COMPLIANCE TEST REPORT

DETERMINATION OF AUDIT ACCURACY FOR THE

RO STACK OPACITY MONITOR

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AIR QUALITY DIVISION

Weyerhaeuser

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Semi-Annual – October 26, 2017

1.0 INTRODUCTION

As required by Weyerhaeuser Grayling OSB's Title V Renewable Operating Permit, a Continuous Opacity Monitoring System is installed at the RTO exhaust to monitor opacity from EUDRYERS and EUCOEN. The opacity monitor is a Teledyne LightHawk Model 560, Serial Number 5602516. The COMS is installed, calibrated, maintained, and operated in accordance with the procedures set forth in 40 CFR § 60.13; 40 CFR § 60, Appendix B, PS1; and 40 CFR § 60, Appendix F, Procedure 3.

2.0 SUMMARY OF RESULTS

Audit testing was conducted by Weyerhaeuser personnel on the Teledyne LightHawk Opacity monitor servicing the Dryer RO Stack. NIST certifiable attenuators were used. The attenuators were calibrated on April 17, 2014 and on April 8, 2015 at Cal Check LLC of Raleigh, North Carolina. The calibration audit was conducted on October 26, 2017, satisfying the second semi-annual quality assurance/quality control requirements for these monitoring systems for 2017.

Attenuator certification forms for the last two calibrations are provided in Appendix A. The two consecutive annual filter calibrations agreed within .5% opacity therefore, in accordance with the new Procedure 3 rule, the next filter calibration is due by April 7, 2020. Calculations of monitor reading accuracies are provided in Appendix B. The results present calibrated attenuator values and monitoring system responses. All accuracies were within the allowable limit of 3.0% (≤ ± 3%).

Opacity Filter Audit Accuracies
Weyerhaeuser, Grayling

Teledyne LightHawk 560 Serial No: 5602516	**Next filter calibration due by: April 7, 2020 Path Length Correction Factor (PLCF) = 1.000**		
Filter Serial Number	**S10170**	**S10139**	**S10326**
Attenuator Opacity Value: 4/17/2014	**Low – 16.9%**	**Mid – 27.6%**	**High – 49.0%**
Attenuator Opacity Value: 4/8/2015	**Low – 16.8%**	**Mid – 27.6%**	**High – 48.6%**
Change in Opacity	**0.1%**	**0.0%**	**0.4%**

Table 2.1

3.0 TEST PROCEDURES

Daily

This facility's LightHawk 560 opacity monitor is subjected to daily calibrations for zero and upscale drift with an upscale calibration value of 35.67 % opacity. Daily visual checks of the COMS system are conducted by the operating teams on shift and recorded in a daily check sheet. The system alarms automatically for any deviations which are recorded via an in-house DAS called EQAMS into the IP21 data logger and on the human interface, Proficy, where operators can record the cause and resolution to system malfunctions, if they occur.

Semi-annual audit procedures on the LightHawk opacity monitor system are performed when ambient temperatures allow removal of the protective housing without creating fogging on the optics. An external zero device is installed and used during the audit.

Semi-annually

Optical Alignment: The Optical alignment assessment was performed as specified in 40 CFR § 60, Appendix F, Procedure 3_ Quality Assurance Requirement for Continuous Opacity Monitoring Systems at Stationary Sources, ASTM D6216-12, and 40 CFR § 60, Appendix B, PS1. Light source window and optical reflectors are cleaned and optical alignment is checked following procedures outlined in the Teledyne 560 LightHawk Opacity Monitor Manual. This procedure is completed before any other part of the audit is performed.

Calibration Error : The Calibration Error Test was performed as specified in 40 CFR § 60, Appendix F, Procedure 3_ Quality Assurance Requirement for Continuous Opacity Monitoring Systems at Stationary Sources, ASTM D6216-12, and 40 CFR § 60, Appendix B, PS1. Low, mid, and high range filters certifiable to the National Institute of Standards and Testing were used. Nine non-consecutive tests were completed using the three filters (three readings with each filter). The calibration error is represented by the sum of the mean differences plus the 95 percent confidence interval expressed as an opacity percentage.

Zero Compensation: The Teledyne LightHawk does not distinguish between zero compensation and dust compensation. The unit automatically applies the dust compensation to the final readings, as required by Procedure 3.

COMS Calibration Audit Tracking

Interval	Quarterly	Semi-annual	Semi-annual	Semi-annual	Semi-annual
Test Date	9/29/2015	3/11/2016	9/15/16	3/16/17	10/26/17
Dust / Zero Compensation Before Cleaning	1.99	1.05	.92	0.0	0.22
Dust / Zero Compensation After Cleaning	0	0	0	0	0
Zero Compensation PASS / FAIL <4% / ≥4%	PASS	PASS	PASS	PASS	PASS
Optical Alignment Confirmed Y/N?	Y	Y	Y	Y	Y
Calibration Error% - Low	0.53	0.60	0.33	0.52	0.40
Calibration Error% - Mid	0.05	0.92	0.14	0.31	0.22
Calibration Error% - High	0.11	0.67	0.42	0.60	0.97
Audit PASS/FAIL	PASS	PASS	PASS	PASS	PASS

Table 3.1

Annual

Zero Alignment: The Teledyne LightHawk 560 calibration kit includes an external zero device which is used for each annual on-stack zero alignment. Off-stack zero alignment was performed on June 8, 2013 prior to initial installation of this replacement opacity monitor system on June 25, 2013. The Manufacturer's Certificate of Conformance was submitted to the Michigan Department of Environmental Quality on 7/24/2013. An on–stack zero alignment was performed during the 2015 2nd quarter opacity audit (3rd consecutive quarterly audit) on 6/24/2015 and the report submitted. An off-stack zero alignment was performed on September 29, 2015 by a certified Teledyne service technician, satisfying the initial requirements imposed by the new Procedure 3 rules. The results are summarized below wherein EZD is the instantaneous zero reading during an on-stack alignment and CPC is the instantaneous zero reading under Clear Path Conditions during an off-stack alignment, SZC is the Simulated Zero Condition, and PZA is the Primary Zero Alignment expressed as a percentage.

Zero Alignment						
Test Date	**On Stack/ Off Stack**	**Dust/Zero Compensation After Cleaning**	**(Instantaneous opacity reading) Variable EZD (on-stack) CPC (off-stack)**	**Simulated Zero SZC**	**Primary Zero Alignment PZA = EZD – SZC PZA = CPC - SZC**	**PASS/ FAIL (< ± 2%)**
6/24/2015	On Stack	0.9 %	0.5%	.3%	.2% Opacity	PASS
9/29/2015	Off Stack	0%	0.1%	0.05%	0.05% Opacity	PASS
9/15/16	On Stack	0%	-0.18%	-0.06%	0.12% Opacity	PASS
3/16/17	Off Stack	0%	0.0%	0.0%	0.0% Opacity	PASS
10/26/17	Off Stack	0%	-0.06%	0.09%	0.15% Opacity	PASS

Table 3.2