

11/16

PDR

XSNM01909

BW

This is Miss. Swai

request to amend

License application XSNM1909.

Have Delivered by Mr Oga,

this day.

more

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U.S. NRC

1982 NOV 16 PM 2 51

1. Items of amendment

1a. item 11 : from 56.058 to 32.996

1b. item 18 : from 56.058 to 32.996

1c. item 20 : from 52.302 to 30.785

and if it is necessary;

1d. item 6 : April 1984 to March 1984

OK 1e. item 8 : September 1985 to June 1985

OK 1f. item 11a: September 1984 to October 1984

2. Reason of pending the fabricator

Nuclear Fuel Industries(NFI) refused fabrication of the 7 cores of JMTR fuels.

The Government of Japan therefore did not approve JAERI as the Authorized Person.

3. Reason of decreasing the amount of HEU application

JMTR operation cycles with HEU in 1984 and 1985 under the new application will be skipped 3 cycles compared with the previous schedule.

4. Fabrication schedule in NFI

Fabrication schedule in NFI will be during the first of January 1984 to the end of September 1984.

NFI therefore needs the amount of HEU metal of around 15 kgs for fabrication to start because of satisfying the fabrication schedule.

5. Written confirmation provided in the Agreement for cooperation concerning the civil use of atomic energy between the US and Japan

The written confirmation about 33 kgs uranium metal is expected to request newly again to the Embassy of Japan.



Japan Atomic Energy Research Institute

RECEIVED
U.S. NRC

2-2, Uchisaiwai-cho 2-chome, Chiyoda, Tokyo 100

Telephone: (03) 503-6111

Telex: J24596

Cable: JAERINIPPON TOKYO

Our ref.:

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To whom it may concern:

EXPORT/IMPORT
AND
INTERNAT'L SFGRDS

END USE STATEMENT

The undersigner certify that a quantity of

32.996 kgs of uranium (93.30% U-235 enriched)

in the form of uranium metal containing 30.785 kgs of U-235 which will be furnished to us under the Adjustable Fixed Commitment Enrichment Contract and a metal conversion contract with USDOE will be used by us for fuel elements of the Japan Materials Testing Reactor (JMTR) in our Oarai Research Establishment, Oarai-machi, Ibaraki-ken, Japan.

The enriched uranium metal shall be fabricated into fuel elements by Nuclear Fuel Industries Ltd., 23-5 Nishishinbashi 3-chome, Minato-ku, Tokyo 105, Japan.

We authorize Nissho-Iwai American Corp., 1211 Avenue of the Americas, New York, U.S.A. to apply for the export license.

JAPAN ATOMIC ENERGY RESEARCH
INSTITUTE

Shoichi Takahashi
Shoichi Takahashi

Head, Division of Contracts

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O-arai Research Establishment
O-arai, Ibaraki 311-13
Tel. (049267) 4111

XSNM 1909 1400270

1. NAME NISSEI Iwai AMERICAN CORPORATION		2. STREET ADDRESS 4011 AVENUE OF THE AMERICAS		3. CITY NEW YORK		4. STATE NY		5. ZIP CODE 10036		6. RECEIVED U.S. NRC 1982 NOV 16 PM 5:25 DEPARTMENT OF ENERGY OAK RIDGE OPERATIONS P.O. BOX 8 CANTON/EXPORT					
7. TELEPHONE NUMBER (Area Code - Number - Extension) 212-730-2155		8. CITY CANTON/EXPORT		9. STATE NY		10. ZIP CODE 13763		11. FIRST SHIPMENT SCHEDULED OCTOBER, 1983		12. FINAL SHIPMENT SCHEDULED March 1984 APRIL, 1984		13. APPLICANT'S CONTRACT DELIVERY DATE SAME AS ITEMS 5 & 6		14. U.S. DEPARTMENT OF ENERGY CONTRACT NO. (If Known) SEPTEMBER, 1985	
15. ULTIMATE CONSIGNEE a. NAME JAPAN ATOMIC ENERGY RESEARCH INSTITUTE b. STREET ADDRESS 2-2, Uchisaiwai-cho 2-chome, Chiyoda-ku c. CITY - STATE - COUNTRY Tokyo 100, Japan						16. ULTIMATE END USE a. (Name of plant or facility name) 32.996 kg U for the fuel of the Japan Materials Testing Reactor (JMTR) in Oarai Research Establishment b. EST. DATE OF FIRST USE October 1984 September, 1984									
17. INTERMEDIATE CONSIGNEE a. NAME NUCLEAR FUEL INDUSTRIES, LTD. b. STREET ADDRESS 23-5, Nishishintashi 3-chome, Minato-ku c. CITY - STATE - COUNTRY Tokyo 105, Japan						18. INTERMEDIATE END USE a. Fabrication of enriched uranium metal into fuel elements b. EST. DATE OF FIRST USE December, 1983									
19. INTERMEDIATE CONSIGNEE a. NAME b. STREET ADDRESS c. CITY - STATE - COUNTRY						20. INTERMEDIATE END USE a. b. EST. DATE OF FIRST USE									
21. NRC USE		22. DESCRIPTION (Include chemical and physical form of nuclear material; give dollar value of nuclear equipment and components)				23. MAX. ELEMENT WEIGHT		24. MAX. WT. %		25. MAX. ISOTOPE WT.					
C		Uranium Metal				32.996 56.058		93.30		30.785 52.502					
26. COUNTRY OF ORIGIN - SOURCE MATERIAL U.S.A.				27. COUNTRY OF ORIGIN - SNM WHERE ENRICHED OR PRODUCED U.S.A.				28. COUNTRIES WHICH ATTACH SAFEGUARDS (If Known) U.S.A.							
29. ADDITIONAL INFORMATION (Use separate sheet if necessary)															
30. The applicant certifies that this application is prepared in conformity with Title 10, Code of Federal Regulations, and that all information in this application is correct to the best of his/her knowledge.															
31. AUTHORIZED OFFICIAL				32. SIGNATURE J. C. Yamanaka				33. TITLE Manager, Nuclear Energy & Envr							

CHECKLIST FOR USE IN REVIEW OF REQUESTS FOR HEU TO DETERMINE
TECHNICAL AND ECONOMIC JUSTIFICATION

- | | |
|--|---|
| 1. Name of reactor and facility | <u>Japan Materials Testing Reactor (JMTR)</u> |
| 2. Location | <u>120 km northeast of Tokyo</u>
<u>Narita-cho, Oarai-machi</u>
<u>Higashiibaraki-gun, Ibaraki-ken, Japan</u> |
| 3. Quantity of uranium requested (kgs U) | <u>Max. 32.996 kgs U in form of Uranium Metal</u> |
| 4. Enrichment in the isotope U-235 | <u>Max. 93.30 %</u> |
| 5. Quantity of uranium requested (kgs U-235) | <u>Max. 30.785 kgs U-235</u> |
| 6. Type of fuel element and form of uranium | <u>Modified ETR type, U-Al alloy</u> |
| 7. Current reactor power level (MW th) | <u>50 MW th</u> |
| 8. Duty factor, average burnup | <u>Ave. : 20 % U-235, Peak : 34 % U-235</u> |
| 9a. Current core loading (kgs U-235) | <u>Approx. 7 kgs U-235</u> |
| 9b. Amount of fuel per element (kgs U-235) | <u>Standard Fuel Element: 0.279 kg U-235</u>
<u>Fuel Follower : 0.195 kg U-235</u> |
| 9c. Number of elements in core | <u>27 elements</u> |
| 9d. Average core life | <u>4 weeks</u> |
| 9e. Active core dimensions | <u>54 cm x 38.6 cm x 75 cm height</u> |
| 9f. Neutron flux | <u>Thermal : Ave. 2.6×10^{14} n/cm².sec</u>
<u>Fast : Ave. 1.8×10^{14} n/cm².sec</u> |
| 10. Annual fuel useage(kgs U-235) | <u>Refueling:</u>
<u>25 elements/cycle x 5 cycles/year</u>
<u>= 125 elements (32. 775 kgs U-235)</u> |

11. Annual spare fuel requirement, if any (kgs U-235)	50 elements (13.110 kgs U-235) on hand
12. Plans to increase, decrease reactor power level	None
13. Estimated annual supply of current fuel request	17.712 kgs U in the first year and the rest (15.284 kgs U) in the next year
14. Required manufacture's working stock, if any, included in this request (kgs U-235)	38.247 kgs U-235
15. Fabrication loss, if any, included in this request (kgs U-235)	0.57 kg U-235 of loss/25 elements fabrication 2.28 kgs U-235 of fabrication loss and 2.622 kgs U-235 in the form of U-Al scrap are included in this request.
16. Names of converter and fabricator of fuel	Converter: USDOE Fabricator: Nuclear Fuel Industries, Ltd.
17. Location	Fabricator: 40 km south of Osaka, Japan
18. Inventory	As of September 30, 1982
18a. Quantity of scrap U-235, useable, non-useable (kgs U-235)	useable: Approx. 2 kgs U-235 in form of U-Al scrap non-useable: Approx. 2 kgs U-235 in form of dross
18b. Quantity of fabricated unirradiated stored fuel available (kgs U-235)	17.406 kgs U-235 (66 elements)
18c. Quantity of unirradiated non-fabricated stored fuel (which will be available from fabrication planned or in process) (kgs U-235)	43 kgs U-235 including the useable amount of item "18a" and the amount of the uranium metal in USA under the export license No. XSNM-1667, which will be started to transport to Japan in November 1982.
18d. Amount of spent fuel stored (kgs U-235)	Approx. 60.4 kgs U-235

19. Date at which current inventory, including a, b, c will be expended April 1984
20. Date current requested fuel will be needed at reactor October 1984
21. Date current requested fuel will be needed by convertor/fabricator Convertor: Not Applicable
Fabricator: December 1983
- 22a. Time taken for shipment from USA to convertor/fabricator 3 - 4 weeks per one shipment (5 kgs U-235)
- 22b. Lead time for ordering in USA 12 months for procurement of natural uranium, toll enrichment, and metal conversion
23. Date at which current requested fuel will be expended i.e., when a further HEU supply will be needed at reactor June 1985
24. Dates at which reactor could be converted to 45% fuel; to 20% fuel, including time required for licensing procedure To 45 % fuel : October 1985
To 20 % fuel : Core design and safety analysis will be continued.
25. History and dates of previous HEU supplies by the U.S.
- | | | |
|---------------|--------------|----------------------|
| XSNM-1667 | 33.301 kgs U | issued June 1981 |
| XSNM-1408 | 35.624 kgs U | issued July 1980 |
| XSNM-1340 | 27.511 kgs U | issued July 1980 |
| XSNM-0937 | 35 kgs U | issued December 1978 |
| RTD/JA(EU)-16 | 33 kgs U | approved Dec. 1978 |
26. Amount of fuel of U.S.-origin previously consumed during operation of reactor About 125 fuel elements of U.S. origin per year have been consumed from the first full power date, January 1970.

27. Status of cooperation between reactor operator and Argonne National Laboratory in reduced enrichment program(RERTR); and
28. Status of agreement between reactor operator and ANL to reduced enrichment.

JAERI and ANL embarked on a joint study program, "ANL-JAERI JOINT STUDY ON THE USE OF REDUCED ENRICHMENT FUELS ON THE JAERI RESEARCH REACTORS", in January 1980 to assess the feasibility of converting the JAERI reactors to use of fuels with reduced uranium enrichment, both with currently qualified fuels and with fuels that are expected to become qualified in the near future.

Under the Joint Study, ANL and JAERI agreed to accept experts to exchange information and to observe experiments about the RERTR Program. The Joint Study consists of three Phases, Phase A, Phase B and Phase C. The Reports of Phase A which was the first stage of the Joint Study had made up and exchanged between ANL and JAERI. The main subjects of the Phase A were calculational studies on the use of fuels with less than 20% enrichment and 45% enrichment, and preparation for critical experiments and burnup test with 45% and 20% enrichment. Some JAERI engineers were assigned to ANL for three months and they took part in calculation works at ANL, and besides some discussions about the RERTR Program were made between ANL personnel(s) and JAERI personnel(s) at ANL and JAERI.

The end of period of Phase B activities was extended from December 1981 to April 1983 in comparison with the original schedule. In the Phase B studies, the Hydraulics tests at JAERI ended and fabrication of the fuel elements for the Critical experiments in the JMTRC(45%) will be completed by the end of March 1983. For the Burn-up tests in JAERI Reactors, preparations for fabrication of irradiation fuel elements, which are planned to fabricate in West Germany and in France, are proceeding now. Some JAERI engineer(s) will visit the FNR to discuss about the full-core demonstration with LEU core and visit the ORR to discuss about the Burn-up test of 45% and less than 20% fuels.

The Full-core demonstration tests(45%, 20%) in JAERI reactors provided in the Phase C of the Joint Study will be started in October 1985.

29. Status of cooperation between reactor operator and IAEA reduced enrichment program.
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JAERI has been greatly cooperating to the IAEA activities on reduced enrichment program by means of contributing the "RESEARCH REACTOR CORE CONVERSION FROM THE USE OF HIGHLY ENRICHED URANIUM TO THE USE OF LOW ENRICHED URANIUM FUELS GUIDEBOOK(IAEA, VIENNA, 1980)", "Guidebook on Safety and Licensing Issues Related to Research Reactor Core Conversion to Use LEU Instead of HEU" and "Guidebook in the Core Conversion of Heavy Water Research Reactors". JAERI will continue to cooperate these activities.

And besides, JAERI has actively participated the international meetings, which are the "International Meeting of Research Reactor Fuel Designers, Developers and Fabricators" at ANL in November 1978 and in November 1980, the "Consultants' Meeting on Preparation of a Program on Research Reactor Core Conversions to Use Instead of HEU" at Saclay in France in December 1979 and the "Seminar on Research Reactor Operation and Use" at the Nuclear Research Center at Juelich in West Germany in September 1981. The 1983's international meeting will be held at JAERI *in the fall 1983*.