Chapter 1

Executive Summary—Geologic Assessment of Undiscovered Oil and Gas Resources of the Eastern Great Basin Province, Nevada, Utah, Idaho, and Arizona

Click here to return to
Volume Title Page

By U.S. Geological Survey Eastern Great Basin Assessment Team

Chapter 1 of
Geologic Assessment of Undiscovered Oil and Gas Resources of the Eastern Great Basin Province, Nevada, Utah, Idaho, and Arizona

By U.S. Geological Survey Eastern Great Basin Assessment Team

U.S. Geological Survey Digital Data Series DDS–69–L

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
DIRK KEMPTHORNE, Secretary

U.S. Geological Survey
Mark D. Myers, Director

U.S. Geological Survey, Reston, Virginia: 2007

For product and ordering information:

World Wide Web: http://www.usgs.gov/pubprod

Telephone: 1–888–ASK–USGS

For more information on the USGS—the Federal source for science about the Earth, its natural and living resources, natural hazards, and the environment:

World Wide Web: http://www.usgs.gov

Telephone:1–888–ASK–USGS

Suggested citation:
U.S. Geological Survey Eastern Great Basin Assessment Team, 2007, Executive Summary—Geologic Assessment of Undiscovered Oil and Gas Resources of the Eastern Great Basin Province, Nevada, Utah, Idaho, and Arizona, ***in*** USGS Eastern Great Basin Province Assessment Team, Geologic Assessment of Undiscovered Oil and Gas Resources of the Eastern Great Basin Province, Nevada, Utah, Idaho, and Arizona, Nevada, and Utah: U.S. Geological Survey Digital Data Series DDS–69–L, chap.1, 2 p.

ISBN 1-411-31919-6

Contents

Figure

Table

Executive Summary—Geologic Assessment of Undiscovered Oil and Gas Resources of the Eastern Great Basin Province, Nevada, Utah, Idaho, and Arizona

By U.S. Geological Survey Eastern Great Basin Province Assessment Team

Introduction

The U.S. Geological Survey (USGS) recently completed an assessment of the undiscovered oil and gas potential of the Eastern Great Basin Province of eastern Nevada, western Utah, southeastern Idaho, and northwestern Arizona (fig. 1). The province includes Neogene basins, Neogene ranges and structures, the central Nevada thrust belt, and the Sevier thrust belt. The assessment was based on the primary geologic elements that constitute a total petroleum system (TPS): petroleum source rocks (source rock maturation, petroleum generation, and migration), reservoir rocks (based on sequence stratigraphy and petrophysical properties), and petroleum traps (formation and timing). Using this geologic framework, the USGS defined the Paleozoic-Tertiary Composite TPS and three assessment units (AU) within the TPS, and quantitatively estimated the undiscovered oil and gas resources within the three AUs (table 1).

Resource Summary

The USGS estimated a mean of 1.6 billion barrels of oil (BBO), a mean of 1.8 trillion cubic feet of gas (TCFG), and a mean of 85 million barrels of total natural gas liquids (MMBNGL) in the Paleozoic-Tertiary Composite TPS. All of the assessed undiscovered oil and gas resources are conventional (table 1).

Of the total mean 1.6 billion barrels of oil (BBO), a mean of 827 million barrels of oil (MMBO) is estimated to be in the Neogene Basins AU, a mean of 470 MMBO in the Ranges and Other Structures AU, and a mean of 301 MMBO in the Sevier Thrust System AU.

Of the 1.8 TCFG, about 0.1 TCFG is estimated to be in the Neogene basins AU, 1.2 TCFG in the Ranges and Other Structures AU, and 0.5 TCFG in the Sevier Thrust System AU.

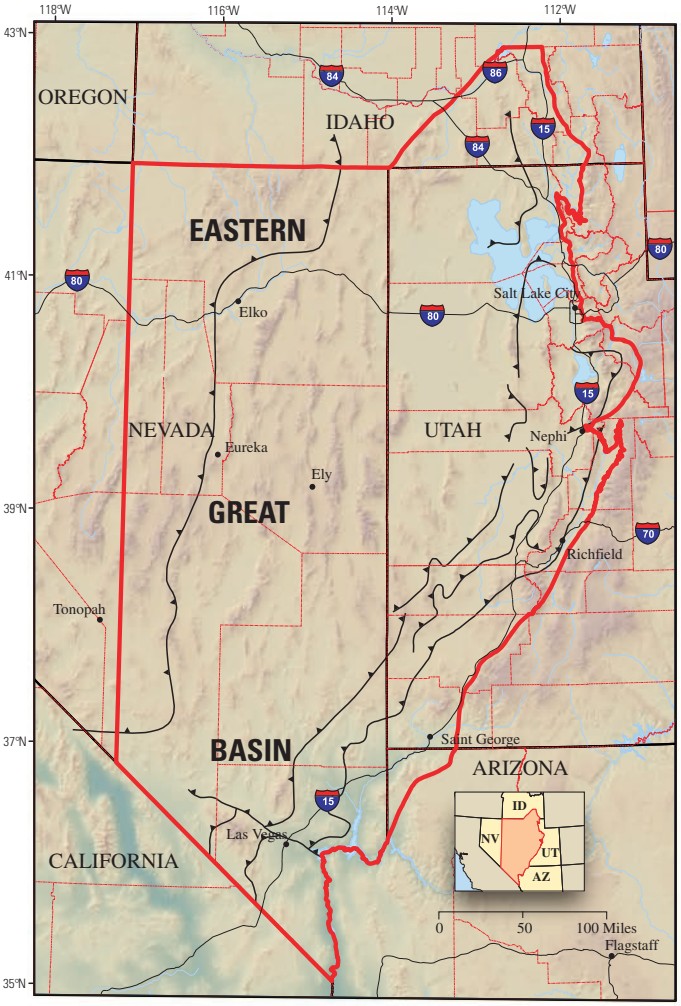

Figure 1. The Eastern Great Basin Province (red line) of Nevada, Utah, Idaho, and Arizona. Shown are major thrust faults, teeth on upthrown side.

Table 1. Eastern Great Basin Province assessment results.

[MMBO, million barrels of oil. BCFG, billion cubic feet of gas. MMBNGL, million barrels of natural gas liquids. Results shown are fully risked estimates. For gas fields, all liquids are included under the NGL (natural gas liquids) category. F95 represents a 95 percent chance of at least the amount tabulated. Other fractiles are defined similarly. Fractiles are additive under the assumption of perfect positive correlation. TPS is Total Petroleum System. AU is Assessment Unit. Gray shade indicates not applicable]

	Total Petroleum Systems (TPS) and Assessment Units (AU)	Field Type	Total Undiscovered Resources											
			Oil (MMBO)				Gas (BCFG)				NGL (MMBNGL)			
			F95	F50	F5	Mean	F95	F50	F5	Mean	F95	F50	F5	Mean
Conventional Oil and Gas Resources	**Paleozoic-Tertiary Composite TPS**													
	Neogene Basins AU	*Oil*	160	740	1,780	827	20	93	244	108	1	5	15	6
		Gas					0	0	0	0	0	0	0	0
	Neogene Ranges and other Structures AU	*Oil*	47	375	1,216	470	6	48	162	61	0	3	10	4
		Gas					114	898	2,981	1,133	5	38	135	50
	Sevier Thrust System AU	*Oil*	33	231	809	301	10	75	279	100	1	4	17	6
		Gas					42	295	1,317	434	2	13	58	19
	Total Conventional Resources		**240**	**1,346**	**3,805**	**1,598**	**192**	**1,409**	**4,983**	**1,836**	**9**	**63**	**235**	**85**

The range in estimates of undiscovered conventional oil and gas (table 1) reflects the uncertainty of assessing new field discoveries in the Eastern Great Basin Province. The small number of drilled wells and producing wells compared to the total geographic area of the province indicates a frontier (or unproven) status. The Neogene Basins AU has the best potential to add new reserves, with current production serving as a successful analogue. The Ranges and Other Structures AU is hypothetical with no current production. The recently discovered Covenant field in the Sevier Thrust System AU provides insight into the potential of that area.

Oil shale, coal-bed gas, and biogenic gas were not quantitatively assessed in this study.

For Further Information

Supporting geologic studies of total petroleum systems and assessment units and the methodology used in the Eastern Great Basin Province are in progress. Assessment results are available at the USGS Central Energy Team Web site: http://energy.cr.usgs.gov/oilgas/noga/index.htm

Eastern Great Basin Assessment Team

Lawrence O. Anna (lanna@usgs.gov, 303.236.5451), Laura N.R. Roberts, Christopher J. Potter, Ronald R. Charpentier, Troy Cook, Timothy R. Klett, Richard M. Pollastro, and Christopher J. Schenk.

Click here to return to
Volume Title Page