



**PROJECT SUMMARY REPORT
Paper Mill**

Paper Machine Lube Oil and Bowser Maintenance

November 2010

INTRODUCTION

This report documents the services performed during the mill's annual shutdown, November 2nd and 3rd 2010.

PROJECT BENEFITS

- Inspect reservoir interior for contamination
- Single Source for all lubricant purification & reservoir cleaning needs
- Advanced oil purification technology
- Reservoirs refilled with purified oil at operating temperature

PRIMARY OBJECTIVES

- To provide safe, efficient and professional results
- To provide timely service results not to affect start-up timing
- To provide documentation of results to satisfy customer requirements

OVERALL SCOPE

- To handle the paper machine oil from "start to finish" of project
- To provide temporary oil storage
- To provide the equipment, labor and expertise necessary to complete this service
- To meet the cleanliness criteria of the customer
- To provide safe and efficient Confined Space Entry (CSE) reservoir cleaning service.
- Inspect system for mechanical defects and problems

PROJECT SAFETY & FINANCIALS

- Dilmar Fluid Services prides itself on working safely. On this project one MPU operator, one Project Manager and five Technicians worked a total of **84 hours without an accident.**
- Final project cost was \$520.00 over budget, customer requested offsite disposal of oily waste generated during the service. Our time estimate was accurate.

PERFORMANCE DOCUMENTATION

The following pages detail the objectives met per specification.

CONFINED SPACE ENTRY (CSE) – RESERVOIR CLEANING

Dilmar’s sub contractor set-up for the Confined Space Entry by following the guidelines set forth by OSHA. These procedures were followed and documented in the “CSE Permit”. Large amounts of sludge, water and rust were removed from both bowser. All of the contaminants were stored in containment provided by the customer and disposed of by our subcontractor at an offsite facility.

RESERVOIR CLEANING RESULTS

1st-4th Section Bowser Cleaning- Before



1st-4th Section Bowser Cleaning- After



RESERVOIR CLEANING RESULTS

5th & 6th Section Bowser Cleaning- Before



5th & 6th Section Bowser Cleaning - After



SYSTEM INSPECTION DOCUMENTATION

Paper Dust on the top of each reservoir enters reservoir via lose manway covers and air breathers



Loose fitting manways allow dirt & water to enter bowser



SYSTEM INSPECTION DOCUMENTATION - Section 1-4

Roof Rust due to water ingress and condensation in headspace of each bowser



Paper plugging exhaust fan of blower motor will overheat motor



SYSTEM INSPECTION DOCUMENTATION - Section 5 & 6

Paper plugging exhaust fan of blower motor will overheat motor



Plugged air breather allows airborne dirt to enter through a non filtered source



Paper Machine Oil Purification

To meet the cleanliness and moisture removal requirement for the Shell Delima S 220 multiple separation methods were employed including; bag filtration, high speed, self cleaning centrifuge, coarse filtration, vacuum dehydration, fine particle filtration utilizing Dilmar Fluid Service’s “advanced filtration technology”.

FINAL RESULTS

#4 PM Gallons	ISO Particle Count	ISO Particle Count	Moisture Content	Moisture Content
	Start	Finish	Start	Finish
6,630	18/16/13	18/16/13	18,780 ppm*	182 ppm

*FIRST GALLONS FROM BOTTOM OF BOWSER

RECOMMENDATIONS

1. Maintain OEM recommended oil cleanliness levels; consider using *Schroeder high dirt holding capacity filter elements*.
2. Consider installation of *Fluitec Stealth Dry Gas blanketing system* on the lube oil bowsers to reduce condensate from forming in the headspace and free water in the bottom of the bowser.
3. *Install new manway gaskets or bolt down manways* to prevent solid and water contamination from entering the reservoir.
4. Maintain *optimum flow rates to machine bearing*.
5. During field days, consider a bearing inspection by Reliable and Dilmar, utilizing a borescope to *determine the possibility of sludge and/or carbon build up in the bearing housings*.
6. Consider cleaning the main lube oil reservoir *once every 3 – 5 years*.

At this time Reliable Contamination Control and Dilmar Fluid Services would like to thank you and your team for support during this critical project.