

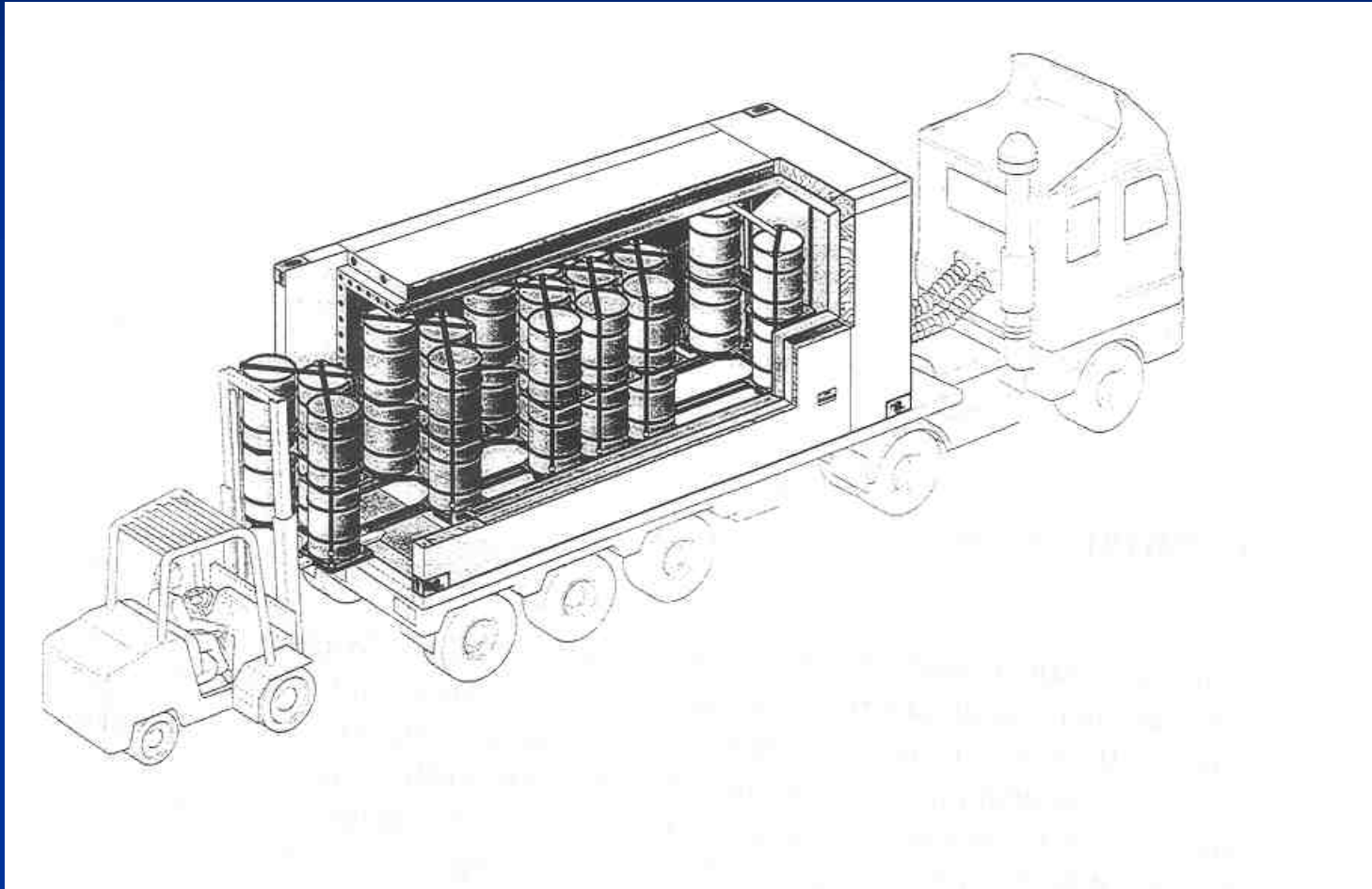
# Status of the TRUPACT-III Application



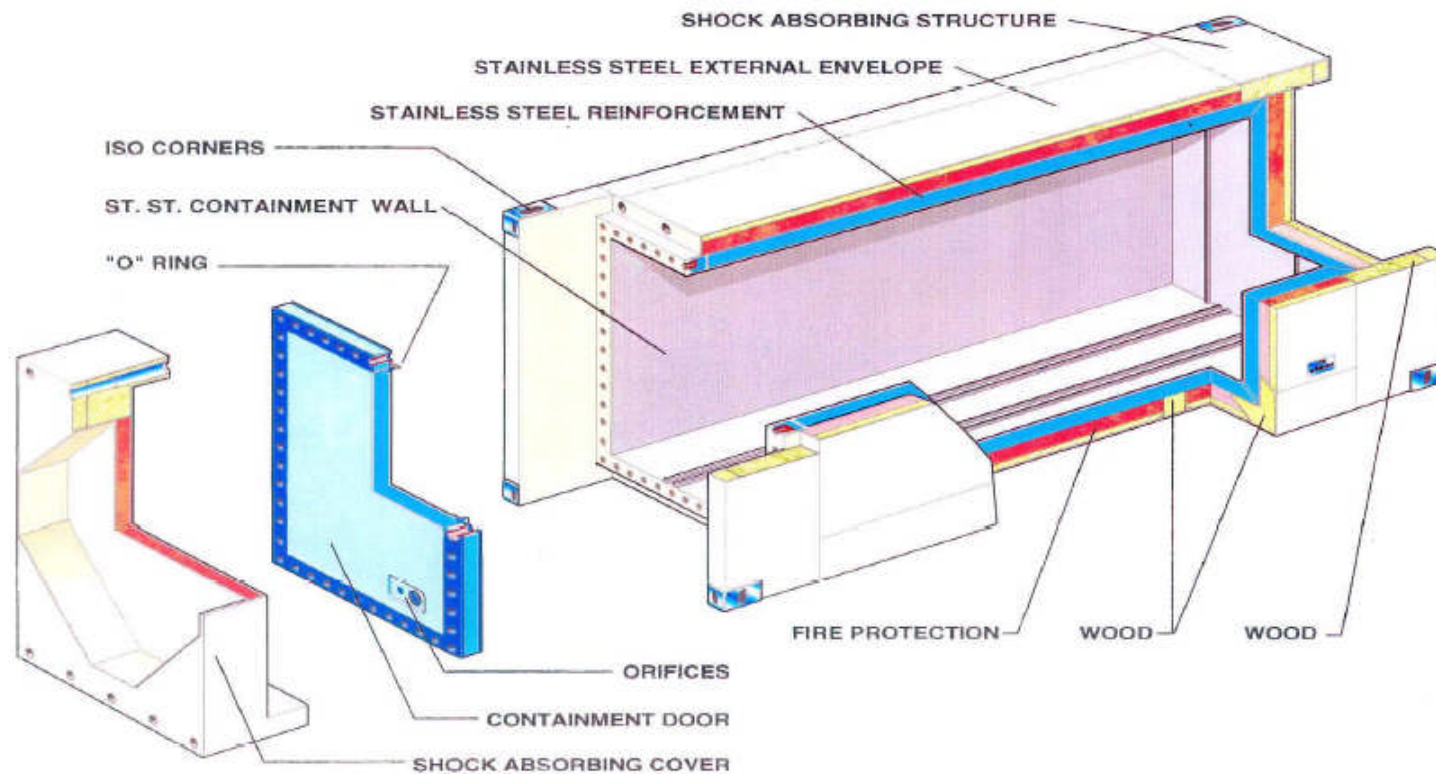
Western Governor's Association  
WIPP Transportation Advisory Group  
May 5, 2005

Earl Easton  
Spent Fuel Project Office  
U.S. Nuclear Regulatory Commission

# TRUPACT-III



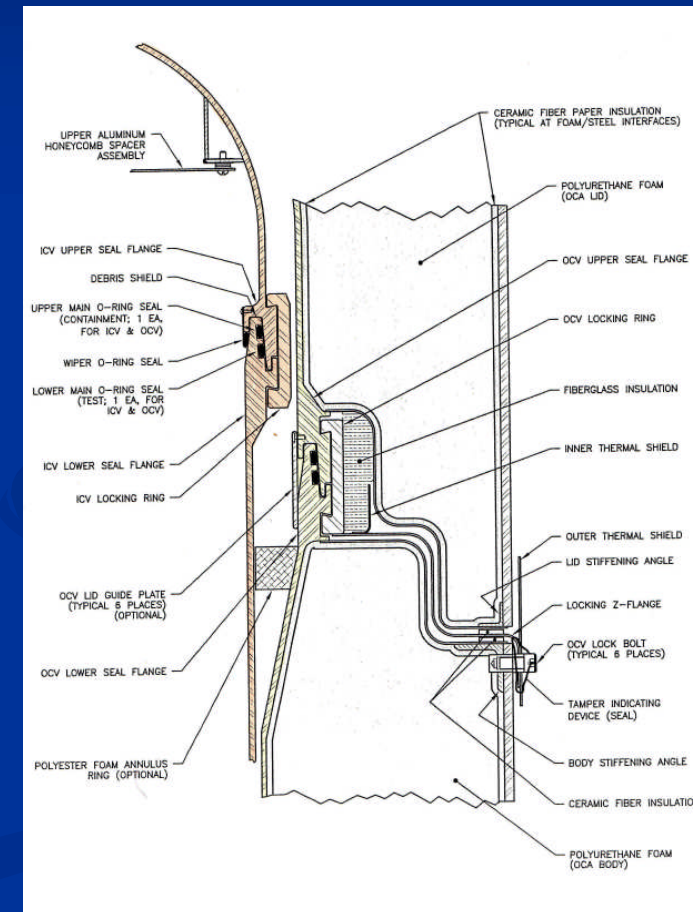
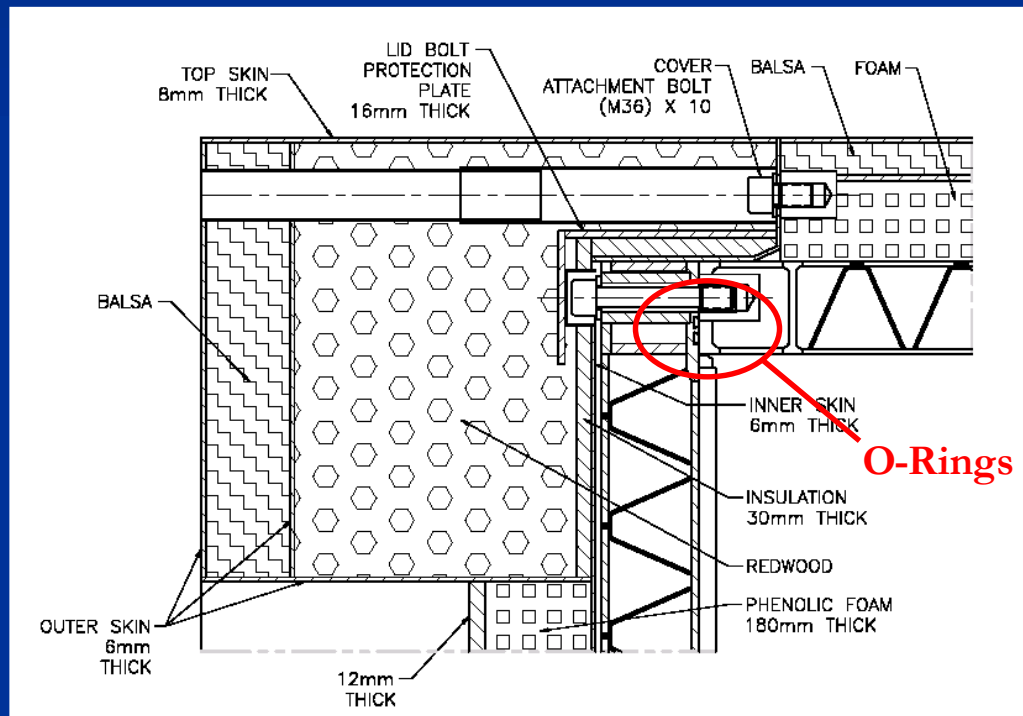
# TRUPACT-III Transport Package



# Simple Comparison between TRUPACT-II and TRUPACT-III

	TRUPACT-II	TRUPACT-III
Package Cross Section	Circular	Rectangular
Seal Type	Bore	Face
Weight, empty	12,700 lbs.	53,500 lbs.
Weight, loaded	19,250 lbs	66,000 lbs.
Payload	6,550 lbs.	12,500 lbs.

# TRUPACT-II and TRUPACT-III (Seal Region)



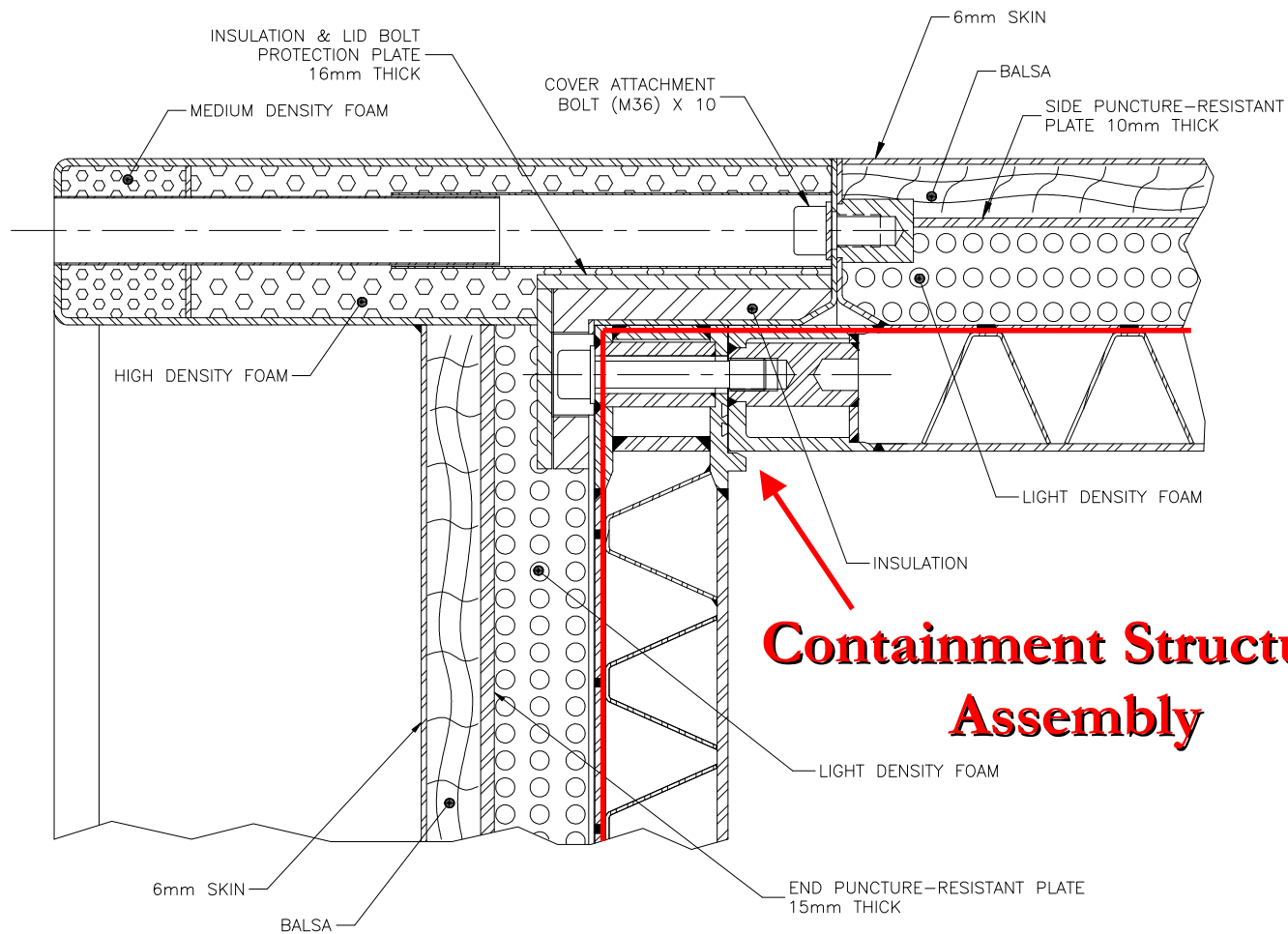
# Status of TRUPACT-III Application

- Application submitted March 12, 2004.
- Package evaluation based on computer analysis and half-scale model testing.
- Initial NRC review identified several structural and thermal issues.
- Structural and thermal issues discussed at public meeting in July 2004 .

# Status of TRUPACT-III Application

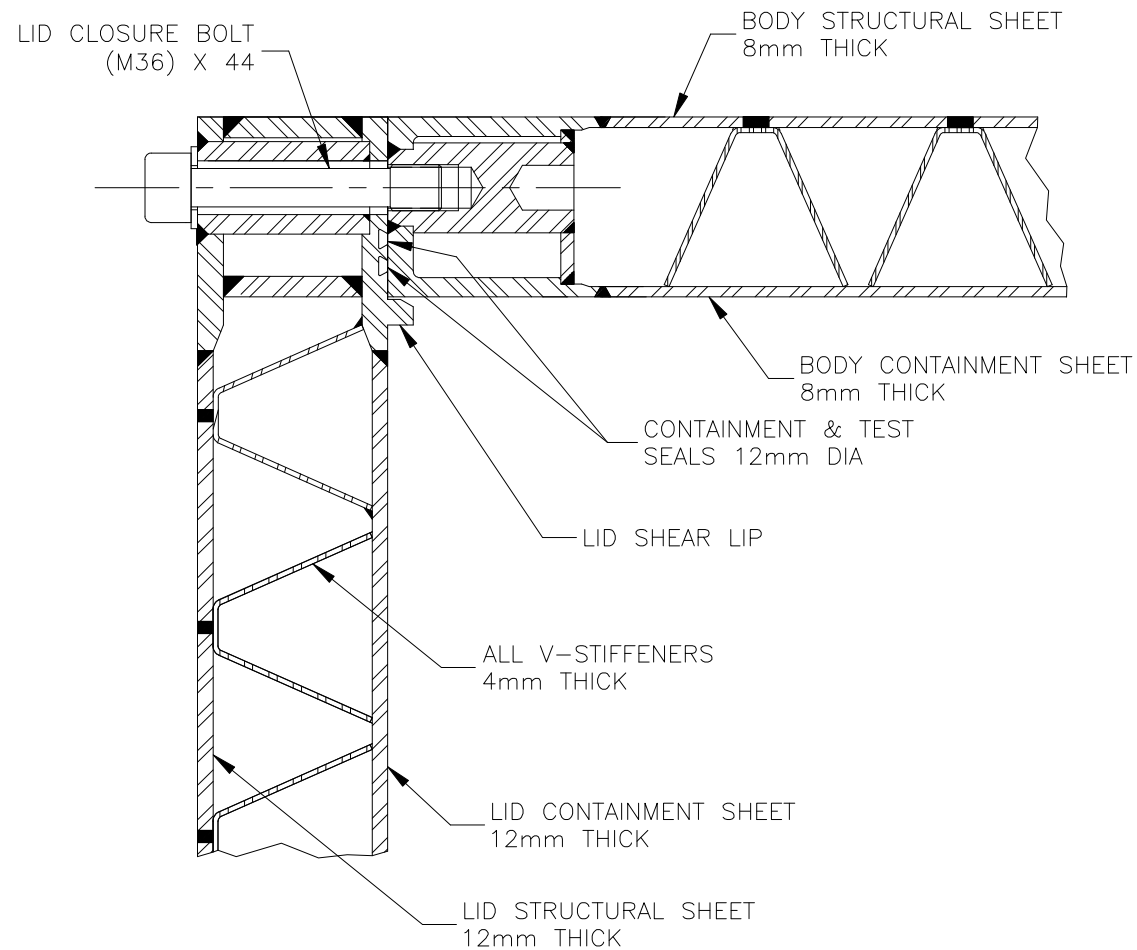
- Applicant requests withdrawal of application in August 2004.
- NRC accepts withdrawal of application documenting additional information needed for resubmitting - September 2004.
- Public meeting held on the redesign of TRUPACT-III in April 2005.

# Cut Away View of Redesigned TRUPACT-III



**Containment Structural  
Assembly**

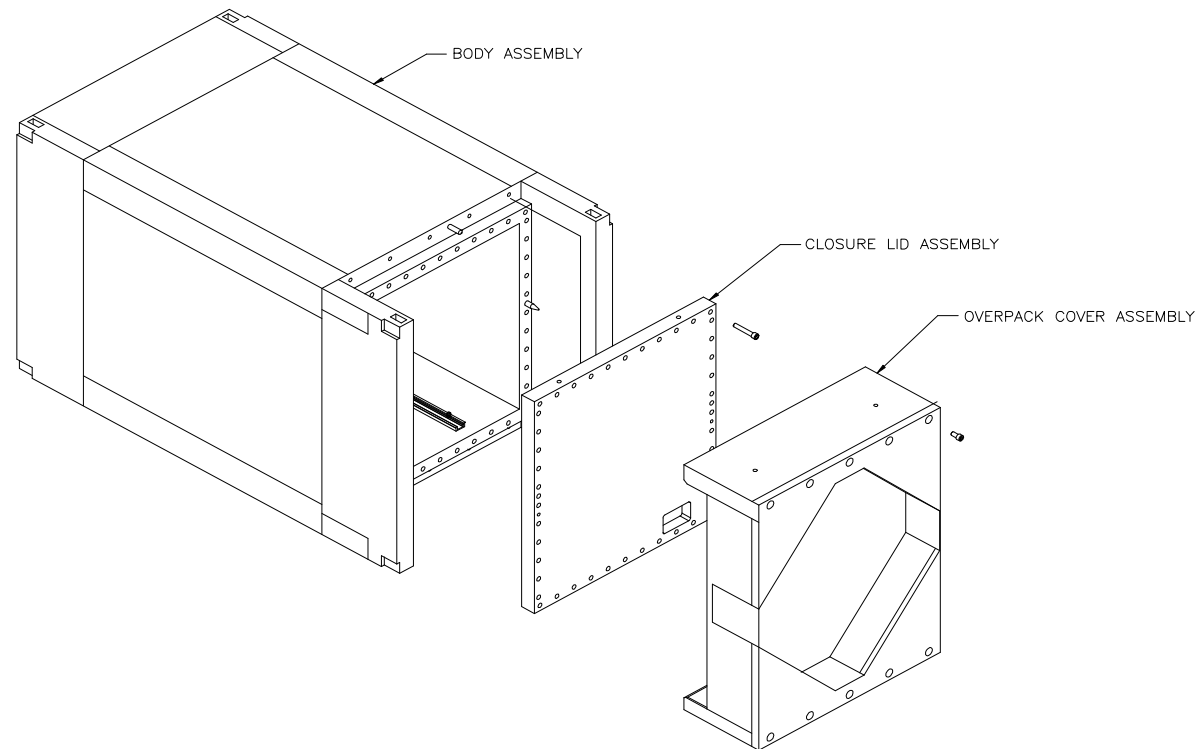
# Containment Structural Assembly



# Structural and Thermal Concerns with Original Application

1. Non-linear analysis showed yielding in the seal region.
2. Code margins were too small given variability of impact limit strength.
3. Puncture tests were not performed on revised overpack.
4. Temperature limits were exceeded for materials used in the containment structural assembly.

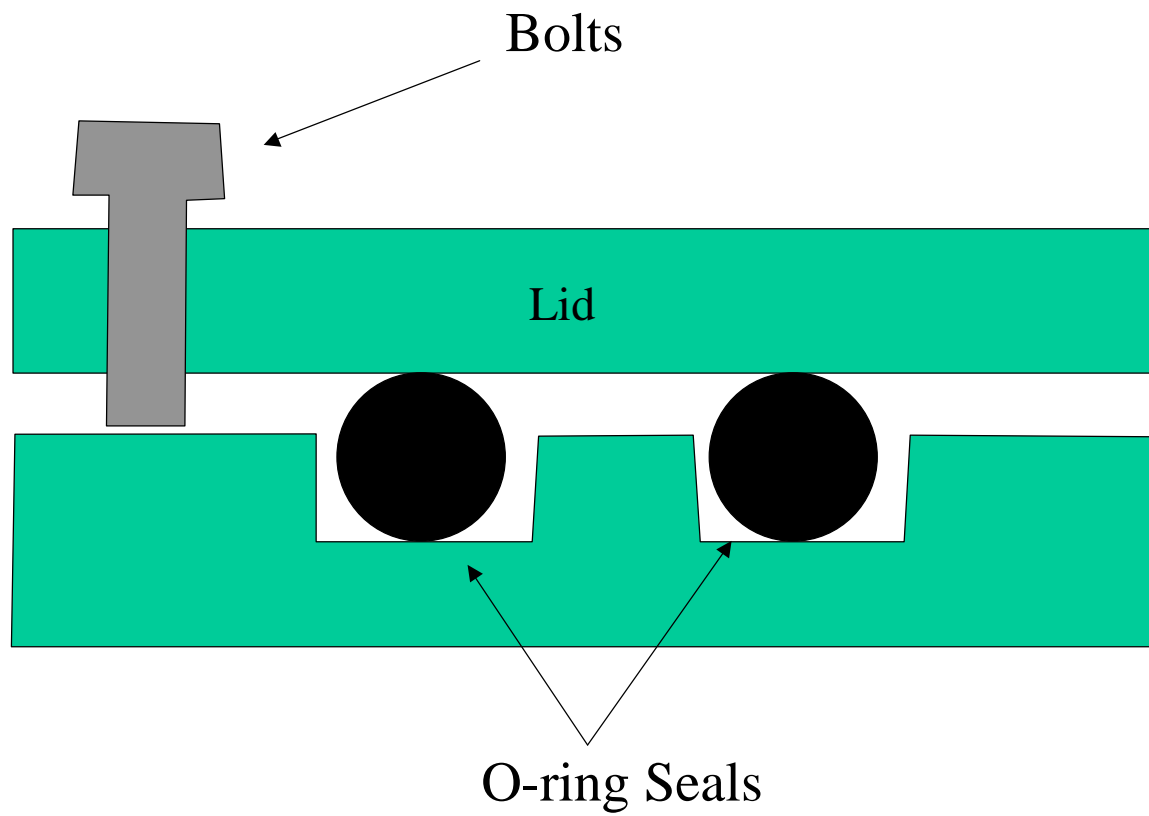
# Proposed TRUPACT-III Redesign

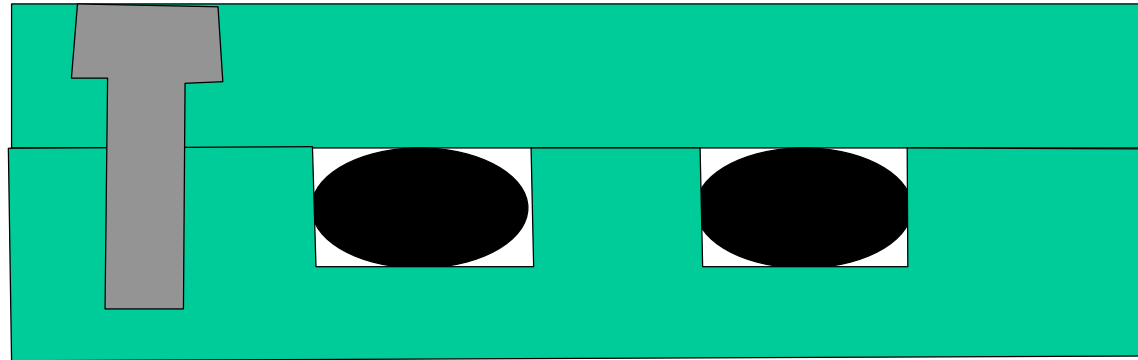


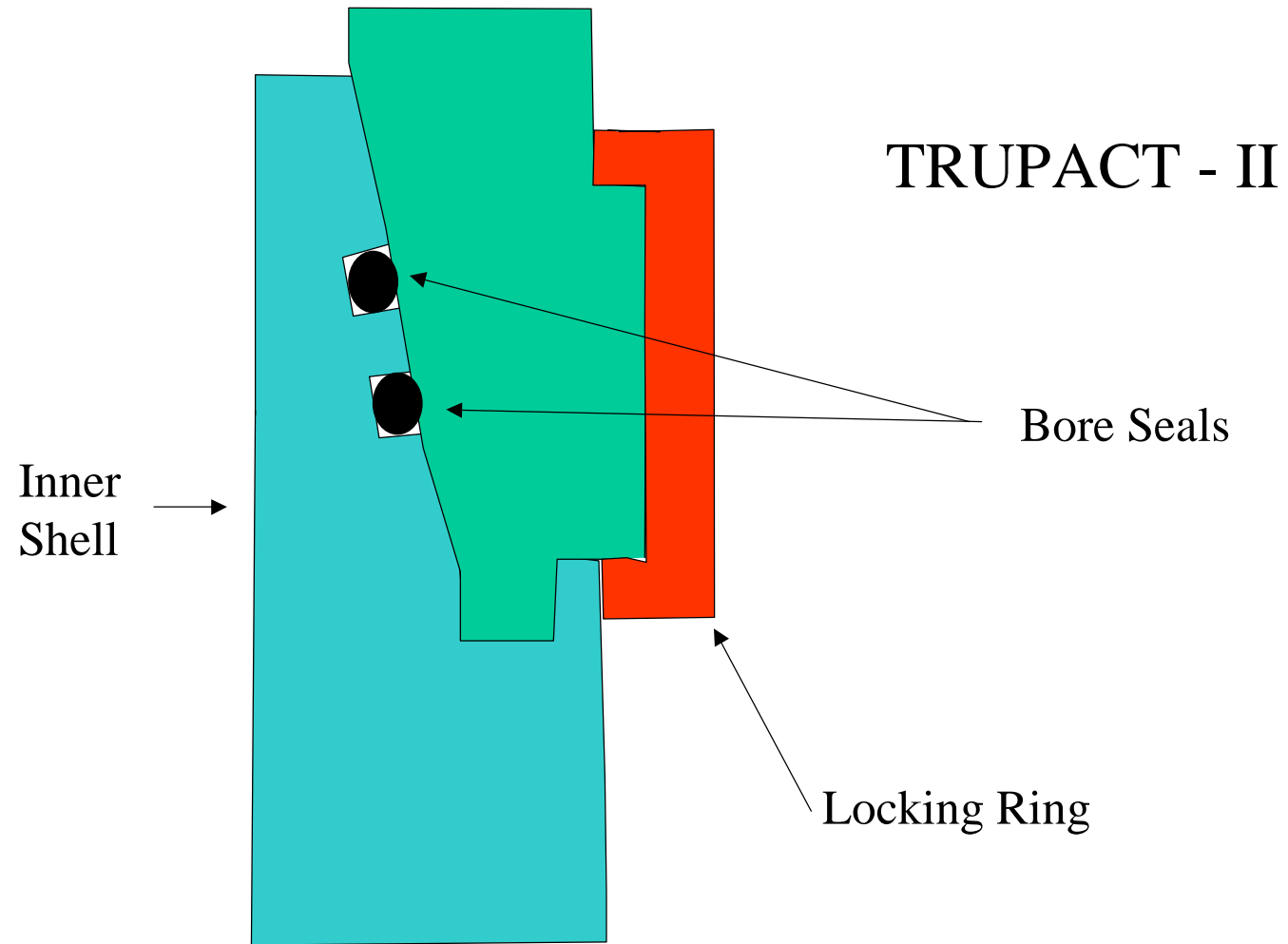
Design shortened by 6 feet to meet weight highway limits.<sub>1</sub>

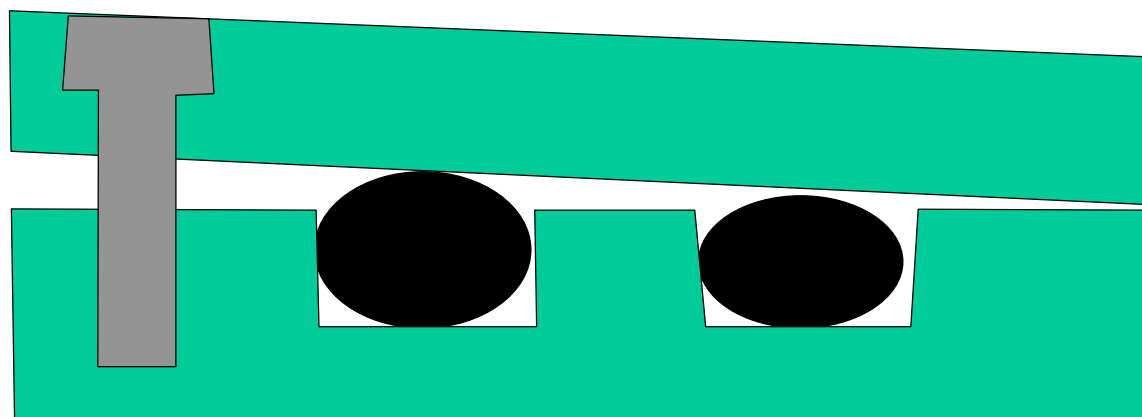
# Comparison between TRUPACT-III Designs

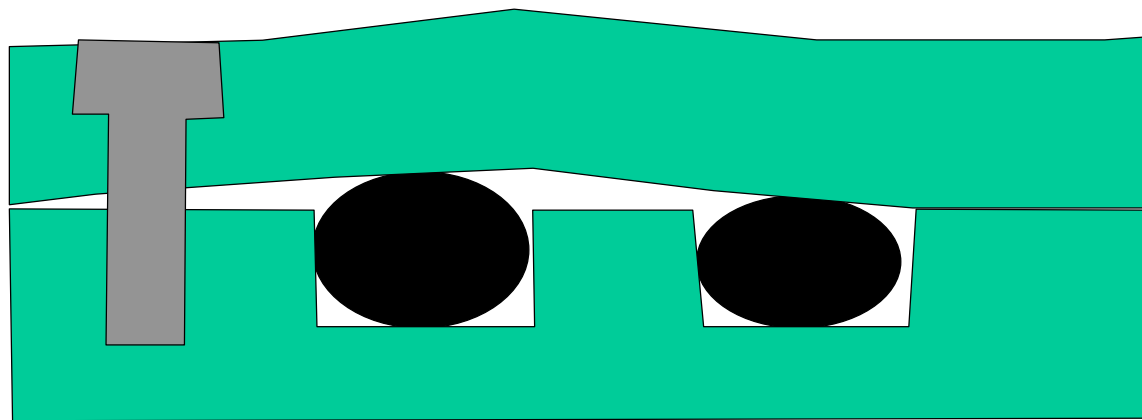
	TRUPACT-III	TRUPACT-III (redesign)
External Dimensions (L x W x H)	20 x 8.2 x 8.7	14 x 8.2 x 8.7
Internal Dimensions (L x W x H)	14.8 x 6 x 6.6	9.1 x 6 x 6.6
Weight, empty	53,500 lbs.	43,800 lbs.
Weight, loaded	66,000 lbs.	55,100 lbs.
Payload	12,500 lbs.	11,300 lbs.

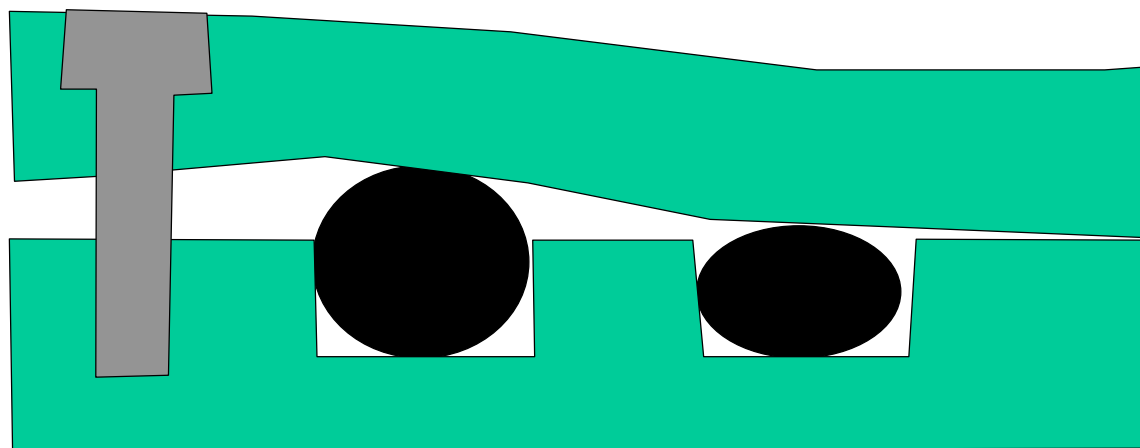




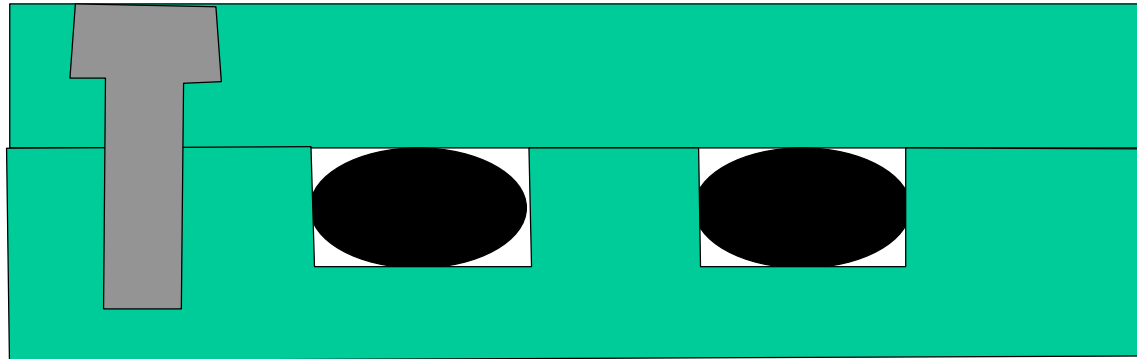








## Approvals based on analysis



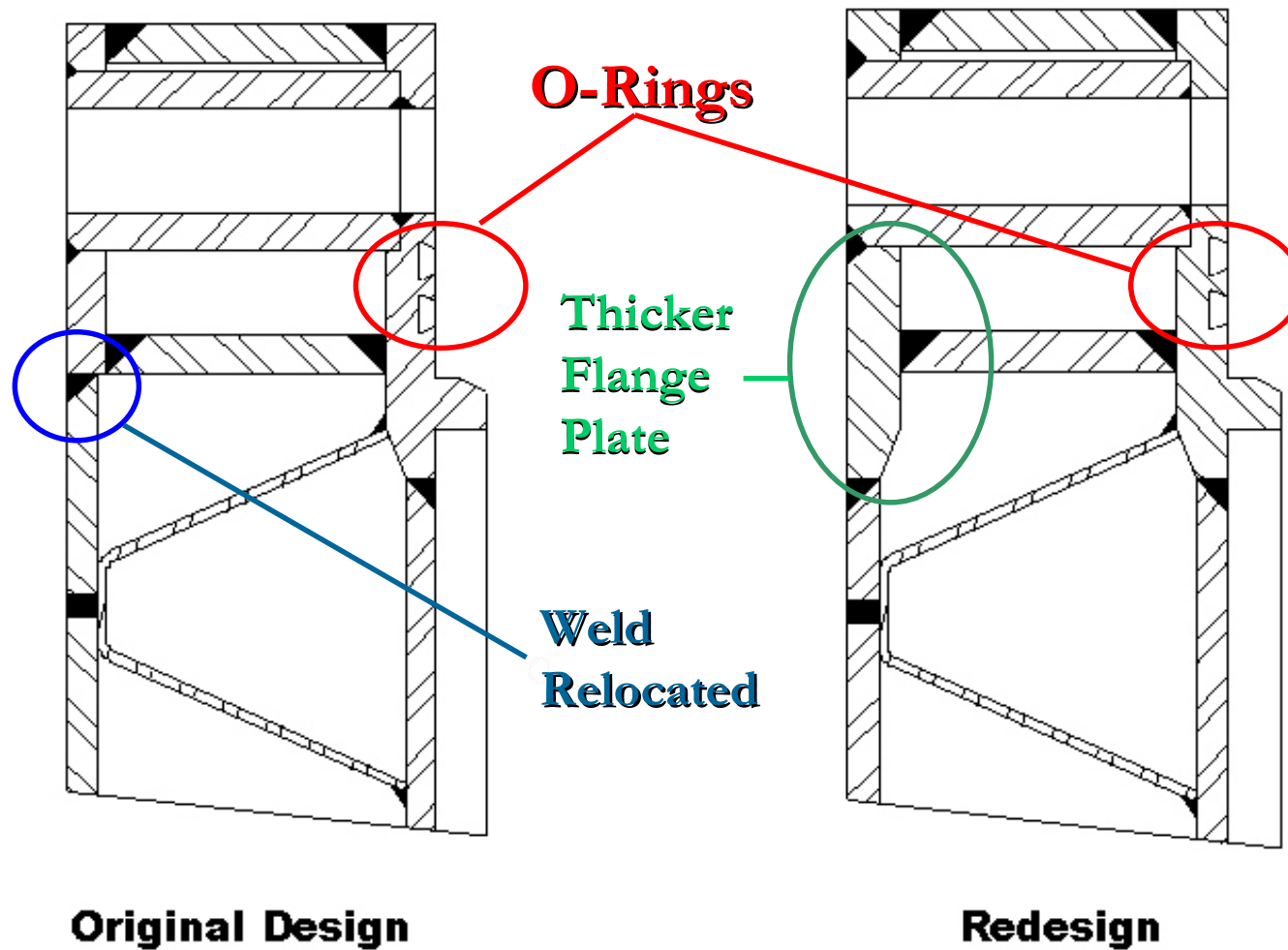
After accident conditions:

- No yielding of bolts
- No deformation of sealing surfaces
- Code margins applied

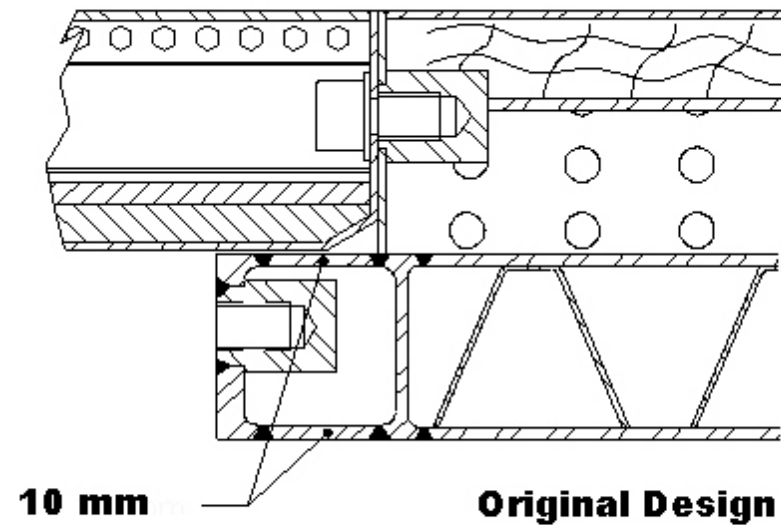
## Concern No. 1 : Non-linear analysis showed yielding in the seal region.

- Thicken inner and outer body flange by 50%.
  - Thicken outer flange plate by 25%.
  - Extend bolting bosses through body flange.
  - Added “dogleg” to radial rib.
- 
- Conduct full-scale impact test and demonstrate leak tightness.

# Closure Lid Flange Area



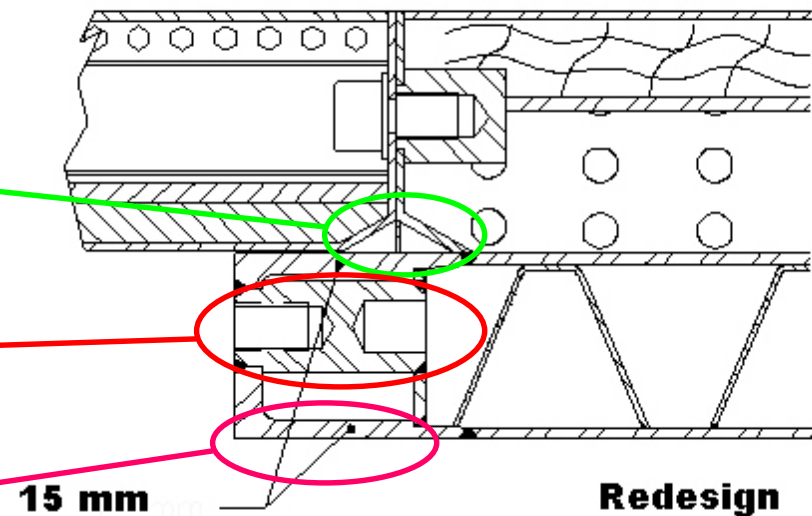
# Body Flange Region



Added Dogleg

Extended Bolt Boss

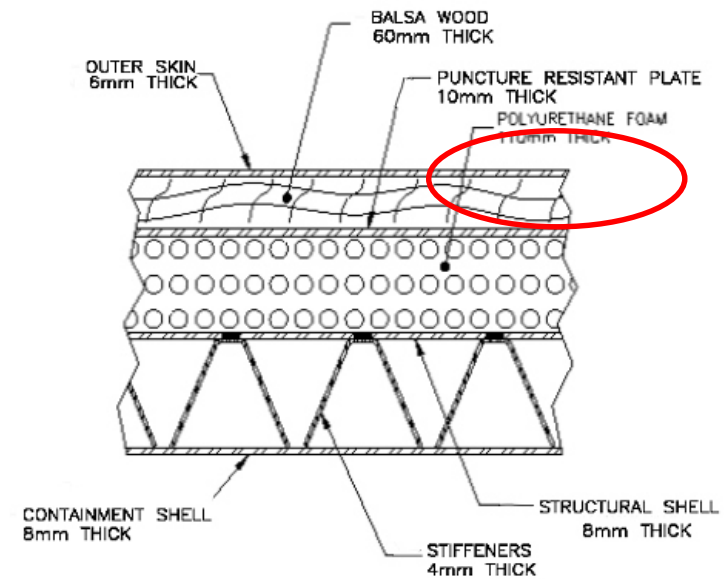
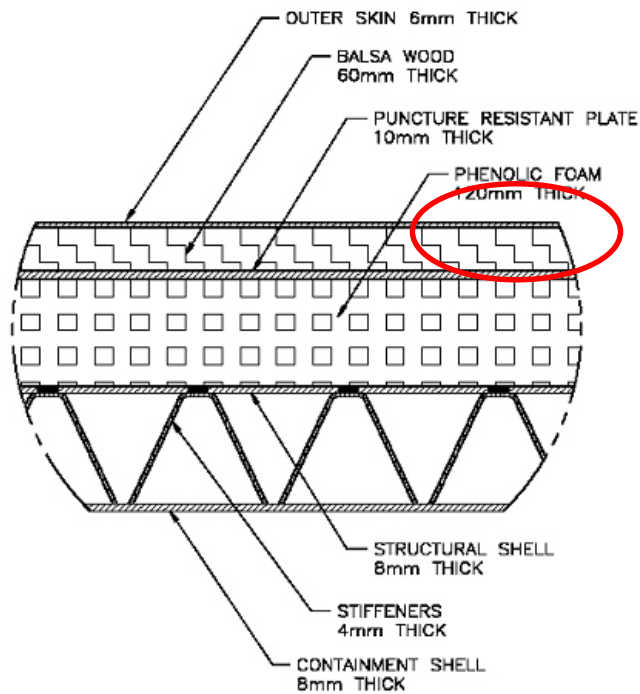
Thicker Flange Plates



Concern No. 2 : Margins were too small  
given variability of impact limit strength.

- Strengthened Flanges
- Improved properties of impact absorbing materials (e.g., foam)

# Wall Cross Section



Foam changed to enhance impact strength.

## Concern No. 3: Pressure tests were not performed on revised overpack.

- Puncture drop tests will be performed on a prototypic certification test unit.

Concern No. 4 : Temperature limits were exceeded for materials used in the containment structural assembly.

- Refine thermal analysis using finer mesh.

# Application for TRUPACT-III Redesign

- Structural analysis and puncture evaluation based on full-scale testing
  - Four thirty foot drop tests
  - One NCT drop test (one foot)
  - Four puncture tests
  - Tests to be done on a single package; acceptance criteria is leaktight (ANSI 14.5)
- Thermal evaluation by analysis.

# Tentative Schedule

- Development of detailed test plan – late 2005
- Full scale testing at SANDIA – May 2006
- Submittal of revised application – July 2006
- NRC decision on application – 6 to 12 months.