

WEBVTT

1

00:00:00.400 --> 00:00:03.300

Major James Knaus US Air Force Reserve is

2

00:00:03.300 --> 00:00:06.700

an Aton pilot and a Air Force TPS graduate,

3

00:00:06.700 --> 00:00:09.500

and he is going to talk to us about

4

00:00:09.500 --> 00:00:11.600

status quo. Thank you.

5

00:00:20.700 --> 00:00:23.500

Well, good morning. Ladies and gentlemen on major James

6

00:00:23.500 --> 00:00:26.700

kanos. Go by hook currently stationed at headquarters Air

7

00:00:26.700 --> 00:00:29.700

Force Reserve command as a flight safety officer

8

00:00:29.700 --> 00:00:33.000

today. I'm more going to tell you a

9

00:00:32.400 --> 00:00:35.400

story rather than get into a big

10

00:00:35.400 --> 00:00:39.500

technical presentation. This will probably be one of the least technical presentations

11

00:00:38.500 --> 00:00:41.100

we've had here but I do

12

00:00:41.100 --> 00:00:44.900

think it's important because we saw some really good results come

13

00:00:44.900 --> 00:00:47.500

from this based on flight testers doing

14

00:00:47.500 --> 00:00:50.500

what flight testers do. So without further

15

00:00:50.500 --> 00:00:54.400

Ado here is the standard slide

16

00:00:53.400 --> 00:00:56.100

that I have to show you in an Air

17

00:00:56.100 --> 00:00:59.300

Force presentation. This is what I'm going to tell you. So we're

18

00:00:59.300 --> 00:01:02.100

going to go over test and operations quick deal on that.

19

00:01:02.100 --> 00:01:05.500

We'll look at the 810c example, we'll talk

20

00:01:05.500 --> 00:01:08.200

about what happened conclusions parting shots. And

21

00:01:08.200 --> 00:01:11.400

then of course, I will show you the what I told you slide as

22

00:01:11.400 --> 00:01:15.200

a good Air Force officer that I am testing operations.

23

00:01:14.200 --> 00:01:17.200

So we only think

24

00:01:17.200 --> 00:01:20.000

of these worlds as mutually exclusive that

25

00:01:20.600 --> 00:01:23.300

That could possibly be an overstatement right? But for

26

00:01:23.300 --> 00:01:26.000

the most part it's test you do your thing Ops you

27

00:01:26.200 --> 00:01:29.200
do your thing. We'll get together when we have to but other than

28
00:01:29.200 --> 00:01:32.500
that, let's just kind of keep your your world separate

29
00:01:32.500 --> 00:01:35.600
over there and we'll keep our world separate over here. I think

30
00:01:35.600 --> 00:01:38.300
that that's a mistake in lots of areas. But

31
00:01:38.300 --> 00:01:41.200
the one area where it's a it's a huge foul is the area

32
00:01:41.200 --> 00:01:44.400
of safety. These are two worlds that we have to bring together because

33
00:01:44.400 --> 00:01:47.300
most of the time like you see there we're flying the same

34
00:01:47.300 --> 00:01:50.500
jets under similar parameters for instance every

35
00:01:50.500 --> 00:01:53.200
airplane whether you are a tester or an Ops guy

36
00:01:53.200 --> 00:01:56.100
has to take off and land and that's kind of the impetus of

37
00:01:56.100 --> 00:01:59.200
what we're going to look at today as testers. We

38
00:01:59.200 --> 00:02:02.900
should look for every opportunity to improve safety in

39
00:02:02.900 --> 00:02:05.400
the ops world because we look at things differently. We

40
00:02:05.400 --> 00:02:07.700
see the world differently, especially the flying world.

41
00:02:09.200 --> 00:02:12.300
So this is the definition of

42
00:02:12.300 --> 00:02:15.600
a bold face. So of for those of you that aren't familiar for

43
00:02:15.600 --> 00:02:18.900
the Bold faces, there's a critical emergency procedure that

44
00:02:18.900 --> 00:02:21.300
is to be done in a published

45
00:02:21.300 --> 00:02:24.500
sequence without reference to the checklist think monkey. See monkey

46
00:02:24.500 --> 00:02:27.600
do if this happens in my airplane my hands

47
00:02:27.600 --> 00:02:30.600
and my feet will do this and I will accomplish

48
00:02:30.600 --> 00:02:33.100
it no questions asked it's from memory. We're tested on it

49
00:02:33.100 --> 00:02:36.600
every single month for the situation.

50
00:02:36.600 --> 00:02:40.300
We're going to look at today. There was a bold-faced procedure

51
00:02:39.300 --> 00:02:43.800
in the a10c that when I was instructing just

52
00:02:42.800 --> 00:02:45.300
didn't seem to make a lot

53
00:02:45.300 --> 00:02:48.300
of sense to me and what you see here highlighted in

54

00:02:48.300 --> 00:02:51.000

red is without reference to the checklist. I believe

55

00:02:51.200 --> 00:02:55.200

that there was a procedure we were doing that relied on reference to

56

00:02:55.200 --> 00:02:58.400

the checklist in order to accomplish it and that didn't

57

00:02:58.400 --> 00:03:01.900

sit well with me. So before I

58

00:03:01.900 --> 00:03:04.200

went to TPS, I tried to change

59

00:03:04.200 --> 00:03:05.400

this procedure.

60

00:03:06.900 --> 00:03:09.600

This was the previous current Tech

61

00:03:09.600 --> 00:03:12.600

order if I can use the past and the present together, but the

62

00:03:12.600 --> 00:03:15.300

situation was a single engine failure or fire

63

00:03:15.300 --> 00:03:18.200

while configured for landing. So if your gear is

64

00:03:18.200 --> 00:03:21.200

down and you are about to land or

65

00:03:21.200 --> 00:03:24.100

you're in a landing configuration, if you lose a motor or if you get a

66

00:03:24.100 --> 00:03:28.500

fire indication, you are supposed to accomplish this procedure throttles.

67

00:03:27.500 --> 00:03:30.400

Max Speed brakes close flaps maneuver.

68

00:03:30.400 --> 00:03:33.900

That is the bold face to be done in the published sequence without

69

00:03:33.900 --> 00:03:36.400

reference to the checklist. What I've highlighted in

70

00:03:36.400 --> 00:03:39.400

yellow is straight out of the tech order or previous Tech order

71

00:03:39.400 --> 00:03:42.100

it's changed now, but it says

72

00:03:42.100 --> 00:03:45.200

if the flaps are full down select maneuver, so it's a

73

00:03:45.200 --> 00:03:48.500

very critical word in there and it's the word if right you see

74

00:03:48.500 --> 00:03:52.400

down here that there's a note after the

75

00:03:51.400 --> 00:03:54.200

step to go flaps maneuver. It says

76

00:03:54.200 --> 00:03:57.500

the intent is to decrease drag if the flaps are already up do

77

00:03:57.500 --> 00:04:00.500

not put the flaps too maneuver. So you can kind of see the problem of

78

00:04:00.500 --> 00:04:03.600

where we're going here. This bold face doesn't address

79

00:04:03.600 --> 00:04:06.600

the situation where the flaps

80

00:04:06.900 --> 00:04:09.200

Are up and that creates a problem.

81

00:04:09.200 --> 00:04:12.500

So if you look at the actual checklist.

82

00:04:13.200 --> 00:04:16.300

What's missing from the boldface they're all smacks be

83

00:04:16.300 --> 00:04:19.600

very close flats and Uber even the notes warnings and cautions. This is the checklist.

84

00:04:19.600 --> 00:04:22.700

What we looked at before was the dash one. The checklist

85

00:04:22.700 --> 00:04:24.400

doesn't make reference to it either.

86

00:04:25.300 --> 00:04:28.000

So what are we going to do? What I

87

00:04:28.700 --> 00:04:31.600

presented to the community as an instructor as I said, hey say

88

00:04:31.600 --> 00:04:34.200

you're giving an emergency procedures evaluation in

89

00:04:34.200 --> 00:04:37.200

times running short. So you need to

90

00:04:37.200 --> 00:04:40.400

get a no-flap approach and you need to get this last bold face done

91

00:04:40.400 --> 00:04:43.600

before your time runs out. So you give the guy

92

00:04:43.600 --> 00:04:46.400

a engine failure with the flaps up on is

93

00:04:46.400 --> 00:04:49.600

no flap Landing. So at 500 feet on file you initiate the

94

00:04:49.600 --> 00:04:52.100

engine failure. He immediately goes throttle smack speed

95

00:04:52.100 --> 00:04:55.700

brakes close flaps maneuver. He does the bold face in the published sequence

96

00:04:55.700 --> 00:04:58.400

without reference to the checklist. Well, when

97

00:04:58.400 --> 00:05:01.800

he puts the flats maneuver the aircraft to begin begins to

98

00:05:01.800 --> 00:05:04.300

lose altitude rapidly and seeing that he will not

99

00:05:04.300 --> 00:05:07.200

make the runway he decides to eject. So my question

100

00:05:07.200 --> 00:05:10.700

was what do you do? Do you hook? The guy do you downgrade

101

00:05:10.700 --> 00:05:13.300

him? Do you do nothing? So I had answers to

102

00:05:13.300 --> 00:05:16.600

this question that we're all over the map from instructors within

103

00:05:16.600 --> 00:05:19.900

our community and my point was exactly what

104

00:05:19.900 --> 00:05:22.500

I wanted. We don't know what we're supposed

105

00:05:22.500 --> 00:05:24.700

to do with this right because there's

106

00:05:25.300 --> 00:05:27.300

Security in the procedure, so

107

00:05:28.500 --> 00:05:31.100

I decided that I wanted to submit a change to the

108
00:05:31.100 --> 00:05:34.700
boldface. We have the procedure here that is only valid

109
00:05:34.700 --> 00:05:37.200
for the landing configuration. That is normal. That's

110
00:05:37.200 --> 00:05:40.600
the gears down the flat speed breaks at 40% deflection. Yes,

111
00:05:40.600 --> 00:05:43.900
we still land with our speed brakes out like a tweet and the

112
00:05:43.900 --> 00:05:46.700
flaps are full down. We don't have the engine

113
00:05:46.700 --> 00:05:49.100
spool up time to recover if we do

114
00:05:49.100 --> 00:05:51.100
have to go around if we leave the speed brakes up.

115
00:05:51.800 --> 00:05:54.600
So what I thought was well, this

116
00:05:54.600 --> 00:05:57.200
is obviously in the checklist for a reason or in the dash one

117
00:05:57.200 --> 00:06:00.100
for a reason this could put the aircraft in a very

118
00:06:00.100 --> 00:06:03.300
thrust efficient situation if you put the flaps down

119
00:06:03.300 --> 00:06:04.100
to maneuver.

120
00:06:04.900 --> 00:06:07.300
So think where are we fly these Jets

121

00:06:07.300 --> 00:06:10.500
the most which is Southern Arizona and in August, you get density
altitudes

122
00:06:10.500 --> 00:06:13.600
that can become astronomical. That's where

123
00:06:13.600 --> 00:06:16.500
I was going with this continuing with the rationale.

124
00:06:16.500 --> 00:06:19.600
We're looking at this relies on

125
00:06:19.600 --> 00:06:22.400
the pilot having intimate knowledge of the procedure

126
00:06:22.400 --> 00:06:25.900
in order to accomplish it correctly. They have to remember from

127
00:06:25.900 --> 00:06:28.500
their training that they if the flaps

128
00:06:28.500 --> 00:06:31.300
are up not to put the flaps to the maneuver position to me.

129
00:06:31.300 --> 00:06:34.900
This was unacceptable. This doesn't meet the requirements

130
00:06:34.900 --> 00:06:37.400
for a bold face procedure. So

131
00:06:37.400 --> 00:06:40.300
if the Pilot's not required to reference the checklist for the
definition, he

132
00:06:40.300 --> 00:06:43.200
also should not have to remember the dash one

133
00:06:43.200 --> 00:06:43.600
either.

134

00:06:45.200 --> 00:06:48.200
So this is a summary of the logic. It didn't meet the requirements for

135

00:06:48.200 --> 00:06:51.300
two out of three Landing configurations. We do no flap approaches and

136

00:06:51.300 --> 00:06:54.100
we do simulated single-engine approaches. Both of which the flaps are

137

00:06:54.100 --> 00:06:57.200
up in this condition. It requires the

138

00:06:57.200 --> 00:07:00.600
pilot to refer to the note in the dash one thus violating

139

00:07:00.600 --> 00:07:03.500
the with reference without reference to the checklist.

140

00:07:03.500 --> 00:07:06.500
So the two options I presented was well, let's just remove

141

00:07:06.500 --> 00:07:09.200
it from the critical engine procedures list because

142

00:07:09.200 --> 00:07:13.100
it's it's obviously doesn't meet that test or let's

143

00:07:12.100 --> 00:07:15.900
amend the procedure. My path forward

144

00:07:15.900 --> 00:07:18.000
was well, let's just change the procedure.

145

00:07:18.700 --> 00:07:21.600
So the proposed change was the only instance where

146

00:07:21.600 --> 00:07:24.700
you're actually going to move the flaps flap lever

147

00:07:24.700 --> 00:07:28.100
from the DN or fold down position to maneuver

148

00:07:27.100 --> 00:07:30.300

is if the flaps are

149

00:07:30.300 --> 00:07:33.200

filled out, right? So my proposal was

150

00:07:33.200 --> 00:07:36.100

I just want to add four letters to the boldface thrall's max

151

00:07:36.100 --> 00:07:39.200

be brakes close flaps maneuver if down we have lots of

152

00:07:39.200 --> 00:07:42.200

these if statements actually in our bold faces in the

153

00:07:42.200 --> 00:07:46.400

A10, so it's not unprecedented to do that the procedure

154

00:07:45.400 --> 00:07:48.500

it removes any requirement to

155

00:07:48.500 --> 00:07:51.200

refer to the checklist. It also removes a removes ambiguity of

156

00:07:51.200 --> 00:07:54.800

how we're going to actually do this calf wide

157

00:07:54.800 --> 00:07:55.400

as a community.

158

00:07:57.500 --> 00:08:00.900

This was met with significant pushback. Here's

159

00:08:00.900 --> 00:08:02.300

just some of the direct quotations.

160

00:08:03.700 --> 00:08:06.700

The jet is flown five for 45 years. In fact, Mr. Lutz,

161

00:08:06.700 --> 00:08:09.100

if he flew the A10 this was the this was the

162

00:08:09.100 --> 00:08:12.300

procedure. He would have been trained on right so it had stayed

163

00:08:12.300 --> 00:08:15.300

the same since the jet had been around second one is my

164

00:08:15.300 --> 00:08:18.500

favorite dudes are gonna birth the literate kittens. I think I think

165

00:08:18.500 --> 00:08:19.800

that actually probably happened.

166

00:08:21.300 --> 00:08:24.300

We're gonna start changing procedure name people thought this was kind of
hey, we're

167

00:08:24.300 --> 00:08:28.100

just opening the door for everything to be changed. Now. This doesn't

168

00:08:27.100 --> 00:08:31.000

apply to many situations. It really doesn't matter. The caveat

169

00:08:30.200 --> 00:08:33.300

is well known from the B course the point I

170

00:08:33.300 --> 00:08:36.500

want to make is as a tester before test political before

171

00:08:36.500 --> 00:08:40.500

I had actually seen started seeing the world differently this narrative

172

00:08:39.500 --> 00:08:42.800

this logic prevailed

173

00:08:42.800 --> 00:08:45.200

over mine as a community logic was

174

00:08:45.200 --> 00:08:48.400

not enough to persuade the community to change the bold

175

00:08:48.400 --> 00:08:48.600
face.

176

00:08:49.300 --> 00:08:52.700
So I got you know went to Edwards

177

00:08:52.700 --> 00:08:55.600
for a year and started doing flight testing the A10 and I started

178

00:08:55.600 --> 00:08:58.400
thinking about this bolt face again. It was like, well, does this really
matter?

179

00:08:58.400 --> 00:09:01.200
And as you can see from the numbers every pilot has the

180

00:09:01.200 --> 00:09:04.300
log six no flap approaches six single Sim single engine

181

00:09:04.300 --> 00:09:07.600
approaches every single year. So that is

182

00:09:07.600 --> 00:09:10.100
what I was kind of looking at and going

183

00:09:10.100 --> 00:09:13.500
if they're only doing this a handful of times a year. It's probably
pretty

184

00:09:13.500 --> 00:09:16.700
important that we change this because nobody's going to remember from

185

00:09:16.700 --> 00:09:19.100
the B course that this is supposed to happen and

186

00:09:19.100 --> 00:09:22.200
on their EPA Cycles about once every

187

00:09:22.200 --> 00:09:25.200

18 months when they take their check ride this may or may

188

00:09:25.200 --> 00:09:28.400

not come up so guys could go literally through a 20-year career

189

00:09:28.400 --> 00:09:32.300

in the A10 and only do this in the initial formal

190

00:09:31.300 --> 00:09:34.100

training unit. So I went to

191

00:09:34.100 --> 00:09:37.400

the one Chucks and this were this was the data September 1st

192

00:09:37.400 --> 00:09:40.400

2020 one. You can see the numbers

193

00:09:40.400 --> 00:09:43.900

in red there. That is how many times those squadrons have

194

00:09:43.900 --> 00:09:46.700

logged these types of approaches. So

195

00:09:46.700 --> 00:09:49.100

if you've ever been in an air

196

00:09:49.100 --> 00:09:49.200

for

197

00:09:49.200 --> 00:09:52.400

Squadron at the end of the year. That's the September is

198

00:09:52.400 --> 00:09:55.300

usually when you log these approaches because everybody looks at their

199

00:09:55.300 --> 00:09:58.200

their numbers and goes. Oh man, I got to get you know all six of

200

00:09:58.200 --> 00:10:01.200

my sim single edge approaches. So they'll go out on one sortie and do six of them,

201
00:10:01.200 --> 00:10:05.100
right? So this is a probably a conservative

202
00:10:04.100 --> 00:10:07.200
number if I took this data

203
00:10:07.200 --> 00:10:10.100
here on September 1st. So we're talking about 400 times

204
00:10:10.100 --> 00:10:12.000
a year each Squadron is doing this.

205
00:10:12.900 --> 00:10:15.500
Not to mention you probably

206
00:10:15.500 --> 00:10:18.200
familiar A10. There are no dual Cedars. There's one

207
00:10:18.200 --> 00:10:21.100
on a stick at Edwards and the other one. I don't remember where it is,

208
00:10:21.100 --> 00:10:24.300
but we don't fly them anymore. So the first time

209
00:10:24.300 --> 00:10:27.900
you go fly this airplane you fly ain't no flap approach and then

210
00:10:27.900 --> 00:10:30.700
six rides in the trace you're doing two

211
00:10:30.700 --> 00:10:33.800
to three of these approaches every single time. So our most inexperienced

212
00:10:33.800 --> 00:10:35.400
Pilots are flying these approaches.

213
00:10:36.900 --> 00:10:39.200
So now we're going to get into the

214

00:10:39.200 --> 00:10:43.400
technical part of the presentation. This is an acknowledgment. So some

215
00:10:42.400 --> 00:10:45.300
guys over really really smart guys much

216
00:10:45.300 --> 00:10:48.400
smarter than me Jerome Jenkins Rob mail Robert home. They're not here
today. But

217
00:10:48.400 --> 00:10:51.400
these are the gentleman that I worked with in order to help develop and

218
00:10:51.400 --> 00:10:55.000
help me out with analyzing this problem.

219
00:10:54.300 --> 00:10:57.500
They work at AFL CMC. Their

220
00:10:57.500 --> 00:10:58.100
information is up there.

221
00:10:59.200 --> 00:11:02.100
But math math is fun. This is

222
00:11:02.100 --> 00:11:05.800
a flight test presentation. There's got to be math. Right? So I started
cranking

223
00:11:05.800 --> 00:11:08.500
through some original flight test data from the 70s. No

224
00:11:08.500 --> 00:11:11.700
kidding. I had it it was scanned into our drive and

225
00:11:11.700 --> 00:11:14.800
the developmental test Squadron and started working

226
00:11:14.800 --> 00:11:17.300
through some numbers to see. Well what what is

227

00:11:17.300 --> 00:11:20.300

the effect of this problem if you're flats are

228

00:11:20.300 --> 00:11:23.500

up and you put them in maneuver in these scenarios, how does it actually affect

229

00:11:23.500 --> 00:11:26.500

you? What I was coming up with was you're losing

230

00:11:26.500 --> 00:11:29.400

about a thousand to 1500 feet

231

00:11:29.400 --> 00:11:32.300

of altitude to get to a go around so I

232

00:11:32.300 --> 00:11:35.700

was looking at 50 foot per minute climb. How much altitude do

233

00:11:35.700 --> 00:11:38.300

I lose in doing that altitude is very near

234

00:11:38.300 --> 00:11:41.300

and dear to an A10 Pilots hurt. We like flying low, but we all

235

00:11:41.300 --> 00:11:45.500

so respect the Earth. We know that it will kill you very quickly the data

236

00:11:45.500 --> 00:11:48.500

showed the nickname increases in both drag and altitude required.

237

00:11:48.500 --> 00:11:52.000

So that's when I was like Hey test

238

00:11:51.500 --> 00:11:54.300

engineer friends, you're much smarter than me. Can

239

00:11:54.300 --> 00:11:57.500

you guys develop some kind of model to help me get

240

00:11:57.500 --> 00:11:58.800

these numbers a little

241

00:11:59.300 --> 00:12:02.200

More accurate some kind of product. I can push out the community to make

242

00:12:02.200 --> 00:12:06.200

a second push for this. This is the flight test safety

243

00:12:05.200 --> 00:12:08.300

perspective of the solution, right?

244

00:12:08.300 --> 00:12:11.300

So they got there. I gave them the

245

00:12:11.300 --> 00:12:14.500

numbers that I wanted. I gave them the original flight test data and

246

00:12:14.500 --> 00:12:17.900

very very smart individuals that they are they developed

247

00:12:17.900 --> 00:12:20.400

a AT&T six degree of Freedom model.

248

00:12:20.400 --> 00:12:23.500

They used simulink Matlab python. There's the

249

00:12:23.500 --> 00:12:26.500

numbers of code all that's that they used if

250

00:12:26.500 --> 00:12:29.100

you ask me questions after this presentation about the code, I'm going

251

00:12:29.100 --> 00:12:32.600

to have no idea so I will save you the time but the

252

00:12:32.600 --> 00:12:35.600

code was used to look at specific climates and how

253

00:12:35.600 --> 00:12:38.100

much altitude do I need to get to

254

00:12:38.100 --> 00:12:41.100

a 50 foot per minute condition, which is kind of what we would

255

00:12:41.100 --> 00:12:44.700

assess as you're not really climbing away from the ground, but you're

256

00:12:44.700 --> 00:12:47.400

not hitting the ground either you can still go around from that

257

00:12:47.400 --> 00:12:48.200

type of condition.

258

00:12:49.800 --> 00:12:53.100

So the environmental conditions we assumed was Davis-Monthan Air

259

00:12:52.100 --> 00:12:55.300

Force Base in the summertime. If you're

260

00:12:55.300 --> 00:12:59.500

flying in the afternoon. Yes, 110 degrees is very normal 2600

261

00:12:58.500 --> 00:13:01.500

foot elevation. No humidity

262

00:13:01.500 --> 00:13:04.300

that that's pretty much normal as well. So our empty

263

00:13:04.300 --> 00:13:07.600

weight for an 810 about 30,000 pounds. If you're going to do this in a heavyweight

264

00:13:07.600 --> 00:13:10.100

condition, which is required of the formal training

265

00:13:10.100 --> 00:13:13.300

unit about 9000 pounds of gas drag and

266

00:13:13.300 --> 00:13:16.800

decks zero. We fly our training missions prior

267

00:13:16.800 --> 00:13:20.000
to any kind of calf Maneuvers

268
00:13:19.400 --> 00:13:21.100
with a clean jet.

269
00:13:22.400 --> 00:13:25.200
So here's the other scenarios, I won't get into the

270
00:13:25.200 --> 00:13:28.500
nitty-gritty here. The speed brakes are out for the heavyweight approach.

271
00:13:28.500 --> 00:13:31.300
That's how we fly it 40% They're up

272
00:13:31.300 --> 00:13:34.300
for the Sim single engine. That's really important. And then the big
caveat down

273
00:13:34.300 --> 00:13:37.300
there is I elected to keep the gear down

274
00:13:37.300 --> 00:13:40.600
the bold face does not address the gear right. So this

275
00:13:40.600 --> 00:13:43.100
is all assuming that before you get to the

276
00:13:43.100 --> 00:13:44.900
checklist your gear is still hanging.

277
00:13:47.300 --> 00:13:50.200
So what do we have? We had the conditions of

278
00:13:50.200 --> 00:13:53.200
you put the flaps down to maneuver from a no-flap condition

279
00:13:53.200 --> 00:13:56.700
or you leave the flaps up. What are we looking for coefficient lift

280
00:13:56.700 --> 00:13:59.700

drag thrust available thrust required.

281

00:13:59.700 --> 00:14:02.100

But the big one is their number five. This is the one I

282

00:14:02.100 --> 00:14:05.200

really wanted to show the community of what is the altitude required for
a 50

283

00:14:05.200 --> 00:14:06.100

foot per minute climb.

284

00:14:07.300 --> 00:14:10.600

Here's some other solver considerations no real

285

00:14:10.600 --> 00:14:13.800

need to spend a ton of time on this once again

286

00:14:13.800 --> 00:14:16.100

big thing there how much altitude do I need based on

287

00:14:16.100 --> 00:14:19.800

the thrust I have available in these environmental conditions

288

00:14:19.800 --> 00:14:22.000

and given the data we have from the jet.

289

00:14:23.400 --> 00:14:26.300

Ah flight test presentation. I had to throw in a

290

00:14:26.300 --> 00:14:29.300

free body diagram some equations. So these are the ones that I was

291

00:14:29.300 --> 00:14:30.500

using to kind of.

292

00:14:31.300 --> 00:14:34.900

Get my estimates but what you can see is VC the

293

00:14:34.900 --> 00:14:37.300

aircraft descent rate derived from

294
00:14:37.300 --> 00:14:40.300
our Dynamic pressure in coefficient to

295
00:14:40.300 --> 00:14:43.800
drag equation is going to get us where that

296
00:14:43.800 --> 00:14:46.200
50 foot per minute climb happens. We take the

297
00:14:46.200 --> 00:14:49.100
time that is elapsed for that based on sync rates from the

298
00:14:49.100 --> 00:14:52.200
sixth degree of Freedom model which backs us up to a total

299
00:14:52.200 --> 00:14:53.400
altitude that we lose.

300
00:14:55.200 --> 00:14:58.300
So here's the time-based occurrences. We assume to two second.

301
00:14:59.400 --> 00:15:02.800
Pilot Reaction Time fairly standard and then this is

302
00:15:02.800 --> 00:15:06.200
scenario one, right? So this is no flap condition. So the good

303
00:15:05.200 --> 00:15:08.200
engine goes up from 88 to a

304
00:15:08.200 --> 00:15:13.200
hundred the bad engine goes from 88 down to zero, but

305
00:15:12.200 --> 00:15:15.700
the big thing here is step four getting

306
00:15:15.700 --> 00:15:18.600
to the final condition there that you see of

307

00:15:18.600 --> 00:15:21.500
my good engines ended up. My bad engine is down and

308
00:15:21.500 --> 00:15:24.000
the speed breaks are in that's what we were looking

309
00:15:24.200 --> 00:15:27.300
for in order to determine how low we got for

310
00:15:27.300 --> 00:15:30.400
the Sim single engine same thing two second

311
00:15:30.400 --> 00:15:34.000
reaction time except for this case. We assume that the motor

312
00:15:33.200 --> 00:15:36.300
we head up. So when you fly Sim single engine approach the

313
00:15:36.300 --> 00:15:39.900
good Motors that about 92% the the

314
00:15:39.900 --> 00:15:42.500
bad Motors down at idle and so we assume

315
00:15:42.500 --> 00:15:45.200
well, hey what if you lose that good motor and you got to push the

316
00:15:45.200 --> 00:15:48.700
bad one up and the good ones coming down. So yes, you

317
00:15:48.700 --> 00:15:51.300
can see 10 seconds engine spool up time that is

318
00:15:51.300 --> 00:15:54.100
accurate. It is very very slow. Hence why we

319
00:15:54.100 --> 00:15:57.200
land with the speed breaks out, but getting to

320
00:15:57.200 --> 00:15:58.500
that last condition there.

321
00:15:59.300 --> 00:16:03.000
More of bad engine down good engine up aircraft

322
00:16:02.300 --> 00:16:05.300
is cleaned up minus the gear right gear still

323
00:16:05.300 --> 00:16:08.300
hanging. This is what we're looking at in order to get to our Solutions.

324
00:16:09.900 --> 00:16:12.600
So we ran the models and this

325
00:16:12.600 --> 00:16:15.800
is what spit out exported to

326
00:16:15.800 --> 00:16:18.500
Excel for a readability. So this is scenario one

327
00:16:18.500 --> 00:16:21.500
no flap heavyweight what you

328
00:16:21.500 --> 00:16:24.500
see here is if you put the flaps down to maneuver. Yes,

329
00:16:24.500 --> 00:16:27.300
you get a slight bump in the coefficient of lift. So

330
00:16:27.300 --> 00:16:30.200
0.46% but your coefficient of

331
00:16:30.200 --> 00:16:33.700
drag goes up by about seven percent. It takes

332
00:16:33.700 --> 00:16:36.500
you you see negative numbers there. It's because we ran the scenario

333
00:16:36.500 --> 00:16:39.300
at 300 feet AGL. I don't get

334

00:16:39.300 --> 00:16:42.900
too wrapped up around that that we're just looking at the relative
altitude

335
00:16:42.900 --> 00:16:45.700
loss between the two different conditions. So the

336
00:16:45.700 --> 00:16:48.200
additional out to loss you need and this condition

337
00:16:48.200 --> 00:16:51.800
1,361 extra feet

338
00:16:51.800 --> 00:16:54.500
in order to get to the same climate away

339
00:16:54.500 --> 00:16:57.700
from the ground at 50 feet per minute if you put the flaps down

340
00:16:57.700 --> 00:16:59.400
maneuver rather than leaving them up.

341
00:17:00.400 --> 00:17:02.300
for the Simpson single engine scenario

342
00:17:03.200 --> 00:17:06.300
You see again, you get about 0.21% So

343
00:17:06.300 --> 00:17:09.700
slight increase in the coefficient of lift, but the coefficient of

344
00:17:09.700 --> 00:17:12.700
drag now goes up even more by about

345
00:17:12.700 --> 00:17:15.500
7.9% So you saw from the

346
00:17:15.500 --> 00:17:18.500
previous slide. It only went up about six percent. That's because in the

347
00:17:18.500 --> 00:17:21.400

original condition your speed brakes were out in this

348

00:17:21.400 --> 00:17:24.100

condition. They were not so lowering the flaps gives you

349

00:17:24.100 --> 00:17:28.100

more drag. However, since you don't have that speed

350

00:17:27.100 --> 00:17:30.800

break closing time, you are

351

00:17:30.800 --> 00:17:33.200

actually going to lose a little bit less altitude. You're also one

352

00:17:33.200 --> 00:17:37.000

not faster in your recovery. So this resulted

353

00:17:36.100 --> 00:17:39.800

in about 1200 extra feet of

354

00:17:39.800 --> 00:17:42.100

altitude loss when you're looking at the

355

00:17:42.100 --> 00:17:42.300

data,

356

00:17:44.200 --> 00:17:47.500

So the big picture is if the pilot performs the

357

00:17:47.500 --> 00:17:50.300

bolt face as it is written at this current

358

00:17:50.300 --> 00:17:53.100

time when it when it was back then if you put the

359

00:17:53.100 --> 00:17:56.300

flaps from the up position to maneuver, you could expect

360

00:17:56.300 --> 00:17:59.800

to lose 1200 extra feet of altitude in order

361
00:17:59.800 --> 00:18:02.800
to get to that 50 foot per minute client. So obviously

362
00:18:02.800 --> 00:18:05.400
this is not a minor difference. If you ask any

363
00:18:05.400 --> 00:18:08.200
pilot, I'm sure that everyone would say I

364
00:18:08.200 --> 00:18:11.200
would want 1200 more feet to do what I need to do

365
00:18:11.200 --> 00:18:12.400
in this condition.

366
00:18:14.500 --> 00:18:17.300
So the conclusion was that I pitched

367
00:18:17.300 --> 00:18:20.200
to the community was that by adding four letters to the

368
00:18:20.200 --> 00:18:23.500
bold face. We would ensure that the procedure meets

369
00:18:23.500 --> 00:18:26.400
the requirement four letters gets me to now it

370
00:18:26.400 --> 00:18:29.400
meets the requirements of what we looked at in the first slide being able

371
00:18:29.400 --> 00:18:32.600
to accomplish the procedure in the published sequence without reference

372
00:18:32.600 --> 00:18:35.300
to the checklist. It also ensures that the procedure meets

373
00:18:35.300 --> 00:18:38.200
the demands of the performance analysis shown here. So by doing this

374
00:18:38.200 --> 00:18:42.200

we've shown that yes, there is a significant performance

375

00:18:41.200 --> 00:18:44.200

Improvement by leaving the

376

00:18:44.200 --> 00:18:47.600

flaps up and we want to codify that in the procedure itself,

377

00:18:47.600 --> 00:18:51.100

especially if we're going to maintain it as a critical emergency

378

00:18:50.100 --> 00:18:54.100

procedure. It also removes ambiguity.

379

00:18:53.100 --> 00:18:56.800

And this is one of the the most underrated I

380

00:18:56.800 --> 00:18:59.400

think advantages of this there was

381

00:18:59.400 --> 00:19:02.400

no longer this decision of well, what do

382

00:19:02.400 --> 00:19:05.100

I do with both? They says to do this. I know the dash one

383

00:19:05.100 --> 00:19:08.700

says they do this in the moment. What what am I actually going to do we've

384

00:19:08.700 --> 00:19:11.500

removed that every Landing configuration now, we have

385

00:19:11.500 --> 00:19:14.200

a procedure that we can execute as a community and

386

00:19:14.400 --> 00:19:17.000

And be in agreement on what this is.

387

00:19:18.200 --> 00:19:21.800

So what happened? Thankfully I would

388

00:19:21.800 --> 00:19:24.000

say thankfully the bold face was changed, but

389

00:19:25.700 --> 00:19:28.600

It was still met with significant pushback. I presented

390

00:19:28.600 --> 00:19:31.500

this at the flight manual review conference last year as an

391

00:19:31.500 --> 00:19:34.400

emergency change and that we had guys that

392

00:19:34.400 --> 00:19:37.100

were about to start the B course and

393

00:19:37.100 --> 00:19:40.900

they were about to start getting into these Maneuvers in the summer in

394

00:19:40.900 --> 00:19:43.100

Tucson, Arizona. Like let's get

395

00:19:43.100 --> 00:19:46.200

this changed before they start so they are operating off of this

396

00:19:46.200 --> 00:19:49.500

basis. Not the basis. We've been doing for the past 45

397

00:19:49.500 --> 00:19:52.400

years. So the pushback was significant, but

398

00:19:52.400 --> 00:19:56.200

I'd be the first to admit it wasn't all in warranted. I

399

00:19:55.200 --> 00:19:58.200

believe the best of intentions were sought these

400

00:19:58.200 --> 00:20:02.000

were my buddies that I had flown with for for several years and

401

00:20:01.200 --> 00:20:05.300

they were they were not happy with wanting to

402

00:20:05.300 --> 00:20:08.500

do this change. I think a lot of misunderstanding to

403

00:20:08.500 --> 00:20:11.300

the procedure and the math. Once again, what do we provide as

404

00:20:11.300 --> 00:20:14.300

flight testers? We provide this perspective this

405

00:20:14.300 --> 00:20:17.200

perspective of coefficient of drag coefficient of

406

00:20:17.200 --> 00:20:20.600

Lyft besides maybe a few weeks and pilot

407

00:20:20.600 --> 00:20:23.300

training one of my buddies and my Squadron

408

00:20:23.300 --> 00:20:25.400

was a music major, right? He has no idea.

409

00:20:25.600 --> 00:20:28.300

What coefficient of drag is like on

410

00:20:28.300 --> 00:20:31.400

a technical level he knows what drag is he knows what it does his airplane.

411

00:20:31.400 --> 00:20:34.300

But as far as an analysis procedure, he doesn't

412

00:20:34.300 --> 00:20:37.400

really understand that. He's very good pilot

413

00:20:37.400 --> 00:20:40.200

actually is one of the best that I've flown with but if

414

00:20:40.200 --> 00:20:43.200

we look at the procedure in the math, this is where we can come in

415

00:20:43.200 --> 00:20:47.200

and we can really save the day with certain things and this

416

00:20:46.200 --> 00:20:49.800

will push back was to the procedure people didn't really

417

00:20:49.800 --> 00:20:52.400

understand what a six degree of Freedom model was didn't understand

418

00:20:52.400 --> 00:20:55.600

what we were trying to do and they were just unfamiliar with

419

00:20:55.600 --> 00:20:58.600

how we were getting our numbers next. They

420

00:20:58.600 --> 00:21:01.300

wanted to have a precedent for the procedure. They

421

00:21:01.300 --> 00:21:04.700

say they wanted to say well we do this elsewhere. There's a

422

00:21:04.700 --> 00:21:07.400

bold face where we have a double engine failure

423

00:21:07.400 --> 00:21:10.700

in the A10 or if you get a double engine failure, you put

424

00:21:10.700 --> 00:21:13.100

the throttles off you start the Apu you

425

00:21:13.100 --> 00:21:16.300

put the flight controls the manual version and then you put the left motor to

426

00:21:16.300 --> 00:21:19.600

the start position, but you're supposed to wait until 60%

427

00:21:19.600 --> 00:21:22.200

RPM to throw the throttle over the

428
00:21:22.200 --> 00:21:25.000
hump and start it now that is not in the

429
00:21:25.000 --> 00:21:25.400
proced.

430
00:21:25.600 --> 00:21:28.700
Itself, it doesn't say to wait for 60% So

431
00:21:28.700 --> 00:21:32.300
guys are saying see we do this already and in

432
00:21:31.300 --> 00:21:34.600
my argument was well. Yes, we do.

433
00:21:34.600 --> 00:21:38.400
However, if you forget to wait

434
00:21:37.400 --> 00:21:40.300
till 60% RPM, the engine will

435
00:21:40.300 --> 00:21:43.700
still start it just won't start as quickly and I'm not changing the

436
00:21:43.700 --> 00:21:46.600
sequence or changing the steps of the procedure by

437
00:21:46.600 --> 00:21:49.600
having to think about that. In this case. We are

438
00:21:49.600 --> 00:21:52.700
right we're not we're not just we're not

439
00:21:52.700 --> 00:21:55.600
just waiting for something to happen. We are doing a different

440
00:21:55.600 --> 00:21:58.000
procedure if we are in a different condition.

441

00:21:59.100 --> 00:22:02.300

So that was kind of about an hour of discussion. Actually

442

00:22:02.300 --> 00:22:06.600

at this conference more argument came from slippery slope

443

00:22:06.600 --> 00:22:09.700

argument. This was a very large concern amongst

444

00:22:09.700 --> 00:22:12.200

the communities that people were just going to start changing things in the

445

00:22:12.200 --> 00:22:15.600

jet for any reason or no reason that hasn't happened

446

00:22:15.600 --> 00:22:18.900

in the last years since we made this change or so, so I

447

00:22:18.900 --> 00:22:19.900

don't think we're there.

448

00:22:21.400 --> 00:22:24.200

But the the red down here is what won the day in the end was

449

00:22:24.200 --> 00:22:27.500

the analysis and the math. Like I said before I went to test political

450

00:22:27.500 --> 00:22:30.500

and I pitched this change the logic itself

451

00:22:30.500 --> 00:22:33.200

was not going to sway any hearts and Minds

452

00:22:33.200 --> 00:22:36.500

it was showing guys that had been in the jet for 20

453

00:22:36.500 --> 00:22:39.800

plus odd years that you can get back 1200

454

00:22:39.800 --> 00:22:43.100

feet if you make this change, right? That's

455

00:22:42.100 --> 00:22:45.300

what really got people to think go. Okay, I

456

00:22:45.300 --> 00:22:48.400

can get on board with this. It was flight testers doing what flight

457

00:22:48.400 --> 00:22:51.300

testers do we look at situations and we go and

458

00:22:51.300 --> 00:22:56.100

we do the analysis we do the math and we get the results. So no

459

00:22:55.100 --> 00:22:58.600

one actually broaden argument against

460

00:22:58.600 --> 00:23:01.400

that data and it's very very hard to argue

461

00:23:01.400 --> 00:23:01.500

against

462

00:23:03.300 --> 00:23:06.200

So what would be my lesson learned parting shots?

463

00:23:06.200 --> 00:23:09.300

First? The change was very labor-intensive. Like

464

00:23:09.300 --> 00:23:12.200

I said on the order from Cradle to grave about

465

00:23:12.200 --> 00:23:15.100

four years right very controversial within the

466

00:23:15.100 --> 00:23:18.700

community. I received phone calls for weeks and I'm

467

00:23:18.700 --> 00:23:22.000

not talking, you know, Rando Captain stanaval

468
00:23:21.200 --> 00:23:24.700
guy. I'm talking Ops group commanders from

469
00:23:24.700 --> 00:23:27.100
from different units calling me on my cell phone because they

470
00:23:27.100 --> 00:23:31.800
put it out with a change asking me to kind of explain as

471
00:23:30.800 --> 00:23:34.100
real nice asking

472
00:23:33.100 --> 00:23:36.400
me kind of just shed, some light it wasn't how could

473
00:23:36.400 --> 00:23:39.400
you do this? It wasn't animus. It was can you just help me understand
this a

474
00:23:39.400 --> 00:23:42.100
little bit more why we made this change which I was very happy to do

475
00:23:42.100 --> 00:23:45.500
and they were very receptive as testers. We're

476
00:23:45.500 --> 00:23:48.600
trying to many areas. The operational world may not even realize exist.
Right? So

477
00:23:48.600 --> 00:23:51.500
take time safety. Margin does the

478
00:23:51.500 --> 00:23:54.200
does the A10 pilot that dives his nose at

479
00:23:54.200 --> 00:23:57.500
the ground 60 degrees at 350 knots no anything

480
00:23:57.500 --> 00:24:00.200
about time safety. Margin if he hasn't been a test possible

481
00:24:00.200 --> 00:24:03.100
probably not doesn't really understand the dangers that can.

482
00:24:03.200 --> 00:24:06.400
Presented there. That doesn't mean we stop dive in our nose at 60 degrees

483
00:24:06.400 --> 00:24:09.400
towards the Earth at 359. It's just to help understand

484
00:24:09.400 --> 00:24:12.300
what safety things we build into the

485
00:24:12.300 --> 00:24:16.000
stuff to help to help help improve those processes. We offer

486
00:24:15.600 --> 00:24:18.000
unique skill set and approach the safety and

487
00:24:18.100 --> 00:24:21.400
we should seek to use that in order to improve the community

488
00:24:21.400 --> 00:24:24.100
as a whole. So we're all working together. We're all

489
00:24:24.100 --> 00:24:27.700
doing the same things. Same time. We should

490
00:24:27.700 --> 00:24:31.000
look for opportunities like this to challenge. Sometimes

491
00:24:30.500 --> 00:24:33.700
the status quo challenge the established

492
00:24:33.700 --> 00:24:36.600
procedures that may have stood for 45 years in order

493
00:24:36.600 --> 00:24:38.300
to make the whole Community safer.

494
00:24:39.900 --> 00:24:41.900

So as promised what I told you.

495

00:24:43.800 --> 00:24:45.200

And with that I will take questions.

496

00:24:54.100 --> 00:24:57.800

So what you just described as what we all call continuous process Improvement,

497

00:24:57.800 --> 00:25:00.600

right? You find a problem you fixing take care of you clean

498

00:25:00.600 --> 00:25:03.600

your own house. Are you saying that the organization

499

00:25:03.600 --> 00:25:06.600

resists continuous process Improvement?

500

00:25:08.100 --> 00:25:11.400

Or is it is it it's so expensive to

501

00:25:11.400 --> 00:25:14.400

do we don't want to go down the slippery slope, but the slippery slope

502

00:25:14.400 --> 00:25:18.100

is continuous process Improvement. Yeah, and

503

00:25:17.100 --> 00:25:21.000

I would say that the pushback I received was

504

00:25:20.500 --> 00:25:23.500

more or less a you know,

505

00:25:23.500 --> 00:25:26.200

the Jets been flying fine. It's in the

506

00:25:26.200 --> 00:25:30.100

dash one. You're right. I wouldn't say that the organization as

507

00:25:29.100 --> 00:25:33.100

a whole is continuously resisting change. It's

508

00:25:32.100 --> 00:25:35.600

I think just misunderstandings of

509

00:25:35.600 --> 00:25:39.900

where we can improve processes and where we can but sure

510

00:25:39.900 --> 00:25:42.000

you bring up an outstanding Point. Yeah.

511

00:25:43.200 --> 00:25:46.600

Sorry, I saw the analysis.

512

00:25:46.600 --> 00:25:50.600

Did you do any flight profiles to back up the data? No,

513

00:25:49.600 --> 00:25:52.800

we did. Not it. No.

514

00:25:52.800 --> 00:25:55.800

We did some stuff in the simulator. Okay, but we

515

00:25:55.800 --> 00:25:58.300

did not know go fly at the airplane and then

516

00:25:58.300 --> 00:26:01.500

just pull engine idle. No sir. We did not. Thank you.

517

00:26:06.700 --> 00:26:09.900

Simulator simulator data, definitely. Thanks. That

518

00:26:09.900 --> 00:26:11.800

was that was my question simulator day.

519

00:26:19.800 --> 00:26:20.400

Yes, sir.

520

00:26:24.600 --> 00:26:27.700

Simple statement that experts tend to resist

521

00:26:27.700 --> 00:26:30.800
change that's not intuitively obvious to

522
00:26:30.800 --> 00:26:30.800
them.

523
00:26:32.200 --> 00:26:35.800
And I think love your pilot colleagues will think they're not

524
00:26:35.800 --> 00:26:38.600
the guys and girls who are going to lose 1200 feet.

525
00:26:40.500 --> 00:26:44.500
Yep, that's I think the thinking that they're thinking and I'm

526
00:26:44.500 --> 00:26:48.000
not at least 1200 feet. I can I'm just gonna if I'm

527
00:26:47.100 --> 00:26:50.200
going towards the ground. I'm gonna do something about it. So that's

528
00:26:50.200 --> 00:26:53.600
why I think intuitively they didn't think this was necessary.

529
00:26:53.600 --> 00:26:56.600
Yes, not that it's not valid in terms of analysis, but

530
00:26:56.600 --> 00:26:56.900
that's the

531
00:26:57.800 --> 00:27:00.100
Perhaps their thinking. Yes, sir. That's a great point

532
00:27:00.100 --> 00:27:02.000
that this this procedure like we have

533
00:27:03.600 --> 00:27:06.300
Knocked on wood. We still have not in the A10 lost a motor within the

534
00:27:06.300 --> 00:27:09.400
flaps up configuration in the 45 years the jet has been flying. So

535
00:27:09.400 --> 00:27:12.800
that was another kind of thing. Well, this just won't happen. Like it

536
00:27:12.800 --> 00:27:14.300
just doesn't happen engines are reliable.

537
00:27:15.300 --> 00:27:18.000
I don't think that's a great back up to

538
00:27:18.100 --> 00:27:18.300
that. But

539
00:27:19.300 --> 00:27:20.100
yes, sir. Good point.

540
00:27:24.800 --> 00:27:27.400
So you had assets available for

541
00:27:27.400 --> 00:27:30.600
you to conduct flight testing. Did you consider the option of

542
00:27:30.600 --> 00:27:33.200
risk space approach and actually rather

543
00:27:33.200 --> 00:27:35.900
than going through analysis Gathering the data from flight test.

544
00:27:37.200 --> 00:27:42.000
so the difficulty of gathering the data from flight tests would would

545
00:27:40.000 --> 00:27:42.200
be

546
00:27:43.200 --> 00:27:47.000
This to fulfill time safety margin requirements to

547
00:27:46.300 --> 00:27:49.400
fulfill a lot of the safety protocol. We would

548

00:27:49.400 --> 00:27:52.300
be doing these Maneuvers up way high in the

549
00:27:52.300 --> 00:27:55.100
Moa. Right which is going to

550
00:27:55.100 --> 00:27:58.600
skew the data greatly as far as thrust available

551
00:27:58.600 --> 00:28:01.400
and the A10. We already have significant reduction

552
00:28:01.400 --> 00:28:04.500
and thrust when you go up to 10,000 feet per se where

553
00:28:04.500 --> 00:28:07.600
we would perform this. I think that

554
00:28:07.600 --> 00:28:11.400
would have done more to resist our

555
00:28:10.400 --> 00:28:13.300
cause people would

556
00:28:13.300 --> 00:28:16.200
just said, well, that's because he did it up at 10,000 feet. That's why

557
00:28:16.200 --> 00:28:19.700
it didn't work. So we did not take the

558
00:28:19.700 --> 00:28:22.200
time of the resources to do that. But that was kind

559
00:28:22.200 --> 00:28:25.400
of the big reason why but I would love for if

560
00:28:25.400 --> 00:28:29.400
we could find a safe way to test this to fail a motor at you

561
00:28:28.400 --> 00:28:32.400
know on a Final Approach and see I just

562

00:28:32.400 --> 00:28:33.600

don't see that being a possibility.

563

00:28:35.300 --> 00:28:38.500

Yes, sir. Oh as a fellow hog driver. I used

564

00:28:38.500 --> 00:28:41.300

to fly him way back when and we did lose a jet

565

00:28:41.300 --> 00:28:45.100

and this bowl face came from a Myrtle Beach accident interesting

566

00:28:44.100 --> 00:28:48.500

back in the mid late 30s

567

00:28:48.500 --> 00:28:50.500

or eighties around 86 I believe.

568

00:28:55.600 --> 00:28:58.600

So yeah, we did and that's where this came this bullface

569

00:28:58.600 --> 00:29:01.300

came from that accident where we had lost engine on Final.

570

00:29:01.300 --> 00:29:04.300

Wow. Thank you for yeah, the

571

00:29:04.300 --> 00:29:07.400

all the flight to data and stuff we had this was

572

00:29:07.400 --> 00:29:10.600

in there in the toes, but it's good to hear. Yeah, probably

573

00:29:10.600 --> 00:29:13.300

dig up the safety report on that. So that would

574

00:29:13.300 --> 00:29:14.900

be back home. I can let you know.

575

00:29:15.600 --> 00:29:16.200
flaps down

576
00:29:17.600 --> 00:29:19.900
it was in a normal Landing configuration. Yeah.

577
00:29:36.400 --> 00:29:39.400
Thank you. I'm so just kind of one follow-up. Did you

578
00:29:39.400 --> 00:29:42.300
have the similar that the data from the simulator and then

579
00:29:42.300 --> 00:29:45.400
it was the formal analysis that finally convinced?

580
00:29:46.400 --> 00:29:49.400
Everyone or did you have the did you do the analysis and

581
00:29:49.400 --> 00:29:52.400
then go fly it in the Sim? We did the analysis first and

582
00:29:52.400 --> 00:29:55.500
then I went one day and flew the different

583
00:29:55.500 --> 00:29:59.000
procedures in in the simulator. Okay, but yes.

584
00:29:58.200 --> 00:30:01.900
No, we did we did the math in the analysis first and

585
00:30:01.900 --> 00:30:04.300
then we ran into him

586
00:30:04.300 --> 00:30:07.300
and just for timeline perspective between the

587
00:30:07.300 --> 00:30:10.600
time that I submitted this change now covid didn't help this either the

588
00:30:10.600 --> 00:30:13.700
flight manual review conference got delayed and delayed but it

589
00:30:13.700 --> 00:30:16.200
was about a year between my submission of this doing the data

590
00:30:16.200 --> 00:30:19.100
that and then finally getting to present it

591
00:30:19.100 --> 00:30:22.500
to a community in a quorum to actually get it changed. It

592
00:30:22.500 --> 00:30:25.300
happened the first time everybody voted to change it

593
00:30:25.300 --> 00:30:28.200
and then a lot of guys said well we

594
00:30:28.200 --> 00:30:31.400
didn't have enough people there. So let's do it again in

595
00:30:31.400 --> 00:30:34.200
three weeks we presented again. So I presented again and this

596
00:30:34.200 --> 00:30:37.900
time everybody showed up showed up via Zoom, right? And

597
00:30:37.900 --> 00:30:40.200
that's when we finally got enough buy into

598
00:30:40.200 --> 00:30:40.700
changed.

599
00:30:41.300 --> 00:30:42.100
Okay. Thank you.

600
00:30:46.500 --> 00:30:48.900
One more if you have time.

601
00:30:50.600 --> 00:30:51.600
Okay. Thanks, sir.

602

00:30:57.100 --> 00:31:00.600

Yeah, thank you. Really appreciated this a question

603

00:31:00.600 --> 00:31:04.700

that I have because this whole conference we've been expressing want

604

00:31:03.700 --> 00:31:07.100

to raise dissenting opinions and have

605

00:31:06.100 --> 00:31:09.400

these dialogues and it turns out you faced

606

00:31:09.400 --> 00:31:12.100

four years of dissenting opinions and would love to

607

00:31:12.100 --> 00:31:15.300

hear if you have advice for everybody else who will

608

00:31:16.200 --> 00:31:19.400

Hopefully eventually raise something up like you did or already

609

00:31:19.400 --> 00:31:22.700

has and from your experience. Sure the

610

00:31:22.700 --> 00:31:25.600

big thing I found was just being humble

611

00:31:25.600 --> 00:31:29.500

in the whole process just realizing that just

612

00:31:28.500 --> 00:31:31.300

because you have an idea and you think you

613

00:31:31.300 --> 00:31:35.000

know, it's it's the way to go doesn't mean that you

614

00:31:34.100 --> 00:31:38.300

need to go in guns Blaze and all the time. Like I said, I submitted

615

00:31:37.300 --> 00:31:40.400

my change it got

616
00:31:40.400 --> 00:31:43.500
pushed back and I I took that I said, well, what does

617
00:31:43.500 --> 00:31:46.400
the community need in order to get there? Right? How

618
00:31:46.400 --> 00:31:49.300
do we continue to to get people to go

619
00:31:49.300 --> 00:31:52.100
along this train? And it was I came to

620
00:31:52.100 --> 00:31:55.500
the conclusion? Hey, let's let's do more analysis. Let's do math. Okay
did

621
00:31:55.500 --> 00:31:58.600
the math let's go get the engineers on board. Let's do

622
00:31:58.600 --> 00:32:01.300
this. Let's write a paper. Let's let's publish the paper and then

623
00:32:01.300 --> 00:32:05.500
it was just more. So continue

624
00:32:04.500 --> 00:32:07.200
to look for

625
00:32:07.200 --> 00:32:10.400
the things that your community would want slash need

626
00:32:10.400 --> 00:32:13.400
in order to to change it and just be willing

627
00:32:13.400 --> 00:32:16.100
to accept that you may be wrong. Maybe this didn't

628
00:32:16.100 --> 00:32:20.100
Need to get changed which is why I went and did the math. So if

629

00:32:19.100 --> 00:32:22.400

it was you know, what's what's the limit if we

630

00:32:22.400 --> 00:32:25.400

did the math and it only turned out to be a hundred 200 feet of altitude

631

00:32:25.400 --> 00:32:28.500

loss. Oh, maybe maybe the dash one caveat is

632

00:32:28.500 --> 00:32:31.200

is good enough. I think the logic still would

633

00:32:31.200 --> 00:32:34.100

have driven us to change it. But just kind of

634

00:32:34.100 --> 00:32:36.000

find out what your community needs and go for it.

635

00:32:41.600 --> 00:32:43.900

Okay. Yes, sir. Thank you.