WEBVTT

1
00:00:13.745 --> 00:00:15.065
A few mile airplanes here.

2
00:00:58.015 --> 00:01:00.545
Several years ago, nav Air was up in Crystal City

3
00:01:01.085 --> 00:01:02.705
and they weren't as close to us,

4
00:01:03.085 --> 00:01:05.385
and sometimes they took our money when we had projects.

5
00:01:05.735 --> 00:01:08.505
This kind of goes back to the sequester era a few years ago

6
00:01:09.015 --> 00:01:11.585
when Dilbert's money is being taken by his boss.

7
00:01:12.165 --> 00:01:13.665
And of course the answer is, well, just

8
00:01:13.665 --> 00:01:14.745
where the other guy comes back, and

9
00:01:14.745 --> 00:01:15.785
I'll give you the, some of his money.

10
00:01:16.645 --> 00:01:20.705
He, The last time I spoke to a safety symposium,

11
00:01:21.615 --> 00:01:23.385
this is the luncheon up in McLean.

12
00:01:24.545 --> 00:01:29.085
I saw a few folks pause in the soup course when I said,

13
00:01:30.655 --> 00:01:34.035
the quickest way to sense a good safety atmosphere at a

14
00:01:34.035 --> 00:01:36.515
company is to inspect the bathroom in the

15
00:01:36.515 --> 00:01:37.835
furthest corner of the hangar.

16
00:01:40.215 --> 00:01:43.195
The clean bathroom is an isolated work

17
00:01:43.225 --> 00:01:45.035
area, and it's a good vibe.

18
00:01:45.935 --> 00:01:48.745
Besides sensing the pulse of safety management health,

19
00:01:49.545 --> 00:01:51.365
it speaks to good unit morale

20
00:01:53.315 --> 00:01:55.095
and quality aircraft maintenance.

21
00:01:56.335 --> 00:01:59.975
Incidentally, good maintenance is a pilot's best insurance

22
00:02:00.095 --> 00:02:03.215
policy, beating any recruiting benefit offered

23
00:02:03.215 --> 00:02:04.335
by human resources.

24
00:02:05.455 --> 00:02:07.545
Well, good afternoon and welcome to the Deep South

25
00:02:07.635 --> 00:02:09.905
where storytelling is an art form.

26
00:02:10.785 --> 00:02:13.045
My wife over here got a degree in storytelling.

27
00:02:13.125 --> 00:02:14.165

I didn't know there was such a thing

28
00:02:14.165 --> 00:02:15.285
from East Tennessee State.

29
00:02:15.605 --> 00:02:17.485
Unifor University came back,

30
00:02:17.765 --> 00:02:19.445
speaking southern and all that stuff.

31
00:02:20.725 --> 00:02:23.215
Well, perhaps from my own high school where I taught,

32
00:02:23.805 --> 00:02:26.495
this speaks a little bit here to the future of aviation.

33
00:02:27.025 --> 00:02:30.015
After years of navy carrier based combat

34
00:02:30.195 --> 00:02:33.375
and Ilian flying, I spent a decade teaching high school

35
00:02:33.515 --> 00:02:34.895
to inner city students.

36
00:02:39.825 --> 00:02:42.805
One day, a boy named Tremaine approached

37
00:02:42.875 --> 00:02:44.885
with a permission slip to leave class.

38
00:02:45.825 --> 00:02:50.175
The planned time departure was blank. What time is it?

39
00:02:50.175 --> 00:02:53.505
He asked me though, there was a wall clock clearly visible

40
00:02:53.605 --> 00:02:55.425
behind me, taken aback.

41
00:02:55.545 --> 00:02:58.995
I answered one 10. Thanks for making it digital.

42
00:02:59.060 --> 00:03:00.865
Digital, he said, scribbling it on his form.

43
00:03:01.955 --> 00:03:03.725
Turning to the class, I asked

44
00:03:04.425 --> 00:03:06.205
how many can't read our classroom clock?

45
00:03:07.015 --> 00:03:10.405
All but five hands went up. Maria spoke first.

46
00:03:11.395 --> 00:03:13.365
Well, we can't have our cell phones in class,

47
00:03:13.505 --> 00:03:14.565
so we don't know the time.

48
00:03:15.315 --> 00:03:17.885
From the back of the room, Jason piped up

49
00:03:19.125 --> 00:03:20.965
watching two hands move around a circle.

50
00:03:21.115 --> 00:03:25.095
It's so analog. Well, this is my turn. Alright, class.

51
00:03:25.125 --> 00:03:27.055
When I approach Norfolk Airport for landing,

52
00:03:27.075 --> 00:03:29.335
the tower gives me a warning about airplanes nearby.

53
00:03:29.515 --> 00:03:31.055
For example, keep clear

54
00:03:31.055 --> 00:03:33.015

of the Cesta one 50 at your two o'clock low.

55
00:03:33.285 --> 00:03:34.655
Also, keep track of the sess

56
00:03:34.655 --> 00:03:37.575
to citation descending from 14,000 feet at your

57
00:03:37.575 --> 00:03:38.695
one 11 o'clock high.

58
00:03:39.575 --> 00:03:42.555
Where do I look? Dwayne sitting in the front

59
00:03:42.555 --> 00:03:44.275
of the room was the first to shoot up his hand

60
00:03:44.275 --> 00:03:45.955
and say, what do we care?

61
00:03:45.975 --> 00:03:47.075
We don't wanna be pilots.

62
00:03:51.745 --> 00:03:54.675
Another tale is a revelatory one about the student

63
00:03:54.675 --> 00:03:55.915
population I worked with.

64
00:03:56.835 --> 00:03:59.595
Although I taught math, my very first class unexpectedly

65
00:03:59.875 --> 00:04:01.475
involved a civics lesson.

66
00:04:02.425 --> 00:04:04.665
A student announced on the day's start on the classroom

67
00:04:04.945 --> 00:04:06.945
overhead speaker, good morning Bay Shore students,

68
00:04:06.945 --> 00:04:08.545
please rise for the pledge of allegiance

69
00:04:08.545 --> 00:04:10.145
and remain standing for the moment of silence.

70
00:04:12.375 --> 00:04:13.955
So I turned to the flag hanger near my

71
00:04:13.955 --> 00:04:15.075
desk, and I recited the pledge.

72
00:04:15.835 --> 00:04:19.285
When I turned around, I was astounded that no one

73
00:04:20.125 --> 00:04:22.755
had stood up, shielding my disappointment.

74
00:04:22.915 --> 00:04:25.235
I picked up a marker and began writing some

75
00:04:25.235 --> 00:04:26.315
names on the whiteboard.

76
00:04:28.605 --> 00:04:31.965
Hickman, Garrity Smith, Marin.

77
00:04:32.945 --> 00:04:34.405
Who are those people? Ask the student.

78
00:04:35.165 --> 00:04:37.605
I said, those are my pilot friends I knew

79
00:04:37.785 --> 00:04:38.805
who died for America.

80
00:04:39.905 --> 00:04:41.565
And to my class of 29 students.

81
00:04:41.725 --> 00:04:44.525

I asked, how many of you, I'm in the military area,

82
00:04:44.545 --> 00:04:46.205
by the way, how many of you have one

83
00:04:46.205 --> 00:04:47.845
or both parents serving in the military?

84
00:04:50.345 --> 00:04:54.235
14 hands went up. So for those parents

85
00:04:55.405 --> 00:04:57.575
serving your country and our country

86
00:04:57.675 --> 00:05:00.375
and my buddies listed on the board that died for that flag,

87
00:05:00.795 --> 00:05:02.775
we will stand up for the pledge every morning.

88
00:05:02.875 --> 00:05:04.985
Agreed. They agreed.

89
00:05:05.285 --> 00:05:08.905
And no further episodes of such defiant behavior occurred.

90
00:05:11.165 --> 00:05:13.425
Now one of our three days on, on our three days

91
00:05:13.425 --> 00:05:15.985
of discussion here, we include positive steps

92
00:05:16.125 --> 00:05:21.055
to improve our safety management systems is lifesaving to do

93
00:05:21.055 --> 00:05:24.925
so because the downside of not addressing these issues

94
00:05:25.665 --> 00:05:30.205
is seen on my full list of names, remembered in my prayers,

95
00:05:30.625 --> 00:05:32.125
and includes only three.

96
00:05:33.905 --> 00:05:37.355
Those last three combat losses. Everything.

97
00:05:37.595 --> 00:05:40.015
Everyone else was lost in an accident.

98
00:05:42.545 --> 00:05:44.815
Aside from that sobering observation, I want

99
00:05:44.815 --> 00:05:48.255
to school us today on some legacy aircraft

100
00:05:49.445 --> 00:05:50.705
planes We thought we knew.

101
00:05:51.775 --> 00:05:53.465
What do you do when mission changes

102
00:05:53.645 --> 00:05:56.785
and discovery of original design deficiencies bite us

103
00:05:57.345 --> 00:05:58.925
in the aftermarket environment.

104
00:05:59.505 --> 00:06:01.165
We already know the OEM tail.

105
00:06:01.815 --> 00:06:04.315
That's the original air equipment manufacturer,

106
00:06:05.295 --> 00:06:07.875
how its components on a whole aircraft went

107
00:06:07.875 --> 00:06:12.195
through the whole smear, design, build, test, sell,

108
00:06:12.915 --> 00:06:14.235

customer flies, iterations.

109
00:06:15.455 --> 00:06:18.345
Well, this is the twice toll tale of five serious issues

110
00:06:18.345 --> 00:06:21.565
with aftermarket and airplanes that I have flown

111
00:06:21.565 --> 00:06:22.925
that uniquely manage the loss

112
00:06:22.925 --> 00:06:26.285
and control flight problems, for example, from gs, from ice,

113
00:06:26.395 --> 00:06:28.285
from breaks, from propulsion and fuel.

114
00:06:31.855 --> 00:06:34.075
Uh, you probably recognize this is the F 1 0 4

115
00:06:34.075 --> 00:06:38.905
that's in front of that test pile school out at Edwards.

116
00:06:39.015 --> 00:06:41.025
I've spoken there at different times on

117
00:06:41.025 --> 00:06:42.265
hazardous testing as well.

118
00:06:42.265 --> 00:06:46.205
At the one at Lexington Park, Kelly Johnson

119
00:06:46.305 --> 00:06:49.125
of the Lockheed Skunkworks designed a piloted missile

120
00:06:49.125 --> 00:06:51.445
that would climb to 50,000 feet in one minute

121
00:06:51.665 --> 00:06:54.365
and launch missiles to down Cold War adversary aircraft

122
00:06:54.365 --> 00:06:55.805
before they could threaten our territory.

123
00:06:56.545 --> 00:07:00.485
The sleek design was the F 1 0 4 wingspan was spare

124
00:07:00.745 --> 00:07:02.125
as was the fuel capacity.

125
00:07:02.725 --> 00:07:04.965
A tail parachute dealt with a high landing speed

126
00:07:04.965 --> 00:07:06.645
and the elevators were mounted high out

127
00:07:06.645 --> 00:07:08.445
of the slipstream from the wings.

128
00:07:09.655 --> 00:07:10.945
Besides it being a past

129
00:07:10.975 --> 00:07:13.025
interceptor, it's set in the present.

130
00:07:13.625 --> 00:07:17.105
I think a company that's coming year is gonna launch six 10

131
00:07:17.545 --> 00:07:21.625
kilogram satellites into orbit from 60,000 feet

132
00:07:22.245 --> 00:07:25.865
to try to use the F 1 0 4 in its capacity.

133
00:07:25.885 --> 00:07:28.705
It still exists Over the course of the years,

134
00:07:28.725 --> 00:07:31.065
the star fighter speed and altitude made a natural part

135
00:07:31.065 --> 00:07:32.585

of NASA's stable of aircraft,

136
00:07:32.585 --> 00:07:37.085
including the rocket powered version that yielded altitudes

137
00:07:37.085 --> 00:07:38.325
above a hundred thousand feet.

138
00:07:39.365 --> 00:07:43.335
However, one repurposing, can I use that word now?

139
00:07:43.335 --> 00:07:45.415
That's a big deal. One repurposing

140
00:07:45.415 --> 00:07:47.735
of this fabulously fast plane has been the fighter mission

141
00:07:48.085 --> 00:07:49.255
purchased by nato.

142
00:07:49.675 --> 00:07:52.015
One country Germany ordered over 3000 of them

143
00:07:52.685 --> 00:07:54.945
not worried about flying somewhere to join a fight

144
00:07:55.295 --> 00:07:58.385
because the country's frontline location would see their

145
00:07:58.385 --> 00:08:02.835
adversaries almost overhead, but the yanking

146
00:08:02.835 --> 00:08:06.615
and banking maneuvering of the fighter pilot

147
00:08:06.995 --> 00:08:09.055
and a plane with a high stall speed to start with,

148
00:08:09.155 --> 00:08:10.895
put 'em in imminent danger of stall,

149
00:08:12.575 --> 00:08:13.855
cocked up the plane's wings,

150
00:08:13.865 --> 00:08:18.585
block out the tail in the elevator needed to recover.

151
00:08:20.155 --> 00:08:23.305
Hence, the gallow's humor of pilot bar songs comes true

152
00:08:24.355 --> 00:08:27.465
stall spin, crash burn die.

153
00:08:28.155 --> 00:08:30.535
Nearly 300 F 1 0 4 aircraft were destroyed

154
00:08:30.535 --> 00:08:31.575
due to maneuvering issues.

155
00:08:32.305 --> 00:08:35.115
Many of these accidents happen in the German Air Force pilot

156
00:08:35.355 --> 00:08:36.715
training program here in Texas.

157
00:08:37.655 --> 00:08:40.635
If control is lost, the pilot hopefully ejects safely

158
00:08:42.115 --> 00:08:43.935
and out the bottom of the aircraft, by the way,

159
00:08:43.935 --> 00:08:46.615
so he doesn't hit the, uh, the tail flying tail

160
00:08:47.795 --> 00:08:50.735
and due to, uh, the tail plane interference causing injury

161
00:08:50.735 --> 00:08:54.995
to the pilot, if an up rejection were done, A song verse

162
00:08:55.065 --> 00:08:57.355

with stall no recovery.

163
00:08:57.925 --> 00:09:01.195
Eject has too many syllables to fit the earlier tune,

164
00:09:01.255 --> 00:09:03.355
but fortunately has no impact.

165
00:09:05.635 --> 00:09:07.295
No punt included. Well, here we go.

166
00:09:07.715 --> 00:09:10.215
Uh, so this is a picture of this, uh, plane here,

167
00:09:10.215 --> 00:09:14.175
which is a fawer FF 28, which was made for the Navy.

168
00:09:15.035 --> 00:09:17.175
The model was made for I don't think too many exists.

169
00:09:17.395 --> 00:09:19.375
We never bought it, but I did test it.

170
00:09:19.375 --> 00:09:22.735
It was for carrier landings to, to take people back

171
00:09:22.735 --> 00:09:25.735
and forth from the airplane and take equipment,

172
00:09:26.035 --> 00:09:28.905
but it was too big a footprint for the, for the ship.

173
00:09:29.405 --> 00:09:31.295
But I did wanna point it out only

174
00:09:31.295 --> 00:09:34.415
because it shows the high tail here.

175
00:09:34.415 --> 00:09:35.855
And if you pull the plane up high,

176
00:09:36.205 --> 00:09:38.295
then the fuselage blanks out the tail.

177
00:09:38.635 --> 00:09:40.935
And remember the tail is how we recover from a stall.

178
00:09:41.515 --> 00:09:44.695
So you couldn't get a plane like this except extraordinarily

179
00:09:45.365 --> 00:09:46.935
difficult to get it up like that.

180
00:09:47.235 --> 00:09:48.615
But a fighter is possible.

181
00:09:48.615 --> 00:09:51.295
Certainly it was possible in the F 1 0 4.

182
00:09:54.775 --> 00:09:58.395
So this t detail arrangement on the F 28 versus the A seven,

183
00:09:58.925 --> 00:10:00.155
which is, uh, here,

184
00:10:04.725 --> 00:10:07.145
uh, there's, there's a very high angle attack for them,

185
00:10:07.685 --> 00:10:10.185
but, uh, the, uh, what we want,

186
00:10:10.185 --> 00:10:12.225
of course when we have a stall, we want the plane

187
00:10:12.225 --> 00:10:13.425
to the nose to fall through.

188
00:10:13.485 --> 00:10:16.305
So it has flying speed. It'll fly itself out of it.

189
00:10:16.975 --> 00:10:21.195

The A seven here is, uh, has the tail, of course, uh,

190
00:10:21.225 --> 00:10:23.115
located down here on the,

191
00:10:23.115 --> 00:10:24.715
on the fuselage rather than up high.

192
00:10:25.525 --> 00:10:27.025
And what's this fuselage stuff?

193
00:10:27.295 --> 00:10:28.785
Weren't the French there at the beginning?

194
00:10:29.265 --> 00:10:33.385
Fuselage emp, peto tube. And how do you spell hangar?

195
00:10:34.225 --> 00:10:37.425
GAR because it was a shed for French airplanes.

196
00:10:38.565 --> 00:10:39.655
Just, just a thought.

197
00:10:39.975 --> 00:10:42.775
I also have the part certified to teach English.

198
00:10:45.205 --> 00:10:47.695
Okay, here, uh, this is where we fly, flew a lot.

199
00:10:47.975 --> 00:10:52.295
I made 12 different deployments to Edwards from Tux River

200
00:10:52.295 --> 00:10:54.295
because it's, it's for hazardous testing.

201
00:10:55.605 --> 00:10:58.705
So the F 1 0 4, what did we do the, to fix the problem?

202
00:10:58.865 --> 00:11:01.945
Lockheed installed a flight control fix to control stalling,

203
00:11:01.975 --> 00:11:05.025
pulling the airplanes, airplanes stick back too far,

204
00:11:05.085 --> 00:11:08.025
and gauges in opposition force forcing the nose down

205
00:11:08.285 --> 00:11:11.465
to prevent wing stall result.

206
00:11:11.505 --> 00:11:12.945
Lockheed modified the system

207
00:11:13.045 --> 00:11:14.745
to inhibit the entrance to the stall.

208
00:11:15.335 --> 00:11:17.865
Okay, let's take a look at the A seven three different

209
00:11:17.865 --> 00:11:19.025
issues with this airplane.

210
00:11:19.205 --> 00:11:21.305
The Navy desperately needed an attack airplane

211
00:11:21.305 --> 00:11:24.025
with a turbo fan that could return to the ship

212
00:11:24.055 --> 00:11:26.785
with sufficient fuel to make several landing attempts if

213
00:11:26.785 --> 00:11:28.425
necessary, or orbit

214
00:11:28.485 --> 00:11:31.665
to ship while less fuel efficient airplanes were completed.

215
00:11:31.665 --> 00:11:35.705
Their landings like the f the crusader and the, uh, phantom

216
00:11:36.005 --> 00:11:38.025

and the sky hall, the makers

217
00:11:38.025 --> 00:11:40.585
of the A seven famously filled the back cover aviation week

218
00:11:40.585 --> 00:11:41.905
with a full page ad saying

219
00:11:42.785 --> 00:11:47.175
first 756 days from first fight to first flight.

220
00:11:47.755 --> 00:11:50.655
The proud tagline, it sailed right

221
00:11:50.655 --> 00:11:53.460
through the contractor in Navy testing and went to Vietnam.

222
00:11:53.460 --> 00:11:54.790
Five different lettered versions

223
00:11:54.790 --> 00:11:55.925
of the airplane were produced.

224
00:11:56.385 --> 00:11:59.965
The A, the B the C had Pratt Whitney engines all each one,

225
00:12:00.165 --> 00:12:03.325
TF 30 P six P eight, and P 4 0 8 were more powerful.

226
00:12:03.505 --> 00:12:05.645
And then finally they had the A seven D,

227
00:12:05.645 --> 00:12:06.725
which the Air Force bought

228
00:12:06.865 --> 00:12:10.165
and the A seven E, both of which had Allison engines.

229
00:12:12.345 --> 00:12:14.325
The, the thus we arrive at the problem.

230
00:12:15.165 --> 00:12:18.125
A 70 Allison engine failures unexplained Allison engine

231
00:12:18.135 --> 00:12:20.165
fails occurred at full power on takeoff.

232
00:12:20.185 --> 00:12:21.965
The Navy started shedding engine parts

233
00:12:22.305 --> 00:12:24.725
and the plane destruction and lost some pilots.

234
00:12:24.985 --> 00:12:26.605
The cause was a defective spacer

235
00:12:26.605 --> 00:12:28.765
between stages finally discovered

236
00:12:28.765 --> 00:12:30.805
during flight test deployed.

237
00:12:31.045 --> 00:12:34.245
Carriers had to perform a two minute cook on the catapult.

238
00:12:34.465 --> 00:12:37.325
You went full power, the catapult officer stood back.

239
00:12:37.505 --> 00:12:38.645
If the engine didn't fail,

240
00:12:38.875 --> 00:12:40.485
then you took off and you went to combat.

241
00:12:41.545 --> 00:12:43.525
You can imagine how bad that was on board.

242
00:12:43.595 --> 00:12:45.125
It's easy to ground airplanes,

243
00:12:45.125 --> 00:12:47.285

but the ones that are in combat, you can't do that.

244
00:12:47.865 --> 00:12:49.565
So if the engine didn't fail, it was launched.

245
00:12:49.595 --> 00:12:52.005
This was turned the two, the two minute cook.

246
00:12:52.785 --> 00:12:55.405
Now we flew at Edwards and,

247
00:12:55.585 --> 00:12:59.245
and we flew 12 hour days with grueling engine profiles

248
00:12:59.245 --> 00:13:02.815
to force a failure or to redeem a fix by the engineers.

249
00:13:03.285 --> 00:13:05.895
Some wag turned it operation hot pants

250
00:13:06.435 --> 00:13:08.775
and apt to name all flights were flown at

251
00:13:08.775 --> 00:13:10.735
or above high key, an initial point

252
00:13:10.735 --> 00:13:12.975
for some flame out landings if they were required.

253
00:13:13.685 --> 00:13:16.505
We were all trained for that on the 15,000 foot main runway.

254
00:13:16.965 --> 00:13:19.105
Or it's 25,000 foot extension.

255
00:13:19.285 --> 00:13:21.585
If you've been out there, you know that this is 15,000.

256
00:13:21.585 --> 00:13:24.625
You got another 25,000 out here. Hard sand.

257
00:13:26.825 --> 00:13:30.725
The result after weeks, El Allison had a fix that worked.

258
00:13:32.455 --> 00:13:35.435
We used the, um, the facilities up at China Lake

259
00:13:35.435 --> 00:13:36.555
about 60 miles away.

260
00:13:36.785 --> 00:13:37.955
It's a naval air facility.

261
00:13:38.255 --> 00:13:39.835
You can see some of the planes that we used.

262
00:13:39.935 --> 00:13:42.355
One was China Lakes airplane. This is the crew.

263
00:13:42.655 --> 00:13:44.395
Uh, this over here on this right here.

264
00:13:44.395 --> 00:13:46.875
This jet was my engineer, Larry Thomas.

265
00:13:47.615 --> 00:13:51.195
And, uh, I was there at Pepe. Ew, Terry, Terry Brady.

266
00:13:51.615 --> 00:13:53.235
And instead of having 15

267
00:13:53.255 --> 00:13:55.435
or 20 people come to fix our airplanes,

268
00:13:55.735 --> 00:13:57.515
we only brought four mechanics with us.

269
00:13:57.575 --> 00:13:58.995
And the Air Force was astounded

270
00:13:59.055 --> 00:14:01.395

how many capabilities each one of them had.

271
00:14:07.805 --> 00:14:12.295
Finally, uh, Allison developed a fix.

272
00:14:12.515 --> 00:14:14.375
We flew it, it tested fine.

273
00:14:14.715 --> 00:14:18.775
And so the manufacturer finished that fi, fixed that defect,

274
00:14:18.995 --> 00:14:22.575
but it wasn't LTV, it was Allison, the engine maker.

275
00:14:28.005 --> 00:14:29.505
The next problem we had with the uh,

276
00:14:29.825 --> 00:14:32.745
A seven was hot JP four back from overseas.

277
00:14:32.785 --> 00:14:34.785
The a sevens were often flown to bases

278
00:14:35.655 --> 00:14:38.265
that didn't use the high flashpoint JP five fuel.

279
00:14:38.335 --> 00:14:39.985
This is the fuels that we're using at the time.

280
00:14:40.405 --> 00:14:42.945
It was a higher cut fuel for kerosene.

281
00:14:43.765 --> 00:14:44.945
We needed that on the aircraft.

282
00:14:44.945 --> 00:14:46.745
Carriers got 120 degree flashpoint,

283
00:14:46.895 --> 00:14:49.185
both JP four Air Force fuel, similar

284
00:14:49.205 --> 00:14:52.805
to commercial jet fuel was 26.4 pounds per gallon.

285
00:14:52.805 --> 00:14:55.565
And the JP five from the air the Navy used it was

286
00:14:55.585 --> 00:14:56.925
6.8 pounds per gallon.

287
00:14:57.275 --> 00:15:00.245
Both of 'em were approved for the A seven V.

288
00:15:00.635 --> 00:15:01.965
Then at about that time,

289
00:15:02.045 --> 00:15:04.725
a Vaught contractor pilot flew across country across

290
00:15:04.725 --> 00:15:05.925
Georgia with JP four.

291
00:15:06.625 --> 00:15:09.785
He was the, um, uh, Navy, uh, correction.

292
00:15:09.785 --> 00:15:11.305
He was a Marine Corps trained aviator,

293
00:15:11.305 --> 00:15:14.305
and he was a, as a member of this society, Nelson Gillette.

294
00:15:14.725 --> 00:15:17.545
He had a fi high altitude flame out while transiting

295
00:15:17.545 --> 00:15:18.625
Georgia ejected safely.

296
00:15:18.845 --> 00:15:20.505
No accident was needed or filed

297
00:15:20.575 --> 00:15:23.305

because following its manufacturer

298
00:15:23.305 --> 00:15:24.545
that the New Navy airplane was

299
00:15:24.925 --> 00:15:26.345
bailed back to the contractor.

300
00:15:26.895 --> 00:15:29.825
Unfortunately, the Navy test officials had no knowledge

301
00:15:29.825 --> 00:15:31.625
of this flame out, the ejection, the loss

302
00:15:31.625 --> 00:15:33.545
of the airplane or how it happened.

303
00:15:34.715 --> 00:15:37.785
Sadly, Nelson subsequently died in the Philippines doing

304
00:15:38.065 --> 00:15:40.705
demonstration work for the foreign military sales program.

305
00:15:42.125 --> 00:15:44.995
A few weeks later, on a June Friday afternoon,

306
00:15:45.155 --> 00:15:48.915
I departed a blistering hot NAS Navy New Orleans runway,

307
00:15:49.625 --> 00:15:50.755
returning to Pax River

308
00:15:50.755 --> 00:15:52.595
with a critical park for a fellow test pilot.

309
00:15:53.865 --> 00:15:56.265
I had full fuel tanks, both internal in the wings,

310
00:15:56.265 --> 00:15:58.105
10,200 pounds of JP four,

311
00:15:58.105 --> 00:15:59.865
and all 20 minutes later,

312
00:16:00.025 --> 00:16:03.505
I was level at 33,000 feet in a bright blue sky,

313
00:16:04.705 --> 00:16:06.735
three miles above the white clouds

314
00:16:06.925 --> 00:16:09.455
that forever in every direction.

315
00:16:10.035 --> 00:16:12.695
How fortunate to be a pilot on such a day, I thought

316
00:16:14.155 --> 00:16:16.685
then I felt two nudges in my back, similar to my son,

317
00:16:16.685 --> 00:16:18.845
kicked the backseat of the car when I was driving,

318
00:16:20.375 --> 00:16:23.415
then silence a 24,000 pound glider.

319
00:16:24.355 --> 00:16:27.735
The engine RPM gauge was unwinding from 92% towards a wind

320
00:16:27.735 --> 00:16:29.135
windmilling speed of 25%.

321
00:16:29.475 --> 00:16:30.815
The compressor dropped off line

322
00:16:30.815 --> 00:16:32.975
and my chest strained against my torso harness.

323
00:16:33.555 --> 00:16:37.295
As every bo body part expanded to 33,000 foot altitude

324
00:16:37.635 --> 00:16:39.415

and a minus 50 degree temperature.

325
00:16:40.035 --> 00:16:41.615
The generator had dropped off the line

326
00:16:41.615 --> 00:16:43.055
and now the engine engines were gone.

327
00:16:43.195 --> 00:16:45.535
The control stick was frozen in one position

328
00:16:45.535 --> 00:16:47.295
as the hydraulic pump dropped off.

329
00:16:47.365 --> 00:16:50.055
Line two, I yanked a red T handle down

330
00:16:50.075 --> 00:16:52.335
by my right knee breaking its safety wire

331
00:16:52.755 --> 00:16:54.295
and it allowed a ram air turbine

332
00:16:54.755 --> 00:16:56.255
to flop out into the airstream.

333
00:16:56.855 --> 00:16:59.455
I found a, it was like a pinwheel held out a car window.

334
00:16:59.835 --> 00:17:02.815
It quickly spun up the speed its sturdy, but tiny pump

335
00:17:02.875 --> 00:17:05.215
and generator gave me limited hydraulic power

336
00:17:05.235 --> 00:17:07.655
for flight controls and some electricity

337
00:17:07.655 --> 00:17:10.375
for navigation engine, engine instruments plus radios

338
00:17:11.475 --> 00:17:13.105
after delivering a mayday call.

339
00:17:13.225 --> 00:17:16.865
I, I noted from my chart that Maxwell Air Force base

340
00:17:17.715 --> 00:17:19.295
at Montgomery, Alabama was closest

341
00:17:19.355 --> 00:17:21.525
to me about 32 miles away.

342
00:17:22.145 --> 00:17:24.255
Of course, I'm still on top of the clouds.

343
00:17:25.645 --> 00:17:26.805
I planned a dead stick landing

344
00:17:26.805 --> 00:17:27.965
to hit the ground on the runway

345
00:17:28.585 --> 00:17:30.645
or one of the two in about 14 minutes,

346
00:17:31.105 --> 00:17:33.445
the tower gave me clearance for a precautionary approach.

347
00:17:33.685 --> 00:17:35.045
I tried the Air Start procedure.

348
00:17:35.625 --> 00:17:37.045
The attempt was in vain

349
00:17:37.155 --> 00:17:39.325
because the fuel flow gauge was a zero.

350
00:17:40.225 --> 00:17:44.175
The emergency manual said if fuel flow shows zero,

351
00:17:45.035 --> 00:17:48.135

no air starts possible plan ejection on a safe heading

352
00:17:49.955 --> 00:17:53.215
on my precautionary approach to final, I had left the, uh,

353
00:17:53.715 --> 00:17:57.255
the uniters on the engine suddenly came alive

354
00:17:59.235 --> 00:18:00.455
and I landed uneventfully.

355
00:18:01.595 --> 00:18:06.335
The result. After conversations with the engineer from uh,

356
00:18:07.015 --> 00:18:09.895
LTV who tested the fuel system, he admitted

357
00:18:10.485 --> 00:18:12.855
that the JP four tests barely made the spec.

358
00:18:13.655 --> 00:18:15.775
I had him join our test team in Edwards where we proved

359
00:18:15.775 --> 00:18:17.735
that hot JP four was the problem.

360
00:18:19.345 --> 00:18:21.135
Washington said, stay at Edwards

361
00:18:21.135 --> 00:18:22.575
until you develop a flight profile

362
00:18:22.575 --> 00:18:24.615
that will permit wing fuel to be cooled at altitude

363
00:18:24.715 --> 00:18:26.775
before transferred into the fuselage tech.

364
00:18:27.005 --> 00:18:29.295
Then write up the necessary flight manual changes.

365
00:18:31.485 --> 00:18:35.335
What happened was the, uh, how many minutes does it cook,

366
00:18:36.165 --> 00:18:38.695
cook an egg at, uh, Denver, four minutes.

367
00:18:39.275 --> 00:18:40.415
Why Instead of three,

368
00:18:40.415 --> 00:18:41.975
because the pressure's down, you get

369
00:18:41.975 --> 00:18:43.935
to a certain temperature and once you get start boiling,

370
00:18:43.935 --> 00:18:45.015
you can't get a higher temperature.

371
00:18:45.205 --> 00:18:47.175
Well, the same thing was happening in the fuel tank

372
00:18:47.445 --> 00:18:50.175
because the hot JP four, which was in the wings,

373
00:18:50.555 --> 00:18:52.175
was transferred into the sum tank.

374
00:18:52.475 --> 00:18:54.335
And when that dumped in, we're going to altitude

375
00:18:54.335 --> 00:18:56.095
and all the time we're climbing to altitude,

376
00:18:56.115 --> 00:18:57.215
the pressure is dropping.

377
00:18:57.815 --> 00:18:58.855
Suddenly the fuel boils.

378
00:18:58.925 --> 00:19:00.615

They had one fuel pump later,

379
00:19:00.615 --> 00:19:01.815
the Air Force had two in theirs.

380
00:19:01.915 --> 00:19:04.335
One fuel pump. You gotta get 800 pound,

381
00:19:04.335 --> 00:19:07.415
800 PSI out the fuel pump to run that engine.

382
00:19:07.755 --> 00:19:10.615
If it doesn't have any input, the engine quits.

383
00:19:13.345 --> 00:19:16.485
So, uh, we tested hot JP four in the sump

384
00:19:16.485 --> 00:19:18.365
and we found out that this was the cause.

385
00:19:21.675 --> 00:19:26.215
The fix. We decided, uh, we worked out a profile if hot,

386
00:19:26.275 --> 00:19:29.575
if JP four was used, when ground fueling temperature was

387
00:19:29.575 --> 00:19:33.015
above 60 degrees, then a modified climb out was used.

388
00:19:33.555 --> 00:19:37.045
You held back the wing fuel transfer until you got

389
00:19:37.045 --> 00:19:40.605
to altitude, maybe a 25,000 fly around

390
00:19:41.105 --> 00:19:42.805
and it'll quickly cool down the fuel.

391
00:19:43.345 --> 00:19:45.285
And then you haven't burned up the all

392
00:19:45.285 --> 00:19:48.005
of fuel in this pump tank, maybe 10 minutes.

393
00:19:48.265 --> 00:19:50.245
And then to open the wing fuel got get,

394
00:19:50.265 --> 00:19:52.125
and the coal fuel will go in there

395
00:19:52.505 --> 00:19:54.245
and it won't have a problem after that.

396
00:19:55.975 --> 00:19:58.135
So what did we do?

397
00:19:58.555 --> 00:20:01.695
The fix was just to modify the behavior of the pilot.

398
00:20:02.065 --> 00:20:03.895
There was nothing done at the level

399
00:20:03.895 --> 00:20:06.335
of the manufacturer or anywhere else.

400
00:20:07.405 --> 00:20:09.265
Of course, those planes were la later sold

401
00:20:09.285 --> 00:20:11.585
to foreign military sales with plenty of,

402
00:20:11.865 --> 00:20:14.345
I didn't write the manual in Portuguese

403
00:20:14.345 --> 00:20:15.625
for them, but I did it in English.

404
00:20:16.565 --> 00:20:19.305
Uh, the Navy, a sevens were princely based, by the way,

405
00:20:19.725 --> 00:20:22.705

at Fresno Naval Air Station in Lemore, California.

406
00:20:23.625 --> 00:20:25.795
They have a cal, they have an aqueduct there,

407
00:20:26.095 --> 00:20:28.475
but trust me, it doesn't rain a whole lot there.

408
00:20:29.215 --> 00:20:32.835
So we came back from overseas with the a sevens runways

409
00:20:32.905 --> 00:20:34.235
that were wet were not common.

410
00:20:35.155 --> 00:20:37.835
Remember this is the airplane we put through trust testing.

411
00:20:38.175 --> 00:20:40.915
But when the combat tested airplane came back from the wars,

412
00:20:41.065 --> 00:20:42.795
sometimes people landed on wet

413
00:20:42.795 --> 00:20:44.475
runways and they couldn't stop.

414
00:20:45.225 --> 00:20:48.485
They rolled 14,000 feet and went off the end of the runway.

415
00:20:49.115 --> 00:20:51.485
Finally, after several pilots put their tail hooks down

416
00:20:51.485 --> 00:20:53.085
to catch emergency arresting cables

417
00:20:54.125 --> 00:20:57.995
installed on the runways, more senior people looked at it

418
00:20:57.995 --> 00:20:59.915
and said, it's not just bad pilots.

419
00:20:59.915 --> 00:21:01.235
There's something wrong with the airplane.

420
00:21:01.535 --> 00:21:04.035
So a team, once again from Pax River went to Edwards.

421
00:21:04.035 --> 00:21:06.195
We wedded down several thousand feet of runway

422
00:21:06.735 --> 00:21:09.275
and a sevens at different speeds under the pavement at

423
00:21:09.275 --> 00:21:10.715
various water depths

424
00:21:10.715 --> 00:21:14.115
and tried to stop unbelievably, the exit

425
00:21:14.115 --> 00:21:16.755
and entrance speeds when they went were almost the same.

426
00:21:17.485 --> 00:21:19.195
There was no perceptible slowing down.

427
00:21:19.415 --> 00:21:21.795
Now, you know, you all know about the rule of thumb.

428
00:21:22.215 --> 00:21:26.635
Uh, the, uh, speed for uh, this kind of thing is,

429
00:21:27.255 --> 00:21:30.995
uh, nine times the square root of the, uh, tire pressure.

430
00:21:31.455 --> 00:21:33.395
But that didn't seem to apply here.

431
00:21:34.135 --> 00:21:35.235
But anyhow, the display

432
00:21:35.235 --> 00:21:37.675

of hi hydroplaning at any speed seemed to confirm

433
00:21:37.675 --> 00:21:39.435
that arrested landing had to be made.

434
00:21:40.095 --> 00:21:42.185
And so that was the decree.

435
00:21:42.365 --> 00:21:44.345
If it's raining runway's wet,

436
00:21:44.345 --> 00:21:46.065
make an arrested landing end of story.

437
00:21:46.245 --> 00:21:48.105
So the Navy did that again with procedures.

438
00:21:48.155 --> 00:21:50.185
There was nothing required from the manufacturer.

439
00:21:54.215 --> 00:21:56.835
The eng. This is the mysterious engineer from undisclosed

440
00:21:57.075 --> 00:21:58.315
location from LTV.

441
00:21:58.315 --> 00:22:00.395
He took vacation and he came and helped us.

442
00:22:00.735 --> 00:22:01.955
It was really, it was very, very helpful.

443
00:22:02.995 --> 00:22:05.175
And, uh, these are just different orientations.

444
00:22:05.415 --> 00:22:07.855
I wanted to show you this, uh, uh, one more time

445
00:22:07.855 --> 00:22:10.215
because we have not only the long runway,

446
00:22:10.315 --> 00:22:12.775
but over here the former George Air Force base is

447
00:22:12.775 --> 00:22:15.815
where we're putting all the Max Boeing, uh, 7 37 maxes.

448
00:22:15.885 --> 00:22:19.135
They're all stored over there. This way, this way.

449
00:22:19.135 --> 00:22:21.295
There's a lot of 'em in Victoryville, California.

450
00:22:26.635 --> 00:22:30.385
Now this is, uh, this is delivery

451
00:22:30.525 --> 00:22:31.745
for those from other countries.

452
00:22:31.945 --> 00:22:34.385
Delivery is how you paint the airplane, Navy or whatever.

453
00:22:34.685 --> 00:22:39.625
In this case, this is air nip on flying a a Neon Ys 11.

454
00:22:40.795 --> 00:22:42.975
Uh, what we did, we made a cargo plane out of it.

455
00:22:42.975 --> 00:22:46.935
So we nicely took the compressor off the other engine

456
00:22:46.935 --> 00:22:48.695
so you couldn't go above 10,000 feet.

457
00:22:49.115 --> 00:22:51.095
Uh, we took the nice door here out

458
00:22:51.095 --> 00:22:53.135
and we put a door in, I think with a can opener

459
00:22:53.295 --> 00:22:55.215

'cause we didn't have to worry about pressurization seals.

460
00:22:55.215 --> 00:22:58.815
And we put a six foot, six foot by 10 foot door there.

461
00:22:59.435 --> 00:23:02.935
And, uh, you, uh, the important thing here is they have the

462
00:23:03.715 --> 00:23:08.285
red, uh, they have the black, uh, areas here

463
00:23:08.625 --> 00:23:09.725
for deicing.

464
00:23:09.785 --> 00:23:12.165
The boots are here, here and on the wings.

465
00:23:12.165 --> 00:23:14.885
This is important. My experience

466
00:23:14.885 --> 00:23:17.085
with the passenger airline crews found

467
00:23:17.085 --> 00:23:18.605
them animated and good natured.

468
00:23:19.025 --> 00:23:21.805
But when revenue streams dried up with a startup airline,

469
00:23:22.715 --> 00:23:23.995
I became a freight dog.

470
00:23:24.295 --> 00:23:27.435
That's what they call night pilots who

471
00:23:28.055 --> 00:23:29.975
fly cargo night.

472
00:23:30.035 --> 00:23:32.655
Pilots are too reflective. They do what works. Get it done.

473
00:23:32.765 --> 00:23:34.895
Expedient is good and complacent is not.

474
00:23:35.065 --> 00:23:37.455
These rules keep them calm in any situation,

475
00:23:42.945 --> 00:23:46.325
Picture this, I I approach airborne Express's hub

476
00:23:46.325 --> 00:23:47.365
at Wilmington, Ohio.

477
00:23:47.395 --> 00:23:49.765
It's near midnight on a snowy night in Ohio,

478
00:23:51.885 --> 00:23:55.065
30 degrees and earlier, snow had slack

479
00:23:55.085 --> 00:23:57.065
and still snowflakes were mesmerizing.

480
00:23:57.125 --> 00:23:59.705
As they streamed towards the cockpit windows highlighted in

481
00:23:59.705 --> 00:24:02.145
the glare of the landing lights on final approach

482
00:24:02.145 --> 00:24:04.705
with gear down and approached flap set

483
00:24:04.895 --> 00:24:06.305
with me flying in the right seat.

484
00:24:06.325 --> 00:24:09.225
I'm on the glide soap and I call out flaps 30 landing

485
00:24:09.225 --> 00:24:14.145
checklist, and

486
00:24:14.145 --> 00:24:16.865

the yolk flies out of my hand just like that folder did.

487
00:24:18.015 --> 00:24:20.785
What the hell Art are you, you take control.

488
00:24:21.365 --> 00:24:24.185
I'm not taking control. At 10 nos steer V speed.

489
00:24:24.235 --> 00:24:27.105
Bring those flaps up to 15 and settle down.

490
00:24:27.155 --> 00:24:30.775
Watch the yoke back in my head.

491
00:24:32.665 --> 00:24:35.435
What the hell? Astounded. I said nothing.

492
00:24:36.035 --> 00:24:38.675
I had my pitch control. I kissed the Japanese rice rocket on

493
00:24:38.675 --> 00:24:40.235
the runway and then we taxied wordlessly

494
00:24:40.235 --> 00:24:42.035
to parking outside in the snow.

495
00:24:42.075 --> 00:24:45.275
I examined the wings for ice, but I found only a light film.

496
00:24:45.815 --> 00:24:48.705
But up behind the tail, I found that there,

497
00:24:49.005 --> 00:24:51.025
it was discovered that there was some ice up here

498
00:24:51.025 --> 00:24:53.425
behind her, which constructed the longitudinal control.

499
00:24:54.055 --> 00:24:55.825
Well, the problem was we went to the fa a

500
00:24:55.825 --> 00:24:56.865
and I said this ever happened.

501
00:24:56.865 --> 00:24:59.345
They said it's, we've heard it a couple of times.

502
00:24:59.735 --> 00:25:02.185
Well, I was the only test pilot at the company, so I,

503
00:25:02.185 --> 00:25:03.465
they turned me loose to fix it.

504
00:25:03.805 --> 00:25:05.705
And I I loved doing the problem,

505
00:25:06.015 --> 00:25:07.305
working the problem for him.

506
00:25:07.305 --> 00:25:11.145
Meanwhile, another airplane,

507
00:25:11.385 --> 00:25:12.985
YS 11 was flying in darkness

508
00:25:12.985 --> 00:25:15.265
and snow one morning to take their plane from Ohio

509
00:25:15.685 --> 00:25:18.505
or Indiana over to Ohio to get ready

510
00:25:18.525 --> 00:25:20.505
for pick up a girl's soccer team or something.

511
00:25:20.815 --> 00:25:22.105
They flew with the autopilot.

512
00:25:22.125 --> 00:25:24.705
The FA had said, if you have a problem with the autopilot,

513
00:25:24.705 --> 00:25:25.905

you should not use the autopilot.

514
00:25:25.905 --> 00:25:27.985
So you'll know what the control forces feel like.

515
00:25:28.365 --> 00:25:30.545
But they did it anyhow. And so on.

516
00:25:30.545 --> 00:25:33.185
Short final, when the crew disconnected the autopilot,

517
00:25:33.285 --> 00:25:35.385
the plane pitched down uncontrollably landed short

518
00:25:35.385 --> 00:25:38.675
and killed both of them in another contemporaneous accident.

519
00:25:38.695 --> 00:25:40.355
Now, the FA had put out a warning,

520
00:25:40.695 --> 00:25:43.755
do not use the autopilot if ing is suspected.

521
00:25:44.135 --> 00:25:48.435
So this is a commuter airline coming from Buffalo to Ohio.

522
00:25:48.715 --> 00:25:50.835
I think it was Dayton, captain by a man

523
00:25:50.855 --> 00:25:53.955
who talked continuously with his new female copilot.

524
00:25:54.345 --> 00:25:56.275
Despite icing, the autopilot was used

525
00:25:56.275 --> 00:25:57.315
throughout the approach phase.

526
00:25:57.315 --> 00:25:58.715
Short of the runway, the plane pitched over

527
00:25:58.715 --> 00:25:59.795
and killed everybody on board.

528
00:26:00.455 --> 00:26:02.595
The autopilot had disconnected automatically

529
00:26:02.915 --> 00:26:04.115
'cause the elevator control forces.

530
00:26:04.145 --> 00:26:06.355
Finally, there's a breakout force.

531
00:26:06.415 --> 00:26:08.675
And when it broke loose, the plane took, went down.

532
00:26:09.415 --> 00:26:11.875
The result, safety awareness was raised

533
00:26:11.895 --> 00:26:14.155
by regular discussions in winter, flying accidents.

534
00:26:14.475 --> 00:26:16.275
Personal contact with FAE by me

535
00:26:16.275 --> 00:26:18.355
and others, reinforced mutual solutions to problems.

536
00:26:18.355 --> 00:26:21.135
And I see unwise use of the autopilot

537
00:26:21.135 --> 00:26:23.775
with turboprops was pinpointed and given guardrails.

538
00:26:24.035 --> 00:26:25.775
Our company's weather limits on training

539
00:26:25.775 --> 00:26:26.895
flights were revised.

540
00:26:27.535 --> 00:26:30.895

Mishap stories were reviewed to prompt discussion

541
00:26:30.895 --> 00:26:33.735
and point out alternative paths to safety.

542
00:26:34.825 --> 00:26:35.645
And we never had another

543
00:26:35.885 --> 00:26:40.885
incident, A final word.

544
00:26:42.335 --> 00:26:44.285
Saw this in a barber shop not too long ago.

545
00:26:44.535 --> 00:26:46.245
Doing something bad is a mistake.

546
00:26:47.105 --> 00:26:49.695
Doing it again is a choice.

547
00:26:52.065 --> 00:26:54.845
And I think it's time for a break. You can see Garfield.

548
00:26:54.875 --> 00:26:56.205
He's on duty there sleeping.

549
00:26:56.665 --> 00:26:58.965
And finally someone brings him a cup of coffee

550
00:26:59.425 --> 00:27:00.805
and he says it's break time.

551
00:27:01.305 --> 00:27:02.305
Do you have any questions, folks?

552
00:27:08.695 --> 00:27:09.335
Questions? Anybody?

553
00:27:16.055 --> 00:27:17.465
Captain, I think you're off the hook.

554
00:27:18.305 --> 00:27:20.105
I think everyone wants to drink. Thank you.

555
00:27:27.885 --> 00:27:30.545
As I said, we're gonna have the panelists come up.

556
00:27:30.605 --> 00:27:32.705
Uh, what I'm gonna, what we're gonna do is we're gonna,

557
00:27:32.755 --> 00:27:36.105
we've just decided we'll take a 15 minute break, 15 minutes

558
00:27:36.405 --> 00:27:37.785
for the panelists to come on up.

559
00:27:38.115 --> 00:27:40.185
Gives the judges time to breathe.

560
00:27:40.485 --> 00:27:43.585
And you know, those of you that have multiple teams come up

561
00:27:43.885 --> 00:27:46.345
and join us on, uh, the row here.