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

1. DATE: 22-August-2023, 0000-2400hr

2. LOCATION:

2400 hr, 22-August-2023
Hole: *Helix D/V Q4000* was located over Hole UT-GOM2-2-H002

Last Drill/Core depth: 8748 ft MD RKB

***Special Update**: UT DAILY OPERATIONS REPORT, 1024hr on 23-AUG-23: Work 9 7/8 cutting shoe BHA to re-enter WR H002. Delays due to low visibility from mud at mudline. Able to successfully re-enter the wellbore while circulating SW at 1-4 BPM with cement pump. Washed down to 6,829'. Able to slack off with no WOB and no rotation. This confirmed re-entry of hole UT-GOM2-2-H002. Line up Hex pump with 10.3 ppg WBM. Prepare to displace work string. -Thomas Redd*

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 housekeeping on weather deck.

0000-0300 Perform electrical repairs on the iron roughneck (short in jumper line).
0300-0900 Continue to POOH (**Hole UT-GOM2-2-H002**) the PCTB-FB BHA and **Core UT-GOM2-2-H003-04FB** from 5476 ft RKB to surface while laying down doubles of 5 7/8" X T57 drill pipe.
0900-1000 Breaking down BHA and laying down drill collars.
1000-1200 Geotek broke down the BHA and remove PCTB-FB core barrel from BHA.
1200-1230 Installed new PDC Face Bit.
1230-1430 Spaced out PCTB-CS and Center Bit Assembly.
1430-1515 MU and RIH BHA 293 ft RKB.
1515-2230 Continue to RIH on doubles F/293 – T/6484 ft RKB.
2230-2400 Position vessel over **Hole UT-GOM2-2-H002** and began to wash and jet into hole (re-entering operations).

4. OPERATIONAL PLAN (Next 24 Hours):

After re-entering **Hole UT-GOM2-2-H002** at the seafloor, continue to RIH and drill to the PCTB-CS core point at the top of the Blue Sand section at a hole depth of 9132 ft MD RKB.

5. DOWNHOLE LOGGING OPERATIONS:

Hole: NA

Wireline Totals (directional): NA

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: NA
PCTB-FB Coring Totals:

Core UT-GOM2-2-H003-04FB: *8.43* ft (*84%* recovery), 0 psi. *(updated information)*
Coring F/ 8738 - T/ 8748 ft RKB at 80 rpm, maintaining 8-10k on bit, CMT pumping 10.3 ppg WBM at 3.0 bpm and 120 psi.

7. DOWNHOLE MEASUREMENTS

Hole: NA
Pressure and Temperature Tool Deployment (T2P): NA
Temperature Tool Deployment (APCT-3): NA

8. SCIENCE ACTIVITES

In support of dealing with the operational problems from 21-AUG-23, we continued to POOH (**Hole UT-GOM2-2-H002**) the PCTB-FB BHA and **Core UT-GOM2-2-H003-04FB** that had become previously stuck in the BHA. Upon the recovery and inspection of the PCTB-FB BHA and **Core UT-GOM2-2-H003-04FB** inner barrel, a heavy gauge wire was found lodged in the unlatching collet of the retrieval tool latch. In addition, the pawls and other components of the upper latch on the PCTB-FB were severely damaged, most likely by the numerous wireline pulling events that we implemented when trying to unlatch the tool when it became stuck in the BHA. The additional observed damage to the latch likely exacerbated the problem with the latching system.

After **Core UT-GOM2-2-H003-04FB** was extracted from the recovered PCTB-FB BHA, it was confirmed that the integrated sealing system was not fully engaged and the core was recovered unsealed with no pressure. Thus, the conventionalized **Core UT-GOM2-2-H003-04FB** was transferred to the Geotek Core Receiving Van for processing. The appearance of the core suggested the presence of a < 3 ft long gas-hydrate-bearing sand-to-silt section with mousse-like to soupy texture that appeared to be bounded by two mud-rich sedimentary sections. We collected the two sets of WRC microbiological (MBIO) and interstitial water (IW) sample sets to further characterize the inferred hydrate-bearing section in the recovered core. In addition, a standard set of headspace gas samples (HS); along with vane-shear (VANE) and pocket penetrometer (PEN) measurements were acquired from the core. Analysis conducted in the onboard IW laboratory of the core acquired pore-water samples indicated that the core did contain gas hydrate within anomalous section as observed in **Core UT-GOM2-2-H003-04FB.**

Cores UT-GOM2-2-H003-02FB and **-03FB** are also being processed through PCATS (Figure 1 and 2). Based on the PCATS acquired gamma-density and P-wave scans, **Core UT-GOM2-2-H003-02FB** contains two gas hydrate-bearing sand beds. The core will be sub-sectioned into a quantitatively degassed sample, a MBIO cryo core, and a 100 cm long section will be stored for further analysis in the post-expedition labs in Salt Lake City. The "cut plan" for **Core UT-GOM2-2-H003-02FB** also calls for storing two apparent gas-hydrate bearing intervals in a storage chamber for later analysis in Salt Lake City. In addition, a 35 cm long section of the core will be quantitively degassed and an IW core sample will be taken.

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.

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

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

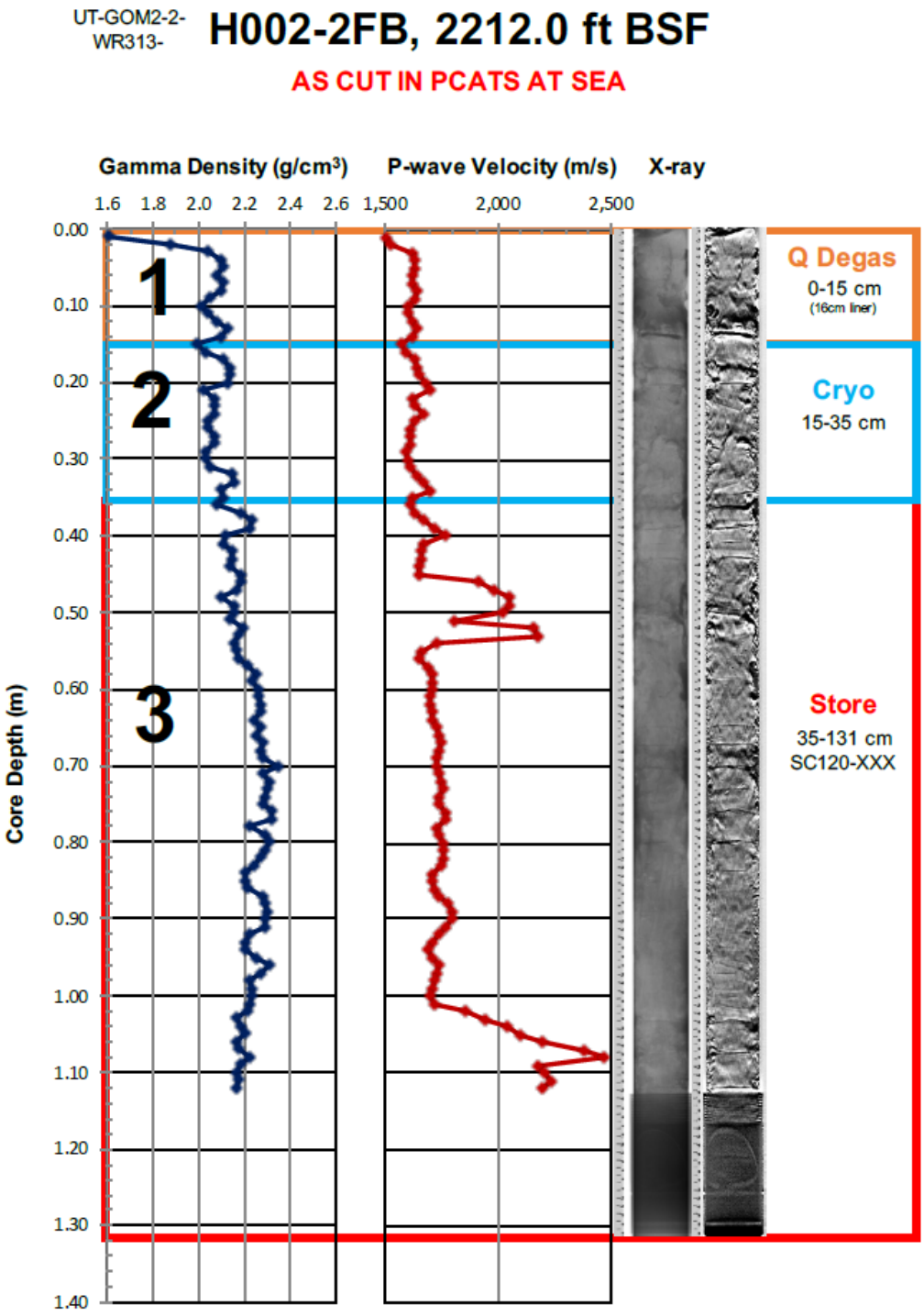

Figure 1: X-ray, P-wave velocity, and density of Core UT-GOM2-2-H002-02FB from the Geotek Pressure Core Analysis and Transfer System (PCATS). Gamma density and P-wave velocity logs along with the X-ray images. The colored boxes show cuts made in PCATS for storage, quantitative degassing, and frozen cryo cores.

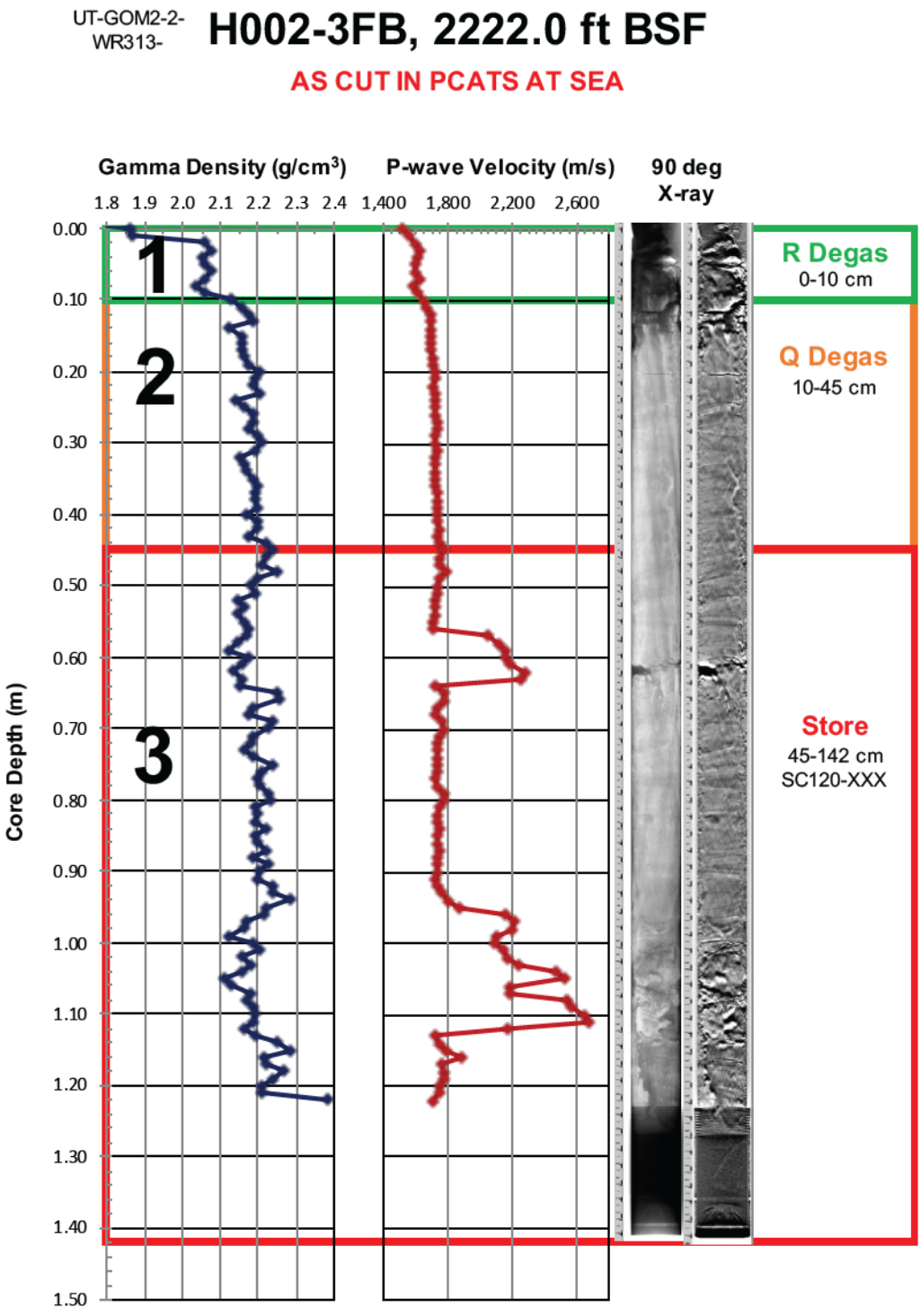

Figure 2: X-ray, P-wave velocity, and density of Core UT-GOM2-2-H002-03FB from the Geotek Pressure Core Analysis and Transfer System (PCATS). Gamma density and P-wave velocity logs along with the X-ray images. The colored boxes show cuts made in PCATS for storage, quantitative degassing, and frozen cryo cores.