Boom Deployment Exercise
BOOM Components

5 Parts of a Boom
1. Universal Connector
2. Main Tension Member
4. Floatation
3. Ballast
5. Skirt
Boom Types
TYPES

- Fence
  - No chain for ballast tension
  - Rigid
  - Poor response to waves
  - Flexi usually used in sheltered areas
  - Foam floatation chamber w/ ballast skirt
TYPES

- **Fence**

- **Curtain**
  - Flexible material
  - Ballast skirt
  - Good response to waves
  - Air or foam in top chamber
TYPES

- Fence
- Curtain
- Inflatable
  - Chained tension member
  - Heavy duty fabric
  - Good for cascade booming
Applications and Limitations
Booming just far enough away from bulkheads, etc. can save clean up costs
Hatchery being protected using boom and anchor points . . .

Lots of them!
Creating Recovery Areas
Limitations
There are limitations on the effectiveness of any boom:

Splash-Over from wind & breaking waves.
Changing tides & shifting currents.
Containment

Overstressed due to high volume of oil. Gross oil loss or entrainment will follow.
In *all cases* of boom deployment…

consideration must be given to conditions on-scene AND protecting the **safety** of personnel.
Booming Configurations
T O O L

1. A Containment Tool (Keep In)

2. A Protective Tool
   a.) Exclusionary Configurations (Keep Out)
   b.) Deflection Configurations (Re-Direct Away)
   c.) Diversionary Configurations (Re-Direct To)
CONTAINMENT BOOM CONFIGURATIONS

COMPLETE ENCIRCLEMENT (NEGligible CURRENT)

PARTIAL ENCIRCLEMENT (NEGligible CURRENT)

Catenary (U-shape)

CURRENT = APPROXIMATELY 2.5 KT.

Double containment booming (swift current)

Angled containment boom (moderate current)

CURRENT = APPROXIMATELY 1.2 KT.

Excavation along shore line

Angled containment boom with recovery pit
Use Boom to contain Debris
Secure product from going into Body of Water
Goal of most containment and recovery strategies is to collect the spilled oil from the water and prevent it from reaching sensitive resources.

This is not always possible & the goal will shift to:

Minimizing environmental injury using a variety of booming techniques to keep the oil out or direct the oil away from sensitive natural resources or cultural artifacts.

What are some of those areas to be protected ????
Exclusionary & Deflection Booming

- Performed prior to the advance of the oil - Used to prevent or exclude oil from entering:
  - Harbor Inlets
  - Sloughs
  - Marshes
  - Estuaries
  - Water Intakes

- Hard boom alone, or in combo with sorbent boom, can be used for these configuration. Factors for consideration:
  - Type
  - Size of Boom
  - Natural Forces of Water Body
  - Wind
  - Tide
  - Currents

- These factors can be pre-determined by:
  - A Priority System (GRP)
  - Regularly Training, and
  - Local Knowledge of the Waters
Protecting Marsh Areas using exclusion strategies
Protection - Exclusionary
Diversionary Booming

- **Purpose:** To divert the direction of the oil to a recover site.

- **Oil velocity** for this booming strategy should be reduced to under 0.7 knots.

- **Accomplished by:**
  Angling the boom in relation to the current's direction, reducing the velocity of the floating oil in relation to the boom.

- **Diversionary booms** can be set up in series along a waterway to increase their effectiveness.

- **Reminder:** The boom needs to be tended and monitored as weather and tidal conditions change.
DEFLECTION BOOMING CONFIGURATIONS

CASCADE

CURRENT

CLOSED CHEVRON

CURRENT

STAGGERED CHEVRON
(Allows Boat Movement)
Cascade booming in fast moving currents.
Staggered sections stepwise along the shoreline
Divert Oil from Wetlands
Natural collection areas for debris and trash are signs of where spilled oil will end up. These natural collection spots can be part of an ACP for this area.
Figure 7. Plot of the maximum angle for boom deployment at increasing current velocities.
Boom Deployment

Boom is sometimes wound onto reels and stored for easy access and maneuverability. In lieu of reels, boom may be stowed methodically on response trailers for rapid deployment.
Use of bridle and amount of boom should not exceed 500 ft
Towing section with a float attached
Damage

Boom selection and tow speed are some of many critical factors in mechanical recovery. The wrong choice can lead to compounding problems during a response event.
CONVENTIONAL BOOM ANCHORING

WATER SURFACE

FLOAT

TETHER LINE

ANCHOR LINE
(5-10 X WATER DEPTH)

ANCHOR
6-10 FEET OF
ANCHOR CHAIN

BOOM
Anchor Procedure
Anchor Procedure

- Attach the anchor to the ring on the Boom at the connection point
- Let all your line out until you get 2-3 feet from the chain.
- Cleat rope off to forward cleat and start to back down pulling the boom where you need it.
- Keep Chain and Anchor on side of boat.
- Put boat in Neutral when boom is in position and remove line from cleat.
- Drop Anchor.
Your Response Trailer
Specifications of Trailer

- 20FT 10,000 lbs
- 8ft Wide
- 3 compartment
- 2-5/16 Ball
- Electric Brakes
- Tongue Weight:
- Rear drop down door
- Complete with Key and pad locks

November 6, 2007
Forward Compartment
Forward Compartment Supplies
On Left Wall

- 20 Lb Anchors.
- 6ft Chain
- Shackles are on Anchors already
- 10 Anchor Buoys

November 6, 2007
Front Compartment on Right Wall

- LongHandled Brooms and Shovels.
- Sledge Hammers

- 8 Towing Bridles with Thimbles. Is fitted with a universal slide connector to fit both the 18” an 12”
Front Compartment Rear Wall

- Caution Tape
- First Aid Kit
- Eye Wash
- Chicken Boots
- Hand Cleaner
- Duct Tape
- Nitrile and leather gloves
- Safety Glasses
- Tool Box w/ Pliers, Cable Ties, Extra pins for Boom
- Portable Lights
- 3 xl Tyvek
- 5 spools of ½ inch rope
Middle Compartment
Middle Compartment

- 5 Bales of Sorbent Boom
- 2 Bales of Snare
- 5 bags of Speedy dry
- 10 rebar Steel Rods
- 5 bales of pads
Middle Compartment

- 12”, 18”, 24” inflatable bladder for storm culvert.
- All fittings are on bladders
- Electric powered Air Compressor
- 2000 Watt generator

November 6, 2007
Rear Compartment
Two types of Boom

- (8) 100 ft sections of 18 inch harbor with Universal connectors.

- (4) 50ft sections of 12 inch harbor boom with Universal connectors.