

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

January 6, 2011

RECEIVED OCD
2011 JAN 10 A 10:57

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 Pierce Canyon 28 Federal #1H
Bone Spring 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: _____

INTER-OFFICE MEMORANDUM
MIDLAND OFFICE

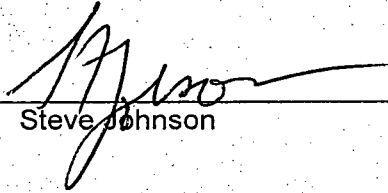
December 15, 2010

TO: FORT WORTH, FILES
FOR: FRANK McCREIGHT
FROM: STEVE F. JOHNSON
RE: COMMERCIAL DETERMINATION
PLU PIERCE CANYON 28 FEDERAL #1H
EDDY COUNTY, NEW MEXICO
FILE: 100-WF: PLUPC281HCD.DOC

Attached are the worksheets and necessary exhibits for the PLU Pierce Canyon 28 Federal #1H to be submitted for commercial determination.

The PLU Pierce Canyon 28 Federal #1H was drilled in 2009 to a total depth of 12,385' and was completed in the Bone Spring reservoir. The well is producing from perforations 8,183-12,371'. On test 7/31/2009 the well pumped at the rate of 148 BOPD, 539 MCFPD, and 1263 BWPD. This well is expected to recover approximately 363.2 MBOE from the current completion.

A price file from the DOE/EIA website (figure 69) was utilized and the oil price was adjusted by - \$3.41/BO, the gas was adjusted with a 54% shrinkage and 17% differential. An operating cost of \$14,000/mo was also incorporated in this evaluation. This will be a commercial well and should be incorporated into a participating area.



Steve Johnson

RSD/cdp

cc: Ross Sutton
George Hillis
Brad Glasscock

WORKSHEET FOR COMMERCIAL DETERMINATION AND PARTICIPATING AREA IN FEDERAL UNITS

WELL DATA

WELL	PLU PIERCE CANYON 28 FEDERAL 1H		FORMATION	BONE SPRING	
LOCATION	A	UNIT, 350	FEET FROM NORTH LINE &	850	FEET FROM EAST LINE
SECTION	28	TOWNSHIP 24S	RANGE 30E	COUNTY Eddy	NEW MEXICO
SPUD DATE	4/23/2009		COMPLETION DATE	7/14/2009	
			INITIAL PRODUCTION	7/16/2009	
PERFORATIONS	8183-12371'				
BHL:	350' FNL & 850' FEL SEC 28 T24S R30E				
STIMULATION:					
	ACID				
	FRACTURE				
	Frac w/ 50,000 gal 15% hcl, 85,745 bbl gel, 3,519,278# sd				
POTENTIAL	(7/6/2009): 148 BOPD, 539 MCFPD, 1263 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>	
Porosity (Φ), %	<u>7%</u>	
Water saturation (Sw), %	<u>40%</u>	
Net Thickness (H), ft.	<u>67</u>	
Temperature (T), Fahrenheit	<u>120</u>	
Bottom Hole pressure (P), psia	<u>3,519</u>	
Recovery factor (RF), %	<u>55%</u>	
Recoverable gas, BCF *(See eq. below)	<u>1.587</u>	

*Sometimes unable to match performance due to volumetric uncertainty.

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

Bgi = 1.10 RB/MCF

Continued

PERFORMANCE DATA

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

CUMULATIVE PRODUCTION TO	<u>5/31/2010</u>	<u>16,308</u>	BBL Oil	<u>245,760</u>	MCF Gas
INITIAL RATE (qi)		<u>320</u>			
ECONOMIC LIMIT (ql)		<u>41</u>			
HYPERBOLIC DECLINE RATE, dy		<u>n = 1.50 d = 28.58%/yr</u>			
REMAINING GAS (Q) =		<u>1,357,668</u>			
ULTIMATE RECOVERABLE GAS (MCF)		<u>1,603,428</u>			

(Attach plat showing proration unit and participating area.)

ECONOMIC

GROSS WELL COST \$2,311,500 (to the depth of formation completed)COMPLETION COST \$2,443,500GROSS TOTAL COST \$4,755,000

YEAR	GROSS GAS MMCF	BFIT NET INCOME (\$M)	OPERATING COST (\$M) INCL SEV & AD VAL TAX	5% NET BFIT DISCOUNTED CASH FLOW
ZERO				
1	<u>165.247</u>	<u>1055.4</u>	<u>147.2</u>	<u>-3853.5</u>
2	<u>213.754</u>	<u>1680.5</u>	<u>312.3</u>	<u>1315.9</u>
3	<u>116.616</u>	<u>969.1</u>	<u>251.4</u>	<u>656.4</u>
4	<u>88.044</u>	<u>764.9</u>	<u>233.8</u>	<u>462.6</u>
5	<u>72.372</u>	<u>645.1</u>	<u>223.4</u>	<u>349.8</u>
6	<u>62.232</u>	<u>565.2</u>	<u>216.5</u>	<u>275.5</u>
7	<u>55.032</u>	<u>510.0</u>	<u>211.8</u>	<u>224.4</u>
8	<u>49.620</u>	<u>467.8</u>	<u>208.1</u>	<u>186.1</u>
9	<u>45.360</u>	<u>431.9</u>	<u>205.0</u>	<u>154.8</u>
10	<u>41.916</u>	<u>404.5</u>	<u>202.7</u>	<u>131.2</u>
REMAINDER	<u>693.235</u>	<u>7422.9</u>	<u>5504.1</u>	<u>838.4</u>
TOTAL	<u>1603.428</u>	<u>14917.4</u>	<u>7716.3</u>	<u>741.6</u>

WELL IS NOT COMMERCIAL

ECONOMIC PROJECTION

Date : 12/15/2010

Lior:

11:32:46AM

Project Name : Exp of WTD Dev Drilling Inventory

As Of Date : 09/01/2009

Lease Name : PC28_1 ACTUAL PRD

Partner : All Cases

Discount Rate (%) : 5.00

Reserv Cat. : Proved Producing

Case Type : LEASE CASE

PC28_1 ACTUAL PRD

Field : POKER LAKE OIL

Archive Set : INVENTORY

Operator : CHESAPEAKE

Cum Oil (Mbbbl) : 0.00

Reservoir : AVALON SHALE

Cum Gas (MMcf) : 0.00

Co., State : EDDY, NM

Risk: 0.000 Inherited/ 0.000 Compounded

Year	Gross Wet Production		Gross Dry Gas & NGL		Sales		
	Oil (Mbbbl)	Wet Gas (MMcf)	Dry Gas (MMcf)	NGL (Mgal)	Oil (Mbbbl)	Gas (MMcf)	NGL (Mgal)
2009	9.808	165.247	76.014	523.833	8.582	66.512	458.354
2010	14.715	213.754	98.327	677.600	12.876	86.036	592.900
2011	7.800	116.616	53.643	369.673	6.825	46.938	323.464
2012	5.676	88.044	40.500	279.099	4.966	35.438	244.212
2013	4.548	72.372	33.291	229.419	3.979	29.130	200.742
2014	3.828	62.232	28.627	197.275	3.349	25.048	172.616
2015	3.336	55.032	25.315	174.451	2.919	22.150	152.645
2016	2.964	49.620	22.825	157.295	2.594	19.972	137.633
2017	2.676	45.360	20.866	143.791	2.342	18.257	125.817
2018	2.448	41.916	19.281	132.874	2.142	16.871	116.265

Rem	38.172	693.235	318.888	2,197.554	33.400	279.027	1,922.860
Total	95.971	1,603.428	737.577	5,082.866	83.975	645.380	4,447.508
Ult.	95.971	1,603.428					

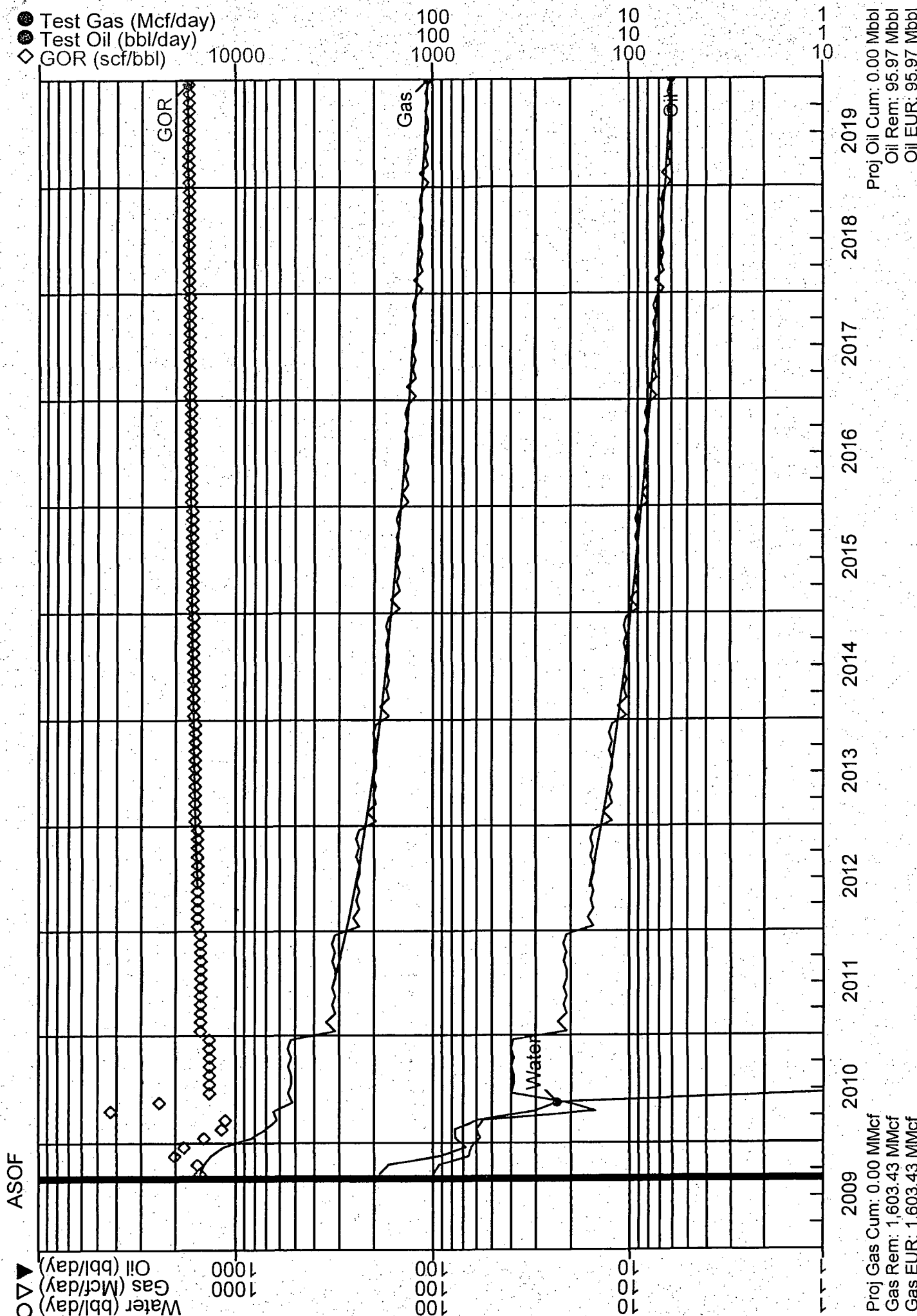
Year	Average Price			Net Revenue			
	Oil (\$/bbl)	Gas (\$/Mcf)	NGL (\$/gal)	Oil (M\$)	Gas (M\$)	NGL (M\$)	Total (M\$)
2009	55.80	2.95	0.83	478.88	196.13	380.43	1,055.44
2010	66.89	3.80	0.83	861.25	327.13	492.11	1,680.49
2011	69.65	4.80	0.83	475.36	225.27	268.47	969.10
2012	76.00	5.21	0.83	377.45	184.75	202.70	764.90
2013	82.33	5.18	0.83	327.63	150.88	166.62	645.12
2014	87.50	5.15	0.83	293.08	128.89	143.27	565.24
2015	91.11	5.30	0.83	265.95	117.35	126.70	509.99
2016	94.82	5.39	0.83	245.92	107.66	114.24	467.82
2017	97.82	5.39	0.83	229.05	98.42	104.43	431.89
2018	101.00	5.43	0.83	216.34	91.66	96.50	404.50
Rem	118.82	6.66	0.83	3,968.72	1,858.25	1,595.97	7,422.94
Total	92.17	5.40	0.83	7,739.63	3,486.38	3,691.43	14,917.45

Year	Expenditures				Future Net Revenue			
	Total Sev Taxes (M\$)	Total Adv Taxes (M\$)	Net Investments (M\$)	Total Net Opcosts (M\$)	Annual (M\$)	Cumulative (M\$)	Disc. Ann. CF 5.00 % (M\$)	Cum. Disc. CF 5.00 % (M\$)
2009	89.06	2.11	4,755.00	56.00	-3,846.73	-3,846.73	-3,853.52	-3,853.52
2010	140.96	3.36	0.00	168.00	1,368.16	-2,478.57	1,315.91	-2,537.61
2011	81.47	1.94	0.00	168.00	717.69	-1,760.87	656.40	-1,881.21
2012	64.29	1.53	0.00	168.00	531.08	-1,229.79	462.56	-1,418.65
2013	54.14	1.29	0.00	168.00	421.69	-808.10	349.80	-1,068.85
2014	47.39	1.13	0.00	168.00	348.73	-459.37	275.51	-793.34
2015	42.74	1.02	0.00	168.00	298.23	-161.14	224.40	-568.94
2016	39.19	0.94	0.00	168.00	259.69	98.55	186.08	-382.86
2017	36.16	0.86	0.00	168.00	226.87	325.42	154.82	-228.03
2018	33.85	0.81	0.00	168.00	201.84	527.26	131.19	-96.84
Rem	621.26	14.85	0.00	4,867.94	1,918.90	1,918.90	838.43	838.43
Total	1,250.51	29.83	4,755.00	6,435.94	2,446.16	2,446.16	741.59	741.59

Major Phase :	Gas	Working Int :	1.00000000	Present Worth Profile (M\$)	
Perfs :	0 0	Revenue Int :	0.87500000		
Initial Rate :	9,718.00 Mcf/month	Disc. Initial Invest. (m\$) :	4,755.000	5.00% :	741.59
Abandonment :	1,349.40 Mcf/month	Internal ROR (%) :	8.91	8.00% :	145.14
Initial Decline :	28.58 % year b = 1.501	ROI Investment (disc/undisc) :	1.16 / 1.51	10.00% :	-158.49
Bee Ratio :	0.07 bbl/Mcf	Years to Payout :	6.95	12.00% :	-410.28
End Ratio :	0.05 bbl/Mcf	Abandonment Date :	12/22/2047	15.00% :	-717.69
Forecast Start :	07/01/2011			20.00% :	-1,104.55
		Initial	1st Rev.	30.00% :	-1,616.08
		Working Interest :	0.00000000	40.00% :	-1,947.37
		Revenue Interest :	0.87500000	50.00% :	-2,183.89
		Rev. Date :		60.00% :	-2,363.37

Field: POKER LAKE OIL
County, State: EDDY, NM
Disc Value: 741.59 M\$

Case Name: PC28_1 ACTUAL PRD
Oper: CHESAPEAKE
Major Phase: Gas



624840

Form 3160-4
(August 2007)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTRECEIVED
Operator Copy

SEP 03 2009

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						5. 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: linda.good@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 PIERCE CANYON 28 FEDERAL 1H			
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface: SESE 32.18248 N Lat, 103.88032 W Lon At top prod interval reported below: At total depth: NENE 350FNL 850FEL						9. API Well No. 30-015-36830-00-S1			
14. Date Spudded 04/23/2009						15. Date T.D. Reached 06/08/2009			
16. Date Completed ☐ D & A ☒ Ready to Prod. 07/14/2009						17. Elevations (DF, KB, RT, GL)* 3300 GL			
18. Total Depth: MD TVD		12402 8026		19. Plug Back T.D.: MD TVD		12385 8009		20. Depth Bridge Plug Set: MD TVD	
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) CAL PLATX3-DLDCNLR HRLAMCFLSGR						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	865		1002		0	
12.250	9.625 J-55	40.0	0	3822		1325		0	
8.750	5.500 HCL-80	20.0	0	12394		2500		3200	
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	7946								
25. Producing Intervals					26. Perforation Record				
Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status			
A) BONE SPRINGS			8183 TO 12371		500	OPEN			
B) BONE SPRING	8183	12371							
C)									
D)									
27. Acid, Fracture, Treatment, Cement Squeeze, Etc.									
Depth Interval		Amount and Type of Material							
8183 TO 12371		FRAC W/50,000 GAL 15% HCL, 85,745 BBL, 3,519,278# 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
07/16/2009	07/31/2009	24	→	148.0	539.0	1263.0			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	
33/64	600		→	148	539	1263	3642	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
07/16/2009	07/31/2009	24	→	148.0	539.0	1263.0			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	
33/64	600		→	148	539	1263		POW	

CONFIDENTIAL

ACCEPTED FOR RECORD

SEP 1 2009

/s/ Chris Walls

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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

ELECTRONIC SUBMISSION #73760 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

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



BLM PLU Schematic

PLU PIERCE CANYON 28 FEDERAL 1H

CONFIDENTIAL

Field: Delaware Basin North
County: EDDY
State: NEW MEXICO
Location: SEC 28, 24S-30E, 350 FSL & 850 FEL
Elevation: GL 3,300.00 KB 3,318.00
KB Height: 18.00

Spud Date: 4/23/2009

Initial Compl. Date:

API #: 3001536830

CHK Property #: 624840

1st Prod Date: 7/19/2009

PBDT: Original Hole - 12402.0; Sidetrack 1 - 12385.0

TD: 12,393.8

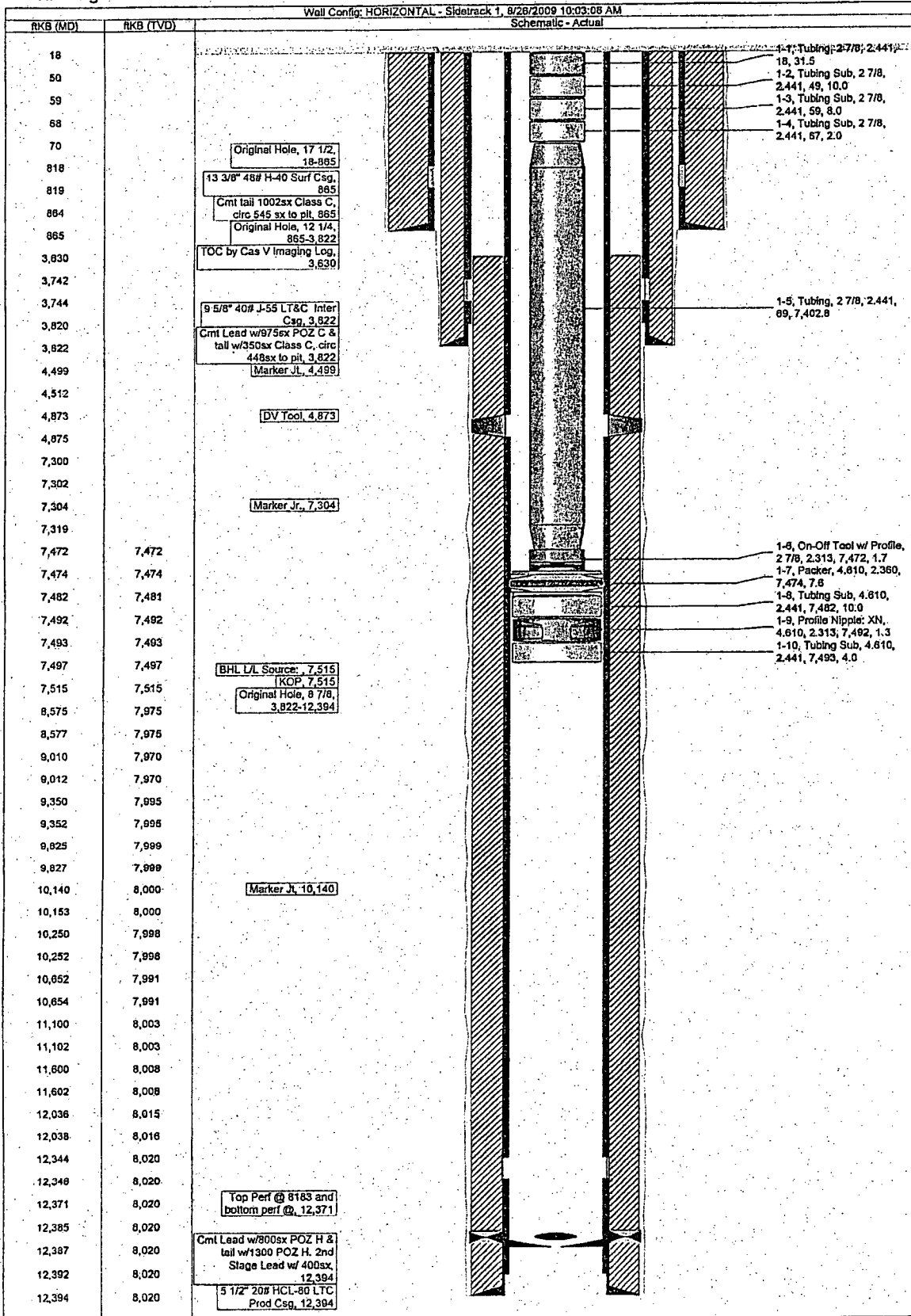
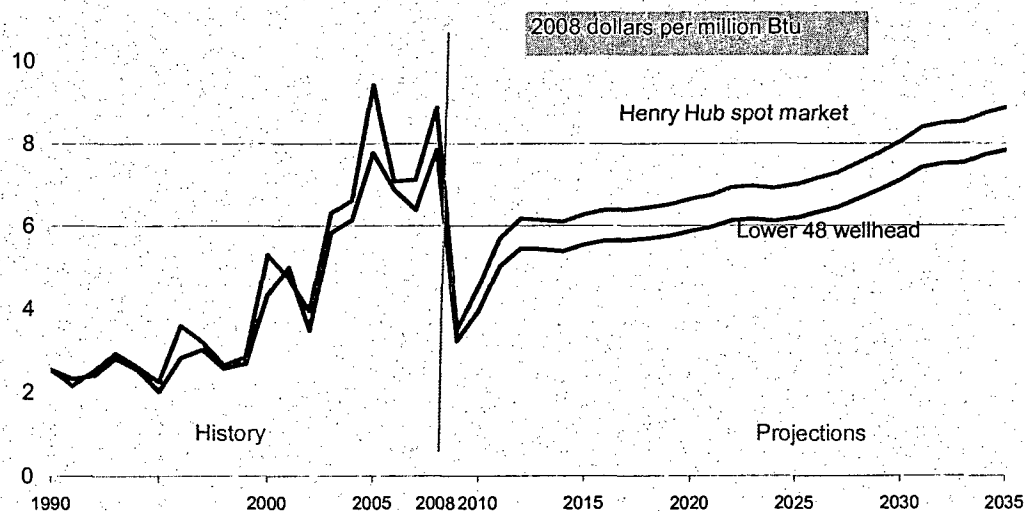


Figure 69. Annual average lower 48 wellhead and Henry Hub spot market prices for natural gas, 1990-2035 (2008 dollars per million Btu)

	Wellhead price	Henry Hub spot price
1990	2.55	2.6
	2.3	2.2
	2.4	2.51
	2.81	2.94
	2.54	2.61
	2.03	2.25
	2.83	3.59
	3.02	3.21
	2.57	2.65
	2.69	2.84
2000	4.32	5.28
	4.99	4.74
	3.49	3.95
	5.83	6.3
	6.14	6.6
2005	7.77	9.41
	6.87	7.07
	6.38	7.12
2008	7.85	8.86
	3.24	3.49
2010	3.94	4.5
	5.02	5.68
	5.45	6.17
	5.42	6.13
	5.38	6.09
2015	5.54	6.27
	5.63	6.38
	5.64	6.38
	5.69	6.43
	5.75	6.51
2020	5.87	6.64
	5.96	6.74
	6.12	6.93
	6.15	6.96
	6.11	6.91
2025	6.18	6.99
	6.32	7.15
	6.44	7.29
	6.65	7.53
	6.87	7.77
2030	7.11	8.05
	7.41	8.39
	7.51	8.5
	7.53	8.53
	7.73	8.75
2035	7.84	8.88

Figure 69. Annual average lower 48 wellhead and Henry Hub spot market prices for natural gas, 1990-2035

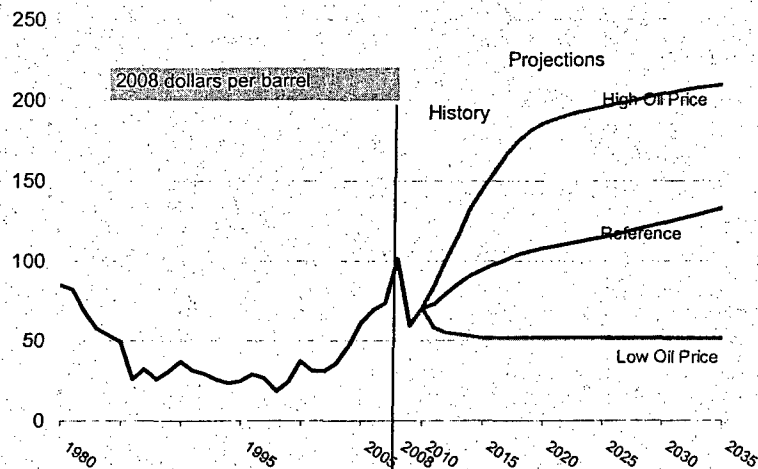


U.S. Energy Information Administration, Natural Gas Annual 2007, DOE/EIA-0131(2007) (Washington, DC, January 2009). Henry Hub natural gas prices: U.S. Energy Information Administration, Short-Term Energy Outlook Query System, Monthly Natural Gas Data, Variable NGHHUUS. Projections: AEO-2010 National Energy Modeling System, run AEO2010R:D111809A.

Figure 16. Average annual world oil prices in three cases, 1980-2035 (2008 dollars per barrel)

	Reference	High	Low
1980	84.95		
	82		
	68.31		
	57.56		
	53.27		
	48.98		
	25.86		
	32.11		
	25.83		
	30.61		
	36.81		
	31.23		
	29.15		
	25.53		
	23.33		
1995	24.5		
	28.85		
	26.44		
	18.3		
	24.19		
	37.19		
	31.06		
	30.76		
	35.75		
	46.35		
2005	61.34		
	69.27		
	73.89		
2008	101.45		
	59.21	59.21	59.21
2010	70.3	70.3	70.3
	73.06	83.89	57.84
	79.41	100.4	54.88
	85.74	115.55	53.86
	90.91	132.86	52.79
2015	94.52	144.78	51.59
	98.23	156.35	51.73
	101.23	166.97	51.78
	104.41	175.39	51.82
	106.47	181.21	51.91
2020	108.28	185.63	51.86
	109.52	188.38	51.83
	110.92	190.68	51.82
	112.32	192.76	51.8
	113.63	194.06	51.76
2025	115.09	196.01	51.73
	116.61	197.59	51.71
	118.32	198.81	51.71
	120.13	200.45	51.66
	122.04	202.29	51.62
2030	123.5	203.91	51.63
	125.56	205.32	51.59
	127.43	206.73	51.53
	129.29	207.78	51.5
	131.25	208.7	51.49
2035	133.22	209.6	51.44

Figure 16. Average annual world oil prices in three cases, 2005-2035



U.S. Energy Information Administration, Annual Energy Review 2008, DOE/EIA-0384 (2008) (Washington, DC, June 2009). Projections: AEO2010 National Energy Modeling System, runs AEO2010R.D111809A, LP2010.D011910A, and HP2010.D011910A.

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Aztec, NM 88010

DISTRICT III
1000 Rio Arriba Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87506

Form C-102
Revised October 12, 2003

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-36830	Pool Code 96403	Pool Name Wildcat; Bone Spring
Property Code 37515	Property Name PLU PIERCE CANYON "28" FEDERAL	Well Number 1H
GRID No. 147179	Operator Name CHESAPEAKE OPERATING CO.	Elevation 3300'

Surface Location

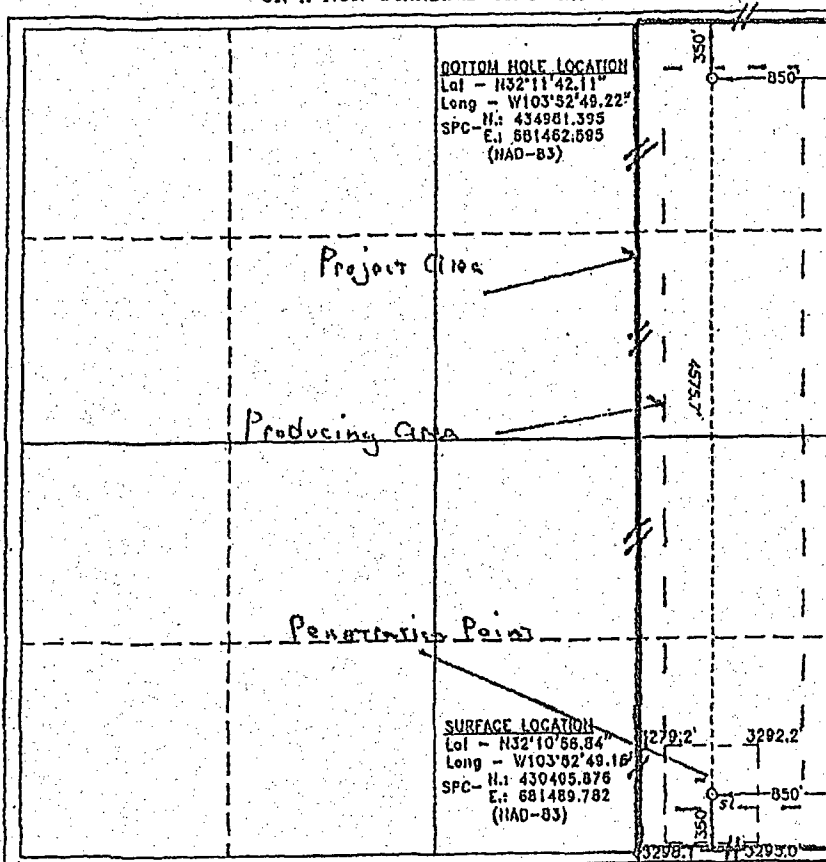
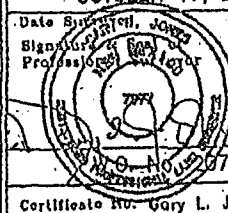
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	28	24 S	30 E		350	SOUTH	850	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	28	24 S	30 E		350	NORTH	850	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or leased mineral interest in the land including the proposed bottomhole location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <u>Chay Bernal</u> mntes Date: _____ Printed Name: <u>Chay Bernal</u>
	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief. OCTOBER 17, 2008 Date Surveyed: _____ Signature: <u>Gary L. Jones</u> Professional Seal:  Certificate No. Gary L. Jones 7977 DASIN SURVEYS

Revised
EXHIBIT A-1