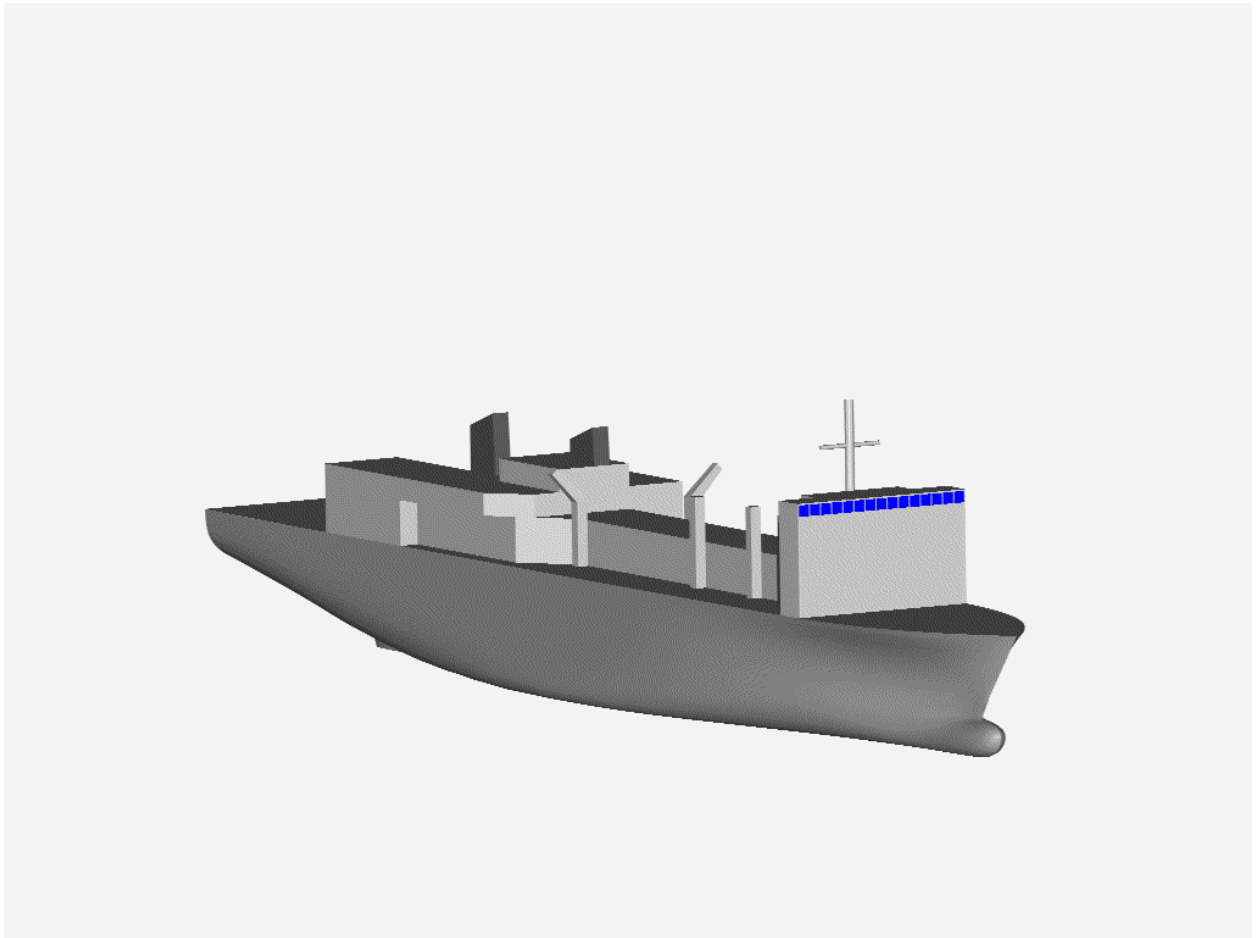




Auxiliary Cargo and Ammunition Ship Design
T-AKE PIKE



AOE 4065/4066 Ocean Design Team #2

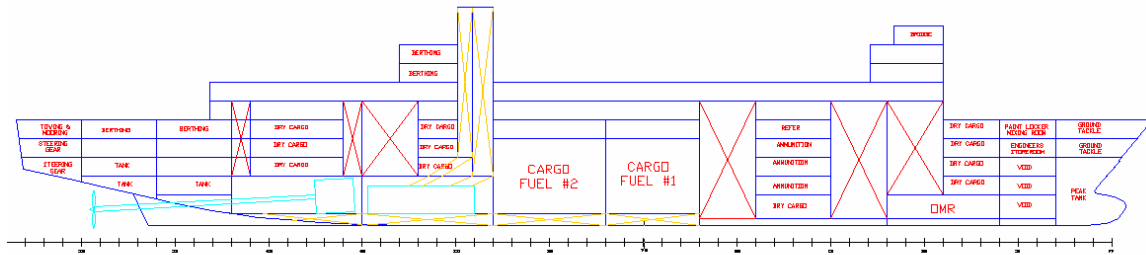
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T-AKE PIKE Design Report

Executive Summary

The auxiliary dry cargo carrier (T-AKE) “PIKE” is designed to serve as a shuttle ship for underway replenishment for the United States Navy. It will carry a mix of dry and refrigerated cargo, cargo fuel, and ammunition to resupply station ships, such as AOE 6, or the battle fleet directly. The PIKE design was optimized using a Pareto Genetic Algorithm to find a lower-cost alternative to current concepts for T-AKE.

The PIKE represents a low cost option that still meets Navy requirements. The hull is designed for low power operation in the design speed range and for good seakeeping characteristics. The structural arrangements are based on ABS 2000 tanker requirements modified for use in a mixed cargo auxiliary. Structural adequacy is confirmed by finite element analysis. The propulsion system is combined plant IPS with LM2500 prime movers. The plant provides sufficient power to meet all electrical and propulsive requirements. Cargo systems are designed to provide efficient and reliable transfer to all major combatants and station ships. Manning is minimized by extensive automation. Passive survivability measurements according to US Navy standards give the ship sufficient protection from all likely threats. The main deck is arranged to maximize cargo transfer efficiency.



Principal Characteristics

Length Overall	605	ft
LBP	581	ft
Maximum Beam	90	ft
Draft	30	ft
Depth	56.7	ft
Displacement, Lightship	11350	ltons
Displacement, Full Load	31089	ltons
Sustained Speed	20	knots
Endurance	14000	nm
Turbine Generator Sets	Two LM-2500 (22800 kWe)	
Propulsion Motors	Two Alstom 23500 BkW @ 120 rpm	
Propellers	Two Four bladed, fixed pitch, 20 ft diameter	
Accommodations		
MSC Officers	13	
MSC CPO	12	
MSC Crew	65	
Navy MILDET	24	
Surge	24	
Cargo Capacity		
Refrigerated	74000	ft ³
Ammunition	240000	ft ³
Dry Cargo	600000	ft ³
Cargo Fuel	33130	bbl