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Specialized foam takes on new role in Gulf cleanup

A polyolefin foam used in the medical and construction fields has taken on a new role as a powerful tool in BP's Gulf response efforts to remove oil from the water, shorelines, and marshes. The foam, called Opflex, allows water to flow through, but attracts and traps oil. It can be made in various shapes, including in pads to mop up oil from coastal marshes and in sausage-like rolls for deployment as offshore booms.

Scott Smith, chief executive officer of Collect Plastics, the maker of Opflex, sees great potential for the product in oil cleanup and other water treatment applications that go beyond its original uses in the medical and construction fields.

"The advantage of Opflex is that it's buoyant open-cell foam that repels water while absorbing oil," says Smith. "It is 70% lighter than conventional booms, costs a fraction of conventional material, is biodegradable, and is highly efficient — absorbing 60 pounds of oil with a 12-foot boom."

"It's better than good," says Larry Hooper, who formerly served as captain of a charter fishing boat and now is providing BP with logistics support. "I've used it out in the ocean and the old-type booms can't come close to matching its performance."

Ken Rice has used Opflex-based pads in cleanup operations in the North Pass marshes of South Louisiana. "People love it once they get their hands on it," he says.

Another key feature is reusability. "Unlike conventional pads, which are considered hazardous waste after absorbing oil and must be disposed of in accordance with various government regulations, Opflex can be reused up to 100 times," says David Kinnaird, who led the first BP response team to evaluate the material.

Various methods for extracting the oil from the foam include using centrifuges or wringers similar to those on old-fashioned washing machines. After Opflex has collected the oil, the foam can be wrung out into a suitable container.

BP – Gulf Update - Continued

Early in the Gulf response, Kinnaird was impressed by a product demonstration of Opflex and contacted Lou Weltzer, who was stationed in the Critical Resources Unit in New Orleans with responsibility for evaluating cleanup materials. After receiving his own product demonstration, Weltzer placed an order for a truckload of the material. Subsequent orders from BP total about two million square feet. Weltzer also began contacting associates at other locations to spread awareness of Opflex's capabilities. Since the experience with BP, Smith has received an order from the Chinese government to assist in the Dalian Oil Port cleanup, as well as a range of other cleanup operations throughout the country, which continues to solidify Opflex's role as a new and effective method for oil spill cleanup.



USA Today Article 2010 – Business Section Cover



After BP oil spill, thousands of ideas poured in for cleanup

Updated 11/15/2010 3:25 PM

By [Julie Schmit](#), USA TODAY



Scott Smith of Collect Technologies shows his oil-absorbing Opflex foam.

Smith's company, the Massachusetts-based Collect Technologies, makes a foam, Opflex, that repels water but absorbs oil. Previously used in the medical, construction and other fields, Smith brought it to the Gulf and "spent days living with fishermen" trying to get his foam into the water.

All sorbent-boom manufacturers claim that their products repel water. But sooner or later, they don't, Kinnaird says. BP's tests found that Opflex went weeks without absorbing water. When oiled, it could be wrung out and reused. It's also biodegradable, Kinnaird says. Traditional absorbent boom often ends up in landfills as hazardous waste.

"This was completely different from anything I'd seen," Kinnaird says. Through the spill, BP bought 2 million square feet of Opflex, which can be in pads, pompoms and sausage-like boom. Overall, more than 11 million feet of boom was deployed in the spill.

The best ideas

Most often, the best new ideas identified by BP came from entrepreneurs like Smith — not conglomerates.

A WORD FROM BP

From: David Kinnaird [REDACTED]

Date: Fri, 10 Dec 2010 07:16:38 -0600

To: Scott Smith [REDACTED] >>

Subject: RE: question

Mr. Smith.

With respect to your question, I respond as follows:

We had light sheening in 4 port and stbd ballast tanks on the t/b Valiant. In lieu of cleaning the tanks, we placed Oplex snares and pom poms in the tank to absorb the oil therein. I am delighted to say that it worked extremely well. We cycled clean Oplex through the tanks twice and after thesecond application, no oil or sheening was observed. The tanks were sufficiently cleaned to pass a US Coast Guard Stage 111 Inspection for Decon. I might add that the USCG is particularly sensitive to ballast tanks, for obvious reasons, so it is particularly significant that this worked so well because it alleviated the need to go in and clean by hand.

Sincerely,

Dave Kinnaird

BP Site Leader

Lake Charles, La.

TFN: [REDACTED]

MOB: [REDACTED]



Alternative Response Technology API Study-Progressing Learnings

Michael J. Cortez
BP America-Oil Spill Technology Manager
RRT-3 Presentation- November 6, 2013

List of Recommended Items (Successes)



• Offshore

- Laser Fluorometer Submerged Oil Detection (Oscar)
- Coda Octopus for Submerged Oil Detection
- Big Gulp Skimmer

• Near Shore

- Tarball Net and Test Net
- V2 Vyper Platform for Marsh and Shallow Water Skimming
- Parachute Surf Skimmer
- Helicopter Boom Removal
- Yates Boom Cleaner
- Boom Blaster (Boom Cleaning Machine)
- Opflex Buoyant Open-cell Foam
- Low Pressure Marsh Flusher
- Amphibious Tool Carrier (Truxor DM 5000)
- Water Curtain (DO2E Wastewater Treatment)
- Oil/Water Separation: Ocean Therapy Solutions
- Bio Based Absorbent (Nature's Broom) – oil cleaning on beach/marshes
- Bio Based Absorbent (Nature's Broom) – decon/cleaning procedures
- Heavy Oil Skimming System (HOSS)
- Silt Barrier Fence (X-Tex®)
- Eco-Barrier Trinity Fence
- RAT (Rapid Attack Tactic) for Skimming

• Onshore

- Bio Energy Gasifier
- Green Earth Sand Cleaner
- Petromax Sand Wash
- M-I SWACO Sand Cleaning
- STS-101 Solids Washing
- Eco-Oil Vortex (Beach Sand Washer)
- Gravely Sand Cleaner
- Ergonomic Beach Cleaning Tool (EZ-Zacks)
- Sand Shark 3000 LeeBoy for Beach Cleaning
- Ozzies OPP-200 for Beach Cleaning
- Beach Tech 2000 & 3000 for Beach Cleaning
- Cherrington 4600 & 5000 for Beach Cleaning
- RECOVERIT from GOLF Energy Service
- Clean Beach Technologies, Inc (Beach Restoration System™)
- Chemstation Degreaser
- Biomass Based Sorbent (Show Me Energy)
- Field Analytical Methods (SiteLab Corporation)
- REUSE recycling

Captain Frank M. Paskewich USCG (Ret.) – Expert Report Sep 2014

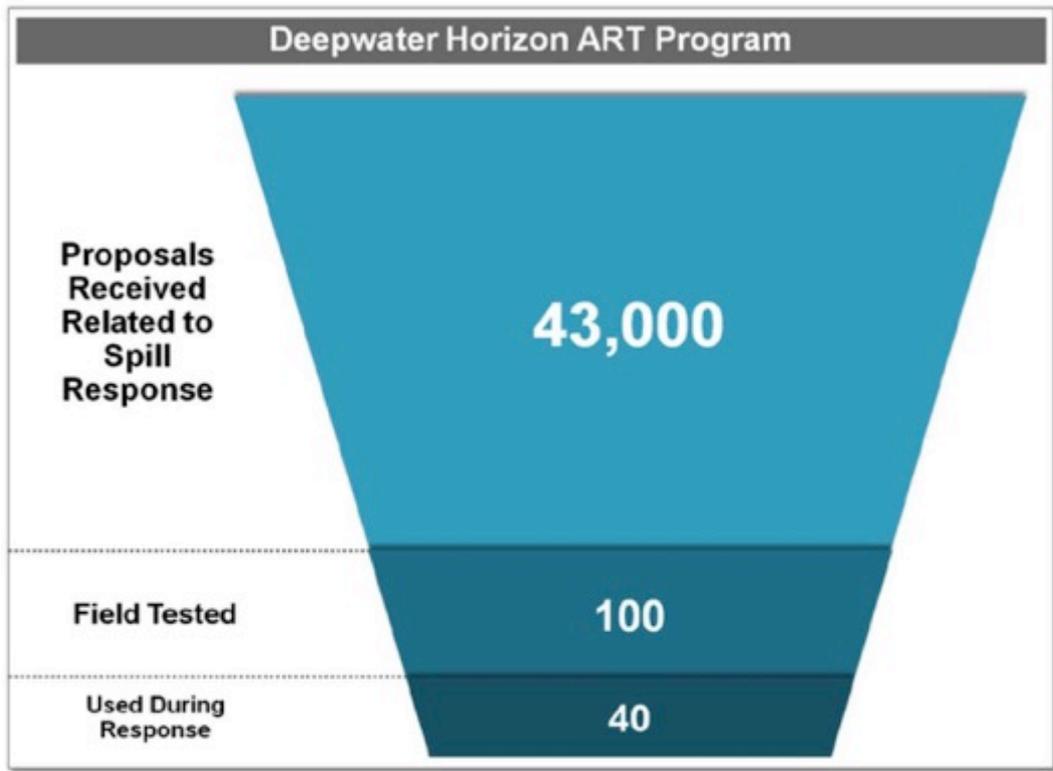


Figure 2: *Deepwater Horizon* ART Program By the Numbers

The Unified Command implemented spill response technologies identified through the ART Program for use in off-shore, near shore and shoreline operations during the Response, as summarized below.

Captain Frank M. Paskewich USCG (Ret.) – Expert Report Sep 2014

Alternative Response Technology Innovations

<p>Offshore</p>	<ul style="list-style-type: none"> • Laser Fluorometer Submerged Oil Detection • Coda Octopus 3D Sonar • Side Scan Sonar • Acoustic Doppler Current Profiler • Big Gulp Skimmer • Wave Glider 	 <p>Coda and EIC Oscar</p>	 <p>Big Gulp Skimmer</p>
<p>Near Shore</p>	<ul style="list-style-type: none"> • Tar Ball Net • V2 Vyper Platform • Parachute Surf Skimmer • Helicopter Boom Removal • Yates Boom Cleaner • Boom Blaster • Opflex Buoyant Open-Cell Foam • Water Curtain • Low-Pressure Marsh Flusher • Truxor Amphibious Tool Carrier • Oil/Water Separation • "HOSS" Heavy Oil Skimming System • X-Tex Silt Barrier Fence and Eco-Barrier Fence 	 <p>Boom Blaster</p>	 <p>Water Curtain</p>
<p>Onshore</p>	<ul style="list-style-type: none"> • Reflectance Spectrometer • Bio Energy Gasifier • Booms to Bumpers • Soft Boom Recycling • Tar Balls to Asphalt • Green Earth Sand Cleaner • Petromax Sand Wash • M-I SWACO Sand Cleaning • STS-101 Solids Washing • Vortex Beach Sand Washer • Big Green Sand Machine • Gravely Sand Cleaner and Barber Sand Man • EZ-Zacks Ergonomic Beach Cleaning Tool • Sand Shark • Ozzies OPP-200 • Beach Tech 2000, 2800 & 3000 for Beach Cleaning • Cherrington 4600 & 5000 for Beach Cleaning • RECOVERIT • Beach Restoration System • ChemStation "7248" Degreaser 	 <p>Sand Shark</p>	 <p>HOSS</p>
		 <p>Contaminated Beach</p>	 <p>Sand Shark Cleaned Beach</p>





After BP oil spill, thousands of ideas poured in for cleanup

Updated 11/15/2010 3:25 PM

By **Julie Schmit**, USA TODAY



Scott Smith of Collect Technologies shows his oil-absorbing Opflex foam.

HOUSTON — As oil spewed from the BP well in the [Gulf of Mexico](#) last summer, so did ideas on how to stop it and clean it up.

BP received about 123,000 ideas, 80,000 of which had to do with plugging the leak and 43,000 on ways to clean up the oil. The ideas came in crayon from 9-year-old boys, in shaky handwriting from 90-year-old men and from scientists, inventors and engineers — even actor [Kevin Costner](#).

Most of the ideas weren't workable: freeze the well into submission or bury it in a nuclear explosion. Many of the ideas had already been tried or discarded. Some of the ideas would've created other problems: dump popcorn from airplanes to soak up oil but create a tasty toxic treat for marine life.

FORMER CEO: [BP was unprepared for Gulf oil spill](#)

OIL CLEANUP: It's not over in Louisiana

But more than 100 ideas were good enough to be tested, and more than two dozen were deployed to help clean up the oil. While there were no magic bullets buried in the entrepreneurial surge, there were improvements to existing cleanup technologies. They'll improve the industry's ability to respond to future spills, given new skimmers to scoop oil, new boom to sop it up, new equipment to clean beaches and other technologies, BP and others say.

"If there's anything good to come out of this spill, that'll be it," says Hunter Rowe, a BP senior manager who has worked since May on vetting the submissions. "We were hoping for the breakthrough, the silver bullet. None came," Rowe says. Instead, people made "incremental improvements," he says.

That's typical for the oil spill response industry, which has long been starved for research funding. Federal funding for oil spill response research was cut in half between 1993 and 2008, falling to \$7.7 million in fiscal year 2008, data from the Congressional Research Service show. That occurred despite calls for more research after the [Exxon Valdez spill](#) in 1989 — the most notorious U. S. oil spill before BP's.

"We were still using the same techniques on the BP spill as we did with the Exxon Valdez," says Bob Deans of the [Natural Resources Defense Council](#). "That's what angered people."

Douglas Helton of the [National Oceanic and](#)

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Atmospheric Administration testified at a congressional hearing last year that oil spill research in the private and public sectors had declined, in part, because larger spills had become less frequent.

As a result, there's little incentive for companies to invest in potentially expensive products that serve as the equivalent of a "seat belt," Costner testified at a congressional hearing in June. He invested \$20 million in an oil-water separator that grabbed his attention after the Exxon Valdez spill. BP leased 32 of the machines, but only after the spill and after facing a firestorm of public scorn.

"In the past, the whole effort for the oil companies centered ... (on) preventing a spill," says **Bruce Bullock**, director of the Maguire Energy Institute in Dallas. "Hopefully, this event has changed that, and companies will think about prevention, containment and cleanup."

The ideas came to BP from more than 100 countries. At the peak, about 4,000 a day poured in via e-mail, websites, BP's call-in center and even command posts set up amid Louisiana's marshes and Florida's beaches.

"I had 50 nutcases a day walk through the door," says David Kinnaird, a BP project manager who helped coordinate BP's response from a Louisiana command center.

But Kinnaird saw something workable from Scott Smith, who marched into the command center as the spill unfolded.

Smith's company, the Massachusetts-based Collect Technologies, makes a foam, Opflex, that repels water but absorbs oil. Previously used in the medical, construction and other fields, Smith brought it to the Gulf and "spent days living with fishermen" trying to get his foam into the water.

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Greg Huntsman and Tim Pedigo, two Missouri real estate developers, had spent 18 months "sitting on our hands," Huntsman says, as their business withered with the recession. Then the oil started spewing, and a global nightmare — and moment of opportunity — arose.

Pedigo called a distant relative (his nephew's wife's dad) who sold boom to sop up oil. The partners headed to the Gulf "following the money," Huntsman says.

After watching cleanup crews spray oil off boom stacked on slippery wooden pallets, Pedigo thought: "I can automate this."

He sketched the design for the Boom Blaster, a car-wash-like contraption to clean boom, a task typically done by hand with hoses. Two childhood buddies, who own a car wash manufacturing plant in Missouri, built it.

The blaster cleaned six times as much boom per person than if the work were done by hand, BP says. "It was kind of a cocktail napkin sketch," Pedigo says.

Lee Dragna, 37, sketched his idea for a supersize skimmer, The Big Gulp, while in a **La-Z-Boy** recliner

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watching TV. "I kept thinking, 'It can't be this easy,'" says Dragna, who's president of barge builder Lad Services in Morgan City, La.

Dragna attached skimmers to the front of a barge to suck in oil and water. He tested a prototype in his pool. BP says the football-field-size skimmer collected 10 times more oil a day than many smaller and conventional skimmers.

The inspiration for The Big Gulp? Dragna's 10-year-old son, Andrea. He was miffed because he couldn't fish because of the spill. "He said, 'Dad, you can fix anything. You can fix this. Just try,'" Dragna says.

Other entrepreneurs likewise played off their strengths.

Mike Halloran, 46, who sold lawn-mowing equipment in Chicago, watched the spill on TV and recalled a contraption used to clean beaches in Spain. He tracked down the device and hit the road for the Gulf, planning to attach it to a two-wheel, self-propelled tractor made by lawn-mower company Gravely.

"We can have a snow blower on the front one day, clean a parking lot with a sweeper the next and then clean tar balls off the beach," Halloran says.

The beach cleaner lifts the sand and shakes it. Clean sand falls to the beach through a screen. A hopper traps bigger tar balls. The machine cleans a half-acre beach in 60 minutes vs. four hours for a 10-person crew with shovels and bags — the most-often-used beach-cleaning method, Halloran says. BP put 10 of the machines to work and found it good for use in small areas.

For many of the entrepreneurs, patience was a must. The Massachusetts-based MicroSorb Environmental Solutions, which makes what it says is a safe, hydrocarbon-eating microbe, reached out to BP in April, shortly after the spill began, to get its product into the Gulf. Last month, BP began the first tests on some of the 200 microbe proposals it received, Rowe says.

"We said three months ago that (microbes) should be tested," says Billy Nungesser, the president of P laquemines Parish, La., and a frequent BP critic. "We're a day late and a dollar short," Nungesser says.

Most people, after submitting ideas to BP, waited weeks or months just to get a rejection.

"In June, we couldn't keep up," says Michael Cortez, who also works on BP's technologies team and who, like Rowe, is a BP retiree who returned to help with the spill. By July, BP had 100 people working on the ideas.

The one that stopped the flow of oil was a cap that was placed over the well in July. That solution originated from BP engineers, the company says. But hundreds, if not thousands, of similar ideas came from the public, Rowe says.

Despite the chaos, "We didn't miss anything great," Rowe says.

Others aren't so sure. InnoCentive, an Internet-based network that links scientists, engineers and others around the world, put out a call for solutions, too. It got more than 2,500 submissions. BP never tapped the resource, saying there were too many legal issues, says InnoCentive CEO Dwayne Spradlin.

"The notion that we weren't using all the tools we had is incredible to me," Spradlin says. "The world deserves better."

Get rich quick?

No one is likely to get rich from any of their new products. BP has spent \$11 billion on spill response so far. But because bigger spills are rare, there's only so much of a market for new products. Finding customers beyond BP has been tough, the entrepreneurs say.

From the Gulf, Smith took Opflex to China and

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demonstrated it for government officials after an oil pipeline blast there. He hopes to sell Opflex to spill response contractors in the U.S., too. But he fears they won't buy it because they may make more money deploying traditional boom. "They don't necessarily want to see a product that's reusable," Smith says.

The Boom Blaster was packed up and returned to Missouri. The partners are chasing oil producers in Brazil, oil spill response firms and the U.S. Coast Guard, which often deals with boom, Huntsman says.

Dragna says he's recouped his more than \$1 million investment in The Big Gulp from contracts with BP. But he's yet to find another customer. One oil spill response contractor told Dragna the barges were too pricey to have on standby, Dragna says.

He hopes to entice oil companies to together pay a standby fee. In July, several oil companies led by ExxonMobil did something similar when they pledged \$1 billion to build a system, deployable within 24 hours, to seal a blown deep-water well.

The Obama administration has asked for an increase of \$8.6 million for fiscal 2011 for oil spill research funding. That's on top of \$6.3 million for fiscal year 2010. Congress has not yet acted on the request. Also, federal legislation has been proposed to require agencies to establish processes to evaluate and deploy cleanup technologies. But only one of the bills specifies funding — and at not more than \$5 million a year.

For now, BP says it'll continue to test and develop the ideas it collected. The team has shrunk to 14. Along with the 100 tested ideas, BP says an additional 400 submissions need further evaluation but that some may be feasible.

Leaders in the industry fear progress will stall once major spills fade from the news.

"There will be a strong focus for some years ... but in the absence of a significant (spill) for an extended period, apathy will fall in place," says Jim O'Brien, founder of O'Brien's Response Management, BP's top management contractor for the spill.

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