

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS										
Date 9/19/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details								
Min Top Depth (ftKB) 6,500.0	Max Btm Depth (ftKB) 6,501.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method								
PRESSURES			Closure Pressure (psi)		Closure Pressure Method								
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 0.83	<b>FRAC GEOMETRY</b> Frac Length (ft)      Frac Width (ft)      Frac Height (ft)										
Min Treat Pressure (psi)	Max Treat Pressure (psi) 6,732.0	Avg Treat Pressure (psi) 3,485.0											
Instant. Shut-in Pressure (psi) 2,559.0	P Post SI (psi)	Shut-in Time Final (hr)											
RATES													
Min Treat Rate (gpm)	Max Treat Rate (gpm) 214.20	Avg Treat Rate (gpm)	<b>COMMENTS</b> Comment Magnacide Treated Water										
POWER													
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)											
GAS			<b>Fluid Additives</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d3d3d3;"> <th>Add</th> <th>Amount</th> <th>Units</th> <th>Conc (%)</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			Add	Amount	Units	Conc (%)				
Add	Amount	Units				Conc (%)							
Gas Type	Total Gas Volume (MCF)												
PROPPANTS													
Total Add Amount													
Proppant Designed (lb)	Proppant In Formation (lb)	Proppant In Wellbore (lb)											
Max Additive BH Conc (lb/gal)	Max Additive Surf Conc (lb/gal)	Est Sand Top Depth (ftKB)											
VOLUMES													
Total Clean Volume Pumped...	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)											
20.00													

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
1	Pump Main Body						20.00	20.00					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL		
Date 9/27/2011	Type Fluid Frac	Delivery Mode Casing
Min Top Depth (ftKB) 5,976.0	Max Btm Depth (ftKB) 5,977.0	Zone Name
PRESSURES		
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 0.60
Min Treat Pressure (psi)	Max Treat Pressure (psi) 4,968.0	Avg Treat Pressure (psi) 2,458.0
Instant. Shut-in Pressure (psi) 1,005.0	P Post SI (psi)	Shut-in Time Final (hr)
RATES		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 189.00	Avg Treat Rate (gpm)
POWER		
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)
GAS		
Gas Type	Total Gas Volume (MCF)	
PROPPANTS		
Total Add Amount		
Proppant Designed (lb)	Proppant In Formation (lb)	Proppant In Wellbore (lb)
Max Additive BH Conc (lb/gal)	Max Additive Surf Conc (lb/gal)	Est Sand Top Depth (ftKB)
VOLUMES		
Total Clean Volume Pumped... 10.00	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)

TECHNICAL RESULTS			
Technical Result		Tech Result Details	
Bottom Hole Pressure Method		Diagnostic Method	
Closure Pressure (psi)		Closure Pressure Method	
FRAC GEOMETRY			
Frac Length (ft)	Frac Width (ft)	Frac Height (ft)	
COMMENTS			
Comment Magnacide Treated Water			
Fluid Additives			
Add	Amount	Units	Conc (%)

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pompe (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
2	Pump Main Body						10.00	10.00					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 10/4/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB)	Max Btm Depth (ftKB)	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft)	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi)	Avg Treat Pressure (psi)	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi)	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm)	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type	Total Gas Volume (MCF)				
<b>PROPPANTS</b>					
Total Add Amount					
Proppant Designed (lb)	Proppant In Formation (lb)	Proppant In Wellbore (lb)			
Max Additive BH Conc (lb/gal)	Max Additive Surf Conc (lb/gal)	Est Sand Top Depth (ftKB)			
<b>VOLUMES</b>					
Total Clean Volume Pumped...	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 10/4/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB) 5,900.0	Max Btm Depth (ftKB) 5,901.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 0.98	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 7,300.0	Avg Treat Pressure (psi) 6,700.0	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi) 3,246.0	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 189.00	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type	Total Gas Volume (MCF)		<b>Fluid Additives</b>		
<b>PROPPANTS</b>			Add		
Total Add Amount			Amount		
Proppant Designed (lb)			Units		
Proppant In Formation (lb)			Conc (%)		
Proppant In Wellbore (lb)					
Max Additive BH Conc (lb/gal)					
Max Additive Surf Conc (lb/gal)					
Est Sand Top Depth (ftKB)					
<b>VOLUMES</b>					
Total Clean Volume Pumped... 20.00	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
4	Pump Main Body						20.00	20.00					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 10/11/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB) 5,850.0	Max Btm Depth (ftKB) 5,851.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 0.74	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 5,200.0	Avg Treat Pressure (psi)	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi) 1,817.0	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 235.20	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type		Total Gas Volume (MCF)	<b>Fluid Additives</b>		
<b>PROPPANTS</b>			Add		
Total Add Amount			Amount		
Proppant Designed (lb)			Units		
Proppant In Formation (lb)			Conc (%)		
Proppant In Wellbore (lb)					
Max Additive BH Conc (lb/gal)					
Max Additive Surf Conc (lb/gal)					
Est Sand Top Depth (ftKB)					
<b>VOLUMES</b>					
Total Clean Volume Pumped... 23.80	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
5	Pump Main Body						23.80	23.80					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 10/18/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB) 5,800.0	Max Btm Depth (ftKB) 5,801.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 0.88	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 6,600.0	Avg Treat Pressure (psi) 4,800.0	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi) 2,600.0	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 201.60	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type	Total Gas Volume (MCF)		<b>Fluid Additives</b>		
<b>PROPPANTS</b>			Add		
Total Add Amount			Amount		
Proppant Designed (lb)			Units		
Proppant In Formation (lb)			Conc (%)		
Proppant In Wellbore (lb)					
Max Additive BH Conc (lb/gal)					
Max Additive Surf Conc (lb/gal)					
Est Sand Top Depth (ftKB)					
<b>VOLUMES</b>					
Total Clean Volume Pumped... 20.00	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
6	Pump Main Body						20.00	20.00					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 10/25/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB) 5,763.0	Max Btm Depth (ftKB) 5,764.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft)	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 7,540.0	Avg Treat Pressure (psi)	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi)	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 105.00	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type	Total Gas Volume (MCF)		<b>Fluid Additives</b>		
<b>PROPPANTS</b>			Add		
Total Add Amount			Amount		
Proppant Designed (lb)			Units		
Proppant In Formation (lb)			Conc (%)		
Proppant In Wellbore (lb)					
Max Additive BH Conc (lb/gal)					
Max Additive Surf Conc (lb/gal)					
Est Sand Top Depth (ftKB)					
<b>VOLUMES</b>					
Total Clean Volume Pumped... 6.50	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
7	Pump Main Body						6.50	6.50					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 10/26/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB)	Max Btm Depth (ftKB)	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 0.73	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 3,750.0	Avg Treat Pressure (psi)	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi) 1,700.0	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 105.00	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type	Total Gas Volume (MCF)		<b>Fluid Additives</b>		
<b>PROPPANTS</b>					
Total Add Amount					
Proppant Designed (lb)	Proppant In Formation (lb)	Proppant In Wellbore (lb)			
Max Additive BH Conc (lb/gal)	Max Additive Surf Conc (lb/gal)	Est Sand Top Depth (ftKB)			
<b>VOLUMES</b>					
Total Clean Volume Pumped...	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com



## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 11/2/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB) 5,724.0	Max Btm Depth (ftKB) 5,725.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
<b>PRESSURES</b>			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 1.02	<b>FRAC GEOMETRY</b>		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 4,410.0	Avg Treat Pressure (psi)	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi) 3,206.0	P Post SI (psi)	Shut-in Time Final (hr)	<b>COMMENTS</b>		
<b>RATES</b>			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 109.20	Avg Treat Rate (gpm)			
<b>POWER</b>					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
<b>GAS</b>					
Gas Type	Total Gas Volume (MCF)		<b>Fluid Additives</b>		
<b>PROPPANTS</b>			Add		
Total Add Amount			Amount		
Proppant Designed (lb)			Units		
Proppant In Formation (lb)			Conc (%)		
Proppant In Wellbore (lb)					
Max Additive BH Conc (lb/gal)					
Max Additive Surf Conc (lb/gal)					
Est Sand Top Depth (ftKB)					
<b>VOLUMES</b>					
Total Clean Volume Pumped... 6.00	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
9	Pump Main Body						6.00	6.00					Magnacide Treated Water

## Frac Details

**Well Name: RAWHIDE FLATS 10-68-16-1M**

**Contractor:**

GENERAL			TECHNICAL RESULTS		
Date 11/8/2011	Type Fluid Frac	Delivery Mode Casing	Technical Result		Tech Result Details
Min Top Depth (ftKB) 5,680.0	Max Btm Depth (ftKB) 5,681.0	Zone Name	Bottom Hole Pressure Method		Diagnostic Method
PRESSURES			Closure Pressure (psi)		Closure Pressure Method
Breakdown Pressure (psi)	P Pre SI (psi)	Frac Gradient (psi/ft) 1.42	FRAC GEOMETRY		
Min Treat Pressure (psi)	Max Treat Pressure (psi) 7,340.0	Avg Treat Pressure (psi)	Frac Length (ft)	Frac Width (ft)	Frac Height (ft)
Instant. Shut-in Pressure (psi) 5,609.0	P Post SI (psi)	Shut-in Time Final (hr)	COMMENTS		
RATES			Comment Magnacide Treated Water		
Min Treat Rate (gpm)	Max Treat Rate (gpm) 105.00	Avg Treat Rate (gpm)			
POWER					
Avg Pump Power (hp)	Max Pump Power (hp)	Max Pump Rating (hp)			
GAS					
Gas Type	Total Gas Volume (MCF)		Fluid Additives		
PROPPANTS			Add		
Total Add Amount			Amount		
			Units		
			Conc (%)		
Proppant Designed (lb)	Proppant In Formation (lb)	Proppant In Wellbore (lb)			
Max Additive BH Conc (lb/gal)	Max Additive Surf Conc (lb/gal)	Est Sand Top Depth (ftKB)			
VOLUMES					
Total Clean Volume Pumped... 1.60	Vol Slurry Tot (bbl)	Total Volume Recovered (bbl)			

Pumping Details													
Stg #	Stage Type	P Cas Start (psi)	P Tub Start (psi)	Q Fluid Init (gpm)	Gas Type	Q Gas (ft³/min)	Vol Clean Pump (bbl)	Cum Clean Vol Pumped (bbl)	Vol Slurry (bbl)	Vol Slurry Cum (bbl)	Foam Quality (%)	Stim/Treat Fluid	Com
10	Pump Main Body						1.60	1.60					Magnacide Treated Water