Team Silver A: Water Rescue

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2.009: Sketch Model Review
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Idea 1: GUARD
Tele-operated drowning victim retrieval vehicle

Latch to hold unconscious victims

“Catamaran”

“Alien”

Handles for conscious victims to hold
Customers and Needs

Lifeguards
• retrieve swimmers too far from shore

Boaters
• retrieve men overboard
• no need for training personnel
• 6.4 million recreational boats in the US

Cruise Ships
• rapid rescue of vacationers overboard
Drivable water devices

Customer Needs

<table>
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<tr>
<th>Effective locating/retrieval of victim</th>
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Design Attributes

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<th>Lightweight tether cable provides electronic control</th>
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<th>Reach victim quickly</th>
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<th>Stream-lined shape with an even distribution of weight</th>
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None for rescue!
Testing

Drag of Different Shapes  Buoyancy  Victim Retrieval
Testing Results

- Drag through water to test power requirements

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<thead>
<tr>
<th>Conditions</th>
<th>Power to pull at 1 m/s</th>
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<tbody>
<tr>
<td>“Catamaran” alone</td>
<td>~10 W</td>
</tr>
<tr>
<td>“Catamaran” with 80kg person</td>
<td>~75 W</td>
</tr>
<tr>
<td>“Alien” with 80 kg person</td>
<td>~ 60 W</td>
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- People naturally float low in the water
- Orientation of buoyancy is key
  - victim’s face can be submerged
- Little buoyant force required (~30 lbs.)
Takeaways

- Need a lower platform to grab victim
- Must position victim correctly during retrieval
- Needs to work for any body type and size
- Power requirements suggest that this product is highly feasible
- Andy the Z-Center lifeguard: “I’d totally buy it if it could successfully wrap around and retrieve victim”