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**NATIONAL TRANSPORTATION SAFETY BOARD**

**Washington, D.C.**

Attachment 6 – 2013 CQ Workshop Presentation  
(13 Pages)



## **NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Washington, D.C. 20594

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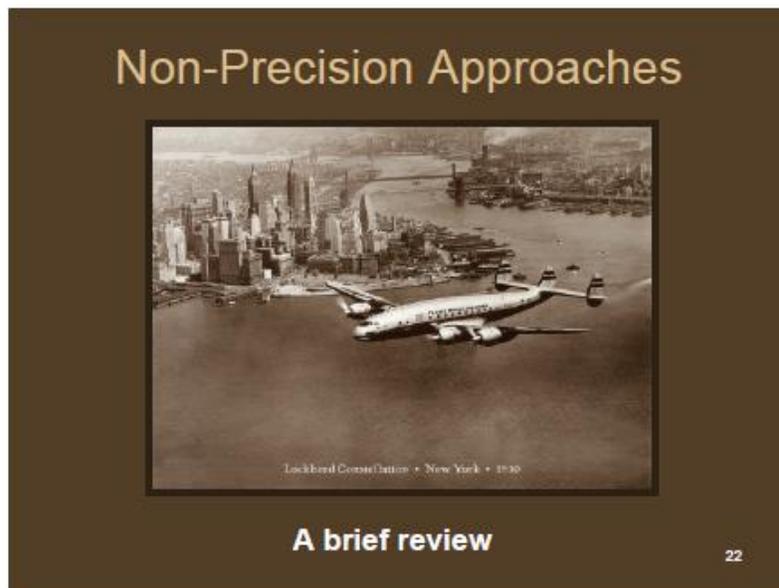
### **Attachment 6 – 2013 CQ Workshop Presentation**

# **OPERATIONAL FACTORS**

**DCA13MA133**

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## 2013 CQ WORKSHOP PRESENTATION



Intro slide to NPA review.





**0406-4** **A310 AIRCRAFT OPERATING MANUAL**  
**SUPPLEMENTAL**  
**NON-Precision APPROACHES**

- A310 not rec'd
  - Not for VOR, GRS and RILV (DPS) approaches
  - LDA for localizer and L/D (DPS) approaches
- A310 pilot notes
  - Profile
- For adjustment to  $V_{app}$  (if necessary), the modification must be made on the A310 APPROACH page. Enter desired  $V_{app}$ , LSA (if L), to activate the wind correction prompt.
- Final approach route must be established prior to entering Profile. LSA (if L) of the APPROACH page, PTKL, 1st prompt (if any) appear when A2, 7D or L/L. CR notes are engaged.

**USE OF DECISION ALTITUDE OR DERIVED DECISION ALTITUDE**

All profile approaches are conducted as a Barometric Decision Altitude (DA) or a Derived Decision Altitude (DDA), as applicable. If a Barometric DA or DDA cannot be utilized, the approach must be flown to the applicable MDA or vertical speed minima.

A Barometric DA may be utilized on the following approaches:

- APV: LPV, approach with published decision altitude minima.
- L3 (S3) only: Provided the vertical profile clears all obstruction trees in the final approach segment. The MDA/Bar Note does not appear on L3 approach charts. However, these approaches may be flown to a DA equivalent to the S3 2nd MDA. These procedures also apply to L3C approaches (not identified) on L3D from A310 or L3 on L3C (not identified).
- All approaches with a MDA/Bar Note. The Bar Note values (they indicated operations may use a Bar DA in lieu of MDA).

**NOTE:** The use of a Barometric Decision Altitude (DA) is restricted to L/D approaches only. If the approach does not support the use of a DA, the approach is flown to a DDA.

**Derived Decision Altitude**

Approaches that do not support Profile approaches to a DA may be flown to a DDA. DDA is calculated by adding 50 feet to the applicable MDA.

**Can we shoot this approach in Profile? If so, to what minimums?**

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Slide is animated (1 click).

This approach may be flown in Profile to D-DA of 4730'. As we see it does not meet the required criteria for a Baro DA approach.

Also, if it comes up, the "LP" in the left minima block refers to an "LPV" approach. LPV stands for Localizer Precision with Vertical guidance. It needs the support of the WAAS system for the ability to conduct this type of approach. We obviously do not have that.

## Another look at the ILS G/S out in Profile...



Do we need to do anything procedurally unique to fly this approach in profile?

04-22-12

A300 AIRCRAFT OPERATING MANUAL  
SUPPLEMENTAL  
ABBREVIATED CHECKLISTS



3. Load approach in FMC and accomplish the following:
  - Enter QAD-QA on APPROACH page.
  - Verify database Vertical Path Angle agrees with approach chart within .1 degrees.
  - Adjust V<sub>app</sub> on Approach page if necessary.
4. Acceptable approach briefing
5. ~~Approach FINAL APPROACH~~
6. Select PROFILE and verify FDEG armed. (On ILS G/S GTS approaches or LOC approaches, where the RNAV path crosses the FAF below the FAF minimum altitude, start a 1000 FPM descent at the FAF and immediately select PROFILE to capture path from above.)

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Slide is animated (2 clicks).

Slide addresses the difference in the crossing altitude at the FAF. Notice the FAF crossing altitude is not coincidental with the GSIA altitude. Therefore, we have to roll the a/c over in vertical speed at the FAF prior to selecting Profile. Students should remember this as we just did this in CQ 2012 First Look.

## Let's take a look at the ILS 05R in MEX...

2. Determine DA or D-DA and set altimeter bugs.

- A Barometric DA may be utilized on the following approaches:
  - RNAV (GPS) approaches with published (NAVAVAR) minima
  - ILS (GS out) or approaches (GS) ILS or LOC RWY XXX, or ILS or LOC DMC RWY XXX.
  - All approaches with a VNAV Baro mode. The Baro mode states: "Only authorized operators may use VNAV DA in lieu of MDA."

**Could we fly this approach in Profile to a Baro DA?**

1. Review PROFILE APPROACH SUBMITTER base for approach set-up.

- Check GPS PRIMARY and GPS PROTECTIVE for GPS approaches.
- Verify PRCR page MRP value (CLR any non-integer MRP).
- Verify GCNSTRM/GPS FCN (D/G/S/SS) message not displayed and FAEI indicates High Accuracy.
- Verify approach temperature restrictions. (Profile approaches are prohibited -10°C or below (or closest temperature if none restriction).)
- VNAV path must be depicted on the approach chart.
- ILS GS OTS approaches, the VNAV path is the same as the ILS glidepath.
- Verify VNAV path clears all step down fixes in the final approach segment.

2. Determine DA or D-DA and set altimeter bugs.

- A Barometric DA may be utilized on the following approaches:
  - RNAV (GPS) approaches with published (NAVAVAR) minima
  - ILS (GS out) or approaches (GS) ILS or LOC RWY XXX, or ILS or LOC DMC RWY XXX.
  - All approaches with a VNAV Baro mode. The Baro mode states: "Only authorized operators may use VNAV DA in lieu of MDA."

NOTE: The use of a Barometric Decision Altitude (DA) is prohibited for all approach sets.

Slide is animated (1 click).

Slide addresses the fact that a Baro DA is restricted to U.S. airspace only. This is an important point that is easily overlooked. The approach can be flown in Profile, but to a D-DA of 7950'.

**Lastly, we need to complete the briefing guide, brief the approach and discuss its execution**

**04.22-12**      **A380 AIRCRAFT OPERATING MANUAL  
SUPPLEMENTAL  
ABBREVIATED CHECKLISTS**

3. Load approach in FMC and accomplish the following:
  - Enter DA/DCA on APPROACH page.
  - Verify database Vertical Path Angle agrees with approach chart within .1 degrees.
  - Adjust V<sub>app</sub> on Approach page if necessary.
4. Accomplish Approach Briefing.
5. Activate FINAL APPROACH.      When?
6. Select PROFILE and verify FCDS armed. (On ILS Q/D approaches or LOC approaches, where the VNAV path crosses the FAF below the FAF minimum altitude, start a 1000 FPM descent at the FAF and immediately select PROFILE to capture path from above.)

**Do you have to be at the FAF altitude to select Profile?**

**No.**

**You can intercept the VPA from above the FAF altitude (similar to intercepting the ILS glideslope from above)**

**However, be aware that with Profile selected the a/c will slow to the V<sub>app</sub> speed in the FMC at VPA interception, no matter your configuration.**

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The approach database is representative of actual aircraft, but approaches may vary.

Descent Descent Altitude

Approaches that do not support Profile approaches to a CRJ may be seen as a CRJ. CRJ are not supported by this slide or the associated video.

Slide is animated (5 clicks).

Slide addresses the fact that Profile can be activated whenever the crew determines they no longer need Profile Descent mode. (This was a change to the AOM in revision #24.) If students still do it the old way, activating Final Approach when cleared for the approach, that is perfectly fine.

If VPA is intercepted from above FAF altitude remind the crew that the speed will reduce to the V<sub>app</sub> in the FMC (or thanks to Speed Protection just down to the hook). May create a spacing problem at a busy airport.

Be sure to reiterate the potential gotcha with respect to selecting Profile when in ALT\*. (Profile will automatically deselect when FMA switches from ALT\* to ALT)



Slide is animated (1 click).

Slide addresses the two final actions which must be accomplished to fly a Profile Approach

# The Vertical Speed Approach

04.06-8A360 AIRCRAFT OPERATING MANUAL  
SUPPLEMENTAL  
NON-PRECISION APPROACHES

**04.06.01.07 VERTICAL SPEED APPROACHES**

Nonprecision approaches must be conducted using AFDS vertical speed plus mode if PROFILE mode is not available. All Vertical Speed approaches must be flown to conventional MDA minima. It is recommended that the vertical speed used during descent to TMA is computed using information available on the approach chart to approximate a continuous descent and prevent EOPWS activation.

**04.06.01.08 APPROACH REQUIREMENTS**

- Autopilot or flight director required.
- Autothrottles required if available.
- GPS and RNAV (GPS) approaches – GPS PRIMARY and GPS PREDICTIVE must be verified. Verify ECAM RW/GPS DISAGREE message is not displayed.
- Verify PROG page RNP (CLR any crew entered RNP).
- AFDS roll mode:
  - NAV for VOR, GPS and RNAV (GPS) approaches.
  - LOC for Localizer, LDA (without GS) and ILS (GS out) approaches.
- Raw data must be monitored on LOC, LDA, ILS (GS out) and VOR approaches. VOR raw data must be displayed by the PM on the ND in ARC or ROSE mode.

**The ground rules**

**Very important**

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Slide is animated (2 clicks).

Slide gives an overview of the V/S approach. Review as needed and stress the two points:

- (1) All V/S approaches must be flown to conventional MDA's
- (2) Raw data must be monitored on the approaches listed above in the slide.

# What can we do?

 ASES AIRCRAFT OPERATING MANUAL SUPPLEMENTAL NON-PRECISION APPROACHES 04.05-9					
VERTICAL SPEED APPROACH SUMMARY TABLE					
TYPE OF APPROACH	APPROACH CHART TITLE	RETREIVE FROM DATABASES	NAV DATA APED W/LL NDBS	MIN	
RNAV (RNP)	RNAV (RNP) RWY XXX RNAV (RNP) _ _ RWY XXX	QDS XXX w RWY XXX	NO	NAV	LS
QDS	QDS RWY XXX VOR w QDS RWY XXX	QDS XXX	NO	NAV	LS
OVERLAY	VOR DME w QDS RWY XXX	VOR XXX	NO	NAV	LS
VOR	VOR RWY XXX VOR DME RWY XXX	VOR XXX	YES (P) ABC/BODE	NAV	FF-NAV RW-VOR
LDC	LDC RWY XXX LDC DME RWY XXX LDC w LDC RWY XXX LDC w LDC DME RWY XXX	LDC XXX LS XXX	YES (PFD)	LDC	LS
LS (RST OUT)	LS RWY XXX LS DME RWY XXX	LS XXX	YES (PFD)	LDC	LS
LDA	LDA RWY XXX LDA DME RWY XXX	FA	YES (PFD/RA)	LDC	LS
LDA WITH SLOPESLOPE	LDA RWY XXX LDA DME RWY XXX	FA	YES (PFD/RA)	LAND	LS
LDC RC	LDC (BACK DRG) RWY XXX LDC (BACK DRG) DME RWY XXX				
NDP	NDP RWY XXX NDP w QDS RWY XXX				
VOR DME RNAV	VOR DME RNAV RWY XXX VOR DME RNAV w QDS RWY XXX				
RNAV (RNP)	RNAV (RNP) RWY XXX				

Let's now take a look at an approach in Boise, ID.

Slide is animated (1 click).

Review the what we can's and what we cant's. Then following slides will review V/S NPA's.

**BOI BOI**  
**BOISE AIR TERMINAL (BOISE)** **Class C** **UNIMOUNTAIN VOR** **DME** **Runy 28L**

**UNIMOUNTAIN VOR**  
 113.3 378 2390 2810 2810

**REWAY**  
 4500 1 10-228

Altitude	Mode	Frequency	Distance
4500	1	10-228	
3400	1		1.1
3000	1		1.5
2600	1		2.0

**First. Could I fly this approach in Profile?  
 If so, is this a Baro DA or a D-DA?**

**Let's assume Profile is deferred. Flown  
 in V/S, what would be the MDA?**

**What vertical mode should be used to  
 descend from "ZIBOR" to "REWAY" on  
 the approach?**

**What are my Raw Data requirements for  
 this approach?**

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Slide is animated (3 clicks).

Review the VOR appch to 28L in BOI. Ask the students to answer the four questions that are presented in the presentation. Make sure they have a strong understanding of how to conduct the approach.

The vertical mode that should be used to descend from "Zibor" to "Reway" is V/S. This concept applies to ANY NPA, whether it be a V/S or Profile approach. The reason is that V/S is the only mode that you have direct control over the fpm descent rate of the a/c. Per the AOM, LVL Change is allowed but not the optimum choice.