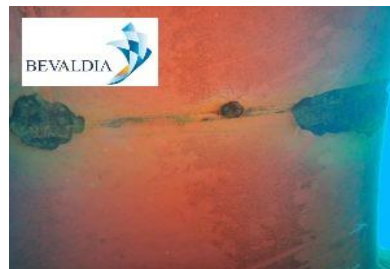


## UNDERWATER RUDDER REPAIR

Ingress of sea water into rudder can reveal cracks. The buoyancy of the rudder is lost and extra weight can cause stretching on the pintles. Although no major casualty will occur, the internal parts might corrode. The cracks – holes should be repaired. The plug on the bottom of the rudder should be opened and water should be drained out.

Neck bearing, pintle and jumping stopper clearance measurements provide an indication of the general condition of the rudder. Superintendents, class surveyors and naval architects can analyze the data and pinpoint the cause of the deflection and give guidelines for the required repairs to the diving team.

Loose bolts, cracks or any other abnormalities on the weld joints of the rudder carrier with the hull or on the rudder plate. Early detection and repair can prevent the expansion of an existing problem. In some cases, permanent repairs can take place under the supervision of Class. Depending on the location of the damage, ballasting can provide a dry environment and permanent repair. Nondestructive measurements in and around the keyways of the fractures can be taken before the initiation of any repair.



Due to the lack of cathodic protection corrosion may lead to extreme pitting and deep fractures on the rudder plate. Installing anodes and repairing the defected areas can solve the problem. In cases with excessive corrosion, class surveyors and superintendents should provide the diving team with the required repair plan.

A rudder is the primary control instrument used to steer a vessel. A rudder operates by redirecting the fluid past the hull, thus imparting a turning motion to the vessel. In basic form, a rudder is nearly a flat smooth metal surface hinged at its forward edge to the sternpost. Early detection and repair of rudder damages can prevent future costly DD-repairs. Several deflections can be observed on the rudder during an underwater inspection.

