

EASYJET, EGNOS AND LPV

EGNOS Workshop, Athens, 3rd October 2017

Overview

- > Your presenter
- > easyJet
- > Opportunities
- > Benefits
 - Examples
- > Training
- > Operations
- > Summary

Who am I?

- > Not a pilot!

- > easyJet Flight Operations – London Luton Airport
- > Support multiple AOCs: UK, CH, AT
- > Flight Operations Engineer; Team of SMEs
 - Aircraft performance; navigation, flight planning and ATM; weight and balance and fleet management.

easyJet

> Network

- 31 countries
- 132 airports
- 802 routes
- 300M Europeans live within one hour's drive of an easyJet airport

> Strategy

> Fleet

- 271 A320 Family: 144 A319, 125 A320, 2 A320neo
- 25 A320, 100 A320neo, 30 A321neo on order. 100 additional purchase rights

> Media shy!

> A bit of a machine: On average, since our first Airbus delivery in September 2003, we have received an Airbus short haul aircraft every sixteen days.

> In “real” numbers

- Since 1996 – 46.6 million cups of tea and 60.9 million cups of coffee!
- Since 2008 – 4.2 million bacon rolls!

Involvement

SBAS CAT I PROJECT AT A GLANCE



BENEFITS

- Improved access to airports
- Improved descent profile and reduced track miles resulting in **reduced fuel burn** (and emissions)
- Reduced noise** footprint
- Improved safety

(Source : SESAR JIU Solution Catalogue, solution #103)



Leveraging use of European **EGNOS** Systems



LPV Opportunity

- **34%** of easyJet flights land at destinations with at least x1 LPV procedure published
 - An additional **6%** do so at LNAV/VNAV destinations authorised for SBAS guidance
 - **79%** of easyJet flights will be performed to EGNOS destinations by 2020
- > If LGW had an LPV:
- **47%** of flights at destinations with at least x1 LPV procedure published
 - An additional **39%** of flights at destinations that will have at least x1 LPV procedure by 2020
 - **Total: 92%** of flights to EGNOS destinations
 - Opportunity to work with LGW to enhance availability of LPV

Benefits

> Safety

- No more NPA's
- Stabilised approaches
- Consistency/accuracy

> Efficiency

- LP/LD
- Noise/emissions
- Ground infrastructure

> Accessibility

- Customer choice
- Service continuity/weather

> Business continuity/Customer satisfaction

- Fewer go-arounds - minima
- Fewer go-arounds - instability
- Fewer diversions
- Increased OTP/Lower disruption

Case Study – Secondary Runway

- > 1st August 2012, EGKK – London Gatwick
- > WIP on main runway 08R/26L– Northerly runway (08L/26R) operations
- > No instrument approach – SRA only
- > Deteriorating weather – cloudbase
 - 201208012050 METAR EGKK 012050Z 20006KT 9999 -SHRA SCT007 16/15 Q1008=
 - 201208012120 METAR EGKK 012120Z 19006KT 160V220 9000 SHRA SCT008 16/15 Q1008 RESHRA=
 - 201208012150 METAR EGKK 012150Z 20006KT 9999 -RA SCT005 16/15 Q1008 RESHRA=
 - 201208012220 METAR EGKK 012220Z 20008KT 6000 RA SCT005 BKN007 16/15 Q1008=
 - 201208012250 METAR EGKK 012250Z 21005KT 9999 -RA FEW005 SCT012 16/15 Q1008 RERA=
- > 16 diversions (9 STN, 2 EMA, 5 BHX)
- > London Gatwick now has an RNAV approach (RNP APCH) on the secondary runway (no LPV minima)

Case Study – ILS Unserviceable

- > *“Upon arrival at SEN (Southend) for an approach on RWY 23, we were informed by ATC of a runway change, due to significant wind shift.”*
- > *“We were vectored on a LH downwind and informed at a late stage of the unserviceability of the ILS including the LOC, so offered a SRA approach.”*
- > *“The weather was deteriorating rapidly, wind increasing, ceiling lowering and visibility decreasing with snow. Reaching MDA, we just became visual with the RWY but too far offset to the right to complete a landing, thus elected to go around.”*
- > *“We were offered another approach but now the VIS was below our minima. We held over SEN and elected to divert to STN (London Stansted) as there was no sign of the ILS being serviceable in time, and the weather was deteriorating further in the whole area.”*
- > Southend are planning the introduction of RNAV approaches (RNP APCH), including a LPV200 procedure, by June 2018 thanks to GSA funding.

Case Study – Non-prevailing Runways

- > *“Left MXP (Milan Malpensa) with extra fuel as destination weather was below minima.”*
- > *“In KRK (Krakow), NDB RWY 07 flown, not visual at minima so G/A flown. Radar vectors to the hold. Waited there for 20 min in hope of improvement. Condition remained the same.”*
- > *“LOT aircraft performed an approach and landed, so made a second attempt on NDB RWY 07, but again not visual at minima. G/A flown and requested diversion to WAW (Warsaw).”*
- > *“Waited for conditions to improve at KRK and at 1600Z a ceiling above MDA was reported so flew to KRK and made an uneventful landing after flying the NDB RWY 07.”*
- > Krakow now has an RNAV approach (RNP APCH) on the secondary runway, with LPV minima.

Training

- > Initial Training
 - Regulatory (including license requirements – Aug 2018)
 - All Flight Crews

- > Basic PBN
 - General concepts and background
 - Self-help/CBT/Briefings

- > Advanced PBN
 - PBN specifics
 - Airport or procedure type specific - FFS

- > Integrated PBN training
 - PBN concepts integrated into formal and recurrent training (EBT)
 - Formal: LPC
 - Recurrent: LOE

Operations

> Simplicity

- Airbus xLS concept
- ILS look alike
- Use of FINAL APP

> Complexity

- PBN, notably in approach
 - RNAV, GNSS, GPS, LNAV, LNAV/VNAV, APV, Baro guided, Baro APV, RNP APCH, RNP AR APCH, LP, LPV
 - Airbus – SLS
- 2D/3D Concept
- Precision or non-precision
 - Neither!

> Mitigations

- SOPs
- Consistent terminology
- Charting standards

Summary

- > Safe/consistent
 - > Familiar (ILS)
 - > Fewer missed approaches/diversions
 - > Reduced infrastructure costs
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- > PBN - Complexity/confusion
 - > Interoperability/consistency
 - > Realising reduced infrastructure costs!
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- > OEM implementation costs
 - > Retrofit options

