



Required Navigational Performance

**LAX Noise Roundtable
Sept 9, 2009**

Captain Perry Clausen
Manager Air Traffic Services
Southwest Airlines



RNP

- Performance based specification
- Not tied to ground based navigational aids
- Precise
- Defines a path and an allowable error

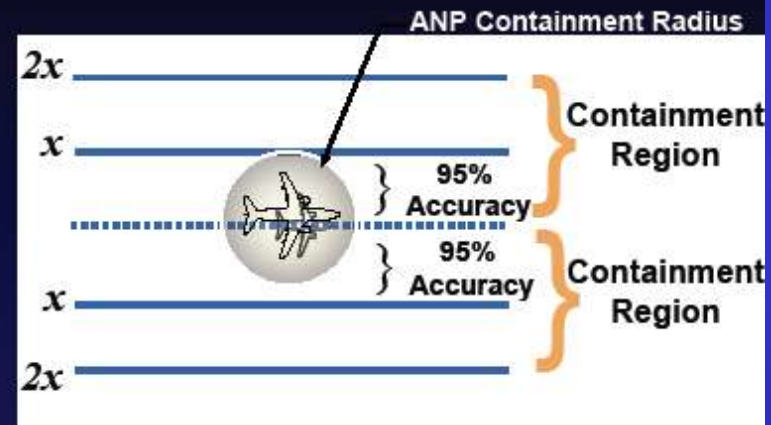


RNP Key Concepts



RNAV/RNP Key Concepts

- Onboard avionics keep aircraft within a tightly specified airspace corridor
- RNP-x is aircraft path conformance (with accuracy x (nm) or better, 95% of time)
- RNP Containment Region is an area 2 x RNP-x on either side
- 99.999% probability that aircraft is within containment region

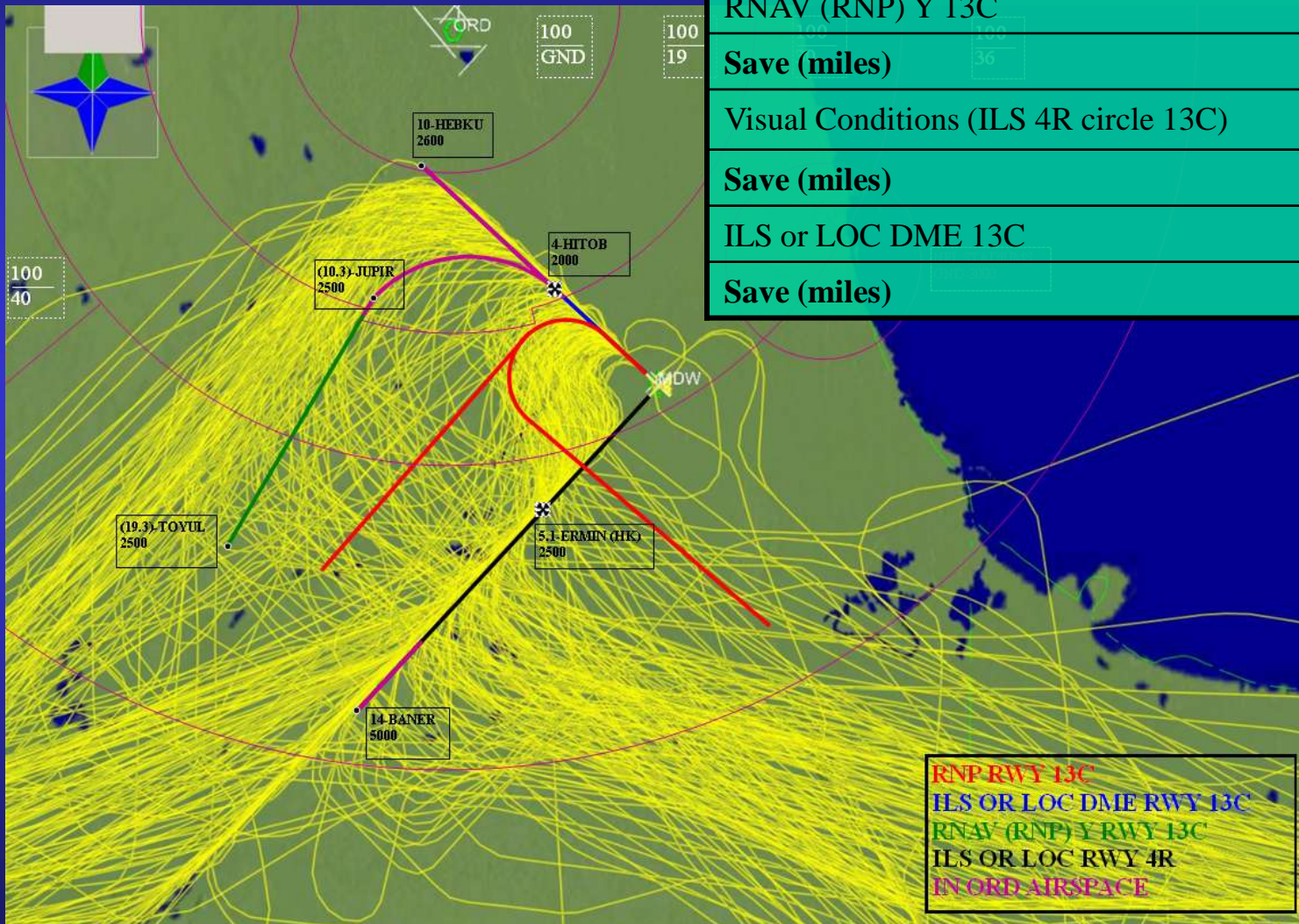


RNP=RNAV + Monitoring= Containment



RNP Benefits

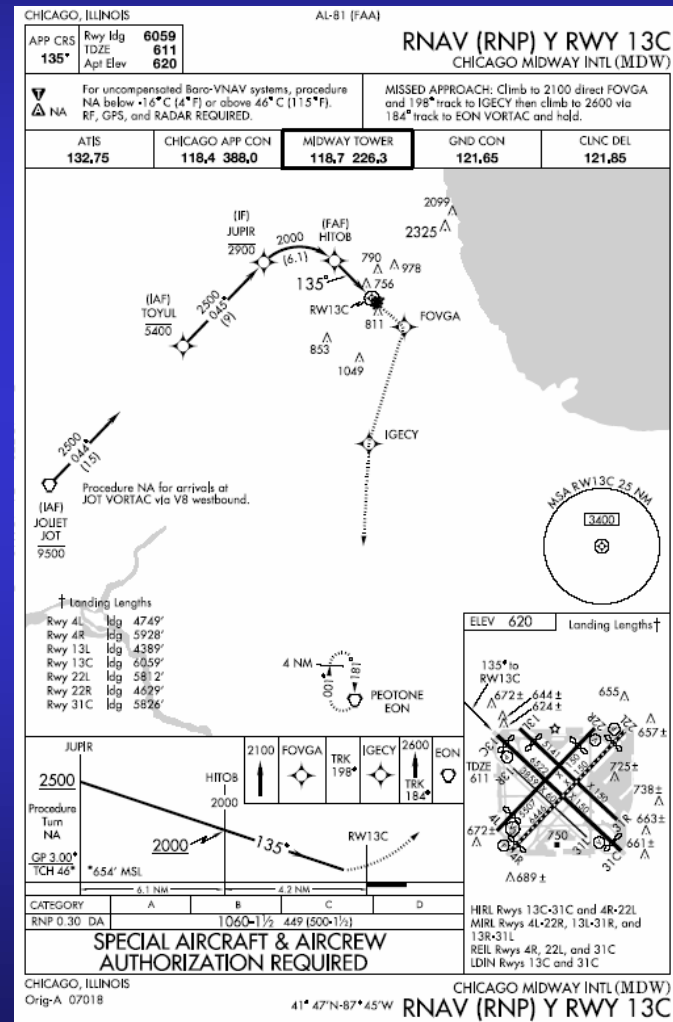
RNP 13C	16.04	19.18
RNAV (RNP) Y 13C	19.3	37.12
Save (miles)	3.26	17.94
Visual Conditions (ILS 4R circle 13C)	21.31	27.94
Save (miles)	5.27	8.76
ILS or LOC DME 13C	24.21	37.12
Save (miles)	8.17	17.94





RNP at MDW

- Access unachievable in any other way
- MDW RNP Decoupled from ORD





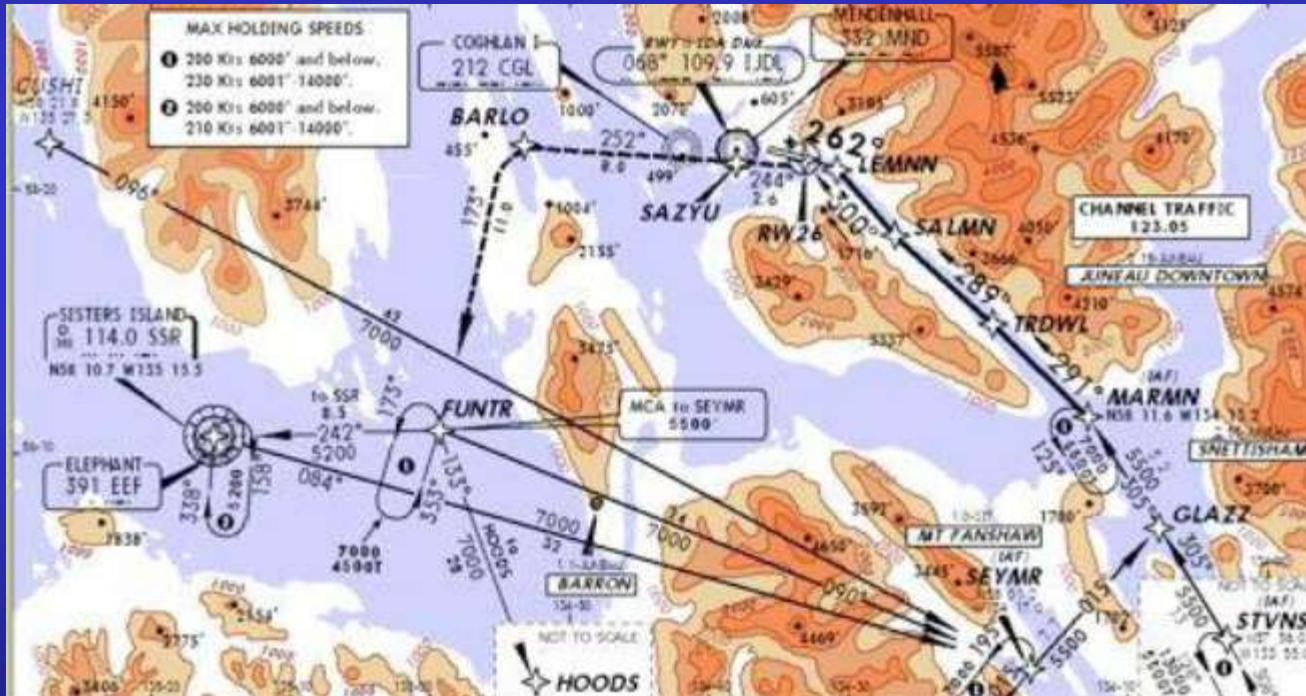
Where it can take you



First RNP to Juneau



Juneau RNP Procedure

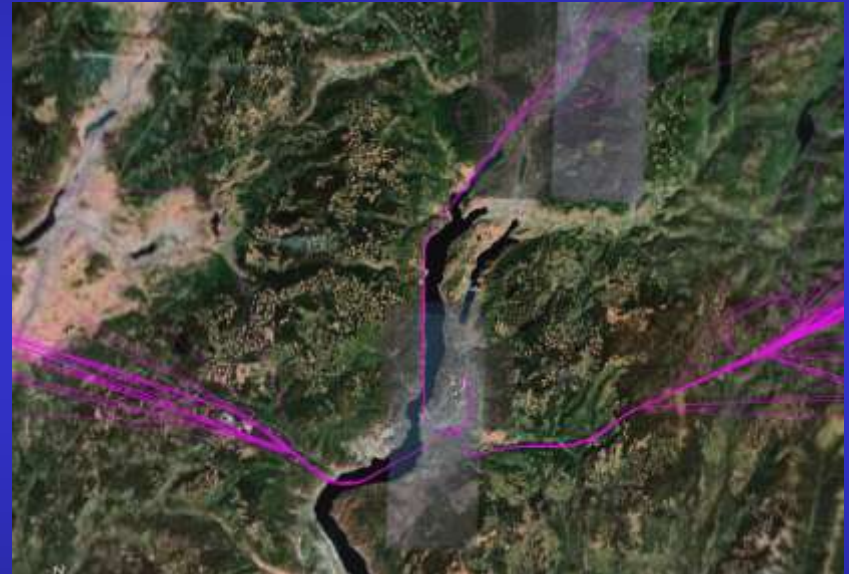




Track Consistency



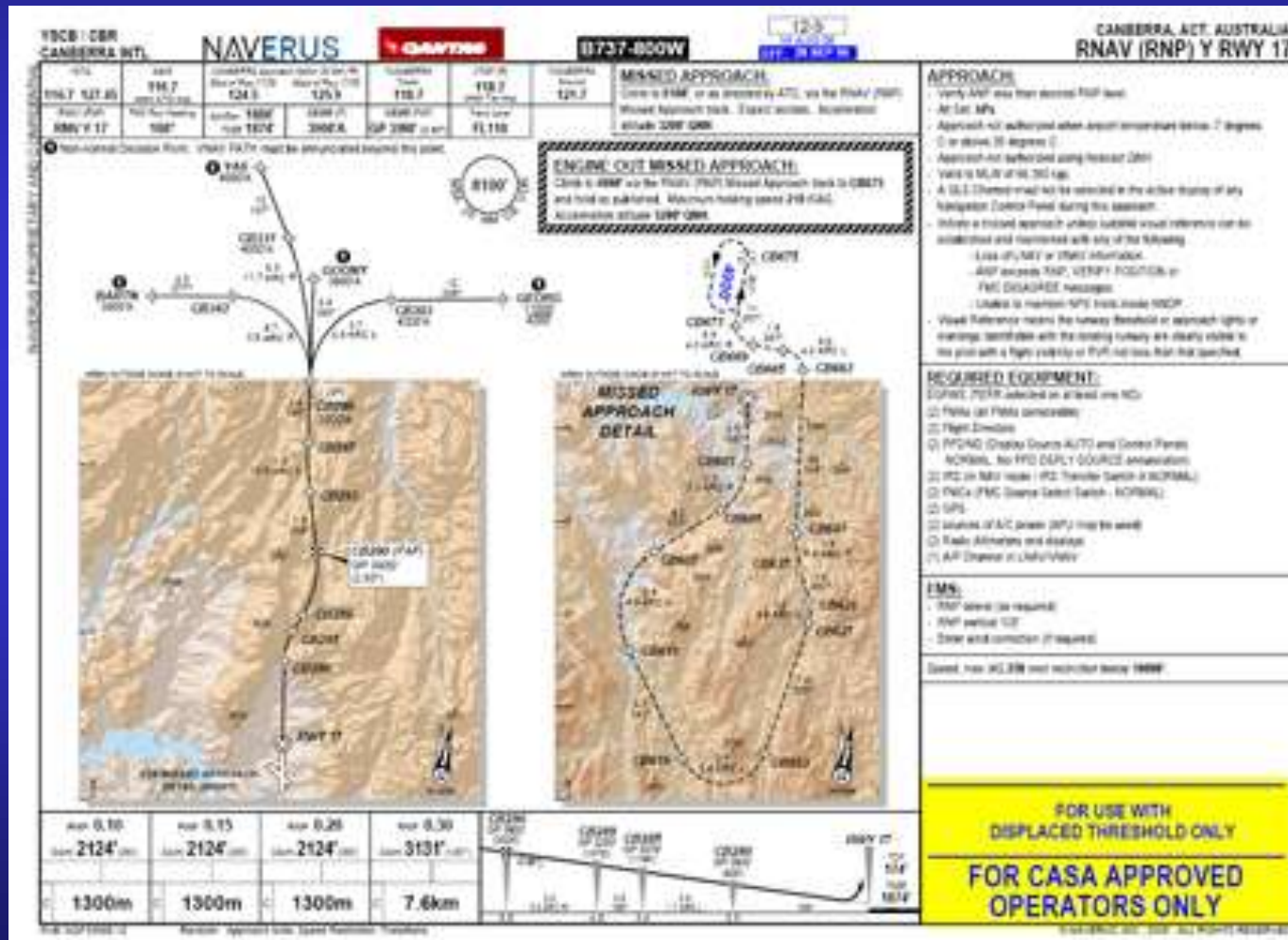
Conventional



RNP

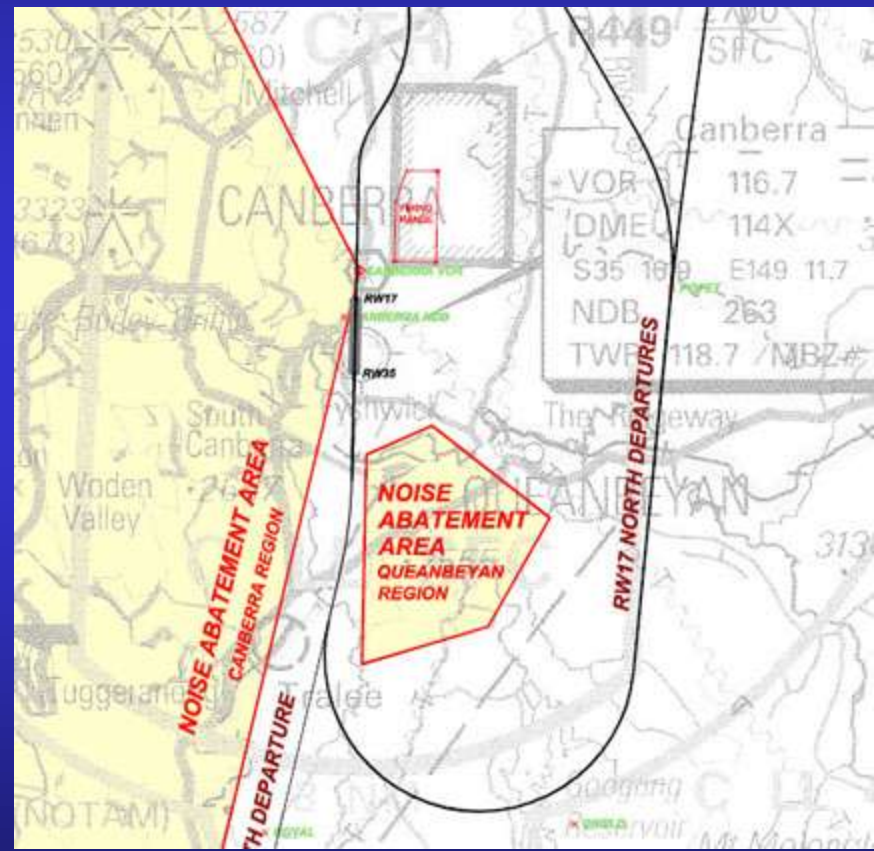


Canberra



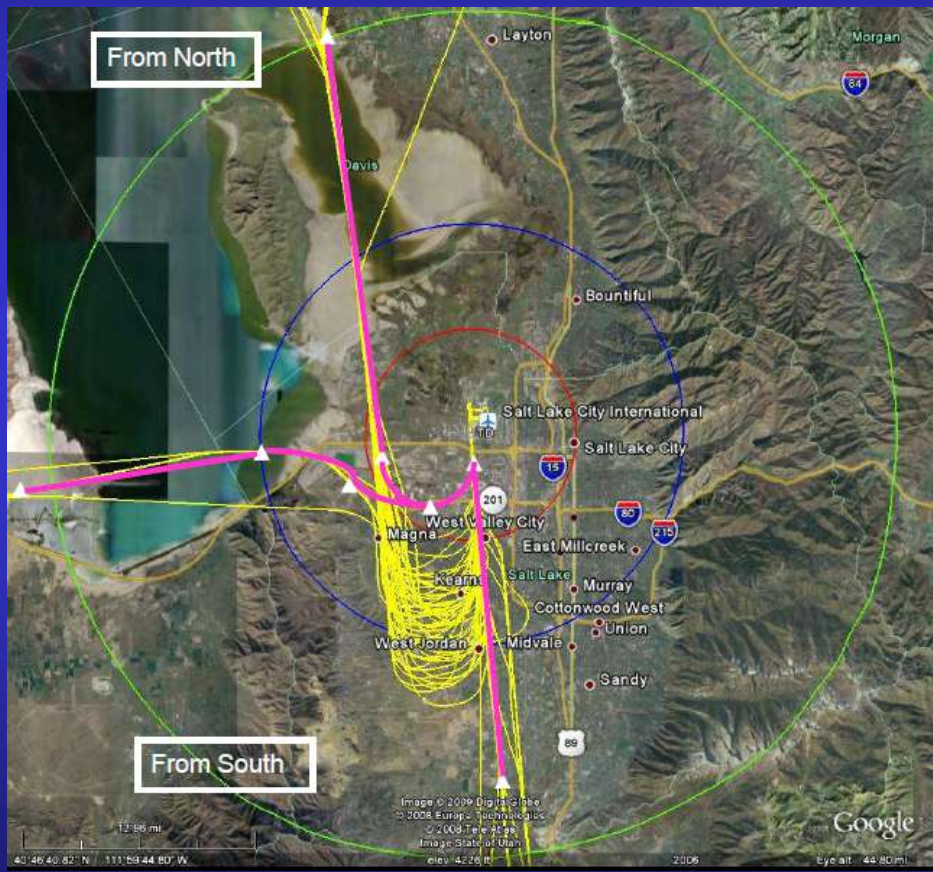


Canberra



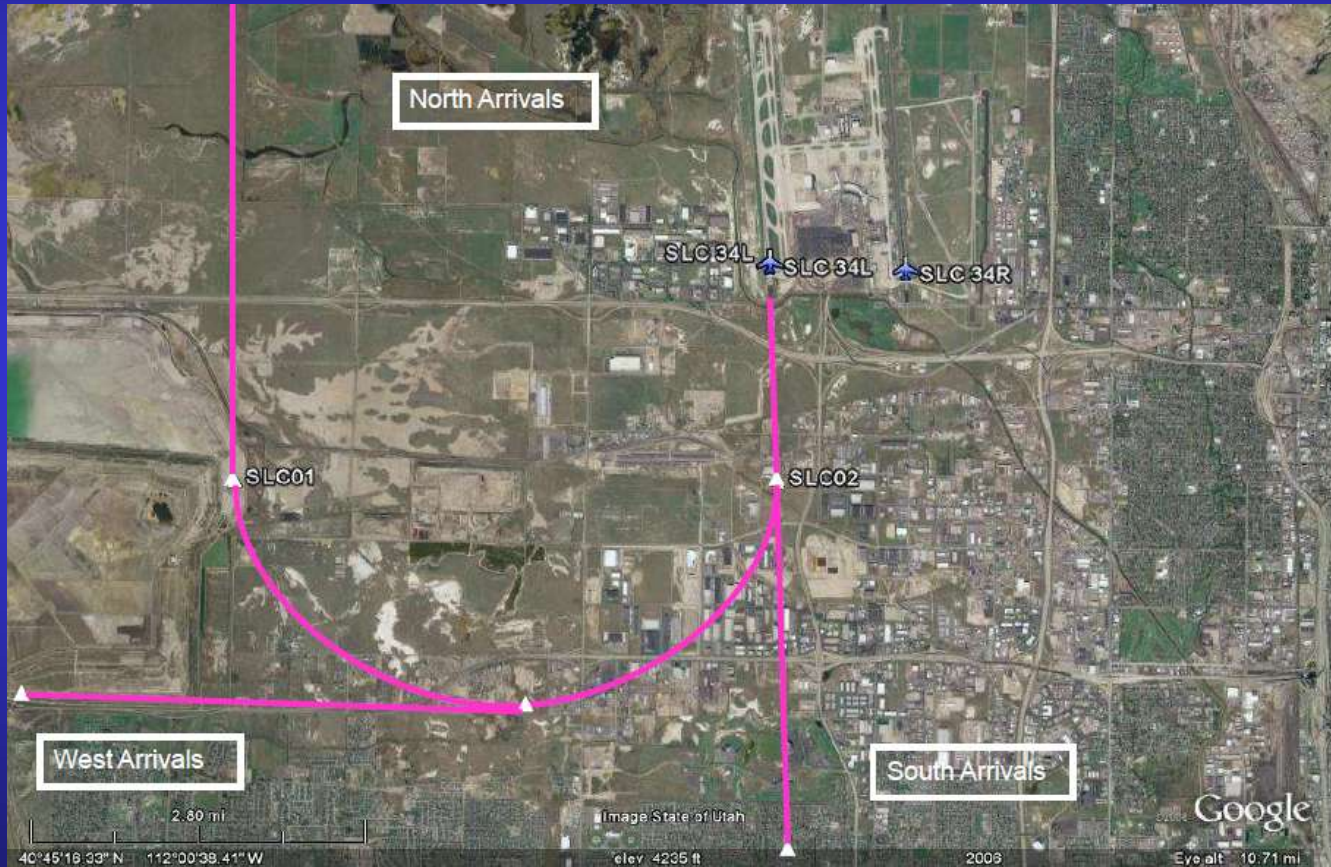


SLC 34 L & R





SLC Green 34L





RNP Does Not

- Repeal laws of physics
- Repeal laws of aerodynamics
- Short circuit any environmental study requirements
- Bypass any existing laws
- Change how the flight management computer guides the airplane



Southwest and RNP

- Going through the RNP certification process
- Modifying aircraft
- Training next year
- Line use possible in 2010
- Public vs tailored RNP
- Only approaches certificated now



Current Topics

- Environment isn't just noise anymore
- Dueling Part 161s
- Someone wins the jackpot
- Noise Profiles
- Air Transport enables the economy
- Safety Risk Management Process



Questions/Comments?

perry.clausen@wnco.com