



NAT OPS BULLETIN

Serial Number: 2010-012

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Subject: Improving understanding of
FANS 1/A data link procedures in the
NAT Region

The purpose of North Atlantic Operations Bulletin 2010-012 is to highlight some of the data link procedures in the NAT Region in order to increase the benefits for all airspace users and air traffic service providers from the use of data link.

Among other subjects, the 45th Meeting of the North Atlantic Systems Planning Group (NAT SPG) discussed safety concerns and the need to improve the efficiency of High Frequency (HF) voice utilisation in the NAT Region. In 1997 the NAT Region agreed to begin using certain FANS 1/A data link applications, namely Automatic Dependent Surveillance – Contract (ADS-C) and Controller Pilot Data Link Communications (CPDLC). The NAT Region also implemented waypoint position reporting using flight management computer functionality (FMC-WPR). The introduction of these services is intended to enhance safety and reduce the necessity to communicate via HF voice. These benefits are being gained by some, but not all, flight crews using NAT Region data link services. Some common errors and misunderstandings are addressed in this bulletin.

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Meaning of “AT” and “BY” in CPDLC clearances

There have been a number of examples where flight crews have not properly executed CPDLC clearances containing the words “AT” or “BY”. This is a safety concern, because the “AT” and “BY” restrictions are included in the clearance to ensure correct separation between flights. Operational experience has shown that these CPDLC message elements are most likely to be misunderstood by flight crews. Flight crews that do not have English as their native language may be especially open to error since the words “AT” or “BY” may have a different meaning in their native language. It is therefore of utmost importance that flight crews know the meaning of the words “AT” and “BY” in CPDLC communications. Information about this subject is also included in the *Oceanic Errors Safety Bulletin* which is available on the ICAO EUR/NAT website at www.paris.icao.int, by following the links for Documents >> NAT Docs. Additional explanatory material has been developed to assist with the correct interpretation of CPDLC messages containing “AT” and “BY” and is provided at the end of this Bulletin, for your ease of reference. Flight crews are strongly encouraged to review this material to ensure correct understanding and execution of this type of ATC clearance.

The direct benefit from the correct execution of clearances is a reduction in flight risk in the NAT Region.

Initial Contact with Aeradio

In the past, flight crews were required to provide a position report on initial contact with each aeradio station serving a NAT Flight Information Region (FIR). If a flight crew is using ADS-C or FMC-WPR, this is usually not necessary. More details regarding flight crew procedures for initial contact with aeradio can be found in the guidance material supporting NAT Region data link. This material is available on the ICAO EUR/NAT website, under “Documents”, “NAT Documents”.

The direct benefits from correct application of this procedure include reduced HF congestion, reduced flight crew workload and reduced aeradio workload.

CPDLC requests for offsets or deviations

CPDLC offers flight crews options to request parallel offsets or weather deviations using the following standard CPDLC downlink message elements:

DM#	Message Element	Message Intent
15	REQUEST OFFSET [direction] [distance] OF ROUTE	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved.
16	AT [position] REQUEST OFFSET [direction] [distance] OF ROUTE	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified position.
17	AT [time] REQUEST OFFSET [direction] [distance] OF ROUTE	Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified time.



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DM#	Message Element	Message Intent
26	REQUEST WEATHER DEVIATION TO [position] VIA [route clearance]	Request for a weather deviation to the specified position via the specified route.
27	REQUEST WEATHER DEVIATION UP TO [direction] [distance offset] OF ROUTE	Request for a weather deviation up to the specified distance off track in the specified direction.

Each of these messages involves different types of requested routes. Accordingly, the ATC clearances provided in response to these requests will involve different amounts of airspace being protected for the flight. The parallel offset requests (DM# 15, 16 and 17) and the weather deviation route request (DM# 26) makes reference to specified, defined, routes. When the associated clearance is provided, ATC will protect the airspace for the specified route. In contrast, the offset deviation request (DM#27) is not a request for a defined route; rather, it is a request for a defined amount of airspace. When ATC provides the associated clearance (CLEARED TO DEVIATE UP TO [direction] [distance offset] OF ROUTE), the full amount of the airspace will be protected for the flight.

The direct benefit from the correct choice of request is that the proper ATC protection will be provided for the flight, according to how the flight is actually manoeuvring.

CPDLC requests for confirmation of the next or ensuing waypoint

From time to time, ATC receives information indicating that a flight is about to commit a Gross Navigation Error. If the flight is equipped with FANS 1/A data link, the most efficient way for ATC to confirm the flight's intentions is use the standard CPDLC message elements designed to request this information. The two messages are:

UM#	Message Element	Message Intent
140	CONFIRM NEXT WAYPOINT	Instruction to confirm the identity of the next waypoint.
142	CONFIRM ENSUING WAYPOINT	Instruction to confirm the identity of the next plus one waypoint.

With particular regard to UM 142 CONFIRM ENSUING WAYPOINT, operational experience has shown that flight crews often do not understand the intent of this message. Flight crews are strongly encouraged to review the meanings of these two message elements.

The direct benefit from the correct understanding and response to these messages is the prevention of GNEs in the NAT Region, particularly those that occur at oceanic entry.

Conclusion

The North Atlantic Systems Planning Group has prepared guidance material to support data link operations in the North Atlantic Region. This material provides assistance and guidance to flight crews and operators and will help flight crews to understand how ADS-C, CPDLC and FMC-WPR operates along with detailing the associated procedures. So far as reasonably possible, these procedures are consistent with the FANS 1/A procedures in other ICAO Regions and with the CPDLC



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procedures detailed in *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM) (Doc 4444). Guidance documents and other valuable material to support operations in the North Atlantic Region are available on the ICAO EUR/NAT website at www.paris.icao.int, by following the links for Documents >> NAT Docs.

UM #	Message Element	Message Intent	Response
21	AT [time] CLIMB TO AND MAINTAIN [altitude]	Instruction that AT or AFTER the specified time, a climb to the specified level is to commence and once reached the specified level is to be maintained.	W/U
22	AT [position] CLIMB TO AND MAINTAIN [altitude]	Instruction that AFTER PASSING the specified position, a climb to the specified level is to commence and once reached the specified level is to be maintained	W/U
24	AT [time] DESCEND TO AND MAINTAIN [altitude]	Instruction that AT or AFTER the specified time, a descent to the specified level is to commence, and once reached, the specified level is to be maintained.	W/U
25	AT [position] DESCEND TO AND MAINTAIN [altitude]	Instruction that AFTER PASSING the specified position, a descent to the specified level is to commence and once reached the specified level is to be maintained.	W/U
26	CLIMB TO REACH [altitude] BY [time]	Instruction that a climb is to commence at a rate such that the specified level is reached AT or BEFORE the specified time.	W/U
27	CLIMB TO REACH [altitude] BY [position]	Instruction that a climb is to commence at a rate such that the specified level is reached BEFORE PASSING the specified position.	W/U
28	DESCEND TO REACH [altitude] BY [time]	Instruction that a descent is to commence at a rate such that the specified level is reached AT or BEFORE the specified time.	W/U
29	DESCEND TO REACH [altitude] BY [position]	Instruction that a descent is to commence at a rate such that the specified level is reached BEFORE PASSING the specified position.	W/U

- END -