Manitoba
Conservation

Technical Bulletin PSF-002
October 2011

MONITORING and LEAK DETECTION of STORAGE TANK SYSTEMS for Petroleum Products and Allied Petroleum Products

for Aboveground Storage Tank Systems 5000 Litres or Larger and Underground Storage Tank Systems

Requirement

For petroleum storage facilities with aboveground tanks 5000L or greater, and/or petroleum storage facilities with underground tanks, Manitoba Conservation requires that all existing and newly construct aboveground and underground storage tank systems be *monitored and tested* in accordance with the tables provided as appropriate for each type of system.

In addition, records shall be maintained and stored in accordance with Part 6 of Manitoba Regulation MR 188/2001 *Storage and Handling of Petroleum Products and Allied Products Regulation* (Petroleum Storage Regulation) and Section 8.11 of *CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003* (CCME Code of Practice).

Definition

Leak detection means a device or method that is capable of detecting *leaks* in a *storage tank system*.

Background

Manitoba Regulation MR 188/2001 *Storage of Handling of Petroleum Products and Allied Products Regulation* (Petroleum Storage Regulation) pursuant to *The Dangerous Goods Handling and Transportation Act* specifies standards for *monitoring* and *leak detection* of storage tank systems in accordance with *CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003* (CCME Code of Practice):

- **For existing petroleum storage facilities** a schedule of *leak detection* and *monitoring methods* are tabled in the following pages to assist facility owners and licensed petroleum technicians in determining appropriate in-service monitoring methods and periodic leak detection tests.

- **For new petroleum storage facilities** a schedule of *final installation leak detection* are tabled in the following pages. Please note that if the field under

'Final Installation Leak Detection' is blank, new installations of this type of containment are not permitted.

Additional Information and Reporting

A person who is responsible for or who has custody and control of a contaminant involved in an environmental accident shall immediately after the occurrence of the environmental accident report the accident by calling 204-945-4888.

In the event a leak is discovered, Manitoba Conservation must be notified immediately, in accordance with Section 38 Part 7 of the Petroleum Storage Regulation, and Sentences 8.3.4(1) and 8.3.4(2) of the CCME Code of Practice.

The contents of this document summarize leak detection requirements set out in M.R.188/2001 and the codes and standards adopted therein. Should any discrepancy between the requirements of this document and the requirements in M.R.188/2001 be found, the requirements of M.R.188/2001 shall prevail.

Useful Links

Manitoba Conservation's Petroleum Storage Program web page:
http://www.gov.mb.ca/conservation/envprograms/psp/index.html

Manitoba Conservation Emergency Response Program
http://www.gov.mb.ca/conservation/envprograms/env-emresp/index.html

Canadian Council of the Ministers of the Environment web page:
http://www.ccme.ca/publications/

For more information, please contact:

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LEAK DETECTION MONITORING REQUIREMENTS

Last Updated 2011-10-17

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Leak Detection and Monitoring Methods Abbreviation Descriptions

Abbreviation	Leak Detection and Monitoring Methods Descriptions
ATG	Automatic tank gauge with monthly precision leak detection test (PLDT)
CITLD	Continuous in-tank leak detection system with monthly leak detection test (results are limited to an evaluation of the storage tank only)
CITLDS	Continuous in-tank leak detection system with monthly leak detection test (results provide an evaluation of the storage tank and piping system)
ELLD	Electronic line leak detection device
HPVLDT	High-pressure inert gas or vacuum leak detection test
HTSCM	High-technology secondary containment monitoring
IR	Manual dip and inventory reconciliation; or
	electronic dip and electronic inventory reconciliation; or
	electronic dip and manual inventory reconciliation
LPVLDT	Low-pressure inert gas or vacuum leak detection test
MLLD	Mechanical line leak detection device
OWM	Observation well vapour or groundwater monitoring (monthly)
PLDT	Precision leak detection test of a storage tank[1]
PLMLDT	Pressure liquid media leak detection test
SIR	Statistical inventory reconciliation (monthly reporting)
SLMLDT	Static liquid media leak detection test
SVCV	Single, vertical check valve
VLD	Visual leak detection (weekly)

[1] A Licensed Petroleum Technician must be used for this type of test. A list of licensed Precision Leak Detection Testers is available from the Manitoba Conservation website or by contacting your local Environment Officer.

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Aboveground Storage Tanks

Single-Wall, Horizontal Tanks with Aboveground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Horizontal tanks	VLD	IR or VLD	Not Required	VLD[1]; or PLDT
Aboveground piping (all types)	PLMLDT; or HPVLDT	VLD	Not Required	PLMLDT; or HPVLDT

[1] Where entire system including piping is visible

Single-Wall, Vertical Tanks with Aboveground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Vertical tanks (within approved secondary containment)	VLD	IR and VLD; or HTSCM	API Std 653-01	PLDT; or API Std 653-01
Vertical tanks (within non-approved secondary containment)		IR and VLD	API Std 653-01; or PLDT (annually)	PLDT; or API Std 653-01
Aboveground piping (all types)	PLMLDT; or HPVLDT	VLD	Not Required	PLMLDT; or HPVLDT

Double-Wall (Horizontal or Vertical Tanks) with Aboveground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Double-walled tanks	VLD	HTSCM; or VLD	Not required	VLD[1]; or PLDT; or LPVLDT[1]
Aboveground piping (all types)	PLMLDT; or HPVLDT	VLD	Not Required	PLMLDT; or HPVLDT

[1] On the interstice only

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Single-Wall, Horizontal Tanks with Underground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Horizontal tanks	VLD	IR and VLD	Not Required	VLD[1]; or PLDT
Piping:				
► Single Wall (Greater than 75mm)	PLMLDT; or HPVLDT	OWM	PLMLDT; or HPVLDT (every year)	PLMLDT; or HPVLDT
		CITLDS or ELLD	Not Required	
► Double-wall	PLMLDT; or HPVLDT and LPVLDT	ELLD; Sensor; CITLDS; or SVCV[2]	Not Required	PLMLDT; or HPVLDT
Existing Single-Wall Piping:				
► Steel without CP[3]		IR and OWM; or SIR	PLMDT; or HPVLDT (annually)	PLMDT; or HPVLDT
► Steel with CP[3]; plastic; or FRP[4]		IR and OWM; or SIR	PLMDT; or HPVLDT (every 2 years)	PLMDT; or HPVLDT
		CITLDS; or OWM and SIR	Not required	
		SVCV[2]; or ELLD[5]	Not required	
Turbine and Transition Sumps	SLMLDT		VLD (annually)[6]	SLMLDT
Dispenser Sumps	SLMLDT	HTSCM; or VLD	Not required	SLMLDT

[1] Where entire system including piping is visible
[2] Suction style systems only
[3] CP - cathodic protection
[4] FRP – Fiberglass-reinforced-plastic
[5] Pressure piping
[6] Inspection and performance testing in conformance with the manufacturer's requirements and procedures

Single-Wall, Vertical Tanks with Underground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Vertical tanks (within approved secondary containment)	VLD	IR and VLD; or HTSCM	API Std 653-01	PLDT; or API Std 653-01
Vertical tanks (within non-approved secondary containment)		IR and VLD	API Std 653-01; or PLDT (annually)	PLDT; or API Std 653-01
Piping:				
► Single Wall (Greater than 75mm)	PLMLDT; or HPVLDT	OWM	PLMLDT; or HPVLDT (every year)	PLMLDT; or HPVLDT
		CITLDS or ELLD	Not Required	
► Double-wall	PLMLDT; or HPVLDT and LPVLDT	ELLD; Sensor; CITLDS; or SVCV[1]	Not Required	PLMLDT; or HPVLDT
Existing Single-Wall Piping:				
► Steel without CP[2]		IR and OWM; or SIR	PLMDT; or HPVLDT (annually)	PLMDT; or HPVLDT
► Steel with CP[2]; plastic; or FRP[3]		IR and OWM; or SIR	PLMDT; or HPVLDT (every 2 years)	PLMDT; or HPVLDT
		CITLDS; or OWM and SIR	Not required	
		SVCV[1]; or ELLD[4]	Not required	
Turbine and Transition Sumps	SLMLDT		VLD (annually)[6]	SLMLDT
Dispenser Sumps	SLMLDT	HTSCM; or VLD	Not required	SLMLDT

1 Suction style system only
2 CP – Cathodic protection
3 FRP – Fiberglass reinforced plastic
4 Pressure piping
5 Inspections and performance testing in conformance with the manufacturer's requirements and procedures

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Double-wall (Horizontal or Vertical Tanks) with Underground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Double-walled tanks	VLD	HTSCM; or VLD	Not required	VLD[1]; or PLDT; or LPVLDT[1]
Piping:				
► Single Wall (Greater than 75 mm)	PLMLDT; or HPVLDT	OWM	PLMLDT; or HPVLDT (every year)	PLMLDT; or HPVLDT
		CITLDS or ELLD	Not Required	
► Double-wall	PLMLDT; or HPVLDT and LPVLDT	ELLD; Sensor; CITLDS; or SVCV[2]	Not Required	PLMLDT; or HPVLDT
Existing Single-Walled Piping:				
► Steel without CP[4]		IR and OWM; or SIR	PLMDT; or HPVLDT (annually)	PLMDT; or HPVLDT
► Steel with CP[4]; plastic; or FRP[5]		IR and OWM; or SIR	PLMDT; or HPVLDT (every 2 years)	PLMDT; or HPVLDT
		CITLDS; or OWM and SIR	Not required	
		SVCV[2]; or ELLD[6]	Not required	
Turbine and Transition Sumps	SLMLDT		VLD (annually)[3]	SLMLDT
Dispenser Sumps	SLMLDT	HTSCM; or VLD	Not required	SLMLDT

[1] On the interstice only
[2] Suction style system only
[3] Inspection and performance testing in conformance with the manufacturer's requirements and procedures
[4] CP – Cathodic Protection
[5] FRP – Foberglass-reinforced-plastic
[6] Pressure piping

API Standard 650-98 with Aboveground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
API Std 650-98 (within approved secondary containment)	API 650 standard	IR and VLD; or HTSCM	API 653	PLDT; or API 653
API Std 650-98 (within non-approved secondary containment)		IR and VLD	API Std 653-01; or PLDT (annually)	PLDT; or API Std 653-01
Aboveground piping (all types)	PLMLDT; or HPVLDT	VLD	Not Required	PLMLDT; or HPVLDT

API Standard 650-98 with Underground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
API Std 650-98 (within approved secondary containment)	As per API 650 standard	IR and VLD; or HTSCM	API 653	PLDT; or API 653
API Std 650-98 (within non-approved secondary containment)		IR and VLD	API Std 653-01; or PLDT (annually)	PLDT; or API Std 653-01
Piping:				
► Single Wall (Greater than 75 mm)	PLMLDT; or HPVLDT	OWM	PLMLDT; or HPVLDT (every year)	PLMLDT; or HPVLDT
		CITLDS; or ELLD	Not Required	
► Double-wall	PLMLDT; or HPVLDT and LPVLDT	ELLD; Sensor; CITLDS; or SVCV[1]	Not Required	PLMLDT; or HPVLDT
Existing single-walled piping:				
► Steel without CP[2]		IR and OWM; or SIR	PLMDT; or HPVLDT (annually)	PLMDT; or HPVLDT
► Steel with CP[2]; plastic; or FRP[3]		IR and OWM; or SIR	PLMDT; or HPVLDT (every 2 years)	PLMDT; or HPVLDT
		CITLDS; or OWM and SIR	Not required	
		SVCV[1]; or ELLD[4]	Not required	

[1] Suction style system only
[2] CP – Cathodic protection
[3] FRP – Fiberglass reinforced plastic
[4] Pressure piping

Underground Storage Tanks

Double-Wall Tanks with Underground Piping

Containment	Final installation Leak Detection	In-service Monitoring	Periodic Leak Detection	Leak Suspected
Double-walled tanks	PLDT	SIR; VLD; ATG; HTSCM; CITLDS; or CITLD	Not required	PLDT
Piping:				
► Single Wall (Greater than 75 mm)	PLMLDT; or HPVLDT	OWM	PLMLDT; or HPVLDT (every year)	PLMLDT; or HPVLDT
		CITLDS or ELLD	Not Required	
► Double-wall	PLMLDT; or HPVLDT and LPVLDT	ELLD; Sensor; CITLDS; or SVCV[1]	Not Required	PLMLDT; or HPVLDT
Existing single-wall piping:				
► Steel without CP[2]		IR and OWM; or SIR	PLMDT; or HPVLDT (annually)	PLMDT; or HPVLDT
► Steel with CP[2], plastic or FRP[3]		IR and OWM; or SIR	PLMDT; or HPVLDT (every 2 years)	PLMDT; or HPVLDT
		CITLDS; or OWM and SIR	Not required	
		SVCV[1]; or ELLD[4]	Not required	
Turbine and Transition Sumps	SLMLDT		VLD (annually)[5]	SLMLDT
Dispenser Sumps	SLMLDT	HTSCM; or VLD	Not required	SLMLDT

1 Suction style system only
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Existing Single-Wall Tanks with Underground Piping				
Containment	**Final installation Leak Detection**	**In-service Monitoring**	**Periodic Leak Detection**	**Leak Suspected**
Steel tank without CP[1]		IR and OWM; or SIR	PLDT (annually)	PLDT
Steel tank with CP[1]; or FRP[2]		IR	PLDT (every 2 years)	PLDT
		IR and OWM; or SIR	PLDT (every 5 years)	
		ATG; or CITLDS	Not required	
		OWM and SIR	Not required	
Piping:				
► Single Wall (Greater than 75mm)	PLMLDT; or HPVLDT	OWM	PLMLDT; or HPVLDT (every year)	PLMLDT; or HPVLDT
		CITLDS or ELLD	Not Required	
► Double-wall	PLMDT; or HPVLDT and LPVLDT	ELLD; Sensor; CITLDS; or SVCV[3]		
Existing Single-Wall Piping:				
► Steel without CP[1]		IR and OWM; or SIR	PLMDT; or HDPLDT (annually)	PLMDT; or HPVLDT
► Steel with CP[1]; plastic, or FRP[2]		IR and OWM; or SIR	PLMDT; or HDPLDT (every 2 years)	PLMDT; or HPVLDT
		CITLDS; or OWM and SIR	Not required	
		SVCV[3]; or ELLD[5]	Not Required	
Turbine and Transition Sumps	SLMLDT		VLD (annually)[4]	SLMLDT
Dispenser Sumps	SLMLDT	HTSCM; or VLD	Not required	SLMLDT

[1] CP - Cathodic protection
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