

Figure 1. Coefficient of Friction as a Function of Specific Film Thickness.¹

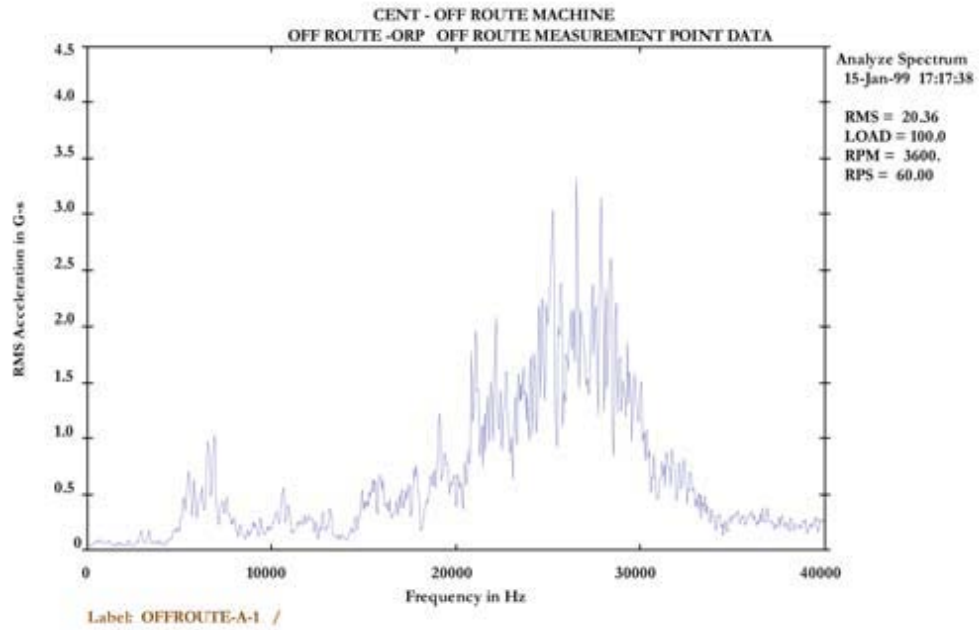


Figure 2. Frequency Domain from an Under-lubricated Bearing at Approximately 4,000 Revolutions per Minute²

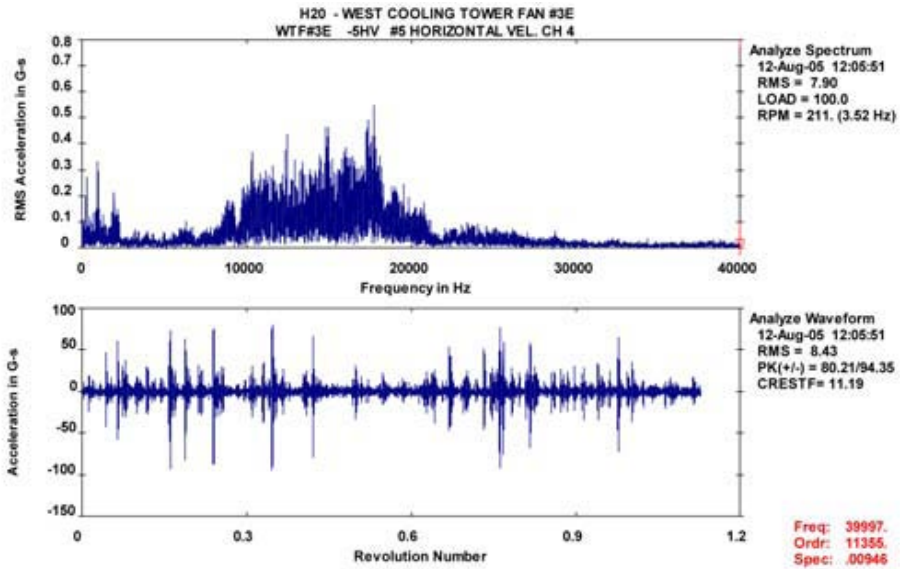


Figure 3. Frequency and Time Domain for a Gearbox Running with a Lubrication Fault

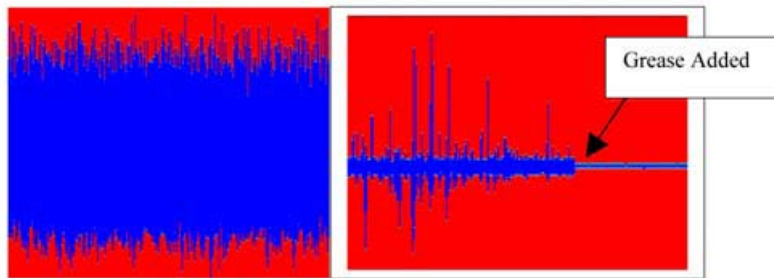


Figure 4. 30 KHz Heterodyned Sound Files Showing Progressive Lubricant Failure

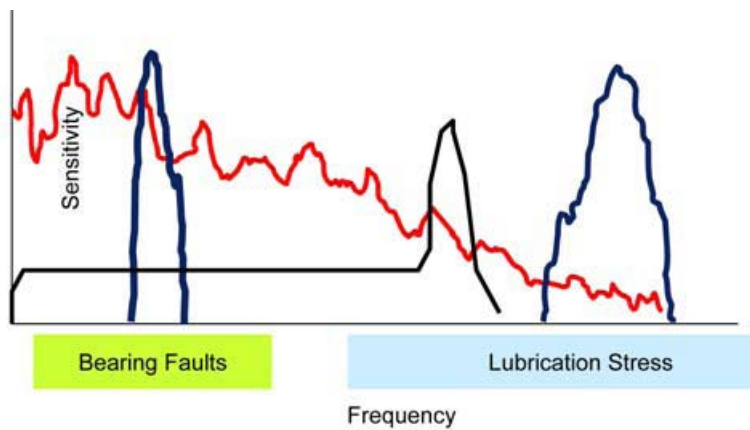


Figure 5. Sensor Sensitivity to Frequency Curves

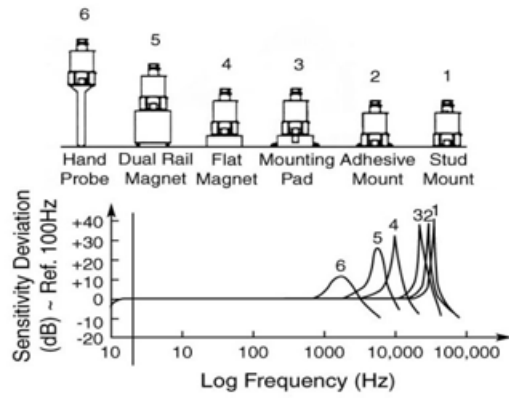


Figure 6. Effect of Accelerometer Mounting on Frequency Response



Figure 7. Vibration Analyzer with Headphone Output and Headphone Filtering



Figure 8. Ultrasonic Analyzer to Measure High-Frequency Lubrication Stress

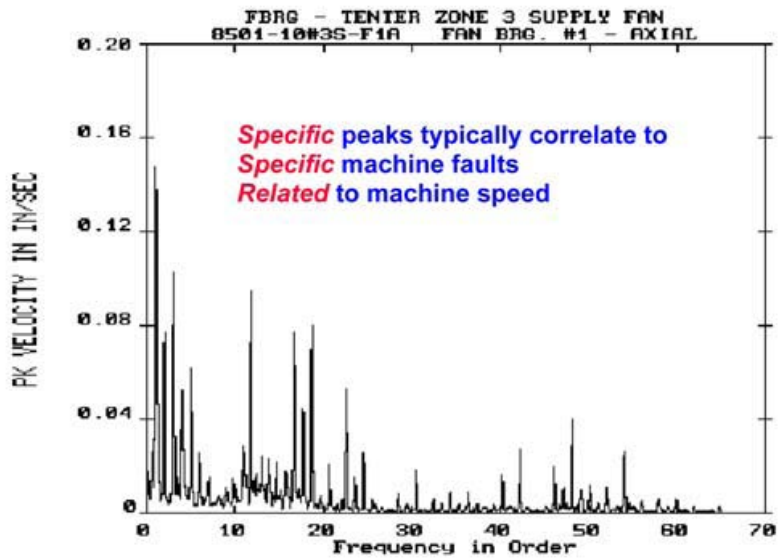


Figure 9. Frequency Domain Spectrum

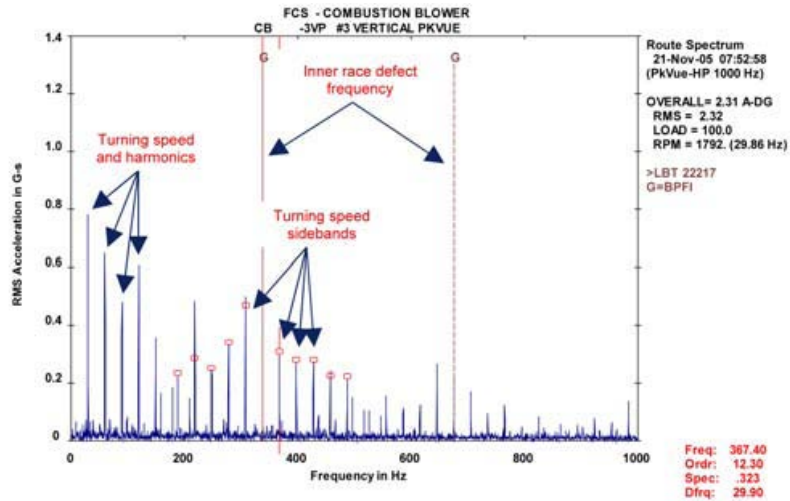


Figure 10. PeakVue Frequency Domain

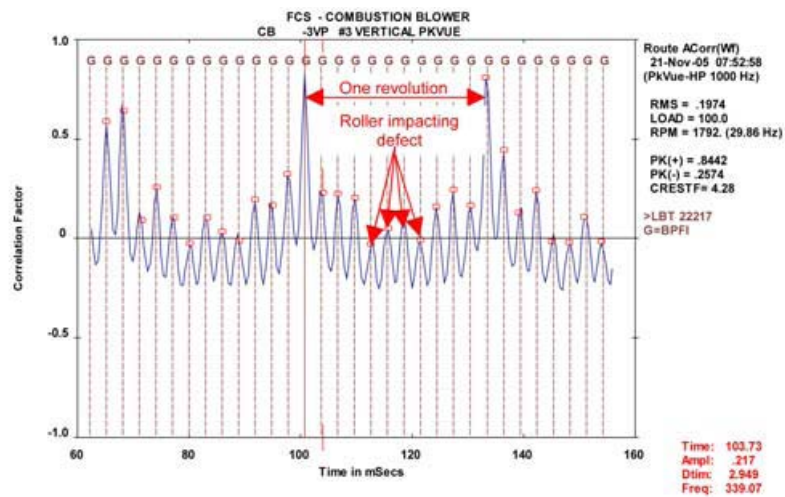


Figure 11. Autocorrelation of a PeakVue Time Waveform

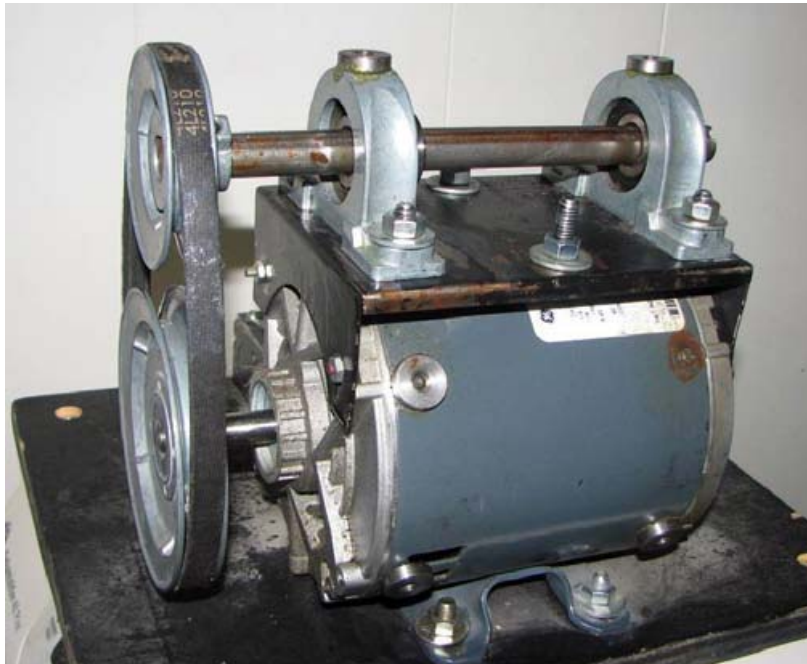


Figure 12. Test Motor – Top Inboard Bearing Monitored

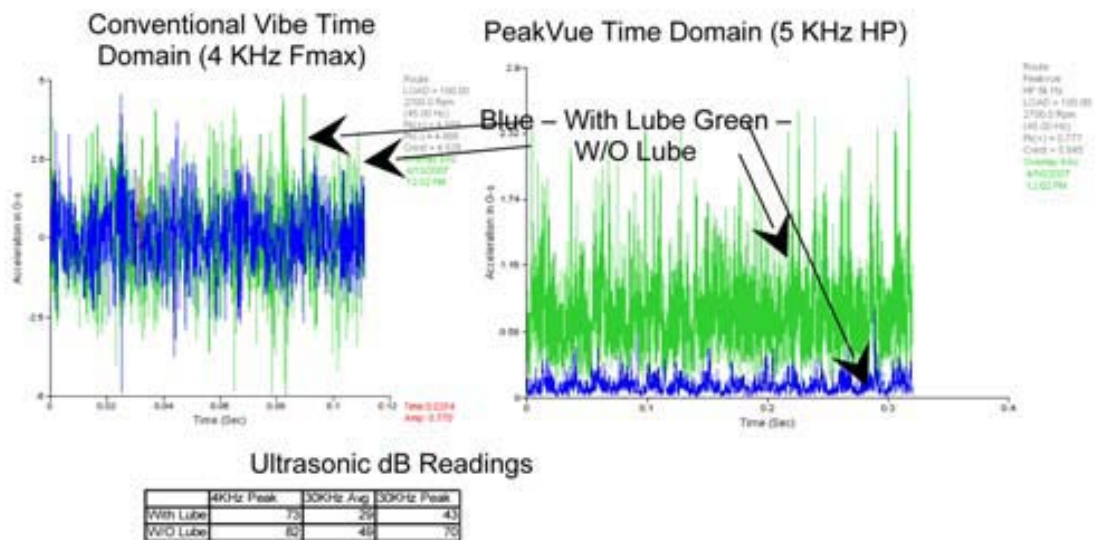


Figure 13. Time Domain Comparison

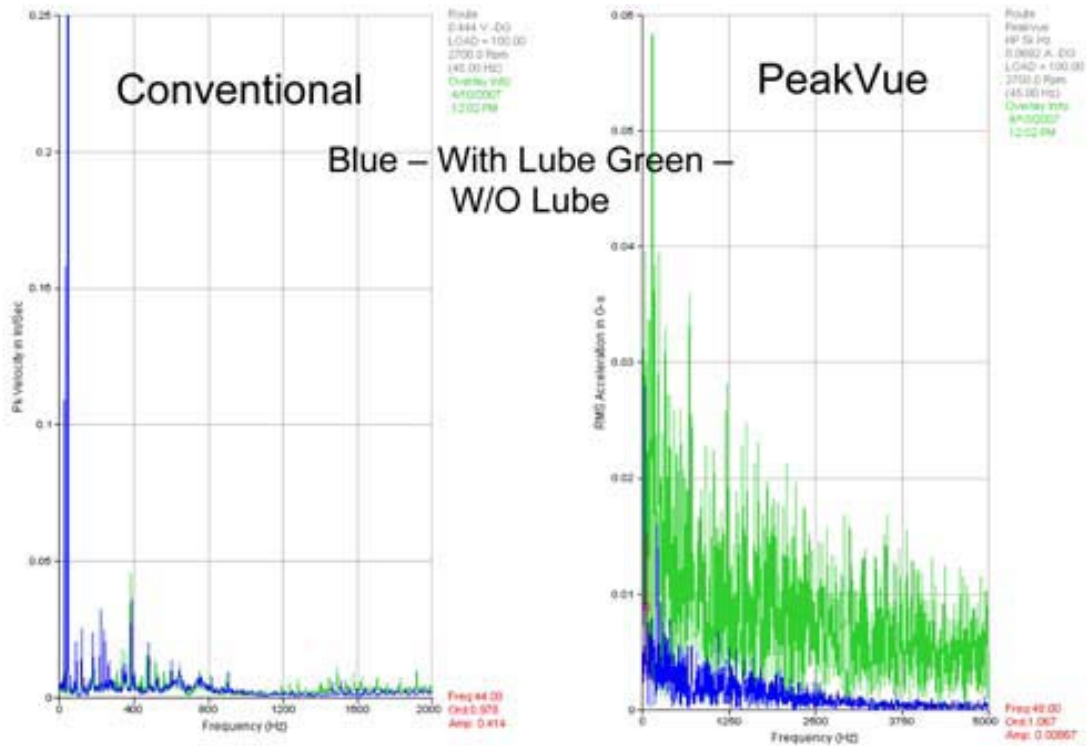


Figure 14. Frequency Domain Comparison

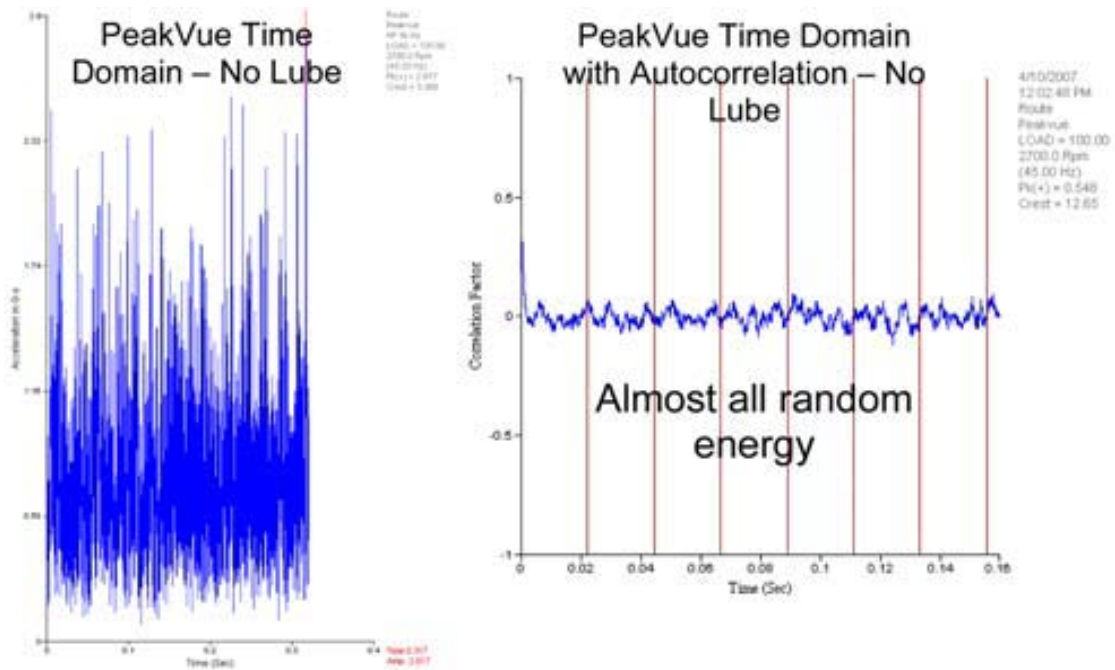


Figure 15. Autocorrelation of PeakVue Time Domain

	Ultrasonic	Accelerometer Listening	Conventional Vibration	Advanced Vibration
Qualitative	Yes	Yes	No	No
Quantitative/Trendable	Yes	No	Yes	Yes
Easy Sensor Mounting	Yes	No	No	No
High Frequency Isolation	Yes	Yes	No	Yes
Periodic Noise Separation	No	No	No	Yes
Detailed Signal Analysis	No	No	Yes	Yes
Quick Comparative Checks	Yes	Yes	No	No

Table 1. Predictive Technology Comparison for Lubrication Fault Analysis

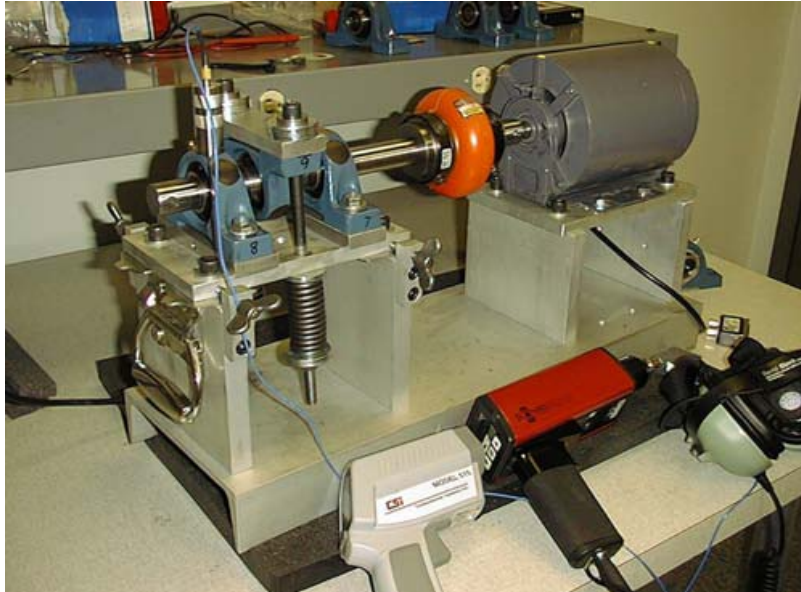


Figure 16. Lubrication Test Stand

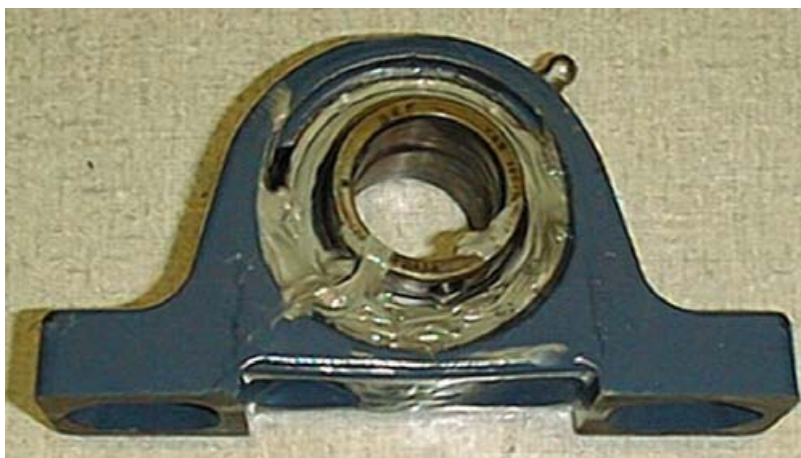


Figure 17. Over-greased Bearing

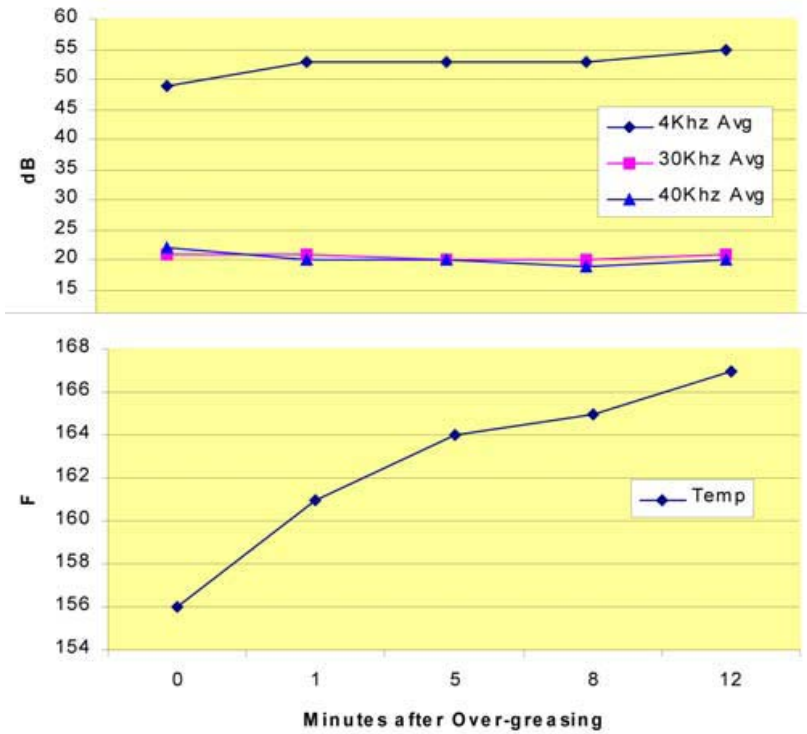


Figure 18. Effects of Over-greasing



Figure 19. Bearing with Grease Removed

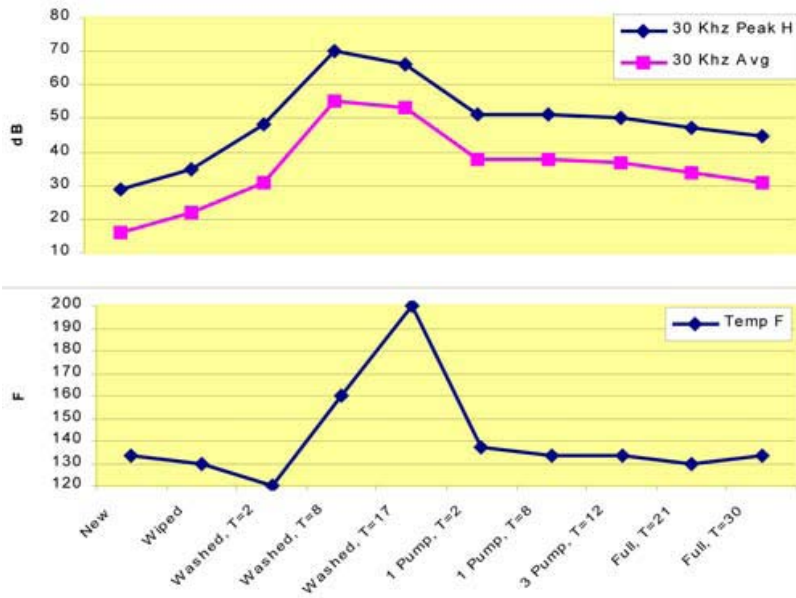


Figure 20. Under-lubrication and Re-greasing Results

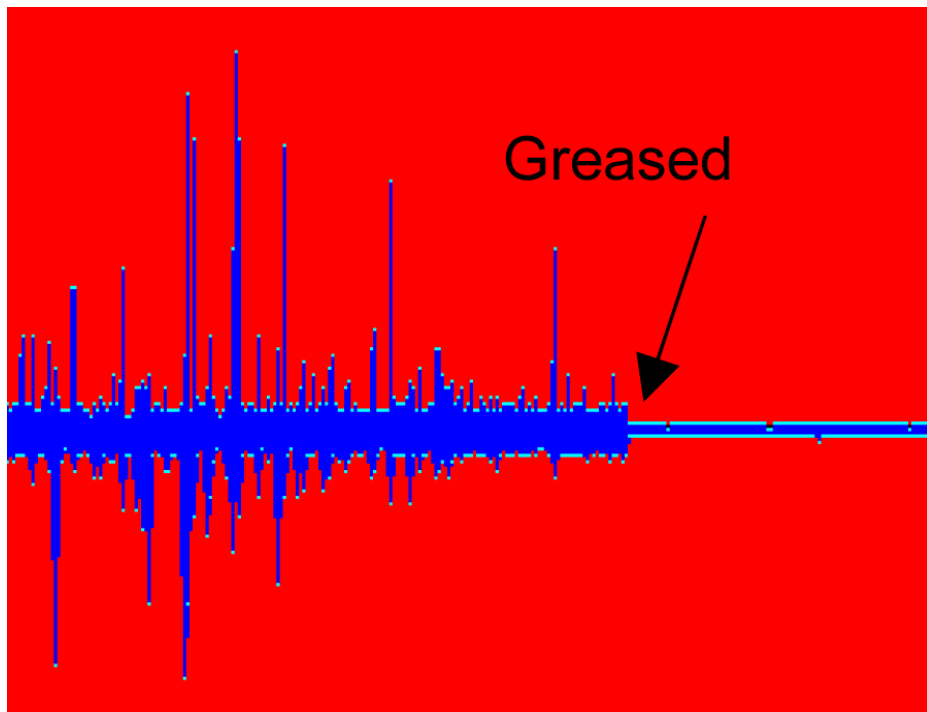


Figure 21. Sound Waveform Showing Decrease in Sound Level when Greased



Figure 22. SonicScan with Contact Probe

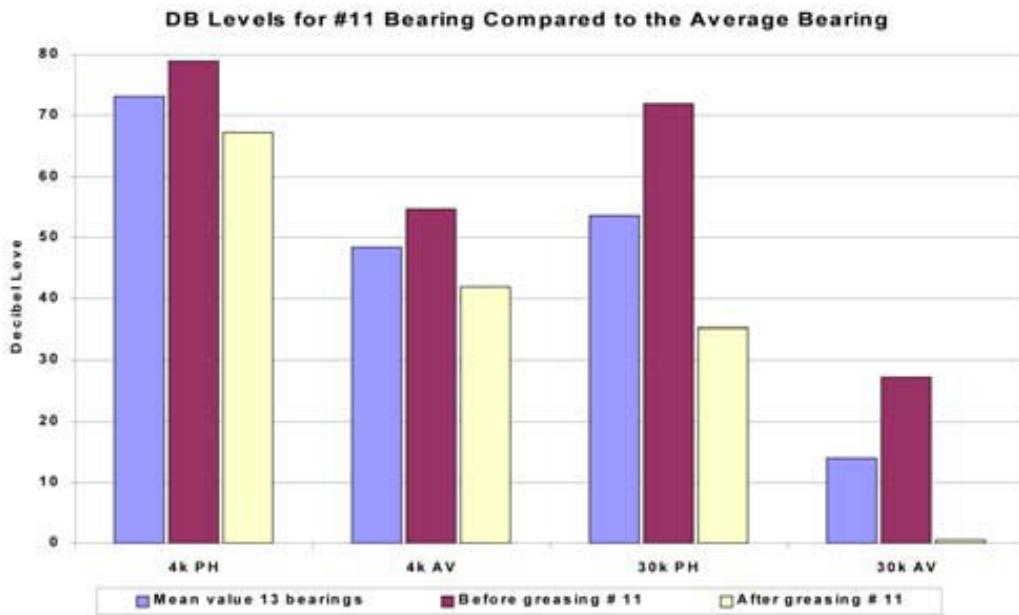


Figure 23. Conveyor Bearings Result³

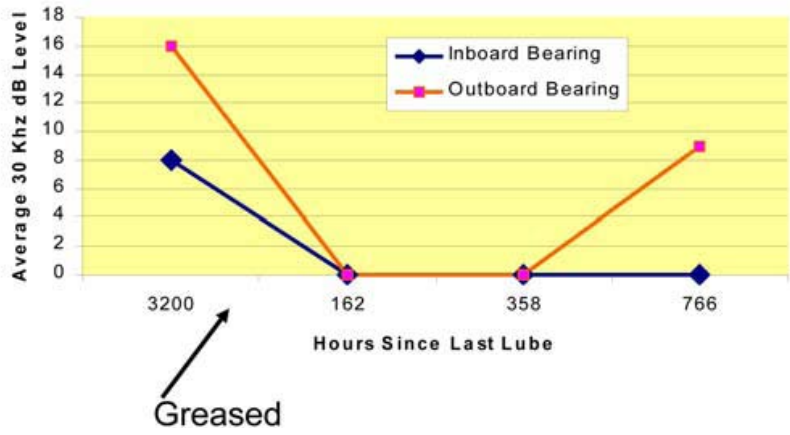


Figure 24. 75 HP GE Motor, Case 1

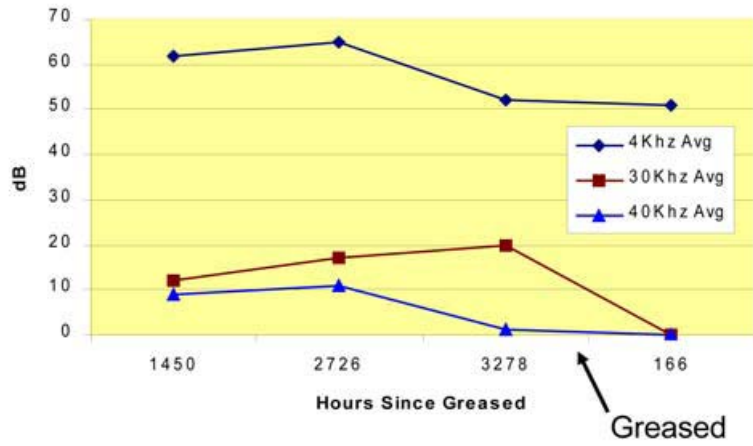


Figure 25. 75 HP GE Motor, Case 2

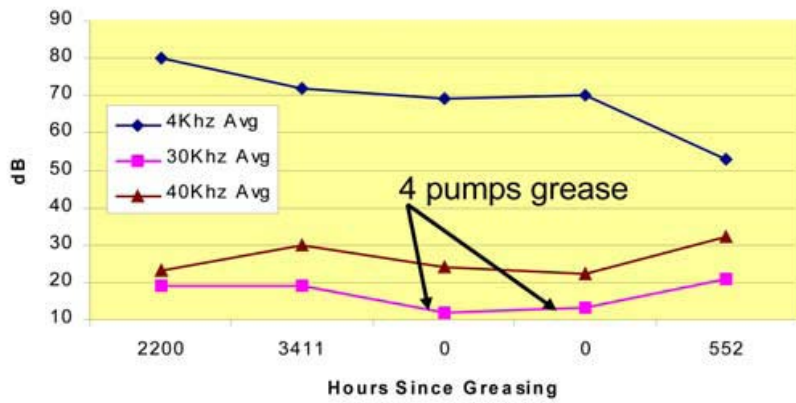


Figure 26. 450 HP Baldor Motor, Case 1

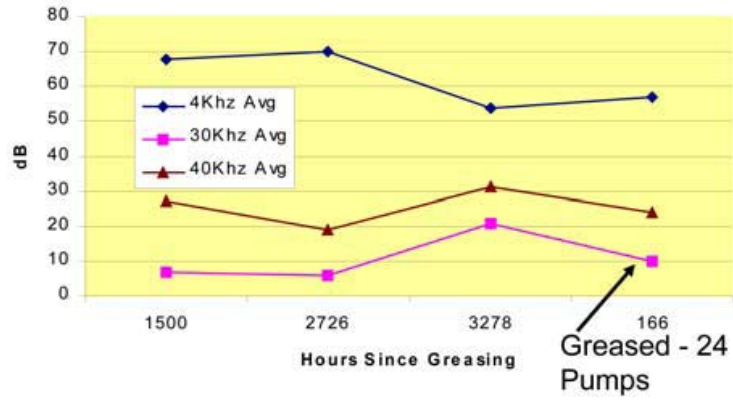


Figure 27. 450 HP Baldor Motor, Case 2

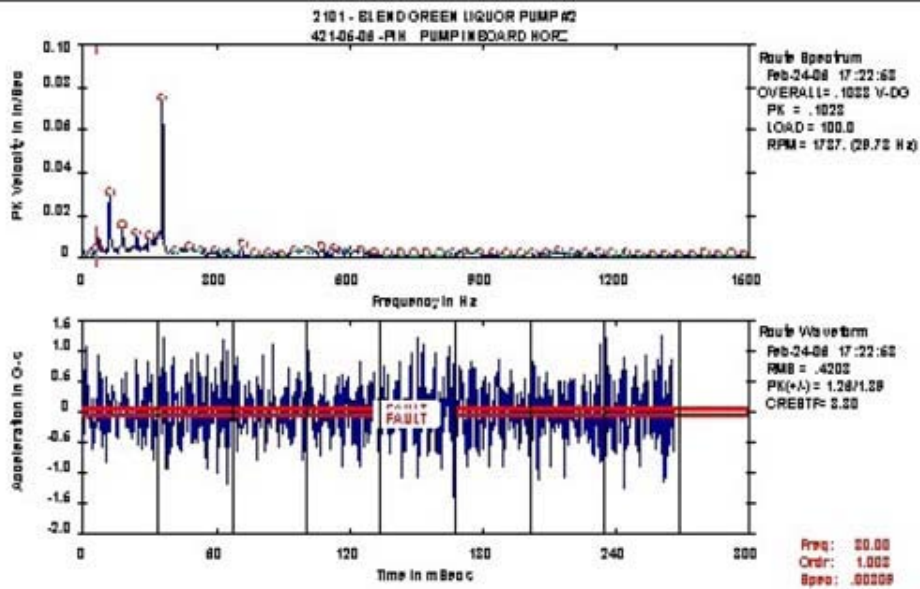


Figure 28. Conventional Vibration Data for a Pump

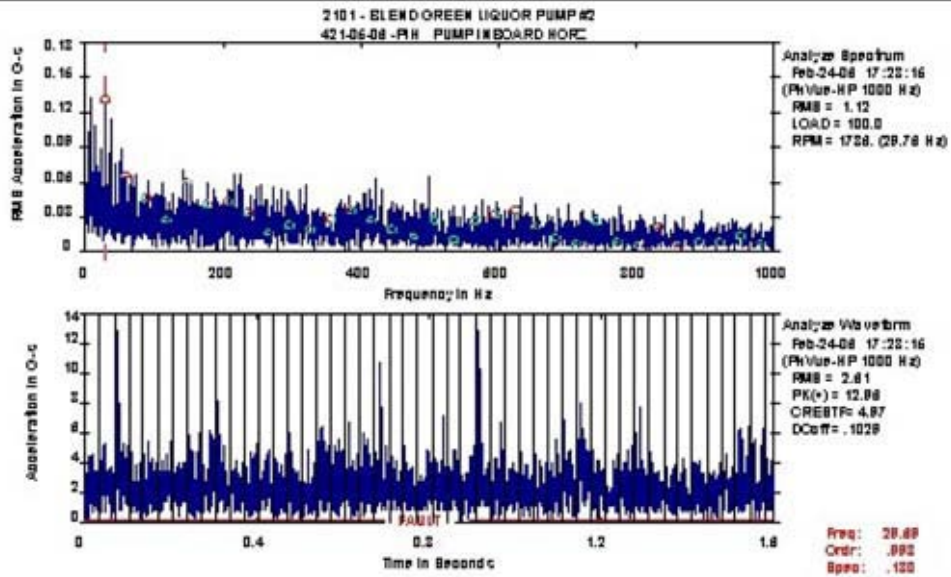


Figure 29. PeakVue Data for Pump

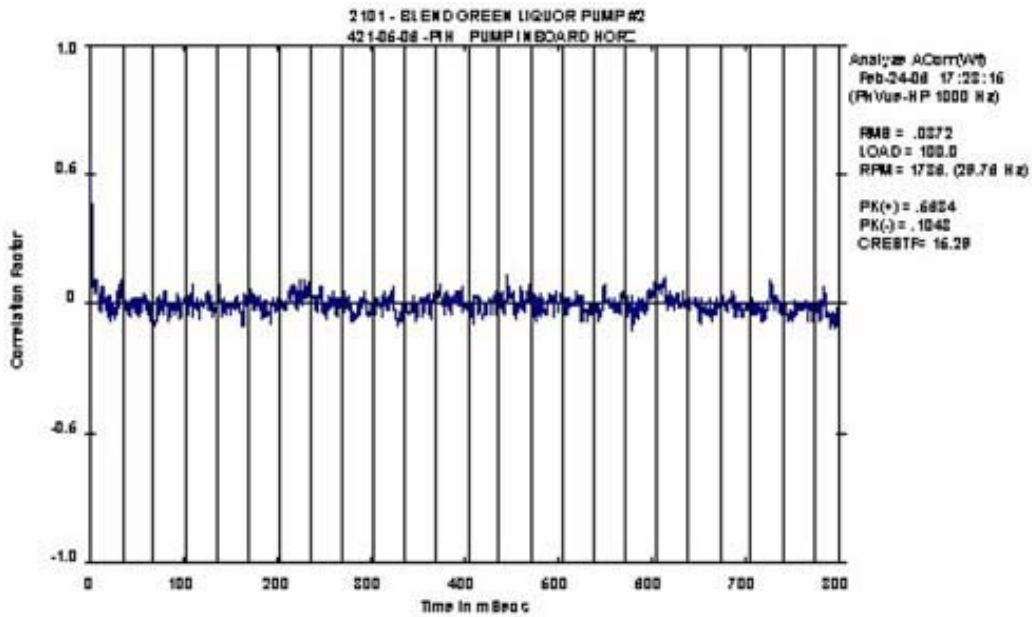


Figure 30. Autocorrelated PeakVue Waveform for Pump

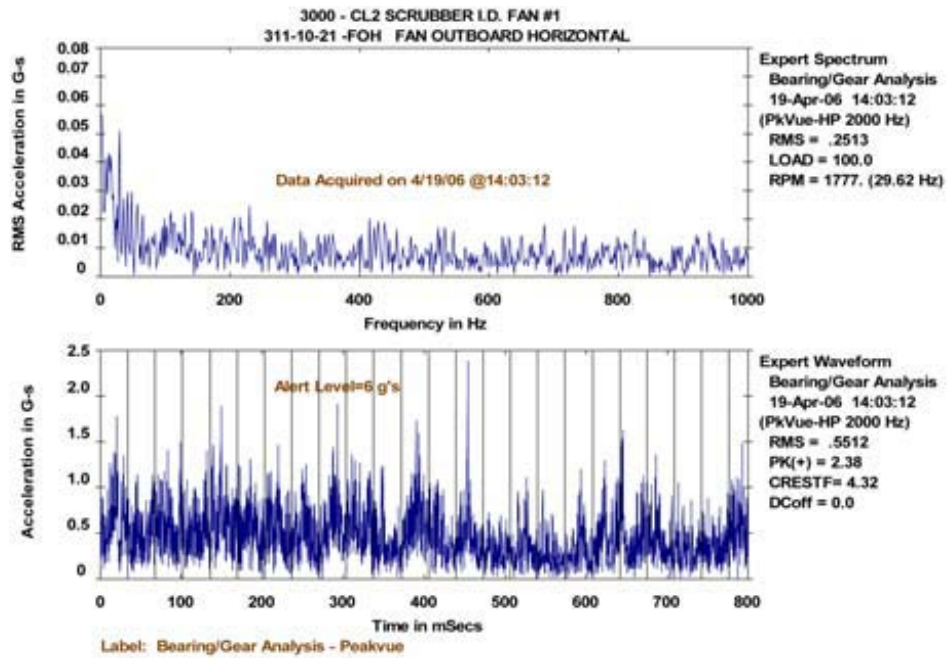


Figure 31. Scrubber Fan, April 19 PeakVue Data

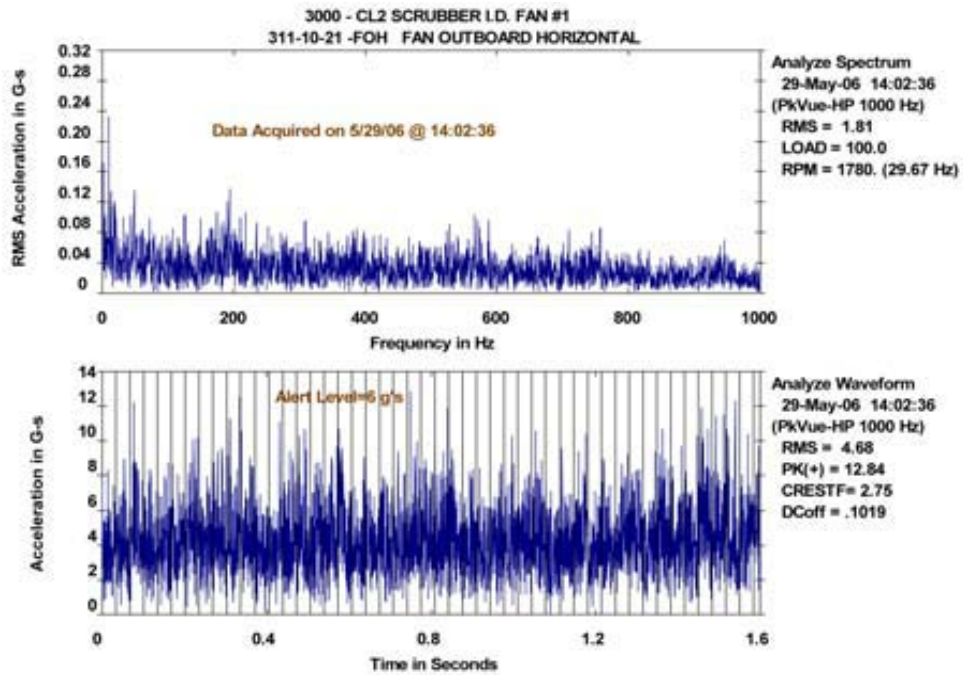


Figure 32. Scrubber Fan, May 29 PeakVue Data

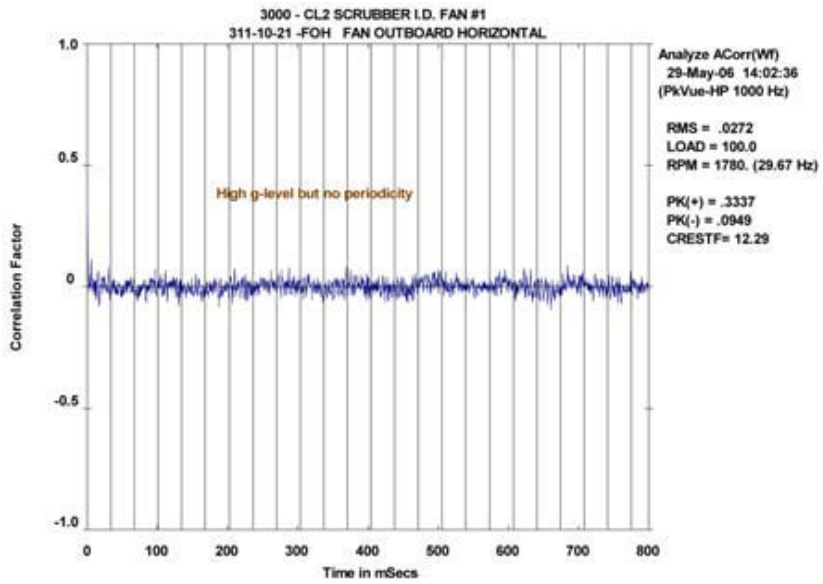


Figure 33. Scrubber Fan, May 29 Autocorrelated PeakVue Data

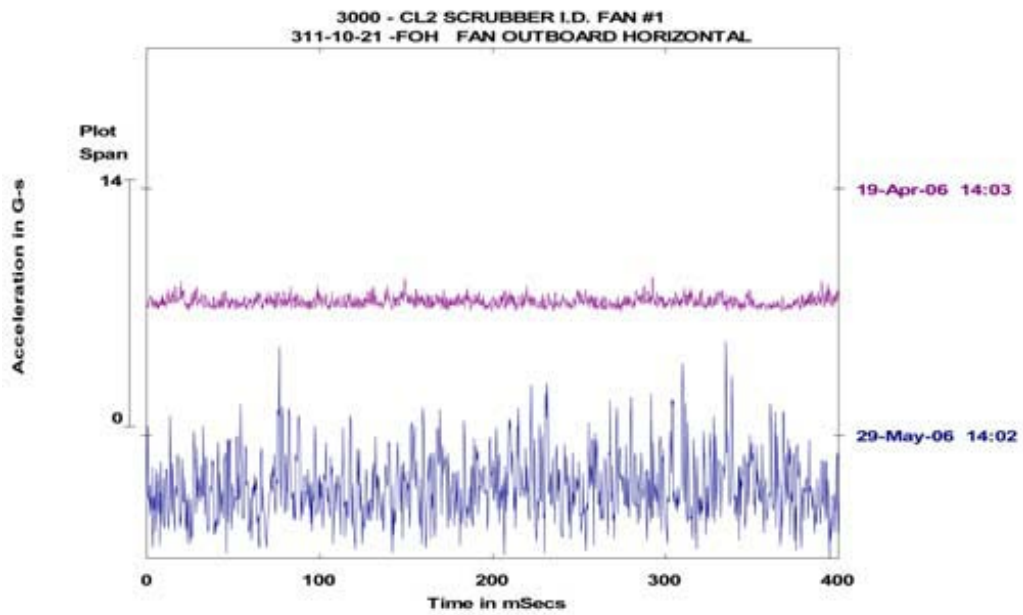


Figure 34. Scrubber Fan PeakVue Comparison

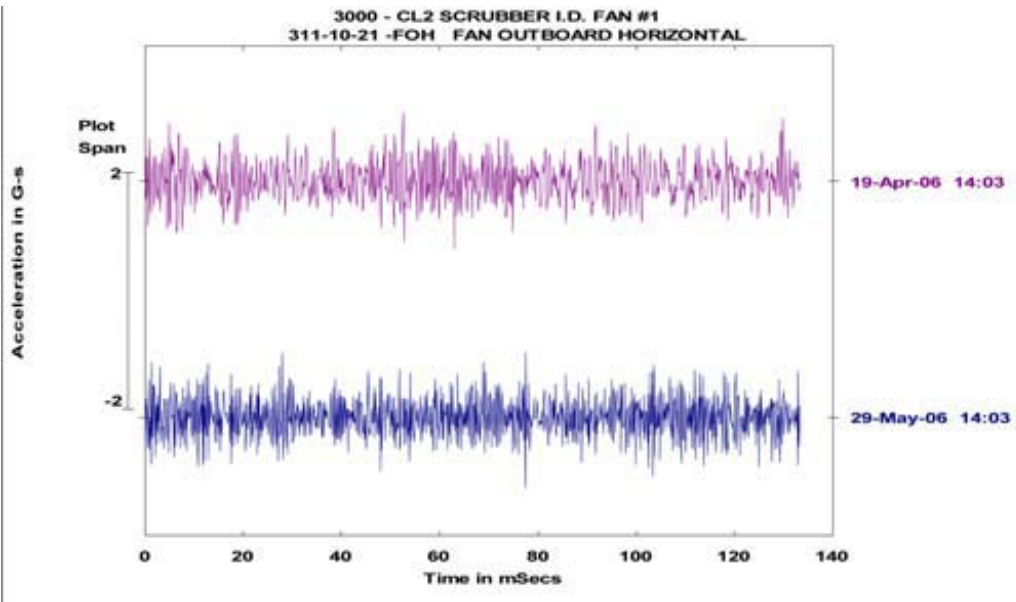


Figure 35. Scubber Fan Conventional Data Comparison

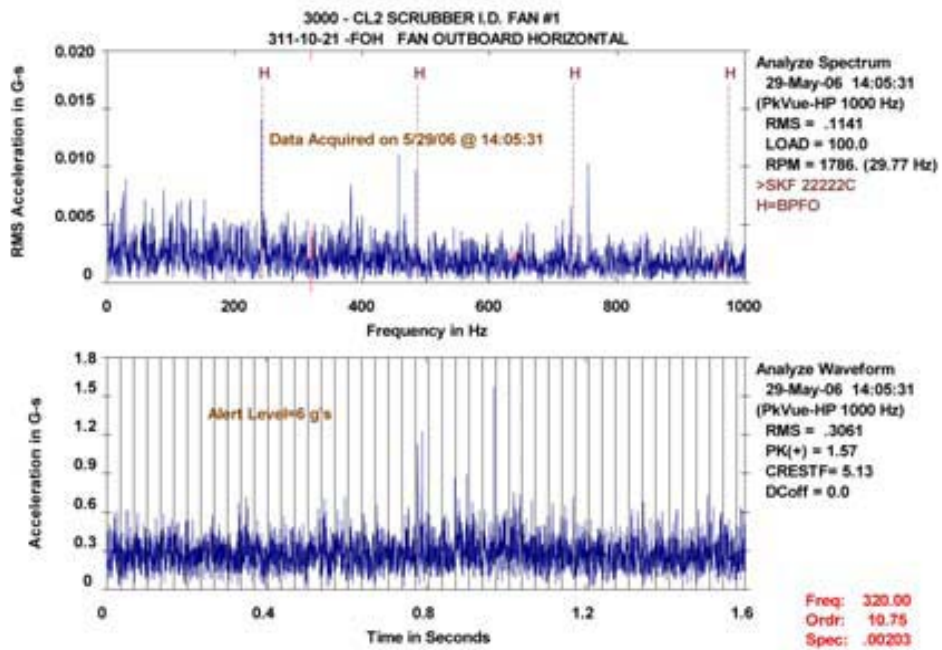


Figure 36. Scubber Fan PeakVue Data after Lubrication Problem was Corrected

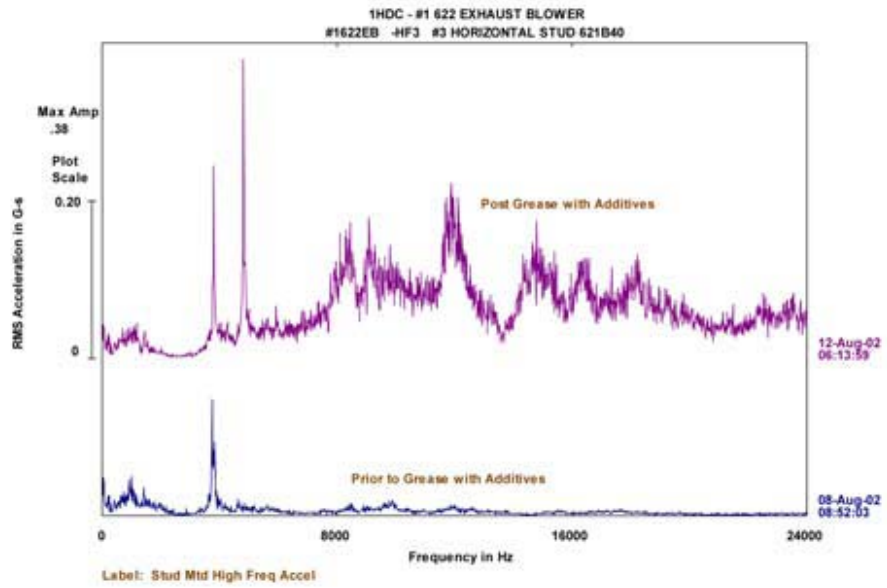


Figure 37. Exhaust Blower Frequency Data Domain Comparison

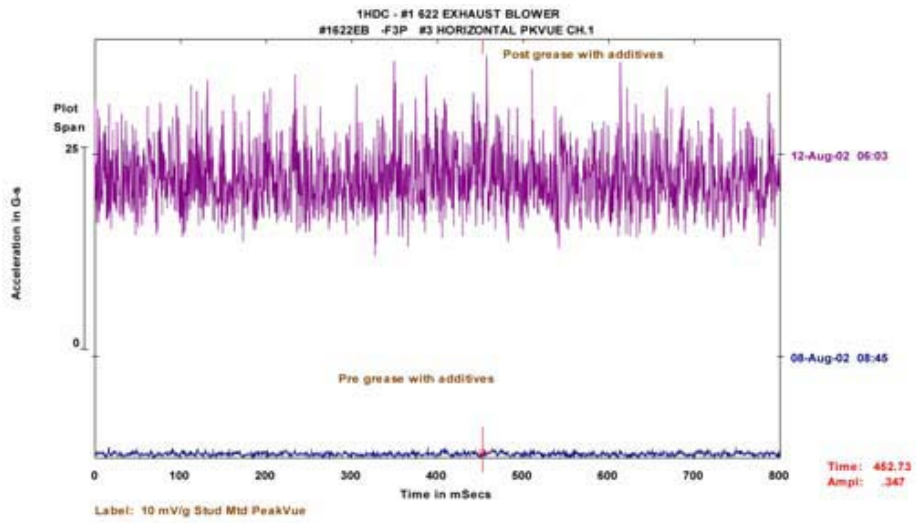


Figure 38. Exhaust Blower Frequency PeakVue Time Domain Comparison