

**TECHNICAL EVALUATION OF THE
SWAN VALLEY GAS CORPORATION
GAS TRANSMISSION AND DISTRIBUTION SYSTEM**

March 31, 2013



Table of Contents

1. Executive Summary.....	5
2. Introduction	5
3. Transmission	6
3.1. General Description	6
3.2. Location and Alignment	6
3.3. Materials	6
3.4. Design and Construction	6
4. Distribution Systems	6
4.1. General Description	6
4.2. Location and Alignment	7
4.3. Materials	7
4.4. Construction.....	7
5. Stations	8
5.1. General.....	8
5.2. Benito.....	8
5.3. Swan River.....	8
5.4. Minitonas	9
5.5. Line Heater Fuel Consumption.....	9
6. Maps and Records.....	9
7. Cathodic Protection	9
8. Odorization	10
9. Customer Services.....	10
10. Operations	11
11. Gas Supply & Gas Quality.....	12
12. Required Capital Expenditures.....	13
13. Post Purchase Maintenance Work Required	13
14. Issues /Concerns	14
15. Conclusion.....	15
16. APPENDIX 1	17
17. APPENDIX 2	21
17.1. Benito Town Border Station.....	21
17.2. Swan River Town Border Station	22
17.3. Valve Stations.....	24
17.4. Minitonas Town Border Station.....	25

1. Executive Summary

This document reports on a review of the transmission and distribution system physical assets of the Swan Valley Gas Corporation (SVG) under consideration for acquisition by Manitoba Hydro.

The review found that the Swan Valley Gas Corporation transmission and distribution system was constructed and has been operated in accordance with all applicable codes and regulations and no major technical issues were identified with the system. The material used and standards of construction are similar to that employed by Manitoba Hydro therefore, there are no major issues in incorporating these assets into Manitoba Hydro operations.

There are some issues that will need to be addressed, notably the heating value of the gas which is markedly higher than that in the balance of Manitoba Hydro's system. There are a number of suspended services which are candidates for abandonment and the low throughput may cause issues with odourant carry and the odourant levels in the distribution system. These and some other minor issues identified need to be addressed but can reasonably be managed within the Manitoba Hydro Natural Gas operation.

2. Introduction

A technical evaluation of the Swan Valley Gas Corporation transmission and distribution system was undertaken to support the evaluation of an acquisition of the assets of the Swan Valley Gas Corporation by Manitoba Hydro.

A site review was conducted on June 18, 2012 with Doug Miller, Cyril Patterson and Ian Delmage from Manitoba Hydro meeting with SaskEnergy personnel identified below. Notes from this meeting are in Appendix 1

Perry Gurski	Area Manager, Yorkton
Greg Lungal	Area Supervisor, Yorkton
Tim Bodnaruk	Gas Tradesman, Kamsack

A further meeting was held in Regina on July 16, 2012 with David Petursson attending from Manitoba Hydro and meeting with the following SaskEnergy personnel:

Randy Greggains	Executive Director Distribution Customer Service
Leanne Stettner	Director Pipeline & Measurement Engineering
Larry Francoeur	Manager Operations and Maintenance Support
Don Anderson	Operations Manager Yorkton
Glenn Jones	Manager Distribution Engineering
Jason Stoudt	Construction Superintendent

The review of the Swan Valley Gas Corporation has been based on examining available documents, information gathered from meetings with SaskEnergy documents and asking questions of people directly involved with the Swan Valley pipeline system.

3. Transmission

3.1. General Description

This transmission pipeline built in 2000 consists of approximately 33.25 km of nominal pipe size (NPS) 6 pipeline from the Many Islands Custody Transfer point south of Benito to Swan River and approximately 16.45 km of NPS 3 pipeline from Swan River to Minitonas. There has been no additional work on the pipeline subsequent to the original construction date. The transmission line was designed by a consultant, AGRA Simons Ltd. An Environmental assessment was conducted for the transmission line by Golder Associates. The line was constructed by Beretta Enterprises Ltd.

3.2. Location and Alignment

The NPS 6 pipeline is located entirely within an 18m right-of-way (ROW) and is positioned 8.0 m from the east ROW boundary. The NPS 3 pipeline is located entirely within a 16m ROW and is positioned 7.0 m from the south ROW boundary.

3.3. Materials

This transmission pipeline is 168.3 mm OD x 3.2 mm wall thickness, grade 359, category 1, externally coated with extruded polyethylene, YJ1. Welds were coated with Canusa shrink sleeves. Increased pipe wall thickness was used for road, rail and water course crossings and with a double layer of polyethylene coating applied.

3.4. Design and Construction

The pipeline was designed and built for a class 1 location as per CSA Z662. There is a tee and buried NPS 2" valve for a future tap off the transmission line near the town of Kenville, between Benito and Swan River. The pipe was installed with 1 m of cover. The welds in the transmission line upon initial construction were subject to 100% radiography. There are three transmission rail crossings that are not cased and were installed by directional boring. Transition pieces were used for changes in wall thickness of pipe which occurred primarily at crossings and where the pipe was brought above grade. The pipe has an MOP of 1150 psi (7930 kPa) with a test pressure of 1438 psi (9912 kPa).

4. Distribution Systems

4.1. General Description

Each of the three pressure regulation stations at Benito, Swan River and Minitonas supply gas to a distribution system in their respective towns. Benito and Minitonas have a single feed from the station to the town distribution system and Swan River has two mains leaving the station feeding the town, running on the east and west sides of the railway through town. There is an above grade valve station in Swan River with three plug valves on the south side of the Swan River crossing that provides limited sectionalization. There are no other distribution valves used.

The gas mains were installed to capture the customers who entered into a natural gas program agreement. There are many cases where the mains did not continue down a street past where the last signed-up customer lived. In some cases where a street had no customers signed-up, a main was not run at all.

There is very little “rural” distribution outside of the towns served and it primarily consists of some services close to the feeder from the station and the town such as in Benito (e.g. Benito) and some services close to town serviced with minor main extensions from town distribution piping.

4.2. Location and Alignment

The gas distribution mains have been installed in a variety of alignments with a primary preferred alignment being in developed back alleys. Mains are also located to lesser degrees in the front streets and there may be some instances of gas mains in undeveloped back alleys. There appears to be some instances of gas mains in mid-block side yards to supply a back alley alignment. No information has been gathered in this technical review on easements for gas distribution mains.

4.3. Materials

The distribution systems supplied by the three town border stations at Benito, Swan River and Minitonas consist primarily of polyethylene with a limited amount of steel pipe used for some crossings. The majority of the polyethylene for mains is 48.3 mm (NPS 1.5) with feeder mains up to 88.9 mm (NPS 3). The crossing of the Swan River was made with 114.3 mm (NPS 4) pipe and the service line from the Minitonas Station to Louisiana Pacific is 114.3 mm (NPS 4). These gas mains are all standard dimension ratio (SDR) 11. Residential services are 15.9 mm (coiled tubing size (CTS) ½) SDR 7 and commercial services range up to 48.3 mm (NPS 1.5). The polyethylene piping is grade 2306 or 2406 and was manufactured in Saskatoon by KWH Pipe Ltd. using DuPont resin. The tracer wire installed with the polyethylene pipe is 14 gauge polyethylene coated copper wire.

New material only was used to construct the distribution system and stations; previously used material was not utilized.

4.4. Construction

The polyethylene was joined by butt fusion and electrofusion using Innogaz fittings. Service tees were attached using Innogaz electrofusion fittings. Excess flow valves were not used; mechanical fittings and mechanical tees were not used. Subsequent to initial construction, there may be Stab-lok mechanical couplings in the distribution system where they have been used for repairing line hit damage on services.

The gas mains were installed with 600 mm of cover and services with 450 mm of cover. There are three rail crossings that are uncased and were installed by directional boring. The gas mains and services were installed separate from the installation of other utilities, that is no joint or four party services. The distribution system was constructed primarily (about 80 – 85%) by internal SaskEnergy forces with the balance done by contractors such as Boisvert Underground Services Ltd. Contractors were used to install the majority of service lines, both for the in initial installation and for subsequent service additions.

The distribution systems were tested to enable a maximum operating pressure of 690 kPa (100 psi).

The tracer wire was taped and left with the pipe without an anode, ground rod or other device attached at the end. To facilitate end cap locating, a length of reinforcing steel (re-bar) was installed at the end

cap to permit locating with a survey pin locator (bar locator). In some situations at end caps, a sign post was installed and the tracer wire was brought above grade and strapped to the sign post. All crossings are uncased and where steel was used for the crossing, the tracer wire was attached to the casing and a magnesium anode was installed. The anode is connected to the steel carrier pipe via a cathodic checkpoint located at one end of the crossing.

5. Stations

5.1. General

The three town border stations at Benito, Swan River and Minitonas reduce pressure from the transmission line to the pressure suitable for town distribution. For all stations, the inlet is rated for 8620 kPa maximum operating pressure (MOP) and the outlet is rated for 690 kPa MOP. Under normal operations the inlet is typically 3000 – 4800 kPa with the stations delivering gas at a pressure of 420 kPa. All stations have inlet and outlet isolation valves and a station bypass valve. The stations do not have strainers on the station inlet. The regulation equipment is housed and there are some bollards that offer physical protection.

The stations do not have electric power and as such have no yard lighting or building lighting. The stations are monitored by the SaskEnergy Distribution Station Remote Monitoring (DSRM) system by a disposable battery powered system with two pressure sensors, a temperature sensor, report by exception (RBX) capability and communication through the cellular network.

In general the station pressure regulation equipment is very similar to the equipment Manitoba Hydro has used at pressure regulation stations. Our measurement technicians are familiar with the equipment and we carry necessary spare parts for this type of pressure regulation equipment.

Stations were constructed by internal SaskEnergy forces and are of welded construction with flanged valves and regulation equipment.

5.2. Benito

The Benito on Town Border Station at SW4 05-34-29 W1M is on the same site as the as the Many Islands Pipe Line (MIPL) meter station. This station is presently configured to use an NPS 1 Fisher 627 regulator to perform the pressure reduction. It was originally set up with NPS 2 Fisher EZR regulators with restrictive trim in a working monitor arrangement utilizing a lead lag configuration. The present configuration with the Fisher 627 was a modification to better handle the low flow rate to the town. This station uses catalytic heaters on a section of pipe in the station to add heat to the gas. A line heater is not used.

5.3. Swan River

The Swan River Town Border Station at NW4 16-36-27 W1M on the south side of Swan River is the largest of the three stations. This station employs NPS 2 Fisher EZR regulators in a working monitor design utilizing a lead lag configuration. The line heater used to heat the gas before the pressure reduction is a BS&B 250,000 BTU/hr indirect line heater.

5.4. Minitonas

Minitonas Town Border Station at NE4 13-36-26 W1M is at the end of the NPS 3 transmission line. The pressure regulation is currently being controlled using a Fisher 627 regulator that is adapting the facility to the reduced consumptive loss from Louisiana Pacific. Although it has a line heater, this Rushton 250,000 BTU/hr indirect line heater has been turned off since 2010. A catalytic heater on the Fisher 627 regulator body has been in use. Rodent infestation has been reported in the building insulation at the Minitonas station. This situation is currently being managed by using rodent control techniques at the stations.

5.5. Line Heater Fuel Consumption

The only line heater currently in service is at the Swan River Town Border Station. From May 2011 to May 2012; the Swan River line heater fuel consumption was 4,779 m³. The fuel used by the catalytic heaters at Benito and Minitonas would be relatively minor.

6. Maps and Records

The as-built mapping of the distribution system has been done using AutoCAD and no information was available on what land base was used to create these maps. The transmission system being on easement should have easement records detailing the easement location.

Records of construction including design notes, as-built information, crossings details, material test certificates, welding procedures, welder certification, radiography records, environmental assessment and pressure test records are all available.

The records of customers and their services are on a paper "card" system and kept locally in Swan River.

Valve maintenance records have been kept and are stored locally in Swan River.

Line heater maintenance records have been kept.

Records of line hits (third party damages) are available.

7. Cathodic Protection

The steel pipelines are cathodically protected by sacrificial anodes. Two anode beds using magnesium anodes were installed in 2001 and more may have been installed in 2007 or later. Generally all readings taken yearly have shown the cathodic protection to meet requirements but periodically some cathodic protection readings at Minitonas have fallen slightly below the -1.0 Vdc target cathodic protection level for galvanic protection.

Isolated cathodic sections in the polyethylene distribution systems such as distribution railway crossings or valve stations are cathodically protected by sacrificial magnesium anodes. The design of the system

has the tracer wire welded or bonded to pipe on both sides of the crossing in addition to a magnesium anode connected via a cathodic test station.

Energy Consultants International Inc. had made inquiries of the Swan Valley Gas Corporation about the cathodic protection on their tracer wire and had asked for verification and confirmation of readings on this cathodic protection.

8. Odorization

The gas supplied by Many Islands Pipe Line pipeline is odorized with a 50-50 blend of TBM-MES (tertiary butyl mercaptan – methyl ethyl sulfide) from an odorization station at York Lake Station near Yorkton, Saskatchewan. The odorant is injected using an Arnold AccuPulse 3 odourant injector at a rate of approximately 1 lb/mmscf. Currently odorant levels are checked in four locations: one in each of Benito, Swan River and, Minitonas and the last location is at the Louisiana Pacific site.

Originally the three stations at Benito, Swan River and Minitonas had supplemental bypass odourizers installed and these were operating until 2004 when it was determined that supplemental odorization was no longer required. They had been subsequently shut down and were removed from the stations.

Low gas consumption resulting in low gas velocities in the pipelines can result in the strength of the odourant fading reducing the detectability of gas by its odour. Recently (since Louisiana Pacific ceased taking gas) gas has been flared at the Louisianan Pacific site to cause flow in the pipeline to bring up odourant levels in the pipeline from Minitonas.

9. Customer Services

Residential meter sets use Fisher 206 or Fisher 402 regulators and Rockwell 250 meters. Risers are anodeless risers and these risers were installed without being bracketed to the building foundation. Mueller Lub-o-seals are used for meter valves and there are no below grade building entries. Commercial services larger than a 425 scfh volume meter are piped to include meter isolation valves and a hard piped locked bypass. Regulators on commercial meter sets are Fisher products. There are some pressure factor metering (PFM) meter sets and these PFM meter sets employ two stages of pressure regulation.

Customers who signed up and paid the program fee had a service line installed to their residence and had a regulator and meter installed when they started taking gas. Many customers participated and thus have service lines but as they have never taken gas, these service lines are presently inactive but remain energized with natural gas. The table below presents data dated August 11, 2010. There have been minimal changes to this tally from the date of this table to present.

	Activated Services	Active Services	Services Never Activated*
Swan River	193	187	183
Benito	48	38	37
Minitonas	13	12	48
TOTAL	254	237	268

*Services Never Activated – There is an energized service line run running from the main to the building, but no meter installed.

10. Operations

The transmission system generally operates at 4830 kPa (700 psi) but has been as low as 2760 kPa (400 psi). The seasonal low pressure time associated with peak load tends to be in the fall due to the gas consumption of grain dryers. The contract minimum pressure is 1720 kPa (250 psi). The transmission ROW is on easement on cultivated land and there is no brushing or vegetation management required on the pipeline ROW. Vegetation management would be required on the station sites. Warning signs along the transmission lines utilize a steel post and sign. An aerial leak survey is performed annually on the transmission lines.

The distribution piping systems operate at 420 kPa (60 psi) and this pressure has been maintained through the year without seasonal adjustments. The valves have been maintained and lubricated with PCB free valve grease. The maintenance records are in the storage container at the Swan River town border Town Border Station site. Leak surveys are conducted using flame ionization instruments on the distribution system every five years. The distribution leak survey was completed November 2012. Future leak surveys will be built into Centra's schedules. No leaks have been identified to date. There have been five (5) damages reported on the distribution system, three in Swan River and one each in Benito and Minitonas. These damages were in 2004(2), 2005(2) and 2009(1).

There have not been any spills, and no contaminated ground was encountered in the construction of the system.

There has been no depth of cover surveys done to date on water course crossings, the transmission or distribution systems.

There has been no unaccounted for gas studies done on this system subsequent to Louisiana Pacific ceasing gas consumption.

The elevations of the three towns are within the elevation range of the pressure zones used in Manitoba Hydro's system for pressure factor metering; Benito 426.7 m ASL (1400 ft.) would fit into Manitoba Hydro's elevation area 3; Swan River 335 m ASL (1100 ft.) would fit into Manitoba Hydro's elevation area 2; Minitonas 323 m ASL (1060 ft) would fit into Manitoba Hydro's elevation area 2.

There have been some meters removed for GI inspections but a group removal has not occurred to date. The gas meters were installed in 2000 – 2001 and it is expected that a full meter change of all the

meters will be required. There are two groupings of meters with one set due for meter assessment in 2013 and one due in 2014.

SaskEnergy have personnel in Kamsack and Canora, Saskatchewan who currently provide emergency response capability for the Swan Valley Gas Corporation. Kamsack is 57 km from Benito, 94 km from Swan River and 111 km from Minitonas. Canora is an additional 40 km further away.

11. Gas Supply & Gas Quality

The gas supply to the Swan Valley Gas pipeline via the Many Islands Pipeline is from the TransGas transmission system in Saskatchewan. Gas from one or more of the three storage caverns in Melville, Regina and Moosomin can deliver gas that will flow to the Swan Valley area, depending upon the requirements and operations of the TransGas system. Some recent changes in TransGas operations have resulted in altered gas flows on their system and some richer gas flowing to the part of their system that supplies the Swan Valley Gas Corporation. The average heating values in 2012 for gas to the Swan Valley Gas Corporation is 39.8 mJ/m³, which is significantly higher than historical average. The record of heating values for 2001 – 2012 is shown below on Chart 1 with the typical range of heating value for gas received from TransCanada PipeLine (TCPL) also shown for comparison.

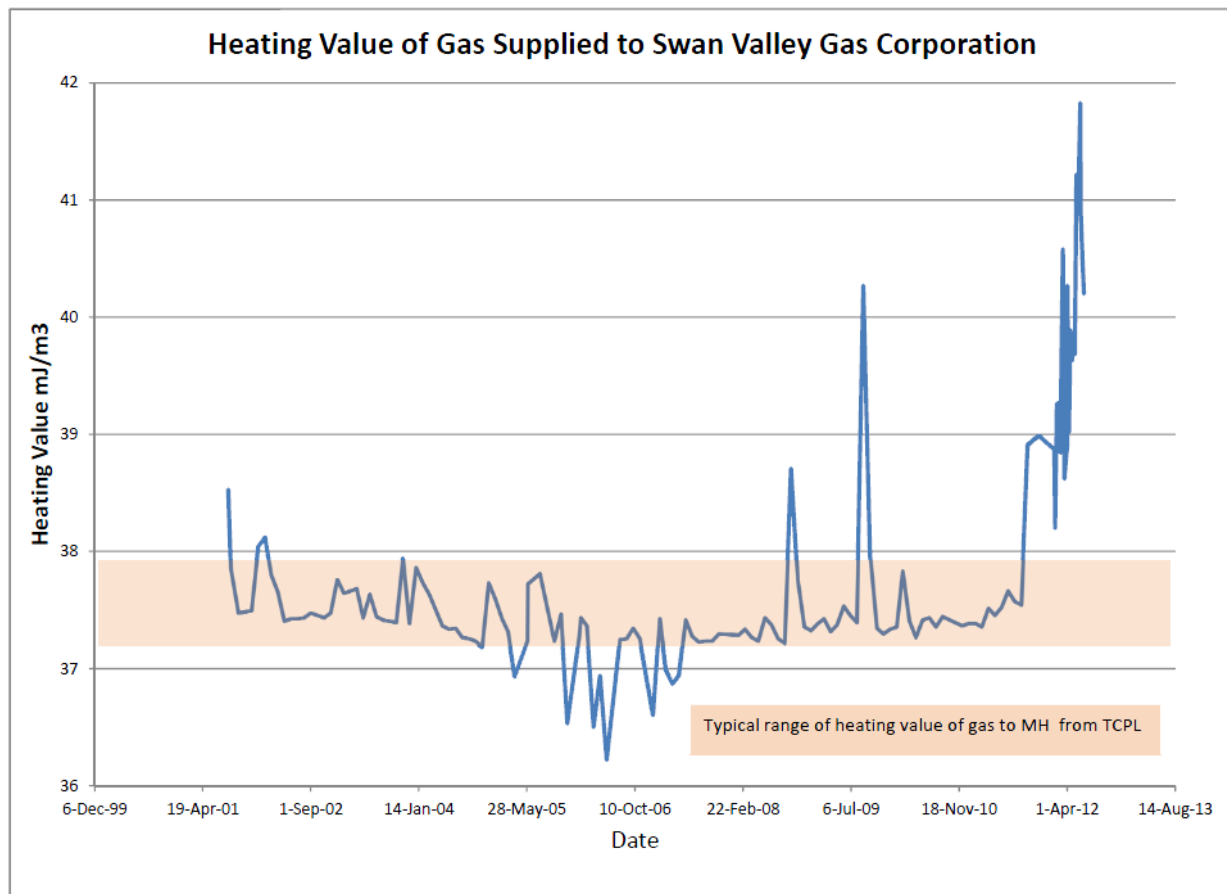


Chart 1: Heating Value of Gas Supplied to Swan Valley Gas Corporation

The water content in the gas is kept within the contract requirements which have a maximum water content of 4 lb/mmscf. SaskEnergy reports that this area of their system has relatively few problems due to water content of the gas with the typical water content being in the 1 – 1.5 lb/mmscf range.

12. Required Capital Expenditures

Required capital expenditures identified are:

1. Change pipeline signage on all pipeline warning signs and at all cathodic checkpoint locations.
2. Change station signage to conform to Manitoba Hydro's station signage standards.
3. Connect Manitoba Hydro's supervisory control and data acquisition (SCADA) system to the stations. This may involve adapting the existing monitoring equipment or it may require installation of equipment consistent with that used by Manitoba Hydro currently in other stations. This may require the supply of electric power to the stations.
4. If electric power is supplied to the stations, yard lighting and station building lighting would be required to have these stations consistent with other Manitoba Hydro stations.

There are no significant capital expenditures required for compliance with applicable codes, regulations and standards.

13. Post Purchase Maintenance Work Required

1. A leak survey of the transmission line will need to be scheduled and incorporated into the Manitoba Hydro transmission leak survey program. A survey was completed November 2012.
2. A leak survey of town distribution piping will be required if it is not done by SaskEnergy in 2012.
3. Consideration should be given to suspending the pipeline from the Minitonas Station to Louisiana Pacific if there is no likelihood of gas deliveries in the near future. This may eliminate the need to flare gas to maintain odorization levels in this pipeline.
4. Depth of cover surveys should be done for river crossings.
5. A thorough review of the cathodic protection should be undertaken to verify the state of protection and adequacy of the anodes in place. This may require the addition of anodes.
6. The inventory of NPS 1.5 PE pipe and fittings should be reviewed to ensure an adequate supply for emergency repairs. This is a size that is not common in the existing Manitoba Hydro gas distribution system.

7. The ability to locate end caps should be verified and purchase bar locators for line locators if they are found useful in locating end caps. Bar locators may not normally be used by locating personnel.
8. There have been some meters removed for GI inspections but a group removal has not occurred to date. The gas meters were installed in 2000 – 2001 and it is expected that a full meter change of all the meters will be required within the next year or two.

14. Issues /Concerns

Issues or concerns that have been identified and should be addressed are:

1. The current gas heating value of the gas supplied by TransGas is notably higher than the gas supplied by TransCanada for the bulk of Manitoba Hydro's gas distribution systems. This should not affect gas utilization, for example the performance of furnaces, but depending upon the transportation or supply arrangements with SaskEnergy, it may have a minor impact on our Weighted Average Cost of Gas (WACOG) and will lead to lower gas costs for customers if they are charged the same volumetric based price as the balance of Manitoba Hydro's customers.
2. The flame ionization method of gas leak detection that Manitoba Hydro uses will detect smaller gas leaks than the aerial survey method that has been done annually on the gas transmission lines. There is no reason to suspect leaks but small leaks may be found that were below the detectable threshold of aerial inspection.
3. The initial pressure test on the transmission lines was a pneumatic (air) test that was conducted for 24 hours. Although this met industry practice at the time, this is significantly less than the test duration required by the current Manitoba Hydro natural gas standards which would require a minimum test duration of 266 hours on a 168.3 mm line that is 33.25 km long. A small leak may not have been detectable on a test of such short duration.
4. The low customer count and the low associated load with Louisiana Pacific not consuming gas could present challenges in maintaining the odourant level in the entire system. It was noted that the Swan Valley Gas Corporation was flaring gas at Louisiana Pacific to have one or more volume changes in the line to Louisiana Pacific to maintain odourant levels. There may be a need to reduce the pressure in the transmission line to increase velocity and thus odourant carry or install supplemental odourizers if odourant levels cannot be maintained.
5. There are approximately 268 service lines that were installed in the original construction effort during 2000 – 2001 that do not have a meter and where the customer has not installed any gas equipment. These lines should be abandoned to be consistent with the approach taken on similar suspended service lines in other parts of the Manitoba Hydro system.
6. The pipeline was built to meet a Class 1 location as defined in CSA Z662. This pipeline will require an annual inspection to determine whether any change in class location has occurred as required by CSA Z662.
7. The tracer wire was terminated at the end caps by taping the end and laying it with the pipe. Locating the end cap using our current pipe locating methods will not be possible. SaskEnergy

reports that they installed a length of re-bar to permit locating using a bar locator. This locating approach should be verified with a procedure developed and training delivered if required.

8. The indirect line heaters should be reviewed for the need of secondary containment?

15. Conclusion

The review indicates that the Swan Valley Gas Corporation pipeline system was designed, constructed and operated in accordance with the requirements of all applicable regulations and standards. There were no major issues or concerns identified that would affect the integrity or operation of the pipeline system. Some capital expenditures will be required upon acquisition and a number of maintenance activities will be required.

Evaluation conducted by:

David P. Petursson P.Eng.

16. APPENDIX 1

Swan Valley Gas Company - Site Visit June 18th, 2012

On Monday, June 18th, 2012 the following representatives met to tour and review the infrastructure of the Swan Valley Gas Cooperative (SVGC) owned by SaskEnergy.

Manitoba Hydro Representatives:

- Doug Miller (Gas Apparatus Maintenance & Control)
- Cyril Patterson (Parkland)
- Ian Delmage (Parkland)

SaskEnergy Representatives:

- Perry Gurski, (Area Manager, Yorkton)
- Greg Lungal (Area Supervisor, Yorkton)
- Tim Bodnaruk (Gas Tradesman, Kamsack)

The SVGC serves the communities of Benito, Swan River, Minitonas as well as service to the Louisiana Pacific plant (this service is currently inactive). A total of 237 customers are currently being provided service.

Overall, the condition and maintenance of the infrastructure which includes gate stations at Benito, Swan River, Minitonas and Louisiana Pacific and all associated equipment is in very good condition. There are many similarities between SaskEnergy's standards and Manitoba Hydro's with regards to line pressures, regulation, odorant methods and levels, and meter set standards. This being considered, daily operation with regards to staff understanding and knowledge of plant design and operation should not be an issue.

During our review there are several issues that would require investigation and possible resolution to ensure a smooth transition, should transfer of ownership occur. Further consultation with other areas is necessary to ensure all requirements are met prior to taking over responsibility of the plant in the SVGC. These areas include:

- Gas Distribution Engineering and Design
- Gas System Control
- Customer Metering
- Billing

Existing infrastructure items to consider:

- Their distribution pressures are 60 and 70 psig (ours are typically 50 psig). This however should not be an issue.
- Station property and station equipment would require additional signage. Valves are not labeled for identification.
- Ensure odorant checks and frequency follows Manitoba Hydro standards.
- Physical station protection (no fences at stations and very little physical protection - bollards).



- SCADA monitoring capability (possible transfer of existing system to be explored)
 - Merc system, 2 pressure sensors, external modems, RBX functional
- Existing line heaters are in place at two locations as well as one radiant. (Their gas quality tariff is the same as ours: 4 lbs. per million cubic feet – typically at 1.1 to 1.2 lbs per million cubic feet.)



- Pressure regulation at stations is very similar to ours. They use Fisher products, Models EZR and 627, with either full of token reliefs. Distribution pressure regulations may need to be reviewed, as they use two pressure reductions at PFM sets.



- Mapping system review (currently all plant is in AutoCAD and paper mapping system is utilized; no eGIS based system is in place).
- Customer Billing System review and transfer of data would have to occur.
- Station lighting both inside and outside of stations does not exist.
- A review of all cathodic protection and leak survey history as well as any repairs conducted would need to be completed.

Operational Issues:

- Line heater use and maintenance requirements/records would be required.
- Staff training and upgrading for joint locates has been completed.
- A staff member and delegate would need to be identified and trained to conduct odorant sniff checks as per MB Manitoba Hydro standard.
- Station inspection routines and schedule would need to be developed.
- Emergency response and carbon monoxide (CO) call protocols will require investigation for the interim as well as long term viable solutions, considering response time and customer safety.
- Promotion of new customer connects through front counter interaction with prospective customers (training of clerical staff required).
- Rodent concern in the station buildings; ceiling insulation was removed at Minitonas because of rodents nesting.

APPENDIX 2

A 2.1 Benito Town Border Station

- Location: SW4 05-34-29 W1M
Approximately 3.2 km south of Benito on the east side of PTH 83
- Pressure Rating: 8620 kPa MOP inlet, 690 kPa MOP outlet
- Other: This site is the delivery point from the Many Islands Pipe Line to the Swan Valley Gas Corporation and has the MIPL custody transfer meter.



Benito Town Border Station and MIPL Custody Transfer Meter Station as seen from HWY 83.

A 2.2 Swan River Town Border Station

Location: NW4 16-36-27 W1M (portion of Lot 9, Block 395)
On the south side of Swan River by George Avenue

Pressure Rating: 8620 kPa MOP inlet, 690 kPa MOP outlet

Other: This site has a storage container that contains records, meter and miscellaneous other materials and supplies. There is no operation office or storage facility otherwise.



Swan River Town Border Station



Swan River Town Border Station



Swan River Town Border Station



End of NPS 6 line at Swan River Town Border Station Take-Off

A 2.3 Valve Stations

Description Valve station for the take-off of the NPS 3 pipeline for Minitonas
Location: NE4 09-36-27 W1M



Valve Station for Minitonas NPS 3 Line Take-Off

Description Valve station for the distribution river crossing in Swan River
Location: Swan River, south side of river, 3 Ave. N and 2 St. N,



Swan River Distribution Valve Station on the South Side of the Swan River Crossing

A 2.4 Minitonas Town Border Station

Location: NE4 13-36-26 W1M
North side of Minitonas on the west side of PR 366

Pressure Rating: 8620 kPa MOP inlet, 690 kPa MOP outlet

Other: The NPS 4 service line to Louisiana Pacific connects to the distribution system at this site.



Minitonas TBS



Minitonas Town Border Station