Airport Moving Map (AMM)

Terrain & Obstacle Databases

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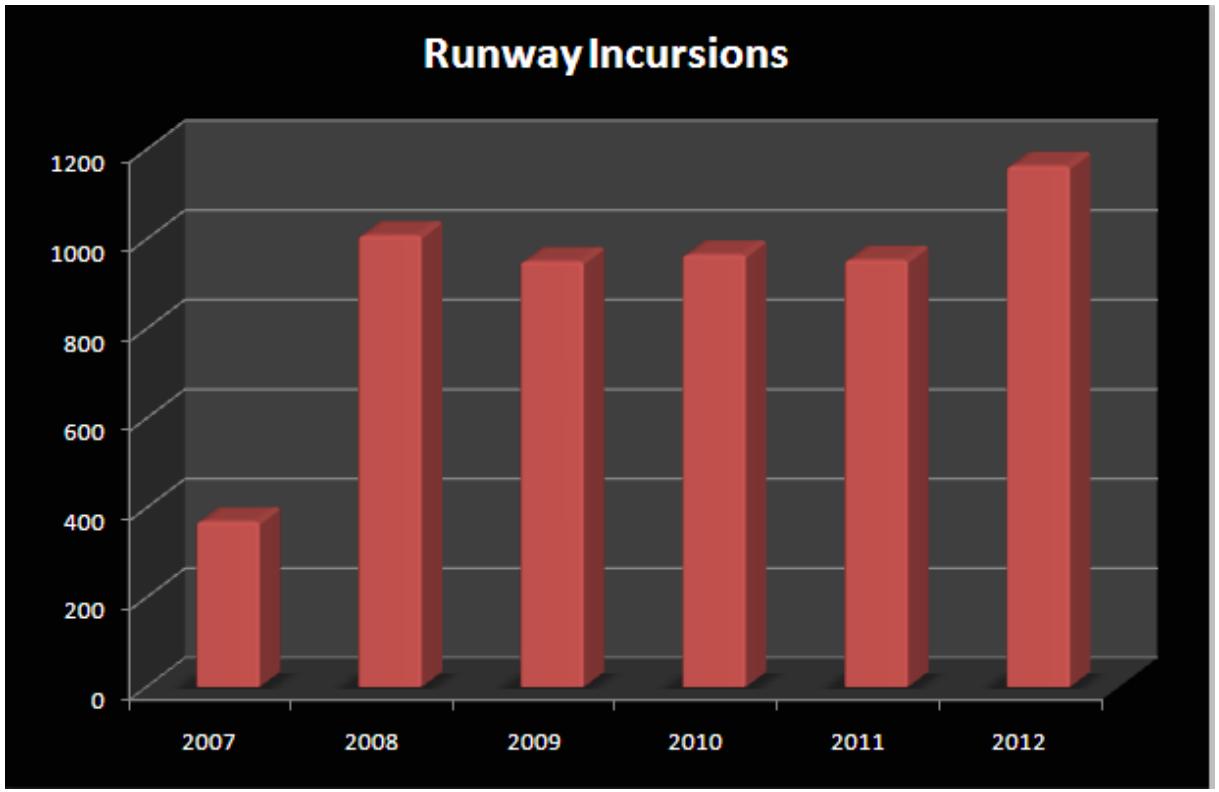
Why Airport Moving Map



Data valid through 3-Jun-2012

2012: Data through JUN 3 2012. 1164 projected EOY

Source: Federal Aviation Administration

Runway Incursion and Excursion Events
IATA Safety Report

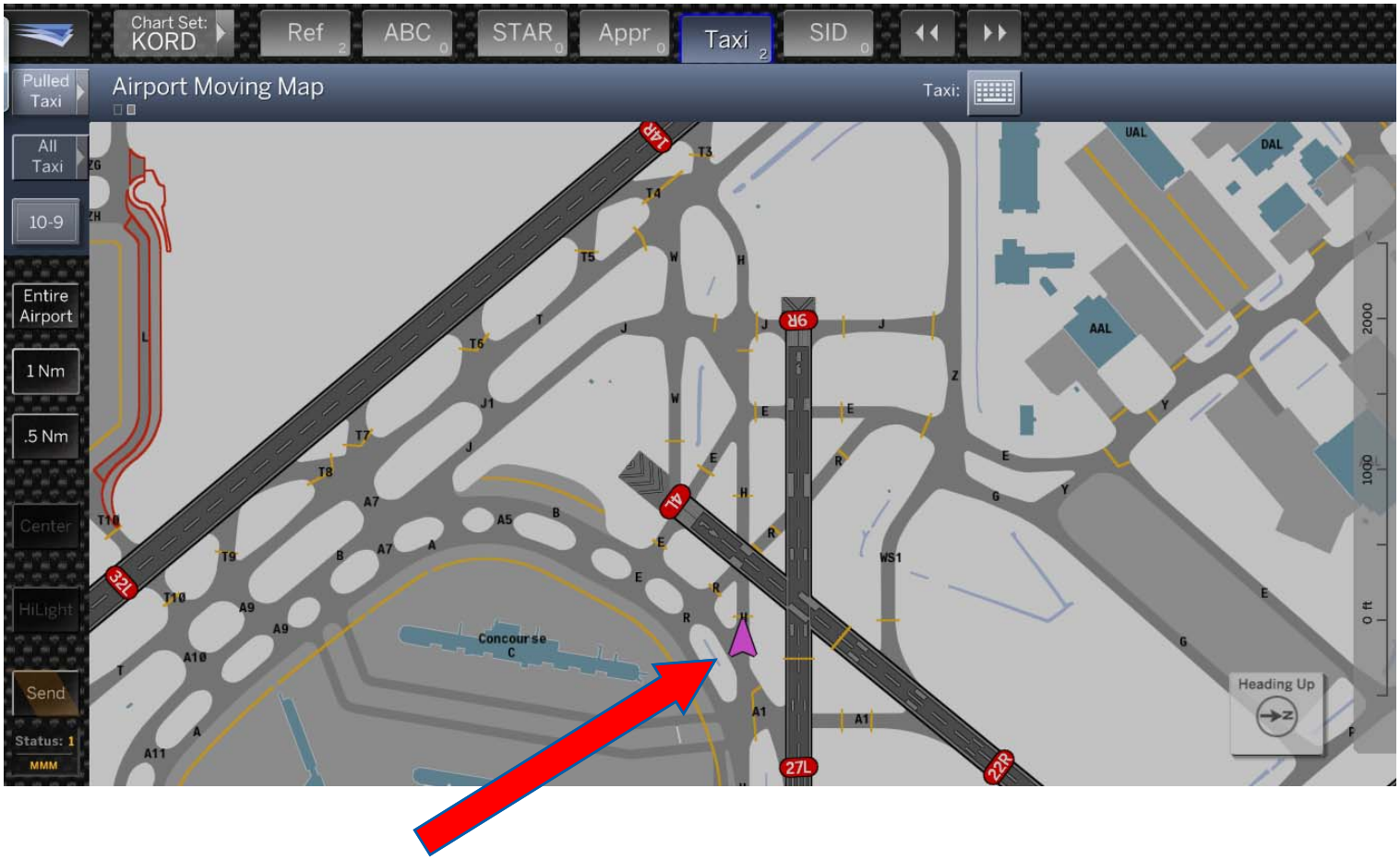
- 2011 - 17 Runway excursion accidents – 0 fatalities
- 2010 - 20 Runway excursion accidents 10% fatal

- 2011 - 0 Runway incursion accidents
- 2010 - 0 Runway incursion accidents

- Does not include Air Taxi, General, Business and Military Aviation

Jeppesen Airport Moving Map - Overview

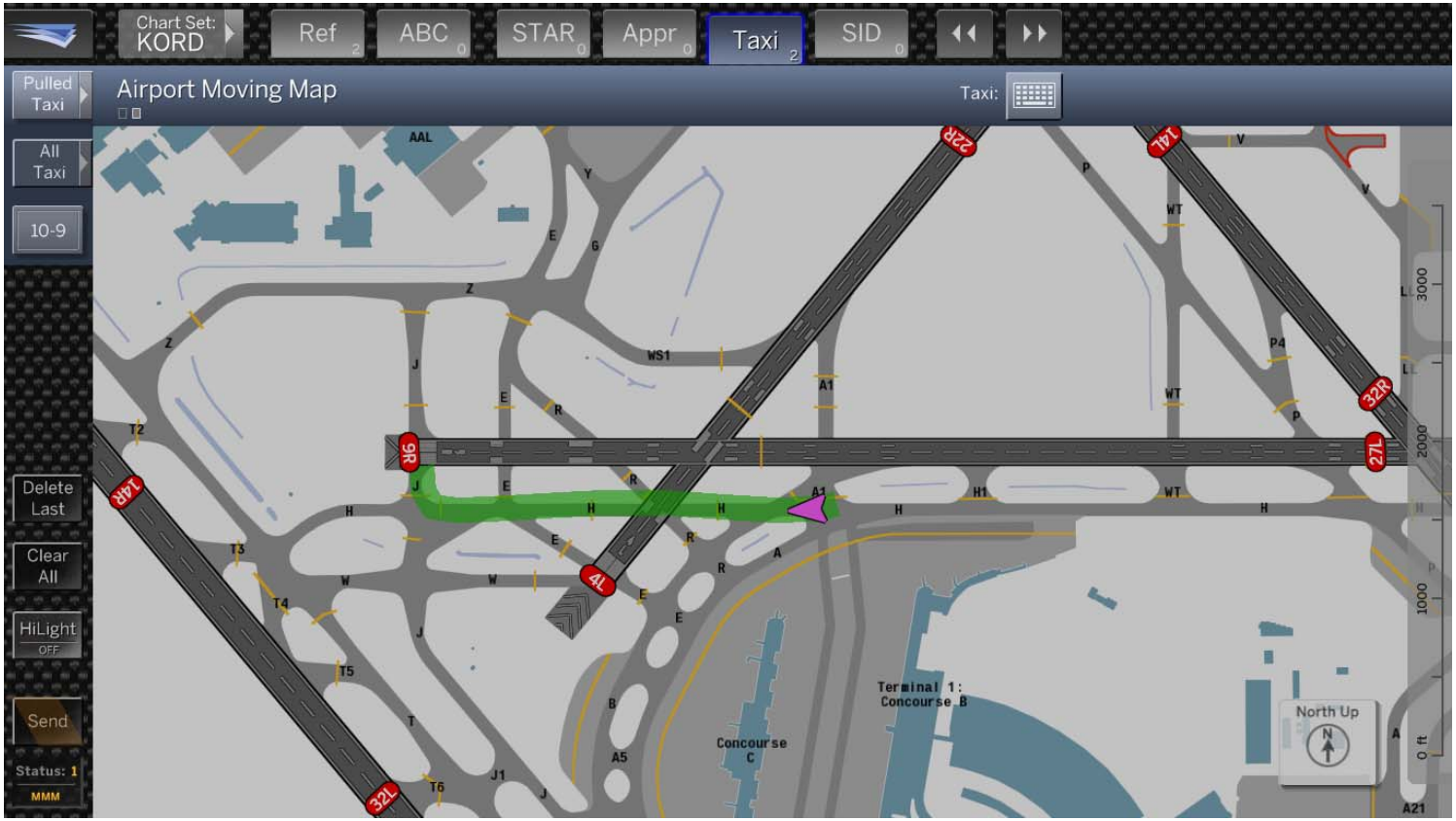
Own-Ship Position
Magenta spotter



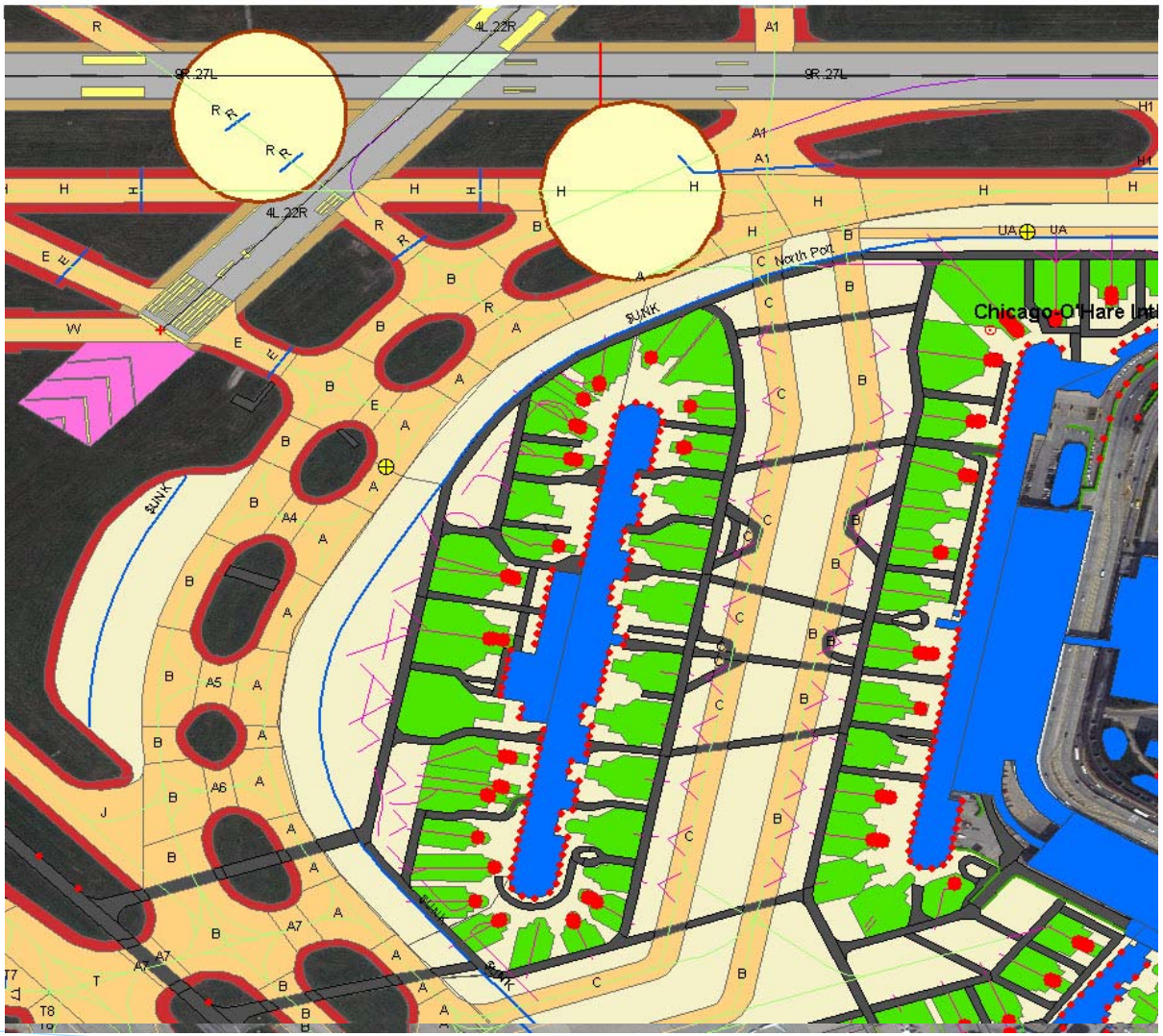
Jeppesen Airport Moving Map - Overview

Own-Ship Position
Magenta spotter

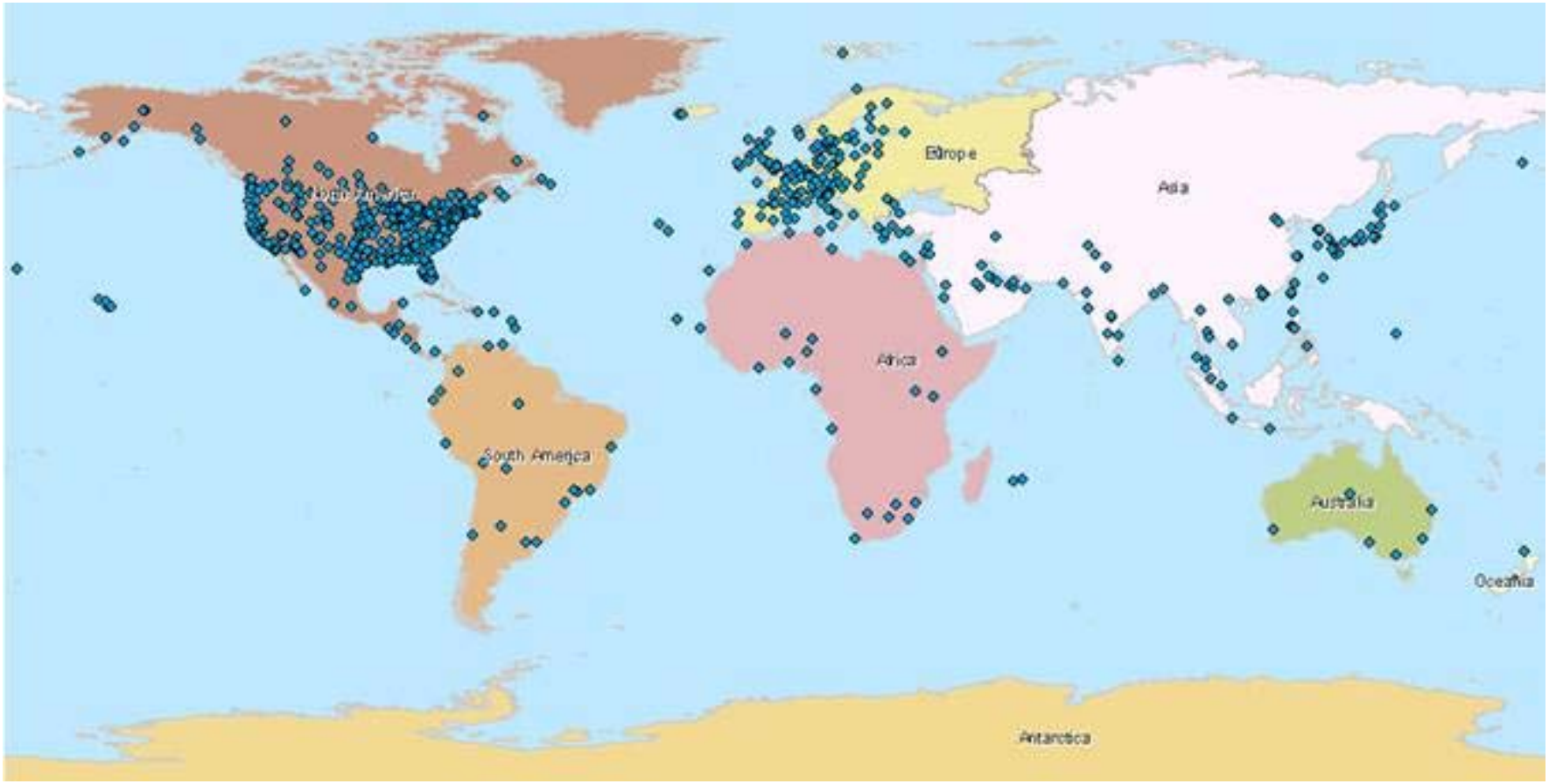
Highlighting
Highlight your route of taxi



AMDB - KORD Sample – Incursion Hot Spots

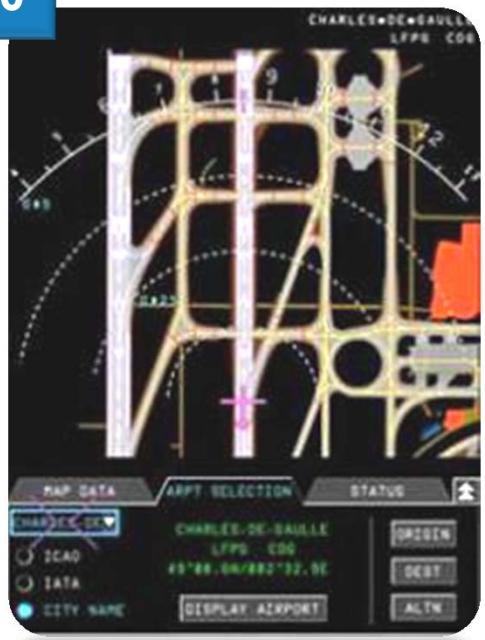


COVERAGE – >730 AIRPORTS & COUNTING



AMM Front Panel Deployments

A380



B787

JEPPESEN AMDB FOR AIRBUS “BRAKE TO VACATE” (BTV)

- Improves management of approach & landing
- Runway Overrun Warning (ROW)
- Runway Overrun Protection (ROP)
- Value Proposition
  - Guarantee to vacate at the assigned exit
  - Reduce brake temperature & wear
  - Reduce max thrust reversers on dry runways
  - Reduce noise level on ground, fuel use, emissions
  - Minimize runway occupancy time
  - Reduce Taxi-Out time to the gate - Fuel Burn

AMDB Roadmap – What's next ?

- Compliance with DO-272C
  - Routing Network - Accommodates Digital Taxi
  - Temporality attributes afford sub-cycle changes

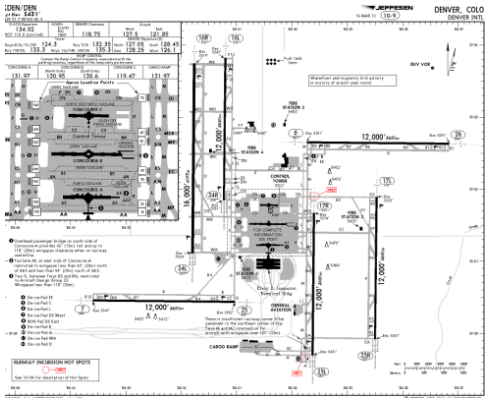
- Early adoption of elements that will be eventually addressed if DO-272D gets approval to proceed from RTCA
  - Hold position "Doormats" – Accommodates SVS
  - Published Taxi Routes
  - Low Vis Routes

- Tailored airline AMM data (Highlight Gates, Operators specific Runway /Taxiway restrictions, Preferred routes, Ramp frequencies, company specific deicing areas)

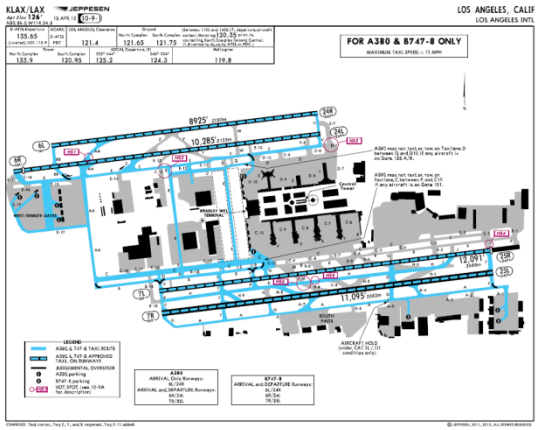
AMDB Roadmap – What's next ?

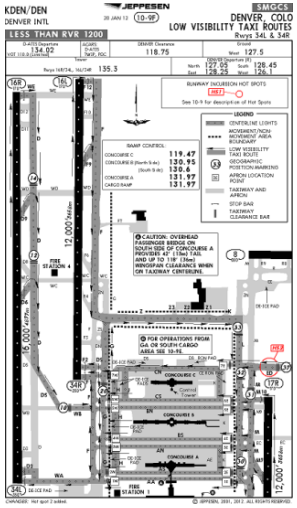
Single application for all Airport info and Ground operation requirements

Airport Chart

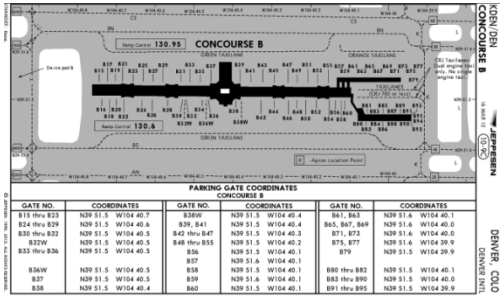


Airframe specific Restrictions

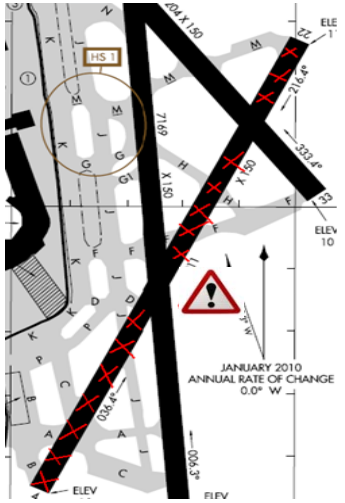




Low Vis Procedures

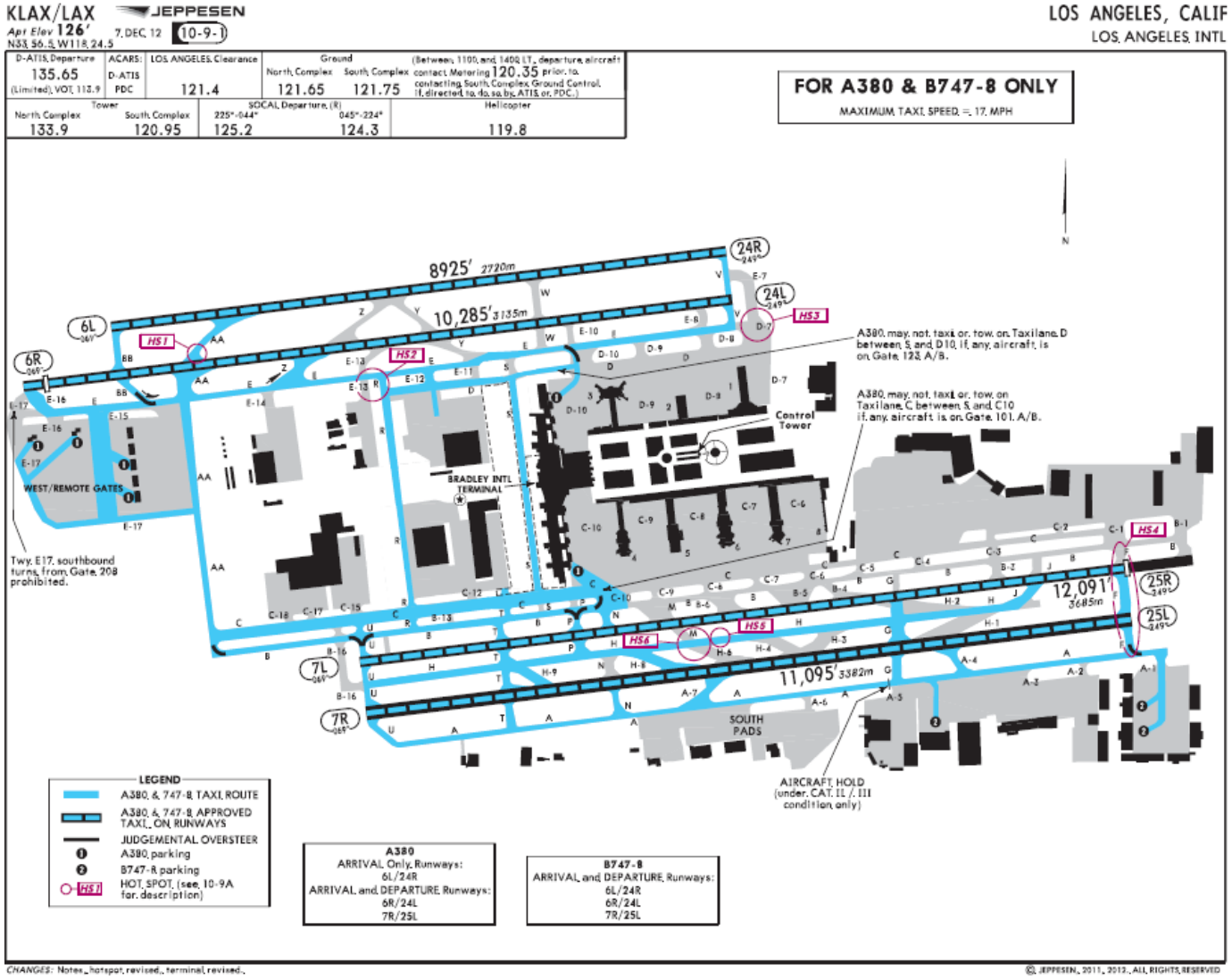


Gate Chart



Digital NOTAMs

Airframe Specific Airport Diagram

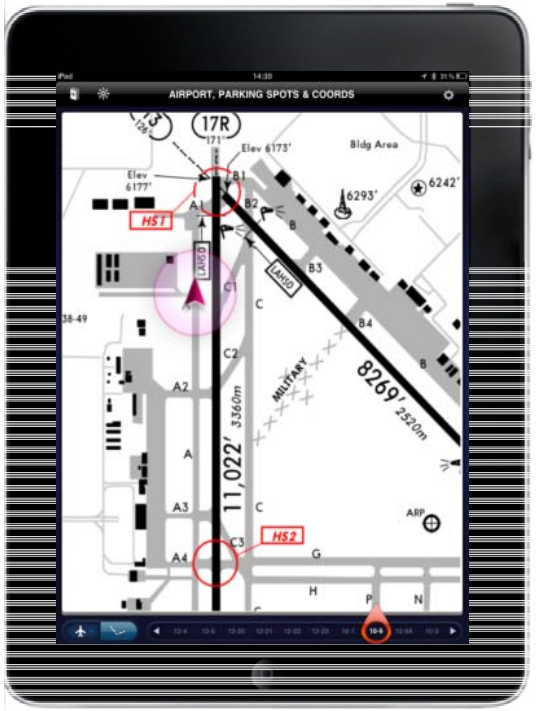


Accurate Airport Diagrams

- Jeppesen worked with Executive Jet Management to complete field trials analyzing the usability, accuracy, reliability and quality of a simple situation awareness tool during taxi operations

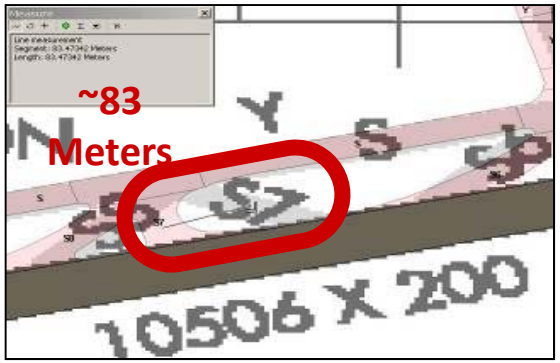
- Pilots were provided with portable GPS receiver to enable own-ship display on Jeppesen accurate airport diagrams of 23m or better using Mobile FliteDeck on iPad

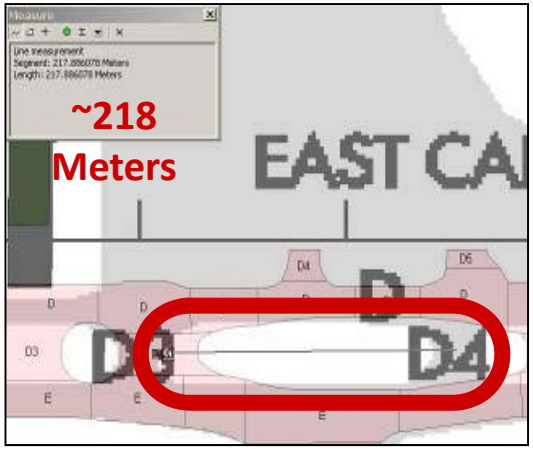
- As a result of this study, effective JAN 31 2013 the FAA is implementing a new policy to support this ground-based capability as a “Type B” application, thus allowing acft spotters on Airport Diagrams of sufficient accuracy.



Accurate Airport Diagrams

- ANSP supplied airport diagrams often contain gross errors
- Errors exceeding 100m are common
- Database Accuracy required from DO-257A for display of acft spotters
  - Total runway error budget 79m
  - Total taxiway error budget 101m
- **Low accuracy airport diagrams cannot display own-ship**
- It is not practical to create an AMDB for every airport in the World



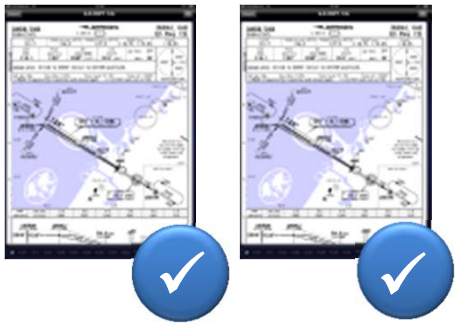


- **The Solution: Accurate Airport Diagrams @ 23m or better acc**
- Total error budget 40m (GPS location acc. 17m + Database acc. 23m)

Mobile Roadmap

Terminal

Standard | Tailored



Enroute

Standard | Weather | Tailored

Text

Standard | Tailored

Further Enhancement

Document Mgmt. | Flight Planning | AMM | Crew Briefing

Windows
Already hosting Jeppesen FliteDeck Pro on Win 7.1
Win8 will be supported

Android
Galaxy development is moving along – 1st release in Q3 2012

Controlled Flight into Terrain Events – IATA Safety Report

- 2011 - 10 accidents 90% Fatal
- 2010 - 7 accidents 86% Fatal

- Does not include Air Taxi, General, Business and Military Aviation

Terrain and Obstacle Database

Overview

The Jeppesen Terrain Database provides the latest generation of terrain data for prevention of controlled flight into terrain and terrain avoidance warning systems (TAWS). Developed as a worldwide database based on the Shuttle Radar Topography Mission (SRTM) data from the National Geospatial Intelligence Agency (NGA).

The Jeppesen Obstacle Database is the world's most complete database of obstacles relevant to aviation. The database contains man-made and certain natural obstacles extracted from digital and paper sources provided by governmental civil aviation authorities and military agencies worldwide.

Obstacle database

The Obstacle Database Can be Viewed in Google Earth

TAWS
Terrain Awareness and Warning System

FAA TSO-C151c - Class A TAWS equipment must provide indications of imminent contact with the ground for the following conditions :

- **Mode 1: Excessive rates of descent**
- **Mode 2: Excessive closure rate to terrain**
- **Mode 3: Negative climb rate or altitude loss after takeoff**
- **Mode 4: Flight into terrain when not in landing configuration**
- **Mode 5: Excessive downward deviation from an Instrument Landing System (ILS) glideslope, Localizer Performance and Vertical Guidance (LPV), or Global Navigation Satellite System (GNSS) Landing System (GLS) glidepath.**

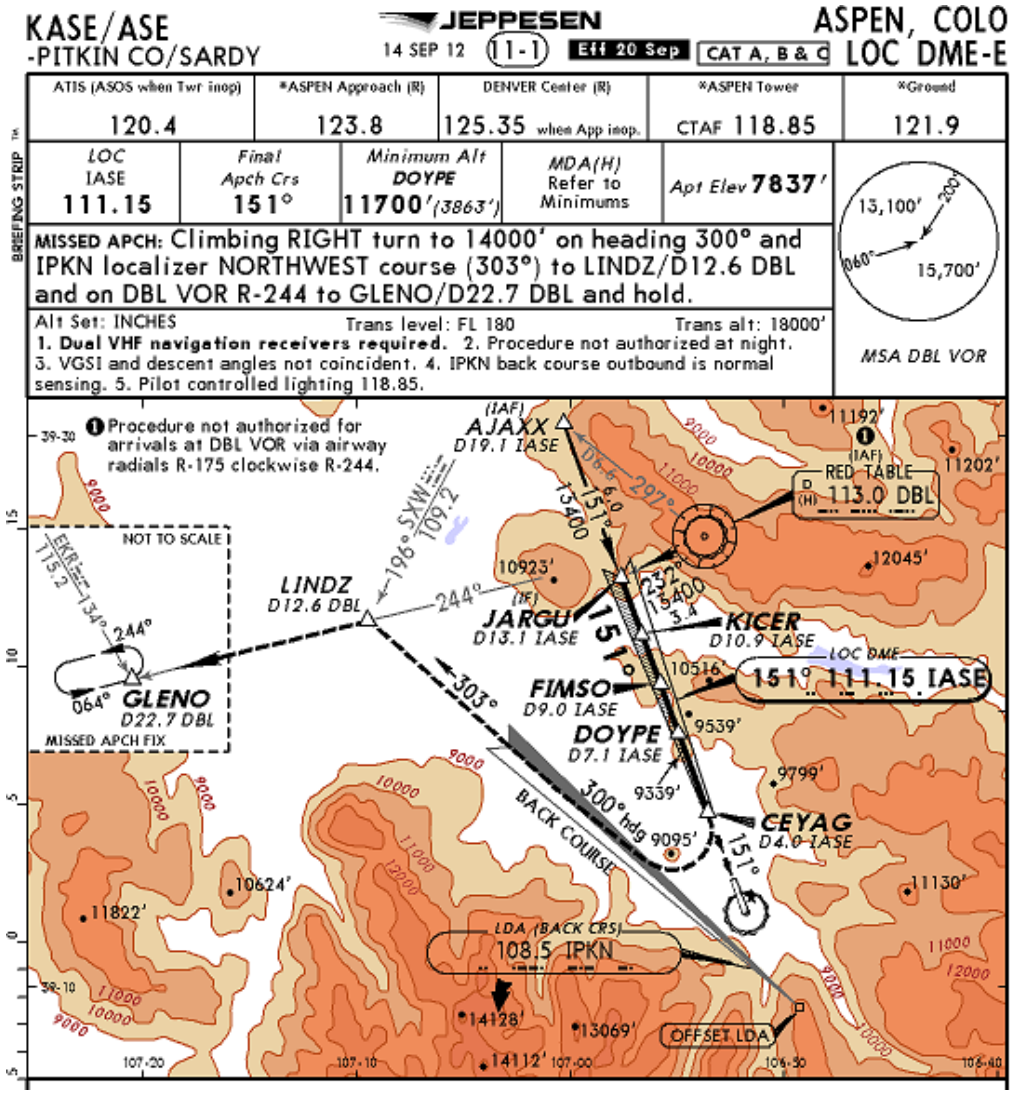
Other Uses of Digital Terrain and Obstacle Databases

- Aeronautical charts (examples follow)
- Airport Obstacle Analysis (AC 120-91)
- Moving Map displays
- SVS
- Flight Planning systems
- Flight Procedure Design
- TAAM (Airspace and Airport Modeling software)

Terminal Aeronautical Charts

Terrain Contours

High Point elevations

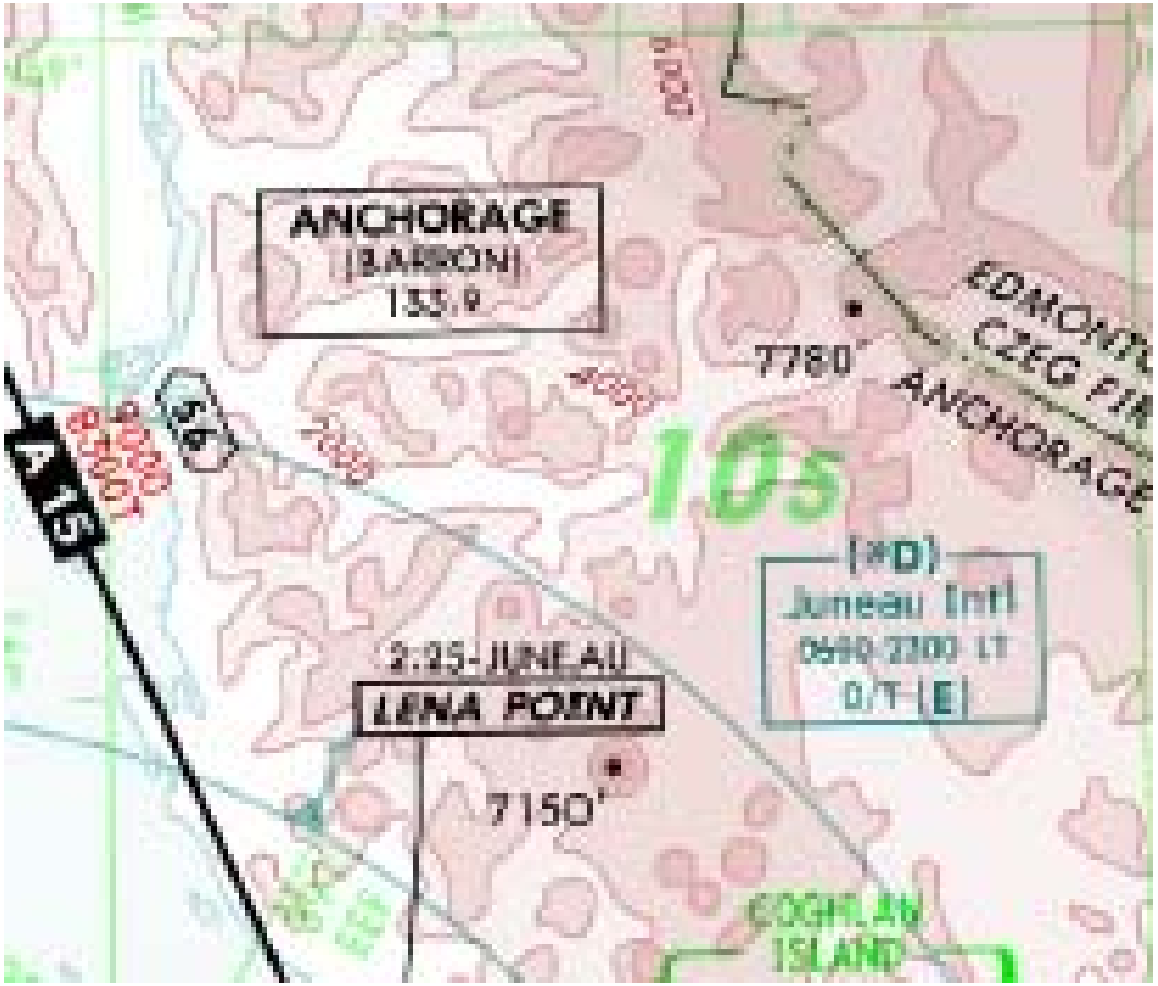


Enroute Paper charts

Terrain Contours

High Point elevations

Grid MORAs



Enroute Electronic Charts

FliteDeck Pro

Boeing Enroute

Why chart Terrain if it is not used in the Procedure?

Situational Awareness:

“The perception of the elements in an environment of time and space, the understanding of their meaning, and the projection of their status in the near future”

END