

UNDERWATER ACOUSTIC FIELD PARAMETERS MODELING

Arsene Mihai¹, Delia Garleanu², Claudia Borda², Marinela Marinescu², Victor Popovici²

¹ SC AFICO SA, România, e-mail: arsenemihai@bksv.ro.

² Politehnica University of Bucharest, e-mail: ctistere@yahoo.com

Abstract: *This paper presents the results of studies conducted in the Black Sea regarding the underwater acoustic pollution. One of the parameters of the acoustic field is the underwater transmission loss; it was measured and then modeled using a specialized software. Measurement procedure is described and are presented the graphical results of the measurements and of the modeling of transmission loss. Measurements were compared with modeling results and found that there is little difference between them, as predictable and acceptable level of transmission attenuation.*

Keywords: *underwater, acoustic parameters, transmission loss measurement*

1. Introduction

Ocean noise results from both anthropogenic and natural sources; different sources dominate specific frequency bands. Standard maneuvers vessels produce underwater noise in a certain frequency range. Low frequency sound waves are influenced by low attenuation and travel over long large radius of action (100km).

According to studies of underwater acoustic pollution, environmental noise contribution ships almost doubled (that is, a 3 dB increase in power) in each of the past four decades. It is estimated that noise levels will continue to increase if not set some countermeasures against underwater noise accidental caused by the navigation activity.

In this context underwater noise mapping studies have been conducted on noise produced by various activities.

2. Measurement Procedures

2.1 Noise investigations on a particular activity

The overall aim of the noise measurements and of the investigations is to provide an objective description of the acoustic environment around a particular activity

noises. Such activities can vary from single elements of an installation in the construction complex objective.

The results of sound pressure level measurements require, in general, an adequate description of the noises received at the measurement site in the moment when the measurements take place.

A study consisting of multiple measurements in several locations was conducted and presented in the paper.

Noise surveys yielded prediction models of the acoustic field of the activity investigated.

2.2 Measurement of the noise from human activities

The purpose of the experiments was to determine the sound pressure level at a particular location, the noise that comes from the activity under study. Some appropriate procedures are required to remove or allow other ambient noise at the place of measurements. More complex situations require the use of statistical analysis and spectrum analysis.

Sounds from mobile sources, such as vessels, may be continuous, but for an animal in a certain position, these sounds are