Closed Loop Gas Capture

Ophelia 27 #1H

Q1 2022 Report

1. Introduction

NMOCD Order R-21747, Paragraph 16, requires quarterly project status updates from EOG Resources on the Ophelia 27 #1H (30-025-41114) Closed Loop Gas Capture (CLGC) well. The following document outlines the activities that have taken place since the previous update submitted December 10, 2021.

Please note that the previous report contained a typo, referring to the subject well as the "Ophelia 21 #1H." All other content was correct and EOG apologizes for any confusion this might have created.

2. Project Activity Summary

Injection on the Ophelia 27 #1H took place for the first time on December 15, 2021. The CLGC system would go on to be utilized on, roughly, a monthly basis for the period covered by this report. Injection took place a total of seven (7) times, with one (1) instance being aborted due to automation and hydrate issues. Volume data (Table 1) and representative charts (Figures 1 & 2) are included in Section 3 of this report.

EOG saw excellent results from continued automation improvements, new operational protocols, and winterization efforts. Additionally, the injection data obtained while utilizing the system assisted with further delineating the "CLGC capacity" of the Ophelia 27 #1H, given the pressure differential available between the compressor station source (1,000-1,100 psig) and the well's production casing. Recovery profiles were in-line with the previous Caballo 23 Fed #2H pilot project results.

3. Injection & Recovery Data

Table 1 summarizes the daily injection totals for the dates that injection took place during the period covered by this report. As previously mentioned in Section 2, the low volume for February 2, 2022 was due to an aborted activation of the CLGC system. On that date, control valve automation issues compounded by the formation of hydrates prohibited the successful use of the system.

The Ophelia 27 #1H shows a particularly stable pressure response at rates of 4-5 MMSCFD. An example of this is shown in Figure 1, utilizing data recorded on January 4, 2022. Given the discharge pressure limitations at the compressor source, this rate range

has been conveyed to the Midland Control Rooms as a preferred starting point if anything beyond brief (<1 hour) injection is required.

Date	Injection Volume [MSCF]	Injection Time [hours]
12/15/2021	516.2	8.32
12/16/2021	427.1	4.41
12/21/2021	810.0	6.78
01/04/2022	985.9	6.58
01/05/2022	163.4	1.31
01/30/2022	742.9	4.41
02/02/2022	0.8	0.01
Total	**3,646.3**	**31.82**

Table 1: *Injection Volume Data for Report Period*

Figure 1 shows the injection rate, casing pressure, and tubing pressure for a representative period on January 4, 2022. Injection took place within the production casing/tubing annulus. The well exhibits a stable buildup, with the casing and tubing pressures equalizing after approximately three (3) hours. The gap between the two pressures after this can be attributed to a disagreement between the calibration of the two different pressure indicating transmitters. The casing pressure exhibited a breakover and stabilization approximately 30 minutes prior to this.

Figure 2 shows the recovery profile for the Ophelia 27 #1H following the injection periods on January 4-5, 2022, which included the period displayed in Figure 1. Full recovery of the cumulative injection volume occurred within approximately 17 days. The well returned close to type curve prior to the next initiation of the CLGC system on January 30, 2022. The recovery profile supports the original data presented from the Caballo 23 Fed #2H pilot project.

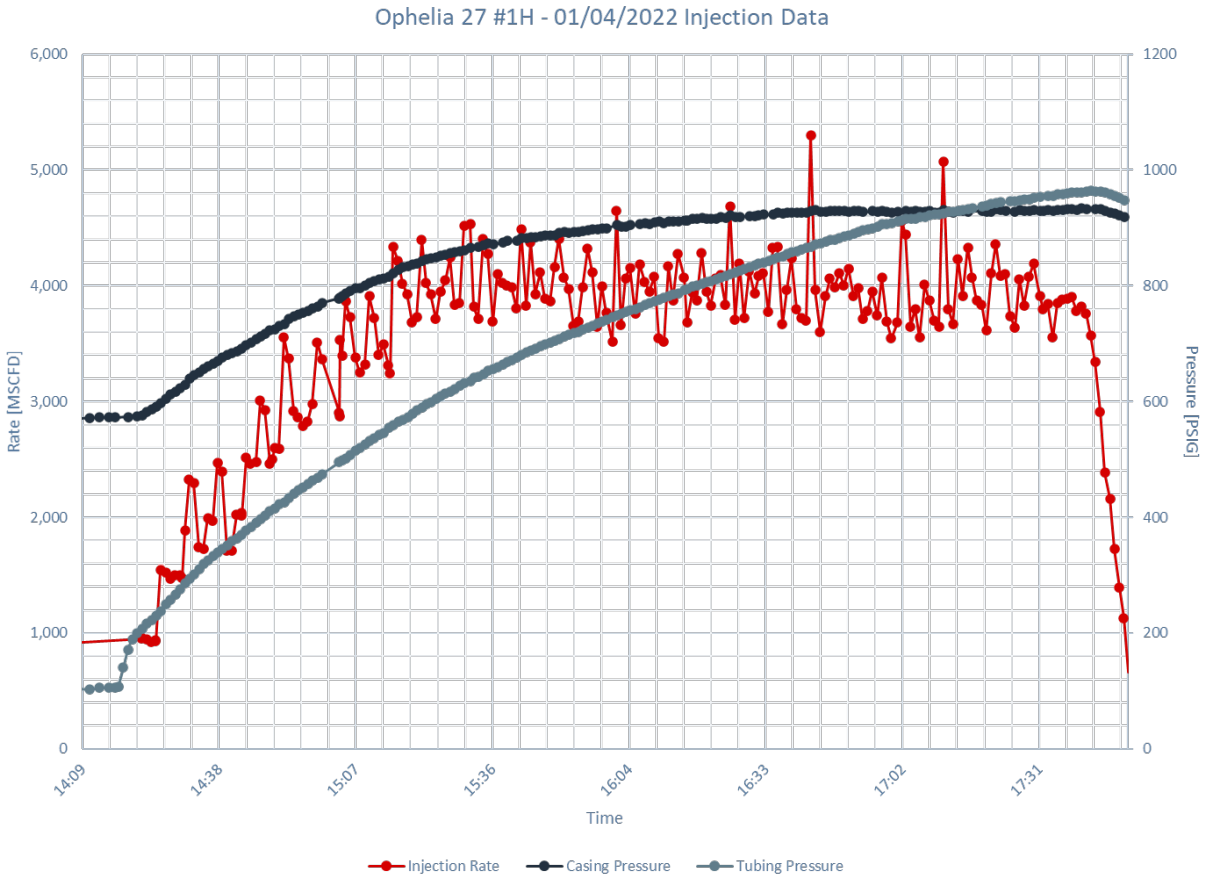

Figure 1: *Injection Rate & Pressure Data from January 4, 2022*

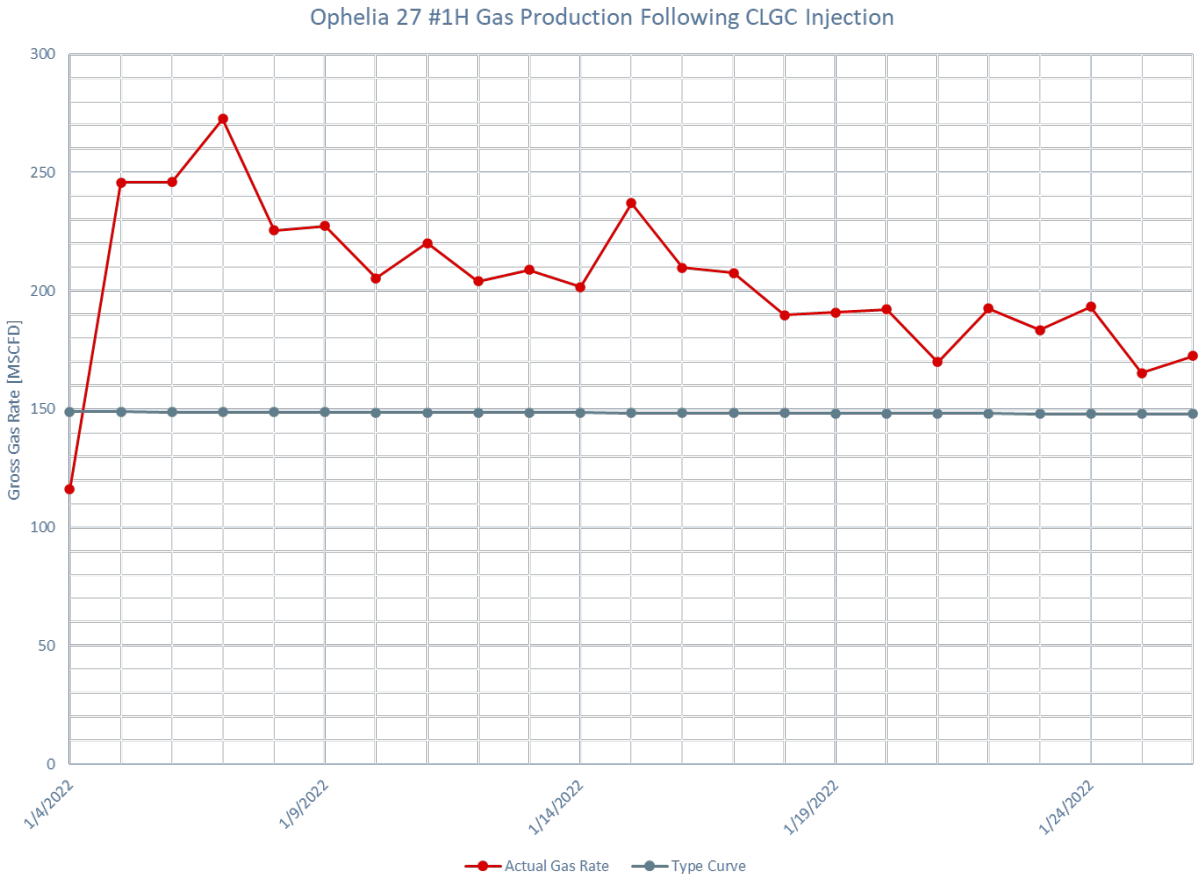

Figure 2: *Gas Production/Recovery Profile Following January 4-5, 2022 Injection*

4. Conclusion

Since the previous report submitted December 10, 2021, EOG utilized the Ophelia 27 #1H for CLGC injection on seven (7) occasions. The CLGC program was assisted by automation improvements, new operational protocols, and winterization efforts. The data captured during the injection periods assisted with the delineation of the well's "CLGC capacity," which influenced the development of Midland Control Room procedures. The well exhibited a stable injection profile and its recovery profile supported previous data submitted to the NMOCD for the Caballo 23 Fed #2H pilot project.

For the next report period, EOG will continue the regular use of the Ophelia 27 #1H as a CLGC injection well with ongoing data capture.

5. Contacts

Engineering

Ryan Yarger

Sr. Facilities Engineer

(432)-210-7842

Ryan_Yarger@EOGResources.com

Regulatory

Sarah Mitchell

Regulatory Advisor

(432)-425-6637

Sara_Mitchell@EOGResources.com