U.S. Department
of Transportation

**Research and
Special Programs
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

**COMPETENT AUTHORITY CERTIFICATION
FOR A FISSILE
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0220/AF-85, REVISION 11**

REVALIDATION OF JAPANESE COMPETENT AUTHORITY CERTIFICATE J/79/AF-85

This certifies that the radioactive materials package design described below is hereby approved for use within the United Sates for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency[1] and United States of America[2].

1. Package Identification - BU-J.

2. Packaging Description - as described in Japanese Certificate of Competent Authority J/79/AF-85, Revision 1, dated March 9, 2001 (attached).

3. Authorized Radioactive Contents - as described in Japanese Certificate of Competent Authority J/79/AF-85, Revision 1, dated March 9, 2001 (attached). Quantity of radioactive contents limited to:

Maximum Uranium Enrichment (weight percent U-235)	Maximum UO2 Per Package (Kilograms)
2.85	46.0
3.06	42.0
3.50	33.0
4.10	27.0
4.31	25.0
4.60	23.0
4.85	21.0
5.00	20.0

4. Criticality -

   a. Criticality Transport Index - 0.4

   b. Allowable Number of Packages per Conveyance - 125

   c. The criticality analysis considered the that the inner container is immersed in water but that no water leaks into the inner container under the normal and accident conditions of transport.

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[1] "Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1985 Revised Edition, as amended," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Parts 100 - 199, United States of America.

CERTIFICATE USA/0220/AF-85, REVISION 11

5. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation in accordance with the endorsed certificate.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology (DHM-23), Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C. 20590-0001.

   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.

   d. Records of Quality Assurance activities required by Paragraph 209 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors and consignees in the United States exporting or importing shipments under this certificate shall satisfy the requirements of Subpart H of 10 CFR 71.

6. Marking and Labeling - The package shall bear the marking USA/0220/AF-85 in addition to other required markings and labeling.

7. Expiration Date - This certificate expires on February 21, 2004.

This certificate is issued in accordance with paragraph 712 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the December 4, 2000 petition by Transport Logistics International, Burtonsville, MD and in consideration of other information on file in this Office.

Certified by:

Robert A. McGuire
Acting Associate Administrator for Hazardous Materials Safety

APR 18 2001
(DATE)

Revision 11 - issued to endorse, for limited contents, Japanese Certificate of Approval No. J/79/AF-85, Revision 1.

IDENTIFICATION MARK
J/79/AF-85 (Rev.1)

COMPETENT AUTHORITY
OF
JAPAN

CERTIFICATE OF APPROVAL OF PACKAGE DESIGN FOR THE TRANSPORT OF RADIOACTIVE MATERIALS

ISSUED BY

MINISTRY OF ECONOMY, TRADE AND INDUSTRY
1-3-1, KASUMIGASEKI, CHIYODA-KU
TOKYO, JAPAN

CERTIFICATE OF APPROVAL OF PACKAGE DESIGN FOR THE TRANSPORT OF RADIOACTIVE MATERIALS

This is to certify, in response to the application by JAPAN NUCLEAR FUEL Co., Ltd. on January 22, 2001, that the design of package described herein satisfies the design requirements of type A fissile package specified in Regulations for the Safe Transport of Radioactive Material (International Atomic Energy Agency, Safety Series No.6, 1985 Edition).

IDENTIFICATION MARK : J/79/AF-85 (Rev.1)

COMPETENT AUTHORITY

9. 3. 2001

Date

Y. Sasaki

Yoshihiko Sasaki
Director General
Agency for Nuclear and Industrial Safety
Ministry of Economy, Trade and Industry
Competent Authority of Japan
for Transport Package Design
of Radioactive Materials

SPECIFICATION

1. NAME OF PACKAGE : BU-J (Type A, Fissile)

2. SPECIFICATION OF CONTENT

(1) Description of Contents

(i) Material of Nuclear Fuel	:	Uranium Dioxide (Powder and Pellet)
(ii) Enrichment	:	5.0% or less
(iii)Isotopic Content	:	$^{232}U \leqq 0.002 \quad \mu g/g^{235}U$
	:	$^{234}U \leqq 10{,}000 \quad \mu g/g^{235}U$
	:	$^{236}U \leqq 5{,}000 \quad \mu g/g^{235}U$
	:	$^{99}Tc \leqq 0.2 \quad \mu g/g^{235}U$

(2) Restriction of Contents

(i) Total Weight of Content	:	89 kg or less
(ii) Total Activity	:	6.60 GBq or less
(iii)Total Heat Generation Rate	:	Not applicable
(iv)Burnup Rate	:	Not applicable
(v) Cooling Time	:	Not applicable
(vi)Physical State	:	Solid (Powder and Pellet)
(vii)Maximum Contents per Package	:	See Attached Table

3. SPECIFICATION OF PACKAGING

(1) Total Weight of Packaging : 115 kg or less

(2) Outer Dimension of Packaging

(i) Outer Diameter	:	Approximately 61 cm
(ii) Height	:	Approximately 88 cm

(3) Materials of Packaging

(i) Inner Container

Inner Drum	:	Steel (SPCC or SPHC)
Flange and Lid	:	Steel (SS400)
Gasket	:	Butyl Rubber
Bolts and Nuts	:	Steel (SS400)

(ii) Outer Container

Outer Drum	:	Steel (SPCC or SPHC)
Fastener	:	Steel (SS400)
Gasket	:	Natural Rubber
Heat Insulator	:	Pealite-Alumina Cement
Bolts and Nuts	:	Steel (SS400)

(4) Package Illustration : See Attached Figure

4. ASSUMED AMBIENT CONDITIONS

(i) Ambient Temperature : 38 ℃

(ii) Insolation Data : Table XII of IAEA Regulation (Safety Series No.6, 1985 Edition)

5. RESTRICTIONS OF TRANSPORT

(i) Restriction Number : 500 Packages

(ii) Array : No Restriction

(iii) Transport Index for Nuclear Criticality Control : 0.1

6. SPECIAL FEATURES IN THE CRITICALITY ASSESSMENT

The subcriticality calculation is evaluated upon assumption that the inner container is in immersion condition by water and no water leaks into the inner container under the normal conditions and accident conditions in transport.

7. DECREASED NEUTRON MULTIPLICATION FACTOR

Any determination on which decreased neutron multiplication factor is not assumed in the criticality assessment, because the content has not been irradiated.

8. RESTRICTION ON THE MODES OF TRANSPORT

It is not confirmed that the design of package satisfies the additional requirements for packages transported by air.

9. INSTRUCTIONS ON USE AND MAINTENANCE OF PACKAGING

(1) Instructions on Maintenance of Packaging

The packaging shall be kept in good condition and required periodic inspections. Periodic inspections of each packaging shall be conducted more than once per year. (In case where a packaging is used for transport more than ten times per year, the periodic inspections shall be conducted at least once every ten transports.)

The periodic inspections shall include visual inspection and subcriticality inspection.

The packages or packagings shall be lifted with a forklift or crane.

(2) Actions prior to Shipment

Each package shall be checked for the following items before shipments.

(i) Visual Inspection
(ii) Lifting Inspection
(iii) Weight Measurement
(iv) Surface Contamination Measurement
(v) Radiation Dose Rate Measurement
(vi) Subcriticality Inspection
(vii) Content Inspection

Gaskets of the packaging shall be inspected, and exchanged if necessary.

(3) Precautions for Loading of Package for Transport

Loading of the package shall be performed such that the package will not move, roll down or fall down during transport.

10. THE ISSUE DATE AND EXPIRY DATE OF CERTIFICATE

(1) Issue Date : February 21, 2001

(2) Expiry Date : February 21, 2004

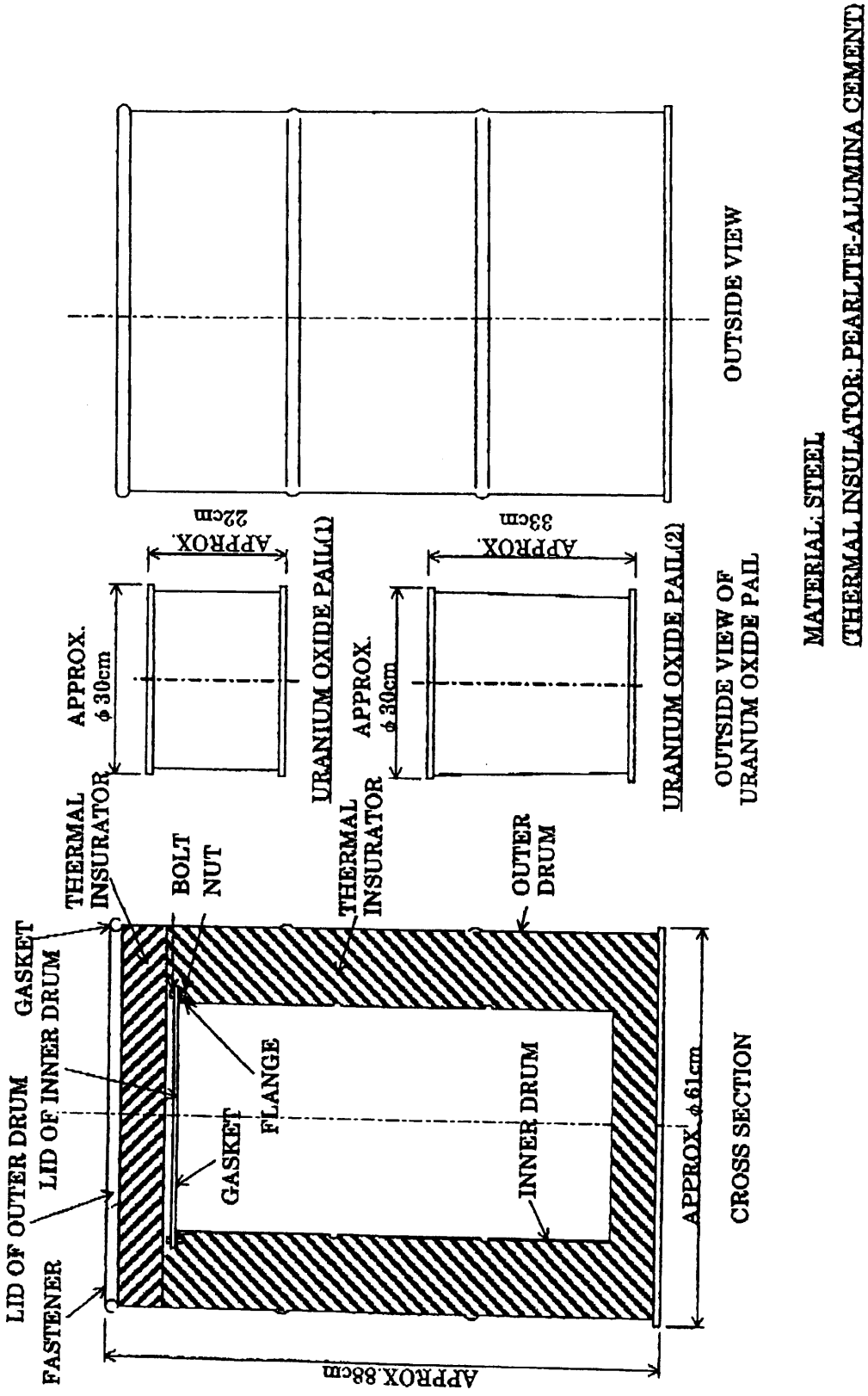
11. NOTE

This certificate does not relieve the consignor from compliance with any requirement of the government of any country through or into which the package will be transported.

Attached Table Maximum Contents per BU-J Package

Enrichment (%)	Maximum Quantity of Material per Package (kg - UO2)	
	Pellet	Powder
3.0 or less	76.2	89.0
3.6 or less	57.0	62.2
4.0 or less	49.4	51.4
4.6 or less	40.0	40.4
5.0 or less	36.2	36.2

H/U ratio shall be confirmed equal or less than 0.45 prior to shipment.



Attached Figure Overall View of Type BU-J Package

経 済 産 業 省

核燃料輸送物設計承認書

平成13・01・22原第9号
平成１３年　２月　２１日

日本ニュクリア・フュエル株式会社
代表取締役社長　待場　浩　殿

経済産業大臣　平沼　赳夫

平成１３年１月２２日付けＳＴＯ－Ｍ０１－００１をもって申請のあった核燃料輸送物の設計については、核燃料物質等の工場又は事業所の外における運搬に関する規則に定める技術上の基準に適合しているので、核燃料物質等の工場又は事業所の外における運搬に関する技術上の基準に係る細目等を定める告示第３５条に基づき、下記のとおり承認します。

記

１．設計承認番号　　：　Ｊ／７９／ＡＦ－８５（Ｒｅｖ．１）

２．核燃料輸送物の名称　：　ＢＵ－Ｊ型

３．核燃料輸送物の種類　：　Ａ型核分裂性輸送物

４．核燃料輸送物に関する説明
(1)輸送容器の材料の種類
イ．外容器
外容器ドラム缶　：　鋼製（ＳＰＨＣ又はＳＰＣＣ）
締め付け金具　　：　鋼製（ＳＳ４００）

ガスケット　：　天然ゴム
断熱材　：　パーライト・アルミナセメント

ロ．内容器

内容器ドラム缶　：　鋼製（ＳＰＨＣ又はＳＰＣＣ）
フランジ及び蓋　：　鋼製（ＳＳ４００）
ガスケット　：　ブチルゴム
ボルト及びナット：　鋼製（ＳＳ４００）

(2)核燃料輸送物の総重量：　最大　２１０ｋｇ

(3)外形寸法　：　直径　約６１ｃｍ
高さ　約８８ｃｍ

(4)外観　：　添付図のとおり

(5)収納する核燃料物質等の仕様

イ．種類　：　二酸化ウラン
ロ．重量　：　最大　８９．０ｋｇ
ハ．放射能量　：　最大　６．６０ＧＢｑ
ニ．性状　：　固体（粉末及びペレット）
ホ．濃縮度　：　５．０％以下
ヘ．燃焼度　：　該当せず
ト．発熱量　：　該当せず
チ．冷却日数　：　該当せず
リ．収納制限条件　：　別表のとおり
ヌ．濃縮ウラン仕様　：　$^{232}U \leqq 0.002$ μｇ／ｇ^{235}U
$^{234}U \leqq 10.000$ μｇ／ｇ^{235}U
$^{236}U \leqq 5.000$ μｇ／ｇ^{235}U
$^{99}Tc \leqq 0.2$ μｇ／ｇ^{235}U

5．輸送制限個数　：　５００個

6．配列方法　：　任意

7．臨界計算における水密性に関する事項

核分裂性輸送物に必要な各種試験条件により内容器の水密性を確認しているので、臨界計算条件としての水の浸入は無いものとする。

8．BM型輸送物にあっては、BU型輸送物の設計基準のうち適合しない基準についての説明
：　該当せず

9．核燃料輸送物の取扱い及び保守に関する事項

(1)輸送容器の取扱い及び保守の方法

イ．輸送容器の取扱いにあたっては専用吊具又はフォークリフトを用いて、落下等のないように行う。輸送物の取扱い時は汚染に留意した放射線管理を行う。

ロ．内容器の水密性に留意した品質管理及び検査を実施するため、輸送容器の管理は屋内で行い、輸送容器のガスケットは輸送の都度点検し、必要に応じて新品と交換する。

ハ．定期検査は、１年に１回以上（年間の使用回数が１０回を越える場合は、使用回数１０回毎に１回以上）実施し、輸送容器の健全性の維持に努める。定期検査は、外観検査及び未臨界検査を行う。

(2)輸送物の発送に先立ってとるべき措置

輸送物の発送にあたっては、外観検査、吊上げ検査、重量検査、未臨界検査、収納物検査、線量当量率検査及び表面密度検査を行う。

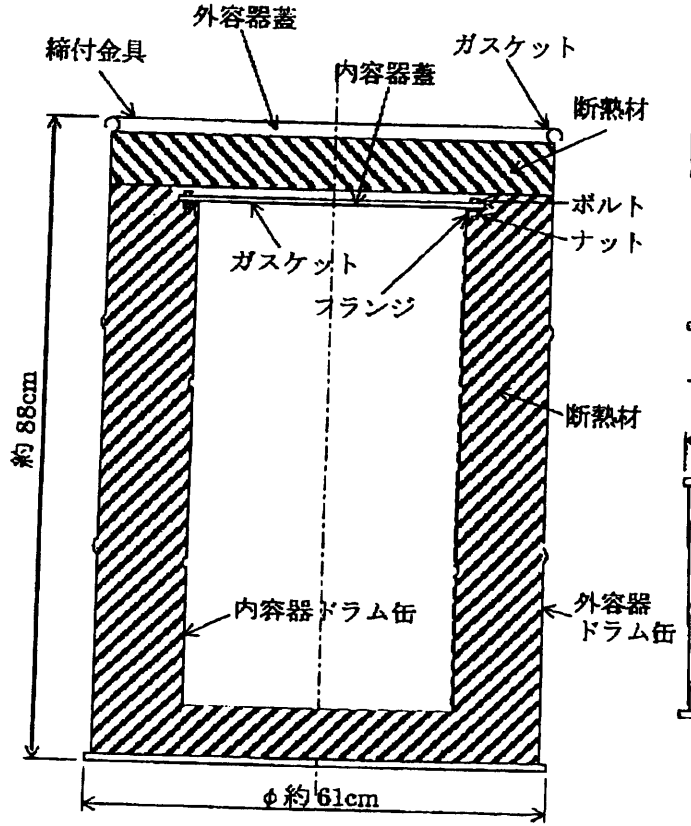
(3)輸送物を運搬する場合の積載方法等に関する注意事項

輸送物の積付けにあたっては、輸送中に輸送物の転倒、転落等のないように行う。

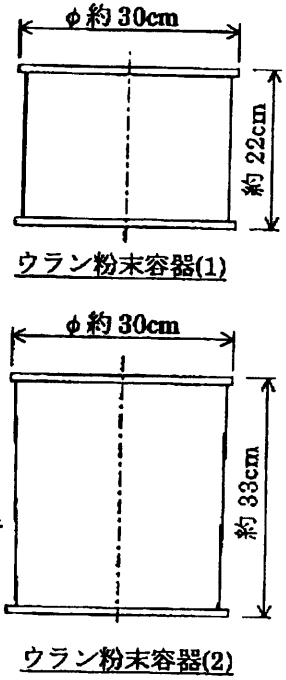
10．有効期間

平成１３年　２月２１日から平成１６年　２月２０日まで

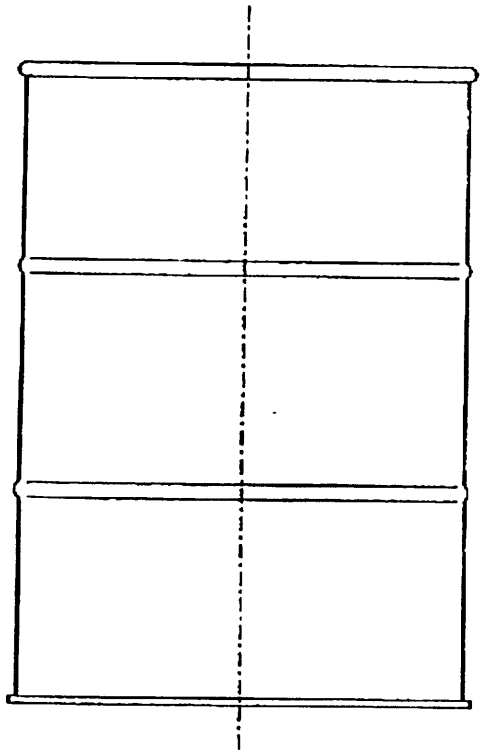
11．本承認書は、本輸送物が通過し、又は搬入される国において定められた荷送人が従うべき義務を免除するものではない。



断面図



ウラン粉末容器外観図



材質：軟鋼(断熱材：パーライト・アルミナセメント)

添付図　ＢＵ－Ｊ型輸送物外観図

別表　ＢＵ－Ｊ型輸送物の収納制限条件

濃縮度（%）	最大装荷量（ｋｇ－UO_2）	
	ペレット	粉末
３．０　以下	７６．２	８９．０
３．６　以下	５７．０	６２．２
４．０　以下	４９．４	５１．４
４．６　以下	４０．０	４０．４
５．０　以下	３６．２	３６．２

水素とウラン原子比（Ｈ／Ｕ）が０．４５以下である。