

MAR 01 1990

Docket No. 72-9 (50-267)

MEMORANDUM FOR: Charles J. Haughney, Chief
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

THRU: John P. Roberts, Section Leader
Irradiated Fuel Section
Fuel Cycle Safety Branch

FROM: Steve R. Ruffin
Irradiated Fuel Section
Fuel Cycle Safety Branch

SUBJECT: MEETING WITH PUBLIC SERVICE COMPANY OF COLORADO (PSC)

DATE/TIME: February 15, 1990; 9:00 a.m.

LOCATION: Room 10B-11, One White Flint North Building,
Rockville, Md

ATTENDEES: See Enclosure 1

PURPOSE: To discuss submittal of a license application for an
Independent Spent Fuel Storage Installation (ISFSI) under
Part 72 at PSC's Fort St. Vrain (FSV) nuclear power plant site.

DISCUSSION: PSC introduced the topics to be covered and the discussion generally followed the proposed agenda (See Enclosure 2, page 2). PSC briefly updated the NRC on the current Fort St. Vrain status regarding the fuel, fuel movement, and DOE response. The discussion followed with the proposed installation which is based on the FW Energy Applications, Inc., Modular Vault Dry Store (MVDS) design, modified to accept high-temperature, gas reactor fuel on the Fort St. Vrain site.

The QA program was discussed. PSC presented its plan regarding: (1) the proposed 10 CFR Part 50 Appendix B Program for the ISFSI, (2) methods to assure that there is no down-grade in the QA Program so that the requirements of 10 CFR Part 72 are maintained after decommissioning of the FSV reactor, and (3) introduced the "enhanced quality" controls for the concrete not important to safety. The QA program will be addressed through the Division of License Performance and Quality Evaluation, MRR.

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PDR ADOCK 05000267
PNC

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NF08

Charles Haughney

- 2 -

PSC plans to design such that there will be no radiation monitoring instrumentation at the MVDS, however, TLDS will be used for personnel monitoring. It was indicated that the emergency planning program will be implemented through 10 CFR Part 50. PSC will establish and maintain a security and fuel accountability system to meet the requirements of 10 CFR Part 72.

PSC briefly reviewed its security plan and design for physical protection. During the discussion it was indicated that a possible exemption from certain requirements of 10 CFR 73.50 may be requested based on specific conditions that will exist at the fuel storage location. Physical Security issues will be addressed through the Division of Reactor Inspection and Safeguards, NRR, and the Division of Safeguards and Transportation, NMSS.

PSC also addressed the "commencement of construction" issue surrounding its early construction request dated February 7, 1990. It was communicated that the early construction activities requested are for site characterization and preconstruction monitoring. PSC indicated that the requested actions are necessary to establish background information related to site suitability and environmental values.

Interfaces between the ISFSI and the reactor will be required while Fort St. Vrain is being decommissioned. Eventually, the ISFSI will be required to have its own safety committee, quality assurance program, staff training, etc., separate from the reactor, as the reactor phases out activities and staff. This review should address the installation as a separate entity to avoid transition problems. Where this is not feasible or appropriate, transitions should be planned to avoid the need to change license conditions, and to ensure that no interface areas are neglected.

PSC plans to submit its ISFSI license application in July of 1990.

Original Signed by

Steve R. Ruffin
Irradiated Fuel Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

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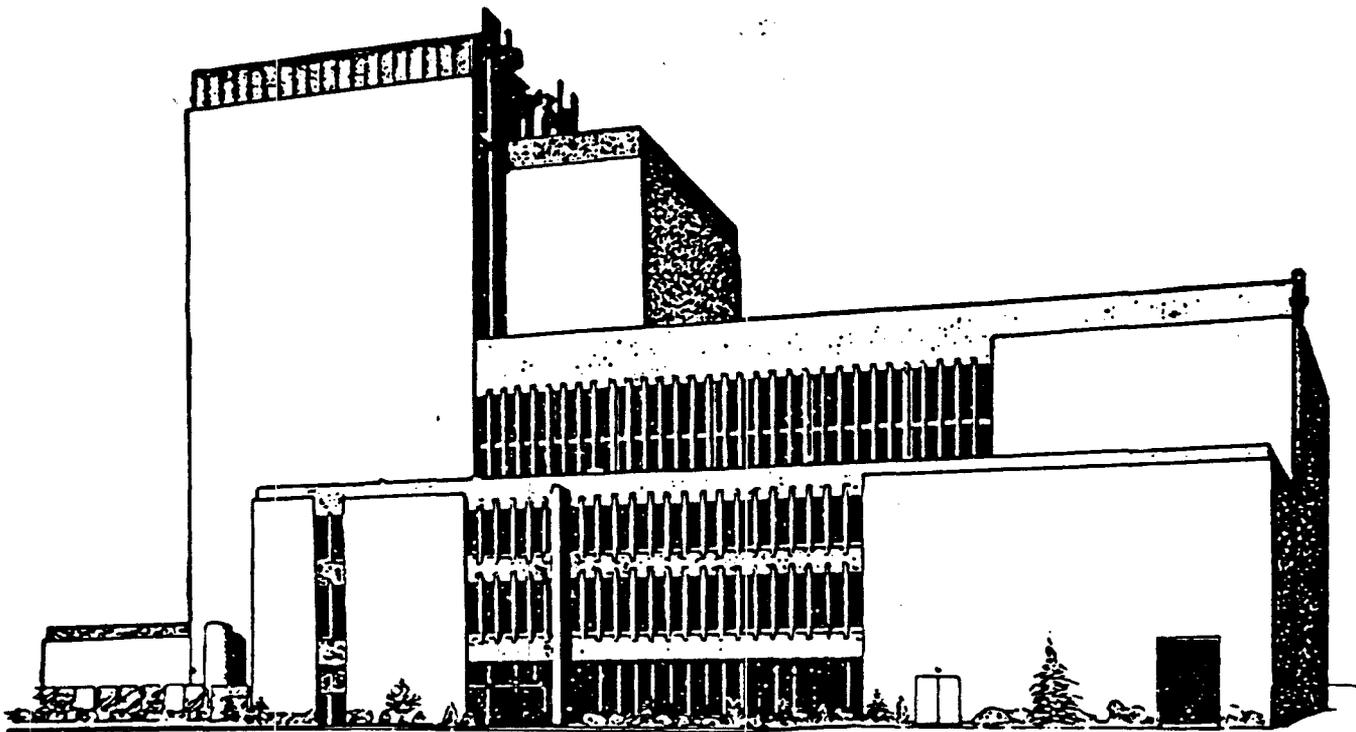
NRC File Center	PDR	LPDR	NMSS R/F	IMIF R/F
SRuffin	JRoberts	FBrown	FSturz	RBManili
CEGaskins	CHaughney	JGSpraul	TWesterman, RIV	
Region IV		PERickson	JMapes RFonner	
			(SR/MTG WITH PSC)	

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NAME :SRuffin:jc	:FBrown	:JRoberts
DATE :3/1 /90	:3/1 /90	:3/1 /90

PSC/NRC Meeting

February 15, 1990

<u>NAME</u>	<u>Affiliation</u>
Steve Ruffin	NRC/NMSS
John Stokley	SAIC
Mike Lehr	PSC
Mike Niehoff	PSC
Mike Holmes	PSC
Don Lamvermeyer	FWEC
Glen Toner	PSC
Paul Bunck	PSC
Pete Erickson	NRC/NRR
Larry Pittiglio	NRC/LWWM
Brian Dyck	PSC
John Holt	GEC
Tom Roberts	PSC
Bob Bosch	Foster Wheeler
Jack Spraul	NRC/NRR
Robert Fonner	NRC/OGC
Jane R. Mapes	NRC/OGC
Ata Istar	SAIC
Marty Ebert	SAIC
Steve Mirsky	SAIC
Fritz Sturz	NRC/NMSS
K.C. Leu	NRC/NMSS
John P. Roberts	NRC/NMSS
Ralph H. Sievers	SAIC
Ted Borst	PSC
Charles F. Nash	FW
T. Westerman	NRC/RIV
Barry Manili	NRC/NRR
Charles Gaskins	NRC/SGTR



Fort St. Vrain

AGENDA FOR NRC MEETING ON 2/15/90
MORNING SESSION

1. INTRODUCTION (15 MIN) MIKE NIEHOFF
2. QA PROGRAM DISCUSSION (45 MIN) PAUL BURCK
3. CLASSIFICATION OF "ITEMS IMPORTANT TO SAFETY" (30 MIN)
MIKE LEHR
4. EMERGENCY PLANNING (30 MIN) TED BORST
5. SPENT FUEL ACCOUNTABILITY (20 MIN) BRIAN DYCK
6. SCHEDULE UPDATE (15 MIN) MIKE LEHR
7. MISC DISCUSSION AND FEEDBACK (25 MIN)

AFTERNOON SESSION

1. SECURITY PLAN (60 MIN)
 - o DISCUSS SELF PROTECTING ISSUE (TED BORST)
 - o DISCUSS THREAT ANALYSIS (TOM ROBERTS)
 - o DISCUSS THE DESIGN FOR PHYSICAL PROTECTION (TOM ROBERTS)
2. REVIEW SECURITY PLAN SCHEDULE (TED BORST)
3. MISC DISCUSSION AND FEEDBACK (40 MIN)

o DOE WASHINGTON D.C. STATUS

- PSC'S CEO MET WITH DEPUTY SECRETARY OF ENERGY

- PSC HAS BEEN PROMISED A YES/NO ANSWER BY 3/1/90

- NO TIMING GUARENTEE WITH DOE RESPONSE

*No deadline
No location*

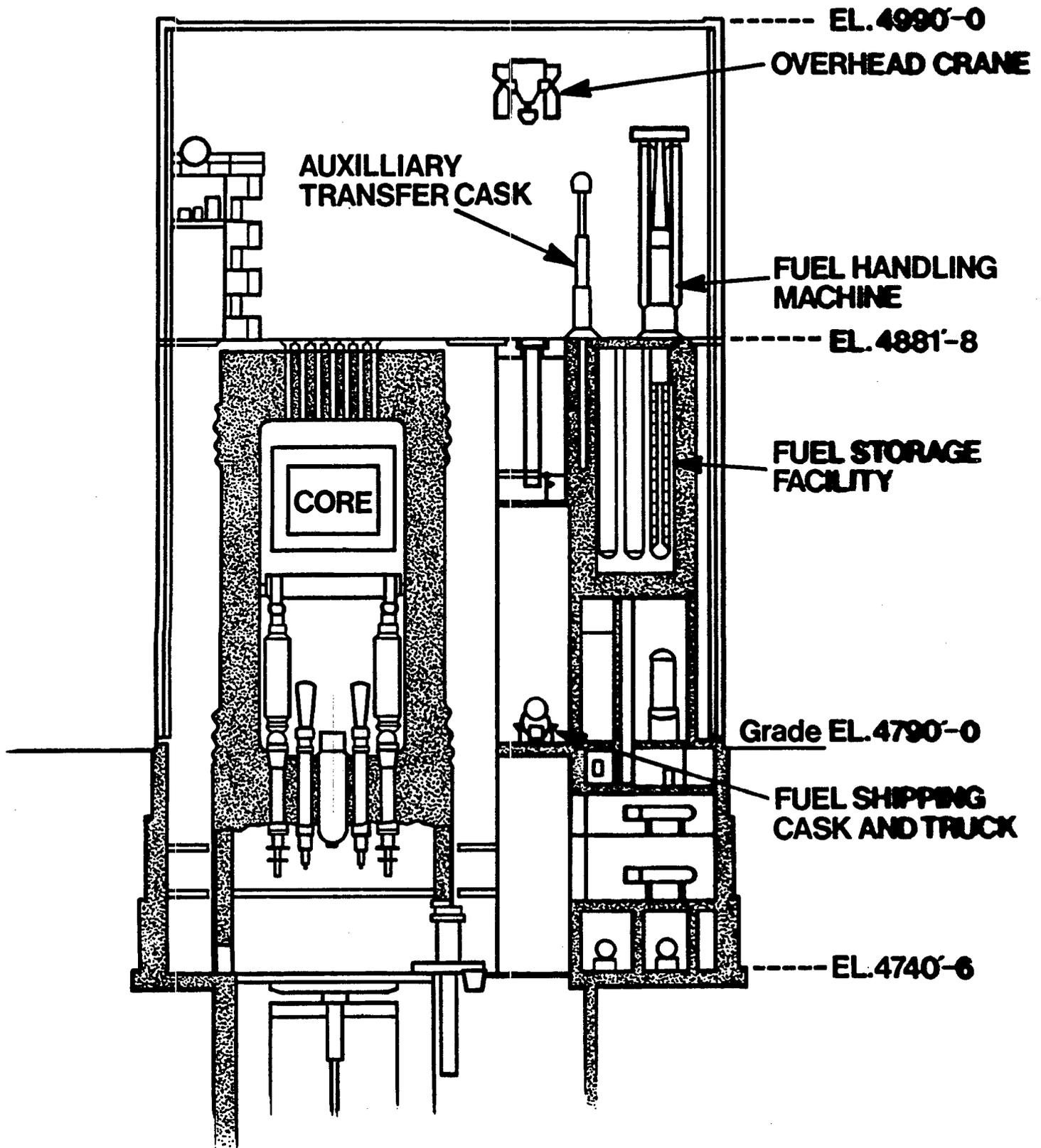
o PSC STATUS

- EXPLORING LEGAL ACTIONS

- FULL SPEED AHEAD ON ISFSI PROJECT

Report from ISFSI

Reactor Building Cross Section



Fuel Rod

Security Related Information
Figures Withheld Under 10 CFR 2.390

FIGURE WITHHELD UNDER 10 CFR 2.390

Part 71

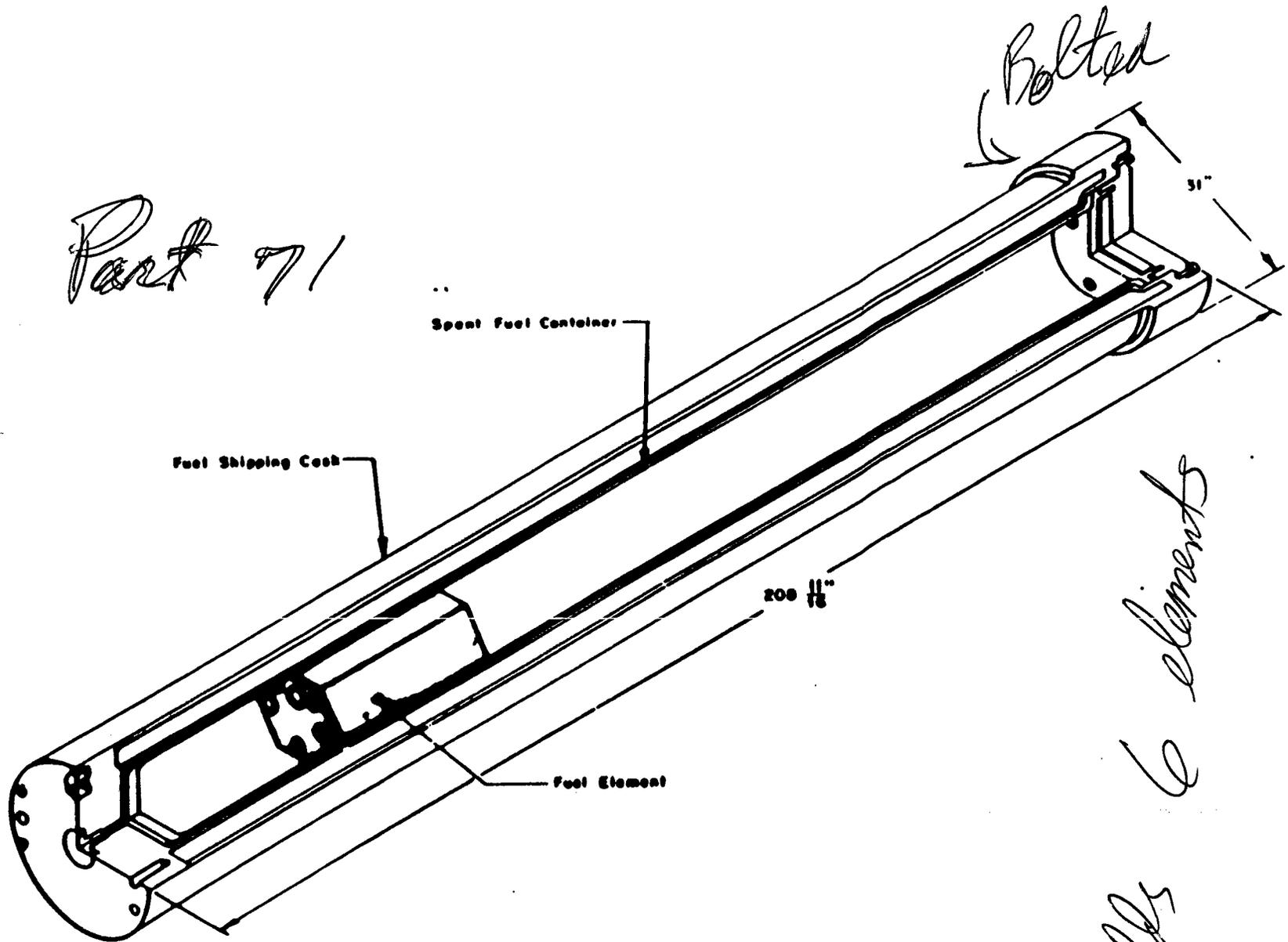


Fig. 4 Part 54. Vrain spent fuel container and shipping cask.

holds 6 elements

77ft 10ins

Passive air-cooled

steel enclosed

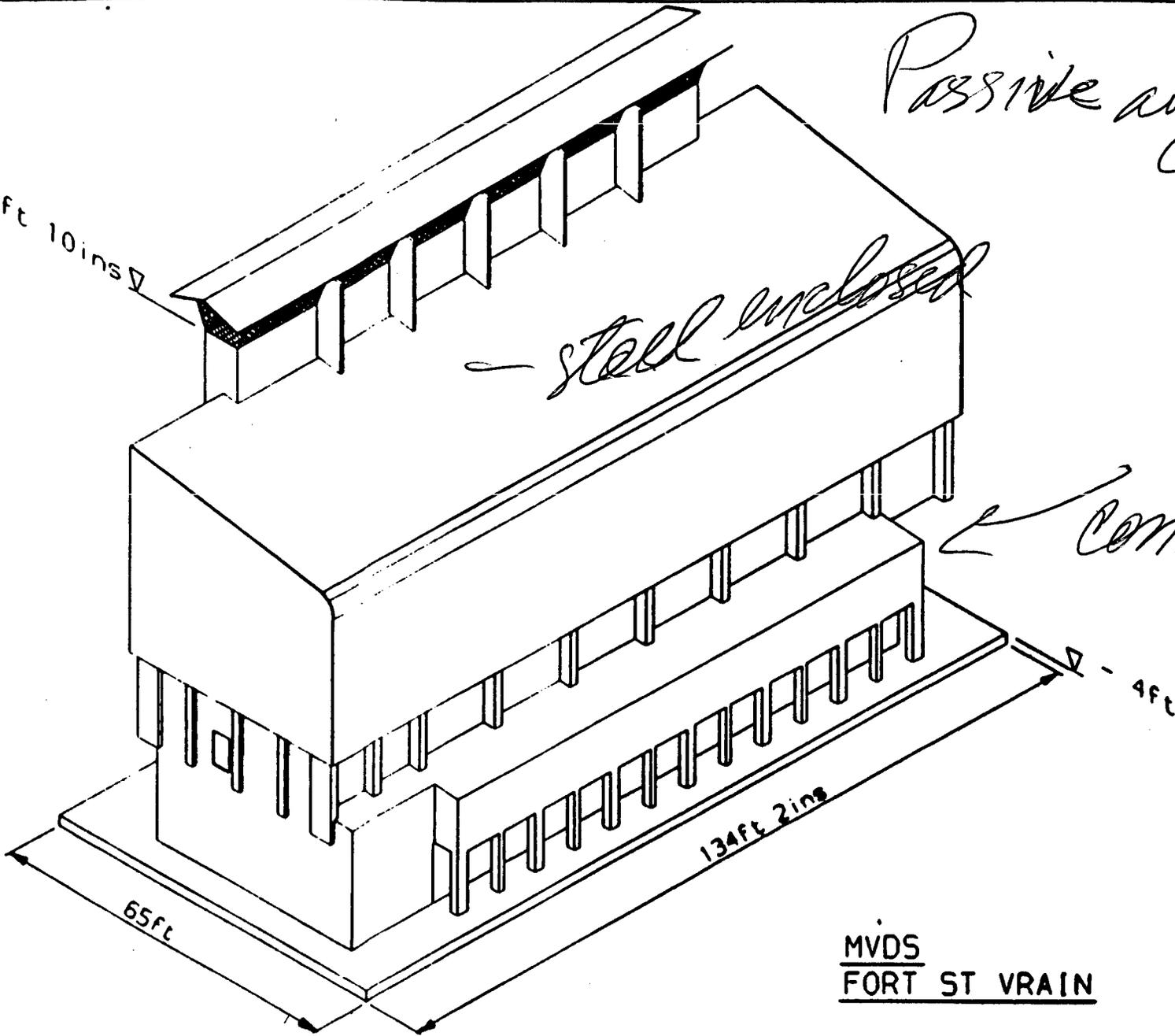
concrete

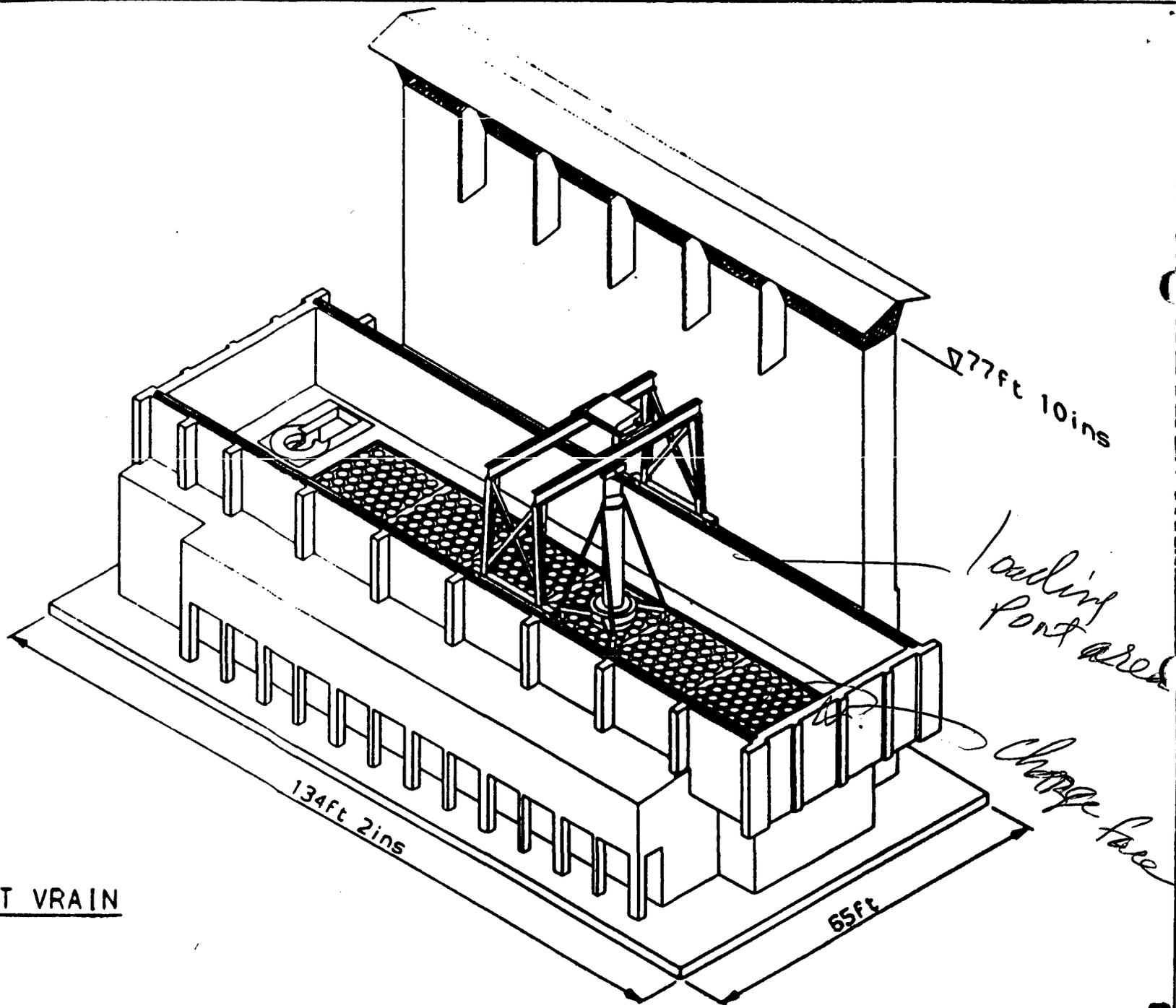
4ft

134ft 2ins

65ft

MVDS
FORT ST VRAIN

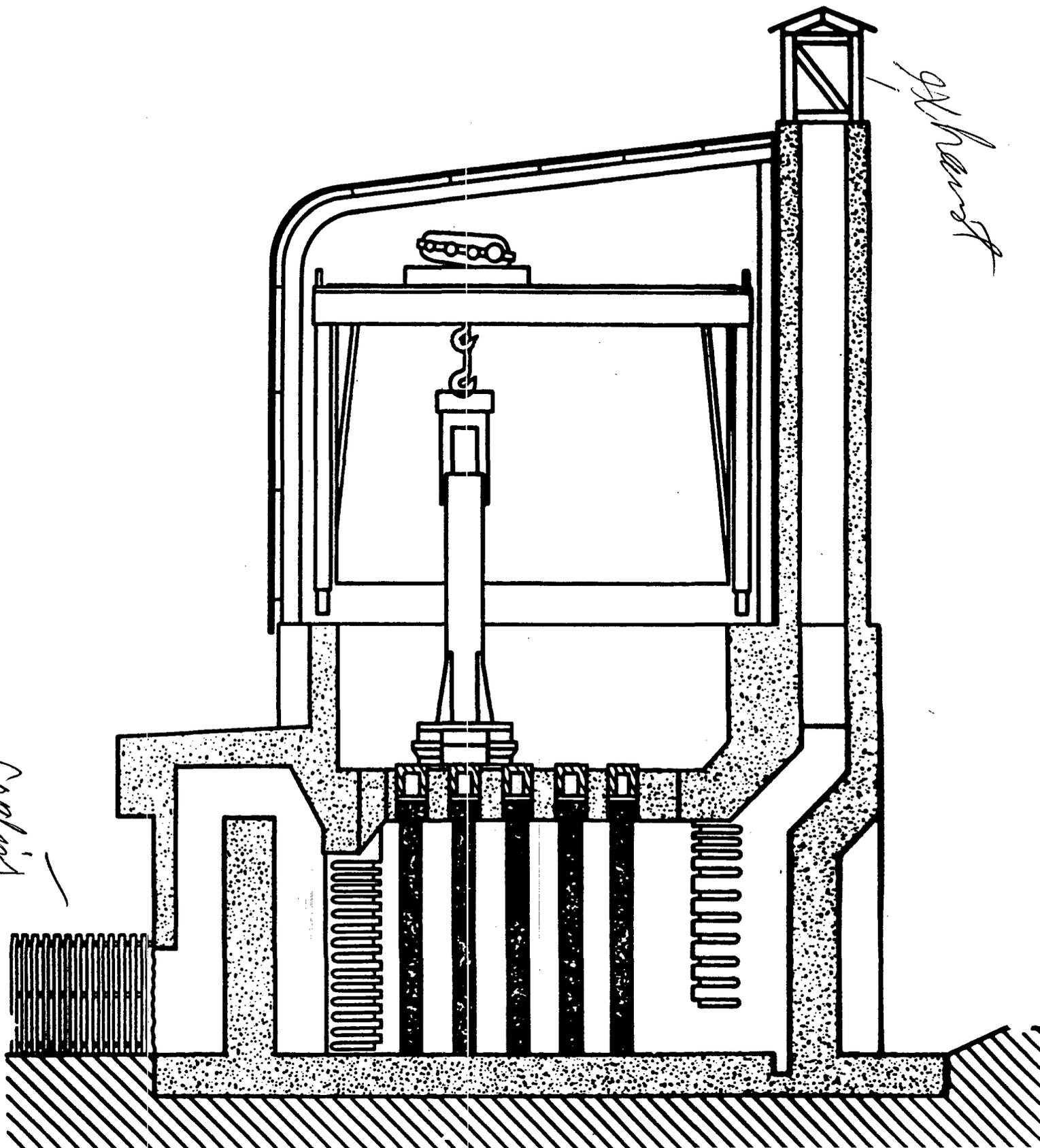




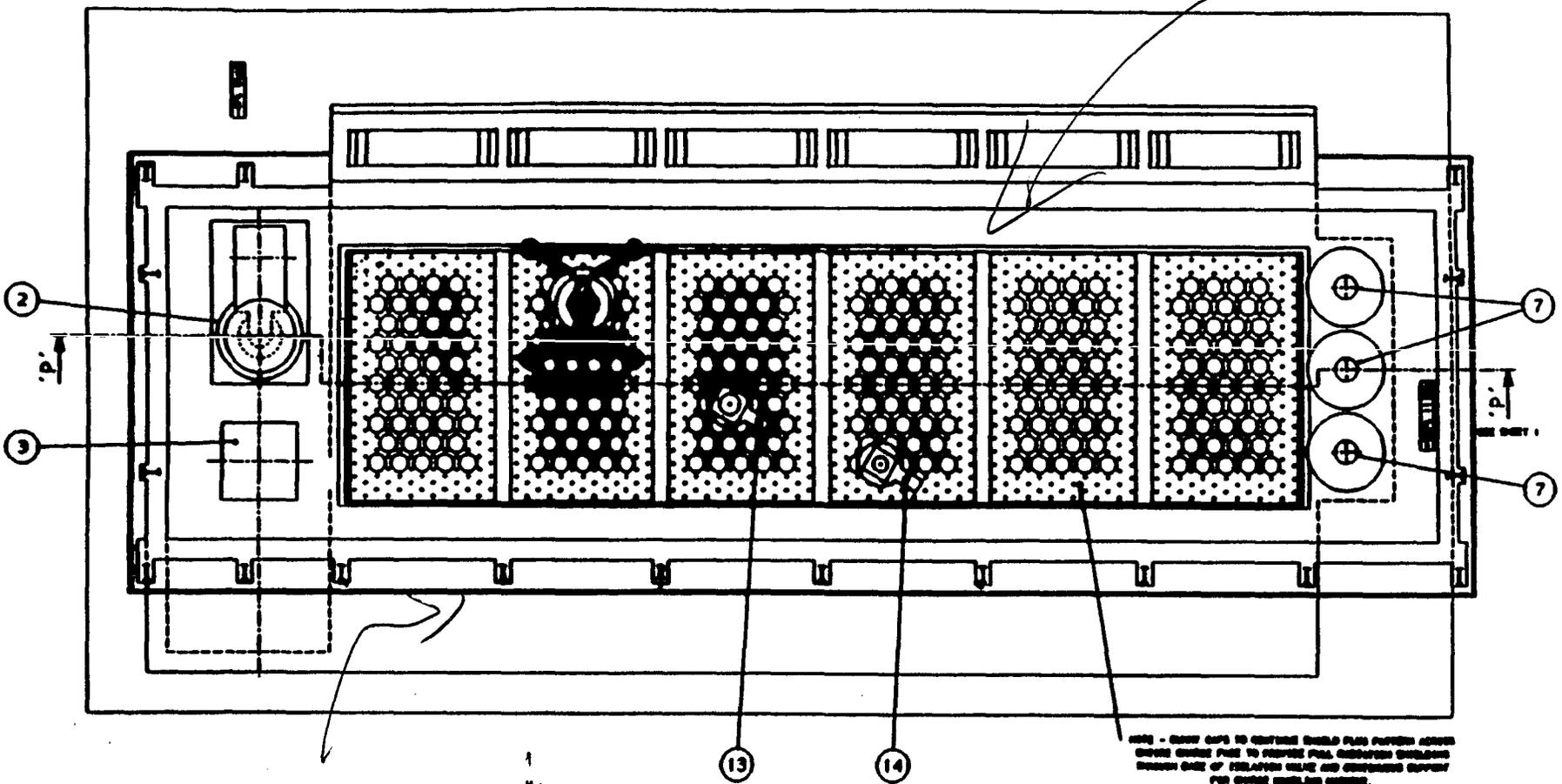
MVDS
FORT ST VRAIN

Modular Vault Dry Store

GENERAL ARRANGEMENT



Charge face

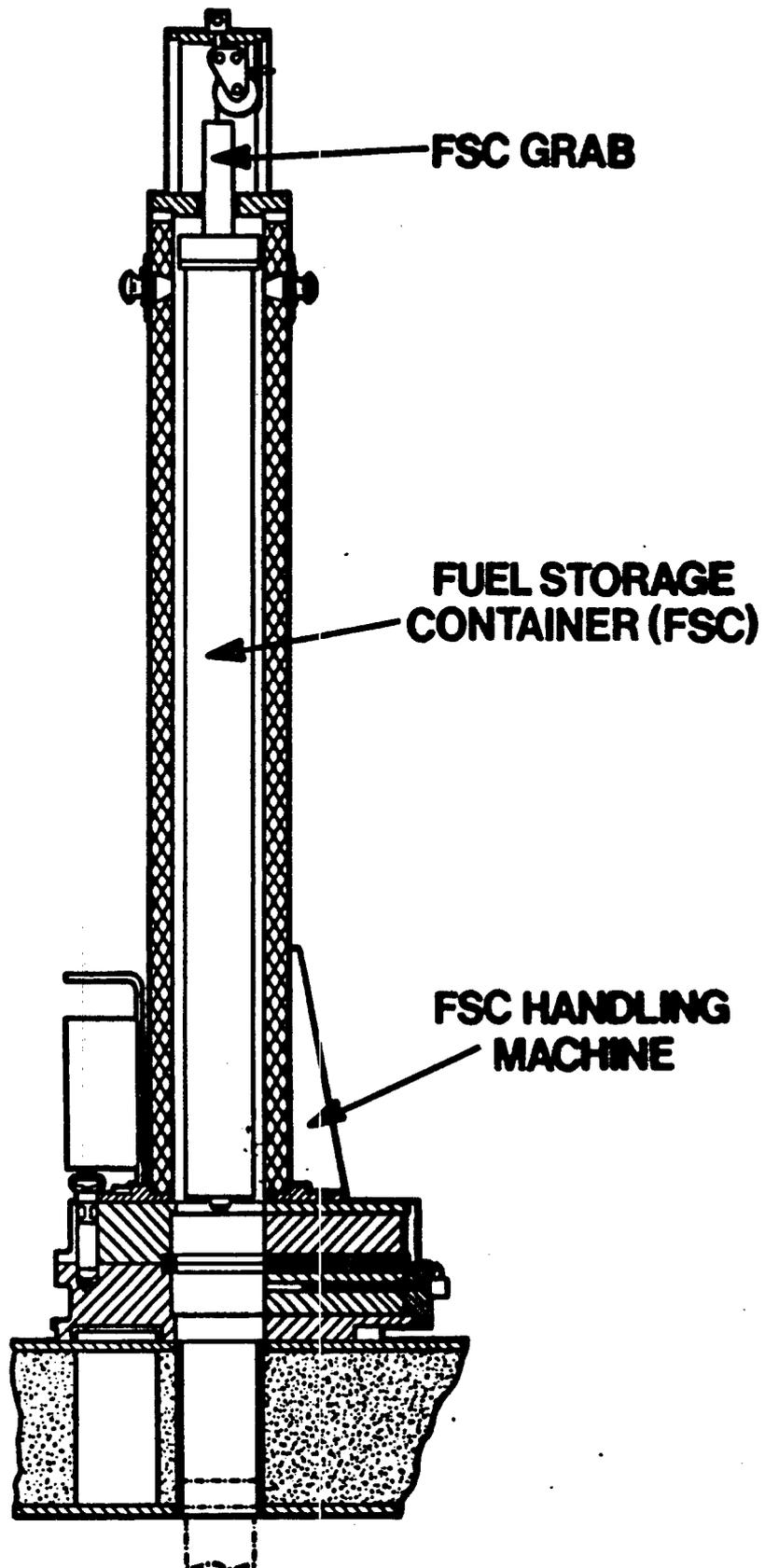


Common air plenum

NOTE - GRID CAPS TO MAINTAIN GRID PATTERN ALONG CHARGE CHARGE FACE TO PREVENT FULL CHARGE CHARGE THROUGH ONE OF TUBULAR VALVE AND REDUCED SUPPORT FOR CHARGE MATERIALS CHARGE.

SECTION 'F-F'
FROM SHEET 11

FSC Loading Equipment



QA Program Discussion

- 1. PSCO proposed approach for implementing the 10CFR50, Appendix B Program for the ISFSI.**
- 2. QA Program controls for concrete "Enhanced Quality".**
- 3. Methods to assure the QA Program will be maintained throughout the life of the ISFSI.**

**Paul Burck - QA Task Manager for
Defueling/Decommissioning.**

**Glen Toner - QA Representative for
the ISFSI Task Team.**

**10CFR50 APPENDIX B PROGRAM
FOR THE FSV ISFSI**

QUALITY ASSURANCE PROGRAMS FOR ISFSI
BRANCH TECHNICAL POSITION,
ADVANCED FUEL AND SPENT FUEL LICENSING BRANCH

"A.2 for the applicant who has an NRC approved 10 CFR 50 Appendix B QA Program, the applicant may simply provide a commitment to apply to the pertinent provisions of its Appendix B QA Program to the design, purchase, fabrication, handling, shipping, cleaning, assembly, inspection, testing, operation, maintenance, repair, and modification of ISFSI items which are important to safety. Such applicants must also identify the structures, systems, and components of the ISFSI which are important to safety."

CONCRETE - "ENHANCED QUALITY"

ISFSI ENHANCED QUALITY CODE COMMITMENTS

— American Concrete Institute (ACI) —

ACI-318 *

ACI-349 *

QUALITY ASSURANCE PROGRAM FOR THE ISFSI CONCRETE STRUCTURE

This attachment addresses and establishes the Enhanced Quality Program requirements for procurement, construction, maintenance, and modification of those items determined to be Enhanced Quality at the FSV ISFSI Facility. The requirements of this attachment are intended to meet the Building Code requirements for reinforced concrete as defined in ACI 318 for construction and ACI 349 for design.

1.0 Quality Requirements

The concrete structure of the MVDS as defined in the ISFSI SAR shall meet the requirements listed in this attachment.

1.1 Design Control

Q-3 and associated NED procedures shall be invoked to implement this criterion for design control.

The following design control measures apply to ISFSI Enhanced Quality systems:

- a) The CN system shall be utilized for modifications. Written design input requirements identifying applicable design bases, regulatory requirements, codes, and standards shall be prepared and approved.
- b) Written design analyses shall be prepared which identify how the design input requirements were incorporated in the design output documentation.
- c) The interfaces between participating design organizations shall be controlled including review, approval, release, distribution, and revision of documents involving design interfaces. Independent design verification shall be performed on CNs, Controlled Work Procedure (CWP), Deviation Requests (DRs), and NCRs.
- d) Appropriate quality standards shall be included in design documents and deviations from such quality standards shall be controlled.

1.2 Procurement Document Control

Enhanced Quality items and services shall be procured utilizing the "N" order system in accordance with APM Q-4 with the exception that qualified vendors are not required. Appropriate quality control, test, and inspection requirements consistent with the performance and quality level requirements of ACI 318-83 (Building Code Requirements For Reinforced Concrete) shall be specified in the procurement document.

QUALITY ASSURANCE PROGRAM FOR THE ISFSI CONCRETE STRUCTURE

1.3 Instructions, Procedures, and Drawings

Activities affecting the design, construction, and maintenance of ISFSI Enhanced Quality items shall be accomplished in accordance with appropriate instructions, procedures, or drawings.

1.4 Document Control

All instructions, procedures, and drawings including changes thereto utilized for design, construction, and maintenance of those items determined to be Enhanced Quality shall be issued and controlled in accordance with APM Q-6 and APM G-2.

1.5 Control of Purchased Material, Equipment, and Services

Control of items identified in Section 1.2 of this attachment shall meet the requirements of APM Q-7, with the exception that qualified vendors are not required.

1.6 Identification and Control of Materials, Parts, and Components

Identification and control of the items identified in Section 1.2 of this attachment shall be in accordance with the requirements of APM Q-8 to provide purchase order traceability.

1.7 Inspection

Inspection of ISFSI Enhanced Quality items shall be accomplished in accordance with APM Q-10 to meet the applicable requirements of ACI 318.83 (Building Code Requirements for Reinforced Concrete).

1.8 Control of Measuring and Test Equipment

Control of the calibration of tools, gauges, instruments, and other measuring and testing devices that are used in connection with ISFSI Enhanced Quality items shall be in accordance with APM Q-10.

1.9 Handling, Shipping, and Storage

Shipping and packaging requirements for the ISFSI Enhanced Quality items identified in Section 1.2 of this attachment shall be delineated in the procurement documents to ensure that the quality of such items are not degraded in transit or storage. These items shall be controlled in accordance with APM Q-13.

Q - Proc. and Administrative Procedures

QUALITY ASSURANCE PROGRAM FOR THE ISFSI CONCRETE STRUCTURE

1.10 Nonconforming Materials, Parts or Components

Control of nonconforming ISFSI Enhanced Quality materials, parts, or components shall be accomplished in accordance with APM Q-15.

1.11 Corrective Action

Conditions adverse to quality identified in this program as well as programmatic deficiencies identified as a result of audits or monitoring functions shall be documented and resolved utilizing the Corrective Action System in accordance with the requirements of APM Q-16.

1.12 Quality Assurance Records

Records for ISFSI Enhanced Quality items and activities as required by the QA Program elements of this attachment shall be maintained in accordance with the requirements of APM Q-17.

1.13 Audits

Activities related to the ISFSI Enhanced Quality Program shall be included in the audit and monitoring program as described in APM Q-18.

**ASSURING AN ADEQUATE
ISFSI QA PROGRAM**

FSAR CHANGES

FSAR B.5

The Quality Assurance Program described in the Appendix also describes the Quality Assurance Program that is applied to items determined to be important to safety under the requirements of 10 CFR 72, Sub-part G. Any changes to this QA Program will effect the 10 CFR 72, Sub-part G Program. Therefore, proposed changes must be reviewed for impact prior to implementation.

FSAR B.5.2.1 (2nd sentence)

This Quality Assurance Program also applies to those items determined to be "important to safety" for the FSV Independent Spent Fuel Storage Installation (ISFSI). Therefore, throughout this QA Program the terms "important to safety" per 10 CFR 72, and "safety-related" per 10 CFR 50 are interpreted as being synonymous.

FSAR B.5.2.2 (1st sentence)

... and 10 CFR 72, Sub-part G ...

APM G-2 CHANGES
IN QA REVIEW SECTIONS

APM G-2 (3.2.6)

- c) Verify that changes to procedures do not constitute a downgrade in the FSV ISFSI QA Program.

APM G-2 (4.1 #51a)

CAUTION: Changes in the FSV QA Program must be reviewed for impact upon the FSV ISFSI QA Program requirements.

APM Q-2 CHANGES

APM Q-2 (2.0 - 2nd sentence)

Additionally, this program applies to those items determined to be "important to safety" for the FSV ISFSI.

APM Q-2 (4.1 - New 2nd paragraph)

This Quality Assurance Program also applies to those items determined to be "important to safety" for the FSV Independent Spent Fuel Storage Installation (ISFSI). Therefore, throughout this QA Program the terms "important to safety" per 10 CFR 72, and "safety-related" per 10 CFR 50 are interpreted as being synonymous.

APM Q-2 (4.1.2)

- d) QA Program for the ISFSI Concrete structure, Attachment Q-2E.

CHAPTER 6
QUALITY ASSURANCE PROGRAM

The activities associated with the ISFSI will be governed by the applicable portions of the FSV Quality Assurance Program, which has been accepted by the NRC. This Quality Assurance Program is described in the FSV Updated FSAR, Appendix B.5, which provides a description of the current QA program for those systems, components, structures and services which have been determined to be safety related. This program is understood by all involved in its execution, and the program will be implemented, as applicable, for all phases of the ISFSI project.

The term "Important to Safety" has all of the applicable requirements that exist for "Safety Related" in the NRC accepted QA Program. Important to Safety activities that have been carried out prior to the submittal of this application have been in accordance with this program. Adherence to this program will ensure that, as required by Subpart G to 10 CFR 72, an adequate quality assurance program is implemented. Details of the Quality Assurance Program, including revisions to support the important to safety concept in 10 CFR 72 and "enhanced quality" concept, are provided in Chapter 11 of the Safety Analysis Report.

PSC will administratively ensure that no changes to the NRC accepted QA Program will be performed without verifying that the requirements of 10 CFR 72, Subpart G are adhered to. This administrative control will remain in place throughout the life of the 10 CFR 72 License.

SECTION XI
QUALITY ASSURANCE
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SECTION XI - QUALITY ASSURANCE

11.1. QUALITY ASSURANCE PROGRAM - PSC

It is the policy of Public Service Company of Colorado to use its best efforts to insure that the Fort St. Vrain Generating Station is maintained and operated in a manner that assures the highest practical degree of safety to the public and to its employees. To ensure that all activities are performed in a manner consistent with PSC's policy, the Company has established and implemented a Quality Assurance Program that meets the requirements of 10 CFR 50 Appendix B and other applicable industry and regulatory requirements. This program is fully described in Appendix B of the Fort St. Vrain Updated FSAR (Ref. 1).

Activities associated with the Fort St. Vrain ISFSI will be governed by the applicable portions of the Fort St. Vrain Quality Assurance Program. Specifically, those systems, components, items, and services which have been determined to be "Important to Safety", as discussed in Section 3.4.

In addition, PSC will extend the Quality Assurance Program, under the designation "Enhanced Quality," to encompass components or systems that are designated as "Enhanced Quality" but not "important to safety" in Section 3.4. The enhanced quality program involves the application of certain quality assurance requirements to the design, purchase, maintenance, construction, test and operation of the designated components or systems. Delineation of QA Program requirements for those items determined to be enhanced quality are specified in the Fort St. Vrain Administrative Procedures.

PSC is committed to maintaining the applicable portions of the Fort St. Vrain Quality Assurance Program as it applies to meeting the requirements of 10 CFR 72, Subpart G. To this end, administrative controls have been established such that prior to implementing any changes to the 10 CFR 50 Appendix B program the impact of those changes will be reviewed to assure that the requirements of the 10 CFR 72 Subpart G will continue to be met.

11.2. QUALITY ASSURANCE PROGRAM - CONTRACTOR

As described in the Fort St. Vrain Administrative Procedures, PSC has the ultimate responsibility for ensuring that the design, procurement and construction of the ISFSI is in accordance with the Fort St. Vrain approved Quality Assurance Program. FW Energy Applications Inc. has been hired by PSC to supply the design, procurement and construction of the Fort St. Vrain ISFSI. FW Energy Applications shall perform its work in accordance with their Quality Assurance Program, which has been reviewed and approved by PSC. The FW Energy Applications Quality Assurance Program is described in Chapter 11 of the FW Energy Application's NRC approved Topical SAR (Ref. 2).

11.3 REFERENCES FOR SECTION 11

1. Public Service Company of Colorado, "Fort St. Vrain Nuclear Generating Station Updated Final Safety Analysis Report," Docket No. 50-267.
2. "Topical Report for the Foster Wheeler Modular Vault Dry Store (MVDS) for Irradiated Nuclear Fuel," FW Energy Applications Inc., October 1987.

"ITEMS IMPORTANT TO SAFETY"

DEFINITION:

Structures, systems, and components important to safety" means those features of the ISFSI whose function is:

- (1) To maintain the conditions required to store spent fuel or high level radioactive waste safely,**

- (2) To prevent damage to the spent fuel or high level radioactive waste container during handling and storage, or**

- (3) To provide reasonable assurance that spent fuel or high level radioactive waste can be received, handled, packaged, stored, and retrieved without undue risk to the health and safety of the public.**

CRITERIA FOR MEETING THIS DEFINITION:

PSC's classification criteria for meeting the above definition is:

An ISFSI structure, system, or component shall be classified as important to safety if:

- 8/27/88*
- (1) It forms a primary containment boundary, or**
 - (2) It controls or prevents criticality, or**
 - (3) It is used to prevent radioactive releases (gaseous and particulate) resulting in an exposure at the owner controlled boundary in excess of 5 Rem (per 10CFR 72.106) for any design basis accident.**

100 meter fence, Owner Controlled Boundary.

The following is a list of structures, and components which are classified as "important to safety" based on the criteria set forth and therefore fall under the 10CFR 50 Appendix B Quality Assurance program:

- o Fuel Storage Container and Storage Well Liners
- o Hoist and "Grapple assembly" of the Fuel Container Handling Machine *(Single failure proof)*
- o Fuel Container Handling Machine Filtration System *— particulates, not gases*
- o Filtration unit on the Fuel Block Grapple Head Glove Box, *must change grapple to handle fuel (need glove box)*
- o Fuel Transfer Cask
- o The structural steel of the Charge Face Structure, *concrete filled for shielding*

ENHANCED QUALITY ITEMS

- o The structural concrete of the MVDS building**

- o The concrete fill inside the Charge Face Structure**

- o Certain aspects of the security system as described in the Enhanced Quality program are considered "enhanced quality" items since they provide the physical protection for the ISFSI site.**

o **MAXIMUM CREDIBLE ACCIDENT**

- **LEAK FROM ONE FUEL STORAGE CONTAINER**

- **10 CFR 72.106 LIMIT IS 5 REM WHOLE BODY
OR TO ANY ORGAN**

Security Related Information
Content Withheld Under 10 CFR 2.390

o **RADIATION MONITORING**

- **NO INSTALLED RADIATION MONITORING AT THE MVDS**

- **THERMOLUMINESCENT DOSIMETERS (TLDS) WILL BE INSTALLED AT THE ISFSI CONTROLLED AREA BOUNDARY**

- **THESE TLDS WILL BE READ QUARTERLY**

- **INCREASED MONITORING FOR OFF-NORMAL FUEL HANDLING EVOLUTIONS**

o **METEOROLOGICAL MONITORING EQUIPMENT**

- **NO RADIOLOGICAL EFFLUENTS DURING NORMAL OPERATION**

- **CREDIT WILL BE TAKEN FOR THE NOAA TOWER AND THE NATIONAL WEATHER SERVICE FOR METEOROLOGICAL DATA**

10 meter tower

o EMERGENCY PLANNING PROGRAM WILL BE TIED TO THE PART 50 EMERGENCY PLANNING PROGRAM

- AS THE PART 50 PROGRAM IS DOWN-SCALED, THE REQUIREMENTS OF PART 72 WILL BE MAINTAINED**

- THIS WILL BE STATED IN THE PART 72 LICENSE APPLICATION**

- ALL AREAS OF THE EMERGENCY PLANNING PROGRAM THAT ARE REQUIRED FOR PART 72 WILL BE IDENTIFIED AND ADMINISTRATIVELY CONTROLLED**

SPENT FUEL ACCOUNTABILITY

- o ISFSI SPENT FUEL ACCOUNTABILITY WILL BE INCORPORATED INTO CURRENT COMPUTERIZED SYSTEM**

- o EACH FUEL ELEMENT HAS A UNIQUE SERIAL NUMBER**
 - SERIAL NUMBER WILL BE VISUALLY VERIFIED IN THE REACTOR BUILDING PRIOR TO CASK LOADING**

 - SERIAL NUMBER WILL BE RECORDED AND VERIFIED PRIOR TO CASK LOADING**

- **FUEL ACCOUNTABILITY SYSTEM WILL RECORD EXACT STORAGE LOCATION AT THE ISFSI**

- **FUEL ACCOUNTABILITY SYSTEM WILL BE USED WHEN SHIPPING FUEL FROM ISFSI**

- **AMOUNT OF SPECIAL NUCLEAR MATERIAL IN EACH ELEMENT IS CONTAINED IN THE FUEL ACCOUNTABILITY SYSTEM**

- **10 CFR 72.72 REQUIRES AN ANNUAL INVENTORY OF THE FUEL**
 - **PSC WILL USE THE ISFSI SECURITY SYSTEM AND THE FUEL ACCOUNTABILITY SYSTEM TO MEET THIS REQUIREMENT**

 - **CONSISTENT WITH OTHER UTILITIES**

1990

1991

1992

J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J

ENVIRONMENTAL REPORT

[]

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SAR & LICENSE APP PREP

[]

EDIT

NRC REVIEW OF LIC APP

[]

EARLY FSV SITE
WORK AND ISFSI
SITE CHARACTERIZATION
WORK

[]

[]

ISFSI SITE PREP

[]

MVDS FOUNDATION

[]

CF CONST

MECH/ELEC

[]

TESTING

SECURITY DESIGN

[]

PROCUREMENT

[]

SECURITY SYSTEM CONST

[]

TEST

[]

M

THREAT ANALYSIS - RADIOLOGICAL EVENT

Security Related Information
Content Withheld Under 10 CFR 2.390

o **FSAR METEOROLOGICAL ASSUMPTIONS**

- o **PATHWAY ANALYSIS INCLUDES EXTERNAL ANALYSIS INCLUDES EXTERNAL (PLUME), INHALATION, AND GROUND SHINE**

- o **RESULTS WILL BE COMPARED TO 10 CFR 100 GUIDELINES FOR WHOLE BODY AND THYROID DOSES**