FLUIDS

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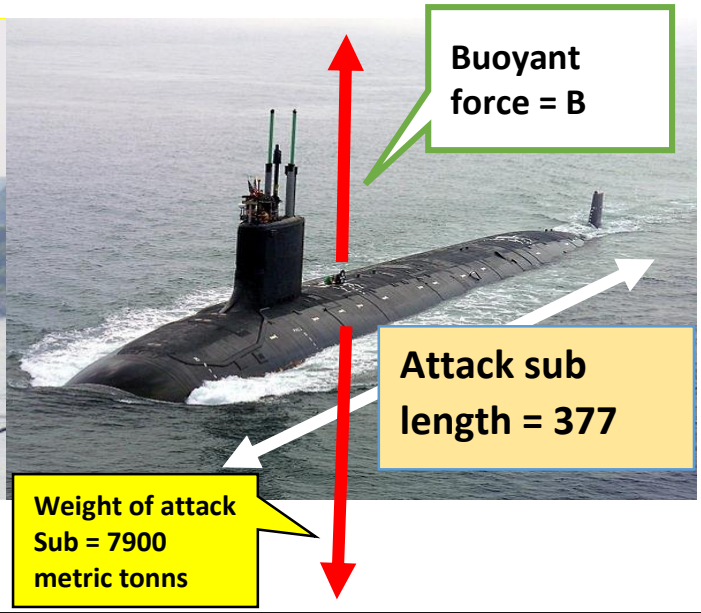
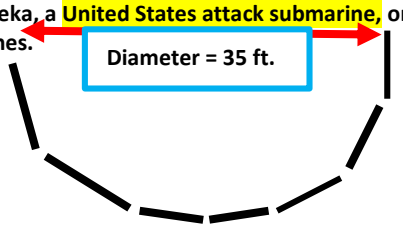
Philippine Supreme Court Approves Return of U.S. Troops

The Philippine Supreme Court on Tuesday approved an agreement to allow United States troops to return to the country. BEIJING — The United States won a significant victory on Tuesday in its efforts to counter China's rising influence in the South China Sea, as the highest court in the Philippines cleared the way for American troops to return to the country.

Philippine Supreme Court, in a 10-to-4 decision, approved an agreement that would allow the American military to lawmakers in Manila voted to expel American troops in a show of anti-colonialism. The decision seemed likely to heighten tensions between the United States and China, which is seeking to establish itself as a dominant power in the region by building military facilities on top of submerged reefs in the South China Sea, a major shipping **route."The South China Sea will be more crowded, and the risk for a military conflict will continue to rise," said** Zhu Feng, the executive director of the China Center for Collaborative Studies of the South China Sea at Nanjing University.

The Topeka, a United States attack submarine, on Subic Bay in the Philippines.





INTRODUCTION: **Archimedes said objects are buoyed up by the weight of the fluid displaced. The object of this application is to validate the volume of the sub submerged (as seen in the picture above) is "about" ~ 75 %. This volume of the ship submerged displaces enough water to support the weight of the sub.**

QUESTIONS: **(a) Find total volume of cylindrical shaped sub? (b)Convert weight of sub to pounds? (c) Find volume of water needed to support weight of sub?**

(d) What percent ($V_{displaced\ water}$/ V_{sub}) of sub's volume is needed to displace enough water to support the weight of the sub?

HINTS: **$V_{cylinder} = A\,L = \pi r^2 L$, 2204.6 lb./metric tonne , Weight density = D = weight/volume = W/V , D_{water} = 62.4 lb./ft.^{3}**

ANSWERS: **(a) 3.62716 X 10^5 ft.^{3} , (b) 17,416,340 lb., (c) 2.791 X 10^5 ft.^{3}, (d) ~ 77 %**

Author's comment: **As you can see in the picture (at left upper) about 25% of the subs volume is NOT submerged. Thus, about 75%(calculated here about 77%) of sub's volume is needed to displace a weight of water (creating a buoyant force up) equivalent to sub weight. Archimedes was smart 2000 years ago**