
Well Inspection Report

Instructions

- Complete all pages.
- Sign and submit electronically within 30 days of the well inspection to orogo@gov.nt.ca.
- If you wish to submit a hard copy, please use the courier address at www.orogo.gov.nt.ca/contact-us.
- Refer to the [Well Suspension and Abandonment Guidelines and Interpretation Notes](#) (May 2022) for details on well inspection requirements.
- Report in metric units.

Required attachments:

- Photos of wellhead and well site (*Include descriptions*)
of photos attached: 4 (in GCHEM Report)
- Wellhead schematic
- Wellbore schematic

Well Information

Well name: F-73-60-10-117-15

4 digit WID: 1992

OROGO risk level: Level 2

Wellhead? Yes No

Pressure rating of all wellhead components:
900/1500 Ansi

Pumpjack? Yes No

Operator: Alvarez & Marsal Canada Inc., in its capacity as receiver of Strategic Oil & Gas's NWT Property
Well status: Suspended

Coordinates (*In decimal degrees; verified onsite*)
Datum: NAD 27 NAD 83 Unknown
Lat: Not Taken
Long: Not Taken

Completed in H₂S zone? Yes
 Estimated % of H₂S: ~2 or
 Measured % of H₂S: 0

Inspection Date and Contact Information

Date of inspection: 2022-09-16

Date of previous inspection: 2018-09-30

Inspection conducted by:

Name: Brad Johnson
Company: G-Chem
Phone: 780-808-1927
Email: brad.johnson@gchem.ca

Environmental or Safety Concerns

(Report all incidents as required under section 75 of the Oil and Gas Drilling and Production Regulations)

Environmental or safety concerns? Yes No

If yes, provide details: [Click or tap here to enter text.](#)

Inspection Results

Site

Well site accessible for inspection and monitoring? Yes No

Equipment or debris on site? Yes No

Additional clean up required? Yes No

Provide details of all site accessibility concerns: This site is accessible with heavy equipment by winter access roads only. Year round access by Helicopter.

Brush cleared 25 m around wellhead?
 Yes No

Wind indicator present and functional?
 Yes No

Wellhead

Wellhead accessible for inspection and monitoring? Yes No

Valves chained and locked? Yes No

Valves operate freely? Yes No

Pressure test well head seal assembly?
 Yes No

(If yes, provide details in comments section with supporting documentation)

Surface casing vent open, operable and accessible in all seasons? Yes No

Pumpjack secure? Yes No N/A

Visible marker or fence in place? Yes No
4-digit Well ID, operator and contact information up to date? Yes No

Date of previous well head seal assembly pressure test: [Click or tap to enter a date.](#)

Surface Casing Vent Flow (SCVF) / Gas Migration (GM) testing

Evidence of SCVF? Yes No

SCVF test conducted? Yes No
(If yes, provide details in comments section with supporting documentation)

Signs of GM? Yes No

GM test conducted? Yes No
(If yes, provide details in comments section with supporting documentation)

Gas samples taken? Yes No
(If yes, provide details in comments section identifying location and anticipated date of submission of analysis to OROGO)

Shut-in pressures

Production casing pressure (kPa):
Not Taken for this Inspection

Intermediate casing pressure (kPa):
Not Taken for this Inspection

Production tubing pressures (kPa):
Not Taken for this Inspection

Any other readings taken:
[Click or tap here to enter text.](#)

Comments

- Details of: SCVF/ GM testing (*Include source: SCV, wellbore or soil vapour*)
 Shut-in pressures (*Include equipment used, results, any changes from previous inspections and previous inspection dates*)
 Seal assembly testing (*Include maximum pressure tested and duration of test*)
 Other comments

This inspection was specific to Gas Migration and SCVF testing; this was not a full wellsite inspection completed by A&M personnel.

Additional supporting documentation attached? Yes No

If yes, list attached documentation: GCHEM Report & Wellbore Schematic

I certify based on personal knowledge of well inspection operations undertaken at the above named well that the above information is accurate.

Responsible Officer:

Date: 2022-11-15

Name: Duncan MacRae
Title: Vice President
Operator: Alvarez & Marsal Canada Inc., in its
capacity as receiver of Strategic Oil & Gas's
NWT Property

Signature:



Heli Source Ltd.

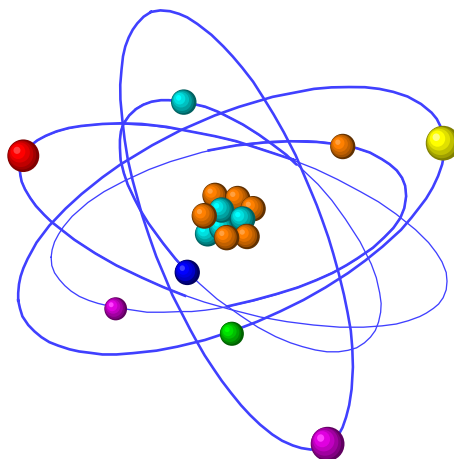
Work Order-Ref #: 22317

Vapor Intrusion Assessment (VIA)

Surface Casing Vent (SCV) Flow Test

Cameron Hills F-73

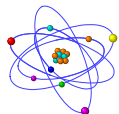
September 16, 2022



GCHEM Ltd.

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FORENSIC SOLUTIONS FOR ENERGY CHALLENGES

**1.0 Vapor Intrusions Assessment (VIA) Summary**

Operating Company: Not Provided
Well Name: F-73
UWI: F-73-60-10-117-15

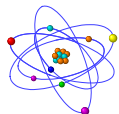
License Number: 1992
Test Date: September 16, 2022
GCHEM Project Number: 22317

1.1 Production Casing Assessment Summary Table

Combustible Gas (CH ₄) (%LEL)	nm		
Hydrogen Sulphide (H ₂ S) Gas (ppm v/v)	nm		
PC Flow Rate (m ³ /day)	nm		
P-T Date Logger Installed	nm		
P-T Data Logger Removed	nm		
P-T Data Logger Test Duration	nm		
MAX Pressure (kPa)	nm		
Gas Spls. Collection-Measurement	Total Collected	Analysis Requested*	Classification**
PC Samples (Total)	0		
PC Combustible Gas Class. Level-1 (Chemical)		NA	NA
PC Combustible Gas Class. Level-2 (δ ¹³ C)		NA	NA
PC Combustible Gas Class. Level-3 (δD)		NA	NA
PC Combustible Gas Class. Level-4 (¹⁴ C)		NA	NA

1.2 Surface Casing Vent Flow (SCVF) Assessment Summary Table

SCV Ten-Minute Bubble Test Result	PASS		
SCV Flow Rate (m ³ /day)	0		
SCV Pressure-Temp Logger Installed	NA		
SCV Pressure-Temp Data Logger Removed	NA		
SCV Shut-In Time (hrs)	NA		
SCV MAX-Recorded Build Up Pressure (kPa)	NA		
SCV Stabilized Build-up Pressure (kPa):	NA		
SCV Stabilized Build-up Time (hours)	NA		
SCV Standpipe Max CH ₄ Content (ppm v/v):	1		
SCV Standpipe Max H ₂ S Content	<1		
SCV Gas Spls. Collection-Measurement	Total Collected	Analysis Requested*	Classification**
SCV Samples (Total)	1		
SCV Combustible Gas Class. Level-1 (Chemical)		1	NON-IMPACTED
SCV Combustible Gas Class. Level-2 (δ ¹³ C)		NA	NA
SCV Combustible Gas Class. Level-3 (δD)		NA	NA
SCV Combustible Gas Class. Level-4 (¹⁴ C)		NA	NA



1.3 Soils Outside Casing (AGM) Assessment Summary Tables

A) Non-Intrusive CH₄ Surface Soil Scan (PMD) (Figure-1 and Table-1)

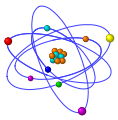
Well Casing Surface CH ₄ Test Sites	28
MAX Surface CH ₄ Reading	1 ppm v/v
MAX H ₂ S Well Soil Reading (ppm v/v)	<1
Number of Background Sites	1
MAX Background CH ₄ (ppm v/v)	1
Max H ₂ S BKG Soil Reading (ppm v/v)	<1
<hr/>	
Surface CH ₄ -PMD Gas Classification	NON-IMPACTED

B) Non-Intrusive Surface Enclosed Soil Vapor FLUX Chamber Test

Surface SV-FC CH ₄ Test Sites	nm		
MAX SV-FC CH ₄ Reading	nm		
<hr/>			
SV-FC Gas Spl. Collection-Measurement	Total Collected	Analysis Requested*	Test Site
SV-FC Samples (Total)	0		
SV-FC & Sites Requested for Level-1 Analysis		NA	NA
Combustible Gas Classification Level-1 (Chem.)		NA	
SV-FC & Sites Requested for Level-2 Analysis		NA	NA
Combustible Gas Classification Level-2 (δ ¹³ C)		NA	
SV-FC & Sites Requested for Level-3 Analysis		NA	NA
Combustible Gas Classification Level-3 (δD)		NA	
SV-FC & Sites Requested for Level-4 Analysis		NA	NA
Combustible Gas Classification Level-4 (¹⁴ C)		NA	

C) Intrusive Auger Test Holes with Soil Vapor Probes (Figure 2 and Table 2)

Number Soil Vapor Probe (SVP) Test Sites	16		
MAX SVP CH ₄ Reading (ppm v/v)	3167		
Max H ₂ S SVP Field Reading (ppm v/v)	<1		
Number SVP BKG Test Sites	1		
MAX SVP CH ₄ BKG Test Sites (ppm v/v)	134		
<hr/>			
SVPs Gas Spl. Collection & Measurement	Total Collected	Analysis Requested*	Test Site
Soil Vapor Probes (SVPs) AGM (Total)	4		
SVP & Sites Requested for Level-1 Analysis		4	E1, E1.5, E3 & W1
Combustible Gas Classification Level-1 (Chem.)		NON-IMPACTED	
SVP & Sites Requested for Level-2 Analysis		0	NA
Combustible Gas Classification Level-2 (δ ¹³ C)		NA	
SVP & Sites Requested for Level-3 Analysis		0	NA
Combustible Gas Classification Level-3 (δD)		NA	
SVP & Sites Requested for Level-4 Analysis		0	NA
Combustible Gas Classification Level-4 (¹⁴ C)		NA	



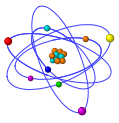
BKG Gas Spl. Collection-Measurement	Total Collected	Analysis Requested*	Test Site
BKG Soil Vapor Probe (SVPs) (Total)	1		
BKG & Sites Requested for Level-1 Analysis		1	BKG N30
Combustible Gas Classification Level-1 (Chem.)			BASELINE
BKG & Sites Requested for Level-2 Analysis		0	NA
Combustible Gas Classification Level-2 ($\delta^{13}C$)			NA
BKG & Sites Requested for Level-3 Analysis		0	NA
Combustible Gas Classification Level-3 (δD)			NA
BKG & Sites Requested for Level-4 Analysis		0	NA
Combustible Gas Classification Level-4 (^{14}C)			NA

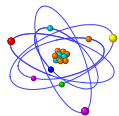
* Sample selection for chemical and isotope analysis (geochemical analytical suite) selected by client/operator.

1.4 Interpreted Source of Migrating Gases

Sample Point	Geologic Formation	Depth Range	Source Depth
No samples submitted for stable isotope composition analysis.			





**3.0 Vapor Intrusion and Surface Casing Vent Flow Testing and Sampling Comments****Assessment-Collection Date: September 16, 2022**

- 1) The Surface Casing Vent passed the ten-minute bubble test (1 ppm v/v methane).
- 2) C₂+ light alkane content of SCV gases collected during this investigation are slightly, above baseline, levels indicting the presence of thermogenic natural gases. There is no evidence of current surface casing vent flow indicating the gases are likely the result of a previous event (historic SCV flow, completion or production operations, etc.).
- 3) A surface combustible gas scan was performed near the wellbore using a Sensit Portable Methane Detector (PMD). All readings were low, (1 ppm v/v methane) compared to background (1 ppm v/v) established 30m north from the wellbore (Figure 1, Table 1).
- 4) An intrusive soil gas migration test was then performed by drilling test holes and inserting Soil Vapor Probes (SVPs). Combustible gas readings in the SVPs were elevated (up to 3167 ppm v/v at E1), compared to the background probe (1 ppm v/v methane) installed approximately 30m north of the wellbore to establish background levels in the area and for comparison to other samples collected during this investigation (Figure 2, Table 2).
- 5) Four soil gas samples from SVPs (E1, E1.5, E3 & W1) and gases from background (BKG N30) were collected, contained, and preserved for geochemical analysis and characterization, classification, geologic origin (source) and depth measured from the KB (Table 3).
- 6) C₂ + light alkane gas levels in soil gases collected near the wellbore are low, comparable to background established 30m N of the wellbore (Figure 3). Elevated combustible gas readings in the soils are the result of the presence of biogenic methane (swamp gas).
- 7) C₆₊ contents in the SCV and soil gas samples are low and comparable to background levels (Figure 4).
- 8) This well does not contain evidence of active SCVF or gas migration at the time of this investigation.

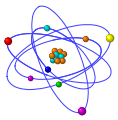


Figure 1. AGM Non-Intrusive Surface PMD

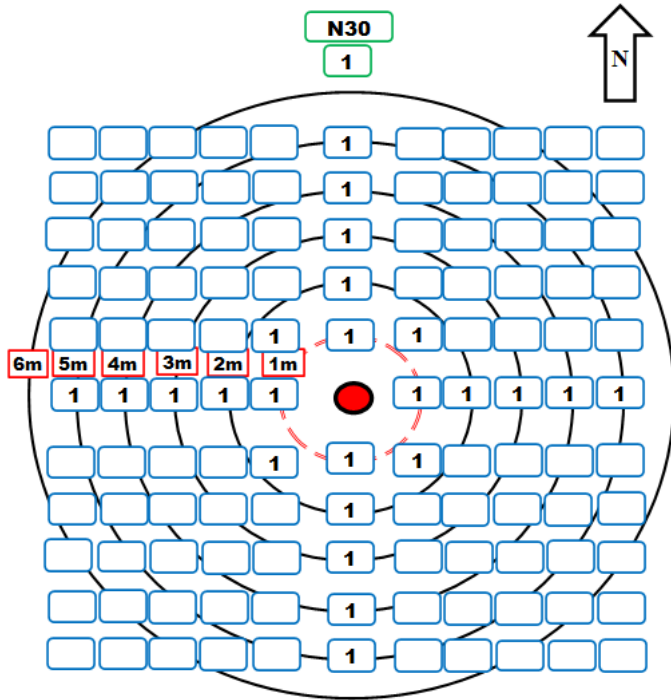


Figure 1A. Non-Intrusive CH₄ Surface Well Casing Detail VIEW

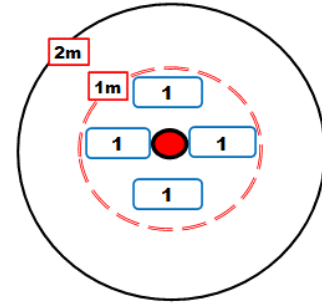


Table 1. AGM Non-Intrusive Surface PMD

WELL CASING (AGM) Non-Intrusive Surface PMD (CH ₄) Soil Scan							
Test Site (m)	PMD CH ₄ (ppm v/v) (%)	Test Site (m)	PMD CH ₄ (ppm v/v) (%)	Test Site (m)	PMD CH ₄ (ppm v/v) (%)	Test Site (m)	PMD CH ₄ (ppm v/v) (%)
N.5	1	E.5	1	S.5	1	W.5	1
N1	1	E1	1	S1	1	W1	1
N2	1	E2	1	S2	1	W2	1
N3	1	E3	1	S3	1	W3	1
N4	1	E4	1	S4	1	W4	1
N5	1	E5	1	S5	1	W5	1
N5-E1		E5-S1		S5-W1		W5-N1	
N4-E1		E5-S2		S4-W1		W5-N2	
N3-E1		E5-S3		S3-W1		W5-N3	
N2-E1		E5-S4		S2-W1		W5-N4	
N1-E1	1	E5-S5		S1-W1	1	W5-N5	
N1-E2		E4-S5		S1-W2		W4-N5	
N2-E2		E4-S4		S2-W2		W4-N4	
N3-E2		E4-S3		S3-W2		W4-N3	
N4-E2		E4-S2		S4-W2		W4-N2	
N5-E2		E4-S1		S5-W2		W4-N1	
N5-E3		E3-S1		S5-W3		W3-N1	
N4-E3		E3-S2		S4-W3		W3-N2	
N3-E3		E3-S3		S3-W3		W3-N3	
N2-E3		E3-S4		S2-W3		W3-N4	
N1-E3		E3-S5		S1-W3		W3-N5	
N1-E4		E2-S5		S1-W4		W2-N5	
N2-E4		E2-S4		S2-W4		W2-N4	
N3-E4		E2-S3		S3-W4		W2-N3	
N4-E4		E2-S2		S4-W4		W2-N2	
N5-E4		E2-S1		S5-W4		W2-N1	
N5-E5		E1-S1	1	S5-W5		W1-N1	1
N4-E5		E1-S2		S4-W5		W1-N2	
N3-E5		E1-S3		S3-W5		W1-N3	
N2-E5		E1-S4		S2-W5		W1-N4	
N1-E5		E1-S5		S1-W5		W1-N5	

BACKGROUND Non-Intrusive Surface PMD (CH₄) Soil Scan

Test Site (m)	PMD CH ₄ (ppm v/v) (%)	Test Site (m)	PMD CH ₄ (ppm v/v) (%)	Test Site (m)	PMD CH ₄ (ppm v/v) (%)	Test Site (m)	PMD CH ₄ (ppm v/v) (%)
N30	1						

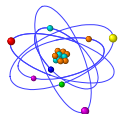


Table 3: High resolution molecular compositions of gas samples collected as part of the VIA Heli Source F-73.

Gas Component	Sample Point	SCV	E1	E1.5	E3	W1	BKG
	Date Collected	Sept. 16-22 ppm v/v	Sept. 16-22 ppm v/v	Sept. 16-22 ppm v/v	Sept. 16-22 ppm v/v	Sept. 16-22 ppm v/v	Sept. 16-22 ppm v/v
Neon		20.14	19.52	0.00	20.41	18.55	20.00
Hydrogen		1114	282.2	1011	603.8	682.0	1159
Helium		3.33	3.09	0.00	3.37	2.98	3.41
Nitrogen		776053	775865	776658	775049	773987	772593
Oxygen		221636	221946	221376	218863	221979	224544
Carbon Dioxide		855.5	1467	863.9	5376	2482	1671
Methane		302.7	415.8	87.23	81.81	848.3	8.38
Ethane		8.87	<0.01	2.44	<0.01	<0.01	<0.01
Ethene		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propane		2.99	<0.01	0.99	0.22	<0.01	<0.01
Propene		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
iso-Butane		0.74	0.31	0.36	0.37	0.28	<0.01
n-Butane		0.81	0.35	0.36	0.36	<0.01	<0.01
iso-Pentane		0.36	0.74	<0.01	0.28	0.29	<0.01
n-Pentane		0.19	0.39	<0.01	0.16	<0.01	<0.01
C6+		1.74	0.55	0.30	0.84	0.50	0.82
C1 Index (C1/ΣC2+)		23.54	557.6	23.03	111.1	N/A	N/A
C2 Index (C2/ΣC3+)		2.23	N/A	1.81	N/A	N/A	N/A
C3 Index (C3/ΣC4+)		3.00	N/A	2.74	0.44	N/A	N/A
C4 Index (C4/C5)		4.26	0.90	N/A	2.29	N/A	N/A
ΣC2+		12.85	0.75	3.79	0.74	N/A	N/A
ATM Ratio (N2/O2)		3.50	3.50	3.51	3.54	3.49	3.44
Vol % CO2 of TG		0.09	0.15	0.09	0.54	0.25	0.17
Vol % Lt. Alk. of TG		0.03	0.04	0.01	0.01	0.08	0.00
Vol % Lt. Alk. CH4		95.59	99.57	95.46	98.33	99.93	100.0
Vol % Lt. Alk. C2+		4.41	0.43	4.54	1.67	0.07	0.00
Vol % C2+ of TG		0.00	0.00	0.00	0.00	0.00	0.00

Stable Carbon Isotope Compositions (‰ VPDB)							
d13C CH4		nm	nm	nm	nm	nm	nm
d13C C2H6		nm	nm	nm	nm	nm	nm
d13C C2H4		nm	nm	nm	nm	nm	nm
d13C C3H8		nm	nm	nm	nm	nm	nm
d13C C3H6		nm	nm	nm	nm	nm	nm
d13C i-C4H10		nm	nm	nm	nm	nm	nm
d13C n-C4H10		nm	nm	nm	nm	nm	nm
d13C i-C5H12		nm	nm	nm	nm	nm	nm
d13C n-C5H12		nm	nm	nm	nm	nm	nm
d13C CO2		nm	nm	nm	nm	nm	nm

Stable Hydrogen Isotopic Compositions (‰ VSMOW)							
dD H2		nm	nm	nm	nm	nm	nm
dD CH4		nm	nm	nm	nm	nm	nm
dD C2H6		nm	nm	nm	nm	nm	nm
dD C3H8		nm	nm	nm	nm	nm	nm
dD i-C4H10		nm	nm	nm	nm	nm	nm
dD n-C4H10		nm	nm	nm	nm	nm	nm

14C Concentration (pMC)		nm	nm	nm	nm	nm	nm
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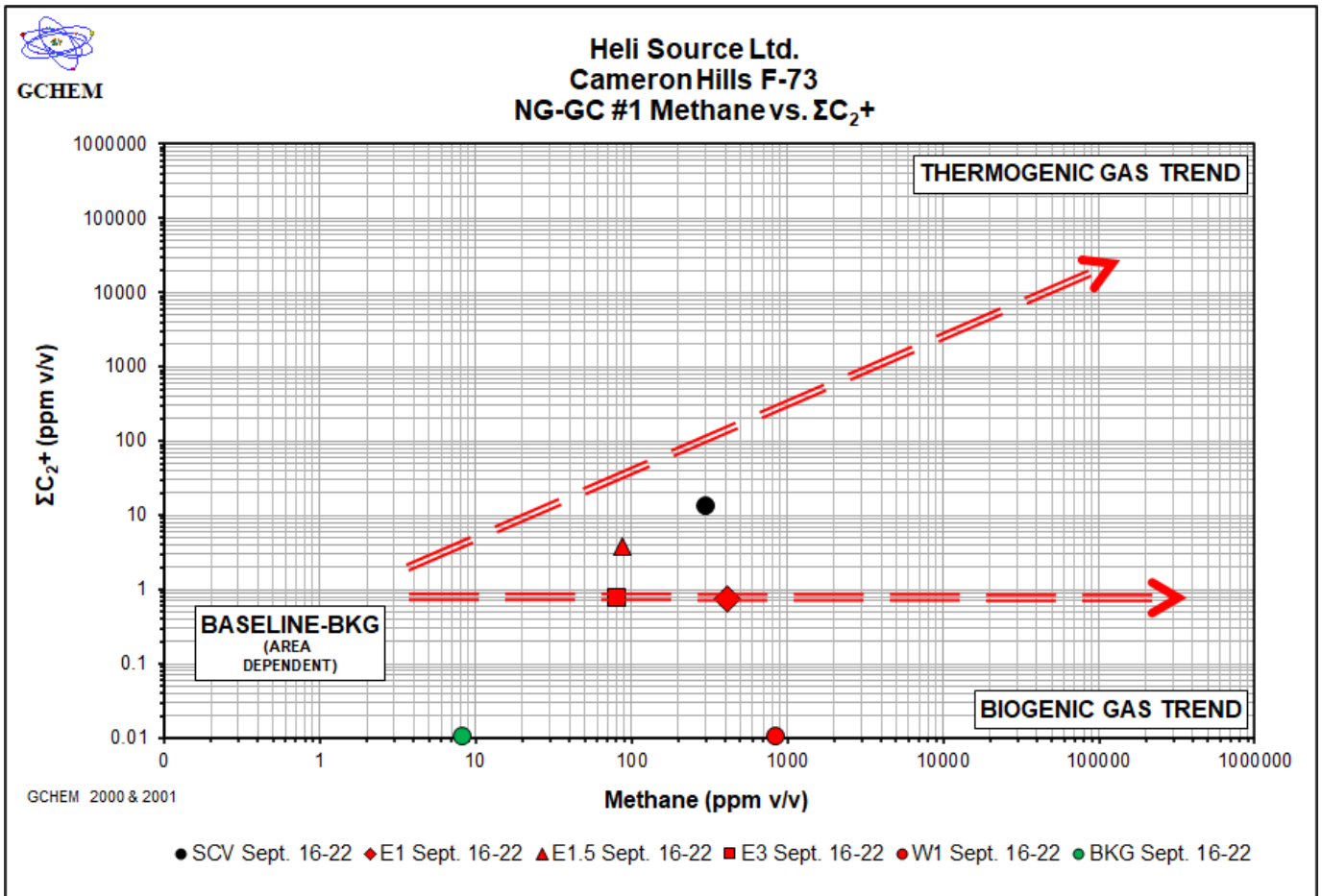
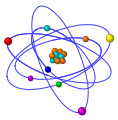


Figure 3: ΣC_2+ vs Methane. Combustible gases detected in soils and SCVs at a wellhead may result from several origins. Natural gases indicative of SCVF or AGM are thermogenic in origin (natural gas in deep reservoirs), contain high methane and C_2+ contents and plot in the Upper RH Quadrant. Low natural gas levels in background, off lease areas are naturally present in soils, vary from region to region and plot in the Lower LH Quadrant. Biogenic gases (swamp-gas) are produced by bacteria, are comprised of predominantly methane and plot in Lower RH Quadrant. Samples plotting in the Lower LH and RH do not contain SCVF or AGM and would not require down-hole remediation

NG-GC-1 Comments

NG-GC-1 Comments

- 1) Natural gases in the SCV and soils near the wellbore contain low levels of C_2+ gases indicating that this well is not impacted with leaking thermogenic natural gases.

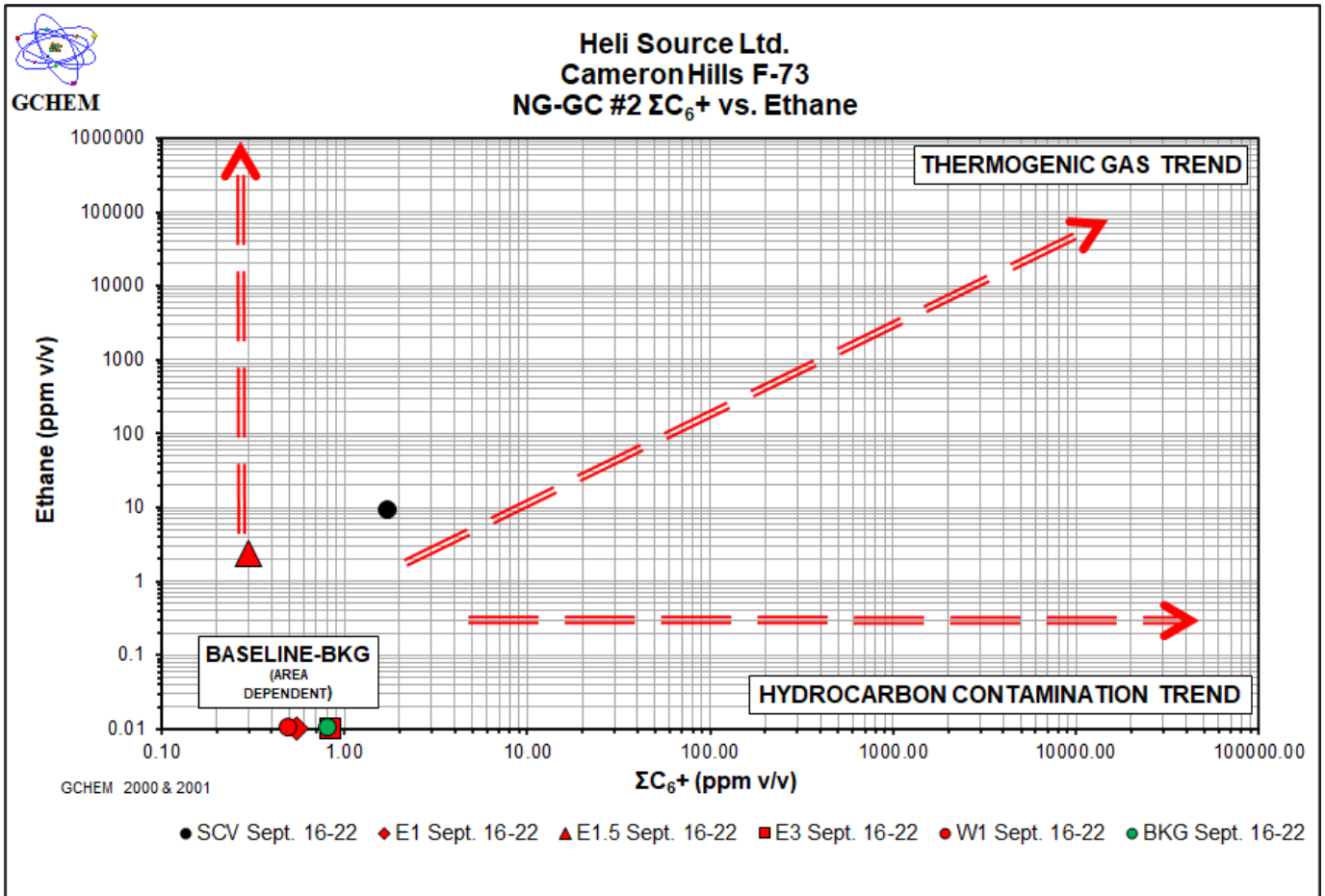
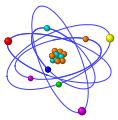


Figure 4: ΣC₆+ vs Ethane. C₆+ gases are relatively large molecules that do not readily or easily migrate in large quantities from depth upwards through subsurface fractures or micro-fractures to surface. Contamination by oil spills, fuels, and solvents is indicated by soil vapor samples that have high contents of C₆+ compounds and plot in the Lower RH Quadrant. Samples plotting in the Lower LH and RH Quadrants do not contain evidence of either SCVF or AGM and would not require downhole repair operations.

NG-GC-2 Comments

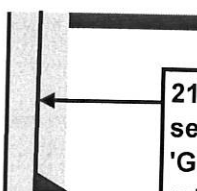
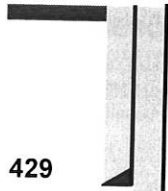
- 1) C₆+ contents of the SCV and soil gas samples are low and are similar to expected baseline readings. Measured combustible gas levels are not the result of near surface hydrocarbon or chemical contamination.

PARAMOUNT ET AL CAMERON F-73

60° 10' N, 117° 15' W WID: 1992

As suspended 20100127

KB: 781.70 m
GL: 777.03 m



219.1 mm, 35.7 kg/m, J-55 ST&C casing set at 429 mKB. Cemented with 33 t class 'G' cement + 2% CaCl₂. 8.0 m³ cement returns to surface.

139.7 mm, 20.83 kg/m, J-55/ ST&C from surface - 465 mKB.
139.7 mm, 23.07 kg/m, K-55/ LT&C from 465 - 1324 mKB.
139.7 mm, 20.83 kg/m, J-55/ LT&C from 1324 - 1459 mKB.
Cemented with 20.7 t Fill Lite 2-125 + 3% A 9 + 0.6% R-3 and 8 t 'G' cement + 0.1% R-3 + 0.4% FL-77. 15.0 m³ cement returns to surface.

Inhibited water
BJ Techni-Hib 606W @ 5000ppm

30 m cement (top @ 1383 mKB)

Drillable bridge plug @ 1413 mKB

Sulphur Point Perforations

Casing set at 1459 mKB

Total Depth = 1459