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Denver, CO 80201-0840

R. F. WALKER
PRESIDENT

April 4, 1986
Fort St. Vrain
Unit No. 1
P-86266

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Attn: Mr. H. N. Berkow, Project Director
Standardization and Special
Projects Directorate

Docket No. 50-267

SUBJECT: Appendix R Evaluation

REFERENCE: PSC Letter, Walker to
Berkow dated 3-14-86
(P-86209)

Dear Mr. Berkow,

As committed to in the above referenced letter, PSC now submits the: 1) justification of the valve position and alignment based on input from plant operations representatives (see attachment "A") 2) the page changes to Reports 1 and 3 to incorporate the manual pressurization system for the Helium Circulator Brake and Seal System into the shutdown model (20 copies of page changes included as attachment "B". Please incorporate these pages into the previously transmitted reports.) The committment to provide the "manual actions and timing" details will be delayed until the early part of May. This is required because PSC is in the midst of labor negotiations which may affect the manpower available on back shifts.

In addition, PSC is continuing to develop an alternate design regarding the portable turbine water removal pump committed to in report No. 4 of our Appendix R Evaluation; future correspondence will detail that design to the commission.

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1/20 cys ATTACHMENT B

If you have any questions please contact M. H. Holmes at (303) 480-6960.

Very truly yours,

R F Walker/dh Warnenberg

R. F. Walker, President

RFW:FT:bt

Attachments

ATTACHMENT A

VALVE POSITION AND ALIGNMENT

The following information is provided to supplement statements made in the December 20, 1985 letter to the NRC (P-85488), response to questions 2a/2b. A commitment for this follow-up was contained in the letter of March 14, 1986 (P-86209). Valve alignment for manual valves is controlled at two levels. The first level includes those controls required to monitor realignments during plant operation. The second level controls system/valve alignment after plant outages or major maintenance.

Level I controls (plant procedure P-2) require the Shift Supervisor to sign-off on all proposed valve realignments, using one of two valve/equipment tagging forms. These are the Standard Clearance Form and the Operations Deviation Form, controlled through SMAP-19. Procedures require use of the forms to change valve position/equipment status prior to and after maintenance/repairs, and for the valve to be appropriately tagged. Copies of issued forms are kept in the Shift Supervisors office and the control room. Prior to close out of the form, an independent verification is performed by operations or other qualified individuals (e.g., health physics, etc.) independent of maintenance personnel. Following satisfactory independent verification, Shift Supervisor approval is required for the clearance to acknowledge work completion and removal of status tags. Therefore, a system/valve which is not in its normal plant operating position is identified on the referenced forms, tagged, easily identified by plant operators, and controlled to assure it is restored to its proper position.

The second level of control is for major maintenance or outages. For this case, complete system alignment checks are performed in accordance with the plant standard operating procedures (SOP's). These alignment checks are performed prior to declaring that the system has been restored to "operable" status.

The above are judged to be adequate to assure that valve position is properly controlled during and following maintenance activities, and is consistent with the

approach applied to other Ft. St. Vrain emergency procedures. Outage times of systems are minimized in order to meet Technical Specification limits. Controls over non-Technical Specification systems/components will be incorporated in the Fire Protection Program Plan.

Additionally, the fire protection shutdown model incorporates system monitoring instrumentation so that proper system operation can be verified. System verification was included (through reference to the appropriate instrumentation) in the staffing assessment for local manual operations.

ATTACHMENT B

APPENDIX R EVALUATION -
FORT ST. VRAIN
NUCLEAR GENERATING STATION

REPORT NO. 1
SHUTDOWN MODEL

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

April, 1986 (Rev. 6)

Includes Rev. 1 page changes from Report No. 2, Rev. 2 page changes from Report No. 3, Rev. 3 page changes from Report No. 4, Rev. 4 page changes submitted by letter dated August 30, 1985, Rev. 5 page changes as of March, 1986, and Rev. 6 page changes as of April, 1986

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7101 Wisconsin Avenue
Bethesda, Maryland 20814
301·654·8960

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pressure boundary consideration. Other sections of this report summarize the related evaluations that were performed. The end result of these shutdown evaluations is a listing of minimum required fire protection shutdown components as contained in Section 3.0 of this report.

Primary System Pressure Boundary:

For a forced circulation cooldown of Fort St. Vrain, primary system integrity is important to assure that a fire will not cause loss of sufficient helium inventory such that the core heat removal function would not be satisfactorily accomplished. The accident analysis relied on for Fort St. Vrain for shutdown under post fire conditions justifies a forced circulation cooldown following a 1-1/2 hour interruption of circulator operation; however, that accident analysis does not assume helium depressurization. Accordingly, an evaluation was performed to identify potential pathways for loss of helium from the PCRV, and to determine the potential for a fire to cause inadvertent loss of helium through any of these flow paths.

All penetrations through the primary system boundary were identified and tabulated. An evaluation was then made for each primary system penetration and a conclusion stated regarding whether each primary system boundary penetration could be compromised, given a fire, such that an inadvertent depressurization with a loss of He would result. In addition, leakage paths associated with the circulators (i.e., along the shaft) have been evaluated.

HV2401) prior to the ventilation system take off line location, it is not considered credible that the primary system integrity would be compromised through this path.

Based on the above, a fire would not cause a loss of helium from the two helium purification system penetrations, the helium purification pump down line, the ventilation system piping, or the storage system.

c. Access

Same as for refueling penetration closures. A fire would not cause a loss of helium from the top head access penetration.

B. Bottom Head Penetrations

a. Steam Generator (NOTE: primary closure is <u>within</u> PCRV liner boundary.)

Since the primary closure is built within the PCRV penetration and the secondary closure is a welded plate on the liner, then fire effects would not cause a loss of helium.

b. Helium Circulator Structure (NOTE: total of four penetrations).

Since there are no parts of these penetration assemblies that would be spuriously operated or degraded because of fire, no helium leaks would result. (NOTE: Helium circulator penetrations such as the buffer lines, static seal actuation system, "O" Ring, and the circulator brake system were evaluated and found not to be a potential primary system leakage path. Leakage along the shaft of non-operating circulators is eliminated by actuation of the associated circulator brake and seal system. The bearing water system prevents leakage along the shaft for the operating circulator.)

C. Sidewall Penetrations

a. Instrumentation (NOTE: Total of 18 penetrations and all have primary and secondary closures that consists of welds, steel pipe, flanges and bolts, and are within the concrete of the PCRV.)

Since there are no leak paths through valves on the instrument lines or other penetrations, no leakage of helium would result because of a fire.

TABLE 3.1

(continued)

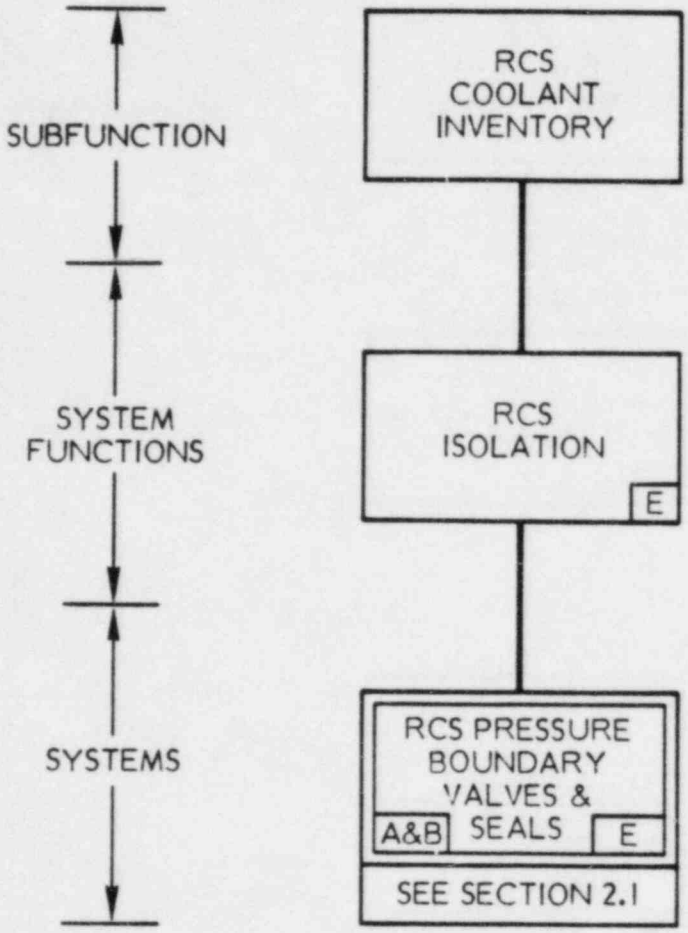
F.P. Shutdown Train A			F.P. Shutdown Train B		
Valves - Manual Only Continued):			Valves - Manual Only (Continued):		
Table 2.1-6 Sht 6	Valve	V-4229	Table 2.1-6 Sht 7	Valve	V-42374
2.1-6 Sht 6	Valve	V-4236	2.1-6 Sht 8	Valve	V-75263
2.1-6 Sht 6	Valve	V-42390	2.1-6 Sht 8	Valve	V-4217
2.1-6 Sht 7	Valve	V-4234	2.1-6 Sht 8	Valve	V-4218
2.1-6 Sht 7	Valve	V-42817	CN-2205 3/	Valve	V-211943
2.1-6 Sht 7	Valve	V-4256	CN-2205 3/	Valve	V-211941
2.1-6 Sht 7	Valve	V-4239	CN-2205 3/	Valve	V-211939
2.1-6 Sht 7	Valve	V-4264	CN-2205 3/	Valve	V-211937
2.1-6 Sht 7	Valve	V-42374	CN-2205 3/	Valve	V-211959
2.1-6 Sht 8	Valve	V-4217	CN-2205 3/	Valve	V-211957
2.1-6 Sht 8	Valve	V-75263	CN-2205 3/	Valve	V-211955
2.1-6 Sht 8	Valve	V-4218	CN-2205 3/	Valve	V-211953
CN-2205 3/	Valve	V-211959	CN-2205 3/	Valve	V-211958
CN-2205 3/	Valve	V-211957	CN-2205 3/	Valve	V-211956
CN-2205 3/	Valve	V-211955	CN-2205 3/	Valve	V-211954
CN-2205 3/	Valve	V-211953	CN-2205 3/	Valve	V-211952
CN-2205 3/	Valve	V-211942	6.3-1 Sht 4 (Rpt.3)	Valve	V-4571
CN-2205 3/	Valve	V-211940	6.3-1 Sht 5 (Rpt.3)	Valve	V-32102
CN-2205 3/	Valve	V-211938	6.3-1 Sht 7 (Rpt.3)	Valve	V-21755
CN-2205 3/	Valve	V-211936	6.3-1 Sht 7 (Rpt.3)	Valve	V-21556
CN-2205 3/	Valve	V-211958	6.3-1 Sht 7 (Rpt.3)	Valve	V-21622
CN-2205 3/	Valve	V-211956	6.3-1 Sht 11 (Rpt.3)	Valve	V-46251
CN-2205 3/	Valve	V-211954			
CN-2205 3/	Valve	V-211952			

3/ CN-2205 (installed in association with the EQ re-analysis) provides the capability to manually actuate each circulator brake and seal system from the Helium Storage Building. The CN to install these valves is listed to document the reference for valve identification and location. Permanent PI and other drawing details are under development.

TABLE 3.2
REQUIRED ACM FIRE PROTECTION
SHUTDOWN COMPONENTS
(Continued)

Component	ID
Helium Purification Cooling Water Pump	P-4701 or P-4702
Selected Plant Lighting	--
Firewater Pump House Vent Fans & Louvers	C-7521 or C-7522
Motor Operated Valves (2)	HV-2301 or HV-2302
Reserve Shutdown System	Racks I-21A, I-21B, I-21C, I-21D
Startup Battery for Diesel Generator and D.C. Control	--
Liner Cooling Water Temperature Indicators	TI-4629 and TI-4630
Helium Purification System, Hel Pressure Indicator	PI-23162
Reactor Building Exhaust Fan Delta P	PDI-7323-1 & PDI-7339-1
Liner Cooling Pump Discharge Pressure	PI-46334, PI-46335, PI-4663, & PI-4664
Service Water Instruments	PI-4214, PI-4216, PDIS-4226, PI-4204 & PI-4206
Circulator Brake and Seal System Valves	See Table 3.1 page 12 for CN-2205 Valves.

* Several ID numbers; one for each transfer switch.



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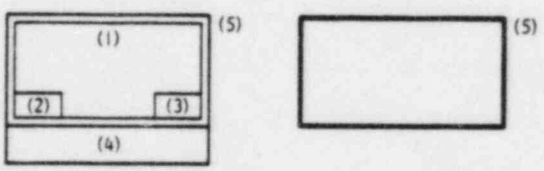


(1) MAJOR COMPONENT/SYSTEM

(2) FIRE PROTECTION SHUTDOWN TRAIN

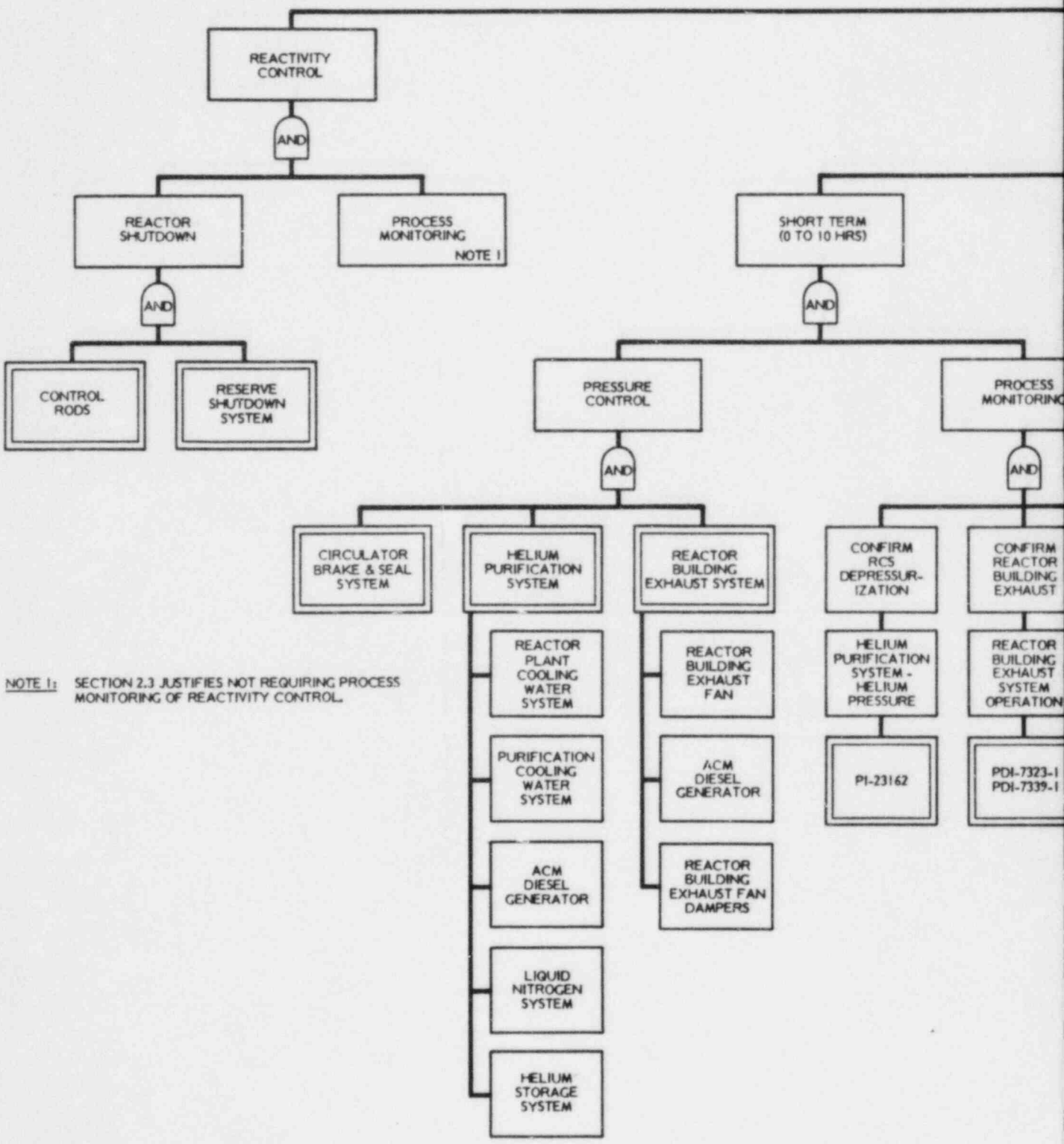
(3) SHUTDOWN FUNCTION

(4) SHUTDOWN COMPONENTS AND SUPPORT FUNCTION TABLES

(5) PERFORMANCE GOAL FROM 8/17/84 LTR TO NRC; NOTE THAT THE SYSTEM MONITORING INSTRUMENTATION AND SUPPORT FUNCTIONS ARE ADDRESSED IN OTHER TABLES AND FIGURES

FIGURE 2.1-5

SHUTDOWN MODEL - NON-CONGESTED CABLE AREAS FORCED CIRCULATION COOLDOWN RCS COOLANT INVENTORY



NOTE 1: SECTION 2.3 JUSTIFIES NOT REQUIRING PROCESS MONITORING OF REACTIVITY CONTROL.

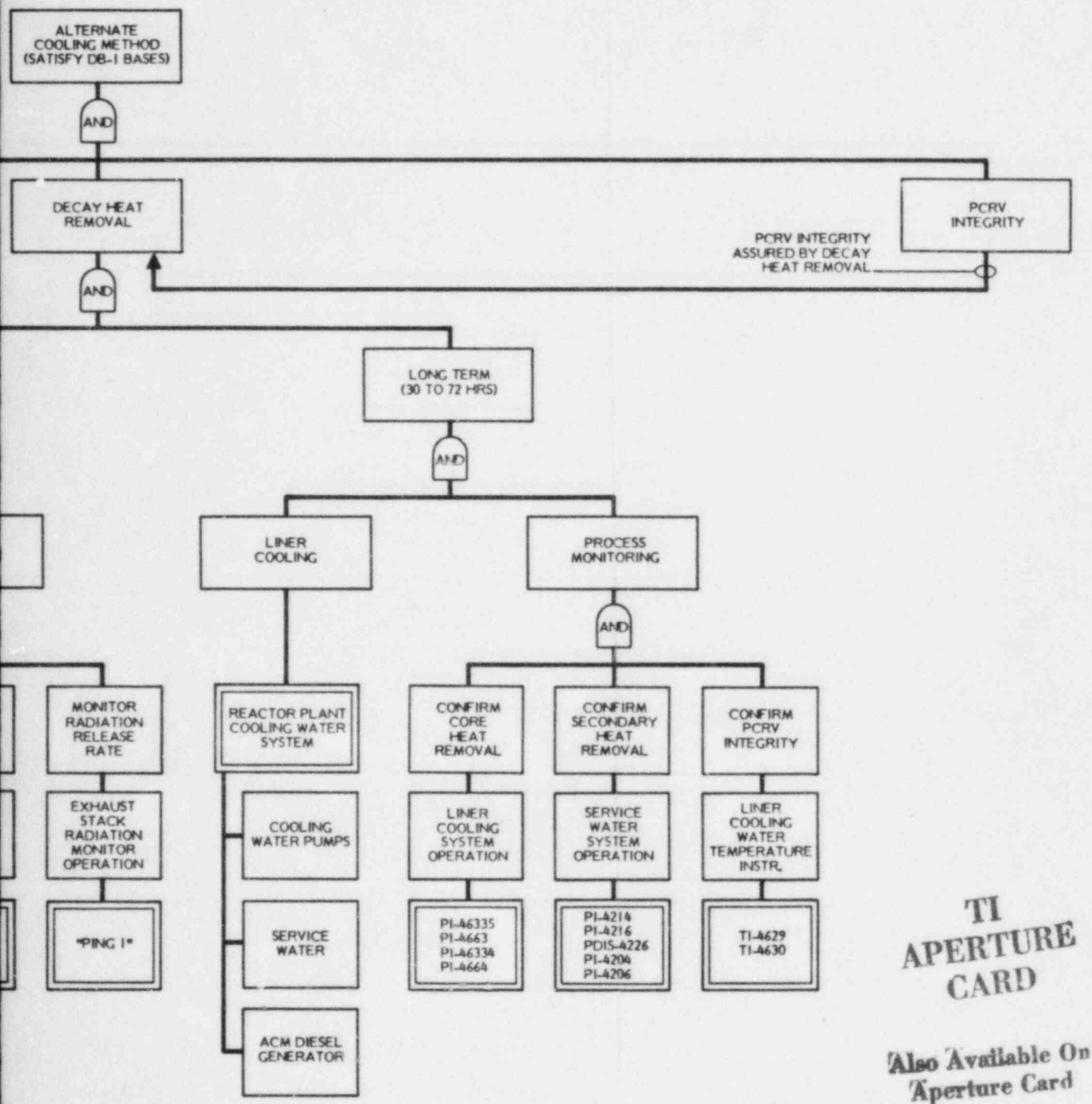


FIGURE 2.1-12

SHUTDOWN MODEL
CONGESTED CABLE AREAS
(LOSS OF FORCED CIRCULATION)

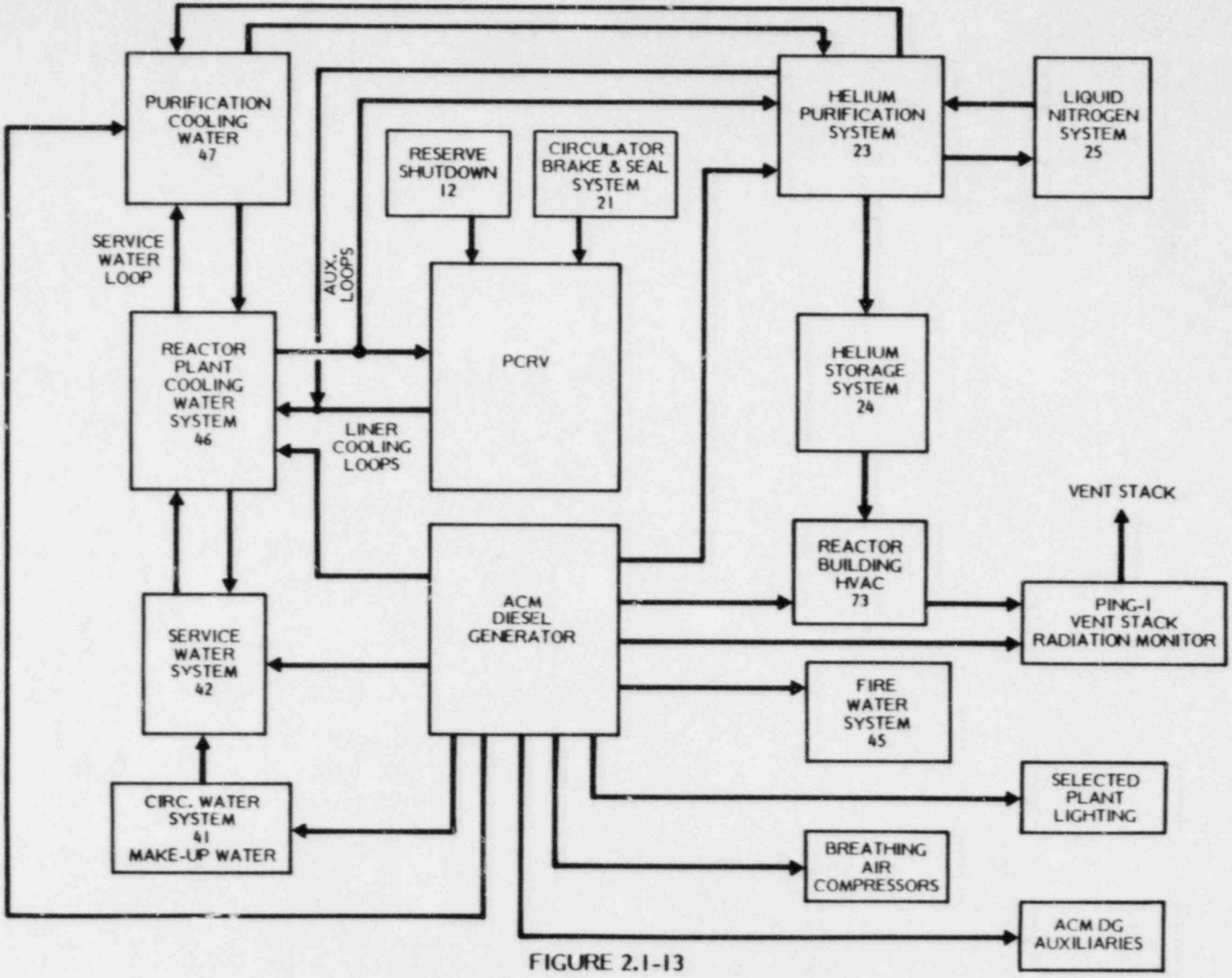


FIGURE 2.1-13

ACM SYSTEM INTERRELATIONSHIPS

APPENDIX R EVALUATION -
FORT ST. VRAIN
NUCLEAR GENERATING STATION

REPORT NO. 3
FIRE PROTECTION REVIEWS

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

April, 1986 (Rev. 4)

Includes Rev. 1
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Report No. 4,
Rev. 2 page changes
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dated September 26, 1985,
Rev. 3 page changes
as of March, 1986, and
Rev. 4 page changes
as of April, 1986

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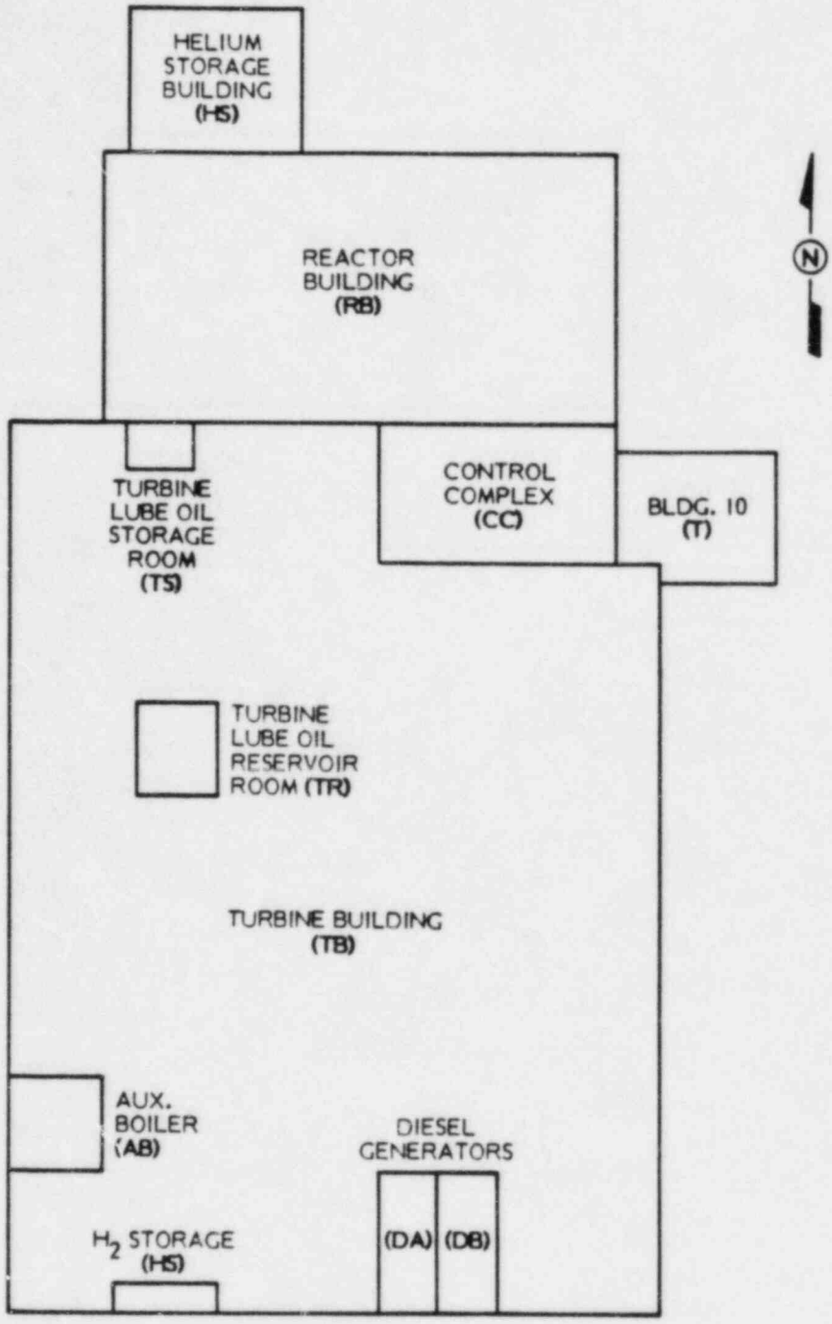

FIGURE 2.1

INTERIOR FIRE AREAS
GRADE ELEVATION

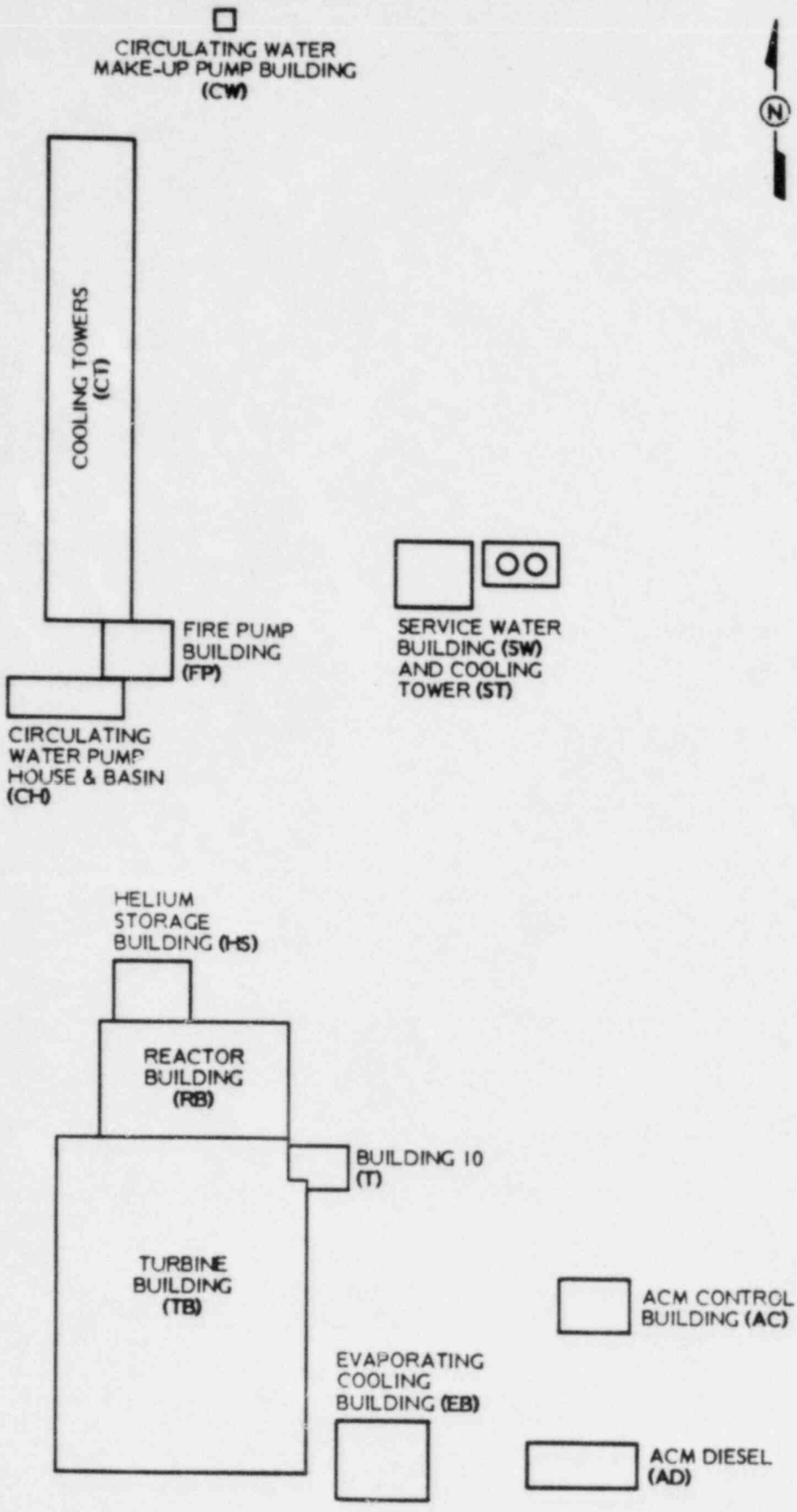

FIGURE 2.2

EXTERIOR FIRE AREAS
GRADE ELEVATION