



## Cement

Well Name: Collins 18Q-221

### Cement

#### Surface Casing Cement, Casing, 10/4/2015 19:00

Type Casing	String Surface, 909.0ftKB	Start Date 10/4/2015	Cementing End Date 10/4/2015	Wellbore Original Hole	Job Drilling - original, 10/3/2015 22:00	Cementing Company Cementers Well Service Inc	Cement Objective ISOLATION	Eval Method Returns to Surface
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#### Cement Stages

Stg # 1	Description Surface Casing Cement				Objective		Top Depth (ftKB) 13.0	Bottom Depth (ftKB) 909.0	Pump Start Date 10/4/2015		Pump End Date 10/4/2015		Top Plug? Yes	Btm Plug? No					
Initial Pump Rate (bbl/min) 4		Final Pump Rate (bbl/min) 5		Avg Pump Rate (bbl/min) 5		Final Pump Pressure (psi) 460.0	Plug Bump Pressure (psi) 800.0		Pressure Held (psi) 800.0		Pressure Release Date 10/4/2015		Full Return? No	Vol Cement Ret (bbl) 8.0		Volume Lost (bbl) 0.0			
Recip? No	Stroke (ft)	Recip Rate (...)		Rotat... No	RPM (rpm)	Pipe Movement Note			MD Tagged...	Tag Method Drill Bit		Tag Wt (100... 5	Prop... No	Depth Plug...	Tag Cement Date		Drill Out Date 10/5/2015		Drill Out Dia (...) 8 3/4

#### Cement Fluids

Fluid	Est Top (ftKB)	Est Btm (ftKB)	Pump Start Date	Pump End Date	Class	Amount (sacks)	Mix H2O Ratio (gal/sack)	Yield (ft³/sack)	Vol Pumped (bbl)	Excess (%)	Dens (lb/gal)
Lead	13.0	909.0	10/4/2015	10/4/2015	G	485	6.30	1.18	101.9		15.20

#### Intermediate Casing Cement, Casing, 10/8/2015 23:00

Type Casing	String Intermediate, 7,392.0ftKB	Start Date 10/8/2015	Cementing End Date 10/9/2015	Wellbore Original Hole	Job Drilling - original, 10/3/2015 22:00	Cementing Company Halliburton Energy Services	Cement Objective	Eval Method Returns to Surface
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#### Cement Stages

Stg # 1	Description Intermediate Casing Cement					Objective		Top Depth (ftKB) 13.0	Bottom Depth (ftKB) 7,392.0	Pump Start Date 10/8/2015		Pump End Date 10/9/2015		Top Plug? Yes	Btm Plug? No		
Initial Pump Rate (bbl/min) 6		Final Pump Rate (bbl/min) 2		Avg Pump Rate (bbl/min) 5		Final Pump Pressure (psi) 2,050.0	Plug Bump Pressure (psi) 2,560.0	Pressure Held (psi) 2,560.0		Pressure Release Date 10/9/2015		Full Return? No	Vol Cement Ret (bbl) 6.0		Volume Lost (bbl)		
Recip? No	Stroke (ft)	Recip Rate (...)	Rotat... No	RPM (rpm)	Pipe Movement Note			MD Tagged...	Tag Method		Tag Wt (100...)	Prop... No	Depth Plug... 7,348.0	Tag Cement Date 10/9/2015		Drill Out Date 10/9/2015	Drill Out Dia (...) 6 1/8

#### Cement Fluids

Fluid	Est Top (ftKB)	Est Btm (ftKB)	Pump Start Date	Pump End Date	Class	Amount (sacks)	Mix H2O Ratio (gal/sack)	Yield (ft³/sack)	Vol Pumped (bbl)	Excess (%)	Dens (lb/gal)
Lead	13.0	7,392.0	10/8/2015	10/9/2015	ELASTICEM	835	7.08	1.60	238.0		13.80

#### Liner Cement, Casing, 10/11/2015 22:45

Type Casing	String Liner, 11,481.0ftKB	Start Date 10/11/2015	Cementing End Date 10/12/2015	Wellbore Original Hole	Job Drilling - original, 10/3/2015 22:00	Cementing Company Halliburton Energy Services	Cement Objective	Eval Method Calculated
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#### Cement Stages

Stg # 1	Description Liner Cement				Objective			Top Depth (ftKB) 6,353.0	Bottom Depth (ftKB) 11,481.0	Pump Start Date 10/11/2015		Pump End Date 10/12/2015		Top Plug? Yes	Btm Plug? No				
Initial Pump Rate (bbl/min) 4		Final Pump Rate (bbl/min) 4		Avg Pump Rate (bbl/min) 4		Final Pump Pressure (psi) 1,512.0		Plug Bump Pressure (psi) 2,455.0		Pressure Held (psi) 2,455.0		Pressure Release Date 10/12/2015		Full Return? No	Vol Cement Ret (bbl) 10.0		Volume Lost (bbl)		
Recip? No	Stroke (ft)	Recip Rate (...)		Rotat... No	RPM (rpm)		Pipe Movement Note			MD Tagged...	Tag Method		Tag Wt (100...	Prop... No	Depth Plug...	Tag Cement Date		Drill Out Date	Drill Out Dia (...)

#### Cement Fluids

Fluid	Est Top (ftKB)	Est Btm (ftKB)	Pump Start Date	Pump End Date	Class	Amount (sacks)	Mix H2O Ratio (gal/sack)	Yield (ft³/sack)	Vol Pumped (bbl)	Excess (%)	Dens (lb/gal)
Lead	6,353.0	11,481.0	10/11/2015	10/12/2015	Expandacem TM System	372	7.72	1.67	110.7		13.80