

## ABSTRACT

This document is the Section G to NSQ-100 Guidelines.

Its objective is to help to the understanding of NSQ-100 requirements through some examples or recommendations and descriptions of industrial good practices.

The Guidelines Section G is related to the Production and Inspection requirements of NSQ100 (Chapters 07.5 & 7.6).

### Summary

- Chapter 1: Purpose of this section
- Chapter 2 : Guidelines

The following questions are addressed :

- *What's the difference between "Inspection" and "Surveillance"?*
  - *How to demonstrate the evidence of "provisions for inspection and surveillance activities"?*
  - *How to manage sub-contractor follow-up process?*
  - *Difference between "calibration" and "verification"?*
  - *How to "select" measuring and test equipment?*
- Annex 1: Example of Follow-up document.

## CHAPTER 1: PURPOSE OF THIS SECTION

The present section refers to NSQ100 following chapters:

**7.5 Product and service provision**

**7.6 Control of monitoring and measuring equipment**

## CHAPTER 2: GUIDELINES

### 7. PRODUCT REALIZATION

7.5. Production and service provision

7.5.1. Control of production and service provision

**7.5.1.1.** Control of production process changes

*No Guidelines for this Chapter.*

**7.5.1.2.** Control of production equipment, tools and computer programs

*No Guidelines for this Chapter.*

### 7.5.1.3. Inspection and surveillance activities

➔ **What’s the difference between “Inspection” and “Surveillance” ?**

#### “Inspection” :

Reminder : the definition given by ISO9000:2005 for the word “**Inspection**” is :

*conformity evaluation by observation and judgement accompanied as appropriate by measurement, testing or gauging.*

Note : the term “inspection” corresponds in French language to the word “contrôle”.

#### “Surveillance” :

Reminder : the definition given by NSQ-100 for the word “**Surveillance**” is :

*The act of **monitoring** or **observing** to verify whether an item or activity conforms to specified requirements.*

In other words, the respective signification of these words may be compared as follows:

	<b>HOW</b> (=kind of activities performed)	<b>WHO</b> (=actor)	<b>WHY</b> (=objectives)
<b>Inspection</b>	By: <ul style="list-style-type: none"> <li>▪ Measurement</li> <li>▪ Examination,</li> <li>▪ Testing,</li> </ul> and comparison of the results with specified requirements (1).	The <b>Organization</b> (or its supplier in case of subcontracted inspection)	To verify whether an <b>item or activity conforms to specified requirements.</b>
<b>Surveillance</b>	By: <ul style="list-style-type: none"> <li>▪ Monitoring,</li> <li>▪ Observing,</li> <li>▪ Checking of documents and/or records,</li> <li>▪ Auditing,</li> </ul> and ensuring that specified requirements (1) are met.	The <b>Customer</b> (2) or its representative  or  The <b>Organization</b> (as a second level above its own inspection or in case of its own sub-suppliers performance survey)	To ensure that the Organization <b>processes are controlled.</b>

(1) : Specified requirements may be (non-exhaustive list): technical specifications, standards, codes, drawings, ....

(2) : Depending of the national regulations, the contractor, the owner or the Regulator might also perform their own surveillance, in addition to the customer and/or organization ones.

## ➔ How to demonstrate the evidence of “provisions for inspection and surveillance activities”?

Demonstration of the evidence of **provisions for inspection and surveillance activities** may be performed through the use of a document generally called “Quality Control Plan” (QCP), “Inspection Test Plan” (ITP), Follow-Up Document (FUD) or any similar names. A suggested model for such document is attached in annex 1.

This document, which must reflect the “graded approach concept”, (refer to Guidelines n° 1) shall:

- ❶ **Be drafted** keeping in mind the following aspects and inputs:
  - Content of specifications (contractual, regulations, codes and standards),
  - IFS classification of items and activities constituting or related to the product (refer to NSQ-100 Guidelines n° 1),
  - Manufacturing processes which needs to be qualified prior to manufacture (refer to NSQ-100 §7.5.2),
  - Organization knowledge and Return of experience for similar products,
- ❷ **Identify** the reference to the equipment specification with its revision index,
- ❸ **Contain** the designation of the component assemblies, sub-assemblies and parts concerned, (complexity of the product which might require equipment breakdown in sub-parts and issuance of sub-QCP, or sub-ITP, sub-FUD, ...),

As an example, welding sequences and claddings are considered to be a part.

- ❹ **List** the chronological steps describing the realization of the product. For each operation described, the reference (1) of the technical document which the supplier intends to apply (drawings, procedures, internal instructions, relevant paragraphs of the construction code or standard):
  - design phases,
  - prerequisites(2), as issuance of contractual and/or regulatory documentation,
  - procurement,
  - manufacturing (with traceability related operations(3)),
  - inspection during manufacturing,
  - workshop assembling,
  - final workshop testing or inspection,
  - packing,
  - delivery,
  - (eventually) on site erection,
  - (eventually) final site testing or inspection,
  - ...

(1): indication of the revision index can be reported only at the time of the performance step.

(2): prerequisites may exist all along the realization of the product. Examples: procurement specifications, welding book, manufacturing procedures, NDT procedures, ...

(3): at each phase of the product realization link between product and associated documentation must be defined without ambiguity.

- ❺ **Indicate** the type of intervention(s) to be performed by the organization (or it’s supplier in case of sub-contracted inspection) or other parties as the customer, the contractor, the owner or the statutory third party to ensure the control of the production:

**Hold Point:** this point is used by an entity to designate an operation which the organization is not allowed to perform or begin without the entity inspector presence or formal authorization (entity may mean the organization itself, the customer, the contractor, the owner or the Regulator).

**Witness point:** this point is used by an entity to designate an operation which the entity inspector requires to be notified about in due time (\*) before performance, but which the organization is allowed to perform or begin without the entity inspector presence or formal authorization (entity may mean the organization itself, the customer, the contractor, the owner or the Regulator).

(\*): “due time” means contractually defined or mutually agreed between the entity and the organization.

Note : in case of surveillance performed by the organization for sub-contracted items or activities, in addition to the aspects and inputs listed in above point ①, the level of the quality management system of the sub-supplier must also be taken into account for its surveillance level or depth.

- ⑤ **Indicate** reference of the production or inspection & tests records if required,
- ⑥ **Identify**, if any, reference of the non conformance reports and brief description of action taken such as:
- the reject,
  - the use-as-is,
  - the repair or rework and reference of the appropriate files.

## ➡ How to manage sub-contractor follow-up process?

Having regard to product complexity and in addition to the above surveillance performed by the organization, follow-up of sub-supplier activities may be performed by using the following method (It's well recommended to draft minutes of meeting including actions list):

### Kick-off meeting

Once purchase order related operations have been initiated by the sub-supplier, the organization may plan a kick-off meeting, possibly with the customer attendance, which purpose is to:

- explain, detail and organize the relations between the organization and the sub-supplier, in particular on surveillance and safety culture aspects,
- ensure that the purchase order has been correctly understood by the sub-supplier,
- clarify specific points, such as documents already issued or to be issued.

During the meeting:

- the sub-supplier explains the nature and content of the documents he has prepared regarding deadlines, technical points and quality,
- the overall time schedule is analyzed,
- action plans may be defined.

### Progress meetings

The meetings managed on organization's initiative are attended by the organization and the sub-supplier, and their purpose is to:

- periodically evaluate progress regarding the overall time schedule of the purchase order,
- verify the detailed time schedules,
- carry out a review on issues and concerns, changes and non-conformances if any.

### Specific meetings

In addition to these progress meetings, specific meetings may be arranged when needed at the request of the organization or the sub-supplier. These meetings, attended by the organization, the sub-supplier and, if necessary, the customer or its representatives, aim at examining problems liable to affect the purchase order performance and product quality and seeking agreement on suitable actions for overcoming such problems.

7.5.2. Validation of processes for production and service provision

*No Guidelines for this Chapter.*

7.5.3. Identification and traceability

*No Guidelines for this Chapter.*

7.5.4. Customer property

*No Guidelines for this Chapter.*

7.5.5. Preservation of product

*No Guidelines for this Chapter.*

7.5.6. Post-delivery support

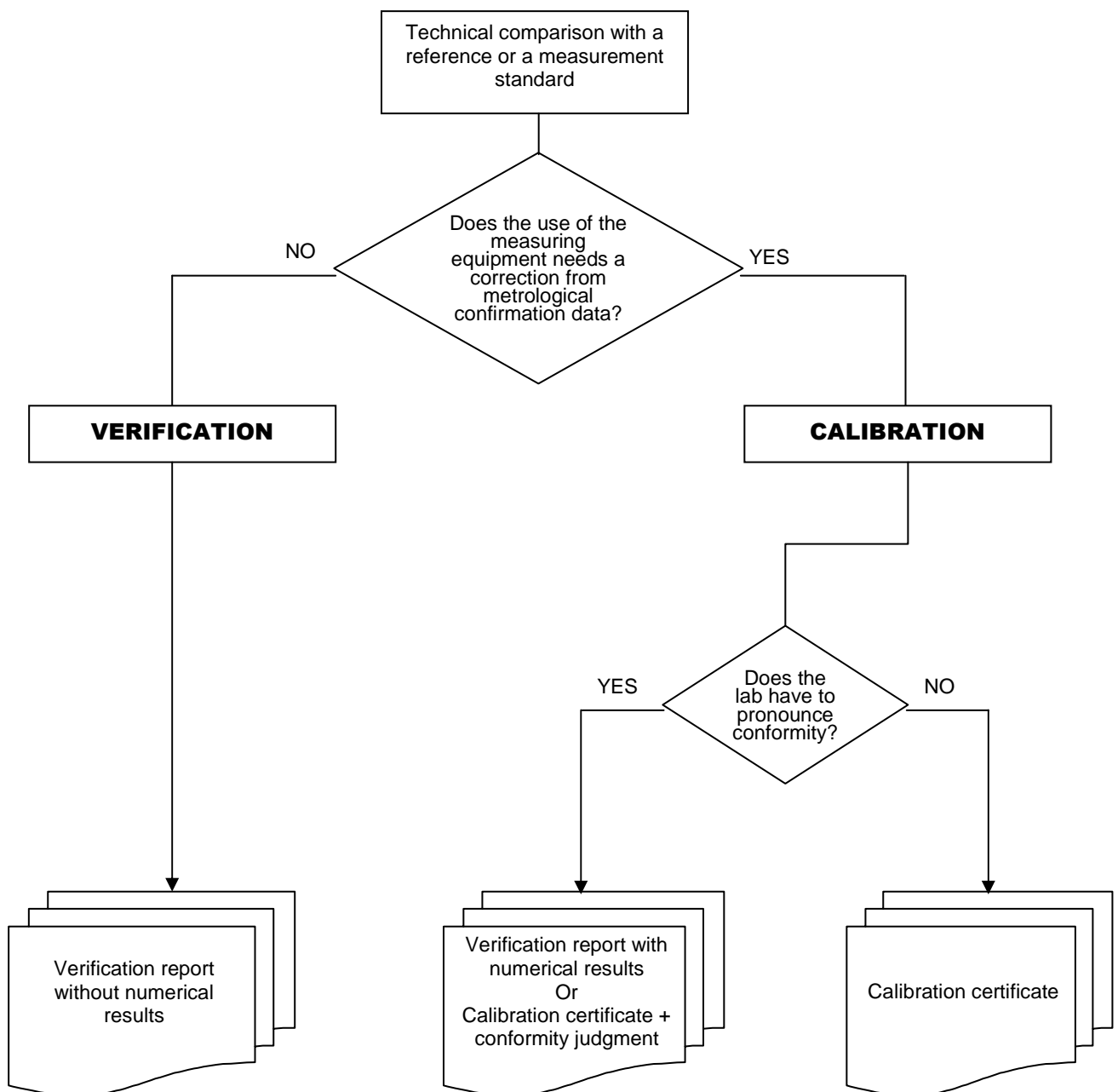
*No Guidelines for this Chapter.*

### 7.6. Control of monitoring and measuring equipment

➔ **Difference between “calibration” and “verification”?**

The monitoring and measuring equipment (measuring instrument, software, measurement standard, reference material or auxiliary apparatus or combination thereof) necessary to realize a measurement process needs a metrological confirmation when it has an influence on the quality of the product.

This metrological confirmation is a set of operations required to ensure that measuring equipment conforms to the requirements for its intended use and may take the two following aspects:



**➡ How to “select” measuring and test equipment?**

Selection of measuring and test equipment may be performed having regard to the 3 following metrological characteristics (non exhaustive list):

The following definitions (refer to ISO/CEI Guide 99 and EN ISO 14253-1) are applicable:

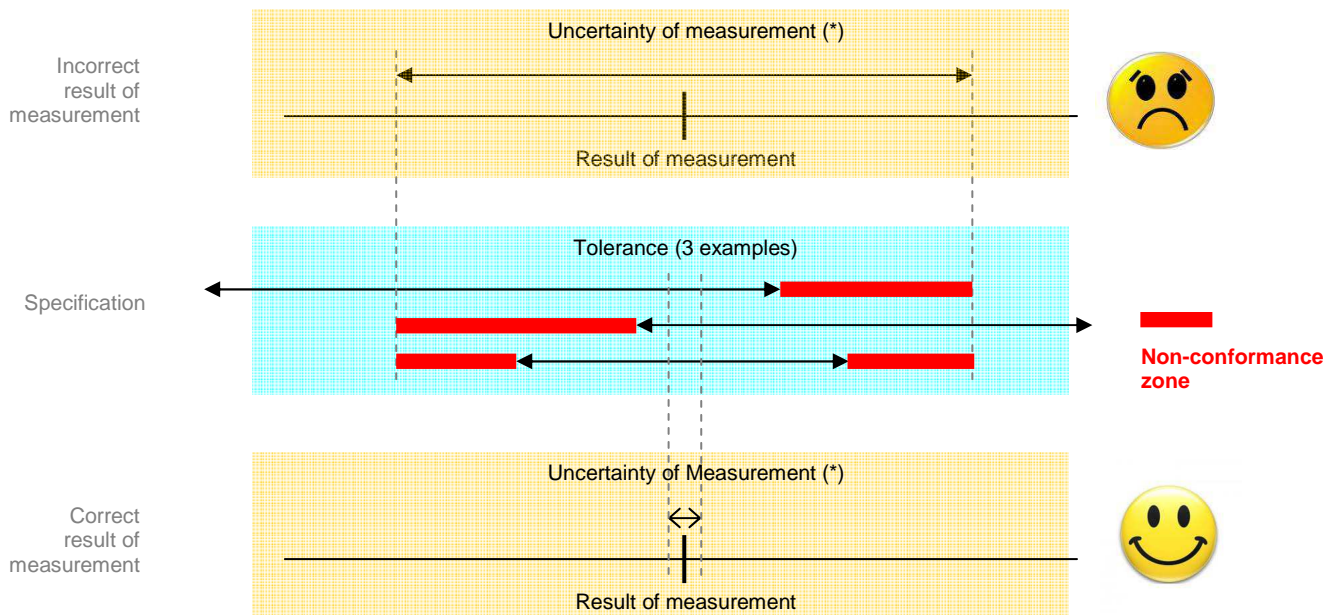
**Measuring range:** set of values of quantities of the same kind that can be measured by a given measuring instrument or measuring system with specified instrumental uncertainty, under defined conditions.

**Measurement accuracy:** closeness of agreement between a measured quantity value and a true value of a quantity value ➡ *accuracy is expressed in units of magnitude (absolute error) or percentage (relative error).*

*Example: for a pressure measurement, the code may require for the gauge an accuracy of 1%.*

**Tolerance:** Difference between the upper and lower specification limits.

Attention is drawn on situations where the measured quantity value is too near of the tolerance limit, situation which may be summarized as follows:



(\*) : measurement uncertainty includes components arising from many factors as measurement accuracy of the measuring equipment, conditions of measurement, etc .....

To avoid or minimize incorrect result of measurement, it's suggested to select a measuring equipment which have a measurement accuracy with a minimum coverage factor of 8 compared with the value of the tolerance (e.g. use of a calliper with a measurement accuracy of  $1/100^{\circ}$  mm when the tolerance is  $1/10^{\circ}$  mm).





# NSQ-100 - GUIDELINES – SECTION G

## PRODUCTION & INSPECTION – ANNEX 1

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<b>ORGANIZATION Name and/or Logo</b>	<i>TITLE of Follow-up document / Project name / .....</i>	Reference	Revision

Equipment		Technical specification(s)		Rev.		Code / Standard		Safety or Statutory Classification	
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PRODUCTION ACTIVITY			PROCEDURE(S)		ORGANIZATION Performer			ORGANIZATION Surveillance			CUSTOMER Surveillance			CONTRACTOR Surveillance			OWNER Surveillance			AUTHORITIES Surveillance			RESULT (8)	REMARKS (9)
N° (1)	DESCRIPTION (2)	IFS (3)	REFERENCE (4)	REV. (5)	Name	Date & Visa	Record N° (6)	Interv. (7)	Name	Date & Visa	Interv.	Name	Date & Visa	Interv.	Name	Date & Visa	Interv.	Name	Date & Visa	Interv.	Name	Date & Visa		
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- (1) No of Chronological / Sequential production operation from Design to Commissioning
- (2) Understandable description of the production activity (e.g. "Shell #1 forming" or "Seam #2 welding")
- (3) Indicate (e.g. by a "x") if the activity has been classified as Important for Safety (IFS)
- (4) Reference of the Organization procedure which has to be applied for the realization of the activity
- (5) The revision may be only indicated at the time of performance of the activity to ensure correct and updated information
- (6) Record may be an inspection record, a measurement record, a test record, ...
- (7) Type of intervention to be performed : Hold point (H), Witness point(W), or any other indication specific to the project
- (8) Global result of the inspection/test and surveillances → may be : Conforms (C), Repair (R), Non-Conformance (NC), Use-as-is (U), ...
- (9) Additional information, e.g. : reference of non-conformance report, repair procedure and its acceptance, use-as-is authorization, ....

<b>Additional comments</b>