

# ChampionX Aerial Optical Gas Imaging Executive Summary

In Support of the ChampionX Alternative Test Method for the New Source  
Performance Standards and Emission Guidelines for Oil and Natural Gas  
Operations

July 12, 2024

## Executive Summary

The ChampionX Aerial Optical Gas Imaging (AOGI) is a periodic screening method that detects methane emissions using an optical gas imaging camera mounted to a helicopter. AOGI is a fast, efficient, and safe method to conduct periodic screenings across many assets. With optimized flight paths and direct routes from asset to asset, you can cover over 100 sites compared to the traditional means of ground-based OGI using vehicles, which cover an average of 5 sites a day with significant risk of windshield time and associated hazards. The AOGI survey has a two-stage quality process. First, a real-time pilot operator surveys for leaks, recording video footage of the sites. This data is then uploaded and reviewed by an in-office technician who adjusts video settings to validate and identify any additional leaks that were not detected during the real-time survey.

The AOGI platform is fit-for-purpose and easily deployed on various helicopter models. AOGI relies on trained operators and pilots to survey and scan sites for methane leaks. This method has been used by industry for over a decade, and numerous studies and work practices have verified the capabilities of optical gas imaging cameras. Over 100 operators, NGOs, and governmental agencies have successfully used the AOGI platform to survey leaks across various topographies and basins.

AOGI meets the EPA requirements for periodic screening at the most stringent levels. The AOGI platform has been tested to detect methane leaks as low as 0.28 kg/hr at a 91% probability of detection level in real-time and increases to a POD of 94% with second phase of in office validation with the probability of detection exceeding 94% with in-office verification.

### Summary of Documents

Below we detail the components of the application and where information can be found:

Required Information	Page number found
<b>The measurement system</b>	Technology Description Page 2
Scientific basis	Technology Description Page 2
Physical description of instrument	Technology Description Page 4
Type of measurement and application	Technology Description Page 8
Potential limitations	Technology Description Page 9
<b>How to convert to mass emission rate</b>	Not applicable

<b>Data handling</b>	Technology Description Page 10
Data collections and storage	Technology Description Page 10
Data streams and processes	Technology Description Page 10
End user software and how information is delivered	Technology Description Page 10

To support this application, these documents have been attached:

- Third-Party Validation Report
- Marketing material
- SOP OGI camera inspection (CBI)
- SOP Pre-flight preparation (CBI)
- SOP Briefing and coordination (CBI)
- SOP Flight Operations (CBI)
- SOP Camera operations (CBI)

Below, a concordance table is provided to outline requirements and where the requirements are addressed in the application. The table includes the rule citation, language, where it is found in the application and who is responsible for the specific obligation under this method (the facility operator, vendor, or both):

<b>Rule</b>	<b>Vendor or operator responsibility</b>	<b>Document</b>
60.5398b(d)(2)(ii)(A)	V	Header
60.5398b(d)(2)(ii)(B)	V	Header
60.5398b(d)(2)(iii)	V	Header
60.5398b(d)(2)(iii)(A)	V	Header
60.5398b(d)(2)(iii)(B)	V	Header
60.5398b(d)(2)(iv)	V	Header
60.5398b(d)(3)	-	-
60.5398b(d)(3)(i)	V	Header

60.5398b(d)(3)(ii)	V	Header
60.5398b(d)(3)(iii)	V	Tech description
60.5398b(d)(3)(iii)(A)	V	Tech description Page 3
60.5398b(d)(3)(iii)(B)	V	Tech description Page 6
60.5398b(d)(3)(iii)(C)	V	Tech description Page 8
60.5398b(d)(3)(iii)(D)	V	Tech description Page 9
60.5398b(d)(3)(iv)	V	Not applicable
60.5398b(d)(3)(iv)(A)	V	Method Document
60.5398b(d)(3)(iv)(B)	-	N/A
60.5398b(d)(3)(iv)(C)	-	N/A
60.5398b(d)(3)(iv)(D)	-	N/A
60.5398b(d)(3)(iv)(E)	-	N/A
60.5398b(d)(3)(iv)(F)	-	N/A
60.5398b(d)(3)(v)	V	Tech description Page 10
60.5398b(d)(3)(v)(A)	V	Tech description Page 10
60.5398b(d)(3)(v)(B)	V	Tech description Page 10
60.5398b(d)(3)(v)(C)	V	Tech description Page 10
60.5398b(d)(3)(vi)	V	See added documents
60.5398b(d)(3)(vi)(A)	-	See added documents
60.5398b(d)(3)(vi)(B)	V	Method
60.5398b(d)(3)(vi)(C)	V	Method
60.5398b(d)(3)(vi)(D)	V	See added documents
60.5398b(d)(3)(vii)	V	Tech Description Page 10

60.5398b(d)(3)(vii)(A)	-	N/A
60.5398b(d)(3)(vii)(B)	-	N/A
60.5398b(d)(3)(vii)(C)	V	Tech description Page 10