



# **MSC NAPOLI**

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# CONTEXT

- Hanjin Pennsylvania
- Hyundai Fortune
- YM Green
- APL Panama
- NYK Argus
- MSC Napoli
  - Not highest value ship
  - Not highest value cargo
  - BUT the second most expensive marine salvage operation since Exxon Valdez!

# CARGO SALVAGE

- No local equipment
- No purpose built facility
- Little space

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- No local equipment
- No purpose built facility
- Little space
- Hazardous Cargo
- Damaged Cargo
- Refused / Abandoned Cargo

# CARGO CONDITION

- ON Deck – largely intact
- UNDER Deck – largely total loss
- Environmental Considerations
- Recycling – 40% of total loss volume recycled
- Waste processing infrastructure

# CARGO ENVIRONMENT

- Insurers to be aware of
  - Commercial Resolution of Cargo Damage
  - Environmental Legislation
  - High Legislation / Low Infrastructure = High Disposal Cost



# CONTRIBUTARY FACTORS

- Insufficient Buckling Strength by Way of Engine Room?
- Change of Strengthening Direction by Way of Engine Room?
- Post-build Modifications
- BUT
  - Built within contemporary class conditions
  - Usual strengthening configuration at the time

# CONTRIBUTARY FACTORS



# CONSTRUCTION

- Built according to plan
- No significant corrosion
- Some steel under spec
- Some welds too thin
- BUT – overall within spec tolerance

# CONTRIBUTARY FACTORS

- Previous Accident / Grounding?
- Built to edge of limit
- Excessive bending moments in shallow waters (port approaches)
- Deadweight discrepancies
- Laden containers heavier than declared
- Speed too high for circumstances
- Slamming and Whipping

# CONTRIBUTARY FACTORS

- Static Pressure (Bending, Torsion) – not causal but used up safety margin.
- Slow Pressure (Waves) – not causal but on the limit of design
- Fast Pressure (Slamming & Whipping) – unclear impact but likely 10% to 50% increase
- RESULT – too close to the edge

# AVOID RECURRENCE



GETTY IMAGES

# DESIGN

- Environment & Economy vs. Safety
- Refine Class Regulations
- Test Bending / Torsion Stress over entire Hull Length
- Better Load Computer Programs
- Increase Safety Margin

# OPERATOR

- Accurate Stow Plans
- Accurate Cargo Weights (and Refusal if wrong)
- Increased Random Inspection of Containers
- Complete Hull Stress Monitoring
- Report Failures / Repairs to Class
- Comprehensive Emergency Response Plan



# CARGO

- Accurate Cargo Weight
- Accurate Cargo Description incl. Hazards
- Generic Cargo Information
- Ownership and Risk
- Post Event Communication and Disposal Decisions

# PORTS

- Check container weight and quarantine those with discrepancies
- Monitor container condition and reject structural failures
- Take into account bending moments when planning load / discharge sequence

# GENERAL COMMERCIAL

- Less Just-in-Time
- More and Better Advance Cargo Details
- Plan for Delay
- Increase Ship Schedule Redundancy

# CONCLUSION

- On the Limit
- Additional Stress = Hull Fracture
- BUT – only two in 50 years.