



International Atomic Energy Agency

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THE TEXTS OF THE INSTRUMENTS RELATING TO A PROJECT FOR
A JOINT AGENCY-NORWEGIAN PROGRAMME OF RESEARCH
WITH THE ZERO-POWER REACTOR "NORA"

Extension of the Joint Programme

The texts [1] of the following agreements, signed on 8 April 1964 and relating to the extension of the Agency project for co-operation in carrying out a joint programme of research in reactor physics with the zero-power reactor "NORA" [2], are reproduced in this document for the information of all Members:

- I. The "First Supply Extension Agreement" between the Agency and the Governments of Norway and of the United States of America;
- II. The "Second Supply Agreement" between the Agency and the Governments of Norway and of the United States of America;
and
- III. The "Project Extension Agreement" between the Agency and the Government of Norway.

[1] The footnotes to the texts have been added in the present information circular.

[2] See document INFCIRC/29.

I. FIRST SUPPLY EXTENSION AGREEMENT

AGREEMENT TO EXTEND AND REVISE THE FIRST CONTRACT FOR THE LEASE OF ENRICHED URANIUM FOR THE NORA REACTOR

WHEREAS the International Atomic Energy Agency (hereinafter called the "Agency") and the Government of Norway (hereinafter called "Norway") on 10 April 1961 signed an Agreement Relating to an Agency Project for Co-operation in carrying out a Joint Program of Research in Reactor Physics with the Zero-Power Reactor "NORA" (hereinafter called the "Project Agreement") [3];

WHEREAS the Agency, Norway and the United States Atomic Energy Commission (hereinafter called the "Commission"), acting on behalf of the Government of the United States of America, on 16 March and 10 April 1961 signed a Contract for the Lease of Enriched Uranium (hereinafter called the "First Supply Agreement") [4] for the Joint Program, pursuant to which a supply of enriched uranium was delivered to Norway on 16 October 1961 to be returned to the Commission no later than two-and-one-half years from that date;

WHEREAS the First Supply Agreement was twice modified by reductions of the Use and Consumption Charges stated therein [5] and was amended on 3 September 1962 by a supplementary agreement (hereinafter called the "Supplementary Agreement") [6] which modified, with regard to some of the material, certain restrictions concerning the use of the enriched uranium;

WHEREAS the parties to the Project Agreement are this day concluding an agreement extending the Joint Program [7]; and

WHEREAS Norway, in connection with the extension of the Joint Program, has requested the assistance of the Agency in arranging for an extension of the First Supply Agreement and also in purchasing some of the enriched uranium covered by that Agreement and by the Supplementary Agreement;

NOW THEREFORE the Agency, Norway and the Commission, acting on behalf of the Government of the United States of America, agree as follows:

ARTICLE I

Extension of the Period of the Leases

Section 1. The leases specified in Sections 1 and 2 of the First Supply Agreement shall extend until 15 July 1964, subject to the termination provisions in Section 8 of that Agreement, and subject to the two reductions of the Use and Consumption Charges and to the Supplementary Agreement.

[3] Text reproduced in document INFCIRC/29, Part II.

[4] Text reproduced in document INFCIRC/29, Part I.

[5] See documents INFCIRC/29/Mod.1 and 2.

[6] Text reproduced in document INFCIRC/29/Add.1.

[7] Part III of this document.

ARTICLE II

Sale and Purchase of Special Fissionable Material

Section 2. The Commission shall sell to the Agency, the Agency shall purchase from the Commission and resell to Norway, and Norway shall purchase from the Agency up to 60 kilograms of uranium-oxide enriched to approximately 3% by weight in the isotope U²³⁵, which material shall be taken from the fuel elements disassembled pursuant to Section 1 of the Supplementary Agreement.

Section 3. The exact quantity of material sold hereunder shall be determined at the time of the return, in accordance with Section 4(d) of the First Supply Agreement, of the balance of the supplied material. This determination shall be made primarily by reference to the determination of the quantity and enrichment of the material originally transferred; for this purpose Norway shall identify to the Agency and the Commission, before the return of the balance of the supplied materials, which disassembled fuel elements it is retaining in whole or part. Any dispute concerning the quantity or enrichment of the material sold shall be settled in accordance with Section 31 of the First Supply Agreement.

Section 4. Title to the material sold hereunder shall vest in the Agency at the time that possession of the balance of the supplied material is accepted by the Commission pursuant to Section 4(d) of the First Supply Agreement, and title shall thereafter immediately and automatically vest in Norway.

Section 5. Until the date of transfer of title pursuant to Section 4, the Use Charge shall be applicable to the material sold hereunder; as of that date the Consumption Charge shall be billed in accordance with Section 12(b) of the First Supply Agreement. Notwithstanding Section 12(d) of that Agreement, the Refabrication Charge for the disassembled fuel elements shall also be billed as of the date of transfer of title to the material pursuant to Section 4 above.

Section 6. In order to assist and encourage research on peaceful uses or for medical therapy, the Commission has in each calendar year offered to distribute to the Agency, free of charge, special fissionable material of a value of up to US \$50 000 at the time of transfer, to be supplied from the amounts specified in Article II.A of the Co-operation Agreement of 11 May 1959 between the Agency and the Government of the United States of America [8]. If the Commission finds the project to which this contract relates eligible, it shall decide by the end of the calendar year in which this Contract is concluded on the extent, if any, to which the project shall benefit by the gift offer, and shall promptly notify the Agency and Norway of that decision. The payment of the Consumption Charge in accordance with Section 5 shall be reduced by the value of any free material thus made available.

Section 7. Sections 22 and 23 of the First Supply Agreement shall continue to apply to the material sold hereunder, even after the transfer of title.

ARTICLE III

Entry into Force

Section 8. This Extension Agreement shall enter into force upon signature by or for the Director General of the Agency and by the authorized representatives of the Commission and Norway.

[8] Text reproduced in document INFCIRC/5, Part III.

DONE in Vienna, this 8th day of April 1964, in triplicate in the English language.

For the INTERNATIONAL ATOMIC ENERGY AGENCY:

(signed) Sigvard Eklund

For the GOVERNMENT OF NORWAY:

(signed) Torfinn Oftedal

For the UNITED STATES ATOMIC ENERGY COMMISSION
on behalf of the GOVERNMENT OF THE UNITED STATES OF AMERICA:

(signed) Frank K. Hefner

II. SECOND SUPPLY AGREEMENT

CONTRACT FOR THE LEASE OF ENRICHED URANIUM FOR THE NORA REACTOR

WHEREAS the International Atomic Energy Agency (hereinafter called the "Agency") and the Government of Norway (hereinafter called "Norway") on 10 April 1961 signed an Agreement Relating to an Agency Project for Co-operation in carrying out a Joint Program of Research in Reactor Physics with the Zero-Power Reactor "NORA" (hereinafter called the "Project Agreement") [3];

WHEREAS the parties to the Project Agreement are this day concluding an agreement extending the Joint Program [7];

WHEREAS Norway, in connection with the extension of the Joint Program, has requested the assistance of the Agency in securing from the Government of the United States of America (hereinafter called the "United States") a new supply of enriched uranium; and

WHEREAS the Agency and the United States on 11 May 1959 concluded an Agreement for Co-operation (hereinafter called the "Co-operation Agreement") [8], under which the United States undertook to make available to the Agency pursuant to its Statute certain quantities of special fissionable material;

NOW THEREFORE the Agency, Norway and the United States Atomic Energy Commission (hereinafter called the "Commission"), acting on behalf of the United States, agree as follows:

ARTICLE I

Lease of Enriched Uranium

Section 1. The Commission, subject to the provisions of the Co-operation Agreement, shall lease to the Agency, and the Agency shall lease from the Commission, approximately 1200 fuel elements (hereinafter called the "supplied material"), the specifications of which are stated in the Annex to this Contract.

Section 2. The Agency shall lease to Norway, and Norway shall lease from the Agency, the supplied material.

Section 3. The conditions of the delivery of the supplied material shall be as follows:

- (a) Prior to delivery the quantity and enrichment by weight in the isotope U^{235} of the uranium in the fuel elements shall be determined by the Commission in accordance with its normal practice and shall be communicated to the Agency and Norway. The Agency and Norway, acting on behalf of the Agency, may, subject to Section 28, verify the quantity and enrichment of the supplied material, and test it for conformity to the specifications in the Annex to this Contract.
- (b) The Commission shall pack the supplied material for shipment in containers, approved for this purpose by the Agency and Norway, which containers shall in any case meet Commission requirements.
- (c) The Commission shall transport and deliver, on approximately 1 October 1964 unless otherwise agreed, the supplied material to the port of export at New York. The Commission shall thereupon transfer possession to the Agency or, at the Agency's request and on its behalf, to Norway at the port so specified, and authorize the export of such material. The Agency or, at the Agency's request and on its behalf, Norway shall pay all costs (including, subject to the provisions of Sections 9 and 11(e), the cost of containers and packaging) for transportation within and outside the United States of America and for delivering and storing such material, as well as for physically handling it in connection with such delivery and transfer; such costs shall not be the responsibility of, nor be borne by the

Commission. The Agency or, at the Agency's request and on its behalf, Norway shall accept possession of such material at the designated port of export and shall give an appropriate written receipt therefor.

Section 4. The conditions of the return of the supplied material shall be as follows:

- (a) The Agency shall be responsible to the Commission for the return of all the supplied material at or before the date of termination of the leases in accordance with Section 8, in the same form and meeting the same specifications in which it was received, except as provided in Section 28.
- (b) At or before such date of termination Norway shall, at the Agency's request or on its behalf, and after giving thirty days' notice to the Agency and the Commission, return the supplied material to the Commission in the same form and meeting the same specifications in which it was received, except as provided in Section 28.
- (c) In carrying out its responsibilities as provided in Section 4(b):
 - (i) Norway shall pack the supplied material for shipment in the containers in which it had been delivered or in such other containers as may be approved for this purpose by the Agency and the Commission; and
 - (ii) Norway shall return the supplied material to a port of entry in the United States of America designated by the Commission after consultation with the Agency and Norway.
- (d) Upon arrival of the supplied material at the port of entry the Commission shall authorize the import of such material and accept possession thereof from the Agency or Norway, acting at the request of and on behalf of the Agency, giving an appropriate written receipt therefor.
- (e) Prior to return of the supplied material the Agency and the Commission shall, after consultation with each other and with Norway, make arrangements regarding its inland transportation within the United States of America. The Agency or, at the Agency's request and on its behalf, Norway shall pay all costs (including, subject to the provisions of sections 9 and 11(e), the cost of containers and packaging), for transportation within and outside the United States of America and for delivering and storing such material, as well as for physically handling it in connection with such delivery and transfer; such costs shall not be the responsibility of, nor be borne by the Commission.

Section 5. Title to the supplied material shall at all times be vested in the United States.

Section 6. The parties may agree that the supplied material be delivered or returned in more than one lot of fuel elements, in which case the provisions of this Contract shall apply, as appropriate, to each such lot separately.

ARTICLE II

Period of Leases

Section 7. The leases specified in Sections 1 and 2 shall commence at the time when, pursuant to Section 3, the Agency or, at the Agency's request and on its behalf, Norway accepts possession of the supplied material and they shall terminate at the time when, pursuant to Section 4, the Commission accepts possession upon return of the supplied material. The rights and obligations under this Contract, insofar as not specifically restricted to the period of the leases, shall commence on the entry into force of this Contract and shall, to the extent unfulfilled, extend beyond the termination of the leases.

Section 8. The leases shall extend for a period of two-and-one-half years, unless otherwise mutually agreed by the parties, except that the leases may be terminated, as provided in Section 7, at an earlier date by and at the initiative of:

- (a) The Agency:
 - (i) Under the conditions specified in Article XII. A. 7 and XII. C of its Statute; or
 - (ii) If any obligation of the Co-operation Agreement or of this Contract is not fulfilled by the other parties thereto; or
 - (iii) Upon termination of the extended Project Agreement; or
 - (iv) After consultation with Norway, in case of any increase, pursuant to Section 15, in the Use or Consumption Charges above the rates indicated in Sections 11(a) and (b) respectively; or
 - (v) At the request of Norway, it being understood that the Agency shall comply with such a request if made under conditions corresponding to those in subparagraphs (ii), (iii) or (iv) above.
- (b) The Commission:
 - (i) If any obligation of the Co-operation Agreement or of this Contract is not fulfilled by the other parties thereto; or
 - (ii) Upon termination of the extended Project Agreement.

The Agency after consultation with Norway may cancel this Contract before acceptance of possession of any of the supplied material, provided that it notifies the Commission and makes provision for the payment of any Cancellation Charge pursuant to Section 11(f).

ARTICLE III

Containers

Section 9. The Commission and the Agency or Norway, acting on behalf of the Agency, may enter into supplementary arrangements concerning the provision of the containers mentioned in Sections 3(b) and 4(c). Unless otherwise agreed, the containers shall be supplied by Norway acting on behalf of the Agency.

ARTICLE IV

Provision of Information

Section 10. The Commission shall provide the Agency and Norway with unclassified scientific and technical data available to it concerning the supplied material.

ARTICLE V

Payment

Section 11. Norway shall pay the Agency and the Agency shall pay the Commission the following amounts, on the terms specified below:

- (a) A Use Charge for the supplied material, levied for the period of the leases or until it has been determined, in accordance with Section 12(b), that it is impossible to return the supplied material, and calculated in accordance with the Commission's lease provisions and its schedule of charges for enriched uranium published in the United States Federal Register (hereinafter called the "Commission's published charges") and in effect during the appropriate period (at present US \$0.0011 per day per gram of contained U²³⁵);
- (b) A Consumption Charge for any of the enriched uranium lost, consumed or otherwise not returned, calculated in accordance with the Commission's published charges in effect at the time of the determination called for by Section 12(b) (at present US \$8.4633 per gram of contained U²³⁵); and a Consumption Charge

calculated at an appropriately lower rate as determined by the Commission for any enriched uranium returned with an enrichment less than that of the material received;

- (c) A Reprocessing Charge for the chemical reprocessing of any enriched uranium contained in the supplied material which is contaminated in accordance with Section 28 or otherwise, at a rate not to exceed the Commission's published charges for chemical processing and conversion of spent fuels; provided that if the Reprocessing Charge exceeds the Consumption Charge for the U²³⁵ contained in such contaminated material, the Agency or, at the Agency's request and on its behalf, Norway may elect to pay the Commission a sum equal to said Consumption Charge in lieu of such a Reprocessing Charge, together with a Service Charge for the handling, storage and/or disposal of such contaminated material;
- (d) A Refabrication Charge for any fuel elements destroyed or damaged in accordance with Section 28 or otherwise, at a rate of US \$200 per fuel element, which charge shall be additional to any Consumption and Reprocessing Charges levied in accordance with Sections 11(b) and (c), provided that, if in accordance with Section 28 the parties to this Contract agree to the disassembly of certain fuel elements in furtherance of the Joint Program, a lower Refabrication Charge may be agreed to;
- (e) The expenses incurred by the Commission in preparing the containers for shipment and the expense of inland transportation in the United States pursuant to Sections 3 and 4;
- (f) A Cancellation Charge to reimburse the Commission for any expense incurred by it, in reserving the supplied material, in preparing it for shipment and in transporting it to the port of export, prior to receiving notice of the cancellation of this Contract pursuant to the final sentence of Section 8.

Section 12. The Commission shall bill the Agency and the Agency shall thereupon bill Norway as follows:

- (a) For the Use Charge, at the end of June and December each year and on acceptance of possession upon return of the supplied material;
- (b) For the Consumption Charge, as soon as a determination has been made and agreed to by the parties that any enriched uranium has been depleted, lost, consumed or that a failure to or impossibility of return has occurred;
- (c) For the Reprocessing Charge, within sixty days after the return of any supplied material which has been contaminated;
- (d) For the Refabrication Charge, at the time when the Commission accepts the return of any destroyed or damaged fuel element;
- (e) For the expenses incurred by the Commission in preparing the containers for shipment, at the time of commencement of the leases;
- (f) For the expenses of inland transportation in the United States, at the time they are incurred by the Commission; and
- (g) For the Cancellation Charge, after receiving notice of the cancellation of this Contract.

Section 13. At the request of the Commission Norway shall provide the Agency and the Commission with such information concerning the supplied material as may be required for the Commission to prepare its billings in accordance with Section 12.

Section 14. Payment shall be made by Norway to the Agency and by the Agency to the Commission or its designated agent or contractor, in United States currency. The Commission shall be entitled to an additional charge at the rate of 6% per annum on all amounts due and not paid within sixty days after the receipt by the Agency of the Commission's invoice. Norway shall pay the Agency within thirty days after receipt of the

Agency's invoice, to be dispatched after receipt of the Commission's invoice, and Norway shall reimburse the Agency for or, at the Agency's request and on its behalf, Norway shall pay directly to the Commission any additional charge if the delay beyond the sixty-day period was due to the fault or negligence of Norway.

Section 15. The Commission may, in accordance with its general policies, change its published charges on which are based the Use Charge specified in Section 11(a) and the Consumption Charge specified in Section 11(b), by giving thirty days' prior notice of such change to the Agency and to Norway. Any such change shall be effective on either 1 July or 1 January as stated in the notice of change furnished by the Commission.

ARTICLE VI

Shipment of the Supplied Material

Section 16. Any shipment of the supplied material arranged for by Norway while the supplied material is in its possession shall be in the custody of a licensed public carrier selected for that purpose by Norway, or shall be accompanied by a responsible person designated by Norway.

Section 17. In arranging for shipment of the supplied material, Norway shall ensure, as far as possible, the observance of the Agency's Regulations for the Safe Transport of Radioactive Materials [9].

ARTICLE VII

Warranty, Responsibility and Liability

Section 18. Neither the Agency nor the Commission make any warranty either express, implied, statutory or otherwise with regard to the supplied material or to the scientific and technical data provided pursuant to Section 10.

Section 19. If any of the fuel elements delivered by the Commission pursuant to this Contract do not conform to the specifications in the Annex to this Contract, the Agency's and the Commission's sole responsibility and liability shall be, upon return of such defective elements, to arrange for the delivery to Norway, acting on behalf of the Agency, of elements available to the Commission that do conform to such specifications. The Commission shall pay or assume all costs and charges provided for in Sections 3(c), 4(c) and 4(e) with respect to the return of such defective elements.

Section 20. Neither the Agency nor the Commission shall be liable for any failure to transport and deliver the supplied material in accordance with the date specified in Section 3(c).

Section 21. During the period of the leases the Agency shall assume full responsibility to the Commission for the supplied material, including any loss, destruction, depletion, contamination or consumption thereof, and Norway shall be equally responsible to the Agency.

Section 22. Neither the Agency nor any person acting on its behalf shall at any time bear any responsibility towards Norway or any person claiming through Norway for the safe handling and the use of the supplied material.

Section 23. During the period of the leases neither the United States nor the Commission, nor any person acting on behalf of the Commission, shall bear any responsibility for the safe handling and the use of the supplied material.

[9] Agency's Safety Series No. 6 (STI/PUB/40).

Section 24. The Agency shall hold harmless the Commission and Norway shall hold harmless the Agency against any liability from any cause arising in connection with the supplied material during the period of the leases.

Section 25. Unless expressly waived in writing by the Agency and the Commission, Norway agrees to indemnify the Agency, the United States, the Commission, or persons acting on behalf of the Agency or the Commission, against liability, and resultant costs and expenses incurred, for infringement of any patent occurring in the utilization by Norway of the supplied material.

ARTICLE VIII

Assignment, Use and Retransfer

Section 26. Neither the Agency nor Norway may transfer any right or interest under this Contract to any third State.

Section 27. Unless otherwise agreed, Norway shall not use the supplied material otherwise than in the zero-power reactor "NORA", nor transfer it to any other country, nor shall it operate the NORA reactor in such a manner that more than a negligible quantity of the U²³⁵ contained in the supplied material will be consumed.

Section 28. Unless otherwise agreed, neither the Agency nor Norway shall disassemble or otherwise destroy any fuel element leased pursuant to this Contract, except that for the purpose of accomplishing the verifications provided for in Section 3(a) the Agency and Norway, acting on behalf of the Agency, may perform such tests as they may consider necessary on no more than a total of ten fuel elements leased hereunder, provided that they do not thereby unnecessarily contaminate or deplete the enriched uranium contained therein, that the fuel elements thus tested and the enriched uranium contained therein are returned to the Commission in accordance with Section 4, and that the payments required by Sections 11(b), (c) and (d) be made with respect to all such elements, except that Norway shall be relieved of its obligation for such payments for any elements tested by the Agency. The Commission shall, sufficiently before the date specified in Section 3(c), make available to the Agency and to Norway, if the Agency or Norway, acting on behalf of the Agency, so requests, sample fuel elements, selected pursuant to mutually agreed procedures within the numerical limits stated above, and, on request of the Agency, arrange for the transfer of possession and the export of such elements in accordance with Sections 3(b) and (c). If the procedure for the settlement of disputes set forth in Section 31 is invoked, the Commission shall similarly make available to the agreed laboratory sample fuel elements in such quantities and selected according to such procedures as may be agreed by the parties, and in the absence of such agreement as may be determined by the laboratory, the Use, Consumption, Reprocessing and Refabrication Charges for which shall be borne in accordance with Section 31.

ARTICLE IX

Officials not to Benefit

Section 29. No Member of the Congress of the United States of America or Resident Commissioner of the United States of America shall be admitted to or share any part of this Contract or any benefit that may arise therefrom.

ARTICLE X

Waiver of Rights by Commission

Section 30. Nothing in this Contract shall obligate the Agency or Norway to pay any charges or observe any provisions of, or established pursuant to, this Contract, if the

Commission, in accordance with statutory or other authority available to it, determines that such charges or other provisions are not applicable.

ARTICLE XI

Settlement of Disputes

Section 31. Any question or dispute concerning the quantity or the enrichment of the supplied material or concerning its conformity to the specifications in the Annex to this Contract shall, at the request of any party to this Contract, be submitted to a laboratory agreed upon by all parties. The laboratory may perform any tests or analyses that it may deem necessary, and all parties agree to facilitate its work in every way. The results of such measurements by the laboratory shall be considered final and binding on all parties. The costs of the measurements by the laboratory shall be borne equally by the parties, provided that if the measurements insisted upon by any party or parties are confirmed by the laboratory such party or parties shall not be obliged to bear any share of the costs.

Section 32. Any other dispute arising out of the interpretation or application of this Contract which is not settled by negotiation or as may otherwise be agreed by the parties concerned, shall on the request of any party be submitted to an arbitral tribunal composed as follows:

- (a) If the dispute involves only two of the parties to this Contract, all three parties agreeing that the third is not concerned, the two parties involved shall each designate one arbitrator, and the two arbitrators so designated shall elect a third, who shall be the Chairman. If within thirty days of the request for arbitration either party has not designated an arbitrator, either party to the dispute may request the President of the International Court of Justice to appoint an arbitrator. The same procedure shall apply if, within thirty days of the designation or appointment of the second arbitrator, the third arbitrator has not been elected.
- (b) If the dispute involves all three parties to this Contract, each party shall designate one arbitrator, and the three arbitrators so designated shall by unanimous decision elect a fourth arbitrator, who shall be the Chairman, and a fifth arbitrator. If within thirty days of the request for arbitration any party has not designated an arbitrator, any party may request the President of the International Court of Justice to appoint the necessary number of such arbitrators. The same procedure shall apply if, within thirty days of the designation or appointment of the third of the first three arbitrators, the Chairman or the fifth arbitrator has not been elected.

A majority of the members of the arbitral tribunal shall constitute a quorum, and all decisions shall be made by majority vote. The arbitral procedure shall be established by the tribunal, whose decisions, including all rulings concerning its constitution, procedure, jurisdiction and the division of the expenses of arbitration between the parties, shall be binding on all parties. The remuneration of the arbitrators shall be determined on the same basis as that of ad hoc judges of the International Court of Justice under Article 32, paragraph 4, of the Statute of the Court.

ARTICLE XII

Entry into Force

Section 33. This Contract shall enter into force upon signature by or for the Director General of the Agency and by the authorized representatives of the Commission and Norway.

DONE in Vienna, this 8th day of April 1964, in triplicate in the English language.

For the INTERNATIONAL ATOMIC ENERGY AGENCY:

(signed) Sigvard Eklund

For the GOVERNMENT OF NORWAY:

(signed) Torfinn Oftedal

For the UNITED STATES ATOMIC ENERGY COMMISSION
on behalf of the GOVERNMENT OF THE UNITED STATES OF AMERICA:

(signed) Frank K. Hefner

A N N E X
SPECIFICATIONS

The specifications of the fuel elements to be leased pursuant to this Contract are as follows:

Geometry	Rod
Over-all length of fuel element	60-63 inches
Cladding material	S.A. E. 308 stainless steel
Clad O. D.	0.5439 ± 0.0007 inches
Cladding thickness	0.018 ± 0.001 inches
Fuel material	UO ₂
Enrichment of uranium in U ²³⁵	$3.41\% \pm 0.02\%$ by weight
Length of fuel in fuel element	48 ± 0.25 inches
Weight of fuel in fuel element	1598 ± 15 grams of UO ₂

Each fuel element is to be identified by a number engraved on its surface.

The fuel elements are to be shipped from existing stocks at the Commission's critical assembly fuel element exchange storage facility at Hartford, Connecticut.

III. PROJECT EXTENSION AGREEMENT

AGREEMENT BETWEEN THE INTERNATIONAL ATOMIC ENERGY AGENCY
AND THE GOVERNMENT OF NORWAY RELATING TO THE EXTENSION
OF THE AGENCY PROJECT FOR CO-OPERATION IN CARRYING
OUT A JOINT PROGRAM OF RESEARCH IN REACTOR PHYSICS
WITH THE ZERO-POWER REACTOR "NORA"

WHEREAS on 10 April 1961 the International Atomic Energy Agency (hereinafter called the "Agency") and the Government of Norway (hereinafter called "Norway") entered into an agreement (hereinafter called the "Project Agreement") [3] for the carrying out for a period of three years of a joint program of research in reactor physics with the zero-power reactor "NORA" (hereinafter called the "Joint Program");

WHEREAS the Agency and Norway desire to extend the period of the Joint Program with a new program of research;

WHEREAS the Agency, Norway and the United States Atomic Energy Commission (hereinafter called the "Commission"), acting on behalf of the Government of the United States of America (hereinafter called the "United States"), on 10 April 1961 concluded a Contract for the Lease of Enriched Uranium for the reactor "NORA" [4], which contract was twice modified by a reduction of the Use and Consumption Charges stated therein [5] and was amended by the parties thereto by a supplementary agreement of 3 September 1962 [6] (the modified and amended agreement being hereinafter called the "Revised First Supply Agreement");

WHEREAS Norway, in connection with the extension of the Joint Program, has requested the assistance of the Agency in arranging for an extension of the Revised First Supply Agreement, in purchasing some of the enriched uranium covered by that Agreement and also in securing from the United States a further supply of enriched uranium to be transferred after the material leased under the Revised First Supply Agreement has been returned;

WHEREAS the Agency, Norway and the Commission, acting on behalf of the United States, are this day concluding a contract extending and further revising the Revised First Supply Agreement (hereinafter called the "First Supply Extension Agreement") [10], and also an additional contract for the lease of further enriched uranium for the reactor "NORA" (hereinafter called the "Second Supply Agreement") [11];

WHEREAS the Agency, Norway and the Governments of the People's Republic of Poland and of the Socialist Federal Republic of Yugoslavia are entering into an Agreement concerning Co-operative Research in Reactor Physics (hereinafter called the "NPY Agreement") [12], which Agreement recognizes that its implementation is furthered by the Joint Program; and

WHEREAS the Agency and the Commission plan to enter into a new contract for research in reactor physics, pursuant to which the Commission will make certain payments to the Agency for the conduct of specific research with the reactor "NORA", and the Agency and the Norwegian Institutt for Atomenergi will then also enter into a new contract for research in reactor physics, pursuant to which the Agency will make payments to the Institutt equal to the payments received by the Agency under its research contract with the Commission;

[10] Part I of this document.

[11] Part II of this document.

[12] Text reproduced in document INFCIRC/55.

NOW THEREFORE the Agency and Norway agree as follows:

ARTICLE I

Extension of the Project Agreement

Section 1. In accordance with Section 27 of the Project Agreement, it is agreed that that Agreement shall continue in force for three additional years from 10 April 1964, subject to the modifications indicated below. Except as specifically provided or agreed otherwise, all arrangements made in implementation of that Agreement shall also continue in force during the extended period.

Section 2. The outline of the new research program is set forth in the Annex.

ARTICLE II

Co-ordination with the NPY Agreement

Section 3. Arrangements will be made for co-ordinating, as far as possible, the work, meetings and membership of the Joint Committee established by the NPY Agreement and of the NORA Committee established by the Project Agreement. It is understood that the Project Manager appointed and approved in accordance with the Project Agreement should be the Program Supervisor appointed by Norway pursuant to the NPY Agreement.

Section 4. To the extent that scientists are placed for work with the NORA reactor pursuant to Article IV of the NPY Agreement and are granted Agency fellowships, the Agency's corresponding obligation under Section 3(c) and Article IV of the Project Agreement shall be considered as satisfied.

ARTICLE III

Supply of Special Fissionable Materials

Section 5. The Agency hereby extends and revises its allocation of the enriched uranium covered by the Revised First Supply Agreement, in accordance with the terms of the First Supply Extension Agreement, which constitutes an integral part of this Extension Agreement to the extent that it creates rights and obligations between the Agency and Norway. As long as the operations carried out pursuant to the supplementary agreement of 3 September 1962 amending the First Supply Agreement are continued, the Project Agreement as hereby extended shall continue to apply to such operations, and Annex C thereof shall apply, mutatis mutandis, to the sub-critical assemblies referred to in the supplementary agreement.

Section 6. The Agency hereby allocates to the Joint Program, and provides to Norway enriched uranium pursuant to the terms (including those relating to method of transfer) of the Second Supply Agreement, which constitutes an integral part of this Extension Agreement to the extent that it creates rights and obligations between the Agency and Norway. Such enriched uranium shall be considered as "supplied material" within the meaning of the Project Agreement.

ARTICLE IV

Agency Safeguards against Diversion

Section 7. The enriched uranium sold to Norway pursuant to Article II of the First Supply Extension Agreement shall be exempt, in accordance with paragraph 32(b) of Agency document INFCIRC/26, from the attachment of Agency safeguards against diversion.

ARTICLE V

Entry into Force

Section 8. This Extension Agreement shall enter into force upon signature by or for the Director General of the Agency and by the authorized representative of Norway.

DONE in Vienna, this 8th day of April 1964, in duplicate in the English language.

For the INTERNATIONAL ATOMIC ENERGY AGENCY:

(signed) Sigvard Eklund

For the GOVERNMENT OF NORWAY:

(signed) Torfinn Oftedal

A N N E X

OUTLINE OF NEW RESEARCH PROGRAM IN REACTOR
PHYSICS WITH THE NORA REACTOR
(1964 - 1967)

The objective of the reactor physics research program with the NORA reactor is to study and further develop methods for the design optimization of small and medium-sized boiling water power reactors. The program will provide experimental data for checking the validity of computational models and to check actual design calculations through a study of a mock-up of a core design. It is to be implemented in two distinct phases.

First Phase

The first phase will concentrate on developing computational models. This will be a natural follow-up of the original Research Program with the NORA reactor, and the proposed studies are also consistent with the technical objectives of the NPY Agreement. It is intended to keep the experimental program flexible and to permit variations of key parameters over sufficiently large ranges to provide tests for theoretical models. This phase can conveniently be divided into two main parts:

(a) Reactor Statics

Measurements of criticality and material bucklings of a variety of core configurations will be carried out. Microscopic parameters, like ρ^{28} , δ^{28} , δ^{25} , and resonance integrals, etc. will be measured. Work performed under the original NORA Research Program in developing experimental techniques will be continued.

A study of burn-up effects may also be carried out. This study would comprise reactivity oscillation experiments with irradiated single slugs from the Halden reactor or from the JEEP II assembly, and a study of simulated burn-up effects arising from fuel rods enriched with plutonium.

The utilization of miniature lattice techniques developed in the original NORA Research Program will be continued.

(b) Dynamic Parameters and Reactor Kinetics

It is proposed to continue the experiments, carried out under the original NORA Research Program, on the spatial dependence of kinetic effects in cores strongly or loosely coupled to reflectors. Considerable emphasis will be put on the evaluation of dynamic parameters like moderator temperature-, Doppler-, and void-coefficients. Good extrapolations from low-power, low-temperature experiments to full operating conditions will be sought.

Second Phase

The second phase will consist of the detailed study of a mock-up of a specific core design, principally from an engineering point of view. The experimental program is to provide information on criticality and power distributions, both macroscopically and in greater detail microscopically around water gaps. Studies of reactivities and power distributions with several burnable poison systems will be conducted. Control-rod effectiveness will be investigated and temperature and void-coefficients will be measured to the extent they can be properly simulated.