



*Flight Standards Service*



# **9/11 Commission Briefing Flight Training**

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3 types

# ***Background and Analysis***

## **→ Types of Flight Schools**

### **– Part 61 school**

- Typically a fixed base operator offering fuel, aircraft rental, hangar storage, flight training
- Typically use standard but not FAA-approved curricula
- Applicants have to meet knowledge and skills standards of part 61 and practical test standards

### **– Part 141 certificate**

- FAA approves curricula
- Approved curricula allow for certification at fewer hours than stated in regulations
- Applicants have to meet same standards
- If lose 141 certificate, can operate as a part 61 school

### **– Part 142 training center**

- Approved curricula for specific aircraft or systems
- Applicants have to meet same standards



# *Background and Analysis*

- ➔ Immediately after 9/11, from a list of the 19 hijackers supplied by the FBI, we searched our FAA airmen records.
- ➔ Six of the terrorists on board the hijacked aircraft had FAA certificates:
  - ranging from private pilot to commercial pilot
  - all had instrument ratings
  - none had type ratings (for aircraft larger than 12,500 pounds) *Building block ~~spot~~ approach*
  - all except one had multiengine ratings
  - one was a flight instructor - HANJOUR
  - none were flight engineers

Medical  
accident  
Enforcement  
Certificates



## ***Background and Analysis***

- ➔ **Combination of certificates and ratings might have been selected to provide minimum exposure to complex airplanes.**
- ➔ **May also be normal signs of pilots attempting to qualify for airline careers.**
  - **Pilots who might need financial help usually obtain single-engine commercial certificates (before a multiengine rating) and flight instructor certificates to build time and earn money as a pilot.**
  - **Foreign pilots taking training paid for by their government, military, or an airline wouldn't necessarily obtain the single-engine commercial or the flight instructor certificate**



## ***Background and Analysis***

- ➔ **Five of the six trained mainly in Florida, from local fixed base operators to FlightSafety International to Embry Riddle Aeronautical University.**
- ➔ **One of the six trained mainly in Arizona, at various fixed based operators and at Pan Am Flight Academy.**
- ➔ **The oldest was 33 (Atta), the others ranged in age from 23 to 29.**
- ➔ **Flight experience ranged from a low of 100 hours to between 300 and 400 hours.<sup>1</sup>**

<sup>1</sup>This is based on total flight time entered on their last airmen certificate applications on file.



# ***Background and Analysis***

## ➔ **History of Foreign Pilot Training in U.S.**

- U.S. has the most extensive flight training infrastructure in the world
  - More cost effective to foreign airlines and military who do not have a built-in training structure for small numbers of pilots
  - Tens of thousands of foreign pilots have trained in universities, training centers, and flight schools (certificated and non-certificated)
  - \* – Our participation in ICAO requires reciprocity in availability of training facilities
  - \* – Before 9/11 FAA supplied, at the request of the U.S. State Department, names of foreign pilots from Communist and former Communist countries only who had been certificated in the U.S.
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# *Background and Analysis*

## ➔ **FAA aviation safety inspector responsibilities**

### – **With our system of designees, inspectors review certification documents submitted by designees--**

- Application filled out correctly.
- Applicant properly identified.
- All necessary paperwork attached.
- Designee conducted certification according to standards and regulations.

*You have to  
provide  
picture  
ID  
for your  
application*

*TO DO*

- Inspectors may re-examine any applicant for **safety** reasons.
- Inspectors have **safety** oversight over flight schools and training centers.
- Inspectors report possible criminal conduct or activity (usually related to drug interdiction).
- Inspectors respond to law enforcement inquiries.
- Inspectors investigate accidents, incidents, or safety-related events.

*Eyes and  
Law*

*No FAA  
requirement  
that designees  
report  
law  
enforcement*



## ***Background and Analysis***

- ➔ In June 2002 preparation for Congressional 9/11 Hearings, Flight Standards polled its aviation safety inspectors to determine what if any pre-9/11 contact they had with the known terrorists and terrorism suspects.
  - Memorandum sent to all regions (9) to be forwarded to all field offices (100)
  - Attached list of 19 known hijackers, high level al-Qaeda leaders, and terror suspects Zacarias Moussaoui
  - Replies forwarded to a single focal point who investigated incidents of any inspector interaction with any of the individuals on the list
- ➔ Two inspector replies received involving--
  - Known hijacker Hani Hanjoor
  - Terror suspect Zacarias Moussaoui





# *Background and Analysis*

## ➔ Incident #1: Jet Tech Training Center, Phoenix, AZ

- Inspector with safety oversight responsibility for Jet Tech was in a 737 ground school class with Hani Hanjoor in January 2001<sup>2</sup>
  - Inspector had previously worked for Saudi Airlines in the 1970's
  - Inspector had served in Air America during Vietnam
  - Employees of Jet Tech indicated to the inspector they didn't think Hanjoor met requirement to "read, speak, and understand" English (Hanjoor had attended at least two English language classes in Arizona and California.)
  - Engaged Hanjoor in conversation about where he was from and why he was in the class
  - Nothing about Hanjoor's behavior or interaction with the inspector aroused any suspicions or led him to question Hanjoor's English qualification
- Inspector had no further contact with Hanjoor

<sup>2</sup>Hanjoor was re-taking the ground school because he had failed the oral test after his first ground school in December 2000.

See FBI 302  
of the  
inspector



# ***Background and Analysis***

## **→ Incident #1 Con'd**

- March 2001 Jet Tech contacted inspector after Hanjoor failed the oral test a second time**
  - Inspector re-checked Hanjoor's airman file and found nothing out of order**
  - Inspector reviewed the history of the designee who had certificated Hanjoor and found nothing out of order**
  - Inspector reported this to Jet Tech, who transferred Hanjoor's student records<sup>3</sup> to their main office in Miami, FL and referred Hanjoor to the main office**
- Inspector was extensively debriefed by the FBI and OST OIG after 9/11**
- Jet Tech ceased operations rather than pay fines exacted for two enforcement actions brought by this same inspector**

<sup>3</sup>These records were subsequently seized by the FBI after 9/11.



## ***Background and Analysis***

### ➔ **Incident #2, Pan Am Flight International<sup>4</sup>, Minneapolis, MN**

- In August 2001 inspector with safety oversight of Pan Am was conducting a records review in a conference room *— didn't use the name*
- An instructor asked her what she thought of a student paying cash for simulator time for a B-747 who only wanted to learn how to fly en-route, not takeoff and land
- Inspector indicated the regulations do not preclude this and that wealthy owners of private, transport aircraft often do this
- The instructor did not provide a name or nationality
- Several days after this inquiry, the inspector was contacted at her office by the FBI with a request to run a name through FAA databases to determine if the person had a pilot's certificate

<sup>4</sup>Not affiliated with Pan Am Airlines



# ***Background and Analysis***

## **→ Incident #2 con'd**

- The name provided by the FBI agent was Zacarias Moussaoui
  - Inspector reported that Moussaoui had a student pilot's certificate
  - Inspector had no suspicions because the office had worked with law enforcement before
- After 9/11 inspector recognized Moussaoui's name from new reports and connected him with the instructor's remarks
- Inspector had no direct contact with Moussaoui
- As of July 2002 inspector was not debriefed or contacted by the FBI beyond the pre-9/11 inquiry on Moussaoui
- All information on this incident was provided to the Congressional 9/11 committee
- Moussaoui also took some flight training at Airman Flight School in Norman, Oklahoma



# *Background and Analysis*

## → Incident #3, Miami International Airport

– December 2000, known hijackers Mohamed Atta and Marwan al-Shehhi left a C-172 on an apron leading to a taxiway near the general aviation side of Miami International Airport

- Atta and al-Shehhi had rented the airplane from Huffman Aviation in Florida
- While waiting for clearance to depart Miami International Airport, the C-172 engine began to “miss” and Atta and al-Shehhi shut the aircraft down and went into the FBO to contact Huffman Aviation
- Huffman Aviation could not retrieve until a later date and Atta and al-Shehhi departed the airport by rental car

*Atta  
were the  
subs.*

*No reg or  
procedures  
were  
violated.*

*They left  
the plane  
w/in an  
area →  
that didn't  
make it  
a violation*



# ***Background and Analysis***

## **➔ Incident #3 Con'd**

- This did not qualify as an accident or an incident and no Miami traffic was impeded so no investigation.**
- FAA inspectors not asked to investigate until October 2001 when a NY Times article characterized the incident as having “blocked a runway”**
  - The aircraft did not block a runway or impede any air carrier traffic**
  - Air traffic did not report the event to Flight Standards as an incident nor did they have a record of the event**
  - Inspectors concluded that no regulations or procedures were violated**



## ***Terrorists Who Had FAA Certificates***

### ➔ Mohamed NMN<sup>5</sup> Atta (Citizenship: Egyptian)

- DOB: 09/01/1968
- Approximately 250 total flight hours (based on entries on last airman application dated 12/21/2000)
- Commercial Pilot, Airplane Multiengine Land, Instrument Airplane; Private pilot privileges in airplane single engine land
- First certificate issued: 9/18/2000 (Private, issued in Florida at Huffman Aviation)
- Last certificate issued: 12/21/2000 (Commercial, issued in Florida at Huffman Aviation)
- Various permanent addresses given for Florida
- Took flying lessons at Airman Flight School, Norman Oklahoma; Huffman Aviation in Venice, Florida; Jones Aviation in Sarasota, Florida; obtained Boeing flight simulator training at Sim Center and Pan Am International in Opa-locka, Florida

<sup>5</sup>stands for "no middle name"

→ Examiner.



## ***Terrorists Who Had FAA Certificates***

### **→ Marwan Yousef Alshehhi (Citizenship: UAE)**

- DOB: 05/09/1978
- Approximately 245 total flight hours (based on entries on last airman application dated 12/21/2000)
- Commercial Pilot, Airplane Multiengine Land, Instrument Airplane, Private Pilot privileges in airplane single engine land
- First Certificate issued: 09/09/2000 (Private, issued in Florida at Huffman Aviation)
- Last Certificate issued: 12/21/2000 (Commercial, issued in Florida at Huffman)
- Various permanent addresses in Florida; same as Mohamed Atta
- Took flying lessons at Airman Flight School, Norman Oklahoma; Huffman Aviation in Venice, Florida; Jones Aviation in Sarasota, Florida; obtained Boeing flight simulator training at Sim Center and Pan Am International in Opa-locka, Florida





## ***Terrorists Who Had FAA Certificates***

### ➔ **Waleed Ahmed Al-Shehri (Citizenship: Saudi Arabia)**

- DOB: 01/01/1976
- Approximately 250 total flight hours (based on entries on last airman application dated 02/24/1996)
- Commercial Pilot - Airplane Single and Multiengine Land
- Instrument Airplane
- Flight Instructor – Airplane Single Engine, Instrument Airplane
- First Certificate Issued: 03/01/1995 (Private, Embry Riddle Aeronautical University-ERAU)
- Flight Instructor Certificate Issued: 12/10/1997 (ERAU)<sup>6</sup>
- Last Rating Issued to Commercial certificate: 3/19/1996 (Addition of multiengine rating, ERAU)

training  
here

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<sup>6</sup>No indication that CFI was renewed; should have been renewed 12/99 and 12/01



## ***Terrorists Who Had FAA Certificates***

### **→ Ziad NMN<sup>7</sup> Jarrah (Citizenship: Lebanon)**

- DOB: 05/11/1975
- Approximately 100 total flight hours (based on entries on last airman application dated 11/15/2000)
- Private Pilot, Airplane Single Engine Land, Instrument Airplane
- First Certificate Issued: 08/05/2000 (Private, issued in Florida at Florida Flight Training Center)
- Last Certificate Issued: 11/15/2000 (Addition of instrument rating to private certificate, issued in Florida at Florida Flight Training Center)
- Permanent address given as Hamburg, Germany
- All primary flight training taken at Florida Flight Training Center; took Boeing flight simulator training at Aeroservice Aviation Center, Virginia Gardens, Florida

<sup>7</sup>stands for “no middle name”

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Note: Atta, al-Shehhi, and Jarrah were considered by authorities to be the ringleaders; the other 13 hijackers were considered the “muscle”

*Microsoft has software that simulates cockpit.*



## ***Terrorists Who Had FAA Certificates***

### ➔ **Hani Saleh Hanjoor (Citizenship: Saudi Arabia)**

- DOB: 08/30/1972
- Approximately 250 total flight hours (based on entries on last airman application dated 4/13/1999)
- Commercial Pilot, Airplane Multiengine Land, Instrument Airplane, Private Pilot privileges airplane single engine land
- First Certificate Issued: 04/23/1998 (Private, after one failure on 04/16/1998<sup>8</sup>, issued in Arizona)
- Last Certificate Issued: 04/15/1999 (Addition of multiengine rating to Commercial certificate, issued in Arizona)
- Permanent address given as Mesa, Arizona

<sup>8</sup>Reasons for failure: VOR interception of radials, coordinated turns to headings



?? which one

## ***Terrorists Who Had FAA Certificates***

→ **Wali Ayedh Al-Ghamdi (Citizenship: Saudi Arabia)**

- DOB: 06/28/1976
- Approximately 322 total flight hours (based on entries on last airman application dated 10/13/1998)
- Commercial Pilot, Airplane Multiengine Land, Instrument Airplane, Private Pilot privileges airplane single engine land
- First Certificate Issued: 06/11/1996 (Private, issued in Jeddah, Saudi Arabia<sup>9</sup>)
- Last Certificate Issued: 10/13/1998 (Addition of multiengine rating to Commercial certificate, Flight Safety, Vero Beach, FL)

FAA has  
U.S.  
designates  
around  
the  
world.

<sup>9</sup>Saudi Airlines employee identification used as required picture ID



## *Background and Analysis*

➔ Hijacked flights and hijackers with U.S. certificates<sup>10</sup>

<u>Flight</u>	<u>Departed</u>	<u>Probable Hijacker</u>	<u>Target</u>
AA Flight 11	BOS	Atta	WTC
UA Flight 175	BOS	Marwan al-Shehhi	WTC
AA Flight 77	IAD	Hanjoor	Pentagon
UA Flight 93	EWR	Jarrah	Unknown <sup>11</sup>

<sup>10</sup>Based on information from FBI

<sup>11</sup>crashed in PA



## *Private Pilot – Aeronautical Knowledge*



- Applicable FAA regulations
- How to report accidents, what constitute an accident
- How to use of the aeronautical publications
- How to navigate using charts, landmarks, and instruments in visual conditions
- Radio communication procedures
- Recognition of critical weather situations
- Safe and efficient operation of aircraft, including collision avoidance and recognition and avoidance of wake turbulence

Grand  
School



## ***Private Pilot – Aeronautical Knowledge***

- Effects of atmospheric conditions on aircraft performance
- How to compute weight and balance
- Basic aerodynamics and basic knowledge of engines aircraft systems
- Stall awareness, spin entry, spins, and spin recovery techniques
- Aeronautical decision making and judgement
- Preflight preparations—obtaining necessary information for the flight and planning for alternatives

Grand  
School



## *Private Pilot – Flight Skills*



- ➔ **Airplane single-engine land:**
- Preflight preparation
  - Preflight procedures
  - Airport and seaplane base operations
  - Takeoffs, landings, and go-arounds
  - Performance maneuvers
  - Ground reference maneuvers
  - Navigation
  - Slow flight and stalls
  - Basic instrument maneuvers
  - Emergency operations
  - Night operations
  - Postflight procedures
-





## *Private Pilot – Aeronautical Experience*



- ➔ **Airplane single-engine rating (minimum):**
  - **40 hours of flight time**
    - **Includes at least 20 hours from an authorized instructor**
    - **Includes at least 10 hours of solo flight training**
  - **3 hours of cross-country flight training**
  - **3 hours of night flight training that includes:**
    - **One cross-country flight of over 100 miles**
    - **10 takeoffs and landings to a full stop**



## *Private Pilot – Aeronautical Experience*



- ➔ **Airplane single-engine rating (minimum):**
  - **3 hours of instrument flying**
  - **3 hours of flight training to prepare for practical test**
  - **10 hours of solo time, consisting of at least:**
    - **5 hours solo cross-country**
    - **One solo cross-country flight of at least 150 miles**
    - **Three takeoffs and three landings to airport with an operating control tower**



# *Instrument Rating Requirements*



- **Prerequisite – hold a Private Pilot Certificate**
- **Aeronautical knowledge:**
  - **FAA Regulations that apply to flying in instrument conditions**
  - **Aeronautical publications pertaining to flying instrument conditions**
  - **Air traffic control procedures while flying in instrument conditions**
  - **Navigating and approaching to land solely by use of flight instruments**
  - **Using instrument navigation and approach procedure charts**
  - **Procurement and use of aviation weather reports and forecasts**
  - **Safe and efficient operation of aircraft under instrument flight rules and conditions**
  - **Recognition of critical weather situations and windshear avoidance**
  - **Aeronautical decision making and judgement**
  - **Crew resource management, including crew communication and coordination**

*You can get a simulator w/o having a certificate*



## ***Instrument Rating – Aeronautical Experience***



### **→ Airplane single-engine rating:**

- At least 50 hours of cross-country flight time as pilot in command, of which at least 10 hours must be in airplanes**
  - A total of 40 hours of actual or simulated instrument time**
    - At least 15 hours of instrument training from an authorized instructor**
    - At least 3 hours of instrument training in preparation for the practical test**
    - At least one cross-country flight under instrument flight rules consisting of:**
      - At least 250 miles along airways or ATC-direct routing**
      - An instrument approach at each airport**
      - Three different kinds of approaches**
  - 30 hours may be in a flight simulator or flight training device if the training is in accordance with a training school program (under part 142) - 20 hours if not.**
-



# Instrument Rating – Flight Skills



- Flight skills related to all other certificates and ratings
- Preflight preparation
- Preflight procedures
- Air traffic control clearances and procedures
- Flight by reference to instruments
- Navigation systems
- Instrument approach procedures
- Emergency operations
- Postflight procedures

4 or 5 days in advance to tell weather

- ①
- ②
- ③

- Buy a ~~garmin~~ GARMIN

Was a GPS on the

They would have needed

How to program - microsoft

where were the NAVAID's in the area

manually fly a comb pilot it into target.



# ***Commercial Pilot Requirements***



- **Prerequisite – hold a Private Pilot Certificate**
- **Aeronautical knowledge areas include everything for private pilot certificate plus:**
  - **Meteorology to include recognition of critical weather situations, windshear recognition and avoidance, and the use of aeronautical weather reports and forecasts**
  - **Use of performance charts**
  - **Significance and effects of exceeding aircraft performance limitations**
  - **Use of air navigation facilities**
  - **Maneuvers, procedures, and emergency operations appropriate to the aircraft**
  - **Night and high-altitude operations**
  - **Procedures for operating within the National Airspace System**



## *Commercial Pilot – Flight Skills*



- **For airplane multiengine:**
  - **Preflight preparation**
  - **Preflight procedures**
  - **Airport and seaplane base operations**
  - **Takeoffs, landings, and go-arounds**
  - **Performance maneuvers**
  - **Navigation**
  - **Emergency operations**
  - **Multiengine operations**
  - **High-altitude operations**
  - **Postflight procedures**



## *Commercial Pilot – Aeronautical Experience*



- ➔ **Airplane single-engine rating:**
  - **250 hours of flight time**
    - **100 hours in powered aircraft, 50 in airplanes**
    - **100 hours of pilot-in-command flight time consisting of:**
      - **50 hours in airplanes**
      - **50 hours in cross-country flight with at least 10 hours in airplanes**





## ***Commercial Pilot – Aeronautical Experience***

- **20 hours of training relating to areas of operation, consisting of:**
  - 10 hours of instrument training of which at least 5 hours must be in a multiengine airplane
  - 10 hours of training in a multiengine airplane that has retractable landing gear
  - One cross-country flight of at least 2 hours in a multiengine airplane in day VFR conditions with a distance of more than 100 miles from point of origin
  - One cross-country flight of at least 2 hours in a multiengine airplane in NIGHT VFR conditions with a distance of more than 100 miles from point of origin
  - 3 hours in a multiengine in preparation for the practical test



## *Commercial Pilot – Aeronautical Experience*

- **10 hours of solo flight time or as pilot-in-command with an instructor**
  - **One cross country flight of not less than 300 miles**
  - **5 hours in night VFR conditions with 10 takeoffs and 10 landings**



## Possible Scenarios – Based on Hijackers' Training

ask NTSB to do this.

### → **Scenario #1:** Commandeer a large aircraft already airborne and in VFR conditions:

- Needs only rudimentary “maneuvering flight” skills
- Depending on the category, class, and type of aircraft, a person can develop sufficient skills to safely act as PIC in about 15 hours in a non-complex aircraft, and proportionately more for more complex aircraft
- If a device that can simulate the flight deck and flight environment is used, the learning and training experience can be enhanced greatly
- Bottom line: Private Pilot ASEL with flight training device augmentation (Microsoft Simulator) would suffice

Airplane  
Simple Level  
Engine

### → **Scenario #2:** Commandeer a large aircraft already airborne and in IFR conditions:

- Need maneuvering flight and instrument flight skills
- Private Pilot ASEL, instrument rating with flight training device augmentation

### → **Scenario #3:** Commandeer a transport aircraft (large, multiengine) on the ground

- Need maneuvering, instrument, and large multi-engine aircraft pilot experience
- Private Pilot ASEL, instrument rating, Commercial Pilot AMEL

Pilot induced oscillation

- AHA can in straight which made it easier
- Stall or lurch  $\rightarrow$  2nd craft made a turn at a speed that made it difficult to do.

Robert  
Gossard

77 hit the ground before it hit the Pentagon

secret  
report

767-757i are comparable in maneuverability.

Not sure if the fuel issue mattered

we can  
investigate  
simulate

VND

ISU

Pardue  
NTSB

~~Secret~~

$\rightarrow$  University Arabian Association

- 93 could have screwed up auto

Ford's <sup>data</sup> would tell us off auto  
if he had it off plane

Thompson  
can  
intercept