



National Transportation Safety Board

Sinking of Amphibious Passenger Vessel
Stretch Duck 7

Table Rock Lake, near Branson, Missouri
July 19, 2018

Managing Director's Introduction

- **Brian Young** — Investigator-in-Charge
- **Marcel Muise** — Operations and Response
- **Michael Karr** — Survival Factors
- **Michael Richards** — Meteorology
- **Nicole Ashby** — Writer / Editor

Managing Director's Introduction

- **Morgan Turrell** — Acting Director, Office of Marine Safety
- **Liam LaRue** — Chief of Investigations, Office of Marine Safety
- **Rob Jones** — Deputy Chief of Investigations, Office of Marine Safety
- **Eric Stolzenberg** — Chief of Product Development, Office of Marine Safety
- **Kathleen Silbaugh** — General Counsel
- **Kathryn Catania** — Deputy Director, Office of Safety Recommendations and Communications
- **Jim Ritter** — Director, Office of Research and Engineering
- **Sean Payne** — Recorder Specialist, Office of Research and Engineering
- **Jeff Marcus** — Chief, Safety Recommendations Division, Office of Safety Recommendations and Communications
- **Mary Pat McKay** — Chief Medical Officer, Office of Research and Engineering



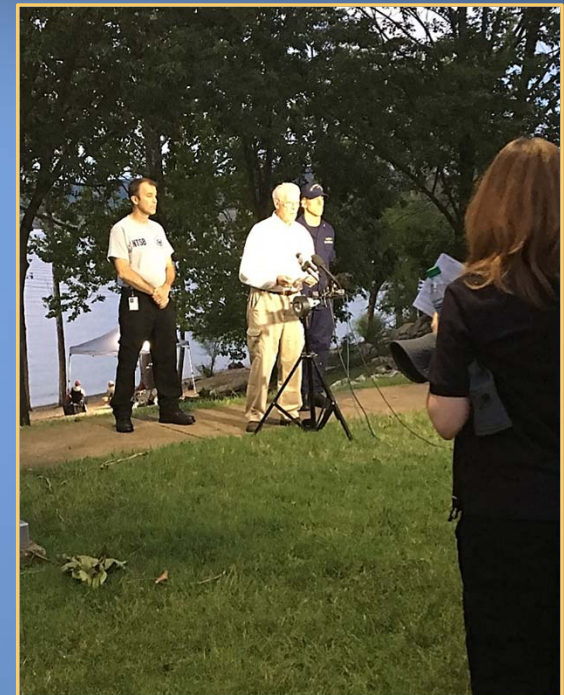
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Accident Overview

Brian Young, IIC

On-Scene Team

- Board Member Earl F. Weener
- Office of Marine Safety
- Office of Aviation Safety
- Office of General Counsel
- Office of Research and Engineering
- Office of Safety Recommendations and Communication



Investigation Team

- **Brian Young**, Investigator-in-Charge, MS-10
- **Marcel Muise**, Operations and Response, MS-10
- **Michael Karr**, Survival Factors, MS-10
- **Michael Richards**, Meteorology, AS-30
- **Dr. Mary Pat McKay**, Medical, RE-1
- **Nicole Ashby**, Report Writer / Editor, MS-20

Staff Who Supported Investigation Team

- **Candi Bing, MD-3**
- **Katrina Givens, CIO-40**
- **Dan Horak, RE-60**
- **Kristyn Jeschelnik, MS-20**
- **Jeff Marcus, SRC-50**
- **Sean Payne, RE-40**
- **Christy Spangler, SRC-60**
- **Shaun Williams, AS-CEN**

Staff Who Produced Virtual Board Meeting

- James Anderson, SRC-60
- Michael Anthony, CIO-1
- Deidra Esters, AD-10
- Keith Holloway, SRC-10
- Carl Perkins, AD-10
- Kelley Romeo, CIO-60
- Van Slovak, CIO-10
- Rahiq Syed, CIO-60
- John Whitener, CIO-10

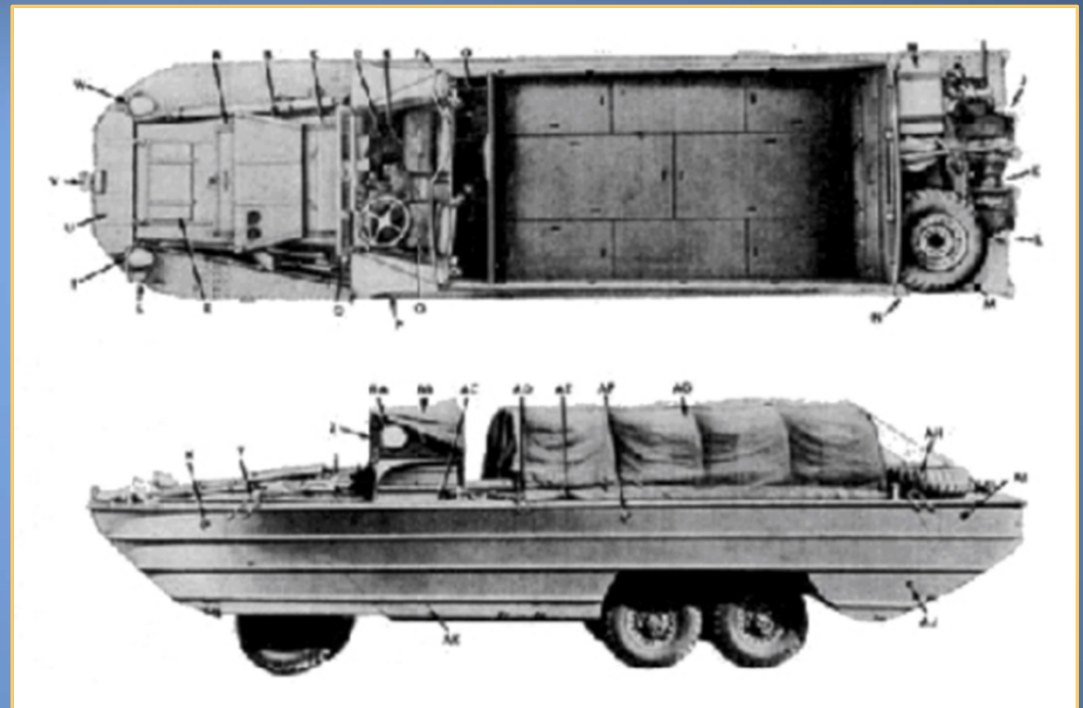
Parties to the Investigation

- US Coast Guard
- Ripley Entertainment Inc. dba Ride The Ducks
- Missouri State Highway Patrol
- National Weather Service
- Federal Aviation Administration

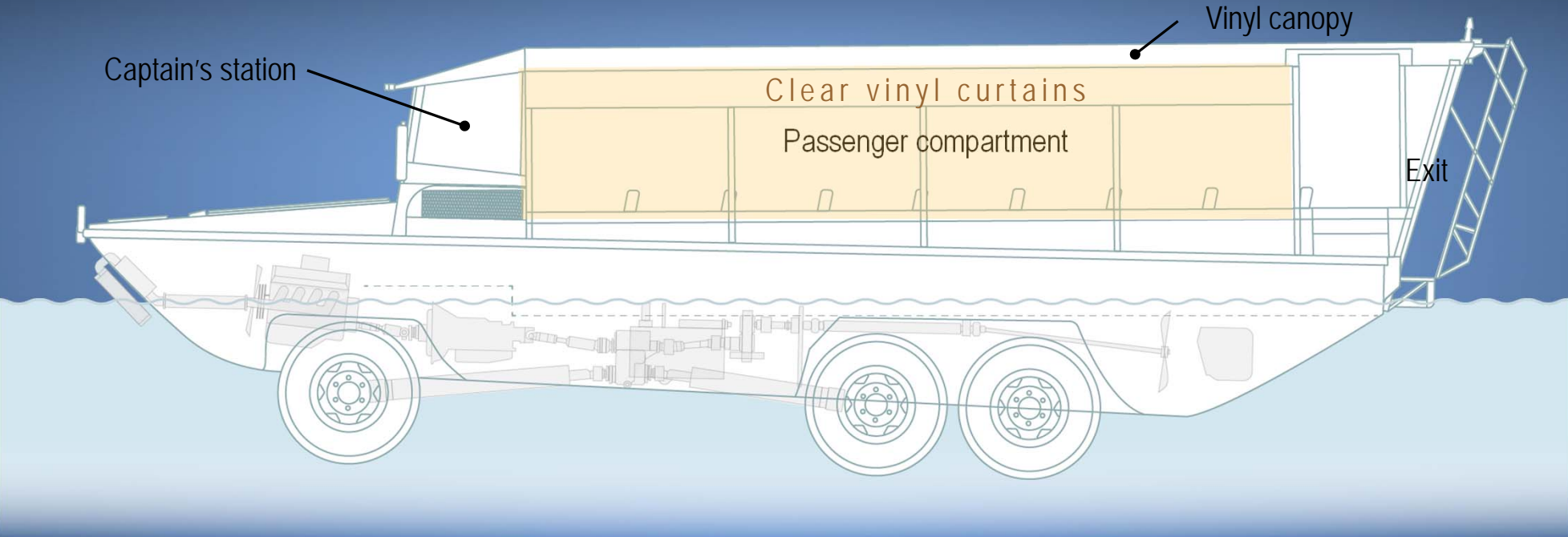
Stretch Duck 7



Stretch Duck 7



Stretch Duck 7



Ride The Ducks Branson



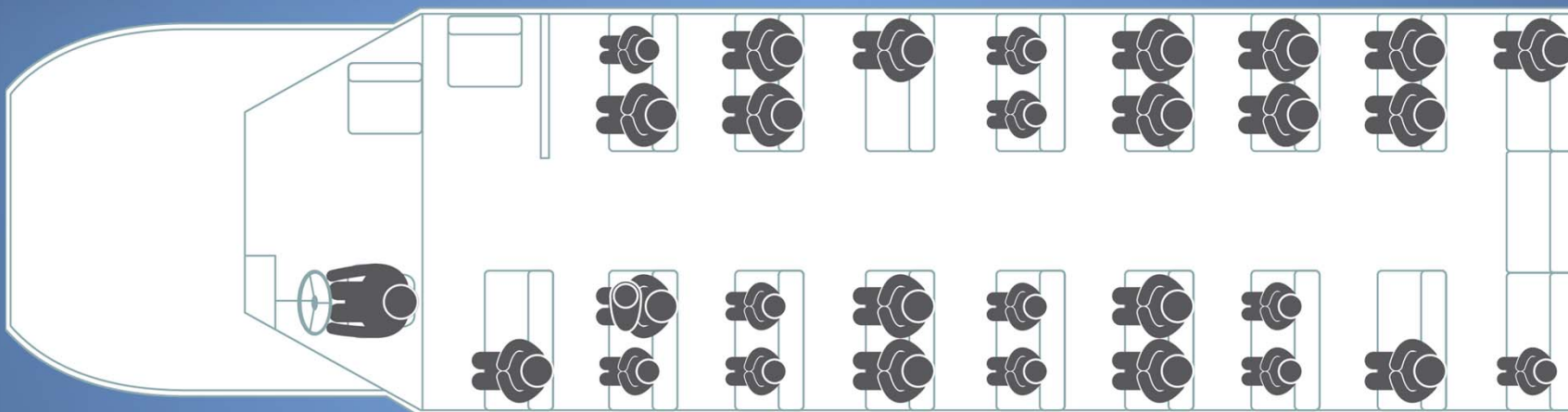
VrxuEh-#7 rrjdn#iduk



Accident Events

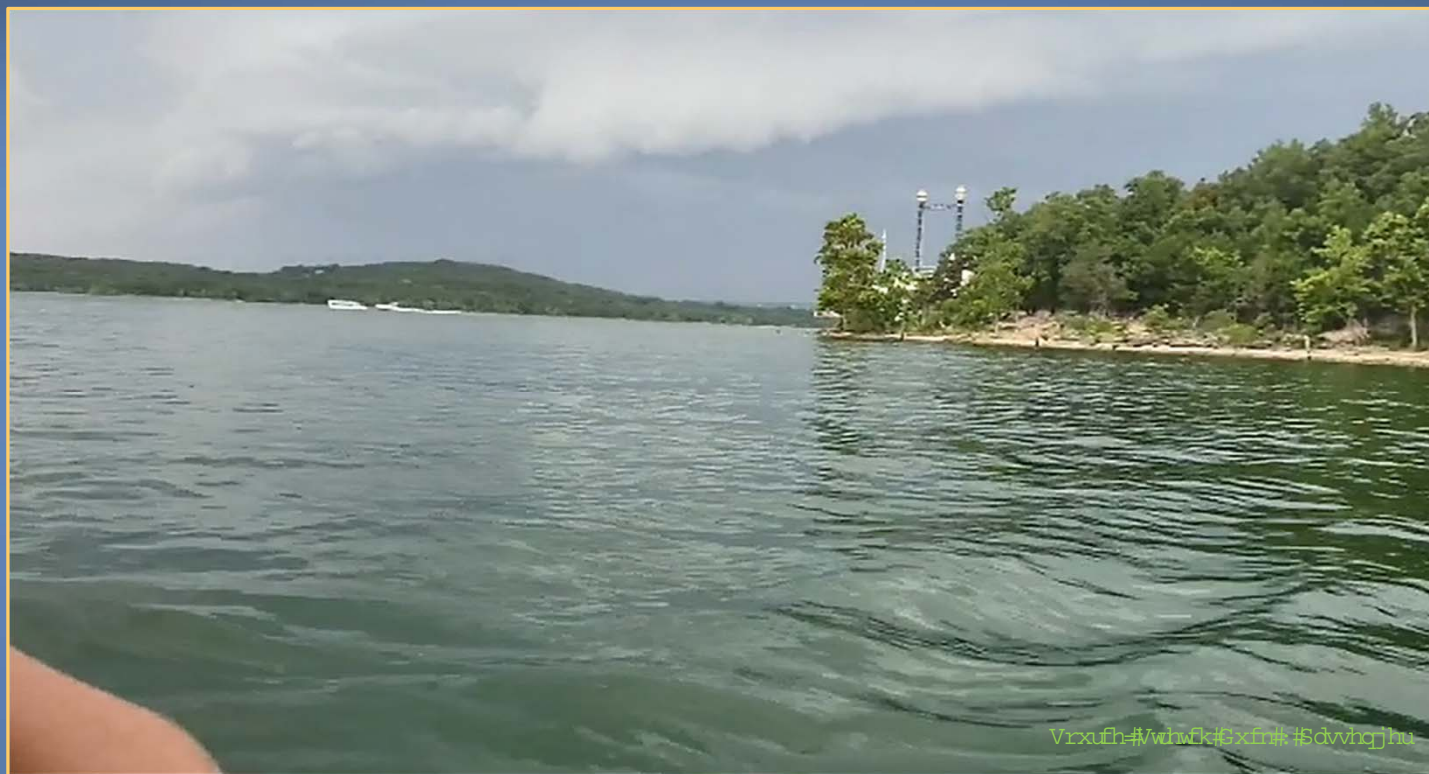
- **1120** — Severe thunderstorm watch issued
- **1828** — Passengers board duck dock
- **1830** — Manager-on-duty advises captain to go to water first
- **1832** — Severe thunderstorm warning issued
- **1833** — *Stretch Duck 7* departs duck dock

Departing Duck Dock



31 Persons on board —
1 Captain, 1 Driver, and 29 Passengers

Entering the Water



Touring the Lake



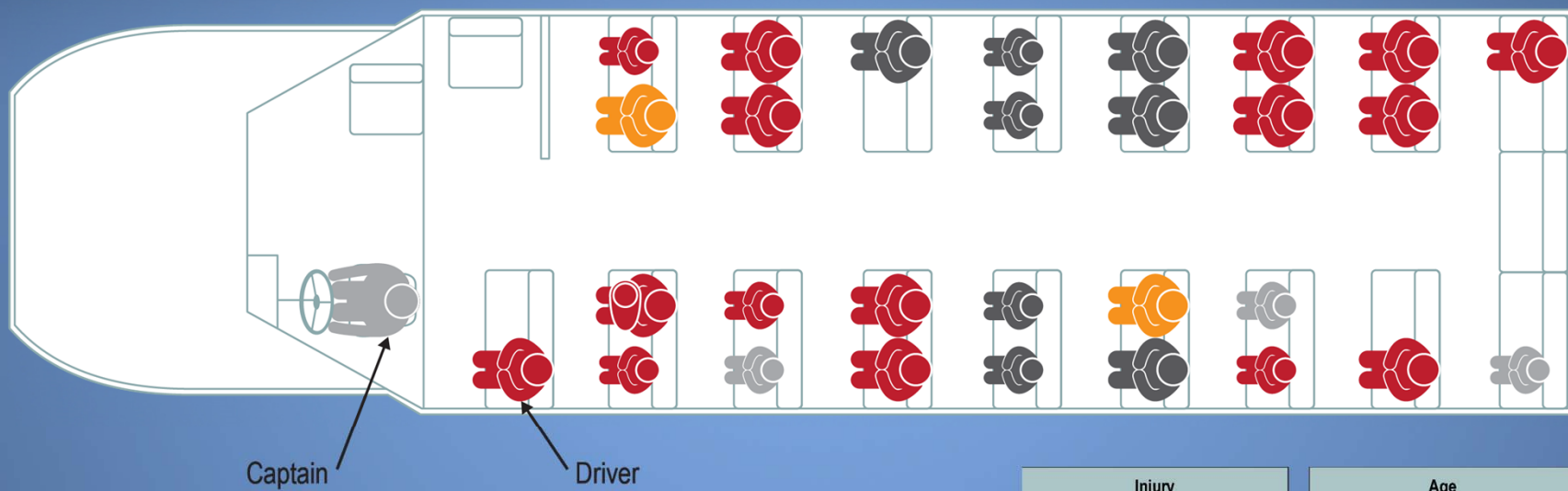
Encountering Severe Weather



Attempting to Exit the Lake



Sinking of *Stretch Duck 7*



Injury
■ F = Fatal
■ S = Serious
■ M = Minor
■ N = None

Age
Child (under 18 years old)
Adult

Salvage of *Stretch Duck 7*



Related Accident: *Miss Majestic*, 1999



Safety Issues

- Company oversight
- Engine compartment ventilation closures
- Reserve buoyancy
- Survivability
- Coast Guard oversight

Exclusions

- Propulsion
- Steering
- Bilge systems
- Alcohol
- Impairing drugs



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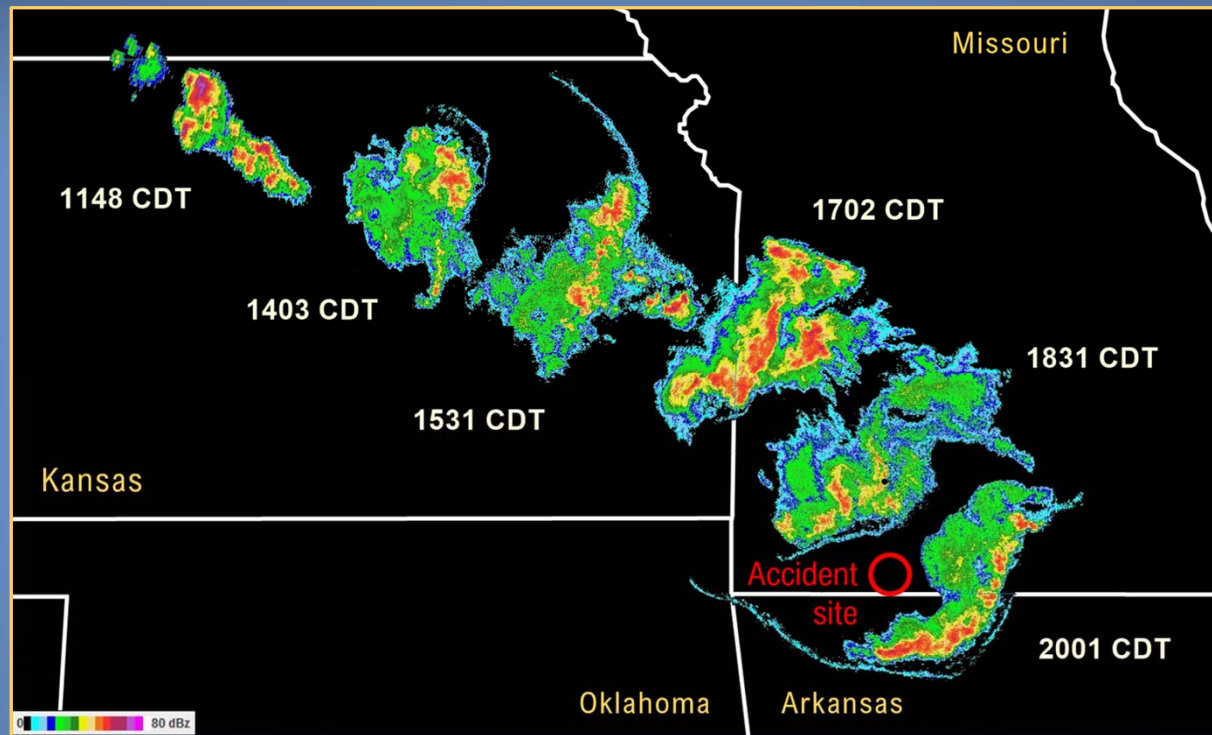


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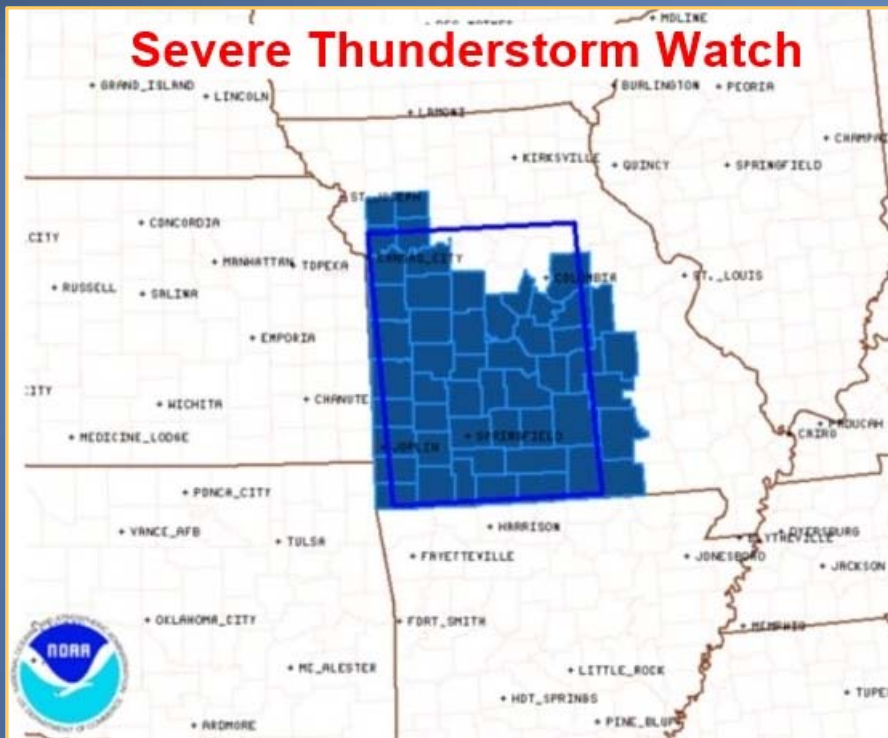
Meteorological Information

Michael Richards, Meteorology Group Chairman

Progression of Severe Thunderstorm



Accurate Forecasts / Timely Notifications



BULLETIN - IMMEDIATE BROADCAST REQUESTED
 Severe Thunderstorm Warning
 National Weather Service Springfield MO
 632 PM CDT THU JUL 19 2018

The National Weather Service in Springfield has issued a
 * Severe Thunderstorm Warning for...
 Taney County in southwestern Missouri...
 Stone County in southwestern Missouri...
 Barry County in southwestern Missouri...

* Until 730 PM CDT.

* At 631 PM CDT, severe thunderstorms were located along a line extending from near Sparta to near Wheaton, moving southeast at 50 mph.

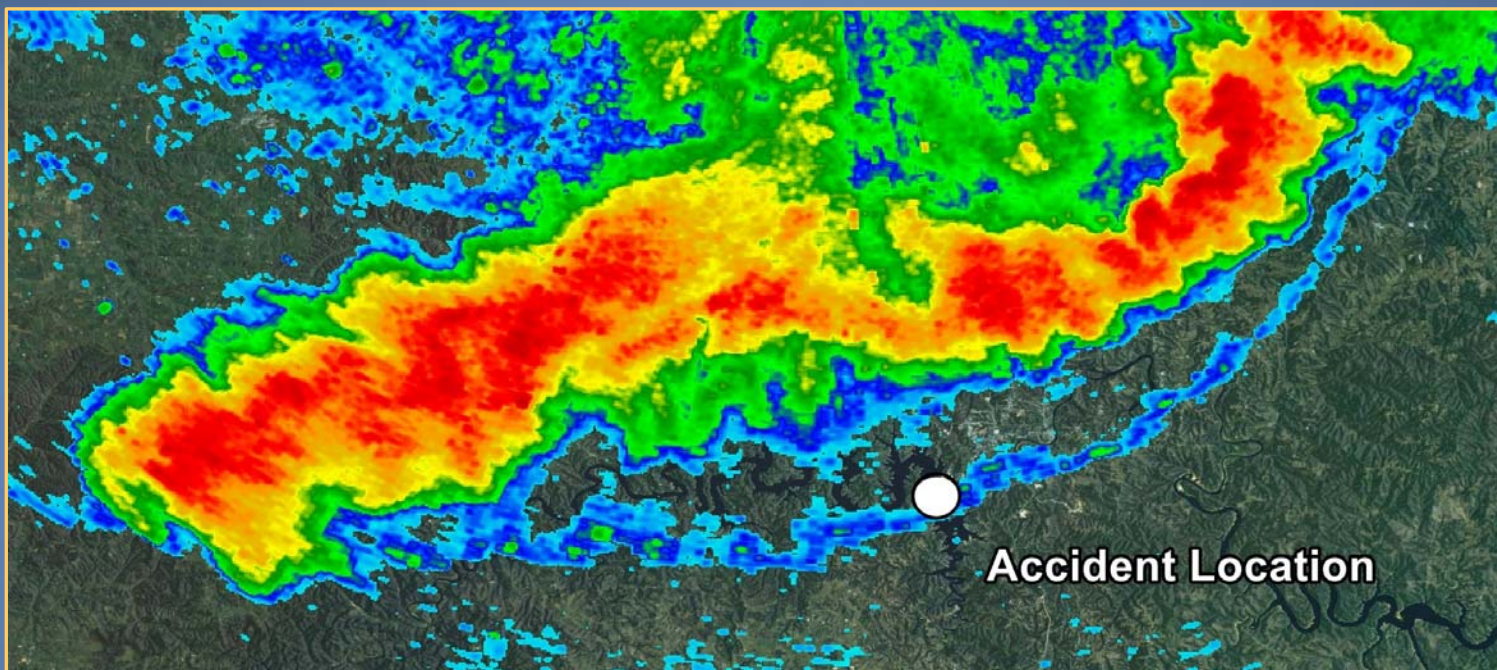
HAZARD...60 mph wind gusts.
 SOURCE...Radar indicated.
 IMPACT...Expect damage to roofs, siding, and trees.

* Locations impacted include...

- Branson...
- Table Rock Lake...
- Roaring River State Park...
- Lake Taneycomo...
- Bull Shoals Lake...
- Table Rock State Park...



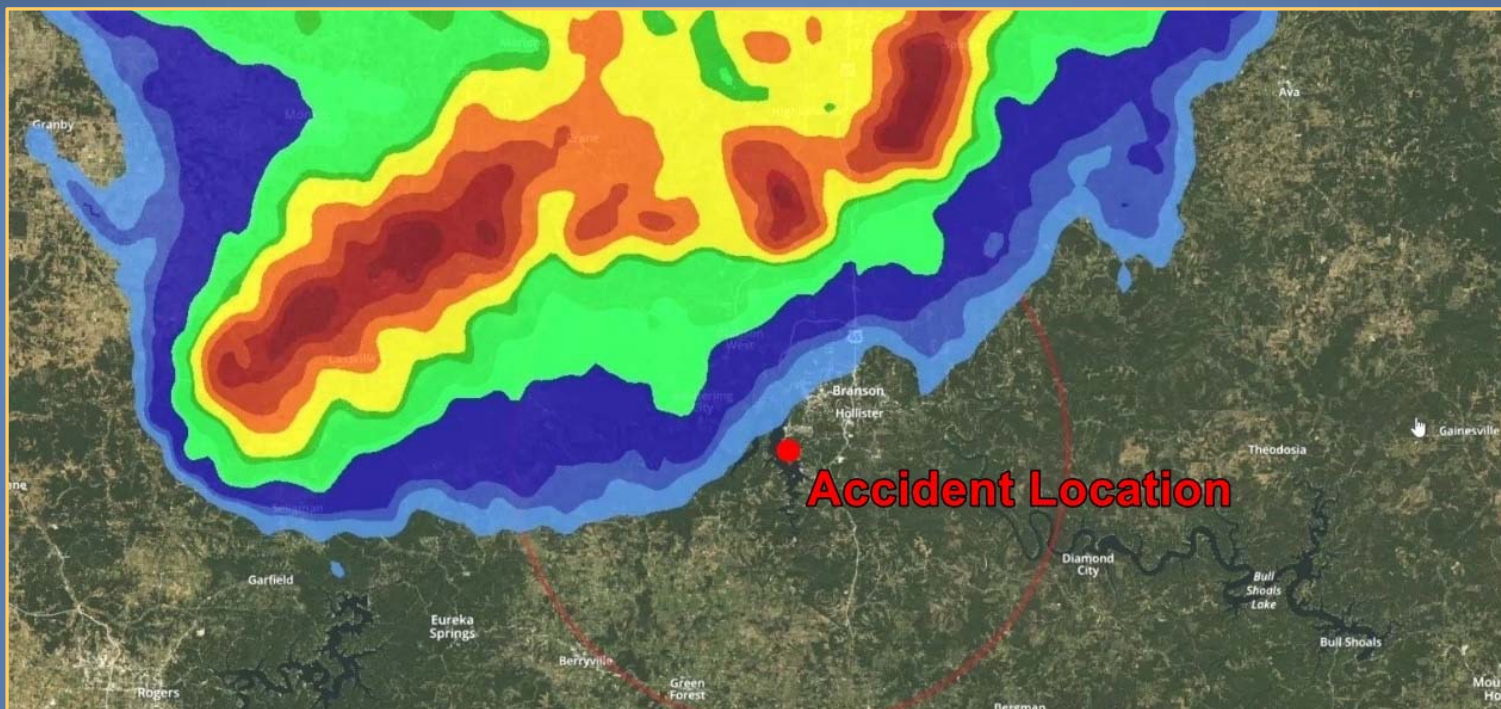
Leading Edge of Storm



Maximum Wind Gust



Ride The Ducks' Radar Image





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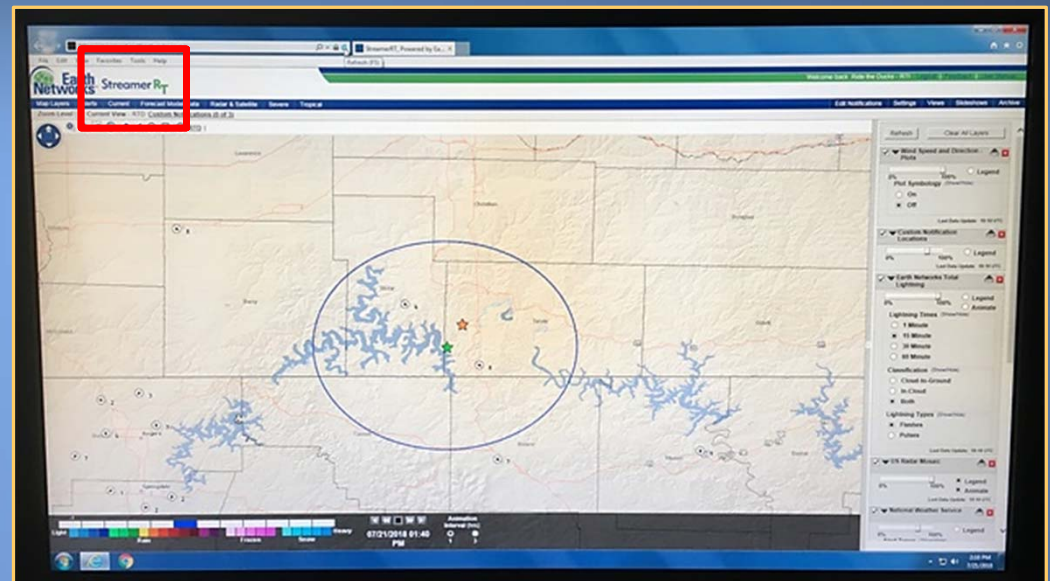
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Operations

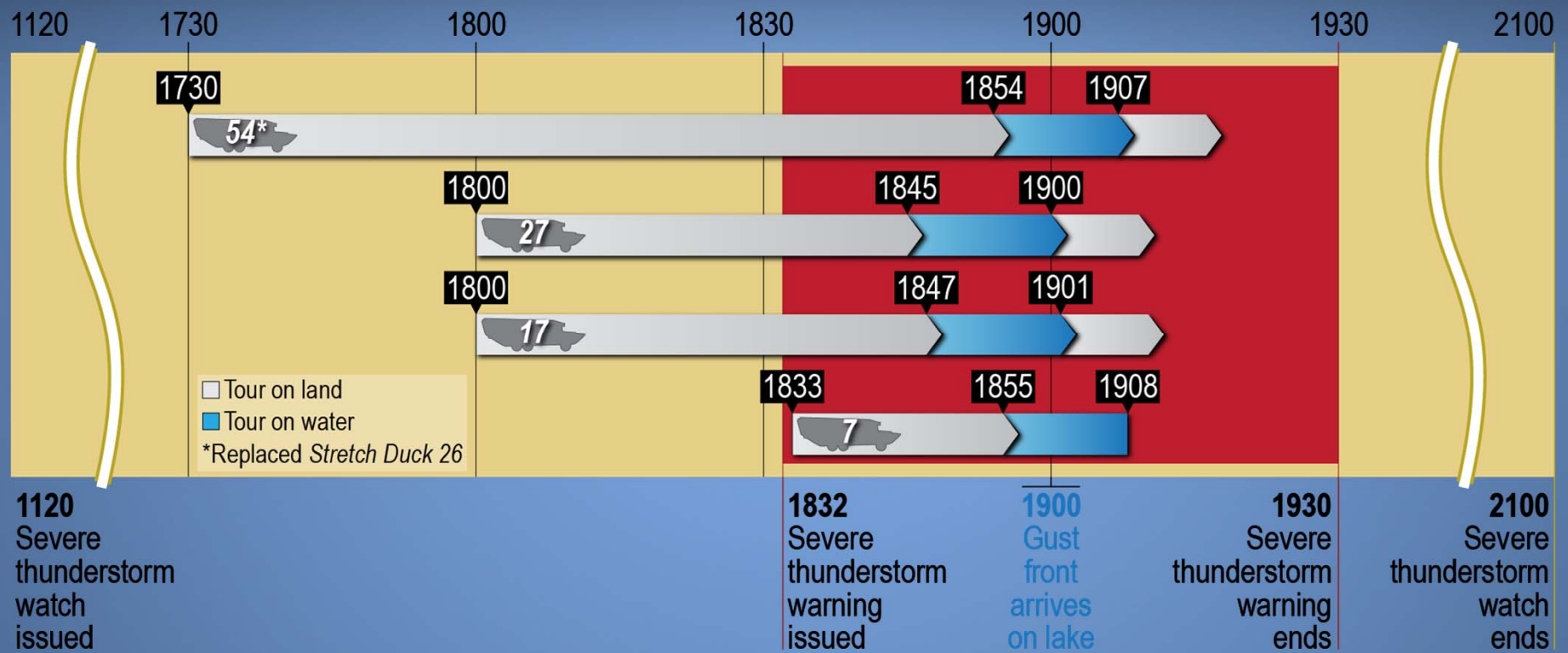
Marcel Muise, Operations Group Chairman

Company Weather Monitoring

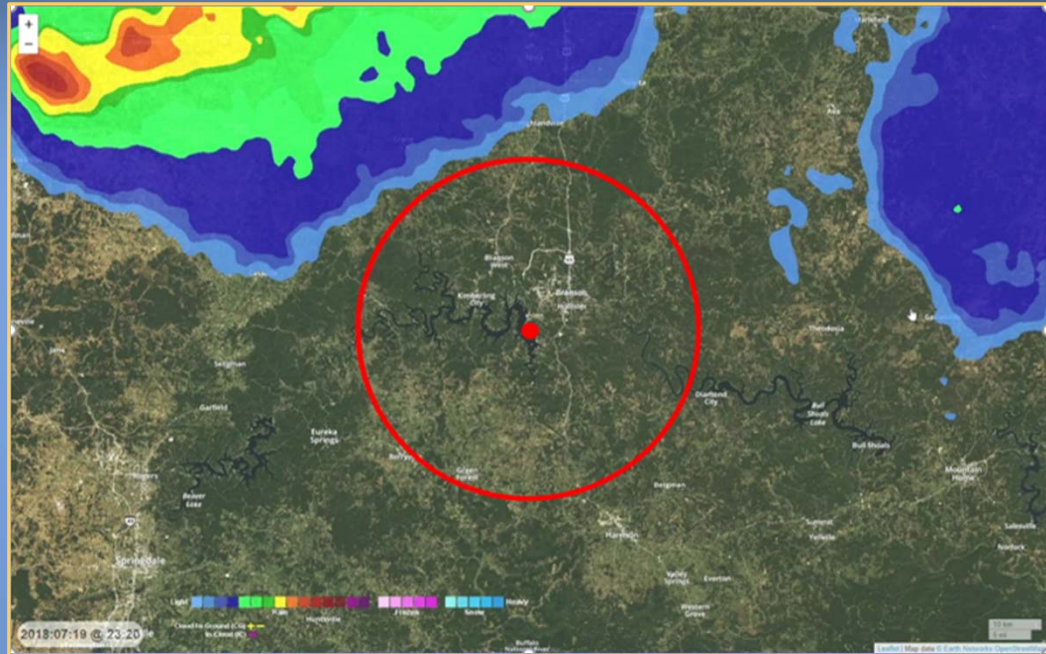
- StreamerRT
 - Radar display
 - Email alerts
 - Severe thunderstorm warning at 1832
 - Lightning observed within 20 miles at 1849



Company Weather Monitoring

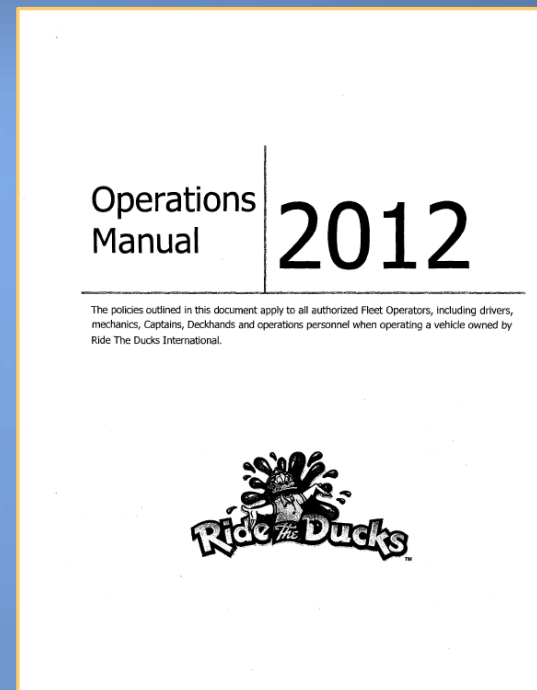


Water-Entry Restrictions



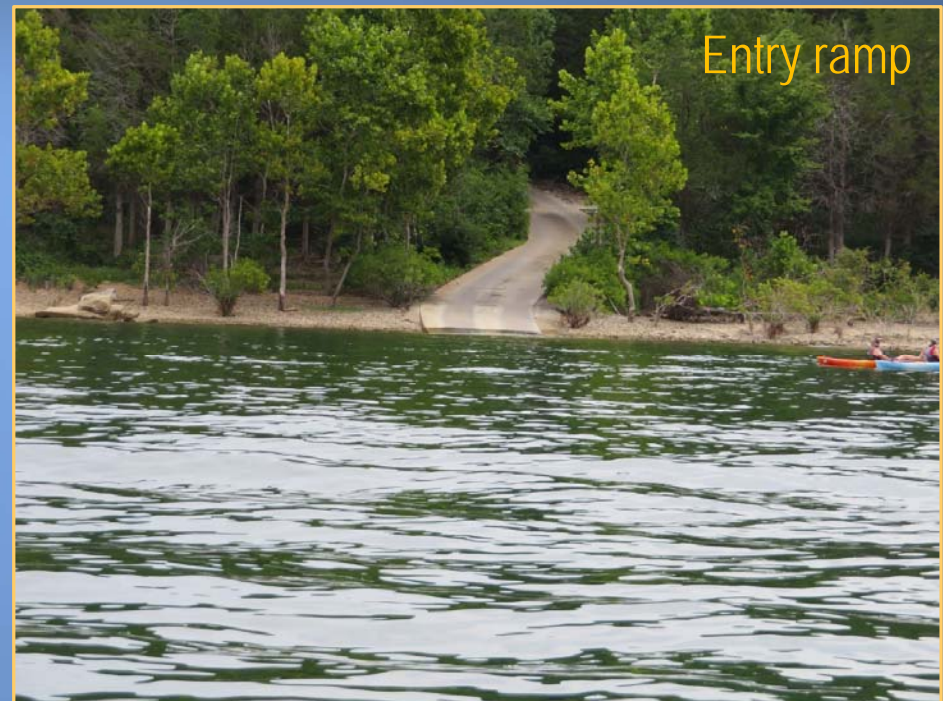
Company's Actions

- On-the-water operating limits
 - 2012 *Operations Manual*
 - Certificate of inspection
 - Stability letter
- Risk-assessment/ decision-making tools
- Go/no-go specifications



Captain's Actions

- Dispatched to lake by manager-on-duty
- Calm water and blue sky
- Other duck boats on lake
- Not aware of severe thunderstorm warning



Captain's Actions

- Followed *Operations Manual* instructions
- Headed for exit ramp
- Putting bow into seas
 - Minimized wind heel
 - Protected low freeboard



Weather-Training Requirements

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National Weather Service Springfield MO
632 PM CDT THU JUL 19 2018

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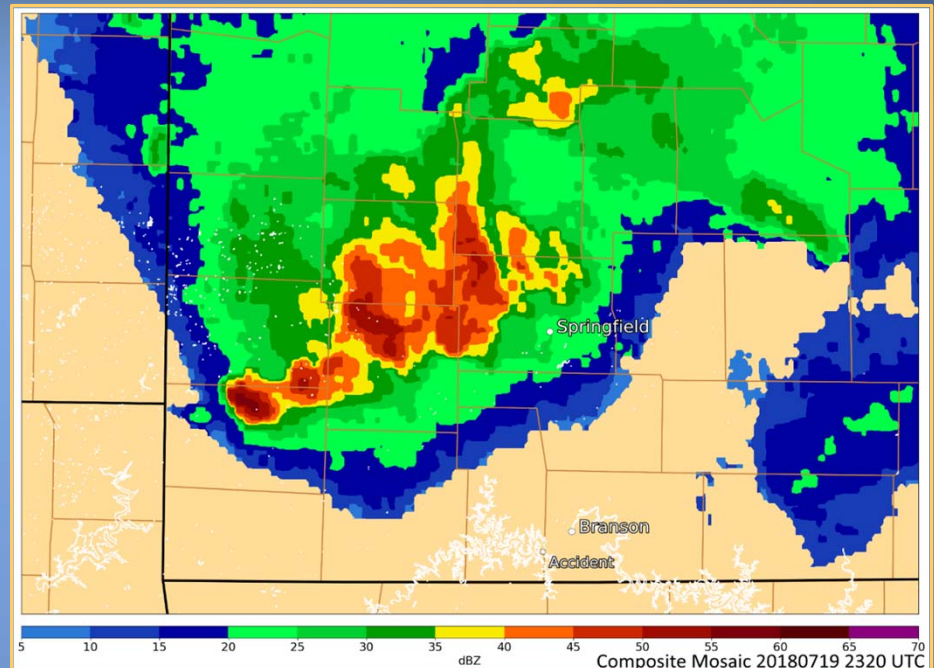
HAZARD...60 mph wind gusts.

SOURCE...Radar indicated.

IMPACT...Expect damage to roofs, siding, and trees.

* Locations impacted include...

Branson...	Lake Taneycomo...
Table Rock Lake...	Bull Shoals Lake...
Roaring River State Park...	Table Rock State Park...





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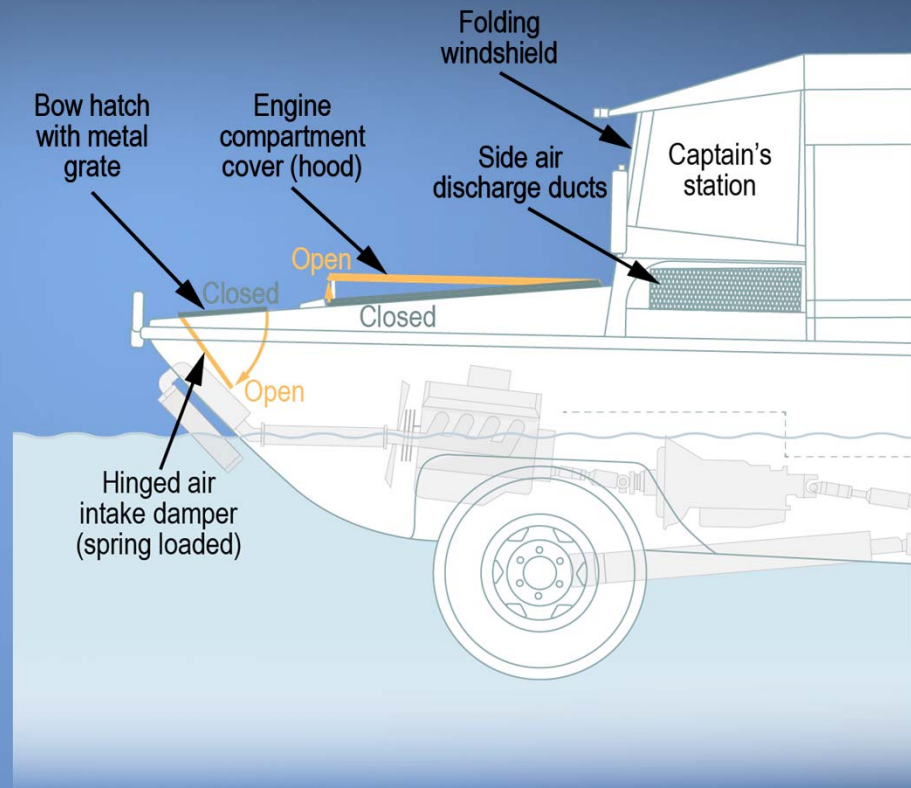


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Engineering Factors

Brian Young, IIC / Engineering Group Chairman

Initial Water Ingress

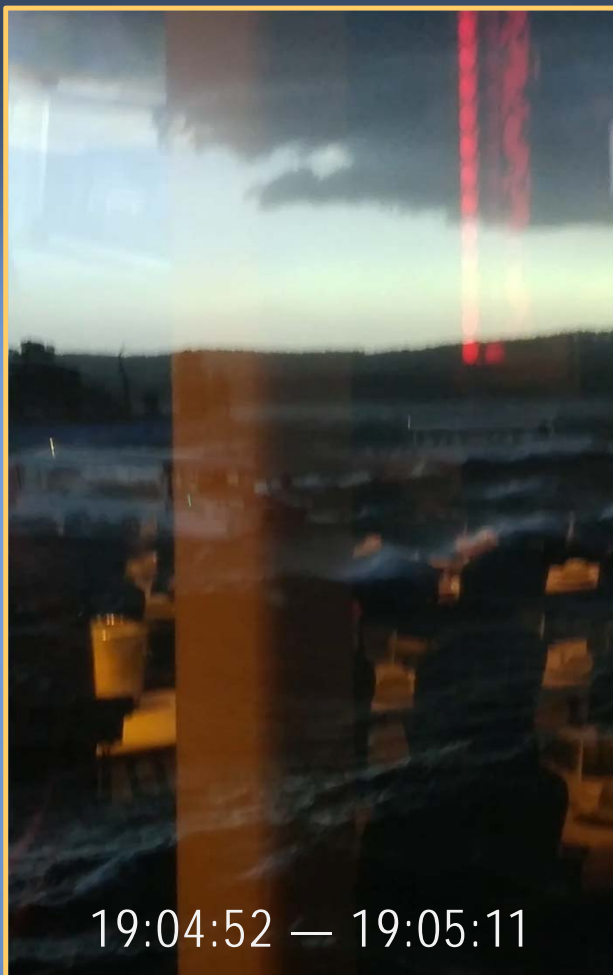




Video: #MogqInFdu



Vixufh#Mhqqh#Fdu.

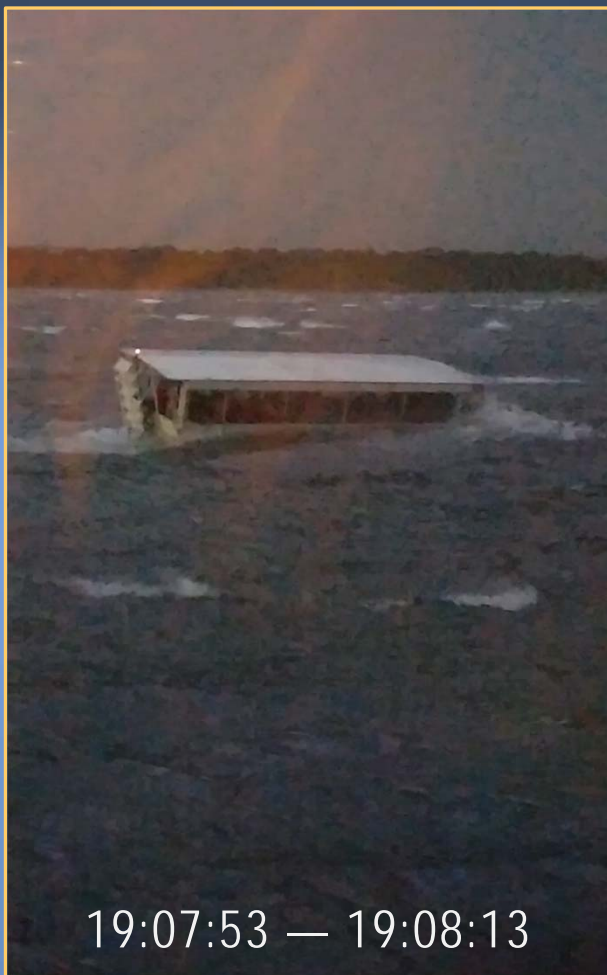


VrxuFh#MhgqH#Fdu



19:07:15 — 19:07:27

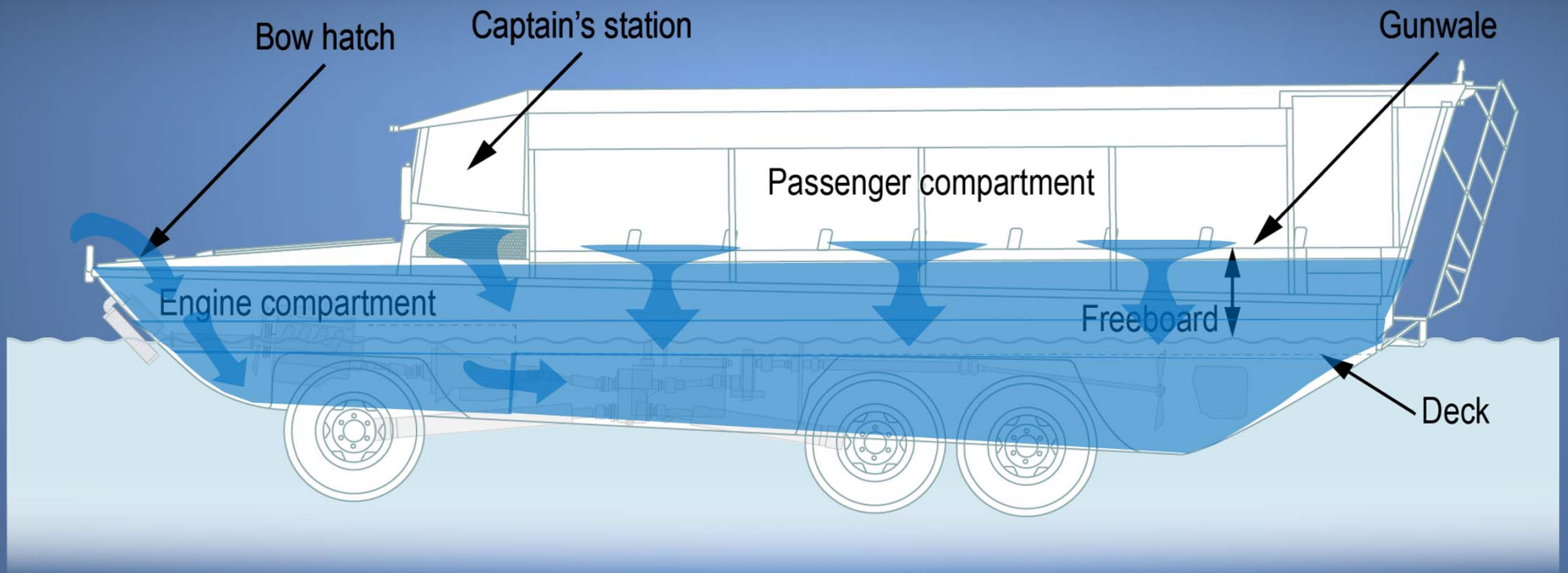
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19:07:53 — 19:08:13

Vrxuifh#MhgqLn#Fdu

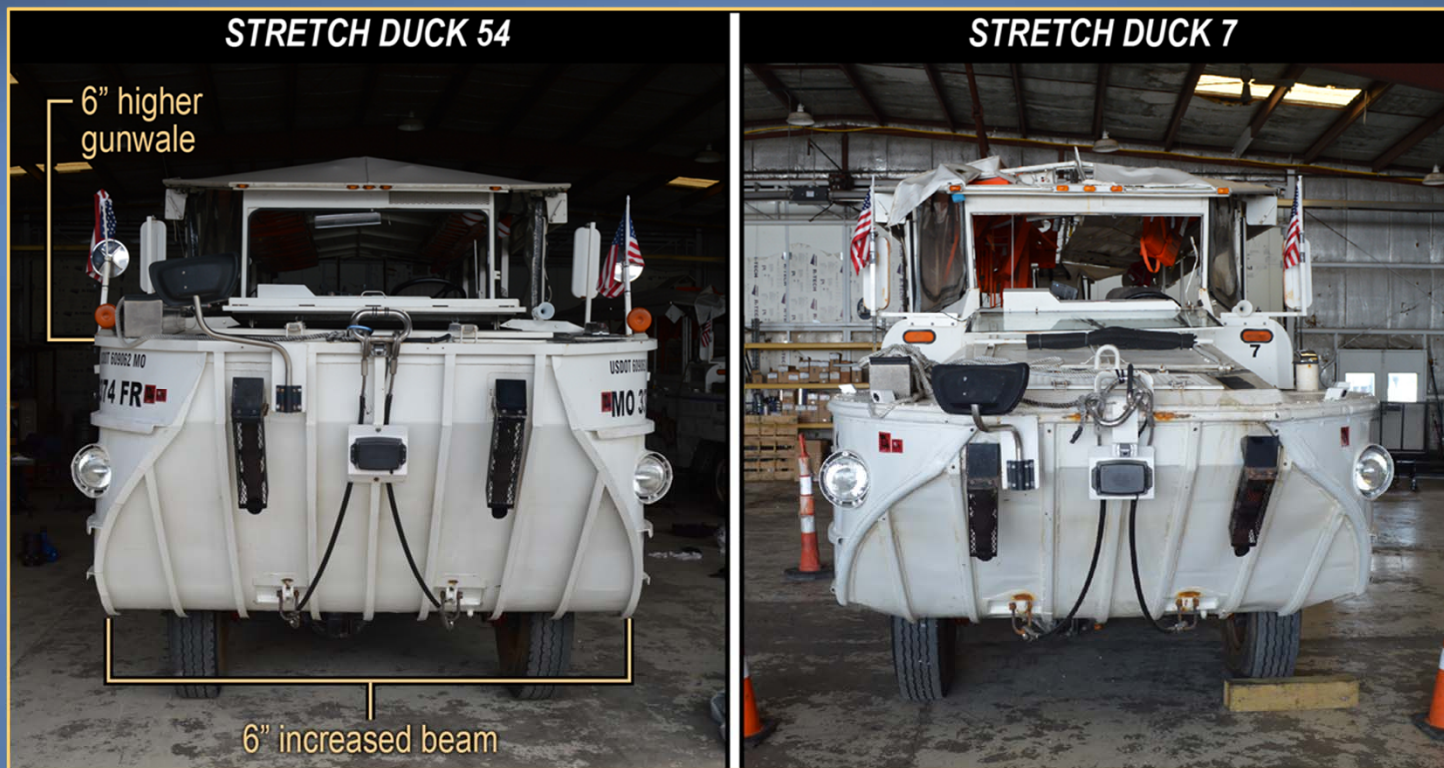
Lack of Subdivision



Lack of Subdivision



Design Differences



Design Differences





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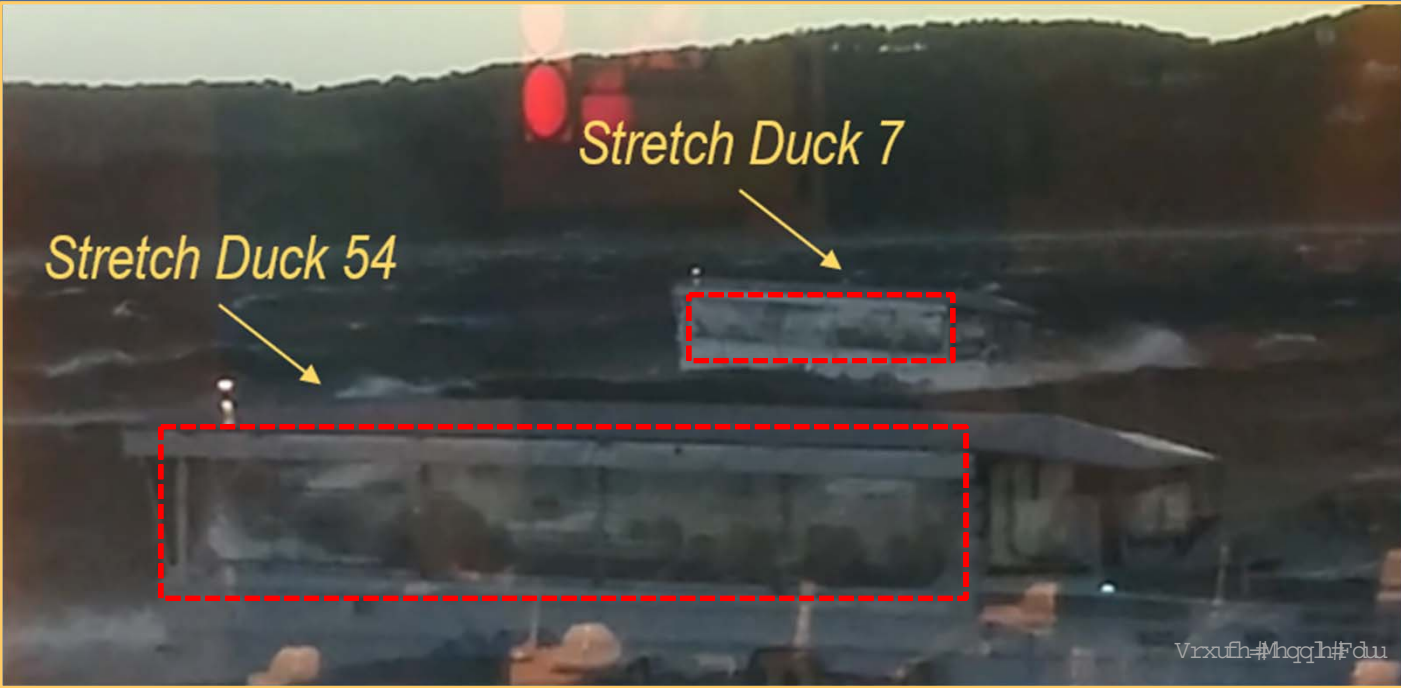


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Survival Factors

Michael Karr, Survival Factors Group Chairman

Side Curtains



Side Curtains

- Obstruct “over the side” escape route
- Could be released during an emergency
- Unless released, over-the-side escape not possible



Side Curtains

- Portside curtain released
- Starboard-side curtain not released
Escape blocked for passengers on starboard side



Lifejackets



Lifejackets

- Once submerged inside an enclosed space, added buoyancy impedes mobility and escape



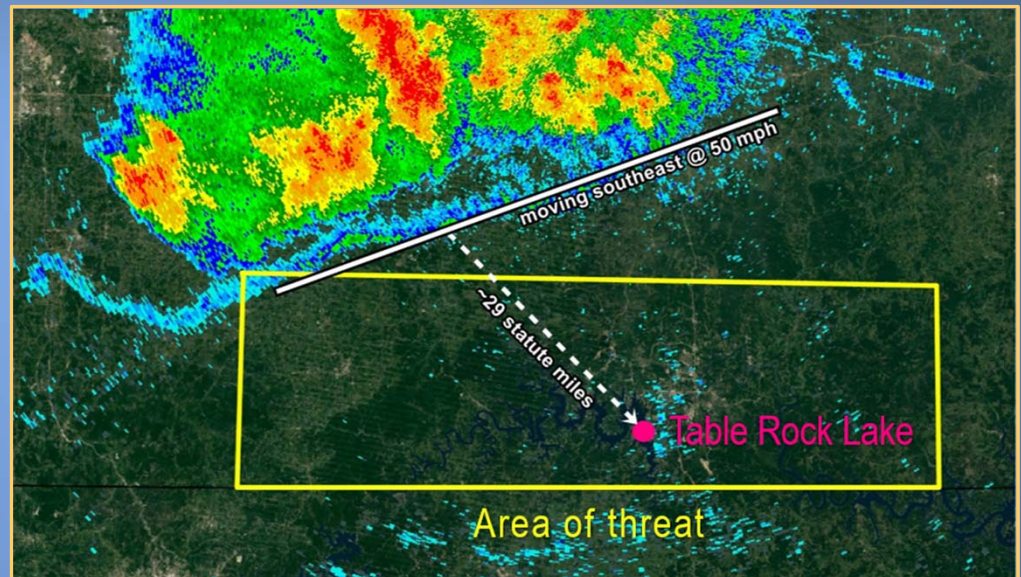
Canopy

- NTSB — removal for waterborne operations
- Coast Guard — no action taken
- NVIC — deficient guidance and/or application



NVIC 1-01

- Requires guidance for operations
- Needs to address weather abort points



NVIC 1-01

- “Realistic” guidance for vessels lacking reserve buoyancy that sink quickly
- Prevent trapped passengers





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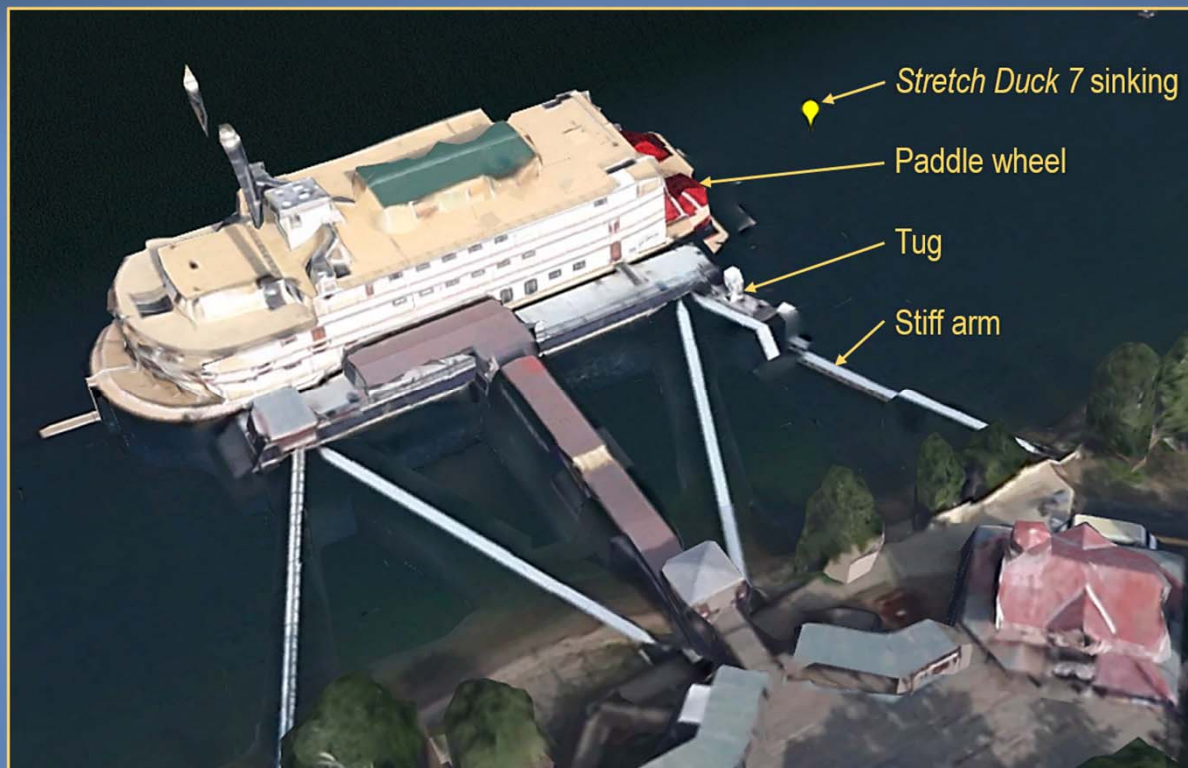


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Emergency Response

Marcel Muise, Response Group Chairman

Showboat Branson Belle



Showboat Branson Belle

- All survivors pulled from water at paddle wheel, tug, and stiff arm
- Other victims drifted out into lake
- All survivors rescued before first responders arrived



Emergency Response

- First 911 call at 1908
- Firefighters on scene at 1925
- Provided triage and transport for survivors



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