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BUREAU OF AIR REGULATION

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Florida Department of Environmental Protection  
Bureau of Air Regulation  
Jonathan Holtam  
2600 Blainstone Road – Mail Station 5505  
Tallahassee, FL 32399-2400

Subject: **Title V – Compliance Assurance Monitoring (CAM) Plan  
Title V Air Permit Application No. 0310028-013-AV  
ST Services – Jacksonville Terminal  
Emission Unit No. 023 – Loading Rack Operation Annex I –  
Tornado Vapor Combustor  
Emission Unit No. 34–Loading Rack Operation Annex II- Zeeco  
Mode 06-1 Vapor Combustor**

Dear Mr. Holtom:

Based on our discussion on the telephone, ST Services is currently operating a bulk petroleum terminal in Jacksonville under a Title V Air Permit. During the Title V renewal process this year, Duval County – RESD notified ST of the requirement to submit a CAM Plan for the emission units located at the Annex I and Annex II truck loading racks. The emissions from each of the racks are controlled by a vapor combustion unit, which is continuously monitored by the automation system.

After discussing the specifics of the regulation with you it became apparent that ST may in fact be in compliance with the CAM requirement due to the existing automation system already in place. You requested the submission of a letter to clarify the technical aspects of the automation system that allows for the continuous monitoring to occur during the fuel loading operations. This would allow you to make a determination of compliance with the CAM Plan rule.

The following technical discussion of the automation system will focus only on the aspects of the system that directly relate to the emissions control system and the referenced vapor combustion units (VCU). It is the intent of this letter to explain how the automation system continuously monitors and controls the truck fuel loading operation and the VCUs. This will be explained from a chronological

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operational standpoint so that the reasoning behind the fuel loading process can be better understood. It will follow three steps:

- Tanker truck
- Loading process
- Vapor combustor unit

Prior to loading any fuel at the ST Services Jacksonville Terminal, the tanker truck must have an annual pressure test certification. This certification is entered into the automation system (computer monitoring system) for that specific tanker. Each tanker truck must have this certification entered into the automation system to load. The driver is then issued a driver ID key card to allow him to access and load at the truck rack. During the loading process the automation system continuously monitors and controls the fuel loading rate (vapor emission generation rate), and the operational functions of the VCU through a Process Logic Computer (PLC).

The loading process begins once the driver uses the key card to gain access through the automated gates. Once the tanker truck (TT) pulls into the loading rack a sensor sends a signal to the vapor combustion unit (VCU) via the automation system to activate and start up. Each VCU is equipped with a continuously monitoring flame detector (thermocouple or fire eye) to insure that the VCU is ready to receive vapors for thermal destruction. A signal is then sent from the VCU to the loading rack that loading can begin. If at any time the flame goes out or a signal is not sent indicating the VCU is ready to receive, then loading will not be allowed.

Each VCU is designed, built and tested to handle the maximum emissions loading rate at each rack. Both manufacturing test data and actual on-site emissions tests performed per the Title V permit verify compliance that the allowable emissions rate of 35 mg/L of VOCs is being met during the loading operations.

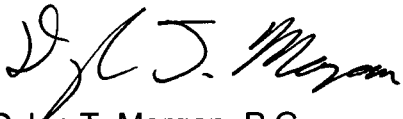
Once the driver pulls up to the loading rack, he must again use his key card while at the rack and connect the vapor recovery line prior to starting any loading operations. Operating procedures require the vapor line to have a tight connection to the VCU to allow loading.

During loading operations a flow control valve is continuously monitored / operated so that an established product flow rate is maintained and not exceeded. This fuel flow rate must be maintained to allow for accuracy at the loading rack and as a result, the maximum rate and volume of displaced vapors to the VCU are maintained or the automation system will go into alarm and the system will shut down until the alarm is corrected.

The current automation system has been in successful operation for over 15 years and effectively demonstrates actual “real time” monitoring of the operational system including the VCUs. Based on the actual emissions data and my understanding of the rule, this system provides a method of achieving continuous compliance assurance in accordance with the CAM rule. Your consideration of the technical aspects of this project as it relates to actual compliance determination would be appreciated.

If you require additional information or have any questions regarding this matter, please contact me at the address on this letter, or by calling (904) 355-9675 Ext. 253.

Sincerely,  
ST SERVICES



Dylan T. Morgan, P.G.  
Manager – Environmental Remediation & Response

Cc: Operation Managers, ST Jax – Jacksonville  
Maria Jones, Mactec – Gainesville  
J. Siciliano – ST Dallas

Table 2-1. Emission Unit 023 – Loading Rack With Vapor Combustor Unit (Page 1 of 2)

	Indicator No. 1	Indicator No. 2
I. Indicator	Presence of Flame	Tight connection of the vapor return line to the tanker truck.
Monitoring Approach	<p>Flame presence is monitored using an ultraviolet flame detector (UFD)</p> <p>[Operations Note. After a tanker truck pulls into a loading rack, a remote signal is sent to the VCU programmable logic controller (PLC) to automatically ignite the pilot flame. If the pilot flame is not detected by the UFD after the fifth automatic ignition trial, the PLC will shut down the combustion system due to pilot failure. After the UFD verifies that the flame is present, a green light illuminates at the loading rack. If the UFD signal is lost during loading, the loading rack automatically shuts down and the green light is turned off]</p>	<p>A tight connection of the vapor recovery line must occur, otherwise the automation system will not allow loading.</p> <p>[Operation Note. The trailer is equipped with an interlock switch that is not enabled unless the vapor recovery fitting is securely in place. This interlock switch is connected to the terminal's automation permissive signal which operates the actual flow control valves]</p>
II. Indicator Range	An excursion occurs whenever the UFD signal is lost during loading (i.e., the flame is absent) resulting in an automatic shutoff at the loading rack, making loading impossible.	An excursion occurs whenever the secure connection is broken and the interlock switch becomes disconnected, resulting in an automatic shutoff of the loading rack, making loading impossible. <i>But flame still on</i>
QIP threshold	Not applicable	Not applicable
III. Performance Criteria		
A. Data	The UFD is wired to the stack to detect the presence of a flame.	The interlock switch must close the circuit in order for a permissive signal to be transmitted and allow the flow valves to open.
B. Verification of Operational Status	For a green light to be present at the VCU control panel and at the overfill prevention system, the UFD must detect the presence of a flame.	Permissive signal at the overfill prevention system confirms that the vapor recovery line is securely connected.
C. QA/QC Practices and Criteria	Manufacturer's routine maintenance requirements include keeping the flame detection system adjusted for the smoothest, most reliable operation, and ensuring that the flame signal current is above the manufacturer's minimum acceptable level.	Inspection and maintenance of the vapor recovery line fittings.

✓  
✓

when flame goes out + loading rack stops, vapors in piping are emitted w/o combustion

set flame current as excursion  
shut down = exceedance

**Table 2-1. Emission Unit 023 – Loading Rack With Vapor Combustor Unit (Page 2 of 2)**

	<b>Indicator No. 1</b>	<b>Indicator No. 2</b>
D. Monitoring Frequency	The UFD operates continuously, when the VCU is operating.	The interlocking switch must be locked at all times loading is taking place.
E. Data Collection Procedures	The UFD continuously senses the ultraviolet radiation emitted by the combustion flames and generates a current (microamps) signal to the PLC	A signal is continuously sent to the tanker truck overfill prevention system when the interlock switch is engaged.
F. Averaging Period	Not applicable.	Not applicable.