Deviation on CS ACNS.B.DLS.B1.075 - CPDLC Downlink Messages

Applicable to Aeroplane operating according to Commission Regulation (EC) No 29/2009 of 16 January 2009

Introductory note:

The following Equivalent Safety Finding shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) of which states:

"*2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency.*"

Statement of Issue

The purpose of this deviation is to address an application for installation of a data link system that is not able to transmit the message *DM89 MONITORING [unitname] [frequency]* as part of the message set that can be downlinked. CS ACNS.B.DLS.B1.075 'CPDLC Downlink Messages', requires the DM89 MONITORING message as part of the required ATN B1 message set. Additionally, this deviation requires one to also consider CS ACNS.A.GEN.001 'Applicability', because compliance may not be fulfilled.

CS-ACNS Subpart B Section 2 contains the applicable Certification Specifications (CS) and Acceptable Means of Compliance (AMC) for data link installations interoperable with ATN B1 data link, supporting the European data link services (DLS) regulation (EC) No 29/2009. CS ACNS.A.GEN.001 states that "*compliance with the appropriate section of these Certification Specifications ensures compliance with the following European regulations:*
… (d) Commission Regulation (EC) No 29/2009 of 16 January 2009 laying down requirements on data link services for the Single European Sky; …".

By deviating from CS ACNS.B.DLS.B1.075, compliance with Commission Regulation (EC) No 29/2009 may be affected.

CS-ACNS Subpart B Section 2 requires that airborne ATN B1 data link installations are compliant with particular sections of EUROCAE ED-120, related to Safety and Performances, as well as with EUROCAE ED-110B, related to Interoperability.

The proposed installation meets the standards for baseline ATN B2 data communications. Compatibility with the ATN B1 standard is assured through compliance with the EUROCAE ED-231A standard, 'Interoperability requirements standard for Baseline 2 ATS data communications, ATN B1 accommodation (ATN Baseline 1 – Baseline 2 Interop standard)'. This standard defines the backward compatibility requirements for ATN B2 airborne and ground systems in order to support the required services when communicating with ATN B1 ground and airborne implementations.

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Downlink Message "*DM89 Monitoring (unit name) (frequency)"* is included in ATN B1 standards to support transfers between 2 Air Traffic Service Units (ATSU's), or to support changes of frequency within different sectors of the same ATSU. Operating methods are referred in EUROCAE ED-120 Sections 5.1.1.1.1 to 5.1.1.1.7, and by reference, are also required in Annex II of Commission Regulation (EC) No 29/2009.

ETSI document EN 303 214, V1.2.1 (2012-04), Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004; 'Requirements for ground constituents and system testing' considered the DM89 MONITORING message conditional in the implementation for ground systems.

During a workshop of the "Monitor task force" on the 6th of December 2006, it was identified that the ACM Monitor concept could not be implemented in LINK2000+ baseline. Later in March 2009, it was concluded that even with the DM89 MONITORING message being part of the CPDLC message set, various issues were found during the early validation. Confirmation of voice availability continued to be needed, resulting in the recommendation not to use the DM89 MONITORING operationally.

During development of the ATN B2 standard, EUROCAE WG78/RTCA SC-214 assessed that the use of the DM89 MONITORING message was not the right mechanism to confirm that a pilot is actually monitoring a particular frequency. Consultation of European ANSP's confirmed that the DM89 MONITORING message was not an adequate solution to support silent transfer. WG78/SC214 approved the decision to remove the DM89 MONITORING message from ATN B2 CPDLC message set, by April 7th 2009. However, the DM89 MONITORING message is still included in ED-231A standard, in order to ensure backwards compatibility of B2+B1 aircraft with B1 ATSU's, albeit stating that when supporting the B1 backward compatibility, the B2 aircraft system may not be expected to send the DM89 MONITORING message to B1 ground systems.

At ICAO level, ICAO Doc 10037 Global Operational Data Link (GOLD) Manual, First edition, 2017, refers to the DM89 MONITORING message as "***not operationally required***".

Doc 10037 states:

A.6.4 ATN B1 downlink message element

Message element	Justification
DM89 MONITORING *(unit name) (frequency)*	*Not operationally required.* *Note. – This message has been excluded from future B2 implementation.*

B.2.2.3.2 *UM 120 MONITOR* (unitname) (frequency)

B.2.2.3.2.1   The UM 120 MONITOR message is not used for inter-ATSU and intra-ATSU flight transfers. This is because controllers want to have the assurance that voice communication is established at "initial call" to the next sector or ATS unit. Moreover, the "initial call" is used to communicate cleared level and passing level, to reconfirm clearance previously given and to verify the accuracy of Mode-C at the first sector of the receiving ATS unit.

B.2.2.3.2.2   In response to UM 120 MONITOR sent by the transferring ATS unit, DM 89 MONITORING is sent to the receiving ATS unit which provides a confirmation message to the controller that the flight crew has switched to the instructed VHF frequency. It appears that in many aircraft, the uplinked frequency is not automatically loaded in the radio management panel and that the frequency and the ATS unit's facility designator in the 'DM 89 Monitoring' message are manually keyed in, making frequency switching more prone to errors.

B.2.2.3.2.3   As voice is the primary means of communications, controllers are not confident that silent transfers can be used in this airspace.

ICAO State letter AN 13/2.1-16/54 of 23 June 2016, introduces Amendment 7A to the PANS-ATM, which removes the DM89 MONITORING message from the from ICAO PANS-ATM CPDLC Message set, as shown in Table A5-7 in Appendix 5 of the letter:

Message element identifier	Message element intent/useintended use	Message elementFormat for message element display	ALRT	RESP
89	The specified ATS unit is being monitored on the specified frequency.	MONITORING *(unit name) (frequency)*	M	N

However, despite of the considerations provided above, the ability to respond with a DM89 MONITORING message continued to be required for airborne implementations.

The SESAR Deployment Manager has recently performed a survey among the European ANSP's deploying ATN B1 services under DLS IR in order to find if any ANSP is expecting aircraft to respond with a DM89 MONITORING message as part of their standard operating procedures. The result of this survey concludes that no ANSP is using the DM 89 MONITORING message operationally, therefore none is expecting that aircraft will downlink the DM89 MONITORING message.

Considering that:
- The DM89 MONITORING message is not operationally used in European implementation of ATN B1 Data link services,
- ICAO has removed the DM89 MONITORING message from the CPDLC Message set or identified it as not operationally required
- The international community of data link experts' considers that silent transfer using DM89 MONITORING message is not adequate;

the deviation to the CS ACNS.B.DLS.B1.075 requirement removes the *DM89 MONITORING [unit name] [frequency]* message from the required downlink message set of the CS.

Original CS-ACNS requirement	Proposed deviation to CS ACNS.B.DLS.B1.075
CS ACNS.B.DLS.B1.075 CPDLC Downlink Messages The data link system is capable of preparing and sending the following downlink message elements: … DM89 MONITORING [unitname] [frequency]	CS ACNS.B.DLS.B1.075 CPDLC Downlink Messages The data link system is capable of preparing and sending the following downlink message elements: … DM89 MONITORING [unitname] [frequency]

As a consequence, since removal of DM89 MONITORING message does not allow to fully support the ACM operating methods contained in ED-120 Sections 5.1.1.1.1 to 5.1.1.1.7, which

are referred to in Commission Regulation (EC) No 29/2009, compliance with CS ACNS.A.GEN.001 Applicability may not be assured.

Taking into account the previous justifications, and considering that there is no direct impact on safety, it has been assessed that airborne data link installations where the DM89 MONITORING message is not implemented as part of the CPDLC message set, can still be considered interoperable with European ATN B1 ground ATC centres.

Aircraft data link installations without the ability to transmit the DM89 MONITORING message should however include the following limitation in Aeroplane Flight Manual to consider the deviation acceptable :

The aircraft's CPDLC installation complies with CS-ACNS Subpart B Section 2, except that the system is unable to generate DM89 MONITORING.