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# Proficiency Testing Schemes General Information (Testing & Calibration Laboratories)

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## 1. Introduction

The term “Proficiency Testing” refers to any activity undertaken by a laboratory in order to provide objective evidence that they are “proficient” or “competent” to perform measurements.

The term thus applies to all laboratories whether they perform measurements for the purpose of calibrating instruments, or perform measurements for the purpose of testing products. Although the term “Proficiency Testing”, (PT) is well understood amongst the testing laboratory community in South Africa, calibration laboratories are more familiar with the term “Inter-laboratory comparisons” or “ILC”.

This document discusses the generic aspects relating to both Inter-laboratory comparisons and Proficiency Testing Schemes and is therefore applicable to both calibration and testing laboratories. More detailed information can be found in the following two documents; “NLA-ILC-I-04-XX Inter-laboratory Comparisons ILC Detailed Information (Calibration Laboratories)” and “NLA-PT-I-05-XX Proficiency Testing Schemes (PTS) Detailed Information (Testing Laboratories)”.

## 2. Background

ISO/IEC 17025 requires that Calibration and Testing laboratories continuously prove competence (proficiency) in performing measurements as part of assuring the quality of their results. Furthermore, SANAS R-48 (calibration laboratories) and R-80 (Testing laboratories) require that Accredited Laboratories shall participate in Proficiency Testing Schemes to cover their scopes of accreditation over a period not exceeding 5 years.

The NLA – SA has embarked on a project to make PT Schemes available to the laboratory community. Whilst it is possible for laboratories to organize, participate in and report on informally organised schemes with participants of their choice, the time and resources required are often underestimated leading to either an indirect financial burden or compromised results.

The NLA – SA Schemes will be run in accordance with the requirements as laid down in ISO 17043 and the intention is to seek SANAS accreditation for the schemes at the earliest opportunity.

While testing laboratories are eager to find suitable local proficiency testing schemes which cover their scopes of accreditation at an affordable cost, a number of accredited calibration laboratories have also experienced difficulties in implementing a programme of PT. These problems include the identification of suitable measurement artefacts, finding willing and technically meaningful participants, generation of the compulsory 5 year PT participation plan for SANAS, generation of written reports and the drawing of conclusions at the end of the comparison.

### 3. Why participate in a proficiency scheme?

Participation in a proficiency scheme, offers the laboratory an opportunity to receive an artefact or sample, as if being received from a customer, measure it and report the result, together with the uncertainty of measurement where applicable. The results are then analysed, compared to the reference value, and feedback provided to the laboratory.

When analyzing the results, an “En value”  $< |1|$ , or a “Z-score” of  $< |2|$  indicate satisfactory performance of the laboratory. Values outside of these ranges indicate that there is a potential problem with the measurements in the laboratory, and that a root cause analysis and corrective action are called for. The advantage is that laboratories can now pro-actively identify and rectify measurement problems, before they have a significant impact on results being reported to customers.

### 4. Benefits of participating in Proficiency Schemes run by the NLA.

- The NLA – SA is an independent third party thereby ensuring the confidentiality of participants and their measurement results.
- In the case of PT for calibration laboratories, the speedy issuing of reports means that laboratories no longer have to wait for a year or more, to be notified that they have potential measurement problems. Thus the risk of unknowingly issuing erroneous measurement results for customers is dramatically reduced.
- The NLA – SA offers a wide range of schemes, thereby simplifying the logistics of laboratory PT activity considerably. It is also therefore possible to mix and match schemes to suit individual laboratory technical capabilities.
- For calibration laboratories, the compulsory 5-year Proficiency Testing plan for SANAS can easily be drawn up using the PT Scheme offerings from the NLA – SA. (Proof can be obtained from the NLA – SA indicating slots which have been booked for PT scheme participation).
- For testing laboratories, the NLA – SA PT schemes offer local and cost effective PT schemes which simplify participation.
- The NLA – SA PT Schemes are particularly cost effective since no additional planning, organizing, or data analysis is required by the laboratory.

### 5. How do the NLA – SA PT Schemes function?

- 5.1 Refer to the documents “**NLA-ILC-I-04-XX Inter-laboratory Comparisons ILC Detailed Information (Calibration Laboratories)**” and “**NLA-PT-I-05-XX Proficiency Testing Schemes (PTS) Detailed Information (Testing Laboratories)**” respectively.

**6. What Schemes are on offer?**

- 6.1 Refer to document “**NLA-PT-I-06-XX PT Schemes Offering Summary (closed, Testing)**”, “**NLA-PT-I-11-XX PT Schemes Offering Summary (Open, Calibration)**” and **NLA-PT-I-12-XX PT Schemes Offering Summary (Closed, Calibration)**”.

**7. How do I participate?**

- 7.1 Refer to the document “**NLA-PT-I-04-XX Proficiency Scheme Process Flow Chart**”.

**8. How and when will I receive my results?**

- 8.1 Calibration schemes: Interim reports are e-mailed to participants within two weeks of scheme participation. Final reports are E-mailed to participants within approximately four weeks of the due date for the Proficiency Testing Schemes and annually for the Inter-laboratory comparison Schemes.
- 8.2 Testing: Preliminary reports are e-mailed to participants within one week of the closing date of the scheme. The final reports are published on the NLA – SA website within 4 weeks of the closing date of the various testing schemes. Participants are informed via e-mail when the reports are available.

**9. What will it cost?**

- 9.1 Refer to the documents “**NLA-PT-I-06-XX PT Schemes Offering Summary (closed, Testing)**”, “**NLA-PT-I-11-XX PT Schemes Offering Summary (Open, Calibration)**” and **NLA-PT-I-12-XX PT Schemes Offering Summary (Closed, Calibration)**”.