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

1. DATE: 15-August-2023, 0000-2400hr

2. LOCATION:

2400 hr, 15-August-2023
Hole: *Helix D/V Q4000* was located over Hole UT-GOM2-2-H003

Last Drill/Core depth: 7505 ft RKB

RKB to Mud line: 6506 ft on Drill pipe measurements
Water depth: 6454 ft (updated 05-AUG-2023)
Per Datum: 52 ft
Lat 26°39'46.50488"N, Long 091°40'33.82464"W

3. DESCRIPTION OF OPERATIONS:

0000-2400 At Hole UT-GOM2-2-H003

General Maintenance: General rig housekeeping. Fluid management during pumping operations.

0000-0100 Continue to POOH the PCTB, observed damage to the SLB slick line (S/L) wire.
0100-0330 Remove damaged wire from S/L, slip and cut 200 ft of S/L wire, rebuilt pack off.
0330-0430 Deploy PCTB retrieval tool and RIH, latch tool into BHA.
0430-0500 Acquire PCTB-CS rotary **Core UT-GOM2-2-H003-28CS** from F 7460 - T/ 7470 ft (RKB) at 60 rpm, maintaining 8-10k on bit, CMT pumping 8.6 ppg seawater at 3.5 bpm and 330 psi.
0500-0620 RIH the Geotek CBRT to recover the PCTB-CS tool, POOH **Core UT-GOM2-2-H003-28CS.**
0620-0900 Prepare to run **Core UT-GOM2-2-H003-29CS**, RIH the PCTB, and recover wireline running tool.
0900-0930 Acquire PCTB-CS rotary **Core UT-GOM2-2-H003-29CS** from F 7470 - T/ 7480 ft (RKB) at 80 rpm, maintaining 8-10k on bit, CMT pumping 8.6 ppg seawater at 4.0 bpm and 400 psi.
0930-1025 RIH the Geotek CBRT to recover the PCTB-CS tool, POOH **Core UT-GOM2-2-H003-29CS.**
1025-1130 RIH Geotek Center Bit while pumping 4 bpm at 305 psi, latch into BHA.
1130-1200 Drill ahead from 7480 to 7485 ft RKB at 70 RPM, w/ 3-4k torque, pumping at 8 bpm, and a pressure of 1000 psi while maintaining 2-5k on bit and a ROP of 100 per minute.
1200-1300 Drill ahead from 7485 to 7505 ft RKB at 70 RPM, w/ 3-4k torque, pumping at 7 bpm, and a pressure of 803 psi while maintaining 2-5k on bit and a ROP of 100 per minute.
1300-1330 Pumped 40 bbls of 10.5 ppg Hi-Vis sweep to prepare hole for logging operations.
1330-1630 RIH Gyro-Data Omega – 1.875 inch Battery Slickline Gyro and performed a gyro survey at 6600 and 7500 ft RKB.
1630-2000 Pumped 8.6 ppg seawater at 7 bpm with 818 psi while rotating and reciprocating the drill pipe from 7450 to 7505 ft RKB.

1947	Received verbal approval on 15-Aug-23 at 1947 hours to proceed with proposed abandonment of **Hole UT-GOM2-2-H003** from Mr. Bill Sanders BSEE Houma District.
2000	Decision to terminate operations in **Hole UT-GOM2-2-H003.**
2000-2130	Displaced hole by pumping 115 bbls of 11.0 ppg WBM (P&A MUD) with Hex pump #1 at 7 bpm with 464 psi followed by 110 bbls of 8.6 ppg seawater.
2130-2400	POOH Geotek PTCB cutting shoe BHA from 7505 to 6491 ft RKB.

4. OPERATIONAL PLAN (Next 24 Hours):

Continue to pull out of Hole UT-GOM2-2-H003, laydown drill pipe in doubles and bottom hole coring assembly. Prepare to move to the location of the permitted **Hole UT-GOM2-2-H002** and prepare the PCTB-FB coring tool for deployment.

5. DOWNHOLE LOGGING OPERATIONS:

Hole: UT-GOM2-2-H003

Wireline Totals (directional): After advancing the hole to a depth of 7505 ft RKB (999 fbsf), conducted wireline deployed (memory sonde) gyroscopic surveys at two depths with a Gyro-Data Omega – 1.875 inch Battery Slickline Gyro and performed a gyro survey at 6600 and 7500 ft RKB. After completing the surveys, POOH and laid out gyroscopic tool and accessed the tool memory, the recorded survey data at a depth of 7505 ft RKB (999 fbsf) indicated a borehole inclination of 7.765º degrees at a azimuth of 124.38º. The same survey at the mud line (seafloor) indicated an inclination of 6.06º degrees at a azimuth of 123.32º. Note that BSEE considers any borehole with an inclination of the more the 3º to be a deviated well, which requires additional approvals and the acquisition of more regular directional surveys with depth (every 500 ft).

6. CORE OPERATIONS AND DATA:

Hole: UT-GOM2-2-H003

G-APC Coring Totals: NA

G-XCB Coring Totals: NA

PCTB-CS Coring Totals:

Core UT-GOM2-2-H003-27CS: *11.05* ft (*92* % recovery), 3531 psi; As deployed on 14-Aug-23 (updated information).

Coring F/ 7448 - T/ 7458 ft (RKB) at 80 rpm, maintaining 8-10k on bit, CMT pumping 8.6 ppg seawater at 3.5 bpm and 330 psi.

Core UT-GOM2-2-H003-28CS: *NA* ft (*NA* % recovery), 3550 psi (waiting to be processed in PCATS).

Coring F/ 7460 - T/ 7470 ft (RKB) at 60 rpm, maintaining 8-10k on bit, CMT pumping 8.6 ppg seawater at 3.5 bpm and 330 psi.

Core UT-GOM2-2-H003-29CS: *NA* ft (*NA* % recovery), 3550 psi (waiting to be processed in PCATS).

Coring F/ 7470 - T/ 7480 ft (RKB) at 80 rpm, maintaining 8-10k on bit, CMT pumping 8.6 ppg seawater at 4.0 bpm and 400 psi.

PCTB-FB Coring Totals: NA

7. DOWNHOLE MEASUREMENTS

Hole: UT-GOM2-2-H003

Pressure and Temperature Tool Deployment (T2P): NA

Temperature Tool Deployment (APCT-3): NA

8. SCIENCE ACTIVITES

Today's coring operations in **Hole UT-GOM2-2-H003** featured the acquisition of two additional pressure cores that targeted the "Red Sand", with the first of the three PCTB-CS cores **(Core UT-GOM2-2-H003-27CS)** being collected the day before on 14-AUG-23. **Core UT-GOM2-2-H003-28CS** was acquired from a depth of F/ 7460 - T/ 7470 ft (RKB) (954-964 fbsf). The third core in this set of three PCTB-CS deployments that targeted the "Red Sand" was the **Core UT-GOM2-2-H003-29CS.** Again, this set of three PCTB-CS and the overlying **Core UT-GOM2-2-H003-26X** conventional G-XCB core were deployed to obtain additional information on the solubility of methane within the pore fluids associated with the occurrence of gas hydrate in the cored stratigraphic section and examine the formation of gas hydrate within mud-rich stratigraphic sections that also contain coarse sand layers with high gas hydrate saturations.

The significant deviation from vertical of the **UT-GOM2-2-H003** borehole (borehole inclination of 7.765º at 7505 ft RKB), as reviewed in the "Downhole Logging Operations" section of this report, places our ability to target the deeper coring targets at significant risk. The cause of the measured hole deviation is unknown; however, it is possible that the strong currents that were present when the hole was originally spudded resulted in an offset of the drilling vessel position relative to the spudded position of the borehole at the seafloor. The offset could have led to the establishment of an inclined borehole at spud and the observed deviated well at depth. It is important to highlight that coring the gas hydrate-bearing sands associated with the deeper Orange Interval is the most important science goal of the expedition, and it is highly doubtful that that we would have successfully cored these critical targets from the current position of the **UT-GOM2-2-H003** borehole.

There have been no new COVID cases on the *Q4000* in the last 72 hours; we are again happy to report that the 3rd member of the UT science party has been released from isolation on the afternoon of 14-AUG-23. There are 3 members of the ship crew and 1 person from the UT crew that are still in quarantine; all are being closely monitored and are recuperating.

The Scientific Party is working on finalizing the "Methods" section of the Expedition Report and processing samples and data that has been collected during the expedition. The UT Science Party also convened a project review science meeting at midnight on 15-AUG-23.

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

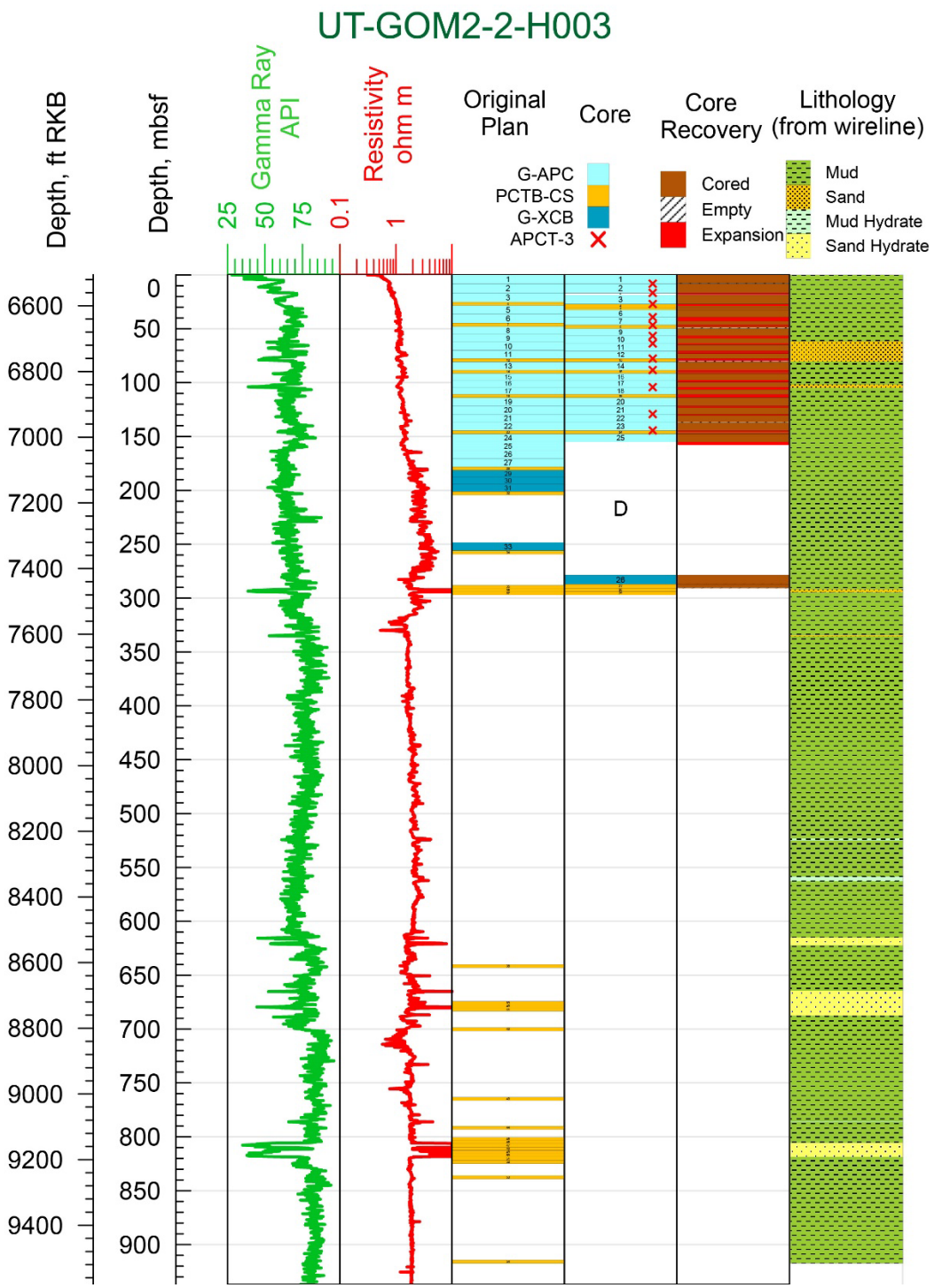

Figure 1: Core recovery plot for the UT-GOM2-2-H003 well as of 24:00 hr 15-AUG-2023. 'G-APC' records core recovered by the Geotek Advanced Piston Corer. 'G-XCB' records core recovered by the Geotech cutting shoe coring cool. 'PCTB-CS' records core recovered by the cutting shoe version of the Pressure Coring Tool with Ball (PCTB). 'APCT-3' records the location where temperatures were measured with a specially instrumented coring shoe.

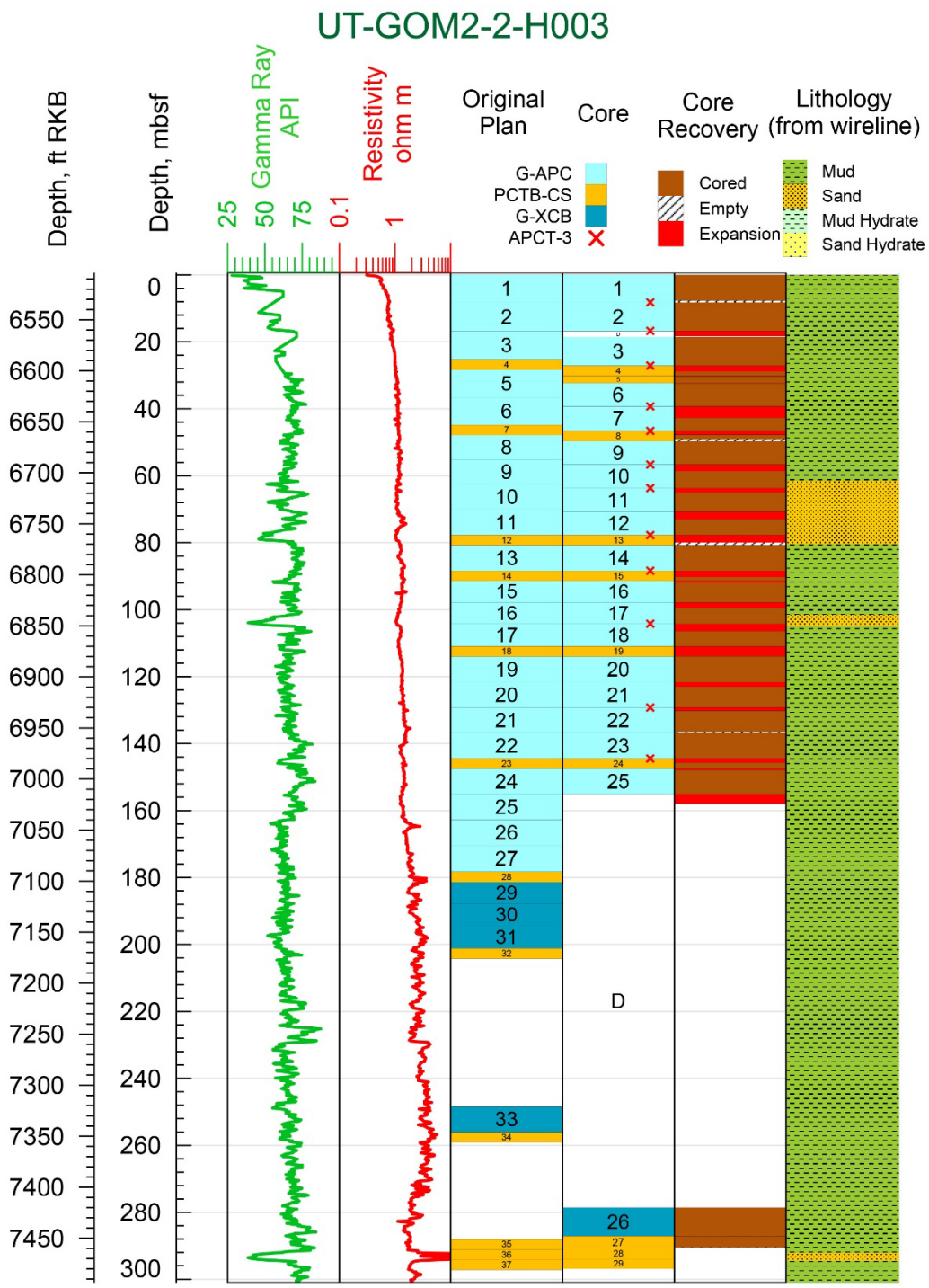

Figure 2: Planned and actual core recovery for the entire UT-GOM2-2-H003 well. 'G-APC', 'PCTB-CS', G-XCB, and 'APCT-3' are defined in the caption to Figure 1. Dashed box defines the interval cored through 24:00 hr 15-AUG-2023.

Figure 3: Science meeting.

Figure 4: Science meeting.