

Developing Engineering Talent for the Next Generation of Nuclear Inspection Technology

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Ontario Power Generation (OPG) is the largest power utility in the Canadian province of Ontario. Key stakeholders internal and external to the organization continually challenge OPG to improve its performance with respect to the areas of concern unique to the stakeholder. These areas include worker and public safety, environmental stewardship, social responsibility, system reliability and economic performance. These broad areas in turn cascade down to the individual departments to implement concrete actions that support the corporation's objectives. The Advanced Inspection & Maintenance (AIM) Department addresses OPG's inspection needs for both regulatory and economic commitments across OPG's generating assets. It too has a role to play implementing actions that meet stakeholders' directives. The AIM Department contributes to meeting stakeholders' directives by improving inspection productivity and efficiency while reducing the resources needed to support inspection campaigns, in short doing more with less. Other areas for improvement include optimizing inspection result quality such that excessive conservatism is reduced thus extending the economic life of the asset. AIM will also enhance inspection capability and address increased scope in the context of new applications. To meet these objectives, conventional inspection processes have a role to play, however will likely contribute in an incremental manner. AIM will have to embrace new inspection processes and innovative technologies, and indeed AIM has already an established track record in this regard. AIM has pioneered the application of FMC/TFM for reactor component inspection. Multiple innovations are being pursued in the areas of transducer technology, signal transmission over optical fibre and instrumentation optimized for operation in high radiation environments. AIM has plans to deploy artificial intelligence for data acquisition and assisted analysis in the future. All these objectives assume access to the engineering resources that have the requisite knowledge, skills, and experience. It is the development of these resources that poses the biggest challenge. Inspection technology is a niche area that is both multidisciplinary and at the forefront of development. The tried-and-true process of on-the-job training of engineering talent is inefficient and may not lead to the desired outcomes. AIM seeks to partner with academic institutions to establish a resource base of personnel with the skills and knowledge that can rapidly address technology development. This paper describes a proposed structure for this partnership and the work performed to achieving this goal.