

Chapter 1

Executive Summary—2003 Assessment of Undiscovered Oil and Gas Resources in the Upper Cretaceous Navarro and Taylor Groups, Western Gulf Province, Gulf Coast Region, Texas



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By U.S. Geological Survey Western Gulf Province Assessment Team

Chapter 1 of

Petroleum Systems and Geologic Assessment of Undiscovered Oil and Gas, Navarro and Taylor Groups, Western Gulf Province, Texas

By U.S. Geological Survey Western Gulf Province Assessment Team

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Introduction

The U.S. Geological Survey (USGS) recently completed an assessment of the undiscovered oil and gas potential of the Upper Cretaceous Navarro and Taylor Groups in the Western Gulf Province of the Gulf Coast region (fig. 1) as part of a national oil and gas assessment effort (USGS Navarro and Taylor Groups Assessment Team, 2004). The assessment of the petroleum potential of the Navarro and Taylor Groups was based on the general geologic elements used to define a total petroleum system (TPS), including hydrocarbon source rocks (source rock

maturity, hydrocarbon generation and migration), reservoir rocks (sequence stratigraphy and petrophysical properties), and hydrocarbon traps (trap formation and timing). Using this geologic framework, the USGS defined five assessment units (AU) in the Navarro and Taylor Groups as parts of a single TPS, the Smackover–Austin–Eagle Ford Composite TPS: Travis Volcanic Mounds Oil AU, Uvalde Volcanic Mounds Gas and Oil AU, Navarro-Taylor Updip Oil and Gas AU, Navarro-Taylor Downdip Gas and Oil AU, and Navarro-Taylor Slope-Basin Gas AU (table 1).

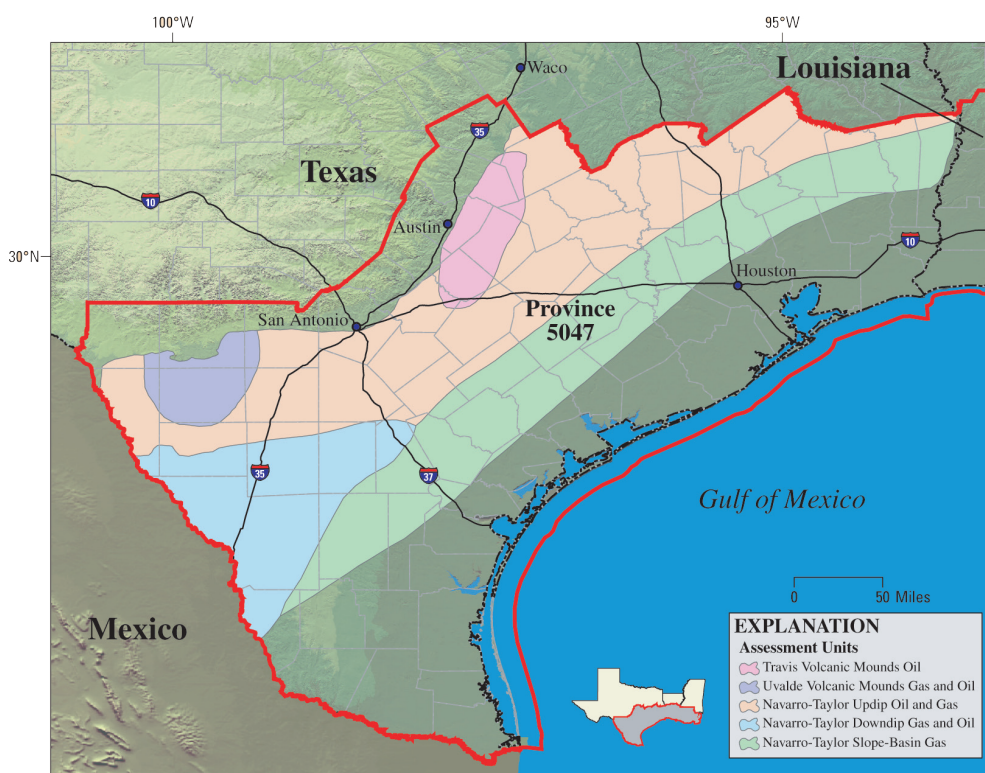


Figure 1. Map of the western part of Western Gulf Province 5047 of the Gulf Coast region (outlined in red), showing geographic distribution of assessment units in the Navarro and Taylor Groups of the Smackover–Austin–Eagle Ford Composite Total Petroleum System.

Resource Summary

The USGS assessed undiscovered conventional oil and gas for each of the AUs, resulting in estimated means of 1,682.8 billion cubic feet of non-associated gas and associated gas in oil fields, 33.22 million barrels of oil, and 34.26 million barrels of natural gas liquids in the Smackover–Austin–Eagle Ford Composite TPS (table 1).

All of the undiscovered gas is conventional. The Navarro-Taylor Slope-Basin Gas AU contains an estimated mean of 924.96 billion cubic feet of gas, representing about 55 percent of the total mean undiscovered gas resource (1,682.8 billion cubic feet) for the Navarro and Taylor Groups in the province.

Table 1. Smackover–Austin–Eagle Ford Composite Total Petroleum System, 504702, Assessment Results Summary

[MMBO, million barrels of oil. BCFG, billion cubic feet of gas. MMBNGL, million barrels of natural gas liquids. MAS, minimum accumulation size assessed (MMBO or BCFG). Prob., probability (including both geologic and accessibility probabilities) of at least one accumulation equal to or greater than the MAS. Accum., accumulation. Results shown are fully risked estimates. For gas accumulations, all liquids are included as natural gas liquids (NGL). 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. Shading indicates not applicable]

| Code and Accumulation Type | MAS | Prob. (0-1) | Total undiscovered resources | | | | | | | | | | | |
|--|-----|-------------|------------------------------|--------------|--------------|--------------|---------------|-----------------|-----------------|-----------------|--------------|--------------|--------------|--------------|
| | | | Oil (MMBO) | | | | Gas (BCFG) | | | | NGL (MMBNGL) | | | |
| | | | F95 | F50 | F5 | Mean | F95 | F50 | F5 | Mean | F95 | F50 | F5 | Mean |
| 50470201 Travis Volcanic Mounds Oil Assessment Unit | | | | | | | | | | | | | | |
| Oil | 0.5 | 1.00 | 1.25 | 2.73 | 4.81 | 2.85 | 0.28 | 0.66 | 1.30 | 0.71 | 0.01 | 0.03 | 0.07 | 0.04 |
| Gas | 3.0 | | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | | 1.00 | 1.25 | 2.73 | 4.81 | 2.85 | 0.28 | 0.66 | 1.30 | 0.71 | 0.01 | 0.03 | 0.07 | 0.04 |
| 50470202 Uvalde Volcanic Mounds Gas and Oil Assessment Unit | | | | | | | | | | | | | | |
| Oil | 0.5 | 1.00 | 1.27 | 2.41 | 3.97 | 2.48 | 1.29 | 2.83 | 5.20 | 2.97 | 0.06 | 0.14 | 0.28 | 0.15 |
| Gas | 3.0 | | | | | | 14.33 | 35.40 | 61.71 | 36.38 | 0.20 | 0.52 | 1.00 | 0.55 |
| Total | | 1.00 | 1.27 | 2.41 | 3.97 | 2.48 | 15.62 | 38.23 | 66.91 | 39.35 | 0.25 | 0.65 | 1.28 | 0.69 |
| 50470203 Navarro-Taylor Updip Oil and Gas Assessment Unit | | | | | | | | | | | | | | |
| Oil | 0.5 | 1.00 | 6.78 | 19.41 | 40.58 | 21.02 | 9.43 | 28.37 | 64.58 | 31.58 | 0.26 | 0.83 | 2.02 | 0.95 |
| Gas | 3.0 | | | | | | 60.96 | 167.86 | 342.17 | 180.56 | 1.01 | 2.93 | 6.57 | 3.25 |
| Total | | 1.00 | 6.78 | 19.41 | 40.58 | 21.02 | 70.38 | 196.23 | 406.75 | 212.14 | 1.27 | 3.76 | 8.60 | 4.20 |
| 50470204 Navarro-Taylor Downdip Gas and Oil Assessment Unit | | | | | | | | | | | | | | |
| Oil | 0.5 | 1.00 | 1.91 | 5.95 | 15.06 | 6.88 | 17.44 | 58.22 | 156.48 | 68.72 | 0.48 | 1.70 | 4.90 | 2.06 |
| Gas | 3.0 | | | | | | 158.43 | 425.92 | 749.36 | 436.91 | 2.95 | 8.26 | 16.30 | 8.76 |
| Total | | 1.00 | 1.91 | 5.95 | 15.06 | 6.88 | 175.88 | 484.14 | 905.84 | 505.63 | 3.44 | 9.96 | 21.20 | 10.82 |
| 50470205 Navarro-Taylor Slope-Basin Gas Assessment Unit | | | | | | | | | | | | | | |
| Oil | 0.5 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Gas | 3.0 | | | | | | 239.07 | 868.58 | 1785.68 | 924.96 | 4.48 | 16.84 | 38.16 | 18.52 |
| Total | | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 239.07 | 868.58 | 1,785.68 | 924.96 | 4.48 | 16.84 | 38.16 | 18.52 |
| 504702 Total: Conventional undiscovered resources in the Smackover-Austin-Eagle Ford Composite Total Petroleum System | | | | | | | | | | | | | | |
| Oil | 0.5 | 1.00 | 11.21 | 30.51 | 64.41 | 33.22 | 28.45 | 90.09 | 227.55 | 103.99 | 0.82 | 2.69 | 7.27 | 3.20 |
| Gas | 3.0 | | | | | | 472.79 | 1497.75 | 2938.92 | 1578.81 | 8.64 | 28.55 | 62.04 | 31.07 |
| Total | | 1.00 | 11.21 | 30.51 | 64.41 | 33.22 | 501.24 | 1,587.84 | 3,166.47 | 1,682.80 | 9.45 | 31.25 | 69.31 | 34.26 |

For Further Information

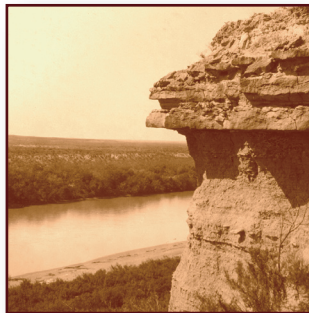
Geologic studies of total petroleum systems and assessment units and reports on the methodology used in assessing resources in the Navarro and Taylor Groups in the Western Gulf Province of the Gulf Coast region are available at the USGS Central Energy Team Web site: <http://energy.cr.usgs.gov/oilgas/noga/>

USGS Western Gulf Province Assessment Team

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USGS Navarro and Taylor Groups Assessment Team, 2004, 2003 assessment of undiscovered oil and gas resources in Upper Cretaceous Navarro and Taylor Groups, Western Gulf Province, Gulf Coast region, Texas: U.S. Geological Survey Fact Sheet FS-2004-3114, November 2004. [Also available at URL <http://pubs.usgs.gov/fs/2004/3114/> last accessed on March 1, 2006]



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