
PAO

1
00:00:05,320 --> 00:00:02,990
well greetings everybody welcome to

2
00:00:07,519 --> 00:00:05,330
Mission Control Houston this is the

3
00:00:10,610 --> 00:00:07,529
International Space Station's flight

4
00:00:12,440 --> 00:00:10,620
control room this is basically the nerve

5
00:00:14,450 --> 00:00:12,450
center for all the activities that go on

6
00:00:16,849 --> 00:00:14,460
aboard the International Space Station

7
00:00:18,740 --> 00:00:16,859
so a team of flight controllers here

8
00:00:21,140 --> 00:00:18,750
looks over all the systems around the

9
00:00:23,090 --> 00:00:21,150
clock of the crew members that are

10
00:00:26,150 --> 00:00:23,100
onboard the International Space Station

11
00:00:29,390 --> 00:00:26,160
and each one of the positions in here

12
00:00:31,189 --> 00:00:29,400
monitors systems different systems to

13
00:00:34,610 --> 00:00:31,199

make sure they're operating well aboard

14
00:00:37,700 --> 00:00:34,620
the complex so we're real happy to have

15
00:00:39,979 --> 00:00:37,710
you guys in Pennsylvania at the Corpus

16
00:00:41,990 --> 00:00:39,989
Christi school join us today here in

17
00:00:43,819 --> 00:00:42,000
Mission Control and also we have an

18
00:00:47,799 --> 00:00:43,829
expert in one of those systems joining

19
00:00:49,850 --> 00:00:47,809
us Jeff baisley Jeff is an expert in

20
00:00:51,680 --> 00:00:49,860
basically all of the systems associated

21
00:00:54,110 --> 00:00:51,690
with the environmental control the

22
00:00:57,920 --> 00:00:54,120
life-support systems aboard the station

23
00:00:59,660 --> 00:00:57,930
so welcome to Pennsylvania and also

24
00:01:11,450 --> 00:00:59,670
welcome Jeff thanks for joining us and

25
00:01:12,980 --> 00:01:11,460
we're ready to go my name is Carson what

26
00:01:16,070 --> 00:01:12,990
are some of the decisions the flight

27
00:01:18,170 --> 00:01:16,080
director has to make that's probably a

28
00:01:19,999 --> 00:01:18,180
good one for Jesse because he works

29
00:01:22,370 --> 00:01:20,009
directly with a flight director all the

30
00:01:25,070 --> 00:01:22,380
time yes the flight director does have a

31
00:01:27,649 --> 00:01:25,080
very important job here as you know the

32
00:01:29,929 --> 00:01:27,659
deploy treacherous Canada the boss when

33
00:01:34,460 --> 00:01:29,939
when were in here one of the big things

34
00:01:35,780 --> 00:01:34,470
that he monitors is actually the timing

35
00:01:38,210 --> 00:01:35,790
of everything that happens on board

36
00:01:40,069 --> 00:01:38,220
space station so his job is to make sure

37
00:01:42,950 --> 00:01:40,079
that we're meeting the objectives of the

38
00:01:45,350 --> 00:01:42,960

day sometimes you have to prioritize

39
00:01:47,929 --> 00:01:45,360
things we never like when things go

40
00:01:49,280 --> 00:01:47,939
wrong but you know definitely sometimes

41
00:01:50,899 --> 00:01:49,290
maintenance doesn't go right and so then

42
00:01:53,030 --> 00:01:50,909
we need to reshuffle everything and make

43
00:01:55,450 --> 00:01:53,040
sure everything's correct and of course

44
00:01:58,690 --> 00:01:55,460
you know he's in charge if we get into a

45
00:02:07,800 --> 00:01:58,700
bind with activities on the system sign

46
00:02:13,330 --> 00:02:11,440
my name is Max and what do you think is

47
00:02:17,920 --> 00:02:13,340
the most important role in Mission

48
00:02:20,680 --> 00:02:17,930
Control and why ours yeah that's a great

49
00:02:23,530 --> 00:02:20,690
question you know Michigan towards a

50
00:02:25,390 --> 00:02:23,540
team so it's hard to pick one wall but

51
00:02:27,130 --> 00:02:25,400
in you know I'm a little biased but I

52
00:02:29,530 --> 00:02:27,140
think the systems controllers are the

53
00:02:32,170 --> 00:02:29,540
ones that have the most important job so

54
00:02:33,760 --> 00:02:32,180
of course we have all the different

55
00:02:36,850 --> 00:02:33,770
systems on board the thermal control

56
00:02:39,160 --> 00:02:36,860
power as you control my system life

57
00:02:41,800 --> 00:02:39,170
support I've also got that command data

58
00:02:43,870 --> 00:02:41,810
handling and a way to communicate with

59
00:02:45,460 --> 00:02:43,880
the vehicle there's also the ground

60
00:02:48,370 --> 00:02:45,470
controller who kind of makes sure that

61
00:02:52,090 --> 00:02:48,380
everything works from vehicle down here

62
00:02:55,690 --> 00:02:52,100
and so do everybody on that Lister here

63
00:03:03,610 --> 00:02:55,700

24 7 365 and sort of very important to

64
00:03:05,740 --> 00:03:03,620
operations my name is Brent and do you

65
00:03:07,990 --> 00:03:05,750
think we'll have another habitat up and

66
00:03:11,350 --> 00:03:08,000
running before the ISS program is over

67
00:03:13,120 --> 00:03:11,360
and that's a very good question you know

68
00:03:15,610 --> 00:03:13,130
definitely something that would thinking

69
00:03:18,790 --> 00:03:15,620
about here different habitats I know

70
00:03:22,180 --> 00:03:18,800
that the ISS is definitely a big

71
00:03:24,160 --> 00:03:22,190
promoter of going forward to creating

72
00:03:26,440 --> 00:03:24,170
new habitats it's a lot of systems on

73
00:03:28,690 --> 00:03:26,450
board that we're testing you know

74
00:03:30,250 --> 00:03:28,700
especially in my system life support you

75
00:03:32,560 --> 00:03:30,260
know we have a lot of water systems a

76
00:03:34,509 --> 00:03:32,570
lot of every generation systems until by

77
00:03:36,670 --> 00:03:34,519
testing them in low Earth or low Earth

78
00:03:40,240 --> 00:03:36,680
orbit while we can actually fix things

79
00:03:42,759 --> 00:03:40,250
but before we go farther it's definitely

80
00:03:47,740 --> 00:03:42,769
a big priority and making sure that we

81
00:03:53,770 --> 00:03:51,310
hi my name is Spencer working in Mission

82
00:03:57,430 --> 00:03:53,780
Control must be stressful what do you do

83
00:04:00,760 --> 00:03:57,440
to help relieve your stress yeah that's

84
00:04:03,010 --> 00:04:00,770
a great question you know it did ours

85
00:04:04,690 --> 00:04:03,020
definitely play on us a lot as i

86
00:04:09,370 --> 00:04:04,700
mentioned system controllers will hit

87
00:04:10,870 --> 00:04:09,380
365 24 7 365 so of course i'm not here

88
00:04:12,640 --> 00:04:10,880

all the time but you know different

89
00:04:15,190 --> 00:04:12,650
ships and the night ships are

90
00:04:17,170 --> 00:04:15,200
particularly top one but two kind of

91
00:04:19,840 --> 00:04:17,180
relieve some of that stress you know a

92
00:04:21,460 --> 00:04:19,850
lot of people do exercise so I know

93
00:04:24,159 --> 00:04:21,470
people my group some of them when

94
00:04:26,800 --> 00:04:24,169
marathons so they definitely i love to

95
00:04:28,120 --> 00:04:26,810
exercise as a big thing it just making

96
00:04:31,240 --> 00:04:28,130
sure that you have an activity outside

97
00:04:33,250 --> 00:04:31,250
of work that that you can do that it's

98
00:04:36,460 --> 00:04:33,260
important and you can look forward to

99
00:04:39,159 --> 00:04:36,470
after work so for me I'm on a k-9 search

100
00:04:41,770 --> 00:04:39,169
team I with my dog and so we get to go

101
00:04:43,630 --> 00:04:41,780
out and do light raining and go out and

102
00:04:45,640 --> 00:04:43,640
do things and definitely something I

103
00:04:47,920 --> 00:04:45,650
look forward you added work I think yeah

104
00:04:50,200 --> 00:04:47,930
I think having a balanced lifestyle even

105
00:04:51,790 --> 00:04:50,210
for you guys you know when you're when

106
00:04:53,800 --> 00:04:51,800
you're done with school every day you

107
00:04:55,360 --> 00:04:53,810
you you certainly don't think about

108
00:04:56,860 --> 00:04:55,370
school all the time but you do your

109
00:04:59,260 --> 00:04:56,870
homework and those type of things the

110
00:05:01,420 --> 00:04:59,270
same thing for folks in here is you know

111
00:05:02,710 --> 00:05:01,430
we when you get off work you you try to

112
00:05:06,460 --> 00:05:02,720
get away from work for a little while

113
00:05:14,800 --> 00:05:06,470

and and unwind and then regroup for the

114
00:05:17,950 --> 00:05:14,810
next day that's a great question hi I'm

115
00:05:21,250 --> 00:05:17,960
an eclair um what was your most exciting

116
00:05:23,380 --> 00:05:21,260
moment in Mission Control well there's

117
00:05:25,810 --> 00:05:23,390
lots of exciting moments here I know

118
00:05:27,550 --> 00:05:25,820
personally for me one at most one

119
00:05:29,770 --> 00:05:27,560
exciting one towards actually working

120
00:05:31,990 --> 00:05:29,780
contour for the first time you know the

121
00:05:35,290 --> 00:05:32,000
way that we train we start in the back

122
00:05:37,000 --> 00:05:35,300
room so not here in the vicar but in the

123
00:05:39,040 --> 00:05:37,010
back room and so sending your first

124
00:05:41,080 --> 00:05:39,050
command at a real vehicle it's quite a

125
00:05:42,969 --> 00:05:41,090
quite an exciting moment as you have

126
00:05:45,010 --> 00:05:42,979
printed out my desk their first command

127
00:05:47,170 --> 00:05:45,020
that sent to the space station another

128
00:05:48,610 --> 00:05:47,180
exciting thing for me which working my

129
00:05:51,580 --> 00:05:48,620
first shuttle mission here in the front

130
00:05:53,800 --> 00:05:51,590
room so I woke sts-134 that's the last

131
00:05:55,210 --> 00:05:53,810
flight of endeavor and I actually worked

132
00:05:57,580 --> 00:05:55,220
you over one shift which is the shift

133
00:05:59,409 --> 00:05:57,590
where the shuttle we talking so he's

134
00:06:01,270 --> 00:05:59,419
cool you know looking up on the big

135
00:06:01,690 --> 00:06:01,280
board and seeing seeing the shuttle come

136
00:06:04,270 --> 00:06:01,700
in

137
00:06:06,580 --> 00:06:04,280
last time for endeavor and you know

138
00:06:12,910 --> 00:06:06,590

watching all that it's definitely a

139
00:06:15,280 --> 00:06:12,920
surreal surreal feeling help you hi my

140
00:06:18,190 --> 00:06:15,290
name is Clara and I would like to know

141
00:06:21,610 --> 00:06:18,200
what is Capcom's most important job that

142
00:06:24,100 --> 00:06:21,620
they need to do okay capcom is noah is

143
00:06:26,740 --> 00:06:24,110
the only one that talks directly to the

144
00:06:28,210 --> 00:06:26,750
crew on a day-to-day basis so one of the

145
00:06:29,950 --> 00:06:28,220
most important jobs is actually

146
00:06:33,250 --> 00:06:29,960
translating with what i tell them into

147
00:06:35,050 --> 00:06:33,260
couche speak so you know we talk on the

148
00:06:37,750 --> 00:06:35,060
loops with lots of acronyms lots of

149
00:06:40,480 --> 00:06:37,760
system issues that were working and then

150
00:06:41,950 --> 00:06:40,490
capcom takes all those and packages it

151
00:06:44,280 --> 00:06:41,960
so the crew we only talk to the crew

152
00:06:46,480 --> 00:06:44,290
once about a certain issue but also

153
00:06:48,450 --> 00:06:46,490
making sure that it's clear it's clear

154
00:06:50,920 --> 00:06:48,460
for the crew you know sometimes

155
00:06:52,930 --> 00:06:50,930
sometimes we put out a lot of words and

156
00:06:55,270 --> 00:06:52,940
they make sense to us but it may not

157
00:06:56,800 --> 00:06:55,280
make sense take crew so that's

158
00:07:04,650 --> 00:06:56,810
definitely wanted a bit probably the

159
00:07:07,270 --> 00:07:04,660
most important job hi I'm mmm hour and

160
00:07:09,520 --> 00:07:07,280
my question is does Mission Control

161
00:07:12,190 --> 00:07:09,530
control everything or just control

162
00:07:16,390 --> 00:07:12,200
something's rd control nothing or do you

163
00:07:20,140 --> 00:07:16,400

just in monitor all of the time that's a

164
00:07:22,390 --> 00:07:20,150
good question because obviously Mission

165
00:07:25,270 --> 00:07:22,400
Control is very integral to what's going

166
00:07:27,460 --> 00:07:25,280
on up in space and I think their crew

167
00:07:29,890 --> 00:07:27,470
relies heavily on that and then Jesse

168
00:07:31,870 --> 00:07:29,900
can probably elaborate yeah you probably

169
00:07:33,700 --> 00:07:31,880
in massillon that you know we send

170
00:07:36,190 --> 00:07:33,710
thousands of commands every day the

171
00:07:38,380 --> 00:07:36,200
space station between us here as well as

172
00:07:41,140 --> 00:07:38,390
well about international partners around

173
00:07:44,800 --> 00:07:41,150
the world and so those those commands

174
00:07:46,720 --> 00:07:44,810
controller systems also in marshall

175
00:07:48,220 --> 00:07:46,730
space flight center at they say they

176
00:07:51,070 --> 00:07:48,230
send commands to do to payload

177
00:07:53,560 --> 00:07:51,080
operations so the advantage of doing

178
00:07:56,320 --> 00:07:53,570
that from the ground is it frees up the

179
00:07:58,720 --> 00:07:56,330
crew to do other activities that we

180
00:08:00,940 --> 00:07:58,730
can't do for instant payload ops which i

181
00:08:03,850 --> 00:08:00,950
think is in the background Don doing

182
00:08:06,850 --> 00:08:03,860
payloads they did change out payloads

183
00:08:08,740 --> 00:08:06,860
all the time also any maintenance ass so

184
00:08:11,050 --> 00:08:08,750
if something fails we need them to put

185
00:08:13,450 --> 00:08:11,060
their hands on the hardware and fix it

186
00:08:15,790 --> 00:08:13,460
so by controlling all the systems down

187
00:08:18,850 --> 00:08:15,800
here it gives gives the crew do bill

188
00:08:25,659 --> 00:08:18,860

to get more tasks done it's a great

189
00:08:29,710 --> 00:08:25,669
question hi my name is rube and how long

190
00:08:32,170 --> 00:08:29,720
is the isos going to be in space that's

191
00:08:35,259 --> 00:08:32,180
a great question yeah that I think right

192
00:08:39,579 --> 00:08:35,269
now we will approve to go through 2020

193
00:08:40,870 --> 00:08:39,589
so that's in eight years now however

194
00:08:44,380 --> 00:08:40,880
we're currently working on extending

195
00:08:46,449 --> 00:08:44,390
that to 20 27 I believe that the big

196
00:08:50,110 --> 00:08:46,459
long long pole and that is obviously the

197
00:08:52,840 --> 00:08:50,120
structure itself so I assess first flew

198
00:08:55,690 --> 00:08:52,850
in 1998 so it's already been up there

199
00:08:57,310 --> 00:08:55,700
for for several years and a lot of the

200
00:09:00,370 --> 00:08:57,320
systems on board and the structure

201
00:09:01,509 --> 00:09:00,380
itself is getting old so that's one of

202
00:09:03,670 --> 00:09:01,519
the challenges we're looking at is

203
00:09:06,400 --> 00:09:03,680
seeing how much much and we still have

204
00:09:09,190 --> 00:09:06,410
to be able to get that far and of course

205
00:09:10,360 --> 00:09:09,200
all the auto spare parts you know we

206
00:09:12,759 --> 00:09:10,370
don't like it when things fail but

207
00:09:18,310 --> 00:09:12,769
things do fail so all the spare parts on

208
00:09:20,530 --> 00:09:18,320
board is important hi my name is

209
00:09:22,720 --> 00:09:20,540
Madeline cardinale what kind of

210
00:09:25,240 --> 00:09:22,730
qualities and previous experiences do

211
00:09:26,860 --> 00:09:25,250
you have that you feel really benefit

212
00:09:30,190 --> 00:09:26,870
your career working in Mission Control

213
00:09:32,410 --> 00:09:30,200

well my back room background is as a

214
00:09:34,630 --> 00:09:32,420
chemical engineer so I received my

215
00:09:36,819 --> 00:09:34,640
bachelor's in chemical engineering and

216
00:09:38,650 --> 00:09:36,829
so an engineering math science

217
00:09:41,620 --> 00:09:38,660
background is very important to working

218
00:09:45,220 --> 00:09:41,630
here there's also the seller qualities

219
00:09:48,160 --> 00:09:45,230
never never taking what's told to you

220
00:09:51,400 --> 00:09:48,170
for granted you know we always strive to

221
00:09:53,560 --> 00:09:51,410
understand the why and the what what is

222
00:09:56,940 --> 00:09:53,570
going on you know look at look deeper

223
00:10:00,310 --> 00:09:56,950
and that's all all on our own accord so

224
00:10:02,380 --> 00:10:00,320
definitely you need to be forward

225
00:10:05,350 --> 00:10:02,390
thinking in always asking what's the

226
00:10:07,360 --> 00:10:05,360
next thing and delving deeper on your

227
00:10:09,610 --> 00:10:07,370
own into whatever you're looking at so

228
00:10:11,170 --> 00:10:09,620
you know your science experiments in

229
00:10:14,050 --> 00:10:11,180
school you know definitely trying to

230
00:10:20,420 --> 00:10:14,060
understand understand it more it

231
00:10:27,389 --> 00:10:24,269
hi my name is Patrick and my question is

232
00:10:31,380 --> 00:10:27,399
who started Mission Control in what year

233
00:10:34,710 --> 00:10:31,390
was it that's that's a good question

234
00:10:37,170 --> 00:10:34,720
yeah well it goes way back actually the

235
00:10:39,810 --> 00:10:37,180
very first mission control was not even

236
00:10:41,670 --> 00:10:39,820
here it was down in Florida when the

237
00:10:43,949 --> 00:10:41,680
first United space astronauts were

238
00:10:46,590 --> 00:10:43,959

launched and then there was a decision

239
00:10:48,780 --> 00:10:46,600
made to build this facility this of

240
00:10:51,720 --> 00:10:48,790
course this room has been changed from

241
00:10:54,389 --> 00:10:51,730
what it was in the early of Gemini days

242
00:10:56,370 --> 00:10:54,399
Jim and I was when two astronauts flew

243
00:10:59,810 --> 00:10:56,380
on capsules and that was when it first

244
00:11:03,180 --> 00:10:59,820
opened it was back in this room back in

245
00:11:05,880 --> 00:11:03,190
1964-65 time frame during the early days

246
00:11:07,620 --> 00:11:05,890
before we even went to the moon and it's

247
00:11:10,050 --> 00:11:07,630
transitioned a little bit for space

248
00:11:12,900 --> 00:11:10,060
shuttle and then now most recently to

249
00:11:15,060 --> 00:11:12,910
the room that you see here which is much

250
00:11:18,540 --> 00:11:15,070
more modernized with better technology

251
00:11:20,009 --> 00:11:18,550
in terms of the consoles and human

252
00:11:22,139 --> 00:11:20,019
factors were involved in that right

253
00:11:23,880 --> 00:11:22,149
Jesse that you know they took that into

254
00:11:25,260 --> 00:11:23,890
account because they knew that flight

255
00:11:27,600 --> 00:11:25,270
controllers would be in here for long

256
00:11:29,490 --> 00:11:27,610
periods of time as opposed to what they

257
00:11:31,110 --> 00:11:29,500
were you know back in early days for

258
00:11:33,840 --> 00:11:31,120
long missions like this space station

259
00:11:36,360 --> 00:11:33,850
right yes that's that's true you know

260
00:11:38,400 --> 00:11:36,370
also looking forward so we have in

261
00:11:40,110 --> 00:11:38,410
testing right now the next mission

262
00:11:43,110 --> 00:11:40,120
control so what that's going to look

263
00:11:45,060 --> 00:11:43,120

like for the Hawaiian project and you

264
00:11:47,970 --> 00:11:45,070
know that's definitely continuing to

265
00:11:49,620 --> 00:11:47,980
modernize the system but also the human

266
00:11:51,449 --> 00:11:49,630
factors part of it and you know we've

267
00:11:53,610 --> 00:11:51,459
learned things here and pick the one

268
00:11:56,760 --> 00:11:53,620
that you know we we can improve on and

269
00:11:58,889 --> 00:11:56,770
so when proven knows it definitely

270
00:12:00,449 --> 00:11:58,899
changed over the years and it's amazing

271
00:12:02,670 --> 00:12:00,459
to look at the pictures around here what

272
00:12:04,949 --> 00:12:02,680
what it used to look like and what it

273
00:12:10,800 --> 00:12:04,959
now looks like yeah great question it is

274
00:12:12,420 --> 00:12:10,810
a great question hi my name is Elizabeth

275
00:12:17,060 --> 00:12:12,430
and what do you think is the coolest

276
00:12:20,340 --> 00:12:17,070
feature on the ISS the coolest feature

277
00:12:22,380 --> 00:12:20,350
well I I definitely say from from the

278
00:12:24,680 --> 00:12:22,390
cruise perspective it's the cupola so

279
00:12:27,689 --> 00:12:24,690
the cupola is basically a bay of windows

280
00:12:29,400 --> 00:12:27,699
basis the earth so you probably seen a

281
00:12:32,210 --> 00:12:29,410
lot of the really cool pictures that

282
00:12:36,200 --> 00:12:32,220
they've sent down also the cool video

283
00:12:38,330 --> 00:12:36,210
from sunrise sunset during the day even

284
00:12:41,300 --> 00:12:38,340
during the night they taken video of

285
00:12:44,150 --> 00:12:41,310
night passes and so it's definitely cool

286
00:12:47,980 --> 00:12:44,160
looking out the window my perspective

287
00:12:50,450 --> 00:12:47,990
I'm a systems guy so I have interesting

288
00:12:51,860 --> 00:12:50,460

interesting modules for systems but

289
00:13:01,010 --> 00:12:51,870
that's obviously not something that

290
00:13:03,470 --> 00:13:01,020
other people find interesting hi my name

291
00:13:05,440 --> 00:13:03,480
is Kira and my question is about how

292
00:13:09,080 --> 00:13:05,450
many times a day does Mission Control

293
00:13:11,630 --> 00:13:09,090
lose connection with the ISS that's

294
00:13:14,210 --> 00:13:11,640
actually a great question we have an

295
00:13:17,210 --> 00:13:14,220
area called the zone of exclusion and

296
00:13:19,490 --> 00:13:17,220
that's usually about every 90 minutes a

297
00:13:22,250 --> 00:13:19,500
day we lose comet a vehicle it's used

298
00:13:24,940 --> 00:13:22,260
about 10 minutes long that gives us time

299
00:13:29,060 --> 00:13:24,950
to take a break while what a coup

300
00:13:31,910 --> 00:13:29,070
continues the interesting thing is that

301
00:13:34,850 --> 00:13:31,920
we can close that gap if we need to so

302
00:13:37,910 --> 00:13:34,860
usually doing critical ops so say

303
00:13:40,370 --> 00:13:37,920
vehicles coming robotics ebas things

304
00:13:43,340 --> 00:13:40,380
like that we we can ask the network to

305
00:13:45,440 --> 00:13:43,350
give us more time and so at that time we

306
00:13:47,570 --> 00:13:45,450
usually have all the time that we want

307
00:13:49,370 --> 00:13:47,580
but we still have what's called a hand

308
00:13:51,530 --> 00:13:49,380
over time which is about 20 seconds

309
00:13:53,480 --> 00:13:51,540
where our antennas need to go from one

310
00:13:55,610 --> 00:13:53,490
angle to another to pick up another

311
00:14:03,549 --> 00:13:55,620
satellite so those those are actually

312
00:14:10,119 --> 00:14:06,979
hello my name is Ana Carmina how do you

313
00:14:13,100 --> 00:14:10,129

get the medications to the astronauts

314
00:14:16,609 --> 00:14:13,110
that's that's a great question the

315
00:14:18,710 --> 00:14:16,619
obviously de medication is provided via

316
00:14:21,889 --> 00:14:18,720
visiting vehicle so it's on board we

317
00:14:23,509 --> 00:14:21,899
don't in real time extend it to them we

318
00:14:26,389 --> 00:14:23,519
do have a console called a surgeon

319
00:14:28,609 --> 00:14:26,399
console they there's a flight surgeon

320
00:14:30,410 --> 00:14:28,619
for the cruise so they they know the

321
00:14:32,809 --> 00:14:30,420
crew they've worked with the crew for

322
00:14:36,439 --> 00:14:32,819
many years as they've gone to training

323
00:14:38,359 --> 00:14:36,449
and so they they know what the crew

324
00:14:45,169 --> 00:14:38,369
needs four different different ailments

325
00:14:46,910 --> 00:14:45,179
that they they might face on board hi my

326
00:14:48,710 --> 00:14:46,920
name is Carrie Oh what kind of

327
00:14:52,879 --> 00:14:48,720
experiences have you had in Mission

328
00:14:55,699 --> 00:14:52,889
Control well as I already mentioned you

329
00:14:59,720 --> 00:14:55,709
know I have to the I did come in in time

330
00:15:03,079 --> 00:14:59,730
to work a few shuttle flights as a ISS

331
00:15:05,389 --> 00:15:03,089
support I you know biggest thing is and

332
00:15:07,759 --> 00:15:05,399
now it's just increment operations so I

333
00:15:10,909 --> 00:15:07,769
get to I get to support you should about

334
00:15:13,460 --> 00:15:10,919
one week every couple months that you

335
00:15:18,319 --> 00:15:13,470
know I come in here and work with the

336
00:15:20,479 --> 00:15:18,329
crew and also as increment lead as a the

337
00:15:23,210 --> 00:15:20,489
increment lead for the last crew before

338
00:15:25,039 --> 00:15:23,220

Dan Burbank came home that is a lot of

339
00:15:28,009 --> 00:15:25,049
planning that goes into each of these

340
00:15:30,470 --> 00:15:28,019
flights and so it is definitely an

341
00:15:36,590 --> 00:15:30,480
experience that you get to do when you

342
00:15:39,439 --> 00:15:36,600
come here hi my name is Lauren how many

343
00:15:42,229 --> 00:15:39,449
how has machine control changed over the

344
00:15:43,429 --> 00:15:42,239
years that is a good question yeah

345
00:15:45,619 --> 00:15:43,439
that's kind of what we were talking

346
00:15:49,189 --> 00:15:45,629
about earlier so it's it's changed quite

347
00:15:52,489 --> 00:15:49,199
a bit from over the years from the early

348
00:15:54,019 --> 00:15:52,499
days of Apollo even before that to what

349
00:15:56,449 --> 00:15:54,029
you're looking at now right yeah the

350
00:15:59,960 --> 00:15:56,459
interesting thing is a right above us is

351
00:16:02,389 --> 00:15:59,970
called picker to which is the old Apollo

352
00:16:04,850 --> 00:16:02,399
picker and that's preserved it's a

353
00:16:06,650 --> 00:16:04,860
historical site and so you get to get to

354
00:16:08,419 --> 00:16:06,660
take a view of what it used to look like

355
00:16:10,669 --> 00:16:08,429
and this room actually looked exactly

356
00:16:12,739 --> 00:16:10,679
like that before he's transition over to

357
00:16:15,409 --> 00:16:12,749
space station and even space station

358
00:16:17,160 --> 00:16:15,419
we've had to fly control room so we used

359
00:16:19,710 --> 00:16:17,170
to be in what's called blue picker

360
00:16:21,660 --> 00:16:19,720
before we outgrew that the station got

361
00:16:23,940 --> 00:16:21,670
bigger and then we transition over here

362
00:16:25,590 --> 00:16:23,950
yeah the Mission Control Center is very

363
00:16:27,360 --> 00:16:25,600

very large you're looking at one room

364
00:16:29,610 --> 00:16:27,370
but there's a flight control room like

365
00:16:31,379 --> 00:16:29,620
Jessie said above us there's one down

366
00:16:32,759 --> 00:16:31,389
the hall that was used for space shuttle

367
00:16:34,949 --> 00:16:32,769
and we'll probably transition to a

368
00:16:37,560 --> 00:16:34,959
future spacecraft like Orion that Jessie

369
00:16:41,069 --> 00:16:37,570
mentioned the next generation of human

370
00:16:44,370 --> 00:16:41,079
space transport that the NASA's helping

371
00:16:47,280 --> 00:16:44,380
develop or is developing so it's a very

372
00:16:49,920 --> 00:16:47,290
big building that houses very different

373
00:16:51,660 --> 00:16:49,930
kinds of flight control depending on

374
00:16:53,100 --> 00:16:51,670
what actually is going on and of course

375
00:16:54,660 --> 00:16:53,110
if there's training going on for another

376
00:16:57,150 --> 00:16:54,670
mission right you do you're always doing

377
00:16:59,819 --> 00:16:57,160
simulations for future flights as well

378
00:17:01,470 --> 00:16:59,829
yeah I'm actually in training to learn

379
00:17:03,720 --> 00:17:01,480
another system so I'm learning our

380
00:17:07,169 --> 00:17:03,730
internal thermal control system so it

381
00:17:09,270 --> 00:17:07,179
Joey evolving you get to grow and learn

382
00:17:10,829 --> 00:17:09,280
more things as you go to your career see

383
00:17:12,659 --> 00:17:10,839
here's a good example of somebody who's

384
00:17:14,610 --> 00:17:12,669
continuing to learn even though he's

385
00:17:24,130 --> 00:17:14,620
already out of school so you guys can

386
00:17:33,310 --> 00:17:28,870
how did oh ryan well how will you get a

387
00:17:35,950 --> 00:17:33,320
Ryan into space that's that's a good

388
00:17:38,620 --> 00:17:35,960

question there's two vehicles right now

389
00:17:41,260 --> 00:17:38,630
that we're working on so the original

390
00:17:42,910 --> 00:17:41,270
lines so the first couple flights i

391
00:17:45,700 --> 00:17:42,920
believe well i should be flown on a

392
00:17:49,240 --> 00:17:45,710
commercial vehicle that's rd Atlas

393
00:17:51,130 --> 00:17:49,250
launch vehicle as it transitions we're

394
00:17:53,740 --> 00:17:51,140
going to go to what's called the Space

395
00:17:56,710 --> 00:17:53,750
Launch System shuttle drive uses shuttle

396
00:17:58,750 --> 00:17:56,720
hardware and it's a new vehicle that

397
00:18:01,240 --> 00:17:58,760
allow us to go farther that's about the

398
00:18:15,299 --> 00:18:01,250
size of believe over 75 so it's a very

399
00:18:25,470 --> 00:18:20,369
what would you do if an astronaut um was

400
00:18:27,210 --> 00:18:25,480
like life-threatening sick yeah that

401
00:18:30,210 --> 00:18:27,220
that's always that's actually something

402
00:18:33,570 --> 00:18:30,220
that we that we are we have plans for

403
00:18:36,539 --> 00:18:33,580
you know that on board the crew does

404
00:18:39,600 --> 00:18:36,549
have two of the return vehicles the call

405
00:18:40,830 --> 00:18:39,610
the Soyuz the Russian vehicle and you

406
00:18:42,899 --> 00:18:40,840
know if we had a crew member get

407
00:18:46,440 --> 00:18:42,909
critically oh we can always bring them

408
00:18:49,109 --> 00:18:46,450
home and land in Russia and get them to

409
00:18:50,369 --> 00:18:49,119
mobile medical support of course his

410
00:18:52,769 --> 00:18:50,379
crewmates would need to come home with

411
00:18:56,369 --> 00:18:52,779
him because then we don't want to leave

412
00:18:58,499 --> 00:18:56,379
them with no escape vehicle so we do

413
00:19:02,279 --> 00:18:58,509

have that plan and we can execute it if

414
00:19:08,519 --> 00:19:02,289
if we need to do luckily we've never

415
00:19:13,289 --> 00:19:08,529
gotten there yet all right how many

416
00:19:16,529 --> 00:19:13,299
times does the I as s go around the

417
00:19:20,249 --> 00:19:16,539
world in a day I that's a good question

418
00:19:22,320 --> 00:19:20,259
the ice SSU orbits the earth every 90 90

419
00:19:25,049 --> 00:19:22,330
minutes which I believe that equates

420
00:19:29,460 --> 00:19:25,059
your 15 orbits in a day something about

421
00:19:31,289 --> 00:19:29,470
that and so we we track it and you know

422
00:19:33,269 --> 00:19:31,299
every day they did go around the earth

423
00:19:36,180 --> 00:19:33,279
every 90 minutes to get the sunrise and

424
00:19:38,220 --> 00:19:36,190
sunset so it's definitely different than

425
00:19:41,100 --> 00:19:38,230
what you have on the ground here the

426
00:19:43,379 --> 00:19:41,110
space station is traveling about 17,000

427
00:19:45,810 --> 00:19:43,389
miles per hour so that's about for you

428
00:19:49,049 --> 00:19:45,820
guys it's about five miles every second

429
00:19:51,149 --> 00:19:49,059
so it travels very fast at what's known

430
00:19:53,460 --> 00:19:51,159
as orbital velocity and and it's about

431
00:19:55,560 --> 00:19:53,470
250 miles above the earth right now so

432
00:19:57,330 --> 00:19:55,570
as Jesse said do you know once every

433
00:20:08,650 --> 00:19:57,340
hour and a half its it goes all the way

434
00:20:14,630 --> 00:20:11,930
hi my name is Mara and I was wondering

435
00:20:17,750 --> 00:20:14,640
how someone got assigned to a council in

436
00:20:20,930 --> 00:20:17,760
Mission Control well that's a great

437
00:20:23,960 --> 00:20:20,940
question you know I came in I was

438
00:20:27,560 --> 00:20:23,970

actually hired as an eClass so life

439
00:20:30,460 --> 00:20:27,570
support officer it used to be that you'd

440
00:20:34,100 --> 00:20:30,470
be hired within that group so specific I

441
00:20:35,510 --> 00:20:34,110
towards the specific console now we've

442
00:20:39,350 --> 00:20:35,520
actually transitioned more towards

443
00:20:41,720 --> 00:20:39,360
generic systems controllers so you when

444
00:20:44,060 --> 00:20:41,730
you get hired in here you get to

445
00:20:46,760 --> 00:20:44,070
experience each two different groups and

446
00:20:49,100 --> 00:20:46,770
basically provide your recommendation of

447
00:20:51,080 --> 00:20:49,110
what what coop you want to work for and

448
00:20:53,750 --> 00:20:51,090
you know sometimes that's not always

449
00:20:56,450 --> 00:20:53,760
possible but you know we definitely like

450
00:20:58,580 --> 00:20:56,460
to allow people to have the opportunity

451
00:21:02,240 --> 00:20:58,590
to work for whatever position they want

452
00:21:07,700 --> 00:21:02,250
which there's lots of them here that's a

453
00:21:09,860 --> 00:21:07,710
good question hi my name is Liam and I

454
00:21:13,640 --> 00:21:09,870
wanted to know what's the hardest task

455
00:21:16,549 --> 00:21:13,650
you ever had to face the hardest task

456
00:21:19,669 --> 00:21:16,559
I've ever had to face you know they

457
00:21:21,820 --> 00:21:19,679
stimulated tasks which we always get get

458
00:21:26,780 --> 00:21:21,830
put through the wringer and a simulation

459
00:21:28,640 --> 00:21:26,790
but I think in real time I think the

460
00:21:31,850 --> 00:21:28,650
hardest thing I had to do was actually

461
00:21:35,330 --> 00:21:31,860
come in I was an on call for a plight

462
00:21:37,700 --> 00:21:35,340
that we had rushing computer problems

463
00:21:39,590 --> 00:21:37,710

that caused the rapid depress to be

464
00:21:41,780 --> 00:21:39,600
enunciated on board and it was actually

465
00:21:43,520 --> 00:21:41,790
while the crew was in what we call

466
00:21:46,610 --> 00:21:43,530
campout so they were in the air lock

467
00:21:48,710 --> 00:21:46,620
down at 10 2 psi and so I was asked to

468
00:21:50,930 --> 00:21:48,720
come in to help the young console team

469
00:21:53,270 --> 00:21:50,940
basically we can figure all systems

470
00:21:55,310 --> 00:21:53,280
after that and the challenge there was

471
00:21:57,200 --> 00:21:55,320
the mixed config we were in because as I

472
00:21:58,760 --> 00:21:57,210
mentioned accrued ways that tend to an

473
00:22:01,039 --> 00:21:58,770
airlock I saw there were a lot of

474
00:22:06,340 --> 00:22:01,049
different things we had to consider and

475
00:22:15,730 --> 00:22:12,100
um will there be other I mean have there

476
00:22:19,840 --> 00:22:15,740
been thoughts about other is esas around

477
00:22:22,210 --> 00:22:19,850
orbiting other planets I believe they

478
00:22:25,740 --> 00:22:22,220
actually has been there currently talks

479
00:22:28,990 --> 00:22:25,750
about putting one I think it past a moon

480
00:22:30,640 --> 00:22:29,000
there's a gravity gradient spot that

481
00:22:33,310 --> 00:22:30,650
actually works for putting a space

482
00:22:36,580 --> 00:22:33,320
station there it actually provide

483
00:22:40,419 --> 00:22:36,590
basically destination for the Orion on

484
00:22:42,520 --> 00:22:40,429
its way to deep space as far as the ISS

485
00:22:46,510 --> 00:22:42,530
hardware I don't believe is actually any

486
00:22:49,049 --> 00:22:46,520
plan for a similar to D ISS there'd be

487
00:22:51,880 --> 00:22:49,059
an advanced version of the space station

488
00:22:53,529 --> 00:22:51,890

that's the beauty about the space

489
00:22:56,560 --> 00:22:53,539
station that we have now is that we're

490
00:23:00,460 --> 00:22:56,570
learning how to live long duration time

491
00:23:02,020 --> 00:23:00,470
periods at this altitude because when we

492
00:23:03,820 --> 00:23:02,030
go out further out obviously it means

493
00:23:06,360 --> 00:23:03,830
it's going to take longer to get back so

494
00:23:09,310 --> 00:23:06,370
you need to you definitely need to know

495
00:23:11,200 --> 00:23:09,320
how to live for long-duration stays in

496
00:23:13,419 --> 00:23:11,210
space because you your trip will become

497
00:23:15,159 --> 00:23:13,429
much longer and that's that's one of the

498
00:23:16,899 --> 00:23:15,169
things we're doing at the International

499
00:23:18,880 --> 00:23:16,909
Space Station right now so those are

500
00:23:21,070 --> 00:23:18,890
great questions and we really enjoyed

501
00:23:24,159 --> 00:23:21,080
visiting with everybody today in

502
00:23:26,590 --> 00:23:24,169
Pennsylvania and you guys keep studying

503
00:23:28,810 --> 00:23:26,600
hard and hopefully you'll make your way

504
00:23:30,730 --> 00:23:28,820
right here to this room and join jesse

505
00:23:33,370 --> 00:23:30,740
along with other flight controllers as

506
00:23:35,380 --> 00:23:33,380
part of the team here in Mission Control

507
00:23:37,690 --> 00:23:35,390
so thanks a lot for joining us everybody