



# ENIQ RECOMMENDED PRACTICE

## ENIQ Recommended Practice 7

Recommended General Requirements for a Body Operating  
Qualification of Non-Destructive Tests

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## FOREWORD – BRIEF REVISION HISTORY OF RP7

The first issue of ENIQ Recommended Practice 7 (RP7) was produced by the former ENIQ Task Group 2.2 and was approved by the ENIQ Steering Committee for publication in 2002. As part of the revision of all ENIQ RPs in 2017 / 2018 RP7 was revised. The content of the first issue of RP7 is still valid. So only smaller changes were made for the second issue of RP7, which mainly involve update of standards referred to in the document.

## EXECUTIVE SUMMARY

This Recommended Practice provides guidance on the minimum criteria that a body operating qualification of non-destructive testing should follow if it is to be recognised as impartial, independent of operational pressures, competent and reliable.

There are three types of qualification bodies defined in this Recommended Practice. This document is mainly intended to provide guidance on the requirements for qualification bodies with a permanent organisational structure. Ad-hoc qualification bodies, being more temporary and inspection-specific in nature will generally be established in a less formal way. However, many parts of this document still provide useful guidance to those wishing to set up an ad-hoc qualification body.

If set up with the appropriate procedures, personnel and controls, all three types of qualification body are capable of providing a qualification service of high quality. The decision on which type of qualification body is most appropriate for each specific inspection needs to be taken at national level between all involved parties and also may depend on the national regulation.

# TABLE OF CONTENT

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1. Introduction .....	1
2. General .....	1
3. Interaction with the different parties involved in inspection qualification .....	1
4. Requirements for technical expertise .....	2
5. Administrative and quality assurance requirements .....	2
5.1 General requirements .....	2
5.2 Administrative structure .....	2
5.3 Organisational structure .....	3
5.4 Qualification personnel .....	3
5.5 Documentation and change control .....	3
5.6 Records .....	4
5.7 Control of qualification process .....	4
5.8 Quality manual .....	5
5.9 Confidentiality .....	6
5.10 Appeals and resolving of conflicts (for type 1 and 2 QBs) .....	6
5.11 Internal audit and periodic review .....	6
5.12 External audit .....	6
5.13 Certificates of qualification .....	6
References .....	7



## 1. Introduction

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The European Methodology Document [1][2] is intended to provide a general framework for the development of qualifications for the inspection of specific components to ensure they are developed in a coherent and consistent way while still allowing qualification to be tailored in detail to meet different national requirements.

This recommended practice (RP) assists those who want to establish a qualification body (QB) and those who have to audit in order to recognise the competence of a QB. It also assists in providing a general framework for a scheme of recognition of qualifications performed in the European Union (EU).

## 2. General

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Three types of QBs are considered within this RP:

- Type 1: QB which is an independent third party organisation;
- Type 2: QB which is an independent part of the utility's organisation set up on a permanent or long-term basis;
- Type 3: Ad-hoc QB set up for a specific qualification.

This document is mainly intended to provide guidance on the requirements for QBs of types 1 and 2. A QB of type 3, being more temporary and inspection-specific in nature, will generally be established in a less formal way than QBs of types 1 and 2. However, many parts of this document still provide useful guidance to those wishing to set up a QB of type 3.

If set up with the appropriate procedures, personnel and controls, all three types of QB are capable of providing a qualification service of high quality. The decision on which type of QB is most appropriate for each specific inspection needs to be taken at national level between all involved parties and also may depend on the national regulation.

Any QB (of any of the three types described above) should be independent and impartial, and have the necessary technical competence and resources. The QB should be free from any commercial, financial, operational or other pressure, which might affect its assessment or judgement. The QB should not engage in any activities that may conflict with its independence of judgement and integrity in relation to its qualification activities. In particular, it should not become directly involved in the design, construction, marketing, use, operation or maintenance of any aspect of the NDT qualified process.

## 3. Interaction with the different parties involved in inspection qualification

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The different parties involved in inspection qualification are generally:

- Utility;
- Regulatory body;
- QB;
- Inspection vendor.

The roles and the responsibilities of the different parties, and the interaction between them, is defined and documented, for example in the qualification plan.

## 4. Requirements for technical expertise

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Any QB should have the necessary technical expertise in order to perform the qualifications correctly. Within any QB at least the following expertise should be available:

- Expertise in the inspection methods and techniques (including inspection equipment and procedures) submitted for inspection qualification, through for example:
  - Appropriate Level II and Level III certifications (for example meeting ISO 9712);
  - Practical experience and training;
  - Involvement in previously conducted qualifications;
- Expertise in assessing inspection procedures, including, where appropriate, the assessment of the data analysis part;
- Expertise in assessing technical justifications (TJs), including, where appropriate, assessing results of modelling;
- Expertise in test piece design and introduction of defects, which means also being aware of problems associated with test piece manufacturing, and knowledge about signal response from different NDT methods on different materials and flaw types.

For QBs of types 1 and 3, members of the utility may sometimes be included in the group of QB personnel considering a specific inspection. This can be an effective means of including staff in the qualification process which has specialised knowledge or expertise of the plant component and/or inspection procedure. To maintain their independence, such utility staff may not be involved in the design, supply or implementation of the inspection by the utility.

## 5. Administrative and quality assurance requirements

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### 5.1 General requirements

It is recommended that any QB of type 1 fulfils at least the independence criteria equivalent to the general criteria specified in the International Standard ISO/IEC 17020 for type A inspection bodies (see ISO/IEC 17020, Annex A). Similarly it is recommended that any QB of type 2 fulfils at least the independence criteria equivalent to the general criteria specified in the International Standard ISO/IEC 17020 for type B inspection bodies (see ISO/IEC 17020, Annex B). The exact requirements to be met by the QB, if it is decided to set one up, are agreed upon between the parties involved.

**Note:** ISO/IEC 17020, being concerned with permanent or long-term organisations, is not relevant to type 3 QBs.

All external organisations selected as potential suppliers of non-destructive tests which require qualification, may have access to the QB. There may not be undue financial or other constraints placed on the assessment of their proposed tests. All utility organisations wishing to carry out non-destructive tests themselves that require qualification may have access to the QB.

### 5.2 Administrative structure

A QB of type 1 is legally identifiable and has adequate liability insurance. For QBs of types 2 and 3 there is in general no need for a separate legal identity or liability assurance.

The QB has documentation which describes its functions, the technical scope of activity for which it is competent, and specifically for the QB of type 1 the conditions on which it does business.

**Note:** The extent of documentation for a QB of type 3 will generally be lower than for the more permanent bodies of types 1 and 2. It may be included, for example, in the qualification procedure.

### 5.3 Organisational structure

The QB has and makes available on request:

- An organisation chart showing clearly the responsibility and reporting structure of the organisation;
- A documented statement of its certification systems including its rules and procedures for granting qualification certificates.

### 5.4 Qualification personnel

The QB has a qualification manager who has the technical competence and experienced in non-destructive testing (NDT) and who has overall responsibility that the qualification activities are carried out in accordance with existing requirements.

QBs of types 1 and 2 have named persons who will deputise in the absence of the manager. This may not be necessary for bodies of type 3.

The personnel of the QB is competent for the functions they undertake. To this end, they have appropriate qualifications, training, experience and a satisfactory knowledge of the requirements of the qualifications to be carried out.

QBs of types 1 and 2 may establish a documented training system. This ensures that the training of their personnel in the technical and administrative aspects of the work in which they will be involved is kept up-to-date in accordance with its policy.

QBs of types 1 and 2 may maintain up-to-date information on the relevant qualifications, training and experience of each member of its personnel.

The management of QBs of types 1 and 2 may designate a person who, irrespective of other duties, has defined responsibility for quality assurance within the QB.

Personnel has clear documented instructions pertaining to their duties and responsibilities available. These instructions are kept up-to-date.

When work is sub-contracted to an outside body, the QB ensures that the personnel involved in the sub-contracted work meets the applicable guidance of this RP.

### 5.5 Documentation and change control

The QB maintains a system for the control of all documentation relating to its qualification activities, and ensures that:

- The current issues of the appropriate documents are available at all relevant locations.
- All changes of documents or amendments to documents are covered by the correct authorisation and processed in a manner, which will ensure timely availability at the appropriate location.
- Superseded documents are removed from use throughout the organisation and its agencies.

Two types of documents can be distinguished:

#### 1. Operation documents:

These documents are applicable at any time, and describe the mode of operation of the QB. All previous revisions of these documents may be archived.

## 2. Documents related to the conduct of inspection qualification:

The contents of these documents, describing what information has to be provided/recorded during inspection qualification, is available. For each specific qualification all these documents are assembled in the qualification dossier [3].

These documents cover at least the following:

- Input information to be provided before the start of the qualification (details on the components to be inspected, defects to be detected and/or sized and the inspection performance to be achieved);
- Documentation to be supplied by the vendor when an inspection procedure is submitted;
- Documentation to be supplied by the vendor concerning the inspection personnel;
- Documentation of test pieces, open and blind, that has to be used in the actual qualification;
- Qualification plan:
  - Objectives of the inspection qualification;
  - Way the TJ and inspection procedure are assessed;
  - Conduct of the practical trials;
- Results of assessment by QB of the inspection procedure and equipment;
- Certificates issued.

The qualification dossier allows tracing back the validity of the different qualification certificates issued at any time.

Different levels of confidentiality can be attributed to the different documents. The level of confidentiality determines who has access to the different documents. Information concerning test pieces used for blind trials may be considered most sensitive and may be disclosed only when unavoidable. A list of persons who have or have had access to the information concerning blind trial test pieces may be drawn up. The level of confidentiality concerning the results obtained by the individual inspection vendors is a matter to be agreed between the utility and the vendor.

## 5.6 Records

The QB maintains a suitable record system. The records demonstrate the way in which each qualification plan was applied. All records are safely stored for the operational lifetime of the plant, or such other period as agreed by the parties involved. The records are held secure and in confidence to each organisation undergoing qualification.

## 5.7 Control of qualification process

The QB has access to the required facilities in terms of qualification personnel, expertise, equipment, documentation, workspace and secure areas to undertake the qualification of non-destructive tests. This does not preclude the use of external resources when necessary. The QB has clear rules for access to and the use of specified facilities and equipment.

A QB of type 1 or 2 has a control system, which ensures that:

- Work to be undertaken is within its expertise and that the organisation has adequate resources to meet the requirements;
- Requirements of those seeking the qualification are adequately defined and that special conditions are understood so that unambiguous instructions can be issued to staff

performing qualification;

- Work being undertaken is controlled by regular review and corrective action;
- Completed work is reviewed to confirm that requirements have been met.

## 5.8 Quality manual

QBs of types 1 and 2 devise, maintain and are responsible for a fully documented quality management system including operating procedures covering all aspects of the organisation and control of NDT qualification activities. Procedures for issuing certificates are also included. The quality system and associated documentation meet ISO/IEC 17020, ISO 9001 or equivalent. The intent of the quality system is to ensure the effective control of all qualification activities and may include:

- Quality policy statement;
- Brief description of the legal status of the QB of type 1;
- Statement of the organisation of the QB;
- Names, qualifications, experience and terms of reference of the senior executive and other qualification personnel, both internal and external;
- Details of training arrangements for QB personnel;
- Organisation chart showing lines of responsibility, authority and allocation of functions stemming from the senior executive;
- Relevant job descriptions for the QB personnel;
- Details of the documented qualification plan for qualifying tests;
- Procedures for test piece production including security of information;
- Procedures for conduct of test piece trials;
- Details of the documented procedures for subsequent surveillance of qualified tests;
- List of its sub-contractors and details of the documented procedures for assessing and monitoring their competence;
- Details of appeals procedures;
- Procedure for certificate issue;
- Procedure for assessment of qualification results;
- Procedure for maintaining security of information;
- Procedures for internal audits;
- Procedures for feedback and corrective action;
- Document control procedures;
- Procedures for management review of the quality system.

For QBs of type 3, such a fully documented quality system is not required. However, controls are still required to ensure that all qualification activities, for the specific qualification being considered, are performed to the required quality. These controls may, for example, be specified in the qualification plan.

## 5.9 Confidentiality

The QB has adequate arrangements to ensure confidentiality of the information obtained in the course of its qualification activities at all levels of its organisation.

## 5.10 Appeals and resolving of conflicts (for type 1 and 2 QBs)

QBs of types 1 and 2 may have procedures for the consideration of appeals against their decisions. Specific instructions may be made available which describe the rules to follow in case of failure by a vendor to meet the qualification objectives. This includes the conditions for re-qualification.

A procedure describing how conflicts between the QB (type 1 or 2) and a vendor are resolved may be available. The arguments and positions of all parties involved are documented in writing as well as the decisions taken.

## 5.11 Internal audit and periodic review

QBs of types 1 and 2 may undertake internal audits and periodic reviews of compliance with the criteria of the present document. Such reviews may be recorded and made available to persons having access right to this information.

## 5.12 External audit

The QB may be prepared to submit itself to external audit if required by regulator or licensee, to ensure compliance with the present or other relevant documents.

## 5.13 Certificates of qualification

Detailed instructions specify the issuing of certificates. The following issues may be considered:

- Who, either the QB or the utility, is responsible for issuing the certificates;
- Detailed contents of certificates: considered component, inspection procedure / equipment, inspection personnel, etc.;
- Validity in time;
- Conditions for renewal of the certificate.

Procedures describing the conditions for withdrawal and cancellation of qualification certificates may be documented.

## REFERENCES

- [1] *The European Methodology for Qualification of Non-Destructive Testing - Issue 4*, ENIQ Report no. 61, The NUGENIA Association, 2019.
- [2] *ENIQ Glossary of Terms – Issue 3*, ENIQ Report no. 62, The NUGENIA Association, 2019.
- [3] *ENIQ Recommended Practice 4: Recommended Contents for the Qualification Dossier - Issue 2*, ENIQ Report no. 55, The NUGENIA Association, 2018.

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## **ABOUT NUGENIA AND ENIQ**

NUGENIA is an international non-profit association under Belgian law established in 2011. Dedicated to the research and development of nuclear fission technologies, with a focus on Generation II & III nuclear plants, it provides scientific and technical basis to the community by initiating and supporting international R&D projects and programmes. The Association gathers member organisations from industry, research, safety organisations and academia.

The activities of NUGENIA cover plant safety & risk assessment, severe accidents, reactor operation, integrity assessment and ageing of systems, structures & components, development of fuel, waste & spent fuel management & reactor decommissioning, innovative light water reactor design & technologies, harmonisation and in-service inspection & their qualification.

The European Network for Inspection and Qualification (ENIQ) is a utility driven network working mainly in the areas of qualification of non-destructive testing (NDT) systems and risk-informed in-service inspection for nuclear power plants. Since its establishment in 1992 ENIQ has issued over 50 documents. Among them are the “European Methodology for Qualification of Non-Destructive Testing” and the “European Framework Document for Risk-Informed In-Service Inspection”. ENIQ is recognised as one of the main contributors to today’s global qualification guidelines for in-service inspection. ENIQ became Technical Area 8 of NUGENIA in 2012.

