

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 040-04378 (Terminated)

License Nos. C-04756 (Terminated)
C-04546 (Terminated)

Inspection Report No. 040-004378/96001

Former Licensee: TRW Inc.

Facility: Bennett Industries, Inc.

Location: 12735 Kirby Road
Cleveland, Ohio 44108

Date: July 25, 1996

Inspectors: E. L. Kulzer, Radiation Specialist
P. J. Lee, Ph.D, Radiation Specialist
D. W. Nelson, Radiation Specialist

Approved By: J. W. McCormick-Barger, Chief
Decommissioning Branch

EXECUTIVE SUMMARY

Formerly TRW, Inc. (Currently Bennett Industries, Inc.)
NRC Inspection Report No. 040-04378/96001(DNMS)

This was a special inspection to conduct a scoping survey at Bennett Industries, Inc., Buildings 50169, 50168, and 50158.

The scoping survey data did not identify any areas with radioactivity in excess of the NRC's unrestricted use guidelines. Based upon the inspection findings, the NRC concluded that the facilities met the current NRC criteria for release for unrestricted use and has no further regulatory concerns regarding this facility.

DETAILS

1. Background

The former TRW Inc., facility located at 12735 Kirby Road is presently owned by Bennett Industries, Inc., which manufactures plastic pails. The first floor of this facility consists of three buildings (Buildings 50158, 50168 and 50169) under one roof and is approximately 200,000 square feet in area (see Figure 1). Building 50169 has four floors and was being renovated at the time of this survey. All four floors of this building were surveyed.

Former License No. C-04756 was issued for use of up to 160 pounds of magnesium-thorium alloy. The license authorized machining and deburring of rough castings at this facility. The waste was returned to Dow in Madison, Illinois. This license was issued on June 2, 1959, and expired on June 30, 1960.

Former License No. C-04546 was issued on February 2, 1959, and expired on January 31, 1960. The license authorized the use of up to 5 pounds of thorium oxide for Thrust Vector Control Nozzles. The material was stored at the Kirby Road location, but never used.

2. Independent Measurements

Independent measurements were conducted in and around the former licensed materials processing areas and the open areas of the site. Surface scans were conducted of floors, walls, and structural supports. The surveys emphasized cracks, crevices, wall/floor junctions, and areas where former licensed operations may have taken place.

Instrumentation used to conduct surveys is identified in Table 1. Due to the surface attenuation, most of the particles detected were expected to be high energy beta, only a very small percentage of alpha was expected to be detected. Therefore, based on the ratio of alpha to beta activity, beta measurements were used to determine the alpha surface activities of source materials.

A total of 58 wipes were collected from locations throughout the facility.

3. Survey Results and Laboratory Analyses

Direct survey measurements were conducted for gross alpha/beta and gamma radiation. Where surface readings indicated levels in excess of approximately two times background, wipes were taken to determine the reason for the elevated readings. There were no elevated readings found. Therefore, all wipes collected were random.

Wipe samples were analyzed by a Gas flow proportional counter (Gamma Products G-5000) and the results reported in disintegrations per minute per 100 square centimeters (dpm/100 cm²). The locations where wipes were collected are described on the map in Figures 1, 2, 3 and 4. Analysis of the 58 wipes collected showed that the gross alpha/beta was less than the minimum detectable activity (MDA) which is 5 dpm/100 cm².

The NRC's unrestricted use guidelines for thorium on building surfaces is 1,000 disintegrations per minute (dpm) (17 becquerels (Bq))/100 square centimeters (cm²) activity averaged over an area not to exceed one square meter; 3,000 dpm (50 Bq)/100 cm² maximum activity over an area not to exceed 100 cm²; and 200 dpm (3.4 Bq)/100 cm² removable activity. These guidelines are found in the NRC's "Guideline for Decontamination of Facilities and Equipment prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated August 1987.

Based upon the inspection findings, the NRC concluded that the facilities meet the current NRC criteria for release for unrestricted use.

4. Exit Meeting

At the conclusion of the onsite inspection on July 25, 1996, the preliminary results of the inspection were discussed with the individual identified below.

Persons Contacted

* Ed Rowe, Plant Manager, Bennett Industries, Inc.

* Indicates those present at the exit meeting on July 25, 1996.

Attachments:

Table 1 - Survey Instruments

Table 2 - Survey Data

Figures 1, 2, 3 and 4 - Location where wipes were collected

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TABLE 1
Survey Instruments

Instrument	Model No.	Serial No.	Detector	Last Calibration
Ludlum	2221	115135	Ludlum 239-1F	07/27/95
Ludlum	12	105745	Ludlum 44-9	05/10/96
Ludlum	12	105718	Ludlum 44-10	02/09/96
Ludlum	19	15522		09/01/95
Ludlum	19	014809		11/17/95

The meters and probes were serviced and calibrated on an annual basis. Calibrations were performed with National Bureau of Standards (NBS) traceable sources. Daily background checks were performed during the inspection to verify detector constancy and determine efficiencies. Source checks were performed using a strontium-90/yttrium-90 check source, Serial Number S-2134 (NRC Tag No. 013251). The average beta efficiency for the Ludlum count rate meters (Model 12) with the Model 44-9 probes was about 25 percent. The average efficiency for Ludlum 2221 with the 239-1F detector was about 40 percent. The gamma scintillation detectors (Ludlum 44-10) were checked for constancy only. Average background for the GM pancake probes (Ludlum 44-9) was 40 to 50 counts per minute (cpm). Average background for the gas flow proportional detector (Ludlum 239-1F) varied from about 1000 to 1250 cpm. The Model 19 meters varied from 5 to 13 microroentgens per hour background radiation ($\mu\text{R/h}$) (1.3 to 3.4 nanocoulombs per kilogram per hour (nC/kg/h)).

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TABLE 2
Survey Data

Wipe #	Location	Total Activity Gross α/β (dpm/100 cm^2)*	Removable Activity Gross α/β (dpm/100 cm^2)
1 - 28	First Floor Kirby Road	< MDA1	< MDA2
29 - 38	Second Floor Building 50169	< MDA1	< MDA2
39 - 48	Third Floor Building 50169	< MDA1	< MDA2
49 - 58	Fourth floor Building 50169	< MDA1	< MDA2

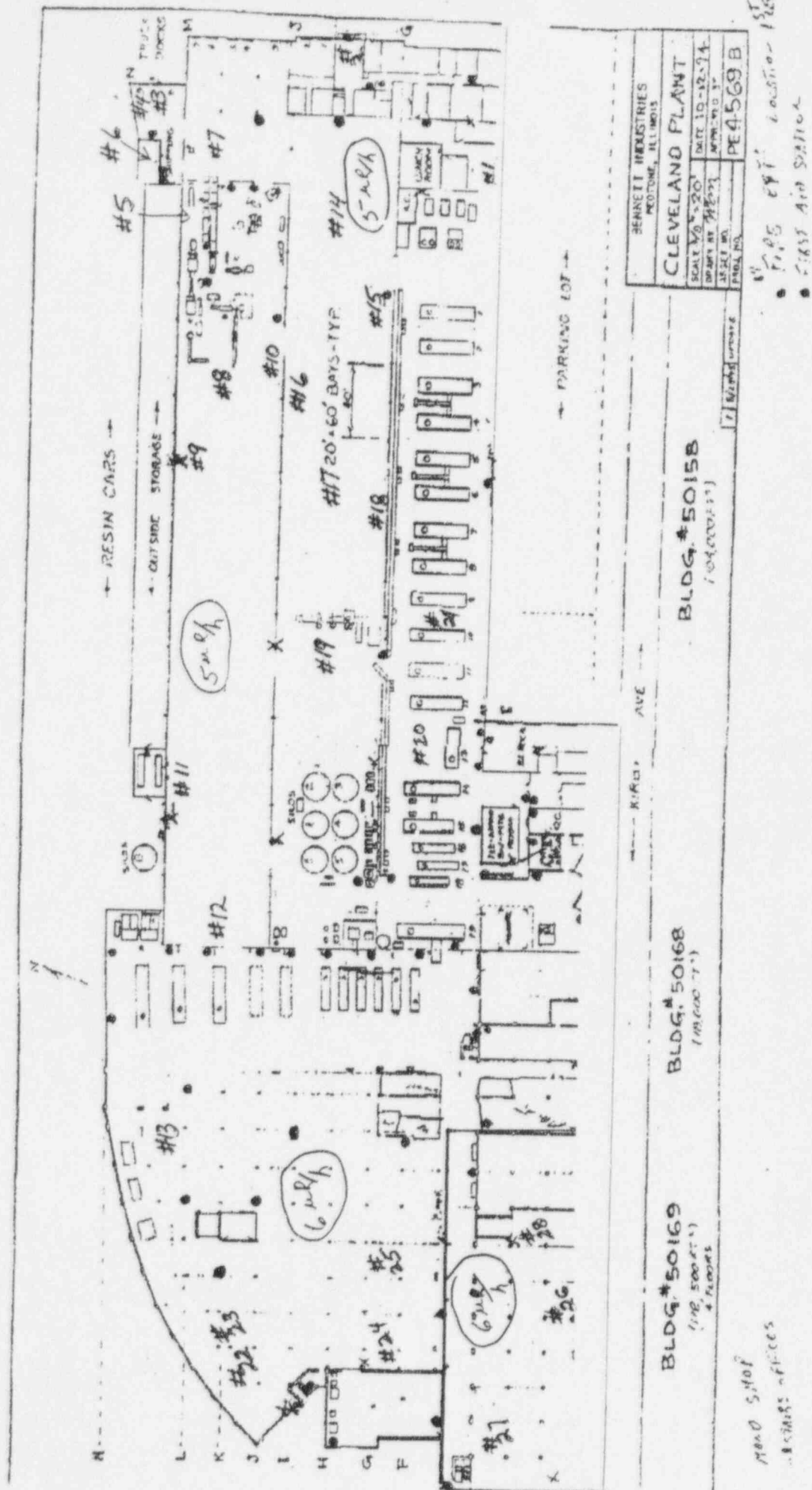
NOTES:

MDA1: 850 dpm, minimum detectable activity of GM (Ludlum 44-09) at 1-minute count.

MDA2: 5 dpm, minimum detectable activity of Gas proportional counter (Gamma Products G-5000) at 5-minute count.

* Total activity is the sum of fixed and removable activity

FIGURE 1
 BENNETT INDUSTRIES
 12735 Kirby Rd
 CLEVELAND, OH



= approximate location of wipe sample

FIGURE 2
BENNETT INDUSTRIES
12735 Kirby Road
CLEVELAND, OH

2ND FLOOR
BUILDING 50169

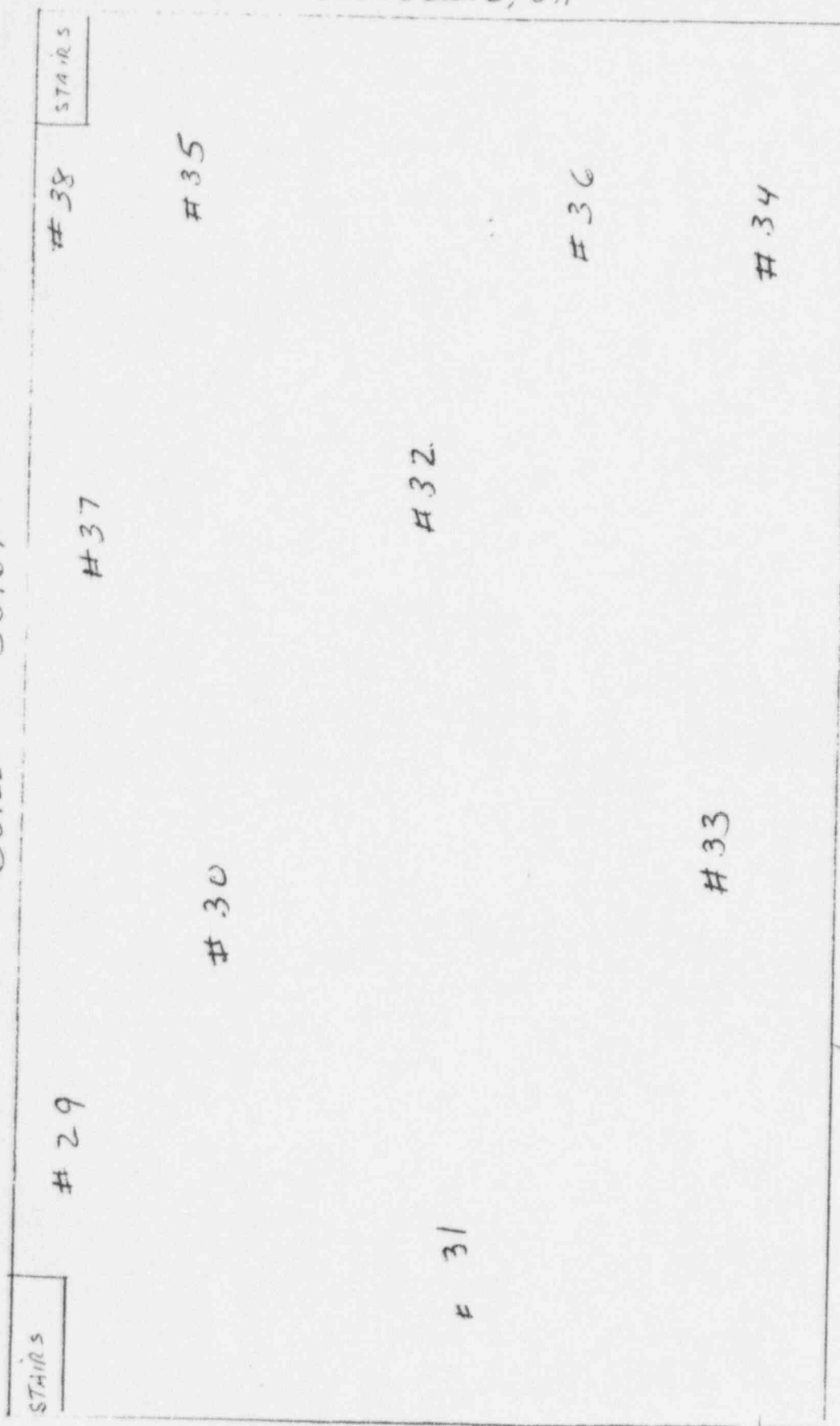
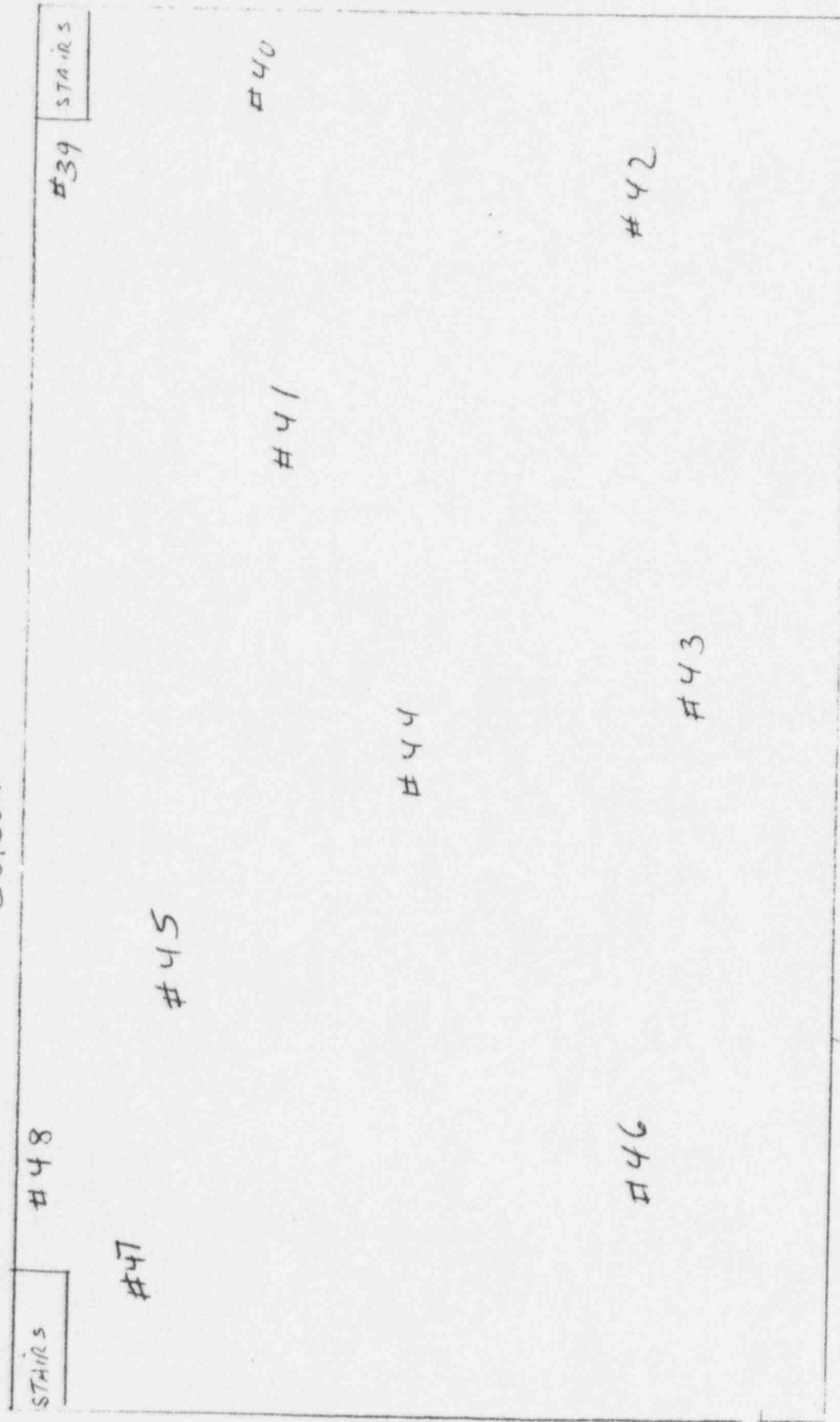


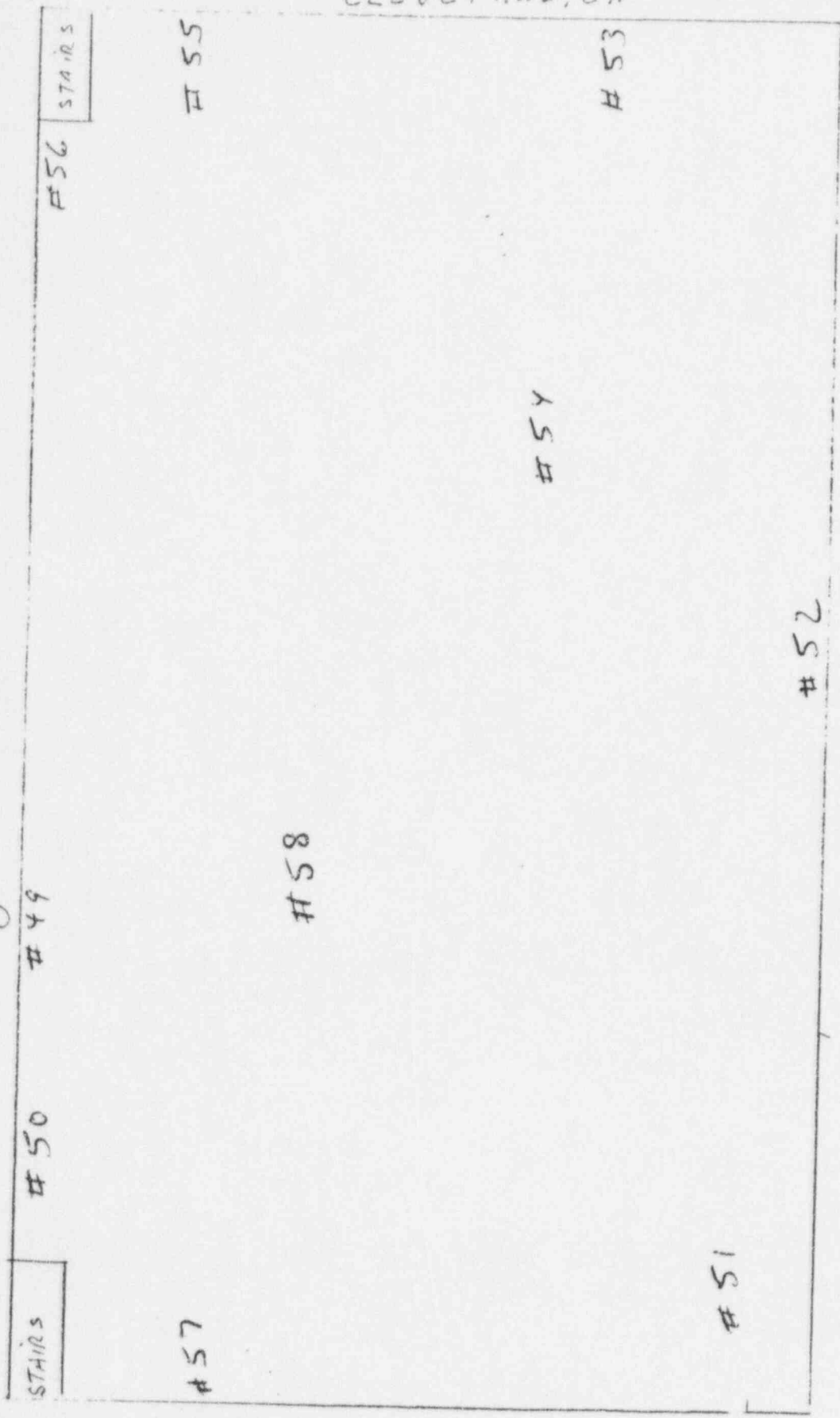
FIGURE 3
BENNETT INDUSTRIES
12735 Kirby Road
Cleveland, OH

3RD FLOOR

Building 50169



4TH FLOOR
Building 50169



BENNETT INDUSTRIES
12735 KIRBY RD
CLEVELAND, OH