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|---|---|------------------------|
|  | NSQ-140 CORRESPONDENCE MATRIX NSQ-100 vs RD-0034 <i>NQSA property – Do not copy or distribute without prior written authorization</i> | Version 0 July 2013 |
| | | Page 1 / 9 |

CORRESPONDENCE MATRIX

NQSA NSQ-100 version 0

NUCLEAR SAFETY AND QUALITY MANAGEMENT SYSTEM – REQUIREMENTS

Model for quality management in design & development,
manufacturing, erection, commissioning and related services

VERSUS

N.N.R RD-0034 revision 0

Requirements Document of the National Nuclear Regulator of South Africa
Quality and Safety Management – Requirements for Nuclear Installations

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CONTENTS


Foreword 3

0. Introduction 3

 0.1. GENERAL – APPLICATION OF NSQ-100 IN AN RD-0034 LICENSING ENVIRONMENT. 3

 0.2. CORRESPONDENCE MATRIX CONTENTS..... 4

1. CORRESPONDENCE MATRIX 5

| | | |
|---|---|------------------------|
|  | NSQ-140 CORRESPONDENCE MATRIX NSQ-100 vs RD-0034 <i>NQSA property – Do not copy or distribute without prior written authorization</i> | Version 0 July 2013 |
| | | Page 3 / 9 |

FOREWORD

The objective of this document is to examine each requirement of the South African National Nuclear Regulator (NNR) Requirements document: RD-0034 (Quality and Safety Management Requirements for Nuclear Installations), and identify the associated paragraph(s) of the Nuclear Quality Standard Association (NQSA) document: NSQ-100 (Nuclear Safety and Quality Management System – Requirements).

0. INTRODUCTION

0.1. General – Application of NSQ-100 in an RD-0034 licensing environment.

The purpose of NSQ-100 is to address quality management in design & development, manufacturing, erection, commissioning and related services and its frame is based on ISO9001:2008.

The RD-0034 has a wider scope which includes requirements on the following:

- Licensees (includes Applicants for a nuclear licence), Designers and suppliers involved in operation, modification and eventual decommissioning of nuclear installations.

RD-0034 requirements specifically aimed at the Licensee are generally not fully or directly covered by NSQ-100, and these, where they relate to requirements that have to be cascaded to suppliers, will have to be made known to, and imposed on suppliers by the Licensee through specifications and contracts/orders.

An example is the requirement for an integrated management system, such as RD-0034 requirement (2), is generally covered by NSQ-100, but not expressly. The Licensee therefore has the obligation of verifying that 'Level 1' suppliers have a system that complies with this requirement. Refer clause 4.2.2, 2nd paragraph and 7.2.1.


A further example is where RD-0034 calls for NNR acceptance, e.g. (64). It remains the Licensee's responsibility to interface with the NNR and its supplier to ensure this acceptance happens through suitable contractual means.

It can be seen from the matrix however that suppliers qualified to NSQ-100 have the essential ingredients of a management system able to satisfy a customer (Licensee) working in an RD-0034 licensing environment.

However, the licensee may partially or fully satisfy these RD-0034 requirements by referring to and applying NSQ-100 requirements; the relevant paragraphs are identified in the matrix by **blue coloured characters**.

Note:

- NSQ-100 covers, through the wording "Important For Safety", the levels 1 & 2 of RD-0034,
- most of the requirements of NSQ-100 are results orientated following the philosophy of the standard ISO9001, whilst the RD-0034 requirements are more means oriented,
- some of the requirements addressed to "senior management" in RD-0034 are sometimes addressed to the "organization" in NSQ-100,
- Some wording may have slightly different senses or definitions, when used in the two different documents. Therefore, coverage of corresponding requirements may be slightly different too.

| | | |
|---|---|------------------------|
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| | | Page 4 / 9 |

0.2. Correspondence Matrix contents

When an NSQ-100 chapter is referred to, it has to be understood as “NSQ-100 requirements for considered chapter” **and** “ISO 9001:2008 requirements for the same chapter” **and** “suggested good practices given in NSQ-100 Guidelines”.

The chapters 1 to 6 of RD-0034 have not been considered as requirements but as general introductory wording, therefore, they have not been addressed in the matrix. The strict requirements of RD-0034 are those referenced in the document as bracketed numbers (x).



NSQ-140

CORRESPONDENCE MATRIX NSQ-100 vs RD-0034

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Version 0
July 2013

Page 5 / 9

1. CORRESPONDENCE MATRIX

| RD-0034 | | | NSQ-100 CHAPTER(S) | Comments |
|---|---|------|--|---|
| § | Title | Pt | | |
| 7 – General Requirements on Organisation and Documentation | | | | |
| / | / | (1) | All | <i>This requirement is directly intended for the Licensee. NSQ-100 only covers design & development, manufacturing, erection, commissioning and related services</i> |
| / | / | (2) | 1 4.1.1, 6.4, 7.1 a), 7.1.1 and 7.1.2 | <i>NSQ-100 is not explicitly containing requirements for an integrated system (it's reminded that NSQ-100 is not intended to be directly applicable to licensee as its scope is limited to organizations which supplies products within nuclear industry) However, in opposite chapters of NSQ-100, safety management aspects are treated in an integrated manner together with quality aspects. Therefore, it's considered that NSQ-100 complies with RD-0034</i> |
| 7.1 | General Requirements on Organisation (level 1, 2) | (3) | 4.1.2 | <i>FSF are detailed in NSQ-100 Guidelines – Section C</i> |
| | | (4) | 7.4.1 | <i>NSQ-100 is to be cascaded all along the supply chain</i> |
| | | (5) | 7.1 | <i>Interface aspects are detailed in NSQ-100 Guidelines – Section E</i> |
| | | (6) | 0.1 1.2 | <i>ISO9001-2008 is the mandatory basis to apply NSQ-100 requirements</i> |
| | | (7) | 4.2.2 | |
| | | (8) | 4.1 4.2.2 | |
| | | (9) | 4.1 4.2.2 | |
| 7.2 | General requirements on Organization (level1) | (10) | All | <i>This requirement is directly intended for the Licensee. NSQ-100 only covers design & development, manufacturing, erection, commissioning and related services</i> |
| | | (11) | 4.2.2 7.1.1 | <i>This requirement is directly intended to the Licensee. Requirement not addressed directly in NSQ-100, but statutory requirements, as this point n° (11), must be taken into account by the organization through § 7.2.1 and 7.2.2.</i> |
| | | (12) | 7.1a) 7.1 g) 7.5.6 | <i>Also refer above comments for Point (2) concerning IMS aspects</i> |
| | | (13) | 4.1.1 4.2.2 5.1 5.2 8.2 | <i>INSAG-13 is not quoted in NSQ-100 as this document is mainly intended for operational safety in nuclear power plant</i> |
| | | (14) | 4.1.1 5.1 | <i>This requirement is directly intended for the Licensee. Wording of Safety Culture used in NSQ-100 addresses Safety Culture Enhancement Programme requirement</i> |
| | | (15) | 4.1.1 5.1 | <i>This requirement is directly intended for the Licensee</i> |
| | | (16) | 4.1.1 5.1 | <i>This requirement is directly intended for the Licensee Refer also to NSQ-100 Guidelines – Section B</i> |
| | | (17) | 4.1.1 | <i>This requirement is directly intended for the Licensee. Through NSQ-100 requirements, it is mandatory to address Safety Culture aspects for any IFS supplier</i> |



NSQ-140

CORRESPONDENCE MATRIX NSQ-100 vs RD-0034

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Version 0
July 2013

Page 6 / 9

| RD-0034 | | | NSQ-100 CHAPTER(S) | Comments |
|--------------------------------------|--|---|-----------------------|--|
| § | Title | Pt | | |
| 7.3 | General Requirements on Documentation | | | |
| 7.3.1 | Overall Requirements (level 1, 2) | (18) | 4.2.1 | Some of the detailed requirements of RD-0034 are addressed in NSQ-100 Guidelines – Section A |
| | | (19) | 4.2.3 | |
| | | (20) | 4.2.4 | |
| | | (21) | 8.2.4 - Pt (20) | |
| | | (22) | | |
| 7.3.2 | IMS Requirements (level 1) | (23) | / | This requirement is directly intended for the Licensee. |
| | | (24) | All | This requirement is directly intended for the Licensee. NSQ-100 only covers design & development, manufacturing, erection, commissioning and related services. |
| | | (25) | / | This requirement is directly intended for the Licensee. |
| | | (26) | / | This requirement is directly intended for the Licensee. |
| | | (27) | / | This requirement is directly intended for the Licensee. |
| | | (28) | / | This requirement is directly intended for the Licensee. |
| | | (29) | 4.2.3 | Also refer to NSQ-100 Guidelines – Section A |
| 8 – Management Responsibility | | | | |
| 8.1 | Management commitment | | | |
| 8.1.1 | Overall Requirements (Level 1, 2) | (30) | 5.1 | |
| | | (31) | 5.3 | |
| | | (32) | 5.5.1 | |
| 8.1.2 | IMS Requirements (Level 1) | (33) | 5.1 | |
| 8.2 | Management priorities, Policy and System Planning | | | |
| 8.2.1 | Overall Requirements (Level 1, 2) | (34) | 5.4 | |
| | | (35) | 5.6 | |
| 8.2.2 | IMS Requirements (Level 1) | (36) | 8.2.3 | |
| | | (37) | 4.1.1 | This requirement is directly intended for the Licensee. |
| | | (38) | 4.1.2 | |
| | | (39) | 4.1.3 | |
| | | (40) | 5.1 | |
| (41) | / | This requirement is directly intended for the Licensee. | | |
| 8.3 | Overall Requirements (Level 1, 2) | (42) | / | This requirement is directly intended for the Licensee. |
| | | (43) | / | This requirement is directly intended for the Licensee. |
| | | (44) | / | This requirement is directly intended for the Licensee. |
| | | (45) | / | This requirement is directly intended for the Licensee. |
| | | (46) | / | This requirement is directly intended for the Licensee. |
| 8.3 | Management, Responsibility, Authority and Communication | | | |
| 8.3.1 | Overall Requirements (Level 1, 2) | (47) | 5.5 | |
| | | (48) | 5.5 | |
| | | (49) | 5.5.2 | |
| | | (50) | 6.2.2 | |
| | | (51) | 5.5.2 | |
| | | (52) | 5.5.3 | |
| 9 – Resource Management | | (53) | 5.6 | |
| | | (54) | | |
| | | (55) | | |
| | | (56) | | |
| | | (57) | | |
| 9.1 | Overall Requirements (Level 1, 2) | (46) | 6.1 | |
| 9.2 | IMS Requirements (Level 1) | (47) | 6.2 | |
| | | (48) | 6.2 | Supervision and monitoring of any individual until full competence is achieved is not formally addressed in NSQ-100. However, the qualification request of chapter 6.2.2 requires for individuals, achievement of qualification requirements prior to performance of activities subject to such qualification. Refer also to NSQ-100 Guidelines – Section A. |
| | | (49) | 5.4.2 | Part of the (49) requirement is intended only for the Licensee. |
| | | (50) | 6.1 | |
| | | (51) | 4.1.1 | "Human factors" are taken into account within development of the Nuclear Safety Culture |



NSQ-140

CORRESPONDENCE MATRIX NSQ-100 vs RD-0034

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Version 0
July 2013

Page 7 / 9

| RD-0034 | | | NSQ-100 CHAPTER(S) | Comments |
|---------------------------------|---|------|-------------------------|---|
| § | Title | Pt | | |
| 10 – Process Realization | | | | |
| 10.1 | Planning and management of Processes | | | |
| 10.1.1 | Overall Requirements (Level 1, 2) | (52) | 4.1 | |
| | | (53) | 4.1 5.5.1 | |
| | | (54) | 5.6 8.2.3 | |
| | | (55) | 4.1 | |
| 10.1.2 | IMS Requirements (Level 1) | (56) | / | <i>This requirement is directly intended for the License</i> |
| 10.2 | Licensing related Processes | | | |
| 10.2.1 | IMS Requirements (Level 1) | (57) | / | <i>This requirement is directly intended for the License</i> |
| | | (58) | / | <i>This requirement is directly intended for the License</i> |
| | | (59) | / | <i>This requirement is directly intended for the License</i> |
| | | (60) | / | <i>This requirement is directly intended for the License</i> |
| | | (61) | / | <i>This requirement is directly intended for the License</i> |
| 10.3 | Design and Development | | | |
| 10.3.1 | Overall Requirements (Level 1, 2) | (62) | 7.2.1 5.5.4 | <i>NSQ-100 doesn't require that deviations are presented to NNR for acceptance. Definition of such communication shall be included in the description of the communication process with regulatory bodies, as required §5.5.4</i> |
| | | (63) | 4.1.3 7.2.1 | |
| | | (64) | 7.2.1 | <i>NSQ-100 doesn't take into account NNR acceptance which is linked to the licensing process</i> |
| | | (65) | 7.2.1 | <i>NSQ-100 doesn't take into account NNR acceptance which is linked to the licensing process</i> |
| | | (66) | 7.3.3 | <i>NSQ-100 is not requiring involvement of the licensee in the reviewing process</i> |
| | | (67) | 7.3.6 | |
| | | (68) | 7.3.1 | |
| 10.3.2 | IMS Requirements (Level 1) | (70) | 4.1.2 4.1.3 7.2.1 | <i>This requirement is directly intended for the Licensee. The selected codes and standards shall be included in the Licensee's requirements</i> |
| | | (71) | 8.3 | <i>This requirement is directly intended for the Licensee. Refer also to NSQ-100 Guidelines – Section H</i> |
| | | (72) | 4.1.2 4.1.3 7.2.1 | |
| | | (73) | 7.3.1 | |
| | | (74) | 7.3.1 8.5.3 | <i>This requirement is directly intended for the Licensee</i> |
| | | (75) | 7.3.7 | <i>This requirement is partly intended for the Licensee (agreement with NNR)</i> |
| | | (76) | 7.1.3 7.3.7 | |
| | | (77) | 7.3.6 7.3.8 | |



NSQ-140

CORRESPONDENCE MATRIX NSQ-100 vs RD-0034

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Version 0
July 2013

Page 8 / 9

| RD-0034 | | | NSQ-100 CHAPTER(S) | Comments |
|-------------|---|-------|----------------------------------|--|
| § | Title | Pt | | |
| 10.4 | Procurement | | | |
| 10.4.1 | Overall Requirements (Level 1,2) | (78) | 7.4.1 7.4.1.2 | <i>This requirement is directly intended for the Licensee. "Qualification process" (RD-0034) vs "Evaluation and selection" (NSQ-100)</i> |
| | | (79) | 7.4.1 7.4.2.1 | <i>This requirement is directly intended for the Licensee</i> |
| | | (80) | 7.4.1 | <i>(RD-0034): "All suppliers of products important to nuclear safety [...] must submit a product related to QM confirmation issued by a certification or conformity assessment organization [...]" NSQ-100 certification would be recognized by NNR.</i> |
| | | (81) | 7.2 | |
| | | (82) | 7.4.1 | <i>This requirement is directly intended for the Licensee. NSQ-100 doesn't require compliance with RD-0034 as this compliance is only specific to RSA nuclear projects</i> |
| | | (83) | 7.2.1 7.4.2 7.4.3 | |
| | | (84) | 7.4.3 7.5.1.3 | <i>This requirement is directly intended for the Licensee</i> |
| | | (85) | 8.2.4 | <i>This requirement is directly intended for the Licensee</i> |
| | | (86) | 7.4.3 | <i>This requirement is partly intended for the Licensee</i> |
| | | (87) | 7.4.3 7.4.2.1 | <i>This requirement is partly intended for the Licensee</i> |
| (88) | 7.4.2.1 | | | |
| 10.4.2 | IMS Requirements (Level1) | (89) | 4.2 7.4.2.1 7.4.3 8.2.4 | <i>This requirement is directly intended for the Licensee</i> |
| | | (90) | 7.4.1.1 | <i>This requirement is directly intended to the Licensee but can be justified by NSQ-100 certification of suppliers.</i> |
| | | (91) | 7.4.1 | <i>This requirement is partly intended for the Licensee which shall define with NNR, the provisions concerning this requirement. Refer also to NSQ-100 Guidelines – Section F</i> |
| | | (92) | 7.4.2.1 | <i>This requirement is directly intended for the Licensee</i> |
| | | (93) | 7.4.2.1 7.5.1.3 | <i>This requirement is directly intended for the Licensee</i> |
| | | (94) | 7.4.2.1 | <i>This requirement is directly intended for the Licensee</i> |
| 10.5 | Production and Service Provision | | | |
| 10.5.1 | Overall Requirements (Level 1, 2) | (95) | 7.5.1 | |
| | | (96) | 7.5.2 6.2.2 | |
| | | (97) | 7.5.3 | |
| | | (98) | 8.3 | <i>This requirement is directly intended for the Licensee</i> |
| | | (99) | 7.1.3 7.5.3 | |
| | | (100) | 7.5.1.3 7.5.5 | |
| | | (101) | 7.5.1 | |
| | | (102) | 6.2.2 7.5.1.3 | |
| | | (103) | 7.5.1 | |
| | | (104) | 7.5.1 7.5.2 | |
| | | (105) | 7.5.1 7.5.2 8.2.4 | |
| | | (106) | 7.5.1.3 8.2.4 | <i>This requirement is directly intended for the Licensee</i> |
| | | (107) | All | <i>This requirement is directly intended for the Licensee. NSQ-100 also applies to replacement equipment sourced from the original manufacturer.</i> |



NSQ-140

CORRESPONDENCE MATRIX NSQ-100 vs RD-0034

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Version 0
July 2013

Page 9 / 9

| RD-0034 | | | NSQ-100 CHAPTER(S) | Comments |
|---|--|-------|---|---|
| § | Title | Pt | | |
| 10.5.2 | IMS Requirements (Level 1) | (108) | 7.1 | Refer also to NSQ-100 Guidelines – Section F |
| | | (109) | | |
| | | (110) | / | This requirement is directly intended for the Licensee |
| | | (111) | 7.1 7.3.2 | This requirement is directly intended for the Licensee and partially concerns nuclear plant operation which is outside NSQ-100 scope |
| 10.6 | Control of Monitoring and Measuring Devices | | | |
| 10.6.1 | Overall Requirements (Level 1, 2) | (112) | 7.6 | This requirement is directly intended for the Licensee |
| | | (113) | 7.6 | |
| 11 Measurement, Analysis and Improvement | | | | |
| 11.1 | Monitoring and Measurement of the Management System | | | |
| 11.1.1 | Overall Requirements (Level 1, 2) | (114) | 7.5.1.3 8.2.2 | |
| | | (115) | 8.2.2 | |
| | | (116) | 5.1 8.4 | NSQ-100 doesn't formally require self-assessment. This requirement is considered as fulfilled through implementation of safety culture (refer to § 4.1.1 and NSQ-100 Guidelines – Section B) |
| | | (117) | 8.2.2 | This requirement is directly intended for the Licensee |
| | | (118) | 5.5.2 5.6.2 8.2.2 8.2.3 8.5.2 | |
| 11.1.2 | IMS Requirements (Level 1) | (119) | / | This requirement is directly intended for the Licensee. This point has been understood as concerning the Licensee' surveillance of the supply chain, in addition to any certification system of the suppliers (as NSQ-100 certification) |
| | | (120) | 8.2.2 8.4 | Refer also to NSQ-100 Guidelines – Sections B and H |
| | | (121) | 8.2.2 | NSQ-100 certification also provide external independent assessment |
| | | (122) | 4.1.1 8.4 | Refer also to NSQ-100 Guidelines – Section B |
| | | (123) | 7.4.1 | Refer also to NSQ-100 Guidelines – Section F |
| 11.2 | Control of Non-conforming Products | | | |
| 11.2.1 | Overall Requirements (Level 1, 2) | (124) | 8.3 | |
| | | (125) | 8.3 | |
| 11.2.2 | IMS Requirements (Level 1) | (126) | 8.3 | This requirement is directly intended for the Licensee. NSQ-100 states that "Where applicable, nonconformity shall be timely reported in compliance with the customer requirements". This requirement doesn't apply to the communication with the Authorities which is Licensee's responsibility. |
| 11.3 | Analysis of Data | | | |
| 11.3.1 | Overall Requirements (Level 1, 2) | (127) | 7.4.1 7.5.3 8.4 | This requirement is directly intended for the Licensee |
| 11.4 | Improvement | | | |
| 11.4.1 | Overall Requirements (Level 1, 2) | (128) | 8.5 | |
| | | (129) | 8.5.3 | |
| | | (130) | 8.5.2 | |
| | | (131) | 5.5.2 8.5.2 | |
| | | (132) | 5.5.2 8.5.3 | |
| | | (133) | 5.5.2 8.5.3 | |
| 11.4.2 | IMS Requirements (Level 1) | (133) | 5.5.2 8.5.3 | |
| | | (134) | 8.5.1 / 8.5.3 | This requirement is directly intended for the Licensee |