

Arctic Frigate (Arctic FFG)

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As a result of polar ice melting, commercial, scientific and military activity is increasing in the Arctic region. As an Arctic nation, the United States has developed a national security strategy for peace and cooperation in the region. In support of this national strategy, the U.S. Navy has been tasked with the objectives of “ensuring security, supporting safety, promoting defense cooperation, and preparing for a wide range of challenges and contingencies” in the region. This design project addresses the need to have a constant naval presence in the Arctic region after 2030. The Arctic Frigate (Arctic FFG) is capable of deploying to the region for extended periods of time for the purpose of ensuring freedom of navigation, maintaining maritime security, conducting search and rescue missions, and rapidly responding to national security threats. Though not an icebreaker, the Arctic FFG can transit independently in medium first-year ice and satisfies all of the U.S. Navy and American Bureau of Shipping (ABS) Polar Class 5 requirements to operate in this environment.

Designing a warship for Arctic operations presented unique challenges. The ship’s structure had to be stronger than that of a regular warship in order to withstand ice loads. Double-walled tanks were added to satisfy pollution prevention requirements. Machinery, air intakes and communications systems also required enhancements for operation in such an extreme environment. The ship was designed for a long endurance time and range (12,000 nm) to eliminate the need for underway replenishment while in the Arctic. The Arctic FFG uses an Integrated Power System (IPS) with two primary CAT 3616 5 MW and two secondary CAT 3612 3.8 MW diesel engines. Two 10 MW puller pods, hardened for ice conditions, provide propulsion. Retractable roll fins were installed to meet sea keeping performance requirements. The ship’s armament consists of a 32-cell VLS, a Mk 110 57 mm gun, a 20 mm Phalanx CIWS and crew-served weapons. Major sensors consist of surface search radar, fire control radar and SEWIP. The helicopter hangar and flight deck can accommodate an aviation detachment with two MH-60R helicopters. The ship also carries two 7 m RHIBs and four 50-person Arctic lifeboats.

Ship Characteristics	
Parameter	Value
LBP	125.6 m
Beam	16.59 m
Full Load Draft	5.77 m
Full Load Displacement	6732 MT
GMT	1.71 m
GMT/B	0.103
Range	12,000 nm
Maximum Speed	19 kts
Endurance Speed	11 kts
Maximum Speed in Ice	5 kts
Crew	160
Lead Ship Cost	\$1.48B (FY 15)
Follow Ship Cost	\$1.25B (FY 15)

