	STANDARD	KOEBERG OPERATING UNIT
---	----------	------------------------

Title: Non Destructive Testing –
Personnel Certification
Requirements

Document Identifier: 240-123597661

Alternative Reference
Number: NSN-276

Area of Applicability: KOU


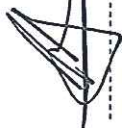
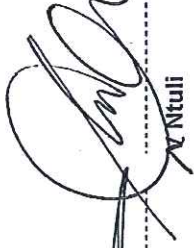

Functional Area: Nuclear Engineering

Revision: 1

Total Pages: 10

Next Review Date: April 2020

Disclosure
Classification: **Controlled Disclosure**

Compiled by	Functional Responsibility	Supported by	Authorized by
 GJ Wilson Consultant PS Nuclear Engineering	 R Bakardien General Manager Nuclear Engineering	 V Ntuli Power Station Manager Koeberg	 D Nicholls Divisional Executive Chief Nuclear Officer
Date: <u>August 1 2017</u>	Date: <u>2017-08-01</u>	Date: _____	Date: <u>2017-08-30</u>

Nuclear Additional Classification Information

Business Level: 2

Working Document: Yes – For reference

Importance Classification: No

NNR Approval: No

Safety Committee Approval: No

ALARA Review: No

Functional Control Area: Nuclear Engineering

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.
No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd.
Reg No 2002/015527/30.

Content

	Page
1. Introduction	4
2. Supporting Clauses	4
2.1 Scope.....	4
2.1.1 Purpose.....	4
2.1.2 Applicability	4
2.1.3 Effective date	4
2.2 Normative/Informative References	4
2.2.1 Normative.....	4
2.2.2 Informative	5
2.3 Definitions	5
2.4 Abbreviations	6
2.5 Roles and Responsibilities	6
2.6 Process for Monitoring	6
2.7 Related/Supporting Documents.....	6
3. Document Content	7
3.1 Qualification and Certification Standards.....	7
3.2 Levels of Qualification and Certification.....	7
3.3 Certification Examination Requirements.....	7
3.4 Vision Requirements	8
3.5 Certification Continuity Requirements	8
3.6 Written Procedure Requirements	8
3.7 Authority to Work.....	9
4. Acceptance	9
5. Revisions.....	9
6. Development Team.....	9
7. Acknowledgements	9

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd.
Reg No 2002/015527/30.

1. Introduction

Nuclear Engineering recognise that a number of different standards for the qualification and certification of Non Destructive Testing (NDT) personnel exist internationally and note that harmonisation between the differing standards is not yet complete.

Therefore, Nuclear Engineering has documented herein a set of normalised requirements which are inclusive of several selected standards for the qualification and certification of NDT personnel.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

This document contains Nuclear Engineering requirements which allows for the use of one, or more, international standard for the qualification and certification of NDT personnel. Only the standards for qualification and certification of NDT personnel listed herein are taken into account.

2.1.2 Applicability

This document shall apply to NDT personnel working on behalf of Nuclear Engineering and/or NDT personnel working at the Koeberg Operating Unit during the 4th Inservice Inspection Interval.

2.1.3 Effective date

As authorisation date.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs unless indicated otherwise.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] *ANSI ASNT CP-189 ASNT Standard for Qualification and Certification of Non Destructive Testing Personnel.
- [3] ASME Section XI Rules for Inservice Inspection of Nuclear Power Plant Components.
- [4] ASNT SNT-TC-1A Personnel Qualification and Certification in Non Destructive Testing.
- [5] ISO/TC 11774 Non Destructive Testing – Performance Based Qualification.
- [6] ISO-9712 Non Destructive Testing Qualification and Certification of Personnel.
- [7] ISO/IEC-17024 Conformity Assessment-General Requirements for Bodies Operating Certification of Persons.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

- [8] South Africa Government Gazette Volume 501 No 29712 No. 19 of 2006: Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006.
- [9] USNRC 10CFR50.55a Codes and Standards.
- [10] 240-110745414 Standard for In-Service Inspection at Koeberg Nuclear Power Station.
- [11] 240-119362012 Fourth Interval In-Service Inspection Programme Requirements Manual.

**Note: For ASME Section XI activities the use of the 1995 edition of ANSI ASNT CP-189 is mandatory.*

2.2.2 Informative

- [12] ANSI/ASNT CP-105 ASNT Standard Topical Outline for Qualification of Nondestructive Testing Personnel.
- [13] ANSI/ASNT CP-106 Nondestructive Testing – Qualification and Certification of Personnel.
- [14] CEN/TC 138 Non Destructive Testing.
- [15] ISO/IEC 17024 Conformity Assessment – General Requirements for Bodies Operating Certification of Persons.
- [16] ISO/TC 135 Non Destructive Testing.
- [17] KSA-049 Koeberg Training Standard.
- [18] SANAS A 03-07 General Information on Accreditation Process.

2.3 Definitions

Term	Definition
Accredited Certification Body	An organisation or facility that has been accredited by SANAS (or equivalent elsewhere) or by a member of the recognition arrangements of the International Laboratory Accreditation Co-operation (ILAC) or the International Accreditation Forum (IAF) [Government Act 19 of 2006].
Authorisation	Status granted by an assessment panel to a learner who has completed all requirements pertaining to a task, or a series of tasks, thus allowing that learner to perform all tasks unsupervised [KSA-049].
Authorised Qualification Body	A body, independent of the employer, authorised by the (accredited) certification body to prepare and administer qualification examinations [ISO 9712].
Certificate	A document issued by the (accredited) certification body under specified provisions, indicating that the named person has demonstrated the competence(s) defined on the certificate [ISO 9712].
Contractor	An external company or individual providing a service to Eskom.
Employer	Organisation for which the candidate works on a regular basis. An employer can also be a candidate at the same time [ISO 9712].
Harmonised	In the context of normalised requirements, recognition by Nuclear Engineering of equivalency between the differing qualification and certification standards.
NDT Method	Discipline applying a principle in non-destructive testing, eg Ultrasonic Testing [ISO 9712].

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

Term	Definition
Normalised	A set of Nuclear Engineering requirements that are based upon the common objectives set forth in the differing international qualification and certification standards.
Outside Agency	A company or individual who provides Level III services and whose qualification to provide these services have been reviewed by the employer engaging the company or individual [SNT-TC-1A].
Providers of Services	Refers to both Eskom and non-Eskom providers of NDT services.
Qualification	Demonstration of physical attributes, knowledge, skill, training and experience required to properly perform NDT tasks [ISO 9712].
Written Practice	A written procedure developed by the Employer that details the requirements for qualification and certification of their employees [SNT-TC-1A].

2.4 Abbreviations

Abbreviation	Explanation
ACCP	American Central Certification Programme
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASNT	American Society of Non-destructive Testing
EN	European Normalisation
IEC	International Electrotechnical Commission
ISIPRM	In Service Inspection Programme Requirements Manual
ISO	International Organisation for Standardisation
NDT	Non Destructive Testing
USNRC	United States Regulatory Commission

2.5 Roles and Responsibilities

Nuclear Engineering is responsible for maintaining the requirements for certification of NDT personnel. Line groups managing and executing NDT activities shall ensure that the requirements detailed herein are met.

2.6 Process for Monitoring

Nuclear Engineering shall periodically review the international standards for the certification of NDT personnel together with referencing codes and USNRC regulation to ensure that the requirements of this document remain current with any developments that may have taken place.

2.7 Related/Supporting Documents

Not Applicable.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.
No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

3. Document Content

3.1 Qualification and Certification Standards

Nuclear Engineering accepts the use of the following standards for the qualification and certification of NDT personnel:

- (1) ANSI ASNT CP-189.
- (2) ASME Section XI IWA-2300.
- (3) ASNT Recommended Practice No. SNT-TC-1A.
- (4) ASNT ACCP-CP-1.
- (5) ISO 9712 when administered by an Authorised Qualification Body.

Note: Nuclear Engineering considers (1) to (3) to be 2nd Party Qualification and consider (4) and (5) to be 3rd Party Qualification (see ISO/TC 11774).

For any given NDT method, the requirements of any one standard shall be met in full and shall not be mixed, interchanged, substituted or otherwise combined with the requirements of another standard.

Personnel performing NDT shall be qualified and certified in accordance with the requirements of one, or more, of the standards listed above.

- (1) *Providers of services shall have documented evidence showing that their NDT personnel meet the education, training, experience, examination, service continuity and re-certification requirements of the standard to which they are certified.
- (2) *Providers of services whom out-source activities shall ensure that their NDT contractors and sub-contractors meet the requirements of this document.

**See definitions.*

3.2 Levels of Qualification and Certification

For 2nd and 3rd Party Qualification, three levels of NDT certification are recognised by Nuclear Engineering; namely, Level I, Level II and Level III.

For 2nd Party Qualification two additional levels of qualification are recognised by Nuclear Engineering; namely, Trainee and NDT Instructor.

3.3 Certification Examination Requirements

For any given NDT method, personnel shall accumulate the requisite training and experience hours in accordance with requirements of the standard to which they are to be certified.

Training, experience and conduct of examination shall be endorsed by one, or more, individual certified to Level III in the applicable method or, when allowed, may alternatively be endorsed by the employer.

Appendix A shows indicative examination content and the number of examinations pertinent to the different standards.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

3.4 Vision Requirements

During any period of certification, personnel shall maintain an annual visual acuity and colour differentiation record in accordance with the requirements of the standard to which they are certified.

When levels of visual acuity or colour differentiation are not specified the following shall be used:

- (1) Near distance acuity shall permit reading a Jaeger J1 letter (or equivalent) at 30cm with one or both eyes, either corrected or uncorrected.
- (2) Colour vision sufficient to distinguish and differentiate between the colours used in the NDT methods of concern.

Vision testing shall be performed and shall be documented by either a medical practitioner (eg optician, registered nurse, etc) or by a qualified NDT Level III.

3.5 Certification Continuity Requirements

Continuity of certification shall be in accordance with the requirements of the standard to which certified and with regard to unbroken service and/or periodic re-certification.

3.6 Written Procedure Requirements

Providers of services shall have a written procedure, or written practice, detailing which qualification and certification standard (or standards) is being made use of and how the requirements of the chosen standard are to be met.

The written procedure shall, as a minimum:

- (1) Detail the chosen qualification and certification standard or standards.
- (2) Detail the levels of NDT competence with regard to the chosen standard.
- (3) Detail how the training, experience and examination requirements will be met with regard to the chosen standard.
- (4) Detail the delineation of levels of responsibility for training, examination, certification, continuity of certification and the employer's authorisation to work. When the employer(s) and employee(s) are the same person(s) the responsibilities shall be delineated nonetheless.
- (5) Be endorsed by the employer's Level III or delegate Level III.
- (6) Be authorised by the employer.

The written procedure shall not mix, interchange, substitute or otherwise combine the requirements of one standard with the requirements of another standard.

When service providers sub—contract activities they shall ensure that their NDT contractors have a written procedure that meets the requirements detailed herein for the certification of NDT personnel.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd.
Reg No 2002/015527/30.

3.7 Authority to Work

NDT personnel meeting the requirements of this document shall only perform work when authorised to do so by Nuclear Engineering or by the Koeberg Operating Unit.

Authorisation to work is the responsibility of the relevant line group manager requesting the work and may be upon the recommendation from an authorisation panel meeting the requirements of KSA-049, or similar.

Eskom authorisation shall be with regard to the work and the scope of work to be undertaken.

- (1) When NDT certification is given in categories, product or industrial sectors, authorisation to work shall impose restrictions commensurate with the category, product or industrial sector so certified.
- (2) For the NDT activities detailed in 240-119362012 authorisation shall impose conditions commensurate with the regulation prescribed in USNRC 10CFR50.55a and ASME Section XI.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
N. Ryland	Engineering Programmes
A. Mthandi	Inspection and Test
A Stephanus	Specification Engineering
M. Stevens	Quality Assurance

5. Revisions

Date	Rev.	Compiler	Remarks
December 2016	0	GJ Wilson.	Requirements for the 4 th Inspection Interval.

6. Development Team

Not applicable.

7. Acknowledgements

Not applicable.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd.
Reg No 2002/015527/30.

APPENDIX A: INDICATIVE EXAMINATION CONTENT

Table 1

ASNT CP-189 Examination Structure and Content					
Level	Examination Content				
	Basic Examination	Method Examination	Specific Examination	Specific Examination	Practical Examination
Level I and II	General Examination	Specific Examination	Specific Examination	Practical Examination	
<p><u>Level III Requirements:</u> An ASNT Level III certificate is required to satisfy Basic and Method examination requirements. Specific examination shall be related to the NDT specifications and standards that are to be used. Practical Examination shall include procedure preparation (and a practical demonstration examination when required).</p> <p><u>Level I and II Requirements</u> Specific examination shall be related to equipment, procedures and techniques that are to be used. Practical examination shall be with test samples representative of the items to be encountered.</p> <p><u>Permissible Deviation For NDT Personnel Working On ASME XI In-Service Inspection Items:</u> The requirement for an ASNT Level III certificate may be substituted with a Level III Basic and Method examination when such examination is conducted by an outside agency.</p> <p>An ASNT ACCP Level II or Level III certificate may satisfy the relevant examination requirements shown above</p>					

Table 2

ISO 9712 Examination Structure and Content			
Level	Examination Content		
	Basic Examination	Main Method Examination	Practical Examination
Level I and II	General Examination	Specific Examination	Practical Examination
<p><u>Level III Requirements:</u> Practical examination requirement is met by successfully completing the Level II practical examination in the appropriate method and sector (or product specific) specific examination. This examination shall include procedure preparation.</p> <p><u>Level I and II Requirements:</u> Specific and Practical examinations shall be product or sector specific.</p>			

Table 3

SNT-TC-1A Examination Structure and Content			
Level	Examination Content		
	Basic Examination	Main Method Examination	Specific Examination
Level I and II	General Examination	Specific Examination	Practical Examination
<p><u>Level III Requirements:</u> An ASNT Level III or ASNT ACCP Level III certificate may satisfy Basic, and Main Method examination requirements</p> <p><u>Level I and II Requirements:</u> An ASNT ACCP Level I or Level II certificate may satisfy the relevant examination requirements shown above</p> <p><u>Note:</u> Level I, II and III examinations may be administered by the employer or an outside agency</p>			

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.