**EQUIPMENT WE LOVE – TO HATE –** (Part of an occasional series) Gunner's mates will love this story. The variable depth sonar, VDS, became part of the USS FRANK KNOX in late 1964 after the ship returned to San Diego. The VDS package was installed on the fantail of the Frank Knox and included the hoist, cable reel, 300+ feet of cable and fairing, attached to a transducer that was towed behind the ship. The power unit for the transducer was installed on the level below the main deck, adjacent to the after steering equipment space. Gunners mates operated and maintained the hoist mechanism while the sonar techs maintained the electronics and provided information to CIC and the bridge when the VDS equipment was deployed. When the VDS was not deployed underwater information and contacts were available from the hull mounted sonar below the sonar shack and relayed to CIC and the bridge. The VDS gained popularity because the Royal Navy, Royal Canadian and Royal Australian Navies developed and deployed their system on several of their ships.

The US Navy was influenced by many of the features of the British hoist system and towed body feeling it worth study. The British sonar system range and reliability of components needed attention. The first photo is of the test installation on DD-760, USS John W. Thomason and compare it to the pictures of the USS Frank Knox after the conversion was complete in late 1964. Quite a difference. The initial contractor for the VDS were Western Electric Corp. and Raytheon Corp.

Ever since ASDIC (snit-submarine detection identification/SONAR) or the original sonar was installed on Navy ships the problem of water temperature and its effect on sonar penetration and transmission has received a lot of attention. Ideally a ship on the surface would simply listen (passive mode) for a sub to make noise. However, water conditions can hide the sound made by submarines. Active sound transmission to locate the sub works well most times. There are times however when water conditions prevent the sound from getting to the sub. The most frequent cause of this is a layer of cold water. The VDS can, in many cases, reach below the layer to transmit sound more easily to locate the sub.

The current US Navy contract for VDS went to Raytheon Corp. for the VDS equipment for the LCS design ships, the Independence class (tri-hull design) and the Freedom class (single hull design) ships. Equipment design includes delivering a package that meets the US Navy's weight standard for this class of ship. The Navy was supposed to select on design and move forward with the remaining build out to a final number of 40 ships. Stay tuned for developments.

# File:Variable depth sonar of USS John W. Thomason (DD-760) c1960.jpg


**VDS (2)**