

# In-line inspection company compliance check

## Guide

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## Foreword

The objective of In-Line-Inspection (ILI) is to obtain data on the pipeline condition, deformation or routing as part of the baseline and/or revalidation process. ILI is typically performed with specially designed and built tools that are based on one or more non-destructive technologies such as ultrasonic, magnetic flux leakage, eddy current, mechanical arms, inertia measurement and other. These tools gather a large amount of data that require interpretation and evaluation of well trained specialists. Calibration of the tools is another important step for correct interpretation of data collected.

Designing, building, operating of ILI tools and interpretation, evaluating of the collected data is typically (but not always) carried out by a single ILI Company.

This guide on ILI Company compliance check has similarities with an audit procedure and can be used by Pipeline Operators as an initial step to find an ILI company that can provide tools, technologies and services in compliance with industry accepted standards.

This document has been reviewed and approved by the Pipeline Operator Forum (POF). It is stated however, that neither any of the member companies of the POF nor their representatives can be held responsible for the fitness for purpose, completeness, accuracy and/or application of this document

This compliance check document is one in a series of documents developed and provided by the Pipeline Operators Forum. This and other ILI related documents can be found on the POF website ([www.pipelineoperators.org](http://www.pipelineoperators.org)).

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## 1 Scope

The scope of this compliance check document is to provide to the pipeline operators community a common baseline document to support the review of inspection companies that offer and operate in-line tools for the inspection of metallic pipelines.

This review should indicate whether a specific company can comply with client's requirements and industry standards such as e.g. API 1163 [1] and the POF specifications [3]. This document is written in such a way that both the pipeline operator as well as a third party could use this document for the compliance check.

This document covers the key points to be reviewed by both the pipeline operator and the In-Line Inspection (ILI) Company, in order to provide assurance that the inspection company is likely to be able to supply services to an acceptable standard under an inspection agreement.

The compliance review process may be used as the first step in the selection process of an ILI company for inspection of pipelines and can be used in the following situations:

1. A new inspection Company, i.e. an ILI Company which has not worked for the Operator or has not been evaluated yet.
2. An inspection Company which has not worked for the Operator recently and/or is not familiar with new processes and requirements from the client.
3. After a previous compliance check (typically. 3 - 5 years or according to Operator policy) to verify that an inspection Company is still compliant.

The information obtained from the compliance check should be evaluated by the Operator where after the decision can be taken to approach the Company for a pipeline inspection project or contract. This document therefore should be used prior to detailed and technical discussions for a pipeline inspection project.

Prior to approaching the Company for a specific inspection project or contract however, an additional field operations visit might be proposed and added by the Operator or the Company to witness specific phases like e.g. tool loading/extraction, tool cleaning, compliance to procedures, safety etc..

The scope of a pre-qualification compliance check typically covers areas such as HSE, QA and technical capability. It is noted however, that this document does not cover financial or general management subjects related to the inspection company's operations which may have to be considered separately prior to award a contract.

## 2 List of definitions, abbreviations and acronyms

For the purpose of this document, the definitions, abbreviations and acronyms as listed below apply.

### 2.1 Definitions

Company	In-Line Inspection Company
Operator	Pipeline Operator, i.e. pipeline owner or pipeline manager
Reviewer	Person that carries out the compliance check on behalf of the Operator

### 2.2 Abbreviations and acronyms

AGM	Above Ground Marker
ART	Acoustic Resonance Technology
ATEX	ATmosphères EXplosibles (Explosive atmospheres)
EC	Eddy Current
EMAT	Electro-Magnetic Acoustic Transducer
FFS	Fitness for Service
GPS	Global Positioning System
ILI	In-line Inspection
IMU	Inertial Mapping Unit
MFL	Magnetic Flux Leakage
QA	Quality Assurance
SCU	Speed Control Unit
UT	Ultrasonic Testing

### 3 ILI company compliance process

The ILI compliance check may be completed in six (6) stages, the schedule below is considered a good practice:

1. General meeting.
2. Compliance document to be forwarded to ILI Company for completion as far as possible.
3. Completed compliance document to be returned to Pipeline Operator.
4. Visit to the technical facilities of the ILI Company.
5. Technical meeting and further completion of the compliance document (optionally to be combined with the visit to the technical facilities).
6. Feed back of findings and (if applicable) agreed follow-up actions.

#### 3.1 An additional stage might be proposed and added by the Operator or the Company, like an additional field operations visit to witness specific phases like e.g. tool loading/extraction, tool cleaning, compliance to procedures, safety, managing sub-contractors etc. General meeting

The general meeting is considered to be the first contact between the Operator and Company. The intention is to discuss the available capabilities and technologies of the Company in relation to Operator's pipelines, inspection and reporting requirements and if required follow-up activities. As such, this meeting can be regarded as a step prior to the actual compliance check process and from this meeting the Operator should decide if a compliance check will be carried out.

If a compliance check is foreseen, this should be agreed with the Company and the person that carries out the compliance check on behalf of the Operator is, for the purpose of this document, called the "Reviewer".

#### 3.2 Compliance document

The compliance document is to be completed with information from the Company, whereby the information requested in sections 4 is for informative proposes only and is not to be checked for compliance to any standard.

Sections 5 to 10 summarise the information to be supplied by the Company that should be checked for compliance to documents as indicated.

Tables are prepared where the information from the Company is requested. The numbering of tables is based on the chapter numbering of the document and as such, in table 4 (in appendix A) general Company information is requested. In tables 5 to 10 (in appendix B) information is requested that should be checked by the Reviewer and/or Operator for compliance with documents as listed in the columns one and two.

#### 3.3 Completion of document

It is advised to forward the tables to the Company with the request to complete the tables prior to the technical meeting. As tables 5 to 10 comprise information that need to be checked for compliance to requirement as listed documents, the Reviewer should check the information and related Company documents. The Reviewer is requested to give or add a descriptive statement that reflects his observation and if required a recommendation.

In the last column of tables 5 to 10 a "verdict" statement is requested from the Reviewer indicating if the Company is compliant for the item considered. In this column therefore, the statement shall be "Compliant" (C), "Not Compliant" (NC), "Not Applicable" (NA) or "Action Required" (AR).

Final completion of the document should be done by the Reviewer and will typically be carried out during the technical meeting (step 5, see also chapter 3.5 below).

All information shall be provided in the English language, unless agreed otherwise between parties.

### 3.4 Visit to the technical facilities

The visit to the technical ILI Company technical facilities can be carried out by the Operator or a third party and is intended to give the Reviewer an impression of the facilities and capabilities of the Company. Typical departments to be visited are:

- Design department
- Machining workshop
- Operations department: Planning, Transport
- Data analysis department
- Maintenance department
- Pull/pump test facilities

### 3.5 Technical meeting

The completed document as received from the Company shall be reviewed during the technical meeting.

The tables 4.1 to 4.8 should be checked for completeness and accuracy. Additional information or explanation might be requested and could be added.

The information in tables 5 to 10 shall be checked and completed by the Reviewer during discussions with specialists from the Company. The Reviewer shall complete the tables and advise if the observations are in compliance with the reference documents and/or recommend actions (see also chapter 3.3).

### 3.6 Feed back

It is advised that the Reviewer summarises the findings and verdict at the end of the technical meeting. Recommended actions shall be discussed and possibly a time schedule agreed.

## 4 Company information

In this section Company information is requested on the locations where the Company has its head quarter, development centre(s) and regional offices. It shall be indicated what services are available from the various locations and what location will be visited for the compliance check.

### 4.1 Company addresses

Information on the company addresses is requested in the table 4.1.

### 4.2 Organisation

Organisational information and information of key persons for the location to be visited is requested in table 4.2.

### 4.3 Technical facilities

Information on available technical facilities such as pump and pull test equipment is requested in table 4.3. An independent or subcontracted third party test facility can also be listed here.

### 4.4 Tools and technologies, general overview

An overview of the available tools, technologies and combinations thereof for each range of pipe diameters and thickness is requested to be given in table 4.4. If applicable, this table can be completed and expanded with additional (not listed) technologies. Also a remark can be added for extra information.

### 4.5 Details of Inspection tools and technologies

Information on the technical details of the available tools is requested in table 4.5.1 to 4.5.11 for the various type of tools as listed below. Sub-tables are prepared for technologies that are considered to be available from 3 or more ILI Companies but, if applicable, additional sub-tables can be added.

- 4.5.1 Gauging and Cleaning tools**
- 4.5.2 Geometry tools**
- 4.5.3 MFL tools, Axial magnetisation**
- 4.5.4 MFL tools, Circumferential magnetisation**
- 4.5.5 UT tools, Compression wave, Wall thickness measurement**
- 4.5.6 UT tools, Shear wave, Crack detection and sizing**
- 4.5.7 EMAT tools, Wall thickness measurement**
- 4.5.8 EMAT tools, Crack detection and sizing**
- 4.5.9 Eddy current tools**
- 4.5.10 Mapping tools**
- 4.5.11 Special and other tools**

#### **4.6 Complementary services**

Complementary and additional services, that are available from or via the ILI Company, are requested to be indicated in table 4.6. This table can be expanded and completed with additional (not listed) services..

#### **4.7 ILI tool running information and performance statistics**

Information on the number and kilometres of pipelines inspected and ILI performance statistics of the last 5 year are requested to be supplied in table 4.7.

#### **4.8 Client list**

A client list is requested in table 4.8.

## **5 Health, Safety and Environment**

Information on health, safety and environmental performance aspects is requested to be supplied in table 5.

## **6 Quality**

Information on the applicable quality assurance system and relevant certification is requested to be supplied in table 6.

## **7 Personnel**

Personnel operating the ILI systems and personnel handling, analyzing and reporting the inspection results shall be qualified and certified according to the latest version of document ANSI/ASNT-ILI-PQ-2005 [2]. If an alternative qualification scheme is in use, a comparison table shall be constructed and reviewed for equivalency.

In addition to the qualification levels, the document "Specifications and requirements for in-line inspection of pipelines - Version 2016" [3] (POF specs) require key personnel to have certain qualifications or experience.

To support development of ILI tools and verification of defects detected in pipelines, general NDT techniques might be used for these activities and personnel might be available with general NDT qualifications for e.g. the ultrasonic technology (e.g. ISO 9712, Non-destructive testing — Qualification and certification of personnel or SNT-TC-1A, Personnel Qualification and Certification in Non Destructive Testing).

In this section the qualification requirements of personnel is listed.

### **7.1 General requirements and documents**

General information and documents regarding personnel qualification are to be supplied in Table 7.1.

### **7.2 Tool operations**

The number and qualifications of tool operators available and qualified shall be indicated in table 7.2. Level of qualification shall be as described in document ANSI/ASNT-ILI-PQ-2005 (reapproved 2010).

### **7.3 Data interpretation and analysis**

The number and qualifications of data analysts available and qualified shall be indicated in table 7.3. Level of qualification shall be as described in document ANSI/ASNT-ILI-PQ-2005 (reapproved 2010).

### **7.4 Assigned personnel for field operations, data analysis and reporting**

Compliance to reference document for the qualifications of assigned personnel for specific activities is requested to be completed in table 7.4.

## **8 Technical requirements of ILI tools**

Compliance to reference documents for technical requirements of available ILI tools is requested to be completed in table 8.

## **9 Operations and project management**

Compliance to reference documents for operations and project management is requested to be completed in table 9.

## **10 Reporting**

Compliance to reference documents for ILI reporting is requested to be completed in table 10.

## **11 Field operations visit (optional)**

Observations of specific aspects made during the optional field operations visit can be reworded in table 11.

## **12 References**

1. API 1163, "In-Line Inspection Systems Qualification", American Petroleum Institute, 2nd Ed., April 2013.
2. ANSI/ASNT-ILI-PQ-2005, "In-line Inspection Personnel Qualification and Certification" (reapproved 2010), American Society for Non-destructive Testing, 2010.

3. "Specifications and requirements for in-line inspection of pipelines, Version 2016", Pipeline Operators Forum, 2016.
4. ISO 9001 Quality management systems - Requirements
5. OHSAS 18001, "Occupational Health and Safety Assessment Series"
6. ISO 14001, Environmental management systems - Requirements with guidance for use