

NTPC	LMI	LARA
TITLE	Guidelines for Preservation of SWAS Sensors during Long Shutdown of Unit	
REF. NO.	LMI 03-R0/C&I/OIN/CHEM/039	

**LARA SUPER THERMAL POWER PROJECT
LOCAL MANAGEMENT INSTRUCTION**

LMI 03-R0/C&I/OIN/CHEM/039

**Guidelines for Preservation of SWAS Sensors during
Long Shutdown of Unit**



All locations are required to comply with this Directive

Approved for Implementation by
HOP(LARA)

Date : 20/7/18

Enquiries to : HOD(C&I)

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6	CHECKED BY	Name: K K Dutta Designation: AGM(C&I) Signature: <i>[Signature]</i> 21.06.18
7	RECHECKED BY	Name: Sunil Kumar Designation: GM(Maint) Signature: <i>[Signature]</i> 12.7.18
8	REVIEWED BY	Name: R K Rout Designation: GM(O&M) Signature: <i>[Signature]</i> 28/7/18
9	APPROVED BY	Name: Sanjay Madan Designation: HOP(Lara) Signature: <i>[Signature]</i> 31/7/18
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Guidelines for Preservation of SWAS Sensors during Long Shutdown of Unit

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Guidelines for Preservation of SWAS Sensors during Long Shutdown of Unit

1.0 INTRODUCTION

SWAS plays an important role in power plant through which chemical parameters of the Boiler water & steam are monitored, this in turn protect our major capital equipment's like Boiler & Turbine etc.

So, reliability & availability of SWAS Analyzers is of prime importance for providing proper indication, through which corrective actions & other technical decisions are taken.

The reliability & life of sensors largely depends upon the operating condition & preservation method. It has been observed that the sensors are not preserved properly during long shut down/OH (more than 15 days) of the units.

After deliberation with experts & OEM of SWAS Analyzers following preservation procedure along with DO's & DON'Ts for different SWAS sensors are prepared which will help to increase the life of sensor as well as reliability of Analyzers in the power plant.

2.0 SUPERSEDED DOCUMENTS - Nil

3.0 GUIDELINES

3.1 pH sensor :

Preservation

1. Remove the sensor from flow chamber.
2. Clean with DM water.
3. Store in 3 M KCL during shut down more than 2 days.
4. Electrodes should be stored with a protective cap containing KCl solution (PN9210342).
5. For overnight storage, immerse the sensor in DM water or 4 pH buffer solution.

Responsibility: AGM(C&I)

Note: 3M KCL & 4 pH Buffer solution is to be provided by Chemistry.

Responsibility: AGM(Chem)

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Start-up

1. Remove the sensor from solution.
2. Rinse thoroughly with DM water.
3. Calibrate with 4.01 pH, 6.86 pH, & 9.18 pH Buffer Solutions if reading is maintained at around 9 pH.
4. Use branded liquid & branded buffers instead of tablets.

Responsibility: AGM(C&I)

Note: Standard Buffer solution is to be provided by Chemistry.

Responsibility: AGM(Chem)

DO's& DON'T's

1. Don't leave the sensor in dry condition.
2. Don't expose the sensor head to moisture.
3. Don't store the electrode in deionized water

3.2 DO Sensor:

Preservation

1. Remove from the flow chamber.
2. Clean electrode with DM water & Store in dry condition.
3. For long shut down (S/D period more than 3-4 days) remove the membrane & electrolyte from the sensor.
4. Store in dry, non-corrosive & non humid condition.

Start-up

1. Change the electrolyte.
2. Polarize for 6 hours.
3. Calibrate with "Zero" only .Ensure zero air bubble in sensor membrane.
4. Sodium sulfite or pure nitrogen should be used for "zero" solution.

Responsibility: AGM(C&I)

Note: Sodium Sulfite is to be provided by Chemistry.

Responsibility: AGM(Chem)

DO's& DON'T's

1. Don't store in water.
2. Don't store the sensor resting on membrane.
3. Don't calibrate for 100% range.

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3.3 Conductivity Sensor:

Preservation

1. Remove from the flow chamber.
2. Clean with isopropyl solution to ensure that no salt deposit is there.
3. Store sensor in dry condition.

Start-up

1. Not necessary to calibrate the sensor.
2. Verification can be done with standard solution of 100 μ S solution.
3. Don't use very low range standard solution ($< 10 \mu$ S) for verification, as they are not stable.

Responsibility: AGM(C&I)

Note: Standard solution of 100 μ S/Applicable solution is to be provided by Chemistry.

Responsibility: AGM(Chem)

DO's & DON'T's

1. Always store the sensors in dry condition.
2. Don't store the sensor in wet condition, corrosive atmosphere & humid area.

3.4 Silica Analyser:

Preservation

1. Flush All the tubes with DM water.
2. Keep mixing chamber clean and dry.

Start-up

1. Ensure availability of Reagents and Sample.
2. Calibrate the analyser with standard silica solution and validate its reading.

Responsibility: AGM(C&I)

Note: Standard Reagents and Silica solution is to be provided by Chemistry.

Responsibility: AGM(Chem)

DO's & DON'T's

1. Always Flush Silica Analyser during long shutdown(more than 3-4 days).

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3 DISTRIBUTION LIST

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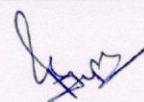
1. HOD(EEMG)
2. HOD(Chemistry)
2. LARA INTRANET LMI WEB PAGE.



LMI Compliance Checklist

LMI Description : Preservation of SWAS Sensors during Long Shutdown of Unit
: LMI 03-R0/C&I/OIN/CHEM/039
LMI COS Reference : COS-ISO-00-OIN/OPS/CHEM/039, Rev. No: 0 December 2016

		Date		
sensor	Compliance Point	Status	Unit-1	Unit-2
pH sensor	Remove the sensor from flow chamber.			
	Clean with DM water.			
	Store in 3 M KCL during shut down more than 2 days.			
	Electrodes should be stored with a protective cap containing KCl solution.			
	For overnight storage, immerse the sensor in DM water or 4 pH buffer solution.			
DO Sensor	Remove from the flow chamber.			
	Clean electrode with DM water & Store in dry condition.			
	Remove the membrane & electrolyte from the sensor.			
	Store in dry, non-corrosive & non humid			
Conductivity Sensor	Remove from the flow chamber.			
	Clean with isopropyl solution to ensure that no salt deposit is there.			
	Store sensor in dry condition			
Silica Analyse	Flush All the tubes with DM water.			
	Keep mixing chamber clean and dry.			
Remarks:				



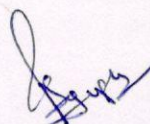
LMI Compliance Checklist

LMI Description : Start Up of SWAS Analyser after long shutdown

: LMI 03-R0/C&I/OIN/CHEM/039

LMI COS Reference : COS-ISO-00-OIN/OPS/CHEM/039, Rev. No: 0 December 2016

		Date		
sensor	Compliance Point	Status	Unit-1	Unit-2
pH Analyser	Remove the sensor from solution(Preservation).			
	Rinse thoroughly with DM water.			
	Calibrate with 4.01 pH, 6.86 pH, & 9.18 pH Buffer Solutions if reading is maintained at around 9 pH.			
	Use branded liquid & branded buffers instead of tablets.			
DO Analyser				
	Change the electrolyte.			
	Clean Electrode with 400-600 grit silicon carbide finishing paper,if Tarnished.			
	Polarize sensor for 6 hours.			
	Calibrate with Zero Only.Ensure zero air bubble in sensor membrane.			
	Sodium sulfite or pure nitrogen should be used for "zero" solution.			
Conductivity Analyser				
	Verification is to be done with standard solution of 100 μ S solution.			
	Don't use very low range standard solution (< 10 μ S) for verification, as they are not stable.			
Silica Analyser				
	Ensure availability of Reagents and Sample.			
	Calibrate the analyser with standard silica solution and validate its reading.			
Remarks:				



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