Analysis of decision alternatives of the deep borehole filter restoration problem

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Abstract

The energy problem is one of the biggest challenges facing the world in the 21st century. The nuclear energy is the fastest-growing contributor to the world energy and uranium mining is the primary step in its chain. One of the fundamental problems in the uranium extraction industry is the deep borehole filter restoration problem. This decision problem is very complex due to multiple objectives and various uncertainties. Besides the improvement of uranium production, the decision makers often need to meet internationally recognized standards (ISO 14001) of labor protection, safety measures, and preservation of environment. The problem can be simplified by constructing the multiattribute utility function, but the choice of the appropriate functional form requires the practical evaluation of different methods. In present work, we evaluate the alternatives of this complex problem by two distinct approaches for analyzing decision problems. The decision maker and the assessor is a Deputy Director General of a transnational corporation.

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