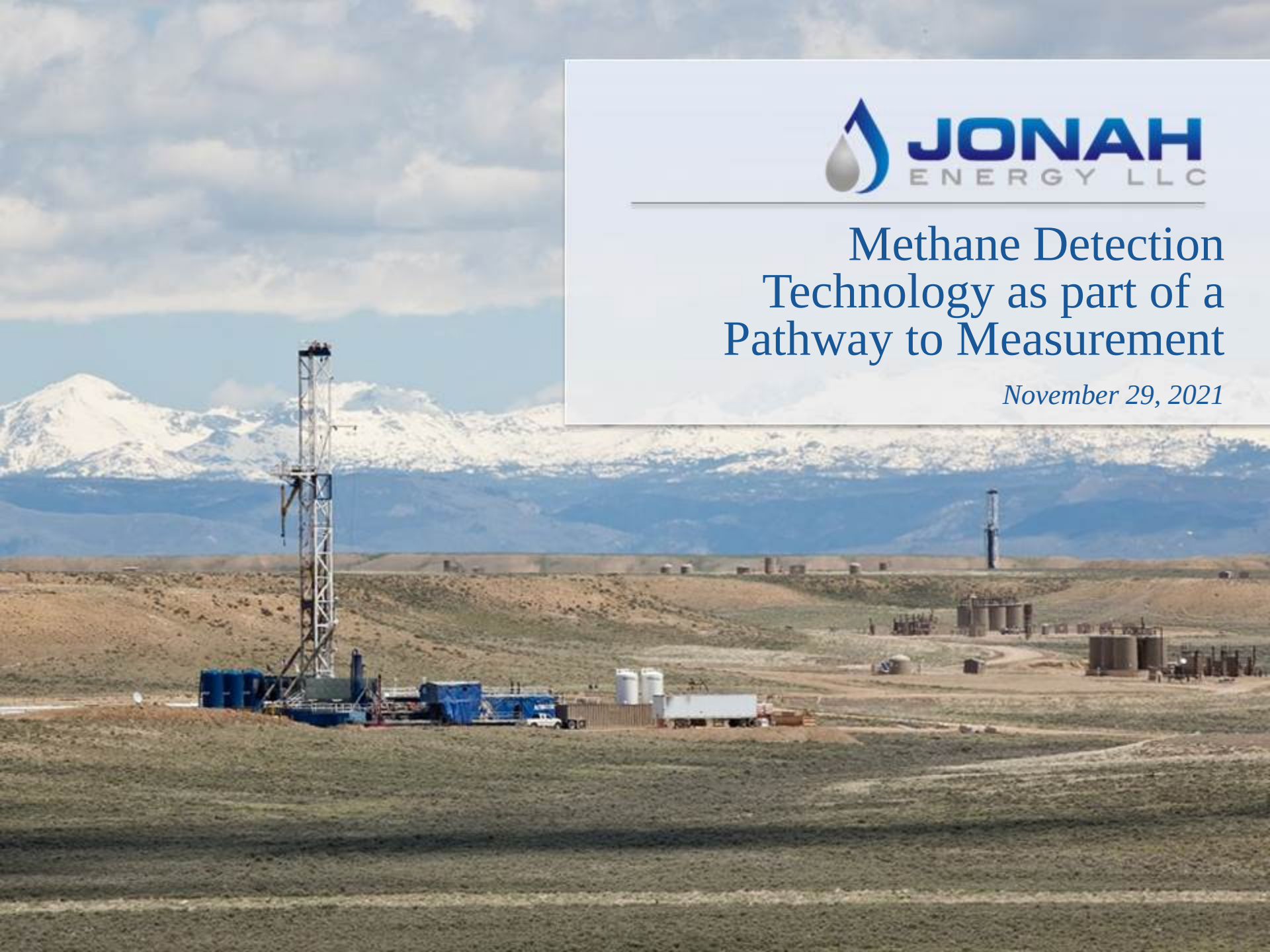


JONAH ENERGY LLC

Methane Detection Technology as part of a Pathway to Measurement

November 29, 2021

LDAR Program

ACTS | FIELD

Form Information

Form Name:	**EDIM Inspection**
Submitter Name:	Pat Mack (pat.mack@jonahenergy.com)
Submission Date:	Dec 7, 2016 9:22:39 AM MST
Server Receive Date:	Dec 7, 2016 3:57:29 PM MST
Reference Number:	20161207-1852220677

General Information

Facility	0000000086
Facility Name	SHB 2-33
Take of Photo of the Facility	
Monitoring instrument used	FLIR GF300
Tag ID	F
Date	Dec 7, 2016 8:55:00 AM MST
Well Code	SHB233

Weather

Conditions	Clear
Temp. (°F)	-13
Maximum wind speed (mph)	4
Humidity (%)	72
Barometric Pressure (Hg)	30.2

Issue 1

Issue Number	1
Issue Type	None
Tag No.	SHB2332016-12-07 08:55:00F-1
Department	Production
Video File ID	SHB2332016-12-07 08:55:00F
Was the issue repaired?:	No

Conclusion

You have finished the inspection. Please hit "Send" when you are ready.

Results – Hi-flow sampler

Enter Inspection Date Range	
Start Date:	2/10/2021
End Date:	8/19/2021

Inspection Data	
Total Number of Inspections:	0
Inspections With Actionable Leaks:	0
Percent Inspections with Leaks:	0%

Note: Change the date range or leak rate ranges (highlighted in yellow) to adjust the data set

Leaks By Equipment (Non-Well Pads)		
Equipment	Leak Count	Leak %
Combustor/VOC Pot	0	N/A
Compressor	0	N/A
Tank Battery	0	N/A
Unit	0	N/A
Wellhead	0	N/A
Unspecified	0	N/A

Leaks By Leak Rate			
Range Start	Range End	Leak Count	Leak %
0	0.099	0	N/A
0.1	0.199	0	N/A
0.2	0.299	0	N/A
0.3	0.399	0	N/A
0.4	0.499	0	N/A
0.5	0.999	0	N/A
1	1.999	0	N/A
2	9.999	0	N/A

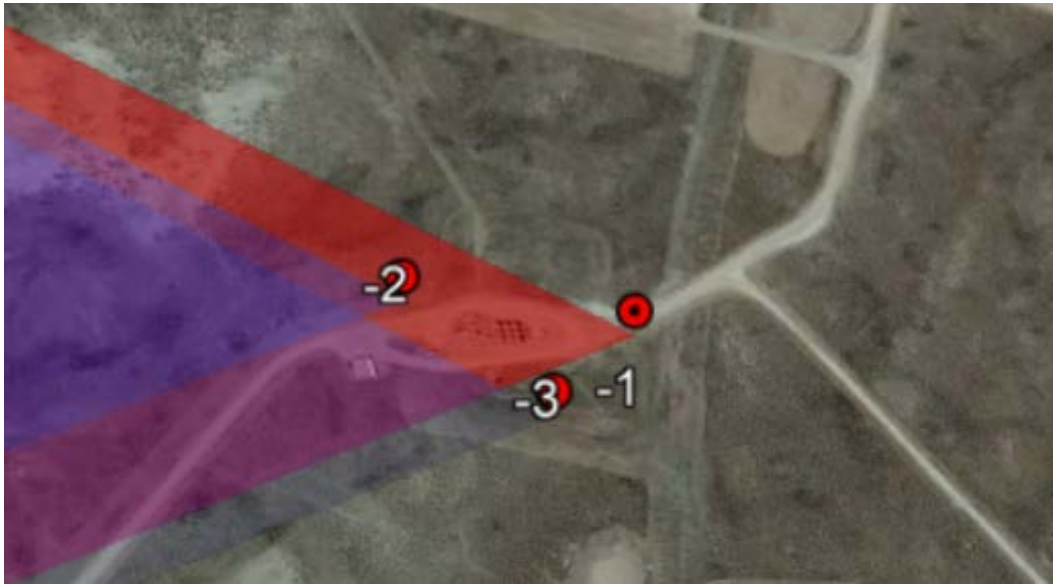
Leaks By Type (Non-Well Pads)		
Type	Leak Count	Leak %
Connector	0	N/A
Flange	0	N/A
Pressure Relief Valve	0	N/A
Pump Seal	0	N/A
Thief Hatch	0	N/A
Valve	0	N/A
Unspecified	0	N/A

Leaks By Equipment (Well Pads)		
Equipment	Leak Count	Leak %
Combustor/VOC Pot	0	N/A
Compressor	0	N/A
Tank Battery	0	N/A
Unit	0	N/A
Wellhead	0	N/A
Unspecified	0	N/A

Leaks Visible From Sky		
Visible?	Leak Count	Leak %
Yes	0	N/A
No	0	N/A
Unknown	0	N/A

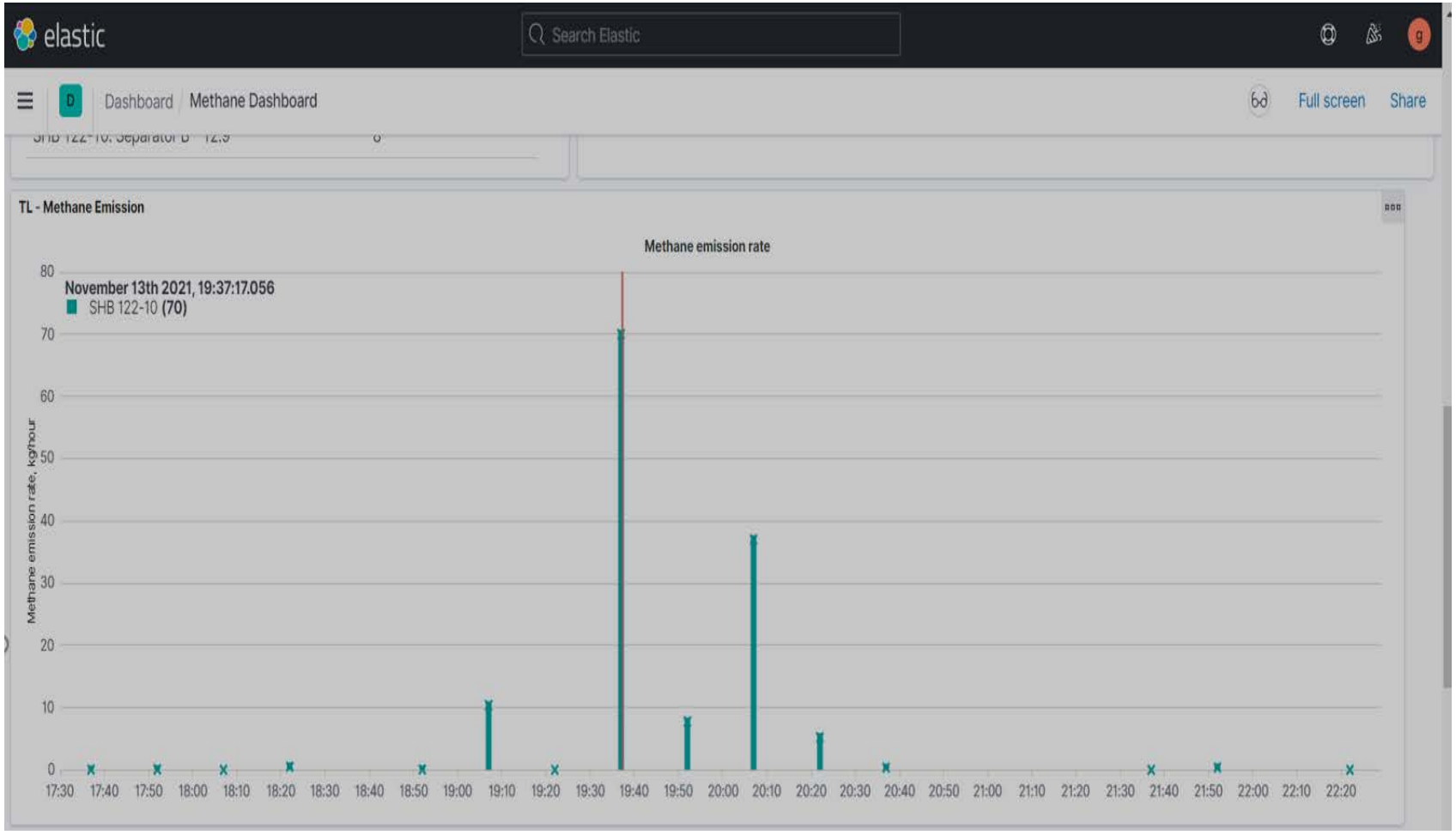
Leaks By Type (Well Pads)		
Type	Leak Count	Leak %
Connector	0	N/A
Flange	0	N/A
Pressure Relief Valve	0	N/A
Pump Seal	0	N/A
Thief Hatch	0	N/A
Valve	0	N/A
Unspecified	0	N/A

Fixed Monitors



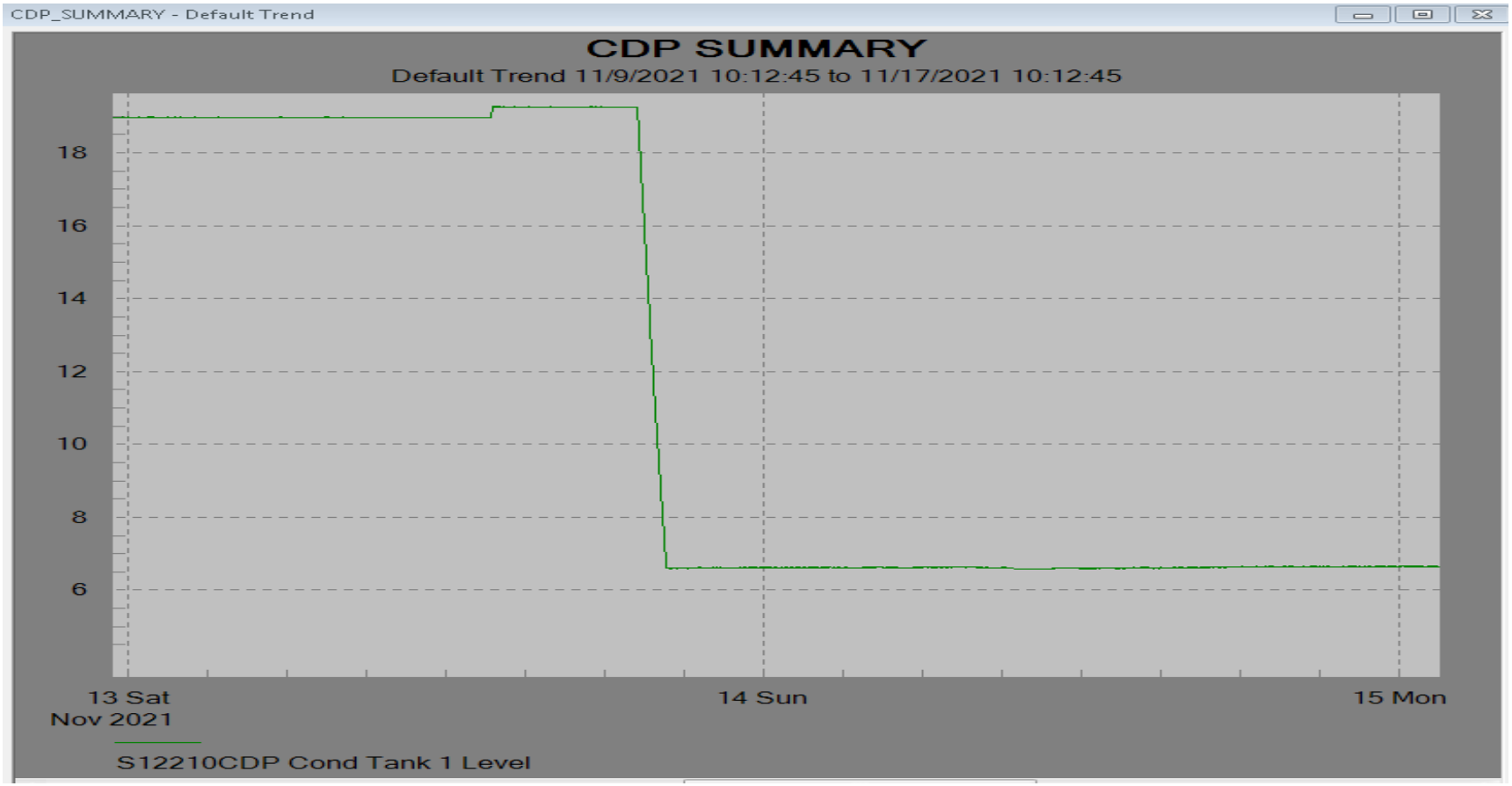
SOOFIE Dashboard

- Scientific Aviation SOOFIE Sensor



SCADA correlation to SOOFIE reading

- Jonah Energy SCADA information shows that a condensate hauler was loading condensate on September 13,7:02pm.



EHS – Operations Collaboration

- Sharing emissions inventory and measurement data with your operations team helps to facilitate a discussion about, and to formulate ideas around, emission reduction strategies

- Two specific examples from Jonah Energy

  - Taking excess equipment out of service
  - Development of engineering solution to control some vented pneumatic controller emissions

EHS – Operations Collaboration

Operations team identified an opportunity to control vented emissions from certain control devices

The finished product…

Each location costs a few hundred dollars in materials and our operations team is doing the work themselves.

Each modified location is inspected daily for a week following installation with a FLIR camera to ensure no leakage. None has occurred on any of the installations.

Result…

Each location where the controllers have been modified **REDUCES** our methane emissions by **1.4 MT CH4**

Conclusions…

- Having a corporate methane metric encourages creativity
- Measuring the values that form our methane emission calculations clearly shows where we have opportunities to drive reductions.