

USGS Energy Program Activities, North Slope, Alaska

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The Alaska North Slope is a national priority for USGS petroleum research. Activities ranging from field studies to rescue of older data are underway, with a stream of products being released. Collaboration with the Alaska Department of Natural Resources and the University of Alaska Fairbanks, and coordination with other Federal agencies, Native organizations, and the private sector are essential elements of this work.

A renewed USGS commitment to North Slope petroleum research was initiated in 1996 with an intensive re-examination of the framework geology and petroleum potential of the Arctic National Wildlife Refuge 1002 area. A significant part of that effort was a new assessment of oil and natural gas resources, the results of which were released in 1998. A voluminous set of papers representing the scientific foundation of that assessment was released recently on CD-ROM.

Framework geology and petroleum potential of the western and central North Slope is now the focus of an interdisciplinary team of USGS geoscientists. The initial emphasis of this study is an NPRA "eastern swath", extending from ~150° to 156° west longitude and from the Brooks Range mountain front to the OCS. Research goals include an improved understanding of the geologic framework and petroleum systems of the region, leading to an enhanced evaluation of the quantity, quality, and distribution of petroleum resources. Already, that project has discovered a significant, and previously undocumented, occurrence of oil stained sandstones in the Torok Formation and has geochemically characterized the associated hydrocarbons.

Data rescue and archival activities are an important component of USGS work on the North Slope. Current projects include rescuing NPRA seismic data from deteriorating magnetic tapes, compilation of data and documents from wildcat wells in the NPRA into digital archives, and digital capture and archiving of information from previous NPRA exploration efforts. This information will be archived on more permanent media, such as CD-ROM, and made available to the public. One CD-ROM already has been released, others are in preparation, and an Internet data delivery system is being implemented.

Conventional cores from 58 exploration wells in and near NPRA are among the geologic materials being archived. All NPRA cores in the USGS collection have been consolidated to the USGS Core Research Center (CRC) in Denver. There, cores are processed for permanent archiving and are made available for examination and sampling. These duplicate many of the cores housed at the Alaska Geologic Materials Center at Eagle River. A recent NPRA core workshop, hosted by the USGS at the CRC, demonstrated the benefits of a public archive of this important collection.

Gas hydrates beneath the North Slope are the focus of research by the USGS in cooperation with the Department of Energy (DOE). The Prudhoe Bay and Kuparuk River oil-field areas are being used as a natural laboratory to answer questions about identification, mapping, volume calculation, and production of natural gas resources associated with gas hydrates. The amount of natural gas in these hydrates is estimated at about 40-trillion cubic feet (equivalent to the total volume of gas in all conventional oil and gas fields in northern Alaska).

Another focus is a collaborative study of coalbed methane by the Alaska DGGS, DOE, and the USGS. Initial planning is under way to evaluate coalbed methane resources in certain parts of Alaska. This research, aimed at assessing the feasibility of providing energy independence for isolated rural communities, including Wainwright, is currently the focus of a funding initiative.