



August 17, 2015

Well Liquid Unloading Frequently Asked Questions (FAQ)

Well Unloading - Regulation Number 7, Section XVII.H.

This document is intended to answer frequently asked questions and provide background information concerning the Well Liquid Unloading requirements of Regulation Number 7, Section XVII.H. Further inquiries can be directed to the Oil and Gas Team at 303-692-3150. Please note this document is subject to periodic revisions, as deemed appropriate.

1. *What is the scope of activities included in this requirement?*

Regulation Number 7, Section XVII.H. addresses venting that occurs during well bore liquid unloading and during downhole well maintenance events. Well bore liquid unloading involves the removal of liquid for the purpose of restoring fluid flow through the well head. Downhole well maintenance unloading activities include the removal of fluid from the well bore in preparation for a maintenance activity. Both wellbore liquid unloading and downhole well maintenance activities are covered by this rule and may have unique best management practices (BMPs).

Downhole well maintenance unloading and well bore liquid unloading activities that do not result in any gas venting are not subject to the requirements of Section XVII.H.

a. Are plunger lifts as part of normal operation considered unloads?

No, plunger lift cycles which do not result in venting of gasses are not considered unloads applicable to Section XVII.H. However, improperly functioning plunger lifts can result in the venting of gasses and should be periodically assessed. Furthermore, recent evidence from the University of Texas indicates that emissions from wells utilizing plunger lifts can be significant. Thus, while not required, operators should assess whether emissions from wells with plunger lifts can be further minimized and whether best management practices can be utilized.

b. Are automatic unloads included in this requirement? This typically means a bypass valve on a plunger lift system that does not go to a separator.

Yes. An automatic unload is considered an unload if it results in the venting of gas for the purposes of Section XVII.H.

c. Is swabbing subject to the requirements of Section XVII.H.?

Swabbing is a downhole maintenance activity for the purpose of removing liquid from a wellbore and may result in gas venting. Where gas could be vented during a swab, it is



subject to the requirements of Section XVII.H., including the use of BMPs to avoid / limit emissions during these maintenance activities.

- 2. Section XVII.H.1.b. requires the owner or operator to be present on-site during any planned maintenance or liquids unloading event. Is a contractor employed by the owner or operator sufficient to meet the requirement to have an owner or operator on site for the purposes of this Section? Is the owner or operator required to document the person on-site during these events?**

A contractor, with the operator's permission, can attend an unloading event in lieu of an owner/operator. The operator is not specifically required to document the presence of an authorized individual during the unloading process; however, it is highly recommended that operators maintain sufficient information to verify compliance-related matters. Ultimately, it is the responsibility of the owner / operator to demonstrate compliance with this and all requirements under Section XVII.H.

Furthermore, due to the unique nature and potentially high frequency of automated liquid unloading events (e.g., wells using automated plunger lifts), owners / operators / contractors of wells with automated unloading events are not required to be present during this activity pursuant to XVII.H.1.b.

- 3. During well bore liquid unloading to atmosphere, is it necessary to log downtime for Regulation Number 7, Section XII?**

Yes, well bore liquid unloading activities that result in hydrocarbon liquids production that is not controlled is considered downtime for the purposes of Regulation Number 7, Section XII. For further clarification, please see PS Memo 10-02 Section 7.7.

- 4. During downhole well maintenance activities, is it necessary to log downtime for Regulation Number 7, Section XII?**

Yes, downhole well maintenance activities that result in hydrocarbon liquids production that is not controlled is considered downtime for the purposes of Regulation Number 7, Section XII. For further clarification, please see PS Memo 10-02 section 7.4.

- 5. What is the "cause" to be reported under XVII.H.1.c.?**

The cause recorded should be the root cause of the venting, if known. Furthermore, Section XVII.H.1 requires operators use BMPs to minimize the need for well venting, other than in circumstances where safety requires venting. Accordingly, if an operator rejects BMPs due to safety concerns, the operator should document the rejected BMP and the rationale for doing so.

- 6. If creating differential pressure poses a safety concern to either personnel or equipment, is an owner or operator considered to have first attempted to create differential pressure by considering this practice and rejecting its use due to these safety concerns and may vent thereafter?**

Yes, if an owner or operator cannot create differential pressure safely, and other BMPs are rejected due to safety, they are considered to be in compliance with XVII.H.1.a. A description of the BMP(s) attempted and the rationale for rejecting the BMP(s) should be recorded to demonstrate compliance with the requirements of Section XVII.H.



7. Will operators be required to use prescribed best management practices such as those referenced in the Regulation Number 7 Statement of Basis and Purpose (SBAP) or EPA's 2014 "White Paper" on liquids unloading?

No, the Division does not intend to prescribe which BMPs must be used. The examples listed in the SBAP and the EPA White Paper are provided as a courtesy to identify some of the BMPs available to reduce emissions during liquid unloading and downhole maintenance activities.

Rule Language

XVII.H. (State Only) Venting during downhole well maintenance and liquids unloading events

XVII.H.1. Beginning May 1, 2014, owners or operators must use best management practices to minimize hydrocarbon emissions and the need for well venting associated with downhole well maintenance and liquids unloading, unless venting is necessary for safety.

XVII.H.1.a. During liquids unloading events, any means of creating differential pressure must first be used to attempt to unload the liquids from the well without venting. If these methods are not successful in unloading the liquids from the well, the well may be vented to the atmosphere to create the necessary differential pressure to bring the liquids to the surface.

XVII.H.1.b. The owner or operator must be present on-site during any planned well maintenance or liquids unloading event and must ensure that any venting to the atmosphere is limited to the maximum extent practicable.

XVII.H.1.c. Records of the cause, date, time, and duration of venting events under Section XVII.H. must be kept for two (2) years and made available to the Division upon request.

Statement of Basis and Purpose

Well Maintenance and Liquids Unloading (Section XVII.H.)

Over time, liquids build up inside a well and reduce flow out of the well. These liquids can slow and even block gas flow in wet gas wells and are removed during a well blowdown, also called liquids unloading. As a result of recent information, EPA has significantly increased their emission factor for liquids unloading. The uncontrolled emission factor is based upon fluid equilibrium calculations used to estimate the amount of gas needed to blow down a column of fluids blocking a well and Natural Gas STAR partner data on the amount of additional venting after a blowdown. Similar to the issues with well maintenance and well completion emissions, considerable uncertainty for liquid unloading emissions arises from the limited data sources used and the applicability of Natural Gas STAR program activities to calculate industry baseline emissions. This is especially important as liquid unloading emissions are estimated to comprise 33% of the uncontrolled methane emissions from the natural gas industry in the latest greenhouse gas inventory. EPA's Natural Gas STAR program advocates the use of a plunger lift system to reduce the need for liquids unloading, and indicates that such systems may pay for themselves in about one year. The Commission has determined that the use of technologies and practices to minimize venting, including plunger lift systems, are available and economically feasible, and encourages their use in Colorado.

