



MSRC 
Marine Spill Response Corporation®

Marine Spill Response Corporation (MSRC) Using Technology to Enhance Conventional Oil Spill Response Tools

February 12, 2015

Agenda

- **MSRC Background**
- **MSRC Spill Response Capabilities**
- **Applying Technology To Enhance Response Tools**
- **MSRC Considerations for International Response**



MSRC Background

- **Established in 1992 in concert with the Oil Pollution Act of 1990 (OPA-90)**
- **Extensive Response Experience**
 - **Over 850 spills post-Exxon Valdez**
 - **1996 Portland, Maine tanker spill**
 - **Katrina/Rita --36 responses for 22 customers**
 - **Deepwater Horizon -- largest surface response contractor**
 - ✓ **12 Responder Class vessels**
 - ✓ **Over 11,000 employee man days offshore**



MSRC Conventional Response Capability

- **Open Ocean Mechanical Recovery**
 - **Responder Class Oil Spill Response Vessels (OSRVs)**
 - **Dual purpose Oil Spill Response Barges (OSRBs)**
 - **Fast Advancing Encounter Systems**
- **Near shore Mechanical Recovery**
- **Controlled Burning**
- **Aerial Dispersants**



MSRC Spill Response Capabilities – OSRVs

- 15 Responder Class OSRVs (7 in Gulf of Mexico)
 - Dual option recovery systems
 - Significant on-board storage (4,000 bbl.) to ensure continuous operations
 - Accommodates 38 personnel for sustained offshore operations
 - 13 ft. draft design provides nearer to shore capability



Enhanced Encounter Rate with Norwegian Buster



J Configuration/Transrec for debris-laden conditions



MSRC Spill Response Capabilities – OSRBs

- **16 dual purpose ocean-rated barges -- average over 40,000 bbls each to avoid reliance on commercial barges that may not be available**
 - **Total Gulf of Mexico offshore storage capacity of 246,500 bbl.**
- **Outfitted with skimming systems and containment boom**



MSRC Spill Response Capabilities – Fast Advance Encounter Systems

- **24 Norwegian buster systems for nimble fast advance recovery tactics (9 in Gulf of Mexico)**
- **Readily transportable**
- **Used with towing vessels**



MSRC Spill Response Capabilities – Near-Shore Recovery

- Large inventory of shallow water barge systems (68)
 - 18 in Gulf area
- Fast Response Vessels (5)
 - 2 in Gulf area
- Fleet of Marco skimming vessels (10) for difficult conditions in shallow water
 - 4 in Gulf area
- Near-Shore Boom
 - 70,000 ft. in Gulf



MSRC Spill Response Capabilities - Controlled Burning

- **Largest inventory of fireboom (22,500 ft.) – critical given extended vendor lead times for replenishment**
- **Supports multi-day, multi-team operations**
- **Dedicated Strike Team specialists with 10-15 MSRC personnel nationwide**



MSRC Spill Response Capabilities - Aerial Dispersants

- Large fleet of dedicated aircraft (6)
- Large payload aircraft with two C-130s
- Largest U.S. aerial application inventory of dispersants (104,000 gallons)



Applying Technology To Conventional Response Tools

- **New technology skimming systems**
- **Critical telecommunications capability**
- **Remote sensing to better position recovery assets**



Applying Technology To Conventional Response Tools

- **New technology skimming systems with high oil to water recovery efficiency**
 - **Crucial disc skimmers**
 - **Lamor brush systems**
 - **Used as large capacity quick deployment systems with Platform Supply vessels**



Applying Technology To Conventional Response Tools

- **Critical telecommunications for voice and data**
 - **Mobile Communication Suites (7) with satellite connectivity for internet and VoIP telephony services -- located on all coasts**
 - **Small satellite systems (7) with internet and voice capability, air transportable, and ideal for staging sites**
 - **Portable base stations, radio repeaters, and handheld radio packages**
 - **Backed by 30 MSRC technical experts**



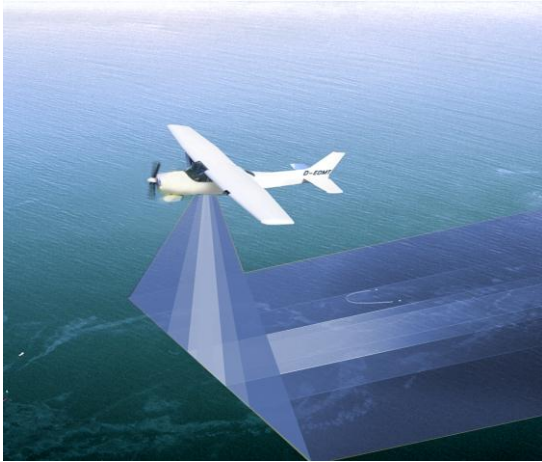
Applying Technology To Conventional Response Tools

- **Remote Sensing for tactical response**
 - **Deepwater Horizon primarily relied on visual spotting for positioning recovery assets**
 - **Challenges with visual spotting**
 - ✓ **Quantity of experienced spotters**
 - ✓ **Distinguishing thickest oil**
 - ✓ **False targets**
 - ✓ **Inability to operate in low-light conditions**
 - **MSRC Level ABC Remote Sensing Systems**



MSRC Level ABC Remote Sensing For Tactical Oil Spill Surveillance

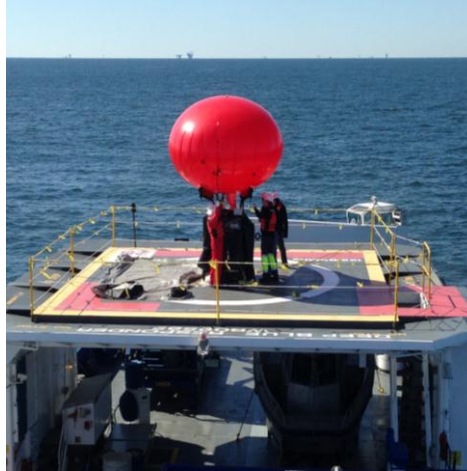
Level A -- Aircraft Ocean Imaging Corporation



**Provides wide-area
spill detection,
thickness
interpretation, and oil
distribution mapping**

Multispectral/TIR Cameras

Level B -- Balloon Maritime Robotics



**Tethered up to 500 ft.
Medium range coverage
with long "hang" time**

TIR and HD Cameras

Level C -- Close-In

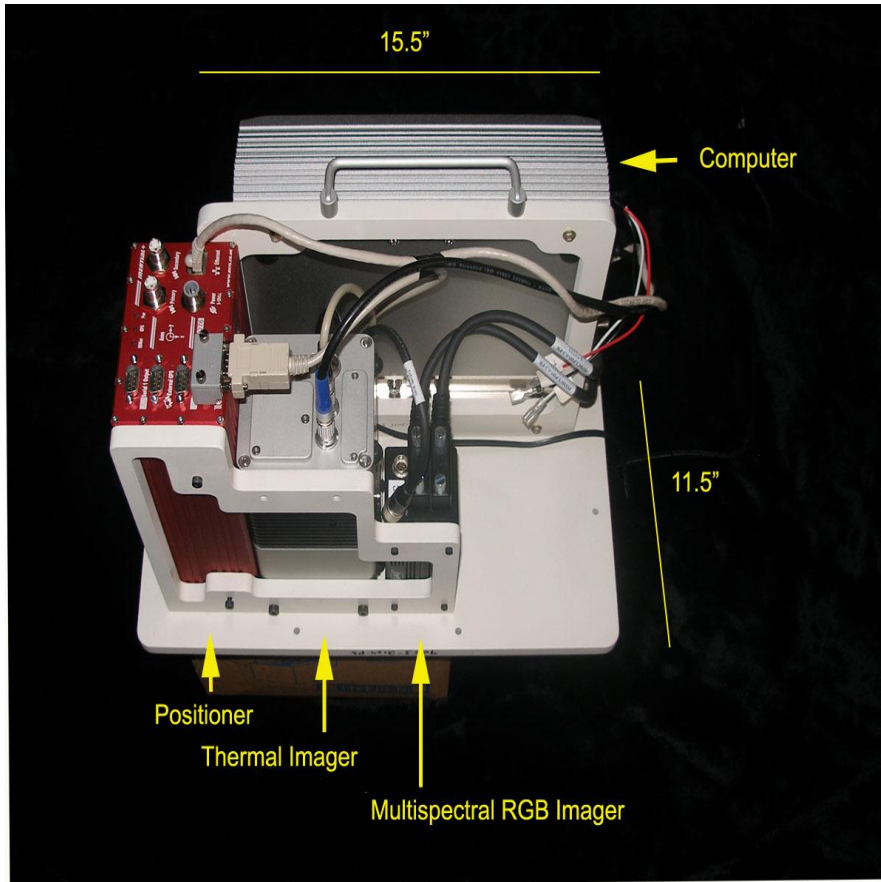


**Optimizes close-in
recovery techniques**

**X Band Radar and TIR
Camera**



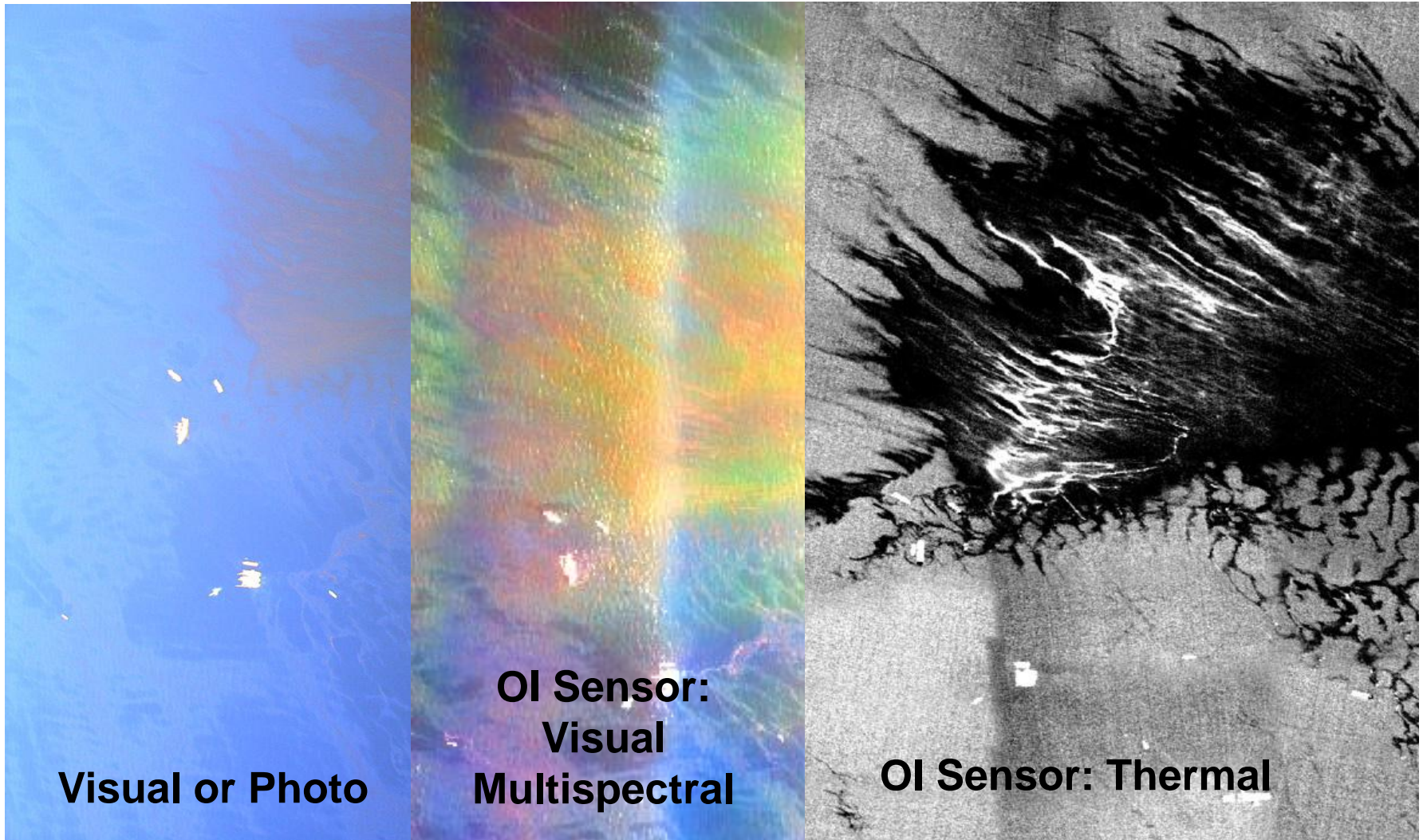
Level A – Aircraft Using Ocean Imaging System



- Use pre-identified Aircraft of Opportunity (AOO)
- Systems operated by trained MSRC personnel
 - Staged on each coast (NJ, TX, LA)
- Tactical use
 - Capture images that can be pre-processed on-board to identify oil as recoverable and direct response resources into thickest oil
- Common Operating Picture (COP) oil mapping
 - Capture images over entire spill (or parts) that can be transferred to OI technologists for detailed oil thickness maps
- Available as post-hurricane assessment tool



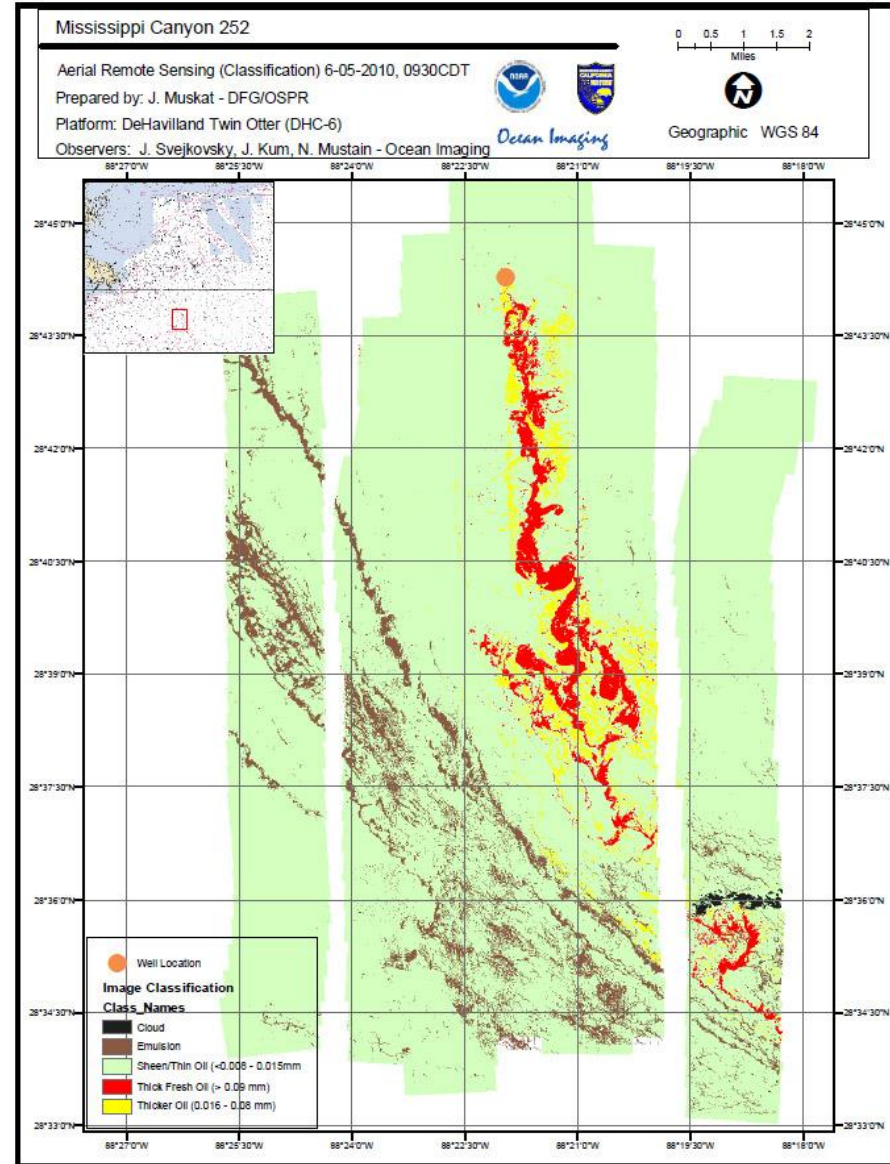
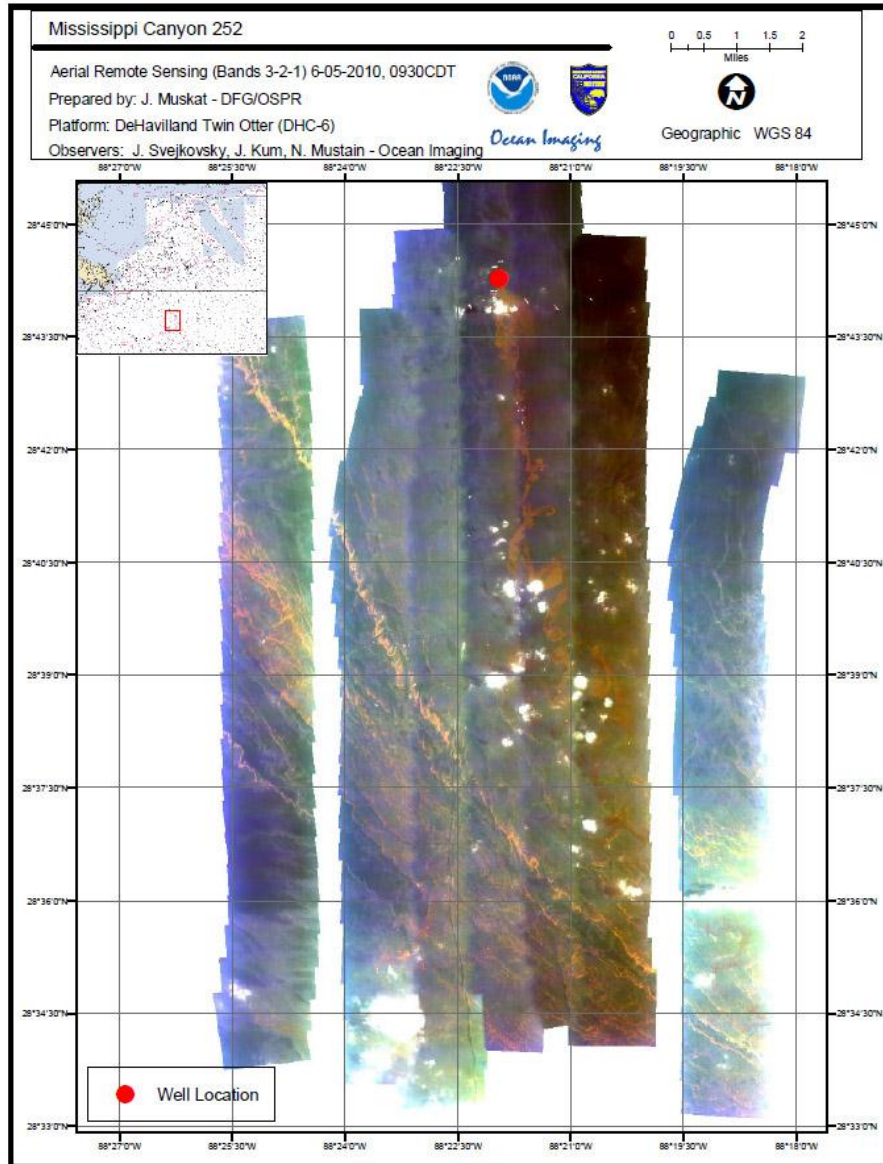
Example: Visual vs. Digital Imaging of a Slick



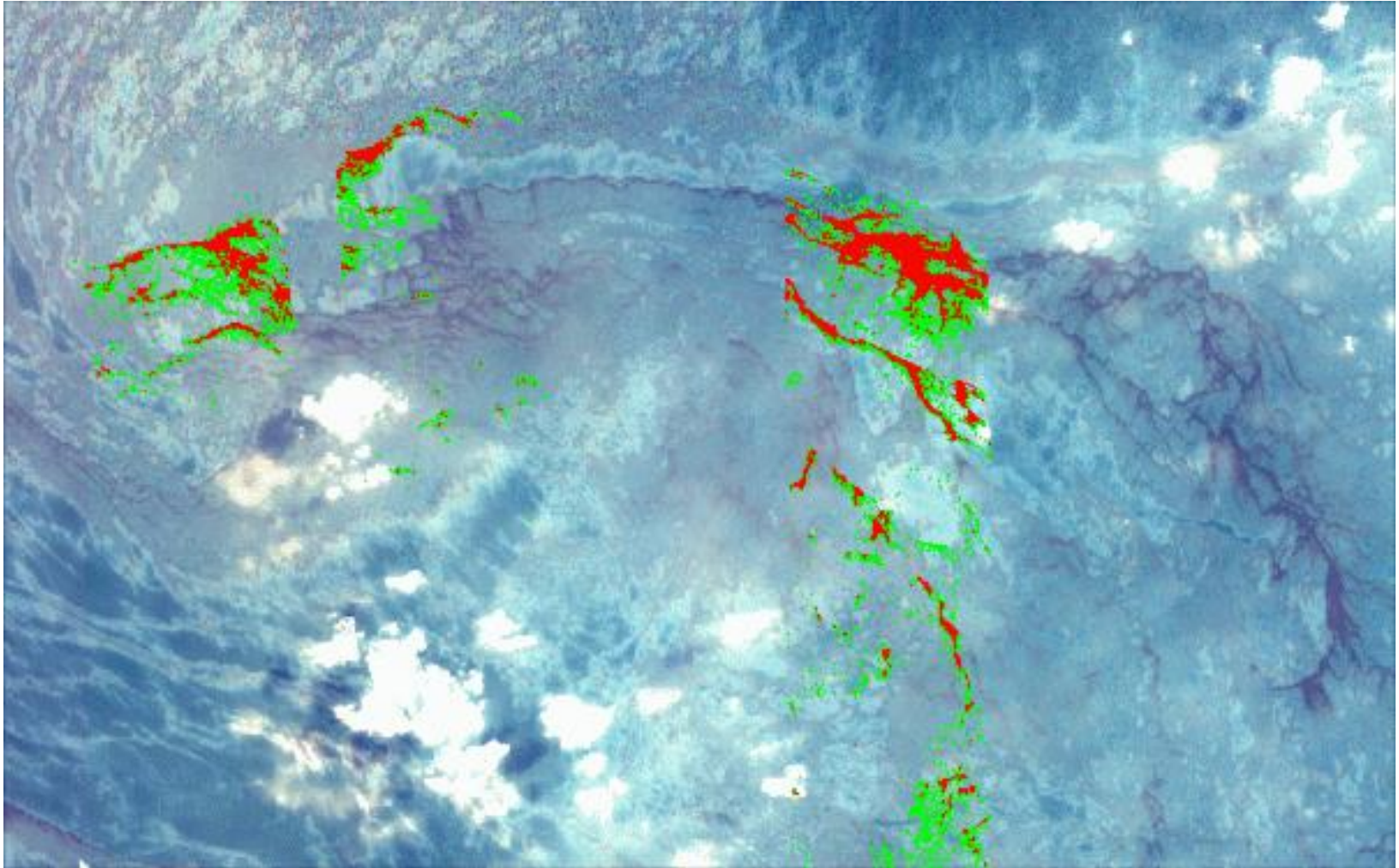
Source: Ocean Imaging, 2010



Full OI oil thickness processing: (DWH example 5/6/2010)



Tracking Moving Oil

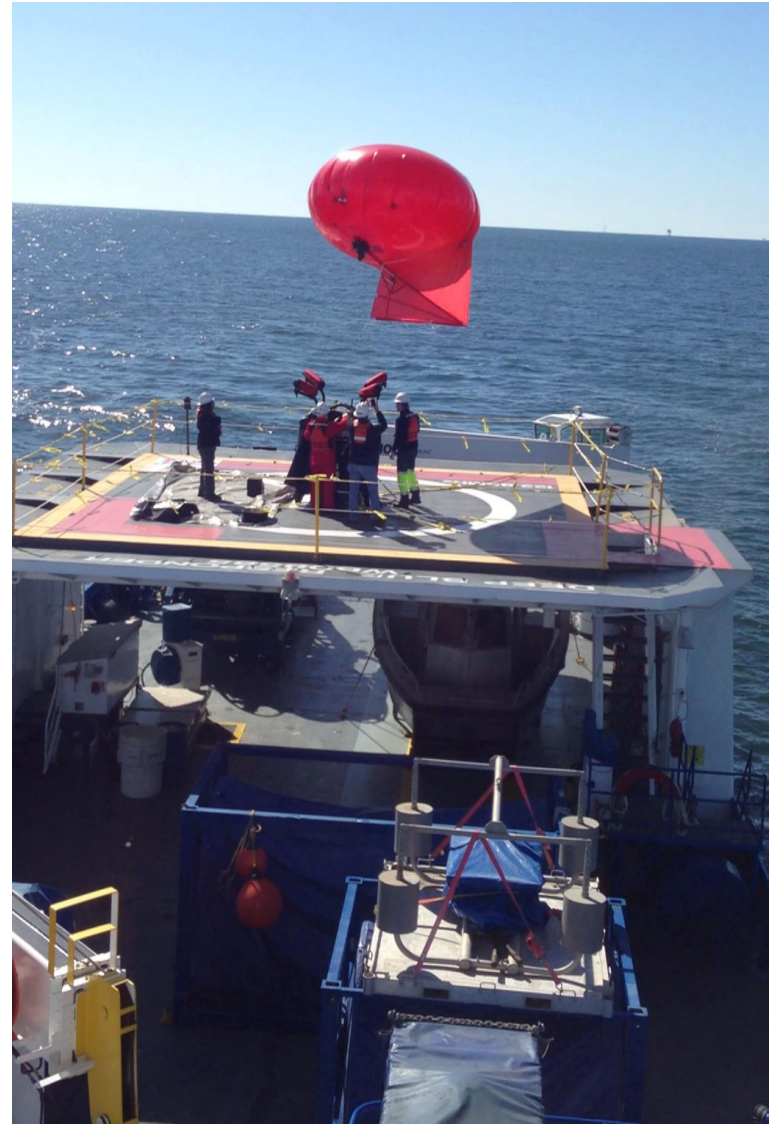


Ol's aerial imaging system allows determination of oil drift speed and direction with multiple images from sequential over flights



MSRC Level B - Maritime Robotics Aerostat

- **Battery powered, non-wired tether**
 - **Up to 12-hour “hang time”**
 - **Rechargeable battery**
- **Package includes:**
 - **HD Camera**
 - **TIR Camera**
 - **AIS Repeater**
- **Small, compact easily transportable package**
- **Proprietary viewing software and gimbal**
- **WiFi transfer to host vessel**



Manufactured by Maritime Robotics: Ocean Eye

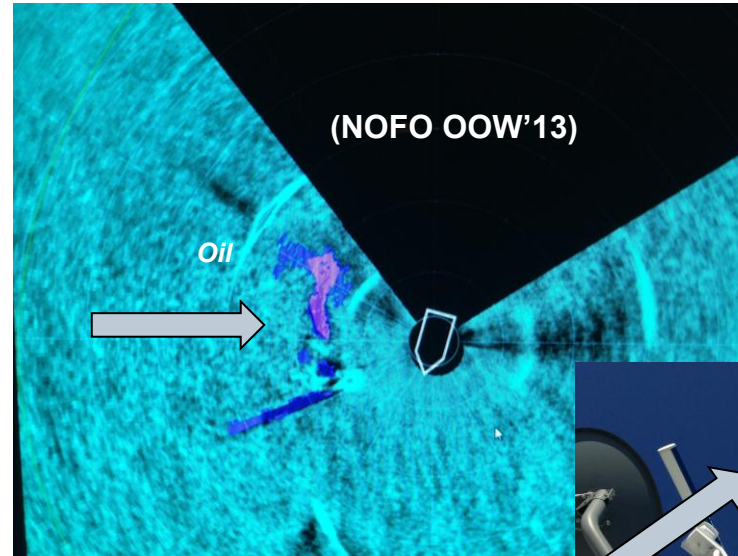


NOFO: Oil On Water 2012



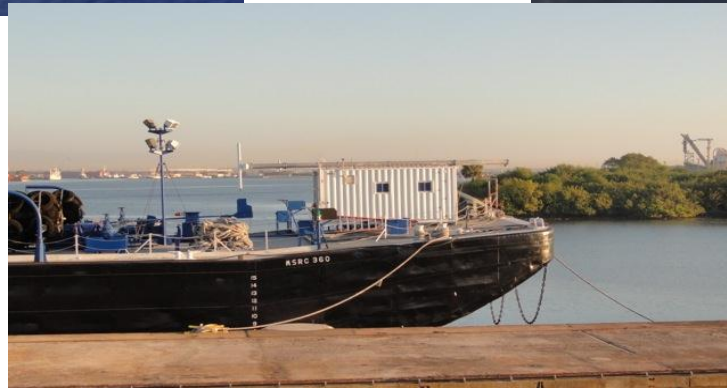
Level C – Close In or Ship Mounted System

- X Band Radar and Thermal Infrared (TIR) on Responder Class Vessels
 - Oil detection (X Band Radar)
 - Better view of oil
 - Stack oil vs. entrainment



Applying Technology To Conventional Response Tools

- **Gulf barges outfitted with Level C Remote Sensing**



MSRC Considerations for International Response

- **Service Agreement obligations to meet customer US operator requirements**
- **Responder Immunity protections**

