



International Atomic Energy Agency

# GENERAL CONFERENCE

Eighteenth regular session

GC

GC(XVIII)/INF/149/Add.5  
16 September 1974

GENERAL Distr.

ENGLISH

Original: FRENCH

## ADVANCES IN THE APPLICATION OF NUCLEAR ENERGY FOR PEACEFUL PURPOSES /

### Information transmitted by Belgium

#### Note by the Director General

On 6 September the Director General received from Belgium material on the advances made in the year 1973-74 in applying nuclear energy for peaceful purposes. The material in question is reproduced below for the information of the General Conference.

#### BELGIUM

1. In 1973 there were two important international developments which were of concern to Belgium. These were decisions relating, first, to the construction of a fast neutron reactor prototype in the Federal Republic of Germany and second, to the construction of a uranium enrichment plant in France.
2. On 19 March 1973, under an agreement between the Governments of the Federal Republic of Germany, the Netherlands and Belgium, the supply contract for the construction of the prototype SNR 300 - a 300 MW(e) power plant with a sodium-cooled fast reactor - came into effect.
3. The construction of this prototype is evidence of Belgium's desire to participate effectively in future developments connected with the generation of fast reactors, which should provide a solution to the problem of the scarcity and increased cost of source materials for the generation of energy.

4. Belgium is contributing 15% of the financing for the construction of this power plant, located at Kalkar in the Federal Republic of Germany.
5. Belgian electric power producers are participating in the work of the Schnell-Britter-Kernkraftgesellschaft (SBK), the design and engineering company which was established in January 1972 to implement the project.
6. Belgian industry is participating in the construction of the power plant, and more particularly, in the fabrication of a large part of mixed oxide (plutonium and uranium) fuel assemblies, which are to be loaded into the reactor core.
7. Such participation has become possible thanks to the research and development activities of Belgian industry during the last 15 years in collaboration with the Nuclear Energy Research Centre (CEN/SCK) and with State support.
8. This contribution to research has been in conjunction mainly with certain specific aspects of the fuel cycle, especially the behaviour of materials under irradiation and the technique for the fabrication of fast reactor fuel.
9. On 6 December 1973 the CEN/SCK, the Kernforschungszentrum of Karlsruhe and the Kernforschungsanlage of Jülich, with the agreement of the Governments concerned, extended by three years the existing five-year collaboration contract on the joint use of the BR2 materials testing reactor. The contracting parties agreed to carry out an extensive irradiation programme with a view to developing fast breeder and high-temperature-gas reactors.
10. These activities have enabled Belgium not only to be prepared for the age of plutonium-fuelled breeders but also to fabricate plutonium fuel assemblies for light-water power reactors so as to further the development of plutonium recycling, a technique which could help solve the problem of energy resources.
11. It was in this connection that S.A. Belgonucleaire put into operation a plutonium fuel fabrication plant at Dessel in April 1974.
12. The Belgian Government approved the joint construction of the fast SNR prototype and contributed to the financing of the project because it is aware of the importance of the project for the future of power generation and industrial development.
13. The Belgian Government has also expressed its willingness to make a financial contribution to another international endeavour of vital importance for the supply of nuclear fuel, namely, the construction of a uranium enrichment plant based on the

principle of gas diffusion, a project which was decided upon by Eurodif at the end of 1973. Belgium's participation has been fixed at 10% and it will be represented by SOBEN (Belgian Company for Uranium Enrichment), established at the end of December 1973, in which the public sector and the private electricity generating sector are equal partners.

14. Belgium's participation in the Eurodif project does not mean that it is not interested in other uranium enrichment plant projects, because its aim is to ensure that the country's future nuclear power plants will be supplied as satisfactorily as possible. The SYBESI (Belgian Company for the Study of Isotope Separation), established in 1971 and representing electricity producers, fuel fabricators and the Nuclear Energy Research Centre, is a member of ACE (Association for Centrifuge Enrichment), the multinational association set up on 1 June 1973 and is participating as a member in evaluations of the industrial and commercial prospects of the ultra-centrifuging technique developed jointly by the Federal Republic of Germany, the United Kingdom and the Netherlands.

15. These actions by the public authorities are evidence of their concern that nothing should be left undone where it is a matter of ensuring Belgian access to all techniques which contribute to the smooth development of nuclear energy, especially as regards power production and supply and also the requirements of manufacturing industries.

16. A further development on the international level was the association formed, at the end of 1973, between the Belgian company MMN (Nuclear Metallurgy and Engineering), whose factories are located at Dessel and which specializes in the fabrication of uranium fuel elements for light-water pressurized reactors, and the Westinghouse Nuclear Europe (formerly Wenese) and the French company Eurofuel (European Company for the Fabrication of Uranium-based Fuel for Light-water Reactors) to set up the Franco-Belgian Company for the Fabrication of Fuel Elements (FBFC) in order to combine their efforts in their particular field.

17. In addition to the fabrication of fuel elements, the Belgian nuclear industry is continuing its work in manufacturing component parts for nuclear power stations including: reactor vessels and steam generators (Cockerill); core equipment, forepumps, handling devices, control mechanisms (ACEC); special pipes for nuclear reactors (Fabricom).

18. With regard to the period after 1973, as far as the generation of nuclear electrical power is concerned, the first group (Doel I), located on the Scheldt at Doel and having a power of 390 MW, will be connected up to the grid in 1974. The second group (Doel II), built on the same site and with the same power, will be connected up in 1975. The Belgian-French Tihange power station on the river Meuse, with a power of 870 MW, will also come into operation in 1975, during the second quarter of the year.

19. The Tihange power station is being built by SIFMO (Mosane Belgo-French Nuclear Energy Company) set up on 31 May 1968. This station is the second of a series to be built in collaboration with France (the first being SENA at Chooz on French territory).

20. Belgian electricity producers foresee that from 1979 or 1980 the network of nuclear power stations will increase each year by the addition of a 900-MW plant, except for 1984 and 1987 during which this increase will be doubled (i.e. twice 900 MW (e)).

21. Trabel, a temporary association formed by Traction et Electricité and by Electrobél, is acting as the consultant engineer for the construction of the Doel power stations and the Belgian part of the Tihange power station.

22. In 1980 nuclear power in Belgium will thus account for approximately 25% of the total electrical power generated. This proportion will increase to 40% in 1985 and 60% in 1990.

23. The use of nuclear energy for the generation of electrical power is therefore expanding in Belgium, as in all industrialized countries, and industry is beginning to reap the harvest of the efforts made to maintain the country at the technical and economic level to which it may lay claim.

24. It should also be mentioned that in 1973 a new five-year national plan for nuclear technology was launched in which the stress is laid much more than in the previous plan on industrialization. It is concerned with research and development work to be carried out at the Centre for the Study of Nuclear Energy at the National Radioisotope Institute and in Belgian industry. The plan provides for an average annual expenditure of approximately Belgian francs 1 400 000 000 (at 1973 values) as the contribution from the State.

25. In conclusion, we may state that Belgium is active in all aspects of nuclear science where there are favourable prospects for the development of the nuclear industry, and for putting our scientific and technological experience to good use. This activity is the logical consequence of the energy and industrial policies which it is proper for a country like Belgium to pursue.

