1
00:00:10,150 --> 00:00:08,150
introducing the expedition 4041 flight

2
00:00:12,549 --> 00:00:10,160
crew

3
00:00:15,190 --> 00:00:12,559
nasa astronaut reed wiseman is a naval

4
00:00:17,189 --> 00:00:15,200
aviator and test pilot he has a master's

5
00:00:18,790 --> 00:00:17,199
degree in systems engineering from johns

6
00:00:21,029 --> 00:00:18,800
hopkins university

7
00:00:22,550 --> 00:00:21,039
in 2009 while serving as a lieutenant

8
00:00:24,790 --> 00:00:22,560
commander on the aircraft carrier

9
00:00:26,950 --> 00:00:24,800
eisenhower reed was selected by nasa to

10
00:00:28,870 --> 00:00:26,960
become an astronaut candidate in his

11
00:00:31,589 --> 00:00:28,880
spare time reeves enjoys golf

12
00:00:33,750 --> 00:00:31,599
woodworking and running

13
00:00:35,990 --> 00:00:33,760

max soraya returns to the international

14
00:00:38,790 --> 00:00:36,000
space station a graduate from the kasha

15
00:00:40,389 --> 00:00:38,800
air force pilot school in 1994 max

16
00:00:43,190 --> 00:00:40,399
received a law degree from the russian

17
00:00:44,709 --> 00:00:43,200
academy of civil service in 2007 while

18
00:00:47,430 --> 00:00:44,719
serving as a flight engineer during

19
00:00:50,150 --> 00:00:47,440
expedition 22 he performed a five-hour

20
00:00:52,389 --> 00:00:50,160
44-minute spacewalk max is a qualified

21
00:00:54,310 --> 00:00:52,399
scuba diver

22
00:00:56,150 --> 00:00:54,320
from germany first-time space flier

23
00:00:57,670 --> 00:00:56,160
alexander gerst received a master's

24
00:00:59,910 --> 00:00:57,680
degree in earth sciences from the

25
00:01:02,790 --> 00:00:59,920
victoria university in wellington new

26
00:01:04,950 --> 00:01:02,800
zealand in 2010 alex graduated with a

27
00:01:06,469 --> 00:01:04,960
doctorate in natural sciences at the

28
00:01:08,789 --> 00:01:06,479
institute of geophysics from the

29
00:01:11,990 --> 00:01:08,799
university of hamburg he was selected as

30
00:01:15,429 --> 00:01:12,000
an esa astronaut in may 2009 alex is a

31
00:01:17,590 --> 00:01:15,439
skydiver and a snowboarder

32
00:01:19,270 --> 00:01:17,600
reed max and alexander are due to launch

33
00:01:25,990 --> 00:01:19,280
to the international space station

34
00:01:29,350 --> 00:01:27,670
afternoon thanks so much for joining us

35
00:01:30,870 --> 00:01:29,360
for a special briefing with one of our

36
00:01:32,550 --> 00:01:30,880
next crews headed to the international

37
00:01:34,550 --> 00:01:32,560
space station gentlemen thanks so much

38
00:01:36,469 --> 00:01:34,560

for joining us absolutely uh that was

39
00:01:37,670 --> 00:01:36,479
quite a video gave us quite an overview

40
00:01:39,830 --> 00:01:37,680
but uh we still want to talk to you a

41
00:01:41,830 --> 00:01:39,840
little bit and learn a bit about each of

42
00:01:43,670 --> 00:01:41,840
you and read we'll start with you

43
00:01:46,950 --> 00:01:43,680
you and alex are both relatively new to

44
00:01:48,469 --> 00:01:46,960
nasa he joined the corps in 2009

45
00:01:50,230 --> 00:01:48,479
got a great background multiple

46
00:01:52,149 --> 00:01:50,240
engineering degrees commander in the

47
00:01:54,069 --> 00:01:52,159
navy and served as a test pilot in

48
00:01:55,109 --> 00:01:54,079
several deployments can you tell us a

49
00:01:56,870 --> 00:01:55,119
little bit about the training that

50
00:01:57,990 --> 00:01:56,880
you've done here both as a ask can and

51
00:02:00,950 --> 00:01:58,000
then especially once you've got that

52
00:02:02,630 --> 00:02:00,960
mission assignment absolutely so the

53
00:02:04,069 --> 00:02:02,640
the the ascan year is the astronaut

54
00:02:05,990 --> 00:02:04,079
candidate years it's basically a

55
00:02:08,389 --> 00:02:06,000
two-year flow and we're really focused

56
00:02:10,869 --> 00:02:08,399
in just getting our feet wet into

57
00:02:13,030 --> 00:02:10,879
life at nasa learning the core

58
00:02:14,550 --> 00:02:13,040
systems on the space station certainly

59
00:02:15,910 --> 00:02:14,560
learning russian language so that we can

60
00:02:17,190 --> 00:02:15,920
communicate better with our russian

61
00:02:19,670 --> 00:02:17,200
colleagues

62
00:02:23,110 --> 00:02:19,680
learning the very basics of robotics

63
00:02:26,150 --> 00:02:23,120

operating the canadarm2 and then we kind

64
00:02:29,589 --> 00:02:26,160
of conclude by focusing on spacewalking

65
00:02:31,430 --> 00:02:29,599
skills very basic in the pool and that

66
00:02:33,430 --> 00:02:31,440
that small amount of information really

67
00:02:34,949 --> 00:02:33,440
does take that full two years and we

68
00:02:36,390 --> 00:02:34,959
also did a little bit of geology work

69
00:02:38,790 --> 00:02:36,400
which was some of my

70
00:02:41,910 --> 00:02:38,800
uh more favorite activities and then as

71
00:02:44,390 --> 00:02:41,920
i transitioned into the assigned

72
00:02:46,949 --> 00:02:44,400
training flow it really is this the same

73
00:02:48,550 --> 00:02:46,959
core subjects but we just take it to the

74
00:02:50,710 --> 00:02:48,560
next level so you're you're honing the

75
00:02:52,630 --> 00:02:50,720
skills on space station you're trying to

76
00:02:54,229 --> 00:02:52,640
master working in the spacesuit of

77
00:02:55,910 --> 00:02:54,239
course we haven't done a spacewalk but

78
00:02:57,270 --> 00:02:55,920
you're trying to learn as much as you

79
00:02:59,030 --> 00:02:57,280
possibly can so that if that event

80
00:03:00,790 --> 00:02:59,040
occurs you're ready to go and then

81
00:03:03,430 --> 00:03:00,800
you're you're finishing up your robotic

82
00:03:05,589 --> 00:03:03,440
arm skills uh getting the russian really

83
00:03:07,589 --> 00:03:05,599
squared away and there's no better way

84
00:03:09,750 --> 00:03:07,599
to learn russian than to live in russia

85
00:03:11,110 --> 00:03:09,760
and work with max and and learn that way

86
00:03:12,470 --> 00:03:11,120
so that's really

87
00:03:13,589 --> 00:03:12,480
about the last four and a half years of

88
00:03:15,830 --> 00:03:13,599

my life

89
00:03:17,509 --> 00:03:15,840
wrapped up in a few words probably seems

90
00:03:19,030 --> 00:03:17,519
like a blur at this point right it seems

91
00:03:20,869 --> 00:03:19,040
like a blur it's amazing how quickly

92
00:03:22,309 --> 00:03:20,879
it's gone and i'm just kind of curious

93
00:03:24,309 --> 00:03:22,319
relative to the other training you've

94
00:03:26,309 --> 00:03:24,319
done like the test pilot aviation and

95
00:03:27,670 --> 00:03:26,319
engineering where would you know how

96
00:03:29,670 --> 00:03:27,680
would you compare this has it been more

97
00:03:31,670 --> 00:03:29,680
intense or just completely different it

98
00:03:34,149 --> 00:03:31,680
it's it is completely different really

99
00:03:36,869 --> 00:03:34,159
uh there are days that are are much much

100
00:03:38,710 --> 00:03:36,879
much more intense but overall it's it's

101
00:03:40,550 --> 00:03:38,720
fairly similar intensity the big

102
00:03:42,229 --> 00:03:40,560
difference here is when we launch into

103
00:03:45,830 --> 00:03:42,239
space we basically have to have this

104
00:03:47,509 --> 00:03:45,840
incredibly broad skill set and uh and my

105
00:03:49,110 --> 00:03:47,519
previous professions were we're more

106
00:03:51,030 --> 00:03:49,120
focused on individual missions let's

107
00:03:53,190 --> 00:03:51,040
train up for this we go fly this train

108
00:03:54,869 --> 00:03:53,200
for the next go fly that and for for us

109
00:03:56,309 --> 00:03:54,879
we we kind of need to have our hands on

110
00:03:58,710 --> 00:03:56,319
everything because once we launch it's

111
00:03:59,990 --> 00:03:58,720
six months and it's it's all on us so

112
00:04:01,830 --> 00:04:00,000
speaking of this would be the first

113
00:04:03,990 --> 00:04:01,840

space flight for the two of you so

114
00:04:05,350 --> 00:04:04,000
rookies training together and i think

115
00:04:07,190 --> 00:04:05,360
that might be kind of special to have

116
00:04:09,030 --> 00:04:07,200
two rookies preparing together how did

117
00:04:11,589 --> 00:04:09,040
that work out did you guys study a lot

118
00:04:13,509 --> 00:04:11,599
together and or rely on past veterans to

119
00:04:15,589 --> 00:04:13,519
help you through how did that certainly

120
00:04:17,030 --> 00:04:15,599
for our time in russia

121
00:04:19,030 --> 00:04:17,040
uh where we generally don't have our

122
00:04:21,030 --> 00:04:19,040
families there there's been many many

123
00:04:22,870 --> 00:04:21,040
nights where alex and i have spent

124
00:04:24,790 --> 00:04:22,880
especially studying the soyuz

125
00:04:26,230 --> 00:04:24,800
our launch and entry vehicle

126
00:04:27,990 --> 00:04:26,240
for the space station

127
00:04:30,150 --> 00:04:28,000
we're together basically all the time

128
00:04:31,830 --> 00:04:30,160
every day we're together in our classes

129
00:04:33,590 --> 00:04:31,840
i don't know if you want to expand or or

130
00:04:35,670 --> 00:04:33,600
not i guess it really depends on on

131
00:04:37,510 --> 00:04:35,680
which training you do where it's really

132
00:04:39,749 --> 00:04:37,520
beneficial to work together a lot like

133
00:04:42,550 --> 00:04:39,759
for the preparation for the nbl runs the

134
00:04:45,350 --> 00:04:42,560
the training runs in the space suit in

135
00:04:47,110 --> 00:04:45,360
in the dive tank that we have here uh

136
00:04:48,710 --> 00:04:47,120
that's it's very important that you

137
00:04:50,310 --> 00:04:48,720
prepare together because you need the

138
00:04:51,830 --> 00:04:50,320

same mental picture of the tasks that

139
00:04:54,550 --> 00:04:51,840
lie ahead and

140
00:04:56,150 --> 00:04:54,560
so you get the timeline uh in your brain

141
00:04:57,990 --> 00:04:56,160
basically because it's a it's a lot to

142
00:05:00,550 --> 00:04:58,000
remember there you have a six hour

143
00:05:02,790 --> 00:05:00,560
timeline basically sometimes down to

144
00:05:05,749 --> 00:05:02,800
single like hand motions that you really

145
00:05:07,110 --> 00:05:05,759
have to memorize and uh and and also in

146
00:05:08,390 --> 00:05:07,120
in training you

147
00:05:10,070 --> 00:05:08,400
you actually do this training by

148
00:05:11,430 --> 00:05:10,080
developing those timelines like you're

149
00:05:13,189 --> 00:05:11,440
not just given

150
00:05:15,670 --> 00:05:13,199
them but you actually need to develop

151
00:05:19,270 --> 00:05:15,680
them in order to really think about the

152
00:05:19,990 --> 00:05:19,280
intricacies of doing a space walk

153
00:05:21,350 --> 00:05:20,000
and

154
00:05:23,510 --> 00:05:21,360
that that is really

155
00:05:25,830 --> 00:05:23,520
the time where you spend hours and hours

156
00:05:27,029 --> 00:05:25,840
together really preparing for the day

157
00:05:28,629 --> 00:05:27,039
of the run

158
00:05:30,230 --> 00:05:28,639
yeah so you probably all three know each

159
00:05:32,070 --> 00:05:30,240
other very well at this point maybe a

160
00:05:34,310 --> 00:05:32,080
little too well

161
00:05:35,510 --> 00:05:34,320
speaking of max how is it for you having

162
00:05:37,749 --> 00:05:35,520
you know this won't be your first

163
00:05:40,390 --> 00:05:37,759

mission for your veteran and having two

164
00:05:42,230 --> 00:05:40,400
rookies on the flight how's that then

165
00:05:43,110 --> 00:05:42,240
you wanna be on some in english or

166
00:06:15,830 --> 00:05:43,120
russian

167
00:06:15,840 --> 00:06:29,830
um

168
00:06:34,469 --> 00:06:31,510
well trained we've gone through a lot

169
00:06:37,110 --> 00:06:34,479
together both as far as research and

170
00:06:39,110 --> 00:06:37,120
science training and as far as survival

171
00:06:41,990 --> 00:06:39,120
training training is concerned

172
00:06:45,590 --> 00:06:42,000
uh i am absolutely certain

173
00:06:46,550 --> 00:06:45,600
of them having my back

174
00:06:48,550 --> 00:06:46,560
hi

175
00:06:49,990 --> 00:06:48,560
um it's a great way to start the mission

176
00:06:51,430 --> 00:06:50,000
well we have a packed room here at the

177
00:06:52,710 --> 00:06:51,440
johnson space center so i'd like to jump

178
00:06:54,710 --> 00:06:52,720
in with some questions so we'll start

179
00:06:55,749 --> 00:06:54,720
with media that are here at johnson if

180
00:06:56,950 --> 00:06:55,759
you can

181
00:06:59,510 --> 00:06:56,960
give us a minute just to make sure we

182
00:07:01,990 --> 00:06:59,520
have our cameras in place and then state

183
00:07:03,909 --> 00:07:02,000
your name and affiliation and i believe

184
00:07:05,909 --> 00:07:03,919
we'll start over here first

185
00:07:08,550 --> 00:07:05,919
gear down with the german space agency

186
00:07:10,230 --> 00:07:08,560
and space expo association uh question

187
00:07:12,230 --> 00:07:10,240
for alex you almost completed your

188
00:07:14,550 --> 00:07:12,240

training for the mission what major

189
00:07:16,150 --> 00:07:14,560
milestones are coming up the next two

190
00:07:18,629 --> 00:07:16,160
months until launch could you please

191
00:07:19,909 --> 00:07:18,639
answer in german and in english

192
00:07:21,670 --> 00:07:19,919
all right which one do you want to hear

193
00:07:28,230 --> 00:07:21,680
first

194
00:07:28,240 --> 00:08:38,469
imprint

195
00:08:38,479 --> 00:09:05,829
um

196
00:09:05,839 --> 00:09:10,550
do you mind sharing that for us

197
00:09:16,150 --> 00:09:13,269
um so as a crew that's flying to the

198
00:09:19,030 --> 00:09:16,160
international space station uh you

199
00:09:21,430 --> 00:09:19,040
principally have to be prepared

200
00:09:23,829 --> 00:09:21,440
completely prepared with all the exams

201
00:09:26,389 --> 00:09:23,839
done and everything before your flight

202
00:09:28,310 --> 00:09:26,399
about half a year before you fly and

203
00:09:31,030 --> 00:09:28,320
that's the time when you're a backup

204
00:09:33,030 --> 00:09:31,040
crew for the crew that flies half a year

205
00:09:35,590 --> 00:09:33,040
before you fly into space

206
00:09:38,070 --> 00:09:35,600
and that means all the major milestones

207
00:09:40,310 --> 00:09:38,080
you have to go through until that point

208
00:09:41,590 --> 00:09:40,320
so between the backup start and the

209
00:09:44,230 --> 00:09:41,600
prime start

210
00:09:47,350 --> 00:09:44,240
which for us is the 28th of may

211
00:09:49,030 --> 00:09:47,360
we mainly train payloads experiments

212
00:09:52,310 --> 00:09:49,040
that we would not have seen on space

213
00:09:54,470 --> 00:09:52,320

station if we had flown as a backup crew

214
00:09:56,790 --> 00:09:54,480
then we collect baseline data for

215
00:09:58,470 --> 00:09:56,800
scientific experiments

216
00:10:01,110 --> 00:09:58,480
that the scientists need to compare for

217
00:10:03,269 --> 00:10:01,120
the data that we collect in space

218
00:10:05,110 --> 00:10:03,279
or after we return

219
00:10:06,710 --> 00:10:05,120
and that's mainly what fills our days

220
00:10:08,630 --> 00:10:06,720
right now of course there's also last

221
00:10:10,389 --> 00:10:08,640
minute training for tasks that came up

222
00:10:11,910 --> 00:10:10,399
that we will do on orbit we train these

223
00:10:14,710 --> 00:10:11,920
in detail

224
00:10:16,790 --> 00:10:14,720
like exchanging a certain part of space

225
00:10:18,870 --> 00:10:16,800
station that i haven't trained on so far

226
00:10:20,550 --> 00:10:18,880
but that just came up because

227
00:10:22,710 --> 00:10:20,560
it might be a hardware that needs to be

228
00:10:24,470 --> 00:10:22,720
changed out so that's kind of last

229
00:10:26,470 --> 00:10:24,480
minute training that we do now and the

230
00:10:28,630 --> 00:10:26,480
only remaining milestone is the

231
00:10:32,310 --> 00:10:28,640
repetition of those exams

232
00:10:35,350 --> 00:10:32,320
that we did also for our a backup start

233
00:10:36,870 --> 00:10:35,360
uh which is in in russia it's the ceo's

234
00:10:39,990 --> 00:10:36,880
exams and the russian part of the

235
00:10:42,389 --> 00:10:40,000
stations so it's it's a two-day big exam

236
00:10:45,590 --> 00:10:42,399
uh that we have to pass in order to be

237
00:10:47,590 --> 00:10:45,600
qualified uh to fly to space uh in the

238
00:10:49,750 --> 00:10:47,600

soyuz uh capsule

239
00:10:51,750 --> 00:10:49,760
and uh that's about the only major

240
00:10:53,269 --> 00:10:51,760
milestone that remains and then and it's

241
00:10:55,670 --> 00:10:53,279
already uh going to baikonur and

242
00:10:57,350 --> 00:10:55,680
preparing for for the launch

243
00:10:59,829 --> 00:10:57,360
okay thanks alex i think we had a

244
00:11:01,910 --> 00:10:59,839
question here gina gina sarah abc news

245
00:11:03,990 --> 00:11:01,920
for alexander and reid you're both

246
00:11:06,630 --> 00:11:04,000
active on social media and i'm just

247
00:11:08,630 --> 00:11:06,640
curious how you will use that on orbit

248
00:11:10,470 --> 00:11:08,640
to share your experiences with your

249
00:11:12,550 --> 00:11:10,480
followers

250
00:11:14,389 --> 00:11:12,560
so

251
00:11:16,389 --> 00:11:14,399
we're both rookies and i think that that

252
00:11:18,470 --> 00:11:16,399
adds just a little

253
00:11:20,550 --> 00:11:18,480
touch of maybe not passion but just a

254
00:11:21,670 --> 00:11:20,560
little unique perspective uh we have not

255
00:11:24,069 --> 00:11:21,680
flown to the space state we haven't even

256
00:11:27,350 --> 00:11:24,079
flown into space and so every event for

257
00:11:30,470 --> 00:11:27,360
us is is kind of new and i think if if i

258
00:11:31,590 --> 00:11:30,480
can share that on twitter that almost uh

259
00:11:33,829 --> 00:11:31,600
childish

260
00:11:35,829 --> 00:11:33,839
uh enthusiasm for the mission that's

261
00:11:38,470 --> 00:11:35,839
really something that i look forward to

262
00:11:40,230 --> 00:11:38,480
all the unique events that i have well i

263
00:11:43,030 --> 00:11:40,240

just opened my food and i have cheerios

264
00:11:44,550 --> 00:11:43,040
everywhere or you know this experiment

265
00:11:46,230 --> 00:11:44,560
went really well but this one was just

266
00:11:47,990 --> 00:11:46,240
terrible and here's why if i can get

267
00:11:50,069 --> 00:11:48,000
that across that would be great and then

268
00:11:53,030 --> 00:11:50,079
another uh thing that i would love to do

269
00:11:56,069 --> 00:11:53,040
on twitter is try to get the folks that

270
00:11:58,870 --> 00:11:56,079
are are following us involved just a

271
00:12:01,030 --> 00:11:58,880
little bit and so i'll try to initiate

272
00:12:03,030 --> 00:12:01,040
it from space this summer but maybe just

273
00:12:04,870 --> 00:12:03,040
a come out and wave campaign where if

274
00:12:07,430 --> 00:12:04,880
maybe a parent can take a child out and

275
00:12:08,870 --> 00:12:07,440
just watch the iss fly overhead and wave

276
00:12:11,350 --> 00:12:08,880
and then tweet about it

277
00:12:12,790 --> 00:12:11,360
and uh i'll try to kind of build a map

278
00:12:13,670 --> 00:12:12,800
of where all those tweets came from and

279
00:12:15,110 --> 00:12:13,680
see

280
00:12:16,710 --> 00:12:15,120
who around the world is coming out and

281
00:12:18,150 --> 00:12:16,720
watching and try to get more people

282
00:12:20,389 --> 00:12:18,160
involved that way and spark some

283
00:12:22,790 --> 00:12:20,399
imagination

284
00:12:25,030 --> 00:12:22,800
yeah i can i can just uh totally agree

285
00:12:27,269 --> 00:12:25,040
with reid here i think he hit the most

286
00:12:29,509 --> 00:12:27,279
important point is that we

287
00:12:31,829 --> 00:12:29,519
both of us we haven't flown so we have

288
00:12:34,310 --> 00:12:31,839

been to space as many times as you guys

289
00:12:35,829 --> 00:12:34,320
have been and to me it's it's an

290
00:12:38,629 --> 00:12:35,839
important

291
00:12:40,470 --> 00:12:38,639
thing to share uh how it is as as a

292
00:12:42,069 --> 00:12:40,480
person who's never been to space to do

293
00:12:43,750 --> 00:12:42,079
all this for the very first time to see

294
00:12:45,829 --> 00:12:43,760
all this for the very first time and

295
00:12:47,829 --> 00:12:45,839
that is a perspective that many people

296
00:12:50,710 --> 00:12:47,839
can relate to because for them it would

297
00:12:53,030 --> 00:12:50,720
also be the very first time and also

298
00:12:55,350 --> 00:12:53,040
for me it's a great way to conserve

299
00:12:58,150 --> 00:12:55,360
all this because i don't have a time

300
00:13:00,150 --> 00:12:58,160
really to write a diary so um

301
00:13:02,949 --> 00:13:00,160
kind of being on on twitter or writing a

302
00:13:03,910 --> 00:13:02,959
blog kind of forces me to conserve some

303
00:13:06,870 --> 00:13:03,920
of that

304
00:13:09,269 --> 00:13:06,880
that those memories that otherwise might

305
00:13:09,990 --> 00:13:09,279
just fade away after a while so

306
00:13:12,150 --> 00:13:10,000
uh

307
00:13:14,230 --> 00:13:12,160
yeah to me it really helps and it's of

308
00:13:16,790 --> 00:13:14,240
course a lot of fun to see the reactions

309
00:13:18,550 --> 00:13:16,800
of people because some some questions

310
00:13:19,829 --> 00:13:18,560
come up that i could have never thought

311
00:13:21,670 --> 00:13:19,839
of and

312
00:13:23,269 --> 00:13:21,680
it was really funny sometimes

313
00:13:24,870 --> 00:13:23,279

to see that

314
00:13:26,710 --> 00:13:24,880
so you guys both kind of touched on all

315
00:13:28,389 --> 00:13:26,720
the new experiences and new training i'm

316
00:13:29,910 --> 00:13:28,399
just kind of curious is there any

317
00:13:32,389 --> 00:13:29,920
particular training that stands out that

318
00:13:33,750 --> 00:13:32,399
was really surprising or really more

319
00:13:35,030 --> 00:13:33,760
exciting or dramatic or different than

320
00:13:38,949 --> 00:13:35,040
you expected

321
00:13:41,910 --> 00:13:40,710
well as always any work that we do in

322
00:13:43,350 --> 00:13:41,920
the neutral buoyancy lab in the

323
00:13:45,750 --> 00:13:43,360
spacesuit is

324
00:13:47,590 --> 00:13:45,760
from day one that shocks me as to how

325
00:13:50,230 --> 00:13:47,600
physically and mentally demanding that

326
00:13:51,189 --> 00:13:50,240
is and i used to think my old job was

327
00:13:53,189 --> 00:13:51,199
very

328
00:13:55,269 --> 00:13:53,199
demanding in just

329
00:13:57,670 --> 00:13:55,279
pace and you just your brain is always

330
00:13:59,910 --> 00:13:57,680
working but you put on a spacesuit and

331
00:14:01,030 --> 00:13:59,920
put yourself underwater for six hours

332
00:14:03,110 --> 00:14:01,040
and

333
00:14:04,710 --> 00:14:03,120
you're just exhausted in the end in all

334
00:14:07,030 --> 00:14:04,720
ways so that that always stands out in

335
00:14:08,550 --> 00:14:07,040
my mind is people just don't really

336
00:14:09,829 --> 00:14:08,560
grasp it's impossible to grasp how

337
00:14:12,629 --> 00:14:09,839
difficult that is until you go into it

338
00:14:15,590 --> 00:14:12,639

right so alex

339
00:14:17,509 --> 00:14:15,600
again agree i i remember on our last run

340
00:14:19,189 --> 00:14:17,519
that we we did in the spacesuit it was

341
00:14:20,870 --> 00:14:19,199
last friday and in the morning when we

342
00:14:23,430 --> 00:14:20,880
got out of the car at six o'clock i

343
00:14:25,189 --> 00:14:23,440
tweeted a picture of the the dark

344
00:14:27,269 --> 00:14:25,199
parking lot our cars were the only ones

345
00:14:29,910 --> 00:14:27,279
there we were preparing to get in there

346
00:14:31,350 --> 00:14:29,920
and that's and that's always a kind of a

347
00:14:33,750 --> 00:14:31,360
hard time in training because you know

348
00:14:35,670 --> 00:14:33,760
you have this big task ahead like in

349
00:14:37,750 --> 00:14:35,680
total you're like eight hours total

350
00:14:39,670 --> 00:14:37,760
concentration you cannot do

351
00:14:41,189 --> 00:14:39,680
any break and it's physically demanding

352
00:14:42,790 --> 00:14:41,199
you're in the suit you work against the

353
00:14:44,710 --> 00:14:42,800
pressure of that suit all the time that

354
00:14:46,550 --> 00:14:44,720
wants to return you into a neutral

355
00:14:48,230 --> 00:14:46,560
position so every time you squeeze you

356
00:14:50,470 --> 00:14:48,240
grab a handhold it's like squeezing a

357
00:14:52,230 --> 00:14:50,480
tennis ball and after like seven hours

358
00:14:53,910 --> 00:14:52,240
that really adds up to i mean you know

359
00:14:56,550 --> 00:14:53,920
what you what you've done and it's

360
00:14:58,150 --> 00:14:56,560
amazing how that transforms like

361
00:14:59,430 --> 00:14:58,160
the anticipation of the hard work but

362
00:15:01,350 --> 00:14:59,440
once you're in the spacesuit it just

363
00:15:04,069 --> 00:15:01,360

fits like a glove and it's like you feel

364
00:15:05,990 --> 00:15:04,079
like you can do this and you you imagine

365
00:15:07,910 --> 00:15:06,000
how would i do this if i was in space

366
00:15:09,750 --> 00:15:07,920
and suddenly it that's a lot of fun to

367
00:15:11,189 --> 00:15:09,760
train that and it's a it's a big reward

368
00:15:13,910 --> 00:15:11,199
when you come out at the end of the day

369
00:15:16,069 --> 00:15:13,920
and you you know what you've done and

370
00:15:18,310 --> 00:15:16,079
that's that's the training that that's

371
00:15:19,829 --> 00:15:18,320
amazing can i just clarify one spacesuit

372
00:15:21,110 --> 00:15:19,839
thing though absolutely i hear it all

373
00:15:23,269 --> 00:15:21,120
the time

374
00:15:24,870 --> 00:15:23,279
you can't itch your nose yeah but you

375
00:15:26,710 --> 00:15:24,880
can itch your nose because we have a

376
00:15:28,470 --> 00:15:26,720
little valsalva so you can scratch your

377
00:15:29,430 --> 00:15:28,480
nose the thing you can't do is itch your

378
00:15:31,670 --> 00:15:29,440
eye

379
00:15:33,430 --> 00:15:31,680
so if you you know you do that so many

380
00:15:35,110 --> 00:15:33,440
times during the day but

381
00:15:37,350 --> 00:15:35,120
you can't do it and i know on friday i

382
00:15:39,749 --> 00:15:37,360
was just like ah it's not my nose it's

383
00:15:41,030 --> 00:15:39,759
but it is the universe sorry sorry if we

384
00:15:44,150 --> 00:15:41,040
digress

385
00:15:45,910 --> 00:15:44,160
it's a universal physical world

386
00:15:47,509 --> 00:15:45,920
it's a universal physical law that

387
00:15:49,590 --> 00:15:47,519
whenever you're in the spacesuit and you

388
00:15:52,310 --> 00:15:49,600

put your helmet on that moment your nose

389
00:15:54,949 --> 00:15:52,320
starts itching gotcha it figures murphy

390
00:15:56,629 --> 00:15:54,959
we all know him um okay and robert will

391
00:15:59,990 --> 00:15:56,639
take it over here

392
00:16:01,509 --> 00:16:00,000
hi robert with collectspace.com for reid

393
00:16:03,269 --> 00:16:01,519
you recently tweeted at least in the

394
00:16:05,509 --> 00:16:03,279
last couple of weeks that you were

395
00:16:07,430 --> 00:16:05,519
adding a run around the world on the

396
00:16:09,350 --> 00:16:07,440
treadmill to your on-orbit

397
00:16:11,269 --> 00:16:09,360
bucket list certainly so i want to know

398
00:16:12,550 --> 00:16:11,279
what else is on that on orbit bucket

399
00:16:14,949 --> 00:16:12,560
list

400
00:16:17,910 --> 00:16:14,959
i have to still go back and parse out

401
00:16:20,310 --> 00:16:17,920
the amazing responses from that single

402
00:16:21,910 --> 00:16:20,320
single tweet i basically asked twitter

403
00:16:23,990 --> 00:16:21,920
followers what would you put on your own

404
00:16:26,069 --> 00:16:24,000
orbit bucket list after mike hopkins did

405
00:16:28,629 --> 00:16:26,079
his run around the world a few weeks ago

406
00:16:31,030 --> 00:16:28,639
so certainly run around the world is on

407
00:16:32,550 --> 00:16:31,040
there i have to look out the window i

408
00:16:34,790 --> 00:16:32,560
really want to take photographs of the

409
00:16:38,470 --> 00:16:34,800
places that i've lived that's kind of

410
00:16:40,310 --> 00:16:38,480
just a personal ambition and then uh

411
00:16:41,910 --> 00:16:40,320
really i'm i'm finalizing this i do need

412
00:16:43,350 --> 00:16:41,920
to do some work on it but just sharing

413
00:16:44,949 --> 00:16:43,360

this experience is number one on the

414
00:16:46,710 --> 00:16:44,959
bucket list if i can get that done

415
00:16:49,350 --> 00:16:46,720
success

416
00:16:52,629 --> 00:16:49,360
okay i believe we have another question

417
00:16:54,550 --> 00:16:52,639
jim oberg with nbc hello and uh it

418
00:16:58,230 --> 00:16:54,560
touches your question about

419
00:17:01,350 --> 00:16:58,240
two new guys and the veteran going up uh

420
00:17:03,670 --> 00:17:01,360
in the spare time after midnight

421
00:17:04,870 --> 00:17:03,680
are there any occasions when and max you

422
00:17:06,549 --> 00:17:04,880
can answer too

423
00:17:08,309 --> 00:17:06,559
when he will tell you something the

424
00:17:10,069 --> 00:17:08,319
teachers won't tell you but let me tell

425
00:17:12,549 --> 00:17:10,079
you how it really is

426
00:17:14,789 --> 00:17:12,559
and here's what you have to you they

427
00:17:16,949 --> 00:17:14,799
won't teach you this but i will any

428
00:17:19,510 --> 00:17:16,959
secrets of your experience

429
00:17:21,110 --> 00:17:19,520
you're blogging anything else that

430
00:17:22,949 --> 00:17:21,120
you've shared with them that they that

431
00:17:26,150 --> 00:17:22,959
they can

432
00:17:26,160 --> 00:17:28,390
well

433
00:17:33,350 --> 00:17:30,950
i'll gladly start with just a

434
00:17:34,630 --> 00:17:33,360
he he told us this one

435
00:17:37,029 --> 00:17:34,640
last week

436
00:17:39,029 --> 00:17:37,039
when we first get on board we were over

437
00:17:41,270 --> 00:17:39,039
in the space station mock-up and we were

438
00:17:43,110 --> 00:17:41,280

going through some class with a bag and

439
00:17:44,310 --> 00:17:43,120
you open it up and inside are all these

440
00:17:46,549 --> 00:17:44,320
little parts

441
00:17:48,549 --> 00:17:46,559
and max just chuckled and he said when

442
00:17:50,390 --> 00:17:48,559
you do this in space

443
00:17:51,750 --> 00:17:50,400
take this bag into your crew quarters if

444
00:17:54,070 --> 00:17:51,760
you do it in the first few weeks where

445
00:17:56,630 --> 00:17:54,080
it's real small and open it up in there

446
00:17:58,630 --> 00:17:56,640
so that when all this stuff lies out and

447
00:18:00,470 --> 00:17:58,640
it's floating around everywhere you're

448
00:18:02,070 --> 00:18:00,480
in a small little room and you can grab

449
00:18:04,390 --> 00:18:02,080
the parts because if you open that up in

450
00:18:06,230 --> 00:18:04,400
the u.s lab it's going to take you six

451
00:18:08,789 --> 00:18:06,240
hours to go collect all that and put it

452
00:18:10,710 --> 00:18:08,799
back in the bag so the the things that

453
00:18:13,190 --> 00:18:10,720
we gain from max and from the other

454
00:18:15,029 --> 00:18:13,200
veterans are the things that are

455
00:18:16,470 --> 00:18:15,039
impossible to teach from a 1g

456
00:18:19,270 --> 00:18:16,480
perspective so

457
00:18:21,190 --> 00:18:19,280
how do you how do you just live in

458
00:18:23,350 --> 00:18:21,200
microgravity and and he's done a great

459
00:18:26,310 --> 00:18:23,360
job teaching us that

460
00:18:27,909 --> 00:18:26,320
like the how to fly at the beginning

461
00:18:31,669 --> 00:18:27,919
maybe you can you can tell that again

462
00:18:35,750 --> 00:18:31,679
though because uh no it's okay

463
00:18:39,830 --> 00:18:37,350

he said he basically said when you when

464
00:18:41,350 --> 00:18:39,840
you uh applied to space the first time

465
00:18:43,669 --> 00:18:41,360
uh people tend to

466
00:18:44,950 --> 00:18:43,679
to float with their kind of legs a bit

467
00:18:48,630 --> 00:18:44,960
spread and that

468
00:18:50,710 --> 00:18:48,640
just for stabilization and that uh

469
00:18:51,909 --> 00:18:50,720
sometimes leads to kind of ripping down

470
00:18:53,830 --> 00:18:51,919
things and the walls that you don't want

471
00:18:56,070 --> 00:18:53,840
to rip down so he kind of recommended

472
00:18:58,870 --> 00:18:56,080
take something like a book or and put it

473
00:19:00,549 --> 00:18:58,880
between your knees to force your force

474
00:19:02,549 --> 00:19:00,559
your legs to be closed because that way

475
00:19:05,350 --> 00:19:02,559
you have a slimmer profile

476
00:19:07,669 --> 00:19:05,360
uh floating along station that was i

477
00:19:09,110 --> 00:19:07,679
guess one of the ones that i

478
00:19:11,110 --> 00:19:09,120
tried to keep in mind when coming up

479
00:19:11,990 --> 00:19:11,120
their first time sounds useful

480
00:19:15,669 --> 00:19:12,000
thank you

481
00:19:17,590 --> 00:19:15,679
question in the back go ahead

482
00:19:19,190 --> 00:19:17,600
hi i'm stefan georgeovich and i'm an

483
00:19:21,510 --> 00:19:19,200
intern and a medical student here at

484
00:19:23,270 --> 00:19:21,520
nasa um speaking of floating what

485
00:19:25,029 --> 00:19:23,280
happens when you get stuck in a room how

486
00:19:27,909 --> 00:19:25,039
do you how do you get out of that stock

487
00:19:32,310 --> 00:19:29,990
oh you mean if you float in the in the

488
00:19:33,990 --> 00:19:32,320

middle of the room yeah you just stop

489
00:19:45,750 --> 00:19:34,000
what happens next

490
00:19:49,590 --> 00:19:47,430
as far as i understand this is because

491
00:19:51,350 --> 00:19:49,600
you can't move because you can't push

492
00:20:20,390 --> 00:19:51,360
off a surface and that's why you're

493
00:20:24,390 --> 00:20:21,990
i have had a very good chance in a very

494
00:20:27,110 --> 00:20:24,400
good experiment when node 3 arrived on

495
00:20:29,029 --> 00:20:27,120
station and all of the racks were not

496
00:20:31,669 --> 00:20:29,039
installed yet and there was lots of room

497
00:20:33,830 --> 00:20:31,679
there i asked all i caught off to place

498
00:20:35,590 --> 00:20:33,840
me in the middle of the module in a

499
00:20:46,950 --> 00:20:35,600
position where i couldn't grab onto

500
00:20:52,549 --> 00:20:50,390
and it is true that you can uh twist uh

501
00:20:54,230 --> 00:20:52,559
as much as a contortionist but you are

502
00:21:00,390 --> 00:20:54,240
not going to be able to move because

503
00:21:00,400 --> 00:21:12,630
vince

504
00:21:16,950 --> 00:21:15,029
but there is ventilation on station and

505
00:21:20,070 --> 00:21:16,960
it's a very good system so there's

506
00:21:27,549 --> 00:21:20,080
always a draft there's always some wind

507
00:21:34,230 --> 00:21:30,789
is a

508
00:21:36,310 --> 00:21:34,240
the same thing happens with things and

509
00:21:38,149 --> 00:21:36,320
that's going to continue to happen on

510
00:21:41,110 --> 00:21:38,159
station people lose their stuff

511
00:21:41,120 --> 00:21:51,110
tomorrow

512
00:21:54,390 --> 00:21:52,630
the only place where you can find

513
00:21:55,590 --> 00:21:54,400

something that you've lost

514
00:21:58,070 --> 00:21:55,600
is a

515
00:21:59,750 --> 00:21:58,080
ventilation opening because that's where

516
00:22:02,310 --> 00:21:59,760
things are going to wind up sooner or

517
00:22:06,230 --> 00:22:02,320
later the drafts the wind is going to

518
00:22:06,240 --> 00:22:10,710
uh

519
00:22:10,720 --> 00:22:24,149
experiment

520
00:22:24,159 --> 00:22:40,230
yes

521
00:22:45,270 --> 00:22:42,630
and i thought that if ever we have

522
00:22:47,510 --> 00:22:45,280
permanent human habitation in space this

523
00:22:49,669 --> 00:22:47,520
would be the best way to keep a person

524
00:22:52,230 --> 00:22:49,679
confined like in prison

525
00:22:53,430 --> 00:22:52,240
in the middle of a room where he or she

526
00:22:55,110 --> 00:22:53,440
cannot

527
00:23:06,149 --> 00:22:55,120
move anywhere

528
00:23:12,149 --> 00:23:09,110
not

529
00:23:15,750 --> 00:23:12,159
the only thing that's required uh is a

530
00:23:17,190 --> 00:23:15,760
large uh room a person and several fans

531
00:23:18,789 --> 00:23:17,200
blowing in different directions to keep

532
00:23:22,149 --> 00:23:18,799
the person in the middle of room that's

533
00:23:25,669 --> 00:23:22,159
scary trust me

534
00:23:29,430 --> 00:23:27,029
it was wonderful

535
00:23:30,630 --> 00:23:29,440
um um i believe one of our questions

536
00:23:31,909 --> 00:23:30,640
alluded to social media and i want to

537
00:23:33,510 --> 00:23:31,919
remind everybody that we are taking

538
00:23:35,110 --> 00:23:33,520

questions real time so we'll turn it

539
00:23:37,430 --> 00:23:35,120
over to amico who i believe has got some

540
00:23:39,029 --> 00:23:37,440
questions via twitter yeah so

541
00:23:40,950 --> 00:23:39,039
welcome guys you guys are both on

542
00:23:42,310 --> 00:23:40,960
twitter we talked to some about that so

543
00:23:44,070 --> 00:23:42,320
a lot of people on twitter are very

544
00:23:46,470 --> 00:23:44,080
excited to be able to ask you a couple

545
00:23:48,230 --> 00:23:46,480
questions one of them can you tell us of

546
00:23:49,830 --> 00:23:48,240
your primary mission objectives we saw

547
00:23:50,710 --> 00:23:49,840
some of that in the video in advance but

548
00:23:51,669 --> 00:23:50,720
maybe

549
00:23:53,750 --> 00:23:51,679
something that you know you're going to

550
00:23:55,750 --> 00:23:53,760
be focused on and more importantly as a

551
00:23:57,110 --> 00:23:55,760
team how do you intend to achieve these

552
00:23:59,029 --> 00:23:57,120
goals

553
00:24:00,549 --> 00:23:59,039
well sure the the iss as you know is

554
00:24:02,870 --> 00:24:00,559
this amazing

555
00:24:05,510 --> 00:24:02,880
microgravity laboratory that we have in

556
00:24:07,990 --> 00:24:05,520
space and we have transitioned almost

557
00:24:10,470 --> 00:24:08,000
completely into the utilization phase so

558
00:24:11,990 --> 00:24:10,480
for us it's a continuation of the main

559
00:24:14,630 --> 00:24:12,000
objectives which is

560
00:24:16,630 --> 00:24:14,640
how do humans live in microgravity how

561
00:24:18,310 --> 00:24:16,640
can we survive up there for six months

562
00:24:20,950 --> 00:24:18,320
or longer so that we can eventually make

563
00:24:23,269 --> 00:24:20,960

these longer missions out to an asteroid

564
00:24:24,950 --> 00:24:23,279
or to mars so our primary objective is

565
00:24:26,789 --> 00:24:24,960
going to really be in the the human

566
00:24:28,390 --> 00:24:26,799
sciences

567
00:24:30,390 --> 00:24:28,400
area to really continue to see what's

568
00:24:31,669 --> 00:24:30,400
going on with our skin our eyes our

569
00:24:34,230 --> 00:24:31,679
heart

570
00:24:37,110 --> 00:24:34,240
our bones our muscles so lots of good

571
00:24:39,750 --> 00:24:37,120
experiments in that and then also we

572
00:24:42,470 --> 00:24:39,760
have this extremely complex machine

573
00:24:44,149 --> 00:24:42,480
and this machine has to keep us alive so

574
00:24:46,230 --> 00:24:44,159
continue to stress these environmental

575
00:24:49,269 --> 00:24:46,240
control and life support systems our

576
00:24:51,510 --> 00:24:49,279
water supply oxygen co2 scrubbing we

577
00:24:53,190 --> 00:24:51,520
need to continue to hone these machines

578
00:24:55,510 --> 00:24:53,200
so that we can eventually

579
00:24:57,750 --> 00:24:55,520
push out further into the solar system

580
00:24:59,990 --> 00:24:57,760
and then also just

581
00:25:01,750 --> 00:25:00,000
with the station extending out to 2024

582
00:25:03,990 --> 00:25:01,760
now we're going to start you'll start to

583
00:25:05,990 --> 00:25:04,000
see an expedition 40 and 41 where we

584
00:25:08,070 --> 00:25:06,000
begin to lay a little of the groundwork

585
00:25:10,630 --> 00:25:08,080
for this extension we're going to move a

586
00:25:12,230 --> 00:25:10,640
module in 2015 so we're going to

587
00:25:13,750 --> 00:25:12,240
hopefully go outside and move some of

588
00:25:15,990 --> 00:25:13,760

the hardware around so that module can

589
00:25:18,630 --> 00:25:16,000
be moved and this is getting us ready

590
00:25:21,190 --> 00:25:18,640
for commercial crude vehicles uh

591
00:25:23,590 --> 00:25:21,200
bringing up astronauts using commercial

592
00:25:25,510 --> 00:25:23,600
vehicles in hopefully 2017 or 2018. so

593
00:25:27,190 --> 00:25:25,520
those are our primary

594
00:25:28,630 --> 00:25:27,200
mission objectives and how are we going

595
00:25:29,510 --> 00:25:28,640
to accomplish them

596
00:25:31,590 --> 00:25:29,520
we have

597
00:25:34,230 --> 00:25:31,600
steve swanson on expedition 40 and then

598
00:25:36,470 --> 00:25:34,240
butch wilmore will be coming up in 41

599
00:25:38,230 --> 00:25:36,480
both seasoned astronauts and

600
00:25:41,350 --> 00:25:38,240
our teamwork so far with all of them has

601
00:25:42,789 --> 00:25:41,360
been fantastic great team cohesion and

602
00:25:44,470 --> 00:25:42,799
working with the ground

603
00:25:46,149 --> 00:25:44,480
we'll get all the objectives done no

604
00:25:48,070 --> 00:25:46,159
doubt about it

605
00:25:49,430 --> 00:25:48,080
and obviously working together as a team

606
00:25:50,310 --> 00:25:49,440
is how it's going to happen otherwise

607
00:25:52,230 --> 00:25:50,320
you're going to find yourself in the

608
00:25:53,990 --> 00:25:52,240
middle of a room

609
00:25:55,990 --> 00:25:54,000
with ventilation

610
00:25:57,830 --> 00:25:56,000
one more question for you um before we

611
00:25:59,350 --> 00:25:57,840
go to other questions out here um how do

612
00:26:01,430 --> 00:25:59,360
you get accustomed to microgravity and

613
00:26:04,230 --> 00:26:01,440

which part of the space station do you

614
00:26:05,750 --> 00:26:04,240
expect to like most excluding the cupola

615
00:26:07,830 --> 00:26:05,760
exclusive

616
00:26:10,390 --> 00:26:07,840
well which part will you like the most

617
00:26:11,510 --> 00:26:10,400
uh i for for most people to come back

618
00:26:13,029 --> 00:26:11,520
node one

619
00:26:15,269 --> 00:26:13,039
is what they like the most and the

620
00:26:17,110 --> 00:26:15,279
reason is there's a dinner table there

621
00:26:20,070 --> 00:26:17,120
and that's really

622
00:26:22,630 --> 00:26:20,080
the eating area for us especially on the

623
00:26:24,789 --> 00:26:22,640
american segment and that's kind of this

624
00:26:26,549 --> 00:26:24,799
little community area where the work day

625
00:26:28,070 --> 00:26:26,559
is done let's all come together around

626
00:26:29,990 --> 00:26:28,080
this dinner table and let's just eat

627
00:26:32,470 --> 00:26:30,000
we'll share stories we'll invite our

628
00:26:34,470 --> 00:26:32,480
russian colleagues down to join us and

629
00:26:36,149 --> 00:26:34,480
that's where kind of the the human side

630
00:26:38,789 --> 00:26:36,159
memories seem to be

631
00:26:41,029 --> 00:26:38,799
formed on the space station so that's

632
00:26:42,470 --> 00:26:41,039
really uh i think what we'll end up

633
00:26:46,070 --> 00:26:42,480
enjoying the most

634
00:26:48,149 --> 00:26:46,080
how do we get accustomed to microgravity

635
00:26:49,990 --> 00:26:48,159
i think everybody has their own answer

636
00:26:50,789 --> 00:26:50,000
fluid shift you're going to be stuffed

637
00:26:52,310 --> 00:26:50,799
up

638
00:26:54,149 --> 00:26:52,320

some things will be really fun some

639
00:26:56,630 --> 00:26:54,159
things will be really frustrating

640
00:26:59,110 --> 00:26:56,640
we've got max and

641
00:27:00,470 --> 00:26:59,120
steve swanson up there and really just

642
00:27:02,630 --> 00:27:00,480
we'll put the burden on those guys to

643
00:27:05,269 --> 00:27:02,640
teach us what we need to do so that's

644
00:27:09,350 --> 00:27:06,870
either of you want to add to the

645
00:27:11,590 --> 00:27:09,360
favorite location or

646
00:27:13,269 --> 00:27:11,600
yeah i think i think

647
00:27:17,750 --> 00:27:13,279
again i have to agree with read here

648
00:27:20,389 --> 00:27:17,760
because it's really uh i think a social

649
00:27:21,909 --> 00:27:20,399
place in node one and if you

650
00:27:23,750 --> 00:27:21,919
think about it the space station has

651
00:27:26,230 --> 00:27:23,760
about the same interior volume as a

652
00:27:28,310 --> 00:27:26,240
boeing 747 so

653
00:27:31,029 --> 00:27:28,320
six people can really distribute

654
00:27:34,230 --> 00:27:31,039
themselves quite a bit i guess and

655
00:27:36,710 --> 00:27:34,240
the way the work is set up is that reid

656
00:27:39,029 --> 00:27:36,720
is a specialist for the u.s laboratory

657
00:27:40,230 --> 00:27:39,039
so he's doing work in science

658
00:27:42,389 --> 00:27:40,240
in the u.s

659
00:27:44,549 --> 00:27:42,399
science laboratory i'm going to do the

660
00:27:46,789 --> 00:27:44,559
same in the european columbus laboratory

661
00:27:49,590 --> 00:27:46,799
and in the japanese kibo

662
00:27:51,750 --> 00:27:49,600
max is working in the russian segment so

663
00:27:54,149 --> 00:27:51,760

we're going to be spread out quite a bit

664
00:27:55,590 --> 00:27:54,159
uh on space station so i guess

665
00:27:57,669 --> 00:27:55,600
at the end of the day

666
00:28:00,070 --> 00:27:57,679
it's kind of nice to to meet up with

667
00:28:02,789 --> 00:28:00,080
your crewmates and just uh well chat

668
00:28:04,789 --> 00:28:02,799
about how the day went and yeah

669
00:28:07,029 --> 00:28:04,799
looking forward to that yeah on the on

670
00:28:08,630 --> 00:28:07,039
the professional side uh so that was

671
00:28:10,950 --> 00:28:08,640
kind of the personal place i guess where

672
00:28:13,029 --> 00:28:10,960
i where i'd like to be most and then on

673
00:28:15,269 --> 00:28:13,039
the professional side i'm going to enjoy

674
00:28:16,710 --> 00:28:15,279
uh working working in the laboratory

675
00:28:18,630 --> 00:28:16,720
modules of course and i think that's

676
00:28:20,630 --> 00:28:18,640
that's true for all of us we have a big

677
00:28:23,909 --> 00:28:20,640
suite of experiments i think we have

678
00:28:26,070 --> 00:28:23,919
about 162 experiments in in the time

679
00:28:28,389 --> 00:28:26,080
that we're up there and that's really a

680
00:28:30,070 --> 00:28:28,399
lot uh of course

681
00:28:31,669 --> 00:28:30,080
the amount of training that you get and

682
00:28:33,669 --> 00:28:31,679
work that you put in a single experiment

683
00:28:36,710 --> 00:28:33,679
really varies there's some experiments

684
00:28:38,630 --> 00:28:36,720
that we we only going to install uh just

685
00:28:41,750 --> 00:28:38,640
put on power and as long as it works

686
00:28:43,110 --> 00:28:41,760
it's going to be run by the grounds

687
00:28:45,110 --> 00:28:43,120
then there's other experiments where we

688
00:28:46,630 --> 00:28:45,120

can really get hands-on and that's those

689
00:28:48,549 --> 00:28:46,640
are the ones that i i'm looking forward

690
00:28:50,149 --> 00:28:48,559
to working the most in i was just gonna

691
00:28:52,070 --> 00:28:50,159
ask if there's one experiment in

692
00:28:53,510 --> 00:28:52,080
particular for and each of

693
00:28:55,029 --> 00:28:53,520
you that you know is something that

694
00:28:57,430 --> 00:28:55,039
you've really become interested in is

695
00:28:58,950 --> 00:28:57,440
there anything like that for our

696
00:29:00,549 --> 00:28:58,960
there's there's one that really piqued

697
00:29:02,070 --> 00:29:00,559
my interest but i had to think about it

698
00:29:04,389 --> 00:29:02,080
for a little while and it's just a

699
00:29:06,630 --> 00:29:04,399
little footnote on our list and that is

700
00:29:08,789 --> 00:29:06,640
uh in the expedition 41 time frame we'll

701
00:29:09,750 --> 00:29:08,799
hopefully get 3d printer

702
00:29:11,669 --> 00:29:09,760
and

703
00:29:13,909 --> 00:29:11,679
at first i just thought okay 3d printer

704
00:29:15,669 --> 00:29:13,919
we'll throw it in a science rack and

705
00:29:17,669 --> 00:29:15,679
we'll just see if it can print but then

706
00:29:20,710 --> 00:29:17,679
i really started to think about the long

707
00:29:23,590 --> 00:29:20,720
term implications of 3d printing imagine

708
00:29:25,510 --> 00:29:23,600
if apollo 13 had a 3d printer

709
00:29:28,549 --> 00:29:25,520
imagine if you're going to mars and

710
00:29:31,190 --> 00:29:28,559
instead of packing along 20 000 spare

711
00:29:31,990 --> 00:29:31,200
parts you pack along a few kilograms of

712
00:29:33,990 --> 00:29:32,000
ink

713
00:29:35,510 --> 00:29:34,000

and now you don't even need to know what

714
00:29:37,830 --> 00:29:35,520
part's gonna break you can just print

715
00:29:39,830 --> 00:29:37,840
out that part or let's say your

716
00:29:41,350 --> 00:29:39,840
screwdriver strips out halfway to mars

717
00:29:43,590 --> 00:29:41,360
and you need a screwdriver print out a

718
00:29:45,510 --> 00:29:43,600
screwdriver so really i think for the

719
00:29:47,190 --> 00:29:45,520
future i that's pretty fascinating i

720
00:29:48,389 --> 00:29:47,200
really like that and i it'll be fun to

721
00:29:49,830 --> 00:29:48,399
play with that on orbit i was just going

722
00:29:51,830 --> 00:29:49,840
to say we can expect a lot of gadgets

723
00:29:54,470 --> 00:29:51,840
being cracked out

724
00:29:55,909 --> 00:29:54,480
it doesn't print food yet though soon i

725
00:29:57,750 --> 00:29:55,919
heard soon

726
00:29:59,909 --> 00:29:57,760
anything for either of you a particular

727
00:30:01,430 --> 00:29:59,919
experiment that you're interested in or

728
00:30:03,510 --> 00:30:01,440
looking forward to working on

729
00:30:04,630 --> 00:30:03,520
you know i get this question a lot and i

730
00:30:06,630 --> 00:30:04,640
always have a hard time answering

731
00:30:09,269 --> 00:30:06,640
because there's so many really good ones

732
00:30:10,870 --> 00:30:09,279
so if i pick out one that

733
00:30:12,950 --> 00:30:10,880
that really doesn't mean the other ones

734
00:30:14,630 --> 00:30:12,960
are any worse for me

735
00:30:16,630 --> 00:30:14,640
there's one that i

736
00:30:18,310 --> 00:30:16,640
gonna like because i'm gonna install it

737
00:30:20,950 --> 00:30:18,320
from the beginning on i'm gonna receive

738
00:30:23,190 --> 00:30:20,960

it uh and at the european from the

739
00:30:25,110 --> 00:30:23,200
european transfer vehicle the atv 5

740
00:30:27,029 --> 00:30:25,120
that's going to arrive on space station

741
00:30:28,470 --> 00:30:27,039
in july august time frame and they're

742
00:30:30,870 --> 00:30:28,480
going to install it in columbus and i'm

743
00:30:33,350 --> 00:30:30,880
going to check it out do the tests and

744
00:30:35,990 --> 00:30:33,360
maybe see the first runs and that's the

745
00:30:38,389 --> 00:30:36,000
electric electromagnetic levitator it's

746
00:30:42,870 --> 00:30:38,399
an alloy furnace

747
00:30:44,950 --> 00:30:42,880
that enables us to to investigate alloys

748
00:30:47,909 --> 00:30:44,960
physic physical properties of new

749
00:30:48,950 --> 00:30:47,919
materials that we cannot test on earth

750
00:30:51,269 --> 00:30:48,960
because

751
00:30:54,389 --> 00:30:51,279
the way that you that you need to

752
00:30:57,669 --> 00:30:54,399
investigate or get out those secrets of

753
00:31:00,470 --> 00:30:57,679
that little drop of molten metal um is

754
00:31:02,789 --> 00:31:00,480
that it cannot touch any furnace or any

755
00:31:05,269 --> 00:31:02,799
box that is that it lies in any any

756
00:31:07,350 --> 00:31:05,279
surrounding place and if you think about

757
00:31:10,310 --> 00:31:07,360
it that's completely impossible on earth

758
00:31:12,389 --> 00:31:10,320
like we cannot do that for longer than a

759
00:31:13,909 --> 00:31:12,399
few seconds maybe on a parabolic flight

760
00:31:15,110 --> 00:31:13,919
or in a fall tower

761
00:31:17,750 --> 00:31:15,120
and

762
00:31:20,389 --> 00:31:17,760
by bringing those materials to space we

763
00:31:22,230 --> 00:31:20,399

can actually have them suspended in the

764
00:31:24,789 --> 00:31:22,240
middle of this furnace without touching

765
00:31:26,389 --> 00:31:24,799
anything for hours at the time and we

766
00:31:28,070 --> 00:31:26,399
can actually extract all those physical

767
00:31:31,029 --> 00:31:28,080
properties that we need

768
00:31:32,389 --> 00:31:31,039
in the future to model new alloys on

769
00:31:35,430 --> 00:31:32,399
earth so

770
00:31:37,750 --> 00:31:35,440
basically we just go to space to fill in

771
00:31:40,950 --> 00:31:37,760
some gaps but very important gaps in

772
00:31:42,870 --> 00:31:40,960
knowledge for finding out new materials

773
00:31:44,470 --> 00:31:42,880
on earth and in the past

774
00:31:46,070 --> 00:31:44,480
we had similar experiments not quite as

775
00:31:48,470 --> 00:31:46,080
advanced as that one but in the past we

776
00:31:51,110 --> 00:31:48,480
did like generate new materials that

777
00:31:53,669 --> 00:31:51,120
were half as half as heavy for the same

778
00:31:56,470 --> 00:31:53,679
strength that you find now in

779
00:31:58,549 --> 00:31:56,480
plain term aircraft turbines new engines

780
00:32:02,230 --> 00:31:58,559
and for me it's really exciting to

781
00:32:04,470 --> 00:32:02,240
possibly work on the material uh that we

782
00:32:07,509 --> 00:32:04,480
will find in 10 20 years down the road

783
00:32:09,909 --> 00:32:07,519
in new machines or new aircraft and help

784
00:32:11,990 --> 00:32:09,919
us save fuel and save the environment

785
00:32:13,350 --> 00:32:12,000
that is really exciting for me yeah it

786
00:32:15,110 --> 00:32:13,360
does sound like a good one and just one

787
00:32:16,870 --> 00:32:15,120
of the many examples of the valuable

788
00:32:19,029 --> 00:32:16,880

science being done up there all right i

789
00:32:20,950 --> 00:32:19,039
want to turn it over now to the phone

790
00:32:25,669 --> 00:32:20,960
bridge where i believe we have one

791
00:32:28,710 --> 00:32:25,679
reporter miriam cramer with space.com

792
00:32:30,630 --> 00:32:28,720
hi yeah thanks um i am just curious does

793
00:32:33,669 --> 00:32:30,640
it does the fact that you're going to

794
00:32:35,509 --> 00:32:33,679
space actually feel real yet um and if

795
00:32:36,630 --> 00:32:35,519
it does when did it start to feel real

796
00:32:40,870 --> 00:32:36,640
for you and if it doesn't when do you

797
00:32:40,880 --> 00:32:44,310
just started off yes

798
00:32:47,909 --> 00:32:45,990
i don't want to say i'm a pessimist i

799
00:32:49,750 --> 00:32:47,919
think i'm a realist but when you get

800
00:32:51,990 --> 00:32:49,760
assigned to the mission

801
00:32:53,909 --> 00:32:52,000
you just think it's so far off in the in

802
00:32:56,230 --> 00:32:53,919
the future and there's you know

803
00:32:59,190 --> 00:32:56,240
something will stand in my way of of

804
00:33:00,870 --> 00:32:59,200
getting getting this complete and

805
00:33:03,269 --> 00:33:00,880
and then you start to move closer and

806
00:33:05,509 --> 00:33:03,279
closer and closer and it starts to get a

807
00:33:08,389 --> 00:33:05,519
little more real but not very believable

808
00:33:10,470 --> 00:33:08,399
yet i think and then there was just one

809
00:33:13,190 --> 00:33:10,480
moment where it just hit me like a tidal

810
00:33:15,430 --> 00:33:13,200
wave and i was riding on the crew bus in

811
00:33:16,789 --> 00:33:15,440
baikonur to watch rick mastracchio and

812
00:33:18,870 --> 00:33:16,799
koichi

813
00:33:19,830 --> 00:33:18,880

launch and it was

814
00:33:24,310 --> 00:33:19,840
just

815
00:33:27,750 --> 00:33:24,320
and these two guys are looking out this

816
00:33:29,590 --> 00:33:27,760
rocket fully fueled venting smoking

817
00:33:31,269 --> 00:33:29,600
ready to go as the crew is going up the

818
00:33:33,190 --> 00:33:31,279
ladder and i was like wow six months

819
00:33:35,110 --> 00:33:33,200
that's that's us getting off this bus

820
00:33:37,350 --> 00:33:35,120
and going on and for me that was bam

821
00:33:39,750 --> 00:33:37,360
it's real at that point on

822
00:33:42,310 --> 00:33:39,760
either of you alex yeah i guess i i kind

823
00:33:44,549 --> 00:33:42,320
of had a similar strategy and

824
00:33:46,070 --> 00:33:44,559
probably everybody of us

825
00:33:47,830 --> 00:33:46,080
does it that way

826
00:33:49,509 --> 00:33:47,840
the same happened

827
00:33:52,149 --> 00:33:49,519
in the in the astronaut selection right

828
00:33:53,590 --> 00:33:52,159
at the beginning i had applied and as a

829
00:33:55,590 --> 00:33:53,600
scientist i knew the chances are so

830
00:33:57,350 --> 00:33:55,600
minimal so i didn't believe a single

831
00:33:59,029 --> 00:33:57,360
second that i would become an astronaut

832
00:34:00,230 --> 00:33:59,039
i'm going to push this away because i

833
00:34:02,789 --> 00:34:00,240
didn't want to get excited i didn't want

834
00:34:05,029 --> 00:34:02,799
to get disappointed by being knocked out

835
00:34:06,789 --> 00:34:05,039
of this selection campaign which i knew

836
00:34:08,149 --> 00:34:06,799
there were so many really good people on

837
00:34:11,190 --> 00:34:08,159
there

838
00:34:13,349 --> 00:34:11,200

now only at the end when i when it came

839
00:34:15,430 --> 00:34:13,359
down to like 10 people and i kind of

840
00:34:17,109 --> 00:34:15,440
knew that i do have a chance that's when

841
00:34:19,589 --> 00:34:17,119
it that's when i

842
00:34:21,349 --> 00:34:19,599
did not manage to push this away as it

843
00:34:23,430 --> 00:34:21,359
becoming real

844
00:34:24,710 --> 00:34:23,440
and that that's kind of a moment where

845
00:34:26,869 --> 00:34:24,720
you where you're kind of vulnerable

846
00:34:28,230 --> 00:34:26,879
because then if you fail then if you get

847
00:34:30,629 --> 00:34:28,240
knocked out then

848
00:34:31,990 --> 00:34:30,639
then you're really disappointed and the

849
00:34:34,230 --> 00:34:32,000
same thing

850
00:34:36,069 --> 00:34:34,240
i kind of did for my space flight i knew

851
00:34:37,669 --> 00:34:36,079
that there are so many things that are

852
00:34:39,270 --> 00:34:37,679
possible to get in the way i mean you

853
00:34:41,510 --> 00:34:39,280
might get hurt there might be a medical

854
00:34:43,270 --> 00:34:41,520
thing there might be a technical thing

855
00:34:45,669 --> 00:34:43,280
some some things that are completely out

856
00:34:48,230 --> 00:34:45,679
of your control so i i always had this

857
00:34:50,069 --> 00:34:48,240
psychological barrier saying i might fly

858
00:34:51,589 --> 00:34:50,079
to space but i'm not getting excited

859
00:34:54,310 --> 00:34:51,599
about it because

860
00:34:55,750 --> 00:34:54,320
maybe not and even now i'm saying hey in

861
00:34:56,550 --> 00:34:55,760
two months i don't know what's going to

862
00:34:57,829 --> 00:34:56,560
happen

863
00:35:00,150 --> 00:34:57,839

but

864
00:35:01,829 --> 00:35:00,160
really going to baikonur and seeing your

865
00:35:04,950 --> 00:35:01,839
friends

866
00:35:06,870 --> 00:35:04,960
climb in that rocket and launch to space

867
00:35:08,950 --> 00:35:06,880
friends that you have spent the last

868
00:35:10,710 --> 00:35:08,960
two years training with the last two

869
00:35:13,670 --> 00:35:10,720
weeks very intensive you lived in the

870
00:35:15,829 --> 00:35:13,680
same hotel you you had shared every meal

871
00:35:17,510 --> 00:35:15,839
you shared every lesson with them and

872
00:35:18,870 --> 00:35:17,520
you you saw them suit up you actually

873
00:35:20,470 --> 00:35:18,880
actually helped them suit up in the

874
00:35:22,950 --> 00:35:20,480
morning and you see them climb in that

875
00:35:24,870 --> 00:35:22,960
rocket and then fly up there i was

876
00:35:26,950 --> 00:35:24,880
excited for them and i could not push it

877
00:35:29,349 --> 00:35:26,960
away i was like wow this is this feels

878
00:35:30,870 --> 00:35:29,359
really real and now being back in

879
00:35:33,030 --> 00:35:30,880
training for a while

880
00:35:35,349 --> 00:35:33,040
it's i'm surrounded by the same training

881
00:35:38,710 --> 00:35:35,359
environment right now that i um i was

882
00:35:40,390 --> 00:35:38,720
for for the last two years it kind of

883
00:35:42,069 --> 00:35:40,400
sunk back down again and i'm happy for

884
00:35:44,150 --> 00:35:42,079
that because i i don't want to be i

885
00:35:46,630 --> 00:35:44,160
can't be excited the whole day every day

886
00:35:49,430 --> 00:35:46,640
so it feels more normal again just

887
00:35:51,910 --> 00:35:49,440
there's single moments when when it gets

888
00:35:53,910 --> 00:35:51,920

real again when we train for a spacewalk

889
00:35:55,349 --> 00:35:53,920
not a generic one that we trained in the

890
00:35:57,270 --> 00:35:55,359
last two years but actually when we

891
00:35:59,829 --> 00:35:57,280
train for a spacewalk for a hand grip

892
00:36:00,950 --> 00:35:59,839
for changing out a part that i know

893
00:36:03,030 --> 00:36:00,960
redeny

894
00:36:05,750 --> 00:36:03,040
our plan to do on orbit that's that's

895
00:36:07,030 --> 00:36:05,760
when it's really getting exciting again

896
00:36:08,790 --> 00:36:07,040
and i guess

897
00:36:10,630 --> 00:36:08,800
anybody would be lying if they said they

898
00:36:13,670 --> 00:36:10,640
would not be excited when once they sit

899
00:36:16,150 --> 00:36:13,680
on the rocket fueled with 26 million

900
00:36:18,550 --> 00:36:16,160
horsepower underneath them igniting i

901
00:36:19,829 --> 00:36:18,560
think that'll be an exciting moment

902
00:36:22,069 --> 00:36:19,839
i would think that would do it that

903
00:36:24,230 --> 00:36:22,079
would be an exciting moment okay um we

904
00:36:25,990 --> 00:36:24,240
want to switch now to the european space

905
00:36:27,349 --> 00:36:26,000
agency which has some media they're

906
00:36:31,109 --> 00:36:27,359
hosting and they also have some

907
00:36:41,109 --> 00:36:33,030
hello nicole this is jules grancia the

908
00:36:44,870 --> 00:36:43,030
go with your question

909
00:36:46,870 --> 00:36:44,880
hello nicole this is jules granzaya the

910
00:36:49,190 --> 00:36:46,880
european astronaut center here

911
00:36:52,390 --> 00:36:49,200
and we've collected uh some questions

912
00:36:54,630 --> 00:36:52,400
from our isa social media followers

913
00:36:55,990 --> 00:36:54,640

for the crew can you hear me well julie

914
00:36:58,310 --> 00:36:56,000
i can hear you

915
00:37:00,230 --> 00:36:58,320
how can you hear us

916
00:37:02,710 --> 00:37:00,240
okay so the first question comes from

917
00:37:04,950 --> 00:37:02,720
our twitter follower edith kotzo and she

918
00:37:07,109 --> 00:37:04,960
wonders actually uh if you will be able

919
00:37:09,109 --> 00:37:07,119
to do some volcanology on board the iss

920
00:37:10,550 --> 00:37:09,119
alex

921
00:37:12,870 --> 00:37:10,560
you know that's a it's a very good

922
00:37:15,349 --> 00:37:12,880
question i hope so

923
00:37:16,390 --> 00:37:15,359
it kind of depends on how my

924
00:37:20,230 --> 00:37:16,400
old

925
00:37:28,230 --> 00:37:25,030
work out uh the iss covers a big part of

926
00:37:31,190 --> 00:37:28,240
earth from above basically you you you

927
00:37:35,190 --> 00:37:31,200
you fly over any point that's between

928
00:37:36,390 --> 00:37:35,200
plus 52 and minus negative 52 degrees

929
00:37:39,349 --> 00:37:36,400
from the equator

930
00:37:41,430 --> 00:37:39,359
at least once uh once every few days so

931
00:37:43,910 --> 00:37:41,440
if there's an active volcano i'd be

932
00:37:46,150 --> 00:37:43,920
happily uh taking pictures of that and

933
00:37:47,990 --> 00:37:46,160
actually i'm indeed in contact with my

934
00:37:50,069 --> 00:37:48,000
with my old institute

935
00:37:53,430 --> 00:37:50,079
that i worked on as a volcanologist they

936
00:37:56,390 --> 00:37:53,440
are very uh interested in getting

937
00:37:58,950 --> 00:37:56,400
views of volcanoes that uh usual earth

938
00:38:00,790 --> 00:37:58,960

observation satellites do not give them

939
00:38:02,870 --> 00:38:00,800
because a usual earth observation cell

940
00:38:05,109 --> 00:38:02,880
light just looks straight down that's

941
00:38:07,829 --> 00:38:05,119
the way that most most images are

942
00:38:08,710 --> 00:38:07,839
wounded by the by the users uh but for

943
00:38:10,230 --> 00:38:08,720
some

944
00:38:12,310 --> 00:38:10,240
things like

945
00:38:15,270 --> 00:38:12,320
determining uh the height of a of an

946
00:38:16,870 --> 00:38:15,280
eruption cloud of a volcanic eruption

947
00:38:18,390 --> 00:38:16,880
it's really good if you have an oblique

948
00:38:21,349 --> 00:38:18,400
view from the side

949
00:38:24,390 --> 00:38:21,359
or for other

950
00:38:26,310 --> 00:38:24,400
natural catastrophes disasters it's also

951
00:38:27,990 --> 00:38:26,320
really useful to get a view that only

952
00:38:30,390 --> 00:38:28,000
the space station can actually provide

953
00:38:31,990 --> 00:38:30,400
which is a view into the sun glint into

954
00:38:32,950 --> 00:38:32,000
the reflection of the sun usually you

955
00:38:34,790 --> 00:38:32,960
would think

956
00:38:36,310 --> 00:38:34,800
it's not a good view usually earth

957
00:38:37,990 --> 00:38:36,320
observation satellites don't like that

958
00:38:40,150 --> 00:38:38,000
because you're you're kind of blinded by

959
00:38:42,310 --> 00:38:40,160
the sun but some details of those

960
00:38:45,670 --> 00:38:42,320
pictures actually enhanced by that sun

961
00:38:47,430 --> 00:38:45,680
glint and that's very valuable

962
00:38:48,870 --> 00:38:47,440
science and very valuable information

963
00:38:50,710 --> 00:38:48,880

that we get out there for example with

964
00:38:52,710 --> 00:38:50,720
floods you can easily see which areas

965
00:38:54,230 --> 00:38:52,720
are flooded and which ones are not which

966
00:38:57,270 --> 00:38:54,240
is hard to see when you look at it from

967
00:38:59,589 --> 00:38:57,280
above actually and so these are kind of

968
00:39:01,990 --> 00:38:59,599
gaps that i that i

969
00:39:02,870 --> 00:39:02,000
may be able to fill with photography

970
00:39:05,750 --> 00:39:02,880
also

971
00:39:07,430 --> 00:39:05,760
reid is really interested in that

972
00:39:15,430 --> 00:39:07,440
with photography from the space station

973
00:39:23,910 --> 00:39:17,030
okay and we're ready for the next

974
00:39:26,550 --> 00:39:24,950
all right

975
00:39:28,790 --> 00:39:26,560
that might be our last from the european

976
00:39:30,550 --> 00:39:28,800
space agency we'll return back here to

977
00:39:33,750 --> 00:39:30,560
johnson space center and go ahead and

978
00:39:39,510 --> 00:39:36,550
thank you mark mcgraw for aviation week

979
00:39:41,990 --> 00:39:39,520
and my questions for reid weissman

980
00:39:43,430 --> 00:39:42,000
i believe if i understand the timing

981
00:39:44,790 --> 00:39:43,440
correctly

982
00:39:47,270 --> 00:39:44,800
after

983
00:39:49,589 --> 00:39:47,280
you've been there several weeks the

984
00:39:50,790 --> 00:39:49,599
maintenance spacewalks might be able to

985
00:39:52,310 --> 00:39:50,800
resume

986
00:39:55,270 --> 00:39:52,320
and i wonder what you're sort of

987
00:39:56,870 --> 00:39:55,280
anticipating that you may need to do

988
00:39:59,349 --> 00:39:56,880

first or second

989
00:40:01,670 --> 00:39:59,359
and what you've trained for all together

990
00:40:03,589 --> 00:40:01,680
in that regard so what uh what are the

991
00:40:05,190 --> 00:40:03,599
objectives of these spacewalks basically

992
00:40:06,790 --> 00:40:05,200
uh

993
00:40:09,109 --> 00:40:06,800
you said one very key word in there and

994
00:40:10,950 --> 00:40:09,119
that was maybe and so we do have a lot

995
00:40:12,630 --> 00:40:10,960
of work left to do on these suits to

996
00:40:14,710 --> 00:40:12,640
make sure they're ready to go out for

997
00:40:16,150 --> 00:40:14,720
maintenance evas

998
00:40:17,430 --> 00:40:16,160
we'll keep our fingers crossed i know

999
00:40:18,390 --> 00:40:17,440
the ground team's working on it really

1000
00:40:21,430 --> 00:40:18,400
hard

1001
00:40:23,750 --> 00:40:21,440
on the schedule right now we have two

1002
00:40:25,829 --> 00:40:23,760
planned evas they could slip out at a

1003
00:40:27,430 --> 00:40:25,839
moment's notice based on the readiness

1004
00:40:29,430 --> 00:40:27,440
of the hardware

1005
00:40:31,270 --> 00:40:29,440
but the first the first spacewalk i will

1006
00:40:34,550 --> 00:40:31,280
most likely go out with steve swanson

1007
00:40:36,630 --> 00:40:34,560
he'll be ev1 and we're looking at

1008
00:40:39,270 --> 00:40:36,640
the main the main task there is

1009
00:40:40,630 --> 00:40:39,280
reconfiguring the p6 radiator that was

1010
00:40:41,750 --> 00:40:40,640
put out

1011
00:40:44,069 --> 00:40:41,760
with sunny

1012
00:40:46,870 --> 00:40:44,079
sunita williamson and aki from the

1013
00:40:49,589 --> 00:40:46,880

japanese space agency a few years ago so

1014
00:40:51,349 --> 00:40:49,599
we'll go and refill some of the ammonia

1015
00:40:52,630 --> 00:40:51,359
fluid out there and then we will stow

1016
00:40:53,670 --> 00:40:52,640
that radiator

1017
00:40:56,150 --> 00:40:53,680
um

1018
00:40:58,069 --> 00:40:56,160
and that will be a solid six hours of

1019
00:40:59,990 --> 00:40:58,079
work we have a few other little

1020
00:41:02,390 --> 00:41:00,000
get-ahead tasks that we may do

1021
00:41:05,109 --> 00:41:02,400
but that's our that's our primary focus

1022
00:41:07,589 --> 00:41:05,119
and then uh a week later would be the

1023
00:41:08,630 --> 00:41:07,599
second maintenance eva and that would be

1024
00:41:11,270 --> 00:41:08,640
myself

1025
00:41:13,670 --> 00:41:11,280
and alex heading out

1026
00:41:15,349 --> 00:41:13,680
and the primary objective there is to

1027
00:41:16,390 --> 00:41:15,359
clear the pump module

1028
00:41:19,270 --> 00:41:16,400
which

1029
00:41:21,910 --> 00:41:19,280
rick mastracchio and mike hopkins put on

1030
00:41:23,990 --> 00:41:21,920
this grapple fixture called the poa

1031
00:41:25,670 --> 00:41:24,000
and we we need to clear out that poa so

1032
00:41:27,430 --> 00:41:25,680
that we can do other contingency evas in

1033
00:41:28,870 --> 00:41:27,440
the future and so the main thing will be

1034
00:41:31,990 --> 00:41:28,880
removing that pump module and getting it

1035
00:41:32,829 --> 00:41:32,000
stowed in a more long-term position

1036
00:41:35,349 --> 00:41:32,839
on

1037
00:41:36,630 --> 00:41:35,359
esp2 and then provided that that goes

1038
00:41:38,550 --> 00:41:36,640

well that's actually going to take us

1039
00:41:39,750 --> 00:41:38,560
about three hours alex will be riding

1040
00:41:40,630 --> 00:41:39,760
the arm

1041
00:41:43,030 --> 00:41:40,640
it's

1042
00:41:44,950 --> 00:41:43,040
it i won't necessarily say it'll be easy

1043
00:41:46,470 --> 00:41:44,960
but it's it's a fairly straightforward

1044
00:41:48,790 --> 00:41:46,480
portion of the eva but it's about three

1045
00:41:50,630 --> 00:41:48,800
hours and then after that alex and i

1046
00:41:51,990 --> 00:41:50,640
will split up and we'll be kind of

1047
00:41:54,630 --> 00:41:52,000
running all over station doing some

1048
00:41:56,630 --> 00:41:54,640
smaller tasks i'll be rewiring part of

1049
00:41:58,550 --> 00:41:56,640
the mobile transporter

1050
00:42:00,470 --> 00:41:58,560
and then

1051
00:42:02,230 --> 00:42:00,480
we will we'll meet back up and we have a

1052
00:42:04,150 --> 00:42:02,240
good chance to do some get aheads maybe

1053
00:42:05,349 --> 00:42:04,160
reconfigure some of our lights that

1054
00:42:07,670 --> 00:42:05,359
aren't working so well and cameras that

1055
00:42:10,390 --> 00:42:07,680
aren't working so well and then maybe

1056
00:42:12,390 --> 00:42:10,400
some cleanup on the mlm from luca

1057
00:42:14,870 --> 00:42:12,400
parmitano and chris cassidy's eva that

1058
00:42:17,270 --> 00:42:14,880
got cut a little short

1059
00:42:18,870 --> 00:42:17,280
that's it in a nutshell

1060
00:42:20,710 --> 00:42:18,880
okay and i believe we do have the

1061
00:42:22,309 --> 00:42:20,720
european space agency back with us with

1062
00:42:24,470 --> 00:42:22,319
two questions so we'll return back to

1063
00:42:25,829 --> 00:42:24,480

them

1064
00:42:27,430 --> 00:42:25,839
thank you very much i've got another

1065
00:42:29,670 --> 00:42:27,440
question actually from our twitter

1066
00:42:31,510 --> 00:42:29,680
follower caramel it's about

1067
00:42:36,470 --> 00:42:31,520
it's for alex about what you're feeling

1068
00:42:43,030 --> 00:42:40,950
well i guess not having been to space i

1069
00:42:45,109 --> 00:42:43,040
i'm looking forward most to the

1070
00:42:47,030 --> 00:42:45,119
perspective that we get there

1071
00:42:51,910 --> 00:42:47,040
that

1072
00:42:53,030 --> 00:42:51,920
there's there's only

1073
00:42:55,829 --> 00:42:53,040
well

1074
00:42:58,309 --> 00:42:55,839
three individuals up on the space

1075
00:43:01,589 --> 00:42:58,319
stations that that can look down on

1076
00:43:03,750 --> 00:43:01,599
earth uh those the only three humans

1077
00:43:06,630 --> 00:43:03,760
outside of the planet right now

1078
00:43:08,870 --> 00:43:06,640
and uh that is a unique perspective that

1079
00:43:10,069 --> 00:43:08,880
we can get from this laboratory flying

1080
00:43:12,470 --> 00:43:10,079
up there

1081
00:43:15,190 --> 00:43:12,480
um it's it's a perspective from the

1082
00:43:16,950 --> 00:43:15,200
outside on our planet that shows us what

1083
00:43:18,309 --> 00:43:16,960
this planet really is

1084
00:43:19,829 --> 00:43:18,319
and that is

1085
00:43:21,910 --> 00:43:19,839
something

1086
00:43:23,670 --> 00:43:21,920
that we cannot get otherwise because

1087
00:43:25,910 --> 00:43:23,680
usually if you have a problem it always

1088
00:43:28,230 --> 00:43:25,920

pays off to take a step back and look at

1089
00:43:30,870 --> 00:43:28,240
it from a distance and this is something

1090
00:43:32,150 --> 00:43:30,880
that we can do from from space station

1091
00:43:33,910 --> 00:43:32,160
and that is

1092
00:43:34,870 --> 00:43:33,920
i think that is something that

1093
00:43:37,510 --> 00:43:34,880
is

1094
00:43:39,190 --> 00:43:37,520
transforming our mind or at least

1095
00:43:41,190 --> 00:43:39,200
it's something that hits us that's what

1096
00:43:43,829 --> 00:43:41,200
my colleague said that flew into space

1097
00:43:46,710 --> 00:43:43,839
before me and uh

1098
00:43:48,630 --> 00:43:46,720
that is important for me to see and also

1099
00:43:50,870 --> 00:43:48,640
important for me to capture in a way to

1100
00:43:53,829 --> 00:43:50,880
bring back to bring back to to earth and

1101
00:43:55,829 --> 00:43:53,839
share with with everybody down here and

1102
00:43:58,230 --> 00:43:55,839
maybe uh maybe

1103
00:44:00,950 --> 00:43:58,240
get a sense on on how fragile this earth

1104
00:44:03,589 --> 00:44:00,960
is and and just

1105
00:44:05,829 --> 00:44:03,599
build the awareness uh that we have to

1106
00:44:08,150 --> 00:44:05,839
make sure we we watch out for our planet

1107
00:44:10,470 --> 00:44:08,160
and not destroy it through wars or

1108
00:44:11,750 --> 00:44:10,480
climate pollution or anything

1109
00:44:13,910 --> 00:44:11,760
that is something that i'm looking

1110
00:44:18,950 --> 00:44:13,920
forward to and i i think it's kind of my

1111
00:44:23,430 --> 00:44:21,190
and our last question uh actually goes

1112
00:44:25,270 --> 00:44:23,440
to alex and also to to max

1113
00:44:27,589 --> 00:44:25,280

it's from david jeremy alonso and he

1114
00:44:29,670 --> 00:44:27,599
wonders uh if and how you manage to

1115
00:44:31,430 --> 00:44:29,680
sleep at night right now given the

1116
00:45:14,870 --> 00:44:31,440
excitement of the pre-launch phase now

1117
00:45:14,880 --> 00:45:58,829
um

1118
00:46:03,589 --> 00:46:01,510
foreign i don't yet feel the pre-flight

1119
00:46:06,150 --> 00:46:03,599
excitement not yet

1120
00:46:08,470 --> 00:46:06,160
based on my experience i can say that

1121
00:46:10,230 --> 00:46:08,480
yes the feeling when that you're about

1122
00:46:13,190 --> 00:46:10,240
to fly comes when you're already at

1123
00:46:15,349 --> 00:46:13,200
baikonur and when you're probably

1124
00:46:17,670 --> 00:46:15,359
five or seven days uh

1125
00:46:21,109 --> 00:46:17,680
prior to launch there and when you are

1126
00:46:23,670 --> 00:46:21,119
busy with the the upcoming flight day

1127
00:46:25,430 --> 00:46:23,680
and night uh thinking about what's going

1128
00:46:27,270 --> 00:46:25,440
next what is to come

1129
00:46:29,910 --> 00:46:27,280
and that's when you get this feeling

1130
00:46:31,109 --> 00:46:29,920
you're about to fly in addition i know

1131
00:46:34,309 --> 00:46:31,119
that uh

1132
00:46:37,030 --> 00:46:34,319
we in the cosmonaut core you usually say

1133
00:46:39,190 --> 00:46:37,040
that you can only be 100 certain that

1134
00:46:41,349 --> 00:46:39,200
you are really going to space when

1135
00:46:43,670 --> 00:46:41,359
you're already in the

1136
00:46:45,910 --> 00:46:43,680
lift which is taking you to the

1137
00:46:47,589 --> 00:46:45,920
uppermost part of the rocket and when

1138
00:46:49,910 --> 00:46:47,599

you are getting to the hedge but

1139
00:46:51,990 --> 00:46:49,920
actually even then you cannot be 100

1140
00:46:54,470 --> 00:46:52,000
sure because certain technical problems

1141
00:46:56,710 --> 00:46:54,480
can arise which are totally independent

1142
00:46:59,030 --> 00:46:56,720
of what you are doing and your launch

1143
00:47:01,109 --> 00:46:59,040
can be delayed

1144
00:47:04,390 --> 00:47:01,119
so for now i'm sleeping

1145
00:47:06,150 --> 00:47:04,400
really quiet and i'm fully calm

1146
00:47:07,510 --> 00:47:06,160
you seem really calm

1147
00:47:08,710 --> 00:47:07,520
with you

1148
00:47:11,430 --> 00:47:08,720
and alex

1149
00:47:13,510 --> 00:47:11,440
yeah i sleep very well right now

1150
00:47:16,069 --> 00:47:13,520
because mostly because i know everything

1151
00:47:18,390 --> 00:47:16,079
is on track there are no major problems

1152
00:47:20,630 --> 00:47:18,400
nothing technical that could get in the

1153
00:47:21,829 --> 00:47:20,640
way so to me

1154
00:47:26,950 --> 00:47:21,839
i'm

1155
00:47:28,870 --> 00:47:26,960
also i think as a as an astronaut in

1156
00:47:31,829 --> 00:47:28,880
training you have this psychological

1157
00:47:33,109 --> 00:47:31,839
mechanism kicking in that you're you're

1158
00:47:35,109 --> 00:47:33,119
not really

1159
00:47:36,950 --> 00:47:35,119
thinking about space

1160
00:47:38,630 --> 00:47:36,960
most of the time as you did before you

1161
00:47:40,870 --> 00:47:38,640
became an astronaut i i noticed that

1162
00:47:42,710 --> 00:47:40,880
with myself when i saw i mean i used to

1163
00:47:45,030 --> 00:47:42,720

see a picture of space station before i

1164
00:47:46,710 --> 00:47:45,040
became an astronaut i was immediately

1165
00:47:48,470 --> 00:47:46,720
full of wonder and i looked at earth and

1166
00:47:51,430 --> 00:47:48,480
how beautiful it is

1167
00:47:54,549 --> 00:47:51,440
and uh and i was excited by the thought

1168
00:47:57,030 --> 00:47:54,559
to fly there now i still have these but

1169
00:47:58,309 --> 00:47:57,040
once when i'm in training actually this

1170
00:48:00,710 --> 00:47:58,319
kind of

1171
00:48:02,790 --> 00:48:00,720
is covered over by this technical view

1172
00:48:05,030 --> 00:48:02,800
now when i see a picture of the space

1173
00:48:07,190 --> 00:48:05,040
station i try to see oh this is this

1174
00:48:10,069 --> 00:48:07,200
module oh and i see the handhold oh yeah

1175
00:48:11,829 --> 00:48:10,079
we did then a change out of an of an

1176
00:48:14,150 --> 00:48:11,839
experiment there on the outside during

1177
00:48:16,150 --> 00:48:14,160
the training run for the spacewalk so

1178
00:48:19,510 --> 00:48:16,160
suddenly i have this technical view

1179
00:48:20,549 --> 00:48:19,520
which which covers over the romanticism

1180
00:48:21,270 --> 00:48:20,559
sometimes

1181
00:48:25,750 --> 00:48:21,280
and

1182
00:48:27,910 --> 00:48:25,760
flying to space what gets me out of this

1183
00:48:29,829 --> 00:48:27,920
and this is why i i really like like

1184
00:48:32,150 --> 00:48:29,839
those situations where i get get out of

1185
00:48:34,069 --> 00:48:32,160
this is when i do

1186
00:48:36,150 --> 00:48:34,079
like public relations when there's kids

1187
00:48:39,190 --> 00:48:36,160
there i mean it's always amazing when we

1188
00:48:40,150 --> 00:48:39,200

have a school class at at the european

1189
00:48:41,990 --> 00:48:40,160
um

1190
00:48:43,510 --> 00:48:42,000
astronaut center and i lead them around

1191
00:48:45,190 --> 00:48:43,520
and they ask those questions i could see

1192
00:48:47,349 --> 00:48:45,200
myself being there like one of these

1193
00:48:49,510 --> 00:48:47,359
curious little fellas asking questions i

1194
00:48:51,670 --> 00:48:49,520
was like yeah this is this brings me

1195
00:48:54,230 --> 00:48:51,680
back this brings the excitement back

1196
00:48:55,990 --> 00:48:54,240
and so i know this will come back at the

1197
00:48:57,430 --> 00:48:56,000
latest in baikonur when we really see

1198
00:48:59,510 --> 00:48:57,440
that rocket when we climb in there i

1199
00:49:01,510 --> 00:48:59,520
know this is this is back and i know

1200
00:49:03,349 --> 00:49:01,520
this is still in there but

1201
00:49:05,270 --> 00:49:03,359
in training actually that mechanism is

1202
00:49:08,309 --> 00:49:05,280
not so bad because it kind of keeps you

1203
00:49:10,470 --> 00:49:08,319
on a on a technical level without being

1204
00:49:12,710 --> 00:49:10,480
too excited about all this

1205
00:49:14,549 --> 00:49:12,720
all the time right that's interesting

1206
00:49:16,470 --> 00:49:14,559
well we don't have any kids here today

1207
00:49:18,549 --> 00:49:16,480
but we do have some students and interns

1208
00:49:19,990 --> 00:49:18,559
here from the johnson space center so if

1209
00:49:21,270 --> 00:49:20,000
we could fit in a couple of questions

1210
00:49:22,390 --> 00:49:21,280
from them if you'll just raise your hand

1211
00:49:23,990 --> 00:49:22,400
i think we have two on this side and

1212
00:49:25,589 --> 00:49:24,000
i'll start with the young lady

1213
00:49:27,430 --> 00:49:25,599

and if you can just say your name and hi

1214
00:49:29,829 --> 00:49:27,440
i'm liz bowman i'm a pathways intern

1215
00:49:31,990 --> 00:49:29,839
from the university of alabama and this

1216
00:49:34,390 --> 00:49:32,000
is for anybody but what do you plan to

1217
00:49:37,510 --> 00:49:34,400
do to inspire today's students

1218
00:49:40,150 --> 00:49:37,520
to spark interest in space exploration

1219
00:49:41,990 --> 00:49:40,160
it's a great question i think

1220
00:49:44,470 --> 00:49:42,000
as a parent of two

1221
00:49:47,270 --> 00:49:44,480
two little children right now

1222
00:49:49,589 --> 00:49:47,280
you start to realize as a parent that

1223
00:49:51,750 --> 00:49:49,599
things that you set off to inspire kids

1224
00:49:53,670 --> 00:49:51,760
with that may not be what actually

1225
00:49:55,510 --> 00:49:53,680
clicks with those children and if you

1226
00:49:57,349 --> 00:49:55,520
think back to your own childhood i

1227
00:50:00,230 --> 00:49:57,359
guarantee there were things that your

1228
00:50:02,790 --> 00:50:00,240
parents almost did as kind of a side

1229
00:50:05,750 --> 00:50:02,800
note or a footnote in your life and that

1230
00:50:08,230 --> 00:50:05,760
is what sparked you like for me

1231
00:50:10,309 --> 00:50:08,240
my parents took me to annapolis one year

1232
00:50:12,390 --> 00:50:10,319
to watch the blue angels fly and i think

1233
00:50:16,230 --> 00:50:12,400
they did it because they wanted to do it

1234
00:50:18,549 --> 00:50:16,240
but wow it ignited me huge to go

1235
00:50:19,589 --> 00:50:18,559
fly these jets for the for the us navy

1236
00:50:22,309 --> 00:50:19,599
and so

1237
00:50:24,630 --> 00:50:22,319
i think just space flight in its own is

1238
00:50:27,589 --> 00:50:24,640

so beautiful so complicated and so

1239
00:50:29,750 --> 00:50:27,599
unique that we could try all day with

1240
00:50:32,309 --> 00:50:29,760
specific tasks but it's the things that

1241
00:50:34,710 --> 00:50:32,319
we don't try that are probably going to

1242
00:50:37,030 --> 00:50:34,720
really ignite uh the minds of some

1243
00:50:38,790 --> 00:50:37,040
children so if we can relay the message

1244
00:50:40,790 --> 00:50:38,800
great but just going up there and

1245
00:50:42,150 --> 00:50:40,800
working i think is is a phenomenal

1246
00:50:43,750 --> 00:50:42,160
motivator

1247
00:50:44,630 --> 00:50:43,760
okay i think we have another one inside

1248
00:50:46,630 --> 00:50:44,640
go ahead

1249
00:50:49,990 --> 00:50:46,640
actually if i can add to that

1250
00:50:51,990 --> 00:50:50,000
we we um we do have quite a nice set of

1251
00:50:53,430 --> 00:50:52,000
educational experiments that i mean you

1252
00:50:56,150 --> 00:50:53,440
call it experiment but it's actually an

1253
00:50:57,990 --> 00:50:56,160
educational activity that we that we do

1254
00:51:01,349 --> 00:50:58,000
up there we have a little little movie

1255
00:51:03,109 --> 00:51:01,359
clips that we degenerate and uh it's

1256
00:51:05,030 --> 00:51:03,119
it's in line what really was saying is

1257
00:51:08,390 --> 00:51:05,040
it's not like to tell people

1258
00:51:11,109 --> 00:51:08,400
what to what to do what to what they

1259
00:51:13,510 --> 00:51:11,119
what they should do in life or why uh

1260
00:51:15,750 --> 00:51:13,520
space science is so good it's more like

1261
00:51:18,230 --> 00:51:15,760
to just trigger their minds

1262
00:51:19,910 --> 00:51:18,240
um to and this is what plutarch once

1263
00:51:21,829 --> 00:51:19,920

said right i mean the mind is not a

1264
00:51:23,910 --> 00:51:21,839
vessel to be filled it's a fire to be

1265
00:51:25,430 --> 00:51:23,920
kindled and and that's what we're trying

1266
00:51:28,309 --> 00:51:25,440
to do like with little experiments that

1267
00:51:31,270 --> 00:51:28,319
we do in space just to show how

1268
00:51:33,349 --> 00:51:31,280
different the the space environment is

1269
00:51:35,990 --> 00:51:33,359
uh to us on earth like we do little

1270
00:51:37,270 --> 00:51:36,000
little things where we where we yeah

1271
00:51:38,549 --> 00:51:37,280
just like show

1272
00:51:40,069 --> 00:51:38,559
small

1273
00:51:41,430 --> 00:51:40,079
physical effects that we're used to on

1274
00:51:43,109 --> 00:51:41,440
earth but they're completely different

1275
00:51:46,230 --> 00:51:43,119
in space and we send those videos out

1276
00:51:49,030 --> 00:51:46,240
for example and then just to see to give

1277
00:51:51,829 --> 00:51:49,040
a children a starting point to think of

1278
00:51:54,710 --> 00:51:51,839
oh the world is not only what i see

1279
00:51:56,710 --> 00:51:54,720
outside my door every day it is it is

1280
00:51:59,750 --> 00:51:56,720
much more than that and and i can

1281
00:52:01,990 --> 00:51:59,760
actually grow up to be a scientist

1282
00:52:04,950 --> 00:52:02,000
or an engineer or an astronaut or a

1283
00:52:07,589 --> 00:52:04,960
pilot whatever i like to like to do if i

1284
00:52:09,589 --> 00:52:07,599
if i embrace this and just learn about

1285
00:52:11,430 --> 00:52:09,599
my environment be good at school study

1286
00:52:14,549 --> 00:52:11,440
hard and and get this

1287
00:52:16,390 --> 00:52:14,559
open get this as a ticket for for

1288
00:52:19,190 --> 00:52:16,400

doing whatever they'd like to do later

1289
00:52:22,390 --> 00:52:19,200
in life

1290
00:52:24,710 --> 00:52:22,400
thanks for adding that alex go ahead

1291
00:52:26,630 --> 00:52:24,720
hi my name is joshua woods i'm a junior

1292
00:52:27,510 --> 00:52:26,640
at columbia university and my question

1293
00:52:31,829 --> 00:52:27,520
is

1294
00:52:34,069 --> 00:52:31,839
engineering project probably one of the

1295
00:52:35,750 --> 00:52:34,079
greatest that mankind's ever done and

1296
00:52:38,230 --> 00:52:35,760
it's accomplished that way through the

1297
00:52:39,750 --> 00:52:38,240
collaboration of over a dozen different

1298
00:52:42,630 --> 00:52:39,760
countries since international space

1299
00:52:44,230 --> 00:52:42,640
station um and with that you get you

1300
00:52:46,230 --> 00:52:44,240
know advanced capabilities more access

1301
00:52:48,390 --> 00:52:46,240
to resources all these different

1302
00:52:50,790 --> 00:52:48,400
advantages but also you have to

1303
00:52:52,549 --> 00:52:50,800
overcome different language cultural

1304
00:52:54,790 --> 00:52:52,559
barriers all these sort of things and

1305
00:52:57,349 --> 00:52:54,800
it's worked out pretty well so far you

1306
00:52:59,589 --> 00:52:57,359
know iss is still going above there but

1307
00:53:01,270 --> 00:52:59,599
and your and you guys opinions and based

1308
00:53:02,150 --> 00:53:01,280
on your experience how do you think this

1309
00:53:04,870 --> 00:53:02,160
will

1310
00:53:07,190 --> 00:53:04,880
affect human space flight in the future

1311
00:53:09,030 --> 00:53:07,200
when you know say we have iss 2 and we

1312
00:53:10,470 --> 00:53:09,040
have not a dozen different countries but

1313
00:53:12,390 --> 00:53:10,480

you know two or three times as many

1314
00:53:13,829 --> 00:53:12,400
working on this one project when we're

1315
00:53:15,750 --> 00:53:13,839
trying to fit together all these

1316
00:53:17,270 --> 00:53:15,760
different philosophies and cultures how

1317
00:53:18,549 --> 00:53:17,280
do you guys see that working out in the

1318
00:53:20,710 --> 00:53:18,559
future

1319
00:53:22,710 --> 00:53:20,720
it can certainly bring some

1320
00:53:24,870 --> 00:53:22,720
uh some minor frustrations at time and

1321
00:53:26,950 --> 00:53:24,880
it can cause just a little more work but

1322
00:53:28,710 --> 00:53:26,960
i think sitting there watching

1323
00:53:31,109 --> 00:53:28,720
watching a switch between english

1324
00:53:32,470 --> 00:53:31,119
russian and uh for alex any language on

1325
00:53:38,069 --> 00:53:32,480
the planet that he would like to speak

1326
00:53:43,190 --> 00:53:40,230
and among eight others

1327
00:53:45,030 --> 00:53:43,200
anytime you bring in these outside uh

1328
00:53:48,230 --> 00:53:45,040
cultures viewpoints

1329
00:53:50,630 --> 00:53:48,240
and technical capabilities knowledge uh

1330
00:53:52,549 --> 00:53:50,640
it offers so much more to this to this

1331
00:53:55,349 --> 00:53:52,559
program and i've learned so much just

1332
00:53:57,430 --> 00:53:55,359
working with russians and germans and

1333
00:53:59,510 --> 00:53:57,440
so from that perspective you can gain a

1334
00:54:01,829 --> 00:53:59,520
whole lot but taking a step back and

1335
00:54:04,230 --> 00:54:01,839
looking at the bigger picture

1336
00:54:06,470 --> 00:54:04,240
if we really want to get off this planet

1337
00:54:08,309 --> 00:54:06,480
beyond low earth orbit it's it's a

1338
00:54:09,990 --> 00:54:08,319

financial problem and it's not one that

1339
00:54:11,430 --> 00:54:10,000
a single country is going to solve it's

1340
00:54:13,190 --> 00:54:11,440
one that our whole world is going to

1341
00:54:14,309 --> 00:54:13,200
solve together and so

1342
00:54:15,990 --> 00:54:14,319
um

1343
00:54:20,069 --> 00:54:16,000
whether it causes a few little hiccups

1344
00:54:21,430 --> 00:54:20,079
along the way it's it's definitely the

1345
00:54:23,510 --> 00:54:21,440
the only solution that we're going to

1346
00:54:25,589 --> 00:54:23,520
have and and me personally it's a

1347
00:54:28,150 --> 00:54:25,599
solution that i want because it brings

1348
00:54:30,549 --> 00:54:28,160
together all of these people and uh and

1349
00:54:32,309 --> 00:54:30,559
the result is fantastic so

1350
00:54:35,109 --> 00:54:32,319
i'm a big fan

1351
00:54:36,470 --> 00:54:35,119
and it's something that that shows us

1352
00:54:38,870 --> 00:54:36,480
just as you said

1353
00:54:41,109 --> 00:54:38,880
we as different countries different

1354
00:54:44,309 --> 00:54:41,119
nations uh we have something together

1355
00:54:45,990 --> 00:54:44,319
that is so precious because it gives us

1356
00:54:47,589 --> 00:54:46,000
the science the perspective the first

1357
00:54:50,150 --> 00:54:47,599
step out into space

1358
00:54:53,030 --> 00:54:50,160
uh that nobody wants to give away and

1359
00:54:54,710 --> 00:54:53,040
and that is a huge incentive to work

1360
00:54:56,630 --> 00:54:54,720
together like to work through uh

1361
00:54:58,309 --> 00:54:56,640
day-to-day uh

1362
00:55:00,710 --> 00:54:58,319
problems that you might have

1363
00:55:02,390 --> 00:55:00,720

it's it's just too too precious and and

1364
00:55:05,109 --> 00:55:02,400
half a space station doesn't fly like

1365
00:55:07,270 --> 00:55:05,119
you you really need to work together and

1366
00:55:08,710 --> 00:55:07,280
that's that's i think one of the major

1367
00:55:11,190 --> 00:55:08,720
achievements of this wonderful

1368
00:55:13,190 --> 00:55:11,200
laboratory i mean if you think about it

1369
00:55:16,150 --> 00:55:13,200
basically what you said right uh it's

1370
00:55:18,549 --> 00:55:16,160
been put together by i heard once more

1371
00:55:19,829 --> 00:55:18,559
than 100 000 individuals actually worked

1372
00:55:21,990 --> 00:55:19,839
and the parts

1373
00:55:24,150 --> 00:55:22,000
that came together on orbit they most of

1374
00:55:24,950 --> 00:55:24,160
the time actually have never met down on

1375
00:55:26,870 --> 00:55:24,960
earth

1376
00:55:29,030 --> 00:55:26,880
so you really have to work well together

1377
00:55:30,150 --> 00:55:29,040
to make make that all fit together and

1378
00:55:32,390 --> 00:55:30,160
and

1379
00:55:33,990 --> 00:55:32,400
if you if you told me before we have

1380
00:55:35,829 --> 00:55:34,000
this project this is how it works out i

1381
00:55:36,549 --> 00:55:35,839
would say that that'll never work

1382
00:55:38,630 --> 00:55:36,559
that'll

1383
00:55:40,309 --> 00:55:38,640
never never work together but we have

1384
00:55:42,470 --> 00:55:40,319
this space station up there and it flies

1385
00:55:44,309 --> 00:55:42,480
and it flies well and uh we we're

1386
00:55:46,470 --> 00:55:44,319
sitting here as an international crew

1387
00:55:48,710 --> 00:55:46,480
and we work well together and it shows

1388
00:55:50,630 --> 00:55:48,720

it's it's feasible and that i think

1389
00:55:51,990 --> 00:55:50,640
that's a very good perspective for the

1390
00:55:54,150 --> 00:55:52,000
future

1391
00:55:55,589 --> 00:55:54,160
all right thank you all three of you so

1392
00:55:57,109 --> 00:55:55,599
much and thank everybody for joining us

1393
00:55:58,630 --> 00:55:57,119
we are out of time that hour went by

1394
00:56:00,309 --> 00:55:58,640
really fast and we want to remind

1395
00:56:02,630 --> 00:56:00,319
everybody again that you can follow reid

1396
00:56:04,069 --> 00:56:02,640
and alex on twitter and you can follow

1397
00:56:07,109 --> 00:56:04,079
all the mission updates on our website