Fresh Water Response with Airboats

Purpose

Provide attendees with a basic overview of the advantages and challenges of using airboats in an oil spill response application.

Airboat Applications

- Transporting equipment and people
- Towing, setting and adjusting boom
- Operating in shallow rivers and lakes
- Operating in overflow and broken ice conditions
- Safety Vessel


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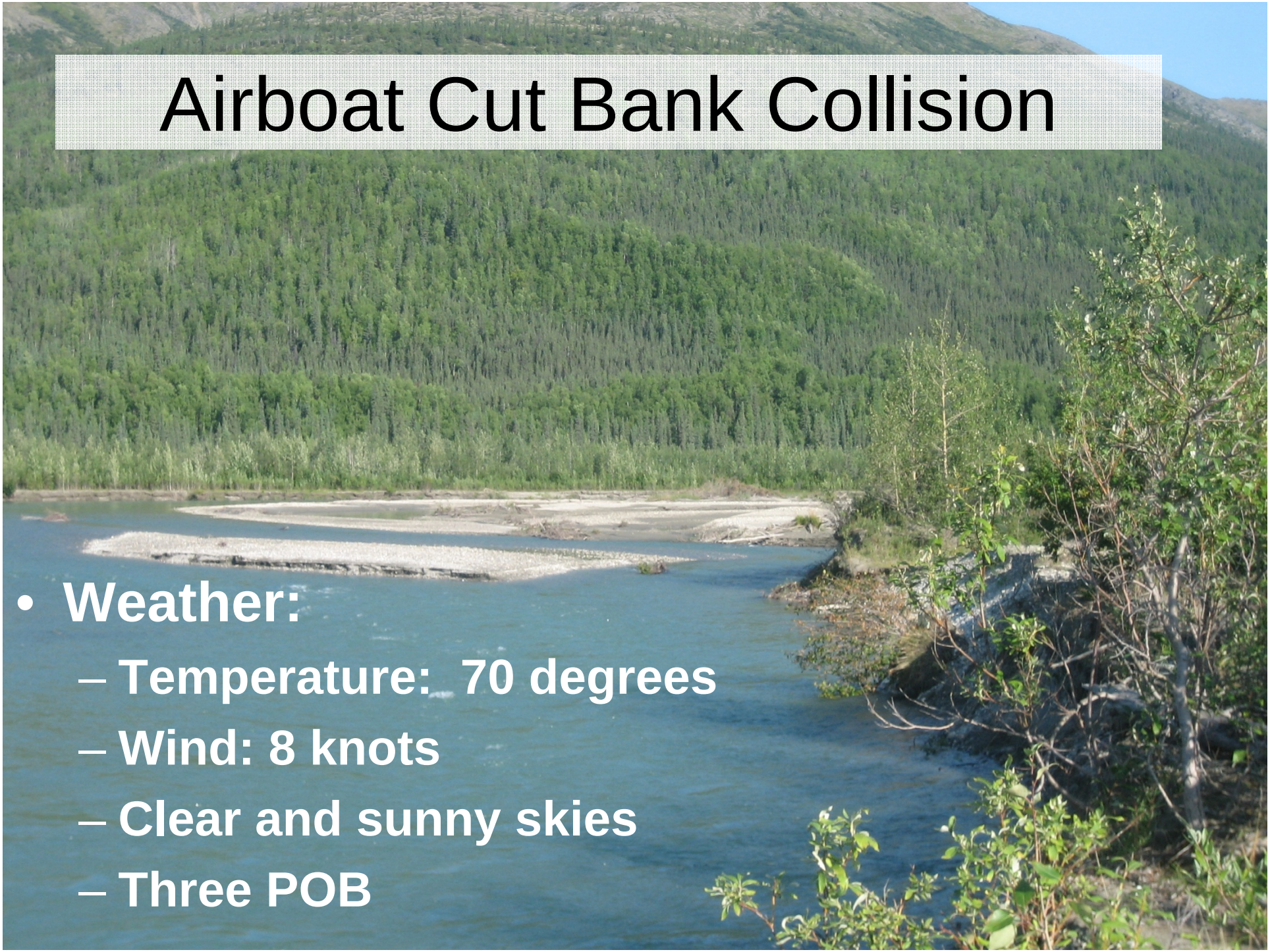
Response Challenges

- Identifying the correct equipment for the task
- Developing a detailed operating policy
- Implementing a comprehensive training program
- Ensuring that operators are qualified for the task

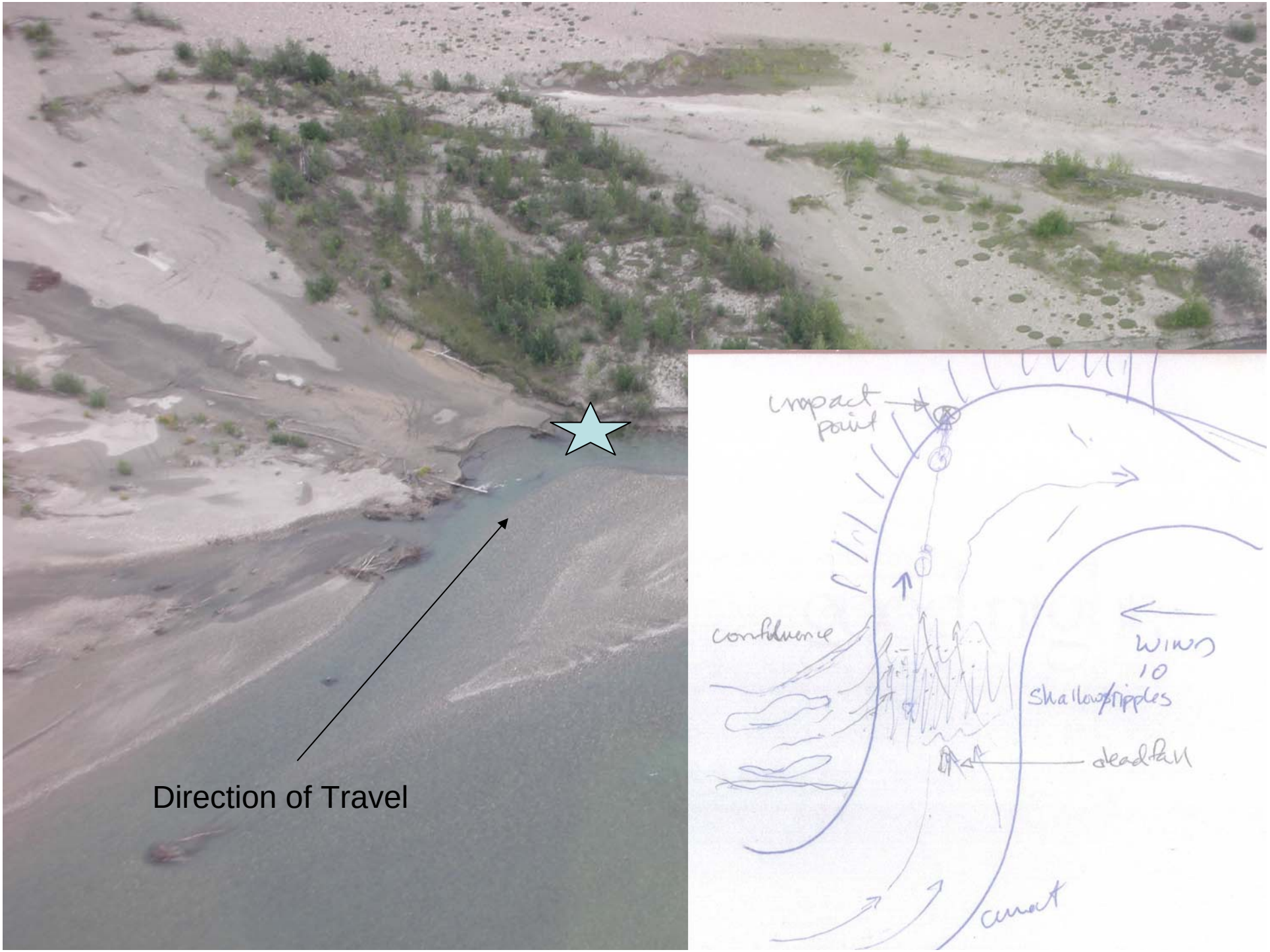
Case Studies

- Airboat Cut Bank Collision during Training
- Sag River Boat Flip

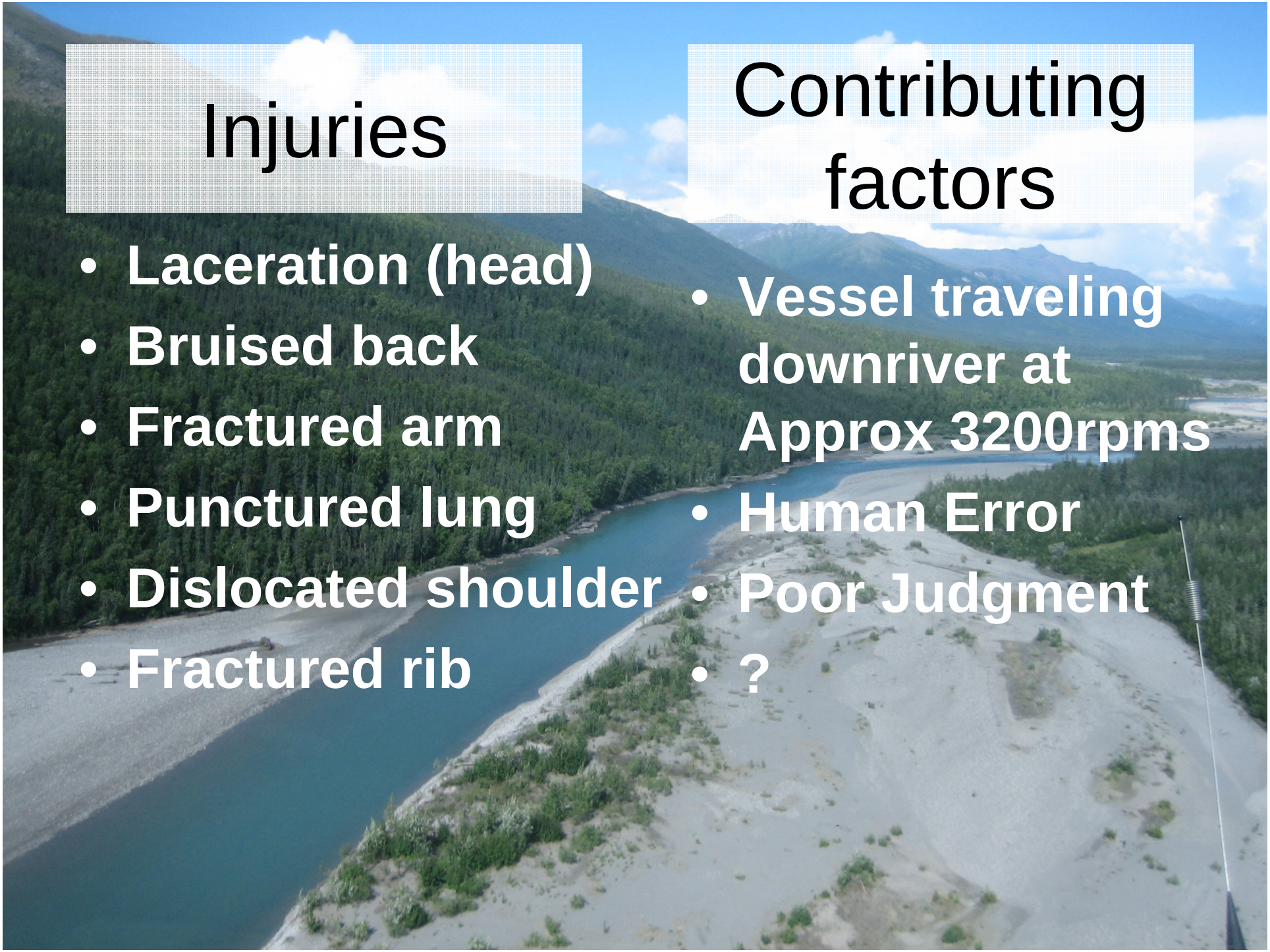
Airboat Cut Bank Collision



- **Weather:**
  - **Temperature: 70 degrees**
  - **Wind: 8 knots**
  - **Clear and sunny skies**
  - **Three POB**




20-06 PHANTOM



Injuries

- Laceration (head)
- Bruised back
- Fractured arm
- Punctured lung
- Dislocated shoulder
- Fractured rib

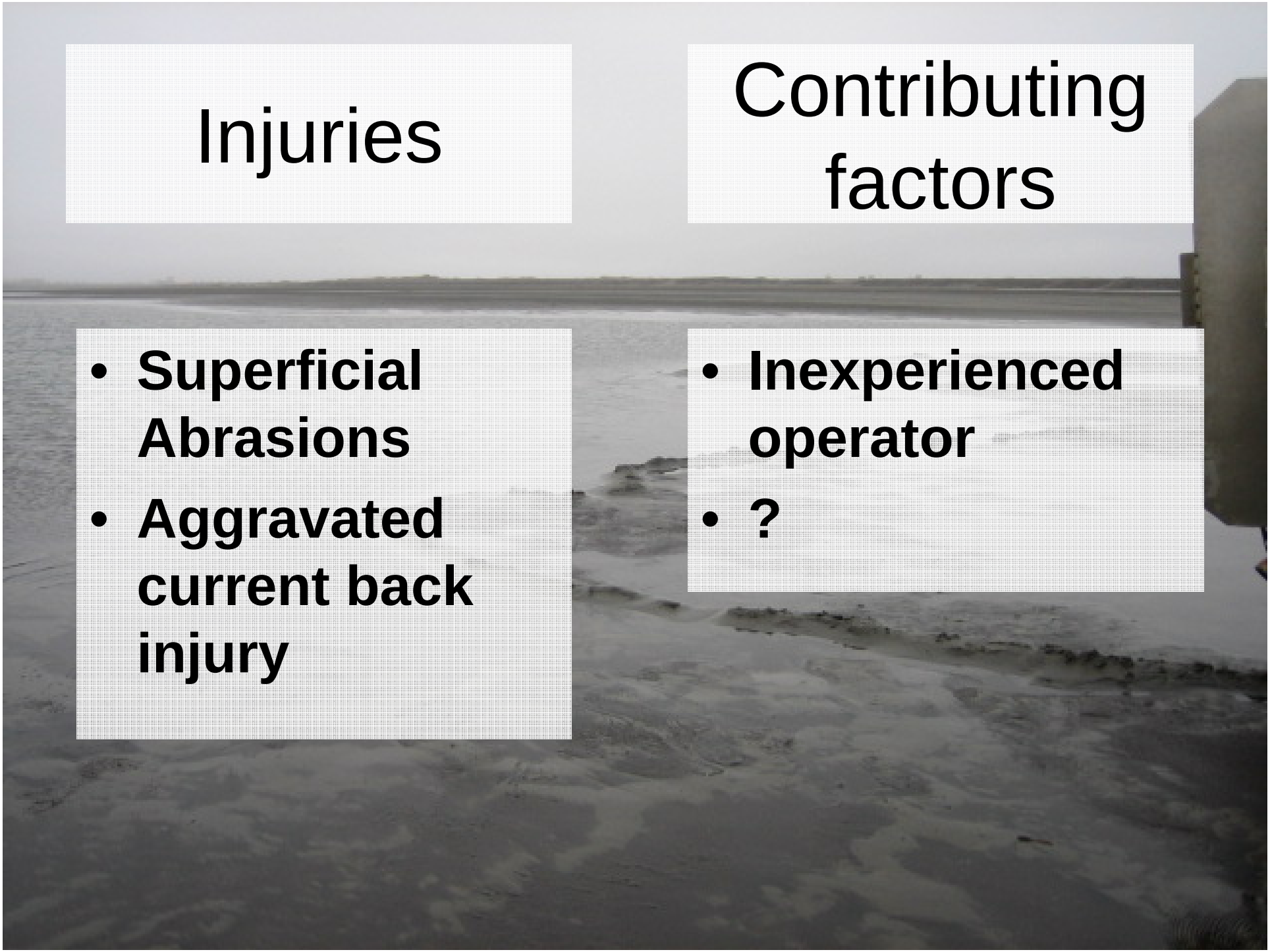
Contributing factors

- Vessel traveling downriver at Approx 3200rpms
- Human Error
- Poor Judgment
- ?

Sag River Boat Flip

- **Weather:**
  - **Wind: 10MPH**
  - **Visibility: Patchy fog**
  - **Five POB**

Vessel Impacted silt bank while attempting to make a turn



Injuries

- **Superficial Abrasions**
- **Aggravated current back injury**

Contributing factors

- **Inexperienced operator**
- **?**

How Can We Prevent this?

- Well defined operational guidelines
- Ensure operator competencies
- Operators understand theory of airboat operations
- Understanding of general airboat safety
- Conduct thorough vessel inspections
- File float plans and conduct passenger briefings
- Ability to take corrective actions in emergency situations

Airboat Operations

ACS Airboat Inventory

Single-Engine Airboat

- Operator seating elevated in the center at rear
- Elevated windshield and control panel
- Passenger seating front and below
- Seats can be removed for hauling cargo
- Maximum visibility
- Less weather protection
  unless outfitted with a house

Husky

- Forward control station with enclosed cabin
- Primarily designed as a rescue vessel for use in ice
- Engine mounted lower in hull than conventional airboat

Freighter

- Rear-drive
- Custom-built to carry 853H Bobcat
- 15 x 30 feet
- 7 foot ramp
- Carries up to 7,500 pounds
- Dual 454 cubic inch engines
- Raised seating for operator and 6 passengers

Airboat Safety Awareness

- Weather limitations
- Float plan
- PPE requirements
- Passenger brief
- Emergency procedures
- Load management
- Communications

Weather Limitations: Wind

- Level I Training limited to average wind speed <18MPH.
- Level II & III Training and oil spill response operations limited to average wind speeds <25MPH – If all attendees are comfortable with conditions
- Airboat response operations will be shutdown when average wind speed is >25MPH.

PPE Requirements

- Double hearing protection
- Safety glasses or goggles
- Hip boots or chest waders
- PFD
- Warm clothing and gloves

Crew & Passenger Safety Brief

- Boat operator's supervisory role
- Proper PPE for crew and passengers
- Crew responsibilities in case of emergencies
- Potential hazards of hypothermia and frostbite
- Proper PFD for crew and passengers
- Double hearing protection
- Hazards of vicinity of the engine cage
- Keep boat free of gravel
- Boarding procedures
- Review safety gear aboard and how to use it
- Staying seated while boat is in motion
- Review task to be completed and procedures involved

Float Plan

- File a Float Plan with Base Operations:
  - Name of the boat
  - Name of the boat operator
  - Number of passengers
  - Destination
  - Estimated time of return
  - Designated radio channel
  - If plan changes – notify ACS Base about changes
  - Close float plan when operations/travel complete

Airboat Inspection Checklist

Outside the Boat

Start at the bow and work toward the stern moving down one side of the boat and up the other side. Check to be sure that:

- The trailer hitch and safety chain are secured.
- The trailer tires are properly inflated.
- There is hydraulic fluid in the inertia-brake reservoir. Fill if low.
- The lugs on the trailer tires are tightened.
- The windshield is securely fasted to the boat.
- There are no fuel, oil or glycol leaks.
- The boat is free of debris and loose gravel.
- The bottom of the boat is free of dents, cracks, thin spots and damaged sheeting.
- The drain plugs are locked in place.

Boat Accessories and Safety Equipment

Climb into the boat and check to be sure the required boat accessories and safety equipment are on board including:

- Operator headset and helmet, if equipped,
- Crew headsets, if equipped,
- Fully charged USCG approved fire extinguisher,
- Fully stocked First Aid Kit,
- 36'' flotation ring with 90 foot line and throw bag with line
- Stainless steel, serrated knife for cutting rope,
- Anchor secured to its chain and line,
- Anchor line secured to the boat,
- Spare Line, (2) 25 ft.,(1) 50 ft, (1) 100 ft. sections
- Marine signaling kit with current expiration dates,
- Ear protection including earmuffs and plugs,
- Spill kit – Water/glycol sorbents and Oily waste bags,
- Basic tool set w/screw drivers, pliers, adjustable wrenches, duct tape
- Boat hook or push pole,
- 2 paddles,
- Extra hand-held radio and spare battery in sealed plastic bag,
- Every crew member has adequate PPE including goggles, gloves, clothing and PFD's suitable for the conditions

Engine and Cage

Before you inspect the engine and cage, you must perform these safety precautions:

- Shut off the ignition switch, remove the key and put it in your pocket.
- Turn off the battery isolation/master switch and disconnect the battery cables and all other sources of power. You will have to **reach into the cage** to check connections and inspect the props.

Check to be sure that:

- The battery straps are secured.
- The steering linkage is properly attached and all connections are good.
- There are no cracked welds on the cage and/or brackets.
- There are no breaks in the wire screen on the cage.
- The propellers are not cracked and the leading edges are free of chips.
- The bilge pump is free of debris and operational.
- There are no loose nuts or bolts on the engine or props.
- There are no loose wires on the engine.
- Exhaust system clamps are tight.
- No tools or other items have been left in the cage.
- All belts are tight.
- The fuel, engine lubrication oil and coolant levels are up to the full line. Fill them if necessary.

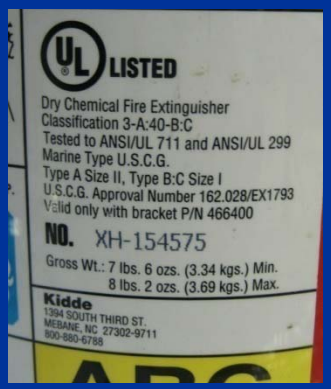
Mechanical and Electrical Systems

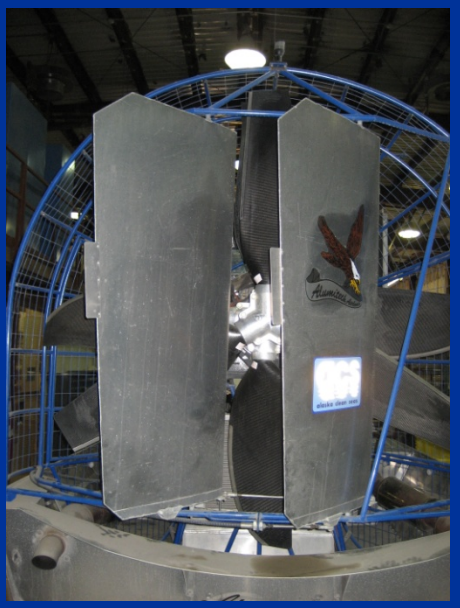
- Turn on the battery isolation/master switch.
- Make radio contact with base operations.
- Turn the lights on and off.
- Move the stick to be sure the rudder control cables are working properly.
- Before starting the engine, attach the kill switch lanyard.
- Then yell "Clear", look behind the boat and to the sides, and wait a minimum of 4-5 seconds.
- Start the engine and check the gauges on the control panel for fuel levels, oil pressure and electrical charge.
- Turn off the engine and the battery isolation/master switch and leave the key in the ignition.

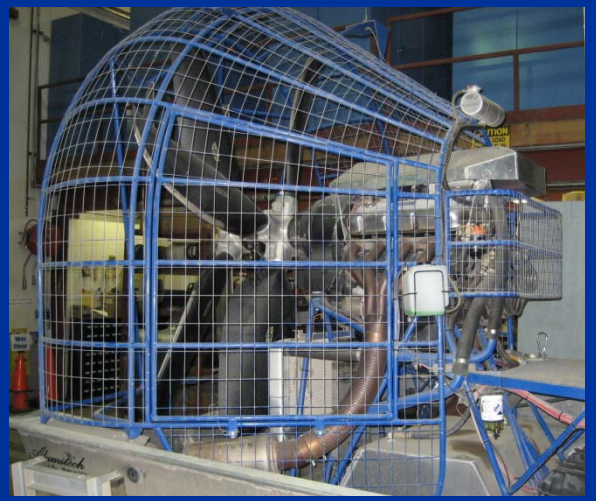
Pre-Launch Inspection

A pre-launch vessel inspection must be completed prior to launching or in the case of extended operations; the on-coming operator should get a briefing from the previous operator and then conduct a thorough inspection prior to departure.

Vessel Inspection







Vessel Inspection

Vessel Inspection

Loading Passengers and Cargo

- Consider the weight of all passengers and gear.
- A 20 foot boat can carry approximately 1200 pounds.
- Keep the weight toward the center of the boat and not too far forward.
- Check the amount of freeboard before leaving shore
- Designed for Inland waters and near shore use in waters less than 6 ft.

Starting

- Attach the kill switch lanyard
- Yell, “Clear”
- Look behind the boat and to the sides and wait 4-5 seconds
- Start engine and let it warm up. Oil pressure should read 25-45psi. Temperature gauge should range between 170-180 degrees.
- Check the rudder control, right and left
- Remember prop wash blast
- Leave the shore at idle speed
- Cruise at minimum speed to stay on step
- Never cruise at full power

Underway Considerations

- Keep deck clear of debris and loose items
- All crew & passengers to stay seated
- Maintain radio contact with other vessels
- Check in with ACS Base on agreed upon time interval

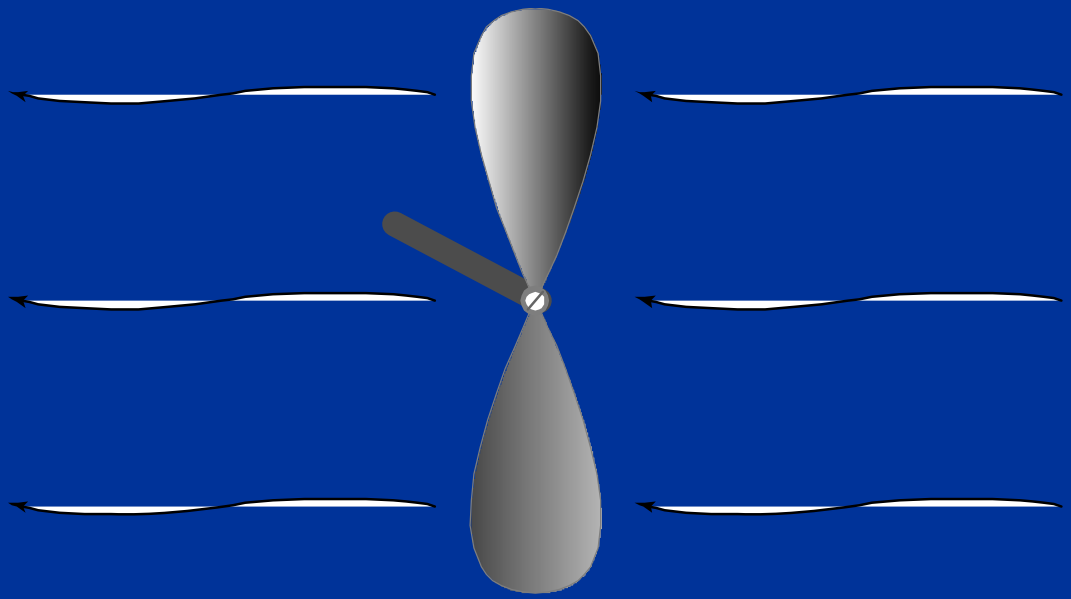
Airboat Handling Characteristics

Airboat Physics

- Airboats at rest want to stay at rest
- Airboats in motion want to stay in motion
- All airboats going in X direction stay in X direction unless course is corrected using rudders and power
- All airboats will bite you if you are not in 100% control 100% of the time

Airboat Aerodynamics-Power

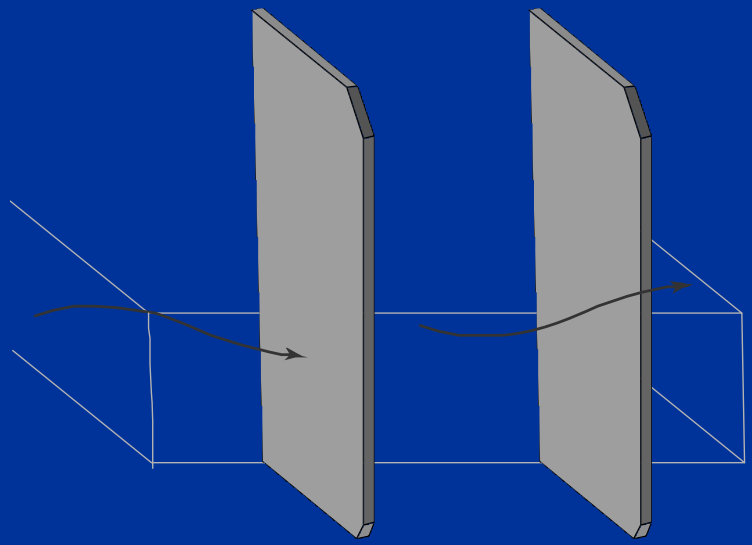
Air flowing across the propeller produces forward thrust.



The operator controls the speed of forward thrust with the accelerator pedal.

Steering

Direction is controlled by movement of air across the rudders.



The operator steers the boat with the rudder control stick.

Steering

- **The Airboat will not turn without applied power**
- Never cruise at full throttle; if you need to turn you will need more power
- Never do “donuts”; the wake can wash over the gunnels and possibly swamp the boat
- Vessel can “spin out” on ice, snow, mud or shallow water 6” or less

Steering

- Most airboats have no keel; the only directional control is with the rudders and power
- Turns in deep water are aided by the chines that act as a keel allowing the hull to carve through turns
- Handling can be adversly affected by personnel placement or movement

Personnel movement can “create” a keel and result in an unexpected turn

Starting

- NEVER stomp on the throttle
- Gently roll into the throttle
- Use only as much throttle as needed to get the boat on step then back off so you have just enough speed to stay on step
- When starting from a stuck position be ready to adjust throttle as soon as you are free and underway

Stopping

- Your airboat does not have brakes; you must always be driving at least 10-20 seconds ahead of your present position and situation
- When stopping be aware of your stern wake, it can swamp you or cause damage to your prop and radiator if you do not throttle away from the wake as it approaches your transom

Stopping

- Option for Bleeding off (reducing) speed
  - Avoid the need by anticipating and driving ahead
  - Use shallow sloping banks
  - As a last resort, shut off ignition – attempt to approach bank as straight as possible

Transition Zones

- When an airboat transitions from shallow water to deep water the operator must be alert to the change in vessel response
- Lift effect is created when transiting from deep water to shallow. You will experience increased speed and a reduced ability to turn without slipping or spinning out
- When traveling from shallow to deep water the stern will squat and can get you in trouble if you are making a turn at the same time

Operating in Windy Conditions

- Besides operator error wind is the greatest contributing factor to capsizing
- Most of these boats have no floatation so if they tip, roll or dive, they sink quickly, usually in 3-10 seconds
- If winds increase while you are underway, running directly into or with the wind causes the least change in control whereas winds perpendicular to the rudder cause the greatest impairment of control

Holding On Station

- Keep the bow into the wind – remember the house and cage is a large sail
- Keep the bow into the current
- If the vessel cannot hold station at idle or with slight power you will need to kill the engine and set an anchor and use a boat hook for retrieval work

Beaching the Boat

- Find a gravel or small cobble beach
- Nose it securely onto the shore at an angle so the bow points slightly upstream
- Set the anchor high on the beach with the line taut
- Avoid beaching the boat on silt, sand and mud because of the danger of getting stuck
- Apply power to get off the beach then reduce power when reentering the water

Operating Concerns

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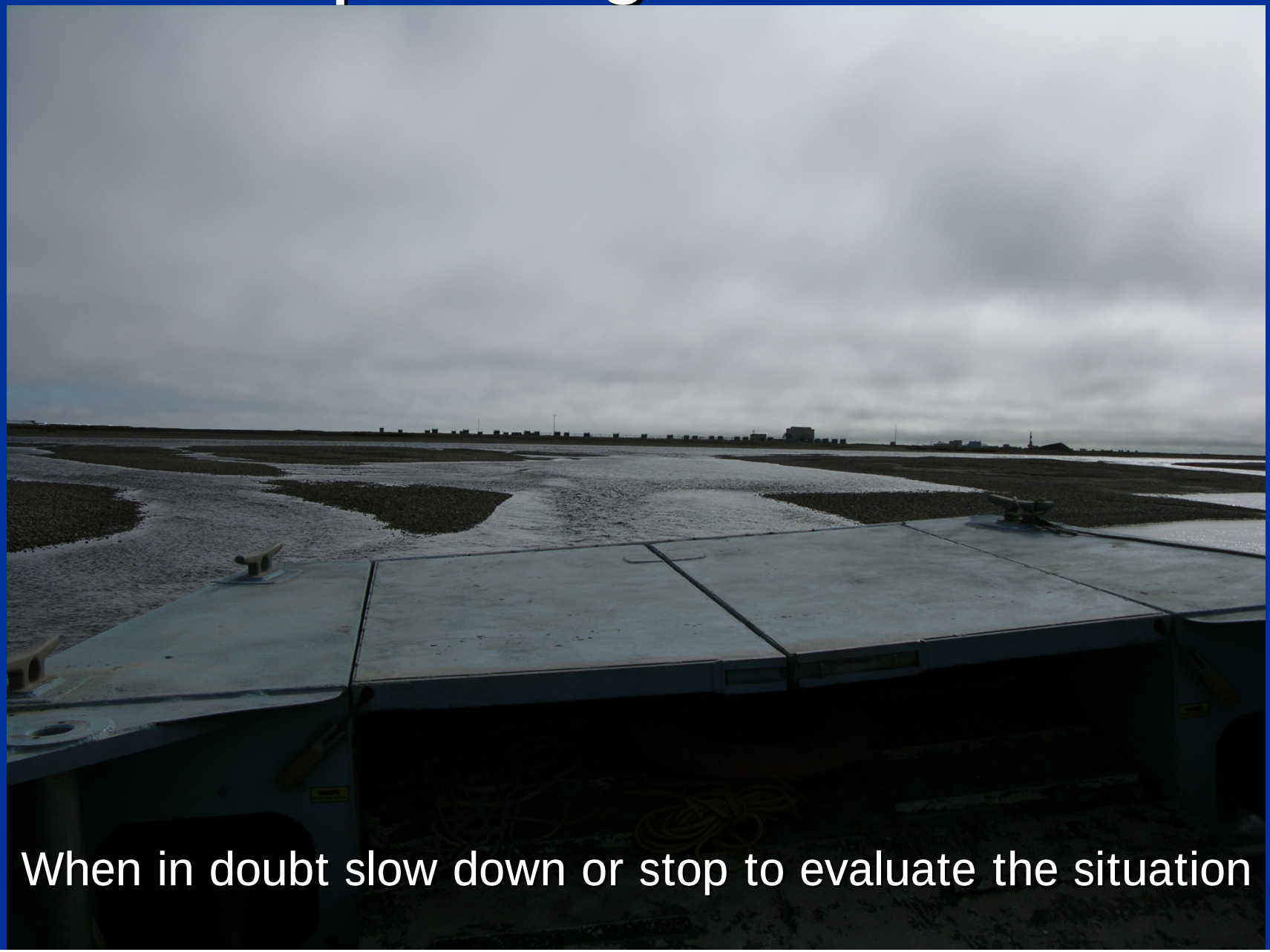
Keep Your Head In the Game

Accidents happen FAST

Operating Concerns



When in doubt slow down or stop to evaluate the situation

Environmental Considerations

- Airboat noise can cause a great deal of wildlife disturbance
- Minimize waterfowl harassment

Cleaning and housekeeping

- As with every boat be sure to leave it clean
- Vessel should be fueled and response ready
- Throw away trash
- Be sure to turn battery off
- Close doors
- Park in safe area out of the way
- Install windshield & seat covers

Emergency Procedures

- Man overboard
- Fire
- Taking on water
- Power failure
- Weather
- Grounding

Man Overboard

- Shout “man overboard, starboard” or “man overboard, port”
- Keep your eyes on the person and point in that direction
- Throw a floatation device to the person
- Reduce speed and turn back
- Approach the person slowly from down stream
- Reach a dead slow speed as you draw alongside and stop
- Assist or pull person into the boat
- Notify Base Operations
- Administer first aid

Fire

- If possible head to shore
- Use fire extinguisher to put out fire
- Gather emergency gear & handheld radio
- Abandon ship as last resort
- Notify ACS Base of situation
- Get away from burning vessel because of explosion hazard

Taking on water & swamping

- Turn on bilge pump and bail water
- Head to the nearest point of land
- Plug the hole
- Gather your emergency supplies & handheld radio
- If the vessel sinks stay together and work your way to shore

Power Failure

- Deploy anchor off bow cleat to keep your bow into the current. (Depends on conditions)
- Use your paddles and boat hook to work your way to shore if possible
- Radio for help

Grounding

- Remove as much weight as possible and never allow passengers to stand near the cage to push
- Create a wake with another vessel to put water under the hull while applying power and steerage to the stuck boat
- Clear a path in front of the boat by flattening vegetation, removing obstacles and wet the area with water
- Any available ice makes a very slick surface to travel over in an emergency
- Rig a tow and pull it off with another vessel
- Ropes with pulleys or a come along may be used to inch a stuck airboat forward
- PVC pipe under the hull will help boat to move

Any Questions ?