

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

**1. DATE:** 17-August-2023, 0000-2400hr

**2. LOCATION:**

2400 hr, 17-August-2023

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

**Last Drill/Core depth: 6924 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: Held pit drill with drill crew. General rig housekeeping. Fluid management during pumping operations.

0000-0500 Continued pressure testing of the drilling system internal lower blowout preventers (IBOPs) on the TDS. Test Night Cap and Kelly Hose assemblies. Test cement assembly offline.

0500-0600 Move drilling vessel 35 m at an azimuth of 191° to the selected spud position.

0600-0800 Spud **Hole UT-GOM2-2-H002**, verified mudline (seafloor) depth by ROV observation of drill bit tag at 6506 ft RKB. Drilled ahead at 150 GPM, 18 RPM, w/ 90 psi, and 0 k WOB, F/ 6506 to 6570 ft RKB. Pumped 15 bbls of 10.5 ppg Hi-Vis sweeps as directed.

0800-1000 Prepare for initial directional survey in **Hole UT-GOM2-2-H002**, RIH Gyro-Data Omega – 1.875 inch Battery Slickline Gyro and performed a gyro survey at 6506 ft RKB (0 fbsf). POOH the gyro survey tool.

1000-1100 Circulated and condition hole while downhole gyro log data was acquired. Gyro inclination survey reading of 0.24°.

1100-1600 Drilled ahead at 200 GPM, 25 RPM, w/ 90 psi, 0 k WOB, F/ 6570 to 6720 ft RKB. Pumped 15 bbls of 10.5 ppg Hi-Vis sweeps as directed.

1600-1730 Prepare for second directional survey in **Hole UT-GOM2-2-H002**, RIH Gyro-Data Omega – 1.875 inch Battery Slickline Gyro and performed a gyro survey at 6667 ft RKB (161 fbsf). POOH the gyro survey tool.

1730-1830 Circulated and conditioned hole while downhole gyro log data was acquired. Gyro inclination survey reading of 0.82° at 110° azimuth. Vessel was moved 14 m at 110° to correct for the measured deviation.

1830-2400 Drilled ahead at 275 GPM, 35 RPM, w/ 92 psi, 0-2 k WOB, F/ 6720 to 6924 ft RKB. Pumped 15 bbls of 10.5 ppg Hi-Vis sweeps as directed.

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

Continue to drill ahead to the first PCTB-FB core point at 8606 ft RKB (2100 fbsf). Conduct planned gyro survey at 7715 ft RKB (1209 fbsf). Switch over to the continuous use of drilling mud (10.5 ppg mud) at 8100 ft RKB (1594 fbsf).

#### 5. DOWNHOLE LOGGING OPERATIONS:

**Hole:** Hole UT-GOM2-2-H002

**Wireline Totals (directional):** Because of the well deviation problem experienced in **Hole UT-GOM2-2-H003**, the drilling of the “top hole” section in the **Hole UT-GOM2-2-H002** included two relatively shallow borehole deviation surveys (inside of drill pipe), one at 6506 ft RKB (0 fbsf) and the second at 6715 ft RKB (209 fbsf); and an additional deviation survey yet to be conducted in the same hole at 7715 ft RKB (1209 fbsf). The wireline deployed (memory sonde) gyroscopic logging services on the Q4000 are being provided by Gyro-Data, who used an Omega – 1.875 inch Battery Slickline Gyro and performed the directional surveys in both **Holes UT-GOM2-2-H002 and -H003**. After completing each of the surveys in **Hole UT-GOM2-2-H002** and accessing the tool memory, it was determined that for the recorded survey at a depth of 6506 ft RKB (0 fbsf) the borehole was inclined at 0.24° and for the survey at 6715 ft RKB (209 fbsf) the borehole was inclined at 0.82° at an azimuth of 110°. Both of these initial surveys show that **Hole UT-GOM2-2-H002** is well within the BSEE inclination limit of 3.0° for a deviated well classification.

#### 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

**Hole UT-GOM2-2-H002** was spudded at 0600 hr on 17-AUG-23 at a ROV observed “bit-tag” mudline (seafloor) depth of 6506 ft RKB. **Hole UT-GOM2-2-H002** was then advanced throughout the remainder of the day to a depth of 6924 ft RKB (418 fbsf). Before the spudding of **Hole UT-GOM2-2-H002** the Q4000 rig crew had to complete an extensive set of permit required testing of the drilling system internal lower blowout preventers (IBOPs) on the TDS, the rig Night Cap, and the Kelly Hose assemblies.

Because of the well deviation concerns associated with the previously drilled/cored **Hole UT-GOM2-2-H003**, the spud in program and initial “top-hole” drilling phase of **Hole UT-GOM2-2-H002** featured the use of controlled drilling parameters designed to reduce borehole deviations, such as limiting weight on bit and the use of higher mud pump rates that allows the borehole to “drop more straight” with depth (Figure 1). Also as reviewed above in the “Downhole Logging Operations” section of this report, two shallow directional surveys were conducted in **Hole UT-GOM2-2-H002** at a depth of 6506 ft RKB (0 fbsf) and the second at 6715 ft RKB (209 fbsf), which yielded measured borehole inclinations of 0.24° and 0.82° @ 110° azimuth, respectively.

The Science Party quantitatively degassed two core sections from Core H003-27CS that was previously acquired in **Hole UT-GOM2-2-H003**, which were then processed as conventionalized core. Two sections

from H003-29CS (also acquired in **Hole UT-GOM2-2-H003**) were quantitatively degassed. Gas samples were collected from each of the degassed sections. The degassing results indicate the presence of low-saturation methane hydrate in each of these sections. Liquid-nitrogen frozen microbiology samples (i.e., cryo cores) were collected from Cores H003-27CS and H003-29CS.

There have been no new COVID cases on the *Q4000* in the last five days and the last UT crew member was released from quarantine.

The Scientific Party is working on finalizing the “Methods” and “Results” section 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

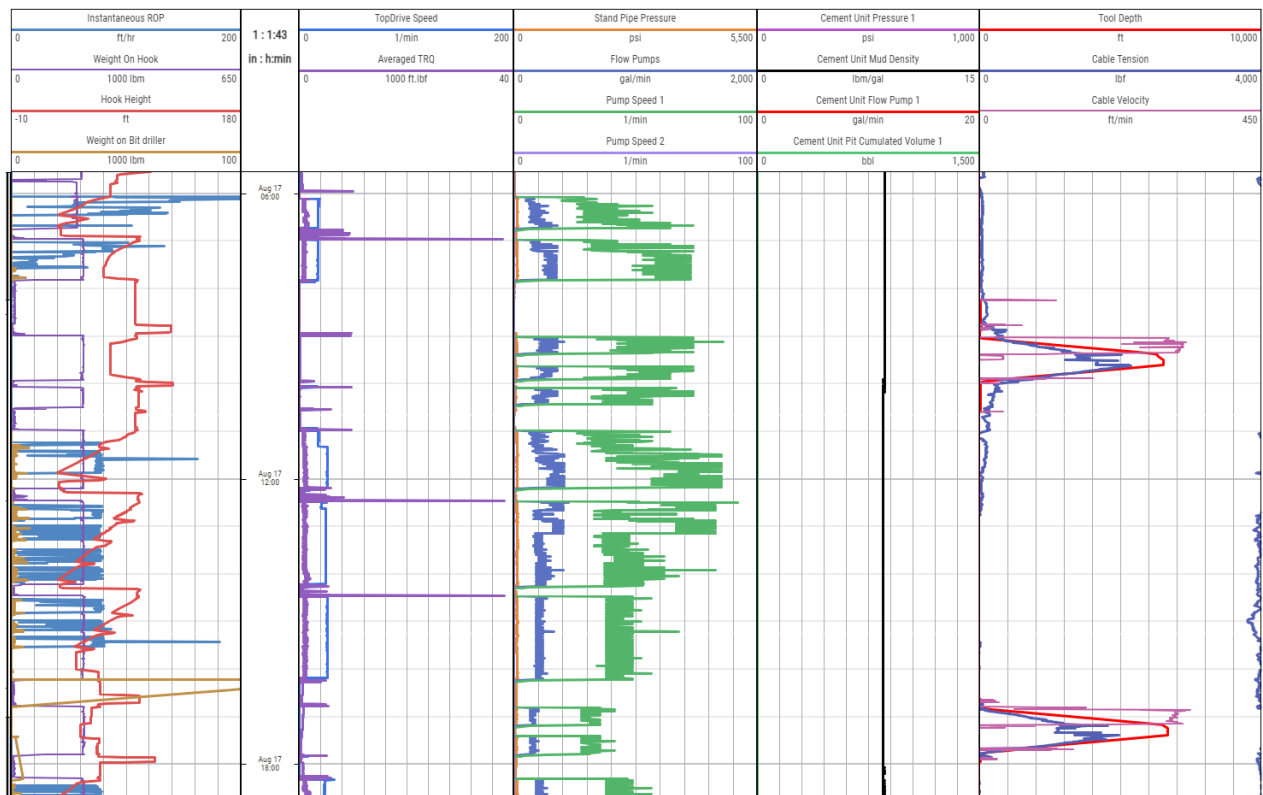


Figure 1. Display of the drilling parameters used to advance the top-hole section of **Hole UT-GOM2-2-H002**. The most important drilling log data depicted in this image includes the Instantaneous Rate of Penetration (ROP), Weight on Bit (WOB), Top Drive Speed (RPM), Average Torque (TRQ), Stand Pipe Pressure (SPP), Rig Pump Volumes (RPV), Cement Pump Volumes (CPV), and Hook Height (HH). The spudding of the well at 0600 hr on 17-Aug-2023 can be seen on the ROP, TRQ, and RPM drilling logs (top of display). Each 60 ft drill pipe (each drill pipe stand of 60 ft) advance can also be seen with decreasing Hook Height (HH – red log) and on the ROP, TRQ, and rig/cement pump volume logs. Of particular interest are the logs of the two wireline surveys (Cable Tool Depth, Cable Tension, and Cable Velocity logs) that collected the borehole deviation surveys at 6506 ft RKB (0800 hr) and the second at 6715 ft RKB (1700 hr).