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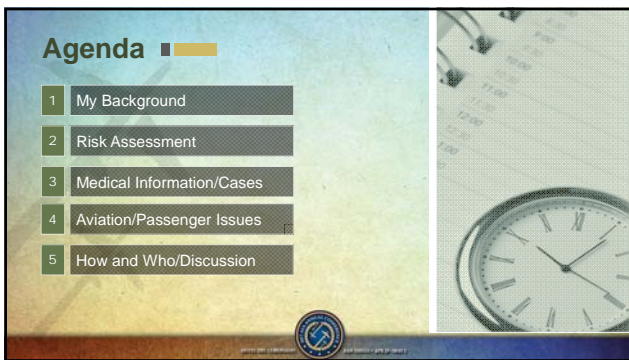
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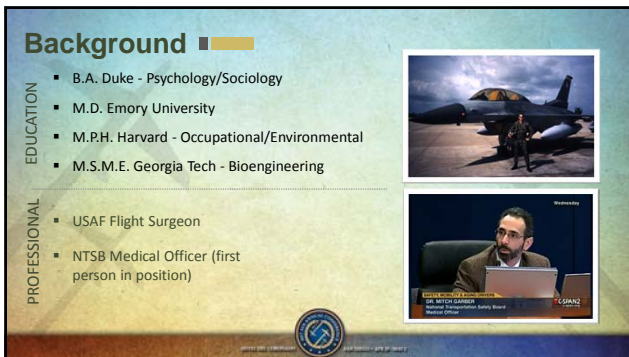
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**Risk Assessment** ■ ■ ■ ■ ■

Aircraft ✈️



Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

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**Risk Assessment** ■ ■ ■ ■ ■

Operation ⚙️



Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

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**Risk Assessment** ■ ■ ■ ■ ■

Location 📍



Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

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**Risk Assessment** ■ ■ ■

Maintenance ✂



Photo: South Wales Aviation Group



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**Risk Assessment** ■ ■ ■

Pilot 🧐



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**Risk Assessment** ■ ■ ■

Medical 🚑



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### Risk Assessment



**As of next week:**

- < 6 occupants
- < 6,000 lbs
- ≤ 18,000 ft
- IAS ≤ 250 knots
- Not for compensation or hire

exceptions: flight instructors, aircraft sales, charity events, search & locate, towing gliders, LSA flight test, etc.

### Medical

#### Requirements

- Driver's license
- Note from doctor every 4 years (medical checklist)
- Medical education course (+ Nat'l Driver Registry release) every 2 years
- FAA: nada \*

\*except one-time special issuance for certain conditions

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### Risk Assessment



### Medical

#### Sources

- FAA medical records
- Personal medical records
- Interviews/questionnaires (personal/family medical history)
- Physical examination (targeted)
- Other available records (DUI, arrests, disability, etc.)

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### Commercial Rated Pilot in Cessna 182-A

### Medical Information

1986 FAA Safety Hotline Information System Report

- Caller reports [the pilot] flies charter flights for an ambulance service, police department, and other companies.
- While [the pilot] was flying a patient ... he became very ill and had a difficult landing. Caller states [the pilot] was hospitalized for several weeks in intensive care.
- [The pilot] has a lot of influence with the police, FAA officials, and Medical Examiner and feels [the pilot's] medical been doctored.
- Caller also reports [the pilot] has influence over mechanics and the accidents and damage to the aircraft have been covered up.

...The doctor's name is DR. QUACKADODDLE.

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Commercial Rated Pilot in Cessna 182-A

**Medical Information** 

**FAA Medical Records:  
Internal FAA Memorandum**

- We have completed our investigation of the allegations in the subject Hotline pertaining to medical certification and unreported aircraft damage.
- Neither was substantiated. ... our Flight Surgeon's contact with DR. QUACKADOODLE... disclosed DR. QUACKADOODLE has had no association with [the pilot] and does not know him.
- 2<sup>nd</sup> Class Medicals performed in 1988, 1989, 1990, 1991, 1992, 1993, 1994.

AME for each: **DR. QUACKADOODLE**


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Commercial Rated Pilot in Cessna 182-A

**Medical Information** 

**Personal Medical Records:  
History & Physical Examination**

- [The pilot] is a 59-year-old white male, air ambulance pilot, who noted the onset of chest pain on the evening of admission while transporting another patient to hospital.
- On seeing him in the emergency room, the pain had been present for about 2 hours.


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Commercial Rated Pilot in Cessna 182-A

**Medical Information** 

**Personal Medical Records:  
DISPOSITION**

Serial EKGs during hospitalization revealed large anterolateral infarction.

- ...[The pilot] was to be transported... by his good friend, DR. QUACKADOODLE, by airplane flying at low altitude.
- ...The patient was advised that he probably would not be [recertified] to fly.
- ...He expressed a strong desire to be followed for his medical care by DR. QUACKADOODLE


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Commercial Rated Pilot in Cessna 182-A

### Medical Information



A commercial-rated pilot performing wolf survey flights under contract to the Michigan Department of Natural Resources descended at high speed into terrain. Exam of the wreckage revealed no anomalies.

The pilot had multiple serious medical conditions, including:

- coronary heart disease requiring angioplasty and bypass surgery,
- disease of his heart valves,
- congestive heart failure,
- abnormal heart rhythms, and
- diabetes requiring insulin and oral medication.



NTSB Investigation


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Commercial Pilot in Amphibious de Havilland DHC-3T

### Medical Information



...the incapacitation of the pilot. A contributing factor was the pilot and medical examiner [DR. QUACKA DOODLE] providing false information on the pilot's medical applications.

NTSB Probable Cause


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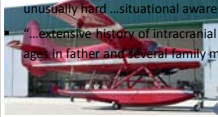

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Commercial Pilot in Amphibious de Havilland DHC-3T

### Medical Information

- Unrestricted class 1 airman medical certificate
- History of large intracerebral hemorrhage
- "...performance subpar in the simulator ...having to work unusually hard ...situational awareness in the car was off"
- "...extensive history of intracranial hemorrhages at young ages in father and several family members"

Interviews & Questionnaires


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Commercial Pilot in Air Tractor AT-502

### Medical Information



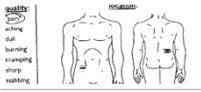

- About 6 weeks earlier, the pilot had experienced pain related to the presence of a kidney stone.
- Days later, the pilot passed 2 fragments of the ureter stone; however, the one nearer the kidney was likely still there.

**Physical Exam & Targeted Testing**

On the morning of the accident, company personnel observed [pilot] rubbing his sides above his hip

**CT Scan: History of Kidney Stone**

- 3.5 mm proximal right ureteral calculus causing partial obstruction.
- Right mid pole renal calyceal stone also is noted.


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Commercial Pilot in Air Tractor AT-502

### Medical Information



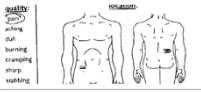

The pilot likely experienced a significant incapacitating event due to pain from the kidney stone, which resulted in his losing control of the airplane.

**Physical Exam & Targeted Testing**

On the morning of the accident, company personnel observed [pilot] rubbing his sides above his hip

**CT Scan: History of Kidney Stone**

- 3.5 mm proximal right ureteral calculus causing partial obstruction.
- Right mid pole renal calyceal stone also is noted.


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Regional Airline Jet in Hawaiian Islands

### Medical Information

**Obstructive Sleep Apnea**

- Obstruction of breathing in sleep
- Common (1 to 10% of population)
- Falling asleep, fatigue-related decrements in performance, serious medical consequences
- Up to 7-fold increase in risk of motor vehicle accident
- Risk eliminated with treatment
- Screening: snoring, obesity, neck size, high blood pressure

**Physical Exam & Targeted Testing:**  
OSA screening




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Regional Airline Jet in Hawaiian Islands

### Medical Information



Height	Weight	No. Blood Pressure	Eye Color	Diastolic	Diastolic	Diastolic	Diastolic
74"	250						

U.S. Do You Currently Use Any Medication (Prescription or Nonprescription)?  
 Yes  No (If yes, please list medication(s) used and check appropriate box)  
 rmlc 290 RSD

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Regional Airline Jet in Hawaiian Islands

### Medical Information

- Snored loudly, tired
- MD advised regular bedtimes, weight loss, relaxation
- Prior cockpit napping (> once/wk)
- Sleep study: severe obstructive sleep apnea RDI 68.5

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Regional Airline Jet in Hawaiian Islands

### Medical Information

#### Interviews & Records

Controller and airline crews were unable to contact flight crew (received no response) and airplane proceeded past destination airport without changing altitude or heading.




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When I die, I would like to go peacefully in my sleep, like my Grandfather did.

Not screaming and yelling... like the passenger in his car.

Jack Handey

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### Medical Information

1. inappropriate language; touching of female staff member
2. use of non-FDA approved drugs
3. patient complaints that led to a fitness for duty evaluation
4. yelling and abusive behavior toward staff
5. abusive behavior in OR -> 20 day suspension of privileges, six weeks of case management
6. told a nurse that she had killed a patient
7. Patient sedation and care issues
8. abusive conduct toward a patient's wife
9. allowed a nurse/practitioner to make incisions, trim burr holes and place electrodes.

Neurosurgeon with Beech Baron

Other Available Records

Medical Board

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### Medical Information



- >> 0.143 (ug/mL, ug/g) FLUOXETINE detected in Muscle
- >> 3.141 (ug/mL, ug/g) FLUOXETINE detected in Liver
- >> 0.557 (ug/mL, ug/g) NORFLUOXETINE detected in Muscle
- >> 15.451 (ug/mL, ug/g) NORFLUOXETINE detected in Liver
- >> SERTRALINE detected in Muscle
- >> SERTRALINE detected in Liver
- >> DESMETHYLSERTRALINE detected in Muscle
- >> DESMETHYLSERTRALINE detected in Liver
- >> BUPROPION detected in Muscle
- >> BUPROPION METABOLITE detected in Muscle
- >> BUPROPION METABOLITE detected in Liver
- >> CITALOPRAM detected in Muscle
- >> CITALOPRAM detected in Liver
- >> N-DESMETHYLCITALOPRAM detected in Muscle
- >> N-DESMETHYLCITALOPRAM detected in Liver
- >> PROPRANOLOL detected in Muscle
- >> PROPRANOLOL detected in Liver
- >> CLANZAPINE present in Liver

Neurosurgeon with Beech Baron

Other Available Records

Medical Board

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**Medical Information** 

Balony Kubicek  
24-person Balloon

Balloon pilot had no driver's license


1987 Arrested 13 years of Complete  
1996 Interferin  
1998 DWI /alcc  
1999 Possessio  
1999 Distributi Convicted  
2000 DWI/alcol Sentence; Incarcerat  
2007 Leaving t  
2010 DWI/alcol  
DL revoked until 2020  
Incarcerated July 10, 2010 - released into probation on Jan. 28, 2012  
Complete release as of Aug. 26, 2013



er's License

**Other Available Records**

Driving & Law Enforcement




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**Medical Information** 

Balony Kubicek  
24-person Balloon

**Diagnoses**

- Anxiety
- Depression
- ADHD
- Insomnia
- Fibromyalgia
- Diabetes

**Toxicology**

- Bupropion
- Fluoxetine
- Diazepam
- Cyclobenzaprine
- Methylphenidate
- Oxycodone



**Other Available Records**

Driving & Law Enforcement




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**Process**

**FAA Medical Evaluation**

- FAA Process
- Limitations
- Exclusions

**20. Applicant's National Driver Register and Certifying Declarations:**  
I hereby authorize the National Driver Register (NDR), through a designated State Department of Motor Vehicles, to furnish to the FAA information pertaining to my driving record. This consent constitutes authorization for a single access to the information contained in the NDR to verify information provided in this application. Upon my request, the FAA shall make the information received from the NDR, if any, available for my review and written comment. Authority: 23 U.S. Code 401, 101e.

- MedXpress (pilot)
- Examination (AME)
- Limited review (FAA)
- DUI NDR review




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**FAA Medical Evaluation**

- FAA Process
- Limitations**
- Exclusions

**Limitations**

- Training
- Qualifications
- NOT 100% review
- Self-reporting
- Long intervals (5 yr 3<sup>rd</sup> class under 40)

yes  
 no  
 maybe

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**FAA Medical Evaluation**

- FAA Process
- Limitations
- Exclusions**

**Exclusions**

- Balloons
- Gliders
- Light sport
- Soon, many private pilots

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**Sea Level**

AIR

LUNGS

75% → 98%

**BLOOD**

- breathing - air drawn into lungs
- 21% oxygen
- blood enters lungs 75% full of oxygen
- blood leaves lungs 98% full to supply body, brain (12-14 seconds later)

**Aviation**

- Hypoxia/ cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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**25,000 feet**

- 65% lower air, O<sub>2</sub> pressure
- blood enters lungs 35% saturated, leaves 60%
- effects:
  - obvious physical, mental impairment
  - unconsciousness

**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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**35,000 feet**

- 75% lower air, O<sub>2</sub> pressure
- oxygen may flow from the blood into the air
- effects:
  - incoherence in seconds
  - loss of consciousness

**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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**Impact Crater**

**Wing**

**Wingtip Tank**

**Pro Golfer Payne Stewart**

**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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G-LOC - G-Induced Loss of Consciousness



**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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Homebuilt Cassutt IIIM at Reno Air Races

- Pilot with 2<sup>nd</sup> class FAA medical certificate
- Special issuance
- Angioplasty for coronary artery disease 2 years prior
- Cardiologist and AME unaware he was racing aircraft
- AME – hi-G flight not advisable
- Right turn, nose-high stall after race
- 99% narrowing of coronary artery on autopsy



**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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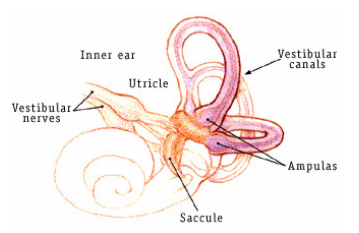
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**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

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Unpressurized at 21,000 ft (on O<sub>2</sub>)

Passenger:

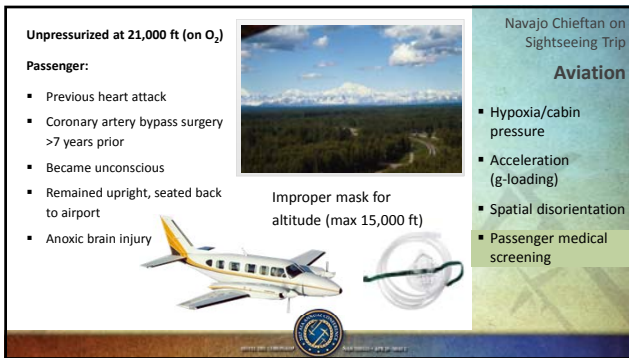
- Previous heart attack
- Coronary artery bypass surgery >7 years prior
- Became unconscious
- Remained upright, seated back to airport
- Anoxic brain injury

Navajo Chieftan on Sightseeing Trip

**Aviation**

- Hypoxia/cabin pressure
- Acceleration (g-loading)
- Spatial disorientation
- Passenger medical screening

Improper mask for altitude (max 15,000 ft)




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**Risk Management**



Health/Life Insurance Expertise

Medical Expertise

Aeromedical Expertise

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