



# Contaminated lube oil caused engine damage

The vessel was sailing when the high lube oil temperature alarm activated, and the main engine stopped.

Subsequent investigations revealed an abnormal level in the sump tank and the cooling water expansion tank had lost water. Cooling water had found its way into the lubricating oil sump and contaminated the lube oil system.

It was also found that the number 2 cylinder head was leaking coolant from a loosened guide bolt on the inlet valve crossbar. Attempts to tighten the bolt failed and so the cylinder head was replaced with a spare. Approximately 900kg of fresh oil was added and the main engine was restarted and the voyage resumed. No contaminated oil was drained off.

Two days later when the vessel was approaching the pilot station an alarm sounded indicating a high lube oil temperature from cylinder number 3. The engine was

stopped, and investigations were carried out. These did not reveal any abnormalities and the engine was restarted. Shortly after the pilot embarked, the crankcase oil mist alarm was triggered followed by a banging noise from the engine and then again the engine automatically shut down. A tug provided assistance and the vessel anchored. It was decided that the vessel should be berthed with tug assistance.

The number 3 cylinder unit had suffered piston seizure. Further damage was noted to the number 3 big-end bearing and crankpin journal, caused by the contaminated lube oil.

An analysis of the lubricating oil taken three months earlier for the main engine, showed that the oil was within specification. Another oil sample was taken one month before the incident and the analysis at this time showed a water content of 0.17%. For some unknown reason this sample had not been sent for analysis prior to the incident.



## Questions

When discussing this case please consider that the actions taken at the time made sense for all involved. Do not only judge but also ask why you think these actions were taken and could this happen on your vessel?

1. What were the immediate causes of this accident?
2. What is the risk of this type of accident happening to our vessel?
3. Is our PMS sufficient to deal with problems like this?
4. What are our procedures when we get a lube oil alarm like this?
5. What are the procedures for taking and sending oil samples?
6. Do we have enough lube oil on board for a full replacement?
7. How could this accident have been prevented?
8. What sections of our SMS were breached if any?
9. Is our SMS sufficient to prevent this accident?
10. If procedures were breached, why do you think this was the case?
11. Is there any kind of training that we should do that addresses these issues?
12. What can we learn?