



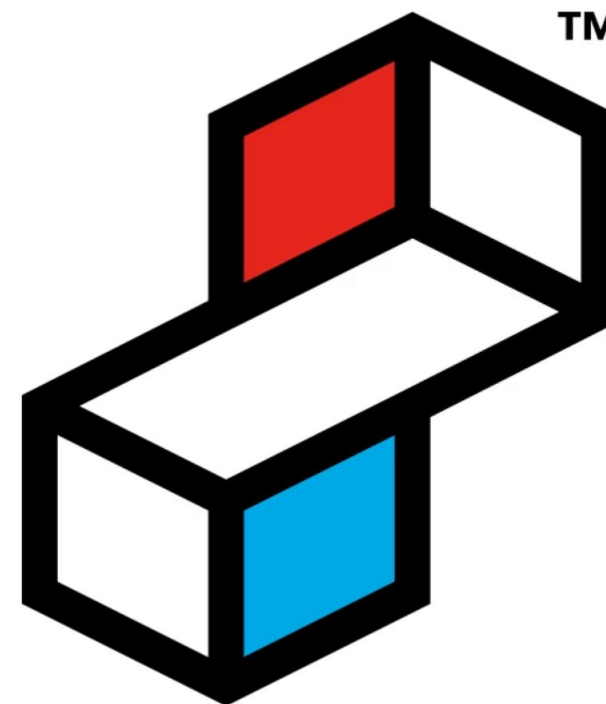
End-to-End Air Charter Shipment Process

From RFQ to wheels-up to Proof of Delivery – a maximum-detail operational guide covering aircraft sourcing, regulatory permits, slot coordination, crew planning, ground handling, and contingency management for air charter operations professionals.

OPERATIONS MANUAL

ALL CARGO TYPES

COMPLIANCE-READY



**CLUSTER
FOR
LOGISTICS**

LUXEMBOURG

ADDING VALUE IS THE KEY.

Chapter 1 · Pre-Booking & Feasibility

Pre-Booking & Feasibility Assessment

The foundation of every successful charter is a rigorous pre-booking phase. This chapter walks through RFQ intake, cargo qualification, aircraft and routing feasibility, pricing, and booking confirmation – ensuring every operational variable is captured before a single permit is filed or contract signed.

01

RFQ Intake & Qualification

Capture all cargo, routing, and compliance parameters at first contact.

03

Charter Pricing & Proposal

Build a fully-costed proposal with schedule, handling plan, and risk assessment.

02

Aircraft & Routing Feasibility

Match cargo requirements to aircraft type, payload, and routing constraints.

04

Booking Confirmation

Execute the contract, confirm aircraft assignment, and initiate operational planning.

1.1 RFQ Intake & Qualification

Every charter begins with a structured intake process. RFQs arrive via phone, email, AOG hotline, control tower, or API. Accurate data capture at this stage eliminates costly corrections downstream.

Cargo & Route Data to Capture

- Cargo type: AOG, DG, pharma, secure, OOG, or humanitarian
- Dimensions, weight, stackability, and loadability
- Commodity classification: IATA DGR, GDP, high-value
- Pickup & delivery airports (ICAO/IATA codes)
- Required departure/arrival windows
- Door size, floor loading, and ground handling requirements
- Temperature, security, and overflight/landing permit needs

Controls & Systems Applied

- Sanctions screening: shipper, consignee, operator, airports
- Airport capability: runway length, PCN, night ops, DG acceptance
- Aircraft availability and weather feasibility checks
- Slot availability at coordinated airports; noise curfew review
- Crew duty time feasibility pre-assessment

Key Documents

RFQ form · MSDS (for DG) · Cargo drawings (OOG) · Temperature profile (pharma)

Systems

Charter management system · TMS · Compliance screening · Aircraft performance tools

1.2 Aircraft & Routing Feasibility

Selecting the correct aircraft type is a technical decision driven by payload, range, door geometry, and ground handling capability. Each cargo profile demands a tailored match between aircraft performance and operational environment.



Turboprop & Narrow-Body

ATR, Saab, B737F, and A321F serve regional and medium-range missions. Ideal for time-critical, lower-weight shipments with limited runway access.



Wide-Body Freighter

B747F and B777F provide intercontinental range with full main-deck and lower-deck capacity. Nose-door variants accommodate OOG cargo with strict CG management.



AN-124 / IL-76 for Outsized

The AN-124 and IL-76 are the benchmark for outsized and ultra-heavy cargo. Ramp-loading capability, reinforced floors, and onboard cranes make them unmatched for ODC missions.



Helicopter & Cabin-Load

Helicopters serve remote last-mile delivery to sites inaccessible by fixed-wing. Passenger aircraft with cabin-load configurations bridge gaps when freighter capacity is unavailable.

Critical Validation Checks: Aircraft performance validation · Loadability (ULD, pallet, bulk) · Floor loading limits · Door size vs. cargo dimensions · Centre of gravity (CG) calculations.

1.3 Charter Pricing & Proposal

A well-structured proposal eliminates ambiguity and builds client confidence. Every cost element must be explicitly calculated and validated before submission. The proposal also includes a handling plan, load plan, and risk assessment to demonstrate operational readiness.

Cost Components to Calculate

Aircraft Lease

Fuel

Crew

Handling

Permits & Slots

Airport Fees

Positioning

De-icing

Security

Proposal Package

- Flight schedule and routing with fuel stop plan
- Full ground handling plan at origin and destination
- Preliminary load plan with CG assumptions
- Risk assessment covering weather, permit lead times, and alternates

Controls

- Cost validation against market benchmarks
- Operator compliance and AOC status verification
- Insurance coverage confirmation (cargo and hull)

1.4 Booking Confirmation

Booking confirmation transforms a proposal into a live operational commitment. Every party – client, broker, and operator – must have clearly defined responsibilities before operational planning commences.

1

Customer Accepts Proposal

Written acceptance received; verbal confirmations are insufficient for charter operations.

2

Charter Contract Issued

Contract details flight schedule, routing, rates, payment terms, and cancellation clauses.

3

Aircraft Assignment Confirmed

Operator locks specific tail number; AOC, insurance, and operator certification are verified.


4

Operational Planning Initiated

Permits, crew, ground handling, and load planning activities are formally triggered.

Key Controls: Contract legal review · Payment terms validation (deposit schedule) · Operator certification check: AOC validity, hull & cargo insurance, safety audit status.

Chapter 2 · Pre-Flight Operational Planning



Pre-Flight Operational Planning

Once the booking is confirmed, the operational machine is set in motion. Permits must be secured, ground handling booked, load plans calculated, and crew assigned — all in parallel, against hard deadlines. Errors or delays at this stage cascade directly into departure risk.



2.1 Permits & Regulatory Approvals

Permits are among the longest lead-time items in charter planning. Applications must be lodged with the correct authorities well in advance, with contingency time built in for rejections or administrative delays. Failure to secure a permit on time can ground the aircraft.

Permit Types Required

- Overflight permits (each overflown state's CAA)
- Landing permits (destination and alternate state)
- Diplomatic permits (state/government cargo)
- DG approvals (state-specific for certain hazmat classes)
- Noise exemptions (curfew-restricted airports)
- Slot allocations (IATA Level 2 & Level 3 airports)

Coordination Parties

- Civil Aviation Authorities (CAA) in each relevant state
- Airport slot coordinators (ACL, EUROCONTROL, national bodies)
- Air Navigation Service Providers (ANSPs) for route clearances

Controls

- Permit lead time compliance – track application deadlines
- DG acceptance confirmed at destination and en-route states
- Airport curfew times cross-checked against flight schedule

2.2 Ground Handling & Airport Coordination

Ground handling is the physical interface between logistics planning and aircraft operations. Securing the right equipment and personnel at both origin and destination airports is non-negotiable – especially for OOG, DG, or temperature-sensitive cargo.



Equipment Booking

High loaders, forklifts, cranes (OOG), GPU, ASU, and de-icing rigs must be reserved with confirmed availability windows aligned to the flight schedule.



Security & Customs

Security escorts (armed if required), customs officers, and supervised ramp access must be pre-arranged. Regulatory requirements vary significantly by airport and commodity.



Ramp & Stand Confirmation

Parking stand allocation, ramp access clearance, loading team availability, and warehouse space must all be confirmed with the airport ground service provider in writing.



Handling Controls

Handling capability check against cargo type · Equipment availability confirmation · Ramp safety and FOD compliance procedures verified with ground handler.

2.3 Load Planning

Load planning is a safety-critical engineering exercise. An approved load plan ensures structural integrity of the aircraft, compliance with DG segregation rules, maintenance of CG within certified limits, and accurate fuel burn calculations. No aircraft may be loaded without a validated and approved load plan.

Load Plan Components

- Load plan drawing with item positions and restraint scheme
- Weight & balance calculation (W&B)
- ULD plan with pallet positions and build-up specs
- DG segregation plan per IATA DGR Section 9
- Temperature control plan (active/passive, monitoring points)

Validation Checks

- Floor loading limits not exceeded at any point
- All items clear of door apertures and structural frames
- CG remains within forward and aft limits throughout flight
- Fuel burn impact assessed across all fuel stop scenarios

Approval Chain

Loadmaster sign-off → Operator approval → DG compliance officer sign-off

2.4 Crew Planning

Crew assignment for charter operations involves more than scheduling availability. Duty time limits, visa validity, rest requirements, and specialised DG certifications must all be validated against the specific flight profile before crew are formally assigned.

Captain

Type-rated on assigned aircraft. Route familiarisation check. Valid medical and licence.

First Officer

Type-rated co-pilot. Duty time validated against planned block hours and positioning.

Loadmaster

Certified loadmaster for cargo aircraft type. DG awareness certification current.

Additional Crew

Augmented crew for ultra-long-haul flights. Crew rest facility availability confirmed on aircraft.

- ☐ **Crew Controls:** FDP/FTL compliance per applicable regulation (EU-OPS, FAA 117, or operator's OM-A) · Visa validity for all transit and destination states · DG initial/recurrent training currency · Rest period at destination pre-planned including hotel and transport.



Chapter 3 · Cargo Preparation & First-Mile

Cargo Preparation & First-Mile

Cargo that arrives at the airport improperly packaged, labelled, or documented will be refused – causing delays, costs, and potential regulatory violations. Rigorous preparation at the shipper's facility and a controlled first-mile transport are the first lines of defence.

3.1 Cargo Preparation at Shipper

Proper packaging is both a safety and compliance obligation. Standards vary by cargo type, and the shipper bears primary responsibility for ensuring cargo is airworthy before collection. The charter operator and freight forwarder must verify compliance before accepting custody.

Packaging Standards Applied

- **IATA general cargo:** Adequate for air transport stresses (vibration, pressure, temp)
- **DG (IATA DGR):** UN-specification packaging, inner/outer requirements, quantity limits
- **Pharma (GDP):** Validated thermal packaging, qualified shipper status
- **High-value:** Tamper-evident seals, reinforced crating, discrete labelling

Labels & Indicators Applied

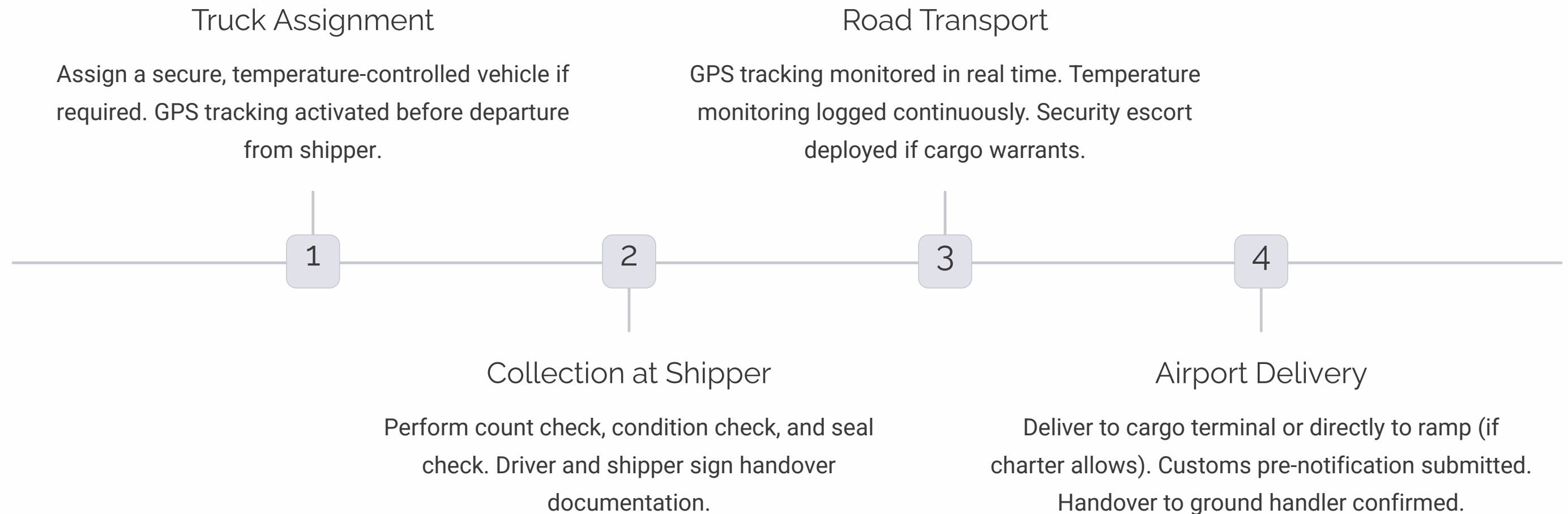
- Handling labels: Fragile, This Way Up, Keep Dry
- DG labels and markings per IATA DGR Table 5.2
- Temperature indicator strips / data loggers activated
- Shock and tilt indicators applied for sensitive equipment

Controls

- Packaging integrity inspection at point of origin
- DG packaging compliance check against IATA DGR specifications
- Temperature packaging validation (cool/freeze qualification records)

3.2 First-Mile Transport to Airport

The first-mile leg is frequently overlooked but represents a significant point of risk. Cargo can be damaged, tampered with, or subject to temperature excursions during road transport. Strict chain-of-custody controls must be maintained from shipper's door to cargo terminal.





Chapter 4 · Airport Export Handling



Airport Export Handling

Export handling is where cargo formally enters the aviation supply chain. Acceptance, security screening, and build-up are gate-keeping functions – each with strict regulatory obligations. Any non-compliance at this stage can result in cargo being offloaded or the flight being delayed pending resolution.

4.1 Cargo Acceptance

Cargo acceptance is a formal, documented process. The ground handler and airline/operator jointly verify that the consignment meets all requirements for safe carriage. An acceptance receipt is only issued once all checks are satisfactorily completed.

Documentation Check

Air Waybill (AWB), Commercial Invoice, Packing List, Shippers Declaration for DG (SHDG), and any required permits or certificates reviewed for completeness and accuracy.

DG Compliance Check

DG shipment details cross-checked against IATA DGR: classification, packaging, marking, labelling, documentation, and segregation requirements all verified.

Physical Acceptance

Weight and dimensions measured and compared to AWB declarations. Packaging condition assessed. Temperature requirements confirmed with cold chain records.

Controls & Receipt

DG acceptance confirmation · Weight discrepancy tolerance ($\pm 0.5\%$ or per operator SOP) · Security status assigned (SPX = screened, SCO = secure consignment). Acceptance receipt issued.

4.2 Security Screening

All air cargo must be screened before loading unless exempt under regulated agent or known consignor status. The method of screening is selected based on cargo type, sensitivity, and regulatory requirements of the departure state. Full traceability of screening activities is mandatory.



X-Ray Screening

Primary method for standard cargo. Certified equipment and trained operators required. Image retention per national security programme.



ETD (Explosive Trace Detection)

Applied where X-ray is inconclusive or for high-risk consignments. Swabs taken from cargo surfaces and packaging for trace analysis.



Canine Unit

Explosives or narcotic detection dogs deployed for high-security or government-sensitive shipments. Results are documented and traceable.



Physical Check

Manual examination for cargo that cannot be screened by other means. Conducted by certified security personnel with full documentation.

- Controls:** Screening traceability – each piece must have a recorded screening outcome. Exemption rules (e.g., Known Consignor, Regulated Agent) applied strictly per national aviation security programme.

4.3 Build-Up & Staging

Build-up is the process of assembling individual pieces into unit load devices (ULDs) or aircraft pallets ready for loading. For charter operations with OOG or charter-specific cargo, build-up often means securing items directly onto aircraft pallets with custom restraint systems.

Build-Up Operations

- Build pallets per approved load plan and ULD build instructions
- Apply cargo nets, tie-down straps, and locking rings per restraint spec
- Apply pallet tags, ULD control tags, and DG NOTOC placards
- For OOG: custom cradles, spreader beams, and shock mounts used
- Move completed ULDs/pallets to designated ramp staging area

Controls During Build-Up

- Load securing verified against aircraft structural limits and operator SOP
- Temperature monitoring: cold chain cargo staged in controlled area until loading
- DG segregation enforced on pallets – incompatible hazmat classes physically separated
- Damaged packaging identified and resolved before staging

Chapter 5 · Aircraft Loading & Departure

Aircraft Loading & Departure

Ramp operations represent the convergence of all upstream planning. The aircraft must be loaded precisely as planned, the crew briefed and ready, and all pre-flight actions completed within tight time windows. Every step from parking stand to wheels-up is subject to strict safety and regulatory controls.



5.1 Ramp Operations

Ramp operations are safety-critical and time-pressured. The loadmaster is the controlling authority on the ramp during loading. All ground equipment must be operated within defined safety envelopes, and no cargo is loaded without explicit reference to the approved load plan.

1 Aircraft Positioning & Ground Power

Aircraft marshalled to the designated parking stand. GPU and ASU connected to provide ground power and air-start capability. Wheel chocks and safety cones placed.

2 Cargo Loading

Cargo loaded using the appropriate equipment: high loader for main deck, forklift for ramp-equipped aircraft, or crane for OOG items. Loading sequence follows the approved load plan – forward-to-aft or as specified for CG management.

3 Loadmaster Supervision

Loadmaster supervises all loading activity, verifies each item against the load plan, confirms restraint attachment, and signs off each position before moving to the next.

4 Ramp Controls

Ramp safety zone enforced (no FOD, no unauthorised personnel). Load plan compliance checked against actual cargo positions. Final CG validation performed and signed before door closure.

5.2 Pre-Flight

The pre-flight sequence is a structured, checklist-driven process that transforms a loaded aircraft into a flight-ready aircraft. Every action has a defined owner and a documented outcome. The final load sheet is the last critical document before pushback is authorised.

Pre-Flight Sequence

- Crew briefing: route, weather, alternates, special cargo procedures
- Meteorological briefing: SIGMET, METAR, TAF, turbulence forecast
- NOTAM review: departure, en-route, destination, and alternates
- Fuelling to planned uplift with captain's final confirmation
- Final load sheet prepared and signed by captain and loadmaster
- Doors secured, safety checks completed, pushback clearance obtained

Critical Controls

- **Load sheet approval:** Signed by captain — no departure without it
- **Fuel quantity validation:** Uplifted vs. planned cross-checked; captain's discretionary reserves confirmed
- **DG NOTOC:** Notification to Captain (NOTOC) issued, listing all DG items by position, class, and quantity
- **Alternate airports:** Confirmed as operationally acceptable with ATIS/METAR

5.3 Flight Execution

Once airborne, the responsibility for the operation transfers to the flight crew, supported continuously by operations control. Real-time monitoring and a pre-planned contingency framework ensure the crew can respond to any en-route situation with speed and authority.



Departure & Climb

Takeoff performance verified pre-departure. Departure clearance obtained from ATC. Initial climb and cruise level confirmed with ANSP. Operations control receives off-blocks and airborne times.



En-Route Monitoring

Operations team monitors weather developments, fuel burn progress, DG status reports, and temperature log transmissions in real time. Position reports submitted per ATC/ops requirements.



Contingency Planning

Alternate airports pre-briefed and confirmed available. Diversion decision matrix agreed between captain and ops control. Emergency procedures for DG incidents pre-positioned at destination and alternates.



Crew Reporting

Crew provides routine position reports and raises any abnormalities – cargo shift, temperature anomaly, DG indicator activation – via ACARS or voice. Operations control logs all communications.

Chapter 6 · Arrival & Import Handling



Arrival & Import Handling

Arrival handling is the mirror image of export – equally demanding and equally consequential. From the moment the aircraft touches down to the point cargo is released to the consignee's agent, the chain of custody must remain unbroken and every control point documented.



6.1 Landing & Taxi / 6.2 Unloading

Arrival ramp operations follow the same safety rigour as departure. Ground power is connected immediately, and unloading begins only after the aircraft is properly positioned and the loadmaster confirms it is safe to open doors.

Landing & Taxi Sequence

- Aircraft lands and taxis to the pre-confirmed parking stand
- GPU and ASU connected; engines shutdown per operator SOP
- Ramp safety zone established before any ground crew approach
- DG handling procedures activated if NOTOC lists Class 1 or other sensitive items

Unloading Controls

- Cargo unloaded in reverse loading sequence to maintain CG stability
- Each piece moved to import warehouse with load plan cross-check
- Damage check: all items inspected on removal from aircraft – discrepancies noted immediately
- Temperature check: cold chain items temperature-logged within 30 minutes of unloading
- DG check: all DG items confirmed against NOTOC, packaging integrity verified

6.3 Customs Clearance

Customs clearance is a mandatory regulatory checkpoint that must be completed before cargo can be released for final delivery. Thorough documentation preparation and proactive engagement with customs authorities minimise hold times and avoid costly detentions.

1

Import Declaration Submission

Submit import declaration via customs electronic system (e.g., CDS in UK, AES in US, CES in other jurisdictions). Include all mandatory data elements and commodity codes.

2

Supporting Documents

Commercial Invoice · Packing List · Master and House AWB · Country of Origin Certificate · Phytosanitary/health certificates · Import licences and permits as applicable.

3

Customs Examination

Customs may direct physical examination, X-ray scanning, or sampling (for food/pharma). Cooperate fully; any discrepancy between declared and actual must be formally rectified.

4

Release Controls

HS code validation against commodity – misclassification is a common enforcement target. Permit compliance confirmed. Customs duty and VAT paid or deferred bond confirmed before release.



Chapter 7 · Last-Mile Delivery



Last-Mile Delivery

The last-mile leg completes the physical journey of the shipment and concludes the chain of custody. Delivery must be executed with the same rigour as every upstream step – particularly for temperature-sensitive, high-value, or security-sensitive cargo where the risk of excursion or loss remains until POD is obtained.

7.1 Delivery Planning

Effective delivery planning begins before customs release is obtained. Route, vehicle, personnel, and documentation must all be prepared in advance so that the moment cargo clears customs, delivery can commence without delay – particularly critical for time-sensitive AOG or pharma shipments.

Planning Steps

- Assign appropriate vehicle: temperature-controlled if required, secure/caged for high-value cargo
- Plan delivery route – assess road restrictions for OOG or heavy cargo
- Identify secure route if armed escort or covert delivery is required
- Prepare and pre-stage delivery documents: Release Note, Delivery Note, POD form
- Notify consignee of estimated time of arrival (ETA) and access requirements

Delivery Controls

- Security compliance: vehicle seal intact, escort briefed, access credentials verified
- Temperature continuity: refrigeration unit pre-cooled/pre-heated before loading; logger active
- GPS tracking active from cargo terminal to consignee's door
- Operations control notified of planned departure from airport and ETA

7.2 Delivery to Consignee & POD



Delivery to the consignee is the final physical transfer of custody. The Proof of Delivery (POD) is the legal and operational record that the shipment was received in the agreed condition. It is the trigger for final billing and the closure of the operational file.

1

Transport to Consignee

Vehicle departs with cargo secured and temperature/tracking systems active. Driver follows pre-planned route with operations monitoring in real time.

2

Unloading at Destination

Cargo unloaded using consignee's equipment or provided resources. Condition inspected jointly by driver and consignee representative before transfer of custody.

3

Condition Checks

Damage check documented with photographs if any discrepancy found. Temperature log downloaded and reviewed against agreed thresholds on the spot if required.

4

POD Obtained

Consignee signs POD with name, date, time, and condition remarks. Original retained; copy provided to consignee. Digital POD transmitted to operations within 30 minutes.



Chapter 8 · Post-Flight Activities



Post-Flight Activities

The operational cycle is not complete at POD. Billing, KPI reporting, claims management, and data archiving are the administrative and analytical functions that close the loop – ensuring the organisation is paid correctly, performs continuously, and remains audit-ready at all times.

8.1 Billing

Accurate and timely billing requires that all cost components incurred during the operation are captured, validated against pre-agreed rates, and invoiced in accordance with contract terms. Unbilled items erode margin; disputed invoices delay cash flow.

6

Billing Categories

Every charter operation invoice must cover all six core cost categories without exception.

<p>Charter Cost</p> <p>Aircraft lease, crew, and operator margin per contract rate.</p>	<p>Handling</p> <p>Origin and destination ground handling, special equipment surcharges.</p>
<p>Fuel</p> <p>Actual uplift reconciled against plan; fuel surcharge applied if applicable.</p>	<p>Permits & Slots</p> <p>All overflight, landing, diplomatic, and slot fees passed through at cost.</p>
<p>Crew Expenses</p> <p>Layover accommodation, per diems, visa fees, and crew transport.</p>	<p>Airport Fees</p> <p>Landing fees, parking, noise surcharges, de-icing, and security levies.</p>

8.2 KPI Reporting

KPI reporting closes the performance loop. Every charter operation generates data that must be reviewed against agreed targets. Systematic measurement identifies operational trends, drives continuous improvement, and provides evidence of service quality for client reviews and regulatory audits.



On-Time Departure (OTD)

Measured as actual off-blocks vs. scheduled off-blocks. Delays are categorised by root cause (permit, ground handling, crew, ATC, cargo) to enable targeted corrective action.



On-Time Arrival (OTA)

Measured at chock-on vs. scheduled arrival. Recovery performance (arrival vs. original schedule) also tracked for disrupted flights.



Loadability Issues

Any cargo refused, offloaded, or repositioned due to load planning failures is recorded. Trend analysis drives improvements in feasibility assessment accuracy.



DG Compliance Rate

Percentage of DG shipments processed without non-conformance. Any DG finding – packaging, documentation, or declaration – is reported and root-caused.



Temperature Excursions

Number and severity of temperature excursions vs. total cold chain shipments. Each excursion requires a formal deviation report and impact assessment for pharma GDP compliance.

8.3 Claims Handling

Claims are an unavoidable aspect of cargo operations. A structured claims process protects the organisation legally, ensures clients are treated fairly and efficiently, and generates data that drives operational improvements to prevent recurrence.

Damage Claims

Photographic evidence collected at point of discovery. Preliminary damage report issued within 24 hours. Cargo survey commissioned if value warrants. Liability assessed against AWB conditions, handling agreements, and insurance coverage.

Delay Claims

Delay records extracted from OCC logs, ATC records, and handling reports. Contractual delay provisions reviewed. Force majeure applicability assessed. Client communication maintained throughout resolution process.

DG Incident Claims

DG occurrences reported to competent authority per ICAO Annex 18 and IATA DGR requirements. Incident investigation conducted. Regulatory notifications filed within mandatory timeframes. Operator and shipper liability apportioned per investigation findings.

Temperature Deviation Claims

Temperature logs retrieved and analysed. Deviation mapped against critical limits in the pharma/cold chain specification. Impact assessment by qualified person (QP) determines product disposition. Costs allocated to responsible party in the cold chain.

8.4 Data Archiving

Comprehensive data archiving is both a regulatory obligation and a business asset. Archived records support claims defence, regulatory audits, quality management reviews, and continuous improvement initiatives. Retention periods vary by document type and jurisdiction – all must be tracked and enforced.

Document Categories Archived

- **Flight logs:** OFP, journey log, fuel records, tech log entries
- **Load sheets:** Signed final load sheet, W&B calculations, loadmaster sign-off
- **DG documents:** SHDG, NOTOC, acceptance checklist, screening records
- **Customs documents:** Import/export declarations, duty records, permits, certificates of origin
- **Handling records:** Acceptance receipts, damage reports, temperature logs, POD

Archiving Controls

- Retention periods enforced: minimum 2 years for DG records (IATA), 5+ years for customs (varies by state), 7+ years for insurance-related documents
- Documents stored in secure, auditable digital repository with version control
- Access controls applied – retrieval tracked for audit trail integrity
- Backup and disaster recovery procedures applied to all archived data

📄 All archived data must be retrievable within 48 hours for regulatory audit purposes.

End-to-End Process Summary

The air charter shipment process spans eight distinct phases – from the first RFQ contact to final data archiving. Every phase is interconnected: a gap in feasibility assessment creates permit failures; a load planning error creates flight safety risk; a documentation gap creates customs delays. Operational excellence requires mastery of every link in the chain.

