



Ministry of Defence

Air Command Secretariat
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Headquarters Air Command
Royal Air Force
High Wycombe
Buckinghamshire
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Ref. 2020/02656

[REDACTED]

18 March 2020

Dear [REDACTED],

Thank you for your e-mail of 25 February 2020 asking for Tornado GR4 documentation. Specifically, you requested:

".....a copy of the paragraph regarding the procedure used by Tornado GR4 pilot during Overhead pattern and the concerning OCU material about the Overhead pattern of Tornado."

I am treating your correspondence as a request for information under the Freedom of Information Act 2000. A search for the information has now been completed within the Ministry of Defence and I can confirm that information within the scope of your request is held and I attach a copy of the relevant paragraphs. For ease of understanding we have expanded a number of acronyms.

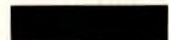
If you have any queries regarding the content of this letter, please contact this office in the first instance.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.uk). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the

Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely



Secretariat 3a1
Air Command

VISUAL CIRCUITS

26. **Circuit Entry via Initials.** When visual with the airfield switch to the Tower frequency. A 420 kt break (45 Wing Sweep) is more expeditious but a 360 kt break (25 Wing Sweep) is useful if low on fuel. Low breaks are acceptable, climbing to 1000 ft. Run in deadside on speed. Call "C/S on the break" with intentions.

27. **Visual Run-in And Break (VRIAB).** Subject to local orders, the SOP speeds and configurations for the VRIAB are 360kt/25° CRUISE or 420kt/45° CRUISE, joining along the runway dead side until at the desired break point. The SOP break procedure is as follows:

- Throttles – IDLE (use airbrake if above 360 kt)
- Wingsweep - 25° Manoeuvre Flap.
- Angle of Bank/G - As required.
- Flaps - MID below 280 kt.
- Airbrakes - IN at 250kts (if req'd)
- Landing Gear – DOWN below 235kts
- Complete the pre-landing checks.
- Speed - 190-200 kt at end of downwind abeam 300 ft point.
- Complete a normal finals turn.

28. **Normal Circuit.** The SOP normal circuit should be flown as follows:

- a. MAX DRY power is used during the initial climb away and the upwind turn. Start the upwind turn at 500 ft and anticipate the level off, reducing power to achieve 1 000 ft and 200-210 kt at the start of the downwind leg. Reduce power to approx 86-88% NH (depending on air temperature, fuel weight and ac configuration).
- b. Fly downwind at circuit height and 200-210 kt with the power approximately 86% to 88% NH. Call 'C/S downwind' (with intentions) abeam the upwind end of the runway.
- c. Set a heading to parallel the runway or avoid sensitive areas as appropriate. On a zero crosswind day, the ideal downwind spacing for a 1000 ft circuit can be achieved by running the wingtip down the near edge of the runway. The green track pointer on the HSI can be used to fly a wind-corrected downwind heading.
- d. Carry out pre-landing checks iaw FCCs, aiming to achieve 3 greens, mid flap and a stable speed of 190-200 kt by the end of the downwind.
- e. Abeam the 300 ft point, select down flap (fuel weight permitting) and roll into the finals turn, with approximately 3-4° nose down in the HUD. The correct abeam position for 10-15 kt headwind day can be judged from the front seat, assuming correct downwind spacing, as when the wingtip appears coincident with the approach end piano keys. Adjustment fore or aft may be needed for either still air or excessive headwind.
- f. Re-check the landing gear is down and call 'C/S final gear down'.
- g. Half way round finals, the ac should be at approximately 650 ft, based on a 1000 ft circuit height, with 8 to 12 Angle of Attack (AOA) (although up to 15 AOA max is permitted when correcting to the runway centreline for 2-engine ccts only). As a cross-check, speed should be in the region 170-180 kt.

h. Approaching roll-out on finals, the Precision Approach Path Indicators (PAPIs) should show one red and 3 whites, changing to 2 reds and 2 whites at 300 ft on roll-out. The normal touchdown point is just beyond the numbers, therefore the PAPIs will continue to change to 3 reds halfway down the final approach and to 4 reds just short of the threshold. Runway perspective should be monitored in concert with the PAPIs. Check toes are clear of the brakes (including rear seat in a trainer).

h. AOA will reduce when the aircraft is rolled wings level on final approach. The pilot should anticipate with power to achieve 10 AOA just before the flare. On short finals the pilot should divert his/her attention from the PAPIs to runway perspective in order to judge the flare and landing. To land, look to the far end of the runway and set a flare attitude equivalent to 12 AOA, simultaneously and smoothly reducing power to achieve IDLE as the main wheels touch. The flare is not to exceed 15 AOA (subject to stores configuration).