MFTC
1
00:00:02.480 --> 00:00:03.540
Okay. Now,

2
00:00:05.100 --> 00:00:05.680
on stage

3
00:00:06.520 --> 00:00:09.180
are going to come, for the last

4
00:00:10.020 --> 00:00:11.260
presentation of this afternoon,

5
00:00:12.240 --> 00:00:13.560
before we have the panel discussion,

6
00:00:15.580 --> 00:00:16.660
a group of three

7
00:00:17.500 --> 00:00:18.000
gentlemen.

8
00:00:19.120 --> 00:00:19.660
I'm not going to

9
00:00:20.820 --> 00:00:24.360
spend too much time about explaining who they are because they are

10
00:00:24.580 --> 00:00:28.040
so experienced that I would probably spend half of the

11
00:00:28.120 --> 00:00:29.500
presentation time for that.

12
00:00:30.740 --> 00:00:31.240
But anyway,

13
00:00:32.160 --> 00:00:32.759
we have here

14

00:00:35.400 --> 00:00:35.800
Terry?

15
00:00:35.920 --> 00:00:36.449
Yep, Terry.

16
00:00:36.480 --> 00:00:39.820
So basically, very experienced people in

17
00:00:40.700 --> 00:00:41.420
this domain.

18
00:00:42.300 --> 00:00:44.640
I can say Airbus.

19
00:00:45.940 --> 00:00:46.400
We have,

20
00:00:47.280 --> 00:00:49.620
yes, Textron and Bombardier,

21
00:00:50.480 --> 00:00:52.680
so that's not bad. And

22
00:00:54.180 --> 00:00:57.820
they are going to talk about Manufacturer Flight Test Committee, which

23
00:00:58.220 --> 00:01:02.000
I personally think is a great organization and very

24
00:01:02.040 --> 00:01:04.200
interesting, and they are going to explain that. Thank you.

25
00:01:04.500 --> 00:01:04.700
Thank you.

26
00:01:09.120 --> 00:01:13.040
Okay. We're happy to have this opportunity to talk about the Manufacturers Flight

27
00:01:13.120 --> 00:01:17.080

Test Council. And we put it together about 15 or

28
00:01:17.160 --> 00:01:20.880
16 years ago so that we could work together and improve flight test

29
00:01:20.940 --> 00:01:21.440
safety.

30
00:01:22.940 --> 00:01:26.600
I'll give you some idea of what the beginnings were here in a second, but I'll give

31
00:01:26.620 --> 00:01:30.520
you the history. We'll talk about some of the significant achievements

32
00:01:30.560 --> 00:01:34.520
that we've had over the past few years and how we collaborate with the

33
00:01:34.580 --> 00:01:36.940
various certification management teams.

34
00:01:38.000 --> 00:01:41.140
So, the beginning began in 2010 in Anaheim.

35
00:01:41.660 --> 00:01:45.640
I was attending there on behalf of Airbus because I was working for Airbus at the

36
00:01:45.700 --> 00:01:45.980
time,

37
00:01:46.880 --> 00:01:50.720
and I was approached by Paul Boldts Moorhead of Boeing, and he

38
00:01:50.840 --> 00:01:53.820
said, "Why don't we try to put together a joint

39
00:01:53.860 --> 00:01:57.650
presentation between Airbus and Boeing about something related

40
00:01:57.680 --> 00:02:01.400

to flight test?" And so I said, "Well, I'll take that note

41
00:02:01.460 --> 00:02:05.300
back to Toulouse, and I'll talk to my boss, and you take that back to Boeing

42
00:02:05.340 --> 00:02:09.140
and speak to your boss about it." So what ended

43
00:02:09.220 --> 00:02:13.080
up was is that Fernando Alonso at Airbus came

44
00:02:13.140 --> 00:02:17.000
with me the following year in 2011 to Anaheim, and

45
00:02:17.040 --> 00:02:19.320
Dennis O'Donoghue came from Boeing.

46
00:02:19.700 --> 00:02:23.400
Now, those two individuals were both the senior vice

47
00:02:23.440 --> 00:02:27.020
presidents of test and integration at

48
00:02:27.060 --> 00:02:30.140
Airbus and Boeing. But more importantly,

49
00:02:31.560 --> 00:02:35.460
we were beginning to see how interrelated we all are

50
00:02:35.640 --> 00:02:39.540
in aerospace, and in particular, in flight testing.

51
00:02:40.340 --> 00:02:43.660
Fernando had attended EPNER

52
00:02:44.280 --> 00:02:48.220
with Doug Benjamin, who was a USAF exchange student at

53
00:02:48.260 --> 00:02:50.160
the time and now working for Boeing.

54
00:02:50.560 --> 00:02:54.540
So there was already an integration between Airbus and Boeing.

55
00:02:54.580 --> 00:02:57.680
The other thing was that Fernando had no

56
00:02:57.720 --> 00:03:01.540
problem coming to Anaheim because as a young man,

57
00:03:01.900 --> 00:03:05.360
young engineer, he had worked for Douglas in Los

58
00:03:05.480 --> 00:03:09.400
Angeles, so he was familiar with the US aspect of

59
00:03:09.460 --> 00:03:13.120
the aerospace industry. So what we agreed

60
00:03:13.220 --> 00:03:16.980
on at that meeting was to put together the concept of

61
00:03:17.080 --> 00:03:21.040
a non-competitive group so that we could talk about our

62
00:03:21.060 --> 00:03:24.760
experiences and try to find solutions to the problems that we

63
00:03:24.820 --> 00:03:28.380
had. And of course, at the time, Airbus and Boeing were

64
00:03:28.560 --> 00:03:31.800
really big competitors, so that was kind of unprecedented.

65
00:03:32.600 --> 00:03:36.280
So in February of 2011, Boeing came to

66
00:03:36.340 --> 00:03:39.900
Airbus to visit. Dennis O'Donoghue and Doug Benjamin came,

67

00:03:40.540 --> 00:03:44.020
and they had the opportunity to fly the Airbus A380.

68
00:03:44.780 --> 00:03:47.400
And the following year,

69
00:03:48.260 --> 00:03:51.680
Fernando, myself, and Pete Chandler went to Seattle,

70
00:03:51.980 --> 00:03:55.540
and we flew the 787. And at the time, both of those

71
00:03:55.600 --> 00:03:59.020
airplanes were just entering service, so they were all brand new.

72
00:04:00.340 --> 00:04:03.100
So we decided that we would forge a

73
00:04:05.060 --> 00:04:08.960
group so that we could talk about our common experiences, and that was

74
00:04:09.000 --> 00:04:11.880
the genesis of the Manufacturers Flight Test Council.

75
00:04:13.100 --> 00:04:16.019
In March of 2013, in further collaboration,

76
00:04:17.740 --> 00:04:20.541
Van Chaney and Paul Boldts Moorhead from Boeing,

77
00:04:21.740 --> 00:04:25.460
Stephane Vau, and myself gave a presentation about stalling transport

78
00:04:25.520 --> 00:04:28.900
airplanes at the Royal Aeronautical Society in London.

79
00:04:29.380 --> 00:04:33.220
That was a first for them at the RAES, and we

80
00:04:33.260 --> 00:04:35.460
gave that presentation later on in

81
00:04:36.440 --> 00:04:37.940
September in Anaheim.

82
00:04:38.880 --> 00:04:39.100
So

83
00:04:40.020 --> 00:04:41.680
we formed the Flight Test Conference.

84
00:04:41.700 --> 00:04:45.520
The first meeting was actually held in Toulouse in October of

85
00:04:45.680 --> 00:04:46.500
2013.

86
00:04:48.060 --> 00:04:51.600
One of those more integrated things, Fernando was also friends

87
00:04:52.140 --> 00:04:55.980
with Alex Figueiredo, who was the VP of

88
00:04:56.060 --> 00:04:59.720
integration and test at Embraer. So we

89
00:04:59.780 --> 00:05:03.380
invited Alex, and we also invited

90
00:05:03.420 --> 00:05:07.400
Gulfstream. So now we have four people involved in a meeting at the very

91
00:05:07.460 --> 00:05:11.400
first flight test conference. Four companies involved at the first

92
00:05:11.420 --> 00:05:12.220
flight test conference.

93
00:05:13.220 --> 00:05:16.200
The Gulfstream involvement gave us the very first

94

00:05:17.360 --> 00:05:21.250
look at the Gulfstream 650 accident and what Gulfstream had learned.

95
00:05:22.660 --> 00:05:26.060
In addition to just meeting with the senior

96
00:05:26.620 --> 00:05:30.180
test pilots and senior flight test engineers, what we tried to do is bring those

97
00:05:30.220 --> 00:05:33.600
representatives into a big group so that they can have a

98
00:05:33.800 --> 00:05:37.320
QA just across the aisle with all of the flight

99
00:05:37.660 --> 00:05:41.380
test pilots and flight test engineers in those companies, and we've tried to

100
00:05:41.420 --> 00:05:43.320
maintain that in our further meetings.

101
00:05:44.460 --> 00:05:48.400
So here's a summary of the in-person meetings that we've had with the

102
00:05:48.460 --> 00:05:50.560
hosts. After meeting

103
00:05:51.540 --> 00:05:55.270
in Toulouse, we went to Embraer in São José dos Campos, then

104
00:05:55.300 --> 00:05:59.120
to Gulfstream, and when we were at Gulfstream was when we first created our

105
00:05:59.140 --> 00:06:02.921
mission statementAnd then from there, we began adding

106
00:06:02.972 --> 00:06:06.132
members. As you can see, we added Dassault, we added

107
00:06:06.152 --> 00:06:09.872
Bombardier, then Textron, and then we had another meeting in

108
00:06:09.912 --> 00:06:13.432
Airbus in October of 2021, and we invited

109
00:06:13.512 --> 00:06:15.032
ATR. And

110
00:06:16.012 --> 00:06:16.572
finally,

111
00:06:17.792 --> 00:06:21.632
my boss, who superseded Fernando, Patrick Duchesne, said,

112
00:06:22.152 --> 00:06:25.772
"We have a lot of good friends in the rotary wing world that are experiencing the

113
00:06:25.852 --> 00:06:29.692
same kind of problems that we are, so why don't we ask the rotary

114
00:06:29.752 --> 00:06:33.692
wing community to join us so that they can see what we've tried to

115
00:06:33.732 --> 00:06:37.692
accomplish?" And that has worked very well, as you will hear just in a little bit

116
00:06:37.732 --> 00:06:40.832
longer. So we created a mission statement.

117
00:06:42.092 --> 00:06:46.012
It's a forum for flight test leadership to begin

118
00:06:46.092 --> 00:06:49.432
talking about the problems that we have to certify airplanes in Part

119
00:06:49.592 --> 00:06:53.492
25, and do that at the highest practical level of

120
00:06:53.552 --> 00:06:57.192
safety where there is no competitive boundary like you might

121
00:06:57.592 --> 00:06:59.292
realize between large companies.

122
00:07:00.192 --> 00:07:02.152
We came up with a set of goals

123
00:07:02.972 --> 00:07:06.452
for the MFTC, mainly to improve flight test planning and

124
00:07:06.512 --> 00:07:09.822
execution to reduce the risk that we have and

125
00:07:09.892 --> 00:07:12.532
put it to the lowest practical level.

126
00:07:13.072 --> 00:07:16.932
And then finally, to facilitate some harmonization of the

127
00:07:16.972 --> 00:07:20.572
rules that we have to live with to certify airplanes in the Part

128
00:07:20.732 --> 00:07:21.832
25 category.

129
00:07:23.412 --> 00:07:27.312
We also came up with some emphasis items to come

130
00:07:27.352 --> 00:07:28.732
up with the best practices.

131
00:07:29.772 --> 00:07:33.352
We talk about facilities, where do we go for high altitude

132
00:07:33.432 --> 00:07:37.072
testing, where do we go for hot weather testing, where do we go for
crosswind

133

00:07:37.152 --> 00:07:40.412
testing. So we're sharing those ideas so that we can go

134
00:07:41.272 --> 00:07:45.192
and take profit from the experiences of others and maintain a

135
00:07:45.392 --> 00:07:47.492
very safe test environment.

136
00:07:49.552 --> 00:07:53.232
When we have a meeting, we all get together and have a mass

137
00:07:53.292 --> 00:07:56.652
picture together, so just to give you some idea where we've been in the last four

138
00:07:56.672 --> 00:07:57.412
or five years.

139
00:07:59.352 --> 00:08:03.272
And so I'm going to turn it over to Keith to talk about some of the significant

140
00:08:03.372 --> 00:08:04.772
safety achievements that we've had.

141
00:08:08.132 --> 00:08:08.751
Thank you, Terry.

142
00:08:09.612 --> 00:08:13.492
Like he said, I just want to go over what is the collaboration we've been able to

143
00:08:13.532 --> 00:08:17.392
do, what are the projects we've been working on, and how have they contributed to

144
00:08:17.432 --> 00:08:19.872
the overall flight test safety.

145
00:08:20.732 --> 00:08:24.382
So high altitude icing was one of the first ones that I helped out with,

146
00:08:24.792 --> 00:08:28.282
and these requirements were initially driven by an FAA special

147
00:08:28.292 --> 00:08:31.012
condition, followed up by an EASA generic CRI.

148
00:08:31.692 --> 00:08:35.252
And they applied to any aircraft which inhibited or reduced their

149
00:08:35.312 --> 00:08:39.231
anti-ice bleeds above flight level 300 or above Appendix c

150
00:08:39.312 --> 00:08:39.692
icing.

151
00:08:40.653 --> 00:08:44.402
Now, to answer the CRI, an aircraft manufacturer would have to
demonstrate safe

152
00:08:44.512 --> 00:08:46.812
operation in that icing environment.

153
00:08:47.492 --> 00:08:51.282
And one of the MFTC's biggest questions was:

154
00:08:51.292 --> 00:08:54.912
How are we going to do this safely? Because the

155
00:08:54.992 --> 00:08:58.912
critical condition for demonstrating this safe operation is

156
00:08:58.932 --> 00:09:02.372
going to be at the ceiling of the aircraft, and that means you're going
to be

157
00:09:02.452 --> 00:09:06.282
dragging artificial ice shapes up to the ceiling and

158
00:09:06.352 --> 00:09:10.292
introducing some unique flight test hazards, such as what if an ice

159
00:09:10.332 --> 00:09:14.321
shape comes off? If that ice shape is then ingested, you could lose an engine at

160
00:09:14.372 --> 00:09:17.632
a high altitude, you could lose performance, you could possibly lose

161
00:09:17.672 --> 00:09:18.472
pressurization.

162
00:09:19.292 --> 00:09:22.912
Even if you don't ingest that ice shape, you're now left with an

163
00:09:22.972 --> 00:09:26.942
asymmetric icing configuration at both high altitude and high Mach.

164
00:09:28.532 --> 00:09:32.052
So over a several-year effort, we collaborated with the Aerospace

165
00:09:32.132 --> 00:09:35.732
Industries Association and the Engine Icing Working Group

166
00:09:35.792 --> 00:09:38.532
to better define and try to reduce this icing

167
00:09:38.572 --> 00:09:42.552
envelope. So with flight data from several of our members,

168
00:09:42.792 --> 00:09:46.492
we were able to discover that there were no cases of icing

169
00:09:46.552 --> 00:09:50.332
above flight level 370, which gave us a great maximum

170
00:09:50.412 --> 00:09:51.292
altitude for this.

171
00:09:52.272 --> 00:09:53.852
Further analysis of this data

172
00:09:54.812 --> 00:09:58.652
also allowed us to determine a liquid water content and a maximum

173
00:09:58.672 --> 00:10:01.252
duration for any icing encounter we did have.

174
00:10:02.092 --> 00:10:06.052
Now we took this new envelope, we presented it to EASA with the help of

175
00:10:06.152 --> 00:10:09.832
AIA and the engine working group, and they were in

176
00:10:09.872 --> 00:10:13.852
favor. In fact, they've now revised their generic CRI to include this new

177
00:10:13.932 --> 00:10:17.532
icing envelope. This new icing envelope is also in the

178
00:10:17.612 --> 00:10:19.272
F-3120 ASTM.

179
00:10:20.132 --> 00:10:23.492
Furthermore, working with ASTM, we've been able to help

180
00:10:23.532 --> 00:10:27.352
define what flight test procedures do you need to show safe

181
00:10:27.452 --> 00:10:28.952
operation, and those

182
00:10:30.192 --> 00:10:34.072
are currently being validated and should be in the next revision of
F3120.

183
00:10:36.092 --> 00:10:39.912
Now, every multi-engine airplane has to comply with the

184
00:10:39.972 --> 00:10:43.272
requirements for minimum control speed in the air, which

185

00:10:43.332 --> 00:10:46.822
includes a dynamic engine cut to show

186
00:10:46.832 --> 00:10:47.602
controllability.

187
00:10:48.612 --> 00:10:52.592
Now, while this test has been performed successfully for many years, it's

188
00:10:52.612 --> 00:10:54.392
really not without its inherent risks.

189
00:10:54.972 --> 00:10:58.642
The airplane has to be at a very low altitude to generate the required thrust.

190
00:10:59.092 --> 00:11:02.752
They're testing it as a very low speed, which means you're also at a very high

191
00:11:02.852 --> 00:11:06.712
pitch angle. There's the possibility that at engine failure, you're going to

192
00:11:06.752 --> 00:11:10.652
hit the wrong rudder pedal. And while not totally a safety risk,

193
00:11:11.012 --> 00:11:14.172
the larger high-bypass engines that we're testing these days

194
00:11:14.732 --> 00:11:17.692
really don't respond well to repeated engine cuts.

195
00:11:19.352 --> 00:11:23.332
So the MFTC got together, and we started comparing VMC results across

196
00:11:23.392 --> 00:11:26.472
our fleets over the past 40 plus years.

197
00:11:26.532 --> 00:11:30.292
In all that research, we couldn't find a single instance where dynamic

198
00:11:30.392 --> 00:11:33.932
VMC was higher than the static VMC number.

199
00:11:34.052 --> 00:11:37.392
In other words, dynamic VMC was never driving the AFM value.

200
00:11:38.092 --> 00:11:41.272
So armed with this information, we drafted a generic issue paper,

201
00:11:41.972 --> 00:11:45.512
which proposes to replace dynamic engine cut with

202
00:11:45.592 --> 00:11:49.492
simulation and analysis of other currently performed single

203
00:11:49.552 --> 00:11:50.292
engine testing.

204
00:11:51.352 --> 00:11:54.352
Now, the authorities have really been pretty much on board with this.

205
00:11:54.692 --> 00:11:58.172
The FAA is looking forward to having an alternative for means of

206
00:11:58.212 --> 00:12:01.782
compliance for dynamic VMC, and they're looking for one or two

207
00:12:01.812 --> 00:12:05.712
companies to present this method to them before they go ahead and write
their own

208
00:12:05.732 --> 00:12:09.416
generic issue paper.Conversations with the other major cert

209
00:12:09.456 --> 00:12:11.336
authorities have been equally promising.

210
00:12:13.536 --> 00:12:17.236
Now, as we've heard several times this weekend, safely conducting flight

211

00:12:17.276 --> 00:12:20.556
testing requires that everyone is on the same page, and that

212
00:12:20.596 --> 00:12:24.375
communication is flowing clearly and in a timely manner.

213
00:12:25.036 --> 00:12:28.906
Now, every company has their own in-house language they use for standard calls,

214
00:12:29.376 --> 00:12:32.696
but this can be a bit problematic, as we've heard, especially when you're bringing

215
00:12:32.756 --> 00:12:36.556
in new people or you're testing with the authorities who have to adapt to

216
00:12:36.596 --> 00:12:38.726
the numerous companies that they test with.

217
00:12:39.855 --> 00:12:43.796
So the MFTC started looking around for, hey, what would be a better

218
00:12:43.836 --> 00:12:45.826
set of standard calls that we could all adopt?

219
00:12:46.306 --> 00:12:49.896
And everything we found out there was either very heavily military-based

220
00:12:49.936 --> 00:12:53.736
or really only good for the pilot flying, pilot monitoring, call and

221
00:12:53.796 --> 00:12:55.216
response cockpit work.

222
00:12:56.296 --> 00:12:59.156
So we got together, and we collaborated on a new document.

223
00:13:00.096 --> 00:13:03.516
And we distributed this document throughout the

224

00:13:03.616 --> 00:13:07.596
MFTC, and we all came up with an agreement on, yeah, this is a good

225
00:13:07.656 --> 00:13:11.576
set of standard calls. Now, these calls lack the strict

226
00:13:11.756 --> 00:13:14.916
military discipline that you find in those

227
00:13:15.696 --> 00:13:19.246
very clipped direct calls, but they're much more

228
00:13:19.256 --> 00:13:22.836
appropriate towards civil aviation and in civil flight test.

229
00:13:23.636 --> 00:13:26.276
Now, as was mentioned yesterday, the

230
00:13:27.536 --> 00:13:31.186
Flight Test Safety Committee has generously posted this on their

231
00:13:31.196 --> 00:13:33.446
website, so it's out there for you all to download.

232
00:13:34.056 --> 00:13:37.836
And we really hope by sharing this with you all, we can start to get
everyone on

233
00:13:37.856 --> 00:13:41.266
the same page. And furthermore, we hope that you'll look at it,

234
00:13:41.936 --> 00:13:45.816
read it through, contemplate it, and figure out is there anywhere we

235
00:13:45.896 --> 00:13:49.536
can improve on this? Are there any additions that we can make?

236
00:13:52.736 --> 00:13:56.066
So stall training requirements is another area that we've collaborated
on.

237

00:13:56.576 --> 00:14:00.056
In 2010, the FAA mandated that all Part

238
00:14:00.256 --> 00:14:04.136
121 air carriers train their pilots to recognize and avoid a

239
00:14:04.196 --> 00:14:07.316
stall, and if they couldn't avoid it, they have to recover from it.

240
00:14:08.076 --> 00:14:11.476
Well, this same law then defined the stall as an

241
00:14:11.536 --> 00:14:15.416
aerodynamic loss of lift caused by exceeding the critical

242
00:14:15.516 --> 00:14:16.356
angle of attack.

243
00:14:17.416 --> 00:14:21.316
Therefore, the FAA just mandated that all Part 121 pilots

244
00:14:21.376 --> 00:14:23.016
do full stall training.

245
00:14:24.396 --> 00:14:26.536
So this has generated several problems.

246
00:14:27.276 --> 00:14:30.986
First of all, that not all simulators can accurately model a stall,

247
00:14:31.596 --> 00:14:35.556
and these simulators are even required to have random roll-off generators

248
00:14:35.576 --> 00:14:39.066
in them at the stall, even if that plane doesn't have a

249
00:14:39.076 --> 00:14:41.876
roll-off due to other protections inherent with the system.

250
00:14:42.996 --> 00:14:44.976
It also leads to a lot of negative training.

251
00:14:45.716 --> 00:14:49.456
So you have your trainee pilot in there who has to fly beyond

252
00:14:49.556 --> 00:14:52.696
all the cautions and warnings that that airplane is throwing up at them.

253
00:14:53.276 --> 00:14:57.036
They're sitting there concentrating on flying a one knot per second entry rate,

254
00:14:57.576 --> 00:15:01.536
which is completely foreign to them, and while they're concentrating on this entry

255
00:15:01.656 --> 00:15:05.566
rate, they're missing all the inherent cues and the aerodynamic cues that

256
00:15:05.596 --> 00:15:06.986
the airplane is throwing at them.

257
00:15:09.716 --> 00:15:13.376
Now, unfortunately, despite lots of effort on our part, the

258
00:15:13.436 --> 00:15:16.976
official response to this has been very slow in coming.

259
00:15:17.216 --> 00:15:20.906
Ideally, the guidance would be changed so we could allow the simulator

260
00:15:20.936 --> 00:15:24.436
itself to fly this maneuver. That would free up the pilot and the

261
00:15:24.456 --> 00:15:28.346
instructor to be able to sit there and feel what the aircraft's doing,

262
00:15:28.536 --> 00:15:30.736
see all the additional cues that they're missing.

263
00:15:32.796 --> 00:15:36.496
The MFTC has written letters to the FAA's National Simulator

264
00:15:36.596 --> 00:15:40.016
Program Manager. We've presented on the topic to the International

265
00:15:40.116 --> 00:15:43.596
Federation of Airline Pilots, and we've even submitted official

266
00:15:43.716 --> 00:15:46.476
comments to AC 120.109 Alpha.

267
00:15:47.356 --> 00:15:51.156
Currently, we're waiting on a response from the FAA before we decide on what our

268
00:15:51.196 --> 00:15:52.896
next steps in this process should be.

269
00:15:55.676 --> 00:15:59.556
So the final achievement I want to touch on is what was just brought up, and that's

270
00:15:59.596 --> 00:16:02.216
the creation of the Rotary Wing Flight Test Council.

271
00:16:03.076 --> 00:16:06.006
Now, as Dave's going to tell you in a few minutes, the MFTC meets

272
00:16:06.056 --> 00:16:09.956
quarterly with the FAA, EASA, Transport Canada,

273
00:16:09.976 --> 00:16:13.836
and ANAC. And at one of these meetings, the FAA mentioned

274
00:16:13.856 --> 00:16:17.796
that there are a couple Part 29 rotary wing manufacturers who

275
00:16:17.836 --> 00:16:21.416
would really benefit from the type of

276
00:16:21.616 --> 00:16:23.126
collaboration and

277
00:16:24.456 --> 00:16:28.336
lessons learned sharing that they've seen with the MFTC, and they asked us

278
00:16:28.536 --> 00:16:32.236
if we could help out and get them their own flight test council

279
00:16:32.296 --> 00:16:32.636
going.

280
00:16:33.516 --> 00:16:37.256
So after a number of telecons with flight test representatives from the major Part

281
00:16:37.436 --> 00:16:41.296
29 manufacturers, we invited them along to our annual meeting

282
00:16:41.336 --> 00:16:42.356
in 2024

283
00:16:43.276 --> 00:16:46.896
to show them the value of collaboration on safety and best practices,

284
00:16:47.376 --> 00:16:51.356
and honestly, to get them all in the same room and talking about how they could

285
00:16:51.366 --> 00:16:52.536
start their own program.

286
00:16:53.856 --> 00:16:57.796
Happily, as a result of that, later that year, the RWFTC

287
00:16:57.936 --> 00:17:01.756
met for the first time. They established their mission statement and their initial

288
00:17:01.796 --> 00:17:05.656
goals, and since then they've gone on to pretty much break off from the

289

00:17:05.737 --> 00:17:08.396
MFTC and started collaborating on their own

290
00:17:08.436 --> 00:17:09.737
issues.

291
00:17:12.356 --> 00:17:13.257
So with that, Dave?

292
00:17:15.017 --> 00:17:17.456
Okay. Good afternoon. My name's Dave Lewandowski.

293
00:17:17.497 --> 00:17:20.596
I'm the chief test pilot at Bombardier, and congratulations, you made

294
00:17:20.636 --> 00:17:24.416
it. This is the last presentation on the last day, and I'm the last

295
00:17:24.556 --> 00:17:26.777
speaker between Joe Phillips and the bar, so

296
00:17:27.757 --> 00:17:28.736
I'll try to make this quick.

297
00:17:29.816 --> 00:17:33.536
So the MFTC has weekly call-in meetings, and we

298
00:17:33.556 --> 00:17:37.146
discuss a myriad of things. The agenda's actually pretty long, whether we can get

299
00:17:37.156 --> 00:17:41.076
to it all in one meeting or not. But throughout the telecons,

300
00:17:41.236 --> 00:17:45.056
there's a lot of things we discuss that we wind up consuming internally, things

301
00:17:45.116 --> 00:17:47.556
that are best practice that we share with each other.

302

00:17:48.036 --> 00:17:51.716
But eventually, there's other things we discuss, such as responses

303
00:17:51.776 --> 00:17:55.416
to notices of proposed rulemaking, like for the mosaic rewrite of

304
00:17:55.576 --> 00:17:56.196
experimental

305
00:17:57.016 --> 00:18:00.556
operating permits. There was another one we did, the AC

306
00:18:00.636 --> 00:18:03.466
response we did, like Keith just mentioned, for the full stall training.

307
00:18:04.136 --> 00:18:07.856
So some of these things that we discuss, we need

308
00:18:07.936 --> 00:18:11.456
to promote further to get regulatory changes

309
00:18:11.476 --> 00:18:15.470
done.So we've had our internal meetings, we've

310
00:18:15.500 --> 00:18:16.380
made these proposals,

311
00:18:17.200 --> 00:18:20.120
and we have typically had a...

312
00:18:21.660 --> 00:18:24.020
And these are just some of the accomplishments that we'll touch on.

313
00:18:24.060 --> 00:18:24.340
But

314
00:18:25.180 --> 00:18:26.460
we've had an annual meeting

315
00:18:27.320 --> 00:18:31.180

once a year with the CMTs, and so it's usually done at the end of the flight

316
00:18:31.220 --> 00:18:34.400
test safety workshop because the FAA is here in person, so we get a lot of

317
00:18:34.660 --> 00:18:38.520
participation there. The other agencies used to show up more often, I think, but

318
00:18:38.540 --> 00:18:40.460
they're all invited to a telecon to call in.

319
00:18:40.520 --> 00:18:44.280
So of course, each OEM has their own agency that they

320
00:18:44.320 --> 00:18:48.100
certify with, right? In the USA, it's the FAA, in Brazil, it's

321
00:18:48.160 --> 00:18:51.430
ANAC, in Europe, it's EASA, and for us at

322
00:18:51.700 --> 00:18:53.180
Bombardier, it's Transport Canada.

323
00:18:54.100 --> 00:18:58.020
So they're all invited to the meetings, and the agendas

324
00:18:58.040 --> 00:19:01.640
for these meetings have gotten longer because there's more things that we

325
00:19:01.660 --> 00:19:05.220
discuss as manufacturers that we want to relay to our counterparts at the

326
00:19:05.260 --> 00:19:09.220
certification authorities. And so now we've begun having quarterly meetings.

327
00:19:09.260 --> 00:19:12.860
So we try to have this one in person here at the Flight Test Safety Workshop,

328
00:19:13.300 --> 00:19:15.200
and then we have quarterly meetings.

329
00:19:15.560 --> 00:19:18.940
And like I said, the agendas vary, but the FAA always wants to hear about

330
00:19:19.000 --> 00:19:19.560
our

331
00:19:21.220 --> 00:19:24.820
best practices, and then if we have any safety

332
00:19:24.900 --> 00:19:28.760
recommendations for testing or safety events that we want to go

333
00:19:28.820 --> 00:19:30.360
over, that they should be aware of.

334
00:19:30.700 --> 00:19:33.240
Because a lot of times they're coming with us on these tests.

335
00:19:34.780 --> 00:19:35.650
So as far as

336
00:19:36.700 --> 00:19:38.440
some of the accomplishments we've had,

337
00:19:39.640 --> 00:19:43.280
this was dealing with an outside, not specifically a certification

338
00:19:43.360 --> 00:19:45.960
agency, but crosswind testing at Iceland.

339
00:19:46.300 --> 00:19:49.530
I'd like to think we single-handedly did this as the Manufacturers Flight Test

340
00:19:49.600 --> 00:19:53.300
Council got the testing opened up. But Terry's going to talk about this real quick.

341
00:19:55.980 --> 00:19:59.800
Okay. So there was an accident with the Sukhoi Superjet at the

342
00:19:59.880 --> 00:20:03.540
Iceland Airport. And the Iceland Airport for years had been the

343
00:20:03.560 --> 00:20:07.490
airport that the manufacturers went to for crosswind testing, that you get these

344
00:20:07.520 --> 00:20:11.460
huge low-pressure systems in the late fall and the early spring, and the

345
00:20:11.500 --> 00:20:15.080
wind is about laminar. There's very little turbulence, and it's very strong.

346
00:20:15.480 --> 00:20:18.960
The good thing about Keflavik is that they have crossing

347
00:20:19.020 --> 00:20:22.780
runways 90 degrees to each other, so you can get the crosswind testing that you

348
00:20:22.820 --> 00:20:25.180
want and then do a normal upwind landing.

349
00:20:25.240 --> 00:20:29.000
Well, the Russians had a bad day. Actually a long bad day.

350
00:20:29.040 --> 00:20:33.029
Their crew day started at 1800, and they were doing

351
00:20:33.060 --> 00:20:36.869
their tests at about 5:00 a.m. It was the fourth sortie of that particular

352
00:20:36.940 --> 00:20:40.800
evolution. And they were doing a go-around

353

00:20:40.860 --> 00:20:42.619
with one engine failed.

354
00:20:43.500 --> 00:20:45.749
Without going into a lot of the details, the

355
00:20:46.920 --> 00:20:50.760
captain that was flying the airplane, they had the failure, they touched

356
00:20:50.800 --> 00:20:54.100
down, and he called for a go-around.

357
00:20:54.140 --> 00:20:57.800
He started to go around, but the throttle that he advanced was the
inoperative

358
00:20:57.840 --> 00:21:01.100
engine. And he called for the gear up, and then the airplane settled on
the

359
00:21:01.140 --> 00:21:05.020
ground. So the Iceland authorities looked at that and said, "What were
they

360
00:21:05.060 --> 00:21:09.040
doing?" And when they learned that they were doing flight tests, they

361
00:21:09.080 --> 00:21:12.570
realized that that was a threat to their commercial operation because
it's kind of

362
00:21:12.620 --> 00:21:16.480
a gateway to Europe and a gateway to the United States for Icelandair.

363
00:21:17.100 --> 00:21:20.760
So what we did was once they stopped all testing at

364
00:21:21.020 --> 00:21:24.840
Keflavik, we put together an effort to try to

365
00:21:24.860 --> 00:21:28.320
restart it, and we had to actually go to diplomatic channels.

366
00:21:28.380 --> 00:21:32.300
We went to the diplomats in Paris, in Iceland, and also

367
00:21:32.340 --> 00:21:35.320
in Washington, just to get a meeting with Isavia.

368
00:21:35.800 --> 00:21:39.540
It didn't help that the director of Isavia had a

369
00:21:39.600 --> 00:21:42.920
house at the end of the runway that the Sukhoi 100 was approaching.

370
00:21:43.520 --> 00:21:47.260
So anyway, but what happened was we took the assistance of Bjarni

371
00:21:47.340 --> 00:21:51.140
Tryggvason. Those of you who are here from ITPS will

372
00:21:51.160 --> 00:21:55.040
remember Bjarni. And he was well-known in Iceland,

373
00:21:55.100 --> 00:21:57.720
and he came over to Iceland, met with us.

374
00:21:57.800 --> 00:22:01.300
He was the one that arranged the meeting, met with us, and we finally got
a way

375
00:22:01.460 --> 00:22:05.410
forward with some very strong restrictions, but now we can do crosswind

376
00:22:05.480 --> 00:22:09.340
testing at Keflavik within those restrictions.

377
00:22:10.740 --> 00:22:13.059
The next slide I wanted to show you was

378
00:22:13.860 --> 00:22:14.080
the--

379
00:22:15.520 --> 00:22:19.140
We talked about the two perpendicular runways, but the biggest problem was

380
00:22:19.760 --> 00:22:23.600
trying to get together with Isavia to get that discussion going, and Bjarni helped

381
00:22:23.620 --> 00:22:24.180
an awful lot.

382
00:22:24.980 --> 00:22:27.550
I think there's another one there, Terry. Did you click next one?

383
00:22:27.580 --> 00:22:27.720
Yeah.

384
00:22:28.040 --> 00:22:28.279
Go ahead.

385
00:22:30.440 --> 00:22:32.159
Yeah. So there was just the results on there, too.

386
00:22:32.240 --> 00:22:35.340
But like you said, the only restriction there now is autoland testing.

387
00:22:35.600 --> 00:22:35.760
Yeah.

388
00:22:36.190 --> 00:22:39.800
And other manufacturers have been able to go there and do crosswind testing.

389
00:22:39.830 --> 00:22:43.580
And the FAA is actually involved in doing safety checks on the test

390
00:22:43.660 --> 00:22:46.780
plans before Isavia allows you to do the testing

391
00:22:46.820 --> 00:22:48.400
there.

392
00:22:49.780 --> 00:22:53.300
Crew resource management. Eric gave a great talk on this in the tutorial, but they

393
00:22:53.340 --> 00:22:56.860
invited members of the Manufacturers Flight Test Council

394
00:22:56.870 --> 00:23:00.770
to come down to Oklahoma City. We experienced the training, and I

395
00:23:00.800 --> 00:23:04.540
can say personally we've taken that back and we use that in our own in-house

396
00:23:04.600 --> 00:23:08.280
ESIM training. And so we need to build some more scenarios, but we're looking

397
00:23:08.340 --> 00:23:11.620
forward to inviting the authorities to come do the same kind of

398
00:23:11.660 --> 00:23:14.140
training in our simulators, right?

399
00:23:14.180 --> 00:23:16.860
Because it's going to give them another airplane to look at.

400
00:23:16.920 --> 00:23:18.940
So we're looking forward to that, really.

401
00:23:18.980 --> 00:23:21.900
The last one, because we're going to run out of time, is experimental flight

402
00:23:21.960 --> 00:23:25.760
permits. So how many of you fly airplanes on

403
00:23:25.860 --> 00:23:27.360
FAA experimental flight permits?

404

00:23:28.020 --> 00:23:30.420
Have you ever read the verbiage in there?

405
00:23:30.480 --> 00:23:34.380
As a brand new baby test pilot, I did, and then I just did what everybody else was

406
00:23:34.400 --> 00:23:38.280
doing. Right? Because it seemed like we were just ignoring what was written

407
00:23:38.320 --> 00:23:39.100
there specifically.

408
00:23:40.120 --> 00:23:43.980
Thirty years later, I'm a chief test pilot now, and when somebody has an

409
00:23:44.020 --> 00:23:45.560
issue, I'm the one that gets phone calls.

410
00:23:46.120 --> 00:23:50.040
So I realize that there's an issue with the way the permit's written, and

411
00:23:50.080 --> 00:23:53.920
through the CMT, I was able to engage with Transport Canada, and they fixed my

412
00:23:53.940 --> 00:23:57.460
flight permits right away. But I also have an FASFA because we fly in US

413
00:23:57.520 --> 00:23:58.000
airspace.

414
00:23:59.900 --> 00:24:03.330
So we brought this up to the CMT. Eric and his team became aware of it,

415
00:24:03.640 --> 00:24:07.604
andI'm going to say they went to bat

416
00:24:07.644 --> 00:24:10.434
for us with the other departments in the FAA, and

417
00:24:10.544 --> 00:24:14.474
8130.2L came out, and now it requires the guys at

418
00:24:14.484 --> 00:24:17.804
the MIDA who write these permits, who don't know anything operational or anything

419
00:24:17.884 --> 00:24:21.603
about experimental flight, have to go consult with an aviation

420
00:24:21.684 --> 00:24:23.644
safety inspector, which is somebody at the FSDO.

421
00:24:24.244 --> 00:24:27.924
So they weren't really doing that for me after this came out, but I went to the

422
00:24:27.964 --> 00:24:31.864
FSDO and talked to them, and the local FSDO

423
00:24:31.984 --> 00:24:35.684
actually got me a waiver against almost all that verbiage in

424
00:24:36.444 --> 00:24:38.084
the operating limits for our flight permit.

425
00:24:38.164 --> 00:24:42.144
So now I can, hand on my heart, tell all my guys, "Doesn't matter where you

426
00:24:42.184 --> 00:24:45.744
go to test, we've got a waiver that allows us to do that." So that became a

427
00:24:45.764 --> 00:24:49.044
personal battle of mine, but I think that's a big win that I had the

428
00:24:50.644 --> 00:24:54.384
weight of the Manufacturers Flight Test Council behind me to talk to the

429
00:24:54.464 --> 00:24:57.404

FAA and get them on board, and so that was really

430
00:24:58.224 --> 00:25:01.684
a big win for me personally. So conclusion, yet we were

431
00:25:02.364 --> 00:25:05.464
formed to enhance flight test safety.

432
00:25:06.684 --> 00:25:09.624
We have shared a lot of lessons learned, and I know we've used them.

433
00:25:09.684 --> 00:25:13.194
We've used them for high-elevation testing, which we just did this last year.

434
00:25:13.264 --> 00:25:16.424
We took two airplanes there, and there was lessons learned from Boeing that we

435
00:25:16.484 --> 00:25:17.404
used, absolutely.

436
00:25:19.924 --> 00:25:23.604
We always talk about means of compliance, and we always discuss, and I know the

437
00:25:23.624 --> 00:25:27.324
rotary wing guys are doing this too, when we figure out if the

438
00:25:27.464 --> 00:25:31.224
FAA or EASA or Transport Canada has a better method

439
00:25:31.444 --> 00:25:35.324
of meeting the same compliance rule, we always share that amongst

440
00:25:35.364 --> 00:25:38.174
each other, and then we share that with the agencies and say, "Hey, did you know?

441
00:25:38.224 --> 00:25:40.764
Did you know?" And we try to get everybody aligned there.

442
00:25:41.984 --> 00:25:42.404
And so

443
00:25:43.824 --> 00:25:46.994
I would say if there's other people out here that have

444
00:25:48.164 --> 00:25:51.924
common interests and think that it's a good idea, it

445
00:25:52.044 --> 00:25:54.714
has been. It's worked for us. It's worked for the rotary wing guys, and I don't

446
00:25:54.744 --> 00:25:58.524
have a whole lot of info on the eVTOL guys, but I assume that they're going to have

447
00:25:58.584 --> 00:26:02.424
the same kind of success we have. And I can say personally, after whatever,

448
00:26:02.464 --> 00:26:06.444
40 years in the business, I am completely humbled and proud to be

449
00:26:06.484 --> 00:26:09.104
on this team with all the other manufacturers.

450
00:26:10.204 --> 00:26:10.944
And I think that's it.

451
00:26:12.744 --> 00:26:13.004
Great.

452
00:26:23.364 --> 00:26:24.884
Great. Thank you very much.

453
00:26:26.384 --> 00:26:29.004
Yeah, it's coming. Thank you very much for this presentation.

454
00:26:29.084 --> 00:26:32.384
I'm going to call all the speakers for the panel discussion

455
00:26:33.644 --> 00:26:35.984
to join here on stage.

456
00:26:36.804 --> 00:26:39.844
I think it should be eight people. So just

457
00:26:40.744 --> 00:26:44.604
be seated, and we'll be waiting for any-