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Extensive corrosion threatens BP pipelines in Alaska, risking explosions, spills

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The extensive pipeline system that moves oil, gas and waste throughout BP's operations in Alaska is plagued by severe corrosion, according to an internal maintenance report generated four weeks ago.

The document, obtained by the journalism group ProPublica, shows that as of Oct. 1, at least 148 BP pipelines on Alaska's North Slope received an "F-rank" from the company. According to BP oil workers, that means inspections have determined that more than 80 percent of the pipe wall is corroded and could rupture. Most of those lines carry toxic or flammable substances. Many of the metal walls of the F-ranked pipes are worn to within a few thousandths of an inch of bursting, according to the document, risking an explosion or spills.

BP oil workers also say that the company's fire and gas warning systems are unreliable, that the giant turbines that pump oil and gas through the system are aging and that some oil and waste holding tanks are verging on collapse.

In an e-mail, BP Alaska spokesman Steve Rinehart said the company has "an aggressive and comprehensive pipeline inspection and maintenance program," which includes pouring millions of dollars into the system and regularly testing for safety, reliability and corrosion. He said that although an F-rank is serious, it does not necessarily mean there is a current safety risk.

Rinehart added that the company will immediately reduce the operating pressure in worrisome lines until it completes repairs. "We will not operate equipment or facilities that we believe are unsafe," he said.

Rinehart did not respond to questions about what portion of its extensive pipeline system was affected or whether 148 F-ranks were more or less than normal, except to say that the company has more than 1,600 miles of pipelines and does more than 100,000 inspections a year.

In 2006, two spills from corroded pipes in Alaska placed the company's maintenance problems in the national spotlight. At the time, BP temporarily shut down all transmission of oil from the North Slope to the continental United States, cutting off about 8 percent of the nation's oil supply, while it examined its pipeline system.

Photos taken by employees in the Prudhoe Bay drilling field this summer, and viewed by ProPublica, show sagging and rusted pipelines, some dipping in gentle U-shapes into pools of water and others sinking deeply

into thawing permafrost. Marc Kovac, a BP mechanic and welder, said that some of the pipes have hundreds of patches on them and that BP's efforts to rehabilitate the lines were not funded well enough to keep up with their rate of decline.

"They're going to run this out as far as they can without leaving one dollar on the table when they leave," Kovac said.

BP Alaska's operating budget is private, so the picture of its maintenance program is incomplete. But documents obtained by ProPublica show that BP has pumped hundreds of millions of dollars into maintenance and equipment upgrades on the North Slope since the 2006 spills. In 2007, BP's maintenance budget in Alaska was nearly $195 million, four times what it was in 2004, according to a company presentation. In 2009, $49 million was budgeted to replace and upgrade systems that detect fires and gas leaks alone.

Despite the investment, workers say that the capabilities of equipment of all types continue to be stretched and that maintenance plans set years ago remain incomplete.

BP employees told ProPublica that several of the 120 turbines used to compress gas and push it through the pipelines have been modified to run at higher stress levels and higher temperatures than they were originally designed to handle. They also said giant tanks that hold hundreds of thousands of gallons of toxic fluids and waste are sagging under the load of corrosive sediment and could collapse.

"When you make a complaint about it, rather than fix it right, they come up with another Band-Aid," said Kris Dye, a BP oil worker and United Steelworkers representative on the North Slope. "It's very frustrating."

One critical maintenance issue concerns the replacement of the warning systems used to alert workers to a gas leak that could lead to an explosion.

The need to replace the gas detectors was made a priority in 2001 in an internal BP report that said oil field technicians were "very concerned about continuing degradation of system reliability, and the ability of these systems to protect the workforce."

Nine years later, outdated systems to detect fire and leaked gas remain in place at some of BP's largest and most important plants, including the Central Power Station, several drill pads and two flow stations that route oil and gas into the pipeline system.

Many of the detection systems are obsolete - the manufacturers that made them are shuttered - so replacement parts are hard to come by, said Kovac, the mechanic. More important, the systems have to be shut down every time BP conducts maintenance on its facilities and pipelines, because the methods used to scan the equipment for flaws have been known to trigger the ultraviolet detectors that set off the fire and gas alarms.

As a result, BP technicians on the North Slope say, the detectors at some facilities are shut down nearly a third of time. When they are off-line, the company relies on what employees refer to as "human fire detectors" - a foot patrol that sniffs for flammable materials and listens for the hiss of broken pipes.

BP has been upgrading the detection systems in recent years and has installed new ones at several facilities, including the buildings that house its workers. But many important facilities remain on the list.

According to people inside BP who declined to be identified because they were not authorized to speak about company affairs, replacing all the detections systems could take nearly 20 years at the current rate of investment.

"They say, 'Yep, in the next few years we're going to upgrade all this fire and gas stuff and it's going to be more dependable,' and blah, blah, blah," said Glenn Trimmer, a BP technician who works on the Slope. "Well, after a few decades, I'm not buying it anymore. We can't even maintain the equipment that we have."

A close call in 2007 illustrates the risks presented by aging facilities with limited alarm systems. In August of that year, a giant turbine used to compress gas before it is pumped back through the company's pipelines caught fire inside BP's Gathering Center 1 after an oil hose ruptured and spewed flammable liquid across the motor. A mechanic on patrol in the facility - seeing smoke - fled the room as the turbine burst into flames. But the automatic fire and gas alarms were never triggered.

A subsequent investigation by Alaska state authorities found that a ruptured hydraulic oil hose was jury-rigged in a position that chafed against the turbine's hot engine. The probe also found that the facility's fire and gas detectors - which Kovac and Dye likened to life boats on a cruise ship - were not on at the time.

The turbine fire was potentially serious not only because no alarms were sounded but because the turbine engines operate near gas and oil pipelines that could be detonated by an uncontrolled fire. The incident was classified by BP Alaska's then-president, Doug Suttles, as a "high potential" event, and news of it was distributed around the BP organization globally as a precaution.

Yet this year, even before the enormous costs of the Gulf oil spill created an estimated $30 billion in BP liabilities, the company was eking out more "efficiencies" in its Alaska budget. It said it would maintain record high funding for new projects and major repairs while reducing its budget for regular maintenance, according to a letter that BP Alaska President John Minge sent to Congress in February. The letter said holding-tank inspections will be deferred and replacement of one pipeline will be postponed; flows through that line will be reduced "to mitigate corrosion."

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