

Daily Operational and Science Report
UT-GOM2-2 Coring Expedition
Terrebonne Basin, Gulf of Mexico Outer Continental Slope

1. **DATE:** 19-August-2023, 0000-2400hr

2. **LOCATION:**

2400 hr, 19-August-2023

Hole: *Helix D/V Q4000* was located over Hole UT-GOM2-2-H002

Last Drill/Core depth: 8621 ft MD RKB

RKB to Mud line: 6506 ft on Drill pipe measurements

Water depth: 6454 ft

Per Datum: 52 ft

Lat 26°39'44.2229"N, Long 091°40'33.8972"W NAD27 BLM15 Feet

3. **DESCRIPTION OF OPERATIONS:**

0900-2400 At Hole UT-GOM2-2-H002

General Operations/Maintenance: General rig housekeeping. Offload and backload supply connex from *M/V Harvey Hermes*. Changing out mechanical seal on brine charge pump #1.

0000-0450 Continued to drill ahead while pumping at 330 GPM, w/ 150 psi, 70 RPM, 0-5 k WOB, F/ 7583 to 8100 ft RKB. Pumped 10.5 ppg Hi-Vis sweeps as directed.

0450-0455 Continued to drill ahead while pumping at 300 GPM, w/ 202 psi, 70 RPM, 0-5 k WOB, F/ 8100 ft RKB. **Swapped borehole over to 9.0 ppg water based mud (WBM).**

0455-1200 Continued to drill ahead while pumping 10.3 ppg WBM at 300 GPM, w/ 202 psi, 70 RPM, 0-10 k WOB, F/ 8100 to 8272 ft RKB.

1200-2000 Continued to drill ahead while pumping 10.3 ppg WBM at 300 GPM, w/ 90 psi, 70 RPM, 0-5 k WOB, F/ 8272 to 8621 ft RKB.

2000-2215 R/U and RIH Geotek Center Bit retrieval tool and POOH Center Bit.

2215-2315 Prepare and RIH the PCTB-FB coring tool.

2315-2400 POOH from depth with PCTB setting tool and RIH the PCTB retrieval tool.

4. **OPERATIONAL PLAN (Next 24 Hours):**

Acquire the first core in **Hole UT-GOM2-2-H002** from 8621 to 8631 RKB (2115-2125 fbsf), which will be **Core UT-GOM2-2-H002-01FB**. Next, conduct a wireline directional survey with BHA at 8626 ft RKB (bit 5 ft off bottom). Then advance hole by drilling from 8631 to 8718 ft RKB (2073-2160 fbsf) (87 ft hole advance). Acquire three consecutive PCTB-FB pressure cores in Hole UT-GOM2-2-H002 at a depth from 8718 to 8748 ft RKB:

Core UT-GOM2-2-H003-01FB, 2115.0 to 2125.0 fbsf

Core UT-GOM2-2-H003-02FB, 2212.0 to 2222.0 fbsf

Core UT-GOM2-2-H003-03FB, 2222.0 to 2232.0 fbsf

Core UT-GOM2-2-H003-04FB, 2232.0 to 2242.0 fbsf

Activity	Ft RKB	fbsf
H002-01-Start	8621	2115
H002-01 End	8631	2125
Drill Ahead Start	8631	2125
Drill Ahead End	8718	2212
H002-02 Start	8718	2212
H002-02 End	8728	2222
H002-03 Start	8728	2222
H002-03 End	8738	2232
H002-04 Start	8738	2232
H002-04 End	8748	2242

5. DOWNHOLE LOGGING OPERATIONS:

Hole: NA

Wireline Totals (directional): NA

6. CORE OPERATIONS AND DATA:

Hole: NA

G-APC Coring Totals: NA

G-XCB Coring Totals: NA

PCTB-CS Coring Totals: NA

PCTB-FB Coring Totals: NA

7. DOWNHOLE MEASUREMENTS

Hole: NA

Pressure and Temperature Tool Deployment (T2P): NA

Temperature Tool Deployment (APCT-3): NA

8. SCIENCE ACTIVITIES

Over the last 24 hours, **Hole UT-GOM2-2-H002** was advanced by drilling from a depth of 7583 to 8621 ft RKB (for a total drilled interval of 1038 ft) without any significant problems. Continued to drill ahead to the first PCTB-FB core point at 8621 ft RKB (2115 fbsf) and prepared to acquire **Core UT-GOM2-2-H003-01FB**. The plan forward for coring in **Hole UT-GOM2-2-H002** calls for acquiring six cores associated with the Blue Sand and background mud, nine cores associated with the Orange Sand and its bounding intervals, and two cores selected to staddle the base of the gas hydrate stability zone as inferred by a prominent seismic imaged bottom simulation reflector (BSR) that crosses the path of **Hole UT-GOM2-2-H002**.

At a depth of ~8100 ft RKB (~1594 fbsf) the drilling fluids program in **Hole UT-GOM2-2-H002** was slowly switched over to the continuous use of water-based weighted drilling mud. Mud was mixed on the fly to the active pit and a mud weight of ~10.5 ppg mud, while drilling ahead from ~8100 ft RKB and pumping 10.5 ppg mud at ~300-350 gpm, ~60-70 RPM, ~3-5k WOB, and a maximum ROP of 100 ft/hr. The WR313 H001 well at this location was drilled without incident with 10.5 ppg mud back in 2009 under the Joint Industry Project Leg II. As reviewed above for **Hole WR313 H002**, it will be drilled with 10.5 ppg mud below about ~1600 fbsf to allow for better hole cleaning, increased hole stability, and to counterbalance any overpressure from gas or water that may be present.

The bottom hole assembly (BHA) being used to recover pressure cores in **Hole UT-GOM2-2-H002** is referred to as the face bit BHA. The BHA provides weight and stiffness for drilling as well as a means for landing and latching the coring tools. Various subs for landing and latching the coring tools and attaching the coring bits are also included in the BHA. The cutting shoe and face bit BHAs have flapper valves to prevent back flow into the drill string when a coring tool or center bit is not in place. The Pressure Coring Tool with Ball Valve (PCTB-FB) in the face bit configuration is used to recover pressurized core samples. Once landed and latched in the BHA the borehole can be advanced up to 10 feet (3 m) while capturing the core. Upon recovery of the PCTB-FB, the ball valve is closed and the pressure chamber is sealed. The PCTB-FB is then recovered with the core maintained at near in situ pressure.

There have been no new COVID cases on the *Q4000* in the last seven days.

The Scientific Party is working on finalizing the “Methods” section and working on the “Results” sections of the Expedition Report and processing samples and data that has been collected during the expedition.

9. ACRONYMS

bpm	Barrels per minute
Fish	The object to be recovered from the borehole/BHA
M/U	Make up
PCATS	Pressure Core Analysis and Transfer System
PCTB-CS	Pressure coring tool with ball-cutting shoe version.
POOH	Pull out of hole
psi	Pounds per square inch
RIH	Run in hole
RKB	Depth measured from the rig floor
SLB	Schlumberger
Slickline	Wireline used to deploy and recover core, etc.
TD	Total depth
TDS	Top drive system

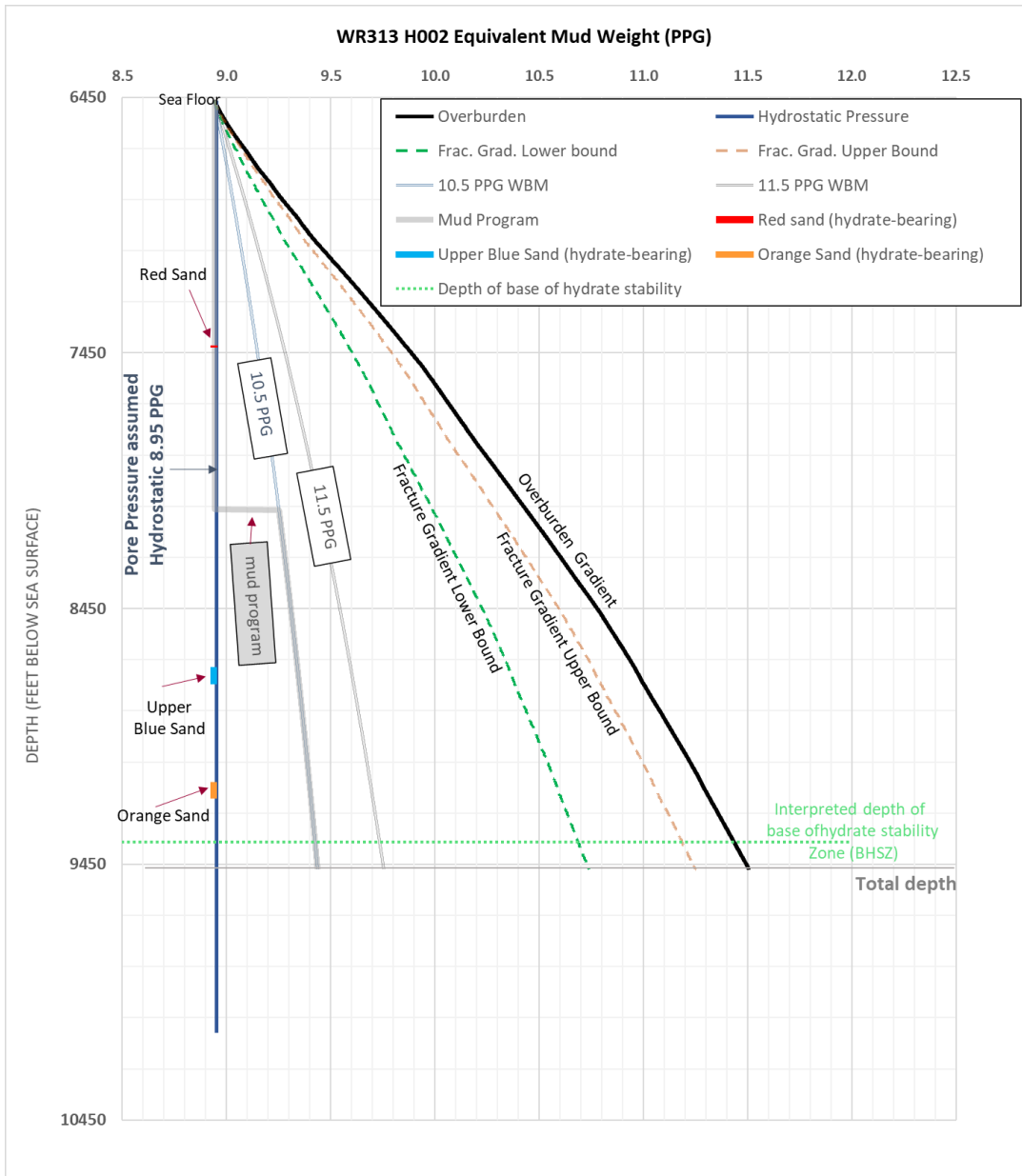


Figure 1. Equivalent mud weight plot for **Hole UT-GOM2-2-H002**.