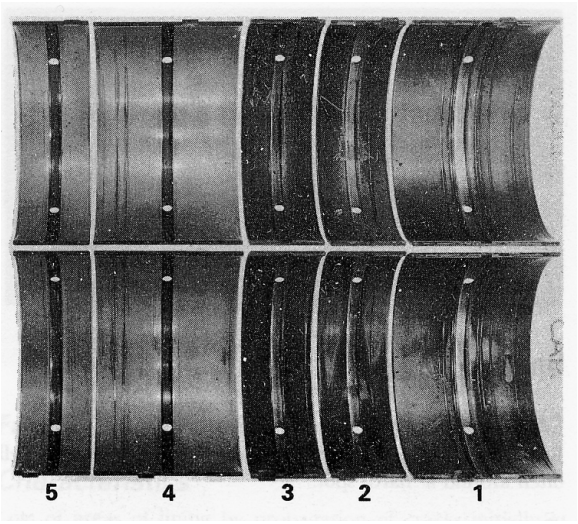
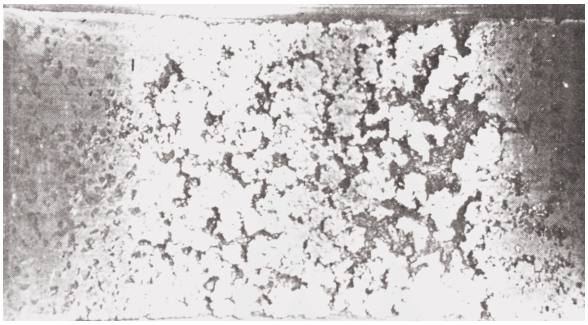
2.4 Plain bearing failures





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.

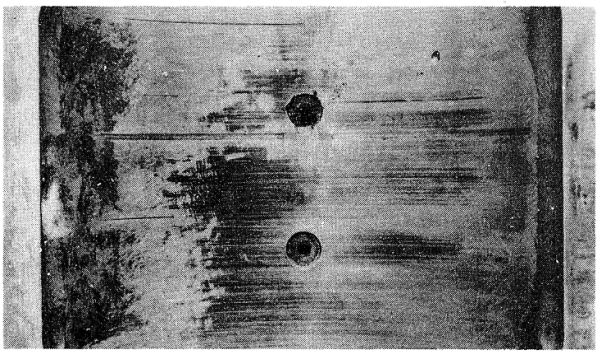
Corrosion

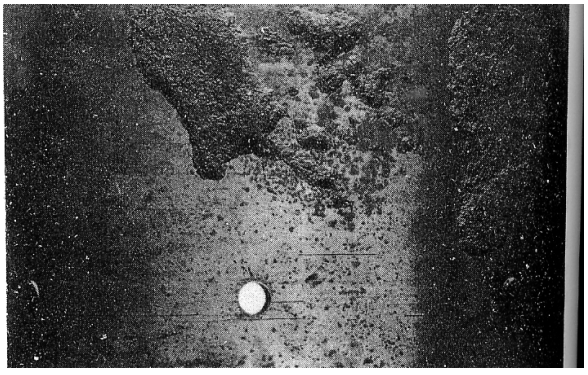
Characteristics

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.