

DUKE POWER COMPANY
COMPLETED PROCEDURE
PROCESS RECORD(1) ID No. PT2 A060011

- (2) STATION: Oconee
- (3) PROCEDURE TITLE: Emergency Feedwater System
- (4) DATE(S) PERFORMED: 3-16-81 thru 3-19-81

(5) PROCEDURE COMPLETION VERIFICATION:

- YES ☒ N/A ☐ Check lists and/or blanks properly initialed, signed, dated or filled in N/A or N/R, as appropriate?
- YES ☒ N/A ☐ Listed enclosures attached?
- YES ☒ N/A ☐ Data sheets attached, completed, dated and signed?
- YES ☒ N/A ☐ Charts, graphs, etc. attached and properly dated, identified and marked?
- * YES ☒ N/A ☐ Acceptance criteria met?

Verified By: William Davenport DATE: 3/20/81

- (6) PROCEDURE COMPLETION APPROVED: JLB DATE: 3/20/81

(7) REMARKS:

Pump 2A MDEFDW tested per NURE 4737 Item II E.1.1. (48 hour pump endurance run.)

* Data set #8 thru #50 shows a high suction pressure because No Vacuum in Condenser.

(8) Page 1 of 121

Figure 4.1-6

Entire Page Revised
Rev 9
03/05/768111030370 811030
PDR ADDCK 05000270
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P

(5) CHANGES:

3.0 TIME REQUIRED

PUMP WILL BE RUN FOR 48 HOURS CONTINUOUSLY AS REQUIRED BY NUREG 737 ITEM II.E.11.

9.0 TEST METHOD

RUN THE EMERGENCY FEEDWATER PUMP THRU THE RECIRCULATION LINE FROM NORMAL SURGE TANK SUCTION FOR 48 HOURS. STOP THE PUMP AND ALLOW TO COOL UNTIL PUMP TEMPERATURES ARE WITHIN 20°F OF VALUES AT START OF TEST AND AT LEAST 8 HOURS HAVE ELAPSED. START PUMP AND RUN FOR 1 HOUR.

10. DATA REQUIRED

DATA AS REQUIRED BY ENCLOSURES 13.9 , 13.15.

13.0 ENCLOSURES

- 13.1 N/A FOR THIS TEST
- 13.2 N/A FOR THIS TEST
- 13.3 N/A FOR THIS TEST
- 13.4 N/A FOR THIS TEST
- 13.5 DRAWING REVISION UPDATE VERIFICATION
- 13.6 PROCEDURE FOR TESTING MOTOR
DRIVEN EMERGENCY FEEDWATER PUMPS
- 13.7 N/A FOR THIS TEST
- 13.8 N/A FOR THIS TEST
- 13.9 VIBRATION DATA SHEET FOR MDEFDWP
- 13.10 ACCEPTANCE DATA "A" MDEFDWP
- 13.11 N/A FOR THIS TEST
- 13.12 N/A FOR THIS TEST
- 13.13 N/A FOR THIS TEST
- 13.14 PSYCHROMETRIC CHART
- 13.15 DATA SHEET
- 13.16 LIMITS AND PRECAUTIONS

NOTE: 49 copies of 13.9 and 13.15 req'd.

(5) CHANGES:

13.6.5.1 OBTAIN PUMP SUCTION PRESSURE PRIOR TO STARTING PUMP AND RECORD IN SPACE BELOW.

OFF SUCTION 12.0 PSIG

BEFORE 1 HOUR RUN OFF SUCTION 3.4 PSIG

13.6.5.6 OBTAIN AND RECORD DATA SPECIFIED ON ENCLOSURE 13.9 AND 13.15 EACH HOUR THE PUMP IS IN OPERATION, AND AT THE END OF THE FINAL 1 HOUR VERIFICATION RUN. (49 ENCLOSURES REQ'D.)

13.6.5.7 OBTAIN AND RECORD BEARING TEMPERATURES USING DIGITAL TREND ON PLANT COMPUTER ON 1 HOUR INTERVALS DURING 48 HOUR RUN, DURING COOLDOWN, AND 1 HOUR VERIFICATION RUN.

13.6.5.8 RUN THE MDEFWD PUMP FOR 48 HOURS, ALLOW TO COOLDOWN FOR AT LEAST 8 HOURS PER STEP 9.0 AND RUN FOR 1 ADDITIONAL HOUR; MONITOR OPERATION PER ENCLOSURE 13.16.

LIMITS AND PRECAUTIONS

- 1.0 IF AN INADEQUATE PUMP LUBE OIL LEVEL IS OBSERVED OR ANY SIGN OF PUMP MALFUNCTION IS FOUND, NOTIFY THE SHIFT SUPERVISOR IMMEDIATELY.
- 2.0 USE CAUTION TO PREVENT PERSONAL INJURY AND/OR MECHANICAL DAMAGE WHEN USING INSTRUMENT PROBES NEAR MOVING PARTS.
- 3.0 BEARING TEMPERATURES SHOULD NOT EXCEED 170°F , IF TEMPERATURES EXCEED THIS LIMIT, HAVE PUMP STOPPED.
- 4.0 IF VIBRATION READING ON ANY POINT EXCEEDS HIGH ACCEPTANCE VALUE, CONTACT THE DUTY ENGINEER AND THE SHIFT SUPERVISOR.

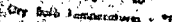
DATA SHEET NUMBER _____ TIME _____ DATE _____

PARAMETER	INSTRUMENT	READING
1. SUCTION PRESSURE	PG-450	
2. DISCHARGE PRESSURE	PG-240	
3. PUMP FLOW	FT-132	
4. COOLING WATER FLOW	FT-155	
5. BEARING TEMPERATURE:		
A. MDEFP-INBOARD A1189		
B. MDEFP-OUTBOARD A1190		
C. MDEFP MOTOR-INBOARD A1191		
D. MDEFP MOTOR-OUTBOARD A1201		
E. MDEFP MOTOR-STATOR A1262		
6. AMBIENT- DRY BULB TEMPERATURE		
WET BULB TEMPERATURE		
HUMIDITY		
7. BEARING VIBRATIONS-SEE ENCLOSURE 139		

DATA RECORDER _____

SEE DATA SHEETS 1 thru 50

Document: 1947-10-10



Land River Volume - 45448 C-100
Land Point - 2100000000 & 1000000

Land Free Vehicle - 45448 Cuts
Land Point - 45448 Cuts

PT/2/A/600/11

EMERGENCY FEEDWATER SYSTEM

ENCLOSURE 11.7

DATA SHEET

MOTOR DRIVEN PUMP

Parameter	Instrument	Calibration Date	Reading
1. Suction Pressure	(HC-450)	7-22-80	(Pump Off) 17 psig
2. Discharge Pressure	(PT-240)	11-30-81	(Pump On) 16 psig 1342 psig
3. DP (Item 2-Item 1)	(NA)	(NA)	124 psig
4. Flow	(FT-152)	1-6-81	83 gpm
5. Cooling Water Flow	(FT-155)	7-22-80	> 30 gpm

Data Taken By WS/Cmo

Date 3/16/81

EMERGENCY FEEDWATER SYSTEM

86E607

DEFINITION

ENCLOSURE 13.15

DATA SHEET

DATA SHEET NUMBER 1 TIME 1715 DATE 3-16-91

PARAMETER	INSTRUMENT	READING
1. SUCTION PRESSURE	PG-450	<u>16</u> PSIG
2. DISCHARGE PRESSURE	PG-240	<u>134.0</u> PSIG
3. PUMP FLOW	FT-152	<u>83</u> GPM
4. COOLING WATER FLOW	FT-155	<u>730</u> GPM
5. BEARING TEMPERATURE:		
A. MDEFP-INBOARD RH89		<u>81.1</u> °F
B. MDEFP-OUTBOARD AH90		<u>93.5</u> °F
C. MDEFP MOTOR-INBOARD AH91		<u>91.5</u> °F
D. MDEFP MOTOR-OUTBOARD AH61		<u>92.0</u> °F
E. MDEFP MOTOR-STATOR AH62		<u>101.6</u> °F
6. AMBIENT- DRY Bulb TEMPERATURE		<u>70</u> °F
WET Bulb TEMPERATURE		<u>50.5</u> °F
HUMIDITY		<u>20</u> %
7. BEARING VIBRATIONS - SEE ENCLOSURE 13.9		

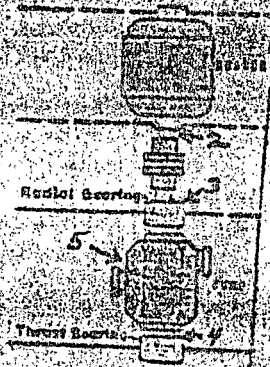
DATA RECORDER M. Swan / W. Sullivan

PUMP PERFORMANCE TEST

DATA SHEET

ENCLOSURE 13.9

"A" PUMP



Data Sheet #1 3-16-81 1715

TEST LOCATION	TUBE POSITION	VIBRATION MILLS		
		PUMP A	VEL. IN/SEC.	FREQUENCY
1	AXIAL	19	065	6541
	HORIZONTAL	24	06	4780
	VERTICAL	09	025	5311
2	HORIZONTAL	22	05	4345
	VERTICAL	10	055	10516
3	HORIZONTAL	44	30	13036
	VERTICAL	33	34	19699
4	HORIZONTAL	54	30	10622
	VERTICAL	25	32	26268
5	HORIZONTAL	40	10	4780
	VERTICAL	11	05	8691
4	AXIAL	44	34	14774

NOTE:
Frequency = $\frac{VEL}{0.13} = 19,120$

Velocity and frequency are diagnostic aids; acceptance criteria applies only to displacement.

DATA TAKER M. Davis / W. BallinInst. Serial No. 0046E-27942DATE 3-16-81Next Calibration Due 2-12-82

DATA SHEET NUMBER 48 TIME 1615 DATE 3/19/71

PARAMETER	INSTRUMENT	READING	UNIT
1. SUCTION PRESSURE	PG 450	<u>81</u>	PSI
2. DISCHARGE PRESSURE	PG 460	<u>1370</u>	PSI
3. PUMP FLOW	FT-152	<u>28</u>	GPM
4. COOLING WATER FLOW	FT-155	<u>29.9</u>	GPM
5. BEARING TEMPERATURES			
A. MDEEP-OUTBOARD AHSB		<u>89.4</u>	°F
B. MDEEP-OUTBOARD AHSB		<u>122.0</u>	°F
C. MDEEP MOTOR-INTERNAL AHSB		<u>101.8</u>	°F
D. MDEEP MOTOR-OUTBOARD AHSB		<u>101.8</u>	°F
E. MDEEP MOTOR-INTERNAL AHSB		<u>104.2</u>	°F
6. AMBIENT- DRY BULB TEMPERATURE		<u>70</u>	°F
WET BULB TEMPERATURE		<u>57</u>	°F
HUMIDITY		<u>44</u>	%
7. BEARING VIBRATIONS-SEE ENCLOSURE 139			

DATA RECORDER DT Long / SA White

ENCLOSURE 13.9



Date 5 Dec 81 1615 3:1001

TEST LOCATION	VIBRATION MILL	VIBRATION MILLS		
		TURN/A	VEL. IN/SEC.	FREQ/SEC
1	AXIAL	.20	.070	6692
	HORIZONTAL	.20	.060	5934
	VERTICAL	.10	.025	2480
2	HORIZONTAL	.20	.060	5736
	VERTICAL	.10	.025	9560
3	HORIZONTAL	.22	.040	14340
	VERTICAL	.22	.280	24934
4	HORIZONTAL	.22	.410	12076
	VERTICAL	.22	.500	26073
5	HORIZONTAL	.20	.070	5099
	VERTICAL	.02	.072	10038
4	AXIAL	.20	.060	12747

NOTE:

Frequency
VEL.
DIS. + 10,110

Velocity and frequency of vibration aids, depending on criteria called on to disassemble.

17 Long / 20 Walled
3-18-81

Inst. Serial No. 00000 22980

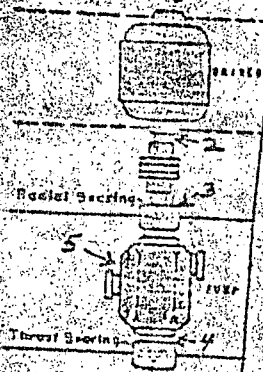
Next Calibration Due 4/30/81

MDEFP 12A
ENCLOSURE 1313
DATA SHEET

DATA SHEET NUMBER 49 TIME 1215 DATE 10-12-1968

- | PARAMETER | INSTRUMENT |
|--|------------|
| 1. Suction Pressure | PG-450 |
| 2. Discharge Pressure | PG-450 |
| 3. Pump Flow | FT-152 |
| 4. Cooling Water Flow | FT-155 |
| 5. BEARING TEMPERATURE | |
| A. MDEFP- INBOARD | AH89 |
| B. MDEFP- OUTBOARD | AH90 |
| C. MDEFP MOTOR- INBOARD | AH91 |
| D. MDEFP MOTOR- OUTBOARD | AH91 |
| E. MDEFP MOTOR- STATOR | AH92 |
| 6. AMBIENT- DRY BULB TEMPERATURE | |
| WET BULB TEMPERATURE | |
| HUMIDITY | 45% |
| 7. BEARING VIBRATIONS- SEE ENCLOSURE 139 | |

DATA RECORDER William H. Long



DATA Sheet # 49 1715 3-18-81

TEST LOCATION	PROBE POSITION	VIBRATION MILLS		
		PUMP A	VEL. IN/SEC.	FREQUENCY
1	AXIAL	.20	.079	7170
	HORIZONTAL	.30	.070	4461
	VERTICAL	.08	.035	8365
2	HORIZONTAL	.25	.080	6118
	VERTICAL	.10	.055	10516
3	HORIZONTAL	.35	.210	11472
	VERTICAL	.26	.290	20591
4	HORIZONTAL	.35	.175	9560
	VERTICAL	.20	.200	19120
5	HORIZONTAL	.30	.080	5099
	VERTICAL	.078	.040	10197
4	AXIAL	.30	.140	8923

NOTE:
Frequency
VEL. = 19,120
DIS. = 19,120

Velocity and Frequency are diagnostic aids; acceptance criteria applies only to displacement.

TAKE: Billy Whitlock / Mary Long

3/18/81

Inst. Serial No. OCPRF 27930

Next Calibration Due 4/30/81

DATA SHEET NUM 50 TIME 0845 DATE 3-19-81

PARAMETER	INSTRUMENT	READING
1. SUCTION PRESSURE	PG 340	<u>31</u> PSI
2. DISCHARGE PRESSURE	PG 340	<u>1370</u> PSI
3. PUMP FLOW	FT-152	<u>83</u> GPM
4. COOLING WATER FLOW	FT-155	<u>28</u> GPM
5. BEARING TEMPERATURES		
A. MDEFP-ENBOARD AIR87		<u>67.9</u> °F
B. MDEFP-OUTBOARD AIR90		<u>72.8</u> °F
C. MDEFP MOTOR-INDOARD AIR91		<u>78.3</u> °F
D. MDEFP MOTOR-OUTBOARD AIR61		<u>79.8</u> °F
E. MDEFP MOTOR-STATOR AIR62		<u>93.4</u> °F
6. AMBIENT - DRY BULB TEMPERATURE		<u>64</u> °F
WET BULB TEMPERATURE		<u>47</u> °F
HUMIDITY		<u>23</u> %
7. BEARING VIBRATIONS - SEE ENCLOSURE 139		

DATA RECORDER W. Schilling / C. M. Owens