



MAINE YANKEE ATOMIC POWER COMPANY
ENGINEERING OFFICE

TURNPIKE ROAD (RT. 9)
WESTBORO, MASSACHUSETTS 01581
617-366-9011

B.4.2.1
WMY 79-92

Open *the 1-11-82* *main* *London* *Maine Yankee*

September 11, 1979

United States Nuclear Regulatory Commission
Office of Inspection and Enforcement
Washington, D. C. 20555

Attention: Director, Division of Reactor Construction Inspection

- References: (a) License No. DPR-36 (Docket 50-309)
- (b) USNRC I&E Letter to MYAPC dated July 11, 1979
I&E Bulletin 79-15

Dear Sir:

Subject: Response to I&E Bulletin No. 79-15

The information contained in Attachment A is being submitted in response to USNRC I&E Bulletin No. 79-15. The responses are numbered corresponding to the bulletin paragraph numbers as listed under "Action to be Taken by Licensee and Permit Holders".

Should any further information be required, please feel free to contact us.

Sincerely,

MAINE YANKEE ATOMIC POWER COMPANY

Robert H. Groce
Licensing Engineer

DEM/smw

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Attachment A

Low Pressure Safety Injection Pumps

1. (a) Pump Name

Low Pressure Safety Injection Pump

(b) Number

P-12 (A&B)

2. (a) Manufacturer

Bingham-Willamette Company
28 Northwest Front Avenue
Portland, Oregon

(b) Model Number

(Size and Type) 14 x 16 x 18 B.V.C.R.

(c) Capacity

3350 gpm at 360 ft. TDH

(d) Plant Application

Low Pressure Safety Injection

3. Pump Dimensions

(a) Height: 35 ft. 3 in.

(b) Diameter: 30 in.

4. (a) Performance Tests Satisfactorily Completed on 9/29/70 and 10/9/70

(b) Routine Maintenance

(1) Weekly: Lubrication Checks

(2) Monthly: Surveillance Testing

(3) Yearly: Oil Samples Tested

5. Operational Problems and Major Repairs

(a) P-12A

10/20/72 Replaced Mechanical Seal

3/21/73 MR 461-73 Replaced Mechanical Seal

5/4/73 MR 683-73 Lower motor oil level low. Added oil to proper level.

- 8/29/73 MR 1349-73 Tightened flange bolts in seal water piping to pump.
- 11/12/73 MR 1865-73 Replaced RTD at lower bearing.
- 7/26/76 MR 0457-76 Ref: Rebuild mechanical seal. Installed new "O" rings carbide face, and carbon face. Assembled seal. Rebuilt seal will be stored in RCA Shop tool crib.
- 4/5/77 Motor Thrust & Journal Bearings (SPK-22326) temperatures may be 250 F for sustained operation. At 265 F and above oil break down may occur. Bearing max. operating temp. for rollers is 290 F Per Bob Linguist, Atlantic Bearings and Drives.
- 4/30/77 MR 697-77 Rezeroed amp meter in MCB per procedure 3.5.4.

5. P-12B

- 4/19/72 Investigated report of smoke from motor. Meggered and found zero ground. Removed and sent motor to Westinghouse at Augusta for rewinding; motor returned and installed. Performed all high voltage testing and placed back into service.
- 8/29/73 MR 1349-73 Tightened flange bolts on seal water piping to pump.
- 11/6/78 MR 1767-73 Replaced mechanical seal. Durametallic rep. (P.L. Keefer) assisted). Found carbon seal pitted. Caused by boron when pump is not running. Replaced complete seal with a rebuilt seal. Pump dropped .380" when uncoupled, and was raised .380" when coupled.
- 12/20/76 MR 1761-76 Upper bearing oil level low. Level was 1/8" lower than normal. No oil was added. Tightened fitting around sight glass.
- 4/5/77 Motor thrust and journal bearings (SPK022326) temperatures may be 250 F for sustained operation. At 265 F and above oil breakdown may occur. Bearing max. operating temp. for rollers is 290 F. Per Bob Linguist, Atlantic Bearings and Drives (4/5/77) (RFP).
- 5/12/77 MR 519-77 Installed threaded pipe cap on casing drain valve.
- 1/23/79 MR 094-79 Ammeter in switchgear room reads 45 amps with pump shut down. Replaced inoperative ammeter with new one from stock. Calibrated new meter in accordance with procedure MYM-3.5.4 and attached calibration sheet.

6. (a) Longest Interval Available for Operation

(1) P-12A: 2 yrs. 8 mos. (11/12/73 thru 7/26/76)

(2) P-12B: 3 yrs. 1 mon. (11/6/73 thru 12/20/76)

(b) Number of cycles during this interval, duration and mode

(1) P-12A 26 cycles, 15 min. recirculation, 14 cycles,
7 days, rated flow

(2) P-12B 26 cycles, 15 min, recirculation, 14 cycles,
7 days, rated flow

(c) Longest Continuous Run and Status at End of Run

(1) P-12A 7 days, operable

(2) P-12B 7 days, operable



Service Water Pumps

1. (a) Pump Name

Service Water Pump

(b) Number

P-29 (A, B, C, & D)

2. (a) Manufacturer

P-29 A, D

P-29 B, C

Worthington Corporation
4751 Broadway
Denver, Colorado 80216

Bingham-Willamette Company
28 Northwest Front Avenue
Portland, Oregon

(b) Model Number

P-29 A, D

P-29 B, C

27 HH1200W-1

16X32CT VM

(c) Capacity

P-29 A, D

P-29 B, C

10,000 gpm at 66 ft. TDH

10,000 gpm at 66 ft. TDH

(d) Plant Application

Service Water

3. Pump Dimensions

P-29 A, D

P-29 B, C

(a) Height: 21 ft. 5-1/4 in.

29 ft. 7-5/8 in.

(b) Diameter: 34 in.

32 in.

4. (a) Performance Tests Satisfactorily Completed On:

6/21/72 (P-29 A, D)

6/28/74 (P-29 B, C)

(b) Routine Maintenance

(1) Weekly: Lubrication Checks

(2) Monthly: Surveillance Testing

(3) Yearly: Oil Samples

(4) Refueling Outage: Inspect motor windings, meggar motor, inspect impeller

5. Operational Problems and Major Repairs

(a) P-29A

2/26/73 to 3/2/73 worked in service water pump. Service rep., Art Rowe, installed stainless steel impeller. Repacked gland with Crane C-60 packing. Inspected pump bearing, found to be satisfactory. Vibration readings were taken with IRD Model 306. Motor at one point 1.2 mills. Pump .7 mills. Megger reading at 1000 volts 700 meg. (R. Guillette).

4/15/74 MR 356-74 Installed shields over expansion joints per W/O 73-135.

8/6/75 MR 1625-75 Removed ventilation screens, cleaned and replaced.

8/8/75 MR 1660-75 Freed up and adjusted gland leaving pump with slight leak off.

10/9/75 MR 0314-76 Removed section of casing drain, ran water through all sections and found them to be clear.

3/8/76 MR 0367-76 Adjusted packing gland to allow normal leakage.

4/2/76 MR 0539-76 Checked packing gland and adjusted same.

2/10/77 MR 170-77 Cleaned cooling air filter screens.

6/4/77 MR 865-77 Excessive packing gland leakage. Removed packing. Repacked without lantern ring (ruined packing ring trying to remove). Installed 7 rings of 5810 packing.

6/9/77 MR 779-77 Removed motor and delivered to Westinghouse in Augusta for cleaning and necessary repairs including bearing replacement. Reinstalled motor and test run.

8/18/78 MR 887-78 Removed, rebuilt and reinstalled P-29A as per maintenance procedures.

NOTE: The present Worthington Pump is scheduled to be replaced in the near future, possibly during the refueling outage in January 1980.

(b) P-29B

2/26/73 to 3/2/73 Worked on Service Water Pump. Service Rep., Art Rowe, installed ceramic impeller from "A" pump. Condition was fair, coating was still good. Repacked gland with Crane C-60 packing. Inspected pump bearings, found to be satisfactory. Vibration readings were taken with IRD Model 306, and taken 90° from each other. Top of motor .5 mills, bottom of motor .2 mills, head of pump .2 mills. Megger reading at 1000 V. 1000 megs. (R. E. Guillette).

4/15/74 MR 354-74 Installed shields over expansion joints per W/O 73-135 (MR is in P-29A file).

8/17/74 MR 1225 and 1252-74 Megger 61-023 1000
Volts. 400 megs. (R. E. Guillette).

9/1/74 MR 1225-74 Complied, replaced Worthington pump.
Installed Bingham-Willamette pump.

10/1/74 MR 1532-74 Took up on head closure strap to
stop leakage. (B. Clark BIW).

10/31/74 MR 1681-74 Added two (2) rings of JC C-60 3/8"
packing. (C. Pinkham BIW).

5/21/75 MR 1032-75 Tightened fitting, leak stopped.

7/4/75 MR 1399-75 Nipple was erroded (renewed).

8/3/75 MR 1625-75 Removed screens to pumps, cleaned
them with solvent, wiped out sister parts and replaced
screens.

10/17/75 MR 1587-75 Corrected as per MR 451-75 which is
in service water system valve file.

10/21/75 MR 2004-75 Cut into casing and welded a nipple,
and piped into drain. Check valves were installed.

6/9/76 MR 0839-76 Problem

Disassemble pump to locate outlet check valve clapper stud
and nut and check pump internals for damage.

Corrective Action (Bingham Rep., W. McCaulley, on site)

Disassembled pump and found the stud lodged on the impeller
bell. Damage to the impeller was minor with tears on two
of the blades and small dings on the others. The impeller
was shipped to BIW for refurbishing and rebalance.

Slight scratches and dings were noted on the directional
vanes above the impeller. An evaluation determined these
would not require repair. Unrelated to this event, three
small shrink cracks were noted near the impeller bell housing
gussets. An evaluation of these was also determined to be
not serious because they are not pressure retaining parts.

Bearing and wear ring clearances were noted as excessive.
No spare parts were on site for replacement (on order)
therefore, the pump was re-assembled with the concurrence
of Bingham representative.

Mr. McCaulley advised bearing clearances of .010" to .020"
on dry cutless rubber bearing was normal. He advised
replacing bearing sleeves and bearings during a future
overhaul, within 2 yrs. if practical. He recommended
impeller and casing wear ring also be replaced at that time.
Replacement of impeller will depend on condition at time
of inspection.

The following bearings clearances were noted:

1st Bottom Bearing

Bearing

Shaft Sleeve

2.789

The shaft sleeve was worn excessively. It was metal spray welded with "Lubritec 19985 and to provide .020 bearing clearances.

2.780

2nd Bearing from Bottom

Bearing

Shaft Sleeve

2.779

2.747

2.7885

2.7485

3rd Bearing from Bottom

These clearances were not recorded because the bearing was "stuck" and would have required machining to remove same. As spares were not available, this machining was not done.

4th Bearing from Bottom

Bearing

Shaft Sleeve

2.7875

2.7465

2.775

2.749

5th Bearing from Bottom

Bearing

Shaft Sleeve

2.780

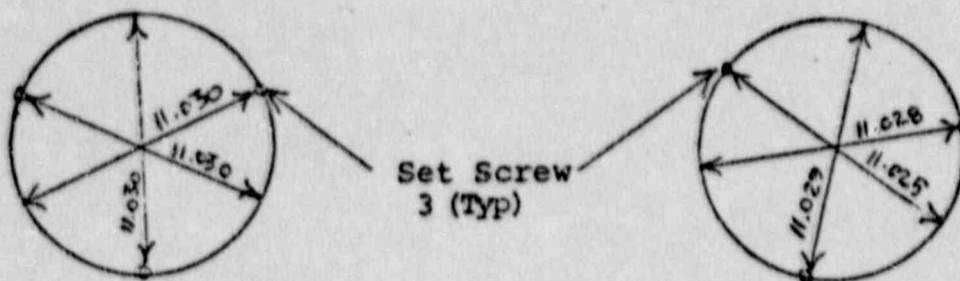
2.750

2.790

2.749

Part of the nut from the outlet check valve was found by a diver under the pump inlet in the circ. water pump bay after having dropped through the pump. When the nut went by the stationary wear rings, it caused the stationary wear rings to rotate approximately one inch causing the ring to roll over its three set screws.

This then caused a bulge in the area of the set screws. The old set screws were drilled out to relieve this problem and three holes were drilled and taped for new set screws. Upon completion, the following stationary wear rings were recorded.



The instruction book specifies .050" to .060" impeller (pump lift) clearance at cold set conditions. In order to achieve maximum pump performance with present wear, Mr. McCaulley recommended a .028" lift. This was confirmed with Bingham Engineering & Service Dept. by PEQAG (R. LaRhette).

Final coupling alignment readings were as follows:

	.000"			.000
-001"	FACE	-001"	-.001 OD	-.001
	.000			.000

The pump was test run after assembly with satisfactory results. The following vibration readings were noted, Horizontal in East to West direction .001", vertical was less than .005".

The cognizant PEQAG inspection report is contained herein for additional references and for specific data.

1/28/77 MR 119-77 Leaks in brackish water piping. Replaced nipples that were leaking. Took up on packings.

2/10/77 MR 170-77 Cleaned cooling air filter screens. (MR is in P-29A folder).

6/9/77 MR 779-77 Removed motor and delivered to Westinghouse in Augusta for cleaning and necessary repairs including bearing replacement. Reinstalled motor and test run.

10/20/77 MR 1532-77 PROBLEM: When P-29 B & C were on together there normally would be 5 to 7 amps difference. On 9-25 "C" amps decreased approximately 7 amps to equal "B" pump. Also, service on pressure oscillation was approx. 1 psi. Checked with Operations, all pumps appear to be operating satisfactorily. These fluctuations could have been caused by mussel control operations that were being performed.

NOTE: The original P-29B pump was a Worthington Pump and was replaced with a Bingham pump.

(c) P-29C

2/26/72 to 3/2/73 Worked on service water pump. Service Rep., Art Rowe, dewatered pump pit. Inspected pump ceramic impeller. Condition was fair. Coating was still good.

4/15/74 MR 356-74 Installed shields over expansion joints per W/O 73-135 (MR is in P-29A file).

9/1/74 MR 1225-74 Completed, replaced Worthington Pump. Installed Bingham-Willamette Pump. MR is in P-29B history file.

9/1/74 MR 1252-74 Completed, tow plate located, drilled, pinned and secured. MR is in P-29B history file.

1/13/75 MR 073-75 Meggered motor with a satisfactory reading.

8/3/75 MR 1625-75 Removed screens to pumps, cleaned them with solvent, wiped out sister parts and replaced screens.

10/17/75 MR 1587-75 Corrected as per MR 451-75, which is in Service Water Systems valve.

10/21/75 MR 2004-75 Cut into casing and welded a nipple, and piped into drain. Check valves were installed.

1/28/77 MR 119-77 Leaks in brackish water piping. Also leaks in air piston. Replaced nipples that were leaking. Took up on packings. Had I&C repair air leak in cylinder. This MR is in P-29B history folder.

2/10/77 MR 170-77 Cleaned cooling air filter screens (MR is in P-29A file).

6/9/77 MR 779-77 Removed motor and delivered to Westinghouse in Augusta for cleaning and necessary repairs including bearing replacement. Reinstalled motor and test ran.

10/20/77 MR 1532-77 PROBLEM: P-29 B & C were on together there would normally be 5 to 7 amps difference. On 9/25 "C" amps decreased approx. 7 amps to equal "B" pump. Also, service water header pressure was oscillating approximately 3 lbs. until A & D were put on. With A & D on pressure oscillation was approx. 1 psi. Check with Operations, all pumps appear to be operating properly. These fluctuations could have been caused by mussel control operations that were being performed (MR is in P-29B folder).

1/30/78 MR 129-78 Solenoid valve leaked by. Removed solenoid valve and cleaned internals. Removed air operated valve, inspected seats and reassembled. Removed piping and inspected inside for obstructions. Reassembled valve and tested satisfactorily.

NOTE: The original P-29C pump was a Worthington pump and was replaced with a Bingham pump.

(d) P-29D

2/26/73 to 3/2/73 Worked on Service Water Pump. Service Rep., Art Rowe, installed stainless steel impeller. Repacked gland with Crane C-60 packing. Inspected pump bearings, found to be satisfactory. Vibration readings were taken with IRD Model 306, and taken 90 from each other. Top of motor 1.5 and 2.5 mills, bottom of motor .7 and .8 mills, top of pump .2 milles. Megger reading at 1000 V. 2500 megs. (R. E. Guillette).

12/17/73 MR 2041-73 Tightened packing and cleaned drain. A. Leeming.

4/15/74 MR 356-74 Installed shields over expansion joints per W/O 73-135. (MR is in P-29A file).

4/27/75 MR 805-75 Repacked pump using JC C-60 packing 1/2" sq. Had much difficulty in removing lantern ring because it was of carbon steel material and was corroded. With PEQAG (J. Hebert) concurrence, removed lantern ring permanently. The packing does not have seal water to the lantern ring.

8/3/75 MR 1625-75 Removed screens to pumps, cleaned them with solvent, wiped out sister parts and replaced screens.

3/17/76 MR 0432-76 Adjusted packing gland.

2/10/77 MR 170-77 Cleaned cooling air filter screens. (MR is in P-29A file).

6/9/77 MR 779-77 Removed motor and delivered to Westinghouse in Augusta for cleaning and necessary repairs including bearing replacement. Reinstalled motor and test ran.

11/23/77 MR 1747 gland leaks. Adjusted packing.

2/17 to 2/22/78 MR 213-78. P-29D Service Water Pump Shaft Broken. The following was noted during pump disassembly.

1. The lower impeller drive shaft was broken at the shaft coupling. The break was at the root of the last thread on the shaft. Indications were that the crack had started at some time previous and had continued approximately 1/3 of the way through shaft prior to breaking.
2. Corrosion by apparent galvanic action was ver-prevalent on the suction bell and support webs. Some was evident to a lesser degree on the casing sections.

3. Some fine cracks were noted at the suction flange webs.
4. Casing wear ring were severely corroded.
5. Impeller and pump casing showed no sign of erosion.
6. Cutless rubber bearings were in satisfactory condition.

Corrective Action

1. Replaced broken drive shaft using shaft from previously removed pump with cast iron impeller.

NOTE: One quarter inch (14/") had to be removed from the unthreaded end of the drive shaft to achieve .185" impeller lift plus 1/32" drive shaft to motor shaft clearance.

2. Replaced suction bell and 2 casing sections using same from old pump.
3. Replaced casing wear ring. The impeller wear ring had to be machined slightly to allow .010" clearance (.020" overall).
4. The pump was repacked.
5. Vibration readings subsequent to assembly were less than 1.2 mils anywhere.
6. Megger readings on motor were 000.
7. Pump alignment

S
000

E+.0005

+001 W

+.004
N

7/2/79 MR 892-79 Packing leaking. Adjusted packing, leak stopped.

NOTE: The present Worthington pump is scheduled to be replaced in the near future, possibly during the refueling outage in January 1980.

6. a) Longest Interval Available for Operation

1. P-29A 1 yr. 4 months (4/15/74 to 8/6/75)
2. P-29B 1 yr. 10 months (10/20/77 to present)
3. P-29C 1 yr. 7 months (1/30/78 to present)
4. P-29D 1 yr. 4 months (2/17/78 to 7/2/79)

b) Number of cycles of Operation during this interval (6a), duration of each cycle, and the operating mode.

1. P-29A: 34 cycles, 7 days, rated flow
2. P-29B: 48 cycles, 7 days, rated flow
3. P-29C: 41 cycles, 7 days, rated flow
4. P-29D: 34 cycles, 7 days, rated flow

c) Longest continuous run and status at end of run

1. P-29A: 7 days, operable
2. P-29B: 7 days, operable
3. P-29C: 7 days, operable
4. P-29D: 7 days, operable

Containment Spray Pumps

1. a) Pump Name:
Containment Spray Pump
- b) Number:
P-61 (A, B & S)
2. a) Manufacturer:
Byron Jackson Pump Division
Terminal Annex
Los Angeles, California 90054
- b) Model Number:
(Size and Type) 18C10H VMT
- c) Capacity:
3700 gpm at 305 ft. TDH
- d) Plant Application:
Containment Spray
3. Pump Dimensions:
 - a) Height: 36 ft. 5-5/8 in.
 - b) Diameter: 28 in.
4. a) Performance Tests Satisfactorily Completed on 4/5/71
- b) Routine Maintenance:
 - 1) Weekly: Lubrication checks
 - 2) Monthly: Surveillance Testing
 - 3) Biannually: Oil Samples tested
5. Operational Problems and Major Repairs
 - a) P-61A
3/19/73 MR 493-73 Tighted unions, leak stopped.
3/4/74 MR 219-74 Repaired line leaks. MR is in P-61S folder.
9/27/77 MR 1513-77 Small leak in leak-off gland area. Replaced leaking pipe union assembly with lb. safety class stainless tubing assembly using crimp fittings. System pressure tested by Ops. System leak tight.

b) P-61B

2/26/74 MR 219-74 Performed per instructions on MR. Work was done on P-61A, B and S. Leak checked pump with satisfactory results.

3/15/73 MR 462-73 Installed new internals in ball valves.

12/27/73 MR 2147-73 Tightened up pipeplugs, leak stopped.

4/4/77 MR 454-77 Removed and replaced mechanical seal cooling coil vent valve with new one. Replaced with 1/2" Whitney valve. SS 12NBSB.

4/30/77 MR 697-77 Replaced amp meter in MCB per procedure 3.5.4.

9/27/77 MR 1513-77 Small leak in gland area. Replaced leaking pipe union assembly with 1500 lb. rated safety class 1 stainless steel tubing assembly using crimp fittings. System pressure tested by Ops. System leak tight (MR is in P-61A folder).

c) P-61S

3/4/74 MR 219-74 Repaired leak-off line leaks. MR is in P-61S folder.

1/3/75 MR 1979-74 Replaced casing vent line with 1/2" stainless tubing.

6. a) Longest interval available for operation

1) P-61A 3 yrs. 6 months (3/4/74 to 9/27/77)

2) P-61B 3 yrs. 1 month (2/26/74 to 4/4/77)

3) P-61S 4 yrs. 8 months (1/3/75 to present)

b) Number of cycles of operating during this interval, duration of each cycle and operating mode.

1) P-61A 42 cycles, 15 min., recirculation

2) P-61B 37 cycles, 15 min., recirculation

3) P-61S 56 cycles, 15 min., recirculation

c) Longest continuous run and status at end of run

1) P-61A, 2 hr., operable

2) P-61B, 2 hr., operable

3) P-61S, 2 hr., operable