DELTA CARGO

WE ARE DELTA CARGO

INTRODUCTION

Chas Petty

Head of Pharma Commercial, The Americas – Delta Cargo

Topics

- Who Is Delta Cargo
- Network & Fleet Planning
- Dry Ice Expansion Case Study
- Aircraft Capability Improvement
- Flight Optimization

WHO WE ARE

THE DELTA CARGO DIFFERENCE

RELIABLE

As North America's most on-time airline* four years in a row, you can count on our team to deliver operational excellence.

THOUGHTFUL

With personalized service and dedicated customer support, we are committed to understanding your unique needs.

INNOVATIVE

We leverage cutting-edge technology, advanced solutions and sustainable practices to deliver unmatched efficiency.

WHAT OUR CUSTOMERS SAY ABOUT US:

"Always on time"

"I love the attention they give their clients. Above all, they help and guide us with the best routes and availability."

"Overall great experience with all shipments. Delta is always helpful in keeping us updated."

**According to Cirium's ranking of on-time arrivals across North American carriers. Delta was also awarded Cirium's Platinum Award for Operational Excellence in 2024.*

DELTA CARGO

DELTA CARGO QUICK FACT

200+

CARGO STATIONS WORLDWIDE

28

CO-LOCATED JV PARTNER FACILITIES

11

US DELTA CARGO HUBS

4,500+

DAILY FLIGHTS

2.3B+

CARGO TON-MILES EACH YEAR

285+

DESTINATIONS SERVED

INTERNATIONAL WIDEBODY FLEET

+13%

INCREASE IN INTERNATIONAL WIDEBODY FLEET BY 2028 (VS. 2023)

+27%

INCREASE IN TOTAL LD3 CAPACITY BY 2028 (VS. 2023)

	NUMBER OF AIRCRAFT		
AIRCRAFT	**2023**	**2025**	**2028**
A351			20
A359	28	40	44
A339	27	39	39
A332/3	42	42	42
B767	65	60	38
AVERAGE	28.1	29.0	31.6
TOTAL	4,554	5,251	5,788

LD3 CAPACITY

INVESTING IN OUR OPERATION

Dry Ice Expansion
Strategic project started in 2018 to expand dry ice capabilities of Delta's 767-400 fleet

CARGO FLEET MOD FOR IMPROVED VENTILATION
Expanding processes and investing in improved ventilation settings for fleet

PLANNING & COORDINATION
Implementing new payload optimization teams working with day-of-departure to expand influence and improve flight planning

EXECUTION & PERFORMANCE
Reducing offloads & improving on-time performance by specifically targeting controllable variables

COLD-CHAIN FACILITIES
Enhanced LAX Active Container Mgmt. infrastructure & implemented GDP-compliant RFS/trucking OPS to enhance global network connectivity for Pharma

PROJECTS UNDERWAY – COMING

ENHANCED VISIBILITY & TRACKING
New technology will deliver improved tracking capabilities for DASH & DASH Critical products

CARGO OPTIMIZATION
Maximizing available capacity via process & planning improvements

LET'S STEP BACK TO THE 1980'S

IMAGINE YOURSELF IN THE DELTA BOARDROOM APPROVING FLEET DECISIONS THAT WILL TAKE THE AIRLINE INTO THE NEXT CENTURY

INVESTING IN BOEING'S LATEST 767

$30 MILLION DOLLAR INVESTMENT BY EMPLOYEES

- Started in 1982 by a group of employees who bought the first 767 aircraft for Delta
- Come late 1980s, Delta starts the journey to the next generation 767-300s and 400s
- Resource constraints made Delta self-certify the crew rest in the aircraft AFT
  - As a result, Delta was not certified to accept more than 45 kgs of dry ice as cargo

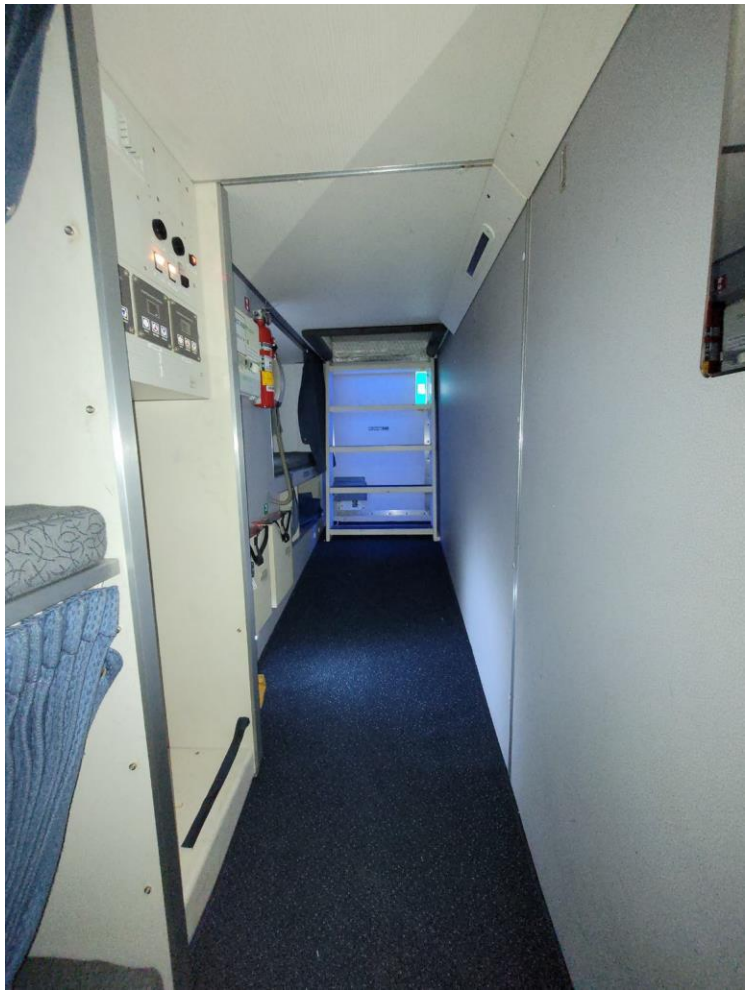
ALLOWABLE CO2 EXPANSION

Project Overview & Safety Risk Assessment (SRA)

The 764 Dry Ice Increase Program was a complex and safety-critical program requiring a detailed Safety Risk Assessment due to the potential impact on crew safety specially while using the Crew Rest Compartment (CCRC) located in the cargo area of the 767-400 Fleet

Risk: Elevated CO_2 levels in the Crew Rest posed a hazard to crew members. To mitigate this, we implemented a first-of-its-kind redundant CO_2 alert system across the DAL fleet.

- Alert System Features:
  - 2 CO2 sensors in the Crew Rest Container
  - 1 airflow sensor
  - Visual (lights) and audible (horns) alarms
  - Horn shut-off switch to avoid passenger disturbance
- Operational changes and Safeguards:
  - Visual pre-flight checks by flight crew
  - Cloud-based monitoring of sensor status and post-flight CO2 levels
  - If sensors are inoperative, either CO_2 cargo is offloaded or crew rest is deemed unavailable

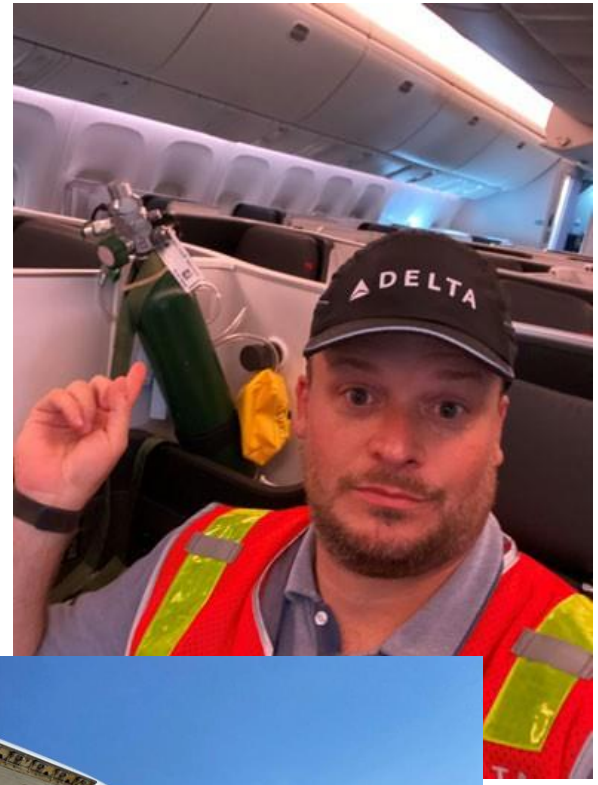


DRY ICE EXPANSION

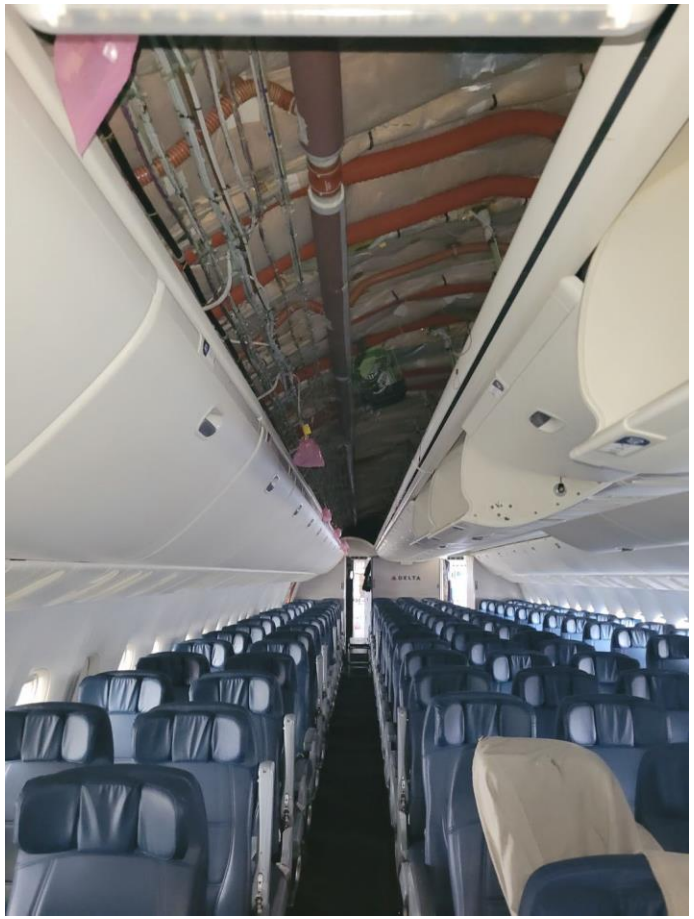
Testing & Validation

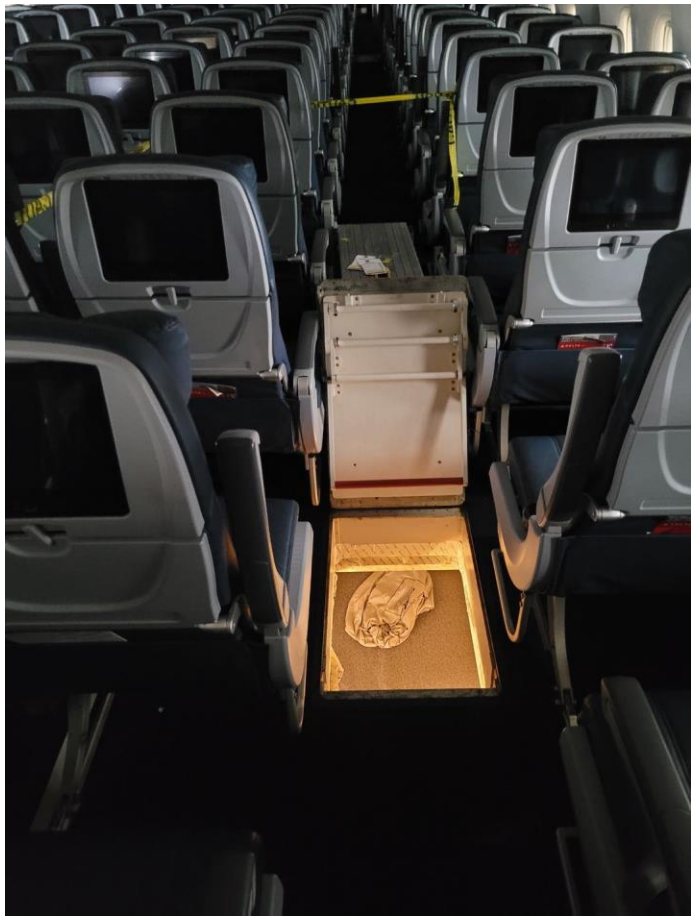
Due to limited data on CO_2 behavior during flight, we conducted two key tests that required extensive planning, coordination, and execution:

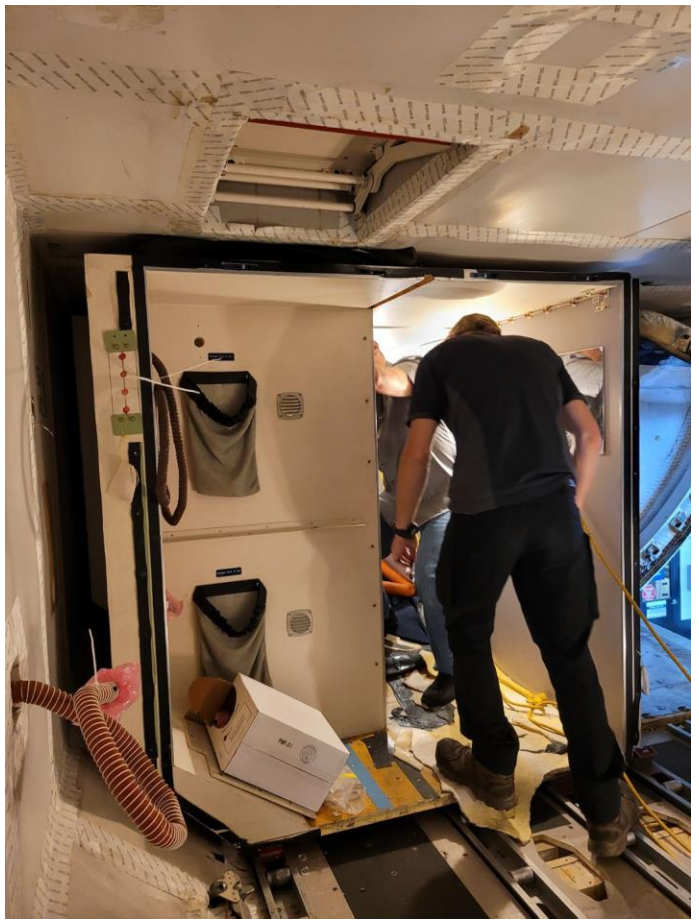
- Ground Test
  - Simulated conditions with 550 kgs. of dry ice
  - Evaluated CO_2 behavior with different air pack configurations
  - Compared sensor reliability across multiple devices
  - This test involved detailed sensor placement, multiple measurement devices, and real-time data collection to ensure accuracy and reliability
- Flight Test
  - Two DAL employees flew ATL–ZRH–ATL to measure CO_2 levels every 30 minutes under normal conditions
  - Validated sensor performance, design, and placement
  - Collaborated with TechOps and In-Flight teams
  - Test required live data collection during international flights, coordination with flight crews, and post-flight analysis to confirm sensor selection and safe CO_2 thresholds



AIRCRAFT MOD







FLEET PLANNING

HOW DELTA CARGO LEADERSHIP INFLUENCES DELTA'S FUTURE FLEET STRATEGY

CARGO HOLD VENTILATION SYSTEMS

PROJECT OVERVIEW

- Ventilation and temperature control within the cargo compartments will ensure DL is able to optimize cargo business within existing routes and cargo space, weight, and positions
- Cargo opportunities associated with enablement of transport of live animals, perishables, and pharma, valued annually at millions $USD in additional annual profit
- Delta Cargo was already operating a mixed fleet with different capabilities or with capabilities that were not being utilized
- New aircraft received drove desire from load optimization teams wanting to remove the systems to maximize the flight payload and reduce CO_2

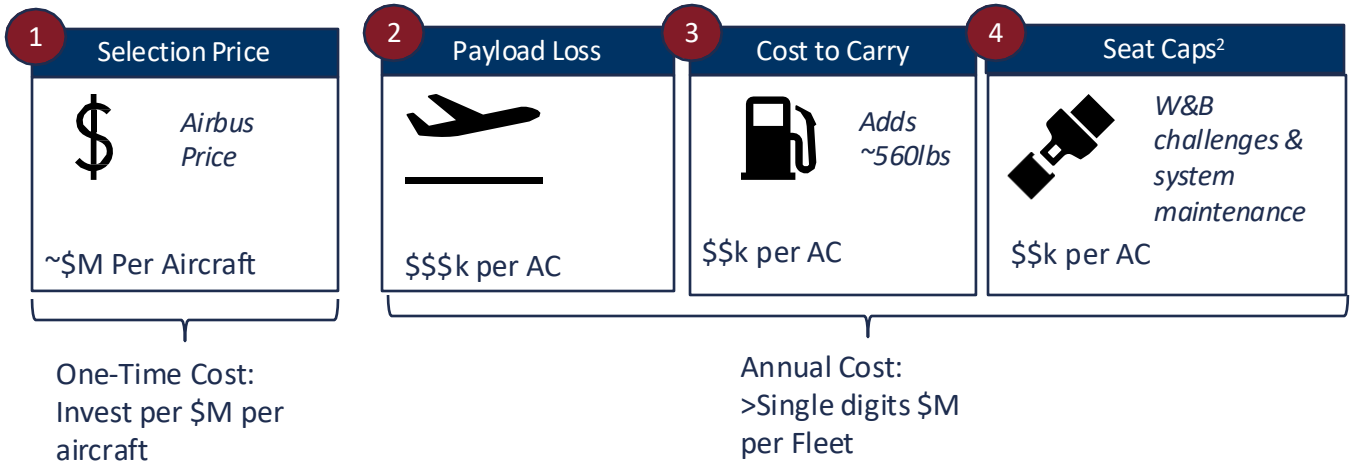
Cockpit Control Panel

COST CONSIDERATIONS

Example numbers considered in cost logic, not actual figures

Heavy upfront cost to implement features; +$M annual costs for full fleet

- The selection price from Airbus is ~$M per AC
- The increased weight of the cargo system onboard a/c reduces the max weight of cargo that can be carried
- The Forward and Aft selection adds > 500lbs of aircraft weight, incurring additional fuel costs and cost of carbon
  - > 500lbs adds fuel consumption and ~$1.2M cost of carbon to the fleet annually

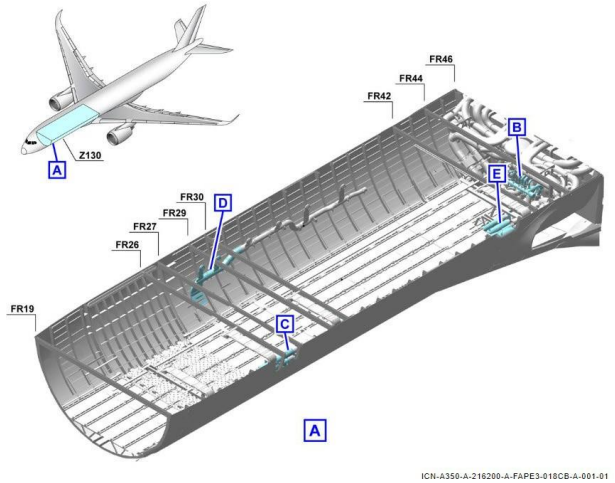


OPERATIONAL CONSIDERATIONS

Policies / Procedures

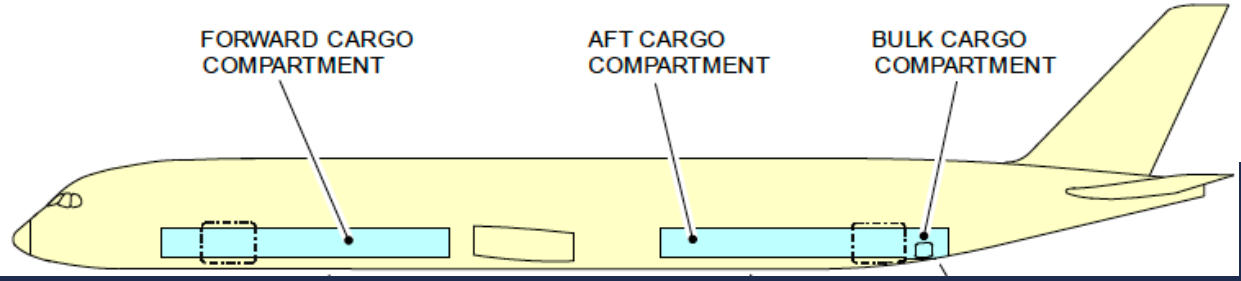
SRA completed to create enhanced policy and procedure for crew and ACS/Cargo

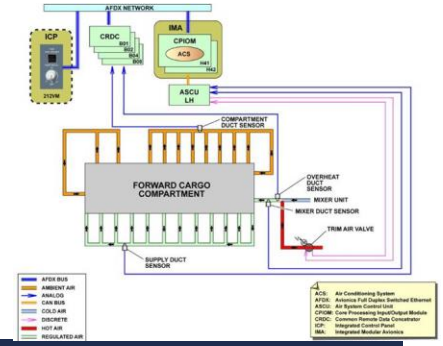
- Airport Service: New functionality would be designed to prevent loading errors (product damage, etc.)
- Cargo: Training was expanded to educate team for enhanced buildup and load segregation of special cargo
- Flight Ops: New training procedures for pilots on involvement with ventilation / temp. control system.



Technology Improvements

- Today, cargo tracking for ventilate systems (on applicable a/c) is done manually; expansion of ventilation to new a/c being integrated into existing automated systems.
- Cargo systems recently completed transition to iCargo; plans to increase functionality already underway





CARGO LOAD PLANNING EFFICIENCY

FLIGHT PLANNING FOR ADDITIONAL CARGO PAYLOAD

CARGO LOAD PLANNING EFFICIENCY

KEY AREAS OF FOCUS

Ways Delta Cargo is maximizing aircraft capabilities to access more cargo capacity:

- Accountability: increasing dedicated resources
- Training: pallet building efficiency
- Container usage optimization, i.e., bags / cargo
- Bin configuration on the aircraft

COMMITTED TO SUSTAINABILITY

ALTERNATIVE FUELS, SUSTAINABLE FUTURE

DELTA IS COMMITTED TO NET-ZERO CARBON EMISSIONS BY 2050

MEETING OUR EXPANDED COMMITMENT

OPERATIONS

Reduce waste and single use plastics by setting and tracking goals across Delta

FLEET

Execute fleet strategy to introduce newer, more sustainable aircraft

Work with suppliers to guide work in propulsion advancements

SUSTAINABLE AVIATION FUEL

Replace 10% of fossil fuel with SAF by 2030 pursuant of fuel market conditions

Work across the industry to rapidly scale the production of SAF globally


THANK YOU