
ENR 1.6 ATS SURVEILLANCE SERVICES AND PROCEDURES**1. Primary radar****Introduction**

The provision of radar services is based on enroute and APCH radar facilities on Swiss territory augmented by additional radar information from facilities in France, Germany and Italy.

Information on radar ground movement services based on SMR is provided in AD 2.23.

The procedures for the radar are based on the recommendations in ICAO Doc 4444-ATM/501.

1.1 Supplementary services

NIL

1.2 The application of radar control service**1.2.1 Radar control services**

The distribution of the functions of the radar services of the ATC is as follows:

- a. overall watch of air traffic, particularly as to the way in which clearances are adhered to;
- b. radar control services for departing and arriving ACFT for the purpose of expediting the traffic flow and of resolving conflict situations;
- c. assistance to ACFT experiencing difficulties in navigation or a failure of two-way communications;
- d. provide information to crews on their request about the presence of TS areas;
- e. provision of information regarding identified or unidentified ACFT traffic that may constitute a hazard;
- f. assistance to ACFT in EMERG.

The PER of those functions is at the discretion of the radar controller and depends on the capacity of the radar equipments, the traffic density and the atmospheric conditions.

1.2.2 ATC units equipped with radar:

ACC ZURICH
ZURICH APP
ZURICH DELTA
ACC GENEVA
GENEVA APP
GENEVA DELTA
BERN APP
SION APP

1.2.3 Minimum levels

When vectoring an IFR FLT, the radar controller shall ensure that adequate terrain clearance will exist at all times until the ACFT reaches the point where the pilot will resume his own navigation.

The radar controller is at all times in possession of the following information:

- a. the MNM FLT ALTs for the relevant route segments;
- b. the lowest usable FLT levels in accordance with [ENR 1.7 5.3](#)

1.2.4 Radar separation

The horizontal separation MNM is 5 NM. It may be reduced to 3 NM for ACFT within 20 NM of the radar antenna.

1.2.5 Surveillance Radar Approaches (SRA)

Approaches shall be carried out with the surveillance radar when no other APCH facility is AVBL or when the pilot requests it explicitly. Radar instructions are terminated at 2 NM from touchdown at the latest.

At or before the commencement of final APCH, the FLT crew shall be informed of the following:

- a. the type of APCH;
- b. the RWY to be used;
- c. the point at which the SRA will be terminated.

When conducting a SRA, the radar controller shall TRANS the following to the FLT crew:

- a. the applicable OCA/OCH when approaching the point at which it is computed that descent should begin, and just before RCH that point;
- b. AZM instructions as, follows:
 - i. the FLT crew shall be informed at regular intervals of the ACFT's PSN in relation to the EXT D CL of the RWY. HDG corrections shall be given, as necessary, to bring the ACFT back on to the EXT D CL.
 - ii. in the case of AZM DEV, the FLT crew should not take corrective action unless specifically instructed to do so.
- c. the DIST to touchdown at each NM;
- d. the pre-computed levels through which the ACFT should be PSG to maintain the GP at each NM, at the same time as the DIST;

The SRA shall be terminated:

- a. at a DIST of 2 NM from touchdown; or
 - b. before the ACFT enters an area of CONS radar clutter; or
 - c. when the pilot reports that a visual APCH can be effected;
- whichever is the earliest.

For SRA, the same missed APCH procedures are applicable as for ILS APCHs.

1.3 Radar and air-ground communication failure procedures

1.3.1 Transponder failure

1.3.1.1 Failure before intended departure

In the case of a transponder which has failed and cannot be restored before DEP, pilots shall:

- a. inform ATS as soon as possible and preferably before filing a flight plan;
- b. plan to PCD, as directly as possible, to the nearest suitable AD where repair can be effected; and
- c. insert in item 10 of the ICAO flight plan form under "SSR" the letter N for CMPL unserviceability of the transponder or, in case of partial transponder failure, the letter corresponding to the remaining transponder capability as specified (REF: [ENR 1.10.1.3.4.2 ITEM 10](#)).

1.3.1.2 Transponder failure after departure

In case of failure which occurs after DEP, pilots may expect that ATC units will endeavour to provide for the continuation of the FLT to the AD of first intended LDG in accordance with the FLT plan. After LDG, pilots shall make every effort to have the transponder restored to normal operation.

If repair cannot be effected, pilots shall comply with the above provisions for failure before intended DEP.

1.3.2 Communication failure

1.3.2.1 Procedures applicable to aircraft

SSR equipped ACFT experiencing radio communication failure will operate the transponder on Code **7600**. On failure of the ACFT radio TRANS only, they may be invited to use the SSR for acknowledging receipt of messages.

Pilots of non-SSR equipped ACFT under radar control may be instructed by ATC to ACK receipt of clearances or of instructions by carrying out specified HDG changes, as long as only the ACFT radio TRANS only is not functioning.

1.3.2.2 Procedures for the air traffic radar control services

Identified or non-identified ACFT experiencing CMPL communication failure will, as far as possible, be separated from other airspace users that constitute a hazard, until they have left the airspace concerned (FIR) or have landed.

1.3.3 Radar failure

In the event of radar equipment failure, attempts will be made to CONT to provide the service by other means. If this should not be possible, separation procedures shall be applied to ACFT under radar control.

Reduced VER separation of 500 ft, respectively 1000 ft, may immediately be resorted to on a TEMPO basis.

As an EMERG measure, VMC clearances will also be given and HLDG patterns will be prescribed.

1.4 Voice and CPDLC position reporting requirements

NIL

1.5 Graphic portrayal of area of radar coverage

NIL

2. Secondary Surveillance Radar (SSR)**Mode S:**

FLT crew of ACFT with Mode S transponders that have an ACFT indication feature shall set the ACFT IDENT to exactly that entered in item 7 of ICAO ATC flight plan. It shall be set through the FMS or transponder control panel before activation of the transponder. For Mode S transponder ground operations at Genève and Zurich APs, refer to AD (LSGG or LSZH) § 2.23.2 A-SMGCS.

Non-Mode S:

Pilots of departing ACFT may only switch the transponder from "Standby" to "ON" immediately prior to the TKOF run. Pilots of arriving ACFT shall switch off the transponder immediately after LDG.

Operational use of Mode C:

Before Mode C data are used for ATC purposes they are verified. This is achieved by the appropriate ATC unit checking the readout of the Mode C transmission against the altimeter reading reported by the pilot at the moment of verification. Where the ATC unit is UNA to verify mode C data, either directly or with the assistance of another unit, or if, on verification there is a variation of more than ± 300 ft between the level readout and the reported level, the pilot will normally be instructed to switch off Mode C.

When reporting levels under routine procedures or when requested by ATC unit, pilots shall always state precisely (to the nearest 100 ft) the current altimeter reading to facilitate verification of the accuracy of Mode C data.

2.1 Emergency procedures

NIL

2.2 Air-ground communication failure and unlawful interference procedures

For radio communication failure refer to [1.3.2](#)

2.3 SSR code assignment

Without prior instruction, the transponder shall be operated on code:

- **7500** in case of unlawful interference;
- **7600** in case of radio communication failure;
- **7700** in case of emergencies;
- **7000** for all VFR flights.

2.4 Voice and CPDLC position reporting requirements

NIL

2.5 Graphic portrayal of area of radar coverage

NIL

3. Automatic Dependent Surveillance - Broadcast (ADS-B)

NIL

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