

DATE IN 12/21/04	SUSPENSE	ENGINEER WVS	LOGGED IN 12/21/04	TYPE DHC	APP NO PUNJO 436 45 1228
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ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



2004 DEC 21 PM 12:22

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☒ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners
 [B] ☐ Offset Operators, Leaseholders or Surface Owner
 [C] ☐ Application is One Which Requires Published Legal Notice
 [D] ☒ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
 [E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
 [F] ☐ Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Mary Corley
 Print or Type Name

Mary Corley
 Signature

Sr. Regulatory Analyst 12/10/2004
 Title Date
corleym1@bp.com
 e-mail Address

District I
1625 N. French Drive, Hobbs, NM 88240
2000
District II
811 South First Street, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
Pools
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-107A
Revised May 15,

OIL CONSERVATION DIVISION

2040 South Pacheco
Santa Fe, New Mexico 87505

APPLICATION TYPE
X Single Well
___ Establish Pre-Approved

APPLICATION FOR DOWNHOLE COMMINGLING

EXISTING WELLBORE
X Yes ___ No

DAE-3386

BP America Production Company P. O. Box 3092 Houston, TX 77253

Operator Warren LS 3 Unit L Section 13 T28N, R09W San Juan
Lease Well No. Unit Letter-Section-Township-Range County
OGRID No. 000778 Property Code 001212 API No. 30-045-07435 Lease Type: X Federal ___ State ___ Fee

DATA ELEMENT	UPPER ZONE	INTERMEDIATE ZONE	LOWER ZONE
Pool Name	Aztec Pictured Cliffs	Otero Chacra	Blanco Mesaverde
Pool Code	71280	82329	72319
Top & Bottom of Pay Section (Perforated or Open-Hole Interval)	2226' - 2284'	3198' - 3371	4484' - 4672'
Method of Production (Flowing or Artificial Lift)	Artificial Lift	Artificial Lift	Artificial Lift
Bottomhole Pressure	425	430	590
Oil Gravity or Gas BTU (Degree API or Gas BTU)	1164	1210	1226
Producing, Shut-In or New Zone	Producing	New Zone	Producing
Date and Oil/Gas/Water Rates of Last Production.	Date: Rates:	Date: Rates:	Date: Rates:
Fixed Allocation Percentage	Oil % Gas %	Oil % Gas %	Oil % Gas %

ADDITIONAL DATA

Are all working, royalty and overriding royalty interests identical in all commingled zones? Yes X No ___
If not, have all working, royalty and overriding royalty interest owners been notified by certified mail? Yes ___ No ___
Are all produced fluids from all commingled zones compatible with each other? Yes X No ___
Will commingling decrease the value of production? Yes ___ No X
If this well is on, or communitized with, state or federal lands, has either the Commissioner of Public Lands or the United States Bureau of Land Management been notified in writing of this application? Yes X No ___
NMOCD Reference Case No. applicable to this well: _____

Attachments:
C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
Production curve for each zone for at least one year. (If not available, attach explanation.)
For zones with no production history, estimated production rates and supporting data.
Data to support allocation method or formula.
Notification list of working, royalty and overriding royalty interests for uncommon interest cases.
Any additional statements, data or documents required to support commingling.

PRE-APPROVED POOLS

If application is to establish Pre-Approved Pools, the following additional information will be required:

List of other orders approving downhole commingling within the proposed Pre-Approved Pools
List of all operators within the proposed Pre-Approved Pools
Proof that all operators within the proposed Pre-Approved Pools were provided notice of this application.
Bottomhole pressure data.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Mary Corley TITLE Sr. Regulatory Analyst DATE 12/10/2004
TYPE OR PRINT NAME Mary Corley TELEPHONE NO. (281) 366-4491

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

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102
Revised August 15, 2000

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-07094	² Pool Code 82329	³ Pool Name Otero Chacra
⁴ Property Code 001212	⁵ Property Name Warren LS	⁶ Well Number 3
⁷ OGRID No. 000778	⁸ Operator Name BP America Production Company	⁹ Elevation 5948' GR

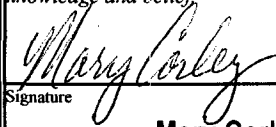
¹⁰ Surface Location

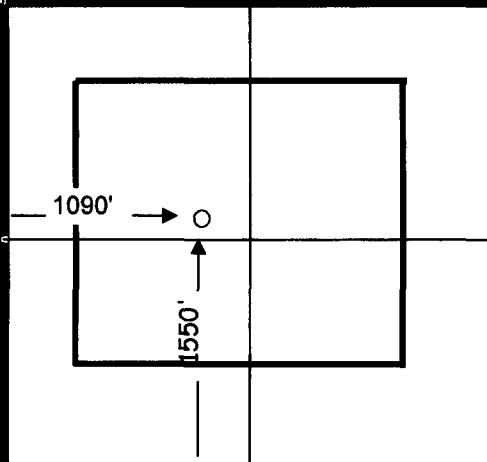
UL or lot no. Unit L	Section 13	Township 28N	Range 09W	Lot Idn	Feet from 1550	North/South South	Feet from 1090	East/West West	County San Juan
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from	North/South	Feet	East/West	County
¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.						

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

				¹⁷ OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</i>  Signature Mary Corley Printed Name Sr. Regulatory Analyst Title 12/10/2004 Date
				¹⁸ SURVEYOR CERTIFICATION <i>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.</i> on file Date of Survey Signature and Seal of Professional Surveyor: Certificate Number



Warren LS 3
Recompletion to Chacra & Downhole Commingle Procedure
December 9, 2004

1. Check ID wellhead; if earth pit is required have One Call made 48 hours prior to digging.
2. RU slickline unit or wireline unit. Pressure test lubricator and equipment. RIH and set barriers for isolation in tubing string.
3. Check and record tubing, casing, and bradenhead pressures.
4. MIRU workover rig.
5. Blow down well. Kill with 2% KCL water ONLY if necessary.
6. Check all casing strings to ensure no pressure exist on any annulus. Nipple down Wellhead. NU BOPs and diversion spool with 3" outlets and 3" pipe to the blow tank. Pressure test BOPs to 200 psi above BHP.
7. TOH with 2-3/8" tubing currently set at 4600'.
8. TIH with bit and scraper for 5-1/2" casing to top of liner at 2299' and work down to PBTD.
9. RIH with 5-1/2" CIBP. Set CIBP (+/-3800'). Load well with 2% KCl to bottom of PC formation. POOH.
10. RU E-line equipment. Pressure test lubricator and equipment. RIH w/ CBL and log from +/- 3,800' to top of liner. Confirm that top of cement is at least 500' above top shot in Chacra formation. Contact engineer if top of cement is below this point to discuss block squeeze.
11. RIH with 3-1/8" casing guns w/lubricator. Perforate Chacra formation (correlate to GR log), 11 spots @ 4 spf = 44 holes (SPF could change): 3371', 3340, 3330, 3323, 3310, 3248, 3235, 3228, 3208, 3201, 3198'.
12. NU Frac Isolation equipment, Spearhead 500 gal 15% HCL, establish injection rate, and proceed with fracture stimulation according to Schlumberger schedule.
13. Flowback frac immediately.
14. ND Frac isolation equipment, release packer and TOH with frac string and packer. LD frac string.
15. Rig up air package/unit, pressure test all. TIH with tubing and bit for 5-1/2" casing. Cleanout fill to top of CIBP. **Perform well test on Chacra for regulatory and document well test in DIMS.** Then cleanout fill and drill bridge plug set at +/-3800'. Cleanout fill to PBTD 4700'.
16. RIH with 2-3/8" production tubing.

17. Land 2-3/8" production tubing at +/-4600'.
18. ND BOP's. NU Wellhead. Pressure test Wellhead.
19. RU WL unit. Run gauge ring. Pull plug and set tubing stop for plunger.
20. RD slickline unit.
21. Test well for air. Return well to production and downhole tri-mingle Pictured Cliffs, Chacra and Mesaverde. RD and release all equipment.

Warren LS #3

Sec 13, T28N, R9W

API # 30-045-07435

GL: 5885'

est. TOC @ surface (circ)

10-3/4" 32.75# Armco SW @ 252'
200 sxs cmt (circulated)

History:

Completed as MV/PC dual in Nov 1957

WO in 11/02 to add Menefee and downhole

Commingle

Est. TOC @ 1175' (temp surv)

Pictured Cliffs Perforations

2226' - 2284' w/ 40,000# sand

5-1/2" liner hanger @ 2299'

7-5/8" 26.4#, J55 @ 2393'
250 sxs cmt

Est. TOC @ 4000' (temp surv)

Mesaverde Perforations

Men: 4053-4400 2 SPF w/85,000 # of sand

PL: 4484 - 4672' w/ 60,000# sand

Tubing: 2-3/8" 4.7#, J55 @ 4600'

5-1/2" liner, 15.5#, J55 @ 4719'
300 sxs cmt

PBTD: 4700'

TD 4720'

NOTES:

updated: 5/10/04 GKC

Warren LS 3

Future Production Decline Estimate

Pictured Cliffs Daily Rates

Month	Gas Volume
Jan-2003	59
Feb-2003	109
Mar-2003	124
Apr-2003	137
May-2003	138
Jun-2003	137
Jul-2003	131
Aug-2003	121
Sep-2003	135
Oct-2003	126
Nov-2003	117
Dec-2003	122
Jan-2004	125
Feb-2004	119
Mar-2004	127
Apr-2004	126
May-2004	119
Jun-2004	73
Jul-2004	109
Aug-2004	91
Sep-2004	90
Oct-2004	90
Nov-2004	89
Dec-2004	89
Jan-2005	88
Feb-2005	88
Mar-2005	87
Apr-2005	87
May-2005	86
Jun-2005	86
Jul-2005	85
Aug-2005	85
Sep-2005	84
Oct-2005	84
Nov-2005	83
Dec-2005	83

$$\ln(Q_f/Q_i) = -dt$$

$$Q_f = 119$$

$$Q_i = 122$$

$$\text{rate} = 119$$

$$\text{time} = 6$$

$$dt = -0.024897552$$

$$\text{decline} = -0.49380144$$

Month	Gas Volume
Jan-2006	82
Feb-2006	82
Mar-2006	81
Apr-2006	81
May-2006	80
Jun-2006	80
Jul-2006	79
Aug-2006	79
Sep-2006	78
Oct-2006	78
Nov-2006	78
Dec-2006	77
Jan-2007	77
Feb-2007	76
Mar-2007	76
Apr-2007	75
May-2007	75
Jun-2007	74
Jul-2007	74
Aug-2007	73
Sep-2007	73
Oct-2007	72
Nov-2007	72
Dec-2007	71
Jan-2008	71
Feb-2008	70
Mar-2008	70
Apr-2008	69
May-2008	69
Jun-2008	68
Jul-2008	68
Aug-2008	67
Sep-2008	67
Oct-2008	67
Nov-2008	66
Dec-2008	66
Jan-2009	65

Month	Gas Volume
Feb-2009	65
Mar-2009	64
Apr-2009	64
May-2009	63
Jun-2009	63
Jul-2009	62
Aug-2009	62
Sep-2009	61
Oct-2009	61
Nov-2009	60
Dec-2009	60
Jan-2010	59
Feb-2010	59
Mar-2010	58
Apr-2010	58
May-2010	57
Jun-2010	57
Jul-2010	56
Aug-2010	56
Sep-2010	55
Oct-2010	55
Nov-2010	54
Dec-2010	54
Jan-2011	53
Feb-2011	53
Mar-2011	52
Apr-2011	52
May-2011	51
Jun-2011	51
Jul-2011	50
Aug-2011	50
Sep-2011	49
Oct-2011	49
Nov-2011	48
Dec-2011	48
Jan-2012	47

Warren LS 3
Future Production Decline Estimate
Pictured Cliffs Daily Rates

Month	Gas Volume
Feb-2012	47
Mar-2012	46
Apr-2012	46
May-2012	45
Jun-2012	45
Jul-2012	44
Aug-2012	44
Sep-2012	43
Oct-2012	43
Nov-2012	42
Dec-2012	42
Jan-2013	41
Feb-2013	41
Mar-2013	40
Apr-2013	40
May-2013	39
Jun-2013	39
Jul-2013	38
Aug-2013	38
Sep-2013	38
Oct-2013	37
Nov-2013	37
Dec-2013	36
Jan-2014	36
Feb-2014	35
Mar-2014	35
Apr-2014	34
May-2014	34
Jun-2014	33
Jul-2014	33
Aug-2014	32
Sep-2014	32
Oct-2014	31
Nov-2014	31
Dec-2014	30
Jan-2015	30

Month	Gas Volume
Feb-2015	29
Mar-2015	29
Apr-2015	28
May-2015	28
Jun-2015	27
Jul-2015	27
Aug-2015	26
Sep-2015	26
Oct-2015	25
Nov-2015	25
Dec-2015	24
Jan-2016	24
Feb-2016	23
Mar-2016	23
Apr-2016	22
May-2016	22
Jun-2016	21
Jul-2016	21
Aug-2016	20
Sep-2016	20
Oct-2016	19
Nov-2016	19
Dec-2016	18
Jan-2017	18
Feb-2017	17
Mar-2017	17
Apr-2017	16
May-2017	16
Jun-2017	15
Jul-2017	15
Aug-2017	14
Sep-2017	14
Oct-2017	13
Nov-2017	13
Dec-2017	12
Jan-2018	12

Future Production Decline Estimate

Mesaverde Daily Rates

Month	Gas Volume
Jan-2003	0
Feb-2003	37
Mar-2003	39
Apr-2003	28
May-2003	13
Jun-2003	0
Jul-2003	0
Aug-2003	0
Sep-2003	0
Oct-2003	0
Nov-2003	0
Dec-2003	0
Jan-2004	0
Feb-2004	0
Mar-2004	19
Apr-2004	16
May-2004	19
Jun-2004	16
Jul-2004	38
Aug-2004	36
Sep-2004	35
Oct-2004	35
Nov-2004	34
Dec-2004	33
Jan-2005	33
Feb-2005	32
Mar-2005	31
Apr-2005	31
May-2005	30
Jun-2005	29
Jul-2005	28
Aug-2005	28
Sep-2005	27
Oct-2005	26
Nov-2005	26
Dec-2005	25

$$\ln(Q_f/Q_i) = -dt$$

$$Q_f = 16$$

$$Q_i = 19$$

$$rate = 16$$

$$time = 4$$

$$dt = -0.171850257$$

$$decline = -0.687401028$$

Month	Gas Volume
Jan-2006	24
Feb-2006	24
Mar-2006	23
Apr-2006	23
May-2006	22
Jun-2006	22
Jul-2006	21
Aug-2006	21
Sep-2006	20
Oct-2006	20
Nov-2006	19
Dec-2006	19
Jan-2007	18
Feb-2007	18
Mar-2007	17
Apr-2007	17
May-2007	16
Jun-2007	16
Jul-2007	15
Aug-2007	15
Sep-2007	14
Oct-2007	14
Nov-2007	13
Dec-2007	13
Jan-2008	12
Feb-2008	12
Mar-2008	11
Apr-2008	11
May-2008	10
Jun-2008	10
Jul-2008	9
Aug-2008	9
Sep-2008	8
Oct-2008	8
Nov-2008	7
Dec-2008	7
Jan-2009	7

Month	Gas Volume
Feb-2009	6
Mar-2009	6
Apr-2009	5
May-2009	5
Jun-2009	4
Jul-2009	4
Aug-2009	3
Sep-2009	3
Oct-2009	2
Nov-2009	2
Dec-2009	1
Jan-2010	1
Feb-2010	0
Mar-2010	0
Apr-2010	0
May-2010	0
Jun-2010	0
Jul-2010	0
Aug-2010	0
Sep-2010	0
Oct-2010	0
Nov-2010	0
Dec-2010	0
Jan-2011	0
Feb-2011	0
Mar-2011	0
Apr-2011	0
May-2011	0
Jun-2011	0
Jul-2011	0
Aug-2011	0
Sep-2011	0
Oct-2011	0
Nov-2011	0
Dec-2011	0
Jan-2012	0

Allocation Method
Warren LS 3

BP America Production Company request permission to complete the subject well into the Otero Chacra and tricomingle production downhole with the existing Aztec Pictured Cliffs and Blanco Mesaverde Pools as per the attached procedure.

The interest owners are identical between these three Pools, therefore, no additional notification is required prior to downhole commingling approval.

Production is proposed to be allocated based on the subtraction method using the projected future decline for production from the Pictured Cliffs and Mesaverde Pools. This production shall serve as a base for production subtracted from the total production for the commingled well. The balance of the production will be attributed to the Chacra. Attached are the future production decline estimates for the Pictured Cliffs & Mesaverde Pools.

Commingling Production Downhole in the subject well from the proposed pools will not reduce the value of the total remaining production.

Application has also been submitted to BLM on Form 3160-5, Federal Lease No. SF – 077123

Pre Approved Pools:

Blanco-Mesaverde (72319) & Aztec Pictured Cliffs (71280) Pools

Blanco-Mesaverde (72319) & Otero-Chacra (82329) Pools

Aztec Pictured Cliffs (71280) & Otero-Chacra (82329) Pools