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### ACCEPTED MANUSCRIPT

# Multi-Level Optimization of Maintenance Plan for Natural Gas System Exposed to Deterioration Process

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#### Highlights

- Analysing the Process Variables (PVs) given perturbations in time series.
- Uncertainty related to parameters, models and historical data was investigated.
- Maintenance time schedule optimization using Markov degradation model.
- Characterizing the reliability of inspection by one-dimensional exponential model.
- The model was examined on Natural Gas Regulating and Metering Stations (NGRMS).

Abstract

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