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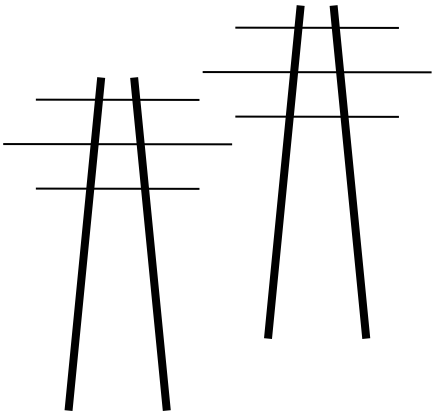


September 13, 2021

Will Seuffert
Executive Director
Public Utilities Commission
121 – 7th Place East, Suite 350
St. Paul, MN 55101

via eDockets only

RE: Overland Late Filed Comments
Xcel Request for Change in Spent-Fuel Storage Technology
PUC Docket E-002/CN-08-510

Dear Mr. Seuffert:

I received Notice for the September 23, 2021 Commission meeting just now, and am making these admittedly late-filed comments as an individual, an attorney with a long history of work on nuclear waste issues in Minnesota. These comments are made not in the course of representing any party.

The question presented for the Commission on the agenda was narrowed down to one issue:

> Is additional information needed before the Commission can make a decision on Xcel's request to change the type of dry cask used for spent fuel storage at its Prairie Island nuclear generating plant, and if so, what information is needed?

The simple answer is "NO!" The Commission should notify Xcel that recertification is required. A more complicated answer includes a listing of information needed, including but not limited to:

In December, 1994, I began my work in nuclear waste when I began citizen representation of the City of Kenyon at then NSP's "Task Force" to determine where NSP would site nuclear waste "in Goodhue County." Then, in fall of 1995, as an attorney, I began my representation of Florence Township, the host of the site NSP had selected, representation that continued until 2000, when the Part 72 application to the Nuclear Regulatory Commission was withdrawn. Over those years, I learned more about nuclear waste cask storage than anyone should have to know. I

also learned many things that everyone should know, including details of the Point Beach cask explosion, the many VSC cask weld failures, and the INEL TN-29P "unloading" fiasco (report attached).

Also, as a resident of the City of Red Wing, I am sorry to note that the City has not yet participated in this docket since Xcel's April 30, 2021 request. Red Wing's participation is particularly important given the harm that has been done to our community by Xcel/NSP's gutting of the utility personal property tax in every possible way after securing ability to store nuclear waste in 1994 through extortionate use of City and County staff and residents to lobby for continued operation of this nuclear plant. That act of slashing the utility personal property tax erased all doubt regarding the corporation's disregard for the County, City and School District, and the people of this host community, and all other host communities. I'll be copying the City on this missive and encouraging participation.

Overland's late filed comments on topics open for comment:

1. **Should the Commission approve Xcel Energy's proposal to change the type of spent fuel storage casks used at its Prairie Island Nuclear Plant?**

   Not yet!

2. **Is additional information needed before the Commission can make a decision, and if so, what information is needed?**

   Additional information is needed.

   - **Change in size and type of casks certified.** What is Xcel's argument for its claim that recertification is not required? Xcel only states its request that recertification not be required (Request, p. 2) based on vague claims that the change is in its customers interest!

     > This request is consistent with Minnesota rules regarding changes in size, type, or timing of facilities authorized for construction pursuant to a previously-issued Certificate of Need. Under these rules, the Commission is authorized to consider whether such a change can be made without recertification. Without this proposed change, the Company will be required to acquire TN-40 casks. Because, as discussed below, allowing consideration of a broader array of NRC-approved cask technology is in our customers' interest, we request the Commission approve this proposed change without requiring recertification.

     Xcel wishes to frame this as a "modification" but it is a clear change in size and type.

   - **Identify the casks that are proposed.** Xcel states that "Through this filing, we seek only a determination from the Commission that the use of NRC-approved cask designs other than the existing TN-40 casks currently in use…" The Commission needs the specific information.

- **Change in cask technology is proposed to facilitate transfer**. Again, specifics are needed.

- **Transport AND storage casks SHALL be ordered to "replace" the TN-40s:**

> **116C.776 ALTERNATIVE CASK TECHNOLOGY FOR SPENT FUEL STORAGE.**
>
> If the Public Utilities Commission determines that casks or other containers that allow for transportation as well as storage of spent nuclear fuel exist and are economically feasible for storage and transportation of spent nuclear fuel generated by the Prairie Island nuclear power generating plant, the commission shall order their use to replace use of the casks that are only usable for storage, but not transportation. If the commission orders use of dual-purpose casks under this section, it must authorize use of a number of dual-purpose casks that provides the same total storage capacity that is authorized under sections 116C.77 to 116C.779; provided, that the total cask storage capacity permitted under sections 116C.77 to 116C.779 may not exceed the capacity of the TN-40 casks authorized under section 116C.77.

  This means that the Commission SHALL order use of casks "that allow for transportation as well as storage" which implies that the casks shall REPLACE TN-40s, the ones currently used for storage. This has not been stated, and it appears to have been avoided.

- **Change in cask technology is proposed to be cheaper**. Need details. If licensed (if they exist) and are economically feasible, see above, Minn. Stat. §116C.776.

- **Xcel should disclose plans for spent fuel in TN-40s.** Is plan to transfer that spent fuel into the new transportable casks? Is plan to put only newly removed spent fuel into the new casks? Need details.

- **TN-40 casks have design need for seal replacement after 20 years.** Which TN-40 casks have had seals replaced? Does use of new casks affect existing loaded TN-40 use and maintenance? Will loaded TN-40s be unloaded and assemblies reloaded into new casks? See attached Technetics Group blurb on seals, including TN-40; and INEL Report "Experiences in Transfer of Canisters from the TN24P Cask…".

3. Does Xcel Energy's request require further proceedings, such as recertification?

- Recertification necessary – it's a change in size and type. Minn. R. 7849.0400, Subp. 2(H). See also Minn. Stat §216B.2421; Minn. Stat §216B.243; etc.

4. Should the Commission consider Minnesota Statutes, Section 116C.776, as part of this proceeding?

- Yes, statutory provisions must be considered, Minn. Stat. §116C.777 as well. Minn. Stat. §116C.777 covers casks "to replace use of the casks," and it's not clear that intent is to REPLACE. Replace means that assemblies would be unloaded from TN-40s and put into the new casks. That is not stated in filings thus far, and if the new casks are indeed suitable for storage AND transport, the Commission SHALL order the new casks "to replace use of the casks."

It's clear that this is a case where more information is needed, and as Commerce-EERA notes, an EIS supplement is required, and I strongly support EERA's request that the Commission take no action to approve Xcel's request, and ask that the Commission Order the EIS be supplemented. I also ask that the Commission make a formal determination that this cask change requires certification for this limited change in size and type of casks.

I understand that the EIS supplement is somewhat delayed from that proposed in June, and I look forward to reviewing the Draft Scoping Decision, and appreciate the Department's tentative scheduling of a live and in-person meeting/hearing here in Red Wing on October 5.

Again, I am not representing any party in this docket, but I will be participating as an individual with a lot of specific expertise in this area. Please keep me on the service list!!

Very truly yours,

Carol A. Overland
Attorney at Law

cc: Electronic Service List
Kay Kuhlman, City of Red Wing Administrator kay.kuhlman@ci.red-wing.mn.us
Ray Kirsch, DoC-EERA raymond.kirsch@state.mn.us (Ray Kirsch is not on the project service list so I am emailing a copy of this comment.)

NUCLEAR

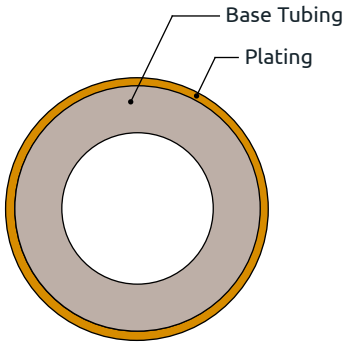
Nuclear Reactor Pressure Vessel Seals

SEALING CONCEPT

Technetics Group is the world's leading manufacturer of Nuclear Reactor Pressure Vessel (RPV) Closure Head Seals. In addition, Technetics Group sealing technology is used extensively as primary seals on spent fuel storage and transportation casks.

O-FLEX™ METAL O-RINGS

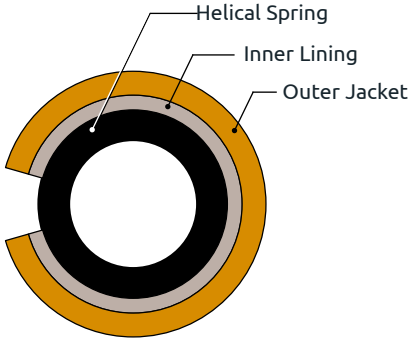
The O-FLEX™ is manufactured of Alloy 718 or Stainless Steel 304 tubing. Alloy 718 is the most common and preferred material because it offers optimum strength, spring back and resistance to radiation and corrosion. The base tubing is plated with pure (99.95%) silver. This combination of elastic core (tubing) with deformable plastic layer (silver) provides durable sealing for traditional Nuclear Reactor Pressure Vessels.



NRPV
O-FLEX™

HELICOFLEX® SPRING ENERGIZED SEALS

The HELICOFLEX® seal is a high performance, flexible, metal seal that has exceptional compression and elastic recovery properties. The HELICOFLEX® seal is composed of a close-wound helical spring surrounded by two metal jackets. The spring is selected to have a specific compression resistance. During compression, the resulting specific pressure forces the jacket to yield and fill the flange imperfections while ensuring positive contact with the flange sealing faces. Each coil of the helical spring acts independently and allows the seal to conform to surface irregularities on the flange surface. This combination of elasticity and plasticity makes the HELICOFLEX® seal the best choice for ageing reactors.



NRPV
HELICOFLEX®

RPV CLOSURE HEAD SEALS

These seals are the primary seal for the reactor pressure vessel. Typically, the seals are used in tandem with an inner and outer seal for redundancy. The seals are positioned in the reactor pressure vessel head with clips and screws for easy installation and assembly.

CONTROL ROD DRIVE (CRD) SEALS

PTFE coated O-FLEX™ seals for CRD mechanisms.

SPENT FUEL CASKS

Primary seals for casks used in the storage and transportation of spent fuel assemblies.

OTHER APPLICATIONS

Steam Turbines
Primary Loop
Valves
Waste Heat Systems
Steam Pressurizer

RPV Closure Lid

REACTOR TYPES

BWR – All Types
PWR – All Types
Gas Cooled
Navy Nuclear

QA SYSTEM ASSESSMENT

ISO 9001
Title 10 CFR 50 Appendix B
ANSI / ASME N45.2
Favorable Audits by NUPIC Members
ANSI / ASME NQA-1
KTA 1401

RPV O-FLEX™ Seals with installation clips

(Photos courtesy of AREVA)

GENERAL SERVICES

- Global leader for more than 50 years in nuclear RPV seal design and manufacturing. References available.
- RPV seal design and manufacturing for most PWR Nuclear Power Plants (NPP) and all BWR NPPs worldwide and to major NSSS worldwide. References available.
- Spent fuel cask seal design to all major spent fuel (transportation and storage) casks manufacturers worldwide. Reference available.
- Individual RPV seal design and recommendations for newly built PWR and BWR units.
- Seal and retainer design improvements to meet today's industries requirements of tight outage itineraries and ALARA requirements.
- Qualified and experienced on-site field services to evaluate the cause of numerous RPV seal problems, i.e. for RPV seal leakages, etc.
- Nuclear seal qualification services for new applications.
- Quality Assurance program based on the requirements of 10 CFR 50 Appendix B, ASME, N45.2, ASME Boiler and Pressure Vessel Codes V and IX, NUPIC audited.
- 3rd party evaluation available for on-site laser scan & repair of mating surfaces, reactor pressure vessel flange, and pressure vessel closure head grooves.
- NPP field staff training available, i.e. handling, installation, removal of RPV seals.
- Airfreight packaging and crating and airfreight arrangement for quick response transportation (airfreight capability limitation given by seal design).

TECHNETICS GROUP EMERGENCY RESPONSE

- Emergency response for outage. Spare RPV seals available on demand.
- 24/7 emergency service phone (803) 695-3553 (U.S.A.)
- 24 - 36 hour worldwide emergency site service available, on request.

NUCLEAR RPV CLOSURE HEAD SEALS

RPV O-FLEX™

			ALLOY 718 BASE TUBING			
Free Height	Wall Thickness	Recommended Diameter Range	Seating Load (PCI) Y_2*	Installation Compression e_2	Installation Compression %	Total Springback (Min.)
0.375	0.038	40 to 180		0.030	8%	0.009
				0.037	10%	0.009
			2500	0.045	12%	0.009
				0.060	**16%**	**0.009**
				0.064	17%	0.009
0.500	0.050	120 to >180		0.040	8%	0.015
				0.050	10%	0.015
			2500	0.060	12%	0.015
				0.080	**16%**	**0.015**
				0.085	17%	0.015
0.625	0.063	120 to >180		0.050	8%	0.017
				0.062	10%	0.017
			4000	0.075	12%	0.017
				0.100	**16%**	**0.017**
				0.106	17%	0.017

Dimensions in inches

NOTE: Recommended compression % for NRPV O-FLEX is 16%

* PCI = Pounds force per Circumferential Inch

RPV HELICOFLEX®: HN200

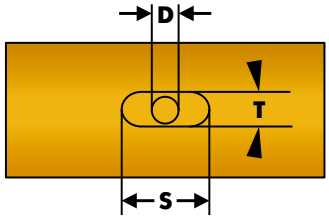
			HIGH TEMPERATURE ALLOY SPRING			
Free Height	Wall Thickness	Recommended Diameter Range	Seating Load (PCI) Y2*	Installation Compression e2	Installation Compression %	Total Springback (Min.)
0.520	N/A	40 to >180				
			4000	0.052	10%	0.017

Dimensions in inches

RPV Closure Head Seals are typically held in the pressure vessel head with specially designed clips. Technetics Group recommends a clip be located at a minimum every 30" of seal circumference. This will ensure that the seal is securely held in place.

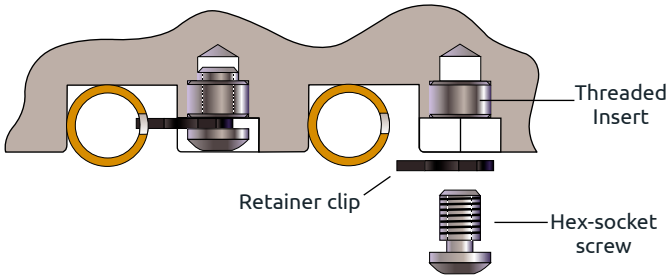
TYPE I

This clip can only be used with the traditional O-FLEX™ RPV seal. This clip is designed to penetrate either a slot (most common) or a hole in ID of the O-FLEX™.



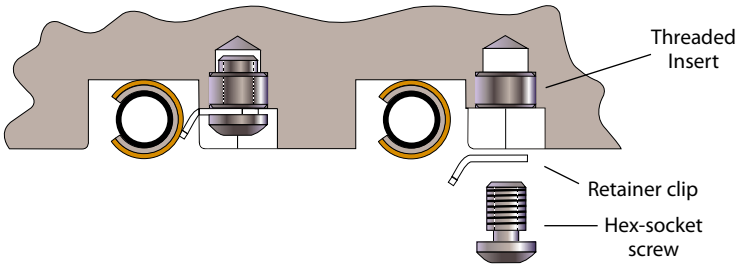
O-FLEX™ Diameter	Number of Slots
up to 72"	4
72" to 144"	8
144" to 200"	12
200" +	16 or 24

Dimensions in inches



TYPE II

This style clip can be used with either the O-Flex™ or the HELICOFLEX® RPV seals. It is designed to hold the seal to the outer circumference of the groove without having to penetrate the ring through a slot. This makes seal installation easier since the seal does not require special alignment.



TYPE I CLIP (O-FLEX™ ONLY)

Free Height	Wall Thickness	Slot Length S	Slot Width T	Hole Diameter D
0.375	0.038	0.281	0.125	0.070
0.500	0.050	0.375	0.205	0.093
0.625	0.063	0.438	0.256	0.125

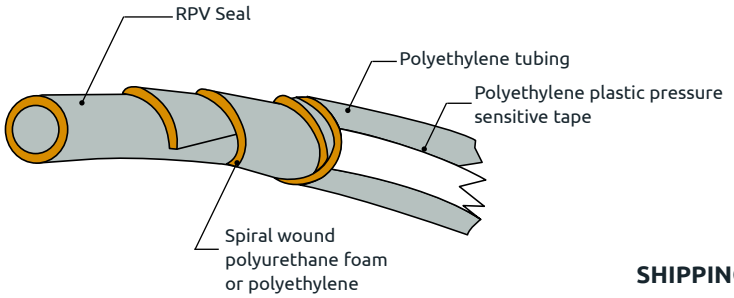
Dimensions in inches

NOTE: Type I clip can be used with a slot or hole (depending on ring design)

RPV CLOSURE HEAD SEAL PACKAGING

Technetics Group offers two styles of protective packaging for RPV seals:

Regular "Casement Tubing"

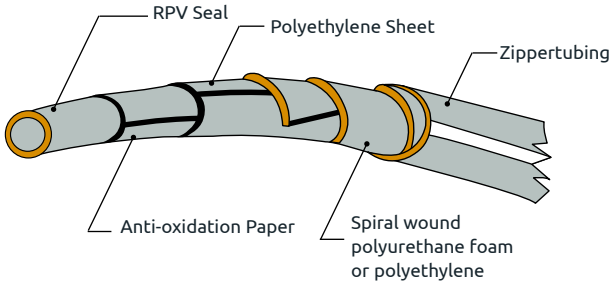


SHIPPING

Individually wrapped seals are securely packaged in wooden crates. Special provisions are made for extra protection during overseas shipments. Typically, the crate is transported by way of a specialized drop deck freight carrier. However, some crates may be custom designed for specialty ocean or air freight carriers.

ZIPPER LOCK TUBING PACKAGING

This is a packaging upgrade that was developed using ALARA minded principles. This packaging is designed to be removed quickly and therefore reduce radiation exposure time during unpacking and installation.

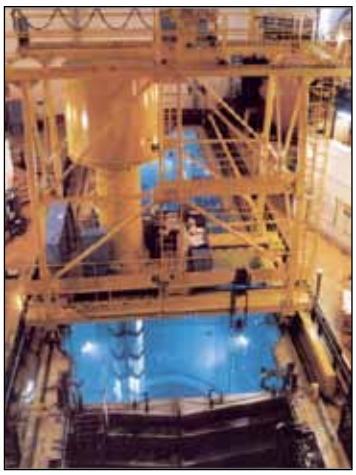


TN-40 Dry Storage Cask

Technetics Group metal seals offer the performance and flexibility to meet stringent spent fuel cask requirements. The HELICOFLEX® seal in particular can be made in a wide variety of geometries and shapes to meet the demanding requirements of cask designers. Typical seal types are listed below. Please contact Applications Engineering to discuss your cask requirements.

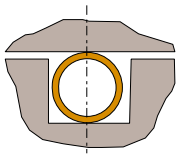
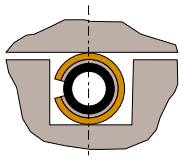
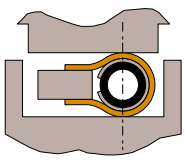
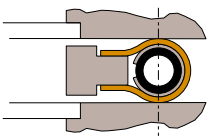
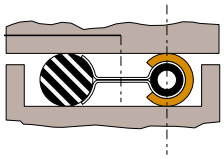
TYPICAL CASK SEAL LOCATIONS:

Cask Lid Closures
Fill Ports
Drain Ports



TN-32 Dry Storage Cask

TYPICAL CONFIGURATIONS

O-FLEX™	HELICOFLEX®			
	HN200 Groove assembly	**HN203** Tongue & Groove	**HN208** Raised face flanges - ANSI B16.5	**HNDE290** Leak check-inert gas purge
				

APPLICATIONS DATA SHEET

Tel: 800-233-1722 Fax: 803-783-4279
E-Mail: sales@techneticsgroup.com

Technetics GROUP
EnPro Industries companies

COMPANY:	PHONE:
CONTACT:	FAX:
ADDRESS:	E-MAIL:
	DATE:

APPLICATION: (please attach customer drawing / sketch)

Brief Description: _____

Annual quantities: _____			RFQ Quantities: _____		
Is This a New Design?	o Yes	o No	Are Modifications Possible?	o Yes	o No
Drawing or Sketch Attached?	o Yes	o No	What is the Seal Type?	o Shaped	o Circular

SERVICE CONDITIONS:

Media:		Life Expectancy:	
Working Temperature: _____		Max/Proof Pressure: _____	@ Temp. = _____
Working Pressure:		Max Temperature:	@ Pressure =
Pressure Direction: (Internal/External/Axial) _____		**Target Sealing Level:**	Helium: _____ Std.cc/sec
Pressure Cycles: _____			Flow Rate: _____ cc/minute
Temperature Cycles:			Other:

FLANGE DETAILS: (Please Provide Drawing)

Amount of Flange Movement in Service: (Inches) Radial: Axial: #Cycles:

Material: _____ Thickness: _____

o Groove / Counter Bore: Please list dimensions in Groove Details section

o ANSI Raised Face Size: _____ # Rating: _____ Face Surface Finish: _____ (RMS)

o Flange(s) with Clamping System: (ISO,KF, etc) Standard: _____ Size: _____

o Other: Description: (Please Provide Drawing)

GROOVE DETAILS: (Please Provide Drawing)

Type (Rectangular, Dovetail, etc.): _____

Outer Diameter: _____	Tolerance: _____	Depth: _____	Tolerance: _____
Inner Diameter: _____	Tolerance: _____	Finish (RMS) _____	Type: _____
		Finish Type: lathe (circular), endmill (multi-directional), other	

BOLTING DETAILS: (Please Provide Drawing)

Size: _____	Type / Grade: _____
Number: _____ Bolt Circle _____	Tapped / Through: _____

OTHER:

Special coating / plating specification:

Special quality / inspection specifications:

Other:

INEL

bcc: L. E. Eslinger
G. L. Mean
P. Leach
E. Saukkonen
Central Files

12-1005
Box

October 18, 1990

Ms. M. W. Fisher, Branch Chief
Low Level Radioactive Waste Branch
Idaho Operations Office - DOE
785 DOE Place
Idaho Falls, ID 83402

EXPERIENCES IN TRANSFER OF CANISTERS FROM THE TN-24P CASK TO THE VSC-17 CONCRETE CASK - RLS-90-90

Dear Ms. Fisher:

The following will serve to document the operational experiences encountered in the transfer of consolidated fuel canisters from the TN-24P metal spent fuel storage cask to the VSC-17 concrete spent fuel storage cask. This work was part of the activities leading to hot testing of the VSC-17 cask in accordance with Cooperative Agreement DE-FC06-88RL11394 and the terms and conditions of that Agreement.

The essence of this letter shall also become part of the data report provided at the conclusion of the test activities for the VSC-17 and, therefore, a part of the final report documentation related to the DOE-OCRWM effort on small concrete cask testing.

Predaratory to fuel transfer, the casks were staged in accordance with procedures in place. A problem developed with placement of the TN-24P in the predetermined location because a protrusion on the side could not be negotiated with the cask transporter as projected. Accordingly, delays were encountered while the project had the Hot Shop floor reanalyzed for placement of the TN-24P cask 12 in. to the south of grade beam 13 centerline instead of directly on beam centerline as planned.

Other activities preparatory to fuel transfer went according to projections and following lid removal, placement of plastics, and so forth, the transfer operation was initiated by mid-day, September 27, 1990. The transfer operation was initiated with the intent to complete the operation including replacement of lids for a stable configuration using overtime hours as required.

Please note that the experiences noted are with consolidated canisters which are of reasonably a tighter fit than normal spent fuel canisters. D. L. Schmitt

190030

EG&G ... P.O. Box 1625 ... Idaho Falls, ID 83415

NF16

9211230175 901018
PDR ADOCK 07201005
C PDR

The assemblies (three of four tried) could not be removed from the TN-24P with a lift equivalent to that which had been used several years ago to place them in the cask, and subsequently retract them and move them around for a better thermal setup (the lift fixture limit was established at 3000 lbs corresponding to that used in the previous work; the information about extracting and moving of canisters was established from conversation with project personnel from that time and verified through PNL personnel). The net force applied to lift the assemblies was not large since canister weights in air is nominally about 2950 lbs; nevertheless, the canisters had stuck in some fashion, thermally, twisting, bowing, corrosion, or other. The activity was stopped while project personnel examined engineering files to evaluate lift fixture and canister lifting lug capacities. Based on that review, a decision was approved by the project, the facility manager, and a safety representative to revise procedures to increase net force to canister (Life 2) 500 lbs. Operations resumed late in the day with instructions to record breakaway forces, constant lift force and so forth since it was recognized that we would be acquiring previously unencountered data. Subsequent operations that evening resulted in partial lifts of all assemblies needed for testing the VSC-17 at which time operations were stopped because of lateness and the need to have time to stop in a stable configeration (lids on casks, etc.).

Activities resumed on October 1, 1990, with further review of the lift fixture. Evaluation determined the need for a new load test in conformance with the OCI Hoisting and Rigging Manual. Discussion with Westinghouse Electric Company, fabricators of the fixture, confirmed that the fixture stress analysis was based on a 6000-lb design load. Subsequently, the fixture was load tested to 6000 lbs in conformance with the requirement of 150% load test such that a 4000-lb lift could be performed.

Discussions were held with PNL personnel to identify alternate canisters to be used in the VSC-17 in case canisters could not be removed from the TN-24P cask.

Transfer operations resumed October 4, 1990. One of the canisters, canister number 18, could not be removed from the TN-24P cask. The canister was raised approximately 18 in. at which time the limiting force of 4000 lbs was reached. This assembly was lowered back into the TN-24P cask and an alternate assembly was selected. The "breakaway" forces required to remove the assemblies are provided in attached Table 1. Video tapes were made and observations recorded such as scraping on all four sides of canister 18 during the removal attempt.

...from the TN-24P
...years ago to
...move them around
...established at
...the information
...from conversation
...of PNL personnel).
...ge since canister
...the canisters had
...corrosion, or other.
...ed engineering files
...ties. Based on that
...lity manager, and a
...et force to canister
...instructions to
...n since it was
...stored data.
...ifts of all
...operations were
...o stop in a stable

...iew of the lift
...test in conformance
...tn Westinghouse
...that the fixture
...ubsequently, the
...n the requirement of
...med.

...ternate canisters to
...emove from the TN-24P

...ne canisters, canister
...The canister was
...force of 4000 lbs was
...4P cask and an
...ols required to remove
...o tapes were made and
...ies of canister 18

Hot Shop
-Airtrans,

...The [illegible] requirements for extracting these fuel canisters from the TN-24P ...was greater in magnitude than expected. The canisters had apparently taken ...on a set, most probably thermally induced although possibly including other ...factors such as swelling, twisting, or other. The laminated makeup of the ...canister body also may have been involved, but the most probable effect would seem ...to be [illegible] expansion of the canisters coupled with close tolerances. The ...[illegible] will examine the behavior experienced but cannot direct much effort ...to this problem within the present budget constraint or at the cost of its ...major focus, testing of the VSC-17. It should be clear, nevertheless, that ...the experience encountered should receive future focus since the inability ...to extract at least one of the assemblies with existing equipment is ...apparent. The experience we have encountered has drawn the interest of ...outside carrier and of course has direct impact on future designs for MRS, ...casks of casks, designers of handling equipment, and related activities. A ...more extensive investigation would seem appropriate which of course we would ...propose to evaluate pending your direction.

The cost to the project from this problem was one week schedular delay and some related engineering and Hot Shop costs. We expect to accomodate the cost impacts within existing funding.

Sincerely,

R. C. Schmitt, Manager
Cask Transport and Testing Program

Attachment:
As Stated

cc: ID Project Engineer

* After fuel ... started t...

** Fuel cani...

TABLE 1. TN-24P CANISTER PULLING FORCE

TN-24P Location	Canister Number	Breakaway Force (lbs)
A1	12	3180
A2	21	3020
A4	16	3020
A5	24	3290
A6	8	3002
B1	10	3010
B2	19	3331
B3	18	3110*
B5	17	3350
B6	9	3030
C1	11	3000
C2	15	3008
C3	6	3010
C6	2	3080
D1	13	3280
D3	4	3050**
D5	23	3360
D6	3	3060

18

* After fuel canister was lifted approximately 3 inches, pull forces started to increase until the maximum force of 4000 was reached.

** Fuel canister number 4 was used as a spare for canister 18.

IN

Ms. M. W. Fir
Civilian Rad
Idaho Operat
785 DOE Place
Idaho Falls,

EVALUATION OF
(A) THE "STUC
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Dear Ms. Fir

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Idaho National Engineering Laboratory

bcc: J. G. Dineen, MS 9109
L. E. Eslinger, MS 9109
W. A. Franz, MS 9206
L. P. Leach, MS 3940
G. R. Trehkimainen, MS 3920
R. C. Schmitt File
Central Files

November 21, 1990

Ms. M. W. Fisher, Branch Chief
Civilian Radioactive Waste Branch
Idaho Operations Office - DOE
785 DOE Place
Idaho Falls, ID 83402

EVALUATION OF OPTIONS, ASSOCIATED COSTS, AND RECOMMENDATIONS FOR: (A) THE "STUCK" FUEL CANISTER IN THE TN-24P CASK, (B) RELATED CASK MOVE OPERATIONS, AND (C) RESOLUTION OF VSC-17 PRESSURE BEHAVIOR - RCS-111-90

Dear Ms. Fisher:

The following provides an assessment of options, costs, and recommendations regarding the "stuck" fuel assembly, related cask operations, and the VSC-17 cask pressure behavior.

Review of Stuck Fuel Assembly Issue

Please recall that during transfer of fuel from the TN-24P cask to the VSC-17 cask, consolidated canister number 18 was withdrawn about 12 inches from the TN-24P basket at which time the 4,000 lb lifting limit of the lifting fixture and the canister lifting lugs was reached. Subsequently, the canister was returned to it's seated position and an alternative canister was selected for testing in the VSC-17. The lifting limit had been increased from the 3,000 lbs of previous operations to 4,000 lbs to overcome the "breakaway" force that was unexpectedly encountered in the removal of canisters after their several years of storage in the TN-24P. The increase to a 4,000 lb lift limit was derived based on the initial design and load test of the lifting fixture of 6,000 lbs and the load test of the canister at 4,000 lbs.

The lift operation was video taped and scrape marks were observed on all four sides of canister number 18. Whereas, thermal expansion of the canister is the most probable cause, bowing, twisting or other mechanisms cannot be eliminated as possibilities; we presently have little capability to determine the root cause because accessing the assembly or the basket is not feasible with fuel in the cask. For the other six canisters in the TN-24P, it is possible, although not probable, that additional canisters

6 canisters?

M. W. Fisher
November 28, 19
RCS-111-90
Page 2

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may be unremovable, it is also possible that canister number 18 is no longer stuck because of thermal unloading of the basket following the removal and placement in the VSC-17 cask of 17 fuel canisters.

Costs for Additional Analyses and Operations for the Stuck Assembly

One possibility for removing canister number 18 from the TN-24P cask is simply to apply more lift. The major risks are that the assembly might become stuck in a partially withdrawn position or that canister damage might be incurred. To assess applying more lift involves reanalyzing the design of the canister and obtaining one-time exemptions to exceed DOE Hoisting and Rigging Manual restrictions. The CCTP has received an estimate of [redacted] from Engineering to analyze the lifting fixture and canister design and determine methodology to remove the stuck fuel canister. The estimate includes conservatism based on the uncertainties involved and, unfortunately, there is no assurance of a useful result. The CCTP has independently prepared an assessment of the task and believe that the estimate from Engineering is about a factor of two too large. Accordingly, [redacted] is expected to be more realistic. Costs could be less if a "dead end" is encountered early.

A second part of the problem would involve what to do with the canister assuming success in extracting it from the TN-24P. One solution would be to place it in the VSC-17 where the canister ports are dimensionally relaxed (more clearance). This requires a number of operations: removal of the VSC-17 and TN-24P lids, removal of a canister from the VSC-17 and placement in the TN-24P, removal of canister 18 from the TN-24P and placement in the VSC-17, replacement of lids, pumpdown and backfill of both casks, and etc. Additionally, partial lifts of the other six canisters in the TN-24P would be completed to assure removability. Our estimate for these operations is about [redacted].

Issue of Permanent Lids on TN-24P

Another issue is the Hot Shop inquiry (or request) that the permanent lids be installed on the TN-24P when it is returned to the pad this time. Our estimate to place the permanent lids on the cask is [redacted] which includes the fact that lid placement fixtures need to be designed and fabricated, special shielding and/or remote handling capabilities are required, and numerous procedural changes are necessary (please recall that the permanent lids include a thin inner lid where shielding is inadequate for personnel to work on bolting).

Issue of Unusual Pressure Behavior in the VSC-17 Cask

The final issue is the unusual pressure behavior observed in the VSC-17 cask, principally during the initial startup and early test runs. The issue includes your request to evaluate the possibility of laboratory scale testing to research the cause of the pressure behavior. It is the project's

VSC-17 Pressure Behav
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Your consideration of the
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cc: D. Hixon, DOE-ID, MS
DOE Project Engineer

P.7-9

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: Stuck Assembly

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M. W. Fisher
November 28, 1990
RCS-111-90
Page 4

VSC-17 Pressure Behavior. The project recommends no action regarding laboratory testing for evaluating the VSC-17 cask pressure behavior unless the evaluation of the data obtained during testing of the VSC-17 cask proves unacceptable for identifying the observed behavior. Since we are still obtaining data as of November 28, 1990, a completion schedule for the evaluation is not projected at this time. The evaluation includes the efforts of PNL and others not in the project.

Your consideration of the above recommendations and your directions accordingly are requested.

Sincerely,

RC Schmitt

R. C. Schmitt, Manager
Cask Transport and Testing Project

lcm

cc: D. Hixon, DOE-ID, MS 1110
DOE Project Engineer

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