

# *Days to Come*

*The Forthcoming NASA  
Simulations at **FutureFlight**  
Central for the **North Airfield**  
Safety Study*

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*Primary Aim of North Airfield  
Safety Study:*

*To estimate **as specifically as possible** the level of future safety associated with each of several alternate configurations of the LAX North Airfield.*

## *Auxiliary Aim:*

*To provide useful information about the capacity implications of the various configurations, in light of projections about LAX traffic levels in 2020.*

*What follows is an **overview** of the program of experiments that will occur at NASA's Future Flight Central facility (FFC) at Ames in August, 2009.*

***Before presenting the overview, we would make two points.***

## *Point 1:*

*While the NASA/FFC simulations are **vital** to the North Airfield Safety Study, they are **not the entirety** of the study.*

# *Examples of Other Sources of Relevant Data:*

- *FAA analyses about the accident-prevention effectiveness of **ASDE-X Radar** and **Runway Safety Lights***
- *Recent experience on the **LAX South Airfield**, which has a new centerline taxiway and increased runway separation*

## *Point 2:*

*The NASA/FFC Simulations cannot possibly cover **all conceivable situations** that could arise. But if we study each configuration in a **wide range of plausible circumstances**, we can make sensible inferences about operational safety.*

# *What will happen at Future Flight Central?*

*In the simulation, we will consider five possible configurations of the LAX North Airfield.*

# *Configuration 1: Baseline*

*Essentially, the North Airfield as it exists now  
(with the addition of the Midfield Concourse, and new  
gates west of the Bradley terminal)*

## *Two Primary Variants:*

- *Group VI traffic on both North and South Airfields.  
(Group VI = Airbus 380, Boeing 747-800)*
- *Group VI traffic restricted to South Airfield*

*Configuration 2: Move Runway 24-R 100 feet North; create a centerline taxiway between Runways 24-L and 24-R.*

*This configuration would make the North Airfield **the mirror image** of the recently-enhanced South Airfield.*

*Configuration 3: Move Runway 24-L  
340 Feet South and create a Centerline  
Taxiway Between 24-L and 24-R*

*This configuration corresponds to the arrangement for the North Airfield that was **announced** a few years ago. It would require the **demolition of three existing airport terminals.***

*Configuration 4: Move Runway 24-R  
340 Feet North and create a Centerline  
Taxiway Between 24-L and 24-R\_\_*

*This configuration would move  
Runway 24-R nearer the existing  
boundaries of the airport.*

*Configuration 5 : Move to a Three-Runway Airport, with A Single Runway 24 on the North Airfield*

*The North Runway would handle the vast bulk of Group V and Group VI aircraft (Boeing 747 and 777, Airbus 340 and 380). Smaller aircraft would be concentrated on the South Airfield.*

# *Some Details about the Experiments:*

*Over the various runs that will each last an hour, we will cover **three visibility conditions**.*

- *Daytime Visual (Day-VMC)*
- *Daytime Instrument (IMC)*
- *Nighttime Visual (Night-VMC)*

*In any given run, the number of operations for **Group VI aircraft** (arrivals plus departures) will take one of three levels:*

- **2 (per hour)**
- **4**
- **6**

*The simulation will consist of roughly **54 runs** -- each one hour long. Each run will concern a particular **configuration, visibility condition and number of Group VI aircraft.** Pilots and air traffic controllers will conduct “actual” operations in a cool simulator.*

*Example: **Configuration 2** (100' North), **Instrument Flight Rules (IMC), 4 Group VI aircraft***

*During **the tour of Future Flight Central**, you will learn more about the specific arrangements involving pilots and controllers. NASA has hired **highly experienced professionals from both groups** to participate in the experiments.*

# *Pilots and Controllers*

- *The tower will be staffed by **six recently retired controllers** plus a **tower supervisor**. Duties for the controller positions will **closely resemble those at the actual tower**.*
- *Most aircraft will be controlled by **pseudo-pilots** who use a (simple) computer-based interface.*
- *In addition, the **full-motion 747 flight simulator** (with a fully qualified pilot and co-pilot) will be integrated into the simulation – it will typically make 4 landings during a 1-hour trial.*

*To learn as much as possible about safety, we will deliberately introduce certain “anomalies” in the operations and see how well they are handled.*

## *Example: Missed Exit*

*A landing aircraft goes past its planned exit taxiway, and **remains on the runway** when the plane behind it is about to land.*

# *Example: Read-Back Error*

*A pilot misunderstands a message from air traffic control, and repeats it incorrectly.*

*(E.g., pilot says “UA 626 cross 24-L” instead of “UA 626 hold short of 24-L”)*

*In introducing anomalies, we face a **balancing act**:*

*We need enough anomalies that we can make **statistically reliable** statements about the responses, yet we cannot introduce so many that pilots and controllers believe they are trapped in a **chamber of horrors**.*

*We plan to conduct **both written and oral surveys** among the pilots and controllers, to gain their perspectives about the configurations that they encountered.*

## *Sample Question for Pilots:*

*In comparison with landings you have performed at **other major US airports in similar visibility conditions** , how difficult were the landings during this run?*

*(Score from 1: **Much Less Difficult than Usual** to 6: **Much More Difficult than Usual**)*

## *Sample Question for Pilots and Controllers*

*During this run, did you observe any condition that you consider a **substantial safety hazard**?*

*(If yes, then **follow-up oral session** to find out what happened.)*

## *Sample Question for Controllers:*

*How often during this run was your instruction or response to an aircraft delayed because you were too busy?*

*(Score from 1: Never to 6: Extremely Often)*

*After the experiment, the Academic Panel--in close consultation with our colleagues at NASA--will **synthesize the information of various kinds** gained from the simulations, and will combine it with other information to reach **answers to the questions posed to us by LAWA and NOR SAC.***

# *Our Policy: Full Disclosure*

*We will not ask NORSAAC or LAWA to trust us, and to accept whatever conclusions we reach about North Airfield safety. Rather, we will present as clearly as possible all the salient information that we used in reaching our conclusions, so that people are in a position to consider other interpretations of the data in assessing the soundness of our own.*

*Thank you.*

*Doubtless, you have some  
questions.....*