San Juan 29-5 Unit 77M hearing

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ConocoPhillips

Exhibits Index

- Well location and surrounding well operations
- Water rates/ reservoir pressures
- Precedent tri-mingle activity (similar petition approvals)
- Mancos production
- Proposed allocation method/ allocation forms
- Mancos dry/ wet reservoir

Abbreviations:
Mesaverde: MV
Mancos: MC
DAKOTA: DK

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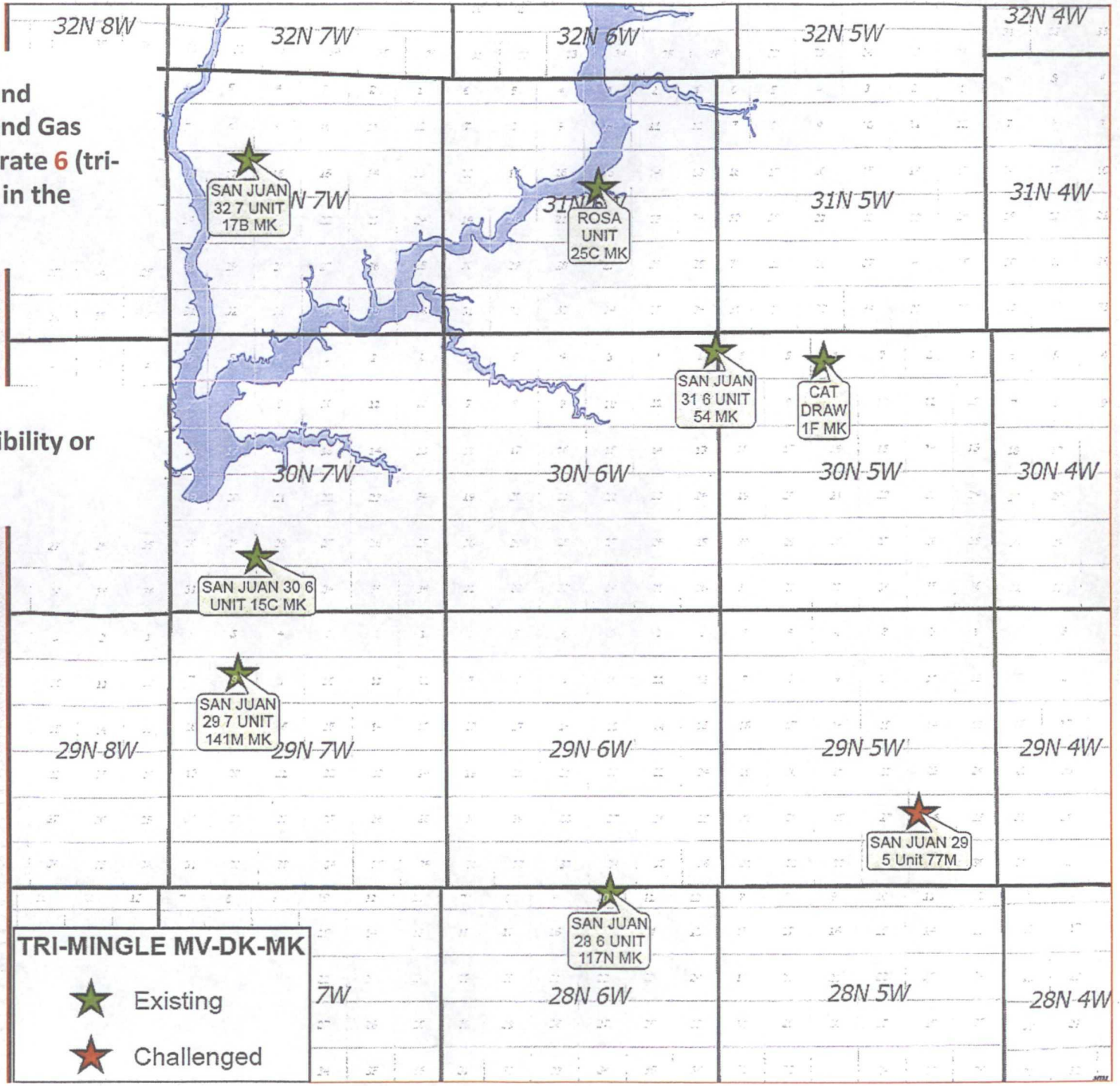
ConocoPhillips Company and Burlington Resources Oil and Gas Company LP currently operate 6 (tri-mingles MV-MC-DK) wells in the surrounding areas

No observed fluid compatibility or performance issues

Low water rates ~ 3 bbls/Mmcf



Water Rates

Well Name	First Prod Date	Location	OPERATOR_NAME	Gas Cum MMcf	Water Cum Mbbl	Oil Cum Mbbl
CAT DRAW 1F_DK	10/15/2011	T: 30N R: 5W S: 4K	BURLINGTON RESOURCES O&G	30.2	0	0
CAT DRAW 1F_MK	10/15/2011	T: 30N R: 5W S: 4K	BURLINGTON RESOURCES O&G	36.9	0	0
CAT DRAW 1F_MV	10/15/2011	T: 30N R: 5W S: 4K	BURLINGTON RESOURCES O&G	48.2	0	0
ROSA UNIT 25C_DK	11/15/2009	T: 31N R: 6W S: 15N	WILLIAMS PRODUCTION COMPANY	79.3	0	0
ROSA UNIT 25C_MK	11/15/2009	T: 31N R: 6W S: 15N	WILLIAMS PRODUCTION COMPANY	113.5	0	0
ROSA UNIT 25C_MV	11/15/2009	T: 31N R: 6W S: 15N	WILLIAMS PRODUCTION COMPANY	160.9	0	0
SAN JUAN 28 6 UNIT 117N_DK	12/15/2011	T: 28N R: 6W S: 10J	BURLINGTON RESOURCES O&G	7.6	0.1	0
SAN JUAN 28 6 UNIT 117N_MK	4/15/2011	T: 28N R: 6W S: 10J	BURLINGTON RESOURCES O&G	22.9	0.2	0
SAN JUAN 28 6 UNIT 117N_MV	12/15/2011	T: 28N R: 6W S: 10J	BURLINGTON RESOURCES O&G	45.6	0.4	0.1
SAN JUAN 29 7 UNIT 141M_DK	3/15/2012	T: 29N R: 7W S: 8G	BURLINGTON RESOURCES O&G	4.3	0	0
SAN JUAN 29 7 UNIT 141M_MK	3/15/2012	T: 29N R: 7W S: 8G	BURLINGTON RESOURCES O&G	4.3	0	0
SAN JUAN 29 7 UNIT 141M_MV	3/15/2012	T: 29N R: 7W S: 8G	BURLINGTON RESOURCES O&G	4.5	0	0
SAN JUAN 30 6 UNIT 15C_DK	1/15/2012	T: 30N R: 7W S: 29P	BURLINGTON RESOURCES O&G	9.1	0.4	0
SAN JUAN 30 6 UNIT 15C_MK	1/15/2012	T: 30N R: 7W S: 29P	BURLINGTON RESOURCES O&G	9.9	0.4	0
SAN JUAN 30 6 UNIT 15C_MV	1/15/2012	T: 30N R: 7W S: 29P	BURLINGTON RESOURCES O&G	25.6	0.4	0
				602.8	1.9	0.1
				bbls per Mmcf	~3	

Tri-mingle Well avg water prod is ~ 3 bbls/Mmcf

No adverse effect from water prod

Production/ operations department has reported no issues or performance challenges different from MV/DK commingles in the area.

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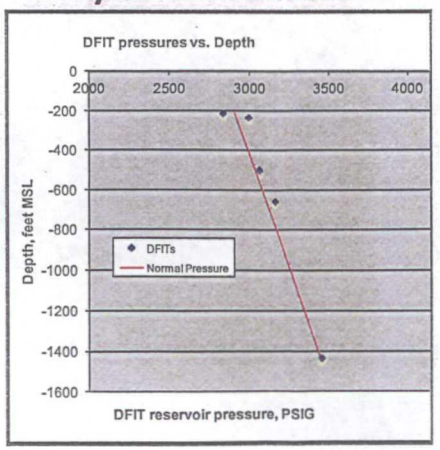
Mancos Reservoir Pressures

- On this well We expect MC pressure to be a little over ~3000 psia at 7650ft (mid perfs) top MV perfs at 3900ft (3900ft*0.65 psi/ft)> 3057 psia

WELL NAME	OPERATOR	LOC	MC** Pressure	DK* Pressure	TOP PERFS SHALLOW	MAX PRESS ALLO BY RULE
ROSA UNIT 634A	WILLIAMS PRODUCTION COMPANY	31N6WS23	2300	2100	6180	4017
ROSA UNIT 630	WILLIAMS PRODUCTION COMPANY	31N4WS7	2400	3000	7000	4550
San Juan 32-7 Unit 17B	CONOCOPHILLIPS	31W7S17	2359	3400	5324	3460
San Juan 28-6 Unit 117N	CONOCOPHILLIPS	28N6WS10	2300	2800	4610	2997
			** Measured	*Estimated		

Observed pressures in the Mancos are at/ or below Hydrostatic Gradient



Mancos pressures have been found to be very close to DK pressures, so there should not be any issues during extended shut in times resulting in pressures above frac gradient of any of the mingled pools

Precedent

Well Name	LOC
CAT DRAW 1F	NM030N05W004K
FEDERAL 11M	NM026N06W023I
FEDERAL C 1M	NM030N11W028M
HORTON 1B	NM032N11W035O
HUBBARD 1B	NM032N12W022J
HUERFANITO UNIT 79N	NM027N09W026P
HUERFANITO UNIT 85M	NM027N09W026C
HUERFANITO UNIT 88N	NM027N09W023J
HUERFANITO UNIT 99E	NM027N09W035F
KLEIN 19P	NM026N06W034G
NAVAJO B 6N	NM027N08W019K
SAN JUAN 27-4 UNIT 102P	NM027N04W033F
SAN JUAN 27-4 UNIT 155A	NM027N04W024M
SAN JUAN 27-5 UNIT 128N	NM027N05W027I
SAN JUAN 28-6 UNIT 181P	NM027N06W014C
SAN JUAN 29-7 UNIT 138M	NM029N07W025D
SAN JUAN 29-7 UNIT 141M	NM029N07W008G
SAN JUAN 29-7 UNIT 82M	NM029N07W004I
SAN JUAN 30-5 UNIT 84A	NM030N05W033I
SAN JUAN 30-5 UNIT 86M	NM030N05W035J
SAN JUAN 30-6 UNIT 15C	NM030N07W029P
SAN JUAN 30-6 UNIT 51B	NM030N06W030J
SAN JUAN 32-9 UNIT 24B	NM031N09W005J
SCOTT FEDERAL 6P	NM026N06W017L
STEWART LS 8N	NM030N10W028D
WALLER 1B	NM032N11W011J
SAN JUAN 28-6 Unit 117N	NM032N11W011J

COP 107A's filed vs approved (since 2011)

FILED	APPROVED
27	19
	No rejections

8 pending approval

WPX Energy, LLC was pre-approved for tri-mingling prod from DK-MC-MV in Rosa unit (31N6W, 32N6W, 31N5W, 31N4W) order R-12991

LAST 6 years of co/tri -mingle activity	
CONOCPHILLIPS	6
ENERVEST OPERATING L L C	2
XTO ENERGY INCORPORATED	75
WILLIAMS PRODUCTION COMPANY	59
CHEVRON MIDCONTINENT LIMITED PAI	1
HUNTINGTON ENERGY LLC	1
	144

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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 14146
ORDER NO. R-12991

APPLICATION OF WILLIAMS PRODUCTION COMPANY, LLC FOR ESTABLISHMENT OF A DOWNHOLE COMMINGLING "REFERANCE CASE" AND PRE-APPROVAL OF DOWNHOLE AND SURFACE COMMINGLING OF PRODUCTION FROM ALL FORMATIONS AND/OR POOLS IN THE ROSA UNIT FROM EXISTING AND FUTURE WELLS, SAN JUAN AND RIO ARRIBA COUNTIES, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on August 7, 2008, at Santa Fe, New Mexico, before Examiner Terry Warnell.

NOW, on this 5th day of September, 2008, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) The applicant, Williams Production Company, LLC ("Williams"), seeks to downhole commingle the gas from pools in the Rosa Unit, in any combination of pools in all existing and future wells pursuant to Division Rule 303.B, and seeks an exception to the provisions of Division Rule 303.A to authorize surface commingling without additional notice or hearing of hydrocarbon production from all current or future productive formations in the Rosa Unit ("the Unit") Area.

(3) Williams, pursuant to the provisions of Division Rule 303.C(4)(a), also seeks to establish a downhole commingling reference case to provide for modification of notification rules on a unit-wide basis for downhole commingling of gas production within existing or future wells producing from the Rosa Unit in San Juan and Rio Arriba

Counties, New Mexico.

(4) Williams is the present operator of the Rosa Unit, which was approved by Division Order No. 759, Case No. 133 dated April 22, 1948, and which currently encompasses 54,209.49 acres, more or less, of Federal, State, and fee owned lands in San Juan County, New Mexico, as described below:

Township 32 North, Range 6 West, NMPM
Sections 32 through 36: All

Township 31 North, Range 6 West, NMPM
Sections 1 through 5: All
Sections 8 through 17: All
Section 21 through 26: All

Township 31 North, Range 5 West, NMPM
Sections 3 through 36: All

Township 31 North, Range 4 West, NMPM
Sections 1 through 31: All

(5) According to Division records, the Rosa Unit currently has approximately 610 wells with 592 wells reporting production. The Dakota, Mesaverde, Fruitland Coal, Pictured Cliffs and Mancos formations have produced to date within the Unit from the following pools: Basin-Dakota Prorated Gas (71599), Basin Fruitland Coal Gas Pool (71629), Rosa Pictured Cliffs Gas (96175), East Blanco Pictured Cliffs Pool (72400), Carracas-Pictured Cliffs Pool (96154), Blanco Mesaverde Pool (72319), Cottonwood-Fruitland Sand Pool (75320), Laguna Seca Gallup Pool (79870), Cedro Gallup Pool (96467), Willow Gallup Pool (96379) and Basin Mancos Gas Pool (97232).

(6) In support of its application, Williams Production Company appeared through its attorney and presented evidence and testimony, which shows:

(a) The interest ownership between wells in the Rosa Unit is generally not common, since the Participating Areas for each formation do not necessarily cover the same aerial extent. Because of this, Williams is currently required to notify approximately 145 owners by certified mail every time an application for surface commingling or downhole commingling is submitted to the Division.

(b) None of these wells is producing at top allowable or is expected to produce at top allowable. The Dakota formation has historically produced the largest volume of gas within the Unit, followed by the Pictured Cliffs formation and then the Fruitland Coal formation.

(c) Williams intends to surface commingle these wells in order to decrease the number of required gas compressors and other surface facilities. Williams will install and maintain separate allocation meters on all commingled wells. Fuel gas will be allocated to each well based on that well's metered gas production and its percentage of the total gas entering each compressor.

(d) Approval of this application will not reduce the value of the commingled production or otherwise adversely affect the interest owners within the Unit. The fluids from each pool which are the subject of this application are compatible and combining the fluids will not result in damage to any pool.

(7) The proposed commingling of production should reduce operating expenses, increase efficiency of operations, increase the amount of gas gathered and sold, lower the reservoir abandonment pressure, and increase the life of the project.

(8) Williams has provided notice of this application and of this hearing to all interest owners within the Unit including the United States Bureau of Land Management ("BLM") and the New Mexico State Land Office. This application was unopposed with no other parties entering an appearance.

(9) Pre-approval of the notification necessary to surface commingle production from wells located in the Unit or downhole commingle wells within the Unit will be in the best interest of conservation, will increase the volume of gas recovered from the unit thereby preventing waste, and will protect the correlative rights of all interest owners in the Unit, and should therefore be approved.

(10) Approval of this proposed reference case will not adversely or otherwise influence the accuracy of William's production splits from each of the formations within the downhole commingled wells, and will not absolve Williams of Division or other legal requirements to keep accurate records of production between pools and therefore to protect owner's rights and prevent waste.

(11) Williams should be allowed to use this Division order number in this case as a reference when applying for commingling within the Unit. When applying, Williams should follow the instructions in Division Rule 303.B(3)(b) by submitting a Sundry form and production schematic as is required for identically owned Pool commingles, and should reference this order as proof of notice to diverse interest owners.

IT IS THEREFORE ORDERED THAT:

(1) The application of Williams Production Company, LLC (OGRID 120782) for pre-approval of downhole commingling and surface comingling from all current and future wells producing from all current or future pools within the 54,209.49

acres, more or less, Rosa Unit, San Juan and Rio Arriba Counties, New Mexico is hereby approved.

(2) The application of Williams Production Company, LLC to establish a reference case for modification of notice rules on a unit-wide basis for downhole commingling and surface comingling of gas and oil production within existing and future wells within the Rosa Unit, San Juan and Rio Arriba Counties, New Mexico is hereby approved.

(3) Henceforth, the procedure used to obtain Division authorization to surface commingle production within this Unit shall be as required in Division Rule 303.C(3)(b) for identically owned Pool commingles. The applicant shall submit a form C-103 to the Division and shall reference this order as proof of notice to diverse interest owners. Separately owned production streams that are surface commingled shall be equipped with allocation meters. The allocation meters shall be calibrated quarterly. There shall be no mandatory suspense or waiting period prior to approving such applications.

(4) Jurisdiction of this case is retained for the entry of such further orders as the Division may deem necessary.

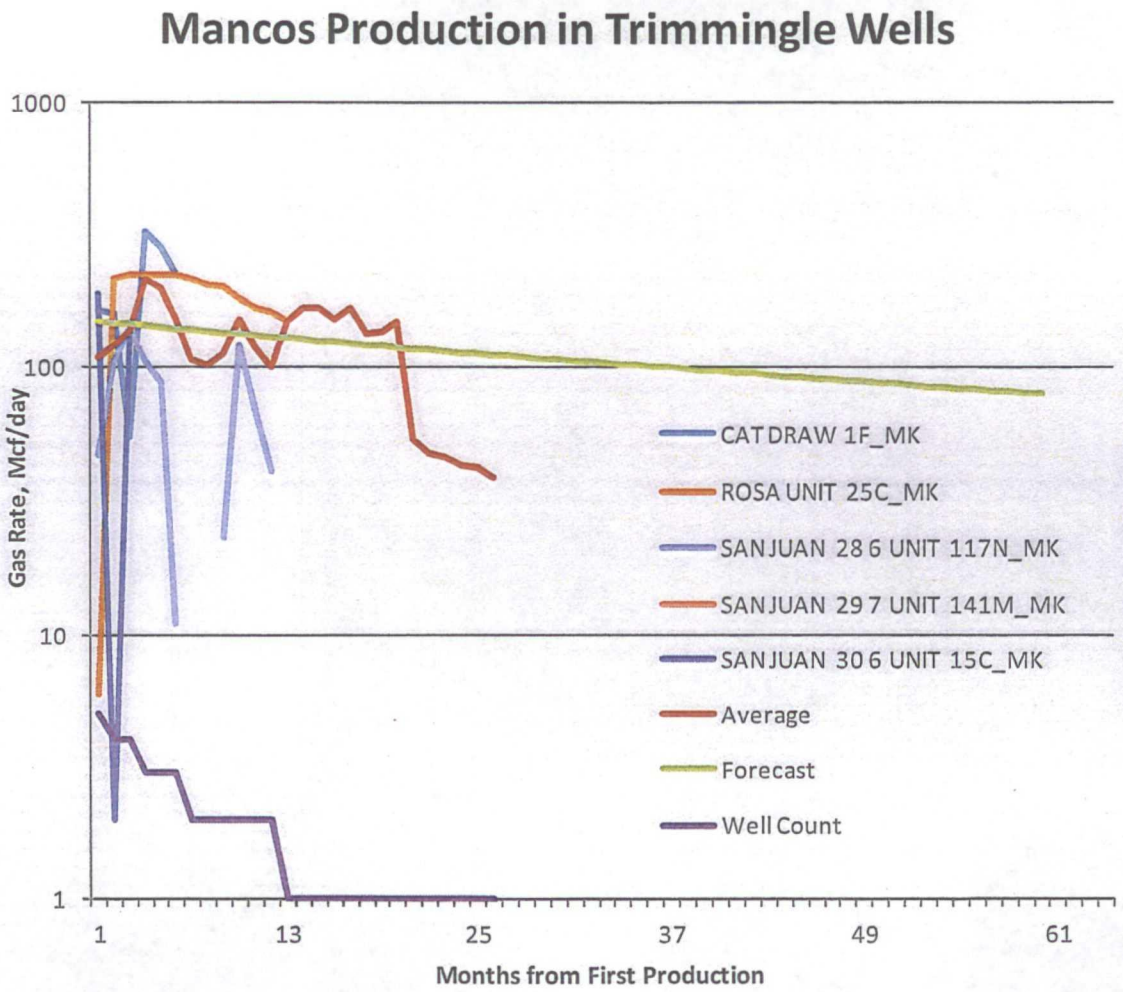
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P.E.
Director

SEAL

Mancos Production



Drilling & Completion: $1,250 MM
Gas price: $2/Mcf esc 2.5%
Opex: $1500/mo
NPV10: -$450 M
Resource 500 MMcf stranded

Mancos vertical wells have challenged economics as standalone wells

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Mancos Production

- Advantages of commingled or tri-mingled production
  - Distributes drilling and completion costs
  - Delays abandonment rates from individual formations
  - Increases Estimated Ultimate Recovery (EUR) of each formation
  - For Mancos, allows development of otherwise currently stranded resource

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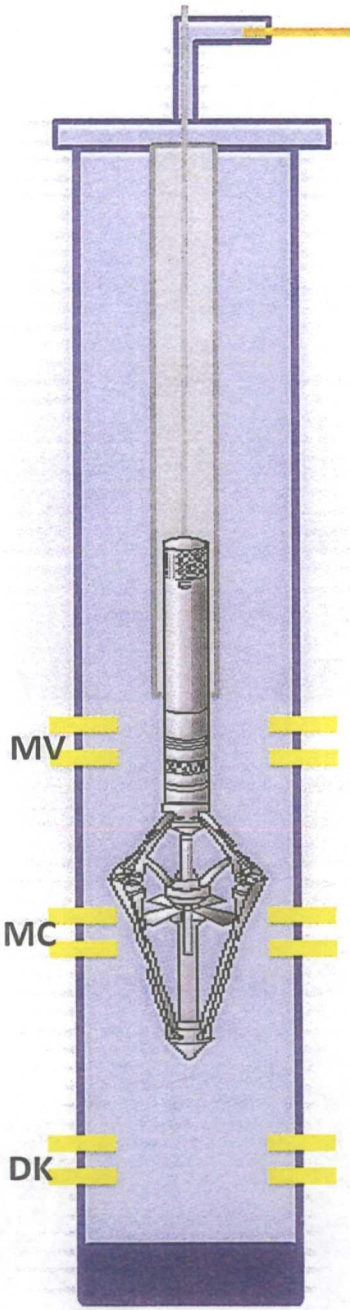
Proposed Allocation Method



Spinner is run across all open perforations (contribution from each set of perforations is recorded)

From the spinner Individual Gas Rates
- Mesaverde Gas rate
- Dakota Gas rate
- Mancos Gas rate

For example:

Mesarverde rate	100 Mcfd
Mancos rate	50 Mcfd
Dakota rate	80 Mcfd
Total well rate	230 Mcfd

So,

Mesaverde Gas Allocation = 100/230 = 43%
Mancos Gas Allocation = 50/230 = 22%
Dakota Gas Allocation = 80/230 = 35%

Oil Allocation = F(gas prod, oil yield) let's assume MV yield = 0.5, Mancos =0.3, DK = 0.2 bbls-Mmcf
Then,
MV oil alloc = MV qo/ Total Qo
Mv qo= MVqg*MVyield
Total qo = MVqg*MVy+MVqg*MKy+DKqg*Dky
= 0.43*0.5/0.43*0.5+0.22*0.3+0.35*0.2= 61%

Individuals oil yield is obtained from stand alone historic data

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Allocation Forms Example

Area «IEAM»

RECEIVED DEC 16 2011 Farmington Field Office Bureau of Land Management

RCVD DEC 27 '11 OIL CONS. DIV. DIST. 3

BURLINGTON RESOURCES

PRODUCTION ALLOCATION FORM

Distribution: BLM 4 Copies, Regulatory, Accounting, Well File
Revised. March 9, 2006

Status
PRELIMINARY ☐
FINAL ☒
REVISED ☐

Commingle Type
SURFACE ☐ DOWNHOLE ☒
Type of Completion
NEW DRILL ☒ RECOMPLETION ☐ PAYADD ☐ COMMINGLE ☐

Date: 12/9/2011

API No. 30-039-30725
DHC No. DHC4463AZ
Lease No. NM-4456

Well Name	Well No.
Cat Draw	#1F

Unit Letter	Section	Township	Range	Footage	County, State
K	4	T030N	R005W	2080' FSL & 1340' FWL	Rio Arriba County, New Mexico

Completion Date: 11/10/2011

Test Method: HISTORICAL ☐ FIELD TEST ☒ PROJECTED ☐ OTHER ☐

FORMATION	GAS	PERCENT	CONDENSATE	PERCENT
MESAVERDE	508 MCFD	44%		44%
MANCOS	360 MCFD	31%	From spinner log	31%
DAKOTA	288 MCFD	25%		25%
	1156			

JUSTIFICATION OF ALLOCATION: These percentages are based upon isolated flow tests from the Mesaverde, Mancos & Dakota formations during completion operations. Initial Oil allocation will be the same as the gas initial allocation until the first liquid sale is completed. After completing the first liquid sale and using known Dakota and Mesaverde liquid yields from offset Stand Alone wells a system of linear equations will be solved for Mancos liquid yield, and that Mancos liquid yield will be used in conjunction with the Mesaverde and Dakota liquid yields to calculate the oil allocations. The oil allocation will be calculated in a way that is a function of individual formation Gas production and Individual formation liquid yields.

Submitted on Dec 2011 and approved (ConocoPhillips & Burlington Resources Oil and Gas Company LP have submitted at least 9 as per March 2012 all approved)

WELL NAME	
SAN JUAN 29-7 UNIT	141M
CAT DRAW	1F
SAN JUAN 28-6 UNIT	117N
SAN JUAN 29-7 UNIT	138M
SAN JUAN 30-6 UNIT	51B
SAN JUAN 30-6 UNIT	15C
FEDERAL C	1M
HUBBARD	1B
SAN JUAN 32 9 UNIT	24B

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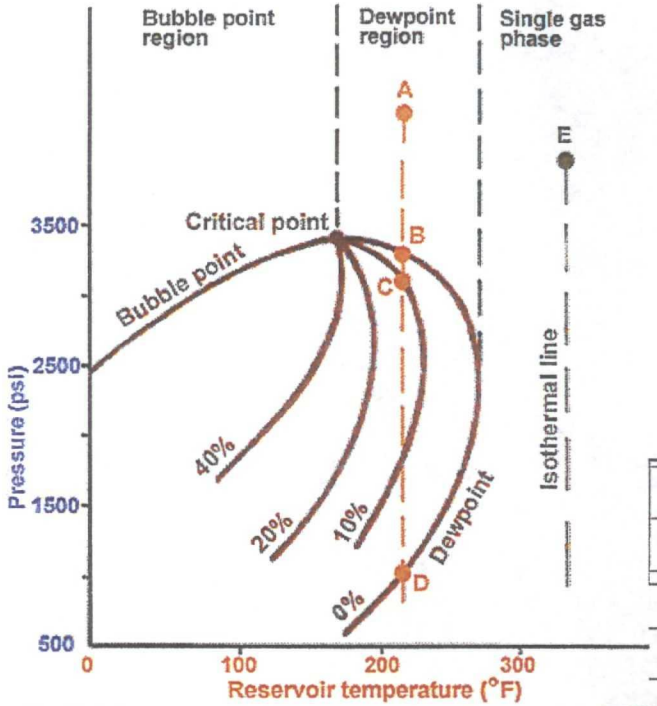

For most natural gas systems, reservoir temperature is higher than the cricondentherm (highest temperature in the two-phase envelope). As the reservoir is produced (see point E), its pressure declines at constant temperature. And there are no phase changes in the reservoir