

Start-Up, Shutdown, and Malfunction Planning

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- ▶ North Carolina regulation NC 2D.0535 requires a facility to establish a malfunction abatement plan.
- ▶ EPA requires under 40 CFR 63.6(e) that facilities meet the MACT emission standard or comply with the startup, shutdown, and malfunction plan.



Why Implement the SSM Plan? (Continued)

- ▶ It is a requirement under a Title V Permit.
- ▶ To provide flexibility in operations during an abnormal process event.
- ▶ It establishes corrective actions taken by operating personnel to ensure that the regulatory requirements are met.



SSM Plan Implementation

- ▶ Establish a written plan:
The plan must describe in detail, procedures for operating and maintaining sources during periods of startup, shutdown, and malfunction (S/S/M). It must also include a program of corrective action for control devices and processes used to comply with the rule.
- ▶ Plan shall identify all routine or predictable malfunctions.



SSM Plan Implementation (Continued)

- ▶ When actions taken during S/S/M are consistent with the plan, the owner/operator shall keep records (checklist) that confirm compliance. These records must be submitted in the required Semi-Annual report under the MACT.
- ▶ If the plan is not followed properly and excess emissions occur you follow the requirements of 40 CFR 63.103.



SSM Plan Implementation (Continued)

- ▶ If actions taken are not consistent with the plan, you must record the actions taken and report the occurrence within 2 working days after the inconsistent action. A follow-up letter is required within 7 working days after the end of the event. If your plan has failed and caused a malfunction event, the plan must be revised within 45 days after the event.



SSM Plan Implementation (Continued)

- ▶ A record of the SSM Plan must be kept for the life of the affected source or until it is no longer subject to the MACT. If the plan is revised, you must keep a copy of the revisions and the previous versions of the plan must be kept for 5 years.
- ▶ The owner/operator may use the facilities standard operating procedures (SOP's) provided the SOP's meet the requirements of the applicable standard.



Example of SSM Plan

Following is an example of a friend's facility located outside of the Carolinas. Any resemblance to a facility within North Carolina is strictly accidental. The names have been changed to protect the innocent.



Start-Up

Startup of a Thermal Oxidizer

Description – Begin operation of the thermal oxidizer.

Plan – Start thermal oxidizer system per standard practice if all utilities are available and O₂ concentration is within SOC's. Once plant systems are at steady state, individual vents can be diverted to the oxidizer, once the oxidizer has reached minimum operating temperature. If plants are not at steady-state condition, the oxidizer will interlock on High O₂ (for safety). See Standard Practices TF 4.04, TF 4.20, TF-4.21, and TF-4.22.



Shutdown

Shutdown of Thermal Oxidizer

Description – Stop operation of the thermal oxidizer.

Plan – Once the last vent has been diverted from the Thermal oxidizer, the oxidizer systems can be shutdown.

See Standard Practices TF-4.04, TF-4.20, TF-4.21, and TF-4.22.



Malfunction

Malfunction of Thermal Oxidizer

Description – Potential malfunctions for the oxidizer include loss of fuel supply, loss of emergency water supply, failure of fume blower bearings, flame scanner failures, instrumentation and PLC failures, quench nozzle cleanings, failed/melted packing, temperature excursions, oxygen in the vent header, pump failures, or loss of utilities.



Malfunction (Continued)

Plan – Determine the cause for the malfunction and correct. Check the following for potential causes: flame scanners and propane supply. Switch emergency water supply between filtered and cooling water. Clean the quench nozzles. Purge the vent header with nitrogen and check for potential oxygen intrusion. Check instrumentation for correct operation.



Job Review Check Procedure

Thermal Oxidizer <u>Checklist</u> per Startup, Shutdown, Malfunction Plan	Was Procedure Performed Yes / No
1. Divert fumes from thermal oxidizer to the bypass stack	Yes
2. Divert each vessel carefully to it's own atmospheric vent.	Yes
3. Shutdown the waste fuel blower.	Yes
4. Pump the knock-out tank empty and shutdown the pump.	Yes
5. Shut off, block in and drain caustic, sulfite and balanced polymer addition systems.	Yes
6. Lower thermal oxidizer temperature to zero.	Yes
7. Block in the boiler feed water addition.	Yes
8. Keep the make-up water going to the quench as well as the scrubber re-circ pumps operating (continue to provide quench re-circ). This will allow the scrubber to obtain a steady-state inlet temperature of less than 127 degrees F.	Yes
Operator Signature: John Doe	Date: 04/12/06
Team Leader Signature: Jane Doe	Date: 04/12/06

Conclusion

- ▶ If the facility has a well written plan and it is implemented properly you reduce the risk of excess emissions reporting.
- ▶ It gives the facility operational flexibility .
- ▶ Therefore increasing productivity and reducing the possibility of non-compliance.

