

FLIGHT PLANNING

But E cannot stand alone, it needs B1—ADS-B Out only or B2—ADS-B Out and In (the “In” on the transponder frequency)—EB1 or EB2 respectively.

For Universal Access Transceivers (UAT) using either Mode C or Mode S transponders, the codes are: CU1 or SU1 for ADS-B Out and CU2 or SU2 ADS-B Out and In (the “In” on the UAT frequency).

Also if the aircraft is ADS-B Out compliant, it must also have a WAAS GPS source but not necessarily WAAS GPS navigation capability. Some transponders and UAT equipment have built-in WAAS GPSs to provide accurate position, but such GPSs cannot be used for navigation.

The following would be the most common options for surveillance codes: C, S, EB1, EB2, CU1, CU2, SU1 or SU2.

Some combinations are not possible: for example CB1, SB1 and EU1.

Additionally if the GPS is WAAS capable for navigation, ITEM 18 *Other Information* needs “NAV/SBAS”—and requires a “Z” in ITEM 10.

SBAS refers to Satellite Based Augmentation System, what we call WAAS, but other countries call SBAS differently (e.g. EGNOS in Europe, MSAS in Japan, GAGAN in India).

However, if the aircraft has Performance Based Navigation (PBN) capability, then PBN/ codes are placed in ITEM 18 without putting information on SBAS. It may be assumed that

if the aircraft has WAAS GPS navigation capability, it also has PBN capability. More on PBN later.

More Common Equipment Codes

The most common combinations of Equipment Codes for light general aviation aircraft are shown in the table on the following page.

Can you file PBN codes, since they do require approval? For Part 91 subchapter K (fractional owners), Part 121 and Part 135—the approval for each individual aircraft must be in FAA approved Management Specifications (MSPECS) or Operations Specifications (OPSPECS) as appropriate. Additionally, flight crews might also need to be approved. For Part 91 operations, the approval needs to be in the POH—specifically in the Airplane Flight Manual Supplement provided by the avionics OEM with a specific configuration. For example, for a Garmin GTN Navigator:

“The Garmin GNSS navigation system complies with the equipment requirements of AC 90-100A for RNAV 2 and RNAV 1 operations. In accordance with AC 90-100A, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-100A are authorized to fly RNAV 2 and RNAV 1 procedures. Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval from the FAA.” (Ref: Garmin AFMS GTN GPS/SBAS System, Rev 6, 16 Sep 2016)

Determining The Codes

So far we have been talking about common installations. But, what about a business jet that has intercontinental capabilities? The equipment codes are more complex. But we don’t have to go that far—what about a pilot renting a Piper Arrow or a G1000 C172? Where would we find the reference for the installed equipment codes?

Let’s start with Aircraft OEMs. Would Piper know what equipment is installed in a 25-year-old Arrow which has gone through a couple of generations of avionics upgrades? Would Cessna know if there were

3 MESSAGE TYPE (FPL) 7 AIRCRAFT IDENTIFICATION 8 FLIGHT RULES TYPE OF FLIGHT
 9 NUMBER TYPE OF AIRCRAFT WAKE TURBULENCE CAT. 10 EQUIPMENT
 13 DEPARTURE AERODROME TIME
 15 CRUISING SPEED LEVEL ROUTE
 16 DESTINATION AERODROME TOTAL EET (HR MIN) ALTN AERODROME 2ND ALTN AERODROME
 18 OTHER INFORMATION
 SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)
 19 ENDURANCE (HR MIN) PERSONS ON BOARD EMERGENCY RADIO (UHF, VHF, ELT)
 SURVIVAL EQUIPMENT (POLAR, DESERT, MARITIME, JUNGLE) JACKETS (LIGHT, FLUORES, UHF, VHF)
 DINGHIES (NUMBER, CAPACITY, COVER, COLOR)
 AIRCRAFT COLOR AND MARKINGS
 REMARKS
 PILOT-IN-COMMAND
 FILED BY ACCEPTED BY ADDITIONAL INFORMATION

The flight plan form less ITEM 1 and 2. ITEM 10 Equipment and ITEM 18 Other information (red ellipse) on the ICAO Flight Plan present the greatest challenge to preparing the flight plan.