SEMI ANNUAL TECHNICAL PROGRESS REPORT
FOR THE PERIOD ENDING June 30, 2009

TITLE: FIELD DEMONSTRATION OF CARBON DIOXIDE MISCIBLE FLOODING IN THE LANSING-KANSAS CITY FORMATION, CENTRAL KANSAS

DOE Contract No. DE-AC26-00BC15124

Contractor:	University of Kansas Center for Research, Inc. 2385 Irving Hill Road Lawrence, KS 66044
DOE Program:	Class II Revisited - Field Demonstrations
Award Date:	March 8, 2000
Total Project Budget:	$5,388,683
DOE Cost Amount:	$1,892,094
Program Period:	March 8, 2000 – March 7, 2010 (BP1 03/00-2/04, BP2 2/04-12/08, BP3 1/09-03/10)
Reporting Period: DOE	January 1, 2009 – June 30, 2009
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DISCLAIMER:

ABSTRACT:

A pilot carbon dioxide miscible flood was initiated in the Lansing Kansas City C formation in the Hall Gurney Field, Russell County, Kansas. The reservoir zone is an oomoldic carbonate located at a depth of about 2900 feet. The pilot consists of one carbon dioxide injection well and three production wells. Continuous carbon dioxide injection began on December 2, 2003. By the end of June 2005, 16.19 MM lb of carbon dioxide was injected into the pilot area. Injection was converted to water on June 21, 2005 to reduce operating costs to a breakeven level with the expectation that sufficient carbon dioxide has been injected to displace the oil bank to the production wells by water injection. By June 30, 2009 271,039 bbls of water were injected into CO2 I-1 and 7,903 bbl of oil were produced from the pilot. Water injection rates into CO2 I-1, CO2#10 and CO2#18 were stabilized during this period. Oil production rates averaged 3.9 B/D for the period from January 1- June 30, 2009. Production from wells to the northwest of the pilot region indicates that oil displaced from carbon dioxide injection was produced from Colliver A7, Colliver A3, Colliver A14 and Graham A4 located on adjacent leases. About 16,618 bbl of incremental oil was estimated to have been produced from these wells as of June 2009. There is evidence of a directional permeability trend toward the NW through the pilot region. The majority of the injected carbon dioxide remains in the pilot region, which has been maintained at a pressure at or above the minimum miscibility pressure. Our management plan is to continue water injection to displace oil mobilized by carbon dioxide injection in the C zone. Estimated oil recovery attributed to the CO2 flood is 24,421 bbl which is equivalent to a gross CO2 utilization of 5.7 MCF/bbl. The pilot project is not economic.

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INTRODUCTION

Objectives - The objective of this Class II Revisited project is to demonstrate the viability of carbon dioxide miscible flooding in the Lansing-Kansas City formation on the Central Kansas Uplift and to obtain data concerning reservoir properties, flood performance, operating costs and methods to aid operators in future floods. The project addresses the producibility problem that these Class II shallow-shelf carbonate reservoirs have been depleted by effective waterflooding leaving significant trapped oil reserves. The objective is to be addressed by performing a CO_2 miscible flood in a 10-acre (4.05 ha) pilot in a representative oomoldic limestone reservoir in the Hall-Gurney Field, Russell County, Kansas. At the demonstration site, the Kansas team will characterize the reservoir geologic and engineering properties, model the flood using reservoir simulation, design and construct facilities and remediate existing wells, implement the planned flood, and monitor the flood process. The results of this project will be disseminated through various technology transfer activities.

Project Task Overview -

Activities in Budget Period 1 (03/00-2/04) involved reservoir characterization, modeling, and assessment:

- Task 1.1- Acquisition and consolidation of data into a web-based accessible database
- Task 1.2 - Geologic, petrophysical, and engineering reservoir characterization at the proposed demonstration site to understand the reservoir system
- Task 1.3 - Develop descriptive and numerical models of the reservoir
- Task 1.4 - Multiphase numerical flow simulation of oil recovery and prediction of the optimum location for a new injector well based on the numerical reservoir model
- Task 2.1 - Drilling, sponge coring, logging and testing a new CO2 injection well to obtain better reservoir data
- Task 2.2 - Measurement of residual oil and advanced rock properties for improved reservoir characterization and to address decisions concerning the resource base
- Task 2.3 – Remediate and test wells and patterns, re-pressure pilot area by water injection and evaluate inter-well properties, perform initial CO2 injection to test for premature breakthrough
- Task 3.1 - Advanced flow simulation based on the data provided by the improved characterization
- Task 3.2 - Assessment of the condition of existing wellbores, and evaluation of the economics of carbon dioxide flooding based on the improved reservoir characterization, advanced flow simulation, and engineering analyses
- Task 4.1 – Review of Budget Period 1 activities and assessment of flood implementation

Activities in Budget Period 2 (2/04-12/08) involve implementation and monitoring of the flood:

- Task 5.4 - Implement CO_2 flood operations
- Task 5.5 - Analyze CO_2 flooding progress - carbon dioxide injection will be terminated at the end of Budget Period 2 and the project will be converted to continuous water injection.
- A no cost extension of Budget Period 2 to June 30, 2009 was approved to continue development of the reservoir model

Activities in Budget Period 3 (1/09-03/10) will involve post-CO2 flood monitoring:

- Task 6.1 – Collection and analysis of post-CO2 production and injection data

Activities that occur over all budget periods include:

- Task 7.0 – Management of geologic, engineering, and operations activities
- Task 8.0 – Technology transfer and fulfillment of reporting requirements

EXECUTIVE SUMMARY:

Injection was converted to water on June 21, 2005 to reduce operating costs with the expectation that sufficient carbon dioxide had been injected to displace the oil bank to the production wells by water injection. By June 30, 2009, 271,039 bbl of water were injected into CO2 I-1 and 7,903 bbl of oil were produced from the pilot. Oil production rates averaged 3.9 B/D for the period from January 1- June 30, 2009. Production from wells to the northwest of the pilot region indicates that oil displaced from carbon dioxide injection was produced from Colliver A7, Colliver A3, Colliver A14 and Graham A4 located on adjacent leases. About 16,518 bbl of incremental oil was estimated to have been produced from these wells as of June 30, 2009. There is evidence of a directional permeability trend toward the NW through the pilot region. The majority of the injected carbon dioxide remains in the pilot region, which has been maintained at a pressure at or above the minimum miscibility pressure. Our management plan is to continue water injection maintaining oil displacement by displacing the carbon dioxide remaining in the C zone. Estimated oil recovery attributed to the CO2 flood is 24,421 bbl, which is equivalent to a gross CO2 utilization of 5.7 MCF/bbl. The pilot project is not economic.

RESULTS AND DISCUSSION:

Task 5.4 - IMPLEMENT CO2 FLOOD OPERATIONS

Figure 1 shows the CO2 pilot pattern located on the Colliver Lease in Russell County Kansas. The pilot pattern is confined within the 70-acre lease owned and operated by Murfin Drilling Company and WI partners. The original ~10 acre pilot pattern consisted of one carbon dioxide injection well (CO2 I-1), two production wells (CO2#12 and CO2#13) two water injection wells (CO2#10 and CO2#18) and CO2#16, an observation well. In October 2006, CO2#16 was converted to a production well and placed on an 8-hour clock. The pilot pattern was designed recognizing that there would be loss of carbon dioxide to the region north of the injection well. This portion of the LKC "C" zone contains one active production well on the Colliver Lease (Colliver #1) which is open in the LKC "C" and "G" zones as well as several zones up hole. CO2#16 was recompleted as a potential production well in 2003 in the LKC "C" zone. Core data indicated that the permeability-thickness product of the LKC "C" in this well was inadequate to support including this well in the pattern.

Liquid carbon dioxide (250 psi and ~***-10F***) was trucked to the lease by EPCO from an ethanol plant in Russell operated by US Energy Partners where it was stored in a 50-ton storage tank provided by FLOCO2. Operational problems were encountered on startup that delayed continuous injection until December 2, 2003. In the next seventeen months, 16.19 MM lbs (138.05 MM SCF) of carbon dioxide were injected into CO2 I-1.

Carbon dioxide injection into CO2 I-1 terminated on June 17, 2005 and water injection began on June 21. Water injection continued into CO2 I-1. Average injection rates are shown in Figure 2 for the period from July1, 2008-June 30, 2009. Relatively stable rates and pressures were maintained. Average injection rate for the six month period from January 1-June 30, 2009 was 212 B/D.

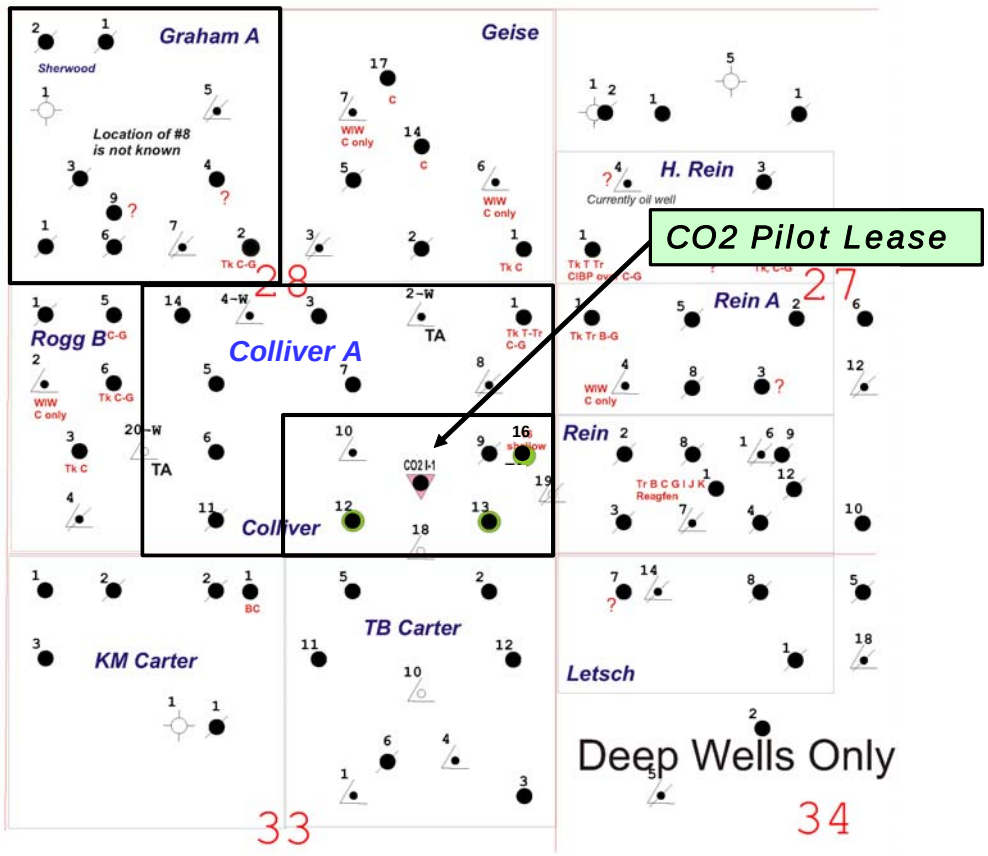

Figure 1: Murfin Colliver Lease in Russell County, Kansas

Cumulative volume of water injected into CO2I-1 was 271,039 bbls. Injection of water was maintained in CO2#10 and CO2 #18 to maintain the pressure the pilot above the estimated minimum miscibility pressure and to reduce loss of oil and carbon dioxide from the pilot pattern. Figure 3 shows injection rates for CO2I-1, CO2 #10 and CO2#18.

Oil and water production rates are shown in Figures 4 and 5 for the period January 1-June 30, 2009. Average oil production rates were about 3.9 B/D for the period from January 1-June 30, 2009. Figure 6 shows the average water-oil ratio for the same period. Cumulative oil production from the pilot area is 7,903 bbl. Water production from the pilot area was about 572,000 bbl.

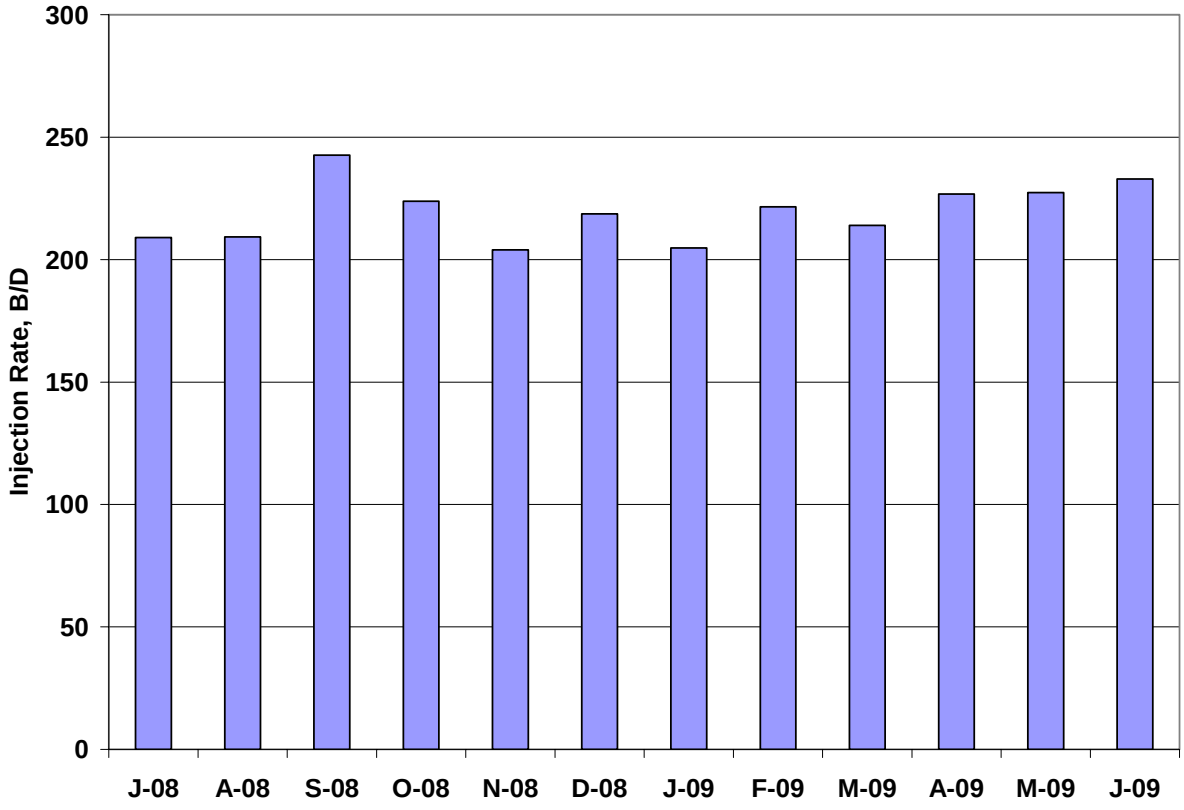

Figure 2: Water injection rate into CO2 I-1

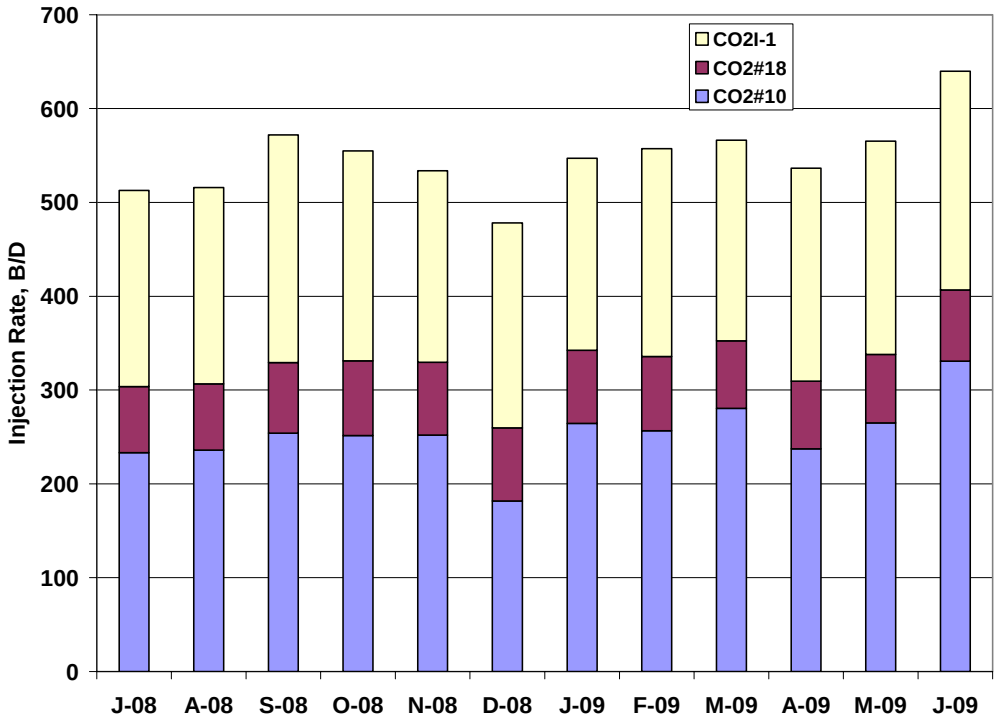

Figure 3: Injection rates into CO2I-1, CO2#18 and CO2#10

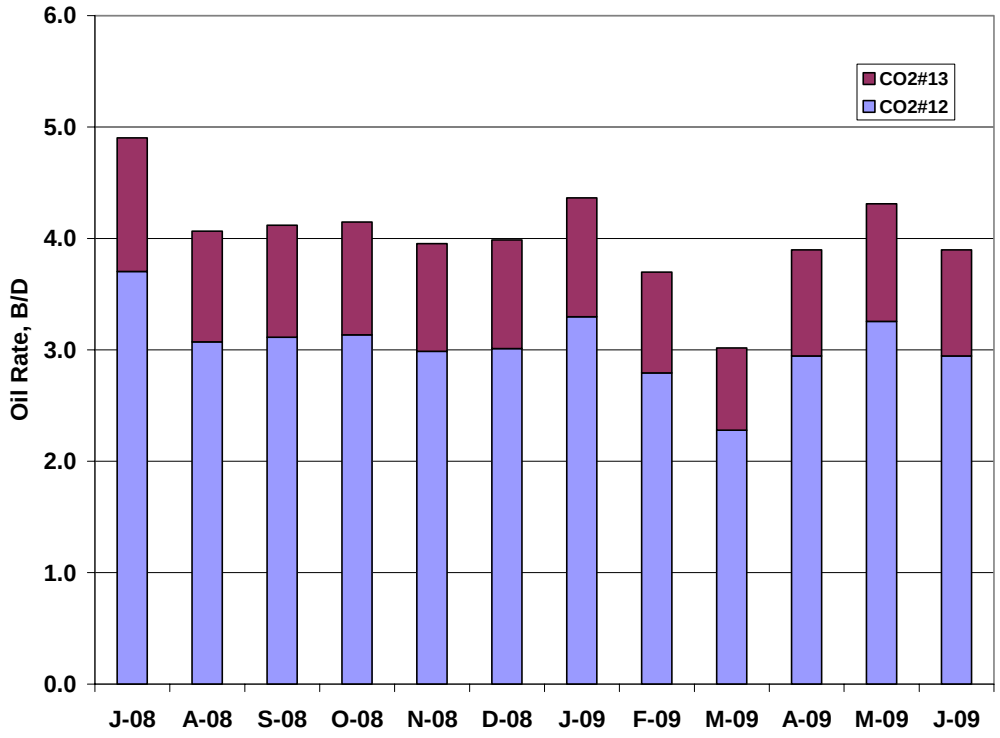

Figure 4: Average daily oil production rates from pilot area

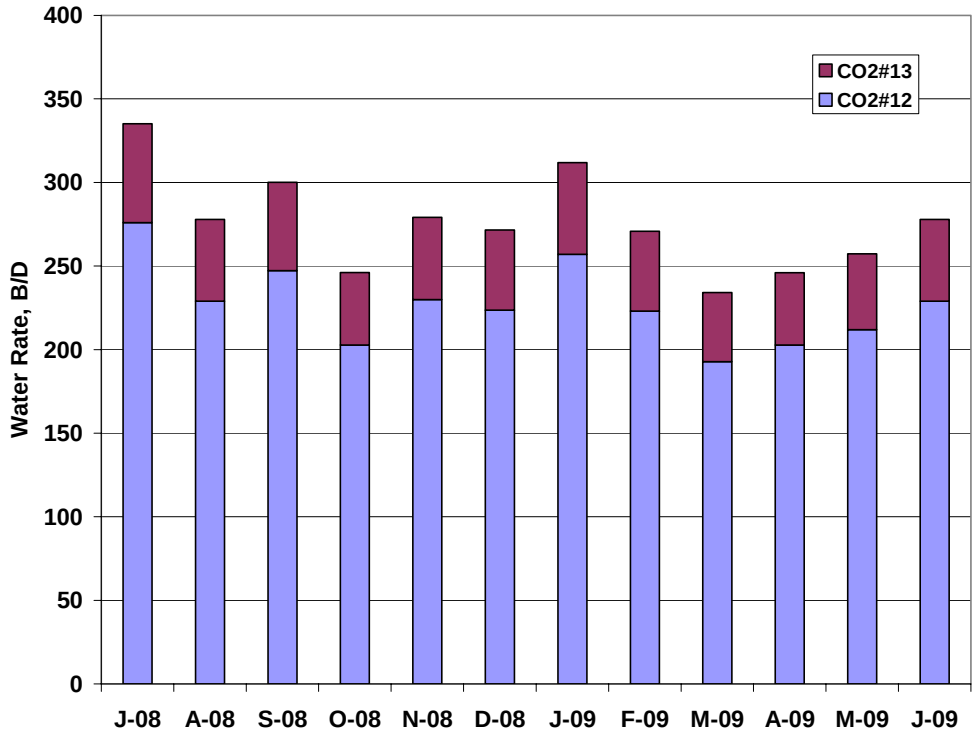

Figure 5: Average daily water production rate from pilot

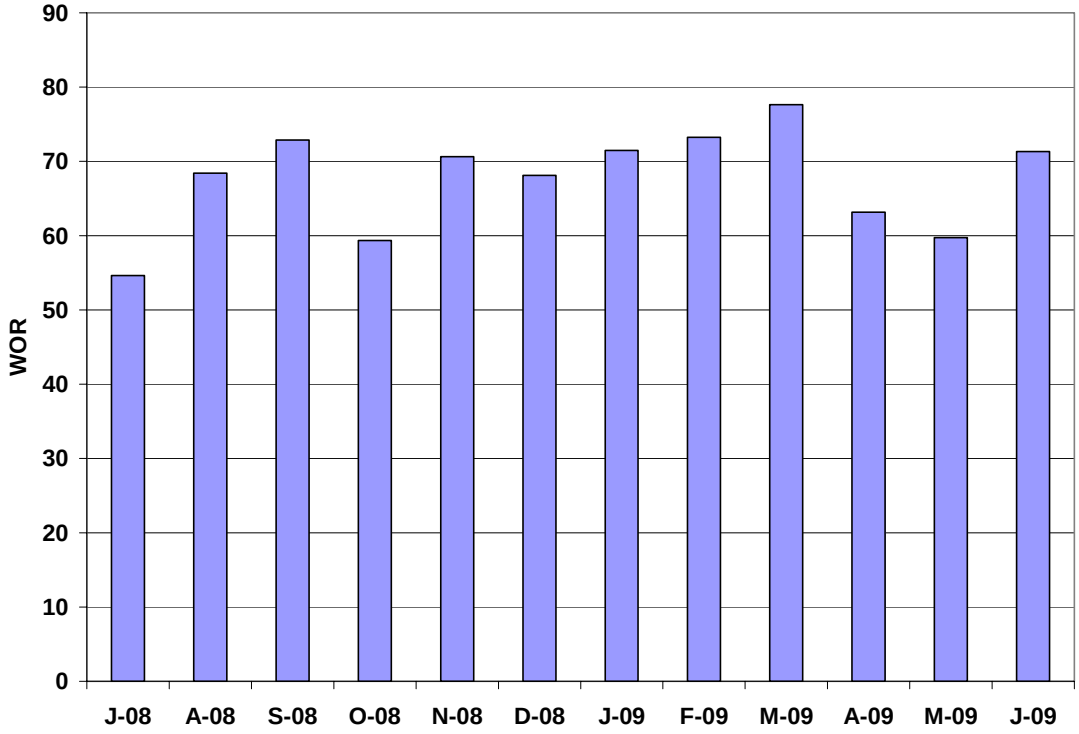

Figure 6: Average water/oil ratio for the period from July 1, 2008 to June 30, 2009

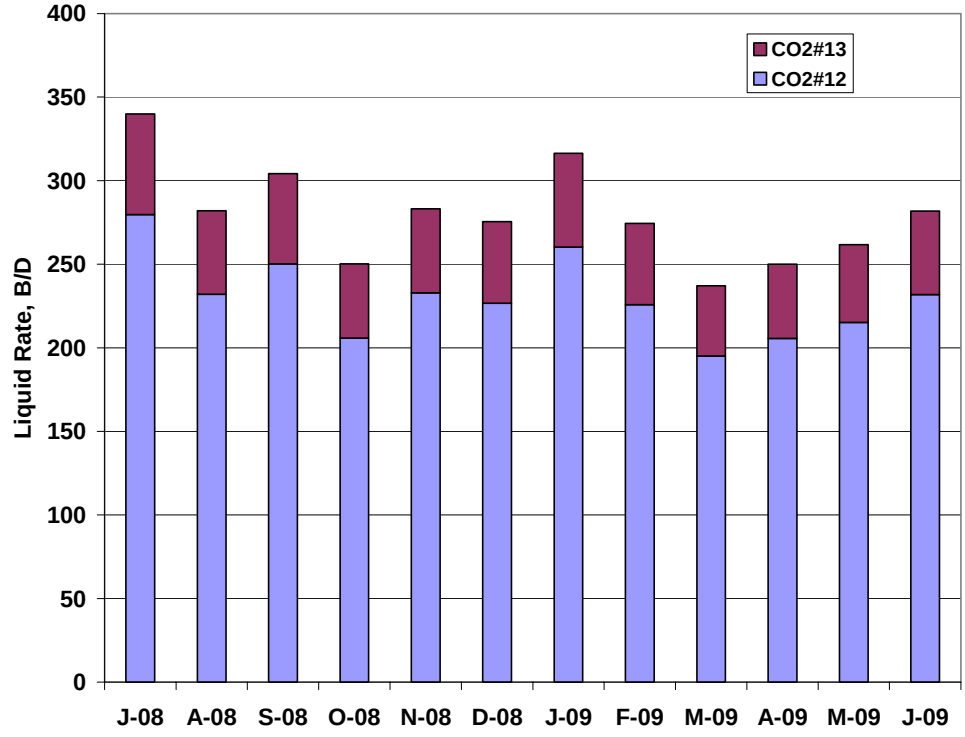

Figure 7: Total liquid production rate from CO2 pilot

Production from Surrounding Leases

In the December 2006 Semi Annual Report, data were presented demonstrating that oil displaced from the CO2 Pilot Area had been displaced to the Graham A and Colliver A leases, on a trend northwest of the pilot.

In August 2006, the operator of the Graham A lease, northwest of the pilot area mentioned that oil production from his lease increased in April-May with no apparent cause. Murfin staff obtained permission to test wells on this lease and determined that the additional production was coming from Graham A4, a well located 3570 feet from CO2 I-1 as shown in Figure 8.

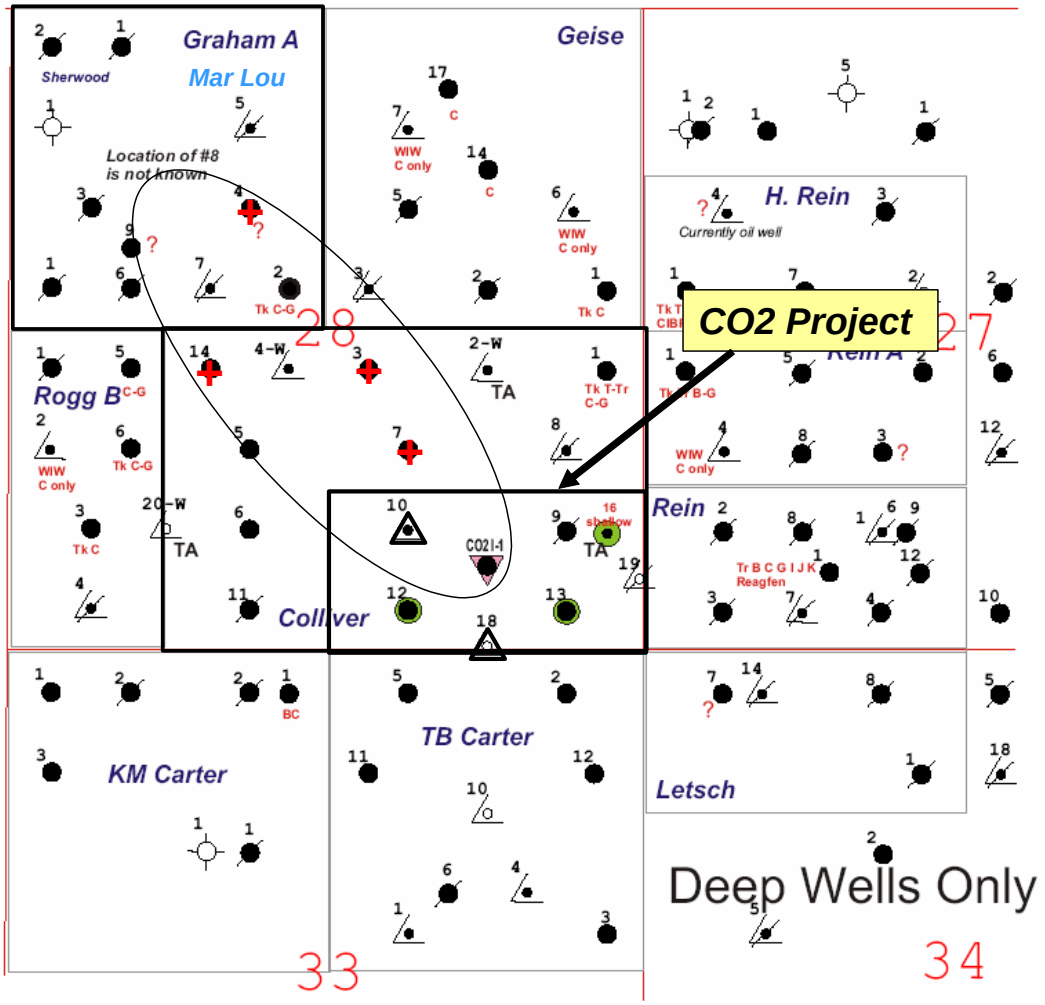

Figure 8: Map showing location of wells completed in the Lansing-Kansas C zone in the area of the CO2 pilot. The elliptical region includes wells marked with a + that appear to have produced oil displaced from the CO2 pilot area.

The discovery of increased oil production from the Graham A lease in August 2006 with no other activity in the area appeared to indicate that oil mobilized by carbon dioxide injection on the CO2

pilot lease was displaced to Graham A4. The amount of incremental oil attributed to the CO2 project from the Graham A lease was estimated to be about 920 bbl. There is no evidence of carbon dioxide breakthrough in this well. The solubility of carbon dioxide in oil and water is so large that it is unlikely that much CO2 will show up as a flowing phase at any location some distance from the pilot region. Production declined on the Graham A Lease after Colliver A7 and Colliver A3 were placed on production from the LKC ***C*** zone and no further incremental oil is attributed to the Graham Lease.

On August 28, 2006 the production packer used to isolate the LKC ***C*** zone from shallow zones was released in Colliver A7 and oil production increased substantially from the Colliver A lease. The CIBP in Colliver A3 was knocked out and the well was placed on production on October 11, 2006. The CIBP in Colliver A14 was removed in March 13, 2007. Sustained increased production from the Colliver A lease is shown on Figure 9. The red line is a projection of the Colliver A lease decline before the C zone was opened in Colliver A7, A3 and A14. Incremental oil above the estimated decline is about 15,598 bbls.

It is believed that opening Colliver A3 and A7 reduced the movement of oil from the Colliver A lease to the Graham A lease. Colliver A3 production declined to 1 B/D by December 2006 and remained at that level. At the present time, incremental oil production on the Colliver A Lease appears to be coming from Colliver A 7 and Colliver A 14. Colliver A14 has declined to about 3 B/D.

Incremental oil production from the Colliver A Lease, north of the pilot, averaged 12.5 B/D for the first six months of 2009. Increased oil production is further evidence that that oil displaced by carbon dioxide injection moved off lease in a Northwesterly trend from the CO2 pilot region. The elliptical shape on Figure 8 suggests a preferential permeability trend from the northwest toward CO2 I-1. We believe that oil displaced by carbon dioxide is being produced in Colliver A7. This conclusion is supported by analysis of casing gas from Colliver A#7. Figure 10 shows the carbon dioxide concentration in the casing gas from shortly after the LKC "C" zone was opened in the well. Carbon dioxide concentration rose steadily from September 2006 through July 2009, appearing to level out around 6% until December 2008 which jumped to 11.1%. CO2 concentrations decreased sharply during 2009 with a concentration of 3% measured in July 2009. There has been no increase in carbon dioxide concentrations in casing gas from Colliver A3 and Colliver A14. The amount of carbon dioxide produced from the Colliver A wells is negligible.

The carbon dioxide concentration in the casing gas from Colliver A7, the principal well producing incremental oil on the Colliver A lease, decreased from 11.1% at the end of December 2008 to ~3% on July 3, 2009 . This suggests that oil mobilized by carbon dioxide injected into the CO2 Pilot Pattern and produced on the Colliver A Lease will continue to decline. Incremental production from the Colliver A Lease during the past fifteen months is declining which is expected.

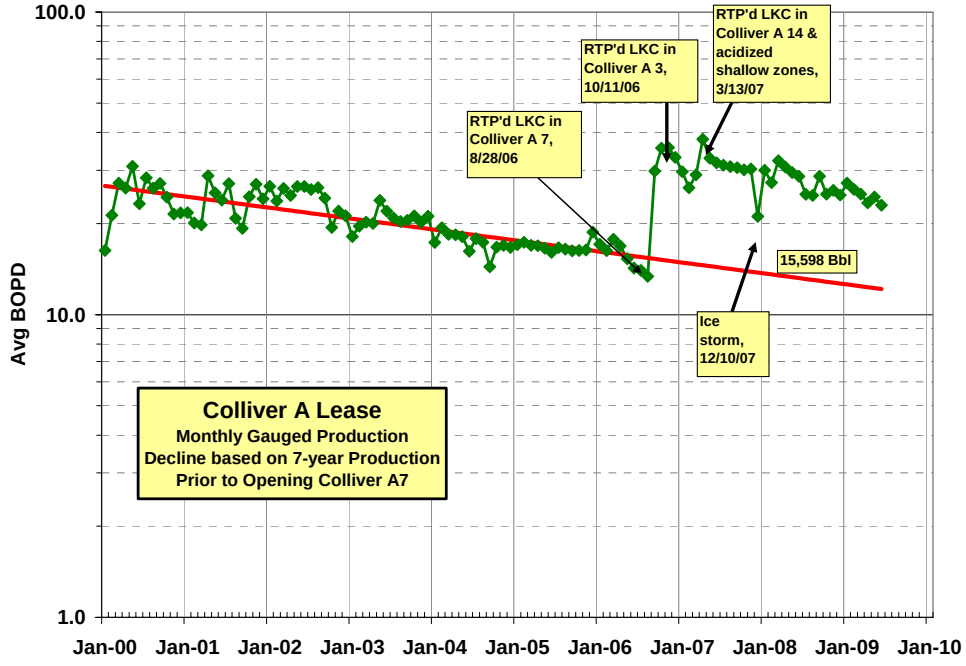

Figure 9: Colliver A lease production after C zone was opened in Colliver A #7, Colliver A#3 and Colliver A#14.

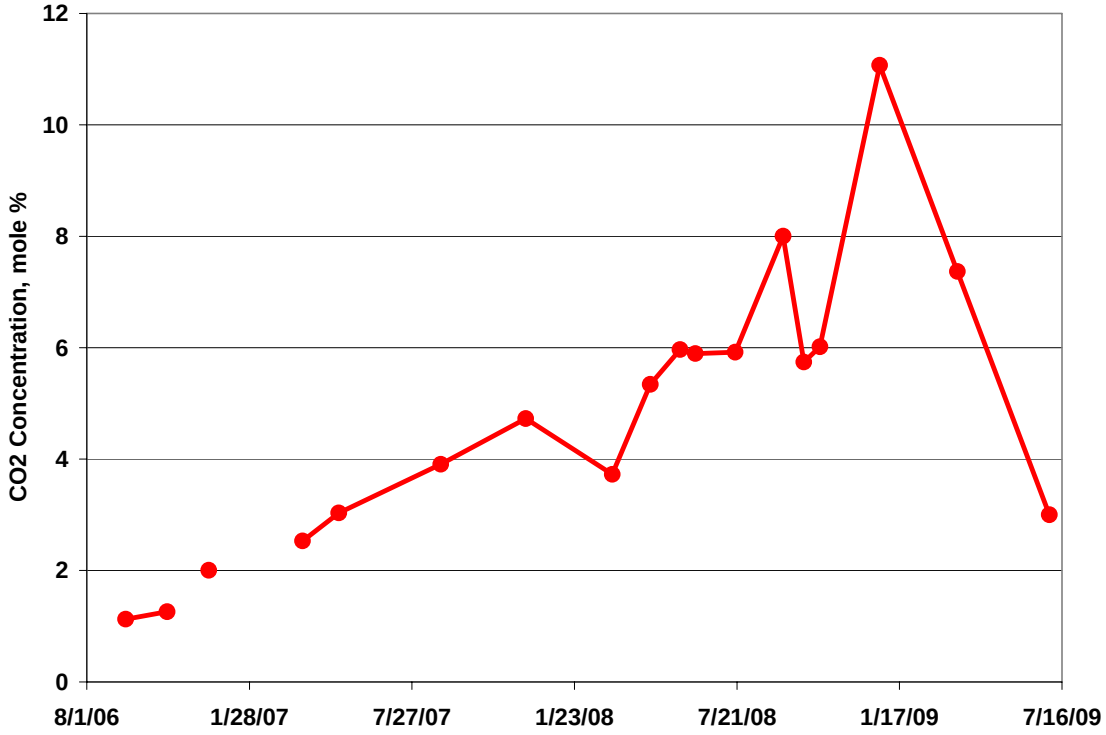

Figure 10: Carbon dioxide concentration in casing gas from Colliver A7

Table 1 contains an estimate of incremental oil from CO2 injection through June 30, 2009. Total incremental oil attributed to the CO2 project is 24,421 bbl. No additional incremental oil from the Graham A lease was added to the total after October 2006. There is evidence of production decline on the Colliver A Lease, but substantial additional incremental production should occur before rates decline to the red line indicating the estimated decline rate prior to opening Colliver A wells to the C zone.

By June 30, 2009, the gross CO2/oil ratio was 5.7 MCF/bbl which is comparable to values observed in large scale West Texas carbon dioxide floods. This demonstrates that carbon dioxide mobilized oil in the LKC ***C*** zone, a key objective of the pilot project.

Table 1: Estimated Incremental Oil from CO2 Injection into LKC ***C***

Date	CO2 Pilot	Colliver A Lease	Graham A Lease	Total BBL	MCF/BBL
6/30/09	7,903	15,598	920	24,421	5.7

Although half of the planned CO2 was injected, only about 5% of the injected CO2 has been produced. A small amount of CO2 is produced in CO2#12 and CO2#13 but is not measured. Consequently, 95% of the injected CO2 remains in the C zone when water injection began. Pressures in much of the pilot region have remained above MMP through maintaining injection pressures in CO2I-1, CO2#10 and CO2#18. At the present time, we suspect that the remaining carbon dioxide may have been trapped by injected water as a residual carbon dioxide saturation or dissolved in the residual oil and water. Although oil mobilized by carbon dioxide continues to be displaced by the injected water, continued decline in oil production rate is likely to occur on the Colliver A lease and the CO2 pilot lease.

Pressure in Pilot Region

Estimated pressure contours are shown in Figure 11 as of June 30, 2009. The average pressure in the PPV region was estimated using Surfer, a mapping program. In developing Figure 11, fluid level or pressure measurements were available from CO2 I-1, CO2#10, CO2#12, CO2#13, CO2#16, Carter 2 and Carter 5. Colliver A1, Carter #2, Rein A-1, Letsch #7 and Colliver A6 were assumed pumped off. The fluid head in Colliver A7 is equivalent to a pressure of 187 psi. Colliver #3 was assumed to have a pressure of 100 psi. No data are available in the white areas beyond the pilot area. The average pressure in the region delineated by the solid black line is about 1518 psi. The pressure in the region around CO2 I-1 is well above the estimated MMP pressure, which was about 1250 psi. Carbon dioxide remaining in this region is either dissolved in the residual oil and water or existing as a free supercritical fluid phase.

Carbon Dioxide

The amount of carbon dioxide injected was 16,190,000 lb. The amount of carbon dioxide produced is about 766,841 lb. About 95% of the carbon dioxide remains in the reservoir. Carbon dioxide injection began in December 2003 and fluid injection has been continuous. Carbon

dioxide from the pilot region is being produced from Colliver A7 as shown in Figure 10. Other than Colliver A7, evidence of injected carbon dioxide has not been detected in any well outside of the project area even though Colliver #1, Rein A-1, Colliver A6, Letsch #7 and Carter #5 have been pumped off throughout the project. Thus, there appear to be no high permeability channels from the pilot region. Analysis of the 4D seismic data has not indicated presence of carbon dioxide in strata above or below the injected interval.

It is believed that much of the remaining carbon dioxide is within the boundary outlined by the solid line in Figure 11. The average pressure in the region outlined by the solid boundary is well above the critical pressure for carbon dioxide at reservoir temperature. The region of high pressure extends substantial distance to the north of the pilot area even with the pressure sink introduced by placing Colliver A7 on production. The carbon dioxide that is present in the region north of the pilot area is probably dissolved in the oil and water phases.

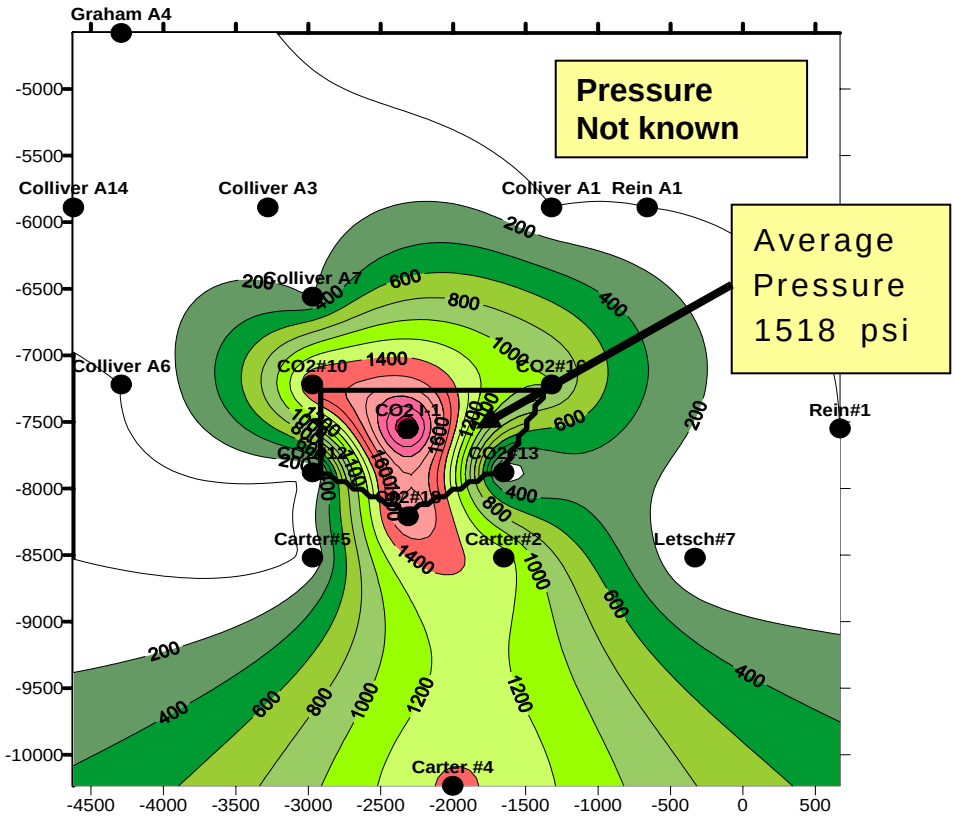

Figure 11: Estimated pressure distribution on Colliver-Carter Leases on June 30, 2009 using Surfer

General Observations

The CO2 Pilot was designed and operated on the basis that oil produced from the pilot wells (CO2 #12 and CO2#13) would come from displacement of oil by carbon dioxide in the PPV (processed pore volume) region. Injection of water into CO2#10 was done to restrict the loss of carbon dioxide north of the PPV area to 30%. Reservoir simulations were consistent with this

assumption.

Oil production from pattern wells is significantly less than estimated and at slower rates than predicted. Much of the oil attributed to CO2 injection has been produced from CO2#12. Oil produced from CO2#13 averaged 1 B/D. CO2#13 is poorly connected to the pilot region and has not experienced the arrival of an oil bank created by carbon dioxide injection.

Results indicate that the pilot area is more heterogeneous than represented in the reservoir model. Production from wells to the northwest of the pilot region indicates that there is a directional permeability trend from NW toward the pilot region and that oil displaced from carbon dioxide injection was produced from Colliver A7, Colliver A3, Colliver A14 and Graham A4.

The majority of the injected carbon dioxide remains in the pilot region, which has been maintained at a pressure at or above the minimum miscibility pressure. Our management plan is to continue water injection to displace oil mobilized by carbon dioxide injected into the C zone.

We revised our reservoir model to reflect the complex heterogeneity indicated by field performance. The revised reservoir description includes compartmentalization described in the December 2008 Semi Annual Report (2). We have been unable to improve the match between observed and predicted field performance using the revised reservoir description.

TASK 7.0 PROJECT MANAGEMENT

A project management plan was developed consisting of a Technical Team and an Operational Team. Technical Team members include Paul Willhite, Don Green and Jyun Syung Tsau. The Operational Team member is Richard Pancake. Changes in field operations are initiated through the Operational Team. Coordination of the activities is done between Paul Willhite (Technical Team) and Richard Pancake (Operational Team). Production and injection workbooks are updated monthly by personnel in Murfin's office in Russell and transmitted electronically to members of the Technical and Operational Team. These Excel workbooks are archived periodically in an FTP site accessible to members of the Technical and Operational Teams.

Various members of the Kansas CO2 Team communicate primarily by email over specific technical or business issues. Conference calls are arranged when the discussion involves more than two members of a team.

Budget Period 3 began on January 1, 2009. Development of a revised reservoir description and simulation of the carbon dioxide flood was completed under a no-cost extension of Budget Period 2 to June 30, 2009.

CONCLUSIONS

Water injection continued in CO2 I-1 to displace the oil bank generated by carbon dioxide injection to the production wells. By June 30, 2009, 271,039 bbl of water were injected into CO2 I-1 and 7,903 bbl of oil were produced from the pilot pattern. Oil production rates increased from averaged 3.9 B/D during the period from January 1-June 30, 2009. Production from wells to the northwest of the pilot region indicates that oil displaced from carbon dioxide injection was produced from Colliver A7, Colliver A3, Colliver A14 and Graham A4. The amount of incremental oil produced from adjacent leases is about 16,518 bbl. Total oil production attributed to CO2 injection is 24,421 bbl. This is equivalent to a gross CO2 utilization of 5.7 MCF/bbl. There is evidence of a directional permeability trend from NW to SE through the pilot region. The majority of the injected carbon dioxide remains in the pilot region, which has been maintained at a pressure at or above the minimum miscibility pressure. Our management plan is to continue water injection to maintain oil displacement mobilized in the C zone by carbon dioxide injection.

REFERENCES

1. "Field Demonstration of Carbon Dioxide Miscible Flooding in the Lansing Kansas City Formation, Central Kansas", Semi Annual Report July 1, 2004-December 31, 2004, DOE Contract No. DE-AC26-00BC15124.
2. "Field Demonstration of Carbon Dioxide Miscible Flooding in the Lansing Kansas City Formation, Central Kansas", Semi Annual Report July 1, 2008-December 31, 2008, DOE Contract No. DE-AC26-00BC15124.

Table 2
Summary of Monthly Data
July 2008 to June 2009

Field				Jul-08 July 2008	Aug-08 Aug 2008	Sep-08 Sept 2008	Oct-08 Oct 2008	Nov-08 Nov 2008	Dec-08 Dec 2008	Jan-09 Jan 2009	Feb-09 Feb 2009	Mar-09 Mar 2009	Apr-09 April 2009	May-09 May 2009	Jun-09 June 2009	Cumulative	
I/W With 30% North Losses																	
PPV Inj CO2 I-1			%	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	
			Loss	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	
			In Pattern	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	
Production		Oil	bbl	152	122	124	129	119	124	135	104	94	117	134	117	7903	bbl
		Wtr	bbl	8302	8339	9002	7630	8374	8417	9670	7582	7259	7382	7978	8337	572	Mbbl
		Gas	mcf	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	6815	mcf
		WOR	bbl/bbl	54.63	68.40	72.84	59.34	70.62	68.11	71.49	73.23	77.62	63.15	59.72	71.32	72.44	
		Cumulative Oil	bbl	6587	6709	6832	6961	7080	7203	7338	7442	7536	7652	7786	7903		
Injection		Wtr	bbl	15894	15473	17159	17201	16010	14491	16958	15603	17557	16091	17523	19189	1,590	Mbbl
		CO2	mcf	0	0	0	0	0	0	0	0	0	0	0	0	138.05	mmcf
			Mlb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.19	MMlb
CO2 Delivered																	
			mcf	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	155	mmcf
			Mlb	0	0	0	0	0	0	0	0	0	0	0	0	17.93	MMlb
			Tons	0	0	0	0	0	0	0	0	0	0	0	0	8,963	Tons
Tank Vent																	
			mcf	0	0	0	0	0	0	0	0	0	0	0	0	15.63	mmcf
			Mlb	0	0	0	0	0	0	0	0	0	0	0	0	1.81	MMlb
			% of Injection	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.19%	

Table 3
Summary of Daily Average Data
July 2008 to June 2009

LKC Pilot Report
Daily Values

Field			Jul-08 July 2008	Aug-08 August 2008	Sep-08 Sept 2008	Oct-08 Oct 2008	Nov-08 Nov 2008	Dec-08 Dec 2008	Jan-09 Jan 2009	Feb-09 Feb 2009	Mar-09 Mar 2009	Apr-09 April 2009	May-09 May 2009	Jun-09 June 2009	Average Average Jan-Jun
Production															
	Oil	bbl	4.9	4.1	4.1	4.1	4.0	4.0	4.4	3.7	3.0	3.9	4.3	3.9	3.86
	Wtr	bbl	335	278	300	246	279	272	312	271	234	246	257	278	266.37
	Gas	mcf	NM	NM	NM	NM	NM	NM							NM
Injection															
	Wtr	bbl	209	209	243	224	204	219	205	222	214	227	227	233	212
	CO2	mcf	0	0	0	0	0	0	0	0	0	0	0	0	0.00
		Mlb	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CO2 Delivered															
		mcf	0	0	0	0	0	0	0	0	0	0	0	0	0.00
		Mlb	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tank Vent															
		mcf	0	0	0	0	0	0	0	0	0	0	0	0	0.00
		Mlb	0	0	0	0	0	0	0	0	0	0	0	0	0.00
		% of Injection													0.00
Wells															
Production															
CO2 12	Oil	bbl	3.7	3.1	3.1	3.1	3.0	3.0	3.3	2.8	2.3	2.9	3.3	2.9	2.92
	Wtr	bbl	276	229	247	203	230	224	257	223	193	203	212	229	219.43
	Gas	mcf	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Total Liquid(bbl)		280	232	250	206	233	227	260	226	195	206	215	232	221
	GOR		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CO2 13	Oil	bbl	1.20	0.99	1.01	1.01	0.97	0.97	1.07	0.90	0.74	0.95	1.05	0.95	0.94
	Wtr	bbl	59	49	53	43	49	48	55	48	41	43	45	49	47
	Gas	mcf													NM
	Total Liquid(bbl)		60	50	54	44	50	49	56	49	42	44	46	50	48
	GOR	bbl/bbl	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Total Liquid-Pattern		bbl	340	282	304	250	283	276	316	274	237	250	262	282	270
Total Gas_pattern		mcf	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
GOR-Pattern		mcf/bbl	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Injection															
CO2 10	Wtr	bbl	233	236	254	251	252	182	265	257	280	237	265	331	272
CO2 18	Wtr	bbl	70	71	75	80	78	78	78	79	72	72	73	76	75
CO2 I-1	Wtr	bbl	209	209	243	224	204	219	205	222	214	227	227	233	221