

PHILADELPHIA ELECTRIC COMPANY

NUCLEAR GROUP HEADQUARTERS

955-65 CHESTERBROOK BLVD.

WAYNE, PA 19087-5691

(215) 640-6000

January 23, 1991

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Limerick Generating Station, Units 1 and 2
Relief Request for the First 10-Year Pump
and Valve Inservice Testing Program

Gentlemen:

Attached for your review and approval is Relief Request No. GPRR-3 and the associated pump table changes for the Limerick Generating Station (LGS), Units 1 and 2, First 10-Year Interval Pump and Valve Inservice Testing (IST) Program. The LGS IST Program was initially submitted to the NRC for Unit 1 by letter dated June 15, 1984, and was subsequently revised by letter dated November 23, 1988, to include Unit 2 and address NRC comments. The LGS IST Program is currently under review by the NRC. Relief Request No. GPRR-3 requests relief from the ASME Boiler and Pressure Vessel (B&PV) Code Section XI, Subsection IWP requirement that IST flow measurement equipment have an accuracy of $\pm 2\%$ of full-scale, and requests NRC approval to use ultrasonic flow measurement equipment at LGS which is accurate to within $\pm 5\%$ of the reading.

This Relief Request applies to the Standby Liquid Control (SLC) pumps, Diesel Fuel Oil Transfer pumps, and Safeguard Piping Fill pumps. Philadelphia Electric Company (PECO) has been using ultrasonic flow measurement equipment with an accuracy of $\pm 5\%$ "of-reading" at LGS to trend the performance of these pumps based

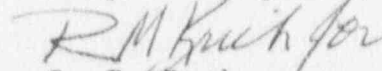
910128C171 910123
PDR ADOCK 05000352
PDR

A077
11

on our interpretation of the ASME B&PV Code, Section XI, Subsection IWP requirements. Only recently did we consider that a relief request would be necessary. We had interpreted the Code requirement of $\pm 2\%$ of full-scale accuracy with full-scale of three (3) times the reference value as being equivalent to $\pm 6\%$ "of-reading" accuracy; therefore, a flow instrument that is accurate to within $\pm 5\%$ "of-reading" meets the intent of the Code. However, during our discussions with representatives from the NRC on October 5, 1990, we learned that a relief request and NRC approval to use the proposed ultrasonic flow measurement equipment to trend pump performance was necessary.

If you have any questions, or require additional information, please do not hesitate to contact us.

Very truly yours,



G. J. Beck

Manager

Licensing Section

Nuclear Engineering and Services

Attachment

cc: T. T. Martin, Administrator, Region I, USNRC (w/ attachment)
T. J. Kenny, USNRC Senior Resident Inspector, LGS
(w/ attachment)
C. Ransom, EG&G Idaho (w/ attachment)

RELIEF REQUEST NO. GPRR-3

PUMP(S):	Safeguard Piping Fill	1AP256 1BP256	2AP256 2BP256
	Diesel Fuel Oil Transfer	1AP514	2AP514
		1BP514	2BP514
1CP514		2CP514	
1DP514		2DP514	
Standby Liquid Control	1AP208	2AP208	
	1BP208	2BP208	
	1CP208	2CP208	

TESTING REQUIREMENT(S): Pump instrumentation accuracy shall be within the limits specified in ASME Section XI Subsection IWP Articles IWP-4110 and IWP-4120.

BASIS FOR RELIEF: PECO proposes to measure flow using ultrasonic flow instrumentation that is calibrated to an accuracy within $\pm 5\%$ of-reading instead of the Code required $\pm 2\%$ of full-scale. Although this equipment does not meet the Code requirements exactly, it meets the intent of the Code by ensuring that data collected during inservice testing is measured to the degree of accuracy specified in Articles IWP-4110 and IWP-4120. Because the Code does not address digital instruments and of-reading accuracy limits, a conversion from full-scale accuracy to of-reading accuracy is necessary to compare the ultrasonic instrument accuracy to the accuracy specified in the Code. Also, because the ultrasonic flow transducers are capable of measuring flow over the entire range of the instrument (0 to 40 feet/second), a percentage of full-scale accuracy would be meaningless when measuring low flow rates associated with small diameter pipes. To ensure that the most accurate data is collected during inservice testing, the technicians are provided guidance through the vendor manuals to select the transducer that is best suited for the pipe where flow is being measured.

For instruments to be in compliance with ASME Section XI Subsection IWP, two requirements must be satisfied. The first requirement (specified in IWP-4110, Table IWP-4110-1) states that flow instrumentation must be accurate to within $\pm 2\%$ of the full-scale value; the second requirement (specified in IWP-4120) states that "the full-scale range of each instrument shall be three times the reference value or less." PECO's interpretation of these requirements allows for establishing a maximum of-reading error of $\pm 6\%$ that would be acceptable per the Code.

Alternate flow measuring instruments, such as magnetic flow meters, provide greater accuracy. However, because they are not seismically qualified they are not suitable for use in the required applications. Also, installation of the magnetic flow meters would require significant piping modifications.

PECO considers that the ultrasonic flow instruments provide the necessary accuracy for pump performance trending purposes and to detect pump degradation. Also, we consider that we meet the intent of the Code since the ultrasonic flow instrument is accurate to within $\pm 5\%$ of-reading.

ALTERNATE TESTING: Use ultrasonic flow instrumentation, which is accurate to within $\pm 5\%$ of-reading, for measuring IST flow data.

1ST TABLE - PUMPS
LIMERICK GENERATING STATION - UNIT # 1 & COMMON

PAGE NO.: 1
DATE: 06/20/90

<u>PUMP NAME OR DESCRIPTION</u>	<u>PUMP ID, NO.</u>	<u>PEID</u>	<u>COORD.</u>	<u>TES, PARAMETERS</u>	<u>RELIEF REQUEST</u>	<u>REMARKS</u>
CONTROL ROOM CHILLED WATER	0AP162	M-90 (SHT 1)	E-4	PI, D/P, V, L/P	GPRR-1, GPRR-2	ROTATING SPEED EXEMPT PER IWP-4400.
CONTROL ROOM CHILLED WATER	0BP162	M-90 (SHT 1)	F-2	PI, D/P, V, L/P	GPRR-1, GPRR-2	ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	1AP206	M-52 (SHT 2)	C-7	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	1BP206	M-52 (SHT 2)	C-3	PI, D/P, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	1CP206	M-52 (SHT 2)	C-5	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	1DP206	M-52 (SHT 2)	C-2	PI, D/P, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
DIESEL FUEL OIL TRANSFER	1AP514	M-20 (SHT 3)	C-4	PI*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400. INACCESSIBLE FOR LUBRICATION CHECK.
DIESEL FUEL OIL TRANSFER	1BP514	M-20 (SHT 4)	C-4	PI*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400. INACCESSIBLE FOR LUBRICATION CHECK.

1ST TABLE - PUMPS
LIMERICK GENERATING STATION - UNIT # 1 & COMMON

<u>PUMP NAME OR DESCRIPTION</u>	<u>PUMP ID. NO.</u>	<u>P&ID</u>	<u>COORD.</u>	<u>TEST PARAMETERS</u>	<u>RELIEF REQUEST</u>	<u>REMARKS</u>
DIESEL FUEL OIL TRANSFER	1CPS14	M-20	(SHT 5) C-4	P1*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400. INACCESSIBLE FOR LUBRICATION CHECK.
DIESEL FUEL OIL TRANSFER	1DPS14	M-20	(SHT 6) C-4	P1*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400. INACCESSIBLE FOR LUBRICATION CHECK.
EMERGENCY SERVICE WATER (ESW)	0APS4B	M-11	(SHT 1) H-8	P1**, D/P, Q, V, L/P	GPRR-2	**INLET PRESSURE VERIFIED IN ACCORDANCE WITH T.S. 4.7.1.3.A. PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
EMERGENCY SERVICE WATER (ESW)	0BPS4B	M-11	(SHT 1) H-4	P1**, D/P, Q, V, L/P	GPRR-2	**INLET PRESSURE VERIFIED IN ACCORDANCE WITH T.S. 4.7.1.3.A. PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
EMERGENCY SERVICE WATER (ESW)	0CPS4B	M-11	(SHT 1) H-6	P1**, D/P, Q, V, L/P	GPRR-2	**INLET PRESSURE VERIFIED IN ACCORDANCE WITH T.S. 4.7.1.3.A. PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
EMERGENCY SERVICE WATER (ESW)	0DPS4B	M-11	(SHT 1) H-2	P1**, D/P, Q, V, L/P	GPRR-2	**INLET PRESSURE VERIFIED IN ACCORDANCE WITH T.S. 4.7.1.3.A. PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED

1ST TABLE - PUMPS
LIMERICK GENERATING STATION - UNIT # 1 & COMMON

PAGE NO.: 3
DATE: 06/20/90

<u>PUMP NAME OR DESCRIPTION</u>	<u>PUMP ID. NO.</u>	<u>PRID</u>	<u>COORD.</u>	<u>TEST PARAMETERS</u>	<u>RELIEF REQUEST</u>	<u>REMARKS</u>
						EXEMPT PER IWP-4400.
HIGH PRESSURE COOLANT INJECTION (HPCI)	10P204	M-50 (SHT 1)	F-5	M, PI, D/P, Q, V, L/P	GPRR-1, GPRR-2	
REACTOR CORE ISOLATION COOLING (RCIC)	10P203	M-50 (SHT 1)	F-6	M, PI, D/P, Q, V, L/P	GPRR-1, GPRR-2	
RESIDUAL HEAT REMOVAL (RHR)	1AP202	M-51 (SHT 1)	B-4	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RESIDUAL HEAT REMOVAL (RHR)	1BP202	M-51 (SHT 3)	B-5	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RESIDUAL HEAT REMOVAL (RHR)	1CP202	M-51 (SHT 1)	B-3	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RESIDUAL HEAT REMOVAL (RHR)	1DP202	M-51 (SHT 3)	B-6	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RHR SERVICE WATER (RHRSW)	OAP506	M-12 (SHT 1)	E-6	PI*, D/P, Q, V, L/P	GPRR-2	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RHR SERVICE WATER (RHRSW)	OBP506	M-12 (SHT 1)	E-4	PI*, D/P, Q, V, L/P	GPRR-2	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RHR SERVICE WATER (RHRSW)	OCP506	M-12 (SHT 1)	E-5	PI*, D/P, Q, V, L/P	GPRR-2	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE

1ST TABLE - PUMPS
LIMERICK GENERATING STATION - UNIT # 1 & COMMON

PAGE NO.: 4
DATE: 06/20/90

<u>PUMP NAME OR DESCRIPTION</u>	<u>PUMP ID. NO.</u>	<u>P&ID</u>	<u>COORD.</u>	<u>TEST PARAMETERS</u>	<u>RELIEF REQUEST</u>	<u>REMARKS</u>
						EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
RHR SERVICE WATER (RHRSW)	0DP506	M-12 (SHT 1)	E-3	PI*, D/P, Q, V, L/P	GPRR-2	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
SAFEGUARD PIPING FILL	1AP256	M-52 (SHT 2)	G-2	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IWP-4400.
SAFEGUARD PIPING FILL	1BP256	M-52 (SHT 2)	F-2	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IWP-4400.
STANDBY LIQUID CONTROL (SLC)	1AP208	M-48 (SHT 1)	E-5	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IWP-4400.
STANDBY LIQUID CONTROL (SLC)	1BP208	M-48 (SHT 1)	C-5	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IWP-4400.
STANDBY LIQUID CONTROL (SLC)	1CP208	M-48 (SHT 1)	B-5	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IWP-4400.

1st TABLE - PUMPS
LINERICK GENERATING STATION UNIT # 2

PAGE NO.: 5
DATE: 06/20/90

<u>PUMP NAME OR DESCRIPTION</u>	<u>PUMP ID. NO.</u>	<u>P&ID</u>	<u>COORD.</u>	<u>TEST PARAMETERS</u>	<u>RELIEF REQUEST</u>	<u>REMARKS</u>
CORE SPRAY (CS)	ZAP206	M-52 (SHT 4)	C-7	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	ZBP206	M-52 (SHT 4)	C-7	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	ZCP206	M-52 (SHT 4)	C-5	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
CORE SPRAY (CS)	ZDP206	M-52 (SHT 4)	C-2	PI, D/P, Q, V, L/P	GPRR-2	PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400.
DIESEL FUEL OIL TRANSFER	ZAP514	M-20 (SHT 7)	C-4	PI*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400. INACCESSIBLE FOR LUBRICATION CHECK.
DIESEL FUEL OIL TRANSFER	ZBP514	M-20 (SHT 8)	C-4	PI*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400. INACCESSIBLE FOR LUBRICATION CHECK.
DIESEL FUEL OIL TRANSFER	ZCP514	M-20 (SHT 9)	C-4	PI*, D/P, Q, V	GPRR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IWP-4310. ROTATING SPEED EXEMPT PER IWP-4400. INACCESSIBLE FOR LUBRICATION CHECK.

1st TABLE - PUMPS
LIMERICK GENERATING STATION - UNIT # 2

PUMP NAME OR DESCRIPTION	PUMP ID. NO.	FIELD	COORD. PARAMETERS	TEST RELIEF REQUEST	REMARKS
DIESEL FUEL OIL TRANSFER	Z0P514	M-20 (SHT 10)	C-4 P1, D/P, Q, V	GP RR-3	*CALCULATED INLET PRESSURE (TEXT 5.1.1). PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400. INACCESSIBLE FOR LUBRICATION CHECK.
HIGH PRESSURE COOLANT INJECTION (HPCI)	Z0P204	M-56 (SHT 2)	F-5 M, P1, D/P, Q, V, L/P	GP RR-1, GP RR-2	
REACTOR CORE ISOLATION COOLING (RCIC)	Z0P203	M-50 (SHT 2)	F-6 M, P1, D/P, Q, V, L/P	GP RR-1, GP RR-2	
RESIDUAL HEAT REMOVAL (RHR)	ZAP202	M-51 (SHT 5)	B-4 P1, D/P, Q, V, L/P	GP RR-2	PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
RESIDUAL HEAT REMOVAL (RHR)	ZBP202	M-51 (SHT 7)	B-5 P1, D/P, Q, V, L/P	GP RR-2	PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
RESIDUAL HEAT REMOVAL (RHR)	ZCP202	M-51 (SHT 5)	B-3 P1, D/P, Q, V, L/P	GP RR-2	PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
RESIDUAL HEAT REMOVAL (RHR)	Z0P202	M-51 (SHT 7)	B-6 P1, D/P, Q, V, L/P	GP RR-2	PUMP BEARING TEMPERATURE EXEMPT PER IMP-4310. ROTATING SPEED EXEMPT PER IMP-4400.
SAFEGUARD PIPING FILL	ZAP256	M-52 (SHT 4)	G-2 P1, D/P, Q, V, L/P	GP RR-1, GP RR-3	ROTATING SPEED EXEMPT PER IMP-4400.
SAFEGUARD PIPING FILL	ZBP256	M-52 (SHT 4)	F-2 P1, D/P, Q, V, L/P	GP RR-1, GP RR-3	ROTATING SPEED EXEMPT PER IMP-4400.
STANDBY LIQUID CONTROL	ZAP208	M-48 (SHT 2)	E-5 P1, D/P, Q, V, L/P	GP RR-1, GP RR-3	ROTATING SPEED EXEMPT PER IMP-

1ST TABLE - PUMPS
 LIMERICK GENERATING STATION - UNIT # 2

<u>PUMP NAME OR DESCRIPTION</u>	<u>PUMP ID. NO.</u>	<u>P&ID</u>	<u>COORD.</u>	<u>TEST PARAMETERS</u>	<u>RELIEF REQUEST</u>	<u>REMARKS</u>
(SLC)				L/P		4400.
STANDBY LIQUID CONTROL (SLC)	2BP208	M-4B (SHT 2)	C-5	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IUP- 4400.
STANDBY LIQUID CONTROL (SLC)	2CP208	M-4B (SHT 2)	B-5	PI, D/P, Q, V, L/P	GPRR-1, GPRR-3	ROTATING SPEED EXEMPT PER IUP- 4400.