~~CONFIDENTIAL~~

July 25, 1978 — SECY-78-406

COMMISSIONER ACTION

For: The Commissioners

From: James R. Shea, Director
Office of International Programs

Thru: Executive Director for Operations

Subject: PENDING RETRANSFER FROM JAPAN TO THE UK FOR REPROCESSING (RTD/EU (JA)-20)

Purpose: Commission review and approval of proposed Department of Energy (DOE) retransfer action.

Discussion: DOE has requested NRC views regarding the proposed retransfer of 126 spent fuel assemblies from the Fukushima No. 1, Unit No. 2, nuclear power reactor in Japan to British Nuclear Fuels Ltd. (BNFL) in the UK for reprocessing (see attached June 30 memorandum at Appendix A).

Although the proposed retransfer is not scheduled to take place until September, DOE recently received a cable from Japan (Appendix B) which requests approval by the end of July because of the need to finalize shipping arrangements. DOE has accordingly requested expedited NRC consideration of the proposal, especially since the Nuclear Non-Proliferation Act (NNPA) requires a fifteen day public notice period before any approved retransfer (or other subsequent arrangement) can take place.

This case is the first proposed retransfer involving reprocessing since the publication of the new interagency procedures for processing nuclear exports.

Pursuant to these procedures, DOE has prepared a detailed analysis of this proposed retransfer and

Contact:
G. G. Oplinger, IP, (492-7866)
M. R. Peterson, IP, (492-8155)

Classified by _____ (name)
ASSISTANT DIRECTOR IPEI (title)

~~CONFIDENTIAL~~

Discussion: (continued) recommended that the retransfer be approved. The staff has reviewed the analysis and, in general, concurs but would like to draw the following points to the Commission's attention:

1. Current U.S. policy towards retransfer requests involving reprocessing is that they can be approved only upon a clear showing of a vital need for such retransfer. In several previous cases, the lack of adequate spent fuel storage space in conjunction with announced plans for storage pool expansion has been determined to meet the approval criterion. NRC has not objected to these previous determinations.

2. The Japanese authorities cite lack of storage space as justification for approving the subject case. The spent fuel storage pool at Unit No. 2 has a capacity of 820 fuel assemblies. The core size is 548 assemblies, leaving a maximum useable capacity of 272 assemblies if a full core discharge capability is to be maintained. There are currently 151 spent fuel assemblies and 118 contaminated defective channel boxes in the storage pool and therefore 269 of the 272 available spaces are occupied. Since 144 assemblies are scheduled to be discharged at the time of the next scheduled shutdown in December 1978, and only 126 assemblies will be removed from the storage pond under the proposed retransfer, it is clear that the Japanese reracking program must be at least partially completed (minimum of 15 additional spaces) prior to the scheduled restart of the reactor in July 1979. Should the retransfer be disapproved, 141 additional spaces would be needed.

3. Optimistically, the Japanese hope to complete their reracking program for Unit No. 2 by December 1978, and if successful the proposed retransfer would not be necessary. However, as discussed in the analysis and its attachments, delays are anticipated and if the retransfer does not take place as scheduled there is a significant risk that a full core discharge capability would not be available at the time of the next scheduled restart. On the other hand, it could be argued that since a minimum of 15 additional

Discussion: (continued)

spaces must be made available even if the retransfer is approved, it may not be asking too much to expect the Japanese to complete reracking by December of at least 141 of the total of 400 additional spaces to be made available upon final completion of the whole reracking program. This would allow for a full core discharge capability without any retransfer taking place.

4. DOE has indicated that if the retransfer is approved it will be subject to the following conditions:

   1. That the spent fuel will be retained by the reprocessor until it may be reprocessed and that, thereafter, the recovered special nuclear material will be retained by the reprocessor subject to the direction of the shipper.

   2. That any direction by the shipper to the reprocessor for the transfer or use of the recovered special nuclear material will be subject to the prior approval of the United States. This second condition is in addition to the right of the United States to prior approval for any transfer of these materials to a country outside Euratom.

On balance, the staff considers that approval of this application is warranted. The Japanese are proceeding with expansion of their spent fuel storage capacity in good faith and in conformity with U.S. policy, and in effect are asking us to minimize the risk that this expansion may not proceed quickly enough to ensure that Japanese legal and operational requirements will be met. I also understand that the other Executive Branch agencies are not objecting to this proposed retransfer.

ecommendation: That NRC not object to the proposed retransfer and that the Commission approve the proposed response to DOE at Appendix C.

Coordination: ELD has no legal objection.

James R. Shea, Director
Office of International Programs

Enclosures:
1. Memo dtd 6/30/78
   Bengelsdorf to Shea
2. Cable dtd 7/5/78
   Miyake to Sievering
3. Proposed ltr to DOE

ioners' comments should be provided directly to the Office of the Secretary by
f business Monday, July 31, 1978.

ion Staff Office comments, if any, should be submitted to the Commissioners NLT
, 1978, with an information copy to the Office of the Secretary. If the
s of such a nature that it requires additional time for analytical review and
, the Commissioners and the Secretariat should be apprised of when comments
expected.

JTION:
ioners
ion Staff Offices
ir. for Opers.
-iat

APPENDIX A

Department of Energy
Washington, D.C. 20545

JUN 30 1978

Mr. James R. Shea, Director
Office of International Programs
Nuclear Regulatory Commission
Room 8103
Maryland National Bank Building
Washington, D.C. 20555

Dear Mr. Shea:

REQUEST FOR SUBSEQUENT ARRANGEMENT (RTD/EU(JA)-20) UNDER THE NNPA OF 1978

Pursuant to Part E of the procedures, enclosed is a retransfer request involving reprocessing, based upon need for additional pool storage space, together with an analysis. We believe that the need does exist, that all applicable criteria are met, and that approval of the retransfer for reprocessing request is appropriate in that it is consistent with the requirements of the NNPA and U.S. non-proliferation policy.

We look forward to receiving your views as provided for Section 1.d. of Part E.

Sincerely,

Harold D. Bengelsdorf
Director for Nuclear Affairs
International Programs

Enclosures:
1. MB-10 Form
2. Retransfer Request Analysis
   w/2 attachments

ument Transmitted
ewith Contains
TIONAL SECURITY INFORMATION

When separated from enclosures, handle this d
as UNCLASSIFIED
(Insert proper classification)

APPROVAL FOR RETRANSFER OF SPECIAL NUCLEAR MATERIAL
OF UNITED STATES ORIGIN

The approval of the United States Department of Energy is hereby requested to the transfer

from The Tokyo Electric Power Company, Inc., Japan
(Transferor)

to British Nuclear Fuels Ltd. for UKAEA on behalf of the Government of the United Kingdom (Transferee)

of United States supplied special nuclear material in the quantity and meeting the specifications described below (hereinafter called "specified material") which the transferor obtained pursuant to its Agreement for Cooperation for Civil Uses with the United States Government. Material was originally obtained by transferor from the U.S Department of Energy under Contract or Order Number 1968. Cont. No. E(49-14) UES/JA/3.

SPECIFIED MATERIAL
(Fill in where applicable)

Fuel Type	Identification: Marking, No., etc.	Total U (In Grams)	U-235, U-233 or Pu (In Grams)	Isotopic Percent U-235, U-233, or P
Enriched Uranium Oxide GE-BWR		U 24,346,000	139,000	about 1.19
		Pu 118,000	89,000	75

The specified material, which is now located at Fukushima No. 1 Nuclear Power Station, Japan will upon approval hereby by the Department of Energy be transferred on or about early September, 1978 for use at British Nuclear Fuels Ltd., the United Kingdom and will be accepted for the following specified purpose:

Chemical reprocessing and recovery of Uranium and Plutonium contained in the irradiated fuels.

Subject to U.S. approval, the produced plutonium will be returned to Japan and the uranium will either be returned as UO_3 to Japan or sent to the U.S. in the form of UF_6 for enrichment at a DOE facility.

The transferor, with the concurrence of the transferee, will notify within 30 days after the aforesaid date the Department of Energy of the actual date and quantity of material transferred. It is agreed by the transferor and transferee that as of that date the specified material will cease to be subject to the Agreement for Cooperation and contract indicated above and will be subject to the transferee's Agreement for Cooperation for Civil Uses with the United States Government

Kazuo Suzuki — Feb. 16, 1978
Kazuo SUZUKI (Transferor) (Date)

Michael Goppel — February 17, 19
M. GOPPEL (Transferee) (Date)
for EURATOM Supply Agency

Embassy of Japan
Above requested transfer under Article of transferee's Agreement for Cooperation for Civil Uses with the United States Government approved, provided physical transfer is consummated by

Retransfer Request Analysis Number RTD/EU(JA)-20

Parties

Transferor - The Tokyo Electric Power Company, Inc., Japan (TEPCO)

Transferee - British Nuclear Fuels Ltd. for UKAEA (EURATOM)

Origin

Obtained by transferor from USDOE under Contract No. E(49-14)UES/JA/3

Material

Fuel Type	Marketing, Number, etc.	Total U (in grams)	U-235, U-233 or Pu (in grams)	Isotopic Percent U-235, U-233 or Pu
Enriched Uraniam Oxide		U 24,346,000	139,000	About 1.19
GE-BWR		Pu 118,000	89,000	75

Present Location

Fukushima No. 1 Power Nuclear Station in the province of Fukushima, Japan. Unit No. 2.

Proposed Location

British Nuclear Fuels Ltd., United Kingdom (EURATOM)

Purpose

Chemical reprocessing and recovery of uranium and plutonium contained in the irradiated fuels. The disposition of the produced plutonium would be subject to the prior agreement of the United States and the uranium would either be returned as UO_3 to Japan or sent to the United States in the form of UF_6 for enrichment at a DOE facility.

Schedule

The proposed retransfer would take place on or about early September 1978. The actual reprocessing will not take place for about 10 years.

TAB A

U.S. NRC Declassification Review

1ST REVIEW – DATE: 20250609 REVIEWER 3591 AUTHORITY: ☐ DC ☑ DD 2ND REVIEW – DATE: 20250609 REVIEWER 3570 AUTHORITY: (DD)	DETERMINATION [CIRCLE NUMBER(S)]: 1. CLASSIFICATION RETAINED 2. CLASSIFICATION CHANGED TO: _____ 3. CONTAINS NO NRC CLASSIFIED INFO 4. COORDINATE WITH: _____ (5) DECLASSIFIED 6. CLASSIFIED INFO BRACKETED 7. OTHER (SPECIFY):

Need

It has been the recent policy of the United States only to approve transfers of this kind on a case by case basis and where there is a clear evidence of need (for example, when the reactor operator has insufficient storage capacity and needs to arrange a retransfer to avoid disruption in his operations).

In this case, there are three power reactors at the Fukushima No. 1 Power Reactor Station (Units 1, 2, and 3), each with its own storage pool as well as three additional reactors under construction. TEPCO has set up schedules for shutdown and reracking of each reactor to allow for greater spent fuel storage capacity. (This is in keeping with United States policy favoring an expansion of such storage capacity in cooperating countries like Japan.) The storage pool at Unit 2, which is the subject of this retransfer request, is planned for reracking during September, October, and November of 1978, with a shutdown from December 1, 1978 through at least March 31, 1979. The core size for No. 2 is 548 assemblies and the existing pool capacity is 820 assemblies, leaving a difference of 272 assemblies. A full core discharge capability must be maintained at the reactor because of Japanese policy and procedures. Also planned maintenance work for Units 1, 2, and 3 over the next three years requires a full core discharge capability at the plant as well as a 6-month shutdown instead of the normal 3-month shutdown. Upon reracking, the pool capacity for Unit No. 2 will be 1240 assemblies or 692 after leaving space (548 assemblies) for an emergency core discharge.

For additional data on spaces already filled and the contemplated discharge in December 1978, see the enclosed Confidential TEPCO letter of March 31, 1978, and the attachment thereto, Tab A and the enclosed unclassified TEPCO letter of March 31, 1978, Tab B.

number of questions were reviewed by the DOE staff with the applicant. hese were all designed to verify that there was a bonafide and pressing eed for the proposed transfer. The main questions that were posed and he answers thereto are as follows:

.1. Why not use one of the other reactor pools for storage of the fuel elements from Unit No. 2 during the reracking period?

.1. All three pools are running short of space. (See Tab B)

Q. 2. Why not use some of the extra capacity in one of the other reactor pools after they have been reracked prior to shutdown of Unit No. 2?

A. 2. The schedule (Data-1) attached to Tab B shows that Units No. 1 and No. 2 are in reracking or shutdown constantly until December. TEPCO cannot physically shift spent fuel from one pool to another during reracking work or periodic shutdown. Thus, it is prevented from shifting these elements into either of the other pools. (See Tab B)

Q. 3. Why not change the order of reracking?

A. 3. The reracking for all three reactors is already scheduled to conform to scheduled shutdowns required. These shutdowns are required annually under the applicable regulations and each reactor shutdown is scheduled in accordance with the operational history even if the previous overhaul is prolonged. Therefore, the order of reracking cannot be changed.

Q. 4. Why not transfer the Unit No. 2 spent fuel to the PNC Reprocessing Plant in Tokai?

A. 4. TEPCO's contract with PNC provides for shipping some suitable fuel from Unit No. 1, which has been done. Further allocations among Japanese utilities and shipping dates have not yet been determined so that TEPCO cannot plan on sending the spent fuel to Tokai. (See Tab B)

Q. 5. Why take any spent fuel out of the Unit No. 2 pool at all when the reracking will provide more than enough capacity for the full core and is scheduled to be completed at the end of November--just before the shutdown at the beginning of December?

A. 5. TEPCO has stated that each reracking is scheduled to take about 3 months but more time may be needed because:

(a) This is their first experience in reracking;

(b) It is difficult to work in the water with spent fuel still in place;

(c) The number of workers at their reactor sites is limited; and

(d) It will be very difficult to share manpower and working hours during the reracking of Unit No. 2 as Units No. 1 and No. 3 will be shutdown for periodic overhaul during the same period. During these extended shutdowns riser pipes will be replaced (which is very difficult).

The Unit No. 2 will have to be shutdown even if the reracking has not been completed by the end of November. (See Tab B)

Other questions and answers are given in Tab B.

Discussion

This request falls under the definition of a "subsequent arrangement" in section 131 a.(2)B of the Atomic Energy Act of 1954, as amended (Act) and requires the concurrence of State and consultation with ACDA, NRC, and DOD. ACDA may, if it deems such action necessary, prepare a Nuclear Proliferation Assessment Statement. Interagency procedures also provide for notice to and require comments by Commerce. Notice of the proposed subsequent arrangement will have to be given at least 15 days in advance in the Federal Register, together with the written determination of the Secretary of Energy or his delegate that this arrangement will not be inimical to the common defense and security. Under section 131 b.(1) of the Act, this retransfer cannot be approved until the Committee on International Relations of the House and the Committee on Foreign Relations of the Senate have been provided with a report containing the reasons for entering into the arrangement and a period of 15 days of continuous session has elapsed; provided that the Secretary of DOE (by delegation from the President under E.O. 12058) can declare an emergency due to unforeseen circumstances and then the period shall be 15 calendar days.

Section 131 b.(2) of the Act provides that:

"(2) the Secretary of Energy may not enter into any subsequent arrangement for the reprocessing of any such material in a facility which has not processed power reactor fuel assemblies or been the subject of subsequent arrangement therefore prior to the date of enactment of the Nuclear Non-Proliferation Act of 1978 or for subsequent retransfer to a non-nuclear-weapon state of any plutonium in quantities greater than 500 grams resulting from such reprocessing, unless in his judgment, and that of the Secretary of State, such reprocessing or retransfer will

not result in a significant increase of the risk of proliferation beyond that which exists at the time that approval is requested. Among all the factors in making this judgment, foremost consideration will be given to whether or not the reprocessing or retransfer will take place under conditions that will ensure timely warning to the United States of any diversion well in advance of the time at which the non-nuclear-weapon state could transform the diverted material into a nuclear explosive device;"

'he BNFL facility in the past has processed power reactor fuel ssemblies and has been the subject of a subsequent arrangement therefore prior to the date of enactment of the Nuclear Non-Proliferation ct of 1978, so this paragraph is not applicable.

owever, section 131 b(3) of the Act provides that:

"(3) the Secretary of Energy shall attempt to ensure, in entering into any subsequent arrangement for the reprocessing of any such material in any facility that has processed power reactor fuel assemblies or been the subject of a subsequent arrangement therefore prior to the data of enactment of the Nuclear Non-Proliferation Act of 1978, or for the subsequent retransfer to any non-nuclear-weapon state of any plutonium in quantities greater than 500 grams resulting from such reprocessing, that such reprocessing or retransfer shall take place under conditions comparable to those which in his view, and that of the Secretary of State, satisfy the standards set forth in paragraph (2)."

iis paragraph is applicable here and the question therefore arises as) the attempt to ensure that such reprocessing shall take place under nditions which satisfy the standards set forth in paragraph (2). iis test is felt to be met since paragraph (2) in connection with mely warning of any diversion, says "well in advance of the time at ich the non-nuclear-weapon state could transfer the diverted material ito a nuclear explosive device" (underscoring added). The United ngdom is a nuclear weapons state and the material will remain the United Kingdom until it is disposed of in accordance with rangements satisfactory to the United States. Accordingly the threat diversion for nuclear weapons by a nonnuclear weapon state is felt to minimal in this instance.

~~CONFIDENTIAL~~

Of course, all the countries in the European Community, except the United Kingdom and France are nonnuclear-weapons states. And, as will be discussed at greater length under criterion (4) below, prior United States approval is not required for retransfer within Euratom. However, the United States also has been controlling retransfers within Euratom of separated special nuclear material in cases such as this by a commitment from the non-Euratom shipping country to the following conditions:

(1) That the spent fuel will be retained by the reprocessor until it may by reprocessed and that, thereafter, the recovered special nuclear material will be retained by the reprocessor subject to the direction of the shipper.

(2) That any direction by the shipper to the reprocessor for the transfer or use of the recovered special nuclear material will be subject to the prior approval of the United States. This second condition is in addition to the right of the United States to prior approval for any transfer of these materials to a country outside Euratom.

The non-EURATOM shipping country agrees to these conditions based upon the processor's contractual pledge to hold the spent fuel, reprocess it, and then use or transfer the recovered material only in accordance with the shipper's instructions. In the instant case, it is proposed that Japan would be required to assure the United States that it agrees to the above conditions.

Criteria

Criteria used for retransfers, in addition to the foregoing requirements, are the same as those set forth for NRC licenses in section 127 of the Act. The word "export" (or a variation thereof) should be henceforth considered as equivalent to the word "retransfer" (or a variation thereof) in the criteria set forth below.

Criterion (1)

"IAEA safeguards as required by Article III(2) of the Treaty will be applied with respect to any such material or facilities proposed to be exported, to any such material or facilities previously exported and subject to the applicable Agreement for Cooperation, and to any special nuclear material used in or produced through the use thereof."

Since the United Kingdom is a nuclear weapons state, this criterion is satisfied in that IAEA safeguards are not required in the United Kingdom pursuant to the NFT.

Moreover, under Article V of the Additional Agreement for Cooperation of 1960, as amended, which incorporates Article XI, XII and Annex B of the November 8, 1958 Joint Program Agreement, as amended, the Community undertakes the responsibility of establishing and implementing a safeguards and control system designed to give maximum assurance that any material supplied by the United States or generated from such supply will be used solely for peaceful purposes ("Euratom Safeguards System"). The Community is bound to consult and exchange experiences with the IAEA with the objective of establishing a system reasonably compatible with that of the latter. The Community is responsibly for establishing and maintaining a mutually (with respect to the United States) satisfactory and effective safeguards and controls system in accordance with stated principles.

Euratom safeguards are being applied to material and facilities previously exported or retransferred and subject to the United States-Euratom Cooperation Agreements and to special nuclear material used in or produced through the use thereof. These agreements require these safeguards to be applied to such material and facilities and to the proposed export or retransfer and special nuclear material produced through its use. Therefore, it appears that the equivalent of criterion (1) is met.

All of the member states of the Community, with the exception of France (a nuclear-weapons state), are parties to the NPT. An agreement for the IAEA application of safeguards pursuant to the NPT was signed by the IAEA and Belgium, Denmark, the Federal Republic of Germany, Ireland, Italy, Luxembourg, the Netherlands, and the European Atomic Energy Community (EURATOM), on April 15, 1973. (As a nuclear-weapons state, however the United Kingdom permits the application of IAEA safeguards pursuant to the NPT under a voluntary offer which was signed on September 6, 1976. Similarly, France has agreed to application of the IAEA safeguards verification system at some of its civil facilities under a France-EURATOM-IAEA trilateral approved by the IAEA's Board of Governors on February 21, 1978.)

The EURATOM accountability system was adapted to that of the IAEA through the publication of Commission Regulation 322/76, which came into force during January 1977. On February 17, 1977, the Commission of the European Communities notified the IAEA that all of the necessary steps had been taken for the IAEA-EURATOM Safeguards verification

Agreement pursuant to the NPT to come into force and the Agreement came into force on February 21, 1977.

Currently, EURATOM and the IAEA are negotiating the Subsidiary Arrangements and Facility Attachments which are necessary to bring IAEA verification of EURATOM safeguards into practical effect. Pending the completion of these negotiations, the IAEA has been conducting ad hoc inspections under Article 48 and 71A of the Verification Agreement. Through late 1977, it had conducted more than 80 such inspections at approximately 70 percent of all EURATOM-safeguarded facilities.

Criterion (2)

"No such material, facilities, or sensitive nuclear technology proposed to be exported or previously exported and subject to the applicable Agreement for Cooperation, and no special nuclear material produced through the use of such materials, facilities, or sensitive nuclear technology, will be used for any nuclear explosive device or for research on or development of any nuclear explosive device."

Each Non-Nuclear-Weapons States (NNWS) of the Community is a party to the Nuclear Non-Proliferation Treaty (NPT). As such, it is pledged not to develop nuclear explosive devices for any purpose. This pledge applies to any material, facilities and sensitive nuclear technology previously exported or retransferred to such state by the United States and subject to the United States-EURATOM Agreements for Cooperation and to special nuclear material used in or produced through the use thereof. Since this pledge will apply to the proposed retransfer and to any special nuclear material produced through its use, it appears that criterion (2) would be met with respect to the NNWS of the Community if any subsequent retransfer were made to a NNWS.

With regard to the two Nuclear-Weapons States (NWS) of the Community, the United Kingdom and France, the proposed retransfer and any special nuclear material produced through its use will be subject to the continuing applicability of the United States-EURATOM Agreements for Cooperation. Article XI(1) and (3) of the November 8, 1958 Joint Program Agreement, as amended, which is incorporated into the Additional Agreement for Cooperation by virtue of Article V of the Additional Agreement, provide that "no material, including equipment and devices, transferred pursuant to this Agreement" and "no source or special nuclear material utilized in, recovered from, or produced as a result of the use of material, equipment or devices transferred pursuant to this agreement...will be used for atomic weapons, or for research or development of atomic weapons or for any other military purpose." The United States--with the support of most other major nuclear supplier

the support of most other major nuclear supplier states--has taken the position that nuclear explosive devices are "atomic weapons," within the meaning of this guarantee, regardless of the intended end use of such devices. Both the United Kingdom and France have accepted this interpretation and, as members of the Nuclear Suppliers Group, have agreed as a matter of national policy to authorize the export of trigger list items "only upon formal governmental assurances from recipients explicitly excluding uses which would result in any nuclear explosive device (underlining supplied) and have notified the IAEA to this effect.

Therefore, it appears that the equivalent of criterion (2) is met with respect to this transfer.

Criterion (3)

"Adequate physical security measures will be maintained with respect to such material or facilities proposed to be exported and to any special nuclear material used in or produced through the use thereof. Following the effective date of any regulations promulgated by the Nuclear Regulatory Commission pursuant to section 304(d) of the Nuclear Non-Proliferation Act of 1978, physical security measures shall be deemed adequate if such measures provide a level of protection equivalent to that required by the applicable regulations."

The Nuclear Regulatory Commission has promulgated new regulations pursuant to section 304(d) of P.L. 95-242, which requires measures equivalent to those recommended in the IAEA's INFCIRC/225/Revision 1, "The Physical Protection of Nuclear Material."

Each member of the Community has established physical security measures, which, as a minimum, do meet those recommendations.

In addition, all states in the Community (except Denmark, Ireland, and Luxembourg) also are members of the Nuclear Suppliers Group, and, as such, have agreed to levels of protection, consistent with INFCIRC/225/ Revision 1, to be ensured with respect to nuclear materials and equipment and facilities containing these materials, which are detailed in transmissions of the Nuclear Suppliers Guidelines to the IAEA.

Therefore, it appears the criterion (3) is met.

Criterion (4)

"No such materials, facilities, or sensitive nuclear technology proposed to be exported, and no special nuclear material produced through the use

of such material, will be retransferred to the jurisdiction of any other national or group of nations unless the prior approval of the United States is obtained for such retransfer. In addition to other requirements of law, the United States may approve such retransfer only if the nation or group of nations designated to receive such retransfer agrees that it shall be subject to the conditions required by this section."

Article XI(2) of the November 8, 1958 Joint Program Agreement, as amended, which is incorporated in the Additional Agreement for Cooperation, as amended, by Article V of the latter Agreement, provides that no material (including equipment and devices) may be transferred beyond the control of the EURATOM Community, unless the United States agrees.

Article 1 bis D of the Additional Agreement for Cooperation, as amended, provides that special nuclear material produced through the use of United States-supplied material may be exported to any nation outside the Community or to a group of nations, provided that such nation or group of nations has an appropriate Agreement for Cooperation with the United States or guarantees the peaceful use of the produced material under safeguards acceptable to the Community and the United States. The European Community's interpretation of this language--as set out in an April 15 letter to the Department of State from Fernand Spaak, Head of the Delegation of the Commission of the European Communities--is that the European Community Supply Agency, prior to any proposed transfer, will consult with the United States to find out whether, in the view of the United States, the proposed recipient of such produced special nuclear material has an Agreement for Cooperation with the United States which is "appropriate." A letter of February 11, 1977 from Fernand Spaak to the Department of Energy (then ERDA) makes clear that this provides the United States a consent right, since the United States has the exclusive ability to decide whether an agreement is "appropriate." This letter states that:

> "It is is our understanding that any transfer of recovered materials from the Community of a third country is subject, in accordance with the terms of the EURATOM-United States Agreement for Cooperation, to prior United States authorization."

Therefore, it appears that, with regard to the proposed retransfer and special nuclear material produced through its use, criterion (4) is met.

With respect to transfers within the Community, it should be noted that the use of the words "group of nations" in criterion (4) makes clear

that no retransfer consent right is required within a group of nations under this criteria. With respect to this provision, the Senate report states:

> "It should be noted that under the U.S.-EURATOM Agreements, the United States does have a right of prior approval on retransfers of certain material outside of the EURATOM Community. It should also be noted that paragraph 4 does not require prior approval with respect to transfers within the EURATOM Community, consistent with United States policy of treating that Community as a [single] entity."

The Congressional intent, in connection with exports, not to require United States consent rights for transfers within the Community is also clear in Section 123 a.(5) of the Atomic Energy Act, as amended, since it requires that the United States seek a guarantee "by the cooperating party" (which, in this case, is EURATOM as a whole).

However, the Executive Branch, before passage of the Nuclear Non-Proliferation Act of 1978, took the position that, with respect to retransfers into EURATOM, it was important to keep retransfers for reprocessing limited as much as possible to control the use and transfer of the separated materials, especially plutonium. Therefore, the need test was developed and the system of control by commitment from the non-EURATOM shipping country.

Criterion (5)

"No such material proposed to be exported and no special nuclear material produced through the use of such material will be reprocessed, and no irradiated fuel elements containing such material removed from a reactor shall be altered in form or content, unless the prior approval of the United States is obtained for such reprocessing or alteration."

Criterion (5) is met in connection with this retransfer since United States approval is being given to the retransfer which is being made for the purpose of reprocessing and the United States, by commitment from the non-EURATOM shipping country (Japan), will have the right of approval prior to any use or transfer of the separated materials whether within or out of EURATOM.

Criterion (6)

"No such sensitive nuclear technology shall be exported unless the foregoing conditions shall be applied to any nuclear material or equipment which is produced or constructed under the jurisdiction of the recipient nation or group of nations by or through the use of any such exported sensitive nuclear technology."

The proposed export does not involve sensitive nuclear technology. Criterion (6) is, therefore, not applicable.

Section 128 Criterion

Section 128 a.(1) of the Atomic Energy Act establishes the following additional criterion: "As a condition of continued United States export of source material, special nuclear material, production or utilization facilities, and any sensitive nuclear technology to non-nuclear-weapons states, no such export shall be made unless IAEA safeguards are maintained with respect to all peaceful nuclear activities in, under the jurisdiction of, or carried out under the control of such state at the time of the export."

This criterion does not apply to this case since the statutory 18/24-month time period in section 128 has not yet expired. For the record, however, all nonnuclear-weapon states that are members of the European Atomic Energy Community are Parties to the NPT and, thus, have agreed to accept IAEA safeguards with respect to all their peaceful nuclear activities. As indicated above, all such peaceful nuclear activities are currently subject to EURATOM safeguards. Therefore, the equivalent of this criterion is met for that part of EURATOM.

Since the United Kingdom and France are nuclear-weapon states, this criterion is not applicable to their countries.

ADDITIONAL FACTORS

Safeguards Implementation

The above discussion of criterion (1) of section 127 of the Atomic Energy Act reviews the current status of implementation of IAEA-EURATOM safeguards verification arrangements. DOE believes the framework of commitments, assurances, and safeguards is adequate for the purposes of this export.

Non-Proliferation and Other Foreign Policy Implications

There is a long history of cooperation and strong bonds between Japan and the United States and between the member states of the Community and the United States, in the economic and security areas. Japan and the Community countries have worked closely with the United States in efforts to further common nonproliferation objectives, through bilateral cooperative efforts and in such forums as the United Nations, IAEA, and Nuclear Suppliers Group. More recently, Japan and the Community countries have agreed to participate in the International Fuel Cycle Evaluation and are actively participating in this program in order to develop more proliferation-resistant means to help meet future world energy needs with nuclear power. Maintaining these essential relationships and cooperative arrangements is a primary United States foreign policy objective.

Recommendation

That upon the making of the determinations and conclusion of the actions, as set forth under discussion above, this retransfer for reprocessing be approved.

(Supplemental Explanations for our letter dated Feb. 16, 1978)

1. Present Operation Program of Fukushima No. 1 Station Unit No. 1 to No. 3

The attached "Data-1" shows the present operation program of the Unit No. 1 to No. 3 of the Fukushima No. 1 Nuclear Power Station.

(i) Operation Period

In "Data-1" you may find it that there are differences among the operation periods (between Shutdown and the next Shutdown).

This is because that the periodical shutdown for overhaul is required annually under the regulations and also that the beginning of the next shutdown for overhaul is automatically set up in accordance with the operational history even if the previous overhaul is prolonged.

The above fact specifies the next shutdown of Unit No. 1, No.2 and No. 3 as in September 1978, in February 1978 and in June 1978 respectively.

(ii) [illegible]

so long as 6 months are as follows:

(a) We schedule to begin the replacement work of 10 pieces of recirculation loop riser pipe at Unit No. 1 to No. 3 during each shutdown period, and will replace all of the riser pipes in the coming three years.

(b) For the above replacement work we have to move all of the fuels in the core into the pool and need additional 3 months of work period other than the normal shutdown period for 3 months.

2. Spent Fuel Discharging Program & Present Situation of Storage Pool

The "Data-2" shows the present situation of utilizations of the each storage pool as of End/March 1978.

(i) Size of Core

The core size of each Unit is:

No. 1	400 Assemblies
No. 2	548 Assemblies
No. 3	548 Assemblies

(ii) Pool Capacity

The present pool capacities of Unit No. 1 to No. 3 are:

No. 1	624 Assemblies
No. 2	820 Assemblies

But the pool capacity of [illegible] cannot be used for the reason described below.

So, useable capacity of each Unit is:

No. 1	224 Assemblies
No. 2	[illegible] Assemblies
No. 3	732 Assemblies

Due to the differnet designs (Unit No. 2 is by G.E. and No. 3 by Toshiba), there exists a difference of 20 assemblies between the pool capacities of Unit No. 2 and No. 3 in spite of same reactor size.

(We explain in the item 4.(i) below the reason why the above pool capacities do not include the spare capacity corresponding to one core.).

(iii) Next Fuel Discharge

At the next shutdown the spent fuels will be discharged from each Unit under the following schedule:

No. 1	184 Assemblies	(from September 1978)
No. 2	144 Assemblies	(from December 1978)
No. 3	152 Assemblies	(from June 1978)

The variation of discharging quantities comes from the following reasons.

(a) Reloading is made almost on quarter of one core basis, however, the discharging quantities may vary in accordance with the burn-up or operation history

(b) [illegible] in accordance with its reactor size.

This is because of the "Clean Out Program" under which we replace all fuels of old-type design with newly designed fuels.

(iv) Situation of Storage Pool after the next Discharge

The "Data-2" obviously shows that after the next discharge the pool capacity of each Unit will overflow without exception.

3. Re-racking Work Program

Coping with emergency case we have already prearranged to increase the pool capacities by re-racking, and started planning of the re-racking work so that we can finish the actual re-racking work before the periodical shutdown in 1978.

The present schedule of re-racking work for each Unit is as "Data-1".

(i) Governmental Permit or Approval for Re-rack[illegible]

For re-racking work we need to obtain an appro[illegible] of the nuclear reactor establishment permits, an[illegible] got such approval in respect of Unit No. 1 to No. 3 in August 1977.

After that we completed precise design and presented Ministry of International Trade & Industry (MITI) the pre-[illegible]

[illegible]

work program, and expect it to be issued shortly.

(When we explained at DOE on March 14, 1978, this approval had been expected to be issued on March [illegible].)

(ii) Starting of Re-racking Work

(a) Before we start the re-racking work we have to obtain an approval for this work program.

This approval has slipped into this March because it took so long time to finalize the precise designs and work program.

(b) Re-racking work cannot be carried during periodical shutdown because the reactor floor is entirely occupied for overhaul.

(iii) Order of Re-racking Work (No. 3 → No. 1 → No. 2)

As it is obvious that the next discharge will [illegible] about overflow of all pool capacities, we have given [illegible] work by the order of next shutdown time; that is [illegible] Unit No. 3 (next shutdown in June 1978), secondly [illegible] No. 1 (next shutdown in September 1978) and lastly Unit No. 2 (next shutdown in December 1978).

(iv) [illegible]

[illegible]

work because of the following reasons.

(a) Re-racking work is a first experience for us and bring us difficulty [illegible]

(b) We have not such enough man-power as can parallelly carry the re-racking ~~fi~~work of all Units, because this will limit number of workers from viewpoints of space and technique and also number of workers at our reactor sites is limited.

Accordingly we will start re-racking work for Unit No. 3 as soon as the approval for work program is given, and before the next shutdown (by the end of May 1978) we have to secure the minimum pool capacity (24 assemblies) at least to be overflowed at the next discharge.

Since Unit No. 1 has much overflowing capacity (107 assemblies) we have advanced the re-racking work programs [illegible] and are planning to finish the work thoroughly [illegible] periodical shutdown for overhaul in September, 1978.
Until the coming August we intend to give our best efforts to the re-racking works of Unit No. 3 and No. 1, and we plan to begin the work for Unit No. 2 [illegible].

[illegible] and No. 2 [illegible] will be [illegible] man-power and working hours to the re-racking work.
And at the same time, we cannot prolong the [illegible] period because the [illegible] to November.

Should the re-racking work of Unit No. 2 not finish by the end of November, serious hindrances would happen on the opera of the nuclear power station.

4. (i) Reason for Need of the Spare Capacity Equivalent to One Core

The following is the actual pool capacity and the normally available capacity.

	(Actual Capacity)	(One Core Spare)	(Available Capaci
No. 1	624 Assemblies	400 Assemblies	224 Assemblies
No. 2	820 "	548 "	272 "
No. 3	~~820~~ 800 "	548 "	252 "

per TEPCO wrote letter of Mar 5, 1978 [illegible]

The reason why we must always secure this spare capacity is a follows:

(a) When we repaired the internal of the reactor vessel all of the fuels had to be moved out from the viewpoint of radiation management.

Also in the future we need to replace the riser pipes of Unit No. 1 [illegible]

[illegible]

Therefore we must keep this spare capacity of one core.

(b) Furthermore this requirement is also based upon the Article-25 of the MITI's "Regulations for Technical Criteria in respect of Generating Facility of Nuclear Pow Station" and this Article specifies "Facility shall be provided with the storage capacity to store fuel produced by the normal operation of the plant and to store fuel necessary to maintain normal operation of the plant." (We understand in this Article the term "normal operation" includes shutdown for inspection or reloading.) This administrative instruction requires us to secure constantly a spare capacity of one core. (The attached "Data-3" is our translation of this Article-2 for your reference.)

4. (ii) Possibility for Comprehensive Use of Spared Capacities of Pools

The reason why we cannot shift the spent fuels from Unit No. 2 to Unit No. 1 and/or No. 3 is as follows:

(a) Shift from Unit No. 2 to No. 3

It is physically impossible for us to shift the spent [illegible] into another pool during [illegible]

As you find in DATA-1, the re-racking work for Unit No. 3 will start in April and continue until just before the coming periodical shutdown which [illegible] in June, [illegible] shutdown will begin in June and last until the end of the November, 1978.

Therefore, there is no way for Unit No. 3 to receive spent fuels from Unit No. 2 during such time period.

(b) Shift From Unit No. 2 to No. 1

As we explained in the above 3, Unit No. 1 would have a large number of overflowing assemblies after the next discharge, therefore, we definitely need to secure such capacity for Unit No. 1 before the next periodical shutdown (from Sept., 1978 to Feb., 1979) will take place by doing every possible efforts to complete re-racking work successfully.

We tentatively planned 3 months (from April to June) for this re-racking work, however, we have to recognize that there is a big possibility that [illegible] will require much longer than 3 months due to the reasons referred to the above 3.(iv) and the fact that the [illegible] provided by this re-racking work is the biggest out of the three Units.

This means that the actual work will probably be continued till the end of August.

[illegible] periodical shutdown for Unit No. 1 [illegible] with shutdown.

Consequently there could not be any interval between the re-racking work and the periodical shutdown on Unit No. 1

It is physically impossible for us to shift the spent f stored in the pool into another pool during re-rackin or periodical shutdown, and we can not make a plan to the spent fuels from Unit No. 2 to No. 1.

5. Reason why we cannot transfer to PNC Reprocessing Plant the spent fuels from Unit No. 2 (for which fuels this MB-10 is being appli

PNC has a plan to reprocess 99 Tons.U for the coming two years. The fuels shall be accepted by PNC on the following basis:

<u>During Hot Test</u>	
(- till early Aug. 1978)	34 Tons.U (14.1 Tons.U for TEPCO)
<u>After Hot Test</u>	
(1978 Autumn - Sept. 1979)	65 Tons.U

(i) In respect of the 14.1 Tons.U during the hot test, it was contractually agreed between PNC and TEPCO that the spent fuels to be accepted by PNC were limited as the fuel from Unit No. 1 from viewpoint of the burn-up suitable for hot test and after that the partial delivery could be

The last delivery was made on March 25, 1978.

(At the meeting held on March 14, 1978 at DOE we explained the last delivery was expected to [illegible] end of March. The deliveries to PNC were made in January, February and March, 1978.

Since Unit No. 2 was under the periodical shutdown during time period, it was impossible for us to take out the spent fuels from Unit no. 2.

(ii) It has not yet be determined how to allocate the further 65 Tons.U to Japanese Utilities and when to transport spent fuels to PNC if we can be partly shared with them.

Because of the above reasons at the present state, we cannot incorporate the spent fuels, for which our MB-10 is being applied, into Shipping Program to PNC.

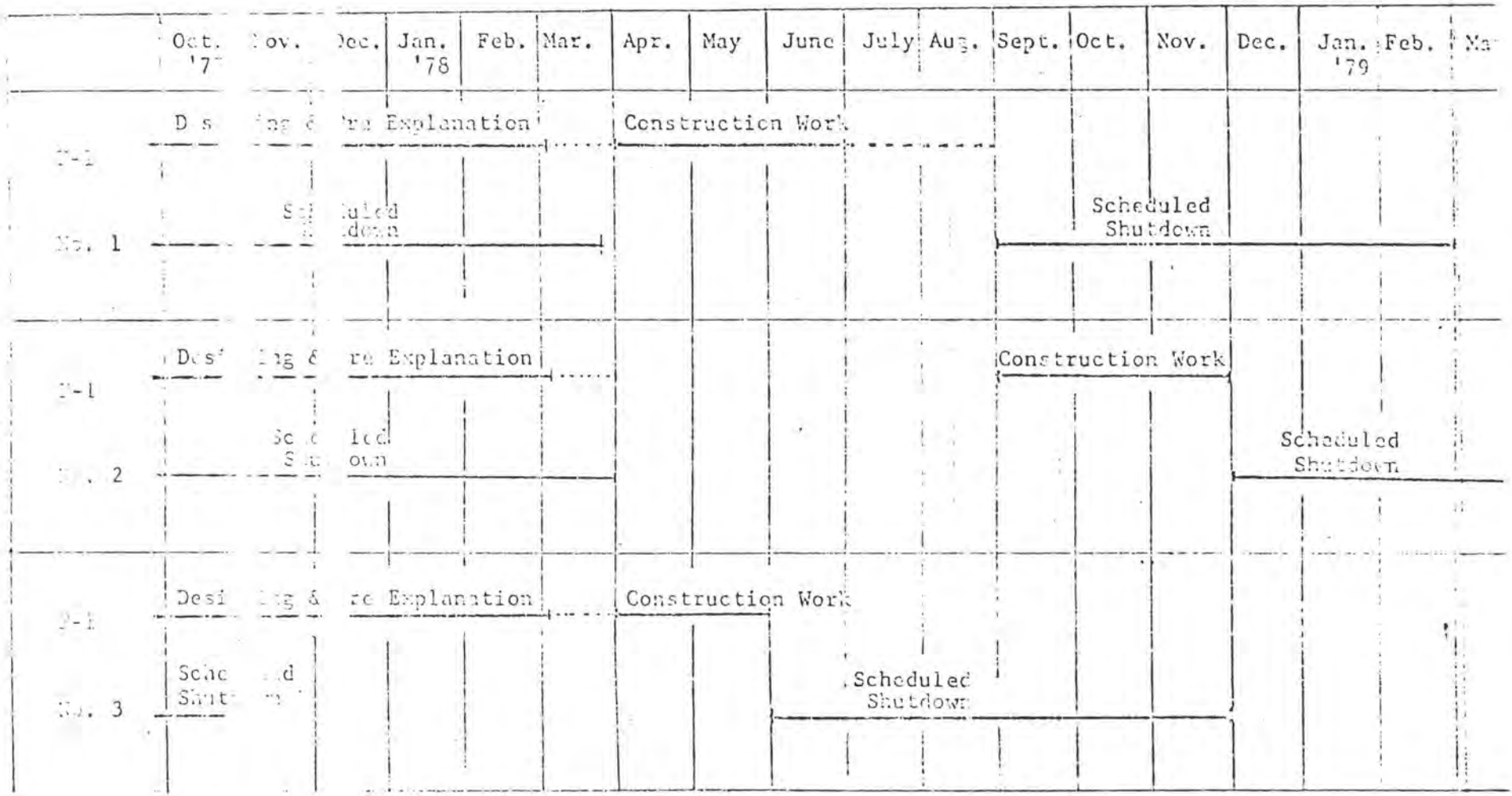
Since the delivery of spent fuels to BNFL is scheduled in the coming September, the fuels cannot be taken out of Unit No. 1 and No. 3 for this delivery because in September Unit No. 1 and No. 3 will be under periodical shutdown.
Only Unit No. 2 can discharge spent fuels in September to be transported to BNFL since the shutdown of Unit No. 2 will begin in December.

If it should happen that we cannot deliver BNFL spent fuels from [redacted] surely overflow and we will be obliged to stop the operation. We would like you to consider seriously that such affair must be avoided [redacted]

(DATA-1)

Scheduled Shutdown & Construction Work of Re-racking

as of March 31, 1978



(DATA-2)

Present Status of Spent Fuel Storage

as of March 31, 1978

Unit No.	As of Mar. 31 (A)	As of Mar. 31 (B)	Present Pool Capacity (C)	(C) - (B)	Next Discharge (D)	Nos. of Assemblies after Next Discharge (B) + (D)
Fukushima-I No. 1	Nos. of assemblies 72	Nos. of assemblies 147	Nos. of assemblies 224	Nos. of assemblies 77	Nos. of assemblies 184	Nos. of assemblies 331
Fukushima-I No. 2	51	151	272	121	144	295
Fukushima-I No. 3	28	124	252	128	152	276
Total	151	422	748	326	480	902

MITI Order 62 (June 15, 1965)

"Order to specify technical criteria with respect to Nuclear power generating facilities"

Article 25 Fuel Storage facility

Facility to store fuel or spent fuel shall be provided with followings:

1. The structure shall be such that fuel does not reach critica
2. Fuel does not melt due to decay heat.
3. The pool to store spent fuel and other highly radioactive fue shall be designed according to following conditions:
   1) The structure shall be such that water does not overflow or leaks.
   2) Water inventory is sufficient to shield radiation from fuel.
   3) If there is any concern that fuel cladding is significantl corroded, such corrosion can be prevented.
4. Facility shall be provided with the storage capacity to stor fuel produced by the normal operation of the plant and to store fuel necessary to maintain normal operation of the plant.
5. Facility, if it stores spent fuel or other highly radioactive fuel, shall be designed such that no man other than engaged for handling can unduly enter

APPENDIX B

APPENDIX B

.DOE MASS WSH

0457 EDT

1978 JUL 5 ... 7:26

TO: MR. NELSON F. SIEVERING, JR.

DERUTY ASSISTANT SECRETARY FOR INTERNATIONAL PROGRAMS

U.S. DEPARTMENT OF ENERGY

WASHINGTON D. C. 20545

U. S. A.

ROM: SHIN MIYAKE

GENERAL MANAGER OF NUCLEAR FUELS DEPARTMENT

THE TOKYO ELECTRIC POWER COMPANY INC.

TOKYO JAPAN

JLY 5, 1973

AR MR. SIEVERING, JR. :

REF: MB-10 APPROVAL FOR TEPCO'S FUKUSHIMA I-2 126 BUNDLES
TRANSPORTATION TO BNFL

ON FEBRUARY 16, 1978, WE FORMALLY REQUESTED THE JAPANESE GOVERNMENT AUTHORITIES TO APPLY FOR U.S. DOE'S MB-10 APPROVAL FOR TRANSFER OF 126 SPENT FUEL BUNDLES DISCHARGED FROM FUKUSHIMA NO.1 NUCLEAR POWER STATION UNIT NO.2 TO BNFL, ENGLAND IN COMING AUTUMN.

AFTER THAT OUR STAFFS PRESENTED DOE PEOPLE IN MARCH THE SUPPLEMENTAL EXPLANATIONS OF OUR CASE "WHY THIS TRANSFER TO BNFL IS SO VITALLY NEEDED", AND SUBMITTED SUCH EXPLANATIONS IN WRITING IN OUR LETTER TO YOU DATED MARCH 31, 1978.

WE BELIEVE BY THESE SUPPLEMENTAL EXPLANATIONS YOU HAVE FULLY UNDERSTOOD THE NECESITY OF THIS TRANSFER TO BNFL.

THE TRANSPORTATION OF THESE SPENT FUELS FROM JAPAN TO BNFL IN U.K. WILL BE MADE BY THE VESSEL "PACIFIC FISHER" PROVIDED BY BNFL, AND HER DEPARTURE FROM U.K. PORT IS NOW EXPECTED BY MIDDLE AUGUST AT LATEST.

PRIOR TO HER SAILING OFF WE NEED TO NOTIFY BNFL THAT WE OBTAINED DOE'S MB-10 APPROVAL FOR OUR FUELS SCHEDULED TO BE SHIPPED, AND THE TIME LIMIT FOR SUCH NOTIFICATION MUST BE END OF JULY OR EARLY AUGUST AT LATEST BY ANY MEANS TAKING HER PREPARATION PERIOD BEFORE DEPARTURE INTO ACCOUNT.

THEREFORE, WE WOULD LIKE TO ASK DOE FOR YOUR SPECIAL CONSIDERATIONS TO ISSUE MB-10 APPROVAL BY THE END OF JULY.

TAKING THIS OPPORTUNITY, WE WISH TO EXPLAIN ALSO THE PRESENT POSITION OF OUR RE-RACKING WORKS OF THE SPENT FUELS STORAGE POOLS OF FUKUSHIMA-1 UNIT NO.1 TO NO.3.

THE UNIT NO.1 RE-RACKING [illegible] VERY [illegible] DUE TO SUCH [illegible]

PROBLEMS AS PROCESS MANAGEMENT, RADIATION MANAGEMENT AND INSPECTION OR RACK FITTING NEVERTHELESS THIS UNIT IS COMPARATIVELY NEW AND THE CONTAMINATION LEVEL IS LOW AT THE SAME TIME.
WE BELIEVE MUCH SEVERER WORKS CANNOT BE AVOIDED FROM UNIT NO.1 AND NO.2 BECAUSE OF THE LONGER OPERATIONAL HISTORIES AND HIGHER CONTAMINATIONS THAN UNIT NO.3.
ACCORDINGLY UNIT NO.2 INEVITABLY REQUIRES MUCH DIFFICULT PROCESS, AND WE CANNOT ANTICIPATE THE RE-RACKING WORK WILL SUCCESSFULLY FINISHED BY THE TARGET DATE JUST BEFORE THE NEXT PERIODICAL SHUTDOWN.

THEREFORE, DUE TO THE ABOVE REASONS WE WOULD LIKE TO ASK AGAIN FOR YOUR SPECIAL CONSIDERATIONS ON OUR VITAL NEED TO TRANSFER SPENT FUELS FROM UNIT NO.2 IN COMING AUTUMN BY ANY MEANS.

SINCERELY YOURS,

THE END

APPENDIX C

Mr. Harold D. Bengelsdorf
Director for Nuclear Affairs
International Programs
Department of Energy

Dear Mr. Bengelsdorf:

This letter will inform you that NRC has no objection to the proposed retransfer from Japan to the UK of 126 irradiated fuel assemblies (RTD/EU(JA)-20), provided it is subject to the conditions contained in DOE's analysis of the case which accompanied your letter of June 30.

Sincerely,

James R. Shea, Director
Office of International Programs