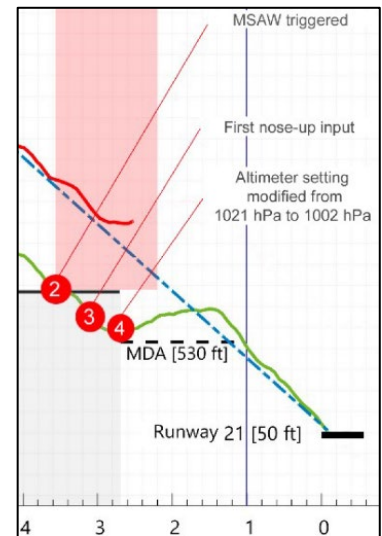


## QNH read-back error, triggering of a MSAW on final approach

### SCENARIO

- Ongoing storm
- Cleared:
  - to descend (first altitude below the transition level) with **QNH 1002**
  - to conduct a RNP approach on **RWY 21**
- PM incorrect readback of QNH → **1021** | Not detected by ATC or PF
- No check of QNH with another source (as per existing operator's procedures)
- About 530 ft below published path | Not detected by crew or ATC
- MSAW warning → ATC message: without QNH or "immediately"
- 30 sec of ATC/crew exchanges before detecting QNH error
- RWY in sight + bad weather on missed approach path → crew decision not to go around (despite existing operator's procedure for MSAW)



### CONTRIBUTING FACTORS

#### to the altimeter setting error

- High workload/stormy conditions → detrimental to SOP (QNH cross-checked with multiple sources)
- Controller's conflict resolution elsewhere → detrimental to hear-back

#### to the non-detection of the erroneous final path

- Inherent limitations of Baro-VNAV function

**On Baro-VNAV approaches, altitude-distance checks are ineffective in case of QNH error**

- Radio altimeter "consistency check" not a robust barrier
- ATC radar display using 1013 hPa

#### to the reaction time to the MSAW

- No QNH information or "immediately" indicated in the ATC message
- Crew surprise effect

### SAFETY LESSONS

#### @Pilots: importance of QNH cross-check against another source

- 1st step of the altimeter cross-check

#### @Operations managers: importance of reinforcing awareness of the Baro-VNAV particularities

- QNH cross-check against another source: basic airmanship or to be added to SOP?
- Why not explore availability of "Altimeter Monitor" function on the fleet?
- MSAW from ATC: are your crew prepared (procedure/training)?