



Authorization For Expenditure



Company Entity	Date Prepared
CIMAREX ENERGY CO	October 21, 2014

Region	Well Name	Prospect or Field Name	Property Number	Drilling AFE No.
Cana	GRELLNER 1-25H	CANA CORE PROSPECT (CANA)	350016-866.01	264191

Location	County	State	Type Well		
SHL-200' FSL & 2054' FWL, BHL- 50' FNL & 2054' FWL	Canadian	OK	Oil	Expl	X
			Gas	Prod	

Estimate Type	Est. Start Date	Est. Comp Date	Formation	Ttl Measured Depth
Original Estimate	November 21, 2014	January 17, 2015	Woodford	16,120'
Revised Estimate				Ttl Vertical Depth
Supplemental Estimate				11,390'

Project Description
Drill and complete a Woodford test. No pipeline costs are included. Drill to 1500', set surface casing. Drill to ± 9559', set intermediate casing. Drill to ± 10916' (KOP). Drill curve, at 12 deg/100' build rate, to 11394' TVD and then a 4452' long lateral, in the Middle Woodford target layer. Run production casing. Frac in 20 stages, with slickwater and white sand proppant. Drill out plugs, run 2-3/8 carbon steel tubing and place on production.

Intangibles	Dry Hole Cost	After Casing Point	Completed Well Cost
Drilling Costs	\$2,690,000		\$2,690,000
Completion Costs		\$3,103,000	\$3,103,000
Total Intangible Costs	\$2,690,000	\$3,103,000	\$5,793,000

Tangibles			
Well Equipment	\$502,000	\$635,000	\$1,137,000
Lease Equipment		\$143,000	\$143,000
Total Tangible Well Cost	\$502,000	\$778,000	\$1,280,000

Plug and Abandon Cost	\$0	\$0	\$0
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Total Well Cost	\$3,192,000	\$3,881,000	\$7,073,000
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Comments on Well Costs
1. All tubulars, well or lease equipment is priced by COPAS and CEP5 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



Project Cost Estimate

Lease Name: GRELLNER 1-25H

Intangibles	Codes	Dry Hole Cost	Codes	After Casing Point	Completed Well Cost
Roads & Location Preparation / Restoration	DIDC.100	\$128,000	DICC.100	\$23,000	\$151,000
Damages	DIDC.105	\$21,000	DICC.105	\$0	\$21,000
Mud / Fluids Disposal Charges	DIDC.255	\$125,000	DICC.235	\$142,000	\$267,000
Day Rate 28.00 DH Days 3.00 ACP Days @ \$23,000.00 Per Day	DIDC.115	\$644,000	DICC.120	\$69,000	\$713,000
Misc Preparation Cost (mouse hole, rat hole, pads, pile clusters, misc.)	DIDC.120	\$23,000			\$23,000
Bits	DIDC.125	\$185,000	DICC.125	\$1,000	\$186,000
Fuel \$3.50 Per Gallon ##### Gallons Per Day	DIDC.135	\$216,000	DICC.130	\$14,000	\$230,000
Water / Completion Fluids \$0.00 Per Day	DIDC.140	\$23,000	DICC.135	\$55,000	\$78,000
Mud & Additives	DIDC.145	\$321,000			\$321,000
Surface Rentals \$1,300.00 Per Day	DIDC.150	\$36,000	DICC.140	\$156,000	\$192,000
Downhole Rentals	DIDC.155	\$77,000	DICC.145	\$40,000	\$117,000
Formation Evaluation (DST, Coring including evaluation, G&G Services)	DIDC.160	\$0			\$0
Mud Logging 21.00 Days @ \$700.00 Per Day	DIDC.170	\$15,000			\$15,000
Open Hole Logging	DIDC.180	\$0			\$0
Cementing & Float Equipment	DIDC.185	\$68,000	DICC.155	\$104,000	\$172,000
Tubular Inspections	DIDC.190	\$14,000	DICC.160	\$10,000	\$24,000
Casing Crews	DIDC.195	\$33,000	DICC.165	\$47,000	\$80,000
Extra Labor, Welding, Etc.	DIDC.200	\$16,000	DICC.170	\$20,000	\$36,000
Land Transportation (Trucking)	DIDC.205	\$17,000	DICC.175	\$17,000	\$34,000
Supervision \$3,000.00 Per Day	DIDC.210	\$99,000	DICC.180	\$24,000	\$123,000
Trailer House / Camp / Catering \$0.00 Per Day	DIDC.280	\$33,000	DICC.255	\$7,000	\$40,000
Other Misc Expenses	DIDC.220	\$1,000	DICC.190	\$52,000	\$53,000
Overhead \$0.00 Per Day	DIDC.225	\$8,000	DICC.195	\$15,000	\$23,000
Remedial Cementing	DIDC.231	\$0	DICC.215	\$0	\$0
MOB/DEMOB	DIDC.240	\$120,000			\$120,000
Directional Drilling Services 0.00 Days @ \$0.00 Per Day	DIDC.245	\$187,000			\$187,000
Dock, Dispatcher, Crane	DIDC.250	\$0	DICC.230	\$0	\$0
Marine & Air Transportation	DIDC.275	\$0	DICC.250	\$0	\$0
Solids Control \$0.00 Per Day	DIDC.260	\$41,000			\$41,000
Well Control Equip (Snubbing Svcs.)	DIDC.265	\$57,000	DICC.240	\$21,000	\$78,000
Fishing & Sidetrack Operations	DIDC.270	\$0	DICC.245	\$0	\$0
Completion Rig 0.00 Days @ \$0.00 Per Day			DICC.115	\$35,000	\$35,000
Coil Tubing 0.00 Days @ \$0.00 Per Day			DICC.260	\$400,000	\$400,000
Completion Logging, Perforating, WL Units, WL Surveys			DICC.200	\$260,000	\$260,000
Stimulation			DICC.210	\$1,400,000	\$1,400,000
Legal / Regulatory / Curative	DIDC.300	\$28,000	DICC.280	\$2,000	\$30,000
Well Control Insurance \$1.59 Per Foot	DIDC.285	\$26,000			\$26,000
Contingency 0.1 % of Drilling Intangibles	DIDC.435	\$128,000	DICC.220	\$146,000	\$274,000
Construction For Well Equipment			DWEA.110	\$0	\$0
Construction For Lease Equipment			DLEQ.110	\$43,000	\$43,000
Construction For Sales P/L			DICC.265	\$0	\$0
Total Intangible Cost		\$2,690,000		\$3,103,000	\$5,793,000

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	0	0.00	\$0.00	DWEB.135	\$0
Surface Casing	13.375	1500.00	\$44.77	DWEB.140	\$67,000
Intermediate Casing	9.625	9559.00	\$41.51	DWEB.145	\$397,000
Drilling Liner	0	0.00	\$0.00	DWEB.145	\$0
Drilling Liner	0	0.00	\$0.00	DWEB.145	\$0
Production Casing or Liner	5.5	16120.00	\$24.76		DWEA.100 \$399,000 \$399,000
Production Tie-Back	0	0.00	\$0.00		DWEA.100 \$0 \$0
Tubing	2.375	11240.00	\$5.51		DWEA.105 \$62,000 \$62,000
N/C Well Equipment					DWEA.115 \$88,000 \$88,000
Wellhead, Tree, Chokes				DWEB.115 \$38,000	DWEA.120 \$79,000 \$117,000
Liner Hanger, Isolation Packer				DWEB.100 \$0	DWEA.125 \$0 \$0
Packer, Nipples					DWEA.130 \$7,000 \$7,000
Pumping Unit, Engine					DLEQ.100 \$0 \$0
Lift Equipment (BHP, Rods, Anchors)					DLEQ.105 \$0 \$0
Tangible - Lease Equipment					
N/C Lease Equipment					DLEQ.115 \$42,000 \$42,000
Tanks, Tanks Steps, Stairs					DLEQ.120 \$25,000 \$25,000
Battery (Heater Treater, Separator, Gas Treating Equipment)					DLEQ.125 \$58,000 \$58,000
Flow Lines (Line Pipe from wellhead to central facility)					DLEQ.130 \$18,000 \$18,000
Offshore Production Structure for Facilities					DWEA.135 \$0 \$0
Pipeline to Sales					DWEA.140 \$0 \$0
Total Tangibles				\$502,000	\$778,000 \$1,280,000
P&A Costs				DIDC.295 \$0	DICC.275 \$0 \$0
Total Cost				\$3,192,000	\$3,881,000 \$7,073,000