U.S. Department of Transportation
Research and Special Programs Administration

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

COMPETENT AUTHORITY CERTIFICATION FOR A FISSILE RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0255/AF-85, REVISION 7

REVALIDATION OF JAPANESE COMPETENT AUTHORITY CERTIFICATE J/74/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 (JCO model).

2. Packaging Description - as described in Japanese Certificate of Competent Authority J/74/AF-85, Revision 1, dated June 22, 2001 (attached).

3. Authorized Contents - as described in Japanese Certificate of Competent Authority J/74/AF-85, Revision 1, dated June 22, 2001 (attached). Quantity of radioactive contents limited to:

Maximum Uranium Enrichment (weight percent U-235)	Maximum UO_2, U_3O_8 or UO_3 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

* No limitation on the H/U ratio as the criticality safety of the package does not depend on moderation exclusion or particle size at these payloads.

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/0255/AF-85, REVISION 7

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. Special Condition - The package has not been evaluated against the additional requirements for air transport and therefore cannot be transported by air.

7. Marking and Labeling - The package shall bear the marking USA/0255/AF-85 in addition to other required markings and labeling.

8. Expiration Date - This certificate expires on May 27, 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 June 28, 2001 petition by Global Nuclear Fuel - Americas of Wilmington, NC and in consideration of other information on file in this Office.

Certified by:

AUG 31 2001

Robert A. McGuire (DATE)
Acting Associate Administrator for Hazardous Materials Safety

Revision 7 - issued to endorse, with limited contents, Japanese Certificate of Approval No. J/74/AF-85, Revision 1 and to extend the expiration date.

IDENTIFICATION MARK

J/74/AF-85(Rev.1)

COMPETENT AUTHORITY

OF

JAPAN

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

ISSUED BY

MINISTRY OF EDUCATION, SPORTS, SCIENCE AND TECHNOLOGY

2-2-1, 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 JCO Co., Ltd. On May 28, 2001, that the design of package described herein satisfies the design requirements of type A fissile package specified in Regulation for the Safe Transport of Radioactive Materials (International Atomic Energy Agency, Safety Series No.6, 1985 Edition).

COMPETENT AUTHORITY
IDENTIFICATION MARK : J/74/AF-85(Rev.1)

June 22, 2001
Date

Toshikijo Kita

for Director General
Science and Technology Policy Bureau
Ministry of Education, Culture,
Sports, Science and Technology
Competent Authority of Japan for
Package Designs of Radioactive Materials

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

2. SPECIFICATION OF CONTENT

(1) Description of Contents

(i) Material of Nuclear Fuel : Uranium Oxide(UO_2,U_3O_8 and UO_3)

(ii) Initial Enrichment : Less than 20%

(iii) Enriched Uranium Specification :

^{232}U	0.002	μ g/g-^{235}U or less
^{234}U	10,000	μ g/g-^{235}U or less
^{236}U	5,000	μ g/g-^{235}U or less
^{99}Tc	0.2	μ g/g-^{235}U or less

(2) Restriction of Contents

(i) Total Weight of Nuclear Fuel : 90 kg or less

(ii) Total Activity : 8.71 GBq or less

(iii) Total Heat Generation Rate : Not Applicable

(iv) Burn Up Rate : Not Applicable

(v) Cooling Time : Not Applicable

(vi) Physical State : Solid(powder or pellet)

(vii) Maximum Contents per Package : See the attached table

3. SPECIFICATION OF PACKAGING

(1) Total Weight of Package : 210 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 Container Drum Can : Steel(SPCC or SPHC)

Flange and Lid : Steel(SS400)

Gasket : Butyl Rubber

Bolt and Nut : Steel(SS400)

(ii) Outer Container

Outer Container Drum Can	:	Steel(SPCC or SPHC)
Fastening Device	:	Steel(SS400)
Gasket	:	Natural Rubber
Heat insulator	:	Pearlite-Alumina Cement
Bolt and Nut	:	Steel(SS400)

(4) Package Illustration : See the attached figure

4. ASSUMED AMBIENT CONDITIONS

(i) Ambient Temperature	:	38 ° C
(ii) Insolation Date	:	Table X II of IAEA Regulation (Safety Series No.6, 1985 Edition)

5. RESTRICTIONS ON TRANSPORT

(i) Restriction Number	:	125 Packages
(ii) Array	:	No Restriction
(iii) Transport Index for Nuclear Criticality Control	:	0.4

6. SPECIAL FEATURES IN THE CRITICALITY ASSESSMENT

The subcriticality calculation is evaluated upon the assumption that the outer 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 package transported by air.

9. INSTRUCTIONS ON USE MAINTENANCE OF PACKAGING

(1) Instruction on Maintenance of Packaging

The packaging shall be kept in good condition and required periodical inspections. Periodical inspections of each packaging shall be conducted more than per year. (In case where a packaging is used for transport more than ten times per year, the periodical inspections shall be conducted at least once every ten operations.) The periodical inspections shall include visual inspection, inspection for gaskets of each packaging and subcriticality inspection. The packages or packagings shall be lifted with a fork lift truck.

(2) Actions Prior to Shipment

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

(i) Visual Inspection
(ii) Lifting Inspection
(iii) Weight Measurement
(iv) Surface Contamination Measurement
(v) Radiation Dose Rate Measurement
(vi) Subcriticality Inspection
(vii) Contents 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 : May 28, 2001
(2) Expiry Date : May 27, 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.

TABLE RESTRICTIONS ON CONTENTS

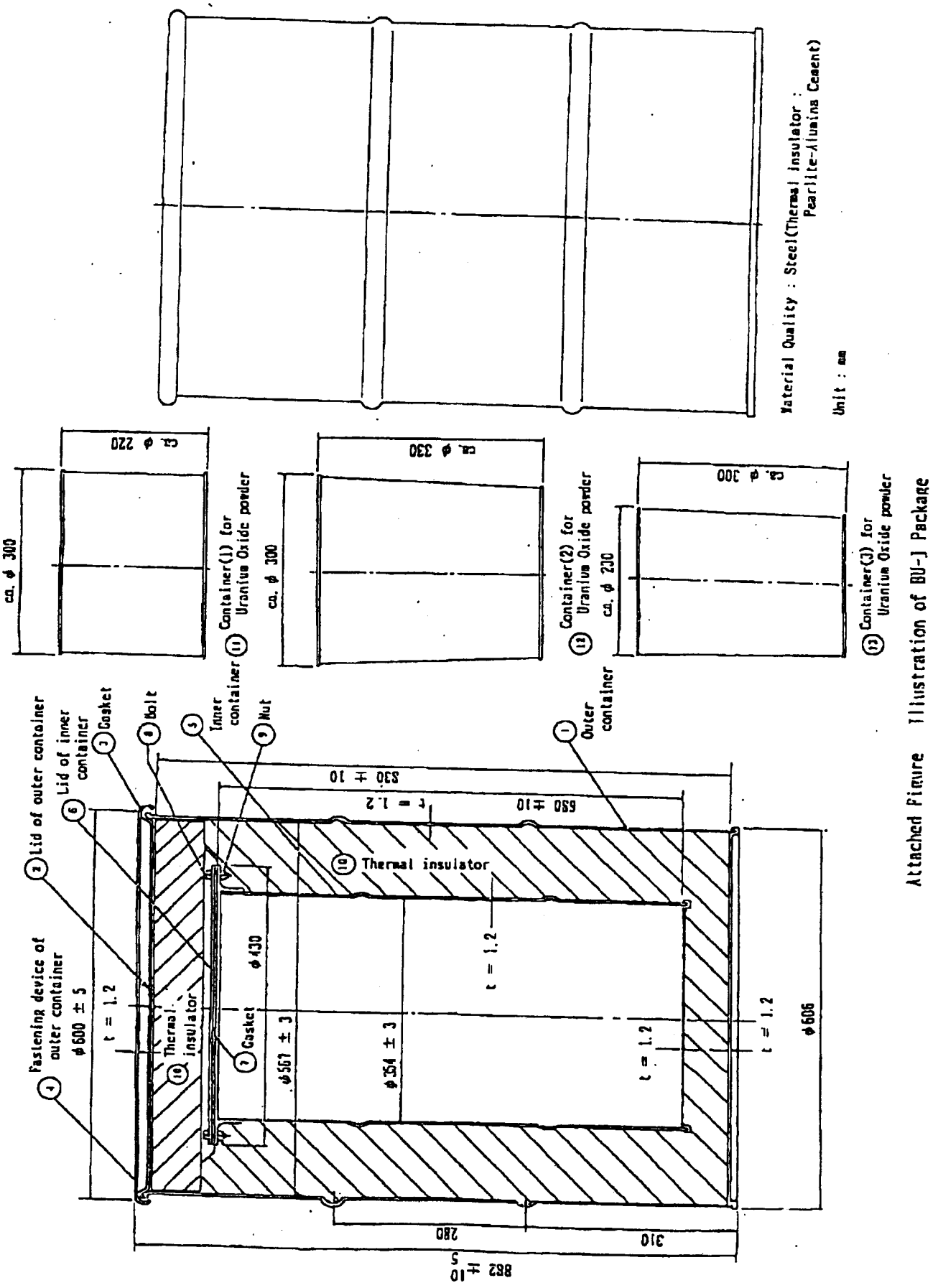
(1) Under the moderation ratio (H/U) control below 0.45 for less than 5% enriched uranium

Enrichment (%)	Max. loading weight (kg)	
	Pellet or mixture of Pellet and Powder	Powder
2.7 or less	90.0	89.0
3.0 or less	76.2	89.0
3.2 or less	68.2	77.8
3.4 or less	62.0	69.2
3.6 or less	57.0	62.2
3.8 or less	52.8	56.6
4.0 or less	49.4	51.4
4.2 or less	45.8	47.4
4.4 or less	42.8	43.8
4.6 or less	40.0	40.4
4.8 or less	37.6	38.2
5.0 or less	36.2	36.2

(2) Under no moderation ratio (H/U) control for less than 20% enriched uranium

Enrichment (%)	Max. loading weight (kg) (Pellet or Powder)
4.0 or less	49.4
less than 10	5.0
less than 13	4.7
less than 16	3.8
less than 20	3.0

In the case of uranium enriched more than 5%, maximum activity of contents must be less than 1 GBq as A_2 value.



Attached Figure Illustration of BU-J Package

核燃料輸送物設計承認書

１３諸文科科第１９３７号
平成１３年５月２８日

株式会社ジェー・シー・オー
代表取締役社長　稲　見　智　之　殿

文部科学大臣　遠　山　敦　子

平成１３年５月１５日付けＪＣＯ－設更－０１００１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．承認を受けた者

住　所：東京都港区新橋五丁目１０番５号
氏　名：株式会社ジェー・シー・オー
代表取締役社長　稲　見　智　之

２．輸送容器の名称　：ＢＵ－Ｊ型

3．輸送容器の外形寸法及び重量等

(1)　外形寸法及び重量

直径：約６１ｃｍ

高さ：約８８ｃｍ

核燃料輸送物の総重量：２１０ｋｇ以下

(2)　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
ボルト及びナット	：鋼製（ＳＳ４００）

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）

(3)　外　　観　　：添付図のとおり

4．核燃料輸送物の種類　：Ａ型核分裂性輸送物

（輸送制限個数：１２５個）

5．収納する核燃料物質等の仕様

イ．種類	：酸化ウラン
ロ．重量	：最大９０．０ｋｇ
ハ．放射能量	：最大８．７１ＧＢｑ
ニ．性状	：固体
ホ．濃縮度	：２０％未満
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　≦０．００２　μｇ／ｇ^{235}U

^{234}U ≦10，000 μg／g^{235}U

^{236}U ≦5，000 μg／g^{235}U

^{99}Tc ≦0．2 μg／g^{235}U

6．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侵入は無いものとする。

7．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

8．設計承認番号　：J／74／AF－85（Rev．1）

9．設計承認書の有効期間：平成13年5月28日から平成16年5月27日まで

10．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おいては、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こと。輸送物の取扱い時は汚染に留意した放射線管理を行うこと。

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こと。

ハ、定期検査は、1年に1回以上（年間の使用回数が10回を超える場合は、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こと。定期検査は、外観検査及び未臨界検査を行うこと。

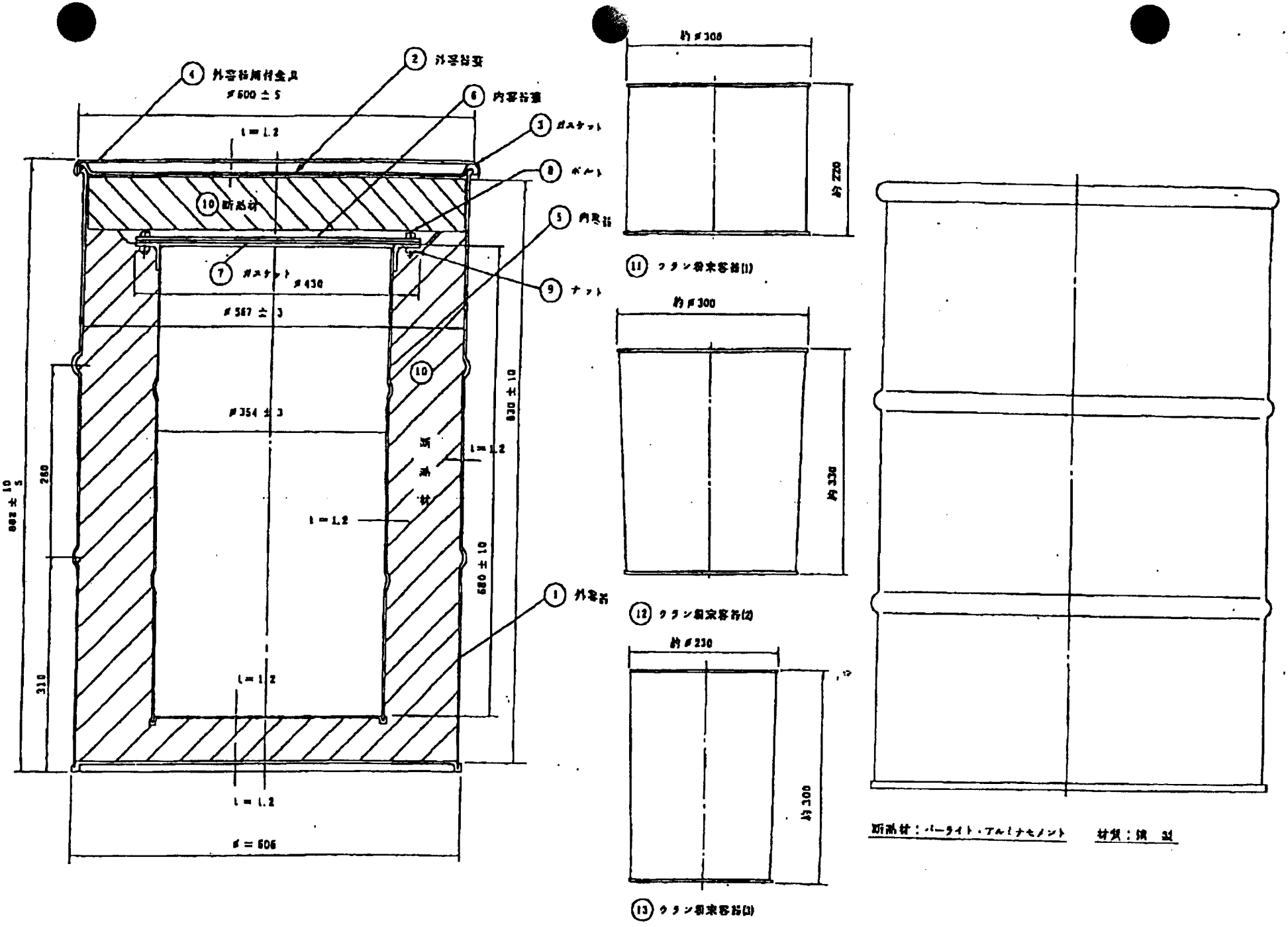
(2) 輸送物の発送に先立ってとるべき措置

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

(3) 輸送物を運搬する場合の積載方法等に関する事項

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こと。

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。



添付図　ＢＵ－Ｊ型輸送容器外観

別表　収納制限条件

（1）濃縮度５％以下で減速比（H／U）が０．４５以下のものの最大装荷量

濃縮度（%）	最大装荷量（kg）	
	ペレット又はペレットと粉末の混合物	粉末
2．7 以下	90．0	89．0
3．0 以下	76．2	89．0
3．2 以下	68．2	77．8
3．4 以下	62．0	69．2
3．6 以下	57．0	62．2
3．8 以下	52．8	56．6
4．0 以下	49．4	51．4
4．2 以下	45．8	47．4
4．4 以下	42．8	43．8
4．6 以下	40．0	40．4
4．8 以下	37．6	38．2
5．0 以下	36．2	36．2

（2）濃縮度が２０％未満で減速比（H／U）が無制限のものの最大装荷量

濃縮度	最大装荷量（kg）
４％以下	49．4
４％を超え１０％未満	5．0
１０％以上１３％未満	4．7
１３％以上１６％未満	3．8
１６％以上２０％未満	3．0

但し、濃縮度が５％を超える濃縮ウランについては、A_2 値である１ＴＢｑを超えないように装荷量を制限する。