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Geological Characteristics of Deep Undiscovered Conventional Gas Worldwide

Geological characteristics of deep (>4.5 km) undiscovered conventional gas resources are identified using results of the U.S. Geological Survey (USGS) World Petroleum Assessment 2000 and U.S. 1995 National Assessment of Oil and Gas Resources. Two hundred seventy-four deep assessment units (AUs) and plays in 123 petroleum provinces were assessed. Together, these deep AUs and plays contain a mean undiscovered conventional gas resource of 844 trillion cubic feet (TCF); more than 50 percent of this resource is in Europe and the Former Soviet Union (FSU).

The FSU holds the largest estimated volume of deep undiscovered conventional gas in the world with a mean resource of 343 TCF. Of this 343 TCF, 176 TCF is present in 14 AUs comprised mainly of carbonate reef reservoirs in subsalt geologic settings. About 113 TCF is estimated for the Murgab Depression Subsalt AU of the Amu Darya Basin and the South Margin Subsalt AU of the North Caspian Basin. The Murgab Depression Subsalt AU contains 70 TCF of deep gas sourced by Lower to mid-Jurassic coal and carbonaceous shale and Upper Jurassic anoxic marine shale. Reservoirs are predominantly Upper Jurassic reef facies. Eighteen clastic AUs account for the remaining 165 TCF of deep undiscovered gas in the FSU.

Europe holds the second largest estimated volume of deep undiscovered conventional gas with a mean of 142 TCF. Of this 142 TCF, 130 TCF is present in AUs with mixed clastic-carbonate lithologies of various ages and depositional environments. Seventy TCF is estimated for the Mid Norway Continental Margin AU in the Norway continental shelf. This deep hypothetical AU contains gas in Devonian through Tertiary reservoirs in stratigraphic and fault-block traps. This gas is sourced by Upper Jurassic marine shales.