ENR 3.3.2.4 L888, Y1, Y2

L888, Y1, Y2

1. 简介

1.1 本规定仅适用于使用数据链技术并按如下程序为航空器提供空中交通服务的管制空域。

2. 背景

2.1 数据链服务可以在现有视距雷达监视和VHF/HF话音通信无法实现情况下，为航空器提供监视和管制员 - 航空器驾驶员通信服务。

2.2 在启用空中交通服务数据链之前，地面系统（管制员）将使用 VHF 或卫星话音与航空器（驾驶员）交换信息。

2.3 航空器驾驶员和管制员的数据链直接通信是通过 CPDLC 功能实现的。

2.4 CPDLC 支持以下功能:
a. 管制员发布管制许可和指令;
b. 航空器驾驶员进行报告和申请管制许可;
c. 使用自由格式报文作为标准报告和管制许可申请的补充;
d. 数据链责任的转换（管制移交）。

2.5 空中交通服务中的数据链监视功能是通过自动相关监视（ADS）实现的。

2.6 自动相关监视支持以下功能:
a. 航空器自动报告位置及有关信息;
b. 航路 / 高度一致性监视;
c. 紧急情况告警;
d. 可用于减小飞行间隔。

2.7 机载飞行管理系统 (FMS) 将按照管制员设置的参数报告相应的信息。

3. 运行区域 / 航路

3.1 在昆明、成都、兰州和乌鲁木齐情报区指定区域内将为具有卫星数据链能力的航空器提供CPDLC和自动相关监视 (ADS) 服务（见航路图）。

ENR 3.3.2.4 L888, Y1, Y2

L888, Y1, Y2

1. Introduction

1.1 These rules describe the airspace within which data-link-based ATS will be available, and prescribe procedures for data-link service.

2. Background

2.1 Data-link services provide surveillance and Direct Controller-Pilot Communications (DCPC) capabilities beyond the range of existing line of sight radar and VHF/HF voice facilities.

2.2 Initial ATS Data-link applications will utilize VHF or satellite to transfer information between airborne and ground based systems, and between controller and pilot.

2.3 DCPC via data-link is supported by the data-link application of Controller-Pilot Data-link Communications (CPDLC).

2.4 CPDLC supports the following services:
a. controller initiated clearances and instructions;
b. pilot reports and clearance requests;
c. free text to supplement standard reports and clearance requests;
d. Transfer of data-link responsibility (transfer of control).

2.5 ATS surveillance via data-link is supported by the data-link application of Automatic Dependent Surveillance (ADS).

2.6 ADS supports the following services:
a. automatic reporting of aircraft position and relevant information;
b. route/altitude conformance monitoring;
c. emergency alerting;
d. application of reduced separation criteria

2.7 Flight Management System (FMS) reports the required information in accordance with parameters (contracts) preset by ATC controller.

3. Area/route of operation

3.1 CPDLC and ADS services will initially be provided to satellite data-link capable aircraft within designated airspace in Kunming, Chengdu, Lanzhou and Urumqi Flight Information Regions (FIRS). See En-route Chart.

3.2 数据链航路 Y1，Y2，L888 宽度为 56 千米，管制单位将在 Y1， Y2 航路， L888 航路的 BIDRU 至龟兹 (VOR) 段提供数据链空中交通服务，航路点如下 (请看航路图):
L888: BIDRU MAKUL DONEN UPGED NIVUX LEVBA BIGOR PEXUN SANLI LUVAR MUMAN TEMOL LEBAK TONAX NOLEP SADAN XKC (VOR).
Y1: OMBON MEPEP LUSMA DUMIN SADAN Y2: LUVAR MEPEP

3.2 The width of the data-link route Y1, Y2, L888 is 56km, Air Traffic services with data-link will be available on route Y1, Y2 and the segment of BIDRU to XKC VOR of L888, the way-points are: (See En-route Chart)
L888: BIDRU MAKUL DONEN UPGED NIVUX LEVBA BIGOR PEXUN SANLI LUVAR MUMAN TEMOL LEBAK TONAX NOLEP SADAN XKC (VOR)
Y1: OMBON MEPEP LUSMA DUMIN SADAN
Y2: LUVAR MEPEP

3.3 准备在数据链航路飞行的数据链航空器必须满足 RNP4 或更高的导航精度。

3.3 The data-link aircraft of which planning to operate the data-link route shall be satisfied the navigation requirements of RNP 4 or higher.

3.4 在以上指定区域飞行的数据链航空器，在正常情况下应使用 CPDLC 通信替代 VHF 和 HF 话音通信作为与空中交通管制的首选通信手段。

3.4 For data-link aircraft operating within this airspace, CPDLC will be used as the primary means of voice communication with ATC in normal conditions instead of VHF and HF voice communication.

3.5 当开始使用 CPDLC 通信时，空中交通管制单位应通知航空器备用的 HF 或 VHF 话音通信频率。(见 ENR 2)

3.5 When CPDLC is being used, a backup HF or VHF voice frequency will be notified to the pilot by relevant ATC facility. See ENR 2 for back-up voice communications.

4. 间隔和飞行高度层

4. Separations and flight level

4.1 在数据链服务空域内，同航路同高度飞行的数据链航空器最小纵向间隔为 10 分钟。

4.1 The minimum longitudinal separation between two data-link aircraft flying on same flight level in data-link service space is 10 minutes.

4.2 在数据链服务空域内，航路最小垂直间隔为 300 米。

4.2 The minimum vertical separation in data-link service space is 300 meters.

4.3 飞行高度层
L888， Y1， Y2：9 200 米或以上。

4.3 Available flight levels are:
L888, Y1, Y2: 9 200m or above.

5. 登录程序

5. LOG ON procedures

5.1 在建立 CPDLC 连接之前，航空器必须先登录到地面系统。

5.1 Before CPDLC connection is established, the aircraft must LOG ON to the ground system.

5.2 航空固定服务登录的地址

5.2 The AFS LOG ON addresses are as follows:

ATS Units	ICAO Facility Designators
Kunming	ZPPP
Chengdu	ZUUU
Lanzhou	ZLLL
Urumqi	ZWWW

5.3 航空器驾驶员用以登录地面系统的识别标志必须与飞行计划相关项填写的飞机识别标志一致。

5.3 The flight identification used by the pilot in the LOG ON process must be identical to that contained in the ATC flight plan.

5.4 航空器从一个不提供数据链服务的区域飞入提供数据链服务的区域，航空器驾驶员必须在预计进入其区域前 15 分钟人工登录到该地面系统。

5.4 Data-link aircraft entering designated data-link airspace from airspace within which data-link services are not being provided are required to manually LOG ON to the appropriate ATS unit before entering the data-link designated airspace. Pilots shall initiate the AFS LOG ON 15 minutes prior to the pilot estimated time of entering the airspace.

5.5 数据链航空器在将要离开数据链服务区域前应登录到相应的空中交通服务单位。

5.5 Data-link aircraft that will depart from an aerodrome within the area designated for data-link services shall LOG ON with the appropriate ATS unit preflight.

5.6 除非地面管制单位要求，数据链航空器在从一个数据链区域飞入另一个数据链区域时，一般不需要人工登录到下一个地面系统。向下一个地面系统进行登录的工作由正在为航空器提供服务的管制单位在航空器进入下一个区域前完成，而不需要飞行机组的干预。

5.6 Unless specifically advised, a data-link equipped aircraft entering designated data-link airspace from adjacent airspace where data-link services are being provided are not required to manually LOG ON to the succeeding ground system. This process is initiated by the controlling ATS unit, without the need for flight crew involvement, before the aircraft enters the next airspace.

6. CPDLC 连通

6. CPDLC connection

6.1 登录是航空器将自己的识别标志和通信地址信息通知地面系统的过程。一但登录成功，地面系统将建立与航空器的 CPDLC 连通。

6.1 The LOG ON process provides the aircraft identification and address information to the ground system. Once LOG ON is complete the ground system will establish its CPDLC connection.

7. 话音通信与 CPDLC 通信的转换

7. Transfer of voice communications to CPDLC

7.1 将在 Y1，Y2 航路，L888 航路 BIDRU 至龟兹 VOR 段为航空器提供CPDLC通信服务。空中交通管制单位将使用话音通知航空器转到 CPDLC 联系，术语如下:
Transfer to (ATS UNIT) control on data-link.Monitor (HF frequency)。

7.1 CPDLC service will be provided on route Y1, Y2 and the segment of BIDRU to XKC VOR of L888. ATC will instruct the pilot to transfer the communication from voice to CPDLC using the following phraseology:
Transfer to (ATS UNIT) control on data-link. Monitor (HF frequency).

7.2 一但 CPDLC 连通建立，航空器驾驶员应下发一个 CPDLC 位置报告。

7.2 Once CPDLC communication starts Pilot shall downlink a CPDLC position report.

8. CPDLC 程序

8. CPDLC specific procedures

8.1 管制员 - 航空器驾驶员间的对话，如果是由话音开始的，必须用话音结束。

8.1 Controller-Pilot dialogues opened by voice must be closed by voice.

8.2 管制员 -航空器驾驶员间的对话，如果是由CPDLC开始的，必须用 CPDLC 结束。

8.2 Controller-Pilot dialogues opened by CPDLC must be closed by CPDLC.

8.3 航空器驾驶员不必按话音通信的规定，在每收到一个 CPDLC 许可时都进行复诵。
例如：接收到爬升至 10 700 米的许可时并不需要复诵 10 700 米，这是因为每一个 CPDLC 报文中都包含有完整性发送检查信息（任何一个需要处理的报文，系统都将为其编码）。

8.3 A clearance issued by CPDLC dose not requires a read-back as would be the case if the clearance had been issued by voice.
For example, a CPDLC clearance CLIMB TO 10 700m does not require a read-back of the10 700m. This is because each CPDLC message contains information to support an integrity check of transmitted information (as well as a coded reference to any preceding related message).

8.4 下行回复 “WILCO” 表示航空器驾驶员收到了所有上行信息，包括 “管制许可或指令”。

8.4 A downlink response of WILCO indicates that the pilot accepts the full terms of the whole up-link message, including any CLEARANCE or INSTRUCTION.

8.5 航空器驾驶员不能使用 “AFFIRM”作为 CPDLC “管制许可”的回复。

8.5 A downlink response of AFFIRM is not acceptable as a pilot's acknowledgement, or reply, to a CLEARANCE issued by CPDLC.

8.6 为了避免可能发生的混淆，每一个下行 CPDLC 中只能包含一个请求。

8.6 To avoid potential ambiguity in message handling and response, each CPDLC downlink shall only contain a single message request.

8.7 由话音转为 CPDLC 通信后，航空器驾驶员必须继续按航路点报告位置。只有当收到管制员 “position reports not required”信息后才可以终止位置点报告。

8.7 After transferring from voice communication to CPDLC, pilots must continue to report at waypoints associated with the FIR boundary. If further reports within the FIR are not required, ATC will advise “position reports not required”.

8.8 尽可能使用固定格式报文。自由格式报文只能用于固定格式报文的补充，或当没有合适的固定格式报文可用时。

8.8 Pre-defined message format shall be used whenever possible. Free text messages shall only be used when appropriate pre-defined messages do not exist, or as a supplement to pre-defined messages.

8.9 如果管制员发送的报文中只包含自由格式内容，或其他内容不需要航空器驾驶员回复时，航空器驾驶员可以发送 “ROGER”报文，然后再发送另一份报文，回答管制员。只有这样，管制员界面的自由格式文本才能够关闭。

8.9 When a controller sends a message containing only free text, or a free text element with other elements of which do not require a response, the pilot can only respond with a ROGER response. The pilot shall send the ROGER response before responding to the actual content of the message. If this procedure is not followed, the free text up-link message will not be closed.

8.10 航空器驾驶员下发的固定格式的位置报告是不需要管制员回答的。但是，如果管制员没有收到预期的位置报告，航空器驾驶员将会收到管制员的上行信息 “request position report”。

8.10 No response from ATC is required for a pre-formatted position report. If a scheduled report is not received when expected, pilot may receive the up-link message “request position report”.

8.11 在使用 CPDLC(NDA) 进行通信移交时，如果移交方通信历史记录中存在没有关闭的上行信息，将会导致要求航空器向新的管制单位登录失败。

8.11 Any open up-link messages at the time of connection transfer will cause the Next Data Authority (NDA) connection to fail requiring a new AFS LOG ON to the new ATS unit.

9. 管制单位间的 CPDLC 移交

9. Transfer of CPDLC between ATS centers

9.1 使用 CPDLC 与相邻管制单位进行移交时，移交方将首先进行操作，完成航空器向下一个管制单位登陆，除非另外通知，航空器不需要人工登录到下一个管制单位。

9.1 The controlling ATS unit providing data-link services will initiate the transfer of CPDLC to the next adjacent data-link facility, unless otherwise advised, an AFS LOG ON to the adjacent center is not required.

10. ADS 联系

10. ADS connection

10.1 航空器登陆地面系统后，地面系统将建立与航空器的 ADS 联系。

10.1 Following AFS LOG ON, an ADS connection is established by the ground system.

10.2 机载 FMS 和地面系统将建立 ADS 协议。协议包括：固定时间间隔或要求位置报告、航路点报告、水平和垂直偏移报告和垂直速率变化报告。

10.2 ADS contracts are established between airborne FMS and the ground system. Contracts include periodic or demand (current) position reporting, waypoint reports, lateral and vertical deviation, and vertical rate change.

11. ADS 程序

11. ADS specific procedures

11.1 在进入有关区域之前，航空器驾驶员应确认 ADS 可用。

11.1 Prior to entering the designated airspace, pilots shall verify ADS is available for operation.

11.2 如果航空器在航向选择模式下偏离航路或平行航路飞行，航空器的预计航迹仍将是 FMC 中的计划航迹，为避免管制员看到错误的推测航迹，航空器驾驶员应按照实际的预飞航路修改 FMC 飞行计划航路。

11.2 If an aircraft is flying an offset route or diverting while operating in heading selects mode, the intent of the aircraft will still be projected along the FMC flight plan route regardless of the actual route flown. To avoid misinformation being displayed to the controller, the FMC flight plan route should be amended to the actual route being flown.

11.3 管制员收到 ADS 紧急状况提示后，将向航空器发出固定格式的上行报文 “ROGER”。此上行报文不需要航空器驾驶员回复。

11.3 In the event that an ADS emergency indication is received, the controller will acknowledge by sending a CPDLC preformatted up-link message ROGER. This message does not require pilot to respond to close the CPDLC dialogue.

12. 飞行申请

12. Flight application

12.1 拟使用中国数据链航路的航空公司开飞之前应向中国民用航空局空中交通管理局递交飞行申请，申请应包括：
a. 城市对；
b. 航班时刻；
c. 开飞时间；
d. 使用机型；
e. 机队卫星电话号码表；
f. 航路紧急脱离程序。（使用Y1，Y2不包括此项内容）

12.1 A formal application shall be submitted to Air Traffic Management Bureau of the Civil Aviation Administration of China before air carriers operate data-link route, the application shall include:
a. City pairs;
b. Schedules;
c. Starting time;
d. Type of aircraft used;
e. Satellite telephone numbers for the fleet;
f. Procedure of emergent escape. (Y1, Y2 exceptive)

12.2 管制单位只有在收到有关航空器具有数据链能力信息后才能为该航空器提供数据链服务。

12.2 Flight plan notification of data-link capability is required before data-link services can be provided.

12.3 具备空中交通服务数据链装备的航空器必须按如下要求填写飞行计划申报表：
a. 建议使用的数据链方式应包括在第 10 项中（通讯与导航），简写为 "J"；
b. 建议使用的数据链媒介应包括在第18项中，在DAT/后用一个或几个字母记录：
(1) DAT/S 为卫星数据链，
(2) DAT/H 为 HF 数据链，
(3) DAT/V 为 VHF 数据链，
(4) DAT/M 为 SSR 模式数据链，
(5) DAT/SAT 为卫星电话。

12.3 Aircraft equipped with serviceable ATS data-link equipment shall fill in ICAO flight plan forms as follows:
a. Advice of data-link capability shall be included in Field 10 (Communication and Navigation) by using an abbreviation "J".
b. Advice of available data-link media shall be included in field 18 by use of the prefix DAT/followed by one or more letters, as follows:
(1) DAT/S for satellited data-link,
(2) DAT/H for HF data-link,
(3) DAT/V for VHF data-link,
(4) DAT/M for SSR mode data-link,
(5) DAT/SAT for satellite phone.

12.4 航空器装备有可用的 ADS 设备，应在 SSR 数据栏中填写字母 “D”。

12.4 Serviceable ADS equipment carried will be annotated by adding the letter D to the SSR equipment carried.

12.5 要求航空器承运人提供使用 L888，Y1，Y2 航路的航空器的卫星电话号码。

12.5 Air Carriers are required to provide a list of satellite telephone numbers with each aircraft which flying along route L888, Y1, Y2.

13. 数据链失效

13. Data-link failure

13.1 航空器驾驶员识别到 CPDLC 连通失败后，必须毫不迟疑地使用备用话音通信频率。一旦建立了备用话音通信方式，应在此方式下继续保持联系，直至重新与数据链空中交通服务单位建立 CPDLC 连通。

13.1 Pilots detecting a CPDLC connection failure shall, without delay, establish communications on the backup voice frequency. Once voice contact is established on the backup frequency, communications must continue via voice until a CPDLC service is re-established by the appropriate ATS data-link facility.

13.2 ADS 系统失效情况下，航空器驾驶员应恢复航路点位置报告直至重新与地面建立 ADS 服务。

13.2 In the event of ADS system failure, pilots will be required to resume full ATC waypoint position reporting until ADS services are re-established.

14. 应急程序

14.1 发生紧急情况时，航空器驾驶员应将 ARCAS 设备调至 ADS EMERGENCY MODE，并尽早利用最有效的方法与管制单位恢复话音通信。

14.2 L888 的备降机场是：昆明机场、成都机场、乌鲁木齐机场和喀什机场。

14.3 航空器遇到紧急情况需要撤离或备降时，航空器驾驶员应按照航路图中的路线撤离 L888。
BIDRU-- 直飞昆明机场；
MAKUL-- 直飞昆明机场；
NIVUX-- 飞往 XIC(VOR)、SB(NDB)、XFA(VOR) 至昆明机场；
LEVBA-- 飞往 XIC(VOR)、SB(NDB)、XFA(VOR) 至昆明机场；
PEXUN-- 飞往 JTG(VOR) 至成都机场；
SANLI-- 飞往 JTG(VOR) 至成都机场；
LUVAR-- 飞往 MEPEP、LUSMA、DUMIN、TUSLI、HAM (VOR)、MIMAR、VIKOL 至乌鲁木齐；
MUMAN-- 飞往 LUSMA、DUMIN、TUSLI、HAM (VOR)、MIMAR、VIKOL、FKG(VOR) 至乌鲁木齐机场；
LEBAK-- 飞往 LUSMA/DUMIN、TUSLI、HAM (VOR)、MIMAR、VIKOL、FKG (VOR) 至乌鲁木齐机场；
TONAX-- 飞往 DUMIN、TUSLI、HAM (VOR)、MIMAR、VIKOL、FKG (VOR) 至乌鲁木齐机场；
SADAN-- 飞往 SCH(VOR) 至喀什机场。

14.4 航空器驾驶员将对座舱释压紧急下降时的下降高度和机动飞行的航迹负责。

14.5 当航空器退出 L888，Y1，Y2 航路时，航空器驾驶员应恢复使用 HF，卫星电话或 VHF 话音通信与地面联系，但一般情况下，管制单位会首先使用话音与航空器驾驶员联系。
海事卫星电话：昆明区域管制室 -441204
成都区域管制室 -441202
兰州区域管制室 -441205
乌鲁木齐区域管制室 -441208
注 :HF 和 VHF 参看 ENR 2

14. Emergency procedures

14. 1In the case of emergency, pilot shall operate the ARCAS with an ADS EMERGENCY MODE to notify the ground facility for the emergency, resume voice communication with ATC authority by the most efficient method (VHF/satellite phone) at early time.

14.2 The available alternate airports for route L888 is: Kunming airport, Chengdu airport, Urumqi airport and Kashi airport.

14.3 Pilot shall fly via regulated way points to break away from route L888 when alternating or diverting is decided in an emergent condition. The breaking points are:
BIDRU--direct to Kunming airport;
MAKUL--direct to Kunming airport;
NIVUX--direct to XIC(VOR), SB(NDB), XFA(VOR), Kunming airport;
LEVBA--direct to XIC(VOR), SB(NDB), XFA(VOR), Kunming airport;
PEXUN--direct to JTG(VOR), Chengdu airport;
SANLI--direct to JTG(VOR), Chengdu airport;
LUVAR--direct to MEPEP, LUSMA, DUMIN, TUSLI, HAM (VOR), MIMAR, VIKOL, Urumqi;
MUMAN--direct to LUSMA, DUMIN, TUSLI, HAM (VOR), MIMAR, VIKOL, FKG (VOR), Urumqi;
LEBAK--direct to LUSMA/DUMIN, TUSLI, HAM (VOR), MIMAR, VIKOL, FKG (VOR), Urumqi airport;
TONAX--direct to DUMIN, TUSLI, HAM (VOR), MIMAR, VIKOL, FKG (VOR), Urumqi airport;
SADAN--direct to SCH (VOR) Kashi airport.

14.4 Pilot will be responsible for the descending levels and maneuvering track when emergency descent is executed in the condition of air cabin depressurizing.

14.5 In the case of escaping from L888, Y1, Y2 pilot shall resume voice communication by HF, Satellite Phone or VHF, switch the radio receivers to proper frequencies on which shall be guarded, Air traffic control center may normally initiate a voice contact.
Inmarsat phone: Kunming ACC-441204
Chengdu ACC-441202
Lanzhou ACC-441205
Urumqi ACC-441208
Note: HF and VHF see ENR 2