BAKER HUGHES a GE company

SPS Final Test Report
Vibration and Alignment

Point	1x(in/s)	2x(in/s)	Overall(in/s)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
M1			
M2			
M3			
M4			
M5			
M6			

Work Order Number: 107179638		Date: 12-13-19	
Customer: XTO Longhorn Comp St. 1 of 2			
Project: 500002097H			
SPS Skid Type: FM1000		S/N: 15083433	
Motor HP: 60	Mfg: GE	S/N: LNFT326U010	
Pump Type: 2SE 4200		S/N:	
Number Stages: 23		S/N:	
500002115-H		S/N: 15074163	
		S/N:	
Thrust Chamber: AL-185108		S/N: 15057642	
Motor Coupling Type: Dodge			

Pressure & Flow@Q Min			Motor Amps	
Suction:	67	(psi)	Phase 1:	43
Discharge:	388	(psi)	Phase 2:	44
Flowrate:	51	(bpd/gpm)	Phase 3:	44
Pressure & Flow @ BEP			**Motor Amps**	
Suction:	65	(psi)	Phase 1:	51
Discharge:	359	(psi)	Phase 2:	51
Flowrate:	82	(bpd/gpm)	Phase 3:	48
Pressure & Flow @Q Max			**Motor Amps**	
Suction:	65	(psi)	Phase 1:	51
Discharge:	291	(psi)	Phase 2:	58
Flowrate:	108	(bpd/gpm)	Phase 3:	52

Specific Gravity		Max Amps	70
Motor temp 78	Motor volts 460	Motor RPM/Hz	3575/60
Motor eff rating		Pwr factor rating	
Length of Test:	30	(min.)	
Ambient Temp:	65	deg F	
TC Operating Temp:	72	deg F	

Certification of test within acceptable limits

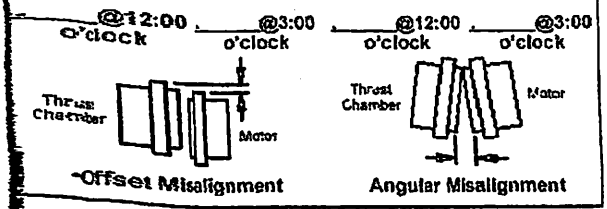
X MR

Pass X Fail-------

Notes _____

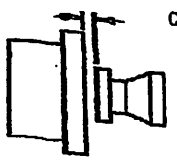
NTC Only - Record total indicator runout on coupling. Max tolerance is .0035 _____

Coupling Alignment Dimensions
(thousandths inch)
See Field Service Manual for Misalignment Limits



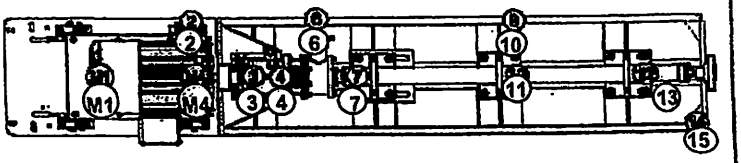
Offset Misalignment — Angular Misalignment

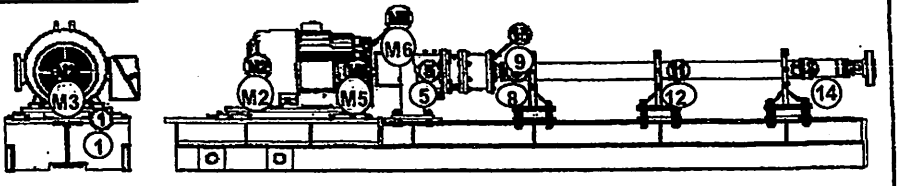
Suction/Pump Base Alignment



Clearance (thousandths inch)
_____ in @ 12:00
_____ in @ 3:00
_____ in @ 6:00
_____ in @ 9:00
All dimensions to be equal

Vibration Points





Vibration limits are 0.156 in/s @ 1x and 0.100 in/s at any other frequency.

Rev A HZP-TST-8404

Baker Hughes, Incorporated

844 W Lowry Rd
Claremore, OK, USA
Tested to API RP11S2 1997
Tested to BHI Engineering Specification ES 517

Stage Type: TE-4200:COMP
Serial Number: 15083433
Well Name: none
Customer: LONG 1
Remarks: none

Stages: 23
NEW Pump
Well ID: none

Date Tested: 12/13/2019
Tested By: rittmikl

RAW DATA

Test Point	Speed (rpm)	Temp (degF)	Flow (GPM)	Pin (psi)	Pout (psi)	Torque (Ft-lbs)
1	2097	75	0	66	306	0.8
2	2100	75	22.9	66	319	0.9
MIN	2397	75	51.2	67	388	0.9
BEP	2395	75	81.8	65	359	0.8
MAX	2394	75	108	65	291	0.8
6	1795	75	98.9	65	140	0.8
7	1795	75	107	66	117	0.8

BPD and HEAD are corrected to density=1.0
Rate,Head and BHP are corrected to 3500 rpm

TEST DATA

Test Point	Flow (BPD)	Head (ft)	Power (HP)	Eff (%)
1	0	67.0	-0.23	100
2	1308	70.4	-0.23	100
MIN	2564	68.7	-0.18	100
BEP	4099	62.9	-0.17	100
MAX	5414	48.4	-0.17	100
6	6610	28.6	-0.3	100
7	7153	19.6	-0.29	100

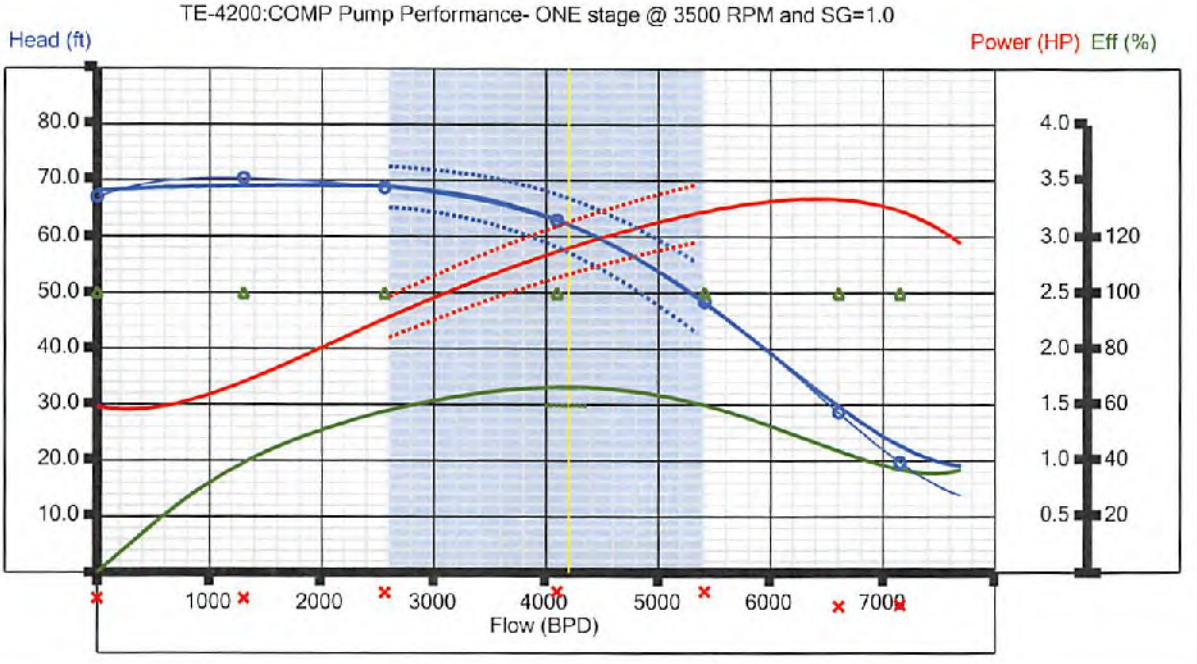
PERCENT DEVIATION/LIMITS

Deviation (%) / API Limit (%)

MIN	2600	-.3 / ±5.0%	* -107.2 / ±8.0%	
BEP	4200	-.1 / ±5.0%	* -104.7 / ±8.0%	50.9 / -10.0%
MAX	5400	.1 / ±5.0%	* -105.4 / ±8.0%	

*Indicates Failed Limit

TE-4200:COMP Pump Performance- ONE stage @ 3500 RPM and SG=1.0



BAKER HUGHES
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Elapsed Time (hh:mm:ss)
00:10:52

File Name	Serial Number	Part Number	Work Order
10583433-20191213_0649	10583433	500002097H	107179638

EXIT

STOP

Location	1	2	M3	M1	M2	M5	M4	M6	3	4	5	6	7	8	9	10	11	12	13	14	15
Overall Vibration (in/s)	0.057	0.037	0.063	0.039	0.041	0.043	0.041	0.043	0.041	0.056	0.072	0.057	0.035	0.031	0.003	0.026	0.036	0.038	0.004	0.004	0.042
1X Vibration (in/s)	0.009	0.020	0.011	0.012	0.001	0.022	0.012	0.002	0.009	0.008	0.014	0.033	0.011	0.010	0.001	0.010	0.013	0.014	0.002	0.002	0.017
2X Vibration (in/s)	0.038	0.003	0.009	0.012	0.000	0.016	0.017	0.001	0.019	0.020	0.006	0.018	0.013	0.005	0.000	0.003	0.005	0.007	0.000	0.000	0.019

Speed (RPM) 2400

1X Max Vibration 0.0327

1X Vibration <= 0.1560 in/s

non-1X Max Vibration 0.038

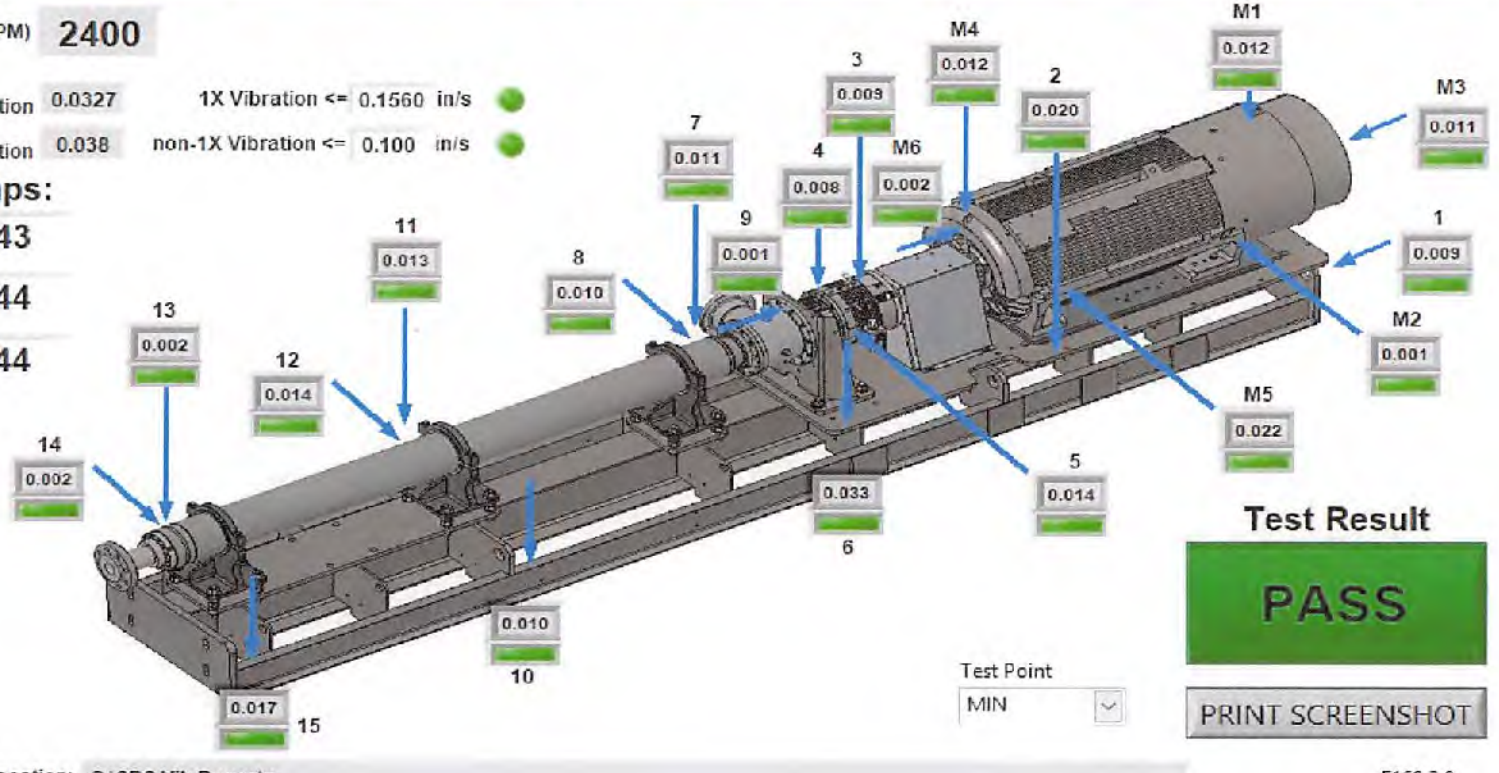
non-1X Vibration <= 0.100 in/s

Motor Amps:

Phase 1 43

Phase 2 44

Phase 3 44



Test Result

PASS

Test Point

MIN

PRINT SCREENSHOT

Report File Location: C:\SPS Vib Reports

F168 2.0

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Elapsed Time (hh:mm:ss)
00:09:02

File Name	Serial Number	Part Number	Work Order
10583433-20191213_0649	10583433	500002097H	107179638

EXIT

STOP

Location	1	2	M3	M1	M2	M5	M4	M6	3	4	5	6	7	8	9	10	11	12	13	14	15
Overall Vibration (in/s)	0.060	0.038	0.053	0.041	0.027	0.045	0.042	0.028	0.041	0.054	0.065	0.058	0.043	0.041	0.002	0.030	0.047	0.047	0.004	0.004	0.053
1X Vibration (in/s)	0.003	0.018	0.006	0.010	0.001	0.017	0.011	0.002	0.008	0.010	0.014	0.031	0.014	0.007	0.001	0.013	0.018	0.019	0.002	0.002	0.023
2X Vibration (in/s)	0.040	0.004	0.011	0.012	0.001	0.016	0.016	0.001	0.019	0.020	0.010	0.014	0.017	0.005	0.000	0.005	0.005	0.006	0.000	0.000	0.018

Speed (RPM) 2397

1X Max Vibration 0.0311

1X Vibration <= 0.1560 in/s

non-1X Max Vibration 0.040

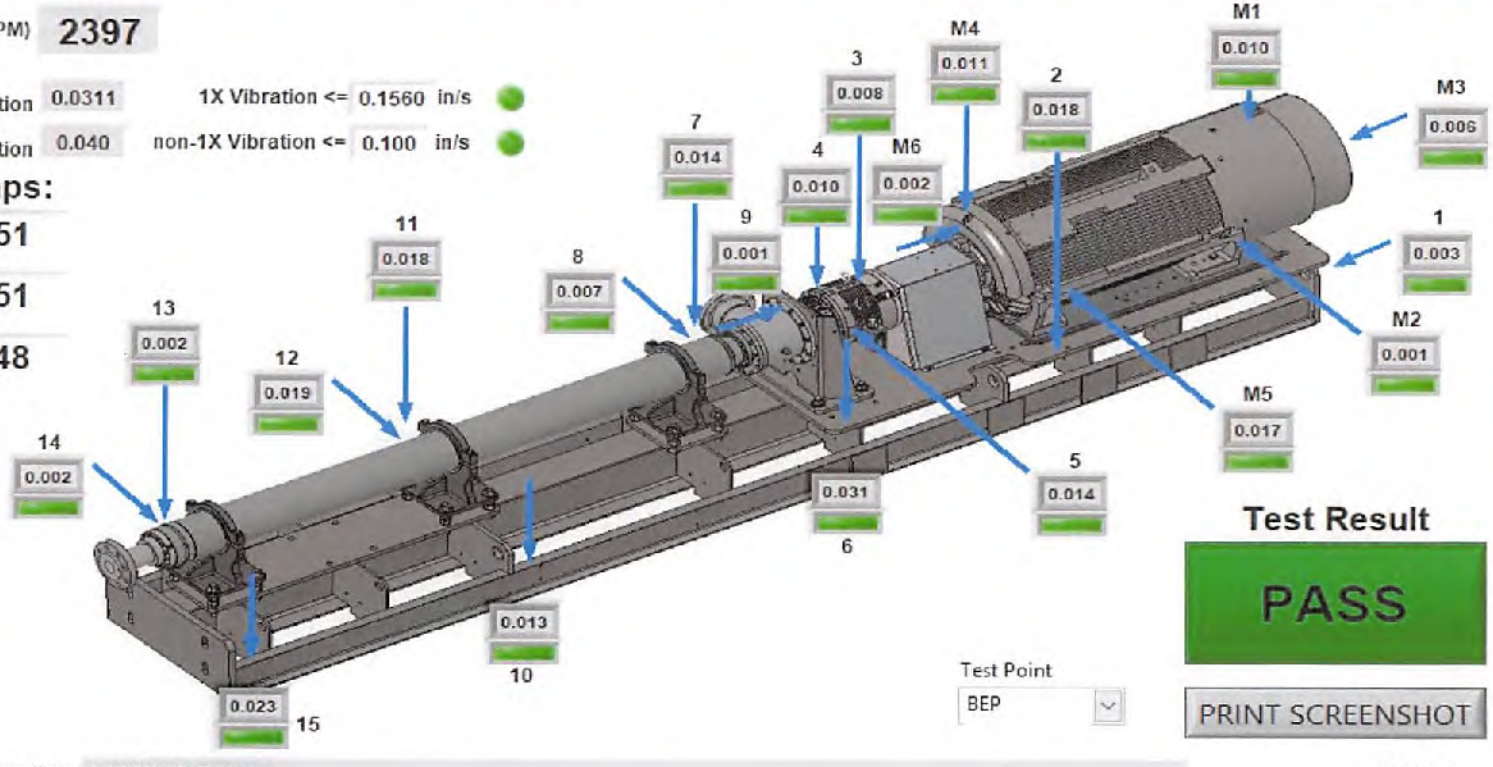
non-1X Vibration <= 0.100 in/s

Motor Amps:

Phase 1 51

Phase 2 51

Phase 3 48



Test Result

PASS

Test Point

BEP

PRINT SCREENSHOT

Report File Location: C:\SPS Vib Reports

F168 2.0

BAKER HUGHES
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Elapsed Time (hh:mm:ss)
00:07:28

File Name	Serial Number	Part Number	Work Order
10583433-20191213_0649	10583433	500002097H	107179638

EXIT

STOP

Location	1	2	M3	M1	M2	M5	M4	M6	3	4	5	6	7	8	9	10	11	12	13	14	15
Overall Vibration (in/s)	0.064	0.036	0.053	0.039	0.020	0.044	0.043	0.020	0.042	0.052	0.061	0.054	0.045	0.035	0.002	0.030	0.045	0.046	0.004	0.004	0.051
1X Vibration (in/s)	0.008	0.017	0.008	0.010	0.002	0.016	0.009	0.001	0.008	0.010	0.012	0.030	0.015	0.008	0.001	0.013	0.019	0.019	0.002	0.002	0.022
2X Vibration (in/s)	0.044	0.003	0.011	0.014	0.001	0.007	0.021	0.002	0.023	0.025	0.011	0.018	0.018	0.002	0.000	0.003	0.006	0.008	0.000	0.000	0.026

Speed (RPM) 2395

1X Max Vibration 0.0296

1X Vibration <= 0.1560 in/s

non-1X Max Vibration 0.044

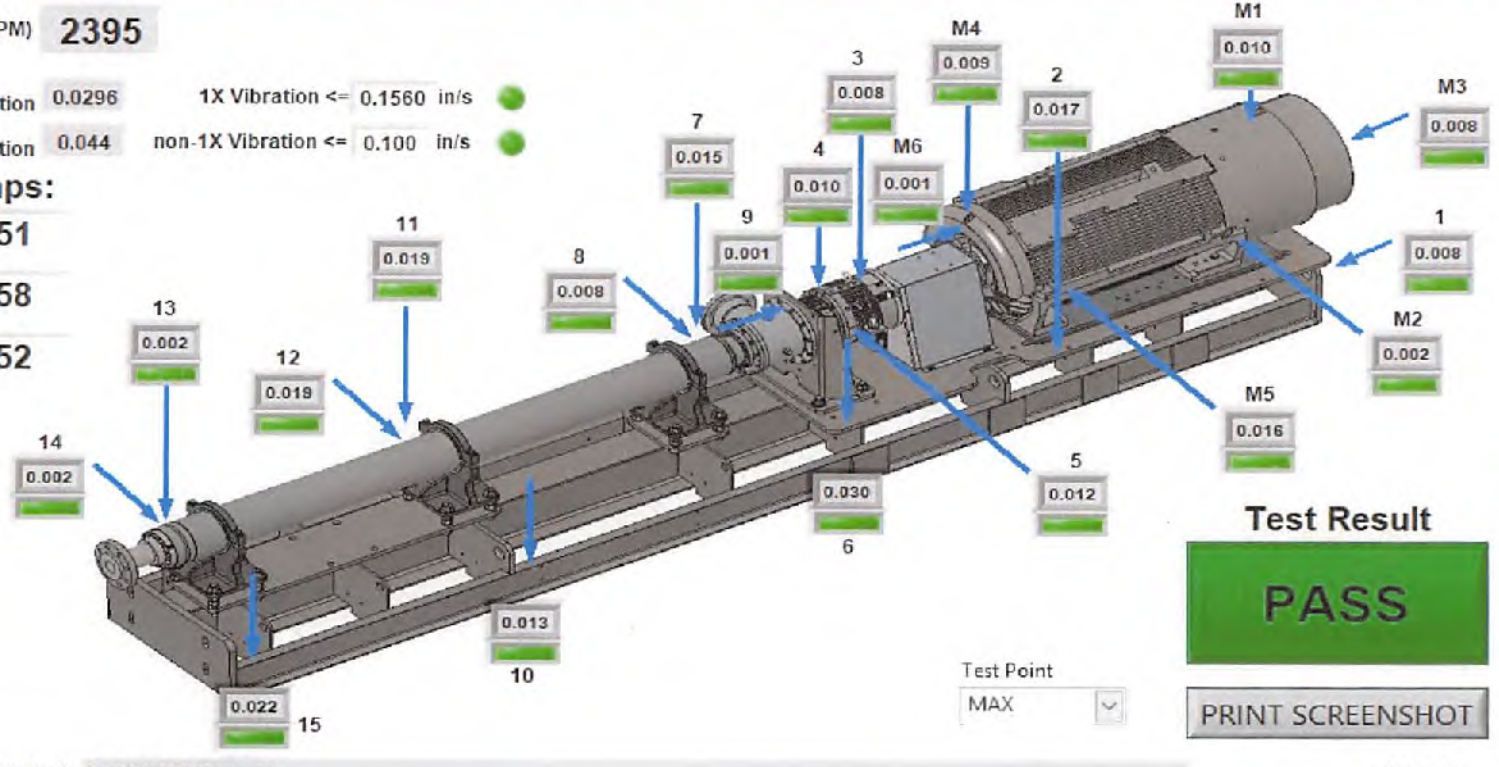
non-1X Vibration <= 0.100 in/s

Motor Amps:

Phase 1 51

Phase 2 58

Phase 3 52



Test Point
MAX

Test Result

PASS

PRINT SCREENSHOT

Report File Location: C:\SPS Vib Reports

F168 2.0