ABSTRACT

HELIUM IN WYOMING[1]

by Mike Clark[2]

Wyoming holds perhaps the single largest known non-depleting reserve of helium in the world! The Tip Top Field along the Moxa Arch in Sublette County has reserves totaling at least 45 BCF in Permian, Pennsylvanian, Mississippian, and Ordovician reservoirs. With new rich discoveries in deep Mississippian and Ordovician reservoirs north of Tip Top along the same structure, reserve estimates may more than triple the reserve volume at Tip Top for that area. The Church Buttes Field, along the Moxa Arch in Uinta and Sweetwater Counties, adds 17 BCF to these reserve figures.

This light and inert gas is a necessity in many subtle but vital operations. Present usage ranges from aiding in the relief of respiratory distress to pre-cooling rocket engines. With soaring technology, the future demand for helium is expected to increase dramatically. Future uses involve nuclear fusion, magnetohydrodynamics, laser development and high energy physics. So unique are its properties that it has no practical replacement. Consequently, many members of our scientific community are fearful that, with lack of proper conservation, helium supplies will fall short of demanding future "Super Technologies".

Helium geology, a relatively new concept in our profession, revolves around helium's diffusibility and its origin from the radioactive decay of uranium and thorium. Produced from radioactive materials either in the crystalline basement, concentrated in the sedimentary section, or disseminated throughout the crust, helium can migrate along various routes to accumulate in natural gas reservoirs (our only commercial source of helium) and in the soil gas of the regolith. Soil gas surveys can then be used to detect anomolous concentrations of helium. Prospecting methods are being perfected to relate these helium concentrations in the regolith to parent, potential ore grade deposits of uranium. Helium may even diffuse through cap rocks of natural gas traps and concentrate in the regolith.

Interest in helium is rising recently in light of its questionable supply for the future and prospecting potential. As colleagues are fond of saying, "It's hard to keep a good gas down"!

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