

# Glossary of Terms

---

## ADS-B (Automatic Dependent Surveillance – Broadcast)

ADS-B systems broadcast your aircraft's position to Air Traffic Control (ATC) and other appropriately equipped aircraft / vehicles using new avionics (usually tied to your transponder). There are two types of ADS-B transmissions: ADS-B Out, which refers to transmissions going out from your aircraft, and ADS-B In, which are transmissions that your aircraft can copy if you have the proper equipment.

Virtually all corporate aircraft are required to be ADS-B Out capable in the United States by 2020. There is no requirement to obtain a Letter of Authorization (LOA) for ADS-B Out operations in the domestic United States; however, **an LOA is required for most international ADS-B Out operations and all ADS-B In operations.**

## ADS-C (Automatic Dependent Surveillance – Contract)

This is a Data Link Communications (DLC) application that allows the aircraft to form an automatic position reporting contract with Air Traffic Control (ATC). When enabled, the aircraft will automatically provide data to ATC without further input from the pilots. Although it has some similarity with Automatic Dependent Surveillance – Broadcast (ADS-B), the two technologies are different systems and have entirely separate standards, mandates, and requirements.

## ATN-B1 (Aeronautical Telecommunication Network – Baseline)

This is a type of Data Link Communications (DLC) system that provides the aircraft with the capability to perform Controller Pilot Data Link Communications (CPDLC). It is a digital-based system and it is used in continental European airspace. (See also "VDL-Mode 2").

## B-RNAV (Basic Area Navigation)

Also known as "RNAV-5" or "RNP-5", it refers to an aircraft's Required Navigation Performance (RNP) ability in the continental en-route area. A Letter of Authorization (LOA) is not strictly required in all airspaces, but is strongly recommended.

## CPDLC (Controller-Pilot Data Link Communications)

This is a Data Link Communications (DLC) application that allows pilots to provide text reports to Air Traffic Control (ATC) in lieu of radio contact. In many airspaces where CPDLC is supported, the preference is for pilots to use CPDLC to send reports to ATC and to receive clearances, with high-frequency radio used as a backup; this helps to alleviate radio congestion. Aircraft operating in the North Atlantic (NAT) Region at or above FL290 will be required to be equipped with CPDLC by January 2020.

# Glossary of Terms

---

## **CPDLC-DCL (CPDLC Departure Clearances)**

CPDLC-DCL provides automated assistance for requesting and delivering initial and revised departure clearances using CPDLC. US Part 91 operators do not currently require a Letter of Authorization (LOA) to use CPDLC-DCL.

## **DLC (Data Link Communications)**

This is an umbrella term that covers various technologies, systems, and mandates, including FANS ATN-B1, LINK 2000+, and more. DLC refers to the aircraft's ability to communicate with Air Traffic Control (ATC) using Data Link functions – specifically, Controller-Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance – Contract (ADS-C). DLC systems enhance efficiency and safety resulting in lower costs overall for civil and commercial aviation. Some areas of the world are already requiring that aircraft be DLC capable, and a Letter of Authorization (LOA) is required for DLC operations.

## **FANS (Future Air Navigation Systems)**

This is an analog system that provides Controller-Pilot Data Link Communications (CPDLC) capability and is used in remote / oceanic airspace.

## **LINK 2000+**

This is the European program that requires aircraft operating above FL285 (flight level 285) to be Controller-Pilot Data Link Communications (CPDLC) capable by February of 2020. If you receive Data Link Communications (DLC) authorization from the Federal Aviation Administration (FAA) and are equipped with operative ATN-B1 equipment, you will also meet the requirements for LINK 2000+ and do not need to obtain additional authorizations.

*Note: LINK-2000+ is the name of a government program only and does not refer to a specific set of avionics. A CPDLC system capable of ATN-B1 Operations (i.e., VDL Mode 2 capable VHF units) may be considered LINK 2000+ compliant.*

## **NAT HLA (North Atlantic High Level Airspace)**

This refers to the standards required to operate in the North Atlantic (NAT) region. A Letter of Authorization (LOA) is currently required for NAT operations.

*Note: Much of this airspace was previously designated as "NAT Minimum Navigation Performance Specifications (MNPS)" airspace. Operators without a NAT HLA authorization but with MNPS authorization may operate in the NAT HLA until December 31, 2019.*

# Glossary of Terms

---

## **PBN (Performance Based Navigation)**

PBN is an umbrella term for Area Navigation (RNAV) / Required Navigation Performance (RNP) specifications and was created to simplify the language used when listing requirements for different airspace. Letters of Authorization (LOAs) may be issued based on the “PBN requirements” of various airspaces.

The International Civil Aviation Organization (ICAO) categorizes PBN specifications based on the phase of flight (i.e., terminal, en route, oceanic / remote, and approach). The Federal Aviation Administration (FAA) has a separate PBN LOA for each phase, and it is recommended that operators obtain an LOA for each phase to clarify their capabilities when operating internationally. For example, although no LOA is required for Part 91 operators to conduct terminal Required Navigation Performance (RNP) operations in the United States, some countries may require an authorization. LOA C063 can be used to demonstrate that the operator is capable of terminal RNP-1 and/or RNAV-1 operations in those countries.

## **P-RNAV (Precision Area Navigation)**

Also known as “RNAV-1”, it refers to an aircraft’s Required Navigation Performance (RNP) ability in the terminal area. A Letter Of Authorization (LOA) is required for P-RNAV operations, especially when operating in Europe.

## **RNP (Required Navigation Performance)**

This is the aircraft’s ability to meet navigation requirements within a specified margin of error, usually indicated by a number (e.g., RNP-10, RNP-4, etc.). It is similar to “Area Navigation” (RNAV) and is included in the term “Performance Based Navigation” (PBN).

Aircraft are required to have an oceanic RNP Letter of Authorization (LOA) to operate on most oceanic routes (e.g., RNP-10/4). RNP operations in other phases of flight may require an LOA as well, per The International Civil Aviation Organization (ICAO)’s categorization of PBN operations.

## **RVSM (Reduced Vertical Separation Minimum)**

This is a standard for vertical separation that is usually applied between FL290 (flight level 290) and FL410 (flight level 410). It requires aircraft to meet certain equipment and performance standards, as well as a Letter of Authorization (LOA), to conduct RVSM operations.

# Glossary of Terms

---

## **VDL (Very High Frequency Data Link) – Mode 0/A**

This is the technical specification for an analog-based Data Link Communications (DLC) system utilized by some Future Air Navigation Systems (FANS) installations.

## **VDL (Very High Frequency Data Link) – Mode 2**

This is the technical specification for a digital-based Data Link Communications (DLC) system utilized by Aeronautical Telecommunication Network – Baseline (ATN-B1) and some Future Air Navigation Systems (FANS) installations.