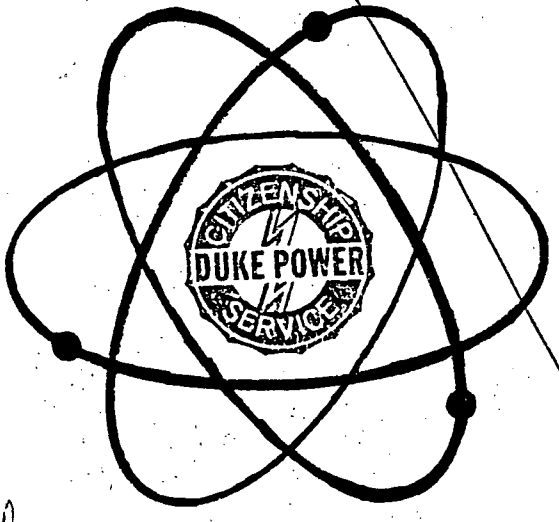
50-269 Superseded per Revs 88-01 & 88-02 to Vol's B&C of the Implementing Procedures manual dtd 4/21/88

Revised 5/11/88

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

IMPLEMENTING PROCEDURES EMERGENCY PLAN



APPROVED:

M S Tuckman

M. S. Tuckman, Station Manager

11/3/87

Date Approved

11/5/87

Effective Date

Volume B

Revision 87-5

November, 1987

VOLUME B

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Form 34731 (3-84)

CONTROL COPY

DUKE POWER COMPANY
PROCEDURE PROCESS RECORD

(1) ID No. CP/1&2/A/2002/05
Change(s) — to
2 Incorporated

PREPARATION

(2) STATION OCONEE NUCLEAR STATION

(3) PROCEDURE TITLE POST ACCIDENT CAUSTIC INJECTION INTO THE LOW PRESSURE INJECTION SYSTEM

(4) PREPARED BY John W Lucas DATE 18 SEP 86

(5) REVIEWED BY Bentley K. Jones DATE 26 Sept 86

Cross-Disciplinary Review By J Snowden 10-6-86 N/R

(6) TEMPORARY APPROVAL (If Necessary)

By _____ (SRO) Date _____

By _____ Date _____

(7) APPROVED BY Joe M Davis DATE 10/9/86

(8) MISCELLANEOUS

Reviewed/~~Approved~~ By K K Green Date 9/23/86

Reviewed/Approved By _____ Date _____

COMPLETION

(9) DATE(S) PERFORMED _____

(10) 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 _____ DATE _____

(11) PROCEDURE COMPLETION APPROVED _____ DATE _____

(12) REMARKS

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

POST ACCIDENT

CAUSTIC INJECTION INTO THE LOW

PRESSURE INJECTION SYSTEM

1.0 Discussion

1.1 Purpose

This procedure is to provide instruction for determining the amount and method of caustic addition into the LPI System during a LOCA.

1.2 Principle

Caustic is injected into the LPI System during a LOCA to neutralize the borated water used in the Reactor Building Emergency Spray System to pH 7.0 - 8.0. The neutralization of the boric acid with caustic results in the formation of the salt sodium tetraborate. This reaction of a very weak acid with a strong base is shown below:

$4H_3BO_3 + 2NaOH \rightarrow Na_2B_4O_7 + 7H_2O$

The neutralization will inhibit the generation of hydrogen gas and promote a higher partition factor for iodine.

2.0 Limits and Precautions

2.1 Adequate precautions in handling sodium hydroxide must be taken. Personnel shall wear safety goggles, face shield, pvc gloves, and a corrosive suit.

2.2 Under accident conditions, valve alignments shall NOT be made and injection shall NOT begin without prior authorization from the Technical Support Center (TSC)!

2.3 Under accident conditions, do NOT attempt any phase of this procedure without Health Physics approval and coverage!

2.4 Refer to CP/0/B/2007/01A for action to be taken in the event of a caustic spill.

3.0 Procedure

3.1 Take the following action prior to switchover to recirculation of core cooling.

3.1.1 Ensure valve line-up by completing Enclosure 5.1.

3.1.2 Pump 100 gallons of 35% NaOH into caustic tank using electric drum pump.

3.2 When switchover to recirculation of core cooling has been made, the TSC will authorize Chemistry to begin caustic addition.

3.2.1 Upon authorization, start caustic pump at maximum flow setting. The caustic pump switch is located on the chemical addition control panel. The maximum pump capacity is approximately 2 gpm.

3.2.2 The mix tank is in recirc. Check visually for recirc to ensure pump is pumping.

3.2.3 If Unit 1 is affected, make valve alignment per Enclosure 5.2 to allow Caustic Injection into the LPI on Unit 1.

3.2.4 If Unit 2 is affected make valve alignment per Enclosure 5.3 to allow caustic injection into the LPI on Unit 2.

3.2.5 Pump caustic until the caustic level reaches the bottom of the gauge glass. Turn caustic pump off. Approximately 50 minutes will be required to pump one mix tank.

3.2.6 Supervisor or his designee shall calculate the amount of caustic required for the neutralization of the borated water added to the core.

3.2.7 The calculated amount of NaOH will probably exceed 100 gals. Therefore, several additions will be required. Repeat the following for each addition until approximately 50% of the required amount of caustic has been added. Record data for each mix on Enclosure 5.4.

3.2.7.1 Close CA-34

3.2.7.2 Close CA-35

3.2.7.3 Pump 100 gal. 35% NaOH to caustic tank

3.2.7.4 Open CA-34

3.2.7.5 Open CA-35

3.2.7.6 Start pump and continue pumping until caustic level reaches bottom of gauge glass.

3.2.7.7 Turn pump off.

3.2.8 Allow LPI recirc time of 1-2 hours then when authorized by the TSC have sample taken to determine pH of reactor coolant. pH _____ Time _____

3.2.9 From results of sample, Supervisor or his designee shall determine the required amount of NaOH needed to complete the neutralization to pH of 7.0 - 8.0.

3.2.10 Repeat 3.2.7.1 through 3.2.7.7 until all necessary caustic has been injected. Allow LPI recirc time of 1-2 hours and request another sample for pH. pH _____ Time _____

3.2.11 If pH > 7.0, result will be reported to Emergency Coordinator and system should be returned to normal at the discretion of the Station Chemist (per Enclosure 5.1).

3.2.12 If pH < 7.0, Station Chemist will authorize additional injections as necessary.

4.0 References

4.1 Dwg. No. OFD-110A-1.7 Chemical Addition and Sampling System

4.2 Dwg. No. OFD-102A1,1 and OFD-102A2,1 Low Pressure Injection System, Borated Water Supply and LPI Pump Suction.

4.3 ONS Technical Specifications 6.4.1.i

5.0 Enclosures

5.1 Return to Normal Valve Lineup for Units 1&2 Caustic Injection System

5.2 Valve Alignment for Caustic Injection on Unit 1

5.3 Valve Alignment for Caustic Injection on Unit 2

5.4 Caustic Mixing and Injection Record

5.5 Piping Diagram of Caustic Injection System for Units 1 and 2. For Information Only.

CP/1&2/A/2002/05
ENCLOSURE 5.1
RETURN TO NORMAL VALVE LINEUP FOR UNITS 1&2
CAUSTIC INJECTION SYSTEM

Valve No.	Valve Name	Normal Position	Initial Date/Time
DW-120(Chm)	Caustic Mix Tank Fill	Closed	_____
LWD-267	Caustic Tank Outlet Drain	Closed	_____
CA-33	Caustic Mix Tank Sample	Closed	_____
CA-34	Caustic Mix Tank Outlet	Open	_____
CA-35	Caustic Pump Suction	Open	_____
CA-36	Caustic Pump Suction Tell Tale	Closed	_____
CA-37	Caustic Header to Waste Evap. Feed Tank	Closed	_____
CA-103	Caustic Recirc Line	Open	_____
CA-112	Caustic Pump Pressure Gauge Isolation	Open	_____
CA-96	Caustic Recirc Block	Open	_____
CA-97	Caustic Recirc Block	Open	_____
CA-39	Caustic to Unit #1 LP Block (OPS)	Closed	_____
CA-62	Caustic to Unit #1 LP Block (OPS)	Closed	_____
CA-58	¼" Tell Tale between CA-39 & CA-62, Unit #1	Closed	_____
LP-51	Caustic Addition to #1 LPI (OPS)	Open	_____
CA-98	Caustic to Unit #2 LP Block (OPS)	Closed	_____
CA-63	Caustic to Unit #2 LP Block (OPS)	Closed	_____
2CA-58	¼" Tell Tale between CA-98 & CA-63, Unit #2	Closed	_____
2LP-51	Caustic Addition to #2 LPI (OPS)	Open	_____

CP/1&2/A/2002/05
ENCLOSURE 5.2
VALVE ALIGNMENT FOR CAUSTIC INJECTION ON UNIT 1

Valve No.	Valve Name		Position	Initial Date/Time
CA-98	Caustic to Unit #2 LP Block	(OPS)	Closed	_____
CA-63	Caustic to Unit #2 LP Block	(OPS)	Closed	_____
CA-58	¼" Tell Tale between CA-39 & CA-62		Closed	_____
CA-103	Caustic Recirc Block		Closed	_____
CA-97	Caustic Recirc Block		Closed	_____
CA-96	Caustic Recirc Block		Closed	_____
CA-39	Caustic to Unit #1 LP Block	(OPS)	Open	_____
CA-62	Caustic to Unit #1 LP Block	(OPS)	Open	_____
LP-51	Caustic Addition	(OPS)	Open	_____

Working Copy has been compared to Control Copy and is appropriate.

By _____ Date _____

CP/1&2/A/2002/05
ENCLOSURE 5.3
VALVE ALIGNMENT FOR CAUSTIC INJECTION ON UNIT 2

Valve No.	Valve Name		Position	Initial Date/Time
CA-39	Caustic to Unit #1 LP Block	(OPS)	Closed	_____
CA-62	Caustic to Unit #1 LP Block	(OPS)	Closed	_____
2CA-58	¼" Tell Tale between CA-98 & CA-63		Closed	_____
CA-103	Caustic Recirc Block		Closed	_____
CA-97	Caustic Recirc Block		Closed	_____
CA-96	Caustic Recirc Block		Closed	_____
CA-98	Caustic to Unit #2 LP Block	(OPS)	Open	_____
CA-63	Caustic to Unit #2 LP Block	(OPS)	Open	_____
2LP-51	Caustic Addition	(OPS)	Open	_____

Working Copy has been compared to Control Copy and is appropriate.

By _____ Date _____

CP/1&2/A/2002/05
ENCLOSURE 5.4
CAUSTIC MIXING AND INJECTION RECORD

Mix No./Gal. NaOH	Date/Time of Mixing	Date/Time of Injection

CP/1&2/A/2002/05
ENCLOSURE 5.5
Piping Diagram of Caustic Injection System
For Units 1 & 2
(for information only)