Female Regulatory Inspectors at Nuclear Power Plants: A constant challenge and opportunities

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Introduction

The South African National Nuclear Regulator (NNR) was established by the National Nuclear Regulator Act, (Act No. 47 of 1999) to provide for the protection of persons, environment and properties against nuclear damage through the establishment of safety standards and regulatory practices. The facilities and actions regulated by the NNR are diverse and includes , research reactors, radioactive waste management, mining, transport of radioactive materials, vessels propelled by nuclear power or having radioactive material on board and to any other actions capable of causing nuclear damage to which the National Nuclear Regulator Act applies. The NNR regulates among others the operation of Koeberg Nuclear Power Station ‘‘(KNPS)’’located near Cape Town, South Africa.

Figure 1. *Location of Koeberg Nuclear Power Station*

Method

In 204, twenty eight inspections were conducted at KNPS by the 3 female Inspectors. The scope of these inspections is determined by the appropriate authorization conditions, operating experience and operational events. The Inspector develops a check list prior to the inspection from the NNR Requirements Documents, USNRC inspection manuals and IAEA standards. The inspections are performed by either having a review/assessment focus and/or a pure compliance focus. They may take place in various areas including controlled areas classified as radiation zones.

Challenges Identified

Challenge 1: Low representation of women,
Women represent 12,4% of the Radiation Workers at the Nuclear Power Plant (NPP) in South Africa.

Challenge 2: Low representation of women in management,
At the NPP in South Africa the typical representation of females at management level is 24,5%. On average 43% of these females are actively performing management duties.

Challenge 3: Overcoming conscious and unconscious biases, LH. Summers, President Emeritus of Harvard University and economic advisor for president Obama suggested that the under-representation of women in science and engineering could be due to a "different availability of aptitude at the high end", and less to patterns of discrimination and socialization.

Consequence 1:
Environment not female friendly: inadequacy of change rooms and toilets; Protective clothing not sized for women; Men promiscuity. The female Regulatory Inspector must fit into a male environment and find ways for the male interlocutor to see a professional instead of a women.

Consequence 2:
Hostile environment for women, misunderstanding, enhanced position dominant - dominated. The female Regulatory Inspector faces to skeptical male worker.

Consequence 3:
Discrimination against women. For the same function, women are paid on average 25% less than men. Lack of sponsorship at school leading to demotivation. Female Inspectors must fight the stereotype, show more perseverance and sometime delay motherhood.

Appropriate Approach

Female Inspectors have to adopt a different behavior without denying their personality. For that reason they must:

- ✓ Develop creativity and adapt to any work environment/situation
- ✓ Be a perfectionist and pursue excellence at work
- ✓ Transform weaknesses into strengths
- ✓ Become more visible and overcome fears

Conclusion

Despite the changing workforce, the gender imbalance in the nuclear profession remains evident. However, it’s important to take in consideration some facts which impact the future and bring positive change:

- ➢ Queen bee syndrome is a myth. A research at Colombia Business School in NY showed where women are appointed CEO other women where more likely to make it into senior positions.
- ➢ Female inspectors should always remember that the founding "mother" of nuclear science and technology was a woman. Marie Curie helped discover radioactivity, later radium and how to measure its atomic weight, winning two Nobel Prizes in 1903 and 1911 for her efforts. She was also a mother and she passed her passion to her daughter Irene, Nobel Prize winner in 1935 for the synthesis of new radioactive elements.

Figure 2. *Marie & Irene Curie in the laboratory at the Radium Institute in Paris, France, 1921*