# NUCLEAR SUBMARINES



This image depicts an oil painting, by James E. Mitchell, called DASO ("Demonstration and Shakedown Operation") off Cape Kennedy, Florida. It shows an A-3 Polaris fired from the *Woodrow Wilson* on October 15, 1969. Image online, courtesy the U.S. Navy Historical Center. Click on the image for a full-page view.

In a sense, a nuclear submarine's power plant (her nuclear reactor) is nothing more than a large boiler which produces steam. That steam runs the turbines (which propel the ship through the water) and the generators (which provide the ship's electricity). The major difference between steam that is produced by a coal-fired boiler, for example, and steam that is generated by nuclear power is what happens INSIDE the nuclear reactor.

Purdue University's web site allows us to "look" inside a nuclear reactor. Even though it is not the type of reactor one would find on a nuclear-powered submarine, it is still interesting to view:

- Purdue's reactor (PUR-1) is housed in a special reactor room.

- The reactor core is at the bottom of a 17-foot deep, 6500-gallon tank of very pure water.

- At "full" licensed power, the reactor core glows (with the blue color of Cerenkov radiation). Cerenkov radiation is caused by electrons exceeding the speed of light (in water) after the electrons are hit by gammas from the core.

- The main control panel for PUR-1 features a prominently displayed red "SCRAM" button. (Scroll down 50% to learn the meaning of its name.)

Less than ten years after nuclear bombs ended World War II, the United States launched the *USS Nautilus* (SSN 571). The world's first nuclear-powered submarine, *Nautilus* was also the first submarine to navigate under the North Pole.

Nearly six years later, America launched her first nuclear-powered ballistic missile submarine, the *USS George Washington* (SSBN 598). The day "598" became part of the US fleet, America had the upper hand in the Cold War. With it, the United States possessed the most powerful deterrent force that anyone could have conceived at the time: a stealth platform with incredible nuclear firepower.

It was that submarine *K-19* was intended to counter.


See Alignments to State and Common Core standards for this story online at:
http://www.awesomestories.com/asset/AcademicAlignment/NUCLEAR-SUBMARINES-K19-Widowmaker

See Learning Tasks for this story online at:
http://www.awesomestories.com/asset/AcademicActivities/NUCLEAR-SUBMARINES-K19-Widowmaker

# Media Stream

## Delivery of Nuclear Warhead via Submarine

Image online, courtesy the U.S. Navy Historical Center (Navsource Online: Submarine Photo Archive) via barthworks.com website.
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## USS Nautilus - First Nuclear-Powered Submarine

16 June 1952 Universal Newsreel.

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