NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OFFICE OF THE CHIEF ADMINISTRATIVE OFFICER

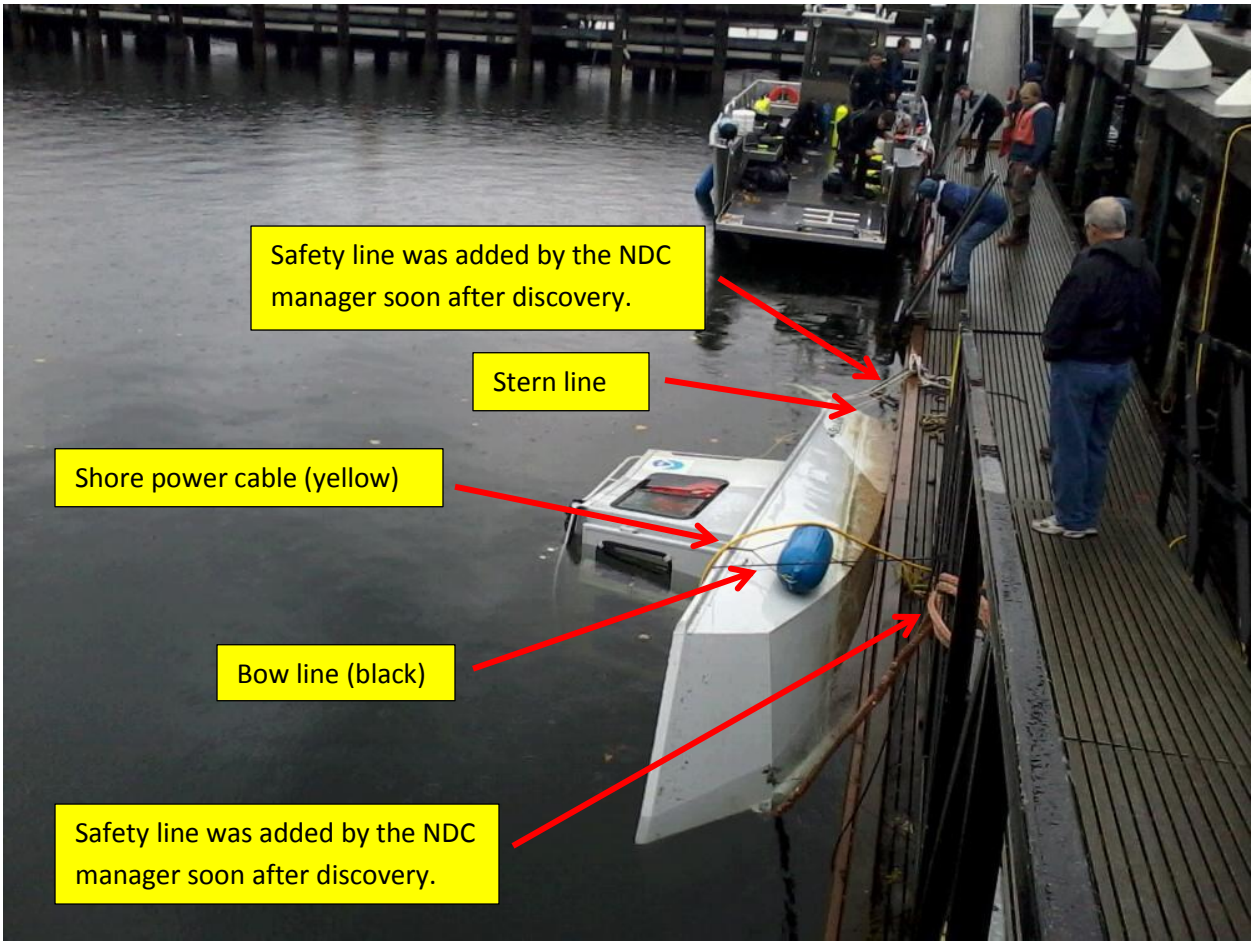
WESTERN REGIONAL CENTER

18’ SEA-ARK BOAT SINKING INCIDENT

OCTOBER 31, 2012

INCIDENT NARRATIVE

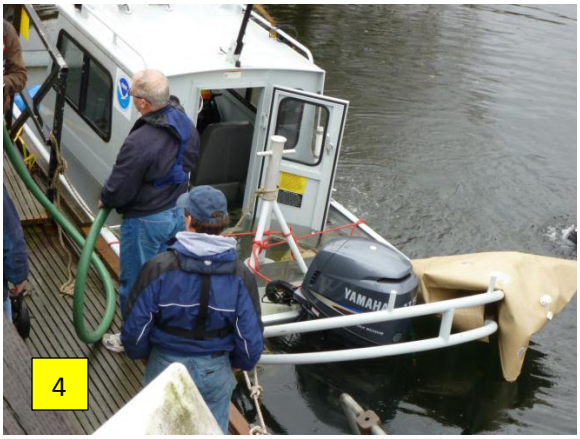
On October 31, 2012, at approximately 0800, members of the NOAA Dive Center were on board the M/V Dinsmore preparing for dive operations on the NOAA Ship Miller Freeman. The M/V Dinsmore was tied up to the finger pier inside the boat basin. A member of the dive crew observed the 18ft. Sea Ark listing heavily to starboard and had a pitch angle of about 15° - 20° degrees down by the stern. The Southern half of the floating pier was rolled at about a 5° - 10° degree angle due to the weight of the sinking vessel being suspended by the pier's west face. The vessel was secured by a bow and stern line (the orange line located underneath the bow was placed by the dive crew as a means of keeping the vessel from completely sinking) and the shore power cable was still connected (the electrical power to the cable was immediately disconnected at the pier side by the NDC Manager).

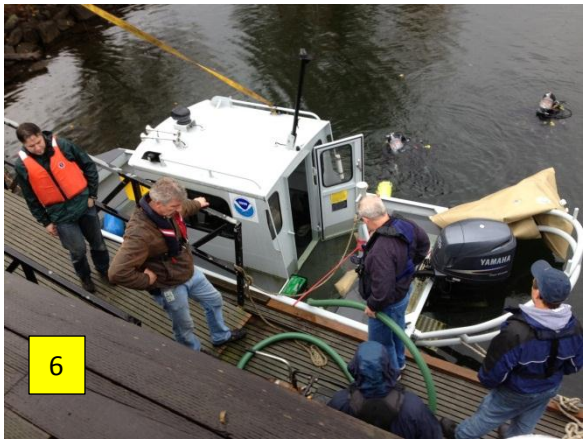


The NDC Executive Officer, located on the Dinsmore immediately notified BMB and the NDC Manager. BMB, DOC Security and NOAA Safety responded to the site. The dive crew was already taking necessary steps to raise and right the vessel with the help of BMB maintenance personnel.

VESSEL RECOVERY OPERATIONS

The NOAA Dive Center splashed two divers in the water to commence the recovery of the Sea Ark. After the initial visual assessment and report by the in-water divers, the dive supervisor instructed the dive team to lift the vessel using lift bags and securing additional lines to prevent the vessel from sinking. As the vessel surfaced upright a water pump was used to remove water from inside the deck area and wheel house.





INVESTIGATION TEAM MEMBERS

Ray Hermes, OCAO, WRC Facility Engineer
Jeff Kingrey, OMAO, Small Boats Program
Darel McCormick, OMAO, Small Boats Program
Joe Duran, OCAO, SECO

WEATHER DATA

Day of event (0800hrs)

- Temperature (F): 57°
- Wind: From east @ 7mph
- Precipitation (24hrs): 1.49 inches
- Visibility: 10.0 miles
- Weather condition: Overcast, light rain

Seven days prior

- Temperature (F) average: 55°
- Winds (average):
- Precipitation (accumulative): 3.02 inches
- Visibility (average): 10.0 miles
- Weather condition: partly cloudy to overcast, rain at times

VESSEL INFORMATION

Type: Utility Boat
Manufacturer: Sea Ark Marine Inc.
Model: 1860 River Runner SAMA 2005/010
Length: 18 feet
Beam: 7 feet
Engine: Yamaha, 115 HP
Freeboards:

- Bow: 27 inches
- Port AFT: **15 inches**
- STBD AFT: **12 ½ inches**

Difference in freeboard dimensions indicates a manufactured STBD list

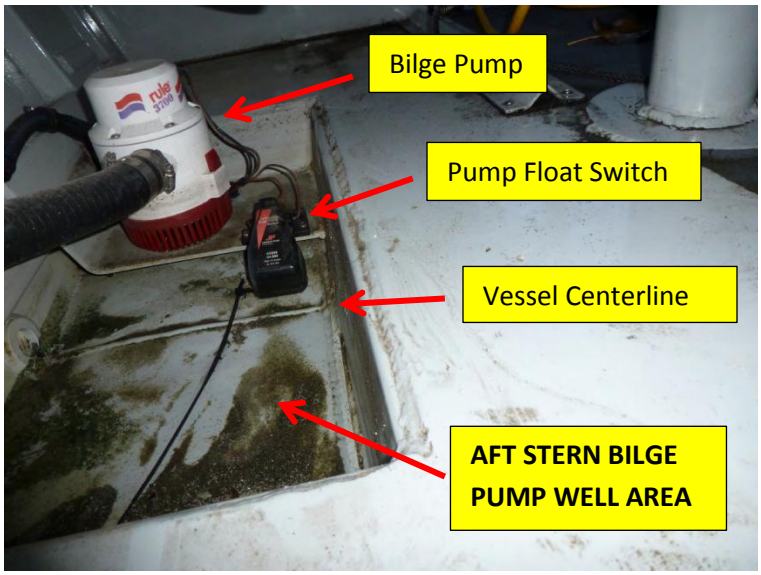
- Draft Hull: 12 ½ inches (6 inches with engine tilted clear of water)

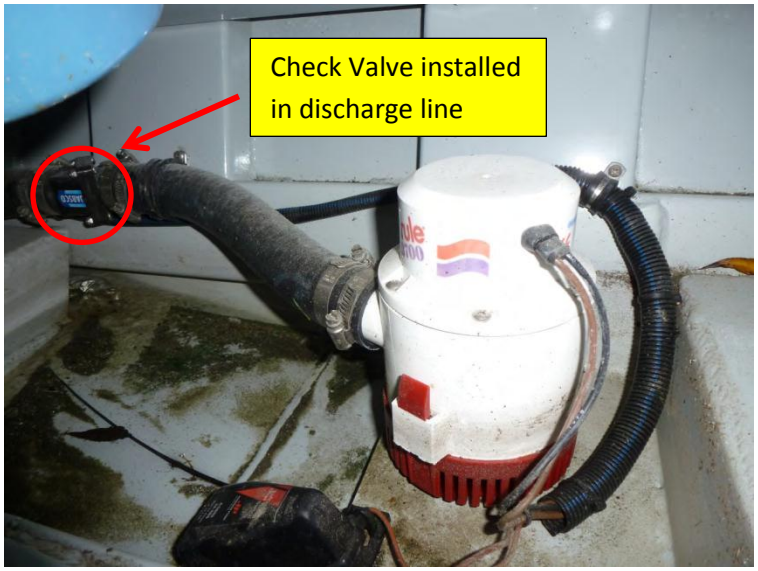
Boat Weight (dry): 1780 lbs.
Fuel Tank (portable): 12 gals. (72 lbs.)
Electronics: 12V DC Power Electrical System
Bilge Pump: 3700 GPH bilge pump with automated float switch located AFT below outboard engine motor well, discharge on STBD side.

FINDINGS

Primary Finding

Water Intrusion in the Bilge. This vessel has an as-built STBD list. The vessel is designed to have any water coming into the boat flow from the bow to the stern via the bilge. Drain holes located inside the bilge area were obstructed with debris causing the water to build up, compromising stability and buoyancy and, lowering the level of the boat in the water. It was observed that there is not a continuous weld along the seams of deck surfaces, adding to the potential intrusion of water into the hull area. The bilge pump float switch was located at portside center inside the pump well. During vessel recovery, it was observed that the pump switch was set in the "automatic" position and as such should have engaged once the float had risen to the activation point. With water trapped in the bilge, the vessel began to list to the STBD side rendering the bilge pump float switch useless since the water line was at the opposite side of the boat from the float switch. With the added effects of rain and wind, the vessel began to list to STBD. With the vessel listing to STBD, the center of gravity of the vessel shifted causing the vessel to sink STBD side first.





Contributing Factors

- Vessel was subjected to rainfall and winds at the time of event.
- A check valve was installed in the bilge pump discharge line. Check valves are known to stick and block the water from discharging out of the boat (according to the Small Boats Program Inspector).
- Vessel was manufactured with a STBD list.
- Vessel was not built in compliance with the NOAA Small Boat Standards and Procedure Manual (SBSPM).
- Vessel did not have an Annual Small Boat Examination (ASBE) conducted upon purchase or thereafter. An ASBE would include a review of the operation manual, operator qualifications, fire protection equipment, lifesaving equipment, construction, and operational equipment.
- Vessel did not have a Small Boat Operations Manual in accordance with SBSPM, Appendix G. This boat specific manual identifies responsibilities, limitations, designates operators, maintenance support and more.
- Vessel was not constructed to 33 CFR 183 Subpart G. Vessel was constructed to commercial standards and did not provide inherent buoyancy for level floatation when swamped. NOAA requires all vessels less than 20' meet these requirements when constructed.
- Vessel was not registered with the NOAA Small Boats Program.
- Vessel is configured as a river boat, lacking a v-shaped keel that would have provided additional stability in deep water.
- This vessel is equipped with an enclosed metal wheelhouse, which is atypical for a boat of less than 23 feet, and as such may contribute to a tendency to roll.

RECOMMENDATIONS

- Weigh the boat and compare to delivery weight for possible water saturation of hull foam flotation. Change in weight will cause stability issues with boat.
- Flush and clean outboard and make operable. Change all fluids, fog cylinders, flush fuel system, and dry out electrical components.
- Dry out built in floatation foam.

- Dry and test all electrical circuits.
- Purchase and install new battery.
- Identify Vessel Operational Coordinator (VOC) as required by the NOAA SBSPM.
- Create and promulgate a Small Boat Operations Manual (SBOM) specifically for this vessel.
- Provide training and qualified operators IAW the NOAA SBP SBSPM.
- Seal the ingress of water into all spaces that contain flotation foam by welding and subsequent air testing.
- Reroute the drainage of water from the forward deck space directly to the aft bilge well.
- Remove the check valve from the bilge pump discharge and install an anti-siphon tube at the hull discharge fitting.
- Install non-return devices on the motor well drains.
- Provide additional flotation foam or buoyant chambers to comply with the level flotation requirements of 33 CFR 183, Subpart G.

CONCLUSION

Based on the above findings, the sinking of this boat was caused by a combination of a number of characteristics of the boat. The natural starboard list exacerbated by height and weight of the wheelhouse, the penetration of water into the hull, and subsequent rising of the waterline worked against activation of the onboard sump pump. As water continued to accumulate the STBD list increased until the boat rolled to STBD.