HORIZON ENGINEERING LLC

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Project No. 3383

SOURCE EVALUATION REPORT

Clearwater Paper Corporation
Lewiston, Idaho

VOC Leak Checking
No. 1 and No. 2 PR Washers

November 12, 2009

Test Site:
Clearwater Paper Corporation
803 Mill Road
Lewiston, Idaho 83501

Air Pollution Emission Testing

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1. CERTIFICATIONS

1.1 Test Team Leader

I hereby certify that the test detailed in this report, to the best of my knowledge, was accomplished in conformance with applicable rules and good practices. The results submitted herein are accurate and true to the best of my knowledge.

Name: Kyle Kline

Signature Kyle Kline Date 12/10/09

1.2 Report Reviewer

I hereby certify that I have reviewed this report and find it to be true and accurate, and in conformance with applicable rules and good practices, to the best of my knowledge.

Name: David Bagwell, QSTI

Signature David Bagwell Date 12/10/09

2. INTRODUCTION

2.1 Test Site: Clearwater Paper Corporation
803 Mill Road
Lewiston, Idaho 83501

2.2 Mailing Address: P.O. Box 1126
Lewiston, Idaho 83501

2.3 Test Log:
Positive Pressure Leak Checking
PR Washers No. 1 & 2

Test Date	Run No.	Test Time
November 12, 2009	1	10:24 – 10:30

2.5 Test Purpose: 40 CFR 63, Subpart S, 63.450 (c) and 63.457 (d).

2.6 Participants:
Horizon Personnel:
Kyle Kline, Team Leader
David Bagwell, QSTI, Report Review
Kate Krisor, Technical Writer
Test Arranged & Observed by:
Rick Wilkinson, Clearwater Paper Corporation

3. SUMMARY OF RESULTS

3.1 Leak Definition:

- Detectable leak concentration: 500 ppmv (as methane) above background
- Applicable Subpart: 40 CFR 63, Subpart S, 63.450(c) and 63.457(d)

3.2 Summary of Results

A single check on each component in the two PR Washer systems was completed. No detectable leaks as defined in the applicable subpart were found at any location.

3.3 Quality Control / Quality Assurance Procedures

QA procedures outlined in the test method were followed, including equipment specifications and operation, calibrations, and performance tolerances. EPA Method 21 details the following:

- Instrument Specifications standards (Sections 6.1 to 6.6)
- Calibration Precision (Section 8.1.2)
- Response Time (Section 8.1.3).

The record of the Calibration Precision and Response Time are on the Analyzer Field Data sheet. Specifications of the instrument used and the results of specific checks are summarized in Tables 1a and 1b.

Table 1a

EPA Method 21 Instrument Specifications

Applicable Section	Method Requirements	Equipment Specification	Meets Requirements
6.1	Detector Type:	Thermo Electron TVA 1000B Portable Flame Ionization Detector	Yes
6.2	Measurement capabilities within specified ranges for leak definition concentration:	0.5 to 10,000 ppm CH_4 – dynamic range 0.5 to 50,000 ppm CH_4 – linear range	Yes
6.3	Instrument meter readable to ± 2.5% of specified leak definition concentration (=12.5 ppm CH_4):	Minimum detectable limit 1.8 ppm CH_4	Yes
6.4	Electrically driven pump:		Yes
6.4	Nominal sample flow rate between 0.10 – 3.0 L/min:	1.0 L/min	Yes
6.5	Probe or Probe Extension Outer Diameter:	≤ 0.25 inches	Yes
6.6	Explosive Atmosphere Safety Specifications:	Class I, Division 1, Groups A, B, C, D Hazardous Locations	Yes

Table 1b

Calibration Precision and Response Time

Calibration Gas	Concentration	Calibration Precision	Avg. Response Time
Zero Gas	0.0 ppmv	NA	5.5 seconds
Span Gas	1.00% CH_4	0.4%	8 seconds

4. SOURCE DESCRIPTION AND OPERATION

4.1 Process and Control Device Description and Operation:

The brown pulp is washed to remove the spent pulping liquors and dissolved solids from the pulp. Some of this liquor is recycled to the digesters while the major portion is sent to the Recovery Area. The weak black liquor is washed from the pulp at the pre-oxygen washers and all brownstock washer system gases are collected in a high-volume low-concentration (HVLC) system and thermally oxidized.

5. SAMPLING AND ANALYTICAL PROCEDURES

5.1 Sampling Procedures

5.1.1 Sampling and Analytical Methods

Test Methods Used: Testing was done in accordance with EPA Method 21 in 40 CFR 60, Appendix A, July 1, 2007. The regulations that specify this are incorporated in 40 CFR 63, Subpart S, July 1, 2007: 63.450 Standards, paragraph (c), 63.453 Monitoring requirements, paragraph (k)(3) and 63.457 Test methods and procedures, paragraph (d).

The portable flame ionization detector (FID) was calibrated in the field according to the manufacturers' specifications using 1.00% methane gas. Instrument zero was done using bottled zero air gas.

5.2 Horizon Test Equipment

Equipment Name	Identification
Portable FID	Thermo Electron TVA 1000B (FID) Portable Flame Ionization Detector

6. DISCUSSION

The results of the testing should be valid in all respects. All quality assurance checks including instrument checks and calibrations were within method-allowable tolerances.

APPENDIX

Field Data

VOC Leak Check Field Data

Calibration Precision Worksheet

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Client: Clearwater
Name: KRK
Job #: 3383
Date: 11/12/09
Source: LVHC, HVLC
Method: 21

Response Factor:								
Initial Calibration:	**Gas Type**	**Cyl. Value**	**Instr. Response**			**Response Time**		
High Cal: M7	Methane	10000	1.01%	1.02%	1.01%	8	8	8
Zero Cal: A8	Zero Air	0	.34	-.48	-.59	5	5	5
Time:								
Final Calibration:	**Gas Type**	**Cyl. Value**	**Instr. Response**			**Response Time**		
High Cal: M7	Methane	10000	1.00	9923	9910	8	8	8
Zero Cal: A8	Zero Air	0	.83	1.14	1.21	6	6	6
Time:								
Sample Point	**Background**		**ppm**			**Time**		
3814								
339870								

Method 21 Calibration Precision Worksheet

Clearwater Paper
11/12/2009
Calibration Precision

Initial	cal gas				Average	Cal Precision, %	
	10000	10100	10200	10100			criteria = 10%
Algeraic Difference		-100	-200	-100	-133.3	-1.33	
	0	0.34	-0.48	-0.59			
Algeraic Difference		0.34	-0.48	-0.59	-0.2	0.00	
Final	cal gas				Average	Cal Precision, %	-0.39
	10000	10000	9923	9910			
Algeraic Difference		0	77	90	55.7	0.56	0.00
	0	0.83	1.14	1.21			
Algeraic Difference		0.83	1.14	1.21	1.1	0.01	

Process Data

Process and Operation Data

No. 1 and No. 2 PR Washers

Date/Start Time: 11/12/2009 10:24
Date/ Stop Time: 11/12/2009 10:30

	1 PR Washer (Stock Flow) FI5526.PV	1 PR Washer (RPM) SIC5550.PV	2 PR Washer (RPM) SIC5560.PV	Area 15 Production Rate (ODTP/Day) FYI7890.PV
12-Nov-09 10:24:00	11582.14	1.89	1.26	678.54
12-Nov-09 10:25:00	11566.86	1.89	1.26	678.39
12-Nov-09 10:26:00	11551.59	1.89	1.26	678.24
12-Nov-09 10:27:00	11536.31	1.89	1.26	678.08
12-Nov-09 10:28:00	11521.04	1.89	1.26	677.93
12-Nov-09 10:29:00	11505.76	1.89	1.27	677.77
Average	**11543.95**	**1.89**	**1.26**	**678.16**

Calibration Information

Calibration Gas Certificates

AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott™

A-8

08-13-09

Shipped From: 500 WEAVER PARK RD
LONGMONT CO 80501
Phone: 888-253-1635 Fax: 303-772-7673

CERTIFICATE OF ANALYSIS

HORIZON ENGINEERING

13585 N.E. WHITAKER WAY

PORTLAND OR 97230

PROJECT #: 08-78977-001
PO#: 1005
ITEM #: 0804100 105
DATE: 06Aug2009

FILL PRESSURE: 1000 PSIG PRODUCT EXPIRATION: 06Aug2011
SCOTT LOT#: 921801

PURE MATERIAL: AIR CAS# 132259-10-0

GRADE: ZERO AIR

PURITY: -

IMPURITY	MAXIMUM CONCENTRATIONS	ACTUAL CONCENTRATIONS
THC	1 PPM	< 1 PPM
O2	20 TO 21%	=20 TO 21%

CGA C-10

MANUFACTURED DATE: 06Aug2009 SCOTTY SIZE: 105

ANALYST: WAYNE JOHNSON

AIR LIQUIDE Scott Specialty Gases
Air Liquide America Specialty Gases LLC

M-7

Shipped From:
6141 EASTON ROAD, BLDG 1 PO BOX 310
PLUMSTEADVILLE PA 18949-0310
Phone: 800-331-4953 Fax: 215-766-7226

C E R T I F I C A T E O F A N A L Y S I S

HORIZON ENGINEERING

13585 N.E. WHITAKER WAY

PORTLAND OR 97230

PROJECT #: 01-73485-001
PO#: 005060
ITEM #: 010431 105
DATE: 17Jan2008

ANALYTICAL ACCURACY: +/-02%
PRODUCT EXPIRATION: 16Jan2010

SCOTT LOT#: 801701C

COMPONENT	REQUESTED GAS CONC MOLES	ANALYSIS (MOLES)
METHANE	1. %	1.00 %
AIR	BALANCE	BALANCE

MANUFACTURED DATE: 17Jan2008 SCOTTY SIZE: 105

APPROVED BY: JAKE SENKOW

QA/QC Documentation

Portable FID Instrument Specifications

TVA1000B Technical Specifications

Safety certifications	FM (Class 1, Div. 1, Groups A,B,C&D Hazardous Location, Temp. Class T4) CENELEC (Div. 1, Zones I and II Group IIC, Hazardous Location, Temp. Class T4)*
Datalogging	Onboard
Readout	Bar graph & 4- digit LCD
Dynamic Range	0.5-2,000 ppm (PID) isobutylene; 0.5-50,000 ppm (FID) methane
Linear Range	0.5-500 ppm (PID) isobutylene; 0.5-10,000 ppm (FID) methane
Response Time	3.5 seconds
Minimum Detectable Limit	100 ppb benzene (PID); 300 ppb hexane (FID)
Alarms	Low, high, STEL
Sample Flow Rate	1,000 cc/min nominal
Power	Rechargeable NiCd Battery
Logging Capacity	800-18,000 points mode specific
Temperature Range	0-40°C (32°F - 104°F)
Fuel	None required (PID); 99.995% hydrogen (FID)
Portable Operation Time	8 hours (with reference operating conditions)
Approximate Mass	5.8 kg (13 pounds)
Nominal Dimensions	13.5 x 10.3 x 3.2 inches (343 x 262 x 81 mm)
Analog Output	0-2V dc
Repeatability	+/- 1% (PID); +/- 2% (FID)
Autoranging	Yes
Diagnostics	Yes

Other Available Options:

Carrying Case	P/N CR012XL
Charcoal Filter	P/N 510095-1
FID Calibration Kit	P/N CR009UY
PID/FID Calibration Kit	P/N CR012UH

** Enhanced probe and DataManager not CENELEC certified as of publication date*

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Environmental Instruments
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Franklin, MA
02038

Analyze • Detect • Measure • Control™

Thermo ELECTRON CORPORATION

TVA1000B

Features and Specifications

Portable Toxic Vapor Analyzer

The TVA1000B is the only over-the-shoulder portable vapor analyzer that offers both PID (Photo Ionization Detection) and FID (Flame Ionization Detection) in a single, easy-to-use instrument. The ability to utilize both technologies in this field proven instrument provides benefits in reduced weight and a single user interface. The user can easily monitor and log inorganic and organic vapors simultaneously.

FID Detection

Users can measure a wide variety of organic vapors over an impressive dynamic range (0-50,000 ppm), monitoring some compounds that the PID will not detect. The flame ionization detector operates by breaking hydrocarbon bonds and is not limited by the ionization potential of the molecule.

Simultaneous FID/PID Detection

No other instrument offers both Photo Ionization and Flame Ionization Detection operating simultaneously in a single portable vapor analyzer. Dual detection eliminates the time, expense and trouble of purchasing and maintaining two separate analyzers.

With PID detection, the user has not only the ability to monitor for organic compounds, but also can detect many inorganic compounds. Some compounds detected by PID and not FID are ammonia, carbon disulfide, carbon tetrachloride, formaldehyde, and hydrogen sulfide. The PID also has the advantage of not requiring fuel or air to operate. In anaerobic environments, the TVA1000B PID can be used.

Applications

Fugitive Emissions Monitoring
The unique dual detector FID/PID design can handle a wide range of compound vapors present at processing plants. The TVA1000B will permit monitoring at lower ppm levels.

Emergency Response
For reliable measurements of hazardous spills or emissions, the TVA1000B responds quickly in an emergency. The ability to quickly detect the presence of "hot spots" is key to locating the source of the hazard.

Hazardous Waste Site Evaluation
The TVA1000B allows quick and easy identification of the hazard location and quantifies the level of contamination.

Underground Storage Tanks
The TVA1000B is a primary tool for determining if a UST is leaking and the extent of the contamination.

Industrial Hygiene
The TVA1000B can help you maximize the effectiveness of your plant ventilation system, and identifies trouble spots. Use it to survey ambient vapor levels in specific breathing zones or in general plant environments, and log for further follow-up action.

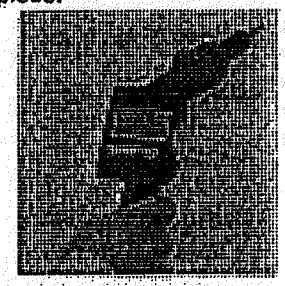
Natural Gas Leak Detection
The TVA1000B enables quick and easy detection of natural gas leaks.

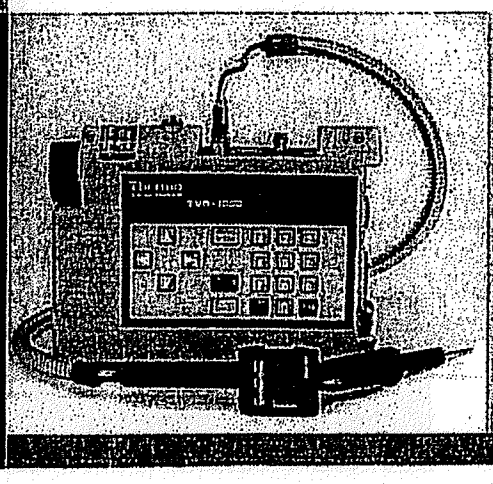
Key Features

- Simultaneous FID/PID or Single FID detector(s)
- Portable and lightweight
- Multiple response factors and curves
- Multi-point calibration
- On-board datalogging
- 8 hour battery life

Probe Options

- *Standard Probe*
  Display measurement values on a 4-character LCD, with measurement units displayed on %, ppm, or ppb. Additionally, a bar graph indicator provides an indication of concentration level. Function keys allow selection of analyzer functions.
- *Enhanced Probe*
  Originally designed for Fugitive Emissions monitoring, the enhanced probe has a larger display area than the basic probe. This provides a display of up to 6 lines x 20 characters, plus a double height concentration value. It displays all the same information as the standard probe and has menu-driven access to many of the analyzer functions, allowing them to be easily initiated and/or changed at the probe.





TVA1000B Data Manager Accessory: Route Management Probe

Powerful field capabilities
The TVA1000B Data Manager allows users to modify or create route data in the field, eliminating the need for manual recording of data. This helps you comply with the electronic data storage requirements within most consent decrees. The new probe has a highly visible 360 degree LED with a pulsed rate linked to concentration.

The DataManager provides access to all of the features previously available only through the sidepack. Users can also easily search and navigate between tags in a route by simply entering the desired tag identifier.

Flexibility and control
The DataManager allows control of how data is viewed and accessed in the field. This allows the user to customize the view to best meet the monitoring needs at your facility, as each route may have different fields and screen displays. Fields may be designated as non-editable to enhance data integrity and database security.

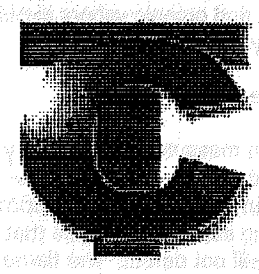
An optional comment field allows the user to make electronic notes about each tag monitored. An alpha-numeric keypad makes data entry a snap.

Key Features for the DataManager

- Custom field labels for more clearly identified route information
- Definable screen layouts optimize user efficiency
- Pick lists lead to consistent data entry and minimize chance of data entry errors
- One button selections to access most commonly used functions
- New sample probe provides 360 degree visual indicator of concentration level
- Cable management system eliminates snagging sample line and electronic cable
- Existing TVA1000 units may be upgraded
- Enhanced filtering system removes dirt and water more efficiently.

ThermoConnect Software

ThermoConnect enables users of the TVA1000B to transfer, display, analyze, and configure data from the instrument using a computer. ThermoConnect is windows based and facilitates the importing of data into other Windows based applications making it easier to retrieve logged data.



Added capability to maximize the TVA DataManager's features

ThermoConnect has been updated with a powerful new utility to create new route database template files. This utility allows you to easily build your own route database and design the screen appearance through a four-step process. Also, any existing route files in the old file format are still recognized by the TVA and may be upgraded to the new format.

The TVA1000B is a benchmark for experience and reliability in Fugitive Emissions Monitoring