RA 3293 – Surveillance Radar Approach

Rationale

A Surveillance Radar Approach (SRA) is a non-precision approach that allows an Aircraft to conduct an approach in Instrument Meteorological Conditions (IMC) without a precision approach aid. Following a set of laid down control procedures ensures that descent below Safety Altitude in IMC is safe and the Risk to Life associated with controlled flight into terrain is minimized. Controllers are required to understand their responsibilities when controlling Aircraft electing to perform this type of approach.

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3293(1) Aviation Duty Holder-Facing organizations **shall** ensure SRAs are provided in accordance with (iaw) specified procedures.

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1. **Published Procedure.** SRAs **should** be conducted according to the procedures published in the relevant Terminal Approach Procedure Charts.

2. **SRA Termination and Update Rates[1].** A Surveillance system providing the positional data for SRAs **should** provide regular updates with at least the following update periodicity:

   a. SRA terminating at 2 nm from threshold; 6 second update periodicity.

   b. SRA terminating at 1 nm from threshold; 4 second update periodicity.

   c. SRA terminating at 0.5 nm, or less, from threshold; 3 second update periodicity.

3. **Range and Height Data.** Unit Air Traffic Management staff **should** produce advisory range and height guidance that depicts range from threshold and the correlated height for the direction of the approach. This **should** be immediately available to the Controller, either on the surveillance screen or on a separate reference document.

4. **QNH approaches.** Where SRAs are conducted using QNH, references to height in this RA **should** be converted to Altitude utilizing the Threshold Elevation.

5. **Controller Actions.** When controlling a SRA, Controllers **should**:

   a. Identify the Aircraft.

   b. Obtain readback of the correct altimeter setting from the pilot before commencing final approach.

   c. Pass to the pilot ranges from the threshold together with pre-computed advisory heights at intervals of ½ nm, until the Aircraft reaches a range equivalent to the pilot's Minimum Descent Height (MDH), after which only ranges from the threshold at intervals of ½ nm **should** be given.

   d. Pass to the pilot heading instructions to intercept, and maintain, the centreline until the Aircraft reaches the Missed Approach Point (MAPt).

   e. Obtain a notification that the undercarriage is down prior to obtaining a clearance. There is no requirement to check fixed undercarriage Aircraft, but if the Controller is in any doubt a 'check gear, acknowledge' instruction **should** be given.

   f. Obtain clearances in the same manner as RA 3291[2].

[1] DefStan 00-972: Military Air Traffic Services Equipment Safety and Performance Standards (Aerodrome, Terminal and Naval Air Traffic Services) with supporting extracts from CAP 670: Air Traffic Services Safety Requirements Part C, Section 3: SUR04: Requirements for Primary Radar Systems para SUR04.17 Note 2.

[2] Refer to RA 3291 – Precision Approach Radar.

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g. Advise the pilot that they are approaching their MDH. ►When the MDH is within ½ nm of the MAPt the phrase 'approaching MDH' is not included.◄

h. Advise the pilot that they are approaching the MAPt. ►After passing the MAPt only the◄ direction of turn and number of degrees related to the Aircraft position from the projected Runway centreline ►**should** be passed.◄

i. Terminate the SRA iaw paragraph 2.

6. **Elevation Control.** Descent **should** be commenced at a range and height from the threshold which corresponds to the required rate of descent. The Controller **should** pass pre-computed advisory heights with range information to assist the pilot in maintaining a rate of descent for a glidepath (GP) angle equivalent to the published procedure, and to meet all associated restrictions[3].

7. **Centreline Information.** The method for assessing centreline information will vary dependent on the nature of the surveillance display and as such, Front Line Commands **should** issue coherent policy that will ensure consistency of service across all units.

8. **Loss of Radar Contact.** If a Controller is unable to maintain identification of the Aircraft, the approach **should** be terminated. The pilot **should** be informed of the loss of radar contact, and a Missed Approach Procedure initiated if the pilot cannot continue their approach visually.

9. **Separation / Avoidance of Other Contacts.** If the SRA Controller observes a radar contact which is in confliction with the track of the Aircraft completing an SRA, they **should** immediately check the elevation indication if available. If collision Risk is apparent in both azimuth and elevation (either assessed from elevation indication, or due to unknown elevation), advice on suitable action for collision avoidance **should** be passed to the pilot together with information on conflicting traffic. Instructions for manoeuvres in a vertical plane **should** normally only result in stopping descent or applying a climb. Where a heading change is involved, the Aircraft **should** be climbed to the relevant height according to the Surveillance Minimum Altitude Chart / Radar Vector Chart.

10. **Surveillance System.** There is an increased Risk of Mid Air Collision when only a co-operative surveillance system is available due to non-transponding traffic not being detected. When pilots are conducting SRAs they are likely to have a reduced lookout. Therefore, units **should** apply RA 3241[4] when considering the provision of SRAs using only a cooperative surveillance system.

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11. When providing a SRA, the Controller passes instructions and information to the pilot to enable them to follow a pre-determined approach path to a position from which a visual landing or circuit can be made. This type of approach is not as accurate as a precision approach in that no electronic GP information is available, nor is there a similar degree of accuracy in azimuth.

12. **Azimuth control.** Adjustments to headings are made with the intention of guiding the Aircraft smoothly onto the centreline before MDH and maintaining this azimuth position. The update rate of the surveillance system in use needs to be considered when assessing corrective headings.

13. **Elevation control.** Procedures designed according to the International Convention on Civil Aviation's Procedures for Air Navigation - Aircraft Operations (ICAO PANS-OPS) utilize measures for ensuring safe separation from obstacles, including Threshold Crossing Height (TCH), SDF and MOCA. Units providing PANS-OPS designed procedures need to ensure that advisory heights passed as vertical guidance during a SRA do not contradict the requirements of the procedure. For example, advisory heights calculated using 318 ft per nm to approximate a 3.0° GP, will not be suitable if they result in vertical guidance that is lower than a SDF or MOCA. Instead, units may elect to use more accurately calculated advisory heights to allow Controllers to issue continuous descent advice that meet the criteria of any

[3] Such as Minimum Obstacle Clearance Areas (MOCA) and Step-Down Fixes (SDF).
[4] Refer to RA 3241 – Secondary Surveillance Radar Alone Operations.

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restrictions in the procedure. An exemplar table for SRA advisory range and height guidance, based on the calculation of 265 ft per nm for a 2.5° GP and 318 ft per nm for a 3.0° GP, to a TCH of 50 ft is included within Table 1 in Annex A.

14. **Separation / Avoidance of Other Contacts.** The application of the type of Air Traffic Control Service provided rests with the Director (or equivalent role), not with the SRA Controller. The SRA Controller will provide the pilot with the necessary information to avoid a collision rather than to maintain any specified separation distance.

Annex A to RA 3293

Table 1. SRA Advisory Range and Height Guidance Example for TCH 50 ft.

Range (from (threshold)	2.5° GP Height (See Note 1)	3° GP Height (see Note 2)
0	50	50
0.5	190	210
1.0	320	370
1.5	450	530
2.0	580	690
2.5	720	850
3.0	850	1010
3.5	980	1170
4.0	1110	1330
4.5	1250	1490
5.0	1380	1640
5.5	1510	1800
6.0	1640	1960
6.5	1780	2120
7.0	1910	2280
7.5	2040	2440
8.0	2170	2600
8.5	2310	2760
9.0	2440	2920
9.5	2570	3080
10.0	2700	3230

Note 1: Calculation method. ((Range) x (Accurate 2.5° ft per nm)) + (TCH) = (height), round up to nearest 10 ft. The accurate 2.5° ft per nm equals 265 ft and the TCH is a procedure design standard 50 ft.

Note 2: Calculation method. ((Range) x (Accurate 3° ft per nm)) + (TCH) = (height), round up to nearest 10 ft. The accurate 3° ft per nm equals 318 ft and the TCH is a procedure design standard 50 ft.