

SWRMC NAVY DIVERS CONDUCT FIRST IN-WATER RUDDER GUDGEON REPAIR

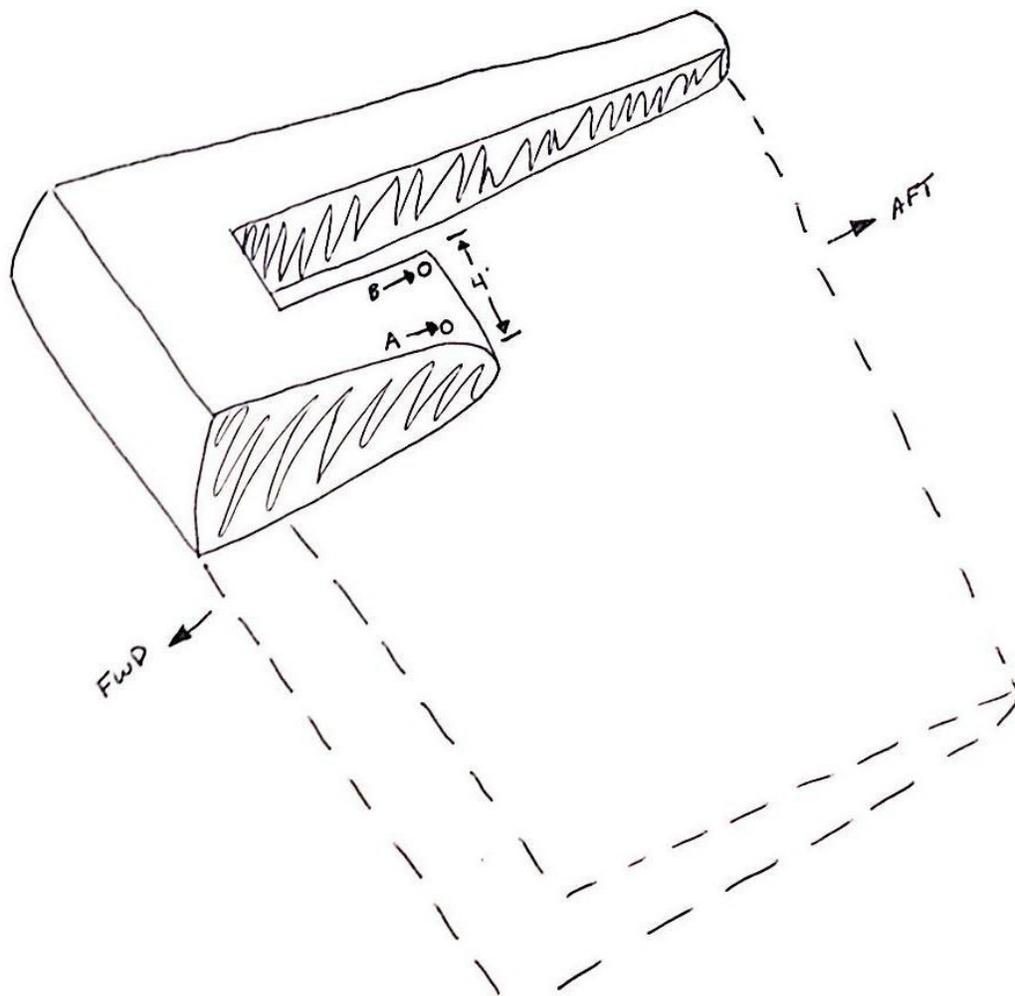
5 September 2013

An underwater inspection in March 2013 on USS CARL VINSON (CVN-70) revealed a missing 2" access plug on the port rudder gudgeon, due to overall deterioration of threads. A Departure from Specifications (DFS) was submitted and approved for underwater repair.



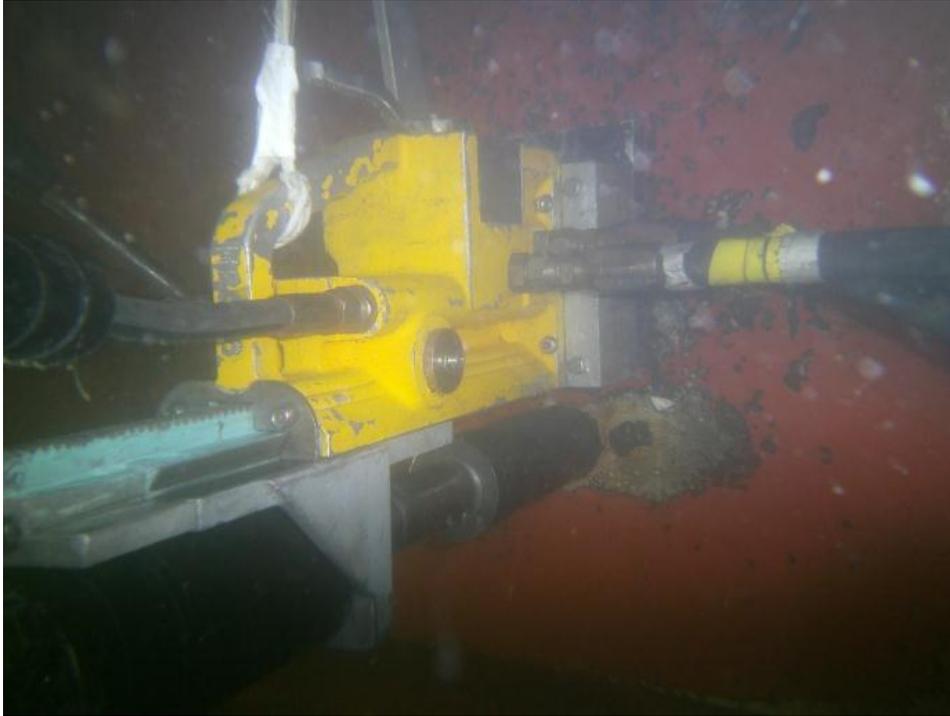
SWRMC Divers (ALPHA Team) was tasked to repair port gudgeon. Led by CWO2 Jason Potts (SWRMC Dive Locker Repair Officer), NDC Brandon Perry (ALPHA LCPO), ND1 Steve Colford (Diving Supervisor) along with the help of SWRMC Code 200, CNAP N43, NSWCCD Power Transmission Branch Division, NAVSEA 00C5, and NAVSEA 05 Technical Warrant Holder for Propellers/Waterjets/Appendages, they began coordinating and planning the Formal Work Package, ordering equipment and repair parts and mobilization of a dive barge.

SWRMC "Alpha Dive Team" started work on 12 August 2013. A description of the underwater Repair follows:



Sketch of Port Rudder Gudgeon

Two gudgeon plugs are specified. The missing plug is marked with the letter A. The first step was for the dive team to clean and prepare the rudder gudgeon area.



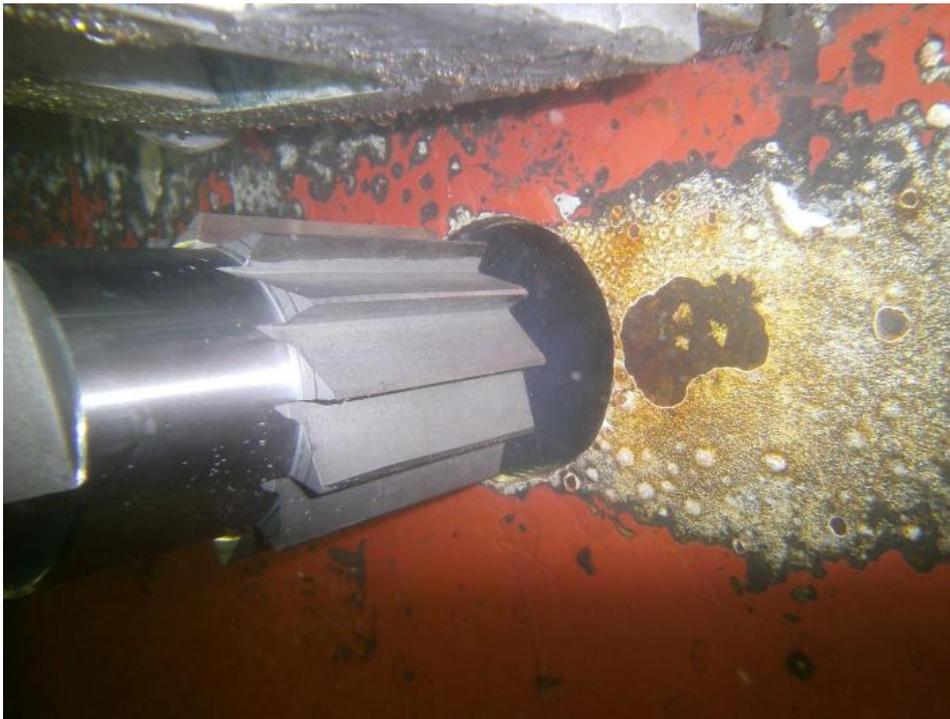
Next, the team mobilized a magnetic hydraulic drill in order to drill the original 2" access hole to 2 ½" diameter.



Here, the divers have carefully positioned a 2 ½" drill bit within the hole and started drilling.



Then, a tap was inserted and new threads were cut. The process was slow as the tap is very brittle.



The hole was reamed out to allow for ease of continued tapping.



After the tapping was completed, piping was connected to remove salt water from the void via pressurization with nitrogen IAW UWSH standard procedures for dewatering rudders post repair.



A new 2-1/2" brass plug IAW ASTM B21 was installed and staked in place.

During the pressure test on 15 August 2013, it was noticed that the top access plug was leaking too. DFS was submitted and approved and SWRMC divers resumed by drilling and tapping. The job was

completed on 20 August 2013 after successfully conducting a second pressure test. All sea water was removed and plugs staked in place. Alpha dive team and supporting organizations saved the Navy roughly \$65,000.00 in contractor costs and completed this U/W operation without need for dry docking.