2023 Technical Webinar Series

DRONES FOR ORPHAN WELLS: APPLYING MODERN SOLUTIONS TO A CENTURY-OLD PROBLEM

Wednesday, September 13, 2023
12:30 pm EDT

Presentation Description

Background/Objectives

Oil, brine, and methane (a potent greenhouse gas) can leak from the estimated 3 to 4 million abandoned oil and gas wells in the U.S. and Canada, including an estimated 900,000 orphan wells in the U.S. With the first oil and gas wells installed in the mid-19th century, there is often little to no documentation available and no visible indications of a well at the surface. An accurate and efficient approach to locating abandoned wells is needed to ensure wells are properly plugged and do not present a risk to people or the environment.

Approach/Activities

Parsons developed a multi-faceted, multi-sensor unmanned aerial vehicle (UAV) approach to locate abandoned well boreholes and map surface terrain data. A pilot study was conducted on a group of historically abandoned oil wells. Many of the wells detected would traditionally be difficult to locate with conventional means of ground-based magnetometry/metal detection as the casing had been harvested far below ground surface.

Results/Lessons Learned

Aerial magnetometry was demonstrated in the pilot study to be an accurate method to detect previously abandoned and unidentified well bores even when the well casing had been removed to several hundred feet bgs. Aerial Light Detection and Ranging (LiDAR) is an efficient technology to capture terrain data for use in access, permitting, and construction activities to reduce the land impacts during re-plugging and remediation activities. Together, these tools can be used to increase the efficiency of well location, reducing the time required in the field, and locating wells that otherwise may not be found

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About the Presenters



RON KRAWCZYK

Ron has 17 years of oil and gas experience with Parsons including plugging and abandonment operations of early-era wells, risk analysis, bioremediation, hydrogeological investigations, remediation systems, permitting, and contractor/safety management. Ron holds a Bachelor of Science in Mechanical Engineering from Saginaw Valley State University.



SAM KIRMIS

Sam has 5 years of experience on geophysical projects. He primarily supports military munitions response program (MMRP) sites with detection, classification, and removal of unexploded ordnance (UXO). He also has experience with drone magnetometer, ground penetrating radar, and electromagnetic surveys locating orphaned wells, subsurface utilities, and anomalies in concrete. Sam holds a Bachelor of Science in Geology from the University of Wisconsin – River Falls

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