

Contained in 30

**OSPR/Chevron Oil
Spill Response
Technology
Workshop
Feb 2017**



Preventing disastrous consequences of oil spills, instantly.

Problem

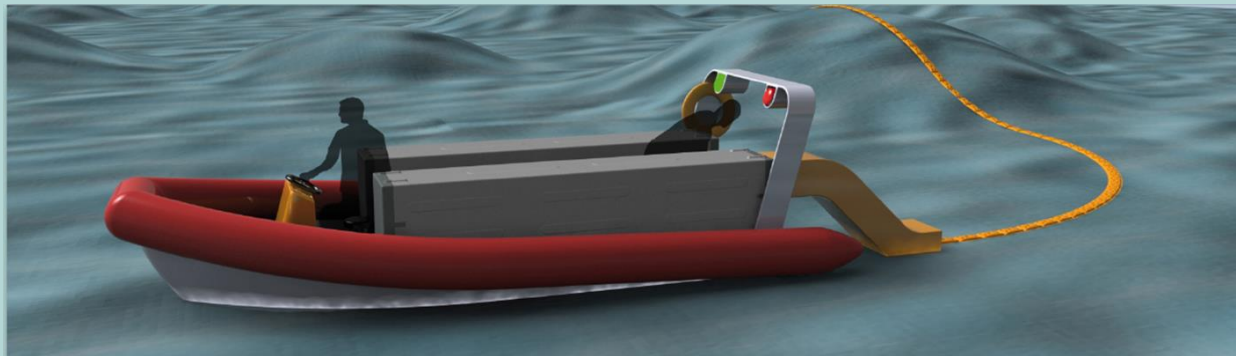
Oil Spills turn into major disasters because there is nothing on site to prevent the oil from spreading.

Oil spill equipment and personnel are mobilized to the spill site after the spill happened.

Solution

Pre-position a system that enables containment of the spill immediately.

HARBO's system can deploy 6000 feet of boom in 30 minutes.



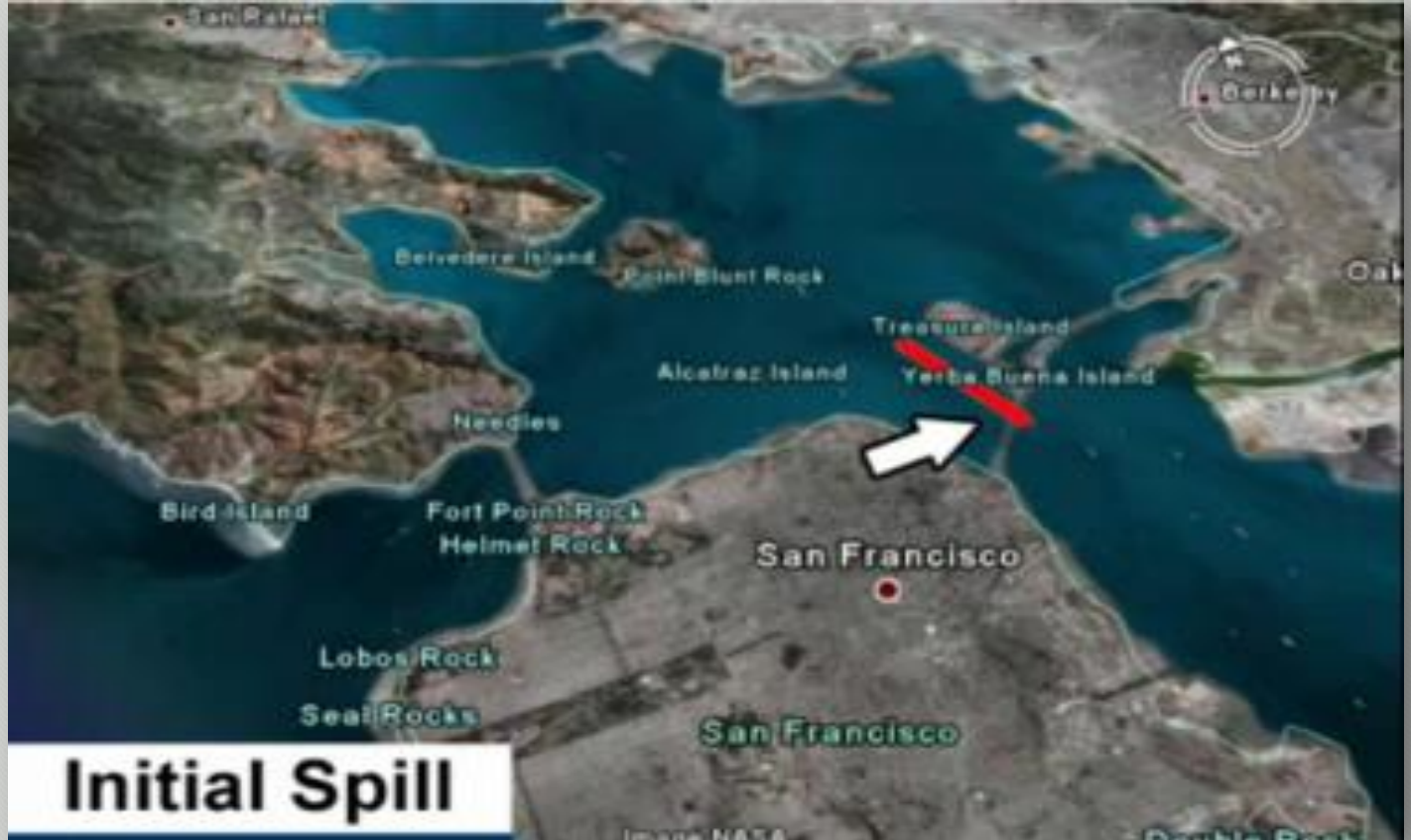
Paradigm Shift

- Containment \neq Clean-up
- Preparedness for immediate containment at the point of failure
- Two person deployment
- Deployment by non-oil-spill professionals
- Disposable boom

San Francisco oil spill 2007

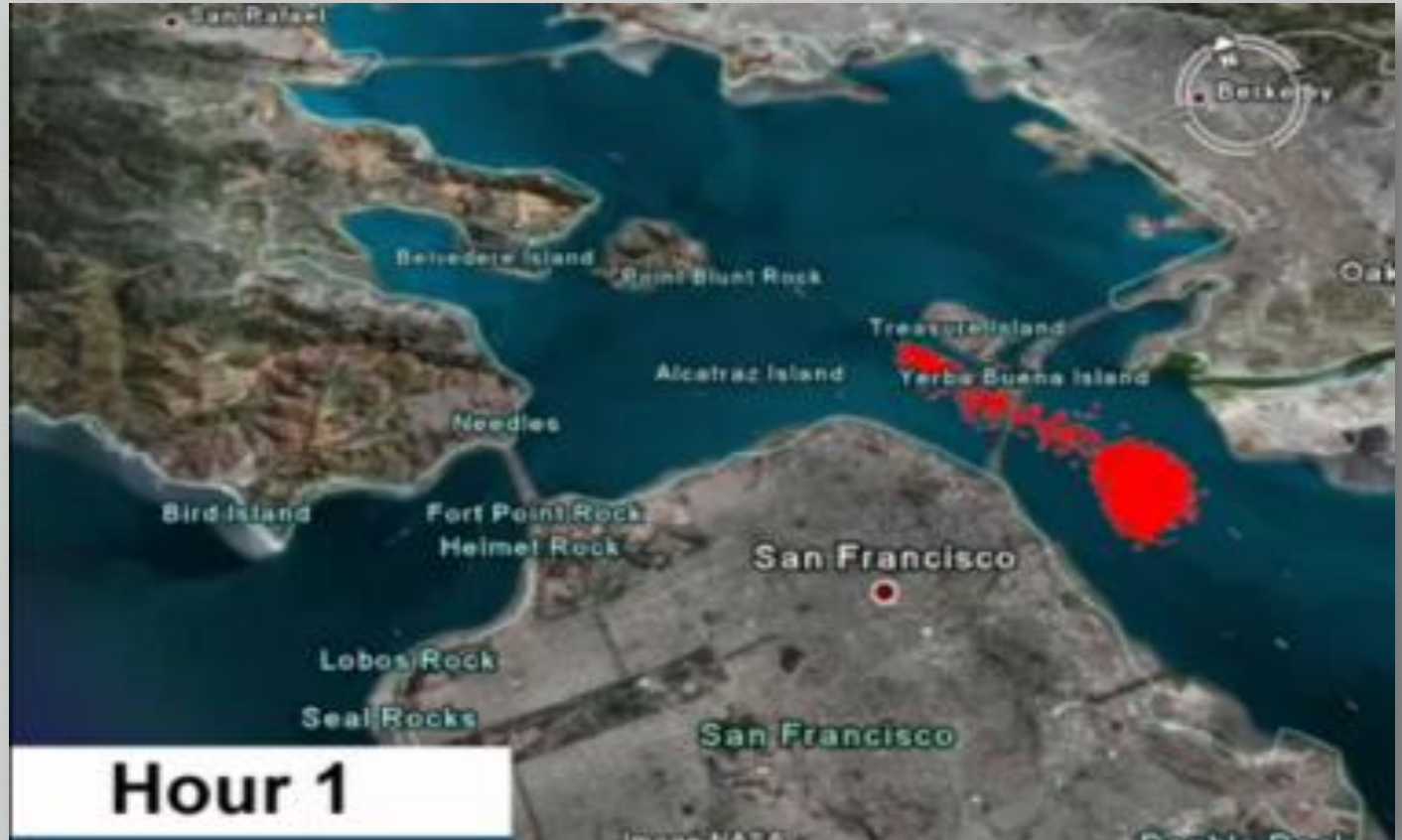


San Francisco oil spill 2007



Source:
Ocean Conservancy

San Francisco oil spill 2007



Source:
Ocean Conservancy

San Francisco oil spill 2007



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Ocean Conservancy

San Francisco oil spill 2007



Source:
Ocean Conservancy

Results

160 kms of Shore

\$100 M costs



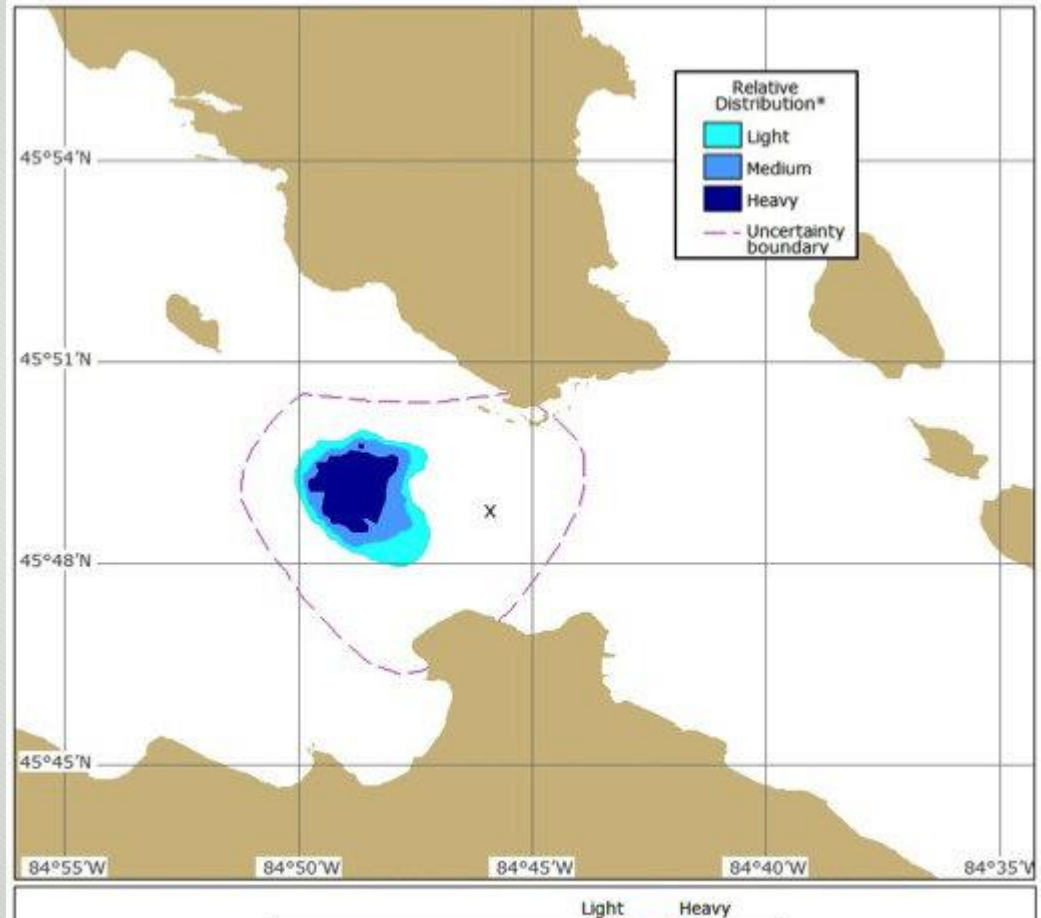
Mackinac straits oil spill drill

- Located in Great Lakes between Canada and the US
- Pipeline 5 crosses the straits
- Drill in September 2015
- Simulate a three-minute, 4,500-barrel release



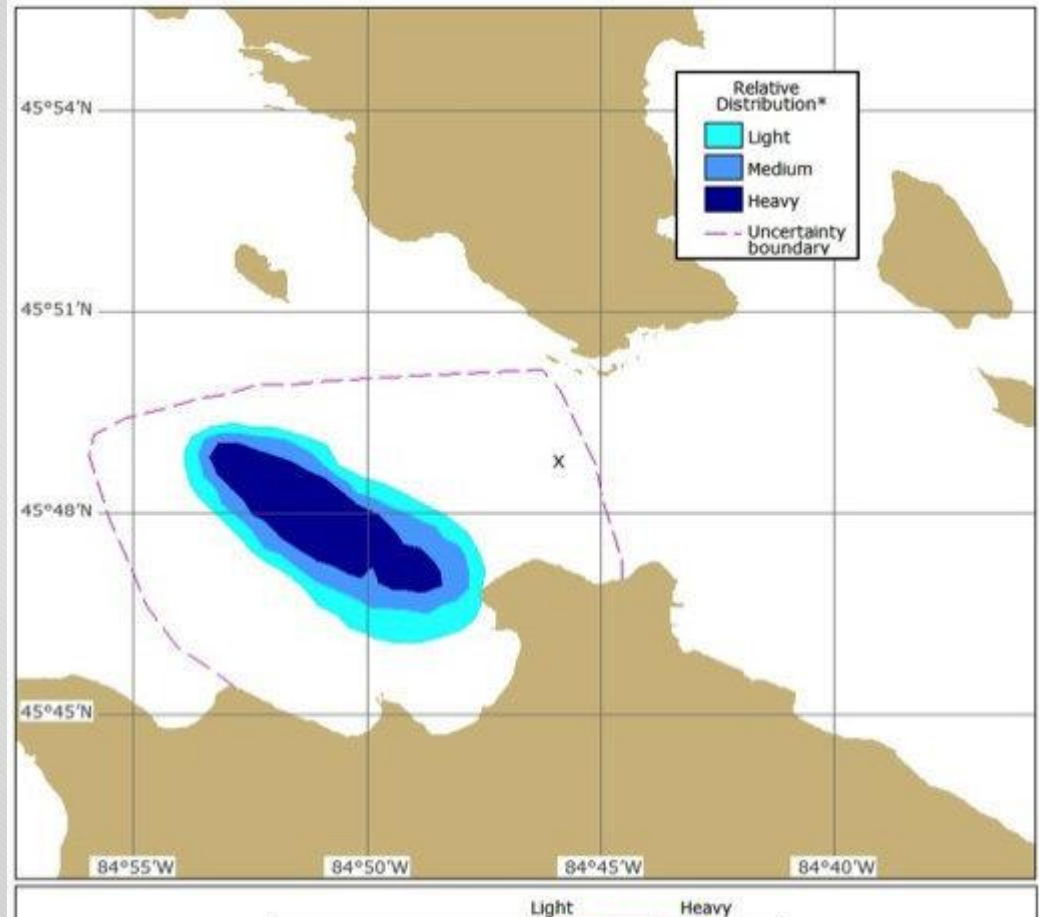
6 Hours after the spill

- 2 Miles Diameter
- Response equipment that was on-site

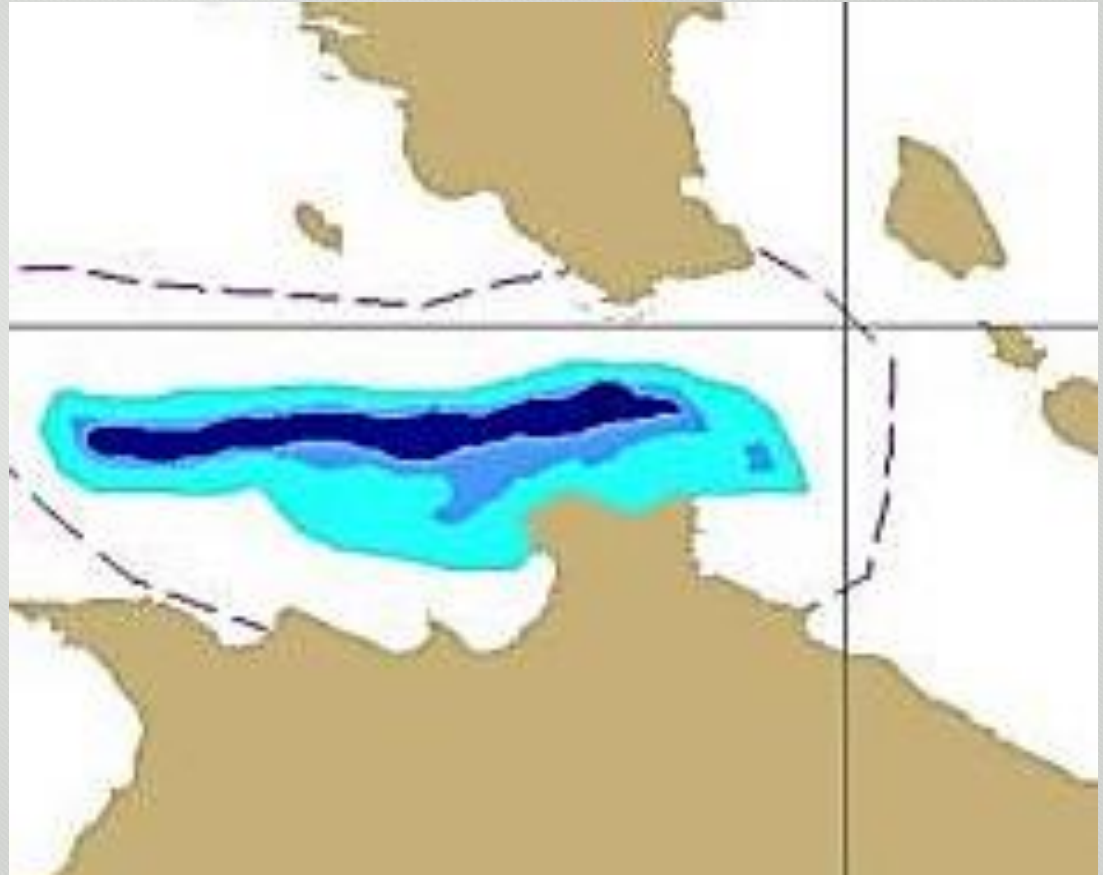


24 Hours after the spill

- 5 Miles Long
- Response manpower arrives from Detroit

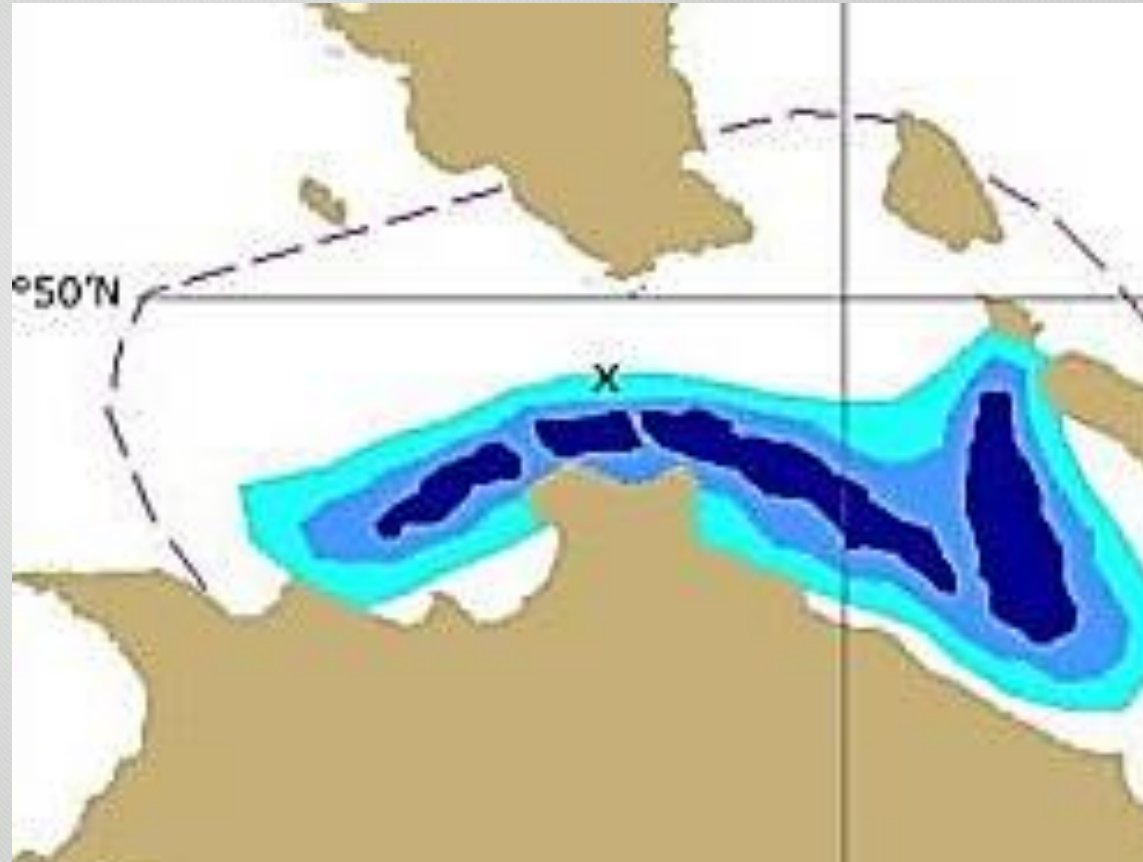


36 Hours after the spill



Source:
NOAA

48 Hours after the spill



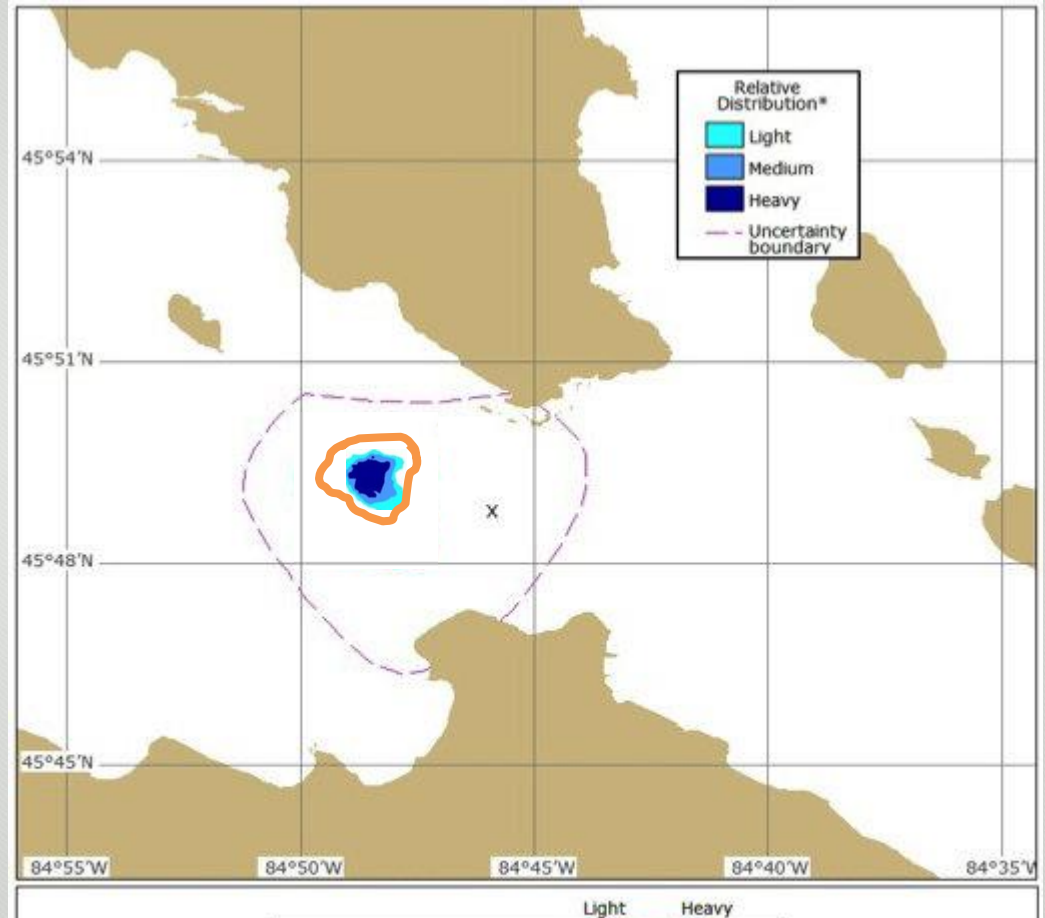
Source:
NOAA



THINK
DIFFERENT

Contained in 30

- 800 Feet Diameter
- Spill Contained



Current oil boom



Heavy



Requires trained crew



Danchor drill

Bulky



Danchor drill

When crews arrive it's too late



7-15% recovery rate



Shift the Paradigm

**Standby at
every location**



**Quickly
deployed**



**Easily
operated**

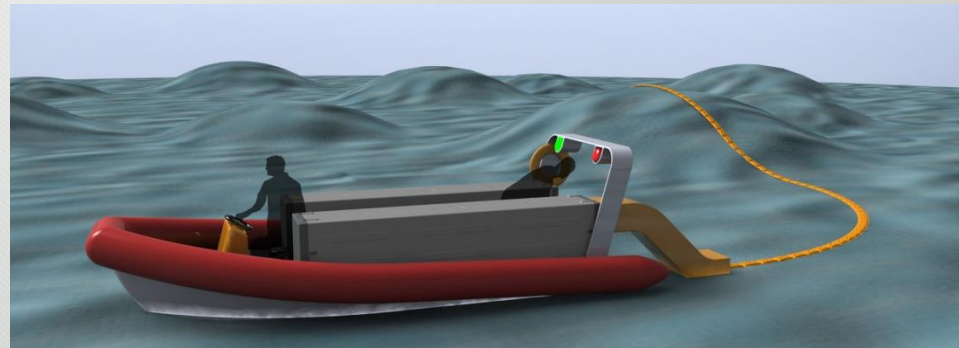
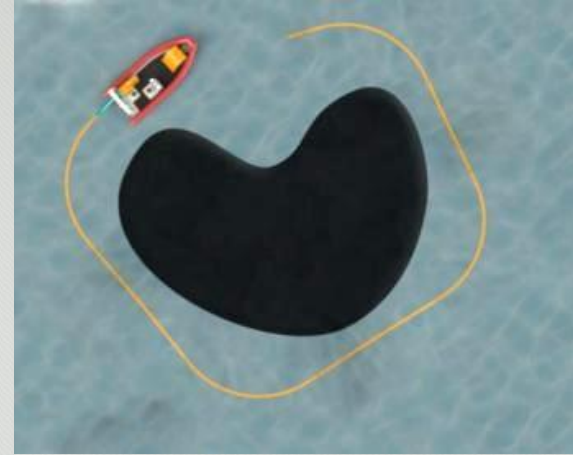


**Stops the spill
in time**

**A STITCH
IN TIME
SAVES NINE**

Immediate oil spill containment system

- Size of a lifeboat
- 6000 feet of boom, deployed immediately
- Preinstalled anywhere a spill can occur (ports, shores, rigs, tankers...)
- Push button deployment.
2 operators trained in a day



Lightest boom in the world

- Revolutionary geometry
- Optimized for wind, currents and waves
- Weighs 1/15th of traditional boom
- Fraction of the storage space
- Disposable and Recyclable



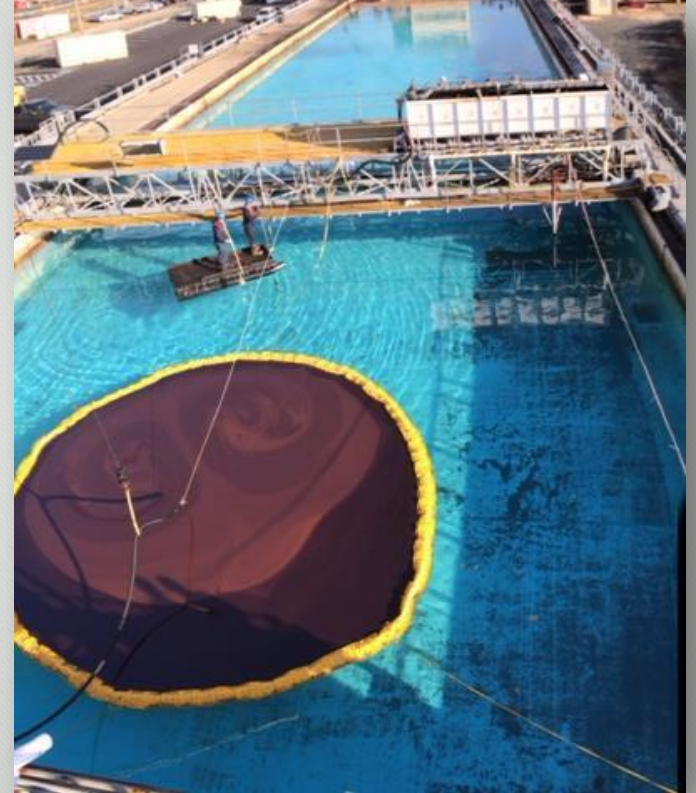
OHMSETT

- Most advanced testing facility in the world
- 660 ft. long wave pool with oil handling capabilities
- Containment, Wave, Tow and Wind



OHMSETT results

- Week long testing
- 2 Different Booms tested
- 100 ft. boom, 23 / 50 lbs. total
- 22 Different tests
- No Losses!



OHMSETT



HARBO's advantages

Weight

Ease of
operation

Crew

Speed

Results

Current



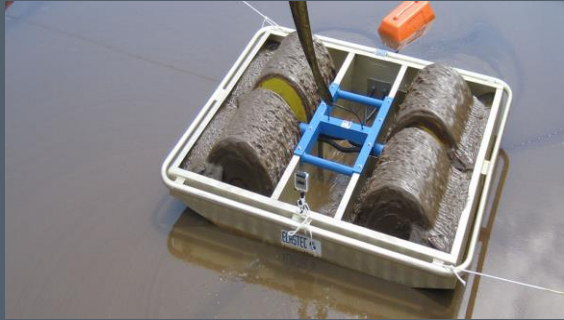
7-15%

HARBO



50%+

HARBO improves oil spill cleanup



Skimmers (Vacuums)



Dispersants



In-situ burning

✓ Less skimming
needed

✓ Reduced quantities,
effective use

✓ Can only be done
if concentrated

Potential Installations

Oil Rigs



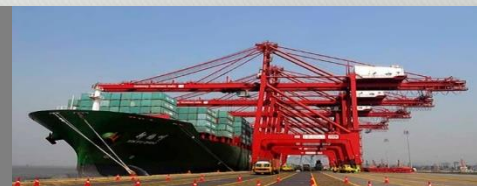
Coastal Infrastructure



Tankers



Ports & Marinas



Large Ships



Coast Guard



Underwater Pipelines



Sensitive Area



Primary Containment – By Responders

- New response layer – Primary containment
- Building a new preparedness market
- Responders maintain and train systems
- Central Depots -> Distributed systems at the point of failure
- Better recovery rates
- Faster and easier operations

Status



Tested at OHMSETT



Largest private responder in Europe partner



Production facility ready



2017



Real life Beta

Product Launch

Global demos and sales



Summary

- Preparedness
- Post spill cleanup -> Immediate Containment
- Enabling effective response everywhere

Contained in 30m!

The immediate containment revolution

Houston,
we have
a solution



HARBO
TECHNOLOGIES



www.harbo-technologies.com