September 25, 2000

MEMORANDUM TO: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield

FROM: Janice Dunn Lee, Director /S/
Office of International Programs

SUBJECT: GERMAN SHUTDOWN AGREEMENT

The federal government and the electric utilities of Germany reached agreement on the phase out of nuclear power in June 2000. I am attaching an English translation of the Agreement for your information. The translation was provided to OIP by a recent visitor from the Company for Reactor Safety (GRS) of Germany.

Attachment: As stated

cc: SECY
OGC
EDO
OPA
NRR
RES
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Agreement between the Federal Government of Germany and the utility companies dated 14 June 2000

Please notice:
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I. Introduction

The controversy in Germany surrounding the question of whether we can answer for the risks of nuclear energy has led to decades of heated debates and discussions in our society. Notwithstanding the continuing differences of opinion regarding the use of nuclear energy, the utilities respect the decision of the German government in its wish to put a regulated end to the generation of electricity from nuclear energy.

Against this backdrop, the German government and the utility companies agree to restrict the future utilisation of existing nuclear power plants. Uninterrupted operation of nuclear power plants and their waste disposal shall, however, be assured if, for the remainder of the plant's operating lifetime, a high level of safety is maintained and the requirements of atomic energy law are met.

Both sides shall play a role in ensuring that the content of this Agreement is implemented permanently. The German government shall take these key points as a basis for developing a draft amendment of the Atomic Energy Act. The German government and the utilities make the assumption that this Agreement and its implementation will not lead to compensation claims between the parties concerned.

The government and the utilities perceive this Agreement as an important contribution to a comprehensive consensus on energy policy. The participants shall in future work together to further develop an energy supply in Germany which is environmentally sound and competitive on the European market. This will also play a considerable role in securing as many jobs as possible in the energy supply industry.

II Restricting the operation of existing plants

1. The maximum electricity volume which each plant is allowed to generate from 1 January 2000 until its decommissioning (residual electricity volume) shall be specified. The right to operate a nuclear power plant will cease when the designated electricity volume, or that volume revised by transfer, has been achieved for the respective plant.

2. The residual electricity volume (net) is calculated as follows:

1. For each plant the residual operating life remaining after 1 January 2000 shall be calculated on the basis of a standard operating life of 32 calendar years from the commencement of commercial power operation. For Obrigheim a transition period up to 31 December 2002 has been agreed.

2. Furthermore, as a basis, a reference volume derived from annual generation volumes shall be calculated for each power plant by taking the average of the 5 highest annual generations between 1990 and 1999. The reference volume amounts to a total of 160.99 TWh/a for the power plants (excepting Mülheim-Kärlich).

3. Due to continuing technical optimisation, capacity increase of individual installations and, as one of the outcomes of liberalisation of the electricity market, the modified obligation to maintain auxiliary energy supplies for the stabilisation of the grid, the Agreement assumes an annual generation which is 5.5% higher than these reference volumes designated for the residual operating life.

4. The residual electricity volume is obtained by multiplying the reference volume, increased by 5.5%, by the residual operating life. The resulting residual electricity volumes for each power station are listed in Annex 1. These residual electricity volumes shall be laid down as binding in the Annex to the amendment of the Atomic Energy Act; no. II/4 shall not be affected.

3. The utilities undertake to inform the Federal Office for Radiation Protection (Bundesamt für Strahlenschutz - BfS) every month of the electricity volume generated.

4. The utilities can transfer electricity volumes (generating rights) from one power plant to another if the Federal Office for Radiation Protection is informed by the operators concerned.

There is agreement between the negotiating partners that this flexibility will be used to transfer electricity volumes from less economical to more economical plants. Therefore, electricity volumes shall in principle be transferred from older to newer and from smaller to larger plants. If electricity volumes are transferred from newer to older installations, agreement is required between the negotiating partners within the framework of the monitoring group (cf no.VII) with participation of the utility company concerned; this does not apply in cases where the newer installation is at the same time being decommissioned.

5. RWE withdraws its licence application for the Mülheim-Kärlich power plant. The company also withdraws its compensation suit against Rhineland Palatinate. The Agreement settles all legal and actual claims connected to the licencing procedure and to the plant's decommissioning deadlines.

In accordance with the Agreement, RWE shall have the opportunity under II/4 to transfer 107.25 TWh to other power plants. It is understood that this electricity volume shall be transferred to the Emsland power plant or to other newer plants, as well as to Blocks B and C of the Gundremmingen power plant, and a maximum of 20% to the Biblis B power plant.

III. Operation of the plants during the residual operating life

1. Safety standard/government supervision
Notwithstanding the differing assessments concerning how far the risks of utilising nuclear energy can be answered for, both sides agree that the nuclear power plants and other nuclear installations shall be operated at an internationally recognized high safety level. They affirm their opinion that this safety level shall continue to be maintained.

During the residual operating life, the legally required high safety standard shall continue to be assured; the German government shall not instigate any alterations to this safety standard nor to the safety philosophy on which it is founded. The German government assures the uninterrupted operation of installations, if there is compliance with the requirements of atomic energy law.

With regard to the further procedure of upgrading the Biblis A nuclear power plant, reference is made to the Federal Environment Ministry's declaration to RWE AG contained in Annex 2.

The utilities shall carry out safety reviews (safety status analysis and probabilistic safety analysis) by the deadlines named in Annex 3, and present the results to the supervisory authorities. This shall continue a practice begun in the majority of nuclear power plants.

The reviews shall be repeated every 10 years. The periodic safety review (PSR) shall not apply if the operator makes a binding declaration that he will shut down operation of the plant within 3 years after the deadline named in Annex 3.

The safety review shall be conducted on the basis of the PSR guideline.

If this guideline is developed further, the Federal Environment Ministry shall involve the *Länder*, the Reactor Safety Commission, and the nuclear power plant operators.

The obligation to submit a safety review shall be regulated by law as the operator's responsibility in order to support state supervision under §19 of the Atomic Energy Act.

The independence and qualification of the GRS shall continue to be assured.

Research in the field of nuclear technology, in particular safety, shall remain free to be pursued.

2. Economic framework conditions
The German government shall not instigate any action which discriminates, through biased measures, against the utilisation of nuclear energy. This shall also apply to fiscal law. Nevertheless the level of insurance cover shall be raised to DM 5 billion by increasing the so-called second tranche or by equivalent regulation.

IV. Waste disposal

1. Interim storage
The utilities shall set up interim storage facilities as swiftly as possible on the site of or in the vicinity of the power plants. Joint efforts will be undertaken to find possibilities for making temporary storage available on site before the interim storage facility goes into operation.

2. Reprocessing
The disposal of radioactive wastes from the operation of nuclear power plants shall be restricted to direct final storage as from 1 July 2005. Until then, transports for reprocessing shall be permitted. Quantities delivered may be processed. Reprocessing requires proof of safe recycling of the products of reprocessing products which are to be taken back.
With regard to their international partners, the utilities shall exploit all reasonable contractual means to achieve an end to reprocessing as early as possible.
The German government and the utilities assume that the remaining quantities can be transported within the designated time period. They further assume that if the legal prerequisites exist, the licencing procedures for transports for reprocessing can be concluded by summer 2000.
If the ending of reprocessing cannot be carried out within the due time limit for reasons which the utilities cannot justify, both parties shall search promptly for appropriate solutions.

3. Transports
In the event of the legal prerequisites being fulfilled, the utilities shall be able to transport spent fuel rods to the regional interim storage facility until the interim storage facility in the vicinity of the plant is in operation; until reprocessing is ended, spent fuel rods can also be transported abroad. Both sides assume that the interim storage facilities in the vicinity of the plant shall be operational within a maximum period of 5 years. The German government, the Länder and the utilities shall set up a joint permanent coordination group for carrying out transports, whose duties shall also include cooperation with the safety authorities of the government and *Länder*.

4. Gorleben
Until planning and safety-related issues have been clarified, exploration of the Gorleben salt dome shall be stopped for at least 3, at most however, 10 years.
The German government has made a declaration regarding exploration of the Gorleben salt dome which, as Annex 4, forms a part of this Agreement.

5. Pilot conditioning plant
The responsible authorities shall complete the licencing procedure for the pilot conditioning plant in accordance with the legal provisions. The use of the plant shall be restricted to repairing damaged containers. An application for the immediate enforcement of the licence under atomic energy law shall only be made under acute need.

6. Schacht Konrad
The responsible authorities shall conclude the plan approval procedures for Schacht Konrad according to the legal provisions. The applicant withdraws the application for the immediate enforceability of the plan approval decision, in order to allow a court examination on the merits in the main proceedings.

7. Costs for Gorleben and Schacht Konrad
It is understood that the costs for Gorleben and Schacht Konrad represent necessary expenditure. The utilities shall not, therefore, demand refunds of any advance payments with regard to Gorleben or to the costs they must assume on a proportional basis for Schacht Konrad. The foundation for this is the Government's agreement to secure Gorleben as an industrial location during the moratorium (cf. the government declaration in Annex 4 on the exploration of the Gorleben salt dome). The utilities shall bear the costs for keeping these installations open (in the case of Schacht Konrad on a proportional basis).

The utilities take note that the German government is endeavouring to achieve a settlement regarding its compensation claims against the Land of Lower Saxony in connection with previous supervisory instructions and/or the non-issuing of permits. The utilities declare that with regards to their allotted share of the costs they will make no reimbursement claims against the government.

8. Proof of provision for waste disposal

The proof of waste disposal provisions shall be adapted to the contents of this agreement.

V. Amendment to the Atomic Energy Act

1. The utilities take note that the German government intends to introduce a legal ban on the construction of new nuclear power plants, and a legal obligation to set up and utilise interim storage facilities that are in the immediate vicinity of the plant.

2. On the basis of these key points the German government shall develop a draft amendment of the Atomic Energy Act (see the summary in Annex 5). The parties concerned conclude this Agreement on the premise that the amended Atomic Energy Act, including the reasons for passing this legislation, shall implement the contents of this Agreement. The negotiating partners will discuss the implementation by the amendment to the Atomic Energy Act, taking the government draft as a basis, prior to the Cabinet debate.

VI. Securing employment

For the Government and the utilities, securing jobs in the energy industry is high priority. The medium-term measures and particularly the flexibility in the operating lives of the plants should make allowance for this desire. The German government and the utilities shall discuss how to fashion the framework conditions for an environmentally sound energy supply which can compete on the European market, in order to strengthen Germany as a location for the energy supply industry. Those concerned wish to secure, to the greatest possible extent, competitive jobs in Germany by investing in power plants and energy services.

VII. Monitoring

To monitor the implementation of the joint agreement, a high-ranking working group will be appointed, consisting of three representatives of the companies concerned, and three representatives of the Federal Government. Under the chairmanship of the head of the Chancellory, the working group will make a joint assessment, once a year as a rule, and where necessary calling on external experts, of the implementation of the arrangements contained in this Agreement.

The agreement is signed :

For the energy utility companies by	For the Federal Government of Germany by
Dr. Walter Hohlefelder, VEBA AG	State Secretary Dr. Frank-Walter Steinmeier, Head of the Federal Chancellery
Gerald Hennenhöfer, VIAG AG	
Dr. Gerd Jäger, RWE AG	State Secretary Rainer Baake, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Dr. Klaus Kasper Baden-Energie Württemberg AG	State Secretary Dr. Alfred Tacke, Federal Ministry of Economics and Technology

Berlin, 14 June 2000

Agreement between the Federal Government of Germany and the utility companies dated 14 June 2000

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Annex I
Residual electricity volumes (net) for individual nuclear power plants

Nuclear power plant	Residual electricity volume from 01.01.2000 (TWh nett)
Obrigheim	8,70
Stade	23,18
Biblis A	62,00
Neckarwestheim 1	57,35
Biblis B	81,46
Brunsbüttel	47,67
Isar 1	78,35
Unterweser	117,98
Philippsburg 1	87,14
Grafenrheinfeld	150,03
Krümmel	158,22
Grundremmingen B	160,82
Philippsburg 2	198,61
Grohnde	200,90
Grundremmingen C	168,35
Brokdorf	217,88
Isar 2	231,21
Emsland	230,07
Neckarwestheim 2	236,04
Total	2.516,05
Mülheim-Kärlich	107,25
Final Total	2.623,30

The Table contains the residual electricity volumes laid down for the individual nuclear power plants, calculated for each plant as follows:
1. Calculation to the day of the residual operating life with a standard operating life of 32 calendar years, reckoned from the commencement of commercial power operation.
2. Calculation of a reference volume as the average of the five highest annual generation volumes between 1990 and 1999 for each nuclear power plant (totalling 160.99 TWh/a for the plants altogether).
3. Addition of 5.5% to the reference volume.
4. Calculation of the residual electricity volume as the product of the residual operating life and the reference volume increased by the addition in (3).

Annex 2

Declaration of the Federal Environment Ministry to RWE on the further procedure of upgrading the Biblis Block A

nuclear power plant

On 27 March 1991 the supervisory authority of Hessen issued subsequent instructions on the safety-related upgrading of Biblis A.
The Federal Environment Ministry affirms its opinion that from a safety point of view, both retrofitting and a qualified emergency system are necessary for continued operation over many years.

The Federal Environment Ministry is currently investigating to what extent safe operation of Biblis A can be assured prior to completion of certain retrofittings. The operator shall be informed of the findings by the end of August at the latest.

The regulations of the Agreement of 14 June 2000 between the German government and the utilities designate a permitted maximum production of 62 TWh for Biblis A from 1 January 2000 until its decommissioning.

By the end of August 2000 at the latest, the Federal Environment Ministry shall set measures to the licencing and supervisory authority of Hesse to accelerate the licencing procedures; these include a structuring of the procedures and a definition of assessment standards.

On condition that the operator waives the right to transfer electricity volumes to Biblis A, and that the operator lays down definite energy volumes which are still to be produced, a decision will be made within 3 months concerning an upgrading programme which will both assure safe operation and be in appropriate relation to the remaining operating life. In this case, the subsequent instructions shall be adapted. The Federal Environment Ministry shall immediately initiate the necessary talks.

Anlage 3
Overview of safety reviews in the nuclear power plants

nuclear power plant (year of operation start-up))	Safety Status Analysis(SSA)	Probabilistic Safety Analysis (PSA)	next PSR
Obrigheim (1968)	97	98	Not applicable - carried out in 1998
Stade (1972)	8/87	3/97	31.12.2000
Biblis A (1974)	2/91	2/91	31.12.2001
Biblis B (1976)	-	8/89	31.12.2000
Neckarwestheim 1 (1976)	12/98	12/94	31.12.2007
Brunsbüttel (1976)	-	3/97	30.06.2001
Isar 1 (1977)	10/94	10/92	31.12.2004
Unterweser (1978)	6/90	8/95	31.12.2001
Philippsburg 1 (1979)	8/95	5/98	31.08.2005
Grafenrheinfeld (1981)	10/98	4/96	31.10.2008
Krümmel (1983)	6/98	12/97	30.06.2008
Grundremmingen B/C (1984)	12/97	6/93	31.12.2007
Grohnde (1984)	-	8/98	31.12.2000
Philippsburg 2 (1984)	10/98	6/98	31.10.2008
Brokdorf (1986)	10/96	6/96	31.10.2006
Isar 2 (1998)	9/99	6/99	31.12.2009
Emsland (1988)	12/98	4/98	31.12.2009
Neckarwestheim 2 (1988)	12/98	7/98	31.12.2009

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Annex 4
Declaration of the Federal Government on the exploration of the Gorleben salt dome

In accordance with §9 Para. 3 of the Atomic Energy Act, the Government has the legal obligation to establish final repositories for radioactive materials. The German government acknowledges this obligation and declares that, notwithstanding the phase-out of nuclear power, it will undertake the necessary measures to provide promptly the necessary final storage capacity for radioactive wastes.

As potential host rocks for final repositories, both salt and other rock formations such as granite and clay come into question. In 1979 it was decided to explore the salt dome in Gorleben as a potential final repository. The geological findings acquired to date are essentially as follows:

In the course of exploring exploratory area 1 (EA1), the extent of the *Zechstein* 2 (Staßfurt formation) designated for burying highly radioactive wastes has proved to be greater than originally believed. EA 1 is not, however, sufficient for the predicted quantity of wastes.

The analytically determined rate of movement of the salt dome indicates that dangers resulting from possible movements, even over a very long timescale (on a magnitude of around 1 million years), are not to be expected. No significant pockets of solution, gas or condensates were found in the Zechstein 2. The findings up to now about a dense layer and thus about the barrier function of the salt, have been positively confirmed. In this respect the geological data acquired to date do not oppose the suitability of the Gorleben salt dome.

Nevertheless, in the context of the continuing international debate, the German government considers it necessary to further develop the suitability criteria for a final repository, and to revise the concept for the final storage of radioactive wastes. In recent years, state-of-the-art science and technology and general risk assessment have developed considerably, and this has consequences for the further exploration of the salt dome in Gorleben.

The following questions raise particular doubts:
- A particular problem is posed by the issue of controllability of gas formation in dense salt rock resulting from corrosion and the decay of the wastes.
- The retrievability of radioactive wastes is being increasingly called for on an international level. The concept of secure isolation in salt contradicts this.
- The suitability of salt as host rock, compared to others such as clay or granite should be studied in the context of the findings from other countries.
- In the case of direct final storage of spent fuel rods, additional requirements may have to be met in order to exclude criticality in the long term (critical accumulation of fissile materials).
- The International Radiation Protection Association is expected to publish recomendations soon which for the first time contain a radiological protection goal for inadvertent human intrusion into a final repository.

A further exploration of the Gorleben salt dome can contribute nothing to clarifying the above mentioned issues. For this reason, the exploration of the Gorleben salt dome will be interrupted for at least 3, but at most 10 years; a rapid clarification of the above mentioned issues will then be undertaken.

The moratorium does not mean that Gorleben will be given up as a location for a final repository. It is rather a question of not activating any investment during the investigation of the design and safety-related issues which cannot contribute to clearing up these issues.

The government shall take the requisite measures to secure Gorleben as an industrial location during the moratorium. This includes the necessary legal steps to ensure the government's position as applicant and to protect the project from the interference of third parties. The government shall undertake the necessary measures to ensure that the 10-year extension of the framework operation plan for the exploratory mine shall be granted. The Government shall secure the planning by banning any alterations to the project under atomic energy law. (Ordinance under §9 g of the Atomic Energy Act).

Annex 5
Summary of an amendment to the Atomic Energy Act

1. Basic new regulations

1.1 Purpose of the Act

o Abolishing the promotion objective
o Regulatory ending of nuclear energy utilisation for the commercial generation of electricity and ensuring regulatory operation up to the time generation ceases

1.2 Ban on licences for the construction and operation of new nuclear power plants

1.3 Research in the field of nuclear technology, in particular in the area of safety, shall remain unaffected

2. Restriction of existing operation licences

2.1 Termination of the right to capacity operation of the respective nuclear power plant, if the electricity volume for that plant designated in the Annex to the Act, or amended by transfer, has been achieved

2.2 Calculation of operating life
o Laying down of a specific electricity volume for each nuclear power plant in an annex to the Act
o The right to transfer the respective volume to other plants in accordance with the key points for a consensus on energy policy
o Objective: old to new

2.3 Obligation for every utility company to report the electricity volume generated each month

2.4 Competent authority to receive the reports: Federal Office for Radiation Protection

3. Safety requirements

3.1 Maintaining the current legal safety standards

3.2 Legal standardisation of the obligation to carry out periodical safety reviews

4. Waste Disposal

4.1 Obligation of the nuclear power plants to set up and utilise interim storage facilities

4.2 Legal regulations concerning interim solutions

4.3 As from 01 July 2005:
o Restriction of waste disposal to direct final storage
o Ban on reprocessing under IV/2

4.4 Maintaining the ban on alterations introduced by the1998 amendment to the Atomic Energy Act to secure the industrial location of Gorleben during the moratorium (in §9g)

4.5 Adapting the proof of provision for waste disposal to the contents of the agreement

5. Repeal of the Atomic Energy Act amendment of April 1998

The Atomic Energy Act amendment of 6 April 1998 shall be repealed, with the exception of: - regulations concerning the implementation of EU law - the ban on alterations (in §9 g see above 4.4)

6. Increasing the insurance cover

Notes on the summary of an amendment to the Atomic Energy Act (Annex 5)

1. Re: 4.1
This obligation shall not apply if decommissioning of the plant is planned and at the time of the decommissioning there is no need for an interim storage site in the vicinity of the plant with due consideration to point IV of the Agreement, waste disposal.

2. Re: 4.2
The parties concerned were essentially agreed as to the necessity and on the content of the regulations.

3. Re: 4.5
It is jointly understood that the proof of provision for waste disposal shall be based on interim storage.

4. Re: 5
The repeal of §7 para 2 sentence 2 shall only refer to the function of clarification provided by the previous government.