U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-358/84-07(DRSS); 30-11989/84-01(DRSS); 70-2838/84-07(DRSS)

Docket Nos. 50-358;
30-11989;
70-2838

Licenses Nos. CPPR-88;
34-07251-04
SNM-1823

Licensee: Cincinnati Gas and Electric Company
139 East 4th Street
Cincinnati, OH 45201

Facility Name: William H. Zimmer Nuclear Power Station, Unit 1

Inspection At: William H. Zimmer Nuclear Power Station Site, Moscow, OH

Inspection Conducted: December 11-12, 13, 14, 17, and 18

Inspector: M. J. Oestmann — 1/8/85 — Date

Approved By: M. C. Schumacher, Chief
Independent Measurements and
Environmental Protection Section — 1/10/85 — Date

Inspection Summary

Inspection on December 11-12, 13, 14, 17, and 18 1984(Report Nos. 50-358/84-07(DRSS); 30-11989/84-01(DRSS); 70-2838/84-07(DRSS)
Areas Inspected: Special, announced, safety inspection of: (1) environmental protection, including implementation of the licensee's site restoration plan; (2) radiological protection including: (a) performing an independent radiation survey of the fuel pool area, the high and low level laboratories and counting room and instrument calibration room; and (b) verifying the licensee's inventory of radioactive sources.
Results: No items of noncompliance were identified. The inspector's tour of the site showed evidence of erosion of the banks of the settling basin where the licensee failed to seed. - (Section 3). The radiation survey results of the fuel pool area, the high and low level laboratories and counting room show that the NRC guidelines (Enclosure 1) for release to unrestricted use have been met. Two radiation sources (Cs-137) are stored in the Instrument Calibration Room and 63 in-core fission chambers (neutron detectors) for Low Power Range Monitors (LPRMs) and Transversing Incore Probes (TIPS) are crated and stored in warehouse No. 2.

DETAILS

1. Persons Contacted

[1]J. R. Schott, Site Manager
[1,2] G. E. Ficke, Licensing Manager
[1]J. Stierizt, Radiation Protection Officer
[1]B. Gott, Field Construction Engineer
S. Fellhaus, Material Handling Specialist

[1]Denotes those present at exit interview on December 12, 1984.

[2]Denotes those present during telephone conversations on December 13, 14, 17 and 18, 1984

2. General

On August 29, 1984, the Atomic Safety and Licensing Board (ASLB) issued a Memorandum and Order authorizing the withdrawal of the Zimmer operating license application and dismissal of this proceeding subject to the implementation of the licensee's site restoration plan submitted to the NRC on June 1, 1984, and verification by the staff that the site restoration has been satisfactorily completed by February 28, 1985.

The Zimmer Site Restoration Plan consists of:

1. Removal of trailers and temporary buildings not useful for conversion to a coal fired unit.

2. Limited grading prior to reseeding;

3. Addition of crushed rock on bare areas that are not seeded;

4. Modification of drainage patterns at two borrow areas;

5. Reseeding of bare areas onsite and on transmission line right-of-ways.

By letter dated October 18, 1984, the licensee's counsel stated that restoration of the Zimmer site as described in the June 1, 1984, plan had been completed and requested termination of Construction Permit CPPR-88.

The licensee has transferred or disposed of most of the radioactive sources on site. Once all sources are removed, the licensee will request termination of their byproduct, source, and special nuclear material licenses.

3. Observations During Site Tour

The inspector toured the site to assure the commitments made in the licensee's June 1, 1984, Site Restoration Plan had been satisfactorily met, particularly the conditions described in the Dames and Moore Report enclosed in the Plan. The enclosed Figure 2 shows the onsite structures, buildings, existing road ways, access roads, parking lots, fence lines, trailer, and drainage lines which existed on January 21, 1984. The enclosed Figure 3 presents the configuration of plant site facilities at the time of this inspection. Comparison of the two figures show what structures had been removed. The tour of the site included an overview from the roofs of the Auxiliary Building and Office Building and on the ground within and outside the security fence. The following observations were noted:

1. Most of the trailers had been moved to a parking lot north of the Auxiliary Building (designated as "A" in Figure 3) and were being sold by auction during the inspection.

2. Trailers were also located within the security fence parked in a lot south of the cooling tower (designated as "B" in Figure 3). A licensee representative stated that they also would be sold.

3. Only permanent buildings still remained on the site. The Construction Office Building (Coordinates C-4) and temporary additions to the Carpenters Mill Shop (D-6), Weld Test Shop (D-6), Iron Workers Shop (D/E-6), Electrical Shop (E-7), Pipe Shop (E-6) and Paint Shop (F-7) have been removed. No debris or rubble was visible on the site except for large concrete slabs at a location south of the parking lot (designated as A) near the banks of the Ohio River. A licensee representative stated that they may be of use when construction for a coal fired plant is underway.

4. Limited grading prior to seeding and addition of crushed rock to bare areas where seeding was not done, was completed during the summer of 1984 (designated as "C" in Figure 3). The grading eliminated depressions where water could accumulate; smoothed surfaces so vegetation could be maintained; and reduced slopes adjacent to some of the drainage courses subject to high rates of erosion.

5. Modified drainage patterns at the two borrow areas resulted in direct runoff toward the Little Indian Creek and drying up of these areas (as designated in "D" in Plate 1). There was no evidence of severe onsite erosion along the other drainage ditches and conduits located within the security fence. These drainage pathways are shown in Figure 3.

6. Revegetation from seeding of about 22 acres within the security fence and the borrow areas was quite evident (as shown by Roman numerals in Figure 3 and in Table 1). Revegetation also was evident on transmission line right-of-ways, in areas along the access roads to both meteorological towers, designated as "F" and the borrow areas ("D") north of the parking lot "A".

7. A licensee representative stated that no seeding had been done around the perimeter of the settling basin or in adjacent areas as stipulated in the licensees Site Restoration Plan. Natural vegetation on the basin edge was heavy but was sparse on the almost vertical bank. Erosion was evident, especially on an area of bank on the south side (area "G" Plate 1) where the bank had apparently caved in. Basin water level follows that of Ohio River from which water enters the basin by intrusion.

No items of noncompliance were identified.

4. Radiation Survey and Radiological Sources

The inspector performed a radiation survey and took contamination smears of the fuel pool area in the Reactor Building where the unirradiated fuel was stored, and the high and low level laboratories, counting room and instrument calibration room in the Auxiliary Building. The inspector used a micro R Meter (Eberline Micro R/h meter, Serial 681, calibrated on November 14, 1984). The smears were counted in the Region III Canberra low-level alpha-beta counter Model 2201. The fuel had previously been shipped to Exxon Nuclear Company Inc., Richland, Washington[1]. The licensee had performed a survey of the storage racks and fuel pool floor which showed no activity above background. (Minimum detectable levels of 104 dpm/100 cm^2).

The smear results and the radiation survey of the fuel pool area and the laboratories and counting room are shown in Table 2 and the enclosed Figures 4 and 5. The smear survey results were generally indistinguishable from background at the 95 percent confidence level. The exceptions were less than one percent of the unrestricted release limits listed in Enclosure 1 to this report. The radiation survey indicated background levels of eight microroentgens per hour in most areas. The only exception was the Instrument Calibration Room where two calibration sources (J. L. Shepherd Associated Model No. 6810 containing less than 100 millicuries Cs-137 and Model No. 28 Series containing less than 20 curies Cs-137) were located. The licensee is planning to transfer the Model No. 6810 (100 mCi) source to D. C. Cook by the end of December 1984.

[1]Inspection Report No. 70-2838/84-06(DRSS)

Crates containing 63 incore fission chambers (neutron detectors used for LRPMs and TIPs) are stored in warehouse No. 2. The fission chambers contain about 2.7 grams of enriched uranium which is licensed under License No. SNM-1823. A licensee representative stated that the second Cs-137 source and the incore detectors would be shipped to Richland, Washington, for disposal by the end of December. At that point the licensee will have transferred or disposed of all licensed radioactive sources.

The inspector reviewed the licensee's records of shipment of licensed materials under License No. 34-07251-04 and determined that all transfers and disposals were made in accordance with NRC rules and regulations.

The results of the radiation and contamination survey made in the Reactor Building fuel pool area and the Auxiliary Building high and low-level laboratories and counting room show that the NRC guidelines (Enclosure 1) for release to unrestricted use have been met. After removal of the cesium-137 sources, the licensee plans to perform a closeout survey to assure no residual contamination remains. The licensee will then request termination of their byproduct and special nuclear materials licenses.

No items of noncompliance or deviations were identified.

5. Exit Interview

The inspector met with licensee representatives (Section 1) at the conclusion of the inspection on December 12, 1984. Additional telephone discussions were held with a licensee representative December 13, 14, 17 and 18 1984 and with representatives of the Office of Nuclear Reactor Regulation (NRR) on December 17-18, 1984. The inspector stated that all the conditions of the Site Restoration Plan appeared to have been met with one possible exception. No seeding had been done around the settling basin perimeter and native vegetation on the steep banks appeared inadequate to control erosion. A licensee representative stated that no decision had yet been made as to possible use of the basin during construction or operation of the coal fired plant. The licensee acknowledged the presence onsite of the cesium sources and the incore detectors used in LPRM's and TIP;s and acknowledged the need to dispose of the material prior to license termination.

Attachments:

1. Enclosure 1 - NRC Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use, or Termination of Licenses for Byproduct, Source or Special Nuclear Material

2. Figure 2 - Zimmer Plant Site Configuration (January 21, 1984)

3. Figure 3 - Projected Zimmer Plant Site Configuration (End of December 1984)

4. Plate 1 - Dames and Moore Interim Restoration Plan - Zimmer Site, May 1984

5. Table 1 - Areas of Seeding in Acres of Zimmer Site

6. Table 2 - Radiation Survey Results of Smears of Removable Contamination

7. Figure 4 - Radiation Survey of Fuel Pool Area

8. Figure 5 - Radiation Survey of Laboratories and Counting Rooms

GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL

U. S. N. ar Regulatory Commission
Divis: Fuel Cycle and Material Safety
Washingt D.C. 20555

July 1982

The instructions in this guide, in conjunction with Table 1, specify the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. The limits in Table 1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control is considered on a case-by-case basis.

1. The licensee shall make a reasonable effort to eliminate residual contamination.

2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.

4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with the active materials, or conversion of facilities to a long-term storage standby status. Such requests must:

   a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree residual surface contamination.

   b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table 1. A copy of the survey report shall be filed with the Division of Fuel Cycle and Material Safety, USNRC, Washington, D.C. 20555, and also the Administrator of the NRC Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

   a. Identify the premises.

   b. Show that reasonable effort has been made to eliminate residual contamination.

   c. Describe the scope of the survey and general procedures followed.

   d. State the findings of the survey in units specified in the instruction.

   Following review of the report, the NRC will consider visiting the facilities to confirm the survey.

TABLE 1

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES[a]	AVERAGE[b c f]	MAXIMUM[b d f]	REMOVABLE[b e f]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm^2	3000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm $\beta\gamma$/100 cm^2	15,000 dpm $\beta\gamma$/100 cm^2	1000 dpm $\beta\gamma$/100 cm^2

[a] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

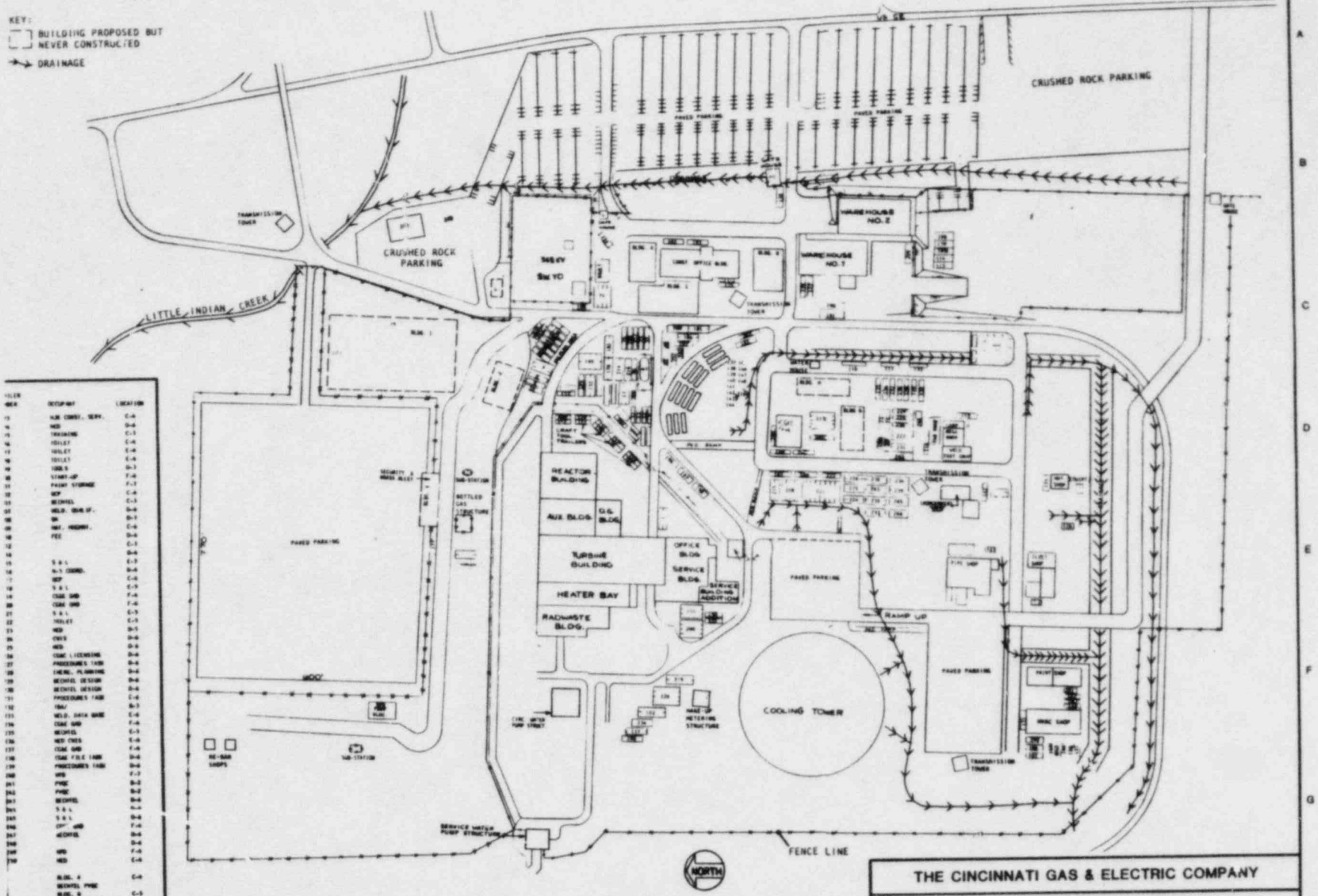
[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d] The maximum contamination level applies to an area of not more than 100 cm^2.

[e] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

[f] The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.



THE CINCINNATI GAS & ELECTRIC COMPANY

FIGURE 2

ZIMMER PLANT SITE CONFIGURATION
(JANUARY 21, 1984)

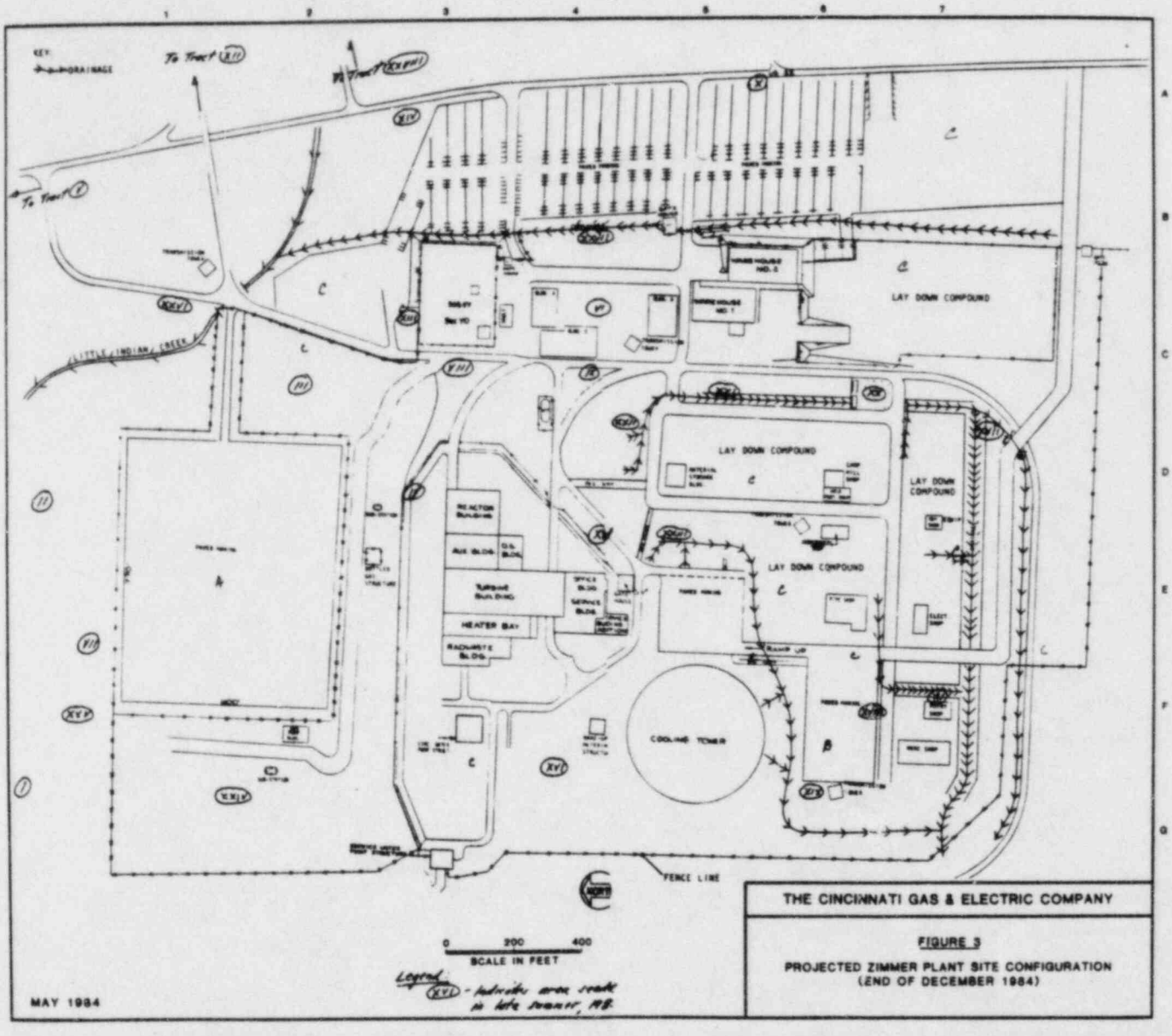


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FIGURE 3

PROJECTED ZIMMER PLANT SITE CONFIGURATION
(END OF DECEMBER 1984)

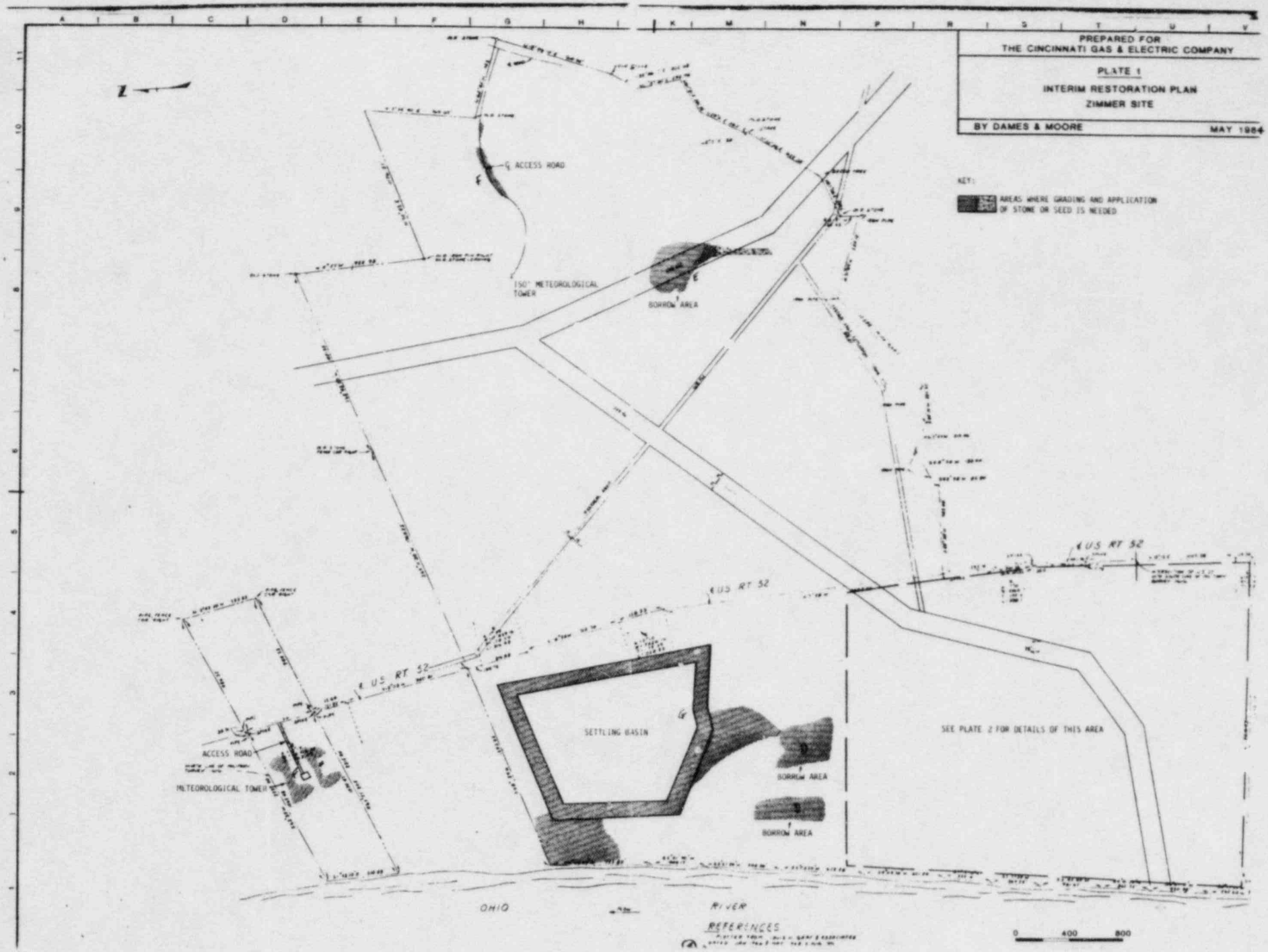
PREPARED FOR
THE CINCINNATI GAS & ELECTRIC COMPANY
PLATE 1
INTERIM RESTORATION PLAN
ZIMMER SITE
BY DAMES & MOORE
MAY 1984
KEY:
AREAS WHERE GRADING AND APPLICATION OF STONE OR SEED IS NEEDED
℄ ACCESS ROAD
150' METEOROLOGICAL TOWER
BORROW AREA
℄ U.S. RT 52
SETTLING BASIN
ACCESS ROAD
METEOROLOGICAL TOWER
BORROW AREA
BORROW AREA
SEE PLATE 2 FOR DETAILS OF THIS AREA
OHIO RIVER
REFERENCES
0
400
800

TABLE 1

AREAS OF SEEDING IN ACRES OF ZIMMER SITE

ROMAN NUMERAL	ACRES
I	0.887
II	4.764
III	2.558
IV	1.189
V	0.996
VI	0.659
VII	0.144
VIII	0.142
IX	0.173
X	0.67
XI	0.121
XII	1.381
XIII	0.216
XIV	0.229
XV	0.052
XVI	0.361
XVII	0.767
XVIII	0.211
XIX	0.145
XX	0.346
XXI	0.192
XXII	0.332
XXIII	0.015
XXIV	3.973
XXV	0.406
XXVI	0.198
XXVII	1.36
XXVIII	0.271
TOTAL	22.758

TABLE 2

Radiation Survey
Results of Smears of Removable Contamination
(Counted on Canberra Alpha-Beta Counter on December 13, 1984)

SMEAR LOCATION	LOG NO.	ALPHA, dpm/100cm²	BETA, dpm/100cm²
1.	84-436	<0.1	<2.8
2.	84-437	0.3±0.7	<2.8
3.	84-438	<0.1	<2.8
4.	84-439	<0.1	<2.8
5.	84-440	<0.1	<2.8
6.	84-441	<0.1	<2.8
7.	84-442	<0.2	<4.7
8.	84-443	0.7±1.0	<2.8
9.	84-444	<0.1	<2.8
10.	84-445	0.4±0.7	<3.1
11.	84-446	<0.1	<2.8
12.	84-447	0.3±0.7	3.1±3.9
13.	84-448	0.7±1.0	<2.8
14.	84-449	0.3±0.7	<2.8
15.	84-450	0.7±1.0	<2.8
16.	84-451	0.7±1.0	<3.5
17.	84-452	<0.1	<3.2
18.	84-453	<0.1	<2.8
19.	84-454	0.3±0.7	<2.8
20.	84-455	<0.2	<5.1
21.	84-456	<0.1	<2.8
22.	84-457	0.7±1.0	<2.8
23.	84-458	<0.1	<3.6
24.	84-459	0.4±0.7	<3.1
24.	84-460	1.1±1.2	<3.9
26.	84-461	<0.1	<3.2
27.	84-462	0.3±0.7	<3.5
28.	84-463	0.3±0.7	<2.8
29. (Blank Filter Paper)	84-464	0.7±1.0	<2.8

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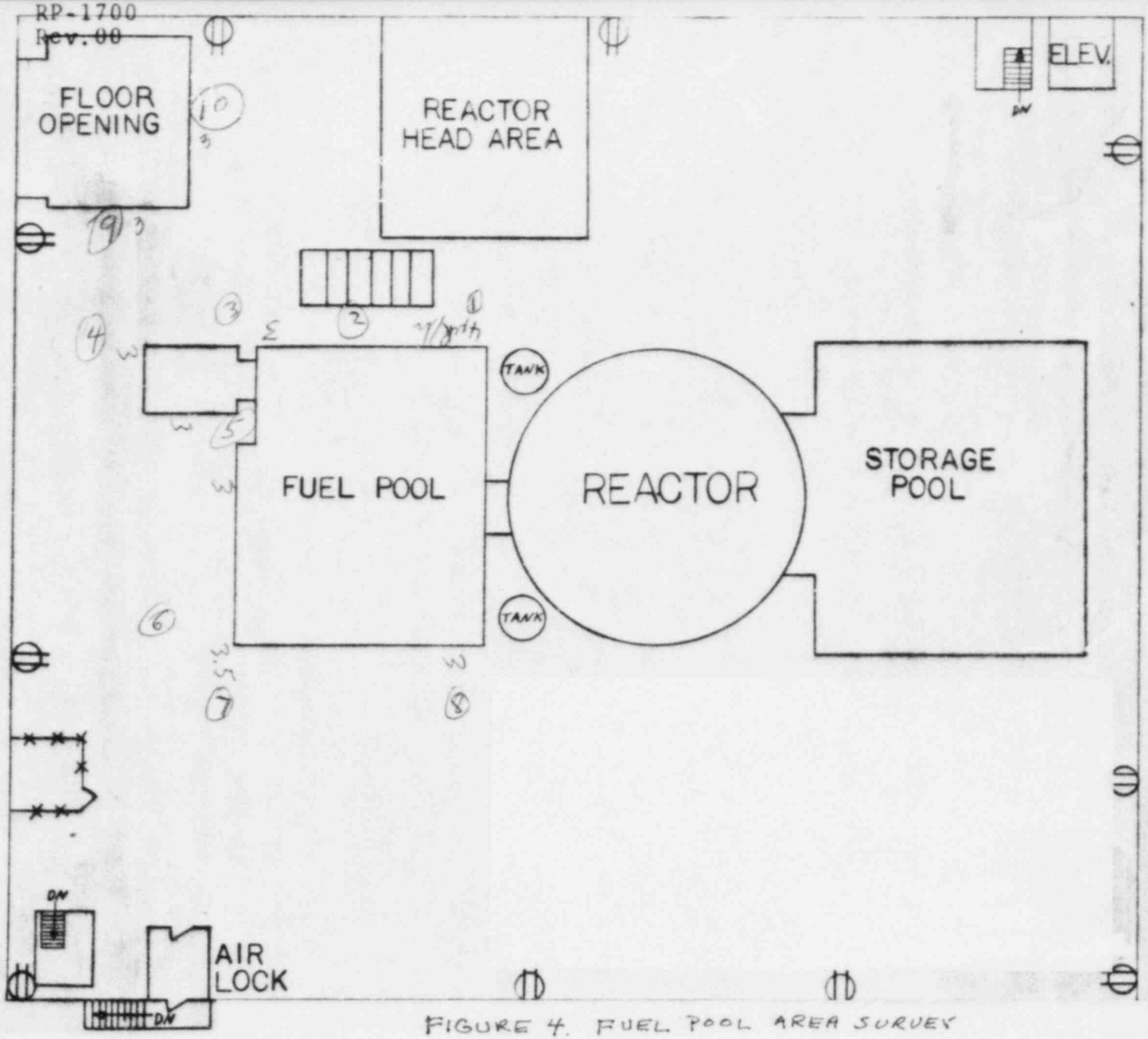

FIGURE 4. FUEL POOL AREA SURVEY

(7) SMEAR LOCATION
3.5 Direct Radiation uR/hr

RX BLDG 627

DATE 00-00-00

TIME _____

RX PWR _____ MW

SURVEY POINT	EXP. RATE (mR/hr)	CONT. LEVEL (dpm/100cm²)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
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LAB AREA

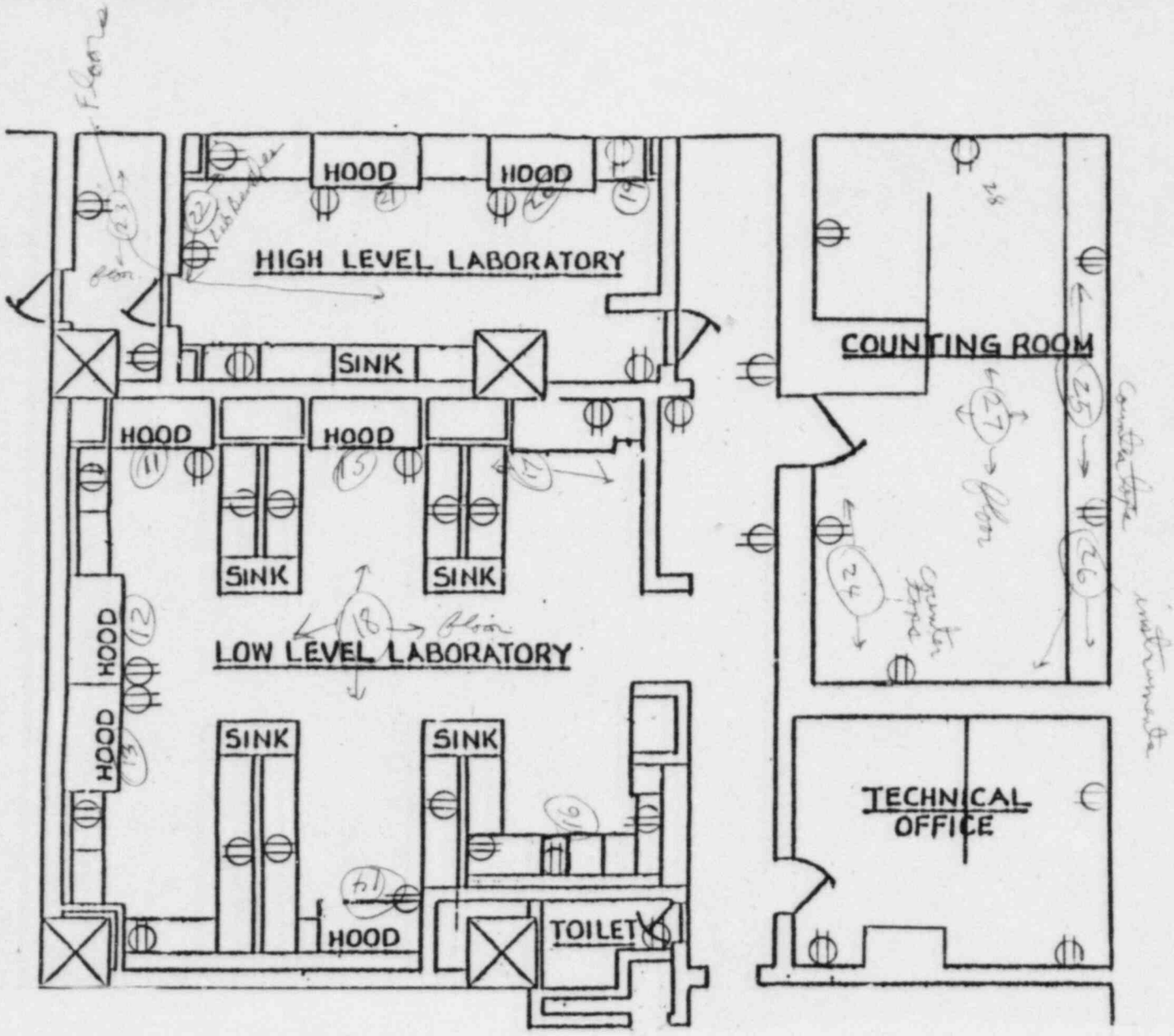

FIGURE 5 LABORATORY AND COUNTING ROOM SURVEY

○ SMEAR SURVEY LOCATION (See Table 2)

All direct survey readings < 8 uR/hr.

AUX BLDG 496

DATE _____

TIME _____

RX PWR _____ MW

SURVEY POINT	EXP. RATE (mR/hr)	CONT. LEVEL (dpm/100 cm²)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
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