"PERMITS VERSUS EQUIPMENT - A CASE HISTORY"

A Technical Paper by
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EPA OPERATING PERMIT LANGUAGE AND INTERPRETATION

ABSTRACT

Most USA petroleum liquid terminals today have installed vapor emission control systems to minimize air pollution as required by the original Clean Air Act and current operating permits. In the 1990s the EPA revised and added permit requirements to include new emission monitoring systems to existing vapor emission controlling systems. These new monitoring systems may be installed to assure that each petroleum liquid terminal facility in full compliance with the CAA. During the 1990s the EPA defined two basic types of monitoring systems. Each has its advantages and disadvantages. The intent of this presentation is to discuss the differences, advantages, and disadvantages in enough detail to create a general understanding of them both.

OPERATING PERMITS AND THE CLEAN AIR ACT

The Federal Clean Air Act Amendments of 1990 established a requirement to obtain operating permits under Title V for facilities (sources) which could contribute to air pollution. On July 21, 1992 the requirements were formally promulgated. These are located in the Code of Federal Register, 40 CFR Part 70.

On November 21, 1997, 40 CFR Part 64, et al., "Compliance Assurance Monitoring; Final Rule" detailed further requirements. The new requirements/regulations require owners or operators of such pollutant sources to conduct monitoring that satisfies particular criteria established in "The Rule" to provide a reasonable assurance of compliance with applicable requirements under the Clean Air Act. Monitoring is to focus on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating new requirements with EPA's operating permits program regulations. Revisions to the operating permits program regulations clarify the relationship between 64 requirements and periodic monitoring and compliance certification requirements.

MONITORING EQUIPMENT VERSUS METHODOLOGY

There are two basic approaches to assuring that control measures taken by the owner or operator to achieve compliance are properly operated and maintained so that the owner or operator continues to achieve compliance with applicable requirements.

One method is to establish monitoring as a method for directly determining continuous compliance with applicable requirements. Where terminal permits are written around this method, simple HydroCarbon Breakthrough Monitor Systems (HCBM's) measure instantaneous hydrocarbon emission levels. These systems alarm the operations personnel when the actual emission level approaches 80% of the maximum permitted, and shut down all terminal loading instantly if/when the maximum emission level is reach.

Another approach is to establish monitoring for the purpose of: (1) Documenting continued operation of the control measures within ranges of specified indicators of performance (such as emissions, control device parameters and process parameters) that are designed to provide a reasonable assurance of compliance with applicable requirements; (2) indicating any excursions from these ranges; and (3) responding to the data so that excursions are corrected. The part 64 adopts this second approach as an appropriate approach to enhancing monitoring in the context of Title V permitting for significant emission units that use control devices to achieve compliance with emission limits. Where terminal permits are written around this method, a more sophisticated approach used to design the detection equipment. Here, the detection system also continuously monitors hydrocarbon emission levels (concentrations). The measurement data is fed to an on-board computing and recording system that is often programmed to average its concentration data over time. The equipment used in this approach is commonly referred to as a Continuous Emission Monitor, or CEM. In some cases the volume of emission vapors is also measured to determine the actual quantity (mass) of emissions over time as allowed by this approach. Since the system averages the emission level, instantaneous emissions spikes, which may exceed the maximum permit limit for the averaging time, are allowed. Such spikes do not shut the control system down since they are reduced in the averaging process by the on-board computer. This more real-world approach to emissions detection and monitoring minimizes periods of terminal shutdowns; at least until the average emission level exceeds the permitted concentration.

TERMINAL OPERATING COSTS VERSUS TYPE OF PERMIT

The economic difference between these two accepted permit approaches can be significant to the terminal.

The HCBM system is simpler and costs less to procure and install. However, this simpler system will detect ANY exceedence, which will result in a terminal-loading shutdown. Since the cost of a terminal loading interruption, or worse, a lengthy stoppage, can be extremely damaging to terminal economics, this method is often viewed as considered less desirable even though the installed cost of the system is less.

Conversely, the CEM is more expensive to purchase and install, but minimizes terminal shutdowns via its allowed data averaging method. The savings from minimizing terminal loading interruptions often offsets the cost difference between the two systems.

It is incumbent on each of us to learn the difference between these two different permit types/approaches, and to understand the implication of each of them as regards their influence on overall terminal operations and economics.

A CASE HISTORY

At TESCO we receive calls requesting service and/or equipment on a daily basis. So, it was no surprise when we received a call from a favorite client requesting a new terminal vapor recovery system CEM. As is the norm in such a call, there was no discussion about the permit, or what the EPA inspector wanted. We assumed the client knew all of this, so our focus was on the specifics and options for the CEM. A few months later this simple assumption would turn out to be both embarrassing and costly for us and for our client.

We prepared our normal formal written and priced proposal for the CEM we discussed, and the client sent us his purchase order. All of this happened rather matter-of-fact.

About eight weeks passed while the CEM components were gathered, assembled, checked out and tested, making the completed CEM ready to deliver. The client asked *TESCO* to ship and install the new CEM. This took another week. The system started up, calibrated, and operated exactly as expected.

Then, the assumption began to take its toll. The EPA inspector visited the client's terminal to see the new CEM for himself. What he found was not what he expected. The permit he had issued required an instantaneous shutdown of the terminal if/when the predetermined emission level was reached. The permit did not require any recording or time averaging. The CEM was not set up to meet the requirements of the permit or the expectations of the inspector. Needless to say, the inspector made this known to the terminal manager immediately. The next call was from the terminal manager to his environmental engineer, who immediately thereafter called *TESCO*.

Naturally, the clients realized that they had not paid enough attention to the language or to the intent of the permit or its issuer, the local inspector. They had purchased a system that cost more than the system they needed, and they had not met the requirements of the inspector or his new operating permit. They wanted help, and they wanted it fast.

TESCO agreed to allow the client to return the CEM for a nominal restocking fee, and to apply the balance to the purchase of the simpler hydrocarbon breakthrough monitor (HCBM) system. The inspector granted the time needed to replace the CEM. In a few weeks the new HCBM was delivered, set up, calibrated and started up. The inspector was present and, after learning how the system is calibrated to assure accuracy, gave the new system his vote of approval.

CONCLUSIONS AND LESSONS LEARNED

The differences between one permit and the next can be crucial. At *TESCO* we no longer assume each client is a permit expert. We discuss the permit language in advance. We ask for a copy of the operating permit, and for the privilege of discussing the permit with the appropriate inspector. We do all of this in advance of making any recommendations for an emission monitoring system. Everyone in this case history learned how embarrassing and costly it is to make assumptions about operating permit language.

We hope this helps you and all readers from making the same costly and embarrassing mistakes.

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ABOUT THE AUTHOR

Tim Hammond is president is a graduate of Columbia University and founder of Technical Equipment Service Corporation, *TESCO*. Tim's focus is on servicing liquid terminals and upgrading the equipment in each. His BA degree combines with the fact that he is the second generation of a family devoted to terminal service. These qualify him to manage this customer oriented company. *TESCO* was founded in 1993 and has proudly served the liquids terminal industry ever since.