



1
00:00:09,910 --> 00:00:08,230
hi i'm mike massimino we've been

2
00:00:11,270 --> 00:00:09,920
following along with the astronauts who

3
00:00:12,950 --> 00:00:11,280
are going to fly the next shuttle

4
00:00:13,910 --> 00:00:12,960
mission to the international space

5
00:00:15,829 --> 00:00:13,920
station

6
00:00:17,750 --> 00:00:15,839
what you are about to see is the crew

7
00:00:19,750 --> 00:00:17,760
practicing for their mission the team

8
00:00:22,150 --> 00:00:19,760
that is responsible for training them

9
00:00:26,150 --> 00:00:22,160
and get a sense of what it's like to fly

10
00:00:27,670 --> 00:00:26,160
the shuttle this is sts 131 behind the

11
00:00:28,710 --> 00:00:27,680
scenes

12
00:00:31,189 --> 00:00:28,720
all right

13
00:00:31,830 --> 00:00:31,199

so fellas can you talk for a minute or

14

00:00:34,069 --> 00:00:31,840

do you want to just get out of the

15

00:00:35,430 --> 00:00:34,079

airplane we did this is kind of historic

16

00:00:37,030 --> 00:00:35,440

here right because uh i don't know about

17

00:00:38,470 --> 00:00:37,040

historic i think it is because here you

18

00:00:42,229 --> 00:00:38,480

have this airplane

19

00:00:44,549 --> 00:00:42,239

gonna fly now yeah which is a very

20

00:00:46,630 --> 00:00:44,559

special airplane it is it's a modified

21

00:00:48,630 --> 00:00:46,640

gulfstream business jet right and it's

22

00:00:50,389 --> 00:00:48,640

got a shuttle cockpit on the left side

23

00:00:51,590 --> 00:00:50,399

uh it's got a shell cockpit on the left

24

00:00:53,110 --> 00:00:51,600

side and it's got a

25

00:00:56,069 --> 00:00:53,120

regular golf stream cockpit in the right

26

00:00:59,029 --> 00:00:57,910

all right and uh but the perp the reason

27

00:01:00,709 --> 00:00:59,039

i'm saying this is somewhat historic

28

00:01:01,990 --> 00:01:00,719

it's not many of these flights are left

29

00:01:03,910 --> 00:01:02,000

because we've only got a few flights

30

00:01:04,789 --> 00:01:03,920

left right we practice these a lot you

31

00:01:06,789 --> 00:01:04,799

know we

32

00:01:08,230 --> 00:01:06,799

do uh like for uh

33

00:01:09,910 --> 00:01:08,240

for for a shuttle pilot to fly in the

34

00:01:12,390 --> 00:01:09,920

shuttle you have to have 500 practice

35

00:01:14,710 --> 00:01:12,400

approaches 500 and for a commander yeah

36

00:01:15,910 --> 00:01:14,720

jim says 500 at least i barely made it

37

00:01:17,270 --> 00:01:15,920

really yeah

38

00:01:19,429 --> 00:01:17,280

you have to have a thousand yeah with

39

00:01:21,590 --> 00:01:19,439

that how many do you have about 50 100

40

00:01:23,190 --> 00:01:21,600

and you've got about 500.

41

00:01:25,109 --> 00:01:23,200

approaches okay

42

00:01:27,270 --> 00:01:25,119

but now there's the airplane out there

43

00:01:29,030 --> 00:01:27,280

and we're doing this at night because

44

00:01:31,510 --> 00:01:29,040

you're going to land at night

45

00:01:32,630 --> 00:01:31,520

maybe all right maybe maybe okay yeah so

46

00:01:33,910 --> 00:01:32,640

we're doing this at night so no one else

47

00:01:35,429 --> 00:01:33,920

can see no we're doing this that night

48

00:01:37,350 --> 00:01:35,439

because you might because you might land

49

00:01:38,830 --> 00:01:37,360

in this okay and so you're gonna fly you

50

00:01:40,550 --> 00:01:38,840

know you're not gonna land with this

51
00:01:42,550 --> 00:01:40,560
airplane all right you're not going to

52
00:01:45,670 --> 00:01:42,560
land with this airplane right jim no no

53
00:01:47,749 --> 00:01:45,680
the gulf stream is uh is a simulator all

54
00:01:49,190 --> 00:01:47,759
right so we fly down to

55
00:01:51,350 --> 00:01:49,200
it's a lot smaller in the shuttle all

56
00:01:52,950 --> 00:01:51,360
right we take it down on approach to the

57
00:01:54,950 --> 00:01:52,960
eye height of the shuttle so i think

58
00:01:56,469 --> 00:01:54,960
it's about 12 feet off the ground for

59
00:01:58,230 --> 00:01:56,479
the gulf stream all right then we go

60
00:01:59,270 --> 00:01:58,240
around we'll do about 10 practice

61
00:02:01,190 --> 00:01:59,280
landings

62
00:02:02,310 --> 00:02:01,200
uh per one session

63
00:02:03,830 --> 00:02:02,320

practice approaches because you don't

64

00:02:04,950 --> 00:02:03,840

actually touch down right because

65

00:02:06,230 --> 00:02:04,960

because that's where that's where the

66

00:02:07,590 --> 00:02:06,240

characteristics that's where the

67

00:02:10,229 --> 00:02:07,600

characteristics end is that what it is

68

00:02:11,990 --> 00:02:10,239

so uh of the flying i mean they want you

69

00:02:13,430 --> 00:02:12,000

to get the same eye point

70

00:02:15,110 --> 00:02:13,440

okay all right the touchdown that would

71

00:02:16,550 --> 00:02:15,120

be a picture that wouldn't be right i

72

00:02:17,990 --> 00:02:16,560

got it so you take it as far as you can

73

00:02:19,430 --> 00:02:18,000

to simulate what the shuttle's gonna do

74

00:02:21,110 --> 00:02:19,440

for you so it tells you when you hit

75

00:02:22,630 --> 00:02:21,120

wheels down it has a radar altimeter it

76
00:02:24,309 --> 00:02:22,640
knows exactly how high you are above the

77
00:02:25,830 --> 00:02:24,319
ground all right

78
00:02:27,670 --> 00:02:25,840
and this is like your bread and one of

79
00:02:41,589 --> 00:02:27,680
your pieces of bread and butter for you

80
00:02:41,599 --> 00:02:46,949
hello sir

81
00:02:46,959 --> 00:02:54,070
hello

82
00:02:58,470 --> 00:02:56,070
okay terry because i know you want to be

83
00:03:01,190 --> 00:02:58,480
scared by everything jax is about to do

84
00:03:03,589 --> 00:03:01,200
to it i hear it's kind of shaky

85
00:03:04,790 --> 00:03:03,599
when he fly no not at all terry what are

86
00:03:05,910 --> 00:03:04,800
you going to do here

87
00:03:09,270 --> 00:03:05,920
i am

88
00:03:11,110 --> 00:03:09,280

my job is the flight sim engineer and i

89

00:03:13,910 --> 00:03:11,120

essentially provide

90

00:03:17,190 --> 00:03:13,920

similar calls to decks that he hopes to

91

00:03:20,470 --> 00:03:17,200

get from his private okay and other than

92

00:03:22,390 --> 00:03:20,480

that i take the blame for all that he's

93

00:03:23,990 --> 00:03:22,400

not happy with and i've had him for all

94

00:03:25,589 --> 00:03:24,000

that he's happy with all right so you're

95

00:03:27,509 --> 00:03:25,599

there to help him learn you know get

96

00:03:28,869 --> 00:03:27,519

better and keep his proficiency

97

00:03:30,789 --> 00:03:28,879

absolutely he's probably pretty darn

98

00:03:32,390 --> 00:03:30,799

good right now he's just trying to keep

99

00:03:33,270 --> 00:03:32,400

his skills

100

00:03:34,309 --> 00:03:33,280

up

101
00:03:36,309 --> 00:03:34,319
cracking

102
00:03:38,229 --> 00:03:36,319
okay

103
00:03:42,390 --> 00:03:38,239
doors windows and door switches they're

104
00:03:42,400 --> 00:04:06,149
stop area is on system is checked aoan

105
00:04:06,159 --> 00:04:39,590
radar is in standby

106
00:04:39,600 --> 00:05:31,350
mike you ready ready

107
00:05:35,029 --> 00:05:33,350
how you doing mass good

108
00:05:36,870 --> 00:05:35,039
sorry it was so dark yeah what are you

109
00:05:39,029 --> 00:05:36,880
gonna do you can't control the darkness

110
00:05:39,990 --> 00:05:39,039
so it happens at night yeah it gets dark

111
00:05:41,430 --> 00:05:40,000
out

112
00:05:42,629 --> 00:05:41,440
get them on the ice cream

113
00:05:43,749 --> 00:05:42,639

all right this i don't even know about

114

00:05:45,110 --> 00:05:43,759

what's this about they don't tell

115

00:05:46,710 --> 00:05:45,120

mission specialists and stuff this is

116

00:05:49,110 --> 00:05:46,720

pilot stuff jim and i have an ongoing

117

00:05:52,469 --> 00:05:49,120

bed what's that and uh you know we have

118

00:05:53,990 --> 00:05:52,479

a target touchdown airspeed okay and uh

119

00:05:56,309 --> 00:05:54,000

you know our target touchdown air speed

120

00:05:59,110 --> 00:05:56,319

is 200 knots 2009 i don't want to land

121

00:06:00,469 --> 00:05:59,120

fast so my ongoing bet with jim you know

122

00:06:01,830 --> 00:06:00,479

since he's got to learn to do that

123

00:06:03,350 --> 00:06:01,840

exactly what we're going to do in case

124

00:06:05,990 --> 00:06:03,360

for some reason my stick doesn't work or

125

00:06:09,110 --> 00:06:06,000

i'm sick or whatever's going to be

126
00:06:10,790 --> 00:06:09,120
so our target is 200 knots so our bet is

127
00:06:13,990 --> 00:06:10,800
you know you got to get

128
00:06:15,350 --> 00:06:14,000
on or just below 200 if you go over

129
00:06:18,550 --> 00:06:15,360
you're you'll lose it's like the price

130
00:06:23,110 --> 00:06:20,790
you're out well so i was two knots fast

131
00:06:25,990 --> 00:06:23,120
i landed at 202 knots

132
00:06:28,230 --> 00:06:26,000
instead of 200 and jim landed at 198

133
00:06:32,230 --> 00:06:28,240
instead of 200. so delta so i think

134
00:06:35,909 --> 00:06:33,670
all right so second night in a row he's

135
00:06:37,510 --> 00:06:35,919
gotten guys and you're buying i am all

136
00:06:38,870 --> 00:06:37,520
right i got to buy him a little dove bar

137
00:06:41,029 --> 00:06:38,880
you know

138
00:06:42,870 --> 00:06:41,039

that's about it that's okay it's so it's

139

00:06:44,150 --> 00:06:42,880

the principle of the thing yeah he'll

140

00:06:46,830 --> 00:06:44,160

get it out of there he'll get it out of

141

00:06:48,790 --> 00:06:46,840

the freezer for you yes how's

142

00:06:50,870 --> 00:06:48,800

that all right

143

00:06:52,710 --> 00:06:50,880

all right so steve we're in the shuttle

144

00:06:53,909 --> 00:06:52,720

training aircraft yeah we were in here

145

00:06:55,110 --> 00:06:53,919

last night but we couldn't see anything

146

00:06:57,990 --> 00:06:55,120

you know why

147

00:06:59,749 --> 00:06:58,000

because it was dark it's like in a cave

148

00:07:01,350 --> 00:06:59,759

yeah but now it's light out so we can

149

00:07:02,710 --> 00:07:01,360

see a little bit better do you have a

150

00:07:04,230 --> 00:07:02,720

minute to explain the airplane or you

151
00:07:05,350 --> 00:07:04,240
got to uh get ready to go well i do

152
00:07:07,430 --> 00:07:05,360
because we're waiting on another

153
00:07:09,589 --> 00:07:07,440
airplane take off so we have steve nagle

154
00:07:11,670 --> 00:07:09,599
here former shuttle commander now okay

155
00:07:14,710 --> 00:07:11,680
so training aircraft uh instructor go

156
00:07:16,309 --> 00:07:14,720
ahead okay uh from here over on this

157
00:07:18,230 --> 00:07:16,319
airplane on the right side is the

158
00:07:19,990 --> 00:07:18,240
gulfstream cockpit where the gulfstream

159
00:07:22,469 --> 00:07:20,000
controls where the instructor flies the

160
00:07:26,390 --> 00:07:22,479
airplane from to set it up for the

161
00:07:27,909 --> 00:07:26,400
simulation runs from this point over is

162
00:07:29,110 --> 00:07:27,919
a partial recreation of the shuttle

163
00:07:30,790 --> 00:07:29,120

cockpit

164

00:07:32,870 --> 00:07:30,800

with the displays the med's displays

165

00:07:34,469 --> 00:07:32,880

like the shuttle has heads-up display

166

00:07:36,550 --> 00:07:34,479

very similar to the shuttle a hand

167

00:07:38,150 --> 00:07:36,560

controller and selected switches so it's

168

00:07:39,909 --> 00:07:38,160

a partial recreation of the shuttle

169

00:07:41,270 --> 00:07:39,919

cockpit what you really need for the

170

00:07:43,110 --> 00:07:41,280

landing pad

171

00:07:45,430 --> 00:07:43,120

so the astronaut sits where terry is

172

00:07:46,390 --> 00:07:45,440

sitting right now for the simulation

173

00:07:47,990 --> 00:07:46,400

hello

174

00:07:49,350 --> 00:07:48,000

the instructor boss is where i'm sitting

175

00:07:51,430 --> 00:07:49,360

and where you're sitting is where the

176
00:07:53,589 --> 00:07:51,440
flight simulation engineer sits where

177
00:07:56,469 --> 00:07:53,599
terry sits when we're doing sims

178
00:07:58,070 --> 00:07:56,479
and controls this panel that interfaces

179
00:08:00,150 --> 00:07:58,080
with the computers in the back that is

180
00:08:02,070 --> 00:08:00,160
the simulation okay

181
00:08:02,869 --> 00:08:02,080
so when we're flying the airplane as a

182
00:08:07,830 --> 00:08:02,879
sim

183
00:08:10,150 --> 00:08:07,840
you know for the starting point of the

184
00:08:12,309 --> 00:08:10,160
dive put it in this configuration in

185
00:08:14,710 --> 00:08:12,319
which we use that switch right there to

186
00:08:16,629 --> 00:08:14,720
lower the main landing gear for drag we

187
00:08:18,230 --> 00:08:16,639
use that switch to deploy the thruster

188
00:08:20,070 --> 00:08:18,240

versions because we do fly with trusted

189

00:08:21,990 --> 00:08:20,080

versus deployed to create the same drag

190

00:08:23,510 --> 00:08:22,000

in this airplane the shuttle has

191

00:08:25,589 --> 00:08:23,520

and then these three switches

192

00:08:27,670 --> 00:08:25,599

respectively turn on the autopilot the

193

00:08:29,189 --> 00:08:27,680

auto throttle and the sim

194

00:08:30,390 --> 00:08:29,199

so once i've done all those five

195

00:08:32,949 --> 00:08:30,400

switches

196

00:08:35,029 --> 00:08:32,959

then that stick is now active and flying

197

00:08:36,790 --> 00:08:35,039

the airplane so i tap the astro on the

198

00:08:38,630 --> 00:08:36,800

leg that person takes the airplane and

199

00:08:41,029 --> 00:08:38,640

flies it and from that point on through

200

00:08:42,949 --> 00:08:41,039

a simulated touchdown it flies the same

201
00:08:44,790 --> 00:08:42,959
trajectory as the shuttle would from 35

202
00:08:46,630 --> 00:08:44,800
000 feet down to a simulated landing and

203
00:08:49,190 --> 00:08:46,640
it has the same response or handling

204
00:08:50,710 --> 00:08:49,200
quality to the shuttle so this simulates

205
00:08:52,389 --> 00:08:50,720
the shuttle it's rc is a regular

206
00:08:54,150 --> 00:08:52,399
airplane but it's all the things you

207
00:08:55,829 --> 00:08:54,160
mentioned make it fly just like the

208
00:08:57,910 --> 00:08:55,839
shuttle now you've one of the few people

209
00:08:59,990 --> 00:08:57,920
in the world that have actually

210
00:09:02,070 --> 00:09:00,000
landed a space shuttle a couple times

211
00:09:03,990 --> 00:09:02,080
right yeah and how well does this

212
00:09:05,350 --> 00:09:04,000
prepare you for doing what what you did

213
00:09:07,430 --> 00:09:05,360

when you were landing the spaceship so

214

00:09:10,310 --> 00:09:07,440

well you know these things have paid for

215

00:09:11,350 --> 00:09:10,320

themselves many times over in my opinion

216

00:09:13,670 --> 00:09:11,360

over the

217

00:09:16,150 --> 00:09:13,680

course of the shuttle program uh because

218

00:09:18,310 --> 00:09:16,160

it is such an authentic good simulation

219

00:09:20,470 --> 00:09:18,320

the visual scene is perfect because it's

220

00:09:22,470 --> 00:09:20,480

real yeah it's not a computer-generated

221

00:09:25,269 --> 00:09:22,480

scene you fly through the real weather

222

00:09:27,030 --> 00:09:25,279

conditions the real winds and so uh by

223

00:09:28,389 --> 00:09:27,040

the time a commander has about a

224

00:09:30,230 --> 00:09:28,399

thousand approaches to one of these

225

00:09:31,990 --> 00:09:30,240

airplanes not to mention how many

226

00:09:33,990 --> 00:09:32,000

approaches that that person has in the

227

00:09:35,750 --> 00:09:34,000

ground-based simulator you know the sms

228

00:09:37,750 --> 00:09:35,760

there well and the bms out in the west

229

00:09:39,269 --> 00:09:37,760

coast they're well prepared to land the

230

00:09:41,030 --> 00:09:39,279

shuttle so it's been been a very good

231

00:09:42,389 --> 00:09:41,040

simulator uh the only place where it

232

00:09:43,990 --> 00:09:42,399

might break down a little bit is in

233

00:09:45,509 --> 00:09:44,000

turbulent air when it gets real bumpy

234

00:09:48,870 --> 00:09:45,519

this airplane reacts a lot for the

235

00:09:50,230 --> 00:09:48,880

turbulence more so than the shuttle rush

236

00:09:51,750 --> 00:09:50,240

and then it degrades a bit but it's

237

00:09:52,870 --> 00:09:51,760

still an awfully good simulator all

238

00:09:54,790 --> 00:09:52,880

right what's going on with the airplane

239

00:09:57,030 --> 00:09:54,800

now what are we gonna do what's uh hurry

240

00:09:58,710 --> 00:09:57,040

at home uh we're taking you some folks

241

00:10:00,710 --> 00:09:58,720

home so right so we can use it as a

242

00:10:02,630 --> 00:10:00,720

regular airplane it's a regular airplane

243

00:10:04,470 --> 00:10:02,640

for this so as soon as we get going

244

00:10:06,230 --> 00:10:04,480

watch 2 38 we're waiting for them to get

245

00:10:08,710 --> 00:10:06,240

going in case they break we can take

246

00:10:11,110 --> 00:10:08,720

them home yeah and then we'll crank up

247

00:10:12,790 --> 00:10:11,120

and fly home we could go non-stop the

248

00:10:14,630 --> 00:10:12,800

t-38s need to stop for gas and

249

00:10:36,470 --> 00:10:14,640

stronghold maybe they'll take us

250

00:10:36,480 --> 00:10:51,509

is

