

## **New York Bight Swim — Sandy Hook to Atlantic Beach**

**Swimmer Patricia Sener**

**16.1 statute miles, 14 nautical miles**

**Time: 11:05:35**

**Navigation notes compiled by Rondi Davies**

**Tides at Sandy Hook:** HT 1:12 PM 4.59 ft; LT 7:05 PM 1.16 ft; HT 1:12 AM 4.34 ft

**Tide differential:** 3.43 feet

**Tides and Currents:** A tide with a very small differential was selected for this swim in order to reduce the impact of the strong ebb and flood currents that move in and out of the New York Harbor and which the swimmer had to cross. The small tide also placed lesser importance on positioning the swimmer at ideal locations on the course with respect to avoiding the strong currents. At the same time, using the current assist would have made for a faster, easier swim.

Patricia's swim started on a flood current at North Beach Sandy Hook, 2 hours and 15 minutes before high tide. The swimmer used the last two hours of the flood current to swim northeast across the Sandy Hook Channel, and to ideally position herself about 2 miles south of Breezy Point in anticipation of the ebb current out of the Narrows and Raritan Bay.

Studies of the Stevens Institute NYHOPS current model from a similar tide (June 23, 2015) suggested there would be significant current assist for the swimmer from the ebb out of the Raritan Bay (which has a heading of about 60°), once the swimmer was in the vicinity of the Ambrose Channel; ideally this was to take the swimmer in the exact direction she wanted to go and provide up to a 1.5 knot current assist. Thus the challenge of modeling the swim was to position the swimmer near the Ambrose Channel when the ebb current started. If the ebb had started earlier, or the swimmer had arrived at the Ambrose later in the tidal cycle, she would be pushed southwest and into the middle of the lower bay.

At about 3PM, a dominant current out of the Narrows pushed the swimmer east and offshore. The 10-12 knot northwesterly wind also contributed to the offshore push. The current maps show the swimmers pace increased to 2.5 mph for the next three hours indicating a generous current assist. However, the paddler had to angle the swimmer northward to prevent too much of an easterly/offshore push. The small tide proved the ebb current assist out of the Raritan Bay was less than anticipated.

For the last 90 minutes of the swim an offshore current of 0.25 knots slowed the swimmers approach to Atlantic Beach. The combined wind and current direction created coastal upwelling (we assume, though it's shallow water) which caused the water temperature to drop by four degrees Fahrenheit.

**Swimmer Pace:** It was assumed the swimmer would hold a pace of 1.7mph. This was calculated from her time for Stage 4 of 8 Bridges two months earlier. For the

first two hours a strong pace was held. After this the pace dropped off due to swimmer fatigue. In retrospect the pace calculations should have accounted for impact of the wind, chop and cross currents on the swimmer.

**Compass Headings:** The kayaker had a compass mounted on her kayak for navigation. Calculations suggested the kayaker would need to hold a heading of  $80^\circ$  to magnetic north for the majority of the swim. She would move the swimmer in an easterly direction while the NW-SE currents in and out of the harbor would move her left and right. However, since the currents were weaker than expected and the wind played a greater role than expected, we had to adjust the kayakers heading immediately. She started at  $70^\circ$  and we slowly adjusted this to  $30^\circ$  throughout the first nine hours of the swim. Once we were about four miles from our destination, the heading was changed (to about  $50-60^\circ$ ) so we were in a direct line with the finish point.