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UNDERWATER EXPLORATION MISSION ON EUROPA JOVIAN MOON

Abstract

NASA's spacecraft, Galileo, discovered large amount of water on Europa, one of the Jupiter's icy moons. It is believed that as far as exploration of our moons and planets are concerned, Europa may yet prove to be one of the most important regions in the Solar System; also, in a distant future, when the Sun warms up, Europa may prove to be ready for colonization by mankind. The purpose of this work is to calculate all the significant data for allowing traveling from the Earth to Europa, transporting a small submarine, safe landing of this submarine, drilling/melting through Europa's icy crust and to be able to control the small vessel, providing communications along with the transmission of the images. The orbit at the end of the mission, descent and landing over Europe surface are discussed. Additionally, the design, construction, and operation of the submarine are also analysed in this work. The technology at the present day can be used to design the travel, prepare the landing and build the pressure hull of the submarine. A submarine hull in ceramic composite is required to have adequate reserve buoyancy. Several alternatives are analysed for both submarine propulsion problems and underwater communication systems.