

What are Sonobuoys?

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About Sonobuoys:

- Sonobuoys are **expendable, electro-mechanical acoustic sensors** that **relay underwater sounds** emitted **from ships and submarines**.
- They **help in the detection**, classification, and prosecution **of adversarial ships and submarines**.
- A naval helicopter or fixed-wing **aircraft generally drops sonobuoys in a pattern**.
- They are **dropped in canisters** and are **deployed automatically upon impact with water**.
- An **inflatable system with a radio transmitter remains on the surface for communication** with the ship or aircraft tracking it while **sensors descend below the surface** to a predetermined depth.
- It then **relays acoustic information** back to those monitoring them.
- A **group of sonobuoys deployed in a pattern can find out the exact location of the submarine**, which then can be tracked by other systems.
- Some sonobuoys are designed to be deployed in passive mode and some in active mode.
 - **Active sonobuoys emit sound energy and receive the echo**, based on which they transmit information back to the aircraft.

- **Passive sonobuoys**, on the other hand, **only listen for sounds coming from ships** or submarines.

They then transmit the sound back to the aircraft.

- There are also **Special Purpose buoys** that provide information about the environment, such as water temperature, ambient noise level, etc.
 - **Components:** A typical sonobuoy consists of a cylindrical or **spherical buoyant housing, sensors** for detecting acoustic signals, a battery or **power source**, and a **radio transmitter** or other communication system to relay data to the host platform (e.g., aircraft or ship).
 - **Other Applications:** In addition to anti-submarine warfare, they are used for **scientific research** and **environmental studies**, including studying the behavior of whales and other marine creatures.
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Q1: What is Acoustics?

Acoustics is defined as the science that deals with the production, control, transmission, reception, and effects of sound. Many people mistakenly think that acoustics is strictly musical or architectural in nature. While acoustics does include the study of musical instruments and architectural spaces, it also covers a vast range of topics, including: noise control, SONAR for submarine navigation, ultrasounds for medical imaging, thermoacoustic refrigeration, seismology, bioacoustics, and electroacoustic communication.

Source: TH

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