

WEBVTT

1

00:00:00.935 --> 00:00:04.085

Which is participants are seated.

2

00:00:11.895 --> 00:00:12.905

Okay, great. Thank you.

3

00:00:16.445 --> 00:00:21.145

So we went through the first two steps in the

4

00:00:21.695 --> 00:00:22.825

operational concept.

5

00:00:23.725 --> 00:00:24.785

We have a checklist title.

6

00:00:25.005 --> 00:00:26.665

We have defined the beginning and the end.

7

00:00:26.885 --> 00:00:28.825

And I got some great comments back.

8

00:00:28.925 --> 00:00:32.665

And I think we need to modify the, uh,

9

00:00:33.665 --> 00:00:37.185

scenario a little bit where we say standby,

10

00:00:43.155 --> 00:00:45.945

where we say in your flight test operation, it's common

11

00:00:46.045 --> 00:00:49.105

to land taxi clear of the runway and depart again.

12

00:00:49.525 --> 00:00:52.185

Of course, we may not taxi clear of the runway and,

13

00:00:52.185 --> 00:00:53.745

and we still have the requirement to,

14

00:00:53.925 --> 00:00:56.465  
to reconfigure the airplane. But

15

00:00:56.465 --> 00:00:58.025  
These guys whining, right? Did

16

00:00:58.025 --> 00:00:58.825  
They, on their checklist,

17

00:01:03.895 --> 00:01:08.425  
they, um, uh, we may do a stop and go.

18

00:01:09.205 --> 00:01:12.105  
We may back taxi or we may do a 180

19

00:01:12.125 --> 00:01:13.385  
and depart opposite direction.

20

00:01:13.445 --> 00:01:16.745  
So I think we strike the words taxi clear of the runway.

21

00:01:16.965 --> 00:01:21.145  
We really have the more generic complete, uh,

22

00:01:21.155 --> 00:01:22.345  
range of possibilities.

23

00:01:23.165 --> 00:01:24.665  
So it's common to land

24

00:01:25.205 --> 00:01:27.505  
and depart again without shutting down engines.

25

00:01:28.575 --> 00:01:30.545  
Okay, thanks for those inputs on that.

26

00:01:32.725 --> 00:01:37.225  
So the next items to define, uh,

27

00:01:37.395 --> 00:01:39.265

begin with, is it well practiced.

28

00:01:40.565 --> 00:01:44.065

And here we're just asking the question, is it frequent

29

00:01:44.285 --> 00:01:46.825

or, uh, uh, frequently accomplished or infrequent?

30

00:01:47.325 --> 00:01:51.665

Do your participants, uh, does your team, whoever it is,

31

00:01:52.895 --> 00:01:55.345

typically do the procedure from memory?

32

00:01:56.205 --> 00:02:00.265

And one thing to take into account is that perhaps most

33

00:02:00.265 --> 00:02:01.345

of the time they do it from memory,

34

00:02:01.445 --> 00:02:02.665

but whatever the activity is,

35

00:02:02.665 --> 00:02:04.585

it may not be two pilots in a flight deck,

36

00:02:04.885 --> 00:02:06.545

may be some other activity on the ground.

37

00:02:07.165 --> 00:02:09.065

Uh, there may be occasional team members

38

00:02:09.125 --> 00:02:10.545

who aren't very familiar with it.

39

00:02:10.605 --> 00:02:14.625

So think not only about who does this activity day in

40

00:02:14.625 --> 00:02:17.745

and day out, but guest members, other people

41  
00:02:17.805 --> 00:02:20.945  
who may come in occasionally, are they going to have it

42  
00:02:21.245 --> 00:02:22.785  
as a well-practiced activity?

43  
00:02:23.775 --> 00:02:27.505  
Okay, the next question is the one we looked at already,

44  
00:02:27.645 --> 00:02:28.905  
is it normal or non normal?

45  
00:02:30.005 --> 00:02:34.025  
Is it one of those procedures that we do, uh, typically

46  
00:02:34.595 --> 00:02:37.505  
daily, uh, day in and day out?

47  
00:02:37.605 --> 00:02:40.345  
Or is it something that's a contingency that's done rarely?

48  
00:02:42.445 --> 00:02:45.905  
And then are we going to use a read and do flow

49  
00:02:46.725 --> 00:02:49.385  
or a due then confirm flow.

50  
00:02:51.285 --> 00:02:54.985  
And as a reminder, these are the typical relationships

51  
00:02:54.985 --> 00:02:57.145  
between the normal and non-normal checklists

52  
00:02:57.375 --> 00:02:59.965  
that do then confirm and read and do.

53  
00:03:00.785 --> 00:03:03.485  
Um, and this is reproduced in your handout,

54  
00:03:03.595 --> 00:03:05.045

this little diagram right here.

55

00:03:06.665 --> 00:03:09.645

So these are the three questions, the act

56

00:03:09.945 --> 00:03:11.765

to work next in your groups.

57

00:03:12.745 --> 00:03:14.125

Any questions on these

58

00:03:14.305 --> 00:03:16.845

before we start with another group activity?

59

00:03:19.995 --> 00:03:21.805

Okay, these ones are pretty straightforward,

60

00:03:21.985 --> 00:03:26.165

so I think in five minutes we should be able to answer these

61

00:03:26.265 --> 00:03:27.845

and one of them at least is

62

00:03:28.085 --> 00:03:29.485

explicitly answered in the handout.

63

00:03:29.585 --> 00:03:31.365

So that was a gimme.

64

00:03:31.865 --> 00:03:36.565

Um, why don't you take five minutes and get into your groups

65

00:03:36.905 --> 00:03:39.685

and develop the answers to these three items.

66

00:04:14.005 --> 00:04:17.295

Okay? So let's get some feedback on these three items.

67

00:04:19.615 --> 00:04:20.635

Was there anyone

68  
00:04:21.985 --> 00:04:25.915  
that said this was not a well practiced procedure?

69  
00:04:28.335 --> 00:04:31.275  
You said it was not. Okay. Explain for us. Well,

70  
00:04:31.275 --> 00:04:35.115  
We said, uh, the handout says that the crew members,

71  
00:04:35.175 --> 00:04:36.835  
the company crew members are well practiced,

72  
00:04:37.135 --> 00:04:38.555  
but they also have customers

73  
00:04:38.655 --> 00:04:40.315  
who may, may not be familiar with

74  
00:04:40.315 --> 00:04:41.315  
This. Uh, okay,

75  
00:04:41.315 --> 00:04:42.875  
you want to comment on

76  
00:04:42.875 --> 00:04:43.875  
That? Well, true.

77  
00:04:43.875 --> 00:04:47.555  
So that's their one crew member in the flight

78  
00:04:47.555 --> 00:04:50.275  
crew may not be well practiced in this procedure.

79  
00:04:55.975 --> 00:05:00.675  
The operational concept couldn't, can get down

80  
00:05:00.675 --> 00:05:04.675  
to some detail in this case as to who's going to,

81  
00:05:05.135 --> 00:05:06.795

if there's one company pilot

82

00:05:06.935 --> 00:05:09.915

and one, uh, customer pilot

83

00:05:10.255 --> 00:05:12.555

who would be conducting the checklist.

84

00:05:13.455 --> 00:05:17.755

So yeah, you'd get into a detailed description of what the,

85

00:05:17.755 --> 00:05:19.675

uh, operational concept might be.

86

00:05:20.905 --> 00:05:23.075

Okay. Good. Um,

87

00:05:24.615 --> 00:05:26.795

did anybody say this was a non-normal?

88

00:05:31.155 --> 00:05:32.155

Good?

89

00:05:39.195 --> 00:05:40.565

It's an Alternate normal.

90

00:05:41.795 --> 00:05:44.325

Okay. That's a's a good category.

91

00:05:44.665 --> 00:05:47.965

We do have, Okay.

92

00:05:48.545 --> 00:05:52.925

The big question I heard, I heard several of you wrestling

93

00:05:52.925 --> 00:05:56.165

with, is this a do and confirm or a read and do,

94

00:05:57.025 --> 00:06:00.405

and I'm gonna ask Dan again to go into a little detail

95

00:06:00.425 --> 00:06:03.725

or explanation about the difference between the two.

96

00:06:04.005 --> 00:06:05.445

'cause that is a distinction.

97

00:06:06.985 --> 00:06:10.005

So yeah, the, as far as what the terms are referring

98

00:06:10.005 --> 00:06:14.085

to the do then confirm is to go

99

00:06:14.085 --> 00:06:16.405

through your procedure from your training.

100

00:06:17.345 --> 00:06:20.765

Uh, in this case it might be the company pilot

101

00:06:21.625 --> 00:06:25.165

is taking the actions to reconfigure the airplane set up,

102

00:06:25.345 --> 00:06:27.485

flight management, auto flight, et cetera.

103

00:06:28.115 --> 00:06:29.845

Take the actions that are listed in the,

104

00:06:29.905 --> 00:06:31.805

uh, procedure there.

105

00:06:32.705 --> 00:06:36.245

And then before moving into the next critical phase,

106

00:06:36.675 --> 00:06:39.645

take off, uh, to run a checklist

107

00:06:40.545 --> 00:06:42.165

and accomplish the critical items.

108

00:06:42.355 --> 00:06:45.765



That would be do then confirm, read

109

00:06:45.765 --> 00:06:49.205

and do would be to work from the checklist

110

00:06:49.665 --> 00:06:53.405

and take each action in real time from the checklist.

111

00:06:54.675 --> 00:06:58.845

Does that clarify any questions on

112

00:06:58.845 --> 00:07:00.765

that? Yes. We had

113

00:07:00.765 --> 00:07:02.685

A question in our group about, uh, that concept.

114

00:07:03.425 --> 00:07:06.525

Is there ever a time when you would combine both, uh, read

115

00:07:06.525 --> 00:07:08.565

and do, and they do they confirm the same checklist?

116

00:07:10.165 --> 00:07:13.445

I think a checklist could be designed

117

00:07:13.445 --> 00:07:14.965

that has elements of each.

118

00:07:15.825 --> 00:07:20.715

For example, you may accomplish a procedure from memory, go

119

00:07:20.715 --> 00:07:23.795

through a confirmed checklist.

120

00:07:24.775 --> 00:07:26.195

But then, and,

121

00:07:26.195 --> 00:07:28.995

and I gave an example earlier of a detailed briefing.

122

00:07:29.615 --> 00:07:32.195

You may have, let's say a six point briefing

123

00:07:32.425 --> 00:07:35.995

that you're always going to read from the checklist in order

124

00:07:36.055 --> 00:07:38.835

to, uh, be sure you accomplish the briefing.

125

00:07:38.855 --> 00:07:40.475

So then the training,

126

00:07:40.935 --> 00:07:44.275

the operational concept would be laid out from the beginning

127

00:07:44.495 --> 00:07:48.715

as a flow followed by a confirmed checklist

128

00:07:49.545 --> 00:07:51.715

with a, a short read

129

00:07:51.715 --> 00:07:55.155

and do section if that was appropriate to the condition

130

00:07:55.155 --> 00:07:57.475

and you all decided that that was the safest

131

00:07:57.475 --> 00:07:59.435

and most appropriate flow that was gonna work

132

00:07:59.435 --> 00:08:02.515

for all the users, that essentially would be a combination.

133

00:08:03.255 --> 00:08:04.395

Um, generally though,

134

00:08:05.815 --> 00:08:10.795

one checklist will be designed either for read

135

00:08:10.795 --> 00:08:13.155

and do or do then confirm.

136

00:08:13.355 --> 00:08:16.835

I mean, if a full checklist would typically not be

137

00:08:16.835 --> 00:08:19.915

appropriate for those two different types of flows,

138

00:08:20.225 --> 00:08:24.875

because the do then confirm flow is going to only

139

00:08:25.925 --> 00:08:27.435

check the critical items

140

00:08:27.815 --> 00:08:29.795

and some of the noncritical items would not

141

00:08:29.795 --> 00:08:30.915

be included on that checklist.

142

00:08:33.455 --> 00:08:36.155

Now, some of you were also discussing your organizational

143

00:08:36.165 --> 00:08:38.475

standpoint and that your organization

144

00:08:39.015 --> 00:08:40.675

has some determinations as far

145

00:08:40.675 --> 00:08:43.355

as which practices which activities are read and do.

146

00:08:44.255 --> 00:08:47.195

And so you have to sort of merge that into your thinking.

147

00:08:48.015 --> 00:08:50.915

So that all comes, so how many, how many

148

00:08:50.915 --> 00:08:52.715

of you had due then confirm.

149

00:08:55.635 --> 00:08:57.125

Okay. How many had read

150

00:08:57.125 --> 00:09:01.365

and do Okay, how many just weren't sure what you were doing?

151

00:09:03.515 --> 00:09:05.845

Okay, about a, a third, a third and a third.

152

00:09:07.225 --> 00:09:09.405

Oh, there was a question over here, Dan. Is

153

00:09:09.405 --> 00:09:13.685

There a, is there any linkage between the well practice

154

00:09:14.645 --> 00:09:17.245

decision and the type of checklist decision?

155

00:09:17.385 --> 00:09:20.325

And, uh, for example, if it's well practiced, does

156

00:09:20.325 --> 00:09:22.685

that mean it's, uh, do and confirm?

157

00:09:22.875 --> 00:09:25.365

Yeah, that's, that is the strongest linkage right there.

158

00:09:25.665 --> 00:09:28.045

If it's, if all your team members

159

00:09:28.705 --> 00:09:30.765

are well practiced in the procedure,

160

00:09:31.505 --> 00:09:33.165

that's when it's most efficient

161

00:09:33.825 --> 00:09:35.885

to have a due then confirmed checklist.

162

00:09:36.185 --> 00:09:39.925

And, and you know, our, our commercial airplane

163

00:09:40.885 --> 00:09:43.045

procedural flows are typically set up that way.

164

00:09:43.065 --> 00:09:44.805

And so there's the best example of that.

165

00:09:45.105 --> 00:09:46.125

We go through our flows

166

00:09:46.125 --> 00:09:48.365

and then we check just a few critical items.

167

00:09:49.945 --> 00:09:52.085

Can I segue on Bob question? Yes, please. So

168

00:09:52.265 --> 00:09:54.605

You stay in the scenario, um, like there,

169

00:09:54.605 --> 00:09:55.965

know the procedures, but errors

170

00:09:55.965 --> 00:09:57.045

and inhibitions have occurred.

171

00:09:57.395 --> 00:09:59.805

Does that start to point you towards a, uh, read and do

172

00:10:00.355 --> 00:10:02.605

Well that actually it, it, it was meant

173

00:10:02.705 --> 00:10:05.005

to be just without a checklist at all.

174

00:10:05.025 --> 00:10:07.045

So we're developing a checklist in response

175

00:10:07.045 --> 00:10:08.365

to this scenario.

176  
00:10:09.105 --> 00:10:11.645  
So no, I wouldn't necessarily say it's pointing

177  
00:10:11.645 --> 00:10:13.525  
to either type just at the fact

178  
00:10:13.525 --> 00:10:15.285  
that we don't have a checklist at all at this point.

179  
00:10:16.435 --> 00:10:17.845  
Good question, Jerry.

180  
00:10:18.265 --> 00:10:21.805  
And could you have the details such that you do it as,

181  
00:10:22.185 --> 00:10:23.445  
as they do that confirm,

182  
00:10:24.865 --> 00:10:27.885  
but you could also use the details in the checklist

183  
00:10:28.575 --> 00:10:30.725  
where you could also read it

184  
00:10:31.035 --> 00:10:34.085  
with a non-familiar pilot to read?

185  
00:10:34.865 --> 00:10:37.125  
So that's a great question that Jerry's asking.

186  
00:10:38.385 --> 00:10:41.325  
If you, if you normally would typically do it

187  
00:10:41.325 --> 00:10:42.525  
as a do then confirm,

188  
00:10:42.925 --> 00:10:45.845  
couldn't you also provide the full detail

189  
00:10:46.465 --> 00:10:47.885

for a non-familiar pilot?

190

00:10:49.425 --> 00:10:51.285

And the answer is yes,

191

00:10:51.465 --> 00:10:54.765

but it would not be in the same checklist.

192

00:10:55.065 --> 00:10:57.445

And I'll, I'll address that in more detail later.

193

00:10:57.865 --> 00:11:00.165

But you want a checklist to always be something

194

00:11:00.165 --> 00:11:04.045

that the pilot is going to read every step of not

195

00:11:04.825 --> 00:11:06.885

be trained to leave items out.

196

00:11:07.265 --> 00:11:09.845

Uh, because once you start leading I leaving items out,

197

00:11:09.845 --> 00:11:11.285

it's really not a checklist anymore.

198

00:11:11.425 --> 00:11:13.365

And it, and it's gonna cause errors.

199

00:11:13.785 --> 00:11:17.245

So you may have a confirmed checklist, uh,

200

00:11:17.265 --> 00:11:19.325

but then have on the other side,

201

00:11:19.505 --> 00:11:24.085

or as an alternate reference available the full procedure if

202

00:11:24.085 --> 00:11:25.925

there's an occasional sort of, uh,

203

00:11:25.935 --> 00:11:27.645  
unfamiliar, uh, crew member.

204

00:11:28.745 --> 00:11:30.165  
Yes. Sorry, that's a good question too,

205

00:11:30.165 --> 00:11:32.125  
because I was working with a group that wanted

206

00:11:32.125 --> 00:11:35.645  
to develop a checklist similar to what Dan's talking about,

207

00:11:35.705 --> 00:11:38.045  
but for training purposes now.

208

00:11:38.075 --> 00:11:40.925  
Okay, so you're crossing what you're trying to do.

209

00:11:41.765 --> 00:11:44.765  
'cause the checklist is not meant to be a training document.

210

00:11:45.345 --> 00:11:47.565  
It can supplement training, but in

211

00:11:47.565 --> 00:11:49.805  
and of itself, it's not meant to be training.

212

00:11:50.585 --> 00:11:54.055  
So you can't, you can't have both. There

213

00:11:54.055 --> 00:11:56.175  
Were, there was another question in the back there.

214

00:11:56.975 --> 00:11:58.055  
I I have a follow

215

00:11:58.075 --> 00:11:59.075  
Up to that question.

216

00:11:59.145 --> 00:12:03.495



Sorry. In my experience, I could see a read

217

00:12:03.595 --> 00:12:06.775

and do checklist being implemented in two ways

218

00:12:08.115 --> 00:12:12.935

and experience, and you could, could you not say, Hey,

219

00:12:13.115 --> 00:12:16.375

in the briefing for life, if your experience pilot says,

220

00:12:16.715 --> 00:12:18.575

I'm gonna accomplish the A checklist,

221

00:12:18.675 --> 00:12:20.895

and then you read through it and I'll confirm it all done,

222

00:12:21.075 --> 00:12:25.175

you go through for the, the customer pilot, um,

223

00:12:25.395 --> 00:12:28.695

he simply has the read each step ahead.

224

00:12:28.715 --> 00:12:30.375

He accomplishes it both

225

00:12:30.555 --> 00:12:34.295

and both cases, the entire steps are accomplished.

226

00:12:34.515 --> 00:12:38.035

But to expedite it for the pilot that's familiar with it,

227

00:12:38.295 --> 00:12:40.315

he simply, he's getting it done

228

00:12:40.455 --> 00:12:41.835

and then acknowledging all this,

229

00:12:42.135 --> 00:12:43.555

is there a problem with that?

230  
00:12:44.065 --> 00:12:45.995  
Yeah, I think, I think that makes sense.

231  
00:12:46.295 --> 00:12:51.235  
Uh, you, you would have, as you,

232  
00:12:51.235 --> 00:12:53.915  
when you're using it as a do then confirmed checklist,

233  
00:12:54.775 --> 00:12:57.755  
it would be, it might be experienced as a sort

234  
00:12:57.755 --> 00:12:59.795  
of a burdensome checklist to the users

235  
00:12:59.795 --> 00:13:02.675  
because it's a longer checklist

236  
00:13:02.895 --> 00:13:05.475  
and it has noncritical items in it.

237  
00:13:05.855 --> 00:13:10.235  
But, uh, given that you still could use it that way.

238  
00:13:11.265 --> 00:13:14.435  
Yeah. Uh, yes.

239  
00:13:14.895 --> 00:13:18.555  
So the one part I had a little problem with was sort of

240  
00:13:18.555 --> 00:13:20.595  
that attc kind of timing kind of one.

241  
00:13:21.095 --> 00:13:22.555  
So once you changed the scenario

242  
00:13:22.655 --> 00:13:23.795  
and you put it that as a stop

243  
00:13:23.795 --> 00:13:27.275

and go as a valid use of this checklist, then

244

00:13:27.275 --> 00:13:29.955

to me it makes it really hard to do a read

245

00:13:29.955 --> 00:13:31.675

and do as a stop and go.

246

00:13:31.675 --> 00:13:33.395

Mm-hmm. You know, it's almost like, okay,

247

00:13:33.775 --> 00:13:35.115

you have the unfamiliar pilots.

248

00:13:35.115 --> 00:13:37.795

We're like, okay, we're gonna do the confer, you know,

249

00:13:37.895 --> 00:13:40.395

for the pilot company pilot runs for everything on there.

250

00:13:40.395 --> 00:13:42.955

Mm-hmm. Is that the timing side that made it really tough?

251

00:13:42.975 --> 00:13:45.395

And I don't know if it's just the, alright, you make

252

00:13:45.395 --> 00:13:48.795

that operational risk management decision that says, Hey,

253

00:13:48.795 --> 00:13:51.275

you're Ken, you're not familiar with this checklist

254

00:13:51.415 --> 00:13:52.475

and we're not gonna stop.

255

00:13:52.475 --> 00:13:54.195

It goes because, you know,

256

00:13:54.585 --> 00:13:55.585

Kind of thing. Yeah. And

257

00:13:55.585 --> 00:13:56.835  
you're getting at what, what the,

258

00:13:56.835 --> 00:13:59.835  
that was the intent of the scenario was the time pressure

259

00:13:59.855 --> 00:14:00.875  
and, and the time pressure

260

00:14:00.975 --> 00:14:03.755  
and the scenario was written as it could be a TC pressure.

261

00:14:03.775 --> 00:14:06.555  
But the even greater time pressure is you've

262

00:14:06.555 --> 00:14:07.595  
gotta stop and go on the runway.

263

00:14:07.655 --> 00:14:08.875  
That's probably the worst case.

264

00:14:09.695 --> 00:14:11.955  
And, uh, and that does start

265

00:14:11.955 --> 00:14:15.995  
to point towards a do then confirm that the company pilot

266

00:14:16.215 --> 00:14:20.235  
who is more familiar with the checklist would be able

267

00:14:20.235 --> 00:14:21.275  
to do each time.

268

00:14:23.025 --> 00:14:25.155  
Okay. We wanna be sure and get through the entire thing.

269

00:14:25.155 --> 00:14:26.235  
So I would encourage you if,

270

00:14:26.235 --> 00:14:27.715

if there are additional questions,

271

00:14:27.735 --> 00:14:30.355

please jot them down so you can remember them.

272

00:14:30.375 --> 00:14:33.555

And we, when we get to the end, if we have additional time,

273

00:14:33.555 --> 00:14:34.915

we'll come back and revisit this.

274

00:14:34.915 --> 00:14:37.635

Again, this is probably one of the most difficult areas

275

00:14:38.055 --> 00:14:40.515

and understanding of how to apply this,

276

00:14:40.935 --> 00:14:43.515

but some of this I think will be clarified when we go

277

00:14:43.515 --> 00:14:45.395

through some of the remaining steps to do it

278

00:14:45.885 --> 00:14:46.885

Right. And it, and it really

279

00:14:46.885 --> 00:14:48.235

does bring to what Bill was saying,

280

00:14:48.235 --> 00:14:49.595

there isn't necessarily a right answer,

281

00:14:49.615 --> 00:14:51.325

but what we're doing is we're hashing

282

00:14:51.325 --> 00:14:52.365

through the considerations

283

00:14:53.065 --> 00:14:57.045

and we're, even though we're not necessarily all coming

284

00:14:57.045 --> 00:14:58.605  
to the exact same conclusion here,

285

00:14:58.605 --> 00:15:00.485  
because we're using a slight d different set

286

00:15:00.485 --> 00:15:02.245  
of assumptions in our own experience,

287

00:15:03.305 --> 00:15:05.845  
we are talking about exactly the right considerations

288

00:15:05.945 --> 00:15:07.085  
in making these decisions.

289

00:15:09.195 --> 00:15:12.405  
Okay. Go back to the presentation, Claude.

290

00:15:21.285 --> 00:15:24.345  
So the next question is the physical form of the checklist.

291

00:15:26.525 --> 00:15:30.945  
And this chart here is a sort of a brief back,

292

00:15:31.185 --> 00:15:34.345  
a brief, um, treatment of different options

293

00:15:34.405 --> 00:15:35.505  
and their pros and cons.

294

00:15:35.565 --> 00:15:36.705  
And it's really looking not

295

00:15:36.705 --> 00:15:39.705  
so much at necessarily just the flight deck environment,

296

00:15:39.965 --> 00:15:42.785  
but a wide range of possible environments

297

00:15:42.785 --> 00:15:44.305

that you might use checklists in.

298

00:15:44.845 --> 00:15:47.705

And so let's start with the idea of putting a checklist

299

00:15:47.845 --> 00:15:49.705

as a poster on the wall and,

300

00:15:49.765 --> 00:15:51.905

and for operating rooms, those,

301

00:15:51.935 --> 00:15:54.825

this has been a pretty good solution for a lot of, uh,

302

00:15:55.005 --> 00:15:56.145

in the medical environment.

303

00:15:56.575 --> 00:15:58.945

Good thing about that is it keeps your hands free.

304

00:15:59.285 --> 00:16:03.985

So if you're a surgeon scrubbed in, uh, that solves

305

00:16:03.985 --> 00:16:05.385

that problem, it allows all team

306

00:16:05.545 --> 00:16:06.585

members to see the checklist.

307

00:16:07.445 --> 00:16:11.985

The cons are that it's one poster or maybe just a few,

308

00:16:12.165 --> 00:16:14.225

but it's better when there's only one process

309

00:16:14.365 --> 00:16:15.865

that's being done in the room.

310

00:16:16.695 --> 00:16:18.145

Only can fit one page

311  
00:16:18.885 --> 00:16:21.865  
and it doesn't work if the checklist needs to be marked.

312  
00:16:23.585 --> 00:16:26.265  
A laminated card is what we're most familiar with.

313  
00:16:27.005 --> 00:16:29.385  
Uh, different checklist cards can be used

314  
00:16:29.385 --> 00:16:30.465  
for different processes.

315  
00:16:31.305 --> 00:16:35.345  
A checklist card can be marked with a non-permanent marker,

316  
00:16:35.525 --> 00:16:37.305  
and then you can erase it and reuse it.

317  
00:16:37.965 --> 00:16:40.545  
Uh, it's good for one or two page checklist.

318  
00:16:41.845 --> 00:16:44.345  
And it's also good for a one page checklist

319  
00:16:44.455 --> 00:16:46.465  
with expanded information on the other side,

320  
00:16:46.515 --> 00:16:48.105  
which was just brought up a minute ago.

321  
00:16:48.405 --> 00:16:51.865  
The idea of having a confirmed checklist on one side,

322  
00:16:51.925 --> 00:16:54.265  
but maybe the full procedure on the other side.

323  
00:16:54.645 --> 00:16:58.585  
For those occasions, when you have a non-familiar, uh,

324  
00:16:59.055 --> 00:17:02.745



team member, a paper checklist

325

00:17:03.525 --> 00:17:07.265

can actually be marked and data can be entered in signatures

326

00:17:07.325 --> 00:17:09.865

and that kind of thing, if that's necessary.

327

00:17:10.485 --> 00:17:13.985

And it can be kept as a record, obviously can't be reused.

328

00:17:14.845 --> 00:17:17.065

Now we get into a flip book with tabs, so

329

00:17:17.065 --> 00:17:19.105

that's like our quick reference handbook

330

00:17:19.365 --> 00:17:23.305

or, uh, flight manual That's good for

331

00:17:24.305 --> 00:17:26.705

multiple checklists such as non-normal checklists.

332

00:17:27.095 --> 00:17:31.065

What you get into there with the book is now the need

333

00:17:31.125 --> 00:17:32.585

and the design of the checklist

334

00:17:33.005 --> 00:17:34.585

to consider access to the checklist.

335

00:17:34.805 --> 00:17:37.345

We have many checklists in one book.

336

00:17:37.845 --> 00:17:41.625

So the indexing system, the tabs, the titles

337

00:17:41.625 --> 00:17:44.585

of the checklist, condition statements so that the,

338  
00:17:45.045 --> 00:17:47.785  
the users can confirm that they're in the correct checklist.

339  
00:17:48.245 --> 00:17:50.405  
All the access issues need

340  
00:17:50.405 --> 00:17:53.405  
to be designed very well when you get into a book full

341  
00:17:53.405 --> 00:17:56.805  
of checklists and then the tablet computer.

342  
00:17:56.945 --> 00:17:59.445  
So that gets into the potential for the advantages

343  
00:17:59.445 --> 00:18:00.885  
of an electronically based checklist,

344  
00:18:00.975 --> 00:18:03.405  
which we may have some time to talk about at the end

345  
00:18:03.405 --> 00:18:07.765  
of this presentation that can have electronic c check boxes

346  
00:18:07.945 --> 00:18:09.205  
to keep your place in the checklist.

347  
00:18:09.475 --> 00:18:10.525  
It's a huge advantage

348  
00:18:10.715 --> 00:18:14.165  
because skipping over line items accidentally in this advan,

349  
00:18:14.225 --> 00:18:18.205  
uh, was brought up here about the, the issue of having

350  
00:18:18.225 --> 00:18:19.885  
to juggle two different checklists

351  
00:18:19.885 --> 00:18:21.765

and potentially losing your place in the checklist.

352

00:18:22.505 --> 00:18:24.885

Uh, if you've got electronically based checklists

353

00:18:24.885 --> 00:18:27.685

that are well implemented, they can do place keeping in

354

00:18:27.925 --> 00:18:30.125

multiple checklists and always drive you back in.

355

00:18:31.345 --> 00:18:34.125

Uh, and then the checklist itself can

356

00:18:34.705 --> 00:18:36.125

record completion data.

357

00:18:36.745 --> 00:18:38.965

Uh, it can be tied to a database

358

00:18:38.985 --> 00:18:41.045

and give you information about the use of the checklist.

359

00:18:42.425 --> 00:18:44.085

Now those are higher cost,

360

00:18:44.085 --> 00:18:45.965

and then there's also a reliability issue.

361

00:18:46.185 --> 00:18:47.645

If you're in a critical environment

362

00:18:47.645 --> 00:18:52.045

and you have only one tablet, computer, uh, airplane system,

363

00:18:52.445 --> 00:18:55.565

E, FB, whatever it is, you may have an issue, uh,

364

00:18:55.565 --> 00:18:57.645

with the reliability and availability of the checklist.

365

00:18:57.825 --> 00:18:59.325

So that becomes an issue with those.

366

00:19:00.305 --> 00:19:02.325

So these aren't all the possible solutions.

367

00:19:02.325 --> 00:19:04.085

There are probably others that you could come up with,

368

00:19:04.225 --> 00:19:07.885

but it's a, it's a, uh, an overview

369

00:19:08.025 --> 00:19:09.885

of the different forms checklists can take

370

00:19:09.885 --> 00:19:11.925

and what the advantages and disadvantages are.

371

00:19:13.485 --> 00:19:14.485

Question. Yes.

372

00:19:14.865 --> 00:19:18.005

So have you ever run across, uh, airplanes?

373

00:19:18.675 --> 00:19:22.085

Anybody run across where the pilot flying the pilot not

374

00:19:22.085 --> 00:19:23.645

flying, might have a separate checklist

375

00:19:24.065 --> 00:19:25.845

to expedite something like this?

376

00:19:26.265 --> 00:19:27.885

So a quick turnaround kind of thing.

377

00:19:28.425 --> 00:19:30.125

You have two crews that are both familiar.

378

00:19:31.105 --> 00:19:33.445

Has anybody ever seen where you have two separate checklists

379

00:19:33.445 --> 00:19:34.445  
that get it done quicker?

380

00:19:34.635 --> 00:19:35.645  
Each does their own part?

381

00:19:35.835 --> 00:19:38.245  
Yeah, certainly in the lab environment.

382

00:19:38.785 --> 00:19:43.765  
Uh, but I, you know, if, if that becomes the,

383

00:19:44.065 --> 00:19:48.885  
the way of accomplishing the task in, um, real time.

384

00:19:48.945 --> 00:19:52.245  
And I think in the cre three crew flight decks, there were,

385

00:19:52.265 --> 00:19:53.965  
we were sort of operating from one checklist,

386

00:19:54.105 --> 00:19:56.565  
but you really broke out into everyone's separate area

387

00:19:56.565 --> 00:19:58.365  
of responsibility with a flight engineer,

388

00:19:58.385 --> 00:19:59.685  
you know, more distinctly.

389

00:20:00.465 --> 00:20:03.445  
Um, so I think if that, if that is the way

390

00:20:03.445 --> 00:20:08.165  
of getting the job done in the time, um, uh, then

391

00:20:08.305 --> 00:20:11.165  
that's a possibility. There's commercial

392

00:20:11.165 --> 00:20:12.165

Space Application. Yes.

393

00:20:12.165 --> 00:20:13.165

I was just thinking about that.

394

00:20:13.385 --> 00:20:17.725

Uh, also the shuttle, uh, they used a really complex system

395

00:20:17.745 --> 00:20:21.765

of checklists in the, uh, the US shuttle program. Keith,

396

00:20:22.225 --> 00:20:23.765

Can we do that production?

397

00:20:25.075 --> 00:20:27.415

The, so same checklist,

398

00:20:27.475 --> 00:20:28.935

but they're doing different jobs and they're

399

00:20:32.065 --> 00:20:33.065

Right. So, okay, so

400

00:20:33.065 --> 00:20:34.935

that example is in production flight test,

401

00:20:35.055 --> 00:20:38.815

a system operator with their set of procedures that's, uh,

402

00:20:39.395 --> 00:20:44.135

um, going in parallel with the, the pilots,

403

00:20:44.475 --> 00:20:46.095

uh, doing their set of procedures.

404

00:20:46.095 --> 00:20:49.605

So essentially you're merging different coordinated Yeah.

405

00:20:50.475 --> 00:20:51.805

Very carefully orchestrated.

406

00:20:51.805 --> 00:20:53.965

Someone talked, referred to it as like a song

407

00:20:53.985 --> 00:20:56.525

or perhaps a dance, and that's what it feels like.

408

00:20:58.355 --> 00:21:02.765

Okay. So, um, why don't we do,

409

00:21:02.795 --> 00:21:05.205

this will be very brief, I think.

410

00:21:05.305 --> 00:21:07.165

So why don't we just take about three minutes,

411

00:21:08.305 --> 00:21:10.685

go into your groups, talk about the possibilities

412

00:21:10.905 --> 00:21:14.845

for checklist, physical form, and then we'll report out.

413

00:21:14.845 --> 00:21:16.565

This will be a quick one. Let's,

414

00:21:23.265 --> 00:21:28.245

all right, let's rejoin

415

00:21:28.305 --> 00:21:29.805

and see what you came up with there

416

00:21:29.945 --> 00:21:31.445

for the physical form of the checklist.

417

00:21:42.725 --> 00:21:44.725

I Card landed card.

418

00:21:45.875 --> 00:21:48.125

Okay, let just engineer.

419  
00:21:49.075 --> 00:21:52.045  
Alright, the human fleshing blood.

420  
00:21:54.755 --> 00:21:57.005  
Anybody have anything else other than laminated card?

421  
00:21:57.145 --> 00:21:58.885  
Tablet. Tablet. Okay.

422  
00:21:59.805 --> 00:22:01.285  
Whatever the rest of the checklists are.

423  
00:22:02.035 --> 00:22:03.445  
Okay. Don't make it

424  
00:22:03.445 --> 00:22:04.645  
different than the rest of the checklist.

425  
00:22:05.375 --> 00:22:09.245  
Electronic on display. Okay. Electronically based.

426  
00:22:17.355 --> 00:22:18.885  
Okay. So you can use a variety

427  
00:22:19.265 --> 00:22:21.845  
to accomplish the same end. Good, thanks.

428  
00:22:22.295 --> 00:22:24.445  
Great. Let's go back to the presentation.

429  
00:22:29.985 --> 00:22:32.645  
The next question is who these, these are the ones

430  
00:22:32.645 --> 00:22:33.965  
that, uh, Dr.

431  
00:22:34.275 --> 00:22:36.965  
Atul Gwane really had not figured out

432  
00:22:36.965 --> 00:22:39.525



before trying to create a surgical safety checklist.

433

00:22:40.305 --> 00:22:41.565

Who will call for the checklist?

434

00:22:42.785 --> 00:22:45.285

Uh, who will read and respond to the checklist?

435

00:22:45.985 --> 00:22:47.725

So who's gonna call for the checklist?

436

00:22:48.065 --> 00:22:50.765

For a normal checklist is simply the person who's gonna

437

00:22:50.765 --> 00:22:51.805

pause the procedure,

438

00:22:52.245 --> 00:22:53.805

whatever it is, and call for the checklist.

439

00:22:53.875 --> 00:22:56.085

They have to be able to recognize the pause point

440

00:22:56.825 --> 00:22:58.005

for a non-normal.

441

00:22:58.235 --> 00:23:01.325

It's recognizing the condition, whatever it may be,

442

00:23:01.385 --> 00:23:03.965

and calling for the checklist in the surgical environment,

443

00:23:04.315 --> 00:23:06.645

that was sometimes a big consideration.

444

00:23:06.785 --> 00:23:08.725

Who is it that's gonna see that the patient

445

00:23:09.265 --> 00:23:10.845

has gone into tachycardia

446

00:23:10.905 --> 00:23:11.925  
or whatever the condition is

447

00:23:11.925 --> 00:23:13.165  
that they have to call for the checklist.

448

00:23:13.945 --> 00:23:18.045  
Um, there that varied depending on what the condition was.

449

00:23:19.065 --> 00:23:21.485  
One thing to consider, especially for larger teams,

450

00:23:21.585 --> 00:23:25.085  
is it should be the highest authority person in the room

451

00:23:25.585 --> 00:23:27.965  
or in the flight deck or whatever it may be.

452

00:23:28.745 --> 00:23:31.165  
Um, initially when Dr.

453

00:23:31.385 --> 00:23:32.405  
Gandhi was, or,

454

00:23:32.405 --> 00:23:34.645  
or some other surgical teams that I've seen,

455

00:23:34.875 --> 00:23:37.125  
they wanted the circulating nurse to be the person.

456

00:23:37.125 --> 00:23:40.445  
They sort of relegated the checklist to the, to one

457

00:23:40.445 --> 00:23:42.045  
of the nurses and not even the highest

458

00:23:42.045 --> 00:23:43.325  
authority nurse in the room.

459

00:23:43.785 --> 00:23:46.605

And I watched as it was very difficult sometimes

460

00:23:46.665 --> 00:23:48.205

for this nurse to get the attention

461

00:23:48.265 --> 00:23:50.845

of everybody in the OR and start a checklist.

462

00:23:51.065 --> 00:23:54.085

In fact, most of the people were just ignoring that person.

463

00:23:55.185 --> 00:23:58.565

So, uh, it isn't as important who reads the checklist,

464

00:23:58.785 --> 00:23:59.845

but who calls for it?

465

00:23:59.865 --> 00:24:04.125

Who stops, pauses the procedure and says, let's do the

466

00:24:04.385 --> 00:24:05.965

before skin incision checklist.

467

00:24:06.265 --> 00:24:10.165

Now, whatever it may be, um, is somebody with the authority

468

00:24:10.165 --> 00:24:12.005

that everyone's gonna pay attention to in the room

469

00:24:14.295 --> 00:24:16.485

Who's going to read and respond to the checklist.

470

00:24:17.185 --> 00:24:19.965

So one person will typically read the checklist,

471

00:24:20.585 --> 00:24:24.525

but the responses could be the opposite person

472

00:24:24.945 --> 00:24:26.445

for a type of a crosscheck,

473

00:24:27.065 --> 00:24:29.685

or it simply could be by area of responsibility.

474

00:24:30.365 --> 00:24:32.965

I think by area of responsibility is the starting point.

475

00:24:33.065 --> 00:24:34.525

And then you would have to have a reason

476

00:24:34.545 --> 00:24:37.165

to do it differently, since those are, that gets everybody

477

00:24:37.225 --> 00:24:41.365

who actually did the task making the response.

478

00:24:41.825 --> 00:24:44.005

In some cases, it's something you can check in real time.

479

00:24:44.145 --> 00:24:46.285

In other cases, it's something that you just have

480

00:24:46.285 --> 00:24:47.485

to say was done.

481

00:24:48.145 --> 00:24:50.765

Uh, sir, for an oxygen test, for example.

482

00:24:51.345 --> 00:24:54.845

Um, so by area of responsibility, uh, generally works well,

483

00:24:54.945 --> 00:24:57.845

but you may have other reasons to say who's going to respond

484

00:24:57.905 --> 00:25:02.765

to the checklist And then will the

485

00:25:02.765 --> 00:25:03.765

checklist be marked?

486

00:25:05.105 --> 00:25:08.245

And this is an area where, again, aviation is,

487

00:25:08.385 --> 00:25:09.765  
in my view, way ahead.

488

00:25:10.345 --> 00:25:12.685  
Uh, the simplest form of a checklist is

489

00:25:12.685 --> 00:25:13.765  
that it's not marked.

490

00:25:14.595 --> 00:25:17.005  
It's not retained as a record.

491

00:25:18.065 --> 00:25:21.045  
Uh, it's simply a device, a tool that you

492

00:25:21.305 --> 00:25:22.965  
as the user will use

493

00:25:22.965 --> 00:25:25.125  
because it's gonna keep you from making mistakes.

494

00:25:25.425 --> 00:25:28.165  
You bring it out, you run through, you check everything,

495

00:25:28.165 --> 00:25:31.805  
you put it away, you're done In other areas, it tends

496

00:25:31.805 --> 00:25:35.845  
to be gravitate towards, uh, we need to check every item.

497

00:25:36.065 --> 00:25:37.485  
We need to sign it. When we're done,

498

00:25:37.505 --> 00:25:38.645  
we need to put it in the records.

499

00:25:39.155 --> 00:25:41.165  
Well, now it becomes something a little bit different.

500  
00:25:41.675 --> 00:25:43.645  
It's something that can put you in

501  
00:25:43.845 --> 00:25:45.005  
jeopardy if you didn't do it.

502  
00:25:45.065 --> 00:25:48.285  
It becomes a task that has to be done for its own sake.

503  
00:25:48.785 --> 00:25:51.445  
And then you start seeing the behaviors, like they go

504  
00:25:51.445 --> 00:25:52.765  
through the items in their flows,

505  
00:25:52.765 --> 00:25:53.765  
they don't really do the checklist,

506  
00:25:53.865 --> 00:25:55.565  
and at the end of the day they go, oh, hey,

507  
00:25:55.565 --> 00:25:57.045  
we didn't fill out that checklist thing

508  
00:25:57.045 --> 00:25:58.525  
and check, check, check, check, check, check,

509  
00:25:58.555 --> 00:25:59.645  
sign, sign, date, date.

510  
00:26:00.025 --> 00:26:01.365  
And the record gets retained.

511  
00:26:01.795 --> 00:26:05.525  
It's no longer the tool to keep you from making mistakes.

512  
00:26:05.555 --> 00:26:08.405  
It's just a burdensome documentation exercise.

513  
00:26:08.825 --> 00:26:12.045

So in its purest form, a checklist is, uh,

514

00:26:12.385 --> 00:26:14.485

not mar is not retained in particular.

515

00:26:14.665 --> 00:26:15.685

And whether it's marked

516

00:26:15.685 --> 00:26:18.605

or not has to do with how long the, the process is.

517

00:26:19.345 --> 00:26:22.605

Um, uh, if you have a long extended process

518

00:26:22.825 --> 00:26:25.485

and it's difficult to, uh, keep your place

519

00:26:25.485 --> 00:26:27.285

or you have a read and do checklist, that's gonna take

520

00:26:27.805 --> 00:26:28.925

a longer period of time.

521

00:26:29.515 --> 00:26:31.565

Then marking it becomes very important.

522

00:26:31.665 --> 00:26:33.965

And of course, electronic checklists have the advantage

523

00:26:34.065 --> 00:26:37.285

of essentially being, uh, marked as you go through them.

524

00:26:39.665 --> 00:26:42.125

So these are the next three questions

525

00:26:42.865 --> 00:26:44.605

for the operational concept.

526

00:26:45.705 --> 00:26:46.925

Who will call for the checklist?

527

00:26:47.185 --> 00:26:51.005

Who will read and respond, and will the checklist be marked?

528

00:26:51.985 --> 00:26:53.525

So any questions on those?

529

00:26:56.395 --> 00:26:58.245

Okay, let's take five minutes

530

00:26:59.905 --> 00:27:02.885

and answer those questions for this scenario.

531

00:27:12.955 --> 00:27:14.805

Okay. We

532

00:27:14.805 --> 00:27:16.445

Can get some feedback on these three questions.

533

00:27:27.085 --> 00:27:31.185

So somebody tell me, who did you choose to be the person

534

00:27:31.185 --> 00:27:32.545

that will call for the checklist?

535

00:27:38.415 --> 00:27:42.145

Okay, so the pilot in command. Anybody else? Pilot

536

00:27:42.145 --> 00:27:43.145

Flying.

537

00:27:43.415 --> 00:27:46.705

Okay, pilot flying. Left seat.

538

00:27:47.535 --> 00:27:49.665

What was that one? Left seat.

539

00:27:51.065 --> 00:27:52.425

I couldn't get you Left seat.

540

00:27:52.805 --> 00:27:54.825



Oh, left seat. Left seat.

541  
00:27:56.535 --> 00:27:59.025  
Okay. Okay.

542  
00:27:59.025 --> 00:28:00.425  
Again, there's no right and wrong,

543  
00:28:01.685 --> 00:28:04.185  
but it needs to be clarified to be sure

544  
00:28:04.185 --> 00:28:06.025  
that everybody understands who respons is,

545  
00:28:06.155 --> 00:28:07.665  
whose responsibility it is.

546  
00:28:08.095 --> 00:28:10.425  
Okay. How about read and respond? Who's gonna read

547  
00:28:11.285 --> 00:28:12.285  
The FP?

548  
00:28:15.485 --> 00:28:17.145  
You're gonna get him in here. Yeah.

549  
00:28:19.355 --> 00:28:20.185  
Roger Lazy.

550  
00:28:23.835 --> 00:28:24.665  
Who's going to read?

551  
00:28:26.965 --> 00:28:27.965  
Pm

552  
00:28:30.775 --> 00:28:32.425  
Whoever normally reads the checklist.

553  
00:28:34.295 --> 00:28:35.825  
Okay. So you make 'em compatible

554

00:28:35.895 --> 00:28:37.465  
with all the other normal checklists.

555

00:28:43.375 --> 00:28:46.225  
Okay, then who's going to respond?

556

00:28:50.045 --> 00:28:53.225  
The what? Sorry, I couldn't hear you. I fly father flying.

557

00:28:54.285 --> 00:28:59.025  
So, okay. That Personal duty action.

558

00:28:59.695 --> 00:29:01.905  
Okay. So by area of responsibility,

559

00:29:04.415 --> 00:29:05.415  
Okay.

560

00:29:05.725 --> 00:29:09.545  
Marked no. Did everybody say yes?

561

00:29:11.815 --> 00:29:13.545  
Okay. Why? What was your reasoning

562

00:29:13.545 --> 00:29:15.065  
for having it marked tablet?

563

00:29:15.115 --> 00:29:16.825  
Electronic. Okay. Okay.

564

00:29:17.485 --> 00:29:18.785  
To show it all go green.

565

00:29:27.535 --> 00:29:30.105  
Okay, great. Again, Dan hit on this pretty well.

566

00:29:30.865 --> 00:29:33.025  
I was working with a group where they said that all

567

00:29:33.025 --> 00:29:35.225

of their checklists, they mark for auditing purposes,

568

00:29:35.515 --> 00:29:37.545

which again, sort of compromises

569

00:29:38.125 --> 00:29:39.585

why you're doing it in the first place,

570

00:29:39.765 --> 00:29:40.905

but you could have reasons

571

00:29:41.105 --> 00:29:42.445

For doing it in your organization.

572

00:29:43.155 --> 00:29:45.445

Yeah, certainly in the electronic environment, the advantage

573

00:29:45.465 --> 00:29:48.205

of marking the checklist simply to keep your place is

574

00:29:48.765 --> 00:29:50.445

a hundred percent good.

575

00:29:51.635 --> 00:29:55.485

Okay, let's go on with the presentation, Claude.

576

00:29:57.595 --> 00:29:58.565

Nice work there.

577

00:30:02.985 --> 00:30:06.245

So now we have answered the questions

578

00:30:06.745 --> 00:30:08.165

for the operational concept.

579

00:30:08.865 --> 00:30:11.845

And, and then we create the operational concept statement,

580

00:30:12.175 --> 00:30:15.765

which is a, a weaving together of those items.

581  
00:30:16.105 --> 00:30:19.605  
And we will pick here from some of these,

582  
00:30:22.535 --> 00:30:24.165  
these are the blanks.

583  
00:30:25.155 --> 00:30:26.205  
Tell you what, um,

584  
00:30:27.105 --> 00:30:28.105  
You want. Just read them.

585  
00:30:28.105 --> 00:30:28.105

586  
00:30:36.715 --> 00:30:37.715  
Well,

587  
00:30:38.285 --> 00:30:41.205  
I think we have, I can't see those very well,

588  
00:30:41.905 --> 00:30:44.565  
but the operational concept statement for the one

589  
00:30:44.565 --> 00:30:45.965  
of our choices was, uh,

590  
00:30:46.155 --> 00:30:49.805  
full stop taxi back checklist, let's call it that.

591  
00:30:50.265 --> 00:30:52.405  
So the full stop taxi back ch checklist.

592  
00:30:52.575 --> 00:30:56.045  
We'll cover the process that begins after landing

593  
00:30:57.745 --> 00:30:59.725  
and ends before takeoff.

594  
00:31:01.395 --> 00:31:02.965  
This is a well practice process.

595

00:31:04.355 --> 00:31:05.685

This is a normal checklist

596

00:31:06.715 --> 00:31:10.085

that will be used in a do then confirm flow.

597

00:31:11.705 --> 00:31:15.565

The checklist will be in the form of a laminated card.

598

00:31:16.665 --> 00:31:18.565

The checklist will be called for

599

00:31:19.665 --> 00:31:21.925

by the PIC.

600

00:31:22.425 --> 00:31:26.045

I'm making this up. I'm choosing from your, your responses.

601

00:31:26.045 --> 00:31:28.085

There's no right answer, but this is an example

602

00:31:28.085 --> 00:31:29.165

of how this might come out.

603

00:31:29.785 --> 00:31:34.725

The checklist will be called for the PIC challenges read

604

00:31:34.825 --> 00:31:39.205

by the PIC responses will be by area of responsibility.

605

00:31:40.025 --> 00:31:42.165

The checklist will not have check marks,

606

00:31:42.605 --> 00:31:44.205

a record will not be retained.

607

00:31:44.745 --> 00:31:48.965

So there is one version, uh, and I kind of picked

608

00:31:48.965 --> 00:31:50.205  
and chose from some of those.

609  
00:31:50.535 --> 00:31:53.165  
Again, not necessarily the one right way to do it.

610  
00:31:53.165 --> 00:31:56.085  
It would vary on your operation and your concept of it,

611  
00:31:56.345 --> 00:31:57.725  
but you would put it all in words.

612  
00:31:57.785 --> 00:31:59.205  
And now you've got a statement

613  
00:32:00.185 --> 00:32:01.925  
for your team developing the checklist.

614  
00:32:02.065 --> 00:32:04.925  
But not only that, this is a nice stage if you have a larger

615  
00:32:04.925 --> 00:32:06.245  
group that you need to do a review

616  
00:32:06.665 --> 00:32:09.045  
and you're in the job, you're in the, the process

617  
00:32:09.145 --> 00:32:10.245  
of developing a checklist,

618  
00:32:10.425 --> 00:32:12.445  
you can take this operational concept statement

619  
00:32:12.445 --> 00:32:14.405  
as a first step and say, look, we don't have the checklist

620  
00:32:14.625 --> 00:32:17.285  
yet, but let's crosscheck this with a larger group

621  
00:32:17.385 --> 00:32:19.365  
or the chief pilot or whoever it is,

622

00:32:19.365 --> 00:32:20.605

and say, this is what we're thinking on

623

00:32:20.625 --> 00:32:21.845

how we're going to use the checklist.

624

00:32:21.985 --> 00:32:24.605

And it's a great way to get an initial review

625

00:32:24.905 --> 00:32:26.405

of the direction you're going

626

00:32:26.435 --> 00:32:27.805

with your checklist development.

627

00:32:29.075 --> 00:32:32.045

Okay. Any questions on the operational concept?

628

00:32:33.345 --> 00:32:36.005

On the value of it? How it can be used?

629

00:32:37.875 --> 00:32:40.365

Okay, great. We'll keep going.

630

00:32:43.645 --> 00:32:48.165

Critical items. So this is the step where you decide

631

00:32:48.235 --> 00:32:50.285

what are the potential items that are going

632

00:32:50.285 --> 00:32:51.405

to be on your checklist.

633

00:32:52.225 --> 00:32:55.405

And let's by the way, assume for moving forward

634

00:32:55.595 --> 00:32:58.925

that this is a do then confirm checklist just

635

00:32:58.925 --> 00:33:00.525  
for the purpose of this exercise.

636  
00:33:00.525 --> 00:33:03.285  
And then we'll sort of be on the same page operational

637  
00:33:03.285 --> 00:33:05.125  
concept wise as we move forward.

638  
00:33:07.325 --> 00:33:09.765  
Critical items are defined as actions,

639  
00:33:09.865 --> 00:33:12.365  
if omitted may have a significant negative impact on the

640  
00:33:12.365 --> 00:33:15.405  
outcome of the procedure, safety, destruction

641  
00:33:15.405 --> 00:33:17.365  
of facilities, et cetera.

642  
00:33:21.315 --> 00:33:24.525  
What we want to do when we're deciding on critical items is

643  
00:33:24.625 --> 00:33:27.965  
try to use, make, make it evidence-based

644  
00:33:29.065 --> 00:33:30.245  
use available research.

645  
00:33:30.825 --> 00:33:35.165  
And in our domain aviation, there's a lot of research.

646  
00:33:35.305 --> 00:33:38.245  
We have safety research on things that have gone wrong,

647  
00:33:38.435 --> 00:33:39.685  
have led to accidents,

648  
00:33:39.985 --> 00:33:41.965  
and what the omissions were in some cases



649

00:33:42.115 --> 00:33:43.525

that led to those accidents.

650

00:33:44.105 --> 00:33:45.645

In medicine, it's the same thing.

651

00:33:46.465 --> 00:33:48.845

Uh, some of the checklists I worked on in, in medicine,

652

00:33:49.355 --> 00:33:52.885

there's a great amount of research that surprised a lot

653

00:33:53.045 --> 00:33:56.165

of the practitioners as to what the most critical items were

654

00:33:56.165 --> 00:33:58.325

that they could leave out in surgery.

655

00:33:58.905 --> 00:34:01.805

One of the most critical items was having blood on hand

656

00:34:02.545 --> 00:34:06.285

for transfusion, uh, for a high risk patient.

657

00:34:06.945 --> 00:34:11.365

So many cases of patient harm involved, uh, an emergency

658

00:34:11.365 --> 00:34:12.725

that could have been anticipated

659

00:34:12.785 --> 00:34:15.085

and not having enough, uh, blood on hand.

660

00:34:15.385 --> 00:34:18.285

And that was found to be in the research, a huge factor.

661

00:34:18.345 --> 00:34:20.085

And so it was emphasized in the checklist.

662

00:34:20.625 --> 00:34:23.605  
So where you can use real data to decide

663  
00:34:23.635 --> 00:34:25.405  
what your actual critical items are,

664  
00:34:26.465 --> 00:34:28.325  
and try to find out what the history of,

665  
00:34:28.545 --> 00:34:30.005  
of omissions has been.

666  
00:34:30.955 --> 00:34:33.165  
Another factor is automatic safeguards.

667  
00:34:33.825 --> 00:34:36.565  
If there's some kind of an alerting or alarming

668  
00:34:36.565 --> 00:34:40.285  
or monitoring system that's very high integrity, that

669  
00:34:41.035 --> 00:34:43.805  
will essentially prevent you from making the mistake,

670  
00:34:44.305 --> 00:34:48.085  
asking the user to read it in a checklist is redundant.

671  
00:34:48.705 --> 00:34:51.405  
So a good rationale for leaving an item out

672  
00:34:51.405 --> 00:34:55.525  
of a checklist is a high integrity alerting system

673  
00:34:55.875 --> 00:34:57.965  
that will, uh, reliably catch

674  
00:34:57.965 --> 00:35:01.445  
that mistake In the checklist.

675  
00:35:01.505 --> 00:35:04.165  
You're not only checking for actions

676

00:35:04.165 --> 00:35:05.285

that you take every time,

677

00:35:05.745 --> 00:35:09.405

but you wanna make sure to cover potential contingencies.

678

00:35:09.505 --> 00:35:11.525

The, the example of having blood on hand

679

00:35:11.525 --> 00:35:12.685

in surgery is one of them.

680

00:35:13.395 --> 00:35:16.125

Another one for us is we check our oxygen masks.

681

00:35:16.585 --> 00:35:18.885

And at least on our, the Boeing airplanes

682

00:35:19.025 --> 00:35:21.045

that's in our pre-flight checklist.

683

00:35:21.705 --> 00:35:24.845

We don't, we may not on a given mission plan

684

00:35:24.845 --> 00:35:27.125

to use the oxygen masks, uh,

685

00:35:27.345 --> 00:35:30.365

but we want to know that that tank valve is open,

686

00:35:30.455 --> 00:35:31.645

those masks are working.

687

00:35:31.955 --> 00:35:35.045

It's not something you wanna find out about it. 40,000 feet.

688

00:35:35.705 --> 00:35:37.085

Uh, so, uh,

689

00:35:37.515 --> 00:35:40.445  
contingencies may play a very important part in the

690  
00:35:40.445 --> 00:35:43.365  
checklist, even though they don't represent the actions

691  
00:35:43.365 --> 00:35:44.685  
that you're taking on the flight.

692  
00:35:46.545 --> 00:35:48.845  
And then checklists provide a really good

693  
00:35:48.845 --> 00:35:50.645  
opportunity for teamwork.

694  
00:35:51.145 --> 00:35:52.965  
Uh, you can, if it's a team

695  
00:35:52.965 --> 00:35:56.205  
that doesn't necessarily know each other, uh,

696  
00:35:56.315 --> 00:35:57.685  
they can have introductions.

697  
00:35:58.145 --> 00:36:01.085  
We know in aviation briefings are very important for safety

698  
00:36:01.785 --> 00:36:03.885  
and the opportunity for anyone in the room

699  
00:36:03.905 --> 00:36:05.045  
to bring up concerns.

700  
00:36:05.545 --> 00:36:08.405  
If there are risks on that particular day,

701  
00:36:08.825 --> 00:36:11.845  
anyone on the team should have the opportunity to voice, uh,

702  
00:36:12.245 --> 00:36:14.725  
concerns about particular risks.

703

00:36:15.055 --> 00:36:17.125

These are all things that to consider

704

00:36:17.505 --> 00:36:18.725

for working into your checklist.

705

00:36:19.525 --> 00:36:20.885

A couple questions here. Yeah,

706

00:36:20.885 --> 00:36:21.965

I got one question.

707

00:36:21.995 --> 00:36:24.845

Have from the automatic safeguards. Yes.

708

00:36:24.845 --> 00:36:27.005

You have a take up warning. It's too late.

709

00:36:27.245 --> 00:36:30.165

I mean, it's really late. Move the throttle out

710

00:36:30.165 --> 00:36:31.325

and have the warning come up.

711

00:36:31.345 --> 00:36:34.285

So, so even though it's a, uh, safeguard,

712

00:36:34.545 --> 00:36:35.725

we still need to do the,

713

00:36:36.425 --> 00:36:37.425

So great point.

714

00:36:37.665 --> 00:36:42.565

So there you're balancing safety and efficiency and, and,

715

00:36:42.905 --> 00:36:45.405

and, and it doesn't tell, it doesn't tell us

716

00:36:45.405 --> 00:36:47.285  
what the right answer is, but it's just, it's good

717  
00:36:47.285 --> 00:36:48.685  
to keep those things clear in our minds.

718  
00:36:48.865 --> 00:36:50.605  
So from a safety standpoint,

719  
00:36:51.005 --> 00:36:55.165  
a takeoff warning system may prevent us from, uh, taking off

720  
00:36:56.115 --> 00:36:57.605  
with, for example, flaps up.

721  
00:36:58.305 --> 00:37:01.565  
But from an efficiency standpoint, we want to know that

722  
00:37:01.565 --> 00:37:03.285  
that's the case before we get on the runway.

723  
00:37:03.865 --> 00:37:05.325  
Uh, and there may be, you know,

724  
00:37:05.325 --> 00:37:06.645  
you could say there's some safety issues

725  
00:37:06.645 --> 00:37:08.845  
with being unexpectedly on the runway

726  
00:37:09.065 --> 00:37:10.645  
and not being able to take off.

727  
00:37:11.305 --> 00:37:14.325  
But, um, but that, so that's right.

728  
00:37:14.545 --> 00:37:17.365  
So there may be reasons to put something in a checklist even

729  
00:37:17.365 --> 00:37:20.925  
though there is a high integrity warning system, uh,

730  
00:37:20.925 --> 00:37:22.565  
because there's an efficiency issue.

731  
00:37:23.515 --> 00:37:25.245  
Okay. I, yes. Just

732  
00:37:25.245 --> 00:37:29.165  
To echo that though, I, I, I think just because that,

733  
00:37:29.265 --> 00:37:31.845  
and maybe brought this is what you were getting at, is just

734  
00:37:31.845 --> 00:37:35.875  
because you have an automatic safeguard, uh, that's just

735  
00:37:35.875 --> 00:37:37.155  
to make sure that they verify,

736  
00:37:37.415 --> 00:37:40.235  
did the checklist essentially, it's not to

737  
00:37:40.975 --> 00:37:42.515  
be a mitigation for a checklist.

738  
00:37:43.185 --> 00:37:44.835  
It's what I got outta what you were saying.

739  
00:37:45.465 --> 00:37:47.875  
Well, I'm saying in general

740  
00:37:48.905 --> 00:37:52.355  
that if you're effectively prevented from making the

741  
00:37:52.355 --> 00:37:55.315  
mistake, from committing the error by some type

742  
00:37:55.315 --> 00:37:58.475  
of an alerting system, that that can be a reason

743

00:37:58.495 --> 00:38:00.035  
to not include it in the checklist.

744  
00:38:01.095 --> 00:38:04.355  
Uh, now there may be cases where we, as a culture,

745  
00:38:04.605 --> 00:38:06.275  
we've decided to be redundant

746  
00:38:06.275 --> 00:38:08.675  
and include things in checklists even though there's a high,

747  
00:38:09.335 --> 00:38:11.355  
uh, integrity alerting system,

748  
00:38:11.895 --> 00:38:13.915  
or that our regulators require us

749  
00:38:13.915 --> 00:38:16.235  
to have things in checklists even though there's a high

750  
00:38:16.235 --> 00:38:17.595  
integrity alerting system.

751  
00:38:18.295 --> 00:38:19.875  
But when I go out and work

752  
00:38:19.875 --> 00:38:23.595  
with larger teams in different environments, uh,

753  
00:38:25.555 --> 00:38:26.555  
I would say

754  
00:38:26.555 --> 00:38:28.915  
that if you've got a very reliable alerting system,

755  
00:38:28.915 --> 00:38:30.995  
that's a reason to not include something on the checklist

756  
00:38:30.995 --> 00:38:32.915  
because the users know



757  
00:38:33.415 --> 00:38:36.805  
and they end up with a checklist that is full of items

758  
00:38:36.915 --> 00:38:37.925  
that they say, you know what?

759  
00:38:38.085 --> 00:38:39.325  
I can't make that mistake.

760  
00:38:39.425 --> 00:38:41.765  
You know, I'm always prevented from making that mistake.

761  
00:38:41.765 --> 00:38:45.245  
And it ends up being a negative on the, uh,

762  
00:38:45.825 --> 00:38:47.965  
the acceptability of the checklist to the users.

763  
00:38:49.065 --> 00:38:52.005  
So in this case, I just want to say generically

764  
00:38:52.635 --> 00:38:54.085  
look at those alerting systems

765  
00:38:54.265 --> 00:38:55.325  
and they can be a reason

766  
00:38:55.385 --> 00:38:56.965  
to not include an item on the

767  
00:38:56.965 --> 00:38:59.365  
checklist. Does that make sense?

768  
00:39:00.185 --> 00:39:01.805  
Are we talking about physical barrier

769  
00:39:02.475 --> 00:39:06.205  
that prevents you from awaiting something critical

770

00:39:06.265 --> 00:39:07.445  
or are we talking about alerting?

771  
00:39:09.525 --> 00:39:12.735  
Well, it could be either. I think if there, if it,

772  
00:39:13.195 --> 00:39:14.295  
if something else

773  
00:39:14.405 --> 00:39:17.215  
besides the checklist will, will

774  
00:39:18.485 --> 00:39:20.975  
very reliably catch your error,

775  
00:39:22.375 --> 00:39:24.265  
then it doesn't need to be on the checklist.

776  
00:39:25.085 --> 00:39:27.225  
You know, if, if, if you can't make that mistake

777  
00:39:27.225 --> 00:39:30.585  
because it's going to be prevented by an alerting system

778  
00:39:30.925 --> 00:39:35.225  
or a physical barrier or, you know, any other method, uh,

779  
00:39:35.375 --> 00:39:38.505  
that can be a reason to not include it on the checklist.

780  
00:39:41.925 --> 00:39:46.665  
You know, I I I, I know I'm getting a little, um, resistance

781  
00:39:46.665 --> 00:39:48.585  
because we all know of items that we want

782  
00:39:48.585 --> 00:39:50.265  
to see on the checklist, even though we

783  
00:39:50.265 --> 00:39:51.385  
know we have an alerting system.

784

00:39:51.925 --> 00:39:54.065

But, uh, this is more generically,

785

00:39:54.525 --> 00:39:55.825

you know, kind of out in the world.

786

00:39:56.485 --> 00:40:00.985

Um, I, if you end up having a number of items for mistakes

787

00:40:00.985 --> 00:40:03.545

that are effectively prevented in other ways,

788

00:40:04.205 --> 00:40:06.465

you have a checklist that's unnecessarily long

789

00:40:06.895 --> 00:40:10.225

Just to recage you, you're, you're speaking specifically

790

00:40:10.285 --> 00:40:12.385

to a do then confirm checklist, correct?

791

00:40:13.285 --> 00:40:14.465

Yes. Good point.

792

00:40:14.525 --> 00:40:17.385

The question was, are we talking about specifically a do

793

00:40:17.495 --> 00:40:19.945

then confirm checklist and Yeah, from this point forward,

794

00:40:20.355 --> 00:40:23.705

we're going to assume a do then confirm checklist, right?

795

00:40:23.935 --> 00:40:25.545

Read. And do you, you need

796

00:40:25.545 --> 00:40:27.985

to include essentially every step on the

797

00:40:27.985 --> 00:40:29.345  
checklist on in the procedure?

798  
00:40:31.115 --> 00:40:32.345  
Guess one more? Yeah.

799  
00:40:32.345 --> 00:40:36.105  
Quick question based upon what you're saying, I'm hearing

800  
00:40:36.175 --> 00:40:37.265  
that for instance, a

801  
00:40:37.265 --> 00:40:38.305  
before landing checklist,

802  
00:40:39.125 --> 00:40:41.465  
almost every checklist I've ever seen, uh,

803  
00:40:41.485 --> 00:40:43.745  
if you have a retractor gear, we'll say here.

804  
00:40:43.765 --> 00:40:46.985  
Now, if I have gear warning system that, you know,

805  
00:40:47.075 --> 00:40:48.945  
fires off at four oh feet, agl,

806  
00:40:49.365 --> 00:40:51.625  
it tells you my gear's not down on the throat,

807  
00:40:52.825 --> 00:40:55.445  
is your line saying that it wouldn't be necessary

808  
00:40:55.585 --> 00:40:57.605  
to include a gear down snip before?

809  
00:40:58.765 --> 00:41:00.365  
I think, um, there's two things.

810  
00:41:00.505 --> 00:41:02.805  
One is, you know,

811  
00:41:03.845 --> 00:41:06.085  
culturally we are always gonna have

812  
00:41:06.195 --> 00:41:07.365  
that step in our checklist.

813  
00:41:08.045 --> 00:41:13.005  
I think those are, that's, uh, something we've had

814  
00:41:13.005 --> 00:41:15.485  
for a long time and probably can't take it out.

815  
00:41:15.705 --> 00:41:17.205  
The other thing is the efficiency issue.

816  
00:41:17.205 --> 00:41:20.845  
It's too, it's a little late to be realizing, you know,

817  
00:41:20.845 --> 00:41:22.205  
you should be on a stabilized approach

818  
00:41:22.305 --> 00:41:24.165  
by then the airplane should be configured.

819  
00:41:24.785 --> 00:41:28.085  
And to be reconfiguring the airplane at

820  
00:41:28.435 --> 00:41:31.965  
400, 500, 400 feet, uh, is too late.

821  
00:41:32.545 --> 00:41:35.685  
Um, so there's an efficiency issue of, you know,

822  
00:41:35.685 --> 00:41:38.325  
having checked that configuration earlier

823  
00:41:39.585 --> 00:41:41.725  
before that alerting system's gonna fire off.

824

00:41:42.875 --> 00:41:44.285  
Okay. Let's say one more question

825  
00:41:44.285 --> 00:41:45.445  
and then I'll have to keep going.

826  
00:41:45.525 --> 00:41:47.085  
I have to comment. I, I, bob, you know, there's

827  
00:41:47.085 --> 00:41:48.845  
Efficiency, but there's also people

828  
00:41:49.235 --> 00:41:50.885  
sometimes ignore alerts.

829  
00:41:51.145 --> 00:41:54.085  
So, um, they might land gear up. Anyway,

830  
00:41:54.355 --> 00:41:55.355  
It's happened. We have

831  
00:41:55.355 --> 00:41:56.165  
had that. Yeah.

832  
00:41:56.225 --> 00:41:58.165  
In fact, I've got an example later in,

833  
00:41:58.865 --> 00:42:00.845  
in the electronic checklist presentation.

834  
00:42:01.165 --> 00:42:03.445  
I think quick again, the,

835  
00:42:03.545 --> 00:42:06.285  
The real foot stopper here is, for example, uh,

836  
00:42:06.285 --> 00:42:10.565  
take our warning, uh, later the current generation

837  
00:42:10.565 --> 00:42:14.645  
of airplanes, if you are misconfigured at all, you have

838

00:42:14.665 --> 00:42:17.405  
so many red lights and, and alerts

839

00:42:17.405 --> 00:42:20.605  
and noises going off, uh, push the up.

840

00:42:20.625 --> 00:42:24.745  
But, uh, uh, if you could miss that,

841

00:42:24.985 --> 00:42:27.745  
I think you probably impairment

842

00:42:29.775 --> 00:42:32.225  
it's more serious than the, uh, the lack of a warning.

843

00:42:34.575 --> 00:42:36.385  
Okay. Well, we'll, let's keep moving.

844

00:42:36.485 --> 00:42:38.265  
And I'd be happy, you know, during the break

845

00:42:38.325 --> 00:42:42.905  
to chat about this some more, um, always cons.

846

00:42:42.965 --> 00:42:45.665  
It should be on your list of considerations as to what needs

847

00:42:45.665 --> 00:42:48.385  
to be on the checklist and what doesn't, uh,

848

00:42:48.385 --> 00:42:50.385  
whether it's whether there's alerting there.

849

00:42:51.205 --> 00:42:53.265  
So in this critical items step,

850

00:42:53.455 --> 00:42:54.985  
it's a brainstorming activity.

851

00:42:55.525 --> 00:42:58.225

You don't have to come up with the final list

852

00:42:58.225 --> 00:43:00.785

because later we're gonna go through a stage of reducing.

853

00:43:01.365 --> 00:43:03.785

So we're gonna bring in critical items in this particular

854

00:43:04.105 --> 00:43:06.305

exercise, you're probably gonna be able to make the,

855

00:43:06.765 --> 00:43:08.705

the correct cut as we go through here.

856

00:43:09.245 --> 00:43:12.305

Uh, but in a, in a much larger exercise, the brain,

857

00:43:12.375 --> 00:43:15.745

it's a brainstorming activity will be refined later.

858

00:43:17.165 --> 00:43:20.425

So, any questions, any, well, we kind of, I think, dealt

859

00:43:20.425 --> 00:43:21.505

with the questions pretty well.

860

00:43:22.085 --> 00:43:25.505

Uh, let's take, uh,

861

00:43:25.615 --> 00:43:27.585

this takes several minutes, I think,

862

00:43:27.585 --> 00:43:29.985

because this is really one of your key activities.

863

00:43:30.515 --> 00:43:32.145

Let's take about seven minutes.

864

00:43:32.705 --> 00:43:34.905

I think that should be enough. Go through.



865

00:43:35.005 --> 00:43:37.145

You've got your rationale sheet there.

866

00:43:37.145 --> 00:43:39.265

You've got information about each item.

867

00:43:40.165 --> 00:43:42.425

Uh, you have your before takeoff checklist.

868

00:43:43.295 --> 00:43:45.505

This is your step where you bring all that together

869

00:43:46.005 --> 00:43:49.185

and decide for a do then confirm checklist.

870

00:43:50.135 --> 00:43:53.025

What critical items do you want to see on that checklist?

871

00:43:54.085 --> 00:43:56.265

You don't have to phrase them correctly yet.

872

00:43:56.495 --> 00:44:00.385

Just identify in some words what those steps will be.

873

00:44:01.625 --> 00:44:01.745

I,

874

00:44:08.495 --> 00:44:10.635

Uh, folks, let me clarify one thing.

875

00:44:11.135 --> 00:44:14.715

For the purpose of this exercise, use the items

876

00:44:14.825 --> 00:44:16.035

that are on the table

877

00:44:16.775 --> 00:44:19.195

as the potential items in the, in the procedure.

878

00:44:19.895 --> 00:44:21.995

You all are familiar with other steps

879

00:44:22.065 --> 00:44:25.595

that could possibly be effect or needed for a checklist,

880

00:44:25.815 --> 00:44:27.995

but let's just use the ones that are on the table

881

00:44:28.135 --> 00:44:29.595

to keep it contained.

882

00:44:30.305 --> 00:44:30.595

Okay?

883

00:44:49.205 --> 00:44:50.375

Okay. Let's wrap up

884

00:44:50.475 --> 00:44:53.135

and see what you came up with for your critical items.

885

00:45:07.885 --> 00:45:10.545

So I know several of you could have very different things

886

00:45:10.545 --> 00:45:11.745

that it would take quite a while

887

00:45:11.745 --> 00:45:12.985

to try and capture them all.

888

00:45:13.085 --> 00:45:15.025

So what I'm gonna do is just have two

889

00:45:15.025 --> 00:45:16.305

or three of you report out.

890

00:45:16.405 --> 00:45:17.785

I'm not gonna try and write them all down,

891

00:45:17.885 --> 00:45:20.665

but listen to what the others have selected as far

892  
00:45:20.665 --> 00:45:23.585  
as their critical items and see if you can determine from

893  
00:45:23.585 --> 00:45:25.265  
what they are saying why they did that.

894  
00:45:25.975 --> 00:45:29.025  
Okay. Who would like to go first? Okay,

895  
00:45:29.965 --> 00:45:30.965  
The flight Control

896  
00:45:31.025 --> 00:45:32.025  
Configuration. Wait a minute,

897  
00:45:32.025 --> 00:45:33.425  
you can use

898  
00:45:33.425 --> 00:45:34.465  
the mic so everybody can hear you.

899  
00:45:34.465 --> 00:45:35.465  
Well, thanks, Colin.

900  
00:45:40.785 --> 00:45:42.225  
I wasn't gonna give an exhaustive list,

901  
00:45:42.225 --> 00:45:43.465  
but all of the flight controls

902  
00:45:43.465 --> 00:45:45.825  
and configuration were, were critical items.

903  
00:45:46.415 --> 00:45:47.785  
Okay. How many of them were there?

904  
00:45:51.805 --> 00:45:52.865  
I'm letting my people count.

905

00:45:57.175 --> 00:46:02.105  
Five. Five, okay. So five of those items. Somebody else

906  
00:46:07.565 --> 00:46:10.145  
We talked about keeping the pilot brief in there.

907  
00:46:11.295 --> 00:46:13.025  
Okay. Keeping the pilot brief.

908  
00:46:15.965 --> 00:46:18.145  
Um, and we also talked about, uh,

909  
00:46:18.145 --> 00:46:19.985  
pulling the speed brakes out of the check.

910  
00:46:20.455 --> 00:46:22.305  
Okay. The, uh, Automatic warning.

911  
00:46:22.815 --> 00:46:26.665  
Okay, good. What else do you have?

912  
00:46:27.285 --> 00:46:29.665  
Set direct draw speeds.

913  
00:46:30.165 --> 00:46:34.545  
We also get the roof in, basically did the RTO

914  
00:46:35.205 --> 00:46:37.105  
speeds the around.

915  
00:46:38.495 --> 00:46:39.345  
Okay, good.

916  
00:46:46.525 --> 00:46:49.545  
Uh, we had the, the three critical ones are, uh,

917  
00:46:49.645 --> 00:46:52.305  
set the flaps, get the correct takeoff speeds

918  
00:46:52.305 --> 00:46:53.345  
and set the stab trim.

919  
00:46:54.005 --> 00:46:58.265  
Um, the, uh, the speed break lever is also a critical item.

920  
00:46:58.285 --> 00:47:00.985  
And we noticed, at least I noticed in the briefing is

921  
00:47:00.995 --> 00:47:03.825  
after landing you, um, you disarm it,

922  
00:47:03.885 --> 00:47:05.865  
but you have to re-arm it for takeoff.

923  
00:47:06.165 --> 00:47:08.305  
It does two things, make sure it's armed for takeoff,

924  
00:47:08.305 --> 00:47:10.625  
but it also resets the logic in the airplane

925  
00:47:10.625 --> 00:47:12.585  
that lets it know it's into the takeoff mode.

926  
00:47:13.735 --> 00:47:15.905  
Okay, good. The, uh, RRTO auto brakes,

927  
00:47:16.415 --> 00:47:17.425  
it's a test item.

928  
00:47:17.565 --> 00:47:19.225  
It may depend on what you want to do,

929  
00:47:19.505 --> 00:47:21.585  
whether you need the RTO auto brakes or not.

930  
00:47:21.645 --> 00:47:23.185  
If you're gonna take off with hot breaks,

931  
00:47:23.725 --> 00:47:26.385  
you may want not want to, to reject the takeoff

932

00:47:26.385 --> 00:47:27.625  
with the RTO auto brakes

933  
00:47:27.785 --> 00:47:29.285  
'cause you'll have a problem at the end.

934  
00:47:30.035 --> 00:47:33.445  
Okay, good. So you can see very different selection of

935  
00:47:33.445 --> 00:47:34.565  
what the critical items are.

936  
00:47:34.985 --> 00:47:36.765  
So again, it's up, it's your perspective,

937  
00:47:36.875 --> 00:47:38.685  
it's your determination based on your

938  
00:47:38.685 --> 00:47:39.805  
group and your understanding.

939  
00:47:40.675 --> 00:47:41.675  
Okay, Dan?

940  
00:47:42.875 --> 00:47:44.805  
Okay, thanks. And we'll have a chance

941  
00:47:45.215 --> 00:47:48.045  
After we reduce, after we reduce

942  
00:47:48.185 --> 00:47:51.245  
and phrase these items, you'll, uh, have a chance

943  
00:47:51.245 --> 00:47:53.805  
to report out on the exact final checklist.

944  
00:47:54.185 --> 00:47:57.565  
So these list of critical items will be essentially, uh,

945  
00:47:57.565 --> 00:47:58.805  
shown again in a little bit.

946

00:48:00.745 --> 00:48:04.285

So the next, uh, activity

947

00:48:05.225 --> 00:48:08.685

in the checklist builder is to establish the pause points.

948

00:48:09.345 --> 00:48:10.605

And this is one that

949

00:48:10.625 --> 00:48:13.685

for this particular simple exercise really doesn't apply

950

00:48:13.685 --> 00:48:15.445

because we have a very short procedure.

951

00:48:15.745 --> 00:48:16.845

We have a single checklist.

952

00:48:17.305 --> 00:48:20.245

We already know that there's one pause point, uh,

953

00:48:20.345 --> 00:48:21.445

in this procedure.

954

00:48:21.505 --> 00:48:24.045

But I'll talk about the more general case.

955

00:48:24.265 --> 00:48:27.045

And this might be for other checklists and other activities

956

00:48:27.045 --> 00:48:29.325

and processes that you could apply checklists to.

957

00:48:30.225 --> 00:48:33.245

So in this case, the surgeons who I worked

958

00:48:33.245 --> 00:48:37.085

with had a long series of activities bringing

959

00:48:37.425 --> 00:48:39.925  
or prepping the, or bringing the patient in,

960  
00:48:40.245 --> 00:48:43.645  
prepping the patient, getting a consent from the patient,

961  
00:48:44.165 --> 00:48:48.405  
inducing anesthesia, um, bringing all the teams together,

962  
00:48:48.405 --> 00:48:50.565  
making sure that all the safety equipment's there,

963  
00:48:51.255 --> 00:48:54.525  
doing a briefing if they do, uh, et cetera, uh,

964  
00:48:54.525 --> 00:48:55.645  
proceeding with the surgery.

965  
00:48:56.585 --> 00:48:58.645  
And so it was a long series of steps.

966  
00:48:59.105 --> 00:49:02.525  
And an early draft of this checklist had one pause point

967  
00:49:02.665 --> 00:49:03.805  
as preoperative.

968  
00:49:04.315 --> 00:49:07.045  
Well, different teams interpreted that term differently.

969  
00:49:07.665 --> 00:49:10.085  
In fact, they ended up with a situation of a checklist

970  
00:49:10.255 --> 00:49:13.285  
where they were trying to do, uh, an item of trying

971  
00:49:13.285 --> 00:49:14.645  
to get consent from the patient.

972  
00:49:14.745 --> 00:49:15.845  
The patient was already under



973

00:49:15.845 --> 00:49:17.085  
anesthesia, so that didn't work.

974

00:49:24.105 --> 00:49:29.085  
So the, uh, the pause points is the process.

975

00:49:29.705 --> 00:49:31.365  
And, and well, I'll show you in this example,

976

00:49:31.395 --> 00:49:33.005  
what they ended up with is

977

00:49:33.005 --> 00:49:35.965  
before induction of anesthesia is the first one

978

00:49:35.985 --> 00:49:37.565  
before skin incision and

979

00:49:37.565 --> 00:49:39.285  
before patient leaves the operating room.

980

00:49:39.625 --> 00:49:42.605  
And then all of the, the steps under each ones of those.

981

00:49:44.705 --> 00:49:46.285  
The pause point process is

982

00:49:46.305 --> 00:49:50.805  
to first organize the critical actions chronologically then

983

00:49:51.025 --> 00:49:53.325  
and noting when each one needs to be complete.

984

00:49:53.545 --> 00:49:56.725  
And then choosing the natural stopping points in the process

985

00:49:57.425 --> 00:49:59.845  
before you go on to the next critical phase.

986

00:50:00.625 --> 00:50:02.725

One thing to keep in mind is it has to be in time

987

00:50:02.745 --> 00:50:04.525

to correct the missing critical actions.

988

00:50:04.545 --> 00:50:07.605

You have to look at each item before that pause point

989

00:50:07.605 --> 00:50:09.605

and make sure that if you had omitted it,

990

00:50:09.605 --> 00:50:12.485

assumed you admitted it, is it too late to correct it?

991

00:50:16.575 --> 00:50:18.405

Other considerations are to make sure

992

00:50:18.405 --> 00:50:19.845

that the pause point is tied

993

00:50:19.845 --> 00:50:21.925

to a very reliably occurring event.

994

00:50:22.065 --> 00:50:23.245

It has to be something

995

00:50:23.245 --> 00:50:24.965

that occurs every time in the process.

996

00:50:25.985 --> 00:50:28.845

For example, we wouldn't want to have our final checklist

997

00:50:29.025 --> 00:50:32.605

before landing as the flap set at full checklist,

998

00:50:33.275 --> 00:50:36.325

because what if we omitted that item on that day?

999

00:50:36.655 --> 00:50:39.205

There is not a natural queue then to do the checklist.

1000  
00:50:39.825 --> 00:50:43.325  
So we need to use queues that are reliably going to occur

1001  
00:50:43.665 --> 00:50:45.245  
to initiate the checklist.

1002  
00:50:45.865 --> 00:50:48.805  
And that event needs to be unambiguous again,

1003  
00:50:48.845 --> 00:50:52.765  
preoperative ended up being an ambiguous point in time,

1004  
00:50:53.185 --> 00:50:55.485  
but then they chose much more clear points.

1005  
00:50:55.675 --> 00:50:59.485  
Like before skin incision was very clear and

1006  
00:50:59.485 --> 00:51:03.805  
before is the best way to phrase the title for each phase

1007  
00:51:03.865 --> 00:51:07.565  
of the checklist, uh, that makes sure

1008  
00:51:07.565 --> 00:51:10.765  
that the users know they need to stop, do the checklist

1009  
00:51:11.105 --> 00:51:14.645  
before going on to that next activity, before engine start,

1010  
00:51:14.665 --> 00:51:17.885  
before takeoff, the words at

1011  
00:51:17.885 --> 00:51:19.685  
or when may sometimes be appropriate.

1012  
00:51:22.825 --> 00:51:23.925  
So on this step,

1013

00:51:23.925 --> 00:51:25.885  
because we only have a single pause point,

1014  
00:51:25.885 --> 00:51:27.565  
we're not gonna go into a group activity.

1015  
00:51:27.745 --> 00:51:31.165  
And because lunch is in 26 minutes, that's another reason.

1016  
00:51:31.945 --> 00:51:36.925  
Um, so any questions though about choosing pause points

1017  
00:51:37.105 --> 00:51:40.845  
for a long, uh, multi-phase process

1018  
00:51:40.955 --> 00:51:42.405  
that needs checklists?

1019  
00:51:44.875 --> 00:51:48.285  
Okay, I'll keep going.

1020  
00:51:48.825 --> 00:51:52.485  
The next step, also, very important step in the process.

1021  
00:51:52.905 --> 00:51:56.525  
Reduce and phrase checklists must be as short

1022  
00:51:56.525 --> 00:51:58.005  
and concise as possible.

1023  
00:51:58.805 --> 00:52:01.925  
I really can't overemphasize that fact.

1024  
00:52:02.315 --> 00:52:05.565  
I've seen a lot of checklists that don't get used,

1025  
00:52:05.875 --> 00:52:08.965  
that the users, if they're forced to use them, hate them.

1026  
00:52:09.545 --> 00:52:11.005  
And it's really generally

1027

00:52:11.005 --> 00:52:13.045

because they are too long and wordy.

1028

00:52:13.225 --> 00:52:16.165

People are smart. The people using checklists know

1029

00:52:17.155 --> 00:52:19.645

when they are being forced to read a lot of words

1030

00:52:19.715 --> 00:52:21.125

that aren't necessary.

1031

00:52:21.585 --> 00:52:23.805

And when they're being forced to check items

1032

00:52:23.875 --> 00:52:25.365

that are either noncritical

1033

00:52:26.065 --> 00:52:29.085

or that for some other reason are, for example,

1034

00:52:29.225 --> 00:52:32.005

for are reliably alerted, they have a sense for that.

1035

00:52:32.005 --> 00:52:34.885

And when you try to introduce a new checklist to users

1036

00:52:34.945 --> 00:52:36.485

who aren't used to checklists,

1037

00:52:36.635 --> 00:52:38.125

they've got a real sense for that.

1038

00:52:38.145 --> 00:52:40.005

And they will not like to stop

1039

00:52:40.025 --> 00:52:41.685

and read a checklist that's too long

1040

00:52:41.705 --> 00:52:43.125  
or has unnecessary items.

1041  
00:52:43.505 --> 00:52:46.405  
So we're gonna work really hard to make the checklist

1042  
00:52:46.625 --> 00:52:48.565  
as short and concise as possible.

1043  
00:52:49.605 --> 00:52:51.885  
Remember that it's really meant in a do then confirm

1044  
00:52:51.985 --> 00:52:53.605  
as just a memory jogger.

1045  
00:52:54.265 --> 00:52:56.885  
You don't have to describe the activity in detail.

1046  
00:52:57.225 --> 00:53:00.565  
You just want to jog the user's memory as to

1047  
00:53:00.565 --> 00:53:01.685  
what the item is so

1048  
00:53:01.685 --> 00:53:04.245  
that they can recognize whether it's been completed or not.

1049  
00:53:07.275 --> 00:53:09.405  
When you're thinking about how short the checklist needs

1050  
00:53:09.405 --> 00:53:10.485  
to be, be sure to think about

1051  
00:53:10.485 --> 00:53:12.885  
how much time is actually available in the flow.

1052  
00:53:14.085 --> 00:53:15.925  
Airplanes keep moving forward.

1053  
00:53:16.825 --> 00:53:19.165  
You know, patients have activity,

1054

00:53:19.355 --> 00:53:21.205

they have processes that go forward.

1055

00:53:21.205 --> 00:53:24.285

There are for time forcing functions that we have,

1056

00:53:24.345 --> 00:53:26.045

and sometimes we can identify just

1057

00:53:26.045 --> 00:53:27.565

how much time we have to do a checklist.

1058

00:53:28.875 --> 00:53:31.245

Also consider when things aren't going as expected.

1059

00:53:31.625 --> 00:53:33.405

And someone brought up earlier, I think, John,

1060

00:53:33.405 --> 00:53:37.645

you did about, uh, merging together the natops checklist

1061

00:53:38.075 --> 00:53:39.925

with the test procedures.

1062

00:53:40.065 --> 00:53:43.445

And sometimes we're juggling even three different activities

1063

00:53:43.445 --> 00:53:45.485

that are in the for form of checklist.

1064

00:53:46.705 --> 00:53:48.645

Um, so don't just assume

1065

00:53:48.645 --> 00:53:51.005

that the checklist you're designing is

1066

00:53:51.005 --> 00:53:52.045

gonna be used by itself.

1067

00:53:52.385 --> 00:53:54.445

Assume that it's happening on a really bad day,

1068

00:53:55.025 --> 00:53:57.005

and it may be a descent or an approach checklist,

1069

00:53:57.105 --> 00:53:59.165

but you may be also accomplishing, um,

1070

00:53:59.165 --> 00:54:00.645

some emergency procedures

1071

00:54:00.645 --> 00:54:03.645

or be under a high workload situation for other reasons.

1072

00:54:04.505 --> 00:54:07.605

Um, so the checklist may have to be done in conjunction

1073

00:54:07.635 --> 00:54:08.725

with other procedures

1074

00:54:08.725 --> 00:54:11.645

and checklists weigh the importance

1075

00:54:11.645 --> 00:54:13.965

of each item based on the evidence.

1076

00:54:14.225 --> 00:54:16.565

So in this case, for this exercise, it's the evidence

1077

00:54:16.565 --> 00:54:18.725

that's on that little sheet there that's kind

1078

00:54:18.725 --> 00:54:21.045

of giving you hints about whether the item

1079

00:54:21.095 --> 00:54:22.325

needs to be in there or not.

1080

00:54:23.625 --> 00:54:26.885

And then trim your list of critical items down



1081  
00:54:26.945 --> 00:54:30.405  
to the very minimum and record the rationale.

1082  
00:54:30.825 --> 00:54:32.725  
That's really important because you,

1083  
00:54:32.795 --> 00:54:33.885  
when you develop a checklist,

1084  
00:54:33.905 --> 00:54:36.005  
you're gonna know a lot about why you took,

1085  
00:54:36.345 --> 00:54:39.805  
why you included each item in and, and excluded other items.

1086  
00:54:40.505 --> 00:54:41.725  
But five years from now

1087  
00:54:41.725 --> 00:54:43.845  
or 10 years from now, when there's a reason to revise

1088  
00:54:43.845 --> 00:54:45.565  
that checklist, whoever comes along

1089  
00:54:46.235 --> 00:54:48.165  
doesn't know the reason you made those choices.

1090  
00:54:48.625 --> 00:54:50.925  
And checklists are very short little documents.

1091  
00:54:50.925 --> 00:54:52.005  
They don't contain much

1092  
00:54:52.025 --> 00:54:53.845  
of a clue about why they are the way they are.

1093  
00:54:53.985 --> 00:54:56.005  
Unlike the procedure, the full procedure

1094

00:54:56.005 --> 00:54:58.605  
that may have a rationale in embedded in it.

1095  
00:54:59.185 --> 00:55:02.525  
So as you develop a checklist, record the rationale as

1096  
00:55:02.525 --> 00:55:05.325  
to the evidence that you used and why you included

1097  
00:55:05.385 --> 00:55:07.885  
or excluded items for future revisions

1098  
00:55:07.885 --> 00:55:09.485  
of the checklist and maintaining it.

1099  
00:55:13.415 --> 00:55:17.115  
You're going to, um, need to decide the sequence

1100  
00:55:17.295 --> 00:55:18.355  
of items in the checklist.

1101  
00:55:18.535 --> 00:55:21.875  
And again, we're thinking do then confirm if it's read

1102  
00:55:21.875 --> 00:55:24.075  
and do, obviously it's going to be the sequence

1103  
00:55:24.075 --> 00:55:25.755  
that you're actually gonna take the actions,

1104  
00:55:26.215 --> 00:55:28.835  
but if it's due, then confirm you have the option

1105  
00:55:28.835 --> 00:55:30.195  
of doing other sequences.

1106  
00:55:31.935 --> 00:55:36.475  
And, uh, chronological works well if the user has just done

1107  
00:55:36.495 --> 00:55:38.795  
the procedure and the very next thing they're gonna do

1108  
00:55:38.895 --> 00:55:39.915  
is run through the checklist.

1109  
00:55:40.665 --> 00:55:43.355  
It's easier to remember whether you've done things or not.

1110  
00:55:43.455 --> 00:55:46.155  
And the flow is natural if it follows the same flow

1111  
00:55:46.385 --> 00:55:47.515  
that you did the procedure.

1112  
00:55:47.815 --> 00:55:50.075  
But there are reasons to do other sequences.

1113  
00:55:50.495 --> 00:55:53.035  
For example, if you've got one item on the checklist

1114  
00:55:53.335 --> 00:55:56.955  
that's highly critical, there's a good rationale for putting

1115  
00:55:56.955 --> 00:55:59.075  
that as the first item simply

1116  
00:55:59.075 --> 00:56:01.795  
because the checklist itself might be interrupted.

1117  
00:56:02.095 --> 00:56:04.315  
You might get partway through it and not finish it.

1118  
00:56:04.885 --> 00:56:07.875  
There are a number of operators, uh, out in the airlines

1119  
00:56:07.905 --> 00:56:10.955  
that have before takeoff checklists that have several items.

1120  
00:56:10.955 --> 00:56:12.755  
They've embellished the items

1121

00:56:12.785 --> 00:56:14.875  
that the manufacturer gives them with more.

1122  
00:56:15.415 --> 00:56:17.355  
And usually flaps set

1123  
00:56:17.355 --> 00:56:19.235  
for takeoff is the first item in the

1124  
00:56:19.235 --> 00:56:20.595  
checklist for that reason.

1125  
00:56:21.135 --> 00:56:22.875  
You might not get through the whole checklist,

1126  
00:56:23.105 --> 00:56:25.125  
but at least you've covered the most critical item.

1127  
00:56:26.335 --> 00:56:30.165  
Other times, times you may have done a long process, uh,

1128  
00:56:30.265 --> 00:56:31.525  
in a, in some sequence,

1129  
00:56:31.585 --> 00:56:34.405  
but then you have a set of control panels,

1130  
00:56:34.575 --> 00:56:38.085  
instrument panels, displays that you're going

1131  
00:56:38.085 --> 00:56:40.205  
to actually be looking at to verify the checklist.

1132  
00:56:40.745 --> 00:56:42.165  
And it might make more sense

1133  
00:56:42.185 --> 00:56:45.525  
to put the checklist in the physical flow of the panels.

1134  
00:56:45.745 --> 00:56:48.605  
So these are a few options for the sequence of the checklist

1135  
00:56:48.785 --> 00:56:50.925  
and some reasons you might consider them.

1136  
00:56:54.145 --> 00:56:55.965  
How do we actually phrase the items?

1137  
00:56:56.435 --> 00:56:58.485  
Well, you're familiar with challenge and response,

1138  
00:56:58.865 --> 00:57:01.765  
and that is a very efficient way to, to phrase checklist.

1139  
00:57:02.845 --> 00:57:06.205  
Specifically, we wanna make the challenge the item

1140  
00:57:06.235 --> 00:57:08.125  
that we're gonna act upon a noun.

1141  
00:57:08.585 --> 00:57:11.805  
And the response is going to be the action, the position

1142  
00:57:11.825 --> 00:57:13.645  
of it, the action that we took.

1143  
00:57:14.305 --> 00:57:17.405  
So item action form is the best for checklists.

1144  
00:57:18.825 --> 00:57:21.445  
Uh, and so it would look something like flight,

1145  
00:57:21.645 --> 00:57:23.885  
squawks checked, weather checked, et cetera.

1146  
00:57:25.265 --> 00:57:28.565  
If you have for some reason a need to create a,

1147  
00:57:28.805 --> 00:57:33.285  
a more detailed list under an item, then go ahead

1148

00:57:33.285 --> 00:57:36.285

and make it a list form rather than a paragraph.

1149

00:57:36.485 --> 00:57:39.525

A paragraph is a little harder for the users to pick out.

1150

00:57:39.905 --> 00:57:43.085

If it is effectively a list, make it a list.

1151

00:57:46.345 --> 00:57:49.365

Always assume, and this this came up earlier when we talked

1152

00:57:49.365 --> 00:57:53.245

about, uh, expanded information being available to users.

1153

00:57:53.345 --> 00:57:55.445

Always assume that the user is going

1154

00:57:55.725 --> 00:57:57.725

to read every single word in the checklist.

1155

00:57:59.665 --> 00:58:02.525

If you, if you create a checklist, that's going to have

1156

00:58:02.525 --> 00:58:04.885

to be by its nature some picking

1157

00:58:04.905 --> 00:58:06.565

and choosing of the of the users,

1158

00:58:06.915 --> 00:58:08.445

they're gonna omit certain words.

1159

00:58:08.795 --> 00:58:10.205

It's really not a checklist anymore.

1160

00:58:10.715 --> 00:58:13.965

It's going to be, it's gonna be, uh, there are things

1161

00:58:13.965 --> 00:58:15.205

that they're not gonna see.

1162  
00:58:15.205 --> 00:58:16.925  
They're gonna end up omitting things from the

1163  
00:58:16.925 --> 00:58:18.045  
checklist and missing things.

1164  
00:58:18.425 --> 00:58:21.765  
So assume that they'll always read every single word in the

1165  
00:58:21.765 --> 00:58:24.645  
checklist if more detail is needed, put

1166  
00:58:24.645 --> 00:58:27.085  
that detail in another location, put it on the backside

1167  
00:58:27.085 --> 00:58:29.085  
of the card, put it in a reference document,

1168  
00:58:29.585 --> 00:58:31.405  
but make the checklist something

1169  
00:58:31.435 --> 00:58:33.765  
that every single word will need to be read.

1170  
00:58:34.955 --> 00:58:37.085  
When you're all done and you think you've got it as short

1171  
00:58:37.085 --> 00:58:39.485  
as possible, do a single word check.

1172  
00:58:39.505 --> 00:58:41.885  
And that means look at each word in the checklist

1173  
00:58:42.625 --> 00:58:44.445  
and say, if I take that word out,

1174  
00:58:44.995 --> 00:58:46.445  
does the, is the meaning lost?

1175

00:58:46.705 --> 00:58:49.285  
And you'll find, oh, hey Kay, I look, I thought it was short

1176  
00:58:49.345 --> 00:58:50.845  
as it could be, but look,

1177  
00:58:50.845 --> 00:58:52.725  
there are a few more words I can take out.

1178  
00:58:53.795 --> 00:58:58.625  
Okay? So I'm gonna give you a before

1179  
00:58:58.685 --> 00:59:00.865  
and after example, uh,

1180  
00:59:00.885 --> 00:59:02.665  
for a fire engine operation checklist.

1181  
00:59:03.085 --> 00:59:05.225  
You, this is the before which I showed you

1182  
00:59:05.225 --> 00:59:07.385  
before the pre response end route and returning.

1183  
00:59:08.335 --> 00:59:12.265  
This was the after, after I worked with the fire chief.

1184  
00:59:12.885 --> 00:59:14.585  
Uh, we threw it back and forth a few times.

1185  
00:59:14.725 --> 00:59:16.105  
We looked at the real evidence

1186  
00:59:16.125 --> 00:59:17.665  
and the criticality of each item.

1187  
00:59:18.365 --> 00:59:19.945  
We looked at phrasing each item,

1188  
00:59:20.005 --> 00:59:22.445  
and we made sure that he did an operational concept



1189

00:59:22.665 --> 00:59:24.365  
and that he understood, you know,

1190

00:59:24.425 --> 00:59:27.405  
how the checklist was gonna be used as a do then confirm.

1191

00:59:27.985 --> 00:59:29.925  
So we ended up with before response.

1192

00:59:30.345 --> 00:59:34.845  
And these five critical items all as item action

1193

00:59:35.905 --> 00:59:40.205  
before return these four item action items.

1194

00:59:41.225 --> 00:59:42.885  
And before entering the station,

1195

00:59:43.375 --> 00:59:45.725  
these were actually the three critical items.

1196

00:59:46.465 --> 00:59:49.085  
So going through an operational concept, going

1197

00:59:49.085 --> 00:59:50.845  
through a strict reduce

1198

00:59:50.985 --> 00:59:54.525  
and phrase ended up with a much more concise

1199

00:59:54.585 --> 00:59:55.605  
and usable checklist.

1200

01:00:00.955 --> 01:00:03.805  
Okay, any questions on reduce and phrase?

1201

01:00:03.915 --> 01:00:04.965  
This is be the process

1202

01:00:05.015 --> 01:00:08.405  
where you actually create your checklist from your critical

1203  
01:00:08.405 --> 01:00:09.965  
items and phrase them

1204  
01:00:10.025 --> 01:00:12.405  
as a challenge response in an item action

1205  
01:00:12.405 --> 01:00:16.685  
format. Yes.

1206  
01:00:17.545 --> 01:00:21.365  
So what the initial assumptions it says that we will, uh,

1207  
01:00:21.385 --> 01:00:23.485  
before takeoff checkbook won't be accomplished

1208  
01:00:23.505 --> 01:00:26.925  
as a final action since we changed the other assumption

1209  
01:00:26.925 --> 01:00:28.325  
that said no quick stops.

1210  
01:00:28.325 --> 01:00:31.765  
Can we get rid of that? As you know, it's two items on there

1211  
01:00:31.765 --> 01:00:34.805  
that are like plastic trim, which a bunch

1212  
01:00:34.805 --> 01:00:36.485  
of people are like, everything that relates

1213  
01:00:36.485 --> 01:00:38.605  
to configuration are the five things they're gonna

1214  
01:00:38.605 --> 01:00:40.365  
check. Can we get rid of that one?

1215  
01:00:40.365 --> 01:00:42.485  
Or let's, let's a good question.

1216

01:00:42.485 --> 01:00:44.325

What do we do with this before takeoff checklist?

1217

01:00:44.735 --> 01:00:48.005

Let's assume, let's continue to assume that

1218

01:00:48.005 --> 01:00:51.965

after our full stop taxi backed checklist is read that the

1219

01:00:51.965 --> 01:00:54.445

before takeoff checklist will always be read.

1220

01:00:55.305 --> 01:00:58.725

So the actual conclusion is you don't,

1221

01:00:58.745 --> 01:01:00.005

you don't need to repeat items.

1222

01:01:00.545 --> 01:01:01.925

So something that's in the

1223

01:01:01.925 --> 01:01:04.645

before takeoff checklist will not need to be in your

1224

01:01:04.645 --> 01:01:07.045

before tax, your, your full stop taxi back checklist.

1225

01:01:07.645 --> 01:01:08.645

'cause it's going to be read in

1226

01:01:08.645 --> 01:01:09.685

the before takeoff checklist.

1227

01:01:11.275 --> 01:01:15.805

Good question. Okay, so

1228

01:01:17.095 --> 01:01:19.805

let's take, let's shoot for, let's try

1229

01:01:19.805 --> 01:01:21.485  
to take about seven minutes to do this.

1230  
01:01:21.905 --> 01:01:23.205  
I'd like to give you a little more time,

1231  
01:01:23.385 --> 01:01:25.765  
but, um, we're, we're short on time

1232  
01:01:26.665 --> 01:01:29.445  
and so, uh, just get together

1233  
01:01:29.905 --> 01:01:32.365  
and it'll be about 21 after,

1234  
01:01:34.625 --> 01:01:37.285  
and Bill and I will walk around and answer any questions.

1235  
01:01:45.905 --> 01:01:46.765  
So have somebody in,

1236  
01:01:53.835 --> 01:01:56.645  
okay, let's wrap up.

1237  
01:02:01.075 --> 01:02:03.365  
Hopefully someone in your group has

1238  
01:02:04.835 --> 01:02:06.805  
Written Down your checklist items.

1239  
01:02:10.035 --> 01:02:11.295  
And then, yeah, go ahead, John.

1240  
01:02:11.395 --> 01:02:13.935  
Two or three people to actually read your checklist

1241  
01:02:14.195 --> 01:02:15.415  
as if you were doing it.

1242  
01:02:15.995 --> 01:02:18.415  
So you start by reading the title you selected

1243  
01:02:19.105 --> 01:02:23.005  
And have one person in your group read the challenge item

1244  
01:02:23.465 --> 01:02:25.965  
and somebody else in your group read the response items.

1245  
01:02:26.865 --> 01:02:28.405  
So who has one? You're ready to go?

1246  
01:02:32.715 --> 01:02:33.715  
Okay, good.

1247  
01:02:38.195 --> 01:02:40.205  
Okay. Quick turn. Checklist. Speed breaks.

1248  
01:02:40.865 --> 01:02:42.365  
Set Auto brakes

1249  
01:02:43.465 --> 01:02:44.465  
Set.

1250  
01:02:44.885 --> 01:02:48.685  
FMC Set checklist complete. All

1251  
01:02:48.685 --> 01:02:49.685  
Right, good.

1252  
01:02:50.855 --> 01:02:53.045  
Short, concise item. Action.

1253  
01:02:53.875 --> 01:02:57.085  
Okay. Comments or questions on their checklist? Too

1254  
01:02:57.085 --> 01:02:58.085  
Complicated.

1255  
01:03:04.425 --> 01:03:07.805  
One of the things, one of the things to ask yourself

1256

01:03:08.345 --> 01:03:11.965  
is can you use a term non repetitively

1257  
01:03:12.715 --> 01:03:15.085  
because the problem using the same term,

1258  
01:03:15.145 --> 01:03:19.405  
and you may have noticed in the, um, earlier one

1259  
01:03:19.475 --> 01:03:20.725  
with the fire prevention

1260  
01:03:20.945 --> 01:03:24.925  
or the fire protection checklist they used Yes, over

1261  
01:03:24.925 --> 01:03:26.005  
and over and over again.

1262  
01:03:26.425 --> 01:03:27.765  
And the more time you do that,

1263  
01:03:28.105 --> 01:03:30.005  
the less it becomes a checklist you can just

1264  
01:03:30.005 --> 01:03:31.165  
automatically reply.

1265  
01:03:31.785 --> 01:03:34.365  
So if you can use some other term so

1266  
01:03:34.365 --> 01:03:36.365  
that you're not just repeating the same term

1267  
01:03:36.365 --> 01:03:37.485  
over and over, it's good.

1268  
01:03:37.905 --> 01:03:38.905  
But that's good. Thanks.

1269  
01:03:45.925 --> 01:03:47.525  
I just have one comment on the, uh,

1270

01:03:47.605 --> 01:03:49.165  
spoilers and the speed break.

1271

01:03:49.165 --> 01:03:53.445  
Because actually, and it may seem nitpicky,

1272

01:03:53.445 --> 01:03:56.885  
but if you look through the line, the trap is a spoiler

1273

01:03:57.195 --> 01:03:59.885  
that is stuck up after the landing.

1274

01:04:00.835 --> 01:04:02.565  
It's not the position of the speed brake lever.

1275

01:04:03.465 --> 01:04:05.205  
Um, it's not the protections

1276

01:04:05.205 --> 01:04:06.845  
of the speed brakes auto retracting

1277

01:04:07.395 --> 01:04:10.405  
because they're captured by the systems.

1278

01:04:11.025 --> 01:04:14.325  
But what is a trap that is not normally there on a cold

1279

01:04:14.395 --> 01:04:17.045  
takeoff, if you like, is the possibility that one

1280

01:04:17.045 --> 01:04:18.525  
of the spoilers has not retracted

1281

01:04:18.905 --> 01:04:21.645  
and it's actually that that's critical to the safety.

1282

01:04:21.975 --> 01:04:23.485  
Great point. So it's a question of,

1283

01:04:23.665 --> 01:04:26.565

So my, my response would be speed breaks

1284

01:04:26.565 --> 01:04:28.685

or spoilers down,

1285

01:04:29.775 --> 01:04:30.775

Right? So there's the issue

1286

01:04:30.775 --> 01:04:32.325

of is the control in the correct

1287

01:04:32.605 --> 01:04:36.485

position versus is the system actually in the correct state?

1288

01:04:37.065 --> 01:04:39.485

And that's a always an important consideration.

1289

01:04:40.985 --> 01:04:42.125

Did you wanna do another one, bill?

1290

01:04:42.515 --> 01:04:44.205

Yeah, let's do one more. Who else has one?

1291

01:04:50.065 --> 01:04:52.565

So without the approved list of critical items,

1292

01:04:52.625 --> 01:04:55.245

we just went through all of them except for, uh, the two

1293

01:04:55.245 --> 01:04:56.485

that were in the before takeoff checklist.

1294

01:04:56.945 --> 01:04:58.285

So a speed break down.

1295

01:05:04.115 --> 01:05:05.445

It's back a few pages, but it was

1296

01:05:06.115 --> 01:05:07.485

many more words than quick turn.



1297

01:05:11.235 --> 01:05:14.245

Okay, speed. Break down flight con fuel control.

1298

01:05:14.305 --> 01:05:19.245

Low idle auto break. R RT take off. Thrust set. Take off.

1299

01:05:19.255 --> 01:05:22.605

Speed. Set. FMS set take off briefing.

1300

01:05:22.965 --> 01:05:25.045

Complete fuel control flight idle.

1301

01:05:25.905 --> 01:05:29.125

All right, great. Okay, comments or questions on theirs?

1302

01:05:30.145 --> 01:05:31.525

Why would you do the fuel control twice?

1303

01:05:31.585 --> 01:05:33.885

If it's a confirm that that,

1304

01:05:33.885 --> 01:05:36.885

would he confirm it's already I?

1305

01:05:38.435 --> 01:05:41.245

Well, what the, it depends on

1306

01:05:41.615 --> 01:05:43.325

where you are running the checklist.

1307

01:05:43.905 --> 01:05:46.285

Uh, if you're, I imagine if you're taxing

1308

01:05:46.345 --> 01:05:47.485

for an extended period of time,

1309

01:05:48.145 --> 01:05:51.725

it talks about having it in low IL four, uh, tax fees,

1310

01:05:51.795 --> 01:05:53.685  
fuel consumption, uh,

1311  
01:05:53.705 --> 01:05:56.125  
and then just prior to take off probably the quiet title,

1312  
01:05:56.305 --> 01:05:57.485  
that's gonna be the situation.

1313  
01:05:58.745 --> 01:06:01.445  
So that might even be a multi-phase checklist.

1314  
01:06:01.835 --> 01:06:04.285  
Essentially. Uh, you could have some items

1315  
01:06:04.285 --> 01:06:07.325  
that you would run a pause point to make sure

1316  
01:06:07.325 --> 01:06:08.965  
that the airplane, for example,

1317  
01:06:09.585 --> 01:06:12.245  
and other items that we didn't have on here, lights set

1318  
01:06:12.465 --> 01:06:13.965  
or transponder for

1319  
01:06:13.965 --> 01:06:16.965  
after, uh, if you're assuming you're going off the runway,

1320  
01:06:17.465 --> 01:06:20.165  
and then you could have another pause point

1321  
01:06:20.265 --> 01:06:21.605  
before you reenter the runway

1322  
01:06:21.745 --> 01:06:23.565  
and actually have a two phase checklist.

1323  
01:06:24.425 --> 01:06:25.725  
So there's another option

1324  
01:06:25.725 --> 01:06:28.165  
or another operational concept essentially for,

1325  
01:06:28.585 --> 01:06:29.965  
for this particular checklist.

1326  
01:06:31.115 --> 01:06:32.365  
What I'll show you now,

1327  
01:06:32.425 --> 01:06:34.285  
and again, there's no one right answer.

1328  
01:06:34.395 --> 01:06:36.325  
Each of you brings in different background

1329  
01:06:36.345 --> 01:06:38.885  
and different technical considerations, um,

1330  
01:06:38.885 --> 01:06:41.565  
that informs uh, your choices.

1331  
01:06:42.115 --> 01:06:46.525  
This is one sample checklist for the scenario. Uh, okay.

1332  
01:06:46.575 --> 01:06:48.845  
Would be called a landing taxi back checklist.

1333  
01:06:50.275 --> 01:06:53.045  
Auto brake, RTO take off, thrust

1334  
01:06:53.065 --> 01:06:56.565  
and speed set departure route set briefing complete.

1335  
01:06:56.955 --> 01:06:58.325  
Some of the things that aren't in there

1336  
01:06:58.865 --> 01:07:01.285  
are the speed brake lever based on the integrity

1337

01:07:01.385 --> 01:07:02.485  
of the alerting system.

1338  
01:07:03.145 --> 01:07:06.965  
Uh, and then the, uh, uh, the, uh,

1339  
01:07:07.685 --> 01:07:09.765  
I idle, um,

1340  
01:07:10.615 --> 01:07:13.085  
adjustment based on non criticality.

1341  
01:07:14.185 --> 01:07:16.845  
And then the, the items that are in the

1342  
01:07:16.845 --> 01:07:19.085  
before takeoff checklist are not repeated in the

1343  
01:07:19.085 --> 01:07:20.205  
landing taxi backed checklist.

1344  
01:07:20.305 --> 01:07:21.885  
So that's one set of rationale.

1345  
01:07:22.345 --> 01:07:25.845  
And then again, all of the processes you worked through.

1346  
01:07:25.945 --> 01:07:27.565  
The important thing here is the process,

1347  
01:07:28.665 --> 01:07:30.965  
how we look at these considerations, how we weigh them,

1348  
01:07:30.985 --> 01:07:32.005  
how we weigh the evidence.

1349  
01:07:32.545 --> 01:07:33.925  
So great work everybody.

1350  
01:07:35.985 --> 01:07:37.485  
Um, we've got two more things

1351  
01:07:37.545 --> 01:07:39.405  
to cover on the checklist builder,

1352  
01:07:39.625 --> 01:07:41.885  
and then just a few considerations

1353  
01:07:41.885 --> 01:07:43.485  
for non-normal checklists.

1354  
01:07:44.025 --> 01:07:45.365  
So Bill's gonna run through,

1355  
01:07:45.365 --> 01:07:48.525  
and we're kind of down to our last five minutes here,

1356  
01:07:48.545 --> 01:07:50.765  
so we're gonna run quickly through our last bits.

1357  
01:07:52.915 --> 01:07:55.325  
Okay. These next couple that we're going to talk about,

1358  
01:07:55.415 --> 01:07:58.125  
we're going to do, so you have a, a complete understanding

1359  
01:07:58.145 --> 01:07:59.445  
of what's in the checklist builder,

1360  
01:07:59.445 --> 01:08:00.965  
but we're not gonna actually do them here

1361  
01:08:00.965 --> 01:08:05.125  
because they use manipulating computer software to do it.

1362  
01:08:05.465 --> 01:08:07.485  
And the first one has to do with formatting.

1363  
01:08:07.485 --> 01:08:09.245  
How do you format your checklist?

1364

01:08:09.915 --> 01:08:11.765

Some of the questions you'll be answering is

1365

01:08:11.765 --> 01:08:12.845

what font should you use?

1366

01:08:12.915 --> 01:08:14.765

What about spacing and icons

1367

01:08:14.765 --> 01:08:15.765

And colors?

1368

01:08:16.505 --> 01:08:18.845

And the reason you want to consider all those things is

1369

01:08:18.845 --> 01:08:20.605

because of the conditions under which the

1370

01:08:20.605 --> 01:08:21.845

checklist is going to be used.

1371

01:08:22.545 --> 01:08:25.205

You know, sitting in a cockpit, there's all kinds of things

1372

01:08:25.205 --> 01:08:27.285

that impact your ability to do your job.

1373

01:08:27.685 --> 01:08:29.765

Lighting, for example, there may be glare

1374

01:08:29.875 --> 01:08:31.485

that makes it difficult to see.

1375

01:08:31.585 --> 01:08:34.005

At times you may be flying in a low light

1376

01:08:34.025 --> 01:08:36.365

or at night, where again, it's difficult to see.

1377

01:08:36.855 --> 01:08:39.245

There could be vibration if you're doing stalls testing,

1378  
01:08:39.385 --> 01:08:41.565  
for example, you could have a lot of vibration,

1379  
01:08:41.565 --> 01:08:43.565  
which makes it difficult to read a checklist.

1380  
01:08:44.185 --> 01:08:46.285  
So the better formatted it is, the better.

1381  
01:08:46.545 --> 01:08:47.925  
And then of course there could be smoke,

1382  
01:08:47.925 --> 01:08:50.405  
which we hope never happens, but it, it could be.

1383  
01:08:50.905 --> 01:08:53.085  
And again, that would, that would compromise your

1384  
01:08:53.085 --> 01:08:54.245  
ability to read the checklist.

1385  
01:08:55.705 --> 01:08:57.645  
So here are some points to consider.

1386  
01:08:58.185 --> 01:08:59.925  
The larger the font, the better.

1387  
01:09:00.695 --> 01:09:02.725  
Don't worry about making it too large

1388  
01:09:03.075 --> 01:09:04.645  
because it can't be too large,

1389  
01:09:04.645 --> 01:09:06.005  
except it won't fit on the page.

1390  
01:09:06.575 --> 01:09:07.805  
Ample line spacing.

1391

01:09:07.825 --> 01:09:09.445

So you want to be able to space it out

1392

01:09:09.505 --> 01:09:12.725

so you can see each line item as they occur.

1393

01:09:13.275 --> 01:09:14.325

High contrast,

1394

01:09:14.745 --> 01:09:17.205

you don't want dark blue on light blue, for example.

1395

01:09:17.685 --> 01:09:20.245

I saw, in fact, we had at Boeing, there was a checklist

1396

01:09:20.315 --> 01:09:21.605

that was produced that way.

1397

01:09:21.985 --> 01:09:23.845

And if you have any kind of colorblindness

1398

01:09:23.865 --> 01:09:27.725

or any kind of possible impact to your viewing it,

1399

01:09:27.915 --> 01:09:29.645

it's gonna be a challenge to read it.

1400

01:09:30.465 --> 01:09:32.685

You wanna separate the challenge in response.

1401

01:09:33.185 --> 01:09:34.205

The best way to do that,

1402

01:09:34.225 --> 01:09:35.805

or the way that we've done here is

1403

01:09:35.805 --> 01:09:37.165

with dots all the way across.

1404

01:09:37.305 --> 01:09:40.325

So you, you see the linkage, you see what the challenge is



1405  
01:09:40.325 --> 01:09:42.245  
or the item, you see what the response is

1406  
01:09:42.245 --> 01:09:46.165  
and they automatically go together, avoid color and coding.

1407  
01:09:46.625 --> 01:09:49.285  
In the bottom of the screen there, where you see the,

1408  
01:09:49.545 --> 01:09:53.645  
the colored box, the blue colored box, there's, there's, um,

1409  
01:09:54.235 --> 01:09:57.685  
shadowing, there's icons, there's different colors, all

1410  
01:09:57.685 --> 01:09:59.045  
of which makes it difficult

1411  
01:09:59.065 --> 01:10:01.205  
to read the items on that part of the checklist.

1412  
01:10:01.555 --> 01:10:03.845  
Whereas you compare that to the ones up above

1413  
01:10:04.305 --> 01:10:06.725  
and the ones up above are so much easier to read.

1414  
01:10:07.225 --> 01:10:08.645  
And that's what you're aiming for.

1415  
01:10:09.245 --> 01:10:11.765  
A checklist that can't be read is not

1416  
01:10:11.765 --> 01:10:12.925  
going to be readily used.

1417  
01:10:13.265 --> 01:10:14.605  
So you want to keep that in mind.

1418

01:10:15.625 --> 01:10:18.165

It also has to be flow apparent to the eye.

1419

01:10:18.665 --> 01:10:21.205

Here's one where you have to wonder what the flow is.

1420

01:10:22.205 --> 01:10:24.485

I mean, you look at that, where do you start?

1421

01:10:26.095 --> 01:10:30.325

Where, where do you go? It's really, it's confusing.

1422

01:10:30.795 --> 01:10:32.485

There's no apparent flow.

1423

01:10:32.635 --> 01:10:34.565

Then there's some other things in there as well.

1424

01:10:35.075 --> 01:10:38.085

There's different colors of boxes are,

1425

01:10:38.185 --> 01:10:39.805

do those colors signify something?

1426

01:10:40.105 --> 01:10:43.045

Are there ones that are more important than others or what?

1427

01:10:43.305 --> 01:10:46.525

So there's a lot of things in this particular checklist

1428

01:10:46.795 --> 01:10:50.485

that are not, it's not constructed in a way

1429

01:10:50.485 --> 01:10:52.005

that's gonna be effectively used.

1430

01:10:52.065 --> 01:10:53.125

And that's what you don't want.

1431

01:10:53.845 --> 01:10:55.485

'cause if you have a checklist that's like that,

1432  
01:10:55.485 --> 01:10:57.565  
people are gonna set it aside, they're not going to use it.

1433  
01:10:57.865 --> 01:10:59.605  
And then you will have wasted all that time.

1434  
01:11:01.585 --> 01:11:05.325  
Are you gonna touch on numbering at all? We didn't.

1435  
01:11:05.325 --> 01:11:07.885  
We If you gotta check that, be interrupted.

1436  
01:11:08.485 --> 01:11:10.565  
I always try and to have a number

1437  
01:11:10.625 --> 01:11:13.845  
or something so the crew can say we're at step five,

1438  
01:11:15.455 --> 01:11:16.455  
Right? Yeah. Numbering

1439  
01:11:16.455 --> 01:11:18.245  
can be a good method, especially

1440  
01:11:18.245 --> 01:11:19.245  
In a test Current.

1441  
01:11:19.395 --> 01:11:22.645  
Yeah. The main issues with numbering that we found is

1442  
01:11:22.675 --> 01:11:26.925  
that it can sometimes be misinterpreted when the,

1443  
01:11:27.155 --> 01:11:29.565  
when the beginning of the step includes a number,

1444  
01:11:29.635 --> 01:11:31.565  
like an engine number, et cetera.

1445

01:11:31.665 --> 01:11:34.005  
You just, it, that's the only issue with numbering

1446  
01:11:34.005 --> 01:11:35.485  
that we've run into is generally good.

1447  
01:11:35.985 --> 01:11:38.485  
But it can end up with some confusion.

1448  
01:11:38.485 --> 01:11:42.245  
You have to be careful about, uh, how it, uh, works

1449  
01:11:42.315 --> 01:11:45.205  
with the step itself and whether there can be confusion.

1450  
01:11:45.265 --> 01:11:46.265  
Yep.

1451  
01:11:47.115 --> 01:11:49.205  
Yeah, some of the same questions come up with marking.

1452  
01:11:49.405 --> 01:11:53.285  
I was working with a group that would do full scale testing

1453  
01:11:53.625 --> 01:11:54.925  
of commercial airplanes

1454  
01:11:54.925 --> 01:11:57.965  
and just the setup of the test took several days.

1455  
01:11:58.665 --> 01:12:00.965  
So there's multiple shifts involved.

1456  
01:12:01.345 --> 01:12:04.445  
And so there's multiple coordination of the checklist

1457  
01:12:04.665 --> 01:12:05.805  
and where they are in the checklist

1458  
01:12:05.905 --> 01:12:07.245  
and what has been accomplished,

1459

01:12:07.275 --> 01:12:08.565  
what hasn't been accomplished.

1460

01:12:09.025 --> 01:12:11.485  
So they marked it not for retention,

1461

01:12:11.785 --> 01:12:13.085  
but just for communication

1462

01:12:13.085 --> 01:12:14.645  
and coordination of what they were doing.

1463

01:12:15.025 --> 01:12:16.885  
So all those things have to come into play.

1464

01:12:18.225 --> 01:12:20.845  
As far as fonts, you want to use a mixed case font.

1465

01:12:21.095 --> 01:12:23.005  
Again, if you look at this and in, in many

1466

01:12:23.005 --> 01:12:25.365  
of our operations, we use a lot of acronyms.

1467

01:12:25.825 --> 01:12:28.485  
So you look at the top one FMS selector

1468

01:12:28.485 --> 01:12:29.565  
and look at the bottom one.

1469

01:12:30.345 --> 01:12:31.845  
Are both of the bottom ones,

1470

01:12:31.845 --> 01:12:34.965  
would they be both considered some kind of an acronym

1471

01:12:35.195 --> 01:12:36.725  
because they're all capitalized?

1472

01:12:36.725 --> 01:12:39.365  
You're not sure. So it's just easier to make

1473  
01:12:39.365 --> 01:12:41.765  
that distinction by using mixed cases

1474  
01:12:41.905 --> 01:12:44.005  
and the same as the response left or right

1475  
01:12:44.425 --> 01:12:46.925  
or I'm not sure what the bottom one signifies.

1476  
01:12:49.445 --> 01:12:51.725  
Likewise, as far as the type of font,

1477  
01:12:52.085 --> 01:12:56.085  
a San Serif font is better than a serif font, San Serif

1478  
01:12:56.825 --> 01:12:58.365  
in the vernaculars without

1479  
01:12:58.535 --> 01:12:59.885  
tails, if you want to call it that.

1480  
01:13:00.185 --> 01:13:02.885  
So the top in this example is a San Serif,

1481  
01:13:02.905 --> 01:13:04.125  
the bottom is a rif.

1482  
01:13:04.625 --> 01:13:07.045  
And for this purpose, historically

1483  
01:13:07.045 --> 01:13:08.565  
and scientifically, it's been proven

1484  
01:13:08.595 --> 01:13:10.805  
that San Crif works better than Crif.

1485  
01:13:10.905 --> 01:13:12.965  
So when you're formatting you want

1486

01:13:12.965 --> 01:13:14.645  
to use San Crif whenever possible.

1487

01:13:15.965 --> 01:13:17.485  
Questions, comments about formatting?

1488

01:13:21.075 --> 01:13:22.685  
Okay, good. Whoops.

1489

01:13:22.825 --> 01:13:26.925  
Uh, the, uh, the wording also when it comes to

1490

01:13:26.925 --> 01:13:31.005  
how the label on the switch is also matches,

1491

01:13:31.275 --> 01:13:32.445  
matches the switch.

1492

01:13:32.545 --> 01:13:33.545  
So

1493

01:13:34.435 --> 01:13:36.845  
Yeah, definitely, uh, Center hydraulic.

1494

01:13:37.395 --> 01:13:41.925  
Yeah, panel panel matching is definitely a positive,

1495

01:13:41.925 --> 01:13:46.605  
especially if you get into, uh, the users not being

1496

01:13:46.605 --> 01:13:49.645  
of the same native language as the flight deck is set up in,

1497

01:13:50.025 --> 01:13:53.165  
um, that character matching between the checklist

1498

01:13:53.505 --> 01:13:55.005  
and the panel is very important.

1499

01:13:55.385 --> 01:13:56.385  
Yep.

1500  
01:13:59.515 --> 01:14:01.085  
Okay. The last step

1501  
01:14:01.085 --> 01:14:03.725  
that in the checklist builder is test and improve.

1502  
01:14:04.425 --> 01:14:06.525  
And you don't wanna make the mistake of trying

1503  
01:14:06.585 --> 01:14:08.765  
to put a checklist together, roll it out

1504  
01:14:08.765 --> 01:14:11.005  
to everyone without testing and approving.

1505  
01:14:11.645 --> 01:14:13.605  
'cause you've been involved in the development process,

1506  
01:14:13.985 --> 01:14:15.845  
you know what work went into it, you know

1507  
01:14:15.845 --> 01:14:17.045  
what your rationale was.

1508  
01:14:17.425 --> 01:14:19.525  
The users may not know that, and

1509  
01:14:19.525 --> 01:14:21.525  
because of that, they may interpret it differently.

1510  
01:14:22.225 --> 01:14:24.565  
So you want to test before distributing first.

1511  
01:14:24.565 --> 01:14:25.725  
You wanna test it yourself.

1512  
01:14:26.025 --> 01:14:29.485  
Use the group that developed the test, run it



1513

01:14:29.545 --> 01:14:30.565  
to see how it goes.

1514

01:14:30.565 --> 01:14:33.165  
Using the checklist, practice reading

1515

01:14:33.185 --> 01:14:34.845  
and responding before using live.

1516

01:14:34.955 --> 01:14:36.525  
Involve all the team members

1517

01:14:36.525 --> 01:14:38.405  
that were involved in development in the test

1518

01:14:38.745 --> 01:14:40.245  
and then revise it as needed.

1519

01:14:40.785 --> 01:14:43.005  
And then provide support in terms

1520

01:14:43.005 --> 01:14:44.325  
of expected use of the checklist.

1521

01:14:44.825 --> 01:14:46.765  
You may need to give a, um,

1522

01:14:47.085 --> 01:14:49.485  
a briefing about why it was developed,

1523

01:14:49.635 --> 01:14:50.765  
what the thinking was.

1524

01:14:50.785 --> 01:14:54.005  
The rationale was you may need to provide some kind

1525

01:14:54.005 --> 01:14:55.245  
of training before you try

1526

01:14:55.245 --> 01:14:57.285  
and implement the checklist, whatever's

1527  
01:14:57.285 --> 01:14:58.405  
gonna make it better to use.

1528  
01:14:59.145 --> 01:15:03.245  
And then deploy to multiple teams, have several teams use it

1529  
01:15:03.245 --> 01:15:04.285  
and give you feedback

1530  
01:15:04.705 --> 01:15:07.165  
before trying to implement it with all teams.

1531  
01:15:07.585 --> 01:15:09.965  
And then once you all submit it to all teams,

1532  
01:15:10.125 --> 01:15:11.765  
continuously seek feedback.

1533  
01:15:11.865 --> 01:15:13.845  
And so you can continuously improve it.

1534  
01:15:14.235 --> 01:15:15.685  
It's sort of a living document.

1535  
01:15:16.065 --> 01:15:18.485  
You want to get it to a point where it makes sense

1536  
01:15:18.625 --> 01:15:20.285  
and is usable as is,

1537  
01:15:20.545 --> 01:15:24.365  
but you want to continuously seek feedback, questions,

1538  
01:15:24.525 --> 01:15:25.845  
comments on testing and improving.

1539  
01:15:28.795 --> 01:15:30.685  
Yeah, no, you mentioned the word training

1540  
01:15:30.785 --> 01:15:34.125  
and earlier I think what Dan said, you have

1541  
01:15:34.125 --> 01:15:36.485  
to assume every word is gonna be read.

1542  
01:15:36.515 --> 01:15:39.485  
Correct. So You have to assume

1543  
01:15:39.485 --> 01:15:41.485  
that you trained to read every word,

1544  
01:15:41.485 --> 01:15:42.485  
Correct.

1545  
01:15:42.755 --> 01:15:44.445  
Yeah, that's exactly right.

1546  
01:15:44.625 --> 01:15:46.805  
And that's one, that's the one thing, one

1547  
01:15:46.805 --> 01:15:48.685  
of the things you need to keep in the back of your mind.

1548  
01:15:48.705 --> 01:15:51.165  
And that's why you do a single word check so

1549  
01:15:51.165 --> 01:15:53.205  
that when you read through it, you want them

1550  
01:15:53.305 --> 01:15:55.725  
to read every single word that's on there.

1551  
01:15:55.755 --> 01:15:58.645  
Because once they start not reading every word,

1552  
01:15:58.875 --> 01:16:01.125  
then they're gonna start skipping portions of it.

1553

01:16:01.425 --> 01:16:04.205  
Excuse me. And Igart eventually skipped the whole checklist

1554  
01:16:04.385 --> 01:16:06.205  
and so you've wasted your time in doing it,

1555  
01:16:06.985 --> 01:16:08.605  
but there may be other things you need

1556  
01:16:08.605 --> 01:16:10.165  
to bring up in training as far

1557  
01:16:10.165 --> 01:16:13.165  
as why this was developed in the first place, what you hope

1558  
01:16:13.165 --> 01:16:14.605  
to achieve through using the

1559  
01:16:14.605 --> 01:16:15.925  
checklist and those kinds of things.

1560  
01:16:18.595 --> 01:16:20.165  
Okay. What other questions?

1561  
01:16:20.165 --> 01:16:21.885  
Maybe you had questions at the beginning,

1562  
01:16:21.945 --> 01:16:22.965  
we didn't get to answer.

1563  
01:16:23.145 --> 01:16:26.965  
Are there other questions you have that you'd like

1564  
01:16:26.965 --> 01:16:28.565  
to get a response to at this time?

1565  
01:16:31.395 --> 01:16:32.805  
When like, when's lunch?

1566  
01:16:34.855 --> 01:16:38.005  
We're gonna skip lunch? No. Oh,

1567

01:16:38.005 --> 01:16:39.005

Please.

1568

01:16:39.515 --> 01:16:41.605

This is kind of an organizational question,

1569

01:16:42.625 --> 01:16:45.725

but how have you found it best for organized so

1570

01:16:45.725 --> 01:16:49.565

that the people who do the checklists are incentivized

1571

01:16:50.505 --> 01:16:52.445

and rewarded for doing this instead

1572

01:16:52.445 --> 01:16:55.165

of being additional duty for the pilot flight?

1573

01:16:55.505 --> 01:16:56.565

That's a great question.

1574

01:16:56.945 --> 01:17:00.685

Um, and, and, and, and I've seen a lot of issues there.

1575

01:17:01.185 --> 01:17:05.525

Um, you know, obviously involving the team members from each

1576

01:17:05.545 --> 01:17:09.045

of the disciplines that is affected by it in the development

1577

01:17:09.125 --> 01:17:11.045

of the checklist, then they're bought into it.

1578

01:17:11.585 --> 01:17:14.245

Uh, good training, including the rationale

1579

01:17:14.345 --> 01:17:17.925

for why the checklist is the way it is, the critical items,

1580

01:17:18.145 --> 01:17:21.605  
the uh, uh, the error history on the checklist helps people,

1581  
01:17:21.985 --> 01:17:23.085  
uh, being more convinced.

1582  
01:17:23.425 --> 01:17:26.125  
The biggest thing though, is the bottom line is that

1583  
01:17:26.125 --> 01:17:28.005  
that checklist is short and easy to use.

1584  
01:17:28.625 --> 01:17:32.285  
And I've watched as surgeons who basically hated the idea

1585  
01:17:32.285 --> 01:17:33.885  
of a checklist, didn't want

1586  
01:17:33.885 --> 01:17:37.085  
to be interrupted in their perfect flow that they were in,

1587  
01:17:37.625 --> 01:17:40.685  
in their work, uh, were found

1588  
01:17:40.685 --> 01:17:42.765  
that they had caught, uh, errors.

1589  
01:17:43.585 --> 01:17:45.365  
And as soon as that happens, oh, okay,

1590  
01:17:45.365 --> 01:17:48.005  
there the thing starts to become your friend a little bit

1591  
01:17:48.005 --> 01:17:50.005  
and then it happens again, and then it happens again.

1592  
01:17:50.305 --> 01:17:52.005  
And if it's short and easy to use

1593  
01:17:52.385 --> 01:17:56.125  
and you find that it's catching your mistakes, that's,

1594  
01:17:56.235 --> 01:17:58.605  
that is by far the biggest factor in the

1595  
01:17:58.735 --> 01:18:00.565  
successful adoption of checklists.

1596  
01:18:02.935 --> 01:18:04.765  
Great question. Any other questions?

1597  
01:18:06.065 --> 01:18:07.965  
So we are really out of time.

1598  
01:18:08.065 --> 01:18:10.245  
We had a few more things that we, uh,

1599  
01:18:10.245 --> 01:18:12.165  
might have covered about electronic

1600  
01:18:12.175 --> 01:18:13.765  
checklists, about non norm.

1601  
01:18:13.825 --> 01:18:16.085  
Uh, a few slides on non-normal checklists.

1602  
01:18:16.465 --> 01:18:19.285  
Um, bill and I are gonna be around for the next couple days.

1603  
01:18:19.865 --> 01:18:23.525  
Uh, I've got a, uh, on the electronic checklist,

1604  
01:18:23.965 --> 01:18:26.085  
I have a paper that essentially is the

1605  
01:18:26.085 --> 01:18:27.525  
same material that's in the checklist.

1606  
01:18:28.265 --> 01:18:31.365  
I'm gonna talk to Susan about getting a link to that.

1607

01:18:31.825 --> 01:18:33.005  
So it'll be on the website

1608  
01:18:33.005 --> 01:18:34.445  
so you'll be able to see that material.

1609  
01:18:35.065 --> 01:18:37.725  
And I would be happy to chat with any of you, uh,

1610  
01:18:37.755 --> 01:18:39.685  
over the next couple days when we have some breaks.

1611  
01:18:40.305 --> 01:18:43.485  
Thanks so much for being a part of this workshop and,

1612  
01:18:43.505 --> 01:18:46.205  
and everybody was really diligently

1613  
01:18:46.205 --> 01:18:47.925  
and brilliantly working through these things.

1614  
01:18:47.925 --> 01:18:51.045  
Appreciate it very much. Alright. Thank.