



NTSB National Transportation Safety Board

Office of Aviation Safety

**Public Hearing
Pinnacle Airlines
Flight 3701
(DCA05MA003)**

Lorenda Ward
Investigator-in-Charge

Accident Summary

- October 14, 2004
- Pinnacle Airlines
- Bombardier CL-600 2B19
- Repositioning flight
- Two flight crewmembers killed

Takeoff to 15,000 Feet

- Dispatched to 33,000 feet
- Stall protection system activated
- Autopilot engaged
- Flight crew changed seats



15,000 Feet to 25,000 Feet

- Autopilot disengaged
- Airplane leveled off
- Elevator and rudder inputs made
- Autopilot engaged

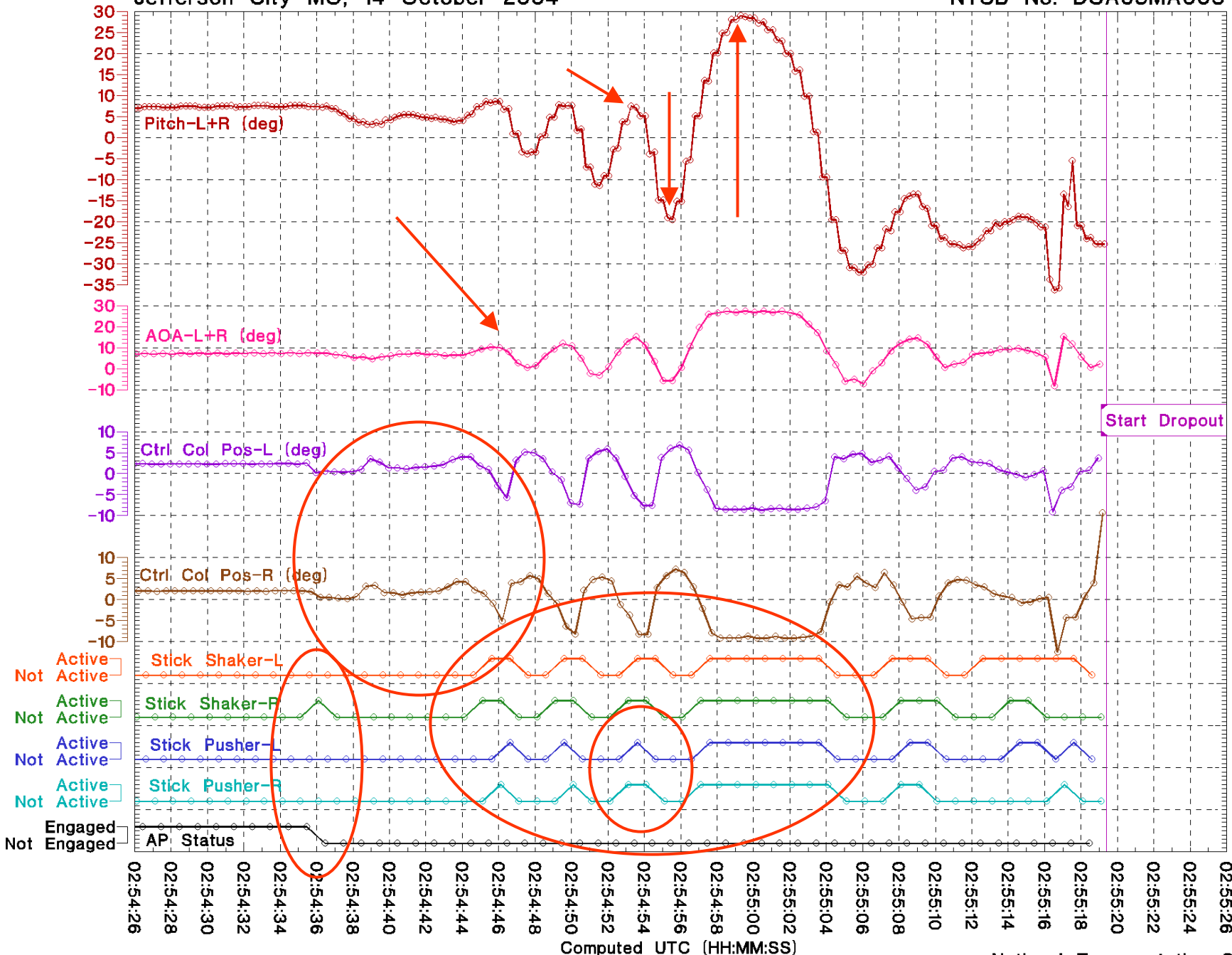
25,000 Feet to 41,000 Feet

- Autopilot disengaged
- Elevator inputs made
- Autopilot engaged
- Vertical speed changed
- Flight crew requested and received clearance to 41,000 feet
- Airplane climbed at 500 feet per minute

Pinnacle Airlines, CL-600-2B19, Northwest Airlin Flt # 3701, N8396A

Jefferson City MO, 14 October 2004

NTSB No. DCA05MA003



FLG3701 DCA05MA003
Jefferson City, MO
Transcript references paraphrased; not all transmissions shown.

FLG3701 OK - I think I have the approach and the beacon where the runway?

FLG3701 I do not see the runway I have the beacon where the runway?
FLG3701 I have the beacon in sight 1200

ARR: 1100 and 3 miles - it's a 200 heading

FLG3701: how do we look for the airport?
ARR: MIA is 2000
R32: S.S frequency is 110.5

ARR: JEF is landing 6.5 36 wind 2006

ARR: ... You want to go direct JEF? FLG3701: ... closest airport - descending 1500 FPM R32: FLG3701 cleared direct JEF

FLG3701: We need direct any airport we've got a trouble engine failure

ARR: ... Columbia's up ahead and JEF's up ahead and they both can accommodate you

FLG3701: Just stand by now we are going to visit this other engine and make sure everything is OK

ARR: Clear FLG3701 to 15000. Do you want to go back to keep do you want to land or what do you want to do?

FLG3701: We're going to need a little lower to start this other engine up. 12 or 11?

FLG3701 checks in w/ vector 52 FL 180 for 13,000

ARR: Roger, advise of any further help you might need

ARR: Roger, understand controlled flight on a single engine right now and 18 go ahead and relay that.

FLG3701: We had an engine failure... so going in a descent now to start our other engine

ARR: What was the nature of your emergency?

FLG3701 we can take the frequency at this time

R32: FLG3701 are you able to take a frequency change?
FLG3701: 3701 Stand by

R32 - Clears FLG3701 to 13,000 feet

FLG3701: We're gonna need to descend down... to 13,000 feet

2187:01 FLR32

0205:30 - Stand by for 3701

0205:30 R32: Evenly stand by. FLG3701, the frequency is open

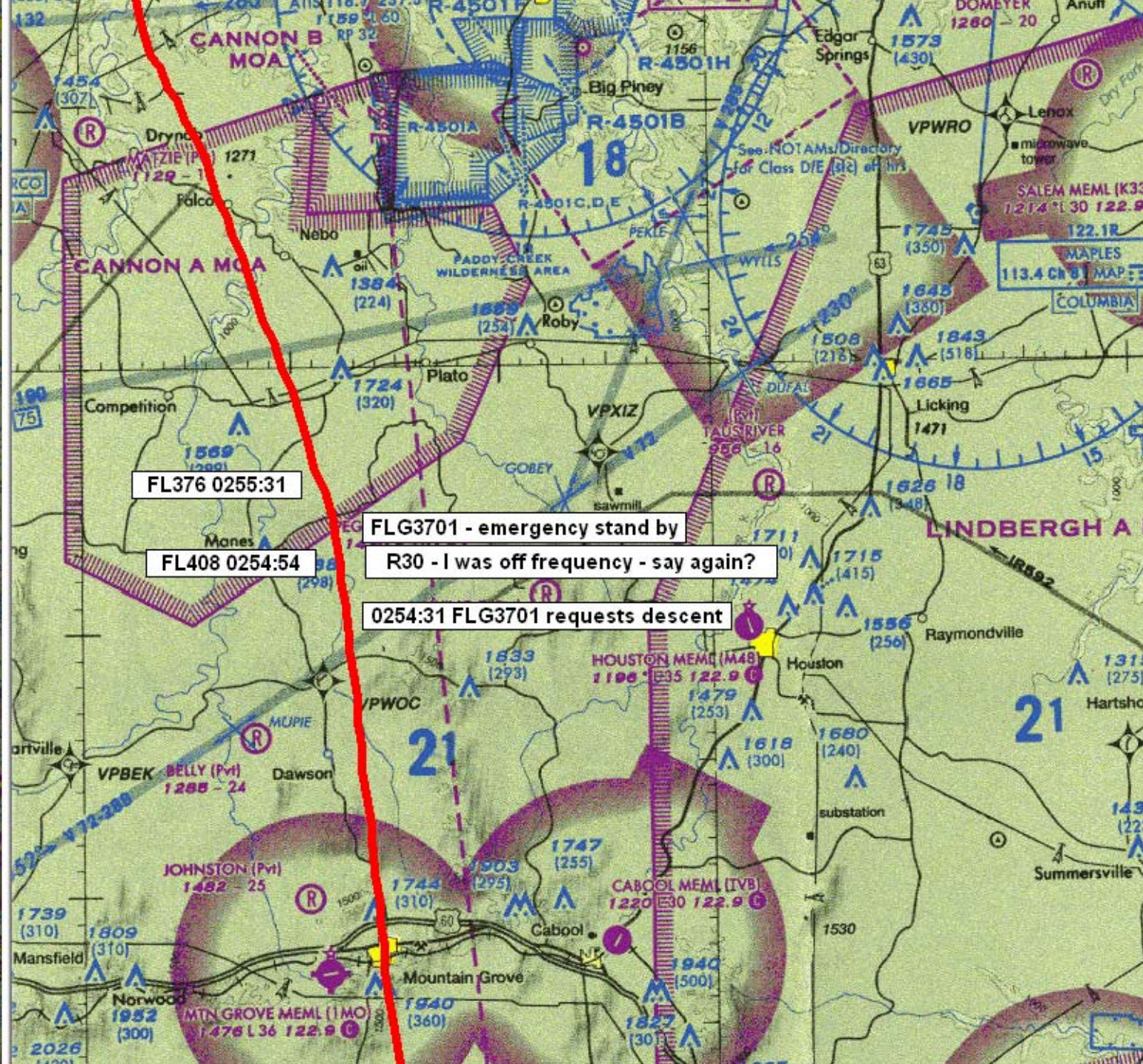
0205:22 Engine OK! Annunciation

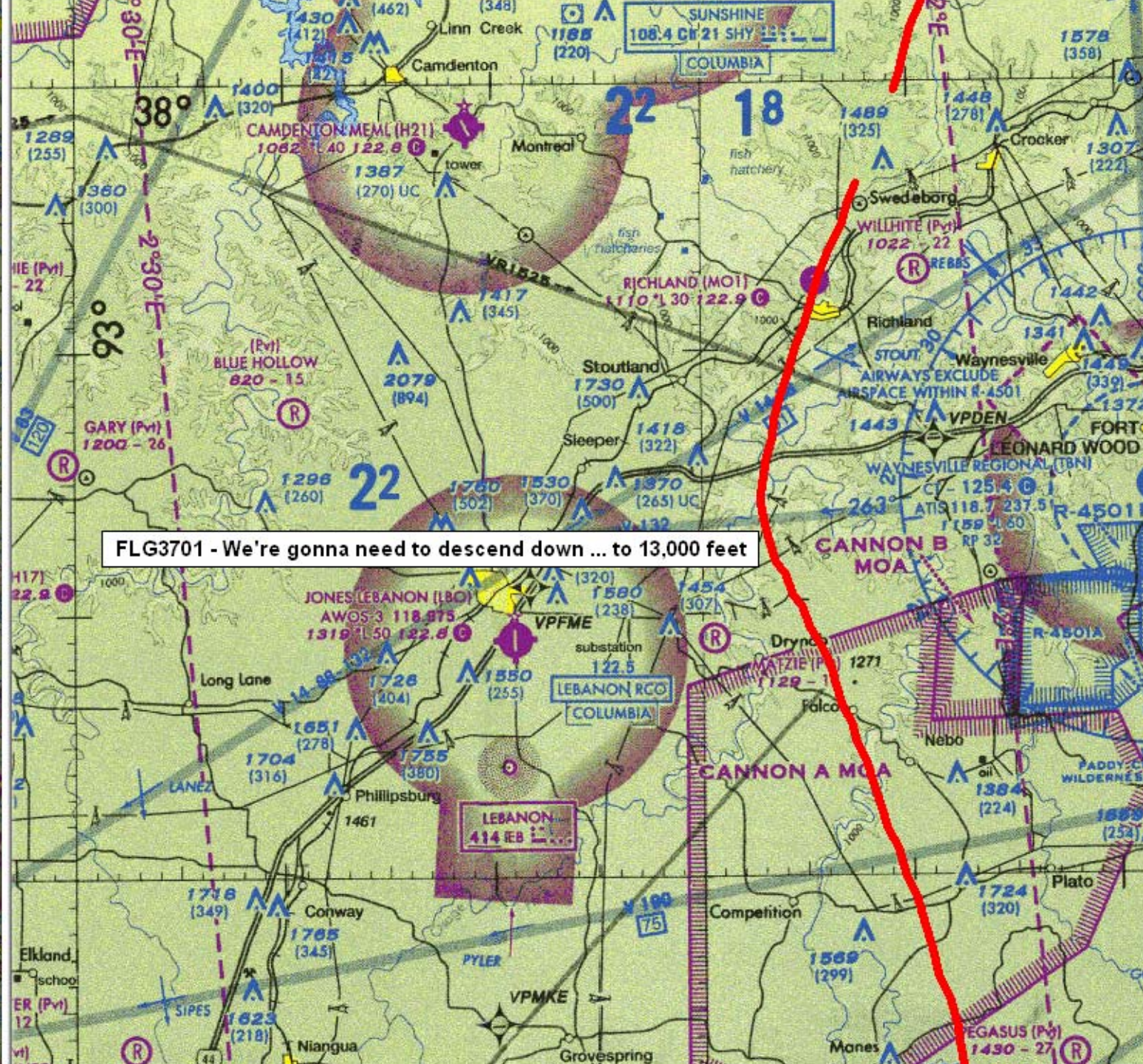
FLG3701 - emergency stand by

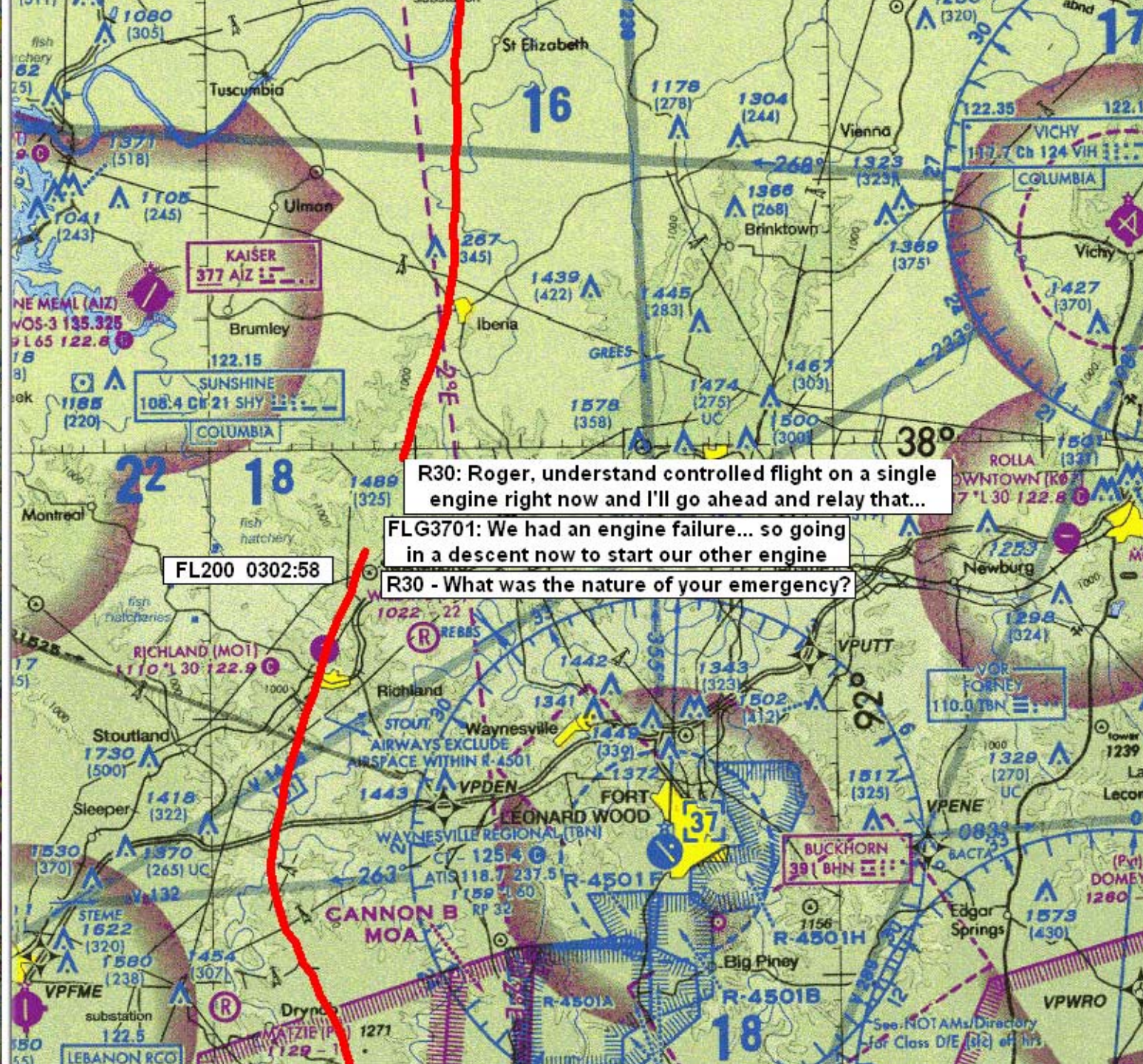
R32 - I was off frequency - lay again?

0204:31 FLG3701 requests descent

FL410 0201:17









Double Engine Failure (Cont)

Relight using windmilling:

From 21,000 feet and below:

Attempt to start both engines at the same time.

1. CONT IGNITION CHECK ON
2. Airspeed..... NOT LESS THAN 300 KIAS

An altitude loss of approximately 5,000 feet can be expected when accelerating from 240 to 300 KIAS.

NOTE

Airplanes 7002 through 7304—With the ADG deployed, during a windmilling start, an airspeed of 330 knots is permitted for 12 minutes, or an airspeed of 335 knots is permitted for 4 minutes.

Airplanes 7305 and subsequent—There are no airspeed limitations with the ADG deployed during flight.

When ITT is 90°C or less and N₂ is:

- At least 12% (above 15,000 feet) or
- At least 9% (15,000 feet and below):

3. Thrust Levers (both) IDLE
4. Airspeed..... NOT LESS THAN 300 KIAS
Maintain airspeed until start is complete (stable idle).
5. Engine Indications MONITOR



Windmilling relight possible (requires airspeed of not less than 300 KIAS):

? **YES**

(From 21,000 feet or below)

- 8. Relight Using Windmilling Procedure
(See Page EP 1-6) ACCOMPLISH

Maintain 240 KIAS until ready to initiate windmill start.

NO

(From 13,000 feet and below)

- 8. Relight Using APU Bleed Air Procedure
(See Page EP 1-8) ACCOMPLISH

**Maintain between 190 KIAS (23,000 kg–51,000 pounds)
and 170 KIAS (16,000 kg – 36,000 pounds).**

— CONTINUED —



Double Engine Failure (Cont)

Relight using APU bleed air:

From 13,000 feet and below:

- 1. Target airspeed..... REESTABLISH ←

AIRPLANE WEIGHT	TARGET BEST GLIDE SPEED
23,000 kg (51,000lb)	190 KIAS
16,000 kg (36,000lb)	170 KIAS

- 2. L and R 10TH STAGE BLEED..... CLOSED
- 3. APU LCV OPEN
- 4. CONT IGNITION CHECK ON

Attempt to start one engine at a time:

- 5. L or R ENG START PUSH

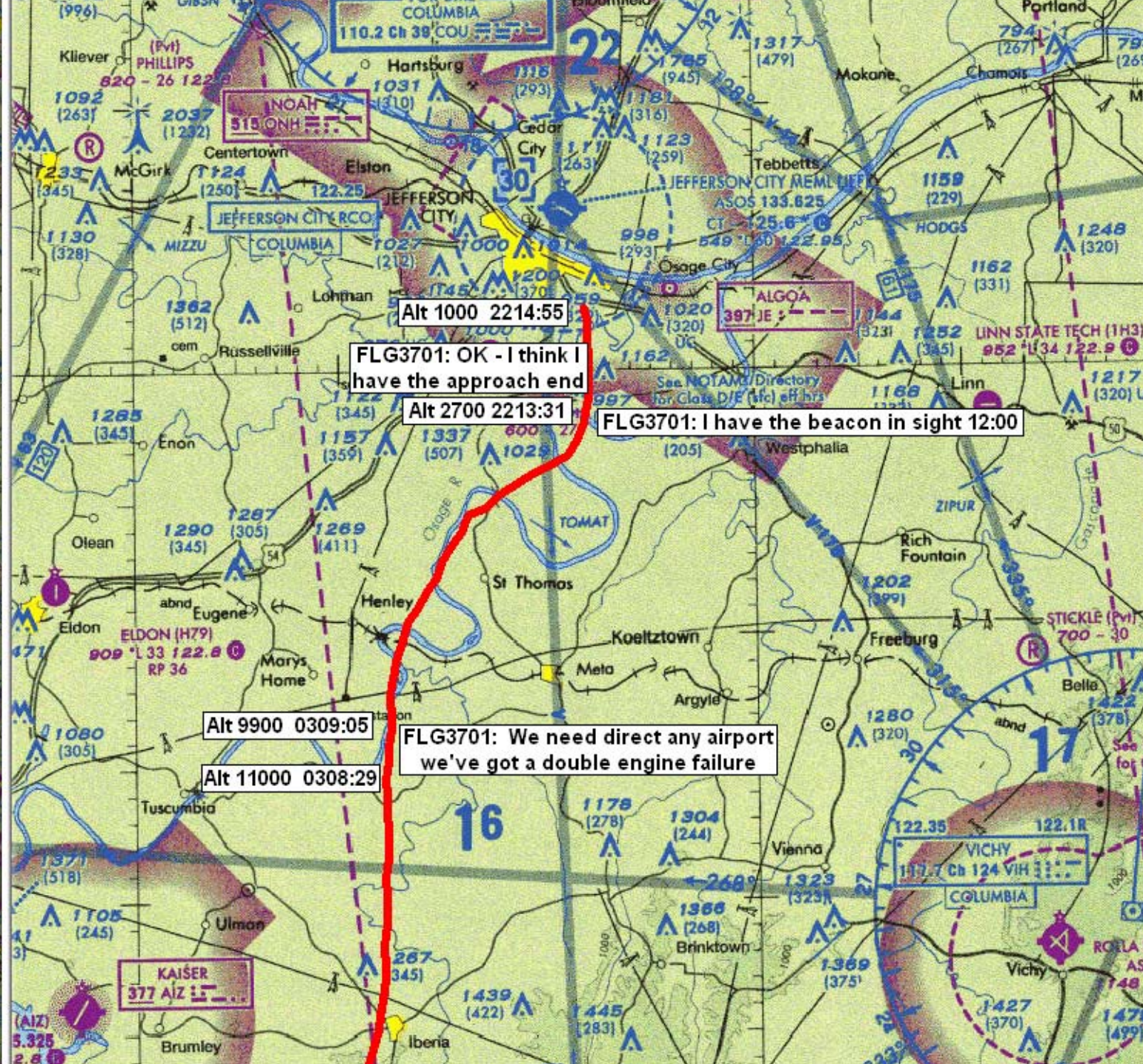
When N₂ is 28% or greater and ITT is 90°C or less:

- 6. Thrust Lever IDLE
- 7. Engine Indications MONITOR

Engine relights (within 25 seconds):

⓪ — YES





Alt 1000 2214:55

FLG3701: OK - I think I have the approach end

Alt 2700 2213:31

FLG3701: I have the beacon in sight 12:00

Alt 9900 0309:05

FLG3701: We need direct any airport we've got a double engine failure

Alt 11000 0308:29



NTSB Investigators and Staff

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- Clint Crookshanks, Maintenance Records
- Dana Schulze, System Safety
- Dave Tew, Operations
- Erik Grosop, TDA
- Terry Williams, Public Affairs
- Karen Stein, Report Writer

Parties to the Investigation

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- Pinnacle Airlines
- Air Line Pilots Association
- General Electric Engines
- Honeywell
- Hamilton Sundstrand
- Rockwell Collins

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