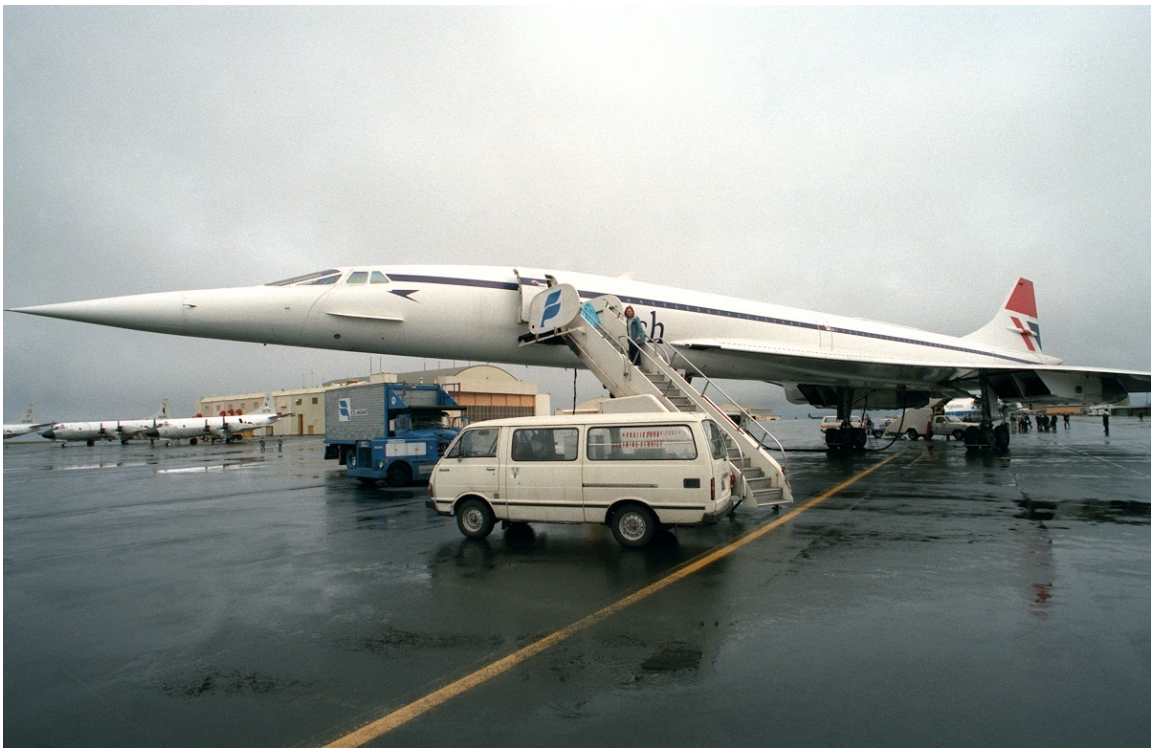
Special Procedures

Procedures for special or unusual situations.

- Concorde
- Emergencies and Abnormal Situations
- Flow Management Procedures

Concorde



Concorde at Keflavik (BIKF) in 1977.

Concorde, the world's only successful supersonic airliner, was retired two decades ago in real life. However, in the skies of VATSIM, she lives on in the hands of an increasing number of nostalgic pilots, thanks to addons like the FlightSimLabs Concorde. Iceland, in particular Keflavik (BIKF), was an occasional charter destination for Concorde in real life, and hence, one may occasionally find virtual pilots flying virtual Concordes into BIKF on VATSIM.

For the most part, controlling Concorde is not unlike controlling any other civilian IFR aircraft. However, because of Concorde's unique design and high-altitude, high-speed regime of flight, there are some unique considerations to be taken into account.

> Portions of this guide have been adapted from the VATSIM UK Concorde Information Sheet. Many thanks go to the authors of that sheet for their work.

Flight Planning and Clearance Delivery

Below is an example of a Concorde flight plan routing from BIKF to EGLL:

RIMUM/M200F430 DCT C/61N020W/M200F450F600 DCT 5230N01500W LULOX/N0566F350 DCT TACQI DCT BAPHU DCT OCTIZ DCT SIRIC

Some waypoints are prefixed with “C/," and have two sets of flight levels listed for said waypoint. This indicates that Concorde will perform “cruise climb” at those waypoints within the block of levels listed, gently climbing as it gets lighter.

> I.e., "C/6120N/M200F450F600" means that starting from 6120N, the aircraft will cruise climb at Mach 2, within the block FL450-600.

For supersonic Concorde flights, **it is not required to ask for Concorde's Mach number or requested flight level,** since Concorde's supersonic cruise speed is always **Mach 2.00,** and its supersonic cruising level is a **block level, FL450 to FL600**.

To enter this information into Euroscope, controllers may do the following:

- Enter `M200` into the Scratchpad to set the MACH item at 2.00.
  - It is not possible to manually enter a Mach higher than 1.00 in the Departure List using Euroscope/TopSky's menu, but this Scratchpad entry will bypass the menu.
- Then, enter `BLOCK F450-600` (or other appropriate text) into the Scratchpad. This will not update the RFL or CFL (the RFL should be set to F600 manually), but this will serve as a reminder of Concorde's true cleared block level.

In terms of navigation equipment, Concorde was **not** equipped with a modern FMS, but rather with an INS. While an INS does provide limited RNAV capability, it does not provide the RNAV1 capability required to fly modern RNAV SIDs. Hence, at airports like BIKF without non-RNAV SIDs, DEL and APP should coordinate to clear Concorde via an Omnidirectional or radar vectored departure.

An example of a typical Concorde clearance is as follows:

> “□□ BAW Concorde 9035, cleared to London Heathrow via the OMNI 4A departure, initial climb 5000ft, squawk 4307.

Aircraft Characteristics

Ground

In terms of ground handling, Concorde may be handled more or less the same as any other commercial airliner.

However, it is worth noting that Concorde does have a much higher fuel burn than most other airliners. While Concorde pilots on VATSIM should not be afforded special priority over other pilots, it is important for GND controllers to ensure they experience the minimum possible delay on the ground.

Subsonic

Generally, Concorde can abide by most standard instructions while subsonic, albeit at much higher speeds and climb/descent rates.

Climb

Generally, a departing Concorde will accelerate to 250 KTS immediately after departure, and will quickly reach the OMNI departures' initial climb of 5000ft, meaning APP should be ready to issue further climb quickly.

Traffic permitting, controllers should consider allowing Concorde to climb at high speed (by saying "no speed restrictions" to cancel the usual 250 KTS below FL100 restriction), which will help its fuel efficiency. If allowed to climb with no speed restrictions, Concorde will generally fly 300-400 KTS below FL100, at which speed it may achieve a 3000+fpm climb rate (potentially up to 6000+ at light weights.)

Above FL100, Concorde generally climbs at 400 KTS/Mach 0.95, with climb rates of 3000-4000fpm or more if lighter. If any subsonic cruise leg is required by Concorde, it will do so at Mach 0.95.

Descent

At subsonic speeds, Concorde descends quite rapidly, at 350 KTS/3000+fpm. Controllers should account for this when vectoring Concorde for arrival.

In heavy traffic situations, Concorde can hold like any other aircraft. However, it is recommended to have Concorde soak up any expected delay in the enroute phase. If absolutely necessary, Concorde may slow to 280 KTS during subsonic descent to achieve this.

Due to Concorde's high-speed nature, it requires longer (in terms of distance) and faster (in terms of speed) hold legs than usual.

- Above FL150, Concorde holds at 285 KTS and 1.5 minute legs.
- Below FL150, Concorde holds at 250 KTS and 1 minute legs, and will adjust bank angle to stay within the protected area of the hold.

Supersonic

> In the Reykjavik CTA, supersonic flight is **prohibited:**
> • Over land, and within 12 NM of the coast.
> • Over water, and below FL150 (even if >12NM from the coast.)
>
> Normally, controllers should not approve supersonic climb/acceleration without these conditions being satisfied. However, sometimes, pilots may wish to simulate routes in which special permission for overland supersonic flight may have been granted in real life. Controllers may use their best judgment to decide how to handle such flights.

Concorde will have extreme difficulty accepting any stop climb/descent instruction during its supersonic acceleration, cruise, or descent. Such instructions will negatively impact its fuel consumption and cooling, and at worst may force the aircraft to divert. Additionally, **it is not advised to vector Concorde while supersonic,** as the extremely high speed of flight generally results in very wide turn radii.

Hence, when approving Concorde's supersonic acceleration or descent, controllers should ensure that Concorde's flight path is entirely clear of conflicts. If there is any conflicting subsonic traffic, controllers should issue traffic avoidance instructions (vectoring, speed control, climbs/descents, etc.) to the *subsonic* aircraft. For departures, controllers may also delay approving the supersonic acceleration until clear of conflict.

Approval for supersonic climb/acceleration may be issued like in the example below:

> BAW Concorde 9035, supersonic climb and acceleration is approved, block FL450 to FL600.

Emergencies and Abnormal Situations

Occasionally, pilots may wish to simulate emergencies or abnormal situations on VATSIM. On VATSIM, it is the choice of the controller as to whether or not they will handle an emergency, but it is nonetheless useful for controllers to know how to handle them.

- An **emergency situation** is one in which the safety of the aircraft or of persons on board or on the ground is endangered for any reason.
- An **abnormal situation** is one in which it is no longer possible to continue the flight using normal procedures but the safety of the aircraft or persons on board or on the ground is not in danger.

When faced with an emergency or abnormal situation, pilots may declare a **Mayday** or **Pan Pan.**

- **Mayday** calls are for emergencies that require **immediate attention & handling** – e.g., fire onboard, loss of engines or flight controls, pressurization failure, etc.
  - When a mayday is declared, the mayday aircraft shall have *absolute priority* over all other aircraft in the vicinity. ATC shall take any & all measures necessary to assist the aircraft in coming to a safe landing, including but not limited to stopping departures, holding arrivals to clear the approach path, etc.
- **Pan Pan** calls are for situations that are urgent but *not* emergencies, e.g., loss of a non-critical aircraft system, ill passenger onboard requiring medical assistance on the ground, etc.
  - A pan pan aircraft shall have priority handling, but not to the extent of a mayday. E.g., while a pan pan aircraft requesting a diversion should be issued a clearance/the required instructions to do so without delay, it is not necessarily required to stop all departures or hold arrivals until the pan pan aircraft is on the ground.

During an emergency, the flight crew's most important needs are:

- **Time**
- **Airspace**
- **Silence**

Real-life controllers use the memory aid "ASSIST" to respond to emergency situations. On VATSIM, controllers may use a modified version: **ASSISTED.**

Acknowledge	Acknowledge the emergency and ensure you understand it.
Separate	Establish & maintain separation with other traffic and terrain.
Silence	Impose silence on the frequency if necessary; do not delay or disturb urgent action of the pilots with unnecessary transmissions.
Inform	Inform neighboring sectors, units, airports, etc. as appropriate.
Support	Provide maximum support to the flight crew.
Time	Allow the flight crew enough time to manage the emergency.
	...
Else, **D**isconnect	If the emergency is interfering with your ability to provide a quality service to other pilots, one may instruct the pilot to cancel their emergency or disconnect.

> Remember that on VATSIM, the goal is to simulate *normal* operations as realistically as possible. On VATSIM, no emergency is “real,” and unlike our real-life counterparts, we VATSIM controllers have no unit supervisors, relief controllers, etc. to help handle the significant workload associated with emergencies. Therefore, **you are well within your rights to refuse an emergency on the network if you do not have the capacity to handle it – a right *explicitly granted* to you by the VATSIM Code of Conduct.**
>
> Additionally, controllers should note that certain types of emergencies — hijackings and unlawful acts in general — are **prohibited** on the VATSIM network. Pilots declaring such emergencies *must* be told to cancel emergency or disconnect. *(Setting squawk 7500 — the "hijacking" emergency squawk — will automatically disconnect such pilots anyway.)*

> In general, if a pilot refuses an instruction to cancel emergency or disconnect, `.wallop` the pilot and let a VATSIM Supervisor handle the matter.
>
> "*...If, for any reason, air traffic control requests the pilot to terminate the emergency, then the pilot must do so IMMEDIATELY or disconnect from the network. Pilots are not permitted to simulate any unlawful act including, but not limited to, declaring a hijack by any method...*" - Code of Conduct B6

Pilots declare a mayday and pan pan by repeating the phrase three times, e.g., "Mayday, mayday, mayday" or "Pan pan, pan pan, pan pan." The pilot will state the nature of the situation, as well as relevant information such as their intentions. *(The "intentions" are not always a "request" in the usual sense – in a Mayday/emergency situation, pilots can take whatever actions they need — without asking first — to preserve the safety of their aircraft and the lives onboard. It is ATC's job to accommodate.)* E.g.,

> “✈ Mayday, mayday, mayday, ICE123 has an engine failure, descending to FL100, require vectors for immediate diversion to Keflavik.

> “✈ Pan pan, pan pan, pan pan, DLH456 has an ill passenger onboard, request diversion to Keflavik and medical assistance at the gate upon arrival.

To acknowledge an emergency, ATC may say "roger Mayday" or "roger Pan Pan" and provide instructions or information as appropriate to assist the pilots – e.g., radar vectors, descents, vectoring other aircraft out of the way, etc. ATC should also collect the following information when able, if the pilots did not already report it:

- **People on board**
- **Fuel remaining in minutes**
- If there is any **hazardous or special cargo onboard.**

E.g.,

> “ ICE123, roger Mayday, cleared to Keflavik, fly heading 240. Do you require any assistance?

> ✈ Request straight-in approach for the closest runway, ICE123.
>
> ICE123, roger, fly heading 190, straight in approach for runway 19.
>
> ✈ Heading 190, straight-in approach runway 19.
>
> ICE123, when able report your people on board, fuel remaining in minutes, and if you have any hazardous or special cargo onboard.
>
> ✈ 124 people onboard, 200 minutes of fuel remaining, no hazardous or special cargo onboard, ICE123.
>
> ICE123, roger, 124 people onboard, 200 minutes fuel remaining, no hazardous or special cargo onboard.

Otherwise, **the handling of every emergency will be different.** Different types of emergencies will require different responses — e.g., a pressurization failure may require an immediate descent, a fire onboard may require landing ASAP, while an engine failure may require landing ASAP (but pilots may request some delays to complete appropriate checklists.) The most important thing is to respond in a way that is appropriate for the situation and reasonable for VATSIM, use the **ASSISTED** memory aid to support the pilot, and always *remain flexible.*

Flow Management Procedures

Normally, on VATSIM, the Reykjavik CTA operates under the principle of “free flow,” meaning there are no restrictions on aircrafts’ movements, departures, or arrivals. However, during periods of heavy traffic, flow control measures may be imposed to reduce the strain on local and neighboring ATC.

Flow control measures may be issued either by a local **supervisory controller,** if one is present (e.g., rostered for an event), or through a larger traffic management initiative like **ECFMP (European Collaboration and Flow Management Project)**, where neighboring vACCs may impose restrictions on flights entering/exiting their airspace via the Reykjavik CTA.

Types of Flow Control

CDM (Collaborative Decision Making)

During periods of high traffic, such as major events, controllers may initiate what is known as **Collaborative Decision Making (CDM).** This is implemented into the BIRD sector file using the CDM for Euroscope plugin.

> A detailed guide to CDM for Euroscope, written by the Danish staff, is available HERE.

To summarize the basic principles of CDM:

- Aircraft are assigned a **calculated take-off time (CTOT).**
  - Aircraft must take off within -5/+10 mins of their CTOT.
- Based on their CTOT, and the distance from their parking location to the runway, they must also adhere to a **target start-up time (TSAT).**
  - Aircraft must start up within +/- 5 mins of their TSAT.

This system allows controllers to make sure that the flow of departures is spread out and does not exceed the airport's capacity at any given point in time, while also reducing congestion on the ground by ensuring aircraft do not start moving until there is capacity for their departure.

The overall flow of CDM is:

1. **Aircraft calls for clearance.**
2. **DEL issues clearance and asks for the aircraft's target off-block time (TOBT),** i.e., the time they expect to be ready for push & start. DEL inputs the TOBT into Euroscope, and the CDM plugin will use the TOBT to automatically calculate the aircraft's CTOT and TSAT.
    1. **During events with bookings, DEL shall NOT let the plugin calculate a CTOT based on the TOBT. Rather, the CTOT shall be the booking slot time, which DEL must *manually input* into the plugin** (generally by referencing the aircaft's slot time as displayed by the VATCAN Bookings plugin.) The plugin will automatically calculate a TSAT from the manually-input CTOT.
3. **DEL provides the aircraft with their TSAT, as calculated by the plugin** (e.g., "BAW123, startup time 1234z.")
4. **When the pilot reports ready for startup, DEL shall:**
    - Mark them as ready in the "RDY" column of Euroscope's Departure List.
    - Within +/- 5 min of their TSAT, DEL shall transfer the aircraft to GND for push & start.
5. **GND and TWR must ensure that the aircraft takes off within -5/+10 mins of their CTOT.** If they miss this window, TWR and DEL shall arrange a new CTOT for them.

Generally speaking, DEL shall always be the CDM "master" in Euroscope, and all other controller shall be in "slave" mode.

Radar Release

During periods of high traffic congestion in the airspace surrounding the airport, APP may move an airport into the status of **radar releases.** When radar releases are in effect, TWR must receive a release from APP for each aircraft before TWR clears them to take off.

APP & TWR should remain in coordination regarding when the period of radar releases will end.

Minimum Departure Interval (MDI)

A minimum departure interval (MDI) is a minimum amount of time which must elapse between two departing aircraft going in a specific direction. This is generally imposed by either local staff, or by staff in neighboring FIRs, to manage the flow of departing traffic out of an airport.

Generally, when CDM is in use, the CDM plugin will factor in any active MDIs issued via ECFMP and include them in the CTOT calculation automatically. **Regardless of whether CDM is in use or not, it is TWR's responsibility to ensure that aircraft are adhering to the MDI requirement.**

> Note that for an MDI, like wake turbulence separation, the time between departures is counted from between the aircraft being airborne. TWR may, for instance, clear aircraft for takeoff slightly early, so that they become airborne just as the MDI is satisfied.

Level Capping

Level capping refers to when flights meeting certain conditions are subject to a level restriction for part (until a certain point) or all of their flight. This is in order to reduce congestion in enroute airspace, particularly in upper sectors.

Rerouting

Flow controllers may occasionally decide to reroute aircraft if necessary to relieve pressure on enroute sectors. If a rerouted aircraft already has a clearance, then the issuing of the re-clearance via the new route is generally handled by DEL.

If the aircraft is already taxiing, then GND should taxi them to an unoccupied area where they will not be blocking traffic so that they can hold position and receive the re-clearance.