NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

On-Board Video Recording

DCA10MM017

by

Douglass P. Brazy
Mechanical Engineer

Warning
The reader of this report is cautioned that the transcription of a video recording is not a precise science but is the best product possible from an NTSB group investigative effort. The transcript, or parts thereof, if taken out of context, could be misleading. The attached transcript should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

August 8, 2011

On Board Video Recording

Group Chairman's Factual Report
by Douglass P. Brazy

NTSB Accident Number
DCA10MM017

1. ACCIDENT

Location:	New York, NY
Date:	May 8, 2010
Time:	0919 Eastern Daylight Time
Vehicle:	Staten Island Ferry Andrew J. Barberi Vessel Number 629314

2. GROUP

Chairman:	Douglass P. Brazy Mechanical Engineer National Transportation Safety Board
Member:	Eric Stolzenberg Naval Architect/ Marine Engineer Investigator In Charge National Transportation Safety Board
Member:	Jon Furukawa Marine Accident Investigator National Transportation Safety Board

Member: LCDR Edgardo Cruz
Enforcement Program Administrator
United States Coast Guard

Member: Frank J. Peters
Port Captain
Staten Island Ferry
New York City Department of Transportation

3. SUMMARY

On May 8, 2010, at 0902 Eastern Daylight Time (EDT), the passenger ferry Andrew J. Barberi departed slip #1 at Whitehall Ferry Terminal, New York, for its regularly scheduled 0900 voyage to St George's Ferry Terminal, Staten Island, New York, on the established route. At the time, there was an ebb tide and the weather was partly cloudy, with light variable winds and good visibility. Around 0919 the vessel allided with the boarding apron and transition bridge on Slip #5 of St. George's Ferry Terminal.

The Safety Board's Vehicle Recorder Division received a video recording that was captured by an on-board video recording system which included a view of the interior of the pilot house. The recording did not contain any audio. The video group convened on July 13, 2010 to document the recording's contents.

4. DETAILS OF INVESTIGATION

4.1. Item(s) Received

On October 2, 2009 the Safety Board's Vehicle Recorder Division received a digital video file[1] containing a recording from an on-board video system. The recording was approximately an hour long and captured the entire voyage. The file contained a time of day reference which indicated the Eastern Daylight time zone, the clock data was accessible using a proprietary software program.

4.2. Description of the Camera View

The camera view was from the portside of the Staten Island pilot house[2]. The camera was located near the rear of the pilot house viewing forward toward the center window in front of the control station. The control station was in the center of the view, and all main controls could be seen (except when obscured by the crew). Figure 1 is a photograph of the control station area for reference.

[1] The video file was in an MPEG format, and was supplied along with an unnamed proprietary software viewing program. The image dimensions were 352x240, the recorded frame rate was approximately 15 frames per second.

[2] The vessel has two identical pilot houses, one on each end of the ship. These are referred to as the Staten Island (or "SI") and New York (NY) pilot houses. This nomenclature is also used operationally to refer to the "ends" of the vessel in lieu of bow and stern. e.g. "Staten Island end" and "New York end"

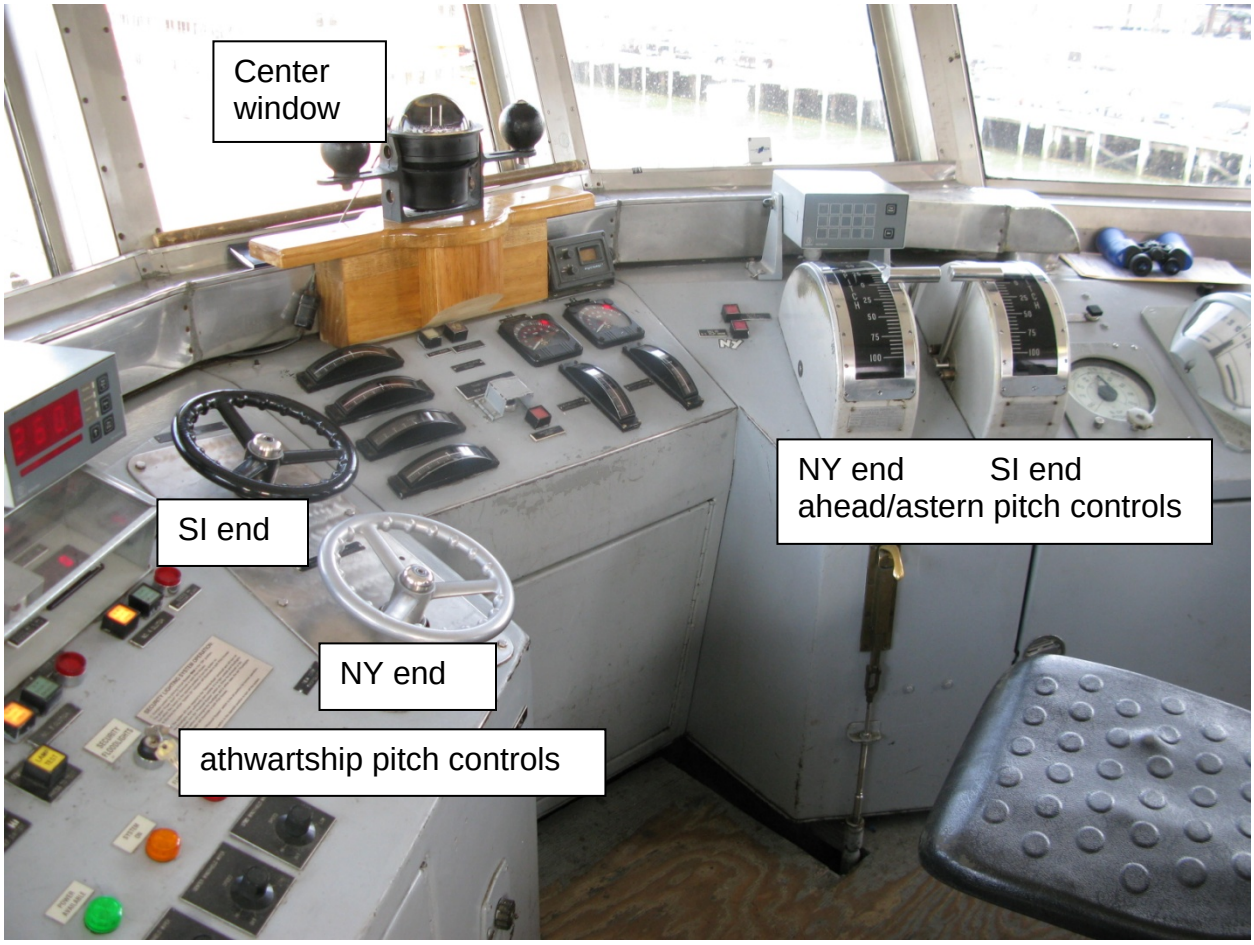

Figure 1 - Control Station Area

In the video, the center window and 2 windows to each side of it were in view across the top of the image.

Two radar image repeater screens overhead on each side of the pilot house (near the windows) could be seen, the imagery on the starboard screen could be seen but it was difficult to see detail.

During the voyage, the vessel was operated by the Assistant Captain (A/C) from the control station. At that station, the athwartship pitch controls were visible (two wheels located to the A/C's left), as were the ahead/astern pitch controls (two levers located to the A/C's right), and the throttles (located above the engine instrument panel near the window to the A/C's left).[3]

The pitch indicating gauges located in front of the A/C were visible but their values could not be read.

In the left center of the view, was the engine control panel. The RPM gauges for all four engines could be seen but their values could not be read. The engine stop/coupled/uncouple lights were visible but their condition (on or off) was not visible during the voyage. The lights indicating 'uncouple' and 'engine stop' for one of the engines could be seen illuminated after the accident.

To the right of the ahead/astern pitch control levers, some of the EOT (Engine Order Telegraph) indicators could be seen, but their values could not be read. The EOTs are not normally used (nor are they used during the accident voyage), and are available for emergency when the engine room has local control of the propulsion/direction of the vessel.

On the left of the view, a security system video monitor could be seen. The camera selected for viewing (primarily) was the New York end exterior view toward the "stern" for this voyage. The camera view automatically switched to a view of the pilot house door for a few seconds, whenever the door was opened.

[3] The vessel utilizes two Voith Schneider propulsion systems (one on each "end" of the vessel) which can direct thrust in any direction. This system is used for both propulsion and steering. Athwartship pitch controls are used to vary the amount of lateral thrust (to port or starboard), ahead/astern pitch controls are used to vary the amount of longitudinal thrust (fore or aft). Separate throttle levers are used to control the output of the diesel engines driving the Voith Schneider rotors (there a total of four engines, two engines per rotor). The pitch controls (and corresponding pitch indicating gauges) are the primary method of controlling the vessel speed and direction.

4.3. Description of the Recording Contents

The video group documented the observations found in Attachment I.

Doug Brazy
Mechanical Engineer
NTSB Vehicle Recorder Division

Attachment I – Transcript

Partial transcript of a video recording captured by a camera installed in the pilot house of the Andrew J. Barberi Staten Island Ferry vessel.

LEGEND

pilot house	unless otherwise noted, “pilot house” refers to the Staten Island end pilot house. The vessel was being operated from the Staten Island pilot house during the accident voyage.
Staten Island (SI) end	For this voyage, the Staten Island end of the vessel is the bow.
A/C	Assistant Captian (operator of the vessel)
AIS	Automatic Identification System
ahead/astern Control	Longitudinal thrust controls
athwartship Control	Lateral thrust controls
CCTV	Closed Circuit Television
KV	the “Kill Van Kull” bouy
New York (NY) end	New York end of the vessel. For this voyage, the NY end is the stern.
UHF	Ultra High Frequency voice radio communication system
NYPD	New York Police Department

[ ] Editorial insertion

Note 1: Times are expressed in Hours:Minutes:Seconds, in the Eastern Daylight Timezone, as indicated by the time-of-day clock reference in the video playback software.

TIME	Observation
8:54:56	A/C arrives in the pilot house, activates the AIS and the radar and walks to the control station and makes a logbook entry.
8:59:36	Mate arrives in the pilot house.
9:01:26	A/C takes control of the vessel. He can be seen pressing buttons near the throttles which allow him to take control of the engines via the levers in this (Staten Island) pilot house, and lock that control to this pilot house [the previous voyage had been controlled from the NY end pilot house].
9:01:34	A/C increases the throttles [engine RPM] setting, increases the ahead/astern pitch control levers[1], and maneuvers the vessel using the Staten Island end athwartship pitch controller.
9:01:46	A/C increases the ahead/astern pitch control levers.
9:01:58	A/C increases the ahead/astern pitch control levers.
9:02:03	A/C increases throttle [engine RPM] setting.
9:02:13	Mate engages with unidentified person off-camera to his right [this unidentified person is located in the normal duty station for the Lookout in pilothouse].
9:03:25	A/C sits down at operator's station and proceeds to navigate the voyage.
9:05:05	Captain appears on the video in the pilot house and then sits at the rear of the pilot house facing forward [the voyage appears routine].
9:10:10	An arm can be seen in the right edge of the view pointing forward [this is likely the Lookout].
9:14:40	A/C rings the engine room buzzer [to contact the engine room], and the Mate picks up the sound powered phone [this phone can be used to communicate to other locations on the ship].
9:15:10	Mate sits down next to the CCTV station.

[1] These levers have both a forward (ahead) and reverse (astern) thrust range, and a "neutral" or no thrust position, between the two ranges. In the ahead range, an increasing (or upward movement) of the levers will increase the forward thrust, and reducing (or downward movement) of the levers will reduce forward thrust. In the astern range, as the levers move downward, reverse thrust is increased.

TIME	Observation
9:15:34	A/C stands up at operator’s station.
9:15:54	Vessel passes by the "KV" buoy on starboard side [the buoy passes by window pillar by starboard radar repeater screen].
9:16:11	A/C reduces the throttle [engine RPM] setting.
9:16:16	A/C reduces the SI end ahead/astern pitch control lever.
9:16:45	Mate stands up.
9:16:52	A/C reduces both ahead/astern pitch control levers.
9:17:16	Mate makes a UHF radio call [internal communications via handheld radio. This is a typical time/location to make an announcement to prepare for docking].
9:17:21	Captain stands and touches a button on the radar.
9:17:26	A/C reduces the SI end ahead/astern pitch control lever.
9:17:29	Mate touches the AIS unit.
9:17:40	Captain passes a paper menu to the Mate. Slips at St George Terminal [commonly called “the "Racks"] come into view at the top of the windows.
9:17:40	A/C reduces the NY end ahead/astern pitch control lever.
9:17:45	A/C reduces the NY end ahead/astern pitch control lever [movement occurred while A/C's hand was obscured by Mate’s head. The levers were married before the obscured view, and the NY lever was lower afterwards]. Lever position appears to be in the astern range.
9:17:54	A/C reduces the SI end ahead/astern pitch control lever. The lever position appears to be in the astern range.
9:17:54	Captain moves forward to stand behind the A/C.

TIME	Observation
9:18:04	A/C moves his right hand, which is on the ahead/astern control levers, downward [toward the astern thrust region]. The levers are briefly obscured by the Mate's head. Once the Mate moves, both levers can be seen in the full astern position, where they remain until the impact. The A/C pushes downward on both levers several times before the impact.
9:18:04	The security monitor viewing the NY end of the vessel shows a propulsion wash which indicates ahead thrust is still applied on the NY end.
9:18:04	The vessel appears to be within one boat length of slip # 5 at St. George Terminal.
9:18:05	The Captain's body language suggests he realizes there is a problem. He jerks his arms slightly.
9:18:08	Captain steps forward toward the engine control panel.
9:18:13	Captain reaches for the throttles (engine RPM) and advances them forward. A/C attempts to reach the throttles at about the same time. The throttle remains at the full throttle (max RPM) position until the allision.
9:18:13	Staten Island end of vessel just enters the slip. The end of the north rack is abeam the starboard side of the vessel.
9:18:20	Mate moves toward the rear right side of the pilot house, out of the camera's view (toward the right side of view).
9:18:23	A/C 's left hand is on or near the athwartship controls, but the Captains body is obscuring the controls. The motion of the vessel relative to the north rack appears to indicate a turn to the starboard.
9:18:24	Captain reaches for and appears to activate the ship's whistle for 4 short blasts, followed by an additional 5th prolonged blast.
9:18:24	A/C continues to steer the vessel using the NY end athwartship controller and continues to hold both the ahead/astern pitch control levers in the full astern position.
9:18:26	Vessel's Staten Island end contacts the north rack to the starboard side.
9:18:29	Captain moves rearward to the port side area of the pilot house and appears to brace for an impact.

TIME	Observation
9:18:32	A/C remains in his position with hands on controls (left hand on the NY end athwartship control, right hand on both the ahead/astern pitch control levers) and crouches down in an apparent brace for impact.
9:18:33	The allision occurs. The camera view is jarred, moving the view upward slightly. The northern shoreside apron is struck (starboard of the vessel) and can then be seen resting on starboard hurricane deck, [which is same deck as the pilot house].
9:18:35	A/C stands and moves both the ahead/astern pitch control levers to a position at or just above neutral.
9:18:35	Vessel forward motion stops.
9:18:43	Two amber engine lights illuminate. The positions of these lights are consistent with amber lights for the number 3 and number 4 engines [SI end] which indicate the clutch couplings are open. The engine lights for the number 1 and 2 engines (NY end) are not visible due to the camera jarring from allision. The amber lights subsequently flash on and off several times.
9:18:45	A/C reduces the throttle setting.
9:18:54	A deckhand can be seen in the pilot house. [normal ops is that this deckhand relieves the lookout so that the lookout can perform other duties outside the pilot house]
9:19:06	A/C moves both ahead/astern pitch control levers downward slightly, their position remains near neutral.
9:19:10	First responders can be seen in the terminal area, through the pilot house windows.
9:19:55	A/C picks up the sound powered phone and talks for about 30 seconds.
9:20:34	A red engine light illuminates. The position of the light is consistent with the engine shutdown alarm for the #3 engine.

TIME	Observation
9:20:58	Captain begins speaking on a phone.
9:24:50	NYPD responders can be seen on the shoreside apron, through the pilot house windows.
9:39:00	NYPD responder can be seen in the pilot house. He subsequently appears to talk with the Captain and the A/C.