

Incidents highlight spill response challenges in Cook Inlet

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Thankfully, the Anna platform oil spill was not worse.

Hilcorp Alaska LLC, which owns the west Cook Inlet production platform and reported the spill from a pipeline April 1, estimates less than three gallons of oil made it into the water.

While some experts have said Hilcorp's guess is a little premature, Cook Inlet Spill Response Inc. General Manager Todd Paxton said his organization's responders did not find any oil to recover after the oil sheen was first spotted April 1.

Hilcorp said the initial sheen was about 10 feet by 12 feet and now can't be found, with the assumption it has been dispersed. But what if it had been larger?

The ice floes common in the Inlet during winter months have prevented Hilcorp from investigating and repairing a separate subsea natural gas pipeline leak for nearly two months and are similarly delaying work on the breached Anna platform oil line.

It's simply unsafe to put divers in the water amongst the large pans of ice that are drifting through the area.

How would that ice impact response capabilities if hundreds or thousands of barrels of oil — 42 gallons each — made it into Cook Inlet waters?

First, it's important to note the differences in the most recent events.

As evidenced by the Anna leak, a ruptured oil line can usually be flushed and shut in quickly after a rupture is detected to minimize the amount of oil spilled.

The gasoline leak continues to bubble at the surface because Hilcorp is worried complete shutdown and depressurization the line could allow residual oil left over from the line's days as a crude carrier to be released.

However, if it were a large spill of a different nature, the operating company likely would not have the same ability to contain the volume of spilled oil.

Hilcorp's Oil Discharge Prevention and Contingency Plan for its Cook Inlet production facilities contemplates such scenarios. The 371-page document details a number of hypothetical oil spill scenarios at different times of the year.

The Alaska Department of Environmental Conservation requires spill prevention and contingency plans for oil producers as well as companies with oil and fuel storage across the state. There are 110 such plans published on DEC's website, including some for shoreside-based seafood processing plants that use and store large quantities of diesel fuel.

What ifs

Specifically to winter, Hilcorp's Inlet plan breaks down the plan to respond to a 75,000-barrel, mid-December oil well blowout on its King Salmon platform in Trading Bay, across the Inlet from Nikiski. It forecasts 30 percent to 50 percent ice coverage.

It is expected the prevailing east wind and tidal currents would mostly carry the oil to the south and west of the platform.

For a rough comparison, the Exxon Valdez spilled about 257,000 barrels of oil, or 10.8 million gallons.

Within an hour of the blowout occurring — or at first available light — crews would begin surveying the extent and exact trajectory of the oil spill. Within eight hours, Cook Inlet Spill Prevention and Response Inc., commonly known as CISPRI, would deploy its electronic spill tracking system.

CISPRI is a member-funded organization responsible for Inlet spill response on behalf of its member companies, which include Hilcorp, ConocoPhillips, BlueCrest, Tesoro, Furie Operating Alaska, Glacier Oil and Gas and Delta Western, a wholesale fuel supplier.

The Municipality of Anchorage, Kenai Peninsula Borough, U.S. Coast Guard, DEC and the Cook Inlet Regional Citizens Advisory Council are also members of CISPRI.

The spill tracking system includes small GPS-trackable buoys that are set in the oil slick to better monitor its movement.

CISPRI also has infrared cameras mounted on two of its vessels to continuously monitor oil movement.

Once the scope of the slick is determined, CISPRI would deploy multiple oil skimmers from its response vessels.

The skimmers are mechanical devices that essentially mop up oil-contaminated surface water. They are also the primary prescribed means of recovering oil spilled amongst ice that mostly prevents the use of booms to contain the sheen.

The basic techniques of recovering offshore oil spills don't change much with the varying types of spills, and Cook Inlet's loose ice doesn't pose as much of a challenge as one might think, CISPRI's Paxton said.

"Primarily, it's as simple as creating a lee with the boat, or a hole in the ice with the boat and utilizing the ice as an effective type of boom to hold the oil in place and we put a skimmer in the hole and skim from that hole," he said.

"We've done tests to include debris and however you want to look at it, ice in that situation is debris and our skimmers were unaffected by it, so I really don't see it as much of an issue."

That technique could be used in several places at once.

The oil could also be eliminated with in-situ burning, or igniting the surface oil where it concentrates in open pockets of ice.

"The oil in that situation hydrostatically comes to the surface easier; meaning that the weight of the ice pushes down on the water and just the force of that — the oil in that case would find path of least resistance (to the surface) and finding a hole in the ice per se would be the least resistance, so oil would come to you as a function of that," Paxton explained.

The final percent of oil that is recoverable amongst Inlet ice should be comparable to open water conditions, according to Paxton.

The techniques are tested regularly but, again thankfully, have never been employed.

Locating the oil amongst the ice would likely be the biggest obstacle responders would face, Paxton acknowledged, making the aforementioned dispersal projections and tracking tactics all the more important.

CISPRI could also position vessels and skimmers at the southern edge of the heaviest ice as it slowly moves out of the Inlet to the open ocean and attack the oil there with more traditional open water techniques, he said.

Ultimately, CISPRI is mandated to be able to recover at least 50,000 barrels of oil in 72 hours, and Paxton said he is confident the \$40 million worth of equipment, including a fleet of 10 vessels and more barges, and the 34 employees solely dedicated to that task can get the job done, ice or not.

Concerns remain

Others focused on first preventing and then cleaning up an Inlet oil spill aren't quite as confident. That's not to imply they question CISPRI's experience and expertise, but rather a nod to the unique environment that is Cook Inlet.

“Recovery of oil in ice is extremely difficult. Cook Inlet in itself is arguably the most difficult body of water in North America to recover oil during a spill, ice or not, and ice just compounds that issue,” said Mike Munger, executive director of the Cook Inlet Regional Citizens Advisory Council, or CIRCAC. “It’s not only difficult with the ice conditions but the dynamic nature of the significant tidal currents combined with the ice makes it extremely, extremely difficult.”

There is very limited ability to skim the oil sheen amongst ice because the openings in the ice pans are often just small compared to the overall size of the ice floes, according to Munger.

He also commended CISPRI for their quick response to the recent oil leak and for their general work history.

The council has supported in-situ burning, particularly in a situation where the oil is entrained in ice, but the technique isn’t always applicable, Munger said.

“It’s just a tough body of water to recover oil in any time of year and it’s compounded exponentially when there’s ice out there,” he reiterated.

The underlying issue is the fact that the water the ice is drifting in can move the ice — and along with it the oil — several miles north and south twice each day. The strongest outgoing Cook Inlet tidal currents exceed five knots.

DEC Spill Prevention and Response Manager Graham Wood said the department, with private support, is prepared to respond to any kind of spill if the need arises, but acknowledged ice is major factor to account for.

“I’m not saying it’s impossible to pick up oil in broken ice; it’s certainly more challenging,” he said.

Truly and accurately testing the effectiveness of some other recovery methods can be challenging for Alaska operators and DEC because regulations prohibit using crude for tests, which can be done some places internationally.

Also, the department’s recovery expectations are set with “realistic operating limitations” in mind, Wood added. Those limitations are environmental factors like sea state, fog, tides and ice.

With all that in mind, the cliché applies: the best spill is no spill, and that’s what Munger and Wood are focused on.

Prevention, inspections

Wood said DEC has conducted flow line audits across the North Slope and Cook Inlet to ensure companies are complying with their internal inspection programs.

The state's flow line regulations were updated in 2007 following above ground leaks at BP North Slope facilities to tighten flow line inspections. BP had to shut in Prudhoe Bay while replacing 16 miles of feeder pipelines to the Trans-Alaska Pipeline System.

Subsea flow lines are not required to have leak detection systems, but they do have cathodic corrosion prevention and other protective coatings.

For typically larger subsea transmission pipelines carrying sale-ready crude, companies must be able to detect a leak of 1 percent or more of the lines daily throughput.

Back on the surface, Munger said CIRCAC has helped install ice cameras all over the Inlet — at the Anchorage and Point MacKenzie ports, the tanker dock in Nikiski, on platforms and other places — to give National Oceanic and Atmospheric Administration forecasters better real-time data.

The FAA has also established a similar network of weather cameras at airports and other high-traffic or high-risk parts of Alaska, a program local FAA officials are preparing to take nationwide.

Before the ice cameras NOAA forecasters relied on satellite images, which intuitively are useless when there is cloud cover or during Alaska's countless dark winter hours.

Better condition information makes the Inlet tanker activity, which includes the large amounts of jet fuel and other refined products into the Port of Anchorage, a little safer yet, Munger noted.

On Cook Inlet's oil and gas infrastructure, he said, its age and monitoring its integrity is what he wants the council to focus on.

"This industry was put in place in the mid-60's and so given the dynamics in Cook Inlet, and again arguably the most dynamic body of water in North America, I go back to what we have to do now is ensure that the infrastructure is as solid as it should be," Munger said.

The state and federal governments need to conduct a blanket inspection of the pipelines in the Inlet, he added.

"I believe that we're really overdue for a complete pipeline risk assessment for the subsea lines in Cook Inlet," Munger concluded. "That's where I believe the focus should be going forward."

A federal agency investigating the leaking natural gas has expanded its review to a nearby oil pipeline.

In a proposed safety order issued March 17, the Pipeline and Hazardous Materials Safety Administration said the 8-inch oil pipeline owned by Hilcorp Alaska LLC is subject to the same stresses as Hilcorp's 8-inch natural gas pipeline and must be quickly inspected.

Hilcorp's leaking gasoline is an old one. The company said in a statement April 3 that the oil line was inspected less than a year ago.

Platform workers reported feeling something hit or shake the platform before the oil leak was detected, according to Hilcorp.

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