Accident Animation
Collision of *Caribbean Sea/The Resource* with *DUKW 34*
Philadelphia, Pennsylvania
July 7, 2010
DCA10MM025

This animation is a shelf item and may be obtained by contacting:
National Transportation Safety Board
Records Management Division (CIO-40)
490 L'Enfant Plaza, SW
Washington, DC 20594
(202) 314-6551
800-877-6799
Online request: http://www.ntsb.gov/pubmail/pubmail.asp

This animation is also available on the NTSB website

This two-dimensional (2-D) animated reconstruction shows events leading up to the collision between *The Resource*, sludge barge, being towed by the tugboat M/V *Caribbean Sea*, and the anchored amphibious passenger vehicle (APV) *DUKW 34* in the Delaware River near Philadelphia, Pennsylvania on July 7, 2010. The animation content is based on AIS (Automatic Identification System) data, VHF radio communications, security camera video, and calculated performance data.

The upper portion of the presentation displays the recorded video, the transcript of the VHF radio communication, and relevant cellular phone events as text at the time that the event occurred. The lower portion of the animation displays a presentation of the Delaware River with the track of the Caribbean Sea during the accident sequence including the operator's blind spot from the lower wheel house projected ahead of the vessel. All times (Eastern Daylight Time) are shown on the middle of the left side of the screen. The animation does not attempt to depict weather and waterway conditions. This animation contains audio.

Voice Over Narration

1. The following animation depicts the sequence of events leading to the collision of the barge *The Resource*, towed by the tugboat *Caribbean Sea*, with the anchored amphibious passenger vehicle *DUKW 34* in the Delaware River, near Philadelphia, Pennsylvania.

2. About 1415, on its third trip of the day, the *DUKW 34* enters the Delaware River heading southbound as the *Caribbean Sea* tows *The Resource* northbound, about 3 miles to the south.

3. About half way into its voyage, the *DUKW 34* reverses course and heads north.

4. About 1425, the master smells an odor and sees what he believes to be white smoke entering the passenger cabin.

5. The master believes the *DUKW34* has a fire on board, and he shuts down the engine and executes emergency procedures for a fire.

6. As the *DUKW 34* drifts south with the river current, the master directs the deckhand to deploy the anchor.

7. About 1431 after deploying the anchor, the deckhand sends the first of two personal text messages while on the bow of the *DUKW34*.

8. Meanwhile, the anchor drags along the river bottom for a distance of about 155 feet.

9. At 1432, the *Caribbean Sea* mate is on an outbound personal cell phone call that lasts 5 to 6 minutes.

10. The mate is operating the Caribbean Sea from the lower wheelhouse.

11. From this position, his view of the DUKW 34 is completely obscured by the bow of the barge as shown by the shaded area depicting the blind zone.

12. The anchor sets around 1433 with *DUKW 34* anchored near the center of the navigation channel about 320 feet from Penn's Landing.

13. The events leading up to the accident will be presented in real time based on recorded audio, video, and *Caribbean Sea* position data.

Selected Comments from the Radio Transcript:

14:36:11	*DUKW34*:	to the northbound tug in front of Penn's Landing this is duck thirty four. I am at anchor. I am unable to maneuver. I am broken down. over.
14:36:32	*DUKW 34*:	the northbound barge in front of Penn's Landing please come back.
14:36:45	*DUKW 34*:	the northbound tug…
14:36:54	*DUKW 34*:	hey ferry ferry ferry whoa whoa whoa whoa whoa.
14:37:09	*FREEDOM Passenger Ferry*:	hey northbound barge. northbound barge at Penn's Landing. that duck boat is broken down.

Voice Over Narration (Continued)

14. About 1437, the bow of the barge contacts the stern of the *DUKW 34.*

15. *DUKW 34* subsequently rolls to starboard and moves across the bow of the barge, and is pushed underwater at the port side of the barge's bow.