



**Duke Energy Corporation**

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W. R. McCollum, Jr.  
Vice President

February 22, 2001

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555

Subject: Oconee Nuclear Station  
Docket Nos. 50-269, -270, -287  
Emergency Plan Implementing Procedures Manual  
Volume B, Revision 2001-03

Please find attached for your use and review copies of the revision to the Oconee Nuclear Station Emergency Plan:

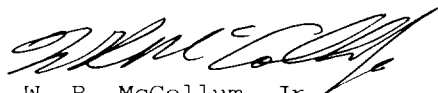
Volume B Revision 2001-03 February 2001

This revision is being submitted in accordance with 10 CFR 50-54(q) and does not decrease the effectiveness of the Emergency Plan or the Emergency Plan Implementing Procedures.

Any questions or concerns pertaining to this revision please call Mike Thorne, Emergency Planning Manager at 864-885-3210.

By copy of this letter, two copies of this revision are being provided to the NRC, Region II, Atlanta, Georgia.

Very truly yours,



W. R. McCollum, Jr.  
VP, Oconee Nuclear Site

xc: (w/2 copies of attachments)  
Mr. Luis Reyes,  
Regional Administrator, Region II  
U. S. Nuclear Regulatory Commission  
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w/copy of attachments  
Mr. Steven Baggett  
Rockville, Maryland

(w/o Attachments, Oconee Nuclear Station)  
NRC Resident Inspector  
M. D. Thorne, Manager, Emergency Planning

A045

February 22, 2001

OCONEE NUCLEAR SITE

SUBJECT: Emergency Plan Implementing Procedures  
Volume B, Revision 2001-03

Please make the following changes to the Emergency Plan, Volume B  
by following these instructions.

REMOVE

Cover Sheet Rev. 2001-02

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CP/1&2/A/2002/005 - 05/23/00

CP/3/A/2002/005 - 05/23/00

Chemistry Manual 5.1 - 12/05/00

ADD

Cover Sheet Rev. 2001-03

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CP/1&2/A/2002/005, - 02/14/01

CP/3/A/2002/005 - 02/14/01

Chemistry Manual 5.1 - 02/22/01

**DUKE POWER**

**EMERGENCY PLAN  
IMPLEMENTING PROCEDURES  
VOLUME B**



**APPROVED:**

**W. W. Foster, Manager  
Safety Assurance**

02/22/2001

**Date Approved**

02/22/2001

**Effective Date**

**VOLUME B  
REVISION 2001-03  
February, 2001**

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Chemistry Lab LM-O-P919	Boron Analysis by Mettler DL 58 Boron Titration – (10/26/99)
CP/1/A/2002/004C	Operating Procedure for the Post Accident Liquid Sampling System (PALSS) - (12/16/99)
CP/1&2/A/2002/005	Post Accident Caustic Injection into the Low Pressure Injection System - (02/14/01)
CP/2/A/2002/004C	Operating Procedure for the Post Accident Liquid Sampling System (PALSS) - (12/16/99)
CP/3/A/2002/004C	Operation Procedure for Operation of the Post-Accident Liquid Sampling System (PALSS) - (12/16/99)
CP/3/A/2002/005	Post Accident Caustic Injection into the Low Pressure Injection System - (02/14/00)
HP/0/B/1009/009	Procedure for Determining The Inplant Airborne Radioiodine Concentration During Accident Conditions - (12/03/97)
HP/0/B/1009/012	Distribution of Potassium Iodide Tablets In The Event Of A Radioiodine Release - (01/09/01)
HP/0/B/1009/015	Procedure for Sampling and Quantifying High Level Gaseous Radioiodine And Particulate Radioactivity - (06/16/99)
HP/0/B/1009/016	Procedure for Emergency Decontamination of Personnel and Vehicles On-Site And From Off-Site Remote Assembly Area - (12/29/97)
HP/1/A/1009/017	Operating Procedure For Post-Accident Containment Air Sampling System - (09/13/00)
HP/2/A/1009/017	Operating Procedure For Post-Accident Containment Air Sampling System - (09/13/00)
HP/3/A/1009/017	Operating Procedure For Post-Accident Containment Air Sampling System - (09/13/00)
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Safety Services Procedure 2.1	Safety Services Emergency Response Procedure 2.1 - (03/14/00)

Revision 2001-03  
February, 2001

Duke Power Company  
**PROCEDURE PROCESS RECORD**

(1) ID No. CP/1&2/A/2002/005Revision No 15**Continuous Use****REPARATION****INFORMATION ONLY**(2) Station Seabrook Nuclear Station(3) Procedure Title Post Accident Caustic Injection Into the Low Pressure Injection System(4) Prepared By Don Roach Date 2-12-01

(5) Requires 10CFR50.59 evaluation?

☐ Yes (New procedure or revision with major changes)☒ No (Revision with minor changes)☐ No (To incorporate previously approved changes)(6) Reviewed By Deann Cantrell (QR) Date 2/13/01Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA YOC Date \_\_\_\_\_Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA YOC Date \_\_\_\_\_

(7) Additional Reviews

QA Review By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (SRO/QR) Date \_\_\_\_\_

By Bryan J. Dennis (QR) Date 2/14/01(9) Approved By Bryan J. Dennis Date 2/14/01**PERFORMANCE** (Compare with control copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?☐ Yes ☐ NA Listed enclosures attached?☐ Yes ☐ NA Data sheets attached, completed, dated, and signed?☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(4) Remarks (Attach additional pages, if necessary)

## Post Accident Caustic Injection into the Low Pressure Injection System

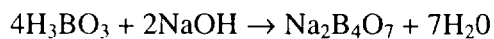
### 1. Purpose

**NOTE:** A control copy of this procedure shall be routed to the Emergency Preparedness Team within 3 working days after any approved changes.

- 1.1 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:



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

### 2. Limits and Precautions

- 2.1 The following safety equipment shall be worn when connecting/disconnecting caustic tote bins:
- 2.1.1 Chemical goggles
  - 2.1.2 Face shield
  - 2.1.3 Corrosive resistant suit, neoprene or chemrel
  - 2.1.4 Corrosive resistant boots, neoprene or PVC
  - 2.1.5 Corrosive resistant gloves, neoprene or PVC
- 2.2 Verify eyewash station and safety shower are operable prior to connecting/disconnecting caustic tote bins.
- 2.3 Chemical hazards shall be known prior to use. For additional information refer to the MSDS sheets.
- 2.4 Under accident conditions, valve alignments shall **NOT** be made and injection shall **NOT** begin without prior authorization from the Operations Emergency Coordinator **OR** the Technical Support Center (TSC)/Operational Support Center (OSC)!

**NOTE:** An initial caustic add of 15 inches will neutralize an RCS inventory of 80,000 gallons with a boron concentration of 1800 ppm. This is a conservative initial add to allow immediate response to a large break LOCA.

- 2.5 An initial caustic add of 15 inches can be made without performing CSM 5.2, Enclosure 6.3 (Caustic Addition Calculations).
- 2.6 In the event of a caustic spill, call 4911.
- 2.7 ITS 5.4.1.a and SLC 16.13.7 require that pH be measured **AND** that the addition of caustic to Reactor Coolant commence within 30 minutes **AFTER** switchover to Recirculation Mode of Core Cooling to adjust the pH to a range of 7.0 to 8.0 **WITHIN** 24 hours.

During recirculation mode, long-term core cooling is provided by injection of water from the Reactor Building Emergency Sump to the core by the Low Pressure Injection (LPI) pumps (1 LP-19 & 20 or 2 LP-19 & 20 are open). Switchover to recirculation mode is accomplished with minimal level in the BWST.

- 2.8 The following safety and caustic addition equipment is stored in the brown storage container located in the Auxiliary Building, Unit 1 & 2 Chemical Addition Area.

Goggles	Boots	Tape Measure
Face shield	Stainless Steel Flex	Flashlight
Corrosive suit	Hose	Bung Wrench
Gloves	Tank to valve adapter	

- 2.9 Keys to the brown storage container are stored with the caustic addition procedures in the OSC Chemistry Emergency Procedure Files and in the fireproof cabinet located in the Primary Chemistry lab office. All personnel in Primary Chemistry and Radwaste have also been issued individual keys.
- 2.10 Steps preceded with "□" (immediately to the left of the step) are check off steps, and should be checked off as completed.
- 2.11 Steps preceded by bullets (•) may be performed in any sequence. Numbered steps may only be performed out of sequence **IF** reviewed and approved by a Primary Staff person and one other individual who are familiar with this procedure (see NSD 704).



- 2.12 Independent Verification (designated by two sign-off steps) is a documented check by a second individual which helps to ensure the correct condition or position of plant components. Separate Verification (designated by SV) ensures individuals act separately and independently. Double Verification (designated by DV) ensures the “doer” and “verifier” independently decide that an action is correct prior to the “doer” performing the action. The “verifier” shall use a “hands-on” approach to verify the action(s) of the “doer”.
- 2.13 Power to the caustic addition pump is provided through 1XL located near the LPI hatch area. For power supply diagram, see Enclosure 5.6.

### 3. Procedure

- 3.1 Upon notification from Operations Emergency Coordinator **OR** TSC / OSC take the following actions to align the caustic addition system to the appropriate unit:

<b>NOTE:</b> The following steps may be performed simultaneously to conserve time.
--

- ☐ Mark the current liquid level directly on the translucent tote bin container.
- ☐ Measure down from the liquid level mark 14 inches and mark this level directly on the tote bin.
- ☐ **IF** necessary, move the tote bin into position and connect the bin discharge to the Swagelock quick-connect fitting upstream of valve CA-36 (Caustic Pump Suction Tell Tale) (Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783) as follows:
  - ☐ Remove dust cover from swagelock fitting on tote bin.
  - ☐ Remove dust cover from swagelock fitting at CA-36 (Caustic Pump Suction Tell Tale) (Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783).
  - ☐ Connect stainless steel flex hose to these fittings.
- ☐ 3.1.1 For Unit 1 **only**, make valve alignments per Enclosure 5.1 to allow caustic injection into the Low Pressure Injection (LPI) pump suction on Unit 1.
- ☐ 3.1.2 For Unit 2 **only**, make valve alignments per Enclosure 5.2 to allow caustic injection into the Low Pressure Injection (LPI) pump suction on Unit 2.
- ☐ 3.1.3 Vent the caustic tote bin by removing the tote bin fill cap.
- ☐ 3.1.4 Open the caustic tote bin outlet valve.

- ☐ 3.1.5 Notify Operations **OR** the OSC (if activated) that valve alignments for caustic injection are complete and ready to be initiated.
- Operations or OSC Notified \_\_\_\_\_ Date/Time \_\_\_\_\_ / \_\_\_\_\_
- ☐ 3.1.6 Start the caustic addition pump at maximum flow setting. The caustic pump switch is located on the Chemical Addition Control Panel. The maximum pump capacity is approximately 2 gallons per minute.

**CAUTION:** The caustic pump has an average pump rate of 1.2 gallons per minute. To pump the initial setting of 15 inches will require 1.5 hours. A calculated volume should be initiated and completed within 30 minutes on turning the caustic pump on.

- ☐ 3.1.7 Calculate the total amount of caustic (in gallons) to be added for the neutralization of the borated water added to the system by using CSM 5.2.
- ☐ 3.1.8 Convert gallons from Step 3.1.7 to inches (in the 350 gallon tote bin) by dividing the number of gallons to be added by 8.1. Record the values below:
- Gallons to be added \_\_\_\_\_ Inches to be added from the tote bin \_\_\_\_\_
- ☐ 3.1.9 Mark the calculated liquid level directly on the tote bin by measuring down from the original "current liquid level" mark made in Step 3.1.

**NOTE:** Use low dose waiting area as possible during addition

- ☐ 3.1.10 **WHEN** the caustic tote bin level reaches the desired level (as marked in Step 3.1) **OR WHEN** the caustic tote bin is empty, **STOP** caustic addition pump using the switch located on the Chemical Addition Control Panel.
- ☐ 3.1.11 Close tote bin outlet valve.
- ☐ 3.1.12 Close CA-36 (Caustic Pump Suction Tell Tale) (Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783).
- ☐ 3.1.13 Record time and volume added on Enclosure 5.5.
- ☐ 3.1.14 **IF** necessary, replace the caustic tote bin as follows:
- ☐ 3.1.14.1 Replace tote bin fill cap.
- ☐ 3.1.14.2 Disconnect empty tote bin from swagelock fitting on stainless flex hose.

- ☐ 3.1.14.3 **IF** necessary, move tote bins and remove dust cover from swagelock fitting on new tote bin.
- ☐ 3.1.14.4 Connect stainless flex hose to the new tote bin.
- ☐ 3.1.14.5 **IF** pumping is to continue, mark the tote bin per Section 3.1 for the amount to be added from the new tote bin and go to Step 3.1.3.
- ☐ 3.1.15 Notify OSC that caustic addition to the LPI is complete and no further additions are in progress at this time.
- OSC Notified \_\_\_\_\_ Date/Time \_\_\_\_\_ / \_\_\_\_\_
- ☐ 3.1.16 After caustic addition is complete, allow LPI recirculation time of at least 2 hours.
- ☐ 3.1.17 **WHEN** authorized by the TSC/OSC, have sample taken (per appropriate procedure) to determine the resultant pH of the reactor coolant.
- ☐ 3.1.18 **IF** pH is < 7.0:
- Calculate (refer to Chemistry Section Manual Section 5.2) the amount of caustic (in gallons) to be added to complete the neutralization of the borated water added to the system.
  - Convert this number to inches (in the 350 gallon tote bin) by dividing the number of gallons to be added by 8.1 gallons/inch.
  - Record the values below:  
Gallons to be added: \_\_\_\_\_ Inches to be added from tote bin: \_\_\_\_\_
- ☐ 3.1.19 **IF** pH is > 7.0, go to Step 3.1.23.
- ☐ 3.1.20 Mark the current liquid level directly on the translucent tote bin container.
- ☐ 3.1.21 Measure down from this mark the number of inches calculated in Step 3.1.18 above. Mark this level directly on the tote bin.
- ☐ 3.1.22 Repeat Steps 3.1.1 through 3.1.19 until all necessary caustic (as determined by TSC/OSC) has been added.

- ☐ 3.1.23 After all necessary caustic has been added and upon authorization from the TSC/OSC, return the system to normal as follows:
  - ☐ 3.1.23.1 Replace tote bin fill cap.
  - ☐ 3.1.23.2 Disconnect empty tote bin from swagelock fitting on stainless flex hose.
  - ☐ 3.1.23.3 For Unit 1 **only**, make alignments per Enclosure 5.3 to return valves to normal position.
  - ☐ 3.1.23.4 For Unit 2 **only**, make alignments per Enclosure 5.3 to return valves to normal position.

#### **4. References**

- 4.1 Dwg. No. OFD-110A-1.8 Chemical Addition System (Primary Side Chemical Addition)
- 4.2 Dwg. No. OFD-102A-1.1 and OFD-102A-2.1 Low Pressure Injection System, Borated Water Supply and LPI Pump Suction.
- 4.3 CSM 5.2
- 4.4 ITS 5.4.1.a
- 4.5 SLC 16.13.7

#### **5. Enclosures**

- 5.1 Valve Alignment for Caustic Injection on Unit 1
- 5.2 Valve Alignment for Caustic Injection on Unit 2
- 5.3 Normal Valve Alignment for Caustic Injection System on Unit 1
- 5.4 Normal Valve Alignment for Caustic Injection System on Unit 2
- 5.5 Caustic Mixing and Injection Record
- 5.6 Unit 1&2 Caustic Pump Power Supplies

**Enclosure 5.1**  
**Valve Alignment for**  
**Caustic Injection on Unit 1**

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Date \_\_\_\_\_

<i>DV</i>	<i>Init</i>	<i>Position</i>	<i>Valve No.</i>	<i>Valve Name</i>	<i>Location</i>
	_____	Closed	2CA-98	Caustic to Unit #2 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
	_____	Closed	1CA-58	Caustic to U1 LPI Suct Tell Tale (Chm)	Unit 1&2 LPI Hatch Area, AB, Elev 771, Col. T-72
	_____	Open	1CA-39	Caustic to Unit #1 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm 118, Elev 771, Col. T-72
	_____	Open	1CA-62	Caustic to Unit #1 LPI Block (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-72
_____	_____	Open	1LP-51	LPI Sample Recirc Isolation (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 061, Elev 771, Col. T-71
	_____	Open	CA-103	Caustic Recirc Line and Press Gauge Block	Downstream of 1&2 Caustic Pump and CA-37, Elev 783, Col. Q-67
	_____	Closed	CA-96	Caustic Recirc Block	Recirc Line tapping off between CA-103 & CA-112 returning to Caustic Mix Tank, Elev 783
	_____	Closed	CA-35	Caustic Pump Suction	Next valve after CA-34 Tank and upstream of Caustic Pump, Elev 783
	_____	Closed	CA-37	Caustic Header to Waste Evap. Feed Tank Block	AB Hallway, Elev 783, near Col. P-74, 6 ft. overhead
	_____	Open	CA-112	Caustic Pump Press Gauge Isol	First valve downstream of PG-27 (Pressure Gauge) behind Caustic Mix Tank on West Wall, Elev 783
	_____	Open	CA-36	Caustic Pump Suction Tell Tale	Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783

**Enclosure 5.2**  
**Valve Alignment for**  
**Caustic Injection System on Unit 2**

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Date \_\_\_\_\_

<i>DV</i>	<i>Init</i>	<i>Position</i>	<i>Valve No.</i>	<i>Valve Name</i>	<i>Location</i>
	_____	Closed	1CA-39	Caustic to Unit #1 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm 118, Elev 771, Col. T-72
	_____	Closed	2CA-58	Caustic to #2 LPI Pump Suct Tell Tale (Chm)	Unit 1&2 LPI Hatch Area, AB Rm 119, Elev 771, Col. T-74
		Open	2CA-98	Caustic to Unit #2 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
		Open	2CA-63	Caustic to Unit #2 LPI Block (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
_____	_____	Open	2LP-51	LPI Sample Recirc Isolation (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 063, Elev 771, Col. T-71
	_____	Open	CA-103	Caustic Recirc Line and Press Gauge Block	Downstream of 1&2 Caustic Pump and CA-37, Elev 783, Col. Q-67
	_____	Closed	CA-96	Caustic Recirc Block	Recirc Line tapping off between CA-103 & CA-112 returning to Caustic Mix Tank, Elev 783
	_____	Closed	CA-35	Caustic Pump Suction	Next valve after CA-34 Tank and upstream of Caustic Pump, Elev 783
		Closed	CA-37	Caustic Header to Waste Evap. Feed Tank Block	AB Hallway, Elev 783, near Col. P-74, 6 ft. overhead
	_____	Open	CA-112	Caustic Pump Press Gauge Isol	First valve downstream of PG-27 (Pressure Gauge) behind Caustic Mix Tank on West Wall, Elev 783
	_____	Open	CA-36	Caustic Pump Suction Tell Tale	Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783

### Enclosure 5.3

#### Normal Valve Alignment for Caustic Injection System on Unit 1

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Date \_\_\_\_\_

<i>DV</i>	<i>Init</i>	<i>Position</i>	<i>Valve No.</i>	<i>Valve Name</i>	<i>Location</i>
	_____	Closed	2CA-98	Caustic to Unit #2 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
	_____	Closed	2CA-63	Caustic to Unit #2 LPI Block (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
	_____	Closed	1CA-58	Caustic to U1 LPI Suct Tell Tale (Chm)	Unit 1&2 LPI Hatch Area, AB, Elev 771, Col. T-72
	_____	Closed	1CA-39	Caustic to Unit #1 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm 118, Elev 771, Col. T-72
	_____	Closed	1CA-62	Caustic to Unit #1 LPI Block (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-72
_____	_____	Closed	1LP-51	LPI Sample Recirc Isolation (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 061, Elev 771, Col. T-71
	_____	Open	CA-103	Caustic Recirc Line and Press Gauge Block	Downstream of 1&2 Caustic Pump and CA-37, Elev 783, Col. Q-67
	_____	Open	CA-97	Caustic Recirc Block	Downstream of CA-96 and upstream of DW-120 on Caustic Mix Tank Recirc Line, Elev 783
	_____	Open	CA-96	Caustic Recirc Block	Recirc Line tapping off between CA-103 & CA-112 returning to Caustic Mix Tank, Elev 783
	_____	Closed	LWD-267	Caustic Tank Outlet Drain	Base of Caustic Mix Tank West Side, Elev 783
	_____	Closed	CA-34	Caustic Mix Tank Outlet	First valve from bottom of Caustic Mix Tank and upstream of Caustic Pump, Elev 783 Col. Q-68
	_____	Closed	CA-35	Caustic Pump Suction	Next valve after CA-34 Tank and upstream of Caustic Pump, Elev 783
	_____	Closed	CA-37	Caustic Header to Waste Evap. Feed Tank Block	AB Hallway, Elev 783, near Col. P-74, 6 ft. overhead
	_____	Open	CA-112	Caustic Pump Press Gauge Isol	First valve downstream of PG-27 (Pressure Gauge) behind Caustic Mix Tank on West Wall, Elev 783
	_____	Closed	CA-36	Caustic Pump Suction Tell Tale	Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783

# Enclosure 5.4

## Normal Valve Alignment for Caustic Injection System on Unit 2

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Date \_\_\_\_\_

<i>DV</i>	<i>Init</i>	<i>Position</i>	<i>Valve No.</i>	<i>Valve Name</i>	<i>Location</i>
	_____	Closed	1CA-39	Caustic to Unit #1 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm 118, Elev 771, Col. T-72
	_____	Closed	1CA-62	Caustic to Unit #1 LPI Block (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-72
	_____	Closed	2CA-58	Caustic to #2 LPI Pump Suct Tell Tale (Chm)	Unit 1&2 LPI Hatch Area, AB Rm 119, Elev 771, Col. T-74
	_____	Closed	2CA-98	Caustic to Unit #2 LPI Block (Chm)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
	_____	Closed	2CA-63	Caustic to Unit #2 LPI Block (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 119, Elev 771, Col. T-74
_____	_____	Closed	2LP-51	LPI Sample Recirc Isolation (Ops)	Unit 1&2 LPI Hatch Area, AB Rm. 063, Elev 771, Col. T-71
	_____	Open	CA-103	Caustic Recirc Line and Press Gauge Block	Downstream of 1&2 Caustic Pump and CA-37, Elev 783, Col. Q-67
		Open	CA-97	Caustic Recirc Block	Downstream of CA-96 and upstream of DW-120 on Caustic Mix Tank Recirc Line, Elev 783
	_____	Open	CA-96	Caustic Recirc Block	Recirc Line tapping off between CA-103 & CA-112 returning to Caustic Mix Tank, Elev 783
	_____	Closed	LWD-267	Caustic Tank Outlet Drain	Base of Caustic Mix Tank West Side, Elev 783
	_____	Closed	CA-34	Caustic Mix Tank Outlet	First valve from bottom of Caustic Mix Tank and upstream of Caustic Pump, Elev 783 Col. Q-68
	_____	Closed	CA-35	Caustic Pump Suction	Next valve after CA-34 Tank and upstream of Caustic Pump, Elev 783
	_____	Closed	CA-37	Caustic Header to Waste Evap. Feed Tank Block	AB Hallway, Elev 783, near Col. P-74, 6 ft. overhead
	_____	Open	CA-112	Caustic Pump Press Gauge Isol	First valve downstream of PG-27 (Pressure Gauge) behind Caustic Mix Tank on West Wall, Elev 783
	_____	Closed	CA-36	Caustic Pump Suction Tell Tale	Bottom of 1&2 Caustic Mix Tank downstream of CA-35, Elev 783



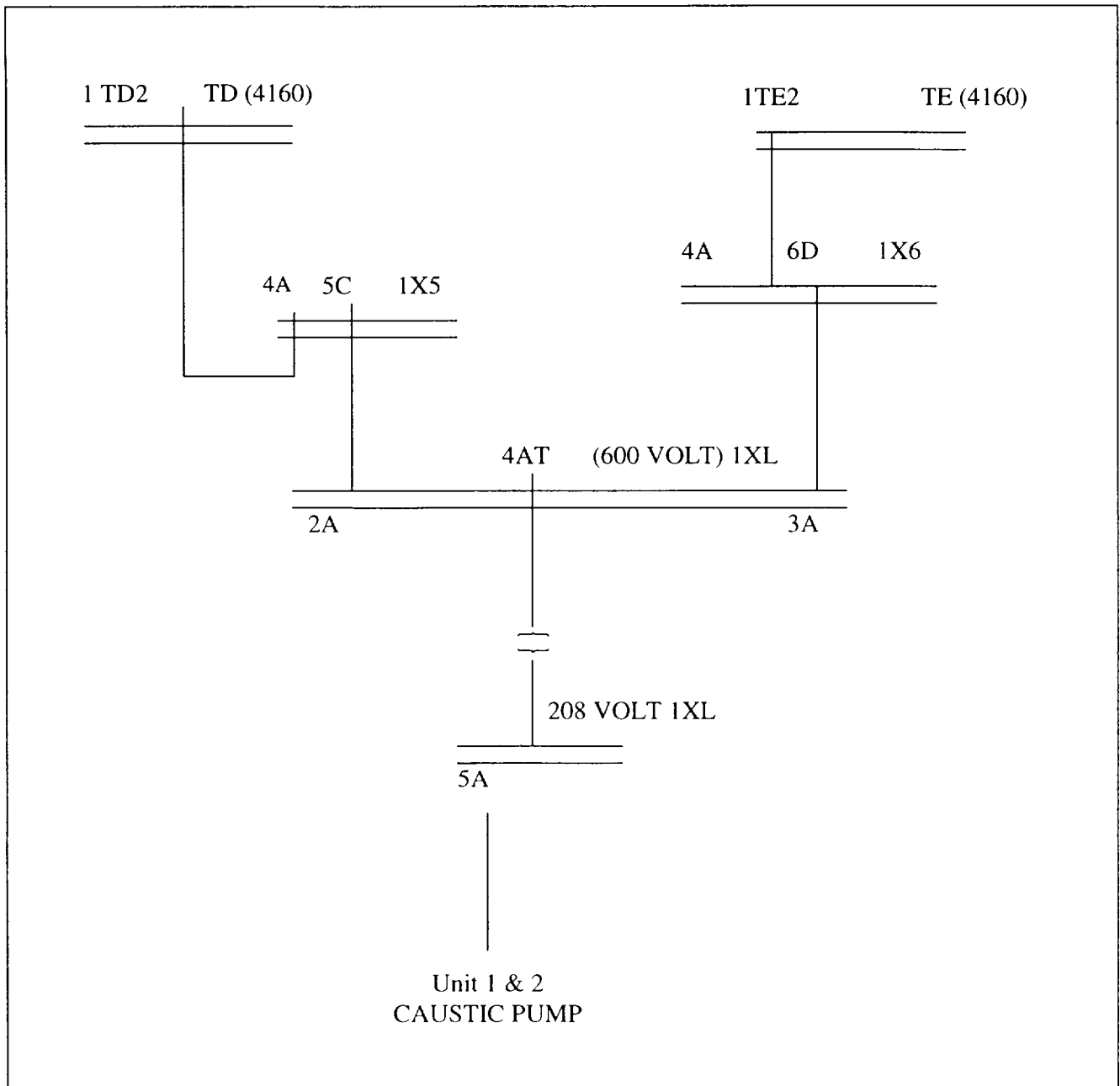
CP/1&2/A/2002/005  
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**Gal NaOH**

Enclosure 5.6  
Unit 1 & 2 Caustic Pump Power Supplies

CP/1&2/A/2002/005  
Page 1 of 1

**NOTE:** Operations alternates the power logic as outlined. Verification will be required to establish which alignment is in use at the time of question.



Duke Power Company  
**PROCEDURE PROCESS RECORD**

(1) ID No. CP/3/A/2002/005Revision No 13**Continuous Use****REPARATION**

# INFORMATION ONLY

Oconee Nuclear Station

(2) Station Oconee Nuclear Station(3) Procedure Title Post Accident Caustic Injection Into the Low Pressure Injection System(4) Prepared By Don Roach Date 2-6-01

(5) Requires 10CFR50.59 evaluation?

☐ Yes (New procedure or revision with major changes)☒ No (Revision with minor changes)☐ No (To incorporate previously approved changes)(6) Reviewed By Dean Cantrell (QR) Date 2-7-01Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA HOL Date \_\_\_\_\_Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA HOL Date \_\_\_\_\_

(7) Additional Reviews

QA Review By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (SRO/QR) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By Bryant Dean Date 2/14/01**PERFORMANCE** (Compare with control copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?☐ Yes ☐ NA Listed enclosures attached?☐ Yes ☐ NA Data sheets attached, completed, dated, and signed?☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary)

## Post Accident Caustic Injection into the Low Pressure Injection System

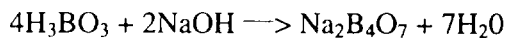
### 1. Purpose

**NOTE:** A control copy of this procedure shall be routed to the Emergency Preparedness Team within 3 working days after any approved changes.

- 1.1 This procedure is to provide instruction for caustic addition into the LPI System during a Loss of Coolant Accident. (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:



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

### 2. Limits and Precautions

- 2.1 The following safety equipment shall be worn when connecting/disconnecting caustic tote bins:
- 2.1.1 Chemical goggles
  - 2.1.2 Face shield
  - 2.1.3 Corrosive resistant suit, neoprene or chemrel
  - 2.1.4 Corrosive resistant boots, neoprene or PVC
  - 2.1.5 Corrosive resistant gloves, neoprene or PVC
- 2.2 Verify eyewash station and safety shower are operable prior to connecting/disconnecting caustic tote bins.
- 2.3 Chemical hazards shall be known prior to use. For additional information, refer to the MSDS sheets.

- 2.4 Under accident conditions, valve alignments shall **NOT** be made and injection shall **NOT** begin without prior authorization from the Operations Emergency Coordinator **OR** the Technical Support Center (TSC) / Operational Support Center (OSC)!

**NOTE:** An initial caustic add of 15 inches will neutralize an RCS inventory of 80,000 gallons with a boron concentration of 1800 ppm. This is a conservative initial add to allow immediate response to a large break LOCA.

- 2.5 An initial caustic add of 15 inches can be made without performing CSM 5.2, Enclosure 6.3 (Caustic Addition Calculations).
- 2.6 In the event of caustic spill, call 4911.
- 2.7 ITS 5.4.1.a and SLC 16.13.7 require that pH be measured **AND** that the addition of caustic to Reactor Coolant commence within 30 minutes **AFTER** switchover to recirculation mode of core cooling to adjust pH to a range of 7.0 to 8.0 **WITHIN** 24 hours.

During recirculation mode, long-term core cooling is provided by injection of water from the Reactor Building Emergency Sump to the core by the Low Pressure Injection (LPI) pumps (3 LP-19 and 3 LP-20 are open). Switchover to recirculation mode is accomplished with minimal level in the BWST.

- 2.8 The following safety and caustic addition equipment is stored in the brown storage container located in the Auxiliary Building, Unit 1 & 2 Chemical Addition Area:

Goggles	Boots	Flashlight
Face shield	Stainless steel flex hose	Bung Wrench
Corrosive suit	Tape Measure	
Gloves	Tank to valve adapter	

- 2.9 Keys to the brown storage container are stored with the caustic addition procedure in the OSC Chemistry Emergency Procedure Files and in the fireproof cabinet located in the Primary Chemistry lab office. All personnel in Primary Chemistry and Radwaste have also been issued individual keys.
- 2.10 Steps preceded with "□" (immediately to the left of the step) are check off steps, and will be checked off as completed.
- 2.11 Steps preceded by bullets (•) may be performed in any sequence. Numbered steps may only be performed out of sequence if reviewed and approved by a Primary Staff person and one other individual who are familiar with this procedure (see NSD 704).

- 2.12 Independent Verification (designated by two sign-off steps) is a documented check by a second individual which helps to ensure the correct condition or position of plant components. Separate Verification (designated by SV) ensures individuals act separately and independently. Double Verification (designated by DV) ensures the “doer” and “verifier” independently decide that an action is correct prior to the “doer” performing the action. The “verifier” shall use a “hands-on” approach to verify the actions of the “doer”.
- 2.13 Power to the caustic addition pump is provided through 3XL located near the LPI Hatch Area. For power supply diagram, see Enclosure 5.4.

### 3. Procedure

- 3.1 Upon notification from Operations Emergency Coordinator **OR** TSC / OSC, take the following actions to align the caustic addition system to the appropriate unit:

**NOTE:** The following steps may be performed simultaneously to conserve time.

- ☐ Mark the current liquid level directly on the translucent tote bin container.
- ☐ Measure down from the liquid level mark 14 inches and mark this level directly on the tote bin.
- ☐ **IF** necessary, move the tote bin into position and connect the bin discharge to the Swagelock quick-connect fitting upstream of valve 3CA-36 (Caustic Pump Suction Tell Tale) (AB Elev 771 at base of Unit 3 NaOH pump) as follows:
  - ☐ Remove dust cover from swagelock fitting on tote bin.
  - ☐ Remove dust cover from swagelock fitting at 3CA-36 (Caustic Pump Suction Tell Tale) (AB Elev 771 at base of Unit 3 NaOH pump).
  - ☐ Connect stainless steel flex hose to these fittings.
- ☐ 3.1.1 Make valve alignments per Enclosure 5.1 to allow caustic injection into the Low Pressure Injection (LPI) pump suction on Unit 3.
- ☐ 3.1.2 Vent the caustic tote bin by removing the tote bin fill cap.
- ☐ 3.1.3 Open the caustic tote bin outlet valve.
- ☐ 3.1.4 Notify Operations **OR** the OSC (if activated) that valve alignments for caustic injection are complete and ready to be initiated.

Operations or OSC Notified \_\_\_\_\_ Date/Time \_\_\_\_\_ / \_\_\_\_\_

- ☐ 3.1.5 Start the caustic addition pump at maximum flow setting. The caustic pump switch is located on the Chemical Addition Control Panel. The maximum pump capacity is approximately 2 gallons per minute.

**CAUTION:** The caustic pump has an average pump rate of 1.2 gallons per minute. To pump the initial setting of 15 inches will require 1.5 hours. A calculated volume should be initiated and completed within 30 minutes on turning the caustic pump on.

- ☐ 3.1.6 Calculate the total amount of caustic (in gallons) to be added for the neutralization of the borated water added to the system by using CSM 5.2.
- ☐ 3.1.7 Convert gallons from Step 3.1.6 to inches (in the 350 gallon tote bin) by dividing the number of gallons to be added by 8.1. Record the values below:  
  
Gallons to be added \_\_\_\_\_ Inches to be added from the tote bin \_\_\_\_\_
- ☐ 3.1.8 Mark the calculated liquid level directly on the tote bin by measuring down from the original "current liquid level" mark made in Step 3.1.

**NOTE:** Use low dose waiting area as possible during addition

- ☐ 3.1.9 **WHEN** the caustic tote bin level reaches the desired level (as marked in Step 3.1) **OR WHEN** the caustic tote bin is empty, stop caustic addition pump using the switch located on the Chemical Addition Control Panel.
- ☐ 3.1.10 Close tote bin outlet valve.
- ☐ 3.1.11 Close 3CA-36 (Caustic Pump Suction Tell Tale) (AB Elev 771 at base of Unit 3 NaOH pump).
- ☐ 3.1.12 Record time and volume added on Enclosure 5.3.

- ☐ 3.1.13 **IF** necessary, replace the caustic tote bin as follows:
- ☐ 3.1.13.1 Replace tote bin fill cap.
  - ☐ 3.1.13.2 Disconnect empty tote bin from swagelock fitting on stainless flex hose.
  - ☐ 3.1.13.3 **IF** necessary, move tote bins and remove dust cover from swagelock fitting on new tote bin.
  - ☐ 3.1.13.4 Connect stainless flex hose to the new tote bin.
  - ☐ 3.1.13.5 **IF** pumping is to continue, mark the tote bin per Section 3.1 for the amount to be added from the new tote bin and go to Step 3.1.2.
- ☐ 3.1.14 Notify OSC caustic addition to U-3 LPI is complete and no further additions are in progress.
- OSC Notified \_\_\_\_\_ Date/Time \_\_\_\_/\_\_\_\_/\_\_\_\_
- ☐ 3.1.15 After caustic addition is complete, allow LPI recirculation time of 2 hours.
- ☐ 3.1.16 **WHEN** authorized by the TSC/OSC, have sample taken (per appropriate procedure) to determine the resultant pH of the reactor coolant.
- ☐ 3.1.17 **IF** pH is < 7.0:
- Calculate (refer to Chemistry Section Manual Section 5.2) the amount of caustic (in gallons) to be added to complete the neutralization of the borated water added to the system.
  - Convert this number to inches (in the 350 gallon tote bin) by dividing the number of gallons to be added by 8.1 gallons/inch.
  - Record the values below:  
Gallons to be added: \_\_\_\_\_ Inches to be added from tote bin: \_\_\_\_\_
- ☐ 3.1.18 **IF** pH is > 7.0, go to Step 3.1.22.
- ☐ 3.1.19 Mark the current liquid level directly on the translucent tote bin container.
- ☐ 3.1.20 Measure down from this mark the number of inches calculated in Step 3.1.17 above. Mark this level directly on the tote bin.



- ☐ 3.1.21 Repeat Steps 3.1.1 through 3.1.18 until all necessary caustic (as determined by TSC/OSC) has been added.
- ☐ 3.1.22 After all necessary caustic has been added and upon authorization from the TSC/OSC, return the system to normal as follows:
  - ☐ 3.1.22.1 Replace tote bin fill cap.
  - ☐ 3.1.22.2 Disconnect empty tote bin from swagelock fitting on stainless flex hose.
  - ☐ 3.1.22.3 Make alignments per Enclosure 5.2 to return valves to normal position.

#### **4. References**

- 4.1 Dwg. No. OFD-110A-3.8 Chemical Addition System (Primary Side Chemical Addition)
- 4.2 Dwg. No. OFD-102A-3.1, Low Pressure Injection System, Borated Water Supply and LPI Pump Suction.
- 4.3 CSM 5.2
- 4.4 ITS 5.4.1.a
- 4.5 SLC 16.13.7

#### **5. Enclosures**

- 5.1 Valve Alignment for Caustic Injection on Unit 3
- 5.2 Normal Valve Alignment for Caustic Injection System on Unit 3
- 5.3 Caustic Mixing and Injection Record
- 5.4 Unit 3 Caustic Pump Power Supplies

**Enclosure 5.1**  
**Valve Alignment for**  
**Caustic Injection on Unit 3**

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Date \_\_\_\_\_

<i>DV</i>	<i>Init</i>	<i>Position</i>	<i>Valve No.</i>	<i>Valve Name</i>	<i>Location</i>
	_____	Open	3CA-103	Caustic Recirc Line & Press Gauge Block	AB Rm. 157, Elev 771, hallway outside Unit 3 SS Filter Rm.
	_____	Closed	3CA-96	Caustic Recirc Block	AB Elev 771 at Unit 3 NaOH Pump Discharge
	_____	Closed	3CA-35	Caustic Pump Suction	AB Elev 771 at base of Unit 3 NaOH pump
	_____	Open	3CA-36	Caustic Pump Suction Tell Tale	AB Elev 771 at base of Unit 3 NaOH pump
	_____	Open	3CA-112	Caustic Pump Pressure Gauge Isolation	AB Elev 771 adjacent to but west of Unit 3 NaOH mix tank
	_____	Closed	3CA-58	Caustic to #3 LP Pump Suction Tell Tale	AB Rm. 157, Elev 783 Col. Q-91, CC Cooler Room
	_____	Open	3CA-39	Caustic to Unit #3 LP Block (Chm)	AB Hall, Elev 783 Col. Q-91, CC Cooler Room
	_____	Open	3CA-62	Caustic to Unit #3 LPI Block (OPS)	AB Rm. 252, Elev 783 Col. Q-91, outside CC Cooler Room
_____	_____	Open	3LP-51	LPI Sample Recirc. Isolation Valve (Ops)	AB Rm. 252, Elev 783 Col. R-90 outside CC Cooler Room

**Enclosure 5.2**  
**Normal Valve Alignment for**  
**Caustic Injection System on Unit 3**

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Date \_\_\_\_\_

<i>DV</i>	<i>Init</i>	<i>Position</i>	<i>Valve No.</i>	<i>Valve Name</i>	<i>Location</i>
	_____	Open	3CA-103	Caustic Recirc Line & Press Gauge Block	AB Rm. 157, Elev 771, hallway outside Unit 3 SS Filter Rm.
	_____	Open	3CA-97	Caustic Recirc Block	AB Elev 771 overhead at Unit 3 NaOH mix tank
	_____	Open	3CA-96	Caustic Recirc Block	AB Elev 771 at Unit 3 NaOH Pump Discharge
	_____	Closed	3LWD-267	Caustic Tank Outlet Drain	AB Elev 771 at tank drain pipe of Unit 3 NaOH pump
	_____	Closed	3CA-34	Caustic Mix Tank Outlet	AB Elev 771 at base of Unit 3 NaOH pump
	_____	Closed	3CA-35	Caustic Pump Suction	AB Elev 771 at base of Unit 3 NaOH pump
	_____	Closed	3CA-36	Caustic Pump Suction Tell Tale	AB Elev 771 at base of Unit 3 NaOH pump
	_____	Open	3CA-112	Caustic Pump Pressure Gauge Isolation	AB Elev 771 adjacent to but west of Unit 3 NaOH mix tank
	_____	Closed	3CA-58	Caustic to #3 LPI Pump Suct Tell Tale	AB Rm. 157, Elev 783 Col. Q-91, CC Cooler Room
	_____	Closed	3CA-39	Caustic to Unit #3 LPI Block (Chm)	AB Hall, Elev 783 Col. Q-91, CC Cooler Room
	_____	Closed	3CA-62	Caustic to Unit #3 LPI Block (OPS)	AB Rm. 252, Elev 783 Col. Q-91, CC Cooler Room
_____	_____	Closed	3LP-51	LPI Sample Recirc. Isolation Valve (Ops)	AB Rm. 252, Elev 783 Col. R-90 outside CC Cooler Room

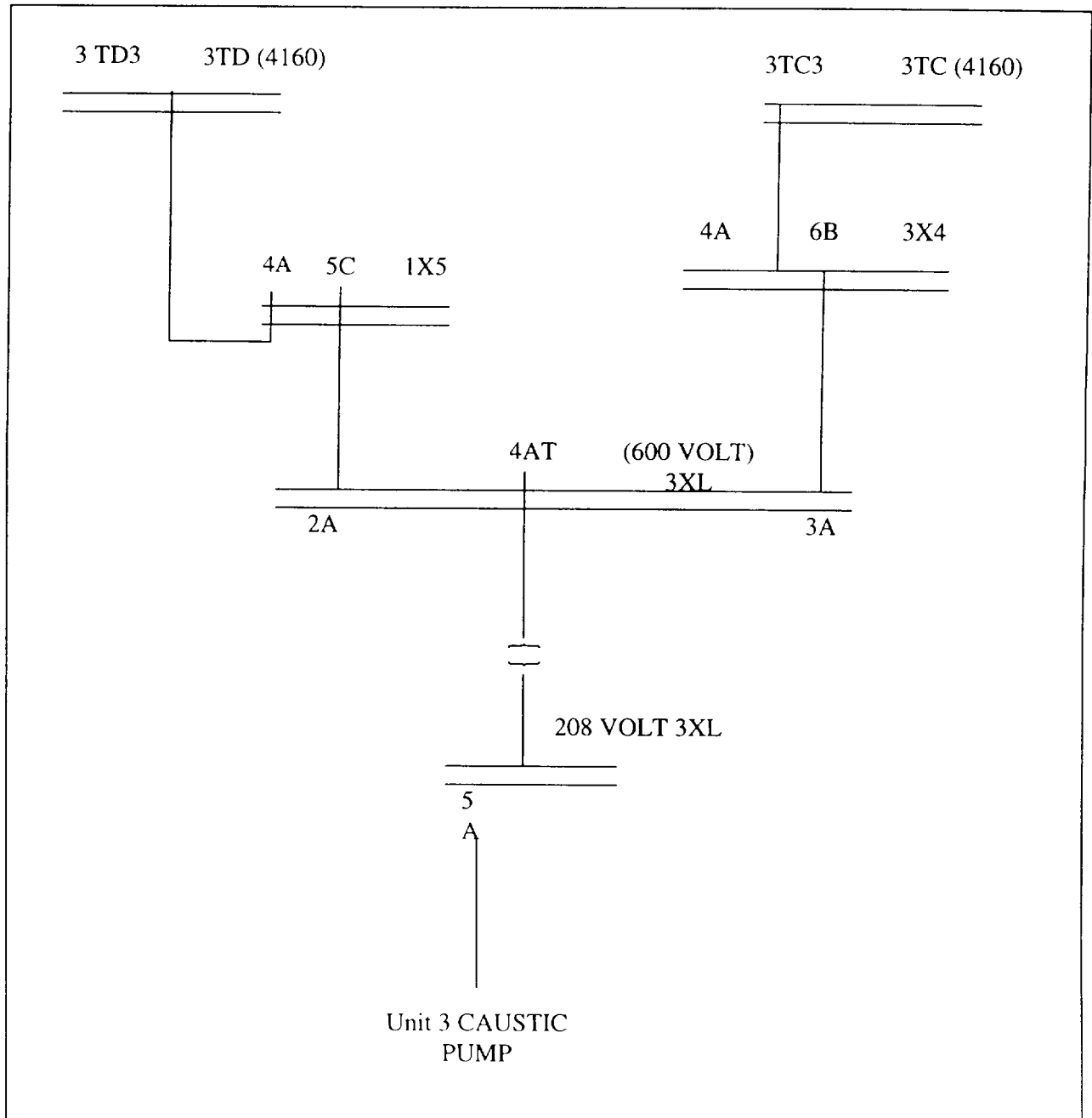
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Enclosure 5.4  
Unit 3 Caustic Pump Power Supplies

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**NOTE:** Operations alternates the power logic as outlined. Verification will be required to establish which alignment is in use at the time of question.



# INFORMATION ONLY

## CHEMISTRY MANUAL 5.1 EMERGENCY RESPONSE GUIDELINES

<u>REVISION NUMBER</u>	<u>ISSUE DATE</u>
Original	10/25/83
1	09/27/95
2	11/30/95
3	01/24/96
4	03/14/96
5	09/16/96
6	10/31/96
7	11/26/96
8	01/02/97
9	09/22/97
10	11/20/97
11	03/12/98
12	06/15/98
13	08/24/98
14	02/04/99
15	05/27/99
16	09/29/99
17	03/27/00
18	12/05/00
19	2/22/01

Prepared by:

*Dan Metler*

Date:

*2/22/01*

10CFR50.59 required: Yes

No

Approval:

*Bryan J. [Signature]*

Date:

*2/22/01*

Control Copies delivered to Emergency Planning:

*Deane Cantrell*

Date:

*2/22/01*

DUKE POWER COMPANY

OCONEE CHEMISTRY MANUAL

## Emergency Response Guidelines

**NOTE:** Seven Control Copies and one Information Only copy of this CSM shall be routed to the Emergency Preparedness Team within three (3) working days following any approved changes/modifications.

### 1. Purpose

- 1.1 To identify members of the Chemistry Emergency Response Organization and their responsibilities.
- 1.2 Provide preplanned responses to emergency situations that may arise.

### 2. Chemistry Emergency Response Organization

- 2.1 The positions identified in Enclosure 6.1 may be filled by personnel identified in Enclosure 6.2.
- 2.2 Chemistry Manager, Chemistry Team Leader or Senior Scientist may serve as Chemistry Manager in the OSC as identified in Enclosure 6.2. During backshift, holidays and weekends the Radwaste shift/coverage person will be the Chemistry Single Point of Contact until relieved.
- 2.3 A list of alternates for other positions is identified in Enclosure 6.2. These personnel may be designated by the Chemistry Manager as essential or non-essential as the emergency condition or event dictates.
- 2.4 The responsibilities of the Chemistry Emergency Response Organization are contained in Enclosure 6.3.
- 2.5 Once the OSC is activated for emergency response, all activities of field teams prior to, during, and thereafter become the responsibility of the OSC to coordinate and control. Upon the activation of the OSC all chemistry activities currently in progress should be turned over to the OSC for coordination. The turnover should at a minimum include:
  - Emergency Job(s) in the field
  - Communication capability with the field team
  - Emergency equipment out of service/job description
  - Status of plant including power availability

If approval to continue is given, an OSC task sheet should be submitted to document the activity(s).

- 2.6 The SPOC Supervisor is responsible for assigning tasks and managing all resources during the first 75 minutes of a back shift drill and/or emergency. If Chemistry management is not available, the SPOC Supervisor (Interim OSC Manager) will direct the Chemistry resources. If Chemistry management arrives in the OSC during the 75 minutes, then the SPOC Supervisor will manage Chemistry resources.
- 2.7 When calling in personnel who are off site, determine Fitness for Duty per Enclosure 6.4.
- 2.8 The Chemistry Emergency Response Organization work schedule should be established as the emergency condition or event dictates.
- 2.9 The Chemistry Emergency Response Organization should use Enclosure 6.5 and 6.6 to assist in planning sampling, analysis, and chemical addition activities during an emergency situation.
- 2.10 If G.O. Chemistry support is needed, contact one of the following per the Chemistry Emergency phone list in the OSC file:

R. W. Eaker

M. K. Johnson

D. P. Rochester

P. W. Downing

2.11 Expectations for Communication in the OSC:

2.11.1 Use the 4 communication techniques which help reduce errors:

- Communications will be directed.
- Use repeat backs (I send, you repeat, I confirm).
- Radio / telephone communications should include name and location.
- Use the phonetic alphabet for train designations.

2.11.2 Teams dispatched from the OSC will take a radio or have access to a radio. Chemistry staff in the OSC will have access to a radio.

2.11.3 Radio communications will be verified. If radio communication **CANNOT** be made, the dispatched team will call Chemistry Staff in the OSC at 3858 or 3495 to determine how communications will be handled.

2.11.4 Prior to the team leaving the OSC, specify when communications will be required (e.g., when the team reaches the task area, every 30 minutes, when results are obtained, etc.).



- 2.11.5 Tasks are to be completed as directed from the OSC. Should conditions change, notify Chemistry Staff in the OSC immediately. Do **NOT** go off on another task without direction from the OSC.

### **3. Chemistry Response to Site Assembly During Normal Working Hours** (Monday through Thursday excluding holidays)

#### **3.1 Inside the Protected Area:**

- Personnel shall assemble at their respective Chemistry office.
- Upon arriving at assembly location,
  - Card in (swipe security badge)
  - Report accountability to Team Leader or designee
  - Remain in the assembly location until given further instructions by the Emergency Coordinator.
- Personnel who assemble at an alternate Chemistry office shall:
  - Card in (swipe security badge)
  - Report accountability to their Team Leader or designee
  - Remain in the assembly location until given further instructions by the Emergency Coordinator.
- Personnel working in the RCA/RCZ who are wearing protective clothing shall:
  - Proceed to the change room
  - Frisk appropriately
  - Card in (swipe security badge)
  - Contact their Team Leader or designee to report their location
  - Wait for further instructions
- Personnel who **CANNOT** reach their card reader / assembly location within 30 minutes of the Site Assembly alarm shall:
  - Immediately call their Team Leader or designee
  - Proceed to their card reader / assembly location as soon as possible

- Personnel engaged in critical work activities: (e.g., resin bed regeneration, valve / equipment operation related to the event, critical path work, work of a sensitive nature associated with the Security Plan, Fire Plan, or Nuclear Safety)
  - must contact their Team Leader or designee to provide their names, work location, nature of work, estimated time to completion, and any other relevant information.
  - Team Leaders shall relay pertinent information through the Chemistry Manager to the OSC Coordinator/Manager, who then assumes responsibility for the industrial and radiological safety of the workers.
  - For drills, such arrangements may be made in advance by location management and Emergency Planning.
- Team Leaders or designee will report location and numbers to the Administrative Specialist at ext. 3856.

3.2 Outside the Protected Area

- Environmental Chemistry personnel shall:
  - Assemble in the Environmental Chemistry office area.
  - Report their accountability to their Team Leader or designee.
  - Team Leader or designee will provide location and numbers to the Administrative Specialist at ext. 3856.
  - Personnel shall not enter the Protected Area unless they are responding to the OSC and shall keep their Team Leader or designee informed of their location until the Emergency Coordinator terminates the Site Assembly.

3.3 The Administrative Specialist will report accountability to the Security Shift Supervisor at ext. 5050 no later than 20 minutes after the initiation of Site Assembly. She will leave a message stating her name, department name, number and names of missing personnel.

3.4 When personnel accountability has been completed as part of the Site Assembly, one of the following will occur:

- 3.4.1 If the Assembly was a test of response time and accountability procedures or if the requirement for an assembly no longer exists, permission to return to normal duties will be given by the Operations Shift Manager/Emergency Coordinator.

- 3.4.2 Plant conditions may require activation of the Site Emergency Response Organization. The notification to establish the Technical Support Center (TSC) and Operational Support Center (OSC) should be made over the PA system. The Chemistry Manager/Alternate should then implement the Organization outlined in Enclosure 6.1.
- 3.4.3 Other instructions may be given by the Operations Shift Manager / Emergency Coordinator.

#### **4. Chemistry Response to Site Assembly During Backshifts, Weekends, and Holidays**

- 4.1 All Chemistry personnel should assemble at their normal office area or any other Chemistry Assembly point, card in (swipe their badge), and report their location to the Radwaste Control Room at ext. 3230. The Radwaste shift/coverage person should account for all Chemistry personnel on site. The accountability should be reported by calling ext. 5050 with name, location, and number of people accounted for including names of any personnel presently not accounted for. All jobs in progress should be safely secured before reporting.
- 4.2 When personnel accountability has been completed as part of a Site Assembly one of the following may occur:
  - 4.2.1 If the Assembly was a test of response time and accountability procedures or if the requirement for an assembly no longer exists, permission to return to normal duties should be given by the Operations Shift Manager/Emergency Coordinator.
  - 4.2.2 Plant conditions may require activation of the Site Emergency Response Organization. The notification to establish the TSC/OSC shall come from the Operations Shift Manager/Emergency Coordinator. The Radwaste shift/coverage person will establish the Chemistry Organization and act as Chemistry Single Point of Contact until relieved by Chemistry Manager or designee.
  - 4.2.3 Other instructions may be given by the Operations Shift Manager/ Emergency Coordinator.

## 5. Chemistry Response to Site Evacuation Announcement

<b>NOTE:</b> A Site Assembly alarm will <u>always</u> precede a Site Evacuation Announcement.
---

- 5.1 Based on plant conditions or radiological conditions, the Emergency Coordinator makes a determination that Site Evacuation / Relocation is warranted.
- 5.2 TSC requests OSC personnel to prepare for Site Evacuation / Relocation.
- 5.3 Chemistry management will identify essential / non-essential personnel and provide information to Group Evacuation Coordinator at ext. 3856.
- 5.4 TSC Offsite Communicator makes PA announcement to initiate Site Evacuation / Relocation.
- 5.5 Group Evacuation Coordinator accesses Evacuation / Relocation instructions through the DAE (Duke Application Environment) and coordinates evacuation / relocation of assigned personnel by notifying Team Leaders or designee.
- 5.6 Personnel being relocated to Oconee Training Center or Oconee Complex should notify the Group Evacuation Coordinator at ext. 3856 of their location and a number where they can be reached. The Group Evacuation Coordinator will then notify TSC/OSC/EOF Managers.

## 6. Enclosures

- 6.1 Chemistry Emergency Response Organization
- 6.2 Designation of Essential Chemistry Personnel
- 6.3 Responsibilities of Emergency Response Organization
- 6.4 Fitness For Duty Questions for Call Outs (if needed)
- 6.5 Post Accident Sampling and Analysis Checklist
- 6.6 Post Accident Chemical Addition Checklist

**Enclosure 6.1** **CSM 5.1**  
**Chemistry Emergency Response Organization** **Page 1 of 1**  
**(Minimum Staffing)**

**NOTE:** OSC - Operational Support Center - the area in the back of the Unit 3 Control Room.

\* - 75 minute response time

OSC

**Chemistry Manager \*** (one)

(phone: ext. 3495)

OSC

**Chemistry Area Manager** (one)

(phone: ext. 3858)

OSC

**Chemistry Staff Support** (one)

OSC

**Chemistry Specialist** (five)

## 1. Operational Support Center (OSC)

**NOTE:** For Initial Response, one Chemistry Manager **OR** Area Manager is all that is required to respond. For extended drills and all emergencies, two persons are required.

### 1.1 Chemistry Manager / Area Manager (one) - OSC phone 3495

Bryon Norris	Dean Cantrell
Rick Wright	Jeff Bramblett
Dale White	Andy Perry

**NOTE:** Two Staff persons will be called out per the Community Alert Network System.

### 1.2 Chemistry Staff Support (one) - OSC phone 3858

Roger Smith	Steve Davenport
Dedrick Wald	Keith Beddingfield
Ellen Morris	Amanda Breland
Garen Denard	

**Enclosure 6.2**  
**Designation of Essential Chemistry Personnel**

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**NOTE:** Only five technicians are required although as many as seven may respond (includes two shift persons (minimum staffing requirements) plus five persons to be called by the Community Alert Network System).

Included in the minimum staffing is the requirement that the qualifications of the two shift persons in combination will allow RCS sampling and PALS operation.

1.3 Chemistry Technicians / Specialists (five)

<b>Secondary</b>	<b>Environmental</b>	<b>Primary</b>	<b>Radwaste</b>
Lance Young	Mike McCoy	Sherri Williams	Jake Lamey
Saverne Williams	Rick Morris	Dennis Earle	Roy Hanks
Ida Huff	Jac Cashin	Gina Roach	Mark Sanders
Lawrence Nesbitt	Ronnie Tucker	Charlie Hendricks	Sharon Strickland
Skip Fletcher	Peri Smith	Emmie Singleton	Greg Aldrich
Lynette Wright	Travis Rollins	Dana Gaillard	On Tran
E. T. Moss		Vivian Howell	
Harold Bruce		Ann Clark	

**Enclosure 6.3  
Responsibilities of  
Emergency Response Organization**

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**1. Responsibilities of the Chemistry Manager**

- 1.1 Set up the Chemistry Emergency Response Organization for OSC and Chemistry Office. Designate non-essential personnel.

**NOTE:** Appropriate procedures are located in OSC in the identified file cabinet.

- 1.2 Keep the OSC Coordinator informed of current status of Chemistry areas of responsibility.
- 1.3 Inform OSC Coordinator of any Chemistry Emergency Response Activities initiated prior to the activation of OSC.
- 1.4 Maintain assessment of the emergency and recovery efforts and identify trends and conditions that have the potential to cause changes in the chemical parameters of the emergency situation.
- 1.5 Participate in the development of recovery programs in Chemistry areas of responsibility.
- 1.6 Use Enclosures 6.5 and 6.6 as needed to plan sampling, analysis and/or chemical addition activities.
- 1.7 **IF** liquid radioactive releases are in progress, classify the release for the OSC/TSC.
- Releases  $\leq$  10 EC are within normal limits.
  - Releases  $>$  10 EC are above normal limits.

**2. Responsibilities of the Radwaste Shift/Coverage Person on Holidays, Weekends, Backshift**

- 2.1 Serve as Single Point of Contact for Chemistry until relieved.
- 2.2 Account and report for all Chemistry personnel on-site during a Site Assembly. The accountability should be reported to Security at ext. 5050 within 20 minutes and should include name, location, and number of people accounted for including names of any personnel presently not accounted for.
- 2.3 Upon implementation of the Site Emergency Response, report to the Operational Support Center (OSC) and provide immediate support to the Operations Shift Manager.

**NOTE:** Appropriate procedures are located in the OSC in the file cabinet labeled Chemistry procedures.



**Enclosure 6.3  
Responsibilities of  
Emergency Response Organization**

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- 2.4 Inform OSC Coordinator of any Chemistry Emergency Response Activities prior to the activation of OSC.
- 2.5 **IF** radioactive releases are in progress, classify the release for the OSC/TSC.
- Releases  $\leq$  10 EC are within normal limits.
  - Releases  $>$  10 EC are above normal limits.
- 2.6 No persons will need to be called out. One (1) Chemistry Manager/Alternate will always be on duty and will respond when their emergency response pager is automatically actuated. Five (5) technicians/specialists and two (2) area Staff support persons and one (1) Team Leader will be called out by the automated "Community Alert Network System".
- 2.7 In the event the Community Alert Network System fails or is out-of-service, Call Outs for the five technicians/specialists may be requested. Persons have the responsibility to respond to a call out (Management Procedure "Overtime, Call-Outs and 16-Hour Provision").
- Fitness for duty must be determined by asking the questions listed in Enclosure 6.4.
  - Two Staff persons from the Duty list should be paged a second time through the Switchboard Operator to please report to the OSC.

**3. Responsibilities of the Chemistry Staff Support**

- 3.1 Keep Chemistry personnel informed of current status of the emergency situation and recovery effort.
- 3.2 Implement control measures to operate the laboratory during emergency conditions.
- 3.3 Use Enclosures 6.5 and 6.6 as needed to plan sampling, analysis, and/or chemical addition activities.
- 3.4 Conduct pre-job briefings to:
- 3.4.1 Ensure employees are sufficiently familiar with the task to efficiently perform it under the anticipated conditions.
  - 3.4.2 Ensure materials, parts, tools, and equipment necessary to perform the task are proper for the job, are readily available, have electric or pneumatic power sources available, and are familiar to workers.

**Enclosure 6.3**  
**Responsibilities of**  
**Emergency Response Organization**

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- 3.4.3      Ensure workers assigned to the task have sufficient remaining exposure to contribute significantly to its completion and necessary requests for dose extensions are submitted in a timely manner and with proper justification.
- 3.4.4      Coordinate work activities with those of other work groups to achieve maximum efficiency in the task as a whole and to minimize the potential for unnecessary exposure due to poor communications or lack of proper planning/scheduling.

**4. Responsibilities of Chemistry Technicians**

- 4.1      Follow applicable emergency procedures unless directed to do otherwise by the Chemistry Manager.
- 4.2      Comply with requirements and special instructions of the applicable Radiation Work Permit (RWP), warning sign or barrier concerning radiation/contamination control unless directed to do otherwise by Radiation Protection or Chemistry Manager.
- 4.3      Know location of radiation sources and their dose rates at the task location or accesses. Utilize Low Exposure Waiting Areas where applicable. This information is to be provided by Radiation Protection personnel.
- 4.4      Ensure you are sufficiently familiar with the task to efficiently perform it under the anticipated conditions. Pre-job briefings should be conducted to ensure your complete understanding of the job. (Repeat any instructions given.)
- 4.5      Ensure you have sufficient remaining exposure to contribute significantly to the completion of the assigned task.

## **5. Training for Emergency Response Organization**

**NOTE:** Emergency Response Training Module (OC-1818) was replaced with UALIIB (Radiation Worker Training).

### **5.1 Chemistry Manager / Team Leader**

- Initial Chemistry Emergency Response Training (OC3704)
- Participate in at least one drill / two years (HS0537)
- Initial Training - OSC Facility Specific (OC7099)
- Chemistry Specific Emergency Plan / Response Yearly Update (OCC043)

### **5.2 Staff**

- Initial Chemistry Emergency Response Training (OC3704)
- Participate in at least one drill / two years (HS0537)
- Initial Training - OSC Facility Specific (OC7099)
- Chemistry Specific Emergency Plan / Response Yearly Update (OCC043)

### **5.3 Technicians**

- Initial Chemistry Emergency Response Training (OC 3704)
- Initial Training - OSC Facility Specific (OC 7099)
- Chemistry Specific Emergency Plan / Response Yearly Update (OCC043)

**Enclosure 6.4**  
**Fitness for Duty Questions for Call Outs**

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1. Employees who acknowledge consumption of alcohol within 5 hours must be evaluated by supervision upon reporting to work. Evaluation may be by observation or breathalyzer.
2. **IF** the answer to the first question is no, the other questions should **NOT** be asked.
3. These questions apply to anyone being called out to work in the Protected Area of the plant, regardless of position or whether his/her name appears on a "duty list". Documentation of the phone call is **NOT** required by the Fitness for Duty "rule". However, if the call out results in a questionable situation, you may want this information documented.

The following questions **MUST** be asked to determine Fitness for Duty:

1. *Have you consumed alcohol in the last 5 hours?*
2. *What did you have?*
3. *How much did you have?*
4. *Can you perform your job unimpaired?*
5. *Can you drive?*

**Enclosure 6.5**  
**Post Accident Sampling**  
**and Analysis Checklist**

CSM 5.1  
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<b>NOTE:</b> Do <b><u>NOT</u></b> use this Enclosure for documentation.
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Date: \_\_\_\_\_ Time: \_\_\_\_\_ Unit: \_\_\_\_\_

\_\_\_\_\_ Sample requested by TSC.

Sample from:

Normal		PALSS		Appendix R	
RCS - Pri. Sample Hood	_____	RCS "J-Leg"	_____	RCS "J-Leg"	_____
RCS - Wst. Sample Hood	_____	HPI Letdown	_____		
LPI - Wst. Sample Hood	_____	LPI Pump Disch.	_____		

\_\_\_\_\_ Determine analysis / analyses to be performed and list below:

_____	_____	_____
_____	_____	_____

\_\_\_\_\_ Initiate OSC Task Work Sheet.

**Enclosure 6.5**  
**Post Accident Sampling**  
**and Analysis Checklist**

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Procedures / Lab Methods to be used:

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_____	CP/0/B/2001/008	Chemical Safety Equipment and Spill Control Response
_____	CP/1/A/2002/001	Unit One Primary Sampling System
_____	CP/2/A/2002/001	Unit Two Primary Sampling System
_____	CP/3/A/2002/001	Unit Three Primary Sampling System
_____	CP/1/A/2002/004 C	Operating Procedure for the Post Accident Liquid Sampling (PALS) System (EP)
_____	CP/2/A/2002/004 C	Operating Procedure for the Post Accident Liquid Sampling (PALS) System (EP)
_____	CP/3/A/2002/004 C	Operating Procedure for the Post Accident Liquid Sampling (PALS) System (EP)
_____	CP/0/A/2002/004 E	Reactor Coolant Sampling during an Appendix "R" Accident
_____	CP/1&2/A/2002/005	Post Accident Caustic Injection into the Low Pressure Injection System
_____	CP/3/A/2002/005	Post Accident Caustic Injection into the Low Pressure Injection System
_____	CP/0/B/2005/021	Composite Sampling of #3 CTP for Radioactivity
_____	CP/1/B/3002/002	Unit One Chemical Additions for Secondary Systems for Normal Operating Conditions
_____	CP/2/B/3002/002	Unit Two Chemical Additions for Secondary Systems for Normal Operating Conditions
_____	CP/3/B/3002/002	Unit Three Chemical Additions for Secondary Systems for Normal Operating Conditions
_____	CP/0/B/5200/012	Turbine Building Sump Monitor Tank Operation
_____	CP/0/B/5200/045	Liquid Waste Release from RWF
_____	LM/O/P003C	Determination of Boron by Manual Colorimetric Titration Using Phenolphthaline Indicator (EP)
_____	LM/O/P004	Determination of Chloride by Specific Ion Electrode
_____	LM/O/P919	Boron Analysis by Mettler DL-58 Boron Titration (EP)
_____	CSM 3.8	Secondary Lab Sampling Frequencies, Specifications, and Corrective Actions
_____	CSM 3.10	Primary Lab Sampling Frequencies, Specifications, and Corrective Actions

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**Enclosure 6.5**  
**Post Accident Sampling**  
**and Analysis Checklist**

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- \_\_\_\_\_ CSM 5.1                      Emergency Response Guideline
- \_\_\_\_\_ CSM 5.2                      Post Accident Procedure Use Guidelines
- \_\_\_\_\_ Obtain applicable RIA readings from the Data Acquisition System or Control Room Liaison:

<u>RIA</u>	<u>Reading</u>	<u>RIA</u>	<u>Reading</u>
RIA-4	_____ mR/hr	RIA-32	_____ CPM
RIA-8	_____ mR/hr	RIA-57	_____ R/hr
RIA-10	_____ mR/hr	RIA-58	_____ R/hr
RIA-13	_____ mR/hr		

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**SYSTEM SAMPLING:**

- \_\_\_\_\_ Notify Operations Liaison an RP of support needs.
- \_\_\_\_\_ Determine number of Chemistry personnel required for sampling and analysis:
- Sampling: \_\_\_\_\_                      Analysis: \_\_\_\_\_
- \_\_\_\_\_ Ensure assigned personnel have sufficient remaining exposure to complete assigned tasks by obtaining Dose Extensions as required.
- \_\_\_\_\_ Determine sample transporter to be used and its location.
- \_\_\_\_\_ Conduct planning session with Chemistry, RP, and Operations personnel involved in sampling to identify / define specific roles and responsibilities:
- \_\_\_\_\_ A. Designate Chemistry personnel to perform sampling.
  - \_\_\_\_\_ B. Designate Chemistry personnel to support sampling at the RCZ / control point.
  - \_\_\_\_\_ C. Identify Chemistry and RP personnel assigned to perform analysis.
  - \_\_\_\_\_ D. Determine required respiratory equipment and protective clothing.
  - \_\_\_\_\_ E. Determine required equipment to support sampling (eg; radios, sample bottles, flashlights, etc.).
  - \_\_\_\_\_ F. Establish Low Dose Waiting Areas / control points.

**Enclosure 6.5**  
**Post Accident Sampling**  
**and Analysis Checklist**

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- \_\_\_\_\_ G. Determine stay-time(s) at PALS Panels.
- \_\_\_\_\_ H. Determine "best" route for sample transport.
- \_\_\_\_\_ Obtain equipment required to support sampling.
- \_\_\_\_\_ Obtain keys required for sampling (located in the Chemistry OSC Emergency Procedures Cabinet).
- \_\_\_\_\_ Establish and maintain stay-time log at the RCZ / control point.

**ANALYSIS:**

- \_\_\_\_\_ Determine additional RP support required during analysis.
- \_\_\_\_\_ Determine need to prepare back-up lab for analysis (RW Facility Lab).
- \_\_\_\_\_ Obtain and label carboys for storing / handling liquid waste.
- \_\_\_\_\_ Obtain lead shielding and prepare Chemistry Lab for analysis.
- \_\_\_\_\_ Ensure analytical instruments are standardized prior to use.
- \_\_\_\_\_ Ensure sufficient quantities of reagents are available; prepare as needed.
- \_\_\_\_\_ Conduct planning session with Chemistry and RP personnel involved in analysis to identify / define specific roles and responsibilities:
  - \_\_\_\_\_ A. Designate Chemistry personnel required to perform specific analyses.
  - \_\_\_\_\_ B. Determine respiratory equipment and protective clothing requirements.
  - \_\_\_\_\_ C. Use Breathing Air Cylinders and set-up Air Line Header for Lab if respiratory equipment is required.



**Enclosure 6.6**  
**Post Accident Chemical Addition Checklist**

CSM 5.1  
Page 1 of 2

**NOTE:** Do **NOT** use this Enclosure for documentation.

This is a time-critical task. Caustic addition must be initiated within 30 minutes of recirc mode operation.

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Unit: \_\_\_\_\_

\_\_\_\_\_ Caustic addition requested.

\_\_\_\_\_ Initiate OSC Task Work Sheet (when appropriate)

Procedures / Lab Methods to be used:

_____	CP/1&2/A/2002/005	Post Accident Caustic Injection into the Low Pressure Injection System
_____	CP/3/A/2002/005	Post Accident Caustic Injection into the Low Pressure Injection System
_____	CP/0/B/2001/008	Chemical Safety Equipment & Spill Control Response
_____	CSM 5.2	Post Accident Procedure Use Guidelines

\_\_\_\_\_ Verify LPI System is in service and taking suction from the Reactor Building Emergency Sump.

\_\_\_\_\_ Obtain the following applicable RIA readings from the Data Acquisition or the Control Room. Refer to Enclosure 6.2 of CSM 5.2 for RIA information.

<u>RIA</u>	<u>Reading</u>	<u>RIA</u>	<u>Reading</u>
RIA-12	_____mR/hr	1RIA-32-12	_____CPM
3RIA-19	_____mR/hr	3RIA-32-3	_____CPM
1RIA-32-3	_____CPM	3RIA-32-5	_____CPM
1RIA-32-10	_____CPM	RIA-57	_____CPM
1RIA-32-11	_____CPM	RIA-58	_____CPM

\_\_\_\_\_ Notify RP, Operations Liaison, and OSC Coordinator of support needs.

\_\_\_\_\_ Determine number of Chemistry personnel required for addition:  
# required \_\_\_\_\_ (minimum of two)

\_\_\_\_\_ Ensure assigned personnel have sufficient remaining exposure to complete assigned tasks.  
Obtain Dose Extensions as required.

**Enclosure 6.6**  
**Post Accident Chemical Addition Checklist**

CSM 5.1  
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\_\_\_\_\_ Time permitting, conduct planning session with Chemistry, RP, Operations, and OSC personnel involved in addition to identify/define specific roles and responsibilities:

- \_\_\_\_\_ A. Designate Chemistry personnel to perform addition.
- \_\_\_\_\_ B. Designate additional OSC personnel to transport caustic.
- \_\_\_\_\_ C. Designate Chemistry or OSC personnel to support addition at the RCZ/control point.
- \_\_\_\_\_ D. Determine required respiratory equipment, protective clothing, and any additional RP requirements.
- \_\_\_\_\_ E. Determine required equipment to support addition (eg; radios, chemical resistant suits, flash lights, etc.).
- \_\_\_\_\_ F. Establish Low Dose Waiting Areas/control points (as required).
- \_\_\_\_\_ G. Determine stay time(s) at caustic addition area (as required).
- \_\_\_\_\_ H. Identify potential safety hazards to team members (eg; heat stress, caustic spill control, caustic hazards, etc.).

\_\_\_\_\_ Obtain equipment required to support addition.

\_\_\_\_\_ Establish and maintain stay time log at the RCZ/control point (as required).