

**SHAMS POWER COMPANY**

**ENGINEERING DIVISION**

**INSPECTION & CORROSION SECTION**

**SHAMS 1**

**LOCATION : R1MAG01BB001**

**KKS : R1MAG01BB001**

**CERTIFICATE OF INSPECTION**

The equipment detailed below was examined in accordance with the SHAMS code of practice for plant inspection,

**ITEM : Main steam header**

**Location : SHAMS Plant**

**Type of Inspection : Major**

**Date of Inspection : March, 2020**

**Place of Inspection : IN-SITU**

**Date of Last Inspection : October, 2017**

**REPORT :**

**1.0. Summary**

The above header was taken off line, and insulation stripped down at flow meter and some locations adjacent to turbine for major external inspections. A 14" diameter connected spool to turbine cut and re-welding as well as readjusting affected supports were carried out successfully. Flow meter follow up inspection carried out successfully.

**2.0. Subject**

2.1. This is a flow meter pipe, ASTM A-335 Gr.P91 Pipe.

Size	
Design pressure	240 bar(g)
Design temperature	565 C
Operation pressure	130 bar (g)
Operation temperature	540 C
Fluid	High Pressure Steam
Flanges Material	ASTM A- 182 Gr. F91
Piping size	2" - 24 " # 1500
Pipe Material	ASTM A-335 Gr.P91

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The above equipment is/ ~~is not~~ considered suitable for further service under the present operating conditions

**Next Major Inspection date : Jan 2024**

**Inspected: Osman Ismail**

**Endorsement: 48 Months**

**Reviewed: Ali Al Masabai**

### **3.0 History**

This header is connecting two booster heaters to turbine, comprising many different components like flow meter, steam traps, supports (normal, snippers and spring types). Pipe diameters ranges 2" – 24 ". Material is ASTM 335 Gr P91. It was commissioned in 2013 and periodical inspection records since Oct.'2014 are available.

On 21/02/2017 it was subjected to hammering incident due to condensate accumulation in the line during lined up in the morning. This led to header dislocation at several locations and clashing with adjacent piping, in addition to small diameter associated piping was heavily affected.

On 17.04.2017 it was inspected by REX subsidiary of GIS – MIC, outcome available in their attached report.

On January outage 2018 it was comprehensively inspected to get piping integrity updated data for further stress analysis. Inspection scope included phased array of most affected welding, laser inspection of most affected welding elbow. Outcome was mostly satisfactory.

On April 2018 Flow meter pipe was reported leak from welding of flow meter nozzle to main pipe. Repairing was very difficult due to utilizing of different materials (SS 316 L for Nozzle) and (A 335 P91 for main pipe) and (tapering material Nickle base alloy). Due to repeated cracks during repair welding process it take more than 4 weeks and plant was completely shut down. Based on manufacturer recommendation nozzle material was changed to be same of main pipe material.

On January 2019 a new flow material with new design was installed.

On March 2020 a follow up inspection was carried out and outcome was satisfactory.

### **4.0. Scope of Inspection**

- 4.1 Visual inspection.
- 4.2 Phased Array.
- 4.3 Replica testing

### **5.0. Conditions Found**

- 5.1 During turbine overall a 14" diameter connected spool to turbine was cut for turbine dismantling, this led to unbalance of all steam header adjacent piping parts to turbine particularly at its supports. So, all supports readjusted based on new position of header after welding it back to turbine inlet, details of readjusted support attached.
- 5.2 New welding of 14" diameter connected spool to turbine was carried out by HIDROMONTAZA contractor, it was welded as per specified welding procedure, heat treated and phased array inspected successfully.
- 5.3 While checking materials of the header using PMI instrument a deviation of material specification found, according it was decided to check all header different parts. Further testing confirmed difference in header parts materials, some of it showed low grade materials, report attached.

### **6.0. Recommendations**

- 6.1 It is highly recommended to check suitability of low grade materials of the header with current operating and design conditions.
- 6.2 Inspect flow meter pipe within main header inspection program after 4 years as per SHAMS Code of Practice.

## **10. Inspection Grade and Interval**

In accordance with the latest revision of SHAMS Code of Practice, this header ~~was~~ endorsed for 48 months for next Major Inspection.

**Frequency : 48 Months.**  
**Endorsement : 48 Months**  
**Next Major Insp. due : January 2024**

### **Attachments:**

- **Phased Array Report**
- **Replica Test Report**



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Form No.: IN-AISF-06 Rev. 00 Dtd.: 11-June-2019

### PHASED ARRAY ULTRASONIC EXAMINATION REPORT

Report No.:	INS/SHAMS/PA-004	Date of Examination:	07-03-2020	Page:	1	Of	3
Client :	SHAMS POWER COMPANY	Mfr's SI No.:	NA	Procedure No. , Rev. No.	INS/SHAMS/MS/PAUT/001 Rev- 01		
Location :	MADINAT ZAYED (ABU DHABI)	Item :	PIPING - BUTT WELD JOINTS	Acceptance Standard :	ASME B.31.3 CODE CASE 181, Ed. 2012		
Project :	MAIN STEAM INSTRUMENT MAINTAINANCE (SHUT DOWN)	Material :	A335-P91	Exam Standard :	ASME SEC V, ED-2015		
Project No.:	NA	Type of Weld :	SINGLE 'V'	Volume Scanned :	100%+ 25mm ADDITIONAL HAZ		
Block No.:	NA			Scan Plan No.:	PA-005A		
Contractor PO No.:	NA						

#### EQUIPMENT AND TESTING PARAMETERS

ULTRASONIC INSTRUMENT		SEARCH UNIT			CALIBRATION SETTINGS				CALIBRATION BLOCK							
Make :	OLYMPUS	Probe Sl. No.:	R1855	Element Size :	0.49mm	Groups :	GR 1	GR2	GR3	Material :	CS	Reflector Type :	SDH 1.5mm			
Model :	OMNI-MX2	Make :	OLYMPUS	Element Gap :	0.01mm	Focal Law :	Linear	Sectorial	Sectorial	Block Temp :	AMBIENT	Reference Mode :	TCG 80%			
Serial No.:	103139	Model :	5L64-A32	Wedge / Natural Angle :	SA32-N55 IHC / 55°- AOD 24°	Angle / Angle Range :	65°	35°-65°	35°-65°	Thickness :	75mm	Block No.:	IOW			
Cal. Due Date :	29-10-20	Frequency :	5MHz	Wedge Cut Angle :	36deg	Focal Depth / Plane :	92mm	92mm	92mm	Calibration Data (TCG Details)						
Software Ver / Data Acquisition :	MXU 4.4R5	No. of Element :	64	Cable Type :	Coaxial	No. of Element :	32	32	32	Reflector Type :	SDH 1.5mm					
Analysis S/W :	TOMOVIEW 2.10R25	Element Pitch :	0.5mm	Cable Length :	Smits	Angular Increment :	0.5°	0.5°	0.5°	Angle:	True Depth :	19,25,32,50				
Special Equipment :	NA	Effective Height :	8mm	Range of Elements :	1-32, 33-64	Focal Law No.:	49	61	61	Echo Amplitude :	80%					
Scanner / Adhering Guiding Mechanism :		HST LITE			Scanning Technique :	SEMITAUTOMATIC			Scanner Block							
Final Display Processing Level :		A-SCAN, B-SCAN, S-SCAN			Data Sampling / Spacing :	1mm			Scanning Sensitivity :	REF+6dB	Encoder Type :	QUAD, 9.05 steps/mm	Material :			
Search unit travel speed :		50mm/sec			Surface Condition :	SMOOTH			Scanning Surface :	OD SURFACE/SINGLE SIDE SCANNING			Block Temp :			
					Couplant / Brand Name :	WATER			NA				Thickness :			
									NA				Block No.:			

Identification : TAG NO: RILBA10CF401 DIA /THK: 24" X 46.02 mm COMPONENT: PIPE TO FLANGE STAGE: IN SERVICE

Examination Details and Results																		
S.no	Weld ID	Welder ID	Scan Start	Clockwise	Weld Width	Probe Offset mm	Thick. mm	Flaw Details (mm)					Aspect Ratio		Accept / Reject	Comments		
								Start	Length	Depth	Height	Axial Start	AMP %	Type	h/t	h/l		
1	J4	NA	0	YES	40mm	75	46.02	4	15	6.2	4.1	15	100%	SUBSURFACE	0.089	0.273	NOTE	
								44	13	9.1	2.4	-10	100%	SUBSURFACE	0.052	0.185	NOTE	
								88	17	35.1	6.9	0	100%	SUBSURFACE	0.150	0.406	NOTE	
								95	28	5.7	2.4	16	100%	SUBSURFACE	0.052	0.086	NOTE	
								183	20	3.2	4.0	14	100%	SUBSURFACE	0.087	0.200	NOTE	
								186	18	35.0	9.6	-2	100%	SURFACE	0.209	0.533	NOTE	
								250	13	4.9	6.4	-12	100%	SUBSURFACE	0.139	0.492	NOTE	
								280	20	35.4	8.5	0	100%	SURFACE	0.185	0.425	NOTE	
								312	17	10.8	4.4	-7	100%	SUBSURFACE	0.096	0.259	NOTE	
								338	16	12.4	3.7	7	100%	SUBSURFACE	0.080	0.231	NOTE	

NOTE : ABOVE REPORTED DEFECT INDICATIONS ARE WELD NATURAL DEFECT AT FABRICATION STAGE AND THERE IS NO INSERVICE TYPE OF DEFECT INDICATION TO BE EVIDENCED IN THE SCANNING DATA. RECOMMENDED TO THE ABOVE REPORTED DEFECT INDICATION TO BE MONITOR AT PERIODICALLY BASIC. @ (400-550),(1355-1506) SCANNING CANNOT BE DONE DUE TO OBSTACLES

Examined & Evaluated By :	ASNT Level II	Reviewed By :	ASNT Level-III			SHAMS	TPI

Abbreviation*	No defect - NRI	Lack of Fusion - LF	Incomplete Penetration - IP	Porosity - P
Volumetric Indication - VOL	Planar Indication - PLA	Crack - C	Inclusion - I	Other Indication - OI
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Form No.: IN-AISF-06 Rev. 00 Dtd.: 11-June-2019

### PHASED ARRAY ULTRASONIC EXAMINATION REPORT

Report No. :		INS/SHAMS/PA-004							Date of Examination : 07-03-2020							Examination Details and Results		Page : 2 Of 3	
S.no	Weld ID	Welder ID	Scan Start	Clockwise	Weld Width	Probe Offset mm	Thick. mm	Start	Length	Depth	Height	Axial Start	AMP %	Type	h/t	h/l	Aspect Ratio	Accept / Reject	Comments
1	J4	NA	0	YES	40mm	75	46.02	716	13	35.4	9.7	0	100%	SURFACE	0.211	0.746	NOTE		
								776	14	37.3	7.7	6	100%	SURFACE	0.167	0.550	NOTE		
								823	15	36.3	5.4	0	100%	SUBSURFACE	0.117	0.360	NOTE		
								829	15	5.4	4	-12	100%	SUBSURFACE	0.087	0.267	NOTE		
								841	11	2.1	3.9	16	100%	SUBSURFACE	0.085	0.355	NOTE		
								902	18	40.1	4.3	2	100%	SURFACE	0.093	0.239	NOTE		
								933	20	20.1	2.9	16	100%	SUBSURFACE	0.063	0.145	NOTE		
								941	19	5.0	6.5	5	100%	SUBSURFACE	0.141	0.342	NOTE		
								989	17	4.4	4.7	16	100%	SUBSURFACE	0.102	0.276	NOTE		
								1019	10	43.1	2.9	1	100%	SURFACE	0.063	0.290	NOTE		
								1030	15	17.7	5	15	100%	SUBSURFACE	0.109	0.333	NOTE		
								1046	16	8.8	3.3	15	100%	SUBSURFACE	0.072	0.206	NOTE		
								1078	8	40.2	2.6	3	100%	SUBSURFACE	0.056	0.325	NOTE		
								1103	9	34.8	5.7	0	100%	SUBSURFACE	0.124	0.633	NOTE		
								1116	205	4.0	7.8	16	100%	SUBSURFACE	0.169	0.038	NOTE		
								1127	74	3.0	15.4	-13	100%	SURFACE	0.335	0.208	NOTE		
								1255	13	3.5	5.5	4	100%	SUBSURFACE	0.120	0.423	NOTE		
								1303	15	39.5	5.2	2	100%	SURFACE	0.113	0.347	NOTE		
								1322	13	10.6	4.4	-6	100%	SUBSURFACE	0.096	0.338	NOTE		
								1507	78	6.2	6.4	-16	100%	SUBSURFACE	0.139	0.082	NOTE		
								1524	39	7.2	5.4	5	100%	SUBSURFACE	0.117	0.138	NOTE		
								1577	16	35.9	9.2	0	100%	SURFACE	0.200	0.575	NOTE		
								1661	74	5.6	3.5	10	100%	SUBSURFACE	0.076	0.047	NOTE		
								1775	15	35.7	5.8	-4	100%	SUBSURFACE	0.126	0.387	NOTE		
								1766	71	2.5	6.9	-16	100%	SURFACE	0.150	0.097	NOTE		
								1611	59	5.1	7.6	(-8)(-16)	100%	SUBSURFACE	0.165	0.129	NOTE		
								1841	13	38.7	6.2	-3	100%	SURFACE	0.135	0.477	NOTE		
								1844	117	6.4	4.4	11	100%	SUBSURFACE	0.096	0.038	NOTE		
								1885	76	4.4	5.1	-18	100%	SUBSURFACE	0.111	0.067	NOTE		

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Examined & Evaluated By :	ASNT Level II	Reviewed By :	ASNT Level-III	SHAMS	TPI

Abbreviation*	No defect - NRI	Planar Indication - PLA	Lock of Fusion - LF Crack - C	Incomplete Penetration - IP Inclusion - I	Porosity - P Other Indication - OI	INSPIC IS PART OF INTERTEK GROUP
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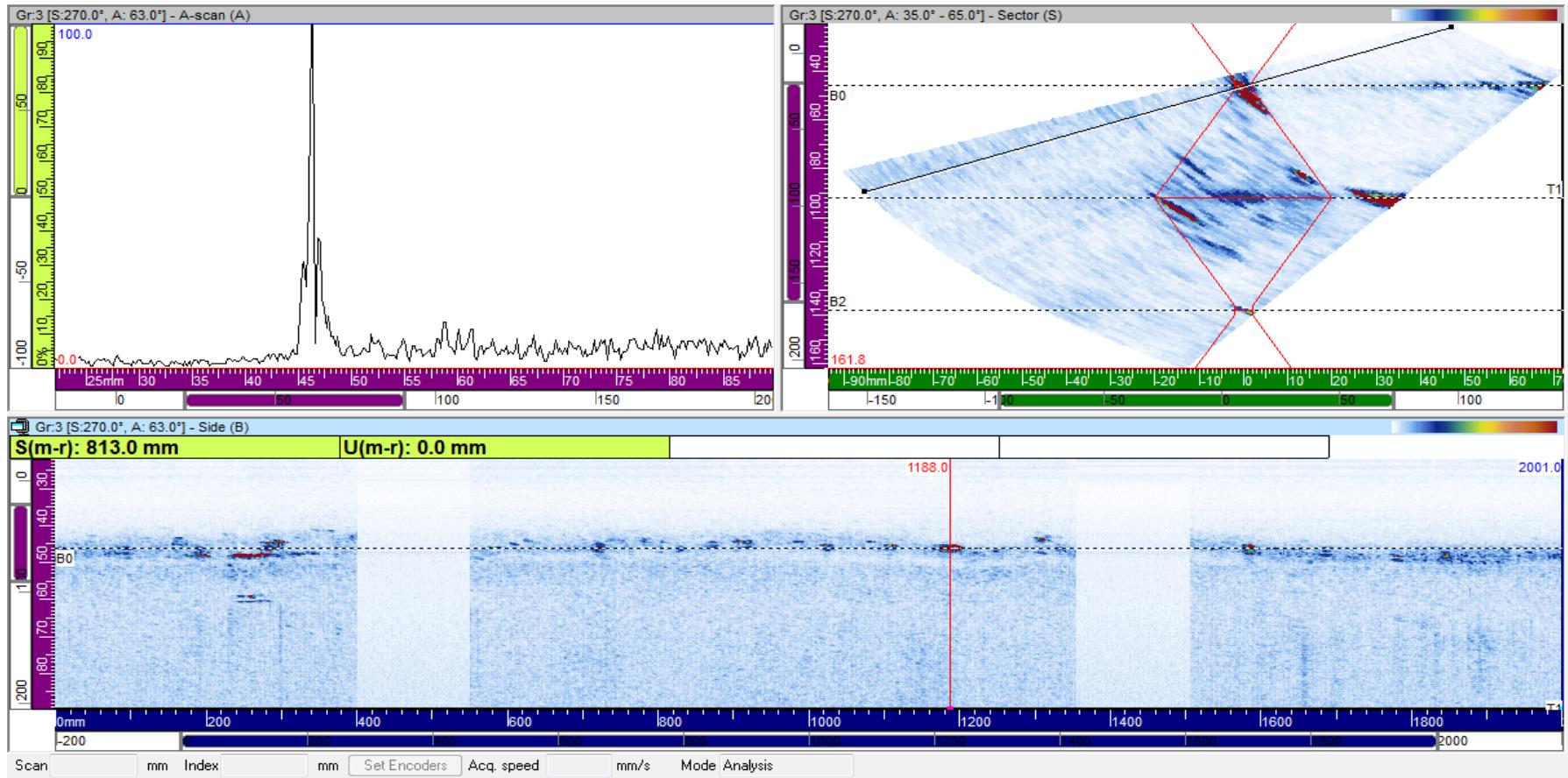
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Form No.: IN-AISF-06 Rev. 00 Dtd.: 11-June-2019

**PHASED ARRAY ULTRASONIC EXAMINATION REPORT**

Report No.:	INS/SHAMS/PA-004	Date of Examination :	07-03-2020	Page :	3	Of	3
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SHAMS-RILBA10CF401-J-4



Form No.: IN-LABF-12 Rev. 6 Dtd.: 15-Nov-2018

**REPLICA METALLOGRAPHY REPORT**

DATE OF TEST:	26-Mar-2020	REPORT NO.:	LAB/AD/473	DATE OF REPORT:	30-Mar-2020	PAGE: 1 OF 2
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CLIENT:	SHAMS POWER COMPANY
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JOB No.:	598
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CONTACT DETAILS:	Mr. Osman Ismail
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**REPLICA METALLOGRAPHY ( As per ASTM E-1351)**

Project:	Outage 2020
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Vessel:	Flowmeter
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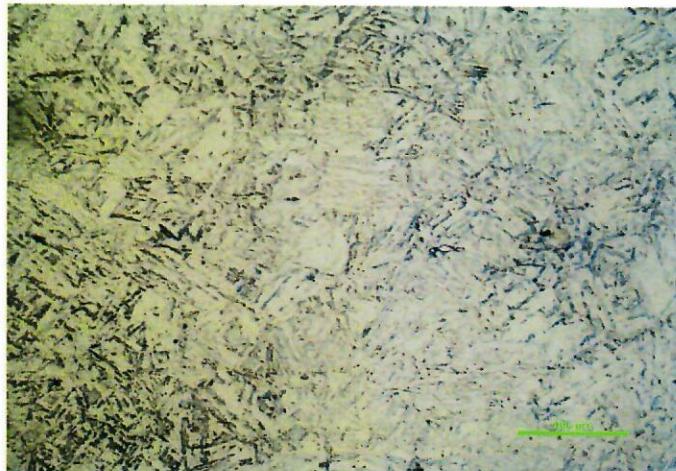
Size:	N/A
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Material:	ASTM A335 Gr. P91
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Locations:	Weld (LHS)
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Spot No.:	1
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**PHOTOS:**



Location: Base Metal ; Etchant: Fry's Reagent; Magnification: 200x

**Observations:**

Microstructure revealed some ferrite pools and carbides in tempered martensitic matrix at the examined location.

No other significant metallurgical anomalies observed.



**Mechanical Lab Supervisor**

Name : AVINASH MATRE  
Sign : Date : 30-03-2020

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Fujairah Branch : P O Box: 7907, Fujairah, U.A.E  
Oman Branch : P O Box: 193, P.C: 131, Sultanate of Oman  
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**Operations Manager**

MOHAMMED ALAWNEH

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## REPLICA METALLOGRAPHY REPORT (CONTINUATION SHEET)

Report No.

LAB/AD/473

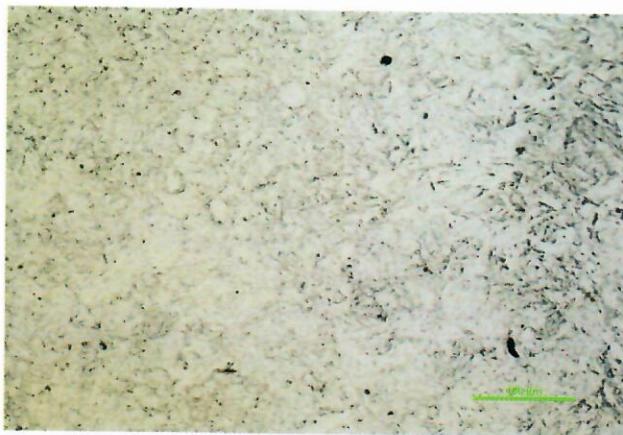
Report Date:

30-03-2020

Date of Test:

26-02-2020

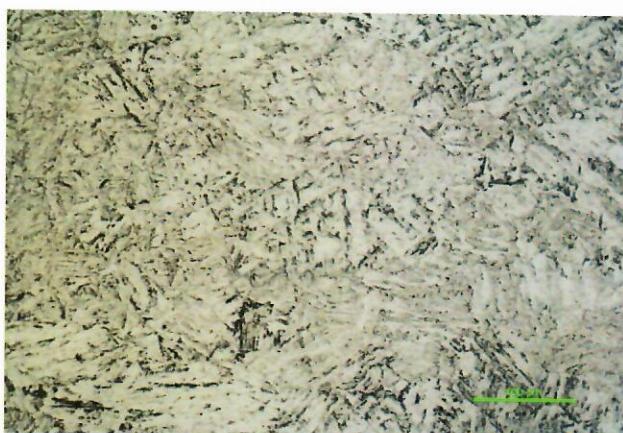
Page: 2 Of 2



Location: Heat Affected Zone ; Etchant: Fry's Reagent; Magnification: 200x

### Observation:

Microstructure revealed ferrite, carbides and some tempered martensite pockets at the examined location.  
No other significant metallurgical anomalies were observed.



Location: Weld Metal ; Etchant: Fry's Reagent; Magnification: 200x

### Observations:

Microstructure revealed ferrite in tempered martensitic matrix at the examined location.  
No other significant metallurgical anomalies observed.



### Mechanical Lab Supervisor

Name :

AVINASH MATRE

Sign :

30-03-2020

### Senior Metallurgist

GOPI KRISHNAN

30-03-2020

### Operations Manager

MOHAMMED ALAWNEH

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Form No.: IN-LABF-12 Rev. 6 Dtd.: 15-Nov-2018

## REPLICA METALLOGRAPHY REPORT

DATE OF TEST:	26-Mar-2020	REPORT NO.:	LAB/AD/474	DATE OF REPORT:	30-Mar-2020	PAGE:	1	OF	1
CLIENT:	SHAMS POWER COMPANY								
JOB No.:	598								

CONTACT DETAILS: Mr. Osman Ismail

## REPLICA METALLOGRAPHY ( As per ASTM E-1351)

Project:	Outage 2020
Vessel:	Flow Meter
Size:	N/A
Material:	ASTM A335 Gr. P91
Locations:	Parent Metal (LHS)
Spot No.:	2

## PHOTOS:



Location: Base Metal ; Etchant: Fry's Reagent; Magnification: 200x

### Observations:

Microstructure revealed ferrite pools and carbides in the tempered martensitic matrix at the examined location.  
No other significant metallurgical anomalies observed.



### Mechanical Lab Supervisor

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Fujairah Branch : P O Box: 7907, Fujairah, U.A.E  
Oman Branch : P O Box: 193, P.C. 131, Sultanate of Oman  
Registered Office : 33-37 Athol Street, Douglas, IM1, 1LB, Isle of Man. Company Number 010728V.

### Senior Metallurgist

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### Operations Manager

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Form No.: IN-LABF-12 Rev. 6 Dtd.: 15-Nov-2018

## REPLICA METALLOGRAPHY REPORT

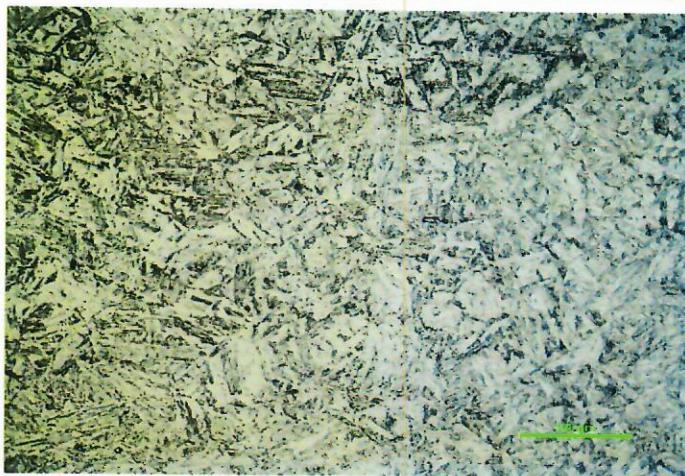
DATE OF TEST:	26-Mar-2020	REPORT NO.:	LAB/AD/475	DATE OF REPORT:	30-Mar-2020	PAGE:	1	OF	1
CLIENT:	SHAMS POWER COMPANY								
JOB No.:	598								

CONTACT DETAILS: Mr. Osman Ismail

## REPLICA METALLOGRAPHY ( As per ASTM E-1351)

Project:	Outage 2020
Vessel:	Flow Meter
Size:	N/A
Material:	ASTM A335 Gr. P91
Locations:	Parent Metal (RHS)
Spot No.:	3

## PHOTOS:



Location: Base Metal ; Etchant: Fry's Reagent; Magnification: 200x

### Observations:

Microstructure revealed ferrite pools and carbides in the tempered martensite matrix at the examined location.  
No other significant metallurgical anomalies observed.



### Mechanical Lab Supervisor

Name : AVINASH MATRE  
Sign :   
Date : 30/3/2020  
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Oman Branch : P.O Box: 193, P.C. 131, Sultanate of Oman  
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### Senior Metallurgist

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Tel : 06 506 1300 Fax: 06 536 1173  
Tel : 02 6225820 Fax: 02 6225830  
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### Operations Manager

MOHAMMED ALAWNEH

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Please email to : [suggestions.inspec@intertek.com](mailto:suggestions.inspec@intertek.com)

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Form No.: IN-LABF-12 Rev. 6 Dtd.: 15-Nov-2018

**REPLICA METALLOGRAPHY REPORT**

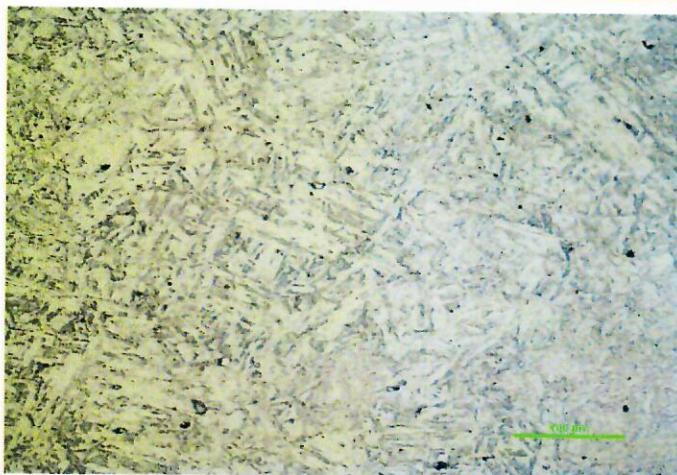
DATE OF TEST:	26-Mar-2020	REPORT NO.:	LAB/AD/476	DATE OF REPORT:	30-Mar-2020	PAGE:	1	OF	2
CLIENT:	SHAMS POWER COMPANY								
JOB No.:	598								

CONTACT DETAILS: Mr. Osman Ismail

**REPLICA METALLOGRAPHY ( As per ASTM E-1351)**

Project:	Outage 2020
Vessel:	Flow Meter
Size:	N/A
Material:	ASTM A335 Gr. P91
Locations:	Weld (RHS)
Spot No.:	4

**PHOTOS:**



Location: Base Metal ; Etchant: Fry's Reagent; Magnification: 200x

**Observations:**

Microstructure revealed some ferrite pools and carbides in tempered martensite matrix at the examined location.  
No other significant metallurgical anomalies observed.



**Mechanical Lab Supervisor**

Name : AVINASH MATRE  
Sign :   
Date : 30-3-2020  
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Sharjah Branch : P O Box: 6130, Sharjah, U.A.E  
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Fujairah Branch : P O Box: 7907, Fujairah, U.A.E  
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**Senior Metallurgist**

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**Operations Manager**

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NON DESTRUCTIVE TESTING, HEAT TREATMENT, ADVANCED INSPECTION SERVICES,  
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intertek.com

Form No.: IN-LABF-12A Rev. 6 Dtd.: 15-Nov-2018



## REPLICA METALLOGRAPHY REPORT (CONTINUATION SHEET)

Report No.

LAB/AD/476

Report Date:

30-03-2020

Date of Test:

26-02-2020

Page: 2 Of 2



Location: Heat Affected Zone ; Etchant: Fry's Reagent; Magnification: 200x

### Observation:

Microstructure revealed ferrite, carbides and some tempered martensite at the examined location.

No other significant metallurgical anomalies observed.



Location: Weld Metal ; Etchant: Fry's Reagent; Magnification: 200x

### Observations:

Microstructure revealed ferrite pools and carbides in tempered martensitic matrix at the examined location.

No other significant metallurgical anomalies observed.



	Mechanical Lab Supervisor	Senior Metallurgist	Operations Manager
Name :	AVINASH MATRE <i>Aneel</i> 30-3-2020	GOPI KRISHNAN <i>M. P. S. K.</i> 30-03-20	MOHAMMED ALAWNEH <i>M. Alawneh</i>
Sign :			
Date :			
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Sheriah Branch	: P.O.Box: 6130, Sharjah, U.A.E	Tel : 06 506 1300	Fax: 06 536 1173
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Fujairah Branch	: P.O.Box: 7907, Fujairah, U.A.E	Tel : 09 2238754	Fax: 09 2238754
Oman Branch	: P.O.Box: 193, P.C: 131, Sultanate of Oman	Tel : 00968 2448 2391	Fax: 00968 2448 5855
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Form No.: IN-OPF-04 Rev. 13E Dtd. 20-03-2019

## LIQUID PENETRANT EXAMINATION REPORT

Report No.:	AD / 53680	Date:	17.03.2020	Page:	1	Of	<u>2</u>
Client.:	SHAMS POWER COMPANY	Job No.:	PROJECT :- SHAMS OUTAGE MARCH -2020				
Location :	MADINAT ZAYED	Item :	AS BELOW				
Material :	CS	Ref / Procedure No.:	INS/ASME/PT/001				
Thickness :	VARIOUS	Revision :	22				
Surface condition :	AS WELDED & CLEANED	Test Temp.:	AMBIENT (25°)				
Viewing condition :	DAY LIGHT (>1076 LUX)	Penetrant Type / Technique :	VISIBLE SOLVENT REMOVABLE				
Penetrant dwell time :	10 MIN	Dev. Time:	10 MIN				
Date of test :	17.03.2020	ACCP - Criteria :	ASME SEC VIII DIV-1				
Consumables Type & Batch	MAGNAFLUX - SPOTCHECK						

Penetrant Remover	Penetrant	Developer
SKC-S ( BATCH NO-180108) JAN 2021	SKL-SP2 ( BATCH NO-171201) DEC 2020	SKD-S2 ( BATCH NO-180102) JAN 2021

### Observation & Evaluation :

# DPT WAS CARRIED OUT ON THE BELOW MENTIONED ITEM

# FLOW METER - R1LBA10CF401

# FOR JOINT LOCATION DETAILS REFER THE ATTACHED DRAWING SHEET

# NO RELEVANT INDICATION WAS OBSERVED DURING THE TIME OF INSPECTION.

# FOUND ACCEPTABLE AS PER THE SPECIFICATION.

ACCEPT	REJECT
--------	--------

RESULT

REPORT FORMAT APPLICABLE ONLY FOR AUH & FUJ FACILITY

LEVEL II TECHNICIAN	CLIENT REP	AI / TPI
<p>Name : SHER ALI            Sign :             Date : 17.03.2020            Level II No. : 660</p> <p>Dubai Branch : P.O Box: 6130, Dubai, U.A.E.            Sharjah Branch : P.O Box: 6132, Sharjah, U.A.E.            Abu Dhabi Branch : P.O Box: 1132, Abu Dhabi, U.A.E.            Fujairah Branch : P.O Box: 7907, Fujairah, U.A.E.            Oman Branch : P.O Box: 193, P.C: 131, Sultanate of Oman            Registered Office : 33-37 Athol Street, Douglas, IM1, 1LB, Isle of Man, Company Number 010726V.</p>	<p>Name :            Sign :            Date :            Tel: 04 3241955 Fax: 04 3241957            Tel: 06 5061300 Fax: 06 5361173            Tel: 02 6225820 Fax: 02 6225830            Tel: 09 2238754 Fax: 09 2238754            Tel: 00968 2448 2391 Fax: 00968 2448 5855</p>	<p>Name :            Sign :            Date :            Email: Inspec.dxbcoor@intertek.com            Email: Inspec.shbcoor@intertek.com            Email: Inspec.adhcoor@intertek.com            Email: Inspec.fujcoor@intertek.com            Email: Inspec.muscat@intertek.com</p>

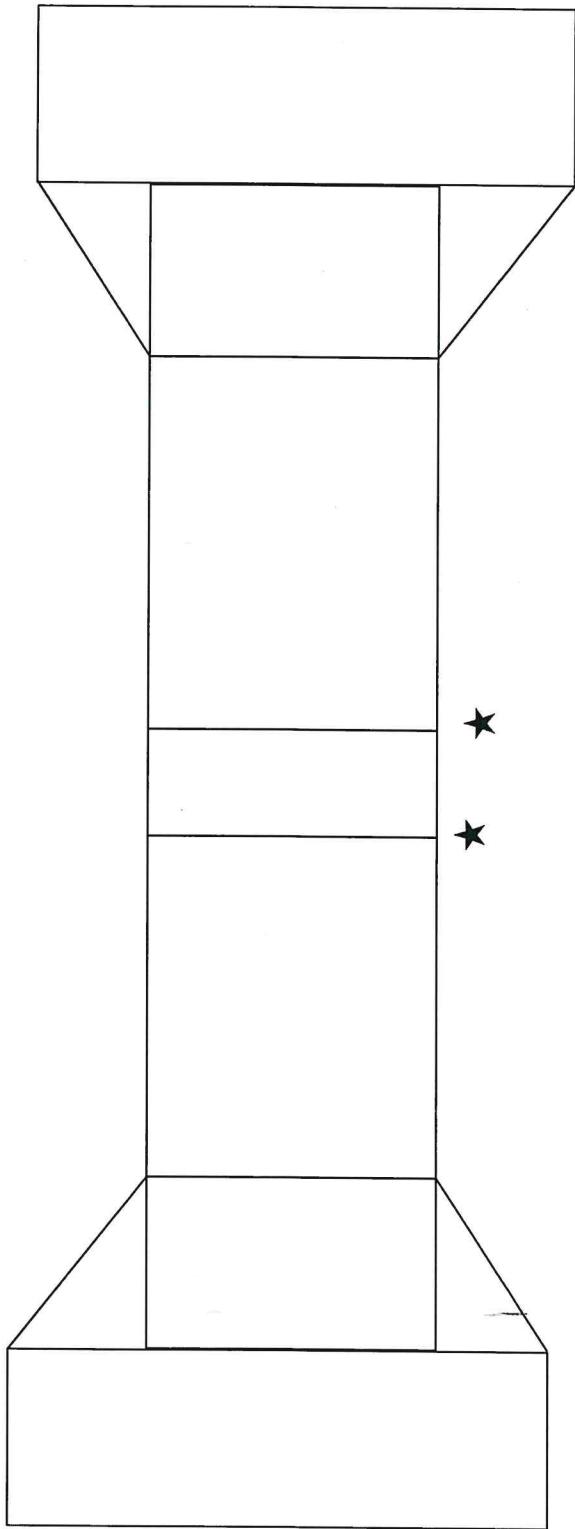
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LIQUID PENETRANT EXAMINATION - DRAWING SHEET

**FLOW METER**



★ PT DONE LOCATION

LEVEL II TECHNICIAN

Name :- SHERZALI

Sign \_\_\_\_\_

Level II No. 560

Date 17.03.2020

Form No.: IN-QSF-36 Rev. 05E Dtd.: 20-10-2018

### ULTRASONIC THICKNESS GAUGING REPORT

Client:	SHAMS POWER COMPANY		
Date:	17.03.2020	Report No.:	AD / 484
Project:	SHAMS OUTAGE MARCH 2020	Job No.:	N/A
Location:	MADINAT ZAYED	Drawing No.:	N/A
Item ID:	FLOW METER R1LBA10-CF401	Material:	CS
Ref/ Procedure No:	INSPEC/UTG/001 Rev.10	Ref. Standard:	ASME SEC V
UTG Equipment Model/ Manufacturer:	USM 35 X DAC / GE	Serial No.:	7292a
Calibration Block No. :	STEP WEDGE, IIW V2 BLOCK	EQPT Calibration Certificate & Due Date:	INS/UT/CAL-043/19/AUH
Probe Type/ Size/Frequency:	WK TR 0° PROBE/ 10mm DIA / 5 MHz	Couplant Brand Name & Type:	POLYCELL + WATER
Connecting Cable Type & Length:	LEMO TO MICRODOT & 2 MTR	Special Attachment/ Equipment/ Block:	STEP WEDGE BLOCK (SL NO : AZB270)
Test Temperature:	AMBIENT	Surface Condition:	AS CLEANED
Inspection Date:	17.03.2020	Page:	1 of 2
<b>Description:</b>			

# ULTRASONIC THICKNESS GAUGING WAS CARRIED OUT ON THE FOLLOWING ITEM

LOCATION	ORIENTATION	MEASURED THICKNESS (mm)
1	0°	91.70
	90°	92.00
	180°	91.62
	270°	91.54
2	0°	91.90
	90°	91.47
	180°	91.72
	270°	91.60

#### REPORT FORMAT APPLICABLE ONLY FOR AUH & FUJ FACILITY

<b>LEVEL II TECHNICIAN</b>  Name : SIVANESAN & MURALI MANO Sign : Date : Level II No. 660 17.03.2020	<b>CLIENT REPRESENTATIVE</b> Name : Sign : Date :	<b>AI / TPI</b> Name : Sign : Date :
Tel : 04 3241955 Fax: 04 3241957 Email: inspec.dxbcoor@intertek.com Tel : 06 5361300 Fax: 06 5361173 Email: inspec.shjcoor@intertek.com Tel : 02 6225820 Fax: 02 6225830 Email: inspec.adhcoor@intertek.com Tel : 09 2238754 Fax: 09 2238754 Email: inspec.fulcoor@intertek.com Tel : 00968 2448 5855 Fax: 00968 2448 5855 Email: inspec.muscat@intertek.com		
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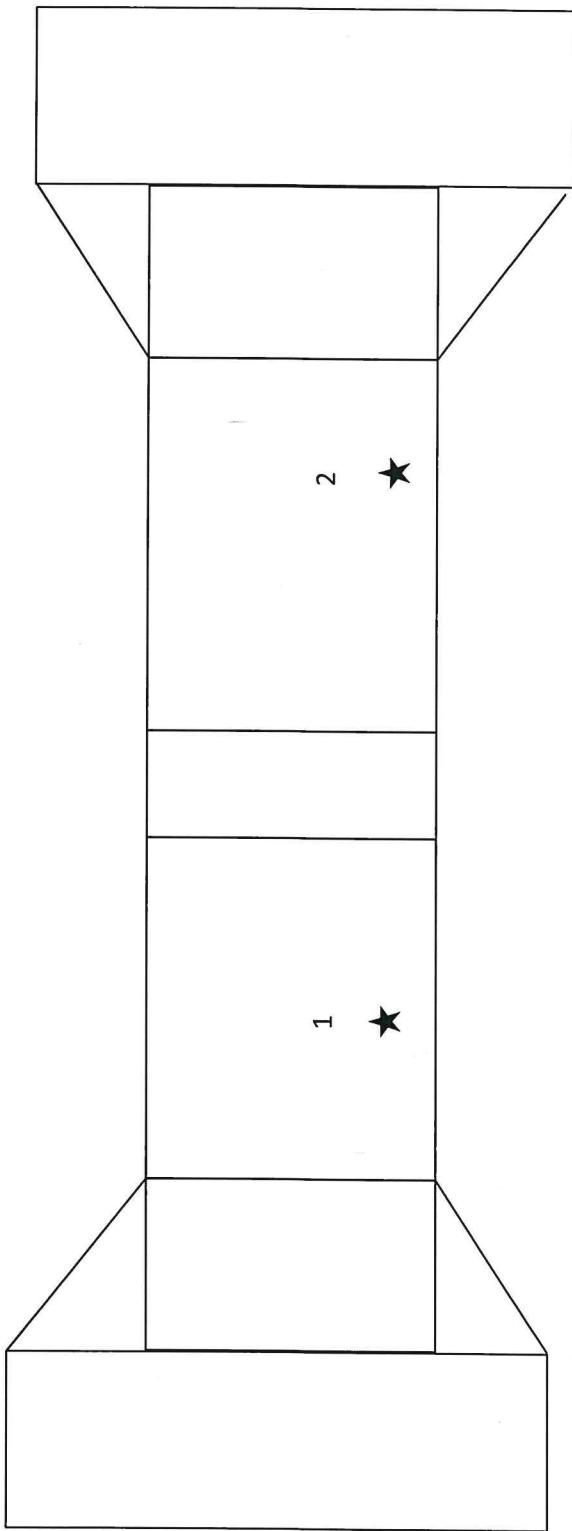
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**International Inspection Services Ltd**

Date :- 17.03.2020  
Report No.: - AD-484  
Page No. :- 2 OF 2

ULTRASONIC THICKNESS SCANNING - DRAWING SHEET

**FLOW METER**



★ UTG LOCATION

