Mechanical Recovery and Monitoring

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Session Overview

- Overview of mechanical recovery systems
- Approach to monitoring spills
- Pros and Cons

introductions

- **Michael Hunt**
  - Bachelors from United States Coast Guard Academy
  - Masters in Public Service and Administration from Texas A&M University
  - 24 years United States Coast Guard (emergency preparedness, homeland security, instructor at National Emergency Response Training Center - TEEX)
  - EM Advisor for Chevron Center for Emergency Preparedness and Response (CEPR)
  - Spill of National Significance Exercise Coordinator and National Security Exercises
  - Certified as Master Exercise Practitioner by FEMA
  - Certified as Incident Commander, Ops Section Chief, Plan Section Chief, and Situation Unit Leader by USCG
  - Hurricane Rita Operations Section Chief
  - Response operations after 9/11 – Operations Section Chief
  - Chevron World Wide Emergency Response Team (WWERT) – Operations Section Chief

Types of skimmers

Four broad categories:

- Weir Skimmers
- Oleophilic Skimmers
- Hydrodynamic Skimmers
- Suction Skimmers

Skimmer Selection

- Oil Type and Viscosity
  - Skimmer performance will vary based upon type of oil and other physical and chemical properties. Viscosity is one of the most important as skimmers are designed for specific ranges of viscosity.
- Slick Thickness
- Debris Tolerance
- Wave condition
- Currents
  - Most skimmers operate in less than 1 knot currents.
- Water Depth
  - Some skimmers require a minimum depth of water.
- Mode of Application
- Deployment considerations
  - Some skimmers require cranes to deploy them.

Credit: USCG

Types of boom

Four broad categories:

- Open water
- Harbour
- Fast water
- Shore seal

Putting it together

V Configuration

Credit: ITOPF

Belt skimmer

Credit: ITOPF

Pros and Cons to Mechanical Recovery

Pros:

Removes oil with minimal impact

Widely accepted - no approvals needed

Cons:

Oil difficult to corral – higher shoreline impact

Very slow (1-3kts)

Higher sea state reduces effectiveness

Generates large amount of waste

Typically recovers only 10-20% of the oil

Credit: ITOPF

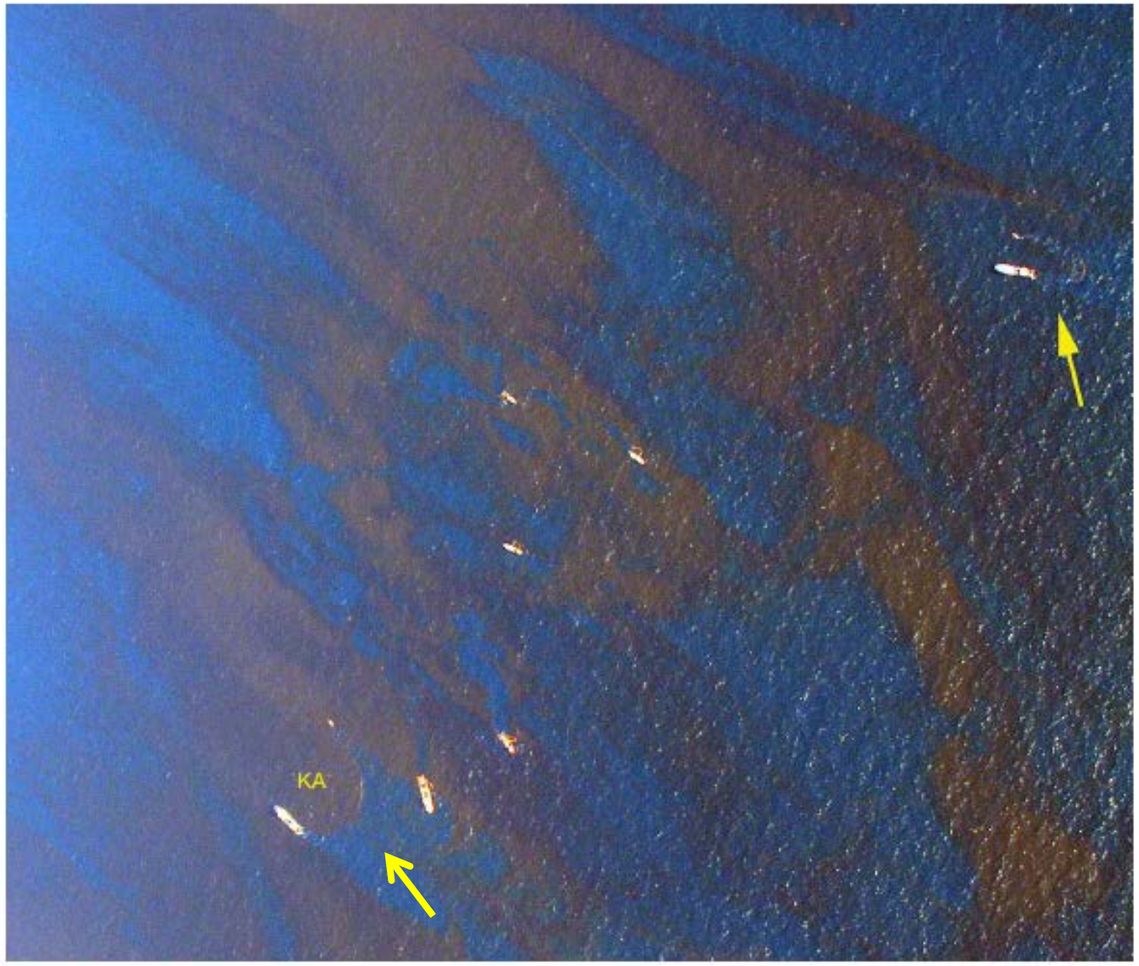
Monitoring program

Activities:

- Classify oil as Recoverable or Non-recoverable (i.e. sheen)
- Track moving oil
- Keep vessels in recoverable oil as it moves
- Expand operating window to low-light conditions (with safety of highest priority)

Desired outcome:

- Put resources in best position to recover oil
- Activities have environmental benefit

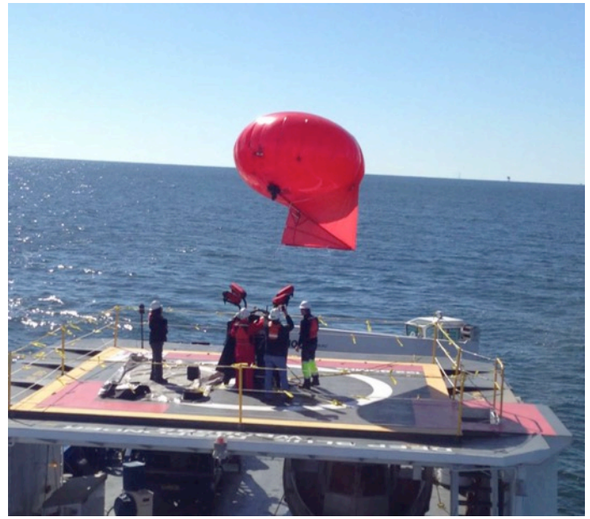


Credit: MSRC

Monitoring platforms

Aerial

- Aircraft
- Balloons
- Drones (UAS)
- Satellites



Surface

- Vessels (radar & thermal infrared)
- Buoys

Subsurface

- Autonomous Underwater Vehicles (AUVs)
- Remotely Operated Vehicle's (ROVs)

Sensors

Passive:

Visual

Infrared

Ultraviolet

Thermal

Multispectral

Hyperspectral

Active:

Laser-Induced Fluorosensor

RADAR

LiDAR

Pros and Cons to Monitoring Systems

Pros:

Enhances oil removal

Drones (UAS) improve pilot safety

Drones stream video to CMD Post

Drones & Balloons operate 24hr/day

Cons:

Flight Restrictions for drones – 1 mile

Sea state/darkness/cloud cover

Duration over target

Area of coverage

Comms

Key points

- Mechanical recovery can be effective when oil can be corralled (harbor)
- Mechanical recovery is less effective on open ocean
- Monitoring is a key component of effective oil spill response

Questions