

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

1. **DATE:** 29-August-2023, 0000-2400hr

2. **LOCATION:**

2400 hr, 29-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. Transferred 16.0 ppg WBM from *M/V Harvey Spirit* to surface pits and brine tanks.

0000-0640 Continuing running into **Hole UT-GOM2-2-H002** with doubles of 5-7/8" drill pipe F/6917 to T/9332 ft RKB.

0640-0730 Spotted 105 bbls of 11.5 ppg pad mud from F/9332 to T/8548 ft RKB followed by 209 bbls of 10.5 ppg WBM.

0730-0900 POOH from F/9332 to T/8548 L/O singles of 5-7/8" drill pipe.

0900-1230 Prepare for borehole cementing operations. M/U cement stand to the drill string. MU cementer and pump 5 bbl WBM spacer of 10.5 ppg and a second 36.3 bbl WBM spacer of 10.5 ppg. Cementer shut down pumps and cleaned unit.

1230-1315 Mix and pump 71 bbls (369 sks) 16.4 ppg Class H Cement w/ 0.05 gps D047 Antifoam, 0.30 gps D500 Gas Agent, 0.05 gps D230 Dispersant, 0.25 gps D186 Accelerator, Yld 1:08, FT# 398.6ft<sup>3</sup>.

1315-1400 Pump 8.7 bbls of tail spacer followed by 5 bbls of seawater. Align Hex Pump and place 6 bpm seawater total pumped 193 bbls. **Cement in place at 14:00 hr. Wait on cement for 24 hrs.**

1400-2400 Laid down Cement Head on deck. POOH F/8548 to T/8048 ft RKB in doubles. Install 2 nerf balls into drill string to clean drill pipe, pump 11 ppg WBM.

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

Continue waiting on cement until about 1400 hr on 30-AUG-23. POOH to seafloor while filling the hole with heavy mud.

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

With the completion of the onboard acquisition and initial processing of both the conventional cores and pressure cores we would like to take this opportunity review the “as drilled and cored” status of **Hole UT-GOM2-2-H002** (Figure 1, Tables 1 and 2) and **Hole UT-GOM2-2-H003** (Figure 2, Tables 1 and 2). We also summarize in this report, the results of both the conventional and pressure coring operations as conducted under the **UT-GOM2-2 Expedition**. Next, we review the inventory and planned distribution of the pressure cores and associated samples that have been acquired during the **UT-GOM2-2 Expedition**. We end the report with a brief look forward to the shore based core processing efforts that will be conducted at the Geotek Facilities in Salt Lake City.

As established in the Prospectus for the **UT-GOM2-2 Expedition**, the goal of this endeavor is to conduct scientific drilling and coring operations in the Terrebonne Basin of outer continental shelf of the Gulf of Mexico. Through the combination of pressure coring and conventional coring, the expedition has provided critical new data and geologic samples to further our understanding the physical, chemical, and biological properties of the hydrate-bearing sediments and to better understand their role as an integral part of numerous natural system processes.

The first of two holes established during the **UT-GOM2-2 Expedition** was Hole UT-GOM2-2-H003. Operations at the location of **Hole UT-GOM2-2-H003** began at 1223 hr on 04-AUG-23 with the acquisition of the **Core UT-GOM2-2-H003-01H**. The first three piston cores acquired in this hole were intensively sampled in order to further characterize the geochemical and biological processes dominating the near-surface marine system. Ultimately, **Hole UT-GOM2-2-H003** was drilled and cored to a total depth of 7480 ft RKB with the acquisition of 19 conventional and 10 pressure cores (Table 1). Operations at the location of the second hole to be established during this expedition started on the 17-AUG-23 with the spudding of **Hole UT-GOM2-2-H002** at a water depth 6506 ft RKB and the drilling onto the first PCTB-FB core point at 8606 ft RKB and the acquisition of **Core UT-GOM2-2-H003-01FB**. **Hole UT-GOM2-2-H002** was drilled and cored to a total depth of 9332 ft RKB with the acquisition of 15 pressure cores (Table 1).

Table 1: PCTB-CS/PCTB-FB pressure core and G-APC/G-XCB conventional core system performance in Holes UT-GOM2-2-H002 and -H003.

Type of Core	Number of Deployments	Total Penetration (m)	Core Totals (m)	Percent Recovery (%)
<b>H002 Total Core</b>	<b>15</b>	<b>46.0</b>	<b>32.0</b>	<b>70</b>
H002 PCTB-CS	11	33.5	25.6	77
H002 PCTB-FB	4	12.2	6.4	52
<b>H003 Total Core</b>	<b>29</b>	<b>171.0</b>	<b>193.9</b>	<b>113</b>
H003 PCTB-CS	10	30.5	22.8	75
H003 PCTB-FB	0	0	0	NA
H003 G-APC	18	133.0	162.6	122
H003 G-XCB	1	8.5	8.5	100

Table 2: Listing of PCTB-CS/PCTB-FB pressure cores and G-APC/G-XCB conventional cores as acquired in Holes UT-GOM2-2-H002 and -H003.

WR313 H003	Core No.	Core Type	Depth Top (fbsf)	Core Curated (m)
WR313 H003	1	H	0	7.69
WR313 H003	2	H	27	10.05
WR313 H003	3	H	61	10.22
WR313 H003	4	CS	89	3.25
WR313 H003	5	CS	99	2.29
WR313 H003	6	H	106	10.42
WR313 H003	7	H	129	8.47
WR313 H003	8	CS	153	2.46
WR313 H003	9	H	163	8.92
WR313 H003	10	H	186	8.3
WR313 H003	11	H	209	9.24
WR313 H003	12	H	232	9.23
WR313 H003	13	CS	255	0.42
WR313 H003	14	H	265	9.42
WR313 H003	15	CS	290	0.9
WR313 H003	16	H	300	8.2
WR313 H003	17	H	321	8.63
WR313 H003	18	H	342	9.58
WR313 H003	19	CS	364	3.46
WR313 H003	20	H	374	9.03
WR313 H003	21	H	399	8.64
WR313 H003	22	H	424	7.25
WR313 H003	23	H	449	8.84
WR313 H003	24	CS	474	3.46
WR313 H003	25	H	484	10.46
WR313 H003	26	X	914	8.51
WR313 H003	27	CS	942	3.21
WR313 H003	28	CS	954	0.75
WR313 H003	29	CS	964	2.61
WR313 H002	1	FB	2115	1.01
WR313 H002	2	FB	2212	1.31
WR313 H002	3	FB	2222	1.42
WR313 H002	4	FB	2232	2.63
WR313 H002	5	CS	9132	2.32
WR313 H002	6	CS	9142	2.7
WR313 H002	7	CS	9152	1.17
WR313 H002	8	CS	9162	2.99
WR313 H002	9	CS	9172	3.42
WR313 H002	10	CS	9182	1.24
WR313 H002	11	CS	9192	0.18
WR313 H002	12	CS	9202	3.47
WR313 H002	13	CS	9212	3.44
WR313 H002	14	CS	9277	3.44
WR313 H002	15	CS	9322	1.25

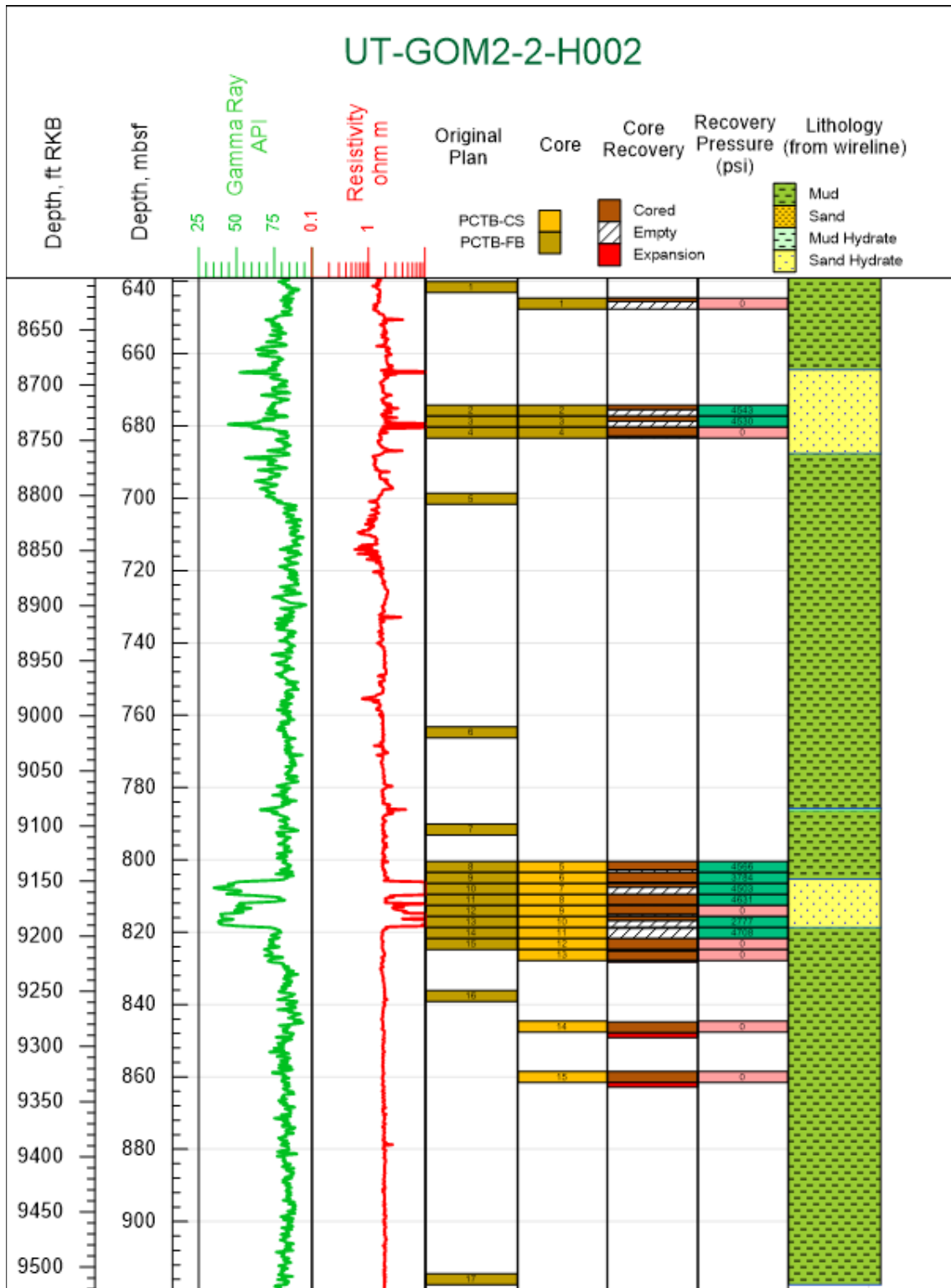


Figure 1: Core recovery plot for the UT-GOM2-2-H002 well as of 24:00 hr 25-AUG-2023 (End of Well). 'PCTB-CS' and 'PCTB-FB' records core recovered by the cutting shoe and face bit versions of the Pressure Coring Tool with Ball (PCTB).

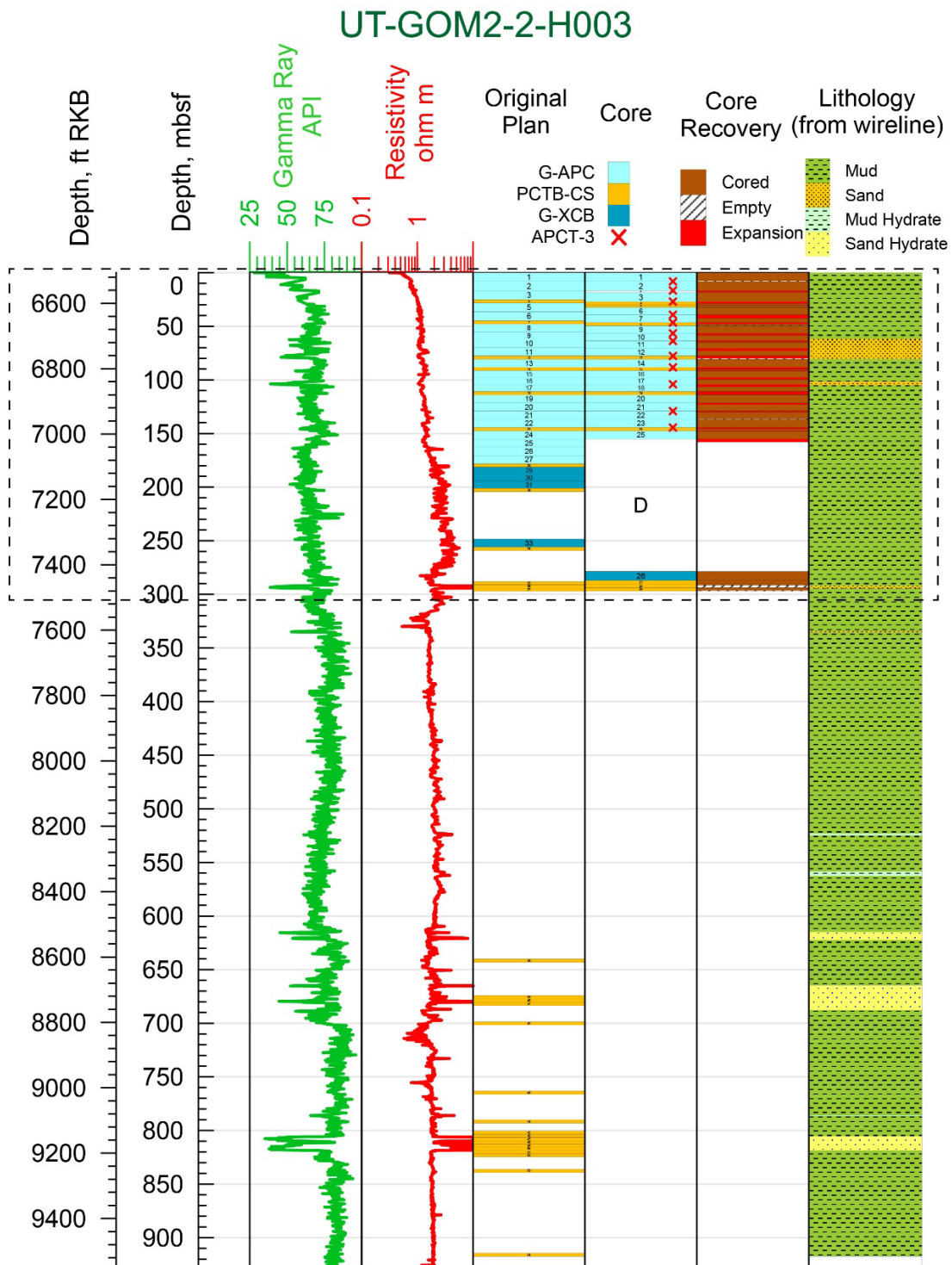


Figure 2: Core recovery plot for the UT-GOM2-2-H003 well as of 24:00 hr 16-AUG-2023 (End of Well). 'G-APC' records core recovered by the Geotek Advanced Piston Corer. 'G-XCB' records core recovered by the Geotech cutting shoe coring tool. 'PCTB-CS' records core recovered by the cutting shoe version of the Pressure Coring Tool with Ball (PCTB). 'APCT-3' records the location where temperatures were measured with a specially instrumented coring shoe.

A critical part of the science program in support of the goals of the expedition was the processing and subsampling of the recovered conventional G-APC and G-XCB acquired cores and equally important the conventionalized PCTB-CS and PCTB-FB pressure cores. The standard set of conventional core subsamples involve the acquisition of a long list of samples (Table 3), including Void Gas (VG/VOID), Cell Count (CEL), Headspace Gas Samples (HS), Microbiological (MB), Interstitial Water (IWO and IWR), Moisture/Density (MDW), Geomechanical (GEOM), and Palaeontologic (PAL) samples. The processing of each conventional core also included the making strength measurements on the end of each core section with Pocket Penatromter (PEN) and Vane Shear (VANE) devices.

*Table 3: List of subsamples obtained from the conventional cores and conventionalized pressure cores as acquired in Holes UT-GOM2-2-H002 and -H003.*

<b>WRC Samples</b>	<b>Sample Code</b>	<b>Sample Count</b>
Paleontology	PAL	32
Cell Count	CEL	46
Headspace	HS	53
Void Gas	VG/VOID	36
Interstitial Water - Organic	IWO	45
Interstitial Water - Regular	IWR	70
Microbiology	MB	67
Moisture/Density	MDW	(58) TBD
Geomechanical	GEOM	(53) TBD
<b>Measurements</b>		
Pocket Penetrometer	PEN	309
Vane Shear	VANE	105

With the expected completion of the at-sea part of the **UT-GOM2-2 Expedition** in the next several days, our attention has now turned to the demobilization of the UT-Austin and Geotek coring equipment and associated core processing laboratories from the *Helix D/V Q4000* and onto the Geotek facilities in Salt Lake City, Utah where the traditional “dockside” operations will focus on completing the primary analysis of the recovered core and the shipping of samples to various institutions for additional detailed analysis.

Table 4 included in this report contains a complete compilation of all the PCTB-CS and PCTB-FB pressure cores attempted and recovered during the **UT-GOM2-2 Expedition**, including their status (recovery pressure) upon recovery and the total length of recovered core. Table 4 also documents what types of PCATS scans have been completed on each core and if DST (pressure & temperature) data was obtained from each core run. This compilation also captures if a particular core section has been “stored” for future analysis, cryo (LN2) frozen, quantitatively degassed, or rapidly degassed.

## 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

Core #	H003			H003			H003			H003			H002			H002			H002			H002			H002														
	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS	CS								
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Curated Length (m)																																							
DST Rabbit																																							
DST Plug																																							
XR 0'																																							
GDPW																																							
XR 90'																																							
X-ray CT																																							
Cut in PCATS																																							
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RAPID DEGAS																																							
Q DEGAS SLC																																							

Table 4: Compilation of the PCTB-CS and PCTB-FB pressure cores acquired during the UT-GOM2-2 Expedition along with description of the processing history of each core (see the text in this report for additional information).