

# NIAC

Nissho Iwai  
American  
Corporation

1211 Avenue of the Americas  
New York, N.Y. 10036  
Direct Number

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WUD 126110 / 12329

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DCS/DF02  
XSNM02467/02  
11004195

GNT90-064

February 8, 1991

Mrs. Betty L. Wright  
Acting Assistant Director  
for Exports, Security, and Safety Cooperation  
International Programs  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555  
Mail Stop 3-H-5

Re: Application of E/L Amendments No. 2  
License No. XSNM02467

Dear Mrs. Wright:

In regard to the Export License, this is to request  
Amendment No. 2 per below:

	Current Amendment No.1 (Kgs)	Amendment No.2 (Kgs)	Remarks
Uranium	85.56	154.01	Q'ty increased by 68.45
Uranium-235	38.50	69.30	Q'ty increased by 30.80

A check list filled by JAERI is attached hereto for  
your reference.

Thank you for your cooperation, in advance.

Very truly yours,



Y. Ogino  
Manager - Nuclear  
Gas & Nuclear Dept.

cc: NIC Tokyo ATOMB-2  
GNT File

Attach.

INT'L SAFEGUARDS  
EXPORT IMPORT

91 FEB 14 P4:13

RECEIVED  
U.S. NRC

9102200120 910208  
PDR XPORT  
XSNM-2467 PDR

Date: May, 1990

CHECKLIST FOR USE IN REVIEW OF REQUESTS FOR HEU TO DETERMINE  
TECHNICAL AND ECONOMIC JUSTIFICATION  
(for amendment to the application)

1.	Name of reactor and facility	Japan Material Testing Reactor (JMTR)
2.	Location	Oarai-machi, Higashibaraki-gun, Ibaraki-ken, Japan
3.	Quantity of uranium requested (kgs U)	(increment) 68.45 (total) 566.42
4.	Enrichment in the isotope U-235	45%
5.	Quantity of uranium requested (kgs U-235)	(increment) 30.80 (total) 255.44
6.	type of fuel element and form of uranium	Modified ETR type
7.	Current reactor power level (MW th)	50
8.	Duty factor Average burnup	0.33 25%
9a.	Current core loading (kgs U-235)	7.805 as of 1 May, 1990
9b.	Amount of fuel per element (kgs U-235)	Standard Fuel: 0.370 Fuel Follower: 0.205
9c.	Number of elements in core	27

Date: May, 1990

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|-----|--|--|
| 9d. | Average core life  | 5 weeks  |
| 9e. | Active core dimensions (mm)  | 540 x 386 x 750  |
| 9f. | Neutron flu.   | $4 \times 10^{14}$ n/cm <sup>2</sup> sec<br>(Average $\phi_{th}$ in fuel region) |
| 10. | Annual fuel usage (kgs U-235)  | Approx. 7 (fuel consumed)  |
| 11. | Annual spare fuel requiremnt,<br>if any (kgs U-235)                                      | Not applicable   |
| 12. | Plans to increase, decrease<br>reactor power level                                       | None   |
| 13. | Estimated annual supply of<br>current fuel request                                       | Standard Fuel 100<br>Fuel Follower 25  |
| 14. | Required manufacture's working<br>stock, if any, included in this<br>request (kgs U-235) | Not applicable   |
| 15. | Fabrication loss, if any,<br>included in this request<br>(kgs U-235)                     | (increment) 1.23   |
| 16. | Names of converter and fabricator<br>of fuel   | CERCA, France  |
| 17. | Location   | DOE:<br>CERCA: 9-11 Rue Georges Enesco<br>94008 Creteil Cedex, France            |
| 18. | Inventory  |  |

Date: May, 1990

18a.	Quantity of scrap U-235, usable non-usable (kgs U-235)	Not applicable
18b.	Quantity of fabricated unirradiated stored fuel available (kgs U-235)	10.168 as of 1 May, 1990
18c.	Quantity of unirradiated non-fabricated stored fuel (which will be available from fabrication planned or in process) (kgs U-235)	0
18d.	Amount of spent fuel stored (kgs U-235)	81.613 as of 1 May, 1990
19.	Date at which current inventory, including a.b.c. will be expended	Dec. 1990
20.	Date at which current requested fuel will be needed at reactor	May, 1992
21.	Date at which current requested fuel will be needed by convertor/ fabricator	Fabricator: July, 1991
22a.	Time taken for shipment from USA to convertor/fabricator	Fabricator 3-4 weeks per shipment
22b.	Lead time for ordering in USA	Approx. 8 months
23.	Date at which current requested fuel will be expended i.e., when a further HEU supply will be needed at reactor	May, 1992
24.	Dates at which reactor could be converted to 45% fuel; to 20% fuel, including time required for licensing procedure	To 45% Fuel: July, 1986 To 20% Fuel: approx., 1993

Date: May, 1990

25. History and dates of previous HEU supplies by the U.S. Since 1968, the initial criticality 505.6 kg. U-235 as of 1 May, 1990
26. Amount of fuel of U.S.-origin previously consumed during operation of reactor 100.767 kg of U-235 as of 1 May, 1990
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 reduce 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. The Joint Study consists of three phases: Phase A, Phase B and Phase C.

Phase A, the first stage of the Joint Study was through in March, 1981. The main subjects of the Phase A were calculational studies on the use of fuels with less than 20% enrichment and 45% enrichment, and preparations for critical experiments and burn-up test with 45% and 20% enrichment. Under the Joint Study, ANL and JAERI agreed to accept experts to exchange information and to observe experiments on the RERTR Program.

Phase B, following the end of Phase A, terminated in March, 1984, where some tasks originally scheduled for Phase B were transferred to Phase C. The Phase B included the hydraulic tests at JAERI, the critical experiments in the JMTRC (45%), the burn-up tests and further feasibility and analytical studies.

The Phase C, now underway, is characterized by the various experiments of uranium silicide LEU fuels. With the full-core demonstration test (45%) in July, 1986, JMTR is now in operation with use of fuels of 45% enrichment.

Date: May, 1990

Since the beginning of Joint Study, exchange of personnel of JAERI and ANL has been made when expedient under the circumstances, for calculation works, observation of the related tests and discussion. Such activities have helped expedite the Program.

29. Status of cooperation between reactor operator and IAEA reduced enrichment program

JAERI has been cooperation greatly with the IAEA activities on reduced enrichment program by means of contributing to the "RESEARCH REACTOR CORE CONVERSION FROM THE USE OF HIGHLY ENRICHED URANIUM TO THE USE OF LOW ENRICHED URANIUM FUELS GUIDEBOOK (IAEA, 1980)", "Guide book on Safety and Licensing Issues Related to Research Reactor Core Conversion to Use LEU Instead of HEU" and "Guidebook on the Core Conversion of Heavy Water Research Reactor". In October, 1984 JAERI sponsored "the International Meeting on Reduced Enrichment for research and Test Reactors". where outline and present status of our program to reduced enrichment were given and discussion among participants was performed.

JAERI will continue to cooperate with IAEA in these activities, including dispatch of its personnel.

An expert of JAERI has been taking part in Steering Committee of RERT Program since 1988.