

IODP EXP 358 Daily Geomechanics Report

Report #012 20181121 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.22 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:	(4855.0) mBRT 11-3/4 "
Static MW:	1.37 sg	Current ECD:	- sg
FIT/LOT/XLOT:	FIT maximum pressure = 1.45 sg, Possible "LOP" = 1.43 sg @4855 mBRT		
Current formation/ lithology:	Shale		
Sensor Offsets:	MicroScope 675: TBA arcVision675: TBA TeleScope675: TBA SonicScope675: TBA seismicVision675: TBA		
Current Operations:	Continued POOH Kick-off BHA to 1394.5 mBRT then carried out slip & cut drilling line from 09:05. Resumed POOH at 14:00. BHA on surface at 20:30. Observed no damage on the bit while paint on the Jar peeled off. MU 8-1/2" x 12-1/4" LWD BHA.		

Geomechanics Alert

GREEN	<p>Green = Projected model remains accurate</p> <p>White = Unanticipated deviation from model which <i>should not</i> affect drilling</p> <p>Yellow = Unanticipated deviation from model which <i>may</i> affect drilling</p> <p>Red = 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	N/A
Pore Pressure	N/A
Wellbore Breakout	N/A
Tensile Failure	N/A
Drilling Parameters	NA
Other	

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Analysis

LWD Log Analysis

N/A

Drilling Experience Analysis

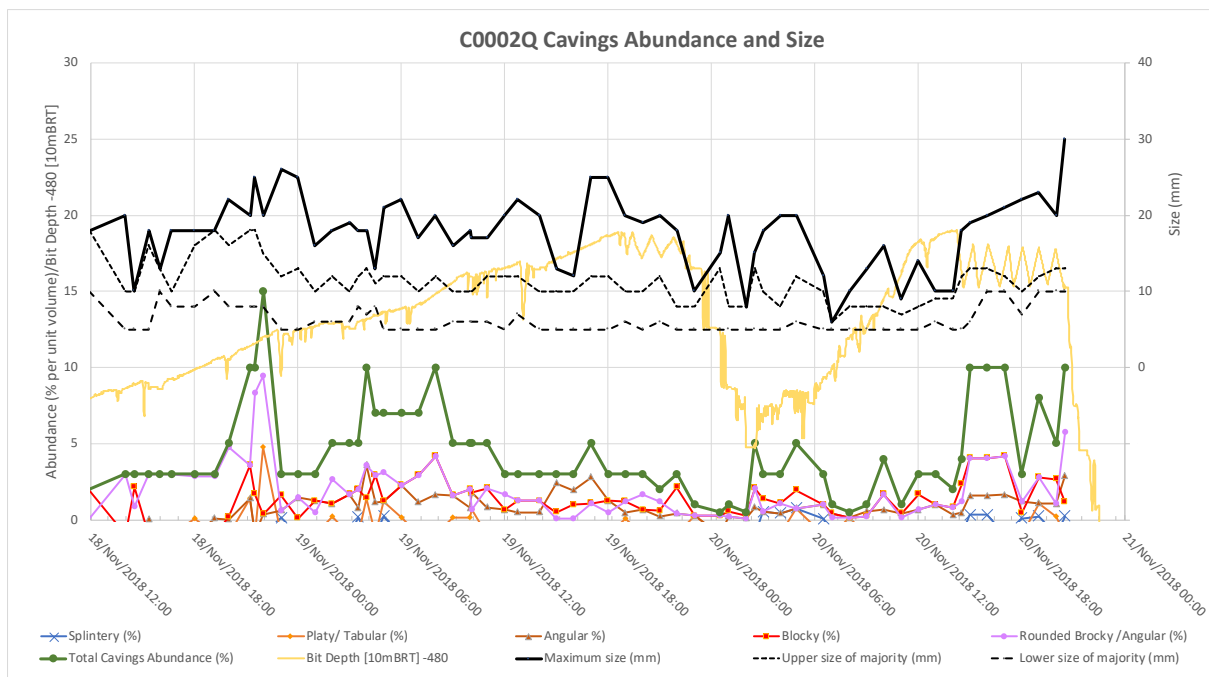
N/A

Cuttings Analysis

N/A

Cavings Analysis

Variations of cavings abundance (per unit volume) and size with time are plotted below. Obvious increment events in cavings abundance are recognized in samples taken at around 1) 20:00-22:00 Nov.18 and 2) 22:00 Nov.18 – 08:00 Nov.19 during drilling down, and from 3) 14:00 Nov.20 during circulation & bottoms-up after reaming down. During those events, major components of the cavings were fresh blocky and reworked (rounded) blocky/angular cavings. In the third events during the circulation & bottoms-up, blocky cement fragments, up to $\varnothing 3$ cm in size, were also recovered with cuttings/cavings. Contrary, cavings amount notably decreased after reaching the former TD (4989 mBRT) and during wiper trip and reaming down, except when the BHA was situated near the window due to work pipe (02:00-07:00 Nov.20). Splintery cavings occur limitedly, but occasionally occurred in samples collected during the circulation & bottoms-up on Nov.20 after reaming down.



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 ^② can be supported by the formation. ^③

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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.

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