Where Protecting Service Requires More Inventory and Capital

Executive conclusion

The strongest pressure comes from unreliable supplier timing, compulsory purchase lots, long replenishment lead times and infrequent ordering reviews. These mechanisms have different remedies: improve reliable delivery, separate purchase commitments from receipt quantities, shorten lead times, and refresh replenishment rules when demand or supply changes.

Some coverage is necessary under the current operating model. Other inventory is a costly workaround for supplier terms or planning delays. The evidence supports quantifying the exposure and selected demand-coverage sensitivities; it does not establish a single total of avoidable additional working capital.

1. Supplier performance extends the coverage the company must finance

Longer delivery times require the business to cover more demand before replacement supply arrives. Unreliable timing can also require additional safety stock, but that uncertainty buffer cannot be calculated from supplier averages alone.

The following calculation values the additional demand horizon at ledger cost: September requested units / 30 x supplier average lead-time overrun x SKU unit cost. It is a constant-demand sensitivity, not an approved buffer, a cash balance or proof that all the extra stock has been purchased. The comparison is against contracted supplier averages, not each SKU's configured planning lead time; some protection may already be embedded in current settings.

Supplier	Reported fill / on-time delivery	Average lead-time overrun	Matched SKUs with open POs	Open PO exposure	Additional lead-time-demand coverage at cost
SUP-03	78.6% / 71.4%	24 days	9	**$960,789**	**$384,718**
SUP-14	83.2% / 76.8%	18 days	5	**$188,301**	**$113,161**
SUP-11	92.1% / 88.4%	8 days	6	$317,937	$86,367
SUP-07	90.8% / 86.5%	8 days	7	$617,159	$73,297

SUP-14 reports eight active SKUs, but only five can be linked through the supplied open POs; the calculation does not extrapolate to the other three. Supplier averages are not individual SKU lead times, and the overrun field measures the difference between actual and contracted averages, not statistical variance.

SUP-03 and SUP-14 also report defect rates of **2.8% and 2.1%**, respectively. Quality losses can reduce usable supply, but SKU-level rejected quantities and replacement timing are missing; an additional quality buffer cannot be quantified defensibly.

Together, the four sensitivities amount to approximately **$657,543 of additional demand coverage at cost**. This quantifies the scale of pressure if the observed average overruns apply to the matched SKUs. It must not be added to existing inventory, PO commitments or the specific-order sensitivities below as an independent financial loss.

Leadership priority: address SUP-03 and SUP-14 first. Require reliable dated delivery commitments, capacity recovery and qualified alternative supply where feasible. Increase buffers only after distinguishing a persistently longer lead time from unpredictable delivery variation. Blanket increases in order quantity are not justified by supplier fill percentages alone.

2. Specific delayed orders show where service protection is most exposed

The company has to bridge the gap between the original delivery promise and the revised receipt date. The supplied three delayed orders are direct evidence of that timing problem.

SKU / supplier	Open units / PO value	Recorded delivery extension	Available coverage at September demand	Demand during extension / ledger-cost equivalent
SKU-046 / SUP-03	484 / $204,413	25 days	12.70 days	About 179 units / **$77,293**
SKU-081 / SUP-03	554 / $236,691	18 days	49.52 days	About 38 units / **$16,496**
SKU-119 / SUP-14	477 / $57,545	32 days	6.90 days	About 403 units / **$48,787**

The extensions represent approximately **$142,576 of demand coverage at cost**, assuming September demand continues. Fractional demand equivalents are rounded for display; the total uses unrounded calculations. This is not a forecast of missing units or a required purchase quantity: the inventory snapshot date, other receipts, customer need dates and demand evolution must be reconciled first.

SKU-119 and SKU-046 deserve early bridge-supply review because available coverage is shorter than their recorded delivery extensions. SKU-081 illustrates a different issue: it has **658 units available plus open orders**, above its **445-unit diagnostic protection level**, yet its large delayed receipt can still arrive at the wrong time. Buying more without time-phasing supply could increase accumulation rather than solve the service problem.

Leadership priority: validate the current receipt schedule before approving expedites, temporary transfers or duplicate supply. The extract does not establish verified current overdue balances, and substitute orders could leave excess stock when the original delayed order eventually arrives.

3. Supplier order constraints force inventory above a smaller-lot service model

These products require large purchases to access replenishment, even when consumption between reviews is much smaller. The constraint is the 600-unit MOQ, not simply an excessively high safety-stock target.

SKU	MOQ	September demand during one review interval	MOQ expressed as demand days	Illustrative extra average cycle-stock value
SKU-022	600 units	133 units over 14 days	63 days	**$93,949**
SKU-055	600 units	About 20 units over 7 days	**212 days**	**$97,207**
SKU-088	600 units	About 176 units over 21 days	72 days	**$56,305**
SKU-109	600 units	84 units over 28 days	**200 days**	**$47,059**

The last column is an explicit steady-demand scenario: average cycle stock is approximated by half the purchase lot. Compare a 600-unit lot with a hypothetical lot equal to one review interval's consumption; value the difference at ledger cost. It assumes uniform consumption and feasible smaller deliveries, excludes safety stock, and does not model freight, order-processing charges or supplier price changes.

Under those conditions, the four MOQs create about **$294,519 of additional average cycle-stock value**, carrying approximately **$60,912 annually** at the supplied rates. This is a prospective operating-model comparison, not guaranteed savings or the amount currently removable.

The actual four-SKU exposure is **$774,972 on hand and $700,332 in open POs**. SKU-055 and SKU-109 also have **646 full units / $178,758** above the conservative current-stock screen. That current reduction envelope and the $294,519 average-stock scenario overlap and must not be added.

Leadership priority: renegotiate SKU-055 and SKU-109 first. Seek smaller releases, scheduled deliveries or supplier-held stock while preserving contracted supply access. Compare the full cost of the revised terms; reducing reorder points cannot remove the compulsory lot size.

4. Long lead times and service promises make some stock structurally necessary

The business must protect a long replenishment horizon on three service-critical products. Their stock should be treated as coverage to validate, rather than automatically included in a reduction campaign.

SKU	Planning lead time / stated service target	On-hand value	Available coverage	Open PO value
SKU-013	120 days / 99%	$64,488	58.33 days	$5,566
SKU-049	120 days / 99%	$100,788	81.98 days	$16,600
SKU-083	120 days / 99%	$20,762	55.75 days	$39,301

These SKUs hold **$186,037 of stock and $61,468 of open POs**. Their stated safety-stock quantities are worth **$52,172** at ledger cost. At September demand, the 120-day demand horizon alone represents approximately **$310,086 at cost**, before safety stock or any additional periodic-review allowance.

The $310,086 measures demand over the lead-time horizon, not a required physical stock balance: dated incoming supply can cover part of that demand. Each day of that horizon represents approximately **$2,584 of demand at cost** across the three products, showing why reliable lead-time reduction could materially reduce protection requirements.

The data do not define whether the 99% targets mean cycle service or unit fill, nor provide enough demand and delivery variability to calculate the buffer needed to achieve them.

Leadership priority: preserve customer-critical protection while investigating reliable lead-time reduction and recalibrating safety stock. A lower inventory target is defensible only when the service commitment can still be met.

5. Replenishment practices can add protection or create expensive workarounds

The ordering architecture itself adds time that inventory must cover. Thirty-nine SKUs use periodic review with intervals of 7-28 days. Their review intervals represent approximately **5,483 units / $1.379m of demand at ledger cost**, in addition to demand during supplier lead time.

That is an inventory-position protection requirement under the diagnostic periodic-review model, not proof that $1.379m of physical stock can be removed. Shorter ordering intervals may reduce coverage requirements, but order costs, MOQs, supplier release capability and receipt timing determine the net benefit.

Planning lag also makes the organization vulnerable. **Seventy-four replenishment settings are more than 90 days since review**, and management notes record a deferred refresh. The eight growth-product SKUs were underforecast by about **22%.** Trying to protect those customers through emergency inventory or expedites while leaving the demand baseline unchanged treats the symptom and can create repeated, poorly coordinated buying.

Replenishment decision	Leadership correction
Treat open orders as protection regardless of arrival date	Use dated available-to-promise and receipt schedules; only usable, timely supply protects the need date
Order duplicate or emergency supply without reconciling delayed POs	Decide whether to cancel, reduce, divert or reschedule the original order before approving replacement supply
Increase safety stock to compensate for all supplier problems	Separate longer mean lead time, delivery variability, incomplete receipts and defect issues; each requires a different response

Replenishment decision	Leadership correction
Keep the old demand baseline and rely on repeated expedites	Approve the changed demand plan and reset replenishment parameters; judge the economics of interim recovery separately
Reduce review intervals while leaving compulsory lots unchanged	Negotiate release flexibility alongside cadence changes, rather than creating more frequent large commitments

These are corrective decisions supported by the observed risks. The files do not prove that duplicate buying or every listed workaround has already occurred, and do not quantify actual expedite expenditure.

Leadership verdict

Correct SUP-03/SUP-14 delivery reliability and the SKU-055/SKU-109 lot constraints first, while protecting the highest-value customer shortages. In parallel, time-phase delayed receipts, refresh changed-demand settings and challenge whether the 120-day service model can be improved without weakening customer protection.

The quantified pressures are different measures: additional lead-time-demand coverage, a smaller-lot cycle-stock scenario, current stock/PO exposure and existing safety-stock settings. They overlap and do not establish an additive total of extra working capital. Cash timing also depends on payment terms and inventory ownership, which the supplied records do not establish. The business can prioritize the causes now; exact buffer increases, cash release and supplier-term savings require validated operating and commercial inputs.