Appendix I. UT-GOM2-2 Site H Pressure Core Quantitative Degassing Data

This appendix contains plots of all the quantitative degassing experimental data. A description of sampling and quantitative degassing methods can be found in Expedition UT-GOM2-2 Methods (Flemings et al., 2025).

Contents

UT-GOM2-2-H003-05CS-1

Section UT-GOM2-2-H003-05CS-1 released a total of 0.09 L of methane from a 110 cm section of core (Figure 1). One gas sample was collected and analyzed, indicating the gas is composed of 1.6 % methane by volume with 98.2 % nitrogen and oxygen contamination. Degassing was performed over 2 hr. The large amount of atmospheric contamination precludes reliable calculation of dissolved methane.

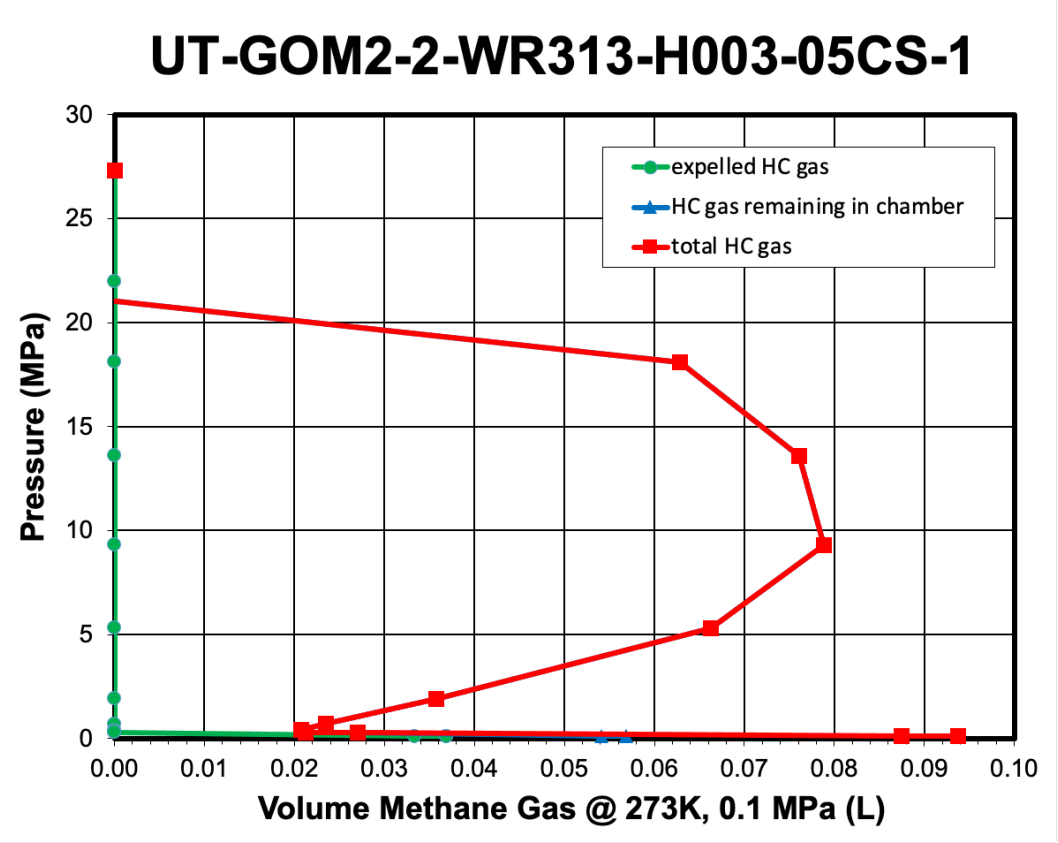

Figure 1. UT-GOM2-2-H003-05CS-1 pressure versus cumulative volume released.

UT-GOM2-2-H003-05CS-2

Section UT-GOM2-2-H003-05CS-2, released a total of 0.95 L of methane from a 119 cm section of core (Figure 2). One gas sample was collected and analyzed, indicating the gas is composed of 94.2 % methane by volume with 5.7 % nitrogen and oxygen contamination. Degassing was performed over 3.6 hr.

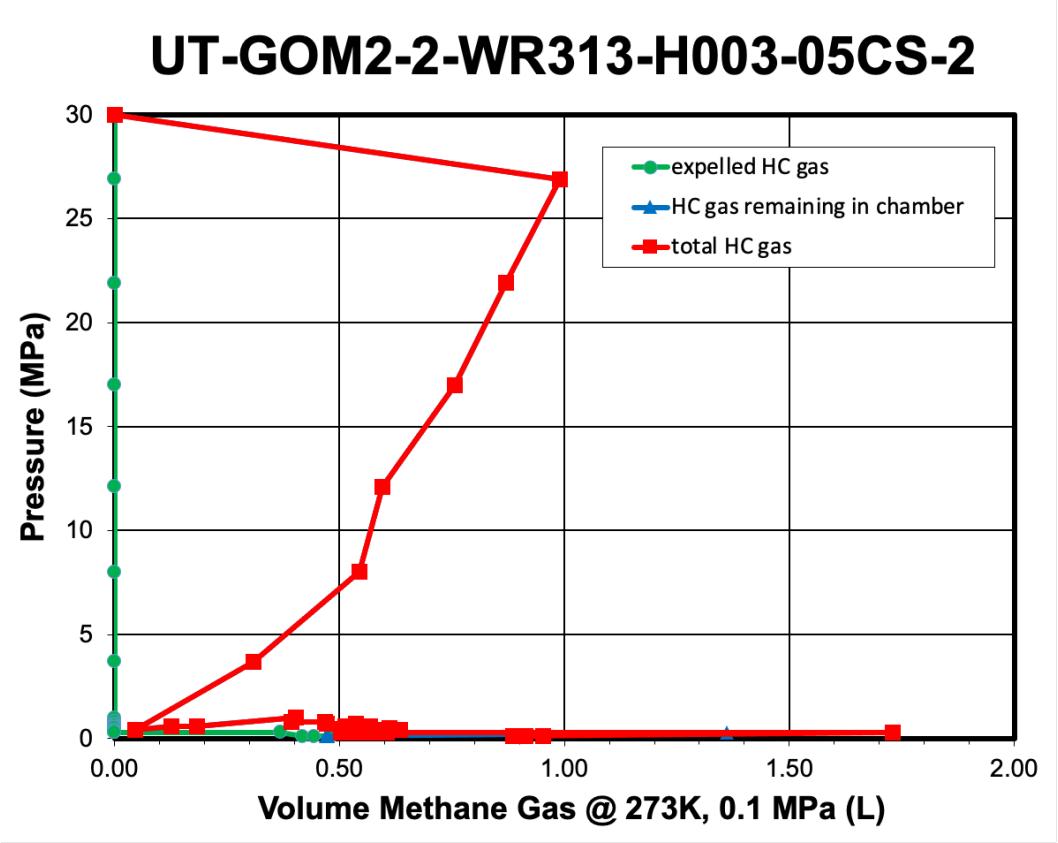

Figure 2. UT-GOM2-2-H003-05CS-2 pressure versus cumulative volume released.

UT-GOM2-2-H003-08CS-2

Section UT-GOM2-2-H003-08CS-2 released a total of 1.44 L of gas (Figure 3) from a 120 cm long section of core. Four gas samples were collected and analyzed, indicating the gas is composed of 79.0 to 95.5% % methane by volume with 4.4 to 20.8 % nitrogen and oxygen contamination. Degassing was performed over 21 hr.

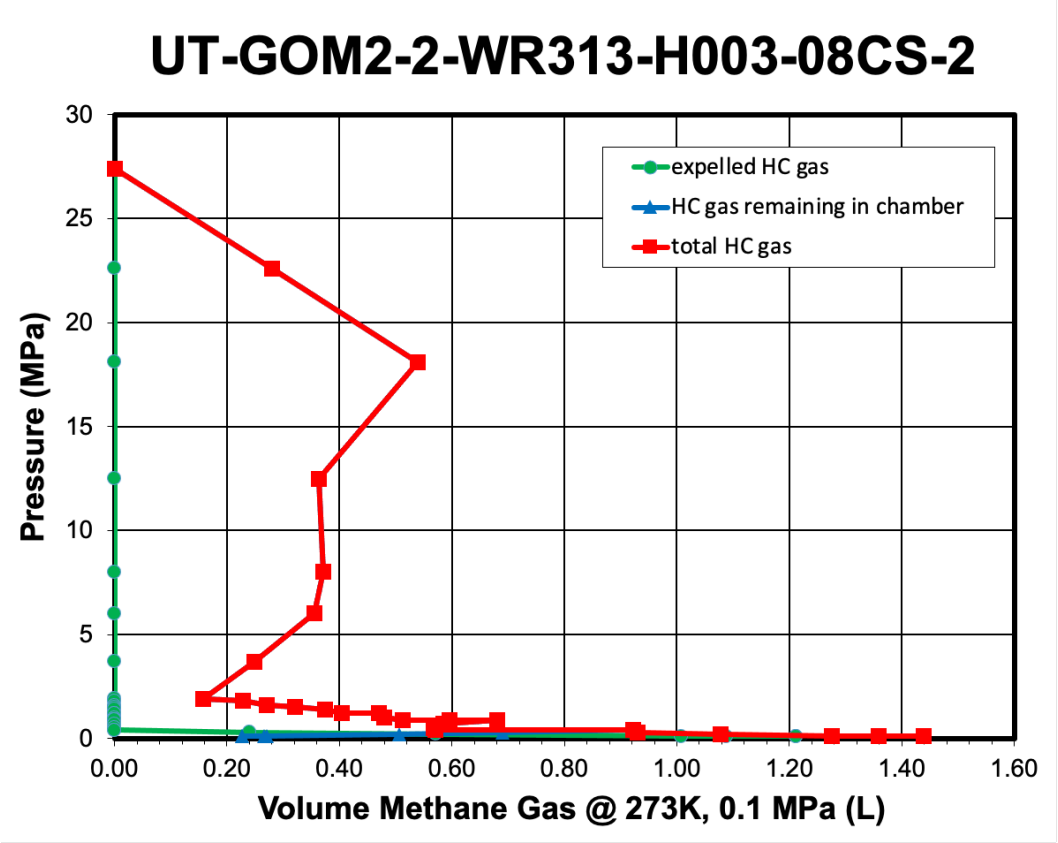

Figure 3. UT-GOM2-2-H003-08CS-2 pressure versus cumulative volume released.

UT-GOM2-2-H003-08CS-3

Section UT-GOM2-2-H003-08CS-3 released a total of 1.25 L of gas (Figure 4) from a 116 cm long section of core. Five gas samples were collected and analyzed, indicating the gas is composed of 90.3 to 97.5% methane by volume with 2.4 to 9.6% nitrogen and oxygen contamination. Degassing was performed over 17 hr.

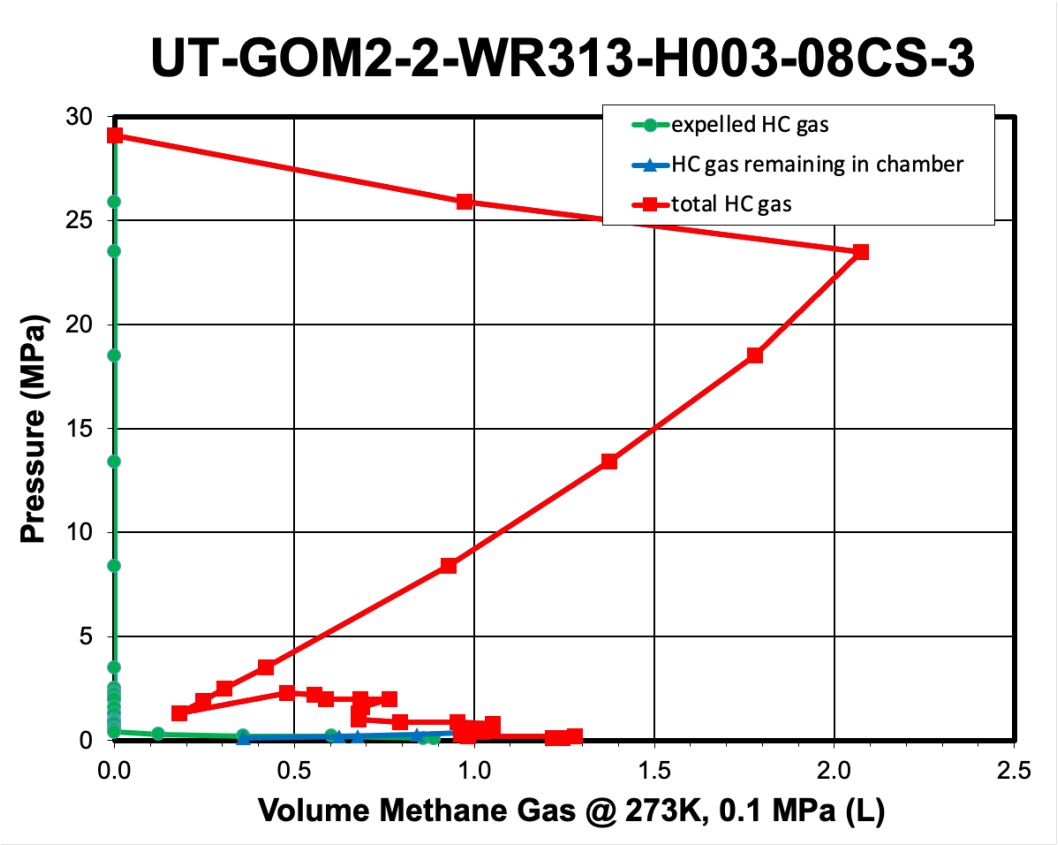

Figure 4. UT-GOM2-2-H003-08CS-3 pressure versus cumulative volume released.

UT-GOM2-2-H003-13CS-1

Section UT-GOM2-2-H003-13CS-1 released a total of 0.14 L of gas (Figure 5) from a 42 cm long section of core. One gas sample was collected and analyzed, indicating the gas is composed of 73.5% methane by volume with 26.4% nitrogen and oxygen contamination. Degassing was performed over 16 hr. No volume of gas accumulated in the bubbling chamber and the only gas sample was collected by pumping water through the core storage. Due to the very low volume of gas and high amount of atmospheric contamination, the dissolved methane calculation is not reliable.

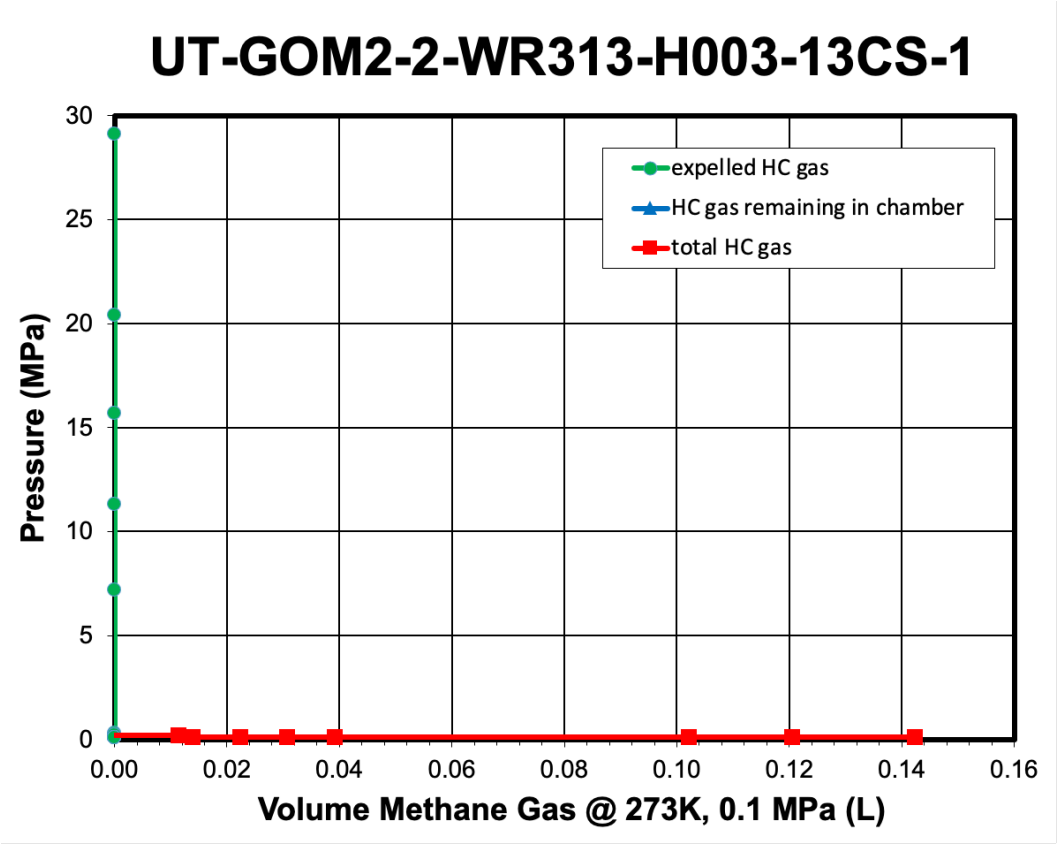

Figure 5. UT-GOM2-2-H003-13CS-1 pressure versus cumulative volume released.

UT-GOM2-2-H003-19CS-3

Section UT-GOM2-2-H003-19CS-3 released a total of 1.86 L of gas (Figure 6) from a 113 cm long section of core. Two gas samples were collected and analyzed, indicating the gas is composed of 91 to 96.9% methane by volume with 3.0 to 8.9 % nitrogen and oxygen contamination. Degassing was performed over 17 hr.

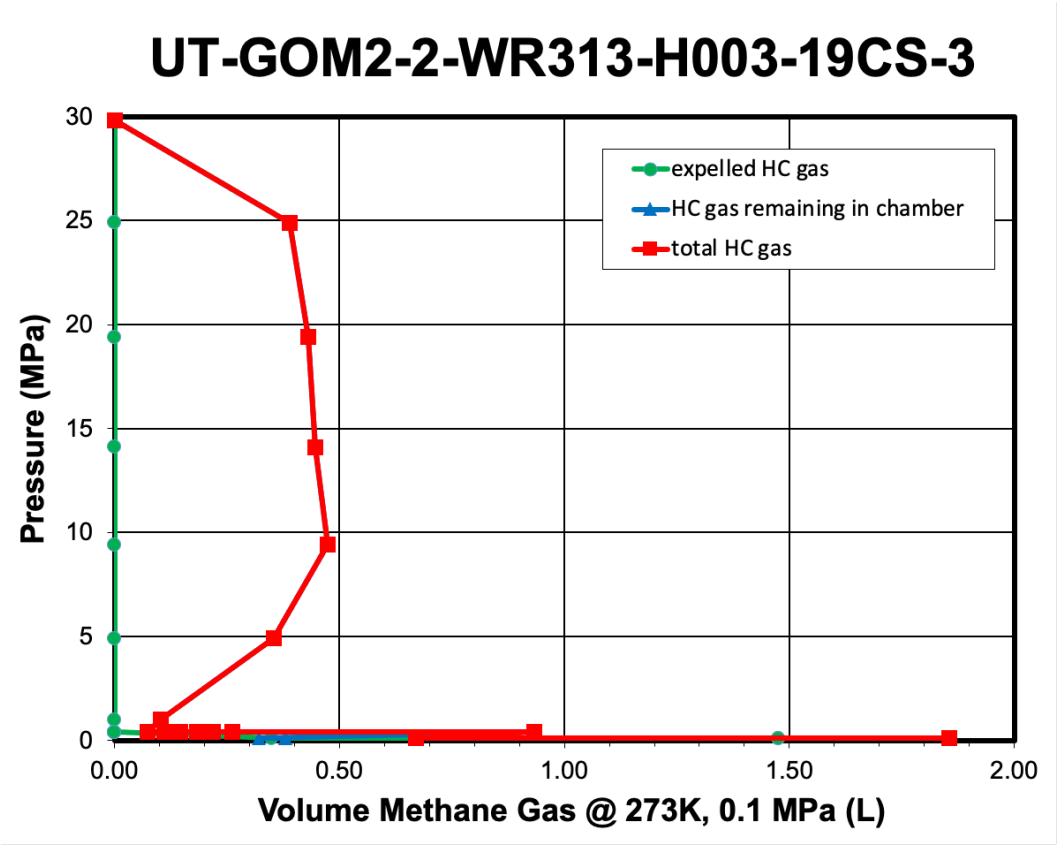

Figure 6. UT-GOM2-2-H003-19CS-3 pressure versus cumulative volume released.

UT-GOM2-2-H003-19CS-4

Section UT-GOM2-2-H003-19CS-4 released a total of 1.84 L of gas (Figure 7) from a 120 cm long section of core. Three gas samples were collected and analyzed, indicating the gas is composed of 33 to 97.2% methane by volume with 2.7 to 66.2 % nitrogen and oxygen contamination. Degassing was performed over 10 hr.

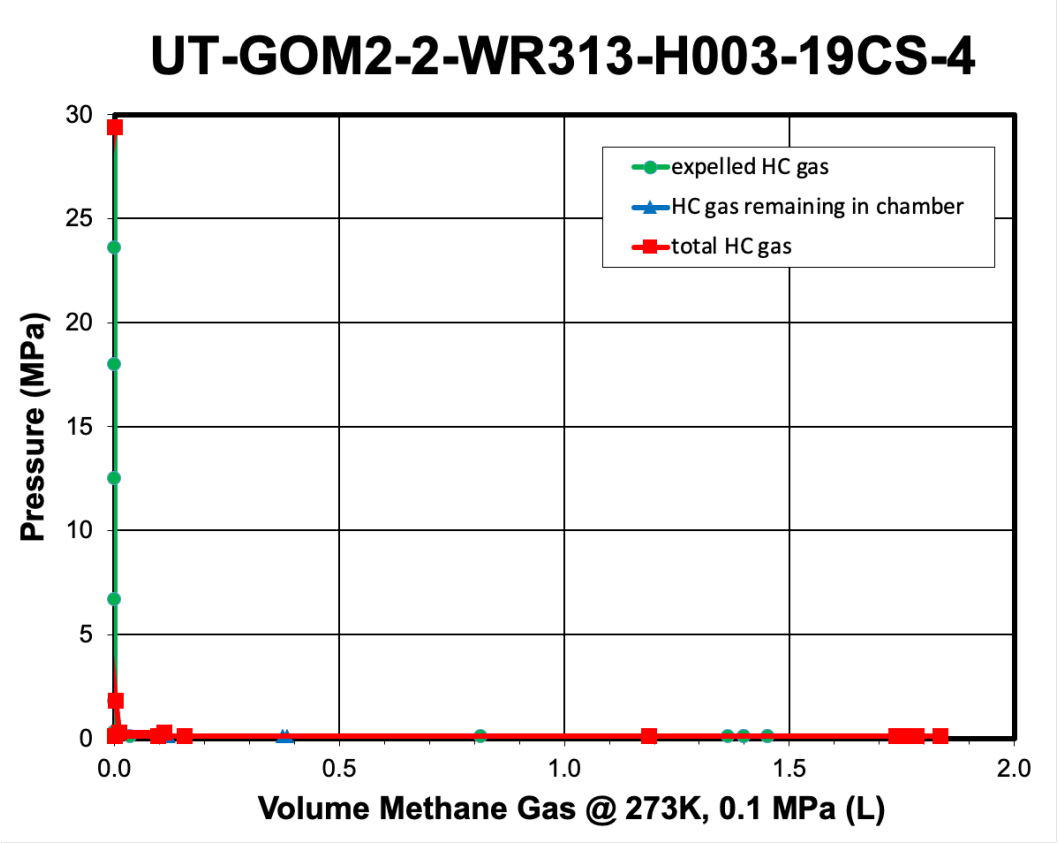

Figure 7. UT-GOM2-2-H003-19CS-4 pressure versus cumulative volume released.

UT-GOM2-2-H003-19CS-5

Section UT-GOM2-2-H003-19CS-5 released a total of 1.57 L of gas (Figure 8) from a 106 cm long section of core. Seven gas samples were collected and analyzed, indicating the gas is composed of 51.8 to 96.5% methane by volume with 5.4 to 48.2% nitrogen and oxygen contamination. Degassing was performed over 11 hr.

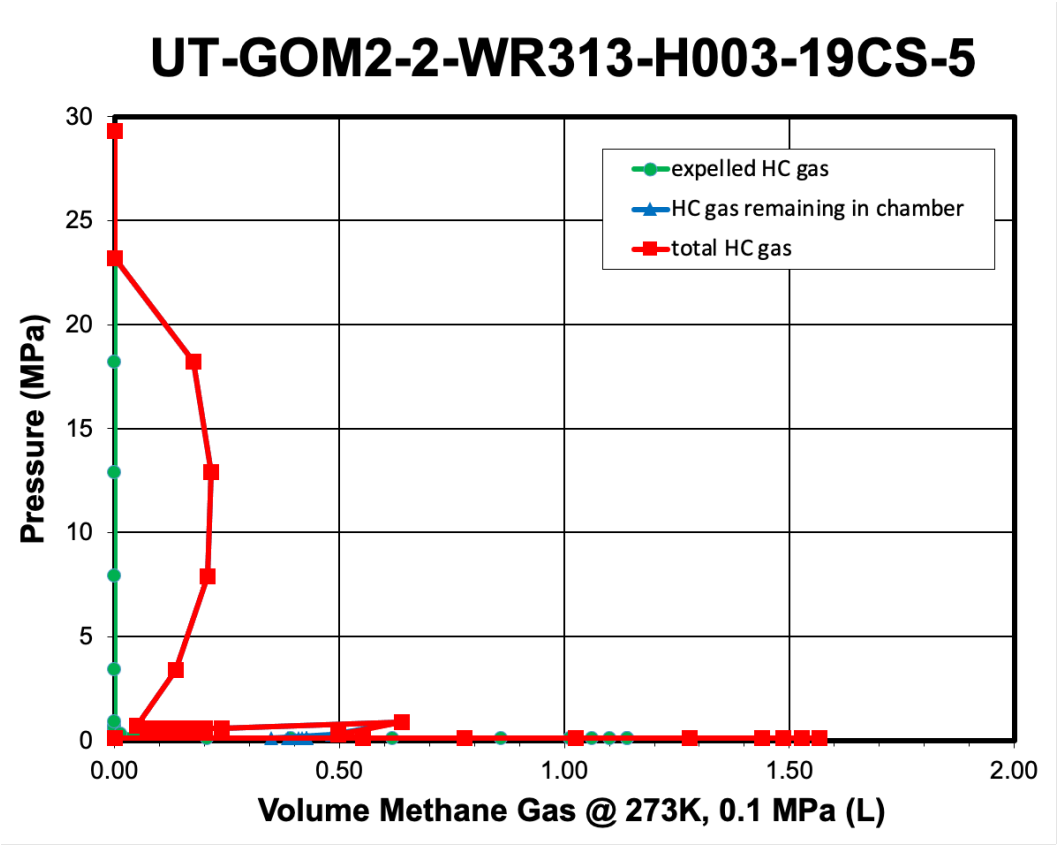

Figure 8. UT-GOM2-2-H003-19CS-5 pressure versus cumulative volume released.

UT-GOM2-2-H003-24CS-2

Section UT-GOM2-2-H003-24CS-2 released a total of 1.66 L of gas (Figure 9) from a 94 cm long section of core. Three gas samples were collected and analyzed, indicating the gas is composed of 92.4% methane by volume with 96.2% nitrogen and oxygen contamination. Degassing was performed over 12 hr.

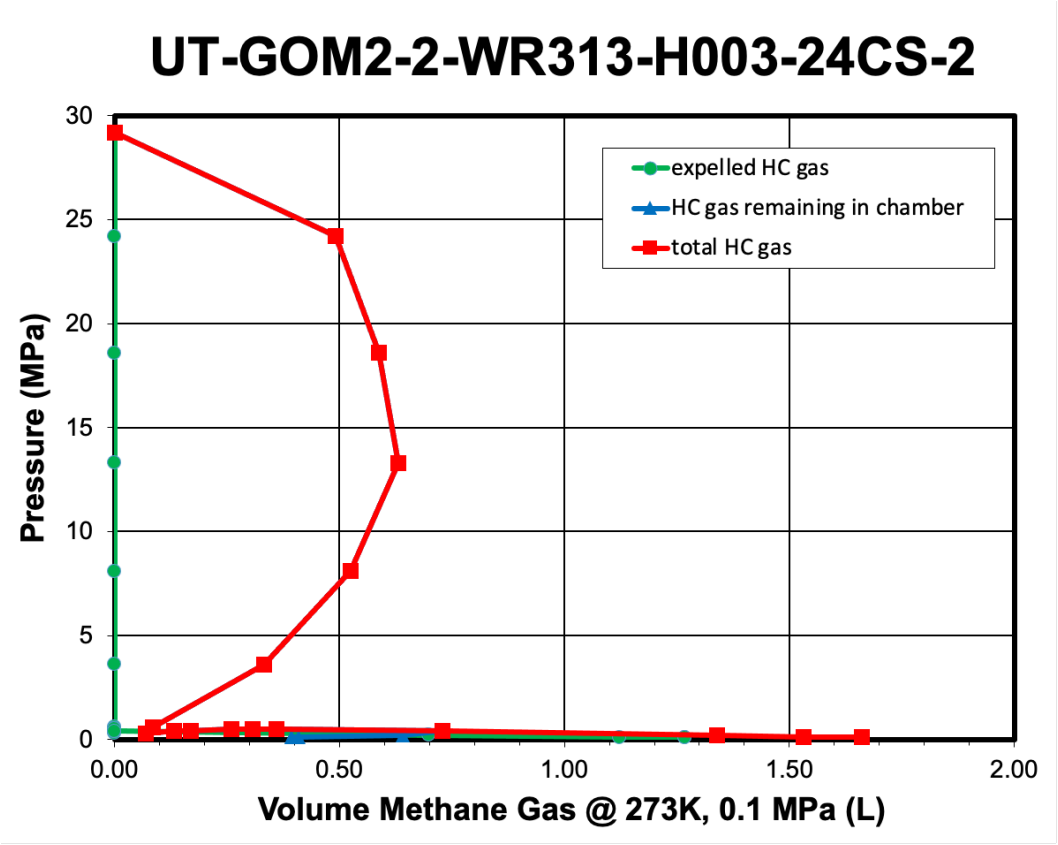

Figure 9. UT-GOM2-2-H003-24CS-2 pressure versus cumulative volume released.

UT-GOM2-2-H003-24CS-5

Section UT-GOM2-2-H003-24CS-5 (Figure 10) from a 106 cm long section of core. Four gas samples were collected and analyzed, indicating the gas is composed of 94.2 to 97.8% methane by volume with 2.0 to 5.8% nitrogen and oxygen contamination. Degassing was performed over 13 hr.

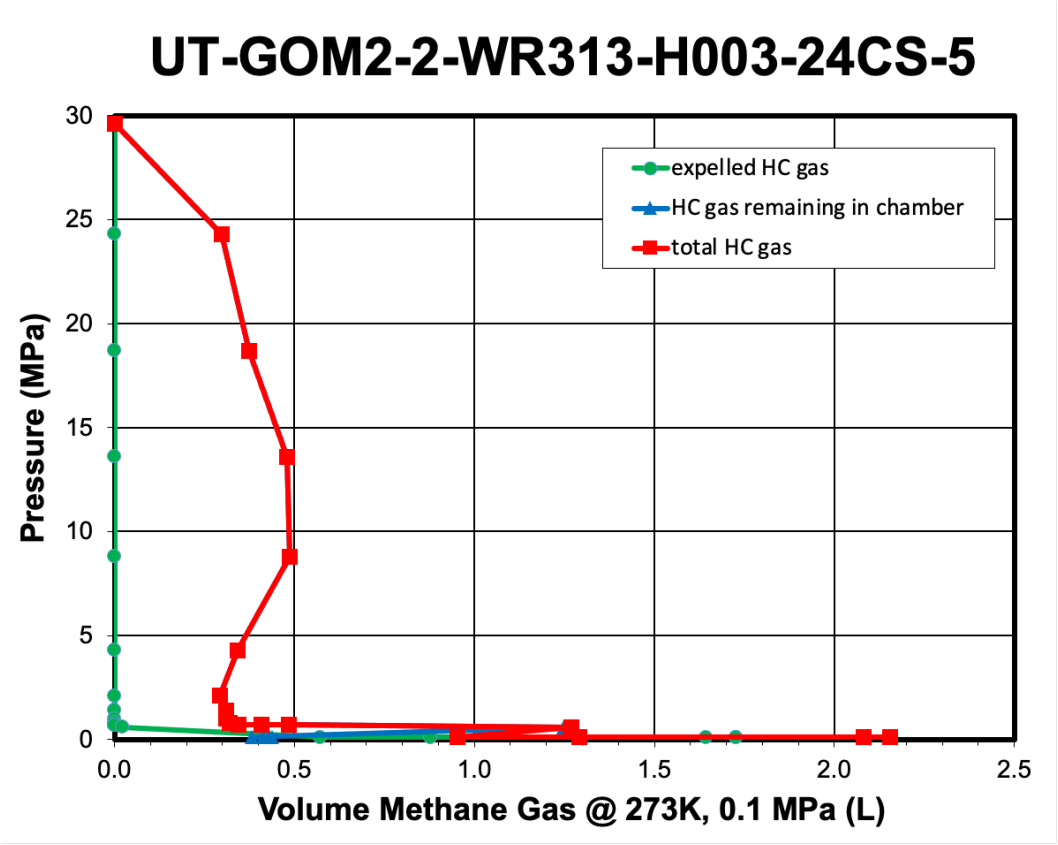

Figure 10. UT-GOM2-2-H003-24CS-5 pressure versus cumulative volume released.

UT-GOM2-2-H003-27CS-4

Section UT-GOM2-2-H003-27CS-4 released a total of 3.16 L of gas (Figure 11) from an 84 cm long section of core. One gas sample was collected and analyzed, indicating the gas is composed of 94.4 to 98.6% methane by volume with 1.4 to 5.5% nitrogen and oxygen contamination. Degassing was performed over 0.6 hr.

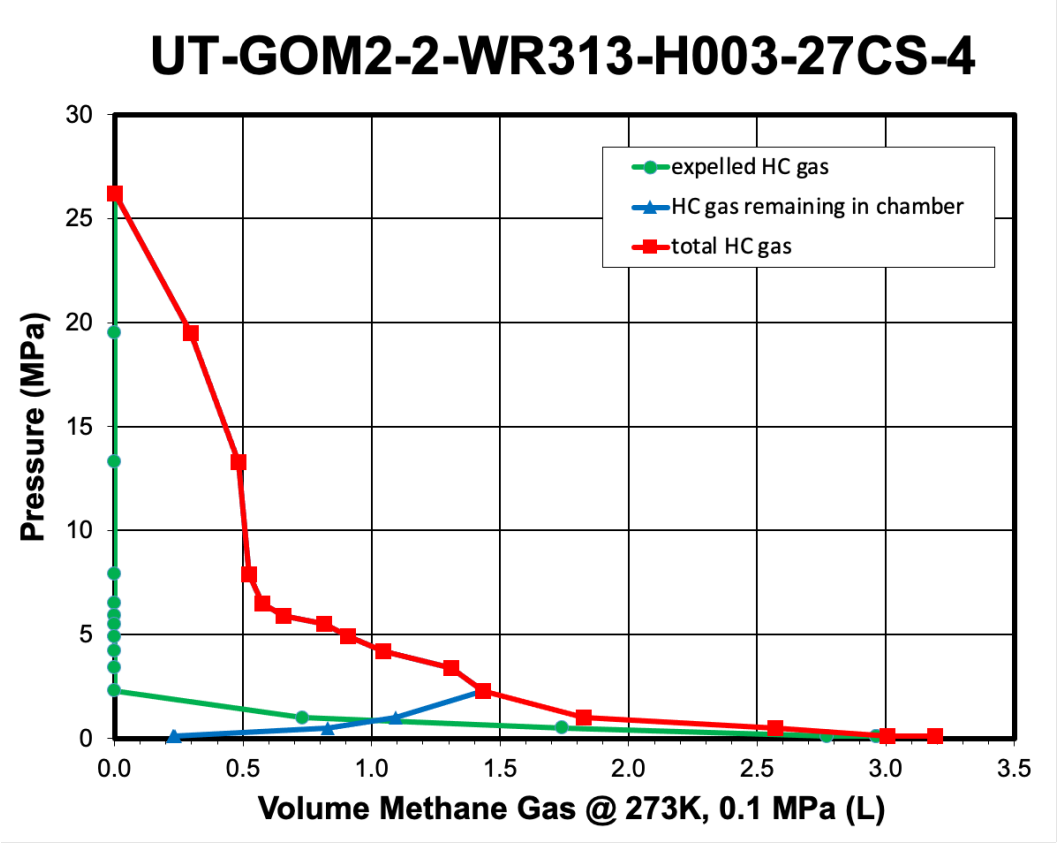

Figure 11. UT-GOM2-2-H003-27CS-4 pressure versus cumulative volume released.

UT-GOM2-2-H003-27CS-5

Section UT-GOM2-2-H003-27CS-5 released a total of 1.97 L of gas (Figure 12) from a 91 cm long section of core. Two gas samples were collected and analyzed, indicating the gas is composed of 96.2 to 96.7% methane by volume with 3.3 to 3.8% nitrogen and oxygen contamination. Degassing was performed over 2 hr.

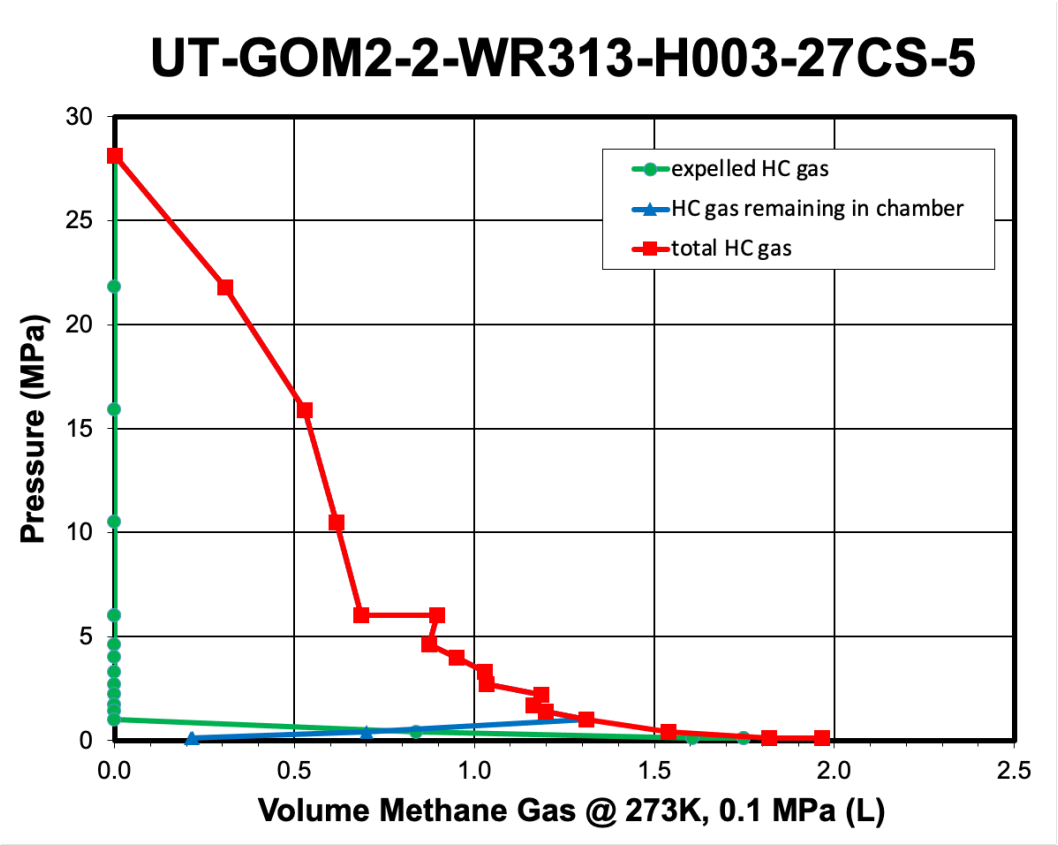

Figure 12. UT-GOM2-2-H003-27CS-5 pressure versus cumulative volume released.

UT-GOM2-2-H003-28CS-1

Section UT-GOM2-2-H003-28CS-1 released a total of 1.97 L of gas (Figure 13) from a 75 cm long section of core. Four gas samples were collected and analyzed, indicating the gas is composed of 92.8 % methane by volume with 7.2 % nitrogen and oxygen contamination. Degassing was performed over 18 hr.

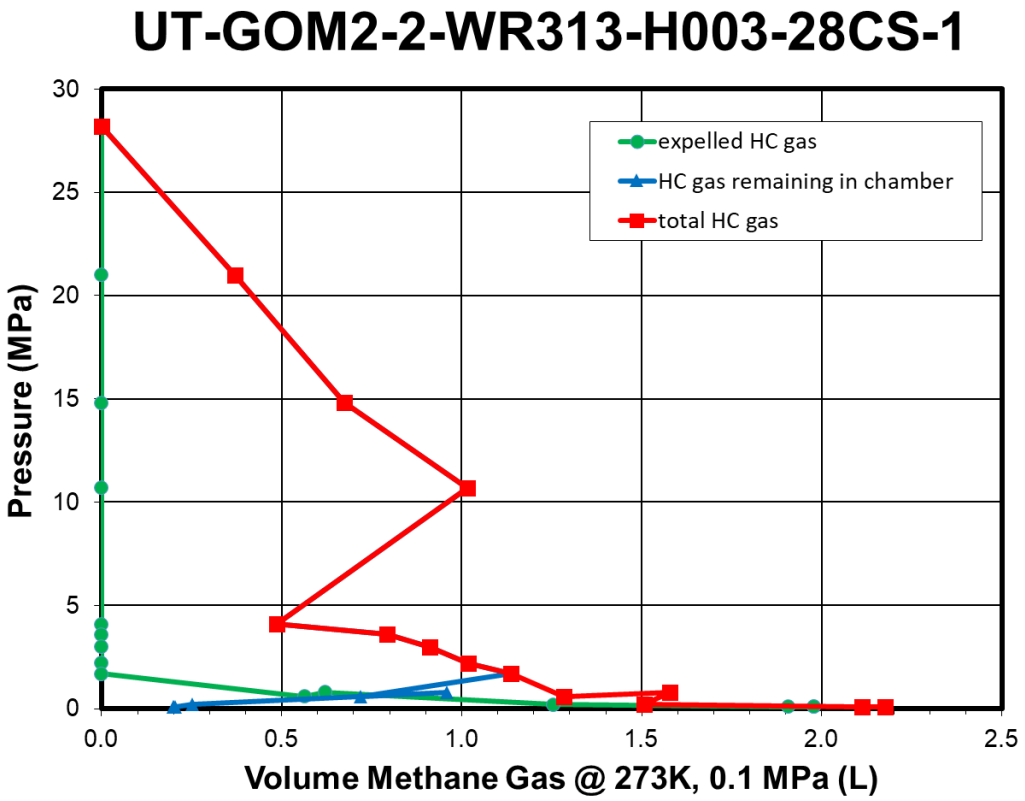

Figure 13. UT-GOM2-2-H003-28CS-1 pressure versus cumulative volume released.

UT-GOM2-2-H003-29CS-3

Section UT-GOM2-2-H003-29CS-3 released a total of 4.28 L of gas (Figure 14) from a 65 cm long section of core. Four gas samples were collected and analyzed, indicating the gas is composed of 95.6 to 98.6% methane by volume with 1.3 to 4.4% nitrogen and oxygen contamination. Degassing was performed over 5 hr.

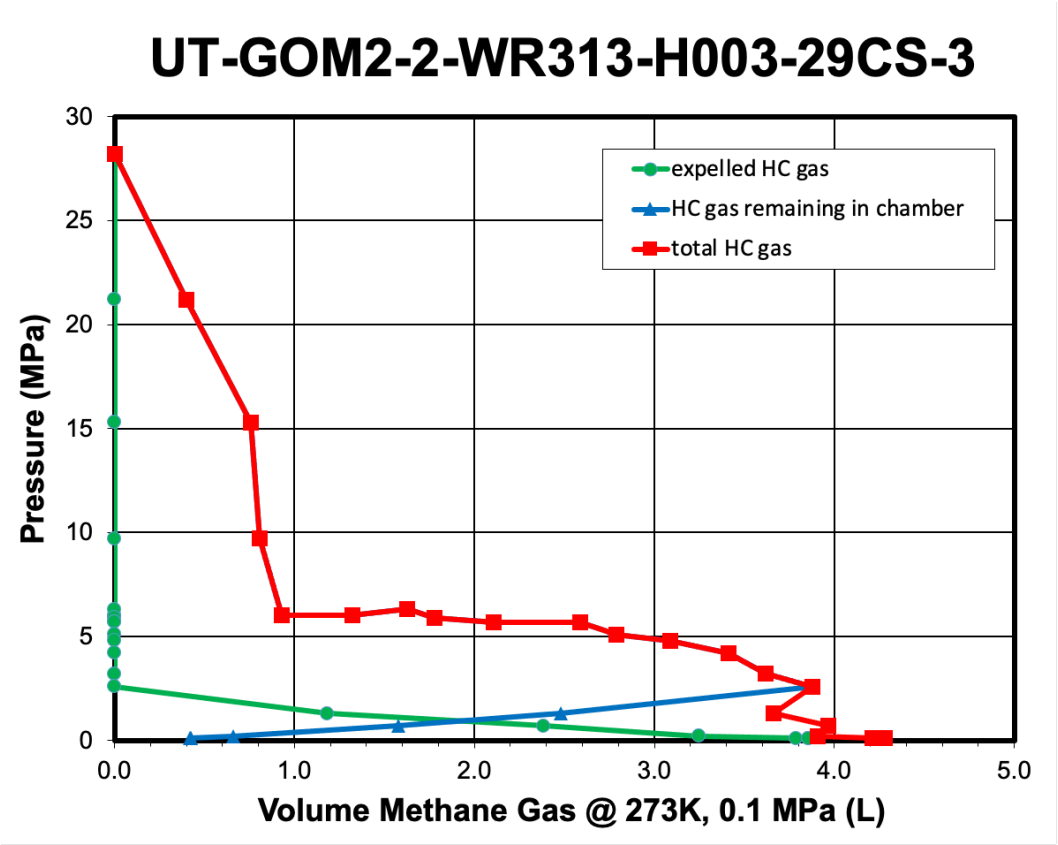

Figure 14. UT-GOM2-2-H003-29CS-3 pressure versus cumulative volume released.

UT-GOM2-2-H003-29CS-5

Section UT-GOM2-2-H003-29CS-5, released a total of 2.69 L of gas (Figure 15) from an 81 cm long section of core. One gas sample was collected and analyzed, indicating the gas is composed of 94.3 to 97.6% methane by volume with 2.4 to 5.5% nitrogen and oxygen contamination. Degassing was performed over 5 hr.

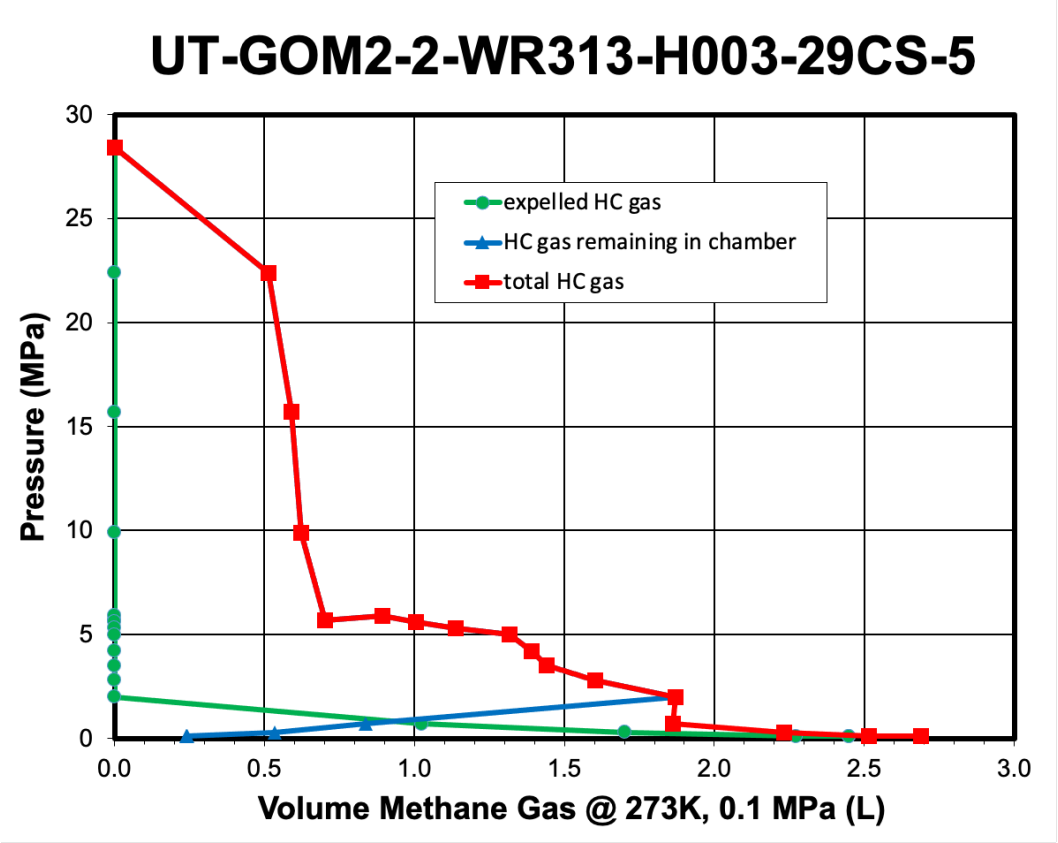

Figure 15. UT-GOM2-2-H003-29CS-5 pressure versus cumulative volume released.

UT-GOM2-2-H002-02FB-1

Section UT-GOM2-2-H002-02FB-1 released a total of 0.13 L of methane from a 15 cm section of core (Figure 16). Two gas samples were collected and analyzed, indicating the gas is composed of 20.7 to 66.4% methane by volume with 33.5 to 79.3% nitrogen and oxygen contamination. Degassing was performed over 4 hr. The large amount of atmospheric contamination precludes reliable calculation of dissolved methane.

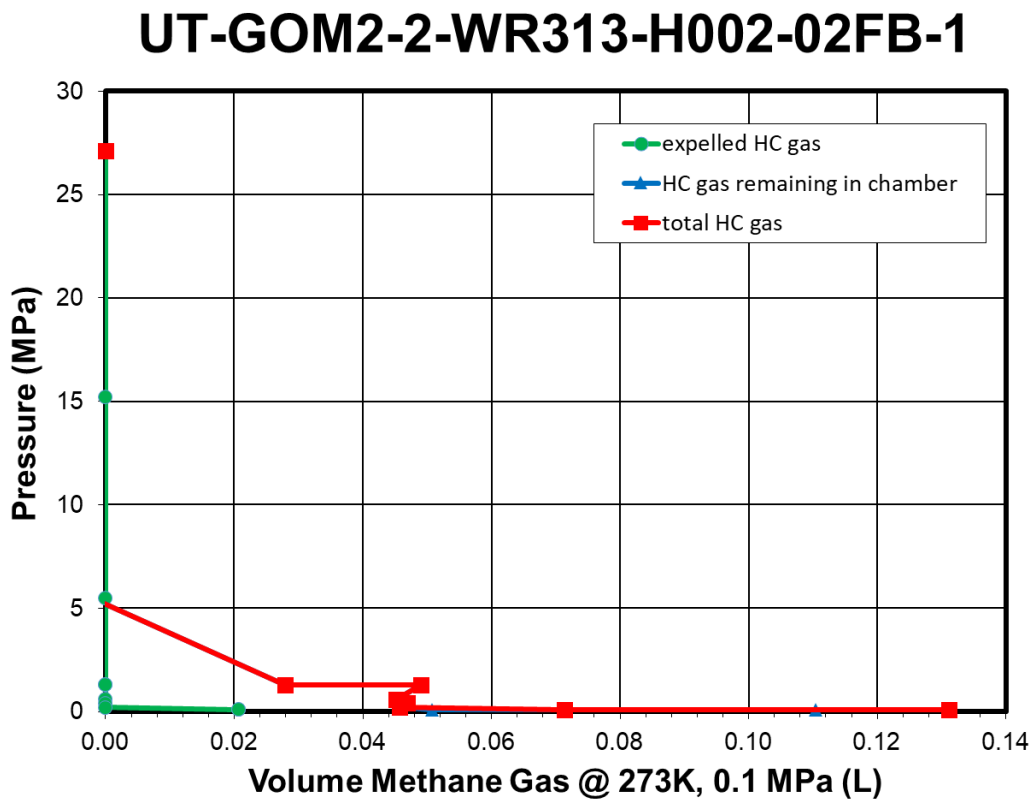

Figure 16. UT-GOM2-2-H002-02FB-1 pressure versus cumulative volume released.

UT-GOM2-2-H002-02FB-4

Section UT-GOM2-2-H002-02FB-4, released a total of 4.40 L of methane from a 20 cm section of core (Figure 17). 11 gas samples were collected and analyzed, indicating the gas is composed of 94.1% methane by volume with 5.9% nitrogen and oxygen contamination. Degassing was performed over 30 hr.

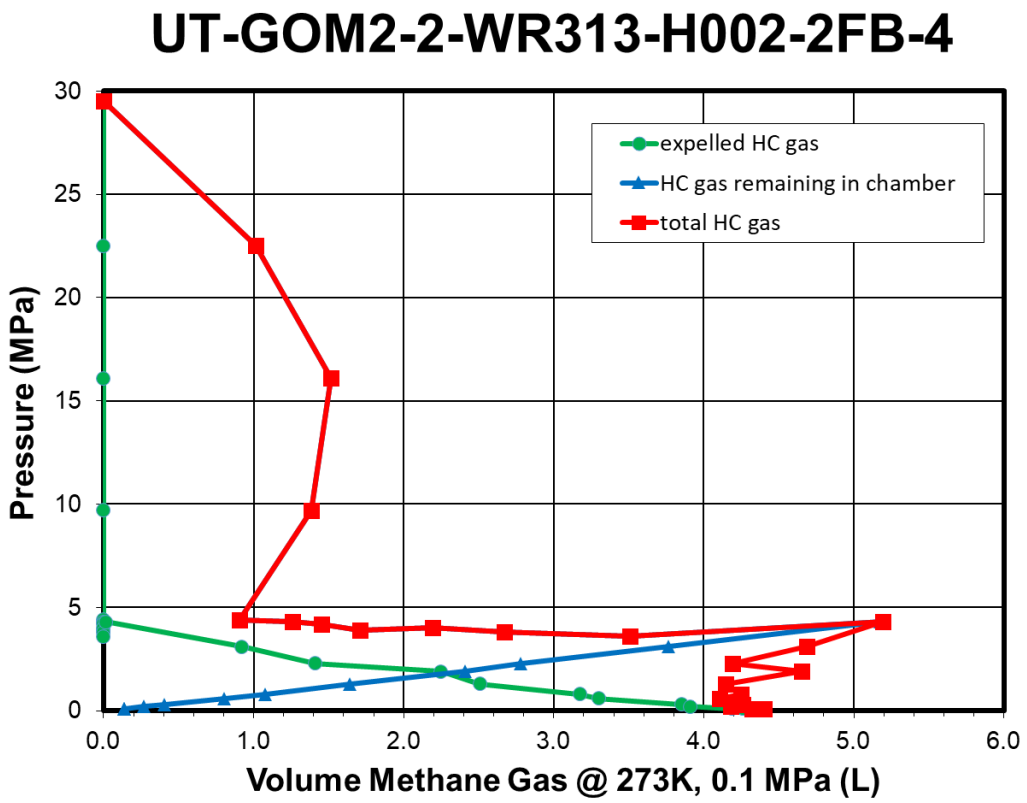

Figure 17. UT-GOM2-2-H002-02FB-4 pressure versus cumulative volume released.

UT-GOM2-2-H002-03FB-2

Section UT-GOM2-2-H002-03FB-2 released a total of 0.63 L of gas (Figure 18) from a 35 cm long section of core. One gas sample was collected and analyzed, indicating the gas is composed of 89.6% methane by volume with 10.4 % nitrogen and oxygen contamination. Degassing was performed over 1.4 hr.

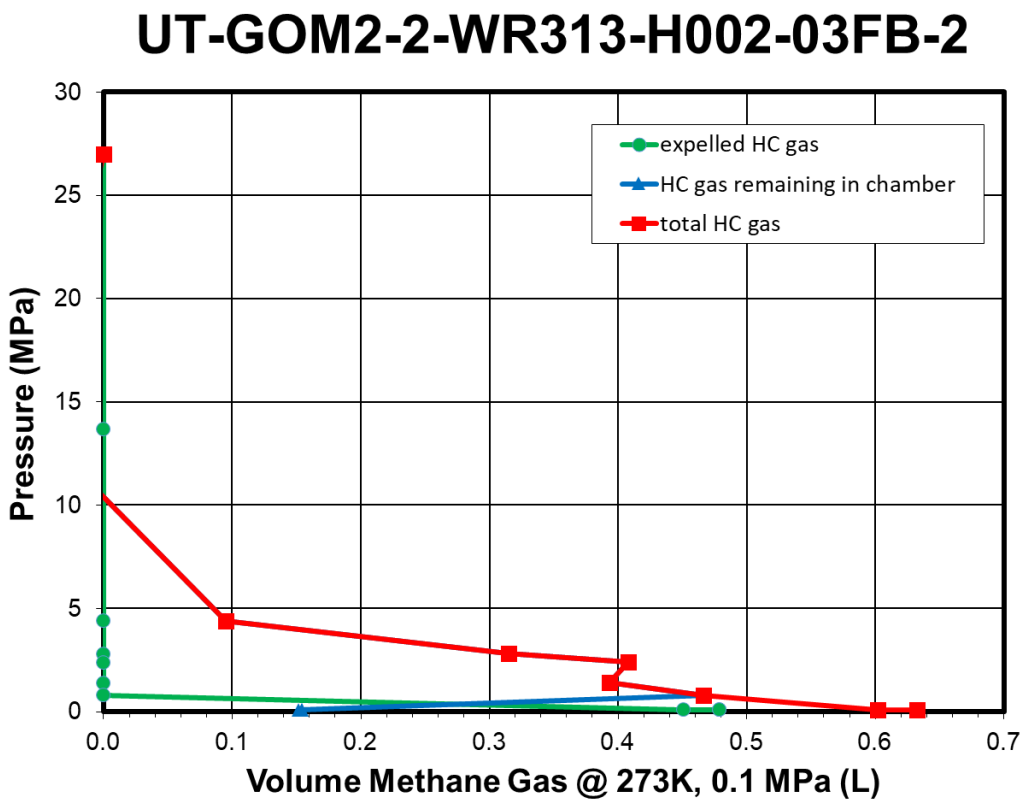

Figure 18. UT-GOM2-2-H002-03FB-2 pressure versus cumulative volume released.

UT-GOM2-2-H002-05CS-3

Section UT-GOM2-2-H002-05CS-3 released a total of 1.11 L of gas (Figure 19) from a 52 cm long section of core. Two gas samples were collected and analyzed, indicating the gas is composed of 83.0 to 89.6% methane by volume with 10.3 to 17.0% nitrogen and oxygen contamination. Degassing was performed over 1.4 hr.

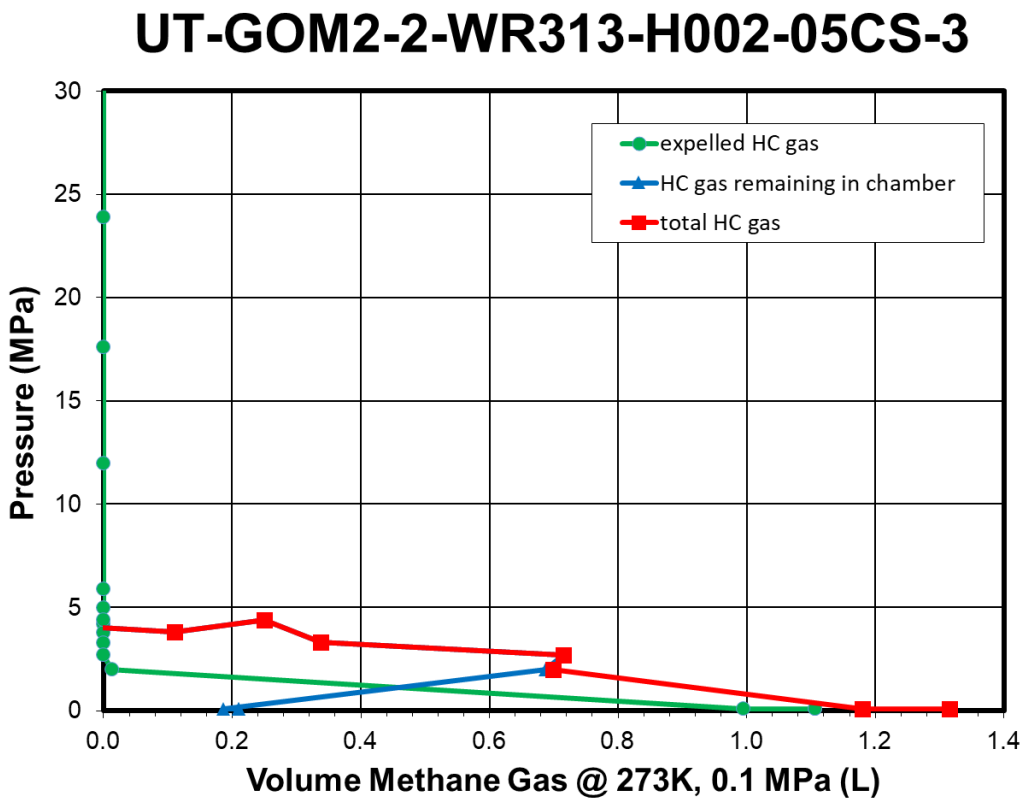

Figure 19. UT-GOM2-2-H002-05CS-3 pressure versus cumulative volume released.

UT-GOM2-2-H002-06CS-2

Section UT-GOM2-2-H002-06CS-2 released a total of 0.80 L of gas (Figure 20) from a 50 cm long section of core. One gas sample was collected and analyzed, indicating the gas is composed of 89.7% methane by volume with 10.3% nitrogen and oxygen contamination. Degassing was performed over 5.9 hr.

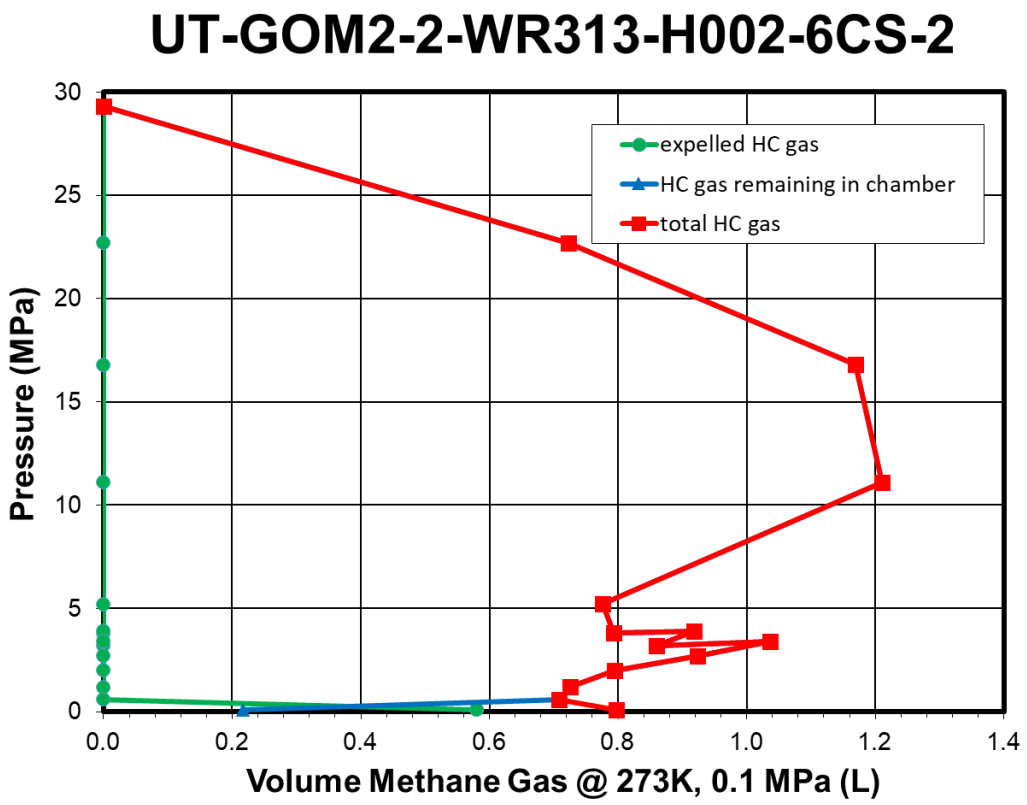

Figure 20. UT-GOM2-2-H002-06CS-2 pressure versus cumulative volume released.

UT-GOM2-2-H002-06CS-5

Section UT-GOM2-2-H002-06CS-2 released a total of 0.80 L of gas (Figure 21) from a 35 cm long section of core. Two gas samples were collected and analyzed, indicating the gas is composed of 77.6 to 93.9% methane by volume with 3.0 to 8.9 % nitrogen and oxygen contamination. Degassing was performed over 6 hr.

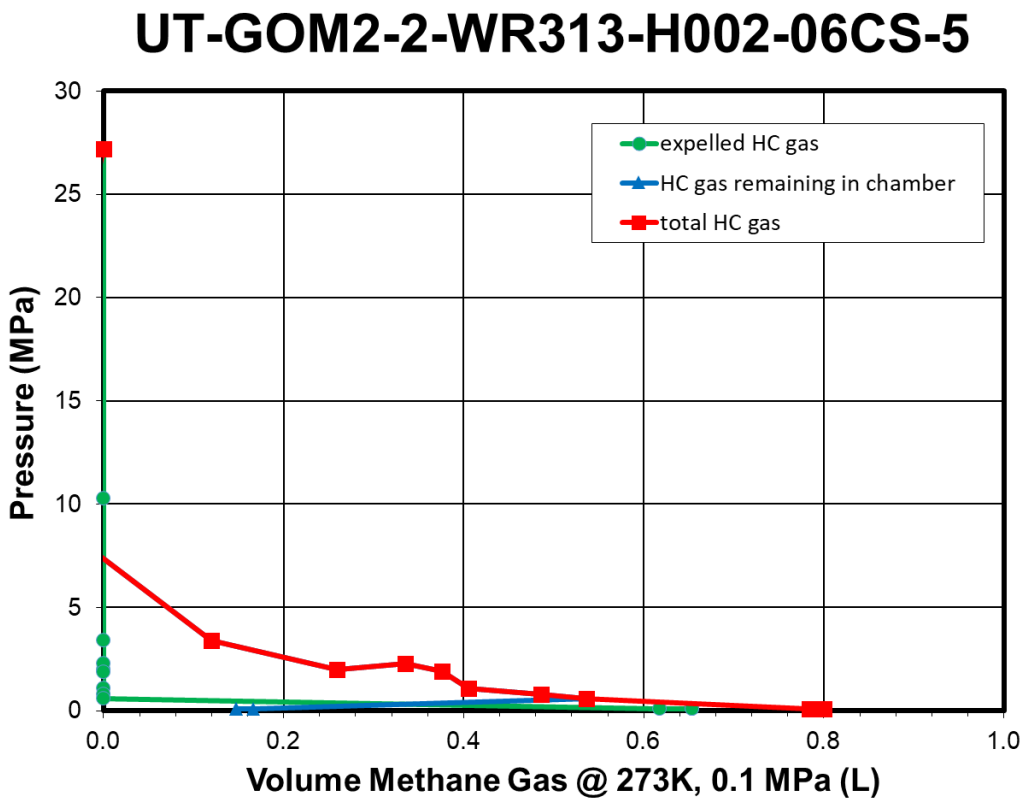

Figure 21. UT-GOM2-2-H002-06CS-5 pressure versus cumulative volume released.

UT-GOM2-2-H002-08CS-3

Section UT-GOM2-2-H002-08CS-3 released a total of 3.97 L of gas (Figure 22) from a 80 cm long section of core. Three gas samples were collected and analyzed, indicating the gas is composed of 91.7 to 97.2% methane by volume with 2.2 to 8.2 % nitrogen and oxygen contamination. Degassing was performed over 5.7 hr.

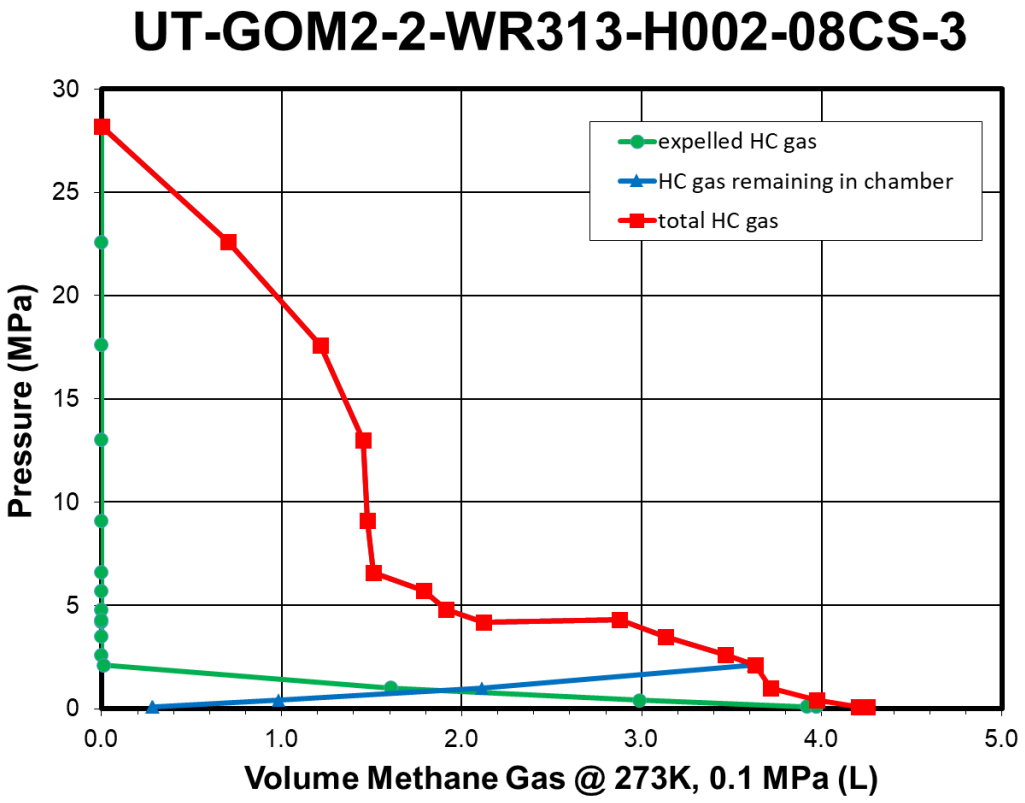

Figure 22. UT-GOM2-2-H002-08CS-3 pressure versus cumulative volume released.

References

Flemings, P. B., Thomas, C., Phillips, S. C., Collett, T. S., Cook, A. E., Solomon, E., Colwell, F. S., Johnson, J. E., Awwiller, D., Aylward, I., Bhandari, A. R., Brooks, D., Cardona, A., Casso, M., Coyte, R., Darrah, T., Davis, M., Dugan, B., Duncan, D., Germaine, J. T., Holland, M., Houghton, J., Mills, N. T., Mimitz, M., Minarich, D., Morono, Y., Murphy, Z., O'Connell, J., Petrou, E., Pettigrew, T., Pohlman, J. W., Portnov, A., Phillips, M. P., Redd, T., Sawyer, D. E., Schultheiss, P., Shannon, K., Sullivan, C., Small, C., Tozier, K., Tsang, M.-Y., Maal, C. V. D., Waite, W. F., and Walton, T., 2025, Expedition UT-GOM2-2 Methods, *in* Flemings, P. B., ed., Proceedings of the Gulf of Mexico Deepwater Hydrate Coring Expedition UT-GOM2-2: The University of Texas as Austin, University of Texas Institute for Geophysics, https://doi.org/10.5281/zenodo.13971228.