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RECORD REVISION SHEET

ST. LUCIE PLANT-UNIT #1

OFF/NORMAL OPERATING
TYPE OR PROCEDURE

0030131
PROCEDURE NO.

PLANT ANNUNCIATOR SUMMARY
TITLE OF PROCEDURE

REVISION NO. 13

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1 thru 3
A-6 B-6

REVISION NO. 14

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H-6

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A-8, B-8, C-1, 7, 9

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REVISION 17

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REVISION 18

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M-5

D-8

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REVISION 19

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FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT UNIT NO. 1
OFF NORMAL OPERATING PROCEDURE NO. 0030131
REVISION NO. 19

1

1.0 Title:

PLANT ANNUNCIATOR SUMMARY

2.0 Approval:

Reviewed by Plant Nuclear Safety Committee _____ 19____
Approved by _____ Plant Manager _____ 19____

Rev. 15 Reviewed by Facility Review Group _____ APRIL 6 1981
Approved by C. M. V. [Signature] Plant Manager APRIL 10 - 1981

Rev. 19 Reviewed by FRG _____ MARCH 17 1982
Approved by C. M. V. [Signature] Plant Manager 3-22-1982

3.0 Purpose and Discussion:

This procedure provides an informative guide to operations personnel for resolving alarm conditions that are received on an annunciator panel in the St. Lucie Unit #1 control center and local annunciator panels throughout the plant.

The actions listed are intended to be a guide in response to single annunciators, and are not intended to be a substitute for good judgment based on thorough understanding of plant conditions and equipment.

In cases where many annunciators are lighted simultaneously, operators are expected to respond to the root cause of the condition and maintain the unit in a safe condition in accordance with applicable off-normal and emergency procedures. Such action will not necessarily correspond to that on this list.

4.0 Symptoms:

See attached annunciator sheets.

5.0 Instructions:

5.1 Annunciators are categorized on the following sheets by vertical rows from left to right.

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TURBINE BEARING OIL LOW PRESSURE TRIP D-2	1. (a) Bearing oil pressure low (b) Emergency bearing oil pump running 2. (a) Generator brkr. opens and a reactor turbine trip results	1. (a) Low bearing oil trip device trips turbine at setpoint 2. (a) Verify Rx/turbine trip as per OP #0030130 (b) Investigate problem (c) Start or restart emergency pump	psig↓	63LB0 at front standard	CWD 711 R4 8770- 3857 Tab 5, 13,41
TURBINE BEARING OIL LOW PRESSURE D-12	1. (a) Low bearing oil pressure 2. (a) Possible emergency bearing oil pump start	1. (a) None 2. (a) Start or restart emergency bearing oil pump as necessary (b) If pressure continues to drop prepare to shutdown unit		63LB0 at front standard	CWD 711 R4 8770- 3857 Tab 13, 41
TURBINE BEARING OIL HIGH TEMPERATURE D-22	1. (a) High oil temp. turbine bearing outlet 2. (a) Increasing bearing temperature and lube oil cooler outlet temperature	1. (a) None 2. (a) Increase cooling water flow (b) If high temperature persists, decrease load on generator to maintain temp.	125°F↑	TE-22-5 Lube oil cooler outlet	CWD 795 R2 8770- 3857 Tab 37
TURBINE BEARING OIL PUMP OVERLOAD TRIP D-32	1. (a) Turbine bearing oil pump has tripped 2. (a) Pump indicating lites extinguish (b) Decreasing bearing oil pressure (c) Emergency bearing oil pump starts on low pressure	1. (a) Pump trips 2. (a) Start emergency bearing oil pump if not running (b) Investigate bearing oil pump problem		Thermal Overload 49 MCC 1C	CWD 8770- B-327 Sh 726
TURBINE EMERGENCY BEARING OIL PUMP RUNNING D-42	1. (a) Turbine emergency bearing oil pump is running 2. (a) Turbine bearing oil pressure (b) Turbine bearing oil pump indicator lites (c) Turbine emergency bearing oil pump indicator lites	1. (a) None 2. (a) If bearing oil pump is running stop emergency pump and monitor bearing oil press. (b) If pump starts erroneously, contact Electrical Department		Start relay 72 X RTGB 101	CWD 8770- B-327 Sh 728
TURBINE EMERGENCY BEARING OIL PUMP OVERLOAD D-52	1. (a) Emergency bearing oil pump indicates off on RTGB 101 2. (a) Decreasing bearing oil pressure (b) Target D-12, RTGB 101 (c) Increasing bearing temperatures	1. (a) Pump trips (b) When bearing oil pressure drops to 6psig, turbine & reactor trip result 2. (a) Carry out OP #0030130 (b) Investigate problem		Thermal overload 49	CWD 8770-B- 327 SH 728

WINDOW TITLE

1. INDICATED CONDITION
2. CONTROL ROOM INDICATION WHICH VERIFY OR PINPOINT TROUBLE

1. AUTO ACTION
2. OPERATOR ACTION - VALID ALARM

SETPT. SENSING ELEMENT
NUMBER & LOCATION

REFERENCE

ANNUNCIATOR LIST REV 19

ANN. IN. PANEL D

VERT. COLUMN 3

TURBINE LOW VACUUM TRIP D-3	1. (a) Turbine/Rx trip - generator brkr. opens (b) MW indication ↓ 0 2. (a) Vacuum indication of less than 25" Hg	1. (a) Turbine trip (20/AST) 2. (a) Verify reactor/turbine trip as per OP #00J0180 (b) Investigate cause of low vacuum	25" Hg Vacuum	63/LV front standard	CWD 710 711 8770- 3857 (Tab 13)
TURBINE LOW VACUUM D-13	1. (a) Low condenser vacuum 2. (a) Low circ water flow (b) Gland seal steam indications (c) Air ejector indication	1. (a) None 2. (a) Increase air ejector capacity or decrease generator/load as necessary to maintain/increase vacuum (b) If vacuum still decreases, prepare for unit shutdown	26.25" Hg	63/LV front standard	CWD 711 8770- 3857 (Tab 13)
VACUUM TRIP/ TURBINE RESET LATCHES NOT DISENGAGED D-23	1. (a) Vacuum trip latch not disengaged (b) Remote latch device not disengaged 2. Check condenser vacuum	1. (a) May defeat vacuum trip (b) May defeat mechanical overspeed trip 2. (a) Check vacuum trip latch to be in correct position for present vacuum (b) Notify I & C	NA	33 (overspeed) RO 33 (other trip VTL devices)	CWD 711 8770- 3857 (Tab 13)
VACUUM BREAKER VALVE 1A OR 1B OVERLOAD TRIP D-33	1. (a) Loss of motor operating capability for 1A or 1B vacuum breaker valves 2. (a) Check valve pos. ind. lights	1. (a) None 2. (a) Reset thermal overloads on motor brkr. (b) Contact Electrical Department		Thermal overload 49 MCC 1A1	CWD 8770- 3857 Sh 754, 755
TURBINE LUBE OIL RESERVOIR HIGH-LOW LEVEL D-43	1. (a) Indicates a high or low lube oil reservoir level 2. (a) None	1. (a) None 2. (a) Verify by level indicators at reservoir (b) If low, check for leak in system; if level continues to decrease and leak cannot be found and isolated, lower load, remove unit from the line (c) If high, check valve lineup on conditioner and levels a conditioner, also possible cooling water leak in lube oil cooler	+10" From Normal Level 45.5"	LS-22-3 (71/01) Lube oil reservoir	CWD 726
SJAE LOW STEAM PRESSURE D-53	1. (a) Indicates decreasing SJAE pressure of 350# 2. (a) Decreasing meter indication of SJAE pressure	1. (a) None 2. (a) Check valve lineup (b) Increase air ejector steam (c) Use hogging jets or decrease megawatt load as necessary to maintain vacuum	170# Decr.	Contacts open on low press. SW #PS-12-31 Turb Bldg 39.5' Level C-5	8770- 079 Sh 2

WINDOW TITLE

1. INDICATED CONDITION
2. CONTROL ROOM INDICATION WHICH VERIFY OR
PINPOINT CORRECTION

1. AUTO-ACTION
2. OPERATOR ACTION - VALID ALARM

SETPT. SENSING ELEMENT
NUMBER & LOCATION REFERENCE

ANNUNCIATOR LIST REV. 19		ANNUN. LABEL D		VERT. COLUMN 4	
TURBINE EXHAUST HOOD HIGH TEMPERATURE TRIP D-6	1. (a) Exhaust hood temp. at trip point 2. (a) Check thermometer on exhaust hood (b) Observe trip	1. (a) Trips turbine (TO/AST) if OCBS are open (b) Trips 84GB if OCBS are closed and turbine is motoring (63 diam) no time delay. Also drops target on 74TT-883 2. (a) See OP 1001130	250°F ↑	26/EHT-1 26/EHT-2 Low Pressure Turbine, West Side	CMD 710, 711 885
TURBINE EXHAUST HOOD HIGH TEMPERATURE D-14	1. (a) Above normal exhaust hood temperature 2. (a) Check thermometer on exhaust hood	1. (a) None 2. (a) Exhaust hood spray valves should be full open	175°F ↑	26/EHT-1 26/EHT-2 Low Pressure Turbine, West Side	CMD 711
GLAND SEAL STEAM HIGH-LOW PRESSURE D-24	1. (a) HI or low gland seal steam pressure 2. (a) Meter indication for gland seal steam pressure	1. (a) None 2. (a) Check valve lineup and attempt to regulate gland seal steam pressure	1psig ↓ 5.5psig ↑	PIS-22-11 A,B,C,D (63/GS-3,4,5,6) By low pressure turbine glands	CMD 711
GLAND STEAM CONDENSATE RESERVOIR HIGH-LOW LEVEL D-34	1. (a) HI or low level in the gland steam condensate reservoir 2. (a) Check level indicator on reservoir	1. (a) Gland steam condensate transfer, pump will start on auto if alarm is high level (b) Low level will stop pump if running 2. (a) Have operator check tank		LS 12, 13 Lower level turbine deck West	CMD 8770-B- 327 Sh 774
GLAND STEAM CONDENSOR EXHAUST 1A OR 1B OVERLOAD TRIP D-44	1. (a) Overload on 1A or 1B gland steam condenser exhauster 2. (a) Motor running indication is lost for affected exhauster	1. (a) None 2. (a) If non-affected exhauster is not running, start exhauster (b) Investigate overload		Thermal overload 49 MCC 1A1	CMD 8770-B- 327 Sh 768
AUX. STEAM LOW HEADER PRESSURE D-54	1. (a) Low pressure on Aux. steam header 2. (a) Meter indication of Aux. steam header pressure	1. (a) None 2. (a) Check valve lineup (b) Check for possible leak	Decr. 17# Decr.	Contacts open on low press. SW #PS-16-3 Turb. Bldg. 19.5' Elev. C-5	8770-079 Sh 2
WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHEN TO VERIFY OR PHYSICALLY CORRECT	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPT.	SENSING ELEMENT NUMBER & LOCATION	REFERENCE

ANNUNCIATOR LIST REV 1		ANPUN. PANEL D		VERT. COLUMN 5	
TURBINE OVERSPEED TRIP D-5	1. Turbine trip on overspeed 2. a. Megawatts 0 b. Governor & throttle valves shut	1. Turbine trip (0/EST) 2. a. Verify turbine/ reactor trip. b. See 0/ 00 01:0	111.5% (2008 RPM)	DEH Output OS (0178 K2 & 3) or OS (0044 J16 H16)	CWD 710 Fadden
TURBINE VIBRATION D-15	1. a. Indicates vibration >600 RPM in turbine rotor b. Possible thrust bearing wear 2. Vibration readout on recorder.	1. None 2. a. If vibration trace shows an trend, reduce unit load b. If vibration is above ____ mils, trip unit. c. Check for failed bearing.	7 Mils (cutout below 600 RPM)	PD/VB (Vibration alarm)	CWD 711, 8770-3858 (TAB 32) Fadden
TURBINE ROTOR POSITION DIFF EXPANSION ECCENTRICITY D-25	1. Indicates eccentricity (bowing of rotor) below 600 RPM. 2. Eccentricity readout on recorder.	1. None 2. If eccentricity is above 3 place rotor on turning gear until eccentricity decreases.		PD/RX (Eccen- tricity) PD/RPCE (Caging expansion - rotor position) PD/DE (Diff. expansion all on back of 10)	CWD 711 8770-3858 (TAB 29, 30, 31) Fadden
SC1A/SC1B HI/HI-HI LEVEL CHANNEL BYPASSED D-35	1. One or more key operated ICG level bypass mode switches in bypass position 2. None	1. No auto action 2. Return switches to normal when plant conditions permit.			CWD 709 Fadden
REHEATER HIGH TEMPERATURE D-45	1. High temperature on inlet steam to low pressure turbine from affected reheater.	1. Later 2. Reduce heating steam inlet flow to affected moisture separators or reheater.	Later	CAB/RCV- reheater controller RTCB 101	CWD 699 Fadden
DEH FLUID HIGH TEMPERATURE D-55	1. Temperature of 120° in DEH system. 2. None except annunciator.	1. None 2. Increase cooling flow or decrease cooling medium temperature.	120°F	TS-22-60 (26/RT)	CWD 721 8770-3857 (TAB 13) Fadden

WINDOW TITLE

1. INDICATED CONDITION
2. CONTROL ROOM INDICATION WHEN VERIFY OR
PILLOWING POWER

1. AUTO ACTION
2. OPERATOR ACTION - VALID ALARM

SETPT. SENSING ELEMENT
NUMBER & LOCATION

REFERENCE

ANNUNCIATOR LIST REV 11		ANNUN. PANEL D		VERT. COLUMN 6	
TURBINE THRUST BEARING TRIP D-6	1. a. High pressure on turbine thrust bearing b. Turbine trip 2. Check indication on recorder.	1. Turbine trip 30/40 2. a. See O/P 0030100 - Turbine/Reactor trip	35 psig	63/TB front standard	CMD 710, 711 8770-3857 (TAB 13) Fadden
TURBINE THRUST BEARING D-16	1. Thrust bearing wear or failure 2. Check indication on recorder	1. None 2. a. Monitor bearing parameters closely b. Consider load reduction or unit shutdown for repair	later	63/TB Front Standard	CMD 710 8770-3857 (TAB 13)
TURBINE BEARING HIGH TEMPERATURE D-26	1. High bearing temperature 2. Increasing temperature on affected bearing on temperature recorder on RTGB 101	1. None 2. a. Decrease bearing oil temperature b. Reduce megawatt load to decrease temperature	1700F	Bearing Rec. (TR-22-1) RTGB 101	CMD 794 Fadden
DEH FLUID PUMP 1A or 1B OVERLOAD TRIP D-36	1. Running DEH pump trips 2. Standby pump starts if in the automatic mode.	1. Standby pump starts 2. a. Start standby pump if not running b. If reason for turbine trip results see O/P 0030130 c. Contact electrical department		Thermal Overload 49 MCC 1A1	CMD 8770-B-327 Sheet 720
DEH FLUID RETURN HIGH PRESSURE D-46	1. a. Indicates fluid return to reservoir press high probably due to plugged return filter.	1. None 2. a. Turbine operator select filter not in use. Clean clogged filter.	30 PSIG 4	63/PR EH Reservoir	CMD 720 8770-3857 (TAB 13)
DEH FLUID RESERVOIR LOW-LOW LEVEL D-56	1. 11.625 inches in DEH reservoir.	1. None 2. a. Turbine operator check for leaks in E.H. system and/or reservoir level problems. b. Refill reservoir as necessary.	11.625 From Bottom	LS-22-1 (71/FL1) EH Reservoir	CMD 720 8770-3857 (TAB 13)

WINDOW TITLE

1. INDICATED CONDITION
2. CONTROL ROOM INDICATION WHICH VERIFY OR DISPROVE CONDITION

1. AUTO ACTION
2. OPERATOR ACTION - VALID ALARM

SETPT. SENSING ELEMENT NUMBER & LOCATION

REFERENCE

ANNUNCIATOR LIST REV 19

ANNUN. PANEL

D

VERT. COLUMN

7

TURBINE GENERATOR LOCKOUT TRIP D-7	1. Turbine/reactor trip by generator lockout actuation. 2. Check yellow targets for cause of lockout.	1. Turbine trip (20/AST) 2. a. Verify turbine/reactor trip b. See O/P 003-130	NA	86CP, 86GB RTCB 101	CWD 711, 710
TURBINE AUTO STOP OR EMERGENCY STOP D.C. FAILURE. D-17	1. Indicates problems on one or both electrical trip circuits.	1. a. None - power lost to 20/AST and 20/ET turbine trip circuits will block certain trips 2. a. Station operator at turbine front stand with direct communications to control room for manual trip purposes, until extent of problem is resolved.	NA	74/710 74/711 RTCB 101	CWD 711, 710
TURBINE RUN BACK D-27	b. a. Decrease in Rx power to <70% c. Decrease in RM load 2. a. Rod drop target and automatic withdrawal prohibit signal - or b. Loss of heater drain pump or feed pump with steam flow feed flow.	1. Governor valves will close at 2.2%/second until condition clears. (45 second full stroke)) 2. Identify runback cause and correct or maintain output as required.	See attached	XX1 RTCB 101	CWD 712
DEH FLUID PUMP 1A or 1B FILTER HIGH DIFFERENTIAL D-37	1. a. Indicates high P on 1A or 1B DEH filters.	1. None 2. a. Start opposite pump b. Change filter on pump with high diff. pressure.	97.5 PSID	63D/MPF-1 63D/MPF-2 EH Reservoir	CWD 720, 721 8770-3857 (TAB 13)
DEH FLUID PUMP DISCHARGE HIGH-LOW PRESSURE D-47	1. a. Indicates DEH fluid pump disch has a high or low pressure 2. a. Pressure gage reading RTCB 101 high or low	1. a. With low pressure, backup pump starts. 2. a. With high pressure, manually start backup pump & secure the operating pump. b. Notify maintenance dept.	2225 1550 (PSIG)	69/HP 63/LP EH Reservoir	CWD 721 8770-3857 (TAB 13)
DEH FLUID RESERVOIR HIGH-LOW LEVEL D-57	1. a. Indicates DEH fluid reservoir has high or low level 2. a. None	1. None 2. a. Notify turbine operator investigate cause. b. If DEH has recently been secured, alarm is normal.	22" 17.25"	LS-22-1 (71/FL1) LS-22-2 (71/FL-2) EH Reservoir	CWD 720 8770

WINDOW TITLE

1. INDICATED CONDITION

2. CONTROL ROOM INDICATION WHICH VERIFY OR
PINPOINT TROUBLE

1. AUTO ACTION

2. OPERATOR ACTION - VALID ALARM

SETPT. SENSING ELEMENT
NUMBER & LOCATION

REFERENCE

ANNUNCIATOR LIST REV 19

ANNUN. PANEL D

VERT. COLUMN 8

Turbine Reactor Trip D-8	1(a) Trip blrs and generator bkr open (b) Associated targets 2 Rod bottom lights, pwr \neq 0 Megawatts \neq 0	1. Turbine trip (NO/ACT) 2. Perform O/P 003130 (Reactor Turbine Trip Procedure)	N/A	UV-1,-2,-3,-4 (Reactor Trip Switchgear Under Voltage) 2 out of 4	CMD 710,711
D-18	SYSTEM NOT IN SERVICE	SYSTEM NOT IN SERVICE			
125 V DC Bus IC Batt. Charger IC Trouble D-28	1.(a) High voltage shutdown (b) Low Voltage Alarm (c) AC Power failure (d) High voltage alarm (e) Control power off 2.(a) Battery voltage indication (b) System grid frequency	1. No auto action 2. (a) Notify electrical department if unable to clear alarm (b) Charge battery as necessary with AB battery charger.		AD-28-1	CMD 999
125 VDC Bus IC Ground D-36	1. Ground on 125 VDC Bus IC 2. None except target.	1. None 2(a) Investigate ground (b) Contact Electrical Department/		Relay 64N 125VDC Bus	CMD 8770-B-327 Sheet 999
125 V DC Bus IC Under Voltage D-48	1. Undervoltage on IC 125 Volt DC bus 2. Target	1. None 2(a) Check battery charger operation (b) Contact electrical department		Relay 27 125VDC Bus	CMD 8770-B-327 Sheet 990
DEH Fluid Reservoir Low Level Lockout-Failure D-58	1(a) Indicates low reservoir level, lockout relay failure, or DEH lockout 2	2(a) Check E.H. pumps. If not running, reset lockout relay (RTGL 101). If they continue not to run, reduce load manually as much as possible and manually trip reactor. (b) If E.H. pumps continue running with no reservoir level problems trouble shoot for lockout relay failure	$\approx 7.5"$		CMD 720
WINDOW TITLE	1. INDICATED CONDITION 2. CONTROL ROOM INDICATION WHICH VERIFY OR PERSUASIVE TROUBLE	1. AUTO ACTION 2. OPERATOR ACTION - VALID ALARM	SETPT. SENSING ELEMENT NUMBER & LOCATION	REFERENCE	