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Machine Condition CRITICAL

Lubricant Condition CRITICAL

Machine Name: B ID FAN BEARING LUBE OIL
Machine ID: BBV2543-6

Analysis Report

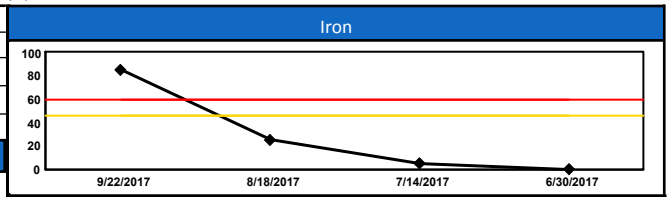
Component Information			Sample Information		Customer Information	
Machine Type:	Anti-Friction Bearing	Sump Size: Unknown	Received:	09/22/2017	Lake Rd Plant	
Lubricant:	CONOCO/AW 46		Report:	09/22/2017	20338 Progress Drive	
Machine MFG:	AIR PROD INC		Sample No.:	19 - 1 - 4 - 4	Strongsville, OH 44149	
Machine MOD:	B175A		Analyst/Test:	MMM / KFPATAFS	Contact:	Jack Boilerman

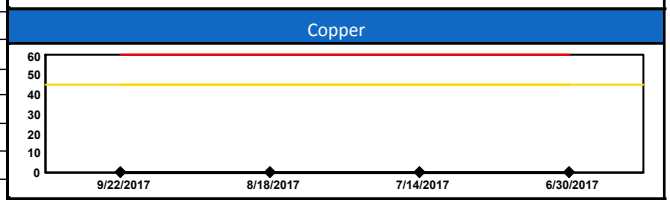
PROBLEMS
High Water Content
Excessive Wear
Excessive Particle Count

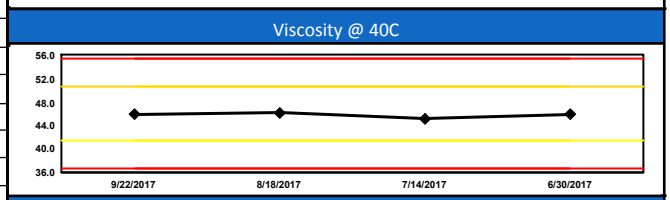
COMMENTS The level of water contamination 0.6890% is excessive and considered abnormal. Check for sources of water ingression and repair as necessary. The particle count for this bearing exceeds the limit (19/17/16) and is considered abnormal. Check for sources of particulate ingression first before changing filters. Fluid contamination is a possible contributor to elevated wear metals. The high level of wear (iron, lead) suggests that an abnormal wear mode exists. Check this bearing for excessive noise, vibration or high temperature.

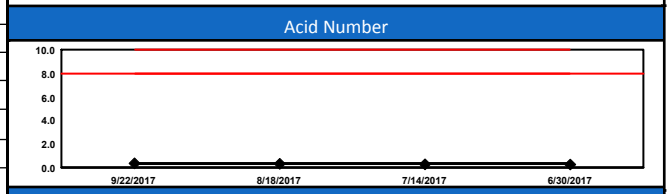
CUSTOMER NOTES Mach Hours: 2016 * Filter change 1/5/2016

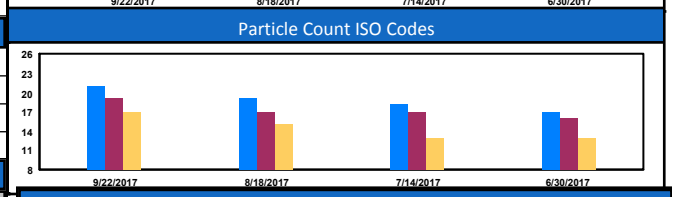
Date Sampled		NEW OIL	9/22/2017	8/18/2017	7/14/2017	6/30/2017	
Lab No		1278905	168113	168112	168111	168110	
Machine / Lube Cond.			C / C	N / M	N / N	N / N	
Lube Hours			2016	1176	336	0	
Machine Hours			2016	1176	336	0	
ELEMENTAL SPECTROSCOPY (ppm) ASTM D5185 Mod (-) indicates below detection limit							
Wear Metals	Iron	-	85	25	5	-	
	Copper	-	-	-	-	-	
	Lead	-	49	9	-	-	
	Aluminum	-	-	-	-	-	
	Tin	-	-	-	-	-	
	Nickel	-	-	-	-	-	
	Chromium	-	-	-	-	-	
	Titanium	-	-	-	-	-	
	Vanadium	-	-	-	-	-	
	Silver	-	-	-	-	-	
Additives	Calcium	174	50	44	39	41	
	Magnesium	2	-	-	-	-	
	Phosphorus	429	329	318	341	321	
	Zinc	659	495	495	472	484	
	Barium	-	-	-	-	-	
	Molybdenum	3	-	-	-	-	
Contaminants	Silicon	4	14	7	9	6	
	Boron	-	-	-	-	-	
	Lithium						
	Sodium	-	-	-	-	-	
	Potassium	-	-	-	-	-	
FTIR SPECTROSCOPY (Indexing Numbers) ASTM E2412							
Oxidation		2	2	3	2	2	
Nitration		3	2	2	2	2	
Anti Wear		12	12	12	12	12	
Other Fluid		40	118	118	117	117	
PARTICLE COUNT (particles per ml) ISO 4406:99							
Pore Block Particle Count Alarm Limits Marginal (19/17/16)							
Pore Block ISO Code		18/16/13	21/19/17	19/17/15	18/17/13	17/16/13	
>4 Micron		1543	10156	2518	1456	899	
>6 Micron		600	2695	789	654	401	
>14 Micron		45	1256	198	78	52	
>50 Micron		2	25	5	2	1	
>100 Micron		0	12	2	0	0	
VISCOSITY (centistokes) ASTM D445 MOD							
Viscosity@40°C		42.4	45.9	46.1	45.1	45.9	
ACID NUMBER (mg KOH/g) ASTM D974 MOD							
Acid Number		0.94	0.35	0.31	0.27	0.25	
WATER (%) a-ASTM D6304C b-IWI-134* c-Crackle d-IWI-135* e-IWI-370*							
Water			0.6890	0.3250	0.0430	0.0090	











Date	Customer Corrective Actions
11/19/13	Changed oil ; Angela Ritchie
3/21/12	Corrected oil leak ;
6/3/10	Replaced bearing ;

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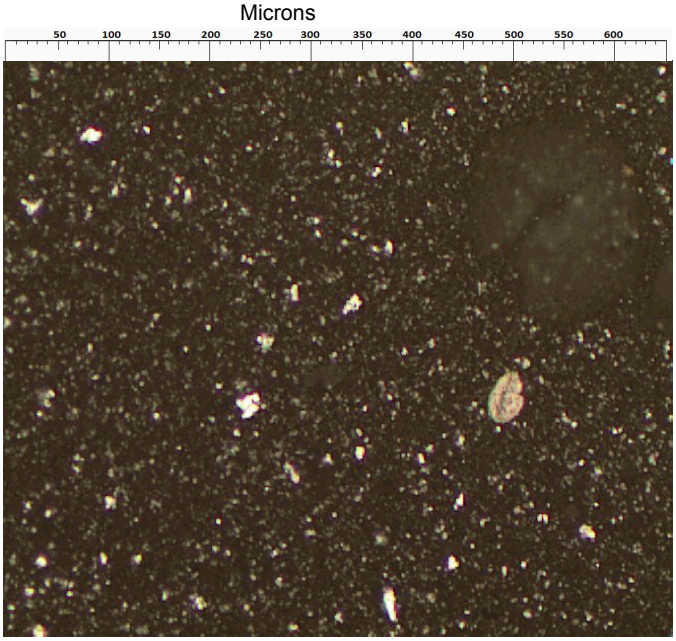
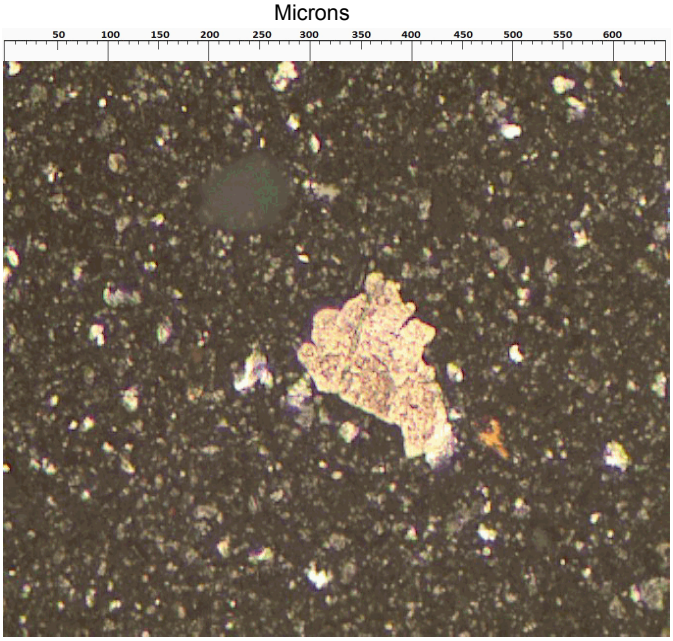
Wear Particle Analysis Report

	Trace	Light	Moderate	Heavy	Max. Size	Particle Composition
Rubbing Wear					15-30	Ferrous
Rolling Contact						
Sliding Wear					>100	Ferrous
Rolling/Sliding Wear						
Cutting Wear						
Chunks						
Spheres						
Corrosion						
Dark Metallic Oxides						
Red Oxides						
Dust/Dirt						
Other Contaminants						
Oxidation By-Products						

Observations:Analytical ferrography has discovered the following abnormalities. Heavy levels of ferrous rubbing wear particles up to 30 microns in size. Rubbing wear particles are generated as the result of normal sliding wear in a machine. Excessive particulate contamination in the lubricating system can significantly increase the generation of rubbing wear particles. Heavy levels of ferrous sliding wear particles over 100 microns in size. Severe sliding wear occurs under excessive load and/or speed. These particles are distinguished by linear striations indicating sliding contact. High levels of dark metallic oxides. Dark metallic oxides, partially oxidized ferrous wear particles, are typically generated under high temperatures and loads.



100x Severe sliding wear particles.



100x Severe wear debris.

Eurofins TestOil - 20338 Progress Drive - Strongsville, OH 44149 216-251-2510 www.testoil.com