ENR 1.6 Radar services and procedures

1 Primary radar

1.1 Supplementary services

1.1.1 ATS surveillance systems normally operate as an integral part of the parent ATS units and provide ATS Surveillance service to aircraft, to the maximum extent practicable, to meet the operational requirement. Many factors, such as radar coverage, controller workload and equipment capabilities, may affect these services, and the controller shall determine the practicability of providing or continuing to provide ATS surveillance service in any specific case.

1.1.2 ATS surveillance service shall be provided by the air traffic control units, which are using the following call signs:

a. ACC (area control centers) - “Control”;
b. APP (approach control) - “Approach”;
c. TWR (tower control) - “Tower”;

1.1.3 Yerevan ACC, APP, TWR are operated by two radar stations and multilateration system:

a. PSR/SSR - station at position 4NM south-west from airport Zvartnots “Zvartnots”, range 100NM/200NM;
b. MSSR/ADS-B - station at position 34NM south-east from airport Zvartnots, range 220NM/250NM;;
c. WAM/ADS-B extended squiter at airport “Zvartnots”, range 150NM/200NM.

1.1.4 Gyumri TWR is operated by multilateration system. WAM/ADS-B extended squiter, range 150NM/200NM.

1.2 The application of ATS surveillance service

1.2.1 Identification is achieved according to the provisions specified by ICAO.

1.2.2 ATS surveillance service is provided to aircraft operating within Yerevan and Gyumri TMA and along all AWYs. This service may include:

a. separation of arriving, departing and en-route traffic;
b. monitoring of arriving, departing and en-route traffic to provide information on any significant deviation from the normal flight path;
c. vectoring when required;
d. assistance to aircraft in emergency;
e. assistance to aircraft crossing controlled airspace;
f. warnings and position information on other aircraft considered to constitute a hazard;
g. information to assist in the navigation of aircraft;

1.2.3 The horizontal separation minimum based on ATS surveillance systems are:

a. - CTA, UTA and ATS routes: 5 NM between identified aircraft in the same and opposite tracks at the same level,
b. - TMA: 5 NM between identified controlled aircraft,
c. - 3 NM between succeeding aircraft which are established on the same final approach track to the runway end.

1.2.4 Levels assigned by the controller to pilots will provide a minimum terrain clearance according to the phase of flight.

1.3 ATS surveillance system and radio failure procedures

1.3.1 ATS surveillance system failure

In the event of ATS surveillance system failure or loss of identification, instructions will be issued to restore procedural separation and the pilot will be instructed to communicate with the parent ATS unit.
In the crossing routes and the longitudinal interval – 10 minutes.

1.3.2 Radio failure

1.3.2.1 The controller will establish whether the aircraft radio receiver is working by instructing the pilot to carry out a turn or turns. If the turns are observed, the controller will continue to provide ATS surveillance service to the aircraft.

1.3.2.2 If the aircraft’s radio is unserviceable, the pilot shall affect see GEN 3.4 point 4.4. In case of fully radio communication failure the pilot shall affect according Regional Supplementary Procedures Doc. 7030.

1.4 Graphic portrayal of surveillance coverage

Surveillanceince coverage of PSR/SSR ENR 1.6-3 and of multilateration (MLAT) see ENR 1.6-4

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2 Secondary surveillance radar (SSR)

2.1 Emergency procedures

2.1.1 Except when encountering a state of emergency, pilots shall operate transponders and select modes and codes in accordance with ATC instructions. In particular, when entering Yerevan FIR, pilots who have already received specific instructions from ATC concerning the setting of the transponder shall maintain that setting until otherwise instructed.

2.1.2 Pilots of aircraft about to enter Yerevan FIR who have not received specific instructions from ATC concerning the setting of the transponder shall operate the transponder on Mode A+C, Code 20 (or 2000) before entry and maintain that code setting until otherwise instructed.
In all other circumstances, the transponder shall be set to Mode A+C, Code 77 (or 7700).

2.1.3 If the pilot of an aircraft encountering a state of emergency has previously been directed by ATC to operate the transponder on a specific code, this code setting shall be maintained until otherwise advised.

2.1.4 Notwithstanding the procedure in 2.1.1 above, a pilot may select Mode A+C, Code 77 (or 7700) whenever the nature of the emergency is such that this appears to be the most suitable course of action.

2.1.5 Aircraft equipped only with eastern type of SSR transponder will not be served within Yerevan TMA without special permission from Yerevan ATC center. This does not apply to ambulance or search and rescue flights. Request for operating single flights must be submitted not later than two hours before the estimated time of departure to the following address:

Tel:+37410 292905
AFS:UDDDZRZX

Note: Continuous monitoring of responses on Mode A Code 77 is provided.

2.2 Radio communication failure and unlawful interference procedures

2.2.1 Radio communication failure procedure

In the event of an aircraft radio receiver failure, a pilot shall select Mode A+C, Code 76 (or 7600) and follow established procedures; subsequent control of the aircraft will be based on those procedures.

2.2.2 Unlawful interference procedure

Pilots of aircraft in flight subjected to unlawful interference shall endeavour to set the transponder to Mode A, Code 7500 to make the situation known, unless circumstances warrant the use of Mode A, Code 77 (or 7700).

Note 1: Mode A, Code 7500 is permanently monitored in the Yerevan FIR/UIR.

Note 2: In emergency situations, which are prescribed above in ENR 1.6 para 2.1 and 2.2, during using the transponder in eastern mode, the crew shall to set mode “EMERGENCY”-“BEDSTVIE”, which is permanently monitoring in Yerevan FIR..

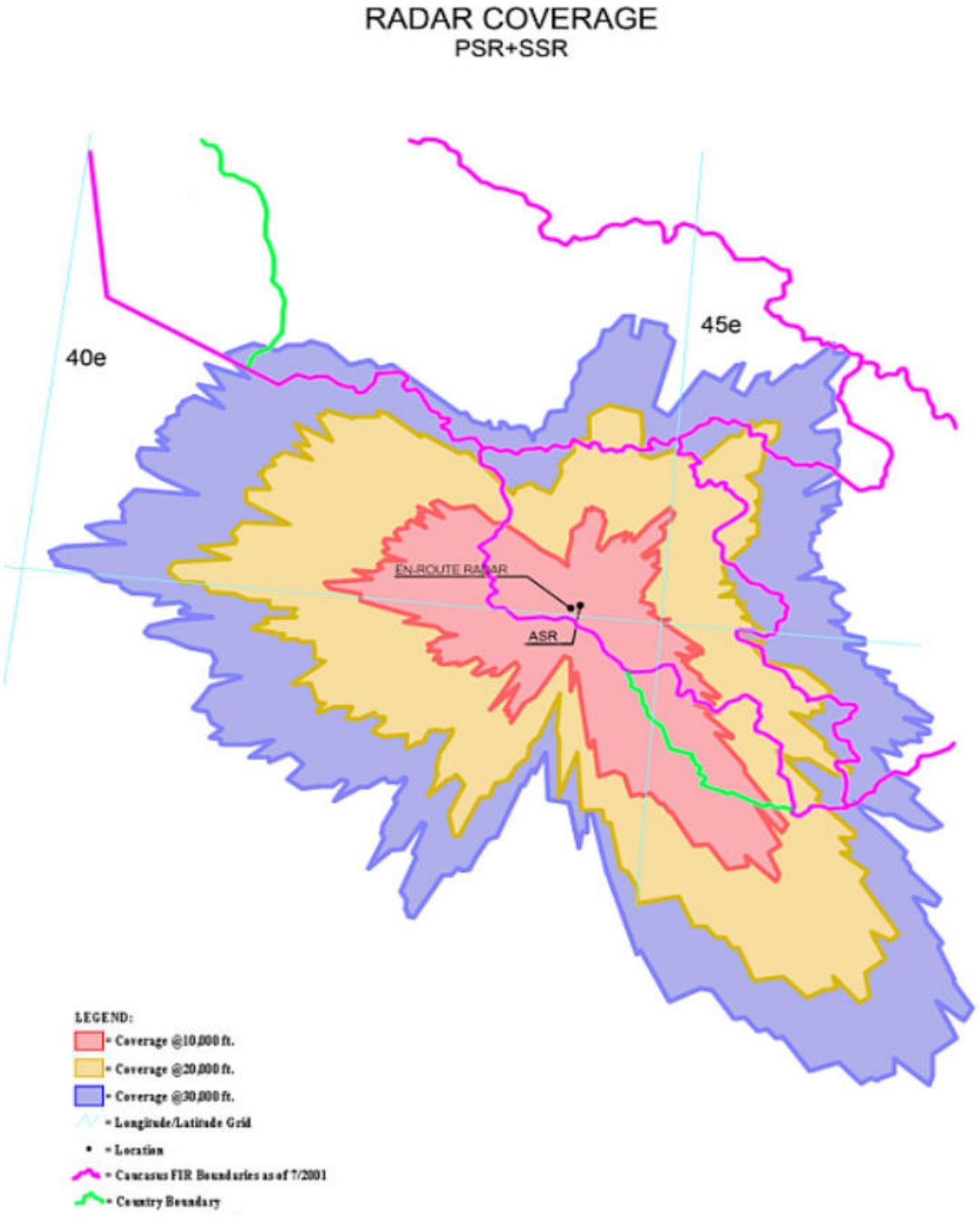
2.3 System of SSR Code assignment

The following functional codes (first two digits) are assigned by Yerevan ACC: The functional codes for arriving and transiting aircraft are supported by Yerevan ACC. The functional codes for departing aircraft are supported by Yerevan APP. :

for international flights	3140 – 3177
for domestic flights	0040 – 0057

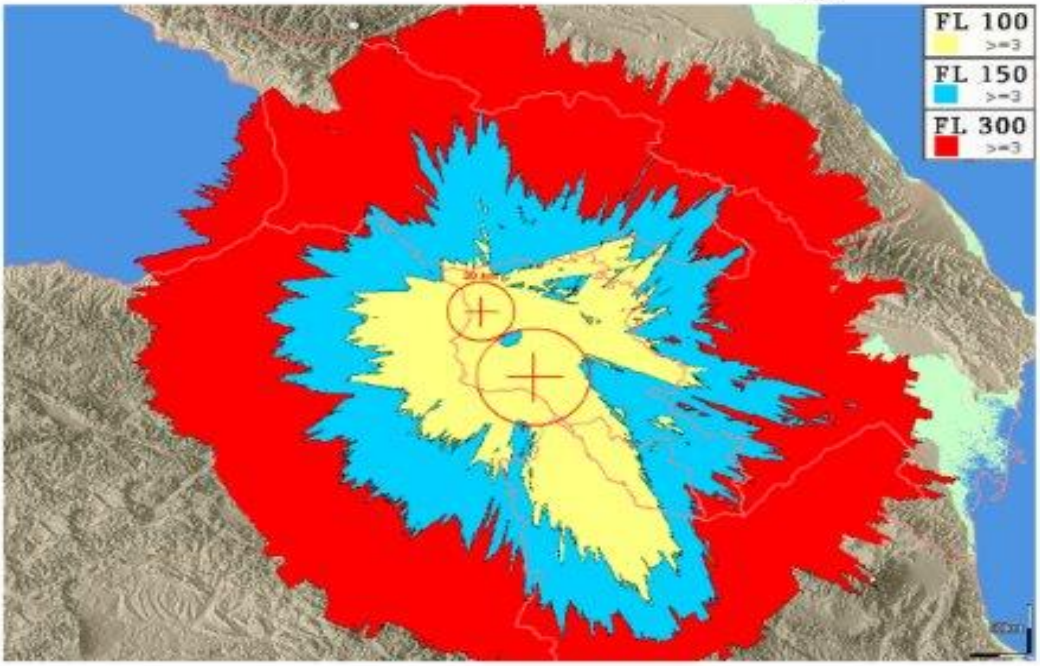
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Graphic portrayal of area of coverage of radar/SSR

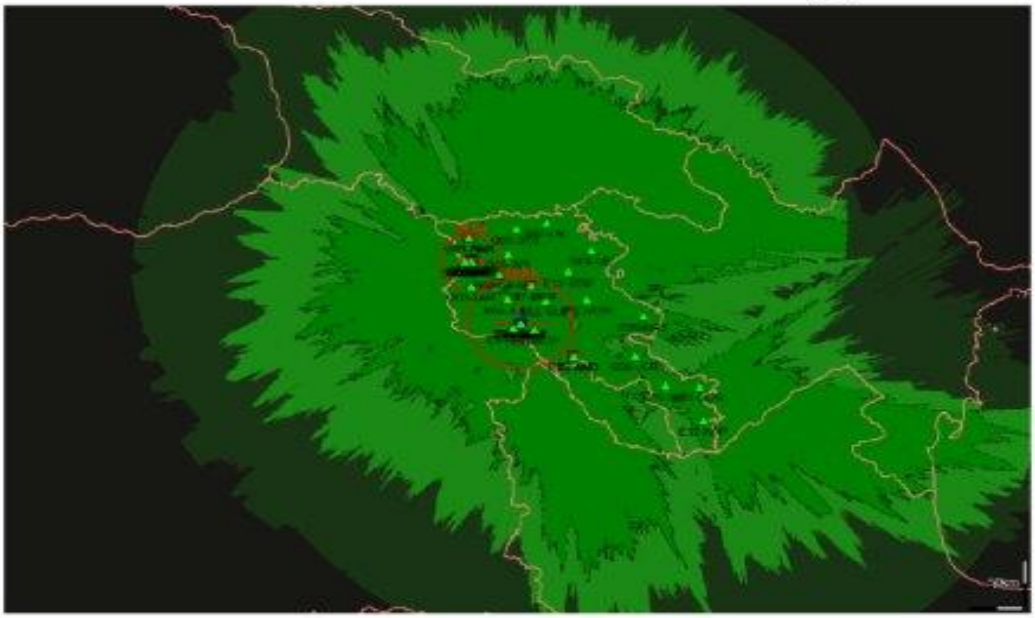


Multilateration (MLAT)

MLAT coverage

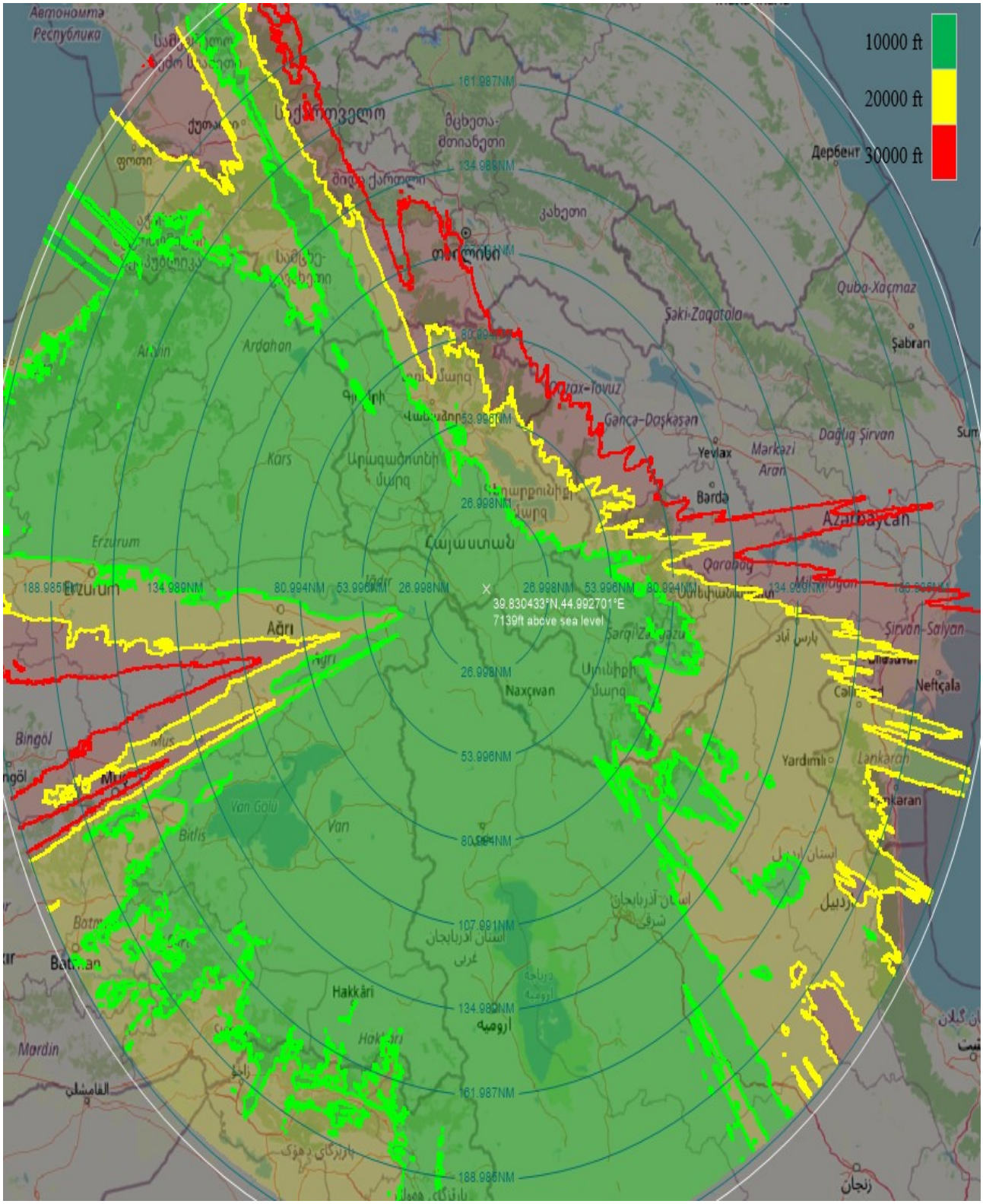


ADS-B coverage



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MSSR/ADS-B


10000 ft
20000 ft
30000 ft
161.987NM
134.989NM
80.994NM
53.996NM
26.998NM
188.985NM
107.991NM
39.830433°N,44.992701°E
7139ft above sea level
Erzurum
Ağrı
Naxçıvan
Van
Bitlis
Hakkâri
Mardin
Bingöl
Muş
Batman
Ardahan
Kars
Artvin
Gürcüstan
Azərbaycan
Ermənistan
Türkiyə
Dərbənd
Şəki-Zaqatala
Quba-Xaçmaz
Şabran
Gəncə-Daşkəsən
Yevlax
Bərdə
Qarabağ
Şirvan-Salyan
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