C-TWO BRIEFING PROCEDURE

Applicable to: ALL

The briefing should be a thought provoking and relevant discussion.

Prior to commencing the briefing:

- The PF shall set up the aircraft and FM for the departure or arrival. All relevant data (such as ATIS, NOTAMs, Port Pages and Charts, etc) shall be reviewed.
- The PM shall cross-check the FM and review all relevant the data. Both pilots must cross-check the FM routing against the CFP and the relevant published procedures.

The briefing should take place once the set up and cross-check of the FM is complete. For departure briefings, there is no requirement to wait for the load-sheet or take-off data to be entered into the FM.

The following actions shall be completed before the briefing commences:

- FCOM procedures are complete (with the possible exception of load-sheet and/or take-off data entry as mentioned above).
- Navigation aids set-up is complete (modifications to radio aid selections may be required after an arrival briefing).
- Any PM questions about the set-up have been addressed (this can be achieved at the time or during the briefing).

"Are you ready for the briefing?" is typically the question that commences the briefing process.
A positive answer from the PM means that all required actions have been completed and checked and that any anomalies have been addressed.

Note: *Reference to FM includes FMGS or FMS.*

C-TWO ACRONYM

Applicable to: ALL

Briefings will consist of five modules covered by the acronym 'C-TWO Plus':

- Chart
- Terrain
- Weather
- Operational
- Plus threats

Each module shall be discussed in every briefing.
The 'C' module identifies the procedure to be flown. The detail of the published procedure should have been 'self-briefed' during data entry and cross-checking. Therefore, the PF should consider experience, recency and training requirements when deciding how much to mention in this module.
The 'TWO' modules will consist of details that the PF considers relevant to the departure/arrival. Incorporate briefing points that generate thought and awareness. Additional procedures should be

reviewed in unusual circumstances; for example, RTO with a thrust-reverser locked out, engine inoperative considerations when engine inoperative, missed approach considerations when there is an increased chance of a missed approach.

Every Departure and Arrival must be viewed in the context of THREATS, and STRATEGIES to overcome them.

The 'Plus' module will consist of relevant threats not previously covered during the brief. Identify specific threats and discuss strategies to deal with them. For example, track shortening onto 07L in HKG with an arrival through SIERRA could be a threat; proactive configuration management may be the strategy.

The PF should decide what is briefed in each module. The Commander shall ensure that all relevant details are adequately covered.

At the start of the briefing, the PF shall display the Airbus F-Plan page on the FM.

The PF commences the briefing by reading the RWY/SID/Departure Transition, or STAR/Type of Approach/RWY from the FM.

At all times, upon receipt of an ATC route clearance, it shall be cross checked against the FM route by the PF and PM.

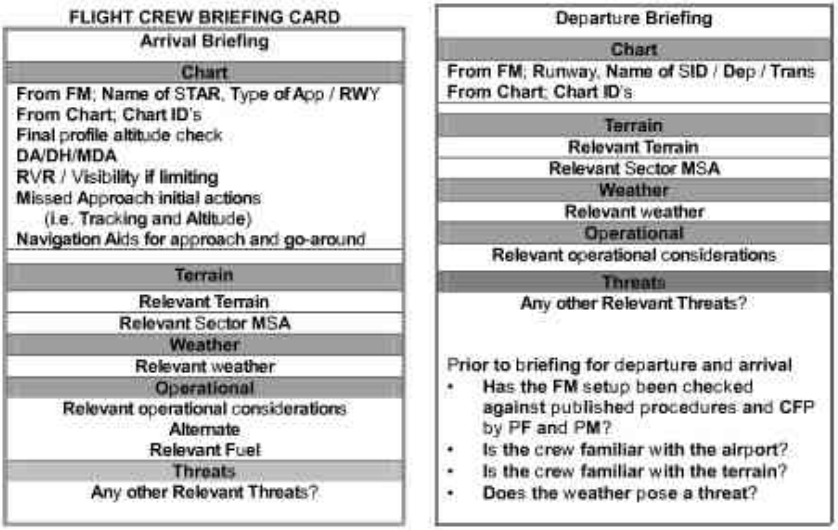
For the remainder of the briefing, there is no further requirement to check the Legs/Flight Plan page as this should have been independently done at the pre-briefing stage by both pilots.

The PF shall call out the chart IDs of the required charts. The PM should check he is using the same charts.

BRIEFING AIDE MEMOIRE

Applicable to: ALL

Flight Crew will be issued with a pocket size briefing card to assist with the briefing. This card shows the minimum briefing items required.



FLIGHT CREW BRIEFING CARD

Arrival Briefing

Chart
From FM; Name of STAR, Type of App / RWY
From Chart; Chart ID's
Final profile altitude check
DA/DH/MDA
RVR / Visibility if limiting
Missed Approach initial actions
(i.e. Tracking and Altitude)
Navigation Aids for approach and go-around

Terrain
Relevant Terrain
Relevant Sector MSA

Weather
Relevant weather

Operational
Relevant operational considerations
Alternate
Relevant Fuel

Threats
Any other Relevant Threats?

Departure Briefing

Chart
From FM; Runway, Name of SID / Dep / Trans
From Chart; Chart ID's

Terrain
Relevant Terrain
Relevant Sector MSA

Weather
Relevant weather

Operational
Relevant operational considerations

Threats
Any other Relevant Threats?

Prior to briefing for departure and arrival
- Has the FM setup been checked against published procedures and CFP by PF and PM?
- Is the crew familiar with the airport?
- Is the crew familiar with the terrain?
- Does the weather pose a threat?

EXPANDED 'C-TWO PLUS' BRIEFING ITEMS

Applicable to: ALL

Items to be included in the 'C-TWO Plus' modules will differ for each flight. The required briefing items are shown on the Flight Crew Briefing Card. These and some suggested additional items are also listed below. This list is not exhaustive. Crews should identify and brief relevant, useful information.

CHART

- RWY/SID/Departure Transition is read from the MCDU followed by the page number (mention RNAV if applicable).
- STAR/Type of Approach/RWY is read from the MCDU followed by the page numbers (mention RNAV if applicable).
- Final profile altitude check.
- DA/DH/MDA.
- RVR/visibility if limiting.
- Airfield elevation if 100 ft or greater (consider stabilised approach criteria).
- Missed approach initial actions; include track, altitude and, if applicable, speed.
- Navigation Aids for the approach and go-around (mention if one nav aid will be auto tuned).
- Metric/QFE usage.

TERRAIN

Discuss relevant terrain. All crew members should have a clear mental model of the terrain in the vicinity of:

- The SID.
- The departure track.
- The descent track.
- The arrival procedure/potential vectoring.
- The approach.
- The missed approach.

If relevant terrain is not familiar to all crew, use information available, including:

- Enroute charts.
- Highest CFP MRA to TOC, or from TOD.
- Area charts or approach charts.
- Other runway approach charts if terrain more detailed.
- Relevant MSA.
- Minimum Vectoring Altitude Chart, if available.

WEATHER

Discuss any weather conditions that may affect the arrival/departure including the following:

- Typhoons.
- Thunderstorms.
- Windshear.
- Turbulence.
- Wind/crosswind.
- Rain/runway contamination.
- Reduced visibility.
- Low cloud base.
- Use of wipers/rain repellent.
- Icing.
- Cold weather altimetry.
- Low visibility procedures.

OPERATIONAL

Relevant considerations may be covered in point form or they may be covered by a question to determine familiarity, such as "There is a speed restriction and an engine out procedure, are you familiar with those procedures?"

Ensure familiarity with any relevant issues that may affect the arrival/departure including:

- NOTAMs.
- Port Page/chart warnings.

- De-icing/anti-ice requirements and holdover times.
- Runway conditions, if contaminated.
- Speed control.
- Configuration.
- Noise abatement requirements.
- Engine inoperative procedures on departure only.
- Engine inoperative procedures on arrival, if engine is inoperative.
- Low Visibility Procedures.
- Use of AP.
- Use of A/THR.
- Flight mode selection.
- Non-normal procedures.
- Crew duties.
- Holding.
- Landing weight.
- Autobrake/braking/exit strategy.
- Taxying requirements.
- Diversion plan and requirements.
- Extra fuel available.
- Low Transition Levels.

PLUS

Consider any threats not previously identified and discuss strategies to deal with them. Threats may include:

- ATC
  - Communications,
  - Tracking,
  - Procedural control,
  - Traffic density.
- Missed approach vital actions, if there is a high probability of a missed approach.
- Port Page information on FDAP occurrences.
- MEL items requiring crew action.
- Airport category.
- Autoland restrictions.
- Non-ILS appproaches
  - Vertical profile monitoring.
- Navaid Location.
- Offset localiser.

- Runway characteristics.
- Parallel runways.
- Runway change (only brief the relevant changes).
- Runway lighting.
- Night.
- Crew
  - Airport familiarity,
  - Experience levels,
  - FDP considerations,
  - Training flights,
  - Augmented crew,
  - Cabin preparation.
- And other appropriate threats.

EXAMPLE BRIEFINGS

Applicable to: ALL

DEPARTURE

HKG 25L CAVOK

- RWY 25L, ATTOL 2B, Chart 10-3D. This is an RNAV departure.
- Significant terrain is out to our left, the relevant MSA is 4 300 ft.
- Weather, nil significant.
- Operationally, there is a speed restriction of 230 kt until established on track to RUMSY.
- Plus (additional threats are...), there is a very short taxy. The SP is briefed. We are required to be at cruise level by DOFIN.
- Any questions?

HKG 07R CAVOK, AUTOTHRUST INOP

- RWY 07R, OCEAN 2A, Chart 10-3K. This is an RNAV departure.
- Significant terrain to the right of the initial departure track, the relevant MSA is 4 300 ft.
- Weather, nil significant.
- Operationally, there is a speed restriction of 220 kt until passing PORPA. Autothrust is INOP requiring manual thrust (discuss), there is an engine out procedure off this runway; are you familiar with this?
- Any questions?

TPE 23L CAVOK

- RWY 23L, AGENT 1M, Chart 20-3. Airfield elevation is 106 ft.
- Significant terrain well left of track and once in the right turn the departure is over water where the relevant MSA is 2 500 ft.
- No weather considerations.
- Nil operational.
- Plus (additional threats are...). ATC traffic density, possibly military traffic. There is a short taxy. The FA1 is briefed.
- Any questions?

TPE 23L, CBS TO WEST, REVERSER INOP, WIP TAXIWAY EC

- RWY 23L, AGENT 1M, Chart 20-3. Airfield elevation is 106 ft.
- Significant terrain well left of track but once in the right turn the departure is over water where the relevant MSA is 2 500 ft.
- Weather avoidance may be required on departure so both on WXR. Cabin crew will not be released until clear of weather.
- Operationally, EC is closed, expect to taxy via S6. We have engine reverser No.1 INOP; in the event of a rejected take off I will...
- Plus (additional threats are...). ATC traffic density, possibly military traffic. There is a short taxy. The SP is briefed.
- Any questions?

ARRIVAL

HKG, 07L, CAVOK

- SIKOU 2A arrival to ILS 07L, Charts 10-2D and 11-1. Check altitude of 1 300 ft at 4.0 DME IZSL, minimum 222 ft set (confirmed by PM), missed approach is initially runway heading, 5 000 ft, max speed is 220 kt. Navaids IZSL 111.1 inbound course 0.73 °, NLG, and SMT will be tuned later.
- There is significant terrain to the right of the final approach and missed approach tracks.
- The relevant MSA is 4 300 ft.
- Weather is not a factor.
- Nil operational.
- Macau fuel is 5.2 tonnes. We will arrive with 7.5 tonnes; therefore _____ minutes holding is available.
- Plus (additional threats are), coming from HKT at this time of night there could be significant track shortening.
- Any questions?

HKG, 07L, THUNDERSTORMS AND MODERATE RAIN, VISIBILITY 2 000 M

- ELATO 2A arrival to ILS 07L, Charts 10-2 and 11-1. Check altitude of 1 300 ft at 4.0 DME IZSL, minimum 222 ft set (confirmed by PM), missed approach is initially runway heading, 5 000 ft, max speed is 220 kt. Nav aids IZSL 111.1 inbound course 0.73 °, NLG, and SMT will be tuned later.
- We may be vectored over Lantau and there is significant terrain to the right of the final approach and missed approach tracks.
- The relevant MSA is 4 300 ft.
- Weather avoidance and possible windshear/ turbulence (discuss avoidance/recovery strategy).
- Operationally, this will be an automatic landing. We may need wipers on finals. In the event of a missed approach I will select TOGA… (discuss all MAP considerations). After landing I will be using max reverse.
- Shenzhen fuel is 6.2 tonnes. We will arrive with 9.5 tonnes; therefore ____ minutes holding is available.
- Plus (additional threats are...), with all the weather around, I will get the cabin secured early.
- Any questions?

TPE 05, LVP IN FORCE, RVR 350 M

- TONGA 3A arrival, Cat 2 ILS 05, Charts 20-2A and 21-1, check altitude at 4.1DME ITIA of 1 400 ft, DH 100 ft (confirmed by PM), RVR required is touchdown 350 m, midpoint 150 m. Nav aids ITIA, 111.1 inbound course 0.53 °. I will use APU and TIA. TI is set on the ADFs.
- The relevant MSA for the approach is 2 000 ft, but rises to 8 500 ft east of the extended centreline.
- Weather (discuss).
- LVPs in force (discuss).
- Multiple speed control requirements are in force (discuss).
- In the event of a go-around I will..... (discuss all MAP considerations). KHH fuel is 10.3 tonnes. We will arrive with 12.7 tonnes; therefore _____ minutes holding is available.
- After touchdown, anticipated taxi via.....
- Plus (additional threats are...), strong tailwinds during descent, but expect rapid change to headwind during approach, therefore I will configure early and intercept the LOC with Flap 2 at F speed.
- Any questions?

KMG 21, CAVOK.

- LXI 3A arrival, ILS 21, Charts 10-2C and 11-2, check altitude at the LOM of 7 743 ft, minimum 6 480 ft set (confirmed by PM), missed approach is initially runway heading, 3 100 m (10 200 ft). Nav aids IQB, 109.7 inbound course 213 °. I will use KMG on the VORs. RW and QB are set on the ADFs.
- The relevant MSA for the approach is 11 500 ft, with significant terrain in the vicinity of the airport.
- Weather is not a factor.
- Operationally, high touchdown elevation 6 217 ft, (discuss stabilised approach).
- Maximum speed during the base turn is 205 kt given the high TAS, I will configure early and intercept the LOC with Flap 2 at F speed.
- Plus (additional threats are...) LOC is unusable beyond 30 ° either side of the front course. This is a known high FDAP event port caused by late configuration, therefore I will monitor configuration versus altitude and watch the DME to touchdown and Rad Alt. On descent, we will alert the cabin for landing at FL250 and FL150.
- Any questions?

FLAP RETRACTION BRIEFING

Applicable to: ALL

After entering the takeoff performance data in the MCDU the PF shall brief the flap retraction strategy, including flap auto-retraction, when applicable. Operational issues such as close-in turns, speed restrictions, altitude/climb requirements and noise abatement must be considered.

An example of the flap retraction briefing follows:

- **A321, HKG07R, Config 1, Takeoff weight –** 86 000 kgs
  "Flap retraction brief – this will be a Flap 1 takeoff with an initial target speed on departure of 220 kts, GD is 239 kts.
  Passing the acceleration altitude I will let the flaps auto retract at 210 kts, once established on the track to RAMEN I will push for managed speed and then call for flap zero."

These are example briefings. There is absolutely no premium in learning them verbatim and then reciting them without thought to the actual operation.
The objective is for the PF to identify the restrictions affecting the flap retraction. The brief should be varied as circumstances dictate to ensure both pilots know, precisely, the sequence of the flap retraction procedure for the departure.