IODP EXP 358 Daily Geomechanics Report

Report #013 20181122 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.23 2018)

Site Name:	C0002		**Hole Name:**	Q	
Water Depth:	1,939.0	m	**RT-MSL:**	28.5	m
Current Depth:	4,990.0 (4,988.0)	mBRT mTVD	**Section TD:**	4,990 (4,988.0)	mBRT mTVD
Section #:	1		**CSG Depth / Size:**	(4855.0) 11-3/4	mBRT “
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 HD 675: (UHRI: 2.10 m, Resistivity: 3.02 m, GR: 4.50 m) arcVision 675: (APWD: 7.59 m) TeleScope 675: (IWOB: 12.43 m, MWD Gamma Ray: 15.15 m, D+I: 15.79 m) SonicScope 675: (Sonic: 25.90 m) seismicVISION 675: (Geophone Radial-1: 31.80 m, Geophone Radial-2: 31.84 m, Geophone Axial: 31.94 m, Hydrophone: 32.18 m)				
Current Operations:	RIH 8-1/2” x 12-1/4” LWD BHA from 06:40. Conducted shallow hole tests for LWD at 512 mBRT and 1417 mBRT. Activated seismicVISION at 2022 mBRT and cleaned around BOP. Conducted a shallow hole test at 3800 mBRT. Continued RIH. 4807 mBRT as of 06:00 Nov.23.				

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	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	

Analysis

LWD Log Analysis
N/A

Drilling Experience Analysis
N/A

Cuttings Analysis
N/A

Cavings Analysis
N/A

SFIB Analysis
N/A

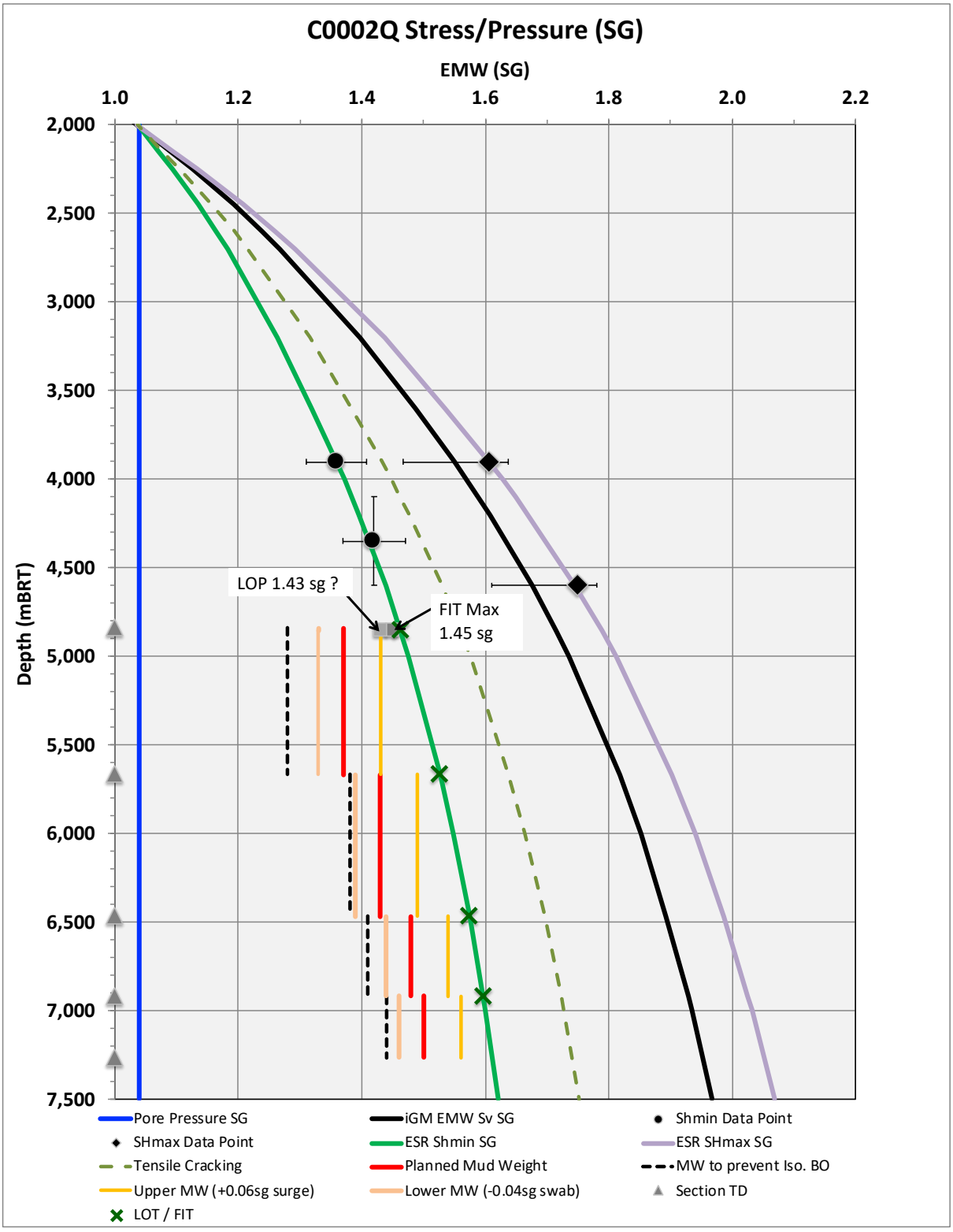
Geomechanical Model Review (a review of the FIT results)

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.


C0002Q Stress/Pressure (SG)
EMW (SG)
1.0
1.2
1.4
1.6
1.8
2.0
2.2
Depth (mBRT)
2,000
2,500
3,000
3,500
4,000
4,500
5,000
5,500
6,000
6,500
7,000
7,500
LOP 1.43 sg ?
FIT Max
1.45 sg
Pore Pressure SG
iGM EMW Sv SG
Shmin Data Point
SHmax Data Point
ESR Shmin SG
ESR SHmax SG
Tensile Cracking
Planned Mud Weight
MW to prevent Iso. BO
Upper MW (+0.06sg surge)
Lower MW (-0.04sg swab)
Section TD
LOT / FIT