FY 2008 Annual Technical Report for NCRDS State Cooperative Program

SUBSURFACE JURASSIC AND CRETACEOUS GAS-SHALE SAMPLES, HAYNESVILLE AND BOSSIER FORMATIONS (SABINE UPLIFT), AND EAGLEFORD GROUP (RIO GRANDE EMBAYMENT): CORE SAMPLING FOR MEASURED VITRINITE-REFLECTANCE (R_o) DETERMINATION

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Submitted to
NCRDS State Cooperative Program
Award Number 02ERAG0006
U.S. Geological Survey

June 30, 2009

Subsurface Jurassic and Cretaceous Gas-Shale Samples, Haynesville and Bossier Formations (Sabine Uplift), and Eagleford Group (Rio Grande Embayment): Core Sampling for Measured Vitrinite-Reflectance (R_o) Determination

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Introduction

This report summarizes activities carried out by the Bureau of Economic Geology (BEG) during Fiscal Year (FY) 2008 for the National Coal Resources Data System State Cooperative Program (NCRDS project). In a continuation of the procedure initiated last fiscal year (Hentz and others, 2008), this report provides a collection of gas-shale samples from shale-rich formations of Texas and Louisiana that are currently experiencing significant natural-gas production or are being closely studied for gas-production potential (Cardott, 2008; Durham, 2008; Hammes and Carr, 2009). Gas-shale samples of the Upper Jurassic (Kimmeridgian and Tithonian) Haynesville and Bossier Formations were collected from whole cores of three wells in Sabine, San Augustine, and Harrison Counties, far east Texas, and of one well in nearby Sabine County, Louisiana (Fig. 1). We also provide samples from the Upper Cretaceous (Turonian) Eagleford Group shales of six wells in Bee, Wilson, Frio, Zavala, and LaSalle Counties, south Texas, and of one well in Ellis County, north Texas (Fig. 1). These samples are provided for vitrinite-reflectance (R_o) analysis by the USGS. Each sampled shale's precise geographic location is identified using GIS applications.

Haynesville and Bossier Shale Samples

We submit 51 samples of three widespread gas-shale units in three Texas and Louisiana structural provinces. A total of 25 samples of Haynesville shale were collected

from whole cores from wells in far east Texas and western Louisiana: the Shell USA Temple #1 in central Sabine County, Texas; the Shell W.C. Jones #1 in eastern San Augustine County, Texas; and the BP T. W. George #A-8H in southern Harrison County, Texas (Fig. 1, Table 1). All three wells occur on the Sabine Uplift, a broad regional paleohigh separating the East Texas Basin from the North Louisiana Salt Basin (Fig. 1). The uplift coincides closely with the play area of current Haynesville and Bossier production.

We also provide eight samples of Bossier shale from the BP T. W. George #A-8H and Shell Boise Southern #1 wells in southern Harrison County, Texas, and western Sabine County, Louisiana, respectively (Fig. 1). Both wells also penetrate strata of the Sabine Uplift. The Bossier Formation of the Cotton Valley Group overlies the Haynesville throughout much of the northeastern Gulf of Mexico Basin (Dobson and Buffler, 1997).

Total organic carbon (TOC) values are provided for all Haynesville and Bossier samples. Analyses were conducted for the Bureau of Economic Geology (BEG) by GeoMark Research, Ltd., in Humble, Texas.

The four Haynesville/Bossier cores are stored at the BEG's Austin Core Research Center. Precise geographic locations of these wells and specific well data, core data, and sample depths were plotted and annotated on a GIS (ArcView) map of the two counties, which is included with this report on a CD-ROM.

Eagleford Shale Samples

Eighteen Eagleford shale samples were taken from whole cores of seven wells in south and north Texas: Shell Leppard #1 in northwest Bee County, Prairie Weinert #1 in western Wilson County, Prairie Bendele #1 in southern Frio County, Prairie

Winterbotham #1 in eastern Zavala County, Auld. Shipman Wilson #1 in northeastern LaSalle County, Getty Hurt #1 in northwestern LaSalle County, and Superconducting Supercollider Boring K-1 in central Ellis County (Fig. 1, Table 1). The first six wells penetrate strata of the Rio Grande Embayment, south Texas, just north and east of the play area of current Eagleford production (Fig. 1). The Superconducting Supercollider Boring K-1 lies on the western shelf of the East Texas Basin; the two shallow samples were collected from cores taken during construction of the Superconducting Supercollider site.

Although the Eagleford shales have long been known to be in the Rio Grande Embayment of south Texas (Getzendaner, 1930), the unit has been most closely studied as a hydrocarbon source rock in the East Texas Basin (e.g., Robison, 1997).

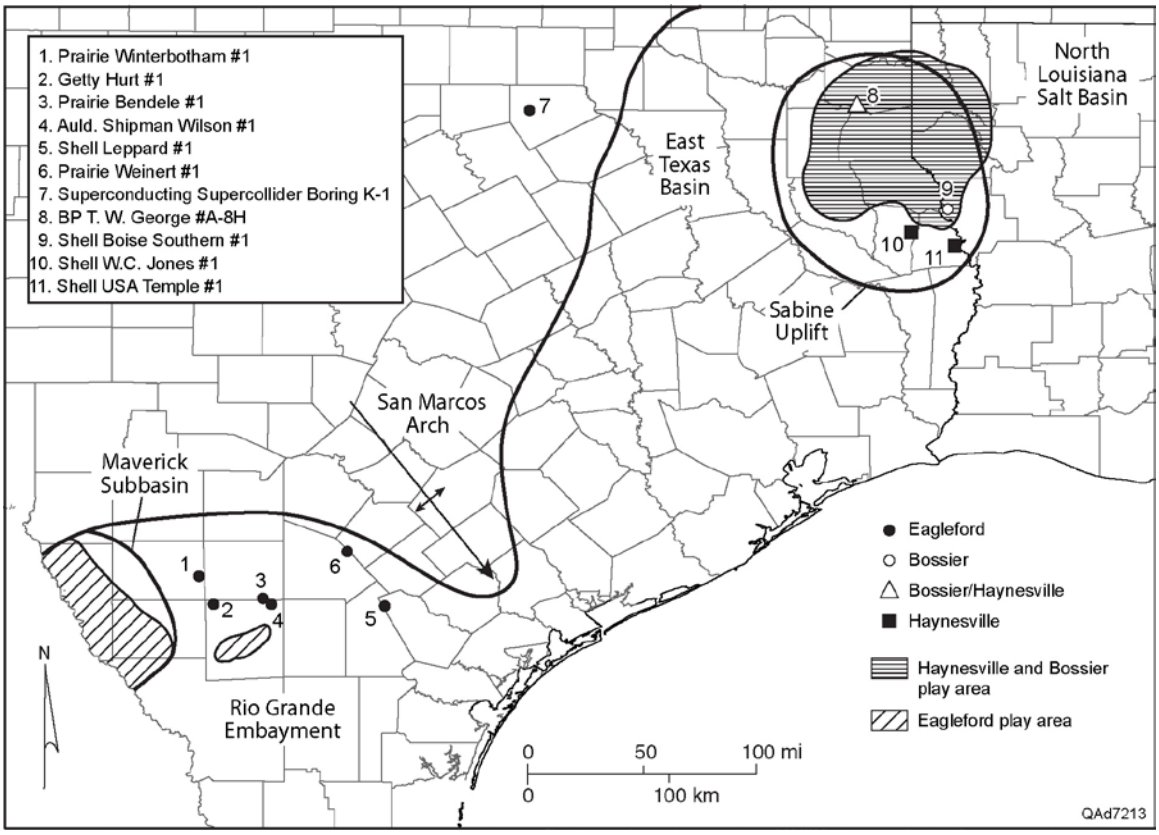

Figure 1. Map showing locations of sampled wells from the Sabine Uplift, Texas and Louisiana, and the Rio Grande Embayment, south Texas.

Table 1. Distribution of gas-shale samples by stratigraphic unit. Total organic carbon (TOC) values from commercial analyses provided only for Haynesville and Bossier samples.

Shell USA Temple #1 (Sabine Co., TX)

Haynesville Formation

Depth (ft)	*TOC (wt% HC)*
14,362	5.45
14,369	3.63
14,375	3.93
14,383	2.92
14,389	4.36
14,392	5.17
14,398	5.14
14,405	6.89
14,414	4.48
14,417	4.18
14,423	3.54
14,425	3.32

Shell W.C. Jones #1 (San Augustine Co., TX)

Haynesville Formation

Depth (ft)	*TOC (wt% HC)*
13,343	2.64
13,357	3.54
13,368	3.35
13,382	5.78
13,392	4.67
13,455	2.91
13,478	2.80
13,490	1.67
13,500	2.23
13,515	2.35

BP T. W. George #A-8H (Harrison Co., TX)

Bossier Formation

Depth (ft)	*TOC (wt% HC)*
11,071.9	0.37

Haynesville Formation

11,137	2.08
11,209	2.26
11,366	2.73

Shell Boise Southern #1 (Sabine Co., LA)

Bossier Formation

Depth (ft)	*TOC (wt% HC)*
12,800	1.15
12,820	0.8
12,845	0.59
12,861	0.63
13,103	0.9
13,124	1.02
13,242	0.72

Shell Leppard #1 (Bee Co., TX)

Eagleford Group

Depth (ft)
13,553
13,617
13,671

Prairie Weinert #1 (Wilson Co., TX)

Eagleford Group

Depth (ft)

6902
6955

Prairie Bendele #1 (Frio Co., TX)

Eagleford Group

Depth (ft)

7918.0
7987.0

Prairie Winterbotham #1 (Zavala Co., TX)

Eagleford Group

Depth (ft)

6239.0
6371.0

Auld. Shipman Wilson #1 (LaSalle Co., TX)

Eagleford Group

Depth (ft)

11,925

Getty Hurt #1 (LaSalle Co., TX)

Eagleford Group

Depth (ft)

6732
6873
6986
7070
7167
7298

Superconducting Supercollider Boring K-1 (Ellis Co., TX)

Eagleford Group

Depth (ft)

216.5
250.5

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