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| **Client** | ARKEMA | **Survey Date** | 8-23-19 |
| **Location** | Memphis, TN | **Report Date** | 8-27-19 |
| **Machine** | D- Hydrogenator Agitator | **QMS No.** | 140287 |
| **Component** | Gearbox | **Analyst** | DWS |

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| **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.*** |

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| **Vibration Data** | | **Analysis** |
|  | | Multiple close vibrations are producing a beat vibration in the gearbox. Unit could be resonant near 11 Hz. |
| **Discussion / Repair recommendations** | **Data** | |
| Data sets for the gearbox bearings show overall vibrations are still near 0.35”/sec velocity peak. Vibrations of interest are around 11 and 278 HZ. Modulation around the 11 HZ peak is causing a beat vibration. Gearbox and structure could be resonant. An internal inspection and oil analysis should be considered. Also, check the unit fasteners for tightness. **Rated a Class II Defect.** Please provide detailed information on the gearbox for further analysis. |  | |