

Safety Corner

What is a “Safety Case”?

Similar to using a business case to justify the launch of a new business in the commercial world, safety case has been used to present a clear, comprehensive and defensible argument, supported by technical analyses and procedures, that a system or an installation will be acceptably safe throughout its lifecycle before commencing operation.

The safety case approach found its root in the UK nuclear industry through the introduction of the Nuclear Installations (Licensing and Insurance) Act in 1959 as a result of a nuclear reactor fire in 1957 at Windscale, resulting a large-scale release of radioactive substance. The term “safety case” was later explicitly used in the amended Nuclear Installations Act in 1965.

It took another major accident, the Piper Alpha disaster in 1988, for the regulators and industries to arrive at the sophistication and comprehensiveness of the structured safety case approach as we know of it today. This costly accident led to the introduction of the Offshore Installation (Safety Case) Regulation 1992. The Regulation requires an operator to prepare and submit a safety case for the Health and Safety Executive’s approval before relevant activities could be carried out. Since then, the application of the safety case approach has been expanded to other industries and countries, notably, the Railway (Safety Case) Act in UK and the Gas Safety (Safety Case) Regulation in Australia.

There is no universal definitive statement of what constitutes a safety case. Its presentation and contents vary from industry to industry and from country to country. Obviously, a safety case must be a true reflection of the safety arrangements for the existing or proposed facility or system demonstrating that

- a sound safety management system with adequate periodical audit and review arrangements are in place; and
- all hazards with the potential to cause a major accident have been identified, the risk evaluated, and measured taken to reduce the safety risk to as low as reasonably practicable.

To date, as safety-critical and safety-related systems are becoming more integrated and continuing to increase in complexity, safety requirements for such systems are also becoming more stringent and requiring more extensive, detailed supporting analyses. Safety cases, therefore, are themselves growing in size and complexity, and are becoming increasingly costly to produce. These remain the challenges to the operators and regulators in the coming years to fine-tune the effectiveness and practicality of the safety case approach.

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