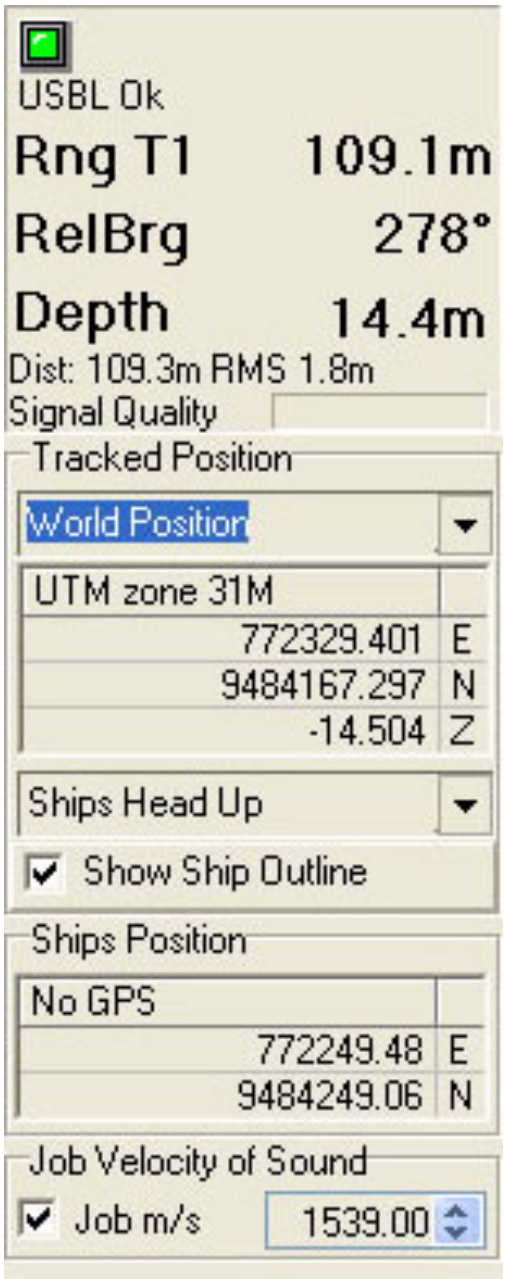
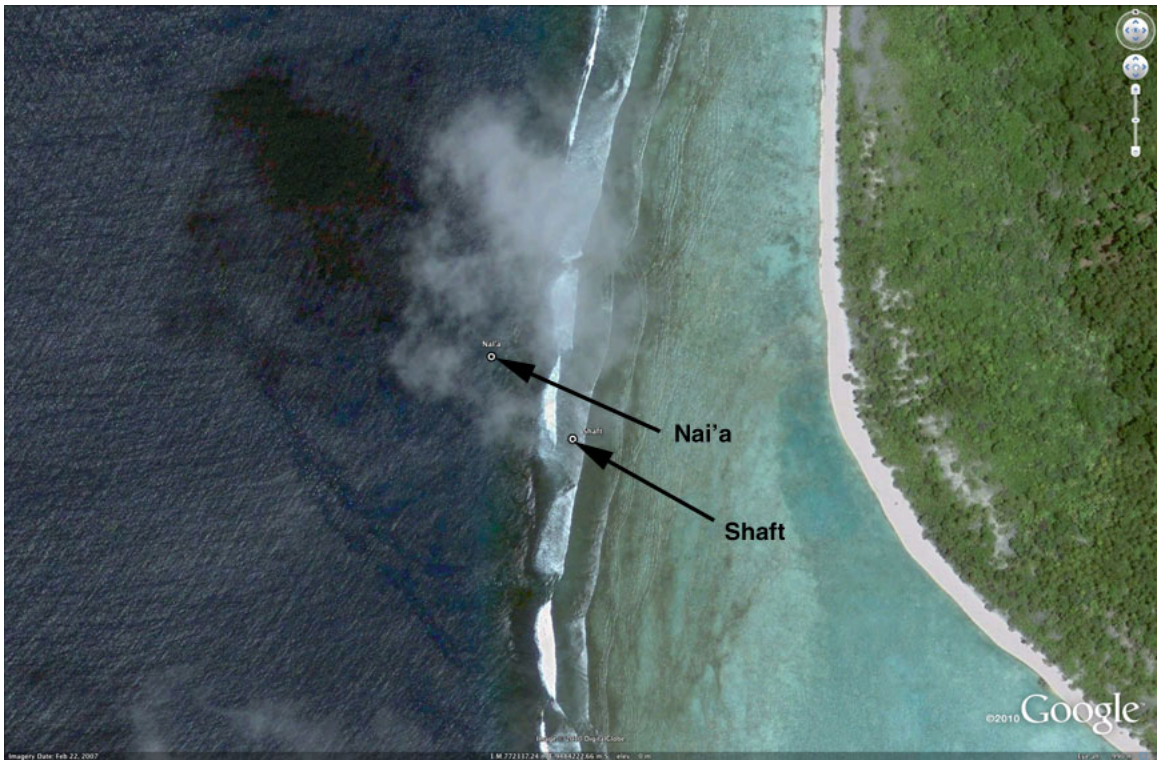
GPS Discrepancies

The map in the initial Seabotix report dated 3 June 2010 uses the Norwich City shipwreck as the reference point for depicting the searched areas overlaid on the Google Earth satellite image of Nikumaroro.

When I questioned the location of Norwich City as shown on the map, you provided a screen shot of the tracking system data showing the UTM coordinates for Nai'a and the propeller shaft of Norwich City.

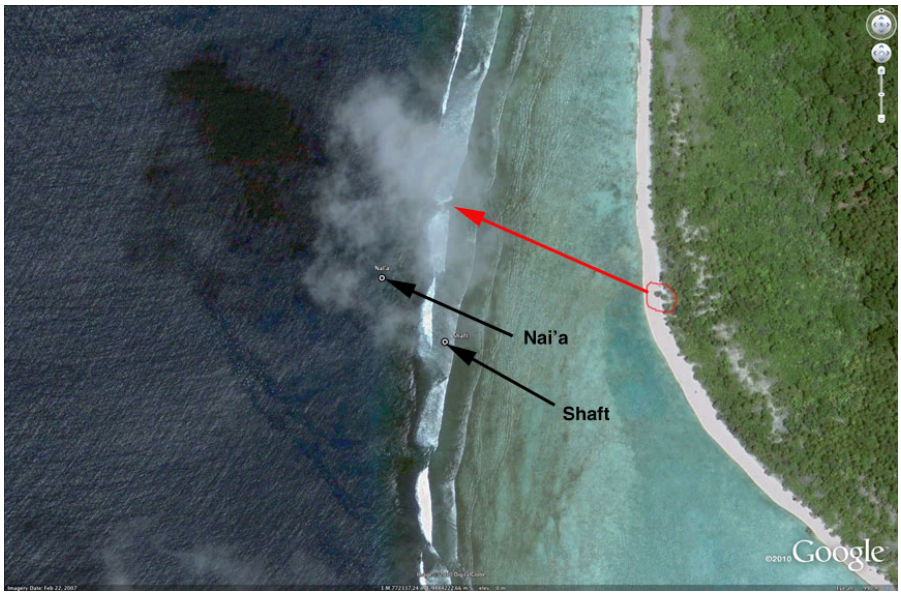


You also provided a map showing the Nai'a position and the shaft position plotted on the Google Earth image.

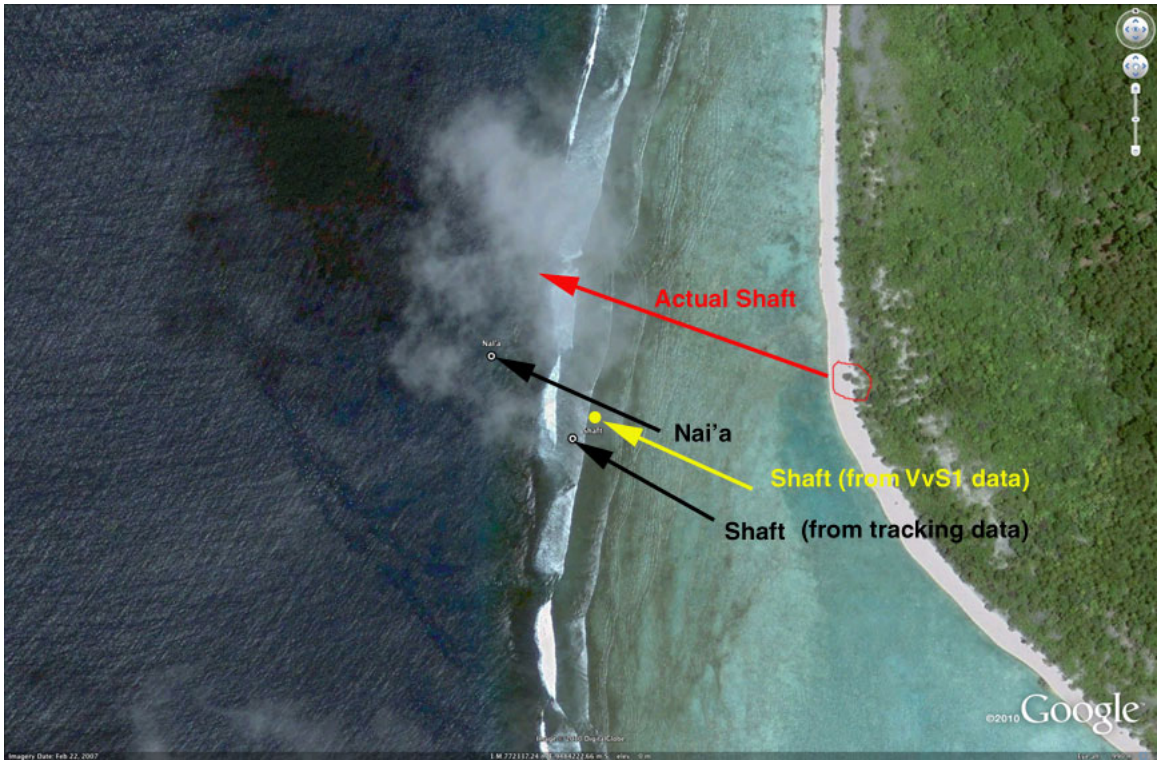


The satellite image used by Google Earth was acquired by Digital Globe on Feb. 22, 2007. In that image there is a cloud partially obscuring the Norwich City wreck.

Comparison with a satellite image acquired by Digital Globe on November 11, 2009 in which the wreck is clearly visible makes it apparent that the “shaft” location is incorrect.



The shaft coordinates from the VvS1 depth data you sent show yet another location.



The problem is not Google Earth. I plotted your tracking data UTM coordinates and got the same locations you did. I then dug out the GPS coordinates we collected in 2001 (before the advent of Google Earth) for several prominent island features – including the Norwich City prop shaft -and they're spot on when plotted in Google Earth.

It appears that, for whatever reason, the GPS coordinates you were getting both from the tracking system and from VvS1 sonar system were flawed.

The fact that both systems were giving you flawed readings makes me wonder where the fault was in the satellite. My own experience with GPS during the expedition would seem to reinforce that suspicion. I twice used a hand-held GPS to walk to the Nessie location and didn't end up where I expected to end up and I'm not even sure that I ended up in the same place both times. I'll check with the other guys who were using GPS and se if they had problems.

If the distortion was consistent we could plug in a correction. However, the fact that the two erroneous locations for the shaft don't agree makes me fear that the distortion was not consistent and, unfortunately we have only one "ground truth" data point (the prop shaft).

How about the AUV in the lagoon? Didn't that navigate by GPS? Your interactive map of the lagoon search seems fine.

Very puzzling. Any ideas?

Ric