



1
00:01:49,640 --> 00:01:56,230

so

2
00:01:56,240 --> 00:02:00,530

you

3
00:02:21,550 --> 00:02:11,510

let it ride good morning Atlantis good

4
00:02:28,250 --> 00:02:24,740

compression is from David Hopkins from

5
00:02:31,009 --> 00:02:28,260

wardsville Missouri age 40 and he asked

6
00:02:33,229 --> 00:02:31,019

the question I noticed that the velcro

7
00:02:36,440 --> 00:02:33,239

attach points in the shuttle cabin are

8
00:02:39,649 --> 00:02:36,450

both blue and yellow any significance to

9
00:02:42,890 --> 00:02:39,659

the different colors no velcro as you

10
00:02:45,350 --> 00:02:42,900

know is a friend of astronauts is very

11
00:02:47,240 --> 00:02:45,360

easy to lose things up in space or on a

12
00:02:49,759 --> 00:02:47,250

camping trip but since there's no

13
00:02:52,309 --> 00:02:49,769

gravity things tend to float away and of

14

00:02:55,580 --> 00:02:52,319

course we use velcro to help keep things

15

00:02:58,099 --> 00:02:55,590

in place but blue velcro is permanent

16

00:03:01,129 --> 00:02:58,109

velcro that is exists on all the

17

00:03:03,319 --> 00:03:01,139

vehicles in standard locations and they

18

00:03:05,750 --> 00:03:03,329

leave it on the orbiter from flight to

19

00:03:08,960 --> 00:03:05,760

flight the yellow velcro is corruption

20

00:03:10,819 --> 00:03:08,970

that we can put in locations that make

21

00:03:16,849 --> 00:03:10,829

things easier for us for our particular

22

00:03:19,220 --> 00:03:16,859

mission now some crews put more yellow

23

00:03:21,559 --> 00:03:19,230

velcro around the vehicle and then

24

00:03:24,619 --> 00:03:21,569

multiple crews like those locations and

25

00:03:26,119 --> 00:03:24,629

so lately I've noticed that the folks

26

00:03:27,890 --> 00:03:26,129

who process the vehicles have been

27

00:03:31,000 --> 00:03:27,900

leaving some of the yellow velcro on

28

00:03:33,349 --> 00:03:31,010

because it's useful to multiple crews

29

00:03:35,720 --> 00:03:33,359

eventually if it stays in one place long

30

00:03:38,240 --> 00:03:35,730

enough then they change it to blue and

31

00:03:40,159 --> 00:03:38,250

it becomes a standard location the other

32

00:03:43,069 --> 00:03:40,169

interesting thing to note is that on the

33

00:03:46,030 --> 00:03:43,079

structure of the vehicle in the cabin we

34

00:03:49,849 --> 00:03:46,040

always put the pile art from the velcro

35

00:03:51,470 --> 00:03:49,859

and then all of the objects the movable

36

00:03:53,869 --> 00:03:51,480

objects that we move from place to place

37

00:03:56,119 --> 00:03:53,879

my cameras and pens and pencils and

38

00:04:16,390 --> 00:03:56,129

sockets we put the pile sign of the

39

00:04:30,610 --> 00:04:22,300

okay will we be using a pu today we'll

40

00:04:35,499 --> 00:04:30,620

be using a pu number one now receiving

41

00:04:37,930 --> 00:04:35,509

live television of the flight deck crew

42

00:04:44,620 --> 00:04:37,940

again preparing for the check out of the

43

00:04:46,930 --> 00:04:44,630

flight control system that's the rudder

44

00:04:48,610 --> 00:04:46,940

speed brake and ELLA vines that are used

45

00:04:50,680 --> 00:04:48,620

to steer the vehicle once it renders the

46

00:04:53,350 --> 00:04:50,690

atmosphere begins to operate like an

47

00:04:55,150 --> 00:04:53,360

airplane for this particular check out

48

00:04:57,760 --> 00:04:55,160

one of the three AP use will be

49

00:05:08,410 --> 00:04:57,770

activated this will be a pu or auxiliary

50

00:05:08,420 --> 00:05:23,190

Iannis were with you on the flight deck

51
00:05:27,600 --> 00:05:25,440
live television now coming down from

52
00:05:30,300 --> 00:05:27,610
atlantis and the flight deck in this

53
00:05:32,000 --> 00:05:30,310
image commander Jim Weatherby in pilot

54
00:05:34,080 --> 00:05:32,010
Mike bloomfield in their seats and

55
00:05:35,970 --> 00:05:34,090
directly behind the mission specialist

56
00:05:48,770 --> 00:05:35,980
Scott Pierzynski the flight engineer on

57
00:05:53,930 --> 00:05:51,230
okay Houston and they had to reselect

58
00:06:17,270 --> 00:05:53,940
the contacts there blur it isn't one a

59
00:06:44,660 --> 00:06:19,220
well maybe he can do it on the next

60
00:06:44,670 --> 00:06:52,090
here we go Houston with the three up and

61
00:06:52,100 --> 00:07:17,570
Lana's swear stand by

62
00:07:22,670 --> 00:07:19,640
this is Mission Control Houston the

63
00:07:34,510 --> 00:07:22,680

images on NASA television showing the

64
00:07:48,619 --> 00:07:46,700
marathon DPO 712 go ahead Wendy theater

65
00:08:19,020 --> 00:07:48,629
setup is complete and everything checks

66
00:08:26,340 --> 00:08:22,300
well the first question is from our duty

67
00:08:29,860 --> 00:08:26,350
to whitby greenville north carolina and

68
00:08:31,600 --> 00:08:29,870
he asked the question what was the most

69
00:08:34,330 --> 00:08:31,610
valuable thing you learned on hill today

70
00:08:37,210 --> 00:08:34,340
on there and how can it be applied to

71
00:08:39,850 --> 00:08:37,220
the International Space Station I you

72
00:08:44,410 --> 00:08:39,860
scheduled for any of the ISS missions as

73
00:08:48,520 --> 00:08:44,420
of yet this is michael forum but after

74
00:08:53,050 --> 00:08:48,530
five essen omnia and i can say that the

75
00:08:55,690 --> 00:08:53,060
most i can't think of any one thing that

76

00:08:58,720 --> 00:08:55,700

was most viable for me or berry except

77

00:09:01,420 --> 00:08:58,730

maybe that's when things get hard make

78

00:09:06,430 --> 00:09:01,430

it easier it will be later and it's best

79

00:09:09,520 --> 00:09:06,440

to take the long view and work hard to

80

00:09:13,030 --> 00:09:09,530

steadily and not let anything affect you

81

00:09:16,360 --> 00:09:13,040

too much I'm going to apply that in

82

00:09:17,890 --> 00:09:16,370

later life also i think as for future

83

00:09:21,880 --> 00:09:17,900

missions or i'm looking forward very

84

00:09:25,990 --> 00:09:21,890

much to being on earth for a while with

85

00:09:28,030 --> 00:09:26,000

my young family and do not expect to be

86

00:09:35,800 --> 00:09:28,040

on the International Space Station for

87

00:09:39,040 --> 00:09:35,810

quite a few years yet on the next

88

00:09:43,890 --> 00:09:39,050

question to Michael fall is from our

89

00:09:49,840 --> 00:09:43,900

will Stevens age 11 in Evanston Illinois

90

00:09:52,390 --> 00:09:49,850

let's tilt you will he ask the question

91

00:09:53,860 --> 00:09:52,400

what have you learned that you would

92

00:09:56,290 --> 00:09:53,870

tell the people planning the new

93

00:09:58,660 --> 00:09:56,300

international space station that's a

94

00:10:01,090 --> 00:09:58,670

very good question well and I have

95

00:10:04,120 --> 00:10:01,100

actually learned a lot of small but

96

00:10:07,450 --> 00:10:04,130

consider details as to how you might

97

00:10:09,520 --> 00:10:07,460

carry out more effectively one one's

98

00:10:12,370 --> 00:10:09,530

experience experiments and how to live

99

00:10:15,550 --> 00:10:12,380

in space and some of those things we are

100

00:10:17,860 --> 00:10:15,560

not yet doing at NASA and I will have my

101
00:10:21,550 --> 00:10:17,870
shorter telling all our experts on the

102
00:10:23,620 --> 00:10:21,560
ground what I've learned a good example

103
00:10:26,200 --> 00:10:23,630
that is quite different from space

104
00:10:29,200 --> 00:10:26,210
shuttle is that the Russians on their

105
00:10:31,650 --> 00:10:29,210
space station is rubber bungees tied to

106
00:10:33,720 --> 00:10:31,660
the walls everywhere to hold

107
00:10:35,760 --> 00:10:33,730
things in place whereas I think you know

108
00:10:38,910 --> 00:10:35,770
that we use velcro here on the space

109
00:10:42,900 --> 00:10:38,920
shuttle I believe that the combination

110
00:10:45,690 --> 00:10:42,910
of velcro on the equipment and bungees

111
00:10:48,390 --> 00:10:45,700
in general on the walls is a very good

112
00:10:50,310 --> 00:10:48,400
way for us to keep control of all the

113
00:10:53,160 --> 00:10:50,320

different things and pieces that we have

114

00:10:54,300 --> 00:10:53,170

to work with when we're in space and I

115

00:10:56,040 --> 00:10:54,310

think that's the most important thing

116

00:10:59,130 --> 00:10:56,050

I'm going to tell anybody about the

117

00:11:03,300 --> 00:10:59,140

International Space Station this is made

118

00:11:05,280 --> 00:11:03,310

three how do you hear me I'm Clara that

119

00:11:09,420 --> 00:11:05,290

match up that is indeed Jim good

120

00:11:11,280 --> 00:11:09,430

afternoon how are you doing we do that's

121

00:11:13,170 --> 00:11:11,290

the big question we all have an era as

122

00:11:14,760 --> 00:11:13,180

you've been in there for longer than

123

00:11:18,030 --> 00:11:14,770

we've been up here and we're wondering

124

00:11:20,340 --> 00:11:18,040

how you're doing Jim we do we're all

125

00:11:22,890 --> 00:11:20,350

doing great we're on day 15 out of day

126

00:11:24,480 --> 00:11:22,900

90 but we want to send some

127

00:11:26,910 --> 00:11:24,490

congratulations your way on an

128

00:11:28,830 --> 00:11:26,920

outstanding mission so far we've been

129

00:11:30,690 --> 00:11:28,840

watching you on the ground here

130

00:11:35,190 --> 00:11:30,700

throughout your mission and throughout

131

00:11:38,220 --> 00:11:35,200

hours down here well thank you very much

132

00:11:39,990 --> 00:11:38,230

it's as you know more than anyone it

133

00:11:41,520 --> 00:11:40,000

helps if you have a good crew and I have

134

00:11:43,170 --> 00:11:41,530

one of the best and these folks are

135

00:11:46,380 --> 00:11:43,180

really awesome and they've been doing a

136

00:11:49,830 --> 00:11:46,390

great job for me and so far everything's

137

00:11:52,050 --> 00:11:49,840

worked well and I guess almost the rest

138

00:11:54,030 --> 00:11:52,060

of it is up to me at least the last part

139

00:11:56,550 --> 00:11:54,040

of it but of course I can't do that

140

00:12:01,410 --> 00:11:56,560

without their continued help and support

141

00:12:03,450 --> 00:12:01,420

so we'll see how it goes yes indeed Jim

142

00:12:05,910 --> 00:12:03,460

I have to ask one question having been

143

00:12:11,510 --> 00:12:05,920

involved in training you folks in water

144

00:12:16,050 --> 00:12:14,160

well we had a tough time remembering and

145

00:12:18,660 --> 00:12:16,060

we spilled all the water and didn't

146

00:12:20,490 --> 00:12:18,670

answer any of it now we're just kidding

147

00:12:24,750 --> 00:12:20,500

it that was great training you did a

148

00:12:26,820 --> 00:12:24,760

wonderful job and it was even fun we had

149

00:12:29,460 --> 00:12:26,830

a lot of fun filling up the water bags

150

00:12:31,740 --> 00:12:29,470

and we did all just according to your

151
00:12:35,490 --> 00:12:31,750
plan and transferred I think more water

152
00:12:37,230 --> 00:12:35,500
then we had intended the most so far

153
00:12:39,030 --> 00:12:37,240
maybe even in

154
00:12:41,010 --> 00:12:39,040
the Russians were very happy with it so

155
00:12:44,220 --> 00:12:41,020
we thank you and i'm sure they thank you

156
00:12:45,600 --> 00:12:44,230
for all your great training well I hope

157
00:12:47,310 --> 00:12:45,610
Dave's going up to drink for the next

158
00:12:48,720 --> 00:12:47,320
few months there's a few folks I'd like

159
00:12:53,010 --> 00:12:48,730
to say hello to you let me pass you on

160
00:12:56,900 --> 00:12:53,020
to Vicki if I may okay well we know

161
00:13:00,990 --> 00:12:56,910
exactly who to pass on to talk to you

162
00:13:05,940 --> 00:13:01,000
related to your past job and he's right

163
00:13:08,130 --> 00:13:05,950

here with us hi Vicki good evening yeah

164

00:13:12,120 --> 00:13:08,140

now kissing me but I enjoyed your food

165

00:13:14,400 --> 00:13:12,130

is fantastic Zach beautiful and I never

166

00:13:15,960 --> 00:13:14,410

had such a good food before that it's

167

00:13:19,680 --> 00:13:15,970

the only part of that I getting more and

168

00:13:21,510 --> 00:13:19,690

more and i haven't city I am emptying

169

00:13:24,510 --> 00:13:21,520

all the containers that I just afraid

170

00:13:26,040 --> 00:13:24,520

I'm taking weight well I'm believer had

171

00:13:28,560 --> 00:13:26,050

such good for either but that's not

172

00:13:31,590 --> 00:13:28,570

because we aren't trying Sandler keep

173

00:13:34,380 --> 00:13:31,600

eating on it well I'm glad you enjoyed

174

00:13:36,360 --> 00:13:34,390

it and since I do have connections down

175

00:13:38,160 --> 00:13:36,370

at the Cape I was wondering if there's

176

00:13:39,480 --> 00:13:38,170

anything special that Mike would like to

177

00:13:46,050 --> 00:13:39,490

have waiting for him when he gets back

178

00:13:49,620 --> 00:13:46,060

oh vicki that's a very kind thought

179

00:13:52,139 --> 00:13:49,630

thanks very much but my kind of dreams

180

00:13:53,280 --> 00:13:52,149

were way ahead of you and I kept this up

181

00:13:56,160 --> 00:13:53,290

but I'm hoping that they'll have some

182

00:13:59,780 --> 00:13:56,170

lasagna and pizza there for me different

183

00:14:02,340 --> 00:13:59,790

days as was a lot of chocolate and beer

184

00:14:08,480 --> 00:14:02,350

well I'll be sure they get that message

185

00:14:14,730 --> 00:14:12,750

yes as part of this test we're doing the

186

00:14:16,949 --> 00:14:14,740

exercise countermeasure protocol that we

187

00:14:19,650 --> 00:14:16,959

used on station and I was just wondering

188

00:14:21,150 --> 00:14:19,660

if Michael Pfohl could comment on some

189

00:14:28,800 --> 00:14:21,160

of the exercise protocols they did on

190

00:14:31,819 --> 00:14:28,810

mirror how's it going the same question

191

00:14:35,690 --> 00:14:31,829

actually for you for what you're doing

192

00:14:38,850 --> 00:14:35,700

we spent basically to exercise today

193

00:14:40,620 --> 00:14:38,860

some crew members do not carry this out

194

00:14:43,829 --> 00:14:40,630

by the way I should say that but for

195

00:14:45,480 --> 00:14:43,839

plan you do two per day and it's

196

00:14:47,010 --> 00:14:45,490

time line for an hour but it takes about

197

00:14:49,610 --> 00:14:47,020

an hour and a half to two hours for each

198

00:14:51,710 --> 00:14:49,620

one of them and basically you do

199

00:14:53,960 --> 00:14:51,720

one session on a treadmill running and

200

00:14:56,600 --> 00:14:53,970

the others on an odometer and the

201
00:14:59,060 --> 00:14:56,610
odometer is between our cycling at with

202
00:15:01,640 --> 00:14:59,070
your legs and movingly odometer with

203
00:15:03,440 --> 00:15:01,650
your hands as well as that something

204
00:15:05,660 --> 00:15:03,450
which from you guys don't need on earth

205
00:15:07,970 --> 00:15:05,670
but you would do on a spaceflight are

206
00:15:09,710 --> 00:15:07,980
the what we call it expanded its a

207
00:15:11,230 --> 00:15:09,720
Russian word for these big bungees and

208
00:15:13,790 --> 00:15:11,240
they're very well designed with nice

209
00:15:15,320 --> 00:15:13,800
trimmings of things that so you can work

210
00:15:17,690 --> 00:15:15,330
out different muscles of your body just

211
00:15:19,460 --> 00:15:17,700
by being anchored to the treadmill in

212
00:15:20,450 --> 00:15:19,470
your harness and then stretching your

213
00:15:23,260 --> 00:15:20,460

arms and legs in different directions

214

00:15:25,850 --> 00:15:23,270

from standing up and doing squats and

215

00:15:27,380 --> 00:15:25,860

that system I think he's very well

216

00:15:29,660 --> 00:15:27,390

worked out by the Russians and there

217

00:15:31,940 --> 00:15:29,670

they've had 36 I was a great success

218

00:15:33,650 --> 00:15:31,950

with his overall in their program and I

219

00:15:37,250 --> 00:15:33,660

did not deviate from their protocols at

220

00:15:40,340 --> 00:15:37,260

all and i would recommend just to

221

00:15:42,590 --> 00:15:40,350

relieve some of the boredom anyway doing

222

00:15:45,350 --> 00:15:42,600

a pre serious exercise program and twice

223

00:15:48,579 --> 00:15:45,360

a day is just fine where you listen to

224

00:15:50,990 --> 00:15:48,589

music you enjoy each other's music and

225

00:15:54,250 --> 00:15:51,000

try not to get in the way of your real

226

00:15:56,630 --> 00:15:54,260

time John Lewis I got a question about

227

00:15:59,360 --> 00:15:56,640

the differing schedules that you have

228

00:16:01,640 --> 00:15:59,370

you know the shuttle base is more of a

229

00:16:03,290 --> 00:16:01,650

time line type schedule when you get

230

00:16:05,240 --> 00:16:03,300

into longer durations we've noticed in

231

00:16:07,790 --> 00:16:05,250

here through our 30 day or 60 days and

232

00:16:09,620 --> 00:16:07,800

now into our 90 day that it's kind of

233

00:16:12,320 --> 00:16:09,630

hard a time line and it's almost easier

234

00:16:14,570 --> 00:16:12,330

to set the schedules yourself on board

235

00:16:16,880 --> 00:16:14,580

the vehicle and I was just wondering how

236

00:16:22,600 --> 00:16:16,890

you all noticed that relative to the

237

00:16:25,220 --> 00:16:22,610

shuttle into the mirror experience John

238

00:16:27,980 --> 00:16:25,230

actually we start pretty close to a

239

00:16:29,900 --> 00:16:27,990

timeline most days but it's more of a

240

00:16:32,180 --> 00:16:29,910

shopping list if you see I mean I

241

00:16:34,519 --> 00:16:32,190

certainly didn't do it per the Minotaur

242

00:16:37,460 --> 00:16:34,529

/ vieira if it wasn't related to a

243

00:16:39,410 --> 00:16:37,470

ground communication path and i just

244

00:16:42,470 --> 00:16:39,420

made a point of in fact my agreement

245

00:16:44,300 --> 00:16:42,480

with the Americans in the soup of the

246

00:16:46,280 --> 00:16:44,310

Russian control center was they would

247

00:16:48,440 --> 00:16:46,290

just give me a an English version of the

248

00:16:49,910 --> 00:16:48,450

Russian timeline but without time and

249

00:16:51,980 --> 00:16:49,920

you just say we want these experiments

250

00:16:53,600 --> 00:16:51,990

done today these activities finished do

251
00:16:56,990 --> 00:16:53,610
them when you can and that was certainly

252
00:17:00,020 --> 00:16:57,000
flexible enough for me and we I think

253
00:17:01,460 --> 00:17:00,030
executed that pretty well I agree I

254
00:17:02,410 --> 00:17:01,470
think you need some flexibility

255
00:17:05,720 --> 00:17:02,420
when you're in this sort of environment

256
00:17:07,940 --> 00:17:05,730
trying to work all the time to to a-rod

257
00:17:10,160 --> 00:17:07,950
artificial schedule seems to be 30

258
00:17:13,340 --> 00:17:10,170
points and I think you lose interest in

259
00:17:14,840 --> 00:17:13,350
it as a crew member of course one thing

260
00:17:17,680 --> 00:17:14,850
I think I don't know if you have it but

261
00:17:20,690 --> 00:17:17,690
is a question are you tied to specific

262
00:17:27,470 --> 00:17:20,700
AOS other less times with a control team

263
00:17:31,550 --> 00:17:27,480

or not Mike no in fact we have no I OS

264

00:17:33,890 --> 00:17:31,560

or LOL OS periods in fact the 8080 for

265

00:17:36,050 --> 00:17:33,900

maybe the 81 crew had suggested maybe we

266

00:17:37,970 --> 00:17:36,060

should have some blackout periods with

267

00:17:40,040 --> 00:17:37,980

the crew on the inside we did not

268

00:17:42,260 --> 00:17:40,050

instigate that for particularly in our

269

00:17:43,670 --> 00:17:42,270

case the safety reasons but it is

270

00:17:46,160 --> 00:17:43,680

something certainly will be looking at

271

00:17:48,410 --> 00:17:46,170

when we go to further out missions on

272

00:17:51,920 --> 00:17:48,420

the ground here such as bioflex which is

273

00:17:54,230 --> 00:17:51,930

our next next phase while i'm thinking

274

00:17:56,630 --> 00:17:54,240

about that i do have a question for

275

00:18:00,200 --> 00:17:56,640

Scott and Vladimir about the about the e

276

00:18:02,660 --> 00:18:00,210

VA I'm wondering how how you both found

277

00:18:05,090 --> 00:18:02,670

it out there Vladimir I'm sure has not

278

00:18:07,820 --> 00:18:05,100

been in the knee mu on orbit before but

279

00:18:09,260 --> 00:18:07,830

and Scott I'm wondering how you two got

280

00:18:10,610 --> 00:18:09,270

on together out there and there must

281

00:18:15,830 --> 00:18:10,620

have been very beautiful looking up of

282

00:18:18,110 --> 00:18:15,840

me oh it's just spectacular it was like

283

00:18:19,340 --> 00:18:18,120

I said during a VA one of the most

284

00:18:21,980 --> 00:18:19,350

beautiful things that I've ever seen

285

00:18:25,100 --> 00:18:21,990

before and I'd sort of the buzzword for

286

00:18:29,120 --> 00:18:25,110

the crew but it was unbelievable and it

287

00:18:32,600 --> 00:18:29,130

truly was and we had some surprises

288

00:18:34,700 --> 00:18:32,610

during the VA for one my safety tether

289

00:18:37,600 --> 00:18:34,710

froze up so I had to use an alternate

290

00:18:40,550 --> 00:18:37,610

tethering technique which was fairly

291

00:18:42,410 --> 00:18:40,560

hand fatigue II but there was a pretty

292

00:18:46,130 --> 00:18:42,420

steep learning curve and we were able to

293

00:18:47,960 --> 00:18:46,140

get the job done nonetheless but a lot

294

00:18:51,530 --> 00:18:47,970

of memories of the spacewalk for

295

00:18:55,010 --> 00:18:51,540

everything in particular one pass over

296

00:18:56,750 --> 00:18:55,020

dandies that was cloud free and we could

297

00:19:00,020 --> 00:18:56,760

just see forever and ever the entire

298

00:19:03,470 --> 00:19:00,030

curvature of the earth and I just looked

299

00:19:06,590 --> 00:19:03,480

over at Volodya and he had a grin from

300

00:19:09,500 --> 00:19:06,600

ear to ear it was one of the happiest

301
00:19:10,700 --> 00:19:09,510
smiles have ever seen in my life and so

302
00:19:14,520 --> 00:19:10,710
that's it that's a memory that all

303
00:19:16,710 --> 00:19:14,530
always cherish from this white

304
00:19:23,510 --> 00:19:16,720
I guess I'll pass it to you to talk

305
00:19:31,800 --> 00:19:27,270
hello both fields Russian they're

306
00:19:36,810 --> 00:19:31,810
Americans used allowed us to make every

307
00:19:38,850 --> 00:19:36,820
test we have right now in space and yes

308
00:19:41,810 --> 00:19:38,860
we have some differences between two

309
00:19:45,990 --> 00:19:41,820
suits but it's not big big difference

310
00:19:51,780 --> 00:19:46,000
because both use was created for

311
00:19:56,780 --> 00:19:51,790
spacewalk and I expect you space suit

312
00:19:59,940 --> 00:19:56,790
new joint space suit where we take went

313
00:20:02,460 --> 00:19:59,950

devices from both suits and created you

314

00:20:04,110 --> 00:20:02,470

for International Space Station one last

315

00:20:06,960 --> 00:20:04,120

question for you guys up there I guess

316

00:20:09,450 --> 00:20:06,970

in terms of wrapping up with missions on

317

00:20:12,240 --> 00:20:09,460

me or four months or greater from the US

318

00:20:14,010 --> 00:20:12,250

point of view and stays on station

319

00:20:16,080 --> 00:20:14,020

scheduled to be in the same time frame

320

00:20:18,060 --> 00:20:16,090

how do you think we'll we're going to

321

00:20:25,650 --> 00:20:18,070

cope with missions to Mars for example

322

00:20:27,900 --> 00:20:25,660

of up to two years in length well that's

323

00:20:30,920 --> 00:20:27,910

a really good question John and I talked

324

00:20:33,630 --> 00:20:30,930

a lot about that with the cosmonauts and

325

00:20:37,440 --> 00:20:33,640

the big difference about being in space

326
00:20:38,760 --> 00:20:37,450
about the earth on station mayor all the

327
00:20:42,780 --> 00:20:38,770
International Space Station is that you

328
00:20:44,850 --> 00:20:42,790
have that beautiful view other thing is

329
00:20:46,590 --> 00:20:44,860
if you on a trip to Mars I'm assuming

330
00:20:48,270 --> 00:20:46,600
you're talking about as wrong versions

331
00:20:49,800 --> 00:20:48,280
where you take about six months to go

332
00:20:52,830 --> 00:20:49,810
there and about a year on the surface

333
00:20:54,300 --> 00:20:52,840
than a six-month stack the journey then

334
00:20:57,690 --> 00:20:54,310
a journey back is going to be where all

335
00:20:59,370 --> 00:20:57,700
the problem is and you just have bright

336
00:21:01,470 --> 00:20:59,380
see the Sun coming in right now it's

337
00:21:03,240 --> 00:21:01,480
totally black it other than the Sun out

338
00:21:05,280 --> 00:21:03,250

there if you look away from the earth

339

00:21:08,580 --> 00:21:05,290

and that's the way it will be going to

340

00:21:11,010 --> 00:21:08,590

Mars absolutely dull quite quite dull

341

00:21:13,110 --> 00:21:11,020

and featureless during that trip very

342

00:21:15,750 --> 00:21:13,120

quickly VF have become small and Mars

343

00:21:17,040 --> 00:21:15,760

would not be visible and raced through

344

00:21:20,430 --> 00:21:17,050

the airport don't be visible because of

345

00:21:21,750 --> 00:21:20,440

the brightness of the Sun and in those

346

00:21:23,400 --> 00:21:21,760

conditions I think we'd be closer to

347

00:21:25,529 --> 00:21:23,410

what you're experiencing right now

348

00:21:27,960 --> 00:21:25,539

you're going to have to find

349

00:21:30,210 --> 00:21:27,970

things to do that keep you busy the

350

00:21:33,509 --> 00:21:30,220

whole time and even though I saw some

351
00:21:35,899 --> 00:21:33,519
very hard things on mere I was busy I

352
00:21:40,409 --> 00:21:35,909
had things to do and the time went by

353
00:21:41,879 --> 00:21:40,419
pleasantly and and fast enough the one

354
00:21:43,259 --> 00:21:41,889
of the most favorite things i did and i

355
00:21:45,180 --> 00:21:43,269
hope you have something like this i had

356
00:21:47,249 --> 00:21:45,190
no idea what you have was a greenhouse

357
00:21:48,930 --> 00:21:47,259
and all I'll do is going right now

358
00:21:51,180 --> 00:21:48,940
temperatures and moisture for these

359
00:21:53,969 --> 00:21:51,190
plants but I would grow i groped three

360
00:21:56,190 --> 00:21:53,979
generations of seeds and had to make

361
00:21:58,589 --> 00:21:56,200
observations very painstaking ones and

362
00:22:00,690 --> 00:21:58,599
then get the data down and discuss that

363
00:22:02,940 --> 00:22:00,700

with the investigators for that

364

00:22:05,460 --> 00:22:02,950

experiment really kept me going in terms

365

00:22:09,089 --> 00:22:05,470

of my interest in the inner space side

366

00:22:11,129 --> 00:22:09,099

and i think but not so much as making

367

00:22:13,649 --> 00:22:11,139

work for a crew that's going to Mars but

368

00:22:15,719 --> 00:22:13,659

actually just finding activities that is

369

00:22:16,830 --> 00:22:15,729

unnecessary on a ship like that and

370

00:22:20,009 --> 00:22:16,840

making sure that there's crew

371

00:22:24,029 --> 00:22:20,019

involvement in a very habitual way will

372

00:22:25,919 --> 00:22:24,039

help them greatly well Mike we copy that

373

00:22:27,839 --> 00:22:25,929

in fact we are growing lettuce in here

374

00:22:30,479 --> 00:22:27,849

and relying on some wheat for some of

375

00:22:33,419 --> 00:22:30,489

our air revitalization but time's

376

00:22:35,009 --> 00:22:33,429

running short we we wish you folks got

377

00:22:36,419 --> 00:22:35,019

speed and farewell and we'll look