

## Submarine Silencer

### **“Mechanics of Underwater Noise”**

Around 1972, Pryce and Lasky became aware that a set of summary reports on underwater acoustics that Pryce had coauthored in the 1950s had become obsolete and needed to be replaced. I talked with them about my doing a three-volume update on: radiated noise, ambient noise, and ocean sound propagation, which I ambitiously projected as a three-year project. By this time, I was working at the DC office of TetraTech, Inc. ONR gave us a one-year contract for the volume on underwater radiated noise. I quickly developed a 20-chapter outline for what I hoped would be used as a self-education text as well as a reference for workers in the field. My approach was to stress physical explanations of the basic mechanisms by which noise is generated, transmitted by structures and radiated into the sea. Despite the complexity of many of the phenomena, most can be explained in straightforward ways by emphasizing the dominant mechanisms, which would be illustrated by practical applications. While other comprehensive reports stressed collections of actual data and so had been classified, my intention was to give the reader a basic understanding of the dominant mechanisms that would be neither classified nor subject to becoming obsolete. The book was to be called “Mechanics of Underwater Noise” (MUN).

By the end of the contract year, I had written a detailed outline, had developed a card file summarizing hundreds of pertinent articles, but I had only started on the first three chapters. I had also moved to La Jolla and was now with TetraTech’s San Diego office. As the contract for the book was cost plus fixed fee, I was able to receive an extension. Progress in the second year was also slow and again ONR gave us an extension. Finally, in the third year, I gave up. I went to TetraTech’s headquarters in Pasadena and told Vice President Don Stern that I couldn’t write the book and that we would have to refund the monies we had received for it to ONR. Knowing that non-performance is a no-no, I expected a hard time. But Stern surprised me. After patiently listening to my story, he said that he understood that I couldn’t write “THE book”. “But,” he said “Donald, do you think you could write A book?” That did it. I got his point immediately and returned to San Diego to complete a 10-chapter book, incorporating the other 10 topics as sections rather than as full chapters.

“Mechanics of Underwater Noise” was published by Pergamon Press in the summer of 1976. It has been used as a reference text in many university and commercial courses ever since. It was reprinted in 1987 by Peninsula Publishing of Los Altos, CA. It seems somehow to have become THE book on its subject, and even today it is still readily available on Amazon.com.

While I certainly made my share of direct contributions to submarine silencing, I truly believe that my most significant contribution to this field was in the training of hundreds of engineers who attended my numerous lectures and short courses and/or who have used MUN as a reference.