

Tug Tiger Salvage Operations

Oil Spill Technical Advisory
Committee Meeting

January 17, 2012

Captain Roy M. Mathur

Navajo Class Fleet Tug USS Quapaw (ATF 110)



ATF-110 Ship Specifications

- Displacement (fully outfitted): 1589 tons
- Length: 205'
- Beam: 38' 6"
- Draft: 15' 4"
- Speed: 16.5 kts
- Complement: 85
- Armament: one 3"/50 cannon, two twin 40 mm AA, two single 20 mm AA
- Propulsion: Diesel Electric, four Alco Diesels driving four GE generators, 3 GM auxiliaries, single screw

Tiger (ex - USS Quapaw) and the Lion (ex - USS Moctobi))



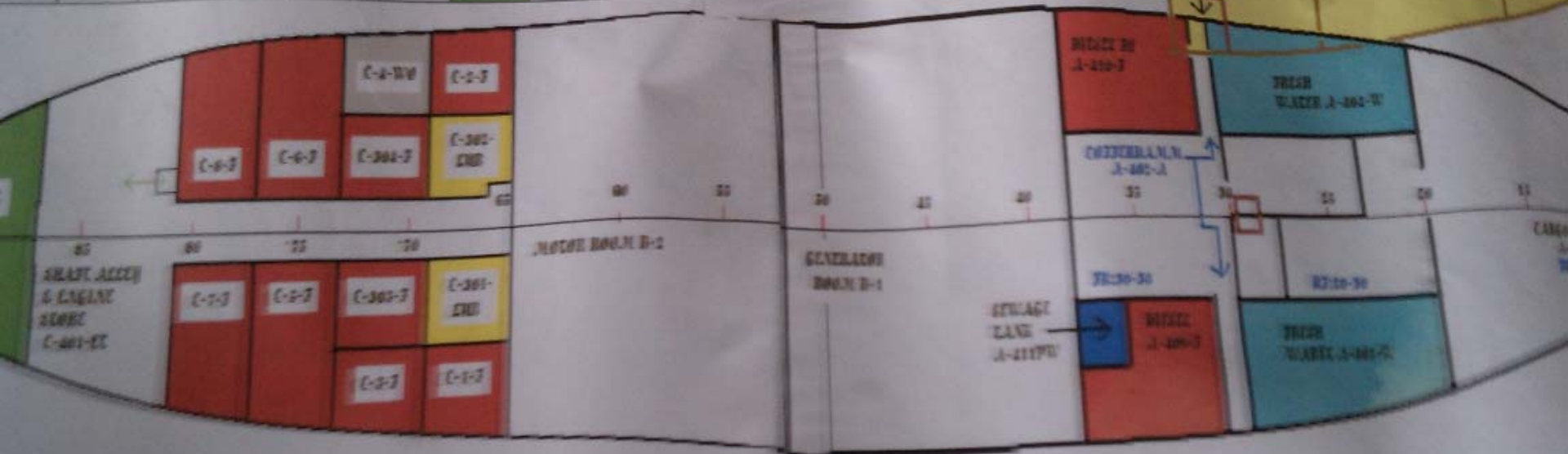
[illegible]

[illegible]

Tank Configuration of the Lion

C-4-J	17,428	C-2-J	19,428	C-4-W		A-1-W	38,684
C-7-J	17,498	C-1-J	26,068	A-200-J	19,223	A-101	16,830
C-6-J	22,743	C-302-J	17,228	A-110-J	19,223	A-102	16,830
C-2-J	22,761	C-303-J		D-201-D02	3,398	A-102	27,878
C-4-J	8,802	C-302-CHD	8,738	D-202-D02	3,398	AJC.P	
C-3-J	8,871	C-301-CHD	11,367			300.P	

TUG "Lion"



Present Boarding History

- Boarded by USCG in 2004
- Dewatered in 2004
- Boarded by USCG / NRC in Oct 2011
- NRC sounded several tanks on the 'Tiger'
 - potential of spill 52,000 gallons oil / oily water

Tugs at south edge of Potrero Point in Richmond



Sinking Response

- Responsible Party – Alecio Shipping Inc.
Mr. Andreas S. Papaspyrou
- Federal on scene coordinator – USCG
- State on scene coordinator – OSPR
- Salvage – Global Diving

'Tiger' listing to starboard



Tug 'Tiger' listing heavily to starboard



12.13.2011 10:08

Oil leaking from the sunken tug 'Tiger'



12.13.2011 10:09

'Tiger' released more than a 1000 gal



12.13.2011 10:17

Clean up with oil skimmers



Oil mopped up by sorbent boom and sweeps



Generators on both tugs removed



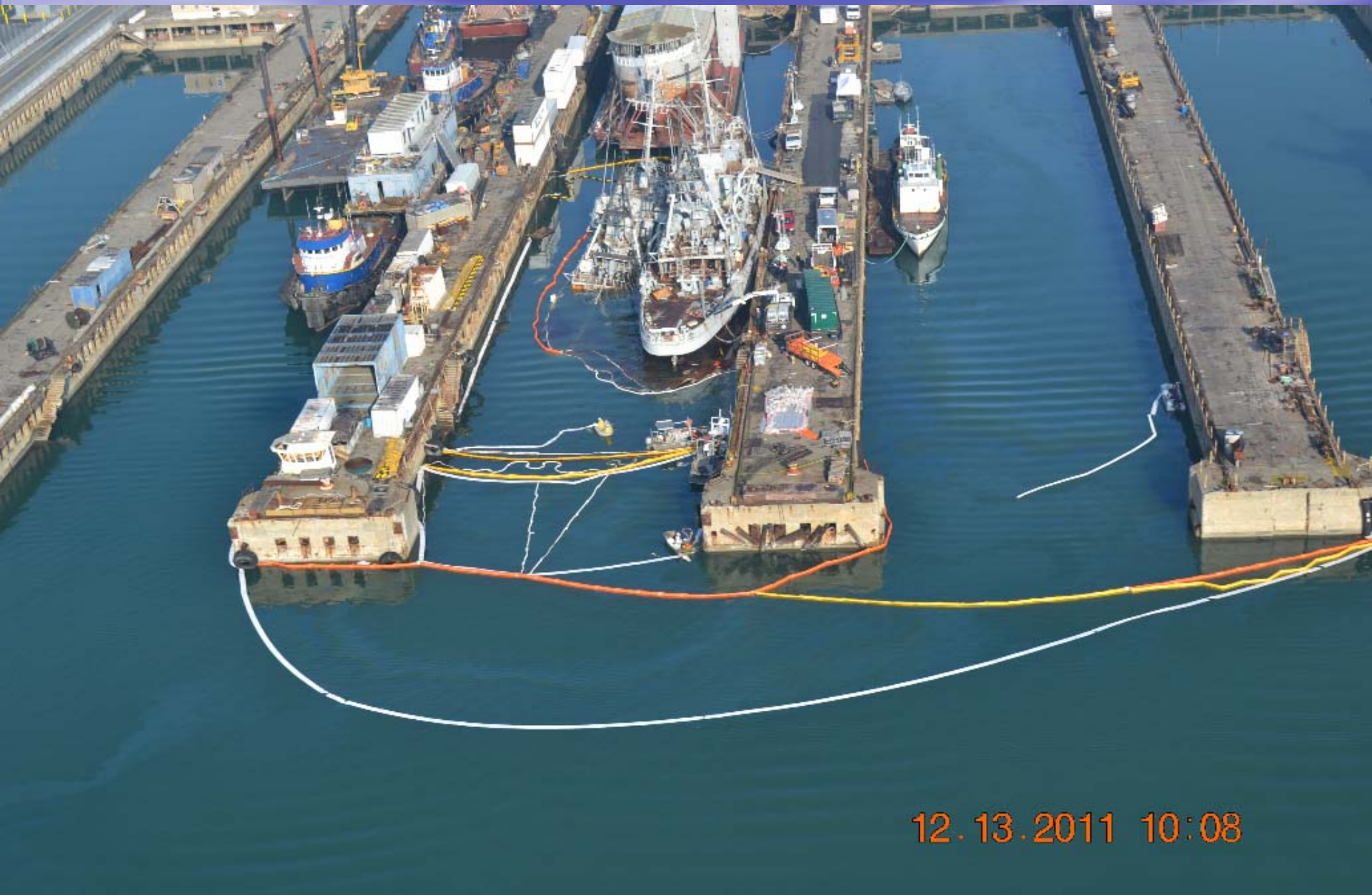
Engines of both tugs removed



Salvage Response

- USCG – Open Federal Oil Spill Fund
- Stabilize / shift and dewater the 'Lion'
- Refloat the 'Tiger'

Booming strategies



12.13.2011 10:08

'Lion' moved out of the dock



Recovered oil – oily water from tugs

Tug Lion

- Total recovered – 15,087 gallons (oil - 4,872 g)
- HAZMAT has been removed
- Stabilized and being monitored

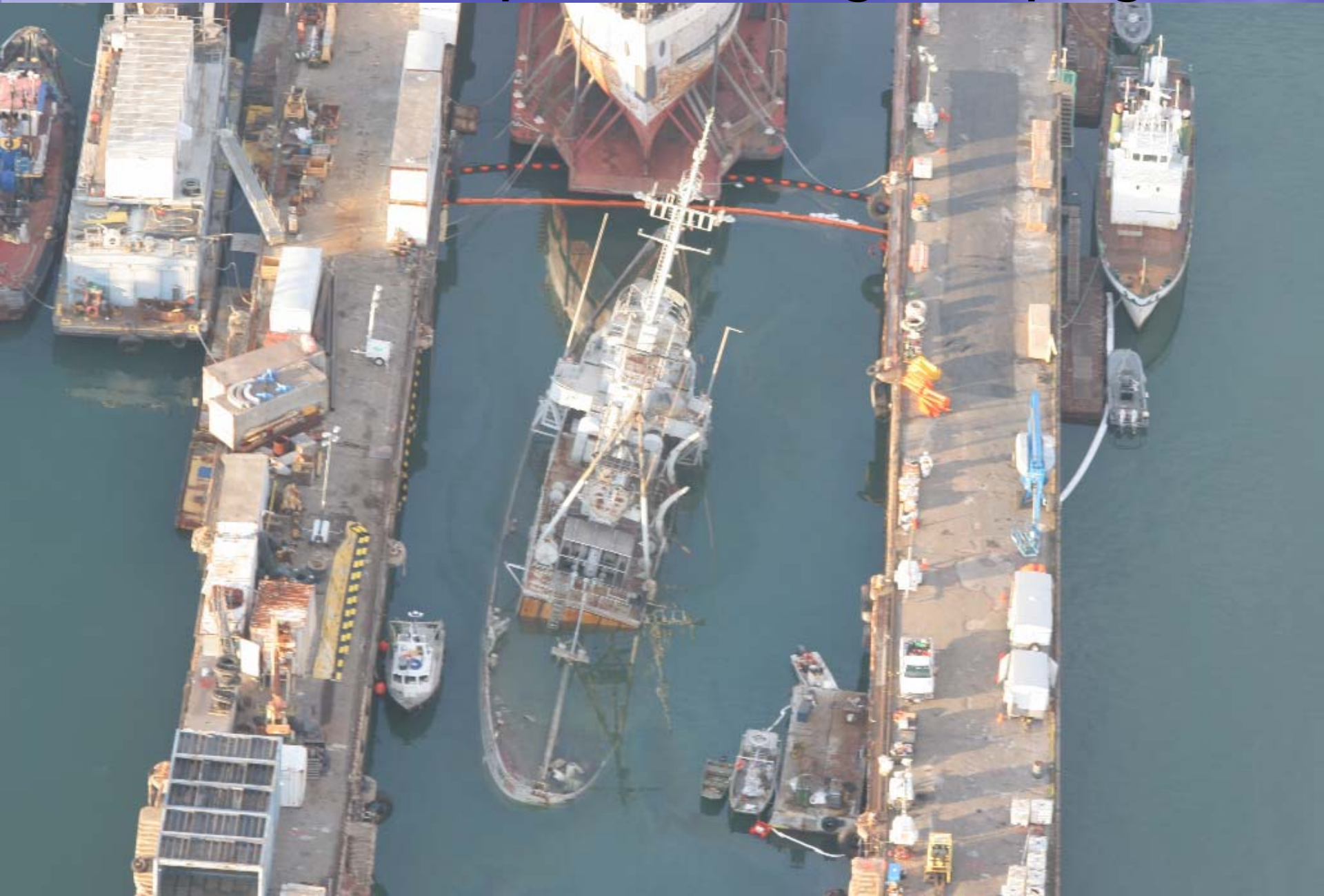
Tug Tiger

- Total Recovered – 1,448 gallons
- Potential – 52,000 gallons
- 'Cofferdam' being built around the tugs bulwark

Current Salvage Response

- Stabilize 'Tiger'
- Access with divers
- Build Cofferdam

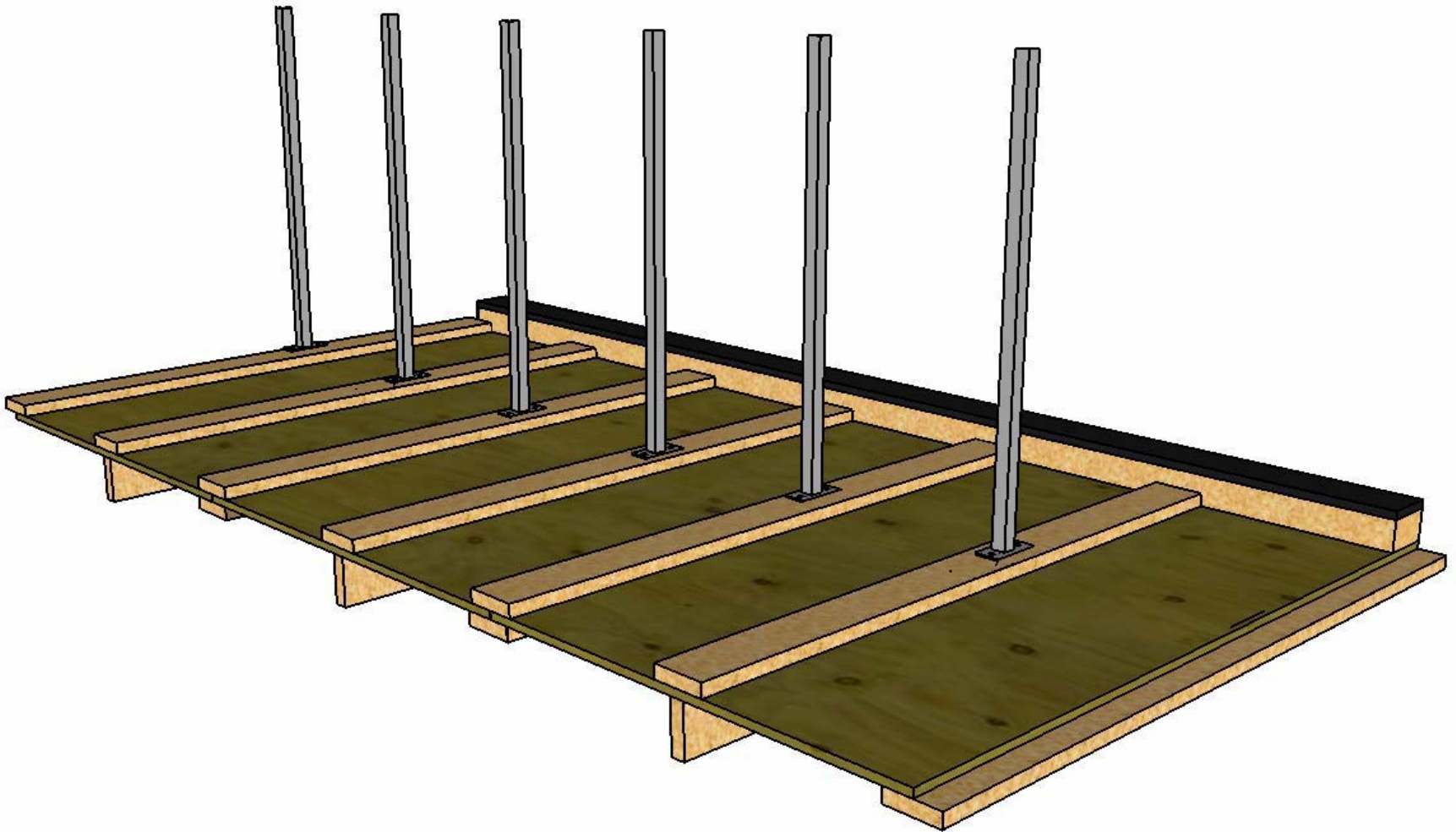
Winches to pull the 'Tiger' upright



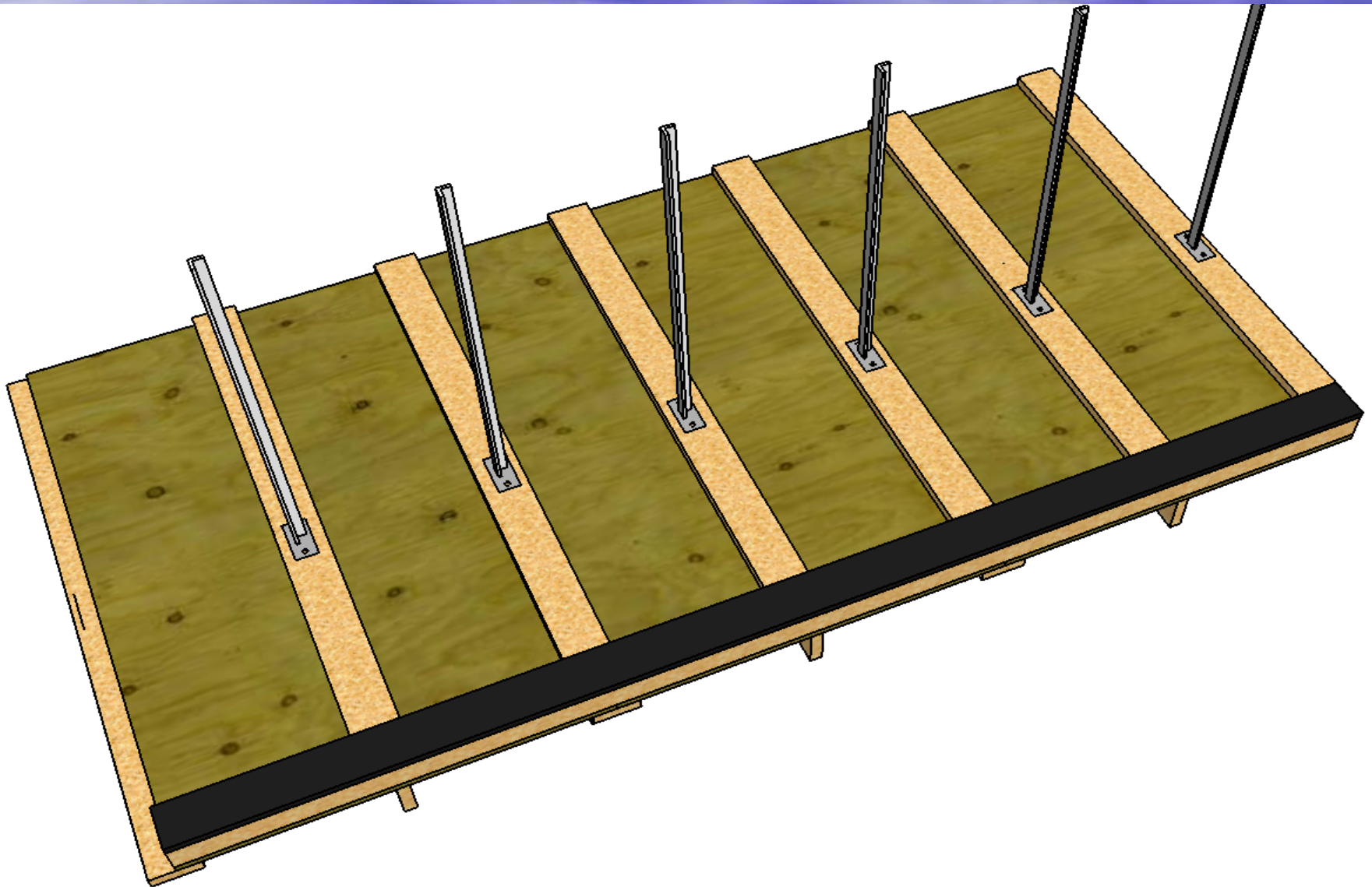
Salvage Response Operations

- Three primary stages
 1. Righting the 'Tiger' through mechanical means
 2. Patch the openings on the ship side
 - extend the portions of the bulwarks with a wooden cofferdam to raise them above the waterline
 3. Dewatering of the 'Tiger' with submersible pumps

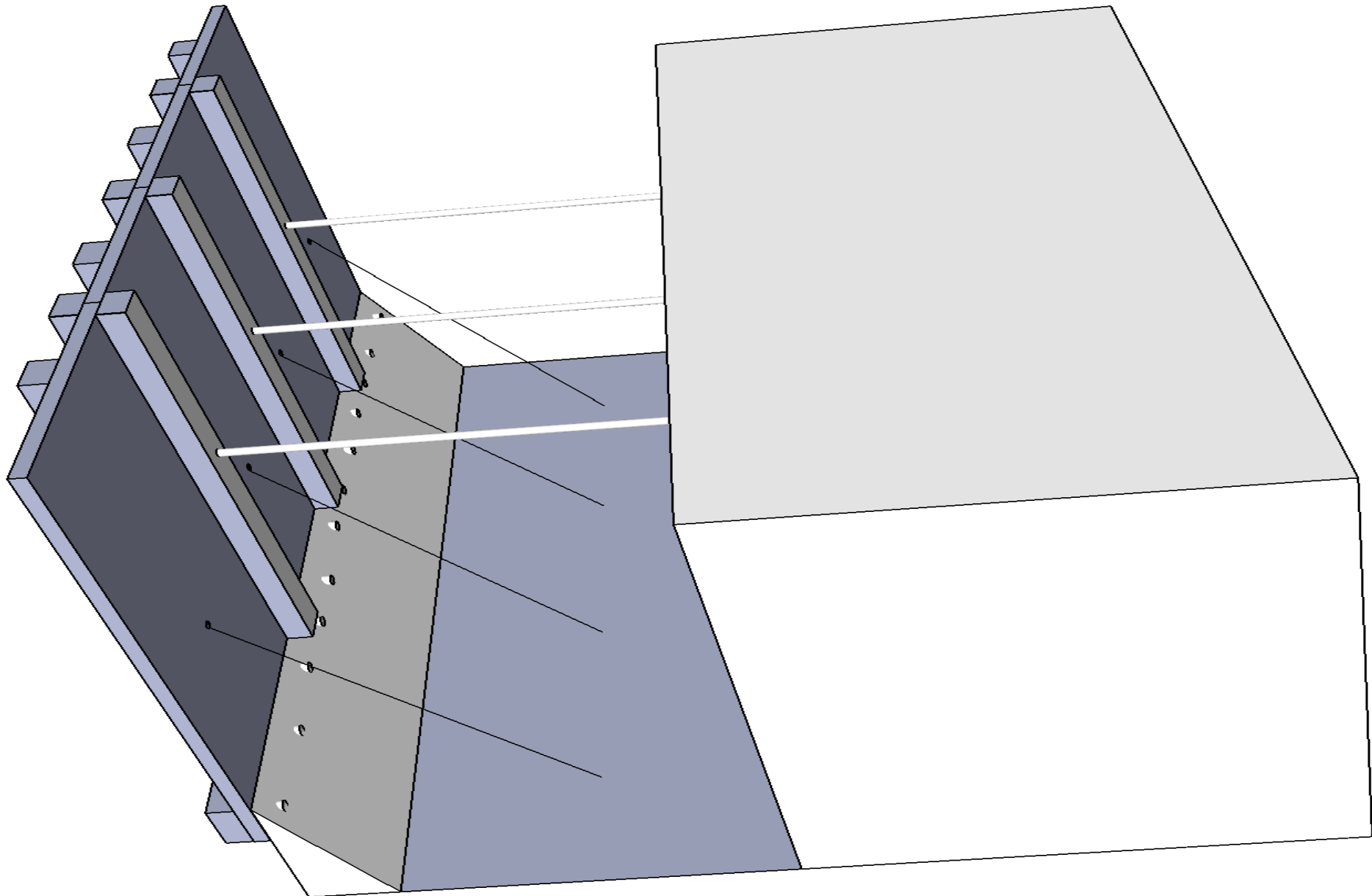
Cofferdam



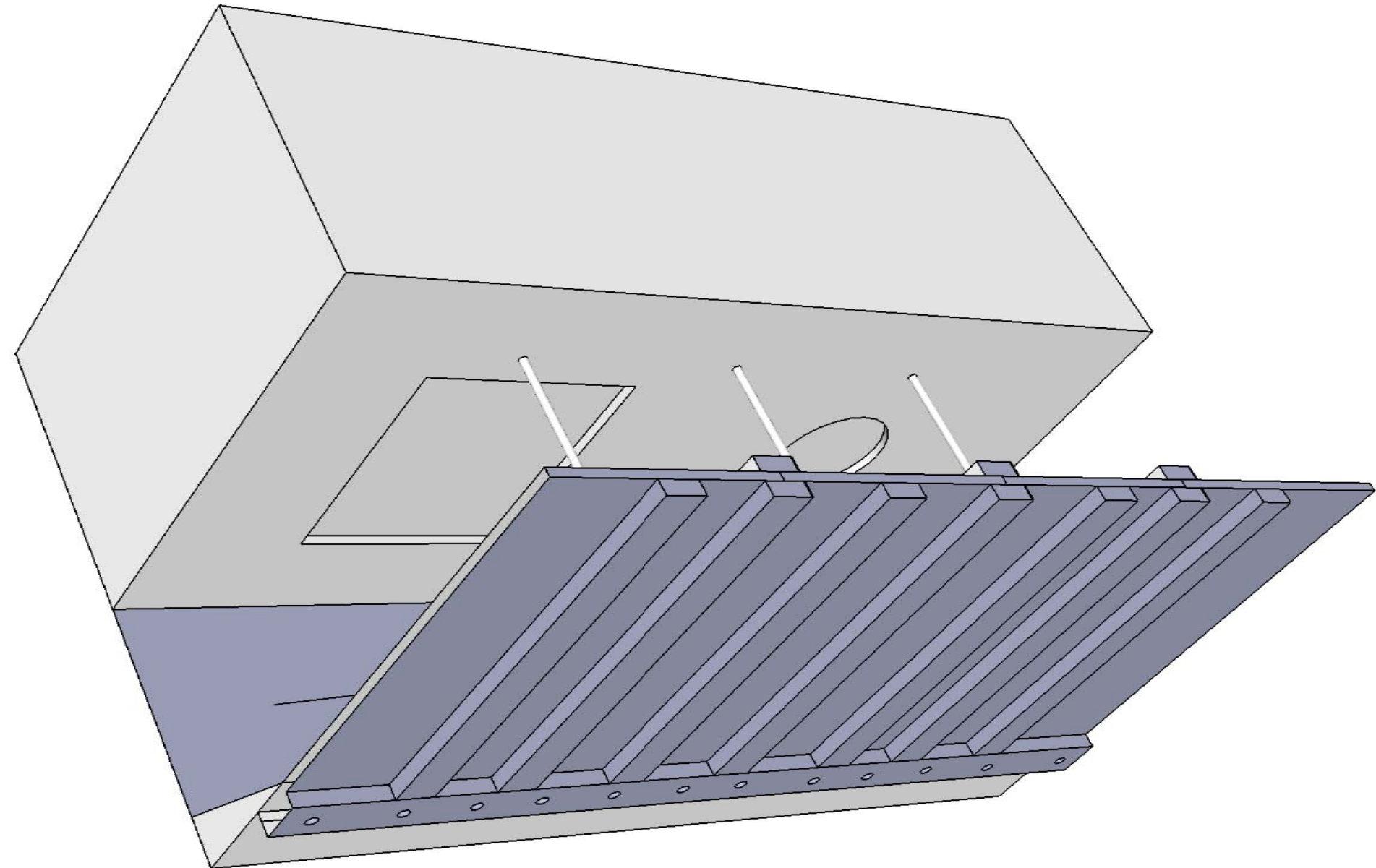
Cofferdam – Neoprene 'gasket'



Cofferdam – Inside View



Cofferdam – Outside View



Dewatering

- 1 pump for each compartment
- 61 tonnes pumped an hour
- Vessel expected to float in 25 minutes
- Compartments of each compartment will be pumped into 'Baker' tanks

Future Pollution and Salvage Operations

- Remove oil from sunken vessel 'Tiger'
- Clean tug 'Tiger' and remove all HAZMAT
- Stabilize 'Tiger'