

Indiana Harbor Canal – Confined Disposal Facility Air Monitoring Test Report

**US Army Corps of Engineers – Chicago District
East Chicago, IN**

July 20, 2012



Background

Continuous air monitoring is required for the Indiana Harbor Canal (IHC) Confined Disposal Facility (CDF) project to monitor air quality during project activities in order to minimize impacts on the adjacent community to the extent possible. To accomplish this goal two separate air quality monitoring units were selected: 1) Thermo Model 5030 SHARP Monitor to measure particulate matter and , 2) Cerex UV Sentry Gas Analyzer for naphthalene detection. These units meet the specifications provided in Section 44 10 00 of the *US Army Corps of Engineers (USACE) Specifications for Indiana Harbor and Canal Confined Disposal Facility, Facility Operations & Dredging* (July 2011). The units were procured from the manufacturer and delivered to the IHC CDF site on May 7, 2012. One Particulate Monitor and one pair of receiver / transmitter UV sentry monitors were mobilized to each air monitoring pad, assembled and installed per manufacturer's instructions during the week of May 7-11, 2012. See Attachment 1: Site Map – Air Monitoring Pad Detail, for serial numbers for Thermo and Cerex units at each monitoring pad.

Air Monitoring Start Up

On May 14, 2012 representatives from Thermo and Cerex were onsite to perform start up of their respective air monitoring unit. Thermo was represented by Prayok Vongkunthong; Cerex was represented by Scott McEwan. Each unit was inspected by the manufacturer's representative to ensure proper assembly; no issues were noted with the assembly, positioning or alignment of any unit. The start up of the Cerex units lasted from May 14 -16, 2012, with much of the time spent on the tedious effort of lining up the UV beam for the transmitter and receiver end for each UV Sentry unit. The full report for the start up of the Cerex unit can be found in Attachment 3: Cerex UV Sentry: Manufacturer's Test Report.

The initial start up of the Thermo units was completed on May 14, 2012. However, the startup was rejected as being deficient upon a quality control review of the test report. The May 14, 2012 start up procedure did not follow the manufacturer's Acceptance Testing and Startup Procedures as outlined in Chapter 2 of the Manufacturer's Instruction Manual (*Model 5030 SHARP Monitor Instruction Manual*, Thermo Fisher Scientific (2007)). Specifically, the May 14, 2012 Thermo start up did not include a calibration of the Relative Humidity Sensor and the calibration instruments used did not meet NIST standards. As stated previously, due to these deficiencies the May 14, 2012 start up was deemed not acceptable, and the start up of the Thermo Units was performed again on July 5, 2012. The startup testing on July 5, 2012 was conducted in accordance with all manufacturer's recommendations; the full report for the start up of the four Thermo Particulate monitors can be found in Attachment 2: Thermo Particulate Monitor: Manufacturer's Test Report. The following is a summary of the significant events of each manufacturer's test report.

Test Report Summary

Thermo Particulate Monitors – Completed July 5, 2012

Air Monitoring Pad # 2 – Thermo Unit serial number E-867: Assembly and control configuration confirmed as being correct. Calibration resulted in adjustment of the following parameters: T1 Ambient, T2 Sample, T3 Flow, T4 Heater, Relative Humidity, Barometric Pressure, and Flow Rate.

Air Monitoring Pad # 4 – Thermo Unit serial number E-857: Assembly and control configuration confirmed as being correct. Calibration resulted in adjustment of the following parameters: T1 Ambient, T2 Sample, T3 Flow, T4 Heater, Relative Humidity, Barometric Pressure, and Flow Rate.

Air Monitoring Pad # 6 – Thermo Unit serial number E-883: Assembly and control configuration confirmed as being correct. Calibration resulted in adjustment of the following parameters: T1 Ambient, T2 Sample, T3 Flow, T4 Heater, Relative Humidity, Barometric Pressure, and Flow Rate.

Air Monitoring Pad # 8 – Thermo Unit serial number E-881: Assembly and control configuration confirmed as being correct. Calibration resulted in adjustment of the following parameters: T1 Ambient, T2 Sample, T3 Flow, T4 Heater, Relative Humidity, Barometric Pressure, and Flow Rate.

Cerex UV Sentry Units – Completed May 14 -16, 2012

Air Monitoring Pad # 2 – UV Sentry serial number 1683: Set up of receiver and transmitter units verified, lamp installed, receiver and transmitter aligned, software configured, 5 ppb Naphthalene concentration test verified, data report generated (UV Sentry & Thermo data collected together).

Air Monitoring Pad # 4 – UV Sentry serial number 1680: Set up of receiver and transmitter units verified, lamp installed, receiver and transmitter aligned, software configured, 5 ppb Naphthalene concentration test verified, data report generated (UV Sentry & Thermo data collected together).

Air Monitoring Pad # 6 – UV Sentry serial number 1681: Set up of receiver and transmitter units verified, lamp installed, receiver and transmitter aligned, software configured, 5 ppb Naphthalene concentration test verified, data report generated (UV Sentry & Thermo data collected together).

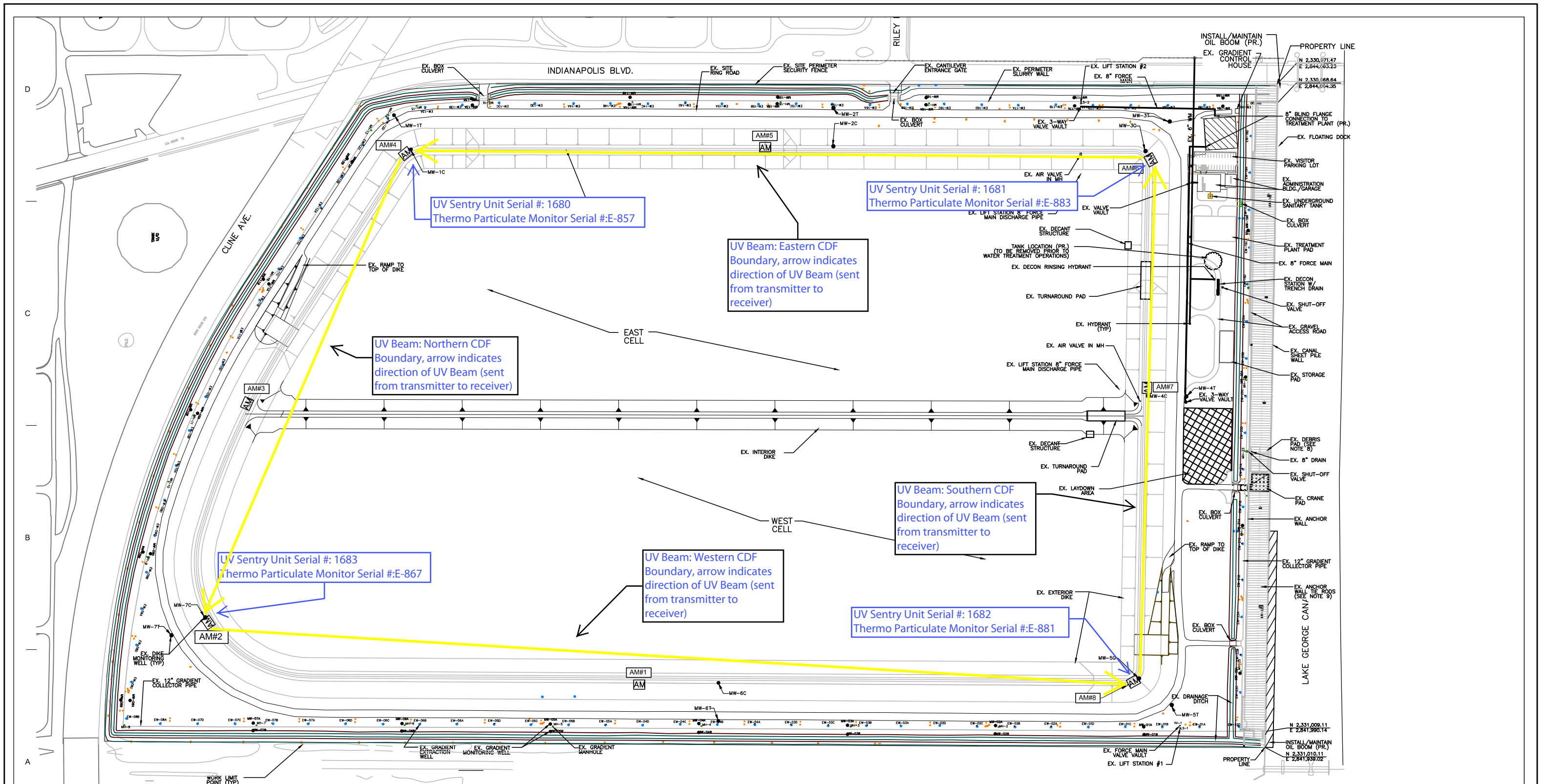
Air Monitoring Pad # 8 – UV Sentry serial number 1682: Set up of receiver and transmitter units verified, lamp installed, receiver and transmitter aligned, software configured, 5 ppb Naphthalene concentration test verified, data report generated (UV Sentry & Thermo data collected together).

Conclusion

The air monitoring manufacturer's start up report for the Thermo Particulate Monitor and Cerex UV Sentry units was completed on July 5, 2012 and May 16, 2012 respectively. The first start up report for the Thermo Particulate Monitor conducted on May 14, 2012 was rejected during the quality control review as being deficient for failure to adhere to the manufacturer's start up procedures. The data for each unit is being collected and stored on the UV Sentry units and downloaded daily by the site operator.

Attachment 1

Site Map – Air Monitoring Pad Detail



UV Sentry Unit Serial #: 1680
Thermo Particulate Monitor Serial #:E-857

UV Sentry Unit Serial #: 1681
Thermo Particulate Monitor Serial #:E-883

UV Beam: Northern CDF
Boundary, arrow indicates
direction of UV Beam (sent
from transmitter to receiver)

UV Beam: Eastern CDF
Boundary, arrow indicates
direction of UV Beam (sent
from transmitter to receiver)

UV Beam: Southern CDF
Boundary, arrow indicates
direction of UV Beam (sent
from transmitter to receiver)

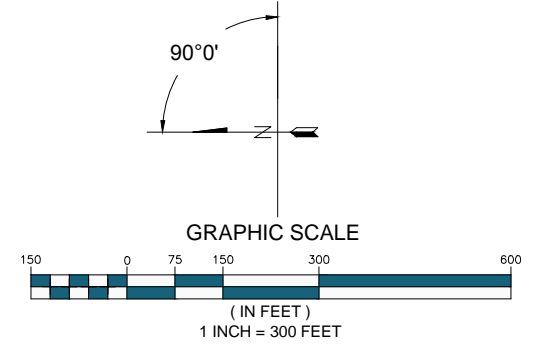
UV Sentry Unit Serial #: 1683
Thermo Particulate Monitor Serial #:E-867

UV Beam: Western CDF
Boundary, arrow indicates
direction of UV Beam (sent
from transmitter to receiver)

UV Sentry Unit Serial #: 1682
Thermo Particulate Monitor Serial #:E-881

- LEGEND**
- NO WORK AREA (DOCKING VESSELS) ALONG CANAL WALL
 - APPROXIMATE LOCATION OF EXISTING LAYDOWN AREA FOR CONTRACTOR'S USE
 - AIR MONITORING STATION (8)
 - AIR MONITORING STATION (8)
- UTILITIES SYMBOLS (EXISTING)**
- POWER POLE
 - MANHOLE, ELECTRICAL
 - GRADIENT MONITORING WELL
 - GRADIENT EXTRACTION WELL
 - GRADIENT WELL MANHOLE
 - CDF MONITORING WELLS
 - MANHOLE

- NOTES:**
1. SEE BLIND FLANGE CONNECTION DETAIL SHEET C-16.
 2. SEE LIFT STATION & FORCE MAIN VALVE VAULT DETAILS SHEET C-16.
 3. SEE DIKE MONITORING WELLS SHEET C-15.
 4. SEE DECANT STRUCTURE DETAILS SHEET C-13.
 5. SEE GRADIENT EXTRACTION & MONITORING WELLS SHEET C-17.
 6. TSCA MATERIAL TO BE PLACED IN THE EAST CELL ONLY.
 7. DEBRIS TO BE PLACED IN THE WEST CELL ONLY.
 8. THE ONLY PLACE THE CONTRACTOR SHALL STOCKPILE DEBRIS ONSITE WILL BE AT THE DEBRIS PAD. NO OTHER DEBRIS STOCKPILES OR STORAGE AREAS SHALL BE ALLOWED OUTSIDE OF THE CDF. THE CONTRACTOR MUST HOSE DOWN OR CLEAN DEBRIS/TRUCKS USING AN APPROVED METHOD AT THE DEBRIS PAD TO PREVENT TRACKING OF MUD OR CONTAMINANTS DURING DEBRIS HANDLING.
 9. CONTRACTOR SHALL NOT OPERATE MACHINERY/EQUIPMENT, DRIVE VEHICLES OR STORE EQUIPMENT ON THE ANCHOR WALL TI-RODS. THIS AREA IS DELINEATED BETWEEN THE EAST-WEST ACCESS ROAD AND SHEET PILE CANAL WALL AT THE SOUTH END OF THE SITE.
 10. CONTRACTOR SHALL TAKE PRECAUTION WHEN WORKING AROUND THE GRADIENT SYSTEM CONTROL PANELS AND WELLS TO AVOID DAMAGE TO THOSE STRUCTURES.



US Army Corps of Engineers® Chicago District

INDIANA HARBOR AND CANAL CONFINED DISPOSAL FACILITY
EAST CHICAGO, INDIANA

FIGURE 1-2
SITE MAP
DECEMBER 2011

KOKOSING CONSTRUCTION COMPANY/O'BRIEN & GERE
JOINT VENTURE




958 N. HURON STREET, CHEBOYGAN, MI 49721

INDIANA CANAL AND HARBOR CONFINED DISPOSAL FACILITY, DSG-1122411

Attachment 2

Thermo Particulate Monitor: Manufacturer's Test Report

00000188

Customer		Contact		Information	
OBrien & Gere 3500 Indianapolis Blvd East Chicago, IN		Name		Scott McQueen, Scott Peterson	
		Phone		(248) 910-7913	
		E-Mail		scott.mcqueen@obg.com	
Equipment	Serial Number	Call Type	Case Number		
SHARP 5030		Acceptance Test	00078449		
As Found					
All units running. All units not certified with NIST traceable equipment.					
Daily Report					
7/5: ON 0800, LUNCH 1330-1400, OFF 1630					
FedEx delivered RH meter at 0845.					
<p>Unit 2: Temperatures, RH, barometric, flow, and NEPH zero all certified. Unit had error when writing to eeprom; calibrations not saved because of this. Reboot unit, calibrate again, still error when writing to eeprom. Consulted Kevin Goohs (R&D), he recommended going in and out of calibrations menu a few times. Tried and worked. Recalibrated unit and successfully saved to eeprom. I noticed a good amount of water spots on top of the unit. Water leaking into unit will destroy the motherboard. Obtained some silicone and sealed all possible cracks.</p> <p>Unit 4: Ambient sensor was reading 2C. Reseated connector and reboot unit; sensor now responding normal. Temperatures, RH, barometric, flow, and NEPH zero all certified. Calibrations successfully saved to eeprom. Obtained some silicone and sealed all possible cracks.</p> <p>Unit 6: Temperatures, RH, barometric, flow, and NEPH zero all certified. Calibrations successfully saved to eeprom. Obtained some silicone and sealed all possible cracks.</p> <p>Unit 8: Temperatures, RH, barometric, flow, and NEPH zero all certified. Calibrations successfully saved to eeprom. Obtained some silicone and sealed all possible cracks.</p>					
As Left/ Outstanding Issues					
All units running and certified. All units silicone as best as possible.					
Total On Site Hours		8		Total Travel Hours	
				16	
Field Engineer		Customer		Service Manager	
 Prayok Vongkunthong Thu Jul 5 2012 17:00:14		 Scott Peterson Thu Jul 5 2012 17:00:35			

**Particulate Monitor
Start Up Worksheet**



Date: 7/5/12
FSE: Prayok Vongkunthong
706-614-4138

Serial # : Station 2, SN: E-867
Customer: O'Brien & Gere
East Chicago, IN

Contact: Scott McQueen

System Configuration: Model SHARP 5030

PM10 Inlet:	Y	HEPA:	Y
VSCC:	N	Logger:	N
Ekto/HVAC:	Y		
3m Heater:	N		
1m Heater:	Y		

Audit Instruments:

	Type	SN
DeltaCal	Flow	0207
DeltaCal	Temp	0207
DeltaCal	Pressure	0207
Vaisala	RH	H2610001

As Found Parameters:

T1 Ambient:	39C	RH:	35%	Rβ0:	11225
T2 Sample:	37C	Baro:	992	Rβ:	11280
T3 Flow:	38C	Flow:	999	Rα:	5361
T4 Heater:	55C				

Acceptance Testing:

	Unit	Reference	Adjusted		Pre Zero		Post Zero	
					Analog	Neph	Analog	Neph
T1 Ambient:	39	37.4	Y					
T2 Sample:	36	37.5	Y	Neph Zero:	170	-0.8	170	-0.6
T3 Flow:	36	37.5	Y					
T4 Heater:	35	37.5	Y					
RH:	35%	32%	Y	Leak:	Unit NA*	System NA*		
Baro:	984	993	Y					
Flow:	998	1013	Y					

* An approved method has not been released for legacy beta attenuation monitors.

Comments: This unit showed eeprom write failure. I rebooted, calibrated again, and still showed failure. The second calibrations was very well within the first. Spoke with, Kevin Goohs (R&D) and he suggested going in and out of calibration menu several times. Finally worked but I had to recalibrate everything to properly write to eeprom. I noticed a lot of water marks on top of the unit as well as inside the enclosure directly above the unit. Moisture is dripping down from the roof of the enclosure. This may cause motherboard issues on the unit. If eeprom issues continue to occur and not recover, motherboard will need to be serviced.

**Particulate Monitor
Start Up Worksheet**



Date: 7/5/12
FSE: Prayok Vongkunthong
706-614-4138

Serial # : Station 4, SN: E-857
Customer: O'Brien & Gere
East Chicago, IN

Contact: Scott McQueen

System Configuration: Model SHARP 5030

PM10 Inlet:	Y	HEPA:	Y
VSCC:	N	Logger:	N
Ekto/HVAC:	Y		
3m Heater:	N		
1m Heater:	Y		

Audit Instruments:

	Type	SN
DeltaCal	Flow	0207
DeltaCal	Temp	0207
DeltaCal	Pressure	0207
Vaisala	RH/Temp	H2610001

As Found Parameters:

T1 Ambient:	45C	RH:	41%	Rβ0:	13104
T2 Sample:	43C	Baro:	988	Rβ:	11174
T3 Flow:	37C	Flow:	1000	Rα:	5452
T4 Heater:	76C				

Acceptance Testing:

	Unit	Reference	Adjusted		Pre Zero		Post Zero	
					Analog	Neph	Analog	Neph
T1 Ambient:	45	34.4	Y					
T2 Sample:	43	34.2	Y	Neph Zero:	173	1.9	173	-0.1
T3 Flow:	37	34.2	Y					
T4 Heater:	28	34.2	Y					
RH:	41%	37.8	Y	Leak:	Unit	System		
Baro:	989	993	Y		NA*	NA*		
Flow:	1000	1082	Y					

* An approved method has not been released for legacy beta attenuation monitors.

Comments: Ambient sensor was reading 2C for some reason. Reseated connection and rebooted unit; sensor now responding as normal.

**Particulate Monitor
Start Up Worksheet**



Date: 07/05/12
FSE: Prayok Vongkunthong
706-614-4138

Serial # : Station 6, SN: E-883
Customer: O'Brien & Gere
East Chicago, IN

Contact: Scott McQueen

System Configuration: Model SHARP 5030

PM10 Inlet:	Y	HEPA:	Y
VSCC:	N	Logger:	N
Ekto/HVAC:	Y		
3m Heater:	N		
1m Heater:	Y		

Audit Instruments:

	Type	SN
DeltaCal	Flow	0207
DeltaCal	Temp	0207
DeltaCal	Pressure	0207
Vaisala	RH/Temp	H2610001

As Found Parameters:

T1 Ambient:	35C	RH:	36%	Rβ0:	13071
T2 Sample:	36C	Baro:	987	Rβ:	11042
T3 Flow:	34C	Flow:	998	Rα:	5399
T4 Heater:	52C				

Acceptance Testing:

	Unit	Reference	Adjusted		Pre Zero		Post Zero	
					Analog	Neph	Analog	Neph
T1 Ambient:	35	37.6	Y					
T2 Sample:	36	37.9	Y	Neph Zero:	166	-1.2	166	-0.6
T3 Flow:	34	37.9	Y					
T4 Heater:	35	37.9	Y					
RH:	36%	35.5%	Y	Leak:	Unit	System		
Baro:	987	993	Y		NA*	NA*		
Flow:	998	1046	Y					

* An approved method has not been released for legacy beta attenuation monitors.

Comments:

**Particulate Monitor
Start Up Worksheet**



Date: 7/5/12
FSE: Prayok Vongkunthong
706-614-4138

Serial # : Station 8, SN: E-881
Customer: O'Brien & Gere
East Chicago, IN

Contact: Scott McQueen

System Configuration: Model SHARP 5030

PM10 Inlet:	Y	HEPA:	Y
VSCC:	N	Logger:	N
Ekto/HVAC:	Y		
3m Heater:	N		
1m Heater:	Y		

Audit Instruments:

	Type	SN
DeltaCal	Flow	0207
DeltaCal	Temp	0207
DeltaCal	Pressure	0207
Vaisala	RH	H2610001

As Found Parameters:

T1 Ambient:	42C	RH:	35%	Rβ0:	12061
T2 Sample:	39C	Baro:	988	Rβ:	10013
T3 Flow:	36C	Flow:	998	Rα:	4835
T4 Heater:	66C				

Acceptance Testing:

	Unit	Reference	Adjusted		Pre Zero		Post Zero	
					Analog	Neph	Analog	Neph
T1 Ambient:	42	41	Y					
T2 Sample:	39	40	Y	Neph Zero:	170	1.9	170	-0.1
T3 Flow:	36	40	Y					
T4 Heater:	35	40	Y					
RH:	35%	24%	Y	Leak:	Unit	System		
Baro:	988	993	Y		NA*	NA*		
Flow:	998	1058	Y					

* An approved method has not been released for legacy beta attenuation monitors.

Comments:

CALIBRATION CERTIFICATE

Instrument HM34F Humidity and temperature meter
Serial number H2610001
Manufacturer Vaisala Oyj, Finland
Calibration date 25th June 2012

The above instrument was calibrated by comparing the relative humidity and temperature readings to two HMT337 factory working standards. At the time of shipment, the instrument described above met its operating specifications.

The relative humidity readings of the two HMT337 factory working standards have been calibrated at the Vaisala factory by using Hygro M-3 dewpoint meter. Hygro M-3 dewpoint meter has been calibrated at Centre for metrology and accreditation (MIKES) by using a MIKES working standard traceable to National Institute of Standards and Technology (NIST). The temperature readings of the two HMT337 factory working standards have been calibrated at an ISO/IEC 17025 accredited calibration laboratory (FINAS), Vaisala Measurement Standards Laboratory (MSL) by using MSL working standards traceable to NIST.

Calibration results

Reference humidity* % RH	Observed humidity % RH	Difference %RH	Permissible difference %RH
0.8	0.8	0.0	±2.0
39.8	39.2	- 0.6	±2.0
71.1	71.1	0.0	± 2.0
Reference temperature* °F	Observed temperature °F	Difference °F	Permissible difference °F
+ 72.95	+72.81	- 0.14	± 0.4

*Average of two references.

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
HMT337 / RH	B2050019	2012-06-07	H06-12230024
HMT337 / RH	B2050018	2012-06-07	H06-12230025
Vaisala HMT337	B2050019	2011-12-08	K008-U02409
Vaisala HMT337	B2050018	2011-12-08	K008-U02408
HYGRO M-3	361095	2011-08-25	M-11H054

Uncertainties (95 % confidence level, k=2)

Humidity 0...50 %RH ±1.1 %RH, 50...100 %RH ±1.4 %RH

Temperature ± 0.23 °F

Ambient conditions / Humidity 43 ± 5%RH, Temperature 22 ± 1 °C, Pressure 1000 ± 1 hPa.



 Technician



CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

(Refer to instruction manual for further details of calibration)

deltaCal Serial Number: 000112

DATE: 9-May-12

Calibration Operator: Brian DeVoe Jr.

Critical Venturi Flow Meter: Max Uncertainty = 0.346%

Serial Number: 1 *CEESI NVLAP NIST Data File 04BGI151*

Serial Number: 2 *CEESI NVLAP NIST Data File 04BGI152*

Serial Number: 3 *CEESI NVLAP NIST Data File 04BGI153*

Serial Number: 4 *CEESI NVLAP NIST Data File 02BGI004*

Room Temperature : Uncertainty = 0.071% Room Temperature: 22.0 C

Brand: *Ever-Safe* Serial Number: 016076

NIST Traceability No. 516837

deltaCal:

Ambient Temperature (set): 22.0 C

Aux (filter) Temperature (set): C

Barometric Pressure and Absolute Pressure

Vaisala Model PTB330(50-1100) Digital Accuracy: 0.03371%

S/N D4310002

NIST Traceable (Princo Primary Standard Model 453 S/N W12537) Certificate No. P-7485

deltaCal:

Barometric Pressure (set): 752 mm of Hg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP).

Where: Q=Lpm, ΔP = Cm of H₂O

Q= 4.14347 ΔP ^ 0.51936

Overall Uncertainty: 0.35%

Date Placed In Service 5/9/12

(To be filled in by operator upon receipt)

Recommended Recalibration Date 5/9/13

(12 months from date placed in service)

Revised: March 2012

C# 0207 *Exit*

To Check a deltaCal
2-20 Lpm

VER 3.30P

9-May-12

BD

Maximum allowable error at any flow rate is .75%.

Serial No. 112

BP= 752 mm of Hg
T= 22 C

	Reading Abs. P Crit. Vent. mm of Hg	Crit. Vent. Temp	Q 760/20 Flow Lpm	QA Flow Lpm	QA deltaCal Indicated	% Error
# 2	198.14	21.3	2.21	2.25	2.25	-0.10
	493.41	21.3	5.58	5.68	5.70	0.34
# 1	252.71	21.3	9.92	10.09	10.06	-0.29
	419.45	21.3	16.59	16.88	16.87	-0.05
	492.87	21.3	19.53	19.87	19.91	0.21
					Average %	0.02

Attachment 3

Cerex UV Sentry: Manufacturer's Test Report

Bistatic UV Sentry Installation Checklist

	IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Site Name				
UV Sentry Serial Number	1683	1680	1681	1682
Location on site	NW Corner	NE Corner	SE Corner	SW Corner
Router IP	192.168.1.100	192.168.1.100	192.168.1.100	192.168.1.100
VNC Password	cerexms	cerexms	cerexms	cerexms
Advanced Settings Password	advanced	advanced	advanced	advanced
Advanced Settings Editor Password	cerexconfig	cerexconfig	cerexconfig	cerexconfig
Unpack the UV Sentry Transmitter, Receiver, and Tripods.	As found	As found	As found	As found
Set up the UV Sentry Transmitter and the UV Sentry Receiver at your desired distance.	As found	As found	As found	As found
Install the Air Filter Assembly.	As found	As found	As found	As found
Install the Hood Assembly.	As found	As found	As found	As found
Install Source Lamp	S. McEwan 5/14/2012	S. McEwan 5/14/2012	S. McEwan 5/14/2012	S. McEwan 5/14/2012
Align the UV Sentry Transmitter and Receiver using the sighting scopes.	As found	As found	As found	As found
Power on the UV Sentry Transmitter and Receiver.	S. McEwan 5/14/2012	S. McEwan 5/14/2012	S. McEwan 5/14/2012	S. McEwan 5/14/2012
Using a laptop pc and wired or wireless Ethernet connection, use VNC software to log onto the UV Sentry Receiver internal computer.	S. McEwan 5/14/2012	S. McEwan 5/14/2012	S. McEwan 5/14/2012	S. McEwan 5/14/2012
Configure the CMS software with the proper distance, site name, and settings.	S. McEwan 5/15/2012	S. McEwan 5/15/2012	S. McEwan 5/15/2012	S. McEwan 5/15/2012
Using Align button under the UV tab within CMS, tune up the physical system alignment.	S. McEwan, S. Perterson, S. McQueen 5/15/2012	S. McEwan, S. Perterson, S. McQueen 5/15/2012	S. McEwan, S. Perterson, S. McQueen 5/15/2012	S. McEwan, S. Perterson, S. McQueen 5/15/2012
Begin taking acquisitions with the CMS software.	5/15/2012 S. McEwan	5/15/2012 S. McEwan	5/15/2012 S. McEwan	5/15/2012 S. McEwan

IHC Dredge Project Bistatic UV Sentry & CMS Operation Verification

Site Name	IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
UV Sentry Serial Number	1683	1680	1681	1682
Location on site	NW Corner	NE Corner	SE Corner	SW Corner
Lid Open Kill Switch Verified	Operational	Operational	Operational	Operational
Auto-Run Verified	Operational	Operational	Operational	Operational
Auto-Integration Verified	Operational	Operational	Operational	Operational
Auto-Load Background Verified	Operational	Operational	Operational	Operational
Auto-Acquire Background Verified	Operational	Operational	Operational	Operational
On Demand Background Acquisition Verified	Operational	Operational	Operational	Operational
Recover From Power Failure Verified	Operational	Operational	Operational	Operational
5ppb Naphthalene Sensitivity Test	5ppb	5ppb	5ppb	5ppb
Sensitivity Test R2	0.99	0.99	0.99	0.99
Zero Signal Intensity Test	0	0	0	0
Serial Connection to TECO 5030	Cable Installed to TECO COM1	Cable Installed to TECO COM1	Cable Installed to TECO COM1	Cable Installed to TECO COM1
Windows Port Configured	COM1 7-Even-2-None	COM1 7-Even-2-None	COM1 7-Even-2-None	COM1 7-Even-2-None
CMS Port Configured	COM1 7-Even-2-None	COM1 7-Even-2-None	COM1 7-Even-2-None	COM1 7-Even-2-None
RS232 Comms Verified	18 parameter string received	18 parameter string received	18 parameter string received	18 parameter string received
Data Summary Naphthalene Verified	Operational	Operational	Operational	Operational
Data Summary TECO 5030 Data Verified	Data in summary report	Data in summary report	Data in summary report	Data in summary report
RF Modem Operation Verified	Base Antenna Not Installed / INOP	Base Antenna Not Installed / INOP	Base Antenna Not Installed / INOP	Base Antenna Not Installed / INOP

As left CMS Configuration: IHC Dredge Project, Indiana Harbor, Indiana

		IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Site Name					
Serial Number		1683	1680	1681	1682
Location on site		NW Corner	NE Corner	SE Corner	SW Corner
General					
Operator Name		OBG	OBG	OBG	OBG
Sitename		IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Paths					
CLS Library		C:\Users\cms-user\Documents\Ce rex\Library	C:\Users\cms- user\Documents\Ce rex\Library	C:\Users\cms- user\Documents\Ce rex\Library	C:\Users\cms- user\Documents\Ce rex\Library
PLS Library		C:\Users\cms- user\Documents\Ce rex\Library\PLS.42m	C:\Users\cms- user\Documents\Ce rex\Library\PLS.42 m	C:\Users\cms- user\Documents\Ce rex\Library\PLS.42 m	C:\Users\cms- user\Documents\Ce rex\Library\PLS.42m
Alarms		Not set	Not set	Not set	Not set
Auto Run		Enable/Disable	Enable	Enable	Enable
Delay		10	10	10	10
User Interface					
Single Beam Chart		Enable	Enable	Enable	Enable
Absorbance Chart		Enable	Enable	Enable	Enable
Sort Column		Rsquared	Rsquared	Rsquared	Rsquared
Data Summary Chart		Never	Never	Never	Never
Concentration Chart		Never	Never	Never	Never
Weather Data Chart		Never	Never	Never	Never
Extrenal Tab		Never	Never	Never	Never

As left CMS Configuration: IHC Dredge Project, Indiana Harbor, Indiana

	IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Site Name				
Serial Number	1683	1680	1681	1682
Location on site	NW Corner	NE Corner	SE Corner	SW Corner
Scanner	disabled	disabled	disabled	disabled
Enable/Disable	disabled	disabled	disabled	disabled
Optimization Enable/Disable	disabled	disabled	disabled	disabled
Coordinates	disabled	disabled	disabled	disabled
Tilt Speed	disabled	disabled	disabled	disabled
Tilt Acceleration	disabled	disabled	disabled	disabled
Tilt Ramp	disabled	disabled	disabled	disabled
Pan Speed	disabled	disabled	disabled	disabled
Pan Acceleration	disabled	disabled	disabled	disabled
Pan Ramp	disabled	disabled	disabled	disabled
Optimization Delay	disabled	disabled	disabled	disabled
Optimaization Delta	disabled	disabled	disabled	disabled
Optimization Threshold	disabled	disabled	disabled	disabled
Micellaneous				
GPS	disabled	disabled	disabled	disabled
Particulate Monitor	enabled	enabled	enabled	enabled
Wind Sensor	disabled	disabled	disabled	disabled
Time Sources	System	System	System	System
Sensors	disabled	disabled	disabled	disabled
Sensor Refresh Interval	60	60	60	60
Calibration Purge Delay	60	60	60	60

As left CMS Configuration: IHC Dredge Project, Indiana Harbor, Indiana

	IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Site Name				
Serial Number	1683	1680	1681	1682
Location on site	NW Corner	NE Corner	SE Corner	SW Corner
Enable/Disable Zero on Non-Detect	enabled	enabled	enabled	enabled
Enable/Disable Zero on Negative Concentration	enabled	enabled	enabled	enabled
Enable/Disable Baseline Correction	disabled	disabled	disabled	disabled
Enable/Disable Spectral Subtraction	disabled	disabled	disabled	disabled
Compound Output Settings:	naphthalene	naphthalene	naphthalene	naphthalene
Single Beam Savitzky-Golay	disabled	disabled	disabled	disabled
Absorbance Savitzky-Golay	disabled	disabled	disabled	disabled
Baseline Correction Savitzky-Golay	disabled	disabled	disabled	disabled
Spectral Subtraction Savitzky Golay	disabled	disabled	disabled	disabled

As left CMS Configuration: IHC Dredge Project, Indiana Harbor, Indiana

	IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Site Name				
Serial Number	1683	1680	1681	1682
Location on site	NW Corner	NE Corner	SE Corner	SW Corner
Port Name	N/A	N/A	N/A	N/A
Baud Rate	N/A	N/A	N/A	N/A
Parity Bits	N/A	N/A	N/A	N/A
Stop Bits	N/A	N/A	N/A	N/A
Data Bits	N/A	N/A	N/A	N/A
Modbus				
System				
Start Address: Integers	N/A	N/A	N/A	N/A
Start Address: Floats	N/A	N/A	N/A	N/A
TCP Port	N/A	N/A	N/A	N/A
Email				
Data Recipient	N/A	N/A	N/A	N/A
Alert Recipient	N/A	N/A	N/A	N/A
Email Sender	N/A	N/A	N/A	N/A
SMTP Settings				
Server	N/A	N/A	N/A	N/A
Port	N/A	N/A	N/A	N/A
Username	N/A	N/A	N/A	N/A
Password	N/A	N/A	N/A	N/A
Timeout	N/A	N/A	N/A	N/A

As left CMS Configuration: IHC Dredge Project, Indiana Harbor, Indiana

	IHC Dredge AM2	IHC Dredge AM4	IHC Dredge AM6	IHC Dredge AM8
Site Name				
Serial Number	1683	1680	1681	1682
Location on site	NW Corner	NE Corner	SE Corner	SW Corner
General				
UV Enable/Disable	enabled	enabled	enabled	enabled
Integration Time	Auto	Auto	Auto	Auto
Acquisition Time	300	300	300	300
Path Length	496m	719m	510m	892m
Calibration				
Integration Time Multiplier	1	1	1	1
Acquisition Time Calibration	15	15	15	15
Automation				
Auto-Integration	enabled	enabled	enabled	enabled
Interval	300	300	300	300
Clean Wavenumber Range	60/360	235/430	285/437	70/670
Clean Intensity Range	13000/14000	13000/14000	13000/14000	13000/14000
Auto-Background	enabled	enabled	enabled	enabled
Interval	300	300	300	300
Pre-Delay	0	0	0	0
Post-Delay	0	0	0	0
FTIR Enable/Disable	disabled	disabled	disabled	disabled
FTIR Serial Number	N/A	N/A	N/A	N/A
General				
Spectrum Type	N/A	N/A	N/A	N/A
Averages	N/A	N/A	N/A	N/A
Path Length	N/A	N/A	N/A	N/A
Gain: Stage 1	N/A	N/A	N/A	N/A
Gain: Stage 2	N/A	N/A	N/A	N/A
Calibration				
Calibration Averaging	N/A	N/A	N/A	N/A
Initialization Delay	N/A	N/A	N/A	N/A
Automation				
Auto-Calibration	N/A	N/A	N/A	N/A
Interval	N/A	N/A	N/A	N/A
Auto-Background	N/A	N/A	N/A	N/A
Interval	N/A	N/A	N/A	N/A
Pre-Delay	N/A	N/A	N/A	N/A
Post-Delay	N/A	N/A	N/A	N/A

As left CMS Configuration: IHC Dredge Project, Indiana Harbor, Indiana

IHC Dredge AM2					
	Port Name	Baud Rate	Parity Bits	Stop Bits	Data Bits
Sensor	N/A	115200	None	1	8
Wind Sensor	N/A	115200	None	1	8
Scanner	N/A	115200	None	1	8
GPS	N/A	115200	None	1	8
Modbus	N/A	115200	None	1	8
Particulate Monitor (TECO 5030)	COM10	9600	Even	2	7

IHC Dredge AM4					
	Port Name	Baud Rate	Parity Bits	Stop Bits	Data Bits
Sensor	N/A	115200	None	1	8
Wind Sensor	N/A	115200	None	1	8
Scanner	N/A	115200	None	1	8
GPS	N/A	115200	None	1	8
Modbus	N/A	115200	None	1	8
Particulate Monitor (TECO 5030)	COM10	9600	Even	2	7

IHC Dredge AM6					
	Port Name	Baud Rate	Parity Bits	Stop Bits	Data Bits
Sensor	N/A	115200	None	1	8
Wind Sensor	N/A	115200	None	1	8
Scanner	N/A	115200	None	1	8
GPS	N/A	115200	None	1	8
Modbus	N/A	115200	None	1	8
Particulate Monitor (TECO 5030)	COM10	9600	Even	2	7

IHC Dredge AM8					
	Port Name	Baud Rate	Parity Bits	Stop Bits	Data Bits
Sensor	N/A	115200	None	1	8
Wind Sensor	N/A	115200	None	1	8
Scanner	N/A	115200	None	1	8
GPS	N/A	115200	None	1	8
Modbus	N/A	115200	None	1	8
Particulate Monitor (TECO 5030)	COM10	9600	Even	2	7