UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 15, 1991

Docket No. 50-267

MEMORANDUM FOR: Seymour H. Weiss, Director
Non-Power Reactors, Decommissioning and
Environmental Project Directorate

THROUGH: Richard F. Dudley, Jr., Chief
Decommissioning Section
Non-Power Reactors, Decommissioning and
Environmental Project Directorate

FROM: Peter B. Erickson, Senior Project Manager
Non-Power Reactors, Decommissioning and
Environmental Project Directorate

SUBJECT: SUMMARY OF MEETING WITH PUBLIC SERVICE COMPANY OF COLORADO (PSC) TO DISCUSS FORT ST. VRAIN (FSV) DECOMMISSIONING ISSUES - FEBRUARY 11, 1991

The meeting was held in Rockville, Maryland on February 11, 1991 to discuss financial and radiological issues related to decommissioning FSV. The attendees at this meeting are listed in Enclosure 1. Copies of an NRC, February 8, 1991 Request For Additional Information (RAI) on the FSV Proposed Decommissioning Plan (DP) were provided to attendees. Major deficiencies in the Plan (Enclosure 2) were discussed as follows:

COST ESTIMATE

The NRC staff informed PSC that their proposed "fixed price contract" with Westinghouse did not satisfy 10 CFR 50.82(b)(4) requirements for "an updated cost estimate for the chosen alternative for decommissioning." This position is consistent with the February 8, 1991 RAI which, also, requests a detailed cost breakdown. The NRC Project Manager and the senior OGC representative present (The Deputy Assistant General Counsel for Reactor Licensing Branch) also pointed out that the "contract" was fixed with respect to the performance of a set amount of work, i.e. removal of a set thickness of concrete from the PCRV, and was not fixed with respect to meeting NRC criteria for release of FSV to unrestricted access. The staff also pointed out that there was insufficient information submitted to ascertain whether the work and funds provided for in the contract would permit completion of the decommissioning of FSV and termination of the license. The PSC staff agreed to provide additional cost breakdown information and additional PCRV activation data and analysis.

FOI
1/1

FUNDING PLAN

The DP discusses four funding options that are being pursued by PSC and states that a funding plan would not be submitted until negotiations were complete. PSC also indicated that if none of the funding options were agreed to, PSC may elect to return to the SAFSTOR alternative. PSC was advised that it should provide a discussion of the impact of changing from the DECON option to SAFSTOR. PSC was also advised that even though SAFSTOR is an acceptable alternative, the NRC would have to start over to review that option, if it was selected.

RADIATION PROTECTION PROGRAM

The NRC staff stressed the need for a Radiation Protection Program that addresses the specific radiation protection aspects of each dismantling operation that involves highly radioactive components and that the Radiation Protection Manager should have direct access to upper management.

PSC presented a discussion of the current status of ISFSI construction, decommissioning contract status, FSV repowering activities, funding options, cost estimate and ALARA/Radiation Protection Plan (Enclosures 3 through 5). PSC also discussed the recent action by Governor Andrus of Idaho to stop FSV spent fuel shipment to the National Engineering Laboratory (Enclosure 6). ISFSI construction has now started and when completed will be able to accommodate all of the FSV spent fuel.

Peter B Erickson

Peter B. Erickson, Senior Project Manager
Non-Power Reactors, Decommissioning and
Environmental Project Directorate
Division of Advanced Reactors

Enclosures:
As stated

cc: See next page

Enclosure 1

Meeting With Public Service Company of Colorado
Fort St. Vrain Decommissioning
February 11, 1991

Attendees

Name	Organization
Peter Erickson	NRC/NRR
Dick Dudley	NRC/NRR
S. H. Weiss	NRC/NRR
William Travers	NRC/NRR
Robert Wood	NRC/NRR
J. B. Baird	NRC/R IV
C. L. Pittiglio	NEC/NMSS
Tim Johnson	NRC/NMSS
Elaine Chan	NRC/OGC
Edwin Reis	NRC/OGC
Don Warembourg	PSC
Michael Holmes	PSC
Michael Niehoff	PSC
C. Bomberger	PSC
F. J. Borst	PSC
Mary Fisher	PSC
Valerie Walker	PSC
Tim Schleiger	PSC
Vince Likar	Westinghouse
Dennis Popp	Westinghouse
J. E. Krauss	Westinghouse
Donald Neely	W-SEG
Ed Parsons	W-SEG
Jim Nicolosi	W-SEG
Bill Hug	MK Ferguson
Elizabeth Len	Winston & Strawn

FORT ST. VRAIN

PROPOSED DECOMMISSIONING PLAN

MAJOR DEFICIENCIES IN PLAN

COST ESTIMATE - 1

- FIXED PRICE CONTRACT UNACCEPTABLE
- DETAILED COST ANALYSIS NEEDED
- RADIOACTIVE CONCRETE VOLUME ESTIMATE MAY BE LOW

FUNDING PLAN - 2

- FOUR FUNDING OPTIONS PURSUED BY PSC
- NO FUNDING PLAN UNTIL PSC NEGOTIATIONS COMPLETE
- SAFSTOR IS BACKUP ALTERNATIVE

RADIATION PROTECTION PROGRAM - 3

- RADIATION PROTECTION PLAN NEEDED
- RPM RESPONSIBILITIES AND AUTHORITY

DETAILED QUESTIONS 2/8/91

NMSS, NRR AND REGION 4

PLAN SECTION IDENTIFIED FOR EACH QUESTION

ENCLOSURE 3

Public Service

AGENDA FOR PSC/NRC MEETING
FORT ST. VRAIN DECOMMISSIONING
FEB. 11, 1991

- **INTRODUCTIONS**
  - *INTRODUCE NRC PERSONNEL*
  - *INTRODUCE PSC/WESTINGHOUSE TEAM*
- **CURRENT STATUS**
  - *FUEL SHIPPING/DEFUELING/ISFSI STATUS*
  - *DECOMMISSIONING CONTRACT STATUS*
  - *REPOWERING PROJECT/FUNDING PLANS STATUS*
- **DECOMMISSIONING COST ESTIMATES/FIXED PRICE CONTRACT**
- **ALARA/RADIATION PROTECTION PLAN**
- **OPEN DISCUSSION**
- **OTHER GENERAL DISCUSSION TOPICS (AS TIME PERMITS)**

CURRENT STATUS
FORT SAINT VRAIN ACTIVITIES

- **FUEL SHIPPING STATUS**
  - *COMPLETED DRY RUN TO IDAHO ON FEB 1, 1991*
  - *POLITICAL UNCERTAINTY OF SHIPMENTS TO IDAHO*
  - *OVERALL SHIPPING CAMPAIGN DURATION ESTIMATED AT 35 TO 50 WEEKS*

- **INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)**
  - *TOTAL RELIANCE ON DOE NOT DEEMED PRUDENT*
  - *PROCEEDING WITH CONSTRUCTION OF ISFSI*
    - *FWEA/GEC ALSTHOM, PRIME CONTRACTORS*
    - *SUMMIT CONSTRUCTION, CONSTRUCTION CONTRACTOR*
    - *EBASCO SERVICES, PSC CONTRACTOR*
  - ***WILL** CONSTANTLY MONITOR ISFSI CONSTRUCTION **-VS-** FUEL SHIPPING TO IDAHO IN TERMS OF **CO**NTINUING WITH CONSTRUCTION*
  - *SCHEDULE*
    - *BEGAN CONSTRUCTION ON FEB 2, 1991*
    - *PROJECT COMPLETION, DEC 1991*

CURRENT STATUS
FORT SAINT VRAIN ACTIVITIES

▪ DECOMMISSIONING CONTRACT STATUS

- *FIXED PRICE CONTRACT WITH WESTINGHOUSE/M.K. FERGUSON*
  - ° *WORKING UNDER LIMITED SCOPE PURCHASE ORDER*

- *CONTRACT NEGOTIATIONS IN PROGRESS*
  - ° *WORK SCOPE SPECIFICATION NEAR COMPLETION*
  - ° *LEGAL CONTRACT NEGOTIATIONS IN PROGRESS*
  - ° *PROVISIONS OF FIXED PRICE CONTRACT*
  - ° *ANTICIPATED COMPLETION END OF FEBRUARY/EARLY MARCH*

- *PLANNING PHASE UNDERWAY FOR DETAILED PROJECT DEVELOPMENT*
  - ° *SITE CHARACTERIZATION*
  - ° *DEVELOPMENT OF PLANS AND PROCEDURES*

- *SCHEDULE*
  - ° *BEGIN SITE MOBILIZATION SUMMER/FALL 1991*
  - ° *BEGIN PHYSICAL DECOMMISSIONING ACTIVITIES JAN 1992*
  - ° *PROJECT COMPLETION APRIL 1995*

CURRENT STATUS

FORT SAINT VRAIN ACTIVITIES

■ REPOWERING ACTIVITIES

- *FIXED PRICE CONTRACT WITH WESTINGHOUSE/ M.K. FERGUSON/BLACK & VEATCH*
  - ° *WORKING UNDER LIMITED SCOPE PURCHASE ORDER*
  - ° *CONTRACT NEGOTIATIONS TO BEGIN SHORTLY*
- *RESOURCE GENERATION STUDY COMPLETE AND SUPPORTIVE OF REPOWERING FORT ST. VRAIN*
- *PREPARATION OF THE APPLICATION FOR A CERTIFICATE OF NECESSITY AND BENEFITS WITH THE COLORADO PUC UNDER WAY*
- *BASIS OF APPLICATION*
  - ° *REPOWER FSV AS A BASE LOAD GAS FIRED UNIT*
  - ° *CONSIDERATION OF A SOLAR OPTION*
  - ° *INCLUDE DECOMMISSIONING COSTS AS A PART OF THE REPOWERING PROCESS*
  - ° *PSC MAINTAIN PLANT OWNERSHIP, OPERATING REPOWERED FACILITY UNDER A NON RATE BASE PURCHASE POWER AGREEMENT*
  - • *DECOMMISSIONING COSTS TO BE RECOVERED WITHIN RATE STRUCTURE OF PURCHASE POWER AGREEMENT*

CURRENT STATUS
FORT SAINT VRAIN ACTIVITIES

■ REPOWERING ACTIVITIES (CONTINUED)

- *SCHEDULE*
  - *FILE APPLICATION WITH THE PUC EARLY MAR 1991*
  - *SCHEDULE AFTER APPLICATION DEPENDENT ON INTERVENTION AND POSSIBLE PUBLIC HEARINGS*
  - *RELEASE PRELIMINARY ENGINEERING FALL 1991*
  - *ON SITE MOBILIZATION/CONSTRUCTION ACTIVITIES LATE SUMMER 1992*
  - *UNIT ON LINE APRIL 1995*

CURRENT STATUS

FORT SAINT VRAIN ACTIVITIES

■ DECOMMISSIONING FUNDING

- *DECOMMISSIONING FUNDING FOR DECON OPTION TOTALLY DEPENDENT ON REPOWERING FSV AND PUC ACTIONS*

- *PSC IS FULLY AWARE OF NRC'S NEEDS FOR FUNDING PLAN INFORMATION TO EVALUATE THE PROPOSED DECOMMISSIONING PLAN (PDP)*

- *AS PSC HAS INDICATED TO THE NRC COMMISSIONERS, THE NRC UPPER MANAGEMENT AND THE NRC STAFF, PSC IS DEVELOPING THE FUNDING PLAN IN PARALLEL WITH THE PDP REVIEW PROCESS*

- *PSC IS COMMITTED TO PROVIDE NECESSARY INFORMATION TO THE NRC AS SOON AS IT BECOMES AVAILABLE.*

■ DECOMMISSIONING CONTRACT/COST ESTIMATE

- *PSC IS FULLY AWARE OF NRC NEED FOR ADDITIONAL COST AND CONTRACT INFORMATION*

- *PSC HAS COMMITTED TO PROVIDE MORE DETAILED COST INFORMATION AS WELL AS CONTRACT INFORMATION AS SOON AS POSSIBLE AFTER COMPLETION OF CONTRACT NEGOTIATIONS*

- *PSC BELIEVES THAT THE FIXED PRICE CONTRACT APPROACH NOT ONLY FULFILLS THE REGULATORY REQUIREMENTS, BUT ALSO PROVIDES THE BEST POSSIBLE ASSURANCE FOR TIMELY PROJECT COMPLETION WITHIN PROJECTED COSTS*

Public Service

ENCLOSURE 4

FORT ST. VRAIN
DECOMMISSIONING COST ESTIMATES/
FIXED PRICE CONTRACT

- **PURPOSE OF FINANCIAL PRESENTATION:**

  - *Demonstrate Acceptability Of Competitive Bid Process and Firm Fixed Price Contract*

  - *Provide Reasonable Assurances That The Cost of Decommissioning is Accurately Identified*

  - *Demonstrate That Approach Provides a Level of Assurance Beyond That Provided By a Detailed Cost Estimate*

  - *Use of An Approach Other Than A Detailed Cost Estimate Is Allowable*

OVERVIEW

- **10 CFR 50.82 REQUIRES PLANTS TO SUBMIT A DETAILED COST ESTIMATE FOR DECOMMISSIONING**
  - *Contractor Commitment To Decommissioning Cost Is Not Feasible In Many Cases*
  - *Without A Firm Contractor Commitment, A Detailed Cost Estimate Is The Best Available Basis To Determine Acceptable Funding*

- **BOTH DETAILED COST ESTIMATES AND FIRM FIXED PRICE CONTRACTS:**
  - *Are Based On Current Assumptions and Regulatory Guidance*
  - *Are Based On a Detailed Scope of Work*
  - *Provide Suitable Basis for Funding Plan*
  - *Are Subject to Same Uncertainties*

OVERVIEW

- **DECOMMISSIONING RULE IS INTENDED TO PROVIDE PROGRESSIVELY GREATER ASSURANCE OF IDENTIFYING COST OF DECOMMISSIONING**

  - *The Nearer A Licensee Gets To Eventual Decommissioning, More Accuracy Is Required In Determining The Decommissioning Cost*

    - *Initially Licensees Can Use Minimum Certified Amount*

    - *Must Submit Site-Specific Cost Estimate 5 Years Prior To Final Shutdown*

    - *Must Update Site-Specific Cost Estimate With Proposed Decommissioning Plan*

  - *Each Of These Estimates Progressively Reduces Uncertainty In Estimating Real Cost Of Decommissioning*

  - *However, Existence Of A Detailed Cost Estimate Does Not Implicitly Prove that Decommissioning Will Occur for That Estimate*

  - *Selection Of A Decommissioning Contractor On The Basis Of A Firm Fixed Price Contract Represents A Significant Step In Determining Actual Cost Of Decommissioning And Minimizes Cost Uncertainty.*

CURRENT STATUS
DECOMMISSIONING PLANNING/FUNDING

▪ PROPOSED DECOMMISSIONING PLAN:

- *Submitted November 5, 1990; Based On DECON Alternative*

- *Breakdown of the Decommissioning Cost:*

WESTINGHOUSE -	*$100,460,000*
PSC -	*36,669,000*
TOTAL COST	*$137,129,000*

▪ DECOMMISSIONING FUNDING:

- *Trust Fund Balance (As Of 12/90) - $25.4 Million*

- *Limited Amount ($1.7 M) Remaining To Be Collected From Ratepayers Per 1986 Settlement Agreement*

- *DECON Funding Plan To Be Submitted To The NRC In Mid-1991*

- *PSC Is Out of Rate Base*

PSC COMPETITIVE BID PROCESS

- **DECOMMISSIONING COST DETERMINED BY COMPETITIVE BID PROCESS**
  - *PSC's Competitive Bid Process Has Been a Lengthy and Comprehensive Process*
  - *Technical Feasibility Study, the RFP, and the Bid Process Provide Extreme Confidence that Full Scope of Work Has Been Identified For The DECON Alternative*
  - *Competitive Bid Process Provides Legally Binding Fixed Price Decommissioning Contract*
  - *Multiple Independent Cost Evaluations Provide Confidence That "Real" Cost of Decommissioning is Identified.*

PSC COMPETITIVE BID PROCESS

- **DESCRIPTION OF PSC'S APPROACH AND KEY STEPS:**

(1) PRELIMINARY FEASIBILITY STUDY (8/88 - 1/89)

- *Evaluated PCRV Dismantlement & Removal of Core Internals, Support Floor, & Steam Generators*
- *Included Fully Detailed Cost Estimate; Provided During Preliminary Decommissioning Plan Review*
- *Separately, PSC Also Performed Detailed Activation and Plateout Analyses*

(2) DETAILED REQUEST FOR PROPOSAL (1/89 - 12/89)

- *Determined Complete Decommissioning Scope of Work*
- *Established Decommissioning Assumptions and Identified Regulatory and Draft Guidance*
- *Comparable to Basis for Detailed Cost Estimates*

PSC COMPETITIVE BID PROCESS

(3) PROPOSAL PREPARATION/ONSITE VISITS (12/89 - 4/90)

- *Determined Qualified Bid Teams*
- *Research And Preparation Period - Confirmed Work Scope And Assumptions*
- *Full Depth of Industry Decommissioning Experience Participated in Response to FSV RFP*
  - *All Major A/E's Represented*
  - *Major Teaming Arrangements*
  - *International Decommissioning And Gas-Cooled Reactor Experience*

(4) BIDDER PRESENTATIONS (4/90)

- *Full Day Presentation And Q&A Period With Each Major Bid Team*

PSC COMPETITIVE BID PROCESS

(5) PROPOSAL EVALUATION (4/90 - 6/90):

- *1 of 4 Responded With Firm Fixed Price; Others Required to Resubmit As FFP to Remain in Consideration*
- *When Resubmitted, 2 of 3 Increased Avg of 37%*

(6) PSC CORPORATE EVALUATION & CONTRACTOR SELECTION:

- *Detailed Assessments And Recommendations Were Evaluated By PSC Senior Management Team*
- *Made Final Recommendation to CEO and Board of Directors, Who Confirmed Selection of Decommissioning Contractor*

CONCLUSIONS OF COMPETITIVE BID PROCESS

- COMPETITIVE BID PROCESS WAS INVOLVED, COMPREHENSIVE PROCESS OVER 20 MONTHS IN DURATION

- PSC CONFIDENT SCOPE OF WORK FULLY IDENTIFIED DURING ITERATIVE PROCESS: FEASIBILITY STUDY, RFP, BIDDER INVESTIGATIONS, Q&A SUBSEQUENT TO PROPOSALS

- DECOMMISSIONING CONTRACTOR SELECTED WAS NOT THE LOWEST BIDDER; FINAL SHORT LIST WERE TWO HIGHEST BIDDERS

- PROCESS PROVIDED MULTIPLE, INDEPENDENT COST EVALUATIONS, INCLUDING PSC INTERNAL COST EVALUATIONS AS WELL AS AT LEAST 4 CONTRACTOR COST EVALUATIONS

- BASED ON CLOSE AGREEMENT OF PROPOSED DECOMMISSIONING COSTS, PSC CONVINCED THAT REAL COST OF DECOMMISSIONING HAS BEEN IDENTIFIED; MEETS ULTIMATE INTENT OF 10 CFR 50.82

- FIXED PRICE CONTRACT APPROACH NOT ONLY FULFILLS THE REGULATORY REQUIREMENTS, BUT ALSO PROVIDES THE BEST POSSIBLE ASSURANCE FOR TIMELY PROJECT COMPLETION WITHIN PROJECTED COSTS

PSC COMPETITIVE BID PROCESS

■ WESTINGHOUSE BID PREPARATION PROCESS

- *Multi-Step Process to Arrive At Decommissioning Price*
- *Developed a Scope of Work Based on the RFP*
- *Determined a Conceptual Approach - "WET" Approach*
  - ° *Water Provides Superior Shielding & Maintains Exposures ALARA*
  - ° *Water Enhances Control of Airborne Contamination*
  - ° *Allows Use of Simple Line-Of-Sight Tools & Proven Techniques*
  - ° *Increased Reliability; No Extensive Reliance On Robotics or Remote Control Operations*
  - ° *Contractor Experienced in Underwater Projects*
- *Developed a Detailed Work Breakdown Structure (WBS)*
  - ° *Developed Schedule Based on WBS*
  - ° *Manloaded Schedule for Craft and Radiation Protection*
  - ° *Developed Support Efforts Required Based on WBS, Including Necessary Equipment, Tooling, Management and Indirect Labor*
  - ° *Developed Cost for Each WBS Element Based on Schedule*
  - ° *Added Escalation and Margin to Determine Final Price*

■ DISMANTLEMENT PLAN

- *Overall Plan Provided in Proposed Decommissioning Plan Sections 2.2 and 2.3*

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SAMPLE WBS LEVEL 4
PRICE BREAKDOWN

LEVEL 4 WBS #	TITLE	PRICE * $K
2.3.1.03	PCRV ASBESTOS REMOVAL	
2.3.1.04	PCRV PREPARATIONS	
2.3.1.05	MODIFY MAIN CRANE	
2.3.1.06	REFURBISH He CIRC/COMPONENT HANDLING	
2.3.1.07	TENDON DETENSIONING AND REMOVAL	
2.3.1.08	REMOVE REGION CONSTRAINT DEVICES, BLOCKS	
2.3.1.09	REMOVE He PURIFICATION WELL EQUIPMENT	
2.3.2.01	CONCRETE REMOVAL TOOLS	
2.3.2.03	SEAL PCRV COOLING TUBES	
2.3.2.04	CENTER ACCESS PENETRATION	
2.3.2.05	PCRV SHIELDING WATER SYSTEM	
2.3.2.06	AIRBORNE CONTAMINATION CONTROL	
2.3.2.07	CUT CORE TOP HEAD	
2.3.2.08	FLOOD PCRV	
2.3.2.09	PCRV CAVITY WORK PLATFORM	
2.3.3.01	GRAPHITE GRAPPLING TOOLS	
2.3.3.03	DEFUELING ELEMENTS	
2.3.3.04	REPLACEMENT & PERM HEX REFLECTOR BLOCKS	
2.3.3.05	LARGE SIDE REFLECTOR ELEMENTS	
2.3.3.06	BORONATED SPACER ELEMENTS	
2.3.3.07	HASTALLOY CAN HEX RELFECTOR BLOCKS	
2.3.3.08	CORE SUPPORT BLOCKS AND POSTS	
2.3.4.03	CORE BARREL AND KEYS	
2.3.4.04	CORE SUPPORT FLOOR	
2.3.4.05	TOP CSF INSULATION	
2.3.5	PCRV LOWER PLENUM	
2.3.5.03	TWELVE STEAM GENERATOR MODULES	
2.3.5.04	FOUR He DIFFUSER & SHUTOFF VALVE ASSY	
2.3.5.05	CORE SUPPORT FLOOR COL/LWR FLOOR, FLEX COL	
2.3.5.06	PCRV LOWER PLENUM INSUL & COVER PLATES	
2.3.6.01	REMOVE BELTLINE ACTIVATED CONCRETE	
2.3.6.02	DECONTAMINATE LOWER PCRV LINER	
2.3.6.04	DEMOBILIZE AND CLEANUP AREA	

* Pricing to be provided after contract is in place.

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FORT ST. VRAIN PROJECT - WBS DICTIONARY

Responsibility: Site Services Operations Manager	WBS NO.: 2.3.2.7 TITLE: Cut Core Top Head
Effective Date: January 3, 1991 Revised Date: Rev. 0	

SCOPE

Remove the volume of concrete, liner plate, insulation, and included penetrations above the liner inner diameter.

Core bore horizontal holes at el. 4865 (5-6 holes required) relative to clock position. First hole enters at 1:30, exits at 4:40. Second hole enters at 3:30, exits at 6:30. Third hole enters at 5:30, exits at 8:30, and so on. These holes will intercept and provide a continuous path to allow a diamond wire (DW) horizontal cut. Core bore vertical hole from top of PCRV to intercept horizontal holes or kerf. These holes will define cut lines to cut the "plug" into a hex shape which will subsequently be divided into 8 segments for removal. (A backup plan exists in case horizontal holes to not intersect. The backup will require DW cutting of a greater area.) After removal of the hex (approximately 35' across the flats and 14.5' thick, the top liner plate will be covered with approximately 1' of heavily reinforced concrete. The circumference of liner is to be laid out and the 8-10" deep saw cut made in the remaining concrete to define an annulus approximately 18-24" wide above the liner. The concrete in this annulus will be broken out using a mini-max and jack-hammers. Flooding of R_X to precede this activity. With the liner exposed, a flame-cut (oxy-acetylene) strip will be removed exposing the kaowool. A strip of kaowool will be removed exposing the inner seal sheet/cover plate (inner/outer reference is from inside R_X cavity) from which a strip will be flame cut to expose the outer layer of kaowool. A strip of this kaowool will be removed exposing the seal sheet/cover plate which will be flame cut. R_X chamber to be under negative pressure during this cut. When cut, the 1' thick disk (concrete, liner, and insulation will be removed, completing activity for this WBS element. See Qtys.)

Quantities:

Est. weight of top head "plug"	1200 Ton
1/8 top head plug	150 Ton
Area of horizontal wire cut	1060 SF
Area of vertical hex sides	1696 SF
Area of vertical y axis	566 SF
Area of vertical x axis	1470 SF

DELIVERABLES

Removal of top head

DRAFT

FORT ST. VRAIN PROJECT - WBS DICTIONARY

Responsibility: Site Services Operations Manager	WBS NO.: 2.3.3.6
	TITLE: Boronated Spacer Elements
Effective Date: January 3, 1991	
Revised Date: Rev 0	

SCOPE

Remove all 1152 Boronated Spacer Elements; approximate weight per element is 195 lbs. 116 to 344 boronated SS pins per element. Typical graphite size is 21" x 10" x 16.5".

Quantity	Drawing
936	R1701-750
96	R1701-810
48	R1701-820
24	R1701-830
48	R1701-850

After completion of flooding, remove from PCRV with grappling tool. Invert underwater to dump boronated SS pins into a submerged cask liner. Remove liner with a bottom loading cask. Let graphite drip drain. Ship graphite as LSA. Remove layer by layer. Work four stations.

DELIVERABLES

Remove each of the 12 layers

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FORT ST. VRAIN PROJECT - WBS DICTIONARY

Responsibility: Site Services Operations Manager	**WBS NO.:** 2.3.3.3 **TITLE:** Defueling Elements
Effective Date: January 3, 1991 **Revised Date:** **Rev.** 0	

SCOPE

Remove 1482 defueling elements, Dwg. R-1801-105, 290 lb. each graphite, 14.2 inches across hex flats by 31.2 inches long.

Remove from PCRV after coring head and flooding with grappling tool. Invert to drain blend holes and let set to drain absorbed water. Load directly onto shipping skid as LSA. Working four stations simultaneously from work platform.

DELIVERABLES

Remove 12 layers of defueling elements and reflector blocks

OTHER CONSIDERATIONS

- **INTERACTION WITH COLORADO PUBLIC UTILITIES COMMISSION**

  - *With FSV Out of Rate Base, CPUC Approval Is Required In The Repowering Process*

  - *PSC Representatives and Colorado Public Utilities Commission (CPUC) Commissioners Have Exchanged Information Related to FSV Repowering*

  - *Repowering Is The Only Means Available To Generate the Necessary Revenues To Fund The Decommissioning of FSV Under The DECON Alternative*

  - *PSC Has Significant Financial AND Regulatory Interest to Accurately Represent The Cost of Decommissioning*

OTHER CONSIDERATIONS

- **PREFERRED INDUSTRY AND GOVERNMENT CONTRACTING PRACTICE**

  - *Fixed Price Contracts Are A Currently Accepted And Preferential Contracting Practice*

    - *Preferred Approach Used In Both Commercial And Government Contracts*

    - *Distinct Preference For Fixed Price Contracts Over T&M Or CPFF Contracts*

  - *A Fixed Price Contract Results In Shared Responsibility For Satisfactory Completion Of Contract*

    - *Incumbent On Entity Desiring Service To Fully Define Scope Of Work And Estimate Approximate Cost*

    - *Incumbent On Contractor To Fully And Accurately Estimate Costs Based On Fixed Work Scope*

OTHER CONSIDERATIONS

- **RULE ALLOWS USE OF ALTERNATIVE COST ESTIMATING METHODOLOGIES**

  - *Use Of Competitive Bid Process And Award Of Fixed Price Contract Is Allowed By Decommissioning Rule And NRC Reg. Guide 1.159*

    "Studies other that the PNL or ORNL studies may be used to estimate decommissioning costs. The reasonableness of the estimate should be shown by indicating the bases used, and the principal assumptions used in the estimate..."

  - *PSC Has Attempted To Demonstrate Reasonableness And Bases Of Its Approach*

    - *Proposed Decommissioning Plan Provided Approach, Major Assumptions, Bases And Scope Of Contract*

    - *Financial Assurance Submittal Of December 17, 1990:*

      (1) Justification For PSC's Approach
      (2) Description of the Competitive Bid Process
      (3) Comparison With Existing Guidance
      (4) Detail of Cost Breakdown to be Provided

SUMMARY AND CONCLUSIONS

- **REASONABLE APPROACH THAT MEETS THE UNDERLYING INTENT OF THE DECOMMISSIONING RULE**
  - *IDENTIFIED COMPLETE SCOPE OF DECOMMISSIONING*
  - *IDENTIFIED REAL COST OF DECOMMISSIONING*
- **DETAILED COST ESTIMATE -VS- FIXED PRICE CONTRACT**
  - *BOTH DEPENDENT ON QUALITY OF UNDERLYING ASSUMPTIONS, ANALYSES AND REGULATORY GUIDANCE AT THE TIME OF DEVELOPMENT*
  - *LESS COST UNCERTAINTY WITH FIRM FIXED PRICE CONTRACT THAN WITH COST ESTIMATE*
- **DETAILED COST ESTIMATE PROVIDES NO GUARANTEE THAT CONTRACTOR WILL PERFORM DECOMMISSIONING AT THAT COST**
- **COMPETITIVE BID/FIXED PRICE APPROACH IS AN ACCEPTABLE MEANS OF IMPLEMENTING CURRENT REGULATORY REQUIREMENTS**
  - *NATURAL PROGRESSION AFTER MINIMUM CERTIFIED AMOUNT AND SITE SPECIFIC COST ESTIMATE*
  - *IDENTIFIED FULL DECOMMISSIONING WORK SCOPE*
  - *PROVIDED MULTIPLE COST EVALUATIONS*
  - *MAKES GOOD BUSINESS SENSE*

ENCLOSURE 5

Public Service

FORT ST. VRAIN

ALARA/RADIATION PROTECTION PLAN

RADIATION PROTECTION PROGRAM

OVERVIEW

- **PROGRAMMATIC APPROACH TO RADIATION PROTECTION**
  - *SCOPE OF PROGRAM DESCRIBED IN PROPOSED DECOMMISSIONING PLAN*
  - *DECOMMISSIONING PLAN DESCRIPTION WILL BE SUPPLEMENTED BY FURTHER DETAILED IMPLEMENTING MANUALS AND PROCEDURES*
- **THE RADIATION PROTECTION PROGRAM WILL INCLUDE:**
  - *THE RADIATION PROTECTION MANUAL*
  - *THE RADIOACTIVE WASTE MANUAL*
  - *THE RADIATION PROTECTION TRAINING MANUAL*
  - *THE OFFSITE DOSE CALCULATION MANUAL*

RADIATION PROTECTION PROGRAM

- **THE RADIATION PROTECTION MANUAL WILL INCLUDE:**
  - *ALARA PROCEDURES*
  - *RADIATION PROTECTION PROGRAM PROCEDURES*
  - *DOSIMETRY PROCEDURES*
  - *ENVIRONMENTAL MONITORING PROCEDURES*
  - *INSTRUMENTATION PROGRAM PROCEDURES*
  - *FINAL RADIATION SURVEY PROCEDURES*

- **THE RADIOACTIVE WASTE MANUAL WILL INCLUDE:**
  - *RADIOACTIVE WASTE PROCESSING, HANDLING AND SHIPPING PROCEDURES*
  - *PROCESS CONTROL PROGRAM*

RADIATION PROTECTION PROGRAM

- **THE RADIATION PROTECTION TRAINING MANUAL WILL INCLUDE:**
  - *GENERAL EMPLOYEE RADIATION TRAINING PROCEDURE*
  - *RADIATION WORKER AND SUPERVISOR TRAINING PROCEDURES*
  - *TECHNICIAN QUALIFICATION & TRAINING PROGRAM*
  - *PROVISIONS FOR SPECIAL TRAINING AND QUALIFICATIONS (RESPIRATORY PROTECTION, ETC.)*
- **THE OFFSITE DOSE CALCULATION MANUAL WILL INCLUDE:**
  - *RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM*
  - *EFFLUENT MONITORING PROGRAM*

PSC COMMITMENT TO ALARA

- **DECOMMISSIONING ALARA BUDGET**
  - *PROPOSED DECOMMISSIONING PLAN ESTIMATE:*
    - *435 PERSON-REM OVER 3 YEARS*
  - *SIMILAR TO THE FSV CONTROL ROD DRIVE REFURBISHMENT PROJECT ESTIMATE*
  - *LESS THAN ANNUAL OUTAGE EXPOSURES SEEN AT PWR'S AND BWR'S*

- **"WET" APPROACH TO PCRV DISMANTLEMENT IS ALARA**
  - *PROVIDES SUPERIOR SHIELDING & MAINTAINS EXPOSURES ALARA*
  - *ENHANCES CONTROL OF AIRBORNE CONTAMINATION*
  - *ALLOWS USE OF SIMPLE LINE-OF-SIGHT TOOLS AND PROVEN TECHNIQUES*
  - *INCREASES RELIABILITY; NO EXTENSIVE RELIANCE ON ROBOTICS OR REMOTE CONTROL OPERATIONS*
  - *CONTRACTOR EXPERIENCED IN UNDERWATER PROJECTS*

RADIATION PROTECTION PROGRAM

- **PROPOSED DECOMMISSIONING PLAN CHANGES**

  - *SECTION 3.2: RADIATION PROTECTION PROGRAM WILL BE STRUCTURED TO CLOSELY MATCH THE FORMAT OF REG. GUIDE 8.8*

  - *ORGANIZATION CHARTS WILL BE ENHANCED TO CLEARLY SHOW RADIATION PROTECTION MANAGER AS DIRECT REPORT TO PSC DECOMMISSIONING PROGRAM MANAGER*

  - *ADDITIONAL SPECIFIC COMMENTS FROM THE NRC REVIEW WILL BE EVALUATED AND INCORPORATED INTO THE PLAN WHERE APPROPRIATE*

PSC COMMITMENT TO ALARA

- **FORT ST. VRAIN HAS HISTORY OF LOW ANNUAL RADIATION EXPOSURE**
  - *SINCE BEGINNING OPERATION IN 1974, FORT ST. VRAIN TOTAL ANNUAL CUMULATIVE EXPOSURE HAS REMAINED BELOW 1 PERSON-REM DURING 8 YEARS, INCLUDING 1990*
  - *CUMULATIVE ANNUAL EXPOSURE HAS REMAINED BELOW 2 PERSON-REM DURING 12 YEARS*
  - *CUMULATIVE ANNUAL EXPOSURE EXCEEDED 3.5 PERSON-REM DURING ONLY ONE YEAR*

- **LOW EXPOSURE HISTORY ON MAJOR PROJECTS**
  - *1985 CONTROL ROD DRIVE REFURBISHMENT:*
    - *PRE-PROJECT ESTIMATE - 110 PERSON-REM*
    - *ACTUAL EXPOSURE - 29 PERSON-REM*

PSC COMMITMENT TO ALARA

- **1991 REVISION TO 10 CFR 20**

  - *WILL BE IMPLEMENTED AT THE OUTSET OF DECOMMISSIONING, APPROXIMATELY 1 YEAR IN ADVANCE OF REQUIRED IMPLEMENTATION DATE (JANUARY 1, 1993)*

  - *ADMINISTRATIVE LIMITS TO BE ESTABLISHED:*

    - *ANNUAL EXPOSURE NOT TO EXCEED 2 REM WITHOUT MANAGEMENT APPROVAL*

    - *LIFETIME EXPOSURE (IN REM) NOT TO EXCEED THE INDIVIDUAL AGE IN YEARS WITHOUT MANAGEMENT APPROVAL*

SUMMARY

- PROGRAMMATIC APPROACH IS DESCRIBED IN PROPOSED DECOMMISSIONING PLAN
- IMPLEMENTING PROCEDURES WILL INCLUDE DETAILS OF RADIATION PROTECTION PLAN
- PSC/WESTINGHOUSE TEAM HAS EXPERIENCE WITH OUTAGE WORK AND MAJOR PROJECTS OF THIS MAGNITUDE
- PSC/WESTINGHOUSE TEAM IS COMMITTED TO EXCELLENCE IN RADIATION PROTECTION PROGRAM FOR DECOMMISSIONING

ENCLOSURE 6

Interoffice Memo

Public Service
Public Service Company of Colorado

RECD FOR DISTRIBUTION
DIAMOND HILL
2-8-91
215

VPO-91-0021

DATE: February 8, 1991

TO: All Nuclear Operations Personnel

FROM: A. Clegg Crawford, Vice President, Nuclear Operations

SUBJECT: GOVERNOR ANDRUS'S LETTER TO PSC STOPPING SPENT FUEL SHIPPING

During the last few months, the Department of Energy (DOE) has been working with Governor Andrus to come to final resolution regarding the shipment of Fort St. Vrain spent fuel to the Idaho National Engineering Laboratory. The DOE, as you are aware, recently directed Public Service Company of Colorado to implement our established plans to begin shipping our spent fuel in early February. As a result, we took the following action:

1. We sent out the 10-day advance notification to the Nuclear Regulatory Commission and DOE on January 29, 1991.

2. We dispatched the "dry run" shipment on January 31, 1991.

3. We hand delivered advance notifications to the governor's designees in the "corridor" states of Colorado, Wyoming, Utah, and Idaho on February 6, 1991.

The notifications to the states of Utah and Idaho were hand delivered by PSC's Senior Vice President of Electric Operations, Mr. Patrick McCarter, who upon delivering the notification to Governor Andrus's designee was provided a letter from Governor Andrus. A copy of that letter is attached.

As a result of Governor Andrus's letter and subsequent information that indicates our shipments would be stopped at the Idaho state border, our shipments to INEL have been postponed. However, we have waited long enough, and yesterday, February 7, 1991, we filed in a federal court in Idaho to force Governor Andrus to comply with federal law and to allow our shipment to proceed to the INEL. As the saga unfolds, I will keep you informed.

A. Clegg Crawford

A. Clegg Crawford

ACC:dr

FORM (C) 650-22-4016

OFFICE OF THE GOVERNOR
STATE CAPITOL
BOISE 83720

(208) 334-2100

CECIL D. ANDRUS
GOVERNOR

February 6, 1991

DELIVERED BY HAND

Public Service Company of Colorado

To whom it may concern:

This letter will serve as official notification by the state of Idaho that shipments of radioactive waste material from the Fort St. Vrain facility in Colorado will not be accepted in the state of Idaho. We are prepared to take all appropriate steps to prevent these shipments from entering the state of Idaho.

I respectfully suggest that you immediately contact the U.S. Department of Energy to begin the process of finding an alternative storage site.

Sincerely,

Cecil D. Andrus

Cecil D. Andrus
Governor

CDA:mjj
J0206.01
a/f

Public Service **News**

Public Service
Company of Colorado
P.O. Box 840
Denver, Colorado 80201

For immediate Release

Contact

Media Relations
(303) 571-7726

February 8, 1990

DENVER -- Public Service Co. of Colorado (NYSE: PSR) Thursday filed a complaint in the U.S. District Court in Boise, Idaho, against Idaho Gov. Cecil Andrus for refusing to allow its used nuclear fuel from the Fort St. Vrain Nuclear Generating Station to be shipped to the Department of Energy's Idaho National Engineering Laboratory.

Under the terms of a contract executed in 1965, DOE has agreed to accept the spent fuel from Public Service Co. of Colorado. Secretary of Energy James Watkins noted in a letter sent to Governor Andrus Thursday that DOE has legal authority and "will receive for storage spent fuel delivered by the Public Service Co. to the INEL facility." Watkins also said that DOE was in compliance with the National Environmental Policy Act, and -- consistent with the law's requirements -- had completed an environmental assessment on the transportation, receipt and storage of the fuel.

Public Service Co. vice president of nuclear operations A. Clegg Crawford said the company had hoped that the Department of Energy and Governor of Idaho would resolve this issue through negotiations. "However, it appears our only recourse is in the federal courts," Crawford said.

Crawford noted that safety or environmental concerns are not the issue. "We've made more than 120 shipments to the National Engineering Laboratory in the past, and w are in full compliance with Nuclear Regulatory Commission and Department of Transportation regulations."

"It's important to point out that the Department of Energy continues to plan to use the spent fuel from Fort St. Vrain in a research and development program to provide data for future reactor design and operation and the much-needed development of waste-processing technologies," Crawford said.

-- more --

The company noted that it was unable at this time to assess the financial impact, if any, of the spent fuel shipping delay.

Fort St. Vrain, the nation's only high-temperature, helium gas-cooled reactor, was shut down August 1989 because of the financial impact of anticipated repairs on its steam generators. Public Service Co. plans to decommission the nuclear aspects of the plant and re-power it by 1995 with natural gas.

-- PSCo --

Andrus to DOE: Borders stay closed to waste

IDAHO FALLS
"POST REGISTER"
FEBRUARY 7, 1991

Renée Carter
and Rhoda Rhohert
Post Register

Gov. Cecil Andrus, calling the Department of Energy "liars and cheaters," said he will go to court or even pay the Idaho State Patrol to close Idaho's borders to nuclear waste shipments from a mothballed nuclear power plant in Colorado.

Andrus said he ready to "do every thing necessary" to prevent Public Service Co. from shipping spent nuclear fuel from the Fort St. Vrain nuclear power plant to the Idaho National Engineering Laboratory. DOE said the waste is necessary for research for the proposed New Production Reactor.

"I don't trust them," Andrus said in a telephone interview this morning. "I've been lied to and I've been cheated."

But Sen. Steve Symms, R-Idaho, said Andrus' intransigence is demagogy and will jeopardize the future of the INEL.

"The governor's political posturing will probably receive some plaudits and praise from the media and will most likely be received well by the public," said Symms in a statement released this morning. "I fear, however, that in the long run this is only

See ANDRUS, Page A8

ANDRUS

From Page A1

damaging to the state and the nation."

Public Service Co. of Denver said today it is rethinking its plans for shipment of the highly radioactive waste.

"Basically, we're just analyzing what makes sense for us at this point," spokesperson Kim DiVigil said this morning. "We haven't made a decision as far as what's next."

DiVigil denied that a date had been set for the first waste shipment, saying only that the company had planned to start shipments this month.

But INEL officials and Andrus said there was a schedule for the first shipment. Neither would divulge any details, however, for security reasons. On Wednesday, an Energy Department spokesman said the shipments could start as early as Sunday.

Andrus said his staff is preparing legal action to stop the shipments and that DOE has indicated to him they will take their case to court if necessary.

Symms said the legal action could cost federal taxpayers more than $60 million.

"I have no idea what it will cost the Idaho taxpayer, but I'm told by constitutional attorneys that Idaho's chances of winning their argument are slim," Symms said.

Andrus refused to reveal his legal strategy, but he said he has had ongoing talks with DOE for months up to Monday night and they would give him no guarantees they would built the $600 million plant needed to reprocess the spent fuel.

"What we could do with 60 million dollars," Symms said. "That's the amount the DOE is willing to spend to begin preparation for a new reprocessing plant.

Andrus dismissed assertions that the waste is needed for New Production Reactor research. The utility made earlier shipments of spent fuel to INEL in the early 1980s.

"If they really wanted that waste for research and development wouldn't they have used the waste that's already there?" Andrus asked. "It smells again like Big Daddy is going to make Idaho the de facto garbage dump of the world."

But Symms said DOE needs all the waste shipments to conduct its research, "and the governor is completely aware of this."

Public Service Co. is planning to ship as many as 1,482 blocks of spent nuclear fuel to INEL, making 247 shipments over a period of about a year. From 1980 to 1986, the utility made 121 safe shipments to INEL, DiVigil said.

It also made a test run to INEL last week, which did not involve any radioactive materials. This also went well, DiVigil said.

A reprocessing plant, connected to the current Idaho Chemical Processing Plant, would reduce the waste volume by 90 percent and be a necessary part of any permanent NPR facility at INEL. A new facility is needed because the fuel from Fort St. Vrain and for a proposed high temperture gas-cooled NPR has graphite mixed in with the uranium, plutonium, tritium and waste products.

Andrus said he is still willing to accept a written agreement from DOE that it would either built the reprocessing plant or pay penalties of $25 million annually if the agency can't make its timetable.

Symms said DOE has "gone the extra mile" to meet Andrus' objections. "They have offered him a contractual agreement which addresses every demand he has made, which they are legally able to address," Symms said.

"The ball is in the governor's court," Symms said. "He can choose to sit down and work this out for everyone's benefit. Or he can choose to obstruct and cost the taxpayer's millions of dollars to settle this in court."

The Shoshone-Bannock Tribes also has indicated it will file a suit to prevent the waste from being shipped across its reservation.

FUNDING PLAN

The DP discusses four funding options that are being pursued by PSC and states that a funding plan would not be submitted until negotiations were complete. PSC also indicated that if none of the funding options were agreed to, PSC may elect to return to the SAFSTOR alternative. PSC was advised that it should provide a discussion of the impact of changing from the DECON option to SAFSTOR. PSC was also advised that even though SAFSTOR is an acceptable alternative, the NRC would have to start over to review that option, if it was selected.

RADIATION PROTECTION PROGRAM

The NRC staff stressed the need for a Radiation Protection Program that addresses the specific radiation protection aspects of each dismantling operation that involves highly radioactive components and that the Radiation Protection Manager should have direct access to upper management.

PSC presented a discussion of the current status of ISFSI construction, decommissioning contract status, FSV repowering activities, funding options, cost estimate and ALARA/Radiation Protection Plan (Enclosures 3 through 5). PSC also discussed the recent action by Governor Andrus of Idaho to stop FSV spent fuel shipment to the National Engineering Laboratory (Enclosure 6). ISFSI construction has now started and when completed will be able to accommodate all of the FSV spent fuel.

Original signed by:
Peter B. Erickson, Senior Project Manager
Non-Power Reactors, Decommissioning and
Environmental Project Directorate
Division of Advanced Reactors

Enclosures:
As stated

cc: See next page

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