
Surviving the Storm

Coastal & Offshore Tactics

Fourth Edition



Steve & Linda
DASHHEW

B E O W U L F



Shakti is 44 feet 7 inches (13.7m) long, 39 feet (12m) at the waterline, with a beam of 13 feet (4m) and draft of 6 feet 6 inches (2m). As cruising boats go, she's relatively quick.

SHAKTI

Thane and Corinne Roberts have been cruising aboard *Shakti*, a Norseman 447, since March of 1997. Prior to taking up the cruising lifestyle, Thane had raced, taught small boat and sailboard handling, and done a variety of short cruises and charters. Their departure from Tonga took place two days after that of *Bucephalus*.

Thane picks up the story from here:

After completing our errands in Nuku'alofa, we left the security of the boat basin and headed out to a small offshore island to make our final preparations. I wanted to clean the hull and check the propeller, which would have been a disagreeable task in the confines of the small harbor, where waste was pumped directly overboard.

On the 18th, the same day we departed to the outlying island, four other yachts left directly for New Zealand: *Glory Days*, *Max*, *Sweet Prophecy*, and *Bandit*. Our small group of laggards, which would leave one day later, consisted of *Bossa Nova*, *Hio Avae*, *Sara*, *Freya*, *Vanessa*, and *Shakti*.

While we were checking our systems, securing all loose items on deck, and bracing ourselves mentally for what was to come, David from *Bossa Nova* went back into town to receive the latest weather prognosis from our "weather guru" Bob McDavitt. The basic problem, of course, is that the passage lasts at least two to three days longer than his five-day forecast, so the uncertainty lies just when one is approaching New Zealand's rocky coast and is most likely to encounter a dangerous storm.

David returned with the message that Bob thought we might have a "reasonable" trip: Not too comforting to me, but David was convinced it was the perfect moment—he may have decided that prior to receiving the report. While I did not agree that it was

Five-day forecasts:

- These can be quite reliable in some cases, but often anything beyond 24 to 48 hours is going to be a wild guess.
- One of the questions to ask the forecaster is about the quality of the data in the forecast periods beyond the next day or so.
- Most forecasts will give you a heads-up on how the computer models are shaping up and the reliability of their data.

the "perfect moment"—reasonable would be more accurate—we would be leaving on my birthday, which I thought might be auspicious. After reviewing the weather maps, I still had two concerns: 1) that we would encounter headwinds two-thirds of the way through our voyage, and 2) that a dangerous low might develop as we approached the coast of New Zealand.

Departure from Tonga

Later that afternoon, our small flotilla threaded its way through the reefs to the west; there we broke free of the islands of Tongatapu and headed out into the open sea. The sky was overcast with a few small squalls as we cleared the pass through the barrier reef in the fading light of day.

It was not long thereafter that *Hio Avae*, the "chick boat," encountered problems. Kristin's previous female crew had been replaced by her ex-boyfriend—neither of whom had a lot of sailing experience to supplement their youthful exuberance. They had just exited the pass when they stopped. A quick trip into the water revealed that their propeller had fallen off...whoops. We were about to turn around and tow them back, when a local hotel offered their launch.

Upon hearing that they were safely on their way back inside the protection of the reef, we continued sailing. It was a big disappointment for them and ourselves to have lost one of our fleet. They would now be forced to make the trip alone.

First Three Days at Sea

The first three days of the trip, through the 21st, were some of the best sailing we had encountered. The seas were oily calm with a gentle breeze that was just sufficient to fill our spinnaker and carry us along at a comfortable speed. At night, our wake bounced small beads of light across the smooth sea surface, which reflected the billions of stars in the sky above. The weather was still tropical and the t-shirt worn to protect from the sun during the day was sufficient to keep us warm all night during our watches.

The winds were light and variable from the west. We held as high a course as possible, but were just able to lay Minerva. Since we did not see any surprises on the weatherfaxes as we approached Minerva Reef, we decided to forego the stop and head on a more favorable course directly for New Zealand.

This tactic, along with many other small, seemingly insignificant decisions, were to combine to greatly affect our different fates in the coming days. In hindsight, the realization of the delicate balance, in which our destiny had hung, suspended, was quite unnerving when viewed from the standpoint of a random universe. However, I believe in fate, so I saw these small events as less portentous since the outcome was secure—some combination of circumstances would always conspire to produce the same result.

I sailed hoping that our destiny was in the hands of a benevolent God, or at least some protective force—guardian angels or the spirit of a lost father—which would protect us. Together, I and my divine navigator(s) set the course which *Shakti* followed south.

"At this point, we were sailing with a full main and 130 percent genoa and moving along at 4 to 5 knots. When the boatspeed dropped too low, I turned on the engine. At the end of this period, the winds started to move aft, and I was able to sail at six to seven knots under a 1,500-square foot gennaker. The seas were flat, and the larger sail area made a huge difference in boat speed, enabling us to pass *Freya* and move up on the boats ahead of us. In retrospect, I think that these first days making good time with the cruising spinnaker may have cut one day off of our trip."

With three days of perfect sailing conditions, we were being lulled into imagining that our entire voyage would take place in these benign conditions. The boats were starting to spread out across the flat seas. Everyone was paying careful attention to the weather and trying to best position themselves for what would come in the future. It was as if we were pieces on a large game board. Time would tell who would win or lose from their strategy, each trying to anticipate from which direction the winds would fill. What we didn't realize was how high the stakes would be.

The wind died somewhat on the 22nd, but we were still able to carry the gennaker because of our course change, and continued to make good time. The winds were variable, and we had to motor occasionally.

We had planned to ride the back of a low southwards, staying just out of its clutches. Two of the boats that left the day before we did, *Glory Days* and *Max*, were already being affected by the edge of the storm and reported that conditions aboard were like living inside a ping pong ball.

Cold Front

On the 23rd, we sailed through a cold front and the winds increased as the temperature dropped. We were catching the low and the winds were rising. Unfortunately, they were mostly on the nose. At this point, we were sailing with a full genoa and a single-reefed main.

Our boatspeed was about 5 to 6 knots. Our course was just to the east of the rhumbline, but we were sailing high and trying to make as much westing as possible, as we headed south.

As the winds continued to move southerly on the 24th, I decided to roll the genoa and motorsail using an extremely flat staysail and double-reefed mainsail. With this configuration, I can sail between 25 and 35 degrees of the apparent wind direction. I was able to stay close to my rhumbline over the next two days. This was the second tactic that shaved valuable hours off the trip time.

Eventually, on the 25th, our seventh day out, the winds swung around to the north and we were able to sail on a reaching course under main and genoa at 5 to 6 knots in 10 to 15 knots of wind—I am not sure why our boatspeed wasn't higher in these conditions.

Although the ride wasn't as comfortable, our daily runs increased from 125 miles per day to just over 150 miles per day. The phosphorescence that we had seen in our wake was now on the deck, which was constantly awash as we cut through the building seas. We had been trying to make westing as we ventured south to set up for the westerly winds we were anticipating. When the wind finally did shift, however, it went only as far as the southwest, forcing us to sail directly into the wind and waves to keep our proper course. Motorsailing enabled us to keep up our boatspeed and stay closer to our desired course, but it was a bumpy ride for the next two days.

On the 26th, the wind shifted to the northeast and started to build. The new low crossing the Tasman was moving much faster than anticipated.

"One night I was awakened by a strange clicking sound. I raced on deck to discover that Corinne was using a winch to adjust the headsail. I was in shock. It was the first time she had taken it upon herself to see if she could put *Shakti's* sails back in balance with the variable winds. This was just one of several instances in which Corinne started to take more responsibility for seamanship aboard. Her timing was good since we would need all our resources for what lay ahead."

When the wind was on the beam, I carried the staysail, a mostly-rolled genoa, and a double-reefed main. In the rising winds, I was able to control speed by rolling the genoa in and out, depending on the wind strength.

A smaller headsail would have been preferable for better sail shape, but what I was using seemed to balance the helm and keep the boat moving. We would carry this sail plan all the way into Opuā, motoring on occasion to maintain an average speed of close to 8 knots.

We were now aware of the strong front on our tail and were careful not to let our boatspeed drop below 7 knots. By monitoring the weatherfaxes and updates from Des, we realized that the front scheduled to arrive on Saturday was now forecast to arrive Friday. Having learned this 24 hours in advance, we were able to pull out the stops and make all way possible in order to beat the system.

Landfall on a Lee Shore

While I was sure that we would arrive safely on Friday the 27th, I kept the boat moving quickly throughout the night in the hope that we could make landfall before darkness. Friday morning everything changed. The cold front had accelerated and an expanding high pressure system to the east was going to create a squash zone just off the coast. Fifty-knot winds with "very rough seas" were forecast to develop by Friday afternoon or evening.

This would be directly in our path and coincide with our arrival. The winds would be from behind us, which was good, but would force us onto a lee shore, which was bad. It was a cruel joke to be so close—already patting ourselves on the back—and at the last minute be reminded that we weren't the ones running the show. I did what any normal, reasonable skipper would do in a similar situation. I panicked.

Our navigation had to be perfect. We would have no second chance to return offshore against the strong winds if we missed our landfall. We also had to arrive as early in the day as possible to escape the worst of the storm and arrive in daylight.

The wind and seas were already building and I could see a wall of dark clouds on the horizon, bearing down on us from behind. I was preparing the boat for storm conditions, but was hesitant to reduce sail prematurely since we needed every bit of speed. Each half knot would move up our arrival by one hour. If our speed dropped below 7 knots, we put on the motor.

From the moment of the fateful forecast, I did not have a minute of repose until our arrival. Although I had only slept a few hours the previous night, I was running on adrenaline. I staved off fatigue, and to a certain extent panic, by constantly trimming sails and checking my navigation while I looked over my shoulder at the approaching wall of blackness. Corinne slept. By noon it appeared that we would make it. With only twenty miles to go, the wind was still below 35 knots and the seas below 10 feet (3m). We were surfing down the swells at an average speed of 8 knots.

I had picked up the bay on radar and calculated that we would be in the lee of Cape Brett in three hours, within late after-

noon. The feeling of relief at our own good fortune would soon be replaced by concern for those who were still in the clutches of the impending storm: *Sweet Prophecy*, *Bandit*, *Freya*, *Salacia* and, possibly, *Sara*.

Two hours later, the vague outline of the headland at Cape Brent could be seen through the mist and rain. I am still amazed every time we arrive exactly at our intended destination after traveling over 1,000 miles and passing many days at sea—eight, in this case. During the next hour the rough, sculpted form of the cape slowly came into focus and we were soon looking through the large hole at its base as we sped by on our way into the bay.

We finished our check-in and left the dock to motor back to Russell where *Bossa Nova* and *Bucephalus* were anchored. We just had time to drop our hook before night fell and the wind started howling. Since it had been calm inside the bay while it was blowing 35 knots outside, I couldn't imagine what the conditions were like offshore now, where four boats were still trying to make landfall as the wind gusted to over 40 knots in our protected bay.

Despite the wind and rain, we found our way ashore and joined our friends for a celebration dinner at one of the town's better restaurants. All of us were dressed in our foul-weather gear and must have looked like a wayward Everest expedition as we entered the posh establishment and started to disrobe, creating a small inland lake. Everyone was friendly, however, and we received a warm welcome for a well-deserved meal.

It was not long before the adrenaline rush of our safe arrival began to wear off and our heads started to wobble as if held by only a thread to our fatigued bodies. We arrived back on board and fell into a deep sleep to the sound of the wind whistling through the rigging.

We heard later that *Sweet Prophecy* and *Bandit* arrived at 0100 later that night. Before they reached the bay, they were experiencing winds up to 60 knots and seas at 15 to 20 feet (4.6 to 6.1m), building rapidly. They entered the bay without charts and with only minimal visibility in the driving rain. They were extremely fortunate to be able to find their way to a protected anchorage in the darkness. At least three more boats still remained unaccounted for: *Freya*, *Salacia* and possibly *Sara*.

Weather Logic

Thane spends more time than most studying local conditions and various weatherfax reports. He is not shy about consulting outside experts, as you have seen.

We asked Thane to outline in more detail his weather logic for this passage:

Our timing for the passage to New Zealand was based on the concept that it is best to wait for the end of the winter storms but not so long as to risk encountering an early-season cyclone.

Conventional wisdom holds that the window opens in early November, although some believe that leaving later is better than earlier. I wanted to leave as late as possible.

To get a reading on the timing of the cyclones last year, I monitored the sea surface temperatures from the AXM/AXI fax

stations in Australia and plotted them against the normal temperatures shown in the Pilot Charts for the same time of year.

Based on what I could see, the warm water required for the creation of cyclones was following a more or less normal pattern. I guessed that it would be unlikely to encounter a cyclone prior to the beginning of December.

The other consideration was the winter storm activity and position of the Tropical Convergence Zone. There appeared to be a lot of activity in the early part of November with several lows crossing our intended course. We hoped that things would settle down a bit more if we sat tight and waited—which they did to a certain extent.

Towards the middle of the month, a large high moved across New Zealand and the isobars started to spread out. The track of the highs and lows seemed to be moving south. The only potential problems seemed to be a couple of lows forming in the Tropical Convergence Zone which was now around 25S. I watched these, but since I didn't see any indication of them being fed from above on the 500mb maps I doubted that any of them would deepen significantly...and they didn't.

There was a second high over southern Australia at this time, that I hoped would move across and be sitting above New Zealand when we arrived around one week later. The easterly waves seemed to have a period of about one week to ten days.

The fact that most boats had already headed south to avoid any early cyclone played on my insecurities and prompted me to head south at the first opportunity, rather than waiting for the weather to settle any further.

Since I wasn't convinced that my simplistic water temperature analysis would provide an accurate prognosis on the lateness of the season, I decided to "be on the safe side" and leave earlier than I might have otherwise. It still did not appear to me that the weather had settled by mid-November, when we decided to leave Tonga. The boats that left just after us experienced gale conditions, but those who left in the beginning of December had a good trip with consistent winds from 12 to 20 knots.

A week later the conditions worsened once more for the last group to leave Tonga.

Professional Forecasts

In addition to my own amateur efforts, I obtained copies of two reports generated by Bob Rice for *Bucephalus*. I also went halves on a Bob McDavitt five-day forecast. Both weather consultants talked about the low that was forecast to move over the North Island. It was predicted to occur prior to our arrival and Bob pointed out that it may actually help our passage with northerly winds.

I did not see anything on their extended forecast to contradict my own expectations for the conditions we were likely to encounter. It seemed like riding on the back of the low might be a good strategy to pick up some westerly winds, if we arrived just after it had safely passed. At the time, I did not think that the low would move so slowly over New Zealand.

I was concerned that we might encounter headwinds if we arrived too soon after its passage before the high filled in.

Understanding the 500mb level fax charts is the very best thing you can learn to do to avoid heavy weather.

Surface depressions are the result of a venting process, which takes place in the upper atmosphere. If there's no venting going on, you are not going to have depressions.

The signs to watch for at the 500mb level are well understood, and easily learned. For more information, see *Mariner's Weather Handbook* starting on page 128.

My other worry was the southerly position of the Tropical Convergence, which might spawn a new low that would cross our path before we could reach New Zealand. I had hoped that with the recent passage of the first low, the second, if it came, would be some distance behind.

On November 18, the first of our group of boats left. It appeared that the boats that had left a day earlier benefited from stronger winds for most of the passage, since they were closer to the low, which had by this time almost stalled over New Zealand.

The bad news was that they eventually caught up with it, and for a short while were sailing in gale-force winds (40 knots) and seas (20 feet/6m).

Our plan was to leave a day later, November 19, and head towards Minerva Reef. Bob McDavitt was supposed to be supplying us with another forecast prior to our arrival at Minerva, which would help us decide whether or not we would stop to wait for the weather to clear or continue on. I chose a course for Minerva Reef that was west of the rhumbline, since I expected southwesterly winds to fill in as we approached New Zealand.

The only other strategic decision was following the common knowledge to keep moving as fast as possible. I did not want to spend any more time exposed to the weather than necessary.

I had filled my tanks prior to leaving, and intended to motor if my speed fell below 5 knots. (In fact, it was usually more like 3 to 4 knots before I used my motor.) It was important to monitor my fuel consumption since my tanks only hold 100 gallons (plus 18 on deck). I would be able to motor for no more than half of the total distance. Since I expected the latter part of the trip to be in the high, I decided that I would try to save as much fuel as possible for the second part of the trip, when I might have less wind.

In Retrospect

Anyone completing a passage where there is some degree of weather exposure is going to learn from the experience. It is even better when we can learn from what others have been through.

Thane has given the subject of crossing tactics a lot of thought, as you can see by the preceding comments. His suggestions for others are worth noting:

I think it is a good idea to watch the weather in advance of any passage and try to establish the pattern (the period of the easterly waves for this part of the world). When the weather seems settled and predictable is usually the best time to leave. I think I may have left too early for my crossing to New Zealand, since the weather was still establishing itself and the low was moving too slowly across the North Island.

Keep the boat moving and sail the shortest course. Unless there is a good reason to do otherwise, sailing close to the rhumbline is usually the most prudent course of action in unsettled conditions. (Several boats who tried to anticipate the wind shifts found themselves on the wrong side and spent many uncomfortable days beating to weather or hove to.)

Try to give yourself an alternative plan (escape route).

"Catching up with the low" could have been foretold by watching the weatherfax charts.

The stalled, and expanding, high pressure system was bound to slow down and then stop the southeasterly progress of the low.

"While every sailor should be self-sufficient, traveling in a fleet and sharing information can be a valuable resource. We created a 'net' that met twice a day and shared weather as well as other pertinent information (navigational hazards, and the like). The weather experienced by the boats directly ahead is usually the best indication of the conditions you are likely to encounter."

"Sail fast. Carry the proper sails. Knowing your boat and how to make it perform well in a variety of conditions is invaluable for shorter, safer, and more comfortable passages. In retrospect, I think that sailing with a 100 percent to 110 blade on long passages would have given me better sail shape and flexibility in my sail plan.

"Keep abreast of the weather from as wide a variety of sources as possible. Don't rely on any single source but your own interpretation based on the actual conditions you are encountering. Shoreside forecasting is rarely more accurate than on-site reports.

"Plan on having sufficient fuel and a properly serviced engine should the need arise to motor. Knowing the best sail plan for motorsailing can add boatspeed and comfort during the times when it may be necessary to use the engine, especially in headwinds.

"Don't be afraid to alter or reverse your course if the weather ahead doesn't look favorable."

Although we didn't need to take advantage of the stop at Minerva, several boats in the group ahead of us did so and saved themselves a lot of grief. It was a good tactic to pass close to the reef in the event that we needed to stop. Next time I will have e-mail on board so I can pick up McDavitt's weather forecast en route.

Another example of vessels needing to change their itinerary were the boats headed to Auckland who had to divert to Opuia on the night of the storm. Since they didn't plan on going to Opuia, they didn't have the proper charts on board. We carried charts and waypoints for all ports on the east coast of the North Island as well as Minerva Reef and the Kermadec Islands route.

Freya relied on the forecasted conditions (40 knots with 15 foot seas) when deciding to heave to in the approaching low. In fact the conditions were much worse—not that they could have known.

To my knowledge, New Zealand weather has limited coverage above 25 degrees South, which is in the jurisdiction of Fiji. Their weatherfaxes do not indicate this and even show isobars, which would lead one to believe that their analysis is complete to the edge of the chart at 10 degrees South.

Inmarsat C provides both Fiji and New Zealand weather which, taken together, offer a more complete forecast on board. I would write the Fiji and actual weather on the Met Service weatherfaxes to supplement my other prognostic tools. Sometimes I would write down my own forecast to check it against what actually occurred later.

On the other hand, it is always best to make your own decisions based on your own vessel and its capabilities. Some of the smaller boats ran into bad weather when they tried to fit through a weather window from which only the larger boats were in a position to benefit.

Avoid the crowd mentality. I fell prey to this one when I left Tonga earlier than I wanted so that I could sail with my friends.

Prepare your boat properly for sea. As much as possible, clear the decks and have everything well battened down, both above and below decks. It is too late to start taking the necessary steps when bad weather hits. Think of your boat as a potential submarine and prepare accordingly. In the future, I would be more prudent about what was carried on deck, the securing of the hatches, and other vulnerable areas. I installed storm windows on my hull ports when I reached New Zealand.

Watch the highs as well as the lows. The problems that our fleet encountered when approaching New Zealand were as much from the expanding high (that had already passed through) as the approaching low. Stay clear of the "squash zone": the area between two systems where the isobars tend to compress, creating strong winds and seas. Since the danger zone can be relatively narrow, around 100 miles in some cases, it can sometimes be avoided if one is sailing defensively.