

ER039769



ER DMC Central

K/D 5773

SITE CHARACTERIZATION REPORT

ER Central DMC

SEP 25 1996

ORGRP DIFFUSION FACILITIES PERMANENT SHUTDOWN

K-700 POWER HOUSE

AND

K-27 SWITCH YARD/SWITCH HOUSE

Prepared By:

R. J. THOMAS

R. D. BLANCHARD

This data contains documentation supporting the K-25 Auxiliary Facilities Administrative Record File. The Administrative Record File for this project includes a pointer to the ER DMC for this documentation. Should this documentation be moved or if the documentation receive another identifier, please notify Lesa Medley, K-1007, MS-7056, 1-3762 so that she can update her files.

This document has been reviewed for Unclassified-Sensitive issues. The review resulted in a decision the document is void of U-S issues and that the 4/2000 ETP CICO public release approval is valid.

A. F. McBride/dew 12/11/2007
BJC ETP Classification and Information Control Office

Rev. 0 Issue Approved June 13, 1988

Submitted by

R. J. Thomas
Engineering

Recommended by

L. D. McCullough
Project Engineer

Reviewed by

R. D. Blanchard
Plant Protection

Accepted by

J. S. Dalton
Plant Protection

This document is approved for public release per review by:

F. Weston/dew 4/13/2000
ETTP Classification & Information Control Office

Rev. 0 (6/13/88)

K-700 Power House and K-27 Switch Yard/Switch House Area
Site Characterization Report

Executive Summary

The K-700 Power House area, initially built to supply power to the K-25 gaseous diffusion plant was shutdown and disassembled in the 1960s. This shutdown was initiated by TVA supplying economical power to the diffusion plant complex. As a result of world wide over production of enriched, reactor grade U²³⁵, the K-27 switch yard and switch house area was placed in standby in 1985. Subsequently, as the future production requirements decreased, the cost of production increased and the separation technologies for other processes improved, the facility was permanently shutdown in December, 1987.

This Site Characterization Report is a part of the FY-88 engineering Feasibility Study for placing ORGDP Gaseous Diffusion Process facilities in "Permanent Shutdown". It is sponsored by the Department of Energy through Virgil Lowery of Headquarters - Enrichment and through Don Cox of ORO - Enrichment Operations.

The primary purpose of these building or site characterization reports is to document, quantify, and map the following potential problems:

- * Asbestos
- * PCB containing fluids
- * Oils, coolants, and chemicals
- * External contamination

With the documented quantification of the concerns (problems) the Engineering Feasibility Study will then proceed with examining the potential solutions.

For this study, permanent shutdown is defined as the securing and/or conditioning of each facility to provide 20 years of safe service with minimal expenditures and, where feasible, also serving DOE's needs for long-term warehousing or other such low-risk use.

The K-700 power house series of buildings were either masonry construction or a mix of masonry and wood. The power generating equipment was removed and sold as salvage in the mid 1960s but the buildings and auxiliary equipment were left intact. The nine ancillary buildings in the power house area use early in the Manhattan Project for special research projects, were left intact minus the original special equipment. During the late 1960s and 1970s, some of the abandoned buildings were used for offices, special projects, and storage.

Some of the remaining electrical transformers contain PCBs in concentrations less than 500 ppm. Many of the steam and hot water pipes in the buildings are insulated with asbestos insulation, but none of the equipment or buildings have high counts of surface radioactive contamination. The general conditions of the buildings are from fair to poor. Many should be boarded-up to prevent personnel entry and in some cases demolitions would be the safer alternative.

TABLE OF CONTENTS

- 1.0 FACILITY DESCRIPTION
- 2.0 HISTORY
- 3.0 CURRENT PERSONNEL ACCESS
- 4.0 FUTURE PERSONNEL ACCESS
- 5.0 HAZARDS SAMPLING
 - 5.1 Asbestos
 - 5.2 PCBs
 - 5.3 Radioactive Contamination
 - 5.4 Other Types of Contamination
- 6.0 HAZARDS DESCRIPTION
- 7.0 GENERAL CONDITIONS
- 8.0 SUMMARY OF HAZARDS
- 9.0 APPENDICES
 - 9.1 Facility Structure Tables
 - 9.2 Drawing Reference Listing

LIST OF FIGURES

<u>NO.</u>	<u>TITLE</u>
1	MAP OF POWER HOUSE AREA
2	CROSS SECTION THROUGH PUMP HOUSE - POWER HOUSE - SWITCH HOUSE
3	MAIN POWER HOUSE STRUCTURE - SOUTH SIDE
4	MAIN POWER HOUSE STRUCTURE - NORTH SIDE
5	K-702 TURBINE - GENERATOR BUILDING - EAST SIDE OF POWER HOUSE
6	K-703 OFFICE AREA - WEST SIDE OF BUILDING
7	K-704 MAIN SWITCH HOUSE - VIEW FROM EAST
8	K-705 WATER INTAKE BUILDING - EAST SIDE OF BUILDING
9	INTAKE WATER FIXED SCREENS AT RIVER EDGE
10	K-706 PUMP HOUSE WITH K-707 AUXILIARY SWITCH HOUSE IN RIGHT BACKGROUND
11	K-707 AUXILIARY SWITCH HOUSE - SOUTH END
12	K-708 SCALE HOUSE
13	K-709 SWITCH YARD - VIEWED FROM THE EAST
14	K-710 SEWAGE TREATMENT PLANT
15	K-738 WATER TREATMENT CHEMICAL FEED BUILDING
16	K-711 STORAGE WAREHOUSE
17	K-735 AND K-712 STORAGE BUILDINGS
18	K-712 AND K-734 STORAGE BUILDINGS VIEWED FROM THE EAST
19	K-722 SURPLUS SALES BUILDING
20	K-723 STORAGE WAREHOUSE
21	K-724 STORAGE WAREHOUSE
22	UNDERGROUND FEEDER RUNS FROM K-704 TO THE K-300 AREA
23	UNDERGROUND FEEDER RUNS INTO THE K-300 AND PLANT AUXILIARY AREAS
24	K-731 (K-27/29) SWITCH HOUSE
25	K-701 BOILER ROOM SHOWING ASBESTOS INSULATED STEAM LINES
26	K-701 BOILER SUPPORT STEEL TYPICAL FOR THREE BOILER POSITIONS
27	K-702 BASEMENT OF TURBINE - GENERATOR ROOM SHOWING ASBESTOS INSULATED LINES
28	K-702 BASEMENT OF TURBINE - GENERATOR ROOM SHOWING ASBESTOS INSULATED LINES

LIST OF FIGURES (continued)

- 29 K-703 OFFICE - LABORATORY BUILDING SHOWING ASBESTOS INSULATED STEAM SERVICE LINES
- 30 K-704 CABLE SPREADER ROOM (BASEMENT AREA) SHOWING TRANSITE CONDUIT DUCT RUNS
- 31 K-705 WATER INTAKE STRUCTURE (INTAKE SCREENS ARE DETERIORATING)
- 32 K-705 WATER INTAKE FILTERS (NOTE BACKWASH WATER LINES WITH ASBESTOS INSULATION)
- 33 K-706 WATER PUMP HOUSE (THIS CONCRETE COLUMN/BEAM WITH WOOD FRAMING STRUCTURE NEEDS TO BE REPAIRED AND WINDOWS BOARDED)
- 34 K-706 PUMP HOUSE WATER PUMP PIT (WOOD SLAT COVER NEEDS REPLACEMENT FOR PERSONNEL SAFETY)
- 35 K-706 PUMP HOUSE - GROUND FLOOR (NOTE PIGEON DROPPINGS)
- 36 K-706 PUMP HOUSE - GROUND FLOOR (NOTE 10 INCH PILE OF PIGEON DROPPINGS)
- 37 K-706 WATER PUMP HOUSE - BASEMENT LEVEL WATER PUMP CASINGS ARE COATED WITH A BITUMASTIC 7 ASBESTOS INSULATION
- 38 K-706 WATER PUMP HOUSE - SERVICE WATER PUMPS ARE INSULATED WITH 1 1/2" - 2" OF ASBESTOS
- 39 K-706 WATER PUMP HOUSE - SERVICE WATER FILTERS INSULATED WITH 1 1/2" - 2" OF ASBESTOS
- 40 K-707 AUXILIARY SWITCH HOUSE - UPPER FLOOR CABLE SPREADER ROOM
- 41 K-707 AUXILIARY SWITCH - BASEMENT SHOWING ASBESTOS INSULATED STEAM LINE TUNNEL FROM K-701 BOILER ROOM
- 42 K-707 AUXILIARY SWITCH HOUSE - ONE OF TWO POWER TRANSFORMERS FOR AUXILIARY POWER (NOT NOW IN USE)
- 43 K-709 SWITCH YARD FIRE SPRINKLER VALVE HOUSE AREA IS USED FOR STORAGE OF ELECTRICAL OUTDOOR EQUIPMENT
- 44 K-709 SWITCH YARD OIL HANDLING HOUSE
- 45 K-731 SWITCH HOUSE BASEMENT SHOWING INSULATED STEEL LINES AND TRANSITE ELECTRICAL FEEDER DUCT RUNS
- 46 K-732 SWITCH YARD - A TYPICAL MINERAL OIL FILLED MAIN POWER TRANSFORMER

LIST OF FIGURES (continued)

- 47 K-732 SWITCH YARD - A TYPICAL MINERAL OIL FILLED REGULATING TRANSFORMER
- 48 K-732 SWITCH YARD - A TYPICAL MINERAL OIL FILLED OIL-BLAST CIRCUIT
BREAKER
- 49 TYPICAL MANHOLE CONFIGURATION

LIST OF TABLES

<u>NO.</u>	<u>TITLE</u>
I	LIST OF REQUESTED SAMPLES - K-700 POWER HOUSE AREA
II	LIST OF REQUESTED SAMPLES - K-731 ELECTRICAL SYSTEM
IIIA	SAMPLE ANALYSIS RESULTS - K-700 POWER HOUSE AREA
IIIB	SAMPLE ANALYSIS RESULTS - K-731 ELECTRICAL SYSTEM
IV	K-732 SWITCH YARD PCB CONTAMINATION LEVEL - MINERAL OIL FILLED EQUIPMENT
V	ASBESTOS FIRE PROOFING QUANTITIES 14KV UNDERGROUND CABLE DISTRIBUTION SYSTEM
VI	20 YEAR SAFE STORAGE CONDITION
VII	HAZARD SURVEY RESULTS

LIST OF APPENDICES

- 9.1 FACILITY STRUCTURE TABLES
- 9.2 DRAWING REFERENCE LIST

1.0 FACILITY DESCRIPTION

The K-700 Power Complex, as shown on the map of Figure 1, was composed of the buildings and systems needed to receive power from the TVA grid, generate power from the local fossil fuel fired steam-electric generating facilities, and distribute power to the original Oak Ridge Gaseous Diffusion Plant complex. A 161 kV electrical switchyard was built to receive power from TVA over transmission lines and to transform this power to a nominal 14 kV level for powering the underground feeders serving the process buildings when the locally generated power from the "Power-house" was not available. The "Power-house" that was installed contained three 750,000 Lb/hr steam boilers to drive fourteen turbine generators, for a total electrical output of approximately 270 megawatts. The "power house" complex was a complete entity in that all the necessary systems were available for the plant to be self-sufficient.

A Cross-sectional View of the Power house is shown in Figure 2. The steam boilers were located in the K-701 building and the steam was piped to the turbine-generators located in the K-702 building. Offices and laboratory facilities were located in the K-703 building. The power from the generators was routed via underground feeder cable to the Main Switch house, K-704 building. Here, the power was routed to the many 14 kV air circuit breaker buses where it was distributed to the underground feeders routed to the K-300 process buildings, ancillary buildings, and the Plant Auxiliary Power distribution system. The auxiliary power to drive the many fans, coal pulverizers, coal conveyor belts, water pumps, intake screens, etc. was obtained from the transformers and switchgear located in the K-707 Auxiliary Switch-house.

The water needed for the boilers, turbine condensers, etc. was obtained from the Clinch River via a water intake traveling screen filter house, K-705-B. This water flowed through an underground flume to the water Pumphouse, K-706 Building, where it was then pumped to the needed equipment. The discharge water was routed through an underground flume to Poplar Creek which discharged the waste water into the Clinch River immediately downstream of the intake water structure. Ash sluice water pumps, installed in the K-706 Building,

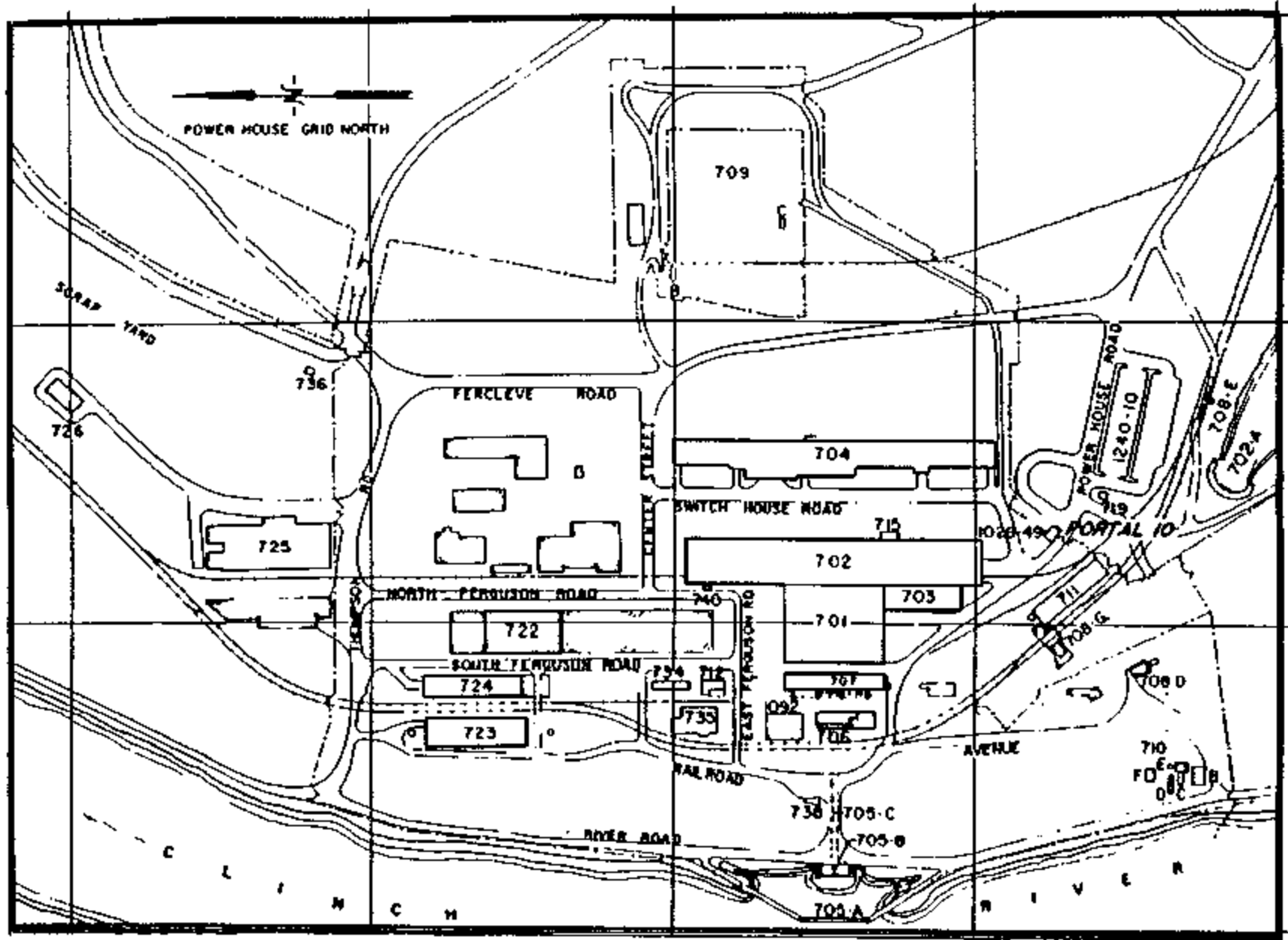


FIGURE 1 - MAP OF POWER HOUSE AREA

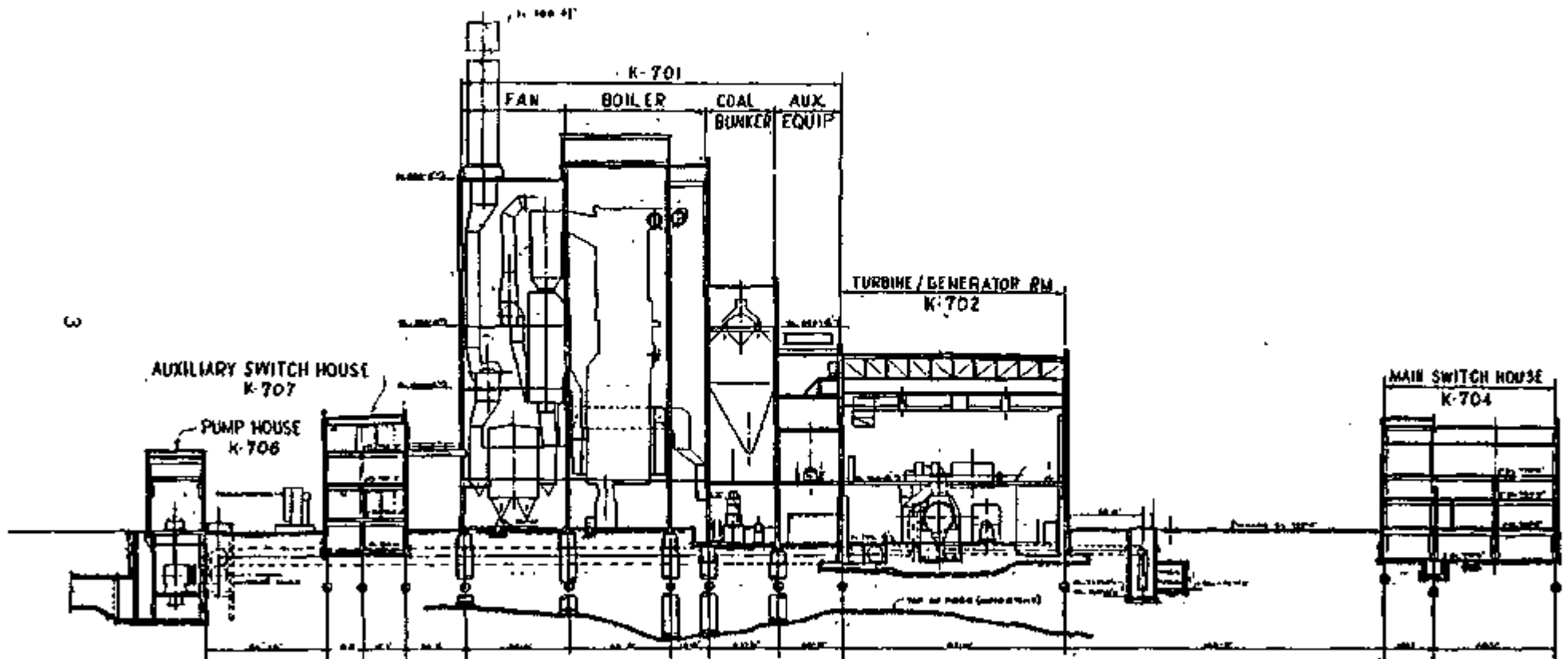


FIGURE 2 - CROSS SECTION THROUGH PUMPHOUSE -
POWER HOUSE - SWITCH HOUSE

supplied high pressure water to sluice the ashes from the boiler discharge to the ash disposal field along side the discharge water flume just prior to exiting into Poplar Creek.

Coal was received by rail cars where it was weighed at the Scale House, K-708 Building, and then sent to the unloading chutes. From the coal yard the coal was transported by conveyor into the bunkers on the north side of K-701 building structure.

The area was also served by a Sewer Disposal system with the treatment facilities being housed in the K-710 Buildings.

External views of the various buildings used at the Power House are shown in the photographs in Figures 3 through 15.

Additional buildings in the K-700 Power House complex used for storage and for special research/development activities in the early days of the project include Buildings K-711, 712, 722, 723, 724, 725, 726, 734, and 735. Special projects associated with the Furclevé thermal diffusion process, and the NEPA Project (nuclear energy propulsion for aircraft) used these buildings for a while in the 1945/48 period. These buildings are shown in the photographs of Figures 16 through 21.

Power from the generators and the TVA transmission system was delivered to the point of usage in the K-25 process and plant auxiliary areas via underground feeders. These underground feeders emanated from the K-704 Main Switchhouse to the northeast, where the feeder duct banks passed just south of the K-27/29 switchyard and into the K-25 process area (K-300 series of buildings). Figure 22 shows the feeder runs from K-704 towards the K-300 area, while Figure 23 depicts the routing of these feeders past the K-27/29 switchyard and on to the K-300 and Plant Auxiliary building areas. As described in the "History" chapter the pertinent feeders supplying the K-300 and Plant Auxiliary areas were transferred from the K-704 Switch House to the K-731 Switch House in later years. This K-731 Switch house, shown in Figure 24, was erected originally to supply power to the K-27 process area. Therefore, this facility was installed to complement the K-700 Power House area but using power generated exclusively by TVA.

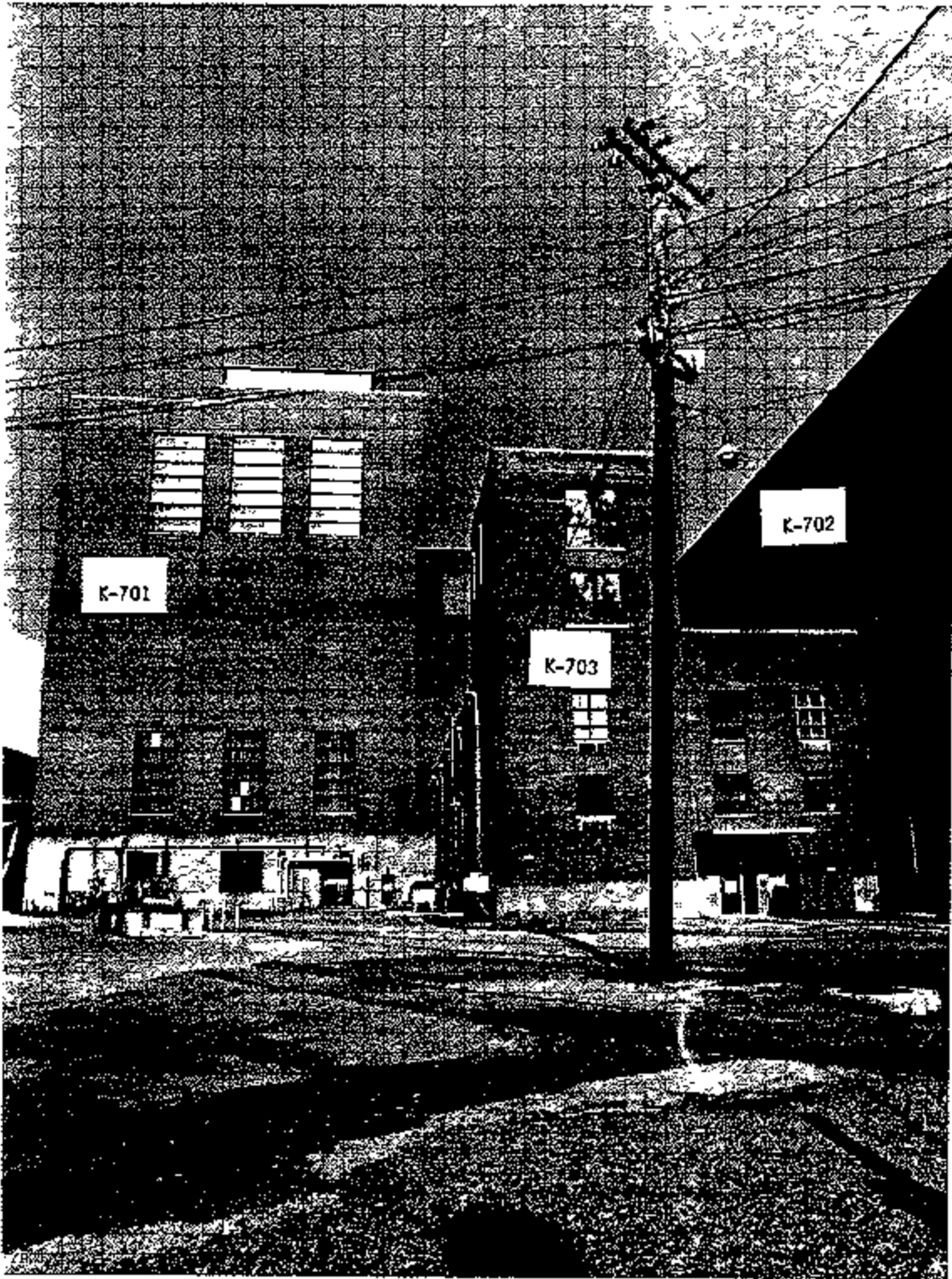


Fig. 3. Main Power House Structure
South Side

PHOTO NO. K/PH-87-3360
(U)

9



Fig. 4. Main Power House Structure
North Side

PHOTO NO. K/PH-87-3278
(U)

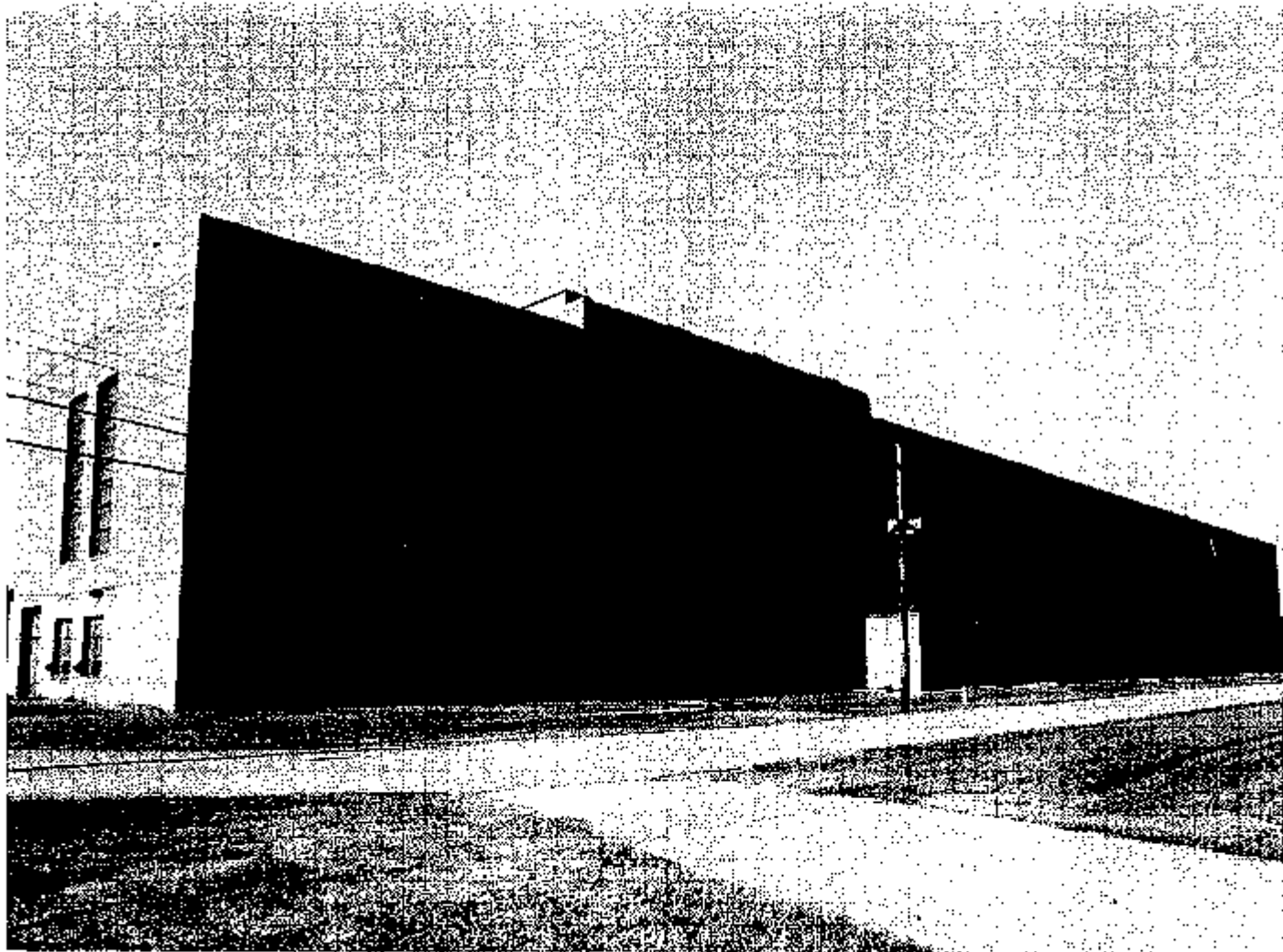


Fig. 5. K-702 Turbine-Generator Building
East Side of Power House

PHOTO NO. K/PH-82-3363
(U)

8

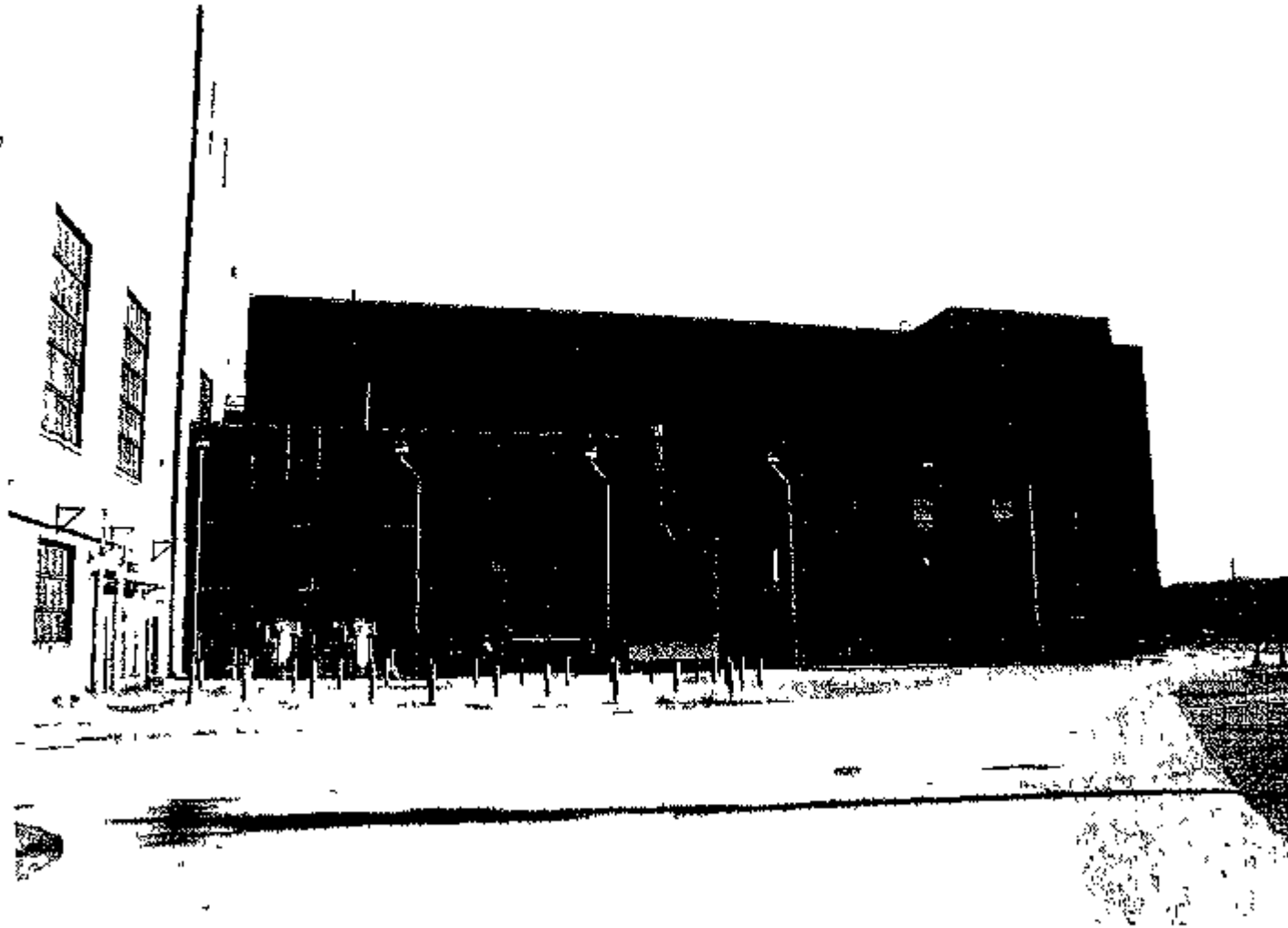


Fig. 6. K-703 Office Area
West Side of Building

PHOTO NO. K/PH 87 3378
(U)

6

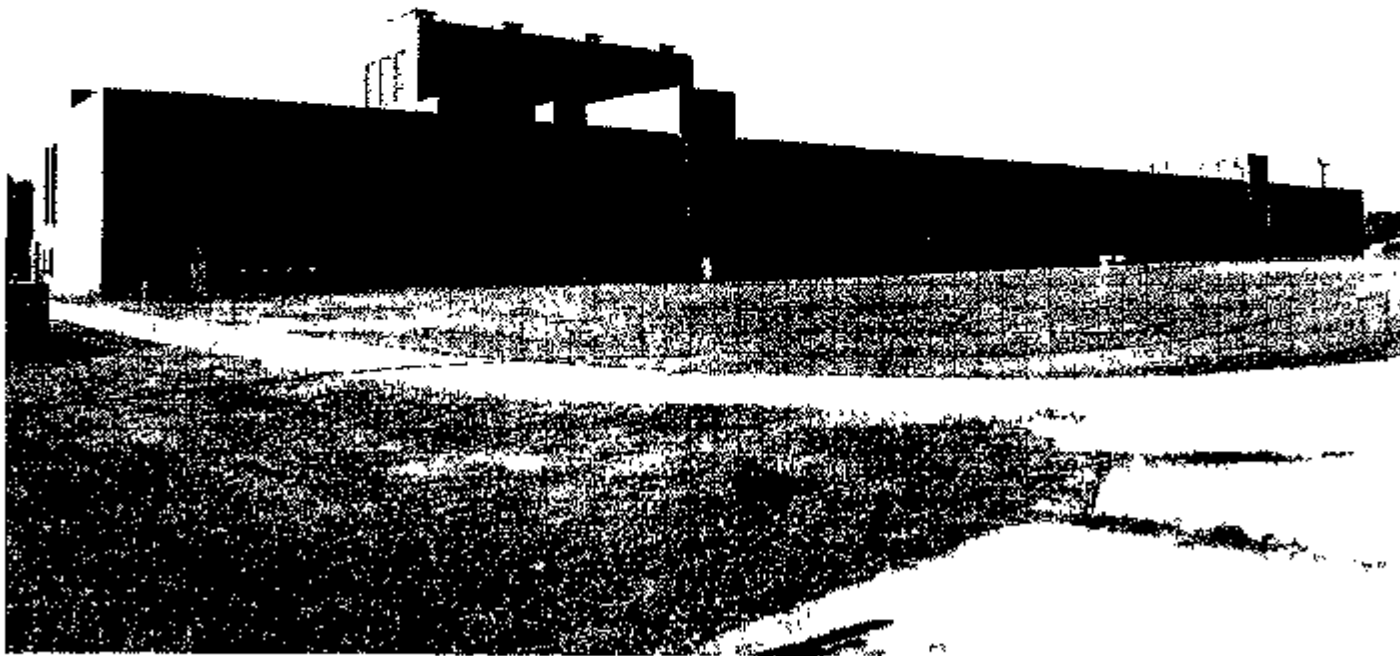


Fig. 7. K-704 Main Switch House
View from East

PHOTO NO. K/PH-87-3371
(U)

10



Fig. 8. K-705 Water Intake Building
East Side of Building

PHOTO NO K/PH-87-3370
(U)

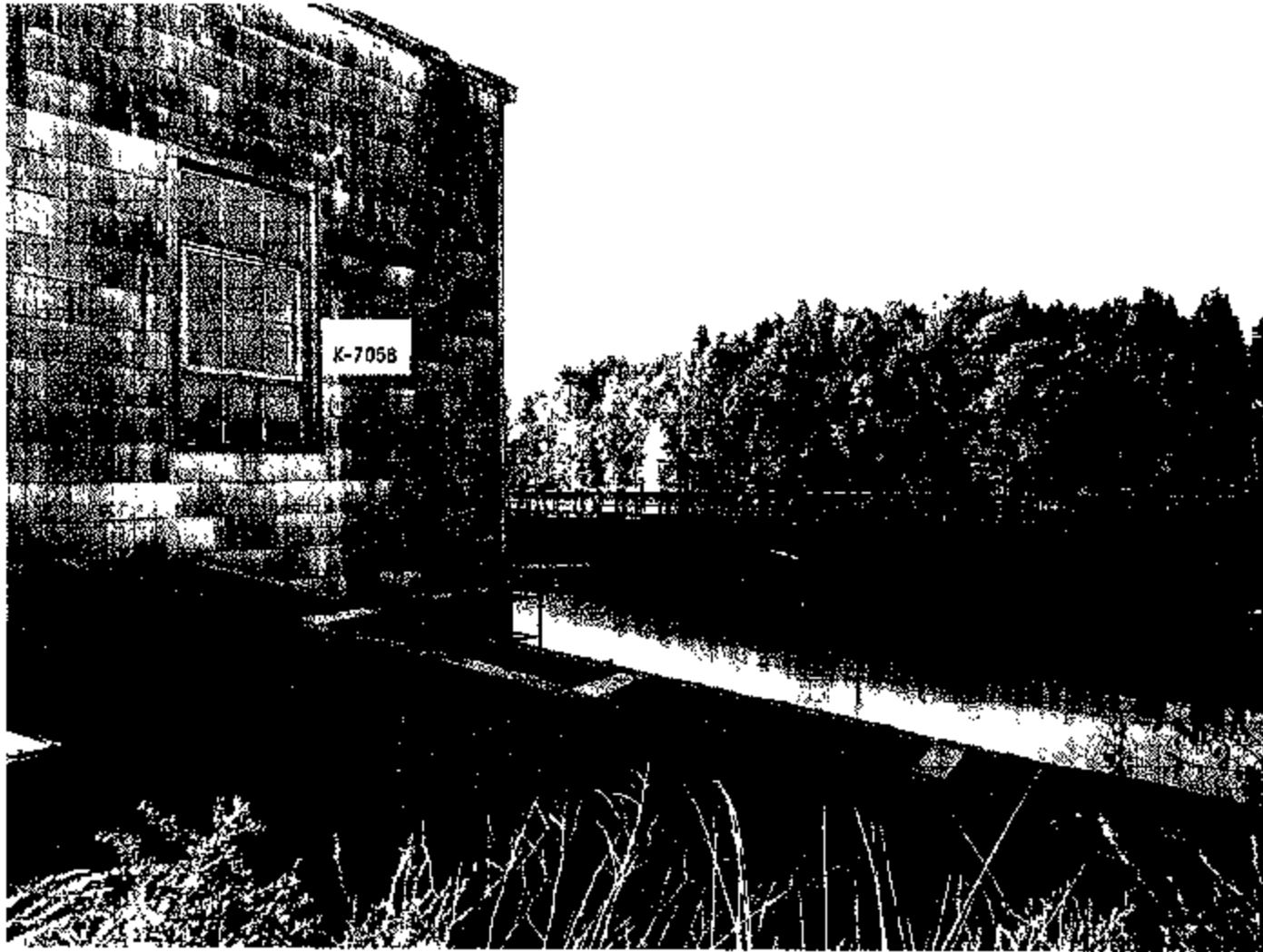
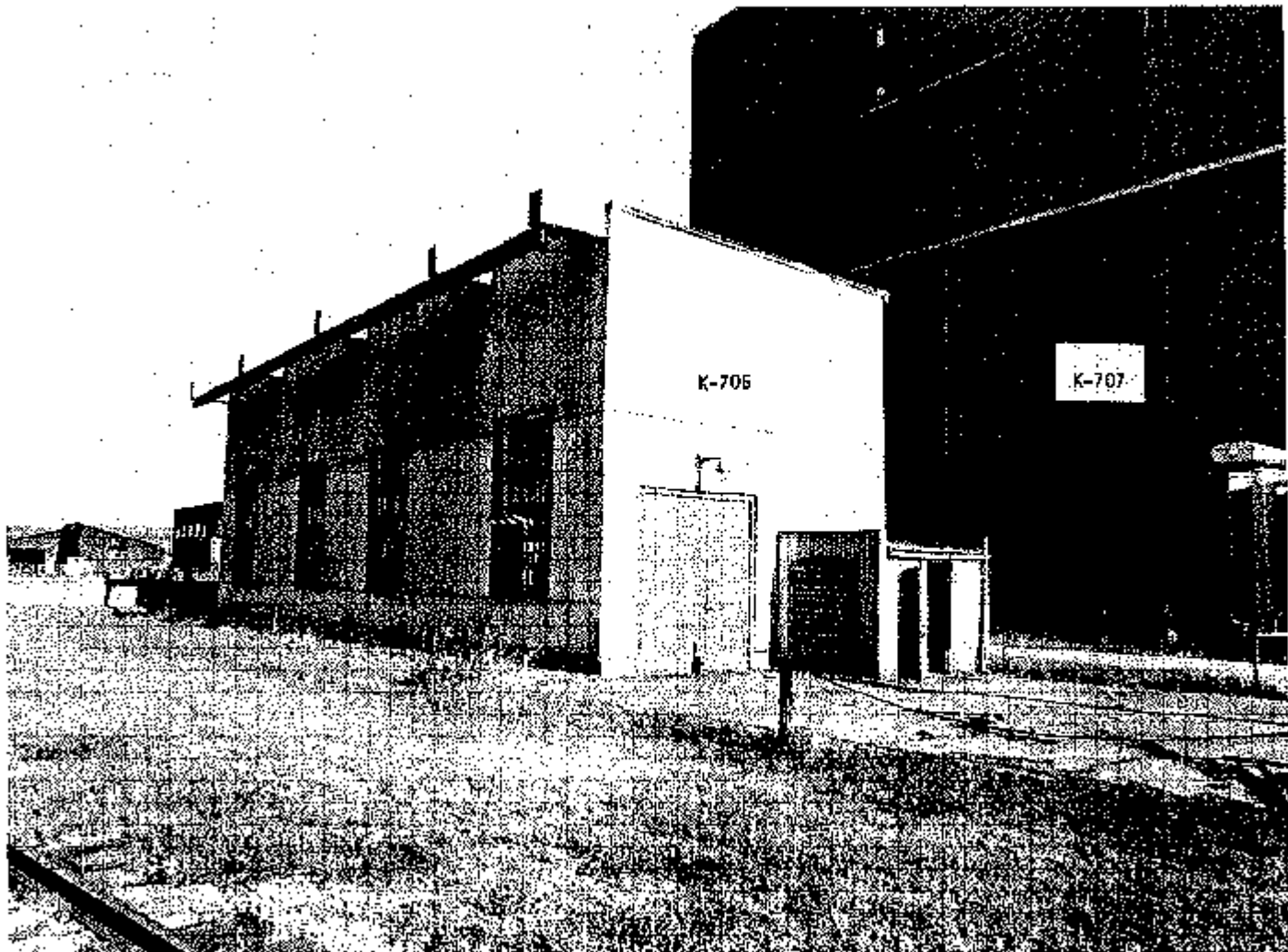


Fig. 9. Intake Water Fixed Screens at River Edge

PHOTO NO. K/PH-07-3572
(U)



12

Fig. 10. K-706 Pump House with K-707 Auxillary Switch House in Right Background

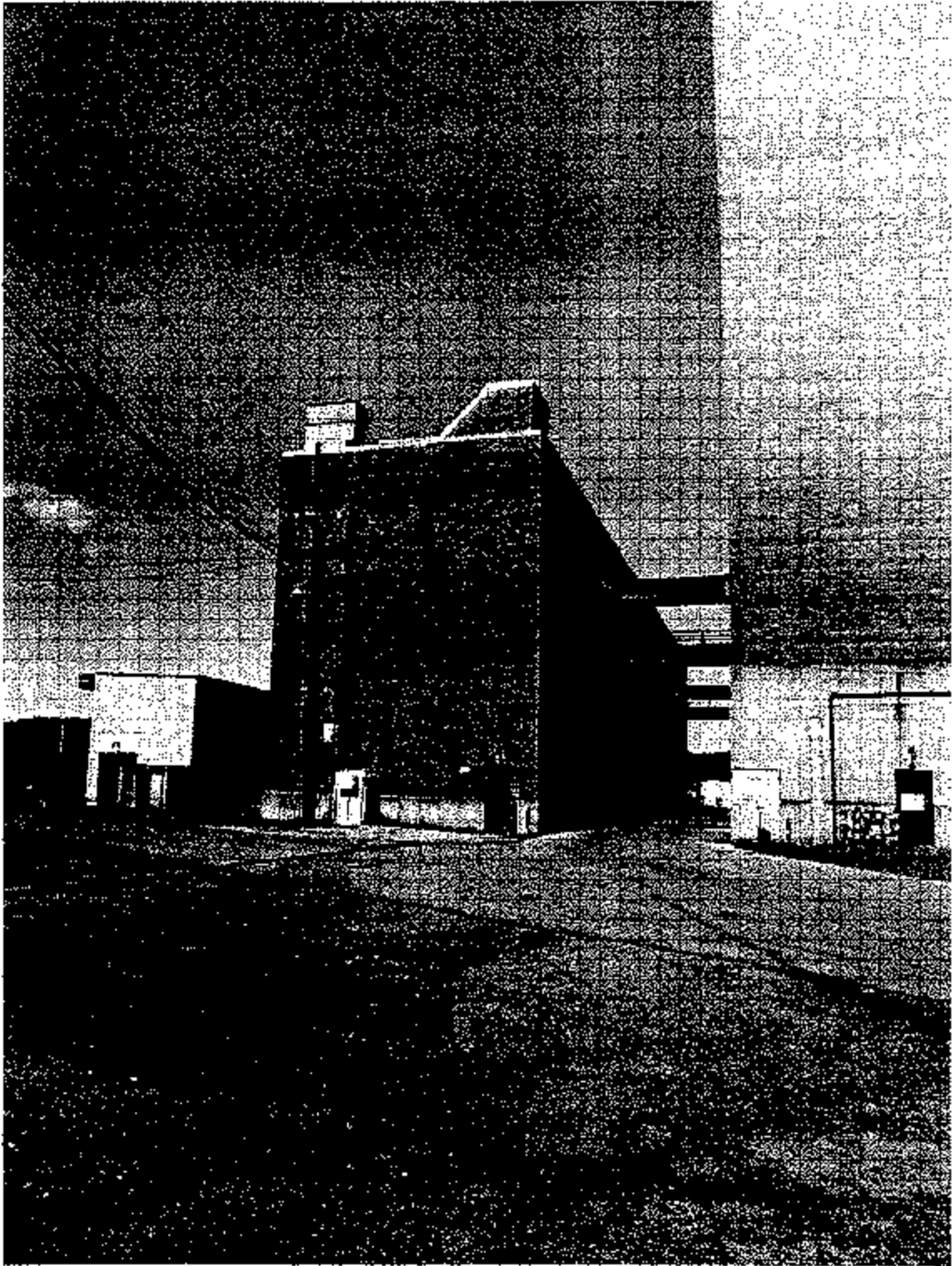


Fig. 11. K-707 Auxiliary Switch House
South End

PHOTO NO. K/PH-87-3375
(U)

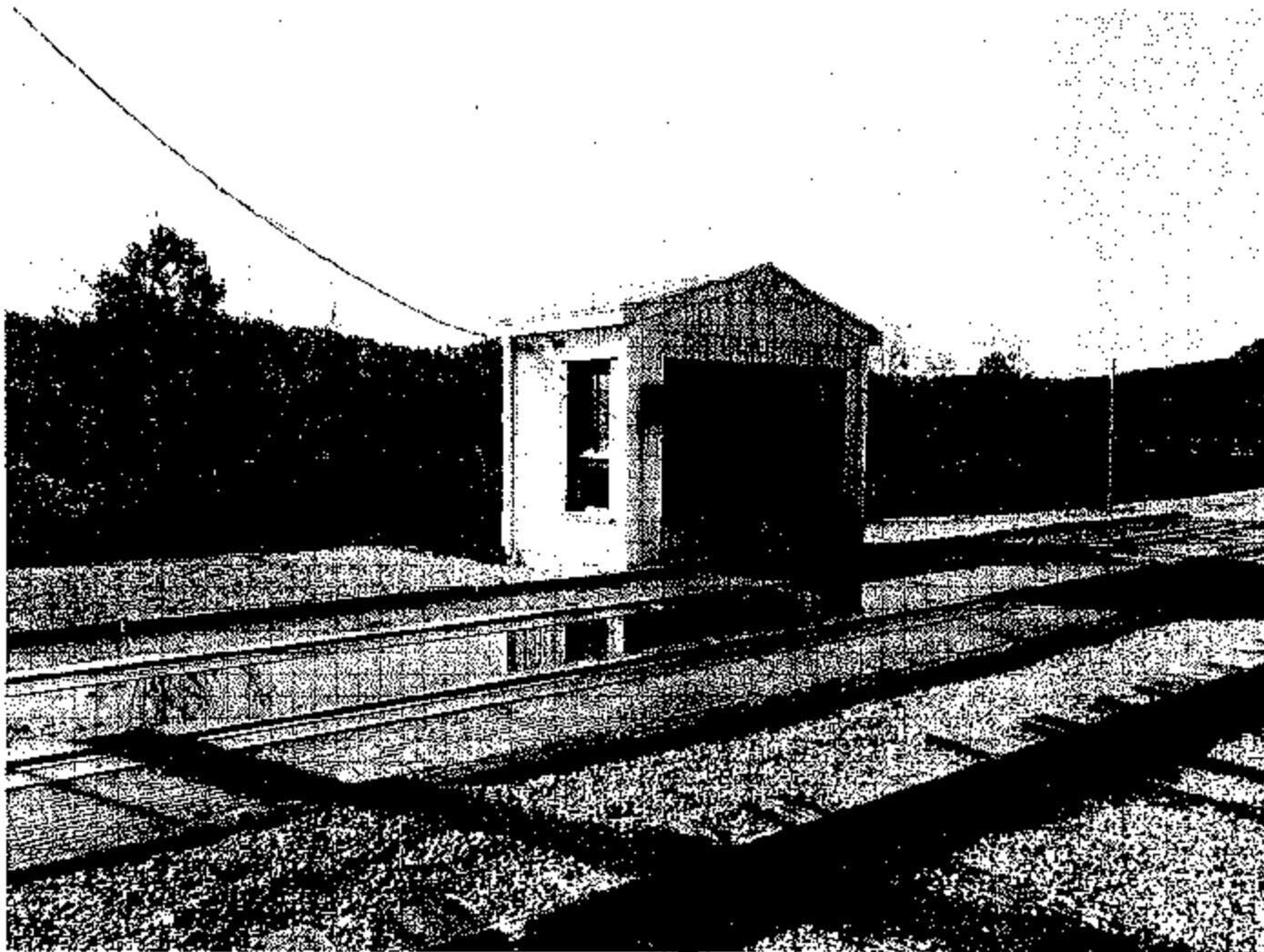


Fig. 12. K-708 Scale House

PHOTO NO. K/PH-67-3368
(U)

15

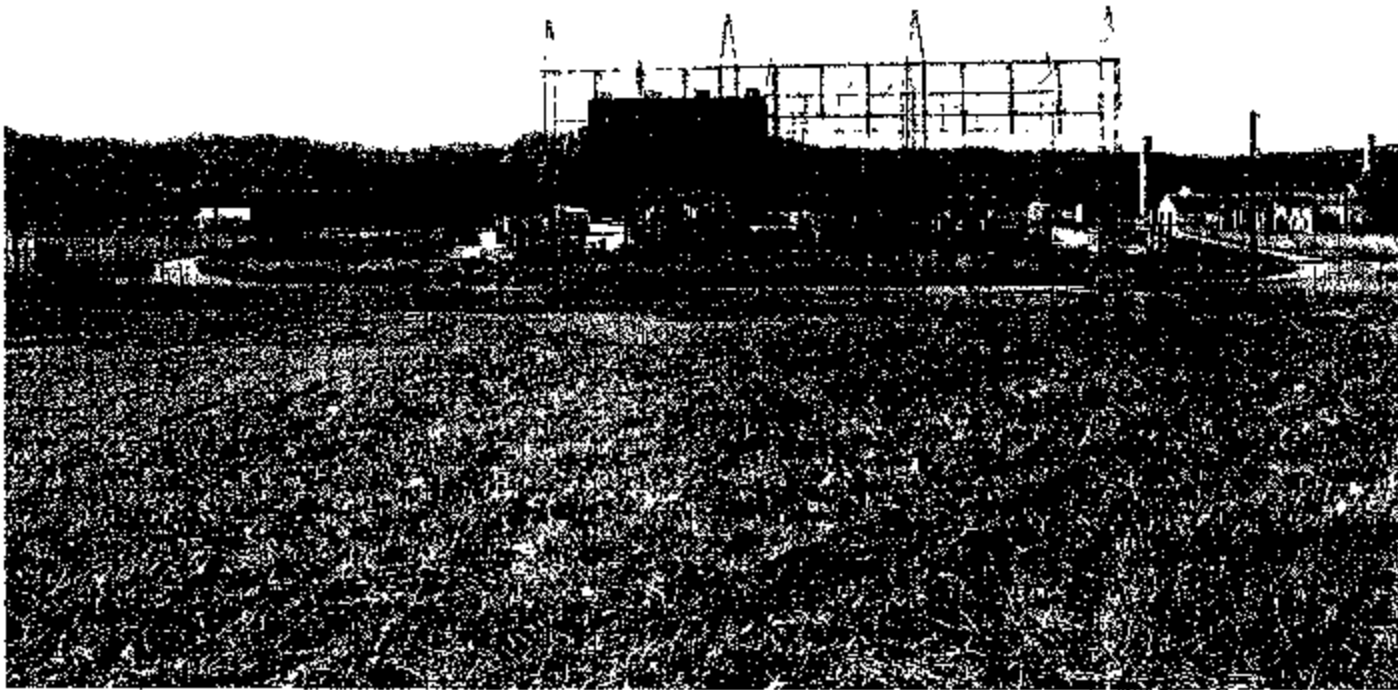


Fig. 13. K-709 Switch Yard - Viewed from East

PHOTO NO. K/PH-87-3373
(U)

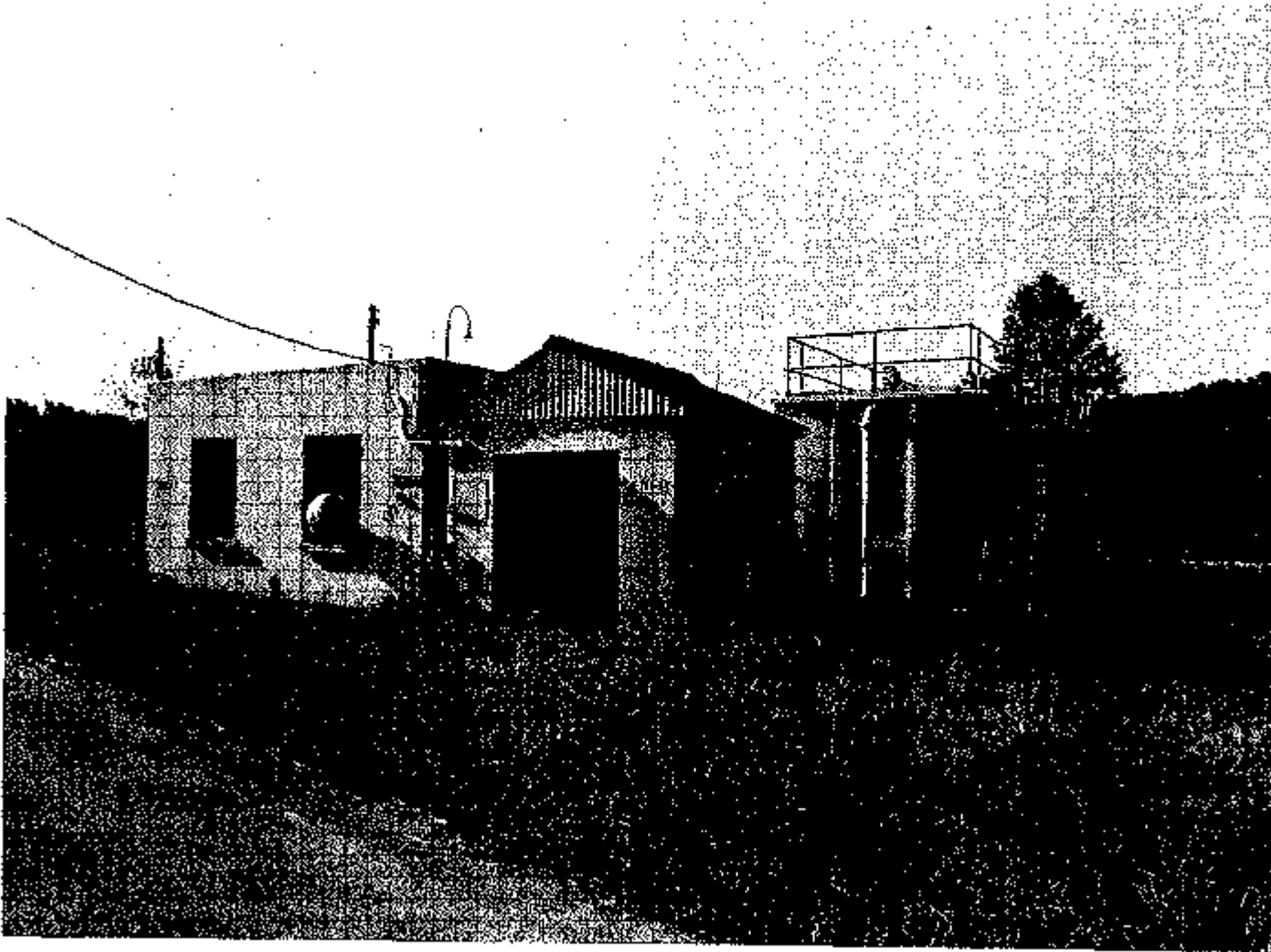


Fig. 14. K-710 Sewage Treatment Plant

PHOTO NO. K/PH-87-3383
(U)

17

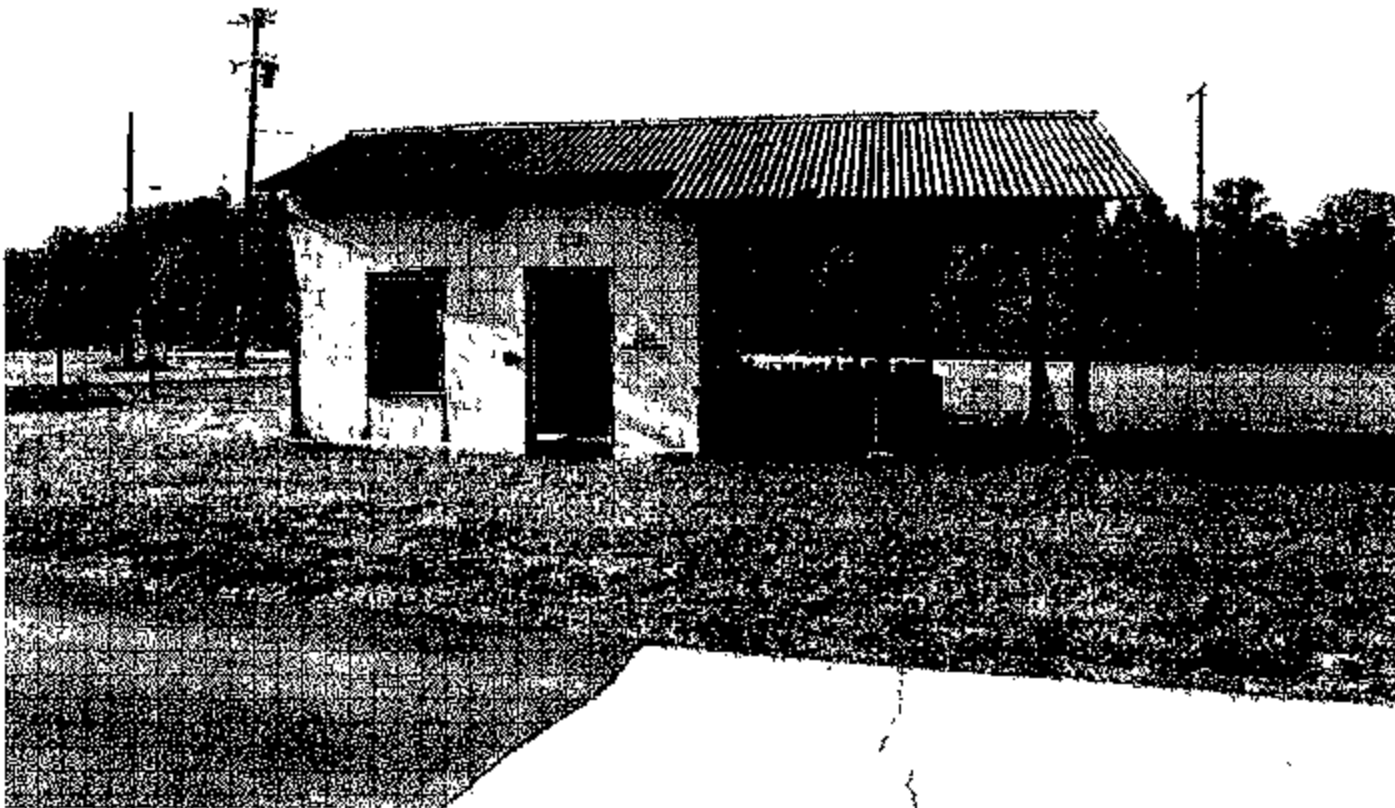


Fig. 15. K-738 Water Treatment Chemical Feed Building

PHOTO NO. K/PM-87 3374
(U)

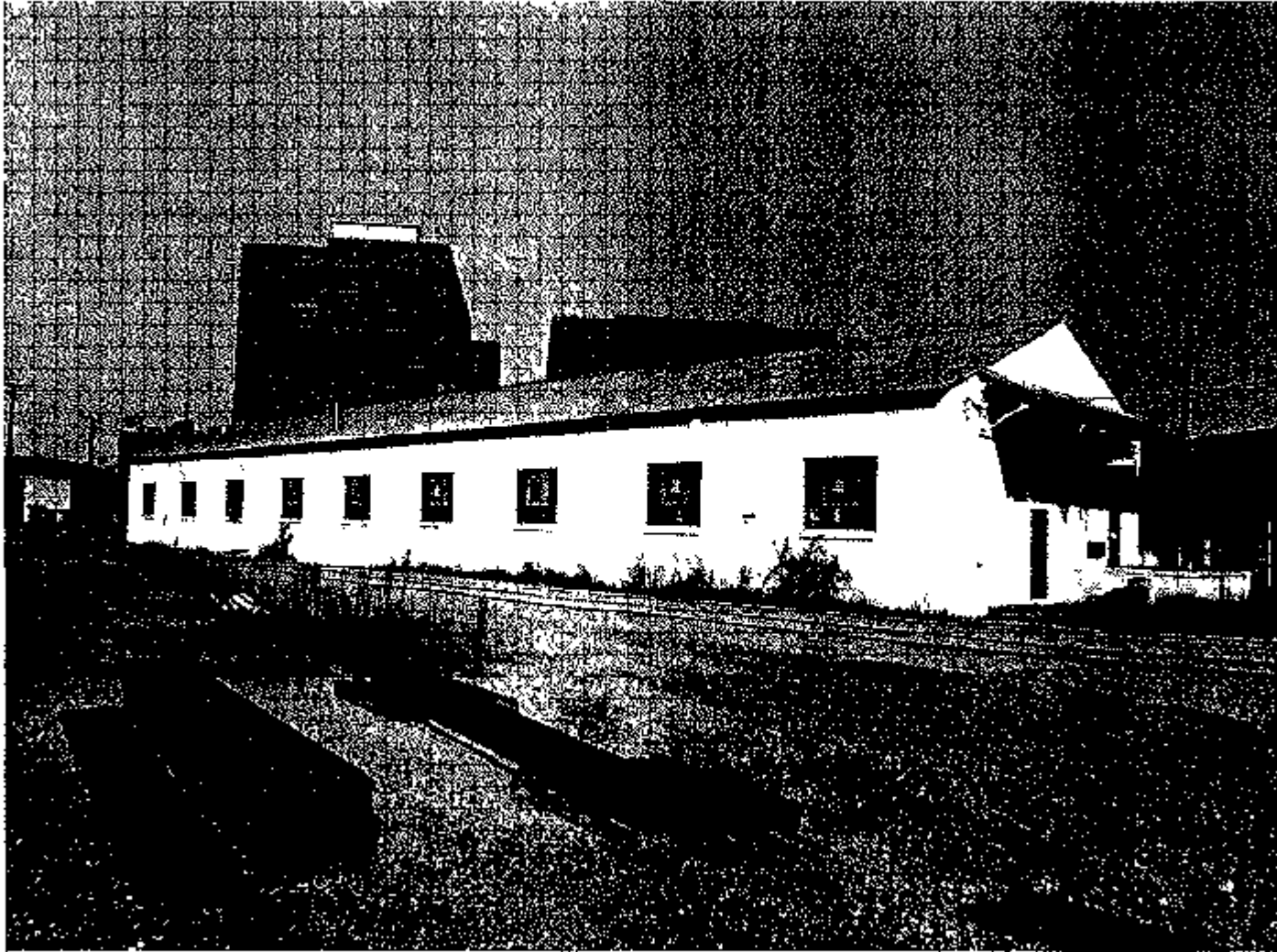


Fig. 16. K-711 Storage Warehouse

PHOTO NO. K/PH-87-3354
(U)

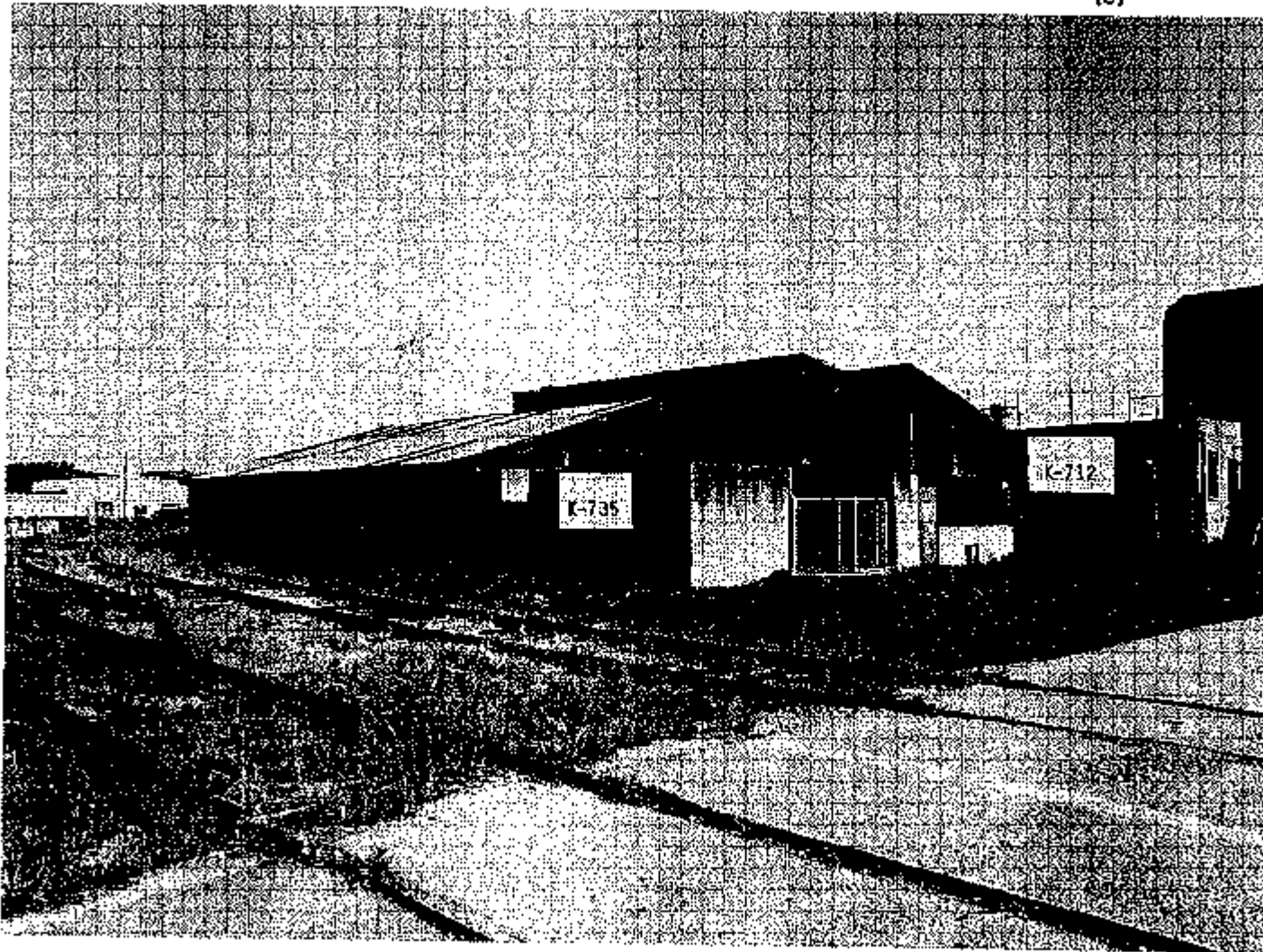
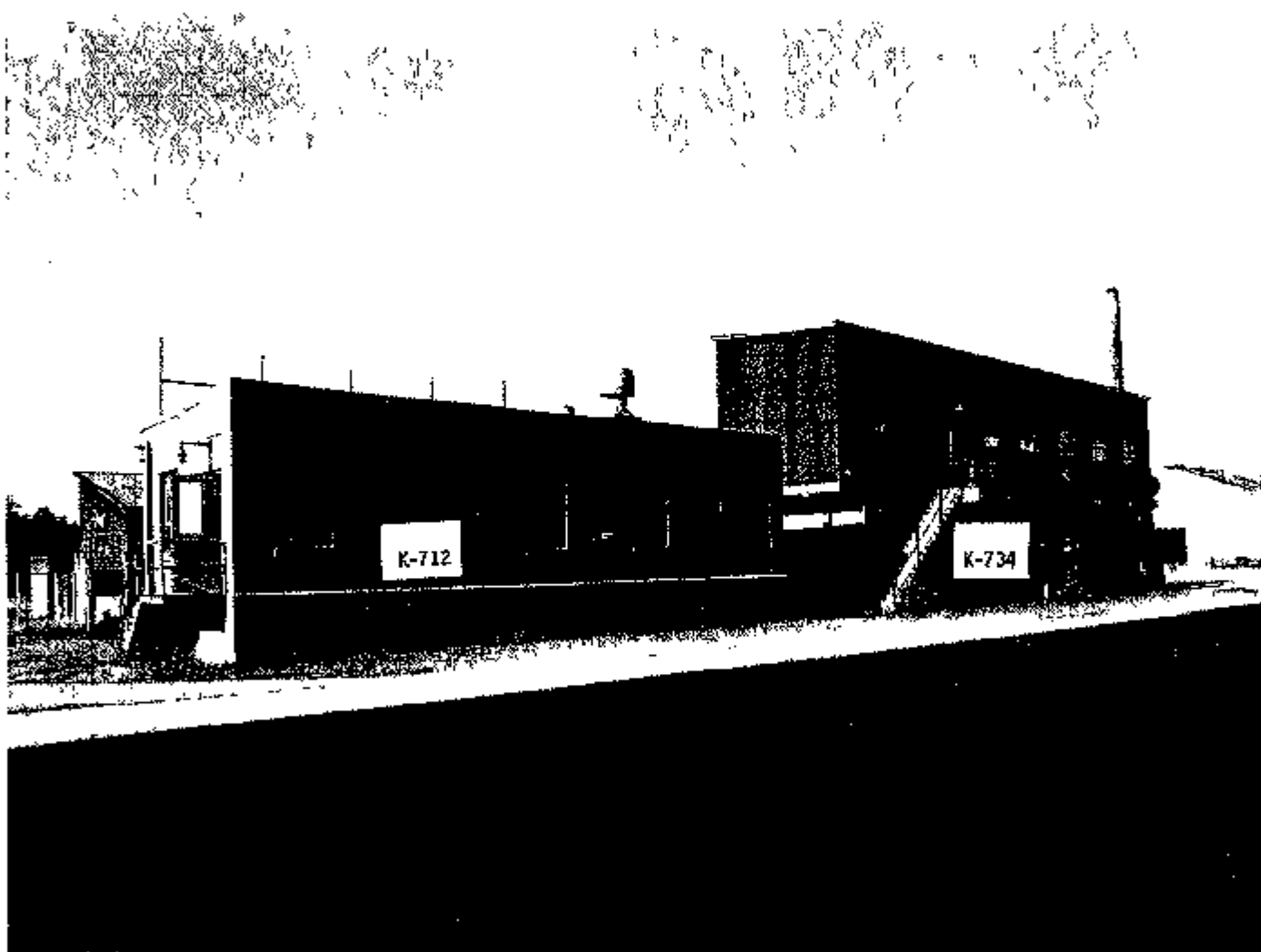


Fig. 17. K-735 & K-712 Storage Buildings

PHOTO NO. K/PH-67-3382
(U)



20

Fig. 18. K 712 & K-734 Storage Buildings
Viewed from the East

PHOTO NO. K/PH-87-3386

(U)

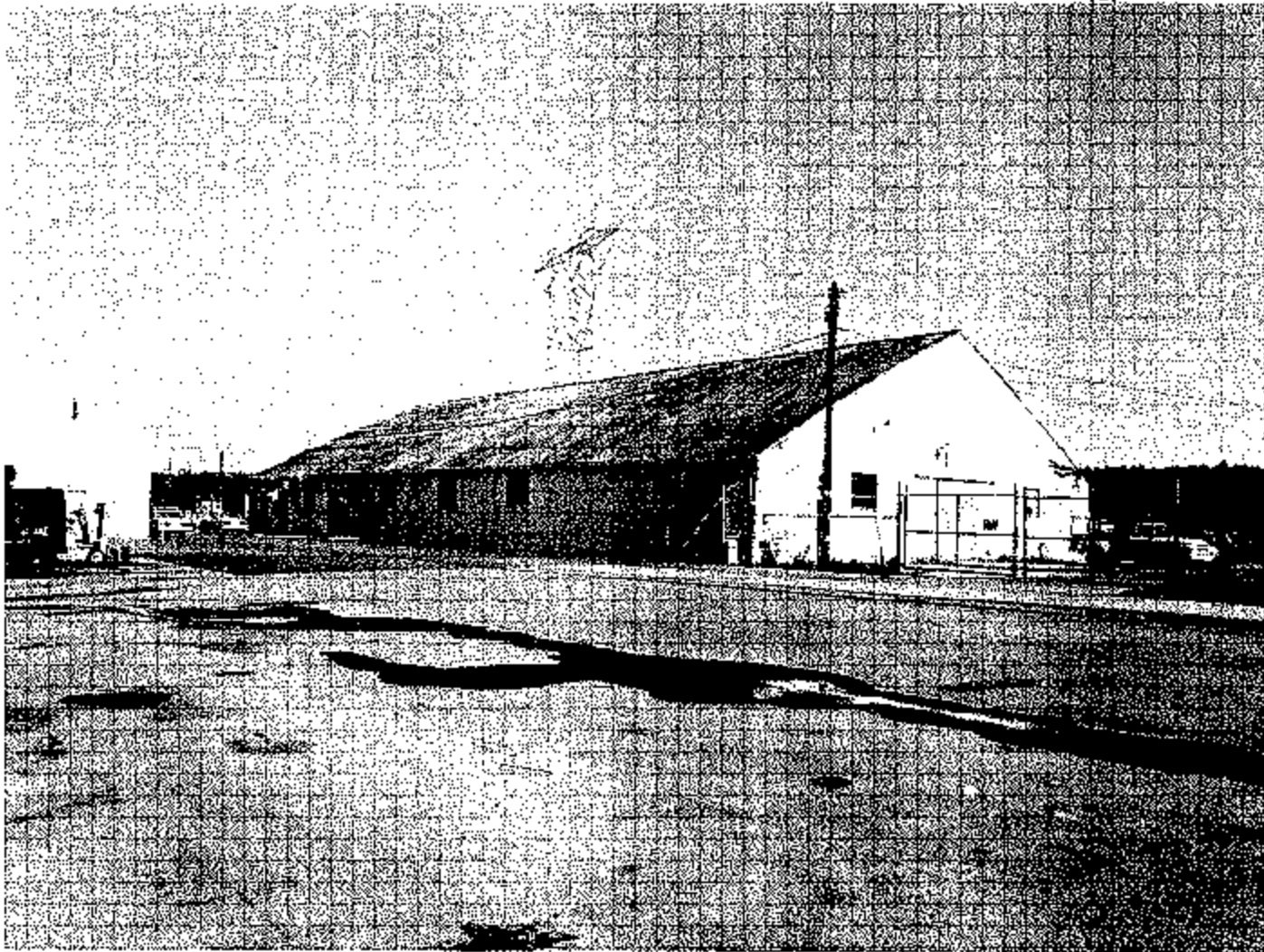


Fig. 19. K-722 Surplus Sales Building

PHOTO NO. K/PH-87-3387
[U]

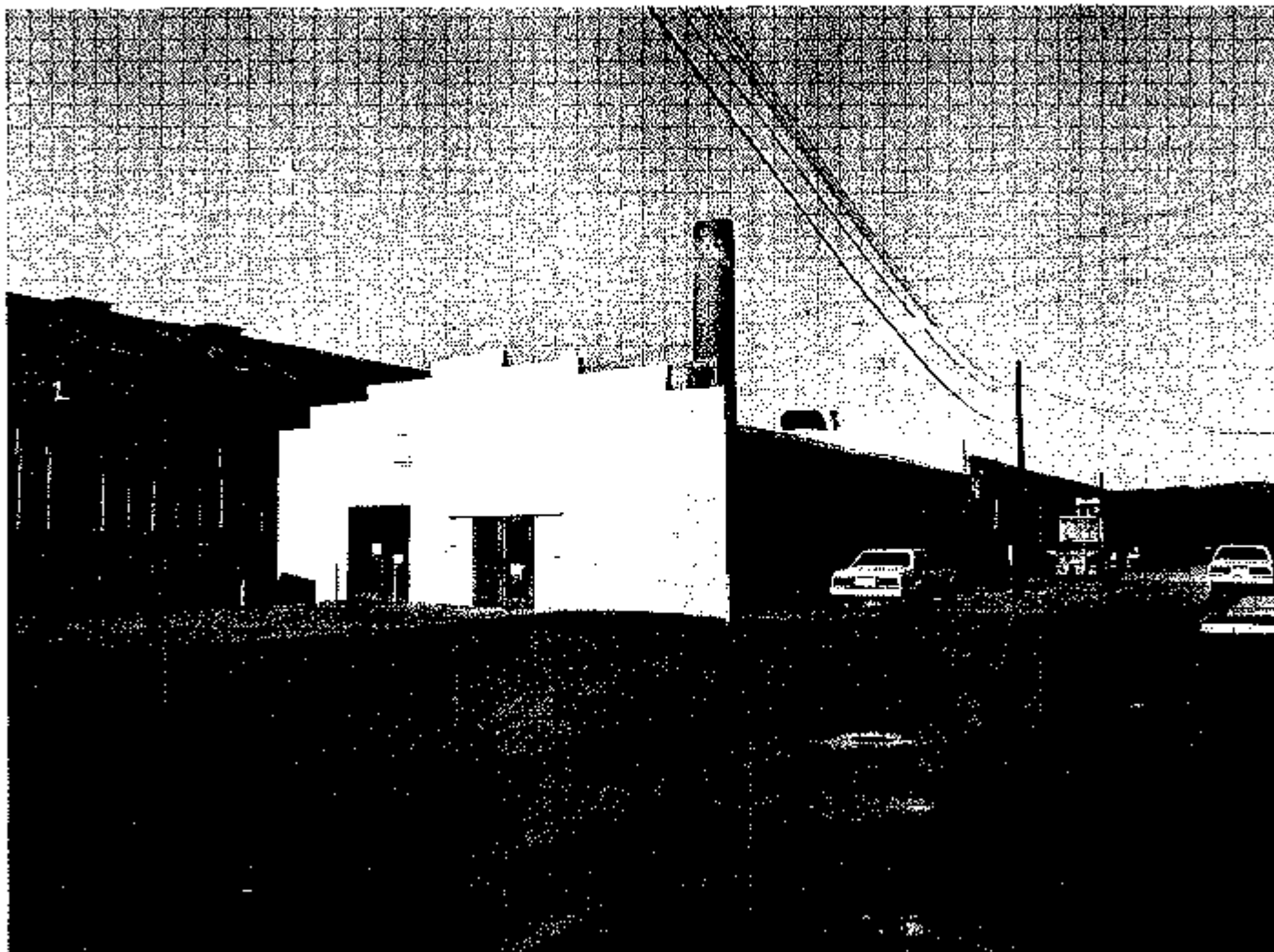


Fig. 20. K-723 Storage Warehouse

PHOTO NO. K/PH-87 2385
(U)

23

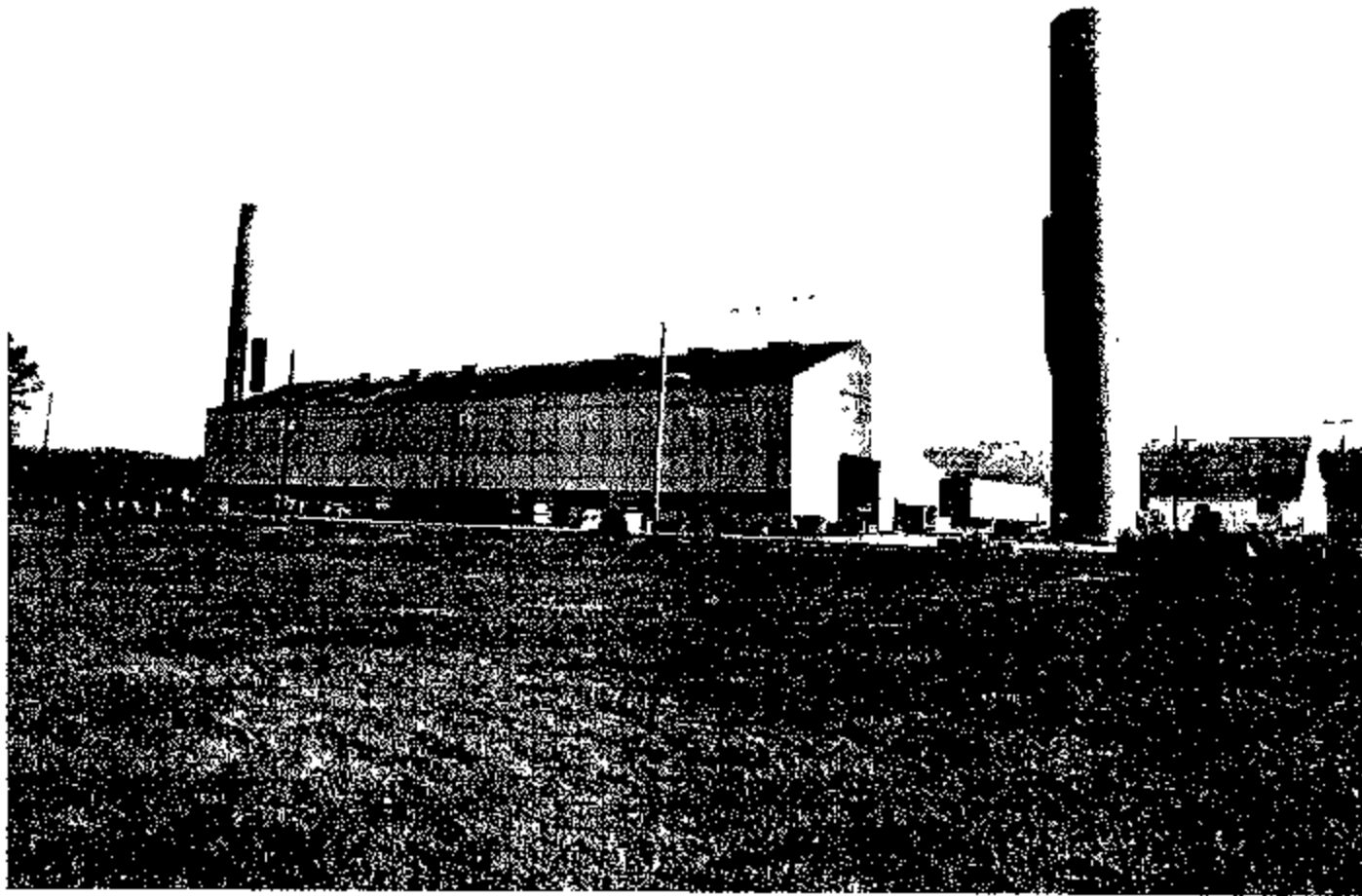


Fig. 21. K-724 Storage Warehouse

NOTE:
 THE MANHOLE NUMBER FOR ROW #2
 ARE TYPICAL FOR ROWS #1 THRU
 #4 EXCEPT AS NOTED.
 A - THE NUMBER SUFFIX INDICATES
 THE ROW NUMBER.

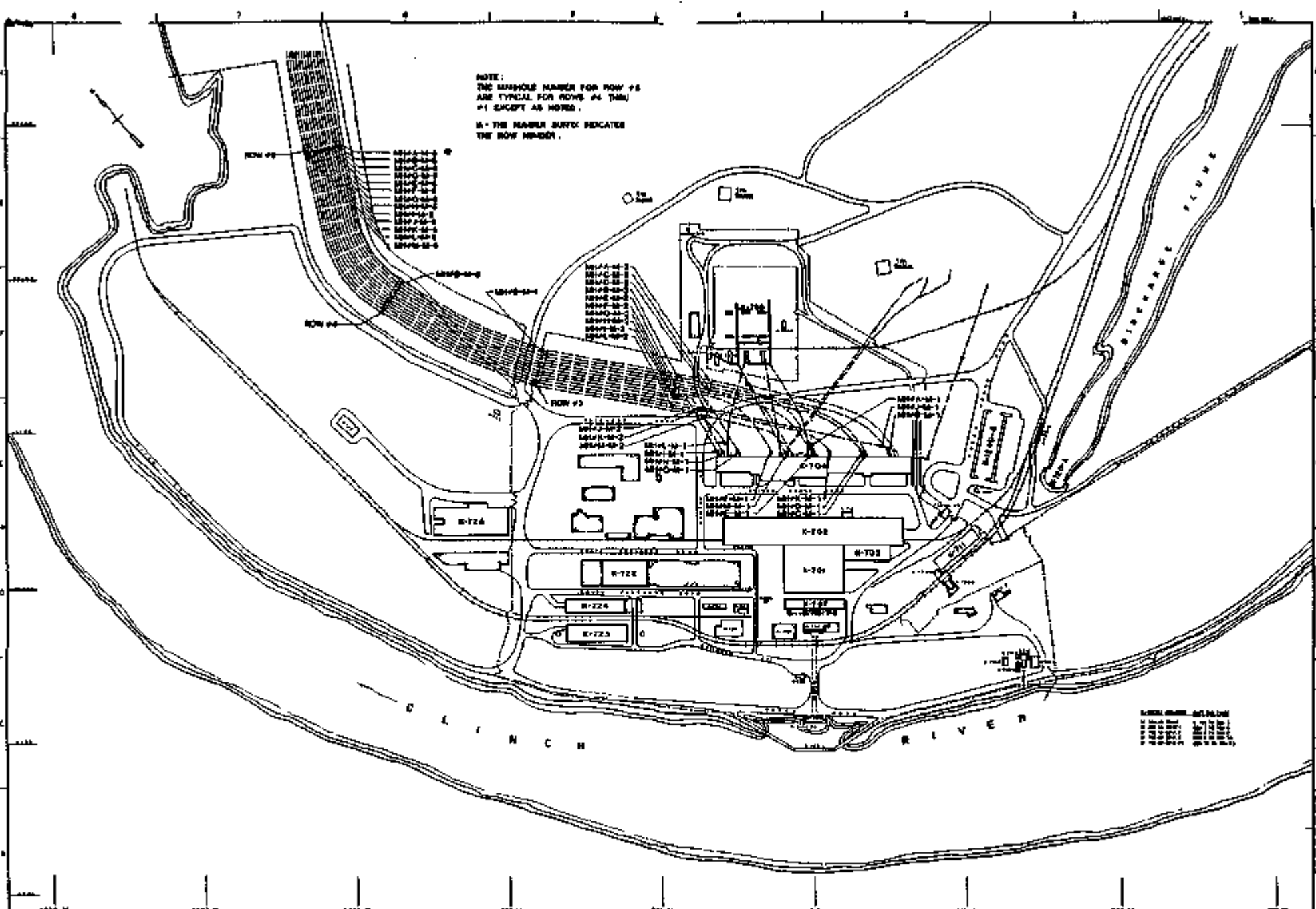


FIGURE 22 - UNDERGROUND FEEDER RUNS
 FROM K-704 TO THR K-300 AREA

LEGEND
 MANHOLE
 BUILDING
 DISEASE FLUME
 CLINCH RIVER

NOT TO SCALE
 DATE: 11/1/58
 DRAWN BY: [illegible]
 CHECKED BY: [illegible]

13 KV UNDERGROUND DISTRIBUTION SYSTEM PLAN OLD POWER HOUSE AREA INCHES AREA 13 KV DIST BUS SERVICE AREA		SHEET NO. 436 576 DATE: 11/1/58
--	--	------------------------------------

25

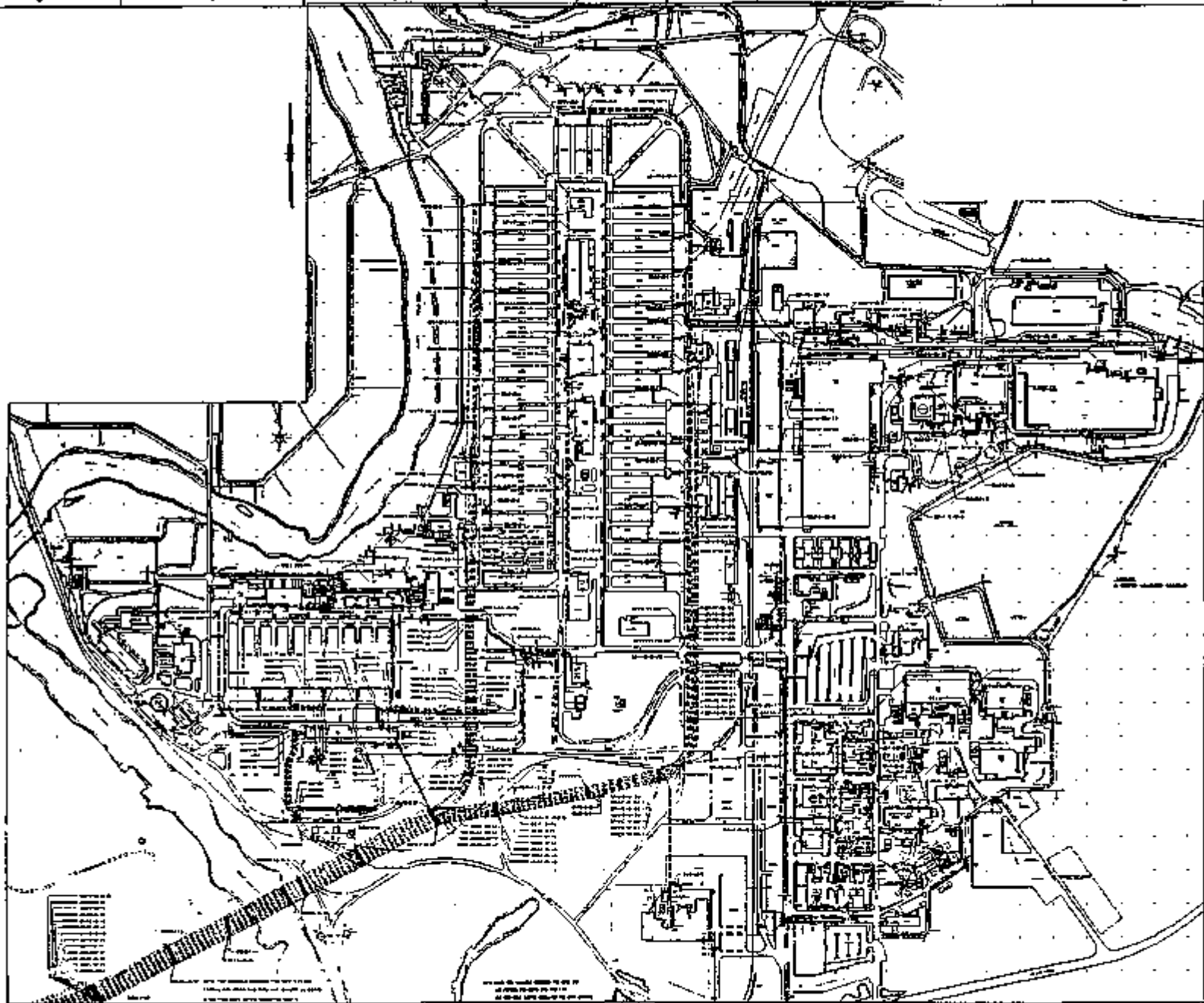


FIGURE 23 - UNDERGROUND FEEDER RUNS INTO THE K-300 AND PLANT AUXILIARY AREAS

REVISIONS

NO.	DESCRIPTION	DATE
1	AS SHOWN	

PROJECT	330KV DIST SYS PLAN
DATE	1/2/80
DRAWN BY	W. J. HARRIS
CHECKED BY	W. J. HARRIS
APP'D BY	W. J. HARRIS
SCALE	AS SHOWN
SHEET NO.	17
TOTAL SHEETS	20
PROJECT NO.	43700E-NY200-0

PHOTO NO K/PH-87-3367
(U)

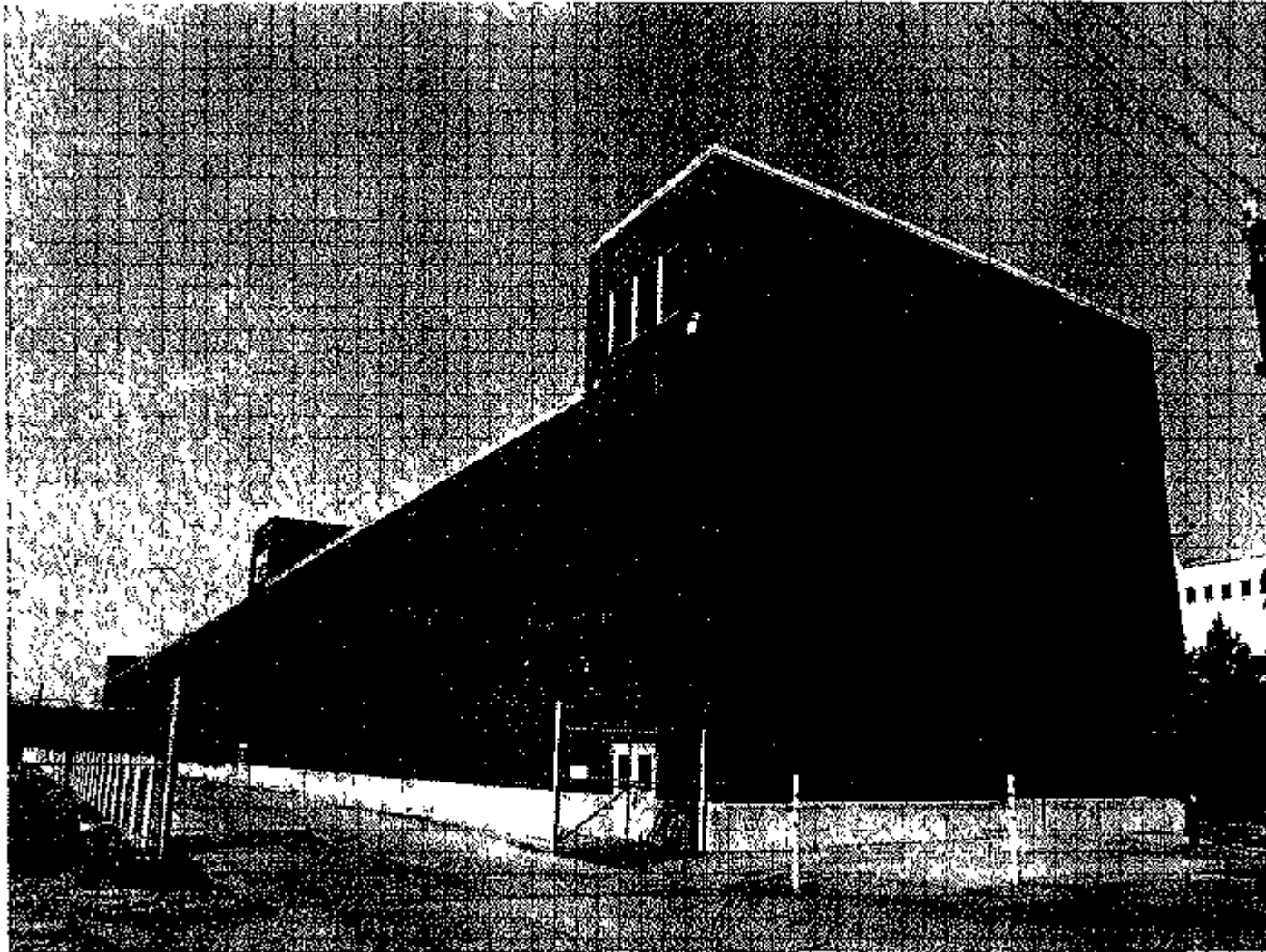


Fig. 24. K-731 (K-27/29) Switch House

2.0 HISTORY

The Oak Ridge Gaseous Diffusion Plant was originally built under the auspices of the Manhattan Project, administered by the Corp of Engineers during the early years of World War II. The K-700 Power House facilities were designed by the Sargent and Lundy Company, an architect-engineering firm located in Chicago, Illinois with the construction being performed by several construction contractors, led by the J. A. Jones Construction Company. Initial operation to supply power to the K-300 process equipment started in 1944 and continued until 1962 when the power generating facilities were shut-down after it was decided to use 60 Hertz power from the Tennessee Valley Authority. The "scrap-out" of the power generating facilities was effected in the mid 1960's, and the equipment was removed from the K-701 and K-702 boiler-turbine buildings with completion occurring in 1967. Essentially all auxiliary equipment and buildings were left intact, as was the K-701 and K-702 building skeleton.

The ancillary buildings in the Power House area, composed of the K-711, 712, 722, 723, 724, 725, 726, 734, and 735 buildings had been used early in the project for special research projects associated with the thermal diffusion process, the NEPA (nuclear energy for the propulsion of aircraft), and for miscellaneous storage or training facilities. During the late 1960's and 1970's some of the abandoned offices and laboratory areas in the K-703 office complex were used for the MAN Project (Molecular ANatomy).

The K-702 turbine-generator building at present houses a Oak Ridge National Laboratory reactor vessel pressure test facility. This test set-up is partially mounted in the basement area, with instrumentation trailers and control rooms located on the equipment floor, both at the north end of the K-702 structure.

At present the K-701, 702, 711, 722, 723, 724 buildings are used for warehousing and for surplus equipment sales activities. Two buildings not previously mentioned, K-725 and K-726, are classified in the RCRA category and are not treated in this report. K-725 was contaminated with hazardous metals

and has been declared off-limits to personnel for many years. The K-726 building is currently being used to store small PCB articles.

Prior to the shutdown of the K-709 161 kV switchyard and the K-704 Main Switch House the 14 kV underground feeders from the K-300 area were rerouted into the K-731 Switch House (K-27/29 area). Power from the K-731 transformers was obtained via necessary 13.8 kV air circuit breakers within the Switch House to power the process and plant auxiliary substations in the K-300 and ORGDP plant area. Also, two feeders were routed back to the K-700 Power House area to serve power to the "shut down" buildings.

3.0 CURRENT PERSONNEL ACCESS

The K-700 Power House area is contained within a security fence and personnel entering must pass through an attended guard portal.

Whenever a surplus equipment sale is pending, the general public interested in bidding on the sale equipment is allowed to pass to the K-722 Building; the surrounding area where cars, trucks, and equipment too large to move into the sheltered area is placed; the K-723 Warehouse; and the K-724 Warehouse. The general public is asked not to enter the other buildings along the walk area but there is no fences or barriers preventing people from going into the K-701, 706, 707, 712, 734, 735 buildings: other structures are sufficiently remote that entrance by the casual public is not anticipated (K-705, 710, and 738). The K-711 Warehouse within the security fence, and the K-708 Scale house outside the fenced area are maintained locked, and not considered readily available to the general public.

Contractor personnel currently have ready access to all areas except the locked buildings. If their work so demands they are given access to these locked areas at their request.

4.0 FUTURE PERSONNEL ACCESS

If the Surplus Sales activity is continued within the K-700 Power House area, the access to the general public and contractor personnel is not expected to be altered from that described above.

If, however, the Surplus Sales activity is moved to another location then the security fences can be maintained locked and all personnel excluded from the area except for the ORNL Reactor Vessel Pressure Test experiment. All buildings could be locked and/or boarded-up to prevent access except for the ORNL Reactor Pressure Test area. This area could be locked when not occupied and Security surveillance maintained by closed circuit television monitoring by the security guard force at K-25.

5.0 HAZARDS SAMPLING

Requests for analysis of samples of materials thought to be hazardous were minimized for economic reasons and to expedite an early result. In the K-700 series of buildings the hazards that could be encountered centered around asbestos insulation and asbestos building materials, possible PCB contaminated mineral oil filled electrical equipment, acids from station batteries, bird droppings, and the remote possibility of some radioactive surfaces. Samples were not requested of battery acid, nor bird droppings, and except for a few confirmation samples the previous sample data obtained by Power Operations on PCB levels in the transformer oils was accepted as being correct.

The samples requested were drawn and analyzed as per Bibliography "A", GENERIC SAMPLING GUIDANCE DOCUMENT, by the Martin Marietta Energy Systems laboratory personnel. The samples requested for the K-700 Power House area are listed in Table I while the samples for the K-731 and K-732 areas (K-27/29 Switch House and switch yard) are shown in Table II.

Samples with an "A" prefix number were basically for determination of the presences of asbestos within pipe insulation or in building materials, while a "P" prefix indicated a PCB analysis of the oil in a piece of electrical equipment. The table heading "Type of Analysis" indicated "Surface" for radioactivity, PCB for ppm of PCB's, and Asbestos for content of asbestos in insulation of building material. The "Density" column indicated if the density of the material in weight per unit volume was desired, while the "Dimension" column indicated if the thickness of insulation on a pipe or the thickness of building material was desired.

5.1 Asbestos

Asbestos was extensively used in steam and hot water pipe insulation during the 1940's when these facilities were built. It was not until the mid-70's that the use of asbestos was curtailed. Since, during the construction period asbestos was the premium insulation to be used whenever possible, any pipe insulation sampled was assumed to have the same material through-out the

TABLE I
 SITE CHARACTERIZATION STUDY
LIST OF REQUESTED SAMPLES
 K-700 POWER HOUSE AREA

Building	Sample Dwg./ No.	Map No.	Type Analysis		PCB	Asbestos	Density	Dimension
			Surface					
K-701	A-0401	SL-M-4	X			X	X	X
	A-0402	M-4	X			X	X	X
	A-0403	M-4	X			X	X	X
	A-0404	M-4	X			X	X	X
	P-0401	M-4			X			
	P-0402	M-4			X			
K-702	A-0405	S&L M-5	X			X	X	X
	A-0406	M-5	X			X	X	X
	A-0407	M-5	X			X	X	X
	A-0408	M-5	X			X	X	X
K-703	A-0409	CALL (1)	X			X	X	X
	A-0410	CALL (1)	X			X	X	X
	A-0411	CALL (1)	X			X	X	X
K-704	A-0412	S&L E-16	X			X	X	X
	A-0413	E-16	X			X	X	X
	P-0403	B-144			X			
	P-0404	B-144			X			
K-705	A-0414	D-KP-19178A	X			X	X	X
K-706	A-0415	S&L B-265	-			X	X	X
K-707	A-0416	S&L B-110	-			X	X	X
	A-0417	B-110	X			X	X	X
	A-0417	B-110	X			X	X	X
	A-418A	B-110	X			X	X	X
	A-0418B	B-110	X			X	X	X
	A-0418C	B-110	X			X	X	X
	P-0405	B-110			X			
	P-0406	B-110			X			
P-0407	B-110			X				
K-708E	A-0419	E-E-32514A	-			X	X	X
	A-0420	E-E-32514A	-			X	X	X

TABLE I (CONTINUED)

Building	Sample No.	Dwg./ Map No.	Type Analysis				
			Surface	PCB	Asbestos	Density Dimension	
K-709A	A-0421	S&L M-421	-		X	X	X
K-709C	A-0422	M-421	-		X	X	X
K-711	A-0423	AWS-10725I	-		X	X	X
K-722	A-0424	SIE-51896A	X		X	X	X
	A-0425	SIE-51896A	-		X	X	X
	A-0426	SIE-51896A	-		X	X	X
K-723	A-0427	(1) Sample Transite Siding	-		X	X	X
K-724	A-0428	D-KS-19112A	X		X	X	X
	A-0429	D-KS-19112A	X		X	X	X
	A-0430	D-KS-19112A	X		X	X	X
K-725	SAMPLING PER RCRA FACILITY INVESTIGATION (RFI)						
K-738	A-0431	(1) Sample Transite Roof	-		X	X	X

(1) ORGDP Building Identification and Location Map TABLE II

TABLE II

List of Requested Samples
K-731 Electrical System

Building	Sample No.	Dwg./ Map No.	<u>Type Analysis</u>				
			Surface	PCB	Asbestos	Density	Dimension
K-731	A-0445	EE-39569D3	X		X	X	
		A-0446	"			X	X
		A-0447	EKE-1827A	X		X	X
		A-0448	"			X	X
K-732	A-0449	EKE-K1827L		X	X	X	

length of pipe for that service; e.g. a steam line insulated with asbestos indicated all steam lines in that building would have asbestos insulation. All suspected asbestos insulated lines and equipment were sampled, and surface beta and gamma monitoring performed with a portable Geiger counter. EPA approved sampling procedures were followed in obtaining the samples, and the sampling personnel were "dressed-out" as per Industrial Health & Hygiene standards.

In addition to the use of asbestos for thermal insulation of pipe lines, asbestos insulation was applied to the electrical feeder cables where ever they would be subjected to intense electrical arcing during an electrical fault or subsequent flames from equipment involved in a combustible fire. Bare feeder cables in the switch houses and these same types of cables in each manhole were so treated. The cables, where so exposed, were wrapped with asbestos tape, covered with hemp rope, and then treated with a mortar mix of cement and asbestos. Since the design prints specified this type of treatment, no sampling was requested. However, it is to be noted that there is extensive use of this practice through-out the electrical distribution system.

Asbestos treated control wiring (Code designation "TA") was used almost exclusively in the instrument and control panels of the Control Rooms and in all of the switchgear. Many thousands of feet of wire now exist, but in all cases checked the wire insulation is not desicated and the asbestos has not become "friable". Sampling of this wire was not requested.

5.2 Polychlorinated Biphenyls (PCB's)

The electrical transformers originally installed in the K-700 Power House area were insulated either with mineral oil, or were air cooled units for indoor applications. Possibly during the course of equipment servicing procedures some of the mineral oil was contaminated with PCB's. A few confirmation samples were taken to verify the samples taken during the 1981 to 1984 period by the Power Operations personnel were correct. As previously mentioned, the results from this previous sampling program is in most cases being used for the Site Characterization review.

Fluorescent light fixture ballasts and power factor correction capacitors that contain PCBs were not sampled since these units are sealed. Units procured after the mid 1970's may not contain PCBs but in those cases it is assumed the articles will be so designated.

5.3 Radioactive Contamination

The "Surface" contamination analysis by use of a Geiger counter was negative in all cases, being less than 0.1 mr/hr. This is to be expected since the Power House area is far removed from the process buildings where the Uranium is handled.

5.4 Other Types of Contamination

The station batteries within the K-704 and K-731 switch houses contain large quantities of sulphuric acid electrolyte. It was deemed not necessary to withdraw samples for analysis.

The "ash disposal area" of the K-700 facility was not sampled since conversations with Health, Safety and Environmental personnel indicated that no problems would be expected after 25 years of weathering and leaching action.

The "pigeon droppings" problem is included in OSHA provisions and is considered to be a source of "Histoplasmosis". Histoplasmosis as defined in the Webster New Collegiate dictionary is "a disease caused by infection with a fungus and marked by benign involvement of lymph nodes of the trachea and bronchi or by severe progressive generalized involvement of the lymph nodes and the reticuloendothelial system.

Both central and wall/window type air conditioners still remain in some of the facilities. It was assumed that these units will be removed prior to final "Safe Storage" certification and therefore did not require sampling to prove the existence of freons.

6.0 HAZARDS DESCRIPTIONS

Results of the sampling analyses have been received and are shown in Tables IIIA and IIIB, SAMPLE ANALYSIS RESULTS. Incorporating these analyses with visual observations and necessary computations, has provided the data for input of hazards to the tables in Appendix A, Titled "Facility Structure Evaluation". Also, a recap of the hazards that must be considered for "Safe Storage" action is presented in Table VI, "HAZARDS SURVEY RESULTS - CRITICAL SAFE STORAGE ITEMS".

The hazards currently foreseen for each of the different buildings treated are indicated in the "FACILITY STRUCTURE EVALUATION" listing in Appendix A. However, a short narrative for each structure is included here to expand on the information contained in the listings.

K-701:

The boiler and fan bays have been stripped of all operating equipment except for an unused service water line and some miscellaneous steam or hot water lines. The large service water line insulation does not contain asbestos, but the other lines do have asbestos containing insulation. Figure 25 shows some of the lines in the south end of the building at ground floor level, while Figure 26 shows the structural steel that is fairly well covered with pigeon droppings.

K-702:

The service water line in the basement of the Turbine-generator room, shown in Figure 27, does not have asbestos insulation, but some of the lines that "Tee" off of this line as shown in Figure 28 have asbestos insulation.

K-703:

The small 1 inch and 2 inch service hot water and steam lines in the "crawl space" under the first floor level of offices are insulated with asbestos, as shown in Figure 29. Also, this office complex has a central air conditioning unit, some wall mounted A/Cs, and of course an extensive number of fluorescent fixtures.

TABLE III A
 SITE CHARACTERIZATION STUDY
 SAMPLE ANALYSIS RESULTS
 K-700 POWER HOUSE AREA

<u>Building</u>	<u>Sample No.</u>	<u>Dwg/Map No.</u>	<u>Type Analysis</u>			<u>Dimension</u>
			<u>Surface</u>	<u>PCB</u>	<u>Asbestos</u>	
K-701	A-0401	SL-M-4	<0.1mr/hr		Neg.	X
	A-0402	M-4	<0.1mr/hr		Neg.	X
	A-0403	M-4	<0.1mr/hr		60%	X
	A-0404	M-4	<0.1mr/hr		60%	X
	P-0401	M-4		16ug/g		
	P-0402	M-4		27.5ug/g		
K-702	A-0405	S&L M-5	<0.1mr/hr		60%	X
	A-0406	M-5	<0.1mr/hr		Neg.	X
	A-0407	M-5	<0.1mr/hr		3%	X
	A-0408	M-5	<0.1mr/hr		45%	X
K-703	A-0409	As Instructed	<0.1mr/hr		X	X
	A-0410	" "	X		X	X
	A-0411	" "	X		X	X
K-704	A-0412	S&L E-16	X		X	X
	A-0403	E-16	X		X	X
	P-0403	B-144		76.8ug/g		
	P-0404	B-144		189.2ug/g		
K-705	A-0414	D-KP-19178A	<0.1mr/hr		X	X
K-706	A-0415	S&L B-265	"		X	X
K-707	A-0416	S&L B-110	-		X	X
	A-0417	B-110			X	X
	A-0418A	B-110	<0.1mr/hr		70%	X
	A-0418B	B-110	X		3%	X
	A-0418C	B-110	X		60%	X
	P-0405	B-110		X		
	P-0406	B-110		53.6ug/g		
	P-0407	B-110		16.4ug/g		
K-708E	A-0419	E-E-32514A	<0.1mr/hr		X	X
	A-0420	E-E-32514A	X		15%	X
K-709A	A-0421	S&L M-421	X		20%	X

TABLE III A (Continued)

<u>Building</u>	<u>No.</u>	<u>Sample No.</u>	<u>Dwg/Map Surface</u>	<u>Type Analysis</u>		<u>Dimension</u>
				<u>PCB</u>	<u>Asbestos</u>	
K-709C	A-0422	M-421	<0.1mr/hr		12%	X
K-711	A-0423	AWS-107251	X		20%	X
K-722	A-0424	S1E-51896A	X		X	X
	A-0425	S1E-51896A	X		X	X
	A-0426	S1E-51896A	-		X	X
K-723	A-0427	(1) Sample Transite Siding	<0.1mr/hr		X	X
K-724	A-0428	D-KS-19112A	<0.1mr/hr		X	X
	A-0429	D-KS-19112A	X		X	X
	A-0430	D-KS- 19112A	X		20%	X
K-725	SAMPLING PER RCRA FACILITY INVESTIGATION (RFI)					
K-738	A-0431	(1) Sample Transite Roof	"		X	X

(1) ORGDP Building Identification and Location Map

TABLE III 8

Sample Analysis Results

K-731 Electrical System

<u>Building</u>	<u>Sample No.</u>	<u>Dwg./ Map No.</u>	<u>-----Type Analysis-----</u>		
			<u>Surface PCB</u>	<u>Asbestos</u>	<u>Dimension</u>
K-731	A-0445	EE-39569D3	X	(70%)	1"
	A-0446	"		70%	1"
	A-0447	EKE-1827A	X	70%	1"
	A-0448	"		70%	1"
K-732	A-0449	EKE-K1827L		NEG	1"

PHOTO NO. K/PH-27-2284
(U)

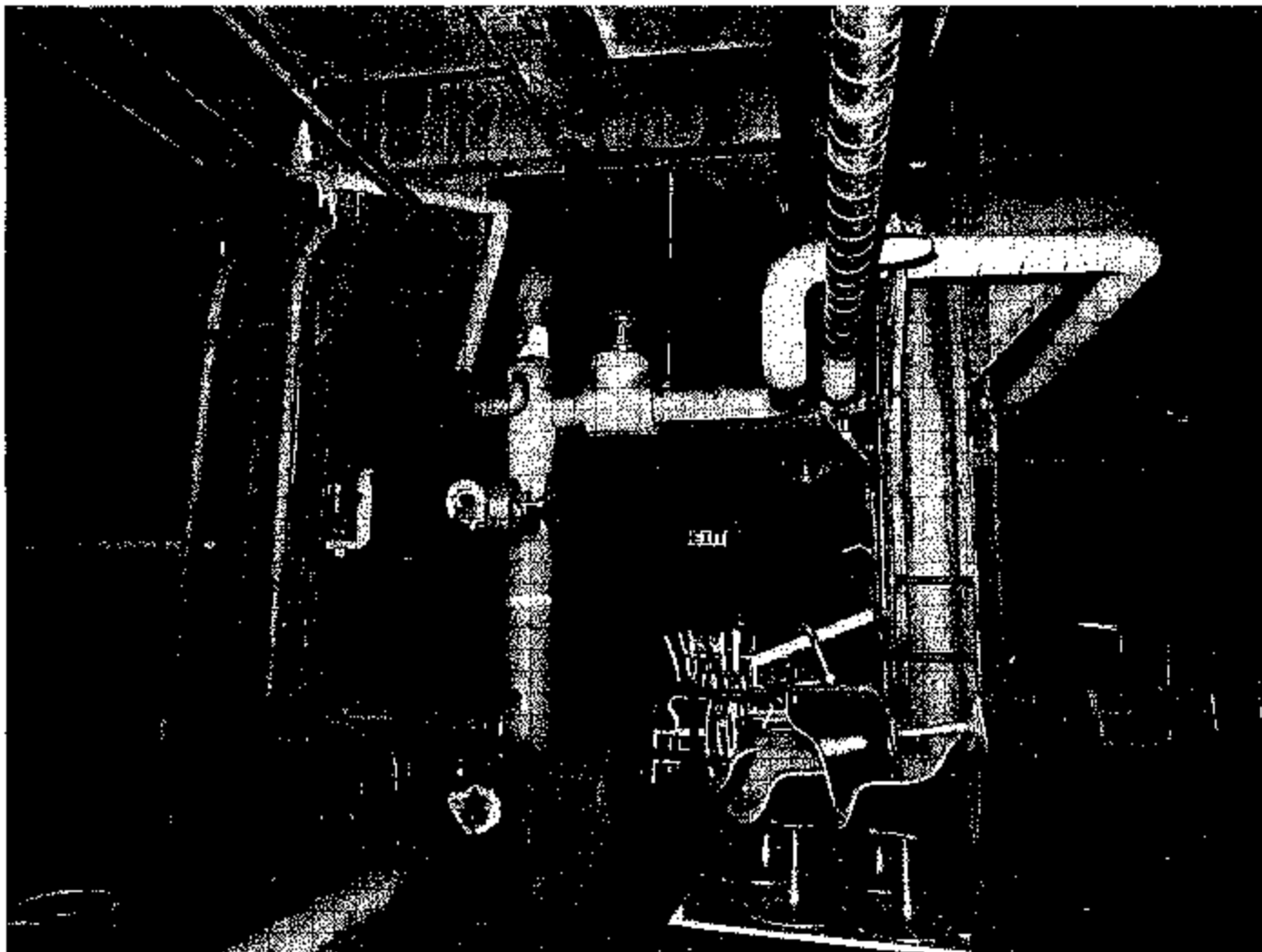


Fig. 25. K-701 Boiler Room Showing Asbestos Insulated Steam Lines

PHOTO NO. K/PH-87 3353
(U)

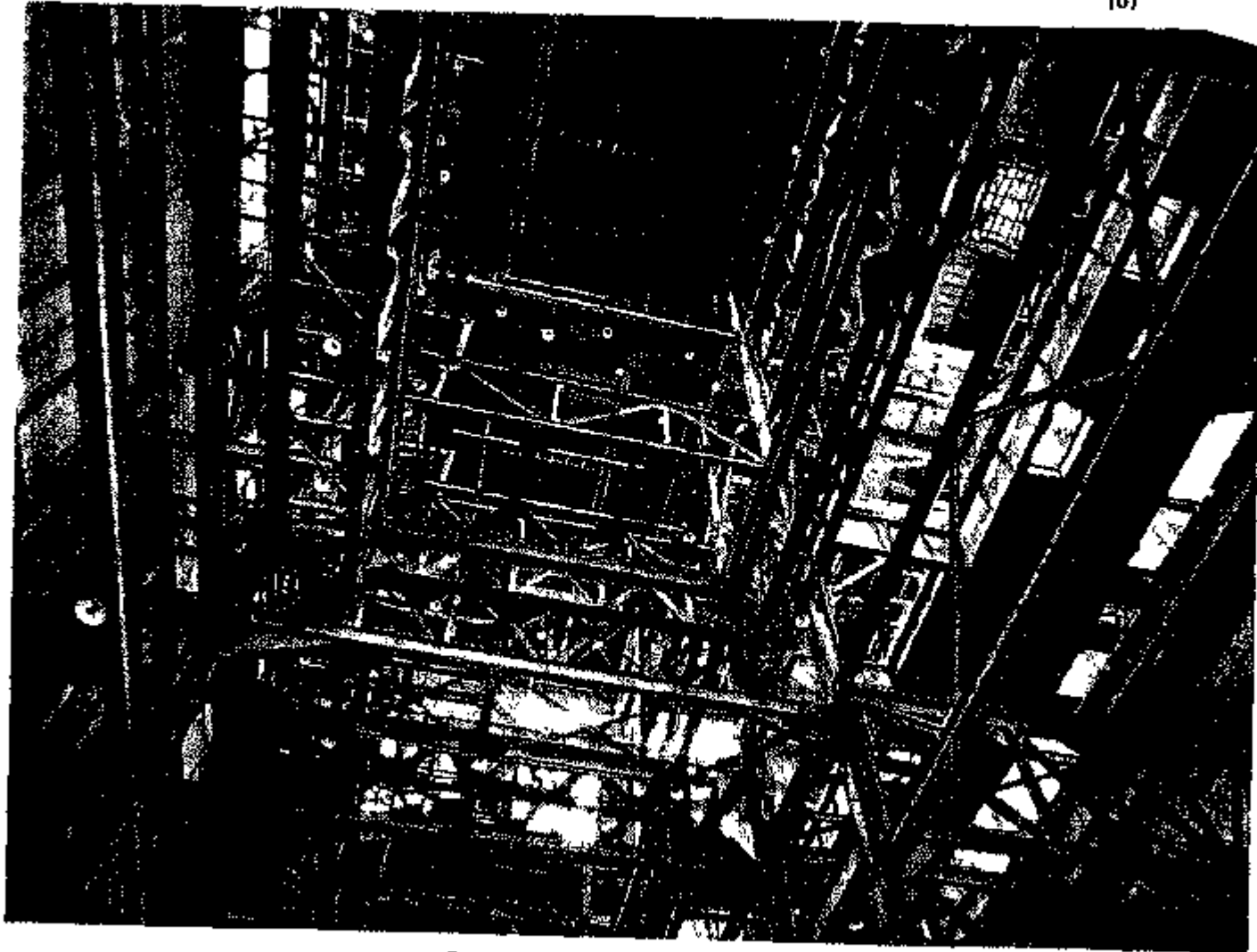


Fig. 26. K-701 Boiler Support Steel
Typical for Three Boiler Positions
This Steel is Coated with Pigeon Droppings

PHOTO NO. K/PH-87-3358
(U)

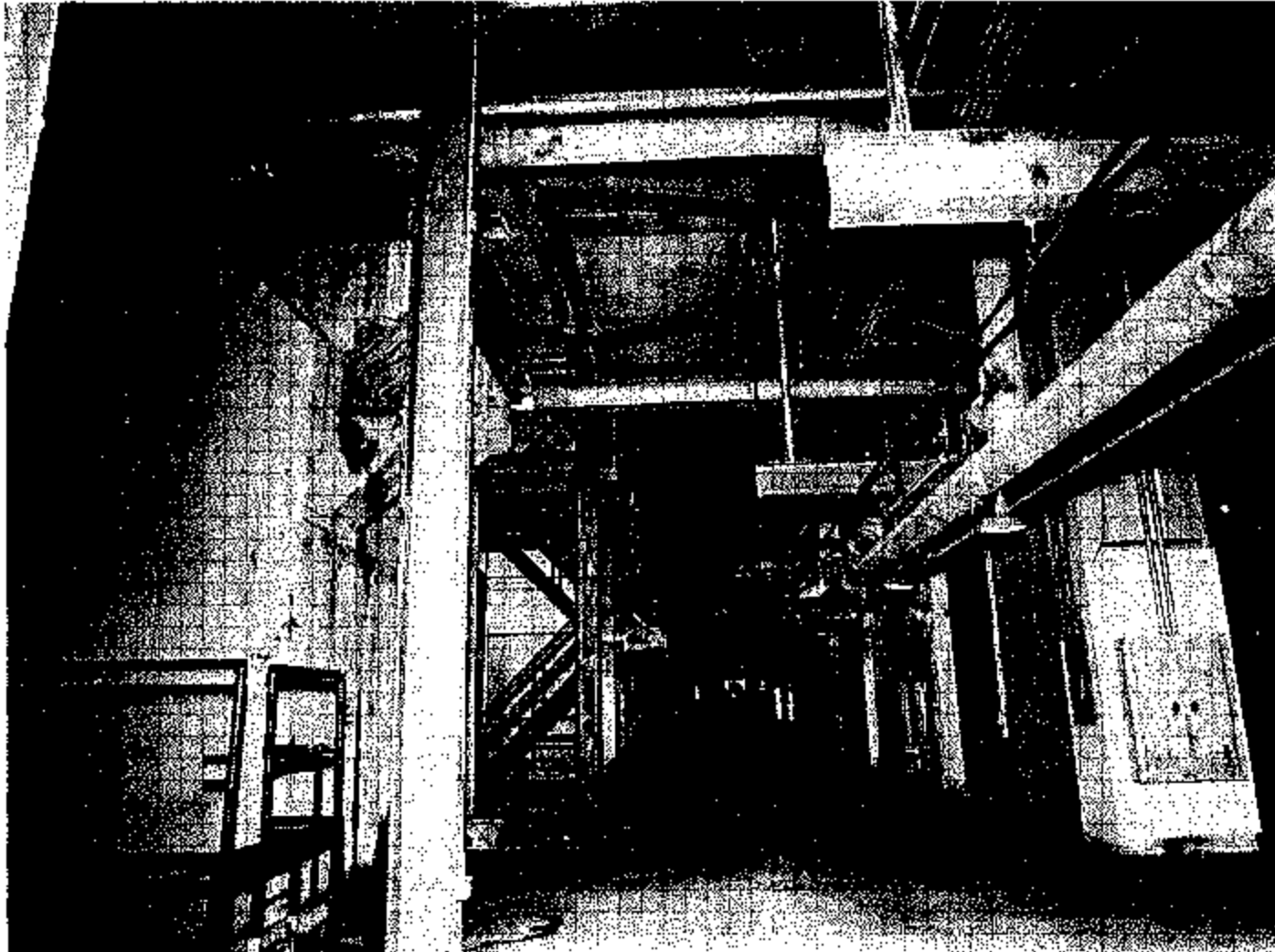


Fig. 27. K-702 Basement of Turbine-Generator Room Showing Asbestos Insulated Line

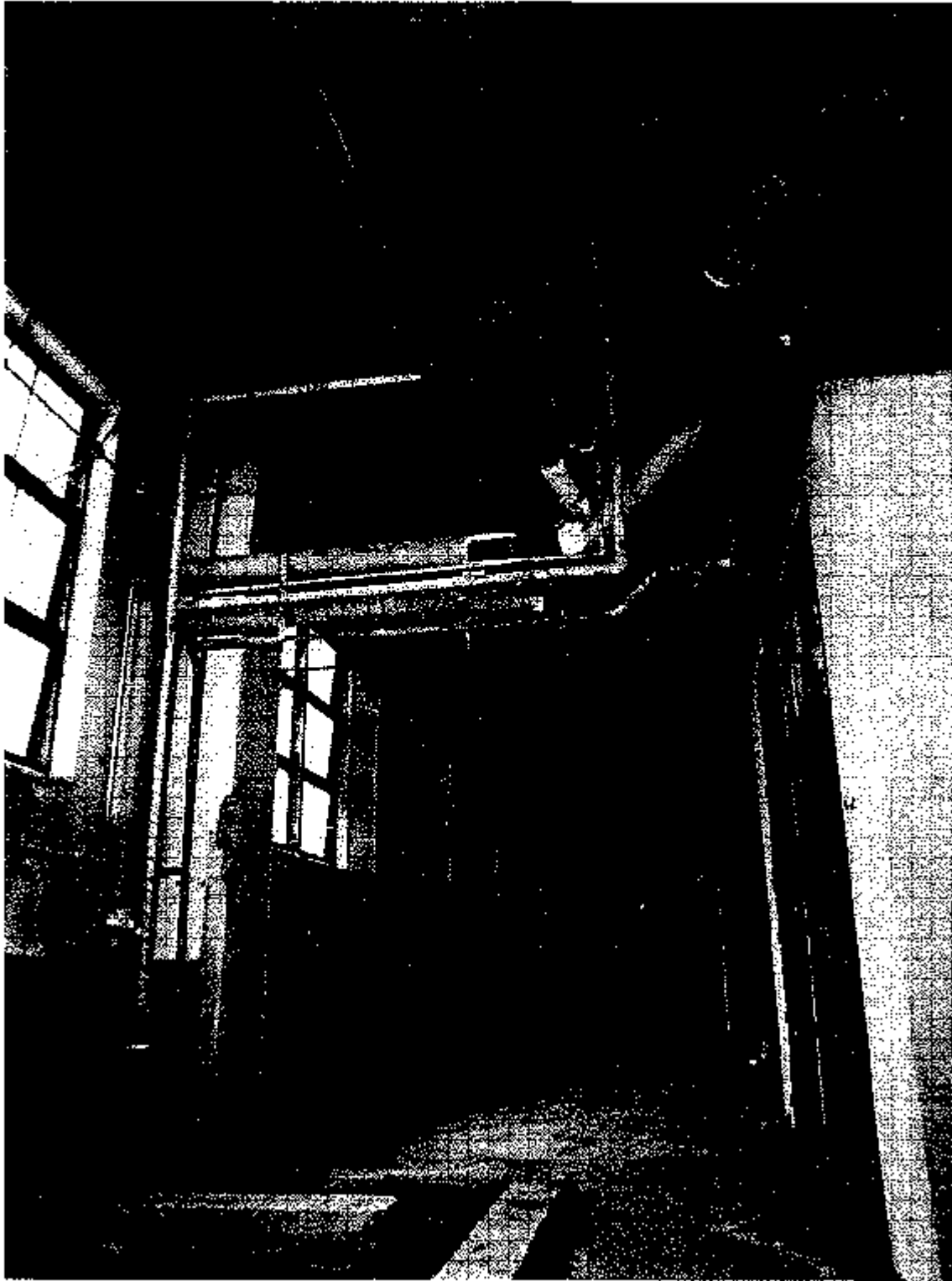


Fig. 28. K-702 Basement of Turbine-Generator Room Showing Asbestos Insulated Lines

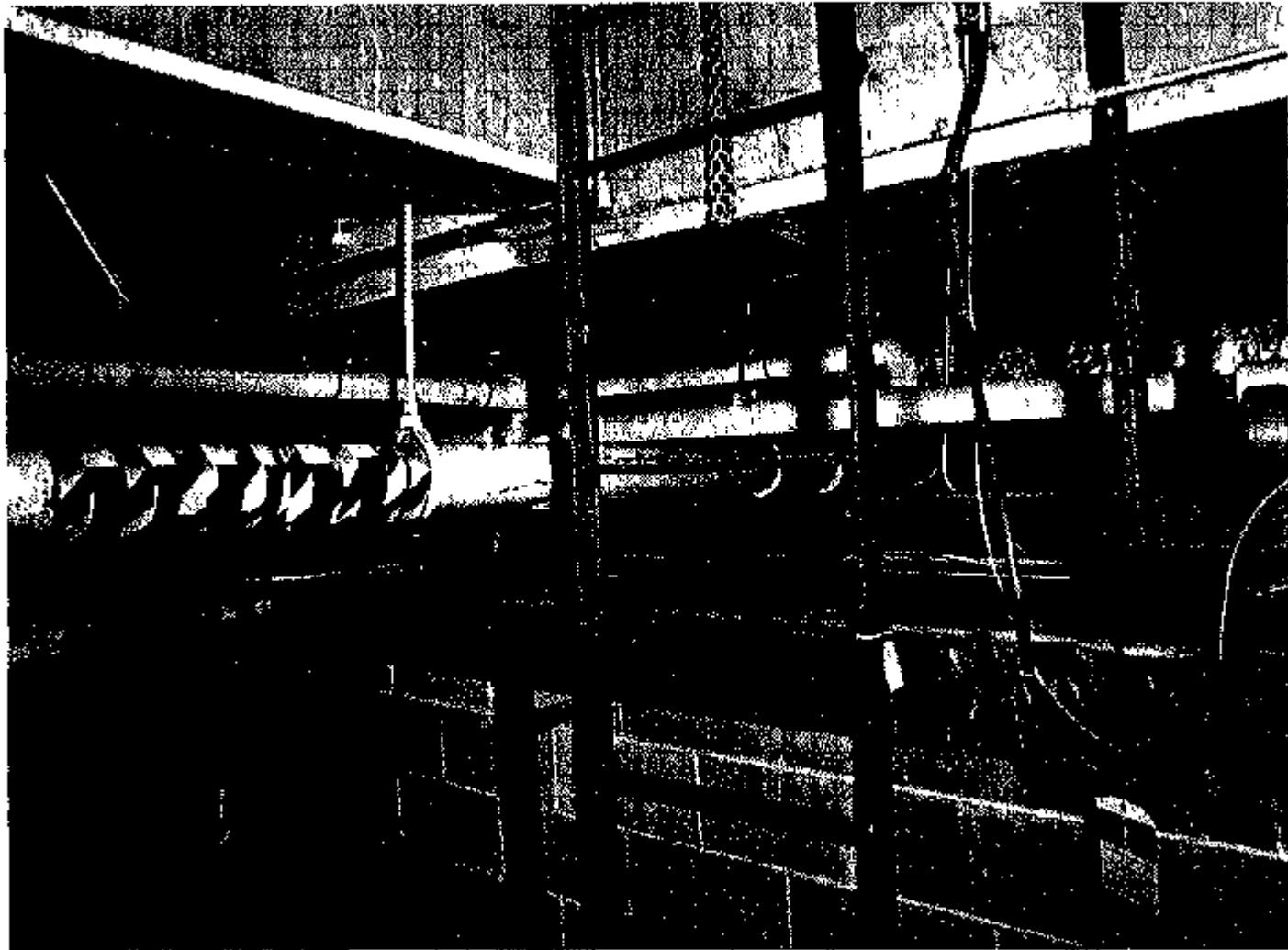


Fig. 29. K-703 Office-Laboratory Building Showing Asbestos Insulated Steam Service Lines

K-704:

This Main Switch house two story structure with a basement area has 10 buses of 14 kV air circuit breakers with a total of 126 breakers. These two-story high units receive power from the generators in the K-702 Building and distribute the power to the process area via PILC (paper insulated lead covered) cable. The cables from the generators to the air circuit breakers and the 61 feeders from the breakers to the point of power usage were routed in transite (asbestos and cement) ducts. A photograph showing only a minor portion of the above ground duct arrays is presented in Figure 30. There is approximately 18,700 linear feet of transite duct runs within the basement area of K-704, with a total volume approximating 880 cubic feet.

There are two lighting transformers located on the east side of the building each containing 395 gallons of mineral oil with a PCB content of 74 and 98 ppm.

There are 4 wall type A/C units and one central unit. Also, there are an extensive number of fluorescent fixtures with ballasts suspected of containing PCBs.

K-705:

The water intake (see Figure 31) structure is a building housing four rotating screens used to screen out leaves and debris that have passed through the fixed screen at the river intake. The back-wash water line (see Figure 32) used to back-flush the rotating screens is composed of 120 ft of 6" pipe and 220 ft of 3" pipe. All of this piping is insulated and it is believed that asbestos was used in the insulation. If so, there is a total of approximately 68 cubic feet of asbestos containing insulation.

K-706:

The K-706 water pump house (reference Figures 33 through 39) contains three large 82,550 gpm water circulating pumps, 5 service water pumps and 2 ash sluice water pumps with associated controls, block valves, filter screens, etc. Piping composed of 1/2, 3/4, 1, 1 1/4, 2, 3, 6, 10, 12, and 16 inch lines are insulated with asbestos. A total of approximately 200 cu. ft. of

PHOTO NO. K/PH-87-0319
(U)

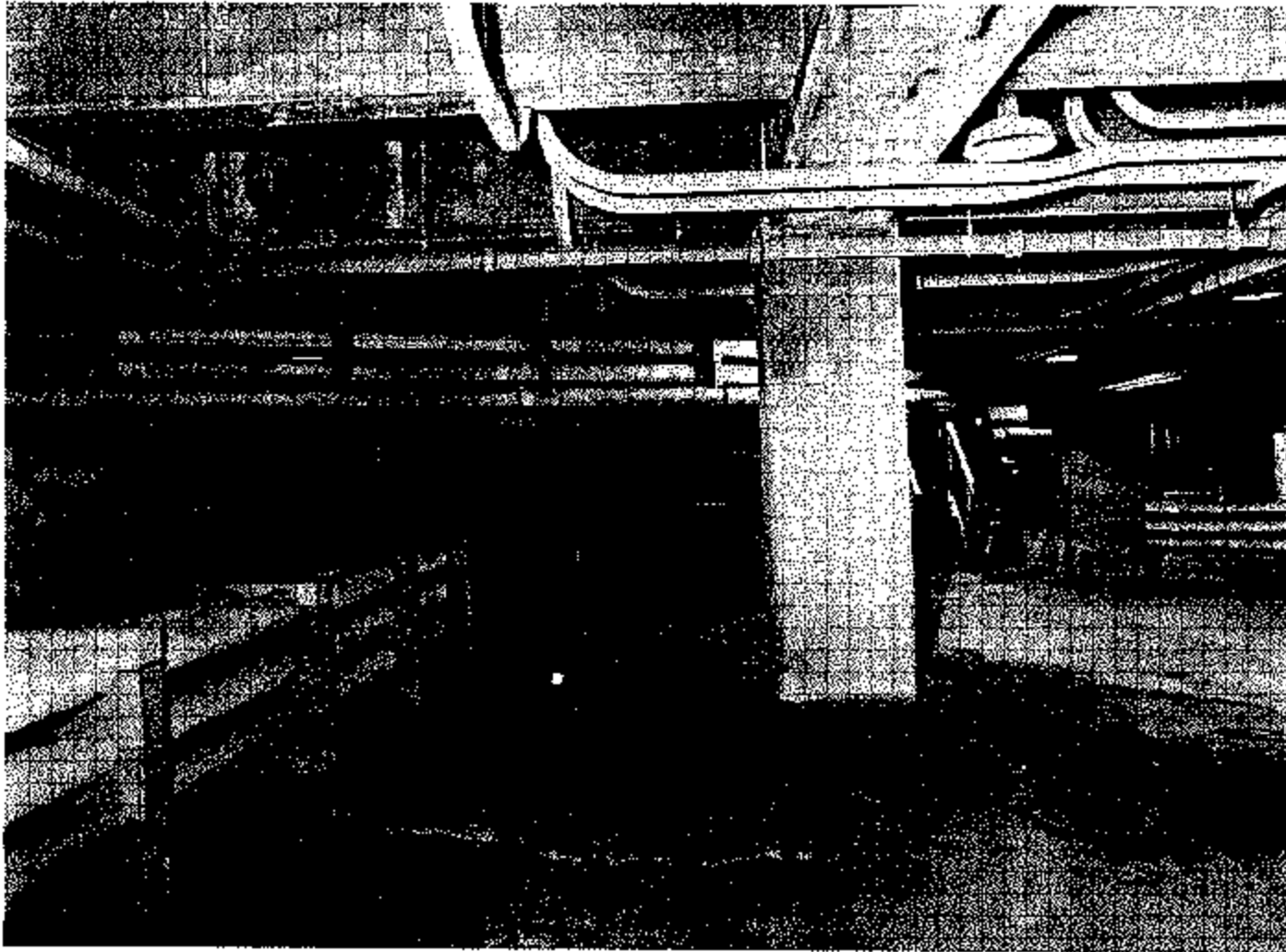
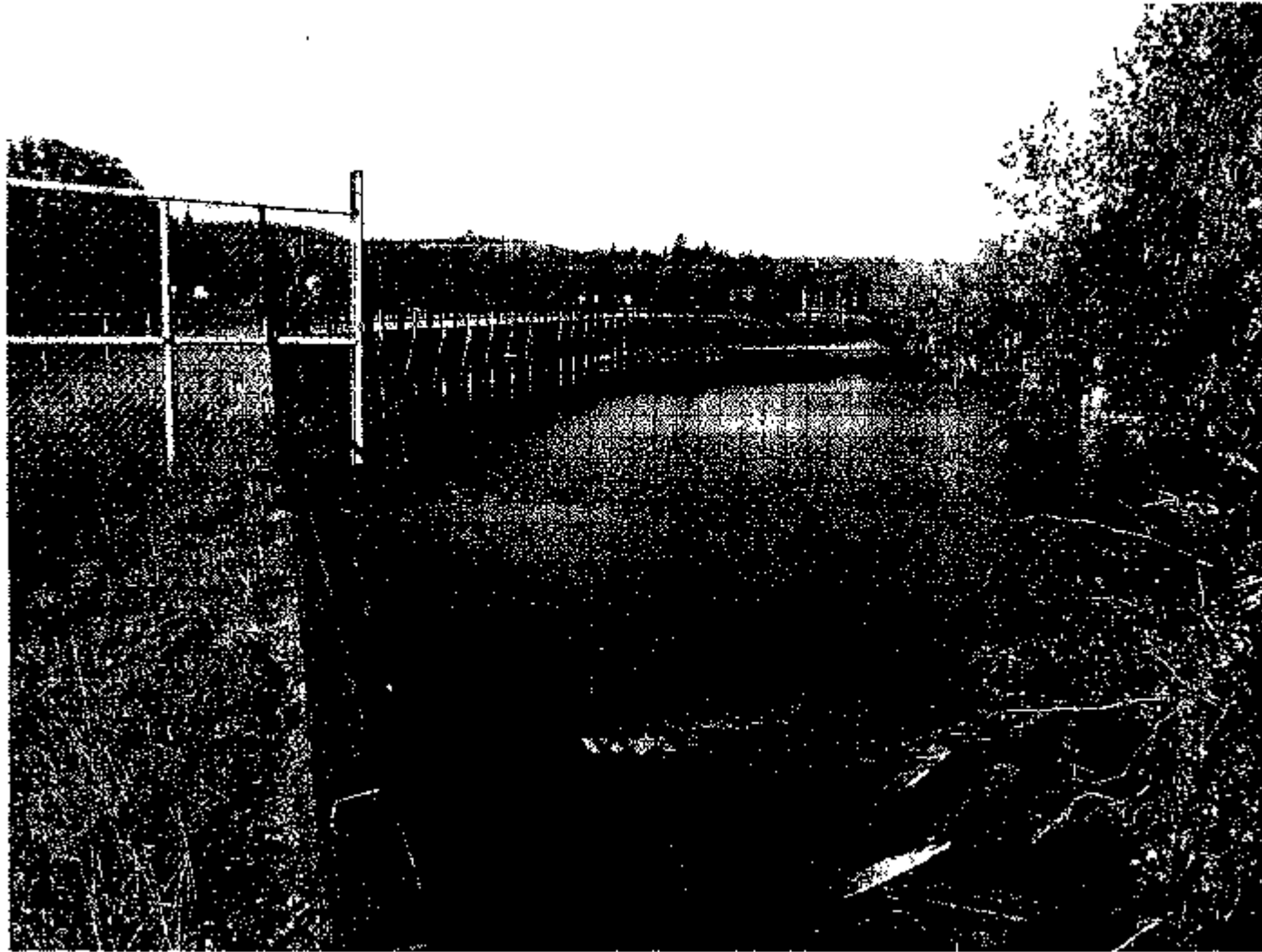


Fig. 30. K-704 Cable Spreader Room (Basement Area) Showing Transite Conduit Duct Runs

PHOTO NO. K/PH-87-3350
(U)



48

Fig. 31. K-705 Water Intake Structure (Intake Screens are Deteriorating)

PHOTO NO K/PH 87 4141

(U)

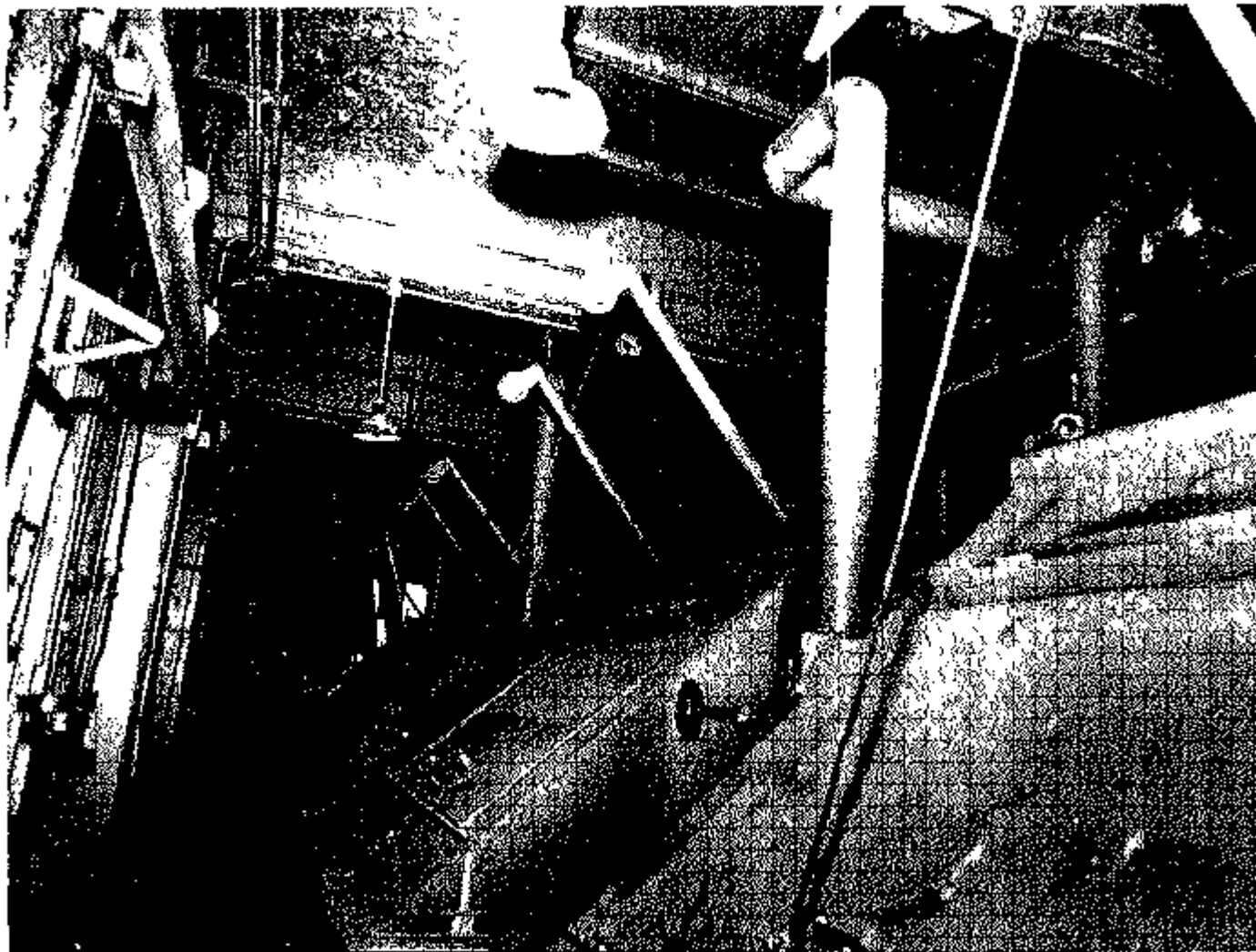
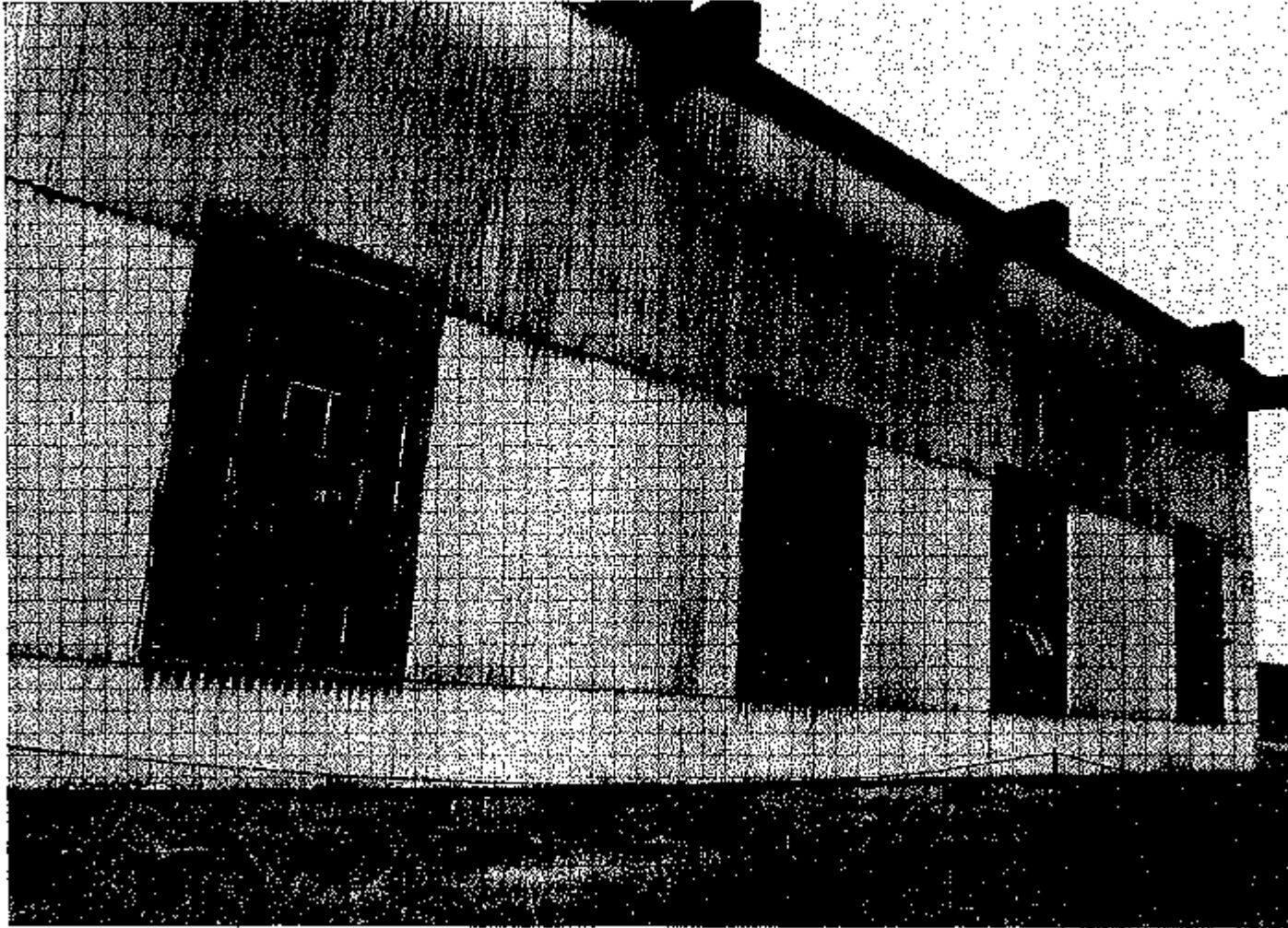


Fig. 32. K-705 Water Intake Filters
Note Backwash Water Lines With Asbestos Insulation

PHOTO NO. K/PH-87-3780
(U)



50

Fig. 33, K-706 Water Pump House
This Concrete Column/Beam With Wood Framing Structure Needs to be Repaired and Windows Boarded

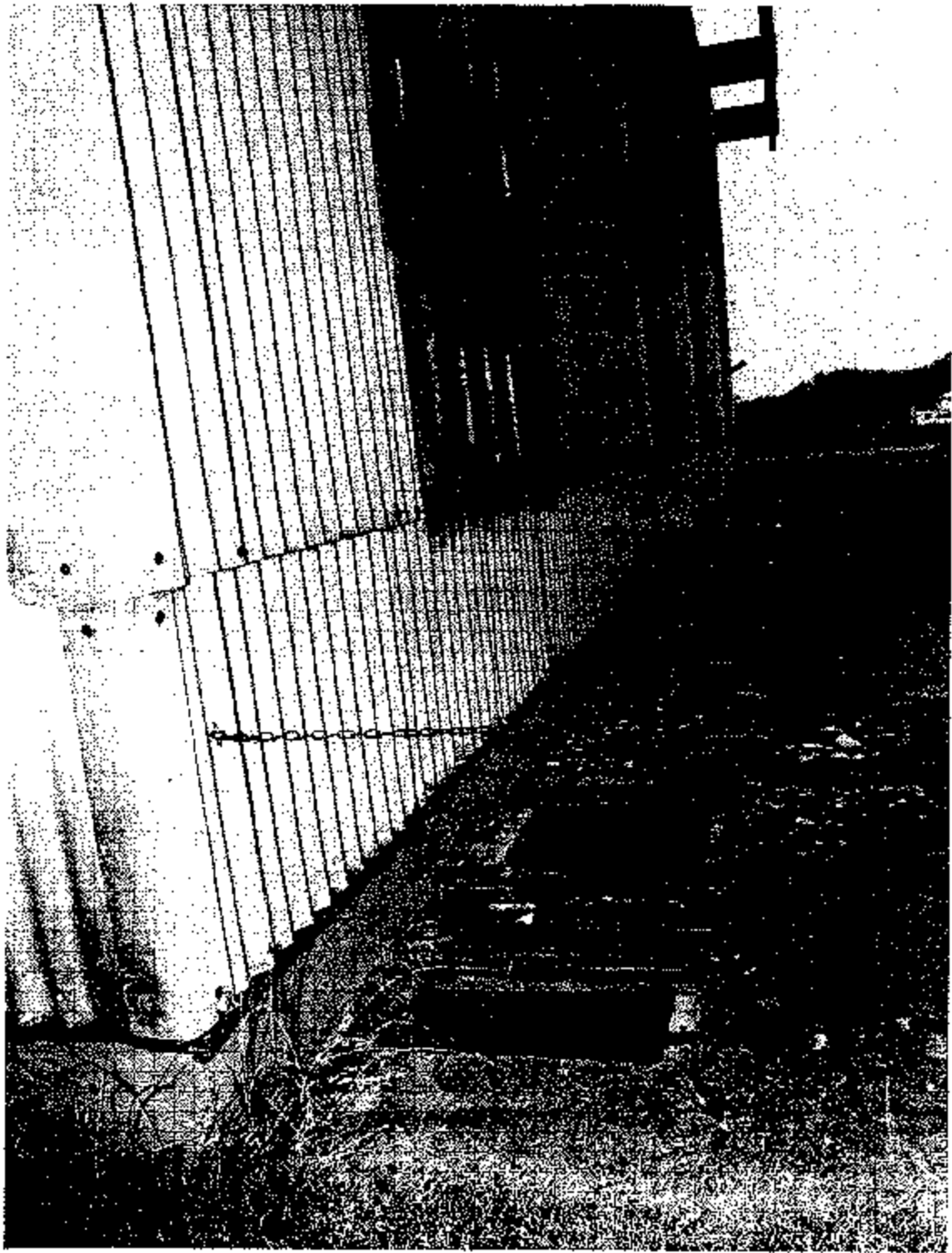


Fig. 34. K-706 Pump House Water Pump Pit. Wood Slat Cover Needs Replacement for Personnel Safety



Fig. 35. K-706 Pump House - Ground Floor
(Note Pigeon Droppings)

PHOTO NO. K/PH-87-3774
(U)

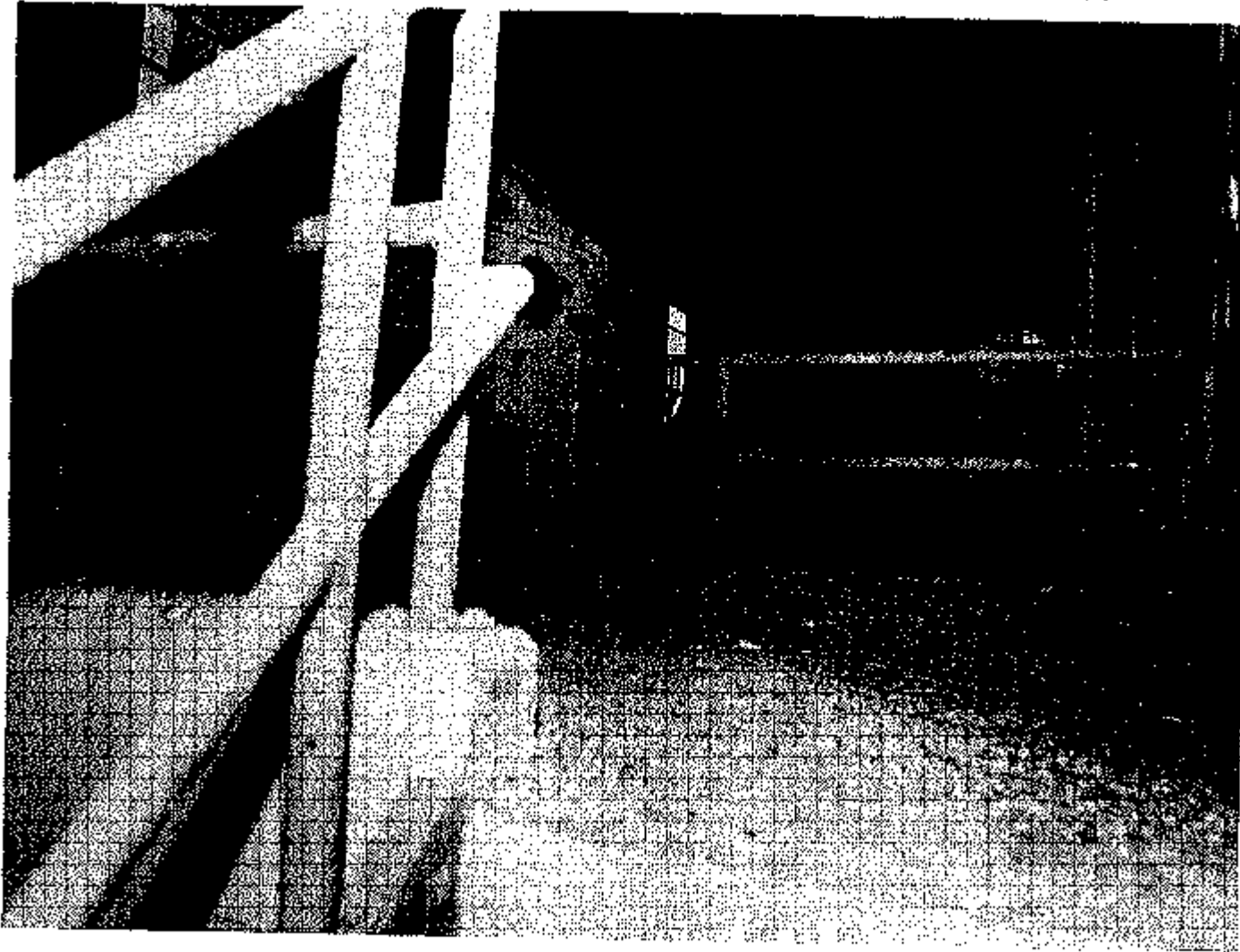


Fig. 36. K-706 Pump House - Ground Floor
(Note 10-inch Pile of Pigeon Droppings)

PHOTO NO K/PH-87 3722
(U)

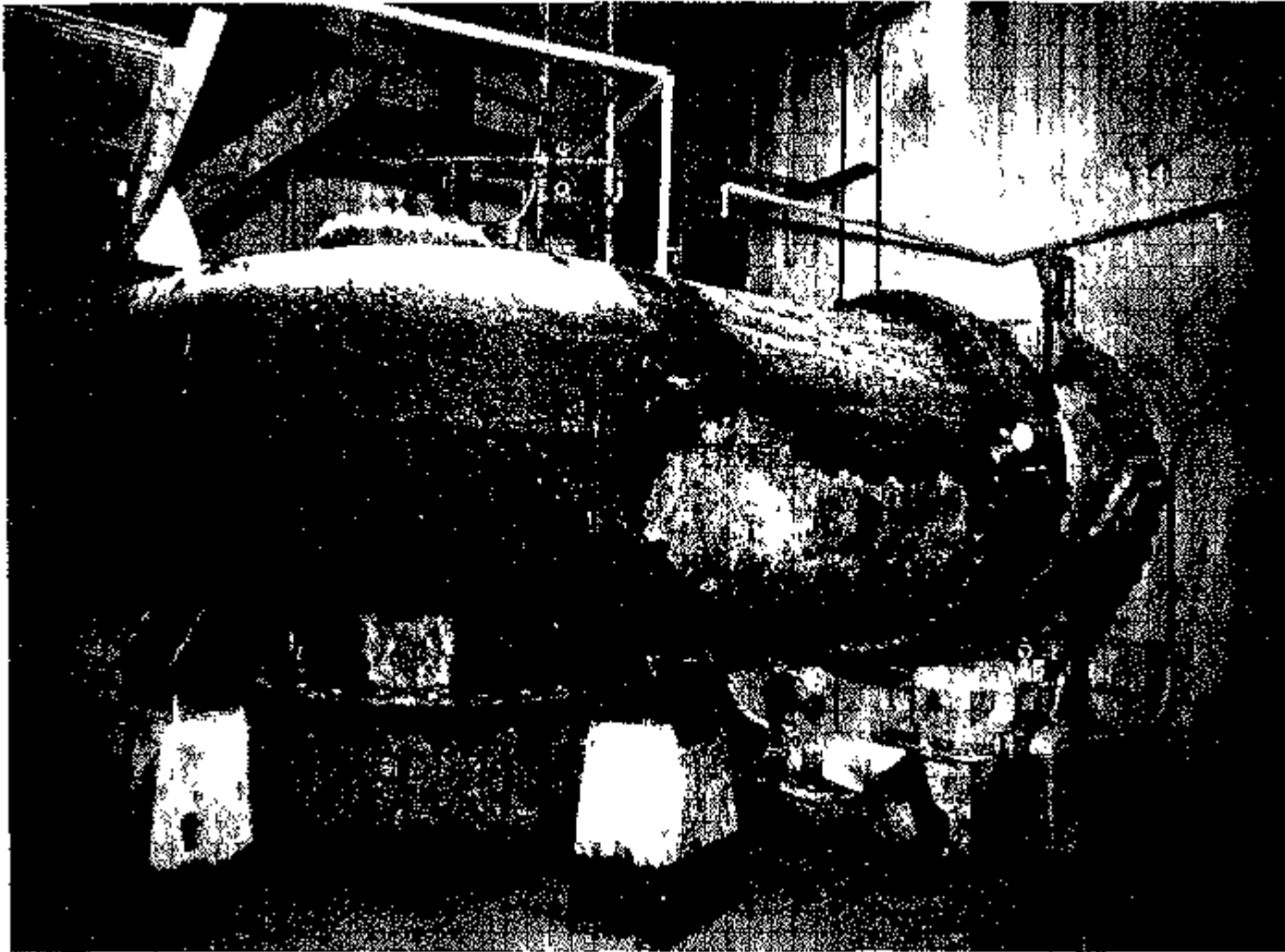


Fig. 37. K-706 Water Pump House - Basement Level
Water Pump Casings are Coated with a Bitumastic 7 Asbestos Insulation

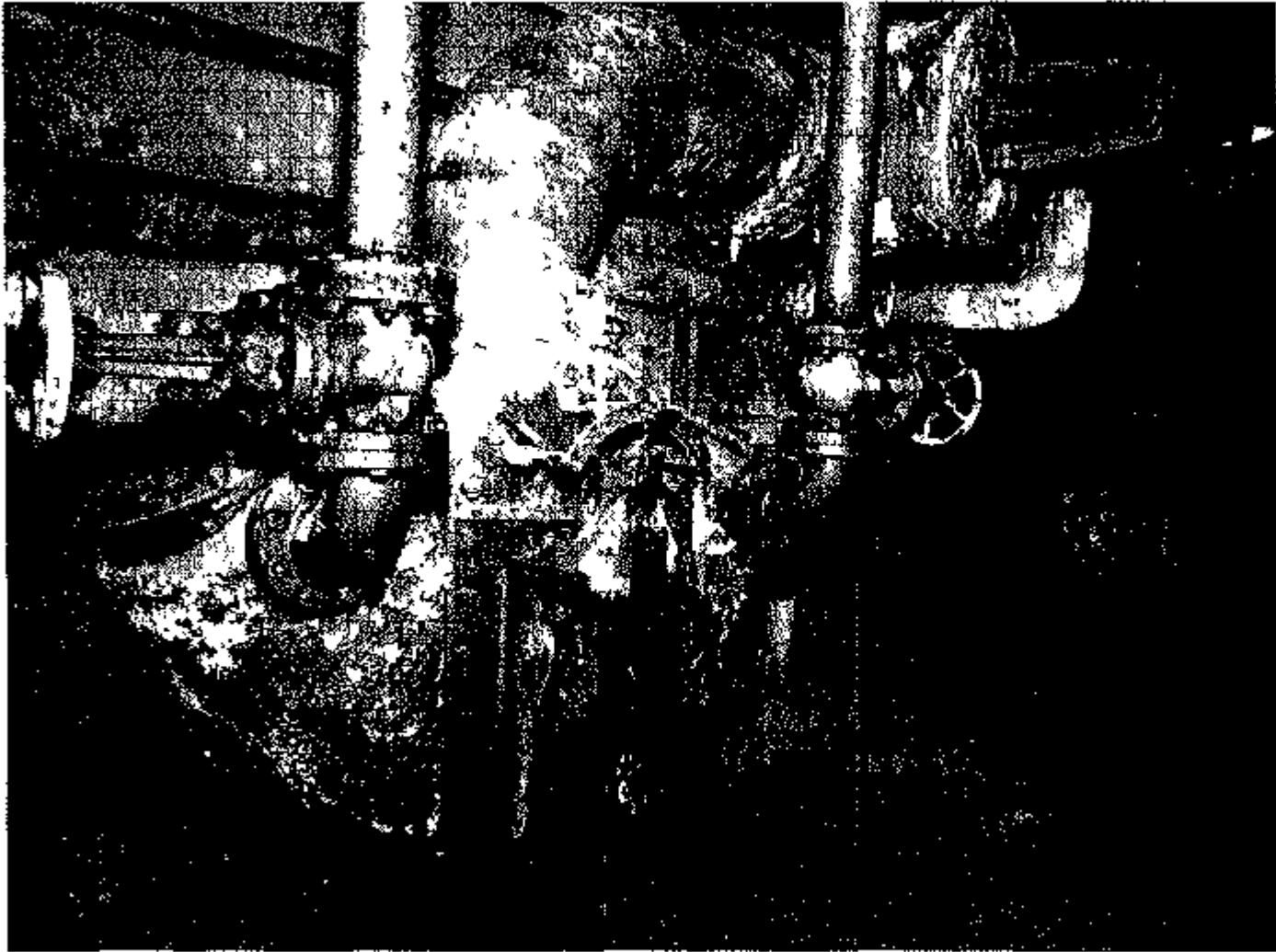
PHOTO NO K/PH-67-3770
(U)



55

Fig. 38. K-706 Water Pump House
Service Water Pumps are Insulated with 1-1/2" - 2" of Asbestos

PHOTO NO K/PH-87 3773
(U)



56

Fig. 39. K-706 Water Pump House
Service Water Filters Insulated with 1-1/2" - 2" of Asbestos

asbestos insulation with most of it in extremely poor condition now exists.

This building has also served as a pigeon roost for many years and there is as much as 10 inches of pigeon droppings on the ground floor in spots.

K-707:

This Auxiliary switch house used to supply power to the many auxiliary pieces of equipment within the power station is composed of three floors with a basement. The 480 volt substations and switchgear is located on the ground floor and the 4160 volt substations and switchgear are located on the upper level. Power cables are run both vertically (reference Figure 40) and longitudinal on the 2nd floor and in the basement. Where the cables are not in conduits they are protected from fire with an asbestos wrap. The cables are also routed through transite conduit prior to exit to the load areas in the power station and auxiliary buildings. There is approximately 1865 ft of 3" transite conduit and 155 ft of 4" conduit, for a total linear 2020 ft or 52 cubic feet of transite material. Asbestos wrapping of cables include approximately 462 linear feet of cable for approximately 5.2 cubic feet.

Piping within the building, such as shown in Figure 41, is insulated with asbestos and includes 3/4, 1, 1 1/4, 2, and 3 inch lines for a total linear footage of 460 ft. The insulation on these lines approximates 44 cu. ft.

Two power transformers, (see Figure 42) that originally supplied power to the 4160 volt system are mounted just outside of the west wall. These two units each hold 3750 gallons of mineral oil with PCB analysis of 49 and 18 ppm.

K-708-E:

This scale house (refer to Figure 12), used to weigh railroad cars, is a frame structure with transite roof and siding. The corrugated materials approximate 250 sq. ft. of surface.

K-709:

The original K-25 switchyard housed nine oil circuit breakers and three power transformers. The yard was equipped with an oil filter system and a fire

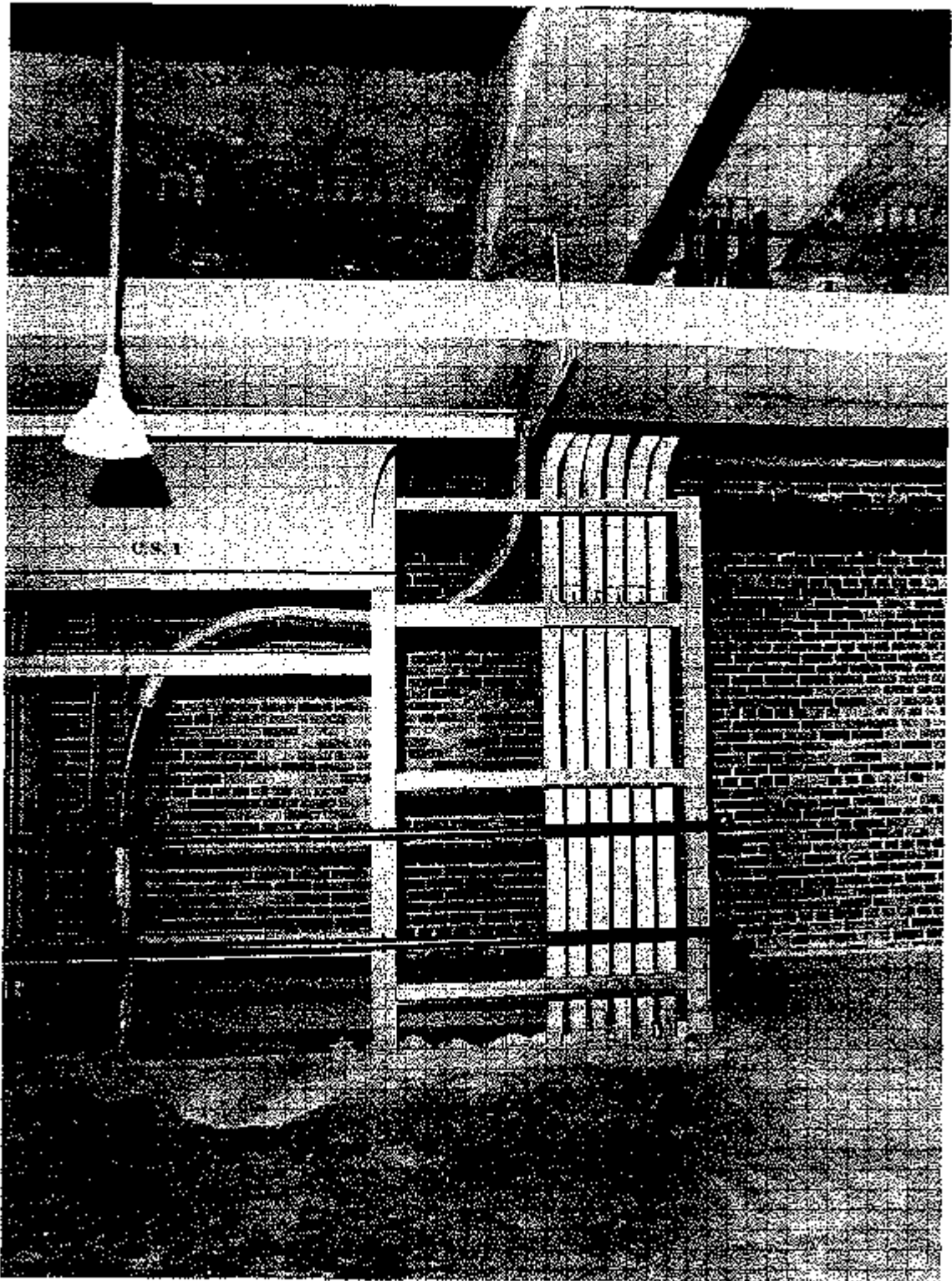


Fig. 40. K-707 Auxilliary Switch House Upper Floor Cable Spreader Room

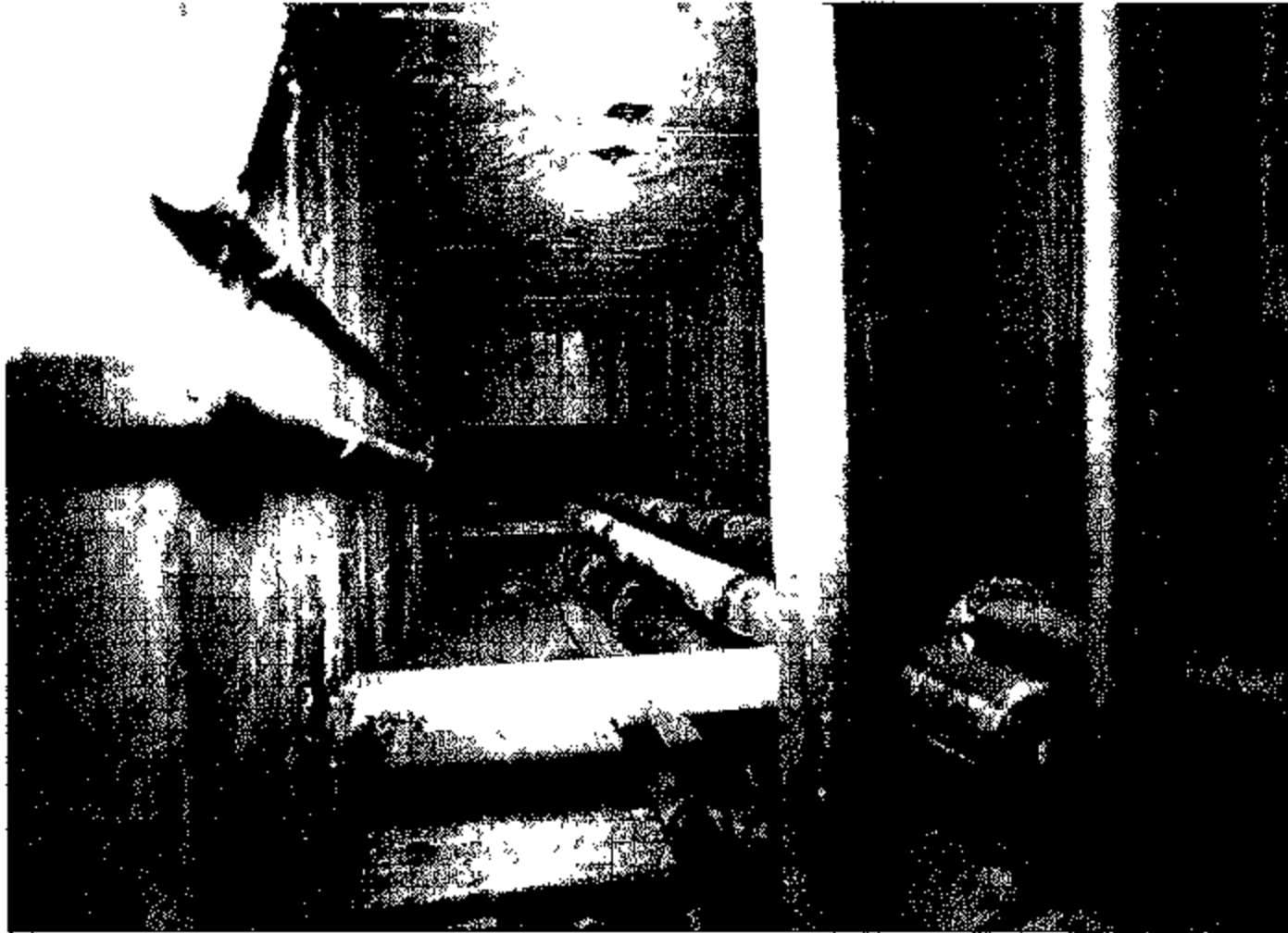


Fig. 41. K-707 Auxiliary Switch House
Basement Showing Asbestos Insulated Steam Line Tunnel from K 701 Boiler Room

PHOTO NO. K/PH-87-9778
(U)

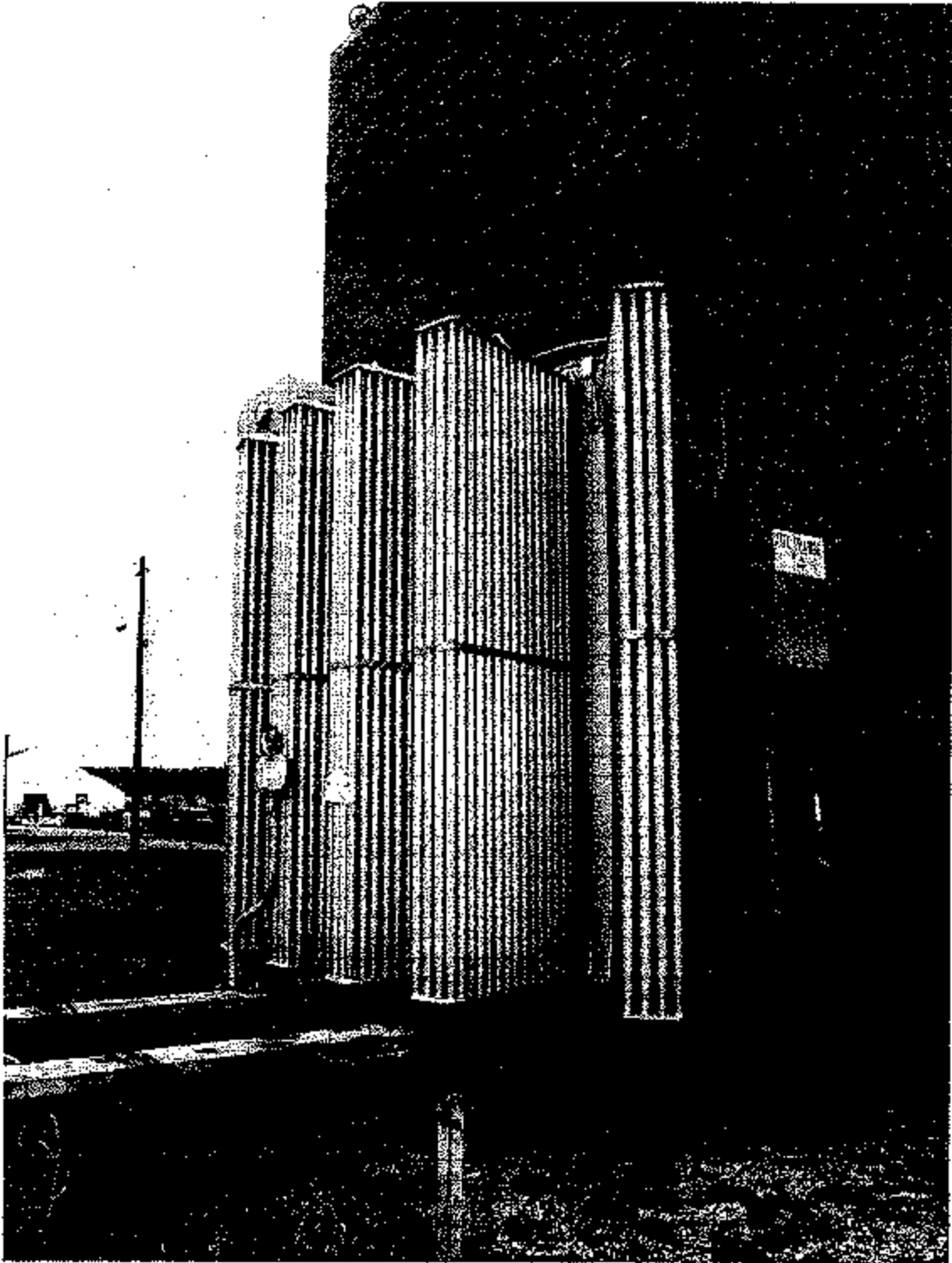


Fig. 42. K-707 Auxiliary Switch House One of Two Power Transformers
for Auxiliary Power (Not Now in Use)

sprinkler system, both housed in steel frame structures (see Figures 43 and 44) using transite siding and roofing materials. These two buildings contain approximately 990 sq. ft. of surface area of transite(asbestos). In addition, this yard which was dismantled in the mid-1960's is now used as a storage area for oil circuit breakers, a power transformer regulator, a moderate number of small distribution size auxiliary transformers, and miscellaneous switchgear components. Excess transite duct is also stored in this yard. It is assumed that this temporary storage area can be cleaned and disposal of all components be effected. PCB content of the spare transformers will need to be ascertained if records indicate the units were ever serviced.

K-710:

The original sewage disposal plant (see Figure 14) has not been used since the mid-1960's. A few fluorescent fixture ballasts were the only possible hazards noted.

K-711:

This building (Figure 16) was originally a J. A. Jones construction warehouse for spare stock. In recent years it was converted to a training facility for welders and is now again a materials warehouse. Hazards noted were fluorescent fixtures and approximately 6700 sq. ft. of corrugated roofing material.

K-712:

This abandoned structure (Figure 17 & 18) served as a research area for the Fercleve thermal diffusion project. The only hazards noted were approximately 10 cubic feet of pigeon droppings.

K-722:

This wood stud wall with steel roof framing structure (Figure 19) has a Transite corrugated roof, and the exterior walls are asbestos shingled. There is approximately 14,000 sq. ft. of transite roofing and 6,800 sq.ft. of asbestos shingles. In addition, there are approximately 50 fluorescent fixtures and 200 ft. of 1" pipe insulated with asbestos. The building is currently being used as the field offices for Surplus Sales activities.

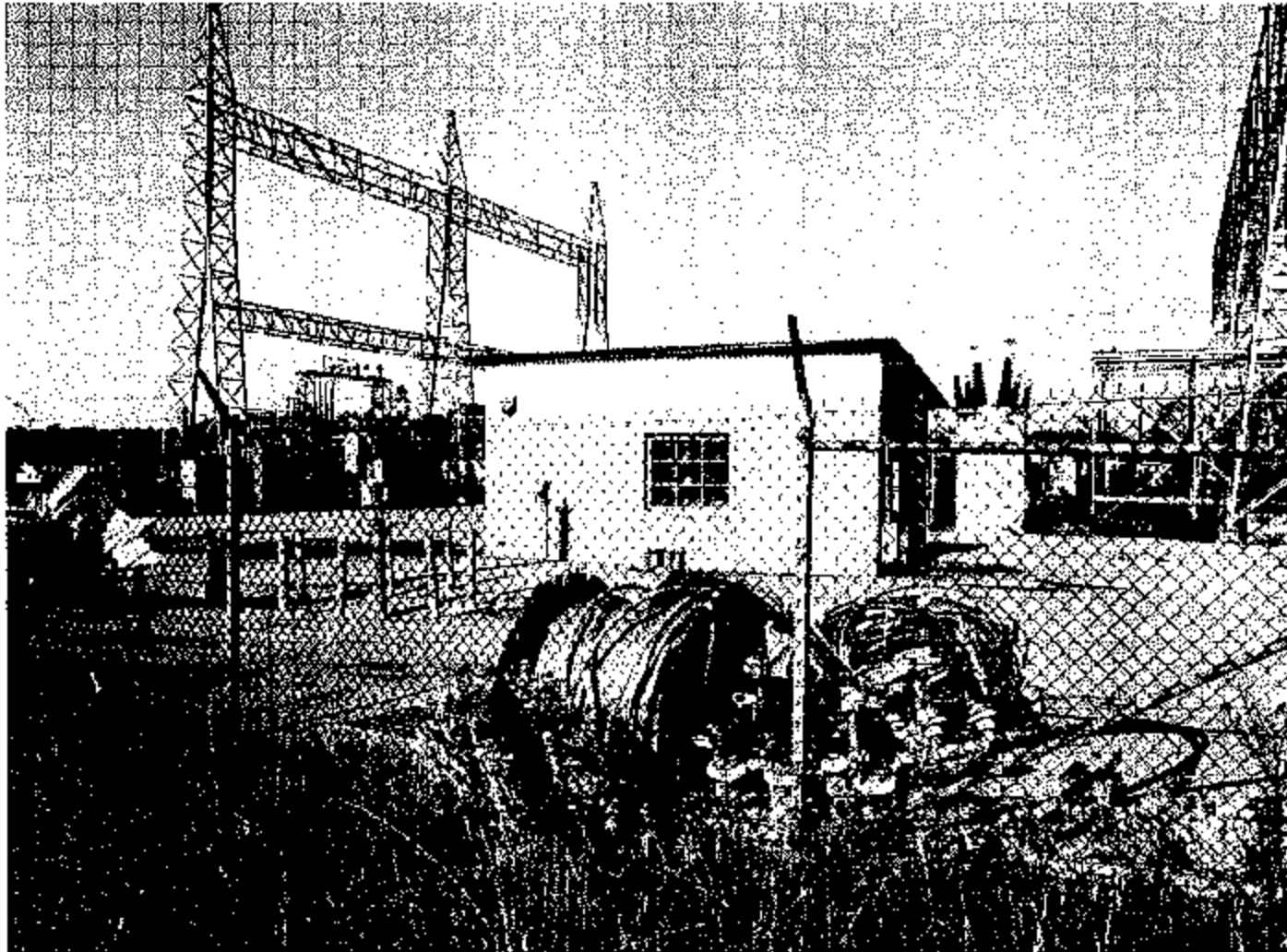
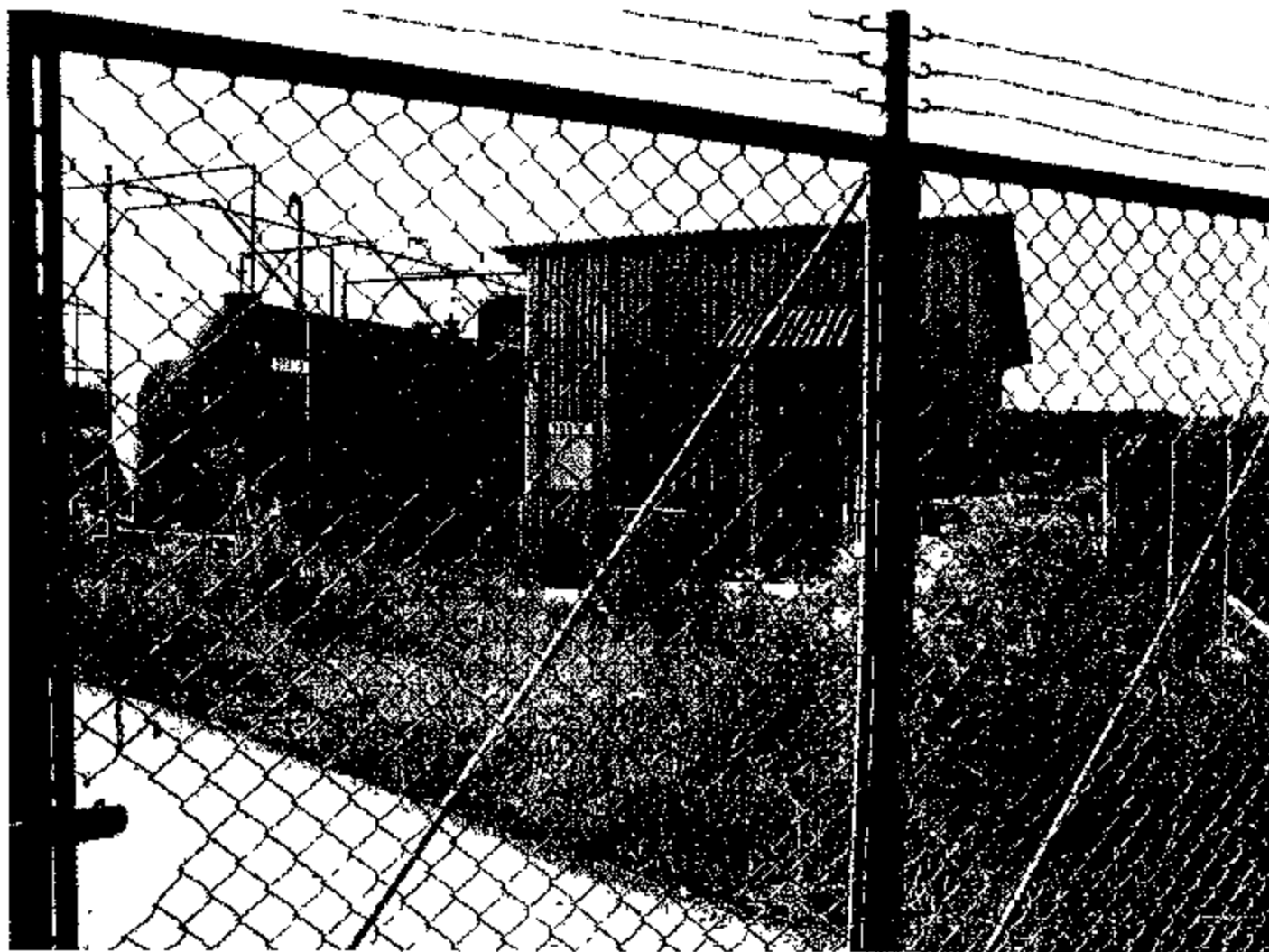


Fig. 43. K-709 Switch Yard Fire Sprinkler Valve House
Area is Used for Storage of Electrical Outdoor Equipment

PHOTO NO. K/PH-87-3376
(U)



63

Fig. 44. K-709 Switch Yard Oil Handling House

K-723:

This wood frame structure (Figure 20) is being used as a warehouse for Surplus Sales activities. It currently has approximately 8400 sq.ft. of transite siding material.

K-724:

This masonry building (Figure 21) with built-up roof is being used as a warehouse for Surplus Sales activities. Hazards noted were approximately 300 ft of 1 and 2 inch pipe insulated with asbestos. There also are 200 fluorescent fixtures that probably have PCB ballasts.

K-734:

This combination masonry and frame structure (Figure 18) was used for Thermal Diffusion Research in the early 1940's. It has approximately 10 to 20 cubic feet of pigeon droppings within the building.

K-735:

This concrete and frame warehouse (Figure 17) was used for storage in the Thermal Diffusion research era. It is now abandoned but does contain approximately 5 cubic feet of pigeon droppings.

K-738:

This concrete block building (Figure 15) lies adjacent to the K-706 water pumphouse and served as the Chlorine Treatment Building to control algae in the cooling water system of the power station. This building has a 200 sq. ft. roof of transite (asbestos).

K-731 Switch House & K-732 Switch Yard:

The K-731 Switch House was originally built to serve the K-27 process building. In 1949 construction was started on the K-29 process building and the proximity of the two structures led to the expansion of K-731 to serve power also to K-29.

There were originally four transformers and 13.8 kV air circuit breaker buses to serve the K-27 process and plant auxiliary loads. The addition of the K-29

process building increased the number of transformers and ACB buses to six. Since the spare transformer still served both installations, the total charges to the two installations can be prorated where 67% is designated to K-27 and 33% to K-29 facilities.

Power to the plant auxiliary loads is obtained through this K-731 switch house and K-732 switch yard, therefore until the entire ORGDP complex is decommissioned, there will be a need for a portion of the equipment. The 13.8 kV underground feeders with associated air circuit breakers can be de-energized and if needed removed. However, since the station must be kept active, there is no driving need for removal of transite ductwork and non-friable asbestos insulation now contained on the equipment. Figure 45 shows some of the transite ducts and asbestos insulated pipe in the basement of K-731. Also, transite siding and roofing were used in the Oil Handling and Fire Sprinkler houses installed in the K-732 Switchyard; it is not anticipated that these structures be disturbed until complete decommissioning of the plant is accomplished.

Figure 46 presents a view of a K-732 power transformer and Figure 47 shows the associated regulating transformer. Figure 48 also shows a typical oil circuit breaker with some of the other switch yard equipment depicted in the background. These mineral oil filled transformers and oil circuit breakers are slightly contaminated with PCBs as indicated in TABLE IV, "K-732 Switchyard Equipment PCB Concentrations". It will be necessary to detoxify the pieces of equipment having greater than 50 ppm concentrations of PCBs. Although the switchyard will not be de-energized when the other facilities are placed in Safe Storage, it is assumed that the K-732 equipment will be treated and 67% of the costs transferred to the "Safe Storage" account.

UNDERGROUND DISTRIBUTION SYSTEM:

As previously discussed, the 13.8kV underground feeder cableplant is composed of many thousands of feet of PILC (paper insulated lead covered) cable. This cable plant is presented in Figures 22 and 23, while the design for a typical electrical feeder cable man-hole is shown in Figure 49.

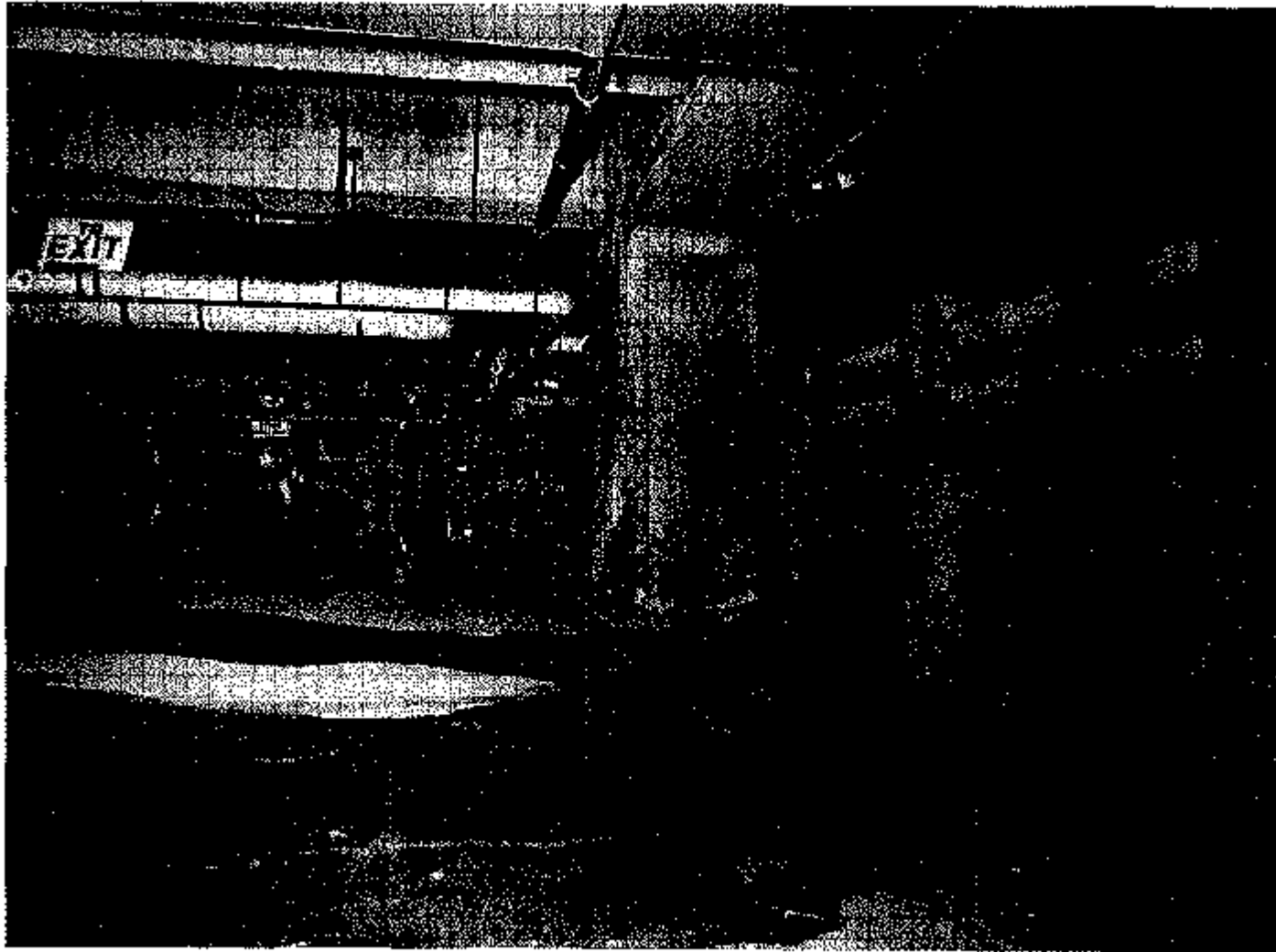


Fig. 45. K-731 Switch House Basement
Showing Insulated Steel Lines and Transite Electrical Feeder Duct Runs

PHOTO NO K/PH-87-4148
(U)

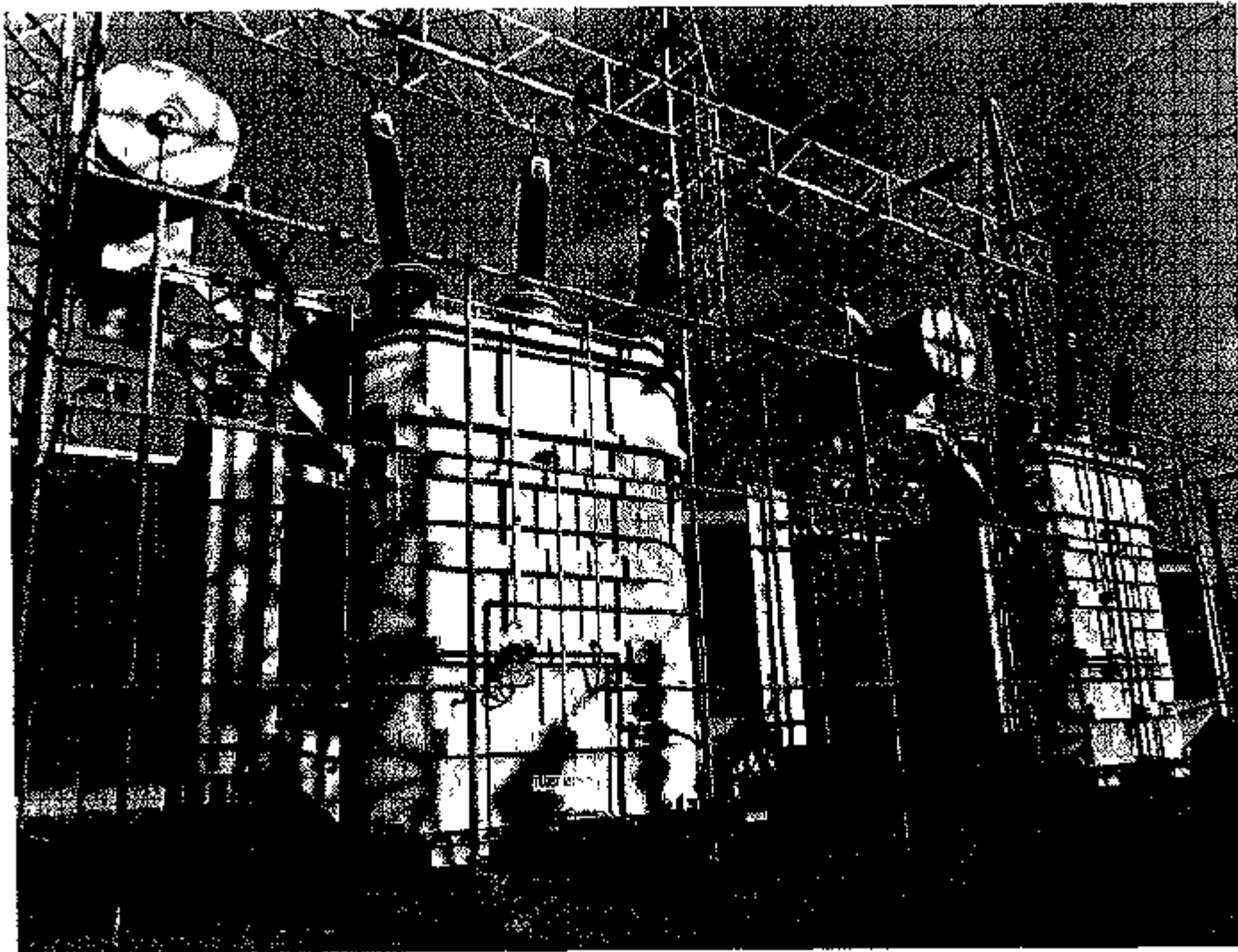


Fig. 46. K-732 Switch Yard - A Typical Mineral Oil Filled Main Power Transformer

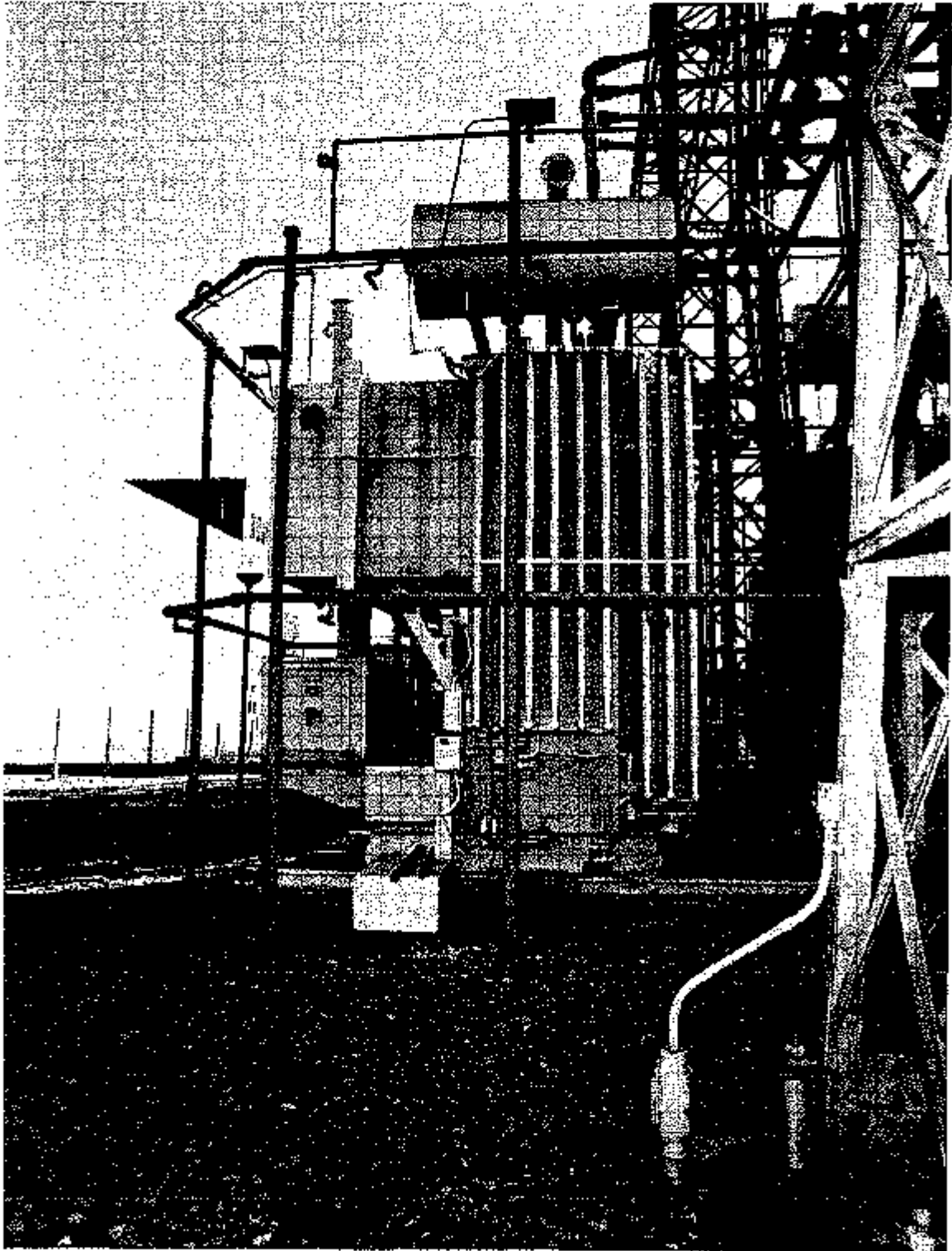


Fig. 47. K-732 Switch Yard - A Typical Mineral Oil Filled Regulating Transformer

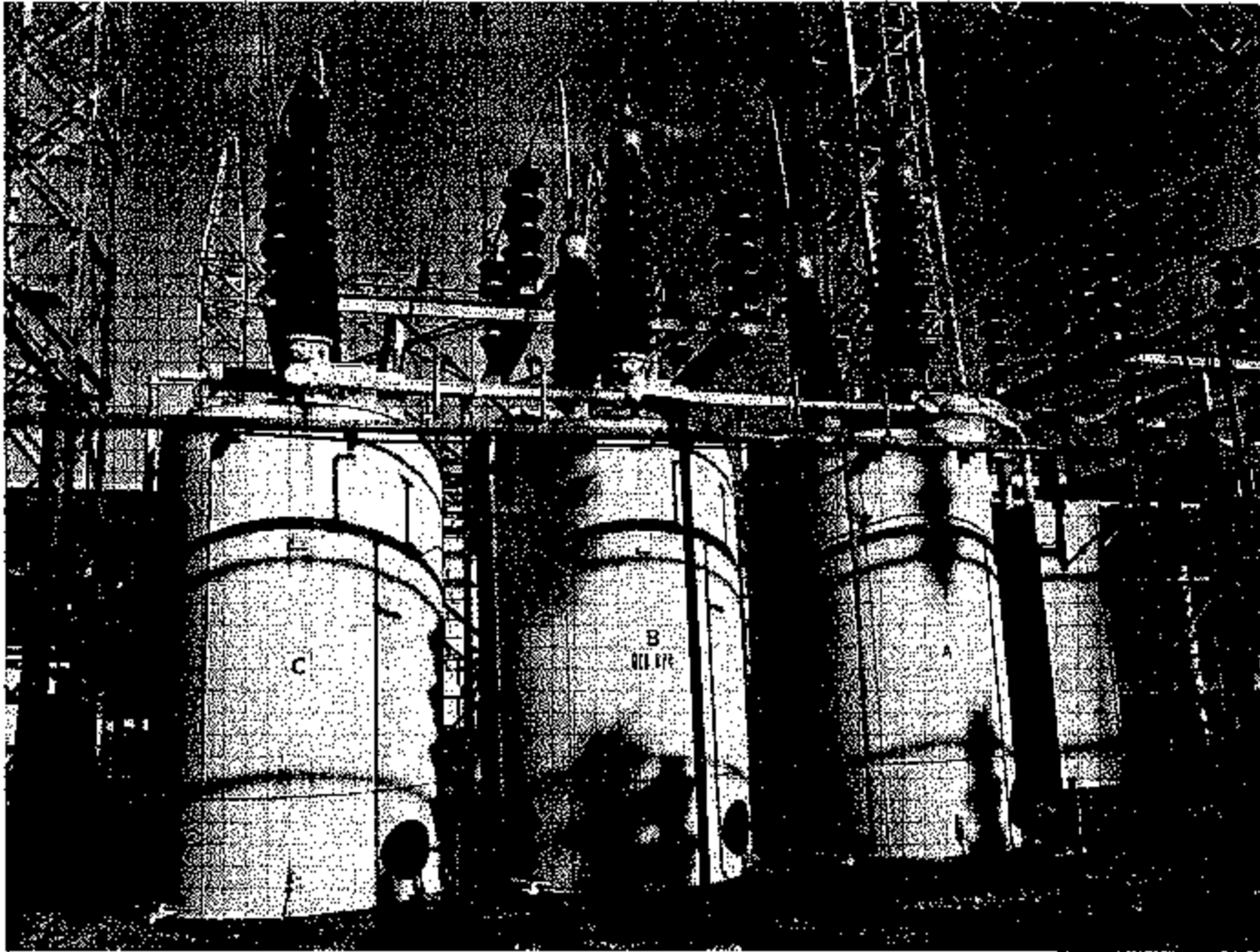
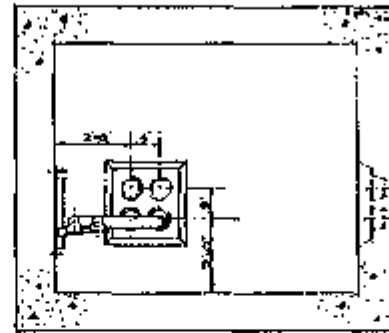
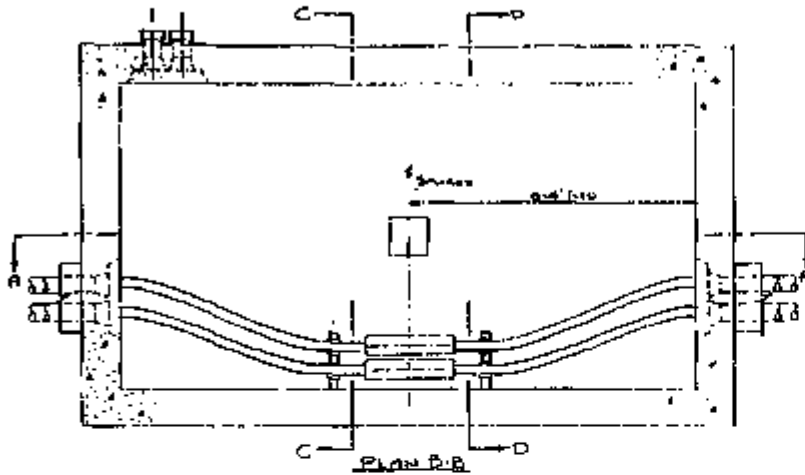
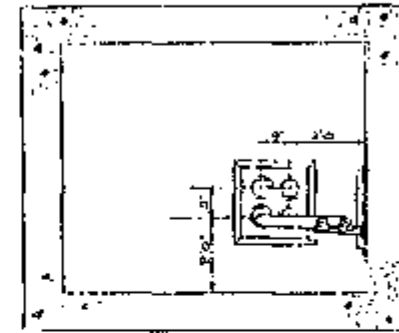


Fig. 48. K-732 Switch Yard - A Typical Mineral Oil Filled Oil-Blast Circuit Breaker

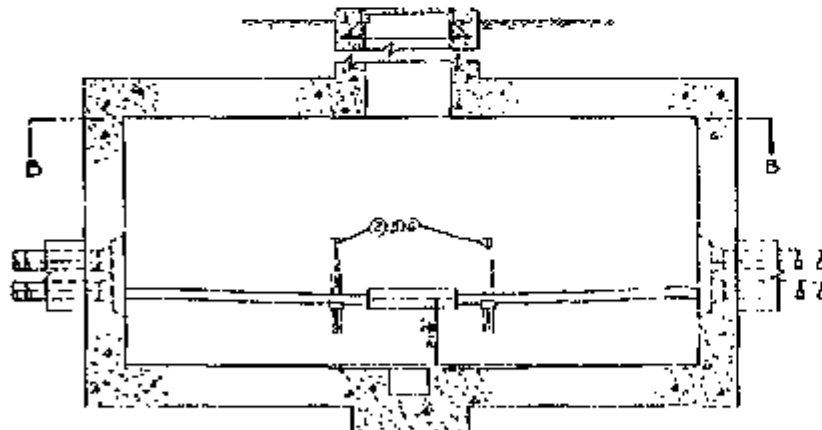
NO100A-N6UB



SECTION C-C



SECTION D-D



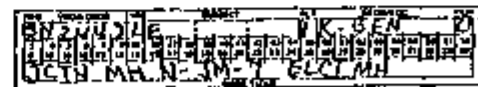
SECTION A-A

NOTES:

1. FOR ELEVATIONS OF DUCTS ENTERING MANHOLE, SEE DWG. NO100A-N6UC
2. TRANS-NAL-13 USED FOR GROUNDING SYSTEM SEE DWG. NO100A-N6UD
3. FOR LOCATIONS OF MANHOLE COVERS, PULLBOXES, BENCH MARKS TO SURVEY JOBS, SEE DWG. NO100A-N6UE
4. ALLOW A MINIMUM OF 20 INCHES CLEARANCE AT DUCT MOUTH & 3 FEET FROM
5. MINIMUM BENDING RADIUS OF CABLES 600MM (24 IN)

REFERENCE DRAWINGS:

- | | |
|--|--------------------|
| Spec. of Materials | DWG. NO100A-N6UCB2 |
| STD. REQUIREMENTS FOR FIREPROOFING L.C. CABLES | N-3-D |
| METHOD OF FIREPROOFING CABLES IN MANHOLES | N-4-D |
| PLANS AND PROFILES | NO100A-N6UC |
| STRUCTURAL DETAILS OF MANHOLE | NO100A-N6UB |
| TYSON M.H. GROUNDING SYSTEM | NO100A-N6UD |
| CABLE DIAGRAM AND SERVICE DATA | NO100A-N6UE |



MATERIAL LIST	QTY	REMARKS
2	2	
3	2	
4	4	
11	1	
12	1	
13	1	
18	4	

FIGURE 49
TYPICAL MANHOLE CONFIGURATION

JOB NO.	
THE KELLEX CORPORATION	
UNDERGROUND TRANSMISSION LINE	
ELECTRICAL MANHOLE LAYOUT	
SECTION MANHOLE "N-IN-7"	
THE KELLEX CORP.	
DATE	BY
NOV 1964	K. GEN
CHECKED BY	DATE
W. J. KELLEY	NOV 1964
NO100A-N6UB	

APPROVED PRINT OR

TABLE IV
K-732 SWITCH YARD
PCB CONTAMINATION LEVELS - MINERAL OIL FILLED EQUIPMENT

EQUIPMENT	ID	PCB CONTAMINATION - PPM				OIL
		MAIN TANK	TAP CHGR	REV SW	POTHD	Quantity
Transformer	New-1					11,240
Transformer	New-2					11,240
TRANSFORMER	102	45				11,700
REG. TRANSF	102	87	88	85	13	3,150
TRANSFORMER	103	31				11,700
REG. TRANSF	103	67	65	64	51	3,150
Transformer	104	47				11,700
Reg. Transf	104	46	86	58	55	3,150
Transformer	105	43				11,700
Reg. Transf	105	38	45	45	13	3,150
Transformer	106	36				11,700
Reg. Transf	106	84	66	84	9	3,150
Transformer	107	36				11,700
Reg. Transf	107	60	53	63	45	3,150
Bus POT	91P/A	598				230
Bus POT	91P/B	625				230
Bus POT	91P/C	492				230
Bus POT	92P/A	594				230
Bus POT	92P/B	432				230
Bus POT	92P/C	510				230
POT Transf	K-1	495				230
POT Transf	K-2	0				230
POT Transf	K-33	1558				230
POT Transf	X-10	691				
			<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	
OCB	824		42	57	57	4,665
OCB	834		45	46	44	4,665
OCB	844		87	50	62	4,665
OCB	854		49	47	51	4,665
OCB	864		51	50	50	5,880
OCB	874		68	98	75	5,880
OCB	914		48	49	47	4,665
OCB	924		50	54	32	4,665
OCB	934		36	41	43	5,880
OCB	944		78	77	75	4,665
OCB	954		74	80	71	4,665
OCB	964		66	63	58	5,010

The cables, where exposed in the manholes, are fire-proofed with an asbestos tape, a layer of hemp rope, and an overall coating of mortar. If the layer of mortar is cracked from cable flexing, subsequent deterioration of the rope can allow the asbestos tape underlayment to become "friable". If the man-holes are then subject to ground water, some asbestos fibers can be liberated to either the ambient air, or to the ground. In either case, if personnel must work in the manholes to repair or install other cable, a possible hazard can exist. As shown in Figures No. 22 and 23 the cables are run in duct banks which interconnect between manholes. The manholes are installed in "rows" where they travel in groups across a cable plant route. Since most of the cable runs were abandoned when the Power House was deactivated, many of the cables were cut and removed from the manholes, but allowed to remain in the duct banks between manholes. The remaining cables, now being energized from the K-27 switch house, supply the present plant auxiliary system have an extensive amount of asbestos in the manholes. Table V attached, lists the length of cable wrapped with fireproofing and the approximate volume of asbestos tape/rope/mortar used. An estimate of 376 cubic feet of combination mix was calculated to exist.

TABLE V
ASBESTOS FIRE PROOFING QUANTITIES
14 KV UNDERGROUND CABLE
DISTRIBUTION SYSTEM

MANHOLE NUMBER	MANHOLE CABLE-FT	EXPOSED LENGTH	SPLICE CU-FT	ASBESTOS CU-FT	FIREPROOFING ROW
1	G & L	23.5	6	.574	1.243
	N	36	9	.872	1.891
	O	24	6	.163	1.076
2	G & L	23.5	6.	.574	1.243
	N	36	9	.872	1.891
	O	24	6	.163	1.076
3	G & L	23.5	6.	.574	1.243
	O	26	6	.163	1.136
4	G & L	23.5	6.	.574	1.243
5	G & L	23.5	6.	.574	1.243
6	G & L	23.5	6.	.574	1.243
7	G & L	23.5	6	.574	1.243
8	G & L	23.5	6.	.574	1.243
9	G & L	23.5	6.	.574	1.243
10	G & L	23.5	6.	.574	1.243
11	G & L	23.5	6.	.574	1.243
12	G & L	23.5	6.	.574	1.243
13	G & L	23.5	6.	.574	1.243
14	G & L	23.5	6.	.574	1.243
15	G & L	23.5	6.	.574	1.243
16	A-M	12.	3	.291	.630
	BJM	28.	6.	.646	1.401
	F	71.	18	1.727	3.747
	G	48	12	1.727	2.521
	k	18.	3	.387	.840
	L	58	12	1.324	2.871
	A-M	12.	3	.291	.630
	BJM	28.	6	.646	1.401
	C	13.	3.	.307	.665
	FJ	130	17	2.319	4.413
17	GJ	54	12	1.259	2.731
	KJ	16	3	.355	.770
	LJ	60	12	1.335	2.899
	M	13	3	.307	.665
	B-JM	526	129	26.899	57.058
	A-M	12	3	.291	.639
	B	24	6	.581	1.261
	C	13	3	.307	.665
	F	36	9	.831	1.808
	18				

MANHOLE ROW	MANHOLE NUMBER	EXPOSED CABLE-FT	SPLICE LENGTH	ASBESTOS CU-FT	FIREPROOFING CU-FT
18(CONT)	G	59	12	1.383	3.008
19	A-M	12	3	.291	.630
	B	24	6	.581	1.261
	C	13	3	.307	.665
	F	36	9	.831	1.808
	G	59	15	1.383	3.008
20	A-M	12	3	.291	.630
	B	24	6	.581	1.261
	C	13	3	.307	.665
	F	43	9	.930	2.009
	G	59	15	1.383	3.008
21	A-M	24	6	.581	1.261
	B	24	6	.581	1.261
	C	13	3	.307	.665
	F	36	9	.831	1.808
	G	64	12	1.278	2.192
22	B	42	9	.969	2.101
	C	13	3	.307	.665
	E	25	5	.407	.909
	F	40	6	.800	1.741
	G	92	22	1.386	4.456
23	B	12	3	.291	.630
	C	13	3	.307	.665
24	B	12	3	.291	.630
25	B	12	3	.291	.630
Cable Run AB (10 Manholes)		504	93	10.62	23.114
Plant Auxiliary ()*			()*		
Cable Runs				<u>92.189</u>	<u>202.335</u>
TOTAL		(2950.5)*	(659)*	172.377	376.535

* Not Complete

7.0 GENERAL CONDITIONS

Each building has been reviewed relative to what its condition is currently and what is considered appropriate for a safe condition after 20 years in storage. A thorough evaluation has not yet been conducted so the information here-in presented borders more on opinion than engineering review. Also, upon completion of the "Feasibility Study" recommendations will be proposed, which if carried out, may appreciably alter the results of the "20 Year" action. Also, the type and amount of Surveillance/Maintenance to be conducted during the 20 year time frame will effect the results. Table VI titled, "20 YEAR SAFE-STORAGE CONDITION" is a first attempt at structure evaluation:

TABLE VI

20 YEAR SAFE STORAGE CONDITION
STRUCTURES ASSOCIATED WITH THE HEU CHARACTERIZATION REPORT

<u>STRUCTURE NO.</u>	<u>NAME</u>	<u>PRESENT CONDITION</u>	<u>ACTION FOR 20 YEAR STORAGE AND COMMENTS</u>
K-701	Boiler House	Fair	Board-up windows, Maintain entrance ways closed
K-702	Turbine Room	Poor	Needs reroofing and windows boarded-up.
K-703	Office/Lab	Good	Remove A/cs & Fluorescent Fixtures.
K-704	Switch House	Good	Repair Wood doors and remove A/Cs & Fluor.Fix.
K-705	Water Intake Filter House	Poor	Intake Screens should be removed & Bldg. Repaired.
K-706	Pump House	Bad	Roof Hatches -replace Board Up, repair, & prevent entry.
K-707	Aux. Switch House	Good	Repair doors and limit personnel access.
K-708	Scale House	Good	Continue Use If Needed
K-709	A & C	Good	Limit Access
K-709	Switch Yard	Good	Remove stored Equipment
K-710	Sewer Plant	Fair	Could Demolish
K-711	Ware house	Good	Can continue Use as Ware-house.
K-712	Ware houses	Bad	Demolish
K-722	Surplus Office/Warehouse	Good	Maintain Normal Maintenance
K-723	Warehouse	Good	Maintain Normal Maint.
K-724	Warehouse	Good	Maintain Normal Maint.
K-734	Warehouse	Bad	Demolish
K-735	Warehouse	Bad	Demolish
K-738	Chemical Feed Water Treatment	Fair	Board-Up windows & doors
K-731	Switch House	Excellent	Maintain in Operation
K-732	Switch Yard	Excellent	Maintain in Operation

8.0 SUMMARY OF HAZARDS

TABLE VI
HAZARD SURVEY RESULTS

FACILITY	SECTION	TYPE HAZARD				
		ASBESTOS	PCB EQUIPT	OIL	FREON A/C	BIRD DROPPING
K-701	BOILER	27 Cu.Ft. Insulation	---	790gal	---	10-20 cu.
K-702	GENERATOR	25 Cu.Ft. Insulation	17-Fl.Fix.	---	1 Centrl	---
K-703	Offices	13 Cu.Ft. Insulation	300-Fl.Fix.	---	1-Ctrl, 11-Wall	---
K-704	SWHOUSE	460 Cu.Ft. Insulation	81-Fl.Fix.	790gal	4 Wind.	Minor
		880 Cu.Ft. Transite	39-8'Fix.	---	1 Centrl	---
K-705	INTAKE	68 Cu.Ft. Insulation	---	---	---	Minor
K-706	PUMPS	200 Cu.Ft. Insulation	---	---	---	20 Cu.Ft.
		5100 Sq.Ft. Transite Siding	---	---	---	---
K-707	AUX PWR	44 Cu.Ft. Insulation	5-Fl.Fix.	7500 gal	None	---
		52 Cu.Ft. Transite	---	---	---	---
		462 Ft. PILC Cable Insul.	---	---	---	---
K-708	Scales	250 Sq.Ft. Transite	---	---	---	---
K-709	SWYARD	990 Sq.Ft. Transite	---	---	---	---
K-710	SEWAGE	---	3-Fl.Fix	---	---	---
K-711	STORAGE	6700 Sq.Ft. Transite	50-Fl.Fix.	---	---	---
K-712	STORAGE	---	---	---	---	10 Cu.Ft.
K-722	STORAGE	1 Cu.Ft. Insulation	50-Fl.Fix.	---	3-A/C's	---
		14,000 Sq.Ft. Transite Roofing	---	---	---	---
		8,800 Sq.Ft. Asbestos Shingles	---	---	---	---
K-723	STORAGE	8,400 Sq.Ft. Transite	---	---	---	VeryMinor
K-724	STORAGE	300ft-1-2"Pipe Insul	200Fl.Fix.	---	---	---
K-734	STORAGE	---	---	---	---	10-20 Cu.
K-735	STORAGE	60ft-1"pipe Insul.	---	---	---	5 Cu.Ft.
K-738	Chlorine	200 Sq.Ft. Transite Roof	---	---	---	---
K-731	K-27SwHse	520 Cu.Ft. Transite Duct	---	...	6-A/C's
K-732	K-27SwYd	---	---	67,725 Gal	---	---

9.0 Appendices

9.1 Facility Structure Tables

9.2 Drawing Reference List

FACILITY STRUCTURE EVALUATION

Building Number	K-701
Building Name	Power House - Boiler Room
Original Use	Steam Generation
Present Usage	Storage
Type of Construction	Masonry
Number of Floor Levels	One = 140 ft high
Projected Area	192' x 147'; 28,224 sq.ft.
Personnel Traffic	Estimated one per day
Type of Hazards	Asbestos Insulation on Service Water Line, Bird Droppings, & PCB Contaminated Mineral Oil
Hazard Location	Water Pipe is 8-12 Feet above Ground Level.
Fan Bay	40Ft 12" Pipe
Boiler Bay	100Ft-10" Pipe, 100Ft 5" Pipe
Bunker	100Ft-6" Pipe, 80Ft-2" Pipe
Floor & Steel Beams	380FT-3" Pipe
External Transformer	Extensive Layer of Droppings Mineral Oil
Applicable References	Dwgs. S & L M-2, M-4, M-5, M-6
Analytical Sample Number	
Fan Bay	A-0401(K-701) & A-0402(K-701)
Boiler Bay	A-0403(K-701) & A-0404(K-701)
Bunker	
External	P-0401(K-701) Ltg. Xfrmr #11 P-0402(K-701) Ltg. Xfrmr #12
Laboratory Analysis	
Approximate Quantity of Material	790 Gallons of Mineral Oil Approx. 10-20 Cu.Ft. Bird Droppings 22.2 Cu.Ft. Insulation

FACILITY STRUCTURE EVALUATION

Building Number	K-702
Building Name	Power House - Turbine Room
Original Use	Power Generation
Present Usage	Vacant Except for ORNL Testing
Type of Construction	Masonry
Number of Floor Levels	Two = 70 ft high
Projected Area	585' x 87'; 50,895 sq.ft.
Personnel Traffic	Estimate 4 per day
Type of Hazards	Asbestos Insulation on Service Water line Fluorescent Fixtures & Central Air Conditioner
Hazard Location	Service Water line is 8 to 12 feet above basement floor. Approx. 55ft 3/4", 120ft 2", 100ft 6" & 400ft 10" Pipe
Applicable References	Dwgs. S & L M-2, M-4, M-5
Analytical Sample Number	A-0405(K-702), A-0406(K-702) A-0407(K-702) & A-0408(K-702)
Laboratory Analysis	
Approximate Quantity Of Material	13 Fluorescent Fixtures 4 - 6ft Fluorescent Fixtures 1 Central A/C 25 Cu.Ft. Insulation

FACILITY STRUCTURE EVALUATION

Building Number	K-703
Building Name	Power House - Office Area
Original Use	Administrative Offices for Power House
Present Usage	Vacant - 3 Floors - 22,000 sqft
Type of Construction	Masonry
Number of Floor Levels	Three
Projected Area	48'8' x 154'; 7500 sq.ft.
Personnel Traffic	Nil - Area Locked
Type of Hazards	Fluorescent Fixtures & AC Freon Utility Pipe Insulation, & Insulation of Service Pipe/Ducts
Hazard Location	Ceiling Fixtures, Wall A/Cs, & Utility Chase service Piping Approx. 600 Ft total of 1", 4" and 8" pipe.
Applicable References	Dwgs. S&L M-4, & MM-ES M-40398-__
Analytical Sample No.	A-0409(K-703), A-0410(K-703) & A-0411(K-703)
Laboratory Analysis	
Approximate Quantity Of Material	300 Fluorescent Fixtures 11 wall/package A/Cs 1 Central A/C 13 cu.ft. Insulation

FACILITY STRUCTURE EVALUATION

Building Number	K-704
Building Name	Main Switch house
Original Use	Power Distribution
Present Usage	Machine Tool Storage for Surplus Salvage Sales
Type of Construction	Masonry
Number of Floor Levels	Three
Projected Area	637' x 48'; 30,580 sq.ft.
Personnel Traffic	Negligible except for Ground Floor Locker Room - Estimate 4 twice a day.
Type of Hazards	Asbestos Conduit, Fluorescent Fixtures, Freon from Excess A/c Units. Transformer Mineral Oil Pipe Insulation
Hazard Location	Asbestos in underground base- ment Area - Pipe Insulation Ground Floor and Basement. Offices Fluorescent Fixtures. 2 Transformers Outside on NE side of Building
Applicable References	Dwgs. S&L B-144 thru B-152 & UCC S-AWE-9215, thru 9217 & 9220
Analytical Sample No.	A-0412(K-704), A-0413(K-704), P-0403(K-704) Ltg. Xfrm#13, P-0404(K-704) Ltg. Xfrm#14
Laboratory Analysis	
Approximate Quantity Of Material	2540 Ft-3/4'-6"Pipe Insulation 460 cu.ft. of material 85 Ft- Cable Fire Proofing 18,700 Ft - 4, 5, 6" Transite Duct 880 cu.ft. of material 81 Fluorescent Fixtures 39 8'Fluorescent Fixtures 1 Central A/c, 4 Wall A/Cs 790 Gallons Mineral Oil

FACILITY STRUCTURE EVALUATION

Building Number	K-705
Building Name	Water Intake Filter House
Original Use	Filter Cooling Water to Condensers
Present Usage	Abandoned Facility
Type of Construction	Masonry
Number of Floor Levels	One
Projected Area	50' x 16'; 800 sq.ft.
Personnel Traffic	Nil
Type of Hazards	Asbestos Insulation on Back Wash Water Lines
Hazard Location	Operating Floor of Bldg. 3" & 6" Service Water Line Insulation
Applicable References	Dwg. C&CCC D-KP-19178A Rev A
Analytical Sample No.	A-0415(K-705)
Laboratory Analysis	
Approximate Quantity Of Material	120 Ft 6" Pipe Insulation 220 Ft 3" Pipe Insulation

FACILITY STRUCTURE EVALUATION

Building Number	K-706
Building Name	Condenser Water Pumphouse
Original Use	Pumpage of Cooling Water
Present Usage	Abandoned
Type of Construction	Concrete with Transite Siding
Number of Floor Levels	One
Projected Area	115' x 28'; 3,220 sq.ft.
Personnel Traffic	Nil
Type of Hazards	Asbestos Insulation on 5 Service water pumps, 2 ash sluice water pumps, and insulation on 1/2, 3/4, 1, 1 1/4, 2, 3, 6, 10, 12, & 16 inch pipes. Asbestos in Siding Bird Droppings
Hazard Location	Siding Floor and Internal Beams
Applicable References	Dwgs. S&L M-145, B-128. B-265
Analytical Sample No.	A-0414(K-706)
Laboratory Analysis	
Approximate Quantity of Material	5,100 sqft Transite Siding 5 Cuft Pigeon Droppings 200 Cu.ft.asbestos Insulation

FACILITY STRUCTURE EVALUATION

Building Number	K-707
Building Name	Auxiliary Switch House
Original Use	Distributed Auxiliary Power
Present Usage	Abandoned
Type of Construction	Masonry
Number of Floor Levels	Four
Projected Area	197' x 33'; 6,500 sq.ft.
Personnel Traffic	Negligible
Type of Hazards	Asbestos Conduit, PILC Cable Fire Proofing, Pipe Insulation, Mineral Oil & Fluorescent Fixtures
Hazard Location	Transite (asbestos conduit and Pipe Insulation in Basement. PILC Asbestos Fireproofing at Transformers External to Bldg. Also, transformer mineral oil.
Applicable References	S & L Dwg: B-110; E-42, 90, 91, 92, 101 C&CC: S-AWE-8333, 8334, 9213, 9300
Analytical Sample No.	A-0416(K-707), A-0417(K-707), A-0418(K-707), & P-0405(K-707) & P-0406(K-707)
Laboratory Analysis	
Approximate Quantity Of Material	1865 Ft 3" Conduit, 155 Ft 4" Conduit (52 cu.ft. composite); 460 Ft 3/4, 1, 1 1/4, 2, & 3 inch Pipe insulation (44 cubic feet); 460 Ft PILC Cable Fire Proofing 7500 Gallons Mineral Oil

FACILITY STRUCTURE EVALUATION

Building Number	K-708-E
Building Name	Scale House
Original Use	Railroad Scale
Present Usage	Railroad Scale
Type of Construction	Frame Transite Roof & Siding
Number of Floor Levels	One Plus Pit
Projected Area	12' x 12'; 144 sq.ft.
Personnel Traffic	Minor
Type of Hazards	Asbestos
Hazard Location	Roof & Siding
Applicable References	Dwg. EE-32514 A
Analytical Sample No.	A-0419(K-708) & A-0420(K-708)
Laboratory Analysis	
Approximate Quantity Of Material	150 sqft Transite Siding 100 sqft Transite Roofing

FACILITY STRUCTURE EVALUATION

Building Number	K-709 (K-709A & K-709C)
Building Name	K-25 Switchyard (K-709A - Oil Valve House; K-709C - Fire System Valve House)
Original Use	Power Distribution 161KV/14KV
Present Usage	Dismantled (Except for Steel Towers) and Valve Houses
Type of Construction	K-709 - Open Steel & Concrete Pads K-709A- Transite Siding/Roof on Pad K-709C- Transite Siding/Roof on Pad
Number of Floor Levels	One level - Not a Building
Projected Area	K-709 A - 17' x 16'; 272 sq. ft. K-709 C - 21' x 11'; 231 sq. ft.
Personnel Traffic	Minor Amount / Maintenance & Stores
Type of Hazards	Asbestos in Transite: Unknown for Stored Equipment.
Hazard Location	Roof and Siding of Valve Houses and Possible in Stored Equipment.
Applicable References	Dwg. UCC B-E-37804 A S&L B-450
Analytical Sample No.	A-0421(K-709A) & A-0422(K-709C)
Laboratory Analysis	
Approximate Quantity Of Material	720 Sqft Siding 270 Sqft Roofing

FACILITY STRUCTURE EVALUATION

Building Number	K-710
Building Name	Sewage Disposal Facility
Original Use	Sewage Disposal
Present Usage	Inactive
Type of Construction	Masonry
Number of Floor Levels	One Floor with Above ground Berned Settling Basins
Projected Area	14' x 21'; 294 sq.ft.
Personnel Traffic	Neglible
Type of Hazards	None
Hazard Location	None
Applicable References	S & L Dwg. B-236, B-237
Analytical Sample No.	_____
Laboratory Analysis	_____
Approximate Quantity Of Material	_____

FACILITY STRUCTURE EVALUATION

Building Number	K-711
Building Name	Training Building
Original Use	Guard Bldg.
Present Usage	Storage
Type of Construction	Masonry with Transite Roof
Number of Floor Levels	One
Projected Area	126' x 38'; 4,788 sq.ft.
Personnel Traffic	Minor
Type of Hazards	Asbestos in Roof Panels Fluorescent Fixtures
Hazard Location	Roof and Internal Ceiling Area
Applicable References	Dwg. J A Jones 20 295
Analytical Sample No.	A-0423(K-711)
Laboratory Analysis	
Approximate Quantity Of Material	6700 sq.ft. transite corrugated roofing material 50 Fluorescent Fixtures

FACILITY STRUCTURE EVALUATION

Building Number	K-712
Building Name	Farclve
Original Use	Thermal Diffusion Testing
Present Usage	Abandoned
Type of Construction	Masonry/Steel
Number of Floor Levels	Two
Personnel Traffic	Nil
Type of Hazards	Bird Droppings
Hazard Location	Through out Bldg
Applicable References	
Analytical Sample No.	
Laboratory Analysis	
Approximate Quantity Of Material	10 Cuft Bird Droppings

FACILITY STRUCTURE EVALUATION

Building Number	K-722
Building Name	Fercleve Office Bldg
Original Use	Offices
Present Usage	Surplus Sales
Type of Construction	Stud Wall-Asbestos Shingles & Transite corrugated Roofing
Number of Floor Levels	One
Projected Area	153' x 82'; 12,546 sq.ft.
Personnel Traffic	Heavy - Open to Public At Times
Type of Hazards	Asbestos in Siding & Roofing Pipe Insulation Fluorescent Fixtures Air Conditioners
Hazard Location	Internal - Water Pipe Insulation Fluorescent Fixtures External - Asbestos Siding/Roofing
Applicable References	Dwg. S1E-51896-A
Analytical Sample No.	A-0424 (K-722) & A-0425 (K-722) A-0426 (K-722)
Laboratory Analysis	
Approximate Quantity Of Material	Asbestos - 200 Ft 1" Pipe Insul. 14,000 SqFt Transite Roofing 6,800 Sqft Asbestos Shingle 50 Fluorescent Fixtures

FACILITY STRUCTURE EVALUATION

Building Number	K-723
Building Name	Perclieve Laboratory
Original Use	Laboratory and Offices
Present Usage	Surplus Sales Storage
Type of Construction	Transite Siding
Number of Floor Levels	One
Projected Area	198' x 53'; 10,494 sq.ft.
Personnel Traffic	Heavy - Open to Public At Times
Type of Hazards	Asbestos
Hazard Location	Building Siding
Applicable References	Dwg S-S-23663 EP, (BR & BS ?)
Analytical Sample No.	A-0427(K-723)
Laboratory Analysis	
Approximate Quantity Of Material	8400 SqFt Siding

FACILITY STRUCTURE EVALUATION

Building Number	K-724
Building Name	Fercleve Area
Original Use	Warehouse
Present Usage	Surplus Sales - Storage
Type of Construction	Masonry - Built-up Roof
Number of Floor Levels	One
Projected Area	178' x 38'; 6,764 sq.ft.
Personnel Traffic	Heavy - Open to Public At Times
Type of Hazards	Pipe Insulation - Asbestos Fluorescent Fixtures
Hazard Location	Attic & Ceilings
Applicable References	Dwg. D-KS-19112A Rev A
Analytical Sample No.	A-0428, A-0429, & A-0430
Laboratory Analysis	
Approximate Quantity Of Material	300 Ft 1 ³ / ₂ " Pipe Insulation 200 Fluorescent Fixtures

FACILITY STRUCTURE EVALUATION

Building Number	K-734
Building Name	Farcleve Test Facility
Original Use	Thermal Diffusion Testing
Present Usage	Abandoned
Type of Construction	Masonry and Frame
Number of Floor Levels	Two
Projected Area	
Personnel Traffic	Nil
Type of Hazards	Bird Droppings
Hazard Location	Floor and Roof Beams
Applicable References	Dwg. UCC D-RWK-12250B (Shows a Bldg. Modification not made).
Analytical Sample No.	
Laboratory Analysis	
Approximate Quantity Of Material	10 to 20 CuFt of Droppings

FACILITY STRUCTURE EVALUATION

Building Number	K-735
Building Name	Percleve Storage
Original Use	Warehouse
Present Usage	Abandoned
Type of Construction	Concrete and Frame
Number of Floor Levels	Two
Projected Area	
Personnel Traffic	Nil
Type of Hazards	Bird Droppings Asbestos Insulation
Hazard Location	Floor 60 Ft of 1" Pipe Insulation
Applicable References	
Analytical Sample No.	
Laboratory Analysis	
Approximate Quantity Of Material	5 CuFt Droppings

FACILITY STRUCTURE EVALUATION

Building Number	K-738
Building Name	Chlorine Treatment Bldg.
Original Use	Control Algae in Cooling Water
Present Usage	Abandoned
Type of Construction	Concrete Block & Transite Roof
Number of Floor Levels	One
Projected Area	10' x 20"; 200 Sq.ft.
Personnel Traffic	Negligible
Type of Hazards	Asbestos
Hazard Location	Roof
Applicable References	
Analytical Sample No.	A-0431(K-738)
Laboratory Analysis	
Approximate Quantity Of Material	200 Sqft Roofing

FACILITY STRUCTURE EVALUATION

Building Number	K-731 (K-27/29 AREA)
Building Name	Main Switch house
Original Use	Power Distribution
Present Usage	Power Distribution
Type of Construction	Masonry
Number of Floor Levels	Three
Projected Area	521' x 48'; 25,008 sq.ft.
Personnel Traffic	Normal Operating Personnel
Type of Hazards	Asbestos Conduit, Fluorescent Fix- tures, Pipe Insulation
Hazard Location	Asbestos in underground basement Area - Pipe Insulation Ground Floor and Basement. Offices Fluorescent Fixtures.
Applicable References	Dwg. ELE-H7E00-A, B, C
Analytical Sample No.	
Laboratory Analysis	
Approximate Quantity Of Material	8,425 Ft - 5" Transite Duct (519 Cu.Ft. of Material)

FACILITY STRUCTURE EVALUATION

Building Number	K-732 (K-27/29 AREA)
Building Name	Main Switch yard
Original Use	Power Distribution
Present Usage	Power Distribution
Type of Construction	Concrete foundations & Steel structures
Projected Area	274,000 Sq.Ft.
Personnel Traffic	Normal Operating Personnel
Type of Hazards	PCB's within operation Transformers and Oil circuit breakers.
Hazard Location	Operating equipment in Switchyard
Applicable References	Dwg. E-KE-1827 X&Y
Analytical Sample No.	
Laboratory Analysis	
Approximate Quantity Of Material	67,725 gallons of Mineral Oil with PCB contaminants in excess of 50 ppm.

DRAWING REFERENCE LIST

SAFE STORAGE FEASIBILITY STUDY

DRAWING ID	DRAWING TITLE
S & L M-2	Profile Thru River & General Cross Section Power Station
M-4	Plan of Piping in Main Switch house
M-5	General Arrangement Plan - Basement Floor
M-6	General Cross Section - Power Station
M-12	Plan of Piping in Auxiliary Switch house
M-13	Sections of Piping in Auxiliary Switch House
M-14	Plan of Piping In Main Switch House
M-15	Sections of Piping in Main Switch House
M-35	Details of Outdoor Piping - Sheet No. 1
M-37	Plan of Circulating Water Piping - Power St.
M-143	Basement & Main Floor Plans - Pump House Piping
M-144	Longitudinal Section - Pump House Piping
M-145	Cross Section of Pump House Piping
M-348	Lower Plans of Piping in Switch House K-27
M-421	Fire Piping in Switch Yard - K-25 Project
B-110	Auxiliary Switch House - Bsmt, 1st, & 2nd Fl
B-128	Elevations & Sections - Pump House

DRAWING ID

DRAWING TITLE

DRAWING ID	DRAWING TITLE
B-144	Ground Floor Plan - South Section, Mn Swhse
B-146	Second Floor Plan, North Section, Mn Swhse
B-152	Longitudinal Section - MainSwitch House
B-236	Sewage Disposal Plant Sections & Details
B-237	Sewage Disposal Plant Sections & Details
B-265	Wood Enclosure For Pumphouse - K-706
B-450	Fire Protection - Valve House - K-25 Project
E-1	Gen. Arrngmt of Elect. Equip. & Grdg. Plan
E-42	Cable Pans - Sections & Details - Aux. Swhse
E-90	Cable Runs & Details - Auxiliary Switch Hse
E-91	Aux. Power Transformers & Connections AuxSwh
E-92	Conduits & Elect. Connections 2nd Floor, Auxiliary Switch House
E-101	2300 Volt Switchgear - Sections- Aux.Swhse

JAJones

20295	Equipment & Spare Parts Warehouse (K-711)
-------	---

UCC	E-3716-1	K-709 & K-732 Switch Yards - Elect. Layout Oil Treatment Houses
	S-AWE-8334	Cable Pans - Plan Aux. Swhse (K-707)
	S-AWE-9212-6	K-707 Power Station Duct Runs at Aux. Swhse
	S-AWE-9213	Conduits & Channels in Floor - Aux. Swhse
	E-AWE-9300B	2300 V. Switchgear, Group 3, K-707 Aux Swhse

DRAWING ID	DRAWING TITLE
UCC D-KP-19178A-A	Modifications of REX Screens-Gen. Arrangmet.
D-KP-19178D-A	Modification of REX Traveling Screen - Details of Counterweight Assembly
S-AWE-9214	Duct Runs-Turbine Room-Main Swhse, (Sht 1of3)
S-AWE-9216	Ditto (Sheet 2 of 3)
S-AWE-9217	Ditto (Sheet 3 of 3)
S-AWE-9220-3K	K-704 Power Station Duct Runs - Sections Main Switch House
S-AWE-10725-1	K-711 Electrical Maintenance & Welding Shop
D-KWK-12250B	Sand Blast Facilities (Proposal No. 2)
D-KS-19112A-A	Alterations to K-734 Plumbing
D-KS-19112B	Alterations to K-734 Heating and Ventilation
B-E-37804A	K-25 SwitchYard-Oil Filter Unit - Power Plan
E-E-39569A	Phase Out - K-709 Switch Yard
E-E-39569D3	K-731 Switch House 14 kV East & West Wing Basement Floor Plan - Duct Runs
E1E-43637G	13.8 kV Underground Distribution System Plan Blocks A, B, D, E
S1E-51896-A	K-722 Roof and Wall Insulation Plans & Detls
P1E-52879B	Instrument EC Unit Control Room HV/AC Replacement, K-731
E1E-H7E00-A	K-731/K-732 SWHse/SWYd Cable Runs (Sht.1of3)
E1E-H7E00-B	(Sheet 2 of 3)
E1E-H7E00-C	(Sheet 3 of 3)
E1E-H7E00-D	13.8 kV Underground Distribution System Plan
E-KE-1927-X&Y	Rearr'gm't Of K-27 Switchyard

MARTIN MARIETTA ENERGY SYSTEMS, INC.
Oak Ridge, Tenn. - Paducah, Ky.

XMTL NO. 140 ISSUE DATE
89-0103 03/22/89

ENGINEERING TRANSMITTAL

PROCUREMENT BY FIELD WORK BY

PROJECT TITLE
ORGDP Diffusion Facilities Permanent Shutdown

PROJECT NO. E.S.O.
M-H8E00

JOB TITLE
Engineering Feasibility Study/Site Characterization
Distribution Quantities

BUILDING PLANT
K-700 ORGDP

FUNCTION	NAME	BLDG	M/S or R/N	X	Dwg R/F	B/M	D/S	*	ISSUED FOR:		
									xxApproved	__CFC	__Des Comp
Process Engineering	RM Canon	1000	342	1					Return Comments To	By(Date)	
Oils - P.E.	JM Chiang	K-1550F	229	1							
Risk Mgr.	RC DeLozier	1000	333	1							
Manager	RW Glass	K-1580	599	1							
Remedial - P.E.	TB Hale	K-1035	209	1							
Safety Ana.	HF Hartman	1000	333	1							
Chem. & Cool.	ES Harrington	1000	342	1							
Radioactivity	DA Kucsmas	K-1035	209	1							
	KH Lin	K-1550F	229	1							
Asbestos - P.E.	BM Spann	K-1550W	223	1							
R.E.D.	LH Stinton	1000	342	1							
	DS Milewski	K-1550W	223	1							
	MJ Stephenson	9733-3	002	1							
Health, Safety & Env.											
Environmental	TA Bowers	K-1020A	402	1							
Enviv. - Chem.	DA Coleman	K-1652	352	1							
Envir. Water	WJ Scheib	K-1020	402	1							
Safety	EL Crowe	K-1020	401	1							
IH/HP	DT Duncan	K-1003	420	1							
Envir. - PCBs	JL Haymore	K-1020	402	1							
IH - Asbestos	LA Headrick	K-1003	420	1							
IH - All	TC Helms	K-1001	420	1							
Nucl. Safety	JC Ingram	K-1020	403	1							
Accountability	PS Johnson	K-1020	401	1							
Envir.-Asbestos	AC Lay	K-1020	402	1							
HP	JM Mahathy	K-1003	420	1							
	RW Oliver	K-1003	420	1							
IH/HP	D Milan	K-1003	420	1							
Safety-Asb/Oils	RW Ray	K-1020	401	1							
Safety - PCBs	DB Shupe	K-1020	401	1							
MAINTENANCE											
PCBs	BJ Ford	K-1035	219	1							
Asbestos	EL Garland	K-1030	319	1							
Chemicals	DS Gordon	K-1035	219	1							
Cool. & U.	TD Harris	K-1035	209	1							
Contamination	JW Hodge	K-1401	367	1							
	HK Hughes	K-1401	367	1							
Oils	BS Milligan	K-1401	367	1							
	LD Owens	K-1401	365	1							
Asb. & Class.	CC Sweet	K-1030	319	1							
TOTALS											

PAGE 2

*Attached is the
Issue Approved (IA)
Rev. 0 of the K-700
Building Characterization
Report, Power House and
K-731 Area, K/D - 5773

Any corrections, comments,
and/or concerns should be
directed to R. J. Thomas
K-1001, MS 163

RECEIVING INSPECTION REQUIRED
(1)Routine (2)Special

Refer Technical Questions
To: R. J. Thomas
Phone: 4-9062

RETURN ORIGINALS TO:
S. A. Harris
K-303-7, MS 7396

ORIGINATED BY
RJ Thomas

SECTION HEAD

DEPARTMENT
HG Smith

PF
LD McCullough

PM
BF Crump

ENGINEERING TRANSMITTAL

PROCUREMENT BY | FIELD WORK BY

PROJECT TITLE
ORGP Diffusion Facilities Permanent Shutdown

PROJECT NO. | E.S.O.
M-H8E00

JOB TITLE
Engineering Feasibility Study/Site Characterization

BUILDING | PLANT
K-700 | ORGP

Distribution Quantities

ISSUED FOR: Procurement
Info Comment Approval
xxApproved CFC Des Comp

FUNCTION	NAME	BLDG	M/S or R/N	X	Dwg R/F	B/M	D/S	*
----------	------	------	------------------	---	------------	-----	-----	---

Return Comments To | By(Date)

TECHNICAL

Development	RW Anderson	K-1006	272	1				
	EJ Barber	K-1004L	27	1				
	PD Bundy	K-1401	387	1				1
	HT Conners	K-1402	383	1				
	GJ Kidd	K-1004L	271	1				
	RL Ritter	K-1004L	266	1				
Analytical Chem.	CR Kirkpatrick	K-1004C	440	1				
	WE McLendon	K-1004B	449	1				1

PAGE 3

*Attached is the
Issue Approved (IA)
Rev. 0 of the K-700
Building Characterization
Report, Power House and
K-731 Area, K/D - 5773

INTERNATIONAL TECH.	SA Herron	K-1600	313	1				1
---------------------	-----------	--------	-----	---	--	--	--	---

ENVIRON. SCI. DIV. @ORNL	FE Sharples	1505	X38	1				
	CF Sigmon	1505	X36	1				

Any corrections, comments,
and/or concerns should be
directed to R. J. Thomas
K-1001, MS 163

CENTRAL E&SA	ME Mitchell	1000	335	1				1
	LJ Megza	2518	325	1				
	TP Perry	1000	335	1				1

LLWDD	AL Rivera	K-1037	357	1				1
-------	-----------	--------	-----	---	--	--	--	---

CONSULTANTS	J Dykstra	K-1001	196	1				
	J Foster	9733-3	002	1				
	DR Kellogg	K-1001	196	1				1
	JA Parsons	K-1001	196	1				1
	JC Bailey	K-1001	196	1				1

CLASSIFICATION	DB Gilliland	K-1004D	279	1				
	AS Quist	K-1004D	279	1				1

RECEIVING INSPECTION REQUIRED
(1)Routine (2)Special

DOE ORO	DB Cox	Downtown	1					3
		Concourse						

Refer Technical Questions
To: R. J. Thomas
Phone: 4-9062

HQ	VM Lowery	DOE HQ	1					3
		Germantown, MD						

RETURN ORIGINALS TO:
S. A. Harris
K-303-7, MS 7396

ORIGINATED BY JM Chiang	SECTION HEAD DS Milewski	DEPARTMENT MJ Stephenson	PE LD McCullough	PM BF Crump
----------------------------	-----------------------------	-----------------------------	---------------------	----------------

MARTIN MARIETTA ENERGY SYSTEMS, INC.
Oak Ridge, Tenn. - Paducah, Ky.

ENGINEERING TRANSMITTAL

XMTL NO. 140 ISSUE DATE
89-0103 03/22/89
PROCUREMENT BY FIELD WORK BY

PROJECT TITLE ORGDP Diffusion Facilities Permanent Shutdown PROJECT NO. E.S.O. M-H8E00
JOB TITLE Engineering Feasibility Study/Site Characterization BUILDING K-700 PLANT ORGDP

Distribution Quantities ISSUED FOR: Procurement
Info Comment Approval
xxApproved CFC Des Comp

FUNCTION	NAME	BLDG	M/S or R/N	X	Dwg R/F	B/M	D/S	*	Return Comments To	By(Date)
MANAGEMENT										
Plant Manager	WR Golliber	K-1001	134	1						
Qual. & Tech. Ser.	JT Bradbury	K-1004A	428	1						
Engr. Site Mgr.	CE Frye	K-1001	196	1						
Fab. & Maintenance	JC Hall	K-1035	219	1						
Plant. Prot. Div.	CH Peterson	K-1652	350	1						
Enrich. Bus. Ser.	JE Rushton	K-1004A	427	1						
H S & E	HD Whitehead	K-1020	403	1						
OPERATIONS										
Proc. Fac. Ser. Dept.	RL Faulkner	K-1024	325	1				3		
	CR Barlow	K-1024	325	1				1		
	KD Estes	K-1024	325	1				1		
	JL Guthrie	K-1024	325	1				1		
	MG Zuschneid	K-1024	325	1				1		
Security	JO Nations	K-1652	351	1				1		
Fire Protection	AC Heitzman	K-1652	351	1						
	KI Roy	K-1652	351	1				1		
Utilities	RD Blanchard	K-1650	300	1				1		
	JS Dalton	K-1650	300	1				1		
Waste Operations	GD Conner	K-1420	347	1						
	BE Vaughn	K-1420	347	1				1		
ENGINEERING										
Project Manager	BF Crump	K-1001	196	1				1		
Principal Engr.	WR Reed	K-1001	196	1				1		
Sr. Tech. Consult.	MI Lundin	K-1580	598	1				1		
Proj. Eng.(PCBs & Oils)	LD McCullough	K-1001	196	1				1		
Proj. Engr.(Asbestos)	LB True	K-1001	196	1				1		
Project Engineer	WD Strunk	K-1580	7520	1				8		
Project Files		K-1001	196	1				1		
Civil & Arch.	BK Miles	K-1550B	231	1				1		
	CT McLoughlin	K-1550H	231	1						
	FW Stout	K-1550J	233	1				1		
Electrical	SM O'Neal	K-1001	163	1						
	DB Janney	K-1001	163	1						
	HG Smith	K-1001	163	1						
PCBs - P.E.	RJ Thomas	K-1001	163	1				1		
Engr. Mechanics	JC Cotts	9733-2	001	1						
	CL Garren	9733-2	001	1						
Estimating	JL Lyons	K-1550V	234	1						
	CE Oldham	K-1550V	234	1						
TOTALS										

Return Comments To By(Date)

*Attached is the Issue Approved (IA) Rev. 0 of the K-700 Building Characterization Report, Power House and K-731 Area, K/D 5773
Any corrections, comments and/or concerns should be directed to R. J. Thomas K-1001, MS 163, 4-9062

RECEIVING INSPECTION REQUIRED
(1)Routine (2)Special

Refer Technical Questions To: R. J. Thomas
Phone: 4-9062
RETURN ORIGINALS TO:
S. A. Harris
K-303-7, MS 7396

ORIGINATED BY RJ Thomas	SECTION HEAD	DEPARTMENT HG Smith	PE LD McCullough	PM BF Crump
----------------------------	--------------	------------------------	---------------------	----------------