Welltec®

Pre-frac confirmation runs with wireline deployed **R**everse **C**irculating **B**it technology

29 October 2014

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Agenda

- Introduction
- **Overview**
- Tool Design and Capabilities
- Tool Developments and Learnings
- Advantages and Disadvantages
- To Date Statistics
- Questions

Overview

Q1 of 2013 – Oil producer in SE Saskatchewan, with high volume of wells, was looking for alternative options to help manage their fluid use during completions.

The Producers true value is not based solely on reducing cost, but enabling them to increase their efficiency by;

- Using "Heavy" assets more efficiently and economically
- Quickly establishing Production
- Increasing the number of economically viable projects
- Decreasing environmental impact
- Minimize health and safety risk
- Maximizing recovery from existing projects

Confirmation runs in cement liners

1. Well Description

- 7” Intermediate Casing
- 4 ½” Cemented Liner
- Tieback string to surface
- Average TD 3000-3500 m
- Average Horizontal 1500–2000 m
- Average Dogleg severity is 30 Degrees over 30 meters

2. Well Preparation

- Service Rig Runs a Tieback
- Clean up of Lease
- Confirmation Run is performed with CT or jointed pipe.

3. CT deployed Straddle BHA

- Isolate and Stimulate

Opportunity for Step change

- E-line with RCB string can substitute for CT or jointed pipe for confirmation runs

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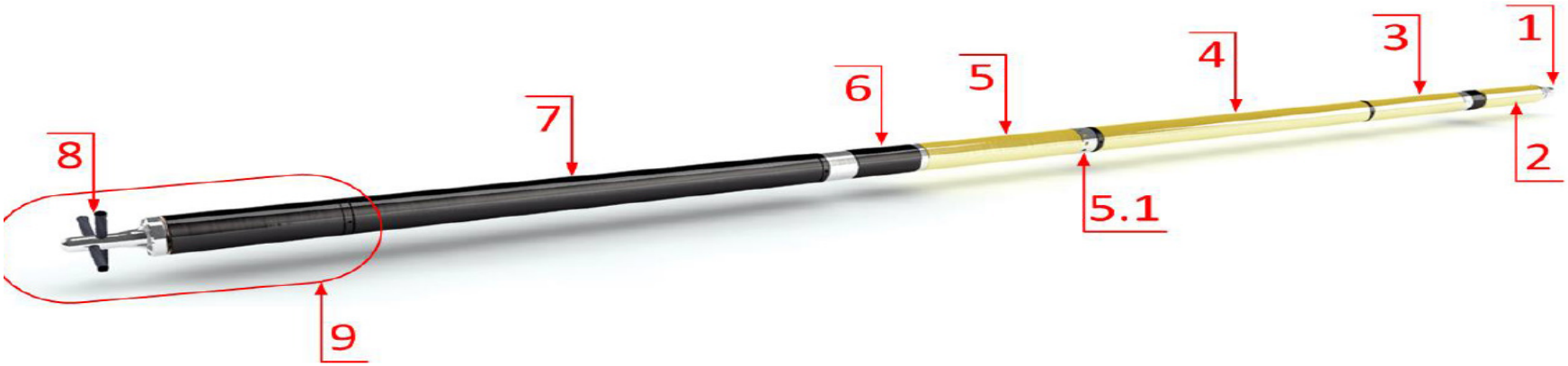
318 Reverse Circulating Bit

Combination of Well Miller and Power Suction Tool

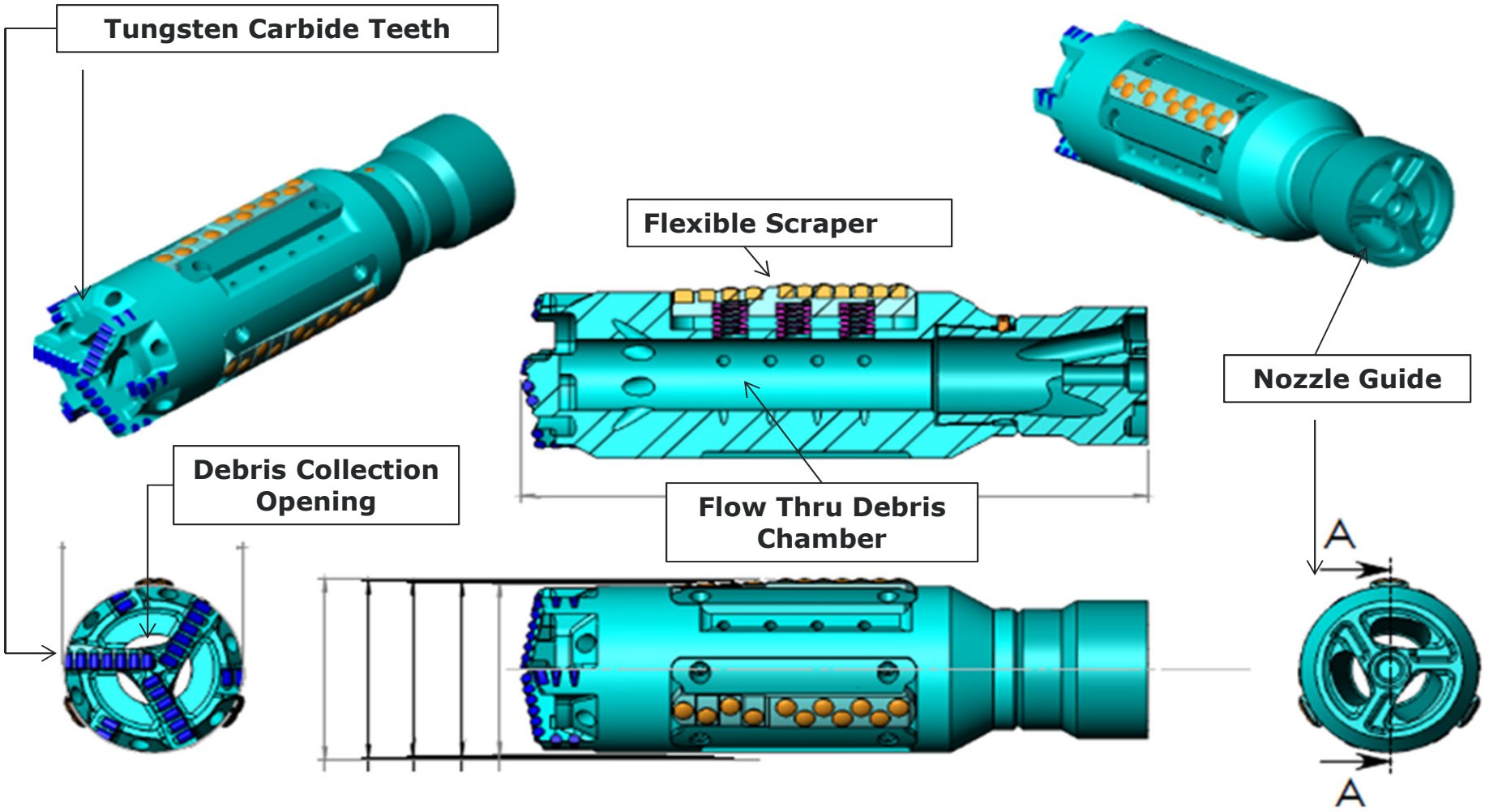


WELL CLEANER® RCB	318	318
Body tool OD	3 1/8"	79.4mm
Bit sizes	3.4" to 7.0"	86.3 – 177.8mm
Length	26.7 ft*	8.14m*
Weight in air	249 lbs*	113kg*
Completion ID	3.5"	88.9mm
Volume/bailer section	1.58 gallons**	6 liter**
Debris size	0.012" to 0.472"***	0.30 to 12mm
Max. well pressure	25 kpsi	172 MPa
Max. temperature, up to	302° F	150° C
Tensile strength	42,000 lbs	18,682 daN
Compressive strength	50,000 lbs	22,241 daN

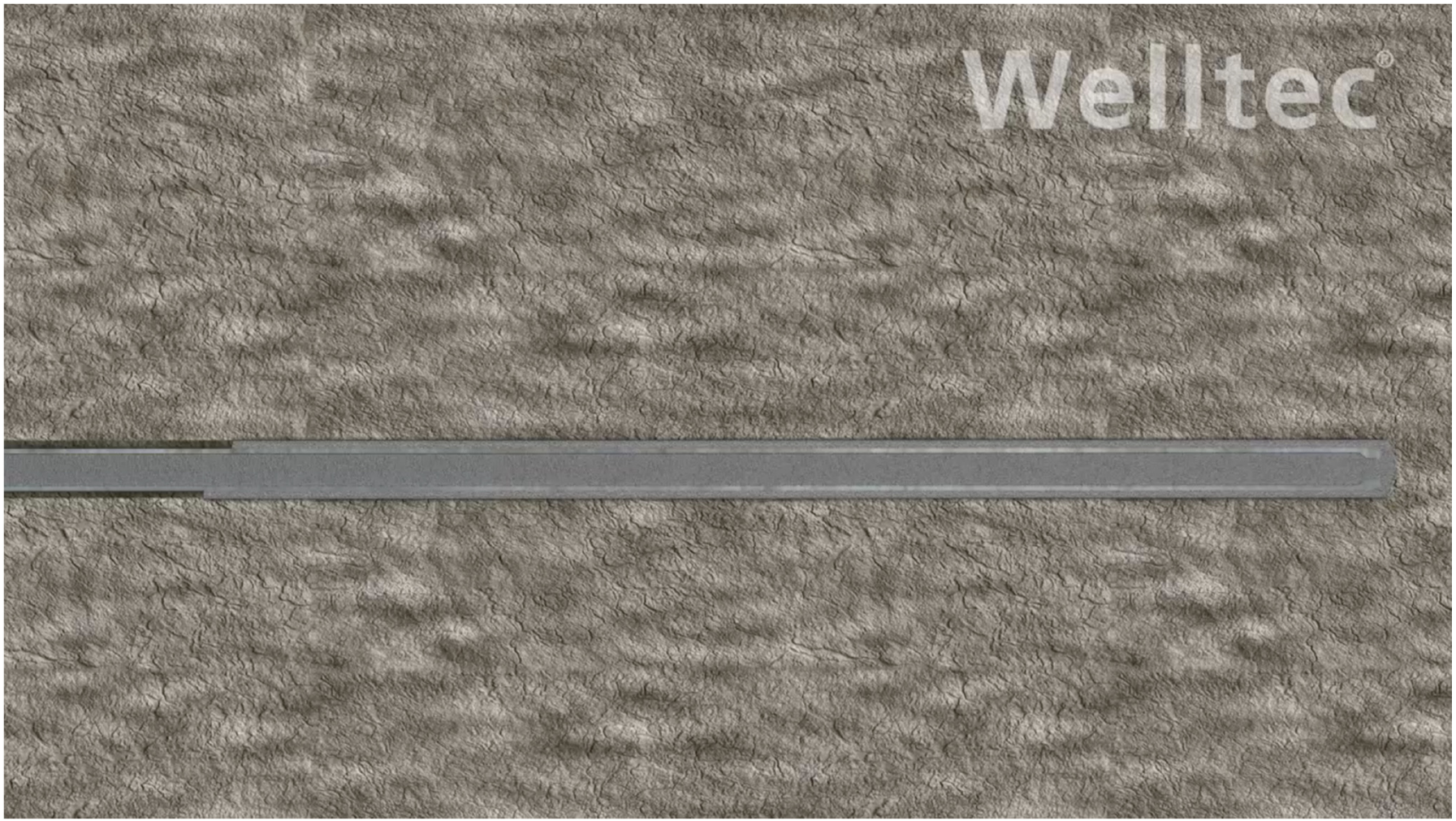
*Specifications based on standard configuration with 1 bailer sections. **Depending on configuration ***other sizes available on request ****Large object jaws and chamber available on request. Specifications are subject to change without notice.

3.845” Scraper Mill- QS93009

Modified Bit for Confirmation Runs



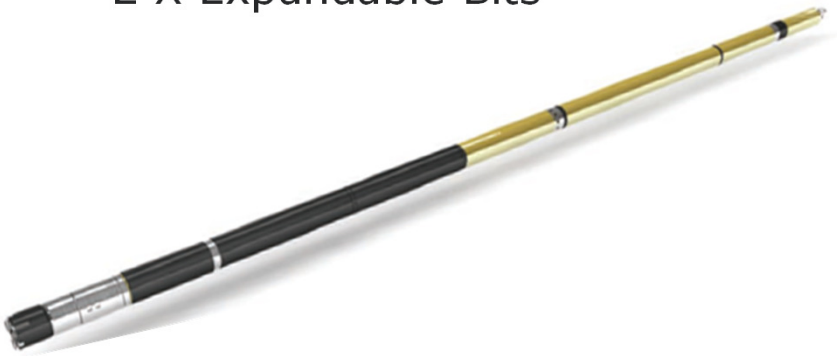
RCB Tool with expandable bit animation



Required Equipment

318 Well Miller- RCB

- 2 X 318WM-RCB
- 2 X Expandable Bits



318 Well Tractor

- 2 X 318WT
- 2 X 218 Swivel (If Required)

Wireline Unit

- 1 X Mast Unit
- 4 man crew
- Support unit
- Power Box

Full String

Length – 35.32 ft. (11.24 m)
Weight - 513.5 lbs.

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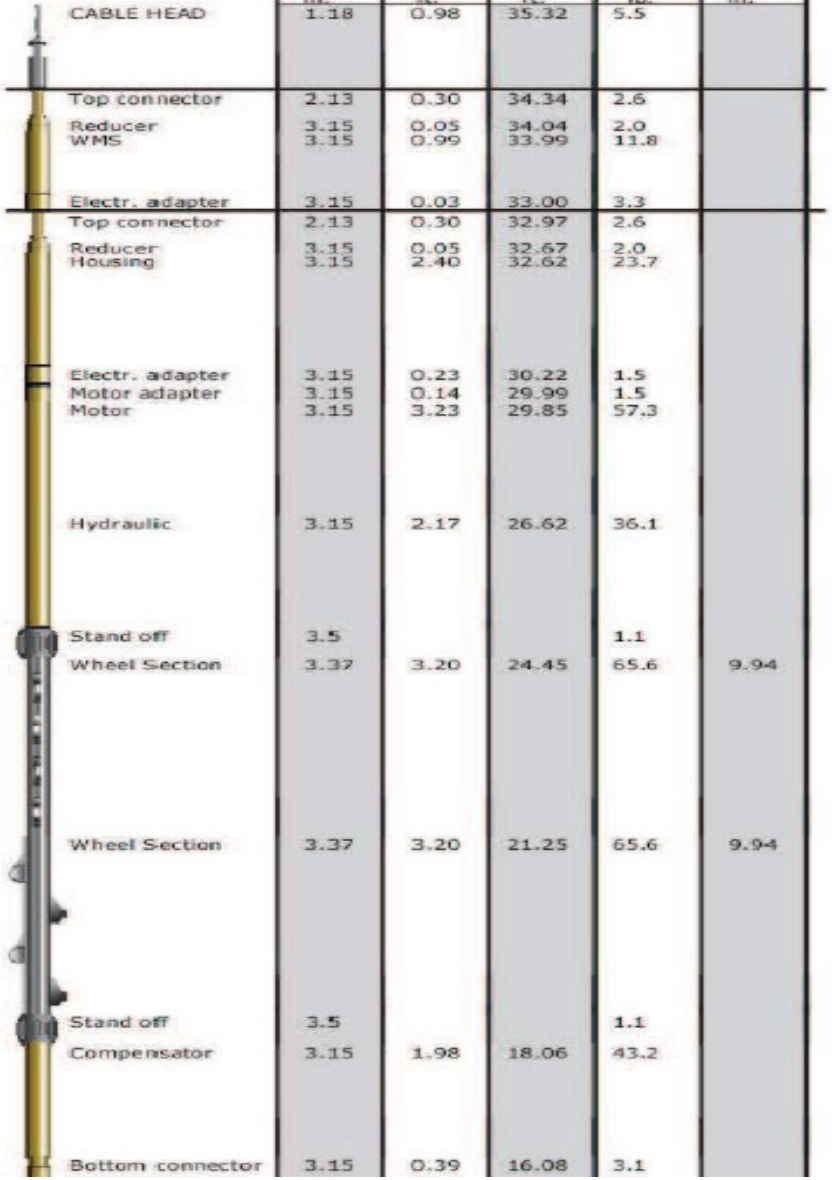
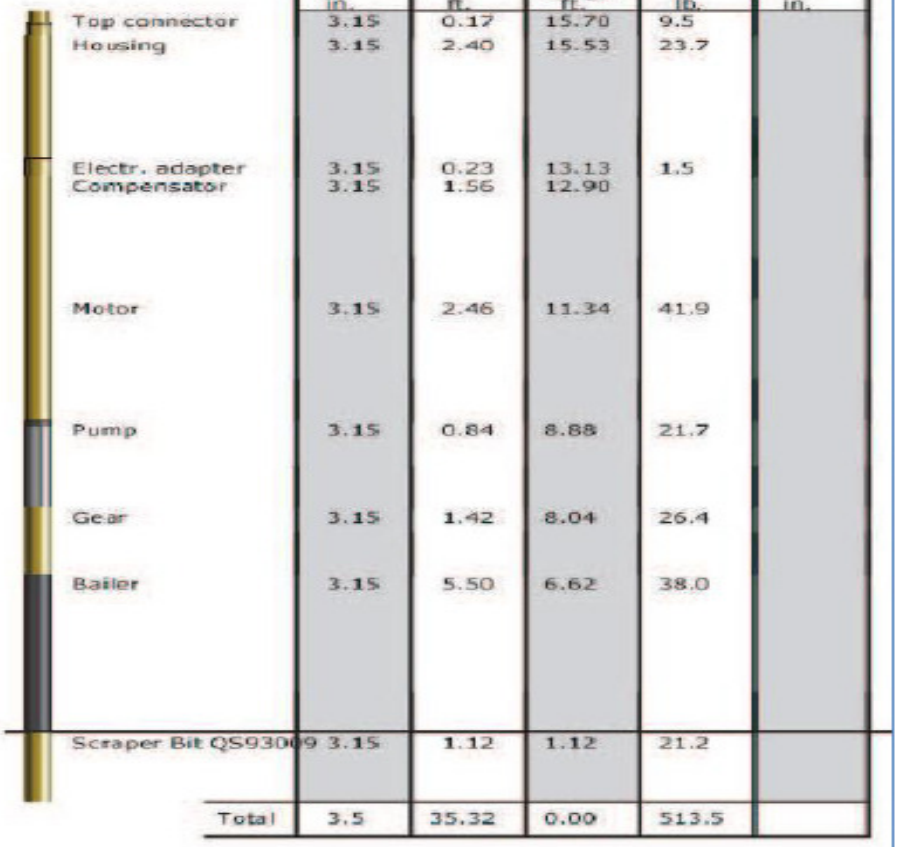
System Integration Test (SIT)
June 2013

Calgary, Alberta

SIT – June 18, 2013



	OD in.	Length ft.	Acc. Length ft.	Weight lb.	Reach in.
CABLE HEAD	1.18	0.98	35.32	5.5	
Top connector	2.13	0.30	34.34	2.6	
Reducer	3.15	0.05	34.04	2.0	
WMS	3.15	0.99	33.99	11.8	
Electr. adapter	3.15	0.03	33.00	3.3	
Top connector	2.13	0.30	32.97	2.6	
Reducer	3.15	0.05	32.67	2.0	
Housing	3.15	2.40	32.62	23.7	
Electr. adapter	3.15	0.23	30.22	1.5	
Motor adapter	3.15	0.14	29.99	1.5	
Motor	3.15	3.23	29.85	57.3	
Hydraulic	3.15	2.17	26.62	36.1	
Stand off	3.5			1.1	
Wheel Section	3.37	3.20	24.45	65.6	9.94
Wheel Section	3.37	3.20	21.25	65.6	9.94
Stand off	3.5			1.1	
Compensator	3.15	1.98	18.06	43.2	
Bottom connector	3.15	0.39	16.08	3.1	



	OD in.	Length ft.	Acc. Length ft.	Weight lb.	Reach in.
Top connector	3.15	0.17	15.70	9.5	
Housing	3.15	2.40	15.53	23.7	
Electr. adapter	3.15	0.23	13.13	1.5	
Compensator	3.15	1.56	12.90		
Motor	3.15	2.46	11.34	41.9	
Pump	3.15	0.84	8.88	21.7	
Gear	3.15	1.42	8.04	26.4	
Bailer	3.15	5.50	6.62	38.0	
Scraper Bit QS93009	3.15	1.12	1.12	21.2	
Total	3.5	35.32	0.00	513.5	

SIT through Frac Sleeve

Objectives

- Test the new 3.845” OD Scraper Bit (#QS93009) and confirm that the 318 WM RCB and bit can fit back-and-forth through frac sleeve without damage.
- Determine if the spring-loaded reamer sections of bit catch on the inside of the Frac sleeve upon pulling out of hole.
- Confirm that the 318 WM RCB can mill and ream the cement inside the Sleeve joint.
- Determine how well the RCB acquires and retrieves the debris from downhole.
- Identify potential problems or issues with respects to conducting same type job for producers.

Test #1 – Physical Fit confirmation through Sleeves

Result Summary –Successful Test/ Criteria Satisfied/No major issues noted

Test #2 – WT/RCB through Assembly, no Cement

Result Summary –Successful Test/ Criteria Satisfied/No major issues noted/No Damage Noted

Test #3 – WT/RCB through Assembly, with Cement

Result Summary –Successful Test/ Criteria Satisfied/No major issues noted/No Damage Noted

Scrapper Mill SIT

RCB Cleaning Frac Sleeve – SIT

Before

After

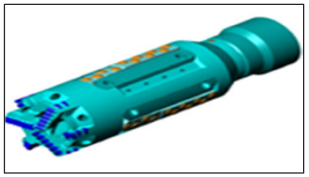
Sample of Debris taken from bailer section’s

Well Miller RCB 2013 Evolution

Q1

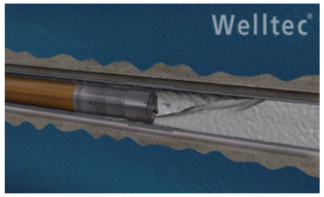
- ID client performing clean-out /confirmation runs in cemented liners.
  - Extreme high volume of operations
  - Reviewed RCB solution- current drift bit design not acceptable

Q2



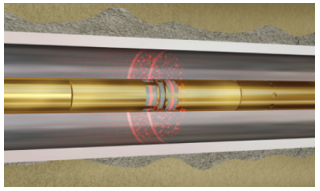
- New expandable bit design - client approval
- S.I.T.- Successful
- Client review & award field trial

Q3



- Successful field trial - awarded work moving forward
- Additional mills, tools and redress kits ordered.

Q4



- October SQ Challenge broken nozzle guide +others
- Stop ops - re-design nozzle guide – debris collector - new ops plan
- Client Review - agrees to new trial
- December- liner hanger/cementing challenges – Producer re-evaluates running and cementing procedures.

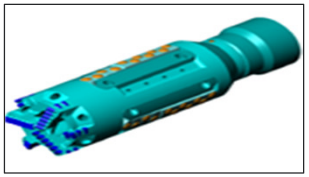
Source: Company data

Well Miller RCB 2014 Evolution Continued

Q1

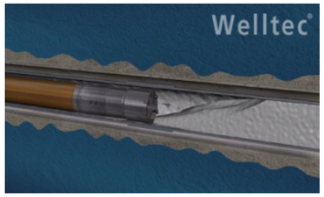
- Status Change reverts to trial due to early cement challenges
- Expand service to add 2nd client
- Inline Magnets arrive for 1 run solution
- Increase of utilization

Q2



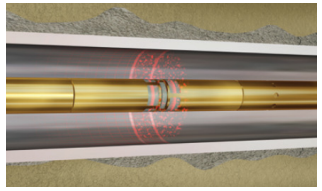
- Develop Expandable bit for larger casing sizes casing sizes and new applications
- Introduce Mechanical and diagnostic services for production optimization

Q3



- Pressure / Temperature sub added to tool string
- Expanded service to 3rd client
- Highest utilization to date

Q4



- Expand service to 4th client

Planned trials

- Expected first 5 ½ completion in November

Source: Company data

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Reverse circulating bit Technology

Advantages

- Smaller footprint
- Reduced number of personnel on site
- No Pumping/No hauling / heating / disposing of fluid
- Casing collar log for Frac port ID
- Incorporated diagnostic equipment (WPT) Pressure Temperature Sub

Disadvantages

- Unable to circulate fluid / debris to surface.
- Limited bailer capacity for excess debris downhole
- Bit design will not support milling of metals (over torqued collars)

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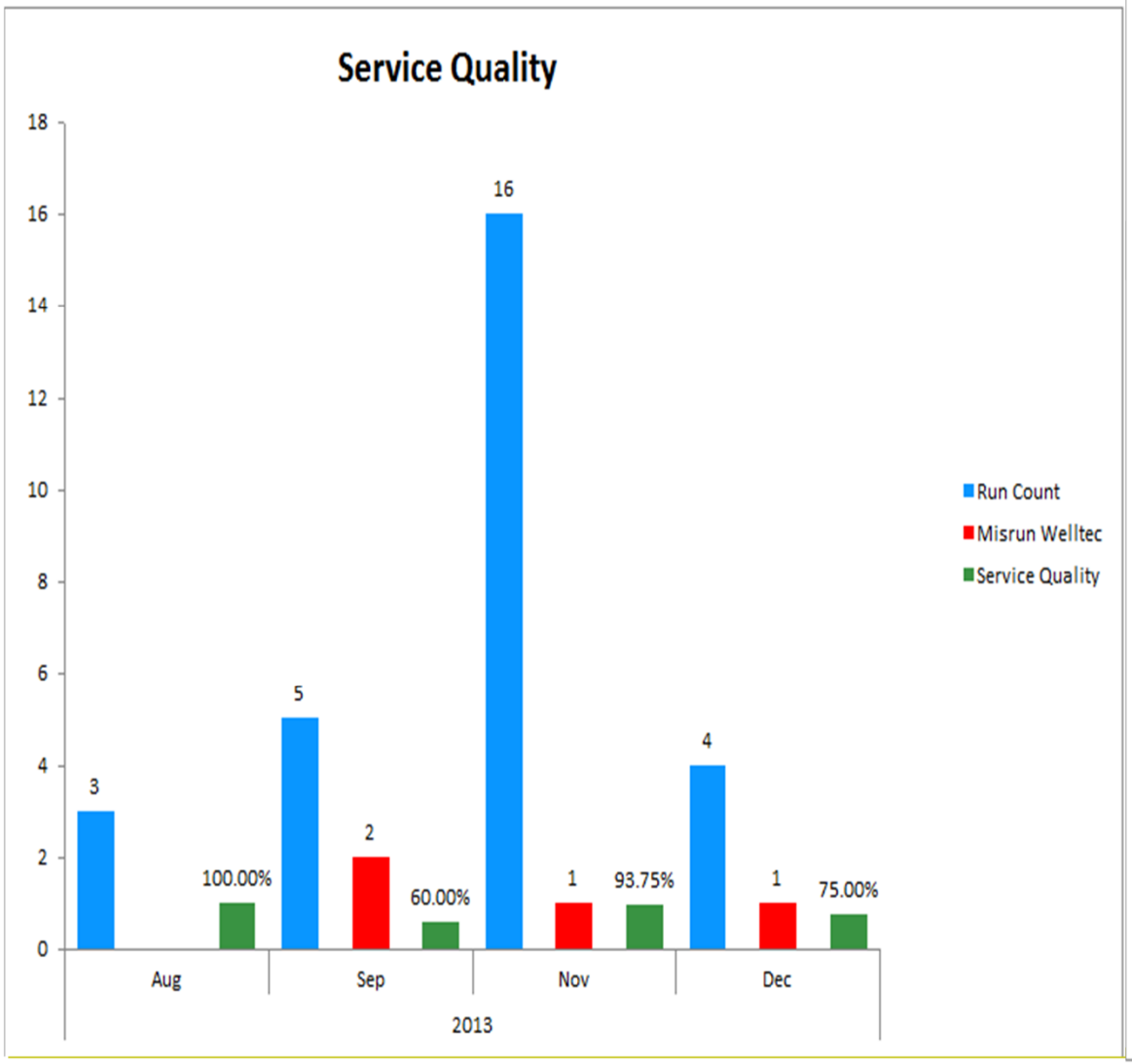
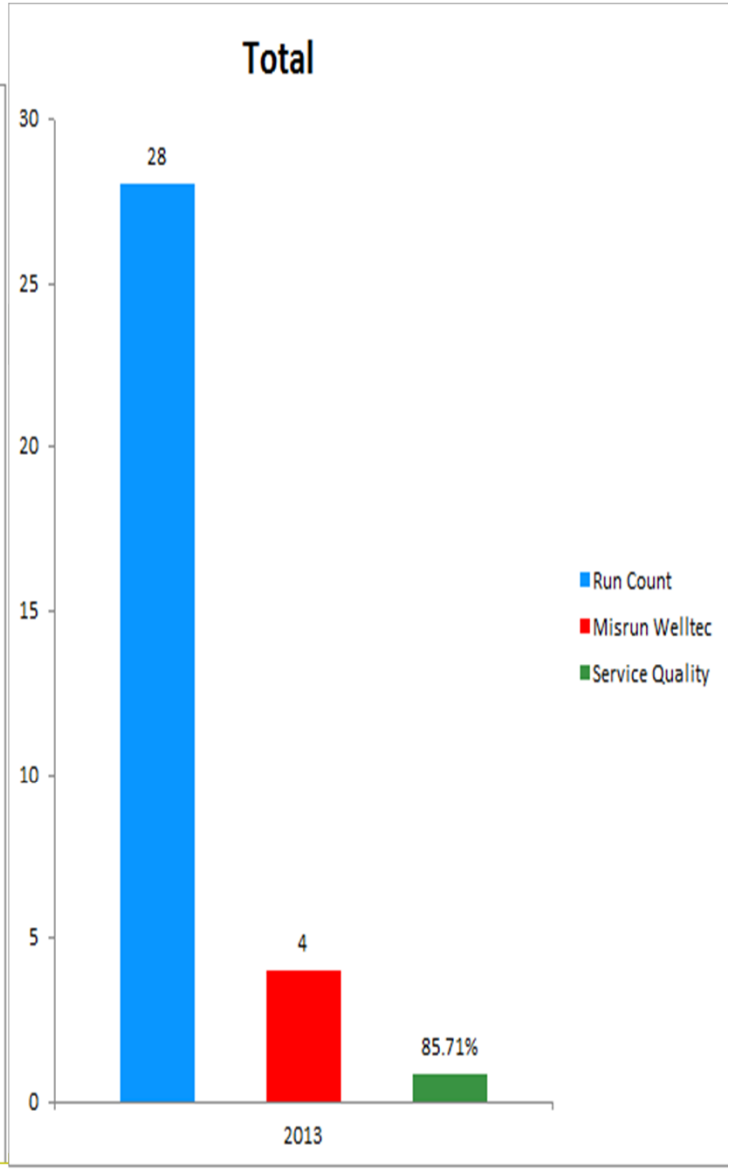
2013 Stats

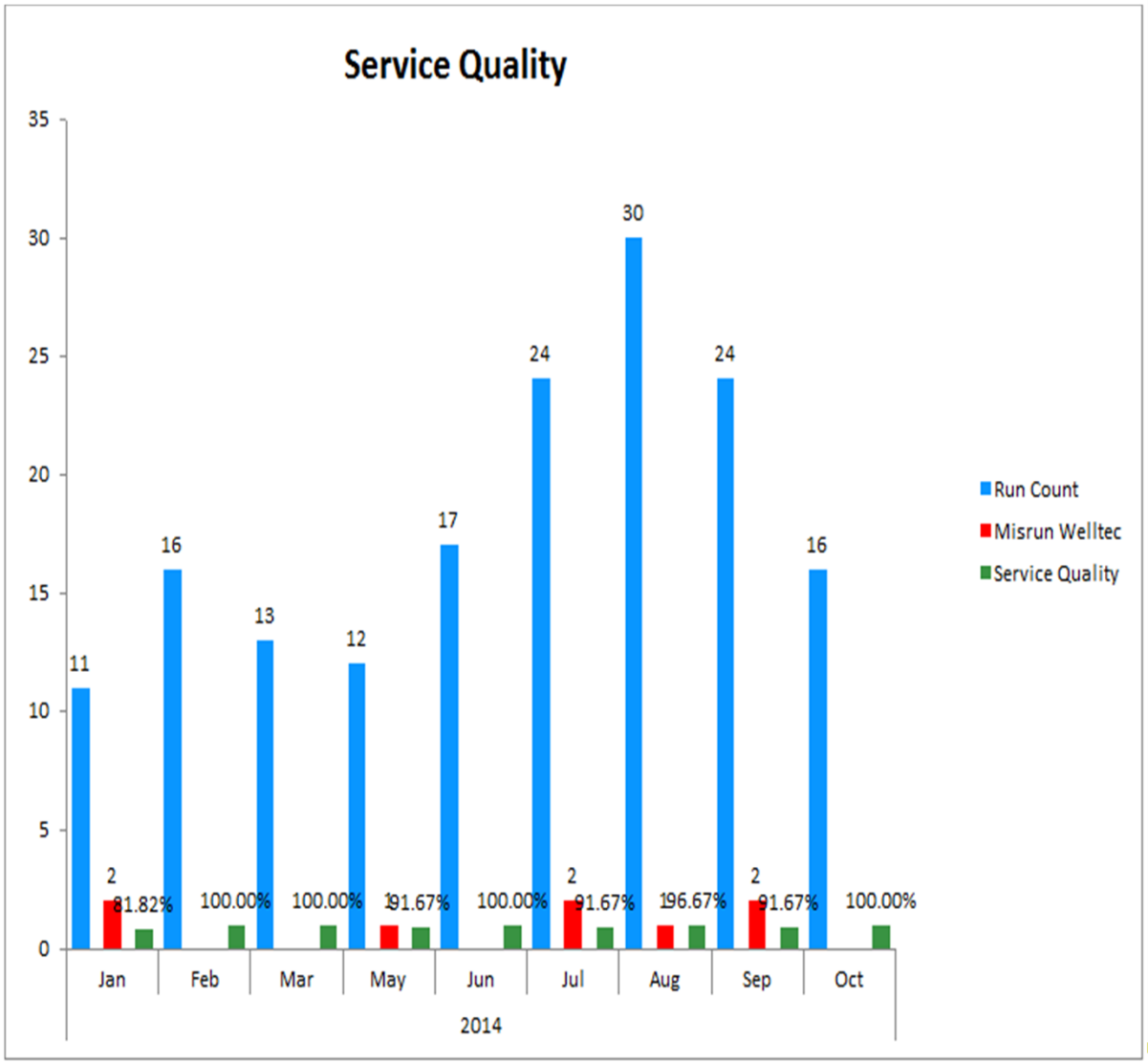
Mechanical Run/Misrun

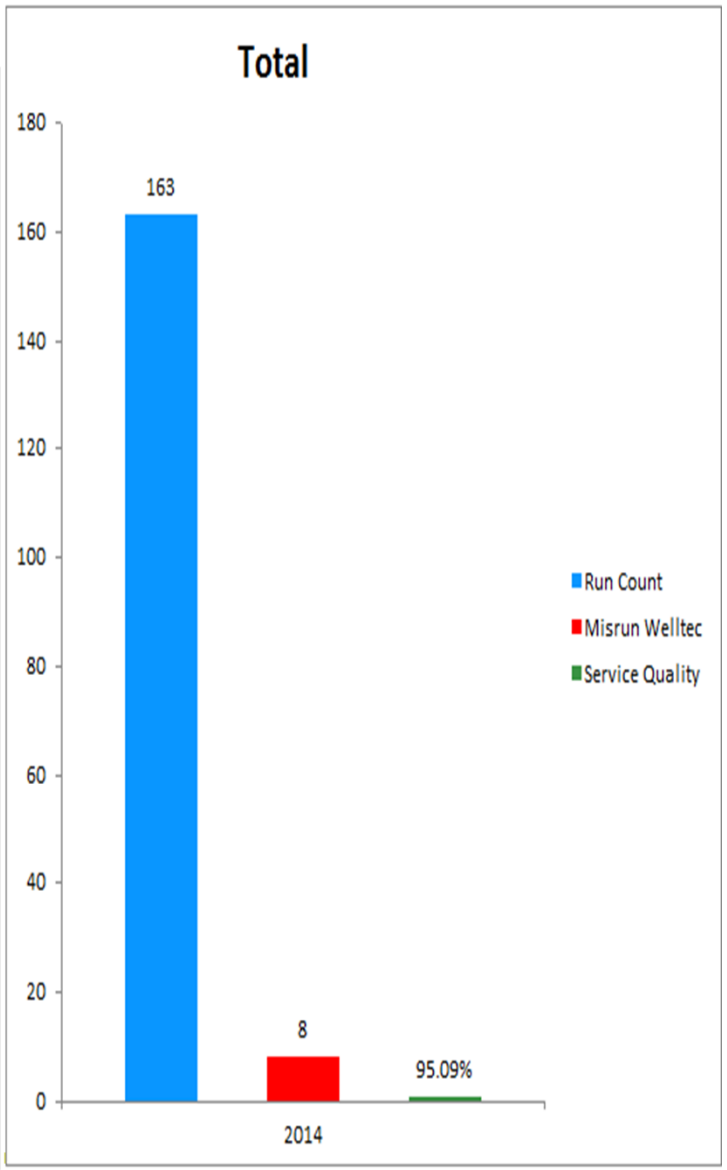




2014 Stats

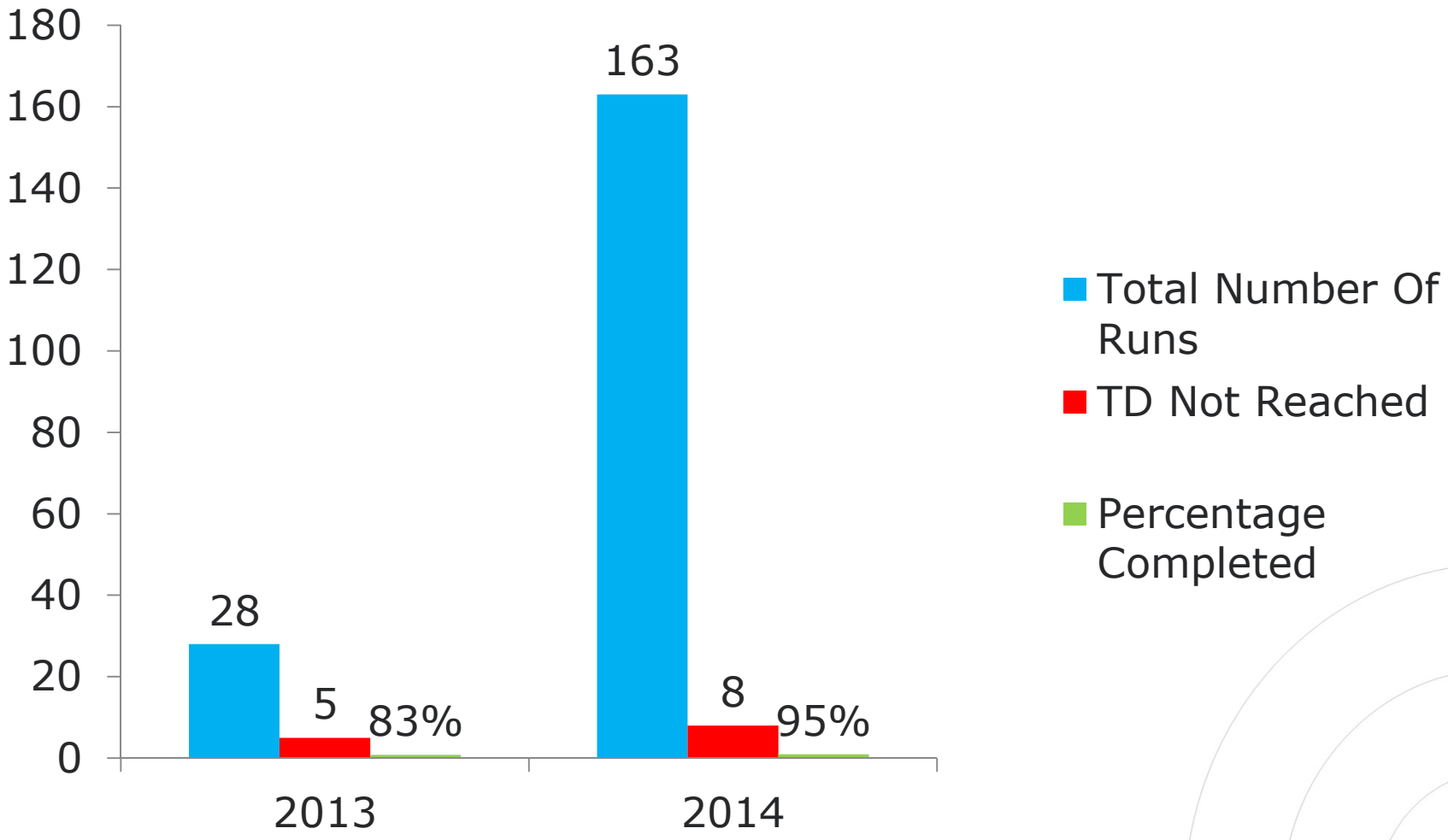
Mechanical Run/Misrun





2013-14 Stats

Total Well – Objective not completed



Questions?

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… and thank you for your time