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Alpine Oil Field, Alaska: A North Slope Legacy Field and Model for Future Development

The Alpine Oil Field is located on the North Slope of Alaska. It resides approximately 60 miles west of the prolific Prudhoe Bay Oil Field and is bordered on the west by the National Petroleum Reserve—Alaska (NPR-A). Discovered in 1994 by ARCO Alaska, Inc (acquired by Phillips Petroleum in 2000), Anadarko Petroleum and Union Texas Petroleum (acquired by ARCO in 1998), the field has been a hugely successful project for the joint interest owners and has been heralded as a model for future developments in remote and environmentally sensitive areas. Current joint working interest partners in the field are ConocoPhillips, Alaska (operator with 78% WI) and Anadarko Petroleum (22% WI).

Alpine Field contains approximately 430 million barrels of recoverable reserves and serves as a facility hub for additional proven satellite accumulations totaling more than 100 million barrels of additional resource. Originally envisioned to produce at approximately 80,000 gross bopd, the field currently produces in excess of 130,000 gross bopd from the Alpine Field proper and two satellites. First production from the field was achieved in 2000 and, to date, the field has produced more than 200 million barrels of oil. More than 100 wells have been drilled in the Alpine Field proper. Wells are drilled horizontally from two 10-acre surface gravel pad drill sites. Surface facilities include onsite handling capacity for crude, gas, produced water and seawater injection in addition to office, storage and living facilities and an airstrip. Total surface area affected by the drill sites and facilities is approximately 100 acres. These facilities can access a maximum subsurface developable area of approximately 40,000 acres. Surface impact is approximately 0.2% of the developable area of the reservoir.

The primary reservoirs at Alpine Field are bioturbated shoreface sandstones within the Jurassic Kingak Formation. The sandstone reservoirs were deposited during transgressive episodes and locally filled and thickened in preexisting incised topography. Reservoirs are dominantly quartzose and glauconitic. Average

depth to the reservoir is 7000 ft SSTVD. Average porosity and permeability are 20% and 25 md, respectively. Utilization of high-resolution 3D seismic has played an integral role in field development as well as satellite exploration in the adjacent NPR-A, where ConocoPhillips and Anadarko have been actively exploring since 1999 and have announced additional Jurassic discoveries.

The field resides in the Colville River Delta, an area of important environmental, archaeological and subsistence significance.

The Alpine Field discovery and subsequent development continues to be a valuable project and proving ground for the application of new remote field development design and technology. The field is in the Colville River Delta, an area of important environmental, archaeological and subsistence significance. Technological achievements such as the application

of advances in horizontal drilling technology, miscible water-alternating-gas (MWAG) enhanced oil recovery processes, innovative drilling designs and creative solutions to pipeline connections have helped maximize the recovery of valuable resources while minimizing the impacts of large oil developments to the environment and local communities. ■

Biographical Sketch

DOUG WILSON received his BS in geology at the University of Texas, Austin and his MS in geology at the University of Texas, Dallas. In 1982 he started work with Arco Oil and Gas Company in Lafayette, Louisiana. While at Arco, he worked on exploration projects in the Gulf of Mexico, California and New Mexico. In 2000 he joined Anadarko Petroleum, where he has worked the eastern Gulf of Mexico and sub-Saharan Africa. Mr. Wilson is currently the Alaska Exploration Manager for Anadarko.

