



Plugback Deeper Procedure

YD-3

McElmo Dome

Yellow Jacket D-3

API# 05-083-06456 2119' FSL & 2017' FWL Section: 15; Township: 37N; Range: 18W Montezuma County, Colorado	Emergency Services Call Out Location (if needed): Surface Location (NAD27) Long: -108.8211559 X-Crd: Lat: 37.4632011 Y-Crd:
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Project Start Date: 9/9/2013

Projected Completion Date: 9/25/2013

Developed By the S&T Subsurface Team
7/11/2013

Prepared By: W. D. SORGENFRA Signature [Signature] Date 7/15/2013
Print Name

Drilling Mgr: Todd Gentles Signature [Signature] Date 8/13/2013
Print Name

Geology Mgr: KEVIN SCHMIDT Signature [Signature] Date 7/14/13
Print Name

Subsurface Mgr: TEO WOOTEN Signature [Signature] Date 8/13/13
Print Name

Eng/Ops Director: Val Brock Signature [Signature] Date 8/15/13
Print Name

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

EXECUTIVE SUMMARY

The YD-3 is a shut in CO2 producer and is unable to flow due to high water production in the McElmo Dome Field. It is thought that by performing a through tubing plugback, utilizing an umbrella plug and dump bailing cement we can shut off the primary source of water from the Leadville 300 and 400. With this water reduction the well is expected to be able to flow with out loading up.

The YD-3 was completed in 1985 as an open hole vertical completion (Figure #2). The subject well has produced over it productive life 64.8 BCF and 1,401,000 BW (Figure #5). Speculation on the primary source of the water is that it is due the original completion below the water contact. The last real production was in 2006, although it tested briefly in 2009 (Figure 3). A production log was run in 2011, which indicated the majority of the gas production @ this point is coming from a high porosity interval in the lower Leadville 200 (Figure #7). The plan is to isolate below the Leadville 200 interval utilizing an umbrella plug and dump bailing cement across a open hole interval (Figure #3). At this point we would test just the Leadville 200. By looking @ the last production data from 2006 and applying the gas percentage and water percentage flow rates seen from the production log an argument can be made we should see production near 5.0 MMSCFPD and a water to gas ratio of 54 STB/MMSCF, although it is expected the water to gas ratio to be lower. This work if successful could lead to additional water shut off projects..

Economics were run utilizing the potential 5.0 MMSCFPD and the projected cost of \$160,000, over a 3 year period.

Economic Runs	XOM Consent	XOM Non-Consent
Gross CO2 Volume BCF	4.9	4.9
CO2 Price \$/MCF	1.55	1.55
Gross Investment \$M	160	160
Net Investment \$M	71.4	143.5
Incremental Rate MMSCFPD	5.0	5.0
Cumulative Cash \$MM	1.734	1.749
Payout (undiscounted) Year	0.38	0.62
Profit/Investment @ 20%	18.19	6.75
Rate of Return %	500	500
PV 10% \$MM	1.345	1.355
PV 50% \$MM	1.072	1.078

XOM Consent:

Kinder Morgan's Initial Working Interest in McElmo Dome is 44.68% (Final Working Interest is 44.68%). Net values were arrived using an Initial Net Revenue Interest of 37.25% (Final Net Revenue Interest 37.25%)

XOM Non-Consent:

Kinder Morgan's Initial Working Interest in McElmo Dome is 89.74% (Final Working Interest 44.68%, after 150% payout). Net values were arrived using an Initial Net Revenue Interest of 74.84% (Final Net Revenue Interest 37.25%)

Yellow Jacket D-3

THROUGH TUBING PLUGBACK PROCEDURE

Permitting this work is expected to be fairly simple and worst case is expected to take 45 days, so plans are to start permitting once Kinder Morgan Management has approved the project, while awaiting partner approval. No facility work is required for this project.

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Well Detail:

(See Attached Well Schematic)

Well Name:	YD-3
API:	05-083-06456
Location:	Montezuma County, Colorado
Legal:	Section: 15; Township: 37N; Range: 18W
Surface:	2119' FSL & 2017' FWL
Formation:	Leadville
Lithology:	Carbonate
Perforations:	Openhole from 8000' to 8235' PBTD
Reservoir Temperature:	160 °F
Estimated BHP:	1800 psi

Casing Profile:

Top Depth (ft)	Bottom Depth (ft)	Size (in)	Weight (lb/ft)	Grade	Hole Size (in)	TOC
0'	81'	16"				Surface
0'	2,898'	10-3/4"	40.5	K-55	14-3/4"	Surface
0'	3,736'	7-5/8"	26.4	K-55	9-5/8"	Surface
3,736'	5,989'	7-5/8"	29	L-80	9-5/8"	Surface
5,989'	7,618'	7-5/8"	39	SS-95	9-5/8"	Surface
7,618'	8,000'	7-5/8"	33	13 CR	9-5/8"	Surface

Proposed Tubing Profile:

Item	Length (ft)	Top (ft-KB)	Btm (ft-KB)
KB		0'	28'
250 joints 4.5" 12.75# 13 CR NKS B TBG	7,831.4'	28'	7,831.4'
3.5" A-95 PIN X 4.5" 8RD X/O	1.55'	7,831.4'	7,833'
5.5" X 2.81" F X 3.5" A-95 ON/OFF	2.24'	7,833'	7,835'
3.5" Hydril Pup Joint	9.97'	7,835'	7,845'
Baker 47C4 Lokset Pkr	4.63'	7,845'	7,850'
3.5" Hydril Pup Joint	9.95'	7,850'	7,860'
2.75" F Nipple	1.7'	7,860'	7,862'
Perf Joint 3.5" Hydril 13 CR	29.5'	7,862'	7,891'
1 Joint 3.5" A-95 Hydril Tbg 13 CR	20.41'	7,891'	7,911.5'
2.56" R Nipple	1.6"	7,911.5'	7,913'
3.5" WL Re-entry Guide	0.5'	7,913'	7,914'

Yellow Jacket D-3

THROUGH TUBING PLUGBACK PROCEDURE

Pre-Job Checklist:

- Notify Production Engineer and Production Operations to discuss the procedure before moving on well.
- Inspect road and location and repair as necessary
- Record all casing and tubing pressures on daily morning report.

Through Tubing Plugback Procedure:

1. MIRU Wireline unit and crane truck. Check and record pressures on tubing and all annulus. NU and test lubricator to 3,000 PSI. GIH with 2.25" gage ring and junk basket to 8,110'. POOH GIH with Weatherford multi image caliper and caliper 4.5" 12.75# 13 CR tubing from 2.75" F nipple @ 7,860' to surface. Report results to Houston office. GIH with umbrella plug and set @ approximately 8,100' in open hole per Weatherford procedure. GIH and dump bail 20' of cement from plug @ 8,100' up to a level of 8,080'. RDMO Wireline unit.
2. Turn well over to production to test well. Report tests to Houston.

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Kinder Morgan Contacts:

Bill Sorgenfrei	Production Engineer	713-369-8441	william_sorgenfrei@kindermorgan.com
Valerie Cawthorn	Drilling Engineer	713-369-8509	Valerie_cawthorn@kindermorgan.com
Ted Wooten	Subsurface Manager	713-369-8088	charles_wooten@kindermorgan.com
Todd Gentles	Drilling Manager	713-369-8487	todd_gentles@kindermorgan.com
Coy Bryant	Operations Manager	970-882-5505	coy_bryant@kindermorgan.com
Stan Mannis	Operations Supervisor	970-739-4906	stanson_mannis@kindermorgan.com

Attachments:

Figure 1:	Location Map
Figure 2:	Current Well Schematic
Figure 3:	Proposed Well Schematic
Figure 4:	Production Plot
Figure 5:	Density Log Section
Figure 6	Cost Estimate
Figure 7	Economic Evaluation
Figure 8	Cross Section
Figure 9	Production Log Display
Figure 10	Prosper Evaluation
Figure 11	Engineering Data Sheet

Prepared By:

Bill Sorgenfrei
Senior Production Engineer
S&T Subsurface Team
Kinder Morgan CO₂ Company
713-369-8441 Office
713-540-7414 Cell

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Figure 1
Location Map

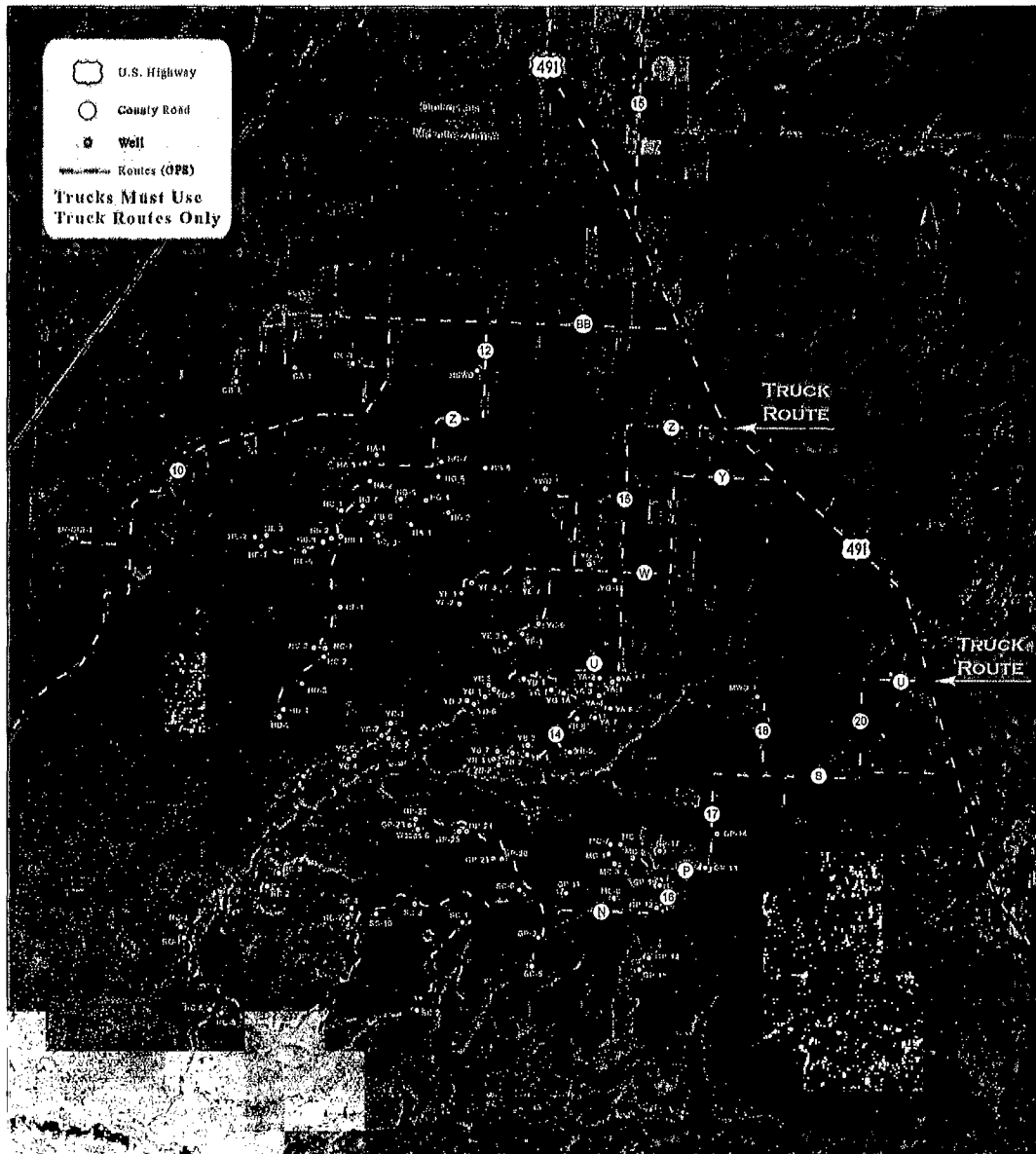


Figure 2
Current Well Schematic

CURRENT WELL SCHEMATIC

Well Name Yellow Jacket D3

Pilot API # 05-083-06456

SIT API # : N/A

Section 15 Township 37N Range 18W

Surface Hole: 2119' FSL, 2017' FWL Section 15, T37N R18W NMPM Elevation 6556'

Spud Date: 8/23/1985

Pilot Completion Date: 10/21/1985

SIT Completion Date: N/A

Updated: 10/7011 VC

Conductor Casing

Size 18 in

Set at 81 ft

Conductor @ 81 ft

Surface Casing

Size 10-3/4 in

Set at 2888 ft

WL 40.5 ppf Grade K-55 surface to 2888 ft

Hole Size 14-3/4 in

Est. T.O.C. surface ft

Csg Shoe @ 2888 ft

Production Casing

Size <u>7-5/8</u> in	Grade <u>K-55</u> from <u>surface</u> to <u>3738</u> ft
Wt. <u>28.4</u> ppf	Grade <u>L-80</u> from <u>3738</u> to <u>5989</u> ft
Wt. <u>29</u> ppf	Grade <u>SS-95</u> from <u>5989</u> to <u>7818</u> ft
Wt. <u>39</u> ppf	Grade <u>13 CR</u> from <u>7818</u> to <u>8000</u> ft
Wt. <u>33</u> ppf	
Hole Size <u>9-5/8</u> in	
Est. T.O.C. <u>surface</u> ft	

Tubing

<u>Set Date: 10/17/85</u>	<u>Top</u>	<u>Bottom</u>
KB	0'	28'
250 JTS 4.5" 12.76# 13CR NKS8 TBG (7803.4')	28'	7831.4'
3.5" A-95 PIN X 4.5" BRD X/O (1.55')	7831.4'	7833'
5.5" X 2.81 F X 3.5" A-95 ON/OFF (2.24')	7833'	7835'
3.5" HYDRIL PUP JT (9.97')	7835'	7845'
BAKER 47C4 LOKSET PKR (4.63')	7845'	7850'
3.5" HYDRIL PUP JT (9.95')	7850'	7880'
2.75 "F" NIPPLE (1.7')	7880'	7882'
PERF JT 3.5" HYDRIL 13CR (29.5')	7882'	7881'
1 JT 3.5" A-95 HYDRIL TBG 13CR (20.41')	7881'	7911.5'
2.66 "R" NIPPLE (1.8')	7911.5'	7913'
3.5 WL ENTRY GUIDE (0.5')	7913'	7914'

Set Date: 9/15/85

Pkr Set @ 7845 ft

Csg Shoe @ 8000 ft

Top of Leadville @ 8030'

Acid Date: 9/26/85

Acidize OH w/ 12,000gal 15% HCl

Bottom of Leadville @ 8158'

TD Date: 9/13/85

6-1/2" OH to 8235'

Conductor Cement

cement with ready-mix to surface

Surface Cement

Date Cemented: 8/28/1985

Lead : 300 sx Class B, 2% CaCl2, 0.1% Halad-9

1400 sx Lite, 2% CaCl2, 1/4#/sk flocele

Tail : 200 sx Class B, 3% CaCl2, 1/2#/sk flocele

10#/sk gilsonite, 0.5% CFR-2

Note : circ 426 sk to pit

Prod Cement

Date Cemented: 9/10/1985

Lead: 225 sx Class H, 0.4% Halad-9, 0.3% CFR-2,

0.1% HR-7; circ 200 bbls cmt

Tail: 2200 sx 5W/50POZ, 2% gel, 12% salt, 0.5% CFR-2

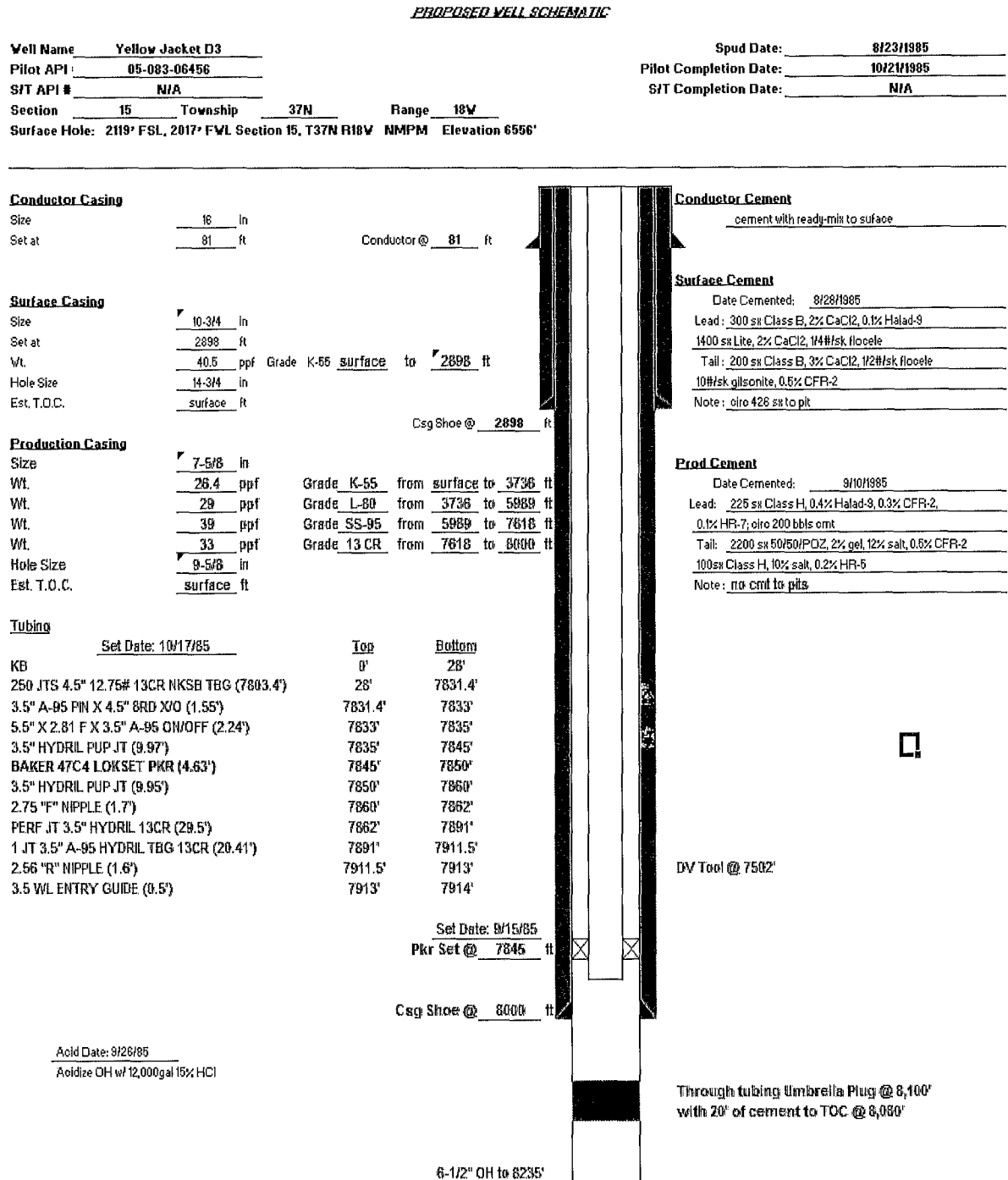
100 sx Class H, 10% salt, 0.2% HR-5

Note : no cmt to pits

DV Tool @ 7502'

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Figure 3
Proposed Wellhead Schematic



Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Figure 4
Production Plot

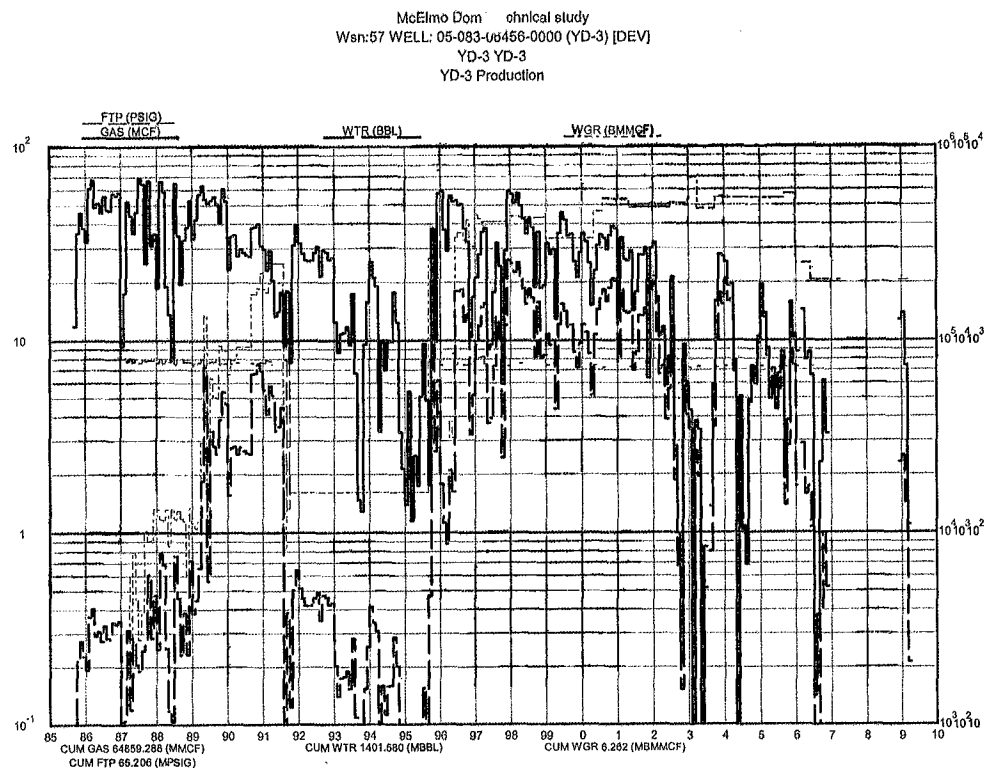


Figure 5
Log Section:

Yellow Jacket D-3 **THROUGH TUBING PLUGBACK PROCEDURE**

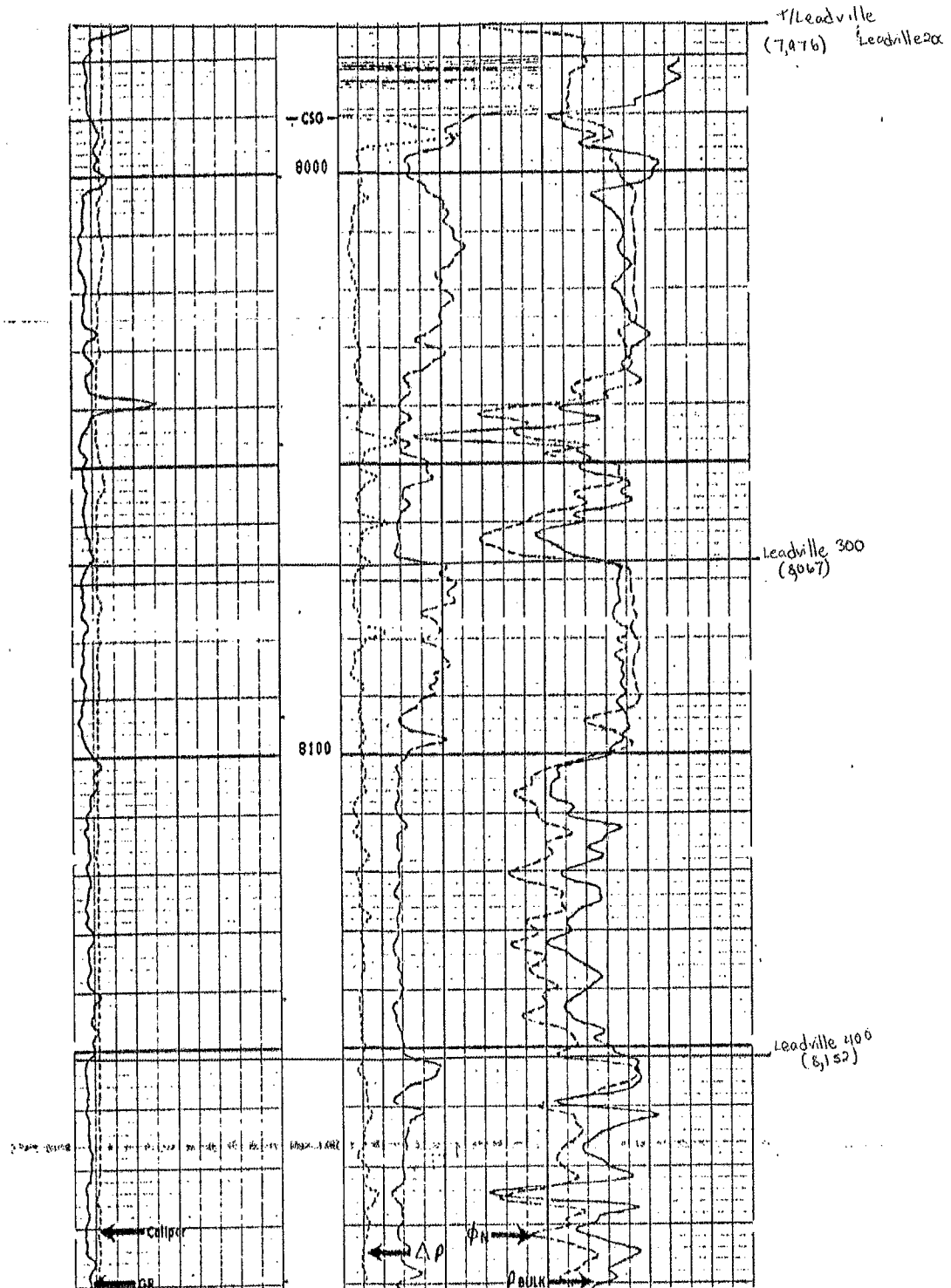


Figure 6
 Cost Estimate

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

KINDER/MORGAN CO2

Approval For Expenditure

☒ Original

☐ Revision

☐ Cancel

AFE NO.
[Redacted]

Responsibility	Project	Supplement

Less: Credit		
Net Cost	\$ [Redacted]	

Budget Control		Approval	
Project In:	<input checked="" type="checkbox"/> Yes	Signature	Date
Budget	<input checked="" type="checkbox"/> Yes	Signature	Date
	<input type="checkbox"/> No	Finance (Owner Company)	Date
Current	<input type="checkbox"/> No	Executive	Date
Estimate	<input type="checkbox"/> No	J. V. Approval Received:	Date
Financial Control Signature	DATE		Date

Figure 7
Economic Evaluation

KINDER MORGAN

Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

YD-3 Aries Output

Economics assume 50.2% Working Interest goes non-consent

Economics XOM Non Consent

■ HCELMO DOME UNIT
YD-3_Plugback

Date: 08/30/2013
Time: 13:36:05
DBS: DEMO
Settings: SETDATA
Scenario: (No

KEYWORD & Ref. Code	C O M B I N E D I N P U T D A T A			I N I T I A L C A L C U L A T E D D A T A			
	Beginning, Ending Rates	Schedule Limit	Method & Value	Ultimate @ End Pt.	Init.Deff	Init. Rate	Final Rate

PROJECT RUN SETTINGS

Base Date : 01/2013 Time Frames : 12,99*12
P.W. Date : 01/2013 Primary PW% : 20.0 Discount Freq. : END
Report Date : 01/2013
Qualifiers : Prod = DEFAULT Price = DEFAULT Cost = DEFAULT Owner = DEFAULT
Title = DEFAULT Misc = DEFAULT Invest = DEFAULT Overlay = DEFAULT

■ HCELMO DOME UNIT
YD-3_Plugback

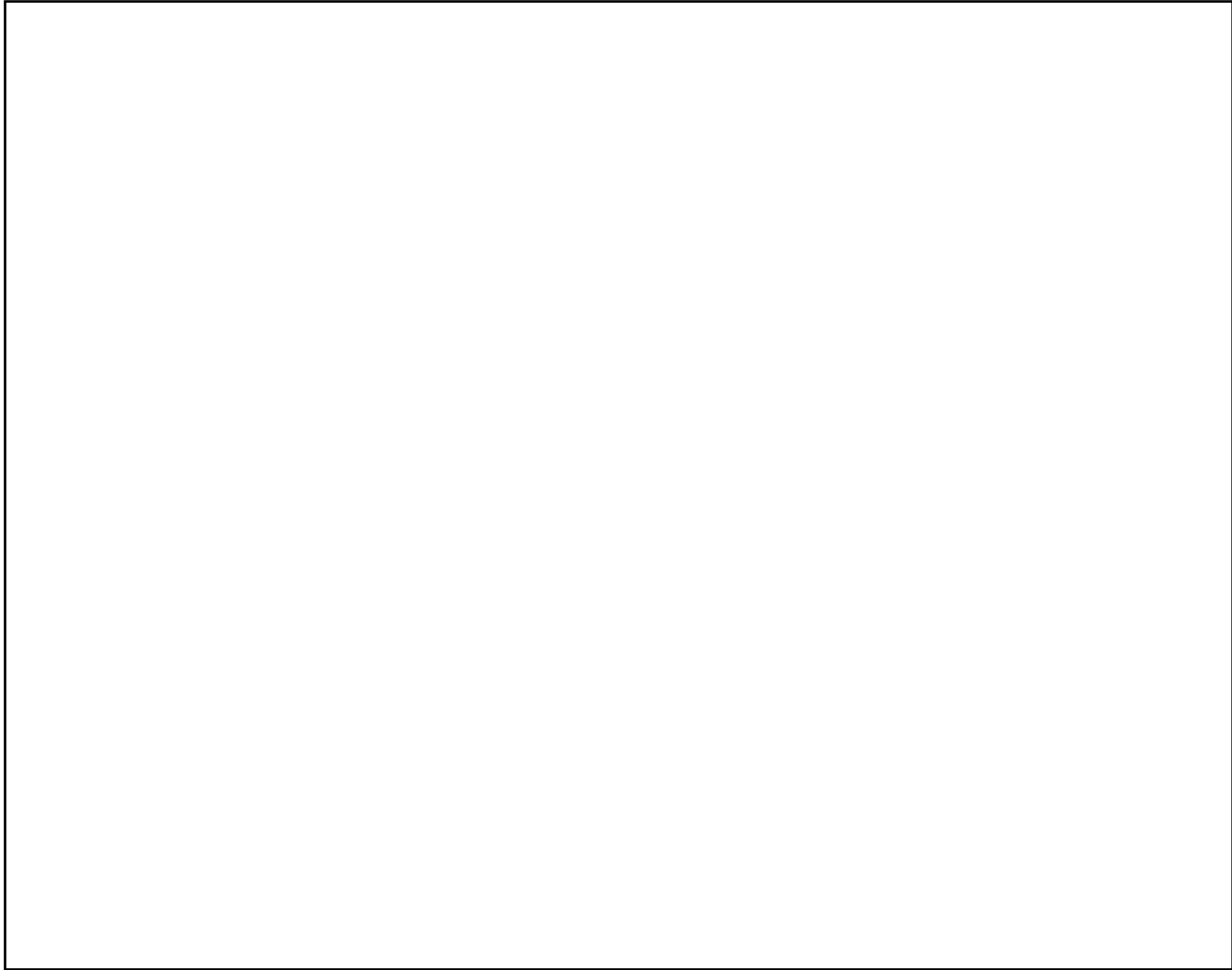
DATE : 08/30/2013
TIME : 13:36:05
DBS : DEMO
SETTINGS : SETDATA
SCENARIO : (No Scenario)

AFTER TAX ECONOMICS

[illegible][illegible]

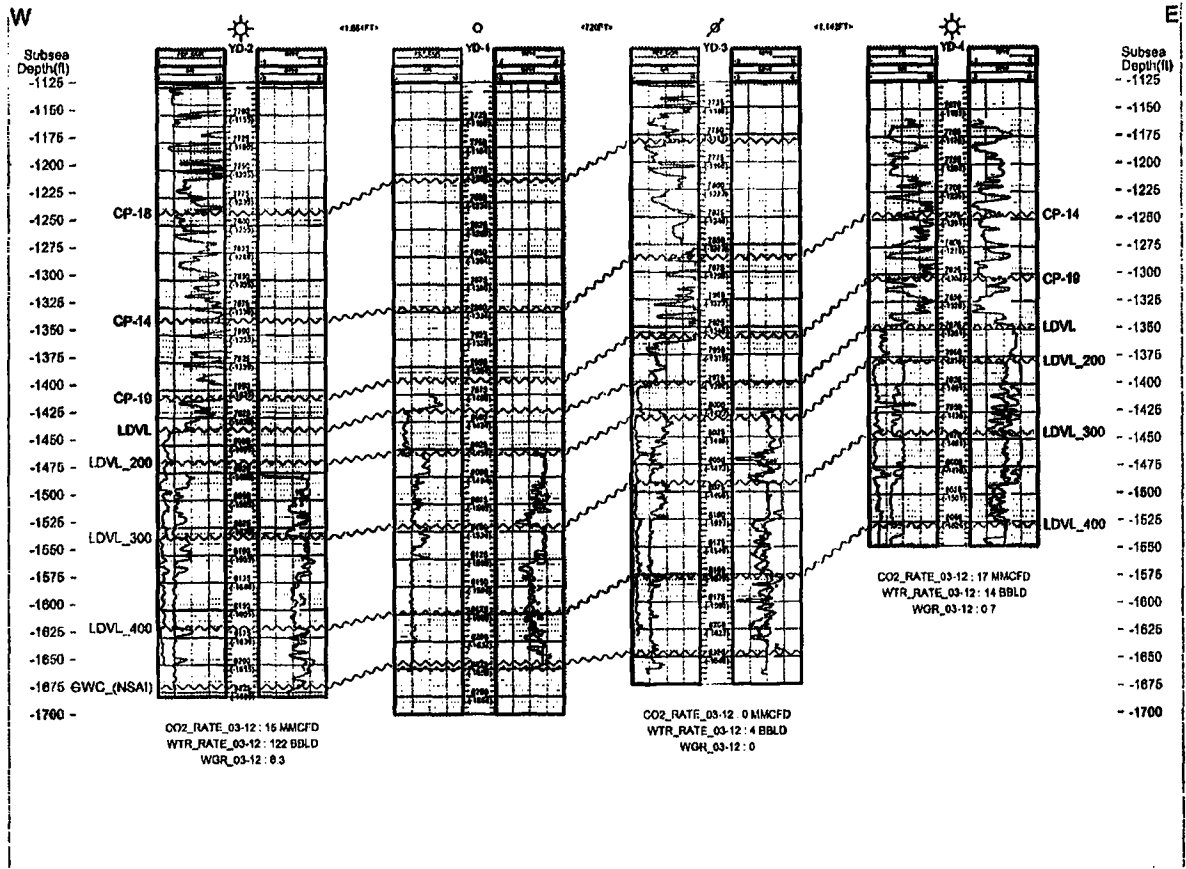
Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Economics XOM Consent



Yellow Jacket D-3 **THROUGH TUBING PLUGBACK PROCEDURE**

Figure 8
Cross Section

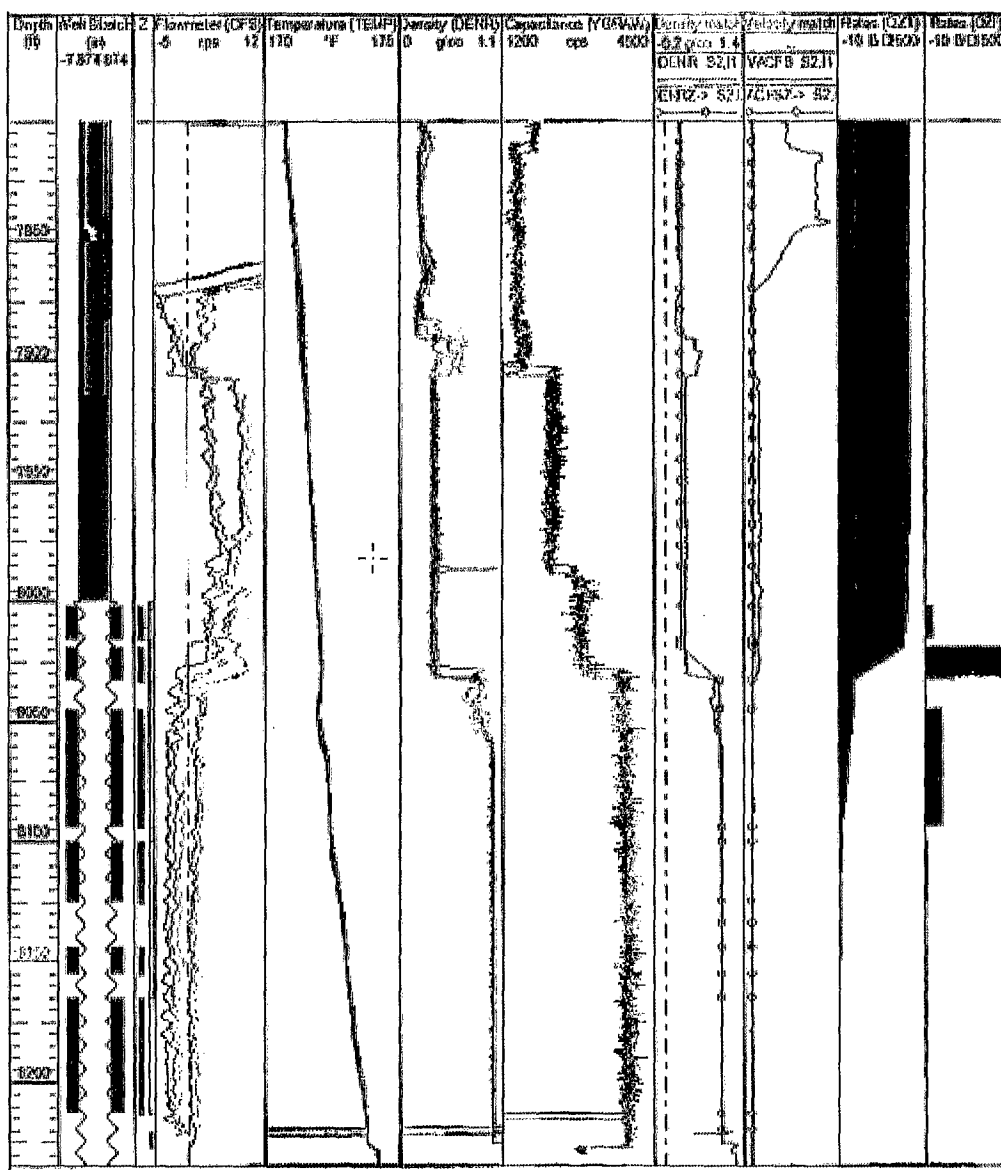


Yellow Jacket D-3 **THROUGH TUBING PLUGBACK PROCEDURE**

Figure 9
 Production Log Display

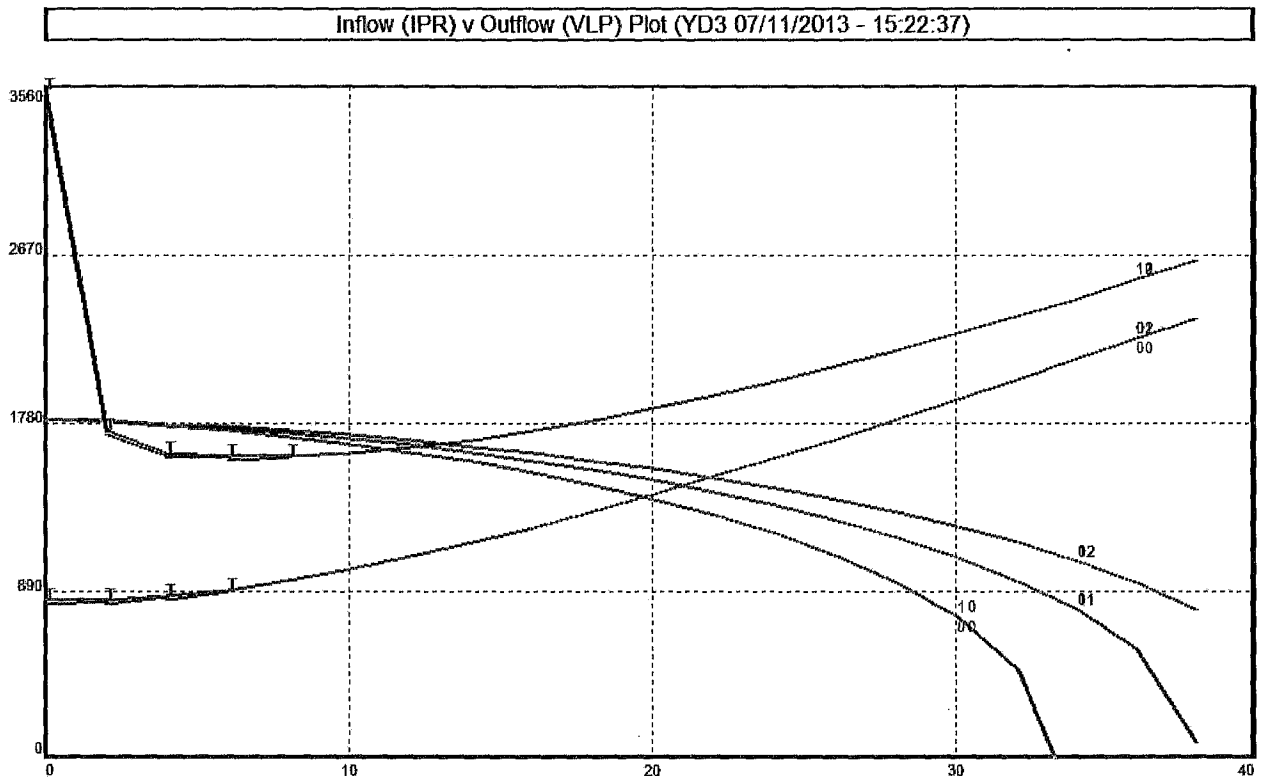
HALLIBURTON

Yellow Jacket D3
 Production Log Analysis



Yellow Jacket D-3 THROUGH TUBING PLUGBACK PROCEDURE

Figure 10
Prosper Evaluation



Note: Model was run using a surface flowing pressure of 500 and 800 PSI. The lower case indicates the current tubular are capable of producing in excess of 10 MMSCFPD.

Figure 11
Engineering data sheet.

An engineering sheet could not be calculated for this well, since no resistivity logs were available to calculate water saturations. Porosity logs indicate approximately 25' of porosity pay in the Leadville 200.

DRILLING WELL COST ESTIMATE

KINDER MORGAN

Date: 2/5/13
Estimate By: Valerie Cawthorn
Yellow Jacket D-3 (YD-3) Water Shutoff
10-3/4" x 7-5/8" & 6-1/2" OH Montezuma County, CO

LOCATION/DRILLSITE

INSTALL/REMOVE RIG

DRILLING

Rig Cost - Daywork

Mud Costs

All Other Intangibles (tools, rentals)

INSTALL SURFACE/PRODUCTION CASING

INSTALL SURFACE CASING

INSTALL INTERMEDIATE CASING

INSTALL PRODUCTION CASING/ TUBING

EVALUATION

TOTAL WELL COST ESTIMATE

SPUD TO RIG RELEASE DAYS

5

DRILLING WELL COST ESTIMATE

KINDER MORGAN

Date: 2/5/13
Estimate By: Valerie Cawthorn
Yellow Jacket D-3 (YD-3) Water Shutoff
10-3/4" x 7-5/8" & 6-1/2" OH Montezuma County, CO

A/E ESTIMATE ACCOUNT SUMMARY

Intangible

Code

137401	Site Preparation and Cleanup
137402	Move In and Move Out
137405	Drilling - Daywork
137406	Rental - Tools and Equipment
137407	Bits
137408	Mud and Chemicals
137409	Fuel, Power, and Water
137410	Supervision
137411	Transportation
137412	Mud Logging/MWD
137413	Electric Logging & Analysis
137414	Cementing Services
137415	Directional Services
137416	Fishing Services
137417	Well Surveys & Testing
137418	Wireline Service
137419	Tubular Inspection and Testing
137420	Coring and Analysis
137421	Perforate, Acidize, Fracture
137422	DST & Formation Testing
137423	Casing and Other Tangible Crews
137424	Contract Labor
137427	Professional Services & Consultants
137430	Miscellaneous Supply and Services
137433	Damages
137434	Regulatory & Permitting
137002	Company Labor
137435	Drilling Overhead

Tangible

137501	Conductor/Surface Casing
137502	Intermediate Casing
137503	Other Subsurface casing (Production)
137504	Wellhead Equipment
137505	Miscellaneous Tangibles
137707	Production Tubing

KINDER/MORGAN CO2☒ Original☐ Revision☐ Cancel**Approval For Expenditure**

AFE NO.

Owner Company	Co.No	State	Responsibility		Project Type	Department	Supplement NO.
Kinder Morgan CO2		TX	Center	Manager	CAP	Drilling	
AFE Title (20)			Location/SubAccount/Property no.:			Budget Year :	
Yellow Jacket D-3 (YD-3)			County			KM Working Interest:	
Estimated Start Date			Estimated In Service Date			Estimated Completion Date	
05/01/13			12/31/13			12/31/13	
Qualify for Federal EOR Tax Credits			Qualify for Federal R&D Tax Credits			Apply Tax Factor?	
Yes/No No			Yes/No No			Yes/No Yes	
Account No.			Account Description			Gross (8/8th) Amount	
137401			Site Preparation and Cleanup			\$0.00	
137402			Move In and Move Out			\$0.00	
137403			Drilling - Turnkey			\$0.00	
137404			Drilling - Footage			\$0.00	
137405			Drilling - Daywork			\$0.00	
137406			Rental -Tools and Equipment			\$0.00	
137407			Bits			\$0.00	
137408			Mud and Chemicals			\$0.00	
137409			Fuel, Power, and Water			\$11,000.00	
137410			Supervision			\$3,000.00	
137411			Transportation			\$7,000.00	
137412			Mud Logging/MWD			\$0.00	
137413			Electric and Other Logging			\$17,000.00	
137414			Cementing Services			\$43,000.00	
137415			Directional Services			\$0.00	
137416			Fishing Services			\$0.00	
137417			Well Surveys and Testing			\$0.00	
137418			Wireline Service			\$28,000.00	
137419			Tubular Inspection and Testing			\$0.00	
137420			Coring and Analysis			\$0.00	
137421			Perforate, Acidize, and Fracture			\$0.00	
137422			DST and Formation Testing			\$0.00	
137423			Casing and Other Tangible Crews			\$0.00	
137424			Contract Labor			\$0.00	
137427			Professional Services and Consultants			\$11,000.00	
137430			Miscellaneous Supply and Services			\$3,000.00	
137433			Damages			\$17,000.00	
137434			Regulatory Permitting Fees			\$6,000.00	
137501			Conductor/Surface Casing			\$0.00	
137502			Intermediate Casing			\$0.00	
137503			Other Subsurface Casing			\$0.00	
137504			Wellhead Equipment			\$0.00	
137505			Miscellaneous Tangibles			\$6,000.00	
137704			Production Tubing			\$0.00	
137002			Company Labor			\$5,000.00	
137435			Drilling Overhead			\$3,000.00	
Justification :							
Contract No.		Reimbursable <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		AFE Amount:		Retain Ownership	
		Attach copy of Agreement		\$ 160,000		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Regulatory Approval				Project Review / Contact Information			
Required Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Docket Number		Team Location		Team Manager	
Received Yes <input type="checkbox"/> No <input type="checkbox"/>				Houston			
Regulatory Affairs / Legal Signature				Project / Construction Coordinator			
Estimated AFE Cost				Property Accounting			
Total Estimated 100% Cost		\$ 160,000		Signature		Date:	
Less: Credit		\$ -					
Net Cost		\$ -					
				Approvals			
				Signature		Date:	
				Signature		Date:	
Budget Control				Finance (Owner Company)		Date:	
Project in: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Current <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Executive		Date:	
Budget <input type="checkbox"/> No Estimate <input type="checkbox"/> No				J. V. Approval Received:		Date:	
Financial Control Signature				DATE			
				Date:			