Just Culture
Practical Exercise/Case

Istanbul

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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.

About the Practical Exercise/Case

- The exercise, while a recreation, contains elements that have actually occurred. This could be real.
- The event is a very complex scenario and presents several integrated factors.

And So It Begins -

Aircraft #1 is a Boeing 747 →

← Aircraft #2 is a Bombardier DHC-8

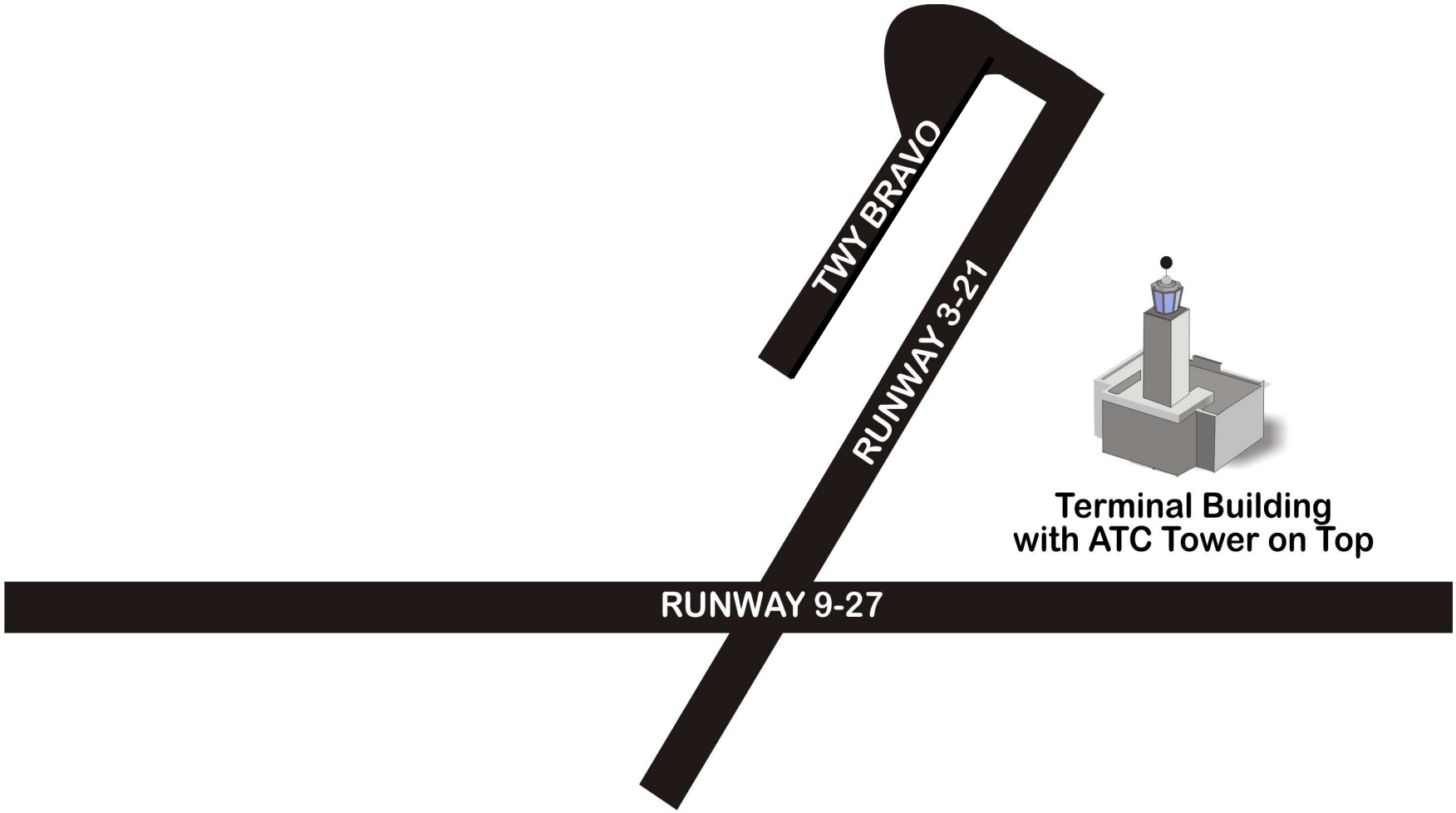
Aircraft #3 is an Airbus A320 →

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

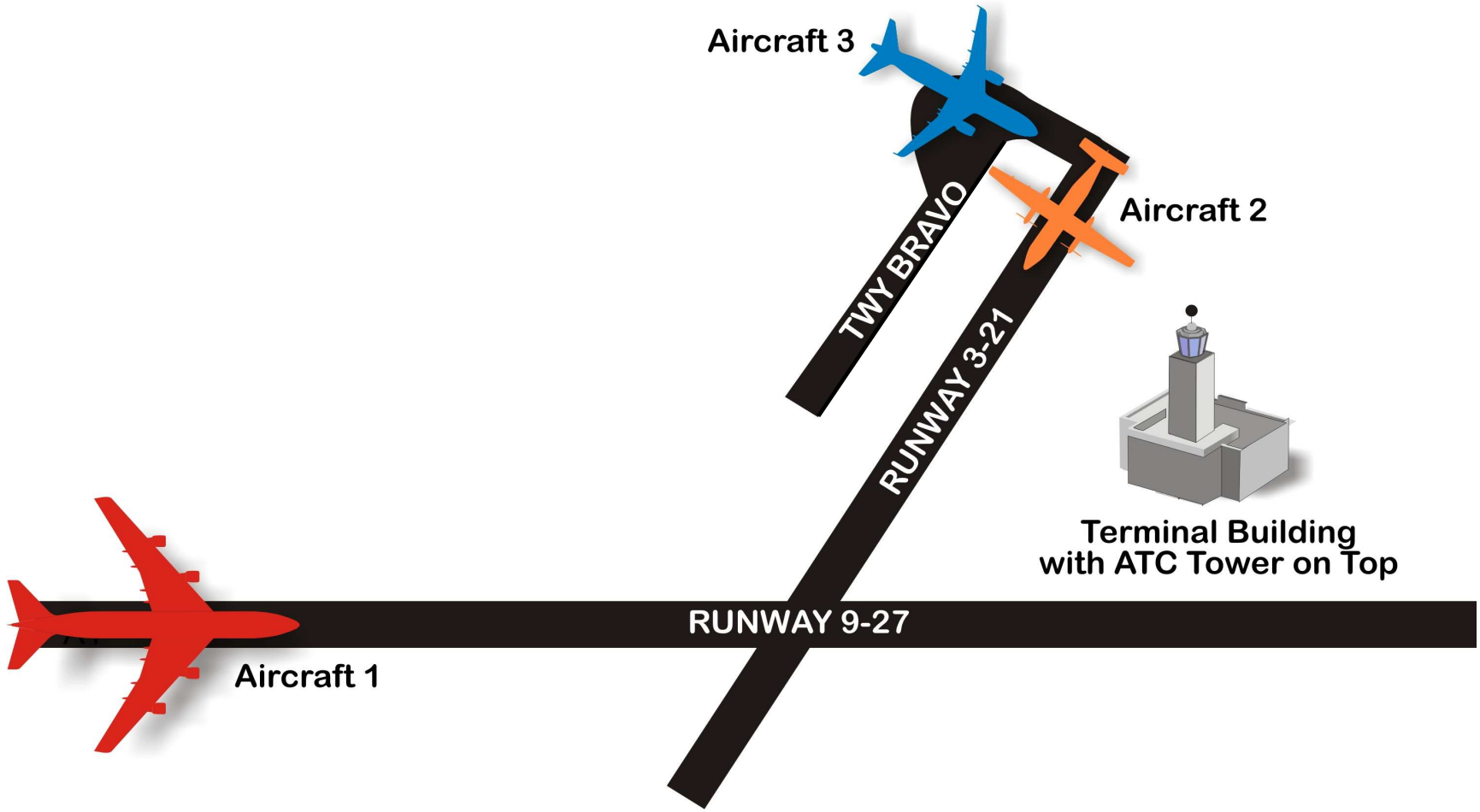
(Not to scale)



The Line-up

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

Aircraft Locations



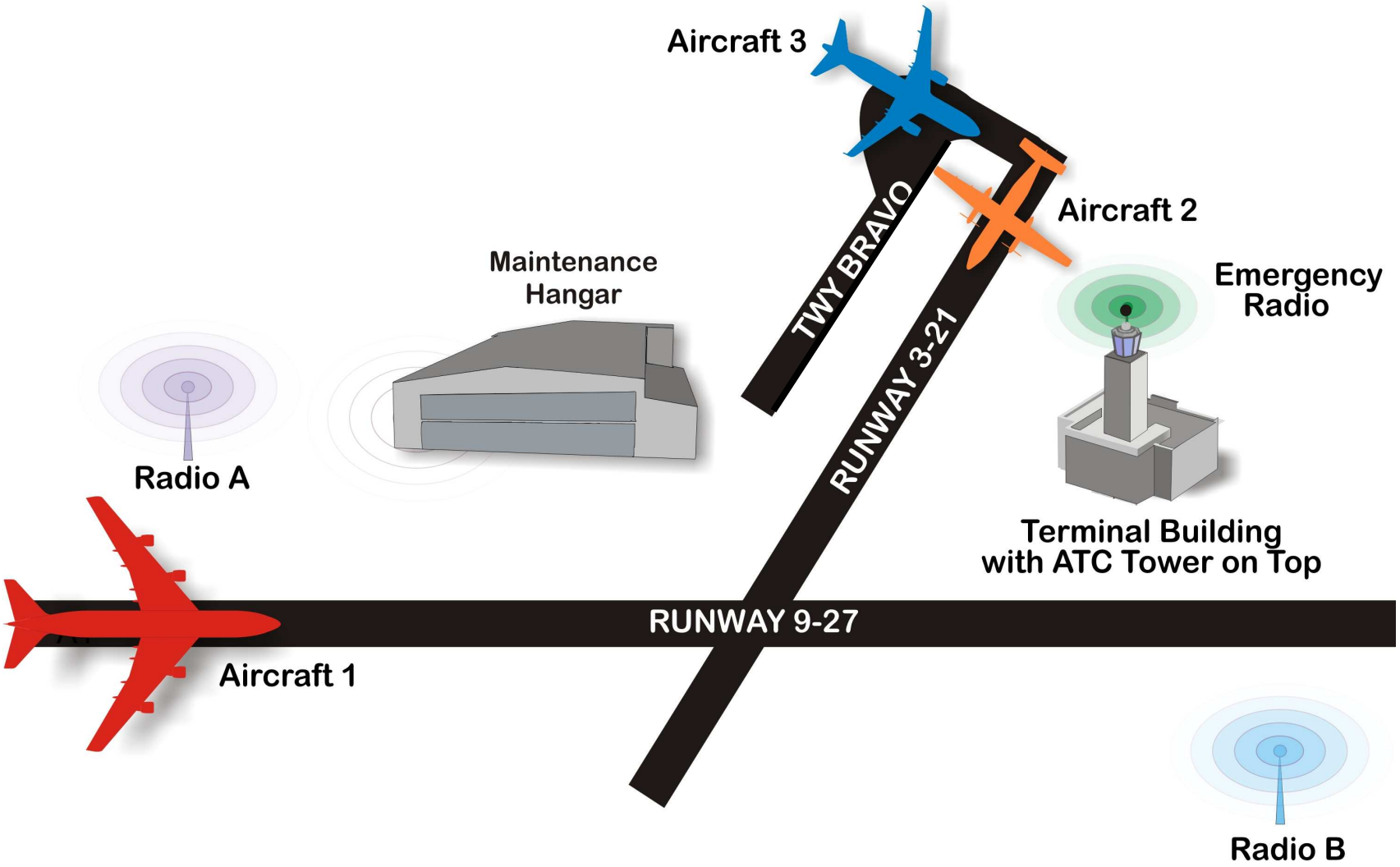
Normal Radio Communications

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

The Results

- Aircraft #2 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 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 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 had attained 71 knots.

What Do You Believe The Judiciary Are Potentially Thinking?

Consider - Technical and Human Factors

- Aircraft #1's proximity to Radio A was such that Radio A was selected automatically when Aircraft #1 transmitted.
- Aircraft #2 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 was expecting a takeoff clearance, and took the clearance in spite of it being directed to another aircraft on another runway.
- Aircraft #1'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.
- 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 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, 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 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 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.

Perhaps All Is Not As Simple As It Seems

Discussion?