DATA SHEET 2
BGM-3 SENSOR CALIBRATION

S/N 222, P/N 6109-300503-1

DATE 1/26/2022 TIME 1513 CALIBRATED BY T. Reidy

DRIFT = _____ MGAL/DAY (IF AVAILABLE)

(1) Unfiltered Output Frequency at 0° = 24944.6572 PPS

(2) Unfiltered Output Frequency at 20° = 13000.0796 PPS

(3) Unfiltered Output Frequency at 340° = 13000.0975 PPS

(4) ½[(2)+ (3)] = 13000.08855 PPS

(5) {[(1) - (4)] x10^{-6}}/(1-cos(20°)) = 0.198061478 PPS/micro g

(6) 980375* x 10^{-6}/(5) = 4.94985199 mgal/PPS **Scale Factor** *(Spec: 4.0 to 6.0 mgal/PPS)*

(7) (1) x (6) x 10^{-3} = 123.4723611 gals

(8) 980.375** - (7) = 856.9026389 gals

(9) **CALIB** output unfiltered frequency = 25005.5322 PPS

(10) **TEST** output unfiltered frequency = 24999.9964 PPS

(11) **CALIB** equivalent = [(9) x (6)] ÷ 1000 = 123.7736833 gals

(12) **TEST** equivalent = [(10) x (6)] ÷ 1000 = 123.7462819 gals

(13) (8) x 1000 = 856902.6389 mgals **Bias** *(Spec: (14) to (15))*

(14) 1000[977-{25 x (6)}] = 853253.7003 mgals (lower limit)

(15) 1000[983-{25 x (6)}] = 859253.7003 mgals (upper limit)

*local gravity at Wheatfield is 980375 mgals. Value must be changed if Calibration is done elsewhere.
**local gravity at Wheatfield (980.375 gals). Value must be changed if Calibration is done elsewhere.

4.0 SYSTEM DRIFT DETERMINATION

This section is to be run only if time permits.

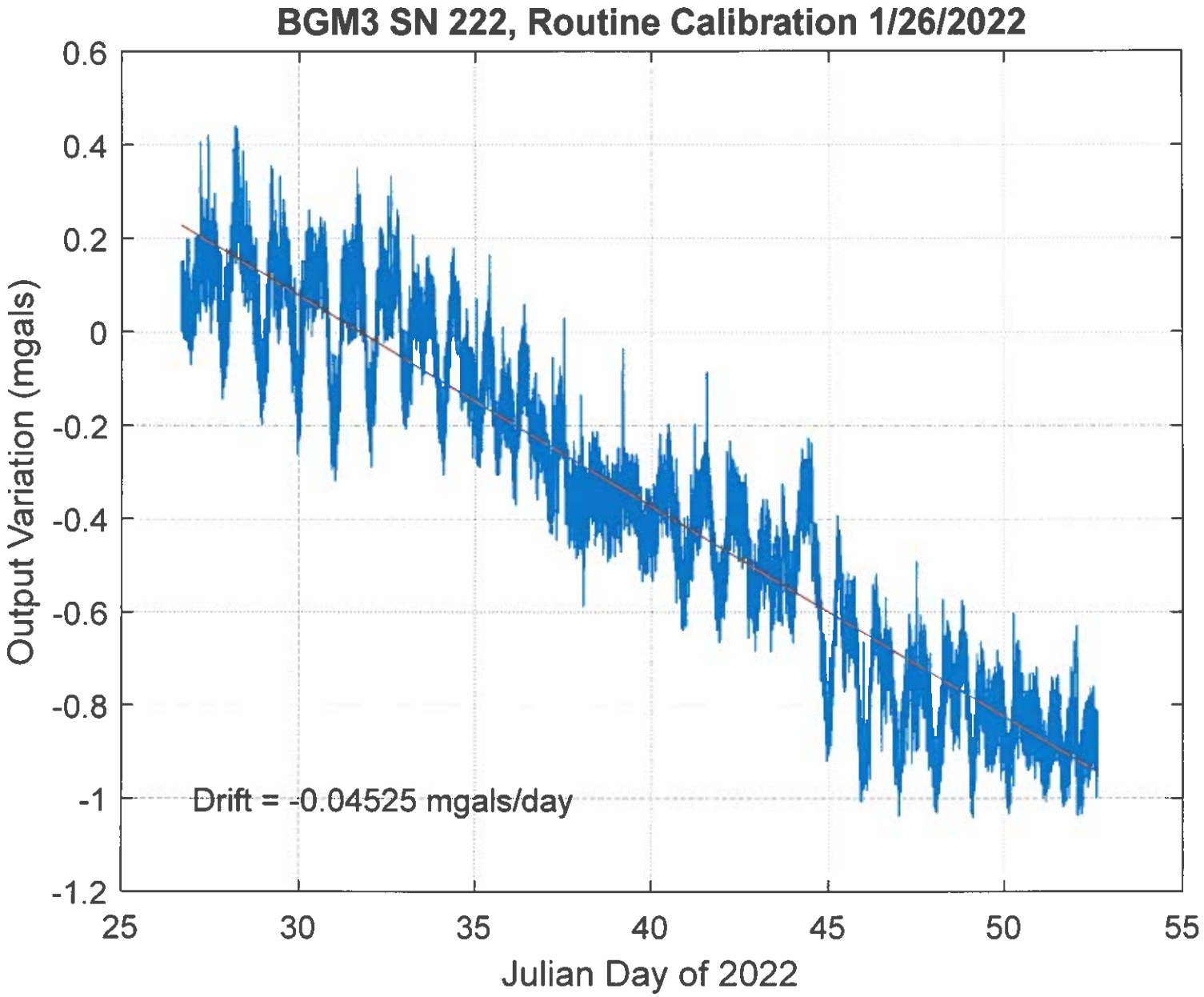
Stop the program and edit the case statement for this unit, using the newly obtained values for Scale Factor and Bias. Restart the program and observe nominal values for both the unfiltered and filtered gravity.

The system shall be in the OPERATE mode in static conditions. The gravity output shall be recorded for as much time as possible, hopefully meaning at least 24 hours. Drift is defined as the least squares best fit straight line to the data. Make this computation (suggested method would be found in MATLAB)

Drift = -0.04525 mgals/day

Spec: 0 ± 1.0 mgals/day

Enter the computed drift value on Data Sheet 2.


BGM3 SN 222, Routine Calibration 1/26/2022
Output Variation (mgals)
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
25
30
35
40
45
50
55
Julian Day of 2022
Drift = -0.04525 mgals/day