^o Form 3160-5

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SUBMIT IN TRIPLICATE - Other instructions on reverse side. 7 If Unit or CA/Agreement, Name and/or No Reverse side. 7 If Unit or CA/Agreement, Name and/or No Reverse side. 8 Well Name and No IRWIN 13 FEDERAL 4 2 Name of Operator Contact. TERRI STATHEM Sub-time and No IRWIN 13 FEDERAL 4 2 Name of Operator Contact. TERRI STATHEM Sub-time and No IRWIN 13 FEDERAL 4 3 Address GO NORTH MARIENFELD STREET SUITE 600 Ph: 432-620-1936 Ph: 432-620-193	Form 3160-5 (August 2007)	DEPARTMENT OF THE I	NTERIOR OCD A	OMB i Expires	NO 1004-0135		
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Solution Other Other Contact. TERRI STATHEM Solution	I Type of Well						
CIMAREX ENERGY COMPANY OF CG-Mail: tstathem@cmarex com 30-015-38101-00-X1 31-Address 600 NORTH MARIENFELD STREET SUITE 600 Ph: 432-620-1936 Phone No. (include area code) HACKBERRY HACKBERRY MIDLAND, TX 79701 4 Location of Well (Footage, Sec. T. R., M., or Survey Description) Sec 13 T19S R30E SESE 1300FSL 480FEL 12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA TYPE OF SUBMISSION TYPE OF ACTION Notice of Intent Acidize Preacture Treat Reclamation Well Integrity Alter Casing Fracture Treat Recomplete Casing Repair New Construction Recomplete Change Plans Plug and Abandon Temporarily Abandon Convert to Injection Plug Back Water Disposal Describe Proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleted, and the operator has determined that the site is ready for final inspection.) While drilling well lost circuation 2441'. BLM approval is respectfully requested to set DV tool 2000' and carment according to the following procedure: 1. RIH & set DV tool @ 2000' 2. Mix and pump lead cement of 710 sx and pump 200 sx tail cement. 3. Open DV Tool & set external cag pkr.	🛛 Oil Well 🔲 Gas Well	IRWIN 13 FEDE	RAL 4				
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4. Mix and pump lead cement of 655 sx and pump 100 sx tail cement to bring	If the proposal is to deepen dir Attach the Bond under which to following completion of the in testing has been completed. Federmined that the site is read While drilling well lost cir @2000' and cement accounty. RIH & set DV tool @ 2. Mix and pump lead ce 3. Open DV Tool & set 6	ectionally or recomplete horizontally, the work will be performed or provide yolved operations. If the operation re nal Abandonment Notices shall be fig for final inspection.) cuation @ 2441'. BLM approved the performed by the following proceduring to the following procedure to formed the following procedure the performed by the following procedure the following	give subsurface locations and measure the Bond No. on file with BLM/BL subsults in a multiple completion or recled only after all requirements, included is respectfully requested to ure: O sx tail cement.	ured and true vertical depths of all pert A. Required subsequent reports shall be ompletion in a new interval, a Form 31 ding reclamation, have been completed	tinent markers and zones. be filed within 30 days 160-4 shall be filed once		
cement to surface.	 Mix and pump lead ce 	ment of 655 sx and pump 100	sx tail cement to bring				

Accepted for record NMOCD NS NMOCD ARTESIA

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14. I hereby certify	that the foregoing is true and correct. Electronic Submission #125133 verifie For CIMAREX ENERGY COMPA Committed to AFMSS for processing by KU	NY OF (CO, sent to the Carlsbad	Ε)
Name (Printed/T	yped) TERRI STATHEM	Title	AUTHORIZED REPRESENTAT	TVE
Signature	(Electronic Submission)	Date	12/08/2011	
	THIS SPACE FOR FEDERA	L OR	STATE OFFICE USE	
Approved By CHRISTOPHER WALLS		TitleF	PETROLEUM ENGINEER	Date 12/09/2011
certify that the applica	al, if any, are attached Approval of this notice does not warrant or ant holds legal or equitable title to those rights in the subject lease applicant to conduct operations thereon.	Office	≎ Carlsbad	

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictutious or fraudulent statements or representations as to any matter within its jurisdiction

* HALLIBURTON

Job Information

2 Stage Intermediate

Well Name: Irwin 13 Federal Well #: 4H

Surface Casing 0 - 500 ft (MD)

Outer Diameter 13.375 in
Inner Diameter 12.715 in
Linear Weight 48 lbm/ft
Thread STC
Casing Grade H-40

12-1/4" Hole 500 - 4000 ft (MD)

Inner Diameter 12.250 in Job Excess 150 %

DV Tool / ECP 2000 ft (MD)

Intermediate Casing 0 - 4000 ft (MD)

Outer Diameter 9.625 in
Inner Diameter 8.835 in
Linear Weight 40 lbm/ft
Thread LTC
Casing Grade J-55

1st Stage TOC2000 ft (MD)2nd Stage TOCSurface

HALLIBURTON

Calculations

2 Stage Intermediate

Stage 1

Cement: (1703.32 ft fill)

 $1703.32 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 150 \%$ = 1333.65 ft^3 Total First Stage Lead Cement = 1333.65 ft^3 = 237.53 bblSacks of Cement = 710 sks

Cement: (296.68 ft fill)

296.68 ft * 0.3132 ft³/ft * 150 % = 232.29 ft³ First Stage Tail Cement = 232.29 ft³ = 41.37 bbl

Shoe Joint Volume: (82.00 ft fill)

82.00 ft * 0.4257 ft³/ft = 34.91 ft^3 = 6.22 bblTail plus shoe joint = 267.20 ft^3 = 47.59 bblTotal Tail = 200 sks

Stage 2

Cement: (1830.64 ft fill)

 $500.00 \text{ ft} * 0.3765 \text{ ft}^3/\text{ft} * 0 \%$ = 188.25 ft^3 $1330.64 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 150 \%$ = 1041.85 ft^3 Total Second Stage Lead Cement = 1230.11 ft^3 = 219.09 bblSacks of Cement = 655 sks

Cement: (169.36 ft fill)

 $169.36 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 150 \%$ = 132.60 ft^3 Second Stage Tail Cement= 132.60 ft^3 Total Tail= 23.62 bbl= 100 sks

Job Recommendation

2 Stage Intermediate

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Stage 1

Fluid 1: Pump 20 bbl

Gel Spacer Fluid Volume: 20 bbl

40 lbm/Mgal WG-19 (Gelling Agent)

Fluid 2: Lead with 710 sks

EconoCem - HLC

5 % Salt (Salt)

5 lbm/sk

Kol-Seal (Lost Circulation Additive)

Fluid Weight

Slurry Yield:

12.90 lbm/gal

Slurry Yield:

1.88 ft³/sk

7 otal Mixing Fluid:

9.61 Gal/sk

Top of Fluid: 2000 ft
Calculated Fill: 1703.32 ft

Volume: 237.53 bbl Calculated Sacks: 709.77 sks Proposed Sacks: 710 sks

Fluid 3: Tail-in with 200 sks

HalCem - C

1 % Calcium Chloride - Flake (Accelerator)

Fluid Weight 14.80 lbm/gal
Slurry Yield: 1.34 ft³/sk

Total Mixing Fluid: 6.36 Gal/sk Top of Fluid: 3703.32 ft

Calculated Fill: 296.68 ft Volume: 47.59 bbl

Calculated Sacks: 200 sks Proposed Sacks: 200 sks

DV Tool / ECP @ 2000 ft (MD)

HALLIBURTON

Job Recommendation

2 Stage Intermediate

Fluid Instructions

Stage 2

Fluid 1: Pump 20 bbl

Gel Spacer

40 lbm/Mgal WG-19 (Gelling Agent)

Fluid Volume:

20 bbl

Fluid 2: Lead with 655 sks

EconoCem - HLC

5 %

Salt (Salt)

5 lbm/sk

Kol-Seal (Lost Circulation Additive)

Fluid Weight

12.90 lbm/gal

Slurry Yield:

 $1.88 \text{ ft}^3/\text{sk}$

Total Mixing Fluid: Top of Fluid:

9.61 Gal/sk 0 ft

Calculated Fill: 1830.64 ft

Volume: Calculated Sacks: 219.09 bbl

654.66 sks

Proposed Sacks:

655 sks

Fluid 3: Tail-in with 100 sks

HalCem - C

Fluid Weight

14.80 lbm/gal

Slurry Yield:

 $1.33 \text{ ft}^3/\text{sk}$

Total Mixing Fluid:

6.34 Gal/sk

Top of Fluid:

1830.64 ft

Calculated Fill: Volume: 169.36 ft

Calculated Sacks:

23.62 bbl

100 sks

Proposed Sacks:

100 sks