UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

AUG 31 1992

Docket No. 50-267
License No. DPR-34

Public Service Company of Colorado
ATTN: A. Clegg Crawford, Vice President
Electric Production
P.O. Box 840
Denver, Colorado 80201-0840

Gentlemen:

SUBJECT: SUMMARY OF JULY 16, 1992 MEETING WITH PSC TO DISCUSS STATUS OF FORT ST. VRAIN DECOMMISSIONING

The NRC requested this meeting with Public Service Company of Colorado (PSC) at the Fort St. Vrain Nuclear Generating Station (FSV) in Colorado to brief management and staff of the Office of Nuclear Material Safety and Safeguards (NMSS) and NRC Region IV on the status of plans for decommissioning in preparation for the planned shift in lead responsibility from NRR to NMSS. Those in attendance are listed in Enclosure 1. A copy of the handouts used in the PSC presentation is included in Enclosure 2.

PSC discussed the status of defueling and litigation on spent fuel shipments, low-level radioactive waste issues, plans for unloading of spent fuel from the Independent Spent Fuel Storage Installation (ISFSI), PSC and Westinghouse Team organization and interfaces, decommissioning work controls and management overview, Prestressed Concrete Reactor Vessel (PCRV) dismantlement plans, initial site radiological characterization, FSV radiological protection program, site release process, liquid radioactivity effluent release plans, and results of tritium leach testing. Tours of FSV and the adjacent ISFSI were conducted after the meeting.

NMSS described the NRC organizational elements having program responsibility after issuance of the decommissioning order and emphasized the need for continued comprehensive PSC management involvement and oversight throughout the decommissioning phase.

A. Bill Beach, Director
Division of Reactor Projects

Enclosures:
As stated

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PDR ADOCK 05000267
P PDR

IE45

cc w/enclosures:
Public Service Company of Colorado
ATTN: M. H. Holmes
Nuclear Licensing Manager
16805 Weld County Road 19-1/2
Platteville, Colorado 80651

Public Service Company of Colorado
ATTN: Nuclear Licensing
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GA International Services Corporation
Fort St. Vrain Services
ATTN: David Alberstein, Manager
P.O. Box 85608
San Diego, California 92138

Public Service Company of Colorado
ATTN: P. F. Tomlinson
Quality Assurance Manager
16805 Weld County Road 19-1/2
Platteville, Colorado 80651

Public Service Company of Colorado
ATTN: D. D. Hock, President and
Chief Executive Officer
P.O. Box 840
Denver, Colorado 80201-0840

Kelly, Stansfield & O'Donnell
ATTN: Mr. J. K. Tarpey
1225 17th Street, Suite 2600
Denver, Colorado 80202

Chairman
Board of County Commissioners
of Weld County, Colorado
Greeley, Colorado 80631

Regional Representative
Radiation Programs
Environmental Protection Agency
1 Denver Place
999 18th Street, Suite 1300
Denver, Colorado 80202-2413

Department of Health
ATTN: Robert M. Quillen, Director
Radiation Control Division
4210 East 11th Avenue
Denver, Colorado 80220

Colorado Public Utilities Commission
ATTN: Ralph Teague, P.E.
1580 Logan Street OL1
Denver, Colorado 80203

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bcc distrib. by RIV:

J. L. Milnoan	Resident Inspector
DRP	DRP/TSS
DRSS-FIPS	Lisa Shea, RM/ALF, MS: MNBB 4503
MIS System	RSTS Operator
RIV File	DRS

Chief, Technical Support Section
Pete Erickson, NRR Project Manager (MS: 10-D-21)

ENCLOSURE 1

Meeting With Public Service Company of Colorado
Fort St. Vrain Decommissioning
July 16, 1992

ATTENDEES

Name	Organization
G. Arlotto	Deputy Director, Office of Nuclear Material Safety and Safeguards, NRC
R. Bangart	Director, Div. of Low Level Waste Mgt. & Decom., NRC/NMSS
C. Haughney	Chief, Source Cont. & Devices Branch, NRC/NMSS
F. Sturz	Section Leader, Irradiated Fuel Section, NRC/NMSS
R. Dudley	Chief, Decommissioning Section, NRC/NRR
P. Erickson	Project Manager FSV, NRC/NRR
R. Hall	Director, Uranium Recovery Field Office, NRC/RIV
L. Callen	Director, Div. of Radiation Safety & Safeguards, NRC/RIV
J. Baird	Senior Resident Inspector, FSV
C. Crawford	Vice President, Electric Production, PSC
D. Warembourg	Manager Nuclear Operation/Program Director, PSC
M. Fisher	Deputy Program Director, PSC
M. Holmes	Nuclear Licensing Manager, PSC
M. Niehoff	Decommissioning Engineering Manager, PSC
F. Borst	Radiation Protection Manager, PSC
G. Schmalz	Decommissioning Project Engineer, PSC
M. Stutz	Media Relations, PSC
J. Krauss	Project Director, Westinghouse
D. Popp	Licensing Manager, Westinghouse
V. Likar	Manager, Technical Services, Westinghouse
E. Lippincott	Radiation Analysis, Westinghouse
J. Parsons	Radiation Protection Manager, Westinghouse/SEG
W. Hug	Operations Manager, MK-Ferguson
W. Hamilton	Chairman, PSC Oversight Committee, Consulting Engineer
R. Quillin	Director, Radiation Control Division, CDH, Colorado

NOTE: Enclosure 2 is for NRC distribution only.

AUG 31 1992

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bcc to DMB (IE01)

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Chief, Technical Support Section
Pete Erickson, NRR Project Manager (MS: 10-D-21)

RIV:SRI*	C:TSS/DRP*	D:DRSS*	D:DRP	
JBBaird	GLConstable	LJCallan	ABBeach	
8/ /92	8/ /92	8/ /92	8/24/92	

*Previously concurred

ENCLOSURE 2

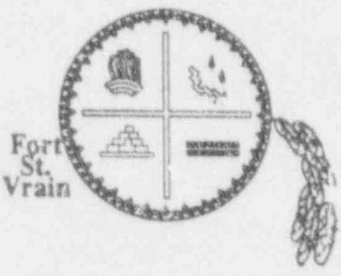
PUBLIC SERVICE COMPANY OF COLORADO

Fort St. Vrain

Decommissioning Status Presentation

to the Nuclear Regulatory Commission

July 16, 1992



Fort St. Vrain

Update on Recent Events & Forecasted Near-Term Activities

A. Clegg Crawford
Vice President, Electric Production

July 16, 1992

Meeting Agenda

8:30-9:15	Digidose & Access Control Training
9:30-12:30	Decommissioning Presentations • Introduction & Status - Clegg Crawford, PSC • PSC & WT Organizations: Functional Interfaces/Work Control Process - Don Warembourg, PSC • PCRV Dismantlement Approach - Jim Krauss, WT • Preliminary Site Characterization Results - Ed Parsons, WT • Radiation Protection Program - Ted Borst, PSC • Site Release Criteria - Mike Niehoff, PSC • Open Discussion
Noon	Working Lunch
12:30-3:00	Plant & ISFSI Tour

DEFUELING AND RELATED LITIGATION STATUS

- PSC & DOE Initiated a Series of Legal Actions Against the State of Idaho & Governor Andrus Alleging that Governor Andrus Violated Commerce Clause of Constitution, Atomic Energy Act as Amended & Hazardous Materials Transportation Act.
  - Judgement in favor of PSC on May 7, 1991

- Governor Andrus Sued DOE Claiming DOE Violated Nuclear Waste Policy Act & National Environmental Policy Act.
  - Ninth Circuit Court dismissed finding no jurisdiction because NWPA did not apply (September 10, 1991)
  - Idaho's counterclaim against DOE for NEPA violations still pending

Three Fuel Shipments Were Made Between October 4 & October 16, 1991 Additional Shipments Have Been Suspended Due to Further Litigation

- Governor Andrus Sued DOE Alleging That INEL Accepting FSV Fuel Was Not in Compliance With Idaho Air Pollution Standards
  - District Court ruled in favor of Idaho & issued an injunction against DOE
  - Ninth Circuit Court reversed the District Court & dissolved the injunction on March 23rd

DEFUELING AND RELATED LITIGATION STATUS Continued

- DOE Working With Idaho & Bannock-Shoshone Indian Tribe to Resolve Issues Related to Environmental Assessment
  - Revision still pending
  - DOE Decision to Re-commence Spent Fuel Shipping still pending

- Governor Andrus Still Creating More Roadblocks
  - NEPA Counterclaim still pending in District Court
  - Revised Idaho Air Quality Law
  - Supreme Court denied request to review previous ruling that NWPA does not apply on June 2nd

LOW-LEVEL RADIOACTIVE WASTE CONCERNS

- The Low-Level Radioactive Waste Policy Amendments Act
  - Provided "incentives" to the States to provide for the disposal of LLRW by 1996.
  - One provision was the "take title" provision which required States to take title for LLRW for which the State had not provided disposal.
  - June 19, 1992, Supreme Court's Opinion Severed This "Take Title" Provision from the Act.

- The Beatty Disposal Site is Scheduled to Close on January 1, 1993

- The Rocky Mountain Compact has been negotiating with the Northwest Compact. Resolved on July 7, 1992 by a Vote of 7 to 1 by the States of the Northwest Compact.

DEFUELING UPDATE

- Defueling to ISFSI Began on December 26, 1991.
- Defueling to ISFSI Completed on June 10, 1992, Approximately 2 Months Ahead of Schedule.
- PSC's Intent is to Ship Spent Fuel to INEL.

UNLOADING SPENT FUEL FROM THE ISFSI

- Current PSC Shipping Casks are not licensed to ship ISFSI Fuel Storage Canisters to DOE Facility.

- PSC has evaluated a number of options for unloading fuel from the ISFSI.

- PSC has decided to license and build two new casks, trailers and hardware.
  - Foster Wheeler selected as vendor
  - Schedule is Forecasted to be:
    * First Cask available 18 months after contract signing
    * Second Cask available 24 months after contact signing
  - PSC desires an August 1992 meeting with the NRC
  - Defueling from ISFSI to INEL is on hold

COMPONENT REMOVAL

Component Removal has been taking place in parallel with Defueling and is continuing prior to the start of Decommissioning:

- 27 of 84 Region Constraint Devices removed & shipped off-site - remaining RCDs removed & will be shipped off-site in 1992
- 38 of 44 Control Rod Drive bodies shipped off-site for disposal - remaining CRD bodies will be shipped off-site in August 1992
- 28 pairs of control rod absorber strings shipped off-site for disposal - final 15 pairs of control rod absorber strings will be shipped off-site in August 1992
- All Helium Circulators removed; one shipped off-site - remaining 4 circulators will be shipped off-site in 1992

DECOMMISSIONING STATUS

- Decommissioning Scheduled to Begin on July 16, 1992 with the Removal of Dummy Fuel Elements.
  - PSC will utilize 50.59 evaluations to continue components removal until the Decommissioning Order is received.
- PSC Understands that All Decommissioning Activities have been properly addressed & Appropriate Information submitted to the Staff for review.
- Six Month Look Ahead Schedule of Level II Activities has been provided to the NRC.
- Westinghouse Team continues Site Mobilization:
  - Approximately 61 personnel on site as of 7/1; 90 by 8/1
- No Public Comments or Intervention on NRC Federal Register Notice of Intent to Issue FSV Decommissioning Order.
- Funding Plan Accepted by NRC

FORM (D) 372 - 22 - 3643

DECOMMISSIONING CONCERNS

PSC has Concerns that could potentially impact Decommissioning:

- Approval of the Proposed Decommissioning Plan and Issuance of the Decommissioning Order
- Implementation of New Part 20 Requirements
- Senior Resident Inspector

ON-SITE PART-TIME SENIOR RESIDENT INSPECTOR

- NRC SRI Would Be Aware of Current Decommissioning Tasks & Future Tasks
- Serves as an Important Communication Link Between PSC & NRC
- Monitoring Radiation Protection/Health Physics - Key Decommissioning Concern

CONCLUSIONS

- PSC is Committed to Safety in All Aspects of FSV Activities
- Quaiity & Radiological Protection Will Not be Compromised as We Proceed with Decommissioning
- PSC's Preferred Option is Still to Ship all Spent Fuel to a DOE Facility in Accordance with Our 1965 Contract
- LLRW Disposal & Associated Costs Continue to be of Significant Interest to PSC
- PSC is Optimistic that Decommissioning will be Completed by the End of 1995
- PSC Recognizes the Importance of its Relationship with the NRC and is Committed to Open Communications

Public Service®

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

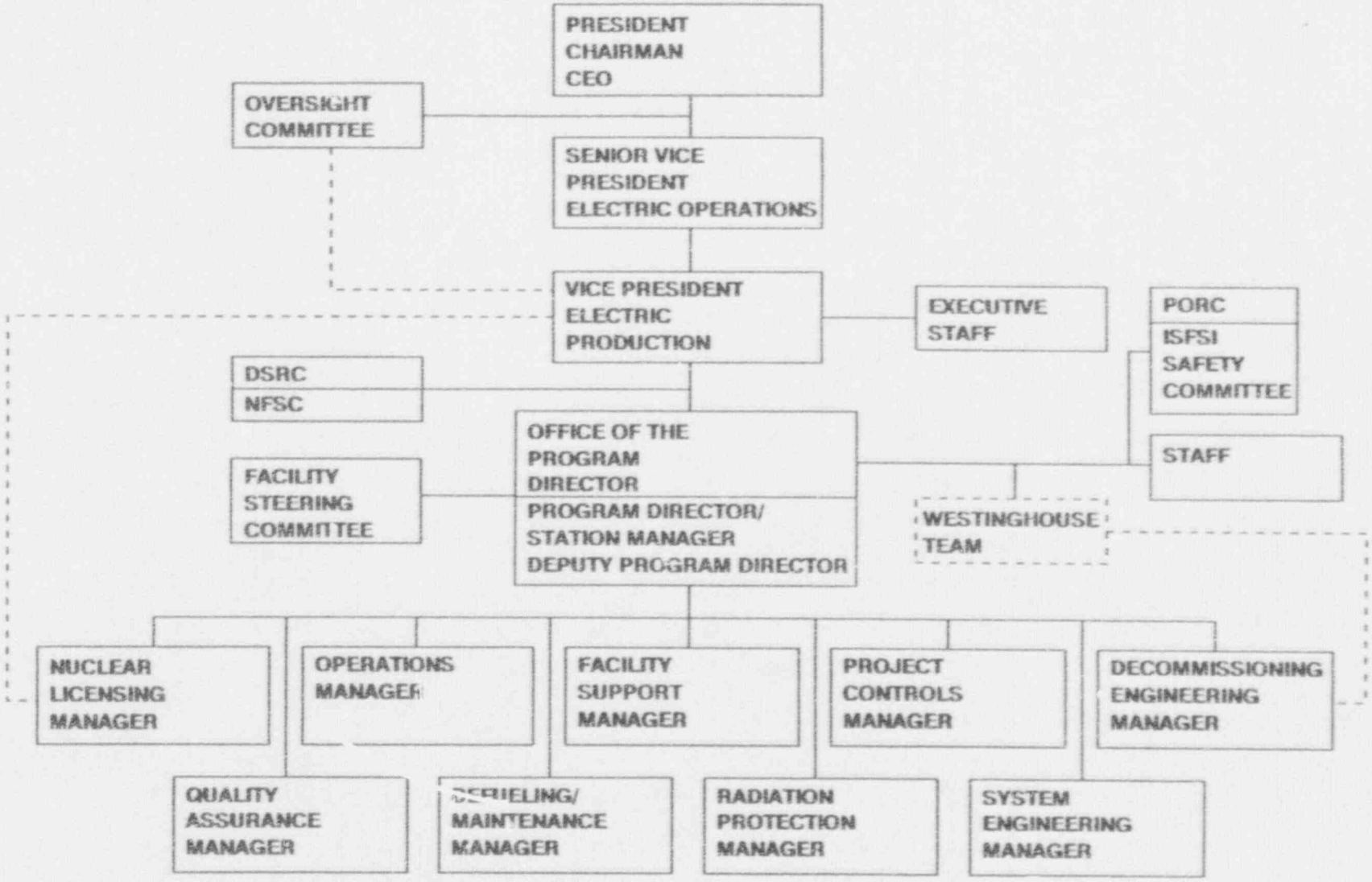
Fort St. Vrain

PSC & Westinghouse Team Organizations: Functional Interfaces/ Work Control Process

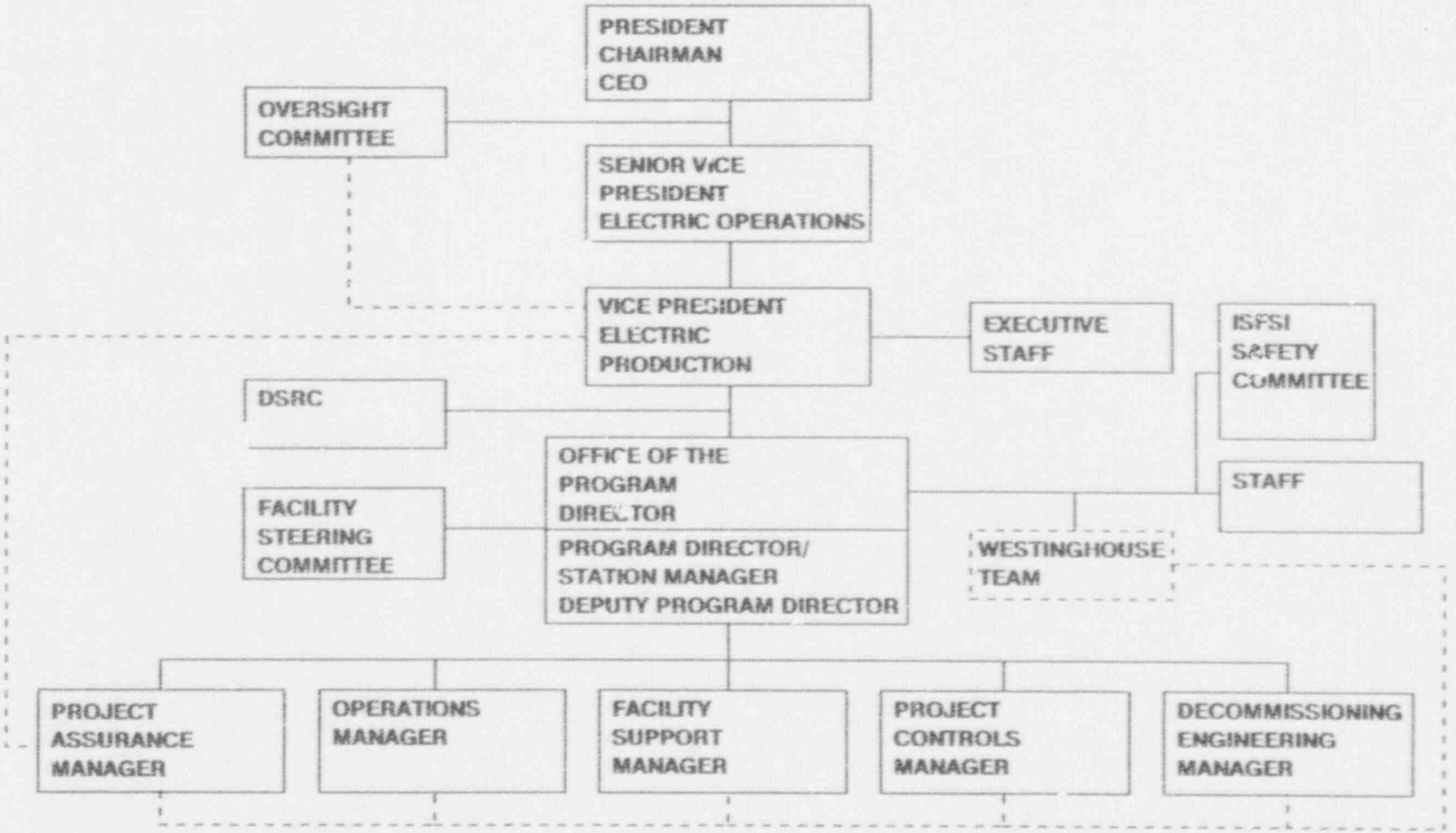
Donald W. Warembourg
Manager, Nuclear Operations

SUBJECT MATTER OUTLINE

- PSC ORGANIZATION
  - Transition
  - Decommissioning
- WESTINGHOUSE ORGANIZATION
- PSC/WESTINGHOUSE MANAGEMENT INTERFACES
- PROJECT OVERVIEW COMMITTEES
  - Oversight Committee
  - Decommissioning Safety Review Committee (DSRC)
  - Hazards Analysis Review of Decommissioning (HARD) Committee
  - ALARA Committee
  - Facility Steering Committee (FSC) for Industrial Safety
- WORK CONTROL
  - Safety Goals
  - Elements of Work Control
  - Work Control Implementation Tools
    - * Programs/Plans
    - * Manual/Procedural Systems
  - Physical Work Control
    - * Work Break Down Structure
    - * Design
    - * Work Specs
    - * Work Packages
    - * Safety Reviews/Controls
  - Work Close Out

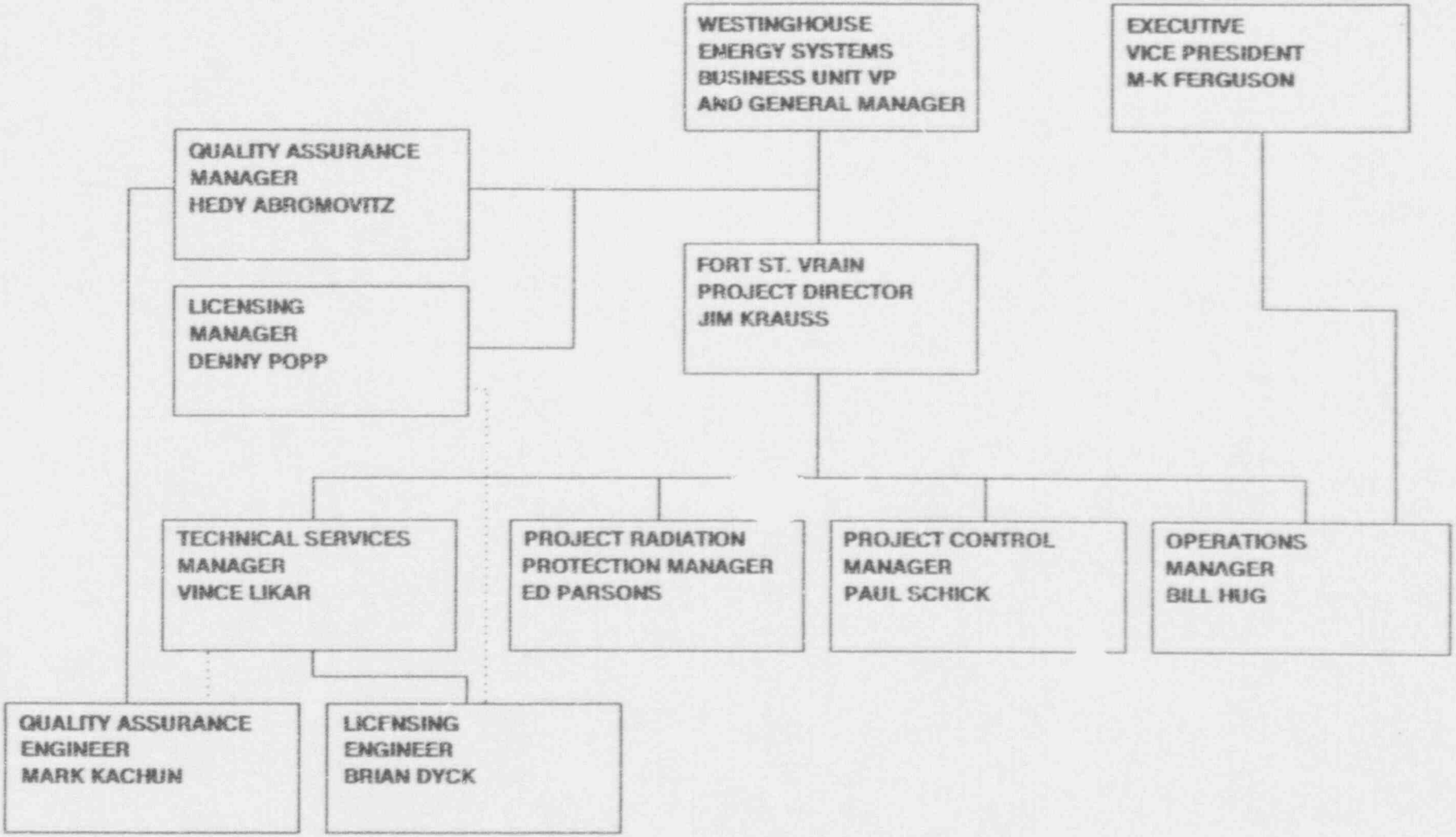


TRANSITION ORGANIZATION
DEFUELING/DECOMMISSIONING
FORT SAINT VRAIN STATION



DECOMMISSIONING ORGANIZATION

FORT SAINT VRAIN STATION


WESTINGHOUSE
ENERGY SYSTEMS
BUSINESS UNIT VP
AND GENERAL MANAGER
EXECUTIVE
VICE PRESIDENT
M-K FERGUSON
QUALITY ASSURANCE
MANAGER
HEDY ABROMOVITZ
LICENSING
MANAGER
DENNY POPP
FORT ST. VRAIN
PROJECT DIRECTOR
JIM KRAUSS
TECHNICAL SERVICES
MANAGER
VINCE LIKAR
PROJECT RADIATION
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ED PARSONS
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MANAGER
PAUL SCHICK
OPERATIONS
MANAGER
BILL HUG
QUALITY ASSURANCE
ENGINEER
MARK KACHUN
LICENSING
ENGINEER
BRIAN DYCK

PSC DECOMMISSIONING ENGINEERING DEPARTMENT

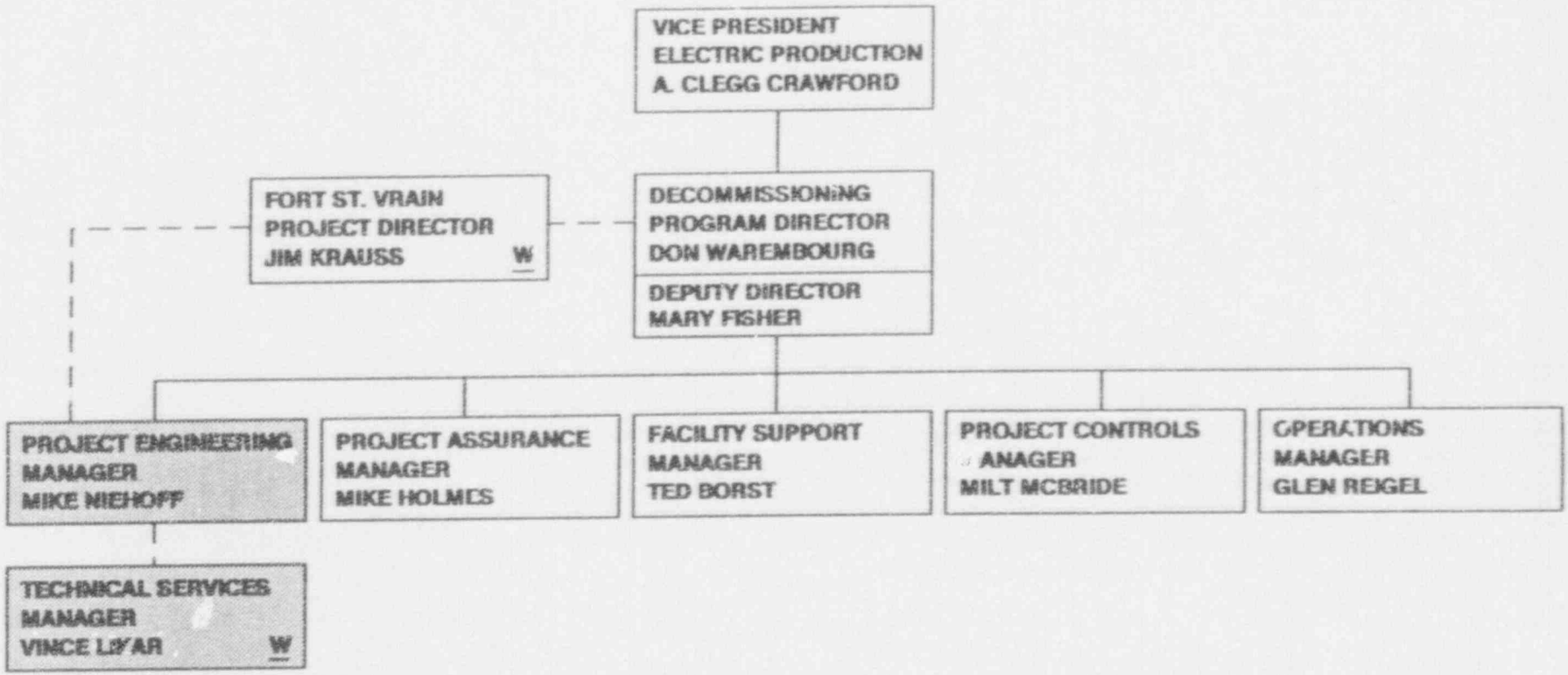
GENERAL RESPONSIBILITIES

- WESTINGHOUSE TEAM CONTRACTUAL INTERFACE
- WESTINGHOUSE SUBMITTAL REVIEWS
- DECOMMISSIONING CONTRACT COST CONTROL
- OVERALL PROJECT WORK OVERSIGHT
- PREPARATION OF DECOMMISSIONING MODIFICATION PACKAGES
- OVERALL PROJECT TECHNICAL ENGINEERING SUPPORT
- PLANT CONFIGURATION
- DESIGN CONTROL
- FIRE PROTECTION PROGRAM
- CHEMICAL CONTROL/HAZARDOUS WASTE PROGRAM
- OPERATIONS AND MAINTENANCE SUPPORT

PRIMARY WESTINGHOUSE TEAM INTERFACE

TECHNICAL SERVICES MANAGER

PROJECT DIRECTOR



ENGINEERING

- WORK SPECIFICATIONS
- WORK PACKAGES
- CONFIGURATION CONTROL

PSC PROJECT ASSURANCE DEPARTMENT

GENERAL RESPONSIBILITIES

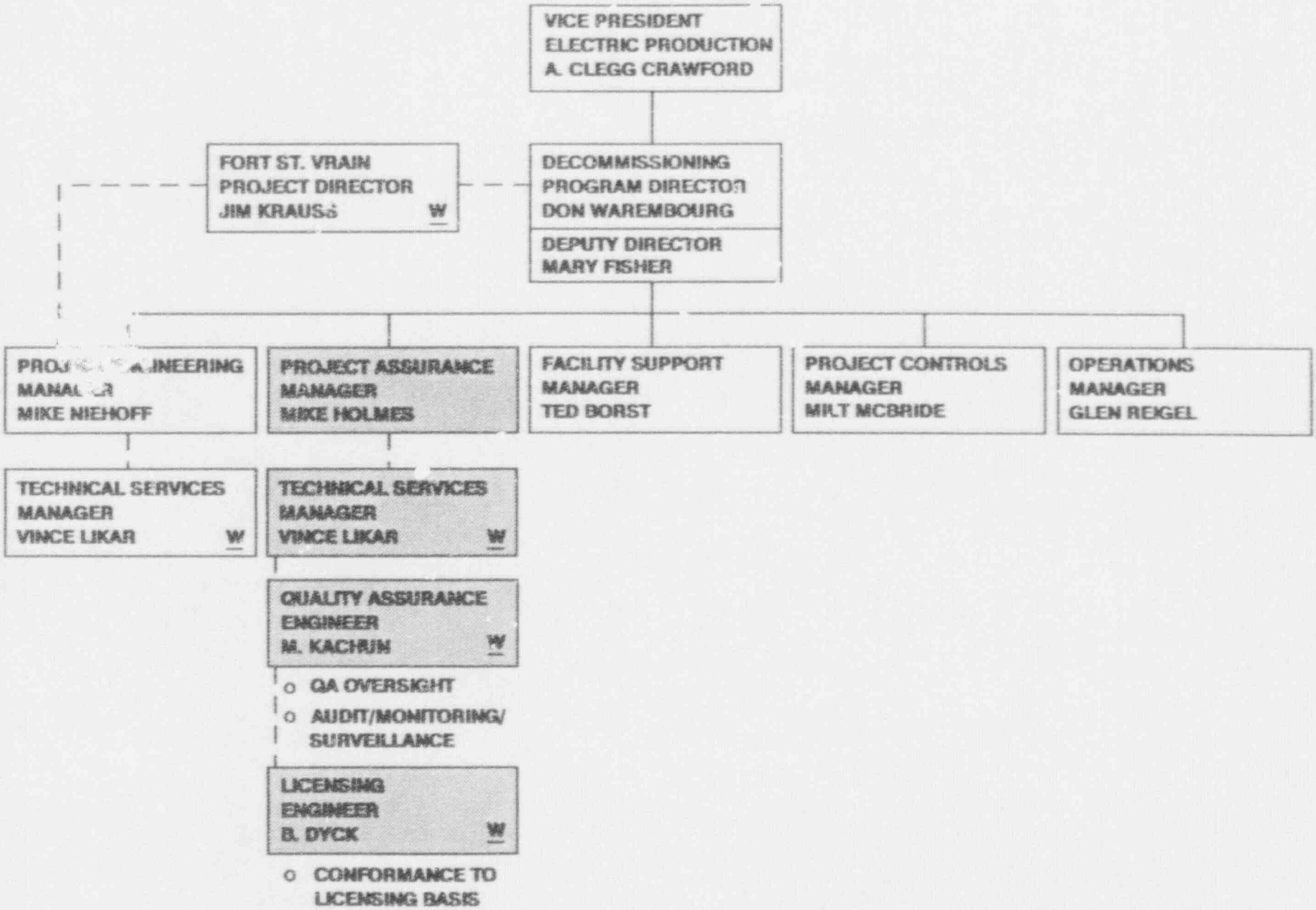
- NRC INTERFACE
- MAINTENANCE OF LICENSING BASIS DOCUMENTS
- LICENSING SUBMITTAL PREPARATION
- SAFETY EVALUATIONS
- INDUSTRIAL SAFETY PROGRAM
- TECHNICAL SPECIFICATION COMPLIANCE MONITORING
- NUCLEAR INDUSTRY OPERATING EXPERIENCE REVIEW
- AUDITS/INSPECTIONS/MONITORING
- QA SURVEILLANCE
- QA ADMINISTRATIVE REVIEWS
- CORRECTIVE ACTION PROGRAM
- QA FOR ISFSI

PRIMARY WESTINGHOUSE TEAM INTERFACE

TECHNICAL SERVICES MANAGER

QA ENGINEER

LICENSING ENGINEER


VICE PRESIDENT
ELECTRIC PRODUCTION
A. CLEGG CRAWFORD
FORT ST. VRAIN
PROJECT DIRECTOR
JIM KRAUSS
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DECOMMISSIONING
PROGRAM DIRECTOR
DON WAREMBOURG
DEPUTY DIRECTOR
MARY FISHER
MANAGER
MIKE NIEHOFF
PROJECT ASSURANCE
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MIKE HOLMES
FACILITY SUPPORT
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TECHNICAL SERVICES
MANAGER
VINCE LIKAR
W
QUALITY ASSURANCE
ENGINEER
M. KACHUN
W
o QA OVERSIGHT
o AUDIT/MONITORING/
SURVEILLANCE
LICENSING
ENGINEER
B. DYCK
W
o CONFORMANCE TO
LICENSING BASIS

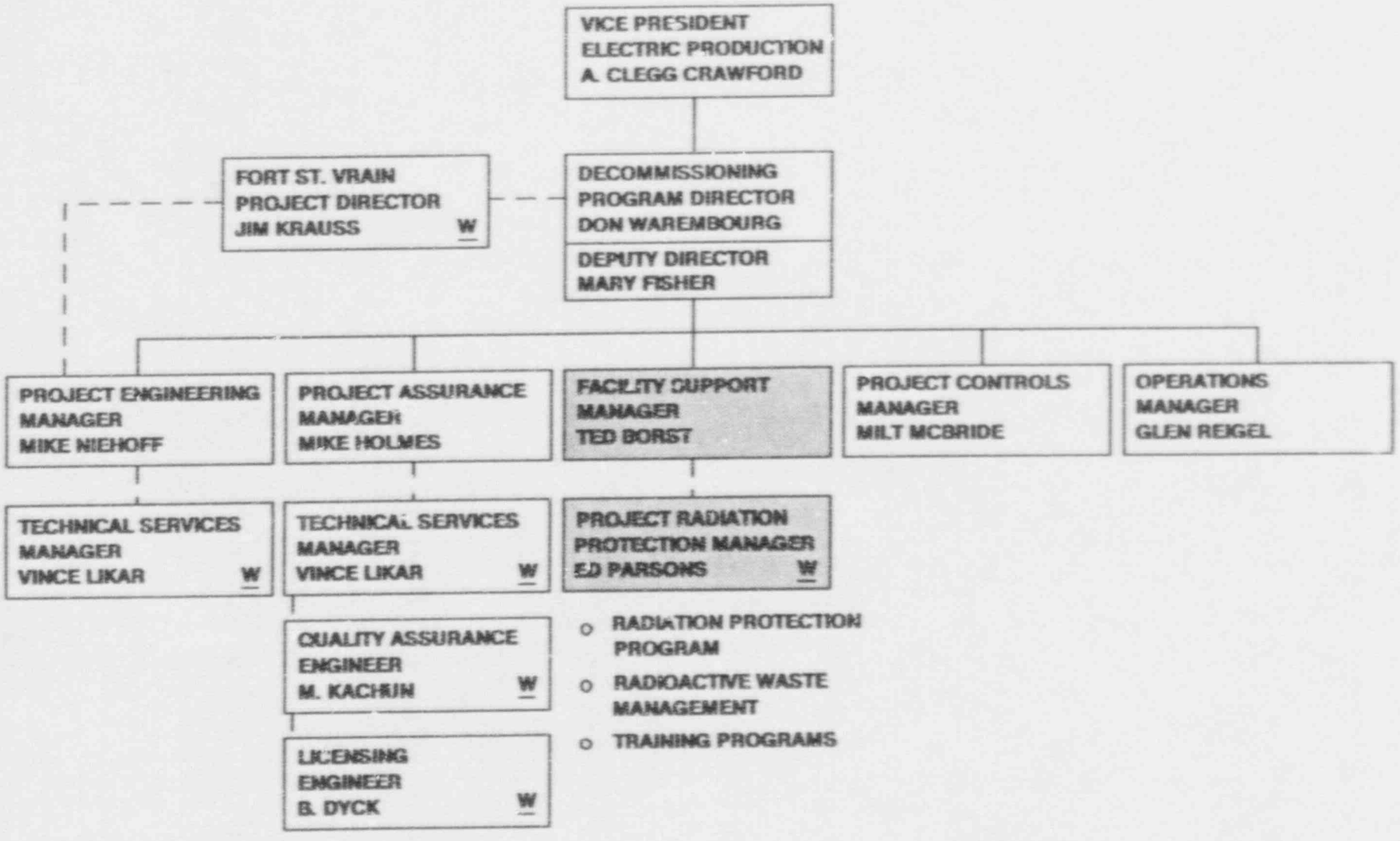
PSC FACILITY SUPPORT DEPARTMENT

GENERAL RESPONSIBILITIES

- FSV RADIATION PROTECTION PROGRAM OVERSIGHT
- ISFSI RADIATION PROTECTION PROGRAM
- RADIOACTIVE MATERIAL SHIPPING/DISPOSAL OVERSIGHT
- RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
- ISFSI RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
- ALARA PROGRAM OVERSIGHT
- TRAINING (PSC PERSONNEL)
- PLANT ACCESS CONTROL
- EMERGENCY PLANNING
- PROCEDURE CONTROL (PSC)
- CLERICAL SUPPORT
- RECORDS MANAGEMENT
- FACILITIES CONTROL/SUPPORT

PRIMARY WESTINGHOUSE TEAM INTERFACE

PROJECT RADIATION PROTECTION MANAGER (SEG)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ENGINEER
M. KACHKIN W
LICENSING
ENGINEER
B. DYCK W
RADIATION PROTECTION PROGRAM
RADIOACTIVE WASTE MANAGEMENT
TRAINING PROGRAMS

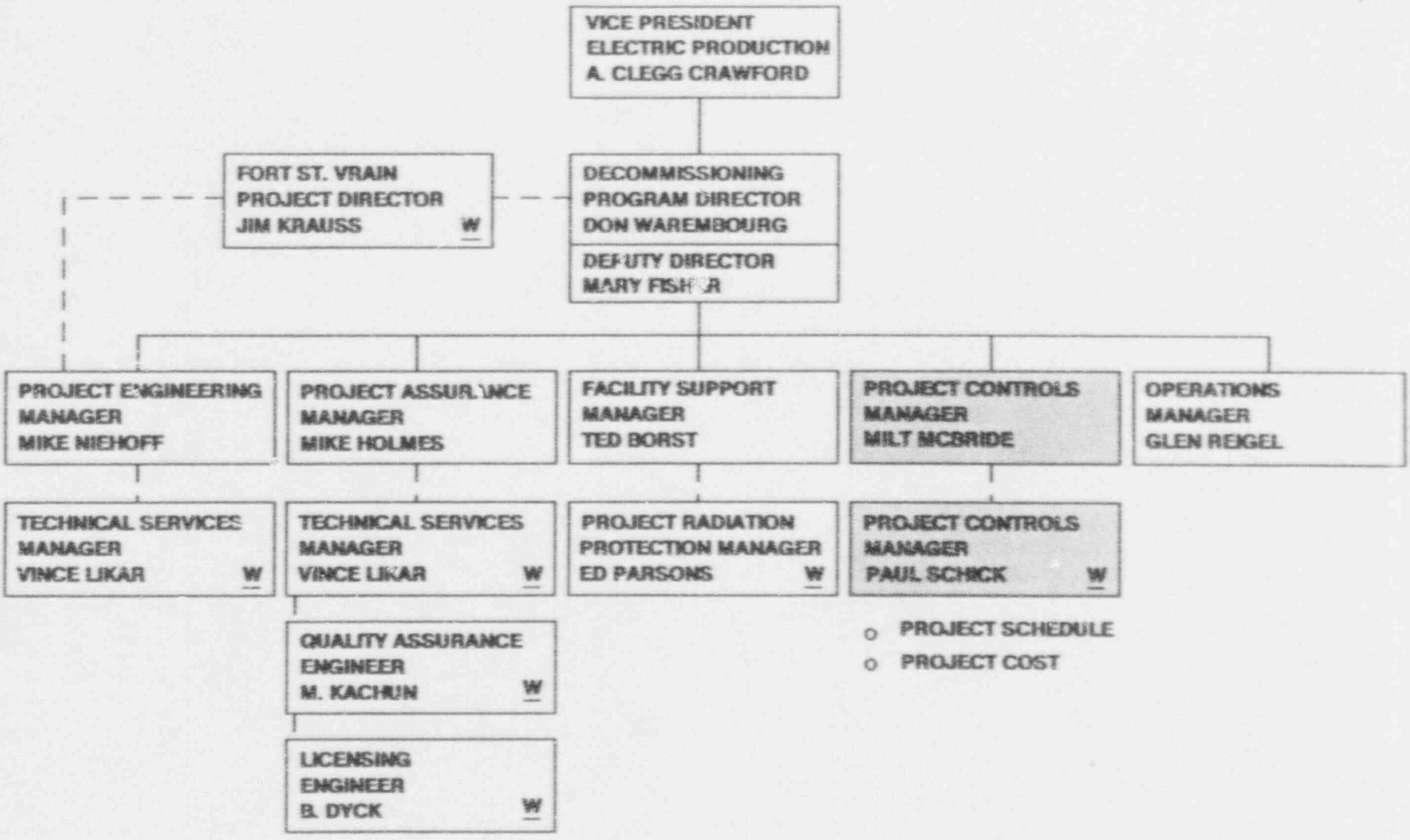
PSC PROJECT CONTROLS DEPARTMENT

GENERAL RESPONSIBILITIES

- COMPUTER SERVICES
- ORGANIZATION PERFORMANCE MONITORING
- PLANNING & SCHEDULING (PSC)
- PROJECT SCHEDULING AND PROGRESS OVERSIGHT
- COST MANAGEMENT
- BUDGET CONTROL & ANALYSIS
- CONTRACT ADMINISTRATION
- STRATEGIC PLANNING

PRIMARY WESTINGHOUSE TEAM INTERFACE

PROJECT CONTROLS MANAGER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PROJECT SCHEDULE
PROJECT COST
QUALITY ASSURANCE
ENGINEER
M. KACHUN W
LICENSING
ENGINEER
B. DYCK W

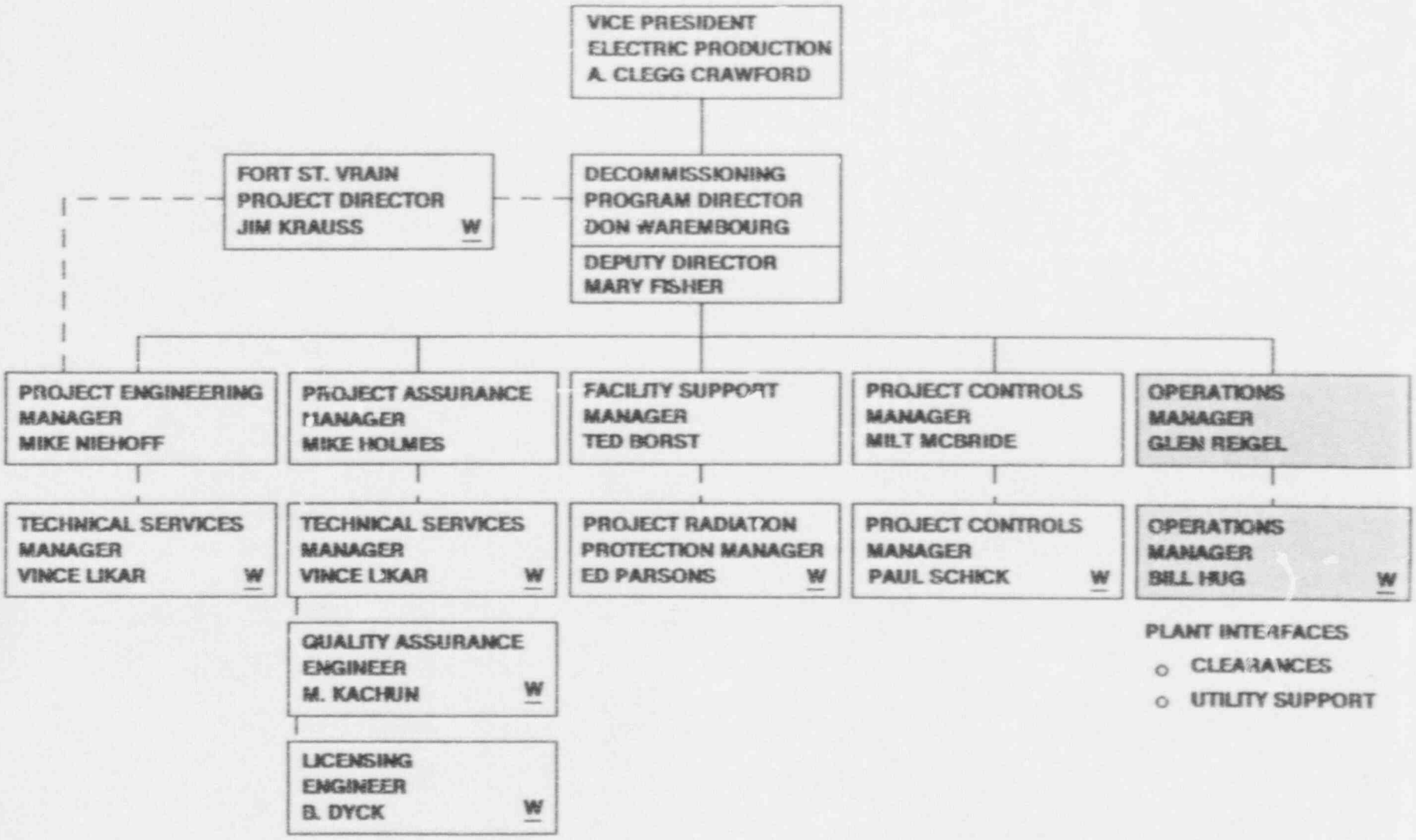
PSC OPERATIONS DEPARTMENT

GENERAL RESPONSIBILITIES

- OVERALL PLANT OPERATIONS
- MECHANICAL AND ELECTRICAL MAINTENANCE
- INSTRUMENT MAINTENANCE/CALIBRATION
- SURVEILLANCE AND TESTING ACTIVITIES
- REGULATORY COMPLIANCE (TECHNICAL SPECIFICATIONS)
- EQUIPMENT CLEARANCE PROGRAM
- STORES/WAREHOUSING ACTIVITIES
- ISFSI OPERATIONS AND MAINTENANCE

PRIMARY WESTINGHOUSE TEAM INTERFACE

OPERATIONS MANAGER M.K. FERGUSON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ENGINEER
B. DYCK W
PLANT INTERFACES
CLEARANCES
UTILITY SUPPORT

OVERVIEW COMMITTEES

- OVERSIGHT COMMITTEE
  - Provide Overall Project Review and Advise CEO Accordingly
  - Ensure That We Are Doing Things Safely
  - Ensure That We Are Doing Things Cost Effectively
  - Ensure That We Are Considering Overall Industry Impact
- DECOMMISSIONING SAFETY REVIEW COMMITTEE (DSRC)
  - Focal Point for Fort Saint Vrain Safety Programs
  - Advises Vice President Electric Production on Safety Matters
  - Audits Major Decommissioning Activities
  - Oversight of Other Safety Committees
    - * ALARA Committee
    - * ISFSI Safety Committee
    - * Facility Steering Committee (Industrial Safety)
    - * Employee Safety Committee
    - * Contractor Safety Program
- HAZARDS ANALYSIS REVIEW OF DECOMMISSIONING (HARD) COMMITTEE
  - Joint Ad Hoc Committee Providing a Detailed/Critical Review of Decommissioning Work Activities
    - * Industrial Safety
    - * Radiological Safety
    - * Property Damage
  - Assess Credible Abnormal Conditions
  - Track Resolution of Concerns

WORK CONTROL

- WORK CONTROL SAFETY GOALS
- ELEMENTS OF WORK CONTROL
- WORK CONTROL IMPLEMENTATION TOOLS
- PHYSICAL WORK CONTROL
- WORK CONTROL PROCESS FLOW DIAGRAMS

WORK CONTROL SAFETY GOALS

- MAINTAIN ACTIVITIES WITHIN LICENSED CONDITIONS
- MINIMIZE THE POSSIBILITY OF EXPERIENCING ANALYZED ACCIDENTS
- DON'T CREATE ANY NEW/UNANALYZED ACCIDENTS
- MINIMIZE RADIOLOGICAL AND NON-RADIOLOGICAL HAZARDS
  - Radiation Exposures/Personnel Contamination
  - Occupational Health Risks
  - Injuries
  - Property Damage
- MAINTAIN POSITIVE TRENDS IN ALL PERFORMANCE INDICATORS

ELEMENTS OF WORK CONTROL

- PROTECTION OF PERSONNEL, PROPERTY AND THE ENVIRONMENT
- REGULATORY/PROCEDURAL COMPLIANCE
- QUALITY STANDARD OF EXCELLENCE
- TECHNICAL & PHYSICAL PERFORMANCE
- PROJECT SCHEDULE
- PROJECT COST

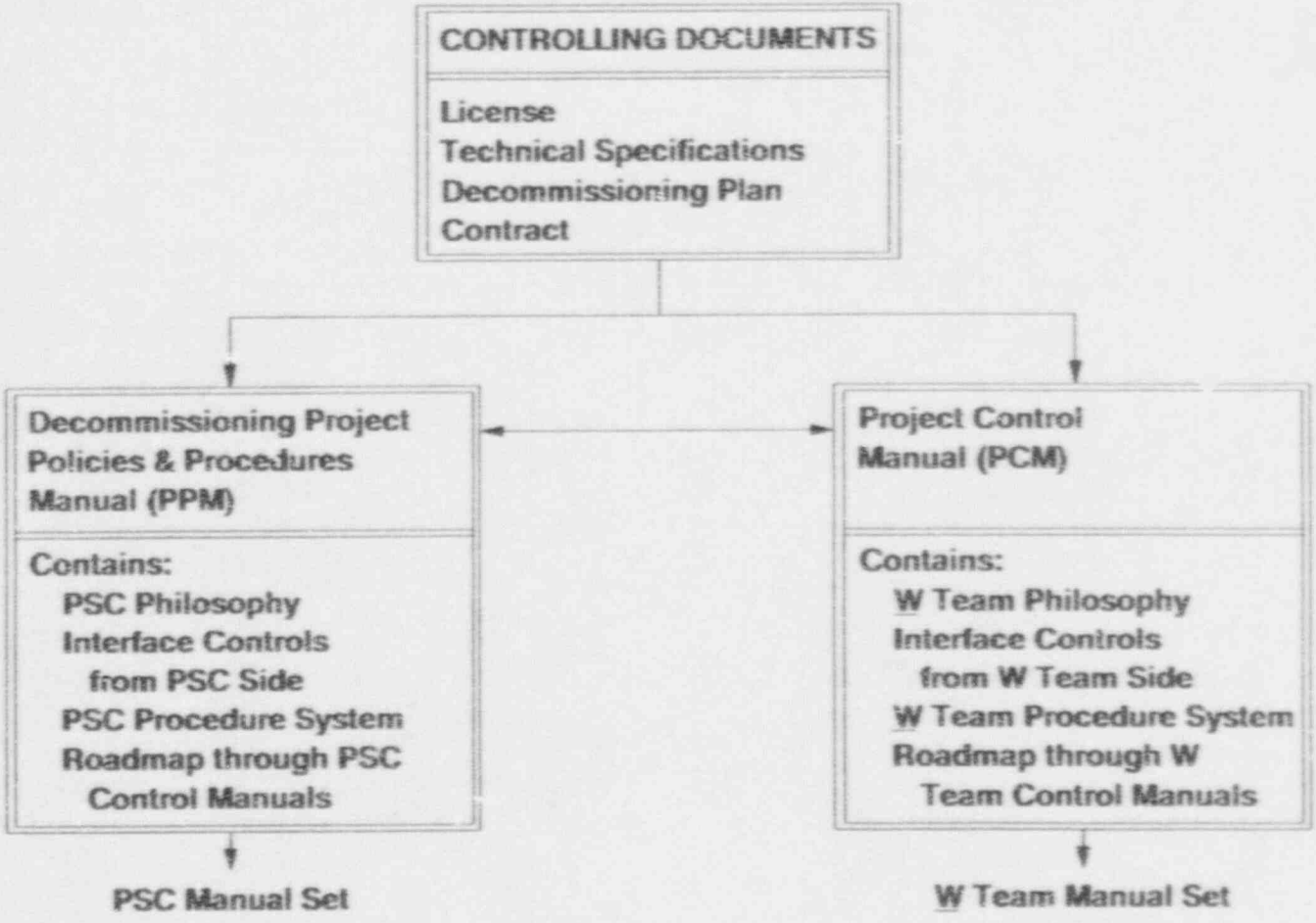
WORK CONTROL IMPLEMENTATION TOOLS

- MANAGEMENT CONTROLS
  - Programs and Plans
  - Manuals & Procedures
  - Technical Reviews
  - Quality Assurance
  - Configuration Control
    - * Operation System Status
    - * Dismantlement Status
  - Stop Work Authority
- CONTRACT COMPLIANCE
  - Oversight/Audits/Inspections/Monitoring Activities
- QUALIFIED PERSONNEL
  - Experience Personnel
  - Training Programs
- STRUCTURED PROGRAM WITH CLEARLY WRITTEN SUPPORTING PROCEDURES AND WORKING DOCUMENTS
- COMPLIANCE TO PROCEDURES
  - General Oversight
  - Monitoring/Inspections
  - Auditing
- PLANNING AND COMMUNICATIONS
  - Daily Plan of the Day Meetings
  - Weekly Look Ahead Meetings
  - Monthly Management Overview Meetings
- TIMELY CORRECTIVE ACTIONS

PROGRAMS AND PLANS

- Project Quality Plan (PDP 7)
- Radiation Protection Plan (PDP 3.2)
  - Preliminary Survey Program (PDP 4.7)
  - ALARA Program (PDP 3.2.5.1)
  - Bioassay Program (PDP 3.2.5.7)
  - Dosimetry Program (PDP 3.2.5.5 & 3.2.5.6)
  - Exposure Control Program (PDP I.1.1.6.3)
  - Routine Radiation Monitoring Program (PDP I.1.1.6.3)
  - Contamination Control Program (PDP 3.2.11.4)
  - Project Radiological Surveillance Program (PDP 3.2.7)
  - Respiratory Protection Program (PDP 3.2.5)
  - Independent Verification Program (PDP 4.7)
- Radioactive Waste Management Program (PDP 3.3)
  - Radioactive Waste Disposal Program (PDP 3.3.3)
  - Radioactive Effluent Control Program (PDP 6.2)
  - Radioactive Environmental Monitoring Program (PDP 6.2)
- Decommissioning Emergency Response Plan
- Personnel Safety Program (PDP I.1.1.6)
  - Industrial Safety Program (PDP 2.5.3.3)
  - Fire Protection Plan
  - Health, Safety & Environmental Management Program (PDP I.1.1.6)
  - Training Programs (PDP 7.4.4)
- Public Safety Program (PDP I.1.1.6)
- FSV Access Control Plan (PDP 8.1)

DECOMMISSIONING PROJECT CONTROL PHILOSOPHY



MANUALS AND PROCEDURES

Sets of Manuals/Procedures Utilized:

(1) Interface Controls:
- Project Control Manual
  - * Project Administration
  - * Planning & Scheduling
  - * Financial
  - * Engineering
  - * Work Control
  - * Quality Assurance

(2) PSC Project Controls:
- 16 Project Manuals
- Approximately 140 Project Procedures

(3) Westinghouse Team Project Controls:
- Stand-Alone Project Quality Plan
- WSEG Manual/Procedure Matrix
- MK Ferguson Standards
  - * Safety Manual
  - * Rigging Manual

PHYSICAL WORK CONTROL

- WORK BREAKDOWN IDENTIFIED IN WORK BREAKDOWN STRUCTURE
  - Design Work
  - Dismantlement Work
  - Major Procurements
- DESIGN & FABRICATION CONTROLLED BY WNATD PROCEDURES
  - Functional Requirements
  - Design Documents
  - Functional Testing of Prototypes
- WORK SPECIFICATIONS PROVIDE OVERALL WORK DEFINITION
  - General Work Specifications
  - Facility Plans
  - Utility Plan
  - Specific Work Specifications
- WORK PACKAGES PROVIDE DETAILS AND WORK INSTRUCTIONS
  - Work Packages
  - Maintenance Work Requests
  - Special Instructions
- MOCK-UPS AND TRAINING
- OVERSIGHT REVIEWS
  - Oversight Committee
  - DSRC
  - ALARA Committee
  - HARD Committee
  - Safety Committee

TYPICAL WBS CHARTS

FORT ST. VRAIN DECOMMISSIONING PROJECT

WORK BREAKDOWN STRUCTURE

PHASE 1

WBS NUMBER	WORK BREAKDOWN STRUCTURE DESCRIPTION
1.3.3.4	Replacement & Permanent HEX Reflector Block Removal
1.3.3.5	Large Side Reflector Element Removal
1.3.3.6	Boronated Spacer Element Removal
1.3.3.7	Hastalloy Can HEX Reflector Block Removal
1.3.3.8	Core Support Block & Post Removal
1.3.4	Core Support Floor, Barrel & Insulation Removal Planning & Engineering
1.3.4.1	CSF Tooling Design & Specification
1.3.4.2	CSF Column & He Ductork Removal
1.3.4.3	Core Barrel & Key Removal
1.3.4.4	Core Support Floor Removal
1.3.4.5	Top CSF Insulation Removal
1.3.5	PCRV Lower Plenum Planning & Engineering Assemblies Removal
1.3.5.1	Steam Generator Removal Tool Design Specification
1.3.5.2	Steam Generator Mock-up Design & Specification
1.3.5.3	Thirteen Steam Generator Module Removal
1.3.5.4	Four He Diffuser & Shut off Valve Assemblies Removal
1.3.5.5	Core Support Floor Columns, Lower Floor, & Flexible Column Removal
1.3.5.6	PCRV Lower Plenum Insulation & Cover Plate Removal
1.3.6	Final PCRV Dismantlement, Decontamination & Cleanup Planning & Engineering
1.3.6.1	Beltline Activated Concrete, Liner, & Insulation Removal
1.3.6.2	Lower PCRV Liner Decontamination
1.3.6.3	PCRV Wells & Penetrations, PCRV Safety Valve Instrumentation & Piping Decontamination
1.3.6.4	Area Cleanup & Demobilization
1.3.6.5	PCRV Decon Procedures for Final Release Survey
1.4	Contaminated Systems D/D Design, Specs & Procedures
1.4.1	Disassembly Tools
1.4.1.1	Mechanical Cutting Tool Specifications

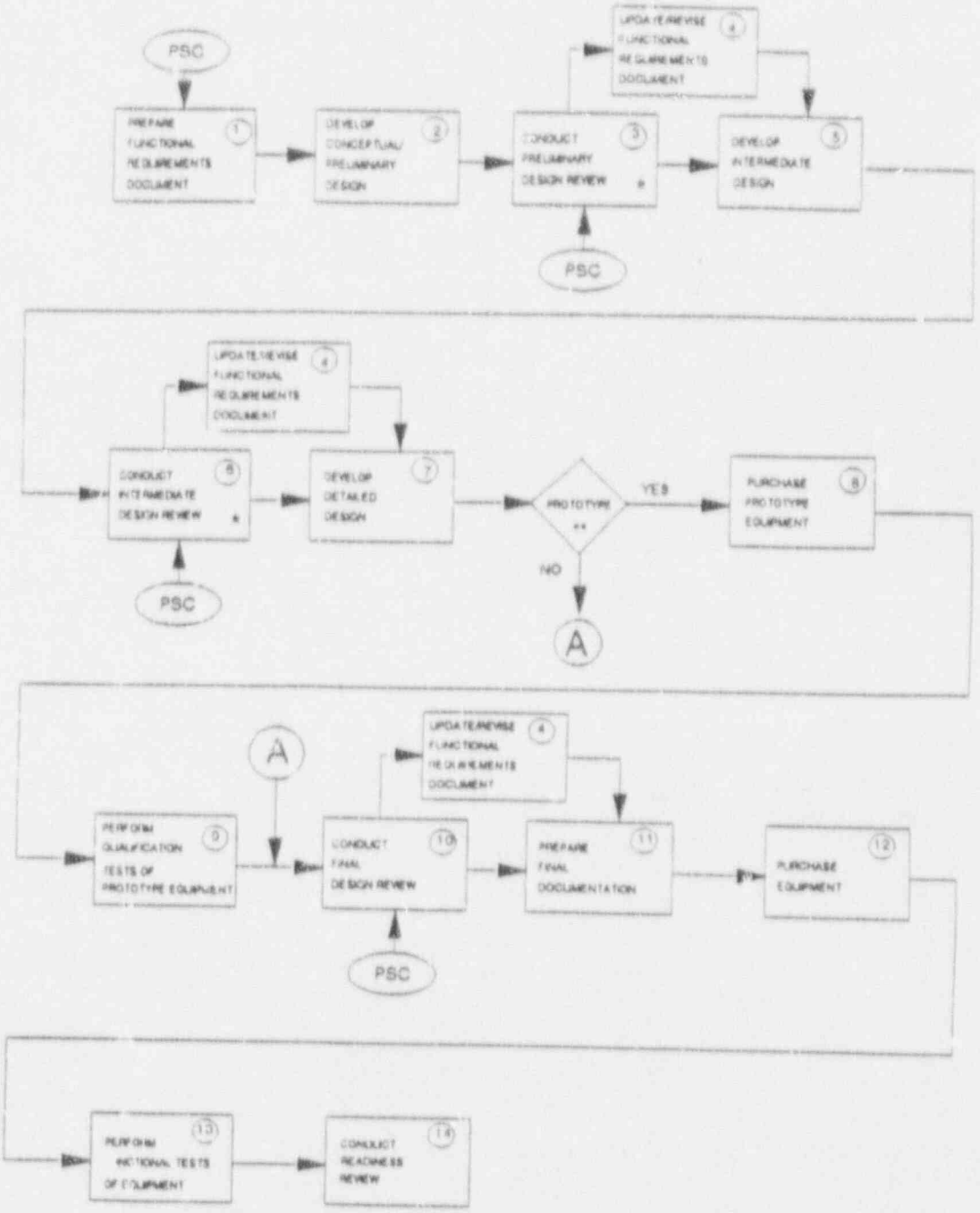
FORT ST. VRAIN DECOMMISSIONING PROJECT

WORK BREAKDOWN STRUCTURE

PHASE 2

WBS NUMBER	WORK BREAKDOWN STRUCTURE DESCRIPTION
2.3.3	Dismantle PCRV Core
2.3.3.1	Graphite Grappling Tools
2.3.3.2	PCRV Core Mockup
2.3.3.3	Refueling Elements
2.3.3.4	Replaceable and Permanent Hex Reflector Blocks
2.3.3.5	Large Side Reflector Blocks
2.3.3.6	Boronated Spacer Elements
2.3.3.7	Hastelloy Can Hex Reflector Blocks
2.3.3.8	Core Support Blocks and Posts
2.3.4	Core Support Floor, Barrel and Insulation D/D
2.3.4.1	Core Support Floor Removal Tools
2.3.4.2	CSF Column and He Duct Work Mockup
2.3.4.3	Core Barrel and Keys
2.3.4.3.1	Core Barrel and 24 Outer Keys
2.3.4.3.2	24 Core Barrel to Graphite Lower Key Removal
2.3.4.3.3	24 Core Barrel to Graphite Upper Key Removal
2.3.4.4	Core Support Floor
2.3.4.5	Top CSF Insulation
2.3.5	PCRV Lower Plenum D/D
2.3.5.1	Steam Generator Removal Tools
2.3.5.2	Mockup of Steam Generator Primary Side Removal
2.3.5.3	Twelve Steam Generator Modules
2.3.5.3.1	Secondary - Steam Generator Modules
2.3.5.3.2	Primary - Steam Generator Modules
2.3.5.4	Helium Circulators
2.3.5.4.1	Remove Helium Circulator Primary Modules
2.3.5.4.2	Remove Helium Circulator Secondary Modules
2.3.5.5	Core Support Floor Columns and Lower Floor & Flexible Columns
2.3.5.6	PCRV Inside Bottom & Side Insulation & Cover Plates
2.3.6	Final PCRV Dismantling, Decontamination, & Cleanup
2.3.6.1	Remove Beltline Activated Concrete
2.3.6.2	Decon Lower PCRV Liner
2.3.6.3	PCRV Walls and Penetrations; PCRV Safety Valves, Instrumentation & Piping

FORT ST. VRAIN DECOMMISSIONING
SYSTEM DESIGN PROCESS



* THESE MAY BE COMBINED OR ELIMINATED BASED ON THE COMPLEXITY OF THE DESIGN.

** PROTOTYPES OF THE GRAPHITE BLOCK HANDLING TOOLS WILL BE FABRICATED.

WORK SPECIFICATION OUTLINE

1.0 PURPOSE

2.0 SCOPE

3.0 APPLICABLE DOCUMENTS

4.0 EQUIPMENT AND SERVICES

5.0 FUNCTIONAL DESCRIPTION

6.0 PREPARATION PREREQUISITES

7.0 IDENTIFICATION OF COMPONENTS TO BE REMOVED

8.0 INTERFACES

9.0 DISMANTLEMENT/DECONTAMINATION APPROACH

10.0 PURCHASING

11.0 TRAINING

12.0 SAFETY

13.0 RADIATION PROTECTION

14.0 QUALITY ASSURANCE

15.0 RADIOACTIVE MATERIAL HANDLING AND SHIPPING

16.0 LICENSING REQUIREMENTS/SAFETY ASSESSMENT

CURRENTLY EXPECT A WORK SPECIFICATION POPULATION OF 46

WORK PACKAGE OUTLINE

1.0 WORK PACKAGE COVER SHEET

2.0 SITE WORK INSTRUCTIONS

- A. Scope
- B. Definitions
- C. Prerequisites and Preliminary Work
- D. Procedures (Work Methods, Safety Precautions and Acceptance Criteria)

3.0 ATTACHMENTS

- A. ALARA Checklist
- B. Process Control Documents
- C. Figures

4.0 WORK PACKAGE CHANGE NOTICE

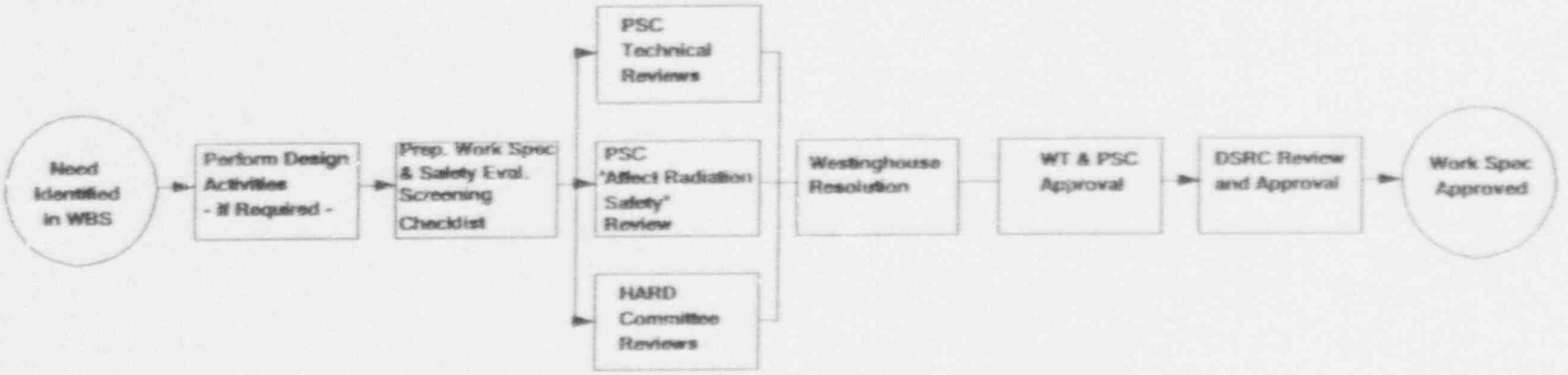
CURRENTLY ANTICIPATE A WORK PACKAGE POPULATION OF 49

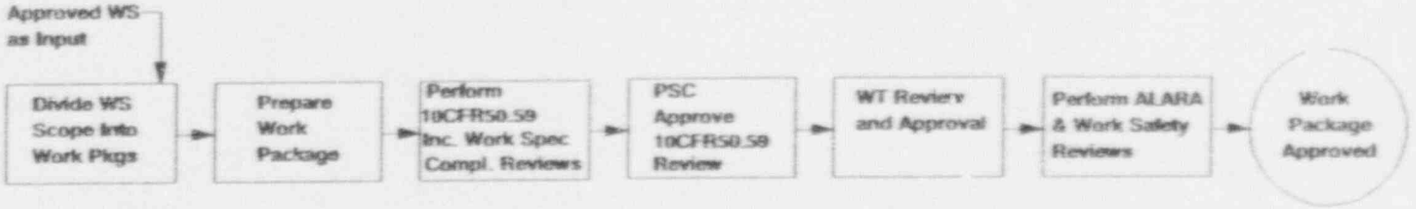
SIMPLIFIED

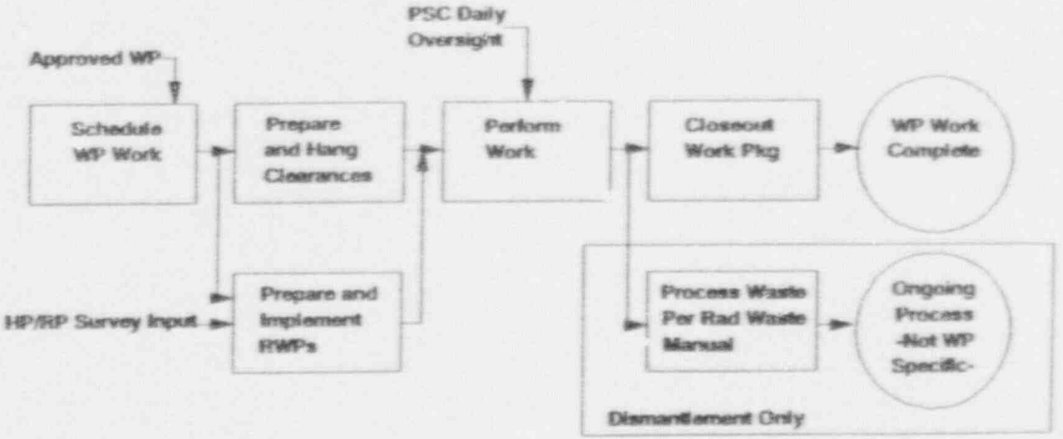
WORK CONTROL

DIAGRAMS

SIMPLIFIED WORK CONTROL PROCESS DIAGRAM



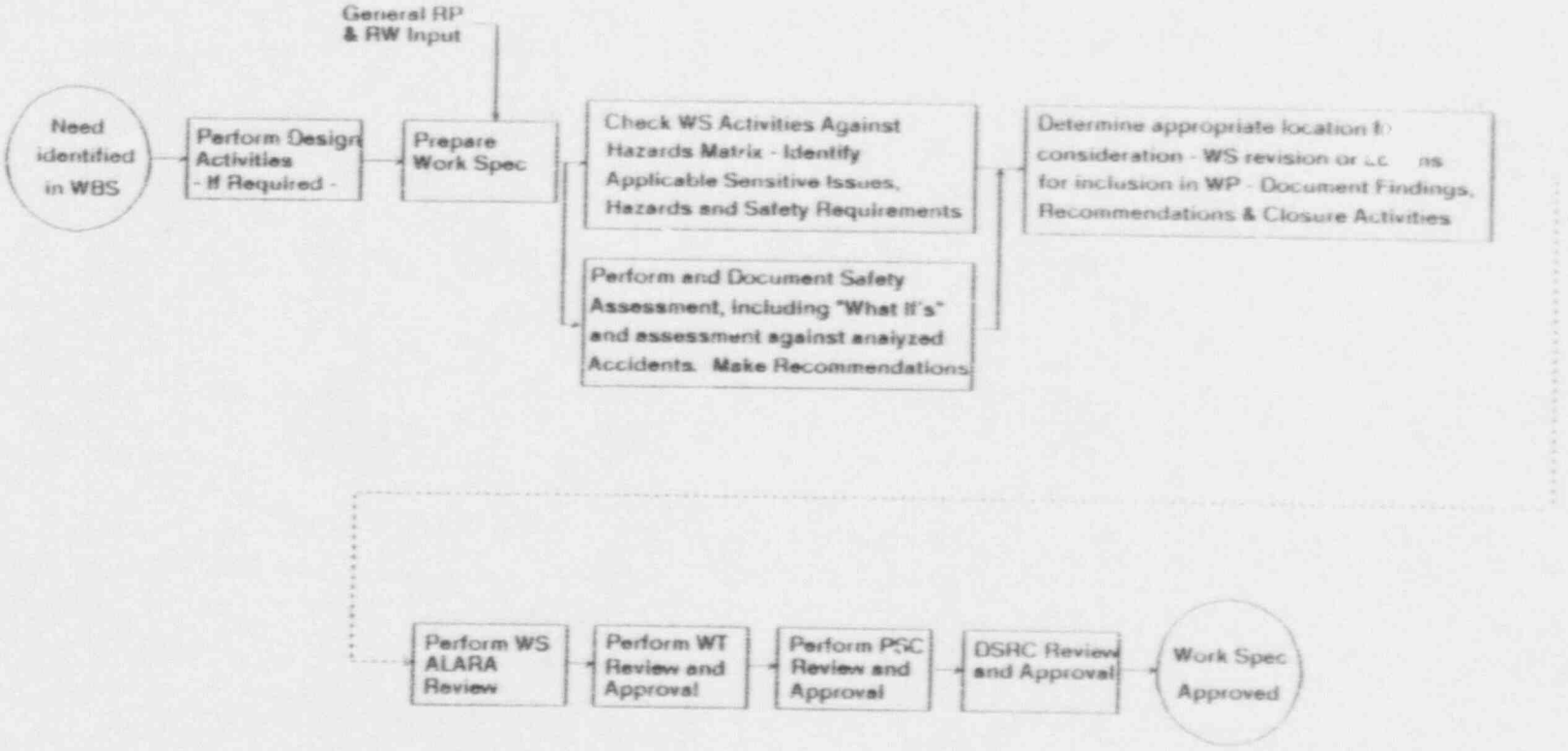




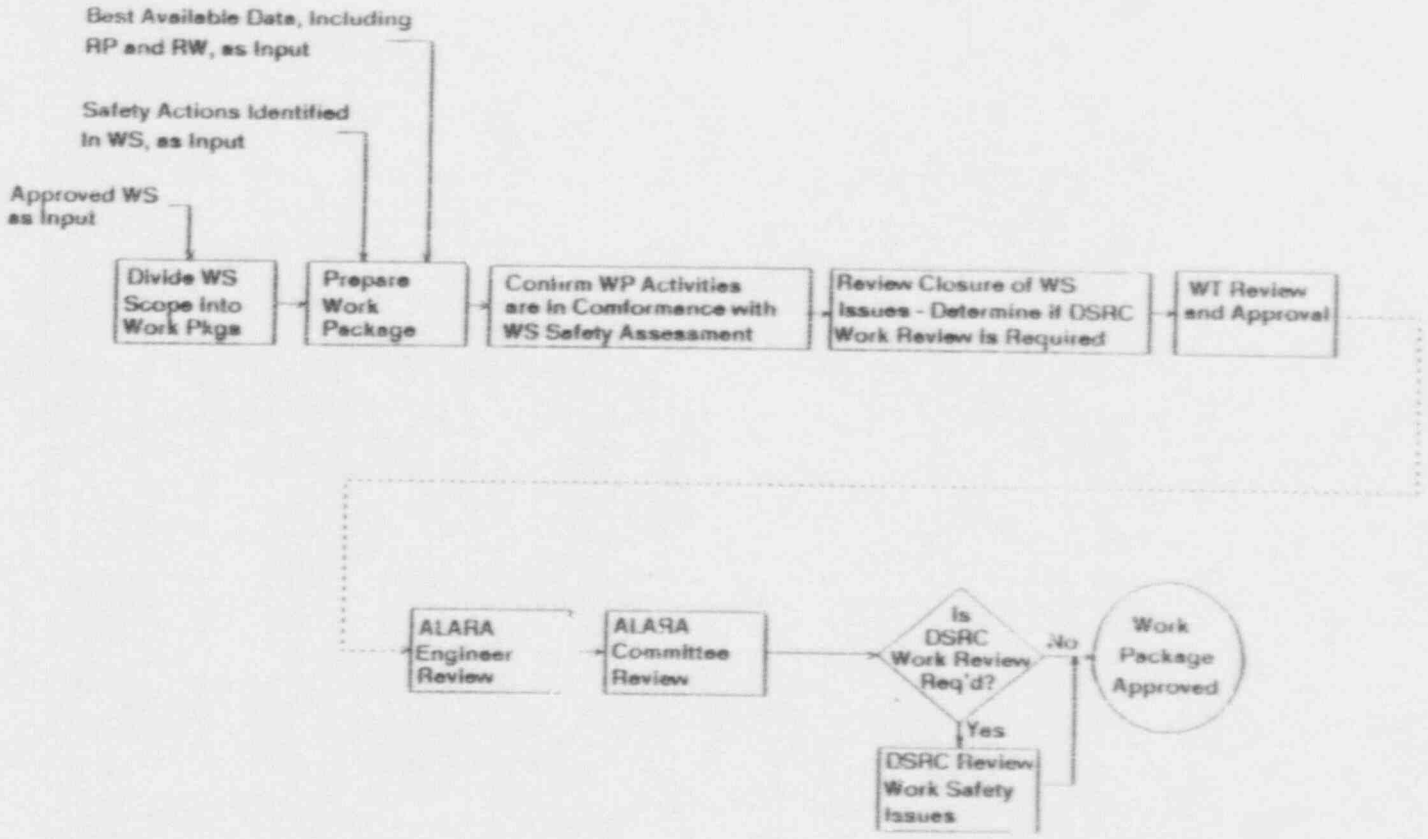
WORK PACKAGE CLOSEOUT ACTIVITIES

- HP/RP SURVEYS & RWP CLOSURE
- POST JOB REVIEW
- ALARA REVIEW & CLOSURE
- CLEARANCE FEEDBACK
- DOCUMENT UPDATING
- DRAWING UPDATING
- WORK PACKAGE CLOSURE

WORK SPECIFICATION PROCESS DETAiL



WORK PACKAGE PROCESS DETAIL



FORT ST. VRAIN OVERSIGHT COMMITTEE

Chairman:

William H. Hamilton*
Former President, Westinghouse-Betus

Members:

Joseph Colvin
CEO, Nuclear Management & Resources Council (NUMARC)

Frank P. Crimi
Vice President, WasteChem

Dr. Paul B. Woollam
Group Head, Nuclear Electric, plc

Noman Cole*
Partner, MPR Associates, Inc

Brian Lipford
Nuclear Engineer, MPR Associates, Inc

* Members of Technical Advisory & Assistance Group (TAAG) at TMI

JIM KRAUSS

WESTINGHOUSE DIRECTOR

FORT ST. VRAIN PROJECT

TOPICS

- PCRV DISMANTLEMENT PLAN
- PLAN DEVELOPMENT
- SCHEDULE

PCRV DISMANTLEMENT APPROACH

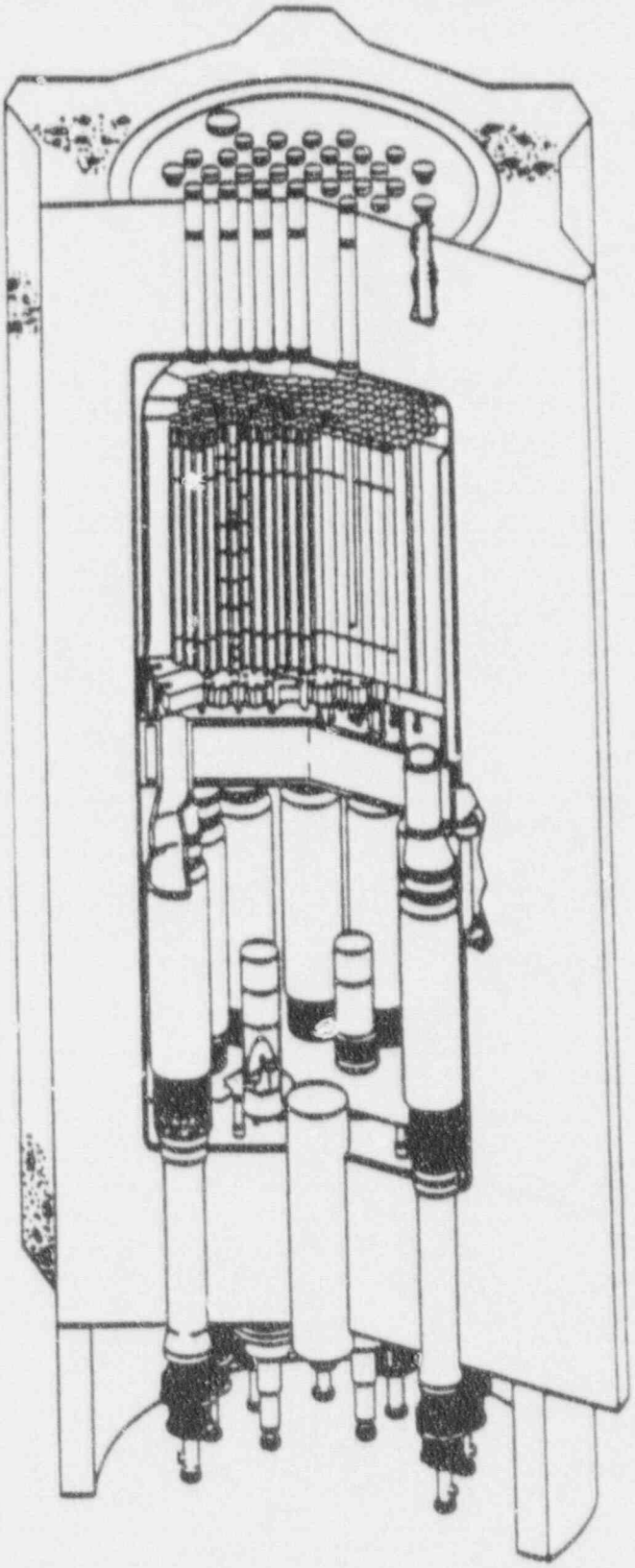
OPTIMIZE:

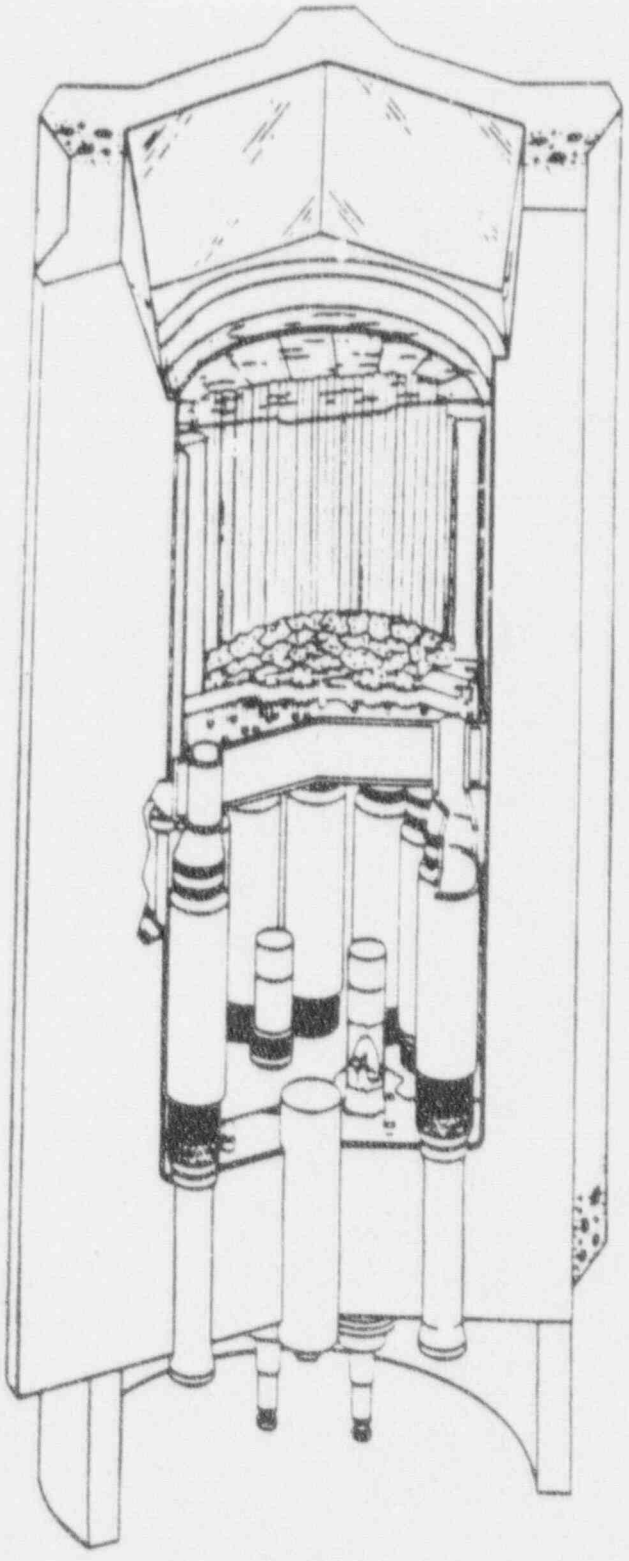
- SAFETY
- ALARA
- SCHEDULE
- RISK
- COST

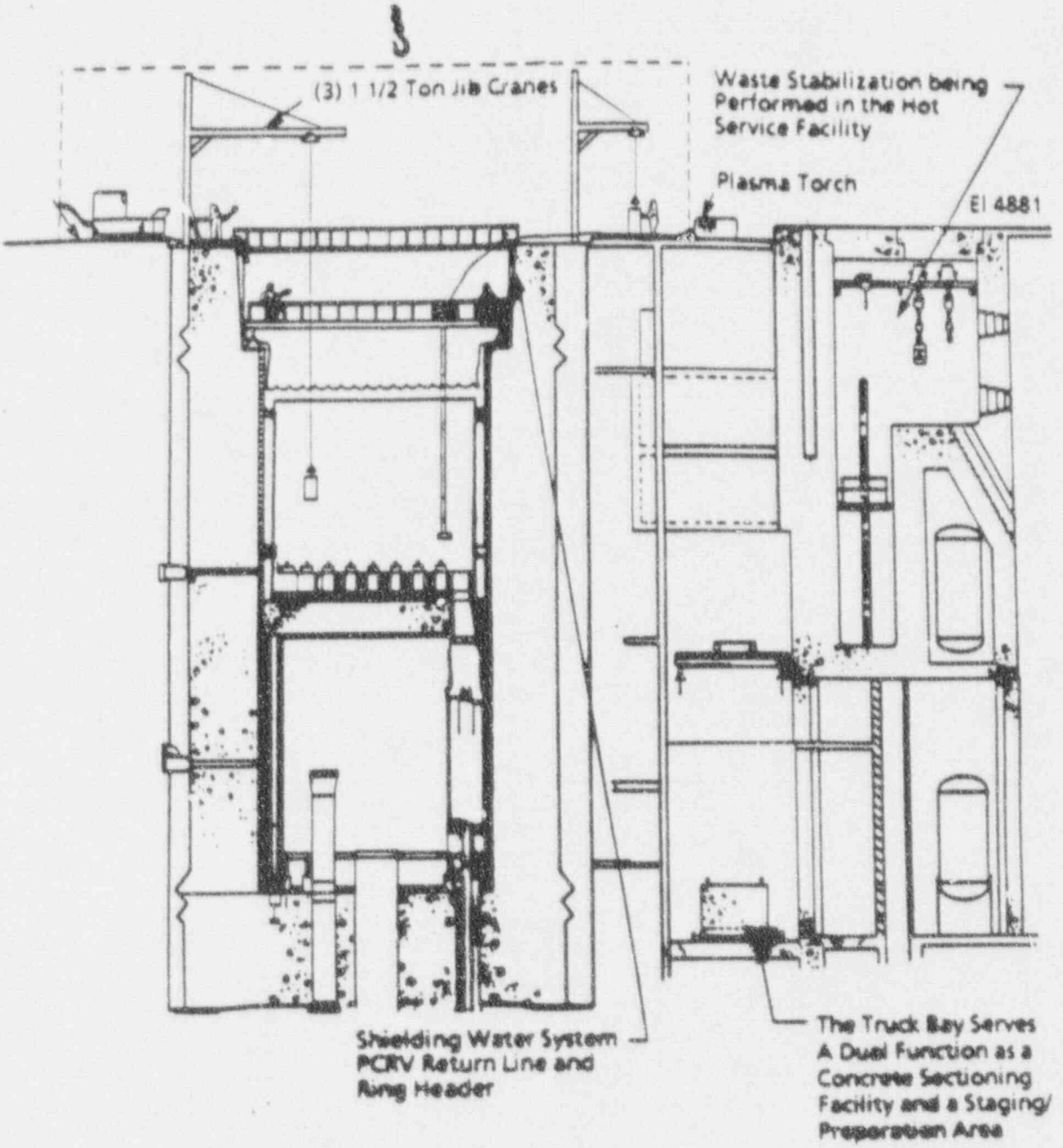
RADIATION EXPOSURE PROTECTION

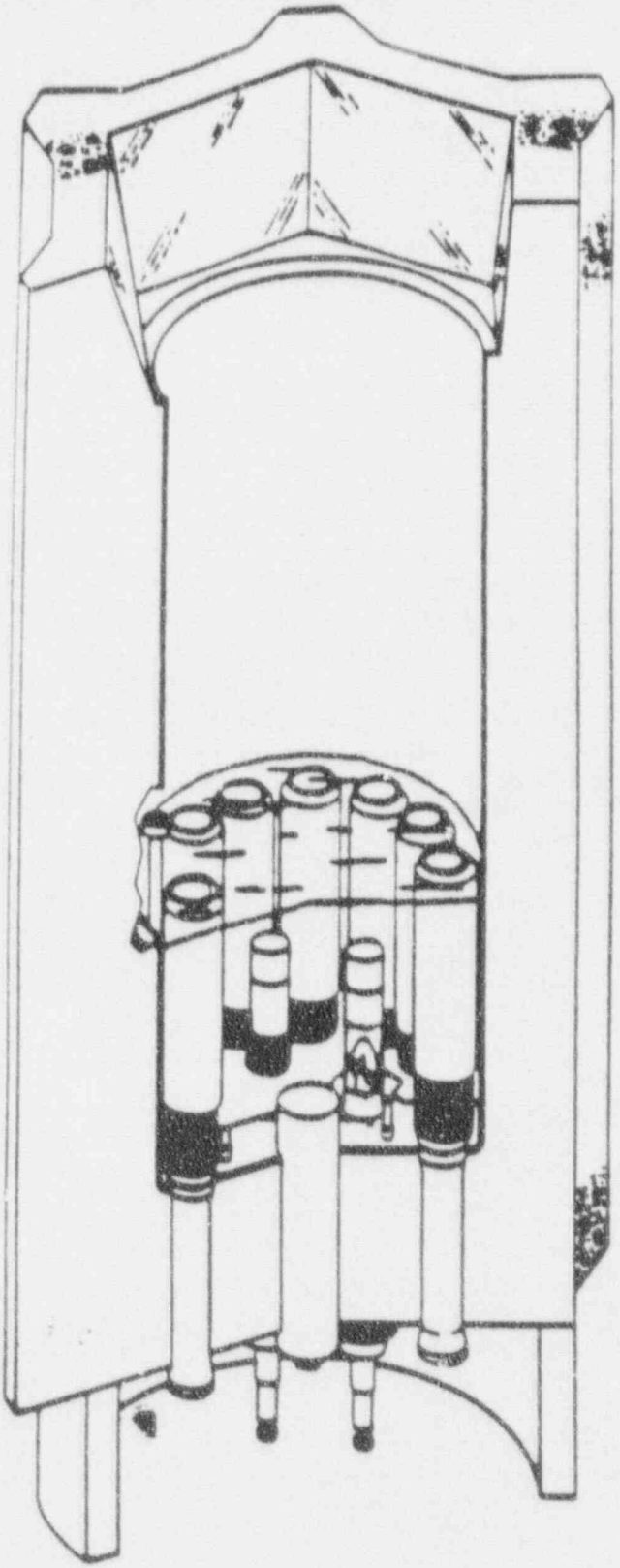
433 PERSON REM

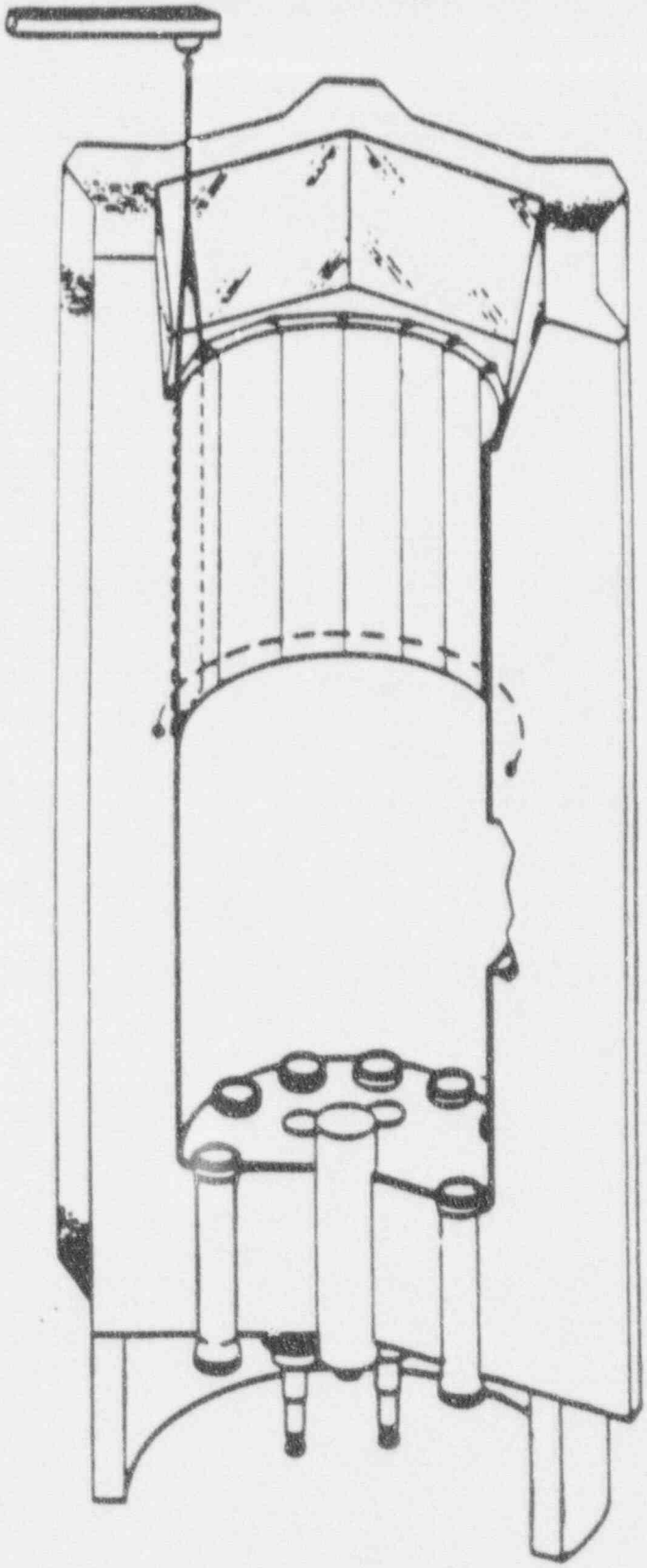
- 85% FROM DISMANTLING PCRV
- 13% FROM RADIACTIVE WASTE PACKAGING
- 2% BALANCE OF PLANT

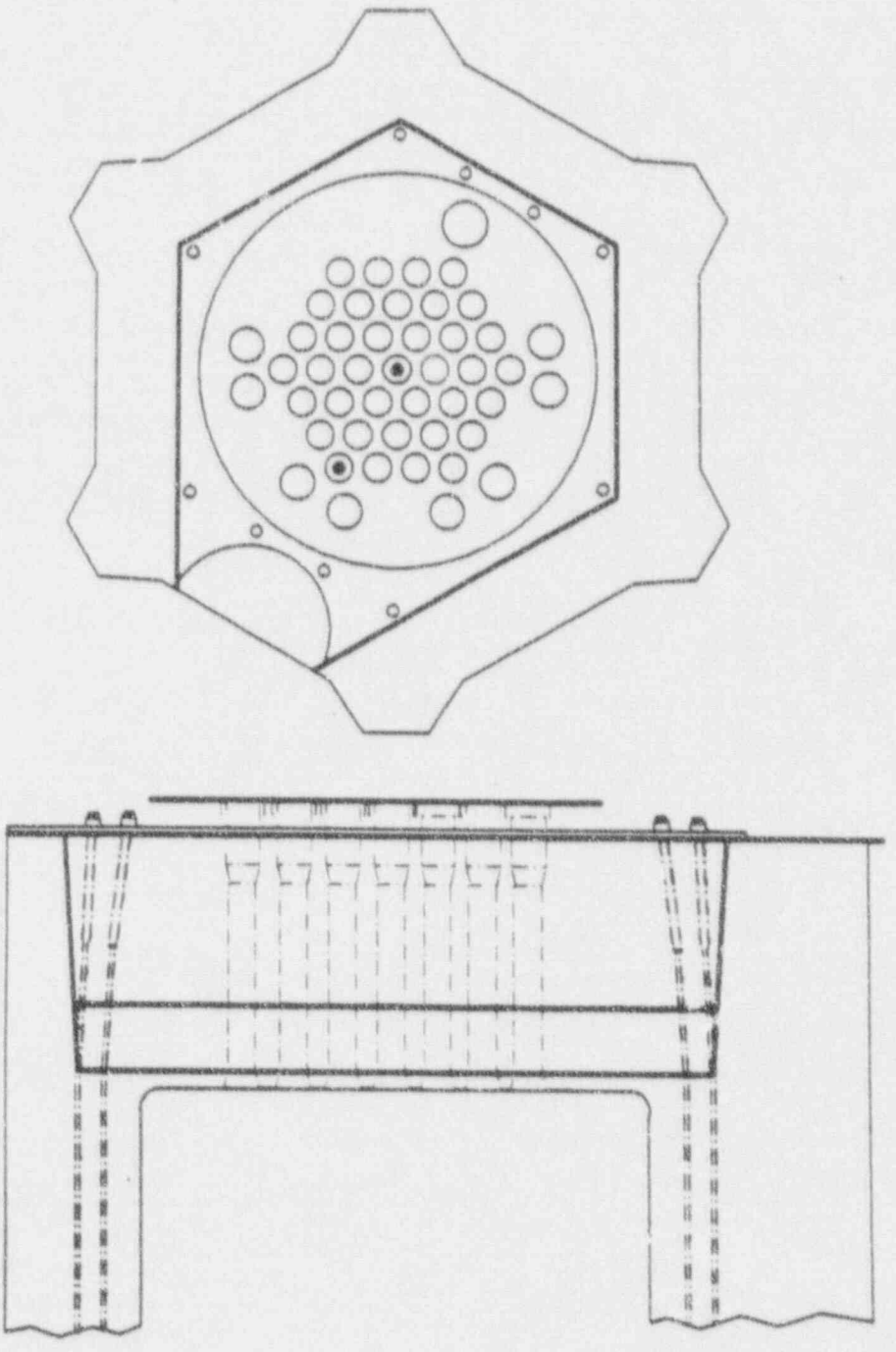


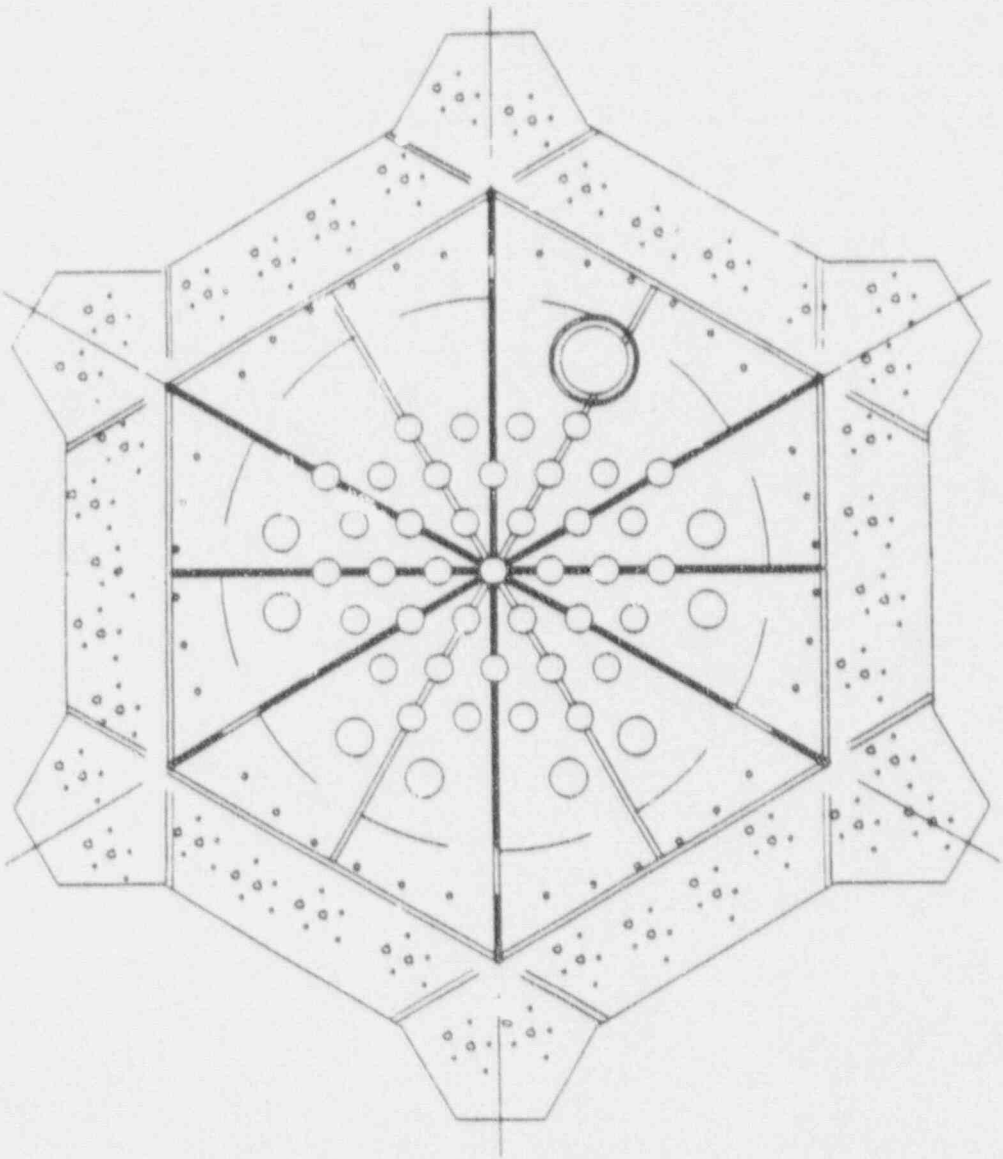



(3) 1 1/2 Ton Jib Cranes
Waste Stabilization being Performed in the Hot Service Facility
Plasma Torch
El 4881
Shielding Water System PCRV Return Line and Ring Header
The Truck Bay Serves A Dual Function as a Concrete Sectioning Facility and a Staging/ Preparation Area

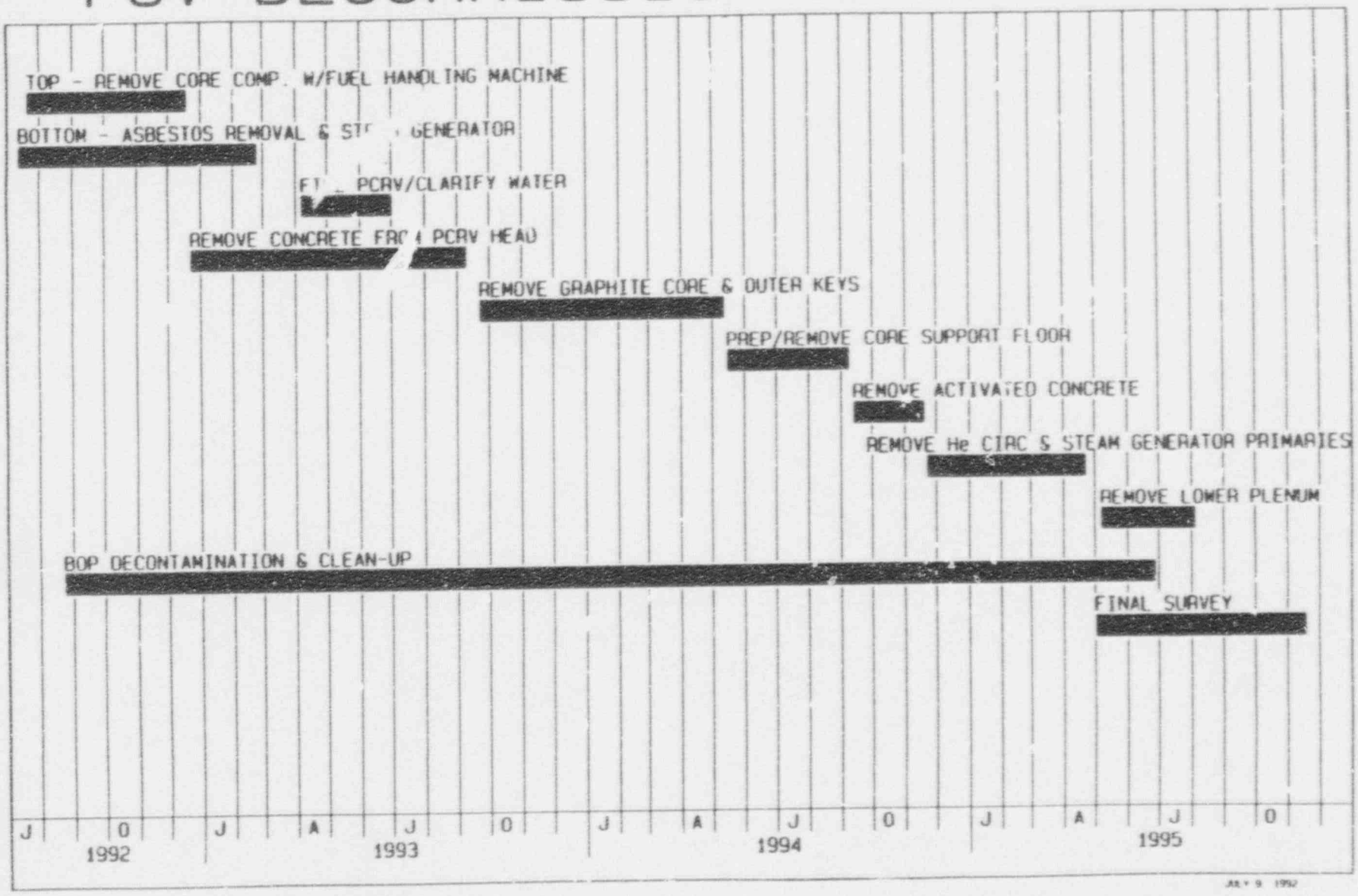








FSV DECOMMISSIONING SCHEDULE



Public Service®

FORT ST. VRAIN NUCLEAR GENERATING STATION

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN
INITIAL SITE CHARACTERIZATION PROGRAM

Presented By

Ed Parsons, CHP

Project Radiation Protection Manager

PROGRAM ORGANIZATION

Background Determination

PCRV Characterization

Structural Characterization

System Characterization

Environmental Characterization

PROGRAM OBJECTIVES

Provide baseline information for:

Detailed Project Planning

Cost Analysis

Waste Volume Estimates

Final Survey Planning

PROGRAM SYNOPSIS

Approximately 25,000 Direct Measurements

17,000 Person Hrs

5 Months Duration

15 Volumes of Data

Public Service®

FORT ST. VRAIN NUCLEAR GENERATING STATION

PUBLIC SERVICE COMPANY OF COLORADO

BACKGROUND DETERMINATION FOR SITE CHARACTERIZATION

(ON–SITE)

	BETA (Contact)	GAMMA (Contact)	GAMMA (1 Meter)
Reactor Building Levels 1–4	6550 dpm/100 cm²	20.2 μR/hr	17.8 μR/hr
Reactor Building Level 5–Roof	7060 dpm/100 cm²	27.8 μR/hr	27.8 μR/hr
Turbine Building	7060 dpm/100 cm²	27.8 μR/hr	27.8 μR/hr
General Areas (Trailers, etc.)	8180 dpm/100 cm²	25.2 μR/hr	22.5 μR/hr

(OFF–SITE)

	BETA (Contact)	GAMMA (Contact)	GAMMA (1 Meter)
Local Area Structures (Underground)	6060 dpm/100 cm²	25.2 μR/hr	25.1 μR/hr
Local Area Structures (Grain Elev.)	6710 dpm/100 cm²	21.2 μR/hr	20.5 μR/hr
Local Area (~ 5mi.) Ambient	7330 dpm/100 cm²	18.1 μR/hr	15.9 μR/hr

PCRV Inter–Comparison

Region Constraint Device Base Metal (at 3 years)

Major Isotopes	Calculated μCi/gm	Measured μCi/gm
Mn–54	1.08e–2	4.56e–2
Co–60	5.78e–1	8.65e–1
H–3	<MDA	3.69e–3
C–14	<MDA	2.60e–3
Fe–55	1.01e+1	7.37e+0
Ni–63	<MDA	2.27e–2
TOTAL	1.07e+1	8.31e+0

PCRV Liner – Charpy Sample (at 3 years)

Major Isotopes	Calculated μCi/gm	Measured μCi/gm
Mn–54	5.55e–3	8.29e–3
Co–58	<MDA	<MDA
Co–60	3.19e–1	2.23e–1
Fe–55	8.02e0	<MDA
Ni–63	2.14e–3	<MDA
Fe–59	1.95e–8	1.07e–7
TOTAL	8.35e0	2.31e–1

PCRV Inter–Comparison

(Cont.)

Bottom of Control Rod Metal Clad Reflector (at 3 years)

Major Isotopes	Calculated µCi/gm	Measured µCi/gm
Mn–54	2.04e–2	<MDA
Co–60	1.56e+3	2.91e+3
H–3	<MDA	7.29e–3
C–14	<MDA	5.20e–1
Fe–55	6.63e+3	4.05e+3
Ni–59	7.47e 1	5.50e+0
Ni–63	1.04e+2	6.01e+2
Nb–94	6.33e–2	<MDA
TOTAL	8.29e+3	7.57e+3

Non–Control Rod Metal Clad Reflector – Top (at 3 years)

Major Isotopes	Calculated µCi/gm	Measured µCi/gm
Mn–54	2.91e–2	8.46e–2
Co–60	1.56e+2	2.04e+0
H–3	<MDA	4.14e–3
Fe–55	9.50e+3	1.54e+1
Ni–63	<MDA	3.35e–2
TOTAL	9.66e+3	1.76e+1

Reactor Building Direct Radiation Summary*

(With Background Subtracted)

Level (Elevation)	Gamma (Contact) uR/hr Avg/Max	Gamma (1 M) uR/hr Avg/Max
1 (4740)	Bkg/2.3	Bkg/14.0
2 (4756)	Bkg/83.8	Bkg/21.9
UNDER VESSEL	Bkg/Bkg	Bkg/Bkg
3 (4771)	12.2/201	10.1/234
4 (4781)	15.9/720	10/346
5 (4791)	Bkg/103	Bkg/64
6 (4816)	Bkg/225	Bkg/22
7 (4829)	Bkg/213	Bkg/127
8 (4839)	10.9/407	7.7/344
9 (4849)	39.7/1000	57/1400
10 (4864)	Bkg/Bkg	Bkg/34.7
11 (4881)	22/674	42/1100
ROOF	Bkg/Bkg	Bkg/Bkg

* General Access Areas

CONTAMINATION DISTRIBUTION

(By Number of Sample Points)

REACTOR BUILDING						
LEVEL (Elevation)	NON-DETECT	<100 dpm/100cm²	>100<1000 dpm/100cm²	>1000<5000 dpm/100cm²	>5000 dpm/100cm²	TOTAL POINTS
1 (4740)	172	96	2	0	0	270
2 (4756)	187	100	3	1	0	290
UNDER VESSEL	66	24	0	0	0	90
3 (4771)	155	123	20	1	1	300
4 (4781)	41	53	15	6	5*	120
5 (4791)	173	131	6	0	0	310
6 (4816)	109	143	26	2	0	280
7 (4829)	80	159	86	5	0	330
8 (4839)	21	20	39	8	2	90
9 (4849)	14	54	21	1	0	90
10 (4864)	39	101	39	1	0	180
11 (4881)	62	152	239	8	9	470
ROOF	49	11	0	0	0	60

* (2 > 10,000, 1 > 100,000)

TABLE NOTES:

1. Non-detectable are smears that are less than the MDA.
2. No alpha contamination was detected from the site characterization surveys.

FORM (D) 372 - 22 - 3643

CONTAMINATION DISTRIBUTION (Cont.)

(By Number of Sample Points)

TURBINE BUILDING						
LEVEL (Elevation)	NON-DETECT	<100 dpm/100cm²	>100<1000 dpm/100cm²	>1000<5000 dpm/100cm²	>5000 dpm/100cm²	TOTAL POINTS
TB4791-5	176	4	0	0	0	180
TB4811-6	123	7	0	0	0	180
TB4829-7	169	11	0	0	0	180
TB4846-8	87	3	0	0	0	90
TB4881-11	56	4	0	0	0	60
TB4904-12	79	11	0	0	0	90
TB4921-13	80	10	0	0	0	90
TB4845-OFFICE ROOF	48	2	0	0	0	50

MISCELLANEOUS BUILDINGS						
BUILDING	NON-DETECT	<100 dpm/100cm²	>100<1000 dpm/100cm²	>1000<5000 dpm/100cm²	>5000 dpm/100cm²	TOTAL POINTS
N. FUEL STG.	88	1	1	0	0	90
HELIUM STG.	88	2	0	0	0	90
RW COMPACT	42	41	7	0	0	90
RC LAB	87	13	0	0	0	100

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SITE SYSTEM SUMMARY – CLEAN SYSTEMS

System ID	Smear Ave/Max (dpm/100cm²)	Direct Ave/Max (dpm/100cm²)
22. Secondary Cooling System	<MDA	<MDA
25. Nitrogen System	<MDA	<MDA
29. Gas Charging System	<MDA	<MDA
31. Feedwater and Condensate System	<MDA	<MDA
32. Feedwater Heater Vents and Drain System	<MDA	<MDA
33. Water Treatment System	<MDA	<MDA
41. Circulating Water System	<MDA	<MDA
42. Service Water System	<MDA	<MDA
43. System Injection System	<MDA	<MDA
44. Domestic Water System	<MDA	<MDA
45. Fire Protection System	<MDA	<MDA
51. Turbine Generator and Auxiliaries System	<MDA	<MDA
52. Main Turbine Steam Supply System	<MDA	<MDA
53. Extraction Steam System	<MDA	<MDA
54. Turbine Lube Oil Purification System	<MDA	<MDA
55. Turbine Vents and Drains System	<MDA	<MDA
75. Turbine Building Vents and Drains, Control Room Service Building HVAC System	<MDA	<MDA
82. Instrument and Service Air System	<MDA	<MDA
84. Auxiliary Boiler and Heating System	<MDA	<MDA
91. Piping – Hydraulic Oil System	<MDA	<MDA

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SITE SYSTEM SUMMARY – CONTAMINATED SYSTEMS

System ID	Smearable Ave/Max (dpm/100cm²)	Direct Ave/Max (dpm/100cm²)	General Information
11. Prestressed Concrete Reactor Vessel			Inaccessible, known contamination.
13. Fuel Handling Equipment			Inaccessible, equipment in use.
14. Fuel Storage Equipment			Inaccessible, equipment in use.
16. Auxiliary Equipment – Auxiliary Transfer Cask and Storage Wells			Inaccessible, equipment in use.
61. Decontamination System	170/910	66,400/568,000	"Clean" boundaries of the system verified.
62. Radioactive Liquid Waste System	75/1,100	2,750/34,600	
63. Radioactive Gas Waste	422/2,420	422/2,420	
93. Controls and Instrumentation	60/119	60/119	Known contaminated portions of the system
			Inaccessible, equipment in use.

SITE SYSTEMS SUMMARY – NEWLY IDENTIFIED CONTAMINATED SYSTEMS

SYSTEM ID & GENERAL INFORMATION	Smear Ave/Max (dpm/100cm²)	Direct Ave/Max (dpm/100cm²)	Radwaste Estimated Volume
23. * Helium Purification System – Significant H–3 levels detected downstream of system.	90/240	<MDA	200 ft³
24. * Helium Storage System – Significant H–3 levels detected in system. (11 μCi/cc). Major portions inaccessible for survey.	46/510	1,000/1,900	13,000 ft³
73. * Reactor Plant Ventilation System – Elevated activities in system noted at Reactor Building exhaust ducting and filter housing.	76/450	98/4,900	1,600 ft³

* Identified in the PDP Revision 1

SITE SYSTEMS SUMMARY – VERIFICATION REQUIRED, POST – DEFUELING

SYSTEM ID & GENERAL INFORMATION	Smear Ave/Max (dpm/100cm²)	Direct Ave/Max (dpm/100cm²)	Radwaste Estimated Vol. (Approximations)
21. * Primary Coolant System – Helium circulators are known contaminated. Low levels of fixed activity found on auxiliary components. Fluctuations during operation of the He buffer may cause contamination. Detailed survey of system necessary.	6/25	4,700/10,900	1,080 ft³
46. * Reactor Plant Cooling Water System	18/98	1,341/16,870	9,000 ft³
47. Purification Cooling Water System	2/18	2,400/11,280	200 ft³
48. Alternate Cooling System – Background in area excessive due to rad waste storage. Survey to release facility is necessary.	<MDA	25,000/100,000	6,000 ft³
72. Reactor Building Drain System – Reactor Building sump was inaccessible. Continued facility operations could affect status.	4/10	4,400/14,200	400 ft³
79. Radiochemistry Laboratory Ventilation System – The system is in continuous use. Survey will be required at turnover.	<MDA	<MDA	700 ft³

* Identified in the PDP Revision 1

FORM (D) 372 - 22 - 3643

Public Service®

FORT ST. VRAIN NUCLEAR GENERATING STATION

PUBLIC SERVICE COMPANY OF COLORADO

ENVIRONMENTAL RESULTS (pCi/gm)

LOCATION	SURVEY AREA/PACKAGE ID	ISOTOPIC Cs134	ISOTOPIC Cs137	ISOTOPIC Co60	ISOTOPIC OTHER	ISOTOPIC TOTAL
ESC081	Soil Under Roof Drain	<MDA	<MDA	<MDA	<MDA	<MDA
ESC082	Soil Under Roof Drain	<MDA	<MDA	<MDA	<MDA	<MDA
ESC083	Soil Under Fuel Cask Storage Area	.87	7.5	.15	<MDA	8.5
ESC084	Soil Under Fuel Cask Storage Area	.10	.33	<MDA	<MDA	.43
ESC085	Soil Under Fuel Cask Storage Area	.05	.11	<MDA	<MDA	.16
ESC086	Soil Under Fuel Cask Storage Area	.07	.11	<MDA	<MDA	.18
ESC087	Soil Under Waste Storage Trailer	.12	.06	<MDA	<MDA	.18
ESC088	Soil Under Waste Storage Trailer	.07	<MDA	<MDA	<MDA	.07
ESC089	Soil Under Waste Storage Trailer	.14	<MDA	<MDA	<MDA	.14
ESC090	Soil Under Waste Storage Trailer	<MDA	<MDA	<MDA	<MDA	<MDA
ESC091	Soil Under Waste Storage Trailer	.10	.22	<MDA	<MDA	.32
ESC092	Soil Under Waste Storage Trailer	<MDA	<MDA	<MDA	<MDA	<MDA
ESC093	Soil Around Oil Separator Pit	.11	<MDA	<MDA	<MDA	.11
ESC094	Asphalt Core Sample Near RxB Truck Bay Door	.14	<MDA	<MDA	<MDA	.14
ESC095	Asphalt Core Sample Near RxB Truck Bay Door	<MDA	<MDA	<MDA	<MDA	<MDA
ESC096	Asphalt Core Sample	<MDA	<MDA	<MDA	<MDA	<MDA
ESC097	Asphalt Core Sample	<MDA	<MDA	<MDA	<MDA	<MDA

SUMMARY

Structural

Reactor Building -

Total Contamination: 15% of the survey points above background with <5% above the Reg. Guide 1.86 release limit.

Removable Contamination: 58% of the survey points above background with <2% above the Reg. Guide 1.86 release limit.

Direct Radiation: <10% of the measurements above 5μR/hr.

Turbine Building -

Total Contamination: <5% of the survey points above background with <0.4% above the Reg. Guide 1.86 limit.

Removable Contamination: ~7% of the survey points above background with no survey points above the Reg. Guide 1.86 release limit.

Direct Radiation: No measurements above 5μR/hr that cannot be attributed to radioactive material storage.

Miscellaneous Buildings -

Total Contamination: No survey points above background. (Exception: Radwaste Compactor building indicated 50% of the survey points above Reg. Guide 1.86 release limit attributed to radioactive material storage.)

Removable Contamination: <2% of the survey points above background with no survey points above the Reg. Guide 1.86 release limit.

Direct Radiation: No measurements above 5μR/hr that cannot be attributed to radioactive material storage.

Systems

20 plant systems confirmed to contain no radioactive material above background.

17 plant systems determined to contain various levels of radioactive material.

PCRV

Initial comparison of activation analysis to core component samples shows reasonable correlation between measured and calculated values of core component samples.

Environmental

Initial review has identified one area within the restricted area that has positive indications of contamination in very small quantities. (spent fuel cask trailer area)

Samples from this area have indicated concentrations below State of Colorado Department of Health soil contamination guidance policy.

Fort St. Vrain

Radiation Protection Program

Ted Borst, CHP
PSC Radiation Protection Manager

RADIATION PROTECTION PROGRAM

- RESPONSIBILITIES
- PROGRAM DESCRIPTION
- ALARA
- IMPLEMENTATION OF REVISED 10CFR20

RESPONSIBILITIES

- PUBLIC SERVICE COMPANY OF COLORADO:
  - Ultimate Responsibility for RP Program as Licensee
  - Program Development
  - Program Approval
  - Oversight of Implementation

- WESTINGHOUSE TEAM
  - Program Development
  - Program Implementation

PROGRAM DESCRIPTION

- Contained in Section 3.2 of Proposed Decommissioning Plan
- Based on Reg Guides 8.8 and 8.10, and NUREG 0761
- Oversight Described in PSC Radiation Management Manual
- Implementation Described in Westinghouse Team RP Manual
  - RP Organization & Functions
  - Dose Control/ALARA
  - Radioactive Material Control
  - Instrumentation
  - Review & Audit/RP Performance Analysis
  - Surveillance
  - Total of about 110 Procedures
- PSC Audit of RP Functions Described in QA Manual

ALARA

- Policy - All Activities Will Be Conducted Such That Radiation Exposures To Employees & The General Public Are Maintained ALARA

- Every Individual Is Responsible For Maintaining Exposure ALARA

- Program - Based On Reg Guides 8.8 & 8.10

- Committee - Co-chaired By PSC & WT Radiation Protection Managers

  Objectives Include:

  - Establishment Of ALARA Program Goals/Performance Indicators
  - Approval Of ALARA Budgets For Decommissioning Work Activities
  - Evaluation Of Actual Doses vs. ALARA Budgets
  - Evaluation Of ALARA Program Resources & Effectiveness
  - Initiation Of Corrective Actions As Necessary

10CFR20 IMPLEMENTATION

- Decommissioning Will Begin Under Existing 10CFR20
- PSC Will Be Prepared To Implement Revised 10CFR20 No Later Than January 1, 1994 In Accordance With Schedule Contained in Proposed Rulemaking
- In Parallel, PSC Plans To Pursue Exemption Request For Implementation Of Revised 10CFR20 During Decommissioning Period
- Regardless Of Pursuit Of Exemption Request, PSC Commits To Meet The Effluent Concentrations For Air & Water Releases Contained In The Revised 10CFR20, Effective No Later Than January 1, 1994

Fort St. Vrain Site Release Process

Michael E. Niehoff
Decommissioning Engineering Manager

July 16, 1992

Background

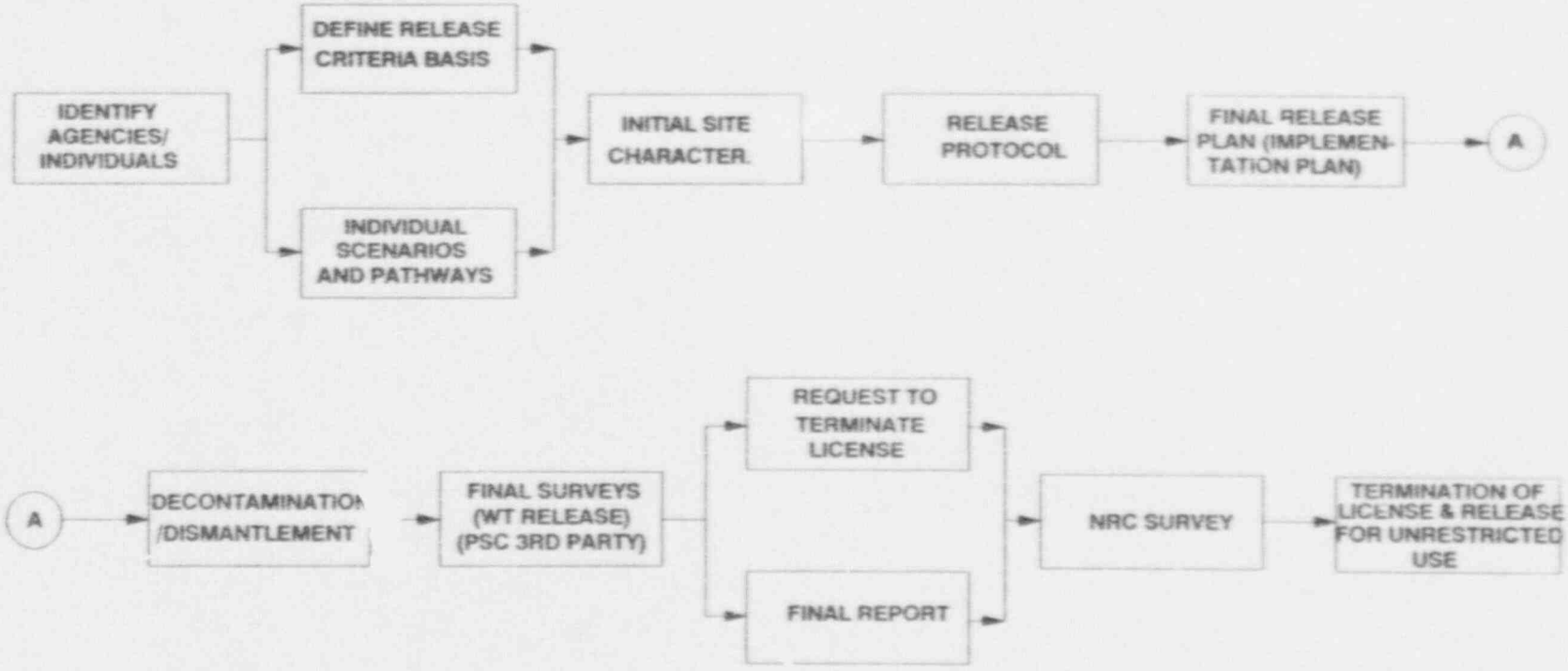
- Started to Develop in Early 1991.
- Needed to Reach a "Mutual Understanding" with NRC
  - Criteria
  - "Process" for Site Release
  - Implementation Details
- "Mutual Understanding" Is Important Because:
  - Defines the Amount of Dismantlement and/or Decontamination to be Performed
  - Defines Documentation Necessary to Demonstrate Compliance with Regulatory Criteria
- Presentations Made To:
  - FSV Oversight Committee
  - State of Colorado
  - NRC's NRR, NMSS & Mr. J. B. Baird, and State of Colorado

Site Release Process Logic Diagram

Block Description

FORT ST. VRAIN

SITE RELEASE PROCESS LOGIC DIAGRAM



Block: Define Release Criteria Basis

- PURPOSE: Define Release Criteria on Regulatory Criteria & Guidance

  - Three basic elements
    - * Site Release (Release of the Site for Unrestricted Use)
    - * Offsite Release of Material
    - * Scenarios and Associated Pathways

Release of the Site for Unrestricted Use

- Regulatory Criteria Input for Release of Site for Unrestricted Use:
  - Regulatory Guide 1.86 Provides Guidance Relative to Allowable Surface Contamination Levels.
  - NRC letter to PSC dated 10/4/89 recommended RG 1.86 and 5 microR/hr criteria. PSC has adopted.

- Allowables Doses and/or Dose Rates
  - RG 1.86 limits for surface contamination level will apply to all materials, equipment & structures left at the site.
  - Residual radioactivity in concrete, components, structures, water & soil from sources other than surface contamination resulting in an exposure rate of less than 5 microR/hr above background @ 1m from the surface.

Offsite Release of Material

- Regulatory Criteria to be used During Decommissioning is the Same as During Plant Operation:
  - NRC Circular 81-07: "Control of Radioactively Contaminated Materials"
  - NRC IEIN 85-92: "Survey of Wastes before Disposal from Nuclear Reactor Facilities"

Scenarios & Associated Pathways

- Utilize scenarios contained in NUREG 5512.
  - Actual measurement data will be utilized
  - Dose conversion factors will be utilized
  - Acceptable level of soil & water contamination concentration: less than or equal to 10 mrem/yr TEDE to an individual in a given population group

Block: FSV Decommissioning Scenarios & Associated Pathways

- PURPOSE: Select appropriate scenarios & pathways for the translation of residual contamination to Annual Dose post-decommissioning.
  - Found in Final Release Implementation Plan
  - Utilizes guidance contained in NUREG 5512.
- Potential Scenarios for Pathway Analysis:
  - Agricultural Use
  - Conversion to other use
  - Renovation

EFFLUENT RELEASE PLANS

- Liquid Effluent Will Be Released Via Normal Effluent Pathway In Accordance With the Following Regulations:
  - 10 CFR 20 Maximum Permissible Concentrations in Local Discharge Ditch
  - 10 CFR 50 Appendix I Dose Limits for Members of the Public (3 mrem/year; 1.5 mrem/qtr)
  - EPA Safe Drinking Water Standards (40 CFR 141) in Downstream Surface Water (20,000 pCi/l), and in Ground Water (Public Doses less than 4 millirem/year)
- Release Will Be Monitored By Enhanced Sampling and Analysis Program
- PSC Plans to Release 500 Curies of Tritium Over About 200 Days, Based on Activation Analysis and British Test Data
- In the Event Actual Tritium in Shield Water Exceeds 500 Curies, PSC Could Release up to 8000 Curies of Tritium in Compliance with All Regulations, Over About a 2 Year Period
- In the Unlikely Event Tritium Exceeds 8000 Curies, Alternate Disposal Methods Are Available

TOTAL PUBLIC DOSE

FSV PUBLIC DOSES FOR DECON

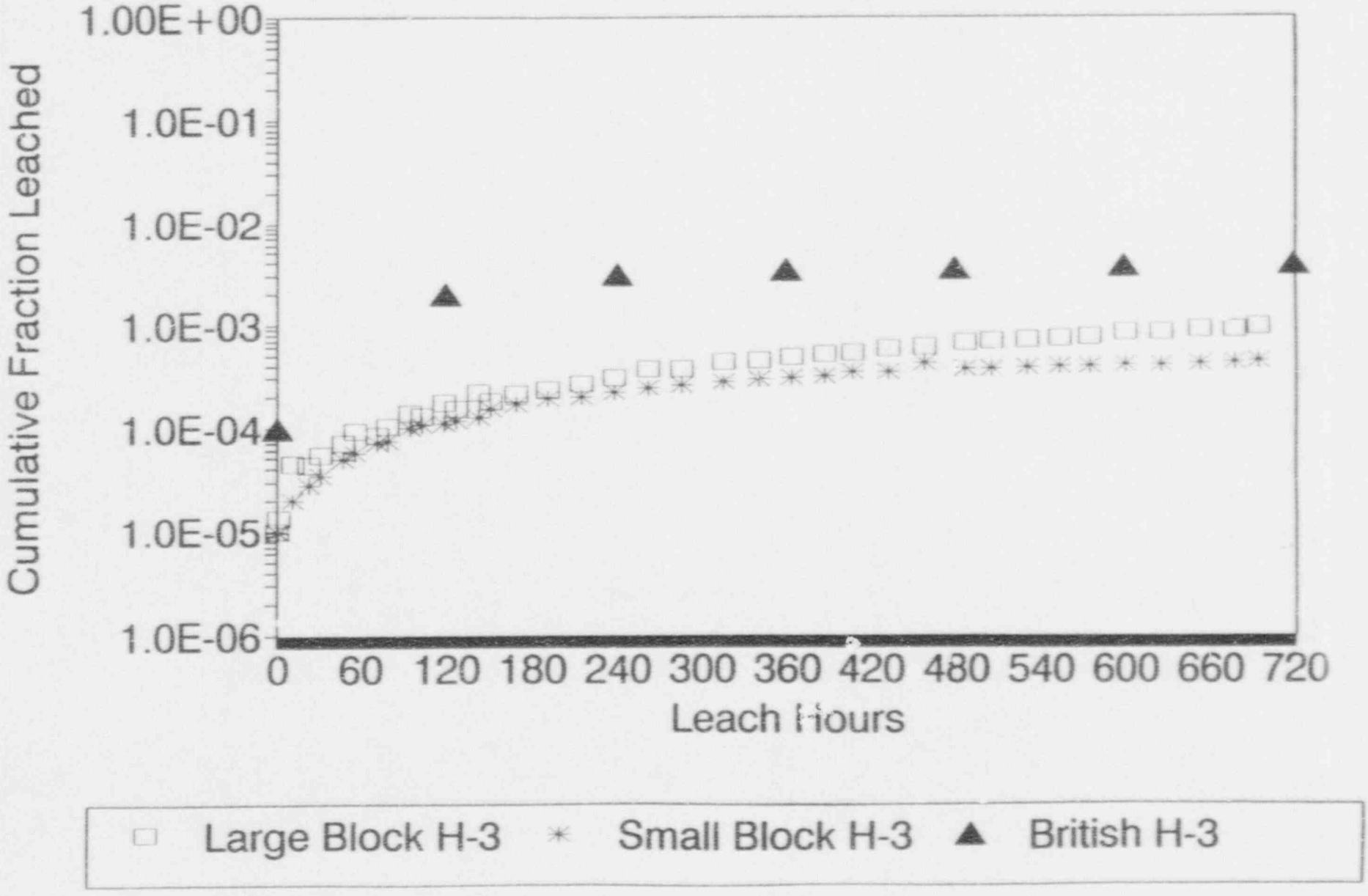
- Inhalation and Ingestion Doses to Population Within 50 Miles:
  - 1 Person-REM 500 Curie Release (Total for 200 days)
  - 5 Person-REM 8000 Curie Release (Total for 2 years)
- Public Dose Due to Waste Transportation (1200 mile Route, All Shipments Over 3 Years):
  - 9 Person-REM
- Total Public Dose:
  - 10 Person-REM 500 Curie Release
  - 14 Person-REM 8000 Curie Release

PUBLIC DOSE COMPARISONS

- Dose Due to FSV Plant Operations, to Population Within 50 Miles of FSV, as Evaluated in Final Environmental Statement:
  - 9 Person-REM/Year
- Total Background Dose to Population Within 50 Miles of FSV:
  - 740,000 Person-REM/Year
- LWR DECON Public Doses Due to Waste Transportation, per NRC Decommissioning GEIS:
  - 22 Person-REM PWR
  - 10 Person-REM BWR

Tritium

British vs. H-327 Graphite



PRELIMINARY CONCLUSIONS FROM THE B&W TRITIUM LEACH TEST

- OVERALL TRITIUM LEACH CHARACTERISTICS OF THE H-327 GRAPHITE ARE IN GOOD AGREEMENT WITH THE BRITISH TEST DATA.

- MEASURED TRITIUM CONCENTRATIONS WERE 1 TO 2 ORDERS OF MAGNITUDE BELOW THE FSV ACTIVATION ANALYSIS CALCULATIONS FOR THESE TWO REFLECTOR BLOCKS.

- GRAPHITE ANALYSIS INDICATED TRITIUM WAS CONCENTRATED NEAR THE REFLECTOR BLOCK SURFACES.

- SUSPENDED SOLIDS IN THE LEACHATE WERE VERY LOW (≈1.3 mg/L) AND DID NOT AFFECT WATER CLARITY.