

## **N07 - NUCLEAR TECHNOLOGY EDUCATION CONSORTIUM NUCLEAR SAFETY CASE DEVELOPMENT**

### **Summary**

The NTEC N07 Nuclear Safety Case Development module examines the fundamental building blocks and the supporting processes and methodologies used in the formulation of a 'Modern standards nuclear safety case'.

Within the statutory framework that regulates the nuclear industry, there is an overriding requirement to demonstrate through an adequate and appropriate safety case that all hazards associated with operations on a Licensed Site are understood, effectively managed and controlled. This Module introduces the knowledge and skills necessary to effectively judge and influence the adequacy of licensees' nuclear safety cases.

On completion, students should:

- Understand the requirement for a modern standards nuclear safety case;
- Have an appreciation of the main building blocks of a modern standards nuclear safety case;
- Have an awareness of the main supporting processes and methodologies used in developing a modern standards nuclear safety case.

**Syllabus:** This module consists of pre-course reading, a series of lectures, an assessed post-course assignment and an examination.

### **Pre-course reading:**

- ONR Safety Assessment Principles for Nuclear Facilities  
<http://www.onr.org.uk/saps/>
- IAEA Nuclear Safety Tutorials  
<http://www-ns.iaea.org/tutorials/bptc/intro/index.htm>
- Guidance on application of ALARP  
[http://www.onr.org.uk/operational/tech\\_asst\\_guides/index.htm](http://www.onr.org.uk/operational/tech_asst_guides/index.htm)

### **Topics:**

- Legislative Requirements for a Nuclear Safety Case
- Purpose and Scope of a Nuclear Safety Case
- Nuclear Safety Justification Principles
- Safety Assessment Principles, Design Standards and Numerical Targets
- Safety Case Lifecycle
- Engineering Substantiation
- Deterministic Safety Justification
- Probabilistic Safety Analysis (PSA) Level 1
- Consequence Assessment (Level 2/3 PSA)
- As Low As Reasonably Practicable (ALARP)
- Safety Case Implementation, Operation, Maintenance and Review.

Subject areas also covered within the above topics also include; Safety Culture/Accidents, a brief introduction to Human Reliability Analysis, examples of Fault Trees used in nuclear reliability engineering, Safety Functional Requirements and Design Substantiation, HAZID methods, and a detailed examination of what is understood by the term 'Risk'.

### **Post-course assignment**

- Preparation of a Preliminary Safety Report for a nuclear facility using scenario data provided.