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SAFETY-SECURITY INTERFACE IN CIVIL NUCLEAR TRANSPORT The influence of leadership, management, and organisational culture

The 1950s saw the advent of the international civil nuclear sector. In 1954, the former Soviet Union's Obninsk nuclear power plant was the first to be connected to an electricity power grid. Two years later, in 1956, Calder Hall Nuclear Power Station was the first commercial nuclear power plant to be connected to the UK's national electricity power grid. Nuclear safety has always been prioritised in the civil nuclear sector. However, since the 1950s, there have been several high-profile nuclear safety incidents. This includes the 1957 Windscale radiological release in the English county of Cumbria; the 1979 partial nuclear core meltdown at the USA' s Three Mile Island Nuclear Generating Station in Pennsylvania; the 1986 reactor explosion at Chernobyl Nuclear Power Plant, in the former Soviet Union; and the 2011 damage to reactors at Japan's Fukushima Daiichi Nuclear Power Plant caused by the Tōhoku earthquake and ensuing tsunami. Amongst others, these incidents have driven development of stringent approaches to nuclear safety by the IAEA.

The IAEA have produced an extensive catalogue of nuclear safety standards. This includes a Fundamental Safety Principles document highlighting leadership, management, and the promotion of effective safety culture as key principles for nuclear safety. In the aftermath of the Chernobyl incident in 1986, the IAEA' s approach to nuclear safety culture was significantly influenced by the Swiss/American Professor of Management, Edgar Schein. Schein's Model of Organizational Culture (hereafter referred to as Schein's Model) hypothesised that organisational cultural was influenced by three levels: 1. Artifacts, which describe visible structures, processes, and observed behaviour; 2. Espoused Beliefs and Values, which are defined by ideals, goals, values, aspirations, ideologies, and rationalisations; and 3. Basic Underlying Assumptions, which relate to unconscious beliefs and values that are taken-for-granted. Influenced by Schein's Model, the concept of nuclear safety culture gained increasing acceptance during the 1980s.

The IAEA acknowledged the need for a legally binding framework for international nuclear security when it developed the Convention on the Physical Protection of Nuclear Material and its Amendment (CPPNM/A), which includes the need for effective transport security. However, the concept of nuclear security culture, and its correlation to the physical protection of nuclear facilities, transport, and operations, did not gain traction until the late 1990s. To an extent, this may be indicative of civil nuclear security considerations advancing at a slower rate and being less prominent in comparison to nuclear safety approaches. Potentially, this may create leadership and management challenges in relation to cohesive approaches to nuclear transport security and safety and this is the main issue this paper examines. Certain academics have asserted that approaches to nuclear security are not as mature as those concerned with nuclear safety. They suggest this may be partly attributable to nuclear security and safety not being integrated and developing in isolation. Arguably, this is an important topic as the IAEA maintain that integrated nuclear security and safety approaches will influence the future development of the civil nuclear sector. Safe and secure nuclear transport capability will underpin this.

Country or International Organization

Instructions

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