

**U. S. DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY**

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“SEQURETM WELL FINDING TECHNOLOGIES”

Almost 12 million wells have been drilled during 150 years of oil and gas production in the United States. When abandoned, many wells were not adequately sealed and now provide a rapid conduit for the vertical movement of liquids and gases. Today, drinking water aquifers are being contaminated by surface pollutants flowing down wells or by deep, saline water diffusing upwards. Likewise, natural gas, carbon dioxide, or radon can travel upwards via these wells to endanger structures on the surface. Recently, the need to find and plug wells has become critical with the advent of carbon dioxide injection into geologic formations for enhanced oil recovery or carbon sequestration. Improperly plugged wells are the greatest threat to the success of both activities. The National Energy Technology Laboratory (NETL) has identified the most effective well finding methods from the past and, with industrial partners (Fugro Airborne Surveys, LaSen, Inc. and Apogee Scientific), has updated and deployed these technologies on helicopters so that large areas could be surveyed quickly. The improved methods, termed SEQURETM Well Finding Technologies, were evaluated at a one square mile test area within a 100-year old oilfield where SEQURETM accurately located 131 of 141 (93%TM) existing wells, including 14 wells that were previously unknown. Subsequently, SEQURETM Well Finding Technologies located more than 5000 wells in a survey of a 40-square mile oilfield, including about 1500 wells that were unknown or incorrectly located. In July 2007, a 15 square mile oilfield was flown with a flight plan and instrument payload that was optimized for locating wells with weak magnetic signatures. Greater than 96% of existing wells were detected using the new flight plan and payload. As a result of the successful demonstration and industry acceptance of SEQURETM Well Finding Technologies, it was selected for a 2007 R&D 100 award and was nominated by Anadarko Petroleum Corporation for the Interstate Oil and Gas Compact Commission (IOGCC) Chairman’s Environmental Partnership Award, which recognizes innovative projects led by non-industry organizations with the cooperation and participation of industry.