
PAO

1
00:00:06,349 --> 00:00:04,730
hi welcome inside the International

2
00:00:07,880 --> 00:00:06,359
Space Station flight control room were

3
00:00:10,100 --> 00:00:07,890
doing this Digital Learning Network

4
00:00:13,310 --> 00:00:10,110
we're talking to I understand second to

5
00:00:16,220 --> 00:00:13,320
ninth grade students out at a space camp

6
00:00:17,540 --> 00:00:16,230
at kennedy space center space camp is

7
00:00:19,790 --> 00:00:17,550
cool this guy knows because he's been a

8
00:00:22,040 --> 00:00:19,800
space camp a few a few times our guest

9
00:00:24,380 --> 00:00:22,050
is today is NASA astronaut Mike Fossum

10
00:00:27,380 --> 00:00:24,390
he's been to space three times twice

11
00:00:30,200 --> 00:00:27,390
aboard the space shuttle 121 124 and

12
00:00:33,080 --> 00:00:30,210
then once aboard the International Space

13
00:00:36,740 --> 00:00:33,090

Station most recently where he spent 167

14
00:00:38,869 --> 00:00:36,750
days in space award expedition 28 and he

15
00:00:42,799 --> 00:00:38,879
was the commander of expedition 29 and

16
00:00:44,840 --> 00:00:42,809
he has conducted seven spacewalk and so

17
00:00:46,250 --> 00:00:44,850
he knows it all so you guys will ready

18
00:00:47,930 --> 00:00:46,260
welcome Mike and thanks for coming

19
00:00:49,520 --> 00:00:47,940
thanks because it's great to be here

20
00:00:51,380 --> 00:00:49,530
it's hard for me to believe that one

21
00:00:53,990 --> 00:00:51,390
year ago right now I was living on the

22
00:00:56,240 --> 00:00:54,000
space station for almost half a year so

23
00:00:58,790 --> 00:00:56,250
it great experience doing that and it's

24
00:01:07,760 --> 00:00:58,800
great to be home now too and so we're

25
00:01:10,820 --> 00:01:07,770
ready for your questions my name is Ali

26
00:01:14,210 --> 00:01:10,830
and I'm from Korea and my most memorable

27
00:01:23,749 --> 00:01:14,220
moment was writing the multiple access

28
00:01:27,950 --> 00:01:23,759
trainer and my question was that um what

29
00:01:30,200 --> 00:01:27,960
was my most memorable moment okay so

30
00:01:32,210 --> 00:01:30,210
your your most memorable moment what at

31
00:01:35,030 --> 00:01:32,220
Space Camp was riding the multiple

32
00:01:38,390 --> 00:01:35,040
access trainer that thing is kind of

33
00:01:40,399 --> 00:01:38,400
crazy I've written that that at multiple

34
00:01:43,310 --> 00:01:40,409
access trainer at down there at Space

35
00:01:44,929 --> 00:01:43,320
Camp for me my most memorable moment

36
00:01:47,899 --> 00:01:44,939
probably there's a lot of them but

37
00:01:49,940 --> 00:01:47,909
probably it was kind of similar to what

38
00:01:52,219 --> 00:01:49,950

you had it was coming home in the Soyuz

39
00:01:54,499 --> 00:01:52,229
spacecraft very different the space

40
00:01:57,050 --> 00:01:54,509
shuttle came in and landed like a great

41
00:01:59,539 --> 00:01:57,060
big airliner very smooth coming home in

42
00:02:01,039 --> 00:01:59,549
the Soyuz was a lot more exciting it got

43
00:02:03,139 --> 00:02:01,049
you kind of twisted and tumbled around

44
00:02:05,840 --> 00:02:03,149
like you did on the on the trainer there

45
00:02:07,370 --> 00:02:05,850
as the parachutes are opening and it's

46
00:02:10,520 --> 00:02:07,380
kind of like whipping it around like a

47
00:02:12,920 --> 00:02:10,530
ball on the end of a string and so that

48
00:02:13,650 --> 00:02:12,930
the Act multiple-access trainer that you

49
00:02:16,680 --> 00:02:13,660
you

50
00:02:18,510 --> 00:02:16,690
actually was was a very realistic kind

51
00:02:20,520 --> 00:02:18,520
of training for the dynamics that we

52
00:02:28,110 --> 00:02:20,530
felt during when I came home just before

53
00:02:31,500 --> 00:02:28,120
Thanksgiving great question next hi my

54
00:02:35,070 --> 00:02:31,510
name is Kayla and my question is how do

55
00:02:39,900 --> 00:02:35,080
you feel about your job and how how long

56
00:02:43,050 --> 00:02:39,910
did it take to be a s oh that's great I

57
00:02:45,090 --> 00:02:43,060
I'd love my job and it has been a dream

58
00:02:47,910 --> 00:02:45,100
of mine since I was probably about your

59
00:02:49,620 --> 00:02:47,920
age I was 12 years old when I really was

60
00:02:51,300 --> 00:02:49,630
laying on a hillside at night looking up

61
00:02:52,920 --> 00:02:51,310
at the stars and I felt like we're not

62
00:02:55,770 --> 00:02:52,930
just looking at the stars but we're in

63
00:02:57,540 --> 00:02:55,780

the stars and that's when we were we're

64
00:02:59,670 --> 00:02:57,550
landing on the moon right at that time

65
00:03:01,830 --> 00:02:59,680
and I said you know what I want to do

66
00:03:03,570 --> 00:03:01,840
that and I would dream about doing that

67
00:03:07,440 --> 00:03:03,580
and I never completely gave up on that

68
00:03:10,530 --> 00:03:07,450
dream as I continued through my high

69
00:03:12,300 --> 00:03:10,540
school and college education and then

70
00:03:14,900 --> 00:03:12,310
different jobs along the way so it did

71
00:03:17,610 --> 00:03:14,910
take me a lot of years I applied

72
00:03:19,949 --> 00:03:17,620
multiple times more than once to be an

73
00:03:22,020 --> 00:03:19,959
astronaut before I was selected but it

74
00:03:24,150 --> 00:03:22,030
was absolutely worth the hard work along

75
00:03:25,770 --> 00:03:24,160
the way and I wasn't waiting I didn't

76
00:03:29,340 --> 00:03:25,780
get selected the first second or even

77
00:03:31,020 --> 00:03:29,350
third time but I wasn't waiting I was

78
00:03:34,949 --> 00:03:31,030
working hard at the different jobs that

79
00:03:36,540 --> 00:03:34,959
i had and trying to contribute to the to

80
00:03:38,970 --> 00:03:36,550
the space program in different ways

81
00:03:40,980 --> 00:03:38,980
until i was finally selected and now

82
00:03:42,930 --> 00:03:40,990
i've really enjoyed it a lot i'm very

83
00:03:46,199 --> 00:03:42,940
fortunate to have gone into space three

84
00:03:48,180 --> 00:03:46,209
times and now i'm helping the people

85
00:03:50,010 --> 00:03:48,190
that are going into space that are

86
00:03:53,190 --> 00:03:50,020
flying on the space station right right

87
00:03:56,100 --> 00:03:53,200
now we have two Americans one Japanese

88
00:03:57,630 --> 00:03:56,110

and three Russian living on the space

89
00:03:59,220 --> 00:03:57,640
station right now and so I'm helping

90
00:04:00,990 --> 00:03:59,230
them out with their mission and getting

91
00:04:03,390 --> 00:04:01,000
next crews ready to go so I'm still

92
00:04:06,060 --> 00:04:03,400
enjoying my job a lot great what a

93
00:04:10,580 --> 00:04:06,070
question and so hard work and a little

94
00:04:20,219 --> 00:04:15,990
um I I'm Caleb I'm from Roseburg Oregon

95
00:04:21,780 --> 00:04:20,229
and my question is are you are you glad

96
00:04:25,980 --> 00:04:21,790
that you did all the training so you

97
00:04:27,659 --> 00:04:25,990
could be an astronaut oh sure Caleb the

98
00:04:29,550 --> 00:04:27,669
trainings a lot of work and we call it a

99
00:04:31,200 --> 00:04:29,560
lot of work but there's parts of it that

100
00:04:33,480 --> 00:04:31,210
are a lot of fun too now part of it

101
00:04:35,370 --> 00:04:33,490
sitting in school sitting in astronauts

102
00:04:37,050 --> 00:04:35,380
cool literally where we have teachers

103
00:04:39,810 --> 00:04:37,060
that come in and teach us about the

104
00:04:42,779 --> 00:04:39,820
detailed technical details in in a

105
00:04:44,879 --> 00:04:42,789
different system spacecraft systems and

106
00:04:46,980 --> 00:04:44,889
then but then you get to not just learn

107
00:04:50,490 --> 00:04:46,990
about it book learning but you get to go

108
00:04:54,360 --> 00:04:50,500
and actually operate it in trainers and

109
00:04:56,490 --> 00:04:54,370
maybe to learn how to you study in

110
00:04:58,590 --> 00:04:56,500
classroom about how the robot Cicero

111
00:05:00,930 --> 00:04:58,600
bhatak systems works and then you go

112
00:05:02,909 --> 00:05:00,940
work on trainers where you move in as

113
00:05:04,620 --> 00:05:02,919

you know simulated robotic arms and then

114
00:05:06,330 --> 00:05:04,630
you go out into space where you're

115
00:05:08,129 --> 00:05:06,340
actually moving the robot arm to do

116
00:05:10,710 --> 00:05:08,139
different tasks and so it's great

117
00:05:12,779 --> 00:05:10,720
experience and it definitely is a

118
00:05:14,820 --> 00:05:12,789
worthwhile and the training itself is a

119
00:05:16,650 --> 00:05:14,830
lot of fun too because there's there's a

120
00:05:18,330 --> 00:05:16,660
lot of different things associated with

121
00:05:20,879 --> 00:05:18,340
it I like to learn new things I like to

122
00:05:23,189 --> 00:05:20,889
do new things and so there's there's

123
00:05:27,300 --> 00:05:23,199
there's a lot of new things to learn and

124
00:05:30,839 --> 00:05:27,310
do another good question we're ready for

125
00:05:33,180 --> 00:05:30,849
the next one my name's Andy and I'm from

126
00:05:35,580 --> 00:05:33,190
boundary to New York and my question is

127
00:05:38,460 --> 00:05:35,590
what parts make up the International

128
00:05:40,740 --> 00:05:38,470
Space Station oh wow Andy that's a great

129
00:05:43,529 --> 00:05:40,750
question the this the International

130
00:05:45,480 --> 00:05:43,539
Space Station it's huge it's it's longer

131
00:05:47,460 --> 00:05:45,490
and wider than a football field when you

132
00:05:49,500 --> 00:05:47,470
include the whole thing and when you

133
00:05:50,640 --> 00:05:49,510
first look at it that mean probably one

134
00:05:52,950 --> 00:05:50,650
of the first things you see are these

135
00:05:55,020 --> 00:05:52,960
great big arrays these panels that are

136
00:05:57,300 --> 00:05:55,030
out on the end so they look gold colored

137
00:05:59,070 --> 00:05:57,310
and those are the part that grabbed

138
00:06:01,920 --> 00:05:59,080

sunlight and turn it into electricity

139
00:06:03,870 --> 00:06:01,930
and those generate all the electricity

140
00:06:05,820 --> 00:06:03,880
that we need on the space station and

141
00:06:07,589 --> 00:06:05,830
one of the sun shining on them they make

142
00:06:09,210 --> 00:06:07,599
the electricity and they charge up some

143
00:06:12,029 --> 00:06:09,220
batteries so when we're in the Earth's

144
00:06:14,520 --> 00:06:12,039
shadow we're using that electricity from

145
00:06:16,860 --> 00:06:14,530
the batteries to keep things going and

146
00:06:19,589 --> 00:06:16,870
then you see the canned parts they look

147
00:06:21,360 --> 00:06:19,599
like individual pieces of of like silver

148
00:06:22,710 --> 00:06:21,370
cans that are go together to make the

149
00:06:24,720 --> 00:06:22,720
pressurized

150
00:06:27,390 --> 00:06:24,730
of the space station and that's where we

151
00:06:29,460 --> 00:06:27,400
live and work and those those individual

152
00:06:32,250 --> 00:06:29,470
cans and they were sized most of them

153
00:06:34,920 --> 00:06:32,260
were sized to fit in the cargo bay of

154
00:06:36,300 --> 00:06:34,930
the space shuttle and so they filled up

155
00:06:37,770 --> 00:06:36,310
that cargo bay the shuttle and the

156
00:06:39,810 --> 00:06:37,780
shuttles would go up to the station and

157
00:06:43,100 --> 00:06:39,820
we'd add a new piece and those pieces

158
00:06:45,300 --> 00:06:43,110
are laboratories they're living modules

159
00:06:47,340 --> 00:06:45,310
one of them we kind of call it our

160
00:06:49,200 --> 00:06:47,350
gymnasium module because it has a lot of

161
00:06:51,360 --> 00:06:49,210
our exercise equipment and some stowage

162
00:06:52,800 --> 00:06:51,370
and stuff in there so that's probably

163
00:06:54,240 --> 00:06:52,810

the biggest stuff that makes it up

164
00:06:56,370 --> 00:06:54,250
there's all the things you have like at

165
00:06:58,080 --> 00:06:56,380
home we have a bedroom it's real small

166
00:07:01,260 --> 00:06:58,090
and you sleep on the wall because you

167
00:07:02,610 --> 00:07:01,270
don't need much room and so that's that

168
00:07:04,140 --> 00:07:02,620
that's the biggest things you see when

169
00:07:11,190 --> 00:07:04,150
you look at the space station good

170
00:07:14,159 --> 00:07:11,200
question hi my name is Julia I'm from

171
00:07:19,080 --> 00:07:14,169
Edmonton Alberta Canada and my favorite

172
00:07:20,820 --> 00:07:19,090
thing was on the spatial simulation and

173
00:07:23,030 --> 00:07:20,830
my question is on what kind of

174
00:07:25,500 --> 00:07:23,040
conversations do you have on the ISS Oh

175
00:07:28,020 --> 00:07:25,510
what kind of conversation do we have on

176
00:07:29,250 --> 00:07:28,030
the ISS well that's that there's there's

177
00:07:31,200 --> 00:07:29,260
several different answers to that

178
00:07:32,640 --> 00:07:31,210
because like I said right now we have

179
00:07:34,680 --> 00:07:32,650
crew members from three different

180
00:07:37,260 --> 00:07:34,690
countries that are living up there to

181
00:07:39,870 --> 00:07:37,270
Americans one Japanese and three

182
00:07:41,490 --> 00:07:39,880
Russians and so you know one thing is

183
00:07:43,350 --> 00:07:41,500
which language are we talking in while

184
00:07:46,250 --> 00:07:43,360
we're up there and it tends to be a

185
00:07:49,140 --> 00:07:46,260
combination of English and Russian

186
00:07:51,120 --> 00:07:49,150
because that's that's just as the the

187
00:07:54,450 --> 00:07:51,130
strongest languages for the crew mix on

188
00:07:57,540 --> 00:07:54,460

board yesterday Joe acaba who is a

189
00:07:59,640 --> 00:07:57,550
Puerto Rican descent did an interview in

190
00:08:01,890 --> 00:07:59,650
Spanish which is really a lot of fun so

191
00:08:04,680 --> 00:08:01,900
he was able to reach out to a large

192
00:08:07,440 --> 00:08:04,690
community of people in in their native

193
00:08:08,880 --> 00:08:07,450
tongue we talked about work the things

194
00:08:10,500 --> 00:08:08,890
we talked about is kind of the same

195
00:08:12,180 --> 00:08:10,510
things you talk about their we're living

196
00:08:14,850 --> 00:08:12,190
with these people for up to half a year

197
00:08:17,490 --> 00:08:14,860
at a time so we talk about work we talk

198
00:08:19,080 --> 00:08:17,500
about school we tell old funny stories

199
00:08:22,170 --> 00:08:19,090
from when we were in training together

200
00:08:24,060 --> 00:08:22,180
or old old stories of what it was like

201
00:08:26,250 --> 00:08:24,070
growing up in the United States are

202
00:08:30,270 --> 00:08:26,260
growing up in Russia are growing up in

203
00:08:31,950 --> 00:08:30,280
Canada and comparing all those different

204
00:08:33,870 --> 00:08:31,960
kind of experiences and getting to know

205
00:08:36,540 --> 00:08:33,880
your crewmates better

206
00:08:38,219 --> 00:08:36,550
it is truly an international today we

207
00:08:41,219 --> 00:08:38,229
just had an interview with aki hoshide a

208
00:08:42,719 --> 00:08:41,229
and he did it in japanese right and the

209
00:08:45,960 --> 00:08:42,729
crew aboard have been watching the

210
00:08:47,430 --> 00:08:45,970
Olympics oh yeah and then the Olympics

211
00:08:48,930 --> 00:08:47,440
are another thing that really draws the

212
00:08:50,460 --> 00:08:48,940
whole world together as we're all

213
00:08:52,230 --> 00:08:50,470

cheering for the cheering for the

214
00:08:54,030 --> 00:08:52,240
athletes cheering for our home country

215
00:08:55,920 --> 00:08:54,040
of course but appreciating the great

216
00:09:05,840 --> 00:08:55,930
efforts of everybody yeah absolutely

217
00:09:09,020 --> 00:09:05,850
good question next my name is Colleen

218
00:09:12,150 --> 00:09:09,030
and I comes from Fairfield Connecticut

219
00:09:16,260 --> 00:09:12,160
and my question is how did you put the

220
00:09:19,170 --> 00:09:16,270
ISS is it warm oh boy how did we put the

221
00:09:23,730 --> 00:09:19,180
ISS into orbit if you look at it now

222
00:09:25,650 --> 00:09:23,740
it's it's over 900,000 pounds and it's

223
00:09:27,300 --> 00:09:25,660
it's kind of hard to even think about

224
00:09:29,580 --> 00:09:27,310
what it takes to put this thing into

225
00:09:32,640 --> 00:09:29,590
orbit because I we couldn't put this

226
00:09:34,740 --> 00:09:32,650
huge space station on top of a great big

227
00:09:37,080 --> 00:09:34,750
monster huge rocket launch it all at

228
00:09:41,310 --> 00:09:37,090
once and so we actually launched it

229
00:09:44,340 --> 00:09:41,320
piece by piece I it took many space

230
00:09:46,620 --> 00:09:44,350
shuttle launches about 27 I don't

231
00:09:48,390 --> 00:09:46,630
remember exactly how many space shuttle

232
00:09:50,700 --> 00:09:48,400
launches to carry up individual pieces

233
00:09:52,560 --> 00:09:50,710
as well as the Russian parts of the

234
00:09:54,690 --> 00:09:52,570
space station went up their own way they

235
00:09:57,600 --> 00:09:54,700
launched the piece of space station on

236
00:10:00,660 --> 00:09:57,610
top of a rocket and then this there's

237
00:10:03,420 --> 00:10:00,670
automatically go up and attach to it and

238
00:10:05,370 --> 00:10:03,430

so we took it up one piece of time until

239
00:10:07,830 --> 00:10:05,380
we got the whole thing built up there

240
00:10:09,690 --> 00:10:07,840
and you actually flew aboard two of the

241
00:10:11,490 --> 00:10:09,700
space shuttle so you know do you recall

242
00:10:12,960 --> 00:10:11,500
any of the items that you brought up in

243
00:10:14,820 --> 00:10:12,970
the well the biggest one we brought up

244
00:10:16,910 --> 00:10:14,830
was on my second space shuttle flight we

245
00:10:20,130 --> 00:10:16,920
brought up the main japanese laboratory

246
00:10:22,650 --> 00:10:20,140
and so it was a one of the largest

247
00:10:24,510 --> 00:10:22,660
single elements on the space station it

248
00:10:26,940 --> 00:10:24,520
pretty much filled up the cargo bay of

249
00:10:29,070 --> 00:10:26,950
the shuttle and so we went up with that

250
00:10:30,720 --> 00:10:29,080
in the back of the space shuttle and we

251
00:10:33,150 --> 00:10:30,730
attached the space shuttle to the

252
00:10:36,510 --> 00:10:33,160
station and then we did some space walks

253
00:10:38,490 --> 00:10:36,520
to prepare the laboratory to install it

254
00:10:40,410 --> 00:10:38,500
and also to prepare the space station

255
00:10:43,920 --> 00:10:40,420
because it's not quite as easy as just

256
00:10:45,780 --> 00:10:43,930
plug in Legos together it sometimes it

257
00:10:47,090 --> 00:10:45,790
looks kind of simple as we plug models

258
00:10:49,370 --> 00:10:47,100
together in different ways

259
00:10:50,720 --> 00:10:49,380
so all very you know complicated and has

260
00:10:53,660 --> 00:10:50,730
to be done just right because once we

261
00:10:56,930 --> 00:10:53,670
attach that once we attach that

262
00:10:58,550 --> 00:10:56,940
laboratory up there for years ago and we

263
00:11:00,050 --> 00:10:58,560

wanted to make sure that was perfectly

264
00:11:02,000 --> 00:11:00,060
clean because it's never going to come

265
00:11:05,060 --> 00:11:02,010
off again so it needs to work for the

266
00:11:07,550 --> 00:11:05,070
next 20 years so it's a it's a you know

267
00:11:09,290 --> 00:11:07,560
it's a great challenge and one of the

268
00:11:12,530 --> 00:11:09,300
amazing things was it all worked it

269
00:11:18,620 --> 00:11:12,540
worked out really well thank you very

270
00:11:20,270 --> 00:11:18,630
good question next question my name is

271
00:11:23,750 --> 00:11:20,280
Caitlin I'm from Martinsburg West

272
00:11:27,020 --> 00:11:23,760
Virginia have you had any emergencies or

273
00:11:31,550 --> 00:11:27,030
close calls on the ISS and what were

274
00:11:33,200 --> 00:11:31,560
they yes occasionally we do we train for

275
00:11:35,360 --> 00:11:33,210
a lot of different things of course so

276
00:11:37,820 --> 00:11:35,370
we train for lots of different kinds of

277
00:11:40,820 --> 00:11:37,830
emergencies we haven't had any that were

278
00:11:43,100 --> 00:11:40,830
were real scary we haven't we trained

279
00:11:47,660 --> 00:11:43,110
for fires we have not had a real fire we

280
00:11:50,360 --> 00:11:47,670
trained for for leaks that were there

281
00:11:53,570 --> 00:11:50,370
airs leaking out and and you know we're

282
00:11:55,280 --> 00:11:53,580
okay there we do a train also for

283
00:11:58,400 --> 00:11:55,290
spilling thing because on the ground if

284
00:12:00,830 --> 00:11:58,410
you spill something bad something really

285
00:12:02,390 --> 00:12:00,840
nasty or toxic as we call it you know it

286
00:12:04,730 --> 00:12:02,400
falls to the floor and you might have a

287
00:12:07,010 --> 00:12:04,740
mess to clean up but it's not that big a

288
00:12:08,930 --> 00:12:07,020

deal but if you if you spill some acid

289
00:12:10,430 --> 00:12:08,940
or something in space well then it's

290
00:12:12,260 --> 00:12:10,440
floating in and it can get in your eyes

291
00:12:14,840 --> 00:12:12,270
getting your lungs and stuff so that's

292
00:12:17,090 --> 00:12:14,850
much more serious and so anything that

293
00:12:19,670 --> 00:12:17,100
we spill it can irritate your eyes or

294
00:12:20,870 --> 00:12:19,680
cause trouble so not quite an emergency

295
00:12:23,660 --> 00:12:20,880
but it's something that we take very

296
00:12:25,430 --> 00:12:23,670
seriously we've had to we do

297
00:12:27,950 --> 00:12:25,440
occasionally we have to move the space

298
00:12:29,660 --> 00:12:27,960
station because there's a piece of space

299
00:12:31,190 --> 00:12:29,670
junk usually it's a piece of an old

300
00:12:33,590 --> 00:12:31,200
satellite or something that's orbiting

301
00:12:35,480 --> 00:12:33,600
up there and we're orbiting together and

302
00:12:38,090 --> 00:12:35,490
sometimes we get so close that we're in

303
00:12:41,030 --> 00:12:38,100
danger of getting hit by this stuff and

304
00:12:43,430 --> 00:12:41,040
so we've got to we have to maneuver turn

305
00:12:46,700 --> 00:12:43,440
we have to ignite the space station

306
00:12:50,030 --> 00:12:46,710
engines and do a little bit of an orbit

307
00:12:59,350 --> 00:12:50,040
change to to get out of its way we do

308
00:13:05,889 --> 00:13:03,090
my name is Calvin I'm from Michigan and

309
00:13:08,829 --> 00:13:05,899
what is your emergency plan if an

310
00:13:12,550 --> 00:13:08,839
asteroid or a meteorite comes at the

311
00:13:14,530 --> 00:13:12,560
space station okay Calvin the well the

312
00:13:17,800 --> 00:13:14,540
emergency plan the first step you do is

313
00:13:19,690 --> 00:13:17,810

we have a big team of people on the

314
00:13:21,730 --> 00:13:19,700
planet who are tracking all of these

315
00:13:25,000 --> 00:13:21,740
different things out there like you know

316
00:13:27,370 --> 00:13:25,010
asteroids and comets and stuff and end

317
00:13:29,319 --> 00:13:27,380
pieces of satellites and rockets that

318
00:13:33,009 --> 00:13:29,329
are in orbit they're tracking this stuff

319
00:13:35,380 --> 00:13:33,019
and they they use computer programs to

320
00:13:37,150 --> 00:13:35,390
to predict where it's going to be and

321
00:13:39,910 --> 00:13:37,160
then in the next days and weeks ahead

322
00:13:41,230 --> 00:13:39,920
and so we know if it's going to we know

323
00:13:43,240 --> 00:13:41,240
ahead of time if it's going to come

324
00:13:45,759 --> 00:13:43,250
close and that's why we would change our

325
00:13:48,160 --> 00:13:45,769
orbit now it's possible that we could

326
00:13:50,319 --> 00:13:48,170
get hit by something that is too small

327
00:13:51,730 --> 00:13:50,329
to track and that's one of the things we

328
00:13:53,350 --> 00:13:51,740
trained for and I think that's what

329
00:13:55,060 --> 00:13:53,360
you're getting at so it's possible that

330
00:13:57,940 --> 00:13:55,070
we could get hit now if we get hit by a

331
00:13:59,920 --> 00:13:57,950
comet well now that's going to be bad

332
00:14:02,230 --> 00:13:59,930
it's that so big it's going to be really

333
00:14:04,060 --> 00:14:02,240
bad but the more likely thing is we'd

334
00:14:06,910 --> 00:14:04,070
get hit by something that could punch a

335
00:14:09,280 --> 00:14:06,920
hole in part of the station and we would

336
00:14:12,160 --> 00:14:09,290
we would get out get all of the people

337
00:14:13,720 --> 00:14:12,170
together and move away from the part of

338
00:14:16,090 --> 00:14:13,730

the station that's leaking and get that

339
00:14:18,610 --> 00:14:16,100
sealed off once we get everybody safe

340
00:14:20,380 --> 00:14:18,620
well then we will work with it with

341
00:14:22,300 --> 00:14:20,390
everybody on the ground and on orbit to

342
00:14:24,519 --> 00:14:22,310
figure out what we do next and that will

343
00:14:26,590 --> 00:14:24,529
depend on a lot of details about exactly

344
00:14:28,660 --> 00:14:26,600
how big of a hole it is or what kind of

345
00:14:30,850 --> 00:14:28,670
damage it caused but you know we have a

346
00:14:33,280 --> 00:14:30,860
lot of plans we hope we never need to

347
00:14:35,139 --> 00:14:33,290
use for how to make repairs or recover

348
00:14:38,290 --> 00:14:35,149
from those kind of situations but the

349
00:14:41,710 --> 00:14:38,300
first step is keep the people safe and

350
00:14:43,810 --> 00:14:41,720
get them as safe as possible so good

351
00:14:49,379 --> 00:14:43,820
very good question i think we still have

352
00:14:56,019 --> 00:14:54,249
hey my name is alex from virginia my

353
00:14:59,049 --> 00:14:56,029
question is what's the worst situation

354
00:15:02,970 --> 00:14:59,059
that you've been in okay Alex the worst

355
00:15:06,519 --> 00:15:02,980
situation I've been in was probably

356
00:15:09,210 --> 00:15:06,529
during during my my space station

357
00:15:12,160 --> 00:15:09,220
mission last June there was a piece of

358
00:15:16,629 --> 00:15:12,170
junk that they identified space debris

359
00:15:19,780 --> 00:15:16,639
that was they identified its track is

360
00:15:22,150 --> 00:15:19,790
becoming close to us too late for us to

361
00:15:24,189 --> 00:15:22,160
do the maneuver away from it and so what

362
00:15:27,009 --> 00:15:24,199
we had to do is close all the hatches on

363
00:15:29,379 --> 00:15:27,019

the station and and kind of get into our

364
00:15:30,970 --> 00:15:29,389
Soyuz Russian Soyuz spacecraft and

365
00:15:33,519 --> 00:15:30,980
that's kind of our emergency way home

366
00:15:36,039 --> 00:15:33,529
and so we got into our Soyuz spacecraft

367
00:15:37,479 --> 00:15:36,049
and close the hatch and then waited to

368
00:15:39,340 --> 00:15:37,489
make sure we didn't get hit because

369
00:15:43,059 --> 00:15:39,350
there's they don't know exactly where

370
00:15:44,889 --> 00:15:43,069
these things are going what you don't

371
00:15:46,629 --> 00:15:44,899
they don't have especially when they're

372
00:15:49,269 --> 00:15:46,639
small and so there's there's enough

373
00:15:51,579 --> 00:15:49,279
uncertainty about it and there's enough

374
00:15:53,949 --> 00:15:51,589
risk associated with it that we had to

375
00:15:56,439 --> 00:15:53,959
we call it hunkering down or shelter in

376
00:15:58,179 --> 00:15:56,449
place and so we did that so that's you

377
00:16:00,759 --> 00:15:58,189
worried up for a little bit as we sit

378
00:16:02,739 --> 00:16:00,769
there trying to listen to say okay do we

379
00:16:06,009 --> 00:16:02,749
hear anything did we hear any any

380
00:16:07,840 --> 00:16:06,019
banging and talking to the ground and

381
00:16:09,879 --> 00:16:07,850
the ground confirmed that all of the

382
00:16:12,729 --> 00:16:09,889
pressures look normal and so we waited

383
00:16:15,039 --> 00:16:12,739
until the time passed and everything was

384
00:16:16,929 --> 00:16:15,049
normal so we went back out and opened up

385
00:16:22,180 --> 00:16:16,939
all the hatches you like to walk back to

386
00:16:25,990 --> 00:16:24,070
my name is Lena Rennels I'm from

387
00:16:27,220 --> 00:16:26,000
Sacramento California and I was

388
00:16:28,960 --> 00:16:27,230

wondering how do you go about working

389
00:16:30,610 --> 00:16:28,970
and communicating with other countries

390
00:16:34,300 --> 00:16:30,620
to keep the international space station

391
00:16:36,700 --> 00:16:34,310
in an Asha it's a communicating with the

392
00:16:39,030 --> 00:16:36,710
other countries and and ground control

393
00:16:41,950 --> 00:16:39,040
teams and even astronauts is a challenge

394
00:16:43,690 --> 00:16:41,960
most of the the communications that we

395
00:16:45,400 --> 00:16:43,700
do on the station are with that with

396
00:16:48,070 --> 00:16:45,410
English with most of the partner

397
00:16:53,200 --> 00:16:48,080
countries so that the Mission Control

398
00:16:57,400 --> 00:16:53,210
Center in Japan and Germany and and

399
00:16:58,990 --> 00:16:57,410
Canada are all work in in English and we

400
00:17:00,430 --> 00:16:59,000
communicate in English with them when

401
00:17:04,929 --> 00:17:00,440
we're working with the Mission Control

402
00:17:07,179 --> 00:17:04,939
in Moscow we work in Russian and so and

403
00:17:08,650 --> 00:17:07,189
and that's just kind of a nature of the

404
00:17:11,439 --> 00:17:08,660
language abilities in different places

405
00:17:13,390 --> 00:17:11,449
and stuff so it can be a little bit

406
00:17:14,980 --> 00:17:13,400
confusing sometimes and when I'm talking

407
00:17:16,900 --> 00:17:14,990
to one of my Russian crewmates for

408
00:17:18,280 --> 00:17:16,910
instance it's kind of funny it drives my

409
00:17:19,689 --> 00:17:18,290
wife crazy because I can have a

410
00:17:22,329 --> 00:17:19,699
conversation with one of my buddies

411
00:17:24,670 --> 00:17:22,339
where I'm speaking English and he

412
00:17:26,439 --> 00:17:24,680
understands my English well enough to

413
00:17:27,790 --> 00:17:26,449

understand what I'm saying but he

414
00:17:29,710 --> 00:17:27,800
doesn't understand English well enough

415
00:17:32,200 --> 00:17:29,720
to answer me so he'll answer me in

416
00:17:34,030 --> 00:17:32,210
Russian and I understand him just fine

417
00:17:36,250 --> 00:17:34,040
and I might answer him in English maybe

418
00:17:37,360 --> 00:17:36,260
a mix of English and Russian and so it's

419
00:17:38,860 --> 00:17:37,370
kind of funny to listen to us talk

420
00:17:42,220 --> 00:17:38,870
because we're perfectly comfortable

421
00:17:44,860 --> 00:17:42,230
after living together for so long having

422
00:17:46,240 --> 00:17:44,870
a conversation like that and so an

423
00:17:48,460 --> 00:17:46,250
astronaut who does fly aboard the

424
00:17:50,080 --> 00:17:48,470
International Space Station does go

425
00:17:52,300 --> 00:17:50,090
through some my language training and so

426
00:17:53,860 --> 00:17:52,310
they they learn Russian oh yes yeah

427
00:17:56,950 --> 00:17:53,870
learning Russian is a requirement to

428
00:17:58,720 --> 00:17:56,960
learn enough to get by and so it's

429
00:17:59,920 --> 00:17:58,730
actually one of the joys of it because

430
00:18:02,050 --> 00:17:59,930
it's so different from the other stuff

431
00:18:04,690 --> 00:18:02,060
I've done throughout my career which is

432
00:18:07,090 --> 00:18:04,700
focused mostly on an engineering work

433
00:18:08,650 --> 00:18:07,100
and system development and so now trying

434
00:18:10,090 --> 00:18:08,660
to use a different part of my brain to

435
00:18:12,880 --> 00:18:10,100
learn another language it's very

436
00:18:14,950 --> 00:18:12,890
challenging but very rewarding to to be

437
00:18:16,990 --> 00:18:14,960
able to now go around another country

438
00:18:19,000 --> 00:18:17,000

and speak in their language and have

439
00:18:21,370 --> 00:18:19,010
that kind of freedom is is really great

440
00:18:22,690 --> 00:18:21,380
and I think a lot of people a lot of

441
00:18:24,640 --> 00:18:22,700
Americans would benefit more from

442
00:18:26,350 --> 00:18:24,650
learning languages so they could enjoy

443
00:18:28,120 --> 00:18:26,360
other cultures you don't really

444
00:18:30,640 --> 00:18:28,130
understand another culture until you

445
00:18:32,350 --> 00:18:30,650
understand some of its language and so I

446
00:18:35,139 --> 00:18:32,360
absolutely say if you guys are

447
00:18:36,879 --> 00:18:35,149
interested in learning something even he

448
00:18:39,310 --> 00:18:36,889
and you know language or something like

449
00:18:41,229 --> 00:18:39,320
that we encourage you to go after that

450
00:18:44,379 --> 00:18:41,239
you got that was a good question next

451
00:18:46,239 --> 00:18:44,389
question all right thank you that was

452
00:18:47,649 --> 00:18:46,249
the last of the student questions but I

453
00:18:50,049 --> 00:18:47,659
was wondering before you go can you

454
00:18:52,419 --> 00:18:50,059
explain how you can go from a scam

455
00:18:54,519 --> 00:18:52,429
student being like an astronaut or an

456
00:18:58,149 --> 00:18:54,529
engineer someone out working at NASA oh

457
00:19:00,070 --> 00:18:58,159
absolutely absolutely oh I know that the

458
00:19:02,229 --> 00:19:00,080
the all of students there at Space Camp

459
00:19:03,849 --> 00:19:02,239
are having a great time it's just a

460
00:19:06,279 --> 00:19:03,859
wonderful experience and you get exposed

461
00:19:08,109 --> 00:19:06,289
to so many different things because

462
00:19:09,549 --> 00:19:08,119
there are so many things to the space

463
00:19:11,320 --> 00:19:09,559

business whether you're in Mission

464
00:19:13,269 --> 00:19:11,330
Control where we're sitting right now or

465
00:19:15,459 --> 00:19:13,279
one of the laboratories around here

466
00:19:18,009 --> 00:19:15,469
helping develop new space systems for

467
00:19:20,079 --> 00:19:18,019
the future or an astronaut in training

468
00:19:22,450 --> 00:19:20,089
in other buildings around the center

469
00:19:23,889 --> 00:19:22,460
here or around the world and as the

470
00:19:25,629 --> 00:19:23,899
students can see from their time at

471
00:19:27,999 --> 00:19:25,639
Space Camp there's a lot of different

472
00:19:30,039 --> 00:19:28,009
things associated with this they have a

473
00:19:31,959 --> 00:19:30,049
things there where they can learn about

474
00:19:33,519 --> 00:19:31,969
neutral buoyancy where they can learn

475
00:19:34,810 --> 00:19:33,529
about different kinds of engineering

476
00:19:36,659 --> 00:19:34,820
where they can learn about different the

477
00:19:39,849 --> 00:19:36,669
different space science things like

478
00:19:41,709 --> 00:19:39,859
geology planetary geology comparing the

479
00:19:44,379 --> 00:19:41,719
geology of the earth to that of the moon

480
00:19:46,149 --> 00:19:44,389
and now we have a new tool to learn more

481
00:19:48,909 --> 00:19:46,159
about the geology and the history of

482
00:19:51,159 --> 00:19:48,919
Mars and all of these things are part of

483
00:19:53,049 --> 00:19:51,169
the body of knowledge that we're working

484
00:19:56,829 --> 00:19:53,059
on putting together on the space station

485
00:20:01,389 --> 00:19:56,839
we do experiments in materials on human

486
00:20:02,649 --> 00:20:01,399
bodies and chemistry on combustion lots

487
00:20:04,539 --> 00:20:02,659
and lots of different kinds of

488
00:20:06,579 --> 00:20:04,549

experiments and science go into the work

489
00:20:09,489 --> 00:20:06,589
we're doing on the space station so for

490
00:20:11,889 --> 00:20:09,499
the students today take check it all out

491
00:20:13,479 --> 00:20:11,899
and when you when you're doing some of

492
00:20:15,969 --> 00:20:13,489
these different things and something

493
00:20:19,599 --> 00:20:15,979
really lights you up and you say wow

494
00:20:21,789 --> 00:20:19,609
that is so cool well go learn more about

495
00:20:23,409 --> 00:20:21,799
it go study more about it when you get

496
00:20:25,479 --> 00:20:23,419
back to school in a few weeks ago ask

497
00:20:27,159 --> 00:20:25,489
your teachers about it and maybe in the

498
00:20:29,619 --> 00:20:27,169
science classes or the things you can

499
00:20:31,719 --> 00:20:29,629
learn more and a lot of you can find

500
00:20:34,029 --> 00:20:31,729
your future careers in these things that

501
00:20:36,639 --> 00:20:34,039
you learn at Space Camp where you go wow

502
00:20:38,320 --> 00:20:36,649
that's really cool go learn more about

503
00:20:40,209 --> 00:20:38,330
it and that could end up being a college

504
00:20:43,299 --> 00:20:40,219
degree it can be a career here at NASA

505
00:20:45,759 --> 00:20:43,309
and there's people in the astronaut

506
00:20:47,259 --> 00:20:45,769
office have lots of different

507
00:20:48,580 --> 00:20:47,269
backgrounds different kinds of

508
00:20:52,149 --> 00:20:48,590
engineering

509
00:20:53,950 --> 00:20:52,159
sciences mathematics medicine lots of

510
00:20:55,390 --> 00:20:53,960
backgrounds astronauts can have many

511
00:20:57,250 --> 00:20:55,400
different kinds of backgrounds and

512
00:20:59,110 --> 00:20:57,260
there's no one background that's better

513
00:21:01,899 --> 00:20:59,120

than the others the important thing is

514
00:21:03,490 --> 00:21:01,909
what you really like so follow your

515
00:21:05,890 --> 00:21:03,500
passion find those things that really

516
00:21:08,289 --> 00:21:05,900
interest you and go learn more about it

517
00:21:10,360 --> 00:21:08,299
and study hard and be one of the best

518
00:21:12,370 --> 00:21:10,370
because that's what we're looking for is

519
00:21:14,890 --> 00:21:12,380
people that stand out as as some of the

520
00:21:17,110 --> 00:21:14,900
best at what they do and they're the

521
00:21:19,029 --> 00:21:17,120
best at it if they really love it right

522
00:21:21,970 --> 00:21:19,039
here just as much as they love it up

523
00:21:23,889 --> 00:21:21,980
here have fun and be sure to thank your

524
00:21:25,990 --> 00:21:23,899
teachers and your mentors oh yes there

525
00:21:28,120 --> 00:21:26,000
there there for you to help you learn

526
00:21:30,490 --> 00:21:28,130
all those wonderful things and you have

527
00:21:32,560 --> 00:21:30,500
it here explore to explore Mike Fossum

528
00:21:37,690 --> 00:21:32,570
it's always a pleasure to have you any

529
00:21:40,240 --> 00:21:37,700
other questions before we cut out great