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**ENR 1.6      ATS SURVEILLANCE SERVICES AND PROCEDURES**

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**1. PRIMARY RADAR****1.1 Supplementary services****1.1.1 Radar service is an integral part of the ATC system within the Budapest FIR.**

Budapest ACC and Budapest TRCC will normally use radar derived information in the provision of air traffic control services.

**1.1.2 Within Budapest FIR radar service is provided by:**

- a. BUDAPEST CONTROL for aircraft operating under Area Control;
- b. BUDAPEST APPROACH for aircraft operating within Budapest TMA;
- c. BUDAPEST FLIGHT INFORMATION may use radar derived information in the provision for flight information service between 4000 feet and 9500 feet altitude. Radar serves only as an aid to provide aircraft with more accurate flight information. It does not relieve the pilot-in-command of an aircraft of any of his responsibilities and he has to make the final decision regarding any suggested alternation of flight plan.

For more details [See ENR 2.1](#)

**1.1.3 Communication**

Aircraft intending to operate under radar services within Budapest FIR shall apply the following R/T procedures (in accordance with Commission Implementing Regulation (EU) No 1185/2016 (SERA C)):

- a. The initial call after a change of air-ground voice communication channel shall contain the following elements (SERA.14065):
  - the designation of the ATS unit being called;
  - call sign and, for aircraft in the heavy wake turbulence category, the word “Heavy” or “Super” if that aircraft has been so identified by the competent authority;
  - level, including passing and cleared levels, if not maintaining the cleared level;
  - speed, if assigned by ATC; and
  - additional elements, if any
- b. Any position report (if required) subsequently shall contain only:
  - aircraft call sign;
  - position;
  - time over (fix)
- c. Aircraft being identified after entering controlled airspace are exempted the requirement of subsequent position reporting. Pilots of aircraft shall resume position reporting when:
  - it is instructed by ATC; or
  - crossing the FIR boundary
- d. For aircraft being provided with aerodrome control service, the initial call shall contain:
  - the designation of the ATS unit being called;
  - call sign and, for aircraft in the heavy wake turbulence category, the word “Heavy” or “Super” if that aircraft has been so identified by the competent authority;
  - position;
  - additional elements, if any

**1.2 The application of radar control service**

For radar separation within the Budapest FIR radar information derived from the primary and secondary

radar stations (En route, TAR) approved by the competent aviation authority, is used.

**1.2.1** Radar control service is applied in accordance with the provisions of ICAO Doc 4444 - ATM/501 Chapter 8. ATS Surveillance Services.

**1.2.2** Radar control service is provided in controlled airspace to aircraft operating within Budapest TMA and Budapest CTA.

**1.2.3** The applicable horizontal radar separation minima:

- Budapest CTA (by Budapest ACC): 5 NM
- Budapest TMA, RUTOL BOX (by Budapest APP): 3 NM

*Note: The 3 NM separation minima is only applied when TAR information is available. Otherwise the 5 NM separation minima is applied.*

**1.2.4** At Budapest Liszt Ferenc International Airport 3 NM separation minima is applied between successive aircraft on adjacent final approach courses or tracks.

**1.2.5** Levels assigned by radar controller to pilots will provide a minimum terrain clearance of at least 1 000 feet regardless the phase of flight.

### **1.3 Radar and air-ground communication failure procedures**

#### **1.3.1 Radar failure**

In the event of radar failure or loss of radar identity of an aircraft under radar control will be advised immediately of the interruption or termination of radar control and as an emergency measure reduced vertical separation (500 feet at/or below FL410 and 1000 feet above FL410) may be resorted to as necessary until standard non-radar separation can be provided or radar control is resumed.

#### **1.3.2 Radio communication failure**

According to ICAO procedures when an aircraft is unable to establish radio connection with the competent ATS unit on the given frequency, the correct function of the radio equipment or the correct setting of the frequency shall be checked. The correct functioning of the receiver can be checked by monitoring continuous transmissions (VOLMET, ATIS) or other message exchanges.

When both transmitting and receiving devices are fully functional, but connection cannot be established (e.g. due to geographical conditions), the aircraft shall request other aircraft operating on the same frequency to relay the message to the ATS unit concerned. If this procedure is unsuccessful, the aircraft shall try to establish connection with other ATS units and request the message to be relayed to the ATS unit concerned.

When an aircraft is unable to establish connection due to receiver failure, pilots shall give continuous reports at set periods or geographical points on the given frequency using the phrase 'TRANSMITTING BLIND DUE TO RECEIVER FAILURE'. The entire transmission shall be repeated once and the time of the next transmission stated.

The ATS unit concerned may advise the aircraft experiencing radio communication failure to carry out a specific manoeuvre as a reply to discover the nature of the radio communication failure. The advisory shall be so that the aircraft returns to the previously cleared route following the identification manoeuvre.

ATS may also advise the aircraft to operate IDENT or change SSR code.

In the case of complete aircraft communication failure the pilot shall carry out the procedures detailed in PANS ATM (ICAO Doc 4444) Chapter 15, paragraph 15.3.

### **1.4 Voice and controller-pilot data link communications (CPDLC) position reporting requirements**

#### **1.4.1 General requirements**

Aircraft are required to report their position when entering controlled airspace. Following aircraft identification position reporting is only required when:

- Requested by ATC,
- Crossing FIR boundary,
- Notified of termination ATS surveillance or loss of radar control.

Position reports shall include:

- Ground station identification on first contact,
- Aircraft identification,
- Aircraft position,
- Aircraft altitude/flight level,
- Crossing times of reporting waypoints.

Following frequency change the position report shall include together with requirements stated above:

- If given speed restriction by ATC, the designated speed,
- In the case of heavy wake turbulence category aircraft, the word 'HEAVY',
- When in descent or climb the leaving altitude/flight level and cleared altitude/flight level.

Aircraft shall report position relative to an important waypoint, ground navigational device or aerodrome.

For information regarding CPDLC [see GEN 3.4.3.2](#).

## 1.5 Graphic portrayal of the area of radar coverage

### 1.5.1 Radar coverage

#### a. Budapest ACC

Radar data from 5 radar stations will be used. Radar data from foreign sensors are utilized under data provision contracts concluded with LPS SK and ROMATSA.

Radar	Position in WGS-84	PSR Range	MSSR Range
Püspökladány (Budapest - East Radar)	472122.90N 0210239.09E	160 NM	200 NM
Kőrishegy (Budapest - West Radar)	471738.97N 0174512.89E	160 NM	200 NM
Velky Javornik	481538.57N 0170947.83E	NIL	160 NM
Velky Bucen	481819.96N 0195214.61E	NIL	160 NM
Manastur	460023.856N 0210812.169E	NIL	256 NM

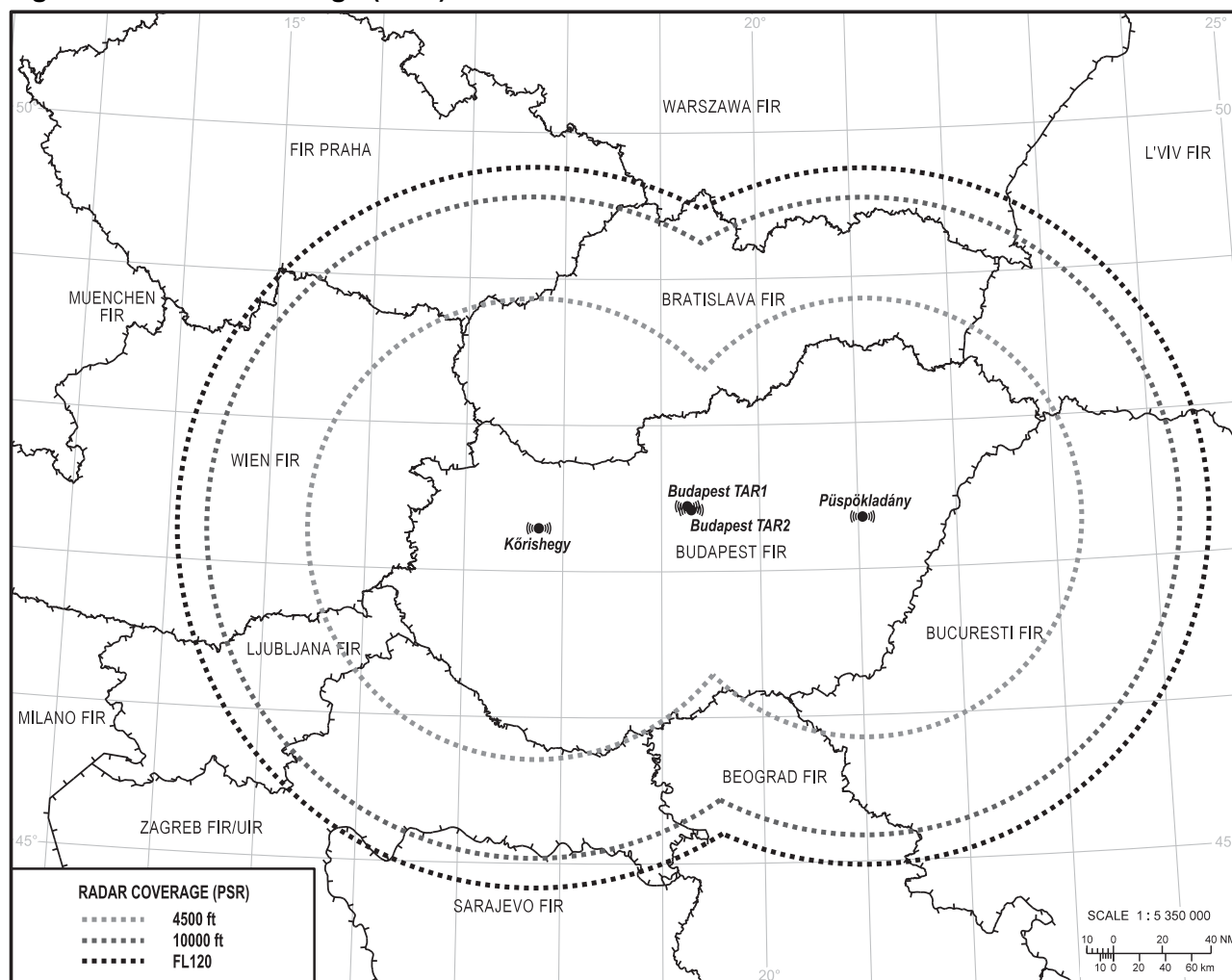
#### b. Budapest APP

A TAR station of Budapest Liszt Ferenc International Airport is equipped with both primary and secondary radars.

Radar	Position in WGS-84	PSR Range	MSSR Range
Budapest Liszt Ferenc International Airport (Budapest - Terminal Area Surveillance Radar) TAR1	472650.81N 0191546.70E	60 NM	150 NM
Budapest Liszt Ferenc International Airport (Budapest - Terminal Area Surveillance Radar) TAR2	472517.38N 0191812.33E	60 NM	150 NM

[See Figure 1.](#)

Figure 1. Radar coverage (PSR)



## 2. SECONDARY SURVEILLANCE RADAR (SSR)

### 2.1 General

2.1.1 Within Budapest FIR the following flights shall be carried out with operating SSR transponder.

- a. all IFR flights,
- b. VFR flights operating in controlled airspace,
- c. VFR flights in the uncontrolled airspace between 4000 feet (1200 M) and 9500 feet (2900 M) AMSL, except non-power driven aircraft with prior notification to the FIC and aircraft operating in glider area.

2.1.2 Pilots of aircraft equipped with Mode "C" or "S" transponder shall operate so that it provides at least Mode "C" transmission unless ATS units specifically direct otherwise.

*Note: The tolerance value of level indications for ATS units is 300 feet. When a discrepancy is in excess of this tolerance value, the ATS units may request to stop Mode "C" transmission. If switching off Mode "C" transmission interrupts the operation of the transponder on Mode "A" as well, the relevant ATS unit shall be notified.*

2.1.3 Except as provided for below, pilots shall operate transponders and select modes and codes in accordance with ATC instructions. Pilots who have already received specific instructions from ATC concerning the setting of the transponder shall, when entering Budapest FIR, maintain that setting until otherwise instructed.

2.1.4 Pilots who have not received specific instructions from ATC concerning the setting of the transponder, shall operate the transponder as stated in the following:

- flights within controlled airspace Mode A/C, code 2000;
- flights within uncontrolled airspace Mode A/C, code:
  - Aeroplanes: code 7000;
  - Helicopters: code 7001;
  - Gliders: code 7002;
  - Lighter than air aircraft: code 7003.

2.1.5 After selection of mode, code the transponder should be switched ON as late as practicable prior to take-off and it should be switched OFF or STAND-BY as soon as practicable after landing, without waiting for instruction to do so.

### 2.2 Emergency procedures

2.2.1 If the pilot of an aircraft encountering a state of emergency has previously been instructed by ATC to operate the transponder on a specific Code, this Code setting usually shall be maintained until otherwise instructed. See para below.

2.2.2 Notwithstanding the procedure in para above a pilot may select Mode A/C, code 7700, whenever the nature of the emergency is such that this appears to be the most suitable course action.

### 2.3 Air-ground communication failure and unlawful interference procedures

#### 2.3.1 Radio communication failure procedure

*See para 1.3.2 above.*

#### 2.3.2 Transponder failure

- a. Prior to departure

In cases where a transponder has failed and definitely cannot be restored prior to departure, permission to perform the flight without SSR must be obtained from the appropriate ATC unit before departure to the nearest aerodrome where the transponder can be fixed. (*See ENR 1.6.*)

In such cases the letter "N" shall be inserted in item 10 of the ICAO flight plan.

- b. After departure

In cases where a transponder failure occurs during flight pilots may expect that ATC units will endeavour to provide continuation of the flight to the aerodrome of first intended landing in accordance with the flight plan. When the traffic situation is such that the flight cannot be continued with a transponder failure ATC may request that the aircraft returns to the departure aerodrome or divert to the nearest suitable aerodrome. After

landing pilots shall make every effort to have the transponder restored to normal operation. If repair cannot be effected, pilots shall comply with the provisions in item a.) above.

### 2.3.3 Unlawful interference procedure

See ENR 1.13

### 2.4 The system of SSR code assignment

SSR Codes will be assigned in accordance with the European Code Assignment Plan, which is based on the Origination Region Code Assignment Method (ORCAM) and Mode 'S' Elementary Surveillance (ELS) conspicuity code assignment (A1000).

### 2.5 Voice and CPDLC position reporting requirements

See para 1.4 above.

### 2.6 Graphic portrayal of the area of SSR coverage

See Figure 2.

Figure 2. Radar coverage (SSR)



### **3. AUTOMATIC DEPENDENT SURVEILLANCE — BROADCAST (ADS-B)**

ADS-B is a function on-board an aircraft that periodically transmits data like identification position, velocity and other information. The data link used for ADS-B messages in Europe is 1090 MHz Extended Squitter.

The aircraft position is determined by the use of GNSS. The broadcasted ADS-B messages are received by a network of ADS-B Ground Stations, processed and sent to the ATM systems to be presented on the Situation Data Display (SDD) used by ATS.

#### **3.1 Emergency procedures**

[See 2.2.](#)

#### **3.2 Air-ground communication failure and unlawful interference procedures**

[See 2.3.](#)

#### **3.3 Aircraft identification requirements**

ADS-B aircraft identification coding shall be compliant to ICAO Annex 10. Vol 4. and ICAO DOC 9871. requirements.

State aircraft that do not transmit ADS-B Out for technical or operational reasons will be accommodated by ANSPs through traditional surveillance methods such as Mode A/C/S. The flight plan shall include in item 18 the indicators SUR/EUADSBX, SUR/EUEHSX, SUR/EUELSX or a combination thereof.

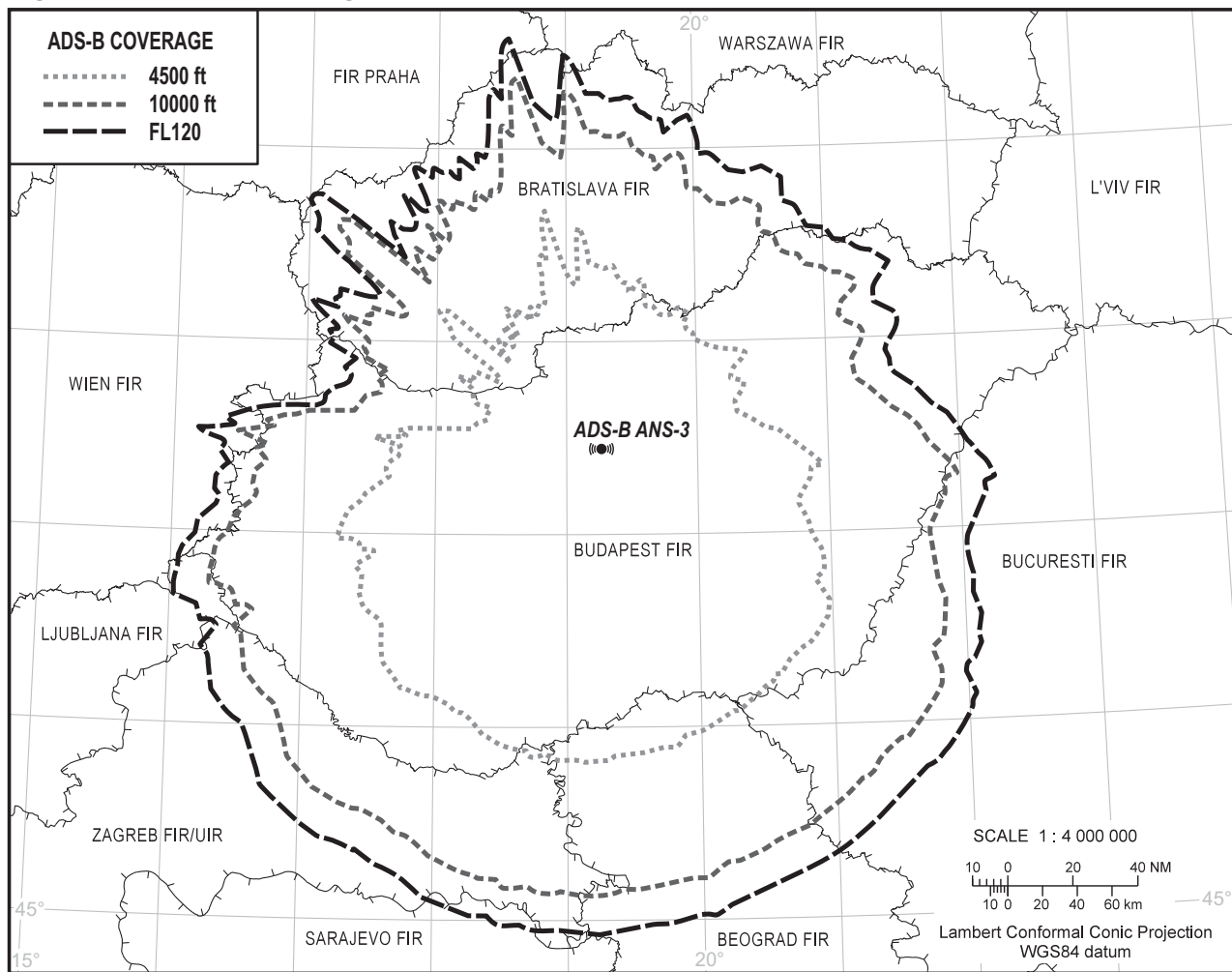
#### **3.4 Voice and CPDLC position reporting requirements**

NIL

#### **3.5 Graphic portrayal of the area of ADS-B coverage**

[See Figure 3.](#)

### Figure 3. ADS-B coverage



#### 4. OTHER RELEVANT INFORMATION AND PROCEDURES

NIL