

BOPCO, L.P.
201 MAIN ST.
FORT WORTH, TEXAS 76102-3131
817/390-8400

February 7, 2012

RECEIVED OOD

2012 FEB -8 P 4:34

FEDERAL EXPRESS

Bureau of Land Management
Carlsbad District Office
620 E. Green St.
Carlsbad, New Mexico 88220
Attn: Mr. Wesley Ingram

New Mexico State Land Office
Commissioner of Public Lands
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501
Attention: Mr. Pete Martinez

New Mexico Oil Conservation Division
1220 St. Francis
Santa Fe, New Mexico 87505
Attention: Mr. William Jones

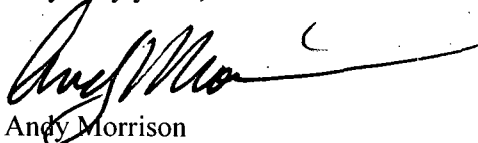
Re: Commercial Determination
PLU Big Sinks 22 Federal #1H
Avalon Shale Formation
Eddy County, New Mexico

Gentlemen:

Please find attached hereto one (1) copy of Bass' commercial determination worksheets and exhibits which indicate that the subject well is a commercial well in the Bone Spring Formation. Please indicate your concurrence to the above Commercial Determination. Upon your execution hereof, Bass will submit a participating area for the well.

Thank you very much and should you have any questions or comments in regard to the attached commercial determination, please do not hesitate to contact the undersigned.

Very truly yours,



Andy Morrison

Bureau of Land Management

New Mexico State Land Office

New Mexico Oil Conservation Division

By: _____

By: _____

By: _____

Its: _____

Its: _____

Its: _____

Date: _____

Date: _____

Date: _____

WORKSHEET FOR COMMERCIAL DETERMINATION AND PARTICIPATING AREA IN FEDERAL UNITS

WELL DATA

WELL PLU BIG SINKS 22 FEDERAL COM 1H FORMATION AVALON SHALE UPPER

LOCATION P UNIT, 175 FEET FROM South LINE & 400 FEET FROM East LINE

SECTION 22 TOWNSHIP 24S RANGE 30E COUNTY EDDY NEW MEXICO

SPUD DATE 12/1/2010 COMPLETION DATE 04/08/2011 INITIAL PRODUCTION 04/09/2011

PERFORATIONS 8275' to 12775'

BHL: NENE 358' FNL 393' FEL of Sec 22 T24S R30E

STIMULATION:

ACID _____

FRACTURE Frac with 60,000 gal 15% HCL, 97500 bbls frac fluid 4,800,000# sand

POTENTIAL 4/12/2011: 348 BOPD, 151 MCFPD, 348 BWPD

(Attach Copy of C-105. Attach Copy of Wellbore Sketch of Completed Well.)

VOLUMETRIC CALCULATION

	SANDS PERFORATED	SANDS NOT PERFORATED BUT POTENTIALLY PRODUCTIVE
Area (A) proration unit size, acres	<u>160</u>	<u> </u>
Porosity (por), %	<u>7%</u>	<u> </u>
Water saturation (Sw), %	<u>35%</u>	<u> </u>
Net Thickness (h), ft.	<u>87</u>	<u> </u>
Temperature (T), Fahrenheit	<u>120</u>	<u> </u>
Bottom Hole pressure (P), psia	<u>3,807</u>	<u> </u>
Recovery factor (RF), %	<u>65%</u>	<u> </u>
Recoverable gas, BCF *(See eq. below)	<u>5.4</u>	<u> </u>

*Sometimes unable to match performance due to volumetric uncertainty.

Formula = $(7758) (A) (h) (por) (1-Sw)(RF)/Bgi$

Bgi = 0.64 RB/MCF

Continued

PERFORMANCE DATA

(If sufficient history exists, attach plot of oil production rate v time.)

CUMULATIVE PRODUCTION TO	10/01/2011	413,146	MCF Gas	55,661	BBL Oil
INITIAL RATE (qi)	2406 MCFPD				
ECONOMIC LIMIT (ql)	43				
HYPERBOLIC DECLINE RATE, dy	n=1.5 d=56.9%				
REMAINING GAS (Q) =	3,518,854				
ULTIMATE RECOVERABLE GAS (mcf)	3,932,000				

(Attach plat showing proration unit and participating area.)

ECONOMIC

GROSS WELL COST \$ \$3,150 (to the depth of formation completed)

COMPLETION COST \$ 3,150

GROSS TOTAL COST \$ \$6,300

YEAR	GROSS GAS MMCF	BFIT NET INCOME (\$M)	OPERATING COST (\$M) INCL SEV & AD VAL TAX	5% NET BFIT DISCOUNTED CASH FLOW
ZERO				
1	602.1	6,847.5	1022.7	-565.5
2	458.8	3,886.0	560.1	3,137.4
3	293.5	2,537.8	406.13	1,913.0
4	226.1	1,990.0	357.36	1,394.8
5	187.7	1,691.8	330.84	1,107.0
6	162.4	1,496.6	313.48	916.4
7	144.2	1,352.4	300.63	775.8
8	130.4	1,245.8	291.13	670.6
9	119.4	1,162.4	283.71	587.8
10	110.5	1,102.7	278.43	525.1
REMAINDER	1,497	18,247.0	7614.8	4,368.3
TOTAL	3,932	41,560.0	11759.31	14,830.8

WELL IS COMMERCIAL

use: PLU BIG SINKS 22 FEDERAL
eld: POKER LAKE
erator: CHESAPEAKE OPERATING I
unty: EDDY State: NM
l Differential: -4.59194 \$/BBL
s Wellhead Differential: -1.69

DATE : 10/18/2011
TIME : 15:01:31
DBS : CHK0101
SETTINGS : cnj0411
QUALIFIER: CNJ0411

R E S E R V E S A N D E C O N O M I C S

AS OF DATE: 04/2011

END--	GROSS OIL	GROSS GAS	NET OIL	NET GAS	NET NGL	NET EQUIV	-----	PRICES	-----	NET	NET	NET
YEAR	PRODUCTION	PRODUCTION	PRODUCTION	PRODUCTION	PROD	PRODUCTION	OIL	GAS	NGL	OIL SALES	GAS SALES	NGL SALES
-----	---MBBLS---	---MMCF---	---MBBLS---	---MMCF---	---MBBLS---	---MMCF---	-\$/BBL-	-\$/MCF-	-\$/BBL-	---M\$---	---M\$---	---M\$---
1-2011	9.63	11.13	8.43	6.93	0.69	61.63	76.408	2.790	33.57	643.98	19.33	23.10
2-2011	58.44	590.95	51.14	367.95	36.56	894.13	76.408	2.790	33.57	3907.44	1026.59	1227.10
3-2012	29.89	458.76	26.15	285.65	28.38	612.83	79.908	2.810	35.02	2089.57	802.68	993.79
4-2013	18.51	293.50	16.20	182.75	18.16	388.89	83.408	2.870	36.47	1351.18	524.49	662.13
5-2014	13.90	226.14	12.16	140.81	13.99	297.72	86.748	2.880	37.85	1054.98	405.53	529.53
6-2015	11.30	187.74	9.89	116.90	11.61	245.93	89.938	2.970	39.17	889.62	347.19	454.97
7-2016	9.62	162.39	8.41	101.11	10.05	211.87	92.958	3.050	40.42	782.08	308.40	406.11
8-2017	8.42	144.18	7.36	89.78	8.92	187.48	95.818	3.070	41.61	705.64	275.61	371.14
9-2018	7.52	130.35	6.58	81.16	8.06	169.01	98.528	3.120	42.73	647.97	253.23	344.59
10-2019	6.81	119.43	5.96	74.36	7.39	154.45	101.068	3.180	43.79	602.39	236.47	323.49
11-2020	6.24	110.54	5.46	68.83	6.84	142.63	103.458	3.360	44.78	565.23	231.25	306.18
12-2021	5.78	103.14	5.05	64.22	6.38	132.82	105.688	3.550	45.70	534.06	227.97	291.58
1-2022	5.38	96.81	4.71	60.28	5.99	124.46	107.758	3.700	46.56	507.33	223.02	278.82
2-2023	5.04	91.00	4.41	56.66	5.63	116.91	109.668	3.890	47.35	483.98	220.41	266.55
3-2024	4.75	85.54	4.16	53.26	5.29	109.96	111.418	4.110	48.07	463.25	218.90	254.39
4-2025	4.50	80.41	3.93	50.06	4.97	103.51	113.008	4.280	48.73	444.61	214.28	242.40
5-2026	4.27	75.58	3.74	47.06	4.68	97.52	114.438	4.410	49.33	427.43	207.54	230.63

S TOT	210.00	2967.58	183.75	1847.76	183.58	4051.75	87.624	3.108	39.25	16100.75	5742.87	7206.49
AFTER	61.06	964.76	53.43	600.71	59.68	1279.36	119.476	5.094	51.33	6383.20	3060.28	3066.42
TOTAL	271.06	3932.34	237.18	2448.47	243.26	5331.11	94.799	3.595	42.23	22483.96	8803.14	10272.91

END--	NO.OF AD	VALOREM	PRODUCTION	OTHER OPER	DIRECT	OVERHEAD	TOTAL OPER	EQUITY	FUTURE NET	CUMULATIVE	CUM. DISC.
YEAR	WELLS	TAX	TAX	EXPENSES	EXPENSES	EXPENSES	EXPENSES	INVESTMENT	CASHFLOW	CASHFLOW	CASHFLOW
-----	-----	---M\$---	---M\$---	---M\$---	---M\$---	---M\$---	---M\$---	---M\$---	---M\$---	---M\$---	---M\$---
1-2011	1.	1.26	57.60	0.00	90.00	0.00	90.00	6300.00	-5762.44	-5762.44	-5763.53
2-2011	1.	11.26	532.54	0.00	330.00	0.00	330.00	0.00	5287.33	-475.11	-565.48
3-2012	1.	7.09	339.01	0.00	214.00	0.00	214.00	0.00	3325.94	2850.82	2571.92
4-2013	1.	4.63	221.50	0.00	180.00	0.00	180.00	0.00	2131.66	4982.48	4484.91
5-2014	1.	3.63	173.73	0.00	180.00	0.00	180.00	0.00	1632.68	6615.16	5879.73
6-2015	1.	3.09	147.75	0.00	180.00	0.00	180.00	0.00	1360.93	7976.09	6986.77
7-2016	1.	2.73	130.75	0.00	180.00	0.00	180.00	0.00	1183.11	9159.20	7903.21
8-2017	1.	2.47	118.16	0.00	180.00	0.00	180.00	0.00	1051.76	10210.96	8679.04
9-2018	1.	2.27	108.86	0.00	180.00	0.00	180.00	0.00	954.66	11165.62	9349.65
10-2019	1.	2.12	101.59	0.00	180.00	0.00	180.00	0.00	878.64	12044.26	9937.45
11-2020	1.	2.01	96.42	0.00	180.00	0.00	180.00	0.00	824.23	12868.49	10462.57
12-2021	1.	1.92	92.18	0.00	180.00	0.00	180.00	0.00	779.51	13648.00	10935.53
1-2022	1.	1.84	88.33	0.00	180.00	0.00	180.00	0.00	739.00	14387.00	11362.55
2-2023	1.	1.77	85.02	0.00	180.00	0.00	180.00	0.00	704.14	15091.14	11750.04
3-2024	1.	1.71	82.04	0.00	180.00	0.00	180.00	0.00	672.80	15763.93	12102.66
4-2025	1.	1.64	78.96	0.00	180.00	0.00	180.00	0.00	640.69	16404.62	12422.45
5-2026	1.	1.58	75.83	0.00	180.00	0.00	180.00	0.00	608.19	17012.81	12711.57
S TOT	1.	53.04	2530.26	0.00	3154.00	0.00	3154.00	6300.00	17012.81	17012.81	12711.57
AFTER	1.	22.83	1094.18	0.00	4905.00	0.00	4905.00	16.00	6471.89	23484.70	14830.84
TOTAL	1.	75.87	3624.44	0.00	8059.00	0.00	8059.00	6316.00	23484.70	23484.70	14830.84

	OIL	GAS		P.W. %	P.W., M\$
	-----	-----		-----	-----
ROSS WELLS	1.0	0.0	LIFE, YRS.	0.00	23484.705
ROSS ULT., MB & MMF	271.058	3932.337	DISCOUNT %	5.00	14830.846
ROSS CUM., MB & MMF	0.000	0.000	UNDISCOUNTED PAYOUT, YRS.	0.89	12063.293
ROSS RES., MB & MMF	271.058	3932.337	DISCOUNTED PAYOUT, YRS.	0.93	10716.212
ET RES., MB & MMF	237.175	2448.470	UNDISCOUNTED NET/INVEST.	4.72	9632.506
ET REVENUE, M\$	22483.955	8803.144	DISCOUNTED NET/INVEST.	3.35	8740.891
INITIAL PRICE, \$	76.408	2.790	RATE-OF-RETURN, PCT.	100.00	7993.108
INITIAL N.I., PCT.	87.500	87.500	INITIAL W.I., PCT.	100.000	6804.353
ET EQUIV RES., MMCFE		5331.108	REVERSION, YRS.	0.00	5699.789
				30.00	4862.061
PLANT GROSS PROD (MU)	278.016			40.00	3656.450
PLANT NET PROD (MU)	243.264			50.00	2814.444
PLANT NET REVENUES (M\$)	10272.911			60.00	2183.028
				80.00	1282.920
				100.00	659.909

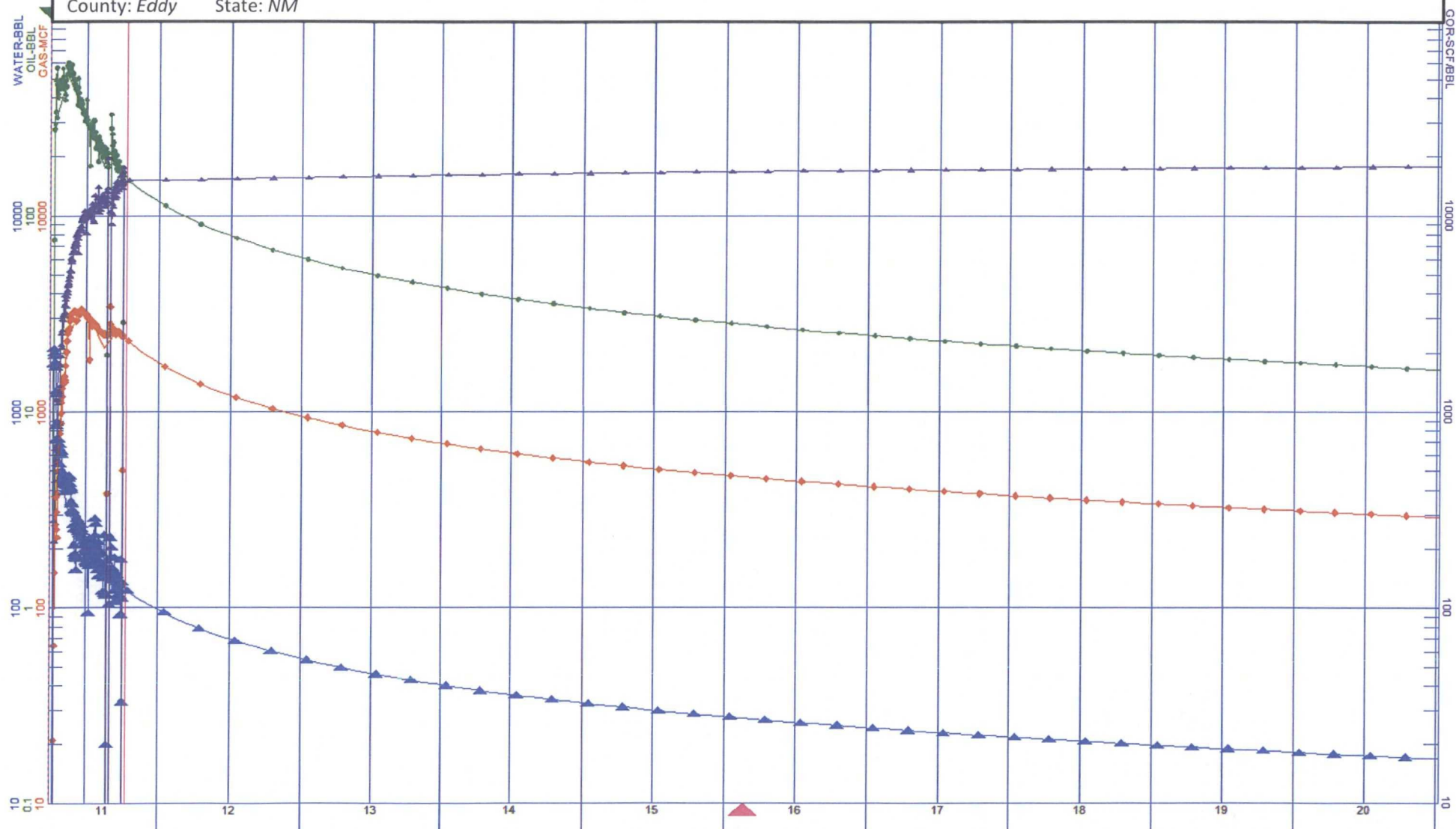
District: PERMIAN

Lease: PLU Big Sinks 22 Federal Com #1H

Field: Poker Lake

Operator: BOPCO

County: Eddy State: NM



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUN 13 2011

operator

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other		3. Lease Serial No. NMNM02862	
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other		6. If Indian, Allottee or Tribe Name	
2. Name of Operator CHESAPEAKE OPERATING INC E-Mail: lyndee.songer@chk.com		7. Unit or CA Agreement Name and No. NMNM71016X	
3. Address OKLAHOMA CITY, OK 73154-0496		8. Lease Name and Well No. PLU'BIG SINKS 22 FEDERAL 1H	
3a. Phone No. (include area code) Ph: 405-935-2411		9. API Well No. 30-015-37838-00-S1	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface SESE Lot P 175FSL 400FEL At top prod interval reported below SESE 175FSL 400FEL At total depth NENE 358FNL 393FEL		10. Field and Pool, or Exploratory WILDCAT	
14. Date Spudded 11/26/2010		15. Date T.D. Reached 12/26/2010	
16. Date Completed ☐ D & A ☒ Ready to Prod. 04/08/2010		17. Elevations (DF, KB, RT, GL)* 3352 GL	
18. Total Depth: MD TVD 12800 8196		19. Plug Back T.D.: MD TVD 12705 8101	
20. Depth Bridge Plug Set: MD TVD		21. Type Electric & Other Mechanical Logs Run (Submit copy of each) CASINGCOLLAR GAMMARAY	
22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)			

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 H-40	48.0	0	525		550		0	
11.000	8.625 J-55	32.0	0	4000		1650		0	
7.875	5.500 L-80	20.0	0	12800	4780	1525		3320	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875		7510						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING			8275 TO 12775		480	open
B)						
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
8275 TO 12775	gal 15% HCL, 97500 bbls fluid, 4800000# sand

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
04/08/2011	04/12/2011	24	→	348.0	151.0	348.0			FLOWS FROM WELL
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
	425		→	348	151	348	434	POW	

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #109062 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
RUSTLER	1191	4010		RUSTLER	1183
BELL CANYON	5820	7750		BASE OF SALT	3956
CHERRY CANYON	7750	8770		BELL CANYON	4031
BRUSHY CANYON	9780	10125		CHERRY CANYON	4860
				BRUSHY CANYON	5997

32. Additional remarks (include plugging procedure):

CONFIDENTIAL

#52 CONT:

Avalon Sand 7908

Avalon Shale 8009

First Bone Spring Carbonate 8234

First Bone Spring Sand 8715

Second Bone Spring Carbonate 9194

33. Circle enclosed attachments:

- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7. Other: | |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #109062 Verified by the BLM Well Information System.

For CHESAPEAKE OPERATING INC, sent to the Carlsbad

Committed to AFMSS for processing by DEBORAH MCKINNEY on 05/31/2011 (11DLM0808SE)

Name (please print) LYNDEE SONGERTitle REGULATORY COMPLIANCE ANALYSTSignature (Electronic Submission)Date 05/26/2011

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED **

PHOENIX

TECHNOLOGY SERVICES

Job Number: 1010711
 Company: Chesapeake Operating
 Lease/Well: PLU Big Sinks 22 Federal 1H
 Location: Eddy County, NM
 Rig Name: Patterson 62
 RKB: 3417'
 G.L. or M.S.L.: 3400' SL: X - 687258.14 Y - 435577.99 (NAD83)

State/Country: NM
 Declination: 7.77736
 Grid: -0.24
 File name: C:\711PLU~1\PLUB.SVY
 Date/Time: 26-Dec-10 / 07:03
 Curve Name: PLU Big Sinks 22 Federal

PLU Big Sinks 22 Federal

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 359.83
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
Gyro Tie In									
7700.00	.91	115.50	7698.62	-18.12	25.23	-18.19	31.06	125.69	.00
First Phoenix MWD Surveys									
7811.00	7.00	359.80	7809.35	-11.73	26.00	-11.80	28.53	114.27	6.70
7828.00	8.30	7.90	7826.20	-9.48	26.17	-9.55	27.83	109.91	9.92
7860.00	10.60	4.00	7857.77	-4.25	26.69	-4.33	27.03	99.05	7.46
7892.00	14.50	358.40	7889.00	2.69	26.78	2.61	26.92	84.26	12.75
7923.00	17.30	357.70	7918.81	11.18	26.49	11.10	28.75	67.12	9.05
7955.00	21.90	358.40	7948.95	21.90	26.13	21.83	34.10	50.03	14.39
7987.00	26.10	358.40	7978.17	34.91	25.77	34.84	43.39	36.43	13.12
8019.00	29.90	358.40	8006.42	49.93	25.35	49.85	55.99	26.92	11.87
8050.00	33.20	359.10	8032.84	66.14	25.00	66.07	70.71	20.71	10.71
8082.00	36.60	.20	8059.08	84.45	24.90	84.37	88.04	16.43	10.81
8114.00	39.70	1.20	8084.24	104.21	25.14	104.13	107.20	13.57	9.88
8146.00	41.90	357.70	8108.47	125.11	24.93	125.03	127.57	11.27	9.91
8177.00	46.10	355.20	8130.76	146.59	23.58	146.52	148.48	9.14	14.66
Hard Line Crossing//Interpolated Point									
8188.00	47.51	354.84	8138.29	154.58	22.88	154.51	156.27	8.42	13.02
8209.00	50.20	354.20	8152.11	170.32	21.37	170.26	171.66	7.15	13.02
8241.00	54.20	356.30	8171.72	195.51	19.29	195.45	196.46	5.63	13.53
8272.00	58.70	357.00	8188.85	221.30	17.79	221.24	222.01	4.59	14.64
8304.00	62.60	357.70	8204.53	249.15	16.50	249.10	249.70	3.79	12.34
8336.00	67.30	358.80	8218.07	278.12	15.62	278.07	278.56	3.21	15.01

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
8368.00	72.00	358.80	8229.20	308.11	14.99	308.06	308.47	2.79	14.69
8399.00	77.10	358.40	8237.45	337.97	14.26	337.93	338.27	2.42	16.50
8430.00	82.10	358.40	8243.05	368.44	13.41	368.40	368.68	2.08	16.13
8462.00	87.10	358.80	8246.06	400.28	12.63	400.24	400.48	1.81	15.67
8494.00	92.90	359.80	8246.06	432.26	12.24	432.22	432.44	1.62	18.39
8526.00	93.30	359.10	8244.33	464.21	11.93	464.18	464.37	1.47	2.52
8558.00	93.60	359.50	8242.40	496.15	11.54	496.12	496.29	1.33	1.56
8590.00	93.60	359.10	8240.39	528.09	11.15	528.05	528.21	1.21	1.25
8622.00	95.30	359.50	8237.91	559.99	10.76	559.95	560.09	1.10	5.46
8653.00	95.60	359.50	8234.97	590.85	10.49	590.81	590.94	1.02	.97
8685.00	95.60	359.10	8231.84	622.69	10.11	622.66	622.77	.93	1.24
8780.00	94.20	.20	8223.73	717.34	9.53	717.31	717.40	.76	1.87
8812.00	93.70	359.80	8221.53	749.26	9.53	749.23	749.32	.73	2.00
8907.00	90.90	357.70	8217.71	844.15	7.46	844.12	844.18	.51	3.68
9002.00	92.20	356.60	8215.14	938.99	2.73	938.98	939.00	.17	1.79
9097.00	91.70	356.60	8211.91	1033.77	-2.90	1033.77	1033.77	359.84	.53
9193.00	91.50	356.60	8209.23	1129.56	-8.59	1129.58	1129.60	359.56	.21
9287.00	92.00	357.00	8206.36	1223.37	-13.83	1223.41	1223.45	359.35	.68
9382.00	91.50	357.30	8203.46	1318.21	-18.55	1318.26	1318.34	359.19	.61
9477.00	90.30	358.40	8201.97	1413.13	-22.12	1413.19	1413.30	359.10	1.71
9573.00	87.90	357.00	8203.47	1509.03	-25.97	1509.10	1509.25	359.01	2.89
9668.00	89.30	357.00	8205.79	1603.87	-30.94	1603.95	1604.17	358.89	1.47
9763.00	91.10	.20	8205.46	1698.82	-33.26	1698.92	1699.15	358.88	3.86
9859.00	90.50	.50	8204.12	1794.81	-32.67	1794.90	1795.11	358.96	.70
9954.00	89.90	3.00	8203.79	1889.76	-29.77	1889.84	1889.99	359.10	2.71
10049.00	90.70	3.30	8203.29	1984.61	-24.55	1984.68	1984.77	359.29	.90
10144.00	89.80	1.60	8202.88	2079.52	-20.49	2079.57	2079.62	359.44	2.02
10240.00	91.40	2.30	8201.87	2175.46	-17.22	2175.50	2175.53	359.55	1.82
10335.00	92.10	3.00	8198.97	2270.31	-12.83	2270.34	2270.35	359.68	1.04
10430.00	91.50	2.30	8195.99	2365.16	-8.44	2365.18	2365.18	359.80	.97
10525.00	90.00	1.90	8194.74	2460.09	-4.96	2460.09	2460.09	359.88	1.63
10620.00	90.10	2.30	8194.66	2555.02	-1.48	2555.01	2555.02	359.97	.43
10715.00	88.90	1.90	8195.49	2649.95	2.00	2649.93	2649.95	.04	1.33
10812.00	89.40	1.20	8196.93	2746.91	4.62	2746.88	2746.91	.10	.89
10907.00	89.50	.20	8197.84	2841.89	5.78	2841.86	2841.90	.12	1.06
11003.00	89.20	.20	8198.93	2937.89	6.12	2937.85	2937.89	.12	.31
11098.00	89.00	359.80	8200.42	3032.87	6.12	3032.84	3032.88	.12	.47
11194.00	90.30	359.10	8201.01	3128.86	5.20	3128.84	3128.87	.10	1.54
11289.00	90.50	358.80	8200.35	3223.85	3.45	3223.82	3223.85	.06	.38
11384.00	91.50	358.40	8198.69	3318.80	1.13	3318.78	3318.80	.02	1.13
11479.00	89.50	359.10	8197.86	3413.77	-.94	3413.76	3413.77	359.98	2.23
11574.00	90.70	359.80	8197.69	3508.76	-1.85	3508.75	3508.76	359.97	1.46
11670.00	90.70	359.50	8196.52	3604.75	-2.44	3604.75	3604.76	359.96	.31
11765.00	90.80	359.50	8195.28	3699.74	-3.27	3699.74	3699.74	359.95	.11
11860.00	90.10	358.00	8194.53	3794.71	-5.34	3794.71	3794.72	359.92	1.74

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1955.00	89.20	357.30	8195.11	3889.63	-9.23	3889.64	3889.64	359.86	1.20
2051.00	87.10	359.10	8198.21	3985.52	-12.25	3985.54	3985.54	359.82	2.88
2146.00	88.30	359.80	8202.02	4080.44	-13.16	4080.46	4080.46	359.82	1.46
2241.00	89.30	.90	8204.01	4175.42	-12.58	4175.43	4175.43	359.83	1.56
2336.00	91.40	.90	8203.43	4270.40	-11.09	4270.41	4270.41	359.85	2.21
2432.00	91.60	1.20	8200.92	4366.35	-9.33	4366.36	4366.36	359.88	.38
2527.00	91.20	1.20	8198.60	4461.30	-7.34	4461.30	4461.30	359.91	.42
2622.00	90.70	.90	8197.02	4556.27	-5.60	4556.27	4556.27	359.93	.61
2717.00	90.20	359.50	8196.28	4651.26	-5.27	4651.26	4651.27	359.94	1.56
Last Phoenix MWD Surveys									
2754.00	89.90	358.40	8196.25	4688.26	-5.94	4688.25	4688.26	359.93	3.08
Projection to TD									
2800.00	89.90	358.40	8196.33	4734.24	-7.23	4734.24	4734.24	359.91	.00



BLM PLU Schematic

PLU BIG SINKS 22 FEDERAL 1H

CONFIDENTIAL

Field:
County: EDDY
State: NEW MEXICO
Location: SEC 22-24S-30E, 175 FSL & 400 FEL
Elevation: GL 3,352.0 KB 3,372.0
KB Height: 20.0

Spud Date: 11/26/2010
Initial Compl. Date:
API #: 3001537838
CHK Property #: 631298
1st Prod Date: 4/8/2011
PBDT: Original Hole - 12705.0
TD: 12,800.0

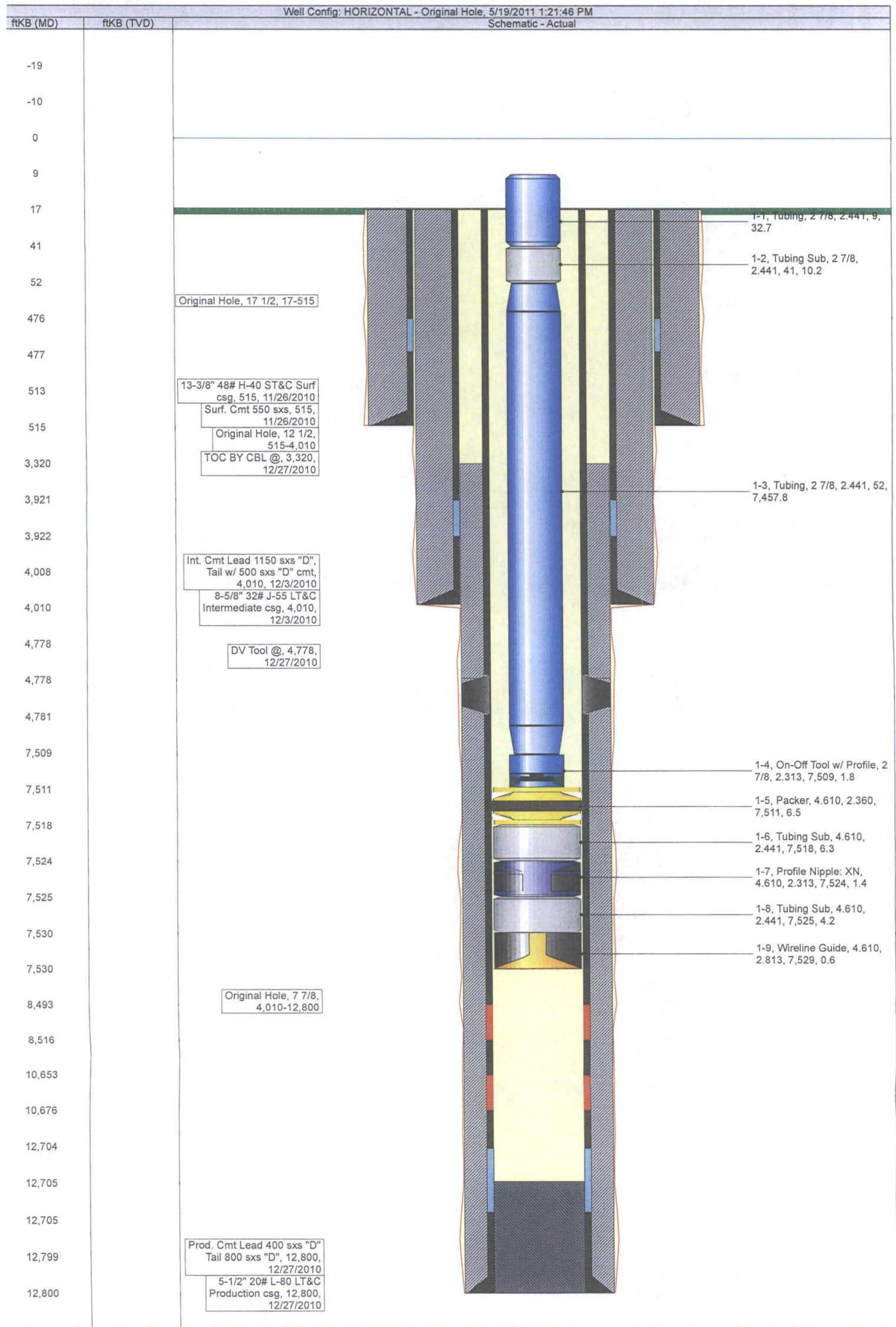


Figure 52. Average annual world oil prices in three cases, 1980-2035 (2009 dollars per barrel)

Reference High Oil Price Low Oil Price

1980	76.16
1981	73.52
1982	61.24
1983	51.61
1984	47.76
1985	43.91
1986	23.18
1987	28.79
1988	23.16
1989	27.44
1990	33.00
1991	28.00
1992	26.13
1993	22.89
1994	20.91
1995	21.96
1996	25.87
1997	23.71
1998	16.41
1999	21.69
2000	33.34
2001	27.85
2002	27.58
2003	32.05
2004	41.55
2005	54.99
2006	62.10
2007	66.30
2008	87.11
2009	36.53
2010	77.50
2011	81.00
2012	84.50
2013	88.00
2014	91.34
2015	94.53
2016	97.55
2017	100.41
2018	103.12
2019	105.66
2020	108.05
2021	110.28
2022	112.35
2023	114.26
2024	116.01
2025	117.60
2026	119.03
2027	120.30
2028	121.42
2029	122.37
2030	123.17
2031	123.81
2032	124.28
2033	124.60
2034	124.76
2035	125.00

Figure 52. Average annual world oil prices in three cases, 1980-2035 (2009 dollars per barrel)

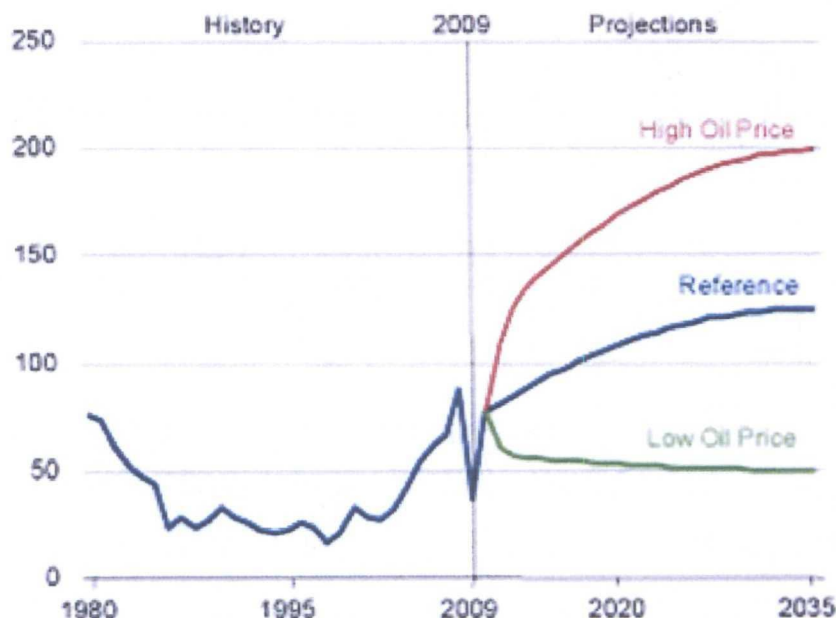


Figure 86. Annual average lower 48 wellhead and Henry Hub spot market prices for natural gas, 1990-2035 (2009 dollars per million Btu)

	Henry Hub Spot Market	Lower 48 Wellhead
1990	2.58	2.58
1991	2.18	2.36
1992	2.54	2.43
1993	2.97	2.85
1994	2.64	2.56
1995	2.27	2.06
1996	3.63	2.86
1997	3.24	3.05
1998	2.68	2.59
1999	2.87	2.71
2000	5.34	4.36
2001	4.78	5.04
2002	4.01	3.54
2003	6.37	5.92
2004	6.68	6.22
2005	9.68	7.82
2006	7.15	6.91
2007	7.19	6.42
2008	8.94	7.96
2009	3.95	3.62
2010	4.43	3.98
2011	4.48	3.99
2012	4.50	3.98
2013	4.56	4.04
2014	4.57	4.05
2015	4.66	4.13
2016	4.74	4.20
2017	4.76	4.22
2018	4.81	4.26
2019	4.87	4.31
2020	5.05	4.47
2021	5.24	4.64
2022	5.39	4.77
2023	5.58	4.94
2024	5.80	5.13
2025	5.97	5.29
2026	6.10	5.40
2027	6.24	5.52
2028	6.31	5.59
2029	6.35	5.62
2030	6.40	5.66
2031	6.49	5.75
2032	6.62	5.86
2033	6.74	5.96
2034	6.87	6.09
2035	7.07	6.26

Figure 86. Annual average lower 48 wellhead and Henry Hub spot market prices for natural gas, 1990-2035 (2009 dollars per million Btu)

