$50,000 SAVINGS plus elimination of unscheduled downtime

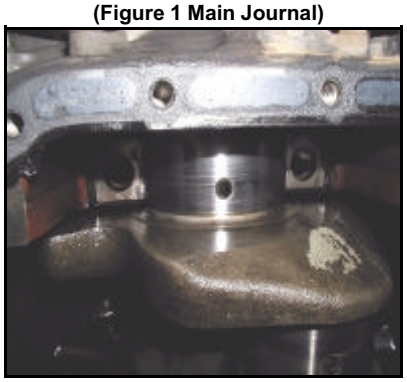
Diesel/Engine
Industry: Mining
Case Study No. 80050

CASE STUDY

Spectrographic Analysis provides early warning of a Diesel Engine failure

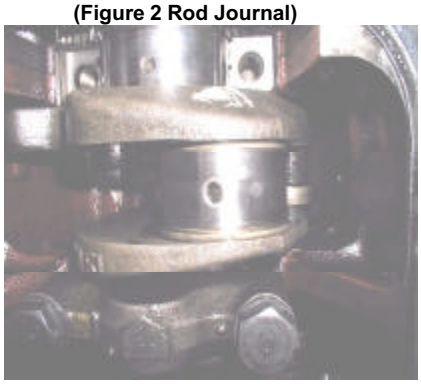
These are pictures of a failed diesel engine from a mobile Link Belt 240LX excavator that is used in mining operations.

(Figure 1 Main Journal)



This equipment has been monitored by Predict's Used Oil Analysis program for 5 months. During the month of November Elemental analysis revealed a drastic increase in the wear metal concentrations.

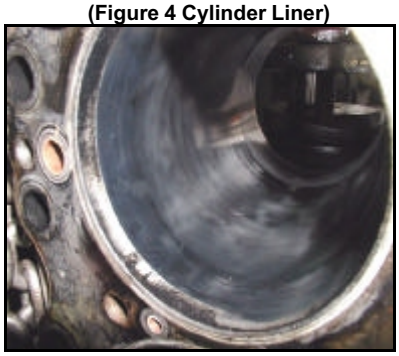
(Figure 2 Rod Journal)



Inspection of this engine identified severe damage applied to several of the components in this unit. The wear is depicted in these photos.

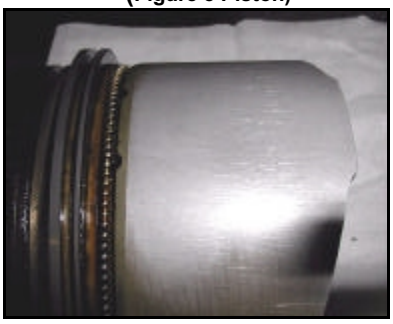
(Figure 3 Main Bearing)

(Figure 4 Cylinder Liner)

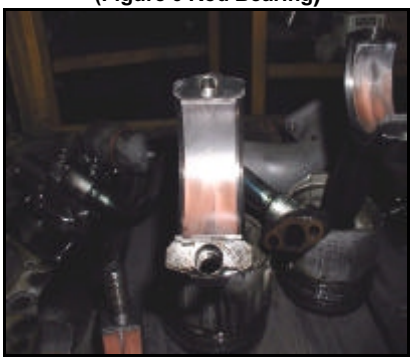


Elevated contaminant levels indicated a problem (illustrated in red). Inspection revealed one filter loaded and the other collapsed due to excessive amounts of dirt contamination.

(Figure 5 Piston)



(Figure 6 Rod Bearing)



The timely identification of this failure mode minimized the repair cost to $15,000.00. If not identified, the entire engine would have failed, increasing the cost to an estimated $50,000.

TRACE ELEMENTS: (ppm)

		5/7/02	6/19/02	7/9/02	11/1/02	Ref.
Equipment	Iron	34	9	21	400	0
	Chromium	6	1	8	54	0
	Aluminum	4	2	4	126	2
	Copper	75	14	20	192	0
	Lead	5	0	2	363	1
	Tin	0	0	0	84	8
	Silver	0	0	0	0	0
	Nickel	1	0	0	11	1
Contaminants	Silicon	4	1	2	316	5
	Sodium	0	0	0	24	0
	Potassium	4	1	6	25	0
	Boron	0	207	105	277	2
	Molybdenum	0	0	0	0	1
	Magnesium	5	204	207	302	49

TRICO

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