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JOHNNY PAN	<i>MW</i>	

RULE 1173 COMPLIANCE PLAN

COMPANY NAME AND ADDRESS

Lunday-Thagard Company
9301 Garfield Ave.
South Gate, CA 90280

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EQUIPMENT LOCATION

Lunday-Thagard Company
9301 Garfield Ave.
South Gate, CA 90280

Facility ID: 800080

Claim of Confidentiality: Yes

BACKGROUND

The Lunday-Thagard Company (Lunday) currently operates a refinery located in the City of South Gate. The South Coast Air Quality Management District (District) classifies the facility as a Title V, and the requirements of the District's Regional Clean Air Incentive Market (RECLAIM) for Nitrous Oxides and Sulfur Oxides. The District has issued Lunday a Title V and RECLAIM permit.

On 25 November of 2009, Lunday submitted a Compliance Plan application, No. 503963, for Rule 1173 to comply with the latest amendment under the rule that was approved by the Governing Board on 1 June 2007. Lunday submitted this current application, Application No. 503963 to update its previous compliance plan which was approved under Application No. 423768. This latest application adds new PRDs to the inventory of PRDs that are subject to the monitoring requirements of the District's Rule 1173.

Under the District's latest revision for Rule 1173, Lunday not only needs to monitor all of its atmospheric process pressure relief devices (PRDs), but is also required to install automatic electronic monitoring devices, tamper proof, that record the release, and its duration as well. Furthermore, Lunday needs to use the collected data to quantify the emissions that each PRD releases to the atmosphere. Some of these major changes in Rule 1173 requirements are as follows:

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Table No.1 Regulatory Citation

RULE 1173 SUBDIVISION (h)(1)	
Regulatory Citation	Rule Requirement
(A)	If a refinery has less than 50 atmospheric PRDs, it must install electronic valve monitoring devices on 50% of all PRDs in its inventory at a minimum by 1 January 2009. As for the remaining PRDs, all must be outfitted by 1 July 2009.
(B)	(i): If a refinery has more than 50 atmospheric PRDs, the facility must install electronic valve monitoring devices on at least 20% of PRDs in its inventory by 1 January 2009. (ii): Install electronic valve monitoring devices on atmospheric PRDs to reach 40% of its inventory by 1 July 2009. (iii): Install electronic valve monitoring devices on the remaining atmospheric PRDs in its inventory by 1 July 2010.
(C)	All atmospheric PRDs that are not outfitted with the electronic valve monitoring devices are required to be monitored for atmospheric releases by using the existing process instrumentation installed as part of the process control until such time as the requirements of (h)(1)(A) and (B) are met.
(D)	As an alternative to (h)(1)(A) and (B), a refinery may delay the installation of electronic valve monitoring devices on all atmospheric PRDs until the next refinery turnaround after 1 June 2007 provided the refinery operator demonstrates to the satisfaction of the District that outfitting the PRDs is not feasible or is a safety hazard. This alternative schedule, however, needs a written approval from the District.
(E)	A refinery may choose to use multiple devices in addition to electronic PRD monitoring devices to monitor releases and quantify the amount of release. However, if the operator chooses to use a combination of devices, it must still comply with the schedule in (h)(1)(A) and (B) whichever is applicable and needs the District's approval for employing the devices on its PRDs.
(F)	PRDs that are connected to an air pollution control or vapor recovery are exempted from the requirements under (h)(1)(A) and (B). The operator can also propose, as an alternative to install electronic valve monitoring devices, to connect its process PRDs to a vapor recovery system or air pollution control on the condition that the PRDs will be connected at the next refinery turnaround after 31 December 2008 and identify in the Compliance Plan before 31 December 2008.
(G)	PRDs in service of heavy liquids that releases to drains and are subject to Rule 1176 are exempt from the electronic valve monitoring requirements of Rule 1173.

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PROPOSED RULE 1173 COMPLIANCE PLAN AND EVALUATION

As required by the District's Rule 1173, Lunday has completed its inventory of all PRDs that must comply with the requirement of Rule 1173, which requires electronic monitoring devices. The company's latest inventory shows that its refinery has twelve PRDs that are subject to Rule 1173. This latest number adds three new PRDs to its previous inventory under Application No. 423768. Based on the total PRDs, Lunday needs to follow the schedule as outlined by Rule 1173 (h)(1)(A) (The current PRD inventory at Lunday's facility is in the file).

Under the District's Rule 1173 (h)(4), an inventory of Rule 1173 components subject to the rule must be clearly identified. The Lunday's revised atmospheric PRD inventory complies with the identification requirements: It clearly tags each PRD with a unique identification number, the location of the PRD, size of valve, pressure setting, and the option for each device (please note that Lunday indicates in an email that all PRDs are outfitted with the same electronic monitoring device. The email is in the file).

APPLICABLE RULE ANALYSIS

Rule 1173 (h)(1)(A) and (B) : Compliance Schedule Requirement

The District's Rule 1173 (h)(1) gives two schedules for complying with the new electronic monitoring and recording device requirements for atmospheric PRDs. These devices must also be able to quantify the emissions of each release. The compliance schedules are divided into two groups, one for facilities with fifty or less PRDs, and one for facilities with more than fifty PRDs. Lunday falls under the fifty PRDs or less schedule.

Rule 1173 (h)(1)(A) and (B) Analysis

Comply. With fifty or less atmospheric PRDs, Lunday must install monitoring devices on at least fifty percent of its PRDs by 1 January 2009, and the remaining PRDs by 1 July 2009 as required by (h)(1)(A). Lunday has completed the installation requirements by outfitting its PRDs with the required electronic monitoring devices (see attached email from Lunday, dated February 12, 2010, confirming the installation of the PRD monitoring devices).

Rule 1173 (h)(1)(C): Monitoring with Process Instrumentation and Control Requirements

In paragraph (h)(1)(C), refineries are required to monitor their atmospheric PRDs that are not outfitted with electronic monitoring devices by using process control instrumentation or other indicators until all PRDs comply with the requirements of (h)(1).

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Rule 1173 (h)(1)(C) Analysis

Comply. Lunday has installed process controls and indicators to monitor releases from its PRDs. The specific methods are listed in Attachment A. In all of its PRDs, the company uses the combination of pressure sensor readings and the newly installed electronic monitoring devices.

Rule 1173 (h)(1)(D): Alternative Schedule for Installing Electronic Monitoring Devices

Not Applicable. (h)(1)(D) gives refineries the option of delaying the compliance schedule for installing PRD monitoring devices until the next turnaround after 1 June 2007 if the companies provide sufficient justification that it can not be done without jeopardizing safety. Lunday in its application did not request to be placed under the alternative schedule, and has installed electronic monitoring devices on all atmospheric atmospheric PRDs.

Rule 1173 (h)(1)(E): Combination of Monitoring

Paragraph (h)(1)(E) gives refineries the option to use a combination of devices or methods to demonstrate compliance with monitoring. Under Rule 1173 (h)(1)(A) and (B), refineries are required to install electronic monitoring devices, tamper-proof, that are capable of recording a release, the duration, and the amount of release.

Rule 1173 (h)(1)(E) Analysis

Comply. Lunday has decided to use a the combination of existing pressure sensors installed on its processes, pressure relief valve design or equations to determine the release, and new electronic monitoring devices and existing data acquisition systems at the refinery that will measure and record the duration or the release.

Specifically, Lunday has installed an approved ultrasonic/acoustic monitoring devices and receivers. The electronic monitoring devices send signals to the receivers, which convert the signals, if a PRD release has occurred, to be recorded on Lunday's existing control system (DCS). All data recorded are time stamped (see file on the Accutech device that Lunday has installed).

Lunday's new monitoring devices, however, only monitor and record the opening of the PRDs and their release durations. To actually determine the amount of release, Lunday will also use the reading from the pressure transmitter to calculate the amount of release. To calculate the PRDs' releases, Lunday will use the time measured and recorded by the District approved electronic monitoring devices, existing pressure sensor, and the PRD pressure setting as data

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inputs for the American Petroleum Institute's (API) pressure relief valve equation for design or sizing in API RP 521. Because all the PRDs in Lunday's inventory are in gas or liquid service, the appropriate equations are the ones for the sizing of relief valves in gas and liquid service. Those equations are as follows (API RP 521, Section 3.6.2.1.1).

PRD Equation for Vapor or Gas Service

$$W_s = \frac{(ACK_d K_b K_c)(P+14.7)}{3600 \sqrt{\frac{(T+460)Z}{M}}}$$

$$W_{voc} = W_s * VOC * t$$

$$W_{TVOC} = \sum W_{voc}$$

Where:

A = Relief Valve Orifice Size

$$C = \text{Sizing Coefficient} = 520 \sqrt{k \left(\frac{2}{k+1} \right)^{\frac{k+1}{k-1}}}$$

k = Cp/Cv = Specific Heat Ratio for the released gas

Kd = Effective Coefficient of Discharge (use Kd = 0.975 in absence of manufacturer's PRD specific data)

Kb = Capacity Correction Factor

Kc = Combination Correction Factor. (Kc = 1 if no rupture disk; Kc = 0.9 if rupture disk)

M = Molecular Weight of the released gas

P = Pressure (psig), as measured with Continuous Process Monitoring System

T = Temperature (°F)

t = Recorded Duration of Release in Seconds by Electronic Monitoring Device

VOC = weight percent VOC in the released gas

Ws = Flow through the PRD, lb/sec

Wvoc = Flow of VOCs through the PRD

W_{TVOC} = Total VOC Released during the Event, lbs

Z = Compressibility Factor

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PRD Equation for Liquid Service

$$Q = 0.63AK_dK_wK_v\sqrt{\frac{P}{G}}$$

$$M = Q * 8.34 * G * t$$

Q = flow rate, (U.S. gallon per second)

K_d = Rated Coefficient of Discharge (use K_d = 0.65 in absence of manufacturer's PRD specific data)

K_w = Capacity Correction Factor (K_w = 1 for atmospheric back pressure)

K_v = Correction Factor due to Viscosity (assume = 1)

P = Pressure (psig), as measured with Continuous Process Monitoring System

G = Specific Gravity of the liquid at flowing temperature

M = Release per Event in lbs

t = Recorded Duration of Release in Seconds by Electronic Monitoring Device

Rule 1173 (h)(1)(F): PRD Connection to Air Pollution Control or Vapor Recovery

Not Applicable. (h)(1)(F) allows refinery operators to connect any of its PRDs to either an air pollution control device or vapor recovery provided that the connections are made during the first refinery turnaround after 31 December 2008. Lunday has not proposed to connect any PRDs to controls.

Rule 1173 (h)(1)(G): Exemption for Liquid PRDs

Not Applicable. (h)(1)(G) exempts atmospheric PRDs in liquid service from (h)(1)(A) and (B) if they are connected to drains and are part of a system subject to Rule 1176. Lunday did not identify any PRDs that are in heavy liquid service.

RECOMMENDATIONS AND CONDITIONS

Because Lunday chooses to use a combination devices to monitor, record, and quantify its PRD releases, the company has submitted a Rule 1173 Compliance Plan for the District's approval as required by the amended Rule 1173 (h)(1)(E). After a review of the Lunday's plan, the District recommends approval with the following conditions:

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CONDITIONS

| See plan approval letter.