



## **PDC Energy Site-Specific Temporary Modular Large Volume Tank Contingency Plan**

The purpose of this Temporary Modular Large Volume Tank (MLVT) Contingency Plan is to outline some of the site-specific considerations to take in to account before MLVT construction and also to define the response actions required in the event of a release from a MLVT. This contingency plan is intended to provide guidance to PDC and its contractors in terms of identifying risks and what is required for response actions to a MLVT release. It is not intended to replace any part of the required PDC Energy MLVT construction checklist or the tank manufacturer's standard operation procedures; it is intended only as supplemental and informational to these. In addition, MLVT's used on PDC locations shall comply with the COGCC Policy on the Use of Temporary Large Volume Storage Tanks in Colorado (see Appendix A).

Upon consideration of the risks at each location it may be determined that a MLVT may not be suitable for use without implementation of additional risk reduction methods (e.g., additional berming, trenching, etc.) or it may be necessary to identify an alternative method of water storage other than a MLVT. The additional risk reduction methods will need to be determined on an individual basis.

Each location where MLVT's are used will have its own set of unique site-specific characteristics and associated risks (e.g., rural vs. urban setting, grade of the location, etc.) to be considered in a worst case scenario. These characteristics must be identified and addressed prior to the MLVT construction phase and should be documented in the MLVT construction checklist. Ensuring the safety of our employees, contractors, and the public are a top priority. This can be addressed with the implementation of MLVT pre-construction risk assessment measures to address safety concerns, and minimize environmental impacts and property damage in the unlikely event of a MLVT release.

### **Pre-Construction Considerations**

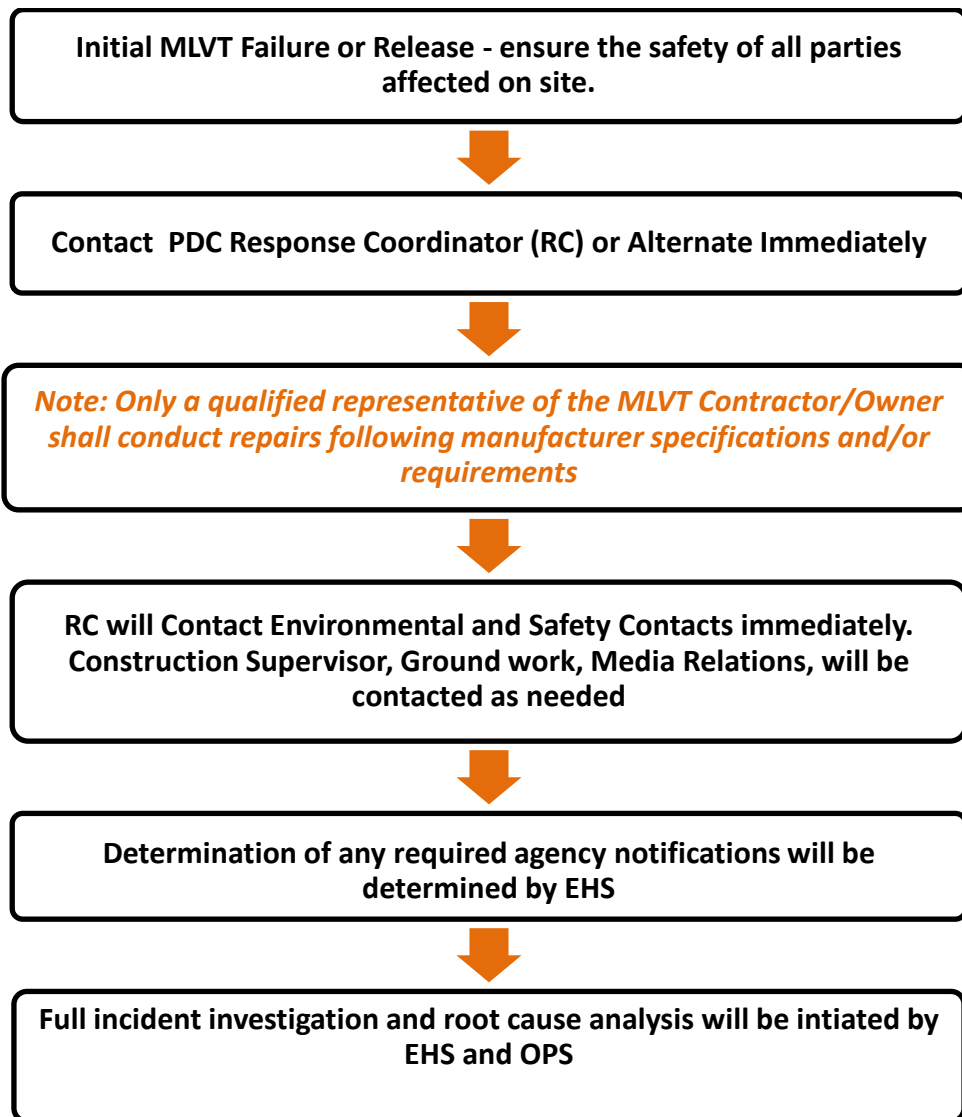
- Topography
  - High, Low, Slope, Direction
- Buildings (houses or others) and their locations; up gradient, down gradient
- Local Roads and traffic
- Surface waters
  - (Proximity to streams, canals, lakes/ponds) and location; (up gradient, down gradient)
- Site visibility must be adequate
  - Night lighting, reflective tape where needed, etc.
- Other equipment on location
- Surrounding land use
  - Agriculture, urban, barren, industrial, etc.
- Traffic onsite must be controlled and managed to maintain tank security
  - Use of barriers, signs directing traffic so everyone knows where to go
- Tear away tank fill connections must be used
- Check valves must be used for anti-siphon prevention
- Site security

## Response Actions for MLVT Release

In the event of MLVT release, whether a liner failure, tank structure failure, etc. it is critical that prompt response actions are understood and taken to ensure the safety of our employees and the public, and to minimize environmental impacts and property damages. **The PDC Energy Response Coordinator (identified in the contacts below) shall immediately notify an EHS environmental or safety contact upon learning of any tank failure or release.** EHS will then determine if any agency notifications need to be made and initiate a complete incident investigation and root cause analysis with all parties involved for any tank failure or release, regardless of magnitude (including small leaks and repairs).

The following is a flow chart of response actions followed by a list of PDC Energy contacts:

### MLVT Failure Response Actions



<b>PDC Energy, Inc.</b> <b>QUICK REFERENCE MLVT CONTACT AND REPORTING TABLE</b>	
<b>PDC Energy MLVT Response Coordinator</b>	<b>PDC Energy MLVT Response Coordinator - Alternate Contact</b>
<i>Lead Completions Supervisor</i> <i>Mike Schweizer (970-215-5608)</i>	<i>District Operations Manager</i> <i>Jason Miller (970-396-8867)</i>
<b>Environmental Contact</b>	<b>Safety Contact</b>
<i>District EHS Professional – Environmental</i> <i>Brandon Bruns (720-281-7255) or</i> <i>Troy Swain (970-381-2019)</i>	<i>District EHS Professional – Safety</i> <i>Jason Thron (970-373-9267)</i>
<b>Construction Supervisor</b>	<b>Ground Work</b>
<i>Construction Supervisor or Field Project Supervisor</i> <i>Mark Longhurst (970-301-8294)</i>	<i>District Well Location and Development Reclamation Supervisor</i> <i>Aaron Clyncke (970-568-6717)</i>

**PDC Energy, Inc.**  
**MLVT Construction Checklist**

**Project Information**

PDC Location:	
Associated Wells:	

Site Legals:	County: <span style="border-bottom: 1px solid black;"></span>	QtrQtr: <span style="border-bottom: 1px solid black;"></span>
	Section: <span style="border-bottom: 1px solid black;"></span>	Twtnship <span style="border-bottom: 1px solid black;"></span>
	Range: <span style="border-bottom: 1px solid black;"></span>	

PDC Representative:	
MLVT Tank Owner:	
MLVT Tank Constructor:	
MLVT Tank Size:	
Number of Tanks:	
Liner Manufacturer:	
Liner Installer:	
Liner Thickness (mil):	

**Site Preparation**

Date Earthwork Completed:	
Tank Area Slope (inches):	
Date Tank Area Compaction Completed:	
Company Who Completed Compaction:	
Compaction Test Method (Standard or Modified Proctor):	

### Site Preparation Sign-Off

PDC Representative:	_____
Signature:	_____
Date:	_____
MLVT Construction Representative:	_____
Signature:	_____
Date:	_____

### MLVT Construction

Has pre-construction checklist been completed by contractor?	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
Comment:	_____			

### Construction Sign-Off

PDC Representative:	_____
Signature:	_____
Date:	_____
MLVT Construction Representative:	_____
Signature:	_____
Date:	_____

### Water Addition

Water source?	_____
How many barrels were added to the tank(s)?	_____
Chemical added? (If so, list)	_____

### Completion Sign-Off

PDC Representative:	_____
Signature:	_____
Date:	_____
MLVT Construction Representative:	_____
Signature:	_____
Date:	_____

- ☐ Has MLVT Pre-Construction Checklist been completed by contractor? Attach
- ☐ Has site-specific MLVT contingency plan been completed? Attach
- ☐ Has site-specific figure been completed? Attach

**Additional Notes:**

**COLORADO OIL & GAS CONSERVATION COMMISSION**  
**POLICY ON THE USE OF MODULAR LARGE VOLUME TANKS IN COLORADO**

January 3, 2014

This policy was developed in response to the recent and increasing use of modular large volume storage tanks (MLVT) (defined below) to hold the large volumes of fresh water typically associated with new well completions. MLVTs are above-ground tanks typically comprised of a free-standing steel structure (commonly a modular ring) with a synthetic liner draped inside to hold fluids. Current MLVTs are capable of storing up to 50,000 bbls or more of water for well completion and are being used in lieu of historic in-ground pits or multiple 500 bbl steel tanks. The use of MLVTs can result in benefits including a substantial cost savings, time savings, and the reduction in truck trips needed for setup and breakdown.

Although MLVTs meet the Colorado Oil & Gas Conservation Commission (COGCC) 100-Series regulatory definition of a Tank, *“a stationary vessel that is used to contain fluids, constructed of non-earthen materials (e.g. concrete, steel, plastic) that provide structural support,”* this emerging technology is not explicitly addressed in COGCC’s 300-, 600-, or 900-Series Rules.

Between October 2011 and June 2013, five catastrophic failures of MLVTs containing fresh water in Colorado have been reported to the COGCC. Causes of the failures have been attributed to liner seam failure, improper liner installation, steel weld failure, poor MLVT placement (one MLVT failed and caused an adjacent MLVT to fail), and unsuitable or underprepared substrate. Failures have not been limited to any specific manufacturer or MLVT construction type.

This policy is being adopted to provide guidance to Operators utilizing MLVTs. As MLVT technology advances, this policy may be subject to change.

**POLICY**

**Definitions**

**Modular Large Volume Tanks (MLVTs)** for the purposes of this policy MLVTs include any aboveground tank that is comprised of a sectional structural member or frame used to support a synthetic liner which provides primary containment for fluids. By this definition, MLVTs are intended to be set-up on location prior to service and dismantled for movement to a different location following their use.

Capitalized words and terms in this policy are defined in current COGCC Rules and those definitions apply to this Policy.

**COGCC Jurisdiction over MLVTs**

COGCC has jurisdiction over a MLVT when it is being used by an Operator on an Oil and Gas Location in the conduct of Oil and Gas Operations. In that circumstance, COGCC considers a MLVT an Oil and Gas Facility. A MLVT may be used in the Field for purposes other than conducting Oil and Gas Operations on an Oil and Gas Location. In that circumstance, the MLVT is not considered an Oil and Gas Facility and COGCC does not have jurisdiction over the MLVT.

**Appropriate Use of MLVT Technology**

When used in accordance with this policy, COGCC considers a MLVT to be appropriate technology to store fresh water to support Oil and Gas Operations. Storing or handling E&P Wastes, including treated E&P Wastes and flowback during hydraulic fracturing operations in a MLVT does not comply with Rule 907.a.(1) & (2).

### **Notice to COGCC**

Operators shall notify COGCC prior to placing a MLVT into service at an Oil and Gas Location as follows:

1. For use on a new Oil and Gas Location (as defined in Rule 303.b.(1): an Operator shall indicate such use on the Form 2A, Oil and Gas Location Assessment.
2. For use on an existing Oil and Gas Location: an Operator shall submit a Form 4 indicating its intent to use a MLVT and requesting a modification of the listed Oil and Gas Facilities.

The Director reserves the right to require a Form 2A submittal in lieu of a Form 4 if a case by case determination demonstrates that the Oil and Gas Location will be expanded or modified substantively, per Rule 303.d.

An Operator shall include the following information regarding a proposed MLVT on the Form 2A or Form 4: manufacturer of the MLVT(s); number and size(s) of the MLVTs; anticipated timeframe MLVTs will be onsite; and Location Drawing indicating where the MLVTs will be located with respect to other facility equipment, property boundaries and setback structures.

### **Design Criteria**

Operator shall submit the MLVT design package to the COGCC with their Form 2A or Form 4. MLVT design package shall include tank design and assembly specifications, liner specifications, and site preparation or sub-grade preparation specifications. The design package or individual components shall be sealed by a Colorado Licensed Professional Engineer.

MLVTs shall be re-certified by the manufacturer and/or certifying Professional Engineer at least every 50 set-ups. Length of tank service records and tank re-certification records from the MLVT contractor shall be provided to the COGCC upon request.

All liner seams shall be welded at the liner manufacturers' facility, field-welded liners shall not be used, and liners shall not be re-used for subsequent MLVT installations.

### **Site Preparation & Installation**

Site preparation and MLVT installation oversight will be provided by a Professional Engineer or their designated representative; the Professional Engineer's certification of such oversight shall be maintained by Operator and provided to COGCC upon request. Construction and installation of the tank structure, liner and sub-grade shall meet or exceed the manufacturer specifications.

Rules 604.a. and 605.a.(2, 3, 5, 6, 7, and 8), as applicable to tank setbacks at the time a MLVT is installed at an Oil and Gas Location shall apply to the siting of a MLVT. If areas are to be graded and disturbed, the Operator shall conduct such activity in accordance with Rules 1002.b. and 1002.c.



MLVT Operators shall supervise initial filling of a MLVT and inspect the MLVT for leaks during filling. If leaks are observed, filling shall cease, the leaks shall be repaired, and the integrity of the tank shall be evaluated prior to continuing to fill or otherwise use the MLVT.

### **MLVT Operations and Contingency Planning**

Operators employing MLVTs on their Oil and Gas Locations shall develop and comply with a written standard operating procedure (SOP).

Signs shall be posted on each MLVT to indicate that the contents are fresh water and that no E&P waste fluids are allowed. Location and additional signage shall conform to Rule 210.

MLVTs will be operated with a minimum of 1 foot freeboard at all times.

Access to the tanks shall be limited to operational personnel.

Operators shall conduct daily visual inspections of the exterior wall of a MLVT and the surrounding area for any integrity deficiencies. If deficiencies are noted, they shall be repaired as soon as practicable.

Records of these inspections and repairs shall be maintained for a period of at least 5 years per Rule 205 and shall be provided to the COGCC upon request.

Each Operator shall develop a contingency plan for any MLVT leak or catastrophic failure of the tank integrity and resulting loss of fluid. The plan should include a notification process to the COGCC and local emergency authority (municipality, county or both) for any failure and resulting loss of fluid. Best

Management Practices (BMPs) shall be employed to prevent injuries, property damage or environmental impacts, such as erosion of onsite sediment into nearby surface water. The contingency plan shall be made available to the COGCC upon request.

In the event of a MLVT failure, the Operator shall notify COGCC as soon as practicable but not more than 24 hours after discovery, file a Form 22-Accident Report within 10 days after discovery, and conduct a “root cause analysis” and provide it to COGCC on a Form 4-Sundry Notice within 30 days of the failure.