

# IODP EXP 358 Daily Geomechanics Report

Report #011 2018120 Final 4990

## RTG Team

RTG Supervisor(s)	David Castillo / Thomas Finkbeiner / Demian Saffer
RTG Watch Lead (00:00-12:00)	Kan Aoike
RTG Watch Lead (12:00-24:00)	Adam Wspanialy
RTG Office Support	N/A

## Well Status (as of 06:00 Nov.21 2018)

Site Name:	C0002	Hole Name:	Q
Water Depth:	1,939.0 m	RT-MSL:	28.5 m
Current Depth:	4,990.0 mBRT (4,988.0) mTVD	Section TD:	4,990 mBRT (4,988.0) mTVD
Section #:	1	CSG Depth / Size:	- mBRT
Static MW:	1.37 sg	Current ECD:	- sg
Current formation/ lithology:	Shale		
Sensor Offsets:	MWD D&I: 18.225 m from the bit MWD Downhole WOB: 14.86 m from the bit		
Current Operations:	Continued ream up/down between 4880-4912 mBRT. Encountered stuck pipe at 4923 mBRT and performed work pipe until 09:00. Reamed down to 4990 mBRT and reached TD at 14:15. After circulation and bottoms-up, started POOH from 20:15. No excess drag observed when passing the window (20:20). Continued POOH. 2888 mBRT as of 06:00 Nov.21.		

## Geomechanics Alert

<b>GREEN</b>	<p><b>Green</b> = Projected model remains accurate</p> <p>White = Unanticipated deviation from model which <i>should not</i> affect drilling</p> <p><b>Yellow</b> = Unanticipated deviation from model which <i>may</i> affect drilling</p> <p><b>Red</b> = Imminent requirement to stop drilling</p>
Basis for Alert Level + Recommendations	No issue with 1.37 sg MW for Section 1.

## Principal Findings

N/A

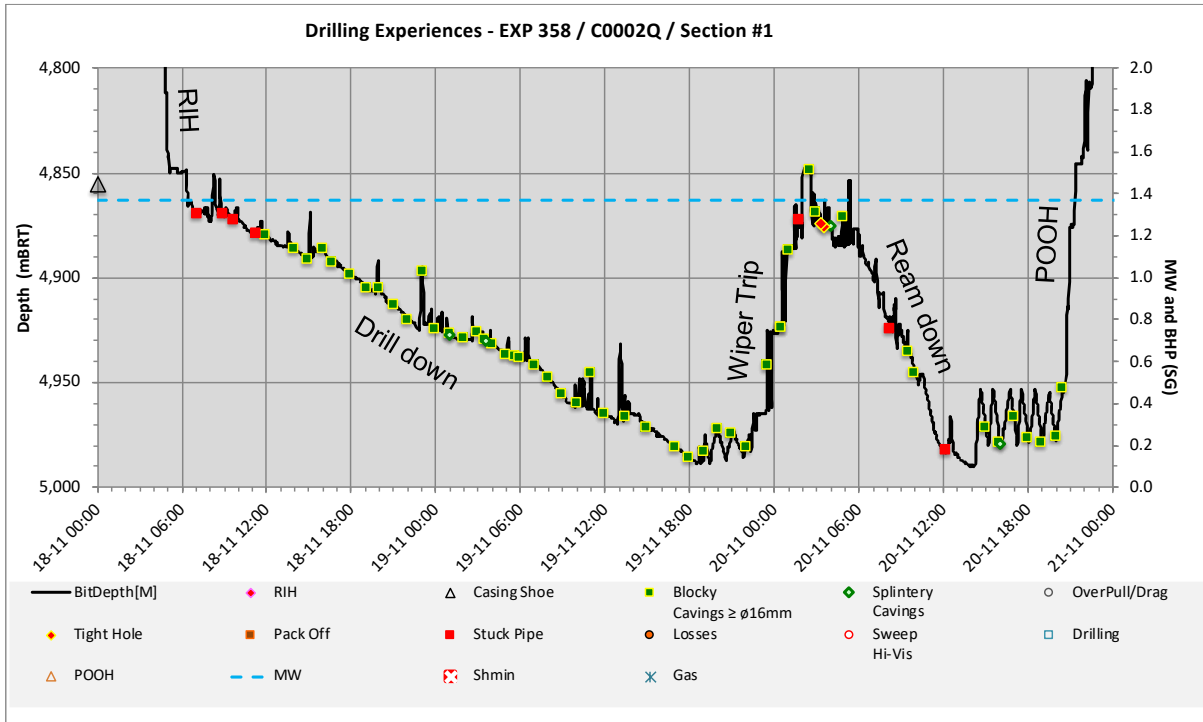
## Observations Summary

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

Fracture Gradient	No losses.
Pore Pressure	Low and steady background gas within 0~0.4%. Trip gas up to 1.28 % around 11:30
Wellbore Breakout	No image log available.
Tensile Failure	No image log available.
Drilling Parameters	Surface torque fluctuated 100-160 kNm during reaming, then 110-130 kNm during circulation and bottoms-up after reaching TD.
Other	

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### Analysis

#### LWD Log Analysis

N/A

#### Drilling Experience Analysis

N/A

#### Cuttings Analysis

N/A

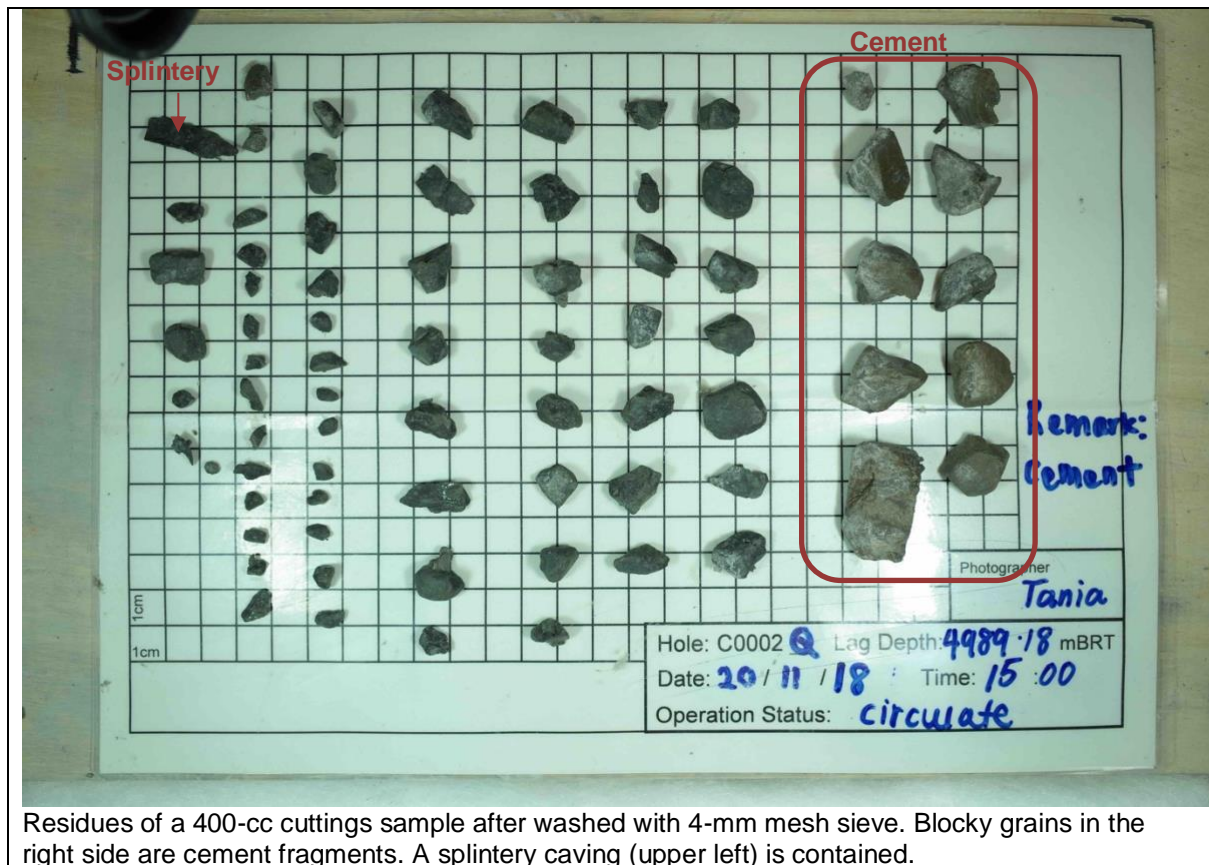
#### Cavings Analysis

Cavings (> ø4 mm) are contained in cuttings generally at ~5% per unit volume, consisting of shale/mudstone. Those less than ø10 mm comprise ~95%, blocky, angular or platy in shape. Occurrence of blocky/angular or rounded blocky cavings larger than ø16 mm is less than 0.5% per unit volume. Occurrence of splintery cavings is rare. From the samples taken at 14:30 Nov.20 during circulation & bottoms-up, blocky cement fragments began to be mingled associated with increment of rounded and fresh blocky/angular cavings which are less than ø20 mm.

**2018/11/20 15:00 – 4989 mBRT lag depth**

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## SFIB Analysis

N/A

## Geomechanical Model Review (a review of the FIT results)

Potentially no changes to the pre-drill geomechanical model because FIT (Formation Integrity Test) does not directly contribute sufficient information for constraining or refining subsurface earth stresses. By design, FIT is intended to determine whether the planned mud weight can be supported by the formation.

The planned mud weight of 1.37 sg with an operational safety upper margin of +0.06 sg (surge pressure), required a formation pressure integrity up to 1.43 sg. The FIT in the C0002Q rat-hole achieved that objective. It is possible that a leak-off pressure of 1.43 sg may have occurred, but a maximum pressure of 1.45 sg was achieved before the pumps were shut-in. If a leak-off pressure of 1.43 sg did occur, this implies a leak-off-test (LOT) had occurred (no longer a FIT). A leak-off-pressure of 1.43 sg may be interpreted as a possible approximation of S3 or Shmin stress magnitudes.

This interpretation would require a pass of the LWD image log across the rat-hole section to identify whether a new tensile was created, or drilling fluids leaked into a pre-existing bedding plane or natural fracture. The former would have direct implications of S3, while the latter would require further information such as bedding plane orientation.

However, since no LWD data acquisition is planned for the rat hole section, we will have no chance to confirm which case occurred. Therefore, we continue to call this test a FIT.