



National Transportation Safety Board

Checklist Use and Procedural Noncompliance

Human Performance presentation



Flight Crew

- Pilot-in-command
 - More than 11,000 total flight hours
 - More than 1,600 hours on G-IV
- Second-in-command
 - More than 18,000 total flight hours
 - More than 3,000 hours on G-IV
- Had flown together for about 12 years

Key Flight Crew Errors

- Neglected to release and stow gust lock
- Neglected to perform flight control check

Neglected to Release Gust Lock

- Error of omission
- Common form of error
- Checklists important defense

Flight Crew's Use of Checklists

- Did not call for checklists
- Did not verbalize checklist items
- Executing checklists silently and from memory removes many benefits

Standardized Use of Checklists

- Assists flight crews with
 - Recall of steps
 - Logical sequence and distribution of workload
 - Enhanced cross-checking
 - Shared awareness

Challenge-Verification-Response Method of Checklist Completion

Sequence	Crewmember	Action
1	Pilot monitoring	Reads item aloud
2	Both pilots	Verify action was performed
3	Pilot flying	Provides standardized verbal response

Company Checklist Policy

- SK Travel flight operations manual required flight crews to complete all appropriate checklists
- Company policy did not specify preferred method of checklist completion
- 2012 independent safety audit concluded company checklists were appropriate and used during checks
- Safety audit did not examine whether company policy specified method of checklist completion

Neglected Flight Control Check

- After Starting Engines checklist required flight control check
- No check performed before accident takeoff, and no complete check performed before 98% of flight crew's 175 previous takeoffs
- Pattern of procedural noncompliance

Procedural Noncompliance

- Can increase likelihood of subsequent errors
- Many reasons for procedural noncompliance
- Explanations have included personality, workload, and goal conflicts
- Consistency of accident flight crew's noncompliance suggests development of shared attitudes

Procedural Drift

- When checks reveal no problems, crews may begin to regard them as less important
- Over time, actual operating practices can diverge from published procedures
- Small operators with consistent crew pairings and less oversight may have increased risk

Noncompliance in Corporate Aviation

- Extent of noncompliance with required flight control checks unknown
- If rate is high, boost compliance or reconsider assumptions about protection such procedures provide, particularly among small operators
- Analysis of corporate flight operations data could help scope problem and guide safety initiatives



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