

CO₂ Pipeline Incident Near Satartia, MS

The Incident, February 22, 2020

A landslide ruptured the 24-inch-diameter Delta Pipeline that transports carbon dioxide (CO₂) 77 miles from Jackson, MS, to Delhi, LA. In response, Denbury isolated the damaged segment by closing valves on either side of the breach; however, the CO₂ between the valves continued to vent.

Although industry-standard dispersion analysis did not predict a CO₂ release would affect the Village of Satartia, a perfect storm of factors, including temperature, humidity, light winds, topography and time of day, led the CO₂ to travel downhill and then along a gully to Satartia.



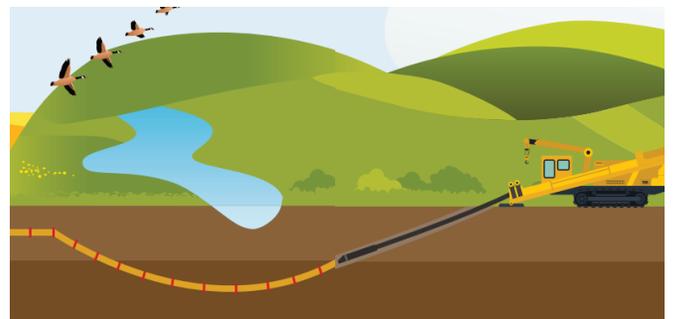
— Delta Pipeline ◆ Incident site
➔ CO₂ flowed downhill and followed a gully to Satartia

Emergency responders helped affected residents during the event. Although 45 people received medical care, none were admitted. Following the incident, third-party air monitoring experts and environmental scientists retained by Denbury confirmed safe conditions within the community and addressed their questions.

Improvements to Pipeline Operations

After the Pipeline and Hazardous Materials Safety Administration approved the restart plan, Denbury shored up the affected hillside, installed strain gauges to monitor land movement, enhanced its geohazard program by adding telemetry to monitor pipeline movement, supplemented its dispersion analysis with computational fluid dynamics (CFD) modeling and installed a new 80-foot section of pipe to replace the affected section. Denbury safely restarted operations in October 2020.

In 2024, to remove the risk to the pipeline of future land movement in the area, Denbury replaced the affected segment of the pipeline by installing it more than 80 feet below the surface by horizontal directional drilling.



Horizontal Direct Drilling allows operators to install pipelines safely below highways, water crossing or unstable terrain.

Enhancements to Community Engagement

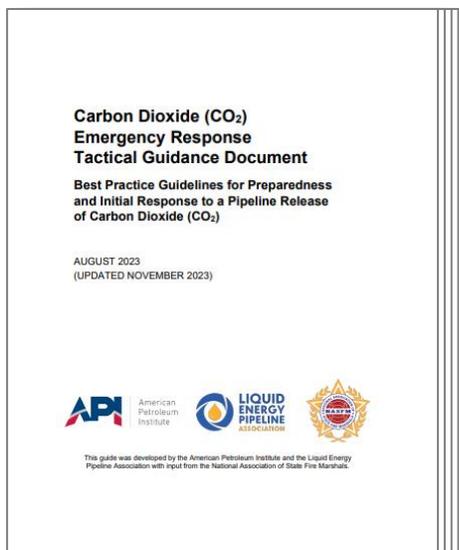
Following the incident, Denbury improved its community engagement along the entire pipeline route. Denbury met with emergency response officials and first responders in every county to reinforce familiarity with the Delta Pipeline’s operations and to increase emergency responders’ preparedness by conducting more frequent emergency drills. The company also provided grants to communities along the route to purchase monitors to detect CO₂ and telecommunications programs to alert residents about emergencies.

Enhancing CO₂ Pipeline Safety

Immediately following the late-2023 ExxonMobil-Denbury merger, ExxonMobil Pipeline Company's (EMPCo) president and Denbury leadership traveled to Satartia to meet with local leaders to reinforce their commitment to continue enhancing safety and community engagement efforts. In addition to continuing to address Satartia's concerns, the two companies have integrated their operations and pipeline integrity expertise and are working to enhance industry knowledge and emergency responder preparedness.

Increasing Industry Knowledge

EMPCo and Denbury have taken a number of actions to advance industry's knowledge of the safe operation of CO₂ pipelines. Denbury presented the findings of a post-incident investigation to an industry conference to share lessons learned regarding geohazards, CO₂ dispersion and emergency response. In addition, both EMPCo and Denbury are contributing to industry R&D efforts into enhanced integrity standards, improved dispersion modeling and better leak detection.



Developing New Emergency Response Guidelines

EMPCo and Denbury experts helped lead the development of new industry guidelines for preparing for and responding to CO₂ pipeline emergencies. These guidelines are now the standard by which the pipeline industry prepares for and addresses CO₂ emergencies.

Training Emergency Responders

EMPCo developed training specifically designed to better prepare firefighters to manage liquids pipeline and storage tank emergencies. The curriculum is based on tactical guidance from the National Association of State Fire Marshals, the American Petroleum Institute and EMPCo. The classroom training and hands-on exercises are conducted in conjunction with the Texas A&M Engineering Extension Service (TEEX) at its world renown Brayton Fire Training Field in College Station, Texas. EMPCo provides the training free-of-charge and funds nearly all of the firefighters' expenses incurred during the program.



EMPCo-sponsored CO₂ pipeline emergency response training

As soon as the CO₂ Emergency Response Tactical Guidance was finalized, EMPCo added a curriculum module focused on addressing potential CO₂ releases and conducted the first-ever, hands-on training based on the new guidelines in 2023.

Since the inception of the program, EMPCo has trained nearly 900 firefighters.

