

RA 3234 – Air System Formations

Rationale

Due to the specific nature of Air System formations, they require additional procedures to ensure safe and efficient flight.

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Regulation 3234(1)

Air System Formations

3234(1) A controller **shall** consider a formation as a single unit for controlling purposes when the formation is operating within specified parameters.

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Air System Formations

1. Formations **should** be considered as a single unit for separation purposes provided that:
 - a. The formation elements are contained within 1 nm laterally and longitudinally for military Air Systems or 0.5 nm laterally and longitudinally for civil Air Systems, and at the same level¹.
 - b. Where the formation contains a mix of military and civil Air Systems, the military distances (1 nm and at the same level) **should** be applied.
 - c. Where a civil formation is undertaking a military task, the formation **should** adopt the military formation distances (1 nm and at the same level).
 - d. Within Class G airspace only, at the controller's discretion, these limitations can be increased to 3 nm and / or up to 1000 ft vertically.
 - e. The formation, although operating outside the parameters given above, has been the subject of an Airspace Utilisation Section Airspace Coordination Notification (ACN) or tactical negotiation between appropriate military supervisors and civilian watch managers.
2. ► Within a formation of military Air Systems the formation leader **should** be responsible for separation between the elements comprising the formation; this is defined as Military Accepts Responsibility for Separation of Air Systems (MARSAs).
3. A formation operating under an Air Traffic Service (ATS) that wishes to operate beyond 3 nm and / or 1000 ft vertically in Class C and G airspace, (eg during Basic Fighter Manoeuvres or Close Air Support) **should** request non-standard formation status from the controller. Subject to the controller's approval, all formation elements **should** acknowledge the agreement and each Air System **should** squawk Mode 3A and C. In all circumstances, the controller will not provide traffic information between formation elements unless requested, or the controller considers it necessary in the interests of safety. ◀

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4. ► ◀
5. In all classes of airspace ► when under an ATS, ◀ individual formation elements, except the lead Air System, ► may ◀ be instructed to squawk standby.
6. When controlling a formation, controllers will identify the number of formation elements in handovers, requests for Cleared Flight Path, verbal coordination or when passing Traffic Information on landline or on Radiotelephony (RT).

¹ At the same level is defined as operating within 100 ft vertically of the lead Air System.

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7. All Air Systems will fly at the same level; where this is not possible formations will be split into elements separated by the prescribed Air Traffic Control (ATC) separation minima, in accordance with (iaw) RA 3228², Separation Standards, before entering Controlled Airspace (CAS). Such elements may be either individual Air Systems or smaller formations that can fly within 1 nm (military) / 0.5 nm (civil) laterally and longitudinally and at the same level. Each element will be assigned a discrete Secondary Surveillance Radar (SSR)³ code.

8. Formations may be stepped-down vertically from the leader and can occupy more than one flight level. It is essential that the controller providing the service is aware of the flight levels blocked by the formation and ensures that, where applicable, it adheres to the Altitude Reservation (ALTRV) authorized in the Airspace Co-ordination Notice.

9. **United States Air Force Europe (USAFE) tanker formations.** If the climb to cruising level is stopped at an intermediate level, the formation will step-down at 500 ft levels from the leader. However, once cruising level is achieved, the formation will stack-up at 500 ft levels from the leader. Each element of the formation will be separated horizontally from the leader by 1 nm.

Formation Procedures Within CAS

10. Prior to a formation entering CAS, controllers will obtain confirmation on RT that all formation elements are contained within 1 nm laterally and longitudinally for military Air Systems or 0.5 nm laterally and longitudinally for civil Air Systems, and at the same level.

11. When a formation has been cleared to climb or descend in CAS, controllers will obtain confirmation that all elements have reached the assigned level. If the vacation of a level is relevant for the purposes of coordination, controllers will obtain confirmation that all elements have vacated the level.

12. When crossing CAS all elements in the formation will monitor the relevant ATC frequency.

13. **Formation Joins Within CAS.** Controllers will only permit a formation to join-up in CAS under the following circumstances:

- a. When an Air System has an emergency and a formation join-up is essential.
- b. Formations commencing a join-up prior to entering CAS are permitted to complete their join within CAS, when conditions allow, subject to maintaining standard separation from other Air Systems.
- c. Within Class C airspace, controllers can allow formations to join; however, they will give appropriate consideration to the formation's proximity to Upper Air Routes and other airspace users.
- d. All elements involved in a formation join will transpond Mode 3A and C until established in formation.

14. **Formation Splits Within CAS.** Controllers can permit formation splits in CAS giving due regard to other airspace users and coordination requirements.

Formation Procedures Outside CAS

15. A formation, with elements keeping station visually or by radar, of more than 1 nm length can receive an ATS outside CAS as follows:

- a. The lead Air System will squawk Mode 3A and C. If the stream extends for 3 nm or more, the last Air System will also squawk. For longer streams, intermediate Air Systems will squawk as appropriate.
- b. Flight Information Service (FIS) will be given to the lead Air System only.

² Refer to RA 3228 – Separation Standards.

³ Throughout this RA, any reference to SSR is equally applicable to Wide Area Multilateration and Automatic Dependant Surveillance Broadcast.

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c. Controllers will identify the full extent of the stream formation during radar handovers, when effecting Coordination and passing Traffic Information to other controllers.

16. **Formation Join-up Procedures.** Formation join-up procedures will be as follows:

a. **Visual Meteorological Conditions (VMC).** Individual Air Systems can rendezvous, either by ground controlled vectors, or by internal aids, with the final join-up being made visually. The initial minimum vertical separation will be 2000 ft below the formation, but if the pilot is not visual with the formation when established in trail, vertical separation can be reduced to 1000 ft below with the agreement of both the formation leader and the pilot of the joining Air System. From this position, with the consent of the formation leader, the Air System can be cleared to climb visually and join the formation. From this point the formation leader is responsible for separation (MARSAs) between the units and the controller will address ►their◄ instructions only to the formation leader.

b. **Instrument Meteorological Conditions (IMC).** When, for operational reasons, IMC join-ups are essential, the following procedures will be applied:

(1) The initial phase of the join-up will be achieved either by ground controlled vectors or by use of Air System internal aids to a point no less than 5 nm horizontally from the formation leader and within 2000 ft vertically.

(2) At this point the position of the joining Air System will be passed to the formation leader and confirmation obtained that ►they are◄ willing to assume responsibility for separation between ►their◄ Air System, the Air System comprising the formation and the joining Air System. From this point MARSAs applies.

(3) The final join-up will be completed using Air System internal aids under the direction of the formation leader. The joining Air System will squawk standby when the join-up is complete.

17. **Formation split procedures.** Formation splits will be carried out by one controlling agency only. Handover of control to another ATS provider will not be attempted until the formation split has been completed.

18. **Achieving Vertical Separation.** The controller will agree with the formation leader whether individual Air Systems will be climbing to a level⁴ above, or descending to a level below, the formation level to achieve standard vertical separation, iaw RA 3228►²◄. With the approval of the controller, individual Air Systems can depart the formation visually in the pre-notified sequence on the instructions of the formation leader and climb or descend to the assigned level. The controller ►will◄ confirm that an Air System is established at its assigned flight level, identified and placed under an ATS, before authorizing the formation leader to instruct the next Air System to depart the formation.

19. **Applying Vectors.** The controller will agree with the formation leader the vectors that individual Air Systems will follow when departing the formation to achieve standard horizontal separation, iaw RA 3228►²◄. With the approval of the controller, individual Air Systems can depart the formation visually, in the pre-notified sequence, on the instructions of the formation leader, maintaining the assigned level and flying the agreed vector. When standard separation has been achieved, the controller must identify the Air System iaw RA 3227►⁵◄ and place it under an ATS before authorizing the formation leader to instruct the next Air System to depart the formation.

20. **Station Keeping Equipment (SKE) Formations.** C130 SKE formations will only be exempted from the requirements of paragraph 1 when:

- a. Lead and tail Air Systems are squawking (with Mode C).
- b. The flight is operating iaw a relevant ACN.

⁴ In the context of this RA, level may be used to refer to flight level, altitude or height.

⁵ ►Refer to RA 3227 – Methods of Identification.◄

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c. Prior to the formation entering CAS, the controller has obtained a confirmation on RT that all elements are at the assigned level.

21. With the exception of paragraph ►20◄, formations subject to ACN action (eg Coronet Flights) or tactical negotiation between appropriate military supervisors and civilian watch managers use best practice (eg first and last Air Systems squawking), together with positive confirmation to ATC that all Air Systems are established in the assigned level block.