National Transportation Safety Board
Operations Group Factual Report

June 18, 2004

Accident Information

Accident No.: DCA04MM001
Description: New York City Department of Transportation (DOT) Ferry *Andrew J. Barberi* allision with dock
Location: Pier B1, South side corner, Staten Island, New York
Date: October 15, 2003
Time: 3:20 PM

Group Representatives

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Vessel Data

A. Accident Information	**NTSB NO. DCA04MM001**
Date of Accident:	Wednesday, October 15, 2003
Time of Accident (local)	3:20 PM
Location	South side corner of Pier B1
Type of Accident	Allision with dock
Coastal/Ocean/Harbor/Pilotage	Harbor

B. General Information	
Vessel Name	*Andrew J. Barberi*
Flag	US
Port of Registry	New York
Owners	City of NY, DOT, Staten Island Ferry Service

Builder	Equitable Shipyards, Inc
Location built	New Orleans, Louisiana
Year Built	1981
Classification Society	American Bureau of Shipping
Official Number	629314

C. Vessel Particulars

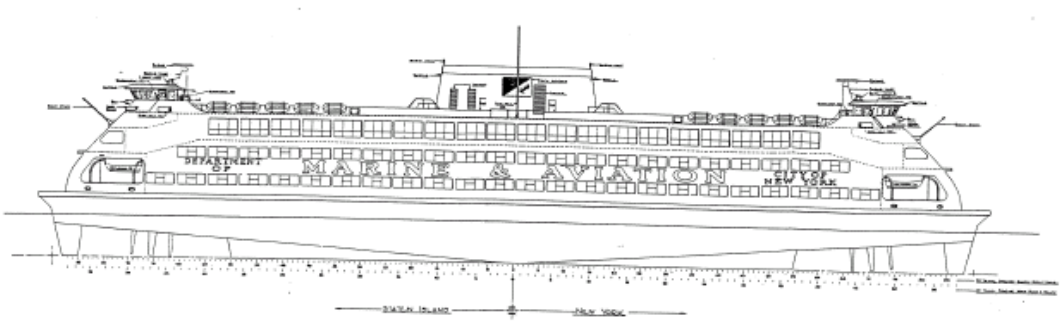
Type of Vessel:	Welded Steel Double-Ended Ferry
Passenger Capacity	6000
Passenger on board	~1500
Gross Tons	3335
Net Tons	2268
Length Overall (LOA)	310 ft
Beam	70 ft
Design Draft	12'-6" ft
Design Speed	18.5 mph.
Design Freeboard	8'-2" ft
Main Engines	4- General Motors EMD 16-645E6
Horsepower	1750 Each
Propulsion type	2 Voith-Schneider cycloidal propellers, Model 40G/250, 3500 HP each, 1 at each end
Electrical Power	2 Caterpillar, Model 3412 engines coupled to 350 KW, 230 Volt, 3 phase Kato generators
Emergency Power	1 Caterpillar, Model SR-4 engine coupled to 135 KW 230 Volt, 3 phase generator
Fuel Type	#2 Diesel Oil

D. Crew

Number Total	16
Deck Officers	4
Engine Officers	2

The Staten Island Ferry, *Andrew J. Barberi*, allided with a maintenance pier at the St. George Terminal, Staten Island, NY at about 1520 on October 15, 2003. The vessel was on a regularly scheduled transit between Manhattan and Staten Island. The Assistant Captain was the vessel operator at the time of the accident, which occurred approximately 2 minutes after passing the "K.V." buoy, located about a half a mile from the intended passenger pier. The vessel never slowed down or altered course before striking another pier 600 yards to the southeast of its intended destination. The vessel sustained heavy damage to its starboard, or New Jersey side, and 11 passengers lost their lives, while 70 others suffered injuries.

Accident Narrative



The Staten Island Ferry, *Andrew J. Barberi*, is a passenger ferry measuring 3,335 gross tons and carrying up to 6,017 passengers. The vessel was operating on October 15, 2003, in regular service between Manhattan and Staten Island. The crewmembers began their shift at 13:30 at the St. George Terminal, Staten Island. According to pay records, the Master and Assistant Captain signed in at 13:15.

The *Andrew J. Barberi* had fifteen crewmembers with the Master and Assistant Captain serving as the conning officers. Two mates were primarily responsible for helping the vessel dock and transferring passengers safely. In addition, there were 7 deckhands assigned to various docking and cleaning stations. As part of their duties, the deckhands rotate as bridge lookout during transits. In the engine department, the Chief Engineer, one Assistant Engineer, and two unlicensed Marine Oilers managed the vessel machinery spaces.

The Master was on the bridge departing the St. George Terminal at 13:30 and was joined by the Assistant Captain according to the statement of the deckhand lookout. It was standard practice for the Master to dock the vessel in Manhattan, New York, due to its more difficult tidal conditions, and for the Assistant Captain to dock the vessel in Staten Island. The docking in New York at 14:00 was uneventful. The same deckhand lookout stated that the Assistant Captain was on the bridge as the vessel departed New York and was joined by the Master. The *Andrew J. Barberi* returned to Staten Island without incident and a different deckhand lookout would be in the pilothouse for the next trip.

On the Staten Island End, Saloon Deck, starboard side, one set of doors to the embarkation ramp were in need of repair and swinging freely due to the wind, estimated to be gusting to 30 knots. On the second departure from St. George the Senior Mate gave a piece of line to the second deckhand lookout during this shift and instructed him to lash the door handles together to prevent them from possibly injuring someone. The doors

were to be temporarily secured during the transit and untied prior to St. George to allow passengers to leave and board.The second deckhand lookout was in the New York pilothouse for the transit from Staten Island to Manhattan at 14:30. The Master was at the controls. The vessel arrived in Whitehall at 14:55.

The Staten Island Ferries are double ended and have two control pilothouses located on each end named either the Staten Island end or the New York end. As the vessel is in the slip unloading and loading passengers, the arriving conning officer maintains control in the inshore wheelhouse. Just prior to departing a terminal, the arriving conning officer switches vessel control to the departing, or offshore pilothouse, and the departing conning officer. An off duty Staten Island Ferry employee observed the Master in the New York pilothouse, as he boarded the vessel at 1500 just prior to departure.

The *Andrew J. Barberi* departed for Staten Island at 1500. The second deckhand lookout returned to the bridge a few minutes later than usual, after securing the Saloon deck doors with a piece of line. The Assistant Captain was at the controls. The lookout arrived in the pilothouse just before the Assistant Captain was ready to make the turn heading down towards Staten Island. The vessel was south bound, west of Governor's Island. The vessel's expected operating speed at this point in the transit was approximately 16 knots.

The Senior Mate was in charge of loading and unloading passengers at the New York end. After departing the Whitehall Terminal in Manhattan, the Senior Mate made a

patrol of the vessel. He then proceeded to the navigation pilothouse on the Staten Island end. The Senior Mate stated that he intended to enter the pilothouse and to write a work order to have the broken door fixed. The vessel was approximately halfway between New York and Staten Island when he arrived on the bridge. The *Andrew J. Barberi* was near navigation buoy #28 according to this Mate's statement. The Senior Mate then sat upon the sofa along the bulkhead, on the port side, behind the navigating console. The Senior Mate reported that the Assistant Captain was standing at the controls and the second deckhand lookout was sitting to the left of him. The lookout stated that he believed the Assistant Captain was seated. The Senior Mate said that he began thinking about his paperwork and picked up a newspaper to read. The second deckhand lookout and the Assistant Captain were engaged in conversation according to the deckhand's statement. The Mate recalled that the Master was not on the bridge at this time. The lookout did not recall seeing the Master at this time either.

When the vessel approached the KV buoy, approximately one half mile from the intended slip at Pier 5, the lookout requested permission to go below. The Assistant Captain consented and the second deckhand lookout proceeded to the Saloon Deck a little earlier than usual, two decks below to untie the broken doors and prepare for docking. The Senior Mate remembered the verbal exchange between the Assistant Captain and the lookout.

No witnesses reported seeing the vessel slow down nor did anyone hear the usual changes in tone or vibration consistent with a maneuvering slowdown or course change. The Senior Mate did not notice anything out of the ordinary, but acknowledged that he was not paying attention to the actions of the Assistant Captain.

The vessel struck the Number 2 Maintenance Pier at the St. George Terminal at approximately 1520. The Senior Mate felt a "heavy vibration" and heard a "loud noise" and jumped up. According to the Senior Mate, The Assistant Captain made an exclamation and was looking down at the vessel position and in "total shock." The Senior Mate observed the Assistant Captain's right hand pull back on the thrust control to full pitch astern and his left hand steered the vessel away from the *Cosgrove*, a moored NYCDOT vessel laying ahead of the *Andrew J. Barberi*'s bow at Maintenance Pier B-2 South. The vessel came to a stop with a 45 degree angle between the vessel and the two piers over 600 yards to the southeast of the vessel's intended slip.

At this point, the Senior Mate recalled that the Master entered the Staten Island pilothouse from the Brooklyn side, or port door and exclaimed "Oh, my God, what happened, or something to that effect." The Master stepped to the control platform and moved the Assistant Captain aside and assumed controls of the vessel and then directed the Senior Mate below to see what was happening.

The Assistant Captain departed the bridge and was seen on the main deck by witnesses. The vessel had sustained major damage to the Main Deck from the impact with the corner of the maintenance pier. Extensive damage to the vessel, several deaths and dozens of injured passengers were scattered in the wreckage. Meanwhile, the Master had been left alone in the pilothouse. The Master wanted to shift maneuvering control from the Staten Island Pilothouse to the New York Pilothouse, so that the vessel could moor and emergency crews could board.

Operational Information

The New York City Department of Transportation operated a fleet of seven ferries, 2 passenger terminals, a maintenance facility and a fuel storage and transfer facility in the Staten Island Ferry operation. The system provides service from the St. George Terminal in Staten Island to the Whitehall Terminal in Lower Manhattan. Five of the seven ferries are in operation at any time. The two largest ferries of this fleet are the sister ships, *Andrew J. Barberi* and the *Samuel I. Newhouse*.

The *Andrew J. Barberi* was commissioned and entered service in 1981. The vessel was constructed and certificated as a Passenger Vessel subject to 46 CFR Subchapter H.

Subpart 70.05-Application

70.05-1 United States flag vessels subject to the requirements of this subchapter.

This subchapter is applicable to all U.S.-flag vessels indicated in Column 3 of table 70.05-1(a) that are 100 gross tons or more, except as follows:

Any vessel operating exclusively on inland waters which are not navigable waters of the United States; or,

Any vessel while laid up and dismantled and out of commission; or,

With the exception of vessels of the U.S. Maritime Administration, any vessel with title vested in the United States and which is used for public purposes.

The City of New York charged passengers a fare to ride the Staten Island Ferries, which, in 1997 was $0.50. Title 46 of the United States Code part 3301 authorized the United States Coast Guard to inspect the publicly owned vessels in the Staten Island Ferry system because they charged a fare. On July 1, 1997, the City of New York stopped charging passengers as they integrated the NYC mass transit system into the "One City-One Fare" program.

On September 17, 1997, the Mayor of New York sent a letter to the United States Coast Guard to formally request the continuation of "…periodic maintenance inspections of the Staten Island ferry boats…". The United States Coast Guard responded in a letter dated October 8, 1997. The Commander of the First Coast Guard District stated that the United States Coast Guard would "…consider whether a statutory amendment to existing federal regulations is advisable or necessary to defuse any debates over whether the ferries are "free"". The United States Coast Guard determined that a memorandum of understanding between the City of New York and the Coast Guard was the best way to

keep the vessels under the Coast Guard's inspection authority. An MOU would allow for the continuation of inspections and the ability to voluntarily go beyond the regulations.

In March of 1998, representatives of the United States Coast Guard and the City of New York met to discuss issues surrounding the drafting of a memorandum of understanding, including provisions to improve passenger safety and the quality of Ferry maintenance and operations, and to expedite the Coast Guard inspection process. On March 4, 1998, the United States Coast Guard sent a letter to the Mayor's office updating him of the status of the draft MOU advising him that improvements in ferry operations were being addressed already.

On May 19, 1998, the United States Coast Guard and the City of New York signed a Memorandum of Understanding. The stated purpose of the document cites the "mutual interest and concern for the safe operation of the Staten Island Ferries." The MOU states, that "The parties have entered into this MOU to formalize procedures for developing standard operating procedures and agreements," between the Office in Charge of Marine Inspections, New York and the New York City Department of Transportation, to improve passenger safety, the quality of Ferry maintenance and operations and to expedite the Coast Guard inspection process.

The Memorandum of Understanding stated that meetings would be held at least quarterly "…to exchange information and discuss issues of mutual concern." Any agreements specifying procedures and/or operations…" would be formalized in writing according to

the document and that the MOU would be "thoroughly reviewed periodically by each party." As of January of 2004, no agreements amending the MOU had been established.

In June of 2000, George Sharp completed a Safety Assessment of the Staten Island Ferry System. The assessment was prepared and submitted to the United States Coast Guard. The assessment is a brief description of the ferry fleet's safety equipment and scope of operation and was done in lieu of full implementation of safety regulations required under 46 CFR Subchapter W. The new regulations included expensive lifesaving equipment upgrades intended for oceangoing passenger vessels.

On September 11, 2001, the World Trade Center was destroyed and the Staten Island Ferry operation changed its operation. Among the changes that followed, the car ferries *Governor H. Lehman*, the *American Legion* and the *John F. Kennedy*, stopped carrying vehicles and police officers were posted to each ferry while underway.

The ferries were inspected under 46 CFR Subchapter H, and had valid Certificate of Inspections. Each ferry was inspected quarterly by the United States Coast Guard. The Staten Island Ferry *Andrew J. Barberi* was due for an inspection on October 16, 2003. The United States Coast Guard and the Staten Island Ferries considered vessel inspections and continuous contact during minor incident investigations as evidence of meetings to improve safety as mentioned in the M.O.U.

The United States Coast Guard conducted quarterly inspections of the vessel and concentrated mainly on its certification, physical condition and adherence to material safety requirements as specified in 46 CFR Parts 70-89. These requirements are broad in scope and flexible to accommodate a wide variety of passenger vessels.

Navigation Equipment

The *Andrew J. Barberi* is a double-ended vessel with two separate, similarly equipped navigation stations, commonly referred to as the wheelhouse, pilothouse or navigation bridge. Each navigation station has controls for the propulsion, communication and radars. There is a single gyrocompass with heading repeaters in each wheelhouse in addition to a magnetic compass in each pilothouse. The pilothouses have a 10 cm, and a 3 cm radar. The 10 cm set has ARPA (Automatic Radar Plotting Aid) capability to manage multiple radar target information. The main radar sets are located aft of the main operating console, out of the sight of the operator. There is one radar repeater above and to the left of the control station. This repeater does not display detailed radar target information. At the time of the accident, there was no electronic navigation aid aboard, like the Global Positioning System, to give the operator position information. The ship did not have an independent method of determining speed other than making an estimate based on engine power. The propulsion controls are identical on each bridge and located on the forward console, just to the right (not necessarily to starboard since this is a double ended ferry) of the centerline. The controls consist of two wheels, which provide

directional control over the Voith-Schneider thrusters, and two pitch throttles. To the left of the directional control wheels, the engine RPM controllers are used on two settings. When, approaching the dock, the operators would reduce the engine revolutions to ease vibration. The revolution setting was typically between 725 and 750 when underway at transit speed. Speed reductions are most effective by changing the pitch of the thruster blades on one or both Voith-Schneider units. Original sea trial data indicated that the propulsion system could stop the vessel in one and a half ship lengths although no recent data for the conditions that day is available.

Upon departure from either the Manhattan or Staten Island terminals, the operator would make a call to the Vessel Traffic System by VHF radio. The United States Coast Guard would acknowledge the call and track the ferry in addition to other traffic in the area. The ferry would not make a call at the end of the transit, as most other vessels are required to do. The ship is not equipped with an Automated Identification System unit, or A.I.S nor is required to have one. Each pilothouse has two VHF radios for harbor communications and a UHF radio for shipboard use. The ship routinely monitored a separate VHF channel used by the ferry fleet. In addition, the wheelhouses had sound-powered telephones for communication with the engine room and between pilothouses. An engine order telegraph is installed to give commands to the engine room if propulsion controls are lost. The ship had a whistle, general alarm and standard navigation lights suitable for the size of vessel. A public address system is installed.

The *Andrew J. Barberi* is not required to have a course recorder or any type of logging device or data recorders aboard and is not equipped with them. The actual position of the vessel is not recorded or tracked and the operators use only visual means or radar to navigate. The New York City Department of Transportation did not have any additional requirements for navigation or safety equipment beyond those listed in 46 CFR Part 77 which the United States Coast Guard would inspect. The Andrew J. Barberi was equipped with the navigation and safety equipment, which was required under the regulations relating to passenger vessels.

On the day of the accident, the weather was clear and visibility was approximately 10 miles. It was windy with gusts estimated up to 30 miles per hour and there was an outgoing tidal current, but not beyond the vessel's capabilities to compensate according to other ferry Masters the Board interviewed. According to the USCG Vessel Traffic Service, harbor traffic was not abnormal that day.

Training

The Staten Island Ferries conducted weekly drills for Fire and Emergency, Abandon Ship, and Emergency Anchoring. Crewmembers work an hour or two extra prior to or after a shift to participate in these drills, which are conducted without passengers. During a drill, the operator sounds the ship's whistle and general alarm bell. The crew gathers to simulate actions taken during an emergency depending upon what type of drill is

signaled. When a new employee deckhand reports aboard, they are given verbal instructions and informally trained on the job.

Automatic Electronic Defibrillators were installed on the vessel and the crew was being trained in their use, but there is no requirement for other types of training in crowd control, bridge resource management, or fire fighting.

There is no formal training program for Mates, Masters or Assistant Captains to learn ship handling at the NYCDOT

Company Management

The deckhands reported to the mates of the ferry, and the mates reported to the captain during vessel operations. The assistant captain reports to the captain and the captain reported to two port captains of the ferry, who oversaw the day-to-day operations of the ferries and were the immediate supervisors of the ferry officers, writing the officers' performance appraisals. The port captains reported to the Director of Ferry Operations of the ferry, who oversaw the ferry system's operations and maintenance. The Director of Ferry Operations reported to the Assistant Commissioner, who oversaw all aspects of ferry operations i.e., operations, maintenance, terminals, and ferry personnel and budgeting. Two other individuals also reported to the Assistant Commissioner, the Director of Terminal Operations and the Director of Administration. The Assistant

Commissioner reported to the NYC DOT Deputy Commissioner. The Deputy Commissioner reported to the NYC DOT First Deputy Commissioner. She in turn reported to the NYC DOT Commissioner.

At the time of the accident, NYC DOT Staten Island Ferry division had an annual budget of approximately $452 million, and about 430 to 450 employees. Of those, 19 were captains and 16 assistant captains. The New York City Department of Transportation managed much of the city's transportation infrastructure, including city streets, highways, sidewalks, and bridges. DOT is responsible for installing and maintaining street signs, traffic signals, and street lights, resurfacing streets, repairing potholes and other street defects, installing and maintaining parking meters, managing municipal parking facilities, and operating the Staten Island Ferry.

There was no formal Safety Management System in place, and many directives were passed along verbally to the crew. Few formal procedures were in place and each Master had their own management style, following tradition and past practice as their guide. Few officers or crewmembers remember receiving written instructions or refresher training beyond the first days of their employment.

A standard operating procedure document, stating the duties of crewmembers aboard the Staten Island Ferries, was given to Board investigators days several days after it was requested on scene. The document was not widely distributed or known among all of the

employees investigators interviewed. Some did acknowledge having seen such a document. No other written directives or memorandum were found on board or in the offices of the Staten Island Ferries pertaining to the safety duties or procedures on the *Andrew J. Barberi*.