

# U. S. Coast Guard Great Lakes District

## Incident Management Branch



## Low-Cost Remotely-Operated Vehicles (ROV) for Pollution Response

### “Drones of the Sea”

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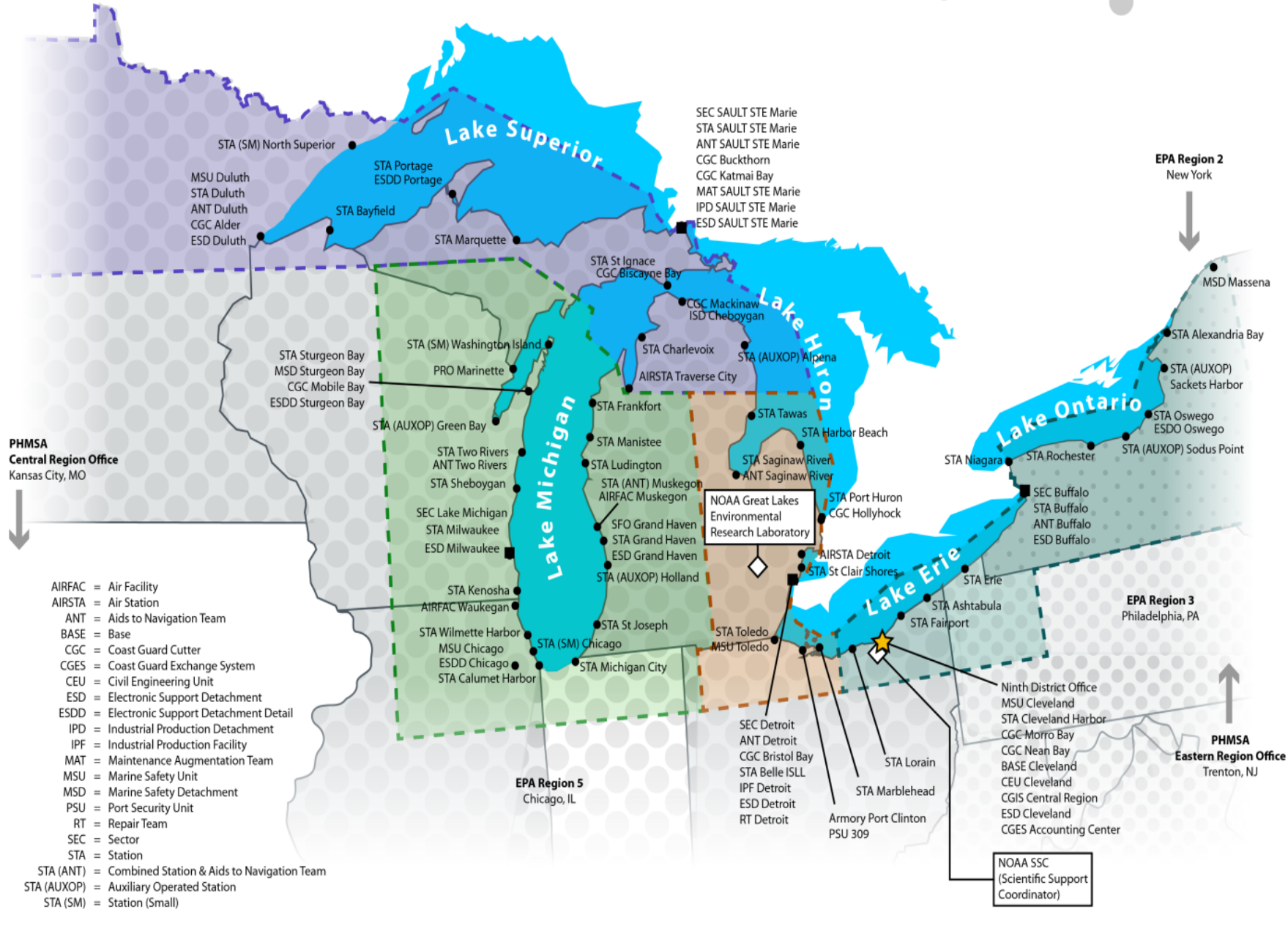
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# Desired Outcomes



- How Coast Guard Great Lakes District is using ROV-LC and underwater sensing during spill responses
- What technology we are currently using
- Lessons learned from previous spill responses
- Future opportunities

■ Sector Sault Ste Marie  
 ■ Sector Lake Michigan  
 ■ Sector Detroit  
 ■ Sector Buffalo  
 ● EPA Region 2  
 ● EPA Region 3  
 ● EPA Region 5



# Overview of USCG Great Lakes Spill Response

- 268 marine environmental responses, coastal zone, in fiscal year 2025 (99% were “minor” case category)
- Underwater ROV-LC technology and sensing used in 2-3% of cases over the past three fiscal years

# Great Lakes District ROV-LC Background



- ROVs are not new – *but putting them in the hands of the first responders on scene in a systematic way is*
- Great Lakes District is the only USCG region currently operating ROV-LC as a program for spill response
- Funded by GLCOE
- Program established in 2021, 2022 first year of operations
- 11 total ROV-LC currently in inventory (10 DTG-3, 1 Photon)

# Deep Trekker DTG-3



- Rated for 600' depth (comes with 225' tether)
- Standard high-definition camera
- Auxiliary lighting
- Battery life of approximately 8 hours
- Operating temps between 14-122 degrees Fahrenheit
- *Recently retrofitted with precision thrusters, sonar and grab claws*

# Operational Use of ROV-LC

## Areas Inspected By ROV:

- Breakwall Zone 5
- Zone 4 (Marina)
- Zones 5 & 6 (Pier)
- Zones 7 & 8 (CG Basin)



- #1 benefit: responders can use ROV-LC in missions where an ROV would not have previously been available
- Example: 2022 major oil spill at legacy power plant, Oswego, New York on Lake Ontario with sunken oil
- ROV-LC used to establish and confirm extent of spill trajectory (visual HD camera only)

# Operational Use of ROV-LC: Other Cases



- Damage assessment/spill evaluation of sunken USN vessel
- Initial investigation on mystery drum
- Investigation of subsurface vessel marine casualty causing medium spill, under ice-covered harbor
- Multiple investigations of marine casualties (grounded commercial vessels) for detecting potential releases
- Multiple agency assists

# ROV-LC Training



- Contractor-provided training
- On-the-job training at unit
- Completion of PQS
- Safety policies include two-person teams (operator, tender), life jacket wear & contingency procedures
- Use of Coast Guard risk assessment frameworks



# Lessons Learned - Positive

<b>Benefits</b>
Expedited initial assessments: much faster than awaiting ROV from distant sources
Safer than deploying human divers
Enhanced situational awareness – sub-surface ability possible for incidents that historically were not
Quickly-obtained imagery
Low cost
Portability
Potential to take or recover samples

# Lessons Learned - Challenges



## Challenges

Operation in low-visibility waters with only camera causes limited utility (new sonars help)

Decontamination after operating in oiled waters

Limited ability for precision station keeping where strong currents exist

Limited options for additional sensors and ancillary equipment

Data transfer to Coast Guard Network

Entanglement hazards

Training – our personnel are not professional ROV operators

# Lessons Learned - Challenges



- Decontamination!

# Opportunities



- Recently procured more-capable Photon model from Deep Trekker for testing and evaluation
- Additional thrusters provide significantly better station keeping
- Addition of sonar and grab claw provide additional capability
- Seeking additional subsurface sensing testing and evaluation

# Questions?

