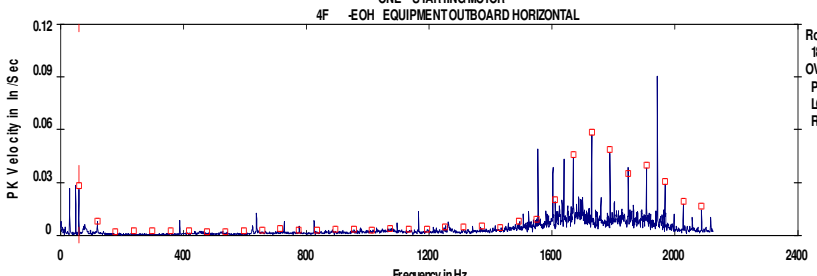
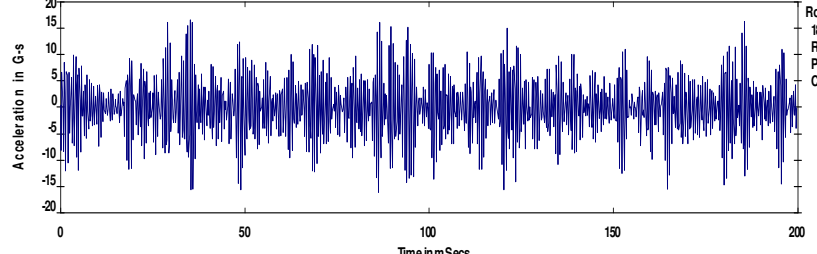
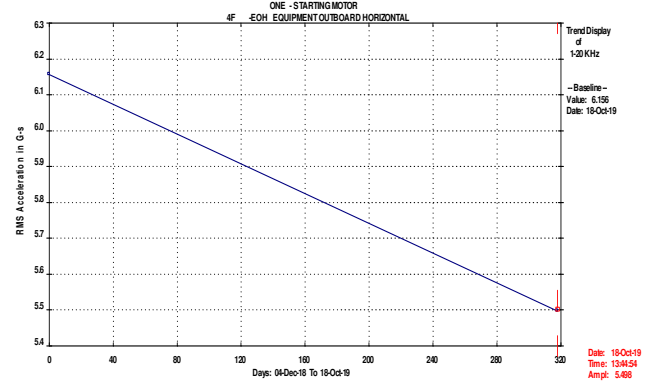




Client	ESSEX Power AECI	Survey Date	10-18-19
Location	Essex, MO	Report Date	10-22-19
Machine	Starting Motor/Gearbox	QMS No.	140513
Component		Analyst	DWS

Defect Rating for this machine	CLASS II
Defect Rating System	
Class I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue normal monitoring.	Class III: Defect (s) present that may cause failure in short term (less than 2 mos.). Should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.
Class II: Defect (s) present that may cause problem in long term (2-6 mos.). Repair during normal maintenance scheduling. Continue to monitor.	Class IV: Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs.

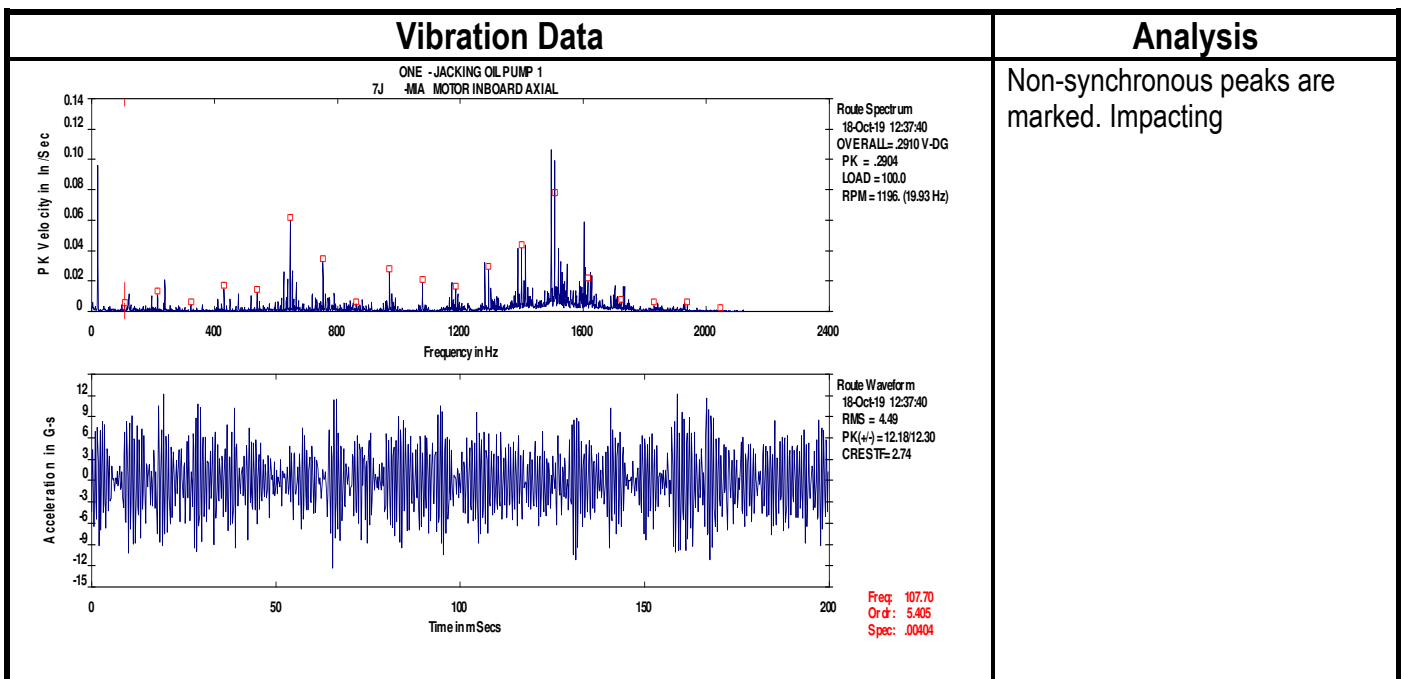
Vibration Data	Analysis
<p>ONE - STARTING MOTOR 4F - EOH EQUIPMENT OUTBOARD HORIZONTAL</p>  <p>Route Spectrum 18-Oct-19 13:44:55 OVERALL= 2894 V-DG PK = .2883 LOAD = 100.0 RPM = 1800. (30.00 Hz)</p>  <p>Route Waveform 18-Oct-19 13:44:55 RMS = 5.76 PK(4+) = 16.65/16.08 CRESTF= 2.89</p> <p>Freq: 59.62 Ord: 1.987 Spec: .02755</p>	<p>High frequency shaft speed harmonics/sidebands. Impacting.</p>

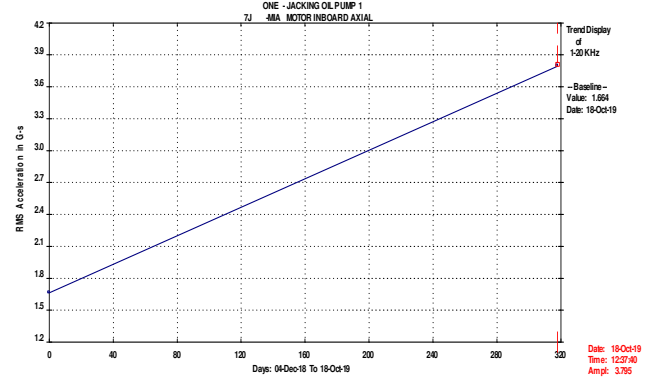
Discussion / Repair recommendations	Trend Data
<p>We still suspect some wear in the gearbox, but cannot at this time call for replacement of this unit. Running speed harmonics/sidebands can be seen above 1500 Hz. Overall acceleration in the gearbox exceeds 5 g's RMS and 15 g's RMS. Perform oil analysis to assist in defect classification.</p> <p>Rated a Class II Defect at this time.</p>	 <p>Trend Display of 1-20 KHz Baseline Value: 6.156 Date: 18-Oct-19</p> <p>RMS Acceleration in G-s</p> <p>Days: 04-Dec-18 To 18-Oct-19</p> <p>Date: 18-Oct-19 Time: 13:44:54 Ampl: 5.460</p>



Client	ESSEX Power AECI	Survey Date	10-18-19
Location	Essex, MO	Report Date	10-22-19
Machine	#1 Jacking Oil Pump	QMS No.	140513
Component	Bearing	Analyst	DWS

Defect Rating for this machine	CLASS III
Defect Rating System	
Class I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue normal monitoring.	Class III: Defect (s) present that may cause failure in short term (less than 2 mos.). Should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.
Class II: Defect (s) present that may cause problem in long term (2-6 mos.). Repair during normal maintenance scheduling. Continue to monitor.	Class IV: Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs.



Discussion / Repair recommendations	Trend Data
Data for this pump clearly indicates what looks to be bearing issues. Non-synchronous vibration peaks have multiple sidebands in this unit also. We do recommend replacement as time allows. Rated a Class III Defect.	 <p>Trend Display of 1-20 KHz Baseline Value: 1.664 Date: 18-Oct-19</p> <p>RMS Acceleration in G-s Date: 18-Oct-19 Time: 12:37:40 Ampl: 3.795</p>