

Measurement System Auditing - A Critical Activity

A measurement system audit is generally defined as a 'Technical Review of a measurement system, by an Independent Authority, against agreed criteria to ascertain if acceptable equipment, processes, procedures, management and personnel competency levels are in place'.

Unlike other types of audits, e.g. ISO 9000, a measurement auditor requires a sound technical knowledge of the processes and standards used in the industry as a necessity to conduct 'Measurement System Auditing'. Auditors should be fully trained and qualified and their independence and traceability paramount. From the operators' perspective this means that all aspects of the product measurement in oil and gas production are fully auditable and traceable as they demonstrate that all practical and reasonable steps to ensure the measurement systems are properly designed, maintained, verified and operated have been taken.

Auditing is a priority due to secondary fields being developed and produced through existing infrastructure to process and transport hydrocarbons. As most oil and gas fields are jointly owned by partners, it is normal for a non-operating partner to perform a measurement audit ensuring their financial interests are secure.

Why Audit?

Measurement audits are carried out to ensure that all measurement systems are in compliance with current regulations, international standards and commercial agreements. In hydrocarbon extraction this means that all aspects of the measurement systems are fully auditable and traceable. This includes, but is not limited to, quantity, quality, calculations, allocation and discharges to the environment. The audit of hydrocarbon measurement systems should be carried out for the following statutory & legal, commercial and environmental requirements and considerations.

Hydrocarbon production may be subject to government taxation, accordingly it must be measured to determine the total tax due and how this is split between partners. It is therefore imperative that the measurement systems are operated and maintained in accordance with current legislation.

In addition to the fiscal considerations, the Sarbanes-Oxley recommendations require, where applicable, that all financial statements by companies must be fully accountable and verifiable. Within the context of the oil and gas industry, this means that measurement of hydrocarbon production and transportation comes under greater scrutiny at corporate level.

Auditing is now a legal requirement under the Emissions Trading Scheme (ETS) and as such operators should ensure that their measurement systems used for fuel and flare comply with the relevant standards and regulations.

About KELTON®

KELTON® is an independent and accredited company specialising in flow measurement consultancy, auditing, training and the provision of specialist software. Founded in 1991, the company employs more than 50 people with 30 consultants who have over 500 man years of experience in the management, operation and maintenance of flow measurement systems. KELTON® has an outstanding reputation in the industry. Services include:

- Audit and Certification
- Uncertainty Calculations & Models
- Measurement Training
- Engineering Studies
- Metering System Documentation & Support
- Software Applications

Currently service is provided worldwide for; major oil & gas operating companies, gas transmission & distribution companies, LNG terminal operators and system integrators. Presently, service is offered from three strategic locations: UK, Qatar and Abu Dhabi.

If additional information is required on KELTON® flow consultancy services or software applications visit:

www.kelton.co.uk



As many operators share production and transportation facilities, measurement is required on each field to allocate production to the respective fields. Compliant measurement systems are required to ensure this allocation is fair and equitable and to determine the corresponding production entitlements and the subsequent financial revenue and costs. It is quite usual for non-operating partners and/or pipeline operators to perform an independent measurement system audit to ensure their financial interests are secure and that entry point requirements are being met.

Key Aspects of Measurement System Auditing

The principal reason for auditing is to ensure measurement systems are operated within the agreed standards, guidelines and commercial agreements to ensure that measurement accuracy is maintained and subsequently, that profits are fully capitalised. Operators place huge focus on the reduction of capital and operating costs in the drive for optimising profitability and return on investment while considering that any reduction in capital and operating costs for measurement systems may affect the accuracy of the revenue that they are credited with, and consequently may outweigh the savings made.

After the measurement system has been installed and is in operation, the key issues are operation, verification of measurement equipment & data as well as management of issues such as reporting, documentation and data protection. It is therefore imperative that the measurement systems continue to operate as intended by performing measurement audits at reasonable intervals. This ensures the measurement systems are continually assessed for compliance to the appropriate standards and guidelines. In summary, regardless of the measurement application, auditing of measurement systems should be an ongoing process designed to maximise return on investment by ensuring they are operating as accurately as possible throughout their operating life.

Why do you need a UKAS Certificate?

A certificate from a United Kingdom Accreditation Service (UKAS) approved Inspection Body demonstrates to stakeholders that you have selected suitable equipment, are operating and maintaining that equipment to the highest standard, providing the best accuracy of hydrocarbon measurement practical and in accordance with the relevant standards, guidelines and commercial agreements.

What does it mean to you?

A UKAS certificate demonstrates the auditor has the prerequisite level of experience, the processes and procedures are in place for the inspection and auditing of measurement systems and that the process is impartial. It also provides a level of guarantee as the auditing company are independently audited by UKAS technical experts periodically. In addition it provides comfort to stakeholders that they are achieving the best return on their investment. As a consequence, inspections will be undertaken in accordance with the scope of the UKAS accreditation and approved procedures, and in accordance with ISO/IEC 17020: 2012 Conformity Assessment - requirements for the operation of various types of bodies performing inspection.

Deliverables

On successful completion of an inspection KELTON[®] will issue a detailed report showing all areas that have been inspected, including traceability to applicable measurement criteria and assuming the measurement systems are in compliance, a UKAS certificate.

Why KELTON[®]?

- Employing the best personnel in the industry
- 500 years' experience
- Detailed inspection procedures and criteria
- Best in class accreditation
- Strategically located and global reach