



**NTSB** National Transportation Safety Board

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*Office of Aviation Safety*

**Pinnacle Airlines**

**Flight 3701**

**Jefferson City, Missouri**

Operational Factors

Captain David Tew

# Operational Issues

- Failure to follow climb procedures
- Deterioration of airspeed at FL 410
- Stall recognition and reaction
- Double Engine Failure procedures
- Emergency landing preparation
- Lack of high altitude training

# Climb Procedures

- Minimum climb speed was 250 Knots / .70 Mach
- FL370 - speed was .63 Mach
- Speed deteriorated during climb to FL410
- FL410 - speed was .57 Mach

# Flight Level 410

- Speed continued to deteriorate
- Unable to maintain FL410
- Airplane approached a stall condition
- Crew failed to take corrective action

# Stall Recognition and Reaction

- Airplane entered impending stall condition
- Stick shaker and stick pusher activated
- Crew countered stick pusher
- Stick pusher activated 4 times
- Crew failed to allow airplane to recover

# Double Engine Failure Procedures

- Emergency checklist delayed
- Target airspeed .70 Mach or 240 knots
- Windmill start required 300 knots
- Captain failed to ensure 300 knots airspeed was obtained
- Highest airspeed momentarily reached was 236 knots

# Emergency Landing Preparation

- Land at nearest suitable airport
- Crew overflew several suitable airports
- Crew did not notify ATC immediately
- When notified – ATC responded
- Crew unable to reach Jefferson City

# High Altitude Training

- Minimal
- Approach to stall training performed in simulators and at lower altitudes
- High altitude stall procedures are different from lower altitude stall procedures
  - Decrease pitch and descend





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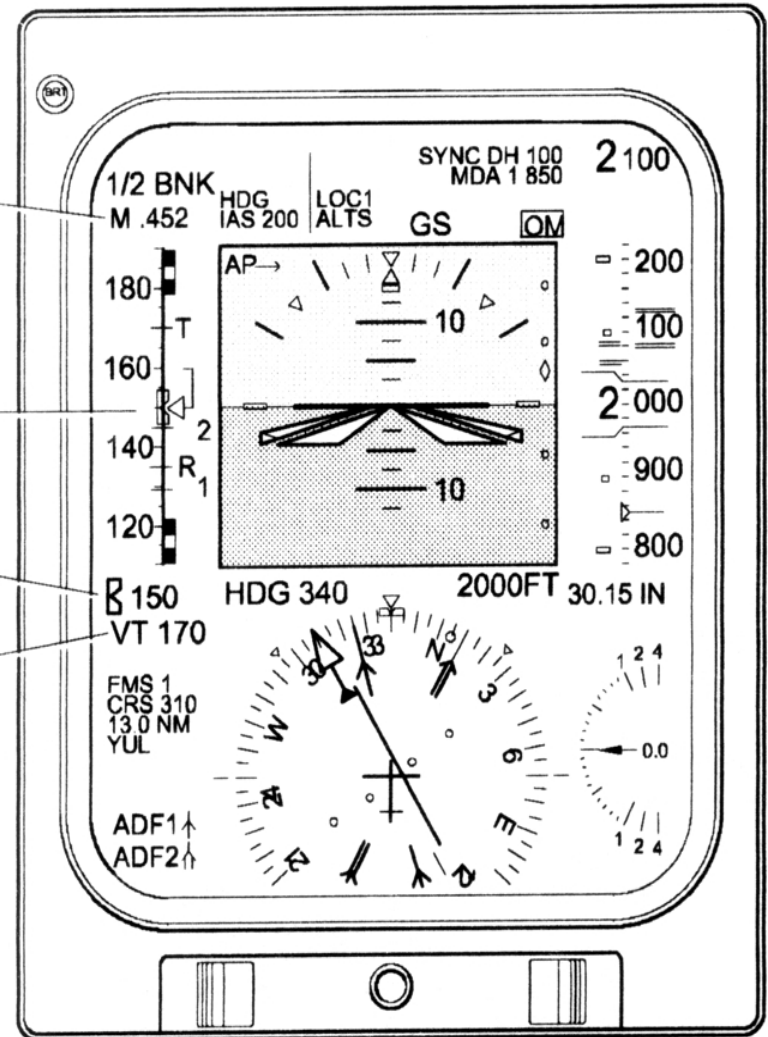
**Mach Readout (white)**

Indicates Mach speed.  
Displayed when Mach is above 0.45 and is removed when Mach is below 0.40.

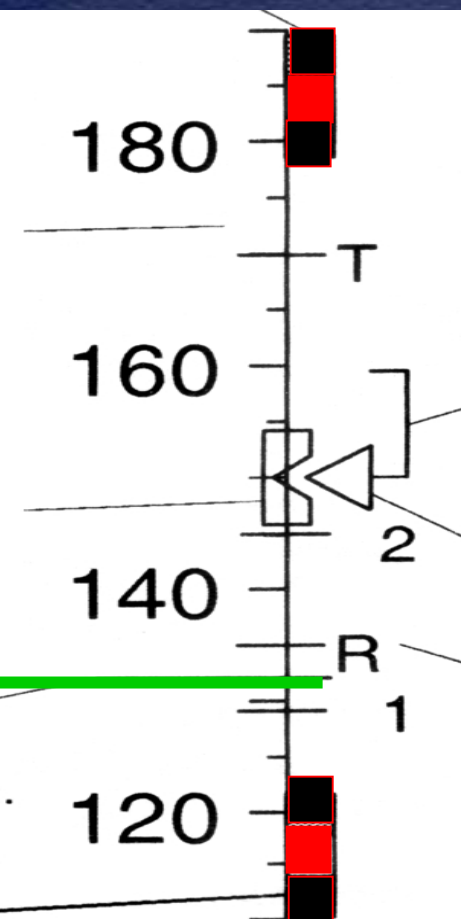
**Airspeed Indicator**

**IAS /Mach Reference (magenta)**

Indicates airspeed as selected using the speed knob on flight control panel.



**Primary Flight Display  
Pilot's and Copilot's Instrument Panels**



**Stall Speed Indicator (green line)**

Indicates 1.25 times the computed stall speed. Displayed in flight only. <FAA>

**Low Speed Cue (red/black checkerboard)**

Descends from stick shaker speed to edge of tape window and acts as cue to impending stall speed. Displayed 3 seconds after lift-off. If AOA data fails, checkerboard stops at 100 kts. and is replaced by a yellow line up to 120 kts.

**Airspeed Indica**