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**The analysis of underwater environmental factors in relation to
the harbor protection in Tzoin-Kaohsiung areas**

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Harbor is an important shipping traffic area. The intrusion or threatening by outsiders in the harbor area will certainly cause great panic of the society, and therefore, the protection of harbor and its nearby water is utterly important. The Tzoin harbor is primarily serviced for navy, and is under planning for further expansion. Therefore, a complete control of the Tzoin-Kaohsiung marine environment, both geographical and acoustical, is necessary for military applications. The purpose of this study is to conduct a complete survey of the environment in the designated area, covering the first seaway of the Kaohsiung harbor and off coast water of the Si-Tze bay area. The survey of the marine environment includes seafloor topography, morphology, subbottom profile, waves, currents, and wind fields. In acoustic aspect, the survey emphasizes the harbor ambient noise measurement. The data obtained shall be thoroughly examined and analyzed. The results provide a foundation for future underwater experimental studies, including target localization, geoacoustic inversion, and active sonar reverberation.