

Nebraska Public Power District

GENERAL OFFICE
P.O. BOX 499, COLUMBUS, NEBRASKA 68601-0499
TELEPHONE (402) 564-8561

June 2, 1983

U.S. Nuclear Regulatory Commission
Operating Reactors Branch No. 2
Division of Licensing
Washington, D.C. 20555

Attention: Mr. Domenic B. Vassallo, Chief

Dear Mr. Vassallo:

Subject: Fire Protection Rule 10 CFR 50, Appendix R,
Preliminary Supplemental Response (Revision 2)
Cooper Nuclear Station
NRC Docket No. 50-~~198~~², DPR-46

- Reference:
- 1) Letter from D. B. Vassallo to J. M. Pilant dated December 14, 1982, "Draft SER on Appendix R Exemption Request"
 - 2) Letter from J. M. Pilant to D. B. Vassallo dated March 18, 1983, Preliminary Supplemental Response (Revised)
Cooper Nuclear Station
NRC Docket No. 50-298, DPR-46

On June 28, 1982, Nebraska Public Power District requested exemption from Section III.G of Appendix R for eight plant areas/categories. In Reference 1 the NRC Staff approved one and preliminarily recommended denial of seven of the eight exemption requests. After review of the Staff's preliminary recommendation, the District sought a working level meeting to provide a response and to bring each outstanding exemption request to a close. This meeting was held in Bethesda on March 5, 1983, to reach resolution on as many of the remaining exemptions as possible. Reference 2 documented the presentation and commitments made by the District to the Nuclear Regulatory Commission's Staff at the March 3 meeting. In a subsequent telephone call on May 5, 1983, the specifics of the March 3 meeting were again reviewed whereby the Staff requested that additional clarifying information and sketches be submitted on the Docket.

The additional clarifying information is contained in the enclosure to this letter, which is a revision of Enclosure 1 of Reference 2. Photographs and sketches are presented to assist the reviewer. It should be noted that the basis for the exemption requests for the Cable Spreading Room, Cable Expansion Room, and Control Building Basement have been amplified and are responsive to the

8306080061 830602
PDR ADOCK 05000298
PDR
F

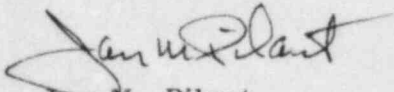
Acob
1/1

Page 2
June 2, 1983

Staff's request. On the basis of the information presented, it continues to be the District's opinion that the Staff will be able to take favorable action on the exemption requests.

The District is confident that the attached information, in conjunction with that which was previously transmitted, demonstrates that the level of safety provided in each instance will be equivalent to the technical requirements of Appendix R, Section III.G.2. We believe that under existing NRC guidance, our proposed exemptions can be approved and, if they are, an appeal meeting (requested in Reference 1) will therefore be unnecessary.

Sincerely,

A handwritten signature in dark ink, appearing to read "Jay M. Pilant", with a stylized flourish at the end.

Jay M. Pilant
Division Manager of Licensing &
Quality Assurance

JMP/gat:kc1/4(QAC2)
Enclosure

ALTERNATIVE SHUTDOWN CAPABILITY

NEBRASKA PUBLIC POWER DISTRICT

ALTERNATIVE SHUTDOWN CAPABILITY

INTRODUCTION

As a preface to the Cable Spreading Room Exemption Request discussions, the District provided a commitment to the Staff to prepare a submittal describing an alternative shutdown capability. The control circuits of the alternative shutdown system would be independent of the Cable Spreading Room, Control Room, Cable Expansion Room, and Auxiliary Relay Room.

CABLE SPREADING ROOM

On the basis of the commitment to provide an alternative shutdown capability, the exemption request for the Cable Spreading Room became limited to the southeast corner of the Cable Spreading Room in the vicinity of the Division 2 125/250V dc power feeds and the Division 2 4160V ac feeds. As indicated on Figure 1 by the shaded area, the specific area of interest is generally southeast of the column lines 14.6 and J.3. As Figure 1 shows, there is only a small amount of cable tray in the specific area of interest. Photo 1 shows that this section of the Cable Spreading Room utilizes predominantly conduit. All the power feeds of interest are within conduit.

On the northwest side of the column at 14.6 and J.3 are the Division 2 (Train B) 125/250V dc power feeds which penetrate up through the cable spreading floor (see Photos 1 and 2) and rise into the overhead (Photo 3). As depicted in Figure 1, these conduits traverse to the east of the column and then run south in a bank of conduits which penetrate the CSR south wall. This bank of conduits is the left bank in Photos 1 and 4.

Photo 4 is a close-up of the 4160V ac power feeds at the south wall of the CSR. These conduits, containing the DG feeds and the service water pump power supplies, penetrate up through the floor, rise 5-6 feet and immediately exit through the south wall. Photo 5 is a close-up of the east side of the Division 2 conduit bank at the south wall. This photo shows the congestion and begins to indicate the problems and difficulty of applying protective wraps to the conduits in the overhead conduit bank.

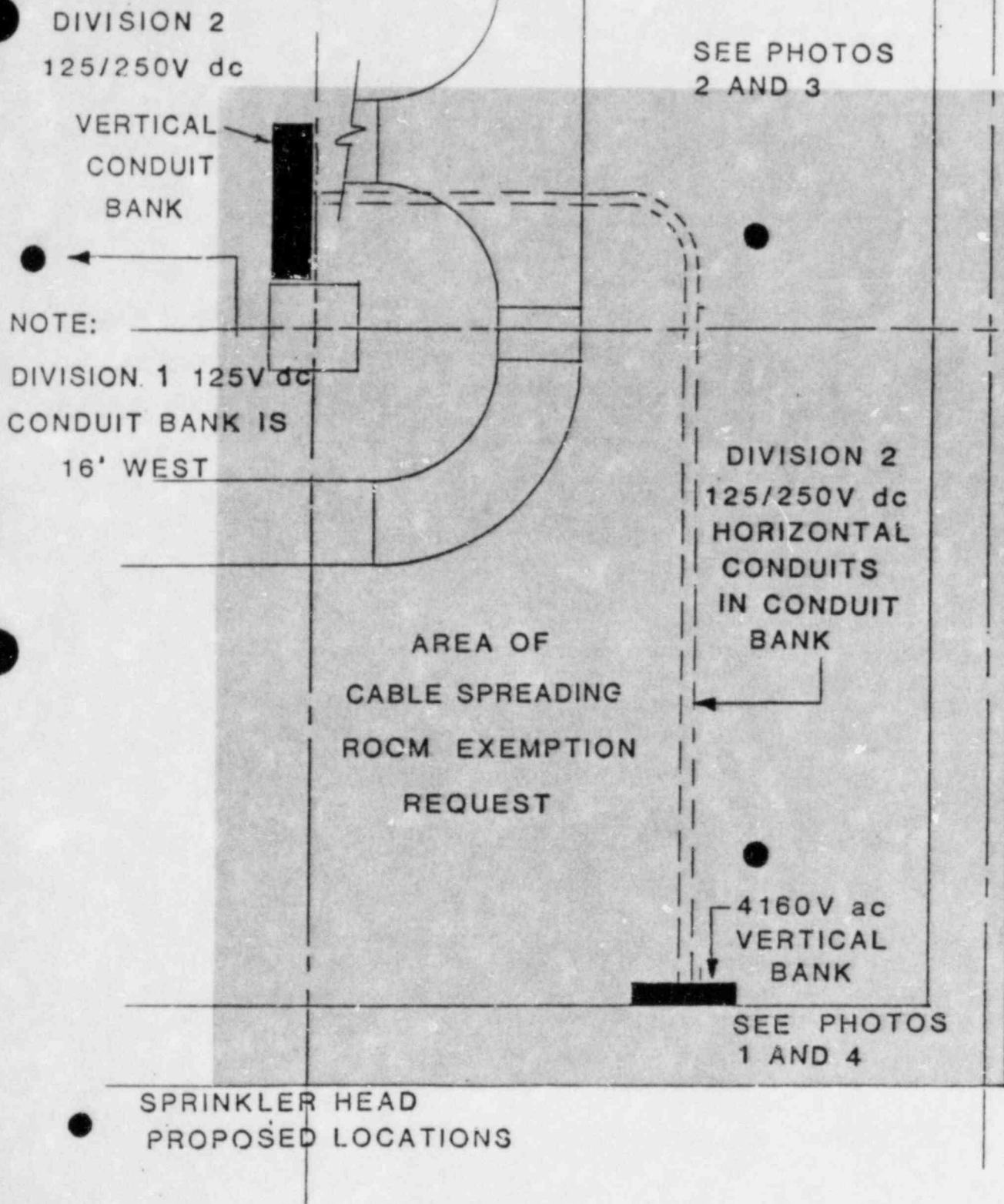


FIGURE 1

DETAIL OF SOUTHEAST CORNER OF CSR

DIVISION 2 - VERTICAL CONDUITS

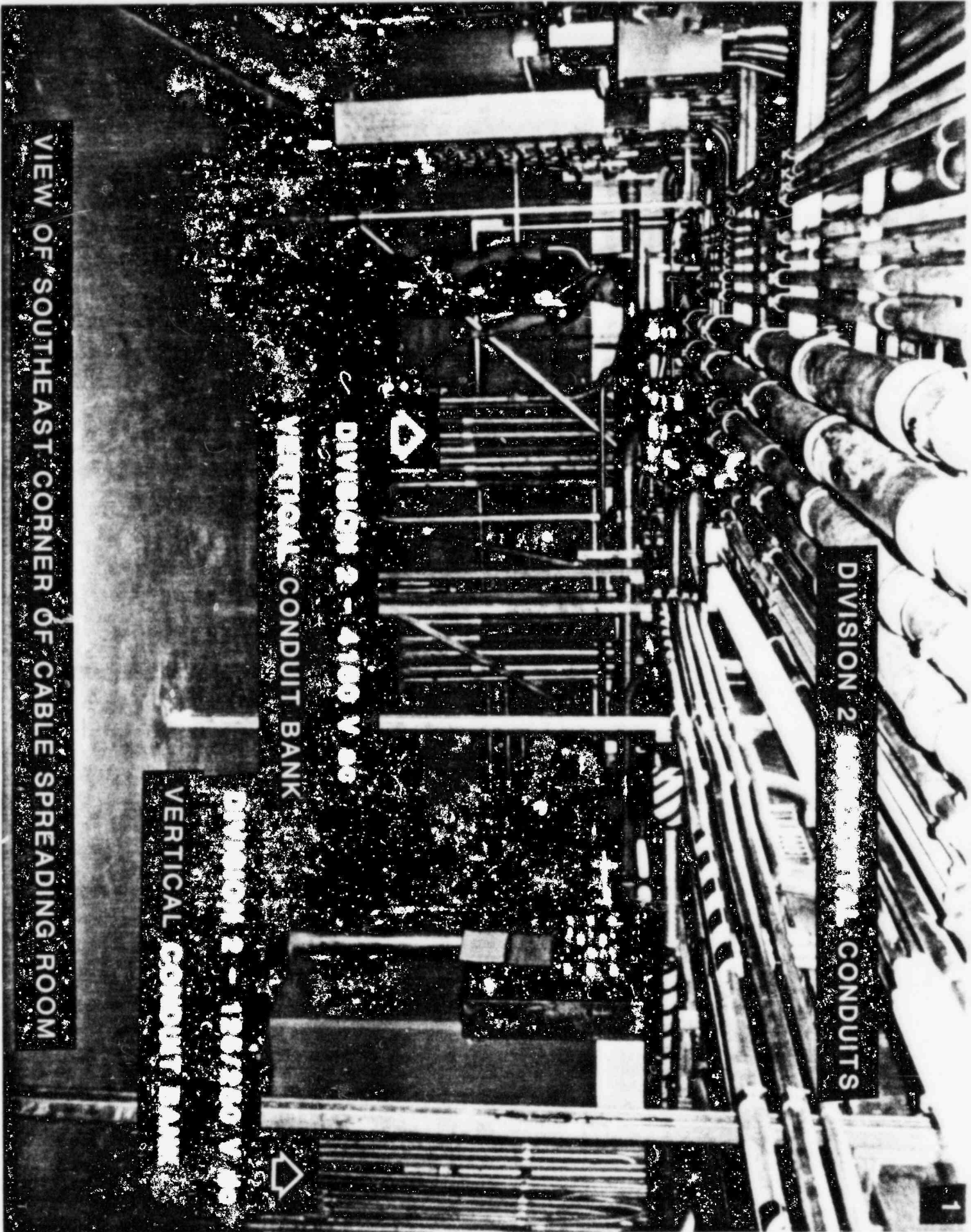
DIVISION 2 - 4100 V AC

VERTICAL CONDUIT BANK

DIVISION 2 - 126/280 V AC

VERTICAL CONDUIT BANK

VIEW OF SOUTHEAST CORNER OF CABLE SPREADING ROOM





COLUMN # 14.6 & J.3

DIVISION 2 - 125/250 V dc CONDUIT BANK

LOOKING NORTHEAST



CABLE TRAY WITH-ASBESTOS-
CEMENT BOARD BOTTOM

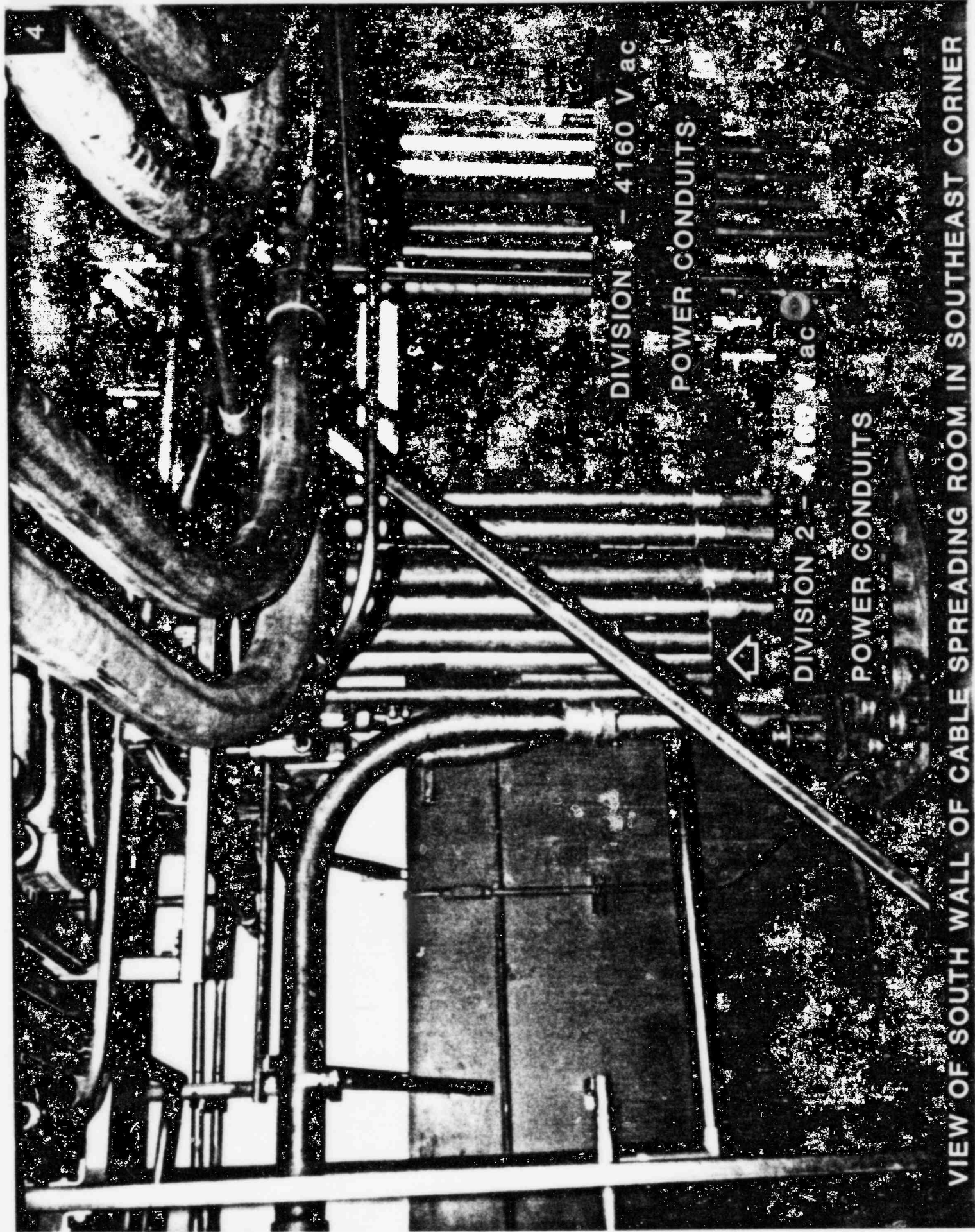
CONGESTED OVERHEAD

COLUMN

COLUMN

VIEW OF CONDUIT OVERHEAD

LOOKING NORTHEAST AT COLUMN 14.6 AND J.3



VIEW OF SOUTH WALL OF CABLE SPREADING ROOM IN SOUTHEAST CORNER

5

HORIZONTAL CONDUIT BANK
CONTAINING 125/250 V dc (INSIDE)


4160 V ac POWER FEEDS

CLOSEUP OF EAST SIDE OF DIVISION 2 BANK
AT SOUTH WALL

The District provided a commitment to box in and protect (with a material such as the 3M fire barrier material on a unistrut frame) the 125/250V dc power feeds up to an elevation where interfaces precluded further boxing. (See the congestion and interferences at the top of Photo 2.) The District also committed to protect the 4160V ac Division 2 safe shutdown power feeds in a similar manner at the south wall of the Cable Spreading Room. (Figure 2.) Finally, the District committed to provide additional suppression beneath the path of the 125/250V dc power feeds to their penetrations at the south wall of the Cable Spreading Room. (Figure 1.) This suppression coverage will be achieved by extending down the existing ceiling-based suppression. It is envisioned that four heads will be added, one each in the vicinity of the penetration areas (i.e., 125/250V dc Division 2 into and out of the Cable Spreading Room, and two beneath the path of the dc power conduits). The coverage from the new heads is estimated at 0.25 gpm/ft^3 after installation of the new fire pump.

In summary, the bases presented for the exemption request included the following:

1. Essentially no fixed combustibles (cable) exposed to a floor-based exposure fire in the southeast corner of the Cable Spreading Room; i.e., the cable is in conduit or in tray with asbestos-cement board bottoms.
2. The ceiling height preaction water suppression system installed in the CSR.

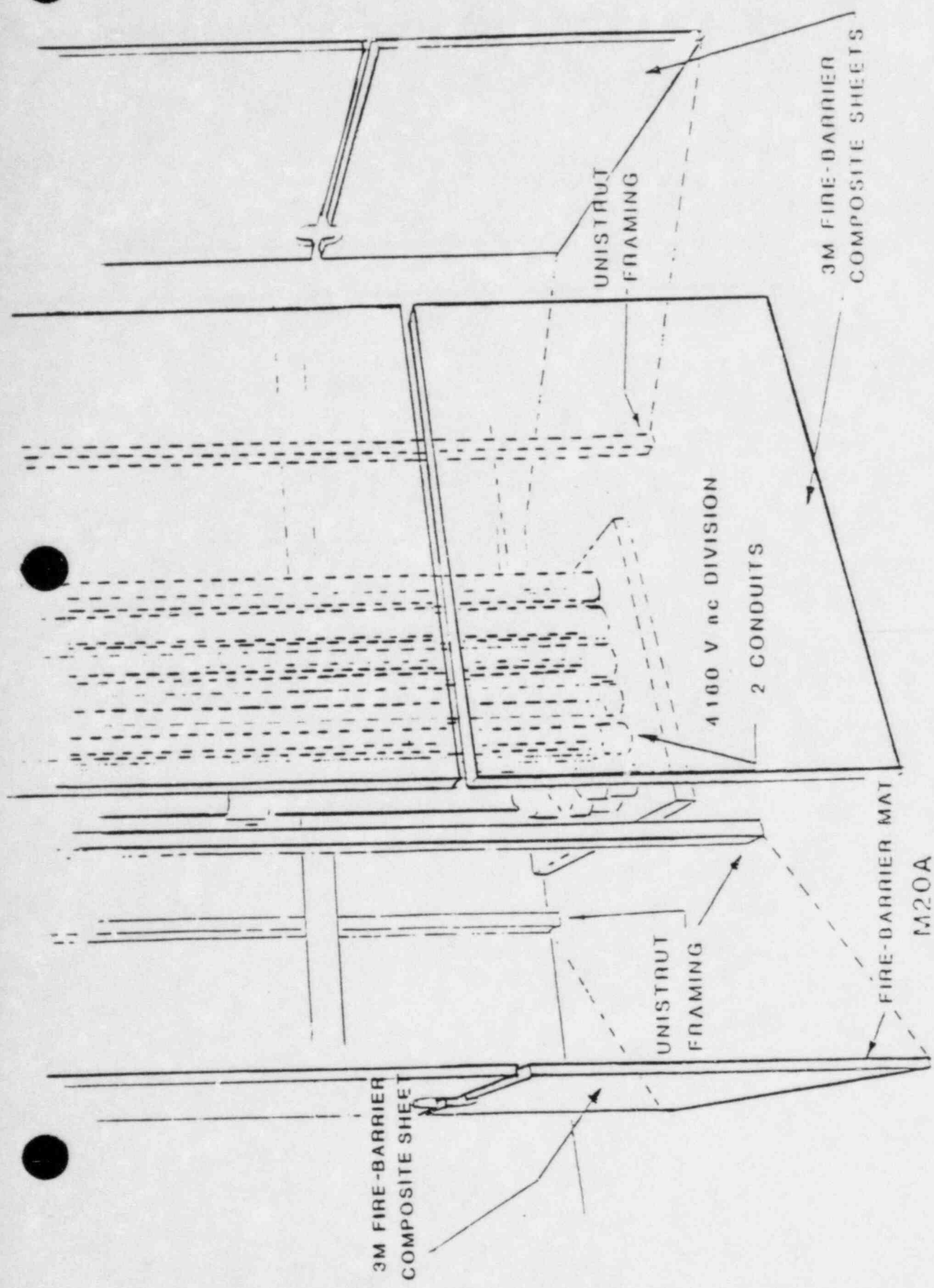


FIGURE 2

3. Excellent access for manual fire suppression (Photo 1).
4. Very limited potential for significant transient combustible material buildup in the area and hence limited potential for damage to even unprotected conduit.
5. The commitment to install (using materials which have been tested to a one-hour rating in other configurations) radiant energy shields around the Division 2 conduits of concern to protect against floor-based fires in the vicinity of the vertical conduits of interest.
6. The commitment to install additional sprinkler heads beneath the horizontal runs of the Division 2 125/250V dc conduits to protect same against a floor-based fire.

On the basis of all of the above, the District believes that it has achieved the intent of the Commission and has provided protection equivalent to that proposed in Appendix R by reducing the risk of damage due to fire to a negligible level.

CABLE EXPANSION ROOM

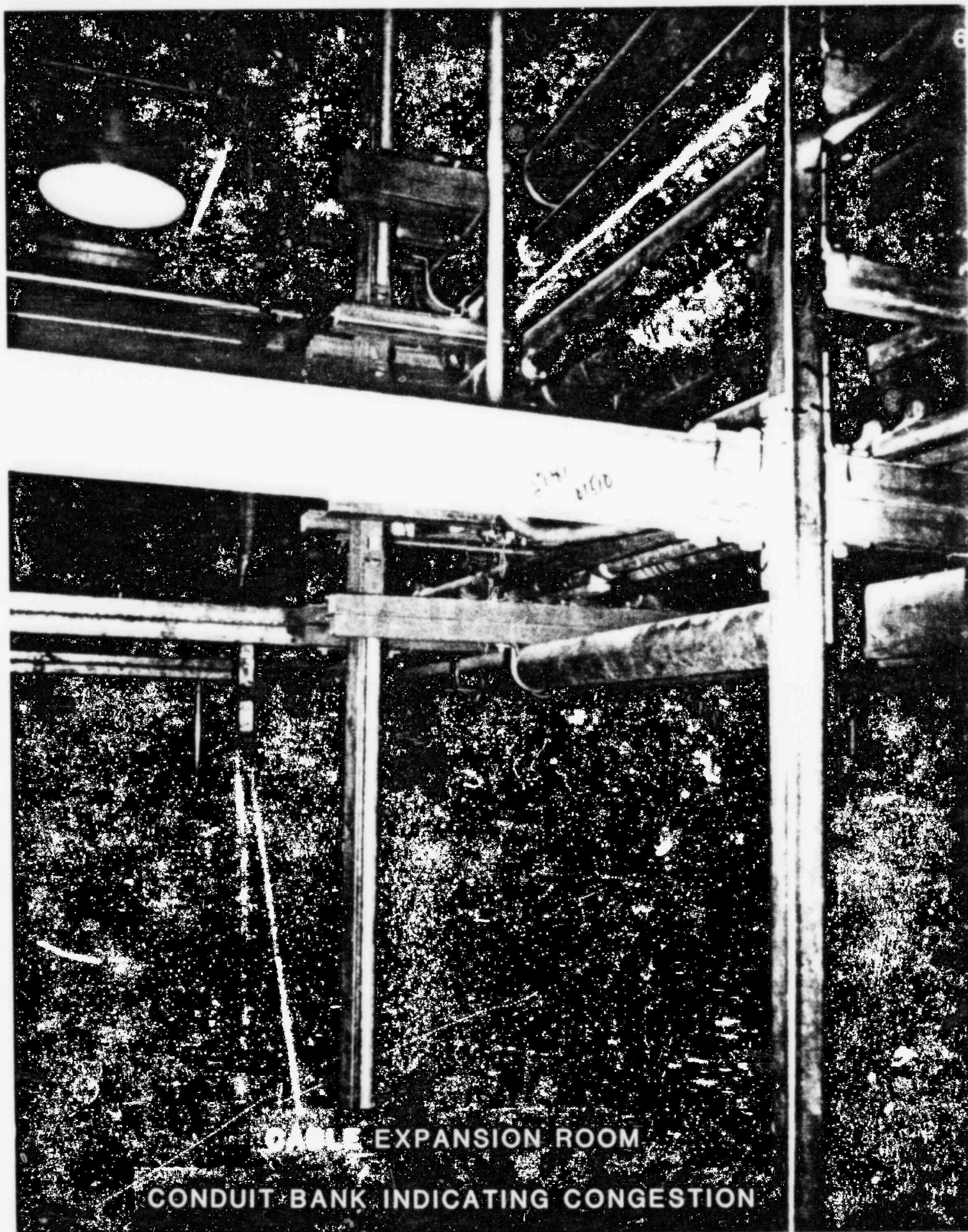
The District proposed a reduced exemption request for the Cable Expansion Room. Specifically, the exemption was requested from the requirement to enclose the Division 2 125/250V dc power feeds for the HPCI and the Division 2 4160V ac power feeds in a rated one-hour fire barrier. The basis was the difficulty in enclosing or encapsulating the conduits of interest within the duct bank. Photos 6 and 7 begin to show the congestion of conduit in the conduit banks in the Cable Expansion Room.

The east side of the room contains only conduit. The eastern-most bank of conduit furthest from the entrance is the Division 2 (B Train) conduit bank containing the same circuits for protection as proposed above.

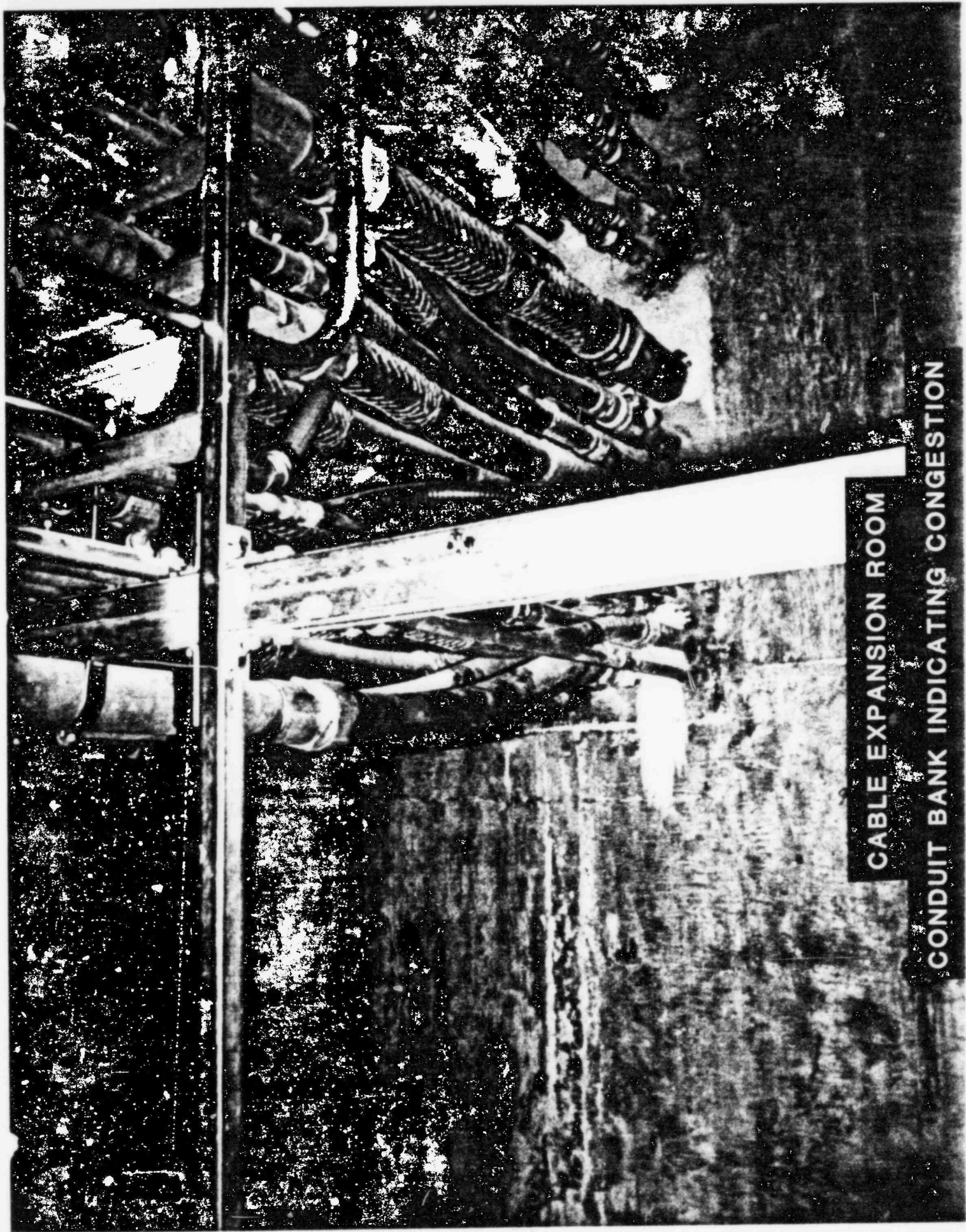
The District committed to extend the wet pipe water suppression system above the conduits in the unsprinkled portion of the room and to provide a plume impingement shield beneath the Division 2 conduits. Conceptually, the plume impingement shield will be constructed of the 3M Composite Fire Barrier material attached to the unistrut frame.

In summary, the basis presented for the exemption request included:

1. The limited access to and low potential for accumulation of transient combustible materials.
2. All exposed fixed combustibles; i.e., cable in tray, have a wet pipe water suppression system applied directly on to them.



CABLE EXPANSION ROOM
CONDUIT BANK INDICATING CONGESTION



CABLE EXPANSION ROOM

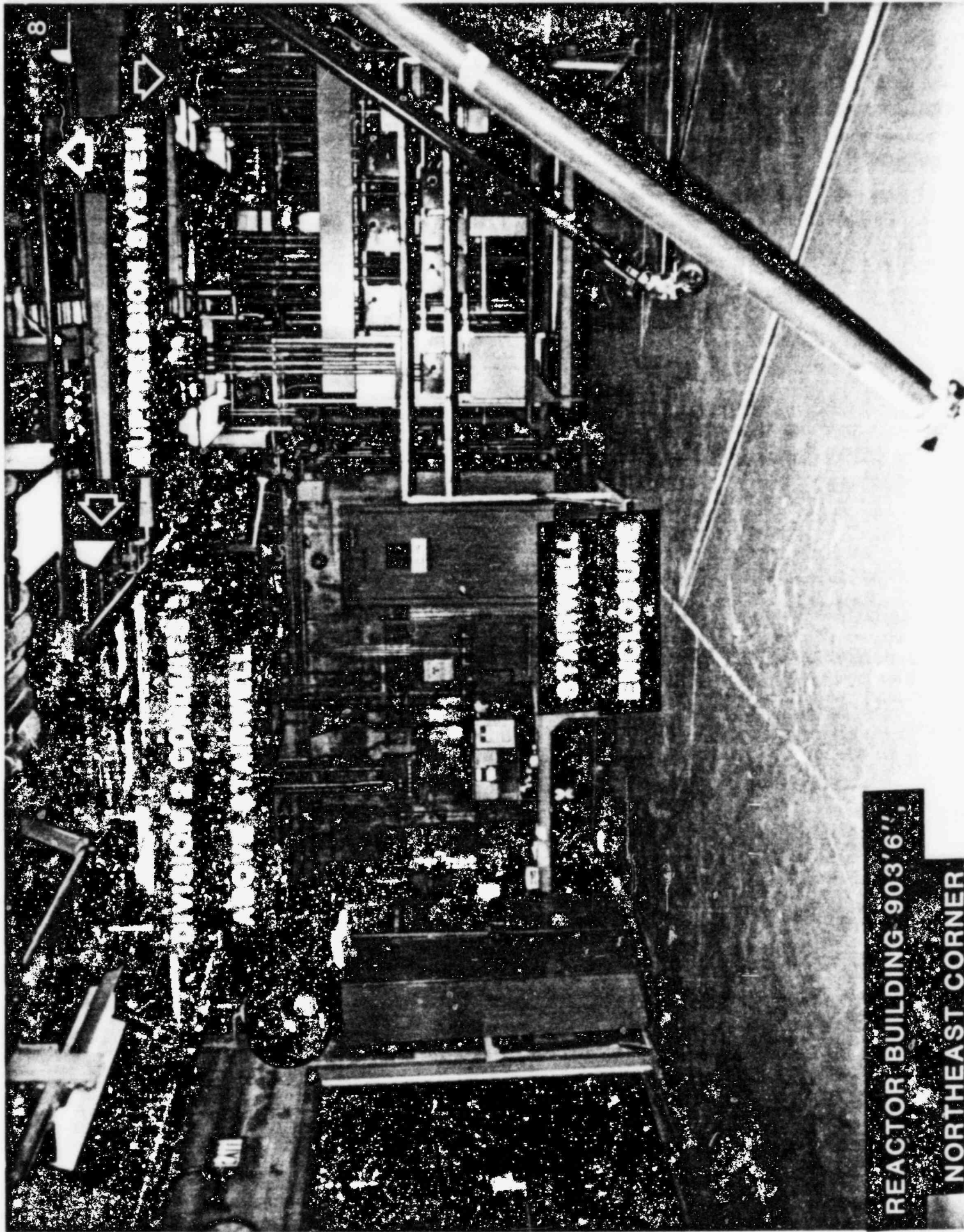
CONDUIT BANK INDICATING CONGESTION

3. Substantial physical separation (approximately 8-3/4 feet) exists between the nearest cable tray and the edge of the Division 2 bank.
4. The existing intervening Division 1 conduit bank acts as a massive, intervening (albeit unqualified) radiant energy shield.
5. The commitment to provide ceiling heads as an extension of the existing wet pipe system over the east half of the room.
6. The commitment to install a plume impingement shield beneath the Division 2 conduit bank.

REACTOR BUILDING 903' 6", NORTHEAST CORNER

The District's presentation reduced the scope of the previous exemption request at the northeast corner of the Reactor Building at 903' 6" elevation. (Photo 8.) Within that area, the District specifically requested exemptions, again, for the 4160V ac safe shutdown system power feeds and the 125/250V dc power feeds within the Division 2 conduit bank. These are the same circuits which penetrated the south wall of the Cable Spreading Room, passed through the Cable Expansion Room, and for which exemptions were previously discussed above. The District noted that the conduit bank is approximately 20 feet above the ground and that the conduits of interest are well within the bank. The floor area in the northeast corner of the Reactor Building is covered by a floor-based water suppression system designed to NFPA-13 extra hazard requirements.

The conduits of interest are protected, in part, from the direct plume impingement effects of any floor-based exposure fire by the stairwell cover in the northeast corner. (Photos 8, 9, and 10.) Only a limited area to the east and southeast of the RCIC starter racks is an area in which a floor-based exposure fire could occur directly beneath the Division 2 conduit bank. In that area, the wet pipe fire suppression system immediately above the floor level would act to mitigate the effects of an exposure fire. (Photo 11.) It was noted that it is unlikely that a floor-based fire could cause damage to the conduits because of their height. It was also pointed out that there is an existing, installed ceiling-based wet pipe suppression system between the Division 1 and Division 2 Cable Trays at the north wall. This system would operate to quench any stratified hot gas layer that could potentially impact the Division 2 conduits of interest.



REACTOR BUILDING 903'6"

NORTHEAST CORNER



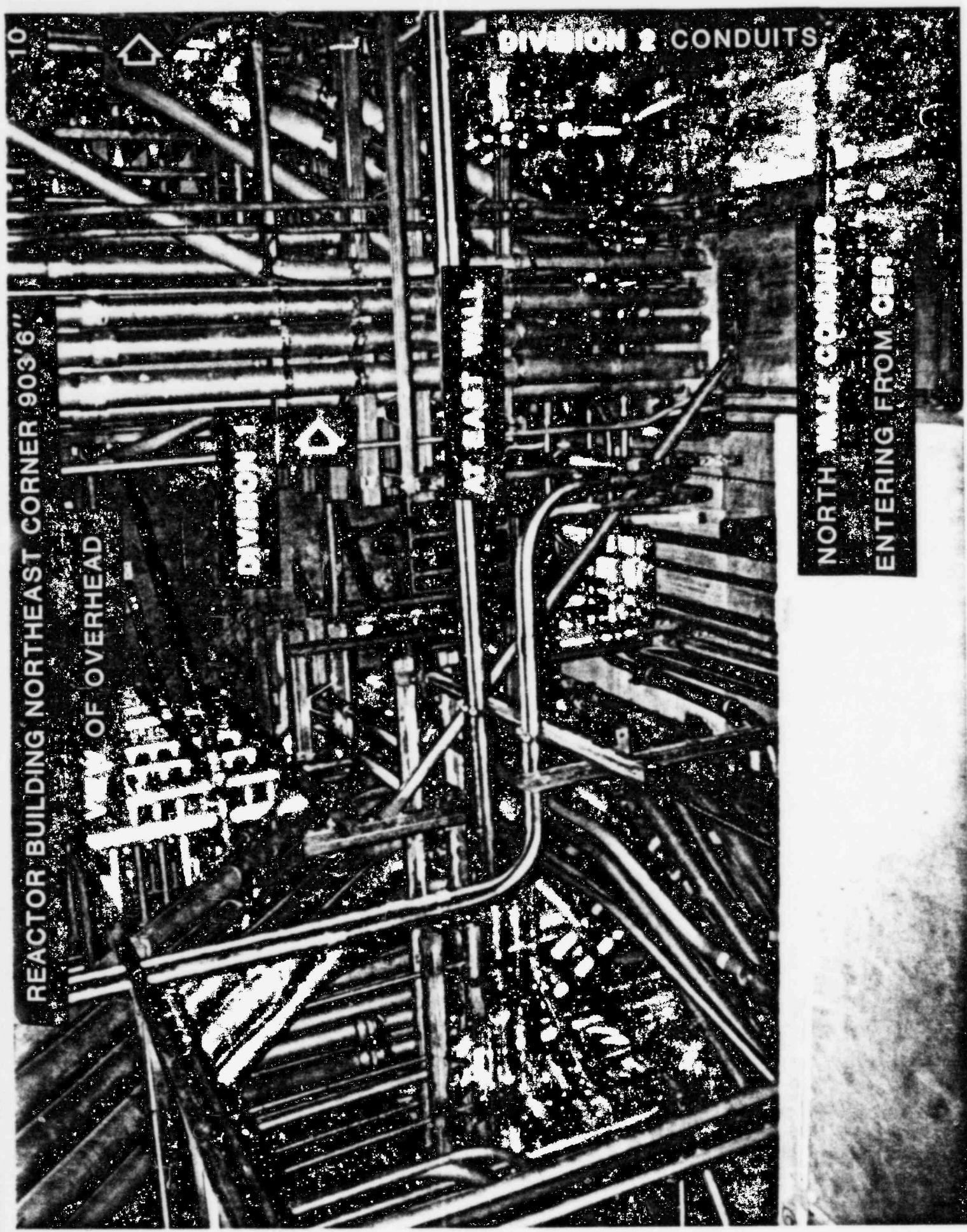
DIVISION 2 CONDUIT BANK

EAST WALL

STAIRWELL ENCLOSURE

EAST WALL OF REACTOR BUILDING 803'S

NORTHEAST CORNER



10

REACTOR BUILDING NORTHEAST CORNER 903'6"

VIEW OF OVERHEAD

DIVISION 1

AT EAST WALL

DIVISION 2 CONDUITS

NORTH WALL CONDUITS

ENTERING FROM OER

On the basis of the existing configuration and the existing installed fixed-suppression system, no additional commitments for modifications were made by the District. Rather, the District requested that the exemption be granted on the basis of the existing configuration.

The previously submitted exemption request material identified additional circuits within the area ~~as~~ being required. The District indicated that on the basis of revised systems engineering it was concluded those circuits were not required.

The District also requested that for the 903' floor area elevation an exemption from total area suppression be granted. The District indicated that the area currently covered by floor-based suppression system was a fire loading of approximately 20,000 Btu/ft². Beyond the area of the suppression system coverage, the 1977 fire hazards analysis indicated a "negligible" combustible loading. Because of the extremely light combustible loading in the unsprinkled area, the District requested that an exemption be granted from the requirement for a suppression system throughout the 903' elevation.

CONTROL BUILDING BASEMENT

The District indicated that in the Control Building Basement the number of circuits of interest had been reduced. The remaining safe shutdown circuits of interest were the 4160V ac power feeds from the diesel generators and the power supplies to the service water pumps and the 125V dc power feeds to the diesel generator control circuitry. Appendix R would require enclosure of one division in a rated one-hour barrier, detection, and automatic fixed area suppression. The District requests an exemption from the requirement of III.G.2(c) to provide an automatic fixed suppression system in the area. Further, as described below, an exemption from the requirement to provide a full one-hour barrier around one bank of conduits due to interferences at the ceiling may be potentially necessary.

The District indicated that the area is very large, essentially void of exposed fixed combustibles, i.e., all cable is in conduit, and is in a very noisy and out-of-the-way portion of the plant such that transient combustible material flow would logically be limited to those materials utilized for normal component maintenance.

As regards the 4160V ac power feeds, the District committed to protect one division up to the ceiling or to a point very near the ceiling where interferences preclude protection. It is currently envisioned that one division will be boxed out from the south wall in a one-hour fire barrier utilizing the 3M fire barrier material. (Photos 12, 13, and 14). Regarding the 125V dc power feeds, after discussion with the Staff, the District commits to protection of a single division with a one-hour fire barrier.

SUPPRESSION
SYSTEM

REACTOR BUILDING 903'S
EAST WALL SE OF STARWELL
ENCLOSURE

LIMITED FLOOR AREA

42
DIVISION 2 - 4160 V ac CONDUITS

1 K
DIVISION 1 - 4160 V ac CONDUITS

SOUTHEAST CORNER OF CONTROL BUILDING BASEMENT
FLOOR VIEW

△ DIVISION 2
4100 V ac CONDUITS

△ DIVISION 1
4100 V ac CONDUITS

SOUTHEAST CORNER OF CONTROL BUILDING BASEMENT

WALL VIEW

88

HVAC DUCT INTERFERENCE

DIVISION 1

4100 VAC CONDUITS

DIVISION 2

4100 VAC CONDUITS

SOUTHEAST CORNER OF CONTROL BUILDING BASEMENT

ORIGINAL VIEW

The summary basis for the exemption request presented was:

1. All cable in the area is in conduit.
2. The area has extremely low exposed fixed combustible loading, less than 1,000 Btu/ft².
3. The area is very spacious and reducing the potential for a stratification layer.
4. Good capability, equipment, and access for manual fire suppression is available throughout the area; fire brigade access times would be expected to be short given the proximity to the main control room.
5. Required circuits will be protected by use of fire barrier materials to achieve to the extent feasible a one-hour fire barrier rating.
6. In the specific situation where installation of a one-hour fire barrier may be very difficult due to existing interferences, the probability of accumulation of transient combustibles would be very low. Existing dikes installed as part of the previous Appendix A evaluation would act to keep flammable liquids away from this area. The proposed fire barrier configuration would provide adequate protection for a floor-based fire.

AUXILIARY RELAY ROOM

The District provided a presentation of the physical configuration of the Auxiliary Relay Room, noting the light combustible loading, the separation of the auxiliary relay cabinets, the proximity of the Control Room, the spaciousness and the excellent access within the room for manual suppression, and that access to the room has an additional level of control beyond the keycard control typically found; i.e., the room is key-locked, and access to the key is controlled.

On the basis of the above and given the commitment to provide an alternative shutdown capability independent of the area, the District requested an exemption from the III.G.3 requirement for a fixed suppression system.

CONTROL ROOM

The District requested, based upon the commitment to provide an alternative shutdown capability independent of the area and the continuous manning of the Control Room, an exemption from the III.G.3 requirement for a fixed suppression system.

SUMMARY OF FUTURE DISTRICT ACTIVITIES

the District's understanding that if the foregoing commitments are
tated to the Staff within two weeks of the March 3, 1983, working level
ng, an SER could be issued which would not deny all remaining exemptions
by precluding the District from requesting exemptions per 10 CFR 50.12).
foregoing modifications (except alternate shutdown capability) not
ring plant shutdown will be completed nine months after the effective
of the Staff's SER (per 10 CFR 50.48.C.2). The foregoing modifications
pt alternate shutdown capability) requiring plant shutdown will be
leted per 10 CFR 50.48.C.3 during the first refueling outage at least
days after the effective date of the Staff's SER (i.e., Spring, 1984,
eling outage assuming no extended outage greater than 60 days beforehand).

rding modifications for alternative shutdown capability, the District will
it a description of modifications per Reference 1 (December 14, 1982,
t SER letter) six months after the March 3, 1983, working level meeting
ussed with the Staff at the working level. Per 10 CFR 50.48.C.4, the
ssary modifications (which require plant shutdown) will be completed
ng the first refueling outage commencing 180 days after Staff approval of
September 3, 1983, submittal (assuming no extended outages greater than
ays).

gat:kcl/5(QAC2)

SUMMARY OF FUTURE DISTRICT ACTIVITIES

It is the District's understanding that if the foregoing commitments are submitted to the Staff within two weeks of the March 3, 1983, working level meeting, an SER could be issued which would not deny all remaining exemptions (thereby precluding the District from requesting exemptions per 10 CFR 50.12). The foregoing modifications (except alternate shutdown capability) not requiring plant shutdown will be completed nine months after the effective date of the Staff's SER (per 10 CFR 50.48.C.2). The foregoing modifications (except alternate shutdown capability) requiring plant shutdown will be completed per 10 CFR 50.48.C.3 during the first refueling outage at least 180 days after the effective date of the Staff's SER (i.e., Spring, 1984, refueling outage assuming no extended outage greater than 60 days beforehand).

Regarding modifications for alternative shutdown capability, the District will submit a description of modifications per Reference 1 (December 14, 1982, draft SER letter) six months after the March 3, 1983, working level meeting discussed with the Staff at the working level. Per 10 CFR 50.48.C.4, the necessary modifications (which require plant shutdown) will be completed during the first refueling outage commencing 180 days after Staff approval of the September 3, 1983, submittal (assuming no extended outages greater than 60 days).

JMP/gat:kcl/5(QAC2)