

Certificate GC-113, Conditions 22
Meikle River Compressor Station Units C3 and C4
Application for Leave to Open
Tab B – Hydrotest Documents

Hydrotest Summary Report
TransCanada PipeLines
Meikle River C3 and C4 Compressor Unit Additions
Project # 2075744

Test Section 1

Test Number:	2075744-1
Description:	Unit C3 Suction and Discharge Piping
Pipe:	NPS 30 x 19.1 mm WT, GR. 483, CAT II, CSA Z245.1 NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS NPS ½ x 4.8 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16707 kPag (min.); 16740 kPag (max.)
Date and Time:	June 3rd, 2009; 15:00 to 16:05 hours
Ambient Temperature:	16 to 17°C
Testing Supervisor:	Vern Hosak

Test Section 2

Test Number:	2075744-2
Description:	Unit C4 Suction and Discharge Piping
Pipe:	NPS 30 x 19.1 mm WT, GR. 483, CAT II, CSA Z245.1 NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS NPS ½ x 4.8 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16735 kPag (min.); 16735 kPag (max.)
Date and Time:	June 6th, 2009; 14:20 to 15:25 hours
Ambient Temperature:	9.4 to 9.6°C
Testing Supervisor:	Vern Hosak

Test Section 3

Test Number:	2075744-3
Description:	Unit C4 Fuel Gas Piping – PN 100 (ANSI 600)
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 9560 kPag Test: 14340 – 15040 kPag
Achieved Pressure:	14692 kPag (min.); 14859 kPag (max.)
Date and Time:	June 7th, 2009; 10:35 to 11:40 hours
Ambient Temperature:	6 to 7.9°C
Testing Supervisor:	Vern Hosak

Test Section 4

Test Number:	2075744-4
Description:	Unit C4 Fuel Gas Piping – PN 50 (ANSI 300)
Pipe:	NPS 3 x 5.5 mm WT, ASTM A312 Gr. TP304, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS ¾ x 5.6 mm WT, ASTM A106 Gr. B, SMLS NPS ½ x 4.8 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 4800 kPag Test: 7200 – 7900 kPag
Achieved Pressure:	7545 kPag (min.); 7717 kPag (max.)
Date and Time:	June 2nd, 2009; 10:53 to 11:59 hours
Ambient Temperature:	11.1 to 14.6°C
Testing Supervisor:	Vern Hosak

Test Section 5

Test Number:	2075744-5
Description:	Unit C3 Fuel Gas Piping – PN 50 (ANSI 300)
Pipe:	NPS 3 x 5.5 mm WT, ASTM A312 Gr. TP304, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS ¾ x 5.6 mm WT, ASTM A106 Gr. B, SMLS NPS ½ x 4.8 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 4800 kPag Test: 7200 – 7900 kPag
Achieved Pressure:	7621 kPag (min.); 7685 kPag (max.)
Date and Time:	June 4th, 2009; 10:15 to 11:15 hours
Ambient Temperature:	8 to 10.7°C
Testing Supervisor:	Vern Hosak

Test Section 6

Test Number:	2075744-6
Description:	Unit C3 Fuel Gas Piping – PN 100 (ANSI 600)
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 9560 kPag Test: 14340 – 15040 kPag
Achieved Pressure:	14686 kPag (min.); 14714 kPag (max.)
Date and Time:	June 9th, 2009; 14:10 to 15:15 hours
Ambient Temperature:	14.8 to 15.8°C
Testing Supervisor:	Vern Hosak

Test Section 7

Test Number:	2075744-7
Description:	Unit C3 Fuel Gas Piping – PN 150 (ANSI 900)
Pipe:	NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16610 kPag (min.); 16769 kPag (max.)
Date and Time:	June 10th, 2009; 15:05 to 16:10 hours
Ambient Temperature:	18 to 18°C
Testing Supervisor:	Vern Hosak

Test Section 8

Test Number:	2075744-8
Description:	Unit C4 Fuel Gas Piping – PN 150 (ANSI 900)
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16817 kPag (min.); 16879 kPag (max.)
Date and Time:	June 15th, 2009; 07:50 to 08:55 hours
Ambient Temperature:	10.8 to 12.8°C
Testing Supervisor:	Vern Hosak

Test Section 9

Test Number:	2075744-9
Description:	Unit C4 Gas Vents
Pipe:	NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 1900 kPag Test: 1950 - 2100 kPag
Achieved Pressure:	1972 kPag (min.); 2048 kPag (max.)
Date and Time:	June 13th, 2009; 08:00 to 09:07 hours
Ambient Temperature:	12.6 to 13.9°C
Testing Supervisor:	Vern Hosak

Test Section 10

Test Number:	2075744-10
Description:	Unit C3 & C4 Gas Vents
Pipe:	NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 & C4 Unit Building
Set Pressures	Design: 1900 kPag Test: 1950 - 2100 kPag
Achieved Pressure:	2027 kPag (min.); 2062 kPag (max.)
Date and Time:	June 29th, 2009; 11:15 to 12:20 hours
Ambient Temperature:	4.5 to 6.0°C
Testing Supervisor:	Vern Hosak

Test Section 11

Test Number:	2075744-11
Description:	Unit C3 Gas Vents
Pipe:	NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16803 kPag (min.); 16824 kPag (max.)
Date and Time:	July 1st, 2009; 13:34 to 14:39 hours
Ambient Temperature:	16.1 to 16.7°C
Testing Supervisor:	Vern Hosak

Test Section 12

Test Number:	2075744-12
Description:	Unit C4 High Pressure Gas Vents
Pipe:	NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16754 kPag (min.); 16754 kPag (max.)
Date and Time:	June 23rd, 2009; 09:00 to 10:05 hours
Ambient Temperature:	11.3 to 12.3°C
Testing Supervisor:	Vern Hosak

Test Section 13

Test Number:	2075744-1
Description:	Unit C4 Scrubber Drain
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C4 Yard Piping
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16679 kPag (min.); 16851 kPag (max.)
Date and Time:	July 11th, 2009; 09:30 to 10:35 hours
Ambient Temperature:	8.3 to 12.8°C
Testing Supervisor:	Vern Hosak

Test Section 14

Test Number:	2075744-14
Description:	Unit C4 Fuel Gas Vent
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 4800 kPag Test: 7200 – 7900 kPag
Achieved Pressure:	7205 kPag (min.); 7433 kPag (max.)
Date and Time:	June 18th, 2009; 10:35 to 11:40 hours
Ambient Temperature:	11.9 to 12.8°C
Testing Supervisor:	Vern Hosak

Test Section 16

Test Number:	2075744-16
Description:	Unit C4 Fuel Gas Vent
Pipe:	NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 1900 kPag Test: 1950 – 2100 kPag
Achieved Pressure:	1972 kPag (min.); 2061 kPag (max.)
Date and Time:	June 17th, 2009; 10:50 to 11:57 hours
Ambient Temperature:	19.4 to 20.0°C
Testing Supervisor:	Vern Hosak

Test Section 17

Test Number:	2075744-17
Description:	Unit C3 High Pressure Gas Vents
Pipe:	NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16657 kPag (min.); 16685 kPag (max.)
Date and Time:	July 7th, 2009; 16:00 to 17:05 hours
Ambient Temperature:	17.7 to 17.7°C
Testing Supervisor:	Vern Hosak

Test Section 18

Test Number:	2075744-18
Description:	Unit C4 Discharge Gas Vents
Pipe:	NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 3 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16638 kPag (min.); 16741 kPag (max.)
Date and Time:	July 10th, 2009; 12:45 to 13:55 hours
Ambient Temperature:	16.1 to 16.9°C
Testing Supervisor:	Vern Hosak

Test Section 19

Test Number:	2075744-19
Description:	Unit C4 Bypass Line Across NPS 20 Recycle Valve
Pipe:	NPS 1.5 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	Station Yard Piping
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16450 kPag (min.); 16844 kPag (max.)
Date and Time:	July 14th, 2009; 14:20 to 15:30 hours
Ambient Temperature:	17.8 to 19.4°C
Testing Supervisor:	Vern Hosak

Test Section 20

Test Number:	2075744-20
Description:	Unit C4 Bypass Line Across NPS 20 Recycle Valve
Pipe:	NPS 1.5 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	Station Yard Piping
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16755 kPag (min.); 16824 kPag (max.)
Date and Time:	July 14th, 2009; 11:20 to 12:25 hours
Ambient Temperature:	17.2 to 23.9°C
Testing Supervisor:	Vern Hosak

Test Section 21

Test Number:	2075744-21
Description:	Unit C3 Air Gas Vents
Pipe:	NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 1900 kPag Test: 1950 - 2100 kPag
Achieved Pressure:	2070 kPag (min.); 2095 kPag (max.)
Date and Time:	July 2nd, 2009; 07:45 to 08:50hrs
Ambient Temperature:	7.8 to 8.9°C
Testing Supervisor:	Vern Hosak

Test Section 22

Test Number:	2075744-22
Description:	Unit C4 Air Gas Vents
Pipe:	NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 1900 kPag Test: 1950 - 2100 kPag
Achieved Pressure:	2047 kPag (min.); 2055 kPag (max.)
Date and Time:	June 28th, 2009; 14:55 to 16:00hrs
Ambient Temperature:	7.0 to 7.5°C
Testing Supervisor:	Vern Hosak

Test Section 23

Test Number:	2075744-23
Description:	Unit C3 Fuel Gas Coalescer Vent
Pipe:	NPS ¾ x 3.9 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 4800 kPag Test: 7200 – 7900 kPag
Achieved Pressure:	7695 kPag (min.); 7715 kPag (max.)
Date and Time:	July 7 th , 2009; 13:30 to 14:35 hours
Ambient Temperature:	16.6 to 16.6°C
Testing Supervisor:	Vern Hosak

Test Section 24

Test Number:	2075744-24
Description:	Unit C4 Fuel Gas Coalescer Vent
Pipe:	NPS ¾ x 3.9 mm WT, ASTM A106 Gr. B, SMLS NPS ¾ x 3.9 mm WT, ASTM A312 Gr. TP304, SMLS
Test Medium:	Water
Test Location:	C4 Unit Building
Set Pressures	Design: 4800 kPag Test: 7200 – 7900 kPag
Achieved Pressure:	7564 kPag (min.); 7626 kPag (max.)
Date and Time:	June 19th, 2009; 08:05 to 09:10 hours
Ambient Temperature:	8.3 to 14.5°C
Testing Supervisor:	Vern Hosak

Test Section 25

Test Number:	2075744-25
Description:	Station Yard Piping - Suction, Discharge, Recycle and Cooler Systems
Pipe:	NPS 36 x 22.5 mm WT, GR. 483, CAT II, CSA Z245.1 NPS 30 x 19.1 mm WT, GR. 483, CAT II, CSA Z245.1 NPS 20 x 15.9 mm WT, GR. 414, CAT II, CSA Z245.1 NPS 12 x 17.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 6 x 11.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS NPS ½ x 4.8 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	Compressor Station Site
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16651 kPag (min.); 16734 kPag (max.)
Date and Time:	June 30th, 2009; 19:31 to 03:31 hours
Ambient Temperature:	6.1 to 0.0°C
Testing Supervisor:	Vern Hosak

Test Section 26

Test Number:	2075744-26
Description:	Unit C3 & C4 Relief and Blowdown Vents
Pipe:	NPS 6 x 11.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 8 x 12.7 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	Station Yard
Set Pressures	Design: 4800 kPag Test: 7200 – 7900 kPag
Achieved Pressure:	7598 kPag (min.); 7618 kPag (max.)
Date and Time:	June 22nd, 2009; 11:35 to 12:35 hours
Ambient Temperature:	14.0 to 16.0°C
Testing Supervisor:	Vern Hosak

Test Section 27

Test Number:	2075744-27
Description:	Unit C3 & C4 Relief and Blowdown Vents
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 10 x 12.7 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	Station Yard
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16741 kPag (min.); 16838 kPag (max.)
Date and Time:	June 22nd, 2009; 15:25 to 16:25 hours
Ambient Temperature:	16.0 to 16.2°C
Testing Supervisor:	Vern Hosak

Test Section 28

Test Number:	2075744-28
Description:	Unit C3 & C4 Scrubber Condensate lines
Pipe:	NPS 4 x 6.0 mm WT, ASTM A333 Gr. 6, SMLS NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	Station Yard
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16451 kPag (min.); 16886 kPag (max.)
Date and Time:	July 9th, 2009; 10:25 to 18:25 hours
Ambient Temperature:	12.0 to 26.0°C
Testing Supervisor:	Vern Hosak

Test Section 29

Test Number:	2075744-29
Description:	Unit C3 Suction and Discharge Piping – RETEST – Due to NPS 30 Flange Repair.
Pipe:	NPS 30 x 19.1 mm WT, GR. 483, CAT II, CSA Z245.1 NPS 2 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS NPS 1 x 4.6 mm WT, ASTM A106 Gr. B, SMLS NPS ½ x 4.8 mm WT, ASTM A106 Gr. B, SMLS
Test Medium:	Water
Test Location:	C3 Unit Building
Set Pressures	Design: 10923 kPag Test: 16385 – 17085 kPag
Achieved Pressure:	16823 kPag (min.); 16865 kPag (max.)
Date and Time:	July 8th, 2009; 15:30 to 16:30 hours
Ambient Temperature:	17.7 to 17.7°C
Testing Supervisor:	Vern Hosak

Test Section 33

Test Number:	2075744-33
Description:	Unit C4 Bypass Line Across NPS 20 Recycle Valve
Pipe:	NPS 1.5 x 5.5 mm WT, ASTM A333 Gr. 6, SMLS
Test Medium:	Water
Test Location:	Station Yard Piping
Set Pressures	Design: 10923 kPag Test: 16385 - 17085 kPag
Achieved Pressure:	16548 kPag (min.); 16755 kPag (max.)
Date and Time:	July 17th, 2009; 13:00 to 14:10 hours
Ambient Temperature:	17.8 to 18.9°C
Testing Supervisor:	Vern Hosak

MEIKLE RIVER C/S UNIT C3 AND C4 ADDITION (PROJECT NO. 2075744)
TRANSCANADA SPECIFICATIONS AND PROCEDURES INDEX

Specification	Title	Rev. No.
Construction Specifications		
Section 02000	Geotechnical Report, Division 2, Site Work	0
Section 02210	Site Grading, Division 2, Site Work	0
Section 02220	Excavation, Backfilling and Site Grading, Division 2, Site Work	0
Section 02223	Access Road, Division 2, Site Work	0
Section 02360	Driven Steel Section Piles, Division 2, Site Work	0
Section 02500	Foundation and Underslab Drainage, Division 2, Site Work	0
Section 02700	Chain Link Fence, Division 2, Site Work	0
Section 03100	Concrete Formwork, Division 03, Concrete	1
Section 03200	Concrete Reinforcement, Division 03, Concrete	1
Section 03300	Cast-in-place Concrete, Division 03, Concrete	1
Section 03345	Concrete Floor Finishes, Division 03, Concrete	1
Section 03610	Grouting of Heavy Machinery, Division 03, Concrete	1
Section 13126	Pre-Engineered Building, Division 13, Special Construction	1
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Section 13412	Commissioning Tests, Division 13, Special Construction	0
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Section 13423	Control Cabinetry, Workstations and Instrument Racks	0
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Section 13426	Natural Gas Flow Elements, Division 13, Special Construction	0
Section 15010	Mechanical General Requirements, Division 15, Mechanical Construction	0
Section 15090	Machinery, Plant and Equipment, Division 15, Mechanical Construction	0
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Specification	Title	Rev. No.
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Section 16501	Lamps, Division 16, Electrical	0
Section 16502	Ballast and Accessories, Division 16, Electrical	0
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TES-DV15-111	Lube Oil Flushing Procedures, Division 15, Mechanical Construction	0
TES-DV15-112	Thermal Insulation of Mechanical Piping and Equipment, Division 15, Mechanical Construction	0
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TES-DV15-120	Welding, Division 15, Mechanical Construction	0
TES-DV15-191	Testing of Station Piping, Division 15, Mechanical Construction	0
TES-DV15-400	Plumbing, Division 15, Mechanical Construction	0
TES-DV15-500	Heating, Ventilation and Air Conditioning, Division 15 Mechanical Construction	0
Material Specifications		
MS-03-005	Single & Double Door, Frame & Hardware – Material Specification	0
MS-03-007	Overhead Crane – Material Specification	0
Section 15110	Schedule 3 – TransCanada Compressor Station Valve Specifications (Less Than NPS 16), Division 15, Mechanical Construction	0
TES-CP-MS	Cathodic Protection Materials Specifications	3
TES-FITG-LD	Specification for Carbon Steel Buttwelding Fittings, Grade 290 and Higher	3
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TES-VOPR-GH	Gas Hydraulic Valve Operator Specification	0
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Specification	Title	Rev. No.
Coating and Painting Specifications		
TES-COAT-EP	External Polyethylene Coating for Pipe	1
TES-COAT-FBE	External Fusion Bond Epoxy for Steel Pipe	2
TES-COAT-STN	External Coating Systems for Underground Station Yard Piping	1
TES-COAT-P1	Paint Systems for Above Ground Facilities	3
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Section 09990	Finish and Colour Schedule, Division 9, Finishes	0
Decal and Sign	TransCanada Decal and Sign Catalogue	09/20/2006
Welding Specifications / Procedures		
CSNEW-01-ASSY	Fillet/groove Welds on Vortex Spoiler Plate and Pipe	0
CSNEW-02-ASSY	Groove, Fillet & Repair Welds, not requiring post weld heat treatment	0
CSNEW-03-ASSY	Groove, Fillet & Repair Welds	0
CSNEW-04-ASSY	Groove, Fillet & Repair welds	0
CSNEW-05-ASSY	Groove, Fillet & Repair Welds	0
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CSNEW-10-ASSY	Branch Connection with Contoured Insert Fitting (CIF)	0
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CSNEW-27-ASSY	Back Welding Repair Procedure	0
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TEP-WELD-CS	Selection of Welding Procedure Datasheets for Compressor Station Fabrication and Installation	1
TES-WELD-ABR	Removal of Arc Burns	1
TES-WELD-STRU	Welding Procedure Specification for Shielded Metal Arc Welding on Structural Steel	1

Specification	Title	Rev. No.
Testing Specifications / Procedures		
TEF-HYDR-FRM	Drawings and Forms Required when Completing a Hydrostatic Test	1
TEP-PROJ-LTO	Project Leave To Open Procedure	3
TES-HYDRO-HTS	Hydrostatic Testing Specification	1
TES-HYDRO-HT1	Primary Test Specification for Hydrostatic Testing New Buried, Pipelines, Compressor Station and Meter Station Piping	1
TES-HYDRO-HT2	Secondary Test Specification For Fully Exposed Pipe, Valves, and Piping Assemblies - Hydrostatic or Nitrogen Testing	1
TES-NDT-RT	Radiographic Examination of Welds	2
TES-NDT-UT2	Manual Ultrasonic Examination of Welds	1
TET-PROJ-LTO	Template for Leave To Open Document	0
Quality		
	Construction Inspection and Test Plan – Compressor Station Projects (Sample Only)	0
	Construction Quality Control Forms – Compressor Station Projects (Sample Only)	0
Addendums		
Section 13400	Project Addendum, Instrumentation and Control, Division 13, Special Construction	0
Section 16000	Project Addendum, Electrical, Division 16, Electrical Construction	0
Section 16001	Project Addendum, Standard Electrical Installation Drawings, Division 16, Electrical Construction	0

MEIKLE RIVER C/S UNIT C3 AND C4 ADDITION (PROJECT NO. 2075744)
PIPE SPECIFICATIONS AND PIPE MANUFACTURERS

Reference: TransCanada Specification, TES-MATL-MD1, Tables 5 and 6 for Pipe Material Specifications

TES-MATL-MD1 Table 5: High Pressure Gas - Compression Facility

Piping System: Compressor Plant, Power Gas, Utility Gas, and Fuel Gas u/s of Coalescing Filter			Fluid Handled: Sweet Natural Gas	Design Pressure: Designer to Specify	Design Temperature: - 45°C To +75°C
ITEM	SIZE (NPS)	ENDS	MATERIAL SPECIFICATION		
Tubing	Up to ¾ ½ ⅝ & ¾ ⅞ & 1	Plain Plain Plain Plain	ASTM A269 Gr. TP304/316, seamless, bright, annealed, 0.89 mm WT ASTM A269 Gr. TP304/316, seamless, bright, annealed, 1.24 mm WT ASTM A269 Gr. TP304/316, seamless, bright, annealed, 1.64 mm WT ASTM A269 Gr. TP304/316, seamless, bright, annealed, 2.11 mm WT		
Tube Fittings	All	Swagelok	ASTM A182 Gr. F316		
Pipe	½ to 1½ 2 3 to 14 16 to 48	Plain Bevel Bevel Bevel	ASTM A106 Gr. B, Sch. 80 ASTM A333 Gr. 6 seamless, Sch. 80 ASTM A333 Gr. 6 seamless, CSA Z245.1 or TES-PIPE-EW TES-PIPE-SAW(TCPL P-04) or TES-PIPE-EW		
Pipe Fittings	½ to 1½ 2 to 14 16 to 48	SW BW BW	ASME B16.11 & ASTM A105, 3000# ASME B16.9 & ASTM A420 WPL6, to match pipe TES-FITG-LD; to match pipe		
Unions	½ to 1½	SW	MSS-SP-83 & ASTM A105, 3000#		
Nipples	½ to 1½	SW or NPT	ASTM A733 & ASTM A106 Gr. B, XXS		
Swage Nipples	½ to 1½	SW or NPT	MSS SP-95 & ASTM A234 WPB, XXS		
Flanges (See Appendix A)	½ to 1½ 2 to 14 16 to 48	SWRF WNRF WNRF	ASME B16.5 & ASTM A105 ASME B16.5 & ASTM A350 LF2 Class 1, to match pipe TES-FLGE-LD, to match pipe		
Blind Flanges (See Appendix A)	½ to 1½ 2 to 22 24 to 48	RF RF RF	ASME B16.5 & ASTM A105 ASME B16.5 & ASTM A350 LF2 Class 1 CSA Z245.12		
Pipe Plugs	½ to 1½	NPT	ASME B16.11 & ASTM A105, 6000#		
Bull Plugs	½ to 1½	NPT	MSS SP-95 & ASTM A234 WPB 6000# (solid)		
O'lets	½ to 1½	SW or NPT	MSS SP-97 & ASTM A105, 3000# (pref.) or 6000#		
Weldolets	2		MSS SP-97 & ASTM A350 LF2 Class 1, XS		
CIF's	3 to 6		TES-FITG-CIF, min. run size NPS 20, to match WT		
Studs	All		ASTM A320 Gr. L7		
Nuts	All		ASTM A194 Gr. 4 or Gr. 7		
Gaskets	All		PN 20/50/68 (Class 150/300/400): ASME B16.21, Permanite AF2100 Glass fibre, 1.6mm (preferred) PN 100/150 (Class 600/900): ASME B16.20, Spiral Wound with Type 304SS Winding c/w 3.2 mm internal & external CS Ring (preferred) Alternate: ASME B16.21, Garlock HTC 9850, 1.6 mm Alternate: ASME B16.21, Wire reinforced non asbestos, 1.6 mm		
Instrument Valves	Up to ¾	NPT	SS body, stem & bonnet; non metallic seat, 6000#		
Valves	½ to 1½ 2 to 14 16 to 48	SW or NPT RF or BW RF or BW	ASME B16.34 & ASTM A105, 2000#WOG min. CSA Z245.15 TES-VALV-LD		
Pressure Vessels	All		TES-MATL-PV1		

TES-MATL-MD1 Table 6: High Pressure Gas - Compressor Fuel (d/s of filter), Control & Seal Gas

Piping System: Compressor Fuel Gas d/s of Coalescing Filter, Control & Seal Gas			Fluid Handled: Sweet Natural Gas	Design Pressure: Designer to Specify	Design Temperature: - 45°C To +75°C
ITEM	SIZE (NPS)	END CONN.	MATERIAL SPECIFICATION		
Tubing	Up to $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ & $\frac{3}{4}$ $\frac{7}{8}$ & 1	Plain Plain Plain Plain	ASTM A269 Gr. TP304/316, seamless, bright, annealed, 0.89 mm WT ASTM A269 Gr. TP304/316, seamless, bright, annealed, 1.24 mm WT ASTM A269 Gr. TP304/316, seamless, bright, annealed, 1.64 mm WT ASTM A269 Gr. TP304/316, seamless, bright, annealed, 2.11 mm WT		
Tube Fittings	All	Swagelok	ASTM A182 Gr. F316		
Pipe	$\frac{1}{2}$ to $1\frac{1}{2}$ 2 3 to 6	Plain Bevel Bevel	ASTM A312 Gr. TP304/TP316, Sch. 80 ASTM A312 Gr. TP304/TP316, Sch. 80 ASTM A312 Gr. TP304/TP316		
Pipe Fittings	$\frac{1}{2}$ to $1\frac{1}{2}$ 2 to 6	SW BW	ASME B16.11 & ASTM A182 Gr. F304/F316, 3000# ASME B16.9 & ASTM A403 Gr. WP304/WP316, to match pipe		
Unions	$\frac{1}{2}$ to $1\frac{1}{2}$	SW	MSS-SP-83 & ASTM A182, 3000#		
Nipples	$\frac{1}{2}$ to $1\frac{1}{2}$	SW or NPT	ASTM A733 & ASTM A312 Gr. TP304/TP316, Sch. 80		
Swage Nipples	$\frac{1}{2}$ to $1\frac{1}{2}$	SW or NPT	MSS SP-95 & ASTM A403 Gr. WP304/WP316		
Flanges (See Appendix A)	$\frac{1}{2}$ to $1\frac{1}{2}$ 2 to 6	SWRF WNRF	ASME B16.5 & ASTM A182 Gr. F304/F316 ASME B16.5 & ASTM A182 Gr. F304/F316, to match pipe		
Blind Flanges (See Appendix A)	$\frac{1}{2}$ to $1\frac{1}{2}$ 2 to 6	RF RF	ASME B16.5 & ASTM A182 Gr. F304/F316 ASME B16.5 & ASTM A182 Gr. F304/F316		
Pipe Plugs	$\frac{1}{2}$ to $1\frac{1}{2}$	NPT	ASME B16.11 & ASTM A182 Gr. F304/F316, 6000#		
Bull Plugs	$\frac{1}{2}$ to $1\frac{1}{2}$	NPT	MSS SP-95 & ASTM A182 Gr. F304/F316, 6000# (solid)		
O'lets	$\frac{1}{2}$ to $1\frac{1}{2}$	SW or NPT	MSS SP-97 & ASTM A182 Gr. F304/F316, 3000# (pref.) or 6000#		
Weldolets	2		MSS SP-97 & ASTM A182 Gr. F304/F316, XS		
Studs	All		ASTM A320 Gr. L7		
Nuts	All		ASTM A194 Gr. 4 or Gr. 7		
Gaskets	All		ASME B16.20, Spiral Wound with Type 304SS Winding c/w 3.2 mm internal & external CS Ring (preferred) Alternate: ASME B16.21, Garlock HTC 9850, 1.6 mm Alternate: ASME B16.21, Wire reinforced non asbestos, 1.6 mm		
Instrument Valves	Up to $\frac{3}{4}$	NPT	SS body, stem & bonnet; non metallic seat, 6000#		
Valves	$\frac{1}{2}$ to $1\frac{1}{2}$ 2 to 6	SW or NPT RF	ASME B16.34 & ASTM A105, 2000#WOG min. CSA Z245.15		
Pressure Vessels	All		TES-MATL-PV1		

Summary Table of Pipe Manufacturers - Larger Than NPS 2

Pipe Description	Material No.	Picklist No.	Purchase Order No.	Pipe Heat No.	Pipe Manufacturer
NPS 3 x 5.5 mm WT, SCH 40, ASTM A312 GR TP304	66780	n/a	180818-1	QG586	Mannesmann
NPS 3 x 5.5 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65971	n/a	180029-9	532106	Beneteler Stahl/Rohl
NPS 3 x 5.5 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS		n/a	180029-14	534327	Beneteler Stahl/Rohl
NPS 3 x 5.5 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS		48172-1	180232; 162618	536372; 741338; 736143	Beneteler Stahl/Rohl
NPS 4 x 6.0 mm WT, SCH 40, ASTM A312 GR TP304	66781	n/a	180818-3	516668	Sandvik Materials Technology
NPS 4 x 6.0 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65974	48172-8	180232; 164690; 153212	463501; X25749; U22910; 532478	IPSCO Koppel Tubulars; USS Tubular Products
NPS 4 x 6.0 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65974	n/a	180029-19	531472; 741278;	Beneteler Stahl/Rohl
NPS 4 x 6.0 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65974	n/a	180029-15	531472; 741278;	Beneteler Stahl/Rohl
NPS 4 x 6.0 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65974	48172-2	164690	X25749	USS Tubular Products
NPS 6 x 7.1 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65977	48172-15	169409	U60012	USS Tubular Products
NPS 6 x 7.1 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	65977	48172-18	169409	U60012	USS Tubular Products
NPS 6 x 11.0 mm WT, SCH 80, ASTM A333 GR. 6 SEAMLESS	66792	n/a	180029-2		USS Tubular Products
NPS 8 x 8.2 mm WT, SCH 40, ASTM A333 GR. 6 SEAMLESS	66797	48172-12	144343; 146342	X04341; X05751	USS Tubular Products
NPS 8 x 8.2 mm WT, SCH 40, ASTM A312 GR TP304	66783	n/a	180818-2	F824065	Sumitomo Metal Industries
NPS 8 x 12.7 mm WT, SCH 80, ASTM A333 GR. 6 SEAMLESS	66795	48172-3	161218	C26204	USS Tubular Products
NPS 10 x 12.7 mm WT, SCH 60, ASTM A333 GR. 6 SEAMLESS	65956	48172-4	173343	965549	Tenaris
NPS 12 x 17.5 mm WT, SCH 80, ASTM A333 GR. 6 SEAMLESS	65961	n/a	180029-3	J8K9458	Sumitomo Metal Industries
NPS 20 x 15.9 mm WT, GR 414, CAT. II, -45 C, TES-PIPE-SAW	46244	43132-2	154722	1-1542; 9-8523; 1-2254; 1-2253; 6-9997	Cantak Corporation
NPS 30 x 19.1 mm WT, GR 483, CAT. II, -45 C, TES-PIPE-SAW	117915	43132-1	127162	9-4337;	Cantak Corporation
NPS 36 x 22.5 mm WT, GR 483, CAT. II, -45 C, TES-PIPE-SAW	128513	n/a	158513-2	1-0733; 1-0735; 6-9997; 1-0737;	Cantak Corporation

Summary Table of Pipe Manufacturers - NPS 2 and Smaller

Pipe Size	Pipe Manufacturer
1/2", 3/4", 1 1/2"	WUXI DINGYUAN PRECISION COLD DRAWNSTEEL PIPE CO. LTD.
1/2", 1", 1 1/4", 1 1/2", 2"	BENTELER STAHL/ ROHR
1/2", 3/4"	SHANDONG YONGCHUN GROUP COMPANY LTD.
3/4"	HUNAN HENGYANG STEEL TUBE CO. LTD.
1", 1 1/2", 2"	HENGYANG VALIN STEEL TUBE CO. LTD
3/4"	CHANGSHU WALSIN METAL INDUSTRIAL CO. LTD.
3/4"	WUXI TONGDA STAINLESS STEEL CO.LTD.
1/2", 1"	FORMOSA STAINLESS STEEL PRODUCTS
1"	NIKOPOL STEEL PIPE
1 1/2"	STELPIPE LTD.
2"	TENARIS
2"	MANNESMANN PIPE / STEEL (ALBERTA OIL TOOL)
Pipe Nipple Size	Pipe Manufacturer
1/2", 3/4", 1", 1 1/2"	PHOENIX GROUP
1/2", 1", 2"	NIAGRARA LASALLE CORP. (ALBERTA OIL TOOL)
3/4"	WFI NUCLEAR PRODUCTS
3/4"	NIKOPOL STEEL PIPE
2"	BENTELER STAHL / ROHR
2"	HENGYANG VALIN STEEL TUBE CO. LTD.