EURATOM SUPPLY AGENCY

ANNUAL REPORT

1996

DOCUMENT

Annual Report 1996

Euratom Supply Agency

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Euratom Supply Agency

PREFACE

With the approach of the fortieth anniversary of the signing of the Euratom Treaty in 1997, it is worth underlining the important recent developments at European Union level in the field of energy policy which have placed the nuclear energy option firmly in the wider context of the Union's energy needs and objectives for the 21st century. In 1996, the Commission published its White Paper on energy policy and in September adopted a draft Indicative Nuclear Programme for the Community (PINC).

Alongside the key energy policy objectives of competitiveness and environmental protection identified in the White Paper, the objective of security of supply runs as a common thread through the development of energy policy in an EU which is the world's biggest net importer of energy. In natural uranium, for example, the EU was dependent for over 90% of its needs in 1996 on external supplies. In the nuclear sector, the prerogatives of the Euratom Supply Agency enable the Commission and the Supply Agency to follow a policy of diversification of sources of supply and to pursue the fundamental objective of security of supply of nuclear fuels to Member States which choose to develop nuclear energy as part of their overall energy mix.

As Member of the Commission responsible for the Euratom Supply Agency, I am pleased to present the 1996 Annual Report of the Agency, which aims to provide for convenient reference an EU-wide overview of nuclear supply data and issues for a readership in public organisations and industry in the nuclear sector and beyond, both within and outside the EU.

(signed)

Christos PAPOUTSIS
Member of the Commission

INTRODUCTION

As in previous years, the Agency satisfied itself, in the context of exercising its exclusive right to conclude supply contracts, that users in the European Union (EU) received a regular supply of nuclear fuels.

1996 was characterised by an overall rise in natural uranium prices, affecting both multiannual and spot contracts, although by the end of the year spot prices had fallen from the high point they reached in the middle of the year. Overall production underwent an increase, although while production in the western world increased, it decreased in the rest of the world. The prospect of a rise in prices contributed to this increase, and to the announcement that a number of new mines would be opened or existing mines reopened, although the question remained open of whether in the longer term the supply of natural uranium would be sufficient to cover world requirements in their entirety. In contrast, prices for enriched uranium and enrichment services remained stable. Given these circumstances, the Agency continued to encourage EU users to diversify their sources of supply and to meet the majority of their needs through multiannual contracts at prices which properly reflect production costs.

The Commonwealth of Independent States (CIS) was once more the biggest source of supply of natural uranium to the EU. The Russian Federation remained the EU's single largest supplier country of natural uranium in 1996. In this context, the Agency pursued its policy of diversification of sources of supply and market-related prices in a flexible and pragmatic manner with regard to offers of material arising from these countries' fresh production or from military and other stockpiles.

The new Euratom/US agreement for cooperation, which replaces the old agreement of 1960 which had expired on 31 December 1995, entered into force on 12 April 1996. Routine contacts with many of Euratom's major nuclear trading partners also took place during the year. The Supply Agency continued to fulfil its well-established role in the Commission team which deals with international nuclear trade issues and negotiations in this field.

EINLEITUNG

Wie schon in den Vorjahren, hat sich die Versorgungsagentur im Rahmen der Wahrnehmung ihres ausschließlichen Rechts zum Abschluß von Versorgungsverträgen davon überzeugen können, daß die Verbraucher in der Gemeinschaft eine regelmäßige Versorgung mit Kernbrennstoffen erhalten haben.

Das Jahr 1996 war durch einen umfassenden Anstieg der Preise für Natururan gekennzeichnet, der sowohl Mehrjahres- wie Spotverträge berührte, wenn auch zum Jahresende bei den Spot-Preisen im Vergleich zu den in der Jahresmitte erreichten Höchstwerten eine Abschwächung zu verzeichnen war. Insgesamt gab es eine Ausweitung der Produktion; während sie in der westlichen Welt stieg, ging die Produktion in der restlichen Welt zurück. Die Aussicht auf steigende Preise trug zu dieser Ausweitung bei, und zu der Ankündigung, daß eine Reihe von neuen Minen eröffnet bzw. alte Minen wiedereröffnet werden würden. Die Frage aber blieb offen, ob langfristig die Versorgung mit Natururan ausreichen würde um den Weltbedarf zur Gänze zu decken. Die Preise für angereichertes Uran und Anreicherungs-dienstleistungen blieben indessen stabil. Unter diesen Umständen hat die Versorgungsagentur die Verbraucher der EU weiterhin darin bestärkt, ihre Versorgungsquellen zu diversifizieren und einen Großteil ihres Bedarfs durch Mehrjahresverträge und zu Preisen zu decken, die die Produktionskosten in angemessener Weise widerspiegeln.

Die Gemeinschaft Unabhängiger Staaten (GUS) war einmal mehr die größte Versorgungsquelle für Natururan der EU. Die Russische Föderation blieb für die EU im Jahre 1996 bei Natururan das wichtigste Versorgungsland. Die Versorgungs-agentur hat in diesem Zusammenhang ihre Politik der Diversifizierung der Versorgungsquellen und der Anwendung von marktgerechten Preisen in flexibler und pragmatischer Weise fortgesetzt, und zwar im Hinblick auf Angebote sowohl aus der laufenden Produktion dieser Länder wie aus militärischen und sonstigen Beständen.

Das neue Kooperationsabkommen zwischen Euratom und den USA, das das alte, aus dem Jahre 1960 stammende und am 31. Dezember 1995 ausgelaufene Abkommen ersetzt, ist am 12. April 1996 in Kraft getreten. Auch mit zahlreichen anderen Handelspartnern von Euratom gab es im Laufe des Jahres routinemäßige Kontakte. Die Versorgungsagentur konnte ihre inzwischen wohletablierte Rolle im Kommissionsteam, das mit Fragen des internationalen Nuklearhandels und den entsprechenden Verhandlungen befaßt ist, weiterhin wahrnehmen.

INTRODUCTION

Comme pour les années précédentes, l'Agence s'est assurée, dans le cadre de l'exercice de son droit exclusif de conclure les contrats d'approvisionnement, que les utilisateurs de l'Union Européenne bénéficiaient d'un approvisionnement régulier en combustibles nucléaires.

L'année 1996 a été caractérisée par une remontée des prix de l'uranium naturel, affectant les contrats tant pluriannuels que ponctuels (spot), mais à la fin de l'année les prix étaient retombés par rapport aux valeurs qu'ils avaient atteintes au milieu de l'année. La production totale a progressé; cependant, alors que la production du monde occidental augmentait, celle du reste du monde diminuait. La perspective d'une remontée des prix a contribué à cette augmentation, ainsi qu'à l'annonce de plusieurs projets d'ouverture ou de réouverture de mines d'uranium. Cependant la question est restée posée de savoir si à plus long terme l'approvisionnement en uranium naturel suffira pour couvrir la totalité des besoins mondiaux. Les prix de l'uranium enrichi et des services d'enrichissement sont en revanche restés stables. Dans ces conditions, l'Agence a continué à encourager les utilisateurs de l'Union à diversifier leurs sources d'approvisionnement et à couvrir la plus grande partie de leurs besoins par des contrats pluriannuels, à des prix couvrant les coûts de production.

La Communauté des Etats Indépendants (CEI) a de nouveau été la plus importante source d'approvisionnement de l'Union européenne en uranium naturel. En 1996, la Fédération Russe est demeurée le principal pays fournisseur d'uranium naturel de l'Union Européenne. Dans ce contexte, l'Agence a poursuivi de façon flexible et pragmatique sa politique de diversification de ses sources d'approvisionnement et de prix liés au marché à l'égard des offres provenant de nouvelle production, ou de stocks militaires et autres de ces pays.

Le nouvel accord de coopération Euratom/Etats-Unis, qui remplace le précédent accord datant de 1960 et venu à échéance le 31 décembre 1995, est entré en vigueur le 12 avril 1996. Des contacts de routine avec plusieurs partenaires commerciaux importants d'Euratom ont également eu lieu dans le courant de l'année. L'Agence d'Approvisionnement a continué à jouer un rôle bien établi au sein de l'équipe de la Commission chargée des questions du commerce nucléaire international et des négociations dans ce domaine.

CHAPTER I

DEVELOPMENTS CONCERNING SUPPLY IN THE EUROPEAN UNION

SECURITY OF SUPPLY

NATURAL URANIUM

In 1996 natural uranium deliveries continued to be covered mainly by long term contracts, while deliveries under spot contracts represented some 4% of total deliveries under purchasing contracts. The countries of the CIS, and especially Russia, continued to be the largest source of supply.

Estimated annual total reactor requirements for natural uranium will average 20,700 tonnes of uranium (tU) over the next 10 years. Potential demand (uncovered requirements) will be very limited in 1997, in the order of an estimated 2,500 tU in 1998, and will increase gradually thereafter.

The Supply Agency's average price for natural uranium deliveries under long-term purchasing contracts in 1996 continued to decrease, but the spot price increased. Several important new long term contracts between EU users and primary producers were signed in 1996.

According to preliminary figures, Western World production in 1996 rose by some 12% to approximately 28,500 tU, largely through better use of existing capacity (essentially in Australia and Canada), while production in the rest of the world (essentially the CIS, Eastern Europe and China) continued to decrease. Accordingly, total world production rose only slightly to some 35,500 tU. In the EU production remained at a very low level, and it is anticipated that in France production might cease towards the end of the century. However, EU companies are continuing their production efforts outside the Community, mainly through their subsidiaries in Africa, Canada, the United States and Australia.

Notwithstanding the increase in production, current world consumption (estimated at some 64,000 tU in 1996 and expected to rise to 70,000 tU by 2000) is nearby double current fresh production, and a substantial proportion of this production comes from mines which are likely to be exhausted soon after the turn of the century. The natural uranium supplies derived from disarmament of Russian warheads are expected to amount to some 37,000 tU between 1997 and 2001, but even if they reach the market on schedule, it cannot be excluded that new production beyond that already planned will have to be brought on line in order to bridge the gap between production and consumption.

The possible opening of new mines in Australia and Canada was announced for around the end of the century, but there are still uncertainties which might delay or even cause the cancellation of some of these projects. The Agency believes that a sufficiently high price level will be necessary to make projects worthwhile and ensure that production is started on time at these mining projects.

In the first half of the year, published spot price indicators increased rapidly to some US $16 per pound U_3O_8, but in the second half prices remained stable and after that decreased slowly to some US $14. The spot market price for natural uranium hence saw an increase to levels not seen since the late 1980s, but towards the end of the year prices started to fall again.

CONVERSION, ENRICHMENT, FABRICATION

The uranium conversion, enrichment and fabrication markets remained stable in 1996, and facilities in the EU provided adequate cover for its needs. Worldwide capacity is more than sufficient to meet future requirements. Almost all enrichment supply took place under multiannual contracts. Estimated total enrichment requirements over the next 10 years will be on average 12,000 tonnes of Separative Work (tSW) per year.

SUPPLY OF CIS ORIGIN MATERIALS

CIS SUPPLY

The CIS remains the largest source of natural uranium supply to the EU, and in 1996 the Russian Federation was once again the EU's largest single supplier country. Although questions remain about the size of the civil uranium stockpiles in Russia, it became clear during the course of the year that at least in terms of new contracts, Russia was not contracting for the large quantities at very low prices which were such a feature of the uranium market in the early 1990s. However, deliveries under old contracts continued to take place at prices some way below the Supply Agency's current average price. The main question now facing the market is by whom and on what timescale the large quantities of natural uranium arising from the US-Russia Highly Enriched Uranium (HEU) deal, to which Russia has title, will be marketed.

Euratom and the US continued to be Russia's main overseas markets for natural uranium. Russia's continued access to the US market as a result of the "matched sales" programme under the amended Suspension Agreement between the US Department of Commerce (DOC) and Russia, deliveries of Low Enriched Uranium (LEU) to the US under the US-Russia HEU deal, and the news late in the year that some Japanese utilities might no longer be excluding Russian origin material in their calls for tender, all contributed to less material being made available on the EU market.

The Supply Agency continued to monitor carefully contracts for supplies from the CIS, and to report on developments to its Advisory Committee. The Agency maintained its flexible and pragmatic approach to the application of the supply policy, which aims to ensure security of supply through diversification of sources and the avoidance of over-dependence on any one source. The considerable market share of the CIS, and in particular Russia, demonstrates clearly that CIS supplies have fair access to the EU market.

Purchases of natural uranium equivalent of CIS origin by EU utilities were in the order of 5,900 tU in 1996, and a further 900 tU were acquired as a result of exchanges and return of loans. Total acquisitions of natural uranium from the CIS were therefore some 6,800 tU, representing about 43% of total deliveries to EU utilities under purchasing contracts in 1996 (33% in 1995).

Deliveries of enrichment of Russian origin to EU utilities in 1996 in the context of enrichment contracts or the Separative Work component of Enriched Uranium Product (EUP) represented about 18% of total deliveries under purchasing contracts (23% in 1995).

1996 saw the dialogue between the Commission and the Russian authorities on nuclear trade matters continue. Exploratory talks took place on a future specific bilateral nuclear trade arrangement/agreement. One of the issues on which the Commission would like to deepen the dialogue in this context is the question of Russia's capacity to supply in terms of current levels of production of natural uranium, of production capacities for natural uranium and enrichment, and of the level of stockpiles of both natural uranium and EUP. More comprehensive knowledge on these points should help both sides towards a better understanding of each other's interests.

PHYSICAL IMPORTS AND STOCKS OF CIS ORIGIN MATERIAL

According to notifications from EU operators, physical imports from the CIS of natural uranium or feed contained in EUP amounted to some 65,300 t of natural uranium equivalent in the period 1992-96, of which some 16,600 t was imported in

1996. These quantities exceed by far deliveries to EU users, but include material in storage not yet contracted for delivery to EU customers, material in transit for final use outside the EU, and a small amount of uranium feed of non-CIS origin returned to the EU after enrichment in Russia.

US Suspension Agreements

The Suspension Agreements between US DOC and a number of CIS countries, which limit their natural uranium exports to the USA, were further amended in 1996.

In October, the option was closed through which Russian uranium could be imported into the USA outside the relevant quotas (tied to US production) if enriched in the EU (known as the "enrichment bypass"). As a result of this amendment to DOC's agreement with Russia, and similar amendments dating from 1995 to the agreements with Kazakhstan and Uzbekistan, a certain amount of uranium of these origins enriched in the EU on behalf of US utilities became stuck in the enrichment bypass and could not be imported into the US. Throughout the year, discussions were reported as continuing between DOC and US utilities on "grandfathering" these quantities. DOC agreed to grandfather certain of these contracts subject to an arrangement whereby 75% of the material could enter the US freely and the remaining 25% could enter subject to the condition of making matched purchases of freshly-produced US uranium. Consequential amendments have been made to the Suspension Agreement with Russia and are expected to be made to the Kazakh and Uzbek Suspension Agreements.

LEU derived from ex-military HEU

The implementation of the 1994 agreement between the US and Russia for the sale of 500 t of HEU blended down to LEU over twenty years remained closely linked with the process of privatising the US Enrichment Corporation (USEC). As part of the Senate budget package, legislation to pave the way for privatisation fell victim to the political impasse over the budget until late April, when this impasse was finally unblocked. This legislation contains not only provisions for USEC's privatisation, but also sets the maximum level of sales of uranium feed from the US-Russia deal in the US market, and of UF_6 and HEU to be transferred from the stockpiles of the US Department of Energy (DOE) to USEC.

The major development of 1996 in this area was a revision of the agreement whereby Russia will deliver 24 t of blended-down HEU to the US in 1998. This is considerably more than the 6 t and 12 t delivered in 1995 and 1996 respectively, and more than the 18 t due to be delivered in 1997. This acceleration of the delivery schedule under the HEU deal raises a number of questions about how this material will be marketed. There are important limiting factors on the disposition of the material on the US market, because the USEC Privatisation Act itself restricts sales of Russian uranium in the US. It seems very probable that much of this material will be targeted for marketing in the EU. The Supply Agency's view is that supplies of Separative Work contained in the blended-down HEU from Russia, arising out of the US/Russia HEU deal, should be subject to the same supply policy considerations as material coming directly from the CIS. The same would apply to the natural uranium feed equivalent returned by USEC to the Russians for subsequent sale.

Other Developments

ENU Case

The oral arguments in the appeal of Portuguese producer ENU in its case against the Commission, relating to Community preference for uranium produced within the Community, were heard on 8 October 1996 by the Court of Justice. ENU's appeal is against the judgement of the Court of First Instance of 15 September 1995, which decided in favour of the Commission both with regard to ENU's annulment action against the

Commission's decision of 19 July 1993, and with regard to ENU's claim for compensation.

On 5 December 1996, the Advocate-General presented his opinion. He recommended the Court to decide in favour of the Commission by rejecting ENU's annulment action as inadmissible, and its compensation action as unfounded.

At the year end no date had been set for the Court's final judgement. Editor's note: the judgement in the ENU case was made on 11 March 1997.

KLE CASE

The oral arguments in the case of German utility KLE against the Commission were heard on 18 September 1996 by the Court of First Instance. This case concerned an annulment and compensation action brought by KLE against the Commission's decisions of 4 and 21 February 1994. These decisions had supported the Agency's decision to impose as a condition upon the conclusion of a given contract that the origin of the supplies involved not be CIS.

The Court has declared that oral pleading is closed, but no date had been set at the year end for the Court's judgement. Editor's note: the judgement in the KLE case was made on 25 February 1997.

DRAFT ILLUSTRATIVE NUCLEAR PROGRAMME OF THE COMMUNITY (PINC)

The draft Illustrative Nuclear Programme of the Community, known by its French acronym as the "PINC" (Programme Indicatif Nucléaire de la Communauté), was approved by the Commission on 25 September 1996. Established according to Article 40 of the Euratom Treaty, the PINC takes the form of a Communication from the Commission on the nuclear industries in the EU, and was transmitted to the Economic and Social Committee for consultation, and for information to the Council and the Parliament. The Commission will be called upon to adopt the PINC definitively once this consultation process has been completed.

The PINC sets the nuclear option clearly in the context of an energy policy for the EU and the White Paper "An Energy Policy for the European Union"[1], which was adopted in 1995. Nuclear energy will have to be judged according to the contribution it can make to the fundamental energy policy objectives of overall economic competitiveness, security of supply, and environmental protection.

On the subject of nuclear fuel supply conditions, the PINC confirms that "The Commission and the Euratom Supply Agency are applying a policy of diversification of sources of supply, implemented in a flexible way by the exercise of the Agency's right to conclude contracts and aiming at avoiding overdependence on any single source of supply".[2]

RESEARCH REACTOR FUEL CYCLE

The Supply Agency continued to provide its support to research reactor operators and industry in this field, and followed closely the problems associated with the supply of HEU and the disposal and reprocessing of spent research reactor fuel.

The major development during the year was the publication by US DOE in May of the Record of Decision announcing the acceptance and management of spent nuclear fuel from foreign research reactors containing uranium enriched in the US. This decision paved the way for the return of large quantities of US origin irradiated fuel stored at reactor sites, which was creating serious difficulties for the operators and raising questions, in some cases, about the continued operation of their reactors.

However, the above policy concerns only the existing inventory of spent fuel and the spent fuel produced over the next 10 years (i.e. fuel irradiated

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1 Commission document COM(95) 682/final of 13 December 1995.
2 Commission document COM(96) 339/final of 25 September 1996 (page 19 of the English version).

until May 2006). It is unlikely that the policy will be extended, and there will therefore be a continued need within the Community for specialised reprocessing capacity, and the development of solutions for the disposal of spent fuel and/or waste. The United Kingdom Atomic Energy Authority continued to postpone its decision on closing down the research reactor fuel reprocessing facility at Dounreay, and Cogema announced that it was prepared to offer reprocessing and waste conditioning services for spent research reactor fuel at its plant at La Hague.

The long term security of supply of HEU for the five reactors within Euratom requiring fresh supplies of this material gave cause for concern, but there were also positive developments in this area. The use of existing inventories in the Community allowed continued operation of all those reactors which require HEU in the near future, and a new source of supply was found for two of them. Furthermore, US DOE is now technically in a position to supply further quantities of HEU to those reactors prepared to commit themselves to convert to LEU fuels, as soon as new high density fuels are made available as a result of a development programme now underway in the US.

Reprocessing, plutonium and MOX

The use of MOX in the Community continued to become more widespread, and more production capacity is due to come on line in the next few years. The amount of natural uranium and Separative Work saved by the use of MOX fuel in the Community can be estimated at some 1,200 t of natural uranium and some 700 tSW annually.

CHAPTER II

SUPPLY OF NUCLEAR MATERIALS AND ENRICHMENT SERVICES IN THE EUROPEAN UNION

REACTOR NEEDS/NET REQUIREMENTS

During 1996, the fresh fuel loaded in EU reactors contained the equivalent of 18,400 t of natural uranium and 11,100 tSW - most tails assays were in the order of 0.30%.

Future EU reactor needs and net requirements for uranium and Separative Work, based on data supplied by EU utilities, rounded to the nearest 100 tU and 100 tSW respectively, are estimated as shown in Table 1.

Table 1 - Reactor needs and net requirements for uranium and separative work

Year	Natural Uranium (tU)		Separative Work (tSW)	
	Reactor needs	Net require-ments	Reactor needs	Net require-ments
1997	19,600	16,300	10,200	9,200
1998	20,300	17,200	11,800	10,500
1999	21,500	19,200	12,000	11,000
2000	20,900	18,900	11,800	10,800
2001	21,100	19,300	12,200	11,500
2002	21,400	19,400	12,600	11,600
2003	20,300	18,400	12,000	11,000
2004	20,800	18,900	12,500	11,500
2005	21,000	19,300	12,400	11,500
2006	19,800	18,100	12,100	11,200
TOTAL	206,700	185,000	119,600	109,800
Average	20,700	18,500	12,000	11,000

Net requirements are calculated on the basis of reactor needs less the contributions from currently planned uranium/plutonium recycling, and taking account of inventory management as communicated to the Agency by utilities.

Average reactor needs for natural uranium over the next 10 years will be 20,700 tU/year, while average net requirements will be about 18,500 tU/year. Compared to last year's report, these figures show an increase in reactor needs of 200 tU/year and an increase in net requirements of 400 tU/year.

Average reactor needs for enrichment over the next 10 years will be 12,000 tSW, while average net requirements will be in the order of 11,000 tSW/year.

NATURAL URANIUM

CONCLUSION OF CONTRACTS

The number of contracts and amendments relating to ores and source materials (essentially natural uranium) which were dealt with in accordance with the Agency's procedures during 1996 is shown in Table 2.

Transactions involving natural uranium totalled 16,400 tU, some 8,700 tU of which were the subject of new purchase contracts by EU utilities. Some 7,300 tU transacted related to purchases by producers or intermediaries, as well as exchanges, loans, etc. This constitutes a drop to less than 50%

of the activity recorded in 1995, returning to the levels comparable to that recorded in 1994.

Table 2 - Natural uranium contracts concluded by or notified to the Supply Agency

Contract Type	Number	Quantity (tU) (1)
Purchase (by a EU utility/user) - multiannual (2) - spot (2)	 7 6	 7,900 800
Sale (by a EU utility/user) - multiannual - spot	 0 1	 0 -
Purchase-sale (between two EU utilities/users) - multiannual - spot	 0 2	 0 -
Purchase-sale (intermediaries)(3) - multiannual - spot	 4 22	 2,000 2,500
Exchanges (4) Loans	26 1	2,900 -
TOTAL Including contracts of less than 10t	69 13	16,400 40
CONTRACT AMENDMENTS	4	2,300

Notes

(1) In order to maintain confidentiality the quantity has been indicated only when there were at least 3 contracts of each type, but all quantities have been included in the total.

(2) "Multiannual" contracts are defined as those providing for deliveries extending over more than 12 months, whereas "spot" contracts are those providing for either only one delivery or deliveries extending over a period of a maximum of 12 months, whatever the time between the conclusion of the contract and the first delivery.

(3) Purchases/sales contracts between intermediaries - both buyer and seller are not EU utilities/end users.

(4) This category includes exchanges of ownership and U_3O_8 against UF_6. In contrast with previous Annual Reports, exchanges of safeguards obligation codes and international exchanges of safeguards obligations are not included.

VOLUME OF DELIVERIES

During 1996, natural uranium deliveries under existing contracts amounted to approximately 15,900 tU compared to 16,100 tU in 1995. Deliveries under spot contracts represented only about 4% of the total (18% in 1995).

The deliveries taken into account are those made under purchasing contracts to the EU electricity utilities or their procurement organisations; they include the natural uranium equivalent contained in EUP purchases. Deliveries under purchasing contracts and fuel loaded into reactors by EU utilities since 1980 are shown in Graph 1. The corresponding table is in Annex 1. The gap between deliveries and the amount of fuel loaded is partly explained by the use of reprocessed uranium (some 500 tU in 1996). The remainder presumably originates from drawdown of inventories.

AVERAGE PRICES

MULTIANNUAL CONTRACTS

For deliveries under multiannual contracts, prices were expressed in 8 different currencies. To calculate the average price, the original contract prices were converted into ECU and then weighted by quantity. For the conversion into ECU the Agency uses the average annual exchange rate of the respective currency as published by Eurostat[3]. A few contracts where it was not possible to establish reliably the price of the natural uranium component (e.g. in some cases of EUP deliveries) were excluded from the price calculation.

The average price for 1996 rounded to the nearest ¼ ECU was as follows.

ECU 32.00 / kgU contained in U_3O_8

(ECU 34.75 in 1995)

SPOT CONTRACTS

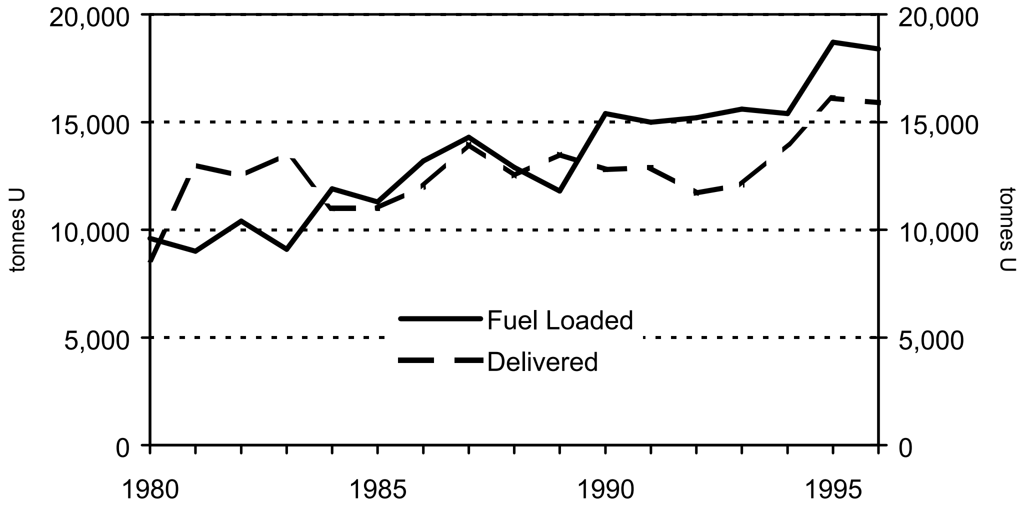
The 1996 average price, calculated according to the same principles, of material delivered under spot contracts was as follows:

ECU 17.75 / kgU contained in U_3O_8

(ECU 15.25 in 1995)

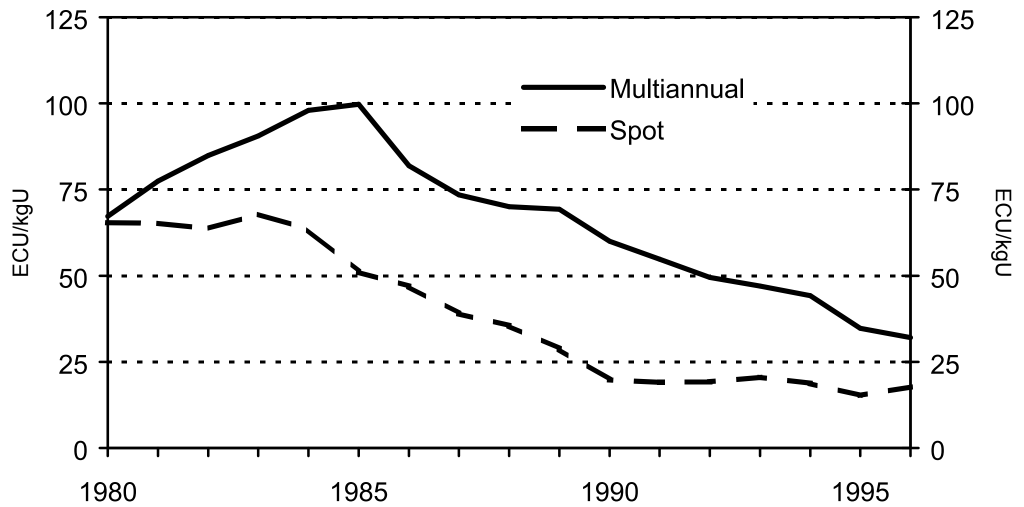
[3] Theme 2, Series B, Ecustat, Table 1.5

Graph 1 Natural uranium feed contained in fuel loaded into EU reactors and natural uranium delivered to utilities under purchasing contracts (in tU)

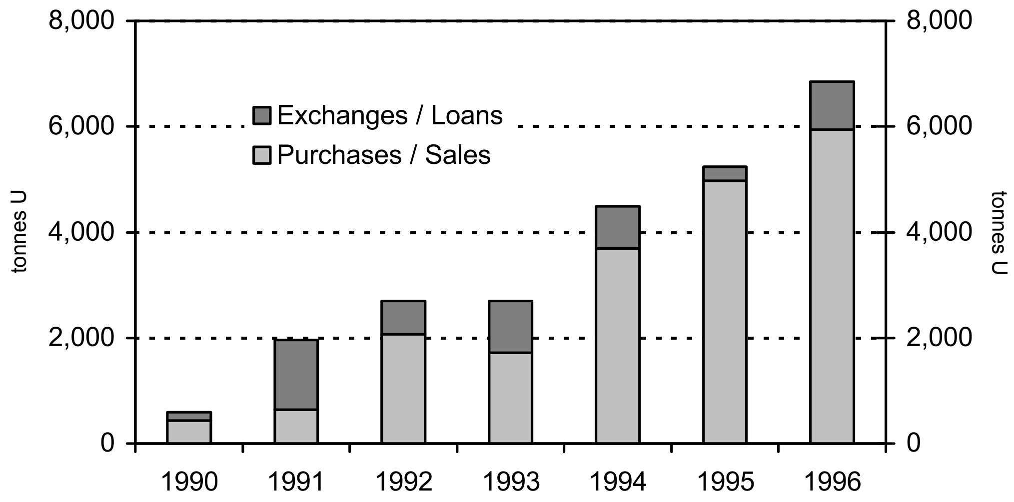


Graph 2 shows prices for deliveries under multiannual as well as spot contracts since 1980, expressed in ECU. For ease of reference, historical data on prices published in previous Annual Reports and variations in exchange rates are presented in Annex 2.

Graph 2 Average price for natural uranium delivered under spot and multiannual contracts (ECU/kgU)



Graph 3 Acquisitions of CIS origin natural uranium by EU utilities (in tU)



ORIGINS

EU utilities or their procurement organisations obtained in 1996 approximately 90% of their supplies from 12 countries outside the EU. The largest single supplier was the Russian Federation, which represented 37% of total external supply under purchasing contracts and 33% of total supply under purchasing contracts.

Acquisitions of CIS origin natural uranium by EU utilities since 1990 are shown in Graph 3, which is provided for reference purposes and brings together information already published in previous Annual Reports.

SPECIAL FISSILE MATERIALS

CONCLUSION OF CONTRACTS

The number of contracts and amendments relating to special fissile materials (enrichment, enriched uranium and plutonium) which were dealt with during 1996 in accordance with the Agency's procedures is shown in Table 3.

LOW ENRICHED URANIUM

In 1996, supply of enrichment services to EU utilities totalled approximately 11,700 tSW, delivered in 2,400 t of LEU which contained the equivalent of some 18,900 t of natural uranium feed. Some 75% of this Separative Work was provided by EU companies (Eurodif and Urenco). Some 4% of deliveries of Separative Work took place under spot contracts.

ENRICHED URANIUM FOR RESEARCH REACTORS

Enriched uranium for research reactors is normally supplied in two enrichment assays: just under 20% (LEU) and about 90% (HEU).

Although the quantities involved represent a minor amount in terms of EU needs for enriched uranium, HEU supply is very important to the scientific community and is of high political significance.

Supply of LEU to research reactors continued unhindered. Reactor requirements for HEU were met, but the source of future supplies continued to be the object of considerable attention (see also

Chapter IV). The Supply Agency continued to provide support to reactor operators in the procurement of fuels.

PLUTONIUM

In 1996, transactions involving plutonium were again mainly related to its use for MOX fuel fabrication and the Agency concluded 17 such contracts.

Table 3 - Special fissile material contracts concluded by or notified to the Supply Agency

Contract Type (1)	Number
I. Special Fissile Materials	
Purchase (by a EU utility/user)	
- multiannual	3
- spot	12
Sale (by a EU utility/user)	
- multiannual	8
- spot	16
Purchase-sale (between two EU utilities/users)	
- multiannual	0
- spot	17
Purchase-sale (intermediaries)	
- multiannual	4
- spot	24
Exchanges (swaps)	17
Loans	2
TOTAL, including (2)	103
- Low enriched uranium	60
- High enriched uranium	27
- Plutonium	17
CONTRACT AMENDMENTS	2
II. Enrichment Contracts (3)	
- multiannual	6
- spot	1
CONTRACT AMENDMENTS	14

Notes

(1) See explanations under Table 2, as appropriate.

(2) Some contracts may involve both LEU and plutonium.

(3) Contracts with primary enrichers only.

CHAPTER III

NUCLEAR ENERGY DEVELOPMENTS IN THE EUROPEAN UNION MEMBER STATES

BELGIQUE/BELGIË - BELGIUM

ENERGY POLICY CONSIDERATIONS

At the beginning of 1996 the Government authorised new electricity production capacity equal to 1,885 MWe for the period 1996-2000, in order to compensate for the shut-down of older installations and to meet a rise in demand. This new capacity consists of:

◊ 725 MWe nuclear power, which represents Belgium's participation in the plants Chooz B1 and B2;

◊ 1,160 MWe from gas-fired plants, equipped with gas-steam turbines.

The electricity sector has to introduce a new equipment plan for the period 1998-2008 at the beginning of 1998.

The new law of 15 April 1994 concerning the protection of the population and the environment against the dangers of ionising radiation and the creation of a Federal Agency for Nuclear Control has partly entered into force, and the Governing Board and the Government Commissioner of the Agency have been nominated. The Council of State has given its advice on the draft royal decree concerning the adaptation of the general regulation on ionising radiation. It is now adapted in order to take due account of the remarks of the Council of State.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

In 1996, Belgium's nuclear power stations (including the French part of Tihange 1) generated about 41.4 TWh. This is 5.7% more than in 1995. It represents 57.3% of the country's total electricity production in 1996, which is 2% more than in 1995. This positive development is due to the excellent load factor of the Belgian nuclear power plants and the increase in production capacity of some plants. Above those already mentioned in the 1995 Annual Report, the following increases were achieved in 1996:

◊ Doel 3: an increase from 970 MWe to 1,006 MWe

◊ Tihange 2: an increase from 930 MWe to 955 MWe

This increase in production capacity was made possible by the replacement of the turbine rotors.

FUEL CYCLE DEVELOPMENTS

Belgium produced 33 tonnes of natural uranium in 1996, derived from imported phosphates.

The production of MOX fuel by Belgonucléaire in its Dessel plant amounted to 36 tonnes in 1996, to be used in Belgian and German nuclear power plants.

The recommendations of the resolution of Parliament adopted on 22 December 1993, concerning the use of MOX fuel in Belgium's nuclear power plants and the suitability of reprocessing spent fuel, have continued to be carried out as in previous years. In this context the following developments took place in 1996 :

◊ 20 MOX fuel elements were loaded in 1996 in units Doel 3 (8 elements in March) and Tihange 2 (12 elements in May), which brings the total to 36.

◊ In the framework of Synatom's programme for the encapsulation of spent fuel for direct disposal, some improvements have taken place in the conceptual design of the reference container defined in 1995. The second phase of the programme was finalised. It consisted of putting together the safety rules and defining the basic hypotheses for the conceptual design of the spent fuel conditioning plant. The third phase, which is the conceptual design of the plant itself, has been started.

◊ In the framework of the R&D programme on geological disposal of both high-level, medium-level and long-lived waste and of spent fuel, mainly carried out by the Nuclear Research Centre at Mol, but co-ordinated and managed by Niras/Ondraf, the following important activities took place:

- as part of the specific programme of the European Commission on nuclear fission safety, the first performance assessment of the disposal of spent fuel in a clay layer has been published. A more detailed safety analysis has been started;
- an experimental programme has been launched into the interaction between the clay and the spent fuel elements;
- a study has been completed into the transportation and handling of the spent fuel elements in the underground repository;
- for the PRACLAY programme, which studies the thermo-hydro-mechanic aspects of the disposal of heat-producing waste, and which is also applicable to spent fuel, a model representing a section of a disposal gallery has been prepared;
- an appropriate concept for the disposal galleries for spent fuel elements was under study.

◊ 56 spent fuel elements from Doel 3 have been placed in two dry storage containers in the interim storage building constructed on the site in 1995. At Tihange, the construction of a new wet storage building has continued.

A dummy test of all phases of the return to the Belgoprocess (daughter company of Niras/Ondraf) site of the High-Level Waste (HLW) glass canisters resulting from the reprocessing of Belgian spent fuel at La Hague has been successfully carried out. On the Belgoprocess site, the part of the building where the HLW glass canisters will be stored has been operational since mid-1994. The part which is to receive the other types of reprocessing waste was almost completed in 1996.

RESEARCH REACTORS

The materials testing reactor BR2 of the Nuclear Research Centre CEN/SCK at Mol underwent refurbishment throughout 1996. No particular technical problems have arisen during the refurbishment. It has been proposed to conclude a contract with Cogema for the reprocessing of all the existing and future spent fuel elements from the BR2.

DANMARK - DENMARK

RADIOACTIVE WASTE

Denmark has no nuclear power plants and the amount of radioactive waste is therefore small. At Risø National Laboratory there are two reactors in operation: a research reactor and an educational reactor. Spent fuel is sent by ship to the United States according to US policy for research reactor fuel of US origin. There are no plans for disposal of HLW in Denmark.

Low-Level Waste (LLW) and Intermediate-Level Waste (ILW) are collected, treated and stored in two intermediate storage facilities on the site of Risø. A storage facility for LLW receives about 100-120 200L-drums per year. Two-thirds of the amount is produced by Risø National Laboratory, the rest comes from hospitals, industry, laboratories and other users of radioactive isotopes in Denmark.

At the moment about 4,400 drums are stored in this facility, which has a total capacity of 5,000 drums. A storage facility for ILW receives about 0-5 drums per year. The amount is decreasing after the hot cell facility was closed in 1994. At the moment about 130 m^3 of long-lived LLW is stored in this facility.

Solid LLW is compacted in drums and liquid LLW is treated in an evaporator and a bituminization plant. The waste embedded in bitumen is then stored in drums. The ILW is not treated but stored in stainless steel containers or drums.

At the moment Denmark has no plans for construction of a repository for final disposal of LLW and ILW.

DEUTSCHLAND - GERMANY

GENERAL CONSIDERATIONS

The combined development of a European Pressurised Water Reactor (EPR) by both French and German utilities involved in nuclear power generation and the power plant constructors went according to plan in 1996. An important intermediate stage in the project will be reached in mid-1997 with the completion of a Basic Design Report. Amongst other things, these studies should provide an answer to the question of whether the EPR can be operated economically. The German companies participating in the project announced in December 1996 that they would make available about DM 150 million for a further three-year study phase, in which the emphasis would be on proving the project's ability in principle to obtain a licence, with the involvement of public authorities and technical standards bodies. This process should enable not only operators and constructors, but also public authorities and technical standards bodies, to maintain their capability to plan, licence and eventually carry out new projects involving nuclear technology.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

Germany's nuclear power plants generated 161.7 TWh of electricity in 1996, 4.9% more than in the previous year. Nuclear power's share in electricity generation in Germany was again about one third.

The 1996 figure for nuclear electricity generation is the highest since the advent of commercial nuclear power in Germany. This is all the more remarkable because with the closure of the Würgassen power plant in 1995 and the long outages at Biblis for political reasons, there was nominally less available capacity. The decisive factors in this good performance were both the excellent level of availability of the power plants and the increasing achievement of efficiency improvements through modifications to the low-pressure turbines. This programme of improvements, put into action step-by-step since the early nineties, had resulted in a capacity increase of over 400 MWe by the end of 1996.

Of Germany's 20 commercial nuclear power plants, 19 were connected to the grid for the majority of the time at a high level of availability. The Mühlheim-Kärlich nuclear power plant is still out of operation because of the revocation by the Rheinland-Pfalz Administrative Court of the newly formulated permit for partial construction. In the meantime, the Federal Administrative Court has accepted operator RWE Energie AG's application to appeal against this decision. Biblis A is now connected to the grid again after a 13-month outage caused by a leak in a valve in one of the steam pipes.

FUEL CYCLE DEVELOPMENTS

Separation of uranium from the reclamation process at Wismut's Königstein mine resulted in some 40 tU in concentrates. After 1996, Wismut will not continue to process uranium concentrates from reclamation.

Urenco Deutschland GmbH's uranium enrichment facility in Gronau ran uninterruptedly at nearly 100% capacity. Total production since entry into service reached 5,000 tSW in September. The extension of the facility to its licensed capacity of 1,000 tSW/year ran to schedule and will be completed in one year's time. At the end of 1996, capacity stood at 800 tSW/year. The ongoing process of licensing a further increase of the facility's capacity to 1,800 tSW/year has been slightly delayed. A licence is expected to be granted in the course of 1997.

Siemens AG KWU covers its European market share in the fabrication of fuel elements through the ANF fuel fabrication facility in Lingen. Since the last half of 1996, ANF has had a second complete production line at its disposal. In October 1996, a licence application was made for an increase in the quantity of material being processed in the fabrication of fuel rods and the final assembly of fuel elements.

The Hanau facility, with its two sections devoted respectively to uranium processing and MOX processing, is in the process of being shut down. More than 700 tU has been removed from the uranium processing section of the plant, and some parts of that section have already been downgraded to the level of controlled areas for radiation protection purposes. The plan for the MOX processing section of the facility is that the remaining inventory of plutonium should be converted into a form suitable for long term storage, and that the existing plant should be put back into operation in the context of decommissioning the facility.

Substantial changes have been made in the plans for decommissioning the reprocessing facility in Karlsruhe. The intention is no longer to vitrify the liquid high level waste at the PAMELA facility at Mol in Belgium, but instead to construct an on-site vitrification plant at the Karlsruhe research centre.

No further spent fuel was placed in the interim store at Ahaus in 1996. The process of obtaining a licence to extend the capacity of the store to 4,200 t Heavy Metal is ongoing, and a licence is expected to be granted in 1997. The first transport and storage container holding 28 vitrified waste blocks arising from reprocessing in France was placed in the identically constructed interim store at Gorleben in May 1996.

Storage of waste at the Morsleben final disposal site went smoothly in 1996. Between the resumption of operations on 13 January 1994 and the end of 1996, some 10,600 m^3 of low and intermediate level waste underwent final disposal. 1996 saw no noticeable progress in the licensing procedure for the planned Konrad final disposal site. The exploratory work on the suitability of the saliferous rock at Gorleben as a final disposal site went according to plan in 1996. The two shafts have been joined at a depth of 840m, and work has begun on the construction of spaces for equipment and for storage.

ELLAS - GREECE

No new developments were reported.

ESPANA - SPAIN

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

Gross production of electrical energy of nuclear origin in Spain during 1996 was 56,204 GWh, which represents approximately 34% of total national production. As in recent years, the performance of the nuclear park has been highly satisfactory, as reflected in the average load factor of 86.1%.

The steam generators of unit 1 of the Almaraz nuclear power plant and of Asco 2 have been replaced. In both cases, the units were stopped for about two and a half months in accordance with the planned programme. During these outages modifications were carried out to the turbines of both units, increasing their electrical power by 52 and 38 MWe respectively.

In March, the entry into service of a new cooling tower was authorised at the José Cabrera plant, allowing the plant to operate at full power while minimising the thermal environmental impact on the river water.

FUEL CYCLE DEVELOPMENTS

In July 1996, the Ministry of Industry and Energy granted the Empresa Nacional del Uranio, S.A. (ENUSA) an extension for a ten-year period of both the Juzbado (Salamanca) fuel fabrication plant's provisional operating permit and its authorisation to fabricate fuel elements. This plant continues to manufacture PWR and BWR fuel elements both for Spanish nuclear plants and for various European countries. Its production in 1996 was 683 elements, containing 216 t of UO_2.

In October, the Ministry of Industry and Energy granted the Empresa Nacional de Residuos Radioactivos, S.A. (ENRESA) a five-year extension to its provisional operating permit for the intermediate and low-level solid radioactive waste storage facility at Sierra Albarrana (El Cabril). At the end of 1996, 4 of the existing 28 cells at the facility had been filled completely.

The Quercus uranium concentrates production plant, which belongs to ENUSA, continued to operate at below design capacity, producing about 300 t of U_3O_8 in 1996.

The intermediate storage strategy for spent fuel continued to be developed, with increases in 1996 in the capacity of the spent fuel pools at the Trillo, Vandellos 2, Santa Maria de Garona, Cofrentes and José Cabrera plants through the installation of racks of compact design. At Trillo, an additional building is planned for the storage of metal spent fuel containers, and will be used once the capacity of the spent fuel pool has been filled.

The preparatory work of processing low level operational radioactive waste continued prior to the start of dismantling the definitively closed Vandellos nuclear power plant. When utility Hifrensa has completed these works, and once the Nuclear Safety Council has given a favourable report and the Ministry of the Environment has issued the Environmental Impact Report, the Ministry of Industry and Energy will be able to authorise the closure and dismantling of the plant. The plan is to reach level 2 "restricted release of the site" in four years, and to complete dismantling up to level 3 "unrestricted release of the site" after an estimated waiting period of 25 years.

By the end of 1996, the work on dismantling and closure of ENUSA's Lobo G uranium ore processing plant at La Haba (Badajoz), had reached an advanced stage and should be completed in the first quarter of 1997.

FRANCE

GENERAL CONSIDERATIONS

On 31 December 1996, French nuclear facilities numbered 55 pressurised water reactors in operation (thirty-four 900 MW PWR's, twenty 1,300 MW PWR's and one 1,450 MW PWR) and two fast reactors (Phénix and Superphénix). 3 reactors of 1,450 MW each are under construction for commissioning by 1998.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

Gross national consumption of electricity rose to 414 billion KWh, an increase of 4.2% compared with 1995.

Industrial consumption was up by 3.7% compared to 1995. Tertiary industries and domestic consumption increased by 4.7%. The export balance was relatively stable compared to 1995 and amounted to 69 TWh.

Total net production of electricity rose to 489 billion KWh, i.e. 3.7% more than 1995. 378.2 billion KWh were produced by nuclear power stations, representing approximately 77% of national production. Thermal production from fossil fuels was 41.8 TWh. Hydroelectric production decreased by 9.1% compared with 1995 and amounted to 68.9 TWh.

As regards nuclear operation, 1996 showed a progression in availability levels, which increased to 82.7% compared to 81% in 1995.

The daily peak of domestic consumption amounted to 69,000 MW, which is close to the record of 70,000 MW reached on January 4, 1993.

The Creys-Malville fast breeder was operated to 90% of its capacity on October 22, and therefore produced 1,060 MW.

The program of testing and removing vessel heads has been carried forward. Since 1994, 18 vessel heads out of the 54 in operation have been replaced. Also, 3 steam generator replacements have been completed.

At the end of 1996, nine reactors were operating with MOX fuel.

FUEL CYCLE DEVELOPMENTS

URANIUM MINING

Uranium production in France amounted to 930 tU in concentrates in 1996, 5% down as compared to 1995. The closure of the mining division of l'Hérault has been announced by Cogema for mid-1997.

In Canada, the development of the McClean Lake project continued: mining of the JEB open pit has been carried out and the ore reached the plant at the end of the year. The construction of the processing plant has gone ahead with the objective of commissioning it in mid-1997.

URANIUM CONVERSION

In May 1996 Comurhex celebrated the delivery of its 200,000th tonne of uranium as UF_6, which was delivered to a Japanese utility.

URANIUM ENRICHMENT

The start-up authorisation for the TU5 installation at Pierrelatte, at first expected in 1995, was received at the beginning of January 1996. The installation is devoted to the conversion of reprocessed uranium into oxide.

REPROCESSING

The UP2 and UP3 plants operated satisfactorily during 1996. More than 321 spent fuel casks were received and unloaded for reprocessing. 820 t of oxide fuel were reprocessed in 1996 in UP3 (reaching the nominal capacity of the plant), and UP2 reprocessed 862 t of oxide fuel. A total of 1,682 t of oxide fuel was reprocessed in 1996, bringing the cumulative quantity to 10,235 t since 1976.

Regarding the reprocessing/recycle programme, commissioning of the MELOX plant continued.

RADIOACTIVE WASTE

Investigations with a view to setting up underground research laboratories continued at the start of 1996. Given the outcome of this work, the French Government has authorised the National Radioactive Waste Management Agency (ANDRA) to file three documented applications for authorisation to set up and operate underground laboratories in the Gard and the Vienne departments and in eastern France (on the border between the Meuse and the Haute-Marne departments). Procedures are expected to last 18 to 24 months.

IRELAND

Ireland does not have a nuclear power industry and there are no plans for such. Ireland's nuclear policy objectives emphasise the need for the enhancement of nuclear safety and radiation protection world-wide. The Government is advised on and assisted with the implementation of this policy by the Radiological Protection Institute of Ireland. Ireland remains opposed to the continued operation and expansion of the nuclear industry.

ITALIA - ITALY

A new impulse is being given by ENEL and ENEA on the one hand, and by ANPA on the other hand, to the implementation of the national policy on radioactive waste management.

ENEL is engaged in decommissioning its four Nuclear Power Plants (NPP's) following a strategy which is consistent with the one adopted by most countries. According to the programme, the first NPP which will reach a safe state, in a year's time, will be Garigliano power station, followed by Latina and Trino power stations. In particular at Garigliano power station, activities to put radioactive waste in a safe state by MOWA machine are under way and will last 18 months. In the next few months Caorso power station will start the preliminary licensing procedure necessary to reach the safe stage.

ENEL is also engaged (together with Ansaldo and FIAT as the GENESI consortium) in a preliminary study into the construction of an interim dry store for irradiated fuel. Research activity on passively safe reactors continued in 1996, both with European partners (utilities and constructors), and in the framework of an international agreement.

ENEA, in the context of a comprehensive action programme on its nuclear waste, and following a call for tender launched at European level, has signed a US $15 million contract with a consortium made up by Techint, SGN, Ansaldo and Fiat (GENESI Consortium) and NUCLECO for the construction of a vitrification unit for the high and low-level liquid wastes at Saluggia. The design, construction and testing of this facility is planned to take five years. ENEA has also set up a specific Task Force for implementing the actions related to the selection and qualification of a site for a low-level waste repository. The same site is being considered for the interim storage facility to be constructed for spent fuel and vitrified high-level waste.

NEDERLAND - NETHERLANDS

ENERGY POLICY CONSIDERATIONS

As already pointed out in the 1995 Annual Report, at the end of 1995 the Netherlands Minister of Economic Affairs sent a White Paper to Parliament on the energy policy for the Netherlands in the years to come. This White Paper outlines what steps should be taken towards a more sustainable energy economy, on the one hand in order to secure a reliable long-term energy supply and on the other hand in order to respond to the threatening climate problem. The main objective of Dutch energy policy is to achieve an energy efficiency improvement of one-third in the next 25 years and a 10% share for renewables in total primary energy consumption by the year 2020. This is in order to reach stabilisation of CO_2 emissions, which at that time should not exceed the level of 1990. Furthermore, the markets for electricity and gas will be opened up while the responsibilities of the government will be restricted.

In a liberalised international energy market, the Dutch energy industry will be able to become more involved in nuclear energy abroad, by means of imports, financial participation in foreign electricity generators whose fuel mix includes nuclear, or supplies by Dutch firms to the nuclear industry.

Like other energy sources, nuclear energy can be assessed on a number of criteria: relative costs, environmental impacts, safety, technological development and demand. In the Netherlands, nuclear energy currently has a number of drawbacks: limited public acceptance due to (perceived) risks, radioactive waste, the proliferation problem and a moderate competitive position. However, it also has a number of specific advantages: a relatively stable price, relatively large uranium reserves and no CO_2 emissions.

It is no simple matter to assess these dissimilar advantages and disadvantages. But neither is it opportune to make such an assessment at present, when there is in the Netherlands a surplus rather than a shortage in capacity. However, that is not set in stone for eternity. Changing circumstances may lead to a change in the balance one way or the other. Against this background, the Dutch Cabinet decided to pursue the following policy. First of all, activities in the past make it necessary to maintain a certain level of nuclear knowledge for supervision of existing plants and ultimate decommissioning of plants, solving the problem of radioactive waste and supporting non-proliferation policy. Knowledge is furthermore needed to permit effective response to possible accidents with nuclear installations in other countries. In addition, nuclear research and the knowledge generated keeps the possibility open for the Netherlands to catch up in the next century if desirable. The Netherlands has no ambition in due course to be able to construct nuclear power plants entirely by itself, but if such plants should be built in the Netherlands in the future, it does want to be a knowledgeable partner.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

At the moment there are two nuclear power plants in the Netherlands :

◊ Dodewaard (1969) BWR 57 MWe net (will be shut down in the course of 1997, see below);

◊ Borssele (1973) PWR 459 MWe net (to be operated until 2004).

Together, their percentage of centralised electricity generating capacity was 8%.

On 3 October 1996, the board of directors of the Dutch utility SEP (N.V. Samenwerkende electriciteits-produktiebedrijven) decided to shut the Dodewaard reactor permanently in the near future, with a tentative closure date of spring 1997. The decision was taken by SEP because it could no longer justify continued operation of the uneconomic plant in the light of impending European electricity market deregulation. Furthermore SEP concluded that the perspective of a positive decision by the Dutch government on nuclear energy in the Netherlands in the foreseeable future had ceased to exist.

Dodewaard, which began operation in 1969, was built by General Electric Co. as a unique design with natural circulation and an isolation condenser, features that have led its promoters to bill it as the prototype of a future passively safe BWR. Originally planned to shut on 1 January 1995, its life was extended once to 1 January 1997, and again last year to 2004.

N.V. GKN, the SEP daughter company that operates Dodewaard, initiated an upgrading project in connection with that life extension, work on which was to have begun in 1997. SEP plans to finish initial decommissioning activities by 2003 and mothball the plant for 40 years before complete dismantling.

FUEL CYCLE DEVELOPMENTS

URANIUM ENRICHMENT

On 17 September 1996, Urenco Nederland B.V. got a licence on the basis of the Nuclear Energy Act which enables Urenco to replace some equipment in order no longer to make use of gases that deplete the ozone layer. For the first time in many years no appeal against a nuclear energy licence has been submitted.

ÖSTERREICH - AUSTRIA

ENERGY POLICY CONSIDERATIONS

Austria’s energy policy, based on the principles of the International Energy Agency of the OECD, is laid down in the 1996 Energy Report of the Austrian Government.

The implementation of this policy has been pursued with special attention to changing energy and environment policy requirements, both at national and international level, and with a view to meeting the challenges posed by:

◊ the continued progression of European integration, which requires constructive co-operation as well as corresponding legal adaptations;

◊ the anticipated global climate change, necessitating CO_2 emission reduction measures on a national basis;

◊ the far-reaching changes in the economies of Central and Eastern Europe, which are opening up new challenges and co-operation possibilities.

Taking into account the above-mentioned challenges, the most important objectives of Austria's long-term energy policy remain unchanged: satisfying energy requirements, security of supplies, environmental compatibility and conservation of energy resources, social acceptance, according the highest priority to energy efficiency and the reduction of oil consumption and oil import dependency as well as of energy imports in general, and the increased utilisation of renewable energy resources.

The following figures on the development of energy and oil consumption demonstrate that Austrian energy policy has proved very successful:

◊ energy intensity (primary energy supply (PES) per unit of gross domestic product (GDP)) decreased from 807 MJ/1000 ATS GDP in 1980 to 658 MJ in 1994, i.e. by 18.5%;

◊ the share of oil in energy supply fell from 50% in 1980 to 42% in 1994. The share of renewables increased from 22% in 1980 to 26% in 1994. Overall carbon dioxide emissions have been stabilised at the level of the early seventies;

◊ specific energy demand in industry (industrial energy input per unit of industrial net product) further decreased by one third between 1980 and 1994.

Combined efforts by the Federal Government, the Länder (provinces) and of both the producer and the consumer side and their representatives - the so-called social partners - will ensure that the common energy policy objectives will also be achieved in the future.

As regards the production of electricity, the utilisation of nuclear fission for the supply of electricity is prohibited in Austria by a federal law (Law Gazette N° 676/1978), as result of a referendum.

RADIOACTIVE WASTE

Having no nuclear power plants in operation, Austria does not produce high-level radioactive waste, and therefore there are no plans to build intermediate or final storage facilities. The small quantities of high-level waste produced by research reactor fuel will be shipped to the United States during the next decade according to the renewed US policy for fuel of US origin.

Low and medium-level waste from hospitals, industry and research laboratories (30-40 t/year) is collected and treated by the Austrian Research Centre Seibersdorf. The research centre is equipped with suitable facilities to treat and condition low and medium-level waste, e.g., incinerator, supercompactor and waste water evaporator. Cementing is predominantly used as the conditioning process.

On the basis of a joint agreement between the Republic of Austria, the community of Seibersdorf and the Austrian Research Centre Seibersdorf, intermediate storage is provided until 2012 on the site of the research centre for a capacity of

15,000 drums of conditioned waste. After this date, the waste has to be transferred into a final planned storage facility which is supposed to be built on a site to be selected at the beginning of the next decade.

Research reactors

Austria has no nuclear power plants. However, three research reactors are in operation in Vienna, Seibersdorf and Graz.

The overall situation, as already reported in the 1995 Annual Report, remains unchanged.

Portugal

Energy policy considerations

Portugal depends heavily on imported energy. Around 90% of the Total Primary Energy Supply (TPES), which in 1994 amounted to 18 Mtoe (Million tonnes oil equivalent), is imported. Imported oil and coal contribute 70% and 18% respectively to the TPES. Domestic sources are hydroelectricity and other renewables, mainly firewood, which in total account for 12% of TPES.

In order to diversify energy supply and reduce CO_2 emissions growth, a programme is underway for the introduction of natural gas, imported from Algeria via Morocco and Spain through the so called Europe-Maghreb gas pipeline. The first deliveries are expected to take place in early 1997.

A gas fired power plant (Tapada do Outeiro) consisting of three 330 MW units of the combined-cycle gas turbine type is under construction, and the first unit is scheduled to start operation in March 1998, the second in November the same year, and the third in March 1999. It is expected that around 40% of the imported natural gas will be used in those units.

Nuclear electricity generation and consumption

Portugal has no nuclear power plants and at present there are no plans to use this source of energy.

Fuel cycle developments

Yellow cake production is currently being carried out at a reduced level that amounted to 17.3 t of U_3O_8 in 1996.

There are plans to start exploitation of the Nisa uranium ore deposit, located in the region of Alto Alentejo, if market conditions allow it. This would increase annual production to 130 tU/year. The pre-feasibility study has already been concluded.

Research reactors

Until the end of the century no new fuel is expected to be needed for the Portuguese Research Reactor (RPI), which is owned and operated by the Instituto Technológico e Nuclear (ITN) of the Ministry of Science and Technology.

Suomi/Finland - Finland

Energy policy considerations

In 1996, energy taxes in the electricity sector remained unchanged compared to 1995. From the beginning of 1997, however, new energy tax legislation will enter into force. A system where the fuels used for electricity production were subject to taxation will be replaced by a system where the end product, electricity, is taxed. The new system weakens the competitiveness of nuclear power compared with coal in electricity production, even though an extra tax to which nuclear electricity was subject has now been abolished.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

In 1996 the electricity produced by the two Finnish nuclear power plants, both comprising two units, totalled 18.7 TWh (net) and covered 27% of electricity consumption in Finland. The weighted average load factor for the four units was 91.4%.

Applications for permits to raise permanently the power levels of all the existing nuclear power units were lodged with the Ministry of Trade and Industry at the end of 1996. The applicants aim at capacity additions totalling 980 MWth. Environmental impact assessment procedures related to these additions have been initiated for both sites.

FUEL CYCLE DEVELOPMENTS

RADIOACTIVE WASTE

The construction of a repository for low and medium-level nuclear waste from the Loviisa power plant has proceeded in accordance with the timetable. The first stage will be completed in early 1997.

Posiva Oy, a company owned jointly by the two Finnish nuclear power operators and responsible for preparations for the final disposal of all existing and future spent nuclear fuel in Finland, has completed interim reporting on the studies for the future site of a deep geological repository, and on safety assessment of spent fuel disposal. Detailed geological studies have been carried out at three localities in between 1993 and 1996. The studies support the earlier conclusion from preliminary studies that all three locations are geologically suitable for a spent fuel repository. Based on recent preliminary studies, the Loviisa NPP site has been chosen as an additional location for detailed geological studies due to its existing infrastructure. Posiva has also decided to start environmental impact assessments for all four localities.

RESEARCH REACTORS

Fir-1, the only research reactor in Finland, was modified to produce epithermal neutrons for BNCT (Boron Neutron Capture Therapy) use. This offers opportunities to continue its use for several additional years.

SVERIGE - SWEDEN

ENERGY POLICY CONSIDERATIONS

In July 1994, the Government appointed an Energy Commission made up of members from the political parties in the Parliament. The Energy Commission recommended in February 1995 that deregulation of the electricity market should take place. A government Bill was presented in May 1995. The Parliament approved the Bill in October 1995, and the reform became effective on 1 January 1996.

The Energy Commission issued its main report on 1 December 1995. The Commission considers that a number of conflicts of objectives remain to be solved. With regard to the Energy Commission's forecasts and assessments, no exact time limit for the year in which the last nuclear reactor is finally taken out of operation is to be specified.

The Government invited all parties in the Parliament to participate in discussions about future energy policy in spring 1996. On 4 February 1997, an inter-party Agreement between the Social Democrats, the Centre Party and the Left Party was presented. The three political parties have agreed on a number of measures to reduce electricity consumption and use new methods of electricity production during the next few years. A new, long-term transformation programme is being started to develop an ecologically sustainable energy supply system.

A law on the decommissioning of nuclear power plants will be passed. Negotiations will be started with the owner of the Barsebäck plant on closing one reactor before 1 July 1998, and a second reactor before July 2001. According to the political parties, no fixed date should be set for closing down the last reactor. Thereby, a sufficiently long period is granted for the transformation of the energy system.

The energy policy programme will give rise to state expenditure of SEK 9 billion over a seven-year period. The result of the energy policy programme and the closure of the Barsebäck plant will form the basis for future decisions on continued transformation. Decisions on the continued decommissioning of nuclear reactors will be taken before the end of the next government term. A Government Bill is scheduled to be presented in the Parliament in mid-March 1997. Editor's note: this Bill was presented on 14 March 1997.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

PRODUCTION AND CONSUMPTION

Electricity consumption in 1996 was 140.4 TWh, down about 0.6% from 1995. Electricity production in 1995 and 1996 was :

	1995 (TWh)	1996 (TWh)
Hydro-electric power	66.9	51.7
Nuclear power	66.7	70.9
Wind power	0.1	0.1
Combined heat/power	8.7	9.1
Condensing/gas turbine	0.7	3.4
Total production	143.1	135.3
Net export/import	1.8	-5.1
Net consumption	141.3	140.4

Nuclear power represented about 52% and hydro-electric power only 38% of total production in 1996. The production of nuclear and hydro-electric power differs a great deal between 1995 and 1996. 1996 was an extremely dry year. The flow to the hydro-electric power reservoirs was low which gave a low production of hydro-electric power. It was however also a dry year in Norway. This is also the reason for the relatively high production in the condensing power stations and the net import of electricity.

Normally the production of nuclear power and hydro-electric power is roughly the same, each with a share of 45-50% of total production. During a climatically statistically average year, hydro-electric power production amounts to about 63.5 TWh.

NUCLEAR POWER

Reactors have been operating normally in 1996. Availability was on average 84.1%. The lower availability of Oskarshamn 1 (BWR) lowered the average value. The availability of the PWR reactors was on average about 90%.

After extensive repairs, the oldest Swedish reactor, Oskarshamn 1, was restarted and put back into commercial operation in 1996. Extensive programs are planned for the modernisation of the oldest Swedish nuclear power plants. For example there will be further modernisation of Oskarshamn 1, consisting of replacement of the core shroud including lid and core-spray system as well as the steam separator. It is the first time work like this will be performed and the order was placed with ABB Atom. The refuelling and maintenance outage at Oskarshamn 1, which started in November 1996, has been extended due to tests and repairs. Surface cracks in the main circulation loop have been repaired. Testing and evaluating the results of tests on the moderator tank lid have been time-consuming. Power production is expected to resume in February 1997.

At Ringhals 1, an ABB-built BWR, a modernisation of the primary systems will be done, comprising a complete overhaul including replacement of pipes, nozzles and components for the main circulation system and ancillary systems.

NUCLEAR FUEL CYCLE DEVELOPMENTS

ENVIRONMENTAL IMPACT OF NUCLEAR FUEL SUPPLY

The Swedish utilities have established a joint venture called “Project Nuclear Fuel and Environment”. The main objective is to assess the environmental and occupational safety aspects, including radiation protection from production of uranium, conversion, enrichment and fabrication by existing and possible suppliers to the Swedish utilities.

FABRICATION

At the ABB Atom fuel fabrication plant, 400 tonnes of uranium dioxide powder were converted and 280 tonnes of fresh fuel produced during 1996. About half of the production was for the export market.

In November 1996, ABB Atom received a permit to increase its production of converted uranium dioxide powder from 400 tonnes to 600 tonnes per year. At the same time, the company will considerably lower most of its emissions to the environment.

RADIOACTIVE WASTE

Four local municipalities, Malå in Northern Sweden, Nyköping, Östhammar and Oskarshamn in Southern Sweden have agreed to carry out preliminary studies for a final repository of spent nuclear fuel together with the Swedish Nuclear Fuel and Waste Management Company, SKB.

These studies are focused on the social, environmental and economic consequences of locating a final repository in their municipalities. SKB has established local offices. After the study on Malå was published, the municipality started an independent evaluation. The studies on Nyköping and Östhammar have been ongoing in 1996, while the preliminary study on Oskarshamn was started at the end of the year.

SKB has also recently decided to establish a pilot plant at Oskarshamn for testing the welding of the lid to copper cylinders, and the welds themselves.

UNITED KINGDOM

ENERGY POLICY CONSIDERATIONS

The Government’s review of the nuclear industry, “The prospects for nuclear power in the UK”, published in May 1995, concluded inter alia that the United Kingdom’s Advanced Gas-Cooled Reactors (AGR’s) and Pressurised Water Reactor (PWR) should be transferred to the private sector in 1996. It further concluded that the Magnox power stations should remain in the public sector.

The nuclear generating industry was formally restructured on 31 March 1996 in preparation for privatisation. A holding company, British Energy plc (BE), and two subsidiary companies were created. The subsidiaries are Nuclear Electric Ltd, operating the PWR and five AGR stations in England and Wales, and Scottish Nuclear Ltd, operating two AGR stations in Scotland.

The successful privatisation of the nuclear industry raised equity proceeds of £1.4billion and £0.6 billion from debt and bond repayments. In addition, liabilities to the value of £3.7 billion followed assets into the private sector.

In its first interim report, published on 21 November, BE reported that operating profits increased from £3 million in 1995 to £81 million in 1996 on turnover of £838 million. Operating costs had fallen by 10% whilst output had increased by 12% following privatisation. This improvement was attributed by BE to an increase in the average AGR load factors from 68% to 75% and to the commissioning of Sizewell B. Market share increased from 20.1% to 21.7%.

A Segregated Fund was established on privatisation of BE to cover the cost of decommissioning the AGR and PWR power stations. The fund has an initial endowment of nearly £230 million. BE will make annual contributions of £16 million, a rate set by independent assessors. The annual contribution will be reviewed at five year intervals.

The six operating civil Magnox power stations remaining in the public sector are owned by Magnox Electric plc. Magnox is decommissioning a further three stations which have reached the end of their useful economic lives. Work on the integration of Magnox and BNFL is proceeding as proposed by the Nuclear Review.

In September 1996, the Government successfully completed the privatisation of AEA Technology plc, the former commercial arm of the United Kingdom Atomic Energy Authority (UKAEA), via a flotation on the London Stock Exchange which valued the company at £224 million. Following the privatisation, the ownership and responsibility for the safe management of UKAEA's nuclear liabilities, as well as certain other functions more appropriate to Government, including fusion research, remain in the public sector.

NUCLEAR ELECTRICITY GENERATION AND CONSUMPTION

The UK's nuclear power stations generated about 86 TWh in 1996, some 6.5% more than in 1995, and representing about 26% of the electricity generated in the UK in 1996.

FUEL CYCLE DEVELOPMENTS

At BNFL Springfields there has been extensive development of capital projects during 1996. The Oxide Fuel Complex (OFC) continues on its commissioning. Progress has been made on both the new Research and Development Centre and the Combined Heat and Power Station to help provide power to the site. Approval has also been granted for the construction of a recycled uranium conversion facility demonstrating closure of the fuel cycle.

Urenco, the UK based British-Dutch-German centrifuge enricher, which has been making deliveries since 1975, delivered its 30 millionth SWU in 1996. In order to meet increased delivery orders Urenco is expanding capacity at its Capenhurst site, which when complete will increase site capacity by around 30%. The first phase of the development is scheduled to be completed at the end of 1997, with full installation by early 1999.

Adjacent to BNFL THORP, the construction of the Sellafield Mixed Oxide Fuel plant (SMP), which will manufacture fuel from recycled uranium and plutonium, is progressing and is due for completion by the end of 1997. Building and civil engineering work is complete and the installation of major plant items is now under way.

The BNFL THORP reprocessing complex is building up to full operation and is now in the process of moving from its active commissioning phase towards full operational status. All parts of the plant have been tested under active conditions of operation and all major fuel types have been reprocessed. BNFL applied for final consent to operate on 18 December 1996.

BNFL Inc., the company's North American subsidiary, has won contracts as part of the consortium on waste management activities at the Rocky Flats Environmental Technology Site in Colorado. BNFL Inc. has recently won a contract worth an estimated £650 million to clean up former weapons material at the Idaho National Energy Laboratory.

In 1996 the Government approved BNFL's substitution proposals whereby overseas customers' intermediate and low-level waste returns are substituted by an equivalent amount of vitrified high-level waste. This will also allow a small volume of material to be returned to customers and reduce the number of transportations required.

The public enquiry into UK Nirex's application for planning permission to construct an underground

Rock Characterisation Facility as the next stage of its investigations into the suitability of a site adjacent to BNFL's Sellafield works for its proposed deep repository for low and intermediate level radioactive wastes ended in February 1996. The Inspector has submitted his report to the Secretary of State for the Environment, whose decision is expected by spring 1997.

Decommissioning of the UK's closed research reactors continued during 1996. The Universities Research Reactor at Manchester was fully decommissioned in July 1996. Its site is now being used for commercial development.

CHAPTER IV

INTERNATIONAL RELATIONS

INTERNATIONAL AGREEMENTS AND RELATED DEVELOPMENTS

As is now well established, EU operators acquire nuclear materials and services from a number of external supplying countries. Moreover, some EU operators also process materials on behalf of foreign clients. Whilst in the EU, nuclear materials in the civil fuel cycle are subject to the safeguards provisions of the Euratom Treaty and, as appropriate, also to the agreements entered into by the Community, its Member States and the International Atomic Energy Agency. In addition, nuclear material received from three non-Community countries - Australia, Canada and the USA - is subject to international agreements concluded between the Community and the country concerned. These agreements provide for some additional conditions which apply to such material. During 1996, these agreements continued to operate, except in the case of the short gap between the expiry of the old Euratom/US agreement and the entry into force of the new one. Deliveries under them generally did not cause problems except in the case of HEU (see also Chapter I).

In accordance with the provisions of the Euratom Treaty, international agreements are negotiated on behalf of the Community by the European Commission in accordance with directives issued by the Council of Ministers. Where these agreements relate to the supply of nuclear materials, the Supply Agency takes part in the Commission's negotiating team and in any ongoing consultations with the authorities of the countries concerned.

EURATOM/AUSTRALIA

Routine contacts with Australia took place during the year. Agreement was reached on the folding-in to the inventory of the Euratom/Australia agreement of the inventories of Australian-obligated material present in Finland and Sweden under their existing bilateral agreements with Australia. This folding-in has now also been implemented in Euratom's inventory reporting to Australia under the agreement. Discussions continued on the future establishment of Australian generic prior consent for retransfers of plutonium obligated to Australia only from Euratom to Japan. Prior generic consent for retransfers from Euratom to Japan of plutonium subject to both the Euratom/Australia and Euratom/USA agreements was agreed back in 1993.

EURATOM/CANADA

Consultations were held in late October/early November between the Commission and Canadian government representatives under Article XIII of the Euratom/Canada agreement. As is the case with Australia, the folding-in to the inventory of the Euratom/Australia agreement of the inventories of Canadian-obligated nuclear items present in Finland and Sweden under their existing bilateral agreements with Canada has now been implemented in Euratom's inventory reporting to Canada under the agreement.

Canada confirmed to the Commission that it had agreed a simpler administrative procedure for retransfers of Canadian-obligated material to Australia, and that it was also able to include some simplification of administrative procedures for retransfers to Argentina, the Czech Republic, Lithuania, Mexico and Slovenia. The questions of further simplifying administrative procedures for retransfers to Japan, and of including Russia in the simplified mechanism, were also discussed. A useful discussion took place on the criteria applied by Canada to international exchanges of obligations involving material under Canadian obligation.

Regular consultations of this kind are useful in allowing fine-tuning of the implementation of agreements which are generally recognised as functioning well, in particular to reduce the administrative burden on industry where appropriate, and to facilitate legitimate commercial operations involving material subject to such agreements.

EURATOM/USA

After the signature of the new Euratom/USA agreement on 7 November 1995, President Clinton passed the agreement to Congress on 29 November 1995, where it had to sit for 90 days of continuous session before it could enter into force. The Congressional approval process in the United States went smoothly. A hearing was held in the US Senate Governmental Affairs Committee on 28 February 1996, the 77th day of the 90-day period, and this period came to an end on 10 March. Upon an exchange of letters between the Commission and the US Government, the agreement subsequently came into force on 12 April 1996.

The fact that the old Euratom/US agreement had expired on 31 December 1995 meant that from that time until 12 April 1996 no agreement was in force between Euratom and the US. During that period, existing licences for the export of nuclear items for which US law requires a co-operation agreement to be in place could not be executed, and new licences could not be issued. However, the nuclear industry on both sides of the Atlantic had been able to prepare in advance for this eventuality and the “gap” period did not raise any major problems. Exports from the US to Euratom of non-major nuclear components falling outside the scope of the new agreement were also briefly suspended pending the issuing of peaceful use, safeguards and retransfer assurances by the Euratom side. These assurances, whose validity was linked with that of the old agreement, were needed to replace those provided to the US in 1979 for transfers of such components. Transfers of non-major components were able to resume with effect from 16 February 1996.

The new Euratom/US agreement, reciprocal in nature, is more complex and wide-ranging than its predecessor and required corresponding care in developing the procedures necessary to implement it efficiently. An interim understanding between the two sides on the implementation of the agreement was in place from its entry into force and allowed nuclear trade to flow with no more than the routine teething problems that might be expected with a new agreement. Both sides made it their priority to ensure that industry’s interests were to the fore as operating procedures were established. Discussions continued throughout the year on an Administrative Arrangement to formalise the operational procedures between the authorities of both Parties. An Administrative Arrangement was expected to be signed in early 1997. Editor’s note: The Administrative Arrangement became formally effective from 28 January 1997, after its signature by US DOE and the Euratom Safeguards Directorate of the Commission.

THE RUSSIAN FEDERATION

The Commission and the Russian Federation continued to discuss nuclear trade matters in 1996. The Interim Agreement, which puts into operation certain key parts of the 1994 Partnership and Co-operation Agreement (PCA), came into force on 1 February 1996. In Article 15 of this agreement, the Parties agree to take the necessary steps to put in place a specific nuclear trade arrangement/agreement. Exploratory talks between Commission officials and officials of the relevant

Russian ministries took place in March and enabled some progress to be made based on a re-examination of the text agreed ad referendum between Russia and the Community in 1992. Contacts were renewed as the year progressed. Until such an agreement is reached, nuclear trade with Russia is covered by the Interim Agreement, which in relation to nuclear trade maintains in operation certain provisions of the 1989 agreement between the Community and the former Soviet Union.

Since the introduction of legislation in the US in 1992, there have been difficulties in obtaining HEU from the US for research reactors in the EU which operate with this type of fuel and need fresh supplies. The Supply Agency has been approached by the operators of some of these reactors for assistance in finding alternative sources of supply. Russia is a potential supplier. In this context, and in close consultation with the Member States whose reactor operators require supplies, the Commission and the Supply Agency made exploratory approaches to the Russian authorities with a view to establishing a framework for possible supplies from Russia. Such a framework would need to allow the necessary assurances related to HEU supply to be given in accordance with the provisions of the Euratom Treaty.

Other Republics of the CIS

The Commission's September 1994 proposal to the Council of directives for the negotiation of nuclear trade agreements between the Community and five CIS Republics (Kazakhstan, Kyrgizstan, Tajikistan, Ukraine and Uzbekistan) had still not been adopted by the Council at the end of the year.

Nuclear trade with the CIS is taking place under a number of legal instruments. In all cases, the provisions of the Euratom Treaty apply. In addition, with regard to Partnership and Co-operation agreements with individual CIS Republics, the situation is as follows. The same trade articles as are contained in the PCA with Ukraine are provisionally applied by an Interim Agreement which entered into force on 1 February 1996. The terms of this agreement exclude coverage of nuclear trade, so no specific nuclear trade provisions exist between the Community and Ukraine until such time as a specific nuclear trade agreement is in place. Similar PCA's have also been signed with Kazakhstan, Kyrgizstan and Uzbekistan, but neither they nor their respective Interim Agreements had entered into force at the year end. Trade with these countries therefore continued to be subject to the 1989 agreement with the former Soviet Union. Once these Interim Agreements come into force the situation regarding nuclear trade with these countries will be the same as for nuclear trade between the Community and Ukraine. There is no PCA or Interim Agreement with Tajikistan, so any trade in nuclear materials with that country would continue to be covered by the 1989 agreement. There are provisions in PCA's with other CIS countries which provide for nuclear trade to be regulated by the Euratom Treaty, but which allow it to be covered by a specific sectoral agreement also, if necessary.

The Supply Agency already recognises these five CIS countries as separate suppliers or potential suppliers to the EU, and, as far as possible, takes into account separately supplies of uranium originating from them.

Euratom/Argentina

An agreement between Euratom and Argentina was signed on 11 June 1996. An exchange of letters bringing the agreement into force will be signed as soon as the parliamentary ratification procedures in Argentina have been completed. The agreement will cover co-operation in such areas as research on reactor safety, radioactive waste management, decommissioning and safeguards, but will not cover trade in nuclear materials except within the defined scope of this co-operation.

Japan

A high frequency of contacts was maintained between the Commission and Japanese government representatives regarding peaceful nuclear co-operation. Discussions focused on matters related to Japanese utilities' plans for the fabrication in the EU of MOX fuel for final use in power reactors in Japan, using plutonium derived from Japanese spent fuel reprocessed in the EU.

ENERGY CHARTER TREATY (ECT)

The ECT had been signed by 49 states and the European Communities when it closed for signature on 16 June 1995. One more signatory of the European Energy Charter, the Former Yugoslav Republic of Macedonia, is in the process of acceding to the Treaty. The ECT has been ratified by 20 states, but only nine states have deposited their instruments of ratification Editor's note: as at 1.3.97. Entry into force of the ECT will take place once 30 signatories have deposited their instruments of ratification. Meanwhile, most signatory states are applying the ECT on a provisional basis. A special protocol relating to nuclear aspects is still under discussion, but with regard to trade in nuclear materials between the Community and the Republics of the CIS, a declaration attached to the Final Act of the Treaty states that this will be covered by bilateral agreements between those parties.

RETRANSFERS

Under the terms of the Community's agreements with Australia, Canada and the USA, these supplier countries retain the right of consent, albeit often in a long-term programmatic framework, over the retransfer from the Community of nuclear material subject to those agreements to other countries outside the Community.

Under the Euratom/Canada agreement, simplified procedures relating to retransfers of certain Canadian-obligated nuclear items, whereby prior notification is given to Canada shortly before shipment, are in place for most of the EU's nuclear trading partners. In the case of the Euratom/Australia agreement, retransfers from the Community of Australian-obligated material can take place to countries with which Australia has a co-operation agreement in place for activities for which Australia has accepted those countries as a destination. Again, this includes most of the EU's nuclear trading partners.

Under the Euratom/US agreement, a mechanism providing for advance generic consent for retransfers of nuclear items subject to the agreement is in place based on a list of destinations outside the EU which includes most of the EU's nuclear trading partners. Advance generic consent for the retransfer to Japan of plutonium, including plutonium contained in mixed oxide fuel, is maintained under this agreement by reference to an exchange of letters of 1988 between the Commission and the US Mission to the European Communities. The US has agreed to extend a similar mechanism to retransfers of this kind to Switzerland once it has concluded a new nuclear co-operation agreement with that country.

Applications for retransfer consents falling outside the generic consents provided for under the above agreements are handled by the Supply Agency. During 1996, 3 such retransfers were approved.

COMMISSION AUTHORISATIONS FOR EXPORT

Under the provisions of Article 59 (b) of the Euratom Treaty (and Article 62.1 (c) in the case of special fissile materials), the authorisation of the Commission is required for the export of nuclear materials produced in the Community. Requests for these authorisations are introduced to the Commission by the Supply Agency.

During 1996, 10 authorisations for export were granted by the Commission.

CHAPTER V

ADMINISTRATIVE REPORT

PERSONNEL

The staff establishment of the Agency at the end of 1996 was 24.

FINANCE

The Agency's expenditure for 1996 amounted to ECU 178,197.12. This amount was financed principally from the budget of the Commission, as a result of a Council decision of 1960 to postpone the introduction of a charge on transactions to defray the operating expenses of the Agency as provided for by the Euratom Treaty.

ADVISORY COMMITTEE

The Advisory Committee met in March 1996. The Agency informed the Committee of developments relating to supply policy, in particular with regard to supply from the CIS. A profitable exchange of views took place on market developments and levels of production and stockpiles in the CIS.

The Committee continued to provide a useful arena for the Agency and other Commission services to keep nuclear sector representatives informed of developments with regard to international agreements and discussions in the field of nuclear trade.

The Agency's Annual Report and accounts for 1995, and its budget for 1996, received favourable opinions from the Committee.

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ORGANISATIONAL CHART

(AS AT 31 DECEMBER 1996)

EURATOM SUPPLY AGENCY

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Assistant to the Director General	D. MONASSE (a.i.)
• Nuclear fuels supply contracts and research	J.C. BLANQUART J. MOTA A. BOUQUET A. MUIJZERS
• General Affairs; Secretariat of the Advisory Committee	D.S. ENNALS E.F. MATHEWS

ADVISORY COMMITTEE OF THE SUPPLY AGENCY

Chairman	Mr. J.L. GONZALEZ (ENUSA, Spain)
Vice-Chairmen	Mr. S. SANDKLEF (Vattenfall Fuel, Sweden) Mr. B. GRESLEY (Urenco, UK)

WORKING PARTY

Chairman	Mr. R. MOTTA GUEDES (ENU, Portugal)
Vice-Chairmen	Mr. P. GOLDSCHMIDT (Synatom, Belgium) Mr. W. SCHOBER (Bayernwerk, Germany)

ANNEX 1

Natural uranium feed contained in fuel loaded into EU reactors and natural uranium delivered to utilities under purchasing contracts (in tU)

YEAR	FUEL LOADED	DELIVERIES	% SPOT DELIVERIES
1980	9,600	8,600	(4)
1981	9,000	13,000	10.0
1982	10,400	12,500	<10.0
1983	9,100	13,500	<10.0
1984	11,900	11,000	<10.0
1985	11,300	11,000	11.5
1986	13,200	12,000	9.5
1987	14,300	14,000	17.0
1988	12,900	12,500	4.5
1989	11,800	13,500	11.5
1990	15,400	12,800	16.7
1991	15,000	12,900	13.3
1992	15,200	11,700	13.7
1993	15,600	12,100	11.3
1994	15,400	14,000	21.0
1995	18,700	16,100	18.1
1996	18,400	15,900	4.4
Total	227,200	217,100	

ANNEX 2

ESA average price for multiannual and spot contracts involving natural uranium

YEAR	MULTIANNUAL CONTRACTS		SPOT CONTRACTS		EXCHANGE RATE
	ECU/kgU	US$/lb$U_3O_8$	ECU/kgU	US$/lb$U_3O_8$	US $ PER ECU
1980	67.20	36.00	65.34	35.00	1.392
1981	77.45	33.25	65.22	28.00	1.116
1982	84.86	32.00	63.65	24.00	0.978
1983	90.51	31.00	67.89	23.25	0.890
1984	98.00	29.75	63.41	19.25	0.789
1985	99.77	29.00	51.09	15.00	0.763
1986	81.89	31.00	46.89	17.75	0.984
1987	73.50	32.50	39.00	17.25	1.154
1988	70.00	31.82	35.50	16.13	1.182
1989	69.25	29.35	28.75	12.19	1.102
1990	60.00	29.39	19.75	9.68	1.273
1991	54.75	26.09	19.00	9.05	1.239
1992	49.50	24.71	19.25	9.61	1.298
1993	47.00	21.17	20.50	9.23	1.171
1994	44.25	20.25	18.75	8.58	1.190
1995	34.75	17.48	15.25	7.67	1.308
1996	32.00	15.63	17.75	8.67	1.270