






รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)									
FORM					PAGE				
Team Thai-Alloys (Thailand) Limited					ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY				
Subject:					รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)				
KP: 78-000 - 78-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Test Post	1	Normal	สภาพดี						
Marker Post	5	Normal	สภาพดี						
Crossing Road	1	Normal	สภาพดี						

รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)									
FORM					PAGE				
Team Thai-Alloys (Thailand) Limited					ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY				
Subject:					รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)				
KP: 78-000 - 78-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Crossing River	1	Normal	สภาพดี						
Crossing Road	1	Normal	สภาพดี						


Any Sign of Gas Leak in ROW: (ถ้ามีสัญญาณของก๊าซรั่วไหลใน ROW) ☒ No ☐ Yes



Construction work near the pipeline: (ถ้ามีงานก่อสร้างใกล้ท่อส่งก๊าซ) ☒ No ☐ Yes

Erosion on the pipeline: (ถ้ามีร่องรอยการกัดเซาะบนท่อส่งก๊าซ) ☒ No ☐ Yes

Other: Refer WO 1002 (รูปถ่ายของพื้นที่สำรวจ) (รูปถ่ายของพื้นที่สำรวจ)

Note: If yes, please specify: (ถ้าใช่ กรุณาระบุ) 1. Specify the pipe coordinate (ระบุพิกัดของท่อส่งก๊าซ) 2. Details of measured values (รายละเอียดของค่าที่วัดได้) 3. Cause (สาเหตุ) 4. Effects (ผลกระทบ) 5. Guidelines for improvement (แนวทางการปรับปรุง) 6. Improvement period (ระยะเวลาการปรับปรุง) 7. Photos before and after the improvement (รูปถ่ายก่อนและหลังการปรับปรุง)

รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)									
FORM					PAGE				
Team Thai-Alloys (Thailand) Limited					ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY				
Subject:					รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)				
KP: 79-000 - 79-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Test Post	1	Normal	สภาพดี						
Marker Post	6	Normal	สภาพดี						
Crossing Road	1	Normal	สภาพดี						

รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)									
FORM					PAGE				
Team Thai-Alloys (Thailand) Limited					ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY				
Subject:					รูปถ่ายของพื้นที่สำรวจ (รูปถ่ายของพื้นที่สำรวจ)				
KP: 79-000 - 79-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Crossing River	1	Normal	สภาพดี						
Crossing Road	1	Normal	สภาพดี						




Any Sign of Gas Leak in ROW: (ถ้ามีสัญญาณของก๊าซรั่วไหลใน ROW) ☒ No ☐ Yes

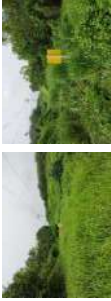
Construction work near the pipeline: (ถ้ามีงานก่อสร้างใกล้ท่อส่งก๊าซ) ☒ No ☐ Yes





Erosion on the pipeline: (ถ้ามีร่องรอยการกัดเซาะบนท่อส่งก๊าซ) ☒ No ☐ Yes


Other: Refer WO 1002 (รูปถ่ายของพื้นที่สำรวจ) (รูปถ่ายของพื้นที่สำรวจ)






Note: If yes, please specify: (ถ้าใช่ กรุณาระบุ) 1. Specify the pipe coordinate (ระบุพิกัดของท่อส่งก๊าซ) 2. Details of measured values (รายละเอียดของค่าที่วัดได้) 3. Cause (สาเหตุ) 4. Effects (ผลกระทบ) 5. Guidelines for improvement (แนวทางการปรับปรุง) 6. Improvement period (ระยะเวลาการปรับปรุง) 7. Photos before and after the improvement (รูปถ่ายก่อนและหลังการปรับปรุง)


FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY					PAGE				
Team Thai-Alsapha (Thailand) Limited					1/2				
Subject: 3 ฐานข้อมูลการติดตามการดำเนินงานตามแผนปฏิบัติการ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)									
NP: 80-006-80-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Test Post	N/A	Normal	N/A	N/A					
Marker Post	1	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Marker Post	6	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Crossing Road	1	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						






FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY					PAGE				
Team Thai-Alsapha (Thailand) Limited					2/2				
Subject: 3 ฐานข้อมูลการติดตามการดำเนินงานตามแผนปฏิบัติการ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)									
Item	Quantity	Status	Detail	Picture	Remark				
Crossing River	1	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Any Sign of Gas Leak in ROW: (มีสัญญาณการรั่วไหลใน ROW)						No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>			
Construction work near the pipeline: (มีการก่อสร้างใกล้แนวท่อ)						No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>			
Erosion on the pipeline: (มีการกัดเซาะบนแนวท่อ)						No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>			
Other: (อื่นๆ)									
Note: If yes, please specify: (หากใช่ โปรดระบุ) 1. Specify the pipe coordinate (ระบุพิกัดแนวท่อ) 2. Details of measured values (รายละเอียดค่าที่วัดได้) 3. Cause (สาเหตุ) 4. Effects (ผลกระทบ) 5. Guidelines for improvement (แนวทางการปรับปรุง) 6. Improvement period (ระยะเวลาการปรับปรุง) 7. Photos before and after the improvement (ภาพถ่ายก่อนและหลังการปรับปรุง)									



FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY					PAGE				
Team Thai-Alsapha (Thailand) Limited					1/2				
Subject: 3 ฐานข้อมูลการติดตามการดำเนินงานตามแผนปฏิบัติการ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)									
Item	Quantity	Status	Detail	Picture	Remark				
Test Post	1	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Marker Post	2	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Marker Post	12	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Crossing Road	1	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						


FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY					PAGE				
Team Thai-Alsapha (Thailand) Limited					2/2				
Subject: 3 ฐานข้อมูลการติดตามการดำเนินงานตามแผนปฏิบัติการ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)									
Item	Quantity	Status	Detail	Picture	Remark				
Crossing River	1	Normal	การพบเห็นเสาหมุดตามเส้นทางเดินท่อ						
Any Sign of Gas Leak in ROW: (มีสัญญาณการรั่วไหลใน ROW)						No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>			
Construction work near the pipeline: (มีการก่อสร้างใกล้แนวท่อ)						No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>			
Erosion on the pipeline: (มีการกัดเซาะบนแนวท่อ)						No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>			
Other: (อื่นๆ)									
Note: If yes, please specify: (หากใช่ โปรดระบุ) 1. Specify the pipe coordinate (ระบุพิกัดแนวท่อ) 2. Details of measured values (รายละเอียดค่าที่วัดได้) 3. Cause (สาเหตุ) 4. Effects (ผลกระทบ) 5. Guidelines for improvement (แนวทางการปรับปรุง) 6. Improvement period (ระยะเวลาการปรับปรุง) 7. Photos before and after the improvement (ภาพถ่ายก่อนและหลังการปรับปรุง)									


รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ										FORM		PAGE	
Tuan Thai-Alloys (Thailand) Limited										ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY		PAGE	
Subject:										2 รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)		1/2	
NP: 82-006-82-999													
Patrolling Date: 31 May 2024													
Item	Quantity	Status	Detail			Picture			Remark				
Test Post	N/A	-	Normal			N/A							
Man Hole	2	✓	Normal										
		-	Abnormal										
Marker Post	15	✓	Normal			 							
		-	Abnormal										
Crossing Road	2	✓	Normal			 							
		-	Abnormal										





รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ										FORM		PAGE			
Tuan Thai-Alloys (Thailand) Limited										ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY		PAGE			
Subject:										2 รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)		2/2			
NP: 82-006-82-999															
Patrolling Date: 31 May 2024															
Item	Quantity	Status	Detail			Picture			Remark						
Crossing River	1	✓	Normal												
		-	Abnormal												
Any Sign of Gas Leak in ROW: (ตั้งแถวตามแนวรั้วใน ROW)												<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Other: (ถ้ามี)	
Construction work near the pipeline: (ถ้าพบการก่อสร้างใกล้แนวท่อ)												<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes			
Erosion on the pipeline: (ถ้าพบการกัดเซาะบนแนวท่อ)												<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes			
Note: If yes, please specify: (ระบุไว้ให้ละเอียด)															
1. Specify the pipe coordinate (ระบุพิกัดแนวท่อ)															
2. Details of measured values (รายละเอียดค่าที่วัดได้)															
3. Cause (สาเหตุ)															
4. Effects (ผลกระทบ)															
5. Guidelines for improvement (แนวทางการปรับปรุง)															
6. Improvement period (ระยะเวลาการปรับปรุง)															
7. Photos before and after the improvement (รูปถ่ายก่อนและหลังการปรับปรุง)															


รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ										FORM		PAGE	
Tuan Thai-Alloys (Thailand) Limited										ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY		PAGE	
Subject:										2 รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)		1/2	
NP: 83-006-83-999													
Patrolling Date: 31 May 2024													
Item	Quantity	Status	Detail			Picture			Remark				
Test Post	1	✓	Normal										
Man Hole	3	✓	Normal			 							
		-	Abnormal										
Marker Post	14	✓	Normal			 							
		-	Abnormal										
Crossing Road	N/A	-	Normal			N/A							
		-	Abnormal										






รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ										FORM		PAGE			
Tuan Thai-Alloys (Thailand) Limited										ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY		PAGE			
Subject:										2 รูปถ่ายแสดงพื้นที่ที่มีการพบเห็นการรั่วไหลของน้ำมันดิบ (PIPELINE GROUND PATROLLING SURVEY ATTACHMENT)		2/2			
NP: 83-006-83-999															
Patrolling Date: 31 May 2024															
Item	Quantity	Status	Detail			Picture			Remark						
Crossing River	2	✓	Normal			 									
		-	Abnormal												
Any Sign of Gas Leak in ROW: (ตั้งแถวตามแนวรั้วใน ROW)												<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Other: (ถ้ามี)	
Construction work near the pipeline: (ถ้าพบการก่อสร้างใกล้แนวท่อ)												<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes			
Erosion on the pipeline: (ถ้าพบการกัดเซาะบนแนวท่อ)												<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes			
Note: If yes, please specify: (ระบุไว้ให้ละเอียด)															
1. Specify the pipe coordinate (ระบุพิกัดแนวท่อ)															
2. Details of measured values (รายละเอียดค่าที่วัดได้)															
3. Cause (สาเหตุ)															
4. Effects (ผลกระทบ)															
5. Guidelines for improvement (แนวทางการปรับปรุง)															
6. Improvement period (ระยะเวลาการปรับปรุง)															
7. Photos before and after the improvement (รูปถ่ายก่อนและหลังการปรับปรุง)															

FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY									
Topic: Thai-Myanmar Pipeline Survey (ATTACHMENT)									
Subject:									
NP: 84-000-84-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Test Post	N/A	Normal	N/A	N/A					
Marker Post	N/A	Normal	N/A	N/A					
Marker Post	6	Normal	Marker Post						
Crossing Road	N/A	Normal	N/A	N/A					







FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY									
Topic: Thai-Myanmar Pipeline Survey (ATTACHMENT)									
Subject:									
NP: 84-000-84-999									
Patrolling Date: 31 May 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Crossing River	2	Normal	Crossing River						
Any Sign of Gas Leak in ROW: (ถ้ามีสัญญาณเตือนภัยใน ROW)									
Construction work near the pipeline: (ถ้ามีงานก่อสร้างในแนวท่อ)									
Erosion on the pipeline: (ถ้ามีดินถล่มบนแนวท่อ)									
Other: (ถ้ามี)									
Note: If yes, please specify: (ถ้ามี โปรดระบุ)									
1. Specify the pipe coordinates (ระบุพิกัดของท่อ)									
2. Details of measured values (รายละเอียดค่าที่วัดได้)									
3. Cause (สาเหตุ)									
4. Effects (ผลกระทบ)									
5. Guidelines for improvement (แนวทางการปรับปรุง)									
6. Improvement period (ระยะเวลาการปรับปรุง)									
7. Photos before and after the improvement (ภาพถ่ายก่อนและหลังการปรับปรุง)									

FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY									
Topic: Thai-Myanmar Pipeline Survey (ATTACHMENT)									
Subject:									
NP: 85-000-85-999									
Patrolling Date: 15 February 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Test Post	3	Normal	Test Post						
Marker Post	1	Normal	Marker Post						
Marker Post	11	Normal	Marker Post						
Crossing Road	1	Normal	Crossing Road						






FORM									
ATTACHMENT: PIPELINE GROUND PATROLLING SURVEY									
Topic: Thai-Myanmar Pipeline Survey (ATTACHMENT)									
Subject:									
NP: 85-000-85-999									
Patrolling Date: 15 February 2024									
Item	Quantity	Status	Detail	Picture	Remark				
Crossing River	1	Normal	Crossing River						
Any Sign of Gas Leak in ROW: (ถ้ามีสัญญาณเตือนภัยใน ROW)									
Construction work near the pipeline: (ถ้ามีงานก่อสร้างในแนวท่อ)									
Erosion on the pipeline: (ถ้ามีดินถล่มบนแนวท่อ)									
Other: (ถ้ามี)									
Note: If yes, please specify: (ถ้ามี โปรดระบุ)									
1. Specify the pipe coordinates (ระบุพิกัดของท่อ)									
2. Details of measured values (รายละเอียดค่าที่วัดได้)									
3. Cause (สาเหตุ)									
4. Effects (ผลกระทบ)									
5. Guidelines for improvement (แนวทางการปรับปรุง)									
6. Improvement period (ระยะเวลาการปรับปรุง)									
7. Photos before and after the improvement (ภาพถ่ายก่อนและหลังการปรับปรุง)									



		PIPELINE GROUND PATROLLING SURVEY		Date: 12 June 2024		
Trans Thai-Malaysia (Thailand) Limited				Rev.: 0		
Subject: ATTACHMENT FOR PREVIOUS AND CURRENT PHOTO DETAILS						
No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition N / A	Details
1.	0+000	N = 770980.625 E = 696649.927 ELV = 5.689			/ -	There is nothing wrong
2.	0+124	N = 770909.625 E = 696649.927 ELV = 5.689			/ -	There is nothing wrong







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No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition N / A	Details
3.	0+665	N = 770909.625 E = 696649.927 ELV = 5.689			/ -	There is nothing wrong
4.	0+098	N = 770909.625 E = 696649.927 ELV = 5.689			/ -	There is nothing wrong
5.	0+343	N = 770909.625 E = 696649.927 ELV = 5.689			/ -	There is nothing wrong







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		PIPELINE GROUND PATROLLING SURVEY		FORM		PAGE	
Trans Thai-Malaysia (Thailand) Limited						1/2	
Subject: ATTACHMENT FOR PREVIOUS AND CURRENT PHOTO DETAILS							
KP: 88-006 - 88-671 Patrolling Date: 15 February 2024							
Item	Quantity	Status	Detail	Picture	Remark		
Test Post	1	✓ Normal	การพบเสาหมุดทดสอบ				
Marker Post	2	✓ Normal	การพบเสาหมุดเครื่องหมาย				
Marker Post	12	✓ Normal	การพบเสาหมุดเครื่องหมาย				
Crossing Road	1	✓ Normal	การพบการข้ามทาง				







		PIPELINE GROUND PATROLLING SURVEY		FORM		PAGE	
Trans Thai-Malaysia (Thailand) Limited						2/2	
Subject: ATTACHMENT FOR PREVIOUS AND CURRENT PHOTO DETAILS							
KP: 88-006 - 88-671 Patrolling Date: 15 February 2024							
Item	Quantity	Status	Detail	Picture	Remark		
Crossing River	1	✓ Normal	การพบการข้ามทางน้ำ				
Any Sign of Gas Leak in ROW: (มีสัญญาณการรั่วไหลของก๊าซใน ROW)				Other: (ถ้ามี)			
Construction work near the pipeline: (มีการก่อสร้างใกล้แนวท่อ)							
Erosion on the pipeline: (การกัดเซาะบนแนวท่อ)							
Note: If yes, please specify: (ระบุถ้าใช่) 1. Specify the pipe coordinates (ระบุพิกัดของท่อ) 2. Details of measured values (รายละเอียดค่าที่วัดได้) 3. Cause (สาเหตุ) 4. Effects (ผลกระทบ) 5. Guidelines for improvement (แนวทางการปรับปรุง) 6. Improvement period (ระยะเวลาการปรับปรุง) 7. Photos before and after the improvement (ภาพถ่ายก่อนและหลังการปรับปรุง)							







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
6.	1+588	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
7.	1+500	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
8.	3+017	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
9.	5+081	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
10.	6+135	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
11.	7+587	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
12.	8+682	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
13.	10+187	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
14.	10+560	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
15.	10+641	N = 770909.625 E = 696649.927 ELV = 5.689			/	-	There is nothing wrong
16.	10+980	E = 100.6681 N = 6.98272 ELV = 50			/	-	There is nothing wrong
17.	12+571	E = 100.65952 N = 6.98467 ELV = 15			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
18.	13+003	E = 100.65068 N = 6.98649 ELV = 16			/	-	There is nothing wrong
19.	13+807	E = 100.642 N = 6.98799 ELV = 21			/	-	There is nothing wrong
20.	14+200	E = 100.63354 N = 6.9857 ELV = 33			/	-	There is nothing wrong



No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
21.	15+850	E = 100.63354 N = 6.9857 ELV = 33			/	-	There is nothing wrong
22.	16+527	E = 100.6178 N = 6.98942 ELV = 56			/	-	There is nothing wrong
23.	17+473	E = 100.6178 N = 6.98942 ELV = 56			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
24.	17+781	E = 100.60882 N = 6.98954 ELV = 71			/	-	There is nothing wrong
25.	18+149	E = 100.60009 N = 6.98975 ELV = 77			/	-	There is nothing wrong
26.	20+448	E = 100.5924 N = 6.98633 ELV = 54			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
27.	21+648	E = 100.58473 N = 6.9816 ELV = 49			/	-	There is nothing wrong
28.	22+600	E = 100.57742 N = 6.97716 ELV = 37			/	-	There is nothing wrong
29.	23+356	E = 100.57504 N = 6.96909 ELV = 38			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
30.	24+100	E = 100.56852 N = 6.96296 ELV = 43			/	-	There is nothing wrong
31.	25+200	E = 100.56202 N = 6.95673 ELV = 43			/	-	There is nothing wrong
32.	26+100	E = 100.55399 N = 6.95558 ELV = 32			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
33.	26+968	E = 100.54533 N = 6.95772 ELV = 30			/	-	There is nothing wrong
34.	28+450	E = 100.53657 N = 6.95778 ELV = 44			/	-	There is nothing wrong
35.	29+500	E = 100.52824 N = 6.96117 ELV = 38			/	-	There is nothing wrong


No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
36.	30+500	E = 100.52025 N = 6.96467 ELV = 37			/	-	There is nothing wrong
37.	31+772	E = 100.51166 N = 6.96568 ELV = 30			/	-	There is nothing wrong
38.	32+632	E = 100.50334 N = 6.96702 ELV = 23			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
39.	33+500	E = 100.49531 N = 6.97082 ELV = 27			/	-	There is nothing wrong
40.	34+500	E = 100.49007 N = 6.97214 ELV = 19			/	-	There is nothing wrong
41.	35+500	E = 100.48626 N = 6.96575 ELV = 17			/	-	There is nothing wrong


No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
48.	40+500	E = 100.48747 N = 6.0874 ELV = 63			/	-	There is nothing wrong
49.	41+900	E = 100.48925 N = 6.89265 ELV = 30			/	-	There is nothing wrong
50.	45+500	E = 100.49104 N = 6.88273 ELV = 26			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
42.	36+500	E = 100.4846 N = 6.95984 ELV = 31			/	-	There is nothing wrong
43.	37+000	E = 100.48744 N = 6.95126 ELV = 33			/	-	There is nothing wrong
44.	37+500	E = 100.48766 N = 6.94266 ELV = 31			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
51.	46+500	E = 100.49198 N = 6.87762 ELV = 28			/	-	There is nothing wrong
52.	47+900	E = 100.49199 N = 6.86456 ELV = 40			/	-	There is nothing wrong
53.	48+500	E = 100.49197 N = 6.85616 ELV = 54			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
45.	37+976	E = 100.48792 N = 6.93443 ELV = 49			/	-	There is nothing wrong
46.	38+500	E = 100.48777 N = 6.92495 ELV = 28			/	-	There is nothing wrong
47.	39+430	E = 100.49047 N = 6.9177 ELV = 56			/	-	There is nothing wrong






No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
60.	55+500	E = 100.48136 N = 6.79813 ELV = 49			/	-	There is nothing wrong
61.	56+600	E = 100.48019 N = 6.78918 ELV = 48			/	-	There is nothing wrong
62.	56+700	E = 100.4789 N = 6.77984 ELV = 39			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
54	49+500	E = 100.49281 N = 6.84789 ELV = 25			/	-	There is nothing wrong
55.	50+500	E = 100.48869 N = 6.8415 ELV = 45			/	-	There is nothing wrong
56.	51+500	E = 100.4864 N = 6.83356 ELV = 67			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
63.	58+500	E = 100.47517 N = 6.77288 ELV = 59			/	-	There is nothing wrong
64.	59+500	E = 100.47305 N = 6.76412 ELV = 32			/	-	There is nothing wrong
65.	60+500	E = 100.47243 N = 6.75452 ELV = 48			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
57.	52+500	E = 100.48514 N = 6.82556 ELV = 66			/	-	There is nothing wrong
58.	53+500	E = 100.48355 N = 6.81498 ELV = 57			/	-	There is nothing wrong
59.	54+500	E = 100.48299 N = 6.81015 ELV = 34			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
66.	61+500	E = 100.47183 N = 6.74623 ELV = 58			/	-	There is nothing wrong
67.	62+500	E = 100.47108 N = 6.73598 ELV = 54			/	-	There is nothing wrong
68.	63+500	E = 100.47036 N = 6.72661 ELV = 61			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
69.	64+500	E = 100.46984 N = 6.71859 ELV = 49			/	-	There is nothing wrong
70.	65+500	E = 100.46993 N = 6.70974 ELV = 44			/	-	There is nothing wrong
71.	66+500	E = 100.46915 N = 6.70073 ELV = 63			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
72.	67+500	E = 100.4679 N = 6.6923 ELV = 42			/	-	There is nothing wrong
73.	68+500	E = 100.46709 N = 6.6817 ELV = 62			/	-	There is nothing wrong
74.	69+500	E = 100.46662 N = 6.67465 ELV = 48			/	-	There is nothing wrong




No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
75.	70+500	E = 100.46616 N = 6.66757 ELV = 42			/	-	There is nothing wrong
76.	71+500	E = 100.46412 N = 6.65245 ELV = 71			/	-	There is nothing wrong
77.	72+500	E = 100.46214 N = 6.64764 ELV = 61			/	-	There is nothing wrong

No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
78.	73+500	E = 100.45726 N = 6.64113 ELV = 50			/	-	There is nothing wrong
79.	74+500	E = 100.45303 N = 6.63324 ELV = 43			/	-	There is nothing wrong
80.	75+500	E = 100.44829 N = 6.62466 ELV = 45			-	/	มีการปลูกต้นไทร และต้นกล้วยลงแล้วในเขตระบบท่อส่งก๊าซฯ



No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
81.	76+500	E = 100.44353 N = 6.61801 ELV = 43			/	-	There is nothing wrong
82.	77+500	E = 100.43894 N = 6.6098 ELV = 64			-	/	มีการปลูกต้นกล้วยลงแล้วในเขตระบบท่อส่งก๊าซฯ (ถึง 15 เมตร)
83.	78+500	E = N/I N = N/I ELV = N/I			-	/	มีการปลูกต้นกล้วยลงแล้วในเขตระบบท่อส่งก๊าซฯ (ถึง 15 เมตร)

No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
84.	79+500	E = 100.42901 N = 6.59239 ELV = 80			/	-	There is nothing wrong
85.	80+500	E = 100.4256 N = 6.58673 ELV = 65			/	-	There is nothing wrong
86.	81+500	E = 100.42248 N = 6.58103 ELV = 61			/	-	There is nothing wrong







No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
87.	82+500	E = 100.42664 N = 6.57549 ELV = 70			/	-	There is nothing wrong
88.	83+500	E = 100.42683 N = 6.56833 ELV = 81			/	-	There is nothing wrong
89.	84+500	E = N/I N = N/I ELV = N/I			/	-	There is nothing wrong

 Trans Thai-Malaysia (Thailand) Limited		PIPELINE GROUND LEAKAGE SURVEY				Date: 12 June 2024 Rev.: 0	
Subject: ATTACHMENT FOR BOUNDARY POLE DAMAGED SUMMARY							
Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
1.	3+312				X		No.R037
2.	3+800		X				





Page 1/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
3.	3+873	X					
4.	5+600		X				

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No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
90.	85+500	E = 100.42956 N = 6.55547 ELV = 89			/	-	There is nothing wrong
91.	87+179	E = 100.6681 N = 6.98272 ELV = 50			/	-	There is nothing wrong
92.	87+613	E = 100.65952 N = 6.98467 ELV = 15			/	-	There is nothing wrong

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No.	KP	Coordinate / Elevation (M)	Previous Photo (December 2023)	Current Photo (April 2024)	Condition		Details
					N	A	
93.	88+400	E = 100.65068 N = 6.98649 ELV = 16			/	-	There is nothing wrong
94.	88+659	E = N/I N = N/I ELV = N/I			/	-	There is nothing wrong

Note: N = Normal, A = Abnormal



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Item	KP	BOUNDARY POLE					REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
9.	44+336		X				
10.	48+071				X		No.R178



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Item	KP	BOUNDARY POLE						REMARK
		Yellow Pole (TTM)			White Pole (PTT)			
		L	R	L	L	R		
5.	5+897		X					
6.	6+200	X	X			X		



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Item	KP	BOUNDARY POLE						REMARK
		Yellow Pole (TTM)			White Pole (PTT)			
		L	R	L	L	R		
11.	51+892	X			X			No.L225
12.	53+000	X			X			No.L233



Page 6/23

Item	KP	BOUNDARY POLE						PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)					
		L	R	L	R	L	R		
7.	35+200		X						No R093
8.	38+700		X						



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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
17.	56+701			X			No.1252
18.	59+275		X				



Page 5/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
13.	53+300	X					
14.	53+500	X					



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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
19.	61+491				X		No. R279
20.	62+210		X				



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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
15.	53+700	X					
16.	53+950				X		No.L237



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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
25.	64+640			X			No.L302
26.	66+153	X					



Page 13/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
21.	63+050		X				
22.	63+979				X		No.R294



Page 11/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
27.	66+648			X			No.L323
28.	66+701	X	X				



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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
23.	63+201			X			No.L288
24.	64+099			X			No.L295



Page 12/73

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
33.	69+672	X					
34.	71+511	X					



Page 17/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
29.	68+721	X					
30.	68+911	X					



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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
35.	71+600	X					
36.	71+992	X					



Page 18/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
31.	69+430	X					
32.	69+556			X			No.L341



Page 16/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
41.	76+766	X					
42.	81+115			X			No.1421



Page 21/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
37.	73+444	X					
38.	73+498			X			No.L367


Page 19/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
43.	83+282				X		No.R446
44.	85+213				X		No.L469


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Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
39.	73+577				X		No.R368
40.	73+926				X		No.R371

Page 20/23

Item	KP	BOUNDARY POLE				PHOTO	REMARK
		Yellow Pole (TTM)		White Pole (PTT)			
		L	R	L	R		
45.	87+380	X					
Summary		19	11	12	8		
		30		20			
Note: N/A							

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PREVENTIVE MAINTENANCE REPORT (PM-FM-MNT-060) Y: PM/MNT/Form/PM-FM-MNT-060.doc		
 Trans Thai-Malaysia (Thailand) Limited	FORM	PAGE
	DOC ID.: PM-FM-MNT-060	1/2
Subject: PREVENTIVE MAINTENANCE REPORT		

Pipeline Preventive Maintenance Report

Title: Pipeline Leakage Survey (Year 2024)

△Asset Reference List No: PM-LIST-001, 002, 003, 004

△ Work Order No: 40091124

Δ EPTW No: TTM-CW-2024-3754

Location Name: Right of Way KP0+000 – KP10+500, Right of Way KP10+500 – KP34+500, Right of Way KP34+500 – KP88+500,

Right of Way Landfall – GSP

Instrument / Equipment Name: Pipeline Right of Way

Tag Number: N/A

Action Date: February 2024 – May 2024

Action by:

1. Mr.Wisarn Ponrak (Senior Pipeline Maintenance Technician)
2. Mr.Witchanan Meepol (WAMS Engineering Co.,Ltd)

Equipments:


1. PPE
2. Hand tools
3. Digital Camera
4. Gas Detector Equipment ID: GD17 Serial Number: GD17124-01

Action Details:

1. Request the permit to work from pipeline operator at CCR.
2. Started performing pipeline leakage survey / Landfall – GSP & KP0+000 – KP88+671.
3. For more details of inspection result please see attached pipeline leakage inspection sheet and pipeline incident report:
 - Pipeline Leakage Survey Check Sheet
 - Attachment Pipeline Leakage Survey Photo Report

Problem was Found:

Corrective Action:


PREVENTIVE MAINTENANCE REPORT (PM-FM-MNT-060) Y: PM-MNT\form\PM-FM-MNT-060.doc		
 Trans Thai-Malaysia (Thailand) Limited	FORM	PAGE
	DOC ID: PM-FM- MNT-060	2/2
Subject: PREVENTIVE MAINTENANCE REPORT		


ISSUED BY


Senior Pipeline Maintenance Technician

REVIEWED BY


Pipeline Management Engineer

		FORM DOC ID: PM-FM-MNT-022		PAGE 1/4	
Trans Thai-Malaysia (Thailand) Limited		Subject:			
Condition of Grasses & Plants		STATUS		Gas Leak Inspect LEL Value (< 10%) & O2 (19-23 %)	
CONDITION OF GRASSES & PLANTS		STATUS		DETAILS	
CONDITION OF GRASSES & PLANTS		STATUS		DETAILS	
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CONDITION OF GRASSES & PLANTS					

<div>  Tran's Thai-Malaysia (Thailand) Limited </div>										FORM		PAGE	
<div> DOC ID: PM-FM-MNT-022 </div>										24			
<div> Subject: </div>													
<div> ใบแจ้งผลการตรวจการรั่วไหลของน้ำมันเชื้อเพลิง (PIPELINE LEAKAGE SURVEY CHECK SHEET) </div>													
<div> ใบแจ้งผลการตรวจการรั่วไหลของอากาศจากท่อแก๊ส (PIPELINE LEAKAGE SURVEY CHECK SHEET) </div>													
KP	CONDITION OF GRASSES & PLANTS			GAS LEAK INSPECT LEL VALUE (< 10%) & O2 (19-23 %)			GENERAL CONDITION						
	STATUS		DETAILS	STATUS		DETAILS	N	A	STATUS	DETAILS			
30+000 - 30+999	✓	-	-	✓	-	-	✓	-	-	-			
31+000 - 31+999	✓	-	-	✓	-	-	✓	-	-	-			
32+000 - 32+999	✓	-	-	✓	-	-	✓	-	-	-			
33+000 - 33+999	✓	-	-	✓	-	-	✓	-	-	-			
34+000 - 34+999	✓	-	-	✓	-	-	✓	-	-	-			
35+000 - 35+999	✓	-	-	✓	-	-	✓	-	-	-			
36+000 - 36+999	✓	-	-	✓	-	-	✓	-	-	-			
37+000 - 37+999	✓	-	-	✓	-	-	✓	-	-	-			
38+000 - 38+999	✓	-	-	✓	-	-	✓	-	-	-			
39+000 - 39+999	✓	-	-	✓	-	-	✓	-	-	-			
40+000 - 40+999	✓	-	-	✓	-	-	✓	-	-	-			
41+000 - 41+999	✓	-	-	✓	-	-	✓	-	-	-			
42+000 - 42+999	✓	-	-	✓	-	-	✓	-	-	-			
43+000 - 43+999	✓	-	-	✓	-	-	✓	-	-	-			
44+000 - 44+999	✓	-	-	✓	-	-	✓	-	-	-			
45+000 - 45+999	✓	-	-	✓	-	-	✓	-	-	-			
46+000 - 46+999	✓	-	-	✓	-	-	✓	-	-	-			
47+000 - 47+999	✓	-	-	✓	-	-	✓	-	-	-			
48+000 - 48+999	✓	-	-	✓	-	-	✓	-	-	-			
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52+000 - 52+999	✓	-	-	✓	-	-	✓	-	-	-			
53+000 - 53+999	✓	-	-	✓	-	-	✓	-	-	-			
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Trans-Thair-Malaysia (Thailand) Limited		DOC ID: PM4-FM-MNT-022		3/4					
Subject: ใบแจ้งผลการตรวจการรั่วไหลของก๊าซ (PIPELINE LEAKAGE SURVEY CHECK SHEET) (ใบแจ้งผลการตรวจการรั่วไหลของก๊าซ (PIPELINE LEAKAGE SURVEY CHECK SHEET))									
KP	CONDITION OF GRASSES & PLANTS			GAS LEAK INSPECT LEI VALUE (< 10%) & O2 (19-23 %)			GENERAL CONDITION		
	N	A	DETAILS	N	A	DETAILS	N	A	DETAILS
61+000 - 61+999	✓	-	-	✓	-	-	✓	-	-
62+000 - 62+999	✓	-	-	✓	-	-	✓	-	-
63+000 - 63+999	✓	-	-	✓	-	-	✓	-	-
64+000 - 64+999	✓	-	-	✓	-	-	✓	-	-
65+000 - 65+999	✓	-	-	✓	-	-	✓	-	-
66+000 - 66+999	✓	-	-	✓	-	-	✓	-	-
67+000 - 67+999	✓	-	-	✓	-	-	✓	-	-
68+000 - 68+999	✓	-	-	✓	-	-	✓	-	-
69+000 - 69+999	✓	-	-	✓	-	-	✓	-	-
70+000 - 70+999	✓	-	-	✓	-	-	✓	-	-
71+000 - 71+999	✓	-	-	✓	-	-	✓	-	-
72+000 - 72+999	✓	-	-	✓	-	-	✓	-	-
73+000 - 73+999	✓	-	-	✓	-	-	✓	-	-
74+000 - 74+999	✓	-	-	✓	-	-	✓	-	-
75+000 - 75+999	✓	-	-	✓	-	-	✓	-	-
76+000 - 76+999	✓	-	-	✓	-	-	✓	-	-
77+000 - 77+999	✓	-	-	✓	-	-	✓	-	-
78+000 - 78+999	✓	-	-	✓	-	-	✓	-	-
79+000 - 79+999	✓	-	-	✓	-	-	✓	-	-
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87+000 - 87+999	✓	-	-	✓	-	-	✓	-	-
88+000 - 88+999	✓	-	-	✓	-	-	✓	-	-

Note: N = Normal, A = Abnormal

แบบฟอร์มการสำรวจร่องรอยการปนเปื้อน (PIPELINE LEAKAGE SURVEY CHECK SHEET) (PM-FM-MNT-022) 3. (PM-MNT-FORM) (PM-FM-MNT-F022.doc)	
 Trans-Thai-Malaysia (Thailand) Limited	FORM
	DOC ID: PM-FM-MNT-022
Subject: แบบฟอร์มการสำรวจร่องรอยการปนเปื้อน (PIPELINE LEAKAGE SURVEY CHECK SHEET)	
PAGE 4/4	

Gas detector Serial Number: GD17 Inspection Date: 11 January 2024
Expiry date: 10 July 2024


Please see attachment for photo report.

Inspected By

Reviewed By

Pipeline Maintenance Technician

Pipeline Management Engineer

 Trans Thai-Malaysia (Thailand) Limited	<h2 style="margin: 0;">PIPELINE GROUND LEAKAGE SURVEY</h2>	Date: 12 June 2024 Rev.: 0
Subject: ATTACHMENT FOR PIPELINE LEAKAGE SURVEY PHOTO REPORT		

Title: Pipeline Ground Leakage Survey 2024

Location Name: TTM Pipeline Right of Way Land Fall – KP88+671

Instrument / Equipment Name: Personal Gas Detector

Gas detector Serial Number: GD17


Inspection Date: 11 January 2024


Expiry date: 10 July 2024





Certificate No.: GD17124-01


Action Date: February 2024 – May 2024

Action by:




1. 

2. 




No.	KP	PHOTO DETAILS		REMARK
1.	Land-Fall - 0+800			
		KP0+719 (Land-Fall - GSP)	KP0+400 (M10 - GLF)	
2.	0+000 - 0+999			
		KP0+343	KP0+660	

No.	KP	PHOTO DETAILS		REMARK
3.	1+000 - 1+999			
		KP1+205	KP1+881	
4.	2+000 - 2+999			
		KP2+000	KP2+759	

No.	KP	PHOTO DETAILS		REMARK
5.	3+000 - 3+999			
		KP3+036	KP3+930	
6.	4+000 - 4+999			
		KP4+416	KP4+641	





No.	KP	PHOTO DETAILS		REMARK
7.	5+000 - 5+999			
		KP5+082	KP5+897	
8.	6+000 - 6+999			
		KP6+479	KP6+681	



No.	KP	PHOTO DETAILS		REMARK
9.	7+000 - 7+999			
		KP7+132	KP7+146	
10.	8+000 - 8+999			
		KP8+770	KP8+800	





No.	KP	PHOTO DETAILS		REMARK
11.	9+000 - 9+999			
		KP9+200	KP9+800	
12.	10+000 - 10+999			
		KP10+800	KP10+861	

No.	KP	PHOTO DETAILS		REMARK
13.	11+000 - 11+999			
		KP11+574	KP11+683	
14.	12+000 - 12+999			
		KP12+000	KP12+892	

No.	KP	PHOTO DETAILS		REMARK
15.	13+000 - 13+999			
		KP13+591	KP13+807	
16.	14+000 - 14+999			
		KP14+086	KP14+568	





No.	KP	PHOTO DETAILS		REMARK
17.	15+000 - 15+999			
18.	16+000 - 16+999			

No.	KP	PHOTO DETAILS		REMARK
19.	17+000 - 17+999			
20.	18+000 - 18+999			



No.	KP	PHOTO DETAILS		REMARK
21.	19+000 - 19+999			
22.	20+000 - 20+999			





No.	KP	PHOTO DETAILS		REMARK
23.	21+000 - 21+999			
24.	22+000 - 22+999			

No.	KP	PHOTO DETAILS		REMARK
25.	23+000 - 23+999			
		KP23+038	KP23+578	
26.	24+000 - 24+999			
		KP24+108	KP24+771	





No.	KP	PHOTO DETAILS		REMARK
27.	25+000 - 25+999			
		KP25+201	KP25+443	
28.	26+000 - 26+999			
		KP26+300	KP26+968	

No.	KP	PHOTO DETAILS		REMARK
29.	27+000 - 27+999			
		KP27+220	KP27+583	
30.	28+000 - 28+999			
		KP28+330	KP28+865	

No.	KP	PHOTO DETAILS		REMARK
31.	29+000 - 29+999			
		KP29+292	KP29+991	
32.	30+000 - 30+999			
		KP30+397	KP30+732	





No.	KP	PHOTO DETAILS		REMARK
37.	35+000 - 35+999			
		KP35+200	KP35+635	
38.	36+000 - 36+999			
		KP36+094	KP36+581	





No.	KP	PHOTO DETAILS		REMARK
33.	31+000 - 31+999			
		KP31+122	KP31+791	
34.	32+000 - 32+999			
		KP32+553	KP32+732	





No.	KP	PHOTO DETAILS		REMARK
39.	37+000 - 37+999			
		KP37+018	KP37+976	
40.	38+000 - 38+999			
		KP38+050	KP38+881	





No.	KP	PHOTO DETAILS		REMARK
35.	33+000 - 33+999			
		KP33+131	KP33+764	
36.	34+000 - 34+999			
		KP34+243	KP34+500-1	

No.	KP	PHOTO DETAILS		REMARK
41.	39+000 - 39+999			
		KP39+054	KP39+614	
42.	40+000 - 40+999			
		KP40+086	KP40+861	

No.	KP	PHOTO DETAILS		REMARK
43.	41+000 - 41+999			
		KP41+038	KP41+981	
44.	42+000 - 42+999			
		KP42+314	KP42+857	





No.	KP	PHOTO DETAILS		REMARK
45.	43+000 - 43+999			
		KP43+350	KP43+996	
46.	44+000 - 44+999			
		KP44+336	KP44+876	



No.	KP	PHOTO DETAILS		REMARK
47.	45+000 - 45+999			
		KP45+000	KP45+580	
48.	46+000 - 46+999			
		KP46+079	KP46+800	





No.	KP	PHOTO DETAILS		REMARK
49.	47+000 - 47+999			
		KP47+105	KP47+840	
50.	48+000 - 48+999			
		KP48+098	KP48+369	

No.	KP	PHOTO DETAILS		REMARK
51.	49+000 - 49+999			
		KP49+670	KP49+888	
52.	50+000 - 50+999			
		KP50+580	KP50+803	



No.	KP	PHOTO DETAILS		REMARK
53.	51+000 - 51+999			
		KP51+068	KP51+891	
54.	52+000 - 52+999			
		KP52+170	KP52+687	

No.	KP	PHOTO DETAILS		REMARK
55.	53+000 - 53+999			
		KP53+436	KP53+850	
56.	54+000 - 54+999			
		KP54+156	KP54+901	





No.	KP	PHOTO DETAILS		REMARK
57.	55+000 - 55+999			
		KP55+136	KP55+801	
58.	56+000 - 56+999			
		KP56+619	KP56+963	



No.	KP	PHOTO DETAILS		REMARK
59.	57+000 - 57+999			
		KP57+426	KP57+980	
60.	58+000 - 58+999			
		KP58+471	KP58+716	





No.	KP	PHOTO DETAILS		REMARK
61.	59+000 - 59+999			
		KP59+571	KP59+845	
62.	60+000 - 60+999			
		KP60+078	KP60+812	

No.	KP	PHOTO DETAILS		REMARK
63.	61+000 - 61+999			
		KP61+015	KP61+971	
64.	62+000 - 62+999			
		KP62+211	KP62+426	





No.	KP	PHOTO DETAILS		REMARK
65.	63+000 - 63+999			
		KP63+050	KP63+985	
66.	64+000 - 64+999			
		KP64+640	KP64+924	

No.	KP	PHOTO DETAILS		REMARK
67.	65+000 - 65+999			
		KP65+175	KP65+753	
68.	66+000 - 66+999			
		KP66+114	KP66+815	

No.	KP	PHOTO DETAILS		REMARK
69.	67+000 - 67+999			
		KP67+247	KP67+816	
70.	68+000 - 68+999			
		KP68+051	KP68+793	

No.	KP	PHOTO DETAILS		REMARK
71.	69+000 - 69+999			
		KP69+306	KP69+996	
72.	70+000 - 70+999			
		KP70+050	KP70+321	

No.	KP	PHOTO DETAILS		REMARK
73.	71+000 - 71+999			
		KP71+396	KP71+630	
74.	72+000 - 72+999			
		KP72+128	KP72+720	





No.	KP	PHOTO DETAILS		REMARK
75.	73+000 - 73+999			
		KP73+083	KP73+576	
76.	74+000 - 74+999			
		KP74+028	KP74+700	





No.	KP	PHOTO DETAILS		REMARK
77.	75+000 - 75+999			
		KP75+183	KP75+748	
78.	76+000 - 76+999			
		KP76+199	KP76+496	

No.	KP	PHOTO DETAILS		REMARK
79.	77+000 - 77+999			
		KP77+581	KP77+602	
80.	78+000 - 78+999			
		KP78+068	KP78+467	

No.	KP	PHOTO DETAILS		REMARK
81.	79+000 - 79+999			
		KP79+019	KP79+798	
82.	80+000 - 80+999			
		KP80+449	KP80+993	


No.	KP	PHOTO DETAILS		REMARK
83.	81+000 - 81+999			
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84.	82+000 - 82+999			
		KP82+284	KP82+981	

No.	KP	PHOTO DETAILS		REMARK
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		KP83+282	KP83+972	
86.	84+000 - 84+999			
		KP84+263	KP84+643	

No.	KP	PHOTO DETAILS		REMARK
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		KP85+206	KP85+690	
88.	86+000 - 86+999			
		KP86+059	KP86+382	

No.	KP	PHOTO DETAILS		REMARK
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		KP87+081	KP87+830	
90.	88+000 - 88+671			
		KP88+405	KP88+659	
Note: N/A				

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PREVENTIVE MAINTENANCE REPORT (PM-FM- MNT-060) Y:\PM\MNT\Form\PM-FM- MNT-060.doc		
 Trans Thai-Malaysia (Thailand) Limited	FORM	PAGE
	DOC ID. : PM-FM- MNT-060	2/2
PREVENTIVE MAINTENANCE REPORT		

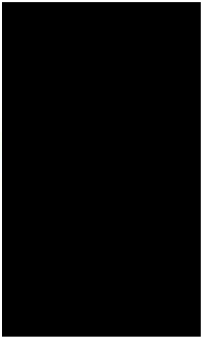
Problem was Found :

Please see in the final report from contractor.

Corrective Action :

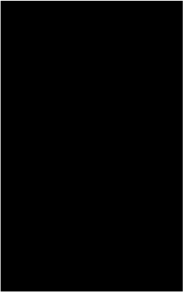
TP-52 50+578 TP disappeared under progress replaced refer PO. 3000020330

ISSUED BY




Pipeline Maintenance Technician

REVIEWED BY



Senior Pipeline Maintenance Engineer

PREVENTIVE MAINTENANCE REPORT (PM-FM- MNT-060) Y:\PM\MNT\Form\PM-FM- MNT-060.doc		
 Trans Thai-Malaysia (Thailand) Limited	FORM	PAGE
	DOC ID. : PM-FM- MNT-060	1/2
PREVENTIVE MAINTENANCE REPORT		

Pipeline Preventive Maintenance Report

Title : CP pipe to soil inspection

△ Asset Reference List No: PM-LIST-007

△ Work Order No: WO 40091556

△ EPTW No: TTM-CW-2024-2063

Location Name: All station (GRF, GLF, BVT1- T8, M10 and M11)

Instrument / Equipment Name CP Test station

Tag Number: Please find in the inspection report

Action Date: 25 March – 4 April 2024

Action by:

1. 
2. 

3. Contractor (CPE)

Equipments:

1. 1 set of Fluke True RMS Multimeter model 175
2. 1 set of Fluke True RMS clamp meter model 325
3. Insulation checker MCM 601
4. Current interrupter
5. CIPS set
6. Hand tools

Action Details:

1. Request permit to work by E-PTW system (Cold Work).
2. The inspection procedure please see in the attached document.
3. Close permit to work in E-PTW system.

CONTENT

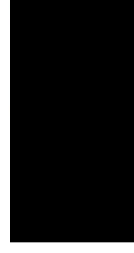
1. Introduction
2. Conclusion
3. CP Test Post Check
4. Isolation Check
5. DC Decoupler Measurement
6. Appendix

**Cathodic Protection
for
Test Inspection**

Chana Gas Separation Plant Underground Pipeline CP Test Inspection Project

submitted to
Trans Thai-Malaysia (Thailand) Ltd.
April 24, 2024

prepared by
CPE Engineering and Service Co., Ltd.



Doc. No. : CPED-2024/011

Introduction

This document is specifically written for TTM, Chana Gas Separation Plant Underground Pipeline CP Test Inspection Project in checking

- CP Test Post Check
- Isolation Check
- DC Decoupler Measurement
- Transformer Rectifier Check

Scope of Work

These following pipelines are inspected in this project.

Pipeline	CP System
- GSP to Border (36" NG and 8" LNG)	Impressed Current
- Landfill to GSP (34")	Sacrificial Anode
- GSP Bypass (30" NG)	Sacrificial Anode
- M10 (16" NG)	Sacrificial Anode
- M11 (8" NG)	Sacrificial Anode
- Slug Catcher	Impressed Current
- GLF (6" LNG)	Impressed Current (bonded from Fire Water CP system)

1. INTRODUCTION

Conclusion

Refer to CP test post check test data, we can conclude that :

- The CP system of all pipelines are still worked because the pipe to soil potential of all test boxes is more negative than -0.850 Vdc.
- The mitigation of AC induced of all pipeline are still worked because the pipe to soil AC potential of all test boxes is less than 15 Vac.

Refer to Isolation check test data, we can conclude that :

- All of isolated joints can still isolate between the under ground side and aboveground side.

Refer to DC Decoupler measurement test data, we can conclude that :

- All of Kirk cells and PCRs are still worked because voltage across terminal is less negative than criteria (-1.26 V for Kirk cell and -3.0 V for PCR).

2. CONCLUSION

Issue Summary

Issue	Recommendation
1 GSP to Border (CNG and K1 PG) TF-52 50+578 TP is disappeared, cable left can be tested P/S	1 The new ones should be installed (Risk C) Any test joints are disappeared, the p/s potential analysis can be referred to test test post. The period of repair is upon consideration of owner.

Criticality Finding

- Critical A : Direct impact to CP Performance which may cause pipeline corrosion , should be rectify by 6 month
Critical B : Minor/indirect impact should be rectify / adjust in 1-2 years as per appropriate to overall CP coverage.
Critical C : No effect to CP Performance and owner can consider for the available budget then plan to repair upon owner decision with no impact to CP performance.

3. CP TEST POST CHECK



3.1. CP Test Post Check Criteria

The NACE standard SP0169-2007 section 6 provide lists of the criteria and other consideration for Cathodic Protection that will indicate, when used either separately or in combination, whether adequate Cathodic Protection of a metallic pipeline system has been achieved. Section 6.2 lists of the criteria for steel and cast iron pipeline are as the following below :

- 6.2.2.1.1. A negative potential of at least 850 mV with the Cathodic Protection applied. This potential is measured with respect to a saturated copper/copper sulfate reference electrode contacting the electrolyte. Voltage drop other than those across the structure-to-electrolyte boundary must be considered for valid interpretation of this voltage measurement.
- 6.2.2.1.2. A negative polarized potential of at least 850 mV relative at saturated copper/copper sulfate reference electrode.
- 6.2.2.1.3. A minimum of 100 mV Cathodic Protection polarization between the structure surface and stable reference electrode contacting the electrolyte. The formation of decay of polarization can be measured of satisfy this criteria.

The NACE standard SP0177-2007 section 5 Personnel Protection provides lists of shock hazards of personnel.

- An induced alternative current voltage on the structure is not exceed 15 V.

CONTENT

- 3.1. CP Test Post Check Criteria
- 3.2. CP Test Post Check Test Procedure
- 3.3. Data Record Sheet
- 3.4. Photograph

3.2. CP Test Post Check Test Procedure

Test Equipment

- 1) Digital multimeter
- 2) Cu/CuSO₄ reference electrode
- 3) Current interrupter
- 4) Hand tools

Test Procedure

3.2.1. Pipe to Soil Potential Measurement

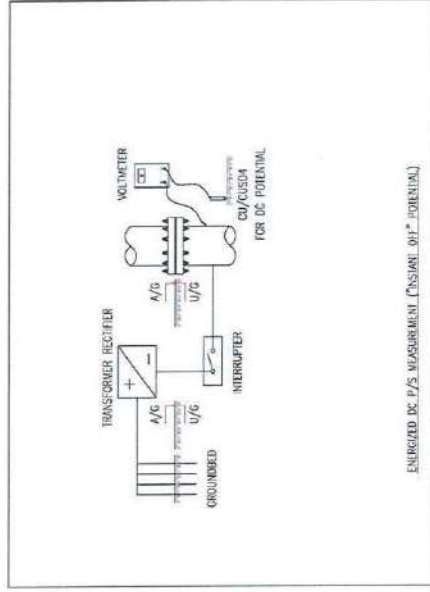
Pipe to soil potential measurement is made most frequently in pipeline corrosion test work and carried out to confirm the protective condition of the pipeline. Pipe to soil potential is measured with respect to a saturated copper/copper sulfate reference electrode (Cu/CuSO₄) with a digital multimeter at all test boxes.

Natural Potential Measurement

- 1) Make sure that the pipeline to be tested is not energized.
- 2) At the CP test post to be tested, place the Cu/CuSO₄ reference electrode on the grade above the underground pipeline to be tested by contacting well between the porous plug of Cu/CuSO₄ reference electrode and grade surface.
- 3) Prior to measure the potential, make sure that the red test lead of digital multimeter is in the “V” terminal and the black test lead of the digital multimeter is in the “com” terminal.
- 4) Take the red test lead of the digital multimeter contact to pipe cable from the CP test post take the black test lead of the digital multimeter contact to the Cu/CuSO₄ reference electrode
- 5) When make the native DC pipe to soil potential measurement, select the “DC volt” mode of the digital multimeter.
- 6) Read and record the test result in the data record sheet.

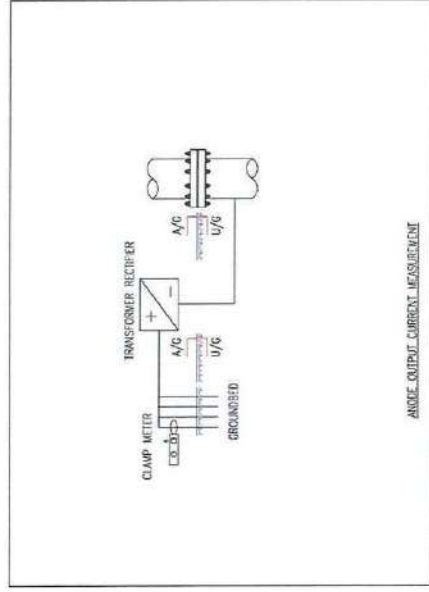
Energized Potential Measurement (“Instant Off” Potential)

- 1) Make sure that the transformer rectifier terminals are connected completely. The (+) terminal of the transformer rectifier is connected to the positive cable from the positive junction box and the (-) terminal of the transformer rectifier is connected to the negative cable from the negative junction box.
- 2) Insert the interrupter between the (-) terminal of the transformer rectifier and the negative cable. The interrupter should be set at a cycle “On” 4.00 sec, “Off” 1.00 sec.
- 3) Turn on the transformer rectifier and the interrupter.
- 4) Adjust the transformer rectifier until the measurement of the “instant off” DC pipe to soil potential with respect to Cu/CuSO₄ reference electrode is more negative than 850 mV, not more negative than 1,200 mV and the measurement of the “on” DC pipe to soil potential with respect to Cu/CuSO₄ reference electrode is not more negative than 3,000 mV at all the CP test posts.
- 5) While the transformer rectifier is being adjusted, at the CP test post to be tested, place the Cu/CuSO₄ reference electrode on the grade above the underground pipeline to be tested by contacting well between the porous plug of Cu/CuSO₄ reference electrode and grade surface.
- 6) Prior to measure the potential, make sure that the red test lead of digital multimeter is in the “V” terminal and the black test lead of the digital multimeter is in the “com” terminal.
- 7) Take the red test lead of the digital multimeter contact to pipe cable from the CP test post and take the black test lead of the digital multimeter contact to the Cu/CuSO₄ reference electrode.
- 8) When make the “instant off” and “on” DC pipe to soil potential measurement, select the “DC volt” mode of the digital multimeter.
- 9) Read and record the test result in the data record sheet.
- 10) After the measurement has been completed, the interrupter should be disconnected and the transformer rectifier is operated steadily.



3.2.2. Anode Output Current Measurement

- 1) Make sure that the CP system to be tested is being operated.
- 2) Prior to measure the current, make sure that the clamp digital multimeter is set zero calibration.
- 3) At the positive junction box, take the clamp digital multimeter hook each anode grounded cable.
- 4) When make the anode grounded current measurement, select the “DC amp” mode of the clamp digital multimeter.
- 5) Read and record the test result in the data record sheet.



3.3. Data Record Sheet

- 3.3.1. GSP to Border (36"NG and 8"LPG)
- CP Test Post Check
- Chart for PS Potential
- Chart for PS AC Induced Potential
- 3.3.2. Landfill to GSP (34")
- CP Test Post Check
- Chart
- 3.3.3. GSP Bypass (30"NG)
- CP Test Post Check
- Chart
- 3.3.4. M10 (16"NG)
- CP Test Post Check
- Chart
- 3.3.5. M11 (8"NG)
- CP Test Post Check
- Chart
- 3.3.6. Slug Catcher
- CP Test Post Check
- 3.3.7. Transformer Rectifier Check

CP TEST POST CHECK

TEST INSTRUMENT

: Digital Multimeter Fluke 189
: Cu/CuSO₄ Reference Electrode

Pipeline Route : GSP to Border (36"NG and 8"LPG)

CP System : Impressed Current

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

Interrupted Transformer Rectifier Data																			
No.	Location	GPS(WGS84)		Input		Rated		Output		Anode Current (A)								Remarks	
		North	East	Volt	Amp	Volt	Amp	Volt	Amp	A1	A2	A3	A4	A5	A6	A7	A8		
1	BVT2	6.97661	100.38284	237.1 V	0.39 A	50 V	10 A	3.624 V	0.222 A	0.003	0.007	0.012	0.002	0.014	0.006	0.011	0.002	C1F4	
2	BVT3	6.89163	100.48317	238.7 V	0.46 A	50 V	10 A	8.260 V	4.850 A	0.110	0.080	0.540	0.630	0.420	0.330	0.340	2.500	C1F9	
3	BVT7	6.61824	100.44466	234.7 V	0.35 A	50 V	10 A	1.039 V	0.074 A	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.003	C1F2	
CP Test Post Data																			
TP	Location	Sta.	Type	GPS(WGS84)		P/S Potential (Vdc)		Criteria	Accept?	P/S Induced Potential (Vac)		Criteria	Accept?	CP Test Post		Box	Post		Remarks
				North	East	"On"	"Off"			Vac	Criteria			Yes	No				
TP-01	GLF	0+000	PCR, D	6.98916	100.36572	-1.135	-1.098	-0.850	Yes	0.053	15.000	Yes	normal	normal	normal	normal	normal		
IBD-02	Bond box of pipe M10	-	-	6.98973	100.36491	-1.505	-1.474	-0.850	Yes	0.096	15.000	Yes	normal	normal	normal	normal	normal	pipe 16" M10 = -1.601, -1.600 Vdc, 0.037 Vac. (Bonded I = 1.47 mA)	
TP-02	Talingchan Rd.	0+663	A	6.97268	100.36081	-1.280	-1.238	-0.850	Yes	0.202	15.000	Yes	normal	normal	normal	normal	normal		
BR	Bond box of pipe 20"	-	-	6.97454	100.37347	-1.331	-1.292	-0.850	Yes	0.226	15.000	Yes	normal	normal	normal	normal	normal	pipe 20" Power Plant = -1.501, -1.293 Vdc, 0.161 Vac (Bonded I = 15.64 mA)	
TP-03	Inside Pond	1+503	A	6.97726	100.35463	-1.256	-1.218	-0.850	Yes	0.569	15.000	Yes	normal	normal	normal	normal	normal	Nameplate is wrong TP no.	
TP-04	Bannairai	3+048	A	6.98661	100.34467	-1.226	-1.197	-0.850	Yes	0.323	15.000	Yes	normal	normal	normal	normal	normal		
TP-05	Banpham	5+098	A	6.98335	100.35159	-1.239	-1.205	-0.850	Yes	0.929	15.000	Yes	normal	normal	normal	normal	normal		
TP-06	BV 0.5	7+001	A (Mg)	6.98019	100.35157	-1.238	-1.197	-0.850	Yes	1.259	15.000	Yes	normal	normal	normal	normal	normal		
TP-07	Banpham	7+548	E	6.97335	100.35172	-1.135	-1.107	-0.850	Yes	1.398	15.000	Yes	normal	normal	normal	normal	normal		
TP-08	Palm Gargen	8+528	A (Mg)	6.97856	100.35187	-1.183	-1.142	-0.850	Yes	1.574	15.000	Yes	normal	normal	normal	normal	normal		
TP-09	Samet Tree	9+417	A (Mg)	6.97782	100.40388	-1.194	-1.156	-0.850	Yes	1.742	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-10	Barrier	10+538	A (Mg)	6.97090	100.40075	-1.286	-1.245	-0.850	Yes	2.353	15.000	Yes	normal	normal	normal	normal	normal		
TP-11	EP 366	11+648	AG	6.98127	100.67545	-1.145	-1.132	-0.850	Yes	0.256	15.000	Yes	normal	normal	normal	normal	normal		
TP-12	EP 358	12+248	AG	6.98233	100.67943	-1.063	-1.052	-0.850	Yes	0.121	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-13	BVT1	12+572	ARG	6.98091	100.60757	-1.123	-1.114	-0.850	Yes	0.153	15.000	Yes	normal	normal	normal	normal	normal		
TP-14	College Jana	12+998	AG	6.98070	100.60379	-1.232	-1.211	-0.850	Yes	0.167	15.000	Yes	normal	normal	normal	normal	normal		
TP-15	College Jana	13+598	AG	6.98487	100.65851	-1.164	-1.151	-0.850	Yes	0.092	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-16	EP 322	15+098	AG	6.98767	100.64522	-1.151	-1.134	-0.850	Yes	0.131	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-17	EP 303	16+133	EG	6.98043	100.63619	-1.082	-1.067	-0.850	Yes	0.107	15.000	Yes	normal	normal	normal	normal	normal		
TP-18	EP 298	16+578	AG	6.98548	100.63231	-1.083	-1.073	-0.850	Yes	0.182	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-19	EP 292	17+453	AG	6.98510	100.62418	-1.018	-1.018	-0.850	Yes	0.049	15.000	Yes	normal	normal	normal	normal	normal		
TP-20	EP 290	17+927	AG	6.98780	100.62131	-1.064	-1.051	-0.850	Yes	0.382	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-21	EP 287	18+193	AG	6.98903	100.61925	-1.072	-1.064	-0.850	Yes	0.136	15.000	Yes	normal	normal	normal	normal	normal	Rusted	
TP-22	EP 278	18+628	AG	6.98941	100.61534	-1.156	-1.138	-0.850	Yes	0.075	15.000	Yes	normal	normal	normal	normal	normal	Rusted	

CP TEST POST CHECK

TEST INSTRUMENT

: Digital Multimeter Fluke 189
: Cu/CuSO₄ Reference Electrode

Pipeline Route : GSP to Border (36"NG and 8" LPG)

CP System : Impressed Current

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

Interrupted Transformer Rectifier Data																		
No.	Location	GPS(WGS84)		Input		Rated		Output		Anode Current (A)								Remarks
		North	East	Volt	Amp	Volt	Amp	Volt	Amp	A1	A2	A3	A4	A5	A6	A7	A8	
1	BVT2	6.97661	106.58084	237.1 V	0.39 A	50 V	10 A	3.624 V	0.222 A	0.003	0.007	0.012	0.002	0.014	0.006	0.011	0.002	C1F4
2	BVT5	6.98163	106.48317	238.7 V	0.46 A	50 V	10 A	8.260 V	4.850 A	0.110	0.080	0.540	0.630	0.420	0.330	0.340	2.500	C1F9
3	BVT7	6.61824	106.44406	234.7 V	0.35 A	50 V	10 A	1.039 V	0.074 A	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.003	C1F2
CP Test Post Data																		
TP	Location	Sta.	Type	GPS(WGS84)		P/S Potential (Vdc)			P/S Induced Potential (Vac)		CP Test Post		Remarks					
				North	East	"On"	"Off"	Criteria	Accept?	Vac	Criteria	Accept?		Box	Post			
TP-23	EP 274	18+852.5	AG	6.98943	106.61333	-1.108	-1.081	-0.850	Yes	0.082	15.000	Yes	normal	normal				
TP-24	EP 247	20+478	AG	6.98974	106.59660	-1.033	-1.021	-0.850	Yes	0.053	15.000	Yes	normal	normal				
TP-25	EP 231	21+308	AG	6.98997	106.59177	-1.090	-1.078	-0.850	Yes	0.145	15.000	Yes	normal	normal				
TP-26	EP 226	21+566	AG	6.98492	106.59002	-1.128	-1.118	-0.850	Yes	0.226	15.000	Yes	normal	normal				
TP-27	BVT2	22+782	ARG	6.97984	106.58649	-1.324	-1.257	-0.850	Yes	0.141	15.000	Yes	normal	normal	Rusted			
TP-28	EP 207	23+097	EG	6.97729	106.57820	-1.039	-1.012	-0.850	Yes	0.527	15.000	Yes	normal	normal	Rusted			
TP-29	EP 199	23+428	AG	6.97763	106.57684	-1.040	-1.026	-0.850	Yes	0.107	15.000	Yes	normal	normal	Rusted			
TP-30	EP 181	24+128	AG	6.96914	106.57511	-1.195	-1.186	-0.850	Yes	0.238	15.000	Yes	normal	normal				
TP-31	EP 166	25+238	AG	6.96244	106.56863	-1.104	-1.098	-0.850	Yes	0.302	15.000	Yes	normal	normal	No nameplate			
TP-32	EP 152	26+238	AG	6.95610	106.56139	-1.132	-1.117	-0.850	Yes	0.528	15.000	Yes	normal	normal	Rusted			
TP-33	EP 110	28+399	AG	6.95783	106.54259	-1.092	-1.084	-0.850	Yes	0.352	15.000	Yes	normal	normal				
TP-34	EP 89	29+393	AG	6.95868	106.53273	-1.145	-1.133	-0.850	Yes	0.622	15.000	Yes	normal	normal				
TP-35	EP 77	30+023	AG	6.96091	106.52855	-1.131	-1.093	-0.850	Yes	0.275	15.000	Yes	normal	normal				
TP-36	EP 48	31+788	EG	6.96568	106.51349	-1.172	-1.141	-0.850	Yes	0.117	15.000	Yes	normal	normal				
TP-37	BVT3	32+698	ARG	6.96604	106.50406	-1.073	-1.066	-0.850	Yes	0.145	15.000	Yes	normal	normal	Rusted			
TP-38	EP 23	33+323	AG	6.96051	106.50831	-1.049	-1.022	-0.850	Yes	0.608	15.000	Yes	normal	normal				
TP-39	EP 17	33+583	AG	6.96028	106.49814	-1.160	-1.131	-0.850	Yes	0.844	15.000	Yes	normal	normal	Rusted, Nameplate has no TP no.			
TP-40	NGV PTT	34+528	AG	6.97155	106.49911	-1.046	-1.026	-0.850	Yes	0.891	15.000	Yes	normal	normal	Rusted, Nameplate has no TP no.			
TP-41	Graveyard China	36+623	AG	6.99962	106.48468	-1.132	-1.104	-0.850	Yes	0.586	15.000	Yes	normal	normal	Rusted			
TP-42	Chomsang 4	37+998	AG	6.94729	106.48757	-1.129	-1.112	-0.850	Yes	0.418	15.000	Yes	normal	normal	Rusted			
TP-43	Graveyard Chris	39+498	EG	6.95423	106.48795	-1.108	-1.098	-0.850	Yes	0.042	15.000	Yes	normal	normal	Rusted			
TP-44	Palm Garden	41+623	AG	6.91677	106.49038	-1.202	-1.193	-0.850	Yes	0.077	15.000	Yes	normal	normal				
TP-45	Banrai	43+376	AG	6.93020	106.48759	-1.183	-1.160	-0.850	Yes	0.035	15.000	Yes	normal	normal	Rusted			
TP-46	Banrai	44+358	AG	6.90239	106.48035	-1.134	-1.082	-0.850	Yes	0.047	15.000	Yes	normal	normal	Rusted			

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CP TEST POST CHECK

TEST INSTRUMENT

: Digital Multimeter Fluke 189
: Cu/CuSO₄ Reference Electrode

Pipeline Route : GSP to Border (36"NG and 8" LPG)

CP System : Impressed Current

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

Interrupted Transformer Rectifier Data																		
No.	Location	GPS(WGS84)		Input		Rated		Output		Anode Current (A)								Remarks
		North	East	Volt	Amp	Volt	Amp	Volt	Amp	A1	A2	A3	A4	A5	A6	A7	A8	
1	BVT2	6.97661	106.58084	237.1 V	0.39 A	50 V	10 A	3.624 V	6.222 A	0.003	0.007	0.012	0.002	0.014	0.006	0.011	0.002	C1F4
2	BVT5	6.80163	106.48317	238.7 V	0.46 A	50 V	10 A	8.260 V	4.850 A	0.110	0.080	0.540	0.630	0.420	0.330	0.340	2.500	C1F9
3	BVT7	6.61824	106.44406	234.7 V	0.35 A	50 V	10 A	1.039 V	0.074 A	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.003	C1F2

CP Test Post Data																	
TP	Location	Sta.	Type	GPS(WGS84)		P/S Potential (Vdc)		Criteria	Accept?	P/S Induced Potential (Vac)		Criteria	Accept?	CP Test Post		Remarks	
				North	East	"On"	"Off"			Vac				Box	Post		
TP-47	Before BVT4	44+948	AG	6.88827	106.49911	-1.251	-1.140	-0.850	Yes	0.048	15.000	Yes	normal	normal	normal	Rusted, Nameplate is wrong TP no. and wrong location KP.	
TP-48	BVT4	45+053	ARG	6.88888	106.49659	-1.208	-1.103	-0.850	Yes	0.089	15.000	Yes	normal	normal	normal		
TP-49	Next BVT4	45+318	AG	6.88888	106.49073	-1.276	-1.145	-0.850	Yes	0.096	15.000	Yes	normal	normal	normal	Rusted	
TP-50	Tunglung Pol. Sta.	46+123	AG	6.87775	106.49205	-1.265	-1.182	-0.850	Yes	0.102	15.000	Yes	normal	normal	normal	Rusted	
TP-51	Banpratueng	48+098	EG	6.96014	106.49139	-1.278	-1.162	-0.850	Yes	0.101	15.000	Yes	normal	normal	normal	Rusted	
TP-52	Kiornong Temple	50+578	AG	6.84175	106.48930	-1.229	-1.064	-0.850	Yes	0.191	15.000	Yes	normal	normal	normal	TP is disappeared, cable left can be tested P/S	
TP-53	Vungling Temple	52+198	AG	6.82765	106.48541	-1.156	-1.136	-0.850	Yes	0.137	15.000	Yes	normal	normal	normal	Rusted	
TP-54	Before BVT5	54+048	AG	6.81058	106.48010	-1.253	-1.256	-0.850	Yes	0.083	15.000	Yes	normal	normal	normal	Rusted	
TP-55	BVT5	55+053	ARG	6.80150	106.48038	-1.263	-1.145	-0.850	Yes	0.047	15.000	Yes	normal	normal	normal	Rusted, Nameplate has no TP no.	
TP-56	Next BVT5	55+088	EG	6.80125	106.48182	-1.397	-1.271	-0.850	Yes	0.048	15.000	Yes	normal	normal	normal	Rusted	
TP-57	Vungling	56+675	AG	6.78716	106.47996	-1.248	-1.155	-0.850	Yes	0.036	15.000	Yes	normal	normal	normal	Rusted	
TP-58	Klongheha	58+028	AG	6.77718	106.47777	-1.201	-1.154	-0.850	Yes	0.032	15.000	Yes	normal	normal	normal	Rusted	
TP-59	Rata	60+008	AG	6.75910	106.47274	-1.249	-1.191	-0.850	Yes	0.045	15.000	Yes	normal	normal	normal	Rusted	
TP-60	Klongaymee	61+598	AG	6.74474	106.47170	-1.232	-1.198	-0.850	Yes	0.035	15.000	Yes	normal	normal	normal	Rusted	
TP-61	Bannmai	63+598	EG	6.72666	106.47044	-1.223	-1.177	-0.850	Yes	0.116	15.000	Yes	normal	normal	normal	Rusted	
TP-62	Inside BVT6	65+348	PCR, D	6.71166	106.46901	-1.219	-1.067	-0.850	Yes	0.878	15.000	Yes	normal	normal	normal	No nameplate	
TP-63	BVT6	65+373	AR	6.71081	106.46903	-1.544	-1.496	-0.850	Yes	1.563	15.000	Yes	normal	normal	normal		
TP-64	Banprick	67+748	A	6.69020	106.46079	-1.614	-1.524	-0.850	Yes	7.280	15.000	Yes	normal	normal	normal		
TP-65	Banyangkor	69+918	A	6.67971	106.45603	-1.624	-1.545	-0.850	Yes	9.240	15.000	Yes	normal	normal	normal	No nameplate	
TP-66	Komplai soi 5	71+898	E	6.65901	106.45422	-1.669	-1.571	-0.850	Yes	7.820	15.000	Yes	normal	normal	normal	Rusted	
TP-67	Bancomplai	73+258	A	6.64280	106.45816	-1.621	-1.560	-0.850	Yes	6.750	15.000	Yes	normal	normal	normal	Rusted	
TP-68	Bannumlut	74+434	A	6.63345	106.45321	-1.555	-1.416	-0.850	Yes	4.145	15.000	Yes	normal	normal	normal		
TP-69	Bannumlut	74+723	A	6.63120	106.45102	-1.552	-1.462	-0.850	Yes	3.524	15.000	Yes	normal	normal	normal	No nameplate	
TP-70	Bannumlut	75+583	A	6.62426	106.44813	-1.539	-1.456	-0.850	Yes	1.948	15.000	Yes	normal	normal	normal	No nameplate	

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Trans Thai-Malaysia (Thailand) Ltd.
Chana Gas Separation Plant Underground Pipeline CP Test Inspection Project.
CP Test Post Check

CP TEST POST CHECK

TEST INSTRUMENT

: Digital Multimeter Fluke 189
: Cu/CuSO₄ Reference Electrode

Pipeline Route : GSP to Border (36"NG and 8" LPG)

CP System : Impressed Current

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V", "AC induced potential less than 15 V"																		
Interrupted Transformer Rectifier Data																		
No.	Location	GPS(WGS84)		Input		Rated		Output		Anode Current (A)								Remarks
		North	East	Volt	Amp	Volt	Amp	Volt	Amp	A1	A2	A3	A4	A5	A6	A7	A8	
1	BVT2	6.57864	100.58084	237.1 V	0.39 A	50 V	10 A	3.624 V	0.222 A	0.003	0.007	0.012	0.002	0.014	0.006	0.011	0.002	C1F4
2	BVT5	6.58163	100.48217	238.7 V	0.46 A	50 V	10 A	8.260 V	4.850 A	0.110	0.080	0.540	0.630	0.420	0.330	0.340	2.500	C1F9
3	BVT7	6.51834	100.44406	234.7 V	0.35 A	50 V	10 A	1.039 V	0.074 A	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.003	C1F2
CP Test Post Data																		
TP	Location	Sta.	Type	GPS(WGS84)		P/S Potential (Vdc)			Criteria	P/S Induced Potential (Vac)		Criteria	Accept?	CP Test Post		Remarks		
				North	East	"On"	"Off"	Vac			Box			Post				
TP-71	Front BVT7	76+323	A	6.61991	100.44432	-1.556	-1.434	-0.850	Yes	0.553	15.000	Yes		normal	normal			
TP-72	Behind BVT7	76+398	AR	6.61366	100.44403	-1.582	-1.454	-0.850	Yes	0.334	15.000	Yes		normal	normal			
TP-73	Side BVT7	76+448	E	6.61815	100.44266	-1.565	-1.479	-0.850	Yes	0.772	15.000	Yes		normal	normal			
TP-74	Sunnakul	78+968	A	6.59663	100.43244	-1.673	-1.580	-0.850	Yes	3.747	15.000	Yes		normal	normal			
TP-75	Ban 800 rai	79+498	A	6.59416	100.42964	-1.581	-1.495	-0.850	Yes	4.128	15.000	Yes		normal	normal	Rusted		
TP-76	Behind Topcode	81+498	E	6.57946	100.42103	-1.614	-1.534	-0.850	Yes	5.565	15.000	Yes		normal	normal			
TP-77	Behind Topcode	83+598	A	6.56682	100.42754	-1.732	-1.649	-0.850	Yes	1.823	15.000	Yes		normal	normal	No nameplate		
TP-78	Inside BVT8	85+148	PCR, D	6.55476	100.42943	-1.481	-1.378	-0.850	Yes	0.548	15.000	Yes		normal	normal			
TP-79	Inside BVT8	85+148	PCR, D	6.55415	100.42943	-1.554	-1.492	-0.850	Yes	0.381	15.000	Yes		normal	normal	No nameplate		
TP-80	Front BVT8	85+178	A	6.55369	100.42944	-1.574	-1.482	-0.850	Yes	0.818	15.000	Yes		normal	normal	Transformer Rectifier in Malaysia had been interrupted		
TP-81	Shooting Gallery	87+098	A	6.55091	100.42261	-1.732	-1.655	-0.850	Yes	0.602	15.000	Yes		normal	normal			
TP-82	Border Malaysia	88+648	AR	6.52431	100.41493	-1.955	-1.878	-0.850	Yes	0.182	15.000	Yes		normal	normal			
														</				

Note/Comment :

Test By				Acceptance By			
CPE				CPE			
Company							
Name							
Title							
Signature							
Date	25 March - 4 April 2024			25 March - 4 April 2024			10-5-2024 / 10-5-7-2024

T. 0-2924-3024, 0-2924-9553-4 F. 0-2924-1744

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Chart Entire for GSP to Border (36"NG and 8" LPG), (Impressed Current System)

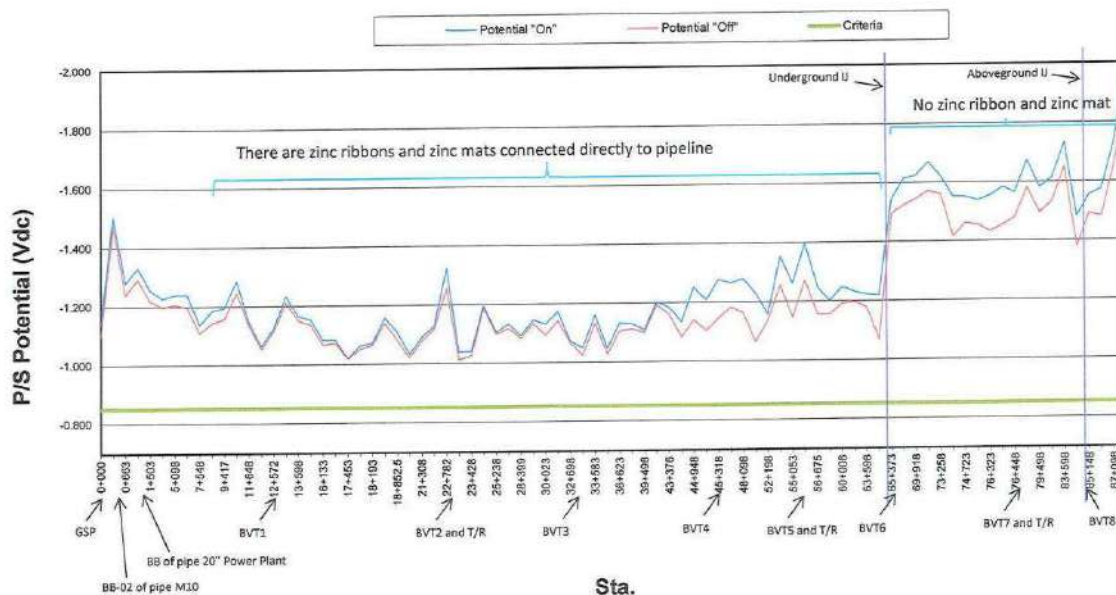
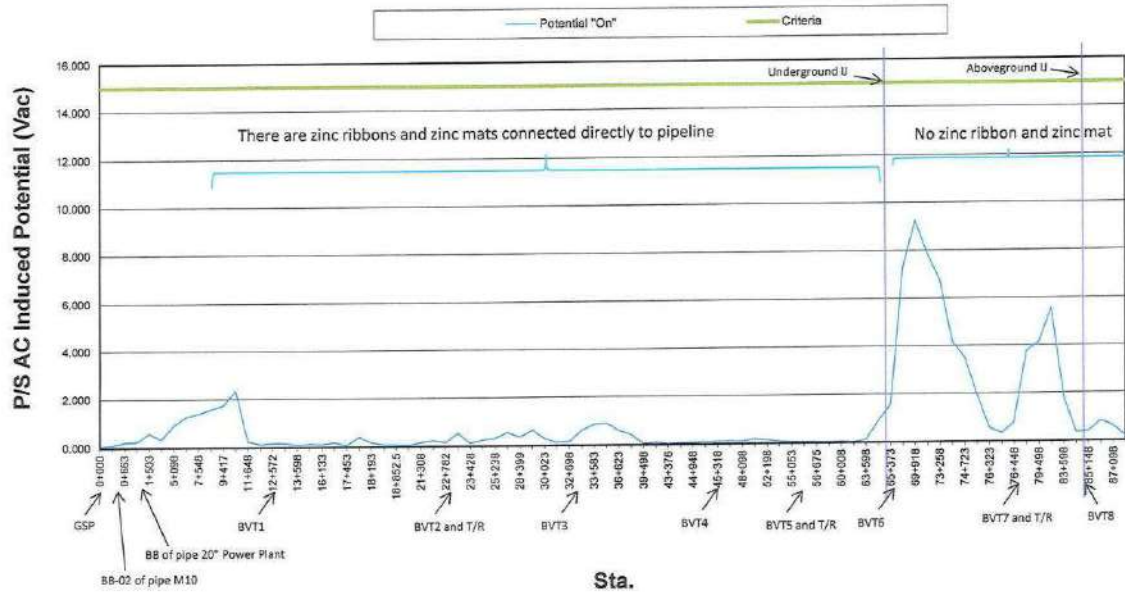




Chart Entire for GSP to Border (36"NG and 8"LPG), (Impressed Current System)



164/620 Moo 1, Bangkruay-Sainoi Rd.,
Pimolraj, Bangbuastrong, Nonthaburi 11110

Trans Thai-Malaysia (Thailand) Ltd.
Chana Gas Separation Plant Underground Pipeline CP Test Inspection Project.
CP Test Post Check.

CP TEST POST CHECK

TEST INSTRUMENT

: Digital Multimeter Fluke 189
: Cu/CuSO₄ Reference Electrode

Pipeline Route : Landfill to GSP (34")

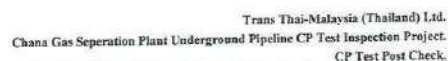
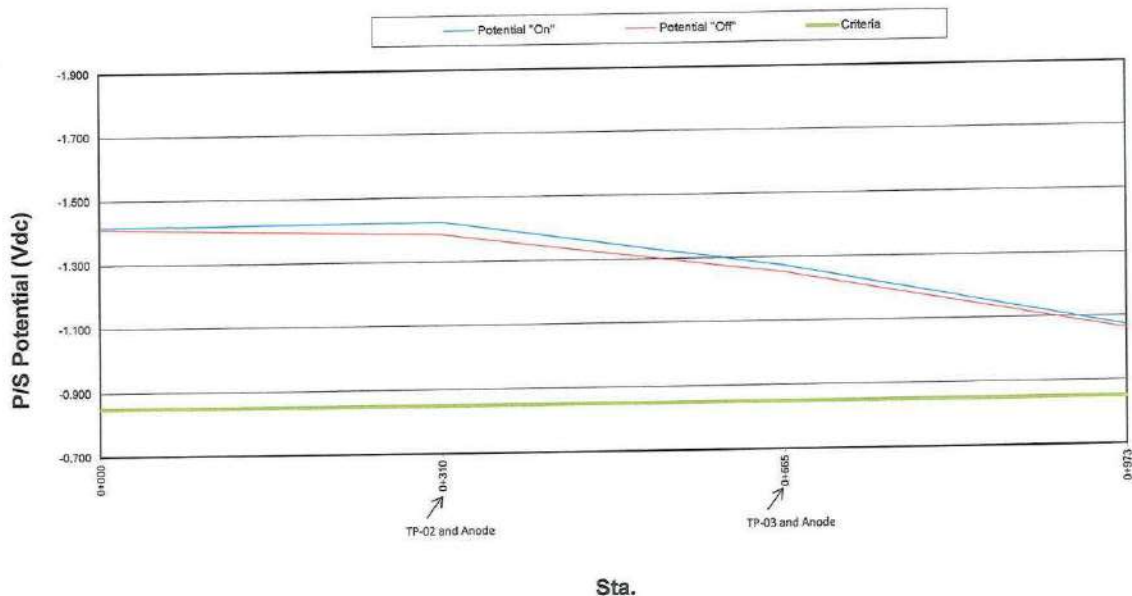
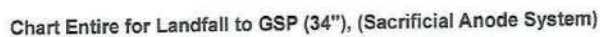
CP System : Sacrificial Anode

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"															
Interrupted Anode Data											Remarks				
No.	Location	Sta.	Type	GPS(WGS84)		Sacrificial Anode System Data (before interrupted)									
				North	East	Pipe/S Potential (Vdc)	(Pipe + Anode)/S Potential (Vdc)	Anode/S Potential (Vdc)	Current (mA)						
1	TP-02	0+310	A (3Mg)	6.97865	100.77378	-1.230	-1.345	-1.438	6.590						
2	TP-03	0+665	A (3Mg)	6.97946	100.77242	-1.559	-1.417	-1.542	2.600						
CP Test Post Data															
TP	Location	Sta.	Type	GPS(WGS84)		P/S Potential (Vdc)			P/S Induced Potential (Vac)		CP Test Post		Remarks		
				North	East	"On"	"Off"	Criteria	Accept?	Vac	Criteria	Accept?		Box	Post
TP-01	-	0+000	PCR, D	6.97768	100.77393	-1.417	-1.411	-0.850	Yes	0.016	15.000	Yes	normal	normal	
TP-02	-	0+310	A (3Mg)	6.97285	100.77376	-1.424	-1.385	-0.850	Yes	0.045	15.000	Yes	normal	normal	
TP-03	-	0+665	A (3Mg)	6.97946	100.77242	-1.274	-1.252	-0.850	Yes	0.043	15.000	Yes	normal	normal	
TP-04	-	0+973	PCR, D	6.96047	100.77221	-1.072	-1.062	-0.850	Yes	0.037	15.000	Yes	normal	normal	

Note/Comment :

Test By				Acceptance By			
CPE				TTM			
Company							
Name							
Title	Supervisor						
Signature							
Date	25 March - 4 April 2024			25 March - 4 April 2024			



TEST INSTRUMENT

: *Cu/CuSO₄ Reference Electrode*

Pipeline Route: GSP Bypass (34°NG)

CP System : Sacrificial Anode

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

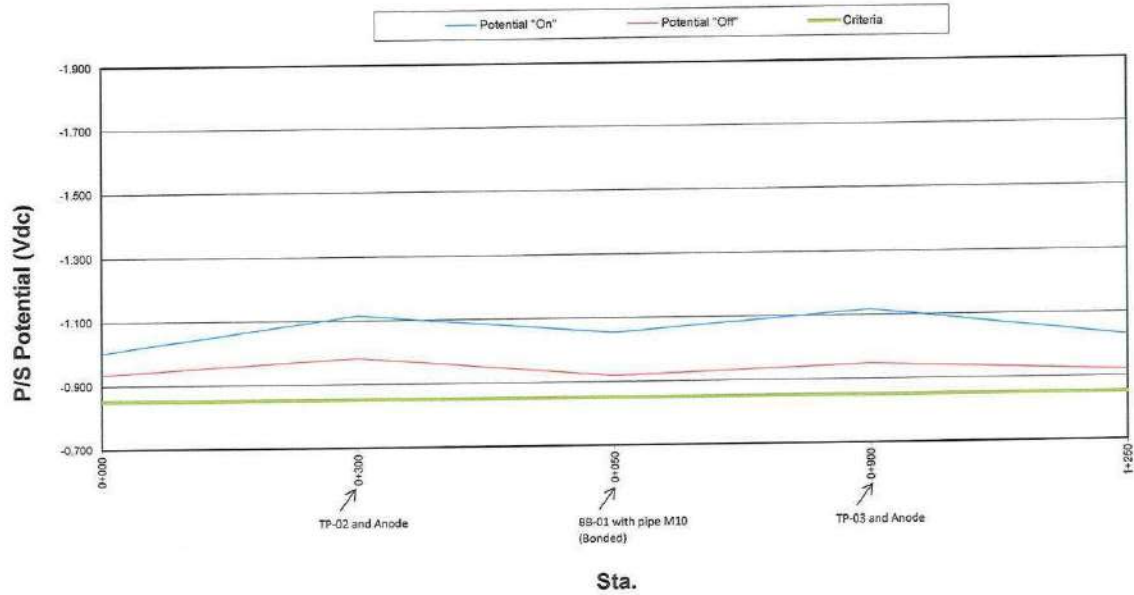
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Note/Comment :

Test By		Acceptance By
CPE		TTM
Company		
Name		
Title	Supervisor	SPMT / SME
Signature		
Date	25 March - 4 April 2024	25 March - 4 April 2024



Chart Entire for GSP Bypass (34" NG), (Sacrificial Anode System)



164/620 Moo 1, Banglor-Sai Noi Rd.,
Pinolraj, Bang Sue Thong, Nonthaburi 11110

Trans Thai-Malaysia (Thailand) Ltd.
Chana Gas Separation Plant Underground Pipeline CP Test Inspection Project.
CP Test Post Check.

CP TEST POST CHECK

TEST INSTRUMENT

: Digital Multimeter Fluke 189
: Cu/CuSO₄ Reference Electrode

Pipeline Route : M10 (16" NG)

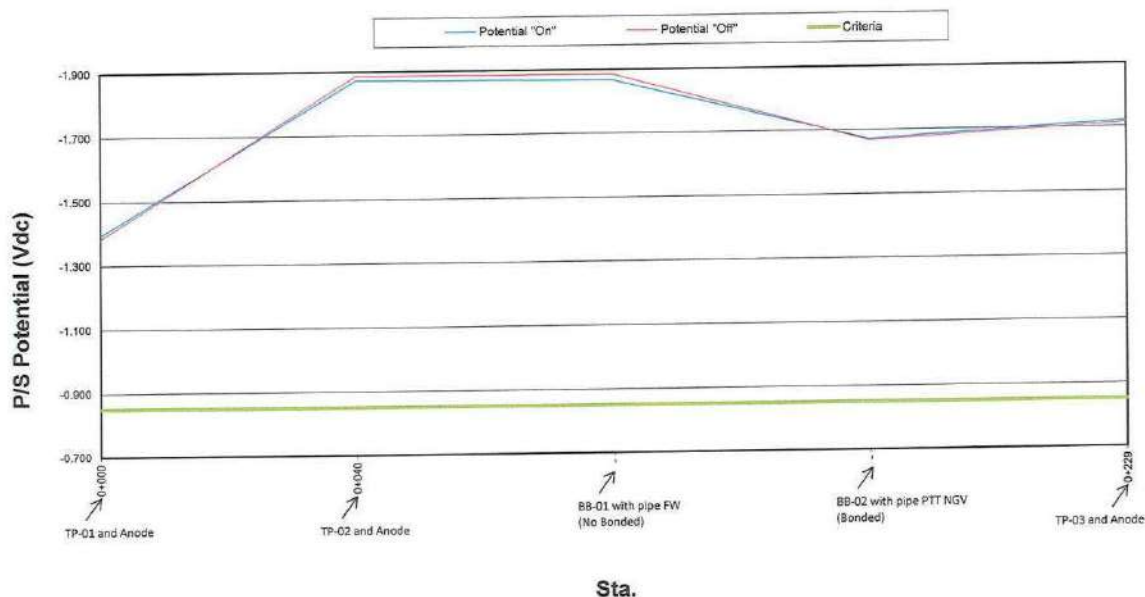
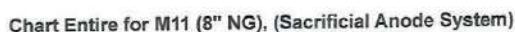
CP System : Sacrificial Anode

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

Interrupted Anode Data														
No.	Location	Sta.	Type	GPS(WGS84)		Sacrificial Anode System Data (before interrupted)				Pipe/S Potential (Vdc) of other pipe bonded with	Remarks			
				North	East	Pipe/S Potential (Vdc)	(Pipe + Anode)/S Potential (Vdc)	Anode/S Potential (Vdc)	Current (mA)					
1	BB-01	0+000	-	6.96981	100.77199	-1.116	-	-	-42.330	-1.041	BB with pipe FW			
2	TP-02	0+050	MA (10Mg)	6.97010	100.77216	-1.184	-1.336	-1.664	51.400	-				
3	BB-02	0+050	-	6.97010	100.77216	-1.309	-	-	-49.290	-1.294	BB with pipe Bypass			
4	TP-03	0+600	MA (10Mg)	6.97319	100.76830	-1.124	-1.232	-1.525	44.320	-				
5	TP-04	1+100	MA (10Mg)	6.96959	100.76533	-1.687	-1.751	-1.944	4.770	-				
CP Test Post Data														
TP	Location	Sta.	Type	GPS(WGS84)		P/S Potential (Vdc)		P/S Induced Potential (Vdc)		CP Test Post		Remarks		
				North	East	"On"	"Off"	Criteria	Accept?	Vac	Criteria		Accept?	Box
TP-01	-	0+000	PCR, D	6.96981	100.77199	-1.115	-1.102	-0.850	Yes	0.035	15.000	Yes	normal	
BB-01	BB with pipe FW	0+000	-	6.96981	100.77199	-1.116	-1.103	-0.850	Yes	0.038	15.000	Yes	normal	pipe FW = -1.055, -1.055 Vdc, 0.049 Vac. (Bonded I = -42.33 mA)
TP-02	-	0+050	MA (10Mg)	6.97010	100.77216	-1.299	-1.262	-0.850	Yes	0.052	15.000	Yes	normal	
BB-02	BB with pipe Bypass	0+050	-	6.97010	100.77216	-1.296	-1.260	-0.850	Yes	0.039	15.000	Yes	normal	pipe 34" GSP Bypass = -1.067, -1.034 Vdc, 0.041 Vac. (Bonded I = -49.29 mA)
TP-03	-	0+600	MA (10Mg)	6.97319	100.76830	-1.224	-1.164	-0.850	Yes	0.062	15.000	Yes	normal	
TP-04	-	1+100	MA (10Mg)	6.96959	100.76533	-1.702	-1.622	-0.850	Yes	0.063	15.000	Yes	normal	
BB-03	BB with pipe Border	-	-	6.96979	100.76491	-1.364	-1.334	-0.850	Yes	0.048	15.000	Yes	normal	pipe 36" NG and 8" LPG = -1.086, -1.083 Vdc, 0.095 Vac (No Bonded)
										</				

Note/Comment :

Test By				Acceptance By			
CPE				SPMT			
Company							
Name	Supervisor			SPMT / SPME			
Title							
Signature							
Date	25 March - 4 April 2024			25 March - 4 April 2024			



CP TEST POST CHECK

TEST INSTRUMENT

* Digital Multimeter Fluke 189

: *Cu/CuSO₄ Reference Electrode*

Pipeline Route : GLF LPG (6")

CP Sytem : Bonding from FW Impressed Current

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

[illegible]

Note/Comment :

Test By		Acceptance By
Company	CPE	ITM
Name	[Redacted]	[Redacted]
Title	Supervisor	SPMT / SPME
Signature	[Redacted]	[Redacted]
Date	22 March - 4 April 2024	22 March - 4 April 2024

CP TEST POST CHECK

TEST INSTRUMENT

: *Cu/CuSO₄ Reference Electrode*

Pipeline Route : Slug Catcher

CP System : Impressed Current

NACE Standard SP0169 criterion#2 "Polarized potential more negative than -0.850 V", "AC induced potential less than 15 V"

[illegible]

Note/Comment :

	Test By		Acceptance By
Company	CPE		SPMT
Name			
Title	Supervisor		SPMT / SPME
Signature			
Date	25 March - 4 April 2024	25 March - 4 April 2024	

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CP TRANSFORMER RECTIFIER CHECK

; Digital Multimeter Fluke 189
; Cu/CuSO₄ Reference Electrode; Digital Multimeter Fluke 189
; Cu/CuSO₄ Reference Electrode

Pipeline Route : GSP to Border (36"NG and 8" LPG), Slug Catcher

[illegible]

Note/Comment:

Note/Comment :		Text By <i>CPE</i>		Assurance By <i>TTM</i>	
Company Name	S. Thanon	S. Porngso		Pompravit / Apinan A	
Title		S. Porngso 4298-Technician			
Signature					
Date	25 March - 4 April 2024	25 March - 4 April 2024			


0-2924-3024, 0-2924-9553-4 F, 0-2924-1744

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3.4. Photograph



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หัวข้อ :

PREVENTIVE MAINTENANCE REPORT

Problem was Found :

None

Corrective Action :

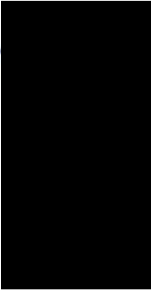
None

ISSUED BY




Pipeline Maintenance Technician

REVIEWED BY



Senior Pipeline Maintenance Engineer

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FORM

DOC ID. : PM-FM- MNT-060

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หัวข้อ :

PREVENTIVE MAINTENANCE REPORT

Pipeline Preventive Maintenance Report

Title : Insulation joint inspection

△ Asset Reference List No: PM-LIST-010

△ Work Order No: WO 40091559

△ EPTW No: TTM-CW-2024-2063


Location Name: All station (GRF, GLF, BVT1- T8, M10 and M11)

Instrument / Equipment Name CP Insulation Joint

Tag Number: Please find in the inspection report

Action Date: 25 March – 4 April 2024

Action by:

1. 
2. 
3. Contractor (CPE)

Equipments:

1. 1 set of Fluke True RMS Multimeter model 289
2. Insulation checker MCM 601
3. Hand tools

Action Details:

1. Request permit to work by E-PTW system (Cold Work).
2. Check the termination and connections in PCR
3. Measure and record ON and instant OFF potentials on both sides of the PCR terminals
4. Use an insulation checker to check the insulation joint.
5. Close permit to work in E-PTW system.



CONTENT

- 4.1. Isolation Check Criteria
- 4.2. Isolation Check Test Procedure
- 4.3. Data Record Sheet
- 4.4. Photograph



4. ISOLATION CHECK

4.2. Isolation Check Test Procedure

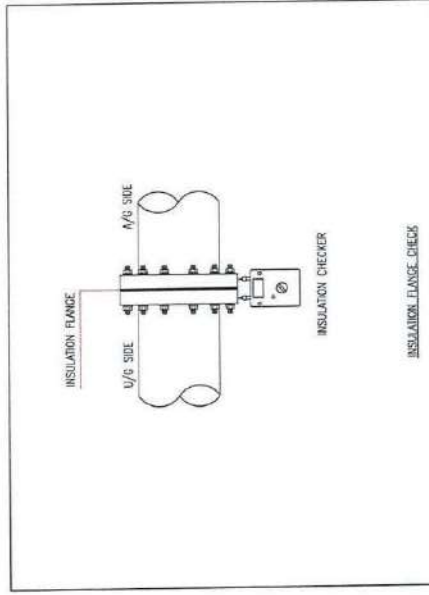
4.2.1. By insulation checker

Test Equipment

- 1). Insulation checker gas electronic model 601
- 2). Hand tools

Test Procedure

- 1). By using the insulation checker gas electronic model 601, turn instrument "on" with the left hand toggle switch.
 - 2). Flip the right hand toggle switch to the "zero" position.
 - 3). Adjust potentiometer knob pointer is at "zero".
 - 4). Flip the right hand toggle switch to the "test" position (pointer will jump hard to the right pointer stop).
 - 5). Checking may be done by shorting across the probes with a screwdriver, knife, etc. This should show a direct short deflecting the pointer "zero" or below.
 - 6). Make contact with each probe across the insulator in question. The following results will be obtained :
 - 6.1). An insulator that is good, will read full scale.
 - 6.2). If an insulator is shorted, the meter pointer will be deflected to or near to "zero" on the meter scale.
- ***All test data are recorded in data record sheet.



4.1. Isolation Check Criteria

The NACE standard SP0286-2007 section 9 Field Testing and Maintenance provide lists of the field testing that is the method to check isolating devices.

- 9.2.2. If the isolating device is installed and connected on both sides, a test may be conducted in which current is applied to the pipe on one side of the assembly and effectiveness is judged by the resulting difference in pipe to soil potentials measured on both sides of the device.

- 9.2.7. Radio frequency meters may also indicate the effectiveness of isolating devices.

By the radio frequency meter criterion is "100% of insulation (FSD – full scale display) is preferred".

4.3. Data Record Sheet

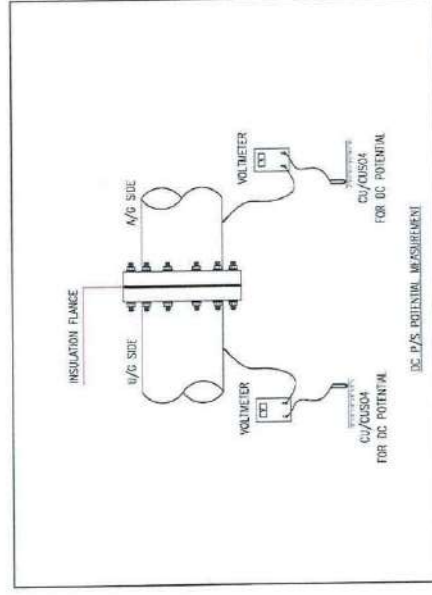
4.2.2. By pipe to soil potential method

Test Equipment

- 1). Digital multimeter
- 2). Cu/CuSO₄ reference electrode
- 3). Hand tools

Test Procedure

- 1). Make sure that the pipeline to be tested is energized by CP system.
 - 2). At the underground section pipe to be tested, place the Cu/CuSO₄ reference electrode on the grade above the underground pipeline to be tested by contacting well between the porous plug of Cu/CuSO₄ reference electrode and grade surface.
 - 3). Prior to measure the potential, make sure that the red test lead of digital multimeter is in the “V” terminal and the black test lead of the digital multimeter is in the “com” terminal.
 - 4). Take the red test lead of the digital multimeter contact to underground section pipe and take the black test lead of the digital multimeter contact to the Cu/CuSO₄ reference electrode.
 - 5). When make the energized DC pipe to soil potential measurement, select the “DC volt” mode of the digital multimeter.
 - 6). Read and record the test result.
 - 7). At the aboveground section pipe to be tested, place the Cu/CuSO₄ reference electrode on the grade above the underground pipeline to be tested by contacting well between the porous plug of Cu/CuSO₄ reference electrode and grade surface.
 - 8). Prior to measure the potential, make sure that the red test lead of digital multimeter is in the “V” terminal and the black test lead of the digital multimeter is in the “com” terminal.
 - 9). Take the red test lead of the digital multimeter contact to aboveground section pipe and take the black test lead of the digital multimeter contact to the Cu/CuSO₄ reference electrode.
 - 10). When make the energized DC pipe to soil potential measurement, select the “DC volt” mode of the digital multimeter.
 - 11). Read and record the test result.
- ***All test data are recorded in data record sheet.



4.4. Photograph



CATHODIC PROTECTION ISOLATION CHECK

TEST INSTRUMENT


: Insulation Checker Model 601
: Cu/CuSO₄ Reference Electrode
: Digital MultimeterPipeline Route : GSP to Border (36"NG and 8"LP), Landfill to GSP (24"), GSP Bypass (30"NG),
MIO (16"NG), MII (8"NG), Slug Catcher


Criterion "100% of insulation is preferred."

Insulation Data							Remarks
No.	Location	Type	% Insulation (By Checker)	Potential (V) U/G	A/G	Accept?	
GSP to Border (36"NG and 8"LP)							
1	BVT1 Bypass	12"	100%	-1.223	-1.207	Yes	
2	BVT2 Bypass	12"	100%	-1.280	-1.280	Yes	
3	BVT3 Bypass	12"	100%	-0.915	-0.915	Yes	
4	BVT4 Bypass	12"	100%	-1.244	-1.241	Yes	
5	BVT5 Bypass	12"	100%	-1.238	-1.243	Yes	
6	BVT6 Bypass	12"	100%	-1.179	-1.159	Yes	
7	BVT6 (Underground ID)	12 3/8"	100%	-1.141	-1.297	Yes	
8	BVT7 Bypass	12"	100%	-1.554	-1.555	Yes	
9	BVT8 Bypass	12"	100%	-0.310	-0.424	Yes	
10	BVT8 NG Inlet	12 3/8"	100%	-1.539	-0.382	Yes	
11	BVT8 NG Outlet	12 3/8"	100%	-1.512	-0.394	Yes	
12	BVT8 LPG Inlet	12 3/8"	100%	-1.563	-0.367	Yes	
13	BVT8 LPG Outlet	12 3/8"	100%	-1.592	-0.407	Yes	
14	GSP NG Outlet	12 3/8"	100%	-1.116	-1.014	Yes	
15	GSP LPG Outlet	12 3/8"	100%	-1.115	-1.013	Yes	
16	GLF LPG upstream	12 3/8"	100%	-1.005	-1.082	Yes	
17	GLF LPG downstream	12 3/8"	100%	-1.011	-1.009	Yes	
Landfill to GSP (34")							
18	TP-01 (Underground ID)	12 3/4"	100%	-1.454	-1.044	Yes	
19	TP-04	12 3/4"	100%	-1.062	-0.885	Yes	
GSP Bypass (34"NG)							
20	TP-01	12 3/4"	100%	-0.968	-0.914	Yes	
21	TP-04	12 3/4"	100%	-0.955	-1.109	Yes	
MIO (16"NG)							
22	TP-01	12 16"	100%	-1.117	-1.025	Yes	
23	TP-04	12 20"	100%	-1.320	-0.501	Yes	
MII (8"NG)							
24	TP-01	12 8"	100%	-1.244	-0.901	Yes	
25	TP-03	12 8"	100%	-1.634	-0.558	Yes	
Slug Catcher							
26	Unit A Inlet	-	100%	-1.068	-1.065	Yes	
27	Unit A Outlet	-	100%	-1.368	-1.399	Yes	
28	Unit B Inlet	-	100%	-1.078	-1.075	Yes	
29	Unit B Outlet	-	100%	-1.358	-1.361	Yes	

Note/Comment :

Company		Test By		Acceptance By	
CPE		CPE		CPE	
Name		Name		Name	
Title		Title		Title	
Signature		Signature		Signature	
Date		Date		Date	
25 March - 4 April 2024		25 March - 4 April 2024		25 March - 4 April 2024	

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	DOC ID. : PM-FM- MNT-060	1/2
PREVENTIVE MAINTENANCE REPORT		

Pipeline Preventive Maintenance Report

Title : Soil to Air Point Corrosion Inspection (1Y)

△Asset Reference List No: PM-LIST-019-020-021-023-024-025

△Work Order No: 40091624-40091627

△EPTW No: TTM-CW-2024-2530

Location Name: All station

Instrument / Equipment Name Above ground to Underground gas piping

Tag Number: Attach file

Action Date: 8-11 April 2024

Action by:

1.
2.

Equipments:

1. General hand tools

Action Details:

1. Annually inspection program
- 1.1 Visual inspection to monitor pipe corrosion and defect of coating of above ground piping (6 inch above ground). Record result to inspection form
- 1.2 Perform corrective maintenance coating repair if found coating damaged at below instruction
- 1.2.1 Initial cleaning pipe surface
- 1.2.2 Surface preparation to remove the damage coating or corrosion by hand tools or power tools.
- 1.2.3 Surface drying by thinner
- 1.2.4 Coating by Coal tar Epoxy or equivalent material

Problem was Found :

Found corrosion at 2” drain line (welding point) knockout drum B at GRF

Corrective Action


Inform pipeline engineer to acknowledge and consideration.

ISSUED BY


Pipeline Maintenance Technician

REVIEWED BY

Senior Pipeline Maintenance Engineer


			Soil-to-Air interface Corrosion Inspection Form (PM-FW-MINT-085) Y:\PM\MINT\form\PM-FW-MINT-085.doc	
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	DOC ID. : PM-FW-MINT-085		2/2	
Subject : Soil-to-Air interface Corrosion Inspection Form				

No.	Location	S/A No.	Pipeline data		Corrosion abnormally (Y/N) at 12" below Gnd.and 6" above		Explanation/ Repair
			Line no./ Size	Point	Coating	Piping	
47	T1	S/A 047	12	BP-U/G	N	N	
48	T1	S/A 048	4	U/G-BP	N	N	
49	T1	S/A 049	4	BP-U/G	N	N	
50	T2	S/A 050	12	U/G-BP	N	N	
51	T2	S/A 051	12	BP-U/G	N	N	
52	T2	S/A 052	12	BP-BD	N	N	
53	T2	S/A 053	12	BD-BP	N	N	
54	T2	S/A 054	4	U/G-BP	N	N	
55	T2	S/A 055	4	BP-U/G	N	N	
56	T3	S/A 056	12	U/G-BP	N	N	
57	T3	S/A 057	12	BP-U/G	N	N	
58	T3	S/A 058	4	U/G-BP	N	N	
59	T3	S/A 059	4	BP-U/G	N	N	
60	T4	S/A 060	12	U/G-BP	N	N	
61	T4	S/A 061	12	BP-U/G	N	N	
62	T4	S/A 062	12	BP-BD	N	N	
63	T4	S/A 063	12	BD-BP	N	N	
64	T4	S/A 064	4	U/G-BP	N	N	
65	T4	S/A 065	4	BP-U/G	N	N	
66	T4	S/A 066	6	U/G-FUTURE	N	N	
67	T5	S/A 067	12	U/G-BP	N	N	
68	T5	S/A 068	12	BP-U/G	N	N	
69	T5	S/A 069	4	U/G-BP	N	N	
70	T5	S/A 070	4	BP-U/G	N	N	
71	T6	S/A 071	12	U/G-BP	N	N	
72	T6	S/A 072	12	BP-U/G	N	N	
73	T6	S/A 073	4	U/G-BP	N	N	
74	T6	S/A 074	4	BP-U/G	N	N	
75	T7	S/A 075	12	U/G-BP	N	N	
76	T7	S/A 076	12	BP-U/G	N	N	
77	T7	S/A 077	4	U/G-BP	N	N	
78	T7	S/A 078	4	BP-U/G	N	N	
79	T7	S/A 079	6	U/G-FUTURE	N	N	
80	T8	S/A 080	36	U/G-T8	N	N	
81	T8	S/A 081	12	BP-BD	N	N	
82	T8	S/A 082	12	BD-BP	N	N	
83	T8	S/A 083	12	MTR-BD	N	N	
84	T8	S/A 084	36	MTR U/G	N	N	
85	T8	S/A 085	8	U/G-T8	N	N	
86	T8	S/A 086	8	MTR-U/G	N	N	
87							
88							
89							
90							
91							

Soll-to-Air Interface Corrosion Inspection Form (PM-FM-MNT-085) Y:\PM\MNT\Form\PM-FM-MNT-085.doc		
 Trans Thai-Malaysia (Thailand) Limited	FORM	PAGE
	DOC ID : PM-FM-MNT-085	1/2
Subject : Soll-to-Air interface Corrosion Inspection Form		

No.	Location	S/A No.	Pipeline data		Corrosion abnormally (V/N) at 12" below Gnd. and 6" above Piping		Explanation/ Repair
			Line no./ Size	Point	Coating	Piping	
1	GRF	S/A 001	G-001-34"-D71	Gas-in GRF	N	N	
2	GRF	S/A 002	D-001-4"-D71	Scraper Drain header	N	N	
3	GRF	S/A 003	D-001-4"-D71	Rodding Drain header	N	N	
4	GRF	S/A 004	D-013-4"-L10A	Flare header	N	N	
5	GRF	S/A 005	D-013-4"-L10A	Rodding Flare header	N	N	
6	GRF	S/A 006	V-013-3"-D61	Sump EQ line A	N	N	
7	GRF	S/A 007	V-014-3"-D61	Sump EQ line B	N	N	
8	GRF	S/A 008	P-001-4"-D62	Condensate to FV110A	N	N	
9	GRF	S/A 009	P-002-4"-D62	Condensate to FV110B	N	N	
10	GRF	S/A 010	SLC Vessel A1	Slug catcher A	N	N	
11	GRF	S/A 011	SLC Vessel A2	Slug catcher A	N	N	
12	GRF	S/A 012	SLC Vessel A3	Slug catcher A	N	N	
13	GRF	S/A 013	SLC Vessel A4	Slug catcher A	N	N	
14	GRF	S/A 014	SLC Vessel A5	Slug catcher A	N	N	
15	GRF	S/A 015	SLC Vessel A6	Slug catcher A	N	N	
16	GRF	S/A 016	SLC Vessel A7	Slug catcher A	N	N	
17	GRF	S/A 017	SLC Vessel A8	Slug catcher A	N	N	
18	GRF	S/A 018	SLC Vessel A9	Slug catcher A	N	N	
19	GRF	S/A 019	SLC Vessel A10	Slug catcher A	N	N	
20	GRF	S/A 020	SLC Vessel A11	Slug catcher A	N	N	
21	GRF	S/A 021	SLC Vessel A12	Slug catcher A	N	N	
22	GRF	S/A 022	SLC Vessel B1	Slug catcher B	N	N	
23	GRF	S/A 023	SLC Vessel B2	Slug catcher B	N	N	
24	GRF	S/A 024	SLC Vessel B3	Slug catcher B	N	N	
25	GRF	S/A 025	SLC Vessel B4	Slug catcher B	N	N	
26	GRF	S/A 026	SLC Vessel B5	Slug catcher B	N	N	
27	GRF	S/A 027	SLC Vessel B6	Slug catcher B	N	N	
28	GRF	S/A 028	SLC Vessel B7	Slug catcher B	N	N	
29	GRF	S/A 029	SLC Vessel B8	Slug catcher B	N	N	
30	GRF	S/A 030	SLC Vessel B9	Slug catcher B	N	N	
31	GRF	S/A 031	SLC Vessel B10	Slug catcher B	N	N	
32	GRF	S/A 032	SLC Vessel B11	Slug catcher B	N	N	
33	GRF	S/A 033	SLC Vessel B12	Slug catcher B	N	N	
34	GRF	S/A 034	G-030-34"-502	ByPass 34" TCBP	N	N	
35	GRF	S/A 035	D-006-2"-L62	KO A to GSP cond.	N	N	
36	GRF	S/A 036	D-007-2"-L62	KO B to GSP cond.	Y	Y	found corrosion at welding point
37	GRF	S/A 037	D-014-2"-L62	KO C to GSP cond.	N	N	
38	GRF	S/A 038	D-009-8"-L62	Rodding KO A/B/C	N	N	
39	GRF	S/A 039	D-016-4"-L62	Rodding Flare Drum	N	N	
40	M10	S/A 040	G115-16"-D61	M10-PTT	N	N	
41	M11	S/A 041	G-004-8"-D60	M11-PTT	N	N	
42	GLF	S/A 042	G-36"	SG GLF-BVT1	N	N	
43	GLF	S/A 043	LPG-8"	LPG GLF-BVT0.5	N	N	
44	GLF	S/A 044	LPG-001-6"-D60	BURIED GSP-GLF	N	N	
45	GLF	S/A 045	LPG-001-6"-D60	BURIED GSP-MTR	N	N	
46	T1	S/A 046	12	U/G-BP	N	N	

PREVENTIVE MAINTENANCE REPORT (PM-FM- MNT-060) Y:\PM\MNT\Form\PM-FM- MNT-060.doc



Trans Thai-Malaysia (Thailand) Limited

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PREVENTIVE MAINTENANCE REPORT

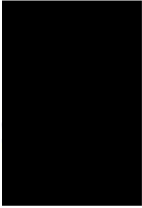
Problem was Found :

None

Corrective Action :

None

ISSUED BY




Pipeline Maintenance Technician

REVIEWED BY



Senior Pipeline Maintenance Engineer

PREVENTIVE MAINTENANCE REPORT (PM-FM- MNT-060) Y:\PM\MNT\Form\PM-FM- MNT-060.doc



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หัวข้อ :

PREVENTIVE MAINTENANCE REPORT

Pipeline Preventive Maintenance Report

Title : Inspection rectifier transformer of cathodic protection system

△ Asset Reference List No: PM-LIST-008

△ Work Order No: 40091821

△ EPTW No: TTM-CW-2024-3477

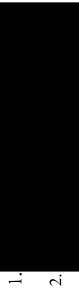
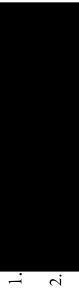
Location Name: Rectifier transformer unit

Instrument / Equipment Name Rectifier transformer unit

Tag Number: CP#1, CP#2, CP#3 and CP#4

Action Date: 21 – 27 May 2024

Action by:


1. 
2. 

Equipments:

1. 1 set of Fluke True RMS Multimeter model 1189
2. Hand tools

Action Details:

1. Request permit to work by E-PTW (Cold Work).
2. Detail action reference document no. PM-WI-MNT-037 CP TRANSFORMER RECTIFIER UNIT MEASUREMENT
3. Close permit to work by E-PTW.


CP RECTIFIER TRANSFORMER INSPECTION FORM (PM-FM-MNT-039) Y:\PM\MNT\Form\PM-FM-MNT-039.doc		
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Subject : CP RECTIFIER TRANSFORMER INSPECTION FORM		

Block valve station:GRF..... Inspection date: ...27 May 2024.....

Rectifier detail :
Model No.ASAI..... Serial No.100531-04K14.....
DC Volts :50..... AC Volts : ...230/3000VA..... Phase : ...1..... Hz : ...50.....
DC Amps :40..... AC Amps :40..... AMB. : ...50..... Deg. C


Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
1	1	1.9	1.886	0.0	0.00	993	20.998
	2	2.0	1.937	0.0	0.00	1000	21.956
	3	2.1	2.300	0.8	0.67	1049	32.121
	4	3.0	3.199	2.2	2.00	1171	38.483
	5	4.0	4.311	5.0	4.67	1324	45.892
	6	5.2	5.727	7.0	6.67	1471	54.190
	7	6.1	6.536	9.0	8.67	1621	62.120
	8	7.7	7.574	11.0	10.67	1761	69.830
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
2	1	8.2	8.540	13.0	12.67	1896	77.48
	2	9.8	9.705	15.5	15.33	2054	85.82
	3	10.3	10.774	17.8	17.33	2200	94.58
	4	11.8	11.796	20.0	19.33	2365	103.15
	5	12.6	12.831	22.0	21.33	2509	111.85
	6	13.7	13.791	23.9	23.33	2644	120.48
	7	14.8	14.879	26.0	26.00	2791	129.76
	8	15.9	15.992	28.3	28.00	2951	139.94
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

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Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
3	1	16.5	16598	29.7	29.33	3042	151.79
	2	17.8	17.605	31.8	31.33	3180	162.27
	3	19.0	18.616	33.8	33.33	3326	174.26
	4	19.0	19.696	36.0	35.33	3480	187.64
	5	20.8	20.619	37.9	37.33	3614	200.17
	6	22.0	21.725	40.0	40.00	3770	214.14
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
4	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

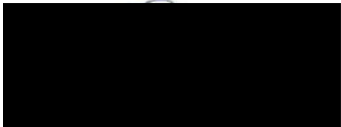
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Subject : CP RECTIFIER TRANSFORMER INSPECTION FORM		

Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
5	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

Problem was found : TRU normal setting is course 1 fine 3.....

Recommend by engineer :




Inspector



Reviewed

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CP RECTIFIER TRANSFORMER INSPECTION FORM (PM-FM-MNT-039) Y:\PM\MNT\Form\PM-FM-MNT-039.doc		
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Subject : CP RECTIFIER TRANSFORMER INSPECTION FORM		

Block valve station:BVT2..... Inspection date: 21 May 2024.....

Rectifier detail :
Model No.ASAI..... Serial No.042663.....
DC Volts :50..... AC Volts : ...115/230..... Phase : ...1..... Hz : ...50.....
DC Amps :10..... AC Amps : ...6.1/3.1..... AMB. : ...50..... Deg. C


Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
1	1	1.0	0.872	0.0	0.00	1107	114.70
	2	1.5	1.362	0.0	0.00	1164	123.79
	3	2.5	2.399	0.2	0.00	1307	127.93
	4	3.6	3.597	0.3	0.20	1473	142.95
	5	5.0	4.797	0.4	0.40	1629	154.72
	6	6.0	5.975	0.6	0.60	1787	176.77
	7	7.1	7.150	0.7	0.60	1937	203.73
	8	8.3	8.252	0.8	0.80	2084	231.14
	9	9.7	9.703	0.9	0.80	2277	266.14
	10	10.9	10.931	1.0	1.00	2455	312.04
2	1	12.0	12.136	1.1	1.00	3356	567.30
	2	13.0	13.337	1.2	1.20	3912	815.60
	3	14.5	14.592	1.3	1.20	3819	747.00
	4	15.4	15.844	1.4	1.40	3937	592.70
	5	16.8	17.061	1.6	1.60	3553	587.20
	6	18.0	18.188	1.7	1.80	3412	514.92
	7	19.0	19.288	1.9	1.80	3670	471.65
	8	20.0	20.554	2.0	2.00	3710	481.94
	9	21.4	21.945	2.1	2.20	3939	410.09
	10	22.8	23.171	2.3	2.40	3711	450.17

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Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
3	1	23.8	24.245	2.5	2.40	3840	491.47
	2	25.0	25.402	2.6	2.60	4034	450.90
	3	26.0	26.674	2.7	2.80	3920	421.44
	4	27.2	27.890	2.9	2.80	3970	447.76
	5	28.5	29.100	3.0	3.00	3649	431.77
	6	29.5	30.187	3.1	3.20	4111	509.70
	7	30.7	31.389	3.3	3.20	4224	430.70
	8	32.0	32.516	3.4	3.40	4201	458.64
	9	33.0	33.922	3.5	3.60	4276	493.75
	10	34.4	35.116	3.6	3.80	4372	460.37
4	1	35.2	36.274	3.8	3.80	4486	470.30
	2	36.7	37.331	4.0	4.00	4556	509.40
	3	37.9	38.671	4.1	4.20	4493	534.00
	4	39.0	39.881	4.2	4.40	4481	551.30
	5	40.0	41.095	4.3	4.40	4551	590.10
	6	41.0	41.569	4.5	4.60	4633	622.40
	7	42.5	43.377	4.6	4.60	4731	572.90
	8	43.0	44.472	4.7	4.80	4735	516.50
	9	44.8	45.793	4.8	5.00	4793	579.60
	10	46.0	46.981	5.0	5.00	4774	651.10

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Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
5	1	47.0	48.098	5.1	5.20	4888	515.20
	2	48.0	48.915	5.2	5.40	4901	654.30
	3	49.3	50.450	5.4	5.60	5015	616.50
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-


Problem was found : TRU normal setting is course 1 fine 4

Recommend by engineer :

Inspector

Reviewed

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Subject : CP RECTIFIER TRANSFORMER INSPECTION FORM		

Block valve station:BVT5..... Inspection date:21 May 2024.....

Rectifier detail :
Model No.ASAI..... Serial No.042664.....
DC Volts :50..... AC Volts : ...115/230..... Phase : ...1..... Hz : ...50.....
DC Amps :10..... AC Amps : ...6.1/3.1..... AMB. : ...50..... Deg. C


Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
1	1	1.0	1.270	0.0	0.00	942	45.321
	2	1.1	1.340	0.1	0.00	978	52.760
	3	2.0	2.219	0.6	0.60	1266	68.720
	4	2.8	2.659	0.8	0.80	1432	49.010
	5	3.5	3.735	1.4	1.40	1912	93.120
	6	5.0	5.327	2.5	2.40	2265	108.14
	7	6.0	6.331	3.2	3.20	2658	124.88
	8	7.2	7.412	4.0	4.00	3097	138.43
	9	8.4	8.507	4.8	5.00	3534	156.30
	10	9.3	9.358	5.5	5.60	3865	173.34
2	1	10.0	10.114	6.1	6.20	4188	193.94
	2	11.1	11.101	6.8	7.00	4584	221.19
	3	12.3	12.178	7.6	7.80	4999	267.30
	4	13.1	13.101	8.2	8.60	5367	333.95
	5	14.0	13.789	8.6	9.00	5657	406.93
	6	15.0	15.055	9.7	10.00	6102	601.60
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

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Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
3	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
4	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

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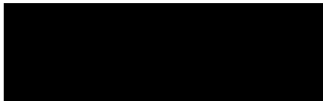
Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
5	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

Problem was found : TRU normal setting is course 1 fine 9

Recommend by engineer :




Inspector



Reviewed

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Block valve station:BVT7..... Inspection date: ...21 May 2024.....

Rectifier detail :
Model No.ASAI..... Serial No.042665.....
DC Volts :50..... AC Volts : ...115/230..... Phase : ...1..... Hz : ...50.....
DC Amps :10..... AC Amps : ...6.1/3.1..... AMB. : ...50..... Deg. C


Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
1	1	0.5	0.539	0.0	0.00	913	175.63
	2	1.0	0.954	0.2	0.20	1326	211.60
	3	2.0	1.877	0.7	0.60	2053	224.97
	4	3.0	2.702	1.4	1.40	2807	360.70
	5	4.0	3.853	2.2	2.20	3542	244.47
	6	4.5	4.423	2.7	2.80	3996	260.60
	7	6.0	5.952	4.1	4.40	5038	292.51
	8	7.2	6.966	5.1	5.40	5757	285.42
	9	8.0	7.871	6.2	6.00	6433	334.12
	10	9.0	8.677	6.9	7.20	6984	355.48
2	1	10.0	9.612	8.0	8.40	7635	432.33
	2	11.0	10.800	9.2	9.80	8447	621.30
	3	12.0	11.540	10.0	10.60	9011	857.50
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

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Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
3	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
4	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

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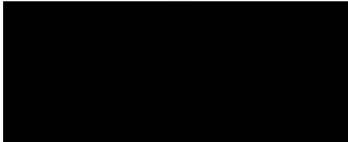
CP RECTIFIER TRANSFORMER INSPECTION FORM (PM-FM-MNT-039) Y:\PM\MNT\Form\PM-FM-MNT-039.doc		
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Rectifier Output		DC Volt (V)		DC Amps (A)		Pipe potential (S)	
Course	Fine	Panel	Portable	Panel	Portable	(-mVDC)	(mVAC)
5	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

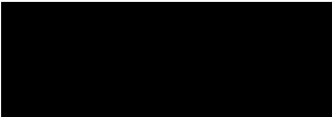
Problem was found : TRU normal setting is course 1 fine 2.....

Recommend by engineer :

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Inspector



Reviewed

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