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RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards final results of plant shielding design review required by NUREG-0578,Recommendation 2.1.6.b.Includes plant radiation zone maps,components/sys subj to excessive radiation damage from TID sources & description of mods.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

June 20, 1980

Mr. Harold R. Denton
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Enclosed are the final results of the plant shielding design review required by NUREG-0578 Recommendation 2.1.6.b for Nine Mile Point Unit 1. Included is the following information:

1. Attachment 1 provides plant radiation (TID) zone maps.

2. Attachment 2 lists those components/systems subject to excessive radiation damage from TID sources and gives a description of necessary modifications.

The total dose for the duration of an accident to personnel in the control room, technical support center and operations support center will be below the guideline of General Design Criterion 19 without any modifications.

Modifications described in Attachment 2 will be performed by January 1, 1981. These modifications are in addition to those discussed in our letter of January 31, 1980 regarding the Nine Mile Point Unit 1 shielding design review.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

Donald P. Dise
Vice President Engineering

PEF/kmb
Enclosure

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1/1

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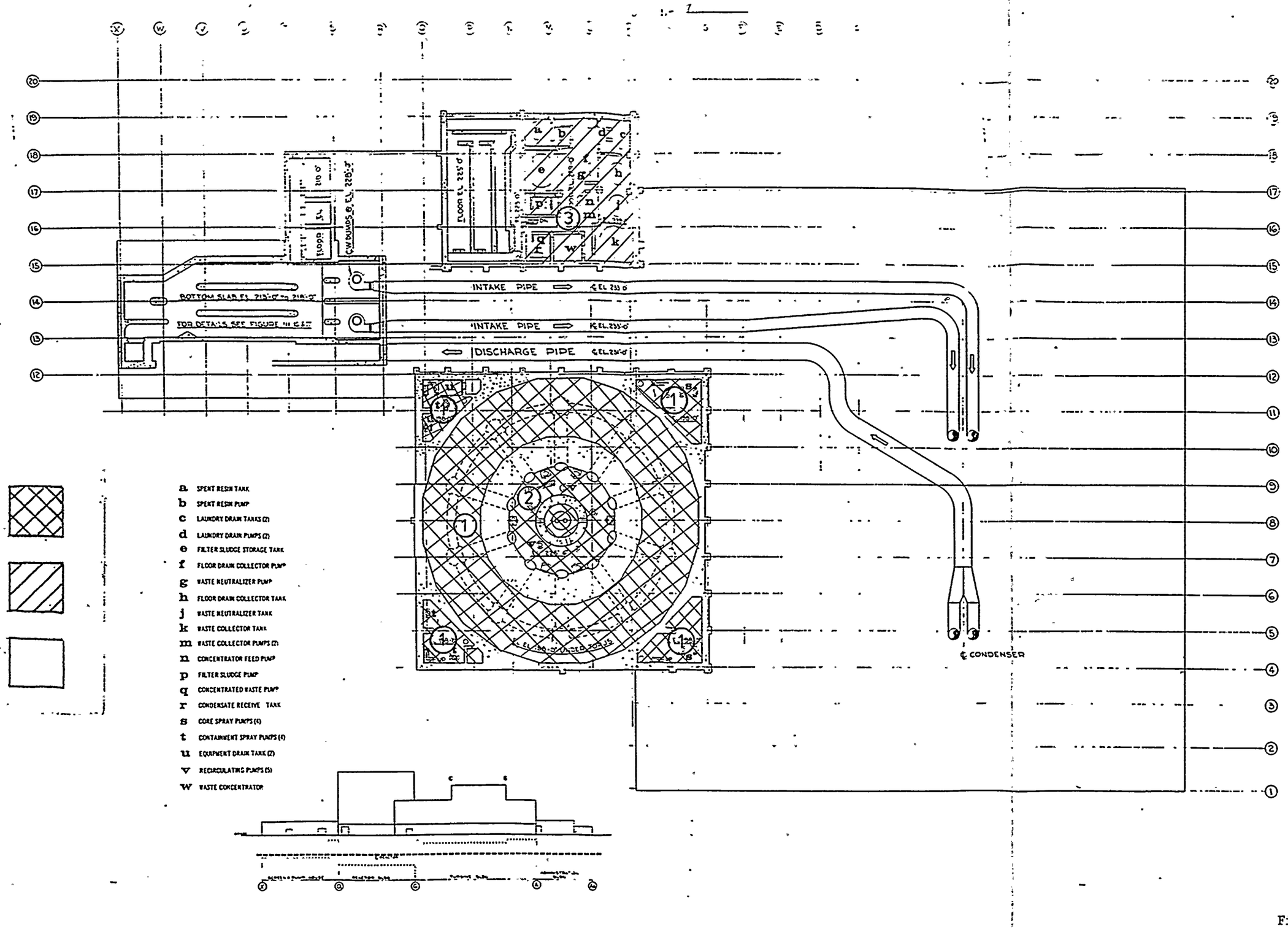
Prohibited Access - Extensive Health Physics sampling and surveys are required prior to entry.

Restricted Access - Potential degradation of equipment requires periodic Health Physics surveys in post-LOCA conditions.

Unrestricted Access - Area dose rates are not anticipated to excede 15 mr/hr. Periodic Health Physics surveys are recomended.

STATION FLOOR PLAN AT ELEVATION 225' – 0"



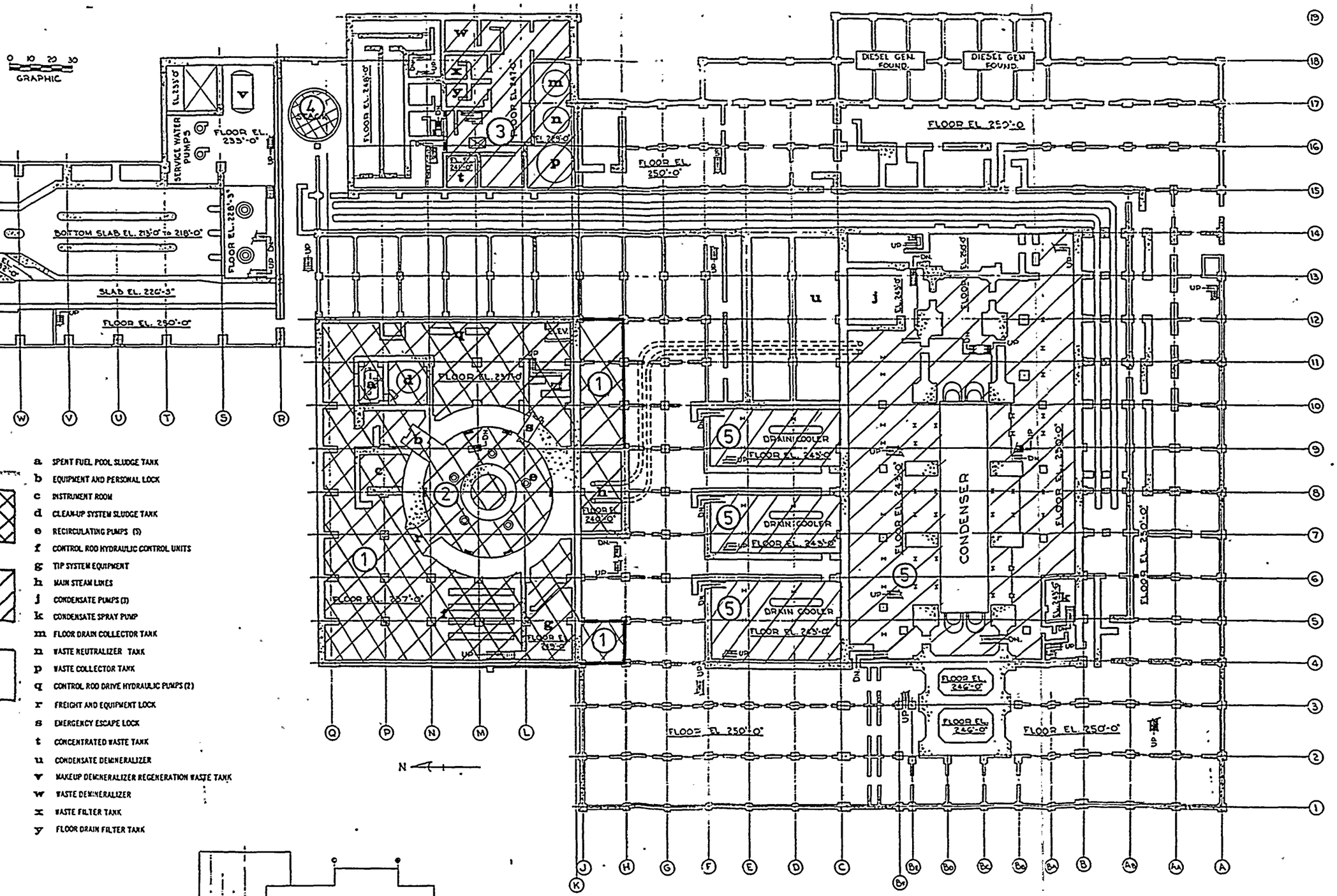
Prohibited Access

Restricted Access

Unrestricted Access

Figure C-1

STATION FLOOR PLAN AT ELEVATION 250' – 0"



- a SPENT FUEL POOL SLUDGE TANK
- b EQUIPMENT AND PERSONAL LOCK
- c INSTRUMENT ROOM
- d CLEAN-UP SYSTEM SLUDGE TANK
- e RECIRCULATING PUMPS (5)
- f CONTROL ROD HYDRAULIC CONTROL UNITS
- g TIP SYSTEM EQUIPMENT
- h MAIN STEAM LINES
- j CONDENSATE PUMPS (3)
- k CONDENSATE SPRAY PUMP
- m FLOOR DRAIN COLLECTOR TANK
- n WASTE NEUTRALIZER TANK
- p WASTE COLLECTOR TANK
- q CONTROL ROD DRIVE HYDRAULIC PUMPS (2)
- r FREIGHT AND EQUIPMENT LOCK
- s EMERGENCY ESCAPE LOCK
- t CONCENTRATED WASTE TANK
- u CONDENSATE DEMINERALIZER
- v MAKEUP DEMINERALIZER REGENERATION WASTE TANK
- w WASTE DEMINERALIZER
- x WASTE FILTER TANK
- y FLOOR DRAIN FILTER TANK

Prohibited Access

Restricted Access

Unrestricted Access

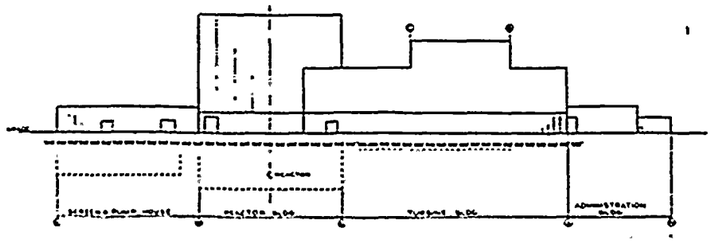
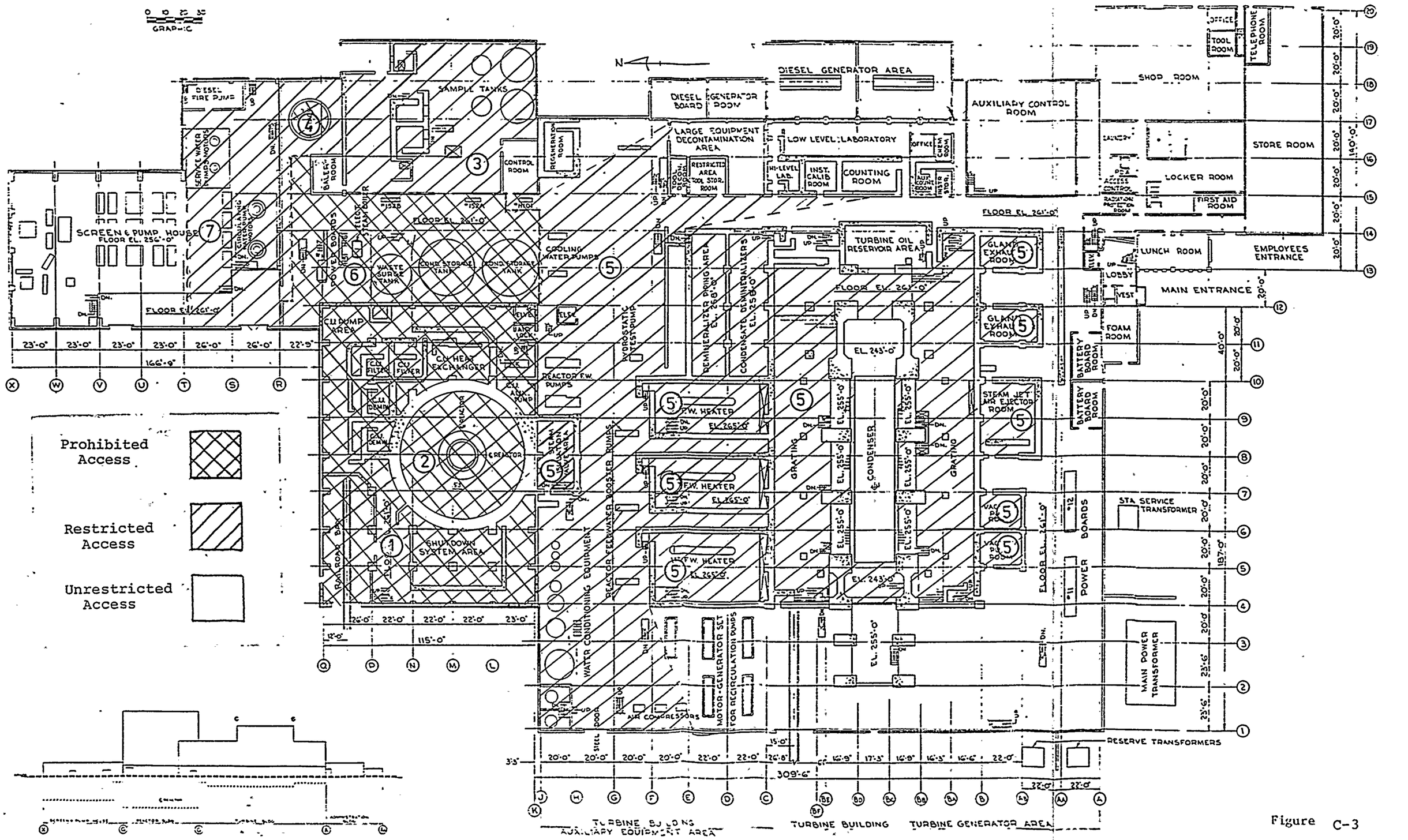


Figure C-2

STATION FLOOR PLAN AT ELEVATION 261' – 0"



TURBINE BUILDING AUXILIARY EQUIPMENT AREA — TURBINE BUILDING — TURBINE GENERATOR AREA

Figure C-3

STATION FLOOR PLAN AT ELEVATION 277' – 0"

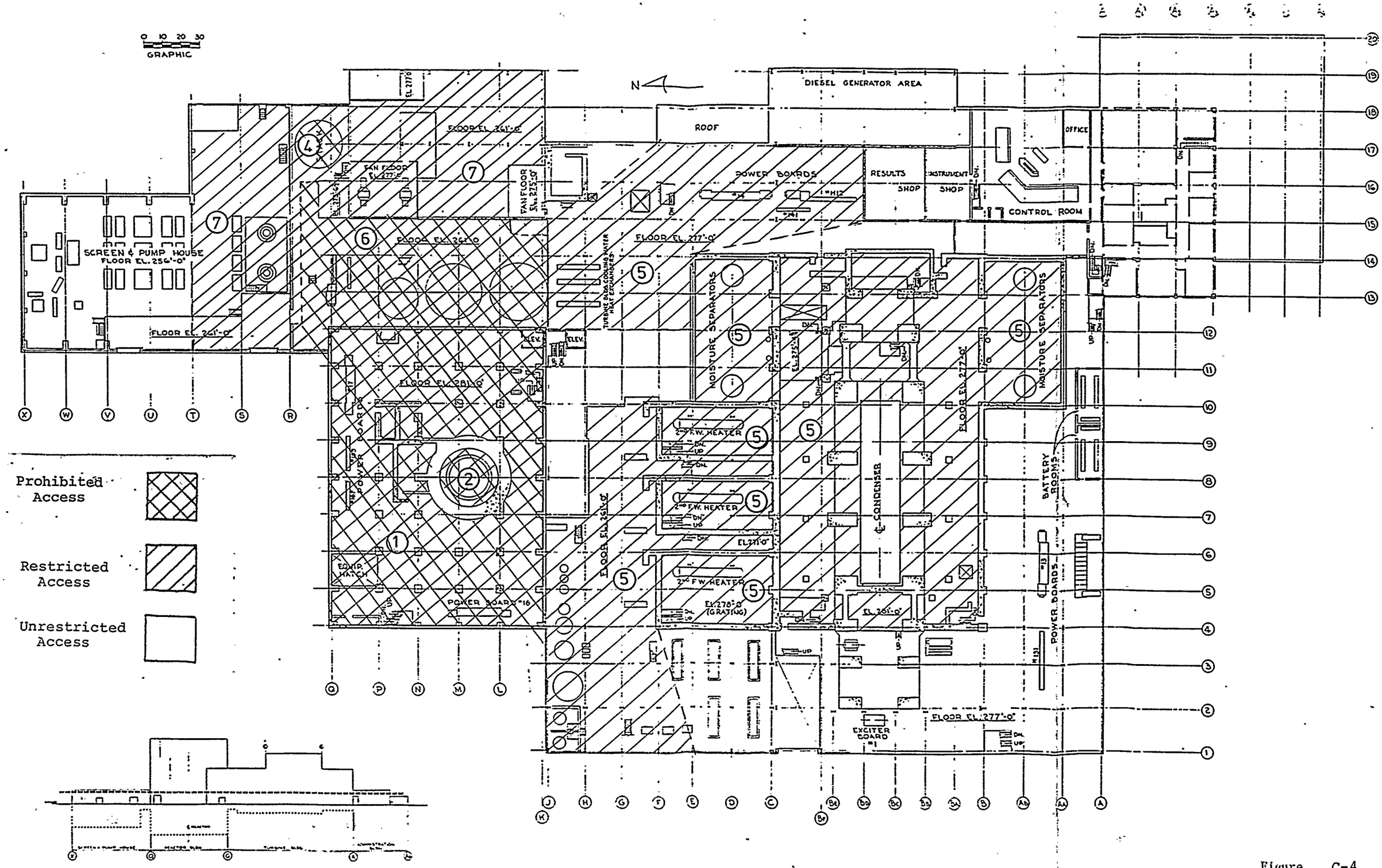


Figure C-4

STATION FLOOR PLAN AT ELEVATION 2[illegible] - 0"

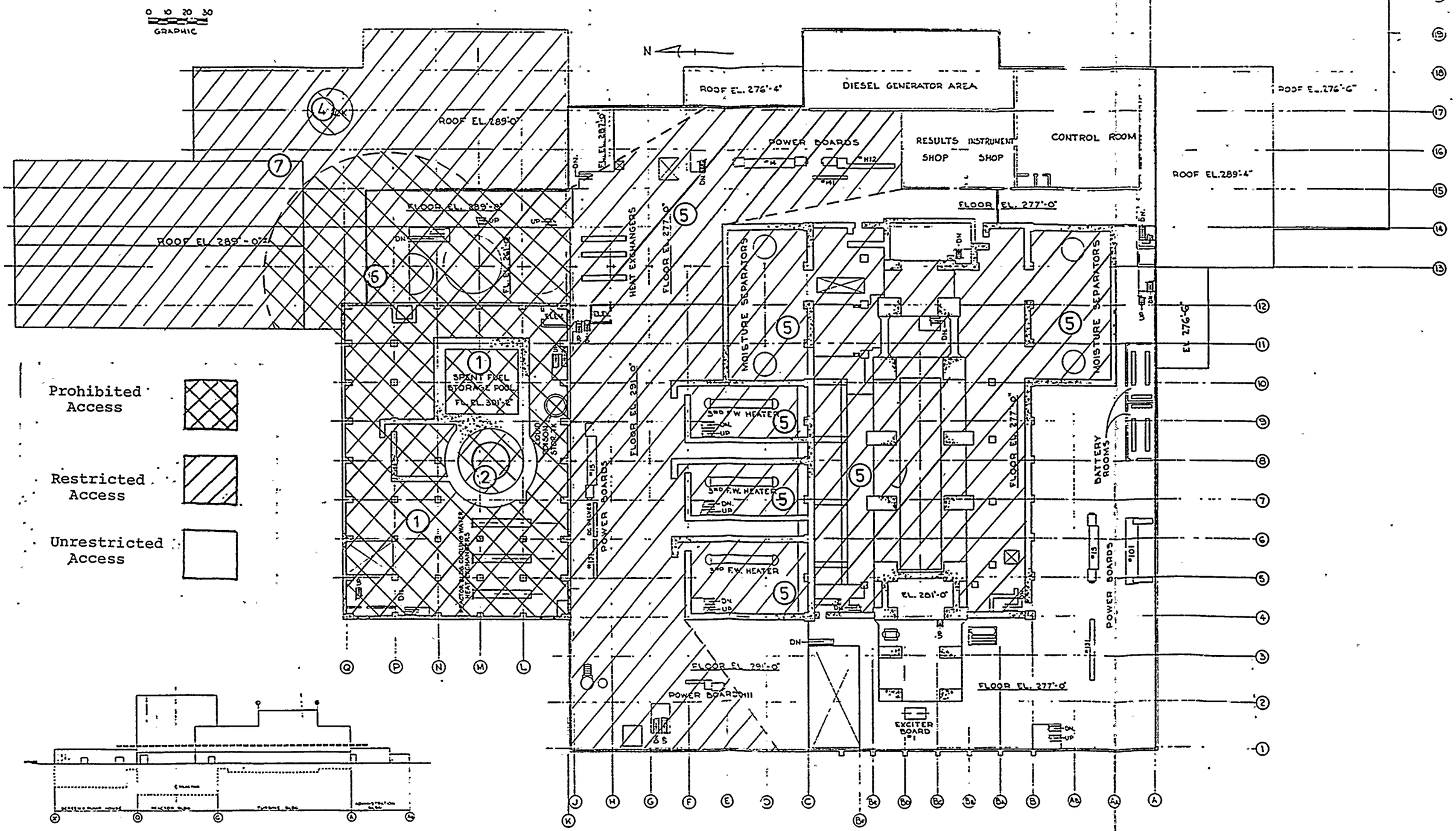


Figure C-5

STATION FLOOR PLAN AT ELEVATION 305' – 0"

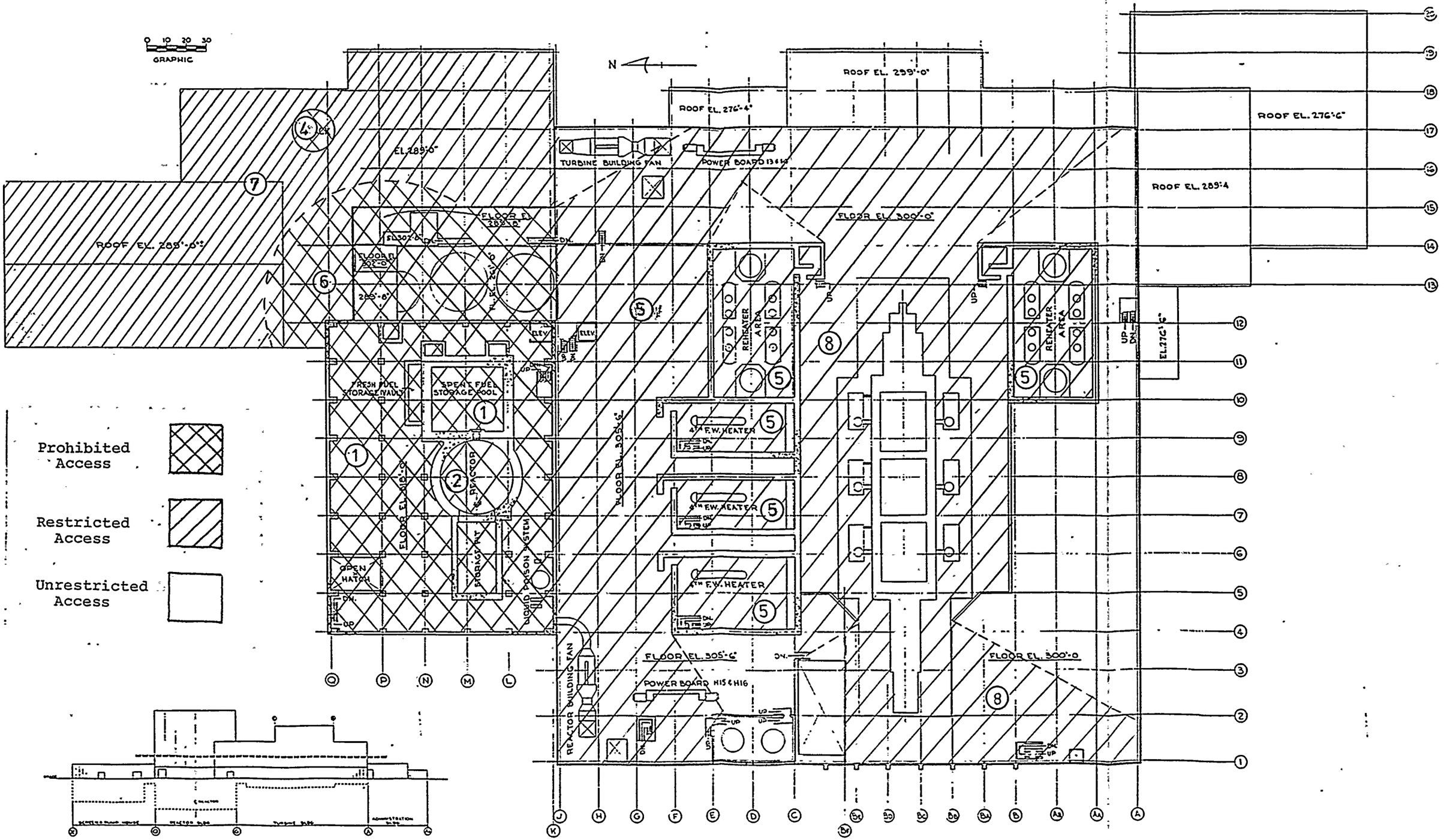


Figure C-6

STATION FLOOR PLAN BETWEEN ELEVATIONS 317' – 0" AND 369' – 0"

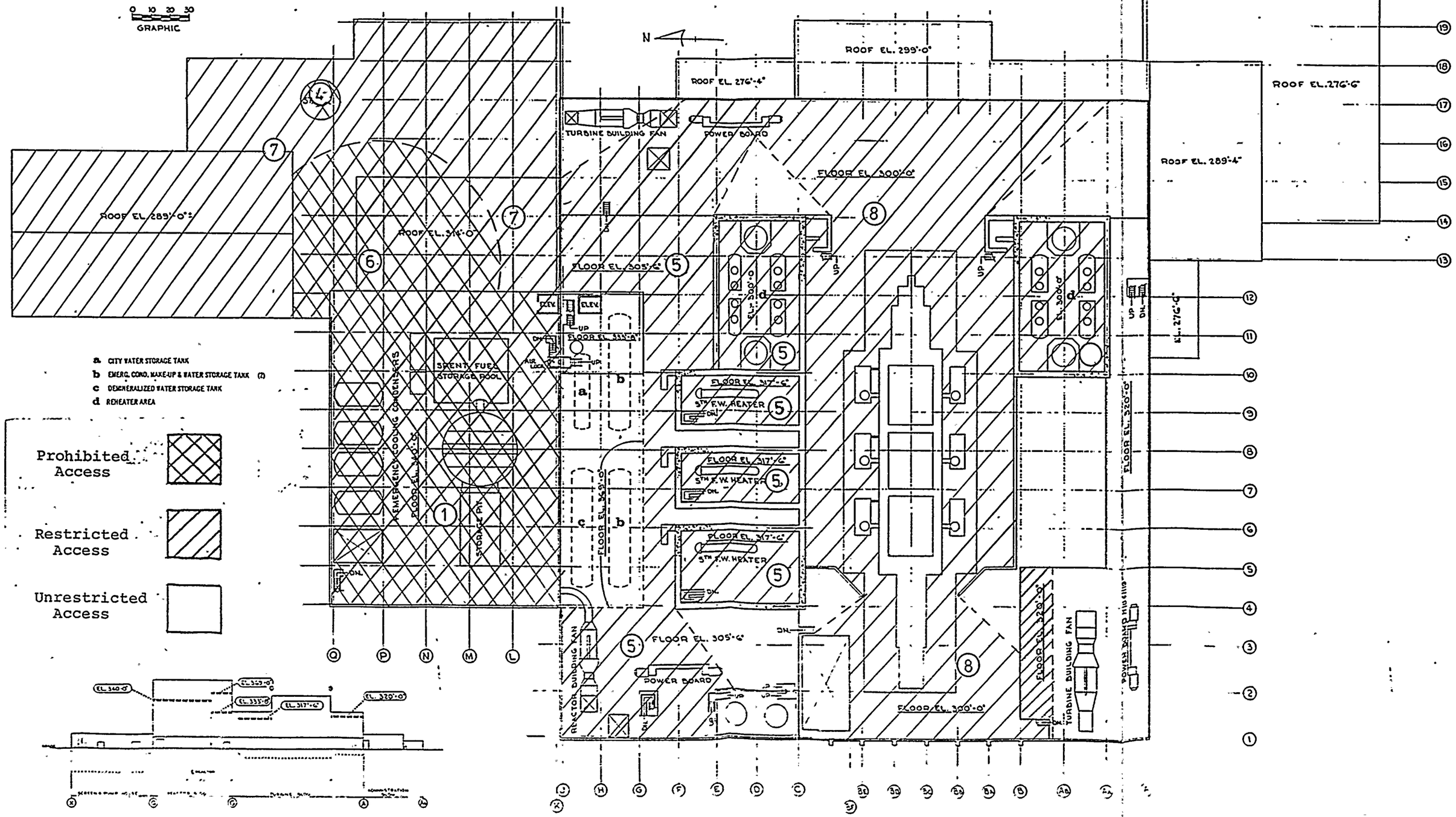


Figure C-7

NOTES

(1) Reactor building atmosphere contains fission products due to primary containment leakage.

(2) Primary containment.

(3) Waste building may be contaminated if reactor water inadvertantly is transferred to building for processing.

(4) Off-gas stack contains large amounts of noble gases released from primary containment and removed to stack by Reactor Building Emergency Ventilation System.

(5) Feedwater system contamination due to possible leakage of feedwater and/or main steam isolation valves.

(6) No access due to shine dose from Emergency Ventilation System Filter.

(7) Restricted access due to the possibility of excessive shine dose from Emergency Ventilation System Filters.

(8) Possible shine dose from turbine due to noble gas accumulation if leakage through feedwater and/or Main Steam Isolation Valves occurs.

ATTACHMENT 2

COMPONENTS/SYSTEMS SUBJECT TO EXCESSIVE RADIATION DAMAGE

Components	Location	Threshold Damage Level (R)	Dose at 100 Days (R)	Proposed Modifications	Justification
Containment Spray Line Air Operated Valve 80-15 (Position Switch)	Reactor Building Elevation 281'	10^6	1.6×10^6	None	The position switch only provides indication of valve position.
N_2 Purge Air Operated Valve 201.2-03 (Solenoid Valve Insulation)	Reactor Building Elevation 298'	10^6	8.6×10^6	Shield solenoids with 2 1/2 inches of lead or equivalent	Failure of solenoid valves will cause valves to remain in closed position. This will prevent valves from being used for operation of CAD system for N_2 addition.
N_2 Purge Air Operated Valve 201.2-32 (Solenoid Valve Insulation)	Reactor Building Elevation 298'	10^6	9.9×10^6	Shield solenoids with 1 1/2 inches of lead or equivalent	Failure of solenoid valves will cause valves to remain in closed position. This will prevent valves from being used for operation of CAD system for N_2 addition.
N_2 Purge Motor Operated Valve 201-31 (Motor Winding Insulation)	Reactor Building Elevation 298'	10^6	7.9×10^6	None	Failure of the motor operated valve will cause the valve to remain in closed position. This is acceptable, since the valve is in the normal vent and purge and it is used only for containment isolation during an accident.

ATTACHMENT 2

COMPONENTS/SYSTEMS SUBJECT TO EXCESSIVE RADIATION DAMAGE

(Continued)

Components	Location	Threshold Damage Level (R)	Dose at 100 Days (R)	Proposed Modifications	Justification
N_2 Purge Air Operated Valve 201-32 (Solenoid Valve Insulation)	Reactor Building Elevation 298'	10^6	1.2×10^6	None	Failure of solenoid valve will cause the valve to remain in closed position. This is acceptable since the valve is in the normal vent and purge system and it is used only for containment isolation during an accident.
Radiation Monitors on Emergency Condensers (RN-04) (Two Detectors)	Reactor Building Elevation 340'	10^6	1.6×10^7 to 1.7×10^7	None	Failure of the detectors would result in the isolation of the emergency condensers. This signal can be overriden if necessary to assure adequate core cooling.
Emergency Condenser Steam Header Drain Air Operated Valves 39-11, 39-12, 39-13, 39-14 (Solenoid Valve Insulation)	Reactor Building Elevation 340'	10^6	1.6×10^7	None	This is acceptable since these valves are designed to fail closed on a loss of motive power. The valves are located in the emergency condenser drain line to the main steam line and are required to perform only an isolation function during an accident.

ATTACHMENT 2

COMPONENTS/SYSTEMS SUBJECT TO EXCESSIVE RADIATION DAMAGE

(Continued)

Components	Location	Threshold Damage Level (R)	Dose at 100 Days (R)	Proposed Modifications	Justification
Emergency Condenser Level Controllers (60-17, 60-18) and Transmitters (IG 06A, IG 06B)	Reactor Building Elevation 340'	10^6	1.6×10^7	Shield transmitters and Level controllers with 2 inches of lead or equivalent	Failure of the level transmitters and controllers could result in level control valves 60-17 and 60-18 opening causing loss of emergency condenser make-up water.
Flow Transmitters 90-30A, 90-33A, 90-32A and 90-34A in the Containment Spray Raw Water System	Reactor Building Elevation 318'	10^6	1.8×10^7 for 90-30A and 90-33A; 3.2×10^8 for 90-32A and 90-34A	None	Failure may cause loss of flow indication in portions of the containment spray raw water system. However, other system flow and temperature indication does exist.
Containment Spray Raw Water Motor Operated Valves 93-25, 93-26, 93-27, 93-28, 93-49, 93-50 (Motor Winding Insulation)	Reactor Building Elevation 318'	10^6	1.3×10^7	None	Failure will cause these valves to remain in their normal position. This is acceptable since their normal position will not prevent operation of containment spray or its cooling system.

ATTACHMENT 2

COMPONENTS/SYSTEMS SUBJECT TO EXCESSIVE RADIATION DAMAGE

(Continued)

Components	Location	Threshold Damage Level (R)	Dose at 100 Days (R)	Proposed Modifications	Justification
Reactor Protection System Sensors in West Instrument Room	Reactor Building Elevation 281'	1.2×10^5	5.2×10^5	None	The west instrument room contains a complete set of reactor protection system (RPS) instrument sensors for a subchannel of each RPS channel, except for the main steam line high flow transmitters which are in the north instrument room. No modification is required, since the sensors will not fail until 30 days into the accident which is long after the instruments have performed their protective safety function. A complete set of redundant instruments for each RPS channel is contained in the east instrument room.
Emergency Condenser Return Isolation Valves 39-05, 39-06 (Solenoid	Reactor Building Elevation 281'	10^6	7.9×10^6	None	This is acceptable since these valves are designed to fail open on a loss of motive power. The valves must be open for emergency condenser operation. A check valve inside primary containment will perform isolation function, if necessary.