



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

August 17, 1982

Mr. Marvin Resnikoff  
Project Director  
Council on Economic Priorities  
84 Fifth Avenue  
New York, NY 10011

IN RESPONSE REFER  
TO FOIA-82-332

Dear Mr. Resnikoff:

This is in partial response to your letter dated June 23 which was received in our office July 27, 1982, in which you requested, pursuant to the Freedom of Information Act, correspondence between Nuclear Assurance Corporation (NAC) and the NRC regarding 1982 irradiated fuel shipments between Chalk River, Ontario, and Savannah River, South Carolina.

Appendix A is a list of documents subject to your request. These documents are enclosed.

Appendix B lists two documents which contain unclassified safeguards information. The statutory authority for withholding this information is found in Section 147 of the Atomic Energy Act (42 U.S.C. 2167). This information is being withheld from public disclosure pursuant to exemption (3) of the Freedom of Information Act (5 U.S.C. 552(b)(3)) and 10 CFR 9.5(a)(3) of the Commission's regulations. Copies of the nonexempt portions of these documents are enclosed.

Pursuant to 10 CFR 9.9 of the Commission's regulations, it has been determined that the information withheld is exempt from production or disclosure, and that its production or disclosure is contrary to the public interest. The persons responsible for this denial are the undersigned and Mr. John G. Davis, Director, Office of Nuclear Material Safety and Safeguards.

This denial may be appealed to the Commission's Executive Director for Operations within 30 days from the receipt of this letter. As provided in 10 CFR 9.11, any such appeal must be in writing, addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and should clearly state on the envelope and in the letter that it is an "Appeal from an Initial FOIA Decision."

The search for additional documents subject to your request is continuing. When this search has been completed, you will be advised of our determination.

Sincerely,

J. M. Felton, Director  
Division of Rules and Records  
Office of Administration

Enclosures: As stated

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PDR FOIA  
RESNIK082-332 PDR

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Appendix A

1. Letter to Director, Export/Import and International Safeguards, NRC, from Charles R. Johnson, NRC, March 10, 1981, with attachments.
2. Special Nuclear Material Import License, March 10, 1981.
3. Memo for the Files from R. Neal Moore, "Findings Related to the Proposed Import of Irradiated Fuel from Canada - ISNM 81005," April 21, 1981.
4. Letter to Director, Division of Safeguards, from F. L. Danese, NAC, April 1, 1981.
5. Letter to George W. McCorkle, NRC, from F. L. Danese, NAC, May 15, 1981.
6. Letter to Director, Division of Safeguards, from F. L. Danese, NAC, November 13, 1981.
7. Letter to Director, Division of Safeguards, from Charles R. Johnson, NAC, December 16, 1981.
8. Letter to F. L. Danese, NAC, from Theodore S. Sherr, NRC, April 2, 1982.
9. Letter to Director of Safeguards, NRC, from F. L. Danese, May 25, 1982.
10. Letter to F. L. Danese, NAC, from Theodore S. Sherr, NRC, June 3, 1982, with attachment.
11. Letter to Director, Export/Import and International Safeguards, NRC, from C. R. Johnson, NAC, July 15, 1982, with attachments.
12. Special Nuclear Material Import License, December 16, 1981.
13. Handwritten note to Larry Danese, undated.

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Appendix B

1. Letter to Director, Region I, NRC, from F. L. Danese, NAC, July 2, 1982, with enclosed schedule sheet.
2. Letter to Director, Region I, NRC, from F. L. Danese, NAC, July 7, 1982, with enclosed schedule sheet.

Nuclear Assurance Corporation  
24 Executive Park West  
Atlanta, Georgia 30329  
(404) 325-4200  
Telex: 549567, 542703

715 Horizon Drive  
Grand Junction, Colorado 81501  
(303) 245-4320  
TWX: 9109296334

Weinbergstrasse 9  
8001 Zurich, Switzerland  
(01) 470844  
Telex: 57275

March 10, 1981  
CRJ/81/35/ETS

ISNM81005  
11002405

Director  
Export/Import and International Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20055

Subject: Import License Application for Spent Nuclear Research  
Fuel Assemblies; Government (Canada) to Government  
(U.S.) Transaction

Gentlemen:

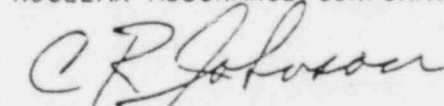
The Nuclear Assurance Corporation, as transportation agent for the Canadian Government, hereby makes application for an import license under 10CFR 110.34, to import no more than eighteen (18) kilograms (17,439.7 grams initial estimate) of U-235 as spent nuclear research reactor fuel for delivery to U.S. DOE, Savannah River Project, to be processed under contract DE-AC09-76-SR01033, Mod. 3.

Similar shipments of spent fuel from Chalk River Nuclear Laboratories in Ontario, Canada, to SRP, Aiken, South Carolina, have been routinely made since 1966. These shipments were made in NL Industries Legal Weight Truck Cask System #6502, which is now operated by Nuclear Assurance under lease agreement.

Data in support of our request for an import license is attached as Appendix A to this letter. If further information is required, please contact me.

Sincerely,

NUCLEAR ASSURANCE CORPORATION



Charles R. Johnson  
Vice President  
Engineering & Transportation Services

Attachment:

1981 MAR 15 11 11 AM '81  
EXPORT AND INTERNATIONAL SAFEGUARDS  
8103240616  
PDR

APPENDIX A

Application for Import License: Shipments of  
Irradiated Research Reactor Fuel Assemblies  
from Chalk River to Savannah River Project

I. 10 CFR 110.34

- (a) Nuclear Assurance Corporation  
24 Executive Park West  
Atlanta, Georgia 30329

ATTENTION: C. R. Johnson

- (b) From:

Chalk River Nuclear Laboratories  
Chalk River, Ontario, Canada

- (c) For:

Chalk River Nuclear Laboratories  
Atomic Energy of Canada, Limited (AECL)  
Chalk River, Ontario, Canada PO: JKOJ1J0

- (d) To:

Department of Energy  
Savannah River Plant  
Dunbarton, South Carolina (USA)

The spent fuel assemblies are to be reprocessed at SRP.

- (e) Starting date of proposed shipments:

NAC proposes to start the first shipment about May 15, 1981.

- (f) Completion date of proposed shipments:

NAC anticipates a total of six (6) shipments from Chalk River to SRP. The final shipment is expected to be complete about seven (7) weeks after the first shipment.

- (g) Description of Special Nuclear Material to be imported:

The materials to be imported are irradiated NRU- and NRX-type fuel assemblies used at the AECL Chalk River Research Laboratories.

1. The chemical/physical form is solid U-A1 fuel rods which originally contained uranium enriched to 93 weight percent U-235.

APPENDIX A

(Continued)

2. These spent fuel assemblies contain no more than trace quantities of plutonium.

(h) Maximum Quantity of Special Nuclear Material to be imported:

	<u>Summary: Type rod</u>	<u>Original U-235 Weight/rod (gm)</u>	<u>Post Irradiation U-235 Weight-Total (gm)</u>
125	NRU	495	10,130.7
28	NRX	550	7,309.0
	Total U-235		17,439.7 grams
	Total U (U-238, U-236, & U-235)		32,008.4 grams

Detailed information on each fuel assembly is attached as Exhibit A (NRX) and Exhibit B (NRU).

(i) Mode of Transport:

The proposed six (6) shipments from AECL to SRP will be by legal weight truck in NL Industries' Cask System #6502.

NRC has issued Certificate of Compliance #9103, Revision 1, for the NL 6502 Cask, which has an expiration date of May 31, 1983. Also attached in Exhibit C is IAEA and Canadian endorsement of the NRC Certificate of Compliance, and copies of correspondence requesting renewals of these items.

(j) The enriched uranium was acquired from the USA, fuel was fabricated by AECL, utilized in a research reactor at Chalk River by the Canadians and is now being returned to the USA (SRP) for fuels reprocessing.

SHIPMENTS OF IRRADIATED REACTOR FUEL ASSEMBLIES

MATERIAL TO BE IMPORTED: Spent nuclear fuel assemblies from Atomic Energy of Canada, Limited's Chalk River NRU and NRX Reactors.

FROM: Chalk River Nuclear Laboratories,  
Chalk River, Ontario, Canada

TO: U.S. ERDA Savannah River Plant, -  
Dunbarton, South Carolina, USA

FOR: The Spent Fuel to be shipped is owned by Atomic Energy of Canada,  
Limited (AECL), A Crown Corporation of Canada

BY: Nuclear Assurance Corporation  
24 Executive Park West  
Atlanta, Georgia 30329 USA

Acting as transportation contract for Atomic Energy of Canada, Limited

I. 10 CFR 70.22 a (1)

A. Applicant's Name: Nuclear Assurance Corporation

B. State in Which Company is Incorporated: Delaware

C. Address of Principal Office: 24 Executive Park West  
Atlanta, Georgia 30329 USA

D. Principal Officers: P. F. Schutt  
President

J. R. Donnell  
Vice President

M. H. Chaffin  
Treasurer

C. B. Woodhall  
Vice President and Corporate Secretary

E. Address of All Principal Officers: 24 Executive Park West  
Atlanta, Georgia 30329 USA

F. Citizenship of All Principal Officers: All citizens of USA

G. No control or ownership is exercised by any alien, foreign corporation, or foreign government.

II. 10 CFR 70.22 a (2)

A. Activity for Which Import License is Requested:

A total of six shipments of irradiated NRX rods and NRU rods is planned utilizing one shielded transportation cask (known as the NL 6502 Cask System). The shipments will originate from Chalk River Nuclear Laboratories (CRNL), Chalk River, Ontario, Canada and terminate at the U.S. ERDA Savannah River Plant, South Carolina, where the fuel rods will be reprocessed under U.S. ERDA contract with AECL No. DE-AC09-76-SR01033, Mod. 3, Batch 6.

B. General Plan for Carrying Out the Activity:

The shielded cask provided by Nuclear Assurance Corporation (NAC) under lease from NL Industries, Inc., will be loaded remotely underwater in the CRNL loading pool. The loadings will be performed by qualified CRNL personnel. The CRNL staff is familiar with the cask loading operation having had experience with several previous loadings of similar fuel elements into this cask since 1966. An NAC representative will be present at the initial loading to provide technical assistance, consultation, and guidance and will be on call if assistance is required at subsequent loadings. Tri-State Motor Transit Company is the carrier. Drivers are trained in accordance with 10 CFR73 and will be equipped with film badges and a radiation monitoring meter and will periodically measure and record temperature, and radiation levels of the load in transit. The shipments will be made as fissile class III with exclusive use of the vehicle and Radioactive Yellow III labeling. The route is preassigned, and cognizant authorities will be notified of the shipment in advance.

The shipper is Atomic Energy of Canada, Ltd. The consignee is the U.S. ERDA Savannah River Plant, E. I. DuPont de Nemours, Inc., Dunbarton, South Carolina. The point of entry into the USA is either Sault Ste. Marie, Michigan, or Ogdensburg, New York.

Unloading of the cask will take place at the RBOF site (244-H) of the Savannah River Plant.

III. 10 CFR 70.22 a (3)

The Period of Time for Which the License is Requested:

The shipments are scheduled to commence as soon as import authority is granted. A total of six successive shipments will follow approximately one week apart. It is desirable to complete all six shipments prior to July 1, 1981. This license application is requested for the period through July 30, 1981, or upon completion of the shipment of 32 kg. SNM, whichever occurs first.



IV. 10 CFR 70.22 a (4)

Description of Special Nuclear Material To Be Imported:

- A. Name of SNM: Irradiated NRU and NRX assemblies of fuel elements containing metallic Uranium enriched to approximately 93 wt.% in the isotope U<sup>235</sup> prior to irradiation.
- B. Quantity of fuel assemblies to be shipped:
- 28 - NRX Rods with initial U-235 weight of approximately 550 grams per rod. Total post-irradiation U-235 content, 7,309 grams.
  - 125 - NRU Rods with initial U-235 weight of approximately 495 grams per rod. Total post-irradiation U-235 content, 10,130.7 grams.
- C. Chemical form of SNM: U-Al with the Uranium enriched to 93 wt.% in the isotope U-235 prior to irradiation.
- D. Physical form of SNM: Solid U-Al fuel rods.
- E. Isotopic content - post-irradiation: This information is tabulated by fuel type in Appendix A.

This spent fuel contains no more than trace quantities of plutonium.

V. 10 CFR 70.22 a (6)

Technical Qualifications of Personnel to Engage in the Proposed Activities:

The technical representative for the transportation contractor is the undersigned, who is Vice President, Engineering and Transport Services, for Nuclear Assurance Corporation. Qualifications include 25 years in the nuclear industry, two years in spent fuel transportation, plus a degree in Metallurgical Engineering.

Since its first shipment in May, 1966, from CRNL to the Savannah River Plant, it is estimated that the NL 6502 Cask System has made 90 trips and carried about 1,900 irradiated reactor fuel assemblies from the NRU and NRX reactors.

Operators highly experienced in handling this cask will be working with it in loading, transport, and unloading.

VI. 10 CFR 70.22 a (7)

Description of Equipment:

The radioactive shipping container equipment to be used for all six shipments is NL Industries' Cask System No. 6502. The cask is a circular cylinder with integral support structure and exterior

attachments approximately 156 inches long by 33-1/2 inches in diameter, excluding attachments. It is constructed as a stainless steel, lead-filled weldment with stainless steel piping. A portion of the cask body shielding is depleted Uranium. As shipped, the cask rests horizontally on its integral supporting structure at each end, and the supporting structure is bolted to a separate structure attached to the vehicle deck. A metal screen enclosure surrounds the cask in transport to serve as a sunshade and a guard against tampering.

NRC has issued Certificate of Compliance No. 9103, Rev. 1, for the NL 6502 Cask System. This Certificate is dated September 30, 1977, and a copy is attached.

VII. 10 CFR 70.22 a (8)

Safety Procedures:

A set of Operating Instructions for the NL 6502 Cask System is provided to users of the cask system. The operating instructions are a section of the Safety Analysis Report, upon which the Certificate of Compliance is based. The Safety Analysis Report contains a full analysis of equipment design and safety features especially in reference to shipping irradiated reactor fuel assemblies from the Chalk River site to the Savannah River Plant. See Docket 71-9103 for details.

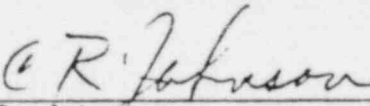
VIII. 10 CFR 70.22 (b)

Regarding Program for Control of and Accounting for Special Nuclear Material Possessed in a Quantity Exceeding One Effective Kilogram:

The proposed import shipments will proceed directly from origin at the CRNL facility of the shipper, AECL, to the consignee's Savannah River Plant facility of the U.S. ERDA without intervening stops. The container will be sealed by the consignor and opened only by the consignee. Thus, the program for control of and accountability for the special nuclear material to be transported will be that of CRNL and the Savannah River Plant. NAC provides a Record and Report Form for each such shipment. The Record and Report Form with shipper's section completed accompanies each shipment and, when the unloading site portion is completed, becomes the permanent record for each shipment. Information necessary to initiate an NRC Form 741 will accompany each shipment.

Physical Protection Plan:

Exemption from physical protection of the material described in Section IV of this application is claimed referencing the regulation in 10 CFR 73.6 (b). The dose rate of the contents of any one shipment will be greater than 100 R at a distance of 3 feet, without shielding.

  
\_\_\_\_\_  
C. R. Johnson  
Vice President,  
Engineering & Transportation Services  
Nuclear Assurance Corporation



Atomic Energy Control Board  
 P.O. Box 1046  
 Ottawa, Canada  
 K1P 5S9

Commission de contrôle de l'énergie atomique  
 C.P. 1046  
 Ottawa, Canada  
 K1P 5S9

8 June 1978

Our file / votre référence 30-10-2-123

Revision 1.

CANADIAN ENDORSEMENT (E53) FOR TYPE B FISSILE RADIOACTIVE MATERIAL PACKAGE DESIGN AND SHIPMENT APPROVAL CERTIFICATE USA/9103/B( )F

This certifies that the package design for the National Lead Industries Inc. Model NLI-6502 approved by the USA Department of Transport (US DOT) under IAEA Certificate of Competent Authority USA/9103/B( )F granted to National Lead Industries Inc., Barnwell, South Carolina is hereby approved for shipment in Canada by road, rail and marine transport subject to IAEA (1) and the Canadian regulations (2) (3) (4) (5) as appropriate, for the transport of radioactive material.

Each shipper under this authorization, other than the original applicant, shall register his identity with the Atomic Energy Control Board prior to the first use of this authorization and shall certify that he possesses the necessary instructions of the package for shipment.

PACKAGING DESCRIPTION

As set out in the attached US DOT certificate USA/9103/B(U)F, the packaging consists generally of a cylindrical steel shell nominally 0.84 m in diameter and 3.25 m in length containing lead and depleted uranium shielding material and having 2 lids, one at each end, both 0.61 m in diameter and extending 0.13 m into the cask recess. Fuel rods are contained within an approximately 0.29 m square by 3.21 m long basket of stainless steel angle and strap with a full length stainless steel clad Boral poison plate with two partial poison plates incorporated in the sides of the basket. A metal screen encloses the package during transportation and the package gross weight is about 19,200 kg. This packaging shall bear the competent authority identification mark "USA/9103/B( )F".

AUTHORIZED RADIOACTIVE CONTENTS

The authorized contents consist of either 20 NRU or 28 NRX irradiated aluminum-uranium alloy fuel rods with a maximum decay heat load of 14,000 BTU/h (4100 W) as further limited in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9103. The average surface heat flux is approximately 400 W/m<sup>2</sup>.

SHIPMENT

Shipment shall be made as a Fissile Class III consignment in accordance with the conditions specified in USNRC approval certificate USA/9103/B( )F - copy attached - and shall be further prepared for shipment, shipped and carried in accordance with the most recent Canadian regulations for road (2) rail (3) marine (4) and with IAEA regulations (1). This certificate authorizes shipment by road, rail and marine transport.

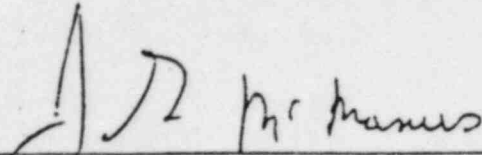
This certificate is issued in accordance with the IAEA regulations (1) the Atomic Energy Control Regulations (2) and by agreement with the Canadian Transportation regulatory authorities.

EXPIRY DATE


This certificate expires 18 April 1981.

Certified by:

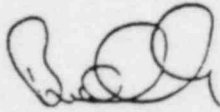
Endorsed by:



J. G. McManus  
Chief - Safeguards - Nuclear Materials  
Licensing Division  
Directorate of Licensing  
Atomic Energy Control Board  
P. O. Box 1046  
Ottawa, CANADA  
(Acting competent authority for  
road transport)



E. J. Hase  
Director of Operation  
Railway Transport Committee  
Canadian Transport Commission  
Ottawa, CANADA

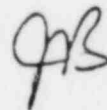


G.W.R. Graves - Chairman  
Board of Steamship Inspection  
Ship Safety Branch  
Canadian Coast Guard  
Ottawa, CANADA

REFERENCES

- (1) IAEA "Regulations for the Safe Transport of Radioactive Materials", 1973 Edition Safety Series No. 6, International Atomic Energy Agency, Vienna STI/PUB/323.
- (2) Atomic Energy Control Regulations, SOR/74-334 dated 4 June 1974.
- (3) Regulations for the Transportation of Dangerous Commodities by Rail, as issued by the Canadian Transport Commission.
- (4) IMCO "International Dangerous Goods Code" published by the Inter-Governmental Maritime Consultative Organization, London. Refer also to National Harbours Board and St. Lawrence Seaway Authority regulations as appropriate.
- (5) IATA "Restricted Articles Regulations" Radioactive materials packaged and shipped in accordance with Part 2 of these regulations are deemed to meet the requirements of Sec. 800 of the Air Regulations for Canada. See Flight Information Manual and Criteria for the Carriage of Dangerous Goods and Magnetized Materials, Civil Aeronautics Branch, Transport Canada.

Revision 1: 8 June 1978. Expiry date changed.





DEPARTMENT OF TRANSPORTATION  
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION  
WASHINGTON, D.C. 20590  
IAEA CERTIFICATE OF COMPETENT AUTHORITY

Type B Fissile Radioactive Material Package Design

ASPER TO:

Certificate Number USA/9103/B()F  
(Revision 1)

This establishes that the packaging design described herein, when loaded with the authorized radioactive contents, has been certified by the National Competent Authority of the United States as meeting the regulatory requirement for Type B packaging for fissile radioactive materials as prescribed in IAEA<sup>1</sup> Regulations and in accordance with §§ 173.393b and 173.396(c)(3) of the USA<sup>2</sup> Regulations for the transport of radioactive materials.

I. Package Identification - NLI-6502.

II. Packaging Description - Packaging authorized by this certificate consist of a 1/2 inch thick steel shell 33 1/2 inch indiameter and 130 inches in length containing lead and depleted uranium shielding material and having 2 lids, one at each end, both 24 1/2 inches in diameter and extending 5 inches into the cask recess. Fuel rods are contained within an approximately 11 1/2 inch square by 128 1/2 inches long basket of stainless steel angle and strap with a full length stainless steel clad Boral poison plate with two partial poison plates incorporated in the sides of the basket. A metal screen encloses the package during transportation and the package gross weight is about 45,300 pounds.

III. Authorized Radioactive Contents - The authorized contents consist of either 20 NRU or 28 NRX irradiated aluminum-uranium alloy fuel rods with a maximum decay heat load of 14,000 BTU/hr as further limited in U. S. Nuclear Regulatory Commission Certificate of Compliance No. 9103 (Appendix A).

Shipments are authorized as Fissile Class III with a maximum of one package per shipment.

IV. General Conditions -

a. Each user of this certificate must have in his possession a copy of this certificate.

b. Each user of this certificate, other than NL Industries, Inc., Barnwell S. C., shall register his identity in writing to the Office of Hazardous Materials Regulations, U. S. Department of Transportation U. S. Department of Transportation, Washington, D. C. 20590.


c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

V. Marking and Labeling - The package must also bear the marking USA/9103/B()P as well as the other marking and labels prescribed by the USA Regulations.

VI. Expiration Date - This certificate, unless renewed, expires on April 18, 1981.

This certificate is issued in accordance with the requirements of the IAEA and USA Regulations and in response to the October 11, 1977 and May 5, 1978 petitions by NL Industries, Barnwell, S. C. and in consideration of the associated information provided in U. S. Nuclear Regulatory Commission Certificate of Compliance No. 9103 (Appendix A).

Certified by:

  
\_\_\_\_\_  
J. A. W. Grella

Chief, R & D Management Division  
Office of Program Support  
Materials Transportation Bureau

6/1/78  
(DATE)

1 "Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1967 Edition" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

2 Title 49, Code of Federal Regulations, Parts 100-199, USA.

Revision 1 issued to incorporate Rev. 1 of NRC Certificate 91 and to extend expiration date.

U.S. NUCLEAR REGULATORY COMMISSION  
CERTIFICATE OF COMPLIANCE  
For Radioactive Materials Packages

1.(a) Certificate Number 9103	1.(b) Revision No. 1	1.(c) Package Identification No. USA/9103/B( )F	1.(d) Pages No. 1	1.(e) Total 4
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2. PREAMBLE

- 2.(a) This certificate is issued to satisfy Sections 173.393a, 173.394, 173.395, and 173.396 of the Department of Transportation Hazardous Materials Regulations (49 CFR 170-189 and 14 CFR 103) and Sections 146-19-10a and 146-19-100 of the Department of Transportation Dangerous Cargoes Regulations (46 CFR 146-149), as amended.
- 2.(b) The packaging and contents described in item 5 below, meets the safety standards set forth in Subpart C of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Materials for Transport and Transportation of Radioactive Material Under Certain Conditions."
- 2.(c) This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. This certificate is issued on the basis of a safety analysis report of the package design or application—

3.(a) Prepared by (Name and address):  
NL Industries, Inc.  
P. O. Box 2046  
Wilmington, Delaware 19899

3.(b) Title and identification of report or application:  
NL Industries, Inc. application dated  
September 7, 1977, as supplemented.

3.(c) Docket No. 71-9103

4. CONDITIONS

This certificate is conditional upon the fulfilling of the requirements of Subpart D of 10 CFR 71, as applicable, and the conditions set forth in item 5 below.

5. Description of Packaging and Authorized Contents, Model Number, Fissile Class, Other Conditions, and References:

(a) Packaging

(1) Model No.: NLI-6502

(2) Description

A steel, lead, and depleted uranium shielded shipping cask. Its overall dimensions are 33.5 inches in diameter by 130 inches long. The loaded cask weighs about 45,300 pounds. The wall thickness of the cavity and outer shell is 1/2 inch. The wall thickness of the inner shell is 1 inch. The main body of the cask is divided into two regions. The inner region, which is a maximum of 5-3/4 inches thick, contains uranium shielding angles at the four corners, the remainder of the shielding region is filled with chemical grade lead. The outer (sacrificial) 3-inch thick region is filled with lower melting point 6% antimonial lead. The cask contains six (6) fusible "weep holes" around the cask at each end. This

5. (a) (2) Description (Cont'd)

sacrificial region also contains 10 layers of 0.018-in terne plate. The main body of the cask is equipped with two (2) lids, one on each end. The two lids are similar in construction, each being 24.5 inches in diameter and extending 5 inches into the cask recess. The lids, like the main cask body, contain an outer sacrificial region (2" thick containing ten 0.018-in terne discs with the remaining volume filled with 6% antimonial lead) and an inner region (4-5/8" thick) containing chemical grade lead. The sacrificial region in each lid is fitted with exterior weep holes.

One lid contains a 1/2-inch drain line and valve. The other lid contains two 1/2-inch lines for a pressure relief valve with filter and the other line is capped.

The fuel rods are contained within an approximate 11-1/2-inch square by 128-1/2-inch long openwork basket constructed of stainless steel angle and strap. The basket has a full-length lid along one side, for horizontal loading, and a lid on one end for vertical unloading. A vertical, stainless steel-clad Boral poison plate divides the basket into two, full-length halves, and two partial poison plates are incorporated into the sides of the basket.

A metal screen enclosure surrounds the package in transport to serve as a sun-shade and prevent inadvertent use of structural parts of the package, other than the tie-down devices for securing the package to the vehicle during transport.

The cask rests horizontally on its integral supporting structure at each end, and the supporting structure is bolted to a separate structure attached to the deck of the special trailer provided for its use.

(3) Drawings

The Model No. NLI-6502 shipping package is constructed in accordance National Lead Company Drawings Numbers:

5797-P, Rev. 1	Details-Safety Shield
5798-0, Rev. 1	Cask Tie-Down
6502-01, Rev. 5	Basket Details
6502-03, Rev. 4	Latch and Basket Details
6502-04, Rev. 3	Basket and Lid Assembly
6502-07, Rev. 5	Cask
6502-08, Rev. 4	Lid Assembly and Details



5. (b) Contents

(1) Type and form of material

Irradiated NRU-NRX aluminum-uranium alloy fuel rods enriched in the U-235 isotope with the following specifications:

	<u>NRU</u>	<u>NRX (MKI&amp;IV)</u>
Number of elements per rod	12	7
Maximum U-235 content per rod prior to irradiation, g	495 (1.8 per cm)	550 (2.0 per cm)
Minimum average burnup, %	45	45
Minimum decay time, days	120	120

(2) Maximum quantity of material per package

The maximum decay heat load per package not to exceed 14,000 Btu/hr, and 20 NRU fuel rods or 28 NRX fuel rods per package.

(c) Fissile Class

III

Maximum number of packages per shipment

One (1)

6. Poison inspection and loading of fuel rods shall be subject to the following conditions:

(a) Poison inspection and loading of fuel rods in accordance with Section VII-B.2.(B.)(3.) (pp. VII-10 thru VII-11) of the application, and

(b) The package shall not be loaded with a mass which exceeds 75% of critical, determined by extrapolation to zero reciprocal count rate.

7. Dummy fuel rods consisting of empty aluminum pipes shall be installed in every fuel rod position not occupied with fuel.

8. The cask cavity shall be dry (no free water) when delivered to a carrier for transport.

9. The cask contents shall be so limited under normal conditions of transport that the dose rate will not exceed 10 mrem/hr at three (3) feet from the external surface of the cask.

10. Construction of additional packaging is not authorized.

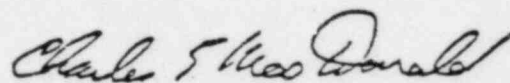
11. Expiration Date: May 31, 1983.

REFERENCES

NL Industries, Inc. application dated September 7, 1977.

Supplement dated: May 1, 1978.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

  
Charles E. MacDonald, Chief  
Transportation Branch  
Division of Fuel Cycle and  
Material Safety

Date:           MAY 3 1978







bcc: Corp  
Chrono  
JMV  
GND  
LD

Nuclear Assurance Corporation  
24 Executive Park West  
Atlanta, Georgia 30329  
(404) 325-4200  
Telex: 549567, 542703

715 Horizon Drive  
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Weinbergstrasse 9  
8001 Zurich, Switzerland  
(01) 470844  
Telex: 57275  
March 4, 1981  
FLD/89/16/ETS

Atomic Energy Control Board  
Radioisotope and Transportation Section  
P. O. Box 1049  
Ottawa, Canada K1P 5S9

Attention: Mrs. Gilmour

Subject: Renewal of Canadian Endorsement (E53) for Type B Fissile Radioactive  
Material Package Design and Shipment Approval Certificate  
USA/9103/B( )F, Rev. 1.

Dear Mrs. Gilmour:

The Nuclear Assurance Corporation respectfully requests the renewal of the  
Canadian Endorsement of the model NLI-6502 shipping package.

The current endorsement expires on April 18, 1981. NAC is presently planning,  
with AECL, to transport spent NRU and NRX research fuel assemblies from Chalk  
River, Canada to DOE's Savannah River Plant in South Carolina. This planned  
move is to occur in May of this year.

It is requested that the subject certificate be issued with an expiration date  
of a May 31, 1983. The certificate would then have the same expiration date  
as the Nuclear Regulatory Commission Certificate of Compliance No. 9103,  
Revision 1.

For your information and use, enclosed are copies of the current Canadian  
Endorsement, the current IAEA Certificate (USA/9103/B( )F, Rev. 1), the cur-  
rent US NRC Certificate of Compliance (9103, Rev. 1) and a copy of our letter  
to the U.S. Department of Transportation requesting renewal of the IAEA  
Certificate.

Please let me know if additional information is required.

Yours truly,

NUCLEAR ASSURANCE CORPORATION



F. L. Danese

FLD:1wb  
Enclosure

GND  
LD

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Telex: 57275

March 4, 1981  
FLD/81/15/ETS

Department of Transportation  
Materials Transportation Bureau  
Office of Hazardous Materials Operations  
Washington, D. C. 20590

Subject: Request for IAEA Certificate of Competent Authority Renewal for  
Model No. NLI-6502 Shipping Package.

Gentlemen:

The Nuclear Assurance Corporation respectfully requests that your office renew the IAEA Certificate of Competent Authority for the shipping package designated NLI-6502.

The current certificate expires on April 18, 1981. NAC is presently planning, with AECL, to transport spent NRU and NRX research fuel assemblies from Chalk River, Canada to DOE's Savannah River Plant in South Carolina. This planned move is to occur in May of this year.

NAC is presently applying for a renewal of the AECB Endorsement Certificate. The renewal of the Canadian Endorsement requires the renewal of the IAEA Certificate.

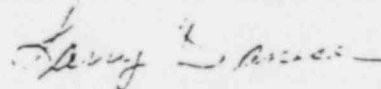
It is requested that the subject certificate be issued with an expiration date of May 31, 1983. The certificate would then have the same expiration date as the Nuclear Regulatory Commission Certificate of Compliance No. 9103, Revision 1.

For your information and use, enclosed are copies of the current IAEA Certificate (USA/9103/B( )F, Rev. 1) and the current NRC Certificate of Compliance (9103, Rev. 1) which expires May 31, 1981.

Should you have any questions, please call.

Yours truly,

NUCLEAR ASSURANCE CORPORATION



F. L. Danese

FLD:1wb  
Enclosure

SPECIAL NUCLEAR MATERIAL IMPORT LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, Part 70, a license is hereby issued to the licensee designated below authorizing the import of special nuclear material in accordance with the statements and representations made by the licensee in the application referenced below. This license is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		3. Docket No. 11002405
1. Name	Nuclear Assurance Corporation	4. License No. ISNM81005
2. Address	24 Executive Park West Atlanta, Georgia 30329  ATTN: Charles R. Johnson	5. Expiration date April 1, 1982

E. Country where shipment originates  Canada	7. Quantity and type of material  URANIUM: 33.0 kilograms uranium containing up to 18.0 kilograms U-235 as spent NRX and NRU Reactor fuel.
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CONDITIONS

- The licensee shall obtain all information from the foreign exporter necessary to complete the shipper's portion of Form NRC-741, "Nuclear Material Transactions Report." If the licensee is the receiver of the material, he shall record both the shipper's and receiver's information on the Form NRC-741 and transmit pursuant to Section 70.54 of 10 CFR Part 70. If the licensee is not the receiver of the material, he shall provide the shipper's information to the receiver of the material for inclusion on the receiver's Form NRC-741.
- The licensee shall notify the appropriate regional Safeguards Branch, Office of Inspection and Enforcement, immediately, by telephone or telegram, if entry of any import shipment authorized by this license is refused by the U.S. Customs Service.
- For import shipment of 350 grams or more of uranium-235 contained in uranium enriched in the uranium-235 isotope 20% or above, the licensee shall promptly notify the appropriate Inspection and Enforcement Regional Office, by telephone, telegram or teletype, upon receiving notification that an import shipment has entered the country, giving the date that the import entered and the estimated time or arrival at the stated destination.
- This license authorized import only and does not authorize the receipt, physical possession, or use of the nuclear material.
- The material to be imported under this license shall be protected in transit while within U.S. jurisdiction in accordance with the requirements of 10 CFR 73 and the licensee's approved security plan, as appropriate. Irradiated reactor

(CONTINUED ON PAGE 2)

For the U.S. NUCLEAR REGULATORY COMMISSION

Date of Application March 10, 1981  
Date of Issuance MAY 05 1981

James B. Devine, Assistant Director  
Office of International Programs  
Original signed by  
James B. Devine

*Handwritten:* 0382  
11820  
PDE - 510508







UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

APR 21 1981

MEMORANDUM FOR: THE FILES -  
FROM: R. Neal Moore  
Office of International Programs  
SUBJECT: FINDINGS RELATED TO THE PROPOSED IMPORT OF IRRADIATED FUEL  
FROM CANADA - ISNM81005

On March 10, 1981, Nuclear Assurance Corporation requested a license authorizing the import of up to 33 kilograms contained in irradiated fuel from the Chalk River Nuclear Laboratories NRX-NRU reactors. The material is in the form of solid U-Al fuel rods which originally contain uranium enriched to 93% U-235. The irradiated fuel contains small quantities of produced plutonium. Shipments will be made in NL Industries' Cask System #6502, USA/9103/B( )F.

This request is essentially the same as previous requests to import NRX-NRU irradiated fuel, for example, ISNM79008, and represents no material change in circumstances from conditions and findings which existed at the time of the earlier imports. The import does not present an undue risk to health and safety or to the environment and will not be inimical to the common defense and security. The staff recommends this license be issued.

R. Neal Moore  
Senior Licensing Reviewer  
Export/Import and International Safeguards  
Office of International Programs

\*Copy to PDR and ACC APR 21 1981 *sg*

*8104240535*  
*PDR*

Nuclear Assurance Corporation  
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TWX: 9109296334

Weinbergstrasse 9  
8001 Zurich, Switzerland  
(01) 470844  
Telex: 57275

April 1, 1981  
FLD/81/26/ETS

EECNAC  
NIMS

Director, Division of Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Gentlemen:

The Atomic Energy of Canada Limited Research Company has requested that the Nuclear Assurance Corporation, acting as their agent, assist them in obtaining an approved route for planned irradiated fuel shipments from the Chalk River Nuclear Laboratories to the Department of Energy's Savannah River facility. These shipments will be made under Contract DE-AC09-76-SR01033, Mod. 3.

In accordance with their request, and with the guidelines for submittal contained in NUREG-0561, the following information is provided:

1. Cargo Description

- (approximately) 150 NRU and NRX aluminium-uranium alloy fuel rods.
- Model No. NLI-6502, AECL Cask Package No. USA/9103/B( )F.
- Loaded weight of transport vehicle is (approximately) 70,000 lbs.

2. Anticipated Schedule

- 6 shipments (approximately) 25 assemblies per shipment.
- Shipment campaign duration is 10 weeks (estimate).
- Proposed start date is May 18, 1981.

3. Route Description

- Origin: Atomic Energy of Canada Limited  
Chalk River Nuclear Laboratories  
Chalk River, Ontario, Canada K0J 1J0

~~8109240052~~

- Destination: U.S. Department of Energy  
Savannah River Operations  
E. I. DuPont de Nemours & Co.  
Savannah River Plant  
Dunbarton, South Carolina 29801

- Proposed Route:

Site to Canadian 17	-	4
Canadian 17 to Port of Entry	-	368
Port of Entry - Sault Ste. Marie		
Port of Entry to (U.S.) I-75	-	0
(U.S.) I-75 to U.S. 23	-	305
U.S. 23 to I-475	-	105
I-475 to I-75	-	12
I-75 to I-275	-	161
I-275 to I-75	-	46
I-75 to I-40	-	250
I-40 (East) to I-26	-	98
I-26 to S.C. 121	-	116
S.C. 121 to S.C. 19	-	48
S.C. 19 to Site	-	36

(Estimated total miles: 1549; Estimated U.S. miles: 1177)

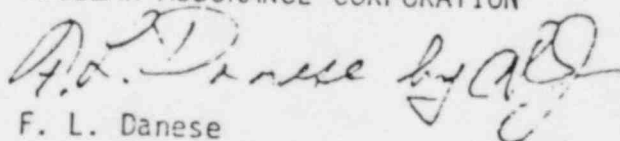
The special assemblies to be shipped have not yet been selected; however, the shipments will be made in accordance with the cask Certificate of Compliance.

Please address comments or questions regarding this submittal to the undersigned.

The information and descriptions provided above contain information of a type specified in 10CFR2.790(d). It is deemed to be proprietary in nature, within the intent of 10CFR9.5(a)(4) and should be subject to disclosure only in accordance with the provisions of 10CFR9.12.

Yours truly,

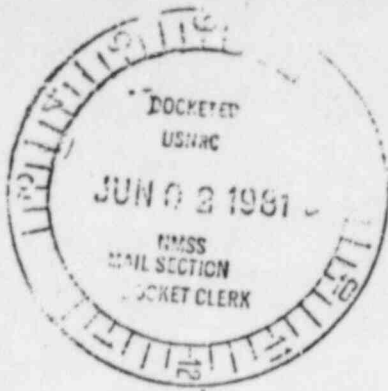
NUCLEAR ASSURANCE CORPORATION



F. L. Danese  
Supervisor, Cask Operations

FLD:cnr

1001002



22113  
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Weinbergstrasse 9  
8001 Zurich, Switzerland  
(01) 470844  
Telex: 57275

May 15, 1981

FLD/81/36/ETS

Mr. George W. McCorkle  
SGPL  
Physical Security Licensing Branch  
Division of Safeguards  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. McCorkle:

Attached is a copy of a route approval request previously developed by the Nuclear Assurance Corporation for the Atomic Energy of Canada Limited Research Company.

We request that the proposed route be reviewed for compliance with current guidelines and approved, if appropriate. Since we had believed that the route was already being reviewed and the other necessary documents such as Import License, IAEA Certificate, and the like have been obtained, we would appreciate any special attention that would expedite approval of this route.

Please let us know if you have any questions.

Sincerely,

NUCLEAR ASSURANCE CORPORATION

F. L. Danese  
Supervisor, Cask Operations

FLD:bam

Attachment

8109296334  
PDR

ALL EXEMPT