

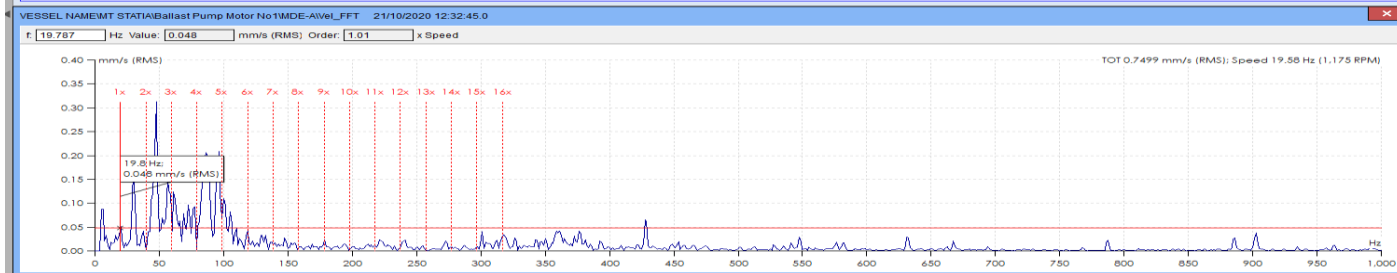
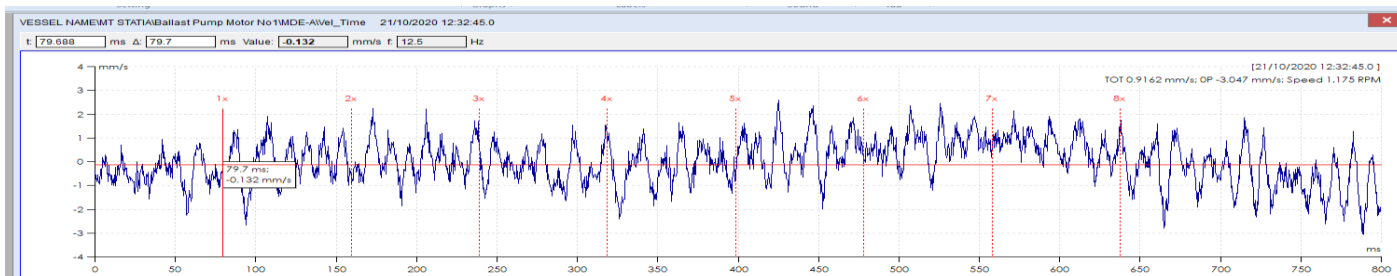
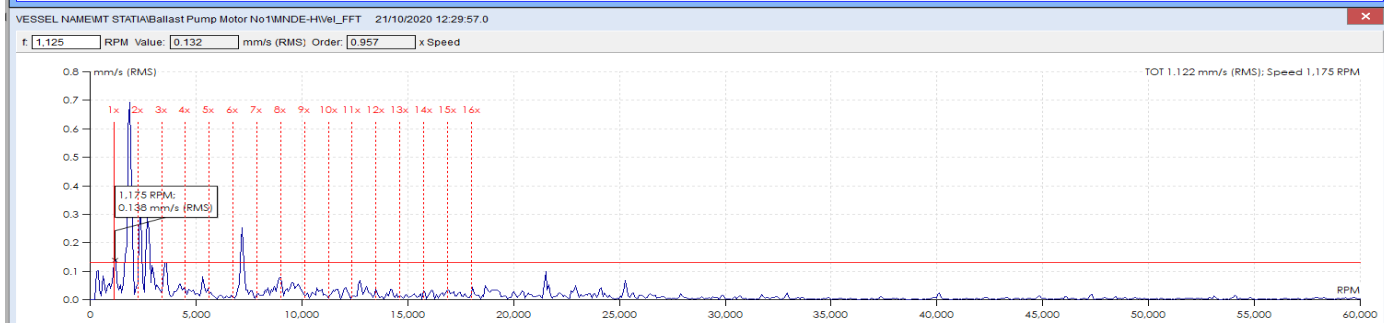
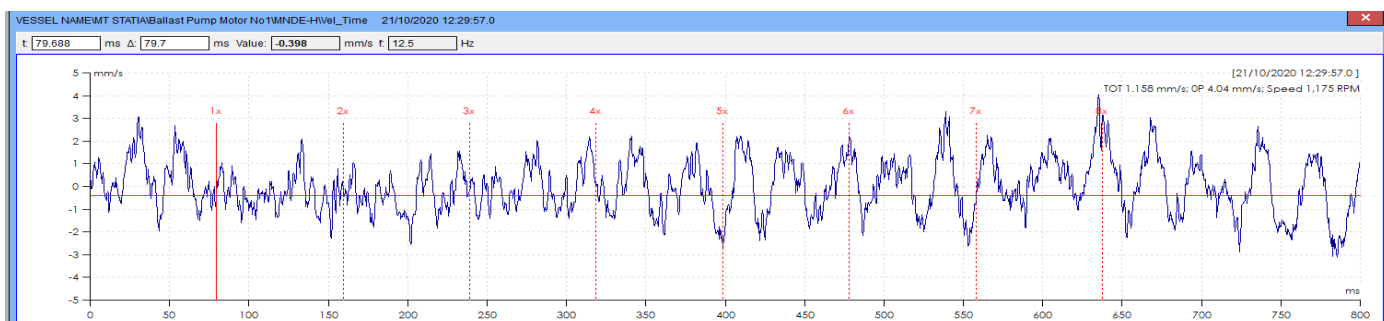
MARINE TANKER VESSEL BALLAST PUMP VIBRATION REPORT

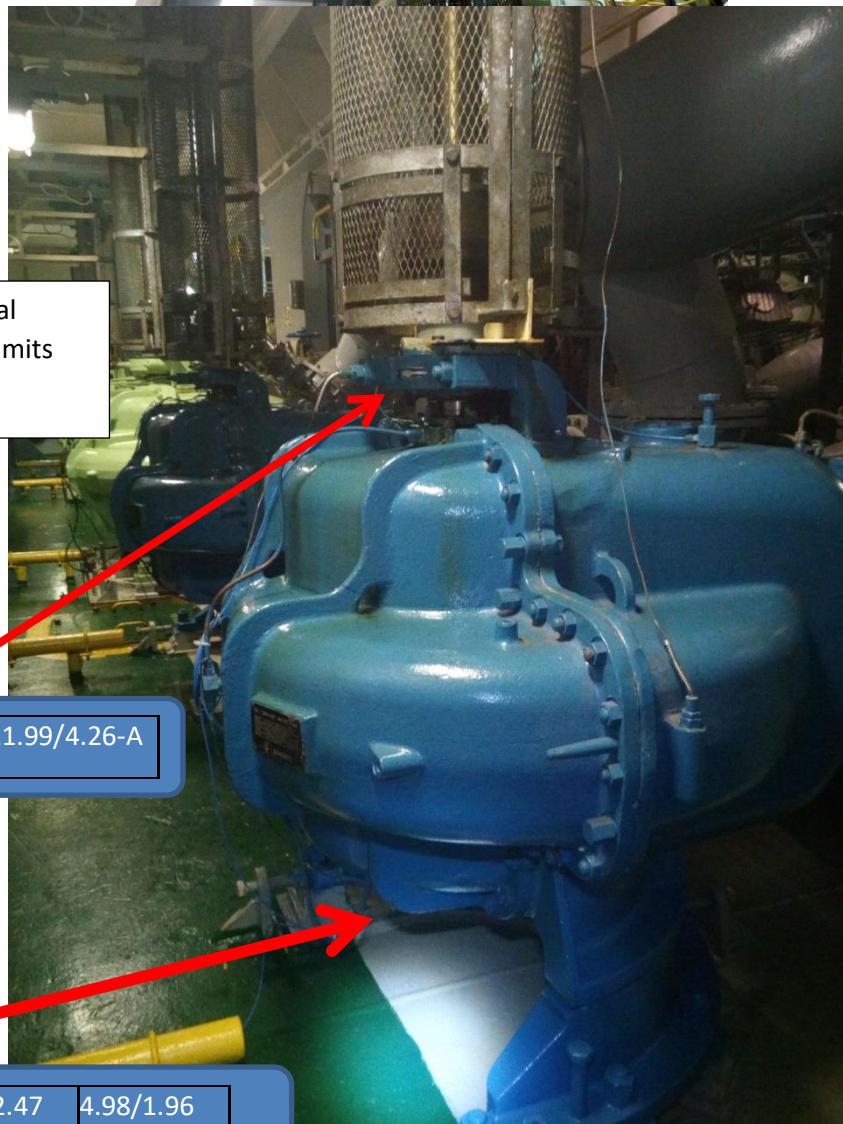


1.01/0.41- H	1.09/0.39- V	0.71/0.52- A
-----------------	-----------------	-----------------

Motor is in Engine room with Very low vibration data and coupling is in Engine room. Shaft penetrated to Pump room Below the Motors shown in picture.

0.81/0.41	1.13/0.51	0.81/0.42
-----------	-----------	-----------





For Marine Vertical pumps vibration limits are 10.5 mm/s

Top DE bearing for Pump

5.37/1.71-H	5.11/1.79-V	11.99/4.26-A
-------------	-------------	--------------

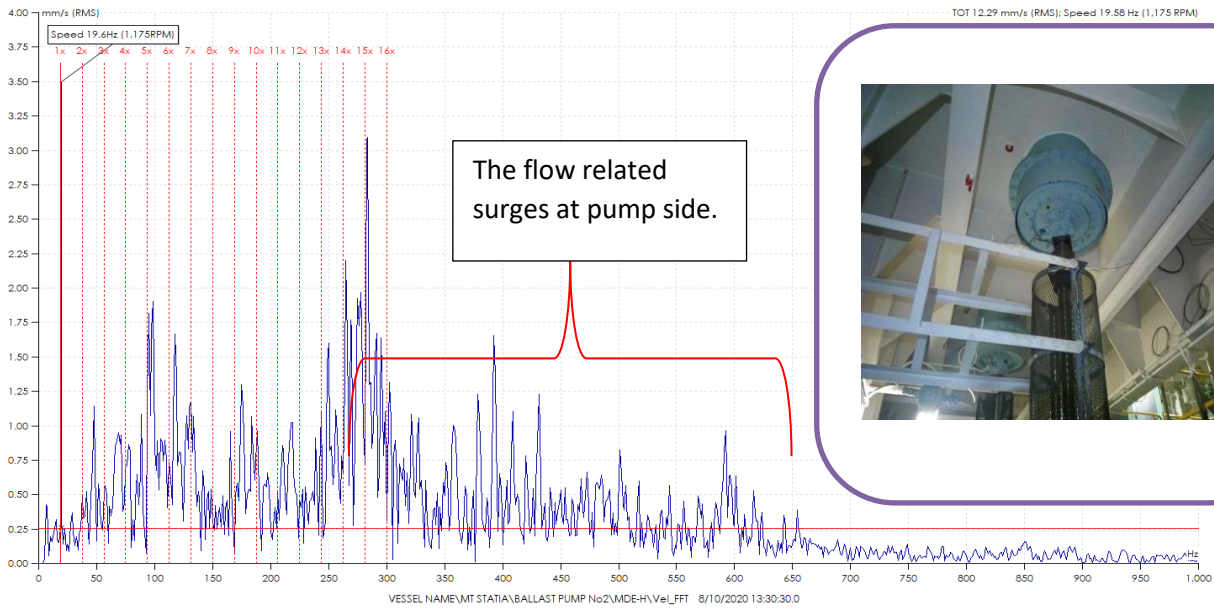
Bottom NDE bearing for Pump

4.8/1.96	3.01/2.47	4.98/1.96
----------	-----------	-----------

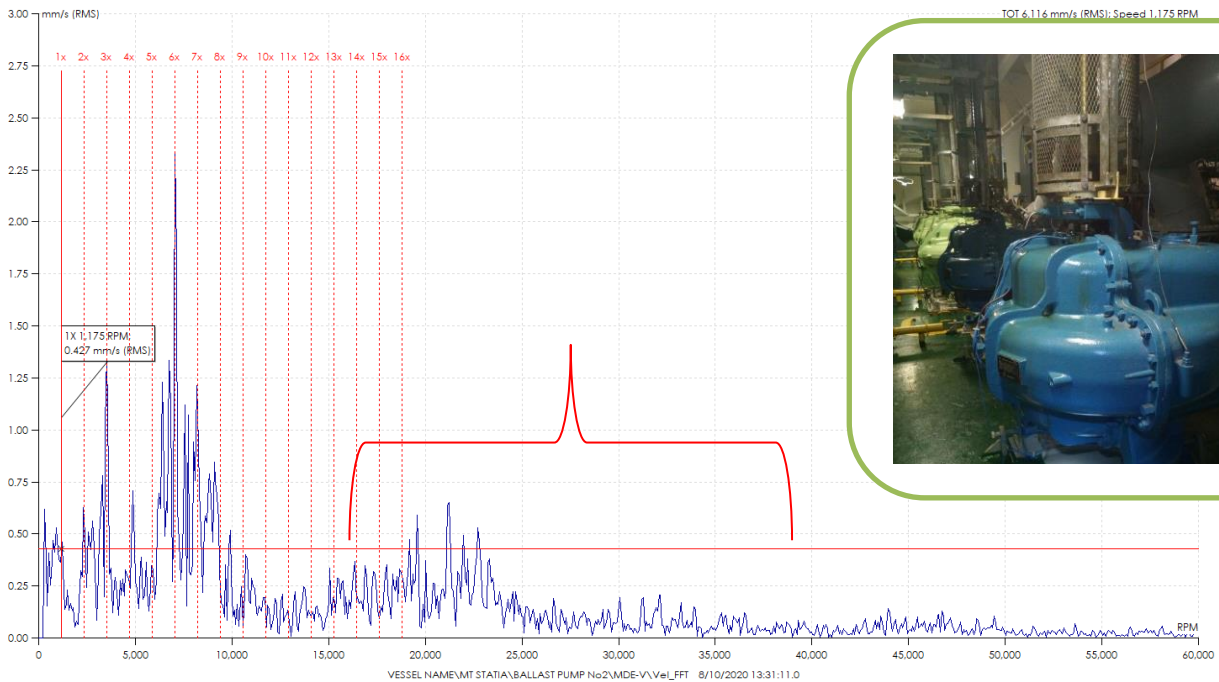
Bottom bearing housing is non Magnetic and using the spindle for measuring the vibration



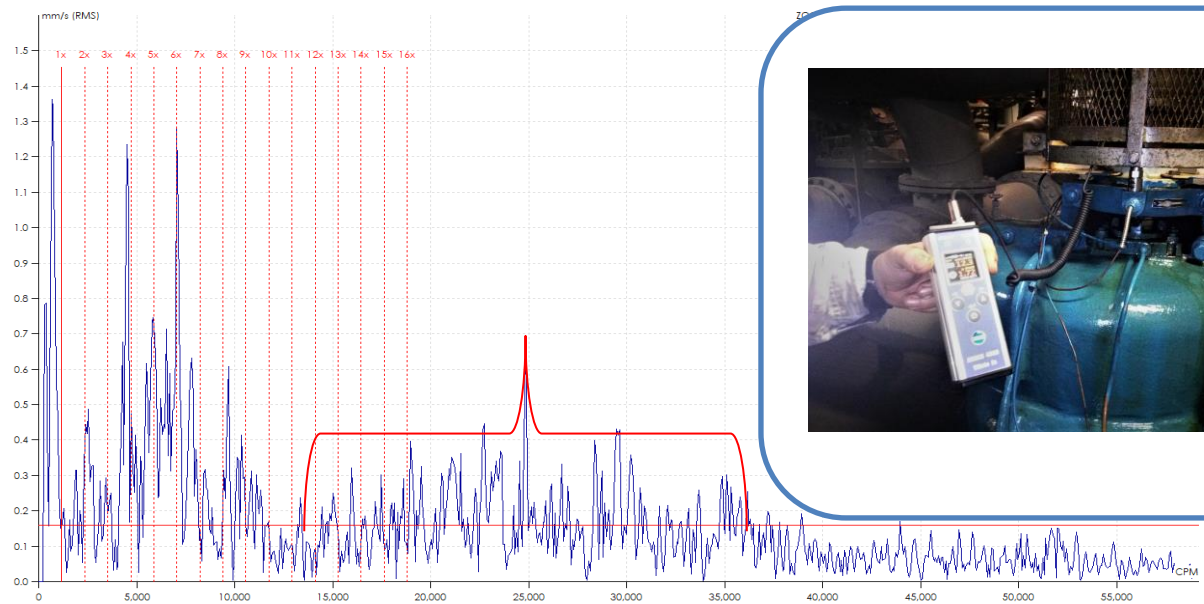
f 18.75 Hz Value: 0.255 mm/s (RMS) Order: 0.957 x Speed

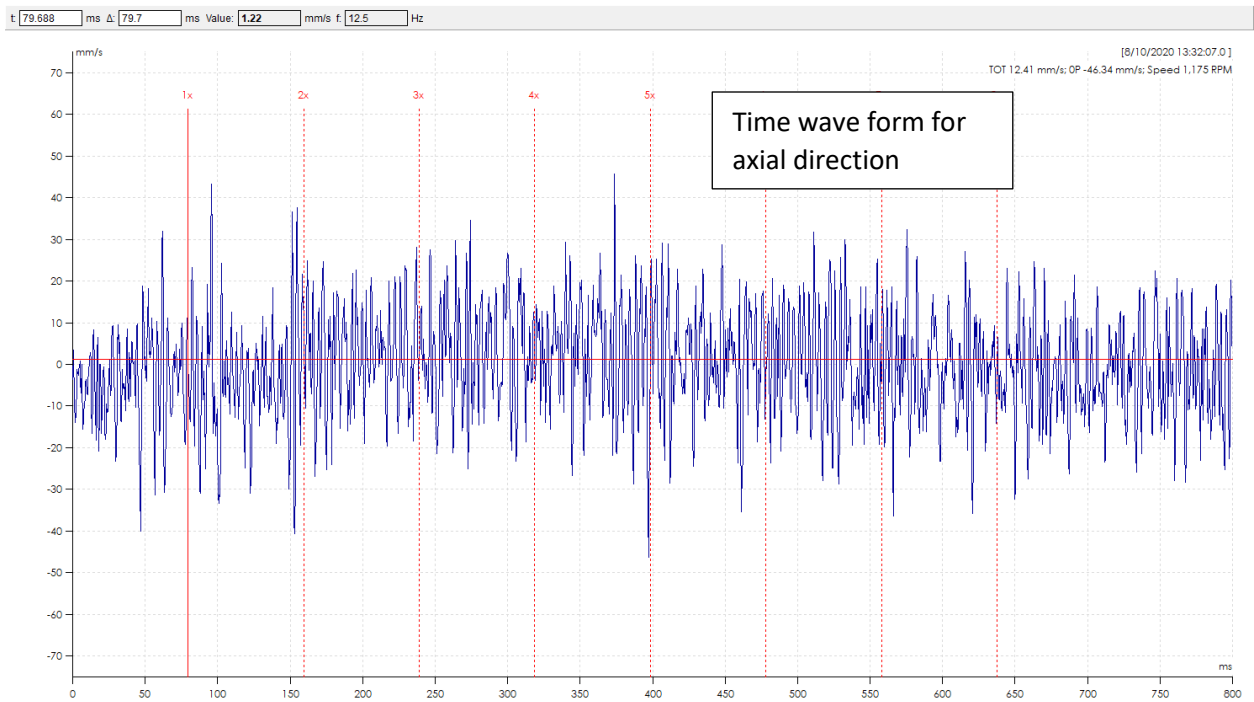
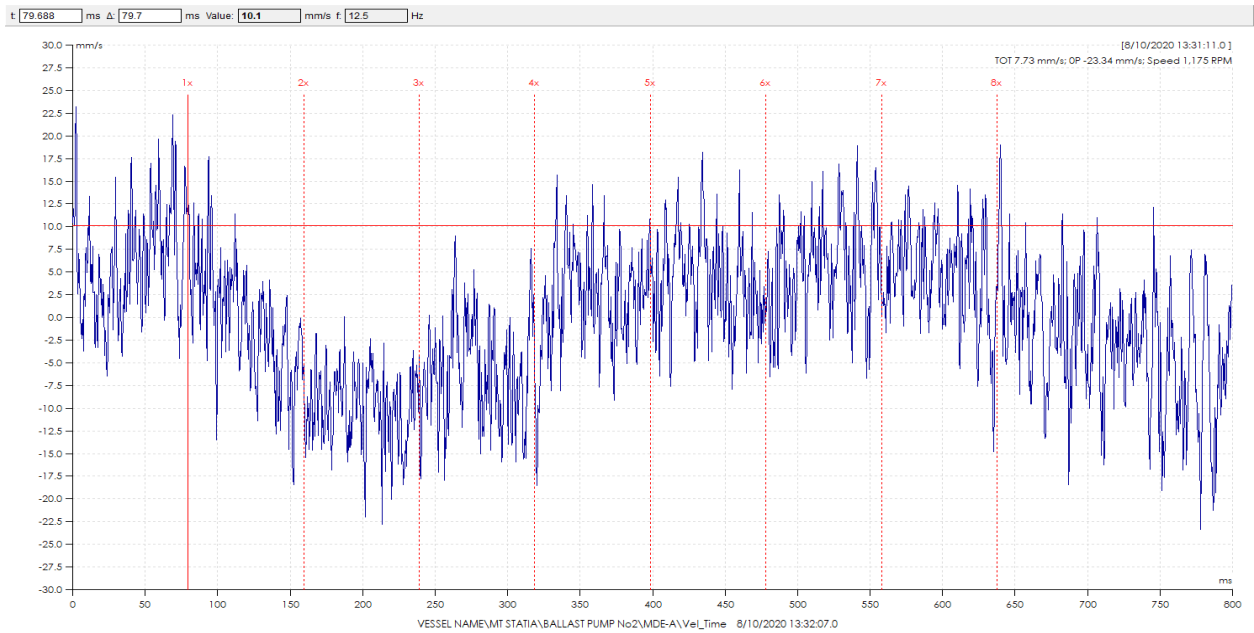
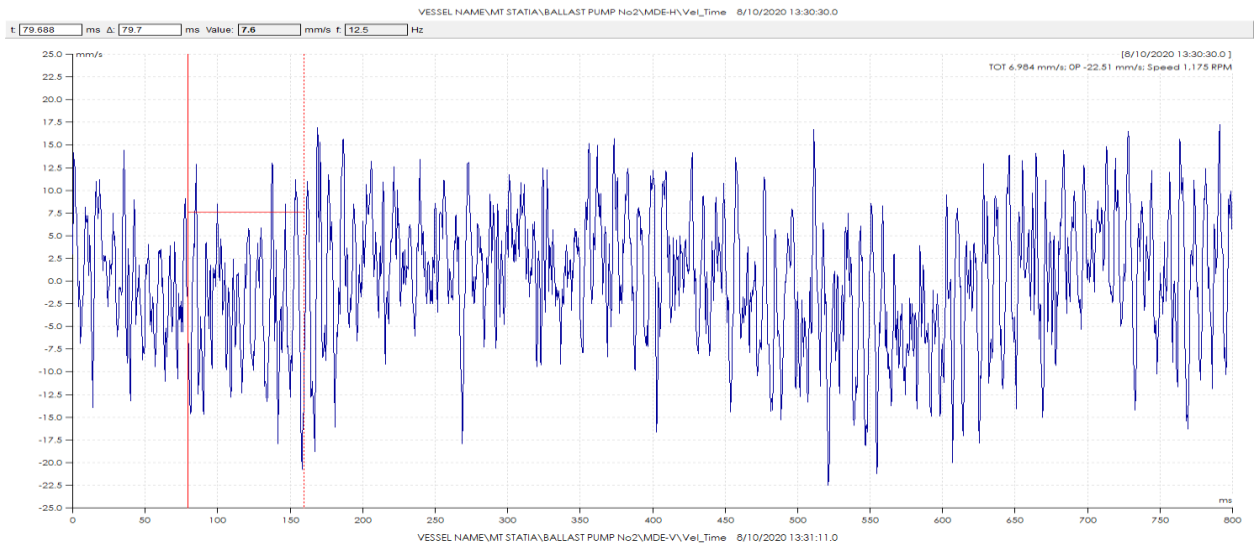


f 1.175 RPM Value: 0.427 mm/s (RMS) Order: 1 x Speed



f 1.175 CPM Value: 0.16 mm/s (RMS) Order: 1 x Speed







Conclusion:

1. Both Ballast pumps showing similar phenomena of the flow related issues.
2. When running pumps, keep the suction valves full open, Filters in clean condition, discharge side keep positive pressure during discharging to avoid cavitation.

---END OF REPORT---