

## **SUPSALV Teams with Commercial Diving and Equipment Contractors to Provide an Immediate Rudder Nut Inspection for USS NICHOLAS (FFG 47)**

10 September 2013

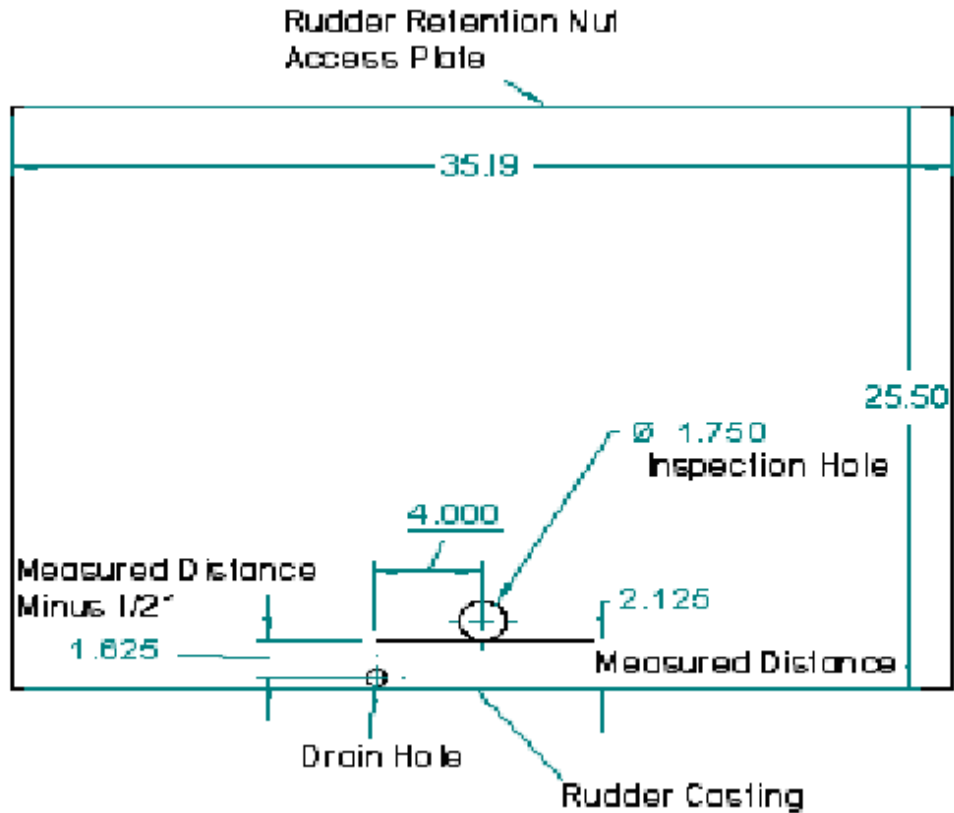
During a routine underwater inspection of USS NICHOLAS (FFG-47) by Seaward Marine Services (Seaward) Inc., in Norfolk, VA divers reported clearance measurements between the rudder and the rudder hull seal fairing plates were inconsistent with the design specification published in the Underwater Ship Husbandry Manual Chapter 17 "Inspection Procedures". Seaward diving supervisor contacted Naval Ship Support Activity (NSSA) engineers with their findings. NSSA engineers ordered a more extensive level III inspection to collect additional information based on the excessive clearance and the concern that the rudder may be dropping off the rudder stock.

On September 1, 2013, the Supervisor of Salvage and Diving, Underwater Ship Husbandry Division (OOC5) directed Phoenix International Holdings, Inc. (Phoenix) to perform and provide equipment in support of a Remote Video Inspection of a Rudder Nut Stopper Plate



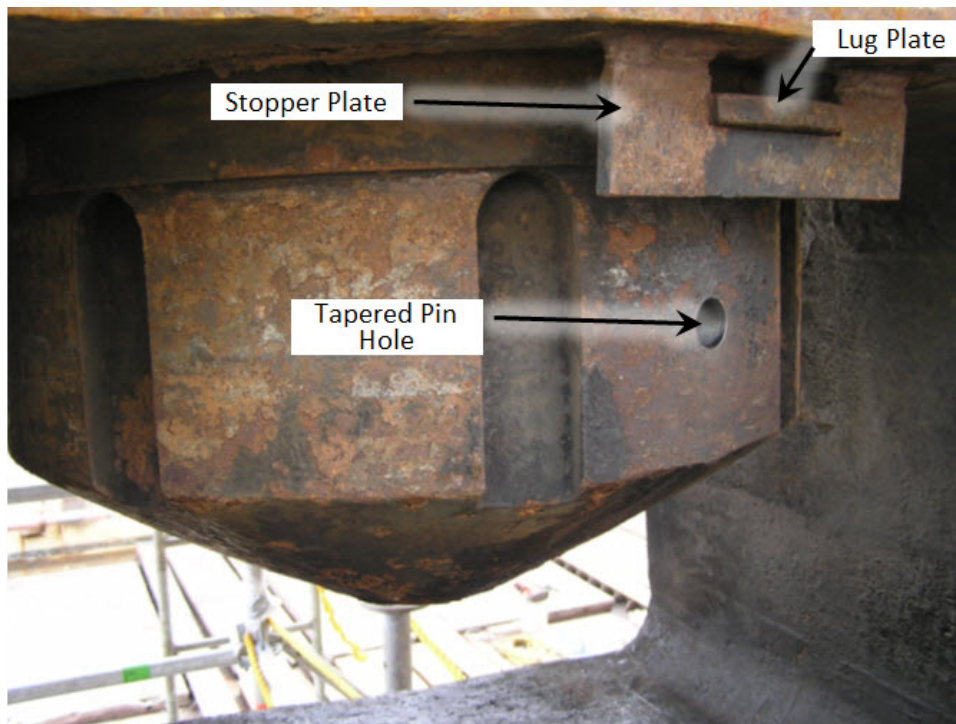
*USS NICHOLAS (FFG 47) at the pier in Norfolk, VA*

On 02 September, Phoenix, Seaward, and GPC mobilized personnel and equipment on short notice to support the inclusive inspection. A comprehensive inspection procedure was developed and Phoenix divers cleaned the rudder access plate and laid out the precise location for two small holes to be drilled on the starboard side of the rudder. SUPSALVs magnetic base hydraulic drill press was used to drill the holes that allowed divers to pass the MN-30 miniature video camera inside the rudder nut void to inspect the stopper plate and lug.



*Diagram of the Rudder Retention Nut Access Plate shows the location and specification for the access holes*

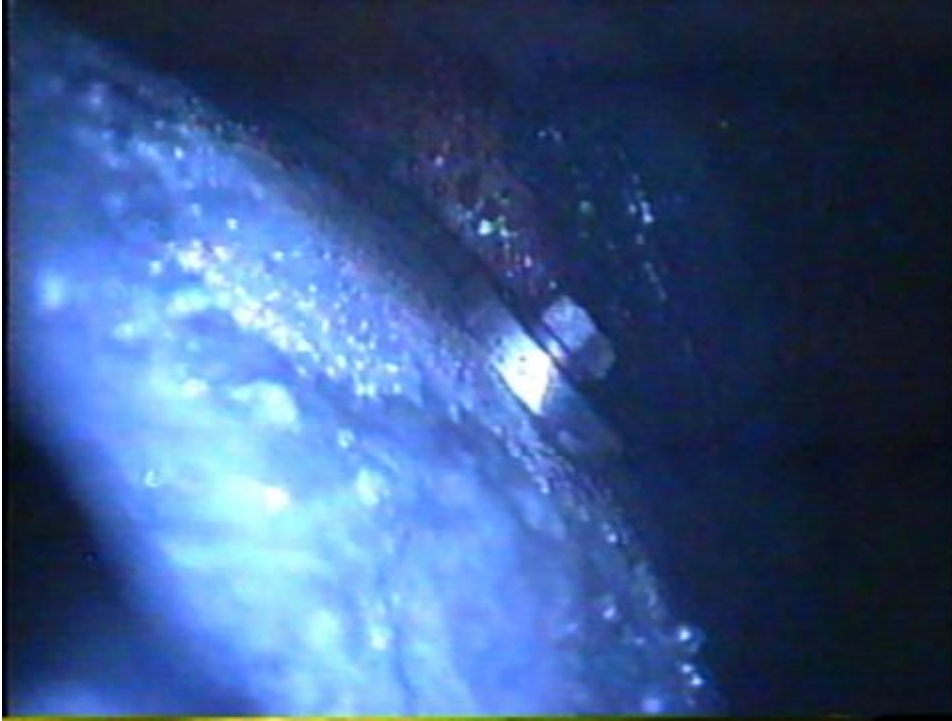
The MN-30 miniature video camera attached to a long rod was manipulated around the rudder nut void by the diver and produced a clear image of the nut, stopper plate and lug for NAVSEA OOC operations manager to monitor pier side. Video from Phoenix was interfaced via live web feed by Seaward to Washington, DC, where NAVSEA program manager could assess the current condition. Below pictures, provided justification that the rudder nut was not backing off nor was rudder dropping.



*Typical configuration of rudder nut stopper plate and lug*



*Stopper plate and lug plate were intact*



*3/8" bolt and cover plate securing tapered pin (previously installed though rudder nut and stock)*



*New plugs installed sealed the rudder retention access plate*

Upon completion of inspection, both holes were tapped and a new plug was installed in the inspection hole. Nitrogen was purged into the rudder nut access void to dewater and preserve the space. Final plug was installed. Thanks to the successful combined efforts by NAVSEA 00C5, Phoenix, Seaward,

and GPC personnel, USS NICHOLAS (FFG-47) was able to meet a mission critical exercise on time without delay.