

To File
From MLN

Calculation Sheet

VISTA

Date: Current
Subject: Revised Vinyl Chloride NESHAP Regulations - Open-Ended valves or Lines

The standards define an open-ended valve or line as follows:

"Open-ended valve or line" means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to atmosphere, either directly or through open piping.

Regulations regarding open-ended valves or lines include:

§61.242-6 Standards: Open-ended valves or lines.

(a)(1) ~~Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in §61.242-6(c).~~

(2) ~~The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.~~

(b) ~~Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.~~

(c) ~~When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves, but shall comply with paragraph (a) at all other times.~~

Made By _____

Date _____

Page 1 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

An exemption to the open-ended valves or lines clause is stated as follows:

(b) Open-ended valves or lines located on multiple service process lines which operate to shift material off the line less than ten percent of the time are exempt from the requirements of § 97.342-4 of Subpart V, provided the open-ended valves or lines are addressed in the monitoring system required by paragraph (c)(1) of this section. This exemption does not apply

The interpretation of this exemption is two-fold.

- 1.) An open-ended valve is permitted on a multiple service process line as long as the process line is in actual vinyl chloride service less than ten percent of the total time. This is provided that the open-ended valve is addressed in the plant monitoring system.
- 2.) An open-ended valve is permitted on a multiple service process line as long as the valve operates as an open-ended valve less than ten percent of the time. This is provided that the open-ended valve is addressed in the plant monitoring system.

This interpretation is agreed upon by Vista's Legal and Environmental departments as well as personnel at the Aberdeen plant based on previous discussions with the EPA regarding these issues.

Made By _____

Date _____

Page 2 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

Values that are addressed by the open-ended value exemption are ones on the multiple service charge headers and recovery/evacuation lines. (Please see attached reactor diagrams). Values on the charge header that are classified as open-ended are the sewer and slurry dump valves.

① This occurs when a reactor is charging and another reactor is returning chemicals to the tank. Under certain circumstances, the chem wash return valve can be classified as an open ended valve. ①

The charge header is in actual vinyl chloride service when VCM is being charged to the reactor. Each reactor is charged on the average of three times in a twenty-four hour period with each charge requiring twenty-five minutes. ^{for a total of seventy-five minutes} The maximum charge time for any reactor in a twenty-four hour period is 120 minutes ^{or two hours} (4 charges requiring 30 minutes per charge). On the average, the charge header ^{on a reactor} is in actual VCM service ^{for} 5.2 percent of the time (1.2 hours in a twenty-four hour period). For the

Made By _____

Date _____

Page 3 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

Maximum case, the charge header is in actual VCM service for 8.3 percent of the time (2 hours in a twenty-four hour period). Since the charge header is in actual VCM service less than ten percent of the time, the open-ended values previously mentioned are permitted ^{long as} the plant monitoring system ^(Honeywell) addresses the values. The standard requires the monitoring systems ^{be able to} detect leaks in general process areas. Since Aberdeen's monitoring systems fit this requirement the open-ended valve clause exemption is permitted.

Valves that are addressed by the open-ended valve exemption on the multiple service ^{VCM} (recovery/evacuation) header are the VCM recovery and the reactor evacuation valve

Made By _____

Date _____

Page 4 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

There are two cases to consider on the VCM recovery/evacuation header.

I. Case I - Evacuation of a Reactor (Please refer to the attached reactor diagram)

The ^{VCM} recovery header (piping downstream of VCM recovery valve) is considered to be in VCM service for the majority of the time. During the evacuation of a reactor, the VCM recovery valve is considered an open-ended valve because it is the only valve separating the process from the atmosphere. Each reactor is evacuated on the average of three times in a twenty-four hour period with each evacuation requiring fifteen minutes for a total of forty-five minutes or 0.75 hours. The maximum evacuation time for any reactor is eighty minutes or 1.33 hours (four evacuations at twenty minutes per evacuation). On the average, the VCM recovery valve on any reactor is considered an open-ended valve for

Made By _____

Date _____

Page 5 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

3.1 percent of the time (0.75 hours in a twenty-four hour period). For the maximum case, the VCM recovery value is considered an open-ended value for 5.5 percent of the time (1.33 hours in a twenty-four hour period). Since the VCM recovery^{value} is considered open-ended less than 10 percent of the time, the exemption applies to this value as long as the Honeywell units address the value.

II. Case II - Recovering One Reactor While Evacuating Another Reactor (Please refer to attached reactor diagram)

The evacuation value^{on a reactor} is considered an open-ended value when the reactor in question is being recovered^{or vented} and another reactor is being evacuated.

Under these circumstances, the evacuation value on the reactor is the only valve between the process and the atmosphere. A reactor is being recovered or vented between four and six hours a day depending on which reactor and the product being

Made By _____

Date _____

Page 6 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

produced. A reactor is recovered a maximum of three times in a twenty-four hour period. Due to reactor recovery scheduling, the cycle times of the different reactor are such that under normal conditions only one reactor will be evacuated while another reactor is being recovered. The ^{normal} total time another reactor will be evacuating while the reactor in question is being recovered or vented is 60 minutes or 1 hour (three evacuations at twenty minutes per evacuation).

For this case, the evacuation valve is considered an open-ended valve for 4.2 percent of the time (1 hour in a twenty four hour period). For the next case to meet the ten percent criterion, the evacuation valve could be considered open-ended for 2.4 hours. This would correspond to a total of seven evacuations ^{on other reactors} which is not possible given the restriction of the reactor ^{in question} being recovered or vented.

Made By _____

Date _____

Page 7 of _____

Allmond 9944

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

The exemption therefore applies to the evacuation valve as long as the Honeywell units address the valve.

The VCM recovery valve and evacuation valve are considered open-ended less than ten percent of the time and therefore qualify for the exemption. The Honeywell units are capable of detecting leaks in general process areas and the open-ended valve clause exemption is permitted.

Made By _____

Date _____

Page 2 of _____

Allmond 9944

Job No. _____

Title _____