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SUBJECT: Requests for exemption from emergency lighting technical requirement of Section III.J of App R to 10CFR50.

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March 15, 1994

PG&E Letter DCL-94-036

U.S. Nuclear Regulatory Commission
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Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Request for Exemption from an Emergency Lighting Technical Requirement of Section III.J of Appendix R to 10 CFR 50

Gentlemen:

Pursuant to the provisions of 10 CFR 50.12, PG&E requests an exemption from a technical requirement of Section III.J of Appendix R to 10-CFR 50. Specifically, PG&E requests approval to use hand-held portable lights for personnel access and egress to certain areas of Diablo Canyon Power Plant (DCPP), Units 1 and 2 during post-fire, safe shutdown operations. This exemption is not requested for areas where personnel actions are required to operate any plant equipment or components. The exemption involves using flashlights whose use and availability will be limited to emergency use and procedurally controlled. The enclosure provides the background, description, justification, and assessment of the request and confirms that the exemption does not present an undue risk to the health and safety of the public.

PG&E identified potential emergency lighting deficiencies in a number of plant areas during our Appendix R Design Basis Documentation Enhancement Project and a self-assessment of the fire hazards safe shutdown analysis. After further evaluation, PG&E issued Licensee Event Report (LER) 2-92-001-01 (DCL-92-156) in July 1992 (Revision 2 in October 1992) to inform the NRC Staff of the findings and our proposed actions. In that LER, PG&E stated that a design change will be implemented to install emergency lighting in areas determined to be deficient. PG&E is taking action to permanently install emergency lights in the areas where illumination is needed for operator actions or for obstructed areas along access/egress pathways. Installation is scheduled during the next refueling outage (1R6 and 2R6) for each unit. PG&E has implemented compensatory measures while permanent lights are being installed.

PG&E's evaluation of various options for compliance with Section III.J of Appendix R indicates that permanently installed lights are not necessary for certain access and egress pathways to achieve the underlying purpose or intent of Appendix R to 10 CFR 50. Therefore, PG&E is requesting an exemption from

A006
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a Section III.J emergency lighting technical requirement for the access/egress pathways identified in this exemption request. PG&E believes that portable lights provide equivalent levels of illumination and reliability and will be adequate for access to post-fire, safe shutdown locations. Further, installation of permanent lighting and routing of associated cabling would result in undue hardship and a cost significantly in excess of that expected when Appendix R upgrades were initially implemented. PG&E has implemented the use of flashlights as a compensatory measure for these pathways and will continue this action while this exemption request is under review.

This exemption request is considered a cost beneficial licensing action as defined in Thomas E. Murley's September 17, 1993, memorandum to the NRC technical staff. PG&E estimates that approval of this request will result in one-time cost savings of over $250,000, plus annual recurring cost savings for maintenance and replacement of permanent battery-operated lights.

PG&E desires to resolve the Appendix R discrepancies as soon as possible and accordingly requests that the NRC Staff assign a high priority for review of this exemption request.

Sincerely,

Gregory M. Rueger

cc: Mary H. Miller
Kenneth E. Perkins
Sheri R. Peterson
Diablo Distribution

Enclosure

6302S/TWL/1167

DCO-91-EN-N002

ENCLOSURE

REQUEST FOR EXEMPTION FROM AN EMERGENCY LIGHTING TECHNICAL REQUIREMENT OF SECTION III.J OF APPENDIX R TO 10 CFR 50

BACKGROUND

As described in the Diablo Canyon Power Plant (DCPP) FSAR Update, Appendix 9.5D, the Fire Protection Program Safe Shutdown (SSD) analysis indicates that the requirements of Appendix R, Section III.J, "Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto," have been met by providing battery-operated lights (BOLs) in the appropriate plant locations and by crediting vital ac and dc lights in certain areas. The method of compliance with, and deviations from, the Appendix R, Section III.J requirements were described in PG&E's Appendix R submittals. The BOL configuration and deviation requests were reviewed and approved by the NRC as documented in SSERs 23 and 31 for Units 1 and 2, respectively.

In December 1990, PG&E's Nuclear Excellence Team's (NET) Fire Protection System Assessment, including walkdowns of post-fire, safe shutdown Procedures OP AP-8, "Control Room Inaccessibility," and EP M-10, "Fire Protection of Safe Shutdown Equipment," identified that some operator actions were required by procedures to be performed in areas that were not provided with adequate emergency lighting to fully comply with 10 CFR 50, Appendix R, Section III.J. The team also identified lack of cable routing documentation for emergency lighting.

PG&E issued a Nonconformance Report (NCR) in early 1991 to address the emergency lighting issue. Provisions for use of flashlights were implemented as a compensatory measure. Post-fire, safe shutdown procedures were revised to address the deficient emergency lighting conditions and the potential need for use of flashlights. As described in LER 2-92-001-01 (DCL-92-156), dated July 8, 1992, PG&E determined that, while these conditions were not in strict compliance with Appendix R requirements, the conditions did not significantly reduce the level of safety.

As followup to the nonconforming conditions identified by the NET self-assessment and NCR investigation and evaluation, PG&E performed a comprehensive review and documentation of DCPP's Appendix R design basis. This review included a review and revision of the safe shutdown component list, circuit identification and routing for safe shutdown components, a fire area-by-fire area assessment of Appendix R compliance (including the identification of operator actions needed for safe shutdown), and emergency lighting assessments. Since identification of required operator actions is a prerequisite for determination of emergency lighting requirements, the emergency lighting portion of the project was the final project step.

After review of the safe shutdown analysis for each fire area, requirements for emergency lighting were determined. Areas with deficient emergency lighting are grouped into two general categories:

- Areas with deficient lighting following a loss of offsite power, i.e., no BOLs or emergency ac lights in the area.

- Areas with a potential for deficient lighting because the fire scenario that could result in the requirement for an operator action in the area could also result in a loss of lighting, i.e., circuitry/power supply for the safe shutdown component is located in the same fire area as the emergency lighting circuitry/power supply.

Additionally, walkdowns were performed during the fifth refueling outage of each unit to assess the adequacy of required emergency lighting following worst-case fire scenarios.

PG&E reviewed emergency lighting and identified options for improvement, such as circuit separation, fire wrapping, and mounted portable lighting. Each of these options was determined to be impractical or too costly in comparison to the option of installing BOLs. Additionally, in August 1993, PG&E implemented a program to identify cost beneficial licensing actions (CBLAs). The use of hand-held portable lights, flashlights, in lieu of BOLs for access/egress in certain areas during emergencies led to the exemption request described below.

EXEMPTION REQUESTED

The access/egress pathways from the control room to the manual action locations, for which an exemption to Section III.J is requested, are normally illuminated, but during post-fire emergency actions, emergency lighting may be necessary. These pathways are interior to the DCPP Units 1 and 2 auxiliary, fuel handling, and turbine buildings, except for one outdoor pathway at the 140 foot level of the auxiliary building. The pathways were chosen to avoid the fire area of concern and are unobstructed stairwells, corridors, doorways, and access control to the RCA. Portable lighting will provide the operator with adequate emergency lighting for access and egress. Plant equipment and components will be illuminated with permanent emergency lighting in all areas where manual operator actions are required. Most pathways are illuminated by permanent emergency lighting at either end.

This exemption request is for a small percentage of the plant access and egress pathways that may be used during post-fire safe shutdown operations. Table 1 provides a tabulation and summary of the pathways and affected fire areas, and Figures 1 through 9 are elevation drawings showing these pathways.

JUSTIFICATION FOR EXEMPTION

PG&E believes that the proposed exemption satisfies the requirements of 10 CFR 50.12(a)(1) in that it would not present an undue risk to public health and safety and is consistent with the common defense and security. Further, granting the proposed exemption is consistent with the intent of Section III.J of 10 CFR 50, Appendix R and meets the underlying purpose of the rule as discussed below. The overall level of fire protection at DCPP is not decreased by the granting of this exemption request.

The justification for granting this exemption is based on (1) the presence of particular circumstances related to emergency lighting requirements at Diablo Canyon Units 1 and 2, and (2) the undue hardship and costs significantly in excess of those expected when Appendix R upgrades were initially implemented. These circumstances meet the following tests established under 10 CFR 50.12(a)(2)(ii) and (a)(2)(iii) for exemptions from the criteria of 10 CFR Part 50:

> "(ii) Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule;"
>
> "(iii) Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated;"

Specifically, PG&E believes the following circumstances at Diablo Canyon allow the use of flashlights to achieve the underlying purpose of Section III.J of 10 CFR 50, Appendix R, to provide reliable lighting for a sufficient period for access/egress:

1. The emergency procedure for fire protection of safe shutdown equipment will identify that flashlights may be needed for access/egress along certain pathways.

2. The flashlights will be dedicated and procedurally controlled and periodically verified for assurance of availability for emergencies.

3. The use of flashlights will not pose an additional burden to operators or significantly increase the response time since they will be stored at convenient locations.

4. The flashlights will provide a sufficient duration of emergency lighting since they are on only for periods of access/egress and would be off during periods of time when installed emergency lighting is adequate for operator actions. They are expected to provide illumination well past the 8-hour duration specified in Section III.J.

5. The flashlights will reveal any minor obstructions in proposed access/egress pathways, and the operators will not be required to perform any manual actions to operate plant equipment or components by using flashlights.

BOLs cannot be easily or cost-effectively installed in all areas at Diablo Canyon required for access/egress. Flashlights will be stored in the control room since the subject access/egress pathways originate from the control room. Flashlights will also be maintained in the hot shutdown panel storage cabinet and at the auxiliary control board. This inventory will be periodically verified and maintained by procedure and recurring task work activity.

The alternate approach of using portable lighting for access/egress is consistent with the Commission's actions to previously grant exemptions from Section III.J under similar circumstances[1]. Granting this exemption achieves the Commission's purpose in providing safety benefits with a minimal cost impact on licensees. For post-fire access/egress, portable lights provide a practical means of providing illumination. Granting this exemption minimizes the cost impact on PG&E in meeting lighting requirements for access/egress during emergencies with measures that we believe are effective and which are already in-place. PG&E estimates a one-time cost saving of approximately $250,000, plus annual recurring cost savings for maintenance and replacement of BOLs. These BOLs would not provide any additional safety benefit since most locations already have some emergency lighting that would be available following a loss of offsite power.

SAFETY/ENVIRONMENTAL IMPACT

The proposed exemption will provide a degree of fire protection that is equivalent to that required by Appendix R for access/egress during an emergency such that there is no increase in the risk of fires at the plant. The probability of fires has not been increased and the post-fire radiological releases would not be greater than previously determined, nor does the proposed exemption otherwise affect radiological plant effluents. The use of flashlights will not impede the operators or impact the performance of necessary actions. Therefore, PG&E believes that there are no significant radiological, environmental, or safety impacts associated with the use of flashlights for the specified access/egress pathways.

CONCLUSION

PG&E believes that an exemption from Section III.J of 10 CFR 50, Appendix R, is appropriate in this instance and our assessment confirms that the exemption would not present an undue risk to the health and safety of the public. The exemption scope is limited to the special circumstances of access/egress. Installation of permanent lighting would result in undue hardship and cost. PG&E believes these circumstances meet the exemption criterion of 10 CFR 50.12(a)(2)(ii) and (iii).

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[1] Exemption for H. B. Robinson (Docket No. 50-261), dated June 30, 1988. Exemption for Beaver Valley (Docket No. 50-334), dated July 27, 1987. Exemption for Millstone (Docket No. 50-245), dated July 17, 1987. Exemption for Calvert Cliffs (Docket Nos. 50-317 and -318), dated August 22, 1990.

TABLE 1 - ACCESS/EGRESS PATHWAYS FOR FIRE SCENARIO LOCATIONS

ACCESS/EGRESS PATHWAYS	REFERENCE FIGURE	LOCATION OF FIRE WHICH REQUIRES ACCESS/EGRESS THROUGH THE PATHWAY[2]
Stairwells		
S2 (Unit 1)[1]	1, 2, 3, 4	3BB-100, 3BB-115, 3L, 3X, 4A, 4A2, 5A3, 5A4, 6A3, 7A, 8C, 11A1, 11A2, 12C, 13C
S2 (Unit 2)[1]	1, 2, 3, 4	4B, 4B2, 5B3, 5B4, 6B3, 7B, 8C, 22B1, 22B2, 23C, 23C1, 24C, S7
S3	3, 4,	3L (Unit 2), 3AA
S4	5	3L (Unit 2)
Corridors, Doorways, etc.		
3L (Unit 1)	1	4A
3X (Unit 1)	4	3BB-100, 3L (Unit 1), 3Q1, 4A
3X (Unit 2)	4	3L (Unit 2), 3T1, 4B
6A5	6	6A1
14A	7	4A, 4B, 5A4, 14E
3AA (Unit 2)	3	3CC-115, 4B, 4B2, 5B3, 6B3, 22B1, 22B2, 23C, 23C1, 24C, S7
13E	8	12E
3CC-85	5	3L (Unit 2)
34 (Unit 1)	2	3BB-115, 5A4, 7A, 8C, 8G
34 (Unit 2)	2	3CC-115, 5B4, 7B, 8C, 8H
4B	9	4A, 4A2, 5A3, 5A4, 6A3, 7A, 7B, 8C, 11A1, 11A2, 12C, 13C

Notes to Table 1

(1) Stairwell S2 is common to both units and is provided with both Unit 1 Light Fixtures and Unit 2 Light Fixtures powered from the respective unit. Emergency lighting is expected to be adequate on loss of power from either unit.

(2) Location designations refer to fire areas and zones as described in the DCPP Units 1 and 2 Fire Hazards Analysis, FSAR Update, Appendix 9.5A and defined below.

FIRE AREA/ZONE	DESCRIPTION
5A3	480 V Vital Switchgear, H Bus, Unit 1
5A4	480 V Nonvital Switchgear and Hot Shutdown Panel Area, Unit 1
6A1	Battery, Inverter, and DC Switchgear, F Bus, Unit 1
6A3	Battery, Inverter, and DC Switchgear, H Bus, Unit 1
7A	Cable Spreading Room, Unit 1
8G	Safeguards Room, Unit 1
3BB-100	Containment Penetration Area, Elevation 100', Unit 1
3BB-115	Containment Penetration Area, Elevation 115', Unit 1
3Q1	Turbine-Driven Auxiliary Feedwater Pump, Unit 1
11A1/11A2	Emergency Diesel Generator 1-1 and Radiator
12C	4.16 kV Cable Spreading Room, Unit 1
13C	4.16 kV Switchgear Room, H Bus, Unit 1
12E	Isophase Room, Unit 1
4A	Counting and Chemical Laboratory
4A2	Chemical Lab Area, H Bus Compartment
4B	Showers, Lockers, and Access Control
4B2	H Bus Compartment, Unit 2
3AA	Auxiliary Building, Elevation 115'
3L	Auxiliary Building, Elevation 85' and 100'
3X	Auxiliary Building, Elevation 100'
8C	Control Room
3T1	Auxiliary Feedwater Pump Room, Unit 2
5B3	480 V Vital Switchgear, H Bus, Unit 2
5B4	480 V Nonvital Switchgear and Hot Shutdown Panel Area, Unit 2
3CC-115	Containment Penetration Area, Elevation 115', Unit 2
6B3	Battery, Inverter, and DC Switchgear H Bus, Unit 2
7B	Cable Spreading Room, Unit 2
8H	Safeguards Room, Unit 2
S7	Stairwell No. 7
22A1/22A2	Emergency Diesel Generator 2-1 and Radiator
22B1/22B2	Emergency Diesel Generator 2-2 and Radiator
23C	H Bus 4 kV Cable Spreading Room, Unit 2
24C	H Bus 4 kV Switchgear Room, Unit 2
23C1	Corridor Outside 4 kV Cable Spreading Room, Unit 2
14E	CCW Heat Exchangers

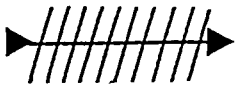
FIGURES 1 - 9 -- LEGEND

AC Lighting Fixtures

Emergency Lighting BOLs

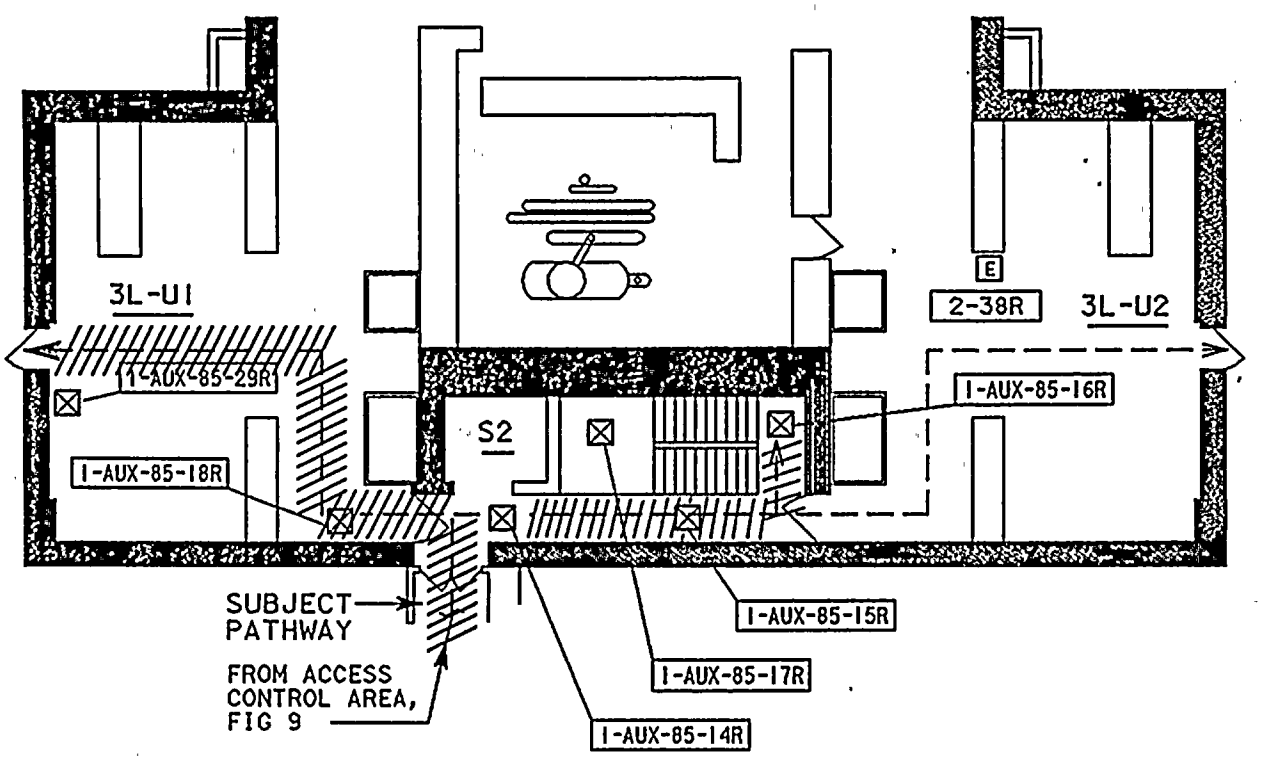
Emergency Lighting BOLs to be Installed

Illuminated Pathway



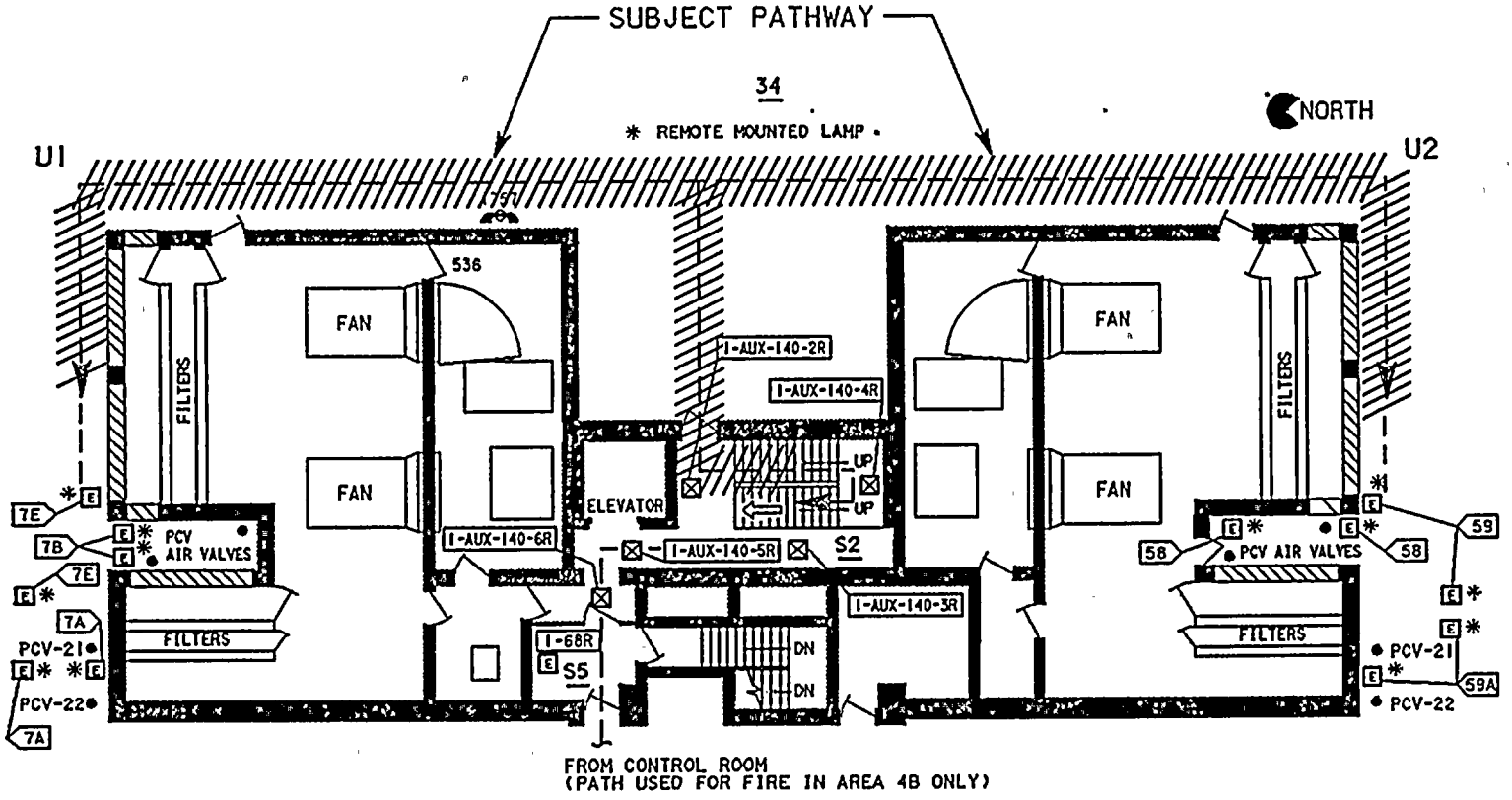
Access/Egress Pathways Subject to This Exemption Request

FIGURE 1
AUXILIARY BUILDING, 85' ELEVATION
S2 AND 3L-U1



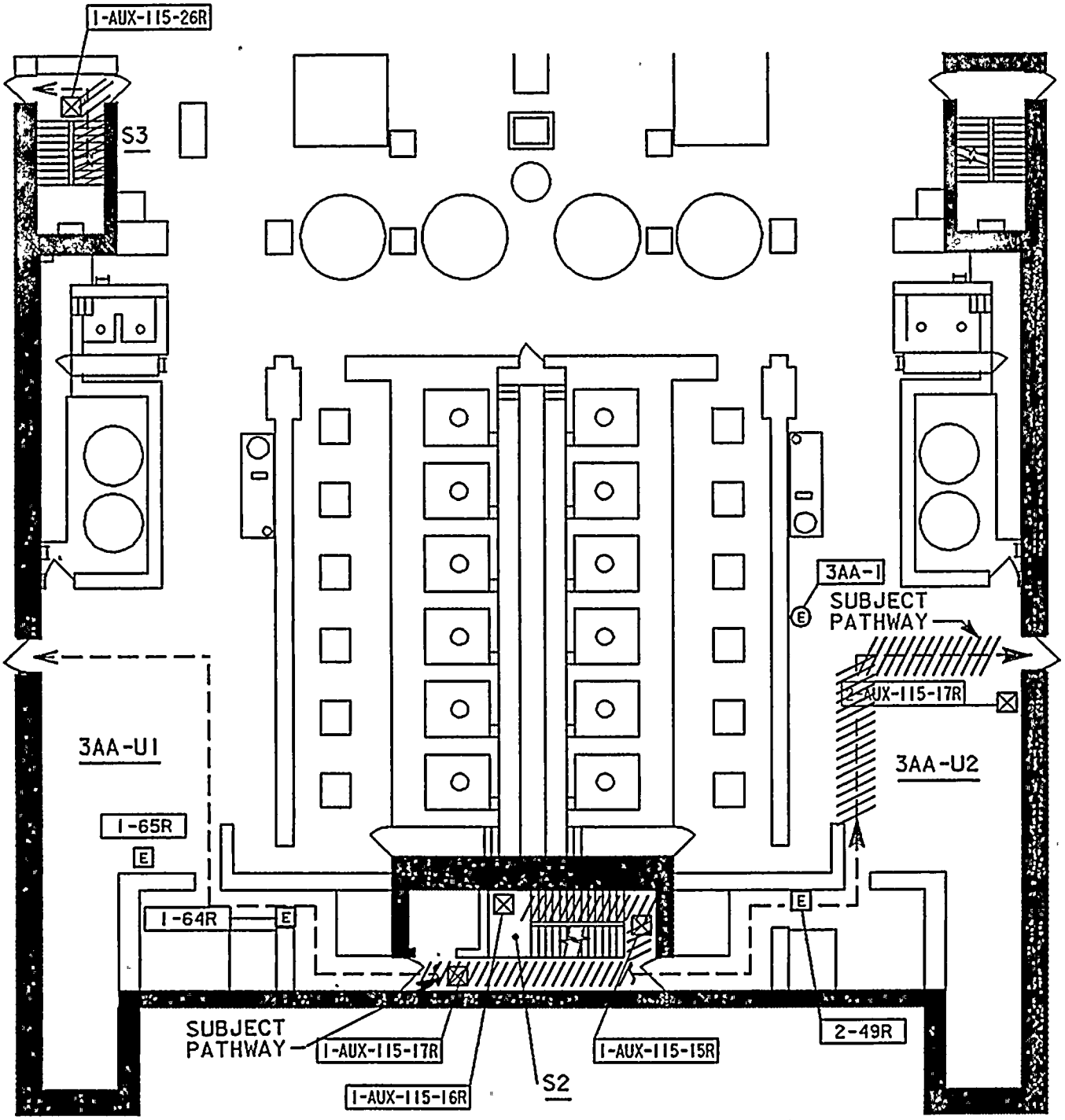
SUBJECT PATHWAY IS *CONTINUED* FROM STAIRWELL S1 THROUGH ACCESS CONTROL (FIGURE 9) AND STAIRWELL S2 TO PENETRATION AREA TO OPERATE REFUELING WATER SUPPLY VALVES 8805A&B.

FIGURE 2
AUXILIARY BUILDING, 140' ELEVATION OUTDOORS
S2 AND 34 (U1 AND U2)



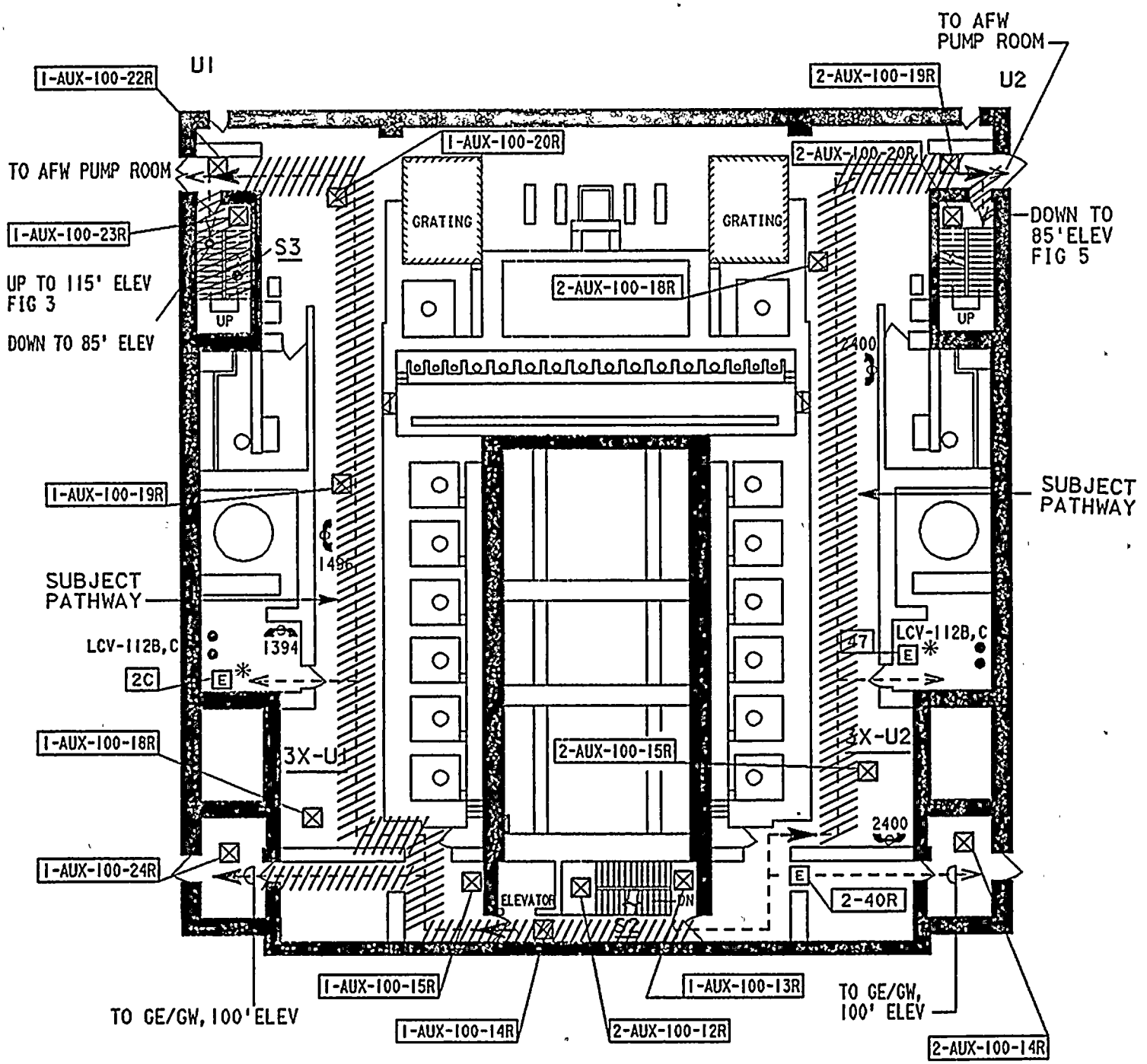
SUBJECT PATHWAYS FROM STAIRWELL S2 TO OUTDOORS AREA TO OPERATE 10% DUMP VALVES PCV-21 AND 22.

FIGURE 3
AUXILIARY BUILDING, 115' ELEVATION
S2, S3 AND 3AA-U2



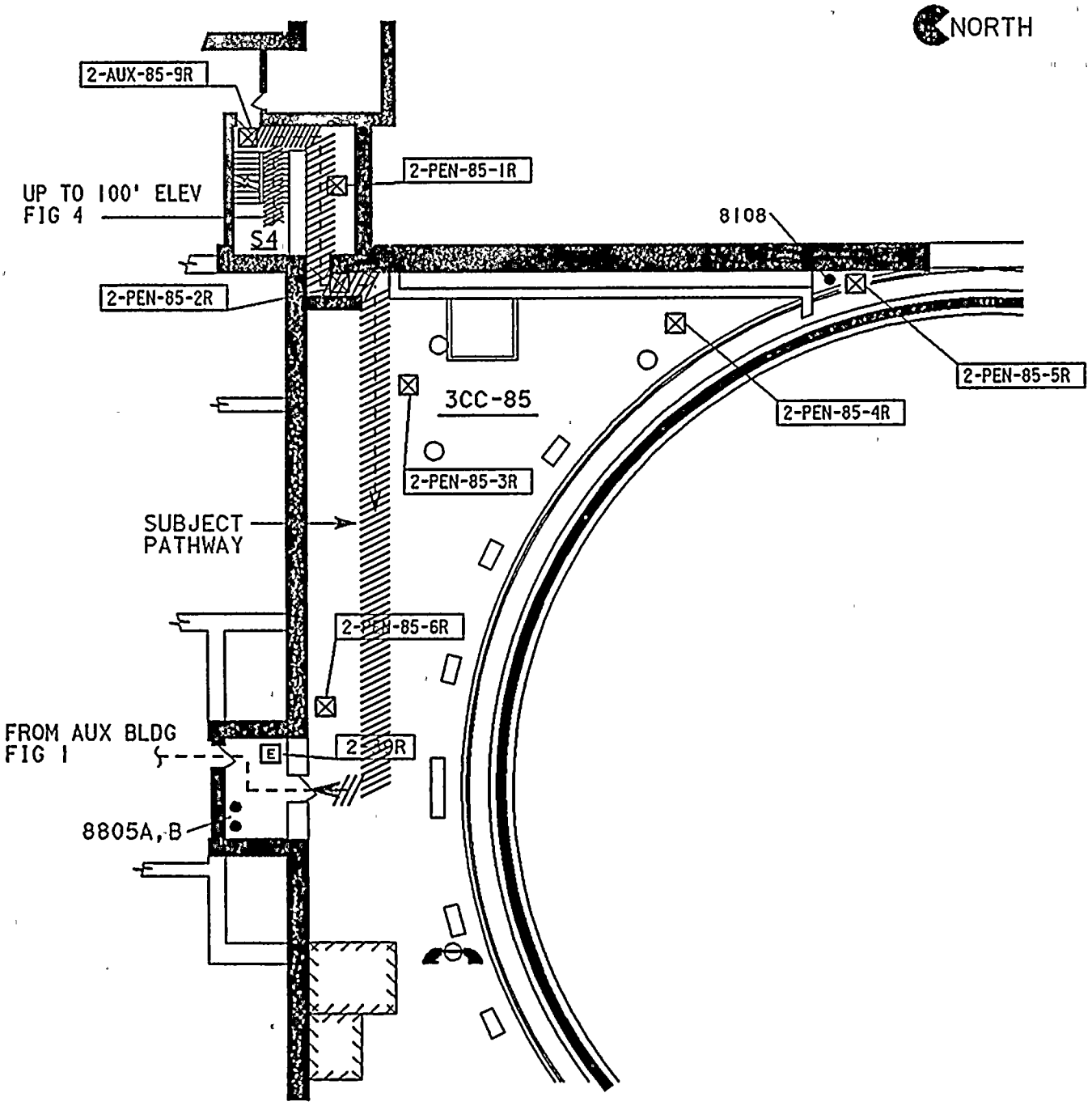
SUBJECT PATHWAY IS STAIRWELLS ~~S1 & S3~~ & SHORT PATH INSIDE AUXILIARY BUILDING TO AREA FOR OPERATION OF MAIN STEAM ISOLATION AND ISOLATION BYPASS VALVES FCV-21, 22, 43 & 44.

FIGURE 4
AUXILIARY BUILDING, 100' ELEVATION
S2, S3 AND 3X



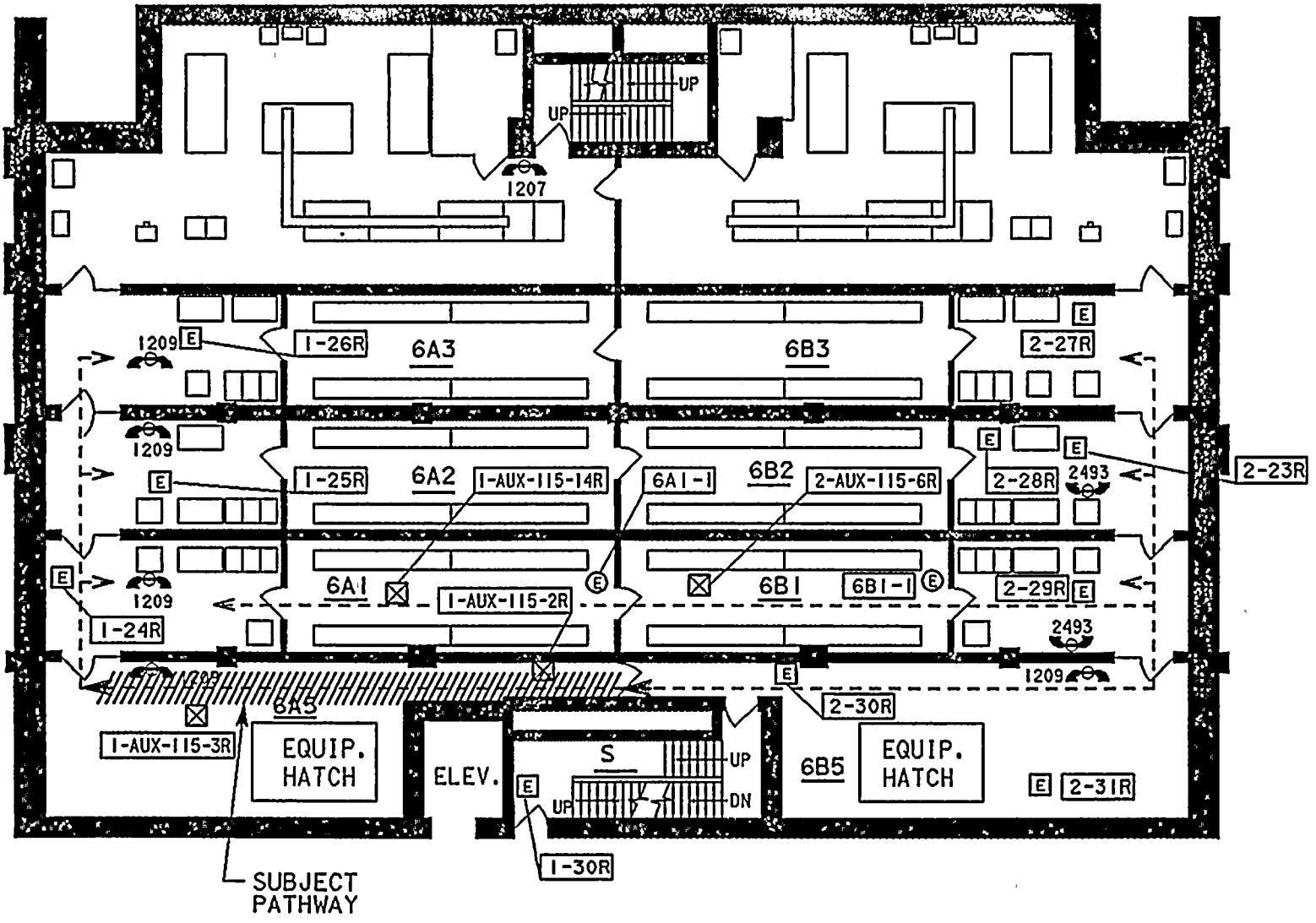
SUBJECT PATHWAY IS FROM STAIRWELL S2 TO AFW PUMP ROOMS AND TO VCT VALVE ROOM TO OPERATE VOLUME CONTROL TANK ISOVALVES LCV 112B/C.

FIGURE 5
UNIT 2 PENETRATION AREA, 85' ELEVATION
S4 AND 3CC-85



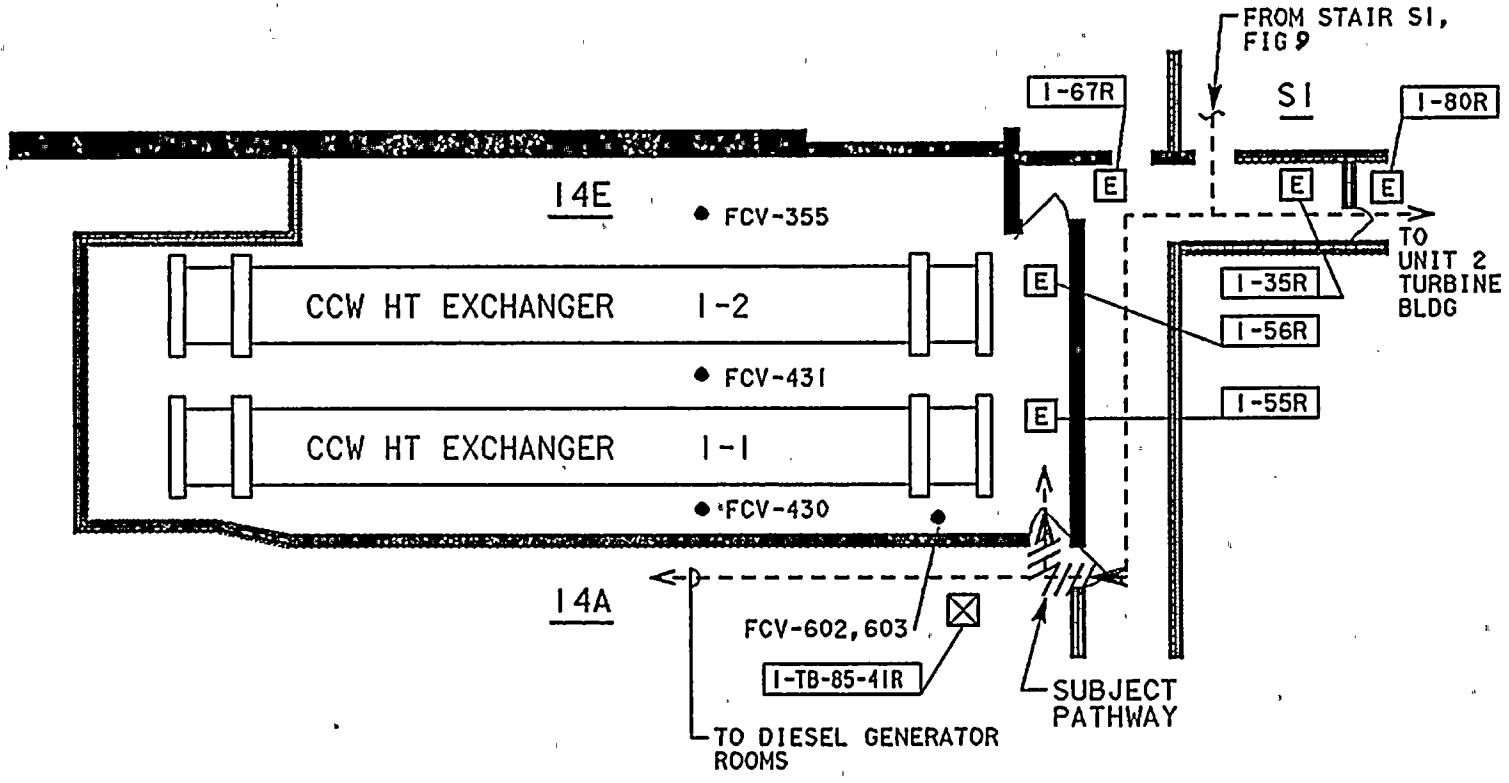
SUBJECT PATHWAY FROM STAIRWELL S4 TO PENETRATION AREA TO OPEN REFUELING WATER SUPPLY VALVES 8805A&B.

FIGURE 6
U1 AND U2 VITAL BATTERY ROOMS, 115'
6A5



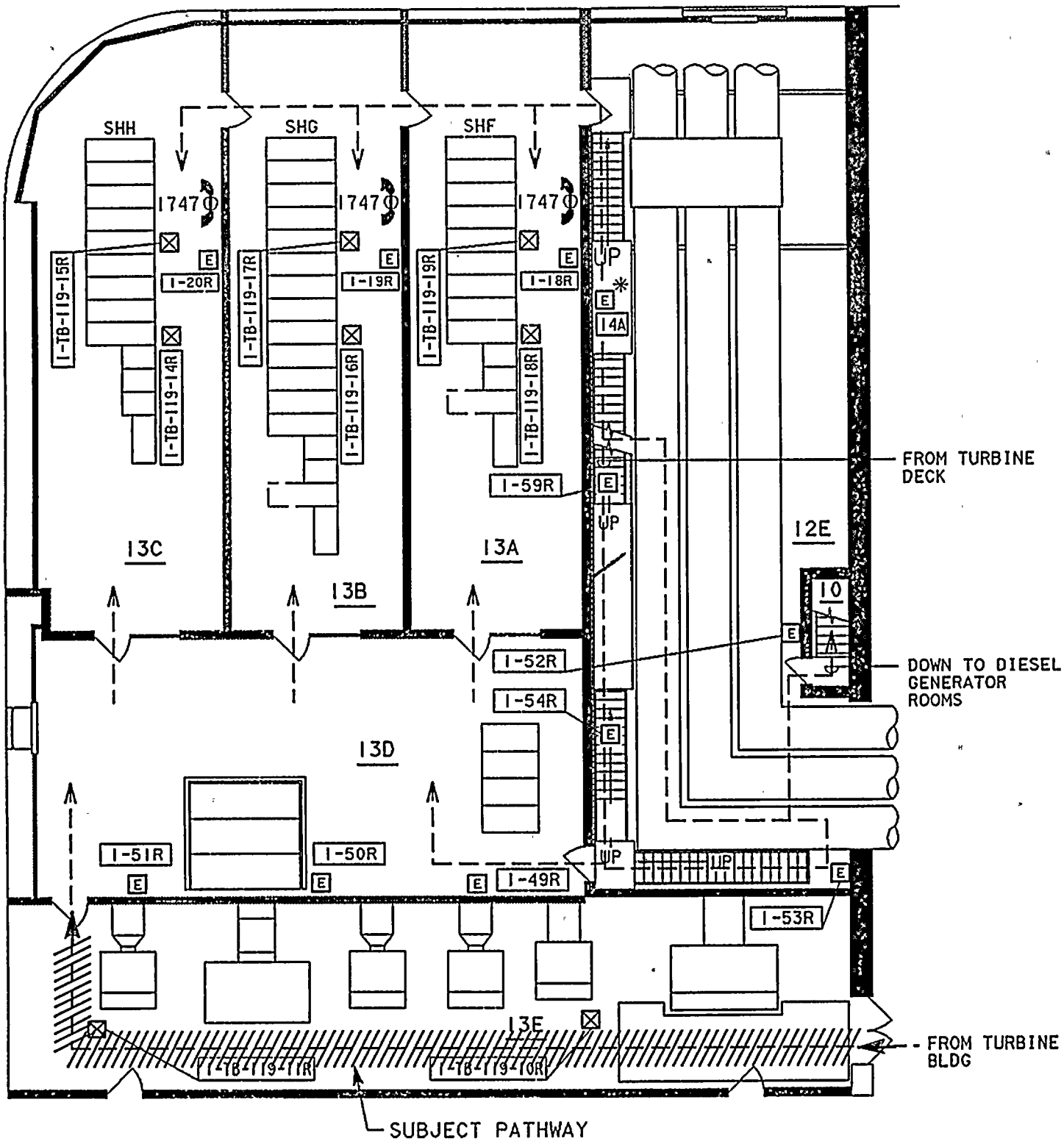
SUBJECT PATHWAY FROM OUTSIDE STAIRWELL S1 TO AREA TO OPERATE DC SWITCHGEAR BREAKERS IN AREA 6A1.

FIGURE 7
UNIT 1 CCW HEAT EXCHANGER ROOM, 85' ELEV.
14A



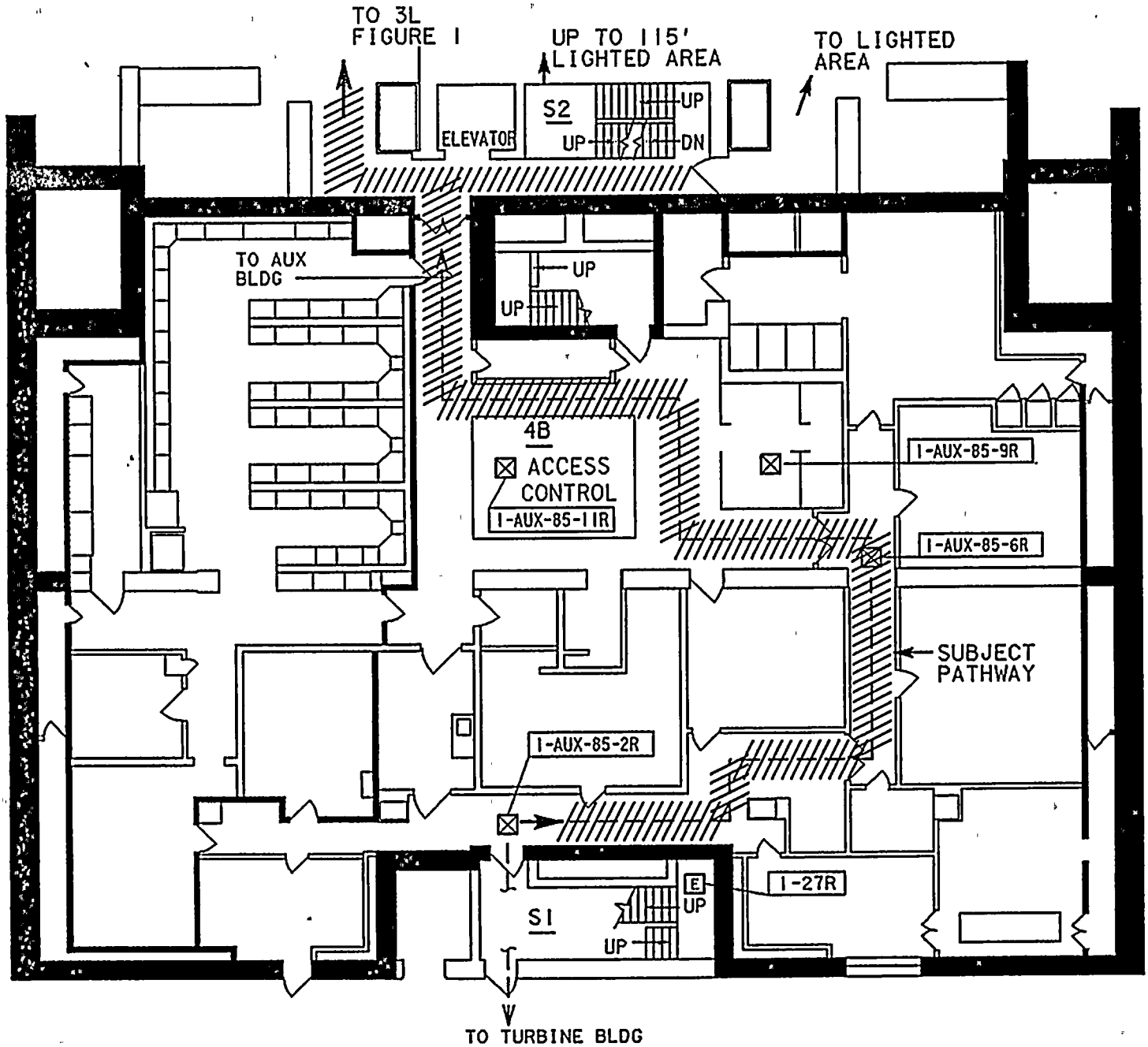
SUBJECT PATHWAY IS SHORT PATH OUTSIDE CCW HEAT EXCHANGER ROOM.

FIGURE 8
UNIT 1 4KV SWITCHGEAR ROOMS, TURBINE BLDG, 119' ELEVATION
13E



SUBJECT PATHWAY IS THROUGH FAN ROOM TO THE 4KV SWITCHGEAR ROOMS TO OPERATE BREAKERS.

FIGURE 9
ACCESS CONTROL, 85' ELEVATION
4B



PATHWAY IS FROM STAIRWELL S1 THROUGH ACCESS CONTROL TO S2