



Consumers
Power

**POWERING
MICHIGAN'S PROGRESS**

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0550

January 30, 1990

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION FOR CLOSE OUT OF
IE BULLETIN 79-15 (TAC NO 74541)

By letter dated October 3, 1989, the NRC provided a request for additional information for IE Bulletin 79-15, Deep Draft Pump Deficiencies, dated July 11, 1979. Consumers Power Company's response to the request for fire pump information is provided herein. The NRC had requested the response be provided by November 15, 1989. Through discussion with the NRC Project Manager the response was delayed to January 31, 1990.

Palisade's three Fire Pumps have been providing reliable performance since installation. No major failures have occurred nor any evidence exists of pump degradation. Pump performance and reliability is assured by periodic Technical Specification surveillance testing.

Item 1

Provide the type and application for the one motor driven and two diesel driven Worthington pumps.

Response

All three fire pumps are identical types, a Worthington Model 15M185, 1500 GPM vertical deep draft pump. P9-A fire pump is motor driven while P9-B and P-41 are diesel driven. The primary application of these pumps is to provide design fire suppression water capacity for the plant. A secondary application is to provide back-up water supply to the following:

- Auxiliary Feedwater Supply
- Critical Service Water Supply
- Fuel Pool Water Make-up
- Instrument Air Compressor Coolers (C2-A & C2-C)

OC0190-0007-NL02

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Items 2 & 3

Provide drawings, sectional assemblies, and parts list of the subject pumps and applicable P&ID's.

Response

Attachment 1 provides fire pump assembly drawings; Attachment 2 provides fire pump sectional drawing; Attachment 3 provides fire pump parts list; and Attachment 4 provides the fire protection system P&ID's.

Item 4

Provide detailed maintenance history of the subject pumps for the last 5 years.

Response

Attachment 5 provides a detailed summary of maintenance performed during the past 5 years. Generally, normal maintenance has occurred on pump packing. These pumps have not experienced those problems identified in the original IE Bulletin 79-15.

Item 5

Provide testing requirements, procedures, and results for both hydraulic and vibration parameters for the last approximately 5 years.

Response

Two Technical Specification Surveillances are used to verify pump and driver operability. These surveillances are MO-7B and RO-52. The most recent revision of these procedures is Attachment 6. Additionally, Attachment 7 summarizes approximately a 5 year period of pump discharge pressures documented on completed MO-7B surveillances. Attachment 8 is excerpts from completed RO-52 surveillances depicting results of actual measured pump head curves. These flow capacities curves were all acceptable.

Since these pumps do not fall within the scope of ASME Section XI inservice testing requirements per IWP-1100, it has not been past practice to trend pump vibration on these pumps. However, the plant now has an in-place Pump and Valve Program along with ISI activities and an Instrument Upgrade Program. These reliability focused programs, which go beyond Section XI requirements, are Consumers Power Company initiatives which include equipment from many systems and are intended to help maintain our plant equipment performance.

Nuclear Regulatory Commission
Palisades Plant
Response to Close-out IEB 79-15
January 30, 1990

In summary, the fire pumps are reliable and are monitored periodically to assure high performance.


Ralph R Frisch
Staff Licensing Engineer

CC Administrator, Region III, USNRC
NRC Resident Inspector - Palisades

Attachments

LIST OF ATTACHMENTS

<u>Attachment #</u>	<u>Title</u>	<u>Pages</u>
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6	Technical Specification Surveillance Procedures MO-7B and RO-52	35
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8	Historical RO-52 Results - Flow Capacities	30

ATTACHMENT 1

Consumers Power Company
Palisades Plant
Docket 50-255

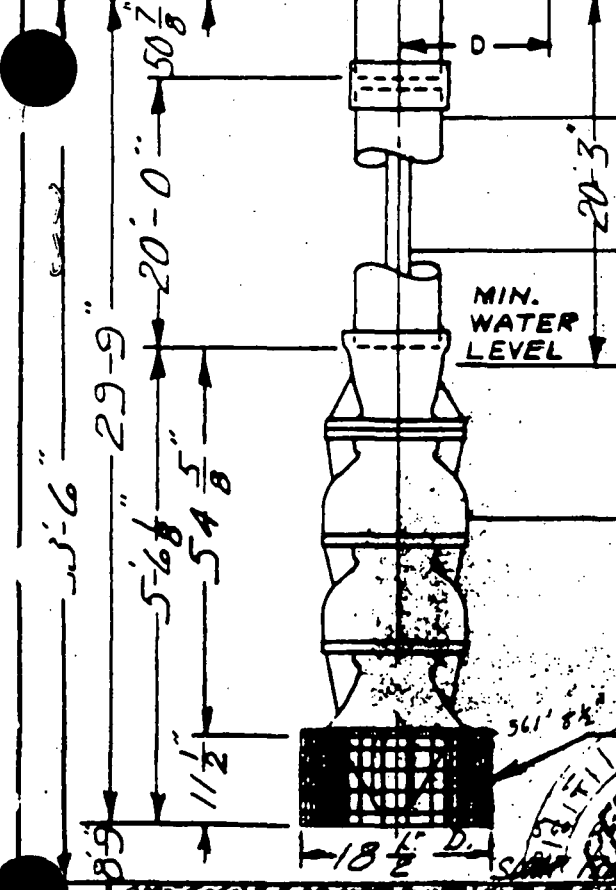
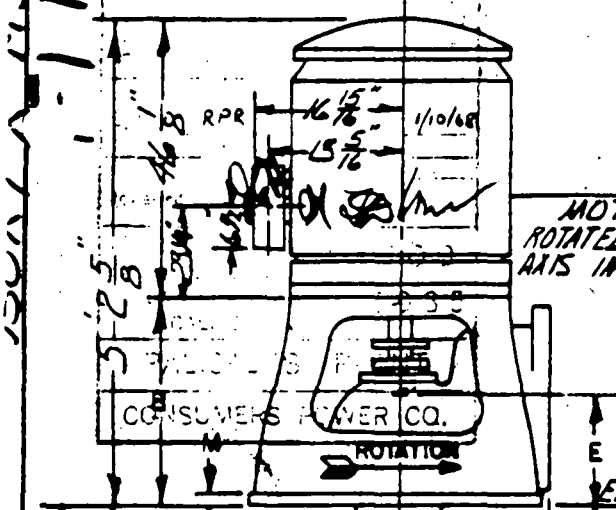
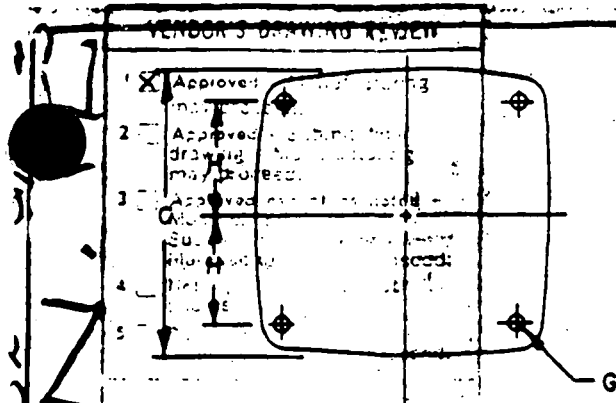
FIRE PUMP ASSEMBLY DRAWINGS

January 30, 1990

3 Pages

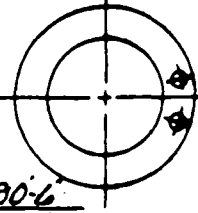
OC0190-0007-NL02

DISCH. HEAD	B	C	D	E	G	H	M
N-1203	11 3/4	14 1/2	7 1/2	4 1/2	3/4	6	3/4
N-1204	11 3/4	14 1/2	7 1/2	5	3/4	6	3/4
N-1206	11 3/4	14 1/2	7 1/2	6	3/4	6	3/4
N-1208	11 3/4	20	10 1/4	7	3/4	8	3/4
N-1604	16 1/2	20	10 1/4	6	3/4	8	3/4
N-1606	16 3/4	20	10 1/4	7 3/4	3/4	8	3/4
N-1608	16 3/4	20	10 1/4	8 3/4	3/4	8	3/4
N-1610	16 3/4	20	12 3/8	9 3/4	3/4	8	3/4
N-2006	16 1/2	24	12 3/8	7 3/4	7/8	9 3/4	1
N-2010	16 1/2	24	12 3/8	9 3/4	7/8	9 3/4	1
N-2412	20 1/4	30 1/4	15 1/2	10 3/4	7/8	11 3/4	1



DATE 10-18-67
 L WAS 24 1/2" COLUMN WAS 17-11/16"
 TOP COLUMN WAS 15 1/2" MOTOR WAS 15 1/2"
 ADDED WEIGHTS SUMP DEPTH &
 ELEVATIONS FOR MODEL 4 G.R.E. A

MOTOR CAN BE ROTATED ABOUT VERTICAL AXIS IN STEPS OF 90°
 150 H.P. G.E. MOTOR O.D.P.
 3 PHASE 60 CYCLE 460 VOLTS
 1800 R.P.M. B4447P20 FRAME



N-2010 DISCHARGE HEAD WITH 10" 125 LB. CAST IRON DISCHARGE FLANGE

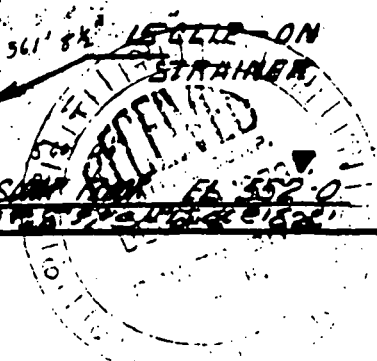
	WEIGHTS
MOTOR	1180
DISCH. HEAD	500
COLUMN ASSY.	1030
BOWL ASSY.	775
TOTAL	3485

10" COLUMN PIPE 2" LENGTH 10'-0" LONG INCLUDING 1" BEARING BRACKET

1 1/2" DIA. SHAFT 2" LENGTH 10'-0" LONG

THIS UNIT BECAUSE OF OVERALL LENGTH WILL BE SHIPPED AS COMPONENTS AND MUST BE ASSEMBLED IN THE FIELD.

15M-185-3 STAGE BOWL ASSEMBLY
 5935-M-32 185-2
 5935-M-32 5 1/2
 U.L. FIRE PUMP



VERTICAL TURBINE PUMP ELEVATION			
WORTHINGTON CORPORATION VERTICAL PUMP DIVISION DENVER, COLORADO			
DTP-29903		DATE 8-4-67 SCALE: N.T.S.	
CORRECT FOR CUSTOMER'S ORDER 5935-M-32			
CUSTOMER <u>BECHTEL CORPORATION</u>			
DISTRICT OFFICE ORDER <u>64-70555</u>			
DRAWN G.H.E.	CHECKED Y.O.	APPROVED	DEN-20291

ATTACHMENT 2

Consumers Power Company
Palisades Plant
Docket 50-255

FIRE PUMP SECTIONAL DRAWING

January 30, 1990

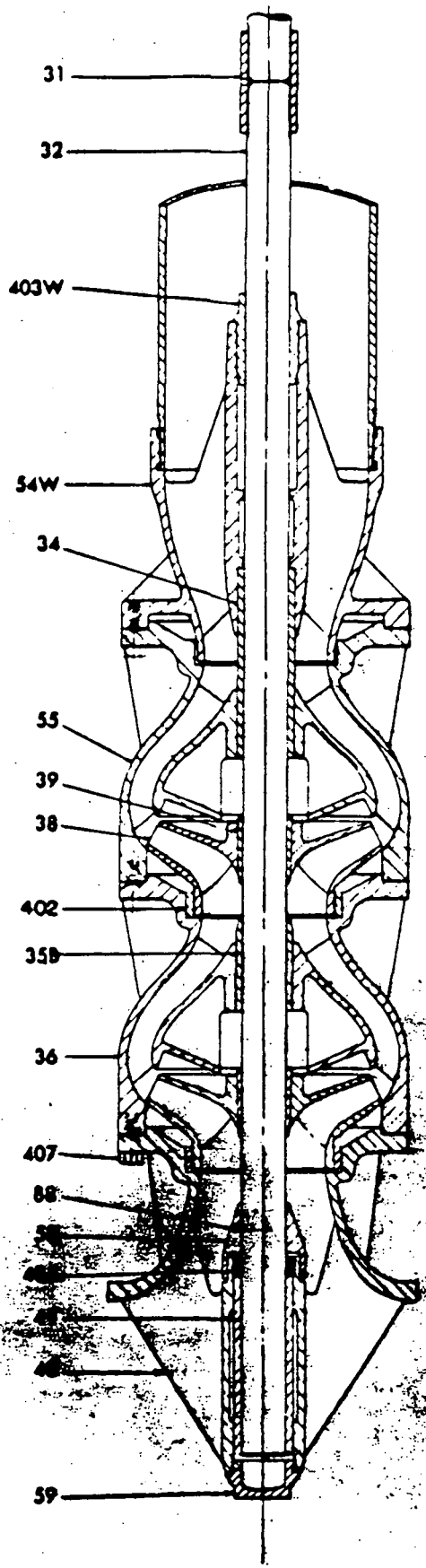
1 Page

OC0190-0007-NL02

950X7XM32

SI

P1848625



Attachment 2
Fire Pump
Sectional Drawing

REF NO.	NAME OF PART
31	PUMP SHAFT COUPLING
32	PUMP SHAFT
34	TOP BOWL BEARING
35B	INTERMED. BOWL BRG. BRONZE
36	INTERMEDIATE BOWL
38	IMPELLER
39	IMPELLER LOCK COLLET
40	SUCTION CASE (BELL TYPE)
41	SUCTION CASE BEARING
54W	DISCHARGE CASE
55	TOP BOWL
58	SUCTION CASE SAND COLLAR
59	SUCTION CASE PLUG
88	SET SCREW
402	WEARING RING
403W	DISCHARGE CASE BEARING
405	GREASE SEAL
407	BOWL BOLTS


NOTE: When referring to part numbers also mention drawing number VK-15016

FIRE Pump

5935-M-32-22-1

SIZE 10-15 UHF

VERTICAL TURBINE PUMP-OPEN TYPE
BOWL ASSEMBLY
TYPICAL SECTION



WORTHINGTON CORPORATION
DENVER, COLORADO

F395

VK-15016

ATTACHMENT 3

Consumers Power Company
Palisades Plant
Docket 50-255

FIRE PUMP PARTS LIST

January 30, 1990

E'848F -0009
 STOCK NO FSC DESCRIPTION
 28-64791 0128 PLUG OIL DRAIN 5K6277XH
 37-16560 4320 COUPLING CPL416 PUMP
 37-16586 4320 BEARING BRG516 BOX
 37-16602 0137 LINESHAFT SHF416
 37-16628 4320 KEY RW97902B ITM 1180
 37-88304 4320 SHAFT TOP RW97902B
 44-98895 4320 BEARING INNER #27
 44-98929 4320 BEARING OUTER #37

LAST PAGE

E'848F -0009A
 STOCK NO FSC DESCRIPTION
 29-99977 0129 GREASE MOBILITH AW-2 14
 39-96311 5330 PACKING 55508 1/2"

LAST PAGE

E'848F -0009B
 STOCK NO FSC DESCRIPTION
 29-99977 0129 GREASE MOBILITH AW-2 14
 44-98929 4320 BEARING OUTER #37

LAST PAGE

E'848F -0041
 STOCK NO FSC DESCRIPTION
 29-99977 0129 GREASE MOBILITH AW-2 14
 37-16560 4320 COUPLING CPL416 PUMP
 37-16586 4320 BEARING BRG516 BOX
 37-16602 0137 LINESHAFT SHF416
 37-16628 4320 KEY RW97902B ITM 1180
 37-88304 4320 SHAFT TOP RW97902B

LAST PAGE

PAGE: 001 BACKWARD
 STOCK NO FSC DESCRIPTION
 37-15851 4320 BEARING LINESHAFT 61015
 37-16578 4320 BOWL DWG VW11161 ASSY
 37-16594 4320 SLEEVE SLV5854 LINESHAF
 37-16610 4320 COUPLING *37-16560
 37-16636 4320 NUT RW97902B ITM 5806
 39-07722 1875 FILTER OIL CH-211
 44-98903 1875 SEAL OIL 32

PAGE: 001 BACKWARD
 STOCK NO FSC DESCRIPTION
 39-15139 0139 RELAY CR2810A14AC2

PAGE: 001 BACKWARD
 STOCK NO FSC DESCRIPTION
 39-96311 5330 PACKING 55508 1/2"

PAGE 001 BACKWARD
 STOCK NO FSC DESCRIPTION
 37-15851 4320 BEARING LINESHAFT 61015
 37-16578 4320 BOWL DWG VW11161 ASSY
 37-16594 4320 SLEEVE SLV5854 LINESHAF
 37-16610 4320 COUPLING *37-16560
 37-16636 4320 NUT RW97902B ITM 5806
 39-96311 5330 PACKING 55508 1/2"

ATTACHMENT 4

Consumers Power Company
Palisades Plant
Docket 50-255

PLANT P&ID's

FOR FIRE SYSTEM

M-216 Sh. 1

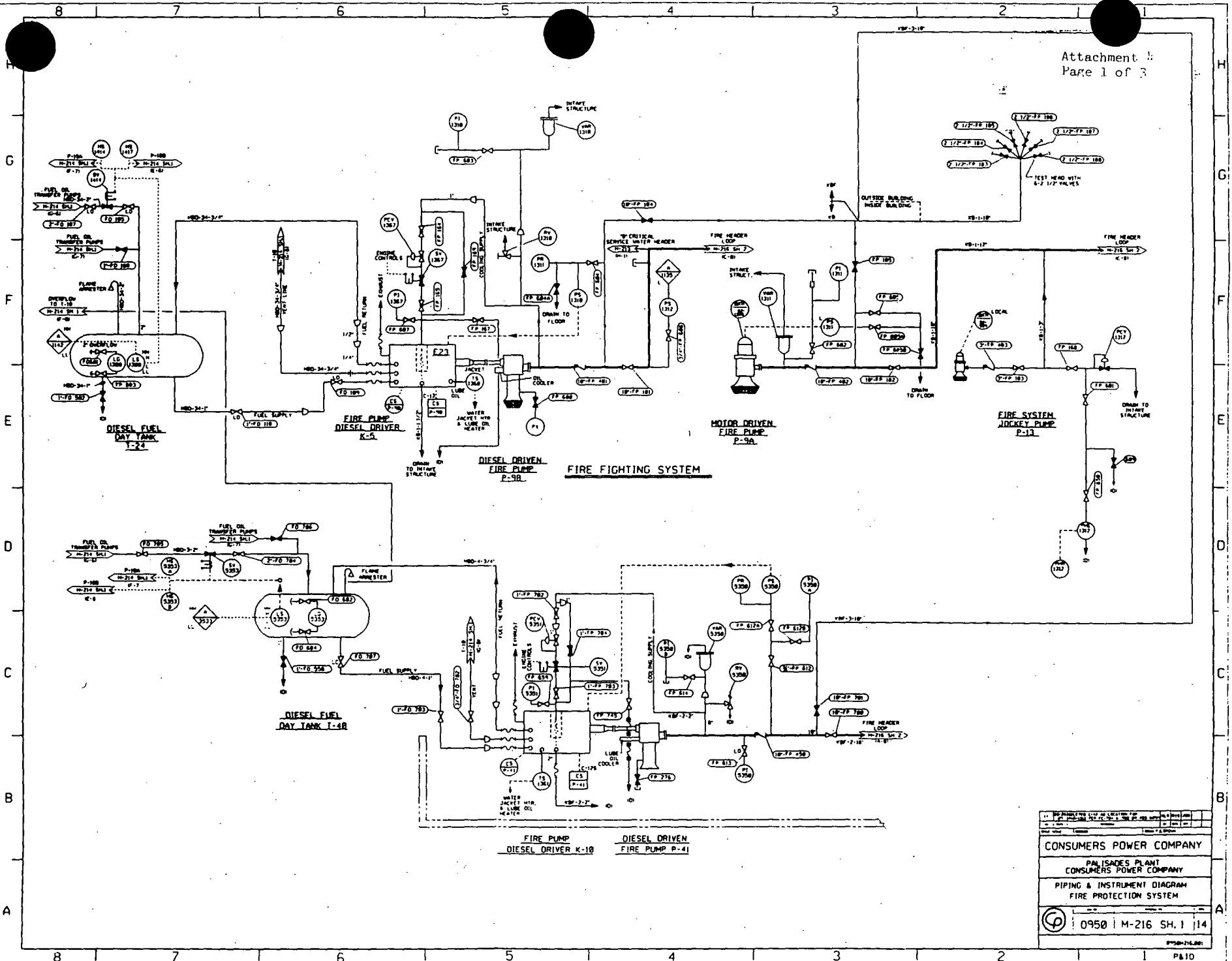
M-216 Sh. 2

M-216 Sh. 3

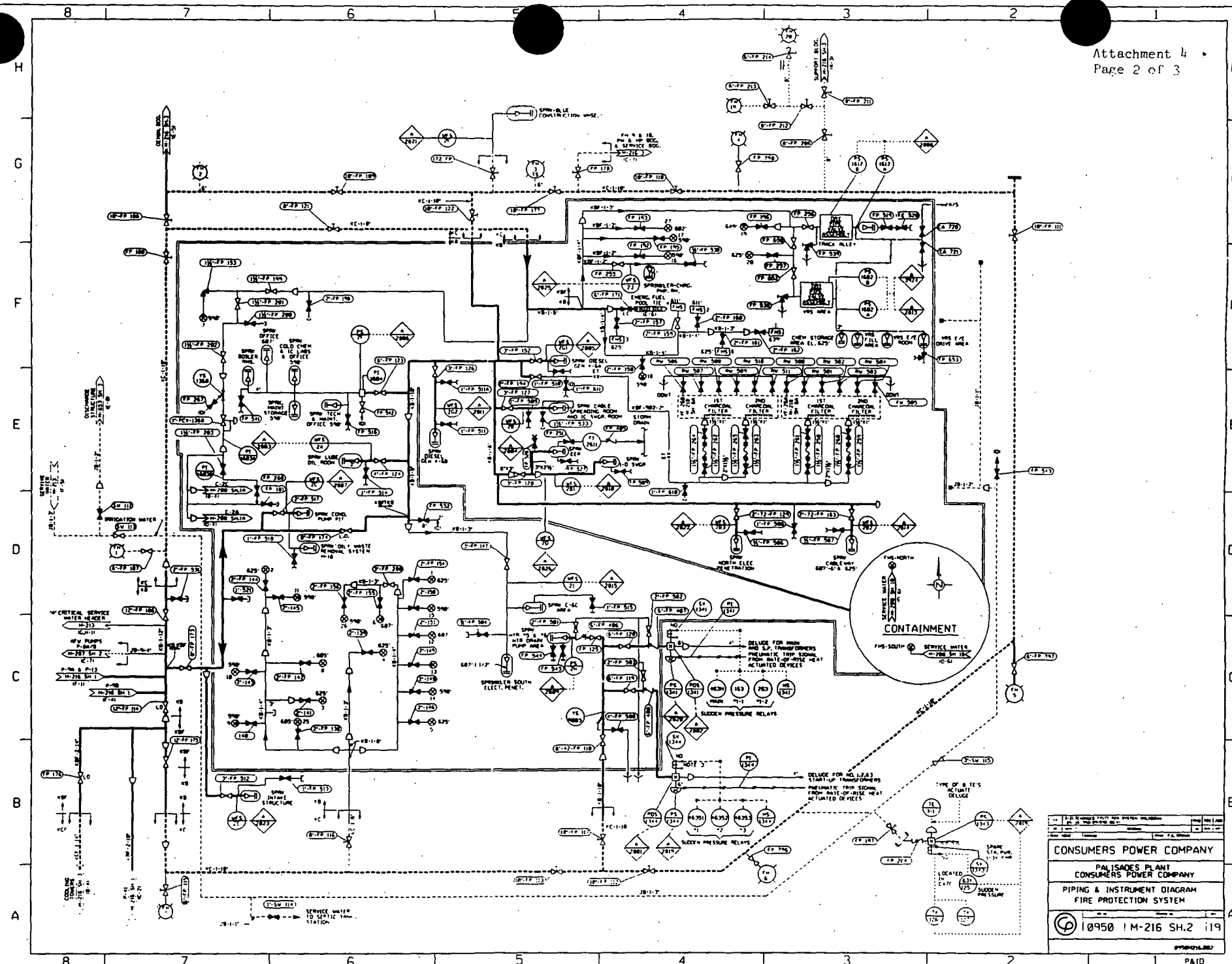
January 30, 1990

3 Pages

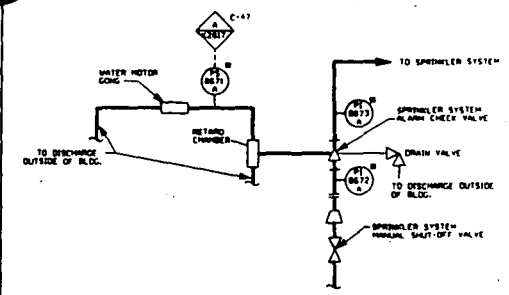
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CONSUMERS POWER COMPANY	
PALISADES PLANT CONSUMERS POWER COMPANY	
PIPING & INSTRUMENT DIAGRAM FIRE PROTECTION SYSTEM	
0950 M-216 SH.1 14	
P750M-216.001	

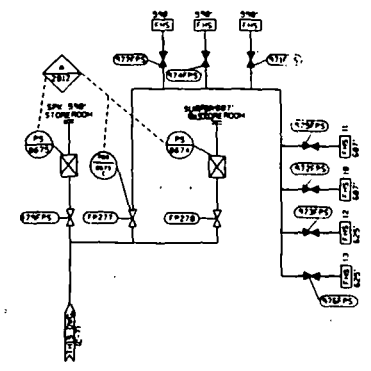


<p>CONSUMERS POWER COMPANY</p> <p>PALISADES PLANT</p> <p>CONSUMERS POWER COMPANY</p> <p>PIPING & INSTRUMENT DIAGRAM</p> <p>FIRE PROTECTION SYSTEM</p>	
<p>LOCATED AT</p> <p>627-425</p> <p>SCALE</p> <p>1" = 10'</p>	<p>DATE</p> <p>10/95</p> <p>BY</p> <p>1M-216 SH.2</p>

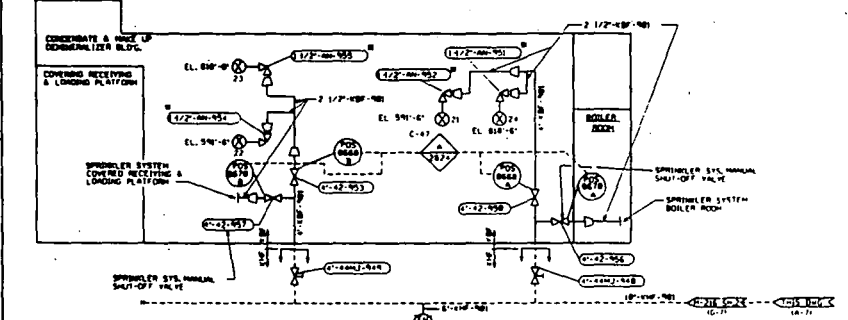


TYPICAL SPRINKLER SYSTEM ALARM DETAILS (SEE TABLE)

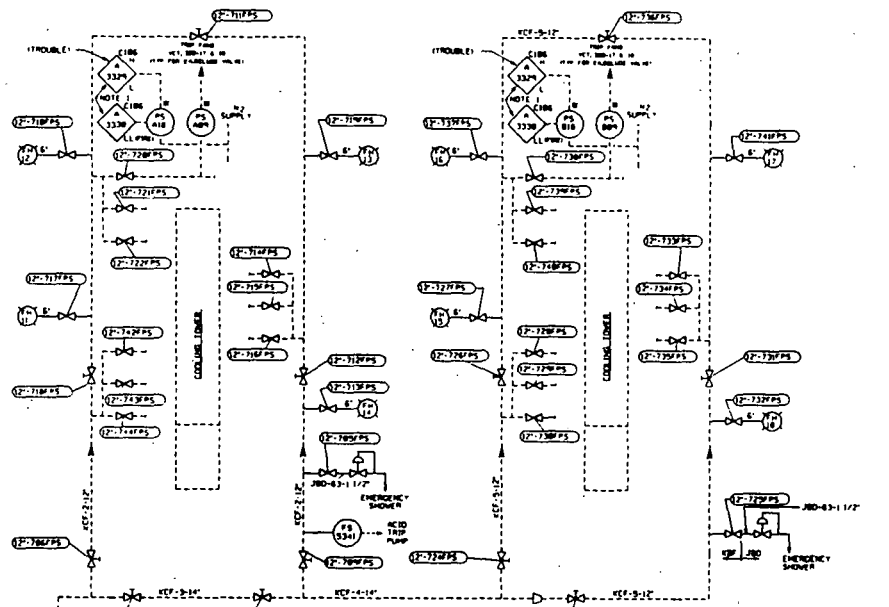
AREA INSTR.	FAP COVERED ROOM S.Y.	FAP COVERED REC & LOADING PLATFORM	SERVICE BLDG. 2ND FLOOR EXHAUST	SERVICE BLDG. 2ND FLOOR STORAGE	POWER BLDG. 2ND FLOOR STORAGE	SUPPORT BLDG.	FUTURE
PRESSURE SWITCH	PS-0671A	PS-0671B	PS-0671C	PS-0671D			
PRESSURE INDICATOR SUPPLY	PI-0672A	PI-0672B	PI-0672C	PI-0672D		PI-0672E	
PRESSURE INDICATOR SYSTEM USE	PI-0673A	PI-0673B	PI-0673C	PI-0673D			
WATER FLOW SWITCH					WFS-2L	WFS-2H	
MANUAL MANUAL SHUT-OFF VALVE	FM056	FM057	FM174	FM270	FM205	FM216	
INSP. TEST DRAIN VALVE	FD524	FD525	FD526	FD527	FD522	FD523	
C-17 ALARM	42017	42018	42019	42012	42027	42016	



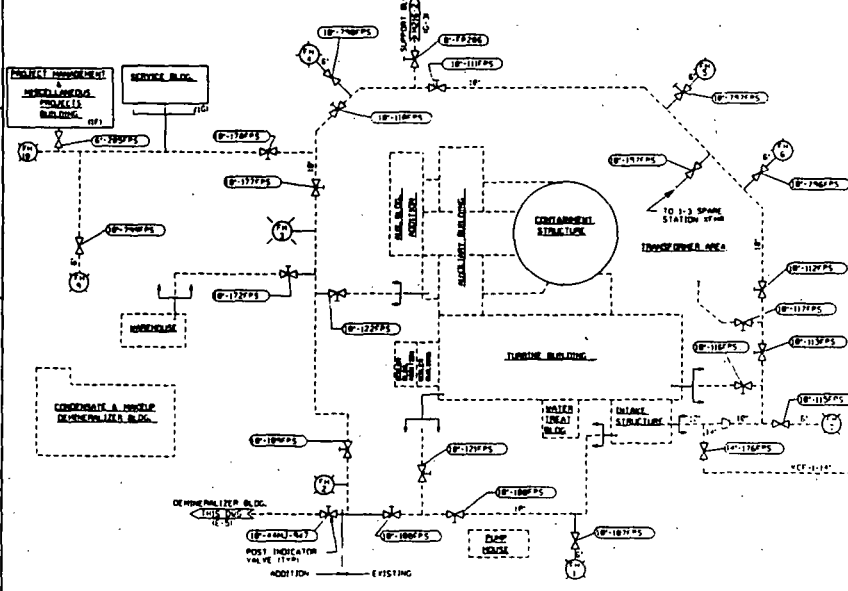
P&I DIAGRAM - SERVICE BLDG.



P & I DIAGRAM CONDENSATE & MAKE-UP DEMINERALIZER BUILDING



P&I DIAGRAM - SUPPORT BUILDING

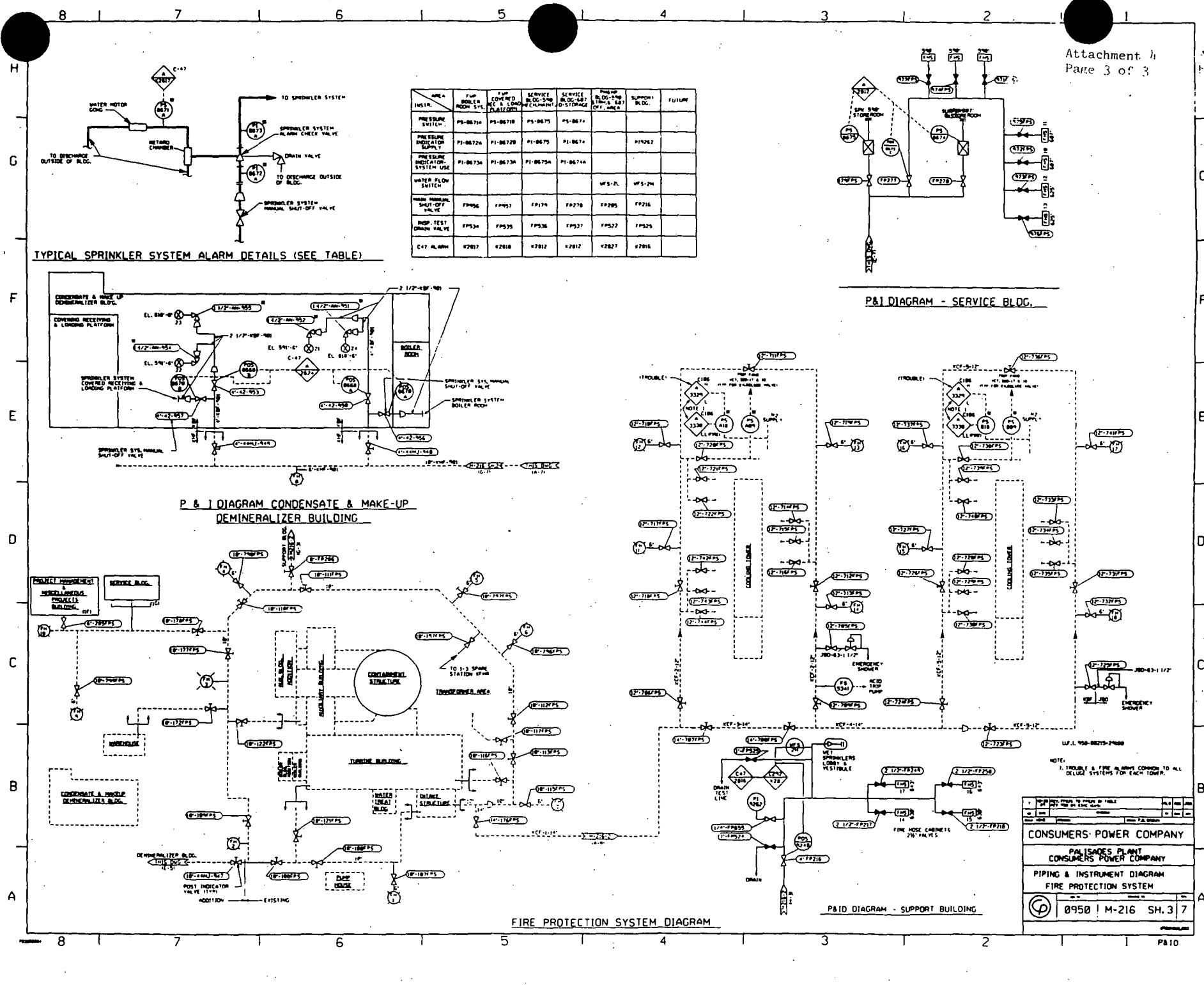


FIRE PROTECTION SYSTEM DIAGRAM

NOTE: 1. TROUBLE & FIRE ALARMS COMMON TO ALL DELUXE SYSTEMS FOR EACH TOWER.

NO.	DESCRIPTION	DATE	BY

CONSUMERS POWER COMPANY
PALISADES PLANT
CONSUMERS POWER COMPANY
PIPING & INSTRUMENT DIAGRAM
FIRE PROTECTION SYSTEM
0950 | M-216 SH. 3 | 7



ATTACHMENT 5

Consumers Power Company
Palisades Plant
Docket 50-255

FIRE PUMP MAINTENANCE HISTORY

January 30, 1990

2 Pages

OC0190-0007-NL02

Maintenance History
Summary for
Fire Pump P9A and B, P-41

<u>Pump</u>	<u>Date</u>	<u>Problem Description</u>	<u>Corrective Action</u>
P 9A	5/4/87	Packing leaking	Remove old packing and replaced, adjusted.
P 9B	10/5/85	Discharge press low discovered during surveillance MO-7B	Check calibration of pressure indicator - OK Discovered recorder recorder pens dirty and readjusted.
P 9B	1/2/83	Auto start at 73 PSIG MO-7B states start at 75 PSIG	Found plugged pulsation dampener, and replaced.
P 9B	8/1/86	Discharge pressure low during MO-7B surveillance (3 psi low)	Check calibration of recorder and gauges all confirmed satisfactory Re-ran surveillance pressure OK.
P 41	1/16/84	PM - Grease packing stuffing box	N/A
P-41	5/23/84	PM - Grease packing stuffing box	N/A
P-41	6/27/83	PM - Grease packing stuffing box	N/A
P-41	4/25/83	PM - Grease packing stuffing box	N/A
P-41	3/28/83	PM - Grease packing stuffing box	N/A
P-41	2/28/83	PM _ Grease packing stuffing box	N/A
P-41	10/30/83	Packing leaking excessively during surveillance	Replaced packing and adjusted.

P-41	1/29/88	Change packing per SC-87-155	Replaced packing and adjusted.
P-41	5/4/88	Packing overheating	Replaced packing, stack order was found incor- rect, adjusted new packing.
P-41	2/3/89	Packing overheating	Packing evaluated as to being wrong type soft graphite closed off cooling water went back to original stiff packing.

LTP 12/1/89
AMMS History as of
10/28/89

ATTACHMENT 6

Consumers Power Company
Palisades Plant
Docket 50-255

TECHNICAL SPECIFICATION
SURVEILLANCE PROCEDURES MO-7B AND RO-52

January 30, 1990

35 Pages

OC0190-0007-NL02