



## Authorization For Expenditure

Company Entity <b>CIMAREX ENERGY CO</b>				Date Prepared <b>October 17, 2016</b>	
Region	Well Name	Prospect or Field Name	Property Number	Drilling AFE No.	
Anadarko	CALMUS 1H-2017X	CANA NORTHWEST PROSPECT	350012-411.01	2216020	
Location		County	State	Type Well	
Sec. 20 - 14N - 11W, Blaine Co., OK		Blaine	OK	Oil Gas	Expl Prod
				X	X
Estimate Type		Est. Start Date	Est. Comp Date	Formation	Ttl Measured Depth
Original Estimate		February 1, 2016	April 1, 2016	Mississippi	21,610'
Revised Estimate					Ttl Vertical Depth
Supplemental Estimate					11,630'
Project Description Drill and complete a horizontal test. Drill to 1500', set surface casing. Drill to 9863' set intermediate casing. Drill to 11147' (KOP). Drill curve at 12 DLS build rate to +/- 11630' TVD and a +/- 9710' long lateral in the Meramec formation. Run and cement production casing. Frac +/- 40 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		\$2,690,000		\$2,690,000	
Completion Costs			\$5,044,000	\$5,044,000	
Total Intangible Costs		\$2,690,000	\$5,044,000	\$7,734,000	
Tangibles					
Well Equipment		\$357,000	\$513,000	\$870,000	
Lease Equipment			\$344,000	\$344,000	
Total Tangible Well Cost		\$357,000	\$857,000	\$1,214,000	
Plug and Abandon Cost		\$0	\$0	\$0	
Total Well Cost		\$3,047,000	\$5,901,000	\$8,948,000	
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. <input type="checkbox"/> 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. <input type="checkbox"/> I elect to take my gas in kind. <input type="checkbox"/> 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			



11/28/16



Lease Name:

	BCP - Drilling (Dry Hole Cost)		ACP - Drilling		Completion / Stimulation	
	Codes		Codes		Codes	
Intangibles						
Roads & Location Preparation / Restoration	DIDC.100	\$153,000			STIM.100	\$11,000
Damages	DIDC.105	\$25,000				
Mud / Fluids Disposal Charges	DIDC.255	\$90,000			STIM.255	\$60,000
Day Rate 37.00 DH Days 5.00 ACP Days @ \$16,000.00 Per Day	DIDC.115	\$592,000	DICC.120	\$80,000		
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)	DIDC.120	\$26,000				
Bits	DIDC.125	\$158,000	DICC.125		STIM.125	
Fuel \$1.65 Per Gallon 1,700.00 Gallons Per Day	DIDC.135	\$132,000	DICC.130			
Water for Drilling Rig / Completion Fluids (Not Frac Water)	DIDC.140	\$13,000	DICC.135	\$1,000	STIM.135	\$75,000
Mud & Additives	DIDC.145	\$410,000				
Surface Rentals	DIDC.150	\$55,000	DICC.140		STIM.140	\$163,000
Downhole Rentals	DIDC.155	\$45,000			STIM.145	\$67,000
Formation Evaluation (DST, Coring including evaluation, G&G Services)	DIDC.160				STIM.150	
Mud Logging 35.00 Days @ \$1,000.00 Per Day	DIDC.170	\$35,000				
Open Hole Logging	DIDC.180					
Cementing & Float Equipment	DIDC.185	\$45,000	DICC.155	\$130,000		
Tubular Inspections	DIDC.190	\$15,000	DICC.160	\$10,000	STIM.160	
Casing Crews	DIDC.195	\$13,000	DICC.165	\$17,000	STIM.165	
Extra Labor, Welding, Etc.	DIDC.200	\$10,000	DICC.170	\$5,000	STIM.170	
Land Transportation (Trucking for tangibles)	DIDC.205	\$14,000	DICC.175	\$13,000	STIM.175	\$5,000
Supervision \$3,500.00 Per Day	DIDC.210	\$165,000	DICC.180	\$18,000	STIM.180	\$79,000
Trailer House / Camp / Catering	DIDC.280	\$24,000	DICC.255	\$4,000	STIM.280	\$10,000
Other Misc Expenses	DIDC.220	\$1,000	DICC.190		STIM.190	\$22,000
Overhead	DIDC.225	\$15,000	DICC.195	\$5,000		
Remedial Cementing	DIDC.231				STIM.215	
MOB/DEMOB	DIDC.240	\$170,000				
Directional Drilling Services	DIDC.245	\$264,000				
Crane for Construction	DIDC.260	\$29,000				
Solids Control	DIDC.265	\$32,000	DICC.240	\$6,000	STIM.240	\$15,000
Well Control Equip (Snubbing Svcs.)	DIDC.270		DICC.245		STIM.245	
Fishing & Sidetrack Operations					STIM.115	\$0
Completion Rig					STIM.260	\$133,000
Coil Tubing					STIM.200	\$108,000
Completion Logging, Perforating, WL Units, WL Surveys					STIM.390	\$47,000
Composite Plugs					STIM.210	\$2,903,000
Stimulation Pumping Charges, Chemicals, Additives, Sand					STIM.395	\$211,000
Stimulation Water / Water Transfer / Water Storage					STIM.305	\$53,000
Cimarex Owned Frac / Rental Equipment	DIDC.300	\$20,000				
Legal / Regulatory / Curative	DIDC.285	\$11,000				
Well Control Insurance \$0.50 Per Foot	DIDC.435	\$128,000	DICC.220	\$13,000	STIM.220	\$198,000
Contingency 5.0 % of Drilling Intangibles						
Construction For Flow Lines						
Construction For Sales P/L						
<b>Total Intangible Cost</b>		<b>\$2,690,000</b>		<b>\$302,000</b>		<b>\$4,160,000</b>

Tangible - Well Equipment							
	Size	Feet	\$ / Foot				
Casing				DWEB.150	\$0		
Drive Pipe				DWEB.130	\$0		
Conductor Pipe				DWEB.135	\$0		
Water String				DWEB.140	\$54,000		
Surface Casing	13 3/8"	1500.00	\$36.00	DWEB.145	\$276,000		
Intermediate Casing 1	9 5/8"	9863.00	\$28.00	DWEB.155	\$0		
Intermediate Casing 2	0 "	0.00	\$0.00	DWEB.160	\$0		
Drilling Liner	0 "	0.00	\$0.00			DWEA.100	\$367,000
Production Casing or Liner	5 1/2"	21610.00	\$17.00			DWEA.165	
Production Tie-Back	0 "	0.00	\$0.00				STIMT.101
Tubing	2 3/8"	11250.00	\$4.00				STIMT.105
Wellhead, Tree, Chokes				DWEB.115	\$27,000	DWEA.120	\$30,000
Liner Hanger, Isolation Packer				DWEB.100		DWEA.125	
Packer, Nipples							STIMT.120
Pumping Unit, Engine							\$45,000
Downhole Lift Equipment (BHP, Rods, Anchors, ESP, GVLs, PC Pump)							
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							
<b>Total Tangibles</b>					<b>\$357,000</b>	<b>\$397,000</b>	<b>\$45,000</b>

P&A Costs	DIDC.295	\$0	DICC.275	\$0		
<b>Total Cost</b>		<b>\$3,047,000</b>		<b>\$699,000</b>		<b>\$4,205,000</b>





# Project Cost Estimate

Lease Name:

	Production	Post	Total Well
	Equipment /	Completion	Cost
	Codes	Codes	
Intangibles			
Roads & Location Preparation / Restoration	CON.100 \$4,000	PCOM.100 \$1,000	\$169,000
Damages	CON.105 \$0		\$25,000
Mud / Fluids Disposal Charges		PCOM.255 \$95,000	\$245,000
Day Rate 37.00 DH Days 5.00 ACP Days @ \$16,000.00 Per Day			\$672,000
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)			\$26,000
Bits		PCOM.125 \$0	\$158,000
Fuel \$1.65 Per Gallon 1,700.00 Gallons Per Day		PCOM.130 \$0	\$132,000
Water for Drilling Rig / Completion Fluids (Not Frac Water)		PCOM.135 \$1,000	\$90,000
Mud & Additives	CON.140 \$4,000	PCOM.140 \$280,000	\$502,000
Surface Rentals		PCOM.145 \$0	\$112,000
Downhole Rentals			\$0
Formation Evaluation (DST, Coring including evaluation, G&G Services)			\$35,000
Mud Logging 35.00 Days @ \$1,000.00 Per Day			\$0
Open Hole Logging			\$175,000
Cementing & Float Equipment		PCOM.160 \$4,000	\$29,000
Tubular Inspections			\$30,000
Casing Crews	CON.170 \$55,000	PCOM.170 \$0	\$70,000
Extra Labor, Welding, Etc.	CON.175 \$9,000	PCOM.175 \$7,000	\$48,000
Land Transportation (Trucking for tangibles)	CON.180 \$13,000	PCOM.180 \$12,000	\$287,000
Supervision \$3,500.00 Per Day			\$38,000
Trailer House / Camp / Catering	CON.190 \$4,000	PCOM.190 \$0	\$27,000
Other Misc Expenses			\$20,000
Overhead		PCOM.215 \$0	\$0
Remedial Cementing			\$170,000
MOB/DEMOB			\$264,000
Directional Drilling Services	CON.230 \$4,000		\$4,000
Crane for Construction			\$29,000
Solids Control		PCOM.240 \$22,000	\$75,000
Well Control Equip (Snubbing Svcs.)		PCOM.245 \$0	\$0
Fishing & Sidetrack Operations		PCOM.115 \$14,000	\$14,000
Completion Rig		PCOM.260 \$0	\$133,000
Coil Tubing		PCOM.200 \$0	\$108,000
Completion Logging, Perforating, WL Units, WL Surveys		PCOM.390 \$0	\$47,000
Composite Plugs		PCOM.210 \$0	\$2,903,000
Stimulation Pumping Charges, Chemicals, Additives, Sand			\$211,000
Stimulation Water / Water Transfer / Water Storage			\$53,000
Cimarex Owned Frac / Rental Equipment	CON.300 \$0		\$20,000
Legal / Regulatory / Curative			\$11,000
Well Control Insurance \$0.50 Per Foot	CON.220 \$9,000	PCOM.220 \$44,000	\$392,000
Contingency 5.0 % of Drilling Intangibles	CON.310 \$0		\$0
Construction For Flow Lines	CON.265		\$0
Construction For Sales P/L			\$0
<b>Total Intangible Cost</b>	<b>\$102,000</b>	<b>\$480,000</b>	<b>\$7,734,000</b>

Tangible - Well Equipment	Size	Feet	\$ / Foot						
Casing									\$0
Drive Pipe									\$0
Conductor Pipe									\$0
Water String									\$54,000
Surface Casing	13 3/8"	1500.00	\$36.00						\$276,000
Intermediate Casing 1	9 5/8"	9863.00	\$28.00						\$0
Intermediate Casing 2	0 "	0.00	\$0.00						\$0
Drilling Liner	0	0.00	\$0.00						\$367,000
Production Casing or Liner	5 1/2"	21610.00	\$17.00						\$0
Production Tie-Back	0	0.00	\$0.00						\$0
Tubing	2 3/8"	11250.00	\$4.00						\$102,000
Wellhead, Tree, Chokes									\$0
Liner Hanger, Isolation Packer									\$7,000
Packer, Nipples									\$0
Pumping Unit, Engine									\$12,000
Downhole Lift Equipment (BHP, Rods, Anchors, ESP, GVIs, PC Pump)									\$12,000
Tangible - Lease Equipment									\$65,000
N/C Lease Equipment	CONT.400	\$65,000							\$57,000
Tanks, Tanks Steps, Stairs	CONT.405	\$57,000							\$108,000
Battery (Heater Treater, Separator, Gas Treating Equipment)	CONT.410	\$108,000							\$28,000
Secondary Containments	CONT.415	\$28,000							\$3,000
Overhead Power Distribution (electric line to facility)	CONT.420	\$3,000							\$31,000
Facility Electrical & Automation	CONT.425	\$31,000							\$0
SWD Connection	CONT.430	\$0							\$23,000
Flow Lines (Line Pipe from wellhead to central facility)	CONT.435	\$23,000							\$0
Pipeline to Sales	CONT.440	\$0							\$29,000
Meters and Metering Equipment	CONT.445	\$29,000							\$0
<b>Total Tangibles</b>		<b>\$344,000</b>						<b>\$71,000</b>	<b>\$1,214,000</b>
P&A Costs									\$0
<b>Total Cost</b>		<b>\$446,000</b>						<b>\$551,000</b>	<b>\$8,948,000</b>