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Kick-Off Meeting: Technical Assistance on the Evaluation of Resin Polymers Used in Storage and Transportation Cask Shield Designs (Contract # NRC-02-00-010)
September 20, 2000

Purpose of Contract: To help SFPO staff resolve concerns and technical issues regarding the licensing bases for polymer neutron shield materials

Agenda:

- Introductions and Logistics (K. Gruss)
- History (M. Waters/K. Lathrop)
- Discussion of Technical Issues (K. Gruss)
- Schedule (K. Gruss)

NRC Participants:

- Wayne Hodges, Deputy Director, Technical Review Directorate, 415-2398, O13-H27
- Mike Waters, Project Manager, 415-3875, O13-F8
- Kim Gruss, Technical Reviewer, 415-8586, O13-H16
(on travel 9/25-29, will leave POC information)
- Kirke Lathrop, Technical Review, 415-8553, O13-E24
(on travel 9/25-26)

Current Staff Understanding of Issue:

- Seems to be adequate information to conclude Holtite-A and NS4FR will not undergo significant degradation within a short time frame
- Uncertain whether adequate data exists to assure long-term performance of Holtite-A and NS4FR
- Applicants routinely use short-term (less than a year) data and analyses to justify long-term performance of neutron shield materials

Outstanding Questions:

1. Are the acceptance criteria (in draft Materials SRP Chapter) adequate for neutron shield materials to shield public and environment from exposure? Do the criteria need to be more specific to assure regulatory compliance? Note: Criteria is most likely cask design dependent but could include: minimum density, minimum hydrogen content, minimum B₄C or Pb, minimum voids, homogeneous distribution of B₄C, minimum long-term weight loss, etc.
2. Does Holtite-A meet the acceptance criteria? Is Holtec's data adequate for licensing the cask for storage? If not, why? If so, why?
3. Are there any reasons to believe Holtite-A and NS-4-FR will not meet the long-term performance objectives of shielding throughout the license period?
4. How do variations in B₄C and hydrogen content, starting material density, and void concentration affect the shielding properties of Holtite-A and NS-4-FR?
5. What minimum formulation, mixing, pouring, testing characteristics or requirements will assure long-term performance (20 years) of the neutron shield material (e.g., pouring temperature, cool down rate, proportion of starting ingredients, etc.)?

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6. From a materials engineering perspective, is there adequate information to conclude that Holtite-A is the same material as NS-4-FR?
7. Do Holtec's data and analyses demonstrate the weight loss of Holtite-A over a 20 year time period will be less 4% (which is assumed in the Holtec shielding analyses)? What is the maximum uncertainty in the 20-year projected weight loss?
8. In Holtec's thermal tests, what factors caused the NAC's NS-4-FR samples to degrade at a faster rate than the Holtite-A materials?

List of Documents

Document Number	Document Summary	Date
-	Holtec Change Pages to Holtec Hi-STAR 100 SAR - includes original and revised SAR justification for use of Holtite-A	8/18/00
-	Holtec Chronology of Holtite-A Development	No Date
12	Holtite-A: Development History and Thermal Performance Data - Holtite-A thermal test data - Holtec tested NAC-NS4FR thermal test data - justification for long-term performance - assorted data and information in references used to support licensing of Holtite-A	4/17/00
13	Holtec Letter Transmitting Holtite-A Procedures and Data - manufacturing and testing procedures - qualification of mixing and pouring procedures - thermal test procedures - data on radiation effects	7/11/00
7	Holtec Part 21 Notification of Defects	5/26/00
9	NAC Letter, Response to Holtec Part 21 Notification Regarding Potential Defect in Material - assorted data and information in references used to support licensing of NAC-NS4FR	6/15/00
8	NAC Response to NRC RAI Questions	6/2/00

Schedule

Contract Start Work Date: 9/13/00

Subtask	Description/Deliverables	Due Date
A	Review technical documents	9/27/00 (7 days from today)
B	Letter report containing request for additional information (RAI) to Holtec (and NAC if needed) to determine adequacy of Holtite-A	10/4/00
C	Letter report containing evaluation of responses to the Holtec RAIs	7 days after receipt of RAI responses
D	Letter report containing safety evaluation and recommendations (Holtec and NAC materials)	14 days after receipt of RAI responses
E	Provide technical expertise on inspections of cask vendor facilities and reviewing cask vendor data, analyses, procedures, and other documentation to evaluate the effectiveness of neutron shield materials (as-needed)	TBD
F	Provide technical expertise in the development of guidance on the specification, evaluation criteria, and other safety aspects of these materials for use in cask designs (as-needed)	TBD
G	Prepare depositions in any litigation or legal actions related to these issues regarding evaluation of resin polymers (as-needed)	TBD

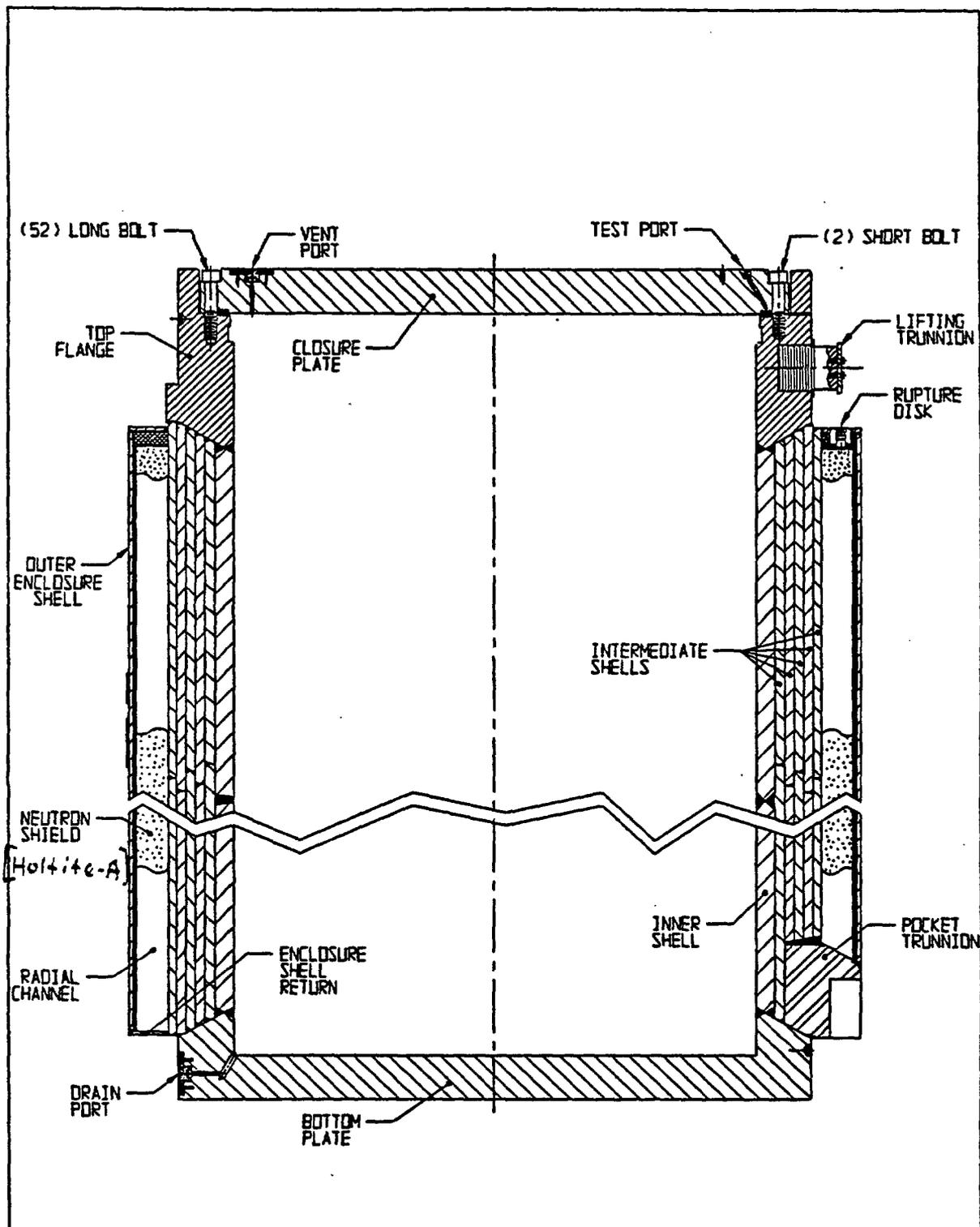


FIGURE 1.2.7; CROSS SECTION ELEVATION VIEW OF OVERPACK

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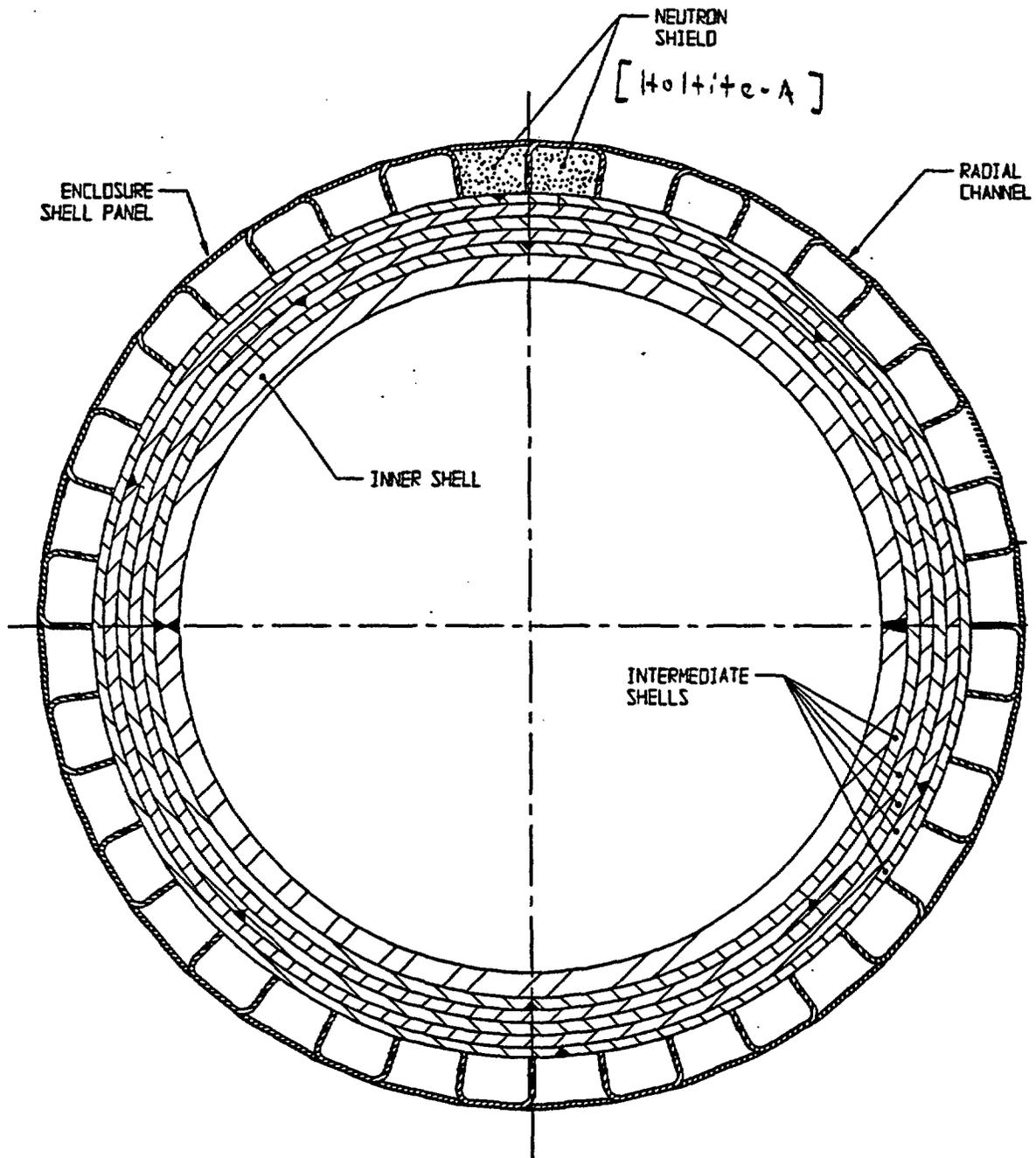


FIGURE 1.2.9; OVERPACK MID-PLANE CROSS SECTION