

Gas release

# Optical Gas Imaging Observer Certification Method Concept

to observe gas release at varying distances with the sky as the background.

Height =

OGI Camera



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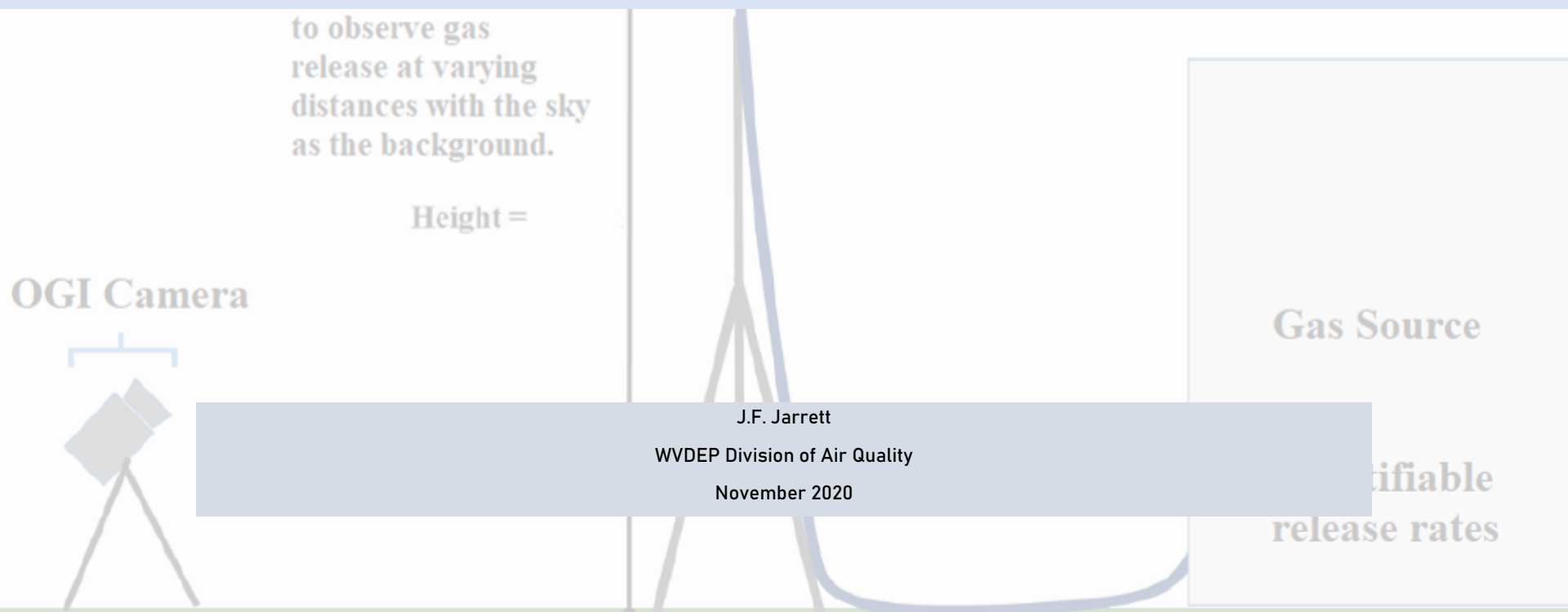
WVDEP Division of Air Quality

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Gas Source

measurable  
release rates

Distance = 3-30 m (9.8-98 ft)



Can OGI observers be certified in a similar manner as opacity observers?



**USEPA GD-52 Figure 3-41**



**USEPA Method 9 Observer Certification**

# Comparison: Opacity observer to OGI observer

<b>Opacity Observer Certification USEPA Reference Method 9</b>	<b>Possible OGI Observer Certification Method</b>
Training on observer position, contrasting backgrounds, interferences, etc.	Training on observer position, how background affects the ability for observer to “see” gases with an OGI camera, interferences, etc.
Document distance to source, background, sun position, wind speed, ambient temperature during observations	Document distance to source, background, sun position, wind speed, ambient temperature during observations

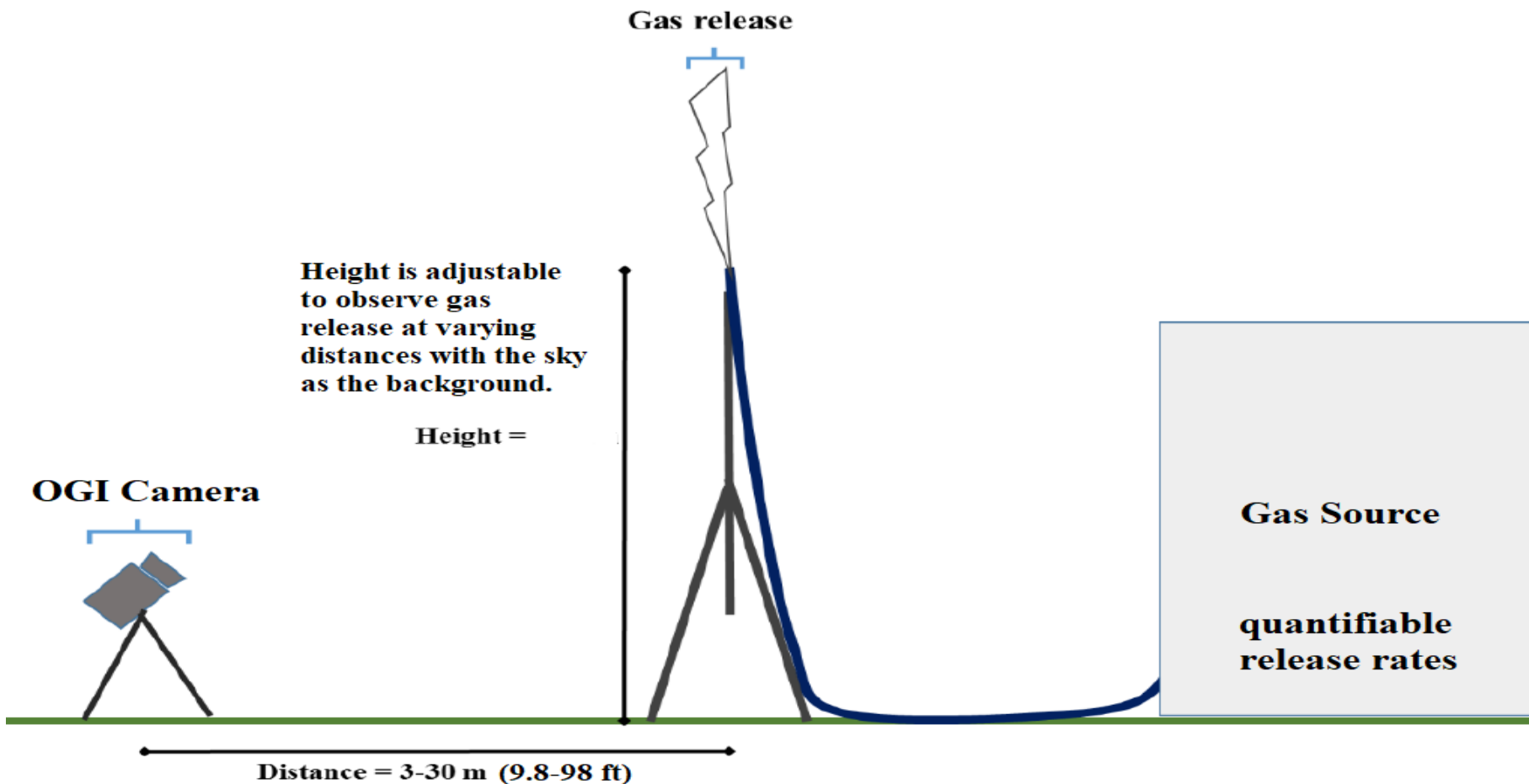
# Comparison: Opacity observer to OGI observer

<b>Opacity Observer Certification USEPA Reference Method 9</b>	<b>Possible OGI Observer Certification Method</b>
Certified with 2 different colored smoke releases (black and white)	Certified with 2 different backgrounds (controlled and sky)
Smoke generator releases 25 shades of black smoke and 25 shades of white smoke for the observer to evaluate	Gas generator releases a known gas concentration with the sky as the background for the observer to evaluate. Repeat on a controlled background with a $\Delta T \geq 5^\circ\text{F}$ .

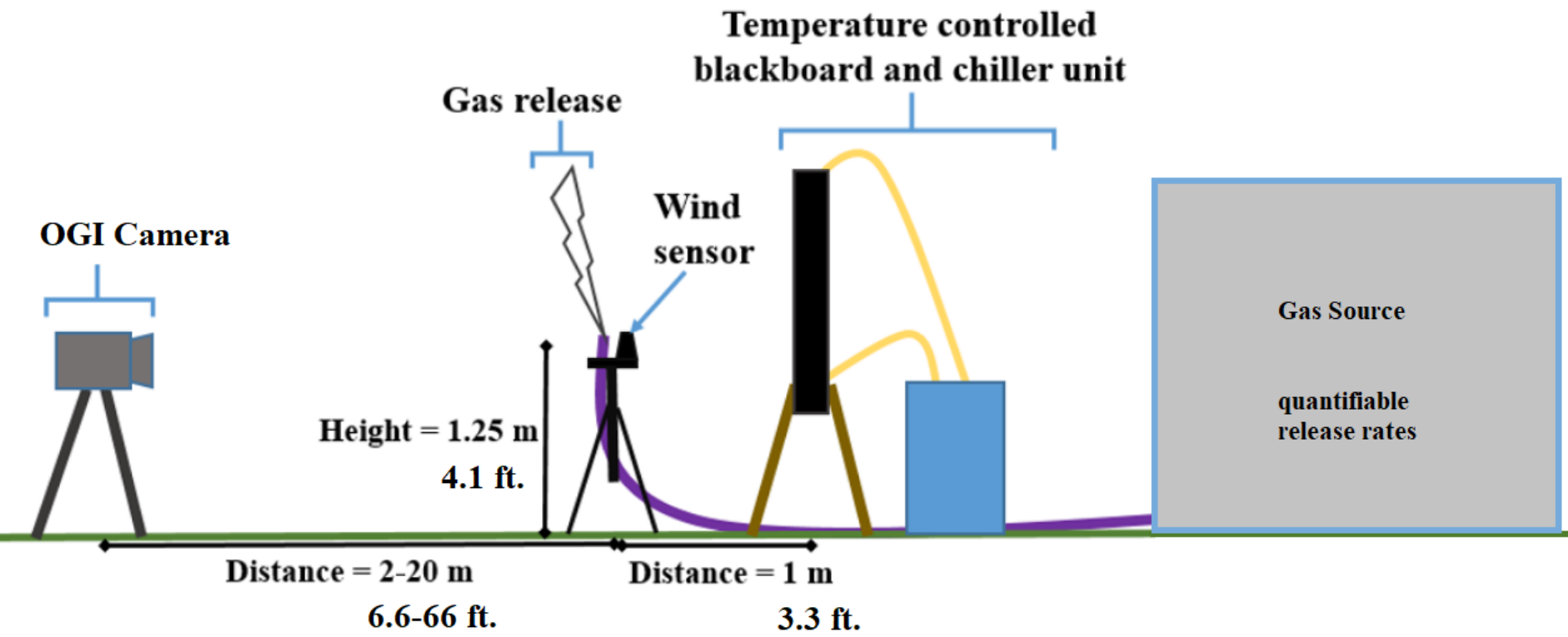
# Comparison: Opacity observer to OGI observer

<b>Opacity Observer Certification USEPA Reference Method 9</b>	<b>Possible OGI Observer Certification Method</b>
Smoke Generator Specifications -reference opacity meter	Gas Generator Specifications -reference OGI camera -gas flow meter for $\leq 60$ g/hr through a $\frac{1}{4}$ inch diameter orifice. -Gas dilution system per EPA Method 205 (to dilute 99.99% purity gases).
Observer recertification does not require passing initial training class again.	Observer recertification does not require passing initial training class again unless a different make/model OGI camera is used.

## Sky background



**Controlled background**





# Example reference OGI observer certification with controlled background

Intermediate  $\Delta T$ :  $4.5^{\circ}\text{F} < \Delta T < 9.0^{\circ}\text{F}$

Range in m (ft)	Wind speed in mph				
	0 to 5	5 to 10	10 to 15	15 to 20	>20
2.5 (8.2)	No Data	286, 59	72	No Data	330, 107
5 (16.4)	290, 89	No Data	299, 76	No Data	300, 77
10 (32.8)	295, 68	296, 69	303, 82	No Data	334, 111
20 (65.6)	297, 70	73	306, 85	No Data	307, 86

Reference: National Physical Laboratory Assessment of FLIR GF320 for NSPS OOOOa

<https://flir.netx.net/file/asset/12465/original>

## Gas Observed Color Code

Yes	Green
No data, assumed Yes	Light Green
No	Red
No data, assumed No	Light Red
No data, unknown	Yellow



OGI Observer Certification



EPA Reference Method 9 Opacity Observer Certification

**What is the possibility that the USEPA will propose a Reference Method 9A or Method 22A for the Visual Determination of Fugitive Emissions using Optical Gas Imaging?**

# Links

- USEPA Emission Measurement Center GD-52

<https://www.epa.gov/sites/production/files/2020-08/documents/gd-52v.2.pdf>

- National Physical Laboratory Assessment of FLIR GF320 for NSPS 0000a

<https://flir.netx.net/file/asset/12465/original>

- USEPA Method 9 Observations and Certification

[https://www.epa.gov/sites/production/files/2017-08/documents/method\\_9.pdf](https://www.epa.gov/sites/production/files/2017-08/documents/method_9.pdf)

- USEPA Method 22 Visual Determination of Fugitive Emissions

[https://www.epa.gov/sites/production/files/2019-08/documents/method\\_22\\_0.pdf](https://www.epa.gov/sites/production/files/2019-08/documents/method_22_0.pdf)

# Disclaimer

This presentation represents the view of the author and does not necessarily represent the view of the WVDEP Division of Air Quality.

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