

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

1. **DATE:** 26-August-2023, 0000-2400hr

2. **LOCATION:**

2400 hr, 26-August-2023

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

Last Drill/Core depth: 9332 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:**

0000-2400 At Hole UT-GOM2-2-H002

General Operations/Maintenance: General housekeeping on weather deck. Mud transfer from the *M/V Harvey Spirit*.

0000-0052 Continue to acquire **Core UT-GOM2-2-H002-13CS**, F/9212 - T/9222 ft RKB (2706.0-2716.0 fbsf), which was the ninth and final core within the **Hole UT-GOM2-2-H002** PCTB-CS Orange Sand Pressure Coring Campaign.

0052-0330 M/U and RIH Geotek Center Bit to a depth of 9222 ft RKB and latch Center Bit into the BHA and continue to RIH.

0330-0600 Advance the hole by drilling F/9222 to T/9277 ft RKB by, while pumping 10.5 ppg WBM at 7 bpm with 100 psi, 70 RPM, maintain 0-10 k WOB.

0600-0810 Pick up (P/U) and RIH Geotek Center Bit Retrieval Tool, latch into Center Bit, and POOH.

0810-1030 Prepare and RIH the PCTB-FB coring tool.

1030-1215 SLB slickline RIH a PCTB-CS to 9272 ft RKB inadvertently actuated. SLB slickline POOH to surface to replace PCTB-CS.

1215-1300 Prepare and RIH the PCTB-FB coring tool.

1300-1430 POOH from depth with PCTB setting tool and RIH the PCTB retrieval tool.

1430-1500 Acquire **Core UT-GOM2-2-H002-14CS**, F/9277 - T/9287 ft RKB (2771.0-2781.0 fbsf).

1500-1600 POOH PCTB-CS coring tool and transfer to the Geotek Pressure Core Processing Van.

1600-1810 Pickup (P/U) and RIH Geotek Center Bit, latch into BHA.

1810-1915 Advance the hole by drilling F/9287 to T/9322 ft RKB, while pumping 10.5 ppg WBM at 7 bpm with 100 psi, 70 RPM, maintain 0-10 k WOB.

1915-2100 Prepare run directional survey in **Hole UT-GOM2-2-H002**, RIH Gyro-Data Omega – 1.875 inch Battery Slickline Gyro and performed a gyro survey at a measured depth of 9268 ft RKB. POOH the gyro survey tool.

2100-2200 Pick up (P/U) and RIH Geotek Center Bit Retrieval Tool, latch into Center Bit, and POOH.

2200-2320 Prepare and RIH the PCTB-FB coring tool (for **Core UT-GOM2-2-H002-15CS**).
2320-2400 POOH from depth with PCTB setting tool and RIH the PCTB retrieval tool.

4. OPERATIONAL PLAN (Next 24 Hours):

Finish acquiring **Core UT-GOM2-2-H003-15CS**, which is now the last core in the operational plan for **Hole UT-GOM2-2-H002**. The operational plan next calls for pulling the bit back to above the Orange Sand and setting a ~300 ft long cement plug.

5. DOWNHOLE LOGGING OPERATIONS:

Hole: Hole UT-GOM2-2-H002

Wireline Totals (directional): 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 to perform the directional surveys in **Hole UT-GOM2-2-H002** at a depth of 9268 ft RKB (2762 fbsf), which recorded a borehole inclination at 0.47° at an azimuth of 78.33°. This survey is again within the BSEE inclination limit of 3.0° for a deviated well classification.

6. CORE OPERATIONS AND DATA:

Hole: Hole UT-GOM2-2-H002

G-APC Coring Totals: NA

G-XCB Coring Totals: NA

PCTB-CS Coring Totals:

Core UT-GOM2-2-H002-13CS: 11.29 ft (113% recovery), 0 psi. (in core receiving)
Coring F/ 9212 - T/ 9222 ft RKB at 80 rpm, maintaining 10-12k on bit, CMT pumping 10.5 ppg WBM at 2.0 bpm and 58 psi.

Core UT-GOM2-2-H002-14CS: 11.29 ft (113% recovery), 0 psi. (in core receiving)
Coring F/ 9277 - T/ 9287 ft RKB at 80 rpm, maintaining 15-22k on bit, CMT pumping 10.5 ppg WBM at 3.0 bpm and 100 psi.

Core UT-GOM2-2-H002-15CS: 4.10 ft (41% recovery), 0 psi. (in core receiving)
Coring F/ 9322 - T/ 9332 ft RKB at 80 (?) rpm, maintaining 15-22k (?) on bit, CMT pumping 10.5 ppg WBM at 2.0 bpm (?) and 58 psi (?).

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

The last 24 hours of operations on the *Helix D/V Q4000* has dealt with advancing **Hole UT-GOM2-2-H002** from a depth of 2706 fbsf (9212 ft RKB) to a total depth of 2826 fbsf (9332 ft RKB) by the deployment of three PCTB-CS pressure cores, marking the end of coring operations in **Hole UT-GOM2-2-H002** (Figure 1; Table 1).

The three PCTB-CS cores recovered today (**Core UT-GOM2-2-H002-13CS, -14CS, and 015CS**) were recovered without pressure. However, **Core UT-GOM2-2-H002-13CS and -14CS** each yielded over 11 ft of sediment core, which because of expansion due to gas voids in the cores, the recovered cores were actually longer than the “throw” for each of these cores. **Core UT-GOM2-2-H002-13CS** also recovered about 4.1 ft of sediment. Each of the cores acquired today targeted the well log inferred mud-rich sections below the base of the Orange Sand and just above the projected depth of the base of the gas hydrate stability field at this site. These cores are expected to provide information about the rate and direction of solute diffusion in the sedimentary section below the hydrate-bearing sand section at this site, which in

turn will provide insights on fluid flow within the sand. Modeling studies of free gas and water flow in the sand sections at this site from below the base of the gas hydrate stability zone are expected to result in elevated dissolved methane and a diffusional gradient both below and through the hydrate-bearing sand which we will be able to test with the cores from this site.

As discussed in yesterday's *Daily Operational and Science Report* (from 25-AUG-23), the reason for the lack of sealing in several of the PCTB-CS core tool deployments from yesterday remains uncertain. As suggested in yesterday's report, we were concerned about the possible impact of the small differences between the core tool set boost pressures and the downhole measured/calculated static pressure conditions. In response, **Cores UT-GOM2-2-H002-14CS and -15CS** were ran with their operational boost pressures increased to 5200 and 5500 psi, respectively. However, at this time it does not appear that the changes in the PCTB-CS set pressures had any significant impact on the operation of the pressure coring tools (Table 1).

The Scientific Party is working on finalizing the writing assignments in support of the hole section descriptions in the Expedition Report and processing samples and data that have been collected during the expedition.

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

9. ACRONYMS

bpm	Barrels per minute
Fish	The object to be recovered from the borehole/BHA
gpm	Gallons per minute
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
P/U	Pick up
RIH	Run in hole
RKB	Depth measured from the rig floor
rpm	Revolutions per minute
R/U	Rig up
SLB	Schlumberger
Slickline	Wireline used to deploy and recover core, etc.
TD	Total depth
TDS	Top drive system
WOB	Weight on bit

UT-GOM2-2-H002

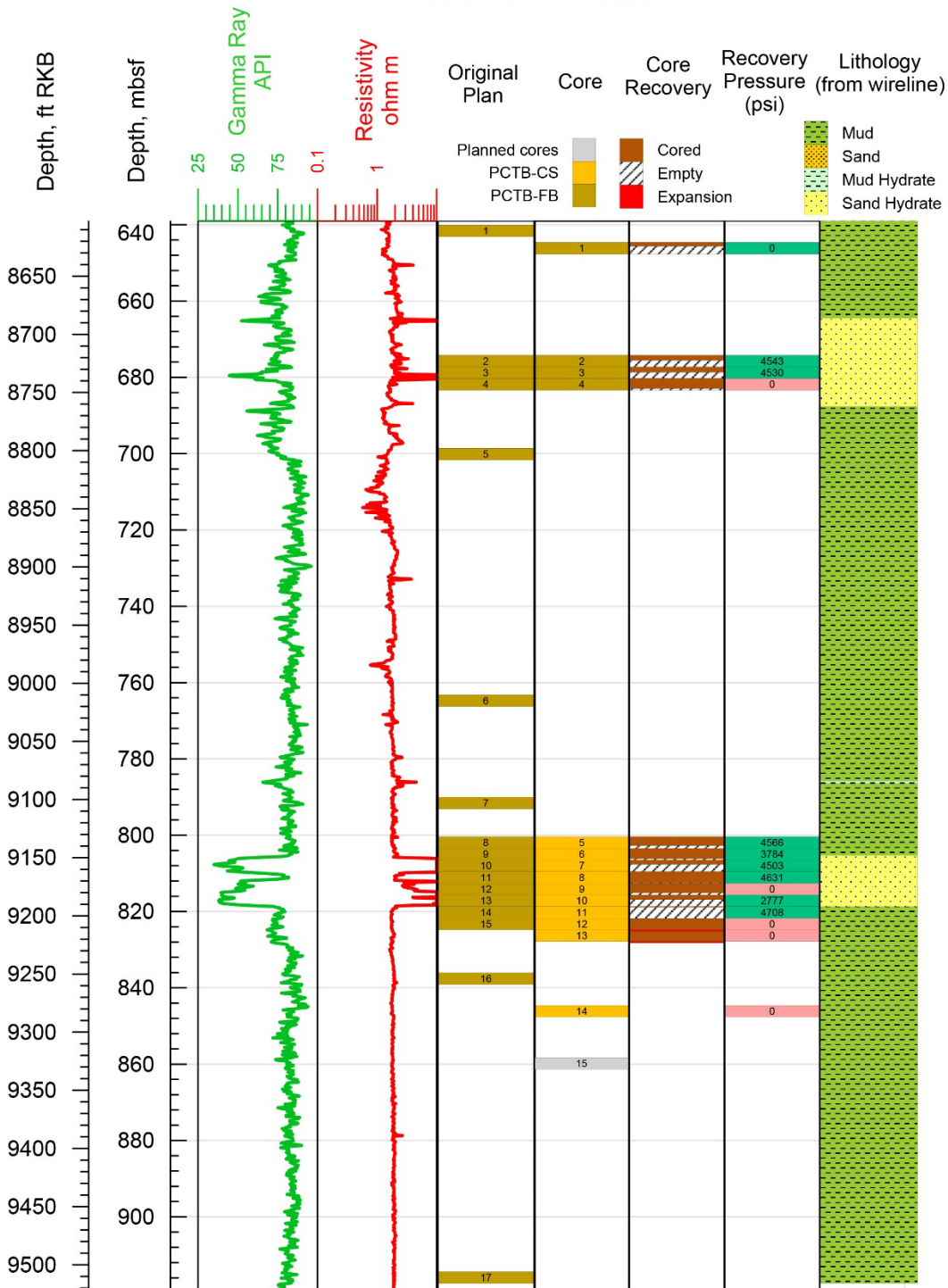


Figure 1: Core recovery plot for the UT-GOM2-2-H002 well as of 24:00 hr 26-AUG-2023. 'PCTB-FB' and 'PCTB-CS' records core recovered by the face bit and cutting shoe versions of the Pressure Coring Tool with Ball (PCTB). Under 'Recovery Pressure', areas colored pink indicate a ball valve that did not seal. At the time of this report, we did not have confirmed information on the status of Cores UT-GOM2-2-H002-14CS and -15CS as reflected in this posting.

*Table 1: PCTB-FB and PCTB-CS pressure core results in Hole
UT-GOM2-2-H002 through 26-AUG-2023 (End of Hole).*

CORE System	Core Number	Core top (RKB ft)	CORE Top (fbsf)	CORE Bottom (fbsf)	CORE Advance (ft)	Curated length (ft)	Recovery (%)	In situ Pressure (psi)	Tool Boost Set Pressure (psi)	Recovery Pressure (psi)
PCTB-FB	1	8621	2115	2125	10	3.31	33%	3820	4500	0
PCTB-FB	2	8718	2212	2222	10	4.30	43%	3863	4500	4543
PCTB-FB	3	8728	2222	2232	10	4.66	47%	3867	4500	4530
PCTB-FB	4	8738	2232	2242	10	8.63	86%	3872	4500	0
PCTB-CS	5	9132	2626	2636	10	7.61	76%	4047	4500	4566
PCTB-CS	6	9142	2636	2646	10	8.89	89%	4051	4500	3784
PCTB-CS	7	9152	2646	2656	10	3.80	38%	4056	4500	4503
PCTB-CS	8	9162	2656	2666	10	9.81	98%	4060	4500	4631
PCTB-CS	9	9172	2666	2676	10	8.20	82%	4065	4500	0
PCTB-CS	10	9182	2676	2686	10	4.07	41%	4069	4500	2777
PCTB-CS	11	9192	2686	2696	10	0.59	6%	4073	4500	4708
PCTB-CS	12	9202	2696	2706	10	11.38	114%	4078	4500	0
PCTB-CS	13	9212	2706	2716	10	11.29	113%	4082	4500	0
PCTB-CS	14	9277	2771	2781	10	11.29	113%	4111	5200	0
PCTB-CS	15	9322	2816	2826	10	4.10	41%	4131	5500	0