IODP EXP 358 Daily Geomechanics Report

Report #056 20190104

RTG Team

RTG Supervisor(s)	David Castillo / Thomas Finkbeiner / Demian Saffer
RTG Watch Lead (00:00-12:00)	Emily Wisbey
RTG Watch Lead (12:00-24:00)	Toby Colson

Well Status

Site Name:	C0002		**Hole Name:**	R	
Water Depth:	1,939.0	m	**RT-MSL:**	28.5	m
0600h Depth:	5,052.0 (5049.0)	mBRT (mTVD)	**Section TD:**	5,667.5 (5,664.5)	mBRT (mTVD)
Section #:	0		**CSG Depth/Size:**	4757.0 11-3/4	mBRT inches
Static MW:	1.39	sg	**Current ECD:**	(1.41)	sg
FIT/LOT/ XLOT:	1.46sg FIT @ 4,757mBRT.				
Current formation/ lithology:	Shale				
Sensor Offsets from the Bit:	TeleScope 675: (Direction + Inclination: 18.00 m)				
Other BHA Offsets from the Bit:	8-1/2” Mill Tool Bit: 0~0.24 m Motor with 1.5 deg bend: 0.24~8.09 m 8.125” Stabilizer: 8.09~9.76 m 2 x 6-3/4” Non-Magnetic Drill Collar + TeleScope 675: 10.54~32.21 m 9 x 6-3/4” Drill Collar: 32.21~116.80 m 6-1/2” Hydraulic Jar: 116.80~126.73 m 2 x 6-3/4” Drill Collar: 127.73~145.39 m 12 x 5.68” Heavy Weight Drill Pipe: 146.19~257.14 m Top of BHA: 258.14 m				
Current Operations:	Continued working and sliding through tight sections, until suspected broken motor occurred. Trouble shot motor. POOH 8-1/2” motor BHA to 4,410mBRT. Commenced pressure testing BOP.				

Geomechanics Alert

GREEN	Green = Projected model remains accurate White = Unanticipated deviation from model which *should not* affect drilling Yellow = Unanticipated deviation from model which *may* affect drilling Red = Imminent requirement to stop drilling
Basis for Alert Level + Recommendations	1.39 sg remains recommended MW for Section 1. Observation suggests hole cleaning remains a key factor in current wellbore condition.

Principal Findings

N/A

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Observations Summary

Use this space to discuss any observations while drilling, running casing etc.

Fracture Gradient	N/A
Pore Pressure	No indications of overpressure observed.
Wellbore Breakout	N/A
Tensile Failure	N/A
Drilling Parameters	N/A
Other	N/A

Analysis

Drilling Experience Analysis

Continue to conduct wiper trip and worked a difficult section at 4,840mBRT near the tuff intervals. Commenced sliding to ream out dogleg at same section and commenced drilling new formation. likely associated with tuff layers. Encountered resistance at 4,804 mBRT, presumably because of the high dog leg severity.

There remains likely fatigued/weakened rock above 4,840mBRT due to proximity of <1m from the original C0002P well. This combined with a tuff layer between ~ 4,830 and 4,840 mBRT and a high dogleg severity hampered efforts to easily ream/re-work the section.

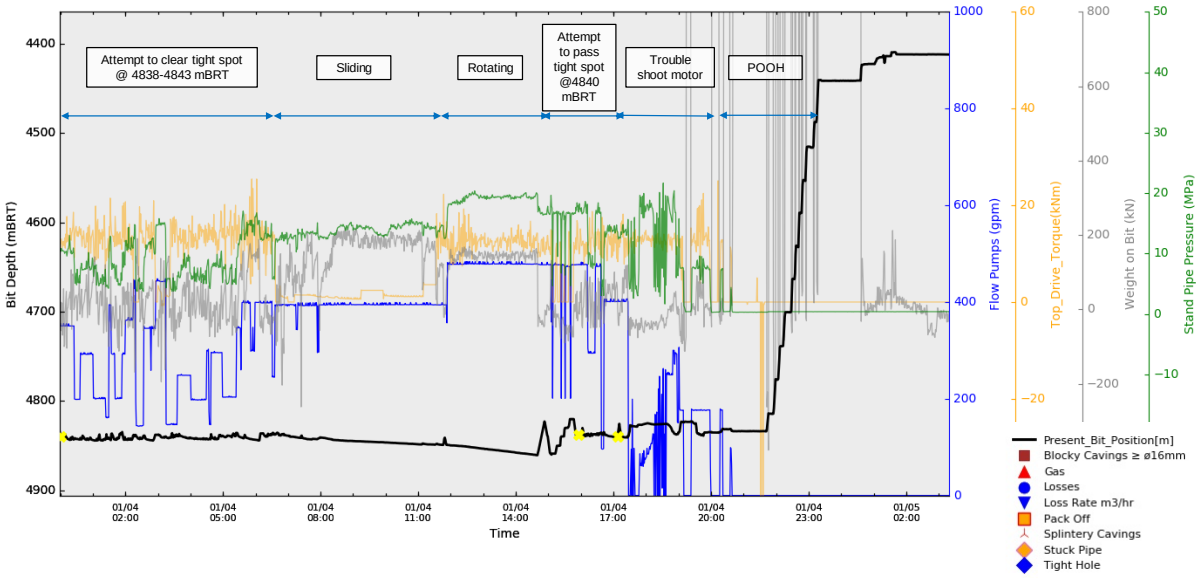

Figure 1 Drilling experiences over the last 24 hrs

Cuttings and Cavings Analysis

Coarser shale/mudstone fragments > ø4mm with sharp edges remain blocky with minor occurrence of platy fragments. Tuff fragments with generally rounded shapes remain present throughout; however, proportion in coarser grains ≥ ø4mm are ~1~2 % in most samples.

The abundance of cuttings during the wiper trip and reaming/re-working remained small (<9mm) and fresh. However, at ~1230hrs a marked increase in cuttings was seen indicating that a new hole was being drilled near 4,840 mBRT. Typical size increased to ~ ø10mm, and were predominately fresh and blocky. It remains possible that larger cuttings are not been effectively circulated out.

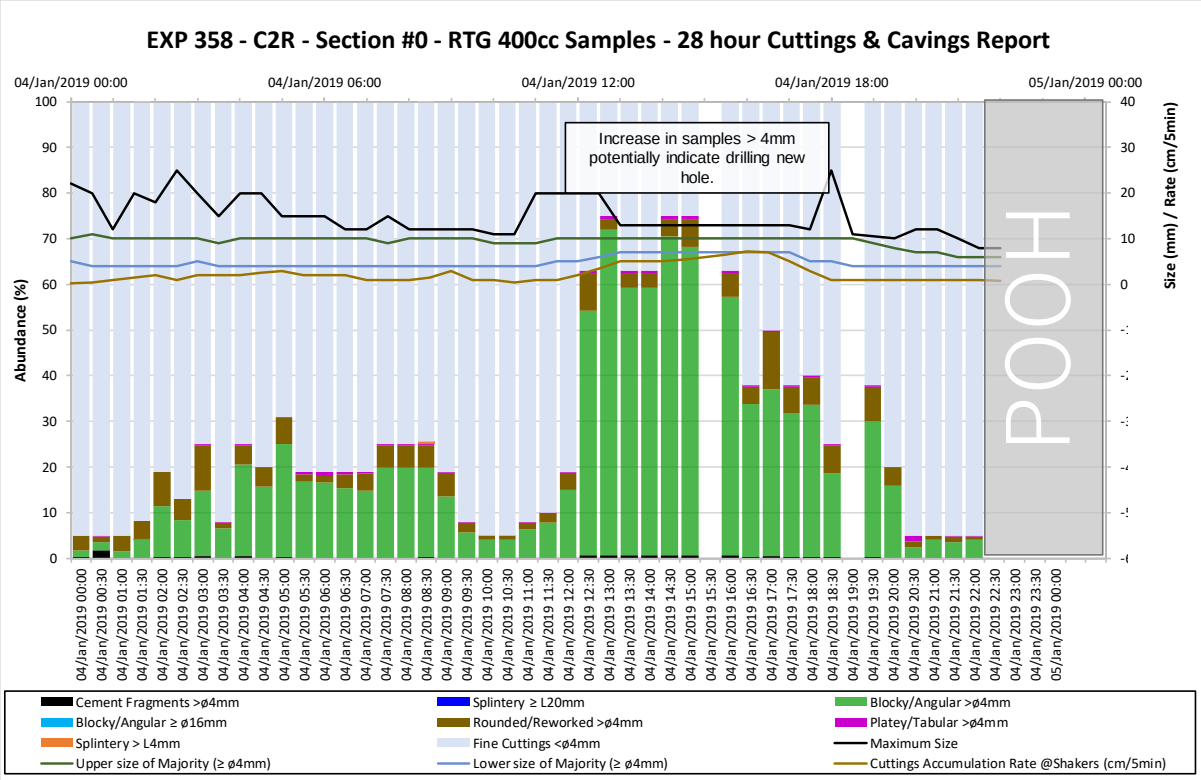

Figure 2 Analysis of cuttings/cavings > ø 4mm (taken from 400cc RTG Samples) over last 24 hrs. *Not corrected for lag-time*

The marked increase in cutting volume after 1230 hrs coincides with the drilling of new formation. Tuff remained present in ~1 to 2% abundance, and showed no significant increase whilst passing through the interval of 4,830 to 4,840mBRT.

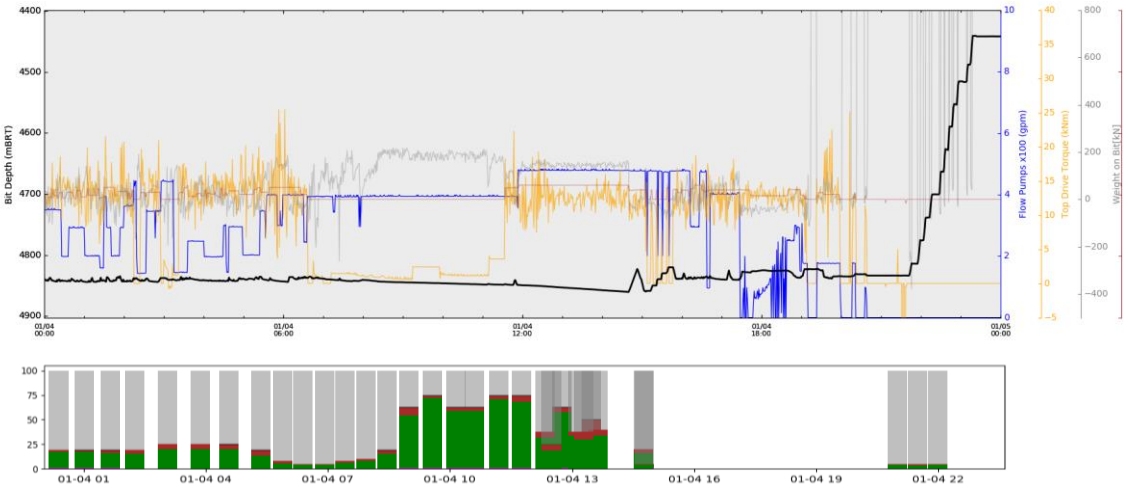

Figure 3 Correlation between drilling events and lag corrected cuttings/cavings occurrences

Figure 4 Example of cuttings/cavings > ø 4mm (taken from 400cc RTG Samples).
The predominant cuttings are fresh shale fragments ≤ ø10 mm, with trace occurrences of large blocky tuff cavings and angular cement fragments.

LWD Data Analysis
N/A

SFIB Analysis
No further updates.

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Geomechanical Model Review

No change in the current stress model.

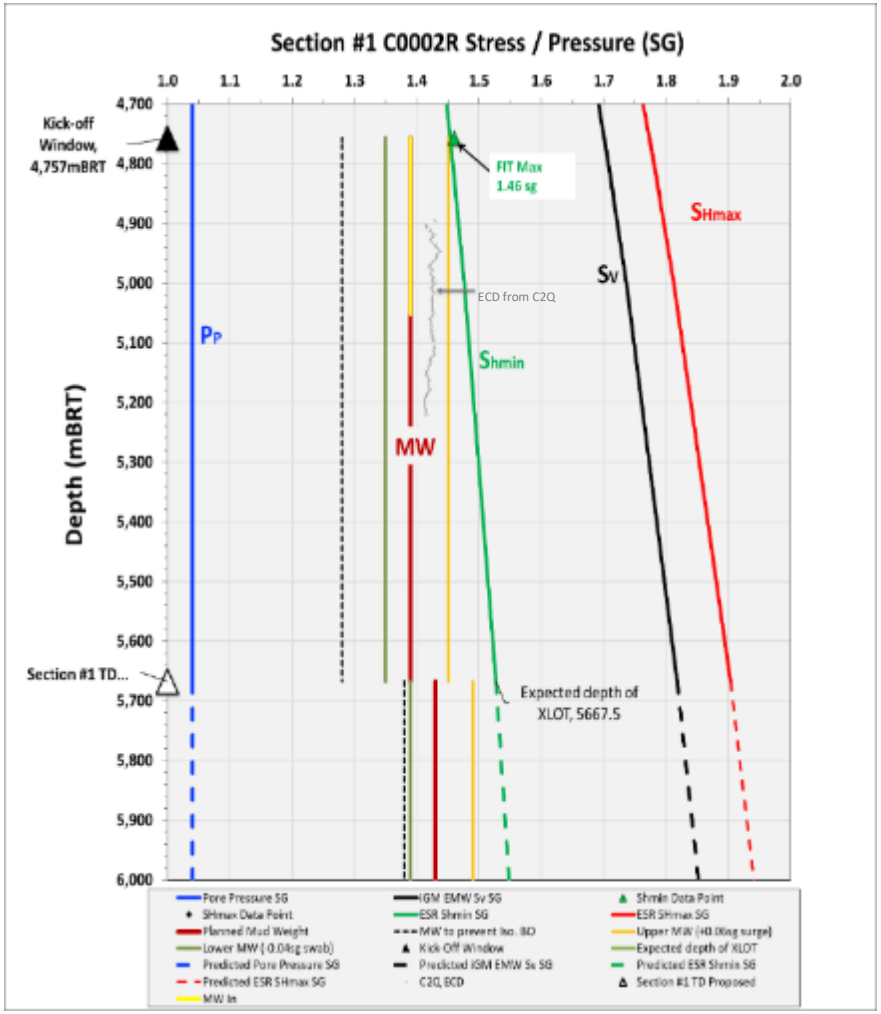

Figure 5 Current stress model for Section #1

Horizontal scale (SG) only applies to ECD

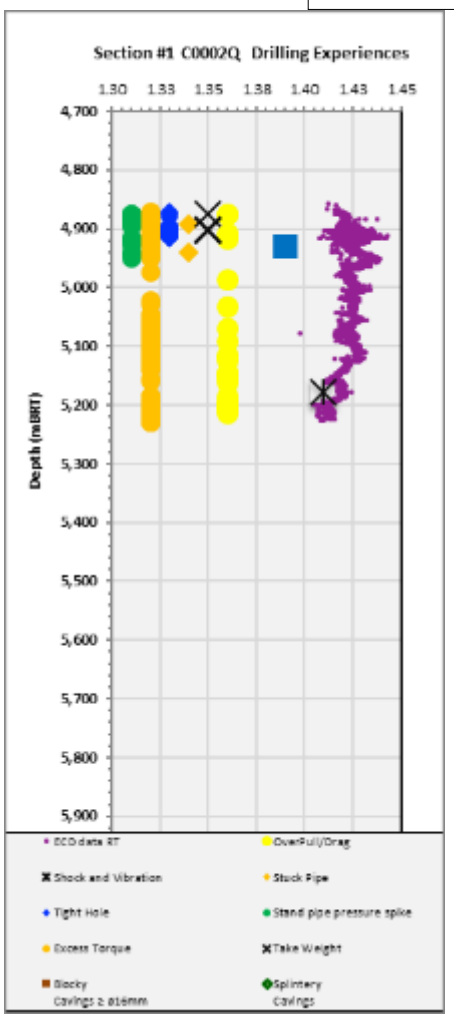

Figure 6 C0002Q Drilling Experiences

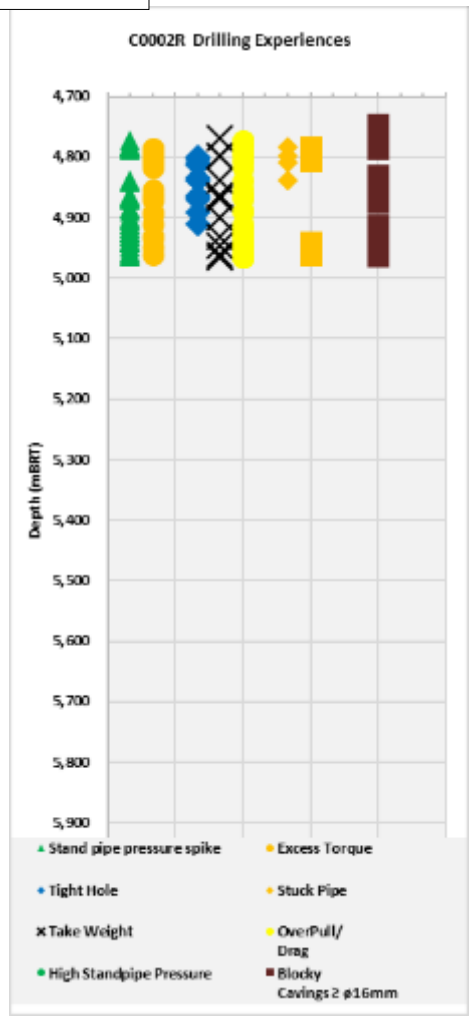

Figure 7 C0002R Drilling Experiences