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July 29, 1983
ST-HL-AE-984
File Number: G9.7

Mr. Thomas M. Novak
Assistant Director of Licensing
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Novak:

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Fire Protection

On July 14, 1983, representatives of Houston Lighting & Power Company met with members of the NRC staff to discuss the fire protection systems for four plant areas. The four areas discussed were:

A) The Control Room,
B) The Component Cooling Water Pump Area,
C) The Remote Shutdown Area, and
D) The Diesel Generator Fuel Oil Storage Tank Room.

At the conclusion of the meeting, the NRC fire protection reviewer stated that he had not identified any concerns related to the fire protection systems discussed. Therefore, we are submitting the attached descriptions of the fire protection systems for the above four areas as confirmatory documentation of the material presented at the meeting. Based on our understanding that NRC has no concerns related to these systems, we are proceeding with their design and construction, unless your staff notifies us otherwise.

If you should have any questions concerning this matter, please contact Mr. Michael E. Powell at (713) 877-3281.

Very truly yours,

J. H. Goldberg
Vice President
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MAM/bjc
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B002
1/1

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SOUTH TEXAS PROJECT

Control Room Fire Protection

The control room is located at elevation 35' in the EAB, between column lines B-F and 20-22 (see Figure A-1). This room is completely surrounded by a 3 hour rated fire barrier with a 1 hour rated fire barrier surrounding the supervisors office, located within. As a result of evolution of the design including post-TMI changes, the operating area of the control room is enclosed by a seismically designed suspended ceiling and architectural barriers, all of which are constructed of materials with a flame spread rating of 50 or less (See Figure A-2).

Fire protection and detection equipment located in the control room is diagrammatically illustrated in the attached Fire Area Drawing (Figure A-1). Fire detection is provided throughout the room, both above and below the suspended ceiling and in each control cabinet. These detectors alarm at the local fire panel and inside the room itself. Detector spacing is such that the number of detectors employed is several times that required by NFPA 72E.

Fire protection is effected through portable fire extinguishers and hose streams from standpipes located at the control room exits. The majority of cables can be effectively reached by these hose streams from ground level. A catwalk above the ceiling (Figure A-3) ensures access to the cabling in this area. The HVAC system return ducts contain smoke detectors which upon activation, close dampers and divert airflow into a purge and cleanup mode. The system also has manual override capability. It should be noted that the space above the suspended ceiling is not used as an HVAC plenum.

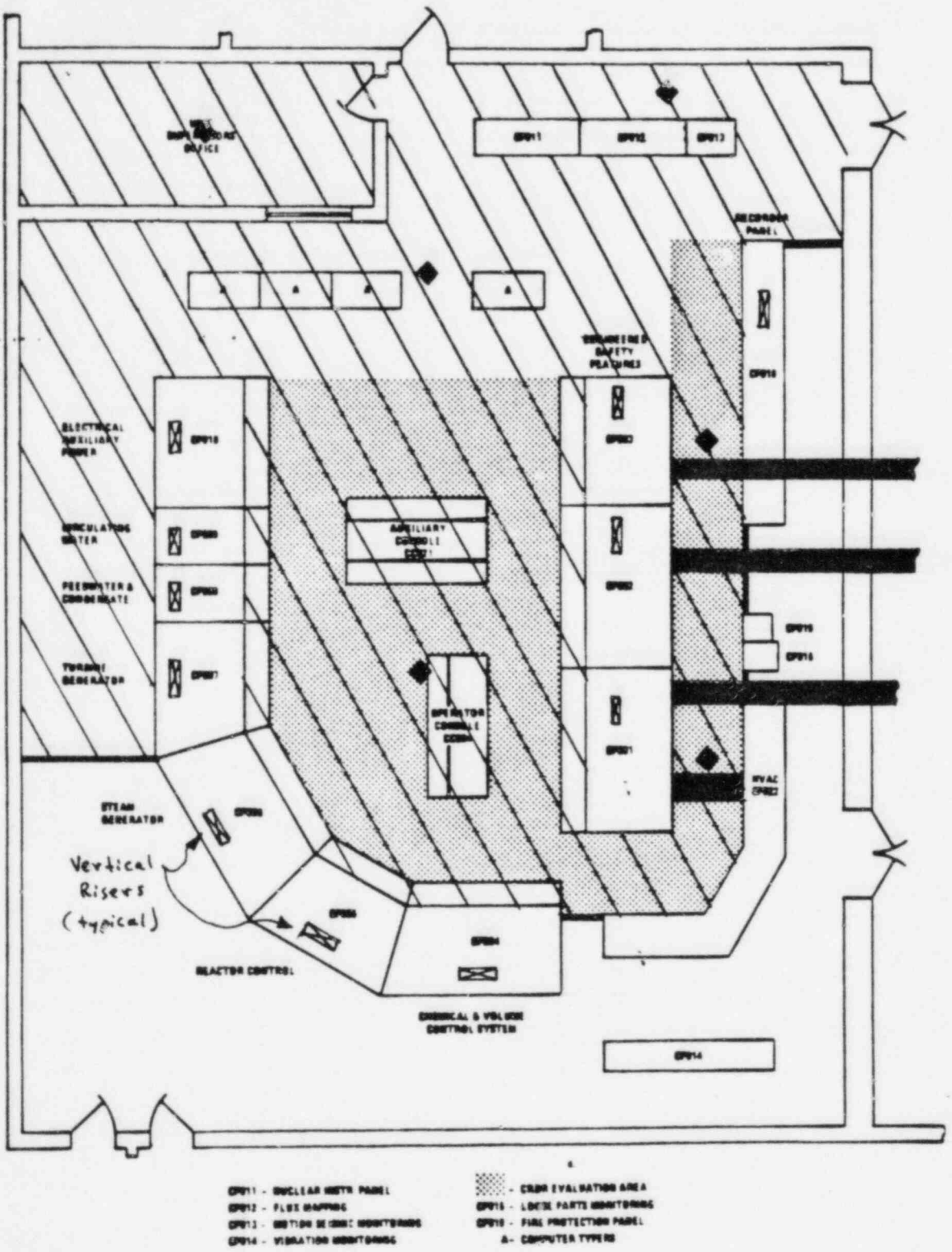
Cabling in raceways above this ceiling is designed to meet the requirements of IEEE 383 and consists of control and instrumentation circuits with the exception of power for lighting which will be enclosed in steel conduit. In the event of fire in this area, the minimum number of safe shutdown circuits are provided with isolation or transfer switches at remote stations in separate fire areas for transfer of control to the remote shutdown panel or local control stations.

Automatic supression has not been provided in the control room as the use of manual supression provides a high reliability against accidental introduction of fire protection agents into this safety related area. Considering the high density of early warning detection provided and the full accessibility of manual hose streams, the use of automatic systems in this room is neither justified or necessary.

List of Figures:

Figure A-1 - Fire Area Drawing MEAB 35'
Figure A-2 - Control Room Layout
Figure A-3 - Control Room Catwalk Plan View

FIGURE A-2



CONTROL ROOM LAYOUT

◆ IONIZATION SMOKE DETECTOR

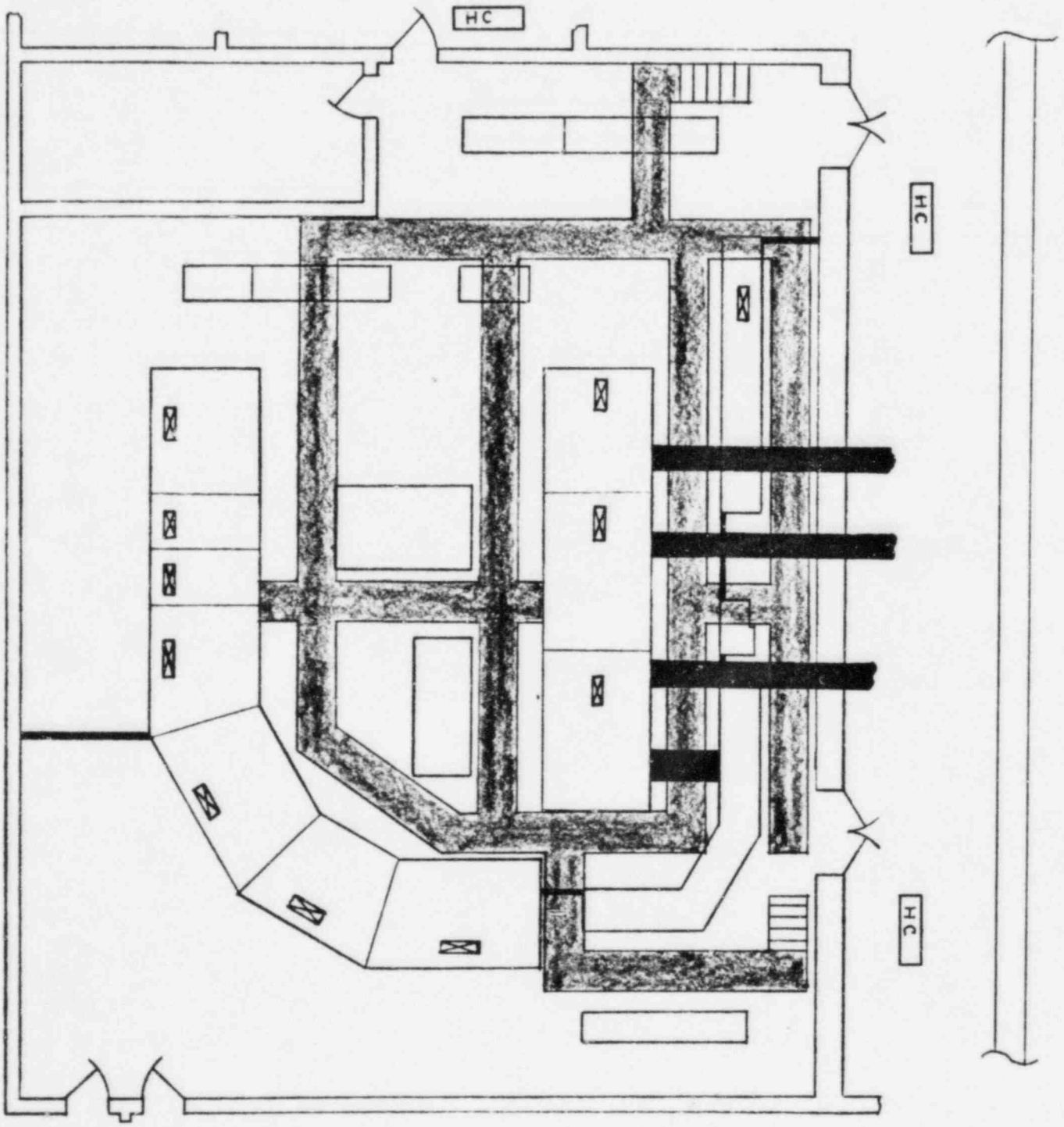
▨ SUSPENDED CEILING (proposed)

▬ ARCHITECTURAL WALL

▬ Cable Above Suspended Ceiling (Schematic)

FIGURE A-3

CONTROL ROOM CATWALK LAYOUT



HC = Hose Cabinet Locations

SOUTH TEXAS PROJECT

Component Cooling Water Pump Area Fire Protection

The consideration in the Component Cooling Water (CCW) pump and chiller area is that of train separation. As physical separation of cable trays from different trains is not feasible, the requirements of 10CFR 50 Appendix R Section III. g. have been met by providing one hour rated fire barriers for cabling and automatic fire supression.

The CCW pumps and chillers are located in three rooms in the MAB at elevation 10'-0", between column lines A-E and 24-27. Each room is completely enclosed by a 3 hour fire barrier and contains one train of CCW pumps and associated chillers (see Figure A-1, for location).

The original layout for this area consisted of a single open space which did not provide for separation of equipment in different trains. The appropriate walls have been upgraded and fire barriers added in order to achieve train separation of the equipment. Complete train fire separation is acomplished by alternate wrapping of unassociated cable trays in each room with a one hour rated fire barrier. In the hallways, two trains of cable trays containing safe shutdown circuits will be enclosed in a 1 hour rated fire barrier. This arrangement is shown schematically in Figure B-2.

Fire protection and detection equipment located in the CCW area is shown diagrammatically in the Fire Area Drawing (Figure B-1). Fire detection is provided in each room and the surrounding hallway by ionization smoke detectors which alarm locally and in the control room. Fire protection is provided by automatic wet pipe sprinklers for both general area protection and concentrated cable tray protection.

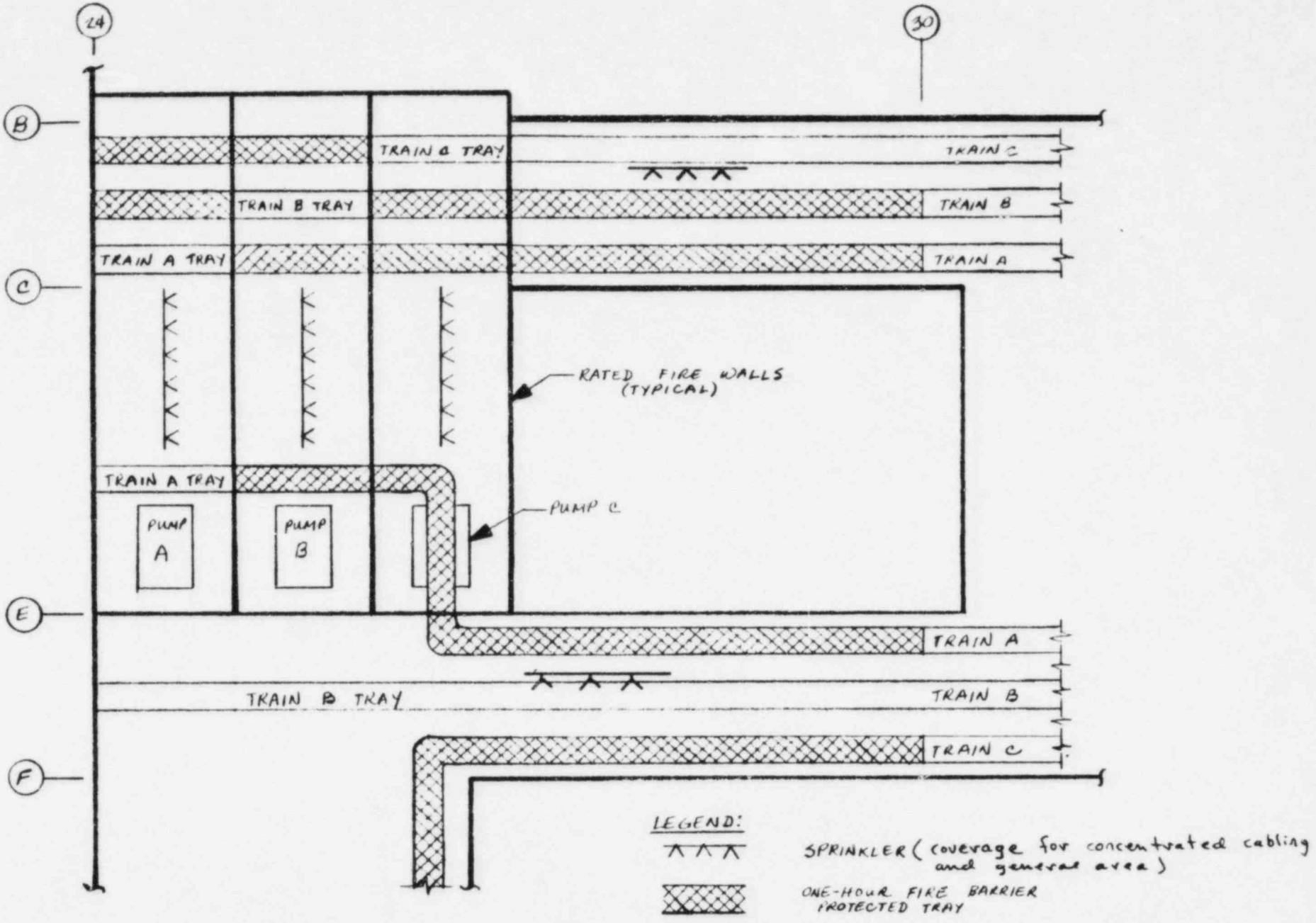
List of Figures:

Figure B-1 - Fire Area Drawing MEAB El.10'
Figure B-2 - Cable Tray Protection Layout

FIGURE B-2

FIRE-BARRIER PROTECTED TRAY LAYOUT

MAB - EL 10'-0"



SOUTH TEXAS PROJECT

Remote Shutdown Area Fire Protection

The issue in the Remote Shutdown Area is the protection of HVAC ductwork. The unique aspect in this case is that the purpose of fire protection is to preclude degradation of a design process, in this case safety-related HVAC cooling airflow.

The remote shutdown area is located at EAB, elevation 10'-0", between column lines A-B and 22-24 (see Figure C-1). This area consists of 4 adjacent rooms, each surrounded by a 3 hour fire wall. One of these rooms contains the remote shutdown panel and each of the other three contains a single train of signal processing equipment for safe shutdown instrumentation and control.

Air supply and return for environmental control is accomplished by two common ducts for the four rooms, leading to the HVAC equipment room on the same elevation. This configuration is illustrated in Figure C-2. It is these two ducts, common to all three trains, which must be protected in order to ensure that a postulated fire in one room would affect only one train of safe shutdown equipment.

Ductwork in the hallway will be protected by a 3 hour rated concrete chase. In the remainder of areas, the ductwork will be enclosed by a framework consisting of a 3 hour rated fire barrier with fire dampers located in the fire barrier at each supply and return register. These dampers will automatically close by actuation of a thermal link. Acceptance criteria will be based on the ability to maintain the process conditions within an acceptable temperature range for an indefinite time period. Preliminary calculations indicate this configuration will be adequate to maintain the required process conditions.

Additional fire protection is provided with portable fire extinguishers in the vicinity. Fire detection is provided by ionization smoke detectors in each room and the surrounding hallway, which alarm locally and at the control room. It should be noted that under normal conditions, safe shutdown circuits are not transferred to the remote shutdown panel. This only occurs if the control room becomes unihabitable.

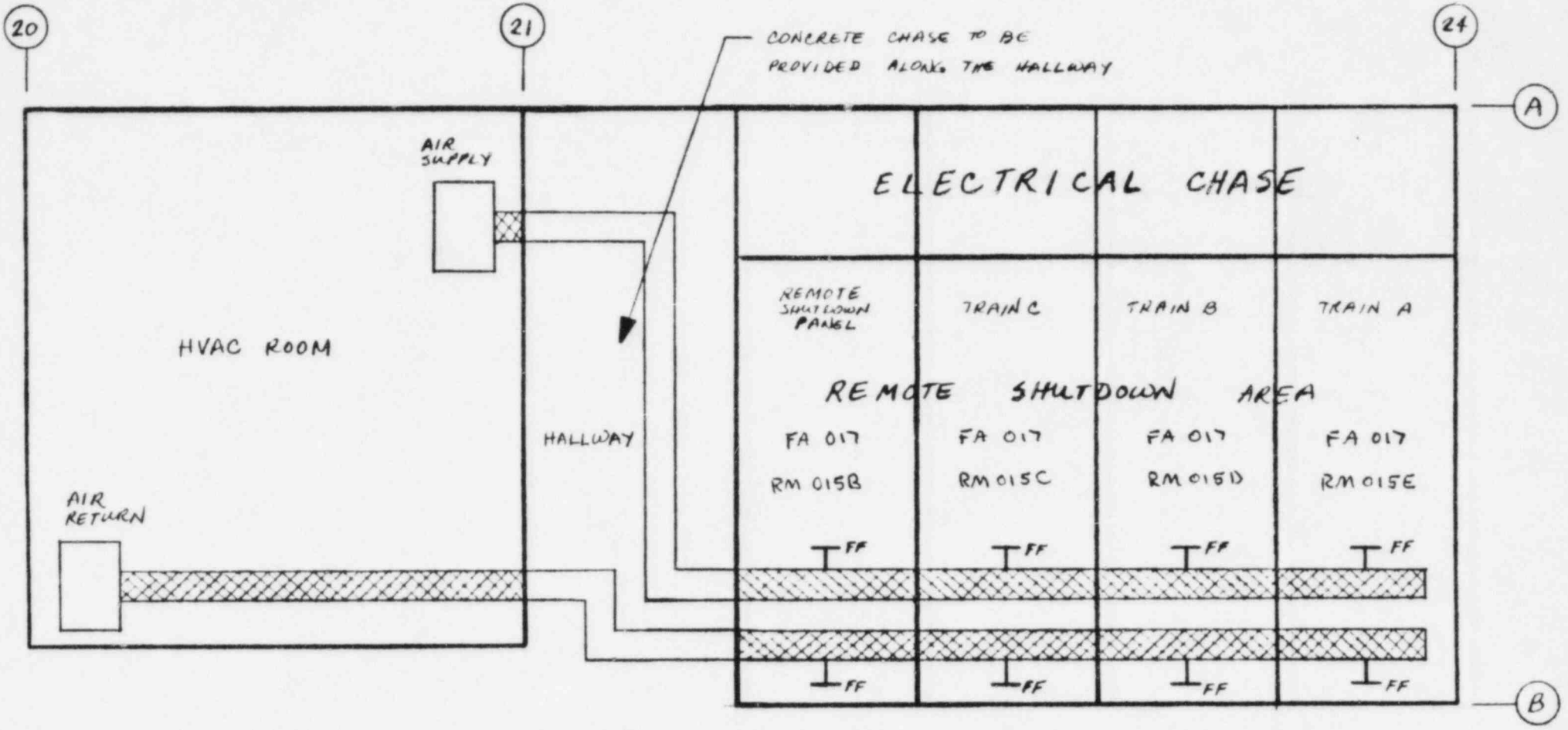
List of Figures:

Figure C-1 - Fire Area Drawing
Figure C-2 - Duct Protection Layout

FIGURE C-2

REMOTE SHUTDOWN AREA FIRE PROTECTION LAYOUT

EAB EL 10'-0"



NOTES:

1) NTS

2) ALL WALLS SHOWN ARE 3-HR FIRE RATED.

LEGEND:

3-HOUR FIRE-BARRIER PROTECTED DUCT

FF FIRE DAMPER

Attachment D

Diesel Generator Fuel Oil Storage Tank Room

Fire Protection

List of Figures

The issue in the Diesel Generator Fuel Oil Storage Tank Room is the location and capacity of the tanks contained in each room. Each tank has a capacity of 75,000 gallons of fuel oil and is normally full. This situation poses a high combustible loading and has been questioned previously by the NRC.

The three Diesel Generator Fuel Oil Storage Tank rooms are located in the DGB at elevation 55'-0", between columns C8-M and 18.2 - 19.4. (See Figure D-1). The DGB itself is located 5' from the North face of the EAB and is an entirely separate building. Inside the DGB, the three Fuel Oil Storage Tank rooms are completely surrounded by a 3 hour fire barrier.

The present fire protection scheme for this area is schematically illustrated in the Fire Area Drawings, Figures D-1 and D-2. Fire detection is provided with thermal spot-type detectors in a cross-zoned configuration which alarm locally and in the control room. This system of detectors is used to automatically actuate a foam-water sprinkler system protecting the tank. Manual actuation of this system is provided at the room exit as well as a hose reel for manual hose streams. Adequate room drainage to the Oily Waste System is provided for removal of foam-waters and tank leakage drainage is also provided through a separate connection.

In addition to these fire protection and detection systems, a ventilation fan, powered by an ESF electrical bus will be provided. This fan will operate continuously under normal conditions only, with thermally actuated damper closure under fire conditions. The system will also be equipped with a means to be manually re-started from outside the room.

The basic philosophy behind this combination of systems is to contain and isolate the fire. In the case of a transient fire, the dampers will not be actuated (closed) and the ventilation provided will negate the possibility of a deflagration. If the postulated fire continues to grow, damper closure will limit available oxygen and actuation of the foam-water supression system will provide extinguishment and cooling. Decisions on subsequent action such as room entry and application of hose streams and/or resuming ventilation, will be made by experienced fire brigade personnel. It is believed that this combination of protection, detection, and ventilation is an effective way to deal with the potential fire hazard in this particular situation.