



Commonwealth Edison
 One First National Plaza, Chicago, Illinois
 Address Reply to: Post Office Box 767
 Chicago, Illinois 60690

TIC

September 5, 1979

Attention: Director,
 Division of Reactor Construction
 Inspection
 U.S. Nuclear Regulatory Commission
 Office of Inspection and Enforcement
 Washington, D.C. 20555

POOR
 ORIGINAL

Subject: Response to I.E. Bulletin 79-15,
 "Deep Draft Pump Deficiencies"
 Dresden Station Units 1, 2 and 3;
 Quad-Cities Station Units 1 and 2;
 Zion Station Units 1 and 2;
 LaSalle County Station Units 1 and 2;
 Byron Station Units 1 and 2; and
 Braidwood Station Units 1 and 2
 NRC Docket Nos. 50-10/237/249,
 50-254/265, 50-295/304, 50-373/374,
 50-444/455, and 50-456/457

Reference (a): J. G. Keppler letter to Byron Lee, Jr.
 Dated July 11, 1979.

Dear Sir:

Reference (a) transmitted I.E. Bulletin 79-15 concerning
 "Deep Draft Pump Deficiencies". The Commonwealth Edison response
 to that bulletin is provided in the attachment to this letter.
 In the event further question should arise in this regard, please
 direct them to this office.

Very truly yours,

(Signed) CORDELL REED

Cordell Reed
 Assistant Vice-President

Attachment

cc: Director, Directorate of Inspection and Enforcement - Region III ✓

1083 096

SEP 11 1979

7910080 / 25

2

Dresden 1 Response
I.E. Bulletin 79-15

PUMPS: Post Incident Pumps (G-142A, G-142B)
MANUFACTURER: Layne & Bowler Pump Co.
MODEL: 10-RM
CAPACITY: 600 GPM @ 320 Ft. Total Head (Each Pump); Each Pump
Capable of System Capacity to Provide Redundancy
APPLICATION: Containment Spray/Long Term Cooling
DIMENSIONS: (See Figure 1)
MAINTENANCE: No Maintenance Has Been Required Since Installation
OPERATIONAL PROBLEMS/REPAIRS: None

Pre-operational tests showed that the original oil lubrication system did not have sufficient capacity to overcome packing gland leakage. Consequently, the system was changed to a pressurized water lubrication system. Changing to a pressurized water lube system necessitated the following changes to each pump:

- 1) 416 stainless steel line shafts and head shafts
- 2) Four slinger rings (for protection of packing)

During pre-operational testing, temporary piping was installed to permit testing at higher flow rates than is possible with normal system piping. Flow meters were installed in the temporary piping for flow measurement.

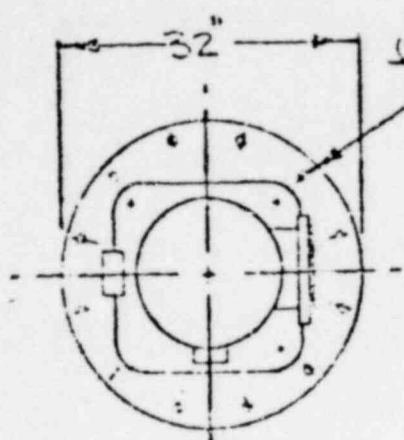
The pre-operational test results showed that the pump flow rates for both pumps were adequate to meet system design requirements. Pump vibration was normal.

The Post Incident pumps are tested once per month and run for ten minutes during each test. No flow meters exist on the system to determine if the pumps are at rated flow (flow measuring devices are currently being installed). During the operational tests of the pumps, water is added to the pump suction until pump discharge pressure becomes steady; the pump is then run for ten minutes and vibration measurements taken. No operational problems have occurred.

The pumps have been available for operation without corrective maintenance since unit start-up (July, 1960). The longest each pump has been run (near rated flow) was two hours. At the end of each run, both pumps were in good operating order.

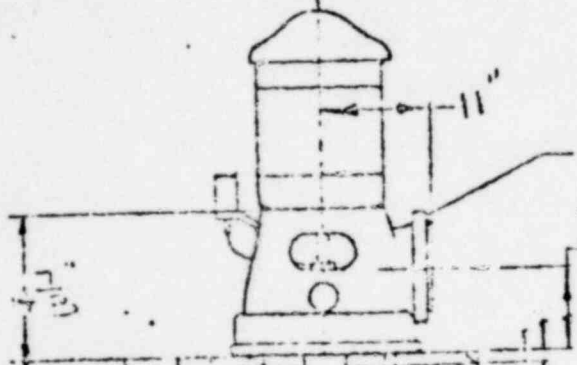
VERTICAL DEEP WELL PUMP

ENCLOSED LINESHAFT CONSTRUCTION



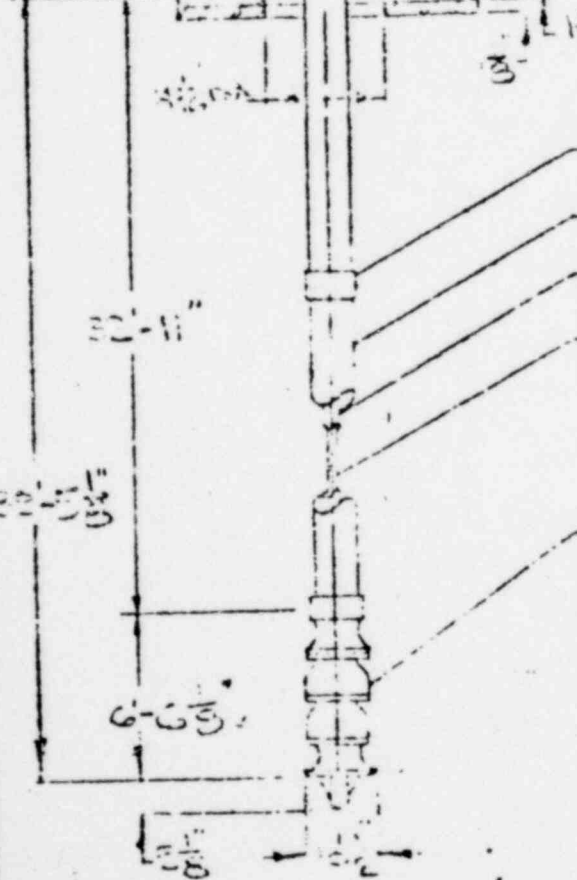
3 BOLTS ON 30 B.C.

MACB DISCHARGE HEAD
62 HP VHS ELECTRIC MOTOR
172 RPM 60 CYCLE 3 PHASE 440 V
7 STAGE 10RM-H BOWLS
600 GPM 320 FT PER CURVE 571290



DISCHARGE FLANGE - 8 DIA 125 # 1/2
 (BOTTOM FINGER STE TO BE WELDED TO
7/8 DIA SHAFT 14.00 DIA)

POOR ORIGINAL



PIPE COUPLING OD - 3-3/4
5 COLUMN PIPE IN 2-2 LGTHS
1-2 ENCLOSING TUBE IN 3-0 LGTHS
1-2 LINESHAFT IN 10-0 LGTHS
 TOTAL OVERALL COLUMN LGTH 33-4

MAX OD BOWL ASSEMBLY 2-1/8

FIG. 1

1083 098

LAYNE & BOWLER PUMP CO	
PROPOSAL FOR <u>REPLACEMENT</u>	
<u>P.O. 2345-M-33</u>	
SPEC _____	ITEM _____
CERTIFIED <u>R. S. 3-2-58</u>	
BY <u>RMS 3-2-58</u> NO. <u>571290</u>	

117-36-104
 MAIN LGTH WAS 33-4

ATTACHMENT

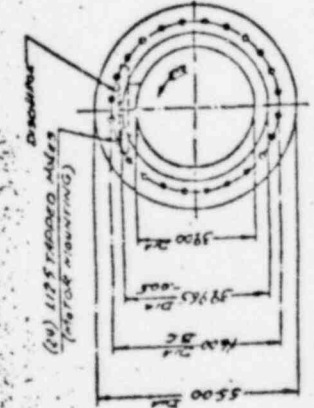
Dresden 1 Response (Cont.)
I.E. Bulletin 79-15

PUMPS: HPCI Injection Pumps (K-6123A, K-6123B)
MANUFACTURER: Ingersoll-Rand, Cameron Pump Division
MODEL: D-12 x 20 KD-8
CAPACITY: 6000 GPM @ 1300 ft. Total Head
APPLICATION: ECCS High Pressure Coolant Injection
DIMENSIONS: (See Figure 2)
MAINTENANCE: None
OPERATIONAL PROBLEMS/REPAIRS: None

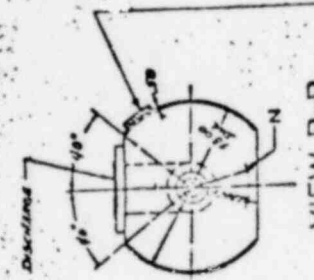
Both pumps have been performance tested and installed on site waiting preoperational testing. One pump, in addition to the normal performance test, was run at full flow conditions for eight continuous hours after which an additional performance test was performed. No degradation in pump performance or vibration was detected when test results were compared.

GENERAL NOTES
 1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 2. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 3. DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 4. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 5. DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 6. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 7. DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 8. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 9. DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 10. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

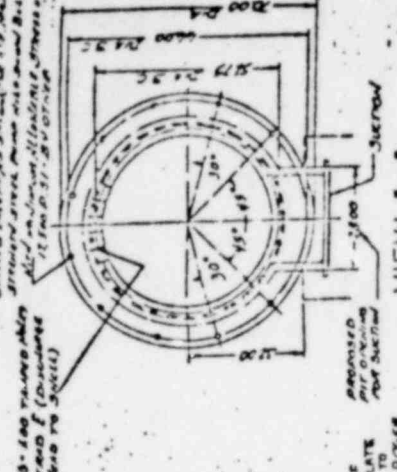
EA- 500 PIPE TAP CLAMP RESISTOR CONNECTION
 BA- 500 PIPE TAP CLAMP DRAIN - RESISTOR
 P- 500 PIPE TAP CLAMP SEAL RING VENT VENT
 @ START UP
 N- 750 PIPE TAP CLAMP SECTION VENT VENT @
 START UP
 TOLERANCE FOR SETTING OF SHELL LENGTH 0.50
 TOLERANCE FOR NOZZLE LOCATIONS 0.25



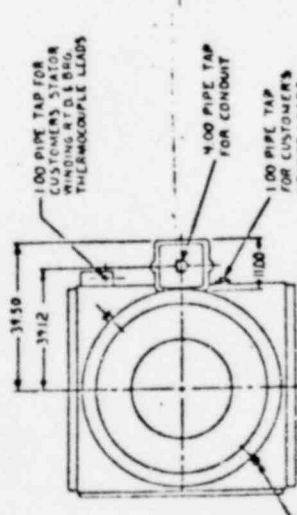
VIEW C-C
 SECTIONAL DRILLING OF MOTOR
 MOUNTING FLANGE
 DRIVER MOUNTING FLANGE
 TO END OF PUMP SHAFT
 (IN DOWN POSITION)



VIEW B-B
 SECTIONAL DRILLING OF
 PUMP ELEMENT
 TO END OF PUMP SHAFT
 (IN DOWN POSITION)



VIEW A-A
 SECTIONAL DRILLING OF PUMP
 ELEMENT
 TO END OF PUMP SHAFT
 (IN DOWN POSITION)



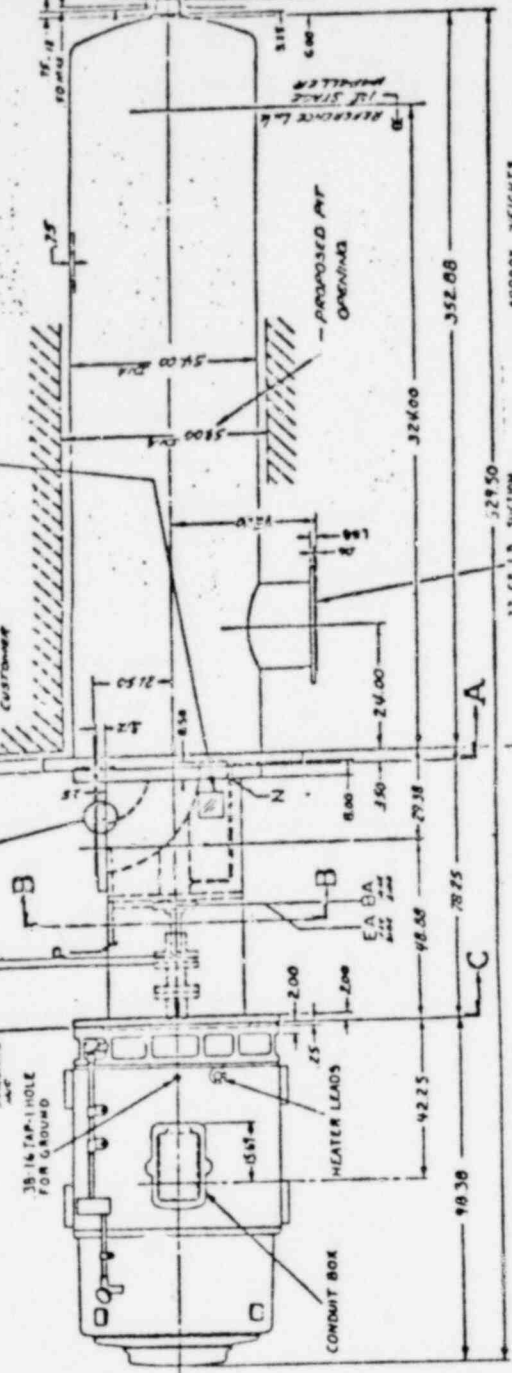
PLAN VIEW OF MOTOR
 WEIGHING NOZZLE FRAMES AND WEIGHTS
 THE FOLLOWING EXPRESSION RELATES THE ALLOWABLE COMBINATION OF FRAMES
 AND WEIGHTS ON THE EQUIPMENT NOZZLES.

$$\left(\frac{A}{10}\right) + \left(\frac{B}{10}\right) \leq 1$$

 WHERE:
 A = THE WEIGHT OF THE FRAME ACTUAL NATIONAL APPROXIMATE PRICES
 B = THE WEIGHT OF THE FRAME ACTUAL NATIONAL APPROXIMATE PRICES
 THE ALLOWABLE VALUE OF A WHEN ALL WEIGHTS ARE ZERO AND NO
 OF A AND B ARE GIVEN IN THE TABLE BELOW FOR THE COMBINATION
 SPECIFIED.

SECTION	WEIGHT (LBS.)	WEIGHT (LBS.)	WEIGHT (LBS.)
A	7175	10775	11900
B	7175	10775	11900
C	7175	10775	11900

CONDITIONS - INTERNAL PUMP WEIGHTS - ALL APPLICABLE NOZZLE
 WITH COMBINATION OF WEIGHTS, INTERNAL, OPERATING BASIS
 ESTIMATED, ETC.
 CONDITION B - (OPERATING) - ALL APPLICABLE NOZZLE LOAD
 COMBINATION OF WEIGHTS, INTERNAL, DESIGN BASIS (START-UP, ETC.)



APPROX. WEIGHTS
 WT. OF DISCHARGE HEAD & PUMP ELEMENT 12,700
 WT. OF SHELL 12,300
 TOTAL WT. OF PUMP DRY 25,000
 WT. OF WATER IN PUMP 25,000
 TOTAL WT. OF PUMP 50,000

GENERAL ARRANGEMENT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

GENERAL ARRANGEMENT
 12X20KD - 85JA
 D-12X20KD86X30

FIG. 2

POOR ORIGINAL

ATTACHMENT

DRESDEN - UNITS 2 & 3 RESPONSE

I.E. BULLETIN 79-15

There are no deep draft pumps used in safety related systems at these facilities.

ATTACHMENT

Zion Station Response to IE Bulletin No. 79-15

1. At Zion Station there are six (6) deep draft pumps, three per unit, similar to those shown in Figures 1 and 2 of the Bulletin utilized in safety related applications.

2. Manufacturer: The Singer Co., Layne and Bowler Division.
Model: 42" RKHC
Serial Numbers: 61031, 61032, 61033, 61034, 61035, 61036
Capacity: 22,000 gpm, 32^o-80^oF water at 100 psig discharge pressure.
Application: Service Water Pumps - provide cooling water to various primary and secondary plant components and heat exchangers.

3. Dimensions:
 - A. Total vertical length: 48 feet from the motor support base to the bottom of the suction bell.
 1. Vertical length of the three bowls (stages of impellers): 11 feet, 10 inches.
 2. The vertical length of the entire shaft from the suction bell to the pump base plate bottom is 42 feet, 5 inches.
 - B. Suction bell diameter: 40 inches
 - C. Discharge pipe diameter: 24 inches
 - D. Pump weight: 24,850 lbs.
 - E. Total developed head at rated flow: 210 feet
 - F. Shut off head: 309 feet
 - G. Pump develops 1342 BHP at rated conditions.

4. A. Startup (Preoperational) Testing

The startup testing program for the service water pumps demonstrated the following items:

1. The pump capacity was measured and it was verified that measured capacity was within 10% of the manufacturer's curve of various flows and pressures. Also, proper motor running current was verified.
2. It was demonstrated that any pump alone could supply needed cooling water to all essential (safety-related) loads at the minimum required pressure. (22,000 gpm at 69 psig)
3. It was demonstrated that any two-pump combination could supply needed cooling water for all (essential and non-essential) loads at minimum required pressure (44,000 gpm at 75-95 psig).
4. It was demonstrated that all pump controls, interlocks, and auto-start features operated properly.
5. During this testing, required flows to all loads were established.

B. Routine Testing

Monthly, in accordance with Technical Specification 3.8.7, the pump combinations are switched such that all pumps are run for a period of four hours. Service water header pressures are read and recorded at the beginning and end of each period.

C. Routine Maintenance

1. During refueling outages, the pump motor's bearing oil is changed.
2. Pump vibration readings are taken and evaluated semi-annually.

5. A. Operational Problems

To date the service water pumps at Zion have been extremely reliable. There have been no instances of "pump failure".

Most of the problems to date have centered around the bearing lubrication water system and its seal (upper bearing packing). For example, the lubrication water injection pressure often drops below the manufacturer's specification, requiring frequent adjustment, or sometimes outright replacement of the packing in order to reduce leakoff of the water, and to bring the pressure back into specification.

B. Major Repair Efforts

This packing had, over a period of a few years, worn grooves into the pump shafts, requiring replacement of the top section of pump shaft, then modification with protective shaft sleeves to take up the wear caused by the packing. The sleeves can be removed and replaced in the future without pump disassembly. These modifications were completed in 1977 for both units.

In addition, it was observed during pump disassembly for the above modifications that the bearing water lubrication lines within some of the pumps were broken. These lines were replaced with flexible wire braid hose. The resultant loss of adequate lubrication water due to the broken lines caused excessive wear of some of the bearings. Those affected were replaced.

No other major repair efforts to the pumps has occurred.

6. Reliability and Longest Operation

Pump availability is summarized below:

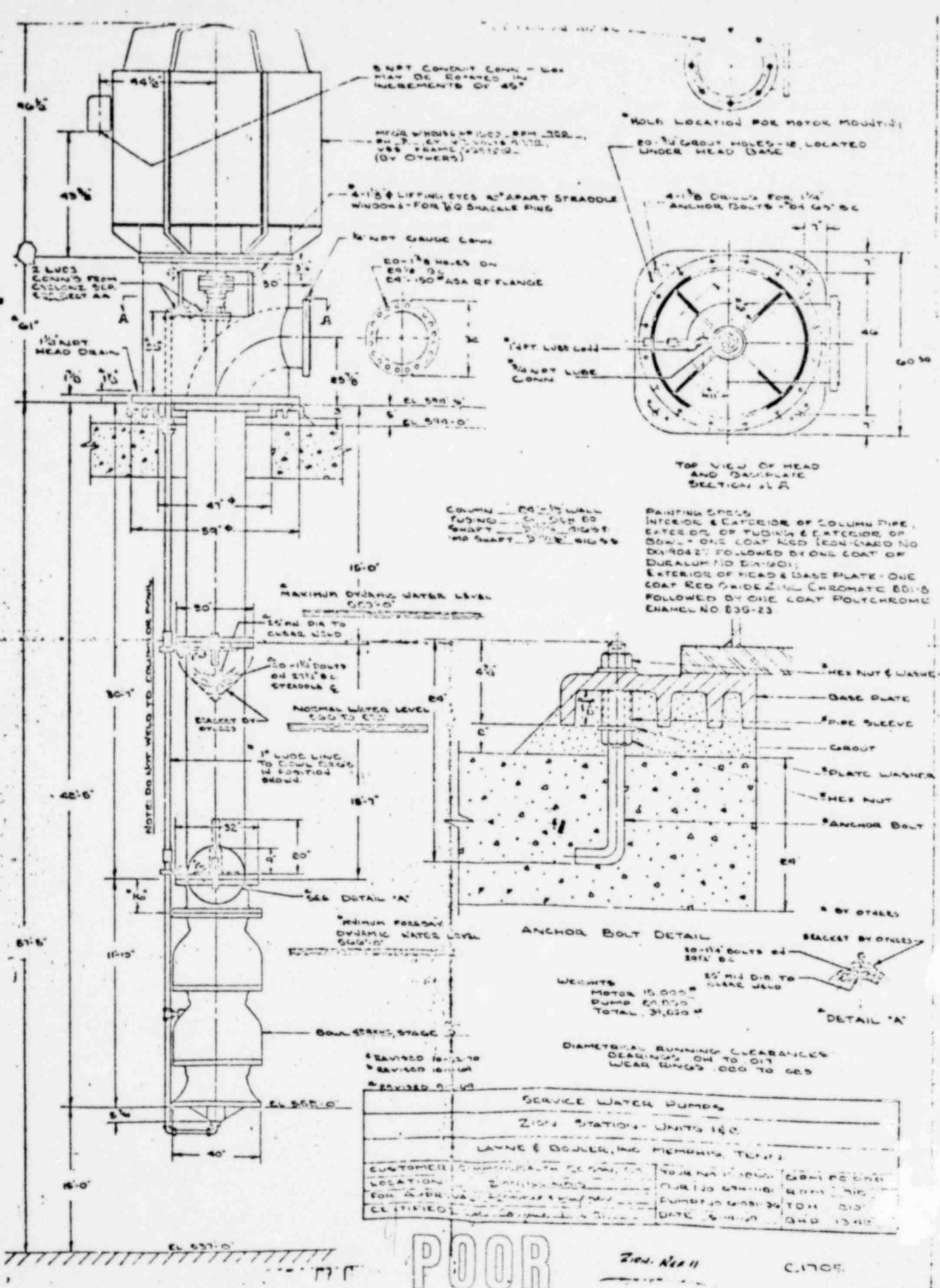
<u>Service Water Pump</u>	<u>Longest Interval Available</u>	<u>Duration</u>	<u>Operating Mode</u>
1A	10/28/75 - 10/20/77	722 days	rated flow
1B	12/31/73 - 9/19/77	1401 days	rated flow
1C	12/31/73 - 4/23/76	844 days	rated flow
2A	3/14/77 - present	900 days*	rated flow
2B	3/24/77 - present	890 days*	rated flow
2C	6/05/78 - present	452 days*	rated flow

*Based on present = 9/1/79

The number of cycles of operation during these longest intervals, and the duration of these cycles cannot be determined because this information is not recorded. However, the total number of pump running hours is available from the pump breakers and is as follows:

<u>Pump</u>	<u>Hours</u>
1A	45387
1B	39649
1C	39932
2A	38076
2B	32201
2C	32763

ROX



SERVICE WATER PUMPS	
ZION STATION - UNITS 1 & 2	
LAYNE & BOLLER, INC MEMPHIS, TENN.	
CUSTOMER: MEMPHIS HEALTH DEPT., 501	YOUR NAME: LAYNE & BOLLER, INC
LOCATION: ZION STATION	YOUR JOB NUMBER: 60711-210
FOR APPROVAL: [Signature]	PUMP NO: 60711-210
CERTIFIED: [Signature]	DATE: 5-11-70
	AND: 13-70

POOR

FIG. 3 ORIGINAL

APPROVED FOR ZION STATION - UNITS 1 & 2

1083 105

ATTACHMENT

QUAD-CITIES UNITS 2 & 3 RESPONSE

I.E. BULLETIN 79-15

There are no deep draft pumps used in safety related systems at these facilities.

ATTACHMENT

LA SALLE COUNTY UNITS 1 & 2
RESPONSE TO I.E. BULLETIN 79-15

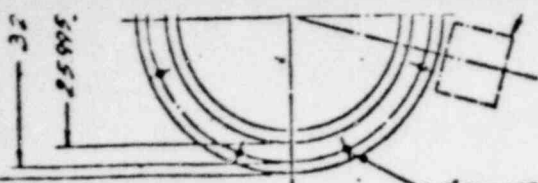
PUMPS: Six RHR Pumps (three in each unit)
MANUFACTURER: Ingersoll-Rand, Cameron Pump Division
MODEL: 29 APKD-3
CAPACITY: 7450 GPM @ 280 Ft. Total Head (each pump)
APPLICATION: Residual Heat Removal
DIMENSIONS: (see Fig. 4)
MAINTENANCE: (see below)
OPERATIONAL PROBLEMS/REPAIRS: (see below)

Since the LaSalle County Station is under construction, the deep draft pumps have no real "operating" history.

However, various defects - as noted in the IE Bulletin No. 79-15 - were spotted during construction (Information concerning these pump problems has been provided in previous deficiency reports to the NRC - see NCR #195,200,217). As a result, the pumps were returned to Ingersoll-Rand for reworking/replacement.

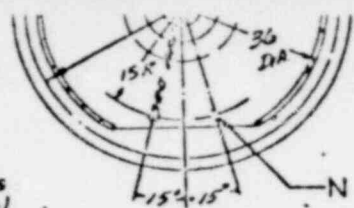
At this time, two of the six RHR pumps have been reinstalled. Testing will begin when all the pumps have been reinstalled.

POOR ORIGINAL



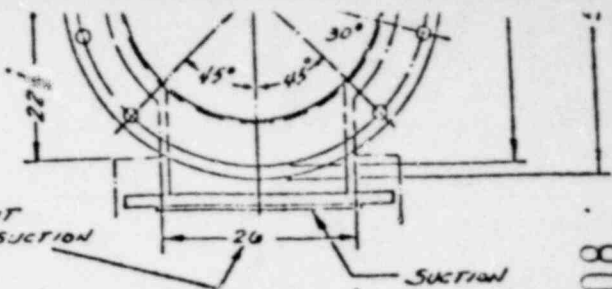
VIEW C-C

SHOWING DRILLING OF MOTOR MOUNTING FLANGE



VIEW B-B

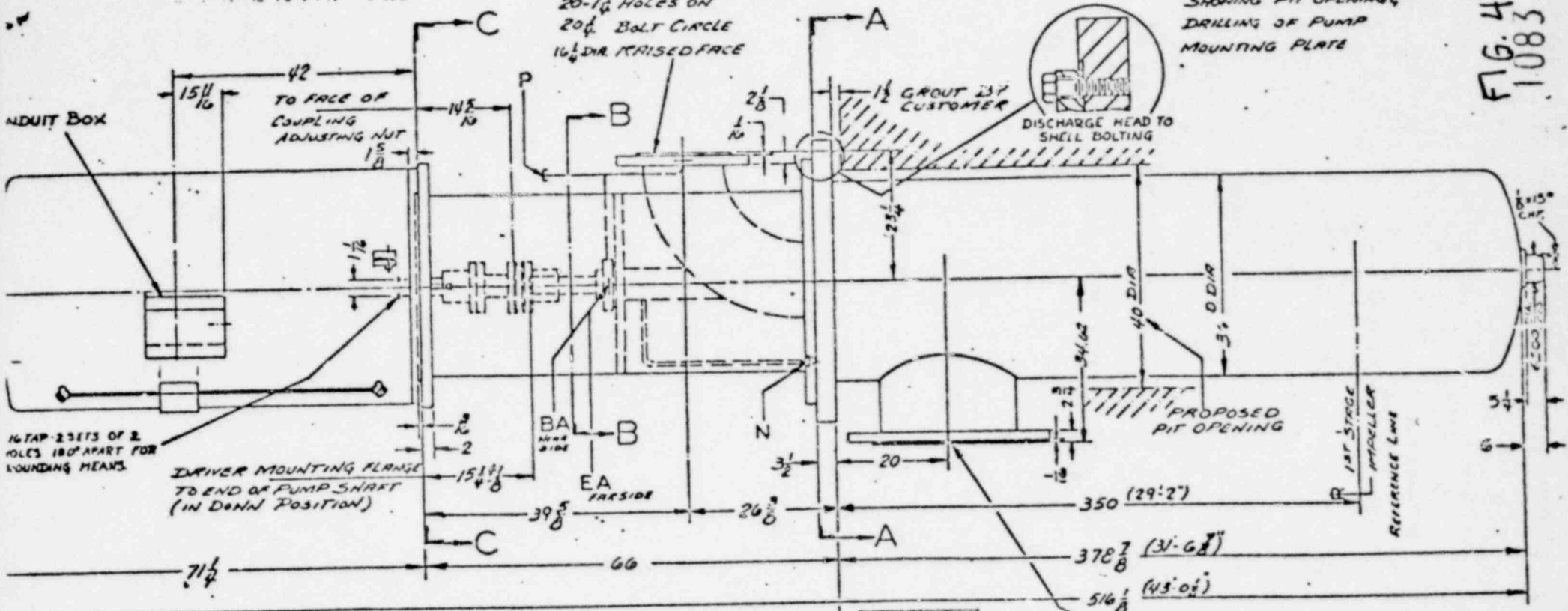
14 DISCHARGE 300" R.F. (I.D. 13 1/8")
 23" DIA FLANGE
 20-1/8" HOLES ON
 20" BOLT CIRCLE
 16 1/4" DIA. RAISED FACE



VIEW A-A

SHOWING PIT OPENING & DRILLING OF PUMP MOUNTING PLATE

FIG. 4
1083 108



16 TAP-2SETS OF 2 HOLES 180° APART FOR MOUNTING MEANS.

DRIVER MOUNTING FLANGE TO END OF PUMP SHAFT (IN DOWN POSITION)



DISCHARGE HEAD TO SHELL BOLTING

REV	DATE	BY	CHKD	APP
9	10-19-70			
DATE OF REV. BY				
REVISIONS				
1. DELETED IEN PIPING DWG. NO. 10-19-70				
2. CHECKED DWG. NO. FROM FIELD				

24 SUCTION - 300" R.F. (I.D. 22 3/8")
 36 DIA. FLANGE
 24-1 1/8" HOLES ON
 32 BOLT CIRCLE
 27 1/4" DIA. RAISED FACE

APPROX 40 FT CRANE LIFT REQUIRED FOR REMOVING DISCHARGE HEAD & PUMP ELEMENT - LESS MOTOR
 18 FT INCLUDING SLING & DISMANTLING WORK AREA MINIMUM
 DISMANTLING HEIGHT (BASIS COMPONENT DISASSEMBLY INSTRUCTION MANUAL)

REV	DATE	BY	CHKD	APP	DRIVER MFG.	SERVICE	CUSTOMER	I.A. ORD. NO.	 Ingersoll-Rand CAMERON PUMP CO. INC. PHILIPSBURG, N.J. 088 (72)
1	6-29-71				GEN. ENL. LIT.	RHR	GENERAL ELECTRIC CO	006-36025	
DATE	DATE	DATE	DATE	DATE	TYPE	LIQUID	ORD. NO.	ITEM NO.	GENERAL ARRANGEMENT PUMP SIZE 29APKD - 3STAGE DWG. NO. D-29-3APKD86XI-L
11-3-71	10-19-70	10-19-70	10-19-70	10-19-70	R		RC-755	167	
REV	DATE	BY	CHKD	APP	FRANK	ROTATION	ITEM NO.	DATE	CHECKED CERTIFIED
1	6-29-71				CS	CON. NT		10-19-70	
REV	DATE	BY	CHKD	APP	H.P.	BLANCHES	REQ. NO.	DRAWN	PUMP SIZE 29APKD - 3STAGE DWG. NO. D-29-3APKD86XI-L
1	6-29-71				800	SEE PUMP		SCHEIDT	
REV	DATE	BY	CHKD	APP	R.P.M.	SEE PUMP	PLANT	CHECKED	CERTIFIED
1	6-29-71				1800		LASALLE 142		
REV	DATE	BY	CHKD	APP	DWG. NO.		(CON. ED OF CHICAGO)	CERTIFIED	
1	6-29-71				82263024Y				

ATTACHMENT

LA SALLE COUNTY UNITS 1 & 2

RESPONSE TO I.E. BULLETIN 79-15

LASALLE

PUMPS: Two HPCS pumps (one in each unit)
MANUFACTURER: Ingersoll-Rand, Cameron Pump Division
MODEL: 12 X 20 KD-8
CAPACITY: 6942 GPM @ 662 Ft. Total Head
APPLICATION: High Pressure Core Spray
DIMENSIONS: (See Fig. 5)
MAINTENANCE: (See below)
OPERATIONAL PROBLEMS/REPAIRS: (See below)

Since the LaSalle County Station is under construction the deep draft pumps have no real "operating" history.

However, various defects - as noted in the IE Bulletin No. 79-15 - were spotted during construction (Information concerning these pump problems has been provided in previous deficiency reports to the NRC - see NCR # 214, 217, 218, 219). As a result, the pumps were returned to Ingersoll-Rand for reworking/replacement.

At this time, the HPCS pumps have not been reinstalled - testing will begin once the reinstallation has be completed.

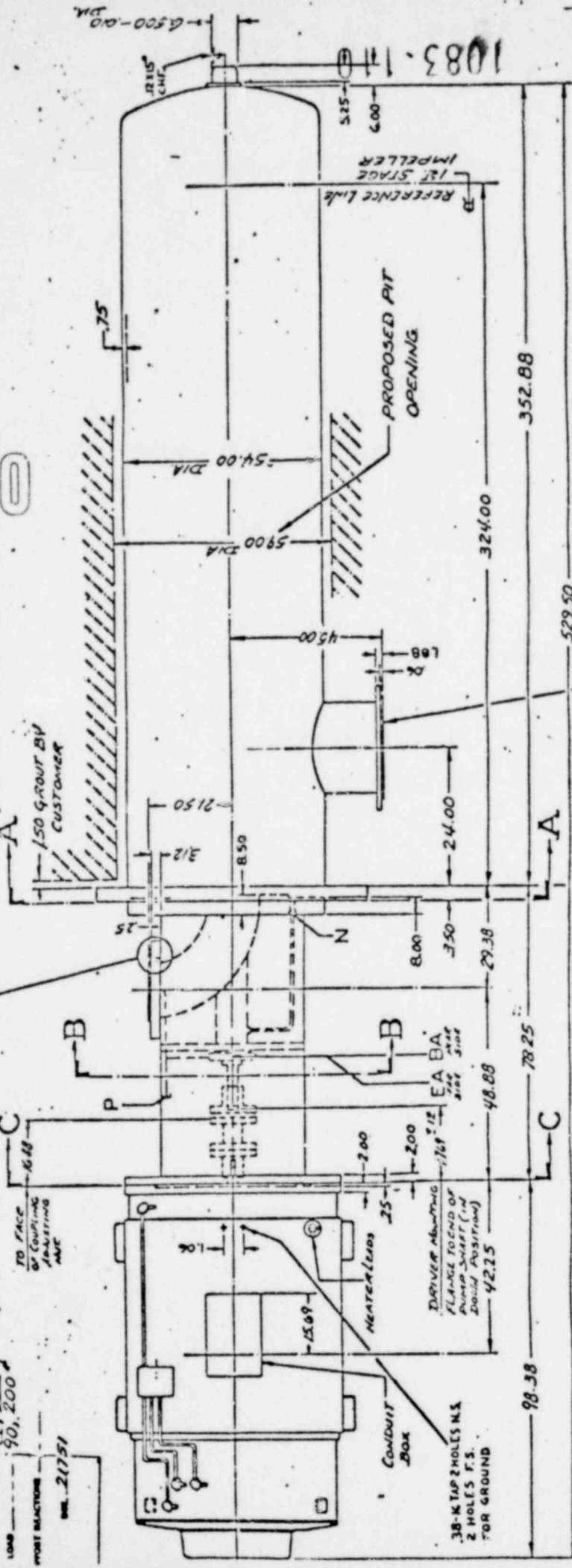
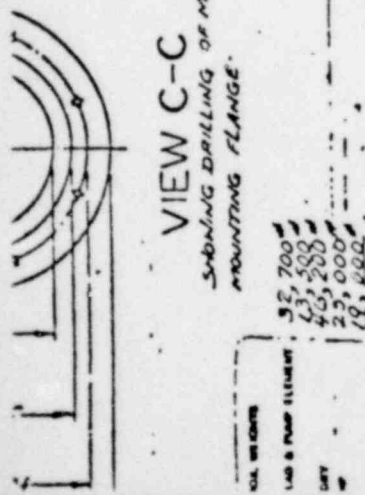
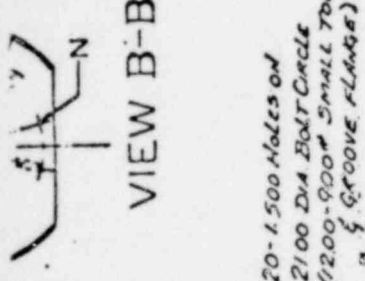
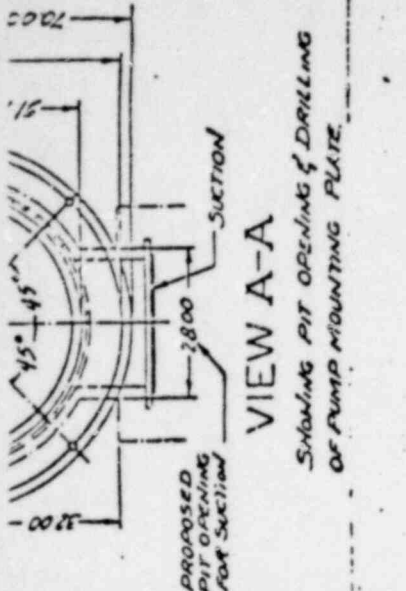


FIG 5

22.62 I.D. SUCTION
 24.00 - 150" R.F.
 32.00 DIA. FLANGE
 20-1.375 HOLES ON
 29.50 BOLT CIRCLE
 27.25 DIA. RAISED FACE

APPROX 468.00 CRANE LIFT REQUIRED FOR REMOVING DISCHARGE HEAD & PUMPING ELEMENT LESS MOTOR
 CENTER OF GRAVITY OF PUMP (INCLUDING WATER) AND MOTOR ASSEMBLY IS 67" BELOW MOUNTING FLANGE
 18 FT NOT INCLUDING SLING & DISMANTLING WORK AREA AT MIN DISMANTLING HEIGHT (SEE INSTRUCTIONS MANUAL)

REV	DATE	BY	CHK	APP	REV	DATE	DATE	DATE
3	18-1-77				1	10-10-77	6-24-77	
4					2			
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98					96			
99					97			
100					98			

Ingersoll-Rand
 GENERAL PUMP DIVISION
 PHILADELPHIA, PA. 19104

1-4 ORD. NO. 000-36035
 ITEM NO. 162
 DATE 2-3-71
 DRAWN P.A. Valua
 CHECKED Platt
 CERTIFIED J. H. M. E. G.

CUSTOMER General Electric Co.
 ORD. NO. AC-792
 ITEM NO.
 SERVICE AND PRESSURE
 LIQUID
 ROTATION
 BEARINGS
 LASALLE Gentry
 MPE # E22001

GENERAL ARRANGEMENT
 PUMP SIZE 12X20KD - 85STAGE
 DRG. NO. D-12X20KD86X1-G

ATTACHMENT

LA SALLE COUNTY UNITS 1 & 2

RESPONSE TO I.E. BULLETIN 79-15

LASALLE

PUMPS: Two LPCS pumps (one in each unit)

MANUFACTURER: Ingersoll-Rand, Cameron Pump Division

MODEL: 29 APKD-5

CAPACITY: 6350 GPM @ 725 Ft.

APPLICATION: Low Pressure Core Spray

DIMENSIONS: (See Fig. 6)

MAINTENANCE: (See below)

OPERATION PROBLEMS/REPAIRS: (See below).

Since the LaSalle County Station is under construction, the deep draft pumps have no real "operatin" history.

However, various defects - as noted in the IE Bulletin No. 79-15 - were spotted during construction (Information concerning these pump problems has been provided in previous deficiency reports to the NRC - see NCR #195, 200, 217, 238, 240). As a result, the pumps were returned to Ingersoll-Rand for reworking/replacement.

At this time, the LPCS pumps have not been reinstalled testing will begin once the reinstallation has been completed.

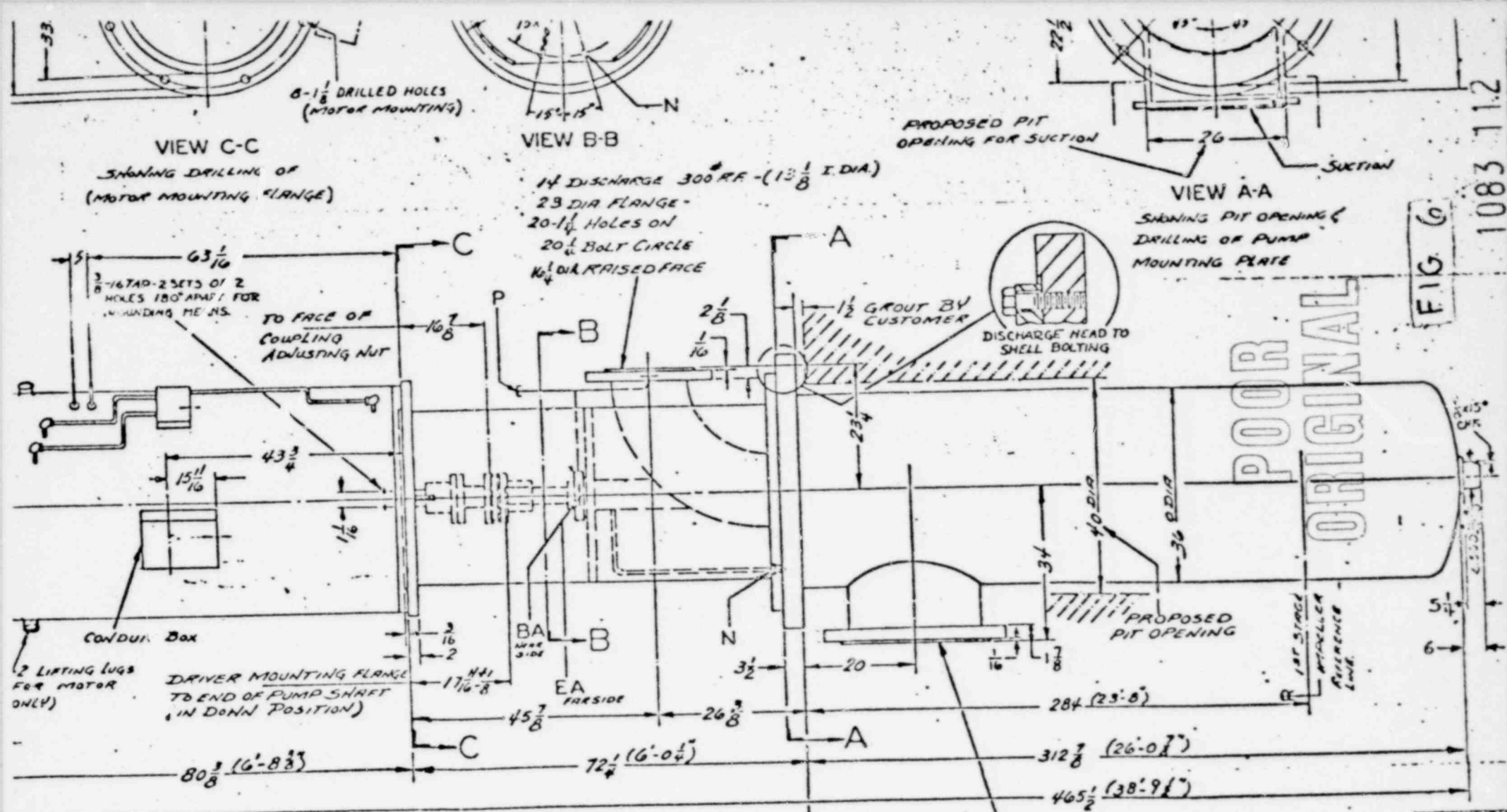


FIG. 6

1083 112

POOR ORIGINAL

APPROX 35' CRANE LIFT REQUIRED FOR REMOVING DISCHARGE HEAD & PUMP ELEMENT - LESS MOTOR

23' NOT INCLUDING SLING (DISMANTLING WORK AREA MAIN DISMANTLING HEIGHT (BASE COMPONENT DISASSEMBLY SEE INSTRUCTION MANUAL))

24" SUCTION - 150 RF - (22 1/8 I.DIA.)
 22" DIA FLANGE
 20 - 1/8 HOLES ON
 20 1/2 BOLT CIRCLE
 27 1/4 DIA RAISED FACE

9 33 1 C
 DATE 11-17-72
 CHECKED
 DES. NO.
 PARTS LIST

REV. 4 DATE 8-28-72 BY BDL CHKD WJL	REV. 3 DATE 4-27-72 BY SLS CHKD WJL	REV. 2 DATE 10-14-71 BY M.C. CHKD WJL	REV. 1 DATE 6-26-71 BY M.C. CHKD WJL	MOTOR BY CUSTOMER	DRIVER MFG. GENERAL ELECTRIC	SERVICE LPG.S.	CUSTOMER GENERAL ELECTRIC CO	FORM NO. 006-36026	<p>General Electric - Rand CHICAGO, ILL. DIVISION 1-4 BOSTON, MASS. DIVISION 2-10008</p>
TYPE K	LIQUID	ITEM NO. AC-765	ITEM NO. 142	DATE 7-19-70	FRAMES 03472242	ROTATION CCM - HI.	REQ. NO.	PUMP SIZE 29APKD - 5STAGE	
H.P. 1500	UL LISTING SILENT PUMP	PART LA SALLE 142	ENGINEER CURTIS		N.P.M. 1730	(COM. ED OF CHICAGO)		DRG. NO. D-29-5APKD86XI-1	
DRG. NO. 223C73568									

ATTACHMENT

BYRON UNITS 1 & 2

RESPONSE TO I.E. BULLETIN 79-15

BYRON

PUMPS: Two Essential Service Water Makeup Pumps

MANUFACTURER: Johnston Pump Co.

MODEL: Model JT

CAPACITY: 1500 GPM @ 385 Ft. (each pump)

APPLICATION: Essential Service Water Makeup

DIMENSIONS: (See Fig. 7)

MAINTENANCE: None

OPERATIONAL PROBLEMS/REPAIRS: None

Since the Byron Station is under construction, the essential service water makeup pumps have no "operating" history.

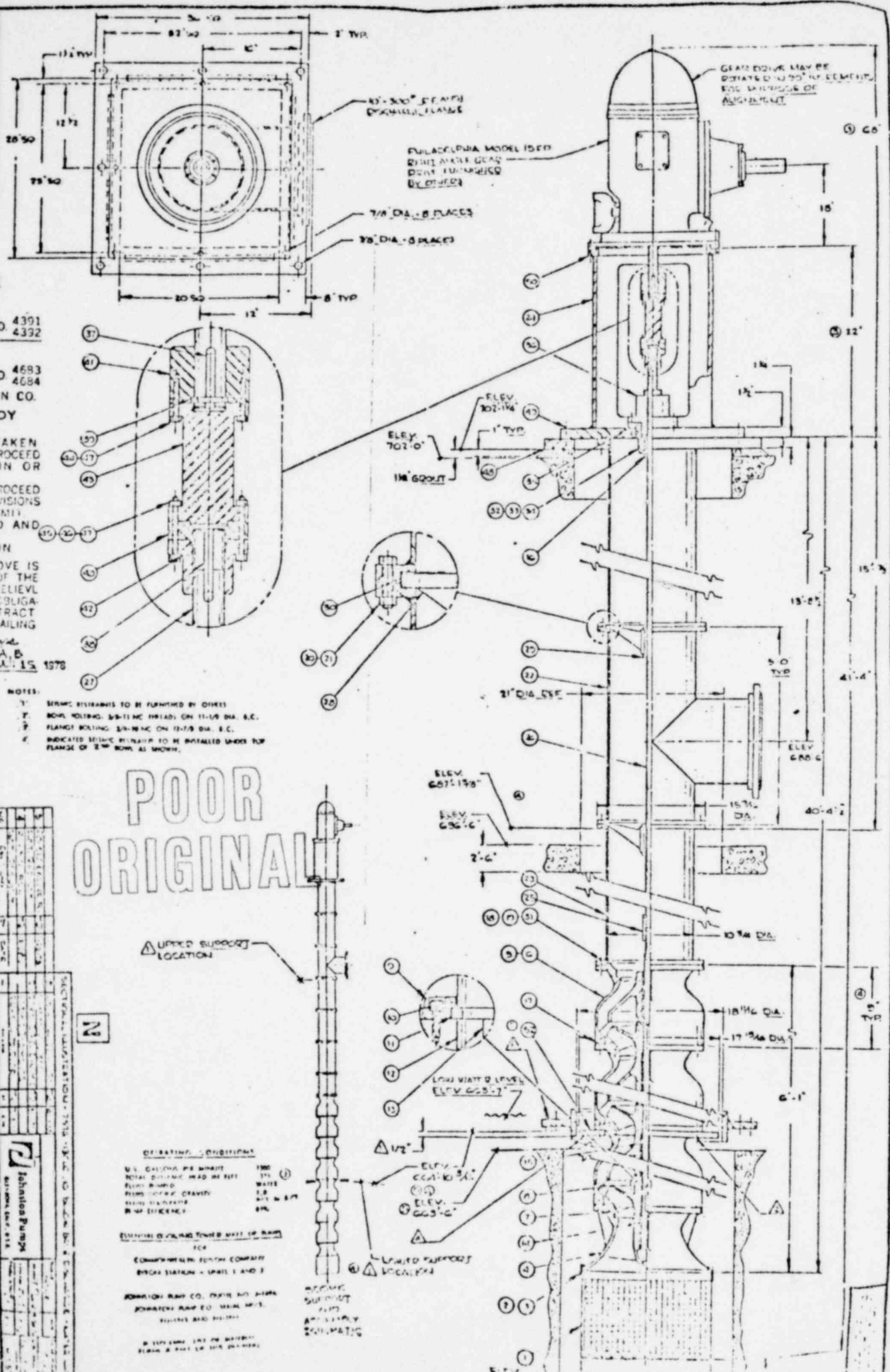
The pumps have been installed. However, no tests have been run on these pumps since the power supply (a diesel generator) has yet to be installed.

REVIEWED FOR

BYRON
UNITS 1 & 2
NO. 2758-P PROJ. NO. 4391
4392
BRAIDWOOD
UNITS 1 & 2
NO. PROJ. NO. 4683
4684
COMMONWEALTH EDISON CO.

SARGENT & LUNDY
ENGINEERS
NO EXCEPTION TAKEN
CONTRACTOR CAN PROCEED
WITH FABRICATION OR
CONSTRUCTION
CONTRACTOR CAN PROCEED
BASED ON MAKING REVISIONS
NOTED AND RESUBMIT
REVISE AS NOTED AND
RESUBMIT
HOLD FABRICATION

ACTION SHOWN ABOVE IS
IN ACCORDANCE WITH THE
TERMS OF THE CONTRACT
AND DOES NOT RELIEVE
THE CONTRACTOR FROM HIS
OBLIGATIONS UNDER THE
CONTRACT
DESIGN AND CONSTRUCTION
DATE: JUL 15 1978
R. LAZOWSKI



NOTES:
1. SEEING REVISIONS TO BE FURNISHED BY OTHERS
2. BOWL BOLTING: 5/8" DIA. ON 11-1/8 DIA. S.C.
3. FLANGE BOLTING: 3/4" DIA. ON 17-7/8 DIA. S.C.
4. INDICATED SEEING REVISIONS TO BE INSTALLED UNDER TOP FLANGE OF 2" BOWL AS SHOWN.

POOR ORIGINAL

FIG. 7

NO.	DATE	REVISION	BY	CHKD.
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OPERATING CONDITIONS
MAX. CALIBER 12 INCHES
NOTAL DYNAMIC HEAD RE 11 FT
FLOW 1000 GPM
PRESSURE GRAVITY
HEAD 100 FT
RPM 1170

ELECTRICAL EQUIPMENT TOWER SHALL BE RATED FOR
COMMONWEALTH EDISON COMPANY
BROOK STATION - UNITS 1 AND 2

JOHN J. RAY CO. 1234 N. 10TH ST.
PHILADELPHIA, PA. 19107
PHONE 215-595-1111

ASSEMBLY DRAWING

ATTACHMENT

BRAIDWOOD UNITS 1 & 2

RESPONSE TO I.E. BULLETIN 79-15

There are no deep draft pumps used in safety related systems at these facilities.

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