



## Authorization For Expenditure

Company Entity	Date Prepared
CIMAREX ENERGY CO	November 21, 2016

Region	Well Name	Prospect or Field Name	Property Number	Drilling AFE No.
Anadarko	FJ 1H-1807X (FKA GRESHAM 1H-1807X)	CANA NORTHWEST PROSPECT	350012-490.01	2216161

Location	County	State	Type Well		
			Oil	Expl	X
Sec. 18-16N-12W, Blaine, OK	Blaine	OK	Gas	X	Prod

Estimate Type	Est. Start Date	Est. Comp Date	Formation	Ttl Measured Depth
Original Estimate	X			21,240'
Revised Estimate		12/01/2016	Meramec	Ttl Vertical Depth
Supplemental Estimate		04/10/2017		11,070'

## Project Description

Drill and complete a horizontal test. Drill to 300', set water string. Drill to 1500', set surface casing. Drill to 9280' set intermediate casing. Drill to 11324' (Pilot Hole). Run OH Logs. Plug Back to 10550' (KOP). Drill curve at 11 DLS build rate to +/- 11070' TVD and a +/- 9670' long lateral in the Meramec formation. Run and cement production casing. Frac +/- 43 stages. Drill out plugs and run production tubing. Flow to sales through new facility

Intangibles	Dry Hole Cost	After Casing Point	Completed Well Cost
Drilling Costs	\$3,560,000		\$3,560,000
Completion Costs		\$5,247,679	\$5,247,679
Total Intangible Costs	\$3,560,000	\$5,247,679	\$8,807,679

Tangibles			
Well Equipment	\$357,000	\$473,272	\$830,272
Lease Equipment		\$354,326	\$354,326
Total Tangible Well Cost	\$357,000	\$827,598	\$1,184,598

Plug and Abandon Cost	\$0	\$0	\$0
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Total Well Cost	\$3,917,000	\$6,075,277	\$9,992,277
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## Comments on Well Costs

1. All tubulars, well or lease equipment is priced by COPAS and CEPS guidelines using the Historic Price Multiplier.

## Well Control Insurance

Unless otherwise indicated below, you, as a non-operating working interest owner, agree to be covered by Operator's well control insurance procured by Operator so long as Operator conducts operations hereunder and to pay your prorated share of the premiums therefore. If you elect to purchase your own well control insurance, you must provide a certificate of such insurance acceptable to Operator, as to form and limits, at the time this AFE is returned, if available, but in no event later than commencement of drilling operations. You agree that failure to provide the certificate of insurance, as provided herein, will result in your being covered by insurance procured by Operator.

☐ I elect to purchase my own well control insurance policy.

Well control insurance procured by Operator, provides, among other terms, for \$20,000,000 (100% W.I.) of Combined Single Limit coverage for well control and related redrilling and clean-up/pollution expense covering drilling (through completion) with a \$1,000,000 (100% W.I.) deductible.

## Marketing Election

Cimarex sells its gas under arm's-length contracts with third party purchasers. Such contracts may include fees. In addition, penalties may be incurred for insufficient volumes delivered over time. Should you choose to market your share of gas with Cimarex, you will be subject to all of the terms of such contracts. Upon written request to Cimarex's Marketing Department, we will share with you the terms and conditions pursuant to which gas will be sold. Failure to make an election below shall be deemed an election to market your gas with Cimarex under the terms and conditions set forth above.

☐ I elect to take my gas in kind.

☐ I elect to market my gas with Cimarex pursuant to the terms and conditions of its contract.

## Comments on AFE

The above costs are estimates only and anticipate trouble free operations without any foreseeable change in plans. The actual costs may exceed the estimated costs without affecting the authorization for expenditure herein granted. By approval of this AFE, the working interest owner agrees to pay its proportionate share of actual legal, curative, regulatory and well costs under term of the joint operating agreement, regulatory order or other applicable agreement covering this well.

## Cimarex Energy Co. Approval

Prepared by	Drilling and Completion Manager	Regional Manager

## Joint Interest Approval

Company	By	Date



12/20/16





## Project Cost Estimate

Lease Name:

Case Name:	BCP - Drilling		ACP - Drilling		Completion /	
	(Dry Hole Cost)				Stimulation	
	Codes		Codes		Codes	
Intangibles						
Roads & Location Preparation / Restoration	DIDC.100	\$178,000			STIM.100	\$11,000
Damages	DIDC.105	\$25,000				
Mud / Fluids Disposal Charges	DIDC.255	\$82,000			STIM.255	\$60,000
Day Rate	55.00	DH Days	4.00	ACP Days @	\$17,000.00	Per Day
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)	DIDC.120	\$26,000				
Bits	DIDC.125	\$158,000	DICC.125	\$0	STIM.125	\$0
Fuel	\$1.50	Per Gallon	#####	Gallons Per Day		
Water for Drilling Rig / Completion Fluids (Not Frac Water)	DIDC.135	\$149,000	DICC.130	\$0		
Mud & Additives	DIDC.140	\$17,000	DICC.135	\$1,000	STIM.135	\$35,000
Surface Rentals	DIDC.145	\$482,000				
Downhole Rentals	DIDC.150	\$60,000	DICC.140	\$0	STIM.140	\$203,000
Formation Evaluation (DST, Coring including evaluation, G&G Services)	DIDC.155	\$45,000			STIM.145	\$98,000
Mud Logging	DIDC.160				STIM.150	\$0
Open Hole Logging	DIDC.170	\$53,000				
Cementing & Float Equipment	DIDC.180	\$22,000				
Tubular Inspections	DIDC.185	\$55,000	DICC.155	\$80,000		
Casing Crews	DIDC.190	\$7,000	DICC.160	\$10,000	STIM.160	\$4,000
Extra Labor, Welding, Etc.	DIDC.195	\$11,000	DICC.165	\$15,000	STIM.165	\$0
Land Transportation (Trucking for tangibles)	DIDC.200	\$5,000	DICC.170	\$5,000	STIM.170	\$0
Supervision	DIDC.205	\$10,000	DICC.175	\$13,000	STIM.175	\$5,000
Trailer House / Camp / Catering	DIDC.210	\$224,000	DICC.180	\$14,000	STIM.180	\$98,000
Other Misc Expenses	DIDC.280	\$22,000	DICC.255	\$4,000	STIM.280	\$8,000
Overhead	DIDC.220	\$1,000	DICC.190	\$0	STIM.190	\$8,000
Remedial Cementing	DIDC.225	\$22,000	DICC.195	\$5,000		
MOB/DEMOB	DIDC.231				STIM.215	\$0
Directional Drilling Services	DIDC.240	\$158,000				
Crane for Construction	DIDC.245	\$412,000				
Solids Control	DIDC.260	\$37,000				
Well Control Equip (Snubbing Svcs.)	DIDC.265	\$48,000	DICC.240	\$6,000	STIM.240	\$17,000
Fishing & Sidetrack Operations	DIDC.270	\$115,000	DICC.245	\$0	STIM.245	\$0
Completion Rig					STIM.115	\$0
Coil Tubing					STIM.260	\$186,000
Completion Logging, Perforating, WL Units, WL Surveys					STIM.200	\$134,000
Composite Plugs					STIM.390	\$55,000
Stimulation Pumping Charges, Chemicals, Additives, Sand					STIM.210	\$2,993,000
Stimulation Water / Water Transfer / Water Storage					STIM.395	\$187,000
Cimarex Owned Frac / Rental Equipment					STIM.305	\$45,000
Legal / Regulatory / Curative	DIDC.300	\$20,000				
Well Control Insurance	DIDC.285	\$11,000				
Contingency	DIDC.435	\$170,000	DICC.220	\$13,000	STIM.220	\$207,000
Construction For Flow Lines						
Construction For Sales P/L						
Total Intangible Cost		\$3,560,000		\$234,000		\$4,354,000

Tangible - Well Equipment									
Casing	Size	Feet	\$ / Foot						
Drive Pipe	0	0.00	\$0.00	DWEB.150	\$0				
Conductor Pipe	0	0.00	\$0.00	DWEB.130	\$0				
Water String	20	300.00	\$60.00	DWEB.135	\$0				
Surface Casing	13.375	1500.00	\$36.00	DWEB.140	\$18,000				
Intermediate Casing 1	9.625	9280.00	\$28.00	DWEB.145	\$54,000				
Intermediate Casing 2	0	0.00	\$0.00	DWEB.155	\$260,000				
Drilling Liner	0	0.00	\$0.00	DWEB.160	\$0				
Production Casing or Liner	5.5	21240.00	\$15.00			DWEA.100	\$319,000		
Production Tie-Back	0	0.00	\$0.00			DWEA.165	\$0	STIMT.101	\$0
Tubing	0	0.00	\$0.00					STIMT.105	\$0
Wellhead, Tree, Chokes				DWEB.115		DWEA.120	\$50,000	STIMT.120	\$50,000
Liner Hanger, Isolation Packer				DWEB.100	\$25,000	DWEA.125	\$0		
Packer, Nipples								STIMT.400	\$0
Pumping Unit, Engine								STIMT.405	\$0
Downhole Lift Equipment (BHP, Rods, Anchors, ESP, GVLs, PC Pump)								STIMT.410	\$0
Tangible - Lease Equipment									
N/C Lease Equipment									
Tanks, Tanks Steps, Stairs									
Battery (Heater Treater, Separator, Gas Treating Equipment)									
Secondary Containments									
Overhead Power Distribution (electric line to facility)									
Facility Electrical & Automation									
SWD Connection									
Flow Lines (Line Pipe from wellhead to central facility)									
Pipeline to Sales									
Meters and Metering Equipment									
Total Tangibles					\$357,000		\$369,000		\$50,000

P&A Costs	DIDC.295	\$0	DICC.275	\$0		
Total Cost		\$3,917,000		\$603,000		\$4,404,000





# Project Cost Estimate

Lease Name:

	Production Equipment / Construction	Post Completion	Total Well Cost
Intangibles	Codes	Codes	
Roads & Location Preparation / Restoration	CON.100 \$4,000	PCOM.100 \$1,000	\$194,000
Damages	CON.105 \$0		\$25,000
Mud / Fluids Disposal Charges		PCOM.255 \$104,190	\$246,190
Day Rate \$5.00 DH Days 4.00 ACP Days @ \$17,000.00 Per Day			\$1,003,000
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)			\$26,000
Bits		PCOM.125 \$0	\$158,000
Fuel \$1.50 Per Gallon ##### Gallons Per Day		PCOM.130 \$0	\$149,000
Water for Drilling Rig / Completion Fluids (Not Frac Water)		PCOM.135 \$1,000	\$54,000
Mud & Additives			\$482,000
Surface Rentals	CON.140 \$9,650	PCOM.140 \$372,771	\$645,421
Downhole Rentals		PCOM.145 \$0	\$143,000
Formation Evaluation (DST, Coring including evaluation, G&G Services)			\$0
Mud Logging 53.00 Days @ \$1,000.00 Per Day			\$53,000
Open Hole Logging			\$22,000
Cementing & Float Equipment			\$135,000
Tubular Inspections		PCOM.160 \$3,700	\$24,700
Casing Crews			\$26,000
Extra Labor, Welding, Etc.	CON.170 \$74,550	PCOM.170 \$0	\$84,550
Land Transportation (Trucking for tangibles)	CON.175 \$7,204	PCOM.175 \$6,800	\$42,004
Supervision \$3,500.00 Per Day	CON.180 \$5,950	PCOM.180 \$2,550	\$344,500
Trailer House / Camp / Catering			\$34,000
Other Misc Expenses	CON.190 \$4,000	PCOM.190 \$0	\$13,000
Overhead			\$27,000
Remedial Cementing		PCOM.215 \$0	\$0
MOB/DEMOB			\$158,000
Directional Drilling Services			\$412,000
Crane for Construction	CON.230 \$0		\$0
Solids Control			\$37,000
Well Control Equip (Snubbing Svcs.)		PCOM.240 \$16,900	\$87,900
Fishing & Sidetrack Operations		PCOM.245 \$0	\$115,000
Completion Rig		PCOM.115 \$14,000	\$14,000
Coil Tubing		PCOM.260 \$0	\$186,000
Completion Logging, Perforating, WL Units, WL Surveys		PCOM.200 \$0	\$134,000
Composite Plugs		PCOM.390 \$0	\$55,000
Stimulation Pumping Charges, Chemicals, Additives, Sand		PCOM.210 \$0	\$2,993,000
Stimulation Water / Water Transfer / Water Storage			\$187,000
Cimarex Owned Frac / Rental Equipment			\$45,000
Legal / Regulatory / Curative	CON.300 \$0		\$20,000
Well Control Insurance \$0.50 Per Foot			\$11,000
Contingency 5.0 % of Drilling Intangibles	CON.220 \$5,268	PCOM.220 \$26,146	\$421,414
Construction For Flow Lines	CON.310 \$0		\$0
Construction For Sales P/L	CON.265 \$0		\$0
<b>Total Intangible Cost</b>	<b>\$110,622</b>	<b>\$549,057</b>	<b>\$8,807,679</b>

Tangible - Well Equipment	Size	Feet	\$ / Foot		
Casing					
Drive Pipe	0	0.00	\$0.00		\$0
Conductor Pipe	0	0.00	\$0.00		\$0
Water String	20 "	300.00	\$60.00		\$0
Surface Casing	13.375	1500.00	\$36.00		\$18,000
Intermediate Casing 1	9.625	9280.00	\$28.00		\$54,000
Intermediate Casing 2	0	0.00	\$0.00		\$260,000
Drilling Liner	0	0.00	\$0.00		\$0
Production Casing or Liner	5.5	21240.00	\$15.00		\$319,000
Production Tie-Back	0	0.00	\$0.00		\$0
Tubing	0	0.00	\$0.00	PCOMT.105	\$52,472
Wellhead, Tree, Chokes					\$52,472
Liner Hanger, Isolation Packer					\$100,000
Packer, Nipples				PCOMT.400	\$1,800
Pumping Unit, Engine				PCOMT.405	\$1,800
Downhole Lift Equipment (BHP, Rods, Anchors, ESP, GVLs, PC Pump)				PCOMT.410	\$0
<b>Tangible - Lease Equipment</b>					\$0
N/C Lease Equipment	CON.400	\$69,387			\$69,387
Tanks, Tanks Steps, Stairs	CON.405	\$61,047			\$61,047
Battery (Heater Treater, Separator, Gas Treating Equipment)	CON.410	\$129,700			\$129,700
Secondary Containments	CON.415	\$8,500			\$8,500
Overhead Power Distribution (electric line to facility)	CON.420	\$0			\$0
Facility Electrical & Automation	CON.425	\$35,000			\$35,000
SWD Connection	CON.430	\$0			\$0
Flow Lines (Line Pipe from wellhead to central facility)	CON.435	\$0			\$0
Pipeline to Sales	CON.440	\$0			\$0
Meters and Metering Equipment	CON.445	\$50,692			\$50,692
<b>Total Tangibles</b>		<b>\$354,326</b>		<b>\$54,272</b>	<b>\$1,184,598</b>

P&A Costs			\$0
<b>Total Cost</b>	<b>\$464,948</b>	<b>\$603,329</b>	<b>\$9,992,277</b>