



**NTSB** *TRAINING CENTER*

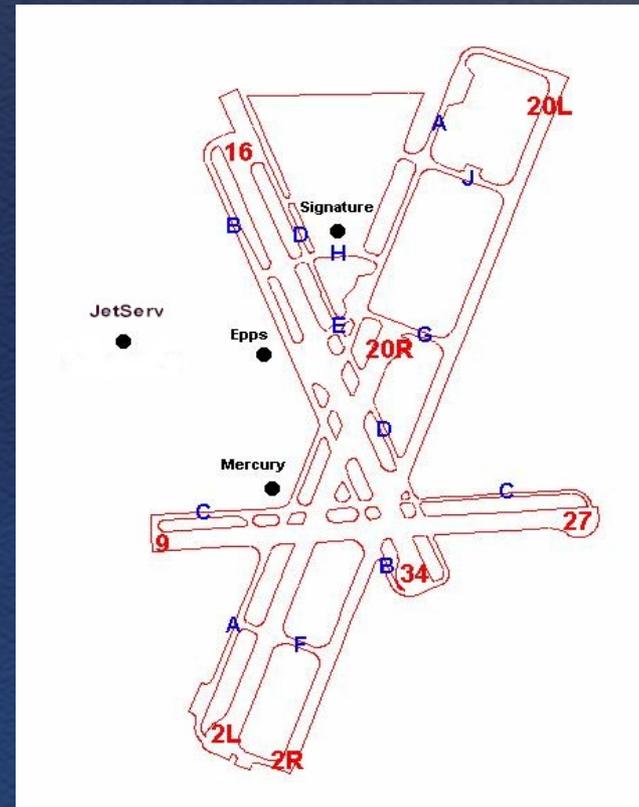
## **Practical Exercise**

**Cessna 210N  
In-Flight Fire**



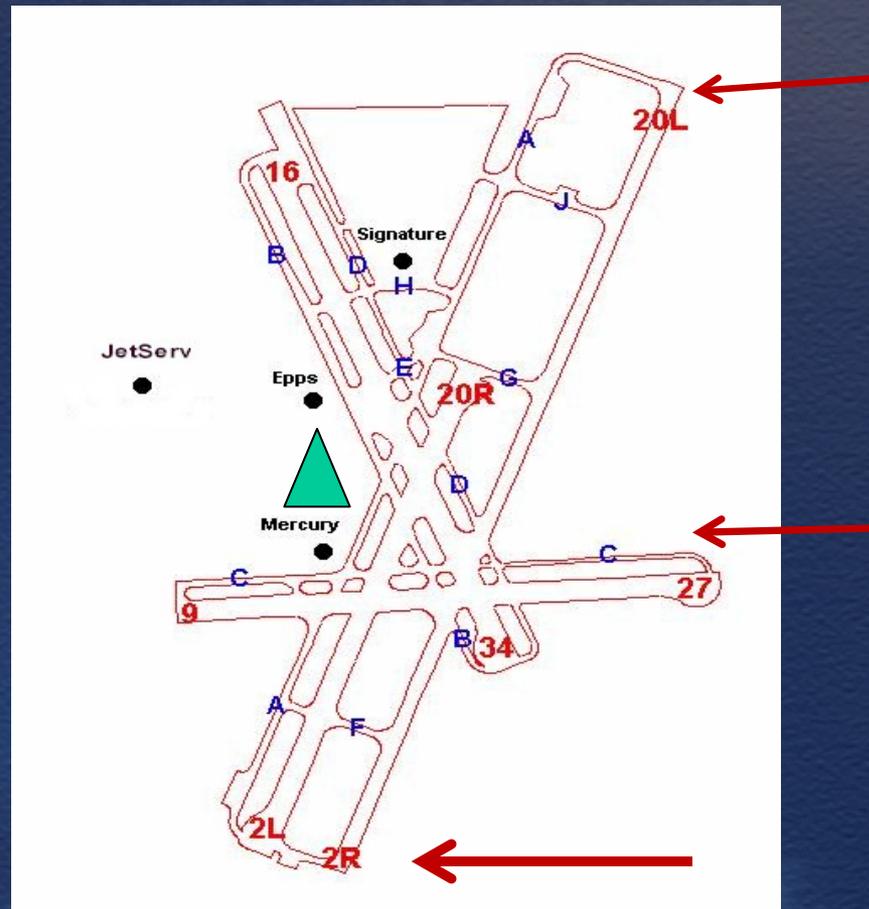
# History of Flight

- 5 minutes after t/o from PDK, requested return
- 1 minute later, specified “smoke in the cockpit” and “gear won’t go down”
- ATC gave straight-in approach to 20L



# History of Flight

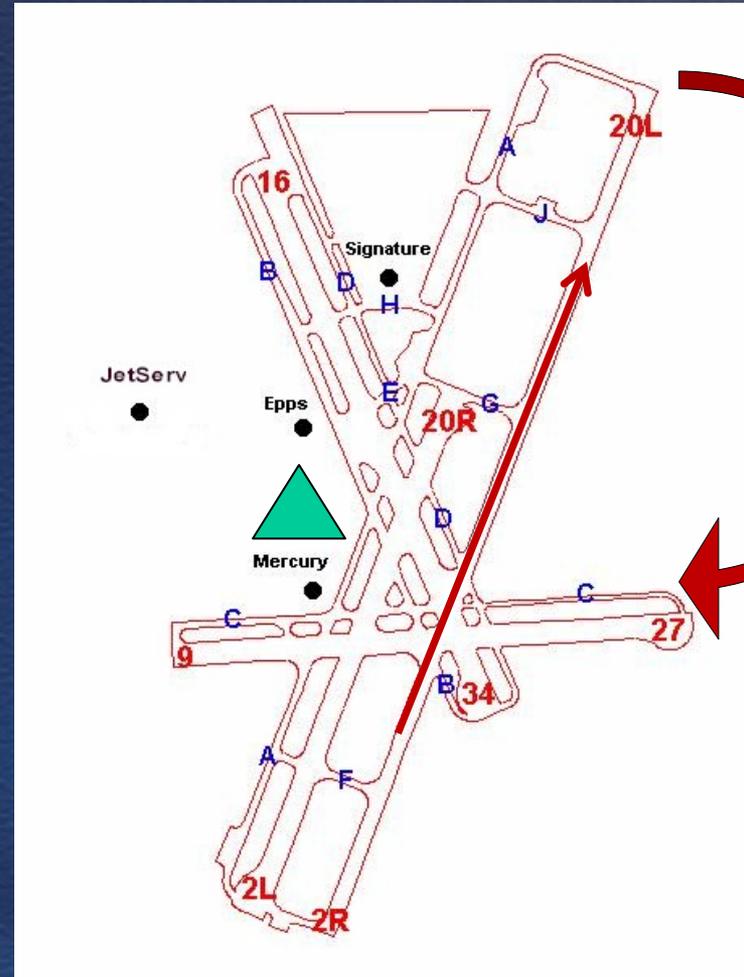
- 4 miles out: ATC asked if pilot wanted left base for 20L or runway 27
- Pilot: right base for runway 2R 
- Reported gear not down
- “Say request...” 
- Pilot conducted fly-by





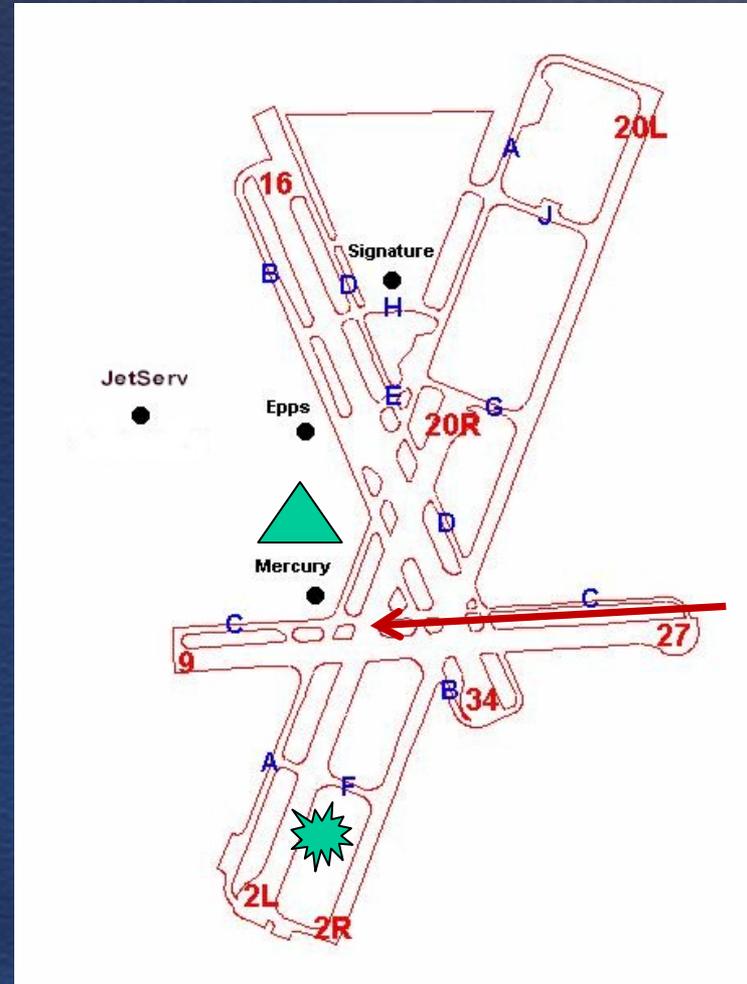
# History of Flight

- ATC: cleared to land 2R; wind: 320 at 3 kts
- 26 seconds later, ATC reported gear not down... “Go around.”
- 20 seconds later, ATC reports smoke from cockpit.. “Say request”
- Airplane made right 270 degree turn; to runway 27



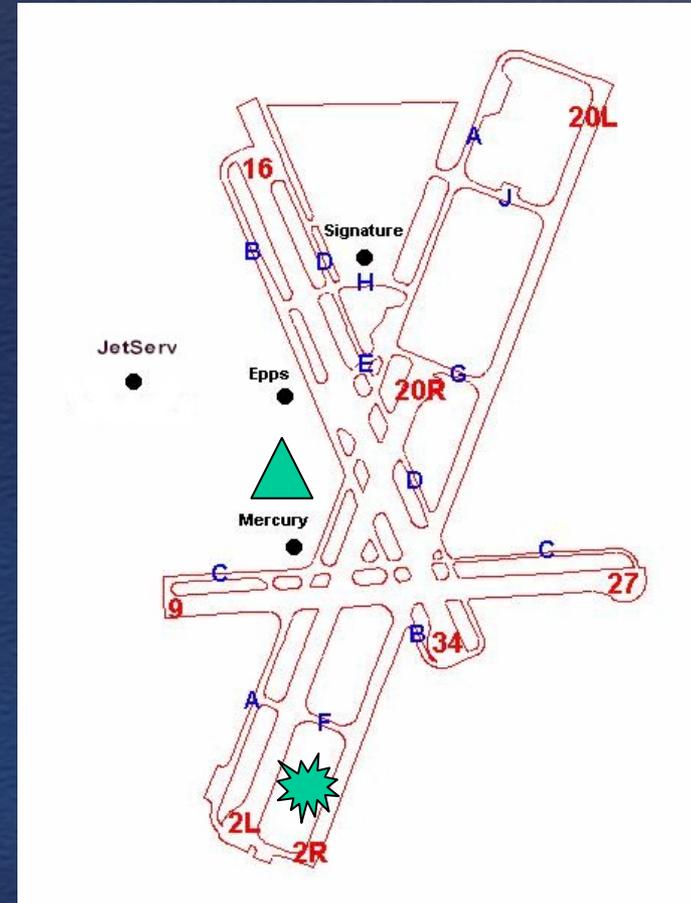
# History of Flight

- ATC states vehicles on runway; asks if he can go-around
- Repeated transmission
- Asked for turn to 2L or any runway 
- Witness observed left turn to ground impact



# History of Flight (cont.)

- Aircraft collided with the ground and burst into flames between runways 2L and 2R
- Emergency response was immediate but unsuccessful



# Wreckage Path



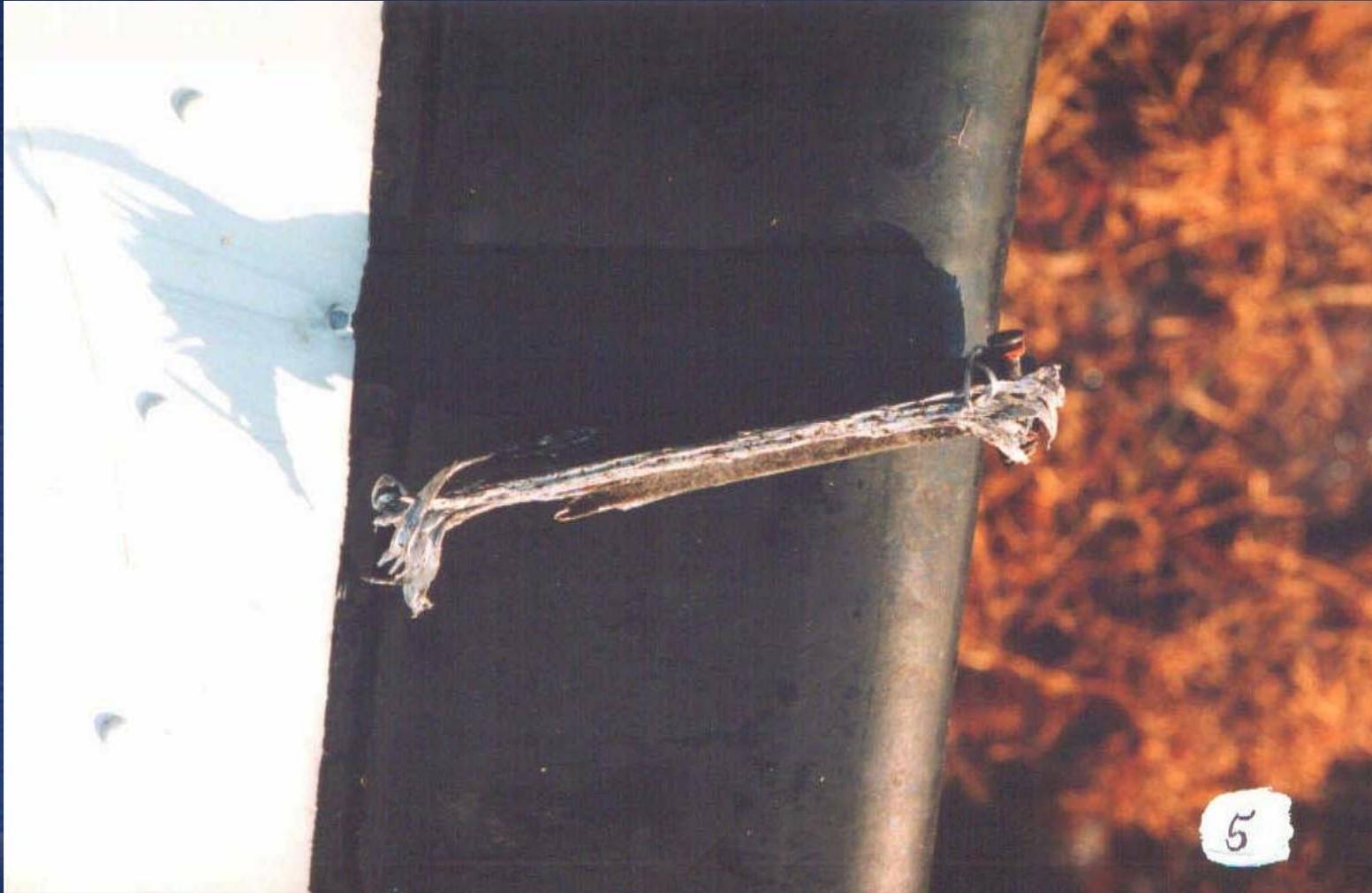
# Main Wreckage



# Fire Damage



# Pilot's Seat Track



# Further Examination





# Aircraft Information

- Aircraft manufactured in 1979
- Electrically driven power pack
- Gear is held up by hydraulic pressure

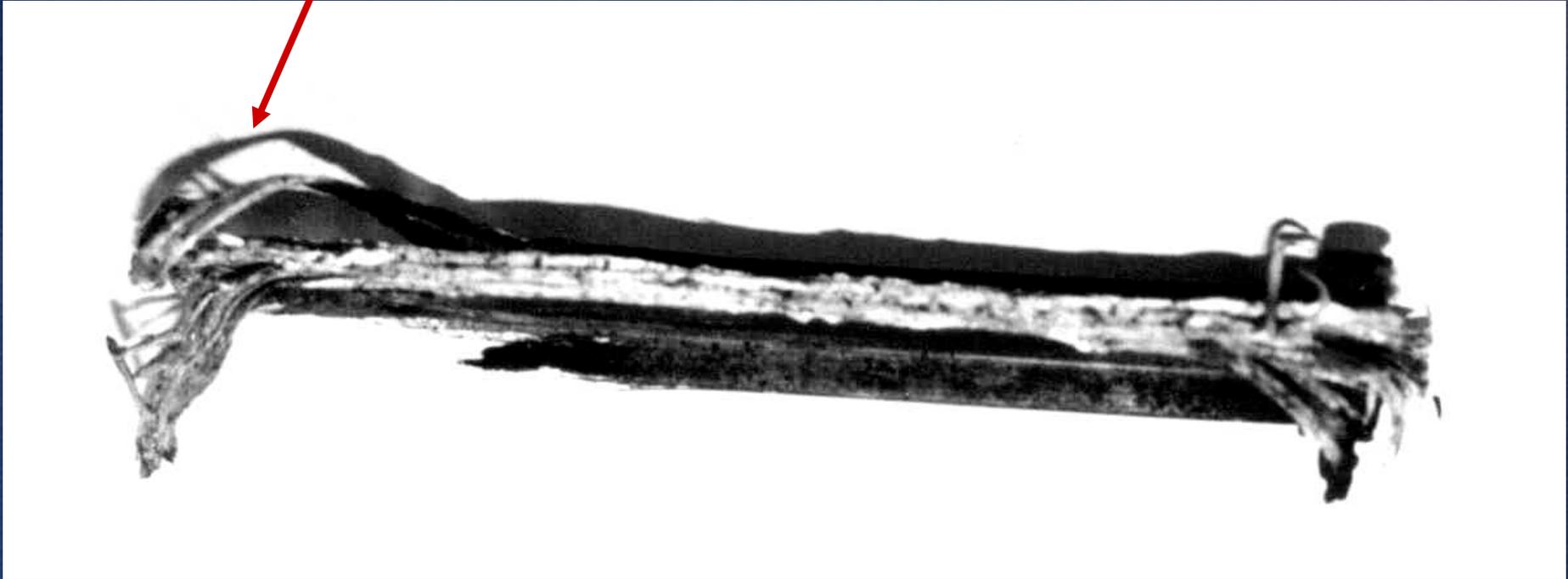
# Wreckage Examination & Analysis

- Most severe fire damage = underside of cockpit area
- Aluminum hydraulic lines ran under pilot's seat
- Several pieces of the hydraulic lines were missing

# Wreckage Examination & Analysis

- Remains of wire bundle found in area of fire damage
- Seat track section displayed “broomstraw” features





# Wreckage Examination & Analysis

- A few ounces of fluid were recovered from the pump and reservoir assembly
- No mechanical anomalies with pump
- Hydraulic fluid = Flash point of 82 degrees C (180 degrees F)

# Hydraulic System



# Wreckage Examination & Analysis

- Engine test run with no anomalies noted
- No other mechanical anomalies
- Cabin interior work done recently

# Pilot's Operating Handbook

- Emergency Checklist
- Master Switch – OFF
- Vents/Cabin Air/Heat – CLOSED
- Fire Extinguisher – ACTIVATE
- Land as soon as possible

TS/FA  
MODEL 210N

SECTION 3  
EMERGENCY PROCEDURES

**ELECTRICAL FIRE IN FLIGHT**

1. Master Switch -- OFF.
2. Avionics Power Switch -- OFF.
3. All Other Switches (except ignition switch) -- OFF.
4. Vents/Cabin Air/Heat -- CLOSED.
5. Fire Extinguisher -- ACTIVATE (if available).

**WARNING**

If an oxygen system is available, occupants should use oxygen masks until smoke and discharged dry powder clears. After discharging an extinguisher within a closed cabin, ventilate the cabin.

If fire appears out and electrical power is necessary for continuance of flight:

6. Master Switch -- ON.
7. Circuit Breakers -- CHECK for faulty circuit; do not reset.
8. Radio Switches -- OFF.
9. Avionics Power Switch -- ON.
10. Radio and Electrical Switches -- ON one at a time, with delay after each until short circuit is localized.
11. Vents/Cabin Air/Heat -- OPEN when it is ascertained that fire is completely extinguished.

**CABIN FIRE**

1. Master Switch -- OFF.
2. Vents/Cabin Air/Heat -- CLOSED (to avoid drafts).
3. Fire Extinguisher -- ACTIVATE (if available).

**WARNING**

If an oxygen system is available, occupants should use oxygen masks until smoke and discharged dry powder clears. After discharging an extinguisher within a closed cabin, ventilate the cabin.

4. Land the airplane as soon as possible to inspect for damage.

11 September 1981 3-7

# Probable Cause

*The failure of the flex hydraulic line and the chaffing of an electrical line under the pilot seat that resulted in an inflight fire...*

and...

*The pilot's inflight decision to continue flight with a known airplane deficiencies.*

# Lessons Learned

- Emergency Situations
  - You are the pilot in command
- Aircraft Maintenance
  - Be aware of unintended consequences



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