

Seamanship

Lessons from three recent accidents



The answer is **NOT**:

“They were stupid or ignorant”

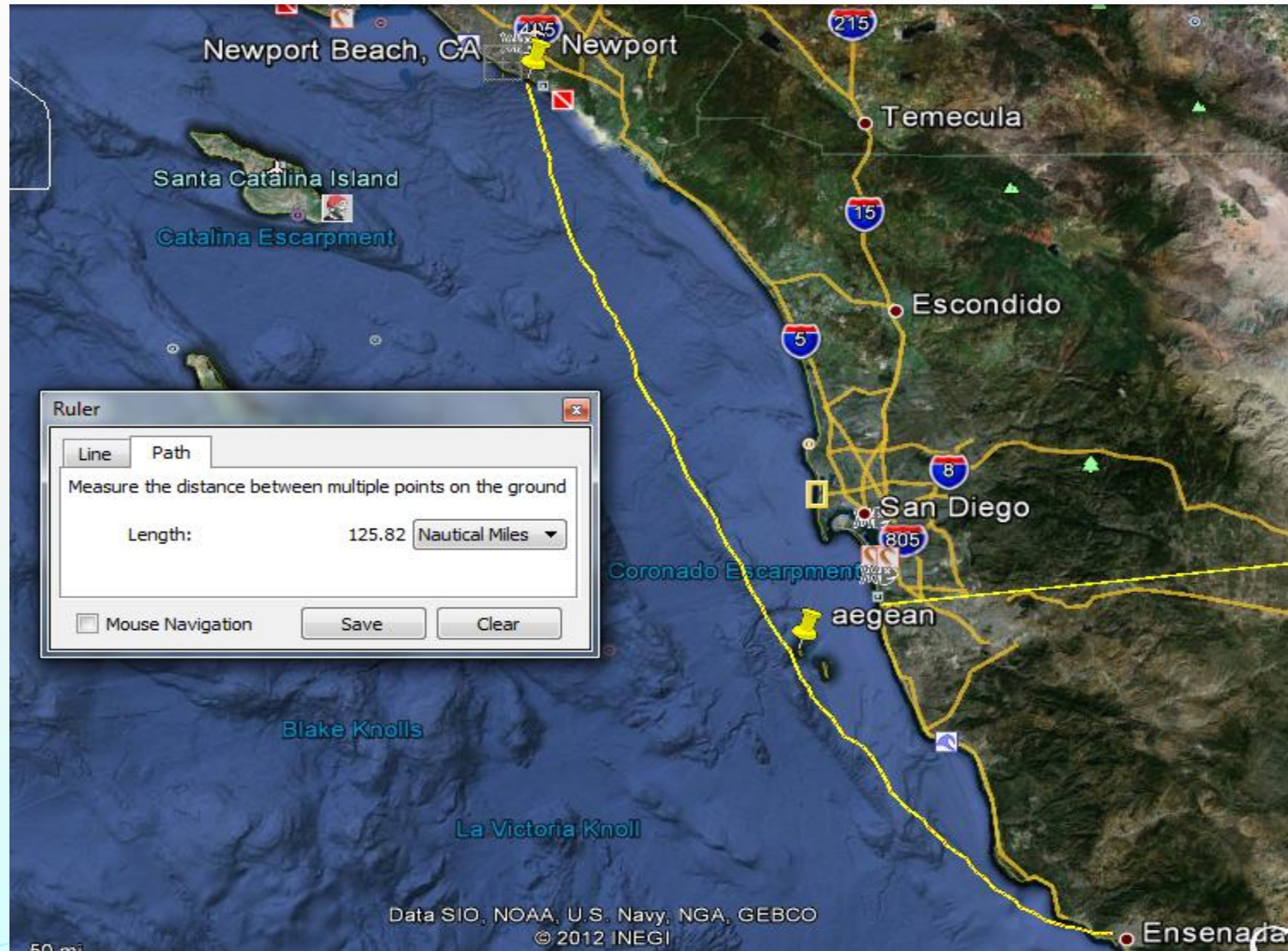


The question **is**:

“How do intelligent people make such mistakes”



Newport to Ensenada Course



Aegean

Hunter 376



“Not their first rodeo”

Cruising Class winners in two previous Ensenada Races
Podium finishes in four.



North Coronado Island



© Phillip Colla
www.OceanLight.com

Skipper's Normal Procedure

- ◆ Set way point about 1nm before island as decision point, with waypoint alarm
- ◆ Minimum 2 people on watch, skipper sleeps for 1-2 hr during motoring
- ◆ No radar guard zone, because of too many targets in race

Spot track

Steering under autopilot & motor
weather calm & clear but dark

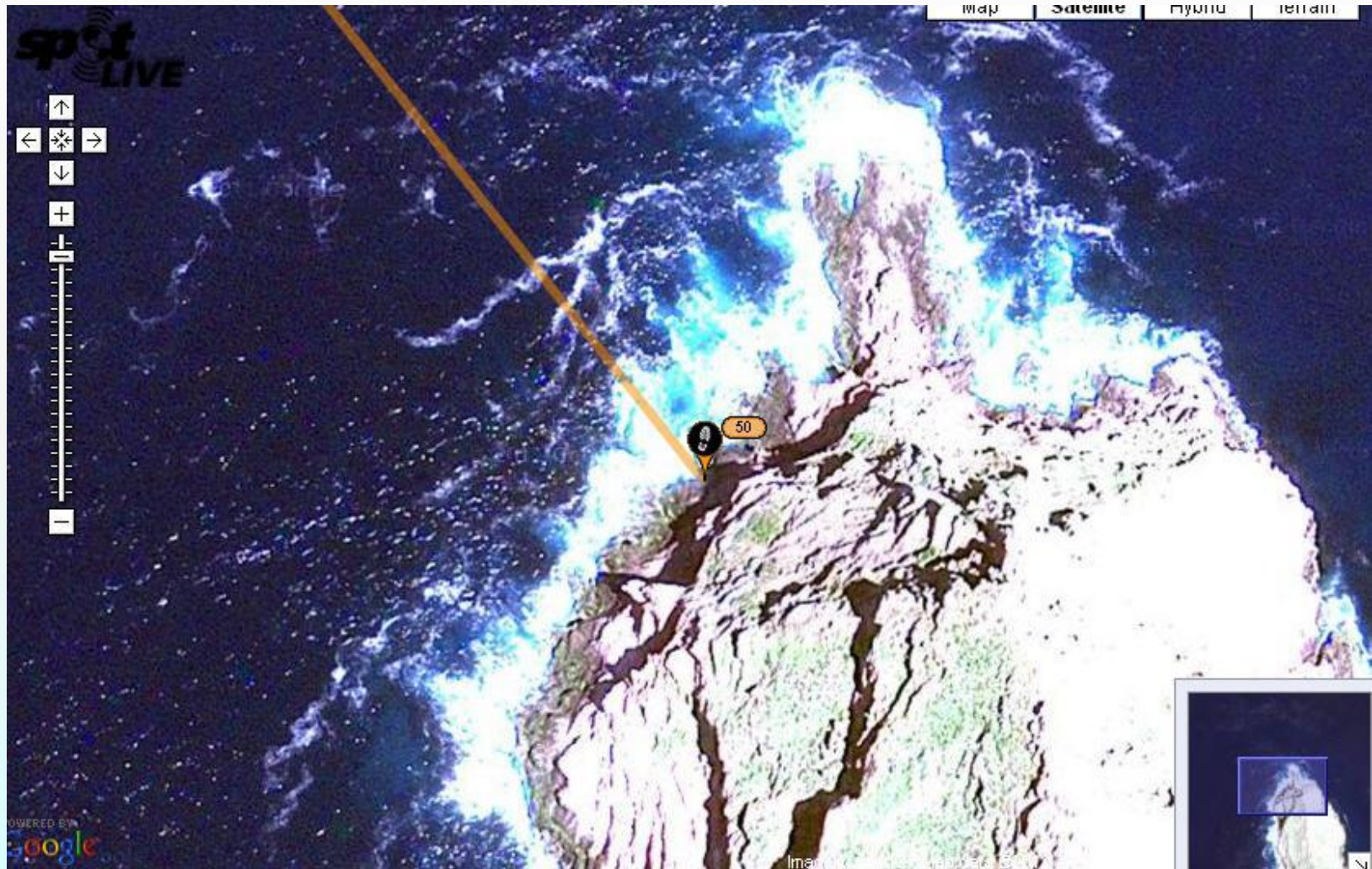


Navigation Light obscured

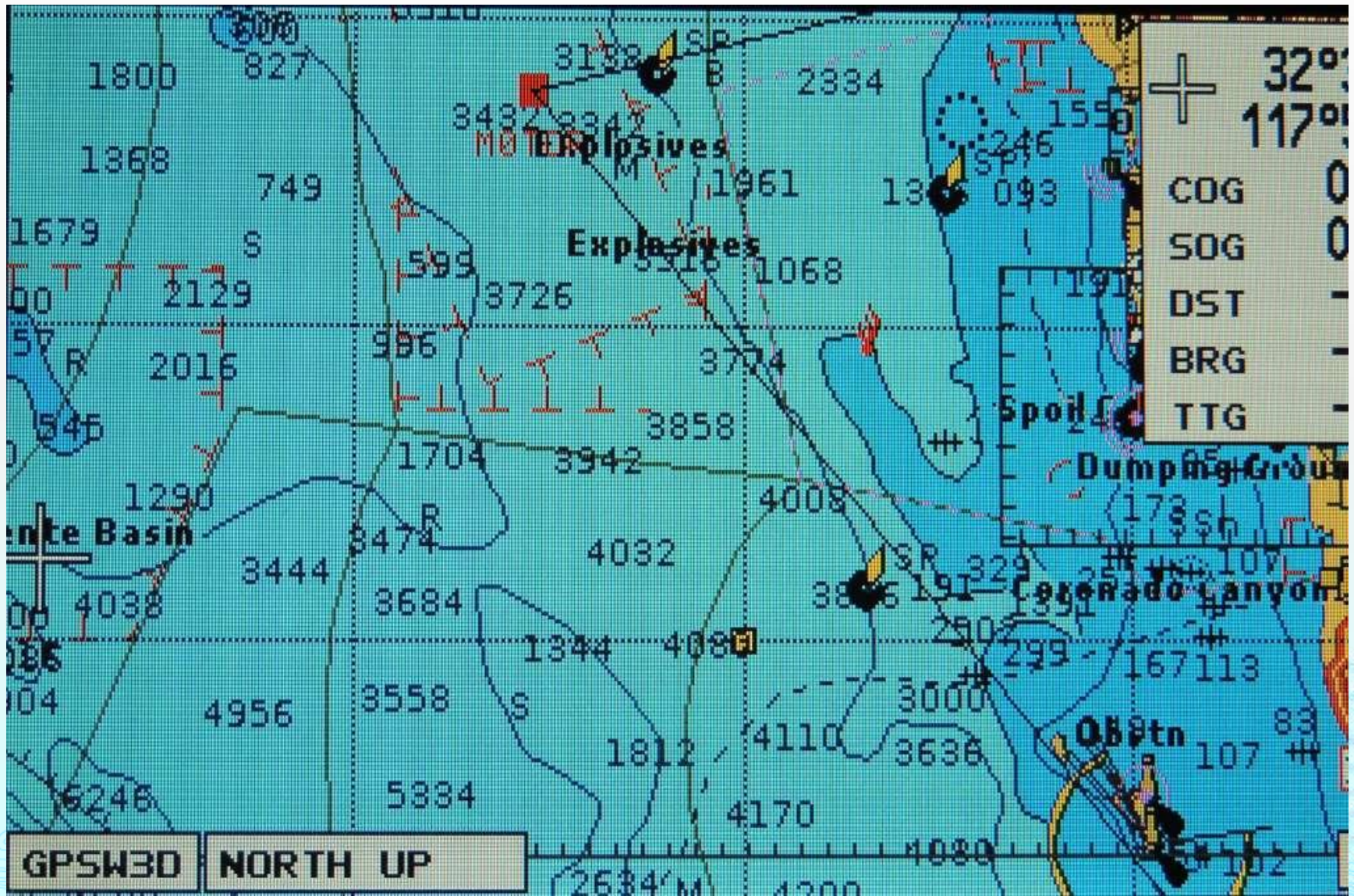


Impact point

Cul-de-Sac



Islands visible even at low zoom



Skipper & Crew Complacent

(6th time down the course, not much going on)

&

Fighting 1am fatigue



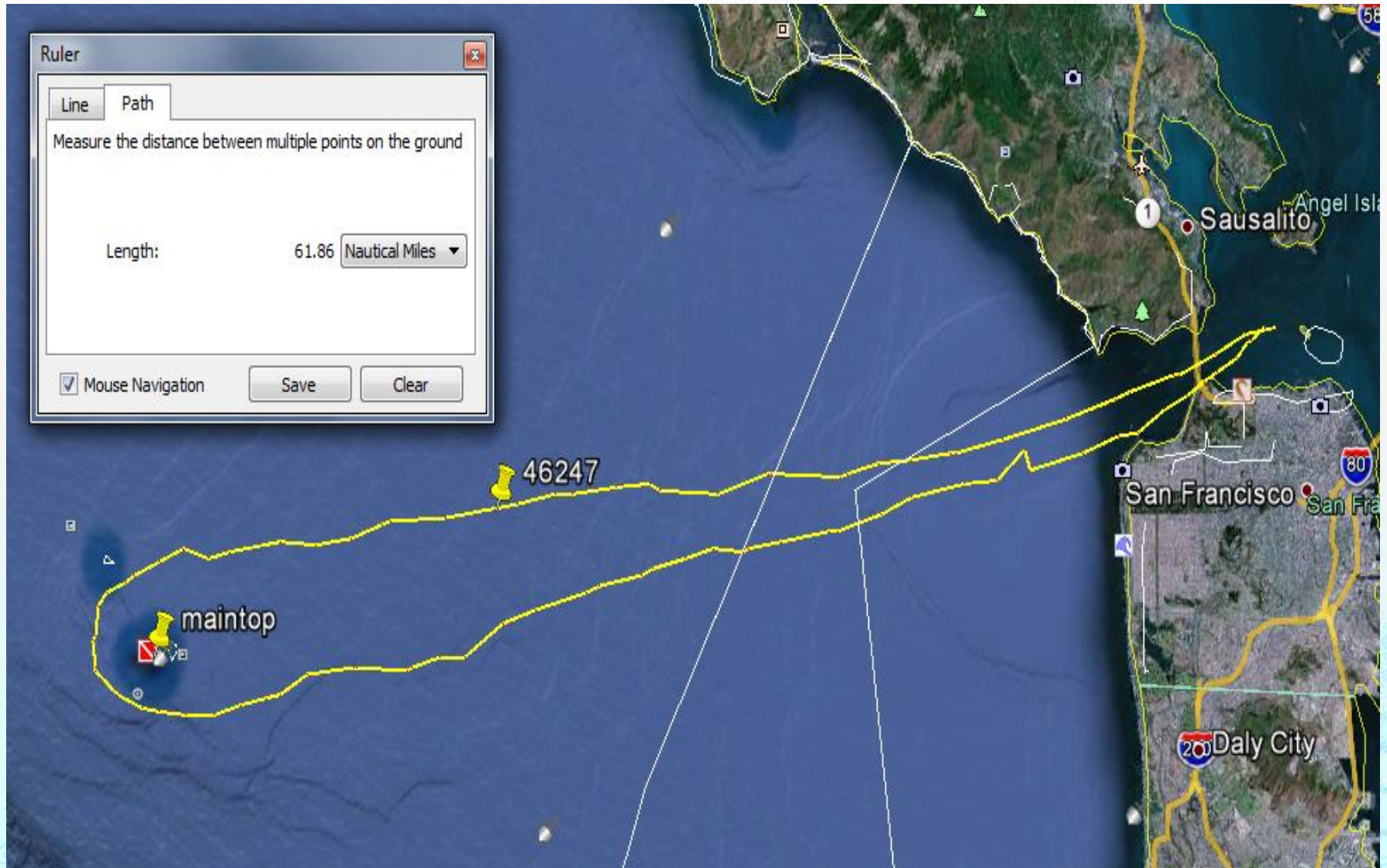
Keeping the watch keepers engaged

- ◆ Discuss 2am fatigue as part of safety orientation
- ◆ Hand Steering
- ◆ Keeping log
- ◆ Alarms (10 minute, guard zone, waypoint)
- ◆ No lights (no reading)
- ◆ Location of plotter/radar
- ◆ Watch keeping contests – depends on crew culture

Equipment Issues

- ◆ Understanding proper procedure for electronic navigation
 - ◆ Offset waypoints
 - ◆ Loud alarms
 - ◆ Checking for hazards at various zooms
- ◆ SOS: #1 DSC, #2 EPIRB, #3 Cell Phone, #4 flares, . . . #10 SPOT
- ◆ Life Jackets when abandoning ship

Farallones Course



Low Speed Chase Sydney 38

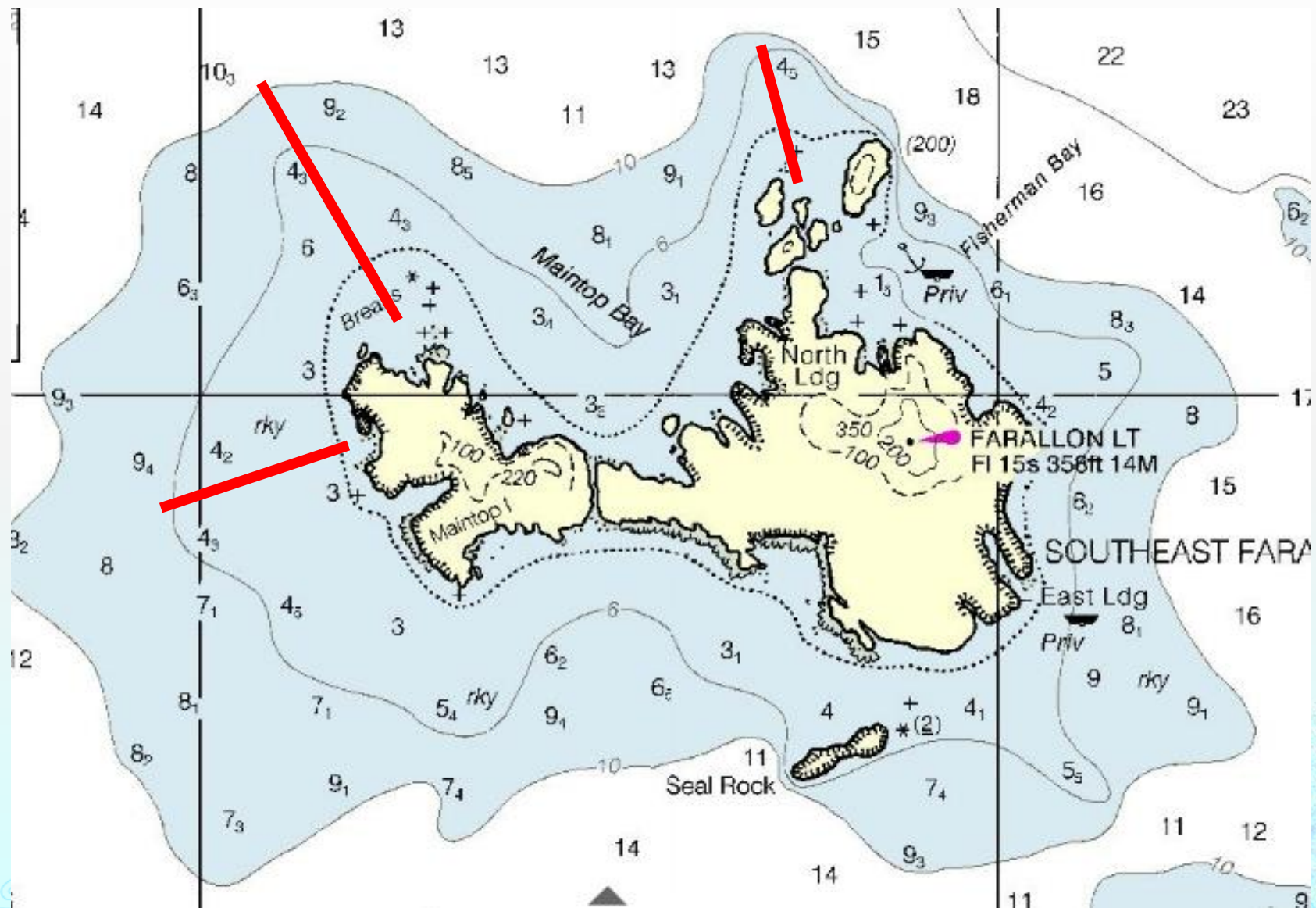


Crew of Eight, Professional Skipper, Several Veterans

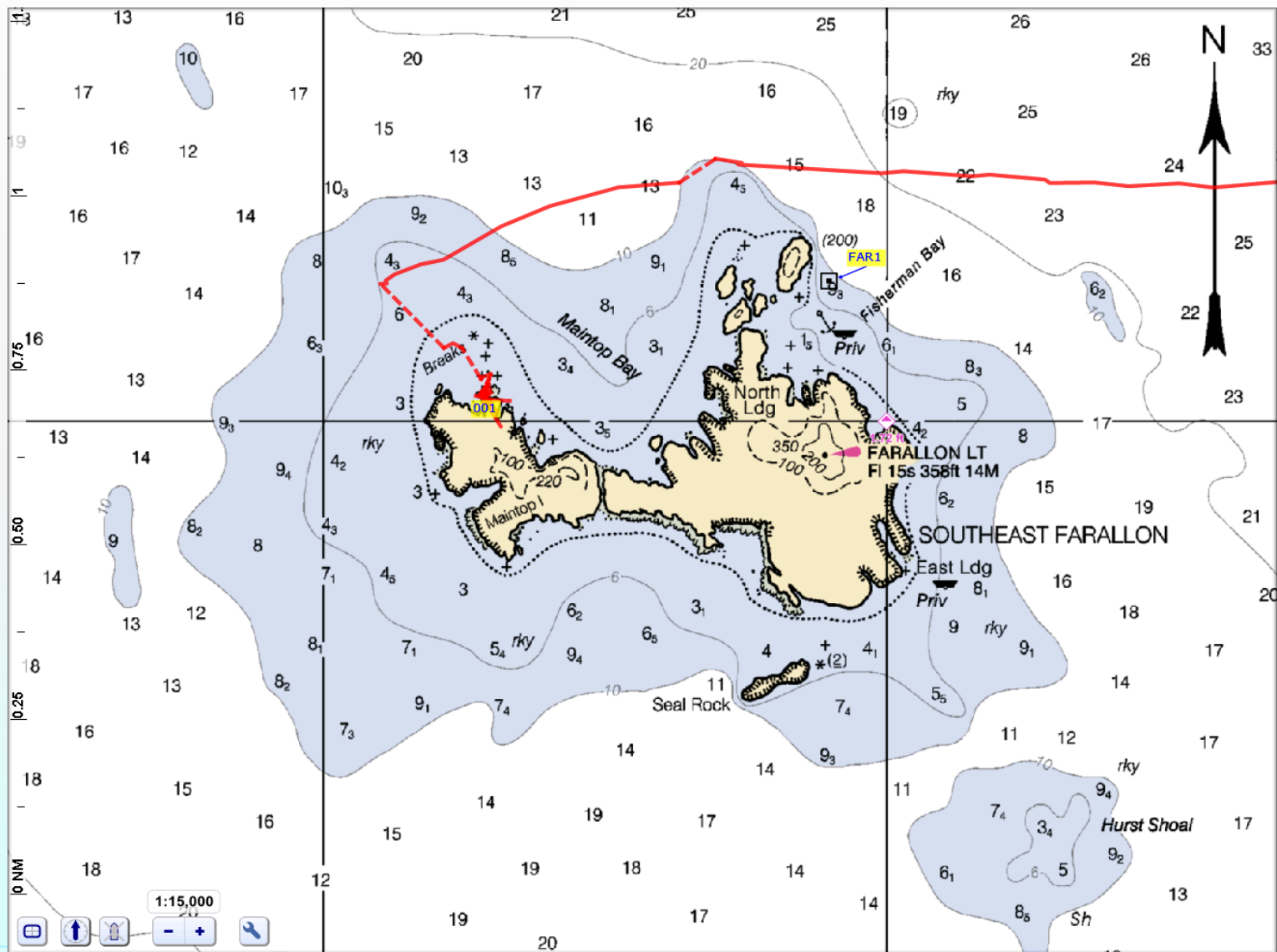
Maintop island



Shallow Bars at the mark

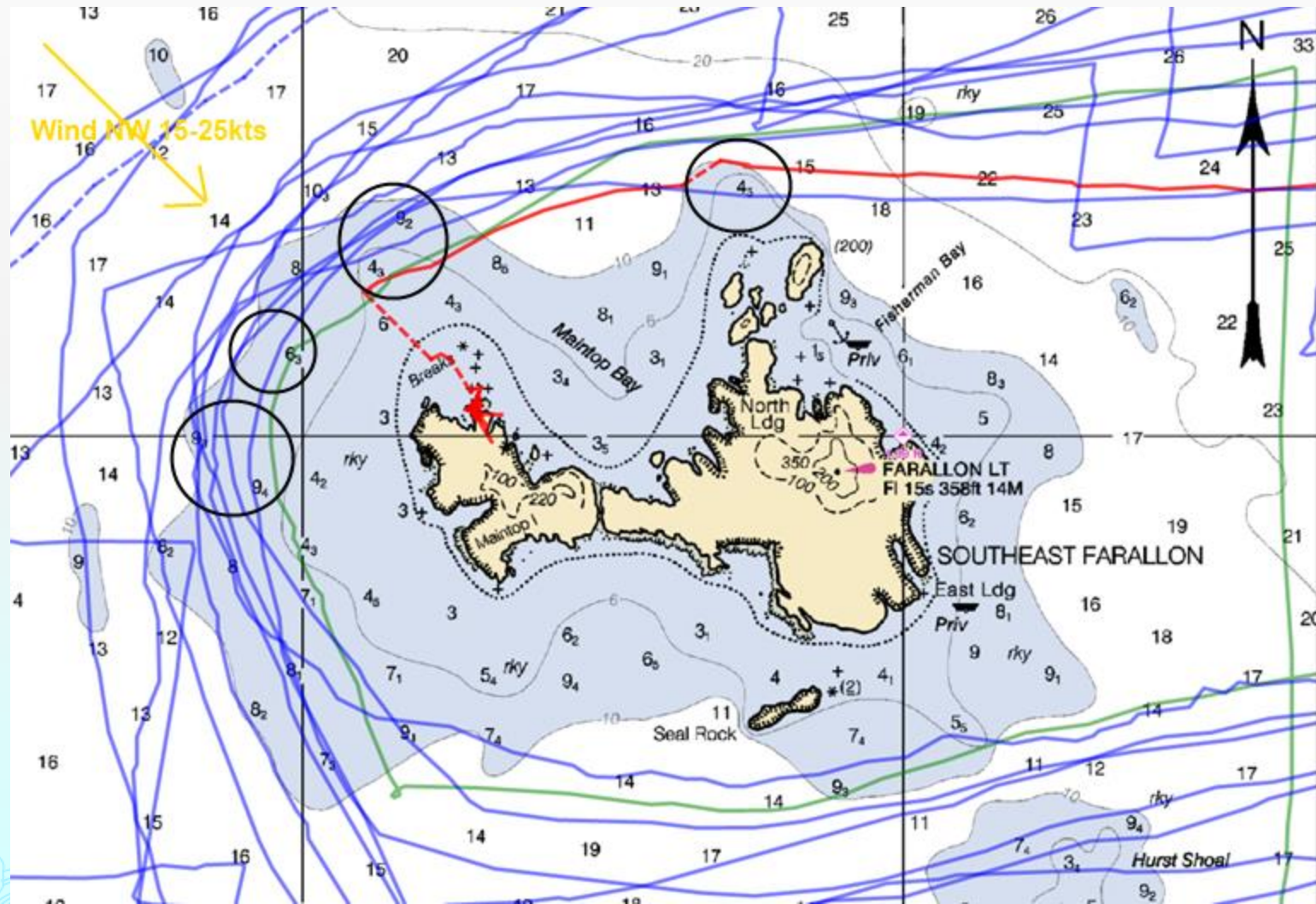


LSC GPS track



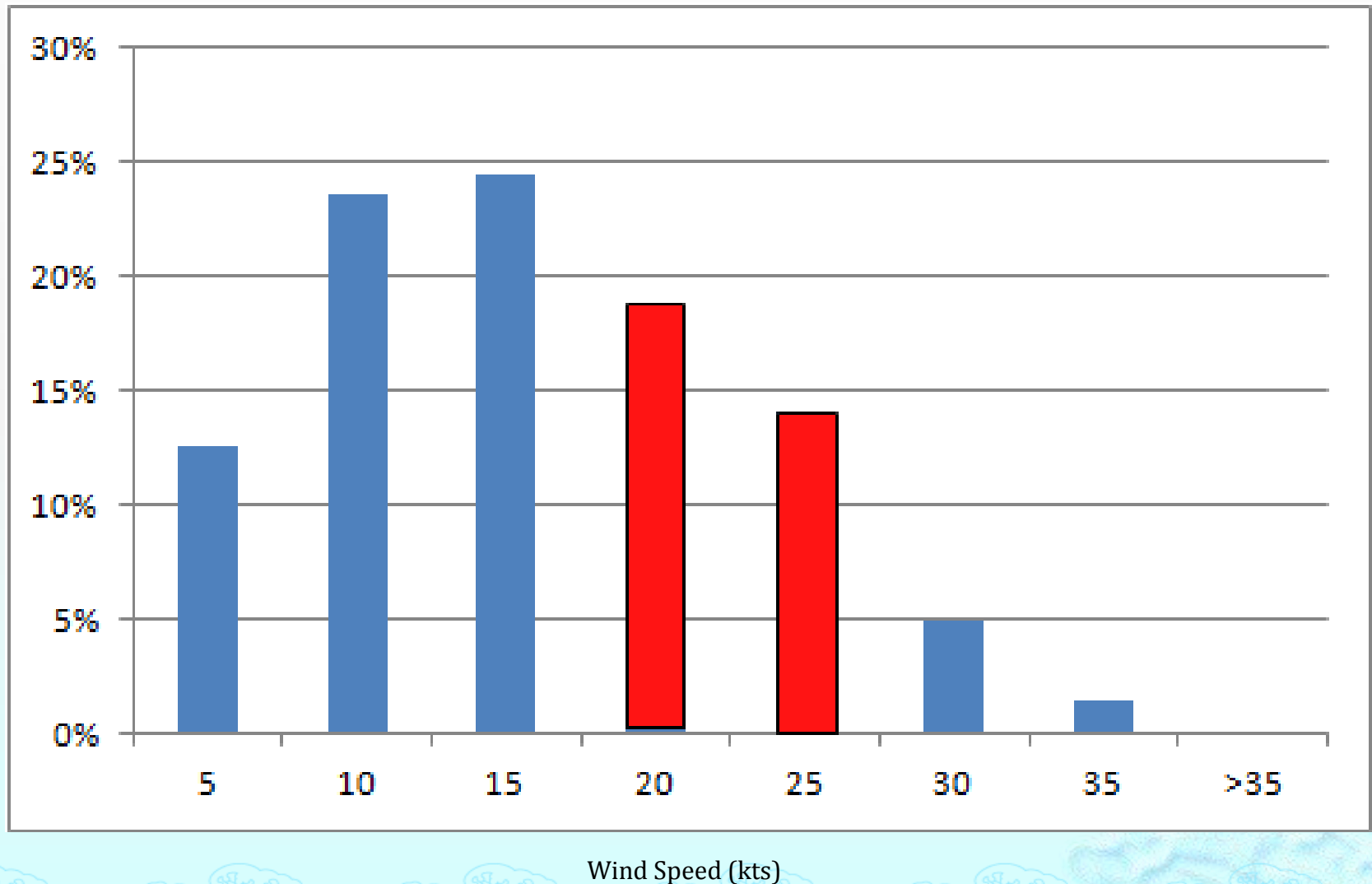
Fleet GPS tracks

4 boats went into less than 5 fathoms
and another 5 'clipped' the corner



Winds were in the 'typical' range

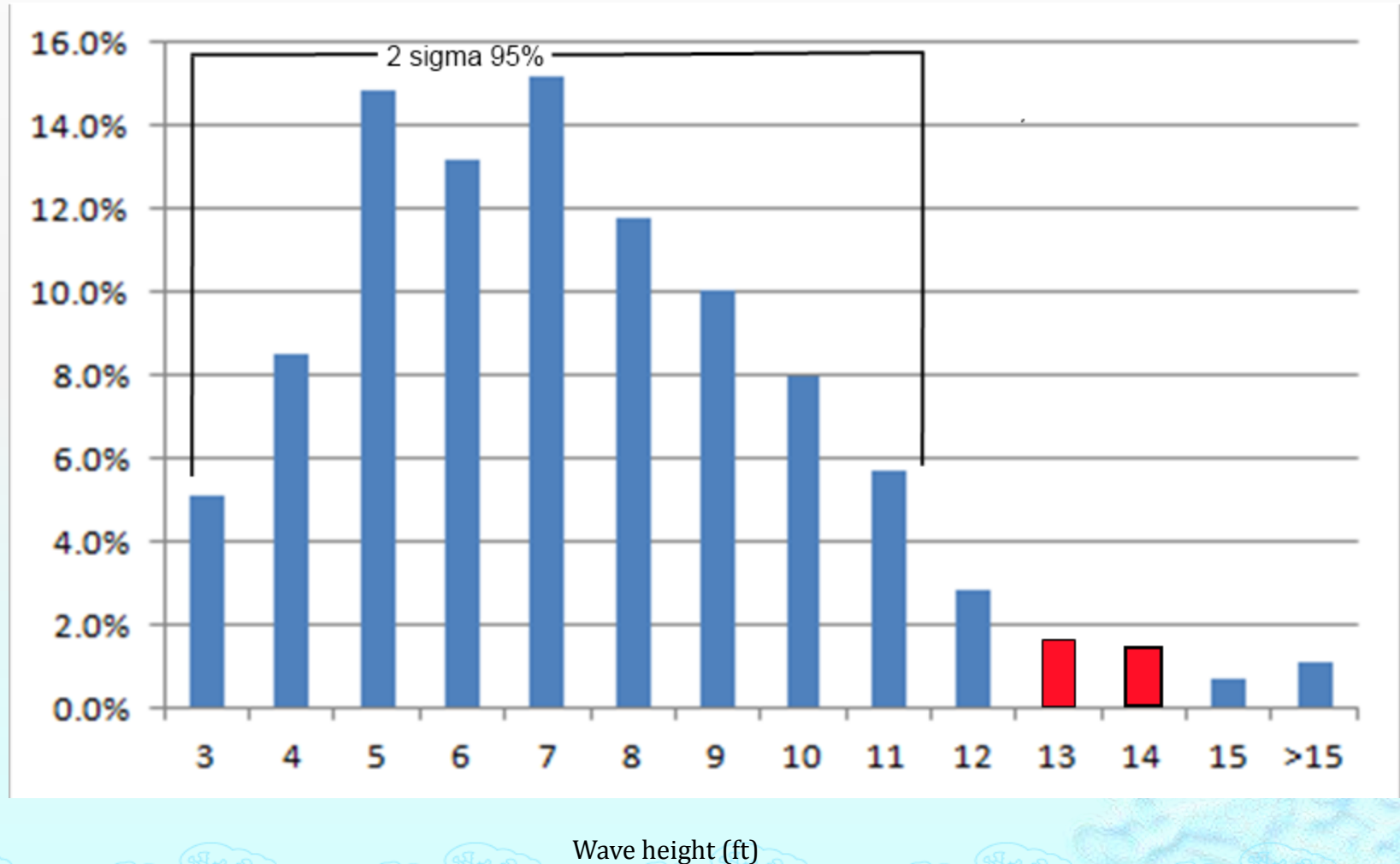
Buoy 46026 -For April for past 5 years



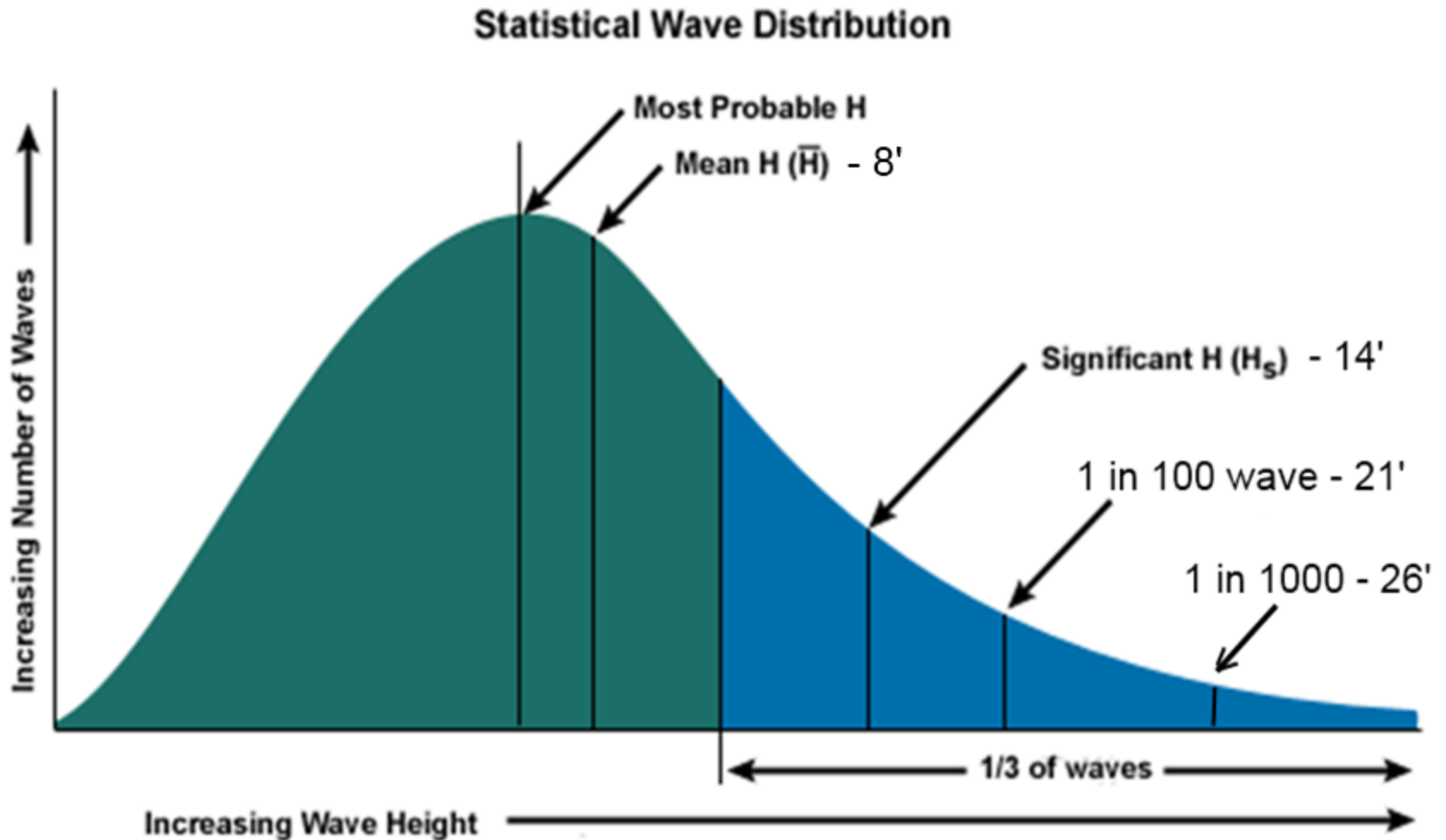
Waves were atypically high

But not so big to flash red warning signs

Buoy 46026 -For April for past 5 years

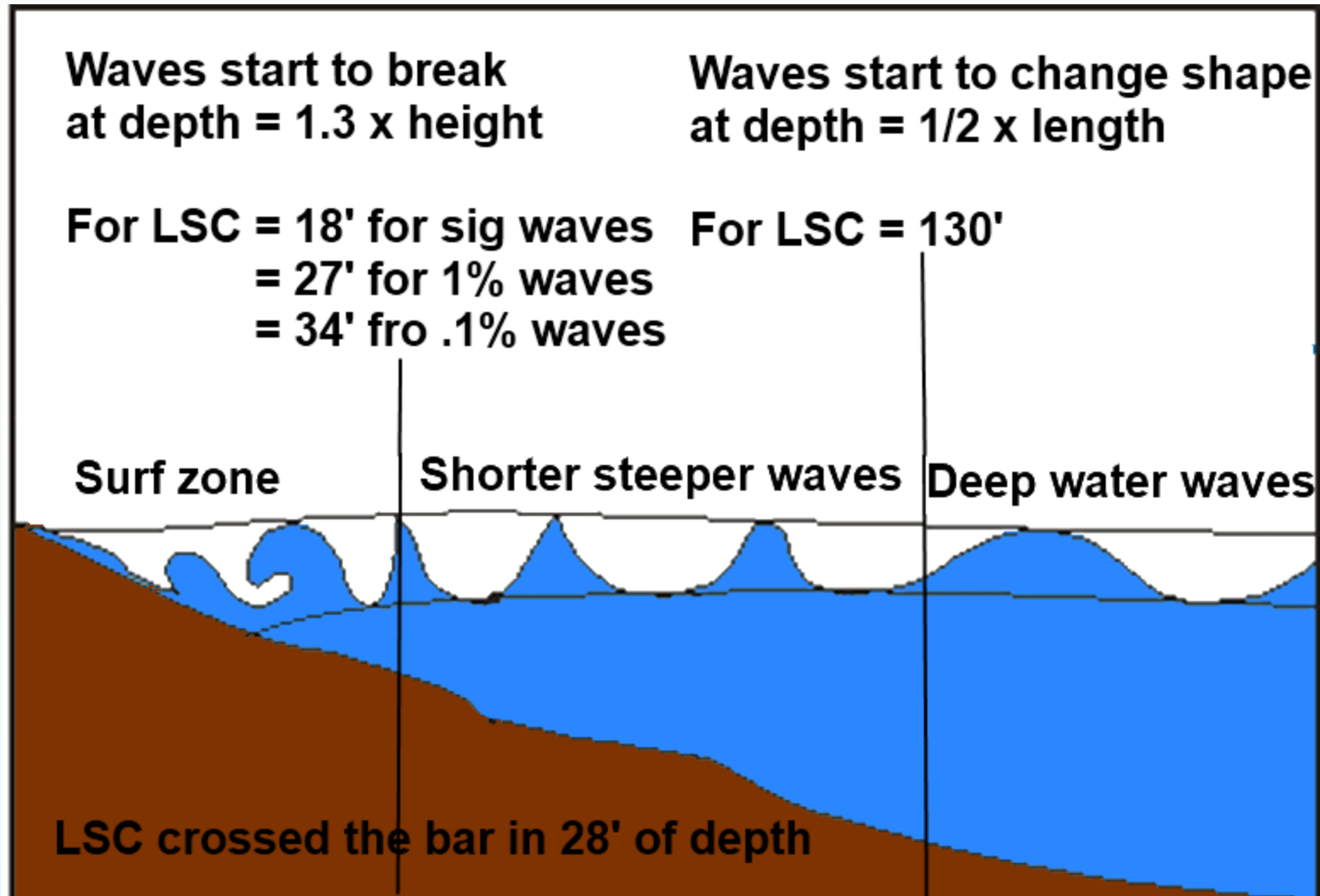


14' Sig. waves means occasional 26' waves



Shallow water wave dynamics

LSC needed to be in $>34'$, but crossed bar in $28'$



Skipper & crew complacent

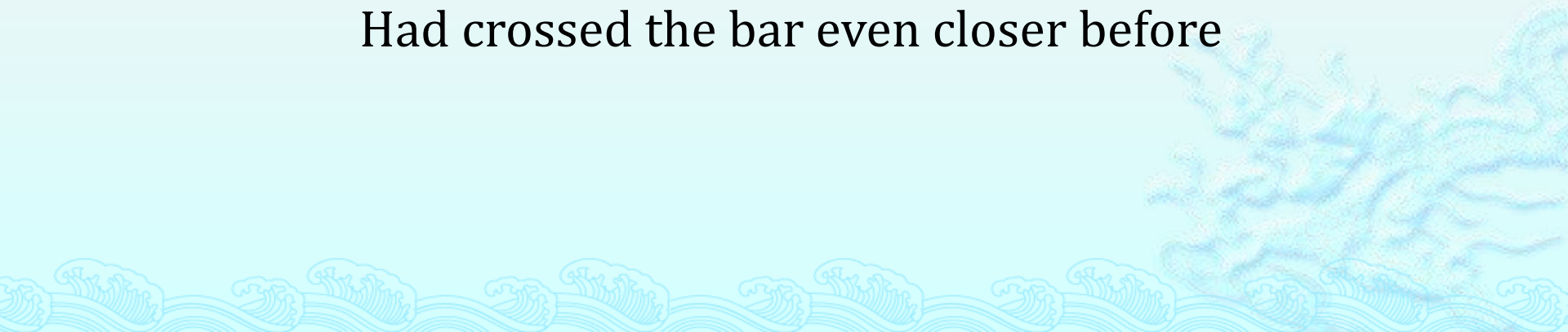
‘Typical’ wind, experienced sailors, well prepared boat

&

Underestimating shallow water Risks

Other boats on the same track

Had crossed the bar even closer before



Enabling Better Risk Assessment

- ◆ Shallow water breaking wave training
- ◆ Public library & training on history of Farallones incidents
- ◆ Mentoring program



Depth & Risk

Description	depth (ft)	rough ballpark	Sport with Similar
		Risk of fatality*	Risk Level
Low Speed Chase Track	28	2%	Climbing Everest & Space shuttle
2.5 * Actual sig wave height	35	0.26%	
	38	0.04%	BASE Jumping
	45	0.001%	Skydiving
	48	0.0003%	Rock Climbing
(actual Wave Period ^2)/4	49	0.0001%	
	51	0.00006%	Skiing
2.5 * (predicted swell + wave height)	55	0.000003%	

Equipment Issues

- ◆ Short tethers, near centerline clip points
 - ◆ The crew who was able to stay aboard survived
 - ◆ 5 of 7 swept overboard did not survive
- ◆ Life jackets – adequate buoyancy, Maintenance (inflatable's), and crotch straps

Bounty



Bounty downwind in prior blow

had faced similar weather in the past



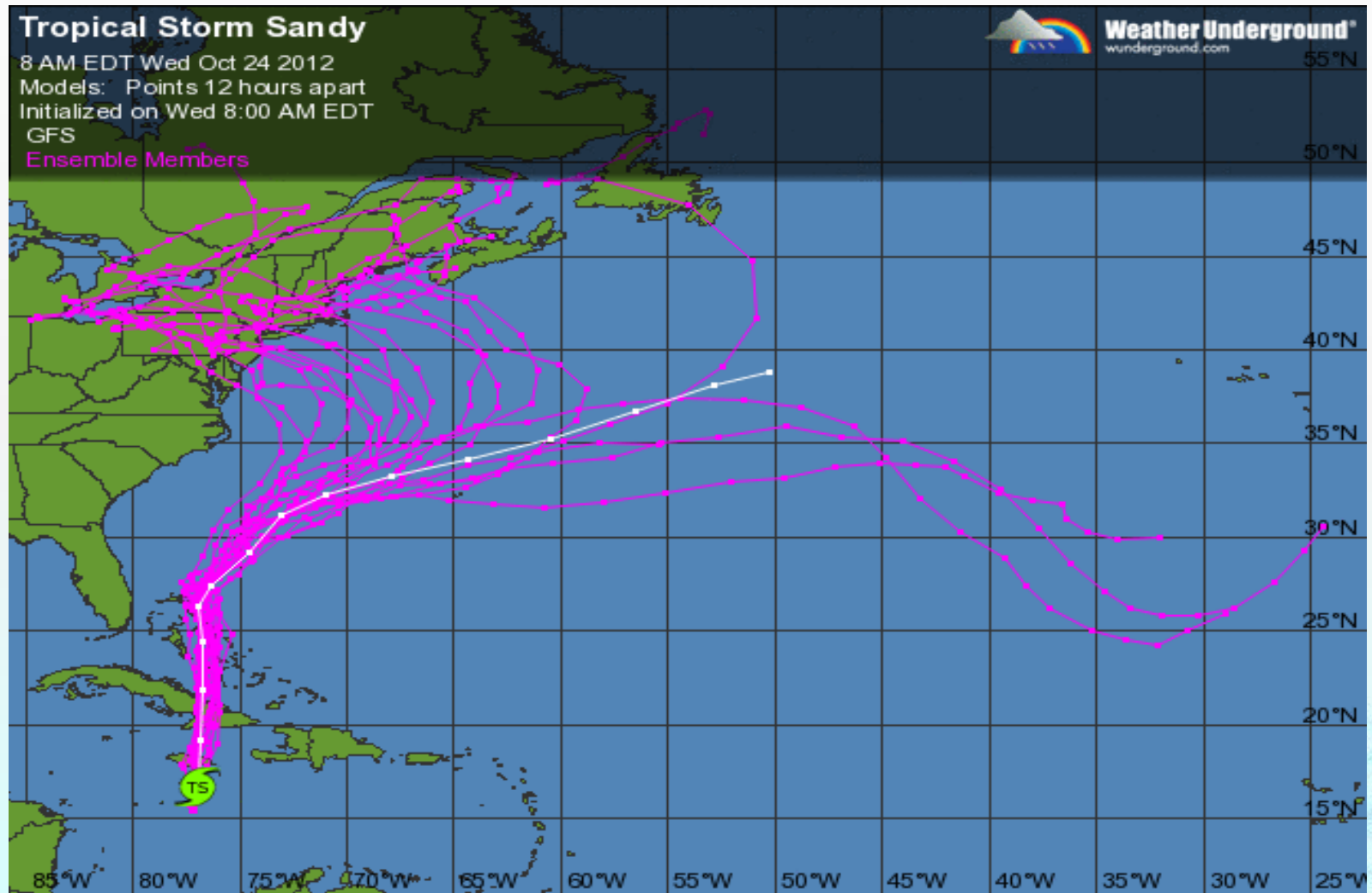
Engine room

Bounty entirely dependant on generators and pumps



Different forecast tracks

Large uncertainty about storm track



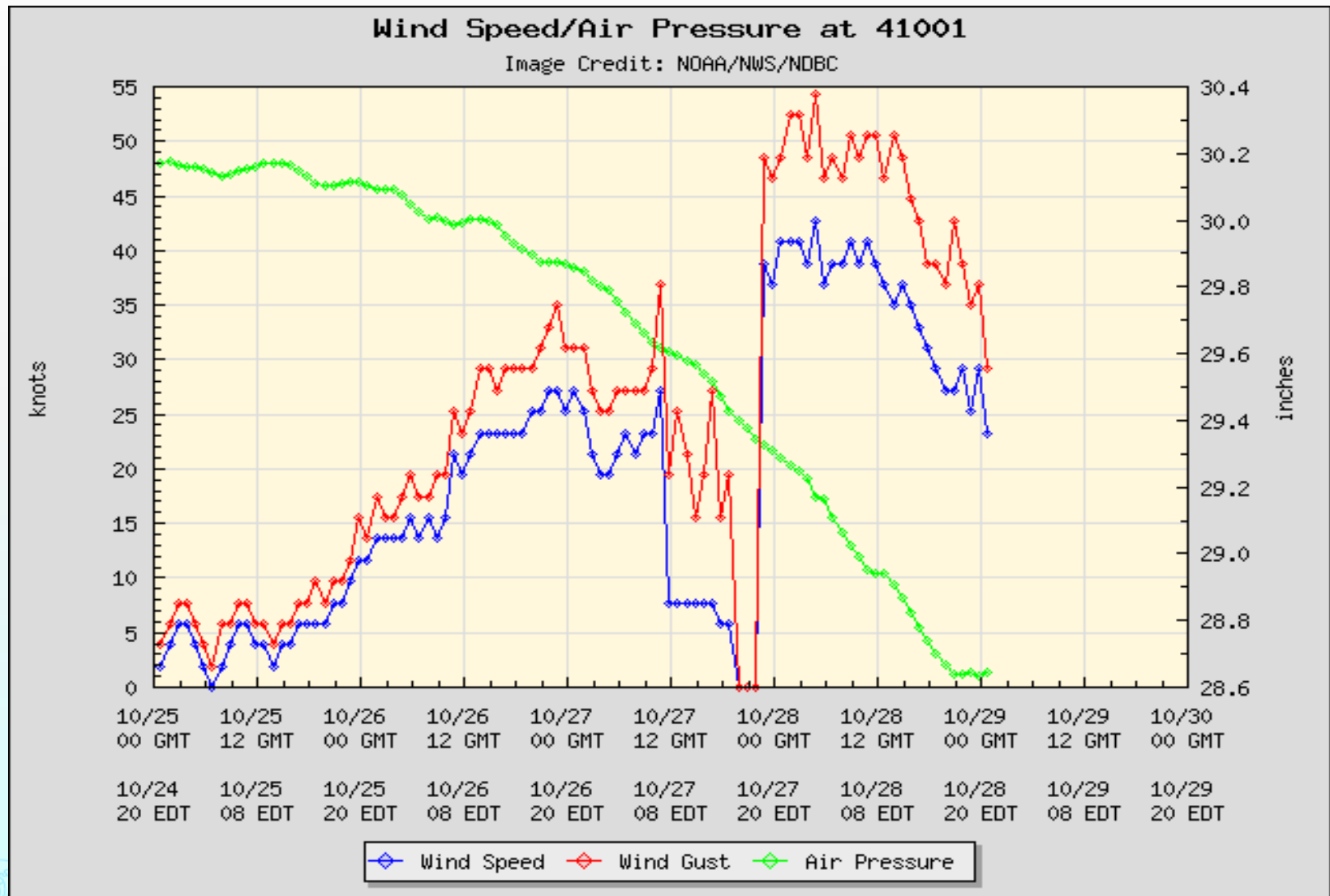
Forecast storm position

Storm clearly forecast when Bounty left harbour



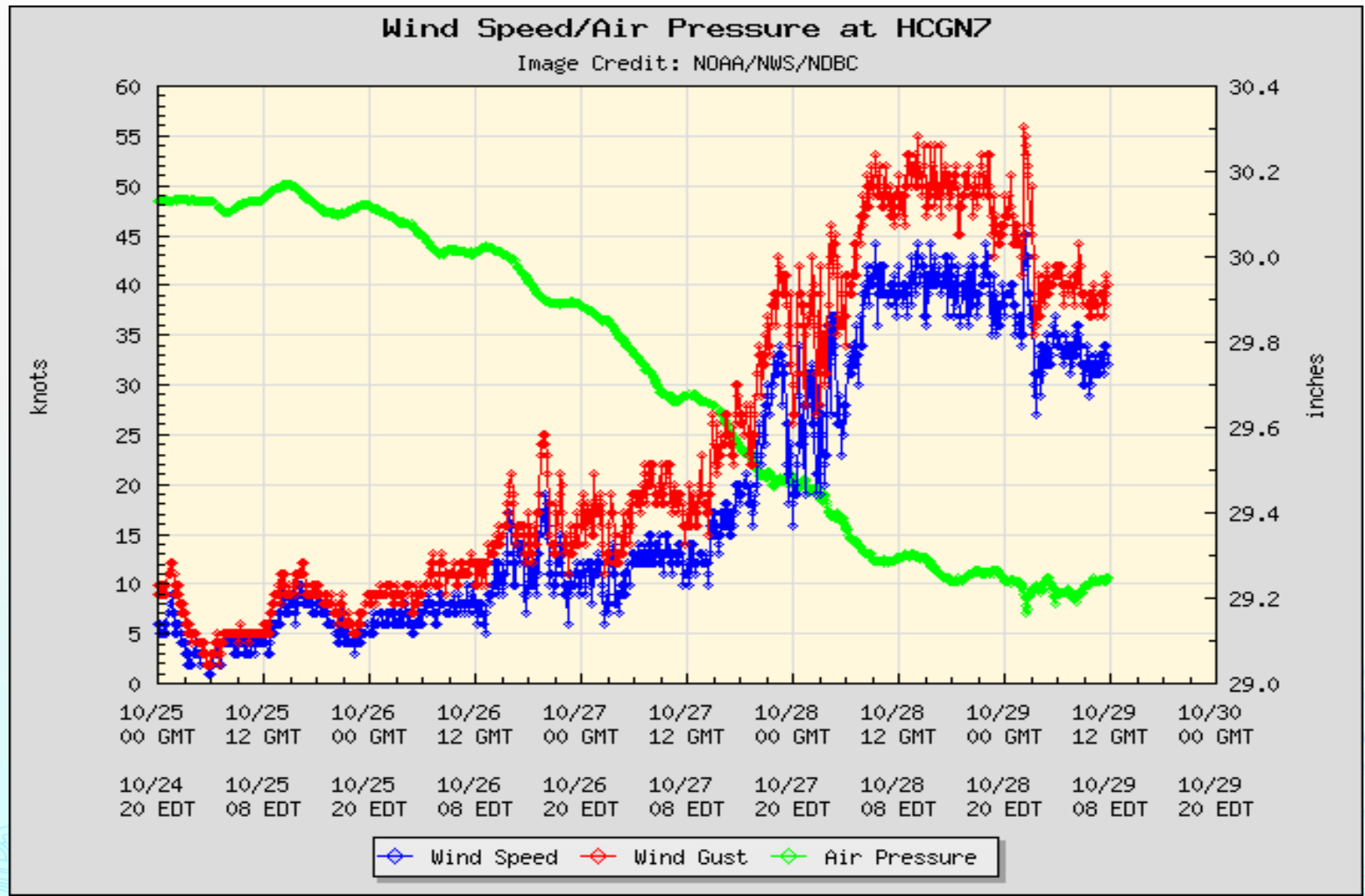
Buoy conditions – 150nm East Cape Hatteras

40kts, gusting to 55kts, 18' sig waves



Buoy conditions – on Cape Hatteras

45kts gusting 55kts

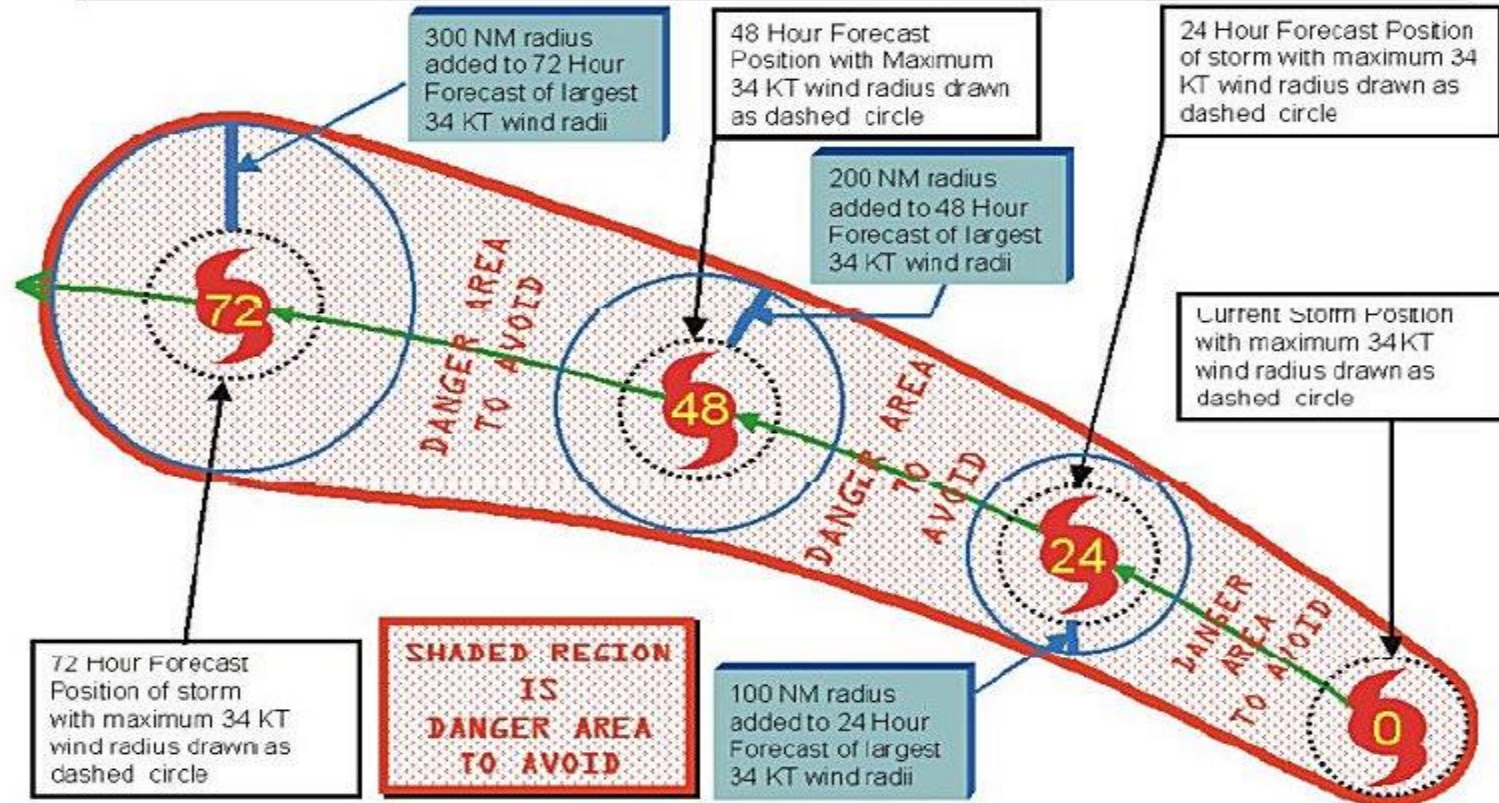


Offshore rule for hurricanes

But perhaps not for ships like Bounty

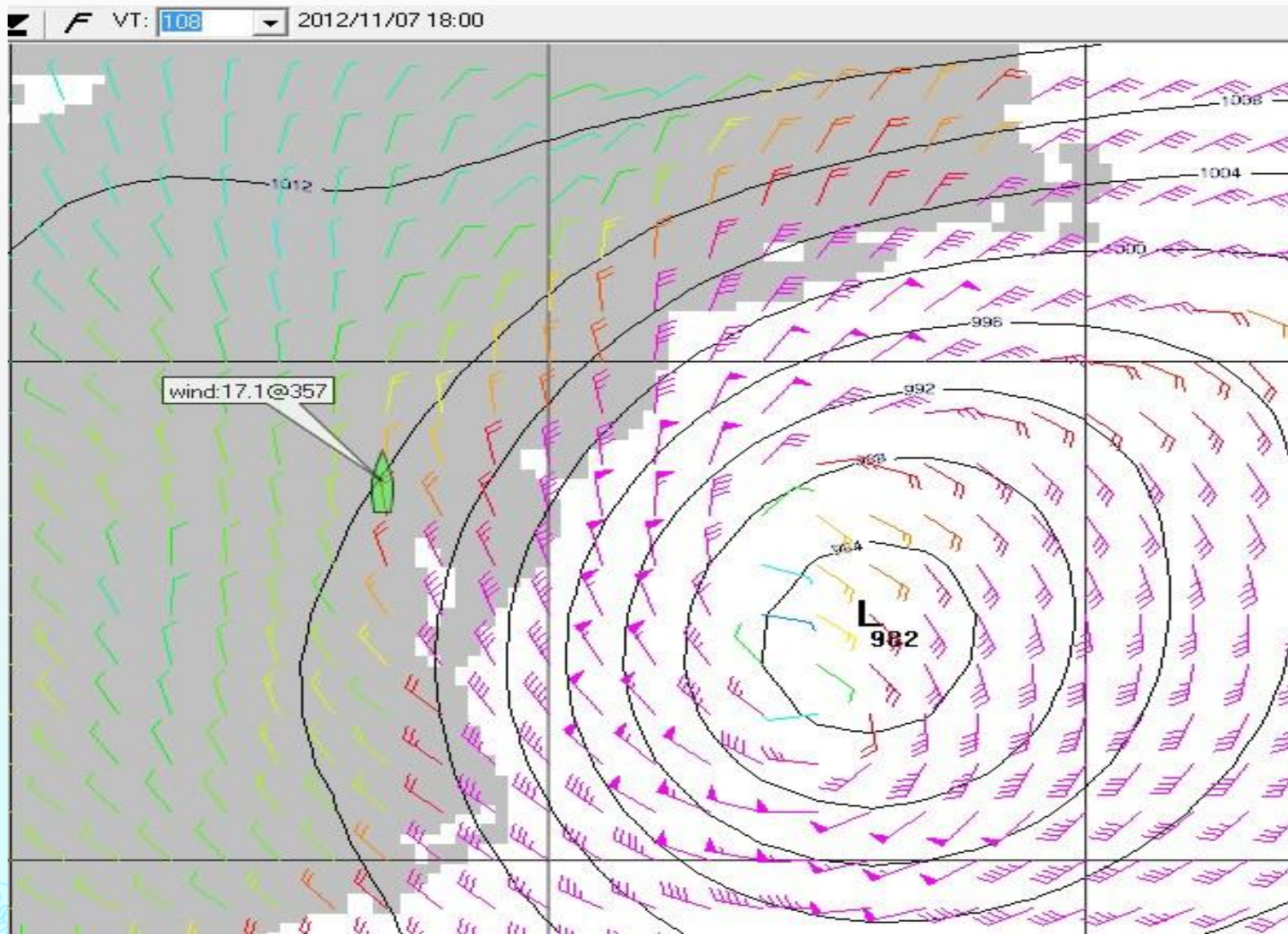
Diagram of the 1-2-3 Rule

The danger area to avoid is the area inscribed by the connecting tangent lines of the outer most radius of 34 knot winds plus a safety margin derived from the ten year average Atlantic tropical cyclone position errors at the 24, 48, and 72 hour forecast positions. Adding 100 NM at 24 hour forecast, 200 NM at 48 hour forecast, and 300 NM at the 72 hour forecast positions.



Weather Map for 11/7

Bounty would have faced similar winds if she had left after the hurricane



Cascade of Mistakes

- ❖ **Complacency:** having done so much with so little for so long



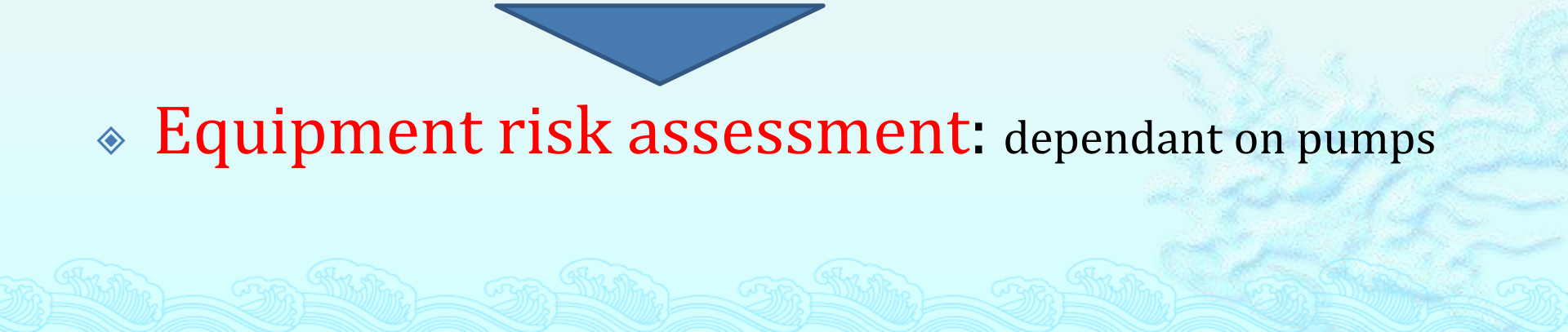
- ❖ **Weather risk assessment:** unusual vessel and storm



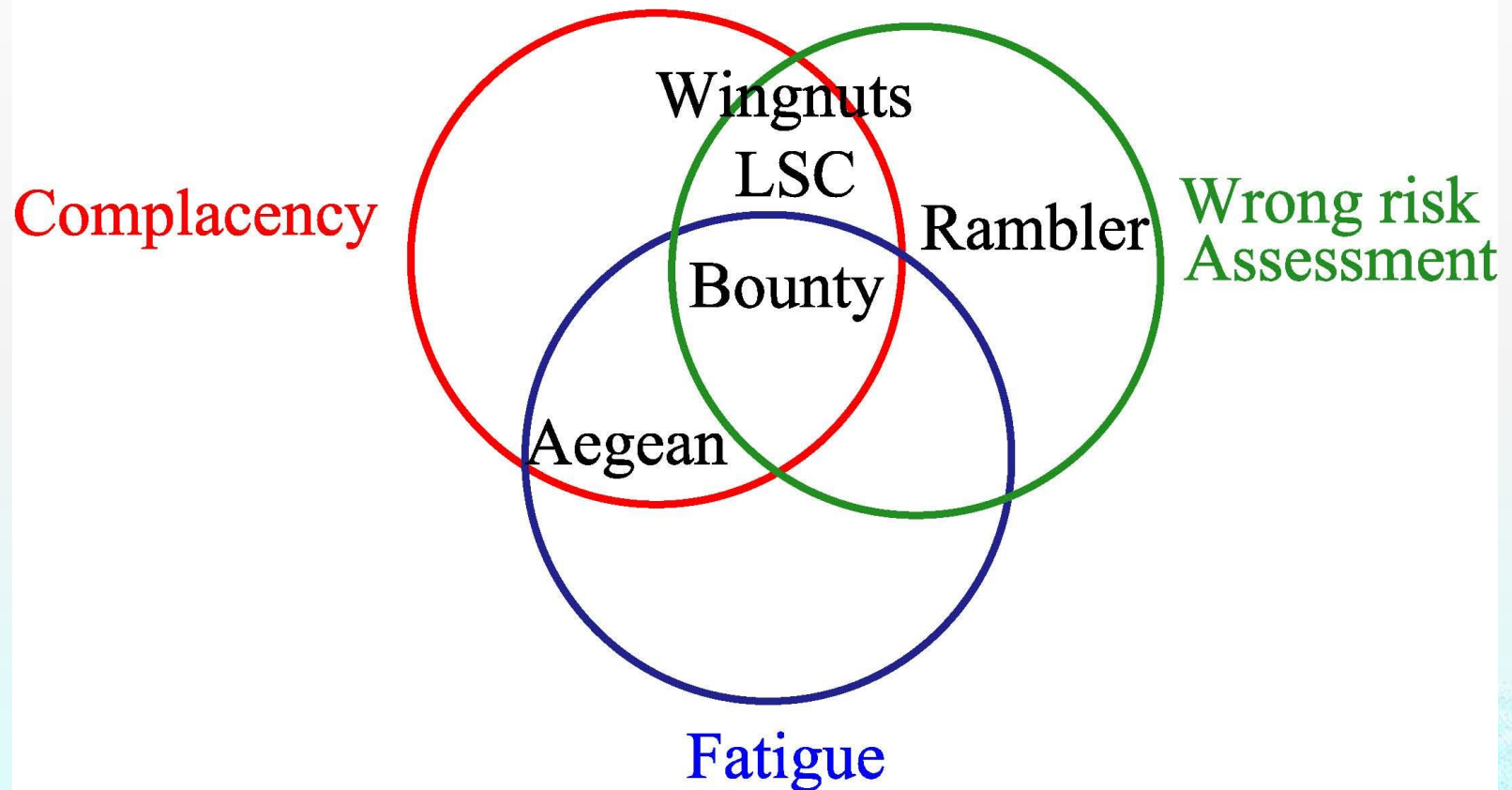
- ❖ **Vessel structure risk assessment:** mixed messages



- ❖ **Equipment risk assessment:** dependant on pumps

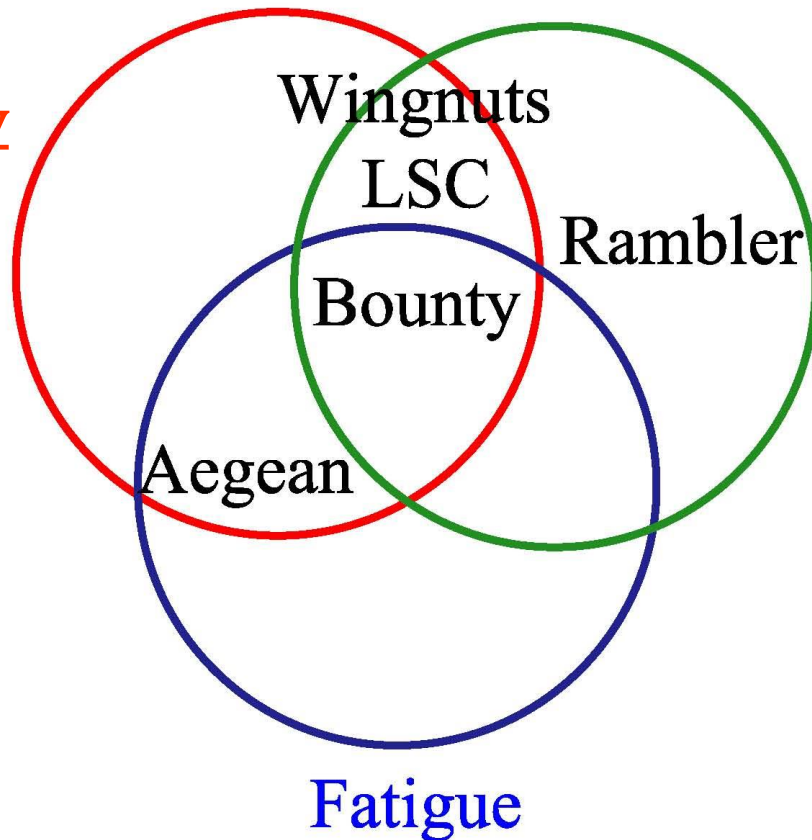


Common root causes



Key Lessons

Be humble
be perceptive
take it seriously
Complacency



Core seamanship knowledge

Wrong risk Assessment

*Seasickness
Crew management
Electronic aids
Maintenance*

When/who to rest and when/how to be alert