



**NTSB** National Transportation Safety Board

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*Office of Marine Safety*

**Hong Kong-registered container ship  
M/V *Cosco Busan* allision with  
San Francisco-Oakland Bay Bridge  
San Francisco, CA  
Nov 07, 2007**

Tom Roth-Roffy, IIC  
DCA-08-MM-004



# Accident site





# M/V Cosco Busan



© Jan Svendsen

Type: Container

Length: 901 ft

Breadth: 131 ft

Dwt: 68,000 tons

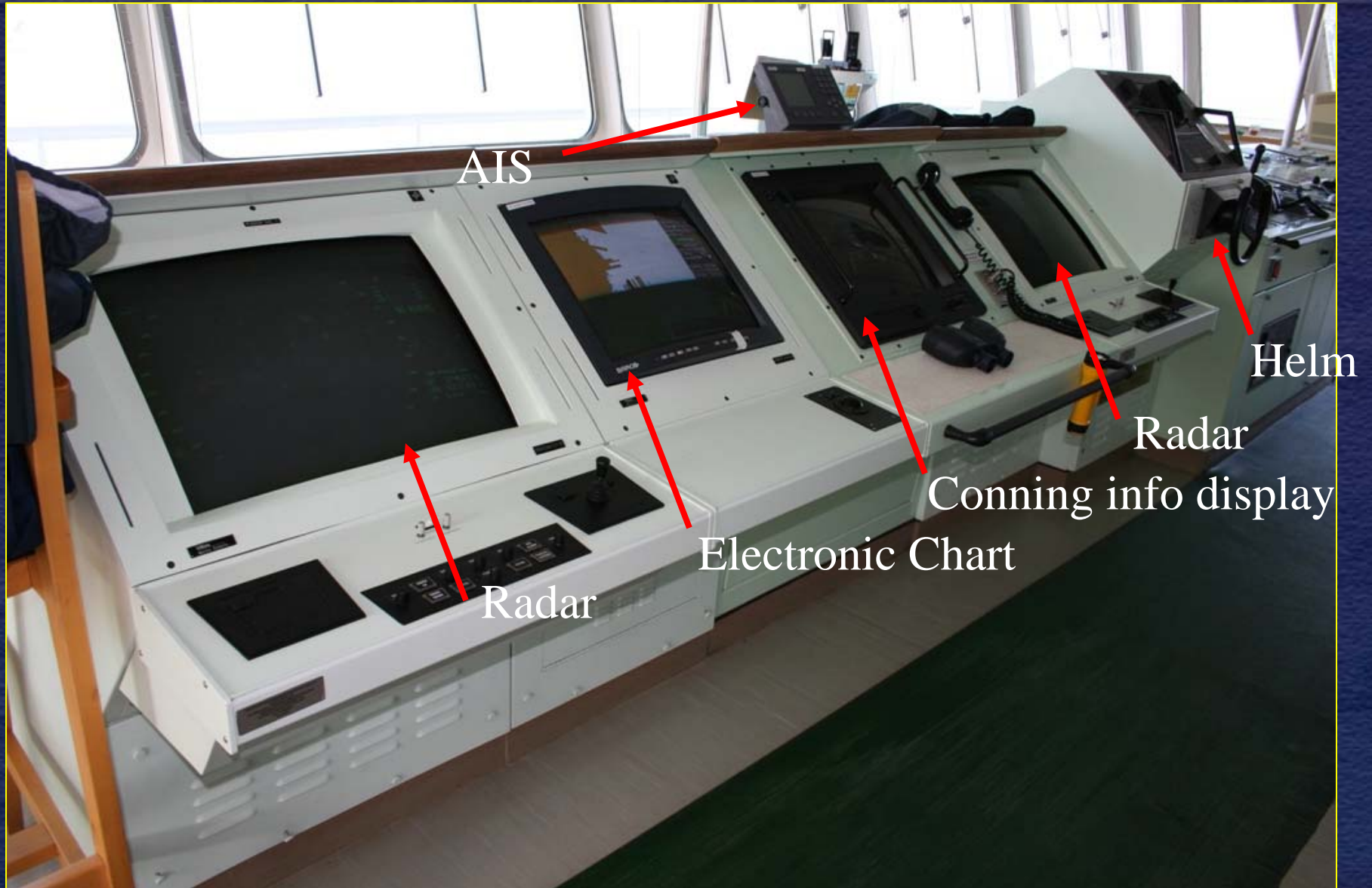
S-VDR fitted

# ***M/V Cosco Busan***

- Navigation equipment -
  - 3 cm radar
  - 10 cm radar
  - Electronic chart system
  - Conning information display
  - Automatic Information System (AIS)



# M/V Cosco Busan



# Bay Bridge



Built: 1936

Traffic: 280K/day

Length: 4.5 mi

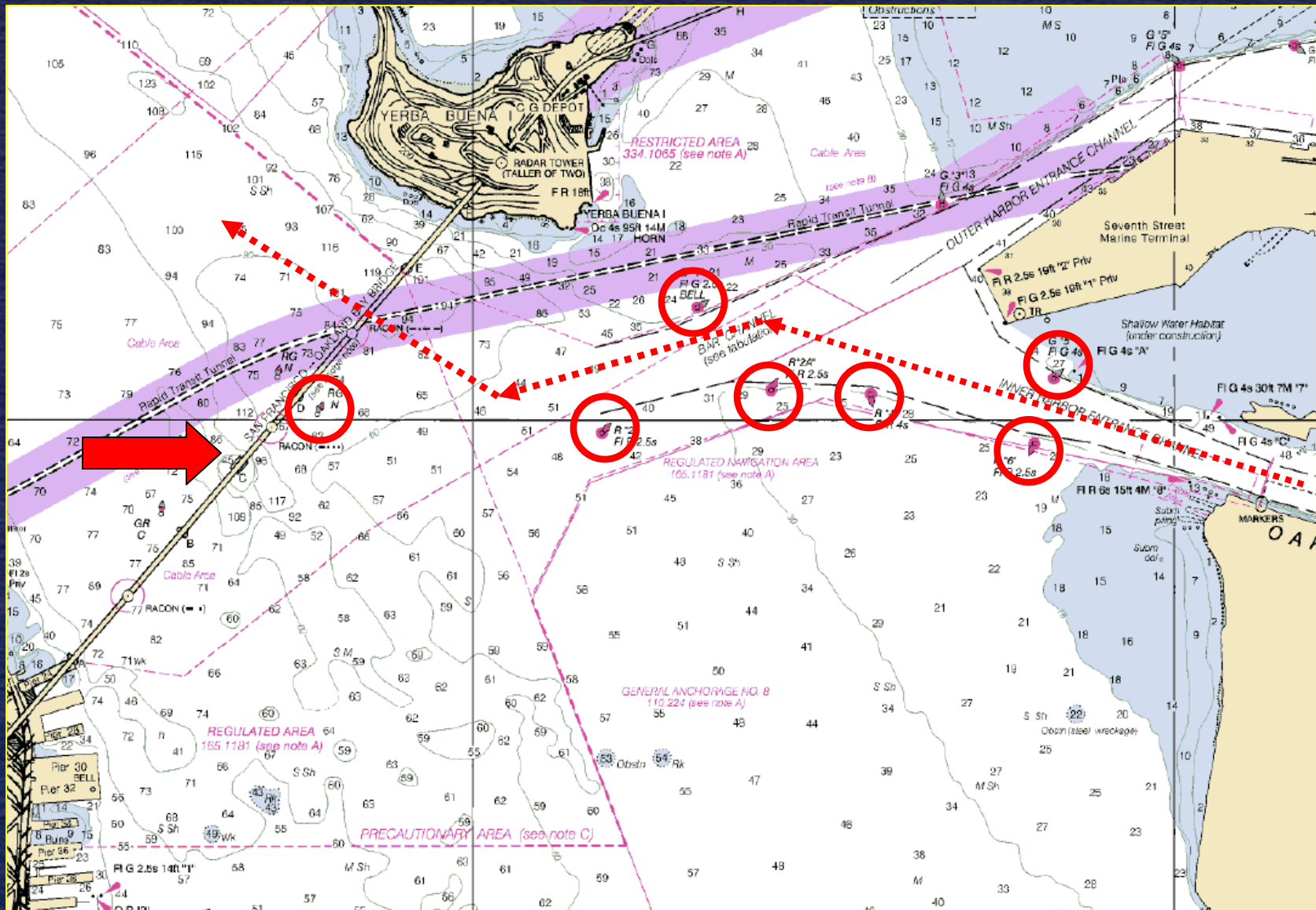
West bay: suspension

East bay: cantilever

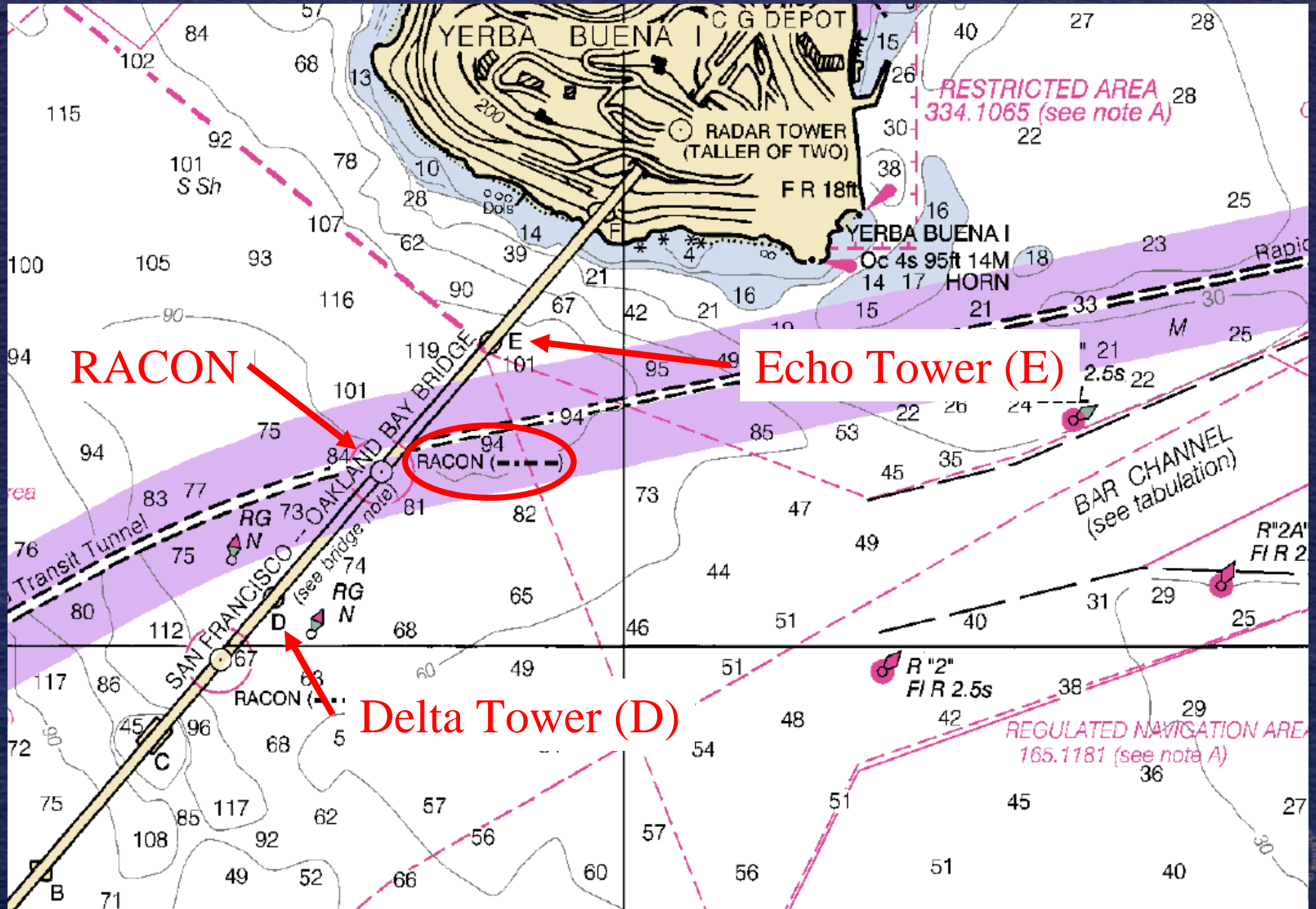
D-E Span: 2100 ft



# Ship's route



# Bridge towers & RACON





# Bridge Approach



# Timeline - allision

- 0620 – Pilot aboard, heavy fog
- 0658 – Pilot reported concerns with radar, crew assists with tuning



# Timeline - allision

- 0620 – Pilot aboard, heavy fog
- 0658 – Pilot reports concerns with radar, crew assists with turning
- 0714 – Paperwork completed, waiting for traffic
- 0808 – Ship underway, first engine order

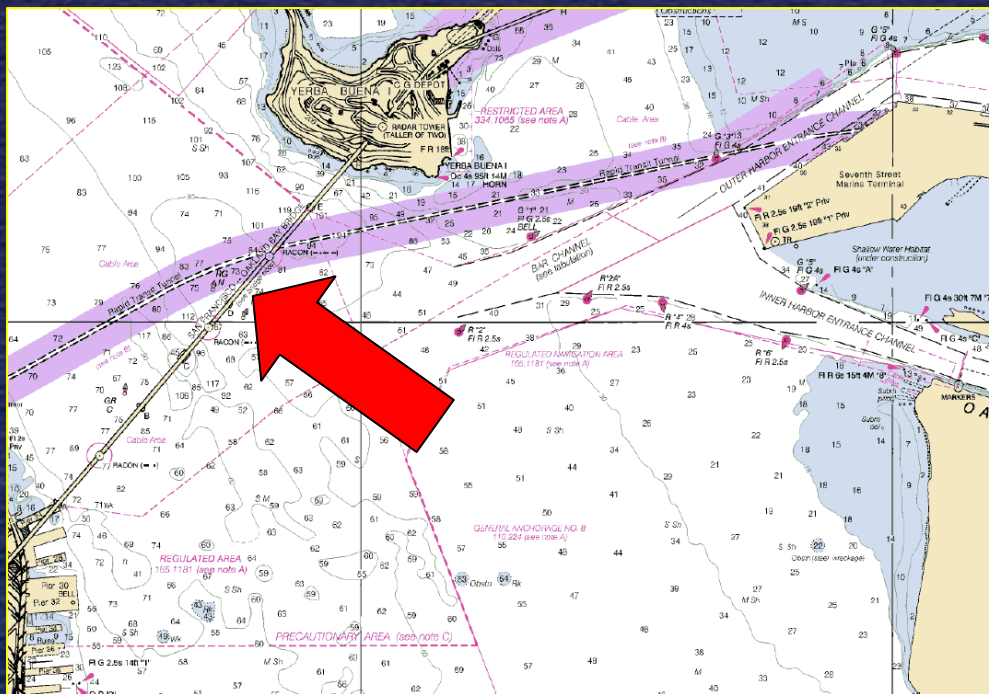
# Timeline - allision

- 0822 – Pilot questioned chart symbol
- 0823 – Pilot ordered port rudder
- 0826 – Pilot ordered starboard rudder
- ~ 0827 – Ship's radars became "distorted"
- 0827 – VTS called ship's pilot
- 0830 – Ship allided with delta tower



# AIS and Radar video

- Ships track – from AIS
- Radar – VDR images

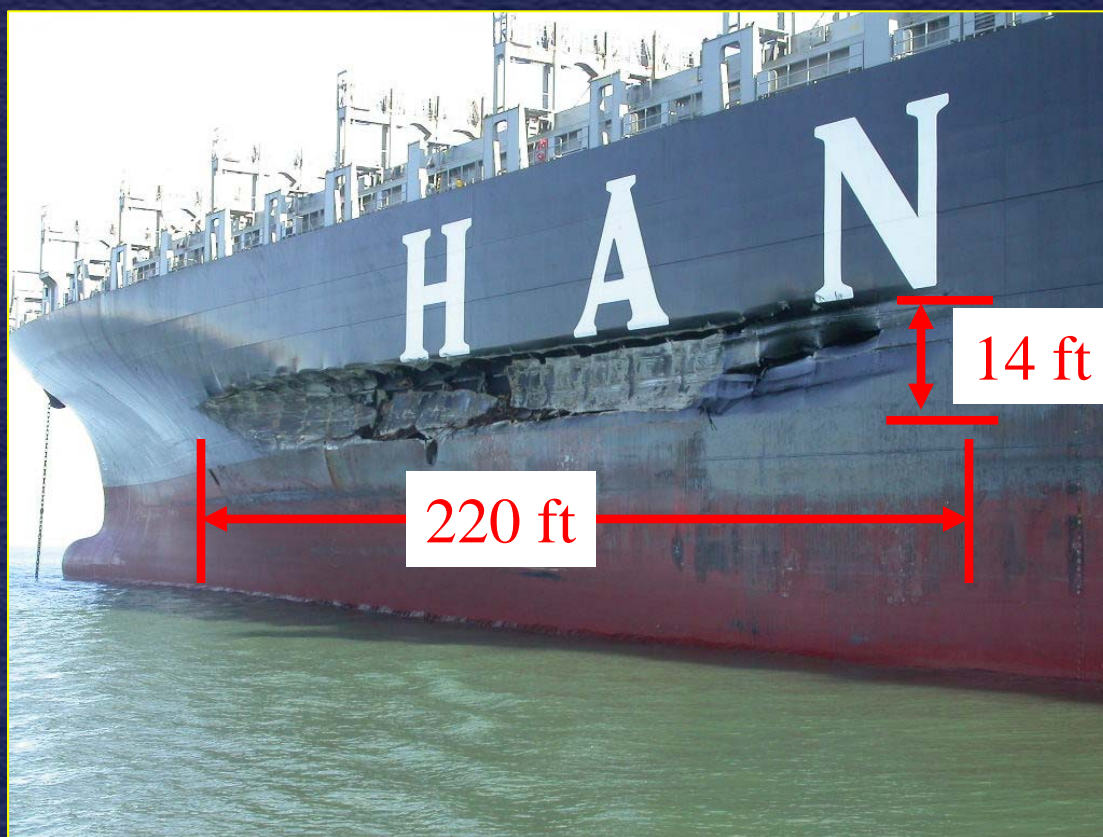


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# Damage to M/V Cosco *Busan*



Damage: \$2.1 M

Size: 220 ft x 14 ft

Spilled: 55,000 gal



# Damage to Bay Bridge



Damage: \$1.5 M

# Timeline – environmental response

- 0830 - Pilot notified USCG VTS that ship struck bridge.
- 0846 - Pilot Association rep notified USCG COTP
- 0849 - Pilot Association rep notified USCG VTS oil was “pouring out of the hull”
- 0857 - Pilot notifies VTS of oil around the ship,
- 0903 - USCG Pollution Investigation Team responded
- 0905 – Relief Pilot notified Oil spill Response Organization (OSRO)
- 0915 - Qualified Individual (QI) notified



# Timeline – environmental response

- 0930 - Incident Management Division (IMD) Chief briefed COTP, D-11 Commander, and Chief of Response
- 0935 - Oil Spill Response Organization began mobilization
- 1000 - USCG team boarded ship
- 0942 - Qualified Individual (QI) notified California Office of Emergency Services (OES)
- 0945 - The State On-Scene-Coordinator and USCG IMD established a Unified Command
- 1000 - Oil spill response contractors began encountering skimmable oil

# Timeline – environmental response

- 1030 - Qualified Individual notified the Coast Guard of involvement
- 1044 - The PI Team reported to Sector Command Center
- 1205 - DFG Oil Spill Prevention Specialist departed for ship
- 1336 and 1506 - Oil spill contractors to conduct overflight operations
- 1600 - The DFG Oil Spill Prevention Specialist reported spill amount
- 1730 - On-water oil spill recovery operations for Day 1 suspended
- 2100 - State OES conducted a conference call with local jurisdiction emergency services



# Environmental Damage

NOAA Oil Trajectory Animation  
(Hindcast)



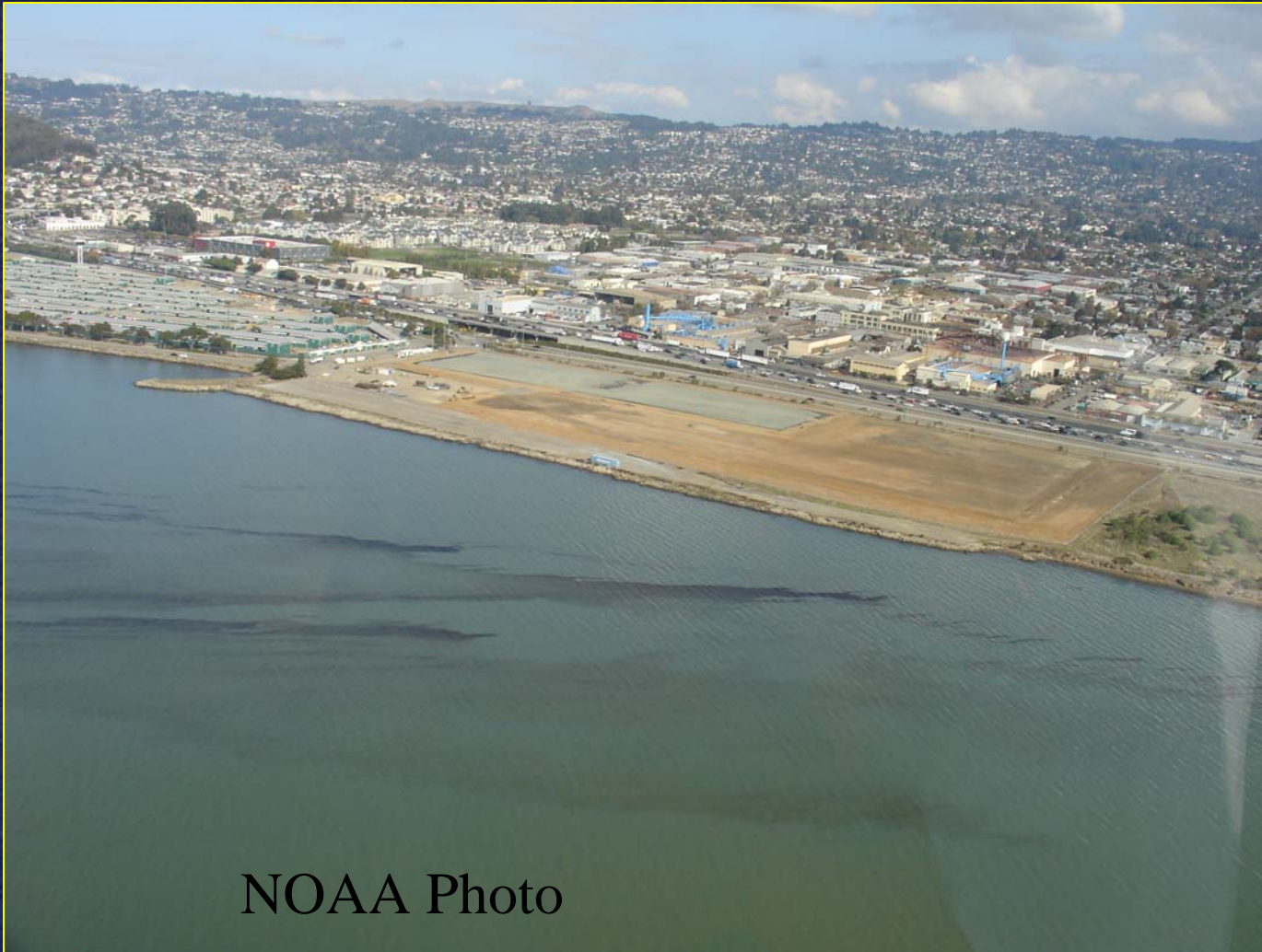
# Environmental Damage



NOAA Photo



# Environmental Damage



NOAA Photo

# Environmental Damage

- News clip





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