



October 19, 2007  
E-25648

Attn: Document Control Desk  
Director, Spent Fuel Storage and Transportation  
U. S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852

Subject: Application for Revision to Certificate of Compliance No. 9233 for the Model No. TN-RAM Package, Docket No. 71-9233

Gentlemen:

In accordance with 10 CFR 71.31(b), Transnuclear, Inc. (TN) herewith submits its application to revise Certificate of Compliance (CoC) 9233 for the TN-RAM package. This application proposes to update the design in order to be assigned a package identification number of B(U)-96, and to add an optional two-piece lid. There is no change to the package geometry or impact limiters.

This submittal includes proprietary information which may not be used for any purpose other than NRC staff review of the application. In accordance with 10 CFR 2.390, I am providing an affidavit (Enclosure 1) specifically requesting that NRC withhold this proprietary information from public disclosure. This information involves drawings. Non-proprietary versions of the drawings are provided in Enclosure 7.

Enclosure 2 provides further description, justification, and evaluation of the requested changes. Enclosure 3 provides a listing of CoC and Safety Analysis Report (SAR) changed pages and drawings and describes the changes made. Enclosures 4 and 5 provide disposition of the "-85" and "-96" designator issues affecting 10 CFR 71 licensees, respectively. Enclosure 6 provides hand marked-up CoC pages and SAR pages and drawings that have changed areas indicated by revision bars.

TN is anticipating a need by potential users for the TN-RAM package in the future due to the planned phase out of some older existing transportation packages in 2008. TN has also proposed a use of this revised TN-RAM package to a potential customer. Accordingly, approval by the end of October, 2008 is requested.

Should the NRC staff require additional information to support review of this application, please do not hesitate to contact Mr. Don Shaw at 410-910-6878 or me at 410-910-6930.

Sincerely,

Robert Grubb  
Senior Vice President - Engineering

MISSO1

cc: Nancy L. Osgood (NRC) (five copies)

Enclosures:

1. Affidavit Pursuant to 10 CFR 2.390
2. Description, Justification, and Evaluation of the Changes
3. List of Changes to the TN-RAM Certificate of Compliance, Revision 8 and to the TN-RAM Safety Analysis Report, Revision 8 (E-10261)
4. Disposition of the "-85 Designator Issues Affecting 10 CFR 71 Licensees TN-RAM Cask
5. Disposition of the "-96" Designator Issues Affecting 10 CFR 71 Licensees TN-RAM Cask
6. Proposed Revision 9 Changes to the TN-RAM Certificate of Compliance, Revision 8 and to the TN-RAM Safety Analysis Report, Revision 8 (E-10261)
7. Non-Proprietary Version of SAR Drawings

**AFFIDAVIT PURSUANT**  
**TO 10 CFR 2.390**

Transnuclear, Inc.                    )  
State of Maryland                 )    SS.  
County of Howard                    )

I, Robert Grubb, depose and say that I am Senior Vice President of Transnuclear, Inc., duly authorized to make this affidavit, and have reviewed or caused to have reviewed the information which is identified as proprietary and referenced in the paragraph immediately below. I am submitting this affidavit in conformance with the provisions of 10 CFR 2.390 of the Commission's regulations for withholding this information.

The information for which proprietary treatment is sought is contained in Enclosure 6 and as listed below:

1. SAR Drawing 990-701, Revision 7
2. SAR Drawing 990-703, Revision 8
3. SAR Drawing 990-704, Revision 4
4. SAR Drawing 990-710, Revision 0

These documents have been appropriately designated as proprietary.

I have personal knowledge of the criteria and procedures utilized by Transnuclear, Inc. in designating information as a trade secret, privileged or as confidential commercial or financial information.

Pursuant to the provisions of paragraph (b) (4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure, included in the above referenced document, should be withheld.

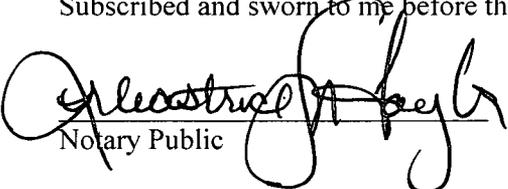
- 1) The information sought to be withheld from public disclosure are drawings associated with the TN-RAM package, all of which are owned and have been held in confidence by Transnuclear, Inc.
- 2) The information is of a type customarily held in confidence by Transnuclear, Inc. and not customarily disclosed to the public. Transnuclear, Inc. has a rational basis for determining the types of information customarily held in confidence by it.
- 3) The information is being transmitted to the Commission in confidence under the provisions of 10 CFR 2.390 with the understanding that it is to be received in confidence by the Commission.
- 4) The information, to the best of my knowledge and belief, is not available in public sources, and any disclosure to third parties has been made pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.

- 5) Public disclosure of the information is likely to cause substantial harm to the competitive position of Transnuclear, Inc. because:
  - a) A similar product is manufactured and sold by competitors of Transnuclear, Inc.
  - b) Development of this information by Transnuclear, Inc. required expenditure of considerable resources. To the best of my knowledge and belief, a competitor would have to undergo similar expense in generating equivalent information.
  - c) In order to acquire such information, a competitor would also require considerable time and inconvenience related to the development of a design and analysis of a dry irradiated and contaminated waste package.
  - d) The information required significant effort and expense to obtain the licensing approvals necessary for application of the information. Avoidance of this expense would decrease a competitor's cost in applying the information and marketing the product to which the information is applicable.
  - e) The information consists of descriptions of the design and analysis of dry irradiated and contaminated waste and transportation systems, the application of which provide a competitive economic advantage. The availability of such information to competitors would enable them to modify their product to better compete with Transnuclear, Inc., take marketing or other actions to improve their product's position or impair the position of Transnuclear, Inc.'s product, and avoid developing similar data and analyses in support of their processes, methods or apparatus.
  - f) In pricing Transnuclear, Inc.'s products and services, significant research, development, engineering, analytical, licensing, quality assurance and other costs and expenses must be included. The ability of Transnuclear, Inc.'s competitors to utilize such information without similar expenditure of resources may enable them to sell at prices reflecting significantly lower costs.

Further the deponent sayeth not.

  
 Robert Grubb  
 Senior Vice President, Transnuclear, Inc.

Subscribed and sworn to me before this 19<sup>th</sup> day of October, 2007.

  
 Notary Public

My Commission Expires 10 / 14 / 2008



## Description, Justification, and Evaluation of the Changes

### 1.0 INTRODUCTION

The scope of this change to CoC 9233 for the TN-RAM package is to update the design in order to be assigned a package identification number of B(U)-96, and to add an optional two-piece lid.

### 2.0 BRIEF DESCRIPTION OF THE CHANGE

The two changes involved with this revision are briefly described below. Enclosure 3 provides a listing of pages and drawings changed and includes additional detail regarding the nature of the changes.

Update the design in order to be assigned a package identification number of B(U)-96:

- Immersion pressure increase from 21.0 to 21.7 psig
- Addition of insulation to post-fire ambient condition
- Change Co<sup>60</sup> A<sub>2</sub> from 7 to 11
- Add required information to cask nameplate

Add an option for a two-piece lid:

- The current lid has integral lead shielding.
- The optional design separates the lid from the lead shield disk.
- The new lid design required structural analysis of the lid and lid bolts.

Certain editorial clarifications and operations changes based on operating experience are also included.

### 3.0 JUSTIFICATION OF CHANGES

TN is anticipating a need by potential users for the TN-RAM package in the future due to the planned phase out of some older existing transportation packages in 2008. TN has also proposed a use of this revised TN-RAM package to a potential customer.

### 4.0 EVALUATION OF CHANGES

TN has evaluated the TN RAM transportation packaging for structural, thermal, shielding, containment, and criticality adequacy and has concluded that the changes described herein have no significant adverse effect on safety. This evaluation is documented in the changes to the Safety Analysis Report, included in this application.

**List of Changes to the TN-RAM Certificate of Compliance, Revision 8  
and to the TN-RAM Safety Analysis Report, Revision 8 (E-10261)**

Chapter/Page/ Drawing/etc.	Source/Reason for Change	Description of Change(s)
CoC Page 1	Anticipated change due to this revision	Marked up the revision number and the package identification number
	TN address has changed	TN address updated to Columbia, MD address.
	Clarification	Added "approximately" to dimension of lead shielding.
	Anticipated change due to this revision	Added description of optional lid.
CoC Page 2	Drawings revision levels have changed	The revision levels for revised drawings are marked for updating and a new drawing is added due to the optional lid design.
	B(U)-96 requirements	Changed the A <sub>2</sub> value of the contents.
CoC Page 3	Anticipated changes due to this submittal	Supplemented date marked up with the date of this submittal
SAR cover page	TN address has changed	Transnuclear, Inc. address is updated
TN-RAM SAR Revision Log Page 2	Indication of changes and new pages, and changed and new drawings	This proposed revision provides 72 revised pages, 34 new pages, three revised drawings and one new drawing.
SAR 1-1	-96 requirements	Update submittal information
SAR 1-2	Optional lid	Description of the optional lid
SAR 1-3A	Optional lid	Clarification of components list
SAR 1-4	Optional lid	Addition of optional lid materials of construction
SAR 1-6	Optional lid	Description of the optional lid
SAR 1-11	Optional lid, editorial	Description of the optional lid, editorial change
SAR 1-13	-96 requirements	Change of maximum A <sub>2</sub> value
SAR 1-14	Drawing revisions New drawing Outdated note	Drawing revision levels are updated. New drawing 990-710 is added. The note at the bottom of the page is outdated and has been removed.
Drawing 990-701 Rev. 7	The optional lid is being treated as a new assembly and needs to be included in the overall package.	Item 5, Optional Lid was added to the Parts List with reference to a new drawing, 990-710. A note was also added to clarify the option of using either the old lid assembly or the new optional lid.
Drawing 990-703 Rev. 8	The regulatory plate information required by 10 CFR 71.85 (c) must be current.	Detail AA, the regulatory plate detail was revised to add the NRC identification number including the new -96 designation, to allow unit numbers beyond "one" and to show the current Transnuclear address.

**List of Changes to the TN-RAM Certificate of Compliance, Revision 8  
and to the TN-RAM Safety Analysis Report, Revision 8 (E-10261)**

Chapter/Page/ Drawing/etc.	Source/Reason for Change	Description of Change(s)
Drawing 990-704 Rev. 4	The previous design allowed only the weld overlay option. Adding the full-sized forging trunnion provides an option that may be easier and more cost effective to fabricate.	Details R and S (including an added flag note) were modified to allow the cask trunnions to be fabricated from either a full sized forging or from a smaller diameter forging with weld overlay added to attain the required diameter.
Drawing 990-710 Rev. 0	New drawing	This new drawing shows the optional lid details.
SAR 2-iii	Updated table of contents	Added new Appendix 2.10.8.
SAR 2-xxviii	Updated table of contents	Added figures and tables from new Appendix 2.10.8.
SAR 2-1	-96 requirements	Change of maximum A <sub>2</sub> value and added -96.
SAR 2-2	Optional lid	Description of the optional lid and added -96.
SAR 2-3	Optional lid, editorial	Editorial change, Optional lid analyses included
SAR 2-8	Optional lid	Optional lid bolt analysis defined.
SAR 2-9	Optional lid	Optional lid containment boundary defined
SAR 2-12	Optional lid	Weight of optional lid added
SAR 2-14	Optional lid	Optional lid material properties added
SAR 2-16	Optional lid	Optional lid material properties added
SAR 2-28	Optional lid	Optional lid lifting configuration described
SAR 2-94	-96 requirements	Discussion of required immersion pressure
SAR 2.10.1-1	Optional lid	Description of optional lid stress analysis logic
SAR 2.10.1-2	Optional lid	Description of optional lid bolt analysis
SAR 2.10.1-18	-96 requirements	Description of thermal stress calculation for HAC thermal analysis consistent with -96 requirements
SAR 2.10.8-1 to 2.10.8-22	Optional lid, -96 requirements	Contains analysis of optional lid and optional lid bolt analysis.
SAR 3-ii	Changes made due to the revised accident condition pre-fire, fire, and post-fire analysis, to include insolation.	Updated List of Tables
SAR 3-iii		Updated List of Figures
SAR 3-2		Temperature change due to -96 and seal temperature limit change
SAR 3-3A		Added discussion for HAC and optional lid
SAR 3-4		Accident condition temperatures changed
SAR 3-6		Table 3-2 updated to include Impact Limiter material
SAR 3-17		Temperature change due to -96 and seal temperature limit change
SAR 3-18		Added discussion for revised HAC analysis
SAR 3-19		Added discussion for revised HAC analysis
SAR 3-19A		Added discussion for revised HAC analysis
SAR 3-19B		Added discussion for revised HAC analysis
SAR 3-20		Table 3-5 replaced by three tables
SAR 3-20A		New Table 3-5.a

## List of Changes to the TN-RAM Certificate of Compliance, Revision 8 and to the TN-RAM Safety Analysis Report, Revision 8 (E-10261)

Chapter/Page/ Drawing/etc.	Source/Reason for Change	Description of Change(s)
SAR 3-20B		New Table 3-5.b
SAR 3-21		Added discussion for revised HAC analysis
SAR 3-22		Table 3-6 replaced for revised HAC analysis
SAR 3-22A		New Figures 3-4 and 3-5 added for revised HAC analysis
SAR 3-23		Added discussion for revised HAC analysis
SAR 3-24		Table 3-7 values changed
SAR 3-25		Old Figure 3-4 replaced by new Figure 3-6
SAR 3-26		Added discussion for revised HAC analysis
SAR 3-27		Old Figure 3-5 replaced by new Figure 3-7
SAR 3-28		Old Figure 3-6 replaced by new Figure 3-8
SAR 3-29		Added discussion on temperatures used for thermal stress analysis
SAR 3-30		Reference list changed
SAR 4-ii		Optional lid
SAR 4-1	Optional lid	Describes optional lid
SAR 4-3	Optional lid	Revised operating limit for seals from 450°F to 437°F
SAR 4-5C	-96 requirements	Revises leak rate to reflect new A <sub>2</sub> value
SAR 4-7	-96 Correction	Revises text to reflect change in 10CFR71.51
SAR 4-9	Optional lid	Figure title revised
SAR 4-11	Optional lid	Figure added to show optional lid containment boundary components
SAR 4-12	Optional lid	Continuation of new figure
SAR 5-1	-96 requirements Optional lid	Revised 10CFR71.51 reference and A <sub>2</sub> value. Describes optional lid
SAR 5-2	Optional lid	Describes optional lid
SAR 5-4	-96 requirements	Changes A <sub>2</sub> value
SAR 5-5	Optional lid	Justifies original lid calc applies to optional lid
SAR 7-i	Table of Contents updated	Reflects section added for optional lid based operations and renaming two sections
SAR 7-1	Optional lid, editorial	Text edited to clarify location of cask operations. Optional lid described
SAR 7-2	Editorial	Text edited to clarify cask operations.
SAR 7-3	Editorial	Text edited to clarify cask operations.
SAR 7-4	Editorial	Text edited to clarify cask operations.
SAR 7-5	Editorial	Text edited to clarify cask operations.
SAR 7-6	Editorial	Text edited to clarify cask operations.
SAR 7-7	Editorial	Text edited to clarify cask operations.
SAR 7-8	Optional lid	Text edited to clarify cask operations.
SAR 7-9	Optional lid	New Section 7.1.3 is added for operations for dry loading with optional lid.
SAR 7-10	Optional lid	New Section 7.1.3 continues
SAR 7-11	Optional lid	New Section 7.1.3 continues
SAR 7-12	Optional lid	New page; new Section 7.1.3 continues

**List of Changes to the TN-RAM Certificate of Compliance, Revision 8  
and to the TN-RAM Safety Analysis Report, Revision 8 (E-10261)**

Chapter/Page/ Drawing/etc.	Source/Reason for Change	Description of Change(s)
SAR 7-13	Editorial	New page; Section 7.2 now begins on this page. Sections 7.2.1 and 7.2.2 are renamed and have additional detail. Text edited to clarify cask operations.
SAR 7-14	Editorial, optional lid	New page; Section 7.2 continued. Text edited to clarify cask operations.
SAR 7-15	Editorial	New page; Previous Section 7.2 continued. Text edited to clarify cask operations.
SAR 7-16	Editorial	New page; Previous Sections 7.2 and 7.3 shown. Text edited to clarify cask operations.
SAR 8-i	Updated Table of Contents	TOC reflects added shield disk load test
SAR 8-2	Editorial, -96 requirements	Editorial correction. Text edited to clarify testing requirements
SAR 8-3	Optional lid	Added testing for optional lid
SAR 8-4	New fabrication will be to the current version of ANSI N14.5	Deleted the "-1987" from "ANSI N14.5"
SAR 8-6	Optional lid	Added testing for shield disk portion of optional lid

## Disposition of the "-85 Designator Issues Affecting 10 CFR 71 Licensees TN-RAM Cask

Issue	Impact on "-85 Designator Application for TN-RAM
Additional Accident Test Requirements	Deep immersion applies only to irradiated fuel casks. Dynamic crush applies to small packages
Expansion of Radionuclide List and Changes in Radionuclide Limits	A <sub>2</sub> for Co60 changed but was changed again in -95
Simplification of Fissile Material Classes	Applies only to fissile payloads
Inclusion of Criteria for Air Shipment of Plutonium	Does not apply

## Disposition of the "-96" Designator Issues Affecting 10 CFR 71 Licensees TN-RAM Cask

Issue No.	Issue	Impact on "-96" Designator Application for TN-RAM
Issue 1	Changing Part 71 to the International System of Units (SI) Only	No effect. Units used in SAR are unchanged
Issue 2	Radionuclide Exemption Values	Does not apply to TN-RAM
Issue 3	Revision of A <sub>1</sub> and A <sub>2</sub>	SAR revised to reflect new A <sub>2</sub> values
Issue 4	Uranium Hexafluoride (UF <sub>6</sub> ) Package Requirements	Does not apply to TN-RAM
Issue 5	Introduction of the Criticality Safety Index Requirements	Does not apply to TN-RAM
Issue 6	Type C Packages and Low Dispersible Material	Not adopted in 10 CFR 71
Issue 7	Deep Immersion Test	Does not apply to TN-RAM
Issue 8	Grandfathering Previously Approved Packages	Not applicable to TN-RAM pending approval of this amendment
Issue 9	Changes to Various Definitions	Does not apply to TN-RAM
Issue 10	Crush Test for Fissile Material Package Design	Does not apply to TN-RAM
Issue 11	Fissile Material Package Design for Transport by Aircraft B. NRC-Initiated Issues	Does not apply to TN-RAM
Issue 12	Special Package Authorizations	Does not apply to TN-RAM
Issue 13	Expansion of Part 71 Quality Assurance (QA) Requirements to Certificate of Compliance (CoC) Holders	Current QA program meets Subpart H
Issue 14	Adoption of the American Society of Mechanical Engineers (ASME) Code	Not adopted in 10 CFR 71
Issue 15	Change Authority for Dual- Purpose Package Certificate Holders	Not adopted in 10 CFR 71
Issue 16	Fissile Material Exemptions and General License Provisions	Does not apply to TN-RAM
Issue 17	Decision on Petition for Rulemaking on Double Containment of Plutonium (PRM-71-12)	Does not apply to TN-RAM
Issue 18	Contamination Limits as Applied to Spent Fuel and High-Level Waste (HLW) Packages	Not adopted in 10 CFR 71
Issue 19	Modifications of Event Reporting Requirements	No effect on TN-RAM

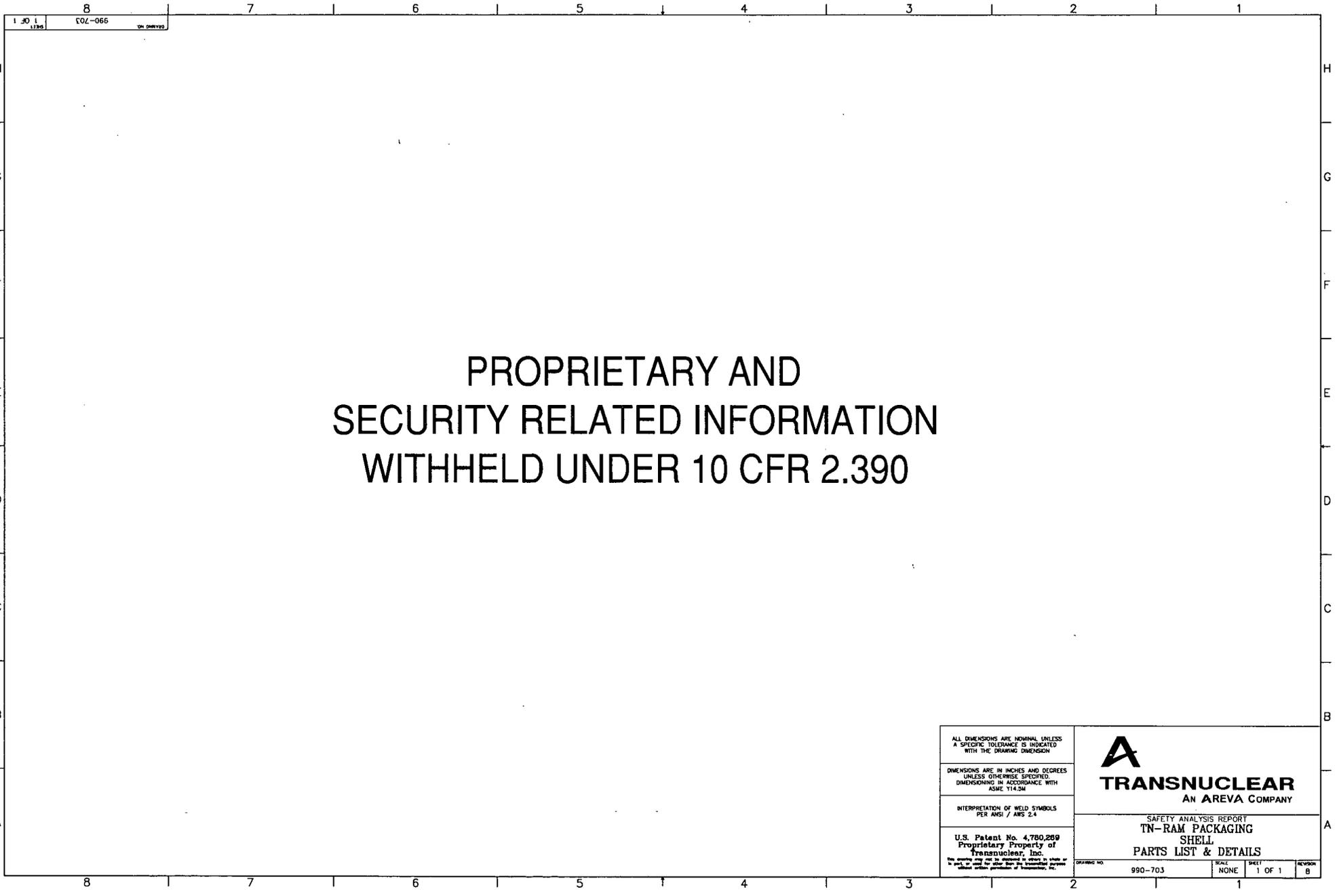
**Non-Proprietary Versions of SAR Drawings**

**990-701, Revision 7**  
**990-703, Revision 8**  
**990-704, Revision 4**  
**990-710, Revision 0**

PROPRIETARY AND  
SECURITY RELATED INFORMATION  
WITHHELD UNDER 10 CFR 2.390

ALL DIMENSIONS ARE NOMINAL UNLESS A SPECIFIC TOLERANCE IS INDICATED WITH THE DRAWING DIMENSION	 <b>TRANSNUCLEAR</b> AN AREVA COMPANY		
DIMENSIONS ARE IN INCHES AND DEGREES UNLESS OTHERWISE SPECIFIED; DIMENSIONING IN ACCORDANCE WITH ASME Y14.5M			
INTERPRETATION OF WELD SYMBOLS PER ANSI / AWS 2.4			
U.S. Patent No. 4,780,289 Proprietary Property of Transnuclear, Inc. <small>This drawing may not be disclosed, in whole or in part, for use or other than the immediate purpose of official nuclear operations of Transnuclear, Inc.</small>	SAFETY ANALYSIS REPORT TN-RAM PACKAGING ASSEMBLY		
DRAWING NO. 990-701	SCALE NONE	SHEET 1 OF 1	REVISION 7

PROPRIETARY AND  
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 WITHHELD UNDER 10 CFR 2.390



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<p>ALL DIMENSIONS ARE NOMINAL UNLESS A SPECIFIC TOLERANCE IS INDICATED WITH THE DRAWING DIMENSION</p> <p>DIMENSIONS ARE IN INCHES AND DEGREES UNLESS OTHERWISE SPECIFIED. DIMENSIONING IN ACCORDANCE WITH ASME Y14.5M</p> <p>INTERPRETATION OF WELD SYMBOLS PER AWS / AWS 2.4</p> <p>U.S. Patent No. 4,780,289          Proprietary Property of  <b>Transnuclear, Inc.</b></p> <p><small>This drawing may not be disclosed in whole or in part or used for other than the intended purpose without written permission of Transnuclear, Inc.</small></p>	 <p><b>TRANSNUCLEAR</b>          AN AREVA COMPANY</p> <p>SAFETY ANALYSIS REPORT          TN-RAM PACKAGING          SHELL          PARTS LIST &amp; DETAILS</p>
<p>DRAWING NO. 990-703</p>	<p>SCALE NONE</p>
<p>SHEET 1 OF 1</p>	<p>REVISION B</p>

PROPRIETARY AND  
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WITHHELD UNDER 10 CFR 2.390

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DIMENSIONING IN ACCORDANCE WITH  
ASME Y14.5M

INTERPRETATION OF WELD SYMBOLS  
PER ANSI / AWS 2.4

U.S. Patent No. 4,780,289  
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without written permission of Transnuclear, Inc.



SAFETY ANALYSIS REPORT

TN-RAM PACKAGING  
SHELL DETAILS

DRAWING NO.	990-704	SCALE	NONE	SHEET	1 OF 1	REVISION	4
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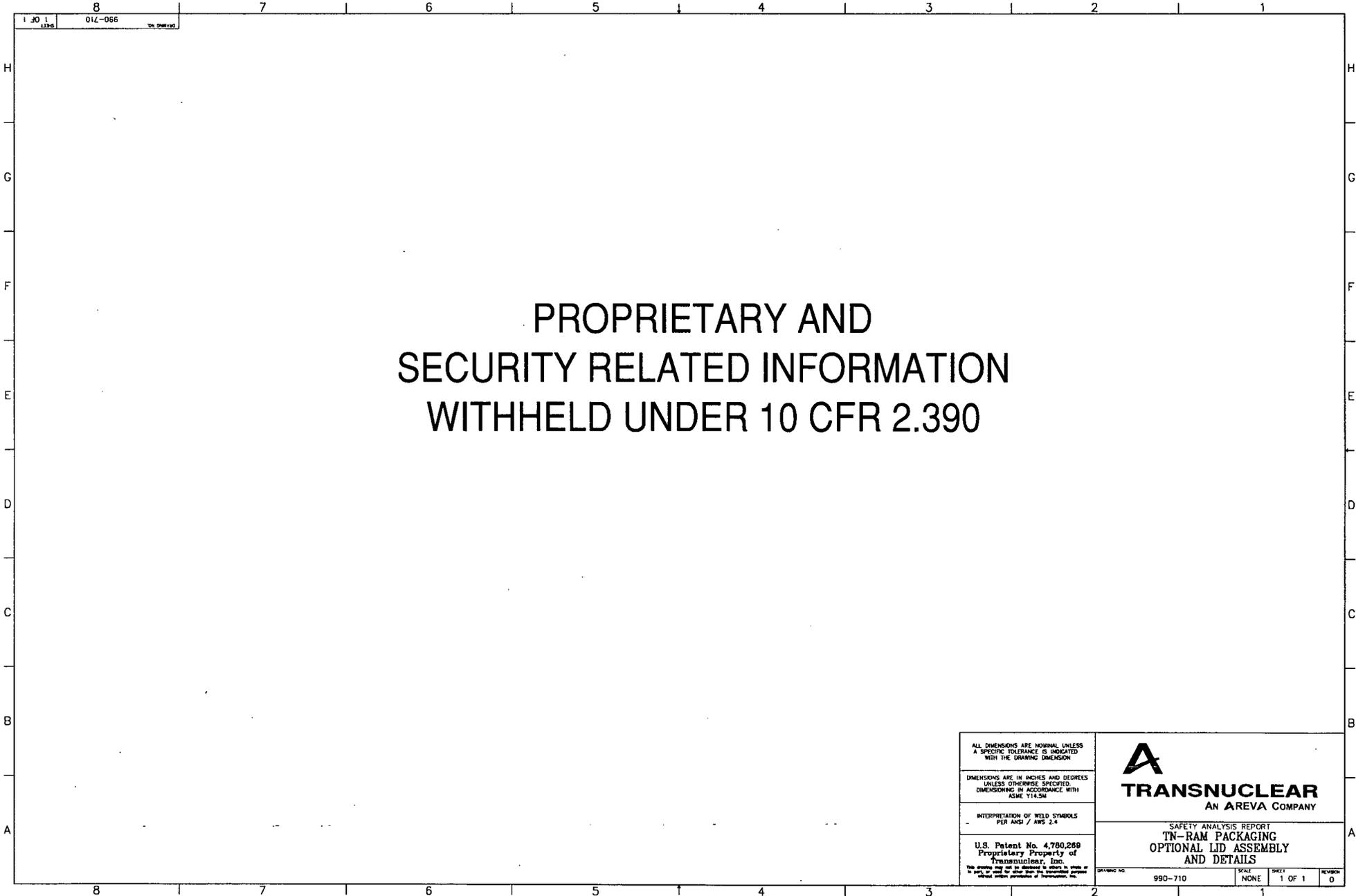
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 WITHHELD UNDER 10 CFR 2.390



<p>ALL DIMENSIONS ARE NOMINAL UNLESS A SPECIFIC TOLERANCE IS INDICATED WITH THE DRAWING DIMENSION</p> <p>DIMENSIONS ARE IN INCHES AND DEGREES UNLESS OTHERWISE SPECIFIED. DIMENSIONING IN ACCORDANCE WITH ASME Y14.5M</p> <p>INTERPRETATION OF WELD SYMBOLS PER ANSI / AWS 2.4</p> <p>U.S. Patent No. 4,780,269          Proprietary Property of          TRANSNUCLEAR, INC.  <small>This drawing may not be disclosed to others in whole or in part, or used for other than the intended purpose without written permission of Transnuclear, Inc.</small></p>	 <p><b>TRANSNUCLEAR</b>          AN AREVA COMPANY</p>		
<p>SAFETY ANALYSIS REPORT          TN-RAM PACKAGING          OPTIONAL LID ASSEMBLY          AND DETAILS</p>			
<p>DRAWING NO. 990-710</p>	<p>SCALE NONE</p>	<p>SHEET 1 OF 1</p>	<p>REVISION 0</p>