WEBVTT

1
00:00:01.945 --> 00:00:03.165
All right, uh, let's see.

2
00:00:03.275 --> 00:00:05.285
Last presentation of the afternoon.

3
00:00:05.705 --> 00:00:07.405
Um, it's gonna be given to us

4
00:00:07.585 --> 00:00:10.165
by Lieutenant Commander Paul Oscar Meyer.

5
00:00:10.785 --> 00:00:14.845
Uh, he's from VX 20. He is currently the E two C two GFTD.

6
00:00:15.585 --> 00:00:19.165
Um, Oscar, uh, is obviously an E two pilot.

7
00:00:19.505 --> 00:00:23.885
He is, uh, primarily been working on, uh,

8
00:00:24.125 --> 00:00:25.725
E 2D aerial refueling.

9
00:00:26.345 --> 00:00:30.885
His presentation today is ambidextrous, a discussion

10
00:00:30.885 --> 00:00:32.565
of handling qualities and time

11
00:00:32.565 --> 00:00:35.365
to train assessment in a multi piloted aircraft.

12
00:00:36.195 --> 00:00:38.845
Without further ado, Oscar,

13
00:00:48.305 --> 00:00:49.725
Thanks for the introduction, Barb.

14
00:00:49.785 --> 00:00:53.205
And, uh, I realize I am the only thing standing between you

15
00:00:53.205 --> 00:00:56.285
and the bar this afternoon, so I promise to try

16
00:00:56.445 --> 00:00:57.965
and be faster and funnier.

17
00:00:58.545 --> 00:01:00.285
Um, but thanks for having me today.

18
00:01:00.285 --> 00:01:03.965
Here to, uh, discuss, uh, a unique thing, uh,

19
00:01:03.965 --> 00:01:05.525
that we've found in our airplane.

20
00:01:05.745 --> 00:01:07.725
Uh, discussing handling qualities

21
00:01:07.725 --> 00:01:10.325
and time to train a multi, multi piloted aircraft.

22
00:01:13.455 --> 00:01:17.165
March 5th, 2015, Oakland, a pitcher, pet Vanti

23
00:01:17.385 --> 00:01:20.405
and his major league debut warmed up throwing right-handed.

24
00:01:21.135 --> 00:01:23.885
While Cubs switch hitter Dexter Fowler took practice swings

25
00:01:23.885 --> 00:01:25.685
in the OnDeck circle, anticipating

26
00:01:25.685 --> 00:01:28.845
to bat right against the uniquely ambidextrous pitcher on

27
00:01:28.845 --> 00:01:31.445

the mountain to the surprise of the entire stadium.

28
00:01:31.505 --> 00:01:33.725
As Dexter Fowler entered the batter's box,

29
00:01:34.145 --> 00:01:36.005
van Didi switched his glove to the other hand

30
00:01:36.425 --> 00:01:38.205
and stepped on the rubber setting up

31
00:01:38.205 --> 00:01:39.245
to pitch the left-handed.

32
00:01:39.895 --> 00:01:42.725
Distraught, his limited preparation for batting left-handed

33
00:01:43.385 --> 00:01:44.805
Fowler went back to the dugout

34
00:01:44.805 --> 00:01:46.245
to be handed his other batting helmet

35
00:01:46.625 --> 00:01:47.845
so he could bat left-handed

36
00:01:47.905 --> 00:01:49.845
and proceeded to strike out swinging against the

37
00:01:49.905 --> 00:01:51.205
phenom ambidextrous pitcher.

38
00:01:52.235 --> 00:01:54.045
Besides inciting a shameless plug

39
00:01:54.045 --> 00:01:56.605
for my 2016 World Champion Chicago Cubs,

40
00:01:58.025 --> 00:02:01.045
Dexter Fowler's dilemma raises a compelling observation

41
00:02:01.045 --> 00:02:04.085
of skill transfer with applicability to our profession

42
00:02:04.085 --> 00:02:05.365
that may often be overlooked.

43
00:02:06.325 --> 00:02:09.965
Although Fowler's five year $82.5 million contract is far

44
00:02:09.965 --> 00:02:13.205
more lucrative than any normal pilot may ever be offered.

45
00:02:14.465 --> 00:02:17.125
The challenge of accomplishing high gain task operations

46
00:02:17.125 --> 00:02:19.805
from both seats of multi piloted aircraft should be

47
00:02:19.965 --> 00:02:21.165
approached with no less dedication

48
00:02:23.345 --> 00:02:24.565
As you can most likely surmise.

49
00:02:24.565 --> 00:02:26.925
From my opening slide and bio, our team has been charged

50
00:02:26.925 --> 00:02:28.365
with the task of developmental test

51
00:02:28.365 --> 00:02:30.525
and evaluation of the E 2D advanced hawkey

52
00:02:30.945 --> 00:02:32.165
air refueling capability.

53
00:02:32.985 --> 00:02:34.925
And so it was that six months ago I stood

54
00:02:34.925 --> 00:02:35.925

before our chief test pilot,

55
00:02:36.245 --> 00:02:38.525
a supremely respected Marine Corps C one 30 pilot,

56
00:02:39.145 --> 00:02:40.285
and briefed him on our plan

57
00:02:40.285 --> 00:02:42.205
to gain proficiency in a baseline aircraft

58
00:02:42.205 --> 00:02:43.765
during risk reduction in the lead up

59
00:02:43.765 --> 00:02:45.765
to our first modified aircraft being ready for test.

60
00:02:46.745 --> 00:02:49.125
We had done this sort of thing over the previous few years,

61
00:02:49.505 --> 00:02:51.285
but with new and different personnel involved,

62
00:02:51.925 --> 00:02:53.245
I confidently briefed him our plan

63
00:02:53.245 --> 00:02:55.245
that the left seat pilot would track the AR basket,

64
00:02:56.325 --> 00:02:58.085
phenomenal amount of time maneuvering in

65
00:02:58.085 --> 00:02:59.405
and outta the pre-contact position

66
00:02:59.405 --> 00:03:00.965
and practicing closure rate management

67
00:03:00.965 --> 00:03:02.725
and gaining proficiency and compensating

68
00:03:02.725 --> 00:03:04.205
for the handling qualities deficiencies

69
00:03:04.715 --> 00:03:07.885
that are infamous in the 1960s era, E two airframe.

70
00:03:08.635 --> 00:03:09.805
Without skipping a beat,

71
00:03:10.045 --> 00:03:12.485
I told him we would then slide back about 500 feet in our

72
00:03:12.645 --> 00:03:15.005
position, and the pilot and co-pilot would execute a side

73
00:03:15.005 --> 00:03:16.565
to side seat swap so

74
00:03:16.565 --> 00:03:17.925
that the other pilot could gain

75
00:03:17.925 --> 00:03:19.405
proficiency with the task as well.

76
00:03:20.795 --> 00:03:23.565
With the surprise look on his face, he tilted his head

77
00:03:23.565 --> 00:03:24.805
and asked probably what he thought

78
00:03:24.805 --> 00:03:26.005
was the most benign question.

79
00:03:26.705 --> 00:03:29.525
Why would you do that? Can't the copilot practice the task

80
00:03:29.525 --> 00:03:31.885
from the right seat in that moment,

81
00:03:32.285 --> 00:03:35.045

13 years in nearly 3000 hours of Hawkeye flight time flash

82
00:03:35.045 --> 00:03:38.405
before my eyes as I contemplated all of the paradigms

83
00:03:38.405 --> 00:03:40.885
and assumptions that have become ingrained in me

84
00:03:40.885 --> 00:03:43.125
through our relatively small carrier base, big wing,

85
00:03:43.125 --> 00:03:44.205
multi piloted community.

86
00:03:45.685 --> 00:03:46.885
Although the field of view and access

87
00:03:46.885 --> 00:03:48.045
to controls is adequate

88
00:03:48.045 --> 00:03:50.205
and nearly identical from both pilot seats of the E two,

89
00:03:51.485 --> 00:03:54.045
regardless of pilot seniority, aircraft commander,

90
00:03:54.045 --> 00:03:55.405
or junior pilot designation,

91
00:03:55.705 --> 00:03:57.845
the flying pilot is always in the left seat

92
00:03:57.845 --> 00:03:59.325
for the performance of high gain tasks.

93
00:04:00.145 --> 00:04:02.645
You see, the side to side seat swap entails a delicate

94
00:04:02.645 --> 00:04:06.085
ballet where the pilot flying sets the autopilot while the

95
00:04:06.085 --> 00:04:08.765
pilot monitoring normally in the right seat slides a seat

96
00:04:08.835 --> 00:04:11.285
daft disconnects from the ICS and seat restraints

97
00:04:11.785 --> 00:04:13.565
and moves over to crouch in the small

98
00:04:13.565 --> 00:04:14.685
space between the two seats.

99
00:04:15.385 --> 00:04:17.645
The pilot flying then slides the caft as well,

100
00:04:17.645 --> 00:04:20.525
and delicately switches seats from the left to right

101
00:04:20.545 --> 00:04:23.165
or vice versa, while still maintaining a semblance

102
00:04:23.165 --> 00:04:24.405
of control of the aircraft.

103
00:04:25.025 --> 00:04:26.165
So for a second or two,

104
00:04:26.265 --> 00:04:28.165
the autopilot is the only one at the controls.

105
00:04:28.755 --> 00:04:30.925
Fortunately, we got a fairly decent one.

106
00:04:35.065 --> 00:04:39.045
So going through that exercise, we developed a short list

107
00:04:39.045 --> 00:04:42.045
of five things that we're relearning about flight test from

108
00:04:42.045 --> 00:04:43.605

our contemplation of the E two side

109
00:04:43.605 --> 00:04:44.765
to side seat swap maneuver.

110
00:04:46.695 --> 00:04:49.205
First question, the assumptions.

111
00:04:50.625 --> 00:04:52.925
As an E two pilot community, we have been ingrained

112
00:04:52.925 --> 00:04:55.365
with the high gain task of day and night carrier landings,

113
00:04:55.505 --> 00:04:57.125
and there are some reasonable considerations

114
00:04:57.125 --> 00:04:58.765
for why we have established a community

115
00:04:59.045 --> 00:05:00.365
paradigm for high gain.

116
00:05:00.365 --> 00:05:01.565
Piloting from the left seat

117
00:05:01.935 --> 00:05:03.965
after all the day carrier landing

118
00:05:03.965 --> 00:05:05.205
pattern is the left-handed pattern.

119
00:05:05.545 --> 00:05:07.485
So the left seat pilot can maintain the best view

120
00:05:07.485 --> 00:05:08.405
of the ship and other traffic

121
00:05:08.605 --> 00:05:09.885
while maneuvering around the ship.

122
00:05:10.465 --> 00:05:11.645
The optical landing system,

123
00:05:11.665 --> 00:05:14.205
or Fennell lens is also on the left side of the ship,

124
00:05:14.255 --> 00:05:16.125
which makes it easier for the left seat pilot

125
00:05:16.145 --> 00:05:18.245
to maintain sight of the lens all the way to touchdown.

126
00:05:19.035 --> 00:05:22.125
However, this paradigm also presents inefficiencies

127
00:05:22.125 --> 00:05:23.565
and nuances that are worth considering

128
00:05:23.565 --> 00:05:25.485
for their ramifications in area refueling.

129
00:05:26.375 --> 00:05:28.485
Fleet replacement. Squadron pilots are qualified

130
00:05:28.485 --> 00:05:30.285
to land the aircraft at the ship in both day

131
00:05:30.285 --> 00:05:32.085
and night conditions with an aircraft

132
00:05:32.085 --> 00:05:33.165
commander in the right seat.

133
00:05:33.555 --> 00:05:36.645
However, if the nugget pilot is having difficulty getting

134
00:05:36.645 --> 00:05:39.485
aboard the ship, then the aircraft commander must execute an

135
00:05:39.485 --> 00:05:41.565

airborne side-to-side seat swap in order

136
00:05:41.565 --> 00:05:43.205
to affect a safe recovery from the left seat.

137
00:05:43.745 --> 00:05:46.045
All manner of instructors, aircraft commanders

138
00:05:46.165 --> 00:05:48.925
and nugget pilots only perform carrier landings

139
00:05:48.925 --> 00:05:50.045
and practice from the left seat.

140
00:05:50.625 --> 00:05:52.845
The transfer of this left seat proficiency paradigm

141
00:05:52.845 --> 00:05:55.405
to the error refueling task has required us

142
00:05:55.405 --> 00:05:56.525
to reexamine the reasoning

143
00:05:56.525 --> 00:05:58.645
behind our established population stereotype

144
00:05:59.065 --> 00:06:00.445
and the ramifications for time

145
00:06:00.445 --> 00:06:02.485
to train new pilots in this highly demanding task.

146
00:06:04.785 --> 00:06:07.125
And when you question the assumptions, you may just find

147
00:06:07.125 --> 00:06:10.325
that an apparently benign population stereotype is actually

148
00:06:10.325 --> 00:06:12.645
an organizational compensation for deficiencies

149
00:06:12.645 --> 00:06:16.485
that require high levels of pilot workload, even when

150
00:06:17.715 --> 00:06:19.245
performed from the preferred seat.

151
00:06:20.065 --> 00:06:23.285
As you can hear in this pilot's voice, uh, in this video,

152
00:06:23.505 --> 00:06:25.405
if we can ensure the sound is up

153
00:06:29.145 --> 00:06:33.565
Closer, 12 feet, five feet,

154
00:06:37.575 --> 00:06:41.005
looks like you have a good lap, there's the side

155
00:06:42.105 --> 00:06:45.005
that's the same hose, uh, look that you had,

156
00:06:46.145 --> 00:06:50.365
and I don't really want to go any further up either.

157
00:06:51.715 --> 00:06:52.805
Okay, looks good.

158
00:06:58.275 --> 00:07:00.075
I give you a little right ru. Yep.

159
00:07:05.825 --> 00:07:07.085
In our case, time to train

160
00:07:07.085 --> 00:07:08.285
and proficiency flying required

161
00:07:08.285 --> 00:07:10.765
for high gain tasks is significantly reduced

162
00:07:10.825 --> 00:07:13.245

by limiting those tasks to the left seat so

163
00:07:13.245 --> 00:07:15.245
that the pilots do not have to build skill transfer

164
00:07:15.245 --> 00:07:17.485
for handling qualities compensations from the right seat.

165
00:07:18.785 --> 00:07:21.645
Second, we must ensure testable requirements.

166
00:07:22.505 --> 00:07:25.045
As previously mentioned, the venerable E two is notorious

167
00:07:25.045 --> 00:07:26.365
for challenging flying qualities in the

168
00:07:26.365 --> 00:07:27.445
performance of high gain tasks.

169
00:07:28.065 --> 00:07:29.165
Indeed, the introduction

170
00:07:29.165 --> 00:07:31.045
of the air refueling task is the first time

171
00:07:31.045 --> 00:07:32.325
that the aircraft is attempting

172
00:07:32.585 --> 00:07:33.845
to meet level one handling

173
00:07:33.845 --> 00:07:35.245
qualities during an up and away task.

174
00:07:35.905 --> 00:07:37.005
To accomplish this feat,

175
00:07:37.005 --> 00:07:39.045
the Northrop Grumman Corporation has incorporated a

176
00:07:39.045 --> 00:07:41.125
significant modification of the automatic flight control

177
00:07:41.125 --> 00:07:43.685
system to address some of the coupling sensitivities

178
00:07:43.685 --> 00:07:44.885
and PIO prone nature of the

179
00:07:45.005 --> 00:07:46.205
aircraft's dynamic characteristics.

180
00:07:46.845 --> 00:07:49.965
Consequently, the Navy's detailed specification requires the

181
00:07:49.965 --> 00:07:52.645
accomplishment of the task with no greater than a handling

182
00:07:52.645 --> 00:07:54.645
qualities rating of four on the Cooper Harper scale.

183
00:07:55.805 --> 00:07:59.005
Likewise, the fleet operational users establish requirements

184
00:07:59.005 --> 00:08:01.365
for training and qualification of aircrew

185
00:08:01.365 --> 00:08:02.525
for weapon system employment

186
00:08:02.525 --> 00:08:03.805
that also require consideration.

187
00:08:04.505 --> 00:08:06.645
The derivation of which includes its own assumptions

188
00:08:06.645 --> 00:08:07.765
is a must be addressed.

189
00:08:08.235 --> 00:08:09.445

Replacement pilot training

190
00:08:09.445 --> 00:08:12.205
for E two pilots already requires nearly four years

191
00:08:12.205 --> 00:08:14.565
before the pilot arrives to his first operational tour.

192
00:08:15.025 --> 00:08:16.925
So any further excessive training requirement

193
00:08:16.925 --> 00:08:18.565
that delays their arrival to the operational

194
00:08:18.565 --> 00:08:19.925
squadron would be frowned upon.

195
00:08:20.705 --> 00:08:22.645
The current resource constrained environment is not

196
00:08:22.645 --> 00:08:25.765
anticipated to provide ready access to organic Navy tankers

197
00:08:25.785 --> 00:08:27.285
for the use of pilot qualification.

198
00:08:27.985 --> 00:08:30.645
So extra training resources for tanking will be met

199
00:08:30.645 --> 00:08:33.405
with some scrutiny and with any discussion of training.

200
00:08:33.825 --> 00:08:36.165
The consideration for expected attrition rate must be

201
00:08:36.165 --> 00:08:38.485
understood with the aforementioned link,

202
00:08:38.485 --> 00:08:39.645
the pilot training pipeline.

203
00:08:40.305 --> 00:08:41.405
Any attrition rate over

204
00:08:41.405 --> 00:08:43.365
and above the current rate observed in fleet replacement

205
00:08:43.365 --> 00:08:45.005
squadron training would be considered detrimental

206
00:08:45.205 --> 00:08:46.725
to efficient return on investments.

207
00:08:47.465 --> 00:08:49.405
So we set out an attempt to answer the questions

208
00:08:49.405 --> 00:08:51.405
of both requirements with the highest level of certainty

209
00:08:51.675 --> 00:08:53.285
with the tools we have at our disposal.

210
00:08:55.095 --> 00:08:57.005
Third, we need to learn from others.

211
00:08:57.945 --> 00:08:59.365
How do other aircraft operate?

212
00:09:00.115 --> 00:09:02.005
Well, we know from our previous conversation

213
00:09:02.005 --> 00:09:04.085
with our chief test pilot, the Marine Corps C one 30

214
00:09:04.085 --> 00:09:06.085
community mostly assumes the standard

215
00:09:06.085 --> 00:09:07.965
where the aircraft commander is always seated in the left

216
00:09:07.965 --> 00:09:10.005

seat and the copilot is seated in the right seat.

217
00:09:10.425 --> 00:09:13.245
And however, either pilot assumes the task of pilot flying

218
00:09:13.325 --> 00:09:16.005
or pilot monitoring depending on the desire of the crew,

219
00:09:16.005 --> 00:09:18.445
and there are no communicated organizational compensations

220
00:09:19.035 --> 00:09:21.285
made for any apparent handling quality deficiencies.

221
00:09:21.695 --> 00:09:24.165
There are some limitations with access to control, such

222
00:09:24.165 --> 00:09:26.845
as nosal steering that lead to the customary assumption

223
00:09:26.845 --> 00:09:28.525
of takeoff and landing tasks from the left seat.

224
00:09:28.755 --> 00:09:31.365
However, those are routinely circumvented through the use

225
00:09:31.645 --> 00:09:33.565
of sound crew resource management techniques.

226
00:09:35.425 --> 00:09:37.085
The air transport community is fairly

227
00:09:37.085 --> 00:09:38.285
well documented standards.

228
00:09:38.285 --> 00:09:39.285
Whether you favor the yoke

229
00:09:39.285 --> 00:09:40.725
and control column of the Boeing family

230
00:09:41.265 --> 00:09:43.965
or more familiar with the Airbus side stick accommodations

231
00:09:44.625 --> 00:09:45.685
in both applications.

232
00:09:45.815 --> 00:09:47.765
First officers always fly from the right seat,

233
00:09:47.765 --> 00:09:49.365
and captains are position in the left seat.

234
00:09:49.865 --> 00:09:51.165
The task of pilot flying

235
00:09:51.165 --> 00:09:53.205
and pilot monitoring are divvied up among the crew

236
00:09:53.205 --> 00:09:54.325
by the desires of the captain,

237
00:09:54.785 --> 00:09:56.405
and the first officer is expected to be able

238
00:09:56.405 --> 00:09:58.405
to pilot the aircraft during all phases

239
00:09:58.405 --> 00:09:59.405
of flight from the right seat.

240
00:09:59.875 --> 00:10:02.725
There's some documentation difficulty in skill transfer when

241
00:10:02.725 --> 00:10:04.045
first officers upgrade to captain

242
00:10:04.225 --> 00:10:05.645
and transfer to left-handed flying.

243
00:10:05.835 --> 00:10:07.005

However, the accomplishment

244
00:10:07.005 --> 00:10:09.725
of high gain tasks has been largely relegated automation

245
00:10:10.265 --> 00:10:12.245
and may be considered to have limited commonality

246
00:10:12.245 --> 00:10:13.725
with a task like error refueling.

247
00:10:14.315 --> 00:10:16.085
However, military applications

248
00:10:16.085 --> 00:10:18.765
of commercial derivative aircraft such as the PA Poseidon

249
00:10:19.395 --> 00:10:20.885
that have undergone developmental testing

250
00:10:20.905 --> 00:10:22.085
for the implementation of BOOM

251
00:10:22.085 --> 00:10:25.325
and receptacle AR have demonstrated consistent application

252
00:10:25.325 --> 00:10:27.525
of airline style cockpit standardization with respect

253
00:10:27.605 --> 00:10:30.205
to seat position and that either pilot is expected

254
00:10:30.205 --> 00:10:32.085
to be able to accomplish the task from either seat

255
00:10:32.085 --> 00:10:33.965
with minimal difficulty in skill transfer

256
00:10:35.805 --> 00:10:36.925
aircraft like the F1 11.

257
00:10:36.925 --> 00:10:38.965
Aardvark also provide an interesting example

258
00:10:38.975 --> 00:10:41.445
where cockpit designers anticipated the skill transfer

259
00:10:41.445 --> 00:10:43.965
and task performance would benefit from commonality

260
00:10:43.985 --> 00:10:46.325
and control location and handedness from both seats,

261
00:10:46.955 --> 00:10:49.165
primarily allowing the pilot to fly right-handed

262
00:10:49.165 --> 00:10:50.445
by the provision of a center stick

263
00:10:50.445 --> 00:10:52.285
and throttles position on the left side console.

264
00:10:53.485 --> 00:10:55.405
Although the weapon system operator in the right seat would

265
00:10:55.405 --> 00:10:57.485
not frequently require use of the center console set

266
00:10:57.485 --> 00:10:59.685
of throttles in the event of an emergency

267
00:10:59.685 --> 00:11:02.085
or instructor use while training new pilots, it

268
00:11:02.365 --> 00:11:04.565
provided greater ease of use given the well-documented

269
00:11:04.725 --> 00:11:06.565
handling qualities deficiencies of the F1 11.

270
00:11:08.065 --> 00:11:11.325

The S3 Viking is another example of the use of provisions

271
00:11:11.325 --> 00:11:13.205
for right-handed flying from both cockpit seats

272
00:11:13.795 --> 00:11:15.805
with center sticks and left-handed throttles.

273
00:11:15.825 --> 00:11:17.685
Air crew in either seat could fly the aircraft

274
00:11:17.685 --> 00:11:19.525
with limited psychomotor skill transfer required

275
00:11:19.525 --> 00:11:21.045
for the accomplishment of high gain tasks,

276
00:11:22.245 --> 00:11:23.645
although similar to the F1 11

277
00:11:23.825 --> 00:11:25.645
and that the right seat document was predominantly

278
00:11:25.645 --> 00:11:26.685
a weapon system operator.

279
00:11:27.185 --> 00:11:29.365
The common control system layout allowed instructors

280
00:11:29.365 --> 00:11:30.805
to gain proficiency from either seat,

281
00:11:30.805 --> 00:11:32.805
including the challenging task of ar.

282
00:11:34.625 --> 00:11:36.285
We don't want to neglect our rotary wing

283
00:11:36.285 --> 00:11:37.325
friends in this discussion either.

284
00:11:37.985 --> 00:11:40.445
In fact, they have long established primary control

285
00:11:40.445 --> 00:11:41.645
placement schemes with name

286
00:11:41.645 --> 00:11:44.485
to address the difficulty required in precise helicopter

287
00:11:44.485 --> 00:11:46.365
control and high gain tasks such as hovering

288
00:11:46.985 --> 00:11:48.085
as legend would have it.

289
00:11:48.395 --> 00:11:50.245
Igor Sikorsky may have been one of the first

290
00:11:50.245 --> 00:11:53.365
to address these issues in helicopters with his development

291
00:11:53.365 --> 00:11:56.045
of the R four helicopter trainer with a single collective

292
00:11:56.045 --> 00:11:57.445
between the pilots to save weight.

293
00:11:57.995 --> 00:11:59.645
According to the Smithsonian Air

294
00:11:59.645 --> 00:12:01.525
and Space Museum, it was so difficult

295
00:12:01.545 --> 00:12:03.005
to teach students from both the left

296
00:12:03.005 --> 00:12:04.645
and right seats with the single collective

297
00:12:04.995 --> 00:12:06.525

that Sikorsky restricted students

298
00:12:06.545 --> 00:12:07.645
to training in the right seat

299
00:12:07.905 --> 00:12:10.245
so they could more quickly build the psychomotor responses

300
00:12:10.485 --> 00:12:11.845
required to fly the aircraft safely.

301
00:12:14.825 --> 00:12:17.645
Indeed, even the most basic training helicopters currently

302
00:12:17.645 --> 00:12:19.925
incorporate separate collectives for both pilot seats

303
00:12:20.345 --> 00:12:22.605
so the pilots can fly right-handed from either seat

304
00:12:22.625 --> 00:12:24.285
and more quickly be trained to compensate

305
00:12:24.285 --> 00:12:25.685
for the highly coupled flying qualities

306
00:12:25.685 --> 00:12:28.045
of the helicopter while performing high gain tasks.

307
00:12:29.205 --> 00:12:31.005
Although far from being a comprehensive review

308
00:12:31.005 --> 00:12:33.325
of the examples of cockpit design addressing the negative

309
00:12:33.325 --> 00:12:35.005
impacts of skill transfer between left

310
00:12:35.005 --> 00:12:37.445
and right seat, we've established an aircraft

311
00:12:37.445 --> 00:12:38.765
with highly coupled characteristics

312
00:12:38.785 --> 00:12:41.045
of routinely incorporated separate flight controls

313
00:12:41.465 --> 00:12:43.245
to aid the pilots and accomplishment of the task.

314
00:12:43.825 --> 00:12:45.245
The E two and C two communities,

315
00:12:45.245 --> 00:12:49.005
however, have established the side-to-side seat swap is an

316
00:12:49.005 --> 00:12:51.165
organizational compensation for the handling qualities,

317
00:12:51.165 --> 00:12:53.685
deficiencies, and limitations in cockpit control layout

318
00:12:54.155 --> 00:12:56.645
that require a significant level of skill transfer.

319
00:12:57.155 --> 00:12:59.325
This appears to be a fairly unique compensation

320
00:12:59.325 --> 00:13:01.125
among multi piot aircraft, yet one

321
00:13:01.125 --> 00:13:03.325
that we anticipate will provide some benefit as we attempt

322
00:13:03.325 --> 00:13:07.645
to in innovatively evaluate the new AR capability.

323
00:13:09.235 --> 00:13:13.645
That brings us to number four, apply History Cooper

324
00:13:13.665 --> 00:13:15.645

and Harper acknowledged the difficulty

325
00:13:15.645 --> 00:13:18.045
of applying their ratings while including variability

326
00:13:18.045 --> 00:13:21.125
of pilot skill and indeed referenced special consideration

327
00:13:21.125 --> 00:13:22.205
for it in their seminal nasa.

328
00:13:22.355 --> 00:13:27.245
NASA technical note on page 15 of that NASA document.

329
00:13:27.245 --> 00:13:31.005
They state it is the opinion of the author authors that

330
00:13:31.005 --> 00:13:33.885
as a general rule, each pilot should judge the suitability

331
00:13:33.905 --> 00:13:36.445
of any set of airplane characteristics in terms

332
00:13:36.445 --> 00:13:37.965
of his own skill and training

333
00:13:38.225 --> 00:13:39.885
and in terms of the required operations

334
00:13:39.885 --> 00:13:42.445
and circumstances as defined in the experiment.

335
00:13:43.135 --> 00:13:45.605
Exceptions to this general rule have occurred,

336
00:13:45.605 --> 00:13:47.125
however, when the research

337
00:13:47.125 --> 00:13:48.645
or development test pilot is asked

338
00:13:48.645 --> 00:13:50.405
to evaluate handling qualities with respect

339
00:13:50.405 --> 00:13:52.365
to his understanding of the lowest degree of skill

340
00:13:52.825 --> 00:13:55.645
and training existed in a group of operational pilots.

341
00:13:56.555 --> 00:14:00.005
However, when we have requirements to be assessed

342
00:14:00.065 --> 00:14:01.085
by test pilots,

343
00:14:03.425 --> 00:14:06.085
the must be transposed on the anticipated skill level

344
00:14:06.085 --> 00:14:07.325
of a new replacement pilot.

345
00:14:07.875 --> 00:14:09.725
There's enough potential for large error

346
00:14:09.875 --> 00:14:11.405
that it may call into question the

347
00:14:11.405 --> 00:14:12.685
general validity of the test.

348
00:14:13.545 --> 00:14:15.925
The learned psychomotor response to the community test pilot

349
00:14:15.985 --> 00:14:17.885
for compensations required during accomplishment

350
00:14:17.885 --> 00:14:21.085
of the high gain task may be considered overly optimistic

351
00:14:21.105 --> 00:14:23.805

and could result in exacerbated resources required

352
00:14:24.265 --> 00:14:26.925
for new pilot training and abysmal attrition rates.

353
00:14:26.925 --> 00:14:31.445
For a standard group of replacement pilots application

354
00:14:31.445 --> 00:14:34.005
of psychomotor learning theory may all too often be one

355
00:14:34.005 --> 00:14:35.045
of those assumptions that we need

356
00:14:35.045 --> 00:14:37.365
to question in the underlying user evaluation methods

357
00:14:37.715 --> 00:14:39.285
that are prevalent in our profession

358
00:14:40.345 --> 00:14:42.965
and the general generally accepted taxonomy.

359
00:14:44.085 --> 00:14:46.205
Learning is expressed as a function of experience

360
00:14:46.705 --> 00:14:49.445
and is characterized by a normally exponential growth curve

361
00:14:49.795 --> 00:14:51.690
that depicts a large amount of of learning gained

362
00:14:51.690 --> 00:14:52.770
with little experience

363
00:14:52.905 --> 00:14:54.805
and the rate of learning in decreasing

364
00:14:54.805 --> 00:14:58.765
as the experience increases to apply this theory into terms

365
00:14:58.765 --> 00:15:02.805
of our profession for known system deficiencies, the level

366
00:15:02.805 --> 00:15:05.245
of task performance could then be expressed as a function

367
00:15:05.245 --> 00:15:07.005
of the time to train for the typical pilot.

368
00:15:10.405 --> 00:15:11.445
Applying generalized Cooper

369
00:15:11.445 --> 00:15:12.885
and Harper handling qualities ratings

370
00:15:12.885 --> 00:15:16.165
to normalize locations on the performance scale provides a

371
00:15:16.165 --> 00:15:17.965
compelling depiction of resource trade-offs

372
00:15:18.765 --> 00:15:21.565
required in the handling qualities domain to attain levels

373
00:15:21.585 --> 00:15:23.005
of performance anticipated in the

374
00:15:23.005 --> 00:15:24.125
accomplishment of a high gain task.

375
00:15:24.705 --> 00:15:27.365
You'll notice that I've limited the application of Hqr R

376
00:15:28.475 --> 00:15:30.485
application to HQ of three and below,

377
00:15:30.825 --> 00:15:31.965
and the thought that any task

378
00:15:31.965 --> 00:15:34.885

that would be considered high gain would result in notable

379
00:15:34.885 --> 00:15:36.405
compensations required by the pilot

380
00:15:36.785 --> 00:15:39.125
to achieve desirable performance on a reliable basis,

381
00:15:39.635 --> 00:15:41.885
resulting in assessment of hqr of three or above.

382
00:15:42.085 --> 00:15:45.325
Normally This generalized application

383
00:15:45.325 --> 00:15:47.765
of psychomotor learning theory also further expounds

384
00:15:47.765 --> 00:15:48.805
that the pilot will progress

385
00:15:48.835 --> 00:15:50.885
through three distinct levels of development.

386
00:15:51.705 --> 00:15:53.965
The first stage of which is the cognitive accomplishment

387
00:15:53.965 --> 00:15:56.325
of the task marked by awkward, slow,

388
00:15:56.325 --> 00:15:58.565
and choppy movements that the operator tries to control.

389
00:15:59.225 --> 00:16:00.885
The pilot is required to actively think

390
00:16:00.885 --> 00:16:02.845
through each required compensation for the task

391
00:16:02.845 --> 00:16:04.685
and subsequent performance suffers.

392
00:16:05.345 --> 00:16:07.565
You may note the area of cognitive learning to the left

393
00:16:07.565 --> 00:16:09.525
of any area of increased performance marked

394
00:16:09.525 --> 00:16:11.645
by academic learning or ground school

395
00:16:11.645 --> 00:16:12.725
that could be considered training

396
00:16:12.745 --> 00:16:14.125
for the accomplishment of the given task.

397
00:16:15.155 --> 00:16:16.845
Next is the associative stage.

398
00:16:17.305 --> 00:16:19.325
The pilot has become more proficient at compensating

399
00:16:19.325 --> 00:16:20.645
for the handling qualities, efficiencies,

400
00:16:20.945 --> 00:16:22.605
but has not yet become second nature,

401
00:16:22.905 --> 00:16:25.285
and the pilot must still expend mental capacity

402
00:16:25.285 --> 00:16:26.285
and the accomplishment of the task.

403
00:16:26.945 --> 00:16:29.525
In this generalized application learning theory In relation

404
00:16:29.525 --> 00:16:32.285
to handling qualities, the standard pilot would not be able

405
00:16:32.285 --> 00:16:33.965

to attain more than adequate performance

406
00:16:33.965 --> 00:16:35.045
in the associative stage.

407
00:16:36.105 --> 00:16:38.605
In order to progress to a level of desirable performance,

408
00:16:38.705 --> 00:16:41.405
the pilot must progress in the stage of autonomic response

409
00:16:41.945 --> 00:16:44.565
or the task accomplishment may be refined through practice,

410
00:16:45.185 --> 00:16:46.685
but the pilot no longer is required

411
00:16:46.685 --> 00:16:48.765
to expend extra mental capacity to compensate

412
00:16:48.765 --> 00:16:50.165
for the handling qualities deficiencies.

413
00:16:50.865 --> 00:16:52.845
It is in this range of autonomic response

414
00:16:52.845 --> 00:16:54.245
that most test pilots operate.

415
00:16:54.875 --> 00:16:57.005
They have established refined compensation techniques

416
00:16:57.005 --> 00:16:59.085
for the deficiencies resident in their aircraft,

417
00:16:59.505 --> 00:17:01.605
and most of the time dedicated thought

418
00:17:01.605 --> 00:17:04.165
or observation to characterize the exact psychomotor

419
00:17:04.325 --> 00:17:06.685
responses they're providing to achieve task performance.

420
00:17:08.225 --> 00:17:10.005
As we consider our seat swap paradigm

421
00:17:10.105 --> 00:17:11.685
and the requirements for which we're tasked

422
00:17:11.685 --> 00:17:14.645
with evaluating this generalized application may be useful

423
00:17:14.645 --> 00:17:16.925
in helping us assess our requirements with more certainty.

424
00:17:17.945 --> 00:17:20.365
The normal fleet replacement pilot is estimated

425
00:17:20.365 --> 00:17:22.405
to graduate somewhere between the associative stage

426
00:17:22.405 --> 00:17:24.445
and the beginning of the autonomic stage of learning.

427
00:17:25.195 --> 00:17:26.805
This presents a quandary in any test.

428
00:17:26.805 --> 00:17:28.125
Pilot's attempt to assess the level

429
00:17:28.125 --> 00:17:30.165
of performance expected from a replacement pilot

430
00:17:30.695 --> 00:17:32.485
while they're evaluating the task from well

431
00:17:32.485 --> 00:17:33.645
within the autonomic range.

432
00:17:35.345 --> 00:17:38.365

And the best way to overcome such a quandary is to strive

433
00:17:38.425 --> 00:17:39.765
to innovate resourcefully.

434
00:17:42.175 --> 00:17:44.605
Given the disparity between the anticipated performance

435
00:17:44.605 --> 00:17:46.325
of our given test pilot and that

436
00:17:46.325 --> 00:17:48.525
of a normalized replacement pilot with a reasonable time

437
00:17:48.525 --> 00:17:50.485
to train, we've come to the conclusion

438
00:17:50.485 --> 00:17:52.285
that we may gain a better understanding of time

439
00:17:52.285 --> 00:17:54.765
to train requirements by having the test pilot evaluate the

440
00:17:54.765 --> 00:17:56.485
performance of the task from the right seat.

441
00:17:57.565 --> 00:17:59.645
Although this may seem like a small change for most,

442
00:18:00.345 --> 00:18:02.245
it may be considered a huge paradigm shift

443
00:18:02.425 --> 00:18:03.525
for many in our community.

444
00:18:04.345 --> 00:18:06.365
And even though it will not provide empirical data

445
00:18:06.465 --> 00:18:07.605
to show equivalency

446
00:18:07.805 --> 00:18:09.725
and time to train, it is anticipated

447
00:18:09.725 --> 00:18:11.645
that will at least provide us a better understanding

448
00:18:11.645 --> 00:18:14.565
of the skill transfer potential for transitioning pilots

449
00:18:14.565 --> 00:18:16.605
and accomplishing the task with less time to train

450
00:18:16.985 --> 00:18:18.845
and handling qualities, compensation techniques

451
00:18:18.845 --> 00:18:20.885
that may not be as finely tuned as the test pilot.

452
00:18:22.705 --> 00:18:25.285
So What we've relearned about flight test

453
00:18:25.945 --> 00:18:27.965
is the more accurate and efficient evaluations

454
00:18:27.965 --> 00:18:30.445
of test programs can be attained by continuous practice

455
00:18:30.825 --> 00:18:33.085
and adherence to the tenants that we've covered here today.

456
00:18:33.785 --> 00:18:36.165
We must first question the assumptions inherent in all

457
00:18:36.165 --> 00:18:38.525
of our programs, communities, and organizations.

458
00:18:39.185 --> 00:18:40.485
We all have unique experiences

459
00:18:40.485 --> 00:18:42.445

and paradigms with which we approach our profession,

460
00:18:43.065 --> 00:18:45.445
and we should constantly strive for deliberate understanding

461
00:18:45.445 --> 00:18:47.685
of the reasoning behind the population stereotypes

462
00:18:47.995 --> 00:18:49.205
that we often overlook

463
00:18:49.205 --> 00:18:51.685
because we've often, we've always just

464
00:18:51.685 --> 00:18:52.925
thought that's how we do it.

465
00:18:53.745 --> 00:18:55.845
Second, we should strive to ensure all

466
00:18:55.845 --> 00:18:57.165
of our requirements are testable

467
00:18:57.505 --> 00:18:58.925
and endeavor to identify new

468
00:18:58.925 --> 00:19:01.405
and innovative ways to assess reasonable considerations from

469
00:19:01.405 --> 00:19:02.885
our operational customers.

470
00:19:03.745 --> 00:19:06.245
The acquisition cutting room floor has been all too often

471
00:19:06.245 --> 00:19:08.325
littered with the remnants of programs plagued

472
00:19:08.325 --> 00:19:10.285
by poorly written and untestable requirements.

473
00:19:11.065 --> 00:19:12.245
As the experts in our field,

474
00:19:12.245 --> 00:19:14.565
we must aggressively seek out these inconsistencies

475
00:19:14.985 --> 00:19:16.445
and pursue reasonable resolution

476
00:19:16.445 --> 00:19:17.765
to the maximum extent possible.

477
00:19:18.555 --> 00:19:21.845
Thirdly, even attendance at this safety workshop is a great

478
00:19:21.845 --> 00:19:23.325
example of our society's drive

479
00:19:23.785 --> 00:19:26.925
to continuously learn from others so that we do not continue

480
00:19:26.925 --> 00:19:29.045
to repeat the mistakes or missteps of the past.

481
00:19:29.905 --> 00:19:32.205
As part of our professional obligation, we must continue

482
00:19:32.205 --> 00:19:34.245
to strive for communications of lessons learned

483
00:19:35.045 --> 00:19:36.805
lest we are doomed to repeat the mistakes of others.

484
00:19:38.385 --> 00:19:39.525
Fourth, scientific

485
00:19:39.525 --> 00:19:42.205
and engineering history provide enormous wealth.

486
00:19:42.745 --> 00:19:43.745

Let go back here,

487
00:19:44.945 --> 00:19:45.945
Pardon me.

488
00:19:47.825 --> 00:19:49.965
For scientific and engineering history provide enormous

489
00:19:49.965 --> 00:19:52.725
wealth of knowledge and application from other related

490
00:19:52.725 --> 00:19:54.605
fields that should continuously be referenced

491
00:19:54.905 --> 00:19:57.565
for their general applications of specifics of our programs.

492
00:19:58.665 --> 00:20:01.165
It is through this continued emphasis on application of new

493
00:20:01.165 --> 00:20:03.725
and expanding technologies while still applying the

494
00:20:03.725 --> 00:20:06.085
historical lessons of the past that we can strive

495
00:20:06.085 --> 00:20:07.285
to innovate resourcefully.

496
00:20:07.985 --> 00:20:09.725
It is that innovation that will empower us

497
00:20:09.725 --> 00:20:10.845
to find novel solutions

498
00:20:10.845 --> 00:20:12.605
for seemingly insurmountable challenges

499
00:20:12.865 --> 00:20:15.125
and give us confidence in expanded risk management

500
00:20:15.125 --> 00:20:16.925
methodologies even in a landscape

501
00:20:16.925 --> 00:20:18.685
of apparently anemic resources.

502
00:20:19.915 --> 00:20:23.285
Adherence to those tenants may indeed aid us in overcoming

503
00:20:23.525 --> 00:20:26.085
challenges in a program to be able to have success

504
00:20:26.395 --> 00:20:27.485
that makes it look easy.

505
00:20:33.345 --> 00:20:36.565
And with that, I'll take any questions if anybody has any.

506
00:20:44.465 --> 00:20:44.685
Sir.

507
00:20:45.065 --> 00:20:46.725
So did, so I gather you did

508
00:20:47.485 --> 00:20:48.965
Ariel refueling from the right seat?

509
00:20:49.105 --> 00:20:52.445
Did you take data, you know, right seat versus left seat

510
00:20:52.465 --> 00:20:53.485
of the same person

511
00:20:53.625 --> 00:20:55.285
And we, we have not yet.

512
00:20:55.465 --> 00:20:58.965
So all of the video shown was of risk reduction efforts

513
00:20:58.965 --> 00:21:00.485

that were actually accomplished with, uh,

514
00:21:00.565 --> 00:21:02.525
E two C UN augmented.

515
00:21:02.945 --> 00:21:04.285
Are you planning to do Right seat.

516
00:21:04.345 --> 00:21:07.925
So the, so the plan is to, uh, approach it in,

517
00:21:07.985 --> 00:21:10.045
in this manner, not full, uh,

518
00:21:10.235 --> 00:21:11.805
evaluations from the right seat,

519
00:21:11.825 --> 00:21:14.925
but to have, uh, essentially a right seat assessment

520
00:21:15.185 --> 00:21:16.445
of time to train.

521
00:21:16.625 --> 00:21:21.125
So, um, specifically the requirement of of HQR four.

522
00:21:21.305 --> 00:21:25.565
So, um, the differences between, you know,

523
00:21:25.565 --> 00:21:27.725
because of how that requirement is written,

524
00:21:28.175 --> 00:21:30.365
there is no specification in that requirement

525
00:21:30.365 --> 00:21:32.725
of saying is it an HQR four from the left seat

526
00:21:32.725 --> 00:21:34.525
or is an HQR four from the right seat?

527
00:21:35.025 --> 00:21:39.885
Um, so based on our community paradigm, um, what has, uh,

528
00:21:40.155 --> 00:21:44.085
been pressed forward is that we are essentially evaluating

529
00:21:44.085 --> 00:21:47.045
that requirement from the left seat, uh, in that,

530
00:21:47.045 --> 00:21:50.365
that is from the 1960s development of the airplane.

531
00:21:50.825 --> 00:21:53.645
Uh, all of the flying qualities evaluations that,

532
00:21:53.675 --> 00:21:55.565
that we have that are documented,

533
00:21:55.565 --> 00:21:56.725
were all from the left seat.

534
00:21:57.225 --> 00:22:01.605
Um, however, uh, we are using this right seat methodology

535
00:22:01.825 --> 00:22:05.445
as an attempt to, uh, aid our fleet counterparts

536
00:22:05.445 --> 00:22:07.525
and as it goes into the fleet to, and, and,

537
00:22:07.705 --> 00:22:11.685
and to be able to reduce some of that risk to, to say, um,

538
00:22:12.665 --> 00:22:15.045
if we can have a test pilot be able

539
00:22:15.045 --> 00:22:17.205
to do it from the right seat, even though, um,

540
00:22:19.195 --> 00:22:21.125

even though they may be, uh,

541
00:22:21.275 --> 00:22:23.845
have more highly refined compensation techniques,

542
00:22:23.845 --> 00:22:26.845
that at least puts them closer on the learning curve to

543
00:22:26.845 --> 00:22:28.525
what a fleet replacement pilot would be

544
00:22:28.525 --> 00:22:32.205
and gives us a, a better confidence, uh, in the ability

545
00:22:32.265 --> 00:22:34.765
to train a replacement pilot in a reasonable

546
00:22:34.765 --> 00:22:37.285
time. Sorry,

547
00:22:38.005 --> 00:22:40.725
Beckon's a nineties, uh, early nineties, uh,

548
00:22:41.005 --> 00:22:45.205
I was project pilot for the uk, uh, uh,

549
00:22:46.415 --> 00:22:48.645
which was the first implementation of the prob on

550
00:22:48.645 --> 00:22:52.205
that seven, seven and high ride, just like the one 30.

551
00:22:53.105 --> 00:22:56.005
And, uh, very interesting.

552
00:22:56.005 --> 00:23:00.005
The MO made no problems about you should be able

553
00:23:00.005 --> 00:23:01.085
to refuel from both seats

554
00:23:01.785 --> 00:23:04.445
and it was part of the spec, part of eye, part

555
00:23:04.445 --> 00:23:07.365
of the except procedure, uh, by those folks that

556
00:23:08.035 --> 00:23:09.445
flew the airplane refuel the

557
00:23:12.145 --> 00:23:13.145
Yes, sir. Interesting

558
00:23:13.145 --> 00:23:14.005

559
00:23:14.345 --> 00:23:19.285
Things have changed, Sir, sir,

560
00:23:19.955 --> 00:23:22.525
Foresee a fleeing conops in which, uh,

561
00:23:22.785 --> 00:23:25.125
pilots from received aircraft.

562
00:23:26.525 --> 00:23:31.445
I, I think, um, that's still yet to be seen,

563
00:23:31.905 --> 00:23:34.685
um, because of the community paradigm.

564
00:23:35.025 --> 00:23:38.845
I'm, I'm not sure that, uh, we will see it

565
00:23:38.845 --> 00:23:41.285
where they will allow, uh, junior pilots

566
00:23:41.285 --> 00:23:42.445
to tank from the right seat.

567
00:23:42.945 --> 00:23:45.845
Um, what I could foresee is something more like how the,

568
00:23:45.945 --> 00:23:48.725
the E six community implements it in, in talking to them.

569
00:23:49.145 --> 00:23:50.925
Uh, essentially a a three P

570
00:23:50.925 --> 00:23:54.485
and a two P are qualified to ar from the left seat

571
00:23:54.485 --> 00:23:55.925
and then as an air, as a part

572
00:23:55.925 --> 00:23:58.165
of the aircraft commander syllabus, then they, uh,

573
00:23:58.165 --> 00:24:00.005
become qualified to ar from the right seat.

574
00:24:00.005 --> 00:24:01.925
And then as, as an aircraft commander

575
00:24:02.145 --> 00:24:05.325
or an instructor, uh, they can ar from both seats.

576
00:24:05.745 --> 00:24:09.085
Uh, but I think that's, you know, I we've addressed this

577
00:24:09.225 --> 00:24:12.285
so far, uh, primarily from the, from the testing

578
00:24:12.385 --> 00:24:13.725
and evaluation standpoint

579
00:24:13.725 --> 00:24:16.485
and as a way to, to, uh, better predict

580
00:24:16.795 --> 00:24:20.445
what we can anticipate, uh, junior pilot performance being,

581

00:24:20.825 --> 00:24:22.445
but not necessarily as a push

582
00:24:22.465 --> 00:24:24.925
to the fleet in their implementation of the conops.

583
00:24:25.035 --> 00:24:27.205
Currently the CONOPS is written such

584
00:24:27.205 --> 00:24:29.925
that they are only planning to do it from the left seat.

585
00:24:35.665 --> 00:24:36.605
Sir, do

586
00:24:36.605 --> 00:24:39.205
You see this, uh, in the future being pushed

587
00:24:39.225 --> 00:24:42.325
to eliminate the seat swap maneuver as a,

588
00:24:42.325 --> 00:24:43.565
as a future risk reduction?

589
00:24:44.225 --> 00:24:48.405
Uh, this will not eliminate the seat swap maneuver in the

590
00:24:48.405 --> 00:24:49.485
carrier landing task.

591
00:24:50.045 --> 00:24:51.165
I can say that much. Uh,

592
00:24:51.315 --> 00:24:56.085
however, this as, uh, Commodore was, uh, asking

593
00:24:56.905 --> 00:25:00.405
it has the potential to eliminate the seat swap maneuver as,

594
00:25:00.425 --> 00:25:02.165
as part of the error refueling task. Absolutely.

595
00:25:02.165 --> 00:25:03.285
Right. So you were saying there's no

596
00:25:03.315 --> 00:25:04.685
currently no plan to do

597
00:25:04.685 --> 00:25:05.685
That, right? The

598
00:25:06.555 --> 00:25:07.555
Push for that in The future?

599
00:25:08.045 --> 00:25:09.645
Absolutely. Do you think that's Absolutely, and

600
00:25:09.665 --> 00:25:13.445
and that would, if, if we successfully demonstrate it, um,

601
00:25:13.885 --> 00:25:16.325
I, I would foresee that there would be high likelihood

602
00:25:16.325 --> 00:25:18.245
that they would probably push to want to do

603
00:25:18.245 --> 00:25:20.565
that based on the proficiency requirements

604
00:25:21.105 --> 00:25:25.965
and the, um, yeah, the, the drive to be, uh, ar capable

605
00:25:26.265 --> 00:25:28.525
for as many pilots as we can in the community.

606
00:25:32.225 --> 00:25:35.325
Any other questions? Thank you. Appreciate it.