Case Study

When the Unexpected Happens:
A real-world disruption and the case for active resilience

Executive Summary

THE CHALLENGE

This case study examines a real-world airspace shutdown that triggered widespread cancellations, reroutes, congestion, and aircraft positioning challenges across global networks.

Five (5) passive CSafe APS Double shipments traveling from the U.S. to Australia experienced an extended delay as a result of the disruption. Ground operations were unable to remove the units from the aircraft and transfer them to a cold room, eliminating a contingency step that many logistics plans assume will be available. The situation tested not only duration performance, but operational resilience in a constrained, real-world environment.

THE OUTCOME

Through a combination of product performance and operational support, all APS payload was preserved:

- The CSafe APS containers maintained temperature control beyond their published duration, safeguarding the product under extended delay conditions.
- CSafe's Control Tower provided active, real-time monitoring and coordination to manage risk and accelerate recovery.
- Backed by the industry's largest service network, CSafe prepared contingency actions, including positioning resources for potential unit exchange where operationally feasible.
- The event demonstrated that APS can exceed expectations under significant stress.

KEY TAKEAWAYS

While this outcome highlights the strength and reliability of CSafe's passive APS solution, it also reinforces an important distinction: resilience in unpredictable conditions is where active solutions are designed to lead.

- Active solutions provide continuous protection when the unexpected occurs.
- Cold room access cannot be assumed during irregular operations.
- Published duration and real-world disruption resilience are not equivalent.
- When accounting for loss risk, investigations, and reshipments, active solutions can deliver a lower total cost of ownership on many lanes and product profiles.
- In stable conditions, high-performance passive solutions can perform exceptionally well. In uncertain conditions, active solutions are purpose-built to carry the risk.

Disruptions impact not only the flow of shipments but also the ability to intervene

Real-world airspace closures and operational restrictions created disruptions and severe impacts to the global shipping network, including reroutes, cancellations, congestion, and delays on long-haul routes.

In these moments, delays are only part of the risk. The bigger issue is that disruptions often remove the ability to intervene:

- Freight may remain on aircraft or in restricted areas
- Staffing may be limited
- Cold rooms may be full, closed, distant, or inaccessible
- Escalation paths may become overloaded and decision-making can slow down

When the network breaks, "what should have happened" stops mattering. What matters is the ability to bridge the gap.

Why active matters when the unexpected happens

Active containers are designed to provide controlled temperature protection independent of external infrastructure during extended, uncertain delays.

Active is optimal because it:

- Maintains temperature control without requiring immediate cold-room access
- Reduces dependence on perfect timing and ideal handling
- Extends the window to resolve exceptions without sacrificing product
- Produces defensible performance data for quality review

Passive works well in stable conditions. The challenge is that disruption events are exactly when consequences are most severe, and exactly when external "rescue" infrastructure may not be available.

A simple way to frame it:

- Passive is a plan.
- Active is resilience.

US to Australia shipment impacted by the disruption

Situation summary

Airline shutdowns and network instability created delays that impacted shipments globally, as carriers rerouted and operations tightened. In this environment, five (5) CSafe APS Double shipments moving from the US to Australia experienced an extended delay. Ground operations were unable to remove the units from the aircraft to transfer them into a cold room. Thus, a contingency step many shippers rely on simply wasn't available in practice.

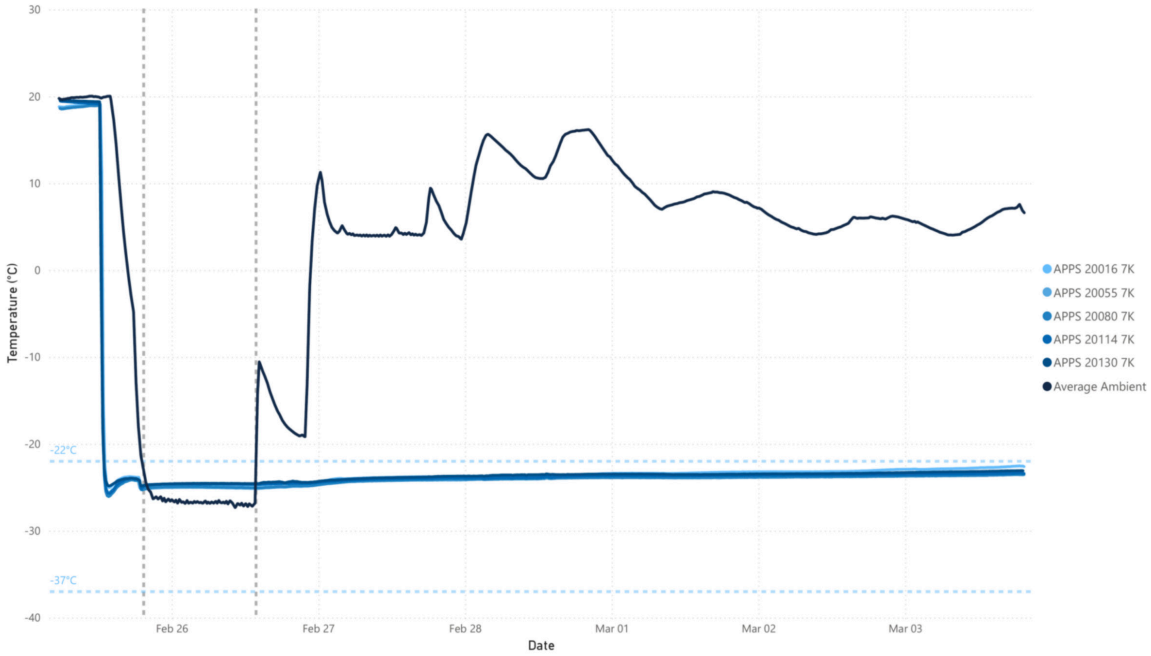

Figure 1 - Temperature monitoring of APS units

Throughout the disruption, CSafe's Control Tower was actively monitoring conditions and shipment status, coordinating with stakeholders to manage risk in real time (see Figure 1). In parallel, CSafe's service teams prepared contingency options. Because CSafe operates the largest service network in the industry, CSafe had the operational reach to adapt quickly if conditions deteriorated further, including positioning resources and preparing unit exchange or recovery actions where feasible.

Critical factors

- No intervention access: units could not be removed from the aircraft to transfer into a controlled environment
- Extended dwell time: delays exceeded expected operational windows
- High value at risk: product exposure was meaningful
- Quality scrutiny: outcome needed to be defensible with data
- Real time monitoring: Control Tower oversight enabled earlier escalation and more informed decisions
- Response readiness: service network reach enabled rapid contingency planning, including potential unit exchange

RAP airfreight is typically 25–35% less per pallet than APS.

Outcome

Despite prolonged delays and a complete loss of intervention access, CSafe APS units sustained validated temperature control, fully protecting product integrity. In total, temperature stability was maintained for greater than 120 hours—even under highly constrained operational conditions.

The economics: put freight cost in context

It's important to look closely at cost. Often passive solutions are selected based purely on the cost of the containers alone. When the analysis is expanded to include freight cost, for example, on comparable lanes, RAP airfreight is typically 25–35% less per pallet than APS. *But packaging choice should not be made just on the freight line item alone.*

A true total cost of ownership should consider:

- Probability and cost of excursions
- Product value at risk
- Investigation costs (quality time, documentation, deviation management)
- Reshipment, replacement manufacturing, or clinical impacts
- Customer experience, service outcomes, and operational burden

A practical way to express this:

Risk adjusted cost = freight + packaging + (probability of loss or excursion × impact cost)

Even low-probability events dominate economics when the impact is huge. One disruption week can erase years of "savings" from choosing a cheaper option that carries higher downside risk. This is also where active often wins: it minimizes reliance on rescue infrastructure and lowers the probability of a catastrophic outcome when the network goes awry.

Conclusion

Disruptions can be sudden, global in impact, and operationally constraining. When airline shutdowns and network instability restrict access to freight, contingency steps such as cold-room transfer may exist in planning documents but prove inaccessible when it matters most.

In the US to Australia shipment highlighted here, CSafe APS units-maintained temperature control beyond their published duration and successfully protected product despite extended delay and constrained intervention options. The performance demonstrated the strength and reliability of a high-quality passive solution under significant stress.

Disruption events reinforce a broader principle: resilience is measured not just by duration, but by independence from external infrastructure. CSafe's active solutions are engineered specifically for these conditions—delivering precise temperature control across uncertain recovery timelines without dependence on immediate cold-room access, and backed by real-time monitoring and a global service network ready to respond when operational access is restored.

Cost considerations must also extend beyond initial packaging and freight line items. When risk exposure, investigation burden, and the true financial impact of a temperature excursion are incorporated into the analysis, active solutions frequently deliver the strongest total cost of ownership; particularly in high-value, high-consequence supply chains.

In stable networks, multiple solutions can perform well. In unstable networks, resilience becomes the differentiator.

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