



NTSB National Transportation Safety Board

Office of Marine Safety

**Allision of Hong Kong-Registered
Containership M/V *Cosco Busan* with
the San Francisco–Oakland Bay
Bridge**

Nov 07, 2007

Accident Site



M/V *Cosco Busan*

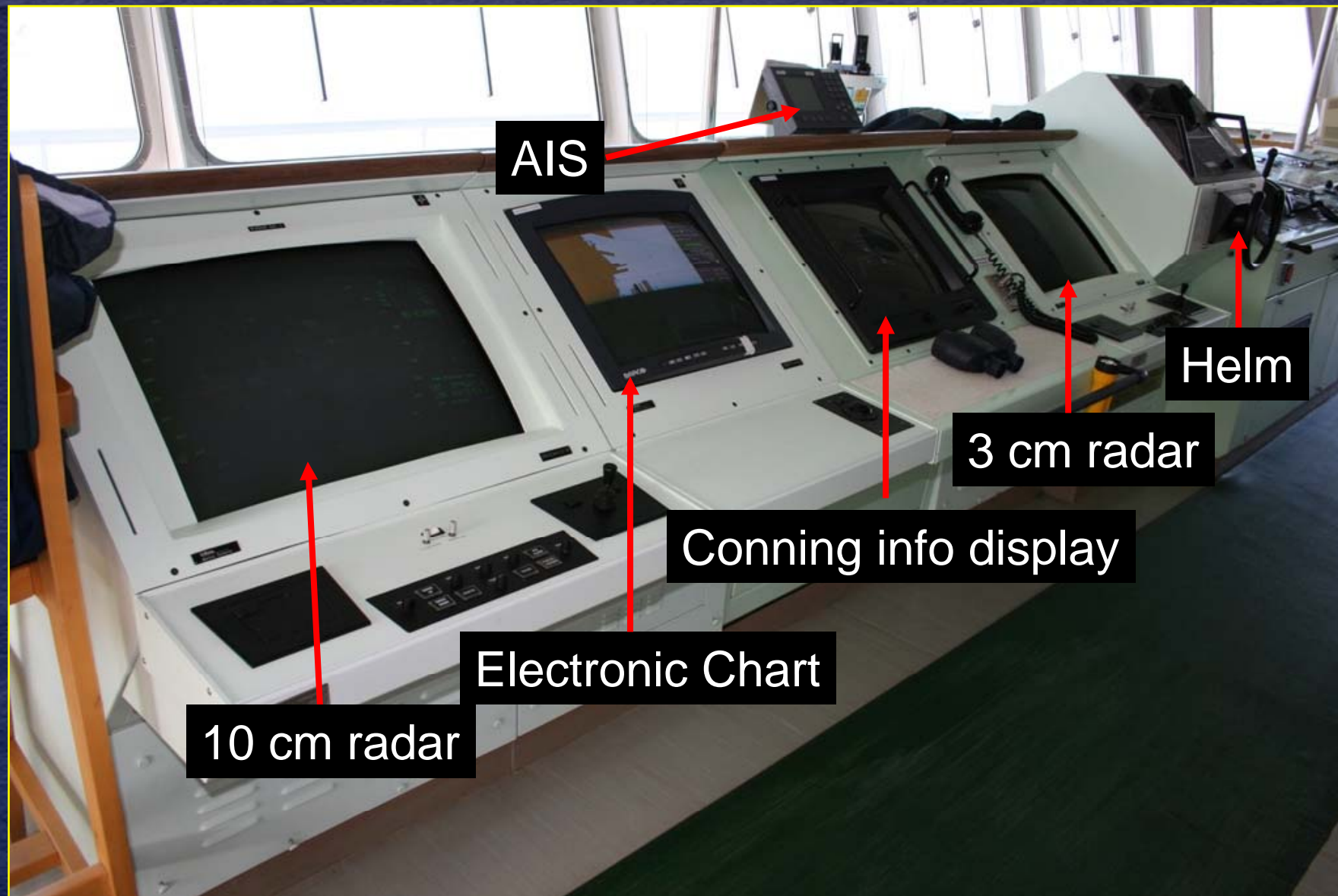


- Type: Container
- Length: 901 ft
- Breadth: 131 ft
- Draft: 40 ft
- Crew: 23

M/V *Cosco Busan*

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

M/V Cosco Busan Bridge

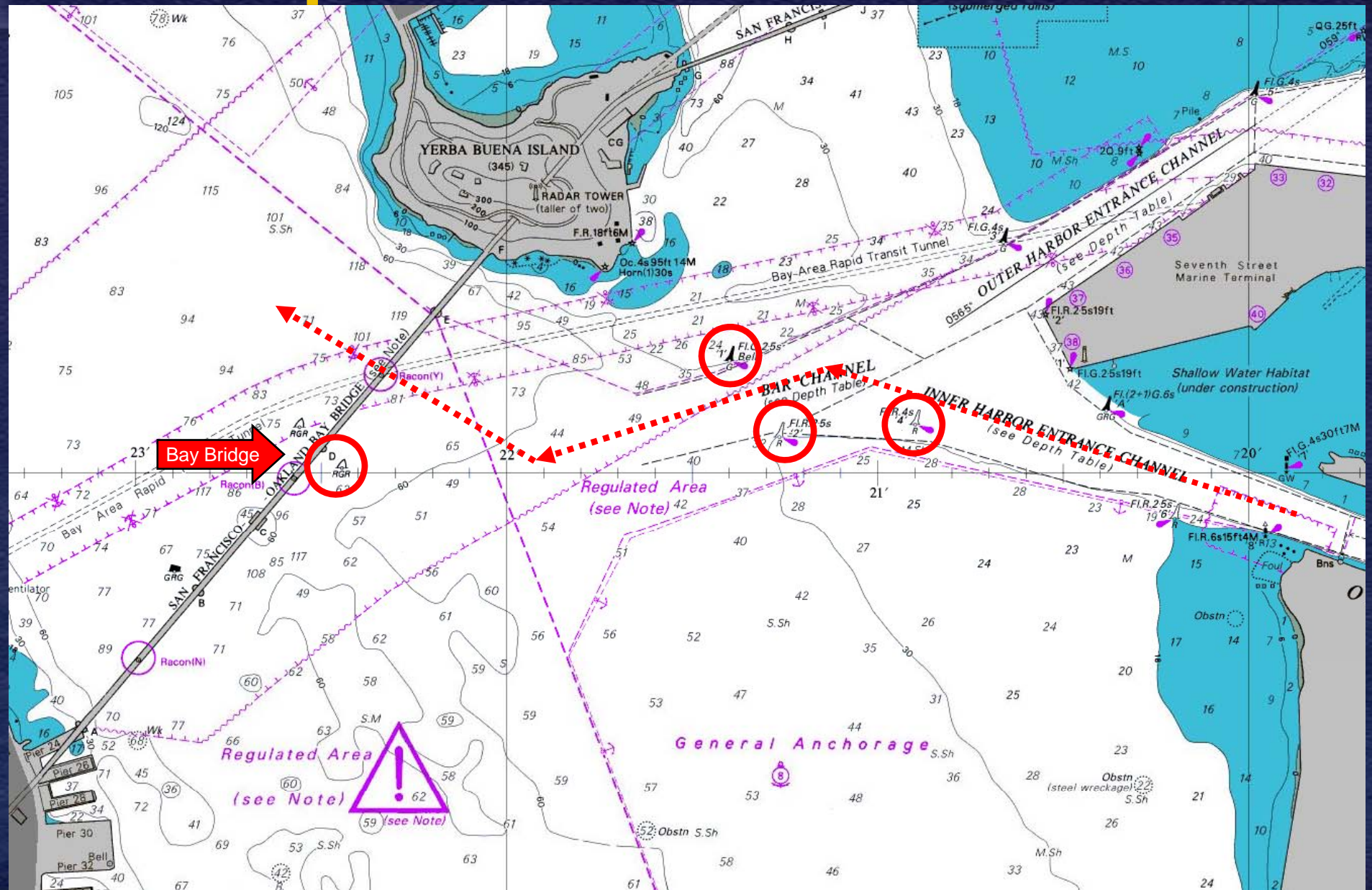


Bay Bridge

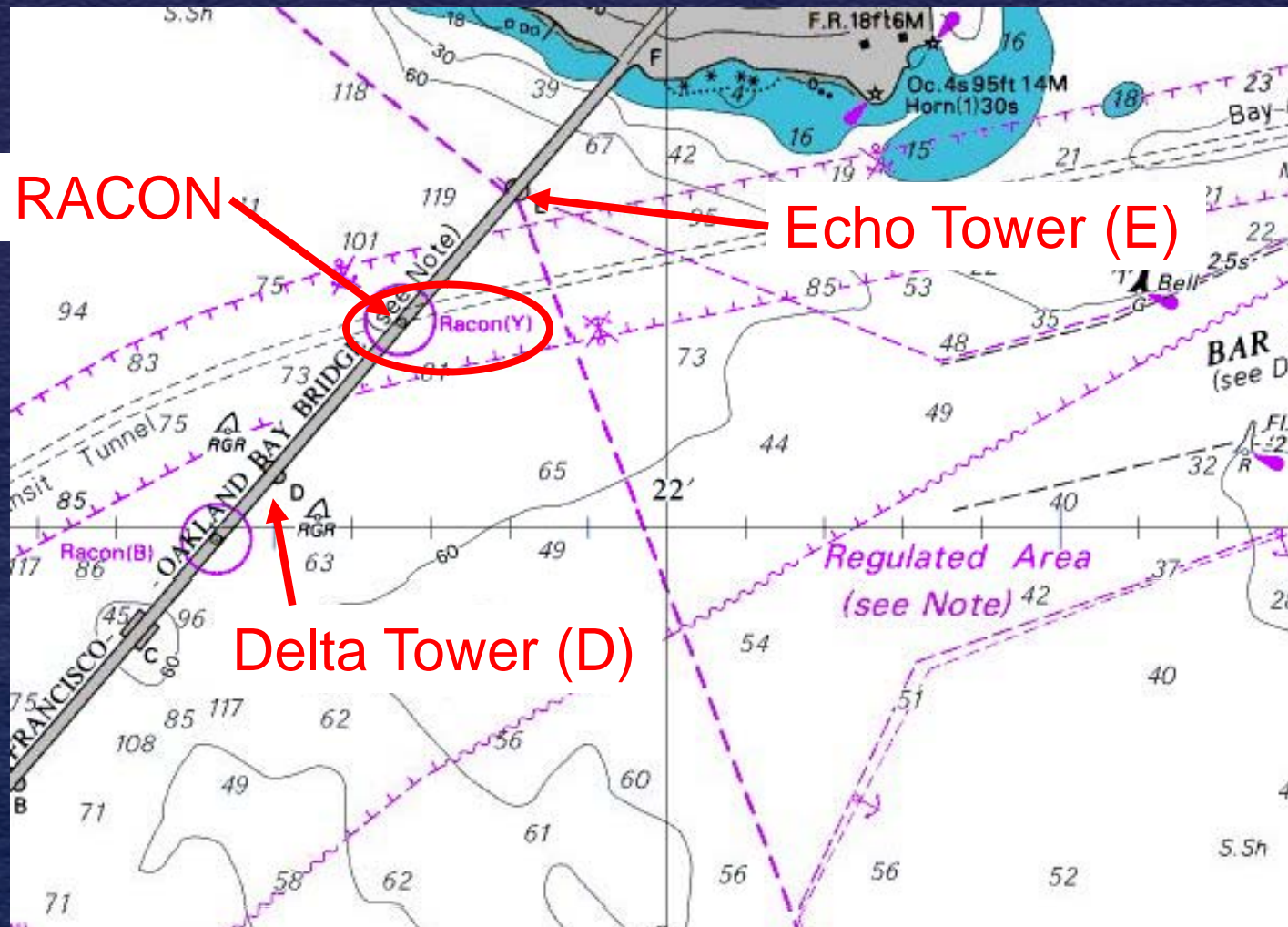


- Built: 1936
- Traffic: 280K/day
- Length: 4.5 miles
- D–E Span: 2200 ft

Ship's Route – BA Chart



Bridge Towers & RACON



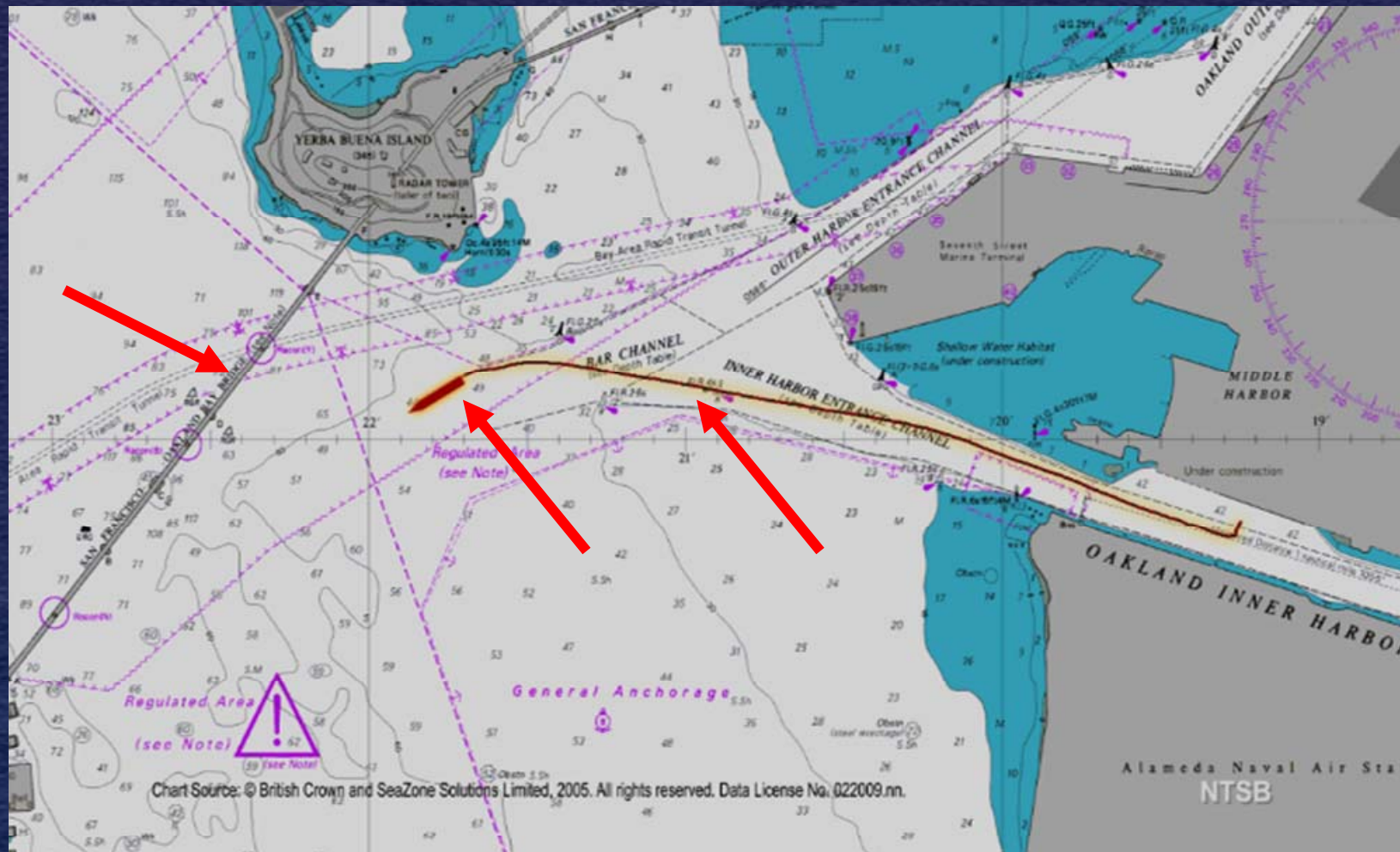
Bridge Approach



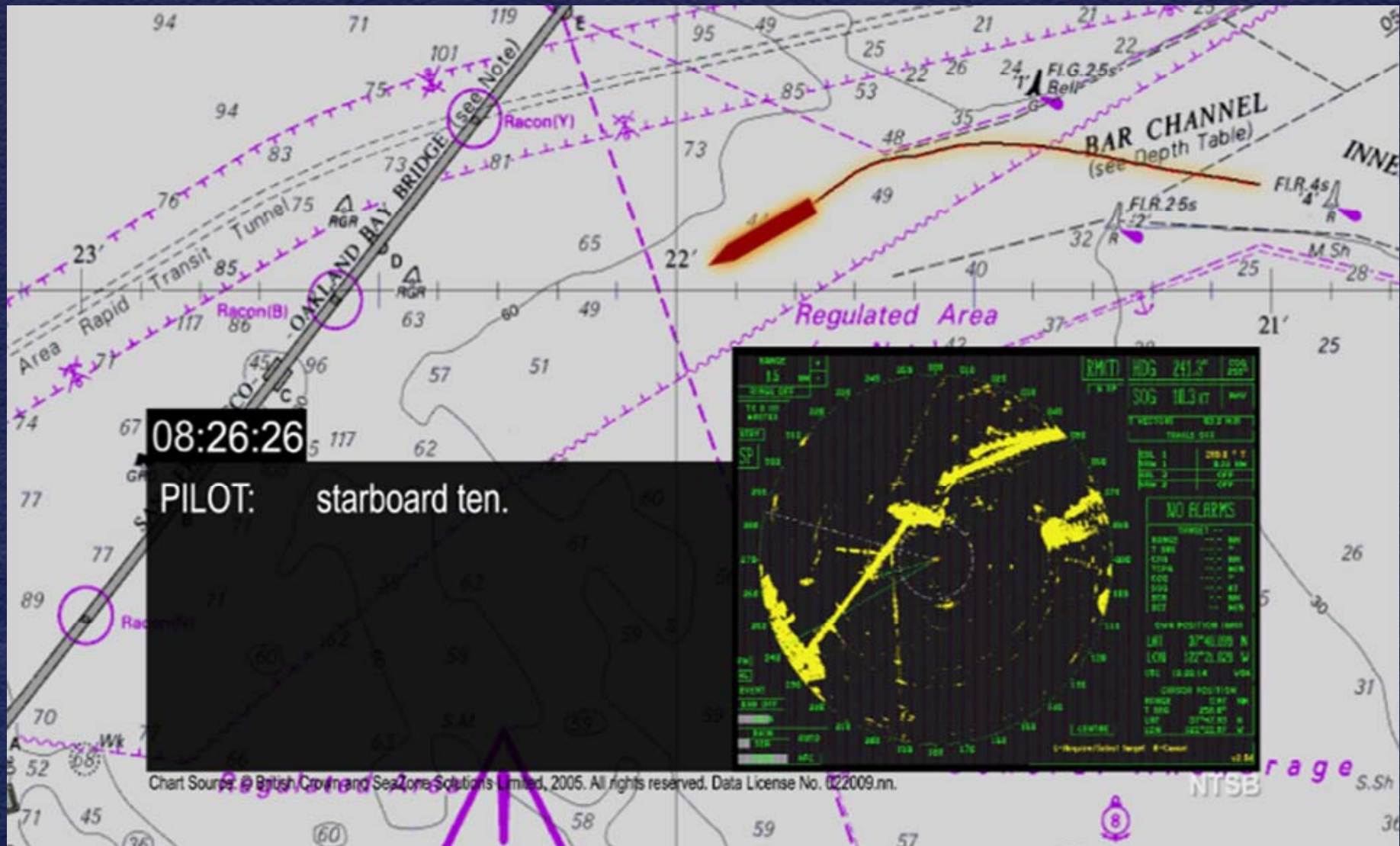
Timeline – Allision

- 0620 – Pilot on board, heavy fog
- 0810 – Ship under way
- 0820 – In bar channel, left turn
- 0822 – Red triangle discussion
- 0823 – Turn to port
- 0836 – Turn to starboard
- 0827 – Callout from VTS
- 0830 – Allision

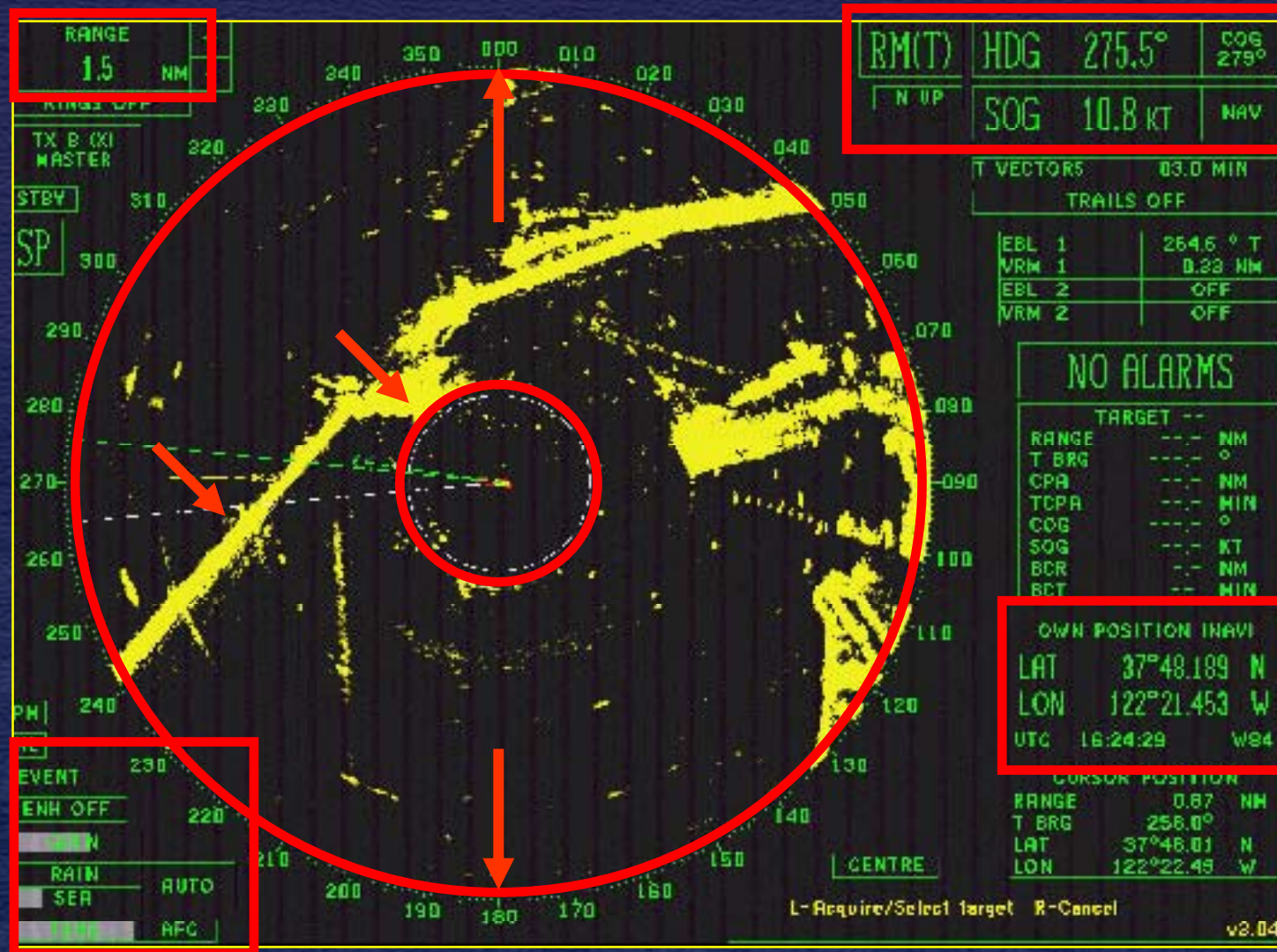
Accident Animation – 20 X



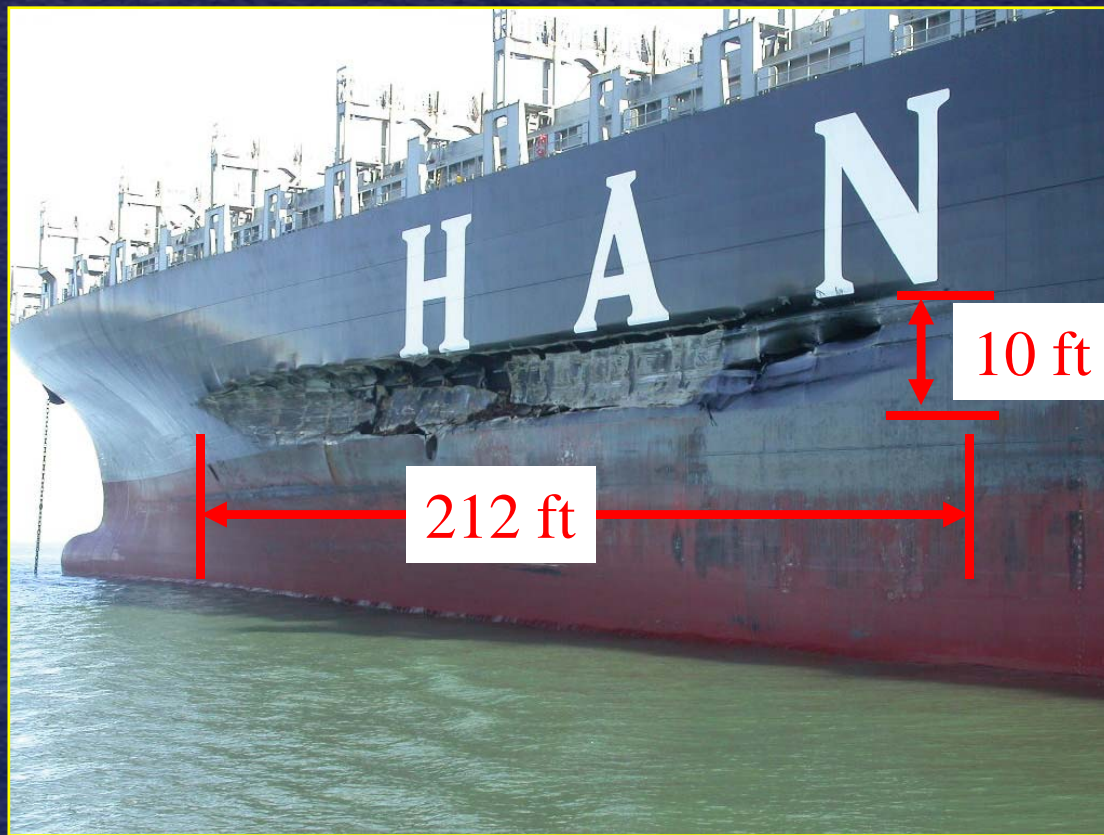
Accident Animation – Real Time



Radar Image – 08:24:29 (1624 UTC)



Damage to M/V *Cosco Busan*



Damage: \$2.1 M

Size: 220 ft x 14 ft

Spilled: 53,500 gal

Damage to Bay Bridge



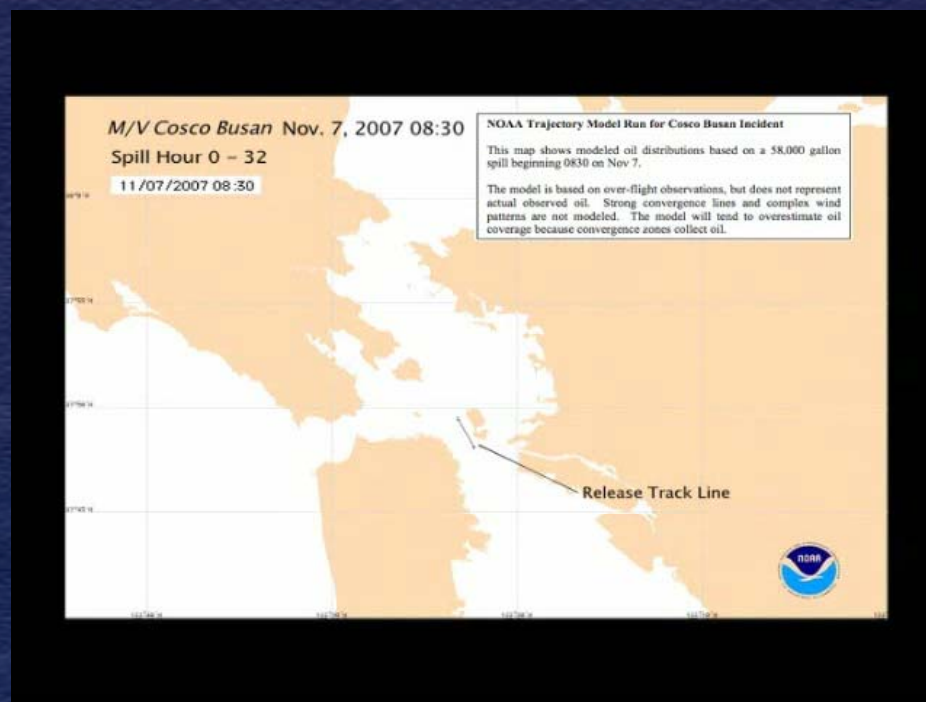
Damage: \$1.5 M

Timeline – Environmental Response

- 0830 – Pilot notified VTS
- 0903 – USCG Investigation Team responded
- 0945 – Unified Command established
- 1000 – Oil spill response contractors began cleanup

Environmental Damage

NOAA Oil Trajectory Animation



Safety Issues

- Medical oversight of pilot
- Medical oversight of mariners
- Guidance for vessel traffic service
- Procedures for improving the assessment of oil spills
- Training and oversight of ship's crew

Staff

- Tom Roth-Roffy
- Rob Henry
- Larry Bowling
- Brian Curtis
- Rob Jones
- Liam LaRue
- Barry Strauch
- Monica Mitchell
- Noel Coleman
- Bob Trainor
- Crystal Thomas
- Paul Stancil
- Chris Babcock
- George Black
- Dwight Foster
- Mitch Garber
- Mike Brown
- Peter Knudson
- Chris Julius
- Robert Combs

Parties to the Investigation

- U.S. Coast Guard
 - Fleet Management, Limited
 - San Francisco Bar Pilots Association
 - American Pilots' Association
 - California Board of Pilot Commissioners
 - California DFG – Office of Spill Prevention and Response
 - Sperry Marine
-
- Flag State – Hong Kong accident investigation agency

Staff Presentations

- Tom Roth-Roffy – bridge response and bunker tank protection
- Rob Jones – performance of pilot & master
- Barry Strauch – influences on performance of pilot & master
- Mitch Garber – medical history and effects of medications
- Barry Strauch – pilot oversight
- Barry Strauch – corporate oversight
- Larry Bowling – vessel traffic service
- Crystal Thomas – environmental response

Bridge Response - Caltrans

- Assessed seismic readings within minutes
- Bridge inspection within 1 hr
- Seismic sensors registered minimal movement
- Fendering system protected bridge & limited damage to ship

New IMO Rule Protecting Fuel Tanks

- MARPOL 73/78, Annex I, Rule 12A
- Regulation in force since January 2007
- Applies to nontank ships with > 158,000 gallon fuel capacity
- Limits maximum tank capacities
- Designates fuel tank locations on board to minimize risk of breach



NTSB

Back up slides

Presentation Outline (hidden)

- Accident overview
 - timeline
 - animation
- Safety issues
- Staff
- Parties to investigation
- Staff presentations listing
- Bridge response issue conclusions
- Bunker tank issue conclusions

Electronic chart image – 0821:51

The screenshot displays a VMS (Vessel Monitoring System) interface. The main area is a 'PLAYBACK WINDOW' showing an electronic chart with a grid and various navigational markers. A red buoy icon labeled '192' is circled in yellow. The chart includes depth soundings, navigational aids, and vessel tracks. To the right is an 'ALARMS DISPLAY' panel with buttons for 'Reveal', 'Overlays', 'MOB', 'TTMG', 'Dock', 'Std', 'Hide', 'Radar', 'Targets', and 'Radar Setup'. It shows 'Ordered Heading 315.0 °T' and 'CONTROL OFF'. Below that is a 'SYSTEM MENU' with various options like 'Manual Sensors', 'History Menu', 'File Manager', 'UPDATE', 'Zone', 'Colors' (set to 'Day Bright'), 'Units Menu', 'Portfolio Editor', 'Computed Sensors', 'ARCS Security', 'Query/Opts', 'HUD Move', 'Reports' (set to 'Bell'), 'Safety Config', 'Capture', 'Diagnostics', 'Password', 'Go To Pos', 'Playback', 'CMAP File', 'Copy Config.txt', 'Quit VMS System', and 'Close'. At the bottom, there is a status bar with 'Z In', 'Z Out', 'Window', 'Default', 'Offset Chart', 'Center Ship', 'New Chart', and 'Auto' buttons. It shows the time '16:21:51', date '07-NOV-07', and playback controls 'Start', 'Stop', 'Playback Data Sources', and 'Features'. On the far right, a small panel shows 'BRG 015 °T', 'LAT 37°48.438'N', 'RNG 856 m', 'LON 122°21.882'W', and '18:04:08 +0 11-JAN-08'.