



## **International Guidelines for Nuclear Safety Culture Surveys at Nuclear Power Plants**

PUBLISHED ON BEHALF OF THE NUCLEAR POOLS FORUM

March 2015

## **International Guidelines for Nuclear Safety Culture Surveys at Nuclear Power Plants**

Published on behalf of the Nuclear Pools' Forum  
March 2015

### **Introductory Note**

These new Guidelines for Nuclear Safety Culture surveys have been developed by a Working Group representing nuclear insurers in the international Pools. They have been approved by the Engineering Sub Committee of the General Purposes Committee on behalf of the Nuclear Pools' Forum.

Belgium	Syndicat Belge d'Assurances Nucléaires (SYBAN) Square de Meeûs 29 B-1000 Brussels e-mail: <a href="mailto:secretariat@syban.be">secretariat@syban.be</a>
Brazil	CBRN – Brazilian Pool for the Insurance of Nuclear Risks IRB Brasil Resseguros S.A. Av. Marechal Câmara 171 - Castelo Rio de Janeiro. RJ – Brasil - CEP 20-020-901 e-mail: <a href="mailto:cnabuco@irb-brasilre.com">cnabuco@irb-brasilre.com</a>
Bulgaria	Bulgarian National Insurance Nuclear Pool Energy Ins. Co. Ltd 33 Kn.Al.Dondukov Blvd. 1000 Sofia e-mail: <a href="mailto:nucl.pool@energy.bg">nucl.pool@energy.bg</a>
Canada	Nuclear Insurance Association of Canada 401 Bay St., Suite 1600 Toronto, Ontario, Canada M5H 2Y4 e-mail: <a href="mailto:Murphy@niac.biz">Murphy@niac.biz</a> ; <a href="mailto:colleen@niac.biz">colleen@niac.biz</a>
China	China Nuclear Insurance Pool China Re Building No. 11 Jin Rong Avenue, Xicheng District Beijing 100033 e-mail: <a href="mailto:zuohq@chinare.com.cn">zuohq@chinare.com.cn</a>

Croatia	Croatian Nuclear Pool Radnička cesta 40-5 HR - 10000 ZAGREB HRVATSKA/CROATIA E-mail: hrnukpool@hrnukpool.hr
Czech Republic	Czech Nuclear Insurance Pool c/o Ceska Pojistovna a.s. Na Pankráci 1720 5C/123 140 00 Praha 4 Czech Republic e-mail: mposad@cpoj.cz
France	ASSURATOME Tour Franklin, Défense 8 92042 Paris La Défense Cedex e-mail: contact@assuratome.fr
Germany	Deutsche Kernreaktor-Versicherungsgemeinschaft (DKVG) Aachener Str. 75 D-50931 Cologne e-mail: Annette.Kaiser@dkvg.eu
Hungary	Hungarian Nuclear Insurance Pool C/o: Allianz Hungária Zrt. 1087 Budapest Könyves K.krt. 48-52 e-mail: attila.4.olah@allianz.hu
Japan	The Japan Atomic Energy Insurance Pool Non-Life Insurance Building Annex 9 7, Kanda-Awajicho 2-Chome, Chiyoda-Ku, Tokyo, 101-8335 e-mail: rito@jaeip.gr.jp
Korea	The Korea Atomic Energy Insurance Pool 80, Susong-Dong, Chongno-Gu Seoul 110-733 C/o. Korean Reinsurance Company C.P.O. Box 1438, Seoul (London Liaison Office) International House 1st St. Katherine's Way, London E1W 1UN e-mail: offrisk@koreanre.co.kr

Mexico	Atomic Mexican Pool Reaseguradora Patria, S.A. Periférico Sur No. 2771 Col. San Jerónimo Lidice La Magdalena Contreras México D.F. Mexico e-mail: <a href="mailto:fmartinez@poolamx.com.mx">fmartinez@poolamx.com.mx</a>
Netherlands	BV Bureau van de Nederlandse Pool voor Verzekering van Atoomrisico's Visitors' Address Handelskade 49 2288 BA Rijswijk ZH The Netherlands Postal Address Postbus 1074 2280 CB Rijswijk ZH The Netherlands e-mail: <a href="mailto:niek.bos@assurpools.nl">niek.bos@assurpools.nl</a>
Romania	Romanian Pool for the Insurance of Atomic Risks c/o Generali Asigurari S.A. Str Ghe. Polizu 58 – 60 Sector 1 Bucharest 011062 e-mail: <a href="mailto:emil.boldus@generali.ro">emil.boldus@generali.ro</a>
Russia	Russian Nuclear Insurance Pool 9/8 Building 2, 3 <sup>rd</sup> Floor Maly Gnezdnikovskiy per., Moscow, Russian Federation, 125009 e-mail: <a href="mailto:info@ranipool.ru">info@ranipool.ru</a>
Slovakia	Slovak Nuclear Insurance Pool Allianz-Slovenská poisťovňa, a.s. Dostojevského rad 4 815 74 Bratislava 1 Slovak Republic e-mail: <a href="mailto:beata.petriskova@allianzsp.sk">beata.petriskova@allianzsp.sk</a>
Slovenia	Nuclear Insurance and Reinsurance Pool (Nuclear Pool) Miklosiceva 19 SL-1000 Ljubljana e-mail: <a href="mailto:danilo.antoncic@triglav.si">danilo.antoncic@triglav.si</a>
South Africa	South African Pool for the Insurance of Nuclear Risks c/o The South African Insurance Association PO Box 5098, Weltevreden Park, 1709 South Africa e-mail: <a href="mailto:info@sainsurance.co.za">info@sainsurance.co.za</a> , <a href="mailto:charles@saia.co.za">charles@saia.co.za</a>

Spain	Espanuclear Aseguradores de Riesgos Nucleares, A.I.E. Sagasta, 18– 4o derecha 28004 Madrid e-mail: espanuclear@espanuclear.com
Sweden	Nordic Nuclear Insurers Birger Jarlsgatan 57B S-11396 Stockholm e-mail: georg.pyk@atompool.com
Switzerland	Swiss Pool for the Insurance of Nuclear Risks Mythenquai 50/60 CH-8022 Zurich e-mail: Alain_Quere@swissre.com
Taiwan	Nuclear Energy Insurance Pool of the Republic of China 15F, 88, Nanking East Road, Sec. 2 Taipei, 104 e-mail: neiproc@mail.cki.com.tw
Ukraine	Ukrainian Nuclear Insurance Pool Vul. M. Raskovoy, 11-a Office 204 Kiev 02660 e-mail: unip@nbi.com.ua
United Kingdom	Nuclear Risk Insurers Limited 18 St. Swithin's Lane, London EC4N 8AD, UK e-mail: enquiries@nuclear-risk.com
United States	American Nuclear Insurers (ANI) 95 Glastonbury Blvd., Suite 300 Glastonbury, Connecticut 06033 4453 e-mail: EngInfo@AmNuclns.com

## Table of Contents

Introduction.....	1
Section 1	Organisational Environment and Management Systems .....3
1.1.	Organisational Structure, Strategy and Plan .....3
1.2.	Communications [CO].....3
1.3.	Continuous Learning [CL].....3
1.4.	Problem Identification and Resolution [PI] (Corrective Action Programme) .....4
1.5.	Environment for Raising Concerns [RC].....4
1.6.	Work Processes [WP].....4
1.7.	Management Systems .....5
Section 2	Individual and Leadership Behaviours.....6
2.1.	Personal Accountability [PA] .....6
2.2.	Questioning Attitude [QA] .....6
2.3.	Leadership Accountability [LA] .....6
2.4.	Decision Making [DM] .....7
2.5.	Respectful Work Environment [WE].....7
Section 3	Contractors .....8
3.1.	SQEPness of personnel .....8
3.2.	Reporting mechanisms .....8
3.3.	Response to client improvement requests.....8
3.4.	Collaborative supervision .....8
3.5.	Contractual standards and expectations.....8
Section 4	References .....9

## Introduction

The International Nuclear Insurance Pools have developed a series of International Engineering Survey Guidelines to achieve quality risk surveys and to inform our insured about nuclear insurers' expectations.

Guidelines for Nuclear Safety – Operations – Third Party Liability (NSO TPL) were first issued in 2010. Since then, there has been the Japanese Earthquake of 2011, and the Fukushima accident. This event, as well as several insurance industry claims which may have had organisational or behavioural causes, have highlighted the importance of Nuclear Safety Culture to loss prevention. Nuclear Safety Culture is a cross functional entity, and it is important that all surveyors – covering NSO TPL, Fire Protection and Machinery Breakdown - are aware of, and can observe and make judgements on the maturity of Nuclear Safety Culture within an organisation or site. For this reason, some topics which had been previously included within the NSO TPL Guidelines are now addressed within this new and separate Nuclear Safety Culture Guideline document.

There is an ongoing focus on Safety Culture within the nuclear industry and its regulators, resulting in various groups (INPO, WANO, IAEA etc.) issuing guidance. These organisations may use different terms to describe the attributes or traits of a healthy nuclear safety culture. Glossaries and cross-reference documents are available which help to promote the use of common language for assessment of Nuclear Safety Culture.<sup>1</sup> This document is largely based on the WANO Guideline GL 2013-01 (Traits of a Healthy Nuclear Safety Culture), and the notation used by WANO is referenced within this document. Additional development has been carried out on behalf of Nuclear Insurers by Human Performance Ltd (HPL) who are specialists in this field, in conjunction with a Working Group representing nuclear insurers in the international Pools.

Nuclear Safety Culture has been grouped into three sections covering Organisational Environment and Management Systems, Individual and Leadership Behaviours, and Contractors. The format is such that each section suggests, in bullet point format, the issues to be considered during a survey. For traits identified by WANO documents, the reference identifier is shown.

This bullet point presentation is followed by a section of References to various International Standards, criteria and other documents. This approach mirrors the NSO/TPL guideline documents, and supports consistent high quality insurance surveys without repeating the large body of work that is presently contained in the supporting references.

A separate Appendix has been developed to provide further explanatory information for Insurance Pools Surveyors.

---

<sup>1</sup> [NRC Safety Culture Common Language NUREG 2165](#) and [WANO GL 2013-1 Cross Reference Traits of a Healthy Nuclear Safety Culture](#)

## **Disclaimers of Liability**

The members of the Nuclear Pools' Forum make no claims, promises, guarantees or warranties as to the accuracy, completeness or adequacy of any information published in the ***International Guidelines for Nuclear Safety Culture Surveys at Nuclear Power Plants***.

The members of the Nuclear Pools' Forum disclaim liability for any personal injury, damage to property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on the ***International Guidelines for Nuclear Safety Culture Surveys at Nuclear Power Plants***.

Anyone using the ***International Guidelines for Nuclear Safety Culture Surveys at Nuclear Power Plants*** should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstance.

## **Reproduction**

**Reproduction in whole or in part permitted with indication of source:** *International Guidelines for Nuclear Safety Culture Surveys at Nuclear Power Plants*, Published on behalf of the Nuclear Pools' Forum.



## **Section 1      Organisational Environment and Management Systems**

**Objective:** The objective of this Section 1 is to identify the organisational strengths and weaknesses as this is crucial to the organisation's development and sustainability of a robust safety culture over time.

### **1.1. Organisational Structure, Strategy and Plan**

- Nuclear safety culture organisation, strategy and plan
- Regulatory and industry compliance
- Third Party Assessments
- Cumulative Impact

Regulation and Third Party Assessments are also covered within the Pools NSO/TPL Guidelines.

### **1.2. Communications [CO]**

- Work process communications [CO.1]
- Communication of organisational and operational decisions [CO.2]
- Observations/ evidence of open communications [CO.3]
- Communication of expectations [CO.4]

### **1.3. Continuous Learning [CL]**

- Operating Experience and Lessons learned [CL.1]
- Self-assessments [CL.2]
- Benchmarking [CL.3]
- Training [CL.4] including error prevention training

Technical training is covered within the NSO/TPL Guidelines.

## **1.4. Problem Identification and Resolution [PI] (Corrective Action Programme)**

- Corrective Action Programme (CAP) [PI.1]
- Evaluation [PI.2]
- Resolution [PI.3]
- Trending [PI.4]
- Cumulative Impact considerations in respect of CAP

## **1.5. Environment for Raising Concerns [RC]**

- Safety Conscious Work Environment (SCWE) policy [RC.1]
- Evidence and indicators of SCWE
- Alternate process for raising concerns [RC.2]

## **1.6. Work Processes [WP]**

- Work management process [WP.1]
- Design margin [WP.2]
- Documentation [WP.3]
- Procedure use and adherence [WP.4]
- Error prevention
- Job site conditions
- Teamwork [PA.3]

Design Authority and Configuration Management are discussed more fully within the NSO/TPL Guidelines.

Maintenance Administration and Activity Control is covered within the Machinery Breakdown Guidelines.

## **1.7. Management Systems**

- Quality Assurance (QA) and transition to Integrated Management System
- Grading and documentation
- Management commitment
- Process implementation
- Assessment

This section 1.7 on Management Systems is also included within the Pools NSO/TPL Guidelines.

## **Section 2 Individual and Leadership Behaviours**

**Objective:** The objective of this Section 2 is to identify how individuals and leaders take personal responsibility for safety. Responsibility and authority for nuclear safety should be well defined and clearly understood. Reporting relationships, positional authority, and team responsibilities emphasise the overriding importance of nuclear safety and how they demonstrate a commitment to safety in their decisions and behaviours.

### **Individual Behaviours**

#### **2.1. Personal Accountability [PA]**

- Adherence to nuclear standards [PA.1]
- Job ownership and personal responsibility [PA.2]
- Teamwork, within and across boundaries [PA.3]

#### **2.2. Questioning Attitude [QA]**

- Recognition that Nuclear is special and unique [QA.1]
- Challenge of uncertain work conditions [QA.2]
- Challenge of assumptions and offering of opposing view [QA.3]
- Complacency is avoided [QA.4]

### **Leadership Behaviours**

#### **2.3. Leadership Accountability [LA]**

- Ensuring availability and adequacy of resources [LA.1]
- Field presence, coaching and reinforcement of standards [LA.2]
- Reward and recognition reflecting nuclear safety as the overriding priority [LA.3]
- Strategic commitment to safety [LA.4]
- Change management [LA.5]

- Roles, Responsibilities, Authorities and Accountabilities (R2A2) [LA.6]
- Monitoring techniques [LA.7] – leading and lagging indicators
- Behaviours exhibited by leaders[LA.8]

## **2.4. Decision Making [DM]**

- Consistent decision making process [DM.1]
- Application and conservatism [DM.2]
- Single point accountability [DM.3]

## **2.5. Respectful Work Environment [WE]**

- Respect for people [WE.1]
- Value of opinions [WE.2]
- Trust [WE.3]
- Fair and objective conflict resolution [WE.4]

## **Section 3      Contractors**

Objective: The objective of this Section 3 is to identify how operational and knowledge worker contractors and agency staff can support the nuclear safety culture. This section covers staff contracted for short term, outages, and embedded contractors.

### **3.1. SQEPness of personnel**

- Availability of training materials and courses
- Training and expectation of use of error prevention tools

### **3.2. Reporting mechanisms**

- Availability of reporting mechanisms

### **3.3. Response to client improvement requests**

- Processes for consideration and approval of client change requests
- Processes for determining impact of changes

### **3.4. Collaborative supervision**

- Evidence of collaborative working
- Sharing of learning

### **3.5. Contractual standards and expectations**

- Contractual statements re roles and responsibilities for Nuclear Safety Culture
- Consequences of failing to reach expected standards

## Section 4      References

A list of all IAEA valid safety standards is available at:

[IAEA list of all valid safety standards 2015](#)

The status of IAEA safety standards is at:

[Status of Safety Standards 2015](#)

Superseded publications and obsolete publications in the IAEA Safety Standards and Safety Series are listed at:

[IAEA superseded safety standards 2015](#)

1. WANO GL 2002-02– Principles of Excellence in Human Performance
2. [WANO Principles PL 2013-01 – Traits of a Healthy Nuclear Safety Culture](#)
3. INPO Principles for a Strong Nuclear Safety Culture, Nov 2004
4. INPO AP928 Work Management
5. INPO 04-003 Guidelines for Effective Nuclear Supervisor Performance
6. INPO 05-002 HU tools for Knowledge workers
7. INPO 06-002 Human Performance tools for workers
8. [IAEA NG-T-2.7 Managing Human Performance in Improve Nuclear Facility Operation](#)
9. [INPO 12-012 Traits of a Healthy Nuclear Safety Culture](#)
10. [IAEA TECDOC 1226 Managing Change in Nuclear Utilities](#)
11. [IAEA Safety Requirements GS-R-3 The Management System for Facilities and Activities](#)
12. [IAEA Safety Guide GS-G-3.1 Application of the Management System for Facilities and Activities](#)
13. [IAEA Safety Guide NS-G-3.5 The Management System for Nuclear Installations](#)
14. [IAEA Safety Reports Series No. 69 Management System Standards: Comparison between IAEA GS-R-3 and ISO 9001:2008](#)
15. International Organisation for Standardisation Quality Management Systems-Requirements, ISO 9001:2008
16. [IAEA TECDOC 1057 Experience in the use of Systematic Approach to Training for Nuclear Power Plant Personnel](#)
17. [IAEA TECDOC 1204 A Systematic Approach to Human Performance at Nuclear Power plants: Training Solutions](#)
18. [IAEA TECDOC 1329 Safety Culture in Nuclear Installations](#)

19. [IAEA TECDOC 1458 Effective Corrective Actions to Enhance Operational Safety of Nuclear Installations](#)
20. [IAEA TECDOC 1580 Best Practices in the Utilization and Dissemination of Operating Experience at Nuclear Power Plants](#)
21. [IAEA INSAG 4 Safety Culture](#)
22. [IAEA INSAG 12 Basic Safety Principles for Nuclear Power Plants](#)
23. [IAEA INSAG 15 Key Practical Issues in Strengthening Safety Culture](#)
24. John P Kotter, Leading Change, 1996
25. James H Shonk, Team-Based Organizations: Developing a Successful Team Environment, 1997
26. E Scott Geller, The Psychology of Safety Handbook, 1998
27. B F Skinner, About Behaviourism, 1978
28. [The National Diet of Japan, The Fukushima Nuclear Accident Independent Investigation Commission, 2012](#)
29. Cumulative Impact Short Term actions, INPO November 2013