authorities.

- security of the transport(s) - in terms of protection against armed attack, as well as in the event of accident;
- weapons-usability of plutonium MOX fuel and adequacy of safeguards;
- regional proliferation implications for East-Asia, with the supply of plutonium MOX fuel by Belgium to Japan.

Greenpeace is urgently seeking clarification from the Belgian government on these and other issues prior to the expected transportation of the plutonium MOX fuel from Dessel to Cherbourg, France.

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