

Hydrocarbon management

HM 96

Guidelines for the allocation of fluid streams in oil
and gas production

2nd edition

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GUIDELINES FOR THE ALLOCATION OF FLUID STREAMS IN OIL
AND GAS PRODUCTION

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FOREWORD

Oil and gas production operations frequently involve well fluids from a variety of sources being carried and processed in a shared pipeline or facility. This means that the individual streams become commingled. At the point where the commingled streams are eventually separated into oil, gas, gas liquids and water, a procedure must be used to divide the quantities between the owners (users) who provided the original fluids. This procedure is referred to as allocation.

Allocation is a key theme for the Energy Institute's (EI) Upstream Hydrocarbon Management Committee (HMC-1), which has overseen the development of this publication, with the aim of providing industry with a common approach to the design and application of allocation systems.

This publication has been compiled for guidance only and whilst reasonable care has been taken to ensure the accuracy and relevance of its contents, the EI, its sponsoring companies, and the contributors to this document cannot accept any responsibility for any action taken, or not taken, on the basis of this information. The EI 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.

This publication will be reviewed periodically, and it would be of considerable assistance for any future revision if users would send comments or suggestions for improvements to:

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1 INTRODUCTION

1.1 GENERAL

Allocation is a term used to describe the system by which the ownership of oil, gas and produced water is determined and tracked from the point of production to a point of sale or discharge. It is important commercially, as owners are paid for the products they are allocated. The allocation system, therefore, has a direct impact on revenue and often involves interaction between several business areas, which may be defined in contracts, operating agreements or by the regulatory authority.

Allocation is also known as hydrocarbon accounting, hydrocarbon value realisation, product measurement and allocation, and production management and reporting.

Allocated quantities will include oil and gas sales streams, fuel gas, gas liquids, vent and flare, and sometimes quantities recycled within the production process. An allocation system may also be applied to the product streams from secondary processing, such as those from onshore terminals.

Although the principles of allocation are straightforward, the detail is often complex. The aim of any allocation development process is to identify the requirements, and to select the most appropriate solutions, taking into account financial, commercial, operational and technical constraints. These vary widely and therefore each system is unique.

However, a set of accepted methods and techniques can be used to develop a system. These are described in the following sections.

1.2 SCOPE

These guidelines describe the processes involved in the development of an allocation system.

The necessary inputs and outputs are defined, and guidance is provided in selecting the calculation method to be used.

Design concepts are presented together with principal factors which need to be considered when designing an allocation system. The management functions which need to be put in place are also described.

These guidelines can be applied to any oil and gas production network.

1.3 DOCUMENT STRUCTURE

These guidelines are in sections, briefly described as follows:

Section 2 – Allocation overview

This section defines allocation, explains why it is needed, and provides a basic summary of the development process. The use of cost-benefit analysis is also discussed.

Section 3 – Development of an allocation system

This section presents a step-by-step procedure for developing an allocation system.

Section 4 – Functions of an allocation system

This section describes the key functions of the allocation system and the aspects that should be considered when developing or evaluating a system.

Section 5 – Allocation methods

This section describes the various methods used in allocation systems, including their features, advantages and disadvantages.

Section 6 – Use of phase behaviour/simulation models

Simulation models and their uses in allocation are described in detail in this section.

Section 7 – Uncertainty of allocation calculations

This section discusses the effects of uncertainty on allocation and describes uncertainty-based allocation.

Note: The term 'allocation system' is commonly used to refer to the computer hardware and software used to perform allocation calculations and store data. These guidelines refer to such hardware/software as an allocation computer system.