



Authorization For Expenditure

Company Entry	Date Prepared
CIMAREX ENERGY CO	September 20, 2014

Region	Well Name	Prospect or Field Name	Property Number	Drilling AFE No.
Anadarko	Hartley 1-32H	CANA NORTHWEST PROSPECT		

Location	County	State	Type Well		
32-16N-12W	Blaine	OK	Oil	Expl	X
			Gas	Prad	

Estimate Type	Est. Start Date	Est. Comp. Date	Formation	TD Measured Depth
Original Estimate	X		Mississippi	15,930'
Revised Estimate				TD Vertical Depth
Supplemental Estimate				11,160'

Project Description
Drill and complete a horizontal test. Drill to 1500', set surface casing. Drill to 9670', set intermediate casing. Drill to 12100' (Pilot Hole). Run OH Logs. Plug Back to 10680' (KOP). Drill curve at 12 DLS build rate to +/- 11160' TVD and a +/- 4500' long lateral in the Meramec formation. Run and cement production casing. Stage frac in 20 stages. Drill out plugs. Run production tubing. Flow to sales through new facility. Note that there is offset Morrow in the area which may result in the need to run a drilling liner. The estimated cost to run the liner is \$750,000 and was not included in the AFE.

Intangibles	Dry Hole Cost	After Casing Point	Completed Well Cost
Drilling Costs	\$4,052,000		\$4,052,000
Completion Costs		\$3,824,000	\$3,824,000
Total Intangible Costs	\$4,052,000	\$3,824,000	\$7,876,000

Tangibles			
Well Equipment	\$486,000	\$490,000	\$976,000
Lease Equipment		\$235,000	\$235,000
Total Tangible Well Cost	\$486,000	\$725,000	\$1,211,000

Plug and Abandon Cost	\$0	\$0	\$0
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Total Well Cost	\$4,538,000	\$4,549,000	\$9,087,000
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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



1027-14

Lease Name:

	BCP - Drilling (Dry Hole Cost)		ACP - Drilling		Completion / Stimulation
Intangibles	Codes		Codes		Codes
Roads & Location Preparation / Restoration	DHDC 100	\$140,000			STIM 100 \$22,000
Damages	DHDC 105	\$30,000			
Mud / Fluids Disposal Charges	DHDC 235	\$125,000			STIM 235 \$80,000
Day Rate 42.00 DH Days 3.00 ACP Days @ \$19,500.00 Per Day	DHDC 115	\$839,000	DHCC 120	\$59,000	
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)	DHDC 120	\$25,000			
Bits	DHDC 125	\$225,000	DHCC 125	\$0	STIM 125 \$0
Fuel \$3.50 Per Gallon ##### Gallons Per Day	DHDC 135	\$296,000	DHCC 130	\$0	
Water for Drilling Rig / Completion Fluids (Not Frac Water)	DHDC 140	\$10,000	DHCC 135	\$0	STIM 135 \$41,000
Mud & Additives	DHDC 145	\$350,000			
Surface Rentals	DHDC 150	\$61,000	DHCC 140	\$6,000	STIM 140 \$167,000
Downhole Rentals	DHDC 155	\$115,000			STIM 145 \$41,000
Formation Evaluation (DST, Coring including evaluation, G&G Services)	DHDC 160	\$200,000			STIM 150 \$0
Mud Logging 30.00 Days @ \$900.00 Per Day	DHDC 170	\$32,000			
Open Hole Logging	DHDC 180	\$200,000			
Cementing & Float Equipment	DHDC 185	\$68,000	DHCC 155	\$88,000	
Tubular Inspections	DHDC 190	\$14,000	DHCC 160	\$4,000	STIM 160 \$2,000
Casing Crews	DHDC 195	\$39,000	DHCC 165	\$30,000	STIM 165 \$0
Extra Labor, Welding, Etc.	DHDC 200	\$15,000	DHCC 170	\$9,000	STIM 170 \$0
Land Transportation (Trucking for tangibles)	DHDC 205	\$17,000	DHCC 175	\$10,000	STIM 175 \$5,000
Supervision \$2,900.00 Per Day	DHDC 210	\$139,000	DHCC 180	\$10,000	STIM 180 \$22,000
Trailer House / Camp / Catering	DHDC 280	\$35,000	DHCC 255	\$0	STIM 280 \$8,000
Other Misc Expenses	DHDC 220	\$1,000	DHCC 190	\$0	STIM 190 \$0
Overhead	DHDC 225	\$10,000	DHCC 195	\$0	
Remedial Cementing	DHDC 231	\$0			STIM 215 \$0
MOB/DEMOB	DHDC 240	\$181,000			
Directional Drilling Services	DHDC 245	\$455,000			
Crane for Construction					
Solids Control	DHDC 260	\$42,000			
Well Control Equip (Snubbing Svcs.)	DHDC 265	\$37,000	DHCC 240	\$0	STIM 240 \$10,000
Fishing & Sidetrack Operations	DHDC 270	\$150,000	DHCC 245	\$0	STIM 245 \$0
Completion Rig					STIM 115 \$35,000
Coil Tubing					STIM 260 \$362,000
Completion Logging, Perforating, WL Units, WL Surveys					STIM 300 \$163,000
Composite Plugs					STIM 390 \$76,000
Stimulation Pumping Charges, Chemicals, Additives, Sand					STIM 210 \$1,953,000
Stimulation Water / Water Transfer / Water Storage					STIM 395 \$172,000
Cimarex Owned Frac / Rental Equipment					STIM 305 \$14,000
Legal / Regulatory / Curative	DHDC 300	\$4,000			
Well Control Insurance	DHDC 385	\$6,000			
Contingency 5.0 % of Drilling Intangibles	DHDC 435	\$193,000	DHCC 220	\$11,000	STIM 220 \$159,000
Construction For Flow Lines					
Construction For Sales P/L					
Total Intangible Cost		\$4,052,000		\$227,000	\$3,332,000

Tangible - Well Equipment

	Size	Feet	\$ / Foot				
Casing				DWEB 150	\$0		
Drive Pipe	0	0.00	\$0.00	DWEB 130	\$0		
Conductor Pipe	0	0.00	\$0.00	DWEB 135	\$0		
Water String	0	0.00	\$0.00	DWEB 140	\$62,000		
Surface Casing	13.375	1500.00	\$41.30	DWEB 145	\$387,000		
Intermediate Casing 1	9.625	9670.00	\$40.00	DWEB 155	\$0		
Intermediate Casing 2	0	0.00	\$0.00	DWEB 160	\$0		
Drilling Liner	0	0.00	\$0.00			DWEA 100	\$378,000
Production Casing or Liner	5.5	15930.00	\$23.70			DWEA 165	\$0
Production Tie-Back	0	0.00	\$0.00				STIMT 101 \$0
Tubing	2.375	10780.00	\$5.50				STIMT 105 \$59,000
Wellhead, Tree, Chokes				DWEB 115	\$37,000	DWEA 120	\$26,000
Liner Hanger, Isolation Packer				DWEB 100	\$0	DWEA 125	\$0
Packer, Nipples							STIMT 400 \$7,000
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					\$486,000	\$404,000	\$86,000

P&A Costs	DHCC 235	\$0	DHCC 275	\$0		
Total Cost		\$4,538,000		\$631,000	\$3,418,000	



Project Cost Estimate

Lease Name:

	Production		Post		Total Well
	Equipment /		Completion		Cost
Intangibles	Costs	Construction	Costs		
Roads & Location Preparation / Restoration	CON 190	\$1,000	PCOM 100	\$0	\$163,000
Damages	CON 195	\$0			\$30,000
Mud / Fluids Disposal Charges			PCOM 255	\$78,000	\$283,000
Day Rate 42.00 DH Days 3.00 ACP Days @ \$19,500.00 Per Day					\$898,000
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)					\$23,000
Bits			PCOM 125	\$0	\$225,000
Fuel \$3.50 Per Gallon ##### Gallons Per Day			PCOM 130	\$0	\$296,000
Water for Drilling Rig / Completion Fluids (Not Frac Water)			PCOM 135	\$0	\$51,000
Mud & Additives					\$350,000
Surface Rentals	CON 140	\$3,000	PCOM 140	\$104,000	\$341,000
Downhole Rentals			PCOM 145	\$0	\$156,000
Formation Evaluation (DST, Coring including evaluation, G&G Services)					\$200,000
Mud Logging 30.00 Days @ \$900.00 Per Day					\$32,000
Open Hole Logging					\$200,000
Cementing & Float Equipment			PCOM 160	\$0	\$156,000
Tubular Inspections					\$20,000
Casing Crews					\$69,000
Extra Labor, Welding, Etc.	CON 170	\$47,000	PCOM 170	\$0	\$71,000
Land Transportation (Trucking for tangibles)	CON 175	\$4,000	PCOM 175	\$0	\$36,000
Supervision \$2,900.00 Per Day	CON 180	\$5,000	PCOM 180	\$0	\$176,000
Trailer House / Camp / Catering					\$43,000
Other Misc Expenses	CON 190	\$3,000	PCOM 190	\$0	\$4,000
Overhead					\$10,000
Remedial Cementing			PCOM 215	\$0	\$0
MOB/DEMOB					\$181,000
Directional Drilling Services					\$455,000
Crane for Construction	CON 230	\$4,000			\$4,000
Solids Control					\$42,000
Well Control Equip (Snubbing Svcs.)			PCOM 340	\$0	\$47,000
Fishing & Sidetrack Operations			PCOM 245	\$0	\$150,000
Completion Rig			PCOM 115	\$0	\$35,000
Coil Tubing			PCOM 260	\$0	\$362,000
Completion Logging, Perforating, WL Units, WL Surveys			PCOM 200	\$0	\$163,000
Composite Plugs			PCOM 390	\$0	\$76,000
Stimulation Pumping Charges, Chemicals, Additives, Sand			PCOM 210	\$0	\$1,953,000
Stimulation Water / Water Transfer / Water Storage					\$172,000
Cimarex Owned Frac / Rental Equipment					\$14,000
Legal / Regulatory / Curative	CON 300	\$0			\$4,000
Well Control Insurance \$0.35 Per Foot					\$6,000
Contingency 5.0 % of Drilling Intangibles	CON 220	\$3,000	PCOM 220	\$9,000	\$375,000
Construction For Flow Lines	CON 310	\$0			\$0
Construction For Sales P/L	CON 265	\$4,000			\$4,000
Total Intangible Cost		\$74,000		\$191,000	\$7,876,000

Tangible - Well Equipment									
	Size	Feet	\$ / Foot						
Casing									\$0
Drive Pipe	0	0.00	\$0.00						\$0
Conductor Pipe	0	0.00	\$0.00						\$0
Water String	0	0.00	\$0.00						\$0
Surface Casing	13.375	1500.00	\$41.30						\$62,000
Intermediate Casing 1	9.625	9670.00	\$40.00						\$387,000
Intermediate Casing 2	0	0.00	\$0.00						\$0
Drilling Liner	0	0.00	\$0.00						\$0
Production Casing or Liner	5.5	15930.00	\$23.70						\$378,000
Production Tie-Back	0	0.00	\$0.00						\$0
Tubing	2.375	10780.00	\$5.50			PCOMT 105	\$0		\$59,000
Wellhead, Tree, Chokes									\$83,000
Liner Hanger, Isolation Packer									\$0
Packer, Nipples						PCOMT 400	\$0		\$7,000
Pumping Unit, Engine						PCOMT 405	\$0		\$0
Downhole Lift Equipment (BHP, Rods, Anchors, ESP, GVLs, PC Pump)						PCOMT 410	\$0		\$0
Tangible - Lease Equipment									
N/C Lease Equipment				CONT 400	\$50,000				\$50,000
Tanks, Tanks Steps, Stairs				CONT 405	\$30,000				\$30,000
Battery (Heater Treater, Separator, Gas Treating Equipment)				CONT 410	\$77,000				\$77,000
Secondary Containments				CONT 415	\$6,000				\$6,000
Overhead Power Distribution (electric line to facility)				CONT 420	\$3,000				\$3,000
Facility Electrical & Automation				CONT 425	\$27,000				\$27,000
SWD Connection				CONT 430	\$0				\$0
Flow Lines (Line Pipe from wellhead to central facility)				CONT 435	\$12,000				\$12,000
Pipeline to Sales				CONT 440	\$0				\$0
Meters and Metering Equipment				CONT 445	\$30,000				\$30,000
Total Tangibles					\$235,000		\$0		\$1,211,000
P&A Costs									\$0
Total Cost					\$309,000		\$191,000		\$9,087,000