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**Terminal Operator
Terminal Location
Pipeline ID**

**Pipeline Field Pressure
Test Report**

Reference: PS100000

Test date: 5th and 6th July, 2010



**NATA Accredited Laboratory
Number: 9475**

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full.

Stephen Ford
NATA Signatory

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References:

- | | |
|---------------------|---|
| AS/NZS 2885.1: 2002 | Pipelines – Gas and Liquid Petroleum, Part 1: Design and construction |
| AS/NZS 2885.5: 2002 | Pipelines – Gas and Liquid Petroleum, Part 5: Field Pressure Testing |

Pipeline Hydrostatic Test Certificate

Pipeline Operator:	Terminal Operator
Pipeline identification:	Pipeline
Pipeline Location:	Location
Date:	05 July, 2010
Constructor:	Pipeline Constructor
Strength Test Result:	Complies with AS2885.5
Leakage Test Result:	Complies with AS2885.5
Start of Strength Test:	05 July 2010 12:30 hours
Completion of Strength Test:	05 July 2010 14:30 hours
Strength Test Method:	Pressure Controlled
Strength test pressure at the highest point:	1500 kPa
Start of Leakage Test:	05 July 2010 12:30 hours
Completion of Leakage Test:	06 July 2010 12:30 hours
Pressure at the start of the leak test period:	1492 kPa
Pressure at the end of the leak test period:	1399 kPa
Pressure loss or gain:	-93 kPa
Average pipe wall temperature at start of leak test period:	13.9 °C
Average pipe wall temperature at end of leak test period:	13.8 °C
Temperature change:	-0.1 °C
Accounted for volume change due to temperature change:	-0.9 Litres
Equivalent pressure change:	-25 kPa
Actual unaccountable pressure loss:	68 kPa
Calculated equivalent loss of test liquid:	2.5 L/day
Allowable unaccountable test liquid loss (Table 51):	40 Litres
Equivalent pressure change:	1084 kPa
Equivalent temperature change:	4.9 °C

Comments :
Pipeline complies with AS 2885.5 - 2002



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NATA Accredited Laboratory
Number: 9475

Stephen Ford
Authorised Signatory

Witnessed by:

Test Section Particulars

Test Program Information

Pipeline Operator:	Terminal Operator
Pipeline identification:	Pipeline
Pipeline Location:	Location
Test Supervisor:	Supervisor Name
Testing Medium:	Fresh scheme water
Strength Test Method:	Pressure Controlled
Location Class:	T1: Suburban (buildings typically less than 4 floors)
Pipeline Configuration:	Unrestrained, uniform
Pipeline Factors:	0.000000469 /kPa - Liquid Compressibility ("A")
	0.000137886 per Deg C - Liquid cubic coeff of expansion - restrained pipe ("B")
	0.000133206 per Deg C - Liquid cubic coeff of expansion - un-restrained pipe ("B")
	0.04 P/V slope litres/kPa
	223 P/T slope kPa/deg C
Test Liquid Additive Types:	n/a
Density @ 15C:	1000.0 kg/m ³ @ 15°C
Atmospheric Pressure:	102.7 kPa
Pipeline MAOP:	1000 kPa
Nominated End Point Pressure (at high point):	1500 kPa
Basis of End Point Selection:	MAOP x 1.25 minimum
Test Point Pressure Measurement Location:	Terminal header
Assessment of Expansion Damage Risk to Pipe Coating:	n/a
Value of Relevant and Significant External Loads:	Unknown
The Limit of Residual Air:	The End-point Pressure is less than 2000 kPa, therefore the residual air affect on leakage detection is calculated and assessed prior to and at completion of the test
Pipeline Specifications and Properties:	
Constructed by:	Pipeline Constructor
Pipe Manufacturer:	Pipe Manufacturer
Pipe Coating Type/Specification:	Unknown
Code:	API 5L
Type ERW/SAW/Fusion/SMLS:	ERW
Grade X:	28
Schedule:	40
Strain rate ratio, mill/field	2000 /1
Flanges:	Class 150, raised flange faces
Test Pressure of Valves, Components, Connections and Appurtenances:	ANSI 150
Highest Pressure Previously Applied to Valves, Components, Connections and Appurtenances:	3000 kPa
Design Pressure:	Unknown kPa
Corrosion Allowance:	Unknown mm
High point Elevation	15.0 metres
Low Point Elevation:	10.0 metres
Test Point Elevation:	15.0 metres
Test Point/Low Point Elevation Difference:	5.0 metres
Test Point/ Low Point Pressure Correction:	50.0 kPa
Test Point/ High Point Pressure Correction:	0.0 kPa

	Pipeline Section	OD mm	Wall Thickness mm	Restrained Section		Unrestrained Section	
				Length m	Volume litres	Length m	Volume litres
A	Manifold to Terminal fence	219.1	8.13	0		598	19324
B	Terminal to jetty root	219.1	8.13	1310	42332	0	
C	Jetty	219.1	8.13	0		4	129
D							
E							
F							
					42332		19453
					Total Pipeline Volume: 61785 litres		

	SMYS Mpa	Pressure Equivalent of SMYS kPa	Mill Test Pressure kPa	Hoop Stress (fH) Mpa	Longitudinal Stress (fL) Mpa	Radial Stress (fR) Mpa	Combined stresses (triaxial) at End Point Pressure Mpa	Combined Stresses at End Point Pressure as percent of SMYS
A	483.00	37226	13582	19.46	9.73	-0.75	17.51	3.62%
B	483.00	37226	13582	19.46	5.25	-0.75	17.98	3.72%
C	483.00	37226	13582	19.46	9.73	-0.75	17.51	3.62%
D								
E								
F								

Test Section Configuration:

- The 200NB Pipeline is located between the jetty head of Berth and the Terminal.
- A 200NB connection to the Port Authority manifold is located adjacent to the entry onto jetty.
- The pipeline rests on mounts suspended below the access jetty and is buried between the FPA manifold and the Terminal.

Procedure for Cleaning, Filling and Pressurising the Test Section:

On 1st July spades were swung to isolate the pipeline from the FPA manifold and the Terminal. The pipeline was then pigged from the jetty head to the Terminal with fresh water behind foam pigs. The pig launcher was subsequently removed and the pipeline blanked at the jetty head. The pig receiver was opened for inclusion in the test.

The pipeline previously contained caustic soda. To clean the pipeline, 5 kilolitres of fresh water was pumped into the pipeline and the entire pipeline pigged twice with batching pigs. This process was repeated before drying the line by pigging with foam pigs.

The residual air test was performed on 2nd July and the combined strength and leakage test was performed on 5th and 6th of July after allowing the pipeline contents to thermally stabilize over three days.

Test Procedures:

- Petrospection Procedure for Field Pressure Testing of Pipelines, Procedure PT-01 and Site Specific Safety Plan.
- Terminal Site Emergency Management Plan, Procedure EP1.

Test Section History:

The pipeline was built in 1987 from used pipe and hydrostatically tested to 3000 kPa by Testing Company. The pipeline has since been regularly pressure tested to 1,250 kPa.

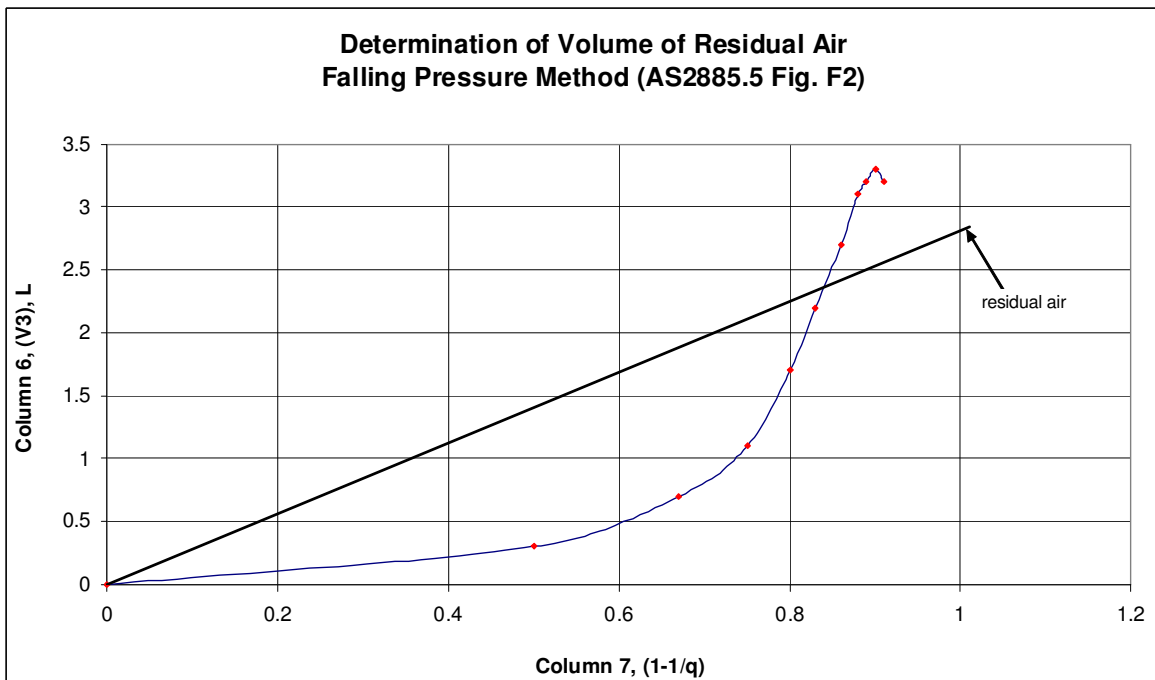
Residual Air Test

Pipeline Volume: 61785 litres
 Atmospheric Pressure: 102.7 kPa
 Pipeline MAOP: 1000 kPa
 Minimum Leak Test Pressure: 1100 kPa
 Initial Pipe Temperature: 20.1 Deg C
 Final Pipe Temperature: 20.1 Deg C
 Initial Pressure at Pipeline High Point: 1490 kPa
 Final Pressure at Pipeline High Point: 490 kPa
 Location Class: T1
 Allowable unaccountable leakage rate: 40 litres/24 hours
 Allowable unaccountable pressure change: 1084 kPa (elastic volume)
 Pressure instrument required resolution (20% of allowable pressure variation): 217 kPa

Determination of Residual Air - Falling Pressure Method

AS2885.5 Table F1

1	2		3	4	5	6	7
Observed gauge pressure	Pressure change (x 100 kPa Abs)		Cumulative volume bled (pressure falling) L	Equivalent cumulative (added) volume L	Elastic volume [P/V slope x (q-1)] L	Column 4 minus Column 5	1-1/q
kPa	q	(q-1)	V	V ₁	V ₂	V ₃ = V ₁ - V ₂	
1490	11	10	0.0	39.3	36.9	2.4	0.91
1390	10	9	3.5	35.8	33.2	2.6	0.90
1290	9	8	7.2	32.1	29.5	2.6	0.89
1190	8	7	11.0	28.3	25.8	2.5	0.88
1090	7	6	15.0	24.3	22.1	2.2	0.86
990	6	5	19.1	20.2	18.4	1.8	0.83
890	5	4	23.2	16.1	14.8	1.3	0.80
790	4	3	27.4	11.9	11.1	0.8	0.75
690	3	2	31.4	7.9	7.4	0.5	0.67
590	2	1	35.4	3.9	3.7	0.2	0.50
490	1	0	39.3	0.0	0.0	0.0	0.00



Residual air determined by Falling Pressure Method:

2.4 litres

Assessment of Allowable Residual Air in Test Section

Pressure variation between Initial 1492 kPa and Final 1399 kPa readings (apparent liquid loss):	-93	kPa
Air expansion for apparent test liquid loss: (1-1/q residual air expansion)	0.009	litres
Dissolution of Air:	0.000	litres
Air expansion/dissolution variation:	0.009	litres
Unaccounted pressure variation:	68	kPa
Unaccounted test liquid variation (P/V slope):	3	litres

Percentage air expansion/dissolution Vs unaccountable test liquid volume variation: **0.35%**

(AS2885.5 Section A4.6 recommendation is less than 10 percent)

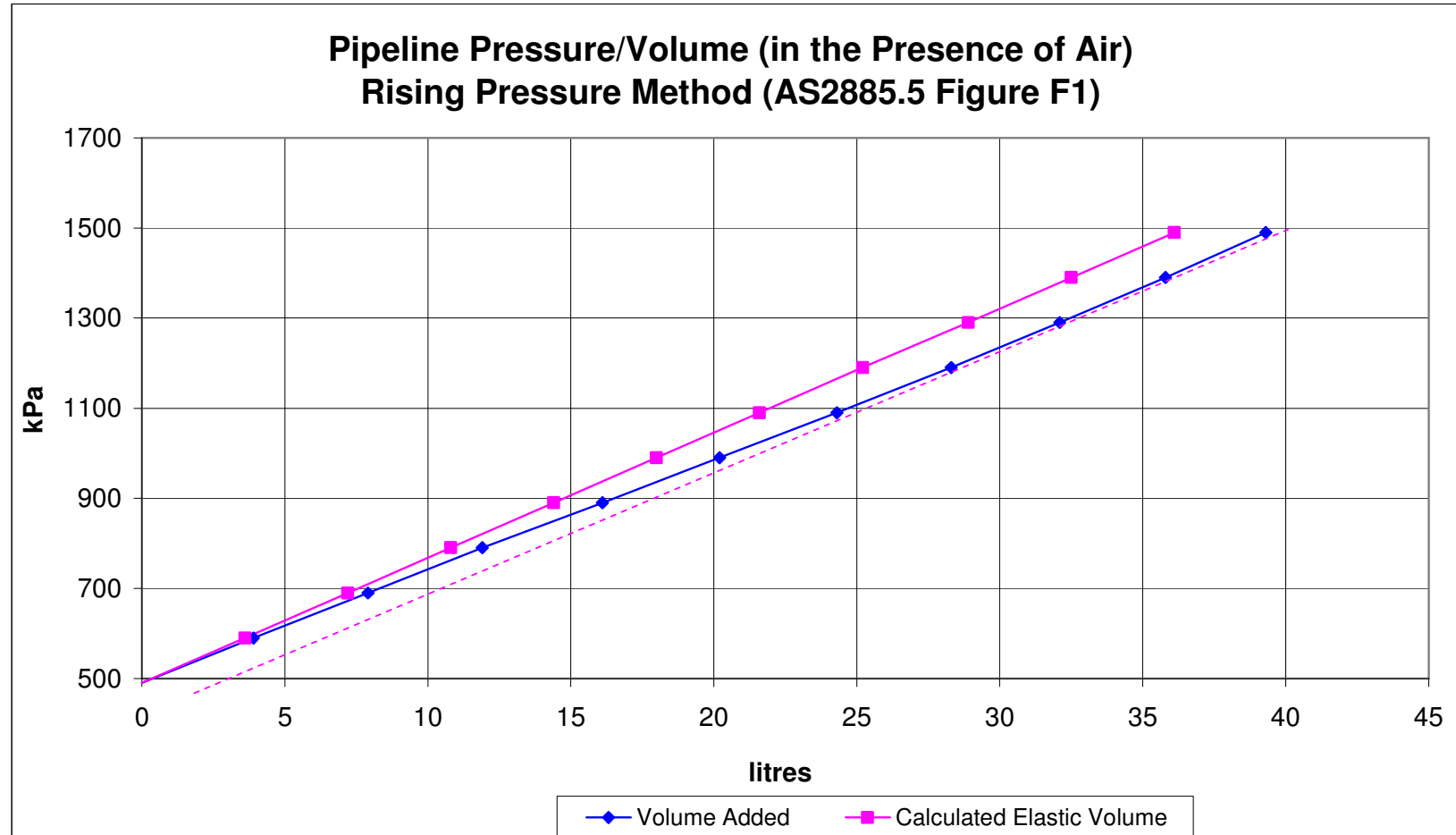
Air Fraction of pipeline volume: **0.00%**

(satisfies AS2885.5 A4.6 recommendations if the air fraction is less than 0.2 percent and test pressure >2000 kPa)

Assessment: **The residual air volume is unlikely to affect the ability to detect leaks**

i.e. The test pressure is less than 2000 kPa and the air expansion/dissolution percentage of the test liquid volume variation is less than 10%.

PV Plot



Strength Test

Strength Test Method:	Pressure Controlled	
Volume/Strain Test Values:		
D/T ratio:	26.9	
Von Mises Factor (triaxial) Field:	1.08	
Von Mises Factor (triaxial) Mill:	0.98	Ring Expansion Test
Minimum Predicted Yield:	12959	kPa
Squeeze volume to End Point:	478	litres
Total pipeline volume at End Point:	62263	litres
Offset Volume Percent:	0.4	%
Offset Volume:	249	litres
Half Slope:	7.4	litres/100kPa
Pipeline MAOP:	1000	kPa
Strength Test Pressure at Test Point:	1500	kPa
Strength Test Upper Pressure Limit (+1% EP Press):	1515	kPa
Strength Test Lower Pressure Limit (-1% EP Press):	1485	kPa
Strength Test Pressure at High Point:	1500	kPa
Strength Test Pressure at Low Point:	1550	kPa
EP/MAOP %:	155%	
Start of Strength Test:	05/07/10 12:30	
Completion of Strength Test:	05/07/10 14:30	
Hold period:	2	hours
Minimum 2 hour hold period achieved?:	YES	
Initial Pressure (at highest elevation):	1442	kPa
Final Pressure (at highest elevation):	1435	kPa
Pressures maintained at required $\pm 1\%$ of EP during test?:	NO	
Pressure Change Rate:	0.2%	/hour
Less than required 1% pressure change per hour over hold period?:	YES	
Permissible added test liquid volume (0.05% of test section volume)	31	litres
Added test liquid volume:	0	litres
Strength test Result:		
<i>i.e. Integrity of pressure containing components of pipeline maintained during strength test</i>	PASS	

Leakage Test

Restrained Pipe:	42332	litres
Unrestrained Pipe:	19453	litres
Total Pipeline Volume:	61785	litres
Atmospheric Pressure:	102.7	kPa
Initial Average Pipe Temperature:	13.9	Deg C
Final Average Pipe Temperature:	13.8	Deg C
Initial Pipe Gauge Pressure:	1492	kPa
Final Pipe Gauge Pressure	1399	kPa
Start of Leakage Test:	05/07/10 12:30	
Completion of Leakage Test:	06/07/10 12:30	
Temperature instrument required sensitivity, repeatability and stability (temp change equiv. for 20% of allowable unaccountable pressure variation):	0.97	°C
Leakage Test initial/final temperature variation:	-0.1	°C
Elastic (pipe & test liquid) Volume Variation:	-1	litres
Residual Air:	2	litres
Air able to be dissolved:	0.001	litres
Elapsed time:	24	hours
Percentage dissolved:	52%	
Solution of Residual Air:	0	litres
Accounted for volume variation:	-1	litres
P/V slope:	0.0369	litres/kPa
Pressure equivalent of accounted volume variation:	-25	kPa (<i>elastic PV</i>)
Observed pressure variation:	-93	kPa
Additions/withdrawals:	0	litres
Additions/withdrawals pressure equivalent:	0	kPa
Total pressure variation:	-93	kPa
Unaccounted pressure loss:	68	kPa
Volume equivalent of unaccounted pressure loss:	2.5	litres
Allowable unaccountable leakage rate	40	litres/24 hours
Pressure equivalent of allowable unaccountable leakage:	1084	kPa (<i>elastic PV</i>)

Leakage Test Result: **PASS**

Remark: The unaccountable leakage rate is less than the allowable unaccountable leakage rate.

Test Field Data

Pressures recorded at the South Terminal

Time	Temperature							Observed Pressure Logger kPa	Additions(+) Withdrawals(-) litres	Weather	Remarks
	Ambient Deg C	Probe 1 Deg C	Probe 2 Deg C	Probe 5 Deg C	Probe 3 Deg C	Probe 4 Deg C	Pipe W. Avg Deg C				
05/07/10 12:30	15.8	18.2	13.0	11.2	21.4	15.0	13.9	1492		9 South; fine, sunny	Commence test following residual air test
05/07/10 13:30	16.9							1468			
05/07/10 14:30	17.0	18.0	13.0	12.1	23.1	15.2	14.2	1485		6 ESE, Fine sunny	
05/07/10 15:30	16.4							1512		Calm, Fine, sunny	
05/07/10 16:30	15.5	17.9	12.7	12.8	22.0	15.5	14.0	1526		6 SE, Fine, sunny	
05/07/10 17:30	14.1							1544		Calm, dusk	
05/07/10 18:30	11.1	17.6	13.3	13.1	18.6	14.8	14.0	1553		Calm, Cool Night	
05/07/10 19:30	9.9							1551		Calm, cool Night	
05/07/10 20:30	10.8	17.5	13.3	12.7	16.1	14.0	13.6	1541		Calm, cool Night	
05/07/10 21:30	10.5							1525		Calm, cool Night	
05/07/10 22:30	10.6	17.5	13.3	12.4	14.0	13.9	13.4	1509		Calm, cool Night	
05/07/10 23:30	10.0							1497		Calm, cool Night	
06/07/10 00:30	9.0	17.4	13.5	11.9	13.2	13.8	13.3	1483		Calm, cool Night	
06/07/10 01:30	9.1							1467		Calm, cool Night	
06/07/10 02:30	8.8	17.1	13.2	11.5	12.7	13.4	13.0	1456		Calm, cool Night	
06/07/10 03:30	8.6							1441		Calm, cool Night	
06/07/10 04:30	7.8	17.2	13.3	11.2	12.7	13.4	13.0	1429		6 NE, Cool Night	
06/07/10 05:30	7.6							1417		Calm, Cool Night	
06/07/10 06:30	7.8	17.1	13.1	10.7	12.5	13.4	12.8	1405		Calm overcast	
06/07/10 07:30	8.0							1394		Calm, overcast, dawn	
06/07/10 08:30	9.1	17.0	12.8	10.6	12.6	13.4	12.6	1380		7NE, overcast	
06/07/10 09:30	10.3							1375		9NE, overcast	
06/07/10 10:30	10.8	17.2	13.4	10.4	15.2	13.8	13.3	1371		NNE7, Partly cloudy	
06/07/10 11:30	14.5							1379		11NNE, Partly cloudy	
06/07/10 12:30	15.8	17.6	13.1	12.0	20.0	14.4	13.8	1399		9N, Mostly sunny	

Temperature Probe at Pipeline Location:

1	2	3	3	3
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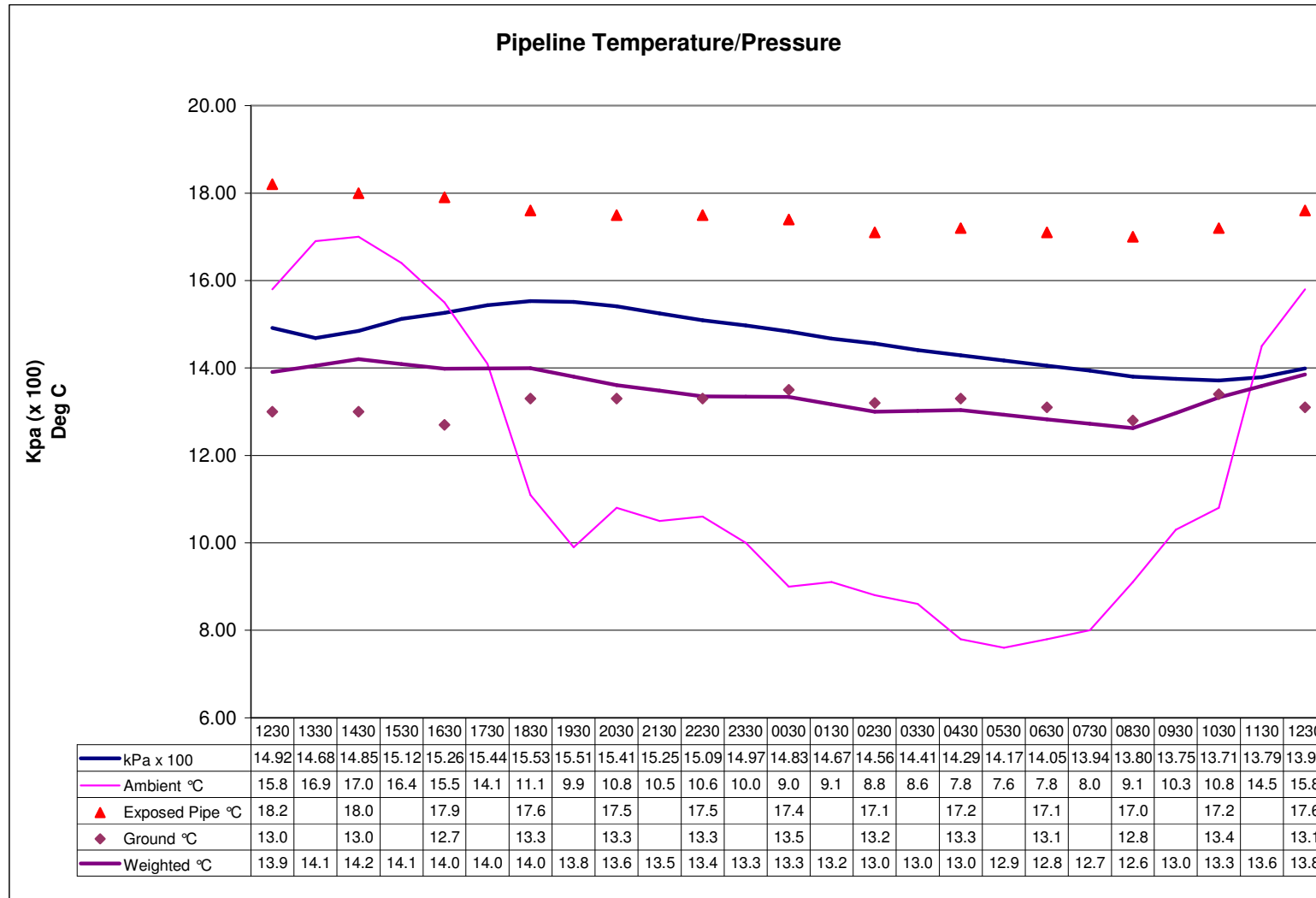
Pipeline Location:	1	2	3	4	5	6
Pipe Volume (litres): (for weighted average of temperatures)	129 Terminal	42687 Buried	19490 Jetty			

Total Pipeline Volume: 62306 litres

The temperature probes ("K" thermocouples) were installed in the following pipeline locations:

- probe #1: Side of pipe next to base of pig receiver in the Terminal
- probe #2: Buried alongside the Mid connection, within the pit adjacent to the Terminal
- probe #3: Side of pipe of the Mid connection, within the pit adjacent to the Terminal
- probe #4: Base of pipe at PA valve manifold, approx. 1 metre from the pipe entry into the ground
- probe #5: Base of pipe, below the jetty

Test Field Data Graph



Testing Equipment

- Stewart Buchanan industrial pressure gauge
 - Size: 100mm direct mount, bottom connection
 - Range: 0 to 2500 kPa
 - Resolution: 100 kPa
(refer to attached certificate)
- Delta Ohm HD2124.2 Digital pressure indicator (manometer)/Thermometer (digital data logger)
 - Resolution: 0.1 °C; 1kPa
 - Accuracy: ±0.1 °C; 0.4% kPa
- Delta Ohm HD2328.0 “K” instrument and Thermocouple K
 - Instrument resolution: 0.1 °C
 - Instrument accuracy: ±0.1 °C
 - Instrument drift (@20 °C): 0.02%/°C
 - Thermocouple tolerance: ±1.1 °C
- “K24” PIUSI Instruments flow meter
 - Resolution: 0.001 litres
- 200 litre prover tank
 - (refer to attached certificate)

Thermocouple Calibration and Evaluation

Certified Thermometer

Tested By: WIKI, NATA Accreditation Number 410
 Thermometer Description: AMA Total Immersion
 Thermometer Number: 0955247
 NATA Test Certificate No.: 558/09
 Test Date: 1/06/2009
 Test Method: AS2831

Delta Ohm HD2328.0 & "GI" level "K" type thermocouple Calibration

Degrees C				
Certified Therm.	3.8	11.0	20.2	30.4
Probe 1	3.8	11.0	20.2	30.3
Probe 2	3.8	11.0	20.2	30.3
Probe 3	3.8	11.0	20.2	30.3
Probe 4	3.8	11.0	20.2	30.3
Probe 5	3.8	11.0	20.2	30.3

- ? Calibrated 28/06/2010
- ? Expanded Uncertainty of thermocouple and Delta Ohm instrument readings: 0.24 °C
- ? Coverage Factor at confidence level 95%: K=1.96

Thermocouple & Instrument Evaluation against AS2885.5, 2.2.6b

UNCERTAINTY CALCULATION FOR: Delta Ohm HD2328.0 "K" thermocouple/instrument accuracy (after calibration)
UNITS OF OUTPUT VALUE: °C

Input #	Description of Input									
1	Certified Thermometer calibration (per Calibration Certificate)									
2	Readability of certified thermometer									
3	Resolution of Instrument									
4	Instrument stability (temperature drift between 20 °C±5 °C)									
5	Accuracy of Instrument (incorporates repeatability)									
6	Sensitivity									
Input #	Units	Dist (N/R/T)	Uncert	Divisor	Vi	Ui	Ci	UICI	(UICI) ²	((UICI)/V
1	°C	N	0.100	2.0000	200	0.0500	1	0.0500	2.50E-03	3.13E-08
2	°C	R	0.100	1.7321	200	0.0577	1	0.0577	3.33E-03	5.56E-08
3	°C	R	0.100	1.7321	200	0.0577	1	0.0577	3.33E-03	5.56E-08
4	°C	N	0.001	2.0000	200	0.0005	1	0.0005	2.50E-07	3.13E-16
5	°C	N	0.100	2.0000	200	0.0500	1	0.0500	2.50E-03	3.13E-08
6	°C	R	0.100	1.7321	200	0.0577	1	0.0577	3.33E-03	5.56E-08
Sums									1.50E-02	2.29E-07
Combined Standard Uncertainty, Uc									0.1225	°C
Effective degrees of freedom, Vi									981.9	
Coverage factor, k=Student's t for Veff and CL 95%									1.96	
Expanded uncertainty, U=KUc									0.24	°C
AS2885.5, 2.2.6b maximum specification:									0.5	°C

Note: Thermocouple K ("GI" level) tolerance ±1.1 °C (negated by calibration)
 Calibration temperature corrections are applied to thermocouple readings for the assessment of accuracy.

UNCERTAINTY CALCULATION FOR: Delta Ohm HD2328.0 "K" thermocouple/instrument combined sensitivity, repeatability and stability
UNITS OF OUTPUT VALUE: °C

1	sensitivity	0.1 °C
2	repeatability (incorporated in manufacturers overall accuracy figure)	0.1 °C
3	stability (temperature drift ±5 °C at 20 °C)	0.001 °C
Combined sensitivity, repeatability and stability (RSS)		0.14 °C
AS2885.5, 2.2.6b maximum specification for this pipeline:		0.62 °C

Equipment Test Certificates

Commissioned 2/9/09.

NATA CERTIFICATE OF TEST



Pressure and Temperature Measurement

Report on : MERCURY IN GLASS THERMOMETER
Customer : STOCK
CERTIFICATE No: 558/09 **DIVIDED TO** 0.5°C
NAME OF THERMOMETER AMA **THERMOMETER No.** 0955247
RANGE -10.0° to 50.0°C **ITEM No.** 526.10937
WORKS ORDER No: 72963 **IMMERSION** TOTAL

ABN 49 004 465 936

WIKAI Australia Pty Ltd
 Unit N, 10 - 16 South Street
 Rydalmere NSW 2116
 Australia

RESULT OF TEST

THERMOMETER READING °C	CORRECTION TO READING °C	TEMPERATURE °C	UNCERTAINTY °C
-0.05	+0.05	0.00	±0.08°C
25.00	+0.05	25.05	±0.10°C
50.00	+0.05	50.05	±0.10°C
-0.05	+0.05	0.00	±0.08°C

DATE ISSUED: 9-Jun-09 **REFERENCE EQUIPMENT:** 9981805
 9981807
DATE TESTED: 1-Jun-09 9865810
 9855811
SHEET No: S275.09 ICE POINT STANDARD

Conditions of Test:

1. Device Under Test was tested in the Vertical Position.
2. The Temp. Device Under Test does comply with stated sections.
3. Coverage factor at confidence level 95% K= 2.00
4. Uncertainty of reported corrections (rounded) ± 0.10°C
5. Test was based on sections of AS 2831 (Refer to note 4, page 2 of this report)
6. Comments: NIL

CHECKED BY: *[Signature]*
 Bayani Musa

NATA SIGNATORY: *[Signature]*
 Neal Murrells



Accreditation Number 410, Heat & Temperature Laboratory

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F/PA/D17

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CERTIFICATE No. 15956/300910/1

DATE OF CALIBRATION 30 Sep 2010 NATA Accredited laboratory No 1736
 CALIBRATION CERTIFICATE FOR : Pressure Transducer c/w Indicator
 Make Delta Ohm Serial No. 06011260
 Model TP704 Position Vertical
 Range 0/5000 kPa Customer ref.
 Submitted by Petrospection Pty Ltd, 8 Edison Circuit, Rockingham

NOMINAL APPLIED VALUES	As found		After Adjustment	
	MEAN INDICATED VALUES	CORRECTION	MEAN INDICATED VALUES	CORRECTION
kPa				
0	0	nil		
1000	999	+1		
2000	2002	-2		
3000	3005	-5		
4000	4008	-8		
5000	5014	-14		
4000	4007	-7		
3000	3008	-8		
2000	2003	-3		
1000	1000	nil		
0	-13	+13		

REMARKS:

Tested in accordance with LCI 1.3.1-06

maximum deviation does not exceed 0.28 % of maximum scale range

Uncertainty of test \pm 2.0 kPa at 95% confidence level and $k = 2.0$

Calibration Fluid:- Oil Morlina 10

Additional conditions:- Calibrated as an INDUSTRIAL INSTRUMENT

Tested with Indicator S/N 07006113

APPROVED SIGNATORY
 B Standing

A laboratory certificate may not be reproduced, except in full, unless permission for reproduction of an approved extract has been obtained, in writing, from the Quality Manager.

LES COOKE INSTRUMENT CO. PTY. LTD.

If further information is required regarding this report Telephone: (08) 9362 1266

NATA 040:2.2 B.08

C

30 SEP 2010



LES COOKE INSTRUMENT CO. PTY. LTD.

ABN 56 008 754 934 A.C.N. 008 754 934
 PO Box 11 Burswood WA 6100 12 Malvern Road Rivervale WA 6103
 Phone: (08) 9362 1266. Facsimile: (08) 9470 1848. Email: cookequip@lescooke.com.au
 CALIBRATION • MANUFACTURE • SALES • OVERHAULS • REPAIRS • MODIFICATIONS

CERTIFICATE No. 15251/240310/9

The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to Australian national standards of measurement. This document shall not be reproduced except in full.



DATE OF CALIBRATION 24 Mar 2010 NATA Accredited laboratory No 1736
 CALIBRATION CERTIFICATE FOR : Pressure Gauge
 Make Stewart Buchanan Serial No. 29908567/1
 Size 100mm direct mount, bottom connection Position Vertical
 Range 0/4000 kPa Customer ref.
 Submitted by Petrospection Pty Ltd 8 Edison Circuit, Rockingham, WA

NOMINAL APPLIED VALUES	As found		After Adjustment	
	MEAN INDICATED VALUES	CORRECTION	MEAN INDICATED VALUES	CORRECTION
kPa				
1000	1000	nil		
2000	2000	nil		
3000	3000	nil		
4000	4000	nil		
3000	3000	nil		
2000	2000	nil		
1000	1000	nil		

REMARKS:

Tested in accordance with AS 1349-1986 SECTIONS 4.4.1, 4.4.3, overload test section 4.2.2 not performed
 And complies with section: 4.1.2.1 maximum deviation does not exceed 0 % of maximum scale range
 Uncertainty of test ± 32.0 kPa at 95% confidence level and k = 2.0
 Calibration Fluid:- , Oil ST55
 Additional conditions:- Calibrated as an INDUSTRIAL INSTRUMENT

[Signature]
 APPROVED SIGNATORY
 B Standing

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LES COOKE INSTRUMENT CO. PTY. LTD.

If further information is required regarding this report Telephone: (08) 9362 1266

24 MAR 2010



Government of Western Australia
Department of Commerce
Trade Measurement Branch
Measurement Standards Laboratory

**CERTIFICATE OF VERIFICATION OF A REFERENCE STANDARD OF
MEASUREMENT IN ACCORDANCE WITH REGULATION 13 OF THE
NATIONAL MEASUREMENT REGULATIONS 1999 IN ACCORDANCE
WITH THE NATIONAL MEASUREMENT ACT 1960**

Name of Verifying Authority: MANAGER TRADING STANDARDS,
DEPARTMENT OF CONSUMER AND
EMPLOYMENT PROTECTION, WA.

Address of Verifying Authority: Stated at the foot of this Certificate.

Description and denomination of standards of measurement :
A volumetric proving measure, cylindrical conical, constructed of galvanized steel, sight glass reference ,
outlet pipe with ball valve below. Nominal volume 200 Litre.

Permanent distinguishing marks: WASGS 1

Date of verification: 19th June 2009.

Date of expiry of certificate: 19th June 2011.

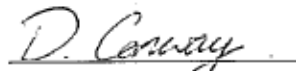
Value of standard of measurement: Deemed equal to its denomination in accordance
with Regulation 30. Inspectors Class 1.

Uncertainty of value: As required by Regulation 31.

This uncertainty is calculated in accordance with the principles of the ISO Guide to the Expression of
Uncertainty in Measurement (1995), with an interval estimated to have a confidence level of 95% at the
time of verification .

Influence factors: The above values are subject to the reference conditions stated in the report.

Signature:



Name of signatory:

D.V. Conway

Position held:

Standards Officer

Being a person, or a person representing a body, appointed as a verifying authority under Regulations 71
and 73 of the National Measurement Regulations 1999 in accordance with the National Measurement Act
1960, I hereby certify that the above standard is verified as a reference standard of measurement in
accordance with the Regulations, under the supervision of the above named authority.

Regulation 13 Certificate: No. RN 165/09

This document comprises a certificate and a one page report and may not be reproduced except in full, without the
written permission of the issuing authority. The certificate and report are identified by the same number.

Address of verifying Authority

Trade Measurement Branch, Unit 3, 321 Selby St, Osborne Park, WA. 6017
Telephone (08) 9282 4317 Facsimile (08) 9282 5615

Locked Bag 14, Cloisters Square, WA. 6850
Email: tsblab@commerce.wa.gov.au

MEASUREMENT REPORT ON CERTIFICATE OF VERIFICATION

Owner of standard:
PETROSPECTION PTY LTD.
8 Edison Circuit.
Rockingham WA 6168.

Place of calibration:
TSB Standards Laboratory
321 Selby Street,
OSBORNE PARK WA 6017

Date of calibration: 19th June 2009. **S. Job N°** 5135 **File** 25812

Category of standard: Reference standard of volume.

Condition of standard: Acceptable Condition.

Verification mark: Crown WA **Date mark:** F9

Notes on verification mark:

The adjustment of the scale plate reference device within the sight glass is sealed with a lead plug the plug bears the verification mark.

Destruction of the mark or removal of the lead seal will render the Certificate of Verification void.

Reference conditions:

When the measure when filled to the point where the meniscus is set to the scale plate line marked '0' with the edge of the line which is nearest to the meniscus forming a horizontal tangent to the convex side of the meniscus, then the valve fully opened and the vessel permitted to drain for a period of 30 seconds after the cessation of continuous flow of liquid, it will deliver the quantity stated under 'Value of standard of measurement' on the certificate. The sight glass scale plate is graduated +/- 1000mL x 100mL.

The reference temperature is 20 °C.

The coefficient of cubical expansion for mild steel is taken as 0.000033/°C.

The measure is fitted with a levelling device and shall be level as indicated by the device when in use.

Stated uncertainty: Stated on the certificate.

TSB measurement reports state the expanded uncertainty *U* which corresponds to a 95% probability that the value of the measurand *Y* lies within the interval *y - U* to *y + U*. The coverage factor *k* = 2.

Comparison standard: Standard of volume No. 200/0 TSB Certificate RN 102/08 Expiry 8/4/2013
The appropriate Western Australian State Standards, which are traceable to Australian/National Standards of Measurement

Test equipment: Certified thermometer No. V60244 (digital)
Certified glass measure No. WM 50/1

Test method: Volumetric Test medium, mains water.

The test measure was compared against the appropriate standard using the method described in the Trading Standards Branch Laboratory Technical Procedure SL-CAL-VV01. (single delivery)

Conditions on certificate:

This certificate is voided if anything is done to the standard that alters its metrological performance.

Signed: D. Conway

Date: 19th June 2009.

D.V. Conway Standards Officer.

Report on Regulation 13 Certificate: No. RN 165/09 Page 1 of 1

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Data Logger Readings