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Two Probabilistic Models for Solving an Oxygen-bottle Inventory Problem

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In this paper, an inventory oxygen-bottles problem is formulated as (i) an (M/M/C) : (GD/N/∞) queueing model with different service rates; (ii) a probabilistic goal programming (PGP) model. By using the first model, the optimum required rate for oxygen bottles to be stored is determined. By using the second model, the decision-maker can determine his policy, which minimizes the total cost. Finally, a case study of the storage of oxygen bottles for the Egyptian Air Force (1980–1984) is presented.

Key words: goal programming, inventory problem, optimization, probabilistic goal programming, queueing models

INTRODUCTION