

Forum

Turbulence at the Shelf Break

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This contribution relates to a series of notes on the above topic which appeared in the September 1988 issue of the *Journal*. It was forwarded by Professor R. Motte.

I was most interested in the notes on 'Turbulence at the Shelf Break' and I thought it would be of interest to report an incident which happened to me in 1975 off the north coast of Brazil.

I was second officer of the motor tanker *Bonny*, on charter to Petrobras and running gasoline from Santos to various ports, usually in Northern Brazil (San Luis and Belem being our usual destinations). Due to the poor navigational aids, and the low swampy nature of the coast, it was our practice to stay approximately 50 miles offshore, running parallel to the coast, and then, having obtained good sights, to turn 90° to port to close the coast, keeping close watch on the echo sounder.

On this particular morning, around 1000, I had obtained good sights and turned to port to close San Luis. Weather conditions were perfect, Beaufort force 1, negligible swell, barely a ripple on the water, visibility more than 20 miles. Then, ahead, I spotted a line of breakers, which stretched from horizon to horizon. Parallel to the coast.

Suspecting that I may have been closer inshore than my sights indicated (despite the perfect conditions) I called the master, rang 'standby' and switched on the echo sounder, which showed no bottom on any depth scale. With the master on the bridge, I re-checked my sights and sextant and could find no mistakes. At steerage way, we nosed into the breakers, taking casts with the lead, but found no bottom. It was an eerie scene, not a breath of wind, but around us the sea raged and tumbled. The width of the band of breakers was about 1 mile, with calm water both inshore and offshore. Half way through the belt of breakers the echo sounder began to pick up a bottom, rising steeply from abyssal depth, finally levelling off (if memory serves) at around 300 ft. We passed through the breakers into smooth water, and our landfall proved my sights to have been good.

We hypothesized that we had witnessed the effects of the N. Equatorial current tumbling over the shelf edge. Given that superimposed waves can be additive, what we witnessed in flat calm conditions, waves 10–15 feet high, must be a frightening phenomena if compounded by a heavy swell.

On a similar subject it is worth noting the loss of the oil rig supply boat *Seaforth Jarl* on December 18, 1983. She had loaded a deck cargo of oil-rig chain in Mulgrave, NS (on the Canso Strait) for Marystown, Newfoundland. All went well until she passed out of the deep water and onto the edge of the Grand Banks. She was hit by severe turbulence. The chain on deck shifted, tearing open the engine room and she sank, happily without loss of life. I can vouch for the viciously steep seas on the edge of that bank, and also on the 'Stone Fence' E. of Sable Island on the edge of the Banquereau, from my own time as master in the Canadian offshore oil industry.