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# Intervention Solutions

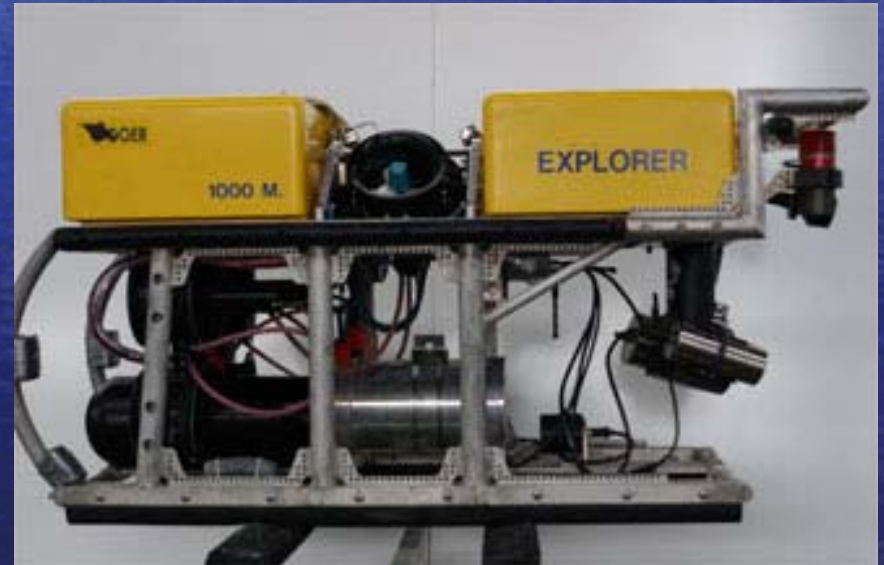
DOER Marine has the right tools to respond to underwater emergencies. These include:

- Submersible Rescue
- Search & Recovery
- Oil Spill Response
- Port & Harbor Security
- Accident Investigation
- Surveillance
- Ordinance Detection



# Submersible Rescue

The tragic Kursk disaster and recent rescue of a Soviet mini sub point to the need for readily deployable equipment in strategic locations. In sub rescue, response equipment may be days away when hours are precious. DOER Ocean Explorer is a capable, transportable ROV with many work class features. It can be rapidly deployed from ships of opportunity.



# Search and Recovery

DOER has responded to search and recovery efforts involving military and civilian aircraft, sunken vessels, towed arrays, and drowning victims, both in open water and through ice/confined space conditions. Custom tools and recovery packs have been developed to facilitate cutting and rigging from both remotely operated vehicles and manned submersibles.



# Oil Spill Response

Oil spills are another event calling for rapid response. Not all spills are tanker related, many come from older wrecks or even submerged seeps. DOER has responded to spill sites in the Galapagos Islands, Glacier National Park, National Marine Sanctuaries and sites off the coast of San Francisco with both manned and robotic vehicles. Timely assessment is key to implementing damage control, especially in fragile marine environments.



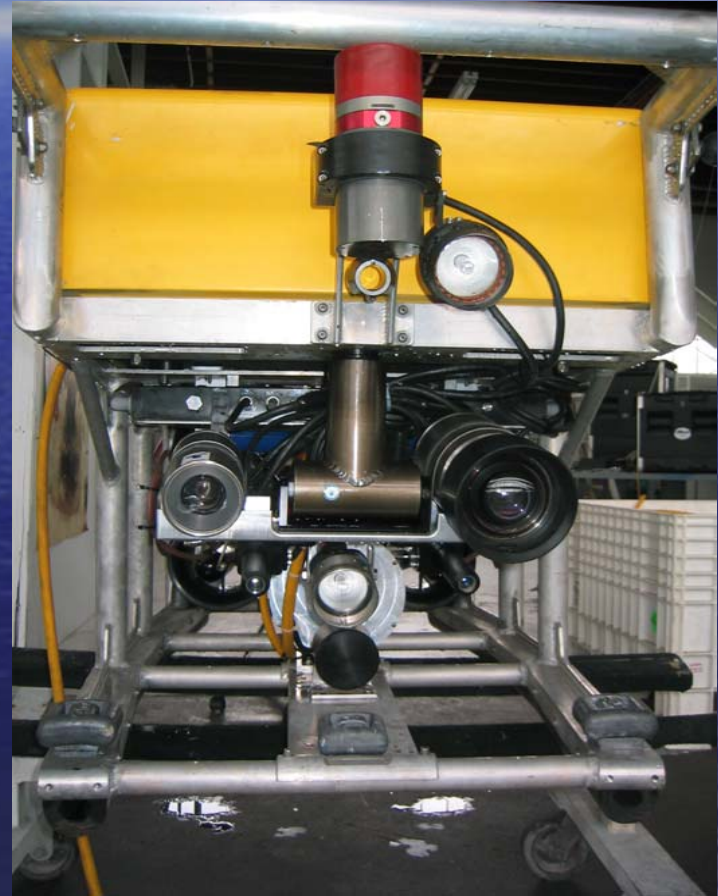
# Port & Harbor Security

DOER Ocean Explorer provides the basic modular architecture for related, specialized vehicles ROSIE and SUSHI.

ROSIE, Remotely Operated Sensor Intensive Equipment, easily carries DIDSON sonar with power to operate and maneuver, even in currents.

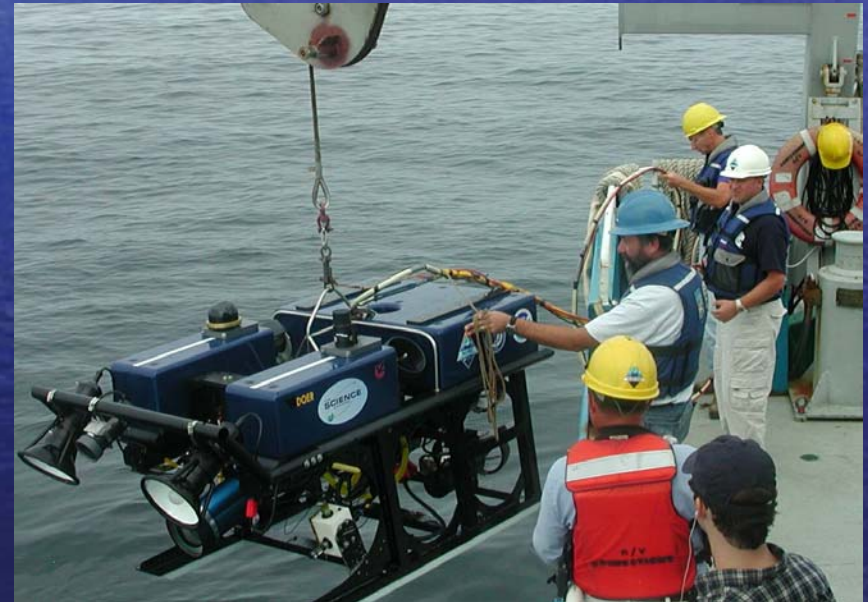
SUSHI, Submersible Ship Hull Inspector provides rapid visual assessment in a very compact package.

Ocean Explorer and ROSIE share a common control system.



# Accident Investigation

Accident investigation is especially well suited to ROV intervention. Unknown hazards may exist, especially with shipwrecks and downed aircraft. DOER Spectre and Ocean Explorer can carry a variety of sensors and tool skids/manipulators, permitting thorough investigation and digital documentation. Ocean Explorer's on board Ethernet allows for off site experts to watch near real time video via the internet.



# Surveillance & Detection

The ability to carry a suite of sensors and hold station are key to underwater surveillance tasks. These tasks include drug enforcement, security, military, and fisheries enforcement. Both Ocean Explorer and the smaller ROSIE are well suited to these tasks and can be equipped with HMI lamps that can be used to startle or disorient. A variable buoyancy system for retrieving or depositing payloads is another option.



# Ordinance Detection

- **Around the world there are many sites where old and unstable ordinance lies submerged awaiting remediation. Incidents also occur due to accidents or other unfortunate events where modern ordinance ends up in waters unsafe for or beyond diver depths.**
- **DOER ROV systems have both the depth rating and stand off capacity to access these sites in as safe a manner as possible.**
- **Our Modular ROV architecture supports special tools, clamps, cutters, sediment/sand blowers and pumps, recovery spools, and manipulators that have been successfully used to retrieve items or to safely deliver neutralizing devices.**
- **Deep Machine, D O E R's custom engineering and machine shop, can quickly prototype and fabricate one off pieces for time critical jobs.**
- **No need for photos here, just the desire and ability to get the job done.**

# Collateral Benefits

- **Having the right tools in the right places not only permits rapid response to emergencies but can also benefit science.**
- **The oceans remain poorly understood and science funding is limited.**
- **By pre-positioning assets in key locations, both scientists and emergency responders can accomplish work to benefit all that reside on this ocean planet.**

