

Evolution of South African nuclear regulatory regime from the British nuclear regulatory system

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Leotlela MJ. Evolution of South African nuclear regulatory regime from the British nuclear regulatory system. *J Mod Appl Phys.* 2017;1(1):01.

INTRODUCTION

The Nuclear Regulatory Authority in South Africa dates as far back as the nuclear program itself. However, it was not always as independent as it is today; it was originally part of the licensing wing of the Atomic Energy Corporation (AEC) that predates the Nuclear Energy Corporation of South Africa (NECSA).

INDEPENDENCE OF THE REGULATORY AUTHORITY

In 1988, the licensing wing of AEC became an autonomous nuclear licensing authority and became the first independent nuclear regulatory authority in South Africa, and was later renamed the Council for Nuclear Safety (CNS). This was as a result of Three Mile Island (TMI) accident which occurred in 1979, from which one of the lessons learnt was the need for an effective nuclear regulatory regime, which many experts believed was hampered by the lack of independence of the nuclear authority from the industry it was regulating. Because of this, there was a lot of complacency, which formed a fertile ground for nuclear accident. When the Chernobyl accident occurred in 1986, this further accelerated the independence of the nuclear regulatory authority. It also prompted member state of the IAEA to revisit the nuclear/radiological emergency planning provisions and called for greater co-operation and information sharing among member states in nuclear regulatory affairs.

NUCLEAR LICENSING REGIMES

Establishing a nuclear regulatory authority for the first time often lends itself with a difficulty of having to make a choice between various licensing regimes to adopt from a number of variations. Although there are many variations of regulatory regimes, there are only two main, well-known licensing approaches; prescriptive and non-prescriptive approaches [1].

Non-prescriptive licensing regime

In the early years of the Council for Nuclear Safety, and possibly even before CNS was independent, South Africa followed the non-prescriptive licensing approach. A non-prescriptive licensing approach is largely a performance-based licensing approach with the licensee having to demonstrate to the regulator how they will achieve a set safety target/goal set by the regulator, and among the countries that use this approach is UK [2].

In the early 1990s when I was there, the majority of people in management positions of CNS had British origin; with experience from the National Radiological Protection Board (NRPB) and Health and Safety Executive

(HSE). As such a non-prescriptive approach was used because that was the licensing approach that the majority of them had experience on. Because of that it made perfect sense to continue with this approach when CNS became independent rather than introduce a new approach that would be completely foreign to everyone.

Prescriptive licensing approach

As years went by and management changed, and the organization became more representative of the demography of South Africa, the association with British nuclear regulations became less pronounced. This brought along gradual move towards prescriptive licensing approaches, which is predominantly applied at The United States Nuclear Regulatory Commission (NRC).

A prescriptive nuclear approach establishes clear requirements and performance expectations, which are extensively documented in regulatory documents, which are further classified according to their hierarchical levels. The Nuclear Regulatory Commission is good example of an organization that uses prescriptive licensing approach. With the enactment of the NNR Act of 1999 [3], the National Nuclear Regulator (NNR) was established (4) and CNS was renamed the NNR, this saw a drastic increase in the number of regulatory documents, regulatory guides, position papers and licensing documents being generated. Because NNR was still using the British approach but also gradually moving to a highly prescriptive approach of the NRC, this clearly made NNR licensing approach a hybrid of the two licensing approaches, and is till the case to-date. This means that in some cases, especially where there are already established domestic nuclear regulations, a prescriptive approached would be used in favour of non-prescriptive. Where there aren't such internal regulations, a non-prescriptive approach would be used, relying on the IAEA, UK and NRC for guidance [4].

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Received: August 11, 2017, Accepted: August 11, 2017, Published: August 25, 2017



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