Hydrocarbon management

HM 58

Guidelines for determination of flare quantities from upstream oil and gas facilities

2nd edition

energy institute

HM 58 GUIDELINES FOR DETERMINATION OF FLARE QUANTITIES FROM UPSTREAM OIL AND GAS FACILITIES

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July 2017

Published by
Energy Institute, London
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Registered charity number 1097899

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This publication has been produced as a result of work carried out within the Technical Team of the EI, funded by the EI's Technical Partners. The EI's Technical Work Programme provides industry with cost-effective, value-adding knowledge on key current and future issues affecting those operating in the energy sector, both in the UK and internationally.

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The EI gratefully acknowledges the financial contributions towards the scientific and technical programme from the following companies

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Tullow Oil
Valero
Vattenfall
Vitol
World Fuel Services

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ISBN 978 0 85293 847 8

Published by the Energy Institute

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FOREWORD

The EI Hydrocarbon Management Committee is responsible for the production and maintenance of guidelines covering various aspects of static and dynamic measurement of petroleum and hydrocarbon gases. This publication has been instigated and managed by the Energy Institute's (EI) Upstream Hydrocarbon Management Committee, HMC-1, which deals with measurement applicable to the upstream sector of the industry and includes measurement for fiscal reporting, product allocation and streams associated with emissions trading.

Flaring and venting are methods of burning or releasing associated gas that is treated as a waste product from an offshore installation or gas terminal. This is necessary for maintaining process safety or for disposal of gas that it is technically or economically impractical to collect and transport.

Greenhouse gas emissions from oil and gas production are currently covered by 'The Greenhouse Gas Emissions Trading Scheme Regulations of 2012' – Directive 2003/87/EC. This monitoring and reporting regulation (MRR Phase III) was implemented in January 2013. The 1st edition of HM 58 was published in 2008. HMC-1 have now developed a 2nd edition of HM 58 to provide up-to-date guidance on the application of measurement techniques and principles needed to comply with the current European Union Emissions Trading Scheme (EU ETS) requirements for the trading of flared quantities discharged from facilities involved in the upstream oil and gas industry.

This publication will be a useful aid to measurement specialists, environmental personnel and operations management principally within the UK upstream oil and gas industry. It will also be a valuable aid to similar personnel from other countries where controls on discharges from flares are being enforced.

This publication has been compiled for guidance only and while every reasonable care has been taken to ensure the accuracy and relevance of its contents, the Energy Institute, its sponsoring companies, the document writer and the Working Group members listed in the Acknowledgements who have contributed to its preparation, cannot accept any responsibility for any action taken, or not taken, on the basis of this information. The Energy Institute shall not be liable to any person for any loss or damage which may arise from the use of any of the information contained in any of its publications.

These guidelines may be reviewed from time to time and it would be of considerable assistance for any future revision if users would send comments or suggestions for improvements to the Technical Department, Hydrocarbon Management, Energy Institute, 61 New Cavendish Street, London, W1G 7AR (e:technical@energyinst.org)

ACKNOWLEDGEMENTS

The Energy Institute (EI) wishes to record its appreciation of the work carried out by the following individuals:

Nigel Bellew of Intertek: Calibration and Metering Services (CMS) for the preparation of these guidelines.

Members of the HMC-1 Flare Measurement Working Group who have assisted with steering the project and for providing valuable expertise:

John Alborough	Nulab
Martin Basil	Solv Ltd
Ian Bates	Total
Paul Batty	BEIS
Simon Barons	ConocoPhillips
Jim Barton	BP
Baron Bennington	SGS
Murdoch Campbell	TAQA
Paul Daniel	Emerson
Alan Elphinstone	Accord-ESL
Heather Fitzgerald	H and D Fitzgerald
Douglas Griffin	OGA
Mark Hay	Kelton
Phil Hunt	Oneflo
Jason Laidlaw	Emerson
Walter Macdonald	Accord-ESL
Alick MacGillvray	TUV NEL
Sandy Marshall	Nexen
Christopher Mills	TUV NEL
David Newman	BP
Richard Paton	Consultant/Petrofac
Denis Pinto	Premier Oil
Michael Reader-Harris	TUV NEL
Bob Sim	Shell
Stephen Smyth	Petrofac
Eddie Spearman	CNR
Alan Spence	Accord-ESL

The Energy Institute also wishes to acknowledge contributions made by the following personnel:

Martin Bruce	Intertek: Calibration and Metering Services (CMS)
Gordon Mackie	GE

During the development of this publication, other members of HMC-1 and other industry personnel were provided with copies for reference and were advised of progress.

1 INTRODUCTION

Our planet's climate is anything but simple: all kinds of factors influence it. However, despite all the complexities, a firm and ever-growing body of evidence points to a clear picture: the world is warming, and this warming is due to human activity increasing levels of greenhouse gases in the atmosphere, and if emissions are allowed to continue, then global warming will continue too, with increasingly serious consequences.

The EU ETS (European Union Greenhouse Gas Emission Trading Scheme) Directive 2003/87/EC was implemented from 2005–2012 (Phase II), and for the first time, the scheme included emissions from offshore installations, which focused on the verification and integrity of measured data. Phase III has now commenced from 2013–2020 which is focused on more consolidated rules based on the knowledge and data gathered during Phase II.

The good news is that from 2013–2014, UK carbon emissions fell dramatically by 8,4 % whilst the economy grew faster than it has in any year since 2007. This was mainly due to a reduction in coal use and the generation of energy from renewable sources, but it illustrates how carbon reduction can play a crucial role in curbing the inevitability of global warming. Source Guardian

Activities such as the burning of produced gas as fuel for power generation, and the safe evacuation of excess gas through emergency flaring, comprise the major source of CO_2 emissions from upstream oil and gas facilities.

The major difficulty in managing flaring is accurately identifying how much gas is coming from the various sources that contribute to the overall flare volume. The measurement of emissions from flares is different to other gas-flow measurement and emission measurement applications due to the unpredictable nature of flaring, and the often hostile environment offshore makes exact measurement an extremely difficult and complex task.

Both the quantity of gas delivered to flare and its composition are required to determine the mass of CO_2 released to atmosphere for EU ETS reporting purposes. Molecular weight is required in order to calculate the total mass of gas flared for the Department for Business, Energy and Industrial Strategy (BEIS) reporting purposes; this can also be determined from the gas composition or directly using online measurement instrumentation. The units of the figures reported to BEIS (i.e. tonnes of gas flared) should not be confused with those reported to the EU ETS (tonnes of CO_2 produced by flaring).

2 SCOPE

The purpose of this publication is to provide guidance to oil and gas duty holders who monitor and report CO_2 emissions and to assist operators with interpretation of the requirements of the EU Emissions Trading Scheme (EU ETS) with regard to achieving the highest standard of monitoring for carbon dioxide emissions, as defined in the Commission Regulation (EU) No. 601/2012 of 21 June 2012, and the EU Monitoring and Reporting Regulation Guidelines (MRR Guidance document No. 1 (MRR), ('M&R Guidelines')).