



Cessna Pilots Association

Comments presented at
second FAA public meeting on

Cessna 400-series wing spar

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What we'll discuss

- **Results of operator survey**
<http://twin.cessna.org/>
- **More data needed** – how can we get it?
- **Compliance strategy** – if we modify airplanes, which should be done first?
- **Implementation** – who's going to do it, how can we be sure they do it right?
- **What we ask the FAA to do**

Results of operator survey

- Voluntary survey: <http://twin.cessna.org/>
- Publicized by AOPA, CPA, CTSc, COO, Twin Cessna Flyer
 - Online
 - Direct mail
 - Print magazines

Survey questionnaire

- **Basic A/C information:**
 - Model, reg., s/n, TTIS, #seats, primary use
- **Typical operational profiles for A/C**
 - Max payload, avg. mission, max range
- **Modifications installed:**
 - HP increase, VGs, winglets, aux tanks
- **Accident and crack repair history**
- **Inspection results per AD79-10-15R2**

Survey participation

| Model | US. Reg. | Responses | Penetration |
|--------------|--------------|------------|-------------|
| 401 | 85 | 18 | 21% |
| 401A | 72 | 11 | 15% |
| 401B | 48 | 4 | 8% |
| 402 | 50 | 1 | 2% |
| 402A | 50 | 1 | 2% |
| 402B | 265 | 31 | 12% |
| 402C | 210 | 11 | 5% |
| 411 | 130 | 5 | 4% |
| 411A | 27 | 2 | 7% |
| 414A | 437 | 86 | 20% |
| TOTAL | 1,374 | 170 | 12% |

Survey participation

- **Disappointing 12% response rate**
 - We were hoping for at least 25%
- **Part 135 operators poorly represented**
 - 77% of responses from Part 91 operators
 - 414A and 401 had highest % reporting
 - 402 and 411 had lowest % reporting
- **What if we had this data for entire fleet?**

TTIS by model

| Model | <4K | 4-5K | 5-6K | 6-7K | 7-8K | 8-9K | 9K-10K | >10K |
|-------|-----|------|------|-------|--------|--------|--------|------|
| 401 | 1 | 3 | 5 | 4 | 2 | 2 | | |
| 401A | | | 4 | 2 | 1 | 1 | 1 | |
| 401B | | | | 2 | 1 | | | |
| 411 | 1 | 2 | 1 | | | | | |
| 411A | 1 | | 1 | | | | | |
| 414A | 23 | 18 | 17 | 11 | 2 | 3 | | |
| Model | <6K | 6-7K | 7-8K | 8-10K | 10-12K | 12-15K | 15-20K | >20K |
| 402 | | | | | 1 | | | |
| 402A | | | | | | | 1 | |
| 402B | 4 | 3 | 3 | 6 | 5 | 4 | 1 | 1 |
| 402C | 1 | | | | 2 | 3 | 3 | 1 |

Usage by model

| Model | Part 91 | Part 135 | Low Level | High Cycle | Rough Field |
|--------------|----------------|-----------------|------------------|-------------------|--------------------|
| 401 | 15 | 3 | 3 | 2 | |
| 401A | 7 | 3 | 1 | 1 | |
| 401B | 3 | 1 | | | |
| 402 | 1 | | | 1 | |
| 402A | 1 | | | | |
| 402B | 5 | 21 | | 15 | 1 |
| 402C | 1 | 10 | | 4 | 1 |
| 411 | 4 | | | | 1 |
| 411A | 2 | | | | |
| 414A | 59 | 17 | 3 | 6 | |

Seats installed by model

| Model | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 |
|--------------|------------|------------|------------|------------|-------------|
| 401 | 1 | | 7 | 11 | |
| 401A | | | 3 | 6 | |
| 401B | | | 2 | 1 | |
| 402 | | | | 1 | |
| 402A | | | | 1 | |
| 402B | 10 | 1 | | 12 | 3 |
| 402C | 4 | | | 7 | |
| 411 | | | | 4 | |
| 411A | | | | 2 | |
| 414A | | 2 | 14 | 70 | |

Avg. mission SOB by model

| Model | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 |
|--------------|------------|------------|------------|------------|-------------|
| 401 | 8 | 8 | 1 | | |
| 401A | 2 | 12 | | | |
| 401B | | | | | |
| 402 | | 1 | | | |
| 402A | | | 1 | | |
| 402B | 15 | 6 | 12 | | |
| 402C | 5 | | 6 | | |
| 411 | 2 | 2 | 1 | | |
| 411A | 1 | 1 | | | |
| 414A | 31 | 38 | 9 | | |

Avg. mission length by model

| Model | <1 hr | 1-2 hr | 2-3 hr | 3-4 hr | >4 hr |
|--------------|-----------------|---------------|---------------|---------------|-----------------|
| 401 | 1 | 4 | 6 | 2 | 3 |
| 401A | | 3 | 3 | 2 | 1 |
| 401B | | | 2 | | 1 |
| 402 | | | | 1 | |
| 402A | | 1 | | | |
| 402B | 1 | 11 | 5 | 5 | |
| 402C | | 5 | 1 | 3 | 1 |
| 411 | 1 | | 1 | 2 | |
| 411A | | | 1 | 1 | |
| 414A | 2 | 17 | 28 | 12 | 3 |

Modifications by model

| Model | Resp. | HP Inc. | GW Inc. | VG | Winglet |
|--------------|--------------|----------------|----------------|-----------|----------------|
| 401 | 18 | 2 | 1 | 5 | 1 |
| 401A | 11 | | | 3 | |
| 401B | 4 | | | 1 | |
| 402 | 1 | | | | |
| 402A | 1 | | | | |
| 402B | 31 | | | 4 | |
| 402C | 11 | | | 9 | |
| 411 | 5 | | | 4 | |
| 411A | 2 | 1 | 1 | 1 | 1 |
| 414A | 86 | 56 | 33 | 59 | 36 |



Reported damage history

23 damage reports of 170 respondents

- 9 MLG collapse
- 6 wing replacement or major repair
- 4 NLG collapse
- 2 hail damage
- 1 gear-up landing
- 1 hangar door fell on tail

Reported crack repair

10 crack repairs of 170 respondents

- 4 MLG side brace attach (SK414-8E)
- 2 MLG trunion or trunion support
- 1 spar replacement (corrosion)
- 1 spar crack repaired (WS not reported)
- 1 wing rib repair
- 1 details not reported

AD79-10-15R2 inspections

- 148 total “Area C” inspections reported by 36 aircraft
 - One 402B reported 20 inspections
 - Many reported 4 to 15 inspections
- One a/c reported finding a spar crack
 - A 1968 401 with 8001 hours TTIS
 - CPA unable to contact owner to verify report (after numerous attempts)

We need more data!!!

If we had this kind of data for most or all of the fleet, we could make much better decisions about risk and compliance

- Voluntary reporting just isn't getting the job done, despite our best efforts
- What if FAA required that every owner or operator of these aircraft report?
- Why not issue a "report-only" AD?

Compliance problem

- 1,420 U.S.-registered aircraft affected
 - ~700 of these considered “at risk” now
- CPA originally estimated that industry would need 8 years to modify 700 a/c
- Based on Cape Air’s experience, we now think it may take much longer
 - 24 a/c in first 12 months
 - 48 a/c per year eventually (8 shops @ 6/y)

Compliance strategies

Can we keep the 700+ “not-at-risk” a/c from entering the “at-risk” category?

- Fatigue Meter?
- Voluntary ZFW limits?
- Extend safe-life based on survey data?
- Extend safe-life based on what “at-risk” a/c are finding when they comply with mod

Compliance strategies

- We must perform “triage” to modify the highest-risk aircraft first
- Which aircraft are truly highest-risk?
 - High-time a/c greater risk than low-time a/c
 - 402-series greater risk than other models
 - 402 and 402A greater risk than 402B
 - Only models with actual history of spar cracks
 - 402/402A alone will take >2 years to mod
 - >75 402/402A aircraft in “at risk” category

Compliance recommendations

- Require reporting of fleet data (via AD?)
- Modify 402/402A aircraft, starting with the highest-time ones first
- Require reporting of inspections results of modified aircraft
- See what we've learned after 2 years, then decide what to do w/ other models

Implementation

- CPA is very concerned that a/c may be damaged during modification
- All FAA repair stations are not capable
 - All Cessna multiengine service centers are not capable, either
- Many existing shops that could do this work will not want to take it on
- Some new shops may want to do it

Implementation

- Industry needs to create a training program for shops that want to do this
- FAA needs to perform special oversight
- How can owner/operators know who can/will do this work competently?
 - We need a “Good Housekeeping Seal”
 - Who does this? FAA? Cessna? CPA?

CPA asks the FAA to...

- **Mandate collection of more data**
 - Survey AD or equivalent
 - Reports of aircraft undergoing modification
- **Limit action to 402/402A for 2 years**
 - Defer other models until there's more data
- **Clearly signal FAA position concerning prophylactic spar life-extension via:**
 - Fatigue Meter
 - Voluntary ZFW reduction



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Questions?