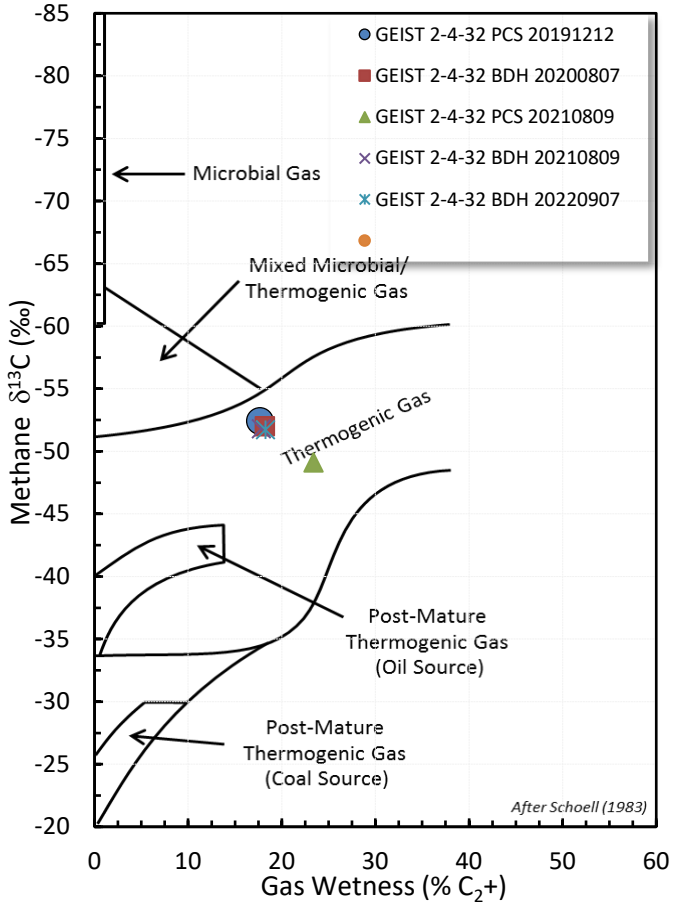
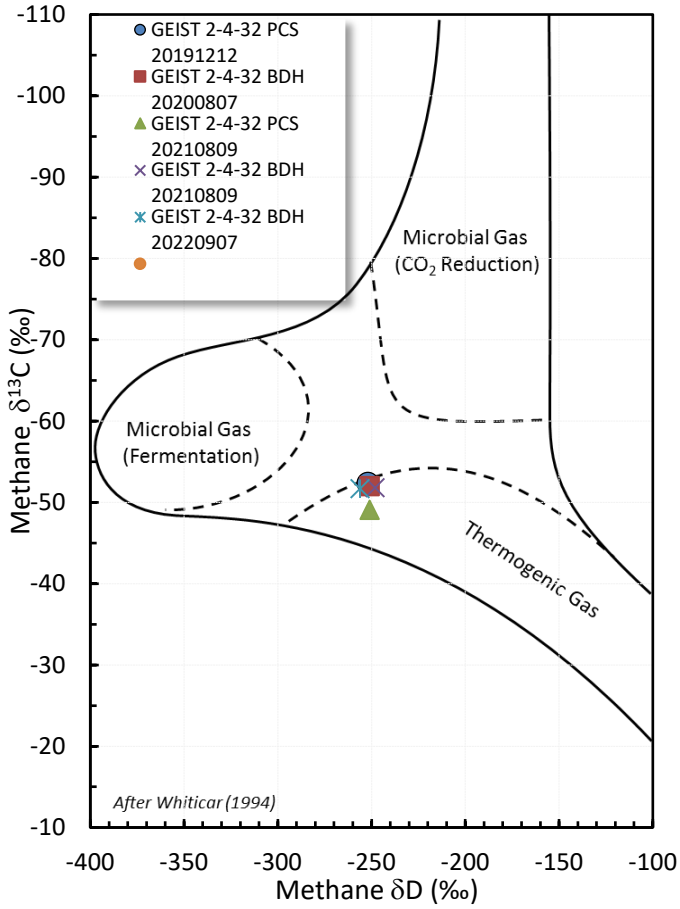
Stable Isotope Interpretive Plots

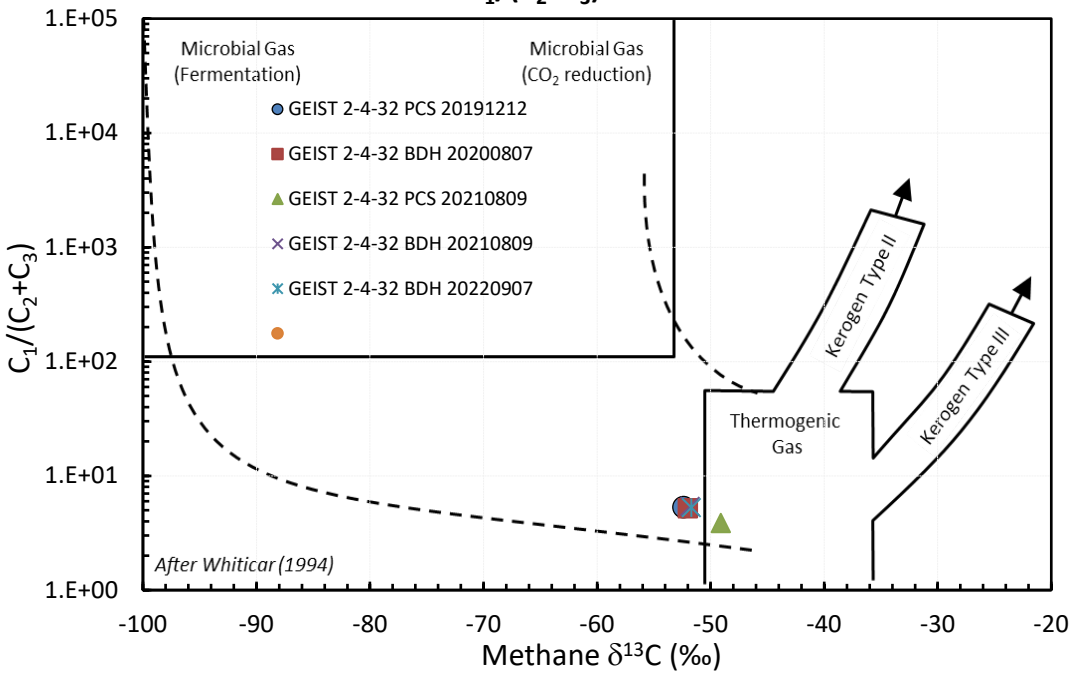
Methane vs Gas Wetness Genetic Classification

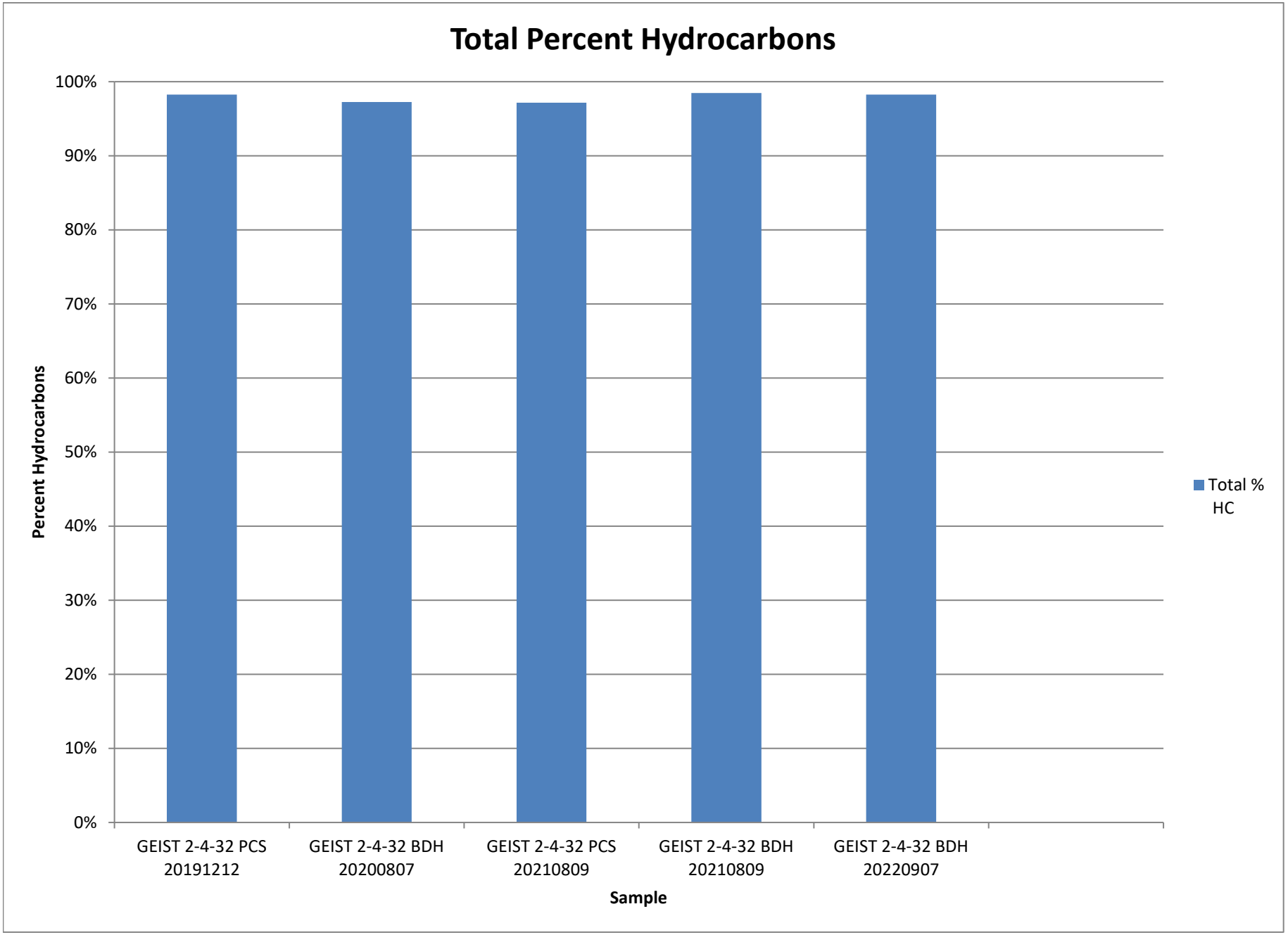


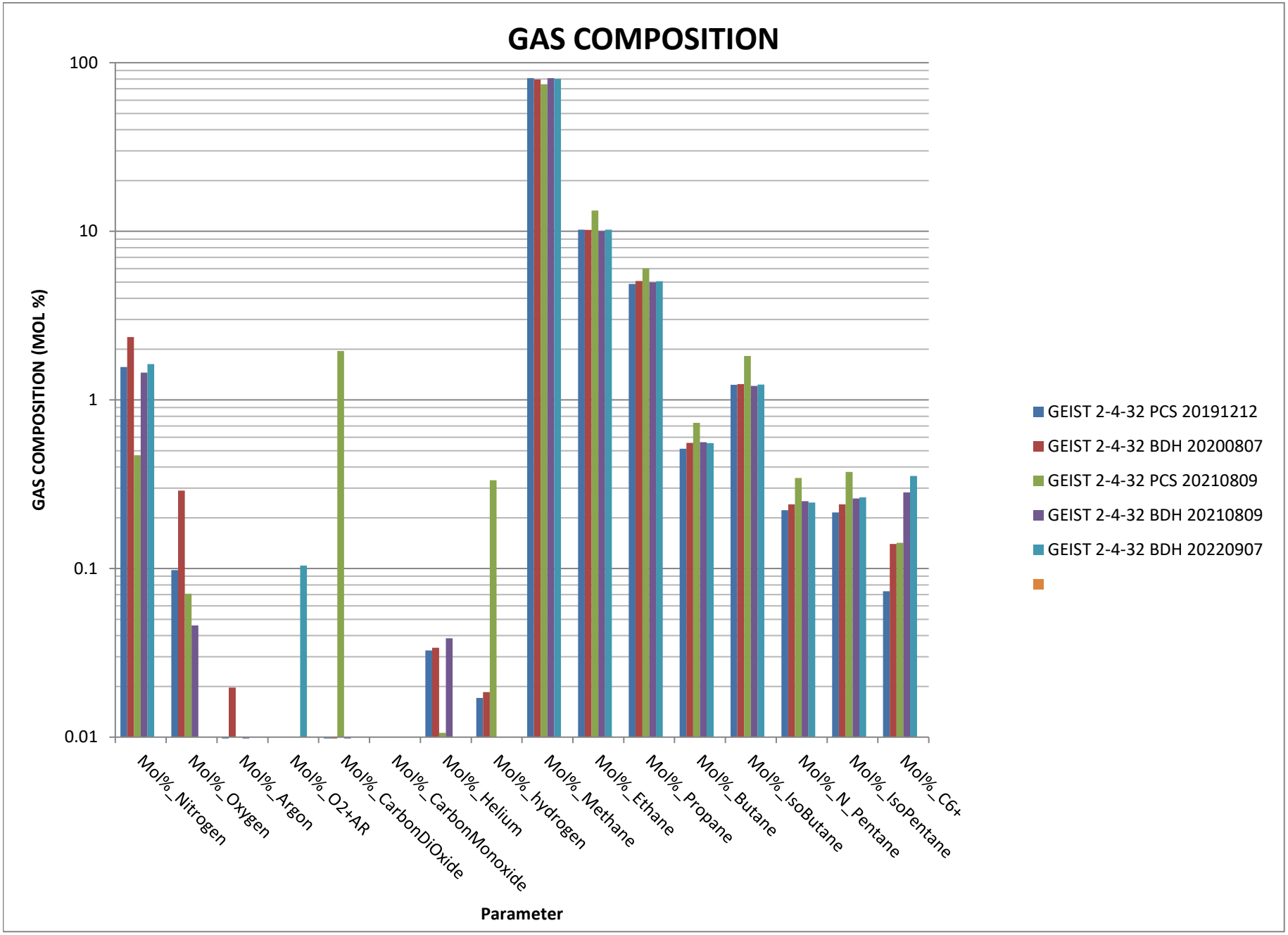
Methane $\delta^{13}C$ vs δD Genetic Classification Plot

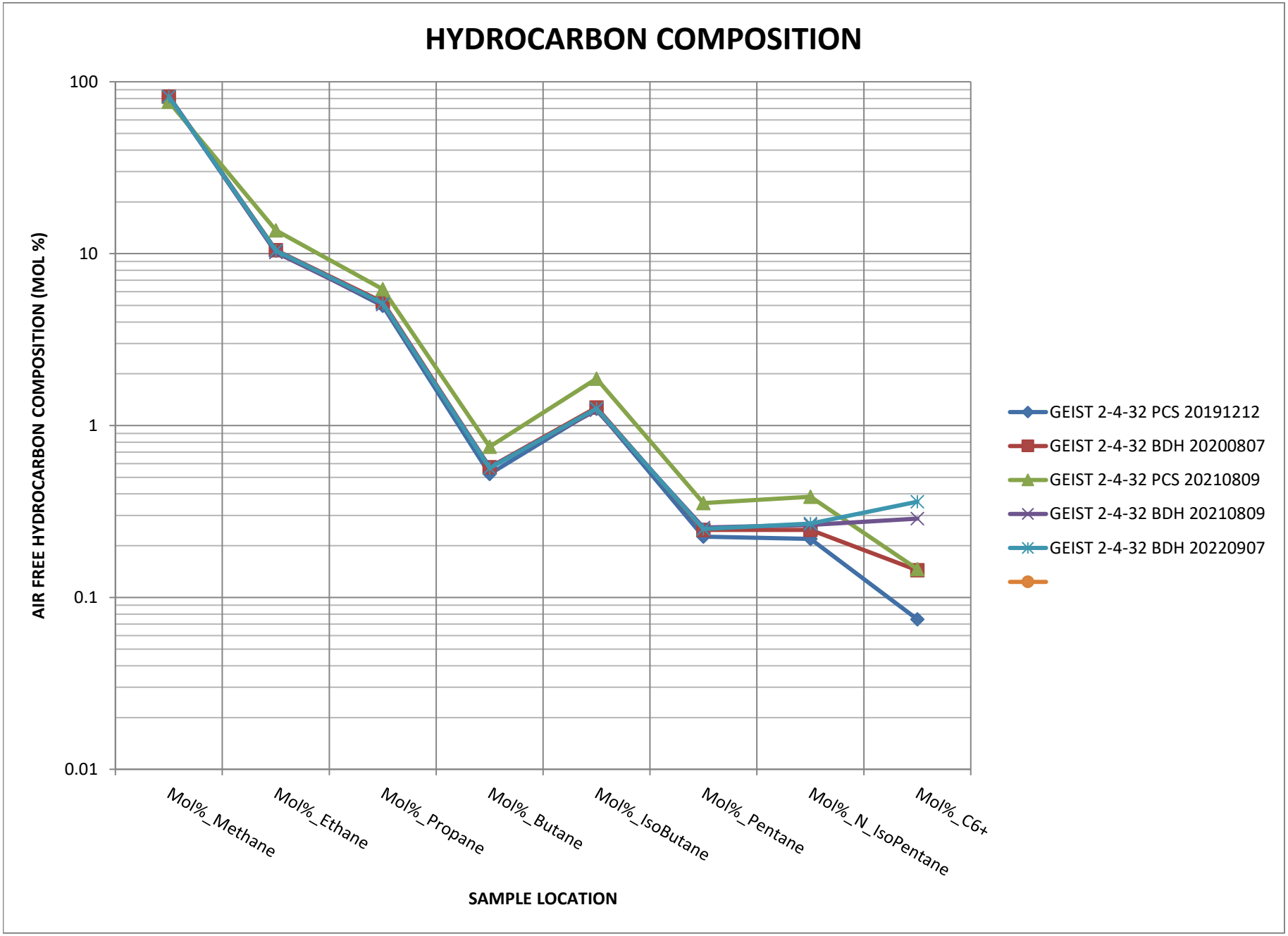


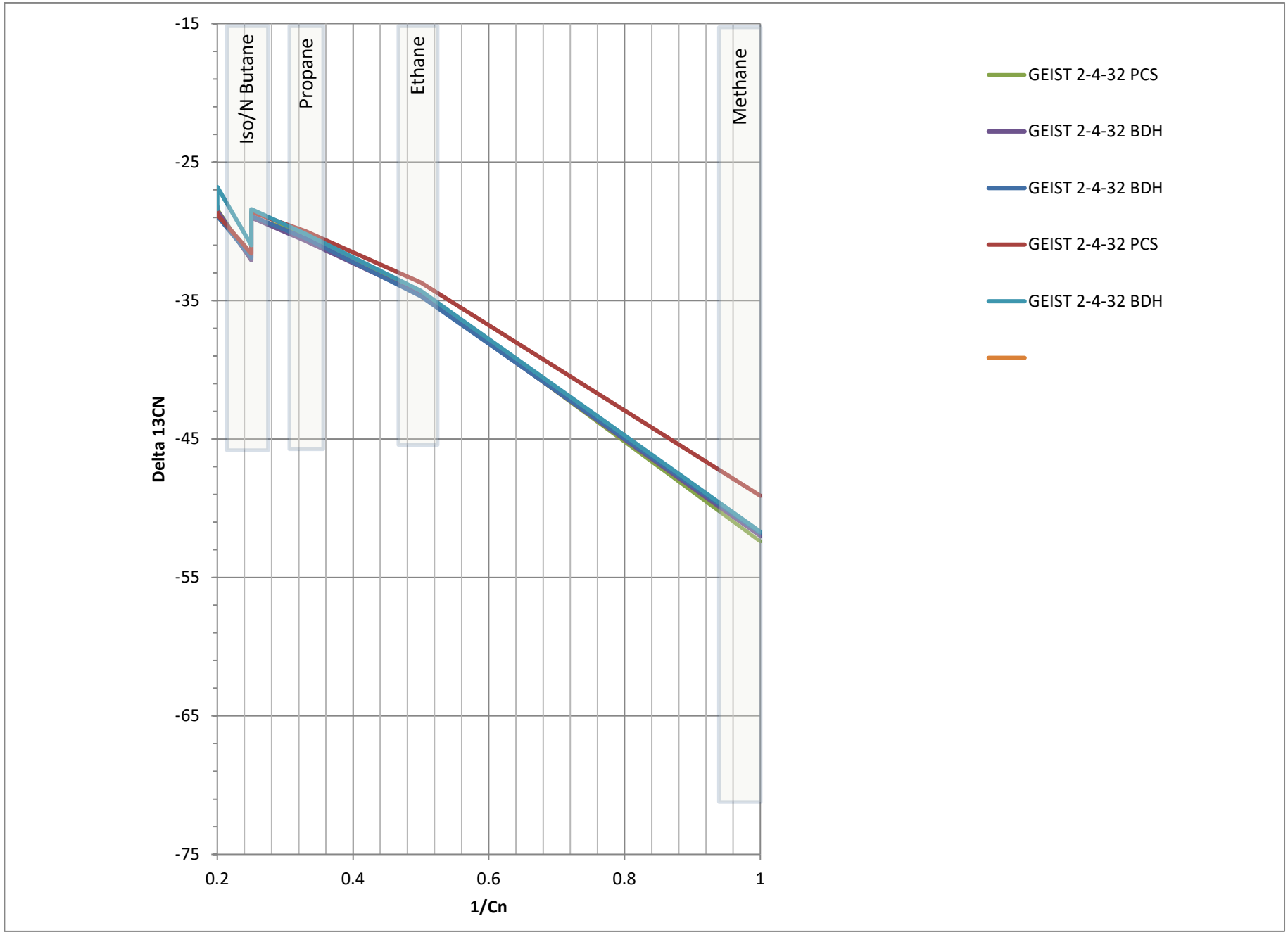
Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot

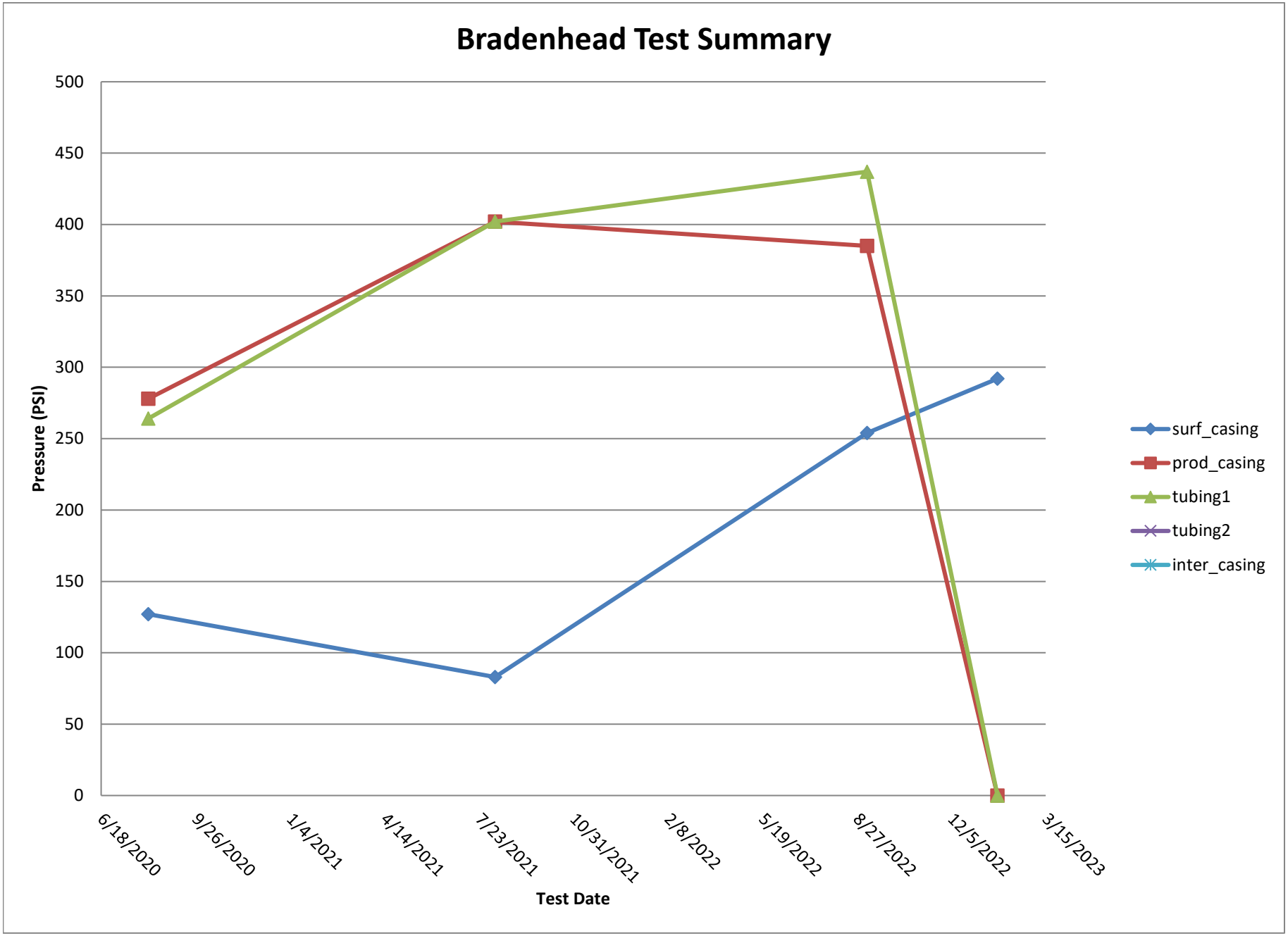


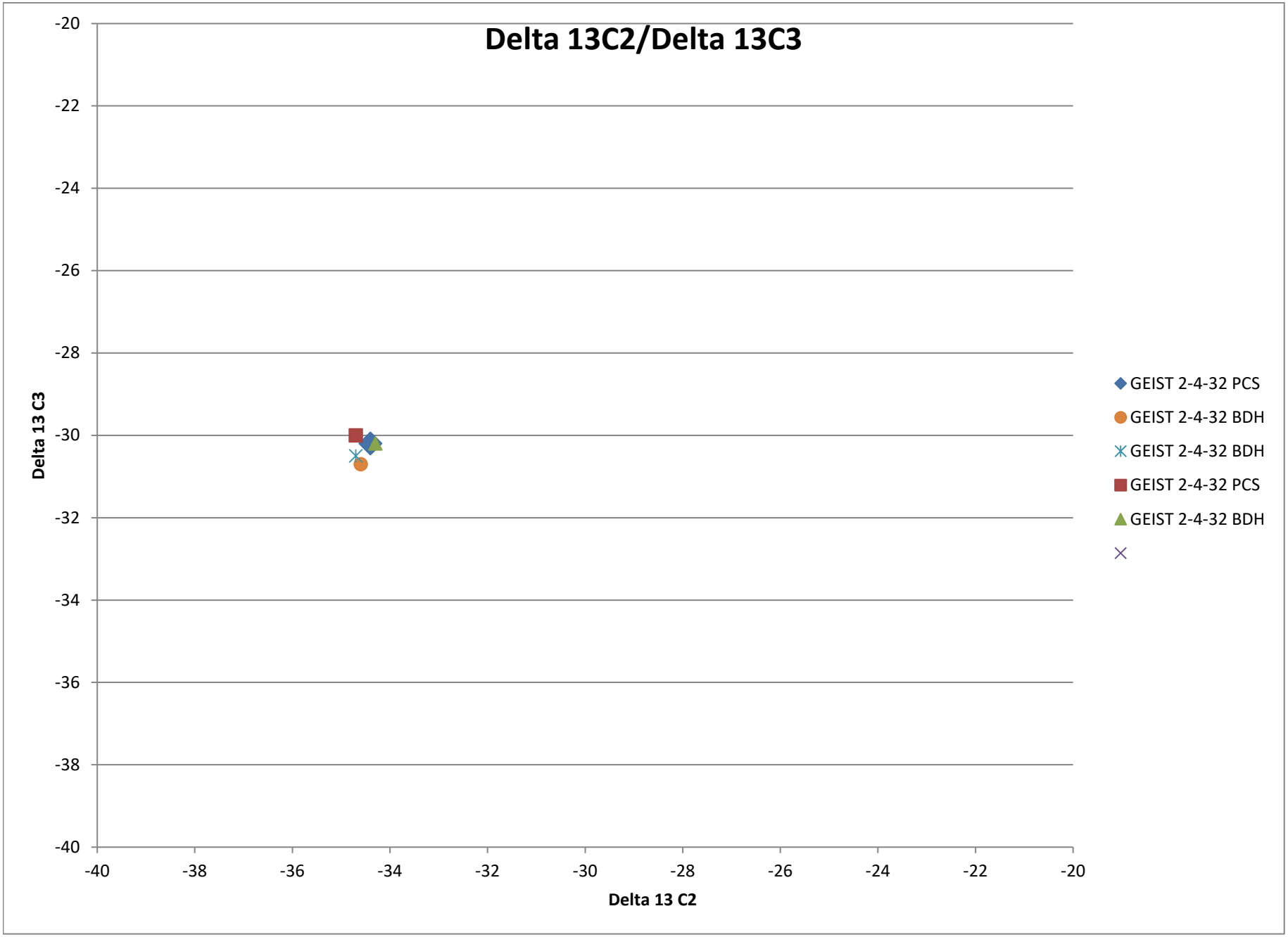

Total Percent Hydrocarbons
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percent Hydrocarbons
GEIST 2-4-32 PCS 20191212
GEIST 2-4-32 BDH 20200807
GEIST 2-4-32 PCS 20210809
GEIST 2-4-32 BDH 20210809
GEIST 2-4-32 BDH 20220907
Sample
Total % HC

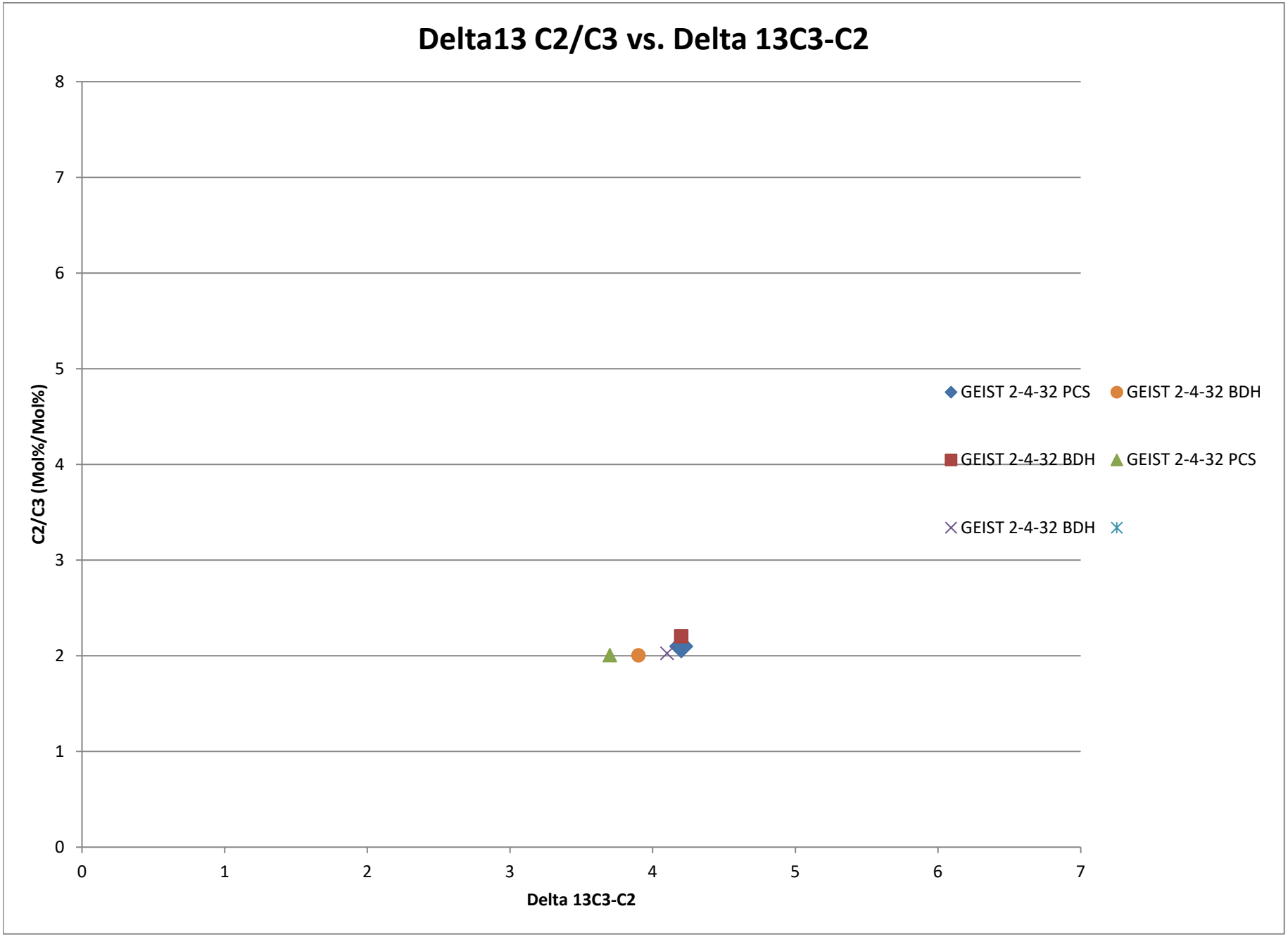

GAS COMPOSITION
GAS COMPOSITION (MOL %)
100
10
1
0.1
0.01
Mol%_Nitrogen
Mol%_Oxygen
Mol%_Argon
Mol%_O2+AR
Mol%_CarbonDiOxide
Mol%_CarbonMonoxide
Mol%_Helium
Mol%_hydrogen
Mol%_Methane
Mol%_Ethane
Mol%_Propane
Mol%_Butane
Mol%_IsoButane
Mol%_N_Pentane
Mol%_IsoPentane
Mol%_C6+
Parameter
GEIST 2-4-32 PCS 20191212
GEIST 2-4-32 BDH 20200807
GEIST 2-4-32 PCS 20210809
GEIST 2-4-32 BDH 20210809
GEIST 2-4-32 BDH 20220907

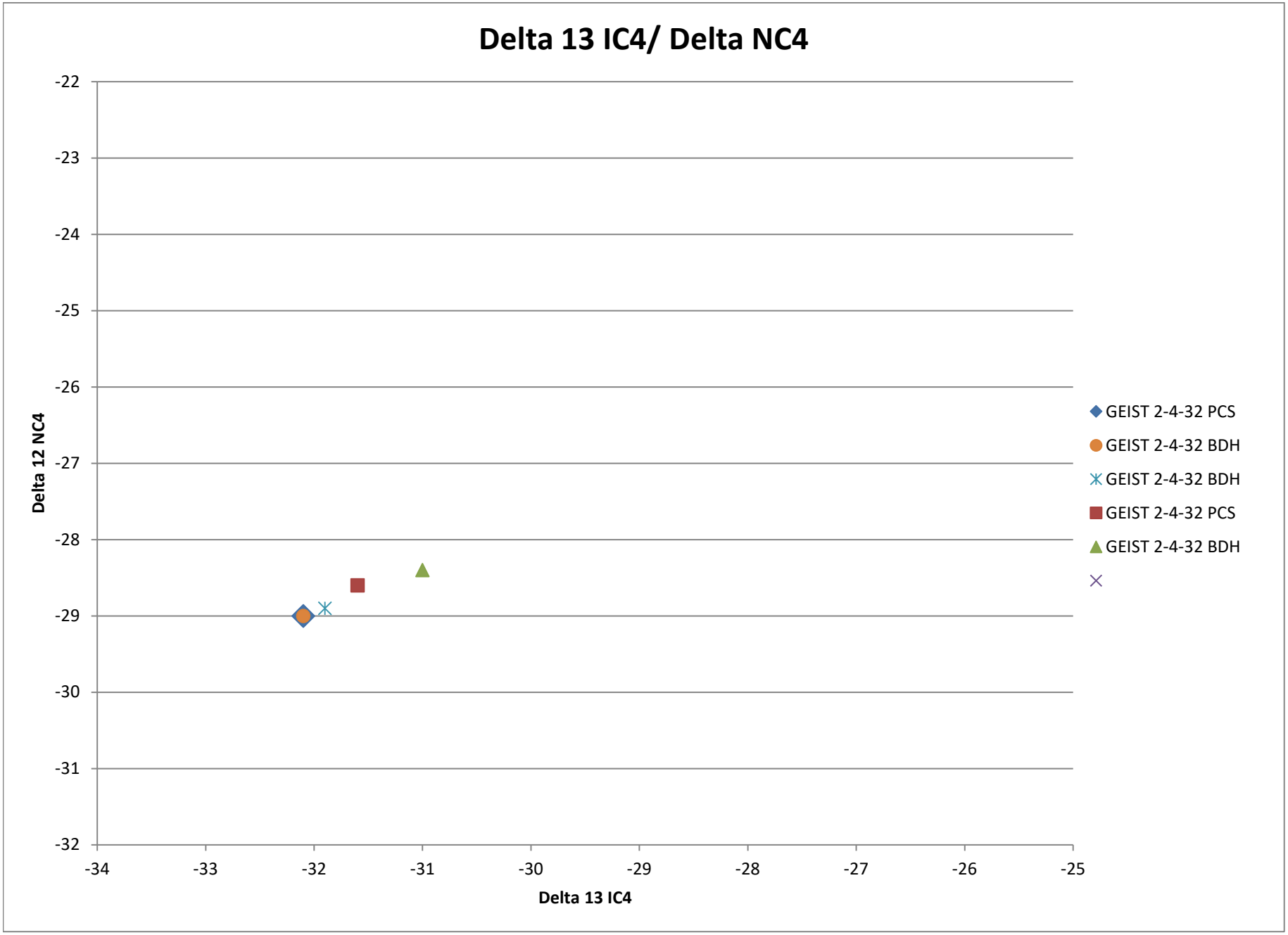

HYDROCARBON COMPOSITION
AIR FREE HYDROCARBON COMPOSITION (MOL %)
100
10
1
0.1
0.01
Mol%_Methane
Mol%_Ethane
Mol%_Propane
Mol%_Butane
Mol%_IsoButane
Mol%_Pentane
Mol%_N_IsoPentane
Mol%_C6+
SAMPLE LOCATION
GEIST 2-4-32 PCS 20191212
GEIST 2-4-32 BDH 20200807
GEIST 2-4-32 PCS 20210809
GEIST 2-4-32 BDH 20210809
GEIST 2-4-32 BDH 20220907


-15
-25
-35
-45
-55
-65
-75
Delta 13CN
0.2
0.4
0.6
0.8
1
1/Cn
Iso/N Butane
Propane
Ethane
Methane
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH
GEIST 2-4-32 BDH
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH


Bradenhead Test Summary
500
450
400
350
300
250
200
150
100
50
0
Pressure (PSI)
6/18/2020
9/26/2020
1/4/2021
4/14/2021
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
Test Date
surf_casing
prod_casing
tubing1
tubing2
inter_casing


Delta 13C2/Delta 13C3
-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
Delta 13 C3
-40
-38
-36
-34
-32
-30
-28
-26
-24
-22
-20
Delta 13 C2
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH
GEIST 2-4-32 BDH
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH


Delta13 C2/C3 vs. Delta 13C3-C2
C2/C3 (Mol%/Mol%)
Delta 13C3-C2
0
1
2
3
4
5
6
7
8
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH
GEIST 2-4-32 BDH
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH


Delta 13 IC4/ Delta NC4
-22
-23
-24
-25
-26
-27
-28
-29
-30
-31
-32
Delta 12 NC4
-34
-33
-32
-31
-30
-29
-28
-27
-26
-25
Delta 13 IC4
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH
GEIST 2-4-32 BDH
GEIST 2-4-32 PCS
GEIST 2-4-32 BDH