

Chronic Pump Failure Causing Unacceptable Downtime - JB



\$237,000
Cost

8/11
Tasks

Review
Status

 English

What happened?

Repeat failures of CP-235 causing unacceptable downtime

Where did it happen?

Facility

Area: Houston

site: Offshore

department: Maintenance

Equipment

type: Pump

class: Centrifugal

code: CP-002

Why did it happen?



Root Cause	Corrective Action(s)
Misalignment	1. Replace bearing and align properly
Improper Installation	–
Inadequate alignment procedure	1. Review alignment procedure and consult for best practices and ensure improvements are made and communicated to
Inadequate alignment tools	1. Purchase Laser alignment equipment
Too Busy to align properly	–


Timeline




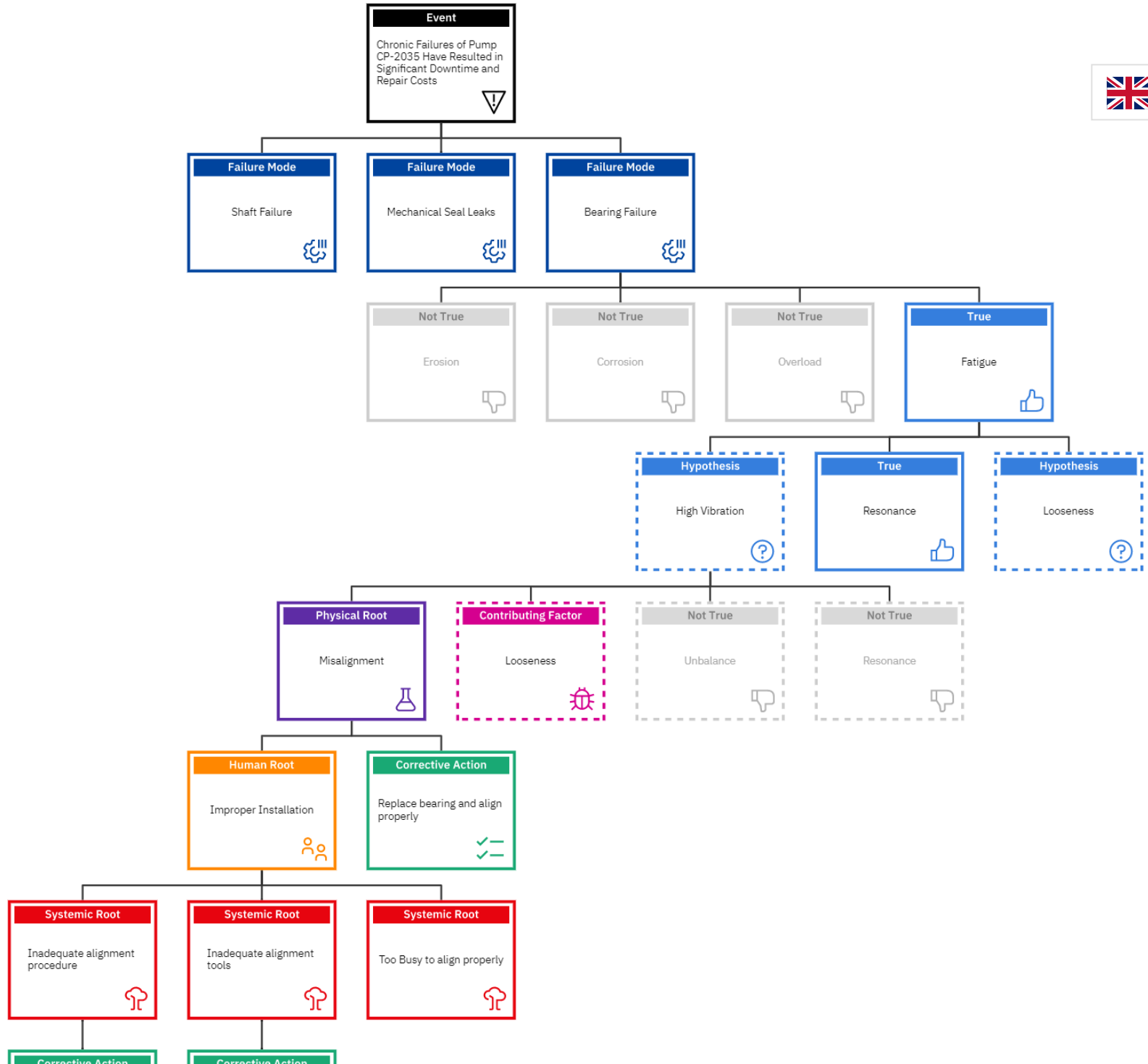
- 02/05/2018 14:13 ◆ Centrifugal pump CP-2035 installed
- 07/04/2019 14:13 ◆ scheduled PM
- 06/10/2020 14:14 ◆ Performed routine maintenance
- 07/07/2020 00:00 ◆ Event Occurs
- 09/07/2020 14:13 ◆ documented high vibration
- 10/23/2020 ◆ Start of Analysis
- 02/08/2022 14:40 ◆ Experienced another failure in pump cp-235
- 02/10/2022 ◆ Expected Completion

Summary of Findings




It was determined that mechanics were not using proper alignment practices and that the alignment procedure was outdated.





Type	Node	Title	Description	Assigned To	Due
Corrective Action	Review alignment procedure and consult for best practices and ensure improvements are made and communicated to	Alignment Procedure Improvement	Review alignment procedure and consult for best practices and ensure improvements are made and communicated to maintenance personnel	John Bartlow	<div data-bbox="1759 180 2024 250" style="border: 1px solid black; padding: 2px;">  English </div> Completed
Corrective Action	Inadequate alignment tools	Purchase Laser Alignment Equipment	Request bids from three vendors to evaluate laser alignment equipment options.	John Bartlow	Completed
Corrective Action	Purchase Laser alignment equipment	Purchase Laser Alignment Equipment	Get bids from vendors for laser alignment equipment and purchase appropriate type for application/environment.	John Bartlow	Completed
Verification	Chronic Failures of Pump CP-2035 Have Resulted in Significant Downtime and Repair Costs	Training Records	Go to Training office and request records	Becker Polverini	10/30/2020
Verification	Chronic Failures of Pump CP-2035 Have Resulted in Significant Downtime and Repair Costs	Process Flow Diagram	Go to engineering office and print the process flow diagram	John Bartlow	Completed

Type	Node	Title	Description	Assigned To	Due
Verification	Chronic Failures of Pump CP-2035 Have Resulted in Significant Downtime and Repair Costs	Operating Temperature	Go to operations and ask for report	John Bartlow	 English Completed
Verification	Chronic Failures of Pump CP-2035 Have Resulted in Significant Downtime and Repair Costs	Vibration Report	Go to maintenance and ask for report	Carlos Oti	Completed
Verification	Erosion	Visual Inspection Of Bearing	Schedule time to inspect bearing for signs of corrosion.	John Bartlow	Completed
Verification	High Vibration	Check With Vibration Monitor	check	Carlos Oti	10/22/2021
Verification	Resonance	Test For Resonance	test	Carlos Oti	Completed
Verification	Looseness	Test Component On A Test Stand	test on stand ASAP	Carlos Oti	08/05/2022



Root Causes and Findings

Type	Root Cause	Corrective Action	Notes
 PHYSICAL	Misalignment	1. Replace bearing and align properly	1 ▼
FINDINGS	It was discovered that mechanics were using outdated procedure and outdated tools for alignment		
 HUMAN	Improper Installation	–	1 ▼
FINDINGS	Mechanics were not aligning equipment properly due to poor procedure and training.		
 SYSTEMIC	Inadequate alignment procedure	1. Review alignment procedure and consult for best practices and ensure improvements are made and communicated to	1 ▼
FINDINGS	Review of current alignment procedure revealed procedure was inadequate and outdated.		

Type	Root Cause	Corrective Action	Notes
 SYSTEMIC	Inadequate alignment tools	1. Purchase Laser alignment equipment	 English
FINDINGS	testing		
 SYSTEMIC	Too Busy to align properly	–	1 ▼
FINDINGS	It was found mechanics were not being given adequate time to conduct their repairs thoroughly. Too much pressure to resume operations.		
 CONTRIBUTING FACTOR	Looseness	–	1 ▼
FINDINGS	Further review of vibration records showed that looseness most likely also played a role in the fatigue of the bearing.		

Team Members



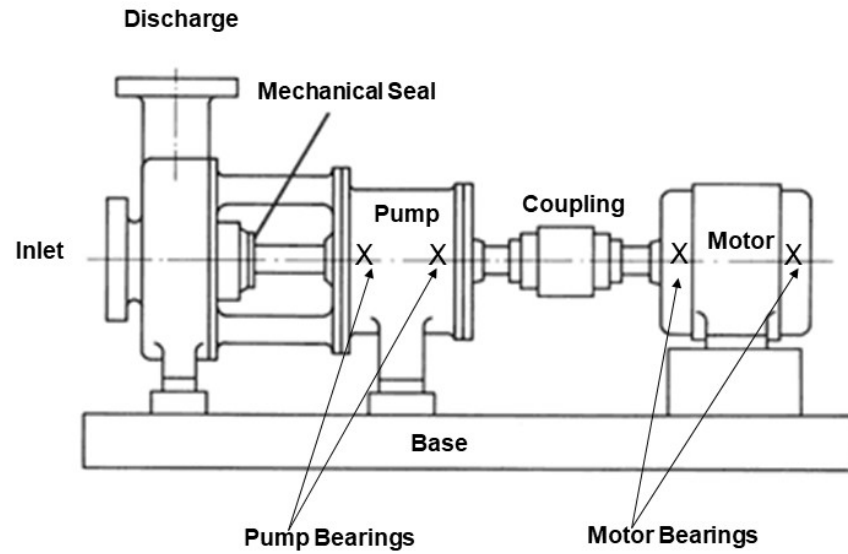
Name	Title	Email
JB John Bartlow	Product Manager	jbartlow@reliability.com
BP Becker Polverini	N/A	becker@reliability.com
ST Sebastian Traeger	Managing Director	sebastian@reliability.com
CO Carlos Oti	N/A	coti@reliability.com

Analysis 802c3fce-877d-490a-9461-d44eebbf46db

Attachments



Paper – CP-201 Drawing



Failed Bearing

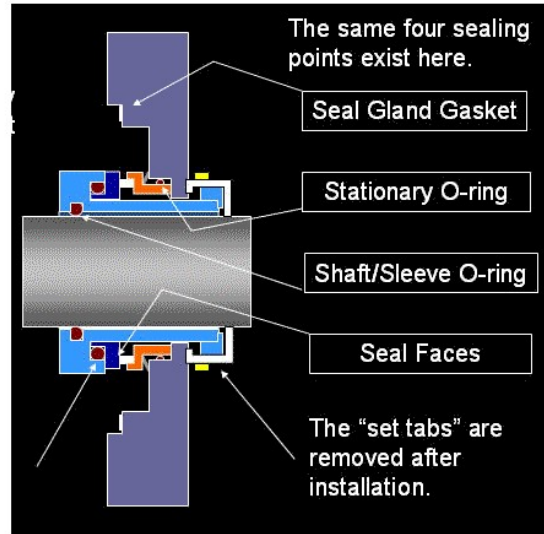
Parts

 English



Parts Mechanical Seal

 English



Parts Mechanical Seal

 English

