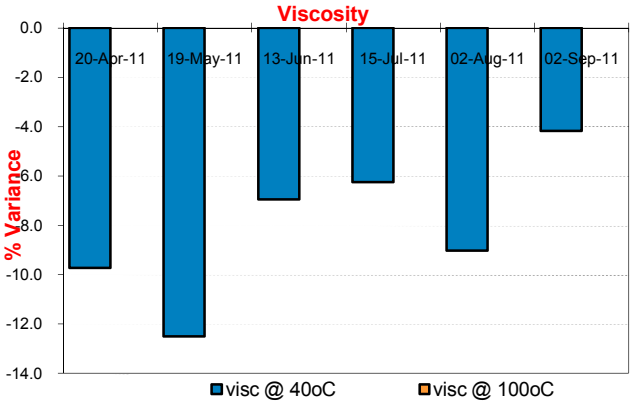
CONDITION MONITORING

TECHENOMICS

TECHNICAL ADVANCE FOR ECONOMIC GAIN

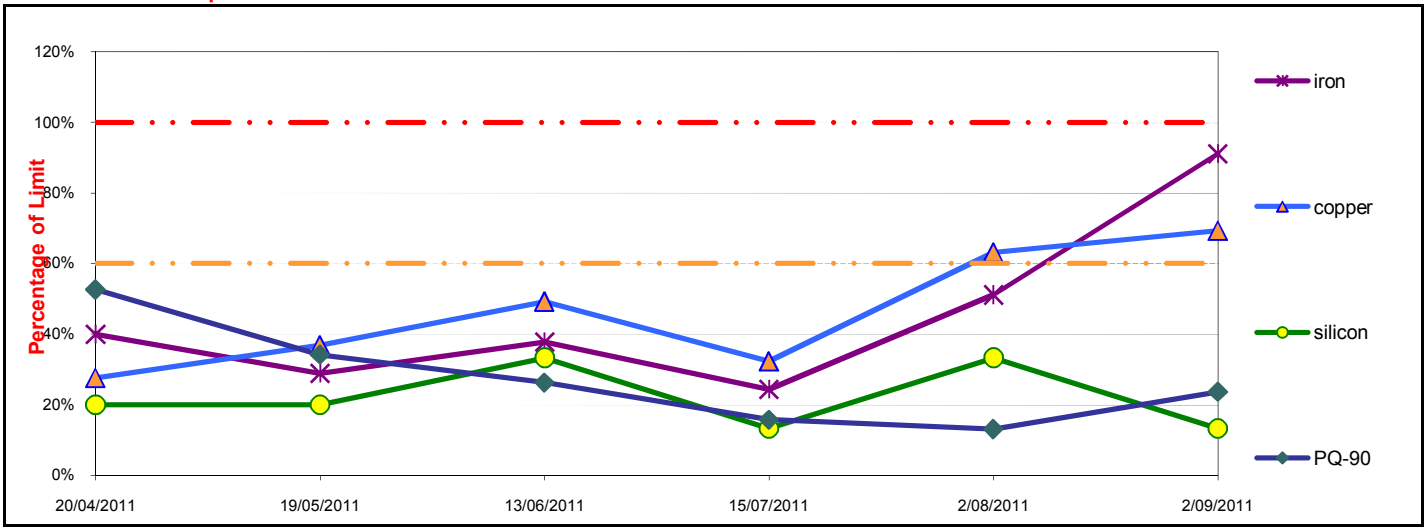
PROBLEM

Wear Metal Report: 278,911
Client Demonstration
Attention Mr. Demo
Machine: 789 CAT Rear Dump **ID No:** 666
Oil Name: DELO 6130
Visc@40°C: 144 **Visc@100°C:** 14.7 **TBN:** 9
Compartm't ENGINE



Sample Date	20/04/2011	19/05/2011	13/06/2011	15/07/2011	2/08/2011	2/09/2011			
Analysis Date	28/04/2011	20/05/2011	16/06/2011	25/07/2011	8/08/2011	12/09/2011			
Sample no.	272885	273873	274858	276665	277276	278911			
SMU	0hrs	862938hrs	0hrs	0hrs	0hrs	0hrs			
Oil Hrs	0	0	0	0	0	0			
Oil Changed	Yes	Yes	Yes	Yes	Yes	No			
Wear Metals	ppm	ppm	ppm	ppm	ppm	ppm	Caut	High	Comments on elevated results
lead	3	4	5	4	8	5	10	13	Iron has increased to 41ppm, PQ90 has also increased from 5 to 16 mg/ltr, Copper is also increasing, check the Oil Cooler, if recently replaced then this element should start to drop. Additives look to be depleting. As for the Iron and PQ90, there are signs of wear to possibly the Block, Gears, Crankshaft, Cast Iron Rings (Check compression), Oil Pump or crankshaft. Change Oil and Continue to Monitor.
iron	18	13	17	11	23	41	30	45	
aluminium	0	0	0	0	0	0	1	5	
copper	18	24	32	21	41	45	50	65	
chromium	0	0	1	1	2	0	10	20	
tin	3	5	4	3	2	0	20	40	
nickel	0	0	1	0	2	0	9	15	
Contaminants									
silicon	3	3	5	2	5	2	10	15	
sodium	0	1	4	3	6	1	8	14	
Oil Additives									
magnesium	12	12	19	15	24	16	0	0	
zinc	3	3	1	2	4	1	0	0	
molybdenum	64	64	98	76	74	58	0	0	
calcium	3549	3544	4208	4303	3682	3331	0	0	
phosphorous	2	2	0	1	2	0	0	0	
boron	0	0	0	0	1	0	10	20	
Infra Red									
TBN	10.0	12.3	9.5	9.0	9.0	10.0	-25%	-50%	
soot	7	15	31	31	27	26	0	0	
glycol%	0	0	0	0	0	0	0	0	
water (ppm)	0.00	0.00	0.08	0.00	0.00	0.00	0	0	
fuel dilution%	0	0	0	0	0	0	0	0	
oxidation	2	3	9	10	10	11	0	0	
nitration	4	5	10	9	9	8	0	0	
sulphation	2	4	16	7	8	8	0	0	
TAN	0	0	0	0	0	0	0	0	
Physical Tests									**Particle Cleanliness Analysis - ISO CODE 4406**
water %	0.00	0.00	0.00	0.00	0.00	0.00	0	0	4 µm -
PQ-90 mg / ltr	20	13	10	6	5	16	15	20	6 µm -
visc @ 100oC	15	13	14	14	14	14	+-10%	+-30%	14 µm -
visc @ 40oC	130	126	134	135	131	138	+-10%	+-30%	SAE AS 4059 NAS CODE -

Element Trends Graph



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