2.4 Plain bearing failures

Cavitation erosion

**Characteristics**

Attack of bearing material in isolated areas, in random pattern, sometimes associated with grooves.

**Causes**

Impact fatigue caused by collapse of vapour bubbles in oil film due to rapid pressure changes. Softer overlay (Nos. 1, 2 and 3 bearings) attacked. Harder aluminium – 20% tin (Nos 4 and 5 bearings) not attacked under these particular conditions.

Corrosion

**Characteristics**

Removal of lead phase from unplated copper-lead or lead-bronze, usually leading on to fatigue of the weakened material.

**Causes**

Formation of organic acids by oxidation of lubricating oil in service. Consult oil suppliers; investigate possible coolant leakage into oil.

Tin dioxide corrosion

**Characteristics**

Formation of hard black deposit on surface of white-metal lining, especially in marine turbine bearings. Tin attacked, no tin-antimony and copper-tin constituents.

**Causes**

Electrolyte (sea water) in oil.

'Sulphur' corrosion

**Characteristics**

Deep pitting and attack or copper-base alloys, especially phosphor-bronze, in high temperature zones such as small-end bushes. Black coloration due to the formation of copper sulphide.

**Causes**

Attack by sulphur-compounds from oil additives or fuel combustion products.