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ABSTRACT POLCA (i.e. Paired-cell Overlapping Loops of Cards with Authorization) is a card-based decision support system for production control, developed to support the adoption of Quick Response Manufacturing. Two variants of POLCA have been proposed in the literature to improve POLCA performance: Load Based POLCA and Generic POLCA. In this paper, we combine these two variants into a single production control system and analyse its performance for different backlog-sequencing rules. The results of a simulation study carried out for a make-to-order flow shop, support the strategy of combining these two POLCA variants and show that capacity-slack backlog sequencing based on corrected aggregate load have the potential for improving performance. KEYWORDS Production Control, Generic POLCA, Simulation