

Evaluating the Pollution Potential of the M/V FERNSTREAM



NOAA

Emergency Response Division

www.response.restoration.noaa.gov



USCG

Sector San Francisco

www.homeport.uscg.mil/sanfrancisco

M/V FERNSTREAM Task Force

USCG

- Sector San Francisco
- Pacific Strike Team
- PACAREA & D-11
- Marine Safety Center SERT

NOAA

- SSC
- NRT-6
- Sanctuaries

Navy SUPSALV

California Department of Fish & Wildlife - OSPR

Contra Costa Sheriff

San Francisco Police Department

Overview

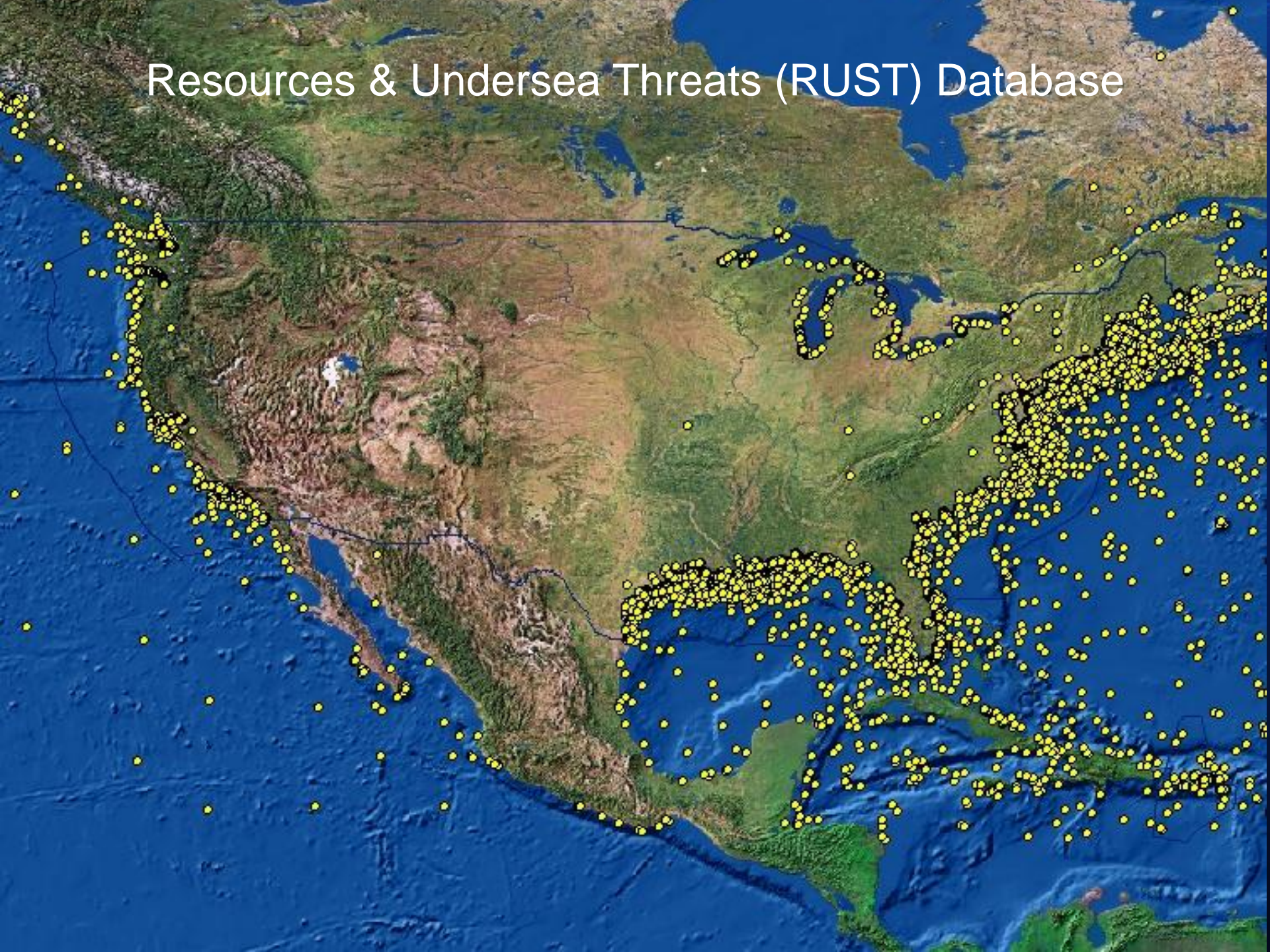
Remediation of Underwater Legacy Environmental
Threats (RULET)

RULET targets for USCG Sector San Francisco

Assessing the *M/V FERNSTREAM*

Outcomes

Resources & Undersea Threats (RUST) Database



RULET Efforts

20,000 wrecks identified
in US waters

573 met screening criteria:

- Built after 1891
- Steel, iron or concrete hull construction
- Tanker/tank barge or at least 200' or 1,000GT

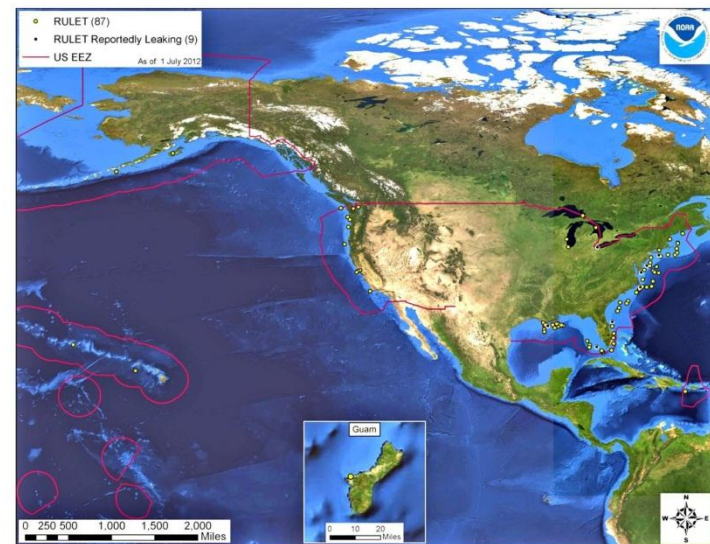
107 may pose substantial
pollution threat based
on casualty information

10 are known leakers

Department of Commerce
National Oceanic and Atmospheric Administration
Office of National Marine Sanctuaries
Office of Response and Restoration



Risk Assessment for Potentially Polluting Wrecks in U.S. Waters



ENVIRONMENTAL
RESEARCH
CONSULTING

March 2013

Some RULET Outcomes

107 individual ships ➡ 87 ship/ship clusters

Individual risk assessments developed

- Based on available information
- Modeled fate, trajectories & threats
- Relative ranking (high, medium, low)

RULET targets in Sector SF AOR:

- M/V Puerto Rican (1984)
- SS Jacob Luckenbach (1952)
- M/V Fernstream (1952)

None are reportedly leaking



Some RULET Outcomes

107 individual ships ➡ 87 ship/ship clusters

Individual risk assessments developed

- Based on available information
- Modeled fate, trajectories & threats
- Relative ranking

RULET targets in Sector SF AOR:

- M/V Puerto Rican (1984)
- SS Jacob Luckenbach (1952)
- M/V Fernstream (1952)**

None are actively leaking



M/V FERNSTREAM particulars

From RULET report:

- Built in Gothenburg, Sweden 1949
- Norwegian flagged
- 416' LOA
- Diesel-powered freighter
- Departed San Francisco for Manila, Philippines on December 11, 1952
- Cargo - 3,000 tons soybeans & general cargo including mail

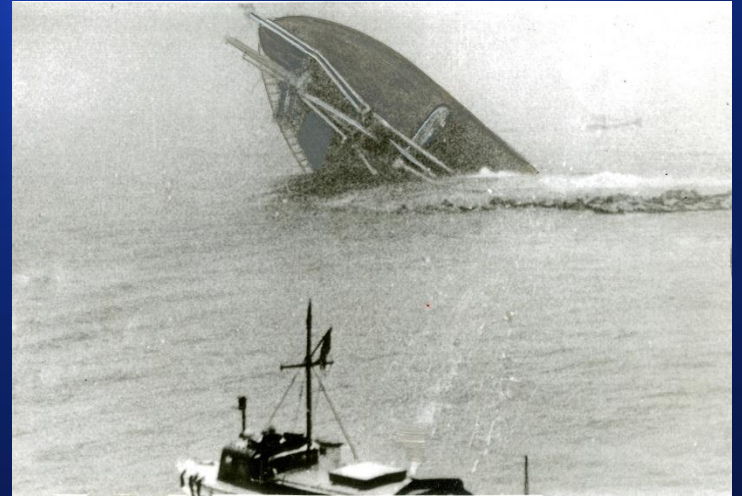


M/V FERNSTREAM incident

- Visibility - ½ mile
- Collision with *SS Hawaiian Rancher*
- Only minor injuries
- Sank within 37 minutes, <1 NM from the Lime Point Lighthouse (north end of the Golden Gate Bridge)
- No significant spill(s) reported

RULET report

- Estimated 12,500bbls marine diesel
- Tank layout unknown
- Exact location not verified



M/V FERNSTREAM

December 11, 1952, at 0730hrs:

“The port bow and stem of the SS HAWIIAN RANCHER first came in contact with the port side of the M/V FERNSTREAM just abaft the bridge... It penetrated the hull at the after part of the engine room, damaging the watertight bulkhead to No. 4 hold.”

At 0807hrs:

“It went under and now rests on its side in 152 feet of water.”

M/V FERNSTREAM

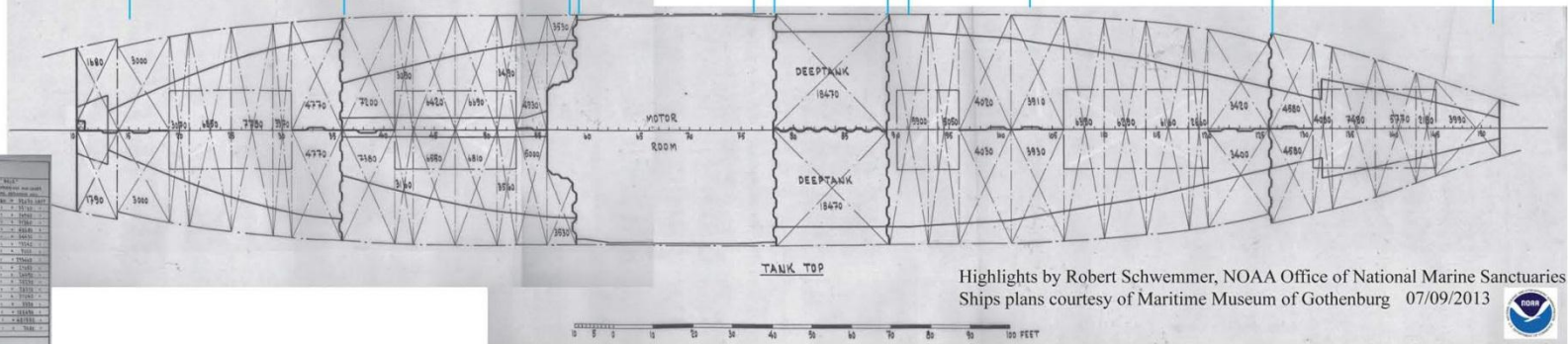
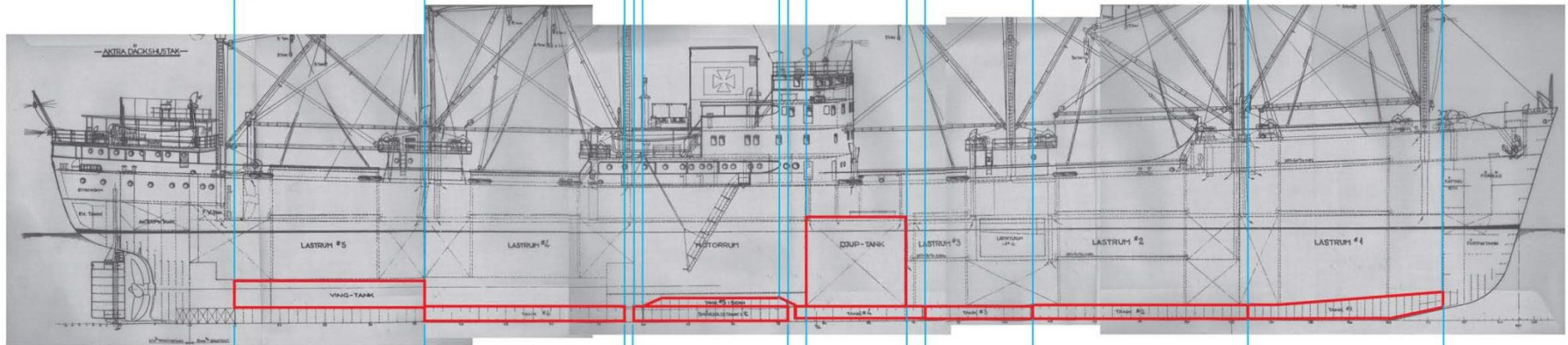
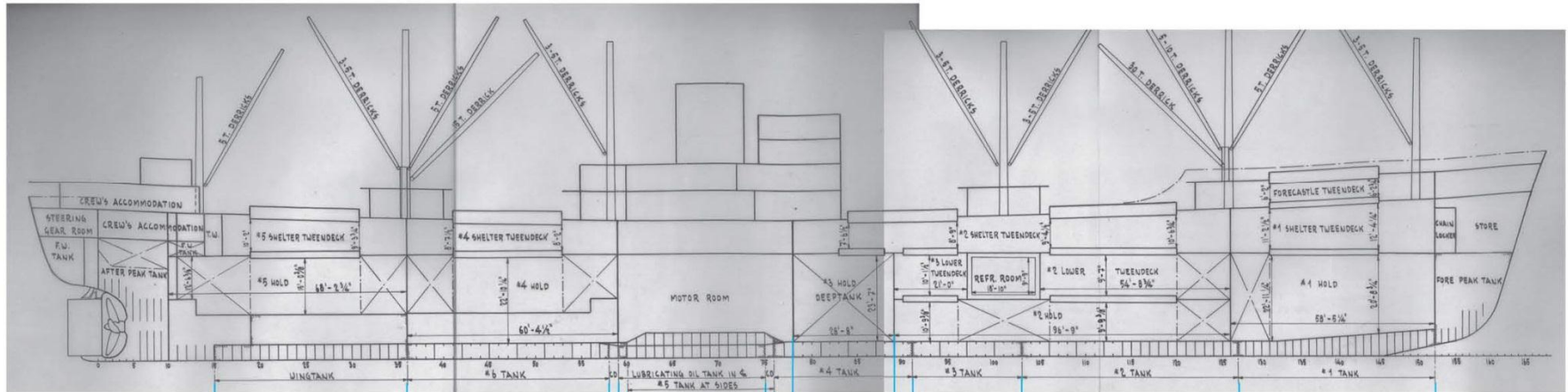
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FERNSTREAM Plans & Tank Layout

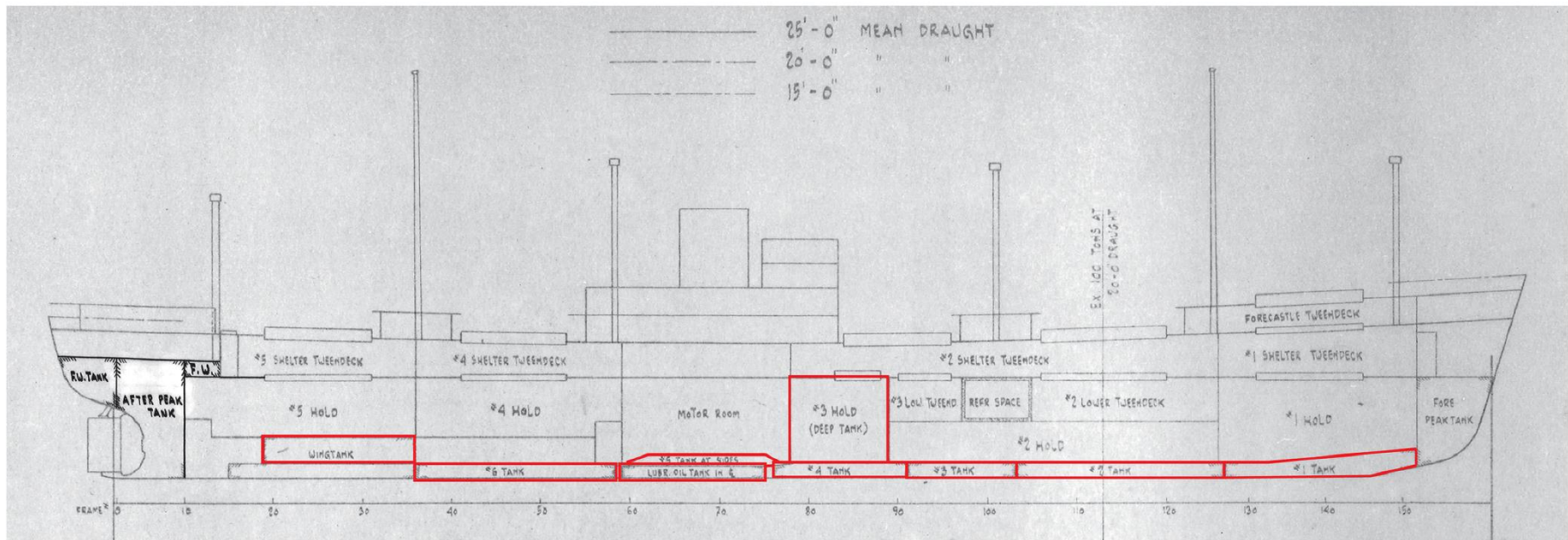


DIMENSIONS OF MAIN TANKS	
NO.	NAME
1	WING
2	WING
3	WING
4	WING
5	WING
6	WING
7	WING
8	WING
9	WING
10	WING
11	WING
12	WING
13	WING
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91	WING
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93	WING
94	WING
95	WING
96	WING
97	WING
98	WING
99	WING
100	WING

Highlights by Robert Schwemmer, NOAA Office of National Marine Sanctuaries
Ships plans courtesy of Maritime Museum of Gothenburg 07/09/2013



FERNSTREAM Plans & Tank Layout



EFFECT ON DRAUGHT DUE TO FILLING TANK			TANK CAPACITIES			oil Tons A 38 C F	If "Oil Tons" equals metric tons (tonnes) of Diesel					
FORWARD	AFT	SALT WATER TANK A 38 C F	M ³	COMPARTMENT	FRAME NO		Tank Capacities	M ³	Oil Tons @ 38 C F	NUCOS volume (bbls)*	NUCOS volume (gals)*	
+ 8"	- 2 3/4"	63.4	63.0	FORE PEAK TANK	52 - 57		Fore Peak Tank	63.0	N/A			
+ 10 1/4"	- 5 3/8"	96.1	95.2	#1 TANK	117 - 152	88.5	#1 Tank	95.2	88.5	640	26,880	
+ 1'-5 3/4"	- 6 1/8"	235.6	233.2	#2	163 - 197	216.6	#2 Tank	233.2	216.6	1,567	65,814	
+ 8 3/4"	- 0 5/8"	173.6	171.4	#3	91 - 103	158.4	#3 Tank	171.4	158.4	1,146	48,132	
+ 7 3/8"	+ 3 3/8"	228.1	225.8	#4	76 - 91	208.6	#4 Tank	225.8	208.6	1,509	63,378	
+ 9 3/8"	+ 10 3/4"	310.6	307.6	#5	60 - 76	286.1	#5 Tank	307.6	286.1	2,070	86,940	
- 4 3/8"	+ 1'-4 1/4"	264.2	261.8	#6	36 - 58/60	243.4	#6 Tank	261.8	243.4	1,761	73,962	
+ 3'-3 3/8"	+ 1'-4 3/4"	1210.8	1200.0	DEEP TANK	78 - 89	1112.6	Deep Tank	1,200.0	1,112.6	8,051	338,121	
- 1'-3"	+ 2'-4 3/8"	322.2	324.3	WING TANK	13/4 - 36	301.4	Wing Tank	324.3	301.4	2,181	91,602	
- 3'-3 3/4"	+ 6"	53.2	52.7	DRINKING WATER TANK	10 - 14		Drinking Water Tank	52.7	N/A			
- 1'-5 3/4"	+ 2'-2 1/4"	224.1	222.0	AFTER PEAK TANK	0 - 10		After Peak Tank	222.0	N/A			
- 5 3/4"	+ 8 1/4"	65.7	65.0	F.W. TANK IN STERN	57 - 0		FW Tank in Stern	65.0	N/A			
TRIM GIVEN FOR A MEAN DRAUGHT OF 20'-0"							TOTALS	3,222.0	2,615.6	18,925	794,829	

Last modified 07/01/2013

Tanks highlights drawn by Robert Schwemmer, NOAA Office of National Marine Sanctuaries
 Tank capacities provided by Jordan Stout, NOAA Emergency Response Division
 Ships plans courtesy of Maritime Museum of Gothenburg



TREASURY DEPARTMENT
UNITED STATES COAST GUARD

NOTICE TO MARINERS

ISSUED BY THE COMMANDER, _____ TWELFTH _____ COAST GUARD DISTRICT

ADDRESS Appraisers Building, San Francisco 26, Calif. Phone: YUkon 6-3111, Ext. 725

SAN FRANCISCO BAY - California - Fernstream Wreck Lighted Gong Buoy WR -
Has been removed and discontinued. The Corps of Engineers reports
that wreck has been swept to a 60-foot depth.

REFERENCE: Local Notice to Mariners No. 129, dated 12 December, 1952

*Do not add
on map - large
wreck - g.f.*

SAN FRANCISCO
ing
and

(365) CALIFORNIA—San Francisco Bay—Golden Gate—Wreck—Lighted
gong buoy discontinued.—1. Fernstream Wreck Lighted Gong Buoy WR has
been discontinued.

2. The Corps of Engineers reports that the wreck has been swept clear to a
depth of 60 feet.

Approx. position: 37°49'12" N., 122°27'31" W.
(See N. M. 52 (670S) of 1952.)

Oak

(N. M. 4, C. G., San Francisco, Jan. 9, 1953.)

(N. M. 4, Jan. 24, 1953.)

Oak

U. S. Coast Survey Charts 5535, 5532.

Oak

U. S. Light List, Pacific Coast, 1952, No. 296.5.

U. S. Coast Pilot, Pacific Coast, 1951, page 239.

Oak

Another temporary lighted dredging buoy has been established near Islaid
Creek:

Islaid Creek Lighted Dredging Buoy "A" - 1560 yards, 117° T. from
Western Pacific Ferry Slip Light (LL No. 394).

All buoys are painted White with Green top and exhibit a Flashing White
light of 60 candlepower. Characteristic Flash White 1 Second, Eclipse
4 Seconds. Buoys will remain in place about 60 days.

C. & G. Survey Chart Nos. 5532, 5535
Light List, Pacific Coast, 1952

R. T. McELLIGOTT
Rear Admiral, U. S. Coast Guard
Commander, 12th Coast Guard District

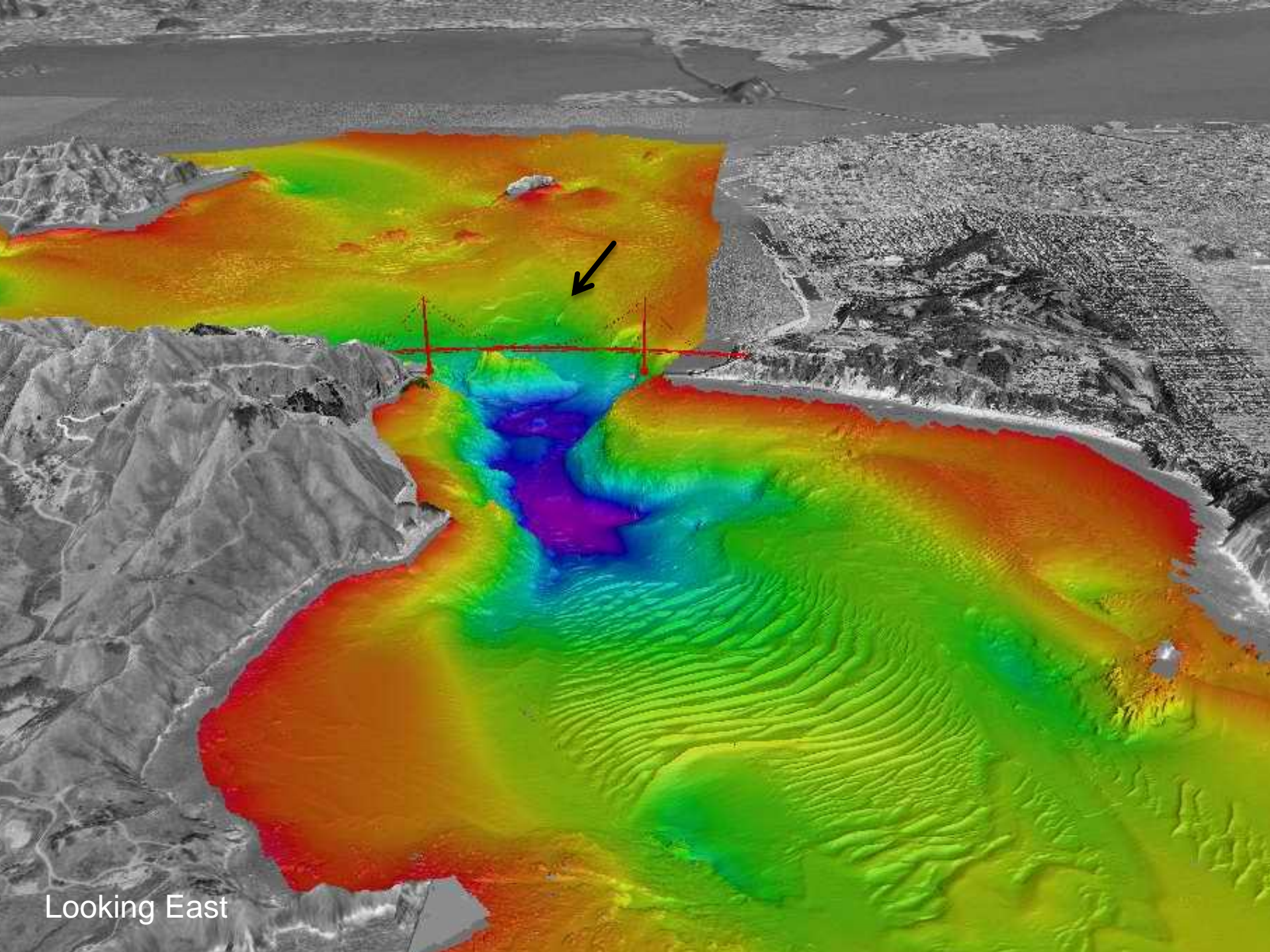
Mariners are requested to report directly to the District Commander any defect in, or displacement of, an aid to navigation. Radio reports, for relay to the
District Commander, should be prefixed COASTGUARD and transmitted direct to any Government shore radio station. If the radio call sign of the nearest
Government shore radio station is not known, radiotelegraph communication may be established by the use of the general call NCG on the frequency of 500 kcs.
Merchant ships may send messages relating to defects noted in aids to navigation through commercial facilities ONLY when they are unable to contact a Govern-
ment shore radio station. Charges for these messages will be paid by the United States Coast Guard. Such cooperation will assist materially in the prompt
correction of defects, and in the effective maintenance of aids to navigation.

PLEASE POST CONSPICUOUSLY

NOTICE No. 4

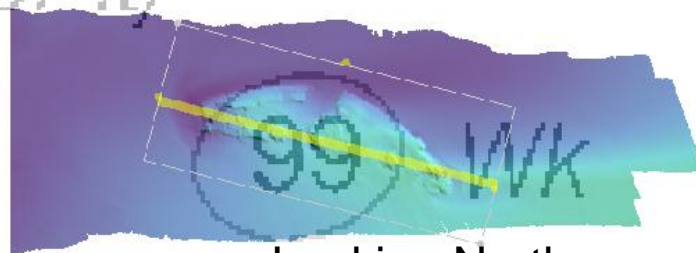
DATE 9 January, 1953

44 JAN 15 1953



Looking East

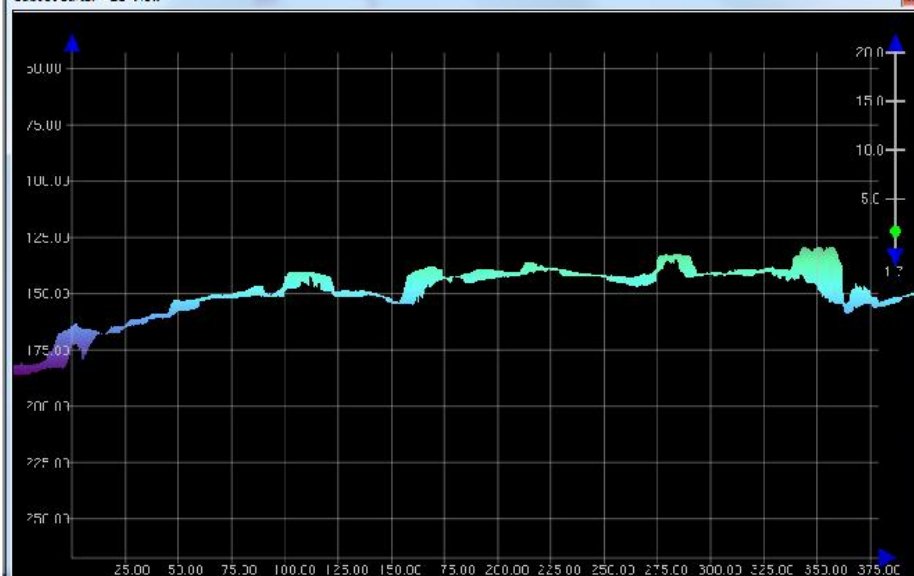
193 (COV 187 ft)



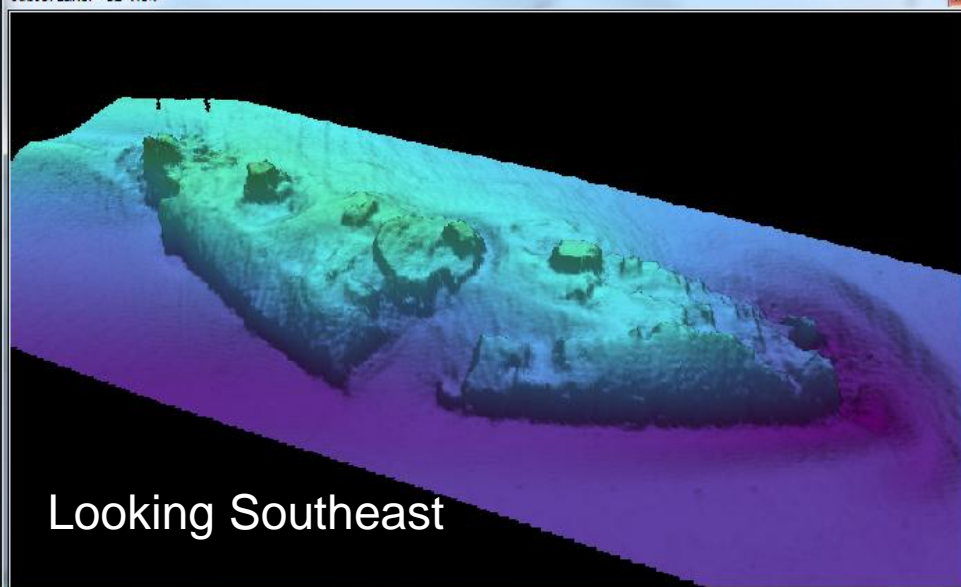
Looking North

WRECK LOCATION: 37-49-11.96N, 122-27-32.56W | LENGTH: 415 FEET | BEAM: 100 FEET | HEIGHT ABOVE BOTTOM: 22 FEET | SHOALEST DEPTH: 123 FEET

Subset Editor - 2D View



Subset Editor - 3D View



Looking Southeast

Chartlet
1 of 7

WRECK FERNSTREAM, EASTBOUND SAN FRANCISCO TRAFFIC LANE

Preliminary data subject to office review. Soundings corrected using preliminary observed tides.
Data reflects state of sea floor in existence on day and at time the survey was conducted.

This chartlet has been corrected through
Notice to Mariners dated 5/11/2013
NOT FOR NAVIGATION



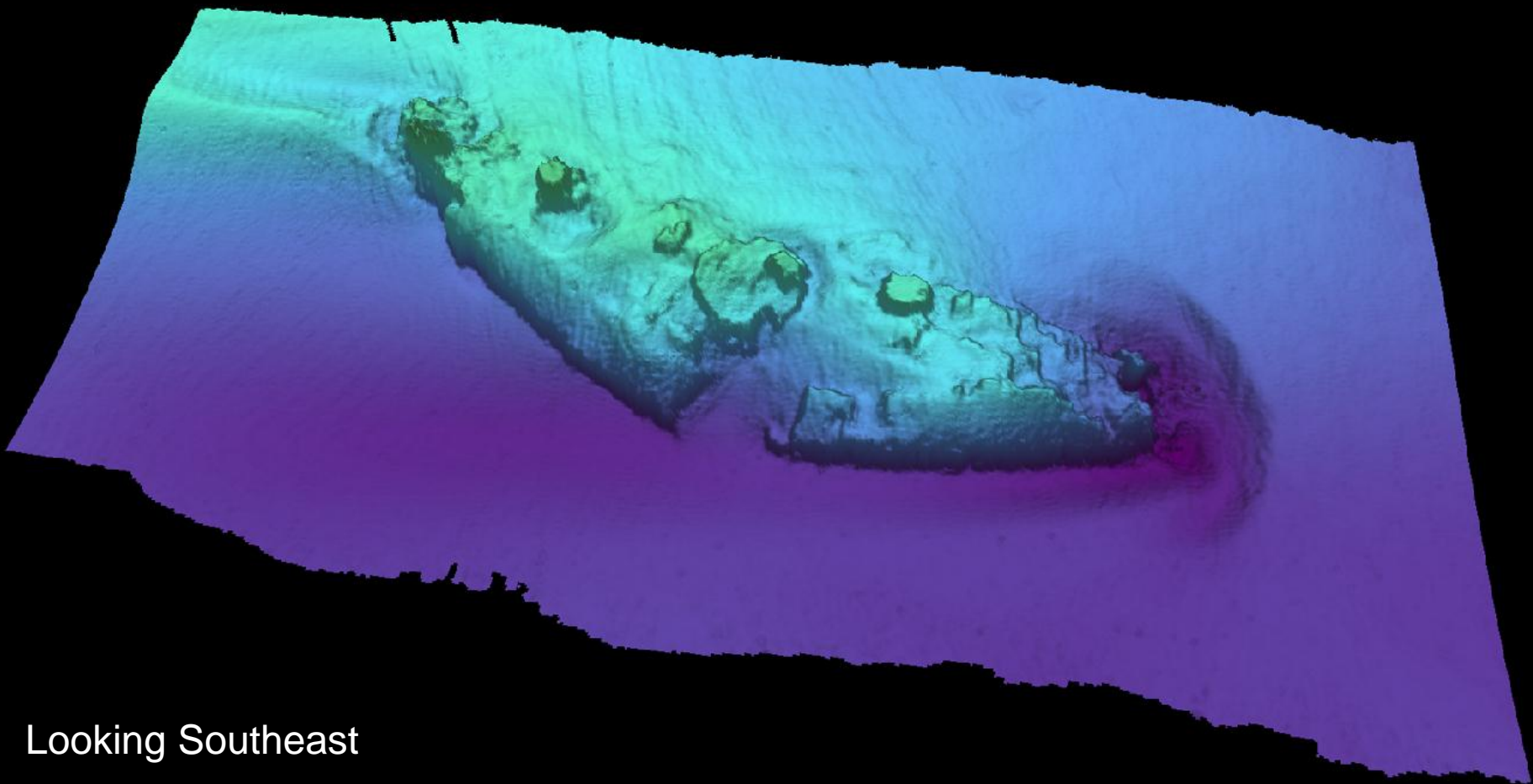
NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: NRT-6 Response
Survey: Wreck Fernstream Development
State: California
Locality: San Francisco Bay
Sub-locality: San Francisco Bay
Survey Scale: 1:10,000

Sounding Units: Feet
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Chart Number: 18650
Chart Edition: 56, Sep./2009
NOS Ref:

NOAA NRT-6
Laura Pagano, Team Lead
Ian Colvert
Edmund Wernicke

Survey Date: May 20, 2013



Looking Southeast

WRECK LOCATION: 37-49-11.96N, 122-27-32.56W | LENGTH: 415 FEET | BEAM: 100 FEET | HEIGHT ABOVE BOTTOM: 22 FEET | SHOALEST DEPTH: 123 FEET

Chartlet
2 of 7

WRECK FERNSTREAM, EASTBOUND SAN FRANCISCO TRAFFIC LANE

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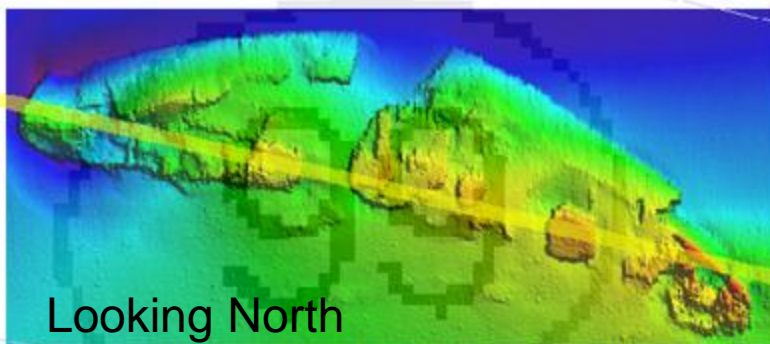
Additional Questions...

- Is she upright or inverted?
- Is she stable?
- How extensive is the damage to the ship & her fuel tanks?
- Might a substantial pollution threat remain?
- If so, what (if anything) can be done about it safely?

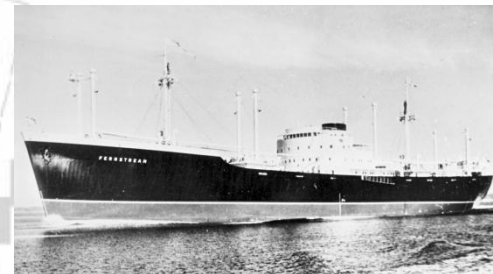
NOAA's Navigation Response Team (NRT-6) side scan survey in October 2013

NOAA Maritime Heritage's ROV surveys in November 2013 postponed due to federal government shutdown

SFPD Marine Unit & Coda Octopus echoscope in November 2013

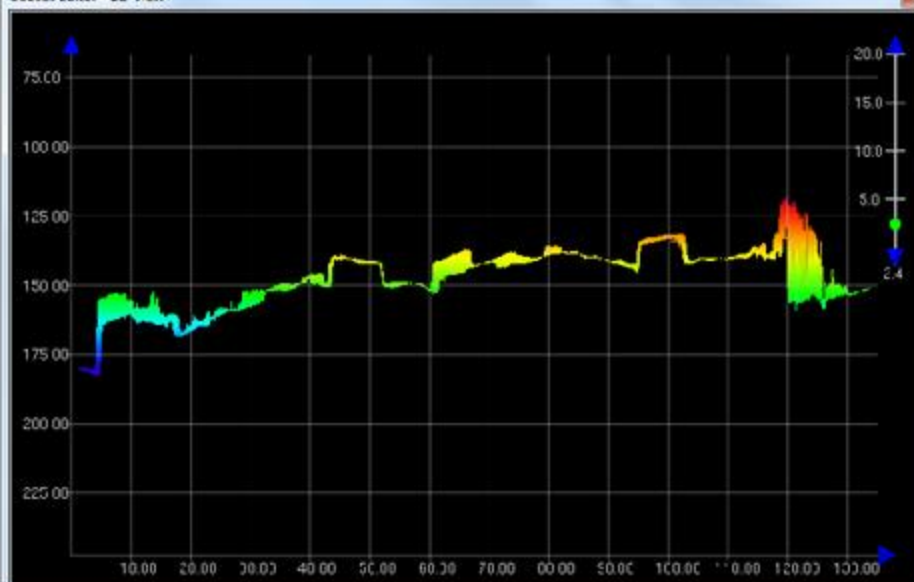


Looking North

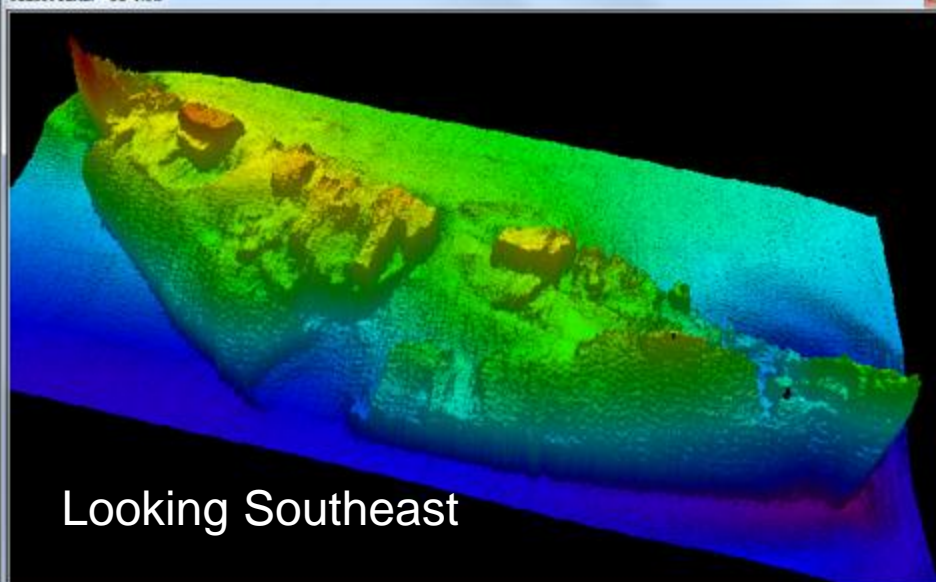


WRECK LOCATION: 37-49-11.96N, 122-27-32.56W | LENGTH: 415 FEET | BEAM: 100 FEET | HEIGHT ABOVE BOTTOM: 46 FEET | SHOALEST DEPTH: 116 FEET

Subnet Editor - 2D View



Subnet Editor - 3D View



Looking Southeast

Chartlet
1 of 8

WRECK FERNSTREAM, EASTBOUND SAN FRANCISCO TRAFFIC LANE, 0.1 METER RESOLUTION

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NATIONAL OCEANIC AND
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NATIONAL OCEAN SERVICE

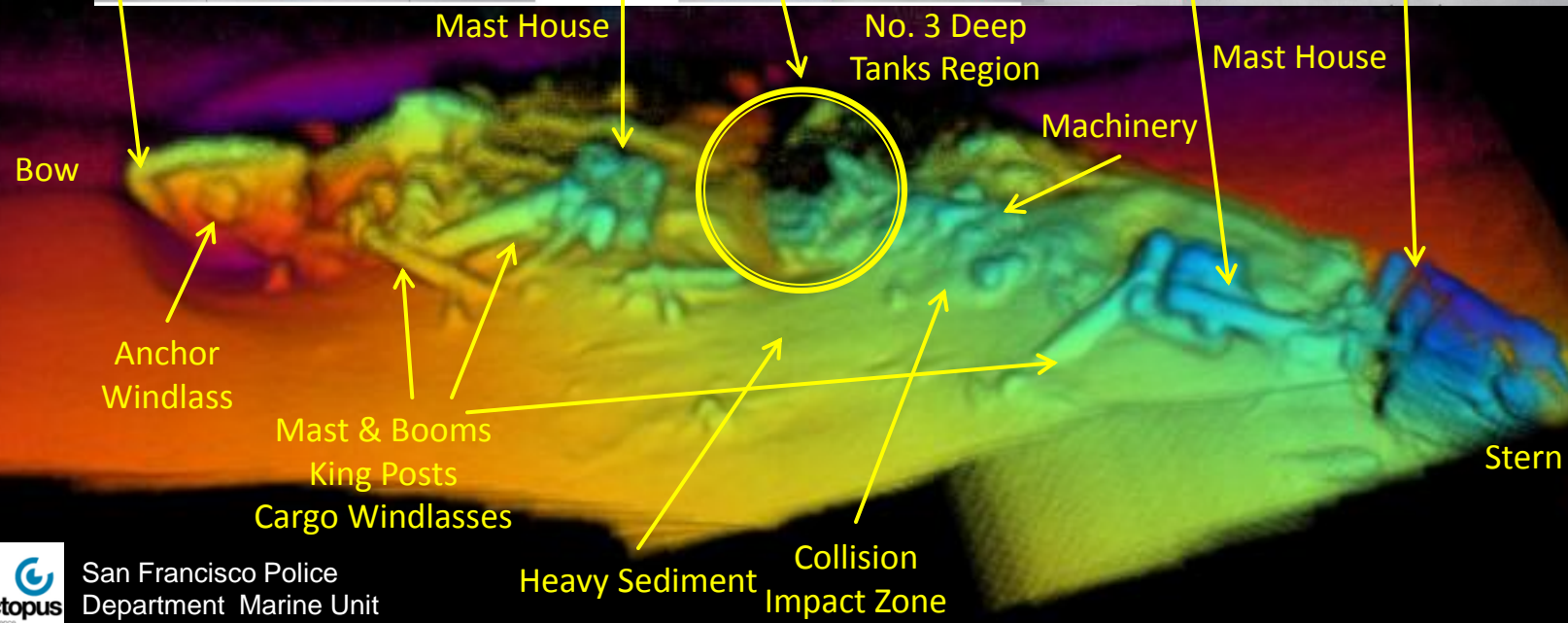
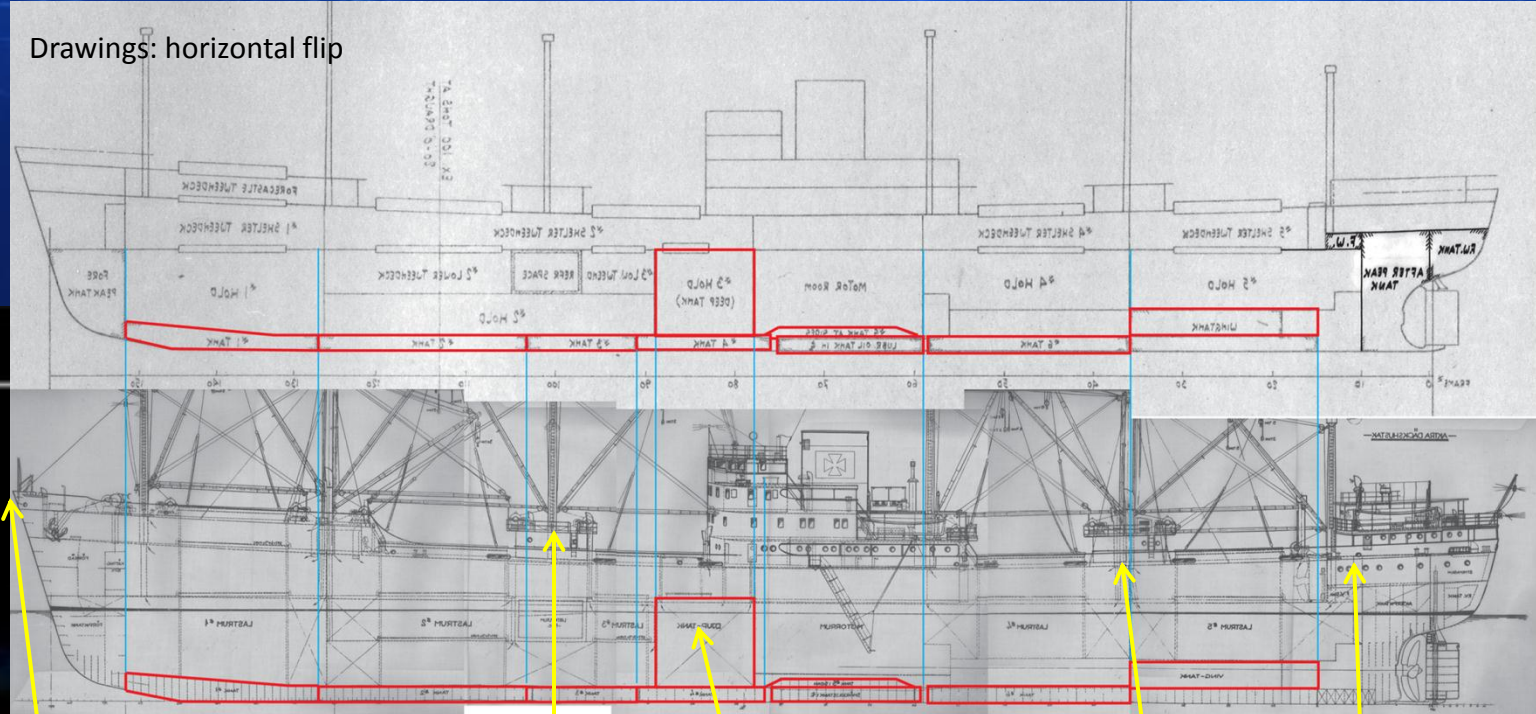
Project: NRT-6 Response
Survey: Wreck Fernstream Development
State: California
Locality: San Francisco Bay
Sub-locality: East of the Golden Gate Bridge
Survey Scale: 1:10,000

Sounding Units: Feet
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Chart Number: 18650
Chart Edition: 56, Sep./2009
NOS Ref:

NOAA NRT-6
Laura Pagano, Team Lead
Ian Colvert
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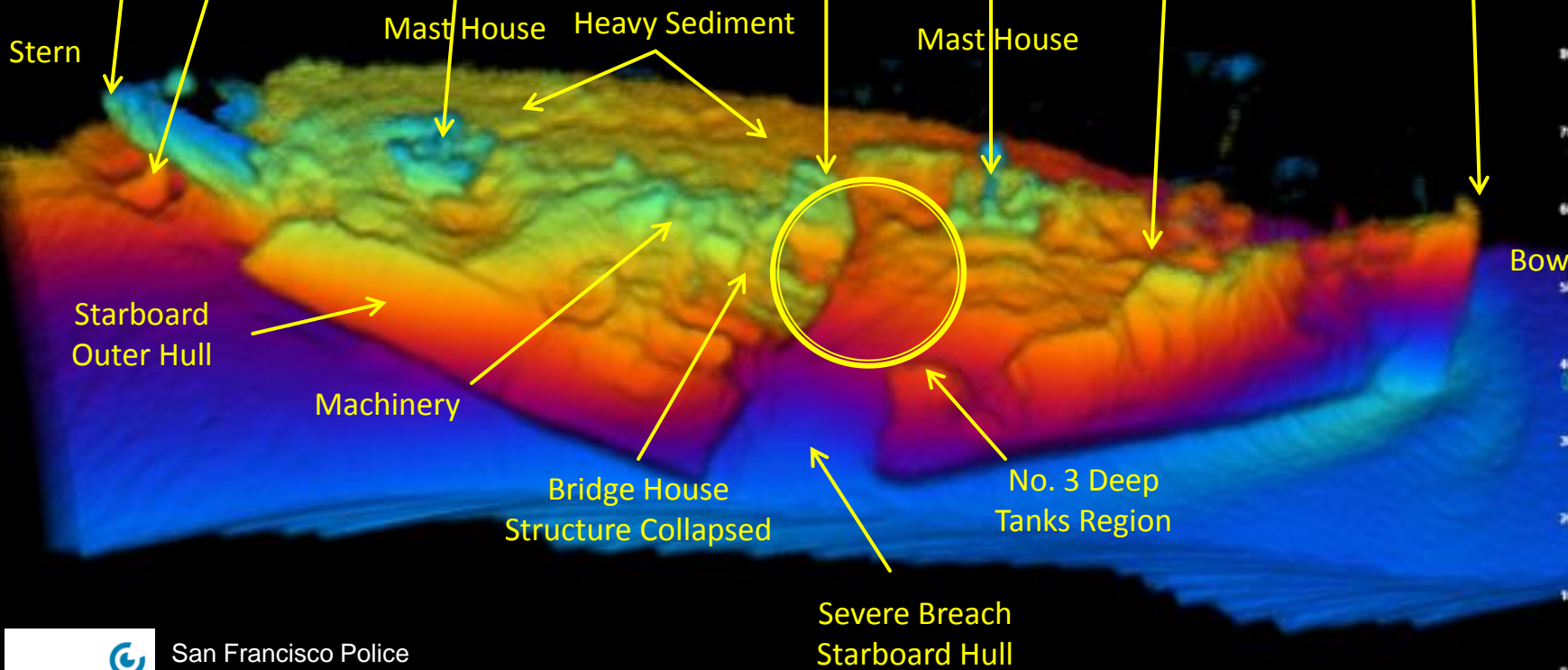
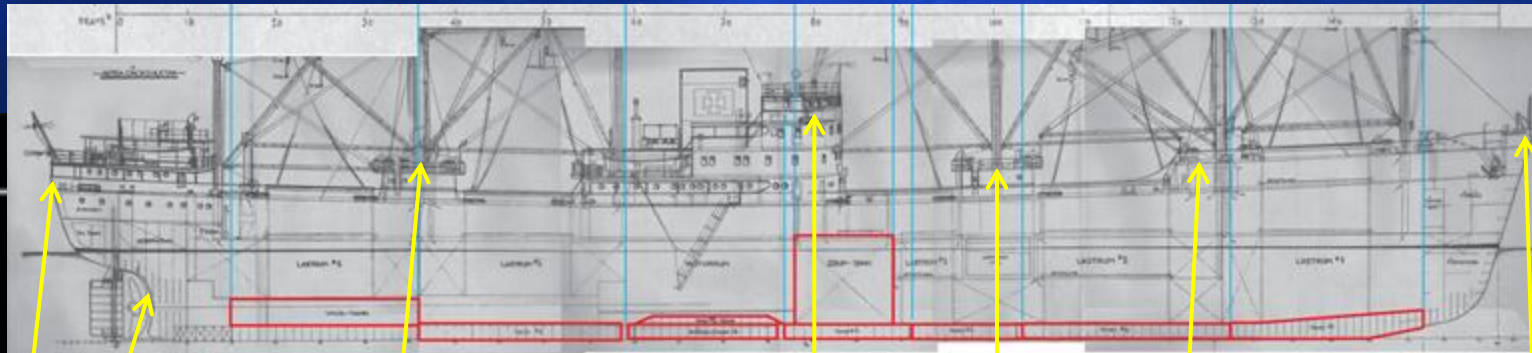
Survey Date: July 8, 2013

Drawings: horizontal flip



San Francisco Police
Department Marine Unit

Looking North



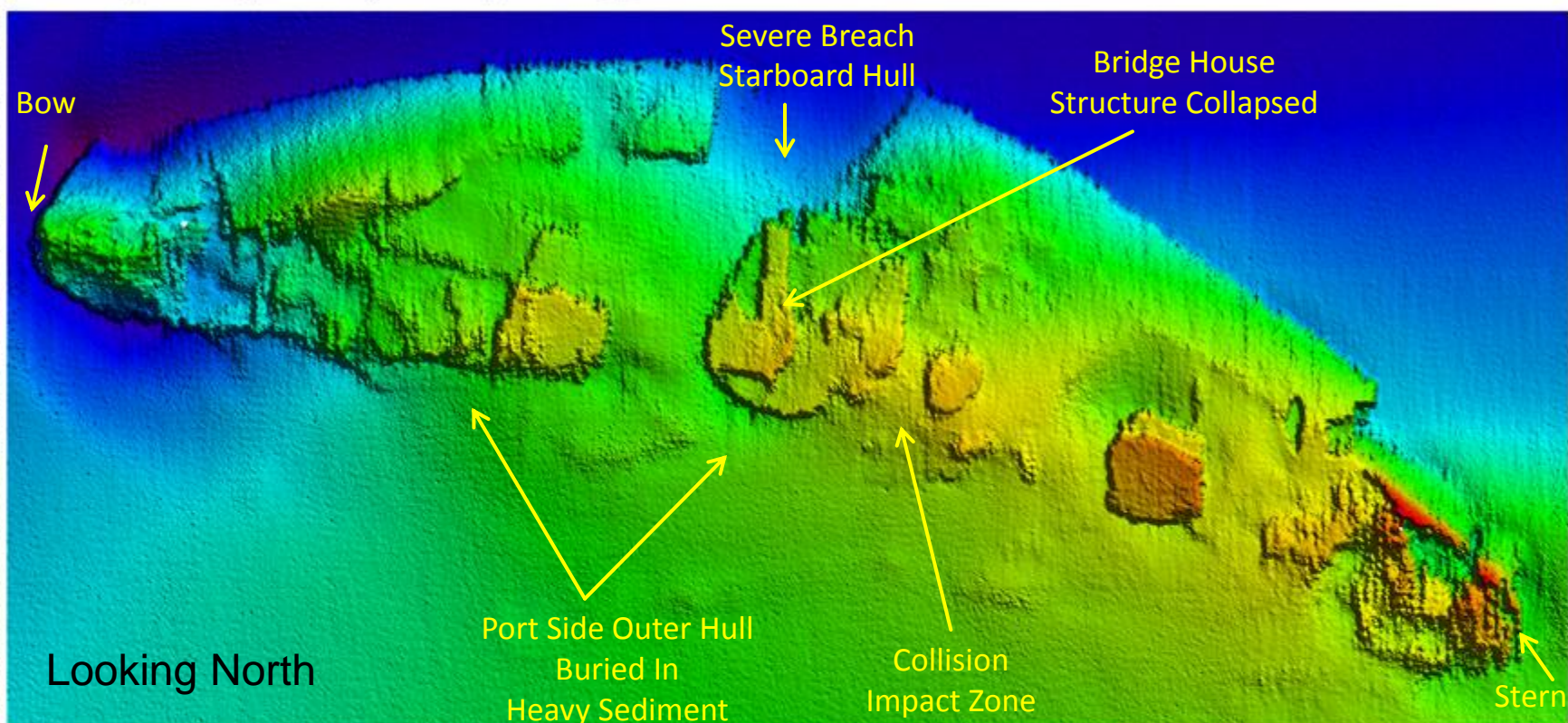
San Francisco Police
Department Marine Unit

Looking South

NORTH



D:\NRT-6_RESPONSE\000182_FERNSTREAM\CARIS\Fieldsheets\01\tenth_Final.casr - Depth (usft)



Looking North

WRECK LOCATION: 37-49-11.96N, 122-27-32.56W | LENGTH: 415 FEET | BEAM: 100 FEET | HEIGHT ABOVE BOTTOM: 46 FEET | SHOALEST DEPTH: 114 FEET

Chartlet
8 of 8

WRECK FERNSTREAM, EASTBOUND SAN FRANCISCO TRAFFIC LANE, 0.1 METER RESOLUTION

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NOAA NRT-6
Laura Pagano, Team Lead
Ian Colvert
Edmund Wernicke

Survey Date: July 8, 2013

Outcomes

Recommendations to the USCG

FOSC determined the M/V FERNSTREAM no longer poses a substantial oil threat; though small, inaccessible amounts of residual oils may remain

Monitor RULET vessels in San Francisco AOR as part of regular Maritime Domain Awareness Patrols

- USCG vessel & aircraft
- NOAA NRT-6 triennial survey
- Port Partner Marine Patrol Units

Recipe for Success...

This non-emergency effort resulted in an informative pollution assessment because there was:

- 1) time to plan
- 2) excellent & open inter-agency cooperation
- 3) useful technology

RULET Reports

RULET reports were released in late May, 2013

Overarching RULET report is available at:

http://sanctuaries.noaa.gov/protect/ppw/pdfs/2013_potentiallypollutingwrecks.pdf

Individual risk assessments available at:

<http://sanctuaries.noaa.gov/protect/ppw/wrecks.html>



QUESTIONS?



NOAA

Emergency Response Division

www.response.restoration.noaa.gov



USCG

Sector San Francisco

www.homeport.uscg.mil/sanfrancisco