



Safety Case Production

When safety is paramount a Safety Case is required to set out the means by which all credible risks are to be managed and controlled. Whether as part of a site license requirement for a new or existing nuclear facility, or for other installations with a statutory requirement to control hazards and prevent major accidents involving dangerous substances.

It is a requirement that a Safety Case be developed that demonstrates not only the best working standards are in place, but that all potential failure modes and consequences of failure are considered.

As structural integrity specialists, EASL have over 250 collective man years working in the nuclear industry. This experience gives us a historic understanding of the processes involved with assisting in the production and development of nuclear safety cases and this expertise is readily transferable to many other safety-critical industries.

What is Safety Case Production?

The safety case is, first and foremost, the means by which an operator demonstrates to itself the safety of its activities. It requires the production of a formal safety assessment in which all major hazards over the whole life cycle of a project will be identified and assessed to establish a strategy for risk management that is required to address the entire spectrum of possibilities.

The structural integrity safety case requires a thorough understanding of the potential failure modes affecting plant, components, systems and structures.

It requires an appreciation of all planned and unplanned operating conditions. It demands that suitable lines of protection are maintained in the event of the unexpected to ensure that the plant remains in a safe state. In a nuclear facility this typically requires safe shutdown, containment and cooling.

In his Piper Alpha report, published in 1990, Lord Cullen concluded that operators of installations should be required by regulation to carry out a formal safety assessment of major hazards, the purpose of which would be to demonstrate that the potential major hazards of the installation and the risks to personnel thereon had been identified and appropriate controls provided.

The aim of this regulation was twofold: to assure the operators that their operations were safe and to fulfil a legitimate expectation of the workforce and public that operators should be required to demonstrate this to the regulatory body.

His conclusions were founded in part on the style of regulations promoted by the Health and Safety at Work Act 1974, intended to “specify principles rather than solutions” and was intended to “encourage innovation on the one hand but be effective against lack of precaution on the other”. Such regulations are “goal-setting” rather than prescriptive.

This “goal-setting” approach underpins the Safety Assessment Principles for nuclear facilities by the Office for Nuclear Regulation. These define a nuclear safety case as a logical and hierarchical set of documents that describes risk in terms of the hazards presented by the facility, site and the modes of operation, including potential faults and accidents, and those reasonably practicable measures that need to be implemented to prevent or minimise harm.

It takes account of experience from the past, is written in the present, and sets expectations and guidance for the processes that should operate in the future if the hazards are to be controlled successfully. The safety case clearly sets out the trail from safety claims through arguments to evidence.



It will involve:

- Methodical review of the severity and frequency of occurrence of plant-based faults, internal and external hazards
- Arguments are then constructed and evidence weighed to support safety case claims that demonstrate the margins against failure by any conceivable mode under any credible scenario

For an existing plant these safety cases take the form of engineering change instructions, setting out what changes to plant and procedures are required to assure nuclear safety now and in the future.

EASL's Safety Case Production Services

EASL has many years' of experience of providing the arguments and evidence required to support structural integrity related safety cases. EASL has authored and verified engineering change instructions for existing nuclear plant. EASL has produced thousands of supporting references used in safety cases for nuclear power stations currently operating safely in the UK.

EASL has particular expertise in the analysis and assessment of infrequent plant-based faults and internal and external hazards including earthquakes, flooding and fire. The disciplines required for nuclear safety can be applied to safety cases for installations in other highly regulated industries.

The skill sets required for structural integrity analysis and assessment are the same, and so whether or not your project is associated with nuclear safety, you can be assured that we will apply the same high standards to your project. We can also help to plan your work to ensure that we get to the heart of what's needed.

If you would like to find out more about our safety case services, or have any further questions about how we can help you, please take a look at our related services below or get in touch on enquiries@easl-stress.co.uk.

Related Services

- Stress Analysis
- Safety Case Production
- Stress Analysis