

This document describes the requirements of the Nuclear Delta™ for membership.

1. Nuclear Safety and Security Culture

The Nuclear Delta™ requires an accredited nuclear professional to demonstrate an understanding of the terms ‘Nuclear Safety Culture’ and ‘Nuclear Security Culture’. *As a Member of the Nuclear Institute you are able to demonstrate that you can;*

- explain what is meant by Nuclear Safety Culture¹.
- explain what is meant by Nuclear Security Culture²

2. Personal Behavioural Standards

The Nuclear Delta™ requires an accredited nuclear professional to demonstrate a commitment to ‘*personal behavioural standards*’.

As a Member of the Nuclear Institute you are able to demonstrate that you;

- challenge unsafe acts and behaviour and reinforce safe practice appropriately and effectively.
- challenge acts which could undermine security and reinforce security practice appropriately and effectively.
- apply nuclear safety principles to check that your decisions and work activities support safe nuclear operations.
- apply human performance and error-reduction tools within your role.
- work against complacency, maintaining and encouraging a questioning attitude.
- contribute to continuous improvement, maintaining an ‘it can happen here’ attitude.
- use organisation and/or site reporting systems effectively to learn from experience.
- accurately and factually represent the pros and cons of nuclear technology, when called upon to do so.

As a Member of the Nuclear Institute you know and understand;

- your role, responsibilities, boundaries of your authority and reporting lines in respect of nuclear safety and security.
- the roles and responsibilities for safety of others within your organisation and/or site including, where applicable, the roles and responsibilities of Site Licensees/Authorisees and Contractors.
- how human error has contributed to previous nuclear industry accidents and recognise how avoidance of human error contributes to future safe operation.
- the principles of nuclear safety, how these apply to your work and their importance as a foundation for sound decisions and actions.
- the contribution you, your activities and/or the products of your work make to maintaining nuclear safety and security.
- how to apply human performance and error-reduction tools within your role

¹ INSAG 15 defines safety culture as “that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance.

² IAEA Nuclear Security Series No 7 & ONR TAG CNS-TAST-GD-002 (Rev 0) defines Nuclear Security Culture as ‘The assembly of characteristics, attitudes and behaviour of individuals, organisations and institutions which serve as a means to support and enhance nuclear security’.

- the safety track record of the nuclear industry, including awareness of key incidents, identified causes, contributory factors and resulting lessons learned.
- the importance of employee vigilance and reporting to maintaining an effective nuclear safety and security culture.
- the range of public opinion regarding nuclear sector operations.
- how to present a high level of personal professional responsibility for nuclear safety and security.

Additionally, Members of the Nuclear Institute who are leaders are expected to promote behaviours which support Nuclear Safety and Security and encourages effective safety and security behaviours. In particular, these members should demonstrate that they;

- practice visible leadership by observing, coaching, mentoring, and reinforcing standards and commitment to policies and procedures.
- consider the employee's perspective in understanding and analysing issues.
- provide appropriate oversight during safety-significant work or where there is the potential for an impact on security.
- are appropriately involved in high-quality nuclear safety and security training that consistently reinforces expected behaviours.
- provide clear and consistent messages to all staff that recognises the importance of nuclear safety and security.

3. Nuclear Safety and Technology

The Nuclear Delta™ requires an accredited nuclear professional to demonstrate an understanding of 'nuclear safety'.

As a Member of the Nuclear Institute, at a level appropriate to their responsibilities and grade you are able to demonstrate that you;

- discharge your role responsibilities for safety, within the limits of your authority.
- accept accountability for maintaining safety standards within your area of responsibility, contributing to identifying and resolving any shortfall in meeting standards.
- identify and understand the potential consequences arising from planned activities and their implications for safety and security.
- take appropriate action when faced with unexpected or uncertain conditions to prevent or minimise the risk of a safety incident, unsafe action or other unintended consequence of your work (or work product).
- recognise what is safety critical.
- understand and comply with nuclear and environmental regulatory requirements to protect people, property and the environment from hazards (accidents, malfunctions and natural events).
- apply operating procedures and safe systems of work to meet organisational and regulatory requirements and minimise risk of exposure to radiation.
- work activity to minimise potential for contamination, as applicable to your role.

As a Member of the Nuclear Institute you know and understand at a level appropriate to your responsibilities and grade the following topics:

- What is meant by Nuclear Safety³
- The regulatory regime within which the nuclear industry operates, as applicable to the organisation, sub-sector and national context in which you work.
- The fundamentals of heat removal and containment relating to nuclear safety, including the need for reactor post shut-down cooling and decay heat removal.
- The principles of nuclear science and engineering, at a level, breadth and depth applicable to your role and working environment, drawn from the following areas;
 - Structure of the atom e.g. characteristics of electrons, neutrons and protons; mass number, atomic number and isotopes.
 - Nature and effect of radiation, e.g. sources, applications of radioisotopes
 - Types of radiation, including, radioactive decay; half-life; ionising radiation - interaction with matter.
 - Methods of reducing exposure to radiation - reducing exposure; equivalent dose; time; distance and shielding.
 - Control of contamination – definition of contamination; control methods; contamination monitoring.
 - Science and engineering of the nuclear fuel cycle including:
 - Criticality.
 - Nuclear Reactors.
 - Reactor Safety and Hazards.
 - Nuclear Weapons.
- Defence-in-Depth, including redundancy, diversity and segregation.
- Emergency procedures, potential emergency situations, alarms and appropriate responses.
- Awareness of legal requirements for handling radioactive waste and how these apply to your work role and activities.

4. Nuclear Security

The Nuclear Delta™ requires an accredited nuclear professional to demonstrate an understanding of ‘nuclear security’ in the nuclear industry.

As a Member of the Nuclear Institute, at a level appropriate to their responsibilities and grade, you are able to demonstrate that you;

- discharge your role responsibilities for nuclear security, within the limits of your authority;
- accept accountability for maintaining nuclear security within your area of responsibility, contributing to identifying and resolving any shortfall in complying with requirements;
- identify and understand the potential consequences arising from planned activities and their implications for nuclear security.
- take appropriate action to prevent or minimise the risk of a security incident or other unintended consequence of your work (or work product).
- recognise what is security critical for their role.
- comply with nuclear security and environmental regulatory requirements to protect people, property and the environment from threats (malicious acts)

³ IAEA in their Safety Glossary define Nuclear Safety as “The achievement of proper *operating conditions*, prevention of *accidents* or mitigation of *accident* consequences, resulting in *protection* of workers, the public and the environment from undue *radiation* hazards.

Nuclear Delta™ Requirements for Membership



As a Member of the Nuclear Institute you know and understand at a level appropriate to your responsibilities and grade the following topics:

- What is meant by Nuclear Security.
- The nature of potential security threats and the reasons why controls are required.
- Work place access and restrictions, including:
 - personal access to site and restricted areas, including use and protection of security passes.
 - restrictions on items brought onto, removed or used on site.
 - general security principles and practices (need to know; steps to avoid accidental security breaches; complacency; vigilance; commitment to following specific policies, procedures and good practices).
- Management of sensitive information, including:
 - local policy, requirements and procedures, including document classification system.
 - correct handling and storage of information, as it applies to your job role.
 - correct IT security practices (locking PCs; password strength and protection; use of laptops, especially off-site).
- Risks of transmission of sensitive safety and security information and precautions when using electronic communications (telephones, mobiles; email, fax and social media).
- Response procedures, alarms and appropriate responses to nuclear security incidents and events.