

# AIRBORNE PUBLIC SAFETY ASSOCIATION



The

Safety

Wire

August 2020

## **UNITED 718...AH...WE'RE GOING IN...**

These were the last words transmitted on June 30, 1956 from a United Airlines DC-7 after it collided with a TWA Constellation over the Grand Canyon. It was the first aviation accident in the US with more than 100 fatalities. It also led to major changes in the air traffic control system.

The two aircraft took off from Los Angeles only three minutes apart. Their flight paths to Chicago and Kansas City would cross over the Grand Canyon area. At that time, the portion of their routes over Grand Canyon were not in controlled airspace and there was no radar coverage. As TWA 2 was nearing the edge of controlled airspace, they asked the TWA dispatcher to relay a request to ATC for 21,000 feet. The request was denied because United 718 was ahead of them at 21,000 feet. The crew of TWA 2 then requested to fly, "1000 on top," which was a VFR clearance to fly 1000 feet on top of the cloud deck. There was no specification what the cloud deck needed to be, or what altitude put the aircraft 1000 feet above it. Basically, the crew was saying that they would take care of traffic separation and they could fly at any altitude they wanted, as long as it was out of the clouds. TWA 2 climbed to 21,000 feet, exited controlled airspace, and collided with United 718.



In 1957 the accident investigator in this case wrote, "The basic means for traffic separation in VFR conditions is presently the, 'see and be seen' philosophy. This

concept has existed as a matter of necessity, with its known limitations, and will continue until there are sufficient technological advances to provide additional assistance to the pilot for collision avoidance.”

As a result of the investigation, the Airways Modernization Act in 1957 led to the Federal Aviation Act of 1958, which created the FAA. The new FAA was given authority over aircraft control throughout the US and began modernizing the system to improve flight safety. According to The Department of Transportation’s air traffic policy, “The primary purpose of the ATC system is to prevent a collision between aircraft operating in the system and to organize and expedite the flow of traffic.” Under this system, pilots will receive two types of warnings from controllers: traffic advisories and safety alerts.



A traffic advisory is given based on the judgment of the controller. If one aircraft is under ATC control and the other is not, the criteria of what warrants giving an advisory is up to the controller. If both aircraft are under ATC control, an advisory will be given if they are within 1000 feet of each other vertically and are merging on the radar screen.

According to the ATC Handbook, a controller should, “Issue a safety alert to an aircraft if you are aware the aircraft is in a position/altitude which, in your judgment, places it in unsafe proximity to terrain, obstructions, or other aircraft.” The addition of the word ‘alert’ indicates that the traffic (or terrain) information is not just advisory in nature but that the controller sees a potential collision may occur if someone doesn’t change what they are doing.

Two things that have not changed since 1956, however, are the pilot’s responsibility to ‘see and avoid’ in VFR conditions, and the inherent limitations of visual scanning for air traffic. Even when under ATC control, the safety of flight may still rely heavily on the Mk. 1 eyeball. According to the ATC Handbook, “Once the pilot informs you action is being taken to resolve the situation, you may discontinue the issuance of further alerts.” Also, “Once the alert is issued, it is solely the pilot’s prerogative to determine what course of action, if any, will be taken.”

If you ask for assistance, the controller may help you with a suggested heading or altitude change, as long as the two dots on their radar are far enough apart. If you wait until you are too close to the other target, they will not be able to help. How close is too close? That depends on the type of radar resources available to the controller you are working with. Of course, none of this helps prevent collisions between manned and small unmanned aircraft. Those accidents continue to be 100% reliant on ‘inherently limited’ visual scanning techniques.



A final note on the 1956 accident. Investigators believed that the two aircraft were maneuvering around clouds in the area to give the passengers a better view of the Grand Canyon. The maneuvering distracted them from normal flying duties, including scanning for other aircraft while in VFR conditions. Maneuvering aircraft to provide a better view of something interesting on the ground perfectly describes the majority of public safety aviation. Our flights are often done in VFR conditions where ATC is not required, or often equipped, to give us traffic or terrain warnings. Even with TCAS and ADS-B, visual scanning for other aircraft will continue to be a significant challenge for our industry for the foreseeable future.



*"My soul is in the sky"*

*~William Shakespeare*

## RESOURCES

Dept of Transportation ATC Organization Policy (Handbook)  
<https://www.faa.gov/documentLibrary/media/Order/ATC.pdf>

NASA Callback – What Would You Have Done?  
[https://asrs.arc.nasa.gov/publications/callback/cb\\_487.html](https://asrs.arc.nasa.gov/publications/callback/cb_487.html)

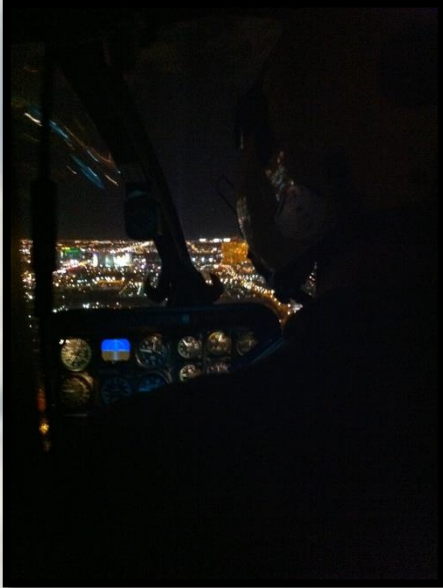
FAA Lessons Learned Reports:  
<https://lessonslearned.faa.gov>

## ONLINE MEETINGS

APSA conducts regularly scheduled online meetings for safety officers, maintenance technicians, SAR personnel, and UAS operators via a conference call you can join using your computer, mobile device or phone. Online meetings are open to any APSA member. Contract maintenance providers to APSA members are welcome to participate

in the maintenance meeting as well. If you would like to join, send an email to: [safety@publicsafetyaviation.org](mailto:safety@publicsafetyaviation.org)

The schedule for upcoming APSA online meetings is as follows.



**Maintenance:**

Wednesday, Sept 9, 2020

1:00 PM - 2:00 PM EDT (1700 UTC)

**SAR:**

Wednesday, Sept 16, 2020

1:00 PM – 2:00 PM EDT (1700 UTC)

**UAS:**

Wednesday, Sept 23, 2020

1:00 PM - 2:00 PM EDT (1700 UTC)

**Safety Officers:**

Friday, October 16, 2020

1:00 PM - 2:00 PM EDT (1700 UTC)

## **EMERGENCY PROCEDURE OF THE MONTH**

In each monthly emergency situation, discuss what you would do, as a crew, to respond to the following emergency. If the EP does not apply to your specific aircraft, think of something similar.

**ATC call for 'traffic alert' and crew is unable to visually locate the other aircraft**

*"Sometimes, flying feels too godlike to be attained by man.*

*Sometimes, the world from above seems too beautiful,*

*too wonderful, too distant for human eyes to see."*

*~Charles Lindbergh*



# Reality Check...

**Note:** The following reports are taken directly from the reporting source and edited for length. The grammatical format and writing style of the reporting source has been retained. My comments are added in **red** where appropriate. The goal of publishing these reports is to learn from these tragic events and not to pass judgment on the persons involved.

## 1956 Grand Canyon Mid-Air Collision Accident Report:

[https://lessonslearned.faa.gov/UAL718/CAB\\_accident\\_report.pdf](https://lessonslearned.faa.gov/UAL718/CAB_accident_report.pdf)

<b>Aircraft:</b>	<b>Cessna 210 and Cessna 206</b>
<b>Injuries:</b>	<b>None</b>
<b>ATSB#:</b>	<b>AO-2017-116</b>

[https://www.atsb.gov.au/publications/investigation\\_reports/2017/air/ao-2017-116/](https://www.atsb.gov.au/publications/investigation_reports/2017/air/ao-2017-116/)

The pilots of the aircraft were both operating charter flights to Port Keats, NT, under the visual flight rules (VFR), and had planned to track at 8,500 ft. Prior to take-off, the pilot of each aircraft was advised by air traffic control that the other aircraft would also be tracking to Port Keats at 8,500 ft. The pilot of SYT was cleared for take-off about 1 minute after HPA. Once airborne, he immediately looked for, and sighted HPA. Just before 0808, the pilot of SYT contacted the approach controller and reported passing 600 ft on climb to 2,000 ft, with HPA in sight. By the end of that transmission, the controller's situation display radar altitude for SYT indicated 100 ft. The displayed level information differed from the pilot's reported altitude by more than the permitted tolerance of 200 ft, but there was no indication that the controller identified that discrepancy.

The pilot of HPA expected that SYT would be either just to the left or directly behind HPA. At 0812, the pilot of HPA requested (and received) a clearance to stop climb at 6,500 ft 'due to faster following traffic'. This transmission was intended to make the pilot of SYT aware that he knew SYT would be close behind, and for vertical separation between the two aircraft.

As SYT approached 5,500 ft, the pilot of SYT could see his aircraft was gaining on HPA, and assessed it would soon overtake HPA. Shortly after, HPA moved through the 10 o'clock position of the pilot of SYT who then lost sight of it behind SYT's left wing. At 0816, when about 15 NM south-west of Darwin Airport, the pilot of SYT reported to the approach controller that he was 'just coming up on HPA's 3 o'clock position and lost sight' of that aircraft. The controller advised that HPA was 'climbing through 6,200 [ft] at the moment, probably half a [nautical] mile to your left'. The pilot of SYT responded 'Sierra Yankee Tango', and did not sight HPA.

The radar data at that time indicated lateral separation between the aircraft was 0.27 NM (500 m), with SYT behind and slightly right of HPA and 800 ft below. About 30 seconds later, an ADATS conflict alert (CA) activated on the controller's situation

display. The approach controller asked the pilot of SYT 'Do you have that traffic in sight or would you prefer a different level or tracking?' The pilot of SYT responded 'Negative, traffic not in sight... happy to maintain this track if HPA has us in sight'. The controller then asked the pilot of HPA if they had SYT in sight. The pilot of HPA responded 'Negative' and advised that HPA was now maintaining 6,500 ft.

At 0818 the CA activated again while neither pilot had the other aircraft in sight. The radar data at the time indicated that SYT was at 5,900 ft, HPA at 6,500 ft with a lateral separation of 0.13 NM (241 m).

The approach supervisor reported that, at that stage, there was still just over 500 ft vertically between the two aircraft and that he instructed the approach controller to maintain 500 ft separation between the aircraft. In response to the direction from the supervisor, the controller asked the pilot of SYT if he would 'like to stop climb 6,000?', to which he responded 'Negative, I'll continue on to 8,500, happy to take 3 miles right of track if that puts us out of conflict'. The pilot of SYT reported that he was puzzled by the question because at that stage his altimeter was indicating an altitude of 6,300-6,400 ft. The radar data at the time showed SYT at 6,000 ft, HPA at 6,500 ft and 0.086 NM (160 m) lateral separation between the aircraft, which were then about 20 NM south-west of Darwin Airport.

The pilot of SYT commented that as soon as he made that request to deviate three nautical miles right of track, HPA came from the left top corner of his windshield across the nose to the bottom right in front of him and filled the windscreen. He estimated the two aircraft passed 3-4 m apart.

<b>Aircraft:</b>	<b>AH-64 and H145</b>
<b>Injuries:</b>	<b>None</b>
<b>AIRPROX#:</b>	<b>2020038</b>

[https://www.airproxboard.org.uk/uploadedFiles/Content/Standard\\_content/Airprox\\_report\\_files/2020/Airprox%20Report%202020038.pdf](https://www.airproxboard.org.uk/uploadedFiles/Content/Standard_content/Airprox_report_files/2020/Airprox%20Report%202020038.pdf)

**THE APACHE NON-HANDLING PILOT (NHP)** reports that they were departing from Wattisham with an IFR clearance to "maintain runway track and climb to height 1500ft". This was acknowledged and read back to the Tower controller. On climb out in VMC the crew changed to the Approach frequency, conducted a transponder altitude check at approximately 400ft height and obtained a Traffic Service. Shortly afterwards, Traffic Information was passed regarding [a HEMS helicopter operating under an 'Alpha' callsign], 3NM to the west. The NHP saw the HEMS helicopter and assessed that it was higher and would pass in front. The Apache continued to climb as per the clearance with the NHP going 'eyes in and out' in order to assist and monitor the Handling Pilot (HP). After a short period of time, circa 20 - 30sec, the NHP regained visual contact with the HEMS helicopter and ordered the HP to stop climb at height 800ft and maintain runway track. A transmission was made on the Approach frequency to reflect this but the HEMS helicopter made a transmission at the same time, making it difficult for the Approach controller to understand. The HEMS helicopter passed approximately 150ft above. Once passed and a further clearance gained, the Apache crew continued the climb and departed on route with no further incident.



Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the pilot remains responsible for collision avoidance." Although operating under simulated instrument conditions, [Apache C/S] remained VMC and given the weather conditions would be operating VMC throughout the sortie. ATC passed the whereabouts of [EC145 C/S] to [Apache C/S], the NHP visually identified [EC145 C/S] and informed ATC that he had done so. Assessment by the NHP was that [EC145 C/S] would pass in front of [Apache C/S], given that this was deemed not to be an immediate conflict, NHP went heads in to conduct NHP duties. During climb out, the HP would be expected to remain eyes in at all times due to the simulated conditions of the test and would offer limited or no lookout.

***There are no new ways to crash an aircraft...  
...but there are new ways to keep them from crashing.***

*Bryan 'Mug' Smith*

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