HALLIBURTON

BLACK HILLS EXPLORATION & PROD-EBIZ
DO NOT MAIL - 1515 WYNKOOP ST
DENVER, CO, 80202
US

WHF D17-998 DHS7C-20
BRONCO FLATS
MESA, CO, US
API/UWI 05-077-10201-00
SEC: 17,TWP: 9,RNG: 98

Cement Proposal

Proposal 166062 - Version 1.0
April 10, 2015

Prepared for:

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USA

HALLIBURTON

Contents

Halliburton appreciates the opportunity to present this cost estimate and looks forward to being of service to you.

1 Foreword

Enclosed is our cost estimate for cementing the casing strings in the referenced well. The information in this cost estimate includes well data, calculations, materials requirements, and cost estimates. This cost estimate is based on information from you the customer, our field personnel, and previous cementing services in the area.

The selection and use of non-Halliburton plugs and casing attachments can compromise and may jeopardize the overall objective for effective zonal isolation. Furthermore, Halliburton is not involved in the design, manufacture or use of plugs and casing attachments supplied by other manufacturers and assumes no liability for their installation and operation. For this reason we recommend Halliburton plugs and casing attachments be used when Halliburton performs any zonal isolation operation.

Halliburton Energy Services recognizes the importance of meeting society's needs for health, safety, and protection of the environment. It is our intention to proactively work with employees, customers, the public, governments, and others to use natural resources in an environmentally sound manner while protecting the health, safety, and environmental processes while supplying high quality products and services to our customers.

We appreciate the opportunity to present this cost estimate for your consideration and we look forward to being of service to you. Our Services for your well will be coordinated through the Service Center listed below. If you require any additional information or additional designs, please feel free to contact myself or our field representative listed below.

SERVICE CENTER:	Grand Junction
OPERATIONS MANAGER:	Larry Cooksey
SERVICE COORDINATOR:	John Trout, John Feuerborn & Thomas Burrows
OPER. ENGINEER:	Evan Russel, Aaron Katz, Patrick Ealey
TECHNICAL MANAGER:	Lance Erdmann
PHONE NUMBER:	970-523-3622

2 Surface Casing

2.1 Job Information Surface Casing

Job Criticality Status: GREEN
Well Name: WHF D17-998 Well #: DHS7C-20

20" Conductor Casing	0 - 145 ft (MD)
Outer Diameter	20 in
Inner Diameter	19.124 in
Linear Weight	94 lbm/ft
14 3/4" Open Hole	145 - 1135 ft (MD)
Inner Diameter	14.75 in
Excess Factor	50 %
10 3/4" Surface Casing	0 - 1100 ft (MD)
Outer Diameter	10.75 in
Inner Diameter	10.05 in
Linear Weight	40.5 lbm/ft
Casing Grade	J-55
Thread Type	STC

2.2 Estimated Calculations Surface Casing

Stage 1

CEMENT: (500 ft fill)

120 ft * 1.3644 ft3/ft * 0 %	= 163.73 ft3
380 ft * 0.5563 ft3/ft * 50 %	= 317.1 ft3
12.3 VariCem	= 480.83 ft3
	= 85.7 bbl
Total Lead	= 205.10 sack

CEMENT: (600 ft fill)

600 ft * 0.5563 ft3/ft * 50 %	= 500.69 ft3
12.8 VariCem	= 500.69 ft3
	= 92.7 bbl

Total Tail = 249.87 sack

Total Pipe Capacity:

980 ft * 0.5509 ft3/ft	= 539.87 ft3
120 ft * 0.5509 ft3/ft	= 66.11 ft3
	= 107.9 bbl

2.3 Job Volume Estimates Surface Casing

Stage 1

Fluid 1: Lead Slurry

VARICEM (TM) CEMENT	Fluid Weight:	12.3 lbm/gal
	Slurry Yield:	2.346 ft3/sack
	Total Mixing Fluid:	13.41 Gal/sack
	Top Of Fluid:	0 ft
	Calculated Fill:	500 ft
	Liquid Volume:	85.7 bbl
	Calculated sack:	204.96 sack
	Proposed sack:	170 sack

Fluid 2: Tail Slurry

VARICEM (TM) CEMENT	Fluid Weight:	12.8 lbm/gal
	Slurry Yield:	2.083 ft3/sack
	Total Mixing Fluid:	11.44 Gal/sack
	Top Of Fluid:	500 ft
	Calculated Fill:	600 ft
	Liquid Volume:	92.7 bbl
	Calculated sack:	240.37 sack
	Proposed sack:	250 sack

Fluid 3: Water Based Spacer

Displacement Fluid	Fluid Density:	8.4 lbm/gal
	Liquid Volume:	107.9 bbl

2.4 Volume Estimate Table Surface Casing

Calculations are used for volume estimation. Well conditions will dictate final cement job design.

Stage 1

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Estimated Avg Rate	Downhole Volume
1	CEMENT	12.3 VariCem	12.3		170 sack
2	CEMENT	12.8 VariCem	12.8		250 sack
3	SPACER	Displacement Fluid	8.4		107.9 bbl

NOTE: These slurries and spacers will require lab testing. The additives and concentrations are estimates based on field experience in the area and may need to be modified prior to the job. The proposed spacer is designed to be generally compatible with water base mud systems. Compatibility testing with field mud samples used may indicate changes in the additive package and the related costs.

2.5 Cost Estimate

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
7521	**CMT SURFACE CASING BOM**	1.00	JOB	0.00	0.00	0.00
Cementing Equipment & Services						
2	MILEAGE FOR CEMENTING CREW Number of Units	100.00 1	MI	5.76	576.00	184.32
1	ZI-MILEAGE FROM NEAREST HES BASE,/UNIT Number of Units	100.00 1	MI	9.79	979.00	313.28
16091	ZI - PUMPING CHARGE FEET/METERS (FT/M) DEPTH	1.00 FT 1125	EA	5,290.00	5,290.00	1,692.80
139	ADC (AUTO DENSITY CTRL) SYS, /JOB,ZI ENTER FEET\METER\JOB\DAY NUMBER OF JOBS NUMBER OF UNITS	1.00 JOB 1 1	JOB	2,275.00	2,275.00	728.00
130104	PORT. DATA ACQUIS. W/OPTICEM RT W/HES DAYS OR PARTIAL DAY(WHOLE NO.)	1.00 1	EA	2,549.00	2,549.00	815.68
114	R/A DENSOMETER W/CHART RECORDER,/JOB,ZI NUMBER OF UNITS	1.00 1	JOB	1,285.00	1,285.00	411.20
74038	ZI PLUG CONTAINER RENTAL-1ST DAY HR/DAY/WEEK/MTH/YEAR/JOB/RUN DAYS OR FRACTION (MIN1)	1.00 DAY 1	EA	1,322.00	1,322.00	423.04
90	ZI QUICK LATCH ATTACHMENT INCHES/MILLIMETERS (IN/MM) SIZE IN INCHES/MILLIMETER	1.00 IN 9.625	JOB	616.00	616.00	197.12
119534	SUCTION HOSE, 4"/FT W/HES,PER JOB ZI NUMBER OF JOBS	100.00 1	FT	4.40	440.00	140.80
14089	PUP TRAILER,NON-ACID MATLS,0-8 HRS,ZI HR/DAY/WEEK/MTH/YEAR/JOB/RUN HOURS (MIN8)	1.00 H 8	EA	822.00	822.00	263.04
Cementing Surcharges						
7	ENVIRONMENTAL CHARGE,/JOB,ZI	1.00	JOB	134.00	134.00	134.00
8	IRON SAFETY INSPECTION SURCHARGE /JOB ZI	1.00	JOB	83.00	83.00	83.00
372867	Cmt PSL - DOT Vehicle Charge, CMT	3.00	EA	241.00	723.00	723.00
Cementing Materials						
452009	CMT, VariCem (TM) cement	170.00	SK	67.62	11,495.82	3,678.67
452009	CMT, VariCem (TM) cement	250.00	SK	67.24	16,808.83	5,378.83
76400	MILEAGE,CMT MTLS DEL/RET MIN NUMBER OF TONS	50.00 21.875	MI	3.35	3,664.06	1,172.50
3965	HANDLE&DUMP SVC CHRG, CMT&ADDITIVES,ZI Unit of Measurement NUMBER OF EACH	497.00 EA 1	CF	5.49	2,728.53	873.13
101350514	Chem - Tuf Fiber 594 - 15 Lb. Box	45.00	LB	40.50	1,822.50	583.20
	Total Net Amount	**USD**				**17,795.61**

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
Optional Charge						
16092	ADDITIONAL HOURS (PUMPING EQUIPMENT), ZI HR/DAY/WEEK/MTH/YEAR/JOB/RUN HOURS	1.00 H 1	EA	1,139.00	1,139.00	**1,139.00**

Primary Plant:	Grand Junction, CO, USA	**Price Book Ref:**	28 - ROCKIES
Secondary Plant:	Grand Junction, CO, USA	**Price Date:**	6/11/2014

3 Surface Casing Equipment

3.1 Cost Estimate

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
374609	**CMT CASING EQUIPMENT BOM**	1.00	JOB	0.00	0.00	0.00
100004964	SHOE,FLT,10-3/4 8RD,2-3/4 SSII	1.00	EA	1,540.00	1,540.00	616.00
100004834	CLR,FLT,10-3/4 8RD 32.75-55.5 PPF,2-3/4	1.00	EA	1,667.00	1,667.00	666.80
100004486	CTRZR ASSY,API,10 3/4 CSG X 14 3/4 H	25.00	EA	216.00	5,400.00	2,160.00
100004630	CLP,LIM,10 3/4,HNGD,FRICT GRIP,WTH DRAW	2.00	EA	65.20	130.40	52.16
101235483	PLUG,CMTG,TOP,10 3/4,HWE,9.09 MIN/10.09	1.00	EA	614.00	614.00	245.60
100005045	KIT,HALL WELD-A	2.00	EA	74.30	148.60	59.44
2	MILEAGE FOR CEMENTING CREW Number of Units	100.00 1	MI	5.76	576.00	230.40
86954	ZI FUEL SURCHG-CARS/PICKUPS<1 1/2TON Number of Units	100.00 1	MI	0.23	23.00	9.20
	Total Net Amount	**USD**				**4,039.60**

Primary Plant: Grand Junction, CO, USA
Secondary Plant: Grand Junction, CO, USA
Price Book Ref: 28 - ROCKIES
Price Date: 6/11/2014

4 Intermediate Casing

4.1 Job Information Intermediate Casing

Job Criticality Status: GREEN
Well Name: WHF D17-998 Well #: DHS7C-20

10 3/4" Surface Casing	0 - 1125 ft (MD)
Outer Diameter	10.75 in
Inner Diameter	10.05 in
Linear Weight	40.5 lbm/ft
Casing Grade	J-55
Thread Type	STC
9 7/8" Open Hole	1125 - 5560 ft (MD)
Inner Diameter	9.875 in
Excess Factor	25 %
7 5/8" Intermediate Casing	0 - 5500 ft (MD)
Outer Diameter	7.625 in
Inner Diameter	6.875 in
Linear Weight	29.7 lbm/ft
Casing Grade	N-80
Thread Type	LTC
Multiple Stage Cementer	4000 ft (MD)

4.2 Estimated Calculations Intermediate Casing

Stage 1

MUD: (837 ft fill)

837 ft * 0.2148 ft3/ft * 25 %	= 224.58 ft3
Total Mud	= 224.58 ft3
	= 40 bbl

CEMENT: (300 ft fill)

300 ft * 0.2148 ft3/ft * 25 %	= 80.53 ft3
12.5 HALCEM	= 80.53 ft3
	= 14.3 bbl
Total Lead	= 47.51 sack

CEMENT: (2815 ft fill)

2815 ft * 0.2148 ft3/ft * 25 %	= 755.68 ft3
13.5 HALCEM	= 755.68 ft3
	= 134.6 bbl

Total Tail = 504.49 sack

Total Pipe Capacity:

4375 ft * 0.2578 ft3/ft	= 1127.85 ft3
1125 ft * 0.2578 ft3/ft	= 290.02 ft3
	= 252.5 bbl

Stage 2

CEMENT: (1300 ft fill)

175 ft * 0.2148 ft3/ft * 25 %	= 46.98 ft3
1125 ft * 0.2338 ft3/ft * 0 %	= 263 ft3
12.5 HALCEM	= 309.98 ft3
	= 55.2 bbl
Total Lead	= 169.36 sack

CEMENT: (2700 ft fill)

2700 ft * 0.2148 ft3/ft * 25 %	= 724.81 ft3
13.5 HALCEM	= 724.81 ft3
	= 129.1 bbl

Total Tail	= 467.64 sack
Total Pipe Capacity:	
2875 ft * 0.2578 ft3/ft	= 741.16 ft3
1125 ft * 0.2578 ft3/ft	= 290.02 ft3
	= 183.7 bbl

4.3 Job Volume Estimates Intermediate Casing

Stage 1

Fluid 1: Water Based Mud		
Mud Flush	Fluid Density:	11 lbm/gal
	Liquid Volume:	40 bbl
Fluid 2: Lead Slurry		
EXTENDACEM (TM) SYSTEM	Fluid Weight:	12.5 lbm/gal
	Slurry Yield:	1.69 ft3/sack
	Total Mixing Fluid:	8.73 Gal/sack
	Top Of Fluid:	2385 ft
	Calculated Fill:	300 ft
	Liquid Volume:	14.3 bbl
	Calculated sack:	47.65 sack
	Proposed sack:	50 sack
Fluid 3: Tail Slurry		
HALCEM (TM) SYSTEM	Fluid Weight:	13.5 lbm/gal
	Slurry Yield:	1.498 ft3/sack
	Total Mixing Fluid:	7.14 Gal/sack
	Top Of Fluid:	2685 ft
	Calculated Fill:	2815 ft
	Liquid Volume:	134.6 bbl
	Calculated sack:	504.46 sack
	Proposed sack:	510 sack
Fluid 4: Water Based Spacer		
Displacement Fluid	Fluid Density:	8.4 lbm/gal
	Liquid Volume:	100 bbl
Multiple Stage Cementer		4000 ft(MD)

Stage 2

Fluid 1: Water Based Mud		
Mud Flush	Fluid Density:	11 lbm/gal
	Liquid Volume:	40 bbl
Fluid 2: Lead Slurry		
HALCEM (TM) SYSTEM	Fluid Weight:	13.5 lbm/gal
7.02 Gal FRESH WATER	Slurry Yield:	1.83 ft3/sack
	Total Mixing Fluid:	9.5 Gal/sack

	Top Of Fluid:	0 ft
	Calculated Fill:	1300 ft
	Liquid Volume:	55.2 bbl
	Calculated sack:	169.39 sack
	Proposed sack:	170 sack
Fluid 3: Tail Slurry		
HALCEM (TM) SYSTEM	Fluid Weight:	13.5 lbm/gal
	Slurry Yield:	1.55 ft3/sack
	Total Mixing Fluid:	7.47 Gal/sack
	Top Of Fluid:	1300 ft
	Calculated Fill:	2700 ft
	Liquid Volume:	129.1 bbl
	Calculated sack:	467.62 sack
	Proposed sack:	470 sack
Fluid 4: Water Based Spacer		
Displacement Fluid	Fluid Density:	8.4 lbm/gal
	Liquid Volume:	100 bbl

4.4 Volume Estimate Table Intermediate Casing

Calculations are used for volume estimation. Well conditions will dictate final cement job design.

Stage 1

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Estimated Avg Rate	Downhole Volume
1	MUD	Mud Flush	11		40 bbl
2	CEMENT	12.5 HALCEM	12.5		50 sack
3	CEMENT	13.5 HALCEM	13.5		510 sack
4	SPACER	Displacement Fluid	8.4		100 bbl

Stage 2

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Estimated Avg Rate	Downhole Volume
1	MUD	Mud Flush	11		40 bbl
2	CEMENT	12.5 HALCEM	13.5		170 sack
3	CEMENT	13.5 HALCEM	13.5		470 sack
4	SPACER	Displacement Fluid	8.4		100 bbl

NOTE: These slurries and spacers will require lab testing. The additives and concentrations are estimates based on field experience in the area and may need to be modified prior to the job. The proposed spacer is designed to be generally compatible with water base mud systems. Compatibility testing with field mud samples used may indicate changes in the additive package and the related costs.

4.5 Cost Estimate

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
392189	**CMT MULTIPLE STAGES BOM**	1.00	JOB	0.00	0.00	0.00
Cementing Equipment & Services						
2	MILEAGE FOR CEMENTING CREW Number of Units	100.00 1	MI	5.76	576.00	184.32
1	ZI-MILEAGE FROM NEAREST HES BASE,/UNIT Number of Units	100.00 1	MI	9.79	979.00	313.28
16093	MSC PUMP CHARGE (1ST STAGE), ZI FEET/METERS (FT/M) DEPTH	1.00 FT 6500	EA	9,448.00	9,448.00	3,023.36
16	MULTIPLE STAGE CEMENTING Number of Units	1.00 1	STG	5,055.00	5,055.00	1,617.60
17	MSC ON SITE,ADD HR,ZI Number of Units	1.00 1	H	1,139.00	1,139.00	1,139.00
139	ADC (AUTO DENSITY CTRL) SYS, /JOB,ZI ENTER FEET\METER\JOB\DAY NUMBER OF JOBS NUMBER OF UNITS	1.00 JOB 1 1	JOB	2,275.00	2,275.00	728.00
130104	PORT. DATA ACQUIS. W/OPTICEM RT W/HES DAYS OR PARTIAL DAY(WHOLE NO.)	1.00 1	EA	2,549.00	2,549.00	815.68
114	R/A DENSOMETER W/CHART RECORDER,/JOB,ZI NUMBER OF UNITS	1.00 1	JOB	1,285.00	1,285.00	411.20
74038	ZI PLUG CONTAINER RENTAL-1ST DAY HR/DAY/WEEK/MTH/YEAR/JOB/RUN DAYS OR FRACTION (MIN1)	1.00 DAY 1	EA	1,322.00	1,322.00	423.04
90	ZI QUICK LATCH ATTACHMENT INCHES/MILLIMETERS (IN/MM) SIZE IN INCHES/MILLIMETER	1.00 IN 7	JOB	491.00	491.00	157.12
119534	SUCTION HOSE, 4"/FT W/HES,PER JOB ZI NUMBER OF JOBS	100.00 1	FT	4.40	440.00	140.80
14089	PUP TRAILER,NON-ACID MATLS,0-8 HRS,ZI HR/DAY/WEEK/MTH/YEAR/JOB/RUN HOURS (MIN8)	1.00 H 8	EA	822.00	822.00	263.04
11941	FIELD STORAGE BIN DEL & RETURN, ZI Number of Units	100.00 1	MI	9.79	979.00	313.28
16115	FIELD STORAGE BIN ON SITE >8 HRS,DAY,ZI DAYS OR PARTIAL DAY(WHOLE NO.)	1.00 1	EA	1,344.00	1,344.00	430.08
Cementing Charges						
7	ENVIRONMENTAL CHARGE,/JOB,ZI	1.00	JOB	134.00	134.00	134.00
8	IRON SAFETY INSPECTION SURCHARGE /JOB ZI	1.00	JOB	83.00	83.00	83.00
372867	Cmt PSL - DOT Vehicle Charge, CMT	4.00	EA	241.00	964.00	964.00
Cementing Materials						
452986	CMT, HalCem (TM) system	510.00	SK	57.46	29,306.12	9,377.96
452986	CMT, HalCem (TM) system	170.00	SK	66.00	11,219.54	3,590.27
101507884	Sugar, Granulated, 10 lb bag	100.00	LB	6.96	696.00	222.72
452981	CMT, ExtendaCem (TM) system	50.00	SK	55.42	2,771.03	886.74
76400	MILEAGE,CMT MTLS DEL/RET MIN NUMBER OF TONS	50.00 55.548	MI	3.35	9,304.29	2,977.37
3965	HANDLE&DUMP SVC CHRG, CMT&ADDITIVES,ZI Unit of Measurement NUMBER OF EACH	1,423.00 EA 1	CF	5.49	7,812.27	2,499.93

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
86954	ZI FUEL SURCHG-CARS/PICKUPS<1 1/2TON Number of Units	100.00 1	MI	0.23	23.00	23.00
86955	ZI FUEL SURCHG-HEAVY TRKS >1 1/2 TON Number of Units	100.00 1	MI	0.68	68.00	68.00
87605	FUEL SURCHG-CMT & CMT ADDITIVES NUMBER OF TONS	50.00 55.548	MI	0.23	638.80	638.80
452986	CMT, HalCem (TM) system	470.00	SK	79.93	37,566.73	37,566.73
	Total Net Amount	**USD**				**68,992.32**

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
Optional Charge						
16092	ADDITIONAL HOURS (PUMPING EQUIPMENT), ZI HR/DAY/WEEK/MTH/YEAR/JOB/RUN HOURS	1.00 H 1	EA	1,139.00	1,139.00	**1,139.00**

Primary Plant:	Grand Junction, CO, USA	**Price Book Ref:**	28 - ROCKIES
Secondary Plant:	Grand Junction, CO, USA	**Price Date:**	6/11/2014

5 Intermediate Casing Equipment

5.1 Cost Estimate

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
374609	**CMT CASING EQUIPMENT BOM**	1.00	JOB	0.00	0.00	0.00
100004914	SHOE,FLT,7-5/8 8RD,P/Q,2-3/4 SSII	1.00	EA	1,606.40	1,606.40	642.56
100004787	CLR,FLT,7-5/8 LG 8RD 26.4- 47.1 PPF,P/Q	1.00	EA	3,095.00	3,095.00	1,238.00
101916827	CMTR,TY P ES-II,7-5/8 LG 8RD 29.7-39 LB	1.00	EA	22,732.00	22,732.00	7,956.20
100004674	PLUG SET-FREE FALL-2-STAGE	1.00	EA	2,493.00	2,493.00	1,121.85
100004482	CTRZR ASSY,API,7 5/8 CSG X 9 7/8 H,HNGD	60.00	EA	179.00	10,740.00	4,081.20
100004627	CLP,LIM,7 5/8,HNGD,FRICT GRIP,WTH DRAW	2.00	EA	54.80	109.60	41.65
100005045	KIT,HALL WELD-A	4.00	EA	74.30	297.20	118.88
2	MILEAGE FOR CEMENTING CREW Number of Units	100.00 1	MI	5.76	576.00	230.40
86954	ZI FUEL SURCHG-CARS/PICKUPS<1 1/2TON Number of Units	100.00 1	MI	0.23	23.00	9.20
	Total Net Amount	**USD**				**15,439.94**

Primary Plant: Grand Junction, CO, USA
Secondary Plant: Grand Junction, CO, USA
Price Book Ref: 28 - ROCKIES
Price Date: 6/11/2014

6 Production Casing

6.1 Job Information Production Casing

Job Criticality Status: GREEN
Well Name: WHF D17-998 Well #: DHS7C-20

4 1/2" Production Casing	6300 - 17000 ft (MD)
Outer Diameter	4.5 in
Inner Diameter	4 in
Linear Weight	11.6 lbm/ft
5 1/2" Production Casing	0 - 7000 ft (MD)
Outer Diameter	5.5 in
Inner Diameter	4.892 in
Linear Weight	17 lbm/ft
7 5/8" Intermediate Casing	0 - 6550 ft (MD)
Outer Diameter	7.625 in
Inner Diameter	6.875 in
Linear Weight	29.7 lbm/ft
6 3/4" Open Hole	0 - 6550 ft (MD)
Inner Diameter	6.75 in
Excess Factor	25 %
6 3/4" Open Hole	6550 - 17000 ft (MD)
Inner Diameter	6.75 in
Excess Factor	25 %
4" Drill Pipe	0 - 7000 ft (MD)
Outer Diameter	4 in
Inner Diameter	3.34 in
Linear Weight	14 lbm/ft

6.2 Estimated Calculations Production Casing

Stage 1

SPACER: (4000 ft fill)

4000 ft * 0.0433 ft3/ft * 0 %	= 173.04 ft3
Total Spacer	= 173.04 ft3
	= 40 bbl

CEMENT: (2300 ft fill)

2300 ft * 0.0433 ft3/ft * 0 %	= 99.5 ft3
12.6 HALCEM	= 99.5 ft3
	= 38.5 bbl
Total Lead	= 123.52 sack

CEMENT: (11919 ft fill)

11919 ft * 0.0942 ft3/ft * 25 %	= 1403.01 ft3
13.5 HALCEM	= 1403.01 ft3
	= 370.4 bbl

Total Tail = 1405.16 sack

Total Pipe Capacity:

200 ft * 0.0873 ft3/ft	= 17.45 ft3
11719 ft * 0.0873 ft3/ft	= 1022.68 ft3
6300 ft * 0.0608 ft3/ft	= 383.32 ft3
	= 253.5 bbl

6.3 Job Volume Estimates Production Casing

Stage 1

Fluid 1: Rheologically Enhanced Spacer

12.3 lb/gal Tuned Spacer III	Fluid Density:	12.3 lbm/gal
34.90 gal/bbl FRESH WATER	Liquid Volume:	40 bbl
191.34 lbm/bbl Barite		

Fluid 2: Lead Slurry

HALCEM (TM) SYSTEM	Fluid Weight:	12.6 lbm/gal
	Slurry Yield:	1.75 ft3/sack
	Total Mixing Fluid:	8.63 Gal/sack
	Top Of Fluid:	4000 ft
	Calculated Fill:	2300 ft
	Liquid Volume:	38.5 bbl
	Calculated sack:	51.05 sack
	Proposed sack:	125 sack

Fluid 3: Tail Slurry

HALCEM (TM) SYSTEM	Fluid Weight:	13.5 lbm/gal
	Slurry Yield:	1.48 ft3/sack
	Total Mixing Fluid:	6.88 Gal/sack
	Top Of Fluid:	6300 ft
	Calculated Fill:	11919 ft
	Liquid Volume:	370.4 bbl
	Calculated sack:	985.26 sack
	Proposed sack:	1320 sack

Fluid 4: Water Based Spacer

Displacement Fluid	Fluid Density:	8.4 lbm/gal
	Liquid Volume:	100 bbl

6.4 Volume Estimate Table Production Casing

Calculations are used for volume estimation. Well conditions will dictate final cement job design.

Stage 1

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Estimated Avg Rate bbl/min	Downhole Volume
1	SPACER	12.3 lb/gal Tuned Spacer III	12.3		40 bbl
2	CEMENT	12.6 HALCEM	12.6	4	125 sack
3	CEMENT	13.5 HALCEM	13.5		1320 sack
4	SPACER	Displacement Fluid	8.4		100 bbl

NOTE: These slurries and spacers will require lab testing. The additives and concentrations are estimates based on field experience in the area and may need to be modified prior to the job. The proposed spacer is designed to be generally compatible with water base mud systems. Compatibility testing with field mud samples used may indicate changes in the additive package and the related costs.

6.5 Cost Estimate

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
7523	**CMT PRODUCTION CASING BOM**	1.00	JOB	0.00	0.00	0.00
Cementing Equipment and Services						
2	MILEAGE FOR CEMENTING CREW Number of Units	100.00 1	MI	5.76	576.00	184.32
1	ZI-MILEAGE FROM NEAREST HES BASE,/UNIT Number of Units	100.00 1	MI	9.79	979.00	313.28
16091	ZI - PUMPING CHARGE FEET/METERS (FT/M) DEPTH	1.00 FT 17000	EA	51,552.00	51,552.00	16,496.64
139	ADC (AUTO DENSITY CTRL) SYS, /JOB,ZI ENTER FEET\METER\JOB\DAY NUMBER OF JOBS NUMBER OF UNITS	1.00 JOB 1 1	JOB	2,275.00	2,275.00	728.00
130104	PORT. DATA ACQUIS. W/OPTICEM RT W/HES DAYS OR PARTIAL DAY(WHOLE NO.)	1.00 1	EA	2,549.00	2,549.00	815.68
114	R/A DENSOMETER W/CHART RECORDER,/JOB,ZI NUMBER OF UNITS	1.00 1	JOB	1,285.00	1,285.00	411.20
119534	SUCTION HOSE, 4"/FT W/HES,PER JOB ZI NUMBER OF JOBS	1.00 1	FT	4.40	4.40	1.41
14089	PUP TRAILER,NON-ACID MATLS,0-8 HRS,ZI HR/DAY/WEEK/MTH/YEAR/JOB/RUN HOURS (MIN8)	1.00 H 8	EA	822.00	822.00	263.04
11941	FIELD STORAGE BIN DEL & RETURN, ZI Number of Units	100.00 1	MI	9.79	979.00	313.28
16115	FIELD STORAGE BIN ON SITE >8 HRS,DAY,ZI DAYS OR PARTIAL DAY(WHOLE NO.)	1.00 1	EA	1,344.00	1,344.00	430.08
Cementing Surcharges						
7	ENVIRONMENTAL CHARGE,/JOB,ZI	1.00	JOB	134.00	134.00	134.00
8	IRON SAFETY INSPECTION SURCHARGE /JOB ZI	1.00	JOB	83.00	83.00	83.00
372867	Cmt PSL - DOT Vehicle Charge, CMT	4.00	EA	241.00	964.00	964.00
452986	CMT, HalCem (TM) system	125.00	SK	90.65	11,330.97	3,625.91
452986	CMT, HalCem (TM) system	1,320.00	SK	139.38	183,985.97	58,875.52
76400	MILEAGE,CMT MTLS DEL/RET MIN NUMBER OF TONS	50.00 70.967	MI	3.35	11,886.97	3,803.83
3965	HANDLE&DUMP SVC CHRG, CMT&ADDITIVES,ZI Unit of Measurement NUMBER OF EACH	1,786.00 EA 1	CF	5.49	9,805.14	3,137.64
483826	SBM, CMT, Tuned Spacer III	40.00	BBL	293.00	11,720.00	3,750.40
100003681	CHEM, BARITE, BULK *Barite*	77.00	SK	31.07	2,392.39	765.56
100003800	CHEM,BE-6 BACTERIACIDE, 48 LB FIBER DRUM	3.00	LB	333.35	1,000.05	320.02
100003780	CHEM, MICRO MATRIX RETARDER, 1 GAL	1.00	GAL	104.47	104.47	33.43
	Total Net Amount	**USD**				**95,450.24**

Mtrl Nbr	Description	Qty	UOM	Unit Price	Gross Amt	Net Amount
Optional Charge						
16092	ADDITIONAL HOURS (PUMPING EQUIPMENT), ZI HR/DAY/WEEK/MTH/YEAR/JOB/RUN HOURS	1.00 H 1	EA	1,139.00	1,139.00	**364.48**

Primary Plant:	Grand Junction, CO, USA	**Price Book Ref:**	28 - ROCKIES
Secondary Plant:	Grand Junction, CO, USA	**Price Date:**	6/11/2014

7 Proposal Cost Summary

Job Name	Cost
Surface Casing	17,795.61
Surface Casing Equipment	4,039.60
Intermediate Casing	68,992.32
Intermediate Casing Equipment	15,439.94
Production Casing	95,450.24
Total Cost USD	201,717.71

8 Conditions

The cost in this analysis is good for the materials and/or services outlined within and shall be valid for 30 days from the date of this proposal. In order to meet your needs under this proposal with a high quality of service and responsive timing, Halliburton will be allocating limited resources and committing valuable equipment and materials to your area of operations. Accordingly, the discounts reflected in this proposal are available only for materials and services awarded on a first-call basis. Alternate pricing may apply in the event that Halliburton is awarded work on any basis other than as a first-call provider.

The unit prices stated in the proposal are based on our current published prices. The projected equipment, personnel, and material needs are only estimates based on information about the work presently available to us. At the time the work is actually performed, conditions then existing may require an increase or decrease in the equipment, personnel, and/or material needs. Charges will be based upon unit prices in effect at the time the work is performed and the amount of equipment, personnel, and/or material actually utilized in the work. Taxes, if any, are not included. Applicable taxes, if any, will be added to the actual invoice.

It is understood and agreed between the parties that with the exception of the subject discounts, all services performed and equipment and materials sold are provided subject to Halliburton's General Terms and Conditions contained in our current price list, (which include LIMITATION OF LIABILITY and WARRANTY provisions), and pursuant to the applicable Halliburton Work Order Contract (whether or not executed by you), unless a Master Service and/or Sales Contract applicable to the services, equipment, or materials supplied exists between your company and Halliburton, in which case the negotiated Master Contract shall govern the relationship between the parties. A copy of the latest version of our General Terms and Conditions is available from your Halliburton representative or at: http://www.halliburton.com/terms for your convenient review, and we would appreciate receiving any questions you may have about them. Should your company be interested in negotiating a Master Contract with Halliburton, our Law Department would be pleased to work with you to finalize a mutually agreeable contract. In this connection, it is also understood and agreed that Customer will continue to execute Halliburton usual field work orders and/or tickets customarily required by Halliburton in connection with the furnishing of said services, equipment, and materials.

Any terms and conditions contained in purchase orders or other documents issued by the customer shall be of no effect except to confirm the type and quantity of services, equipment, and materials to be supplied to the customer.

If customer does not have an approved open account with Halliburton or a mutually executed written contract with Halliburton, which dictates payment terms different than those set forth in this clause, all sums due are payable in cash at the time of performance of services or delivery of equipment, products, or materials. If customer has an approved open account, invoices are payable on the twentieth day after date of invoice.

Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.