



Duquesne Light

Nuclear Group
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July 10, 1985

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Attn: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Appendix R - Fire Protection

Gentlemen:

By letter dated December 16, 1983, we requested additional exemptions from the requirements of Appendix R to 10CFR Part 50. The requested exemptions were all granted per your letter of August 30, 1984 with the exception of the one request concerning structural steel. Your letter indicated that action had been deferred because this particular issue on structural steel was a "generic" issue.

Section III.G.2(a) of Appendix R requires structural steel forming a part of or supporting fire barriers separating redundant trains shall be protected to provide fire resistance equivalent to that required of the barrier. The area in question is the Service Building, Elevation 713 area below the Cable Spreading Room. This area encompasses the following separate fire areas where the structural steel is located:

- West Emergency Switchgear Room (ES-1)
- East Emergency Switchgear Room (ES-2)
- Motor Generator Room (MG-1)
- Process Instrument Room (CR-4)
- Relay Room (CR-3)
- HVAC Equipment Room (CR-2), pump area portion

Our January 14, 1985 letter indicated further review and analysis was being conducted to resolve this issue. An independent analysis was conducted and completed in May of this year. Based on the results of this independent analysis and the recent phone conversation with members of your staff, we have reviewed the following options:

1. Redefining fire area boundaries, and
2. Coating the structural steel beam members

Redefining fire area boundaries was determined to be unfeasible. We have concluded that the prudent course of action is to coat the steel beam surfaces with a qualified fire-proof material. Enclosed as Attachment I is the information on the fire-proof material and relevant drawings of the area.

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This scope of work will not be without difficulty. Due to the sensitive electrical equipment located in these areas, the fire-proof material will most probably be substantially hand-troweled onto the beam surfaces versus spraying. Accessibility to some beam surfaces will be difficult due to the amount of equipment (i.e., conduit, cable raceways, ventilation ductwork etc.) located in the relatively low ceiling area. It is our understanding that if any portions of required structural beams are not coated, your staff may require a suppression system in the affected area to address the potential hazard. The type of electrical equipment located in these areas (such as electrical switchgear, relays, solid state protection system and process instrumentation equipment) would not be conducive to a water suppression system. In addition, a water or gas suppression system would be extremely difficult and costly to retrofit given the complexity, equipment sensitivity and congestive conditions of the ceiling areas in these rooms.

Our intention is to coat the beams as much as physically achievable. The magnitude of this effort cannot be totally defined until personnel begin the task and application techniques are refined as the job progresses. Resolution to problem areas will be, on a case-by-case basis, documented and addressed utilizing one of the following options:

1. Performing a structural analysis of particular secondary beam members to preclude the necessity of coating certain inaccessible beams.
2. Utilizing sound fire protection engineering practices and design to box in certain areas with qualified fire-proof material to prevent the spread of fire to inaccessible beam portions.
3. Providing justification for not coating beams in certain areas requiring removal or relocation of equipment obstructing access for installation of the fire-proof material which could result in degradation of overall facility safety.

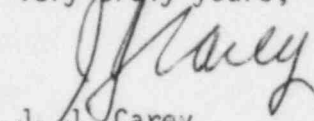
In the event one of the above options is pursued, it will be submitted with adequate justification as part of our original exemption submittal on structural steel. For this reason, we wish to keep the pending exemption request open. If coating of all required beam surfaces can be accomplished, the exemption will be formally withdrawn at that time.

Our schedule for implementation is to initiate coating of beams in areas operationally allowable without delay. Coating of the beams in the Process Instrument Room (CP-4) will require an outage due to the sensitive electrical equipment within the room. Since the fire-proofing task cannot be accomplished before the end of the 5th Refueling Outage (tentatively scheduled to start in May of 1986), we are therefore requesting a scheduler exemption from the requirements of 10CFR50.48(c)(4) in accordance with the provisions of 10CFR50.12. In the interim, compensatory measures will be implemented to provide an acceptable level of alternate shutdown capability until the necessary modifications are completed. For each fire area in question, a

four-hour roving fire watch has been instituted as all the areas have early-warning full-area coverage automatic detection systems that alarm in the control room in the event of a fire. The response time would be minimal with the control room located within the same building two floors above the switchgear areas in question.

Please contact my staff if additional information or clarifications are necessary.

Very truly yours,



J. J. Carey
Vice President, Nuclear

Attachment

cc: Mr. W. M. Troskoski, Resident Inspector
U. S. Nuclear Regulatory Commission
Beaver Valley Power Station
Shippingport, PA 15077

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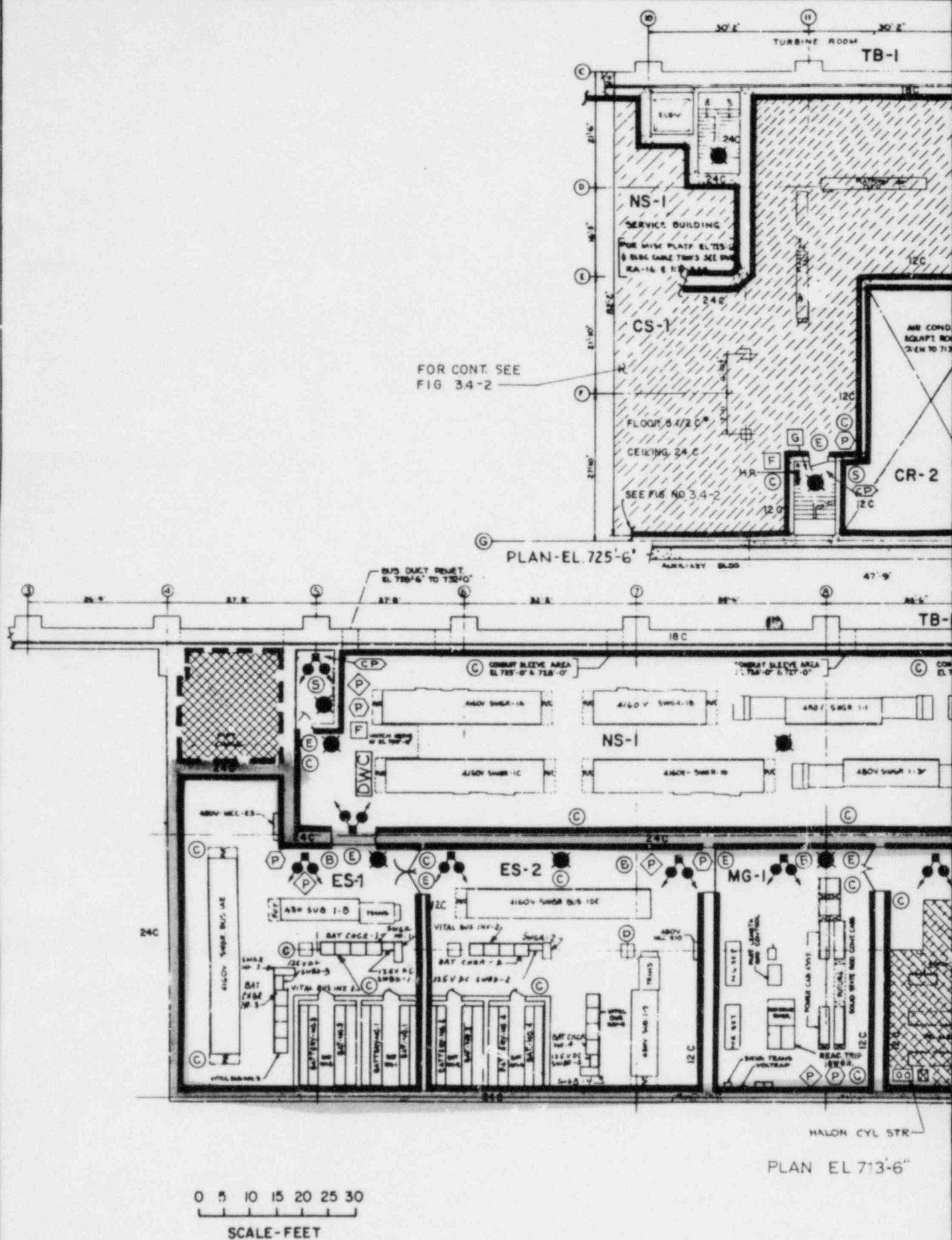
ATTACHMENT I

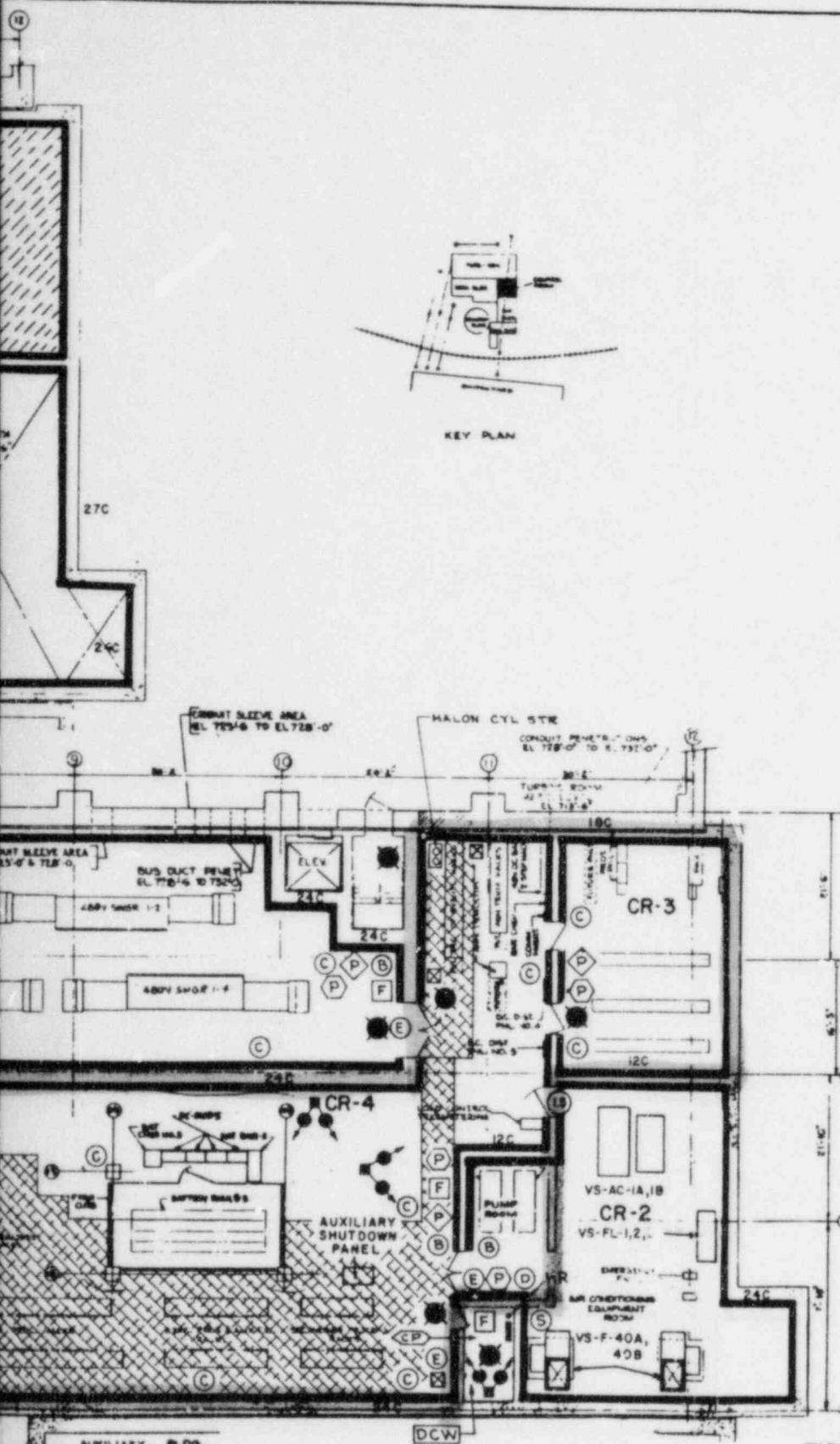
Summary Information on Fire-Proof Coating Material and Area

The fireproofing material to be utilized is Cafcote 560, a cementitious mixture manufactured by US Mineral Products Company. This material is UL tested, and per UL Design No. N714 (UL Fire Resistance Directory) a thickness of $\frac{1}{2}$ " applied, contour fashion, on exposed beam surfaces, will provide a $1\frac{1}{2}$ -hour fire rating to the restrained floor assembly.

The cable spreading room concrete floor thickness on the beam-supported metal deck is a minimum of 4", with a maximum of $5\frac{1}{2}$ " at the deck flutes. Per the NFPA Fire Protection Handbook (15th Edition, Page 5-77, Fig. 5-8F), such concrete floor thickness has over $1\frac{1}{2}$ hours of fire resistance. Per the UL Fire Resistance Directory, since the floor has a greater capacity for heat dissipation than what is required in UL Design No. N714, a $1\frac{1}{2}$ hour protection for the beams alone would be sufficient for a similar fire rating for the entire floor assembly.

Cafcote 560 has been used for steel fireproofing at Limerick and at Three Mile Island.





Also Available On
Aperture Card

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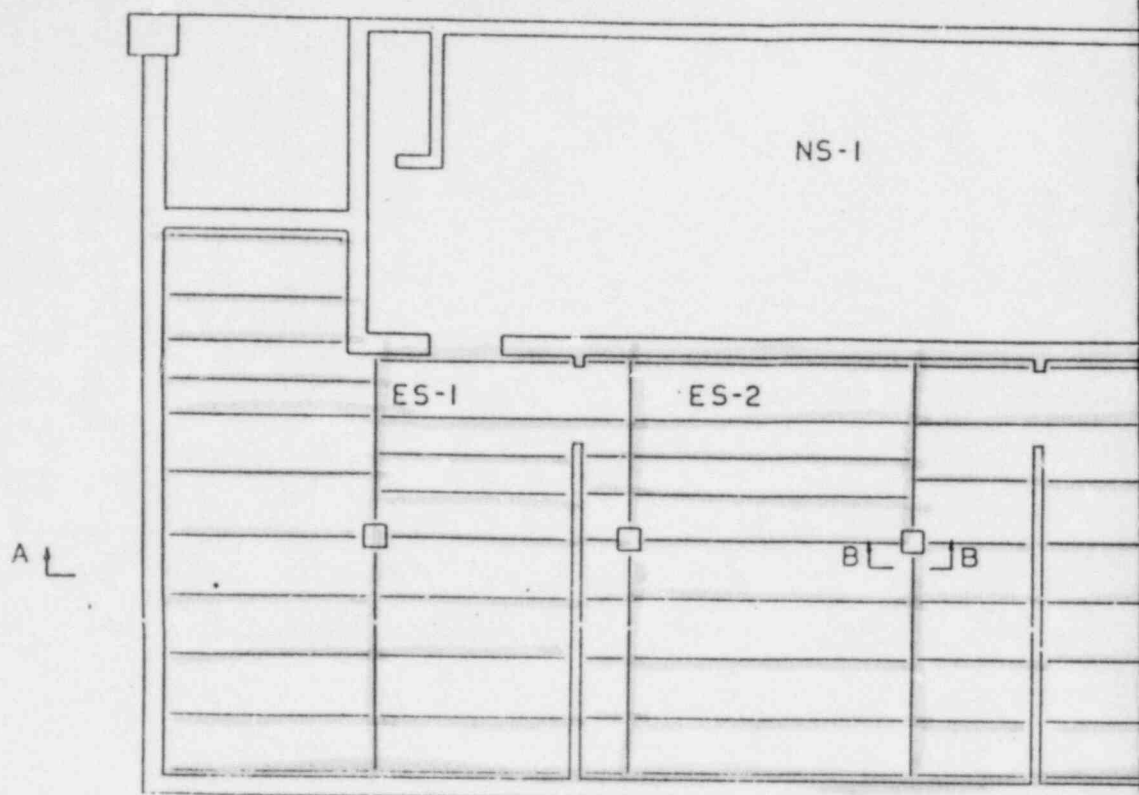
SYMBOLS

- AREA SERVED BY CO₂ SYSTEM
 - AREA SERVED BY WATER SPRAY (DEL'G)
 - AREA SERVED BY HALON SYSTEM
 - HALON ACTUATION PULL BOX
 - PAX PHONE
 - HOSE RACK
 - DRY CHEMICAL WHEEL UNIT
 - COMMAND POST
 - H₂O FIRE EXT.
 - STANDPIPE-HOSE RACK
 - GAITRONICS PHONE
 - CO₂ CONTROL/ALARM PANEL
 - FIRE ALARM STATION
 - EXIT SIGNS
 - DRY CHEMICAL FIRE EXT.
 - PORT. FIRE EXT. CO₂-20LBS
 - FIRE ALARM BELL (APPROX. LOCATION)
 - FIRE AREA
 - FIRE ZONE
 - FIRE BARRIER
 - SUB-AREA
 - FIRE DOOR RATINGS, (HOURS)
 - REINFORCED CONCRETE
 - CONCRETE BLOCK WALL
 - INSULATED METAL SIDING
 - 125V DC BATTERY EMERGENCY LIGHT
 - DC EMERGENCY BATTERY LIGHTING UNIT
- * FLOOR SYSTEM IS 5 1/2" CONCRETE
(INC 1 1/2" CORRUGATED METAL DECKING)

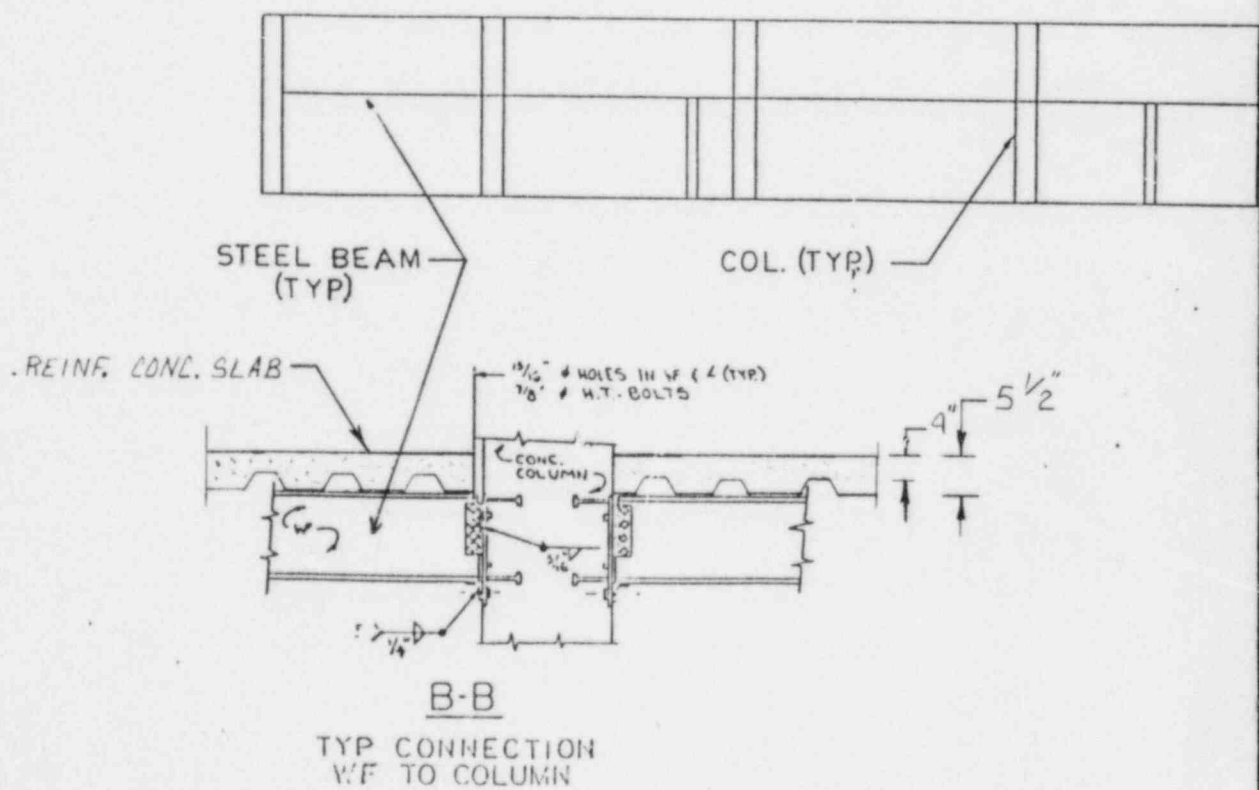
FIGURE 1
CONTROL ROOM, SWITCHGEAR
AND CABLE SPREADING AREA
BEAVER VALLEY POWER STATION - UNIT 1
FIRE HAZARDS ANALYSIS

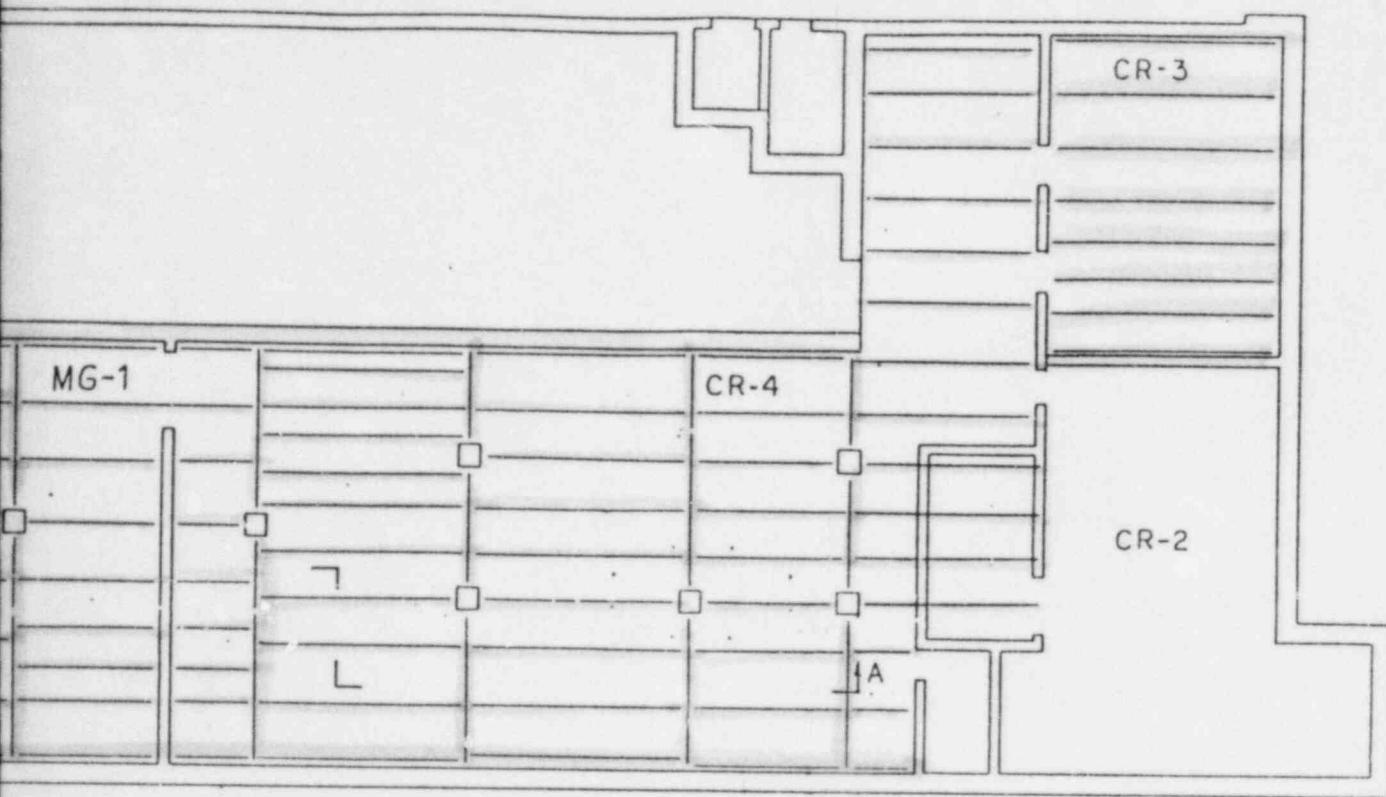
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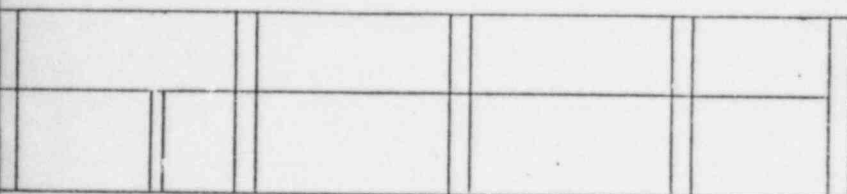




LAN EL. 713'-6"

Also Available On
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CS-1 FLOOR
EL. 725'-6"

EL. 713'-6"

A-A

Denotes Steel Beams

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FIGURE 2