

# MSRC Surveillance and Remote Sensing Services (SRS)



Kevin Hoskins

VP, Telecommunications & Information Systems

# MSRC post-DWH Observations

## **Operations – post event interviews with all personnel (over 11,000 man days offshore)**

- Encounter rate tactics
- Debris handling
- Offloading of recovered product
- Sustainability and redundancy (the human element)

## **All of the above are downstream of the single most significant observation:**

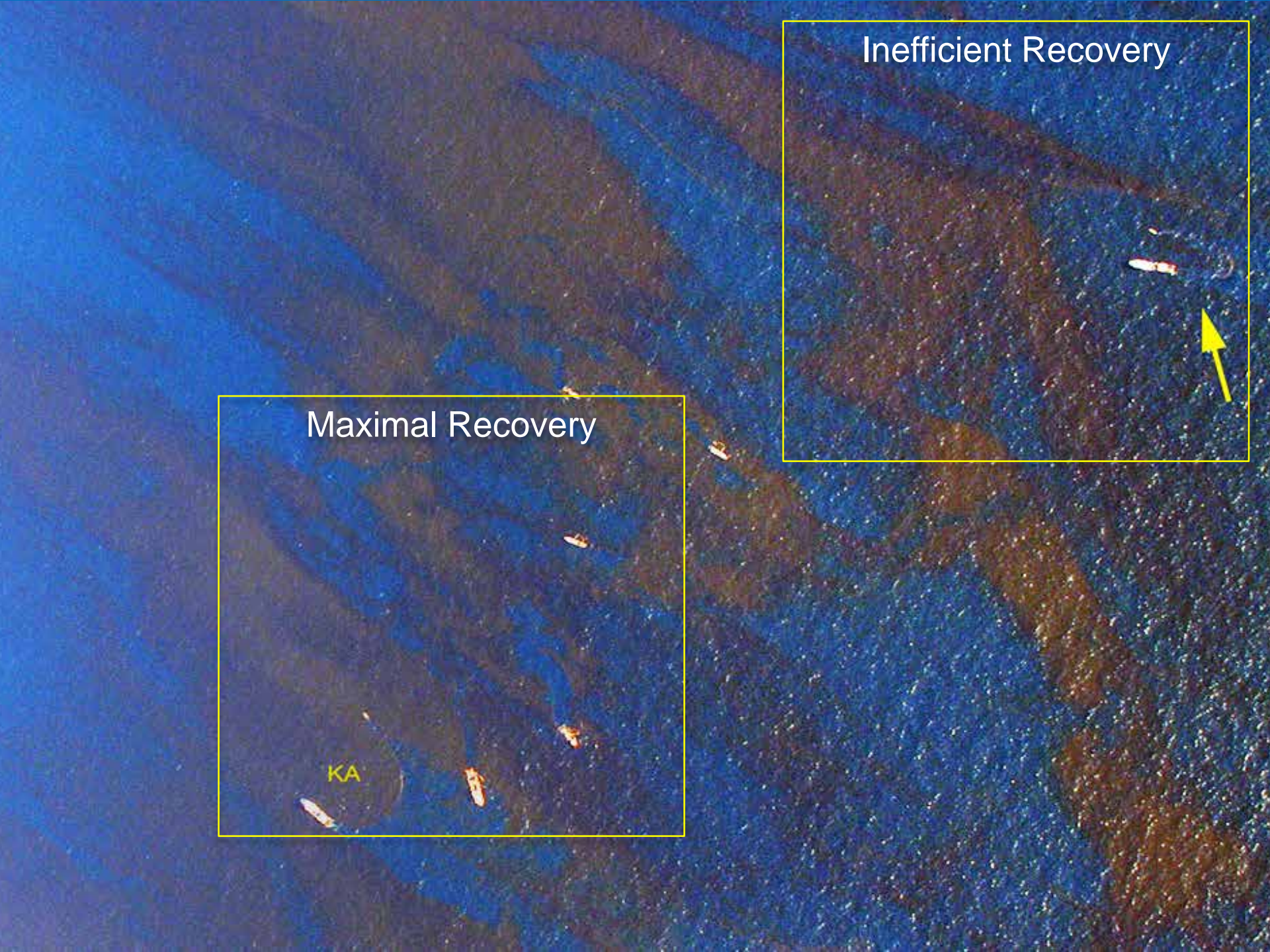
- Efficiently putting (and keeping) resources in the right position (day and night) to recover the oil

Inefficient Recovery



Maximal Recovery

KA



# MSRC Surveillance Objectives

## Post DWH

### Real Time Tactical Information Beyond Visual Spotting:

- Classification of oil targets as recoverable (skim, burn, disperse) or non-recoverable (i.e. sheen)
- Determination of “false positives” (e.g.: grass, debris, cloud shadow, fish schools, algae bloom, etc.)
- Tracking moving oil
- Staying in/with the recoverable oil as it moves
- Expanding the operating window to low-light conditions (with safety always of highest priority)

# MSRC Criteria for Remote Sensing Toolbox

- Multiple sensors -- since one does not do all
- Multiple platforms -- given importance of height of eye
- Portability given span of U.S. coastline and lack of dedicated surveillance planes
- Real time information for tactical use
- Provide “feed” to customer Common Operating Picture (COP) – if requested

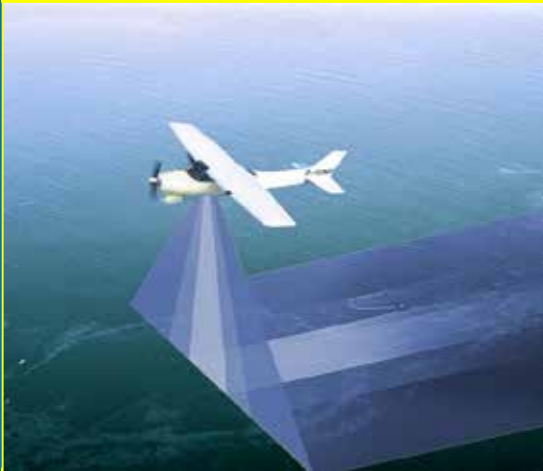
# MSRC Level ABC Remote Sensing for Tactical Oil Spill Surveillance

**A**

## AIRCRAFT

Ocean Imaging  
Corporation

**Multispectral/TIR  
Cameras (i.e. TRACS)**



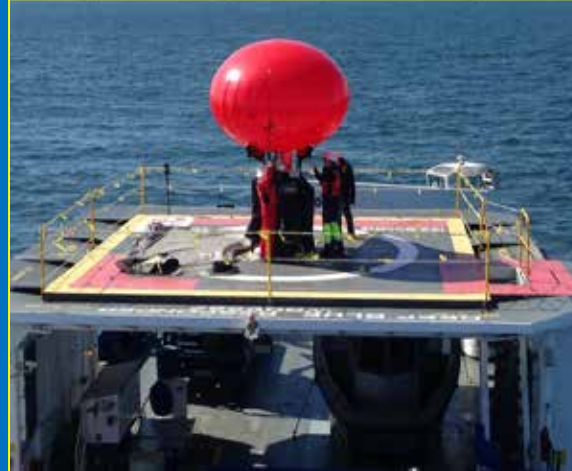
Provides wide-area spill  
detection, thickness  
interpretation, and oil  
distribution mapping

**B**

## BALLOON

Maritime Robotics

**TIR & HD  
Cameras**

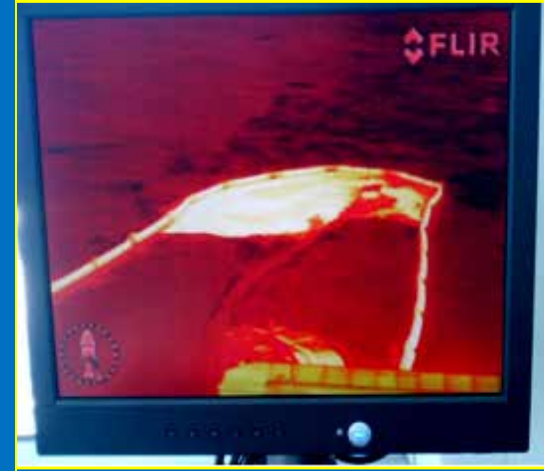


Tethered up to 500 ft.  
Medium range coverage  
with long "hang" time

**C**

## CLOSE-IN

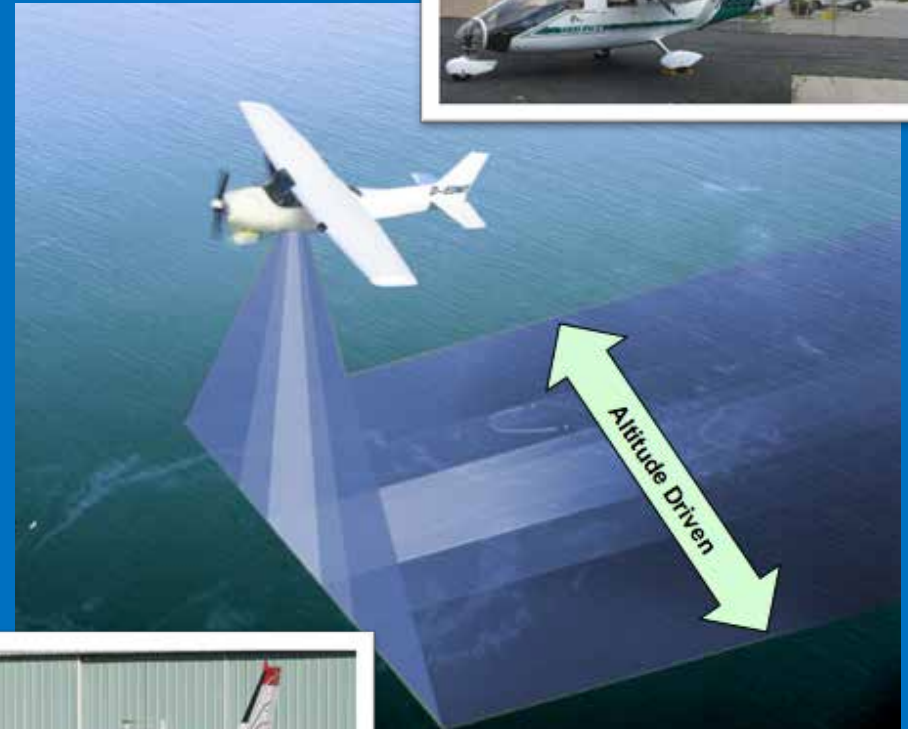
**X Band Radar & TIR  
Camera**



Optimizes close-in  
recovery techniques

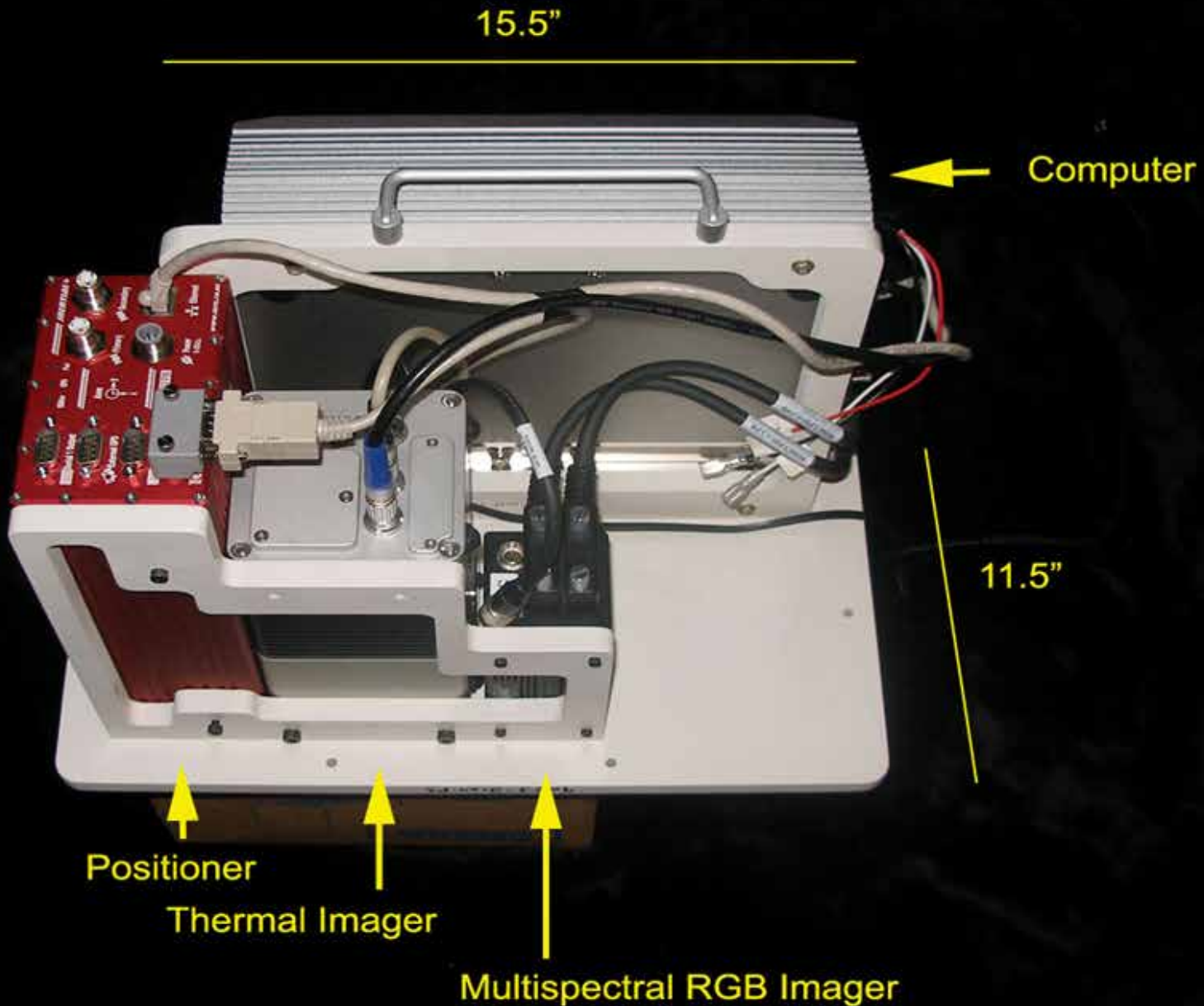
# MSRC Level A – Aircraft based Systems

- **Three dedicated systems**
  - Ø Portable
  - Ø Located in Edison, NJ; Houston, TX; and LA/LB, CA
- **Utilize pre-vetted “Aircraft of Opportunity” (AOO)**
  - Ø Mounting brackets developed for various class aircraft under contract
- **High height of eye with 24-hr operations potential**
  - Ø > 500’ to 12,500’
    - Lower altitude = high level of detail (SCAT)
    - Higher altitude = wider, synoptic view
  - Ø Fast speed of advance (120-200 mph)
- **Sensors**
  - Ø Thermal Infrared (TIR)
  - Ø Multi-spectral (color not seen with eye)
  - Ø Exclusive agreement with Ocean Imaging



# TRACS

Tactical Response Airborne Classification System





# MSRC Level A – Aircraft based Systems

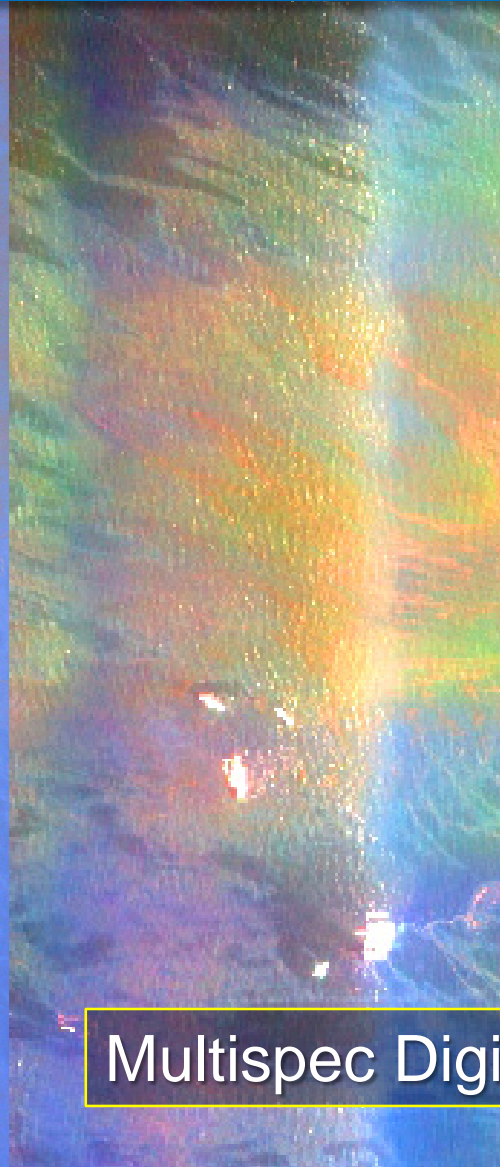
## **Advantages over visual methods:**

- 1) System is more objective – does not rely on opinion or educated guessing
- 2) Extends human eye visible wavelength limitations (e.g. adds thermal IR)
- 3) Survey map is in digital GIS format – allows accurate location determinations, direct computation of oil spill area and volume, etc.
- 4) Survey provides much greater spatial detail (1-3 meters)

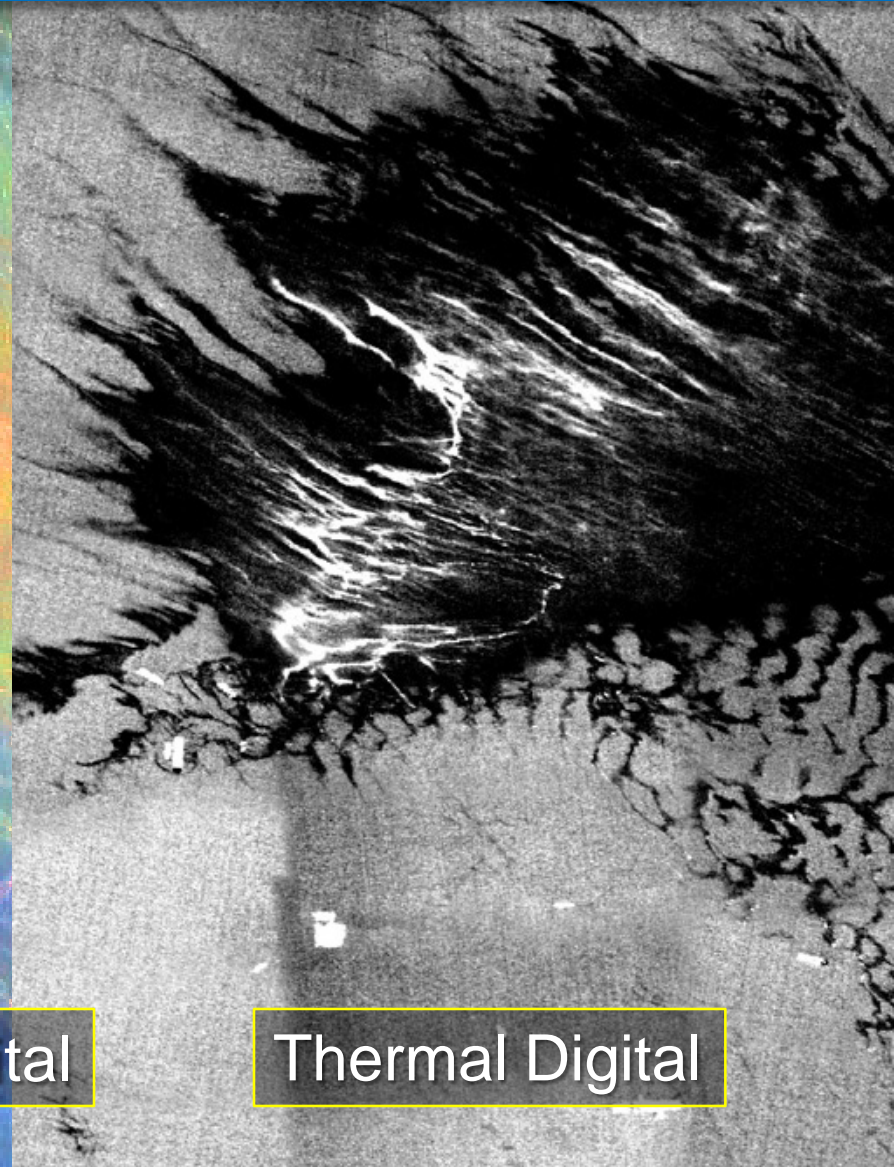
# Visual & Digital Imaging Oil Comparisons



Visual / Photo

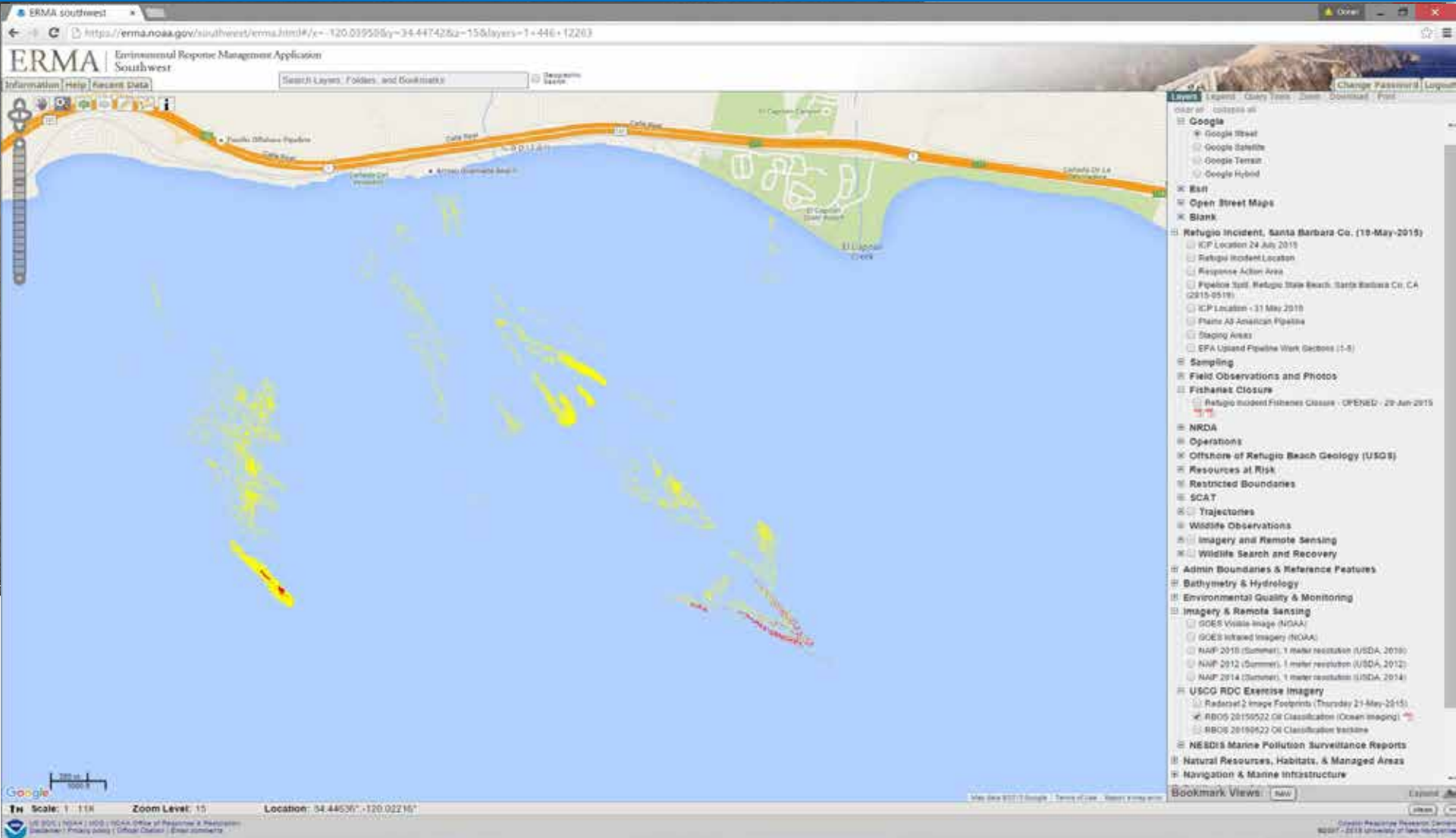


Multispec Digital

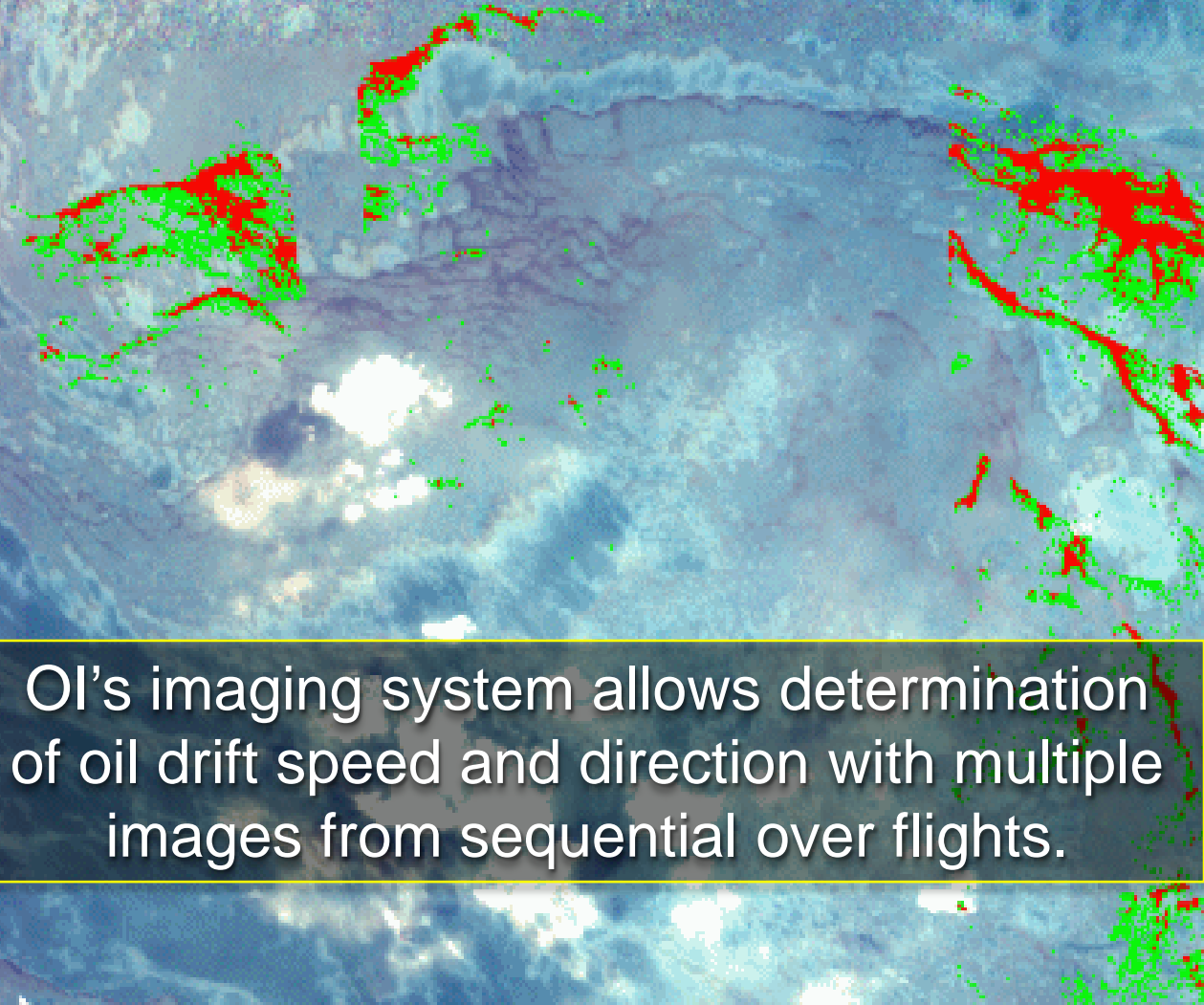


Thermal Digital

# TRACS Allows Real-Time Tactical Use as Well As Data Collection for COP Mapping



# Tracking Moving Oil



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

# MSRC Level B - BALLOON

## Maritime Robotics Aerostat

### Battery powered, non-wired tether

- Up to 12-hour “hang time”
- Rechargeable battery

### Package includes:

- HD Camera
- TIR Camera
- AIS Repeater

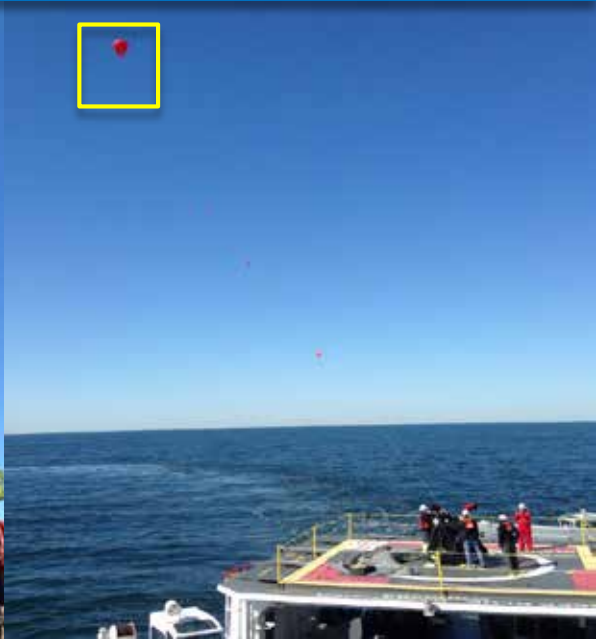
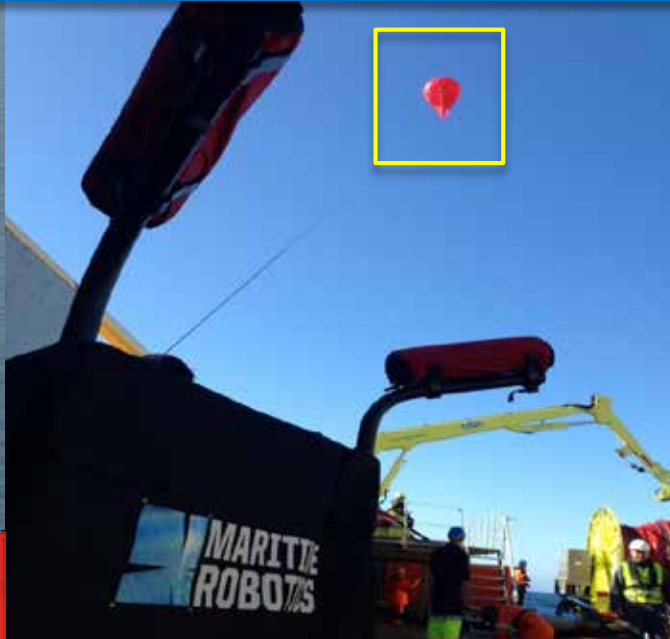
### Small, compact easily transportable package

### Proprietary viewing software and gimbal

### WiFi transfer to host vessel



# MSRC Level B – BALLOON

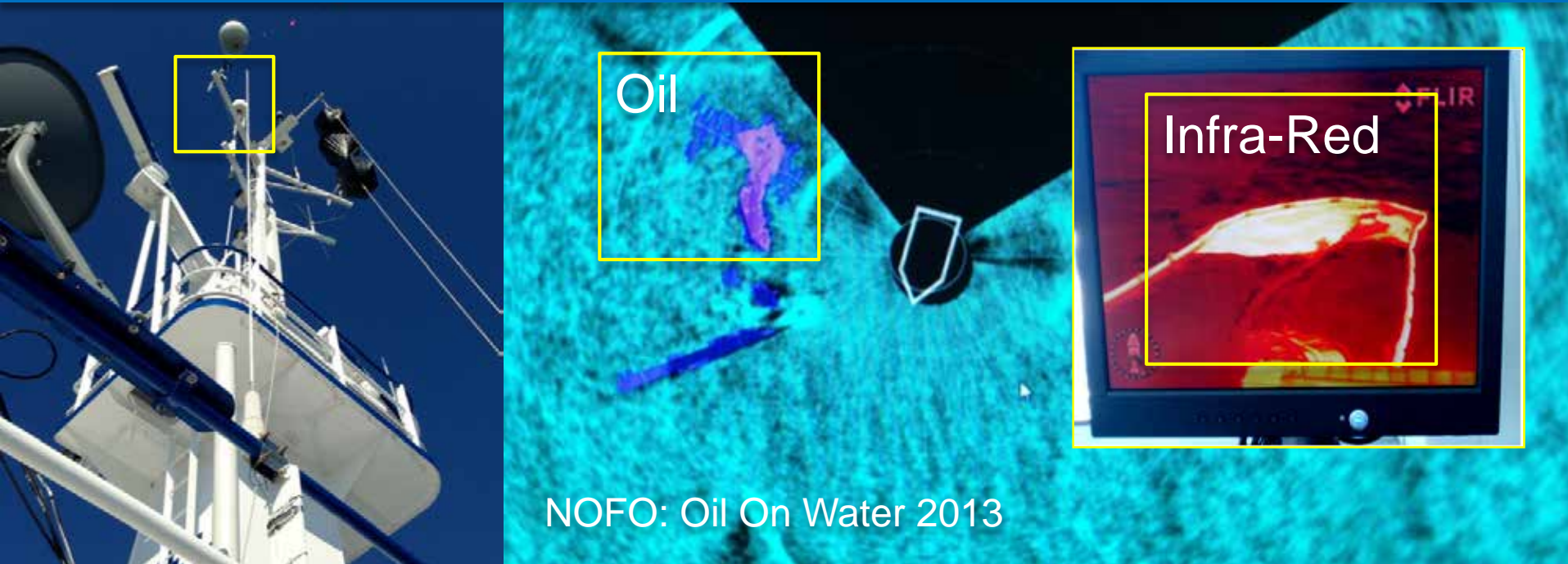


# Oil on Water Deployments (NOFO, Norway)



# MSRC Level C – CLOSE IN

## OSRV-Mounted Systems for Tactical Optimization



### X Band Radar and Thermal Infrared (TIR) on Responder Class Vessels

- Oil detection (X Band Radar)
- Better view of oil
- Stack oil vs. entrainment



# Access to MSRC Level ABC

- ü Remote sensing Strike Team members independently operate system(s) for tactical operations.
- ü MSRC acquires imagery and can forward to OI for full COP-oriented processing or retains for tactical operations.
- ü MSRC Level ABC Remote Sensing is available to all MPA Members that have a contract with MSRC
- ü MSRC Level A (OI TRACS) is available exclusively to MSRC within the MSRC Operational Area
- ü OI is available to contract with federal or state government agencies directly, but the MSRC Strike Team would not be available as part of this contract

# Questions?

**For more information:**

hoskins@msrc.org

www.msrc.org