

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8303160427 DOC. DATE: 83/03/04 NOTARIZED: NO DOCKET #  
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397  
 AUTH. NAME: AUTHOR AFFILIATION  
 BOUCHEY, G.D. Washington Public Power Supply System  
 RECIP. NAME: RECIPIENT AFFILIATION  
 SCHWENCER, A. Licensing Branch 2

SUBJECT: Forwards info presented at 830304 meeting in Bethesda, MD re  
 fine hose/standpipe mod. Encl info provides technical basis  
 for acceptance of current manual fire suppression sys  
 design.

DISTRIBUTION CODE: B002S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 20  
 TITLE: Licensing Submittal: Fire Protection

## NOTES:

	RECIPIENT ID CODE/NAME		COPIES		RECIPIENT ID CODE/NAME		COPIES	
			LTTR	ENCL			LTTR	ENCL
	NRR LB2 BC		1	1	AULUCK, R.	01	1	1
INTERNAL:	ELD/HDS2		1	0	IE FILE	07	1	1
	<del>NRR/DE/CEB</del>	06	2	2	NRR/DSI/ASB		1	1
	<u>REG FILE</u>	04	1	1	RGNS		1	1
EXTERNAL:	ACRS	10	6	6	LPDR	03	1	1
	NRC PDR	02	1	1	NSIC	05	1	1
	NTIS		1	1				

The following information was obtained from the records of the  
 Department of the Interior, Bureau of Land Management, at  
 Washington, D. C., on the 10th day of May, 1906.  
 The land described in the foregoing is situated in the  
 State of California, and is more particularly described in  
 the accompanying map.

The land described in the foregoing is situated in the  
 State of California, and is more particularly described in  
 the accompanying map.

The land described in the foregoing is situated in the  
 State of California, and is more particularly described in  
 the accompanying map.

Section	Range	County	State	Acres	Owner
1	1	San Diego	Cal.	1.00	U. S. Land Office
2	1	San Diego	Cal.	1.00	U. S. Land Office
3	1	San Diego	Cal.	1.00	U. S. Land Office
4	1	San Diego	Cal.	1.00	U. S. Land Office
5	1	San Diego	Cal.	1.00	U. S. Land Office
6	1	San Diego	Cal.	1.00	U. S. Land Office
7	1	San Diego	Cal.	1.00	U. S. Land Office
8	1	San Diego	Cal.	1.00	U. S. Land Office
9	1	San Diego	Cal.	1.00	U. S. Land Office
10	1	San Diego	Cal.	1.00	U. S. Land Office
11	1	San Diego	Cal.	1.00	U. S. Land Office
12	1	San Diego	Cal.	1.00	U. S. Land Office
13	1	San Diego	Cal.	1.00	U. S. Land Office
14	1	San Diego	Cal.	1.00	U. S. Land Office
15	1	San Diego	Cal.	1.00	U. S. Land Office
16	1	San Diego	Cal.	1.00	U. S. Land Office
17	1	San Diego	Cal.	1.00	U. S. Land Office
18	1	San Diego	Cal.	1.00	U. S. Land Office
19	1	San Diego	Cal.	1.00	U. S. Land Office
20	1	San Diego	Cal.	1.00	U. S. Land Office

The land described in the foregoing is situated in the  
 State of California, and is more particularly described in  
 the accompanying map.

## Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

March 4, 1983

G02-83-184

50-397

Director of Nuclear Reactor Regulation  
Attention: Mr. A. Schwencer, Chief  
Licensing Branch No. 2  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2  
FIRE HOSE/STANDPIPE MODIFICATION

At a March 4, 1983 meeting in Bethesda, the Supply System requested that the NRC accept the current WNP-2 manual fire suppression system. This information provides a technical basis for acceptance of the current design. Attached is a summary of the information presented at that meeting.

Very truly yours,



G. D. Bouchey  
Manager, Nuclear Safety and Regulatory Programs

GDB/lm

cc: R. Auluck, NRC  
WS Chin, BPA  
D. Feil, NRC Site  
NS Reynolds, D&L  
W. Johnston, NRC  
V. Benaroya, NRC

Book



## APPENDIX R

D. MANUAL FIRE SUPPRESSION. STANDPIPE AND HOSE SYSTEMS SHALL BE INSTALLED SO THAT AT LEAST ONE EFFECTIVE HOSE STREAM WILL BE ABLE TO REACH ANY LOCATION THAT CONTAINS OR PRESENTS AN EXPOSURE FIRE HAZARD TO STRUCTURES, SYSTEMS, OR COMPONENTS IMPORTANT TO SAFETY.

## STAFF GUIDANCE

- 0 BTP 9.5-1 AND APPENDIX A
  - RECOGNIZES 100 FEET
  - BASED ON NFPA-14
  
- 0 NRC CASELAW STATES THAT  
STAFF GUIDANCE DOCUMENTS  
PRESCRIBE ONE ACCEPTABLE  
MEANS OF MEETING LEGAL  
REQUIREMENTS; ALTERNATIVE  
MEANS ARE PERMISSIBLE.

N F P A - 1 4

- 0 REFLECTS 100 FEET (SECTION 3-2.1)
- 0 RECOGNIZES ALTERNATIVES IF LEVEL OF FIRE PROTECTION SAFETY NOT LOWERED (SECTION 1-2)
- 0 THUS GOVERNING CRITERIA IS FIRE PROTECTION SAFETY.

## GENERIC FIRE PROTECTION FEATURES

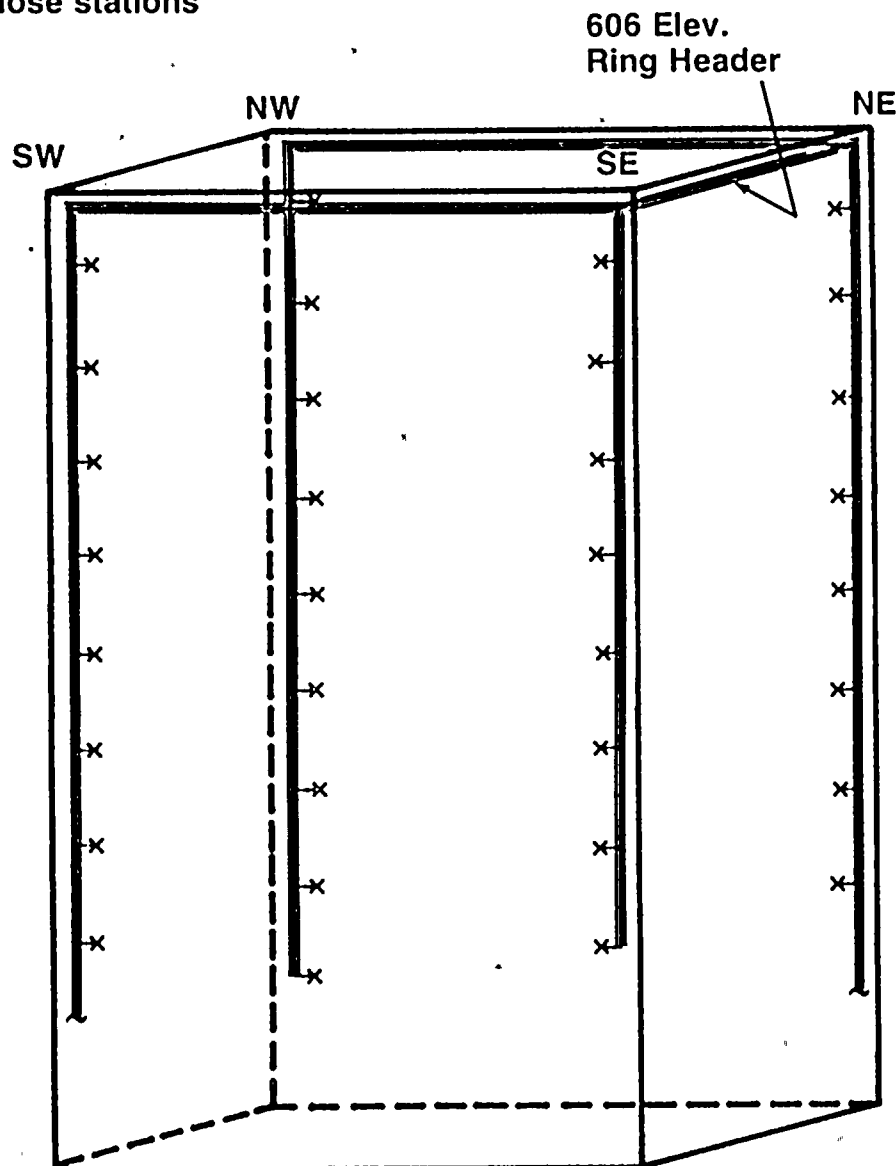
- 0 SEPARATION OF REDUNDANT SAFETY-RELATED TRAINS
- 0 THREE-HOUR WRAPS ON ONE TRAIN
- 0 TOTAL DETECTION
- 0 VERY LOW COMBUSTIBLE LOADING  
(4000 BTU/SQ/FT)
- 0 TRAINED FIRE BRIGADE
- 0 FIRE RESISTIVE PASSIVE BARRIERS
- 0 FIRE DAMPERS
- 0 LABELED/CERTIFIED FIRE DOORS



# REACTOR BUILDING MANUAL FIRE SUPPRESSION CONFIGURATION

—x Current hose stations

—x New hose stations



**CURRENTLY:** Hose stations in NE & SW enclosed stairways

**PROPOSED:** Additional hose stations in NW & SE open stairways

**BACKFITTING COST ESTIMATE:** \$3,200,000

FIGURE 13



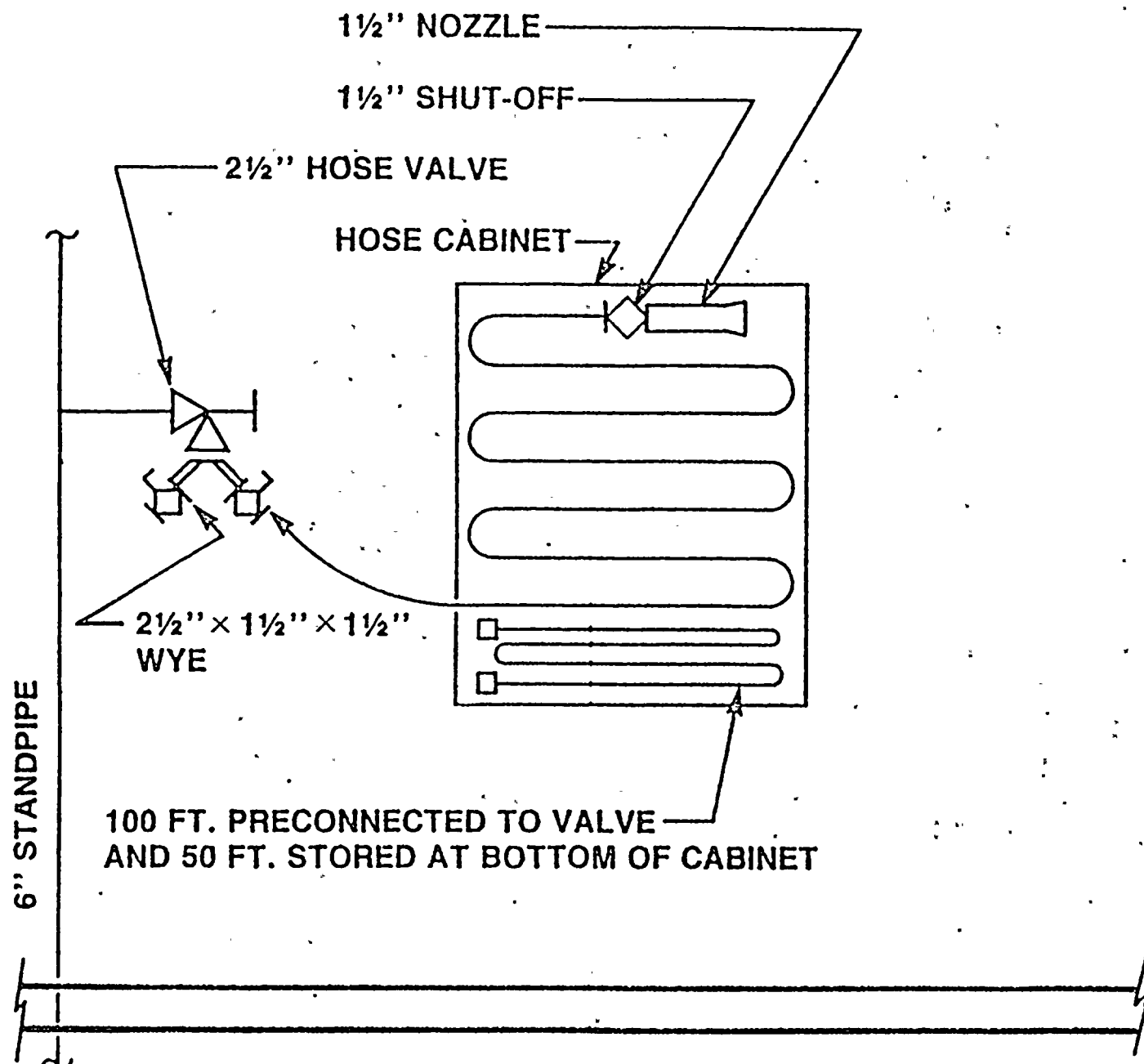


FIGURE 1  
HOSE STATION DETAIL  
TYPICAL WNP-2 HOSE STATION

## REACTOR BUILDING 606 LEVEL FLOW TEST RESULTS

TEST	LOCATION	HOSE SETUP	STATIC (psi)	RESIDUAL (psi)	PITOT (psi) 1-1/8" STRAIGHT TIP	FLOW	FLOW @ 65 psi
1	SW Corner	100'2½"	109	102	76	326	879
2	NE Corner	200'2½"	108	101	62	295	786
3	SW Corner	100'2½"	88	86	66	304	1136
4	NE Corner	200'2½"	86	84	57	283	1007

Test 1 & 2 conducted with 2000 gpm at 125 psi electric pumps at circulating water pump house (unlimited supply)

Test 3 & 4 conducted with 2500 gpm at 140 psi diesel pump at filtration building taking suction from 300,000 gallon tank

Friction loss in 50'1½" hose per NFPA table 9-5E      16.5 psi

NFPA 14 — required pressure at standpipe outlet      65.0 psi

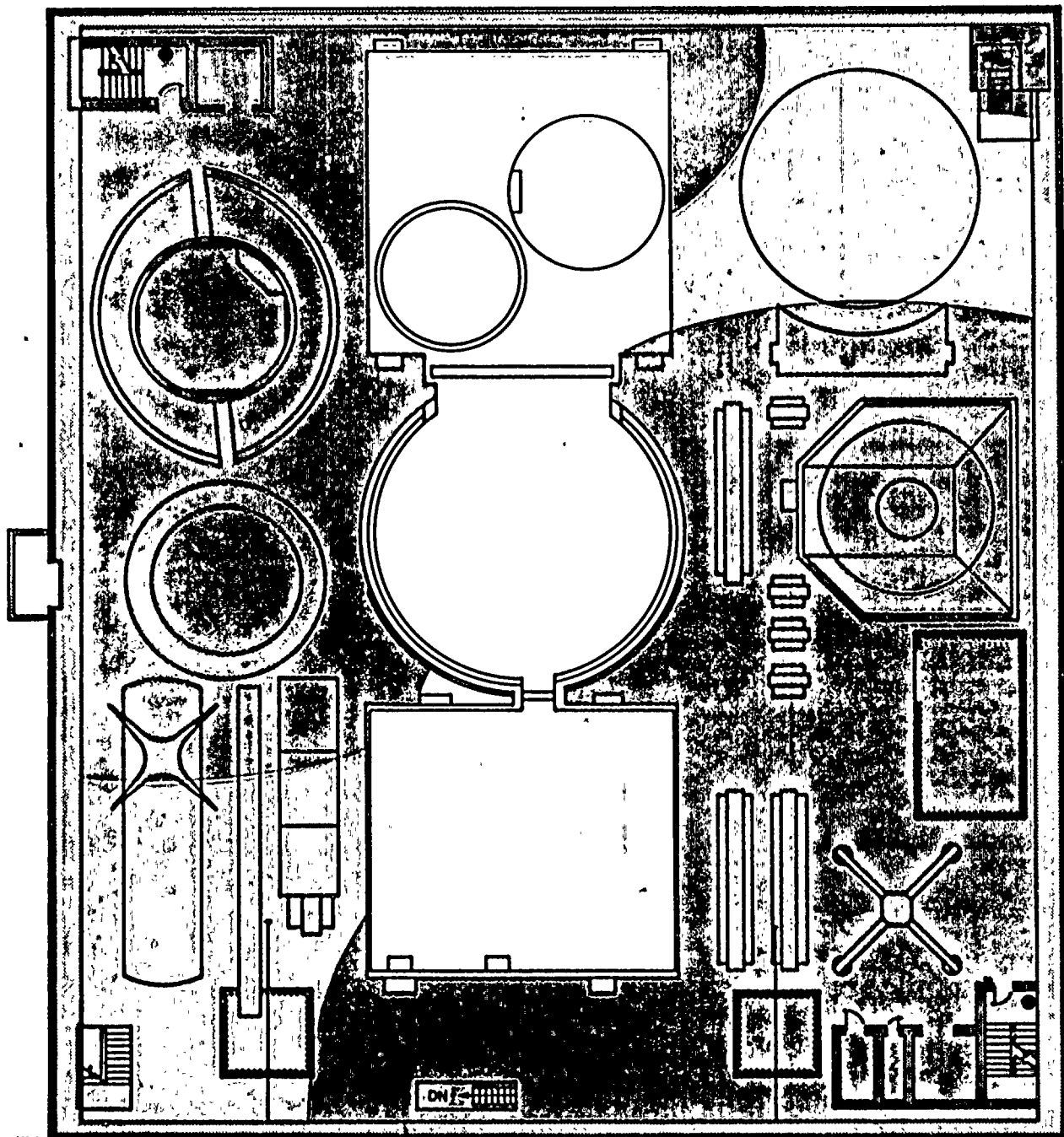
Required pressure at outlet for 150' hose      81.5 psi

Per graph 606 level reactor building has 500 gpm or more at 81.5 psi

**NOZZLE PERFORMANCE**  
**(PROPOSED VARIABLE FLOW NOZZLE, 125 GPM)**

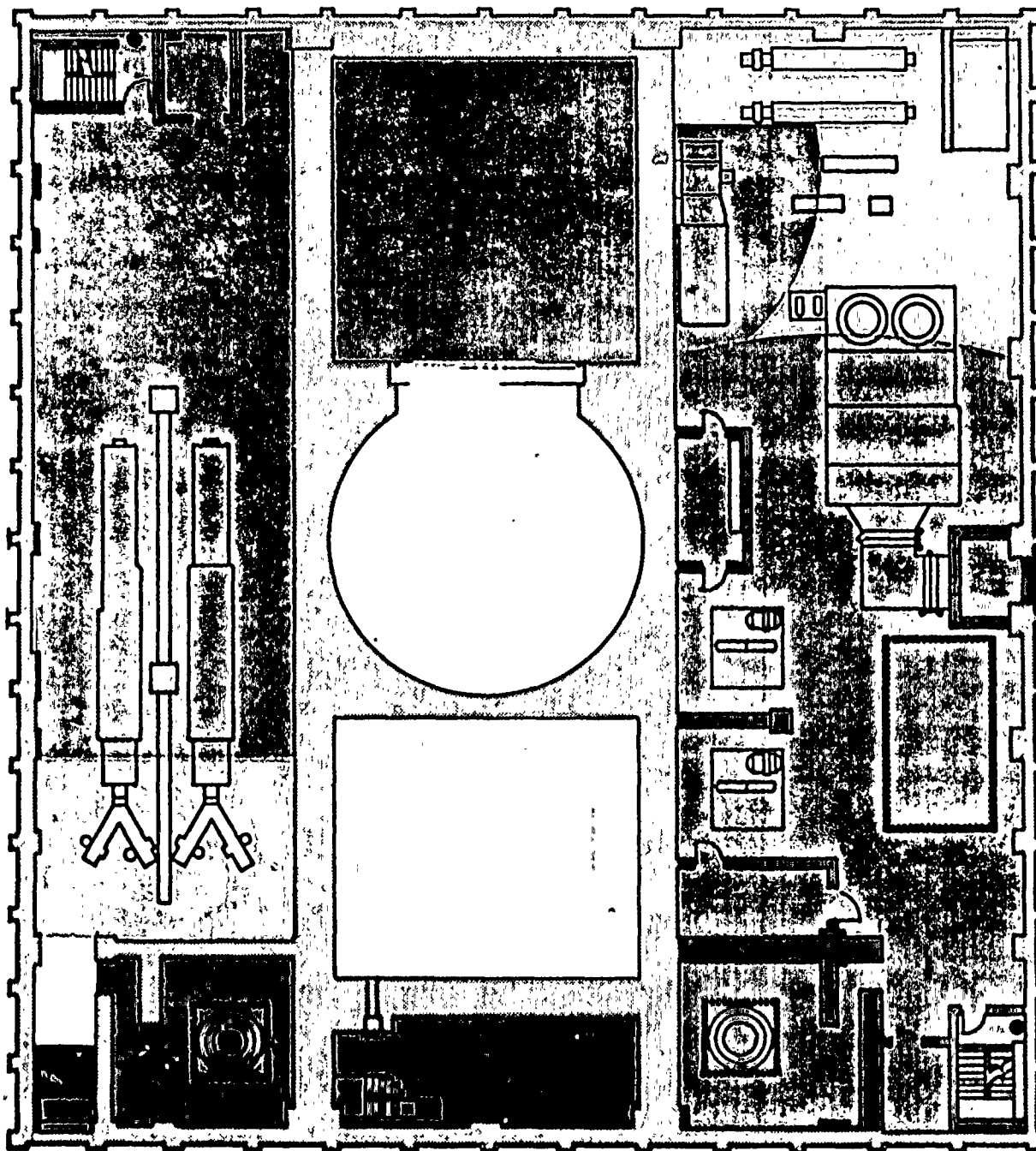
<u>PRESSURE</u> <u>AT 606'</u> <u>LEVEL</u>	<u>HOSE</u> <u>LENGTH</u>	<u>HOSE</u> <u>FRICTION</u> <u>LOSS</u>	<u>PRESSURE</u> <u>AT</u> <u>NOZZLE</u>	<u>NOZZLE</u> <u>DISCHARGE</u>	<u>REACH</u> <u>WIDE</u> <u>FOG</u>	<u>NARROW</u> <u>FOG</u>	<u>SOLID</u> <u>STREAM</u>
105 PSI	100 FT.	33	72	111	35	60	118
	150 FT.	49	56	90	30	50	100
88 PSI	100 FT.	33	55	90	30	50	100
	150 FT.	49	39	81	28	46	91

°ELKHART L-205-B



REACTOR BLDG — ELEV 606'-10½"



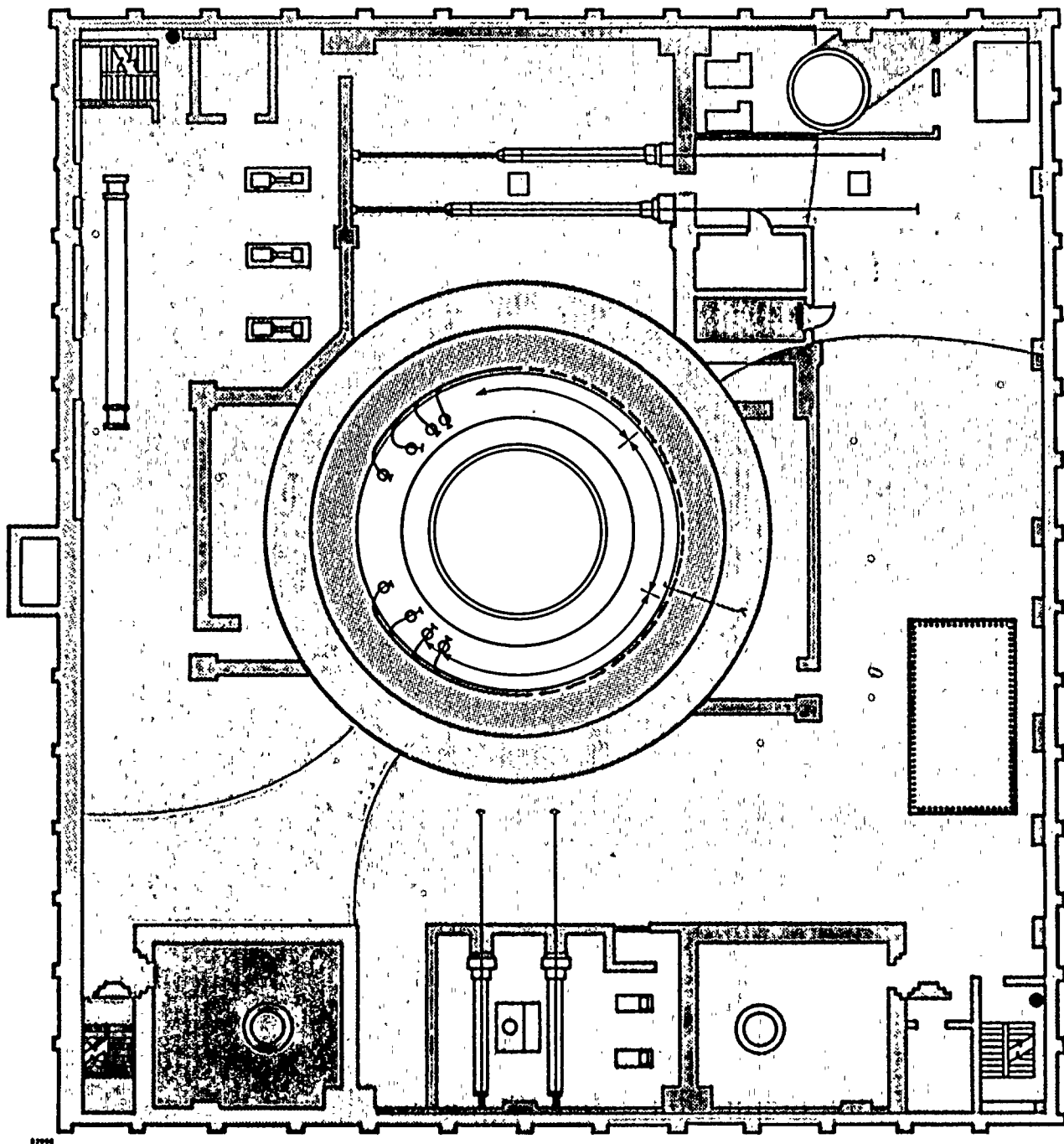


REACTOR BLDG — ELEV. 572'-0"



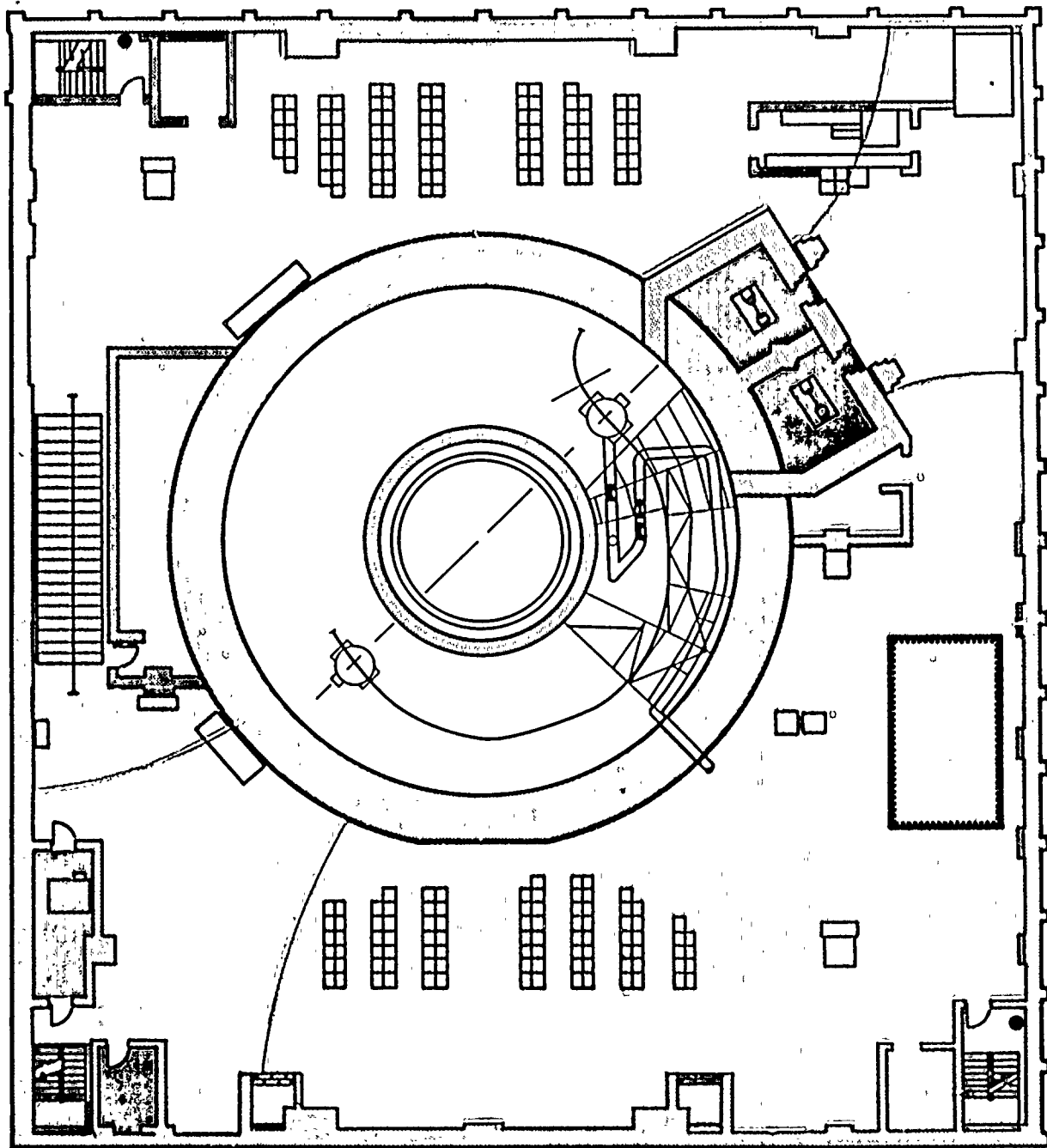






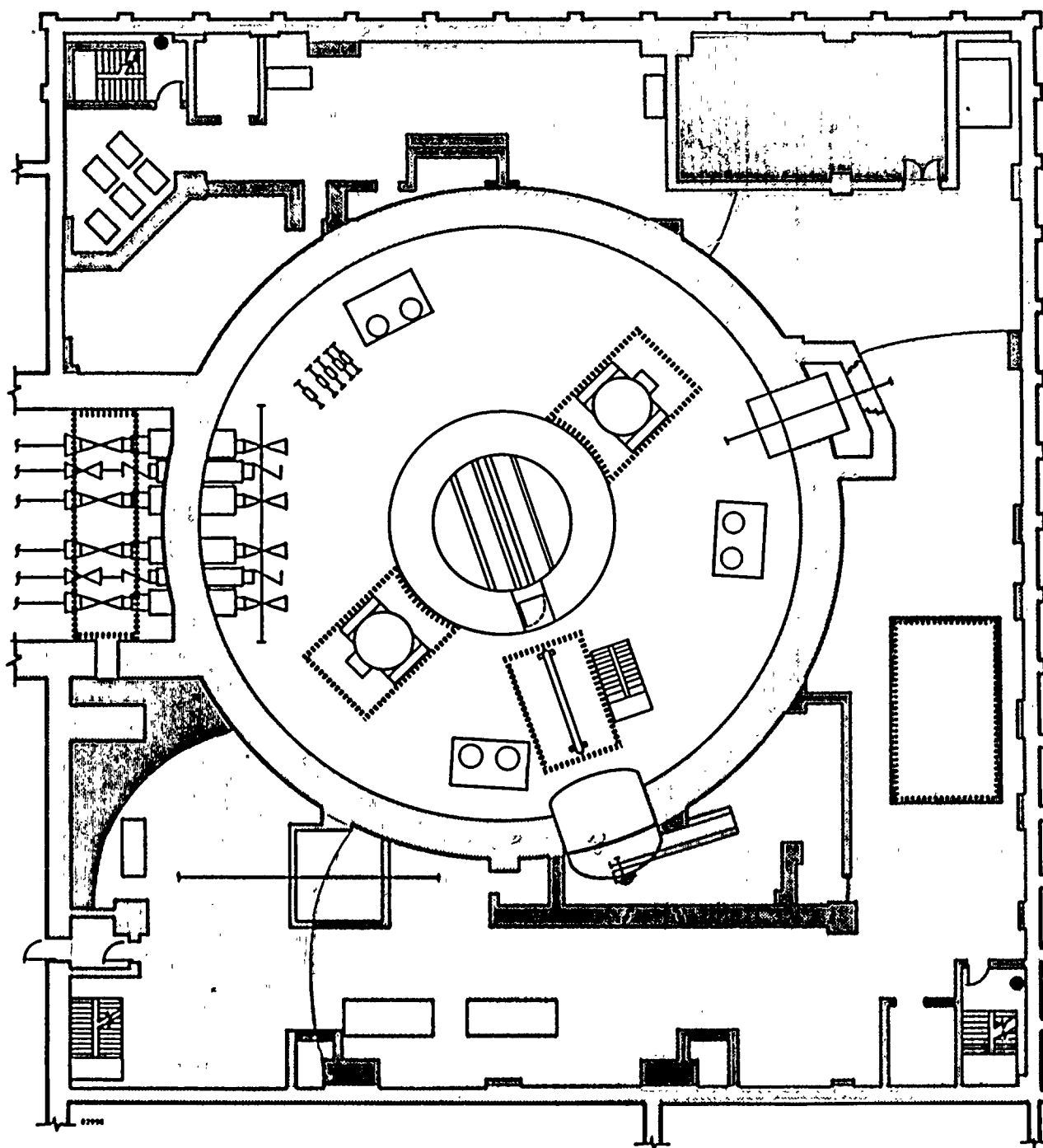
REACTOR BLDG — ELEV 548'-0"





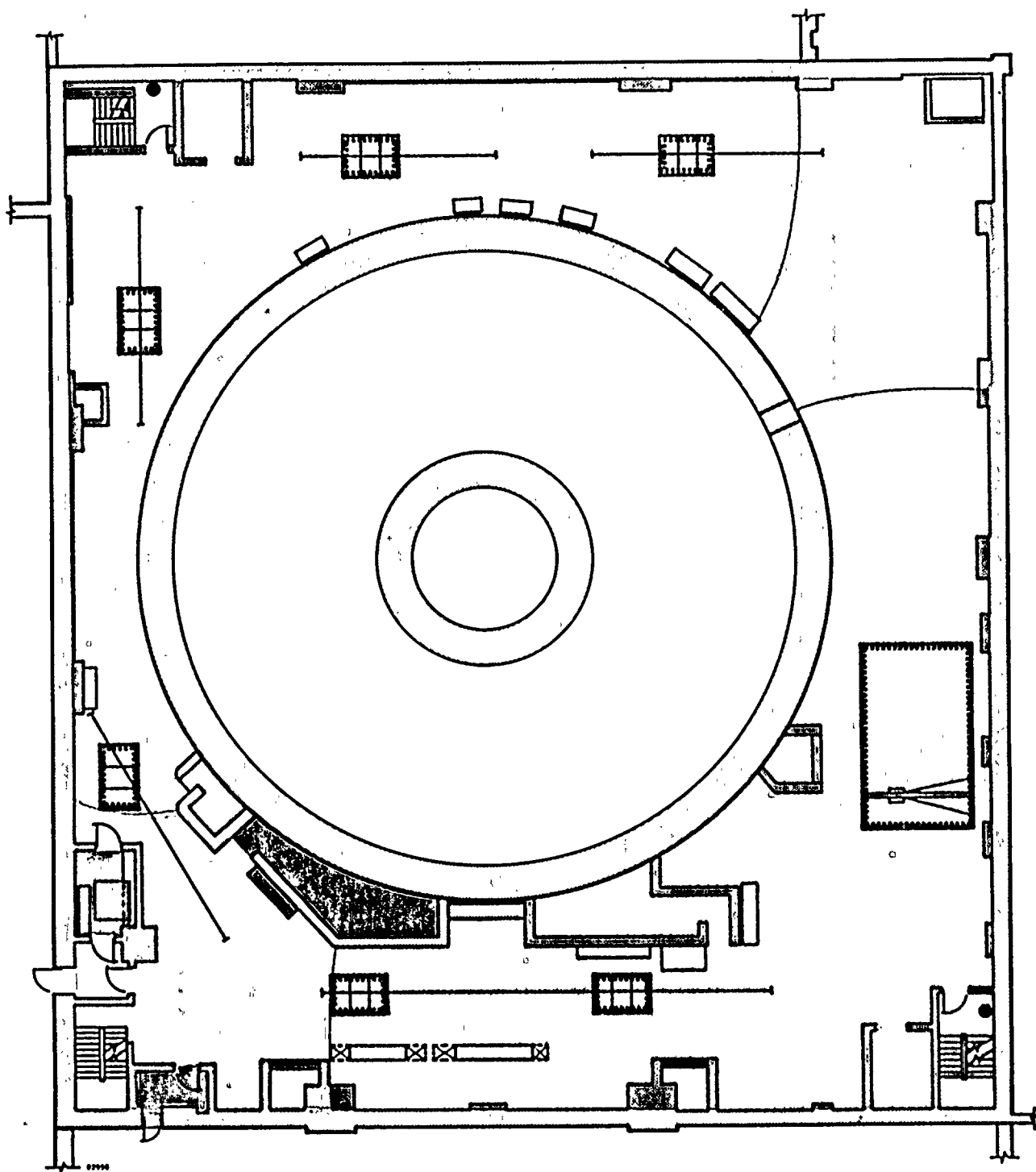
REACTOR BLDG — ELEV. 522'-0"





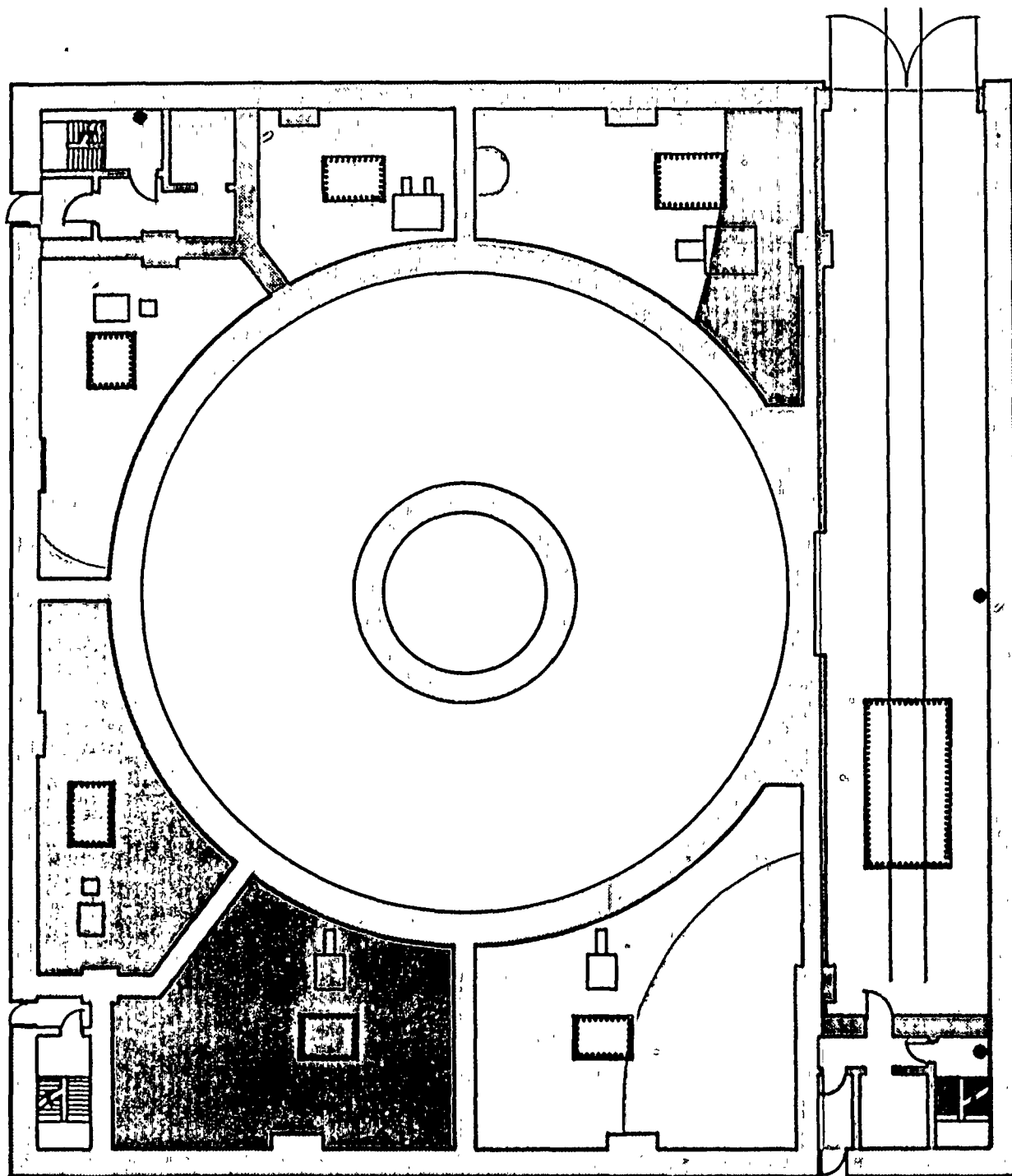
REACTOR BLDG. ELEV 501'-0"





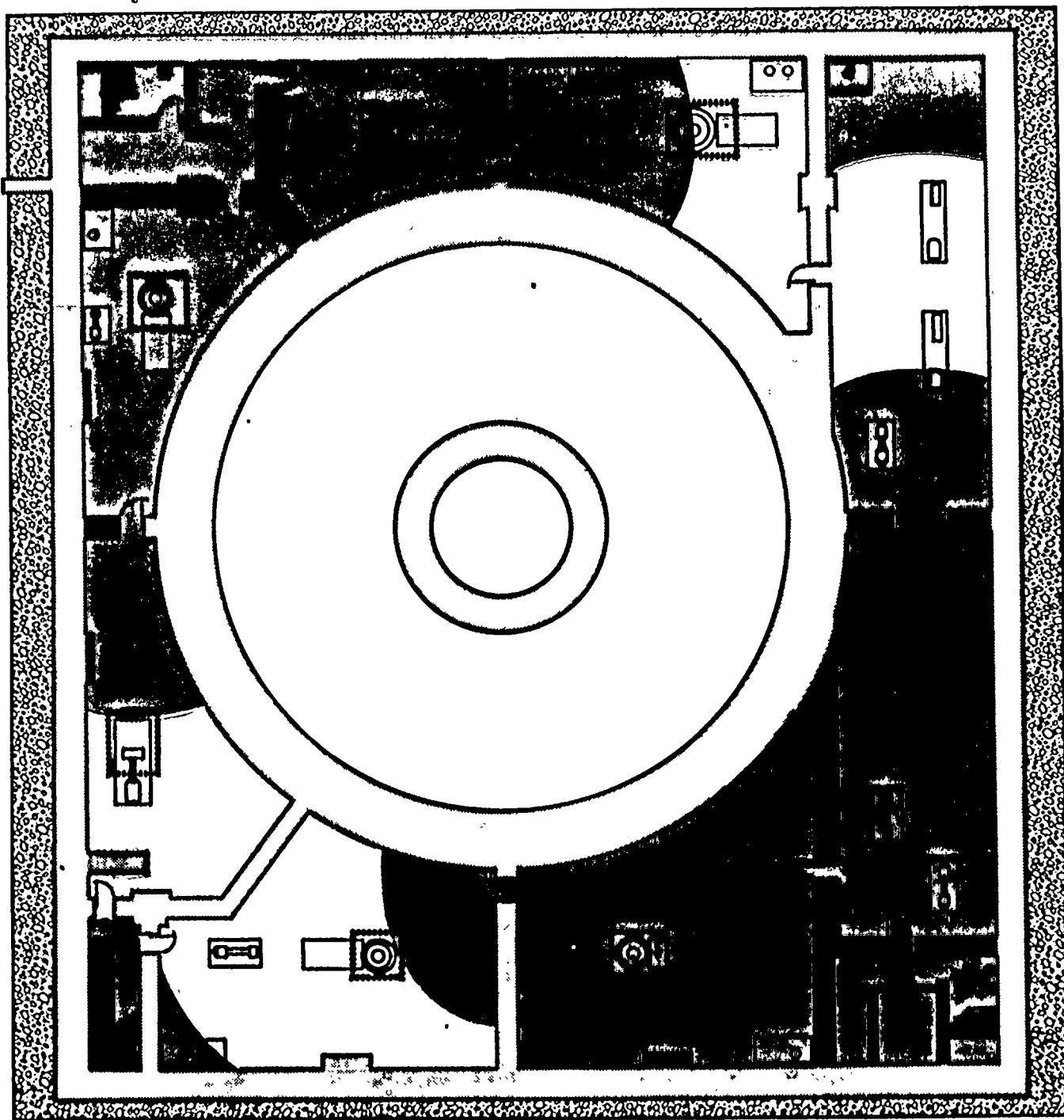
REACTOR BLDG ELEV 471'-0"





REACTOR BLDG. ELEV 441'-0" & 444'-0"





**REACTOR BLDG — ELEV 422'-3"**





### TECHNICAL CONSIDERATIONS

- o SEPARATION/THERMO-LAG COATING OF DIVISION 2 CABLES - MEETS APPENDIX R
- o EXCEEDING LOW (LESS THAN 1/2 HOUR) COMBUSTIBLE LOADINGS THROUGHOUT REACTOR BUILDING
- o MANUAL/AUTOMATIC WATER SPRAY SYSTEM FOR CHARCOAL FILTERS
- o REACTOR BUILDING DIMENSIONS (130' x 146') ALLOWS NEARLY COMPLETE COVERAGE WITH 100' OF HOSE -- LESS THAN 10% OF FLOOR AREA REQUIRES ADDITIONAL 50' FT. OF HOSE
- o ACTUAL NOZZLE SPRAY CAPABILITY OF 50 FT.
- o WATER SUPPLY ADEQUATE FOR EXTRA 50 FT. OF HOSE (TESTED)
- o EXTENSIVE FIRE BRIGADE TRAINING (25 HOUR PROGRAM) INCLUDES HANDS-ON USE OF 150 FT. OF HOSE
- o USE OF PRE-FIRE PLANS
- o RAPID CONNECTION OF ADDITIONAL 50 FT. OF HOSE CAN BE ACCOMPLISHED USING VALVE JUST UP STREAM OF NOZZLE (< 2 MINUTES INCLUDING TIME TO RETRIEVE 50 FT. OF HOSE FROM STATION)





## EQUIVALENT LEVEL OF PROTECTION

### ORIGINAL NFPA 14 BASIS

- 0 WEIGHT OF HOSE
- 0 POTENTIAL USE OF HOSE BY UNTRAINED PEOPLE

### WNP-2 CONFIGURATION

- 0 WEIGHT OF 150 FEET OF 1 1/2" HOSE ACCEPTABLE  
(50 FT. WEIGHS 20 LBS.)
- 0 LIMITED NEED FOR ADDITIONAL 50 FT. OF HOSE
- 0 FIRE BRIGADE TRAINED AND EXPERIENCED WITH USE  
OF HOSE
- 0 ADEQUATE COVERAGE THEREFORE CONFORMANCE WITH  
NFPA 14 INTENT

### EXPERT OPINION REGARDING WNP-2 SYSTEM

- 0 SUPPLY SYSTEM ENGINEERS
- 0 ANI REVIEW AND ACCEPTANCE
- 0 NFPA LIAISON ENGINEER (NFPA 14)
- 0 SCHIRMIR ENGINEERING

### CONCLUSIONS

- o CURRENT SYSTEM ADEQUATE AND IN COMPLIANCE WITH APPENDIX R
- o NEW SYSTEM PROVIDES LITTLE ADDED FIRE PROTECTION AND INTRODUCES UNWARRANTED LIFE SAFETY HAZARDS .
- o NRC IS REQUESTED TO ACCEPT CURRENT REACTOR BUILDING FIRE SUPPRESSION SYSTEM DESIGN