

# CPDLC

THE GOLD MANUAL = THE bible in DATA LINK

Appendix E-1 CONTAINS FIR ADDRESSES AND DATA LINK SERVICES

① AFN = ATS facilities NOTIFICATION = Log ON process

ATSU = Air Traffic SERVICES Unit = ATC

② INTERNATIONAL flight Plan:

ITEM 7: REGISTRATION

ITEM 10: J/ = DATA LINK SYSTEM

/D = ADS

ITEM 10: DAT/SV = SATCOM AND VHF Link

REG/ Aircraft REGISTRATION

CPDLC = how ATC TALKS TO AIRCRAFT.

## CPDLC NOTES:

- ① CREW TRAINED/AUTHORIZED
- ② AIRCRAFT PROPERLY EQUIPPED
- ③ FLIGHT PLAN INDICATES AIRCRAFT'S DATA LINK capability
- ④ EACH PILOT INDEPENDENTLY REVIEWS EACH CPDLC uplink /downlink MESSAGE
- ⑤ AUGMENTED CREWS = HANDOVER BRIEFINGS when duties ARE TRANSFERRED
- ⑥ RESPONSES TO CPDLC SHOULD BE VIA CPDLC
- ⑦ RESPONSES TO VOICE RADIO MESSAGES SHOULD BE VIA VOICE RADIO
- ⑧ IF CPDLC AND VOICE RADIO INSTRUCTIONS CONFLICT DO AS INSTRUCTED ON VOICE RADIO while verbally clarifying instructions
- ⑨ REJECT MSG WHEN UNCERTAIN ABOUT ITS INTENTIONS

- ⑩ Respond to MSG in less than a minute
- ⑪ Reply with "Standby" if you need more than 1 minute
- ⑫ "Wilco" means you will comply with all elements of ATC's uplink message
- ⑬ "Roger" means you understand the information in ATC's uplink message
- ⑭ Notify ATC immediately if data link stops working properly

## IN OCEANIC AIRSPACE:

- ① CPDLC = PRIMARY MEANS of COMMUNICATION
- ② VOICE RADIO (VHF, HF, SATCOM) AS SECONDARY
- ③ CPDLC POSITION REPORT WHEN ENTERING AIRSPACE, EVEN WHEN ADS-C IS USED  
EXCEPTION: NORTH ATLANTIC REGION
- ④ REQUIRE A HF CHECK-IN & MAINTAIN A LISTEN-WATCH
- ⑤ HF AUDIO CAN BE TURNED OFF IF SELCAL CHECK OK
- ⑥ REQUIRE A LISTENING WATCH ON GUARD FREQUENCIES
- ⑦ USE ADS-C WHEN AVAILABLE



## IN EUROPEAN AIRSPACE:

- ① ATSU do not use HF
- ② Use voice radio for unusual issues
- ③ Use CPDLC for all routine issues
- ④ Require check in on each sector of their VHF radio network
- ⑤ Requires voice radio confirmation for any CPDLC message that changes the aircraft's profile \*

\* Profile = altitude, heading, airspeed

"London Control, B-HH1, datalink climb FL 390."

- ⑥ Do not use ADS-C because their radar coverage is excellent

# AREAS WHERE pilots GET INTO TROUBLE:

① **Conditional Clearance:** contains a constrain that must be satisfied before clearance becomes valid. Examples:  
"AT XYZ Climb to FL290"

"By XYZ descend to FL210"

## Steps to minimize threat:

- ① RECOGNIZE THAT IT'S A SPECIAL SITUATION
- ② PROCLAIM TO THE OTHER PILOT
- ③ DISCUSS HOW TO EXECUTE IT CORRECTLY
- ④ UNDERSTAND DIFFERENCE BETWEEN AT AND BY

a) AT = AFTER PASSING

b) BY = BEFORE PASSING

## ② EXPECT A CLEARANCE: NOT A clearance

EXAMPLE:

"EXPECT descent to FL210"

### STEPS TO MINIMIZE THREAT:

- ① RECOGNIZE THAT IT'S A SPECIAL SITUATION
- ② IT IS ONLY INFORMATION, NOT A CLEARANCE
- ③ PROCLAIM TO THE OTHER PILOT
- ④ DISCUSS HOW TO RESPOND CORRECTLY
- ⑤ DISCUSS THE PLAN YOU WILL EXECUTE  
if your EXPECTATION IS NOT SATISFIED

## CRM Considerations:

- ① USE MCDU 3 for CPDLC
- ② HOME PAGE:
  - ATC LOG, or
  - ATC INDEX, or
  - ATC LOGON/STATUS PAGE
- ③ NEW uplink MESSAGE:
  - PM displays on MCDU 3
  - PM displays NEXT PAGE
  - PM READS MESSAGE ALOUD
  - PM PROCLAIMS SPECIAL SITUATION
  - PF ANNOUNCES MSG MEANING AND PROPOSES A RESPONSE
  - PM VERBALLY AGREES OR DISAGREES
  - PM COMPOSES RESPONSE AT VERIFY PAGE BEFORE pushing SEND
  - PF DIRECTS PM TO SEND RESPONSE

Two kinds of DATA LINK MESSAGES:

- ① AOC MESSAGE, and
- ② ATS MESSAGE

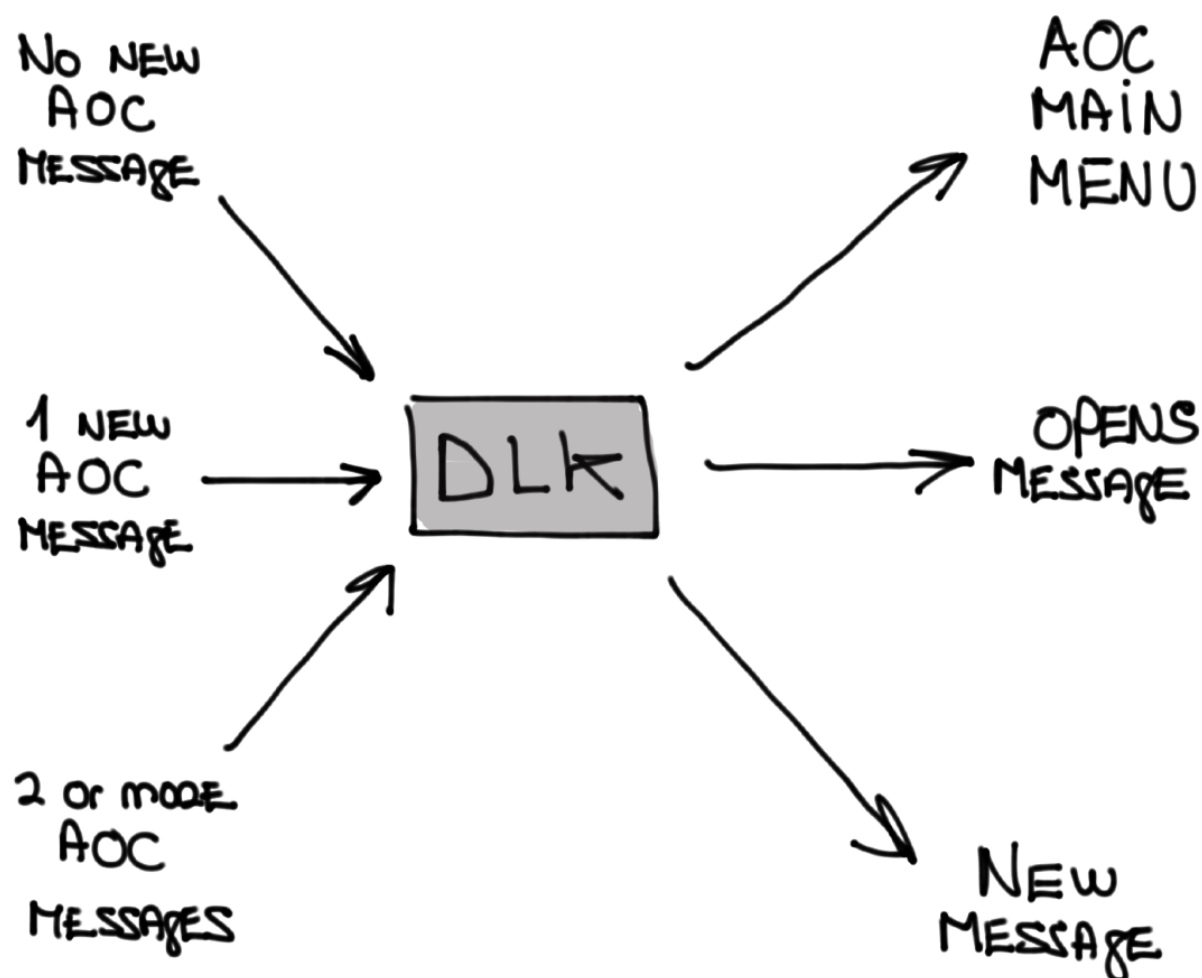
① AOC MESSAGES COME FROM THE MIDDLE MAN, DATA LINK PROVIDER, like GDC OR ARINC. IT'S A MESSAGE ABOUT OPERATIONAL stuff like flight plan, WEATHER REPORT, OCEANIC CLEARANCE. All AOC MESSAGES PASS THROUGH THE DATA LINK PROVIDER

**AOC** = AERONAUTICAL OPERATIONAL COMMUNICATIONS

AOC = ACARS

AOC MESSAGE is ALWAYS INDICATED ON THE SCRATCH PAD

# How FMS functions with AOC msg:

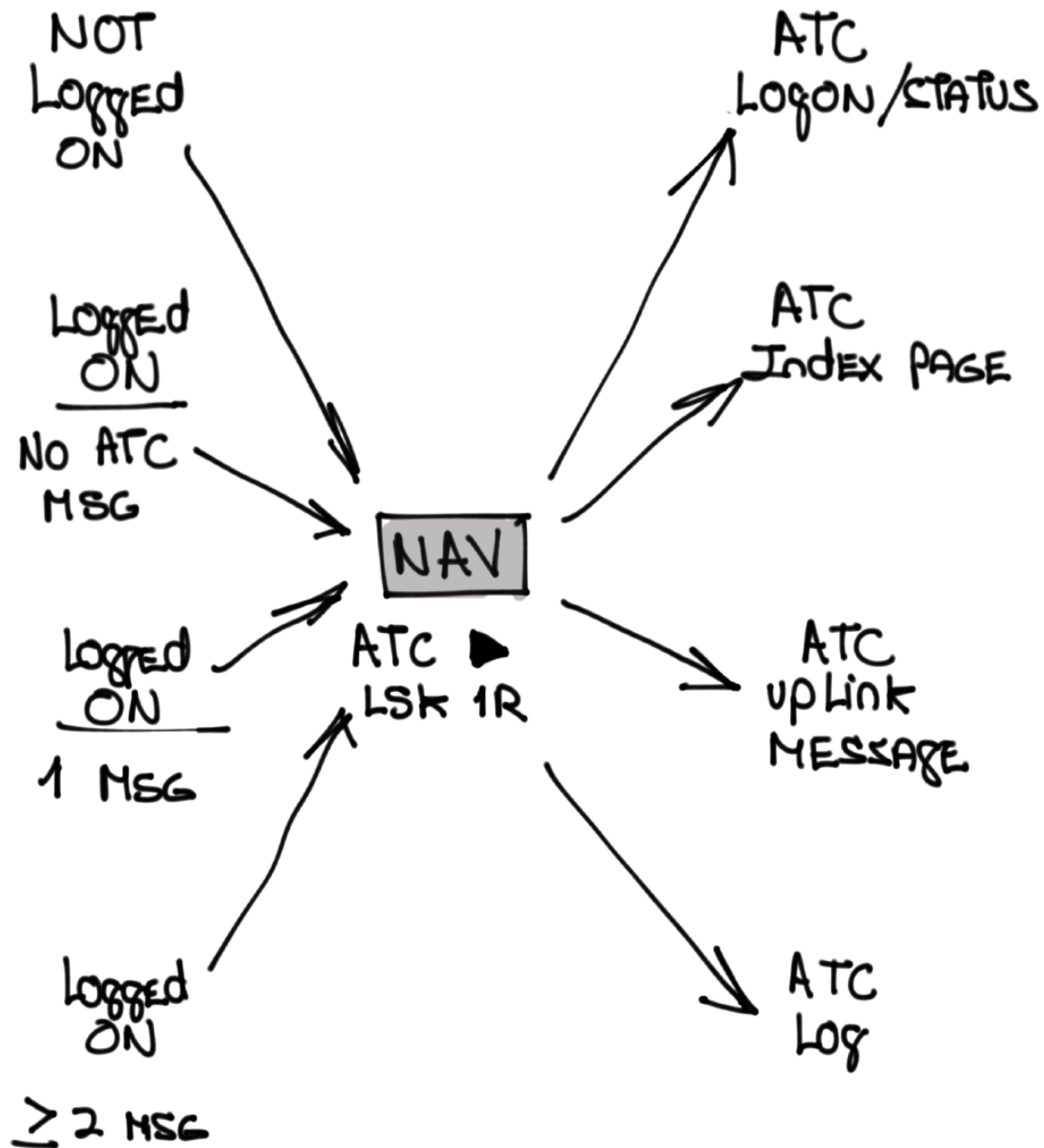


② ATS MESSAGES COME STRAIGHT FROM THE CONTROLLER, NO MIDDLE MAN

ATS MESSAGES ARE INDICATED ON THE CAS  
ATC MESSAGE



# How FMS functions with ATC stuff:



# DATA LINK checklist:

## BEFORE STARTING ENGINES:

- COM/NAV 3 TO DATA MODE
- Download flight plan/D-ATIS

## WHEN AIRBORNE:

- CHECK LINKS
- LOGON / ACCEPTED
- ADS ESTABLISHED
- CHECK ADS CONTRACTS: EVENT & PERIODIC

## COASTING OUT:

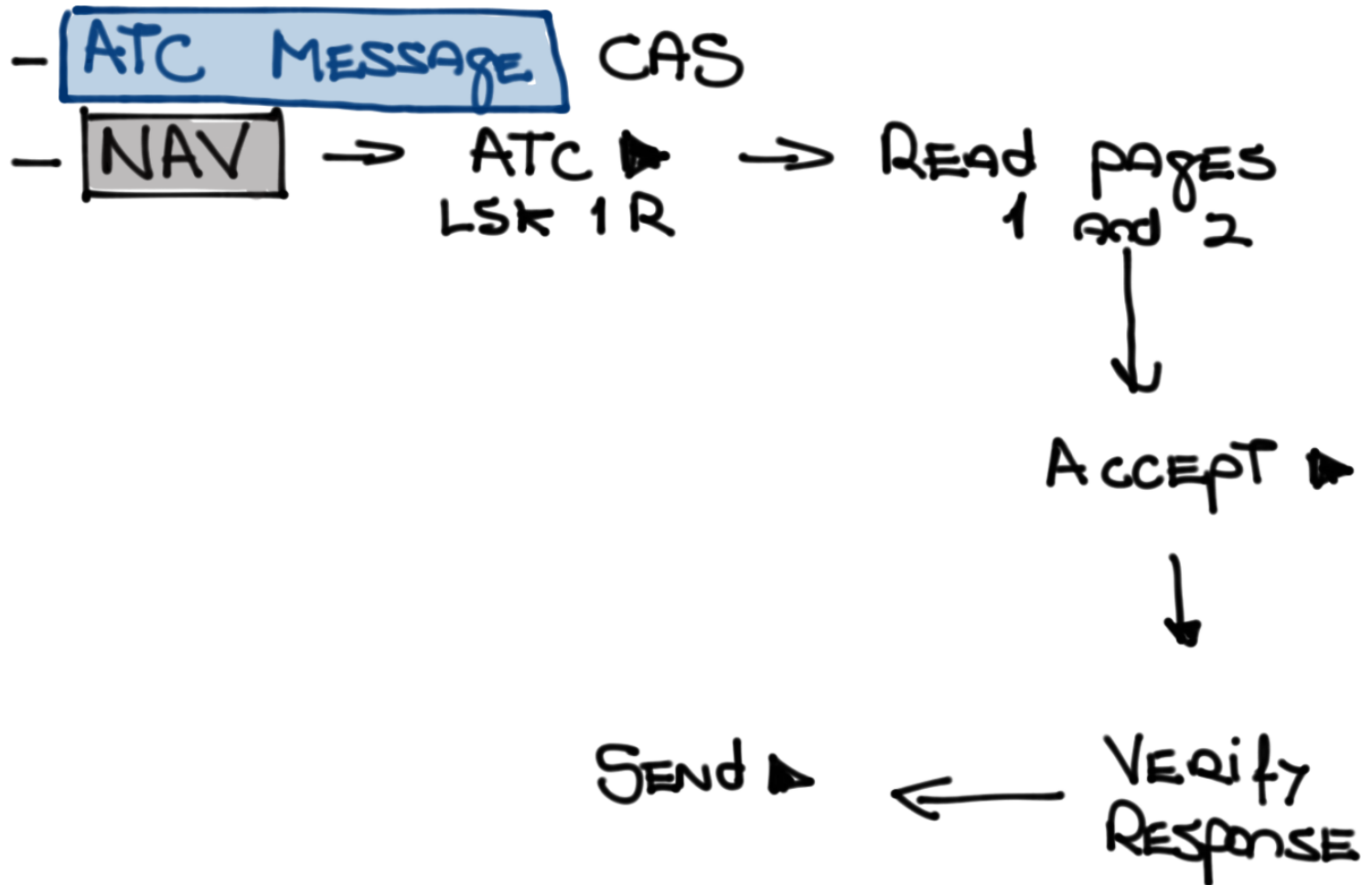
- ACTIVE CENTER / COMM ESTABLISHED
- VERIFY NEXT CENTER INDICATIONS
- BE READY TO LOGON MANUALLY
- CHECK IN ON VHF/HF, AS DIRECTED
- GET SELCAL CHECK



COASTING IN:

- EXPECT SQUAWK AND CONTACT MESSAGE
- ATC COMM AND ADS TERMINATED MESSAGES

# ATC uplink MESSAGE



- ① **NAV** ATC Page 1
- ② REVIEW PAGE 2
- ③ ACCEPT MESSAGE
- ④ VERIFY RESPONSE
- ⑤ SEND it

## Conditions to logging on to a network:

- ① If in CPDLC AIRSPACE within 15 minutes AFTER TAKEOFF, log on BEFORE DEPARTURE
- ② If CPDLC AIRSPACE is MORE THAN 15 MINUTES AWAY, log on NOT MORE THAN 90 minutes and NOT LESS THAN 15 minutes.
- ③ If log on ATTEMPT fails, check flight ID and TAIL NUMBER, and try again AFTER 5 minutes.

With **ADS EMERGENCY ON**, ADS -C reports are made every **64 seconds**

DATA LINK SYSTEM CAN BE CONFIGURED TO USE VHF FREQUENCIES WHENEVER A GROUND-BASE MONITORING STATION IS IN-RANGE.

COM/NAV 3 CAN BE CONFIGURED FOR DATA LINK. IF NOT CONFIGURED AS SUCH, ONLY SATCOM LINK WILL BE USED.

VDL = VHF DATA LINK

VDL REDUCES THE COST OF USING DATA LINK SERVICES.

TO CONFIGURE COM/NAV 3 TO DATA LINK:

① Radio, PAGE 2

- ② Double click STANDBY frequency LSK 6L  
To go to RADIO's sub-MENU
- ③ ON COM/NAV 3 page, Toggle the RADIO  
to a COM frequency, LSK 1L
- ④ Toggle the DATA/VOICE feature to  
DATA mode, LSK 2R
- ⑤ SELECT RETURN, LSK 6R

ATC INDEX is the hub of all CPDLC  
Activity.

ATC COM ESTABLISHED = CPDLC ESTABLISHED  
ADS ESTABLISHED = ADS CONTRACTS ESTABLISHED

A CONTRACT is an AGREEMENT BETWEEN  
COMPUTERS about the DATA they SHARE

OAGs in the North Atlantic do NOT require a manual position report, provided an event contract with a waypoint-change trigger has been set. Most other parts of the world do require a manual position report when entering a new FIR/OCA. If no radar or ADS-C capability, a manual position report is required at every mandatory waypoint.

IN THE EVENT OF EDM ALL THREE FMSs will display "VERIFY EMERGENCY" PAGE AND POPULATE ALL FIELDS. THE CREW CAN REVIEW AND SEND IT. If INCAPACITATED, THE MESSAGE WILL BE SENT AUTOMATICALLY IN 60 SECONDS.

LOGON/STATUS PAGE, ADS EMERGENCY IS ON AND ADS REPORTS ARE SENT EVERY 64 SECONDS.

EMERGENCY STATUS ALLOWS YOU TO TELL ATC WHAT YOU WILL DO INSTEAD OF ASKING FOR PERMISSION.

UNLIKE EUROPE, MOST OF THE WORLD USES CPDLC POSITION REPORTS TO CONFIRM THAT THEY ARE YOUR CURRENT DATA AUTHORITY (CDA)