“Experience is the best teacher but the wisest learn from the experience of others.”

John Lang

President

Association of Sail Training Organisations

ASTO Promoting UK Sail Training

Sail Training International

Accidents, Incidents and Lessons Learned in 2011


HANNE
© Lloyd Images

Topics for Today

- **Accidents from 2010**
  - Concordia
  - Royalist
- **Analysis and Trends**
  - Dismasting
  - Complacency
  - Bridge Resource Management
- **Incident Reporting**


The Accident Chain

How an Accident is Caused

- Never the result of a single event
- But by many things going wrong over time.
- The human element is almost always involved.
- If someone makes a “mistake” there will always be a reason. Determining the “why” lies at the heart of learning the correct and effective lessons.

When there is an accident, How do we react?

What can we learn from them?

PERIL HITS A-SUB CREW

EIGHT sailors were rushed to hospital yesterday when a nuclear submarine's emergency air supply failed during an exercise in the Clyde.

The eight were among a number of the sub's crew who rapidly became unconscious after breathing from face masks during a fire drill.

The sub—unidentified for security reasons—was tied up at Faslane jetty.

But the incident could have caused a disaster in a real fire and the Navy has begun a top-level inquiry into the mystery.

By ARNOT McWHINNIE

A spokesman said: "There are no nuclear safety implications and we cannot yet comment on the cause of the incident."

The drama began soon after the sub's company began a routine fire training exercise.

Officers monitoring the drill watched men collapsing one by one as they put on their emergency masks.

They went to their aid immediately and ripped off the masks to revive them.

Most of the men recovered immediately, but eight, suffering from dizziness and nausea, were taken to the base sick quarters.

They were discharged after treatment.

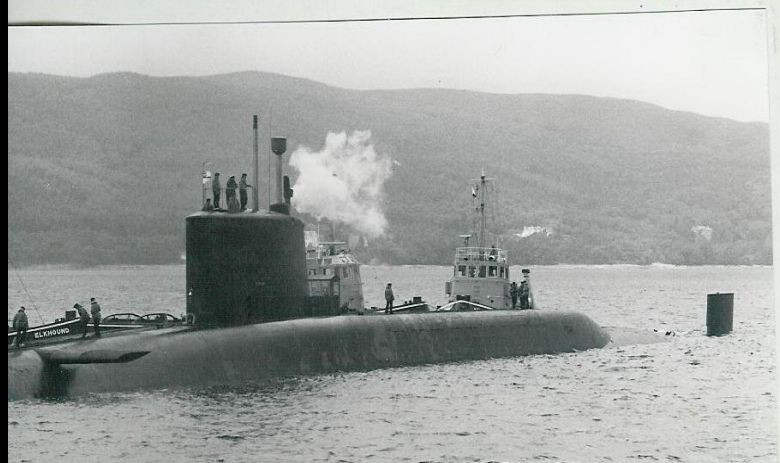
Announcing the investigation into the incident, the Navy spokesman said:

"During the exercise a number of the ship's crew breathed as usual through the ship's emergency breathing system.

Plugged

"This consists of a number of large bottles of compressed air into which breathing masks can be plugged in various parts of the ship.

"Unfortunately on this occasion personnel breathing these supplies rapidly became unconscious."



If it is <u>your</u> accident

- Dismay even trauma.
- Do I tell someone or can I get away with it?
- Try and convince yourself it wasn't my fault: rogue wave; the other person was to blame; it was one of those things.
- Fear of litigation, prosecution, or a bad press
- Impact on future career……..
- The less the publicity the happier I will be

The legitimate concerns you will have

- Prosecution and even criminalisation
- Irresponsible or inaccurate media reports
- Commercial consequences and impact
- Litigation
- Stigma
- Career consequences
- Any public statement that shows you in a bad light – including blogs and internet "comment"

If it someone else's accident, do you, should you, think differently?

Yes

Reactions of those not involved

- There but for the Grace of God…….
- What on earth happened?
- How did it happen?
- It couldn't possible happen to me……
- Or could it? What **can** we learn from it
- So what **were** the lessons?
- How can we find out?

Do we need to know what happened?

- We **must** learn from the things that go wrong.
- We must learn the **right** lessons and not the convenient. ones
- Find out what really happened not just the sanitised version.
- Best source is an investigation done by effective, independent, investigators and the publication of responsible reports in a reasonable timescale
- Heed the recommendations and **learn the lessons.**

The Interested Parties in Any Accident

- Those involved – with anxiety.
- Owners, management or parent body.
- Those to whom recommendations are made
- Next of kin and families of victims.
- The media – to sensationalise.
- Lawyers and insurers.
- **The wider maritime community.**

The Starting Point The Investigations.

- A good investigation by independent professionals, who tend to probe in depth, leading to a responsible report.
- A superficial investigation with a report that tells you nothing.
- An investigation but no report is ever published. Very common in some flag states.
- No investigation is carried out at all.

First Person Arne Sagen — Accident investigations

'A large percentage of investigations are so superficial as to be useless'

THE intention behind an accident investigation is to find the underlying causes behind the accident, and then to amend relevant regulations and conditions to make sure that this accident does not happen again. Why is this well intentioned procedure so ineffective?

In Solas Chapter I, Regulation 21, it is stated that each administration undertakes to conduct an investigation of any casualty occurring to any of its ships "when it judges that such an investigation may assist in determining what changes in the present regulations might be desirable".

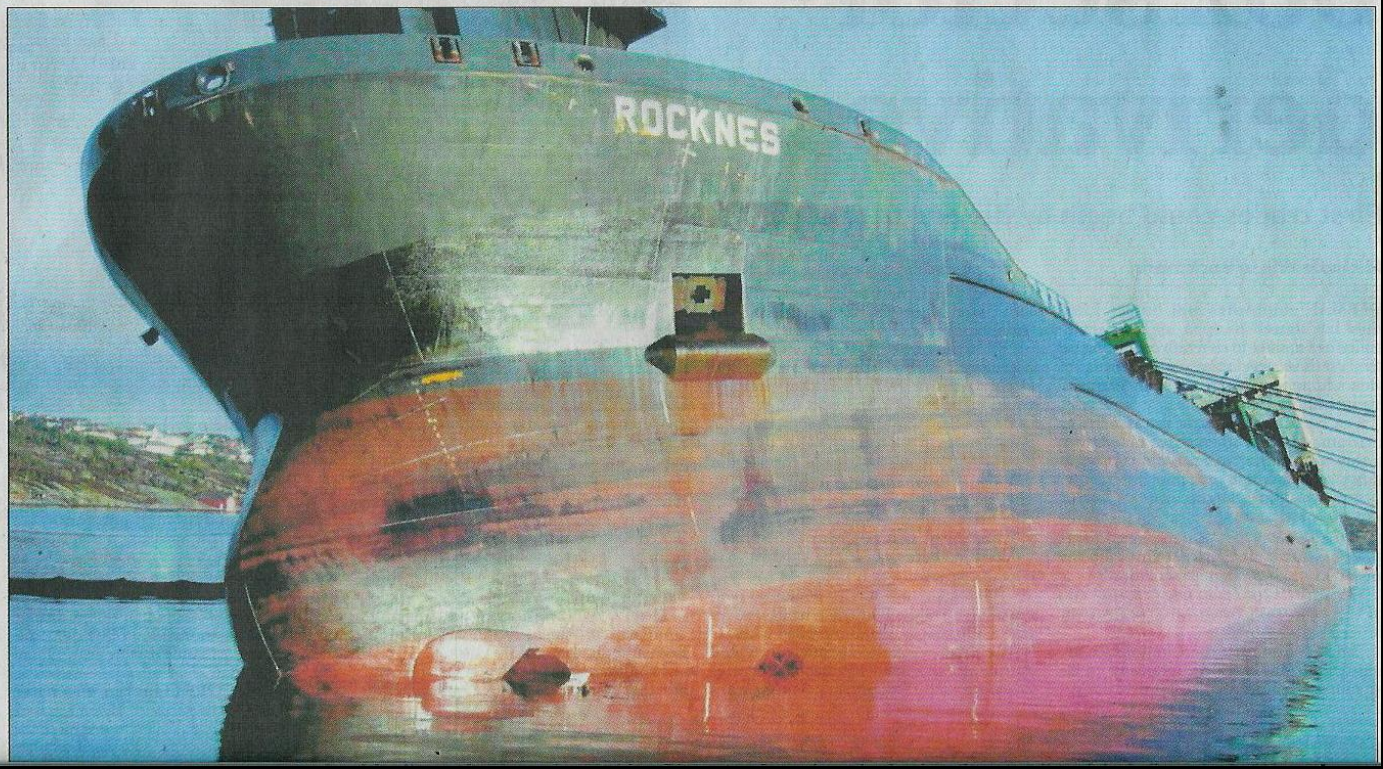
The purpose of this regulation is clearly to make sure that the same accidents do not happen again. But why leave it up to the various national administrations' discretion to decide when an accident investigation should be carried out?

In theory, the accident investigation should establish the direct and underlying cause and the International Maritime Organization regime can then change the relevant regulations accordingly.

But in practice, far too few reports are forwarded to IMO. According to the organization itself, five years after the IMO established the Marine Casualty and Incident Report Database, it had requested member states to provide information relating to 2,896 casualties, but only 1,676 were ever received.

The IMO further commented that "the full value could not be obtained from many reports due to the lack of information provided". It was even evident that in some cases, no investigation at all had been undertaken.

Furthermore, the probability of pre-



The two types of accident most likely to concern the sail training world

Loss of the vessel – particularly if there is loss of life.

Someone falling from aloft and being killed

An Accident in 2010
The 2011 Report
(and lessons learned)

CONCORDIA

Foundered South Atlantic

17 February 2010

Concordia

CONCORDIA was a steel hulled 3 masted barquentine owned by West Island College International, Inc. (WIC Bahamas) and time-chartered to Nova Scotia based West Island Class Afloat to deliver academic programs to students aged 16 to 20.


CONCORDIA

S.V. Concordia: The voyage

The Accident

- On 17 February 2010, at approximately 1423, the *Concordia* encountered a squall off the coast of Brazil, was knocked down and capsized.
- All 64 crew, faculty, and students abandoned the vessel into liferafts.
- 40 hours later they were rescued by 2 merchant vessels and taken to Rio de Janeiro, Brazil.
- One crew member suffered broken bones.

Although Concordia was registered in Barbados the accident was investigated by the Canadian Transportation Safety Board (TSB).

- Its report was published on 29 Sept 2011.
- http://www.tsb.gc.ca/eng/rapports-reports/marine/2010/m10f0003/m10f0003.pdf

The Report - Preamble

- The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.
- Report Number M10F0003

A very brief resumé

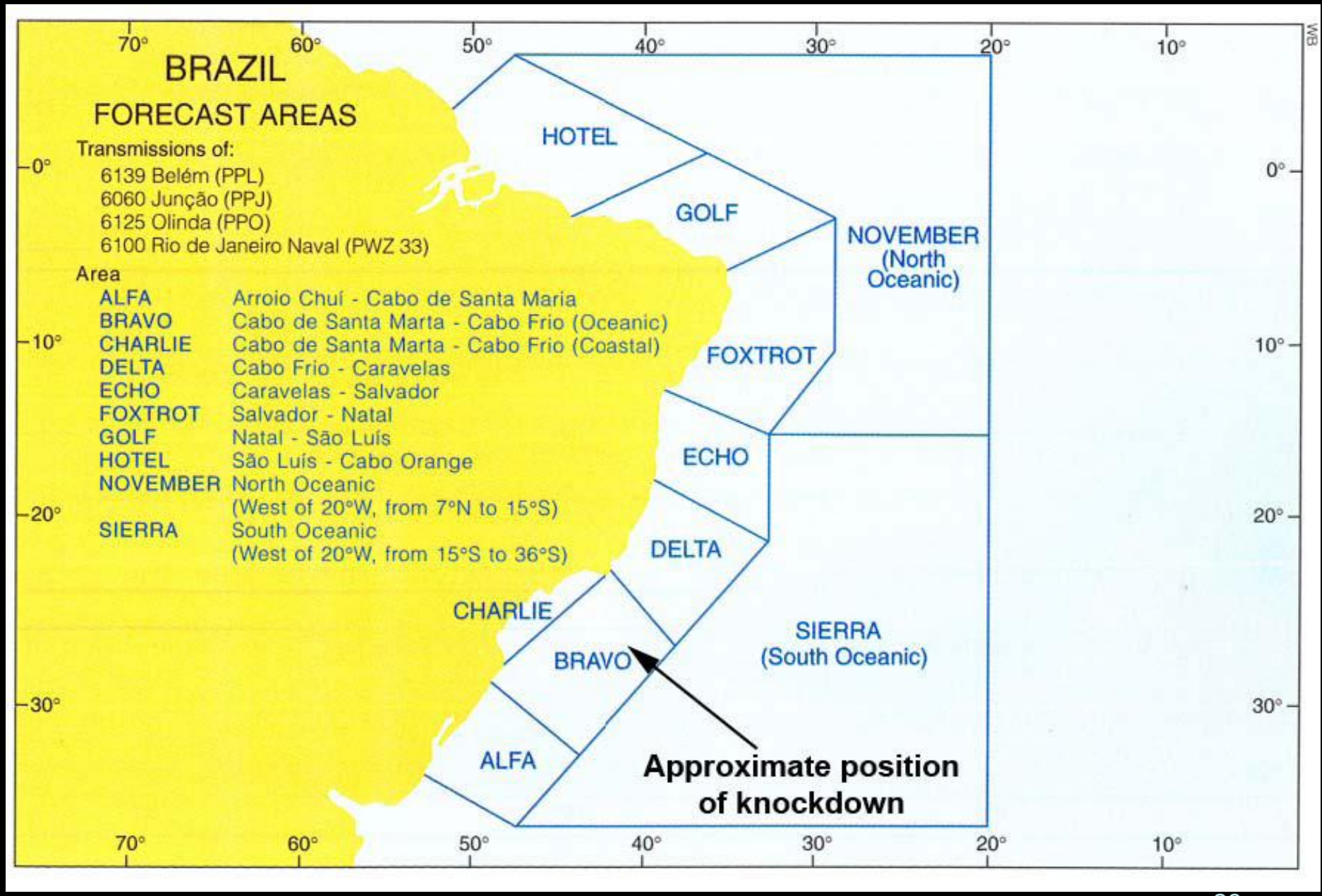
Location and Weather

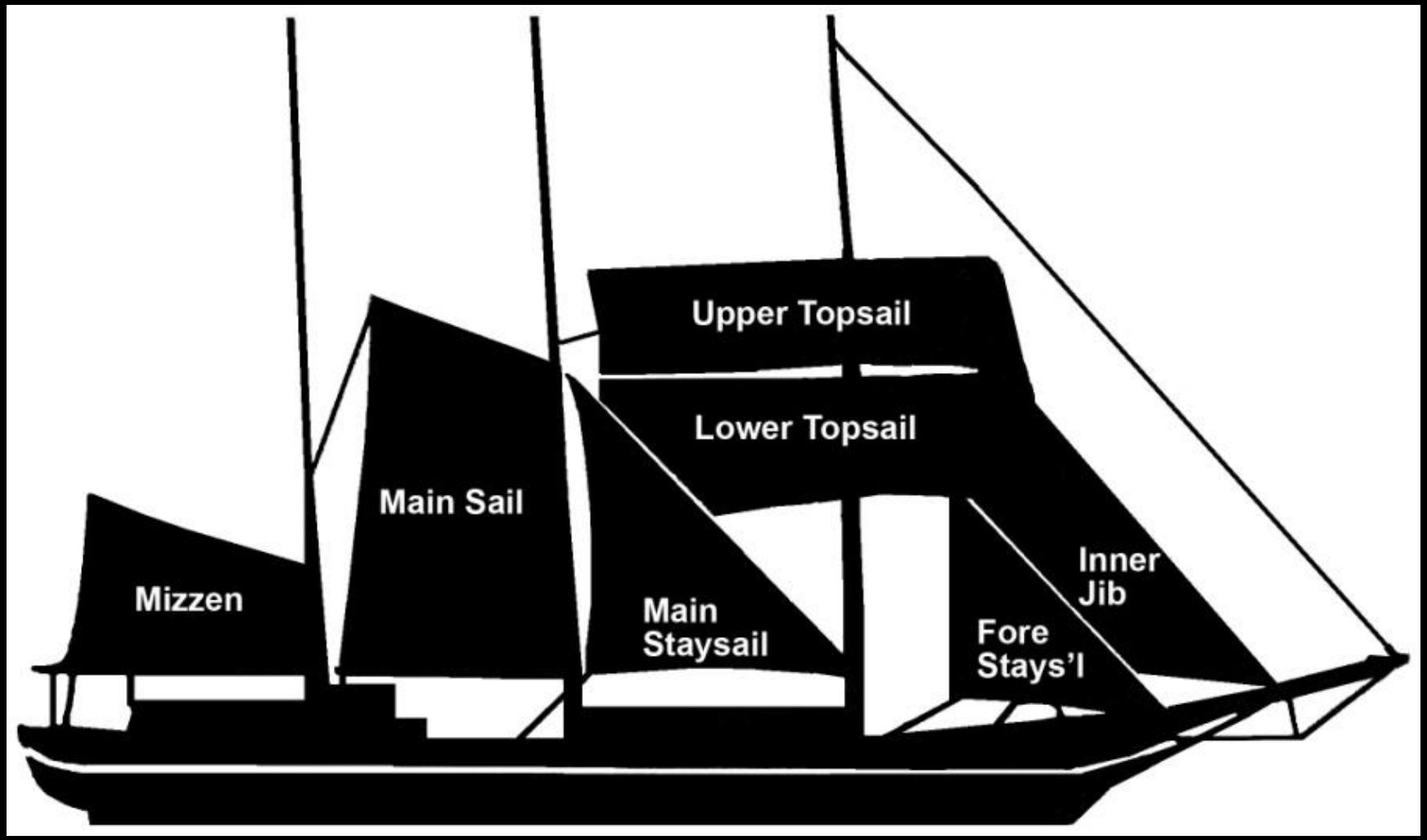
Position

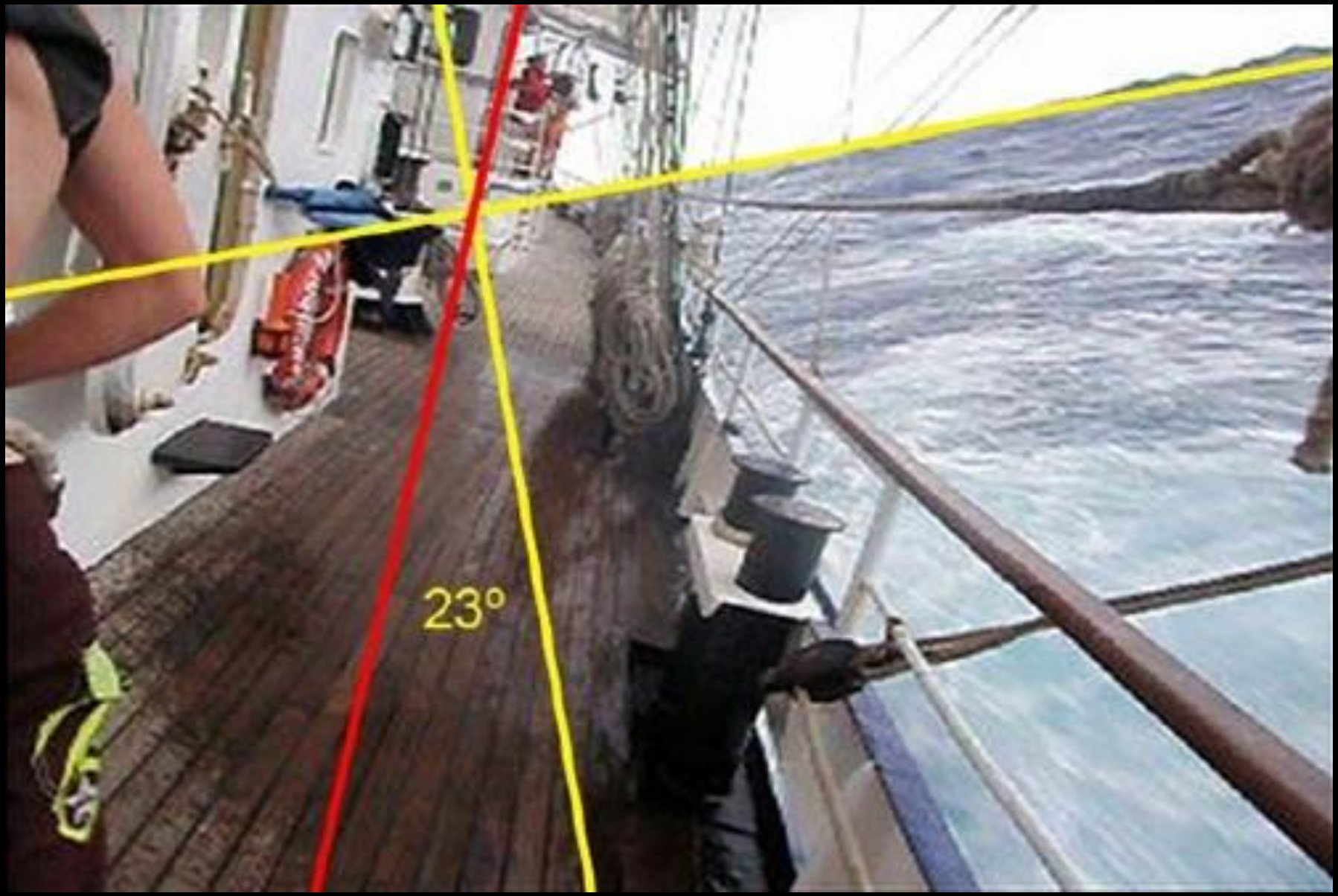
300 nm SSE off Rio de Janeiro

Weather Forecast

Forecasts indicated wind to back to the S/E and increase to 7 or 8 with gusts


BRAZIL
FORECAST AREAS
Transmissions of:
6139 Belém (PPL)
6060 Junção (PPJ)
6125 Olinda (PPO)
6100 Rio de Janeiro Naval (PWZ 33)
Area
ALFA Arroio Chuí - Cabo de Santa Maria
BRAVO Cabo de Santa Marta - Cabo Frio (Oceanic)
CHARLIE Cabo de Santa Marta - Cabo Frio (Coastal)
DELTA Cabo Frio - Caravelas
ECHO Caravelas - Salvador
FOXTROT Salvador - Natal
GOLF Natal - São Luís
HOTEL São Luís - Cabo Orange
NOVEMBER North Oceanic
(West of 20°W, from 7°N to 15°S)
SIERRA South Oceanic
(West of 20°W, from 15°S to 36°S)
70° 60° 50° 40° 30° 20° 10°
0° 10° 20° 30°
HOTEL
GOLF
NOVEMBER (North Oceanic)
FOXTROT
ECHO
DELTA
CHARLIE
BRAVO
SIERRA (South Oceanic)
ALFA
Approximate position of knockdown


Upper Topsail
Lower Topsail
Main Sail
Mizzen
Main
Staysail
Inner
Jib
Fore
Stays'l


23°

The Initial Investigation concluded

- The vessel had been knocked down by a microburst.
- Everyone (64 people) had survived.
- There were major delays to initiating an effective Search and Rescue.

TSB Findings General

- Very experienced master
- Relatively inexperienced 2nd Officer
- Concordia was in full compliance with the requirements regarding equipment and drills
- Sailing under reduced canvas.

And yet……

- She capsized and sank in conditions that were well within her capability to handle.
- **Why?**

- **Remember accidents are never caused by a single event but many events over time - and the human factor is invariably involved.**

TSB Findings

- Concordia was vulnerable to a knockdown
- The officer of the watch was unaware, unfamiliar, and untrained with squall curves
- Risk not recognized and no timely mitigating action taken to:
  - Reduce sail and/or change course
  - Make the vessel watertight
- **Lack of** co-operation **with SAR Authorities**

Safety Issues Identified

- Many flag states do not require squall curves (or equivalent) on sail training vessels
- Officers are not required to be knowledgeable in the use of squall curves

TSB Report

- The wind speeds at the time of the knockdown were most likely in the range of 25 to 50 knots.
- While there was probably a vertical component to the wind, there is no evidence that a microburst occurred
- The vessel was operated in a way that did not allow it to "...react to changing weather conditions appropriately and maintain the stability of the vessel."

Main Recommendations

- …officers to whom it issues sailing vessel endorsements are trained to use the stability guidance information *provided*.

- ….. undertake initiatives ……for sail training vessels *to provide* stability guidance to assist officers in assessing the risk of a knockdown and capsize ……..

Knockdown and Capsizing of the Sail Training Yacht *Concordia*

off the coast of Brazil

17 February 2010

Even the most dedicated operators are affected by comments made by others on what has happened.

Comments made by outsiders

- **"A vessel is nothing but a bunch of opinions and compromises held together by the faith of the builders and engineers that they did it correctly."**
- **"Distracted crew ignored basic navigation rules in ferry sinking."**
- **"Tragedy or tragic stupidity? I lean towards the latter."** ***Blog comment.***
- ***Speaking of a spokesman for Class Afloat someone commented*** **…… "Of course he does not agree with the findings, THEREIN lays responsibility and liability."**

What should you be looking for when reading this, or any accident, report?

- Don't be too hung up on the recommendations unless directed at you.
- Look for the obvious and not so obvious lessons contained in the text.
- Analyse where the links were in the accident chain.
- Determine what lessons are relevant to you.
- If you were either the skipper or OOW what would you do differently and **WHY?**

Advice

- Seek out and read any sail training accident reports
- Look for the lessons that apply to you and your vessel.
- Discuss them with colleagues.
- Think before publicly disagreeing with an official report - the media **love** controversy.
- Don’t be upset by ill informed or malicious comment

A Personal Opinion

- Strongly recommend Class A personnel read the report. Available on line
- Identify and discuss lessons learned.
- Ask “Could it happen here.”
- The really important aspect is to train all watchkeepers to read the sea and weather.

BAD WEATHER TACTICS
Shipmasters of old

"A ship's survival depended almost solely on the competence of the master and on his constant alertness to every change in the weather. There was no one to tell him that the time had now come to strike his light sails and spars, and snug her down under close reefs and storm trysails. His own barometer, the force and direction of the wind, and the appearance of sea and sky were all that he had for information. Ceaseless vigilance in watching and interpreting signs, plus a philosophy of taking no risk in which there was little to gain and much to be lost, was what enabled him to survive."

And now for something else!

The next worst catastrophe

"Short of loss of a vessel, the most catastrophic event any sail training programme might experience is a fall from aloft leading to serious injury or death…

Prevention of falls from the rig is one of the hallmarks of any sailing safety culture."

ASTO (UK)

A Detailed Report (and lessons learned)

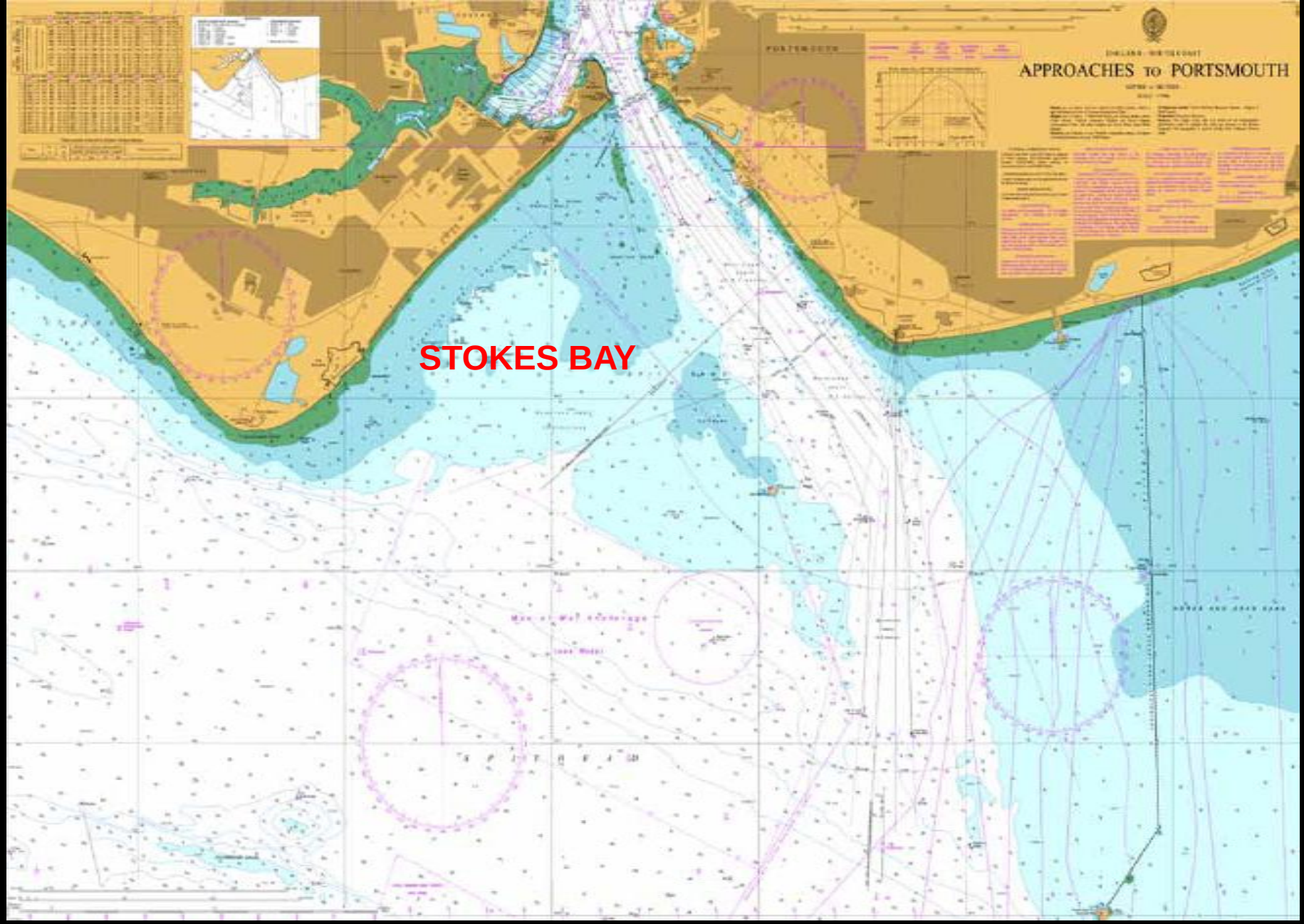
"Royalist"

Sea Cadet's Fatal Fall from Yard

2 May 2010

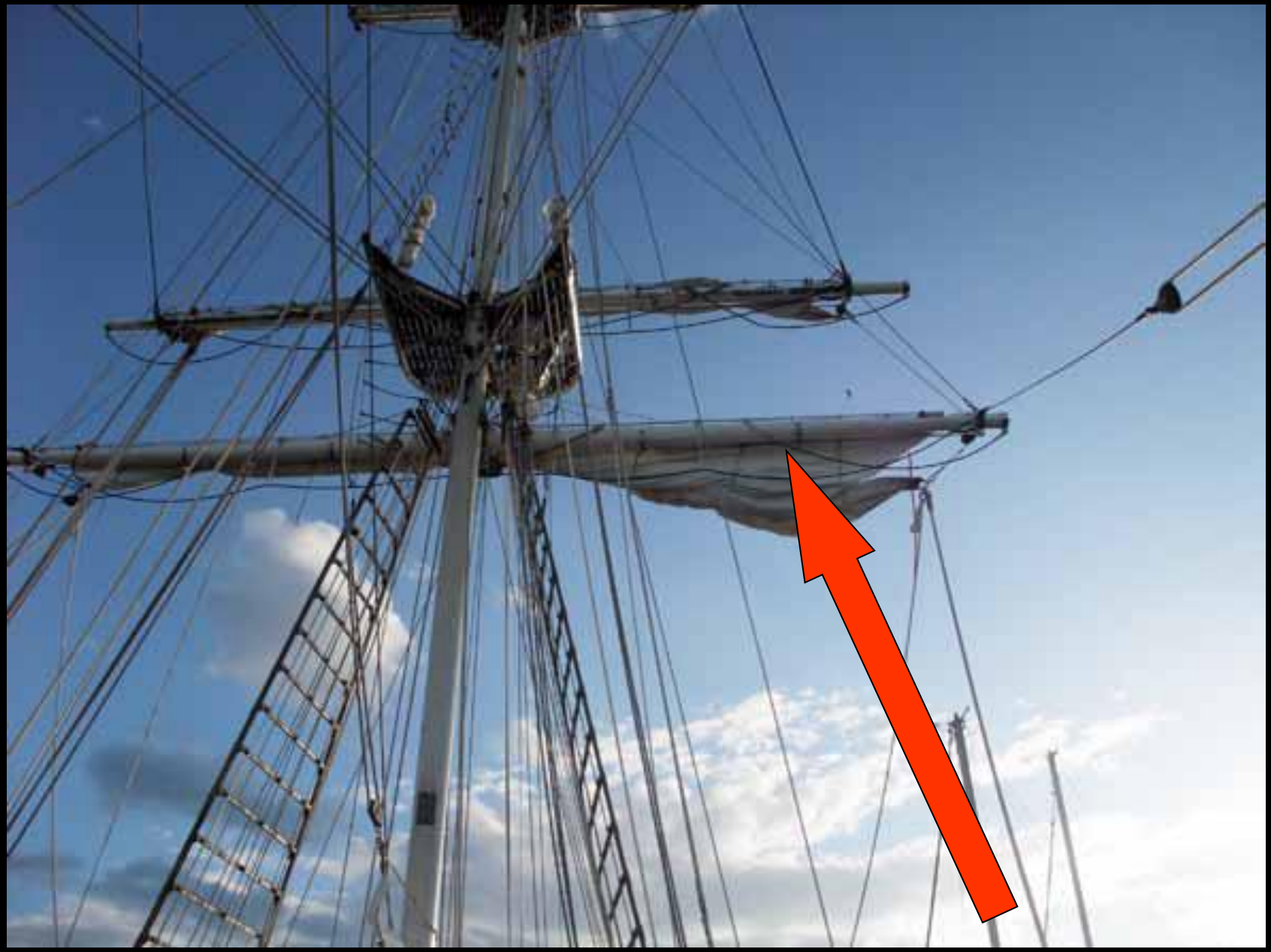
Royalist Fatality

- No fatal accidents in 39 years, or sailing with 30,000 cadets.
- All cadets were well briefed and had rehearsed drills.
- The victim had previous experience, was competent and confident.
- High standards maintained on board
- Safety harnesses carried and worn.


APPROACHES TO PORTSMOUTH
STOKES BAY

The Accident

- Occurred with the vessel at anchor after a day's sailing.
- The cadets were furling the fore course.
- The victim was working aloft on the starboard fore course yard and assisting others to furl the sail when he unclipped his safety harness and tried to pass behind one of his colleagues.
- He fell 8m to the bulwark below and into the sea but was pronounced dead by the time he reached hospital.



So why did it happen?
And what can be done to prevent it happening again?

- Remember investigations tend to probe in depth.
- What clipping on regime applied?
- Were the harnesses fit for purpose?
- Were the harnesses up to the task?
- What safety audits applied?

The Findings

- The 3 points of contact rule had been broken by the victim.
- Elevated risk-taking among adolescents is well documented.
- Victim was known to have unclipped while aloft previously but this had not been reported.
- MSSC had trialled different harnesses and selected the single lanyard belt version.
- Supervision from the deck was inadequate

Single Lanyard Belt Harness as used on board Royalist.

STI recommends full body harness with two lanyards but acknowledges different rigs and crew needs may require different configurations.

Royalist Report

- **Was published by the UK's Marine Accident Investigation Branch on 3 March 2011**

- **http://www.maib.gov.uk/publications/investigation_reports/2011/ts_royalist.cfm**

Lang's Conclusions

- No matter how good, or effective, you think your operation is, read other accident reports to consider what can be improved.
- Never think it can't happen to you.
- Don't under estimate the relevance of a good safety management system.
- Don't underestimate the value of an independent safety auditor.

Dismasting

Fryderyk Chopin – Oct 2010

Leader – Sept 2011


Lifeboats
RNLI 16-08


09/11/2010 12:00:35


12/01/2011 14:38:07


ZODIAC


LEADER

Common Features

- Sea conditions. Chopin buried bow sprit?
- Mast weaknesses not detected by survey.
  - Chopin – Exhaust system?
  - Leader: single piece of timber. Laminated mast better? Inspection regime?
- Nobody Hurt
- Post incident sequence of events. Decision making by skipper on recovery action. Both calm and professional. Learn the lessons.

And Finally…….

3 generic features to mull over.

Complacency

Bridge Resource Management

Incident Reporting

Complacency

In a maritime context what would you understand by the accusation that an accident has been caused by complacency?

Complacency

What do you think it means?

- Extreme self-satisfaction or smugness.
- Indulgent, easy-going, undemanding, tolerate, lenient.

Complacency

- Task familiarity
- Constant repetition of same routine
- Develops over time
- Knowingly break the same rules because it has worked so many times before.
- Routine tasks becomes automatic
- Failure to take the task seriously
- Over confidence in own ability.
- Failure to recognise conditions have changed.

But……

- The problem is that if you ever suggest that complacency is a contributory factor in the cause of an accident people become apoplectic, angry, incensed and refuse to speak to you ever again…….
- Which presents a problem – there is an issue created by constant repetition etc and you **have** to highlight the dangers. So what **do** you call it?

Complacency

- Is a very real problem across the entire maritime sector.
- Be aware of it and constantly ask yourself if you are guilty of it.
- An effective way of recognising the danger is to encourage……
- What?

Bridge Resource (Team) Management

Became fashionable once marine accident investigators began to focus on how available information was handled on a vessel's bridge

The Aviation Industry

- A number of aircraft accidents in the jet age revealed that a breakdown of communications between pilot and co-pilot in the cockpit was a key causal factor.
- The concept of cockpit resource management was introduced and made an immediate difference to improving flight safety.

THE PAST

- Analysis of practically every navigational incident including groundings, collisions and berthing mishaps, reveals human factor issues and a failure to integrate the bridge team.

Human Limitations

- In a tight situation the person most involved will focus entire attention on a very narrow field.

- Even the most talented and experienced skipper or captain can become distracted.

Past Tendencies

- To assume that the accident happened because the person most closely involved made a mistake and nobody else was involved.

- Failure to look at the broader picture and realise that serious mistakes could have been avoided had someone else, perhaps a junior member of the team, drawn attention to something that could have prevented the accident.

BRT Ingredients

- Develop Situational Awareness, Communications, Leadership, Teamwork, Manage workload (fatigue, stress, too many things happening at once.)

- It aims to foster a climate or culture where the freedom to respectfully question authority is encouraged.

What Next?

- Try Googling "Bridge Resource Management" and see where it takes you.
- Resist the temptation to think "It doesn't apply to me."
- Try reading the Royalist Report (UK's MAIB) on her grounding on 5 April 2009.
- Consider convening a BRM workshop in your organisation!

A Reflection on the Royalist Grounding

- It was a relatively "minor" event.
- Nobody was hurt and there was no damage apart from pride and a potential dent in the Sea Cadets reputation.
- Should it have led to a full investigation and a published accident report?
- Discuss. Yes or no?

Incident Reporting

An incident is defined as:

"An event that, if not corrected, would danger the ship, its occupants or the environment.

Sometimes known as a near miss.

Incident Reporting - Advantages

- Provides a powerful tool for identifying safety problems and issues.
- Reporting incidents ensures that lessons can be shared with others.
- The aviation sector embraces incident reporting as part of the safety culture of flying. The marine world isn't there yet!

Examples - 1

- Visitors chatting away in earshot of the skipper – big distraction and making orders hard to hear.
- Giving way to an oncoming vessel at night in a narrow and unfamiliar channel only to run aground. Too late the lights were identified as fixed leading lights!

Examples - 2

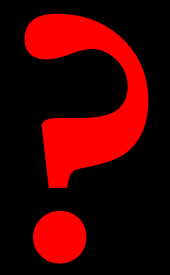
- Giving way to an oncoming vessel – only to hear 5 short blasts from astern. Failure to check astern before altering course!
- Failure to see another ship in an empty ocean – distracted by working on charts rather than keeping a lookout.

Examples - 3

- Very nearly falling out of a safety harness.
- Seeing a young lad breaking the safety rules whilst aloft and not doing anything about it.

101

What about your “Incidents?”



The Main Lessons?

- Have an effective Safety Management System
- Permanent staff to set a consistently good example.
- Encourage incident reporting as part of the safety culture – **Don't penalise**
- **Learn the lessons from your, and other's, near misses!**

Workshop Summary

- “If you think safety is expensive, try having an accident.”
- “Every accident is a learning experience.”
- The sole aim of today has been to prevent accidents in the sail training world by learning from the misfortunes of others.

DISMASTING

BERTHING INCIDENT

MAN OVERBOARD

FLOODING

GROUNDING

FOUNDERING

CAPSIZE

FIRE OR EXPLOSION

COLLISION

PERSONAL INJURY

FALLING FROM MASTS OR RIGGING

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