



Just Culture conversation between aviation and  
judiciary

Castelldefels 26 May 2017

Occurrence Scenario 2



# Objective

The objective of the practical exercise/case is the creation of a simulated aviation occurrence to serve as a discussion between judicial and ATM & aviation experts to provide a forum on the issues associated with criminal investigations resulting from aviation incidents or accidents.

# And So It Begins -

Aircraft #1 is a  
Boeing 747 →



← Aircraft #2 is a Bombardier DHC-8



Aircraft #3 is an Airbus A320 →

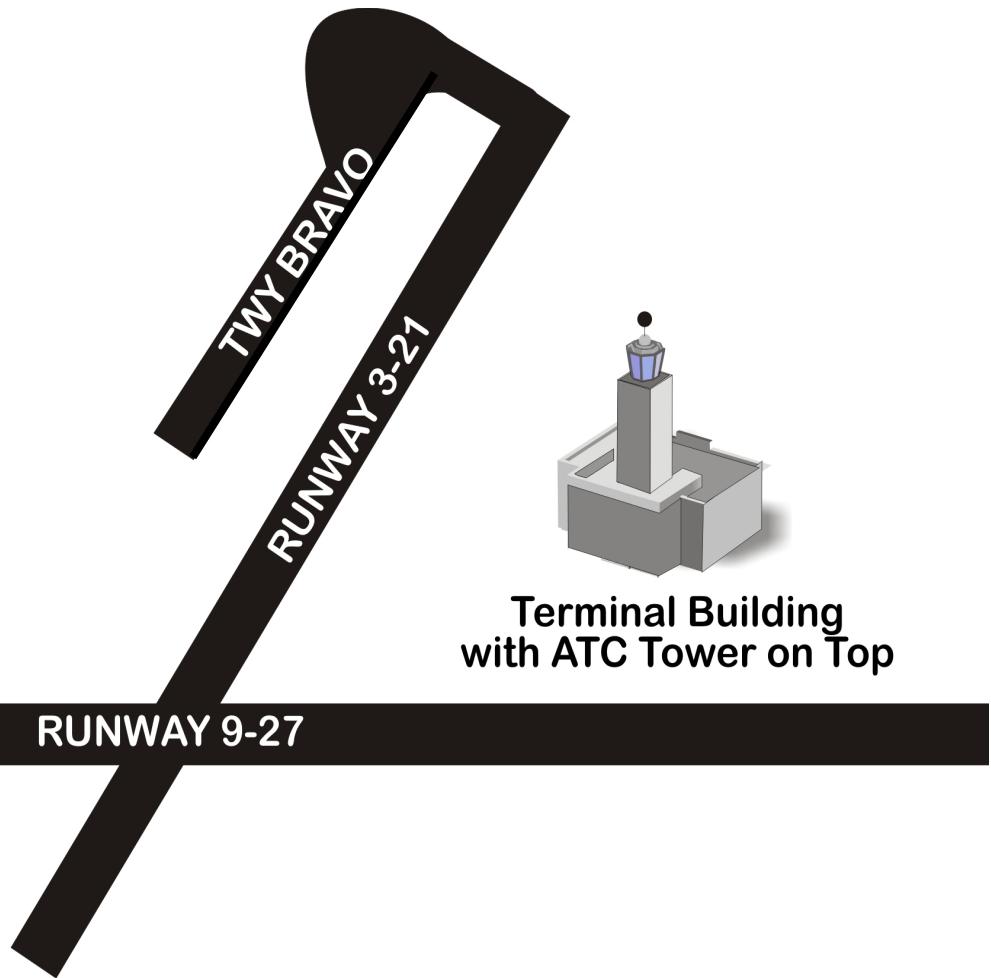


## The Airport Involved

- Is a major international aerodrome with heavy traffic.
- Has two runways, an east-west runway that is 3,700 meters long, and a northeast-southwest runway that is 2,500 meters long.
- The runways intersect at about the mid-point of the longer one.
- The terminal building is located in the northeast quadrant of the airport, with the ATC tower located on the top of the terminal.

# Selective schematic of airport

(Not to scale)

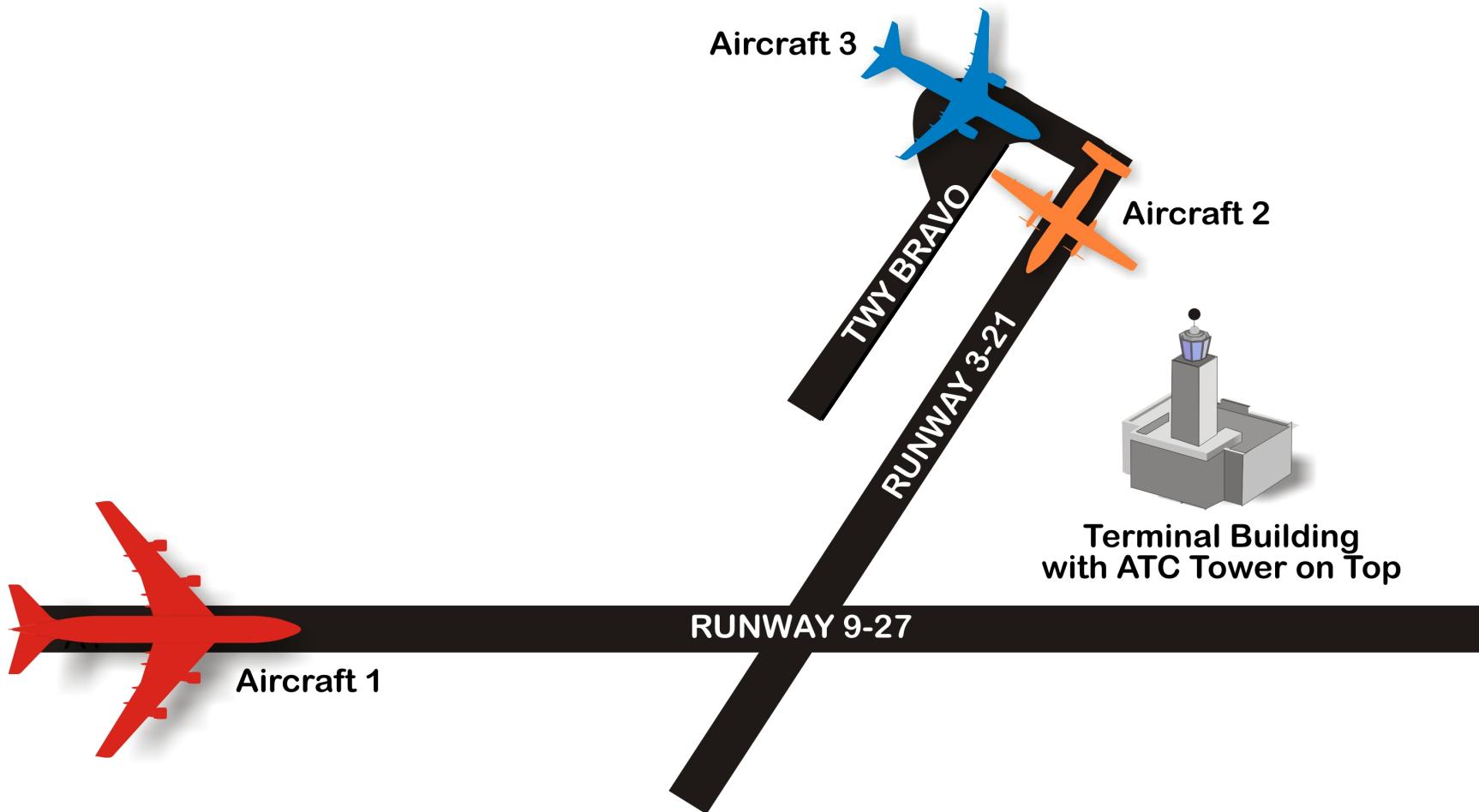


Terminal Building  
with ATC Tower on Top

## The Line-up

- Aircraft #1 (B747) is lined up for takeoff on RWY 9.
- Aircraft #2 (DHC8) is lined up for takeoff on RWY 21.
- Aircraft #3 (A320) is holding short of RWY 21 on TWY Bravo.

# Aircraft Locations



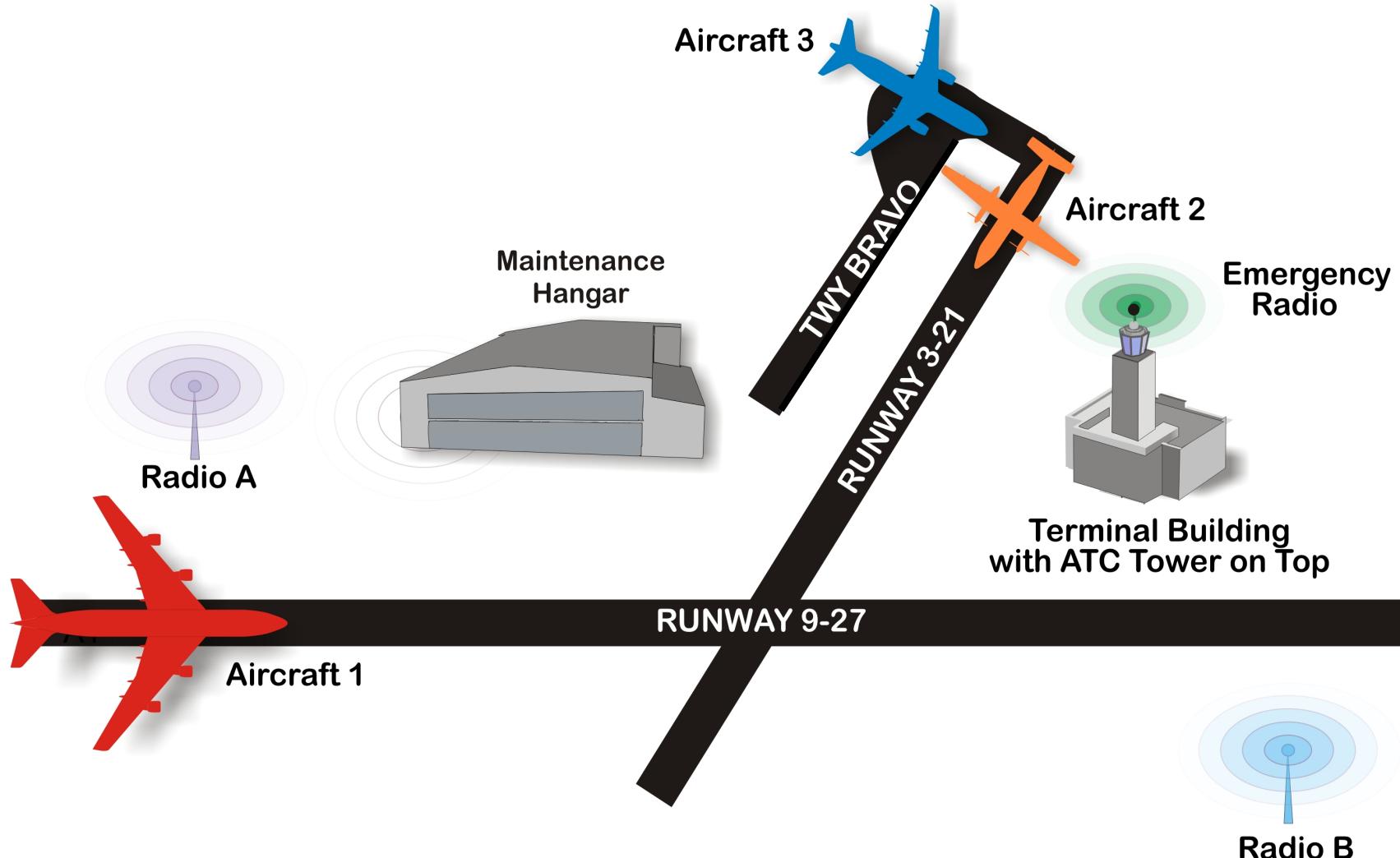
## Normal Radio Communications

- The Radio A antenna is physically located at the west end of the airport, north of the runway.
- The Radio B antenna is located at the east end of the airport, south of the runway.
- There is an automatic switching system that activates the radio with the strongest signal. Only one radio at a time is activated.

# The Emergency Radio

- There is an emergency radio located in the tower cab that is totally separate from the rest of the communications system.
- The volume on the emergency system, which uses a speaker, is normally kept at the minimum level so as not to interfere with normal ATC communications.

# Radio Antenna Locations



## The Event

- Aircraft #1 (B747) is cleared for takeoff on RWY 9, and immediately begins the takeoff roll.
- Aircraft #2 (DHC8), almost simultaneously, begins takeoff roll on RWY 21.
- Approximately 15 seconds later, the crew of Aircraft #3 (A320) advises the controller that there may be two aircraft taking off at the same time.
- The controller instructs Aircraft #2 (DHC8) to abort.

## The Results

- Aircraft #2 (DHC8) successfully aborts the takeoff and is able to clear the runway approximately half-way down its length, well short of the intersection with RWY 9.
- Aircraft #1 (B747) takes off and completes its flight.
- There is no damage to either aircraft, and no persons were injured in the event.

## Factual Items

- Both aircraft crews and the air traffic controller were properly trained, current, and certificated for the operations being conducted.
- Both aircraft were properly certificated and maintained for the operations being conducted, and neither had pre-existing technical defects that might have caused or influenced the event.
- All radio communications were in English, and the crews of Aircraft #2 and Aircraft #3 were native speakers of that language.
- The event occurred during daylight hours, with visibility greater than 10 km. There were no other meteorological factors that contributed to the occurrence.

## Factual Items

- The local, ground, clearance delivery, and operations manager positions were occupied at the time of the event.
- Traffic at the time was described by the local controller as of a very high volume and great complexity.
- Due to building repair and modifications both inside and outside the tower, and the related noise, the local controller was wearing a headset.

## Factual Items

- The local control position is equipped with a warning system designed to alert the controller of conflicts on the ground between aircraft and between aircraft and vehicles.
- When the controller transmitted the abort, Aircraft #2 (DHC8) was at 54 knots and Aircraft #1 was at 10 knots. When Aircraft 2 aborted, it was at 74 knots.
- As Aircraft #2 was braking and decelerating through 61 knots, the warning system generated an alert. At that time, Aircraft #1 (B747) had attained 71 knots.

# What Do You Believe The Judiciary Are Potentially Thinking?



## Consider - Technical and Human Factors

- Aircraft #1(B747)'s proximity to Radio A was such that Radio A was selected automatically when Aircraft #1 transmitted.
- Aircraft #2 (DHC8) could hear the controller on Radio A, but maintenance hangars blocked line-of-sight between the aircraft and the radio site – the weaker transmission from the aircraft was not heard by the controller.
- The controller did not hear anything indicating that two aircraft were transmitting at the same time.

## Inside the Cockpits

- Aircraft #2 (DHC8) was expecting a takeoff clearance, and took the clearance in spite of it being directed to another aircraft on another runway.
- Aircraft #1' (B747) s response to the controller was longer than that from Aircraft #2, thus Aircraft #1 never heard another aircraft transmitting.
- Aircraft #2 should have been able to hear the end of Aircraft #1' s acknowledgement, but was immediately involved in initiating the takeoff.

## Inside the Tower Cab

- The controller was concentrating on the RWY 9 departure, trying to get it out ahead of traffic on final.
- There was construction activity taking place on the outside of the tower cab, and the personnel involved in that activity were immediately adjacent to the controller's view of Aircraft #2 (DHC8).
- It was determined that the controller would have been able to see Aircraft #2 from the normal working position, while either sitting or standing.

# Now What Would The Judiciary Be Thinking?



# Expectations and Reality

- Aircraft #2 (DHC8) was in position for takeoff on runway 21 - the next thing they were expecting to hear was clearance for takeoff - and that's what they heard, regardless of what was said.
- Aircraft #1 (B747), due to their takeoff acknowledgement being longer than Aircraft #2's, was never aware that another aircraft had taken their clearance. They were unaware an event had occurred until an investigation was begun a few days later.
- Aircraft #3 (A320) had better situational awareness than the controller and either of the involved aircraft - and spoke up quickly when they realized there was a potential problem.

## Who's At Fault? Well, What If...

- Aircraft #2 (DHC8) departed the side of the runway while rejecting the takeoff - minor damage, minor injuries.
- Aircraft #2 was not told to abort - resulting in a near-miss over the runway intersection.
- The controller could not believe what Aircraft #3 said, delayed the abort call, and a collision occurred.
- Nothing said on frequency, collision occurs in the intersection, and during the investigation - by some means - Aircraft #3's recorder is pulled and it is determined the crew was aware of the possibility of an event and said nothing.

## And What If...

- What if the workers on the exterior scaffold were a distraction, and:
- The controller decided to work with it and say nothing, or
- The controller told the supervisor, who decided it was okay and told the controller to “work around them”, or
- The supervisor told the manager, who knew the work was behind schedule and allowed it to continue, or
- The manager called for the work to stop but the contractor, being behind schedule on the job, refused to do so.