Engineering Bulletin

To:	All X-1R distributors	**From:**	Nigel (Mac) McKenzie
Cc:		**Date**	30th July 2009

Subject: The Role of Blow-by in the formation of sludge

A recent exchange of e-mails have lead to believe that there is still some miss-understanding about the formation of sludge in engines. Whilst the role of blow-by in the formation of sludge was discussed briefly in a previous engineering bulletin (dated 20-10-08) it is probably appropriate to briefly revisit the subject.

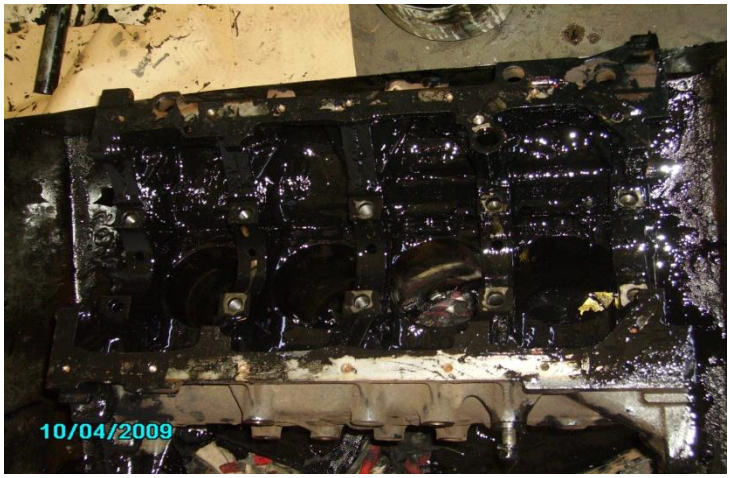
Extract from recent e-mail sent by X-1R distributor;

" Yesterday we were called to check on an engine which had been taken apart for over-hauling and which the mechanic was reporting unusual sludge deposits.

The vehicle had been overhauled after 100,000 Km's and after a further 15,000 Km's it had lost compression. This led them to take the engine apart and they found large quantities of sludge.
The oil which has been used all along in this vehicle has been DS40, which is what the mechanic uses in all it's commercial vehicles. They were using this before being introduced to X-1R and have continued to use the same.

Samples of the sludge have been sent to a local University to carry out test as they were concerned about metal like substance in the sludge which they observed to the touch.

Kindly share with us any information you have with regard to such cases being reported from other markets."



Picture above of sludge deposit from Distributor

The following was the response from Dr.Brian Taylor

"When an engine loses compression it is typically a result of either poor valve sealing or poor ring sealing. In the case of poor ring sealing, this allows a much increased volume of

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"blow-by" gases (air, exhaust gases and partially oxidized fuel) to get past the rings and to contaminate the oil. This oil contamination leads to the formation of massive amounts of sludge such as is seen in the pictures.

My clue as to what caused this to happen is the fact the engine was overhauled at 100,000 km, and relatively soon after that (less than 15,000 km) the problem occurred. There are several obvious questions to ask:

1. ***Is the engine petrol or diesel powered?***
2. ***What exactly was done at the overhaul?***
3. ***Were the piston rings replaced?***
4. ***If diesel, were the liners replaced, and if so with OEM parts or an "off-brand?"***
5. ***If gasoline, were the cylinders re-bored, and if so, what degree of oversize was used for the new rings, and were the rings replaced with OEM parts or an "off-brand?"***
6. ***What special precautions were taken during the "run-in" period after the overhaul?***
7. ***How long was the "run-in" period, and was a special "run-in" lubricant (engine oil) used during that time?***
8. ***How many kilometers after the overhaul was it when a loss of performance was first noticed for this vehicle.***

It seems to me that the problem resulted from a failure of the rings to properly seat following the overhaul. This lead to loss of compression and a massive increase in blow-by, which in turn caused the sludge."

Nigel McKenzie

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