RA 3226 – Secondary Surveillance Radar

Rationale

Secondary Surveillance Radar (SSR)[1] provides controllers with essential information on ►Aircraft◄ identity, position and level and is required to be confirmed as accurate.

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Regulation 3226(1)

Validation of Mode 3/A Codes

3226(1) A controller assigning any Mode 3/A code **shall** validate the code as soon as possible.

Acceptable Means of Compliance 3226(1)

Validation of Mode 3/A Codes

1. Mode 3/A codes **should** be validated as follows:

   a. A controller assigning any Mode 3/A code **should** validate the code by checking as soon as possible, either by direct reference to their surveillance display or with the assistance of another controlling agency, that the data displayed corresponds with the code which has been assigned.

   b. If this is not the case, the pilot **should** be instructed to reset the assigned code. Where this fails to achieve display of the assigned code, then ►the pilot◄ **should** be instructed to select SSR mode A 0000.

   c. If a corrupt code still exists, the pilot **should** normally be instructed to switch off the transponder. However, where approved by local procedures and provided the Mode C has been verified, the corrupt code may be retained to assist identification and tracking. Associated Air Traffic Service (ATS) units **should** be informed of the retention of corrupt data.

   d. At units where code callsign conversion equipment is in use, procedures to ensure the correct correlation of the callsign with the assigned code **should** be utilized by controllers and included in Local / Unit Orders.

   e. Where a controller can ascertain from the Code Allocation Plan that a discrete Mode 3/A code has been assigned by a unit capable of validating the code, and has not been notified that the code is corrupt, then that code **should** be deemed validated.

2. SSR Code assignments mean that codes may be re-used in more than one area and controllers **should** therefore act with caution in areas where duplicate code allocations may occur.

Guidance Material 3226(1)

Validation of Mode 3/A Codes

3. **Code Allocation Plan**. Controllers assign Mode 3/A codes to ►Aircraft◄ according to the Code Allocation Plan, which comprises:

   a. Discrete codes comprising:

      (1) Domestic codes which are allocated to ►Aircraft◄ flying within the Areas of Responsibility (AoR) of a unit.

      (2) Centralised SSR Code Assignment and Management System (CCAMS) codes which are assigned to international flights will normally be retained beyond the AoR of the assigning unit.

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

Guidance Material 3226(1)

b. Special purpose codes allocated internationally.

c. Conspicuity codes, allocated nationally, or to specific users / units.

Regulation 3226(2)

Verification of Mode C Data

3226(2) Controllers **shall** verify Mode C data transmitted by ►Aircraft◄ for accuracy on initial contact once the ►Aircraft◄ has been positively identified.

Acceptable Means of Compliance 3226(2)

Verification of Mode C Data

4. Controllers **should** verify Mode C data transmitted by an ►Aircraft◄ for accuracy on initial contact once the ►Aircraft◄ has been positively identified.

5. Mode C data **should** be verified by one of the following methods:

a. By a visual check of the data readout immediately on receipt of a pilot's report giving their present or passing level[2]. Particular care **should** be exercised when assessing the accuracy of the Mode C readout if the ►Aircraft◄ is climbing or descending.

b. By coordination with another unit.

6. There is no requirement to monitor Mode C readouts for possible discrepancies once verification has been effected, nor is it necessary to notify a pilot whose Mode C data is within the permitted limit. However, if a controller observes a discrepancy of more than 200 ft either during initial verification or during the subsequent provision of an ATS, the controller **should**:

a. Ask the pilot to confirm their altimeter setting and level.

b. If the discrepancy remains, the pilot **should** be instructed to switch off Mode C. If independent switching of Mode C is not possible the pilot **should** be instructed to select SSR mode A 0000 to indicate a transponder malfunction.

7. A Mode C readout may be deemed verified if it is associated with a validated, or deemed validated, Mode 3/A code. Codes with which the associated Mode C data **should** be considered unvalidated and unverified are annotated accordingly in the UK SSR Code Allocation Plan.

Guidance Material 3226(2)

Verification of Mode C Data

8. Mode C provides information on the vertical position of an ►Aircraft◄ in flight. This information is normally displayed as a flight level, but information transmitted by an ►Aircraft◄ flying below a pre-determined datum may be converted to an altitude by use of Air Traffic Control (ATC) data processing equipment.

Regulation 3226(3)

Level Occupancy using Secondary Surveillance Radar

3226(3) Controllers **shall** ensure specified criteria are met when utilizing SSR to assess level occupancy.

Acceptable Means of Compliance 3226(3)

Level Occupancy using Secondary Surveillance Radar

9. **Criteria for Assessing Level Occupancy.** The assessment of level occupancy by use of verified Mode C **should** be based on the following criteria:

a. **In Level Flight.** An ►Aircraft◄ **should** be considered to be at an assigned level provided that the Mode C readout indicates 200 ft or less from that level.

b. **Vacating an Assigned Level.** An ►Aircraft◄ which is known to have been cleared to vacate a level **should** be considered to have done so when the

[2] In this context level may refer to altitude, height or flight level.

Acceptable Means of Compliance 3226(3)

Mode C readout indicates a change of 400 ft or more in the anticipated direction.

c. **Passing a Level.** An ►Aircraft◄ climbing or descending **should** be considered to have passed through a level when the Mode C readout indicates that the level has been passed by 400 ft or more in the required direction.

d. **Reaching a Level.** An ►Aircraft◄ **should** be considered to have reached an assigned level when three successive Mode C readouts indicate 200 ft or less from that level.

Guidance Material 3226(3)

Level Occupancy using Secondary Surveillance Radar

10. Mode C information may be used to determine whether an ►Aircraft◄ has reached, is maintaining, has vacated, or is passing a level or altitude, and accordingly the vertical displacement between ►Aircraft◄ and / or rate of change may be deduced.

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