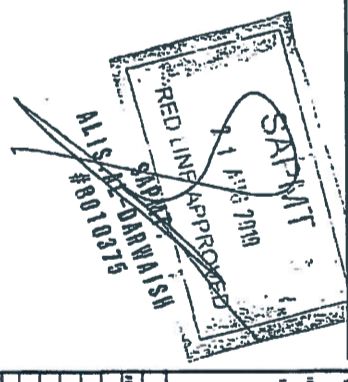


- NOTES CONT:**
12. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS UNLESS OTHERWISE NOTED.
 13. ELEVATIONS ARE BASED ON HIGH POINT GRADE EL. 100,000M.
 14. ALL ABOVE GROUND PIPING SHALL BE EXT. PAINTED AS PER APCS-1B OF SAES-H-004.
 15. ALL CARBON STEEL PIPING SHALL BE INTERNALLY FBE COATED PER APCS-102.
 16. NOT COVERAGE SHALL BE 10% PER SAES-H-011 PARA. 17.5.2.

REEL NUMBER	DATE
SAFMT NAME & SIGNATURE	
<i>Abdulhadi Alsharif</i>	SEP 11 2019



19 August 2019
 REISSUED FOR CONSTRUCTION

STANDARD DETAIL REFERENCE DRAWINGS			
DATE OF FIRST EDITION	1-18000-8551	REVISION	
DATE OF SECOND EDITION	1-18000-8551-001	REVISION	
DATE OF THIRD EDITION	1-18000-8551-002	REVISION	

NO.	DESCRIPTION	DATE
1	ISOMETRIC PIPING DETAIL	1-18000-8551
2	SAUDI ARABIAN OIL COMPANY	1-18000-8551
3	WEST MANIFOLD AREA	1-18000-8551
4	SAUDI ARABIA	1-18000-8551

PROJECT NO.	039
REVISION NO.	L
DATE	19 AUG 2019

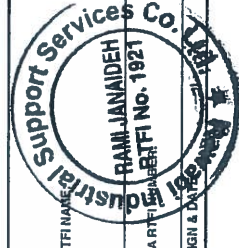
RESTRICTED VECTOR CAD-03

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SAUDI ARAMCO ID/PID SAUDI ARAMCO TEST REPORT		SATR # SATR-NDE-2008 Rev 2 dated 31 July 2017	
NON -DESTRUCTIVE TESTING (NDT)REQUEST / NDT ASSESSMENT / INTERPRETATION REPORT			
PROJECT TITLE:- MANIFA FLANK 2 & 3 WATER INJECTION REPLACEMENT		Acceptance Criteria API - 1104 / AWS D1.1	
FACILITY / LOCATION MANIFA		RTFI Assessment # MANIFA-(S-642 to S-649)	
TYPE OF NDT SATIP NO SATIP-NDT-RT-01		NDT Contractor: Br. C.A.T. INTERNATIONAL CO. LIMITED	
TESTING REQUESTED - RT 3.1 A		RWP No. & Validity 3359 26-MAY-2019	
INSPECTION LEVEL Sub Contractor H		RAWABI INDUSTRIAL SUPPORT SERVICES	
Welder ID Welding Process 1016 | 1016 GTAW		NDT AGENCY COMMENTS ACC RES Q COMMENTS	

LINE NUMBER	WELD NUMBER	Sketch Number	Welding Process	NDT LOG NUMBER	RT REPORT NUMBER	LOCATION MARKERS	PRIME CONTRACTOR COMMENTS				SAUDI ARAMCO ASSESSMENT			
							AGRE	REF	DISAG	COMMENTS	AGRE	REF	DISAG	COMMENTS
1	2"-W-0032 15LEOW06	2 0.436 0.436	GTAW	F-1	X		0			0				
2	2"-W-0019 15LEOW06	2 0.436 0.436	GTAW	F-1	S62 9A265		✓			3				
3	2"-W-0019 15LEOW06	2 0.436 0.436	GTAW	F-1	S63 9A265A		✓			3				
4	8"-W-0015 3LEOW06	8 0.375 0.500	GTAW SMAW	F-5	S64 62801		✓			3				
5	2"-W-0032 15LEOW06	2 0.436 0.436	GTAW	F-4	S65 9A265		✓	FM@		3				
6	2"-W-0032 15LEOW06	2 0.436 0.436	GTAW	F-4	S66 9A2656		✓			3				
7	2"-W-0032 15LEOW06	2 0.344 0.344	GTAW	F-4	X		0			0				
8	1"-W-0034 15SV0W	2 0.218 0.218	GTAW	F-1	S67 695402		✓			2				
9	1"-W-0021 15SV0W	2 0.218 0.218	GTAW	F-1	S68 695402		✓			2				
10	2"-W-0032 15LEOW06	2 0.436 0.344	GTAW	F-1	S69 695402		✓			3				

CONTRACTOR		Name		Date	
CONSTR. Representative		SAMER / MOHAMMED		9-1-19	
QC Inspector / NDT Coordinator		ZARYAB KHAN		9-1-19	
QC Supervisor		FAHEEM AHMED		9-1-19	
SAUDI ARAMCO PID Representative		GAMAL AYYAD		9-1-19	
Email: gmal.ayyad@aramco.com					
PRIME CONTRACTOR		Name		Date	
H. A. DARABSEH				11-1-19	
RTFI NAME: H. A. DARABSEH		RTFI NAME: H. A. DARABSEH		RTFI NAME: H. A. DARABSEH	
SA RTFI NUMBER: 11-1-19		SA RTFI NUMBER: 11-1-19		SA RTFI NUMBER: 11-1-19	
SIGN & DATE:		SIGN & DATE:		SIGN & DATE:	



SAUDI ARAMCO TEST REPORT
 NON-DESTRUCTIVE TESTING (NDT) REQUEST / INTERPRETATION
 PROJECT TITLE: MANIFA FLANK 2 & 3 WATER INJECTION REPLACEMENT
 FACILITY/LOCATION: MANIFA
 TYPE OF NDT: TESTING REQUESTED - RT
 SATIP NO: SATIP ACTIVITY: 3.1 A
 SATIP-NDT-RT-01
 WBS / BI / JO Number: AS BELOW
 NDT Agency Comments: Br. C.A.T. INTERNATIONAL CO. LIMITED
 Prime Contractor / Sub Contractor: RAWABI INDUSTRIAL SUPPORT SERVICES
 RTFI Assessment #: MANIFA-(S-1673 to S-1680)
 Acceptance Criteria: API-1104, SAP-01, SAEP-L-110
 Assessment Date: 7-SEP-19
 RWP No. & Validity: 3830, 13-NOV-2019

S/N	WELD HEAD DRAWING NUMBER BI NUMBER	LINE NUMBER	DIM (inch) Thk (inch)	WELD NUMBER	Spool No	WELDER ID	RT REPORT NUMBER	LOCATION MARKERS	PRIME CONTRACTOR COMMENTS			SAUDI ARAMCO ASSESSMENT		
									COMMENTS	COMMENTS	COMMENTS	Y	N	Y	N	Y	N	COMMENTS
1	MANIFA CB-436722-003 11-18000-8551	1"-W-0034 15SV0W	1 0.179 0.178	SW-2	F-1	1016 1016 GTAW	208902		✓		3			
2	MANIFA CB-436722-003 11-18000-8551	2"-W-0021 15SV0W	1 0.179 0.250	SW-3	F-3	CBK/CBK GTAW	208902		✓		3			
3	MANIFA CB-436722-003 11-18000-8551	1"-W-0034 15SV0W	1 0.179 CL 3000	SW-1C	F-1	1016 1016 GTAW	208902		✓		1			
4	MANIFA CB-436445-004 11-18000-8551	2"-W-0021 15SV0W	1 0.179 0.178	SW-2	F-1	757 757 GTAW	208902		✓	IFA PRE	3			180
5	MANIFA CB-436445-004 11-18000-8551	2"-W-0021 15SV0W	1 0.179 0.250	SW-3	F-3	757 757 GTAW	208902		✓		3			
6	MANIFA CB-436445-004 11-18000-8551	2"-W-0021 15SV0W	1 0.179 CL 3000	SW-1C	F-1	757 757 GTAW	208902		✓		1			
7	MANIFA CB-436722-002 11-18000-8551	4"-W-0037 15LE0W06	4 0.488 0.237	SW-1M1	F-1	1515 1515 GTAW	208902		✓		4			
8	MANIFA CB-436722-002 11-18000-8551	4"-W-0037 15LE0W06	4 0.438 0.438	SW-6M1	F-1	1347 1347 GTAW	208902		✓		4			442
9	.	.	.	.	.	.	.
10	.	.	.	.	.	.	.							22

NON-DESTRUCTIVE TESTING (NDT) REQUEST

CONTRACTOR: SAMER / MOHAMMED, VIPUL, SUTHAR, SELVAMANI M., GAMAL AYYAD
 CONST. Representative
 GC Inspector / NDT Coordinator
 GC Supervisor
 SAUDI ARAMCO PID Representative
 Email: gamal.ayyad@aramco.com

Signature: [Signatures]
 Date: 5/9/19, 5/9/19, 5/9/19, 5/9/19

NDT SERVICE PROVIDER: ASHOK MOGAVELERA, No 1893
 RTFI NAME: Q Toon
 SA RTFI NUMBER: 7-9-19
 SIGN & DATE: 07-09-2019

SAUDI ARAMCO COMMENTS: HASAN M. PATWARI, S.A. RTFI # 1785
 SA RTFI NUMBER: 7-9-19
 SIGN & DATE: 07-09-2019

SATR # SATR-NDE-2008 Rev 2 dated 31 July 2017

SAUDI ARAMCO ID/PID
 SAUDI ARAMCO TEST REPORT
 NON-DESTRUCTIVE TESTING (NDT) REQUEST / NDT ASSESSMENT / INTERPRETATION

PROJECT TITLE: MANIFA FLANK 2 & 3 WATER INJECTION REPLACEMENT
 FACILITY/LOCATION: MANIFA
 TYPE OF NDT: SATIP ACTIVITY - TESTING REQUESTED - RT

SATIP NO: SATIP-NDT-RT-01
 SATIP ACTIVITY: 3.1 A
 INSPECTION LEVEL: Aramco H/W/S

NDT Category: 10%
 WBS / BI / JO Number: AS BELOW
 Acceptance Criteria: API-1104 SAPI-01 SAPI-L-110
 Prime Contractor / Sub Contractor: RAWABI INDUSTRIAL SUPPORT SERVICES
 NDT Contractor: Br. C.A.T. INTERNATIONAL CO. LIMITED
 RMP No. & Validity: RMP No. & Validity
 Assessment Date: 13-NOV-2019

RTFI Assessment #
 MANIFA (S-1668 to S-1669) 4-sep-19

WELD HEAD DRAWING NUMBER BI NUMBER	LINE NUMBER SKETCH NUMBER	DIA (inch) Thick (inch)	WELD NUMBER	Spot No	WELDER ID	NDT LOG NUMBER	RT REPORT NUMBER	LOCATION MARKERS	NDT AGENCY COMMENTS		PRIME CONTRACTOR COMMENTS		SAUDI ARAMCO ASSESSMENT		
									ACC	RE	RE	COMMENTS	AG	RE	RE	COMMENTS	DIS	GR	RE	COMMENTS
1 MANIFA CB-436445-004 11-18000-8551	3/4-W-0021 15SVOW	3/4 0.154 CL1500	SW-4E	F-2	10161016 GTAW	5691	20607		✓		✓				
2 MANIFA CB-436722-003 11-18000-8551	3/4-W-0021 15SVOW	1 CL1500 0.250	SW-5B	F-2	CBK/CBK GTAW	5691	80507		✓		✓				
3															
4															
5															
6															
7															
8															
9															
10															

NON-DESTRUCTIVE TESTING (NDT) REQUEST		NON-DESTRUCTIVE TESTING (NDT) REQUEST	
Name	Signature	Name	Date
SAMER / MOHAMMED	<i>[Signature]</i>	ASHOK MOGAVEERA	3/9/19
VIPUL SUTHAR	<i>[Signature]</i>	RTFI NO 1893	3/9/19
SELVAMANI M.	<i>[Signature]</i>	RTFI NO	3 sep 19
GAMAL AYYAD	<i>[Signature]</i>	RTFI NO	3/9/19

CONTRACTOR: SAUDI ARAMCO PID Representative
 CONST. Representative: SAMER / MOHAMMED
 QC Inspector / NDT Coordinator: VIPUL SUTHAR
 QC Supervisor: SELVAMANI M.
 SAUDI ARAMCO PID Representative: GAMAL AYYAD
 Email: gamal.ayyad@aramco.com

NDT SERVICE PROVIDER: Ashok Mogaveera, RTFI No 1893, Manifa Industrial Services (Arabia) Co. L.T.
 SA RTFI NUMBER: 1441
 RTFI NAME: Q Tech
 SIGN & DATE: 4-4-19

SAUDI ARAMCO ID/TS/DC/NDT/APSU
 RTFI NAME: Mustafa
 RTFI NUMBER: 1422
 SIGN & DATE: 5/9/19

Liquid Penetrant Testing Report

Serial No. **11581**

Report No.:		Page <u>01</u> of <u>01</u>		Date: <u>07-09-2019</u>	
Project Information					
Client: CAT		Project/Job No: 11-18000-8551		Location/ Site: DAMMAM	
Job Information					
Procedure No: RISAL/EP/PT-002		Material: S.S		Surface Condition: WELDED	
Acceptance Criteria: API-1104, AWS-D1.1		Component: SOCKET WELD		Surface Temp. (°C): AMB	
Light Meter Model: <input checked="" type="checkbox"/> White <input type="checkbox"/> UV		Technique: <input checked="" type="checkbox"/> Solvent Removable		<input checked="" type="checkbox"/> Visible/Contrast <input type="checkbox"/> Fluorescent	
Light Meter Serial No.:		Chemical: Cleaner		Penetrant: Developer	
Lighting Source: <input checked="" type="checkbox"/> Natural (sun) <input type="checkbox"/> Artificial <input type="checkbox"/> UV Light		Designation: 9PRS		Penetrant: 996PB	
Light Intensity:		Batch Number:		Developer: 9D1B	
		Manufacturer: Androx		Androx	

Item No	Job Identification Number	Joint No.	Welder ID	Size	Thick.	Interpretation	Result	Remarks
1.	CB-436445-004 F-2	SW-4B	CBK	1"	0.250	-	Acc	GTAW
2.	CB-436445-004 F-2	SW-4C	CBK	3/4"	0.219	-	Acc	GTAW
3.	CB-436445-004 F-1	SW-1B	757	1"	0.179	-	Acc	GTAW
4.	CB-436445-004 F-1	SW-1C	757	1"	0.179	-	Acc	GTAW
5.	CB-436445-004 F-1	SW-1D	757	1"	0.250	-	Acc	GTAW
6.	CB-436445-004 F-1	SW-1E	757	1"	0.250	-	Acc	GTAW
7.	CB-436445-004 F-1	SW-1F	757	1"	0.179	-	Acc	GTAW
8.	CB-436445-004 F-1	SW-1A	CBK	1"	0.179	-	Acc	GTAW
9.	CB-436722-003 F-1	SW-1B	1016	1"	0.179	-	Acc	GTAW
10.	CB-436722-003 F-1	SW-1C	1016	1"	0.179	-	Acc	GTAW
11.	CB-436722-003 F-1	SW-1D	1016	1"	0.250	-	Acc	GTAW
12.	CB-436722-003 F-1	SW-1E	1016	1"	0.250	-	Acc	GTAW
13.	CB-436722-003 F-1	SW-1F	1016	1"	0.179	-	Acc	GTAW
14.	CB-436722-003 F-1	SW-1A	1016	1"	0.179	-	Acc	GTAW
No Relevant Indications Found. Accepted.								

	Performed By	Interpreted By	Reviewed/Verified By	Approved By
Name	MOHD. ATIKUR RAHMAN	MOHD. ATIKUR RAHMAN	M'D SAUD	
Level	III	II	NDT Coordinator	
Signature	<i>Md Atikur</i>	<i>Md Atikur</i>	<i>M'd Saud</i>	
Date	07-09-2019	07-09-2019	07-09-19	

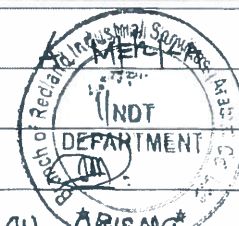

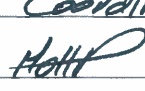
Liquid Penetrant Testing Report

Serial No. 11555

Report No.:	Page 01 of 01		Date: 04-09-19
Project Information			
Client: CAT	Project/Job No: MANIFA 11-18000-8551	Location/ Site: DMM	
Job Information			
Procedure No: RISAL/EP/PT-02	Material: Cs	Surface Condition: AS WELD	
Acceptance Criteria: API 1104	Component:	Surface Temp. (°C): AMBIENT TEMP.	
Light Meter Model: <input type="checkbox"/> White <input type="checkbox"/> UV	Technique: <input type="checkbox"/> Solvent Removable <input checked="" type="checkbox"/> Visible/Contrast <input type="checkbox"/> Fluorescent		
Light Meter Serial No.:	Chemical: Cleaner	Penetrant:	Developer:
Lighting Source: <input checked="" type="checkbox"/> Natural (sun) <input type="checkbox"/> Artificial <input type="checkbox"/> UV Light	Designation: 9 PPS	996 PB	901 B
Light Intensity: 1000 Lux	Batch Number:		
	Manufacturer: AIRDROX	AIRDROX	AIRDROX

Item No.	Job Identification Number	Joint No.	Welder ID	Size	Thick.	Interpretation	Result	Remarks
1.	CR-436445-004 / F-2	SW-4D	101G	3/4"	CL3000 .154		ACC	STAIN
2.	"	SW-4E	"	"	.154 CL1500		"	"
3.	"	SW-4F	"	"	CL3000 .154		"	"
4.	CR-436722-003 / F-2	SW-5B	GRK	1"	CL1500 .250		"	"
5.	"	SW-5C	"	3/4"	-219 CL3000		"	"
6.	"	SW-5D	"	"	CL3000 .154		"	"
7.	"	SW-5E	"	"	.154 CL1500		"	"
8.	"	SW-5F	"	"	CL3000 .154		"	"

NOTE: NO RELEVANT INDICATION. ACCEPTABLE

	Performed By	Interpreted By	Reviewed/Verified By	Approved By
Name		A. MEHKA	MOH'D SAID	
Level		"	NDT Coordinator	
Signature				
Date	04-09-19	04-09-19	04-09-19	

POSITIVE MATERIAL IDENTIFICATION REPORT

CLIENT	Br.CAT INTERNATIONAL CO.LTD.	WBS/BI/JO No.	11-18000-8551-001	DATE	09-Jan-19
PROJECT	OMPP / MANIFA	LOCATION	DAMMAM FABSHOP	REFERENCE PROCEDURE	DICL/SA/NDT/PMI-01, REV-02
EQUIPMENT	OXFORD	MODEL	PMI MASTER PRO & MET 8000	X Sr. No.	67W0010 & 800108

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART C,
CHEMICAL COMPOSITION REQUIREMENTS FOR UNDILUTED WELD METAL

GRADE : NiCrMo-3(Inconel 625)

WELD METAL 12.5 % ±	Carbon %	Chromium %	Nickel %	Molybdenum %	Manganese %	Phosphorus %	Sulfur %	Silicon %
	Max : 0.10	20 - 23	MIN-55	08.0 - 10.0	Max : 1	Max : 0.03	Max : 0.02	Max : 0.75

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART A,
CHEMICAL COMPOSITION REQUIREMENTS FOR BASE METAL

GRADE : 254 SMO (F-44)

BASE METAL 10 % ±	Carbon %	Chromium %	Nickel %	Molybdenum %	Manganese %	Phosphorus %	Sulfur %	Silicon %
	Max : 0.02	19.5 - 20.5	17.5 - 18.5	6 - 6.5	Max : 1	Max : 0.03	Max : 0.10	Max : 1

Sr.#	Report No	Drawing No	Spool No.	Joint No.	Dia & Thk	Item Type	Remarks
1	CPS-1412	CB-436722-003	F-1	SW # 1	2" X 0.218"	FLANGE / WELD / SWG-NIPPLE	ACC
2	CPS-1413	CB-436445-004	F-1	SW # 1	2" X 0.218"	FLANGE / WELD / SWG-NIPPLE	ACC
3	CPS-1414	CB-436445-004	F-2	SW # 4	2" X 0.218"	FLANGE / WELD / SWG-NIPPLE	ACC
4	CPS-1415	CB-436445-004	F-2	SW # 4A	1" X 0.179"	WELD (BUTTON)	ACC

***** NOTHING FOLLOWS *****

REMARKS:

NOTE : SEE THE ATTACHED SHEETS FOR DETAILED REPORTS.

TEST PERFORMED BY		REVIEWED BY	APPROVED BY
Name	ROY.Y	Vipul Suthar	
Signature			
Date	09-Jan-19	09/01/19	



شركة دييم انسبكتيون
Deem Inspection Company Ltd.

7800, 28th St.-Ghirmatah, Unil#10, Dammam 32245-5457, KSA, Ph: 013-8438710, Fax: 013-8438720, E-mail: info@deeminspection.com, Web Site: www.deeminspection.com

POSITIVE MATERIAL IDENTIFICATION REPORT

CLIENT	Br. CAT INTERNATIONAL CO. LTD	WBS/BIJO No.	11-18000-8551	DATE	07-Sep-19
PROJECT	MANIFA FLANK 2&3 WATER INJECTION REPLACEMET	LOCATION	CAT SHOP DAMMAM	REFERENCE PROCEDURE	DICL/SA/NDT/PMI-01, REV-02
EQUIPMENT	OXFORD	MODEL	X-MET 8000	Sr. No.	821279

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART A, (SA-182 / SA-182M)
CHEMICAL COMPOSITION REQUIREMENTS FOR BASE METAL

GRADE : 254 SMO (F44) BASE METAL

WELD METAL 10% ±	Carbon %	Chromium %	Nickel %	Molybdenum %	Manganese %	Sulfur %	Copper %	Silicon %
	19.5-20.5	17.5-18.5	6-6.5	Max: 1.0	Max: 0.01	Max: 1.0	Max: 0.8	

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART A,
CHEMICAL COMPOSITION REQUIREMENTS FOR

GRADE : 316L BASE METAL

BASE METAL 10% ±	Carbon %	Chromium %	Nickel %	Molybdenum %	Manganese %	Phosphorus %	Sulfur %	Silicon %
	16-18	10-14	2-3	Max: 2	Max: 0.045	Max: 0.030	Max: 1	

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART C,
CHEMICAL COMPOSITION REQUIREMENTS FOR UNDILUTED WELD METAL

GRADE : ER NiCrMo-3 WELD METAL

WELD METAL 12.5% ±	Carbon %	Chromium %	Nickel %	Fe %	Manganese %	Phosphorus %	Sulfur %	Silicon %
	18-22	67.0 Min	3.0Min	2.5-3.5	Max:0.03	Max:0.015	Max:0.5	

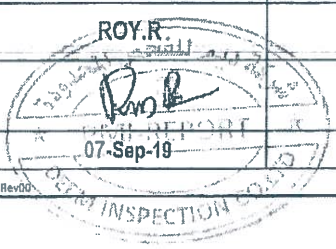
S/N	Report No	Drawing No	Spool No	Joint No.	Dia & Thk	Item Type	Remarks
11	CSPS-2187	CB-436445-004	F-3	SW-3	1"X0.179	FLANGE / NIPPLE / WELD	ACC
12	CSPS-2188	CB-436445-004	F-1	SW-1A	1"X0.179	WELD	ACC
13	CSPS-2189	CB-436722-003	F-2	SW-5B	1"X0.250	SWG-NIPPLE / WELD	ACC
14	CSPS-2190	CB-436722-003	F-2	SW-5C	3/4"XCL3000	TEE	ACC
15	CSPS-2191	CB-436722-003	F-2	SW-5D	3/4"X0.154	NIPPLE	ACC
16	CSPS-2192	CB-436722-003	F-2	SW-5F	3/4"X0.154	NIPPLE	ACC
17	CSPS-2193	CB-436722-003	F-1	SW-1B	1"X0.179	PIPE / WELD	ACC
18	CSPS-2194	CB-436722-003	F-1	SW-1C	1"XCL3000	TEE / WELD	ACC
19	CSPS-2195	CB-436722-003	F-1	SW-1D	1"X0.250	NIPPLE / WELD	ACC
20	CSPS-2196	CB-436722-003	F-1	SW-1E	1"X0.250	WELD	ACC

REMARKS:

NOTE : SEE THE ATTACHED SHEETS FOR DETAILED REPORTS.

PAGE : 02 OF 03

TEST PERFORMED BY		CONTRACTOR		CLIENT	
Name	ROY.R.	Vipul Suthar			
Signature					
Date	07-Sep-19	7/9/19			





شركة دييم انسبكتيون
Deem Inspection Company Ltd.

7800, 28th St.-Ghimatah, Unit#10, Dammam 32245-5457, KSA, Ph: 013-8438710, Fax: 013-8438720, E-mail: info@deeminspection.com, Web Site: www.deeminspection.com

POSITIVE MATERIAL IDENTIFICATION REPORT

CLIENT	Br. CAT INTERNATIONAL CO. LTD	WBS/BI/JO No.	11-18000-8551	DATE	07-Sep-19
PROJECT	MANIFA FLANK 2&3 WATER INJECTION REPLACEMENT	LOCATION	CAT SHOP DAMMAM	REFERENCE PROCEDURE	DICL/SA/NDT/PMI-01, REV-02
EQUIPMENT	OXFORD	MODEL	X-MET 8000	Sr. No.	821279

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART A, (SA-182 / SA-182M)
CHEMICAL COMPOSITION REQUIREMENTS FOR BASE METAL

GRADE : 254 SMO (F44) BASE METAL

WELD METAL 10% ±	Carbon %	Chromium %	Nickel %	Molybdenum %	Manganese %	Sulfur %	Copper %	Silicon %
		19.5-20.5	17.5-18.5	6-6.5	Max: 1.0	Max: 0.01	Max: 1.0	Max: 0.8

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART A,
CHEMICAL COMPOSITION REQUIREMENTS FOR

GRADE : 316L BASE METAL

BASE METAL 10% ±	Carbon %	Chromium %	Nickel %	Molybdenum %	Manganese %	Phosphorus %	Sulfur %	Silicon %
		16-18	10-14	2-3	Max: 2	Max: 0.045	Max: 0.030	Max: 1

ACCORDING TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION II, PART C,
CHEMICAL COMPOSITION REQUIREMENTS FOR UNDILUTED WELD METAL

GRADE : ER NiCrMo-3 WELD METAL

WELD METAL 12.5% ±	Carbon %	Chromium %	Nickel %	Fe %	Manganese %	Phosphorus %	Sulfur %	Silicon %
		18-22	67.0 Min	3.0 Min	2.5-3.5	Max-0.03	Max-0.015	Max-0.5

S/N	Report No	Drawing No	Spool No	Joint No.	Dia & Thk	Item Type	Remarks
21	✓ CSPS-2197	✓ CB-436722-003	✓ F-1	✓ SW-1F	1"X0.179	PIPE / WELD	ACC
22	✓ CSPS-2198	✓ CB-436722-003	✓ F-1	✓ SW-2	1"X0.179	WELD / FLANGE	ACC
23	✓ CSPS-2199	✓ CB-436722-003	✓ F-3	✓ SW-3	1"X0.179	FLANGE / NIPPLE / WELD	ACC
24	✓ CSPS-2200	✓ CB-436722-003	✓ F-1	✓ SW-1A	1"X0.179	WELD	ACC
NOTHING FOLLOWS							

REMARKS:
NOTE : SEE THE ATTACHED SHEETS FOR DETAILED REPORTS.

TEST PERFORMED BY		CONTACTOR	CLIENT
Name	ROY.R	Vipul Subhkar	
Signature			
Date	07-Sep-19	7/9/19	

