



Darwin City Gate

Coating Assessment Report

Document No. BGS-RP-A-0001 Rev A

File Path: G:\Major Projects\23.3_BGS_Below Ground Station Pipework Recoating\2. Reports and Approvals\Coating Defect Analysis\Darwin City Gate\BGS-RP-A-0001 DCG coating assessment.docx

Author	James Barrenger <i>James Barrenger</i> 20/11/12			
Report Checked by				
Report Approved by				
Changes to be approved by				
Version control	Date	Version	Nature of Change	Approved by (Name)
	20/11/2012	0	Final	<i>Stephen Hughes</i>

Contents

1 Introduction 1

2 Method 1

3 Results 2

 3.1 DCVG 2

 3.2 Coating Inspection 2

 3.3 Metal loss 3

4 Discussion and Recommendations 3

5 Conclusion 4

Appendix 1 Station Layout 5

Appendix 2 Coating Damage Assessment Forms 6

Appendix 3 Metal Loss Assessment Forms 7

Appendix 4 Photo Log 8



1 Introduction

DCVG surveys have been conducted at each scrapper station along the Amadeus Gas Pipeline to give an indication of the condition of the coating at each site. However, the accuracy of these DCVG surveys at the scrapper stations is uncertain due to the possibilities of CP shielding and interactions between different pipe sections.

To correlate the DCVG results to actual defects, 5 scraper stations and 5 MLV's have been selected to be excavated and to undergo coating assessment. The results of these 10 excavations and coating assessments will help determine the expected condition of the remaining stations and MLV's and feed into the decision to excavate them or not.

Darwin City Gate (DCG) is the first scraper station to be excavated and assessed. This report compares the DCVG results for DCG to the results of the coating assessment following excavation.

After coating assessments had been conducted, the station pipework was cleaned by abrasive blasting and recoated with Luxepoxy, a high build 2 part epoxy coating.

2 Method

In April 2012 a DCVG survey was conducted on the DCG scraper station. These results have been included in this report for comparison to determine if there is a good correlation between the DCVG survey data and actual coating defects.

The DCG site has been excavated and assessed (see Appendix 1). For major defects a coating defect assessment has been conducted, completed coating defect assessment forms are in Appendix 2. All sections of pipe with coating defects have been photographed, see Appendix 4 for a photo log.

To help number the defects, the station pipework has been categorised into several sections. A map showing the location of each section is showing in Appendix 1.

The results of the DCVG survey and the coating defects assessments have been compared to determine if there is a correlation between the DCVG survey and actual coating defects.



3 Results

3.1 DCVG

There were 8 areas highlighted as having coating defects by the DCVG survey. These defects are summarised in Table 1 below. Locations of each defect are shown on the drawings in Appendix 1.

Table 1: DCVG Detected Defects

DCVG Defect Number	Section	IR
1	Section A	7.8%
2	Section C	13.9%
3	MLV (Section H)	6.7%
4	Section E	15.6%
5	Section H	33.3%
6	Section H	24.4%
7	Section G	12%
8	Section F	33.3%

3.2 Coating Inspection

The coating found at Darwin City Gate was generally in poor condition. There was a large amount of blistering and the coating in places was falling away from the pipework. The extent of coating damage can be seen in Appendix 1 which shows a layout of the station with all the defects marked on it. Photos of the different sections of pipework can be found in Appendix 4.

There were a number of areas where the coating degradation was worse or more concentrated than the rest of the station. The following table lists these severe defect clusters that were found. For each of these defects, a coating damage assessment form was filled out (see Appendix 2).

Table 2: List of Severe Defects

ID	Section	Section Number	Defect Length (mm)	Defect Width (mm)	Correlation to DCVG	DCVG Survey IR
1	Section A	A1	Entire elbow covered with cracked paint.		Defect 1	7.8%
2	Section B	B1	Inside concrete support on blowdown line		Defect 8	33.3%
3	Section C	C1	Multiple coating defects		Defect 2	13.9%
4	Valve V07 (Section D)	D1	Multiple defects on valve		Defect 3	6.7%
5	Section D	D2	40	2	N/A	N/A
6	Section E	E1	7	7	N/A	N/A
7	Section E	E2	55	45	N/A	N/A
8	Section E	E3	15	5	N/A	N/A
9	Section E	E4	45	20	N/A	N/A
10	Section E	E5	18	7	N/A	N/A
11	Section E	E6	8	3	N/A	N/A
12	Valve V08 (Section E)	E7	Multiple defects on valve		Defect 4	15.6%
13	Section E	E8	Excavation damage		N/A	N/A
14	Section G	G1	15	7	N/A	N/A
15	Section G	G2	Blistering of paint near support block over tee into blowdown stack		N/A	N/A
16	V49 (Section G)	G3	Blistering of paint along stem, minor defects under stem, flange and bottom of valve body.		Defect 7	12%
17	MLV (Section H)	H1	78	12	Defect 6	24.4%
18	12" riser (Section H_)	H2	Blistering of paint		Defect 5	33.3%
19	Section I	I1	65	8	N/A	N/A
20	Section I	I2	25	2	N/A	N/A
21	Section I	I3	2	2	N/A	N/A

3.3 Metal loss

There was no metal loss found at any of the coating defects.

A defect was found on the DN300 line leading to the pig receiver inlet in Section C (see Appendix 1); and a gouge was found on the DN300 line in Section I (see Appendix 1). The metal loss section of the coating damage assessment form was filled out for each defect (Appendix 3). There was no coating damage and no corrosion product found at either site of metal loss, it is therefore believed they were either mill or construction defects.

4 Discussion and Recommendations

The DCVG results were able to pick up some of the worst affected areas of the coating where there are a large number of defects, however it does not appear to detect all major defects. Overall the condition of the coating was much worse than the DCVG survey suggested and the degradation much more wide spread.



There was no metal loss found at any of the coating defects suggesting that shielding has not been an issue and that the cathodic protection system is working adequately.

5 Conclusion

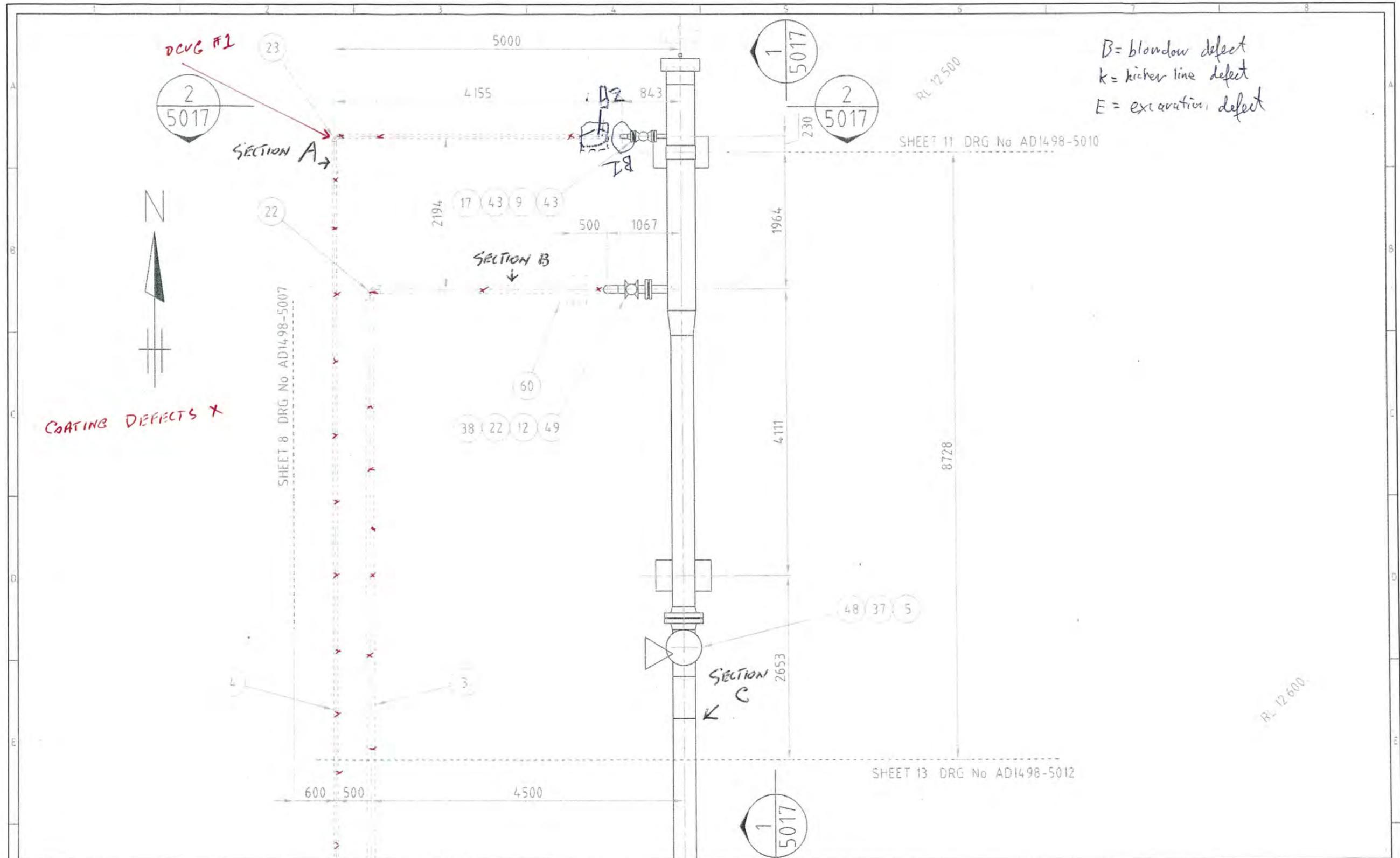
DCVG has been able to locate 8 significant defects generally consisting of large clusters of coating defects. However there are a large number of sever coating defects (13) that have not been detected by the DCVG survey.

The DCVG survey appears to be unable to determine the extent of the coating damage on the station pipework. The DCVG survey showed only 8 significant defects, however there were 21 recorded sever defects. The DCVG survey also does not show the overall condition of the pipework coating which was considered poor due to the large amount of blistering found. The DCVG survey does not appear to be a reliable method of determining station pipework coating condition, however this will be reassessed after more station coating inspections have been performed.

The only metal loss found at DCG is suspected to be either mill or construction defects. It is therefore concluded that the station cathodic protection is working and there are no shielding issues at the station.

Appendix 1 Station Layout

14



					INTS.	SIGNATURE	DATE	<p>N.T. GAS Pty. Limited ACN 050 221 415</p> <p>16 Georgina Crescent PALMERSTON NT PO Box 7 PALMERSTON NT 0831 Telephone (08) 8935 1611 Facsimile (08) 8932 1663</p>	<p>TITLE AMADEUS BASIN TO DARWIN PIPELINE DARWIN CITY GATE STATION PIPING ARRANGEMENT SHEET 12</p>					
					DRAWN	KAS	9 4 99				DRG SIZE	SCALE	DRAWING NUMBER	REV
					DESIGN CHECKED						A3	150	AD1498-5011	0
					DRAWING CHECKED									
0	NEW DWG REF AD1495-5011 REV 2	BP	ML	14/9/09	AD1498-5017	DCG STATION - SECTIONS SHEET 1								
REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS								

SHEET 12 DRG. No AD1498-5011

RL 12 600

RL 12 500

750 COVER

300 NB

50 NB

100 NB

COATING DEFECT ALL ALONG 2" + 4" PIPES

DCVG DEFECT #2 SECTION C

COATING DEFECTS

SHEET 7 DRG No AD1498-5006

104.16



DCVG DEFECT #3

300 NB

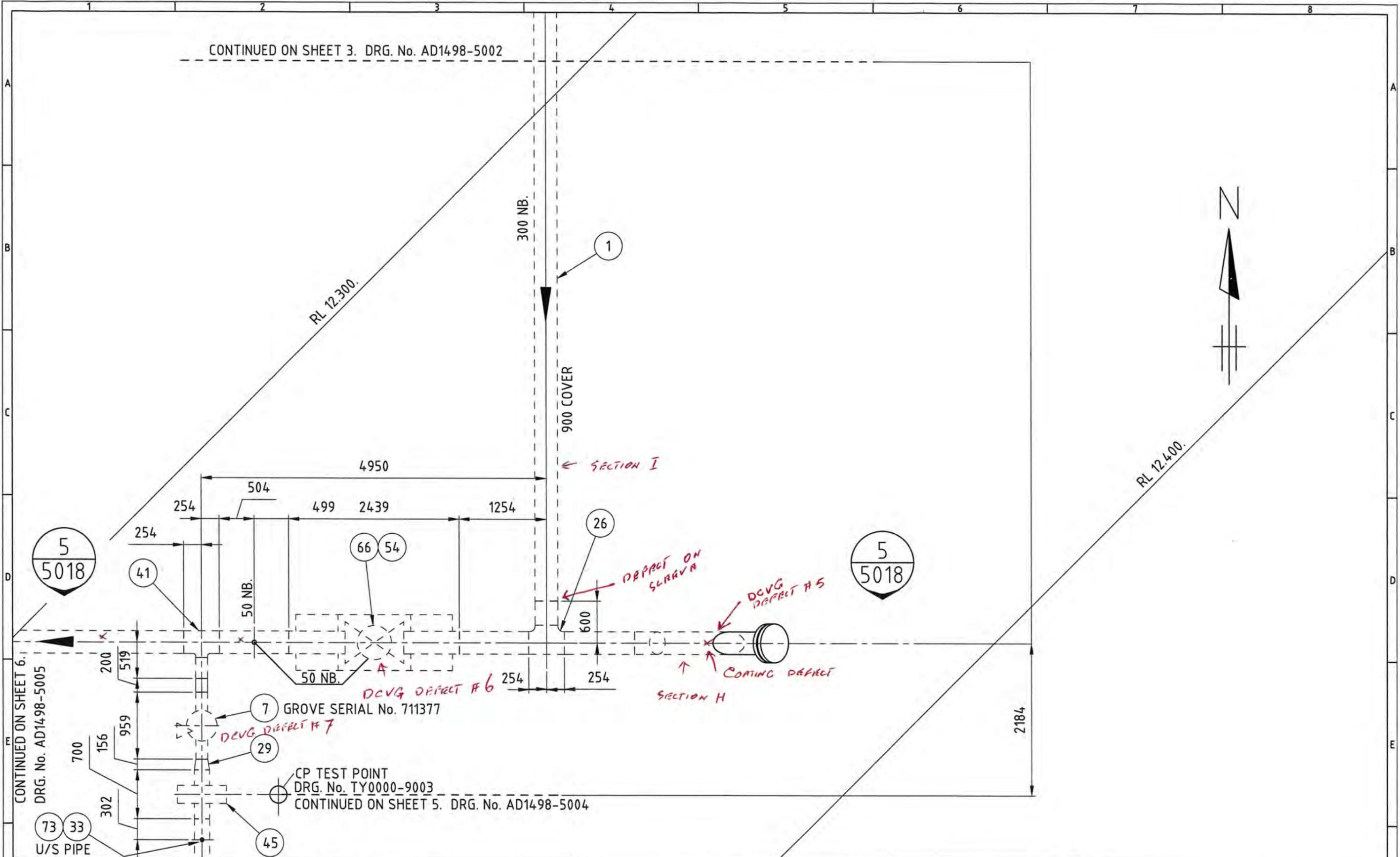
200 NB

SHEET 14 DRG No AD1498-5013

DCVG DEFECT #4

				INTS	SIGNATURE	DATE	 N.T. GAS Pty Limited ACN 050 221 415 16 Georgina Crescent PALMERSTON NT PO Box 7 PALMERSTON NT 0831 Telephone 1081 8935 1011 Facsimile 1081 8932 1605	TITLE AMADEUS BASIN TO DARWIN PIPELINE DARWIN CITY GATE STATION PIPING ARRANGEMENT SHEET 13			
				DRAWN	KAS	9 4 99		DRG SIZE	SCALE	DRAWING NUMBER	REV
				DESIGN CHECKED				A3	150	AD1498-5012	0
				DRAWING CHECKED							
				APPROVED							
0	NEW DWG NO REF AD1495-5012 REV 2	BR	HL	14/9/99	AD14-98-5017	DCG STATION - SECTIONS SHEET 1					
REV	REVISION DESCRIPTION	DRAWN	CHECKED	APPRO	DATE	REFERENCE DRAWINGS					

CONTINUED ON SHEET 3. DRG. No. AD1498-5002



CONTINUED ON SHEET 6.
DRG. No. AD1498-5005

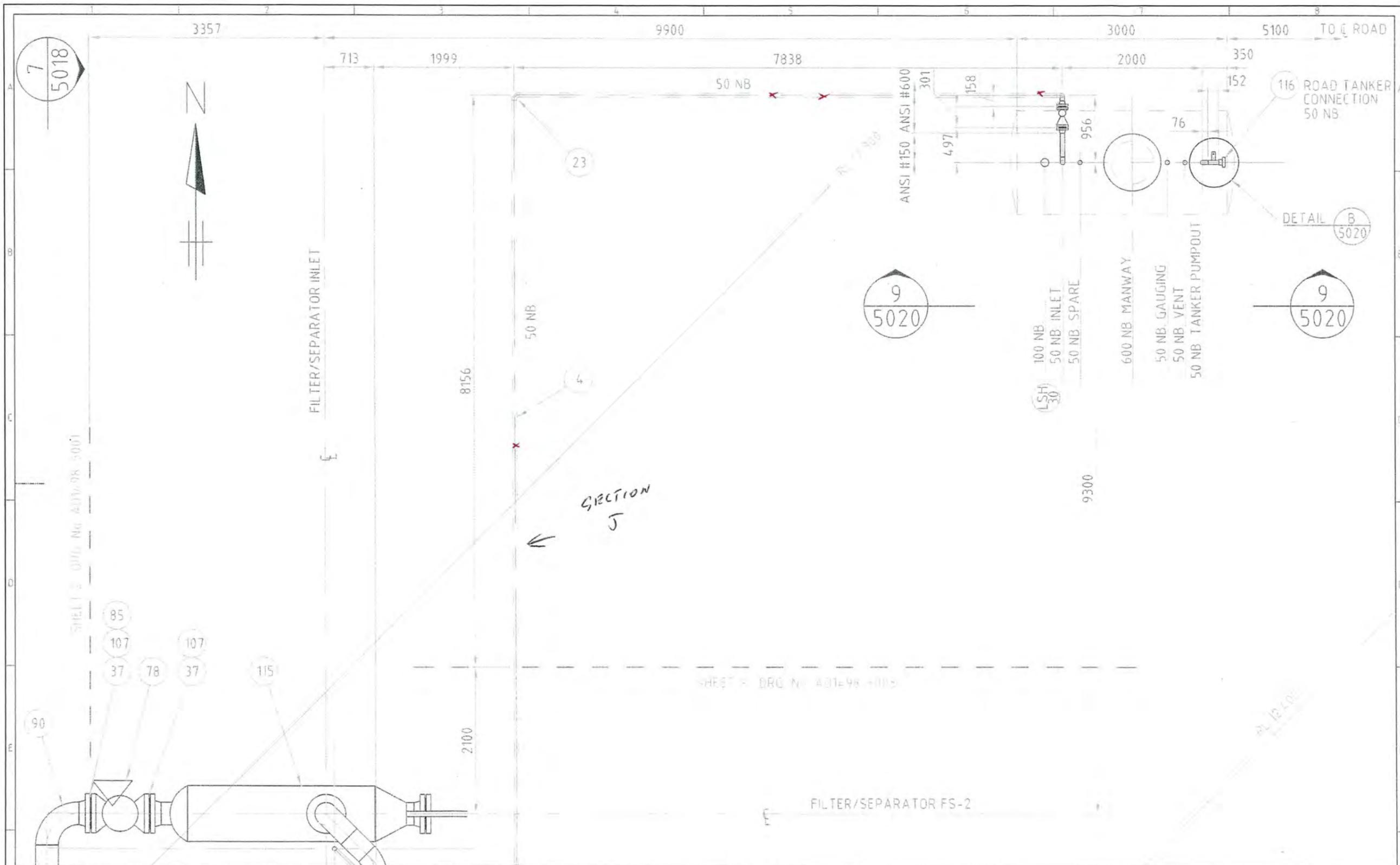
CONTINUED ON SHEET 5. DRG. No. AD1498-5004

REV.	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS	APPROVED	INITS.	SIGNATURE	DATE
0	NEW DWG NO. REF AD1495-5003 REV 2	BP	HL		6/7/09	TY0000-9003 CP TEST POINT INSULATING JOINT TYPE #21 AD1498-5018 DARWIN CITY GATE STATION SECTIONS SHEET 2		KAS	<i>[Signature]</i>	15.4.99

N.T. GAS
Pty. Limited
ACN 050 221 415

16 Georgina Crescent PALMERSTON NT
PO Box 7 PALMERSTON NT 0831
Telephone: (08) 8935 1611
Facsimile: (08) 8932 1663

TITLE AMADEUS BASIN TO DARWIN PIPELINE DARWIN CITY GATE STATION PIPING ARRANGEMENT SHEET 4			
DRG. SIZE A3	SCALE 1:50	DRAWING NUMBER AD1498-5003	REV. 0

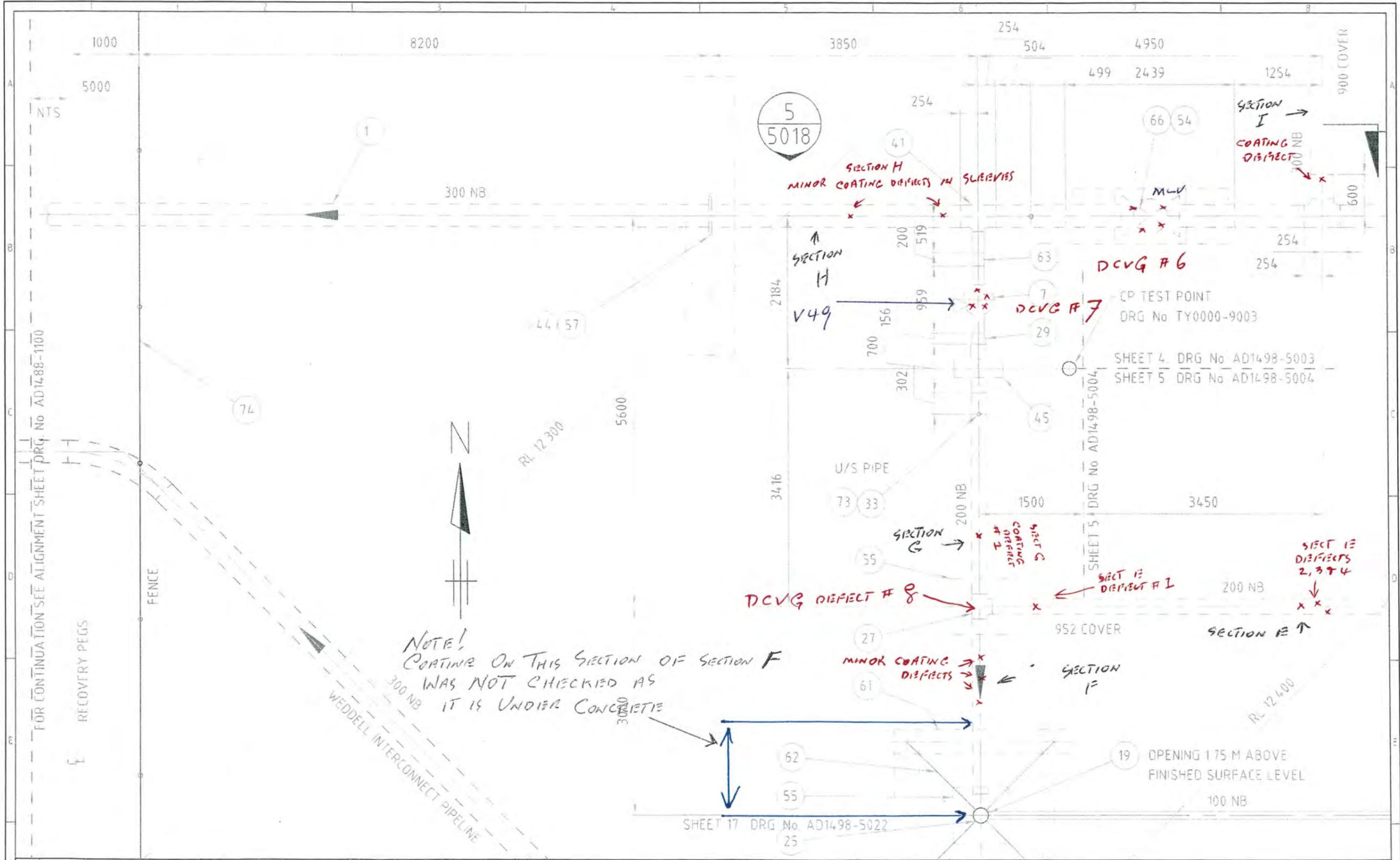


REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS	APPROVED	INITIALS	SIGNATURE	DATE
0	NEW DWG REF AD1495-5009 REV 2	BP	ML		14/1/09	AD1498-5020 AD1498-5018			KAS	25/3/99
						DCG STATION - SECTIONS SHEET 4 DCG STATION - SECTIONS SHEET 2				



16 Georgina Crescent PALMERSTON NT
 PO Box 7 PALMERSTON NT 0831
 Telephone (08) 8935 1611
 Facsimile (08) 8932 1663

TITLE AMADEUS BASIN TO DARWIN PIPELINE DARWIN CITY GATE STATION PIPING ARRANGEMENT SHEET 10.			
DRG SIZE A3	SCALE 150	DRAWING NUMBER AD1498-5009	REV 0



FOR CONTINUATION SEE ALIGNMENT SHEET DRG. No AD1488-1100

NOTE!
COATING ON THIS SECTION OF SECTION F
WAS NOT CHECKED AS
IT IS UNDER CONCRETE

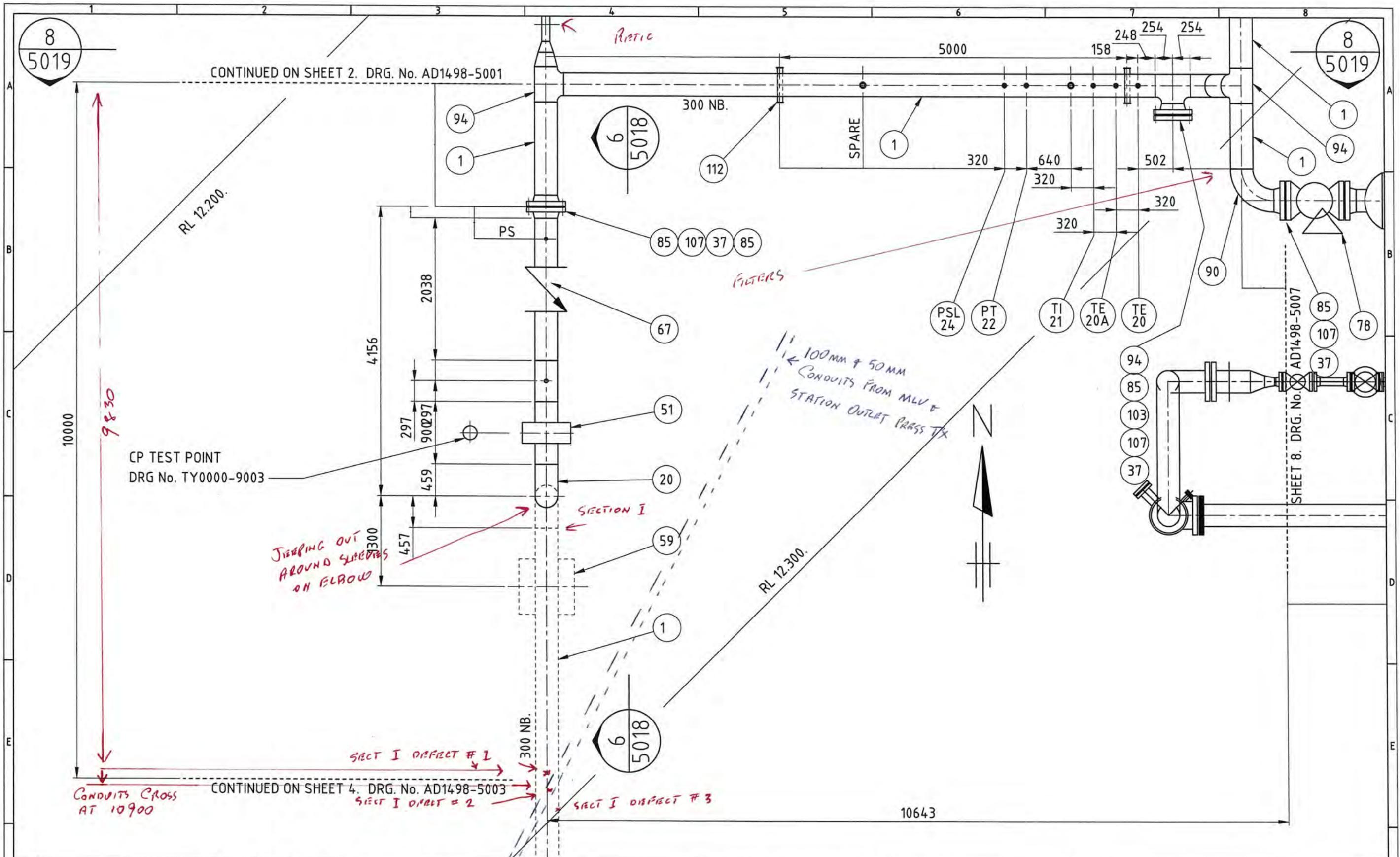
REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS
0	NEW DWG REF AD1495-5005 REV 2 AND WP0000-6007 REV 5	BP	ML		6/7/09	AD1488-1100 AD1498-5018
						TY0000-9003 CP TEST POINT INSULATING JOINT TYPE #21 AS BUILT ALIGNMENT SHEET DARWIN CITY GATE STATION SECTIONS SHEET 2

DRAWN	KAS	SIGNATURE	<i>[Signature]</i>	DATE	30 3 09
DESIGN CHECKED					
DRAWING CHECKED					
APPROVED					

N.T. GAS
Pty Limited
ACN 050 221 415

16 Georgina Crescent PALMERSTON NT
PO Box 1 PALMERSTON NT 0831
Telephone (08) 8935 1511
Facsimile (08) 8932 4661

TITLE AMADEUS BASIN TO DARWIN PIPELINE DARWIN CITY GATE STATION PIPING ARRANGEMENT SHEET 6			
DRG SIZE	SCALE	DRAWING NUMBER	REV
A3	150	AD1498-5005	0



REV.	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS	INTS.	SIGNATURE	DATE
0	NEW DWG NO. REF AD1495-5002 REV 3	BP	ML		6/7/09	TY0000-9003 CP TEST POINT INSULATING JOINT TYPE #21 AD1498-5019 DARWIN CITY GATE STATION SECTIONS SHEET 3 AD1498-5018 DARWIN CITY GATE STATION SECTIONS SHEET 2	DRAWN	KAS	15.4.99
							DESIGN CHECKED		
							DRAWING CHECKED		
							APPROVED		

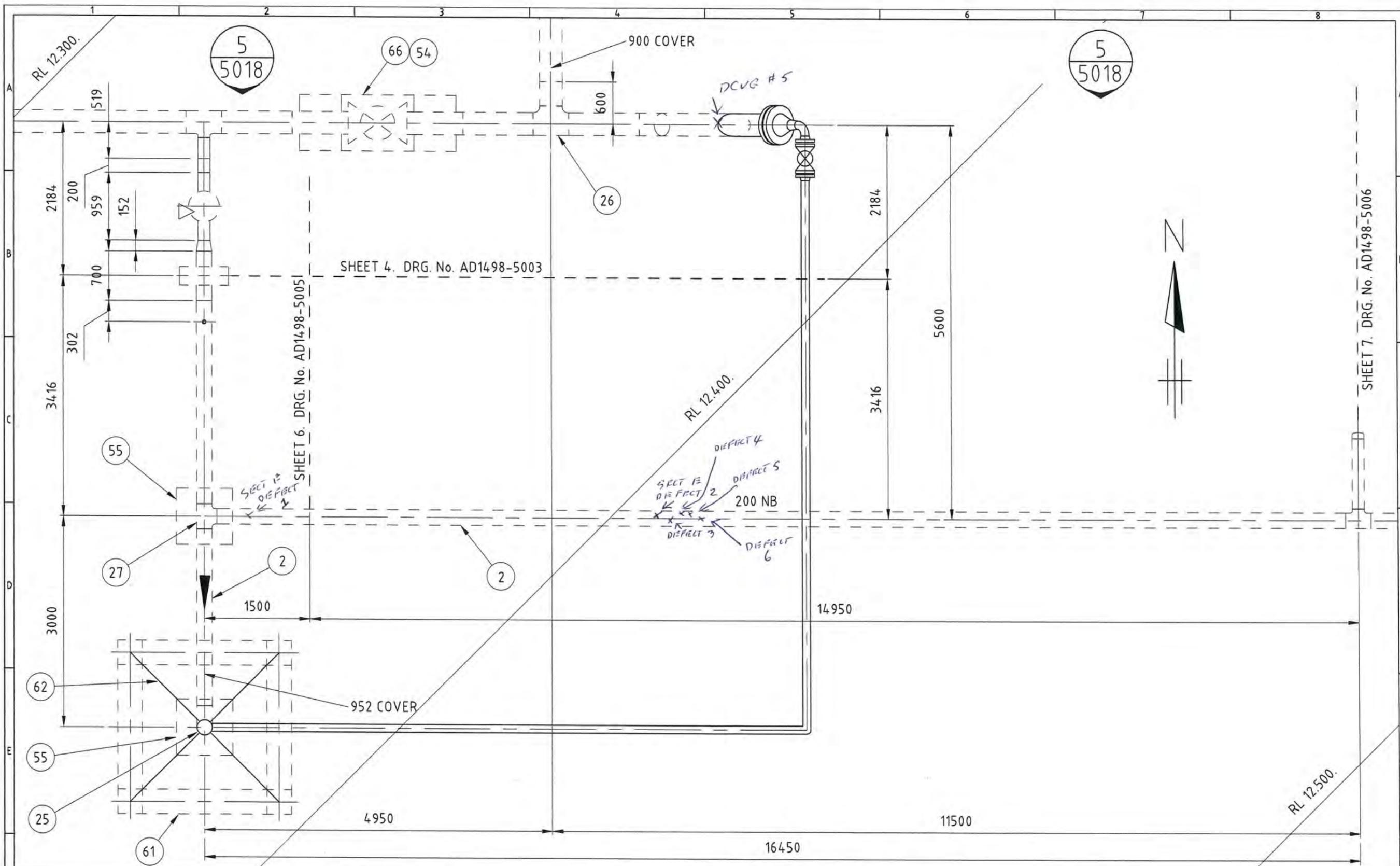


N.T. GAS
Pty. Limited
ACN 050 221 415

16 Georgina Crescent PALMERSTON NT
PO Box 7 PALMERSTON NT 0831
Telephone: (08) 8935 1611
Facsimile: (08) 8932 1663

TITLE
AMADEUS BASIN TO DARWIN PIPELINE
DARWIN CITY GATE STATION
PIPING ARRANGEMENT SHEET 3

DRG. SIZE	SCALE	DRAWING NUMBER	REV.
A3	1:50	AD1498-5002	0



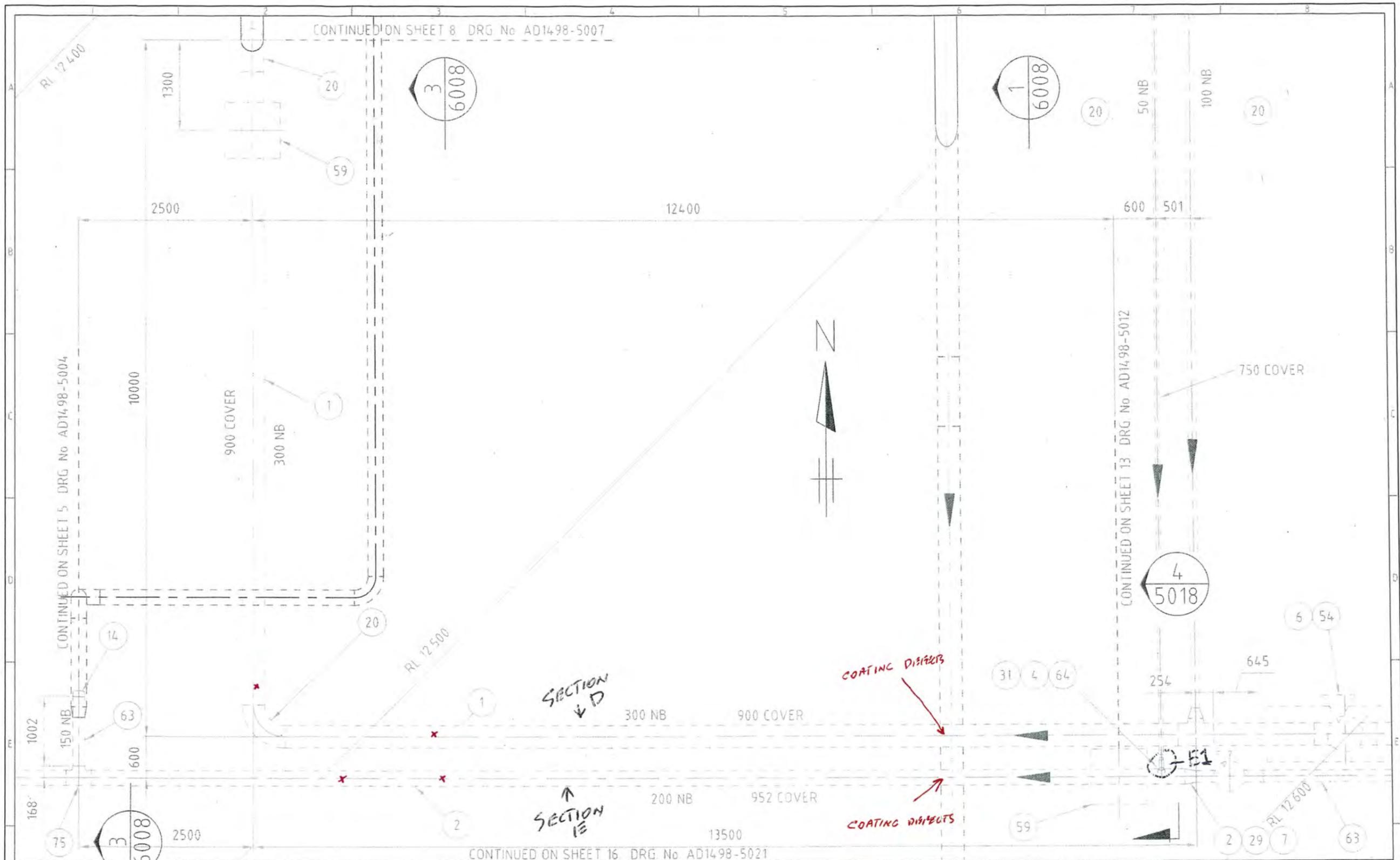
					INIT.	SIGNATURE	DATE			
					DRAWN	KAS	26.3.99			
					DESIGN CHECKED					
					DRAWING CHECKED					
					APPROVED					
0	NEW DWG NO. REF AD1495-5004 REV 2	BP	ML	6/7/09						
	ABOVE GROUND PIPEWORK ADDED				AD1498-5018	DARWIN CITY GATE STATION SECTIONS SHEET 2				
REV.	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS				
1										
2										
3										
4										
5										
6										
7										
8										

N.T. GAS
 Pty. Limited
 ACN 050 221 415

16 Georgina Crescent PALMERSTON NT
 PO Box 7 PALMERSTON NT 0831
 Telephone: (08) 8935 1611
 Facsimile: (08) 8932 1663

TITLE
**AMADEUS BASIN TO DARWIN PIPELINE
 DARWIN CITY GATE STATION
 PIPING ARRANGEMENT SHEET 5**

DRG. SIZE	SCALE	DRAWING NUMBER	REV.
A3	1:50	AD1498-5004	0



REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS	APPROVED	INTS	SIGNATURE	DATE	 N.T. GAS Pty Limited ACN 050 221 415 16 Georgina Crescent PALMERSTON NT PO Box 7 PALMERSTON NT 0831 Telephone (08) 8935 1611 Facsimile (08) 8937 1663			TITLE	DRG SIZE	SCALE	DRAWING NUMBER	REV	
0	NEW DRAWING NO REF AD1495-5006 REV 2 AND WP0000-6004 REV 8	BP	ML		22/9/09	WP0000-6010 WEDDELL PIPELINE DCG STATION 200 VENT LINE PIPE SPOOL WP0000-6009 WEDDELL PIPELINE DCG STATION PIPE SPOOLS WP0000-6008 WEDDELL PIPELINE DCG STATION SECTIONS AD1498-5018 DARWIN CITY GATE STATION SECTIONS SHEET 2			KAS	29 3 99				A3	150		AD1498-5006	0	

Appendix 2 Coating Damage Assessment Forms

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 19/7/2012
 Section: A Digup Reason: COATING INSPECTION
 150mm B/POWEN LINE ELBOW
 Kilometre Point: DCVG # 1 DCVG Measurement: 7.8
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: INSIDE COMPOUND
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0034, 0049, 0048</u>
Pipe with coating removed	<u>0440, 0441, 0444</u>
Pipe cleaned	<u>0440, 0441, 0444</u>
Pipe repaired	<u>0609</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.90 Soil pH: 5-6
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? BUSTLING/CRACKS
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

ENTIRE ELBOW COVERED WITH CRACKED PAINT

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

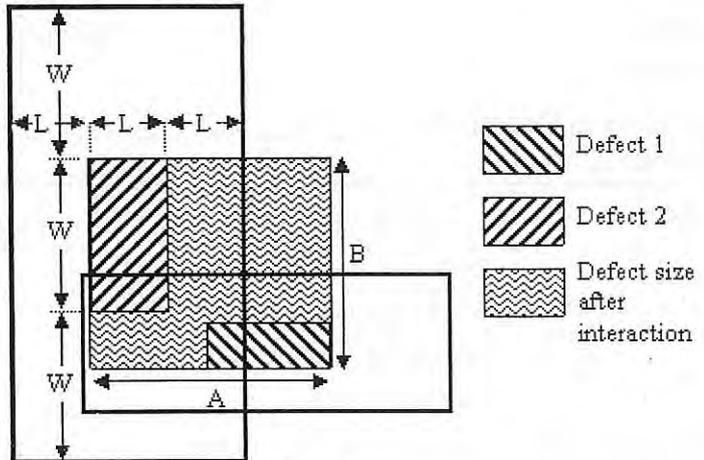


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

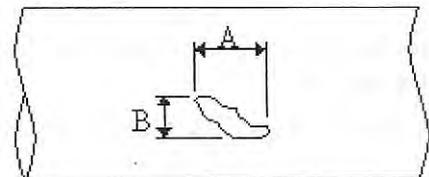


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING DEFECT WAS PAINTED DURING RECOAT OF 50MM BLOW DOWN LINE.

Dig Up Comments:

Operator: *Malcolm Fry*

Signature: *[Handwritten Signature]*

Date: *14/8/2012*

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 27/7/2012
 Section: B/DOWN LINE TIE Digup Reason: COATING INSPECTION
 Kilometre Point: (DCVG # 8) DCVG Measurement: 33.3
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124 343
 Northing: _____

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0158, 0159, 0176, 0177</u>
Pipe with coating removed	
Pipe cleaned	<u>0389, 0388, 0391</u>
Pipe repaired	<u>0615, 0614, 0613</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5-6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Is there a coating defect (Y/N)? _____

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Any white buildup from cathodic protection (Y/N)? _____

Any evidence of termite damage (Y/N)? _____

Any moisture inside the coating (Y/N)? _____

Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A

Has the coating lifted away from the pipe (Y/N)? _____

If yes, how far around the pipe has it lifted (mm)? _____

Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

DCVG DEFECT IS INSIDE CONCRETE SUPPORT BLOCK. AROUND BLOW DOWN LINE TIE

AFTER BLASTING ALL PIPE WORK FENCING BLOCK THERE WERE NO SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

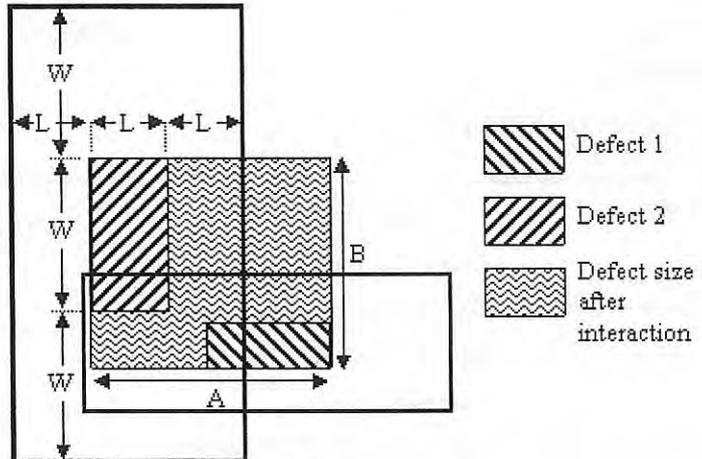


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

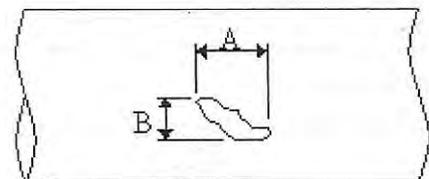


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING DEFECT WAS RECOATED DURING RECOAT OF SECTIONS E, F & G

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 1/9/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DARWIN CITY GATE Excavation Date: 21/7/2012
 Section: PIG RECEIVER INLET Digup Reason: COATING DEFECT
 Kilometre Point: SECT C DCVG #2 DCVG Measurement: 13.9
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0257, 0258, 0259</u>
Pipe with coating removed	<u>0269, 0270, 0271, 0272</u>
Pipe cleaned	<u>0269, 0270, 0271, 0272</u>
Pipe repaired	<u>0648</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.5 Soil pH: 5.5-6
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

MULTIPLE COATING DEFECTS. JUST BELOW GROUND LEVEL

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

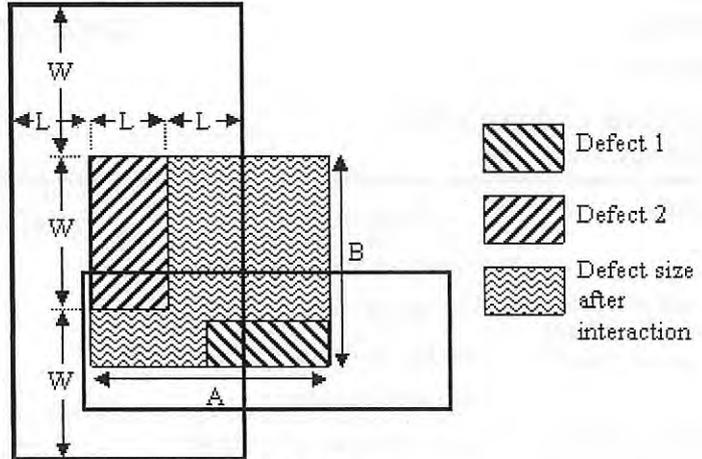


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

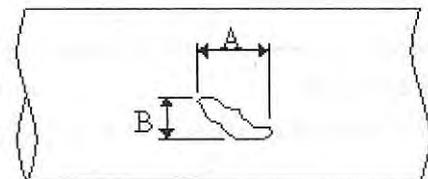


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING DEFECT WAS PAINTED DURING RECOAT OF SECTION C

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 5/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DARWIN CITY GATE Excavation Date: 21/7/2012
 Section: VALVE V07 Digup Reason: COATING INSPECTION
 Kilometre Point: DCVG # 3 DCVG Measurement: 6.7
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: COMPOUND
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0094, 0092, 0071</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	<u>0649, 0607</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5.5
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? _____
 Any white buildup from cathodic protection (Y/N)? _____
 Any evidence of termite damage (Y/N)? _____
 Any moisture inside the coating (Y/N)? _____
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? _____
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

COATING DEFECTS ARE PRESENT IN SEVERAL PLACES ON V07

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

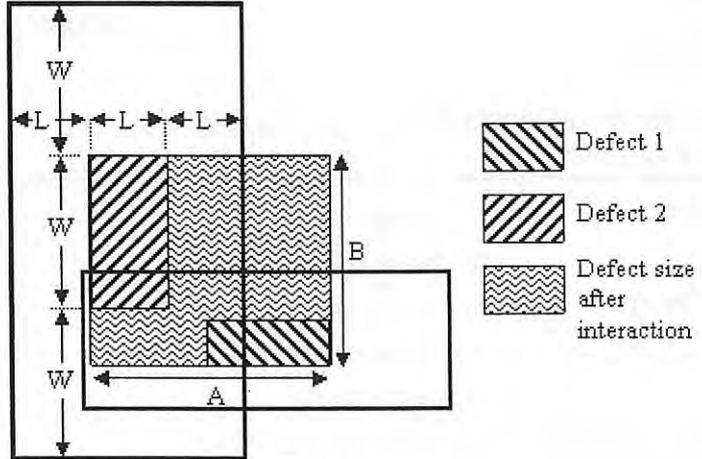


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

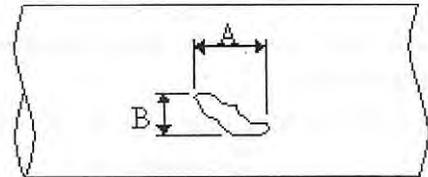


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS VALVE WAS PAINTED DURING THE RECOAT OF STATION INLET PIPING, SECTION D

Dig Up Comments:

Operator: W. DUFFY

Signature: [Signature]

Date: 9/3/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 26/7/2012
 Section: D, 300MM INLET Digup Reason: COATING INSPECTION
 Kilometre Point: _____ DCVG Measurement: N/A
 Zone: _____ Defect Length from survey (m): N/A
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____

Surrounding Description: _____

(Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0331, 0332</u>
Pipe with coating removed	<u>0353</u>
Pipe cleaned	<u>0353</u>
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input checked="" type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5.6-6.0

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): _____ Pin Spacing 1.5m

Coating

Coating Description: Yellow Jacket Sleeve Wrapping FBE Paint

Is there a coating defect (Y/N)?

Any white buildup from cathodic protection (Y/N)? N

Any evidence of termite damage (Y/N)? N

Any moisture inside the coating (Y/N)? N

Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report

Has the coating lifted away from the pipe (Y/N)? N

If yes, how far around the pipe has it lifted (mm)? _____

Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): 40 Coating Defect Width (mm): 2

Coating Defect Comments:

POSSIBLE SHOVEL IMPACT TO COATING WHEN WIEDRIEL PIPE LINE WAS LAYED

KP:

Work Order No:

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

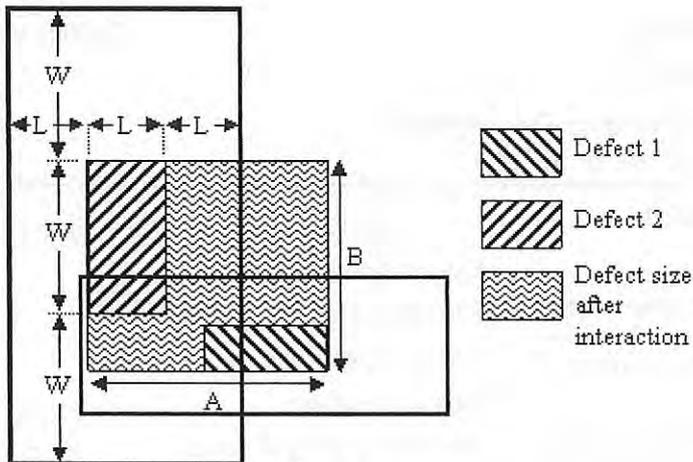


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

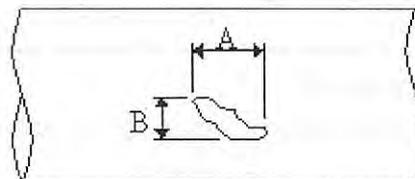


Figure 2

Repair

Length of Pipe Wrapped (mm): 4000

Other Repair Information:

THIS COATING REPAIR WAS PART OF A LARGER AREA OF PIPELINE THAT WAS BLASTED & PAINTED

Dig Up Comments:

Operator: H.T

Signature:

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCC
 Section: E DEFECT 1
 Kilometre Point: _____
 Zone: _____
 Easting: _____
 Northing: _____

Excavation Date: 28/7/2012
 Digup Reason: COATING INSPECTION
 DCVG Measurement: NIL
 Defect Length from survey (m): _____
 CMMS Work Order No: 124 343

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	0185
Pipe with coating removed	
Pipe cleaned	0390
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 950 mm Soil pH: 5.6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m.

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 7 Coating Defect Width (mm): 7

Coating Defect Comments:

MINOR COATING DEFECTS

AFTER BLASTING THERE WERE NO SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

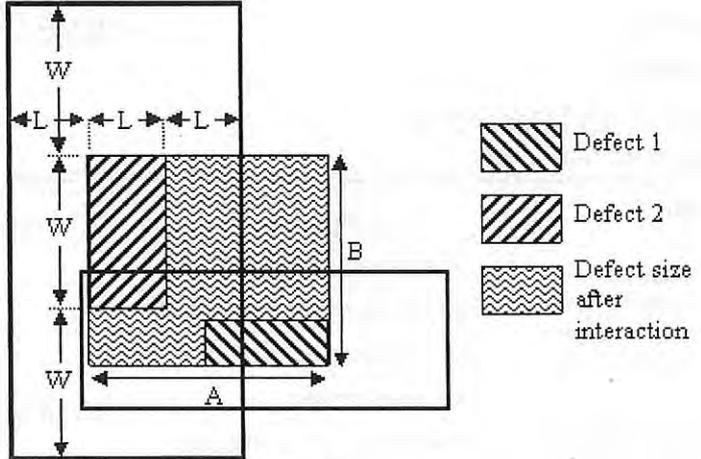


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

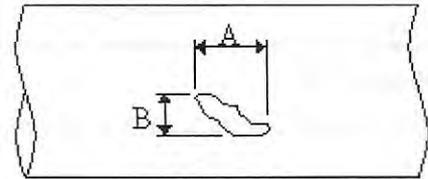


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE COATING REPAIR ON THE 200MM BLOW DOWN LINE, WHICH WAS COMPLETELY BLASTED & PAINTED

Dig Up Comments:

Operator: W.D

Signature: 

Date: 25/08 2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCC Excavation Date: 28/7/2012
 Section: E, DEFECT 2 Digup Reason: COATING INSPECTION
 Kilometre Point: _____ DCVG Measurement: N/A
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124 343
 Northing: _____
 Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0188,</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 1.0 Soil pH: 6
 Pipe To Soil Potential (V): _____ Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description: Yellow Jacket Sleeve Wrapping FBE Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? Y
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 55 Coating Defect Width (mm): 45

Coating Defect Comments:
LARGE ROCK FOUND AGAINST PIPE DURING EXCAVATION

AFTER BLASTING THERE WERE NO SIGNS OF METAL LOSS OR CORROSION

KP:

Work Order No:

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

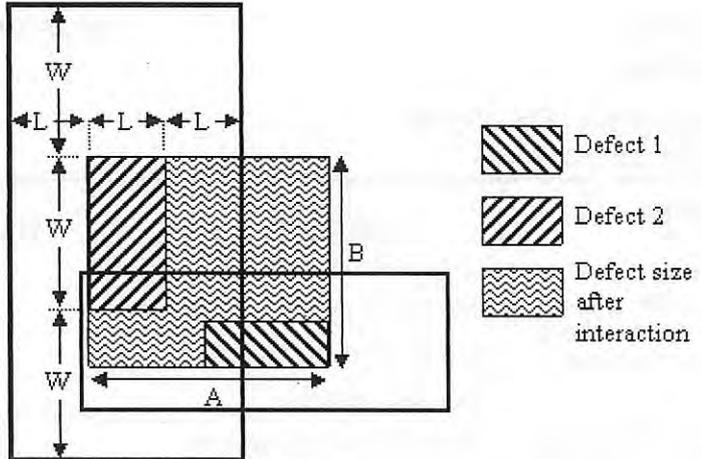


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

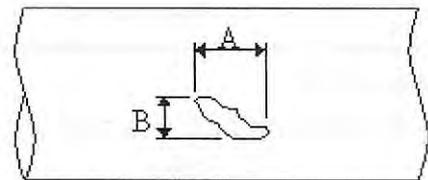


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE COATING REPAIR ON THE 200MM BLOW DOWN LINE, WHICH WAS COMPLETELY BLASTED & PAINTED

Dig Up Comments:

Operator: J. DUFFY

Signature: *[Handwritten Signature]*

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 28/7/2012
 Section: E, DEFECT # 3 Digup Reason: COATING INSPECTION
 Kilometre Point: _____ DCVG Measurement: NIL
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124 343
 Northing: _____

Surrounding Description: _____

(Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0190</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 1.0

Soil pH: 6

Pipe To Soil Potential (V): _____

Soil Resistivity (Ohms): 300,000

Pin Spacing 1.5m

Coating

Coating Description: Yellow Jacket Sleeve Wrapping FBE Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 15

Coating Defect Width (mm): 5

Coating Defect Comments:

LARGE ROCK FOUND AGAINST PIPE DURING EXCAVATION

AFTER BLASTING THERE WAS NO SIGNS OF METAL LOSS OR CORROSION

KP:

Work Order No:

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

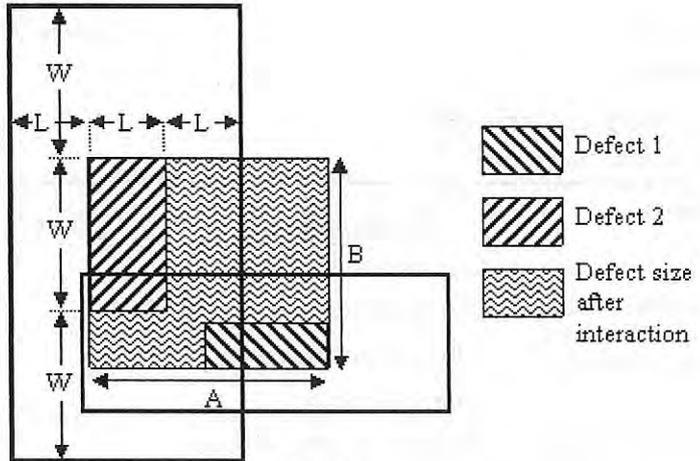


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

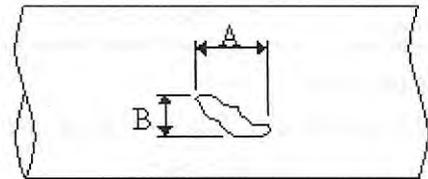


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE REPAIR ON THE 200MM BLOW DOWN LINE

Dig Up Comments:

Operator: W. DUFFY

Signature: [Signature]

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCC Excavation Date: 28/7/2012
 Section: E, DEFECT #4 Digup Reason: COATING INSPECTION
 Kilometre Point: _____ DCVG Measurement: NIL
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0191</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input checked="" type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 1.0 Soil pH: 6
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description: Yellow Jacket Sleeve Wrapping FBE Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? H
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): 45 Coating Defect Width (mm): 20

Coating Defect Comments:

LARGE ROCK FOUND AGAINST PIPE DURING EXCAVATION

AFTER BLASTING THERE WERE NO SIGNS OF METAL LOSS OR CORROSION

KP:

Work Order No:

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

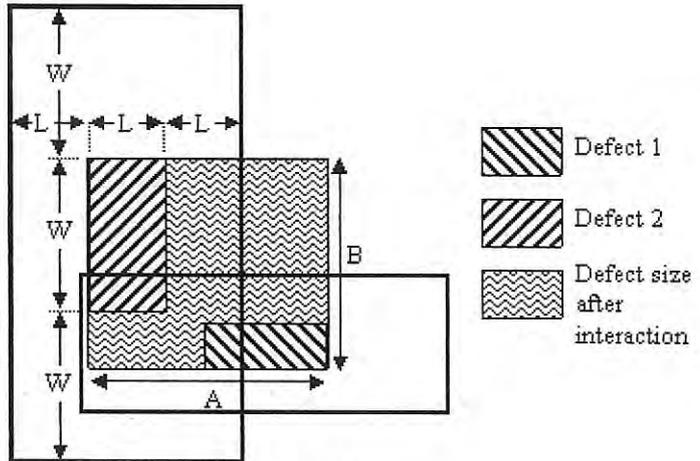


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

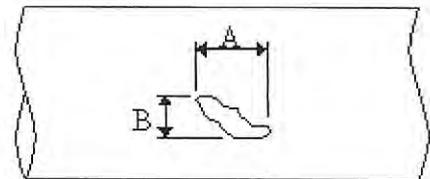


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE COATING REPAIR ON THE 200 MM STOP TANK BLOW DOWN LINE.

Dig Up Comments:

Operator: John DUFFY

Signature:

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 28/7/2012
 Section: E DEFECT #5 Digup Reason: COATING INSPECTION
 Kilometre Point: 1 DCVG Measurement: NIL
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124 343
 Northing: _____

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0192</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input checked="" type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 1.0 Soil pH: 6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

<input type="checkbox"/> Yellow Jacket	Is there a coating defect (Y/N)?	<u>Y</u>
<input type="checkbox"/> Sleeve	Any white buildup from cathodic protection (Y/N)?	<u>N</u>
<input type="checkbox"/> Wrapping	Any evidence of termite damage (Y/N)?	<u>N</u>
<input type="checkbox"/> FBE	Any moisture inside the coating (Y/N)?	<u>N</u>
<input checked="" type="checkbox"/> Paint	Any stress corrosion cracking (Y/N)? <small>If yes, complete APA pipeline damage report</small>	<u>N/A</u>
	Has the coating lifted away from the pipe (Y/N)?	<u>N</u>
	If yes, how far around the pipe has it lifted (mm)?	_____
	Sketch of coating / corrosion damage completed (Y/N)?	_____

Coating Defect Length (mm): 18 Coating Defect Width (mm): 7

Coating Defect Comments:

AFTER BLASTING THERE WERE NO SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

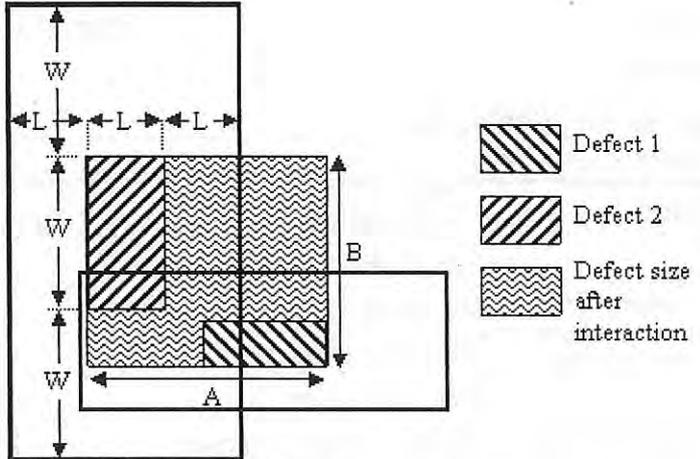


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

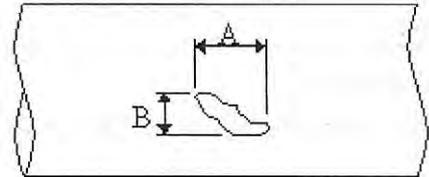


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE COATING REPAIR ON THE 200MM BLOW DOWN LINE.

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCC Excavation Date: 28/7/2012
 Section: E. DEFECT #6 Digup Reason: COATING INSPECTION
 Kilometre Point: _____ DCVG Measurement: N/A
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0346</u>
Pipe with coating removed	<u>0384</u>
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): ~~0~~ Soil pH: 5-6

Pipe To Soil Potential (V): _____ Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
 Sleeve
 Wrapping
 FBE
 Paint

Is there a coating defect (Y/N)? Y

Any white buildup from cathodic protection (Y/N)? N

Any evidence of termite damage (Y/N)? N

Any moisture inside the coating (Y/N)? N

Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report

Has the coating lifted away from the pipe (Y/N)? N

If yes, how far around the pipe has it lifted (mm)? _____

Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): 8 mm Coating Defect Width (mm): 3 mm

Coating Defect Comments:

PAINT BLISTERS, 7.180m D/S OF TIE BLOCK ON 200mm BLOW DOWN LINE

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

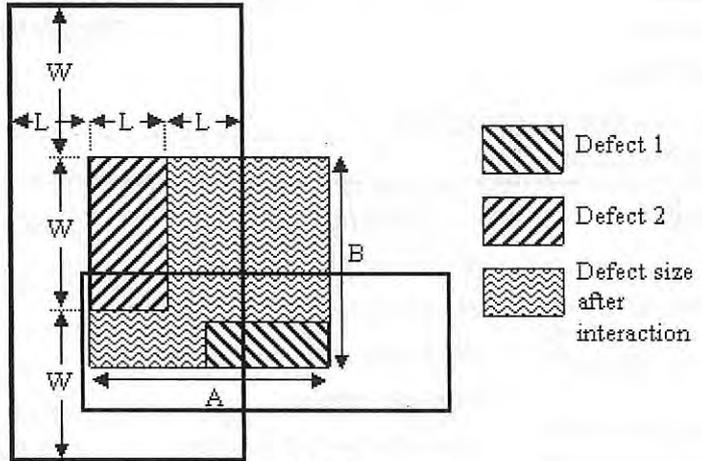


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

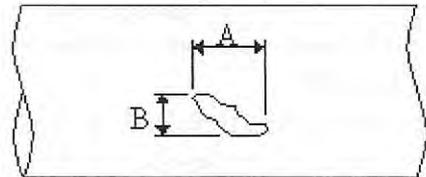


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE COATING REPAIR ON THE 200 MM BLOW DOWN LINE.

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DARWIN CITY GATE Excavation Date: 21/7/2012
 Section: VALVE V08 Digup Reason: COATING INSPECTION
 Kilometre Point: DCVG # 4 DCVG Measurement: 15.6
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0248, 0249, 0252, 0253, 0071, 0096, 0097</u>
Pipe with coating removed	<u>0283</u>
Pipe cleaned	<u>0283</u>
Pipe repaired	<u>0649, 0509, 0607</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5.5
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? Y
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

MULTIPLE COATING DEFECTS ON VALVE

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

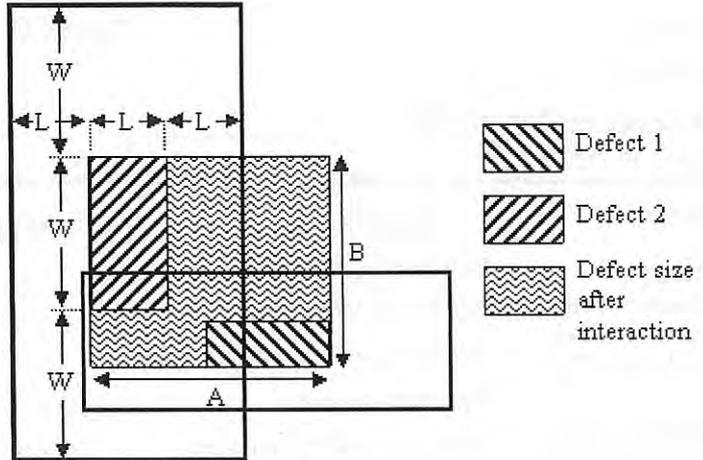


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

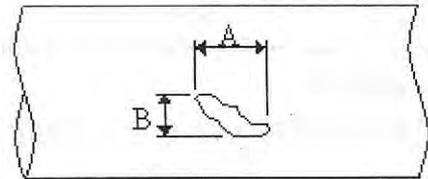


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS VALVE WAS BLASTED & PAINTED DURING RECOAT OF 200 MM BLOW DOWN LINE

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 8/8/2013

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 26/7/2012
 Section: E 200mm B/DOWN Digup Reason: INSPECT COATING
 Kilometre Point: _____ DCVG Measurement: N/A
 Zone: _____ Defect Length from survey (m): N/A
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: COMPOUND
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0207, 0210</u>
Pipe with coating removed	<u>0355, 0354, 0359</u>
Pipe cleaned	<u>0355, 0354, 0359</u>
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 950mm Soil pH: 5.6-6.0

Pipe To Soil Potential (V): -1.068 Soil Resistivity (Ohms): _____ Pin Spacing 1.5m

Coating

Is there a coating defect (Y/N)? Y
 Coating Description: Any white buildup from cathodic protection (Y/N)? N
 Yellow Jacket Any evidence of termite damage (Y/N)? N
 Sleeve Any moisture inside the coating (Y/N)? N
 Wrapping Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 FBE Has the coating lifted away from the pipe (Y/N)? N
 Paint If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

COATING DAMAGED BY EXCAVATION OF WOODS PIPE LINE
VARIOUS SCRATCHES AND BUMPS TO THE COATING, PROBABLY BY SHOVELS.

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

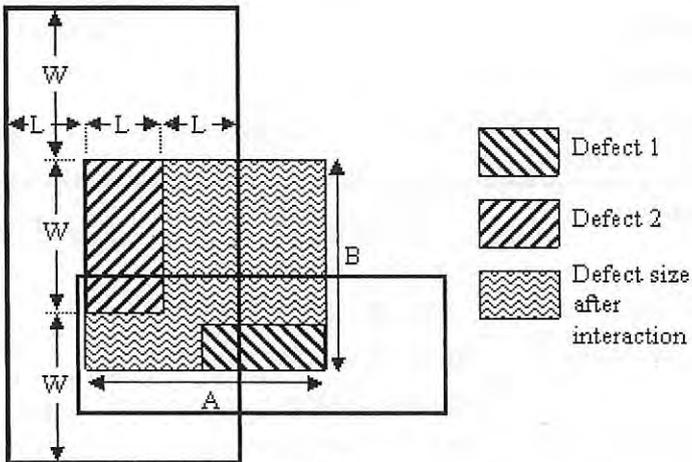


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

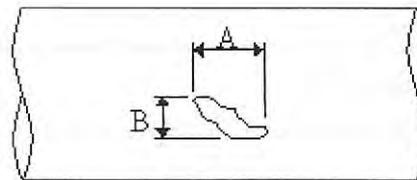


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING DEFECT REPAIR WAS PART OF THE COATING REPAIR ON THE 200MM BLOW DOWN LINE, WHICH WAS COMPLETELY BLASTED & PAINTED

Dig Up Comments:

Operator: W.D

Signature: 

Date: 25/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG
 Section: G, DEFECT I
 Kilometre Point: _____
 Zone: _____
 Easting: _____
 Northing: _____

Excavation Date: 28/7/2012
 Digup Reason: COATING INSPECTION
 DCVG Measurement: NIL
 Defect Length from survey (m): _____
 CMMS Work Order No: 124343

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0183, 0184, 0161</u>
Pipe with coating removed	<u>0392</u>
Pipe cleaned	<u>0392</u>
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5.5-6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? Y
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 15 Coating Defect Width (mm): 7

Coating Defect Comments:

SOME CORROSION VISIBLE IN COATING DAMAGE.

AFTER BLASTING THERE WERE NO SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

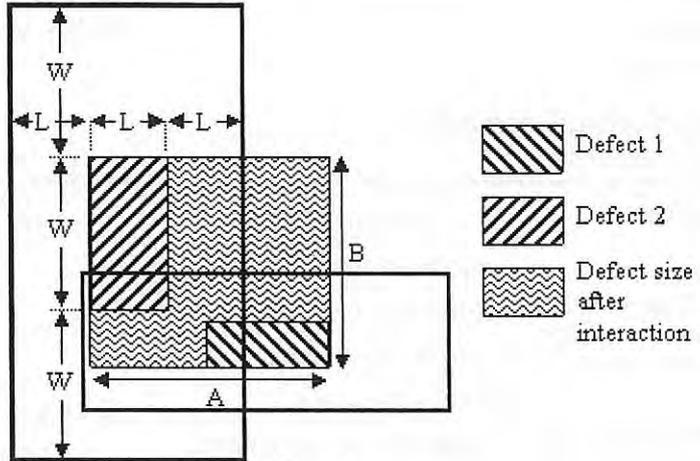


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

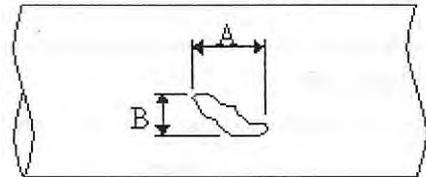


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING REPAIR WAS PART OF THE COATING REPAIR ON SECTION G

Dig Up Comments:

Operator: W. Duffy

Signature:

Date: 11/3/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 28/7/2012
 Section: G TIE BLOCK. Digup Reason: COATING INSPECTION
 Kilometre Point: DCVG # 8 DCVG Measurement: N/A
 Zone: _____ Defect Length from survey (m): N/A
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____

Surrounding Description: _____
(Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	0176, 0159
Pipe with coating removed	0404,
Pipe cleaned	0404,
Pipe repaired	0615

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5-6
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? _____
 Any white buildup from cathodic protection (Y/N)? _____
 Any evidence of termite damage (Y/N)? _____
 Any moisture inside the coating (Y/N)? _____
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? _____
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

BLISTERING OF PAINT NEAR SUPPORT BLOCK OVER TIE INTO BLOW DOWN STACK.

AFTER BLASTING THERE WERE NO SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

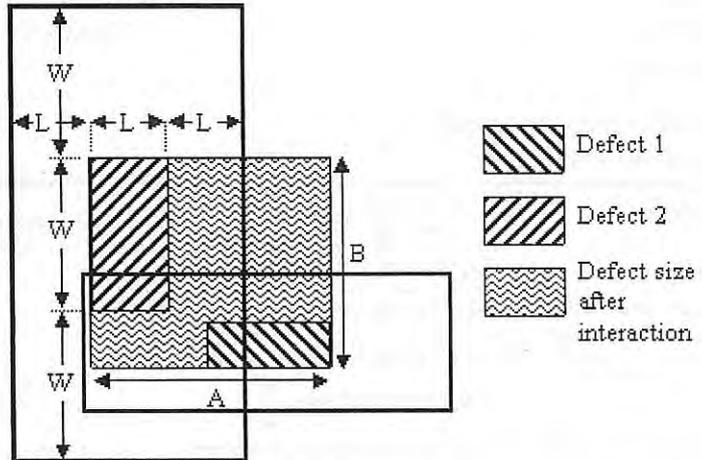


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

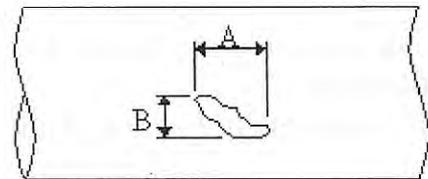


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING DEFECT WAS PAINTED DURING RECOAT OF SECTION G.

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 11/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 24/7/2012
 Section: G V49 Digup Reason: COATING INSPECTION
 Kilometre Point: DCVG # 7 DCVG Measurement: 12.0
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: DCG Compound
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0325, 0326, 0328</u>
Pipe with coating removed	<u>0400, 0399</u>
Pipe cleaned	<u>0397, 0398, 0399, 0400, 0401</u>
Pipe repaired	<u>0616</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.90 Soil pH: 5-6
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

GENERAL BLISTERING OF PAINT ALONG STEM, MINOR COATING DEFECTS UNDER STEM FLANGE AND BOTTOM OF VALVE BODY
AFTER BLASTING THERE WERE NO VISIBLE SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

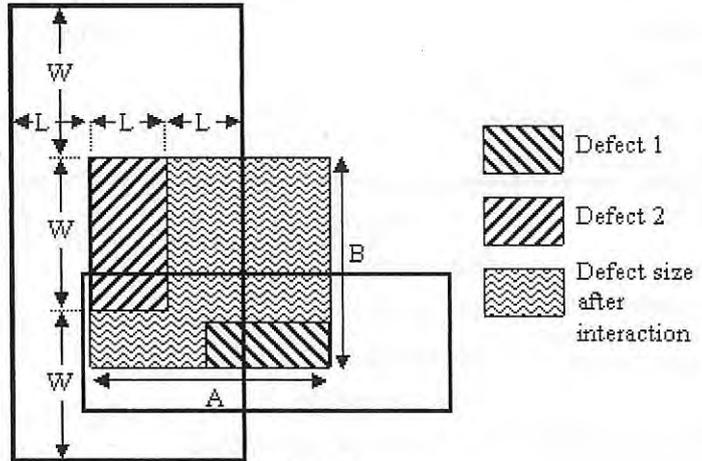


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

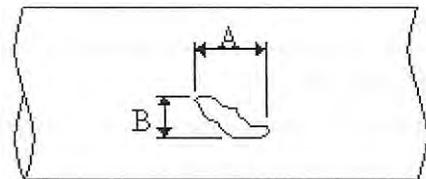


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS VALVE WAS RECOATED DURING RECOAT OF SECTION

Dig Up Comments:

Operator: W. DUFFY

Signature: *[Handwritten Signature]*

Date: 13/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 24/7/2012
 Section: MLV Digup Reason: COATING INSPECTION
 Kilometre Point: DCVG #6 DCVG Measurement: 24-4
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 024343
 Northing: _____
 Surrounding Description: INSIDE DCG COMPOUND
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input checked="" type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.900 Soil pH: 5.5
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 200,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? Y
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 78 mm Coating Defect Width (mm): 12

Coating Defect Comments:

MAIN COATING DEFECT THAT WAS VISIBLE WAS ON SUPPORT LEG OF VALVE.
PHOTOS PROVIDED OF OTHER COATING DEFECT ON MLV
DCVG DEFECT #6
AFTER BLASTING THERE WERE NO VISIBLE SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

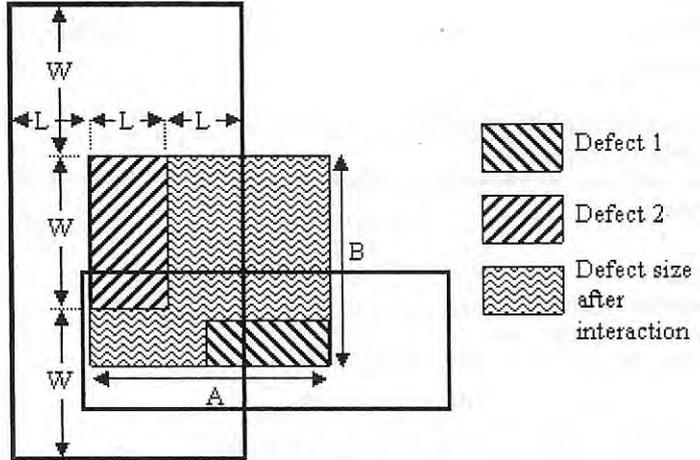


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

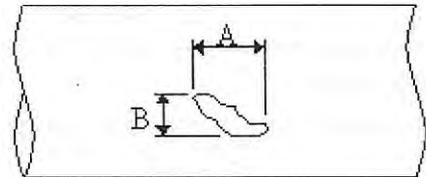


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS VALVE WAS PAINTED DURING RECOAT OF SECTION H

Dig Up Comments:

Operator: *W. DePry*

Signature: *[Signature]*

Date: *13/6/2012*

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 24/7/2012
 Section: H Digup Reason: COATING INSPECTION
 Kilometre Point: (DCVG # 5) DCVG Measurement: 33.3
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0204, 0205, 0206</u>
Pipe with coating removed	<u>0405, 0406, 0407, 0410, 0411, 0412</u>
Pipe cleaned	<u>0405, 0406, 0407, 0410, 0411, 0412,</u>
Pipe repaired	<u>0619</u>

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): RISER Soil pH: IN SAME AREA 5.5
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? Y
 If yes, how far around the pipe has it lifted (mm)? BLISTERING
 Sketch of coating / corrosion damage completed (Y/N)? PHOTOS

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

BLISTERING OF PAINT, NO CORROSION FOUND

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

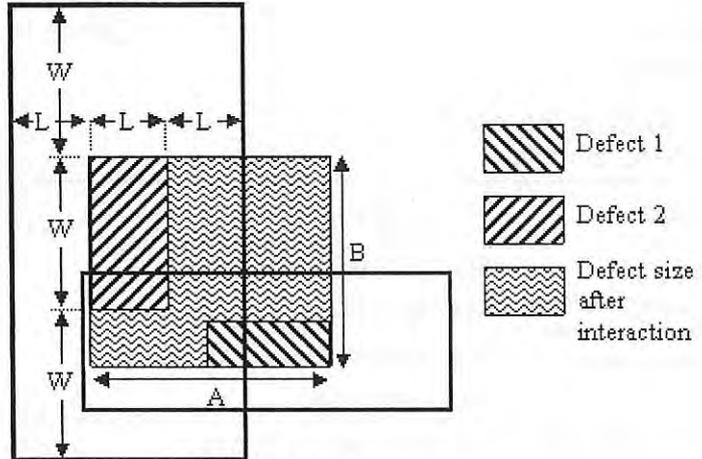


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

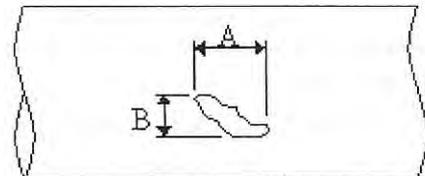


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

THIS COATING DEFECT WAS PAINTED WITH DULUX UAB DURING RECOAT OF SECTION H

Dig Up Comments:

Operator: Val. DUFFY

Signature:

Date: 9/9/2013

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG
 Section: I DEFECT # 1
 Kilometre Point: _____
 Zone: _____
 Easting: _____
 Northing: _____

Excavation Date: 26/7/2012
 Digup Reason: COATING INSPECTION
 DCVG Measurement: NIL
 Defect Length from survey (m): _____
 CMMS Work Order No: 124 343

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0134, 0135, 0137, 0179</u>
Pipe with coating removed	<u>0292</u>
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5-6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
 Sleeve
 Wrapping
 FBE
 Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 65 Coating Defect Width (mm): 8

Coating Defect Comments:

WRAP OVER YELLOW JACKET DAMAGED

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

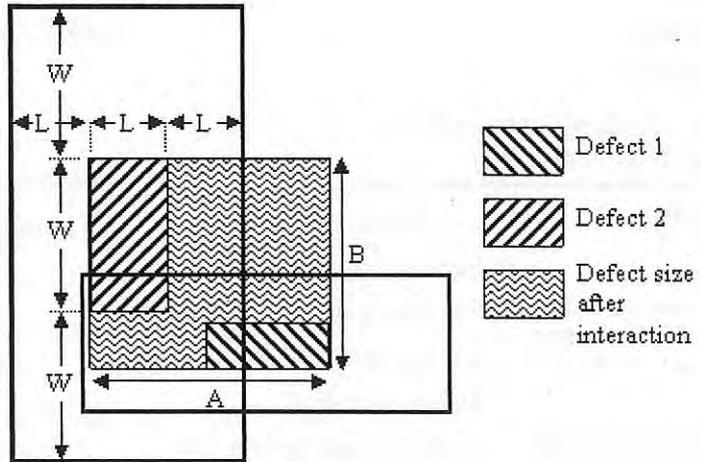


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

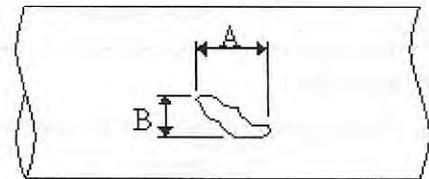


Figure 2

Repair

COATED

Length of Pipe Wrapped (mm): 2.0 M

Other Repair Information:

THIS COATING DEFECT WAS PAINTED WITH DULUX VHB

Dig Up Comments:

Operator: W. DUFFY

Signature: [Signature]

Date: 13/8/2012

KP:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

Work Order No:

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG Excavation Date: 26/7/2012
 Section: I DISPECT 2 Digup Reason: COATING INSPECTION
 Kilometre Point: _____ DCVG Measurement: NIL
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0180</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: 5.6
 Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m.

Coating

Coating Description: Yellow Jacket Sleeve Wrapping FBE Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? N
 Any stress corrosion cracking (Y/N)? N/A If yes, complete APA pipeline damage report
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 25 Coating Defect Width (mm): 2

Coating Defect Comments:

WRAP OVER YELLOW JACKET DAMAGED

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

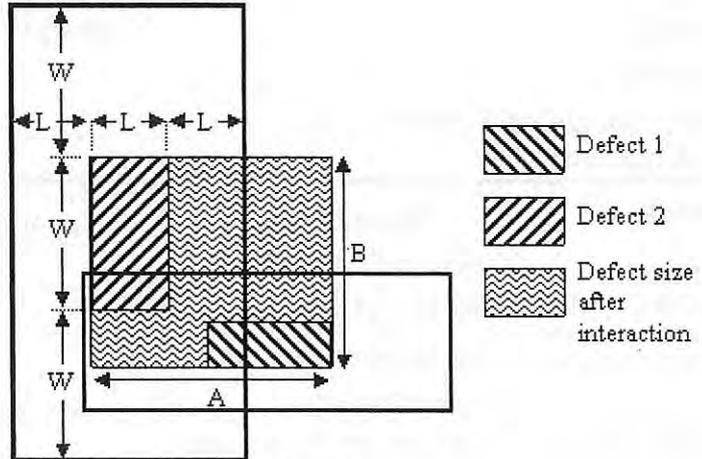


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

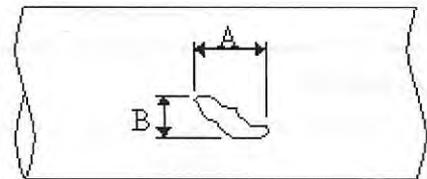


Figure 2

Repair

Length of Pipe Wrapped (mm): COATED 2.0

Other Repair Information:

THIS COATING DEFECT WAS PAINTED WITH DULUX UHB.

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 13/8/2012

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCG
 Section: I DEFECT 3
 Kilometre Point: _____
 Zone: _____
 Easting: _____
 Northing: _____

Excavation Date: 27/7/2012
 Digup Reason: COATING INSPECTION
 DCVG Measurement: NIL
 Defect Length from survey (m): _____
 CMMS Work Order No: 124343

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	<u>0181</u>
Pipe with coating removed	
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input checked="" type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.2 Soil pH: 5.6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): 300,000 Pin Spacing 1.5m

Coating

Coating Description:

- Yellow Jacket
- Sleeve
- Wrapping
- FBE
- Paint

Is there a coating defect (Y/N)? Y
 Any white buildup from cathodic protection (Y/N)? N
 Any evidence of termite damage (Y/N)? N
 Any moisture inside the coating (Y/N)? Y
 Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Has the coating lifted away from the pipe (Y/N)? N
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? N

Coating Defect Length (mm): 2 Coating Defect Width (mm): 2

Coating Defect Comments:

WRAP OVER YELLOW JACKET DAMAGED.

AFTER BLASTING THERE WERE NO SIGNS OF CORROSION

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)? _____

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)? _____

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

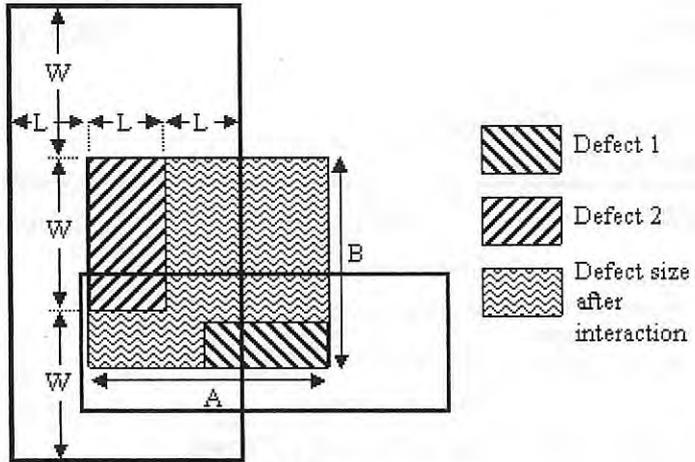


Figure 1

Maximum Depth (mm): _____

Wall thickness (mm): _____

Longitudinal dimension (A) (mm): _____

Circumferential dimension (B) (mm): _____

Clock Position (looking in direction of flow): _____

Distance from longitudinal weld (mm): _____

Distance from nearest girth weld (mm): _____
(if no girth weld has been found, do not excavate further)

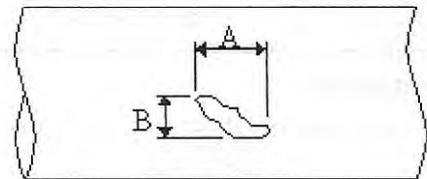


Figure 2

Repair

COATED WITH UHB

Length of Pipe Wrapped (mm): 2:0

Other Repair Information:

THIS COATING DEFECT WAS PAINTED WITH DULUX UHB

Dig Up Comments:

Operator: W. DUFFY

Signature:

Date: 13/8/2012

Appendix 3 Metal Loss Assessment Forms

COATING DAMAGE ASSESSMENT

Location

Pipeline: Darwin City Gate Excavation Date: 21/7/2012
 Section: Pig Receiver Inlet Digup Reason: Coating Inspection
 Kilometre Point: _____ DCVG Measurement: _____
 Zone: _____ Defect Length from survey (m): _____
 Easting: _____ CMMS Work Order No: _____
 Northing: _____

Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	
Pipe with coating removed	<u>0276, 0277</u>
Pipe cleaned	
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.5m Soil pH: 5-6

Pipe To Soil Potential (V): -1.060 Soil Resistivity (Ohms): _____ Pin Spacing 1.5m

Coating

Coating Description: _____ Is there a coating defect (Y/N)? _____
 Yellow Jacket Any white buildup from cathodic protection (Y/N)? _____
 Sleeve Any evidence of termite damage (Y/N)? _____
 Wrapping Any moisture inside the coating (Y/N)? _____
 FBE Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Paint Has the coating lifted away from the pipe (Y/N)? _____
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments: _____

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)?

N

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)?

Y

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

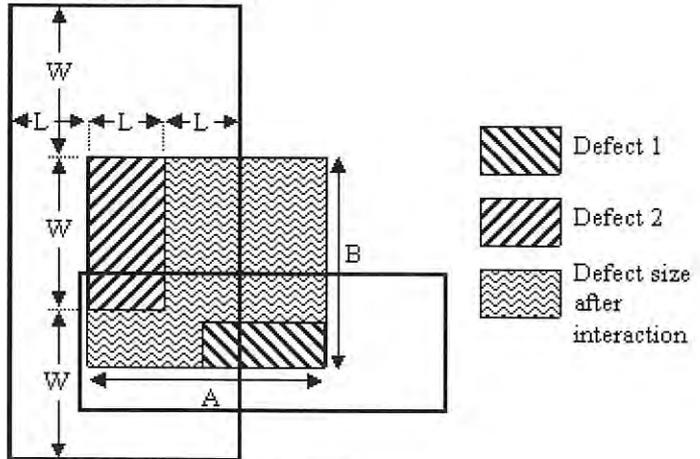


Figure 1

Maximum Depth (mm):

0.84 mm

Wall thickness (mm):

7.92 mm

Longitudinal dimension (A) (mm):

4 mm

Circumferential dimension (B) (mm):

5 mm

Clock Position (looking in direction of flow):

~ 30'clock, 250 mm clockwise from 12 o'clock

Distance from longitudinal weld (mm):

11 mm

Distance from nearest girth weld (mm):
(if no girth weld has been found, do not excavate further)

4150 mm to downstream girth weld

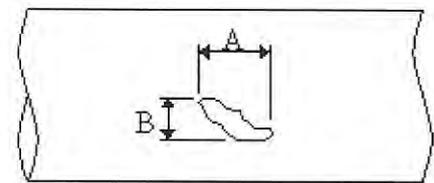


Figure 2

Repair

Length of Pipe Wrapped (mm): _____

Other Repair Information:

No repair necessary. Pipe recoated as part of project.

Dig Up Comments:

Operator: James Barrenger

Signature: [Signature]

Date: 7/08/12

KP:

Work Order No:

Form created by Ben Parkin Apr 09
Approved by Henry Dupal

COATING DAMAGE ASSESSMENT

Page 1

Location

Pipeline: DCC Excavation Date: 27/7/2012
 Section: Section I Digup Reason: INSPECT COATING
 Kilometre Point: _____ DCVG Measurement: N/A
 Zone: _____ Defect Length from survey (m): N/A
 Easting: _____ CMMS Work Order No: 124343
 Northing: _____
 Surrounding Description: _____
 (Buildings, drains, etc)

Photos

Has the camera date and time been set correctly?

Please remember to take both close up (no closer than 500mm) and wide photos.

Description	Time(s) photo taken or viewfinder number
Surrounding landscape	
Site facing increasing chainage	
Site facing decreasing chainage	
Pipe with coating	
Pipe with coating removed	<u>0464, 0465</u>
Pipe cleaned	<u>0464, 0465</u>
Pipe repaired	

Soil and CP

Soil Description (tick one or more from each column):

<input type="checkbox"/> Sand	<input type="checkbox"/> Fine	<input type="checkbox"/> Dusty
<input type="checkbox"/> Loam	<input type="checkbox"/> Coarse	<input checked="" type="checkbox"/> Dry
<input type="checkbox"/> Clay	<input type="checkbox"/> Gravel	<input type="checkbox"/> Damp
<input type="checkbox"/> Black	<input checked="" type="checkbox"/> Rocky	<input type="checkbox"/> Wet
<input type="checkbox"/> Red Dirt		

Pipeline Soil Cover Depth (m): 0.9 Soil pH: _____
 Pipe To Soil Potential (V): _____ Soil Resistivity (Ohms): _____ Pin Spacing 1.5m

Coating

Coating Description: _____ Is there a coating defect (Y/N)? _____
 Yellow Jacket Any white buildup from cathodic protection (Y/N)? _____
 Sleeve Any evidence of termite damage (Y/N)? _____
 Wrapping Any moisture inside the coating (Y/N)? _____
 FBE Any stress corrosion cracking (Y/N)? If yes, complete APA pipeline damage report N/A
 Paint Has the coating lifted away from the pipe (Y/N)? _____
 If yes, how far around the pipe has it lifted (mm)? _____
 Sketch of coating / corrosion damage completed (Y/N)? _____

Coating Defect Length (mm): _____ Coating Defect Width (mm): _____

Coating Defect Comments:

Metal Loss

Is there any deformation of the pipe (dent, gouge or not round) (Y/N)?

Y

If Yes, Engineering must be contacted IMMEDIATELY.

Is there any metal loss (Y/N)?

If there is any metal loss, complete the remaining section of this form and contact Engineering IMMEDIATELY.

The following measurements should indicate whether defects INTERACT

Interaction Rules:

1. Consider each defect as a rectangular box.
2. Draw a larger box around each defect, extending length and width as per Figure 1.
3. IF BOTH larger boxes intersect with the original defect boxes, the defects interact.
4. The dimensions reported on this form are the dimensions of the defect after interaction - dimensions A and B as shown in Figure 1.

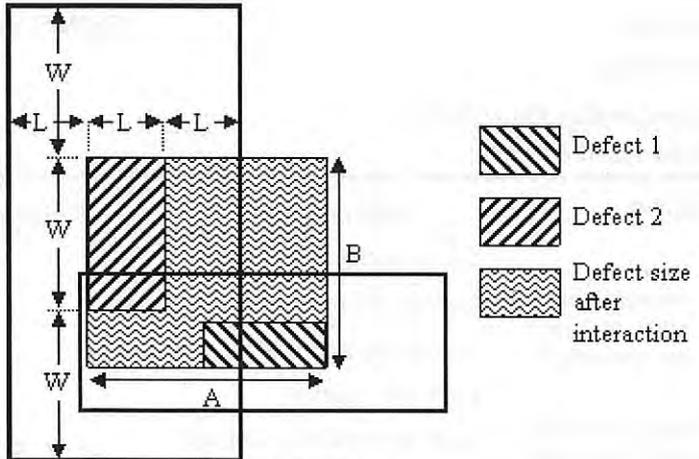


Figure 1

Maximum Depth (mm):

1.0mm

Wall thickness (mm):

70mm

Longitudinal dimension (A) (mm):

20mm

Circumferential dimension (B) (mm):

20mm anticlockwise 9 o'clock

Clock Position (looking in direction of flow):

Distance from longitudinal weld (mm):

470mm

Distance from nearest girth weld (mm):
(if no girth weld has been found, do not excavate further)

3060mm upstream girth weld

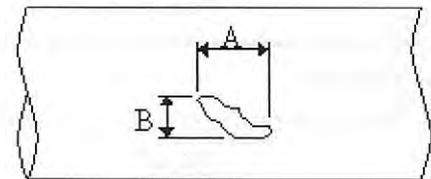


Figure 2

Repair

Length of Pipe Wrapped (mm):

Other Repair Information:

PAINTED WITH LUXAPOXY 2.6m OF PIPE PAINTED

Dig Up Comments:

Operator:

Signature:

Date:

Appendix 4 Photo Log