INSPECTION AND REPAIR OF HORIZONTAL CENTRIFUGAL PUMPS

PUMP INSPECTION AND REPAIR HISTORY

DATA SHEET P-G-5S1

GENERAL

Name: Zamorov D Date and Time of Occurrence: 31.07./2024

Equipment Number: 150-PC-014A Unit: 50 WO Number: 110608

Service:

OPERATIONS

Because of Failure, Process Unit Was: ☑ Not Affected ☐ Shutdown ☐ Slowed Down/Upset

Reason Pump Pulled:

☐ Environmental (1173) ☐ Seal Leak ☐ High Vibration ☐ Gasket leak ☐ Low Discharge Pressure

☐ Low Flow ☐ Locked-Up ☐ Hot Bearings, Temperature (°C) _____

☐ Other: Pump is operating with high strange noise

Operation Prior to Failure:

☐ Normal ☐ Startup ☐ Unit Upset ☐ Cavitating ☐ Run Dry (Loss of Flow)

☐ Dead Headed ☑ Noisy ☐ Other _____

Barrier Reservoir Liquid Level: ☑ OK ☐ Low ☐ High ☐ N/A

Barrier Reservoir Pressure: 0 to 2 ☐ N/A

Extent of Leak:

☐ Slow Drip ☐ Fast Drip ☐ Spraying ☐ No Visible Leakage ☑ N/A

☐ Other

Leak Path:

☐ Under Sleeve Along Shaft ☐ Between Sleeve and Gland ☐ Unknown ☑ N/A

☐ Between Gland and Pump ☐ Buffer Fluid Reservoir Full ☐ Volute Gasket

☐ Pressurized Dry Runner Vent or Buffer Fluid Reservoir ☐ Other _____

Operating Parameters at Time of Failure:

☐ Operating Temperature (°C) 40 ☐ Flow Rate (gpm) _____

☐ Suction Pressure (psig) 0,7 to 4,16 ☐ Discharge Pressure (psig) 14,7

Brief Description of Failure and, if Applicable, Unit Upset: _____

Comments to Field Machinist: _____

FIELD REMOVAL

Name: Zamorov D Date and Time of Removal: 31.07./2024

Alignment: ☑ Offset OK ☑ Angularity OK ☐ No Soft Foot

Pipe Strain: ☑ OK ☐ Unacceptable

Coupling Type: ☑ Disc-Pack ☐ Diaphragm ☐ Gear ☐ Other _____

Coupling Condition: ☑ OK ☐ Dry ☐ Damaged _____

Seal Flush Lines: ☑ Clear ☐ Plugged and Comments: _____

Seal Flush Orifice: ☐ Present Diameter (in.) _____ ☐ N/A

Volute Wear Ring Diameter: ☐ Vertical (in.) 173,43 MM ☐ Horizontal (in.) 173,47 MM ☐ N/A

Base Condition:

☐ Grout OK ☐ Hold Down Bolts OK ☐ Jack Bolts OK

☐ Unacceptable _____

Condition of Lube Oil: ☑ OK ☐ Unacceptable _____

Impeller Condition: ☑ OK ☐ Unacceptable _____

Additional Comments: _____

Comments to Machine Shop: _____

INSPECTION AND REPAIR OF HORIZONTAL CENTRIFUGAL PUMPS

PUMP INSPECTION AND REPAIR HISTORY

DATA SHEET P-G-5S1

MACHINE SHOP

Name: Zamorov O Date and Time Started Inspection and Repair: 31.04.1 1024

Rotating Seal Faces:

☐ Cracking hard face ☐ Uneven/widened wear track ☐ Breakage ☐ Corrosion ☐ Chipping
☐ Pitting-carbon ☐ Grooving-hard face ☐ Erosion-carbon ☐ Heat checking
☐ Other Not opened ☐ Comments if Dual Seal _____

Stationary Seal Faces:

☐ Cracking hard face ☐ Uneven/widened wear track ☐ Breakage ☐ Corrosion ☐ Chipping
☐ Pitting-carbon ☐ Grooving-hard face ☐ Erosion-carbon ☐ Heat checking
☐ Other Not opened ☐ Comments if Dual Seal _____

Bellows:

☐ Breakage ☐ Corrosion ☐ Hardening ☐ Coking ☐ Clogging ☐ N/A
☐ Other not opened

Gaskets and O-Rings:

☐ Swelling ☐ Burning/Overheating ☐ Extruding ☐ Cracking ☐ Corrosion
☐ Hardening ☑ Other Casing gasket damaged

Other Seal Parts:

☐ Breakage-Springs ☐ Corrosion ☐ Hardening ☐ Coking ☐ Clogging
☐ Comments _____

Impeller Condition:

☐ Cavitation Damage ☐ Eroded ☐ Cracked ☐ Corroded ☐ Pitted
☐ Other OK

Components Replaced:

☐ Bearings ☐ Bearing Housings ☐ Wear rings ☐ Seal ☐ Shaft
☐ Impeller ☐ Other _____

Comments on Overhaul and Upgrades: _____

Comments to Field Machining: _____

FIELD ASSEMBLY

Name: _____ Date and Time of Installation: _____ / _____

Seal Flush Cooler: ☐ Disassembled and Cleaned ☐ N/A

Buffer Fluid System: ☐ Steam Cleaned ☐ At Proper Level w/New Fluid ☐ N/A

Alignment: ☐ Offset _____ ☐ Angularity _____

Pipe Strain:

☐ Satisfactory ☐ Repaired ☐ Oil Mist Installed ☐ Oil Reservoirs Filled
☐ Plugs Tight ☐ Unknown

Comments: _____

OLTIN YO'L GTL

UZBEKISTAN GAS TO LIQUID PROJECT (UZGTL)
ПРОЕКТ GTL УЗБЕКИСТАН (UZGTL)

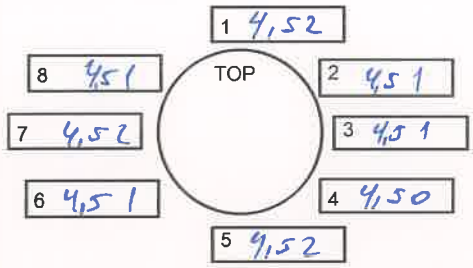
Rotating Equipment – Piping Flange Alignment Inspection

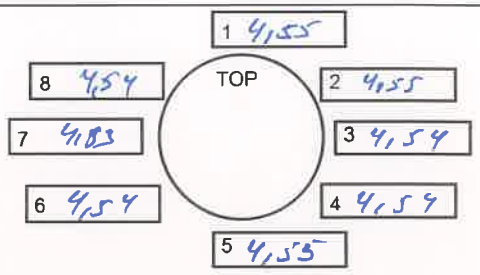
REPORT NO:
АКТ №:
DATE/
ДАТА:

Description: **Описание:**	**System No.:** **Система №:**
Drawing no.: **Чертеж №:**	**Unit:** **Подразд.:**
150-PC-014A	**Discipline:** **Дисциплина:**

Free Gauge Reading Between Flange Faces

Inlet Flange Size: 4"	Outlet Flange Size: 3"
Reading at inlet Flange:	Reading at Outlet Flange:





Maximum Allowable Tolerance (Difference between high & low reading

10 µm/centimeter (0.01mm/centimeter) of flange outside diameter, not exceed 750 µm (0.75mm)
Piping smaller then NPS10 250 µm (0.25mm) or less
Only 4 feeler gauge readings, equally spaced, required on flange 6" (150mm) outside diameter and smaller

Pipe Strain Readings

Net indicator Readings	Inlet flange Bolt-up			outlet flange Bolt-up		
Horizontal Orientation (1)	0,02	+ or -	µm	0,02	+ or -	µm
Horizontal Orientation (1)	0,01	+ or -	µm	0,01	+ or -	µm

Note:
For horizontal Machinery-Dial indicator reading on coupling hub flange.
For vertical Machinery-Dial indicator reading on driver-mount flange.

(1) For vertical Machinery, the horizontal orientation is perpendicular to pipe centerline when viewed from top.
(2) For vertical Machinery, the vertical orientation is parallel to pipe centerline when viewed from top.
(3) Maximum shaft movement in either direction is 50 **µm (0.05mm)**
(4) All flange bolting shall be to move in bolt holes of mating flanges right angle to flange face and parallel to pipe run.
(5) Final alignment with the nozzles connected to piping shall be only accepted when all temporary supports are removed and permanent supports are installed.

Note / Примечание:
µm = microns = micrometer

Mechanical Tecnician	**Mechanical Engineer**	**Mechanical Supervisor**
Name ФИО Burigbaev S	Name ФИО Zamonov O	Name ФИО Бутабаев О
Signature Подпись	Signature Подпись	Signature Подпись
Date Дата 31.07.2024	Date Дата 31.07.2024	Date Дата 31.07.2024

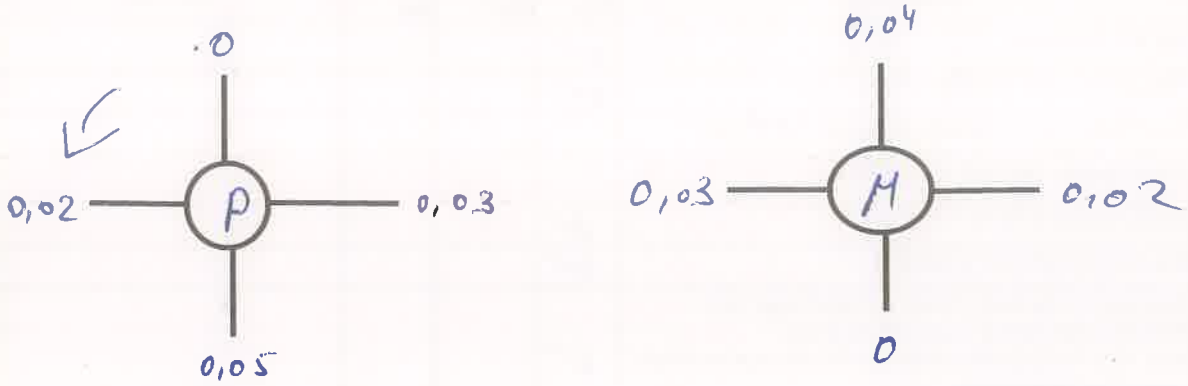
UNG WE CREATE PURE ENERGY
Uzbekistan GTL

UZBEKISTAN GTL

UZBEKNEFTEGAZ

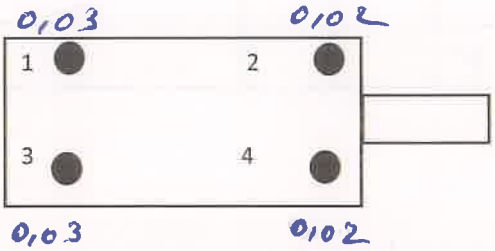
Alignment Inspection Test Record

Unit: 50	Equipment No: 150-PC-014 A	Date: 31.07.2024



Pump reading		Motor reading

Soft foot



Shim thickess

1 2,70 MM

2 2,60 MM

3 2,65 MM

4 2,70 MM

Distance between shaft ends DBSE	Drawing: 180 MM
	Actual: 180,15 MM
	Tolearnce: 0,15 MM

Test accepted within acceptable limits Yes ☑ No ☐

Mechanical Technician		Mechanical Engineer	
Name:	Buriyev SH	Name:	Zamonov O
Signature:		Signature:	
Date:	31.07.2024	Date:	31.07.2024

UNG WE CREATE PURE ENERGY
Uzbekistan GTL

UZBEKISTAN GTL

UZBEKNEFTEGAZ

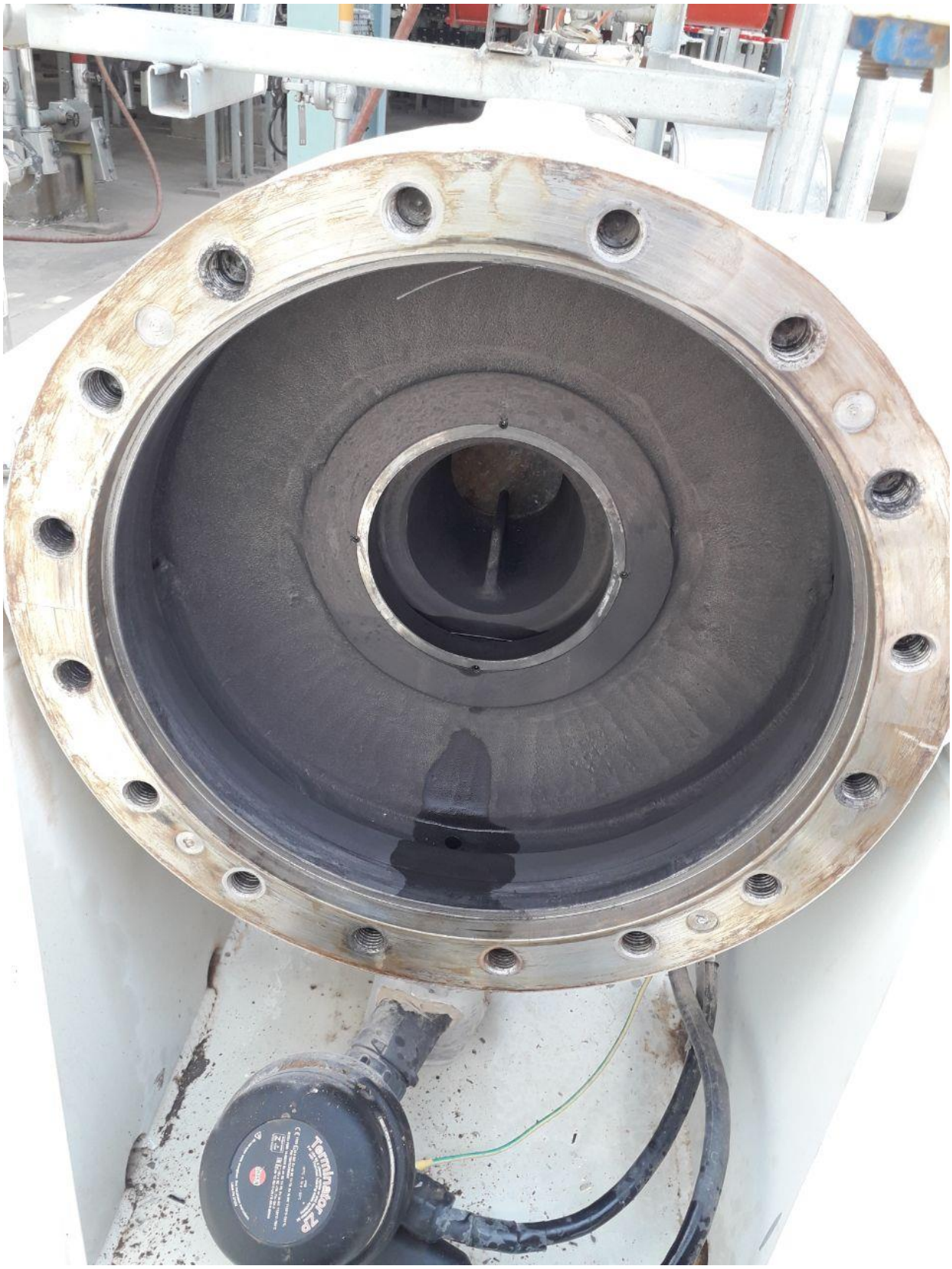
Alignment Inspection Test Record

Unit: 50	Equipment No: 150-PC-014A				Date: 31.07.2024
No	Check Item	Acceptable			Remark
		Yes	No	NA	
1	Jack bolt fit for driver	✓			
2	Fixed and moveable machine shaft free to turn	✓			
3	Record DBSE (Distance between shaft ends) 180 mm.				
4	Record coupling free length 180,1 mm.				
5	Correct shims park for driver fitted.	✓			
6	Maximum 5 shims under any support.	✓			
7	Shims are stainless steel or better. Permitted single shims thickness under any foot is not to be more than 3mm. Total shim thickness at least 3mm but not to be more than 12mm under movable foot.	✓			
8	Coupling bolt size 12 mm				
9	Bolts are not undercut.	✓			
10	Shim packs	✓			
11	Soft foot is not more than 0.05 mm	✓			
12	Dowels fitted in machinery feet if required.	✓			

Remarks:

Mechanical Technician	Mechanical Engineer
Name: Buriyev Sh	Name: Zamonov O
Signature:	Signature:
Date: 31.07.2024	Date: 31.07.2024

Name	Horizontal diameter (mm)	Vertical diameter (mm)
Impeller wear ring outside diameter	173.49	173.47
Casing wear ring inside diameter	174.05	173.98
Wear ring tolerance	0.56	0.51



Casing gasket damaged

New one