Introduction

Nuclear companies have to operate to high standards of Environment Health and Safety (EH&S) from a moral, business and public acceptance perspective. To deliver high levels of consistent performance it is necessary to engage with the workforce at a cultural level. Safety Culture is the subject of guidance by the IAEA which is equally applicable to the four major areas of safety on a nuclear facility:

Radiation Protection Culture in Context

To develop and deliver a high EH&S standard there is a need to understand the different characteristics and common management factors in order to have a successful integrated hazard management process, supported by a strong safety culture. Radiation protection professionals have a vital role in strengthening and supporting the Radiological Protection Culture in the Integrated Safety Management Systems. British Nuclear Group in 2006 developed a model to communicate and assist its leadership to develop such a Safety Culture. This is presented below:

Common Management Factors:

Leadership
- Set clear standards, expectations and accountabilities.
- Sustain a demonstrable commitment to risk.
- Lead by example with your own behaviours.
- Open to learning and challenge.
- Communicate safety below production.
- Listening and coaching.

Management Systems
- Risk-based hazard identification, risk assessment, hierarchy of controls.
- Advancing training, preparation and training.
- The role: One Milestone Risk Assessment (eg STAN-STOP etc).
- Harmonised guidance to developing standards.
- Integration of supply chain and contractors.
- Practical and theoretical training (IEG - both our awards and others).

Culture
- Inherence of degraded plant and equipment conditions: plant operates as designed.
- Consequences, but with a questioning attitude.
- Learning, behaviour change.
- Committed decision taking.
- Supporting the development of EH&S competence.
- Involving ‘right first time’ and ‘Continuous Improvement’ attitudes.

Nuclear Safety
- High consequences, but low probability - hard to make sense.
- Emphasis on the end event; difficult to make the right decision.
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- Mathematical models are often ill suited.
- Standardisation of safety practices and procedures.
- Presence can only be made visible using electronic dosemeters.
- Controls are in place to keep us safe.
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Radiological Safety
- Low consequences but very high probability.
- All participants have direct and immediate experience, can use common sense.
- Advance planning, preparation and training.
- Guthrie has limited experience, can use common sense.
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- Guthrie has limited experience, can use common sense.

Conventional Safety
- Low probability/low consequence events.
- High frequency and wide mix.
- Most threats generally obvious, evident and well understood.
- People have direct experience, can use common sense.
- People have direct experience, can use common sense.
- People have direct experience, can use common sense.

Environmental Protection
- High frequency/low consequence events.
- High frequency and wide mix.
- Many threats generally obvious, evident and well understood.
- Most threats generally obvious, evident and well understood.
- People have direct experience, can use common sense.
- People have direct experience, can use common sense.
- People have direct experience, can use common sense.

Hazard
- Nuclear accidents.
- Missile accidents.
- Ignition of chemical plant containment and other equipment.
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- Missile accidents.
- Ignition of chemical plant containment and other equipment.

Characteristics
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- Emphasis on the end event; difficult to make the right decision.
- Mathematical models are often ill suited.
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Controls
- Prevention of occurrence of occurrences.
- Placement of occurrence of occurrences.
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Conclusion

By understanding the nature of the four Safety disciplines and the common management factors, an organisation can tailor its communication, training, management and leadership of an integrated risk management system. They will also be able to develop a safety culture that strongly maintains the organisation’s capability to meet standards and expectations of society.

The radiological protection professional has a vital role to assist an organisation in the management and development of a strong radiation protection safety culture as part of the integrated hazard management system.