

	<b>COOLING TOWER (EUCOOLTWR) MALFUNCTION ABATEMENT PLAN</b>	Date: 5/30/12 Page No.: 1 of 3
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## **INTRODUCTION**

This Malfunction Abatement Plan (MAP) identifies practices the Verso Paper Corp. Quinnesec mill follows to ensure the condensing steam turbine generator cooling tower (EUCOOLTWR) operates in accordance with the mill's Permit to Install No.100-10, Special Condition III. 1.

### Process Description:

The Quinnesec mill's condensing steam turbine generator supplies electricity for the mill's pulp and paper making processes. Steam produced by the mill's Waste Fuel Boiler (EU1121) is used to power the turbine generator. Unused exhaust steam discharged from the turbine generator is condensed and reused in the boiler feed water process. Process mill water used to cool the turbine exhaust steam is sent to a fiberglass counter flow type cooling tower to be cooled and recycled back to the mill process water system. The cooling tower includes drift eliminators to insure that emission standards are met.

## **PREVENTATIVE MAINTENANCE**

To maintain environmentally sound operation of the cooling tower drift eliminators, an ongoing preventative maintenance program is essential. The preventative maintenance program is presented here.

### **Responsible Personnel**

Personnel responsible for overseeing the inspections, maintenance and repair of the cooling tower drift eliminators are indicated below:

- Recovery and Utilities Maintenance Manager
- Team Leaders
- Water Treatment Operators

### **Inspection and Frequency**

The cooling water tower is inspected regularly to insure proper operation of the cooling tower control equipment (drift eliminators). The frequency of inspection for each item is indicated. Corrective measures will be taken to service or maintain those items which are found to require action.

Operating personnel conduct routine inspections of the cooling tower equipment (i.e., drift eliminators) and immediately report any operation issues to their supervisor.

	<b>COOLING TOWER (EUCOOLTWR) MALFUNCTION ABATEMENT PLAN</b>	Date: 5/30/12 Page No.: 2 of 3
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Daily:

The water treatment plant operator conducts daily inspections of the cooling tower equipment, including visual observation of the drift eliminator operating condition.

Weekly:

Detailed inspections are conducted weekly on critical cooling tower equipment that includes:

- Fans and motors
- Tower deck and structures
- Screens and sump pits
- Drift eliminators

**Spare Parts**

An adequate supply of spare parts will be maintained on site for maintenance and repair of the cooling tower equipment (i.e., drift eliminators).

**OPERATING VARIABLES AND CORRECTIVE ACTION**

The Quinnesec mill operates the cooling tower in accordance with manufacture’s specification to insure compliance with drift limits as certified by the manufacture. The cooling tower will not operate unless the drift eliminators are installed and functioning properly. To insure the drift eliminators remain free from biological build-up, water treatment chemicals (i.e., chlorine) can be added to the cooling tower inlet water.

The Quinnesec mill’s PTI No. 100-10 requires the mill to record particulate emissions from the cooling tower on a calendar month basis (Special Condition, VI. 2.). An example calculation is detailed below:

Process water design inlet flow = 18,700 gallons per minute  
 Total dissolved solids = 225 mg/l, (0.002 lb/gal)  
 Maximum drift rate = 0.0009%  
 Operating hours per month = 744

Particulate emission rate (Tons per Month):

$$(18,700 \text{ gal/min}) \times (0.002 \text{ lb/gal}) \times (60 \text{ min/hr}) \times (744 \text{ hr/month}) \times (0.0009\%) / (2000 \text{ lb/ton}) = \underline{0.008}$$



**COOLING TOWER (EUCOOLTWR)  
MALFUNCTION ABATEMENT PLAN**

Date: 5/30/12  
Page No.: 3 of 3

**OTHER CONSIDERATIONS**

This Malfunction Abatement Plan may be updated periodically as operating and maintenance experience with the equipment is gained.