



Aluminum Chambered Boats On Security Watch

Unmanned Surface Vessel Offers Remote-Control Technology



# ALuminum Extrusion

S H O W C A S E

I N N O V A T I O N S T A K I N G S H A P E

## ALUMINUM CHAMBERED BOATS ON SECURITY WATCH: PATROLLING U.S. SHORES AND PROTECTING THE HOMELAND



*ACB's Center Console patrol boat features all extruded aluminum framing.*

Aluminum Chambered Boats, Inc. (ACB) of Bellingham, Washington, is instrumental in helping the Department of Homeland Security meet the daily challenges of patrolling U.S. shores, safeguarding major port cities, and providing border patrols, military defense operations, as well as national and local law enforcement disaster preparedness. ACB's aluminum boats are used to protect the U.S. coastline around-the-clock, handling rough seas where their extruded aluminum framing provide the safety, endurance, and high performance critical to the boats' reliability and rapid response.

ACB's odyssey began in the aftermath of the tragic events of September 11, 2001. Former Congressman George Nethercutt and NAV SEA System Command brought ACB aluminum boats to the fore, declaring them "urgent mission essential" to homeland security under the U.S. Patriot Act. "The speed and performance of these watercraft are impressive," said Nethercutt. "Our homeland security and national defense agencies would be well-served by these aluminum chambered boats."

The U.S. Navy, U.S. Marine Corps, U.S. Border Patrol, the National Oceanic and Atmospheric Administration (NOAA), and the Army Corps of Engineers are all using ACB aluminum boats to fortify security on United States shores. The U.S. Coast Guard has declared these aluminum vessels "virtually unsinkable." U.S. Congressman Rick Larsen (Washington State, District 2) notes, "For the communities I represent along the U.S. land and water border, homeland security also means personal security. Companies like Aluminum Chambered Boats make products that help keep our borders and our communities safer."



*Fireboats like the Quantico Fire Boats are on duty from coast-to-coast.*

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*A V-shaped hull and aluminum chambers are assembled around extruded aluminum framing.*



*ACB personnel weld aluminum extrusions to form the internal framing of the vessel.*



*The painting phase is complete on this DV-R boat's exterior.*

## Aluminum Boats Setting A New Standard

Airtight three-sixteenths-inch thick sealed aluminum chambers completely surround the craft, forming each boat's sides and bow while providing floatation. The quarter inch V-bottom and boat chambers are welded to create a reverse chine, and interior extruded aluminum framing provides key strength and rigidity. ACB boats maintain record endurance, speed, and maneuverability, with rapid easy repair and rugged structural design.

ACB vessels, with their unique welded chamber construction, extensively use extruded aluminum interior framing for its higher strength-to-weight ratio, exceptional dent resistance, and light weight—30 to 40 percent less than fiberglass and 45 to 55 percent less than steel vessels—translating to increased speed for equivalent horsepower, lower fuel burn, vastly reduced operating costs, and greater cargo capacity with reduced draft relative to payload.

ACB's Homeland Security fleet comprises the 23- to 29-foot Center Console vessel, the 23- to 29-foot Rescue Pro model, and the 23- to 29-foot DV-R model, which is used extensively by the U.S. Border Patrol and county law enforcement.

Aluminum Chambered Boats primarily use aluminum alloys 5086 and 5052, as well as 6061 and 6063 alloy extrusions. Marine-grade 5xxx-series aluminum alloys pass stringent industry manufacturing quality standards. They are completely rustproof, preventing corrosion in both salt and fresh water and performing consistently over decades of testing. These alloys don't require painting above the water line and form a hard aluminum-oxide coating that helps protect the aluminum. ACB's DV-R model for border patrols has a bright yellow painted top half with bold NASCAR-type decals.

Extruded aluminum interior framing gives ACB boats their framework for success. "Using extruded structural components gives us the assurance of quality tolerances, not only for dimensioning but to easily monitor alloy control through supplied certifications," said Rick Benson, ACB fabrication and design superintendent. "It's imperative that our boats are always built the same, ensuring the quality, safety, and dependability that ACB boats are known for."



*This brightly painted aluminum patrol boat will never rust, thanks to marine-grade aluminum alloys.*



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*This DV-R Navy Special Warfare model awaits painting.*

Aluminum Chambered Boats' chamber design uses three-sixteenths-inch-thick rolled aluminum alloy 5086 that is bent to form the chamber, then seam welded along its entire length using MIG (metal inert gas) welding on long continuous welds; TIG (tungsten inert gas) welding is used for the upper cabin assembly. Marine aluminum alloys weld easily, with hull plating accommodating pulse MIG welding using a computer to create controlled square wave pulses, forming high-strength hull integrity. Newer welding equipment uses less heat, minimizing distortion during joining, resulting in faster more controlled precision welds with less labor.

Aluminum extrusions' unique characteristics enable tougher hull construction to withstand impacts, achieving nearly 30 percent greater dent resistance. Dents are easily repaired, and damaged areas are quickly rewelded in sections, whereas fiberglass or steel can rupture severely and may crack or fracture on impact. Repair cost effectiveness is a major factor in keeping ACB boats in service, with minimal downtime. Unlike flammable petroleum-based resins in fiberglass boats, aluminum boats do not burn. Aluminum boat chambers provide structural compartmentalized fire protection, without separate firefighting systems.



*An ACB police boat shows its toughness while on patrol.*

For more information on aluminum extruders, request your free copy of the AEC Buyers' Guide at [mail@aec.org](mailto:mail@aec.org).



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## UNMANNED SURFACE VESSEL OFFERS REMOTE-CONTROL TECHNOLOGY



*The remote control Unmanned Surface Vessel (USV) docks on the Mississippi River while on its maiden U.S. tour.*

ACB has partnered with International Submarine Engineering (ISE) of Port Coquitlam, British Columbia, Canada, to create the Unmanned Surface Vessel (USV), the new high-tech security vessel designed for a wide range of missions performed in harbors, rivers, near shore, and deep ocean environments. The USV uses ACB's design and ISE's proven control system, which may be manufactured by ACB into a variety of mission-capable unmanned surface vessels.

"The Unmanned Surface Vessel combines leading edge technology—ACB patented hull design with a tested and proven control system," said Vincent A. McLeod, ACB vice president for government sales. These two work to provide the capability of utilizing an unmanned boat in venues such as port security, mine warfare, or force protection, allowing the agency to achieve improved monitoring and increased performance capability through technology versus manpower."

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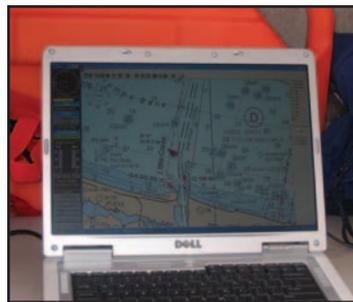
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*Swiftness and maneuverability are hallmarks of ACB's patrol vessels.*

The test bed USV is a 26-foot center console model, featuring air-filled sponsons, multiple gun mounts and weapons capabilities, and multiple passenger/boarding team seating. The highly maneuverable USV is an unmanned or manually operated 55 mile-per-hour-plus pursuit craft, powered by twin 200-horsepowered V-6 outboard engines with a convertible canopy and transportable by C-130/Airlift. The USV has toured U.S. shores, demonstrating its prowess along the eastern seaboard, the Texas gulf coast, San Diego Bay, and along the west coast back to its home in Washington State.



*Left to right: This high-tech security control terminal aboard the USV can be operated manually, or via remote control for many different types of missions. • A laptop computer is a key part of the USV terminal station. • An omnidirectional antenna and video cameras are perched atop the USV. • This Global Positioning System (GPS) antenna and receiver relay are key elements of the USV's control system.*

The USV's Tactical Command Kit adds capabilities via UHF, VHF, and satellite communications (SATCOM) through all the boat's performance/speed ranges, including manual or remote control, with on-the-fly shift at the controller's discretion; mission-specific sensor package includes radar, forward looking infra-red (FLIR), infra-red display system (IRDS), cameras, low light TV, sensor detects biological and chemical agents (called SNIFFER), radiation detection, and biologic detection. Towed or fixed sonar may also be used. Clear, detailed data is facilitated with a gyro-stabilized system.

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*The U.S. Marine Corps and many government agencies rely on ACB watercraft for safety and performance at high speeds and under mission-critical conditions.*



*Aluminum chambered boats, with their extruded aluminum framework, are declared by the U.S. Coast Guard to be "virtually unsinkable."*



*Vigilance is the watchword for U.S. Border Patrol crews engaged in preventing drug and arms smuggling, illegal entry across U.S. borders, and on the lookout for terrorist activities.*

## Aluminum Extrusion and Aluminum Chambered Design Combine for Unbeatable Performance and Reliability

ACB's patented aluminum chambered design is rendered in boat configurations from 23 to 30 feet long for government, commercial, and recreational markets. ACB also supplies complex, multi-purpose workboats to the U.S. Marines Bridge Erection fleet. In rugged seas testing, aluminum chambered boats consistently demonstrate significant fuel savings, reduced maintenance, safe performance, and high-speed response in demanding situations. Remarkably, aluminum extruded ACB boats exhibit life cycles three to four times longer than conventional fiberglass boats.

Design modifications to extruded aluminum boats make it easy to relocate bulkheads, customize cabins, and adapt equipment mountings by cutting, welding, drilling and bolting. CAD software allows hull design to be implemented at competitive cost, even with short production runs.

"ACB boats are, and will continue to be, an integral part of homeland security forces throughout the U.S. Our boats, with their virtually unsinkable factor, smooth ride, low maintenance, and fast response, provide a perfect candidate to supply the nation's border patrol forces, county police departments, and port security agencies with the most workable platform available," said Timothy A. Kolb, ACB government/commercial sales manager.

As the Department of Homeland Security continues to expand and implement new technologies and greater manpower to protect U.S. shores. ACB's boats, with their strong and vital extruded aluminum framing, will continue to provide a vigilant watch from coast-to-coast, helping those who serve and protect the freedom and safety of our citizens.

For more information on aluminum extruders, request your free copy of the AEC Buyers' Guide at [mail@aec.org](mailto:mail@aec.org).

Watch for more extruded aluminum application stories in future issues! Contact [mail@aec.org](mailto:mail@aec.org) to share an application story, provide feedback, or request a free subscription to this bimonthly Showcase. We encourage you to share this Showcase with anyone you feel will be interested.



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