



1
00:00:05,190 --> 00:00:03,429
good morning i'm alan ladwig from the

2
00:00:08,390 --> 00:00:05,200
office of communication welcome to this

3
00:00:10,310 --> 00:00:08,400
special valentine's day edition of our

4
00:00:12,070 --> 00:00:10,320
astronaut presentations we have three

5
00:00:14,310 --> 00:00:12,080
astronauts today who served on the

6
00:00:15,589 --> 00:00:14,320
international space station uh that are

7
00:00:17,189 --> 00:00:15,599
going to be telling you about their

8
00:00:18,630 --> 00:00:17,199
adventures in space

9
00:00:20,150 --> 00:00:18,640
those of you that brought me chocolates

10
00:00:21,990 --> 00:00:20,160
i'll be waiting for it outside the door

11
00:00:24,150 --> 00:00:22,000
after this is over

12
00:00:25,750 --> 00:00:24,160
uh it's been a busy week here at nasa

13
00:00:27,429 --> 00:00:25,760

for all those people that seem to think

14

00:00:29,750 --> 00:00:27,439

nasa has gone out of business because

15

00:00:31,669 --> 00:00:29,760

the shuttles no longer fly

16

00:00:33,670 --> 00:00:31,679

i don't know who they talk to i'm busier

17

00:00:35,830 --> 00:00:33,680

than can be and i know all of you are as

18

00:00:37,430 --> 00:00:35,840

well this has been a particularly busy

19

00:00:40,310 --> 00:00:37,440

week because of the rollout of the

20

00:00:42,229 --> 00:00:40,320

president's fiscal year 2013 budget

21

00:00:44,229 --> 00:00:42,239

yesterday

22

00:00:46,069 --> 00:00:44,239

we had a big roll out here with the

23

00:00:48,310 --> 00:00:46,079

press conference for the administrator

24

00:00:50,549 --> 00:00:48,320

and beth robinson our chief financial

25

00:00:52,389 --> 00:00:50,559

officer that was followed by press

26

00:00:56,470 --> 00:00:52,399

conferences with each of the mission

27

00:00:59,510 --> 00:00:56,480

directorates and um and now this week uh

28

00:01:02,310 --> 00:00:59,520

lori garber our deputy is uh was down at

29

00:01:04,950 --> 00:01:02,320

uh marshall yesterday uh is on her way

30

00:01:06,950 --> 00:01:04,960

to langley this week charlie bolden our

31

00:01:08,469 --> 00:01:06,960

administrator is out at goddard today

32

00:01:11,350 --> 00:01:08,479

he's going to kennedy at the end of the

33

00:01:13,750 --> 00:01:11,360

week and within the next uh within two

34

00:01:16,149 --> 00:01:13,760

weeks they plan to visit all the centers

35

00:01:17,749 --> 00:01:16,159

to have all hand briefings to talk about

36

00:01:19,510 --> 00:01:17,759

the budget and what to expect in the

37

00:01:21,510 --> 00:01:19,520

year ahead

38

00:01:23,910 --> 00:01:21,520

also charlie will be speaking at the

39

00:01:25,510 --> 00:01:23,920

space club tomorrow morning

40

00:01:26,950 --> 00:01:25,520

this is kind of an annual tradition

41

00:01:28,870 --> 00:01:26,960

where the first

42

00:01:31,109 --> 00:01:28,880

outside group that the administrator

43

00:01:33,670 --> 00:01:31,119

talks to about the budget is the space

44

00:01:35,590 --> 00:01:33,680

club so we're looking forward to that

45

00:01:37,670 --> 00:01:35,600

at the same time a lot of us are very

46

00:01:40,230 --> 00:01:37,680

busy getting ready for the preparation

47

00:01:43,670 --> 00:01:40,240

and the arrival of the discovery orbiter

48

00:01:45,590 --> 00:01:43,680

out at the udvar hazy museum or udar

49

00:01:48,069 --> 00:01:45,600

hazy center of the national air space

50

00:01:49,350 --> 00:01:48,079

museum and that will be arriving on

51

00:01:51,910 --> 00:01:49,360

april

52

00:01:55,350 --> 00:01:51,920

i want to say the 17th with the ceremony

53

00:01:57,590 --> 00:01:55,360

of the transfer on april 19th and will

54

00:02:00,550 --> 00:01:57,600

actually have discovery and the

55

00:02:02,469 --> 00:02:00,560

enterprise nose to nose in a ceremony

56

00:02:05,270 --> 00:02:02,479

out there at dulles and then that

57

00:02:07,830 --> 00:02:05,280

following monday enterprise heads up to

58

00:02:10,550 --> 00:02:07,840

the intrepid museum in new york so a lot

59

00:02:12,070 --> 00:02:10,560

of activities going on also later this

60

00:02:14,309 --> 00:02:12,080

month we've got three different

61

00:02:16,390 --> 00:02:14,319

activities to commemorate the 50th

62

00:02:17,830 --> 00:02:16,400

anniversary of john glenn's first

63

00:02:20,070 --> 00:02:17,840

orbital flight

64

00:02:22,869 --> 00:02:20,080

back in 1962.

65

00:02:25,270 --> 00:02:22,879

so with that we have three astronauts

66

00:02:27,430 --> 00:02:25,280

today with us and they have a busy week

67

00:02:30,070 --> 00:02:27,440

uh ron garan is going to be tweet doing

68

00:02:31,509 --> 00:02:30,080

a tweet up this afternoon uh katie

69

00:02:33,190 --> 00:02:31,519

coleman

70

00:02:35,910 --> 00:02:33,200

and um

71

00:02:38,229 --> 00:02:35,920

uh mike fossum are going to be leaving

72

00:02:39,990 --> 00:02:38,239

here after lunch going over the air and

73

00:02:42,470 --> 00:02:40,000

space museum they're all speaking

74

00:02:44,309 --> 00:02:42,480

tonight at the university of maryland to

75

00:02:46,150 --> 00:02:44,319

students out there they're spending a

76

00:02:48,150 --> 00:02:46,160

day on the hill tomorrow to talk to

77

00:02:49,990 --> 00:02:48,160

congressmen and senators about nasa's

78

00:02:52,070 --> 00:02:50,000

activities they have an event at the

79

00:02:54,470 --> 00:02:52,080

norwegian embassy they're doing a

80

00:02:56,790 --> 00:02:54,480

presentation for employees at the agency

81

00:02:58,630 --> 00:02:56,800

for international development so they

82

00:03:00,470 --> 00:02:58,640

have a very busy week while they are

83

00:03:02,390 --> 00:03:00,480

here and we run them pretty hard but

84

00:03:04,470 --> 00:03:02,400

we're glad they came to share their

85

00:03:06,229 --> 00:03:04,480

adventures with us today

86

00:03:08,550 --> 00:03:06,239

we've got kind of a unique group today

87

00:03:11,190 --> 00:03:08,560

they're all three air force colonels are

88

00:03:14,149 --> 00:03:11,200

retired uh so this must be driving the

89

00:03:16,070 --> 00:03:14,159

navy astronauts crazy to have just an

90

00:03:18,550 --> 00:03:16,080

air force crew here today

91

00:03:21,509 --> 00:03:18,560

we've got mike fossum of sioux falls

92

00:03:23,270 --> 00:03:21,519

south dakota he went to texas a m air

93

00:03:25,509 --> 00:03:23,280

force institute of technology in the

94

00:03:28,990 --> 00:03:25,519

university of houston he became an

95

00:03:32,030 --> 00:03:29,000

astronaut in 1998 he flew on

96

00:03:36,309 --> 00:03:32,040

sts-121 in 2006

97

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

sts-124 in 2008 and was the commander of

98

00:03:39,190 --> 00:03:38,239

expedition 29

99

00:03:41,030 --> 00:03:39,200

uh

100

00:03:42,710 --> 00:03:41,040

in 2000

101
00:03:45,030 --> 00:03:42,720
last year i think it was

102
00:03:46,390 --> 00:03:45,040
we also have ron garan another former

103
00:03:48,869 --> 00:03:46,400
air force colonel

104
00:03:52,949 --> 00:03:48,879
uh from yonkers new york he attended

105
00:03:55,509 --> 00:03:52,959
sony at the college of oneota uh emory

106
00:03:58,550 --> 00:03:55,519
riddle and the university of florida he

107
00:04:02,630 --> 00:03:58,560
served in operation desert storm he was

108
00:04:04,710 --> 00:04:02,640
selected as a nasa pilot in july of 2000

109
00:04:07,830 --> 00:04:04,720
he flew um

110
00:04:11,030 --> 00:04:07,840
along with michael on sts-124

111
00:04:14,789 --> 00:04:11,040
and was on expedition 27 and 28.

112
00:04:16,870 --> 00:04:14,799
and then caddy coleman or katie coleman

113
00:04:19,349 --> 00:04:16,880

from south carolina actually went to

114

00:04:22,069 --> 00:04:19,359

school here locally at w.t woodson high

115

00:04:24,790 --> 00:04:22,079

school in fairfax she also went to mit

116

00:04:28,469 --> 00:04:24,800

and the university of massachusetts uh

117

00:04:29,350 --> 00:04:28,479

joined nasa in 1992

118

00:04:33,350 --> 00:04:29,360

and

119

00:04:37,189 --> 00:04:33,360

was on sts 73 sts 93

120

00:04:39,430 --> 00:04:37,199

and on expedition 26 and 27 she will be

121

00:04:42,150 --> 00:04:39,440

forever remembered in popular culture as

122

00:04:45,110 --> 00:04:42,160

a flautus and she played a duet when she

123

00:04:47,430 --> 00:04:45,120

was on the space station with uh ian

124

00:04:49,110 --> 00:04:47,440

anderson from jethro tall and for all

125

00:04:51,350 --> 00:04:49,120

you young whippersnappers that was one

126

00:04:53,110 --> 00:04:51,360

of the great bands of the 60s

127

00:04:54,550 --> 00:04:53,120

so

128

00:04:56,710 --> 00:04:54,560

we have

129

00:04:58,950 --> 00:04:56,720

photographs of each of the astronauts is

130

00:05:00,950 --> 00:04:58,960

on a table just outside here in the uh

131

00:05:02,950 --> 00:05:00,960

hallway that has already been uh

132

00:05:05,270 --> 00:05:02,960

autographed for you so please feel free

133

00:05:07,189 --> 00:05:05,280

to pick one of those up and with that

134

00:05:19,189 --> 00:05:07,199

let's all please give a big nasa

135

00:05:23,270 --> 00:05:21,350

hi thank you very much

136

00:05:24,870 --> 00:05:23,280

just we're we're all excited to be here

137

00:05:26,790 --> 00:05:24,880

today you've got i guess uh three

138

00:05:28,469 --> 00:05:26,800

colonels all uh lined up in a row here

139

00:05:31,590 --> 00:05:28,479

air force colonel type so yeah i think

140

00:05:33,590 --> 00:05:31,600

the navy guys uh were sleeping when all

141

00:05:35,749 --> 00:05:33,600

the sequential assignments were being

142

00:05:38,550 --> 00:05:35,759

made either they're smart enough not to

143

00:05:40,310 --> 00:05:38,560

get locked in a can for half a year

144

00:05:42,469 --> 00:05:40,320

they get that out of their system as

145

00:05:45,670 --> 00:05:42,479

submariners and stores

146

00:05:48,950 --> 00:05:45,680

we actually rick uh represent a total of

147

00:05:50,870 --> 00:05:48,960

uh one year a complete year on the iss

148

00:05:53,270 --> 00:05:50,880

right here with katie launching last

149

00:05:55,990 --> 00:05:53,280

december 16th

150

00:05:59,189 --> 00:05:56,000

uh just barely the 16th as i recall and

151

00:06:01,270 --> 00:05:59,199

uh uh ron launched in april

152

00:06:03,430 --> 00:06:01,280

april 12th oh

153

00:06:05,189 --> 00:06:03,440

six yeah and then uh

154

00:06:07,350 --> 00:06:05,199

when when it was time for katie to come

155

00:06:10,230 --> 00:06:07,360

home i took her place up there so we

156

00:06:11,830 --> 00:06:10,240

kind of tagged uh figuratively she was

157

00:06:13,590 --> 00:06:11,840

landing we were going through the final

158

00:06:14,469 --> 00:06:13,600

launch preparations and then i got home

159

00:06:16,469 --> 00:06:14,479

just

160

00:06:18,550 --> 00:06:16,479

the end the end of the year

161

00:06:20,710 --> 00:06:18,560

and so we're really excited to

162

00:06:22,950 --> 00:06:20,720

come to washington today and to a nasa

163

00:06:24,629 --> 00:06:22,960

headquarters to say thanks to all of the

164

00:06:26,309 --> 00:06:24,639

people here that helped make this

165

00:06:28,309 --> 00:06:26,319

possible that have worked for so many

166

00:06:31,990 --> 00:06:28,319

decades on the international space

167

00:06:33,990 --> 00:06:32,000

station program and to now really see it

168

00:06:36,309 --> 00:06:34,000

come into life and not not just coming

169

00:06:38,790 --> 00:06:36,319

to life but to see it done and that in

170

00:06:41,270 --> 00:06:38,800

the last year it's been a really huge

171

00:06:43,029 --> 00:06:41,280

thing as we've completed the assembly

172

00:06:45,029 --> 00:06:43,039

phase of the iss

173

00:06:47,110 --> 00:06:45,039

and moved into

174

00:06:49,110 --> 00:06:47,120

uh the full utilization now that it's

175

00:06:51,029 --> 00:06:49,120

built and it all works and we worked so

176

00:06:52,790 --> 00:06:51,039

hard for so many years on all of the

177

00:06:54,950 --> 00:06:52,800

unknowns associated with getting it

178

00:06:57,510 --> 00:06:54,960

ready and each sequential step in the

179

00:06:59,189 --> 00:06:57,520

build and it's done it's really done and

180

00:07:00,870 --> 00:06:59,199

it's an amazing place

181

00:07:02,870 --> 00:07:00,880

what else want to see

182

00:07:04,950 --> 00:07:02,880

well we're going to show you uh a short

183

00:07:07,189 --> 00:07:04,960

film that kind of combines that year on

184

00:07:08,710 --> 00:07:07,199

the iss and you know can't possibly show

185

00:07:11,189 --> 00:07:08,720

you everything we did but we're hoping

186

00:07:13,589 --> 00:07:11,199

that it gives you a flavor of

187

00:07:15,430 --> 00:07:13,599

what it's like to live up there because

188

00:07:17,749 --> 00:07:15,440

there's there's working but there's also

189

00:07:19,909 --> 00:07:17,759

just living you know 24 hours a day and

190

00:07:21,909 --> 00:07:19,919

as you see this film think of our crew

191

00:07:23,909 --> 00:07:21,919

that is our cruise two crews that are up

192

00:07:26,550 --> 00:07:23,919

there right now six people you know

193

00:07:29,029 --> 00:07:26,560

living up there doing science and you

194

00:07:30,390 --> 00:07:29,039

know for me if i could have

195

00:07:31,749 --> 00:07:30,400

packed up my whole family and brought

196

00:07:33,749 --> 00:07:31,759

them and i'm actually taking this quote

197

00:07:35,670 --> 00:07:33,759

from don pettit who's up there

198

00:07:37,990 --> 00:07:35,680

uh i would have brought them i mean

199

00:07:40,550 --> 00:07:38,000

there's actually no reason for people

200

00:07:45,270 --> 00:07:40,560

not to live there just all the time and

201

00:07:48,869 --> 00:07:46,950

well it's it's really exciting to be

202

00:07:50,869 --> 00:07:48,879

here like mike said you know and katie

203

00:07:52,390 --> 00:07:50,879

that we want to come out here and thank

204

00:07:54,390 --> 00:07:52,400

everybody for the for the tremendous

205

00:07:56,070 --> 00:07:54,400

support that uh that the whole space

206

00:07:58,790 --> 00:07:56,080

program gets and

207

00:08:00,869 --> 00:07:58,800

um you know we we were part of history

208

00:08:02,309 --> 00:08:00,879

uh we being everybody in this room and

209

00:08:03,670 --> 00:08:02,319

everybody headquarters and everybody at

210

00:08:04,869 --> 00:08:03,680

all the centers and everybody who had

211

00:08:06,230 --> 00:08:04,879

anything to do

212

00:08:08,790 --> 00:08:06,240

with the space shuttles and the space

213

00:08:11,029 --> 00:08:08,800

station um we basically

214

00:08:12,070 --> 00:08:11,039

saw that transition from first of all

215

00:08:13,749 --> 00:08:12,080

the construction of the international

216

00:08:16,070 --> 00:08:13,759

space station and full utilization of

217

00:08:17,990 --> 00:08:16,080

the space station uh the construction

218

00:08:19,990 --> 00:08:18,000

phase and the payback on investment

219

00:08:21,510 --> 00:08:20,000

phase if you will where we are getting

220

00:08:23,670 --> 00:08:21,520

tremendous payback through the

221

00:08:26,309 --> 00:08:23,680

scientific research that is full speed

222

00:08:27,830 --> 00:08:26,319

right now so we saw that we also saw the

223

00:08:29,510 --> 00:08:27,840

closing of a chapter in our space

224

00:08:32,070 --> 00:08:29,520

program's history in the uh retirement

225

00:08:34,070 --> 00:08:32,080

of the space shuttle um but we really

226

00:08:36,149 --> 00:08:34,080

felt uh as we witnessed that uh

227

00:08:37,829 --> 00:08:36,159

firsthand that we were also watching the

228

00:08:39,829 --> 00:08:37,839

opening of a new chapter that will

229

00:08:41,269 --> 00:08:39,839

hopefully see us going beyond low earth

230

00:08:42,790 --> 00:08:41,279

orbit and exploring the rest of the

231

00:08:44,790 --> 00:08:42,800

solar system so

232

00:08:46,389 --> 00:08:44,800

that's uh that was really exciting to be

233

00:08:48,870 --> 00:08:46,399

a part of that uh that little piece of

234

00:08:50,790 --> 00:08:48,880

history so um i think we're ready to

235

00:08:52,310 --> 00:08:50,800

start let me just give a quick preface

236

00:08:54,550 --> 00:08:52,320

for it i mean you see our patches up

237

00:08:56,949 --> 00:08:54,560

here behind us and that's uh katie went

238

00:09:00,550 --> 00:08:56,959

up and joined expedition 26 on the far

239

00:09:02,710 --> 00:09:00,560

left and she was up there for 26 and 27

240

00:09:04,550 --> 00:09:02,720

when ron got there that was the uh kind

241

00:09:06,550 --> 00:09:04,560

of the beginning of the expedition 27

242

00:09:08,790 --> 00:09:06,560

time frame and so we each wear you know

243

00:09:10,870 --> 00:09:08,800

two mission patches were there for you

244

00:09:13,030 --> 00:09:10,880

know two expeditions that's right and

245

00:09:15,910 --> 00:09:13,040

katie's got him both on her sleeve here

246

00:09:18,630 --> 00:09:15,920

uh when katie left at the end of it 27

247

00:09:20,550 --> 00:09:18,640

28 started and that's when i joined ron

248

00:09:22,710 --> 00:09:20,560

uh and then i finished up

249

00:09:24,790 --> 00:09:22,720

with the expedition 29 and so that's why

250

00:09:26,870 --> 00:09:24,800

we have the the four different

251

00:09:28,949 --> 00:09:26,880

expedition patches to uh pretty much

252

00:09:31,030 --> 00:09:28,959

cover the year and 30 picked up as the

253

00:09:32,949 --> 00:09:31,040

hatch closed on us those guys are still

254

00:09:35,350 --> 00:09:32,959

up there you're also going to see a lot

255

00:09:36,550 --> 00:09:35,360

of kind of coming and going in the film

256

00:09:39,269 --> 00:09:36,560

and that's because we're not is that

257

00:09:42,070 --> 00:09:40,310

that's because

258

00:09:44,790 --> 00:09:42,080

the the crew going up and down is not

259

00:09:47,750 --> 00:09:44,800

the only traffic that that goes on um

260

00:09:49,590 --> 00:09:47,760

during our expedition during 26 and 27

261

00:09:52,790 --> 00:09:49,600

we had a couple progress the russian

262

00:09:54,389 --> 00:09:52,800

supply missions we had the japanese htvs

263

00:09:56,790 --> 00:09:54,399

the japanese supply ship and the

264

00:09:58,710 --> 00:09:56,800

europa automated transfer vehicle so

265

00:10:00,630 --> 00:09:58,720

those vehicles all came up during our

266

00:10:02,949 --> 00:10:00,640

tenure there and so you'll see some of

267

00:10:06,150 --> 00:10:02,959

those coming and going as well as two

268

00:10:07,750 --> 00:10:06,160

space shuttle missions 133 and uh well i

269

00:10:11,350 --> 00:10:07,760

was up there and then when ron was up

270

00:10:15,110 --> 00:10:11,360

there as well 134 and in fact our crew

271

00:10:17,750 --> 00:10:15,120

paolo and i undocked during sts-134 so

272

00:10:19,670 --> 00:10:17,760

it's really kind of a busy busy time and

273

00:10:22,069 --> 00:10:19,680

i think it speaks to what we're doing

274

00:10:23,350 --> 00:10:22,079

right now at nasa with commercial crew

275

00:10:24,790 --> 00:10:23,360

because

276

00:10:27,590 --> 00:10:24,800

candidly getting people up and down on

277

00:10:29,190 --> 00:10:27,600

the space station is doable and it's the

278

00:10:31,350 --> 00:10:29,200

right time for the commercial companies

279

00:10:33,590 --> 00:10:31,360

you know with our help so that nobody's

280

00:10:35,590 --> 00:10:33,600

reinventing the wheel to be

281

00:10:38,150 --> 00:10:35,600

doing that kind of process

282

00:10:40,310 --> 00:10:38,160

and the people the crew on the station

283

00:10:42,150 --> 00:10:40,320

is focusing on doing the experiments

284

00:10:43,910 --> 00:10:42,160

that are coming up and down on those

285

00:10:45,590 --> 00:10:43,920

supply ships so it's very exciting time

286

00:10:47,350 --> 00:10:45,600

but you'll find it's a little confusing

287

00:10:48,630 --> 00:10:47,360

when you see all the people you wonder

288

00:10:50,230 --> 00:10:48,640

if we're all just waving goodbye all the

289

00:10:51,590 --> 00:10:50,240
time

290

00:10:53,350 --> 00:10:51,600
you know while we're talking about the

291

00:10:56,710 --> 00:10:53,360
patches too if you look at the

292

00:10:58,949 --> 00:10:56,720
exhibition 28 patch the 50 on the bottom

293

00:11:00,470 --> 00:10:58,959
has the name gagarin and shepard with it

294

00:11:02,949 --> 00:11:00,480
too and and the other part of history we

295

00:11:05,430 --> 00:11:02,959
got to witness was the 50th anniversary

296

00:11:06,790 --> 00:11:05,440
of the first human space yuri gagarin

297

00:11:10,150 --> 00:11:06,800
and the 50th anniversary of the first

298

00:11:12,310 --> 00:11:10,160
american in space alan shepard and uh

299

00:11:13,829 --> 00:11:12,320
um my russian crewmates and i launched

300

00:11:15,990 --> 00:11:13,839
from and actually all these guys

301
00:11:18,230 --> 00:11:16,000
launched from the same launch pad that

302
00:11:19,829 --> 00:11:18,240
your gagarin launched from and we

303
00:11:21,269 --> 00:11:19,839
launched very close to the that 50th

304
00:11:22,630 --> 00:11:21,279
anniversary so the name of our rocket

305
00:11:24,230 --> 00:11:22,640
was gagarin and the name of our

306
00:11:25,190 --> 00:11:24,240
spacecraft was gagarin so i thought that

307
00:11:27,110 --> 00:11:25,200
was a

308
00:11:29,190 --> 00:11:27,120
pretty good tribute being that all of us

309
00:11:30,870 --> 00:11:29,200
were born at the height of the cold war

310
00:11:33,110 --> 00:11:30,880
and i was born in the same year that uh

311
00:11:34,550 --> 00:11:33,120
yuri gagarin uh launched into the space

312
00:11:36,630 --> 00:11:34,560
i just thought it was amazing that 50

313
00:11:38,310 --> 00:11:36,640

years later that we'd all be flying on

314

00:11:40,310 --> 00:11:38,320

you know with our russian crewmates i

315

00:11:42,630 --> 00:11:40,320

think you'll see a picture of the six of

316

00:11:43,990 --> 00:11:42,640

us on april 12th celebrating in our own

317

00:11:46,069 --> 00:11:44,000

way up there on the space station all

318

00:11:47,269 --> 00:11:46,079

wearing uh t-shirts that ron and his

319

00:11:50,230 --> 00:11:47,279

crew brought for us that have yuri

320

00:11:51,990 --> 00:11:50,240

gagarin's face on there

321

00:11:53,430 --> 00:11:52,000

okay well let's uh let's go ahead and

322

00:11:54,470 --> 00:11:53,440

take a look at the video again this

323

00:11:56,389 --> 00:11:54,480

represents

324

00:11:59,670 --> 00:11:56,399

an entire year in space

325

00:11:59,680 --> 00:12:14,230

we go fast but not that fast

326

00:12:17,829 --> 00:12:16,230

well since i was first i launched about

327

00:12:19,350 --> 00:12:17,839

two days after my

328

00:12:20,629 --> 00:12:19,360

50th birthday

329

00:12:22,870 --> 00:12:20,639

and if you know my signature you know i

330

00:12:23,990 --> 00:12:22,880

was nervous signing my door

331

00:12:25,110 --> 00:12:24,000

this is the place that we stay in

332

00:12:27,590 --> 00:12:25,120

baikonur

333

00:12:29,350 --> 00:12:27,600

and we get there's lots of really

334

00:12:31,670 --> 00:12:29,360

interesting russian traditions we get

335

00:12:34,310 --> 00:12:31,680

blessed by the russian priests

336

00:12:35,030 --> 00:12:34,320

we report to the russian officials and

337

00:12:36,470 --> 00:12:35,040

they

338

00:12:39,269 --> 00:12:36,480

give us a great send-off there on the

339

00:12:41,269 --> 00:12:39,279

launch pad in baikonur and i can't tell

340

00:12:43,430 --> 00:12:41,279

you how amazing it is to i mean even

341

00:12:45,910 --> 00:12:43,440

looking at it i just think wow i was in

342

00:12:47,590 --> 00:12:45,920

that very very small thing and actually

343

00:12:50,389 --> 00:12:47,600

this is the part i loved about it was

344

00:12:52,550 --> 00:12:50,399

being in a small soyuz spacecraft so

345

00:12:54,550 --> 00:12:52,560

close to the earth and yet uh so far

346

00:12:56,069 --> 00:12:54,560

away as well it's easy for her to say

347

00:12:57,590 --> 00:12:56,079

look at her eyes

348

00:12:59,269 --> 00:12:57,600

hey this is my favorite part of the

349

00:13:01,030 --> 00:12:59,279

whole movie okay even though you see my

350

00:13:02,790 --> 00:13:01,040

rear end and

351

00:13:05,190 --> 00:13:02,800

but because it's not about floating

352

00:13:07,110 --> 00:13:05,200

around up in space it's about flying i

353

00:13:10,230 --> 00:13:07,120

mean that place is huge and here comes

354

00:13:12,550 --> 00:13:10,240

the the japanese supply ship that htv

355

00:13:13,750 --> 00:13:12,560

that paolo nespoli and i were in charge

356

00:13:15,829 --> 00:13:13,760

of actually catching that with the

357

00:13:17,910 --> 00:13:15,839

robotic arm so we're on the controls

358

00:13:19,190 --> 00:13:17,920

reaching out grabbing that thing if you

359

00:13:21,110 --> 00:13:19,200

didn't read about it in the papers it's

360

00:13:22,150 --> 00:13:21,120

because we did not mess it up we're very

361

00:13:24,550 --> 00:13:22,160

proud of that

362

00:13:25,430 --> 00:13:24,560

then we just saw the the european supply

363

00:13:27,910 --> 00:13:25,440

mission

364

00:13:31,190 --> 00:13:27,920

and and that docks automatically with uh

365

00:13:33,910 --> 00:13:31,200

sasha uh caleri and paulo shepherding

366

00:13:35,590 --> 00:13:33,920

and now we have the arrival of sts-133

367

00:13:37,829 --> 00:13:35,600

they are looking at us and we are

368

00:13:40,790 --> 00:13:37,839

looking at them there's nicole stott the

369

00:13:42,790 --> 00:13:40,800

rest of her crew steve lindsey

370

00:13:45,750 --> 00:13:42,800

and they they brought up the mplm it's

371

00:13:47,269 --> 00:13:45,760

our giant closet and it may sound

372

00:13:49,189 --> 00:13:47,279

trivial to you but

373

00:13:51,670 --> 00:13:49,199

having a place to put things where

374

00:13:53,509 --> 00:13:51,680

things are not packed eight things deep

375

00:13:55,269 --> 00:13:53,519

um is is actually the key to doing

376

00:13:57,269 --> 00:13:55,279

science up there is having enough space

377

00:13:59,110 --> 00:13:57,279

to actually operate and their crew

378

00:14:01,269 --> 00:13:59,120

brought the mplm did the spacewalks to

379

00:14:03,030 --> 00:14:01,279

hook it all up helped us unpack it and

380

00:14:06,389 --> 00:14:03,040

get it ready and also brought us the

381

00:14:07,350 --> 00:14:06,399

robonaut and this guy is really pretty

382

00:14:09,189 --> 00:14:07,360

cool

383

00:14:10,389 --> 00:14:09,199

we'll get him out to play later but then

384

00:14:12,389 --> 00:14:10,399

scott and his crew so i was up there

385

00:14:14,550 --> 00:14:12,399

with scott kelly and his two uh russian

386

00:14:15,990 --> 00:14:14,560

crewmates uh they left we had a little

387

00:14:17,189 --> 00:14:16,000

spare time got to do a little flute

388

00:14:19,110 --> 00:14:17,199

playing there

389

00:14:21,350 --> 00:14:19,120

and uh and a lot of time for science one

390

00:14:22,310 --> 00:14:21,360

of my favorite fluids experiments there

391

00:14:24,470 --> 00:14:22,320

and

392

00:14:26,870 --> 00:14:24,480

it's ronnie on board

393

00:14:28,790 --> 00:14:26,880

it was fun opening up the hat and seeing

394

00:14:30,629 --> 00:14:28,800

these guys on the other side

395

00:14:32,470 --> 00:14:30,639

we had to get acclimated really quickly

396

00:14:34,389 --> 00:14:32,480

though because um well first of all we

397

00:14:37,030 --> 00:14:34,399

were going to celebrate the uh

398

00:14:38,870 --> 00:14:37,040

the 50th anniversary uh first human

399

00:14:40,710 --> 00:14:38,880

space flight right after we arrived and

400

00:14:41,990 --> 00:14:40,720

that's that's us celebrating that but

401
00:14:44,629 --> 00:14:42,000
then we had the

402
00:14:45,910 --> 00:14:44,639
arrival of sts-134 hears us all in our

403
00:14:48,790 --> 00:14:45,920
crew quarters our respective crew

404
00:14:50,629 --> 00:14:48,800
quarters and here comes a spatial

405
00:14:51,990 --> 00:14:50,639
endeavor coming aboard that's the view

406
00:14:53,910 --> 00:14:52,000
that they had of us

407
00:14:55,269 --> 00:14:53,920
when they came on board

408
00:14:57,590 --> 00:14:55,279
they brought the alpha magnetic

409
00:14:58,629 --> 00:14:57,600
spectrometer this is this instrument

410
00:15:00,710 --> 00:14:58,639
that

411
00:15:03,269 --> 00:15:00,720
basically helps us look at dark energy

412
00:15:04,870 --> 00:15:03,279
and dark matter things that we didn't

413
00:15:06,790 --> 00:15:04,880

know a lot about and are learning more

414

00:15:08,790 --> 00:15:06,800

even i mean already today that thing is

415

00:15:11,030 --> 00:15:08,800

working um we also because we had paolo

416

00:15:13,990 --> 00:15:11,040

nespoli and roberto vettori on board two

417

00:15:15,590 --> 00:15:14,000

italians um the pope uh got arranged a

418

00:15:16,629 --> 00:15:15,600

conference we were all pretty excited

419

00:15:20,710 --> 00:15:16,639

about that

420

00:15:22,470 --> 00:15:20,720

that roberto brought really good italian

421

00:15:23,990 --> 00:15:22,480

food

422

00:15:25,350 --> 00:15:24,000

and i love this picture of the station

423

00:15:27,030 --> 00:15:25,360

in the shuttle dock just it's a

424

00:15:28,710 --> 00:15:27,040

representation of the work that

425

00:15:31,030 --> 00:15:28,720

everybody here has done to create an

426

00:15:33,269 --> 00:15:31,040

outpost space where people can live and

427

00:15:35,030 --> 00:15:33,279

work and do i think just simply amazing

428

00:15:37,269 --> 00:15:35,040

things i didn't actually want to come

429

00:15:39,430 --> 00:15:37,279

home um i mean eventually i did want to

430

00:15:41,030 --> 00:15:39,440

come home but i would have stayed six

431

00:15:42,790 --> 00:15:41,040

months longer in a minute because

432

00:15:44,550 --> 00:15:42,800

there's just so much good work to do it

433

00:15:45,910 --> 00:15:44,560

takes you a while to get good at it but

434

00:15:47,910 --> 00:15:45,920

then

435

00:15:50,550 --> 00:15:47,920

sooner or later it's time to leave

436

00:15:52,550 --> 00:15:50,560

and uh as they're undocking paulo and

437

00:15:55,030 --> 00:15:52,560

katie and dima took these amazing

438

00:15:57,189 --> 00:15:55,040

pictures of special endeavor dock to the

439

00:15:59,430 --> 00:15:57,199

space station it was uh it was sad to

440

00:16:00,870 --> 00:15:59,440

see those guys leave they abandoned us

441

00:16:02,470 --> 00:16:00,880

in the middle of the mission in the

442

00:16:04,150 --> 00:16:02,480

middle of the night

443

00:16:05,110 --> 00:16:04,160

they just snuck out and they were gone

444

00:16:07,350 --> 00:16:05,120

but

445

00:16:09,350 --> 00:16:07,360

it was a very busy mission they did four

446

00:16:10,550 --> 00:16:09,360

spacewalks and delivered tons of

447

00:16:13,350 --> 00:16:10,560

equipment and

448

00:16:14,949 --> 00:16:13,360

here's katie returned to the earth

449

00:16:17,030 --> 00:16:14,959

you know we've learned a lot about

450

00:16:18,470 --> 00:16:17,040

exercise and what we need to do to keep

451

00:16:20,550 --> 00:16:18,480

people people healthy it's part of our

452

00:16:22,150 --> 00:16:20,560

mission to use the space station to you

453

00:16:24,710 --> 00:16:22,160

know make sure people can be healthy for

454

00:16:26,870 --> 00:16:24,720

exploring further you know i i came back

455

00:16:28,470 --> 00:16:26,880

in in great shape as did these guys and

456

00:16:30,069 --> 00:16:28,480

it's a tribute to what we've learned

457

00:16:32,230 --> 00:16:30,079

those lessons come right back here to

458

00:16:33,590 --> 00:16:32,240

earth about osteoporosis and

459

00:16:34,710 --> 00:16:33,600

unfortunately i think the word is that

460

00:16:37,110 --> 00:16:34,720

basically we're all going to have to

461

00:16:38,790 --> 00:16:37,120

exercise our whole lives

462

00:16:41,430 --> 00:16:38,800

and eat healthy

463

00:16:43,990 --> 00:16:41,440

so shortly after katie left

464

00:16:46,470 --> 00:16:44,000

and never left and here comes mike and

465

00:16:48,710 --> 00:16:46,480

the guys coming aboard just a few weeks

466

00:16:50,389 --> 00:16:48,720

later it was a very busy time a lot of

467

00:16:52,150 --> 00:16:50,399

traffic coming and going

468

00:16:53,590 --> 00:16:52,160

so you know mike traveled he was two and

469

00:16:54,870 --> 00:16:53,600

a half days in the capsule and he

470

00:16:56,629 --> 00:16:54,880

launched he went a million miles

471

00:16:58,470 --> 00:16:56,639

launched from russia and he was a little

472

00:16:59,990 --> 00:16:58,480

upset with me because uh all i had

473

00:17:01,670 --> 00:17:00,000

waiting for was a bag of coffee a

474

00:17:05,669 --> 00:17:01,680

vincent carl egg of instant coffee

475

00:17:08,309 --> 00:17:07,270

it was great to get up there though and

476

00:17:09,669 --> 00:17:08,319

we did

477

00:17:11,909 --> 00:17:09,679

have to jump right into it we were on

478

00:17:13,829 --> 00:17:11,919

the road to 135 preparing for atlantis

479

00:17:16,470 --> 00:17:13,839

as well as you know getting getting to

480

00:17:19,270 --> 00:17:16,480

work ourselves and

481

00:17:21,189 --> 00:17:19,280

cleaning up some of the messes uh and uh

482

00:17:23,110 --> 00:17:21,199

it's hey hey hey

483

00:17:25,270 --> 00:17:23,120

it was uh it was i mean it's it's always

484

00:17:27,270 --> 00:17:25,280

amazing and uh finally i think about

485

00:17:29,350 --> 00:17:27,280

five weeks after we got there atlantis

486

00:17:32,310 --> 00:17:29,360

was uh coming aboard

487

00:17:33,990 --> 00:17:32,320

it was uh great to have this view of

488

00:17:35,510 --> 00:17:34,000

atlantis or i think ron got that picture

489

00:17:36,710 --> 00:17:35,520

there

490

00:17:38,950 --> 00:17:36,720

you know it's like a hurricane when a

491

00:17:40,470 --> 00:17:38,960

shuttle arrives i mean in that there's

492

00:17:42,310 --> 00:17:40,480

so much work to do in such a short

493

00:17:43,590 --> 00:17:42,320

amount of time and it's amazing when a

494

00:17:45,830 --> 00:17:43,600

team comes together like this and does

495

00:17:47,750 --> 00:17:45,840

it and mike and i got to do our fourth

496

00:17:49,830 --> 00:17:47,760

space walk together on that mission we

497

00:17:52,310 --> 00:17:49,840

got to do the uh the one space walk on

498

00:17:54,070 --> 00:17:52,320

135 and it was uh it was great getting

499

00:17:55,110 --> 00:17:54,080

out the door um it was kind of like

500

00:17:56,870 --> 00:17:55,120

going in you're

501
00:17:59,270 --> 00:17:56,880
out in your backyard after being in

502
00:18:01,830 --> 00:17:59,280
space that long

503
00:18:04,310 --> 00:18:01,840
that we we brought the broken pump

504
00:18:07,669 --> 00:18:04,320
module home on board atlantis and we

505
00:18:10,630 --> 00:18:07,679
moved a remote refueling mission rrm

506
00:18:12,390 --> 00:18:10,640
payload to the out from the cargo bay to

507
00:18:14,230 --> 00:18:12,400
the outside of the station

508
00:18:16,390 --> 00:18:14,240
and then run and i just found out last

509
00:18:18,789 --> 00:18:16,400
week we hold the record for the two

510
00:18:21,110 --> 00:18:18,799
people with the most space walk time

511
00:18:23,350 --> 00:18:21,120
together that's kind of cool

512
00:18:25,510 --> 00:18:23,360
i love this picture yeah it's a lot of

513
00:18:28,150 --> 00:18:25,520

work uh and we had of course huge

514

00:18:29,350 --> 00:18:28,160

support from the 135 crew and we're

515

00:18:31,029 --> 00:18:29,360

fortunate that

516

00:18:33,750 --> 00:18:31,039

that we were able to you know called on

517

00:18:35,350 --> 00:18:33,760

to do the space walk for that time

518

00:18:37,190 --> 00:18:35,360

so you know when that mission was over

519

00:18:39,110 --> 00:18:37,200

we got to ring the bell and signify the

520

00:18:41,029 --> 00:18:39,120

departure of atlantis but also the

521

00:18:43,590 --> 00:18:41,039

departure of the space shuttles from i

522

00:18:46,789 --> 00:18:43,600

think of that arm there is a salute yeah

523

00:18:48,470 --> 00:18:46,799

as it backs away from the station

524

00:18:49,909 --> 00:18:48,480

it was kind of a bittersweet time for us

525

00:18:53,430 --> 00:18:49,919

yep

526

00:18:55,510 --> 00:18:53,440

got kind of quiet after that

527

00:18:56,630 --> 00:18:55,520

back in august though about a month

528

00:18:59,110 --> 00:18:56,640

before

529

00:19:00,870 --> 00:18:59,120

i returned i was i was in the cupola

530

00:19:03,909 --> 00:19:00,880

that's the windowed observatory on the

531

00:19:05,909 --> 00:19:03,919

bottom of the space station and um i was

532

00:19:07,350 --> 00:19:05,919

getting set up to take some pictures for

533

00:19:10,310 --> 00:19:07,360

some of the time lapse photography that

534

00:19:12,870 --> 00:19:10,320

i think you'll see later in the video

535

00:19:13,990 --> 00:19:12,880

mike was doing a lot of that as well and

536

00:19:15,510 --> 00:19:14,000

i was getting ready to delete the

537

00:19:17,909 --> 00:19:15,520

practice shots when something caught my

538

00:19:20,390 --> 00:19:17,919

eye this this bright illuminated line

539

00:19:23,270 --> 00:19:20,400

snaked across hundreds of miles across a

540

00:19:25,350 --> 00:19:23,280

large landmass and initially i wrote

541

00:19:27,510 --> 00:19:25,360

that off as you know just strange

542

00:19:29,510 --> 00:19:27,520

reflection of moonlight on a on a river

543

00:19:31,110 --> 00:19:29,520

but it turns out that that wasn't a

544

00:19:32,230 --> 00:19:31,120

natural reflection at all you know many

545

00:19:34,070 --> 00:19:32,240

of us say

546

00:19:35,510 --> 00:19:34,080

you can't see any borders from space but

547

00:19:37,430 --> 00:19:35,520

apparently we're wrong because that was

548

00:19:39,430 --> 00:19:37,440

actually the man-made illuminated border

549

00:19:41,270 --> 00:19:39,440

between india and pakistan

550

00:19:43,270 --> 00:19:41,280

and seeing that had had a really big

551
00:19:45,029 --> 00:19:43,280
impact on me because you know for the 50

552
00:19:46,789 --> 00:19:45,039
years that we've been flying in space

553
00:19:48,150 --> 00:19:46,799
astronauts and cosmonauts have commented

554
00:19:49,909 --> 00:19:48,160
on how beautiful how peaceful how

555
00:19:51,430 --> 00:19:49,919
fragile the earth looks from space and

556
00:19:53,190 --> 00:19:51,440
it you know these are not cliches that

557
00:19:55,590 --> 00:19:53,200
that astronauts said because it feels

558
00:19:57,350 --> 00:19:55,600
good it really is moving to look down on

559
00:19:58,789 --> 00:19:57,360
earth but i think the the point is not

560
00:20:00,150 --> 00:19:58,799
whether we could look down and see a

561
00:20:02,149 --> 00:20:00,160
man-made border between india and

562
00:20:04,549 --> 00:20:02,159
pakistan the point is that we could look

563
00:20:06,070 --> 00:20:04,559

down at that same area and feel empathy

564

00:20:08,149 --> 00:20:06,080

for the struggles that all people face

565

00:20:09,669 --> 00:20:08,159

you know we could look down and see this

566

00:20:11,270 --> 00:20:09,679

beautiful planet that we've been given

567

00:20:12,630 --> 00:20:11,280

to realize that we're you know all

568

00:20:14,470 --> 00:20:12,640

riding through the universe together on

569

00:20:16,149 --> 00:20:14,480

the spaceship that we call earth but

570

00:20:17,669 --> 00:20:16,159

after five and a half months on board it

571

00:20:18,549 --> 00:20:17,679

was it was time to say goodbye to our

572

00:20:20,950 --> 00:20:18,559

friends

573

00:20:22,710 --> 00:20:20,960

say goodbye to our home on the iss

574

00:20:24,710 --> 00:20:22,720

and it you know again it was it was very

575

00:20:26,950 --> 00:20:24,720

bittersweet and we wanted to savor our

576

00:20:28,630 --> 00:20:26,960

last moments in space as we uh

577

00:20:31,110 --> 00:20:28,640

undocked and did a couple of laps around

578

00:20:32,789 --> 00:20:31,120

our planet and uh

579

00:20:34,710 --> 00:20:32,799

this is some of the uh time-lapse

580

00:20:37,190 --> 00:20:34,720

photography that

581

00:20:39,270 --> 00:20:37,200

that we took there's the uh

582

00:20:41,190 --> 00:20:39,280

the black sea right there

583

00:20:43,430 --> 00:20:41,200

this is a new way of doing photography

584

00:20:45,190 --> 00:20:43,440

up there that these guys actually

585

00:20:47,350 --> 00:20:45,200

perfected of doing time-lapse

586

00:20:48,789 --> 00:20:47,360

photography and getting to see what

587

00:20:51,190 --> 00:20:48,799

getting to see this

588

00:20:53,750 --> 00:20:51,200

and to me this is the way that you get

589

00:20:55,669 --> 00:20:53,760

to see what it was like for us up there

590

00:20:57,590 --> 00:20:55,679

and how it felt to be going around the

591

00:20:58,470 --> 00:20:57,600

earth not actually this fast it's sped

592

00:21:00,710 --> 00:20:58,480

up for

593

00:21:02,549 --> 00:21:00,720

you know those time lapse but it's just

594

00:21:04,789 --> 00:21:02,559

really excited about that one because we

595

00:21:06,470 --> 00:21:04,799

can finally share it with you we see all

596

00:21:07,909 --> 00:21:06,480

these amazing things and we know that

597

00:21:09,669 --> 00:21:07,919

the camera is not going to capture it

598

00:21:11,190 --> 00:21:09,679

and we don't have the words we're

599

00:21:13,430 --> 00:21:11,200

engineers and scientists we don't have

600

00:21:15,029 --> 00:21:13,440

the words to really describe it watch

601
00:21:17,270 --> 00:21:15,039
the moon rise and the moon's reflection

602
00:21:19,430 --> 00:21:17,280
here just just as new zealand just went

603
00:21:21,750 --> 00:21:19,440
by on the right it's it's it's really

604
00:21:23,350 --> 00:21:21,760
stunning so it's a it's a lot of fun to

605
00:21:25,029 --> 00:21:23,360
be able to capture this and this wasn't

606
00:21:26,470 --> 00:21:25,039
official work this is all you know kind

607
00:21:28,230 --> 00:21:26,480
of free time and weekends trying to

608
00:21:30,149 --> 00:21:28,240
figure out how to get things right and

609
00:21:32,549 --> 00:21:30,159
then get sequences of photos that we can

610
00:21:35,110 --> 00:21:32,559
string together to make these videos

611
00:21:36,549 --> 00:21:35,120
and uh we're excited because this allows

612
00:21:38,789 --> 00:21:36,559
us to share it there's ronnie coming

613
00:21:44,230 --> 00:21:40,710

looks bad

614

00:21:47,270 --> 00:21:44,240

physics this is physics in action and it

615

00:21:50,549 --> 00:21:48,870

but that left things a little quieter on

616

00:21:53,190 --> 00:21:50,559

board because there was

617

00:21:54,950 --> 00:21:53,200

some delays in the soyuz line at that

618

00:21:57,510 --> 00:21:54,960

time so we had a crew of three for a

619

00:21:59,110 --> 00:21:57,520

couple of months during expedition 29

620

00:22:00,710 --> 00:21:59,120

we were able to get robonaut out and put

621

00:22:02,710 --> 00:22:00,720

him to work through some of his paces

622

00:22:08,230 --> 00:22:02,720

here he's the first humanoid robot in

623

00:22:12,390 --> 00:22:10,230

and so it was a little quieter but we

624

00:22:14,149 --> 00:22:12,400

were able to participate in a lot of the

625

00:22:16,310 --> 00:22:14,159

experiments we

626
00:22:17,350 --> 00:22:16,320
we were up to full speed by then and so

627
00:22:19,110 --> 00:22:17,360
we were

628
00:22:20,549 --> 00:22:19,120
you know working very effectively and

629
00:22:22,630 --> 00:22:20,559
managed to keep things going you

630
00:22:25,430 --> 00:22:22,640
exercise with a bungee cords holding you

631
00:22:27,669 --> 00:22:25,440
to the treadmill a shower doesn't work

632
00:22:29,270 --> 00:22:27,679
so you wash up with uh just a washcloth

633
00:22:31,270 --> 00:22:29,280
and soapy water

634
00:22:32,870 --> 00:22:31,280
uh going to bed means climbing into your

635
00:22:34,710 --> 00:22:32,880
sleeping bag that's stacked to the wall

636
00:22:36,390 --> 00:22:34,720
there's no reason to lay it out any

637
00:22:42,310 --> 00:22:36,400
flatter than that because it's a wall

638
00:22:45,830 --> 00:22:44,149

you're maintaining systems at the same

639

00:22:48,710 --> 00:22:45,840

time

640

00:22:50,789 --> 00:22:48,720

and experiments a cargo ship means fresh

641

00:22:52,310 --> 00:22:50,799

things like onions which we're eating

642

00:22:53,909 --> 00:22:52,320

like apples

643

00:22:55,990 --> 00:22:53,919

i know it seems weird but it's a taste

644

00:22:58,310 --> 00:22:56,000

of earth the free time was spinning that

645

00:23:00,070 --> 00:22:58,320

cupola the amazing window cluster on the

646

00:23:01,590 --> 00:23:00,080

bottom of the station here's what it

647

00:23:02,870 --> 00:23:01,600

looks like when you're doing a reboost

648

00:23:04,870 --> 00:23:02,880

on the station

649

00:23:07,110 --> 00:23:04,880

and when we let go we're at a constant

650

00:23:11,110 --> 00:23:07,120

speed the station is accelerating away

651
00:23:14,710 --> 00:23:12,390
it's kind of cool

652
00:23:18,149 --> 00:23:14,720
here's satoshi furukawa demonstrating

653
00:23:20,549 --> 00:23:18,159
his baseball skills with a one-man team

654
00:23:22,630 --> 00:23:20,559
both teams one man playing baseball

655
00:23:24,230 --> 00:23:22,640
gotta pitch it nice pitch satoshi now

656
00:23:25,190 --> 00:23:24,240
he's got to go faster than the pitched

657
00:23:26,870 --> 00:23:25,200
ball

658
00:23:28,070 --> 00:23:26,880
it's a little easier in space than it is

659
00:23:31,510 --> 00:23:28,080
on the ground

660
00:23:34,070 --> 00:23:31,520
grab the bat let's go batter up

661
00:23:37,669 --> 00:23:34,080
oh we got it it's a hit it's a pop fly

662
00:23:38,789 --> 00:23:37,679
can he feel that ball

663
00:23:42,310 --> 00:23:38,799

let's see it

664

00:23:45,909 --> 00:23:44,230

this is what i meant about flying up

665

00:23:48,310 --> 00:23:45,919

there it's not about floating around

666

00:23:51,269 --> 00:23:48,320

it's about a whole new world to live and

667

00:23:52,789 --> 00:23:51,279

work in because all our experiments can

668

00:23:54,789 --> 00:23:52,799

take advantage of this weightlessness as

669

00:23:56,710 --> 00:23:54,799

well oh midair the experiments are a

670

00:23:59,350 --> 00:23:56,720

little better i think

671

00:24:00,789 --> 00:23:59,360

finally in november mid-november the

672

00:24:02,950 --> 00:24:00,799

expedition uh

673

00:24:05,269 --> 00:24:02,960

30 crew dan burbank and his crewmates

674

00:24:06,230 --> 00:24:05,279

came aboard we just had six days with

675

00:24:07,750 --> 00:24:06,240

them

676
00:24:10,070 --> 00:24:07,760
not counting the day they arrived and

677
00:24:13,110 --> 00:24:10,080
left we had four days to hand over the

678
00:24:15,110 --> 00:24:13,120
entire space station we did our best uh

679
00:24:17,029 --> 00:24:15,120
they're a great crew they are up there

680
00:24:19,510 --> 00:24:17,039
today and they were joined by the next

681
00:24:21,430 --> 00:24:19,520
crew of about a month later

682
00:24:22,789 --> 00:24:21,440
so it was uh after

683
00:24:24,230 --> 00:24:22,799
i think we didn't sleep for the four

684
00:24:26,149 --> 00:24:24,240
days we were really working and handing

685
00:24:27,990 --> 00:24:26,159
over it's time for us to climb aboard

686
00:24:29,750 --> 00:24:28,000
our soyuz spacecraft

687
00:24:31,430 --> 00:24:29,760
and get the hatches closed and do all

688
00:24:32,870 --> 00:24:31,440

the leak checks and stuff to begin our

689

00:24:35,669 --> 00:24:32,880

journey toward home

690

00:24:37,110 --> 00:24:35,679

it was uh really amazing to as we backed

691

00:24:38,549 --> 00:24:37,120

away from the station looking out the

692

00:24:41,350 --> 00:24:38,559

window to see the

693

00:24:43,110 --> 00:24:41,360

to see it growing dim and here's here we

694

00:24:44,390 --> 00:24:43,120

are coming home inside a meteor we're

695

00:24:45,510 --> 00:24:44,400

actually the little dot in the middle of

696

00:24:47,430 --> 00:24:45,520

the screen

697

00:24:50,230 --> 00:24:47,440

and the two uh throwaway parts of the

698

00:24:52,070 --> 00:24:50,240

soyuz are burning up behind us

699

00:24:55,029 --> 00:24:52,080

that that had never been seen before

700

00:24:56,950 --> 00:24:55,039

because we landed before dawn here

701

00:24:57,830 --> 00:24:56,960

and uh in an unusual

702

00:25:00,230 --> 00:24:57,840

um

703

00:25:02,070 --> 00:25:00,240

kind of unusual but that was uh dictated

704

00:25:04,149 --> 00:25:02,080

by us delaying a little bit so we could

705

00:25:07,990 --> 00:25:04,159

greet the other crew and hand over

706

00:25:12,390 --> 00:25:10,230

bill ingles right here he's got that

707

00:25:24,310 --> 00:25:12,400

amazing photo and then we of course

708

00:25:28,149 --> 00:25:26,230

the words just don't do it justice it's

709

00:25:35,510 --> 00:25:28,159

a it's you know been an amazing uh

710

00:25:40,950 --> 00:25:37,990

that was a year on the iss yep

711

00:25:43,269 --> 00:25:40,960

okay well we have time for questions uh

712

00:25:45,110 --> 00:25:43,279

and as the moderator i'm going to do the

713

00:25:47,590 --> 00:25:45,120

moderator's prerogative to start off

714

00:25:49,909 --> 00:25:47,600

okay uh for those of us in the field of

715

00:25:53,029 --> 00:25:49,919

communications what can we do to help

716

00:25:54,549 --> 00:25:53,039

you all tell the stories of space

717

00:25:56,950 --> 00:25:54,559

station better

718

00:25:58,870 --> 00:25:56,960

um i think the public doesn't have a

719

00:26:00,470 --> 00:25:58,880

good appreciation for the fact that it's

720

00:26:02,070 --> 00:26:00,480

up there all the time it's been up there

721

00:26:04,390 --> 00:26:02,080

for over 10 years

722

00:26:06,390 --> 00:26:04,400

and what can we do to help get that word

723

00:26:07,990 --> 00:26:06,400

out more what can we do to help you well

724

00:26:10,870 --> 00:26:08,000

you know i think that the whole playing

725

00:26:12,789 --> 00:26:10,880

field in that regard has changed and in

726

00:26:14,310 --> 00:26:12,799

the past i think the public had you know

727

00:26:16,149 --> 00:26:14,320

followed along on space missions as

728

00:26:17,830 --> 00:26:16,159

spectators and i think we have the

729

00:26:19,510 --> 00:26:17,840

opportunity now through a lot of the the

730

00:26:21,750 --> 00:26:19,520

new technology that we have is to have

731

00:26:24,149 --> 00:26:21,760

the public along as fellow crew members

732

00:26:26,710 --> 00:26:24,159

and a lot of the interactive things like

733

00:26:28,630 --> 00:26:26,720

like twitter and facebook and and google

734

00:26:31,510 --> 00:26:28,640

plus and all these other platforms

735

00:26:32,950 --> 00:26:31,520

enable us to have not only real contact

736

00:26:35,110 --> 00:26:32,960

uh with people on the ground we're in

737

00:26:37,269 --> 00:26:35,120

space but actually collaborate with them

738

00:26:38,710 --> 00:26:37,279

i know that on twitter

739

00:26:39,990 --> 00:26:38,720

i was sending pictures down to some of

740

00:26:41,430 --> 00:26:40,000

the friends i met on twitter and they

741

00:26:42,789 --> 00:26:41,440

were helping me identify them and so

742

00:26:43,510 --> 00:26:42,799

that when i sent them out you know i

743

00:26:45,110 --> 00:26:43,520

could

744

00:26:46,470 --> 00:26:45,120

it's it's more interesting when you send

745

00:26:47,830 --> 00:26:46,480

out a really cool picture to know where

746

00:26:48,950 --> 00:26:47,840

that was and to maybe tell something

747

00:26:50,789 --> 00:26:48,960

about it but we don't always have the

748

00:26:52,149 --> 00:26:50,799

time on board you know we're very busy

749

00:26:54,230 --> 00:26:52,159

with all the experiments that we're

750

00:26:56,470 --> 00:26:54,240

doing so it's it's really good to have

751
00:26:58,630 --> 00:26:56,480
uh that support from the public and

752
00:27:00,950 --> 00:26:58,640
again i i don't mean just as spectators

753
00:27:02,710 --> 00:27:00,960
i mean it there really is a a valid

754
00:27:03,990 --> 00:27:02,720
important role that the public can serve

755
00:27:06,070 --> 00:27:04,000
in helping

756
00:27:07,110 --> 00:27:06,080
us uh to tell a story a little bit

757
00:27:08,710 --> 00:27:07,120
better and

758
00:27:10,470 --> 00:27:08,720
a lot of the technology that we have as

759
00:27:11,430 --> 00:27:10,480
far as the cameras that you see

760
00:27:13,350 --> 00:27:11,440
um

761
00:27:14,870 --> 00:27:13,360
one of our gun i think we all share this

762
00:27:16,390 --> 00:27:14,880
and i think the guys on board now share

763
00:27:17,830 --> 00:27:16,400

this too is we don't want to just take

764

00:27:19,990 --> 00:27:17,840

the same pictures you can see from a

765

00:27:21,830 --> 00:27:20,000

satellite we've got humans in space for

766

00:27:24,230 --> 00:27:21,840

a reason you know for many reasons one

767

00:27:26,710 --> 00:27:24,240

of them is that we can share the emotion

768

00:27:27,750 --> 00:27:26,720

of of that too and so you know a lot of

769

00:27:29,830 --> 00:27:27,760

us try and

770

00:27:31,350 --> 00:27:29,840

include those type of emotional things

771

00:27:33,350 --> 00:27:31,360

uh in the in the pictures that we take

772

00:27:34,870 --> 00:27:33,360

in the time-lapse photography uh the

773

00:27:36,950 --> 00:27:34,880

when you see the time-lapse photography

774

00:27:39,190 --> 00:27:36,960

that gives a whole new uh element to it

775

00:27:40,389 --> 00:27:39,200

you know maybe certain camera angles uh

776

00:27:42,549 --> 00:27:40,399

certain times of the day where you could

777

00:27:43,990 --> 00:27:42,559

see shadows being cast on the horizon

778

00:27:46,470 --> 00:27:44,000

you know those are things that really

779

00:27:48,149 --> 00:27:46,480

help us to to you know show the emotion

780

00:27:51,029 --> 00:27:48,159

of living and working in space and i

781

00:27:53,750 --> 00:27:51,039

think it goes a long way

782

00:27:55,430 --> 00:27:53,760

okay questions from the audience

783

00:27:58,070 --> 00:27:55,440

don't be bashful

784

00:28:02,230 --> 00:27:58,080

we don't get them here that often uh

785

00:28:06,870 --> 00:28:04,149

um since you all had

786

00:28:09,510 --> 00:28:06,880

both um launched on the space shuttle

787

00:28:11,510 --> 00:28:09,520

and landed in the soyuz capsule what is

788

00:28:14,230 --> 00:28:11,520

the difference i mean i know it's it has

789

00:28:15,909 --> 00:28:14,240

to be dramatic the landings in the soyuz

790

00:28:18,789 --> 00:28:15,919

rather than the nice smooth landing of

791

00:28:23,909 --> 00:28:21,669

i'd say the the shuttle of course is a

792

00:28:25,669 --> 00:28:23,919

nice smooth landing and there's times

793

00:28:28,149 --> 00:28:25,679

when you're not even completely certain

794

00:28:29,029 --> 00:28:28,159

what the point of touchdown might have

795

00:28:31,350 --> 00:28:29,039

been

796

00:28:33,510 --> 00:28:31,360

i i like to joke that they're all good

797

00:28:36,470 --> 00:28:33,520

air force landings none of those navy

798

00:28:42,630 --> 00:28:38,710

the uh with the soyuz there's very

799

00:28:45,510 --> 00:28:44,389

just a few feet above the ground i mean

800

00:28:48,389 --> 00:28:45,520

you're coming down on the parachute

801
00:28:50,549 --> 00:28:48,399
you're coming down you know over land

802
00:28:54,070 --> 00:28:50,559
a few feet above the ground the soft

803
00:28:56,470 --> 00:28:54,080
landing rockets uh ignite to begin to is

804
00:28:58,149 --> 00:28:56,480
uh you know decelerate and cushion and i

805
00:28:59,510 --> 00:28:58,159
felt those kick in you could you can

806
00:29:01,430 --> 00:28:59,520
kind of feel them hear them because it's

807
00:29:04,950 --> 00:29:01,440
an explosion going on right behind your

808
00:29:06,710 --> 00:29:04,960
back um but it i i couldn't say how much

809
00:29:09,029 --> 00:29:06,720
of a difference they make but it's a

810
00:29:10,549 --> 00:29:09,039
it's a significant um

811
00:29:12,630 --> 00:29:10,559
you know event the touchdown it's very

812
00:29:15,750 --> 00:29:12,640
dynamic but you know the system's doing

813
00:29:18,870 --> 00:29:15,760

its job and and there's there's energy

814

00:29:20,710 --> 00:29:18,880

absorption uh uh mechanisms built into

815

00:29:22,389 --> 00:29:20,720

you know just the design of the capsule

816

00:29:25,110 --> 00:29:22,399

and the seat structure and the struts

817

00:29:26,549 --> 00:29:25,120

holding it up are all giving a little

818

00:29:29,350 --> 00:29:26,559

bit to help absorb that energy and

819

00:29:31,590 --> 00:29:29,360

you're in a custom molded seat liner you

820

00:29:33,430 --> 00:29:31,600

know the the on the shuttle it's it's a

821

00:29:34,630 --> 00:29:33,440

big generic seat

822

00:29:36,230 --> 00:29:34,640

um

823

00:29:38,950 --> 00:29:36,240

here you're actually laying on your back

824

00:29:40,870 --> 00:29:38,960

in a seat pan and that mold has been

825

00:29:43,510 --> 00:29:40,880

form-fitted to your body just to help

826

00:29:46,630 --> 00:29:43,520

give you really good uh support similar

827

00:29:49,110 --> 00:29:46,640

to the kind of support that nascar

828

00:29:51,029 --> 00:29:49,120

drivers and stuff have to to help

829

00:29:53,190 --> 00:29:51,039

protect them against you know similar

830

00:29:54,870 --> 00:29:53,200

kind of energies and for a for an impact

831

00:29:57,110 --> 00:29:54,880

for them i think the

832

00:29:58,549 --> 00:29:57,120

parachute opening is actually something

833

00:30:00,470 --> 00:29:58,559

it's not that it's unexpected because of

834

00:30:02,149 --> 00:30:00,480

course you know we've all been trained

835

00:30:03,590 --> 00:30:02,159

and talk about things but

836

00:30:05,269 --> 00:30:03,600

people think about the landing but when

837

00:30:08,389 --> 00:30:05,279

that parachute opens

838

00:30:10,310 --> 00:30:08,399

that is a very violent event and i

839

00:30:11,830 --> 00:30:10,320

actually had a little timer counting

840

00:30:13,190 --> 00:30:11,840

down to that and so you're just you know

841

00:30:14,710 --> 00:30:13,200

coming along and pulling g's and just

842

00:30:15,590 --> 00:30:14,720

kind of already and making sure that

843

00:30:17,909 --> 00:30:15,600

you're just

844

00:30:20,630 --> 00:30:17,919

ready and then suddenly that happens and

845

00:30:23,430 --> 00:30:20,640

that thing is swinging and spinning and

846

00:30:25,110 --> 00:30:23,440

it's it's like the most amazing uh you

847

00:30:26,710 --> 00:30:25,120

know rollercoaster ride you've ever been

848

00:30:29,029 --> 00:30:26,720

on and i like what mike what mike

849

00:30:31,909 --> 00:30:29,039

sometimes says all right for him say um

850

00:30:33,830 --> 00:30:31,919

which is that um as long as actually

851

00:30:35,669 --> 00:30:33,840

these really violent events are really

852

00:30:37,029 --> 00:30:35,679

good if they're planned and it's

853

00:30:38,870 --> 00:30:37,039

actually when you don't have any violent

854

00:30:41,029 --> 00:30:38,880

events that you begin to worry

855

00:30:42,470 --> 00:30:41,039

it's time where is it we're sorry filing

856

00:30:44,789 --> 00:30:42,480

event there should be a parachute

857

00:30:46,630 --> 00:30:44,799

opening here i think scott scott kelly i

858

00:30:48,630 --> 00:30:46,640

used to say it's like going over niagara

859

00:30:51,669 --> 00:30:48,640

falls in a barrel

860

00:30:53,430 --> 00:30:51,679

on fire followed by a head-on collision

861

00:30:56,149 --> 00:30:53,440

right here

862

00:30:57,669 --> 00:30:56,159

for us with we came in uh pre-dawn and

863

00:30:58,870 --> 00:30:57,679

so we really got to experience the

864

00:31:05,029 --> 00:30:58,880

plasma

865

00:31:07,990 --> 00:31:05,039

we dig in at over four g's in the

866

00:31:10,149 --> 00:31:08,000

shuttle it's about 1.4

867

00:31:11,750 --> 00:31:10,159

so it's a much shallower entry and we're

868

00:31:13,590 --> 00:31:11,760

coming in pretty steep the chase

869

00:31:15,909 --> 00:31:13,600

helicopters actually saw our plasma

870

00:31:18,149 --> 00:31:15,919

trail which is you know had never been

871

00:31:19,750 --> 00:31:18,159

seen before it was really cool from from

872

00:31:21,750 --> 00:31:19,760

you know our perspective because you

873

00:31:23,750 --> 00:31:21,760

know you see the orange pink glow

874

00:31:26,149 --> 00:31:23,760

outside and all and the the heat shield

875

00:31:28,549 --> 00:31:26,159

on the soyuz capsule isn't a blader it

876

00:31:30,630 --> 00:31:28,559

burns away carrying heat with it and so

877

00:31:33,430 --> 00:31:30,640

there's this incredible incandescent

878

00:31:35,669 --> 00:31:33,440

stream of irregular sparks and pieces

879

00:31:39,269 --> 00:31:35,679

coming off of that going by my window

880

00:31:43,509 --> 00:31:41,430

i i think in a nutshell you know riding

881

00:31:45,430 --> 00:31:43,519

the shuttle is this big massive vehicle

882

00:31:47,190 --> 00:31:45,440

that you ride inside and the soyuz is

883

00:31:49,190 --> 00:31:47,200

kind of a vehicle that you that you wear

884

00:31:51,350 --> 00:31:49,200

it feels like every pump that comes on

885

00:31:53,269 --> 00:31:51,360

every valve that opens every you know

886

00:31:54,710 --> 00:31:53,279

explosive bolt that fires you you feel

887

00:31:56,789 --> 00:31:54,720

all that stuff and it's

888

00:31:57,750 --> 00:31:56,799

it's really a neat experience yeah

889

00:31:59,509 --> 00:31:57,760

katie

890

00:32:01,990 --> 00:31:59,519

how much time do you spend actually

891

00:32:04,389 --> 00:32:02,000

doing experiments on during the day on a

892

00:32:06,710 --> 00:32:04,399

mission and a two-part question and and

893

00:32:09,750 --> 00:32:06,720

there was this gizmo you were pushing

894

00:32:11,350 --> 00:32:09,760

against the wall i saw it twice what was

895

00:32:12,549 --> 00:32:11,360

that and what was the purpose of that

896

00:32:14,789 --> 00:32:12,559

experiment

897

00:32:16,070 --> 00:32:14,799

well officially we get up at six and we

898

00:32:18,230 --> 00:32:16,080

go to bed at

899

00:32:19,509 --> 00:32:18,240

ten and i'm sure we did that every night

900

00:32:21,269 --> 00:32:19,519

oh yeah yeah

901
00:32:22,870 --> 00:32:21,279
um

902
00:32:24,950 --> 00:32:22,880
and but you know most of us probably

903
00:32:27,269 --> 00:32:24,960
work you know really more like a 12-hour

904
00:32:28,470 --> 00:32:27,279
day or so and it's always divided in

905
00:32:30,870 --> 00:32:28,480
some way between

906
00:32:33,750 --> 00:32:30,880
you know systems maintenance and uh

907
00:32:35,190 --> 00:32:33,760
experiments and i think uh

908
00:32:36,789 --> 00:32:35,200
they're aiming for do you guys know the

909
00:32:38,630 --> 00:32:36,799
number of utilization hours they're

910
00:32:41,190 --> 00:32:38,640
aiming for these days

911
00:32:43,509 --> 00:32:41,200
35 30 35 hours of experiment kind of

912
00:32:45,669 --> 00:32:43,519
stuff every week and so that's really

913
00:32:47,029 --> 00:32:45,679

quite a lot um and yet when system stuff

914

00:32:48,549 --> 00:32:47,039

comes up you know then that's what i

915

00:32:50,789 --> 00:32:48,559

mean if something breaks you have to to

916

00:32:53,190 --> 00:32:50,799

do that but to me what's really

917

00:32:54,950 --> 00:32:53,200

fascinating is that you know we've built

918

00:32:56,269 --> 00:32:54,960

this station it's got a series of

919

00:32:58,950 --> 00:32:56,279

facilities these are like

920

00:33:00,389 --> 00:32:58,960

refrigerator-sized you know racks where

921

00:33:02,070 --> 00:33:00,399

it's not a place where you can do just

922

00:33:04,070 --> 00:33:02,080

one experiment but a series of

923

00:33:06,310 --> 00:33:04,080

experiments and so you know after one

924

00:33:08,310 --> 00:33:06,320

experiment finishes or maybe goes maybe

925

00:33:09,990 --> 00:33:08,320

it goes well maybe has unexpected things

926
00:33:11,430 --> 00:33:10,000
you know the next experiment can either

927
00:33:13,029 --> 00:33:11,440
automatically get inserted there or

928
00:33:15,029 --> 00:33:13,039
maybe we're changing out the hardware so

929
00:33:17,350 --> 00:33:15,039
the new uh experiment can be done so

930
00:33:19,509 --> 00:33:17,360
it's just a series of over and over

931
00:33:21,909 --> 00:33:19,519
again doing different experiments but in

932
00:33:23,190 --> 00:33:21,919
the same hardware and so it's very

933
00:33:24,549 --> 00:33:23,200
efficient in that way because meanwhile

934
00:33:27,430 --> 00:33:24,559
the results are coming down to the

935
00:33:29,029 --> 00:33:27,440
ground in the form of video and data all

936
00:33:31,830 --> 00:33:29,039
the time to the scientists all over the

937
00:33:33,430 --> 00:33:31,840
world results are being analyzed and the

938
00:33:34,470 --> 00:33:33,440

experiments are being changed in real

939

00:33:36,310 --> 00:33:34,480

time

940

00:33:38,470 --> 00:33:36,320

and so that's an exciting process to be

941

00:33:40,149 --> 00:33:38,480

a part of you know personally as a

942

00:33:42,710 --> 00:33:40,159

polymer chemist i love the things where

943

00:33:44,710 --> 00:33:42,720

i actually get to do things and yet

944

00:33:47,190 --> 00:33:44,720

really the fact that science is going on

945

00:33:49,669 --> 00:33:47,200

24 hours a day up there even while i'm

946

00:33:51,830 --> 00:33:49,679

sleeping or supposed to be sleeping

947

00:33:54,070 --> 00:33:51,840

is is an amazing thing that we've done

948

00:33:56,789 --> 00:33:54,080

and coming from my two straddle missions

949

00:33:58,549 --> 00:33:56,799

one of them was a lab mission sds-73 16

950

00:34:00,230 --> 00:33:58,559

days of science experiments and the

951
00:34:02,710 --> 00:34:00,240
purpose of that mission was to figure

952
00:34:04,870 --> 00:34:02,720
out how to do experiments on the space

953
00:34:06,789 --> 00:34:04,880
station and in fact if you look at that

954
00:34:07,750 --> 00:34:06,799
73 patch you'll see

955
00:34:09,589 --> 00:34:07,760
a sort of

956
00:34:11,510 --> 00:34:09,599
soccer ball sort of geometry shape and

957
00:34:13,190 --> 00:34:11,520
that was the shape of the cupola to

958
00:34:15,589 --> 00:34:13,200
represent the space station which was

959
00:34:16,710 --> 00:34:15,599
the future of these experiments and i go

960
00:34:18,389 --> 00:34:16,720
up there and one of the things we needed

961
00:34:20,470 --> 00:34:18,399
to figure out was how do we get not just

962
00:34:21,270 --> 00:34:20,480
one scientist's data down at the one

963
00:34:23,990 --> 00:34:21,280

time

964

00:34:26,069 --> 00:34:24,000

but you know many and really detailed

965

00:34:27,909 --> 00:34:26,079

data and excuse me and a lot of you know

966

00:34:29,510 --> 00:34:27,919

a lot of bandwidth and that's one of the

967

00:34:31,109 --> 00:34:29,520

things that we've done i think quite

968

00:34:33,109 --> 00:34:31,119

well and are still working to do even

969

00:34:34,710 --> 00:34:33,119

better so that you know these early

970

00:34:36,710 --> 00:34:34,720

shuttle missions

971

00:34:38,310 --> 00:34:36,720

uh set the stage for what happens every

972

00:34:40,389 --> 00:34:38,320

single day up there the specific

973

00:34:42,069 --> 00:34:40,399

experiment that you asked about was

974

00:34:43,510 --> 00:34:42,079

getting weighed which was kind of fun

975

00:34:44,950 --> 00:34:43,520

you know when you think about it it's

976
00:34:46,069 --> 00:34:44,960
going to take more force to push one of

977
00:34:49,030 --> 00:34:46,079
these guys around than it's going to

978
00:34:50,550 --> 00:34:49,040
take to push me around and so we have a

979
00:34:52,629 --> 00:34:50,560
thing that we kind of perch on and try

980
00:34:54,790 --> 00:34:52,639
to be real still and hold our feet and

981
00:34:56,790 --> 00:34:54,800
hands and everything in and uh and then

982
00:34:59,349 --> 00:34:56,800
we push a little button on the computer

983
00:35:00,230 --> 00:34:59,359
get real still and it pulls us into the

984
00:35:02,310 --> 00:35:00,240
rack

985
00:35:04,470 --> 00:35:02,320
and then it measures the force it takes

986
00:35:07,430 --> 00:35:04,480
to do that and that'll tell us our

987
00:35:09,510 --> 00:35:07,440
weight so to speak and so we can judge

988
00:35:10,950 --> 00:35:09,520

how people are doing up there and

989

00:35:12,390 --> 00:35:10,960

whether they're eating all the the

990

00:35:13,349 --> 00:35:12,400

wonderful food

991

00:35:15,670 --> 00:35:13,359

yeah

992

00:35:17,589 --> 00:35:15,680

it's flying a good weight loss

993

00:35:20,470 --> 00:35:17,599

you know i was on a it was a government

994

00:35:22,069 --> 00:35:20,480

program we had exercise we had food i

995

00:35:24,230 --> 00:35:22,079

had a place to stay

996

00:35:26,870 --> 00:35:24,240

it was like going to the best uh the

997

00:35:29,109 --> 00:35:26,880

best outer space spa you could think of

998

00:35:31,349 --> 00:35:29,119

the spa but you know

999

00:35:33,190 --> 00:35:31,359

yeah i won't say we did spa-like

1000

00:35:35,990 --> 00:35:33,200

activities but

1001
00:35:38,390 --> 00:35:36,000
it was good for weight loss uh question

1002
00:35:40,230 --> 00:35:38,400
okay yes my question is

1003
00:35:42,470 --> 00:35:40,240
you mentioned about exercising when

1004
00:35:44,630 --> 00:35:42,480
you're up there how do you like stay

1005
00:35:46,790 --> 00:35:44,640
motivated do you have a is that part of

1006
00:35:48,150 --> 00:35:46,800
your schedule

1007
00:35:50,230 --> 00:35:48,160
yeah well it is part of our schedule

1008
00:35:53,190 --> 00:35:50,240
we're scheduled for two hours of

1009
00:35:55,190 --> 00:35:53,200
physical training every day and actually

1010
00:35:58,310 --> 00:35:55,200
it's we really look forward to it i mean

1011
00:36:01,109 --> 00:35:58,320
it really feels good to to exercise in

1012
00:36:03,030 --> 00:36:01,119
space and so it because

1013
00:36:04,790 --> 00:36:03,040

you feel so much better afterwards when

1014

00:36:06,710 --> 00:36:04,800

you don't exercise and there were times

1015

00:36:08,950 --> 00:36:06,720

um during our missions where you get so

1016

00:36:10,630 --> 00:36:08,960

busy that you just can't do it

1017

00:36:13,270 --> 00:36:10,640

and then you start to feel bad after a

1018

00:36:14,710 --> 00:36:13,280

while so it really is a self-motivating

1019

00:36:17,190 --> 00:36:14,720

thing and

1020

00:36:18,710 --> 00:36:17,200

the what we're doing them for uh like he

1021

00:36:21,349 --> 00:36:18,720

said is for countermeasures and

1022

00:36:24,310 --> 00:36:21,359

countermeasures for to combat uh bone

1023

00:36:27,670 --> 00:36:24,320

loss muscle atrophy etc and it does a

1024

00:36:30,390 --> 00:36:27,680

tremendous job i felt probably as good

1025

00:36:31,829 --> 00:36:30,400

after being almost six months in space

1026

00:36:33,270 --> 00:36:31,839

when i came back as i did after two

1027

00:36:35,349 --> 00:36:33,280

weeks in space on my space shuttle

1028

00:36:36,630 --> 00:36:35,359

mission because of the exercise programs

1029

00:36:37,349 --> 00:36:36,640

and the countermeasure programs that we

1030

00:36:40,390 --> 00:36:37,359

have

1031

00:36:41,670 --> 00:36:40,400

and what's exciting to me about that um

1032

00:36:43,589 --> 00:36:41,680

you know understanding how to stay in

1033

00:36:44,950 --> 00:36:43,599

shape i mean i said spa but you know we

1034

00:36:46,950 --> 00:36:44,960

actually worked i think is you know

1035

00:36:48,550 --> 00:36:46,960

really really hard up there and the

1036

00:36:49,990 --> 00:36:48,560

exercise part i mean i'm just like

1037

00:36:51,990 --> 00:36:50,000

everybody else probably in this audience

1038

00:36:53,510 --> 00:36:52,000

where you go oh i should do that today

1039

00:36:54,950 --> 00:36:53,520

and it's hard to work it in down here

1040

00:36:56,390 --> 00:36:54,960

but up there it's part of what you're

1041

00:36:59,270 --> 00:36:56,400

supposed to do and you really do feel

1042

00:37:00,870 --> 00:36:59,280

badly if you don't do it but what's

1043

00:37:03,030 --> 00:37:00,880

amazing is while we're taking care of

1044

00:37:04,870 --> 00:37:03,040

ourselves we're also serving as really

1045

00:37:07,190 --> 00:37:04,880

important data for experiments to come

1046

00:37:09,910 --> 00:37:07,200

right back here to earth our bone loss

1047

00:37:12,310 --> 00:37:09,920

rate would typically be about 10 times

1048

00:37:15,190 --> 00:37:12,320

the rate of a 70 year old woman that has

1049

00:37:17,030 --> 00:37:15,200

osteoporosis 10 times and so the fact

1050

00:37:18,150 --> 00:37:17,040

that the experiment progresses so

1051
00:37:20,470 --> 00:37:18,160
quickly

1052
00:37:22,630 --> 00:37:20,480
makes it measurable so we're doing lots

1053
00:37:24,550 --> 00:37:22,640
of different data collections both blood

1054
00:37:26,550 --> 00:37:24,560
and urine and different things

1055
00:37:28,150 --> 00:37:26,560
some of us use different drugs to

1056
00:37:30,550 --> 00:37:28,160
understand how those drugs work and

1057
00:37:32,950 --> 00:37:30,560
because that process of both you know

1058
00:37:33,750 --> 00:37:32,960
losing bone mass and actually rebuilding

1059
00:37:35,030 --> 00:37:33,760
because they're actually always

1060
00:37:36,710 --> 00:37:35,040
competing

1061
00:37:38,870 --> 00:37:36,720
processes because that's happening so

1062
00:37:40,390 --> 00:37:38,880
fast it makes it easier to measure and

1063
00:37:42,150 --> 00:37:40,400

that knowledge comes right back down

1064

00:37:44,069 --> 00:37:42,160

here to earth to understand those

1065

00:37:45,270 --> 00:37:44,079

processes and in fact

1066

00:37:47,670 --> 00:37:45,280

you know even though i can only speak

1067

00:37:50,470 --> 00:37:47,680

for my own personal data but i actually

1068

00:37:52,470 --> 00:37:50,480

had the same amount of physical bone as

1069

00:37:54,230 --> 00:37:52,480

what i left with it doesn't mean that my

1070

00:37:55,750 --> 00:37:54,240

bones are the same though and it's

1071

00:37:57,430 --> 00:37:55,760

important to understand that process and

1072

00:37:58,950 --> 00:37:57,440

what we do up there helps us understand

1073

00:38:00,630 --> 00:37:58,960

that that you know if your bone is a

1074

00:38:02,390 --> 00:38:00,640

pipe i probably have lost some out of

1075

00:38:04,550 --> 00:38:02,400

the meaty middle of that pipe but the

1076

00:38:06,550 --> 00:38:04,560

pipe came back a little bit thicker and

1077

00:38:09,190 --> 00:38:06,560

understanding those things for people

1078

00:38:11,430 --> 00:38:09,200

who are 70 and might have a lot of

1079

00:38:15,589 --> 00:38:11,440

competing physical processes going on i

1080

00:38:19,109 --> 00:38:17,349

any other over here

1081

00:38:21,990 --> 00:38:19,119

i know that sioux falls is a rather

1082

00:38:23,829 --> 00:38:22,000

large town in south dakota because i am

1083

00:38:26,069 --> 00:38:23,839

from whitewood which is a rather small

1084

00:38:28,710 --> 00:38:26,079

town where did you find or did you find

1085

00:38:31,349 --> 00:38:28,720

any inspiration for this career in the

1086

00:38:33,109 --> 00:38:31,359

middle of south dakota and my second

1087

00:38:35,670 --> 00:38:33,119

question is are you involved in any

1088

00:38:37,349 --> 00:38:35,680

activities to then go back and provide

1089

00:38:39,430 --> 00:38:37,359

some inspiration for the younger kids

1090

00:38:41,910 --> 00:38:39,440

that are there today sure hey great

1091

00:38:43,190 --> 00:38:41,920

question uh and it's it's a it actually

1092

00:38:45,030 --> 00:38:43,200

is a very personal question my

1093

00:38:46,470 --> 00:38:45,040

grandfather was a homesteader in the

1094

00:38:48,230 --> 00:38:46,480

watertown area

1095

00:38:51,990 --> 00:38:48,240

at the turn of the century of last

1096

00:38:53,510 --> 00:38:52,000

century and so you know and so i i'd

1097

00:38:55,430 --> 00:38:53,520

really like to say that the you know

1098

00:38:57,030 --> 00:38:55,440

that the pioneering spirit

1099

00:39:00,390 --> 00:38:57,040

you know that really opened up south

1100

00:39:02,710 --> 00:39:00,400

dakota is still alive today and that's

1101
00:39:05,349 --> 00:39:02,720
true really for our for our country and

1102
00:39:06,630 --> 00:39:05,359
that that pioneering spirit the the

1103
00:39:09,750 --> 00:39:06,640
desire

1104
00:39:10,790 --> 00:39:09,760
to know what's out there and to go and

1105
00:39:14,069 --> 00:39:10,800
tame it

1106
00:39:15,190 --> 00:39:14,079
conquer it and learn to live and thrive

1107
00:39:17,510 --> 00:39:15,200
uh is

1108
00:39:19,589 --> 00:39:17,520
out there wherever out there is and a

1109
00:39:21,670 --> 00:39:19,599
hundred years ago that meant moving west

1110
00:39:24,630 --> 00:39:21,680
and now it means moving up

1111
00:39:26,630 --> 00:39:24,640
moving down maybe into our oceans uh and

1112
00:39:28,870 --> 00:39:26,640
and so that that spirit is one of the

1113
00:39:29,910 --> 00:39:28,880

things that's made our country great

1114

00:39:31,829 --> 00:39:29,920

and i think that that's really

1115

00:39:33,829 --> 00:39:31,839

exemplified by the the pioneers that

1116

00:39:35,430 --> 00:39:33,839

endured the hardships and the loneliness

1117

00:39:36,790 --> 00:39:35,440

and the separation from family as they

1118

00:39:38,870 --> 00:39:36,800

went out to try to

1119

00:39:41,589 --> 00:39:38,880

carve out a better way of life

1120

00:39:43,990 --> 00:39:41,599

and part of our job is to go out and and

1121

00:39:45,349 --> 00:39:44,000

share the story and you know i

1122

00:39:47,030 --> 00:39:45,359

you know i think we all came from

1123

00:39:49,670 --> 00:39:47,040

improbable backgrounds for the career

1124

00:39:52,630 --> 00:39:49,680

we're in now but we were

1125

00:39:56,069 --> 00:39:52,640

captured by the dream of doing this most

1126
00:39:59,030 --> 00:39:56,079
outrageous of uh humankind's adventures

1127
00:40:01,829 --> 00:39:59,040
and participating in it

1128
00:40:03,750 --> 00:40:01,839
and that that dream is still alive too

1129
00:40:06,230 --> 00:40:03,760
and there's a

1130
00:40:07,270 --> 00:40:06,240
many opportunities in the future and i

1131
00:40:09,190 --> 00:40:07,280
think that there will be more

1132
00:40:10,790 --> 00:40:09,200
opportunities for people to to fly in

1133
00:40:12,790 --> 00:40:10,800
space and to participate in the

1134
00:40:14,870 --> 00:40:12,800
breakthroughs that come

1135
00:40:16,470 --> 00:40:14,880
as we've gone from just figuring out how

1136
00:40:18,950 --> 00:40:16,480
to build something up there and now

1137
00:40:21,109 --> 00:40:18,960
we're involved in the utilization and

1138
00:40:22,550 --> 00:40:21,119

getting into the science and finding a

1139

00:40:26,550 --> 00:40:22,560

lot of different things that we can

1140

00:40:28,550 --> 00:40:26,560

affect in in materials and medicines

1141

00:40:33,030 --> 00:40:28,560

in health and there's there's more

1142

00:40:38,309 --> 00:40:35,349

katie i noticed you had your flutes in

1143

00:40:40,630 --> 00:40:38,319

the video did you have a chance i i

1144

00:40:42,230 --> 00:40:40,640

believe you had a duet with ian anderson

1145

00:40:45,030 --> 00:40:42,240

did you have a chance to rehearse

1146

00:40:47,270 --> 00:40:45,040

beforehand with him and uh

1147

00:40:48,230 --> 00:40:47,280

how often did you play up uh on the

1148

00:40:50,390 --> 00:40:48,240

station

1149

00:40:52,630 --> 00:40:50,400

uh i didn't play as often as i'd like i

1150

00:40:54,710 --> 00:40:52,640

played often you know kind of at night

1151

00:40:58,150 --> 00:40:54,720

probably after that bedtime

1152

00:40:58,950 --> 00:40:58,160

um and often in the cupola because a the

1153

00:41:01,750 --> 00:40:58,960

view

1154

00:41:02,950 --> 00:41:01,760

simply amazing both day and and night

1155

00:41:04,470 --> 00:41:02,960

and b it was in the middle of the

1156

00:41:07,109 --> 00:41:04,480

station and i was actually just sure

1157

00:41:12,630 --> 00:41:07,119

that it wouldn't wake anybody up

1158

00:41:17,109 --> 00:41:14,710

anyways i actually didn't even get to

1159

00:41:18,710 --> 00:41:17,119

meet ian anderson until i got home

1160

00:41:21,589 --> 00:41:18,720

and i did actually get to play with him

1161

00:41:24,470 --> 00:41:21,599

on stage in concert over in italy i'll

1162

00:41:25,990 --> 00:41:24,480

tell you that was totally terrifying and

1163

00:41:27,430 --> 00:41:26,000

i mean i'm not worried about going to

1164

00:41:29,829 --> 00:41:27,440

space but that was really right i was

1165

00:41:31,910 --> 00:41:29,839

very good i was very nervous

1166

00:41:34,710 --> 00:41:31,920

um and actually

1167

00:41:36,630 --> 00:41:34,720

it to me the fact that i i like i like

1168

00:41:39,349 --> 00:41:36,640

the flute things because i think it

1169

00:41:41,349 --> 00:41:39,359

shows everybody that we live up there we

1170

00:41:43,109 --> 00:41:41,359

meaning the three of us here but we

1171

00:41:44,950 --> 00:41:43,119

meaning just people from our planet are

1172

00:41:46,870 --> 00:41:44,960

living in a place that is not on the

1173

00:41:48,550 --> 00:41:46,880

surface of the planet and they're doing

1174

00:41:51,510 --> 00:41:48,560

normal things like i happen to play the

1175

00:41:52,710 --> 00:41:51,520

flute and actually the two other flutes

1176
00:41:55,349 --> 00:41:52,720
that you saw

1177
00:41:57,670 --> 00:41:55,359
um were in that picture

1178
00:41:58,790 --> 00:41:57,680
are irish there's a tin whistle

1179
00:42:01,349 --> 00:41:58,800
and an

1180
00:42:03,910 --> 00:42:01,359
irish flute that's about 150 years old

1181
00:42:05,990 --> 00:42:03,920
from musicians and the chieftains and

1182
00:42:07,190 --> 00:42:06,000
they're actually about to

1183
00:42:09,430 --> 00:42:07,200
have an album come out where they

1184
00:42:11,349 --> 00:42:09,440
actually use the music from that tin

1185
00:42:13,430 --> 00:42:11,359
whistle in one of their songs just to

1186
00:42:15,829 --> 00:42:13,440
show that music is everywhere

1187
00:42:19,510 --> 00:42:15,839
and you know they have about 20 guest

1188
00:42:21,589 --> 00:42:19,520

artists on that uh on that album but we

1189

00:42:23,829 --> 00:42:21,599

meaning you know you who make all this

1190

00:42:25,349 --> 00:42:23,839

possible and me who was playing and

1191

00:42:26,390 --> 00:42:25,359

somebody who captured that and brought

1192

00:42:28,150 --> 00:42:26,400

it down and

1193

00:42:30,069 --> 00:42:28,160

sent it off i mean it's all part of the

1194

00:42:31,670 --> 00:42:30,079

whole big puzzle in the whole big

1195

00:42:32,870 --> 00:42:31,680

picture of what we do

1196

00:42:35,430 --> 00:42:32,880

so we

1197

00:42:38,630 --> 00:42:35,440

are on an album that shows that music is

1198

00:42:38,640 --> 00:42:50,950

yes

1199

00:42:54,790 --> 00:42:52,950

i'd like to expand that question a

1200

00:42:57,109 --> 00:42:54,800

little bit for all three of you yes you

1201
00:42:59,430 --> 00:42:57,119
are living there and colonel coleman got

1202
00:43:02,230 --> 00:42:59,440
to play your flute what other kinds of

1203
00:43:04,470 --> 00:43:02,240
hobbies are you able or capable of

1204
00:43:06,710 --> 00:43:04,480
pursuing up on the station i don't see

1205
00:43:07,750 --> 00:43:06,720
you playing much golf like alan shepard

1206
00:43:09,670 --> 00:43:07,760
did

1207
00:43:11,829 --> 00:43:09,680
on the moon and baseball games get kind

1208
00:43:13,589 --> 00:43:11,839
of short yeah right yeah so what else

1209
00:43:15,349 --> 00:43:13,599
can you guys do up there

1210
00:43:17,349 --> 00:43:15,359
for fun

1211
00:43:19,030 --> 00:43:17,359
well we have a number of musical

1212
00:43:20,150 --> 00:43:19,040
instruments up there we have keyboard we

1213
00:43:22,550 --> 00:43:20,160

have a guitar

1214

00:43:25,270 --> 00:43:22,560

um but but really and ron plays the

1215

00:43:28,390 --> 00:43:25,280

guitar no i don't

1216

00:43:29,589 --> 00:43:28,400

no all three chords um

1217

00:43:30,950 --> 00:43:29,599

you know

1218

00:43:32,790 --> 00:43:30,960

you're you realize that you're in a very

1219

00:43:34,390 --> 00:43:32,800

very special place and i think the

1220

00:43:36,550 --> 00:43:34,400

biggest i don't know if i want to call

1221

00:43:37,990 --> 00:43:36,560

it a hobby but you know just basically

1222

00:43:38,950 --> 00:43:38,000

looking out the window and trying to

1223

00:43:40,550 --> 00:43:38,960

capture

1224

00:43:42,870 --> 00:43:40,560

what's out the window for everybody on

1225

00:43:43,829 --> 00:43:42,880

the on the earth i think is uh

1226
00:43:46,630 --> 00:43:43,839
is what

1227
00:43:48,390 --> 00:43:46,640
we spent whatever little spare time we

1228
00:43:49,910 --> 00:43:48,400
had that was the majority of it was was

1229
00:43:52,150 --> 00:43:49,920
trying to do that because that is very

1230
00:43:53,349 --> 00:43:52,160
rewarding because it almost seems like

1231
00:43:54,790 --> 00:43:53,359
when you're looking at something that's

1232
00:43:57,190 --> 00:43:54,800
just breathtaking and it's hard to

1233
00:44:00,069 --> 00:43:57,200
describe it it's it's frustrating not to

1234
00:44:02,710 --> 00:44:00,079
be able to share that and so um luckily

1235
00:44:04,230 --> 00:44:02,720
or not luckily but fortunately we have

1236
00:44:06,150 --> 00:44:04,240
some great equipment on board now that

1237
00:44:08,069 --> 00:44:06,160
we can start this to capture just a

1238
00:44:09,750 --> 00:44:08,079

little bit of that and it's a that i

1239

00:44:11,750 --> 00:44:09,760

found and i think everybody shares that

1240

00:44:13,990 --> 00:44:11,760

very very rewarding and and so that's

1241

00:44:16,230 --> 00:44:14,000

what we spend most of our spare time

1242

00:44:19,190 --> 00:44:16,240

doing well for me i was in the cupola

1243

00:44:21,589 --> 00:44:19,200

watching just taking a break during the

1244

00:44:23,349 --> 00:44:21,599

atlantis documentation 135 with sandy

1245

00:44:25,589 --> 00:44:23,359

magnus who had previously lived on the

1246

00:44:28,230 --> 00:44:25,599

station but the cupola wasn't there yet

1247

00:44:29,829 --> 00:44:28,240

when she so she was enjoying this this

1248

00:44:31,750 --> 00:44:29,839

new view in the few days that she had to

1249

00:44:33,990 --> 00:44:31,760

visit her old home and we went through

1250

00:44:35,030 --> 00:44:34,000

this amazing aurora bloom

1251
00:44:41,750 --> 00:44:35,040
and

1252
00:44:43,750 --> 00:44:41,760
to figure out how to capture this i knew

1253
00:44:45,670 --> 00:44:43,760
we had cameras that would work could

1254
00:44:48,230 --> 00:44:45,680
capture low light and i that was that

1255
00:44:50,710 --> 00:44:48,240
became a mission uh to try to do that so

1256
00:44:53,430 --> 00:44:50,720
we could share it with you um the other

1257
00:44:55,510 --> 00:44:53,440
thing you you mentioned we we all do you

1258
00:44:57,829 --> 00:44:55,520
know bring our hobbies and interests for

1259
00:44:59,510 --> 00:44:57,839
me a big one's boy scouting i'm a scout

1260
00:45:01,349 --> 00:44:59,520
master of a boy scout troop in houston

1261
00:45:04,069 --> 00:45:01,359
i'm active at the council level and a

1262
00:45:06,710 --> 00:45:04,079
few committees at the national level and

1263
00:45:08,630 --> 00:45:06,720

so i you know maintained my ties with my

1264

00:45:10,710 --> 00:45:08,640

troop i had an acting scout master but i

1265

00:45:12,470 --> 00:45:10,720

did a scout masters conference with

1266

00:45:14,230 --> 00:45:12,480

every one of the boys in my troop which

1267

00:45:16,069 --> 00:45:14,240

is one of the steps along

1268

00:45:18,790 --> 00:45:16,079

as part of the rank progression so i had

1269

00:45:20,870 --> 00:45:18,800

a one-on-one phone call with each one of

1270

00:45:22,390 --> 00:45:20,880

the boys one of them one of the boys

1271

00:45:24,470 --> 00:45:22,400

father had previously served on the

1272

00:45:25,910 --> 00:45:24,480

station so i called matthew up and i

1273

00:45:27,990 --> 00:45:25,920

said it's probably not a big deal for

1274

00:45:31,190 --> 00:45:28,000

you to talk to somebody in space is it

1275

00:45:32,870 --> 00:45:31,200

no actually it kind of is

1276

00:45:35,109 --> 00:45:32,880

so that was that was fun and i was able

1277

00:45:37,270 --> 00:45:35,119

to send messages to uh scout camps

1278

00:45:39,349 --> 00:45:37,280

around the country uh several of them

1279

00:45:41,349 --> 00:45:39,359

that i have ties to and just have a

1280

00:45:43,670 --> 00:45:41,359

little fun share the experience in very

1281

00:45:45,670 --> 00:45:43,680

unusual ways i did a actually a live

1282

00:45:47,349 --> 00:45:45,680

event with the scout camp that i

1283

00:45:48,790 --> 00:45:47,359

attended as a youth and served on the

1284

00:45:53,030 --> 00:45:48,800

staff

1285

00:45:55,349 --> 00:45:53,040

you know my high school years so that

1286

00:45:56,950 --> 00:45:55,359

was a lot of fun for me to be able to do

1287

00:45:58,069 --> 00:45:56,960

that and there were you know you know

1288

00:45:59,349 --> 00:45:58,079

you know what those those kind of

1289

00:46:01,190 --> 00:45:59,359

organizations are like there's some of

1290

00:46:02,870 --> 00:46:01,200

the old boys that are still around

1291

00:46:05,349 --> 00:46:02,880

and so they were they were out there for

1292

00:46:07,109 --> 00:46:05,359

that to take part in that and i i got to

1293

00:46:08,630 --> 00:46:07,119

you know to reach out and

1294

00:46:10,710 --> 00:46:08,640

and you know

1295

00:46:12,390 --> 00:46:10,720

you know in ways to uh you know a

1296

00:46:14,150 --> 00:46:12,400

segment of the community that we don't

1297

00:46:15,910 --> 00:46:14,160

normally get to talk to and that was

1298

00:46:17,349 --> 00:46:15,920

just my little niche

1299

00:46:19,589 --> 00:46:17,359

you know we've talked a couple times

1300

00:46:20,470 --> 00:46:19,599

about the cupola and looking out from

1301

00:46:21,589 --> 00:46:20,480

that

1302

00:46:23,190 --> 00:46:21,599

and

1303

00:46:24,790 --> 00:46:23,200

it's a really different place than we've

1304

00:46:26,870 --> 00:46:24,800

ever had up there in that most of our

1305

00:46:28,309 --> 00:46:26,880

windows are kind of like portals and so

1306

00:46:30,710 --> 00:46:28,319

they're just they're certainly usually

1307

00:46:32,950 --> 00:46:30,720

circular and you look out and the earth

1308

00:46:34,309 --> 00:46:32,960

is just going by quickly and if you just

1309

00:46:35,750 --> 00:46:34,319

kind of look at your the side when

1310

00:46:37,190 --> 00:46:35,760

you're in your car and just look like

1311

00:46:38,390 --> 00:46:37,200

this you know you'll see things going by

1312

00:46:39,990 --> 00:46:38,400

really fast you have to sort of know

1313

00:46:42,150 --> 00:46:40,000

what's coming and figure out where you

1314

00:46:45,030 --> 00:46:42,160

are and now the fact that we have

1315

00:46:46,390 --> 00:46:45,040

windows you know here here all the way

1316

00:46:48,710 --> 00:46:46,400

around us

1317

00:46:50,550 --> 00:46:48,720

you know we're almost a part of the view

1318

00:46:53,349 --> 00:46:50,560

and the reason i bring this up to you is

1319

00:46:54,950 --> 00:46:53,359

that years and years ago as a nasa

1320

00:46:56,630 --> 00:46:54,960

community we had to decide are we going

1321

00:46:59,190 --> 00:46:56,640

to have a cupola

1322

00:47:00,950 --> 00:46:59,200

are we going to have a module that has

1323

00:47:02,230 --> 00:47:00,960

windows i mean there's a lot of

1324

00:47:04,950 --> 00:47:02,240

engineering

1325

00:47:06,710 --> 00:47:04,960

you know nuances that we're adding in

1326

00:47:08,309 --> 00:47:06,720

windows are hard that are not

1327

00:47:10,150 --> 00:47:08,319

is it physically necessary in order to

1328

00:47:12,470 --> 00:47:10,160

have a space station to have this module

1329

00:47:13,670 --> 00:47:12,480

that is maybe not very big and has

1330

00:47:15,430 --> 00:47:13,680

windows and

1331

00:47:16,870 --> 00:47:15,440

they could leak or they could i mean all

1332

00:47:17,829 --> 00:47:16,880

those concerns

1333

00:47:19,510 --> 00:47:17,839

but

1334

00:47:21,589 --> 00:47:19,520

it's everything you hear about because

1335

00:47:24,870 --> 00:47:21,599

it's part of the human experience of

1336

00:47:25,670 --> 00:47:24,880

being up there and as we march forward

1337

00:47:27,750 --> 00:47:25,680

here

1338

00:47:29,589 --> 00:47:27,760

and you know we're handing off getting

1339

00:47:31,030 --> 00:47:29,599

people and stuff up to space to those

1340

00:47:34,710 --> 00:47:31,040

commercial companies

1341

00:47:36,870 --> 00:47:34,720

and we are focusing on going further

1342

00:47:38,470 --> 00:47:36,880

realize that you know together with a

1343

00:47:40,710 --> 00:47:38,480

robotic presence that's how we're going

1344

00:47:43,670 --> 00:47:40,720

to get there but in the end what we're

1345

00:47:45,190 --> 00:47:43,680

doing is extending the human presence

1346

00:47:47,430 --> 00:47:45,200

and we have to make sure that we're

1347

00:47:49,430 --> 00:47:47,440

building vehicles and

1348

00:47:51,270 --> 00:47:49,440

you know places that

1349

00:47:53,109 --> 00:47:51,280

bring allow us to have those human

1350

00:47:56,230 --> 00:47:53,119

experiences

1351

00:47:58,549 --> 00:47:56,240

nasa has a space act agreement with lego

1352

00:48:01,750 --> 00:47:58,559

uh didn't katie didn't you get to play

1353

00:48:02,630 --> 00:48:01,760

with the legos up here not nearly enough

1354

00:48:04,870 --> 00:48:02,640

you know i actually have an

1355

00:48:07,030 --> 00:48:04,880

eleven-year-old that lives for lego and

1356

00:48:08,470 --> 00:48:07,040

in fact we we actually um because you

1357

00:48:10,790 --> 00:48:08,480

know we train we never do anything in

1358

00:48:13,349 --> 00:48:10,800

nasa unless we practice and so they sent

1359

00:48:15,190 --> 00:48:13,359

me the lego space station and he and i

1360

00:48:17,829 --> 00:48:15,200

who is he's a much better lego builder

1361

00:48:19,670 --> 00:48:17,839

than i am right um he and i built it and

1362

00:48:21,750 --> 00:48:19,680

then actually sent them some critiques

1363

00:48:22,549 --> 00:48:21,760

like hey this part here is not going to

1364

00:48:24,549 --> 00:48:22,559

work

1365

00:48:25,829 --> 00:48:24,559

and uh and it would have been real i did

1366

00:48:27,910 --> 00:48:25,839

not get to build it

1367

00:48:29,589 --> 00:48:27,920

but uh you know and so mike actually i

1368

00:48:31,349 --> 00:48:29,599

think got to build it up there satoshi

1369

00:48:33,510 --> 00:48:31,359

do more than i did yeah but you know it

1370

00:48:35,349 --> 00:48:33,520

just it's again something that brings

1371

00:48:36,549 --> 00:48:35,359

home the fact that people are living up

1372

00:48:38,230 --> 00:48:36,559

there and

1373

00:48:40,390 --> 00:48:38,240

i love you know these kinds of

1374

00:48:42,309 --> 00:48:40,400

activities for kids where they think i'm

1375

00:48:44,549 --> 00:48:42,319

envisioning something and now i'm going

1376

00:48:47,430 --> 00:48:44,559

to build it and they do

1377

00:48:49,670 --> 00:48:47,440

and whether it's robotics or lego or

1378

00:48:52,069 --> 00:48:49,680

i mean all these kinds of things that

1379

00:48:54,630 --> 00:48:52,079

get our young people feeling empowered

1380

00:48:56,549 --> 00:48:54,640

and feeling like the future is actually

1381

00:48:58,309 --> 00:48:56,559

possible and they'd better be ready for

1382

00:48:59,190 --> 00:48:58,319

it and that's part of what we do here

1383

00:49:00,230 --> 00:48:59,200

too

1384

00:49:02,150 --> 00:49:00,240

and

1385

00:49:04,309 --> 00:49:02,160

so doing lego was was pretty fun we did

1386

00:49:07,190 --> 00:49:04,319

a little sesame street as well

1387

00:49:09,270 --> 00:49:07,200

prior to uh ron and i are 10. we counted

1388

00:49:12,230 --> 00:49:09,280

10. prior to some of the last shuttle

1389

00:49:14,790 --> 00:49:12,240

launches and some of the elv launches

1390

00:49:16,710 --> 00:49:14,800

lego was set up at the kennedy space

1391

00:49:19,109 --> 00:49:16,720

visitor center in

1392

00:49:21,030 --> 00:49:19,119

in the big imax theater building there

1393

00:49:23,589 --> 00:49:21,040

and they would come and throw piles of

1394

00:49:25,349 --> 00:49:23,599

hundreds of thousands of legos in 10

1395

00:49:27,109 --> 00:49:25,359

piles around the room and then we'd have

1396

00:49:28,710 --> 00:49:27,119

students be able to come in with their

1397

00:49:30,950 --> 00:49:28,720

parents we'd have astronauts there to

1398

00:49:33,109 --> 00:49:30,960

help with them and they would dive in

1399

00:49:35,750 --> 00:49:33,119

and they'd have 45 minutes to launch the

1400

00:49:37,910 --> 00:49:35,760

future and and i would have a hard time

1401

00:49:40,870 --> 00:49:37,920

building a little kit with instructions

1402

00:49:42,790 --> 00:49:40,880

these kids dive in find all the pieces

1403

00:49:46,150 --> 00:49:42,800

that they need and then make the most

1404

00:49:48,390 --> 00:49:46,160

remarkable spacecraft airplane space

1405

00:49:50,870 --> 00:49:48,400

stations it's really is something to

1406

00:49:52,950 --> 00:49:50,880

watch it gives you great hope about the

1407

00:49:54,710 --> 00:49:52,960

future of creativity future engineers

1408

00:49:56,470 --> 00:49:54,720

startups engineers right they start with

1409

00:49:58,549 --> 00:49:56,480

legos

1410

00:50:00,390 --> 00:49:58,559

we've got about eight minutes left any

1411

00:50:01,910 --> 00:50:00,400

other questions i think that's back

1412

00:50:04,710 --> 00:50:01,920

right up here in that last thing oh

1413

00:50:09,670 --> 00:50:04,720

right over here one of our future

1414

00:50:13,510 --> 00:50:11,670

what do you do when you get sick in

1415

00:50:14,790 --> 00:50:13,520

space

1416

00:50:16,630 --> 00:50:14,800

that's a really good question what do

1417

00:50:17,510 --> 00:50:16,640

you do when you get sick in space we

1418

00:50:19,510 --> 00:50:17,520

have

1419

00:50:21,030 --> 00:50:19,520

i mean we're some of us are trained i

1420

00:50:24,150 --> 00:50:21,040

think most of us are trained as crew

1421

00:50:25,990 --> 00:50:24,160

medical officers we have quite a

1422

00:50:28,630 --> 00:50:26,000

quite a big first aid kit that goes

1423

00:50:31,030 --> 00:50:28,640

beyond first aid to actually taking care

1424

00:50:32,309 --> 00:50:31,040

of more serious things if we need to

1425

00:50:33,670 --> 00:50:32,319

uh but

1426

00:50:36,549 --> 00:50:33,680

you know you're so you're ready to

1427

00:50:38,309 --> 00:50:36,559

handle um bumps and bruises i get to use

1428

00:50:39,910 --> 00:50:38,319

a little dermabond which is kind of like

1429

00:50:43,109 --> 00:50:39,920

super glue you can use for medical

1430

00:50:44,870 --> 00:50:43,119

things when one of one of the crew had a

1431

00:50:46,950 --> 00:50:44,880

little injury and i got to use that to

1432

00:50:48,549 --> 00:50:46,960

help because you know stitches would be

1433

00:50:50,230 --> 00:50:48,559

just real messy and hard for everybody

1434

00:50:52,549 --> 00:50:50,240

so you can actually use this dermabond

1435

00:50:53,750 --> 00:50:52,559

like super glue to close up a wound i

1436

00:50:55,510 --> 00:50:53,760

got to do that that was the most

1437

00:50:57,990 --> 00:50:55,520

significant thing i did i'm glad we

1438

00:50:59,190 --> 00:50:58,000

didn't do anything more

1439

00:51:01,829 --> 00:50:59,200

the other thing that we use the space

1440

00:51:03,829 --> 00:51:01,839

station for is to to try and develop

1441

00:51:06,230 --> 00:51:03,839

those medical procedures that we'll need

1442

00:51:08,549 --> 00:51:06,240

if we go to the moon if we go to morris

1443

00:51:10,710 --> 00:51:08,559

and not only in space missions but also

1444

00:51:13,030 --> 00:51:10,720

undersea missions as well uh we have a

1445

00:51:14,470 --> 00:51:13,040

mission called nemo where we spend weeks

1446

00:51:15,430 --> 00:51:14,480

on the bottom of the ocean and we work

1447

00:51:17,750 --> 00:51:15,440

on

1448

00:51:20,470 --> 00:51:17,760

telementoring uh telemedicine

1449

00:51:22,790 --> 00:51:20,480

telerobotic surgery and uh i was on a

1450

00:51:26,230 --> 00:51:22,800

mission actually in 2006 where we had a

1451
00:51:28,230 --> 00:51:26,240
surgeon in canada uh operating a robotic

1452
00:51:31,030 --> 00:51:28,240
a surgical robot that was with us on the

1453
00:51:32,230 --> 00:51:31,040
bottom of the ocean um and so this you

1454
00:51:33,510 --> 00:51:32,240
know this is technology that will help

1455
00:51:35,829 --> 00:51:33,520
us when we go to the moon will help us

1456
00:51:37,349 --> 00:51:35,839
when we go to mars but it will also help

1457
00:51:39,510 --> 00:51:37,359
anywhere in the world that does not have

1458
00:51:42,150 --> 00:51:39,520
access to a major medical center when we

1459
00:51:44,630 --> 00:51:42,160
make this telerobotic surgery just this

1460
00:51:46,309 --> 00:51:44,640
telementoring telemedicine these are all

1461
00:51:47,750 --> 00:51:46,319
things that really

1462
00:51:49,430 --> 00:51:47,760
can make life better on planet earth i

1463
00:51:51,030 --> 00:51:49,440

mean so that means like places where

1464

00:51:53,349 --> 00:51:51,040

there's a really wide expanse of

1465

00:51:55,589 --> 00:51:53,359

geography where you can't have you know

1466

00:51:57,190 --> 00:51:55,599

an uh laparoscopic surgeon you know

1467

00:51:58,870 --> 00:51:57,200

right there but maybe you can have that

1468

00:52:01,270 --> 00:51:58,880

equipment and a doctor in a helicopter

1469

00:52:05,270 --> 00:52:01,280

you know getting out there um but it's

1470

00:52:07,030 --> 00:52:05,280

it also is enables folks to uh teach the

1471

00:52:08,950 --> 00:52:07,040

practice of medicine the video

1472

00:52:11,109 --> 00:52:08,960

associated with this tele-robotic kind

1473

00:52:12,470 --> 00:52:11,119

of surgery allows more surgeons to be

1474

00:52:14,790 --> 00:52:12,480

trained but something i just learned

1475

00:52:15,670 --> 00:52:14,800

about this week is that the technology

1476
00:52:17,750 --> 00:52:15,680
that

1477
00:52:20,390 --> 00:52:17,760
was used to develop the robotic arms on

1478
00:52:22,630 --> 00:52:20,400
the space station up in canada that same

1479
00:52:23,829 --> 00:52:22,640
technology is being applied to doing

1480
00:52:26,470 --> 00:52:23,839
surgery

1481
00:52:29,190 --> 00:52:26,480
inside an mri where of course you can't

1482
00:52:31,270 --> 00:52:29,200
have metal metal and things but brain

1483
00:52:32,470 --> 00:52:31,280
surgery inside the mri

1484
00:52:34,309 --> 00:52:32,480
in that

1485
00:52:36,710 --> 00:52:34,319
in the mri you can see what really needs

1486
00:52:37,990 --> 00:52:36,720
done and by having the right instruments

1487
00:52:39,670 --> 00:52:38,000
made out of the right stuff that could

1488
00:52:41,430 --> 00:52:39,680

actually do the surgery

1489

00:52:43,349 --> 00:52:41,440

then they're able to actually really

1490

00:52:44,549 --> 00:52:43,359

understand exactly locally where they're

1491

00:52:47,349 --> 00:52:44,559

supposed to be operating and i think

1492

00:52:49,990 --> 00:52:47,359

that's a fairly new development so it

1493

00:52:51,750 --> 00:52:50,000

all adds up and it's pretty neat yeah

1494

00:52:53,349 --> 00:52:51,760

we have time for one last question

1495

00:52:55,190 --> 00:52:53,359

because we have a hard cut off because

1496

00:52:57,109 --> 00:52:55,200

there's a show coming up after this

1497

00:52:59,510 --> 00:52:57,119

about the space station i think actually

1498

00:53:01,430 --> 00:52:59,520

they're transmitting down so

1499

00:53:03,670 --> 00:53:01,440

yeah you guys spent

1500

00:53:06,710 --> 00:53:03,680

if you went up and came back in a

1501
00:53:09,589 --> 00:53:06,720
soyuz like three days

1502
00:53:10,870 --> 00:53:09,599
total on a very very small

1503
00:53:12,870 --> 00:53:10,880
we're obviously more familiar with the

1504
00:53:15,829 --> 00:53:12,880
shuttle what what is that like i mean

1505
00:53:18,069 --> 00:53:15,839
can you even get out of your seat

1506
00:53:21,109 --> 00:53:18,079
yes you can the part that we launch and

1507
00:53:22,549 --> 00:53:21,119
land in is a capsule that's very very

1508
00:53:24,710 --> 00:53:22,559
small and that's what you saw sitting on

1509
00:53:25,990 --> 00:53:24,720
the ground that we are hanging under the

1510
00:53:26,870 --> 00:53:26,000
parachute

1511
00:53:32,549 --> 00:53:26,880
the

1512
00:53:34,390 --> 00:53:32,559
small module just on top of that uh it's

1513
00:53:37,190 --> 00:53:34,400

called an orbit module that there's has

1514

00:53:39,829 --> 00:53:37,200

a significantly more room for the crew

1515

00:53:41,589 --> 00:53:39,839

to get in to and to get out of the suits

1516

00:53:43,510 --> 00:53:41,599

and stretch out a little bit so that

1517

00:53:45,910 --> 00:53:43,520

it's a kind of rudimentary living

1518

00:53:47,589 --> 00:53:45,920

conditions but there you know there is a

1519

00:53:49,190 --> 00:53:47,599

toilet uh

1520

00:53:51,109 --> 00:53:49,200

and there's you know there's some room

1521

00:53:52,230 --> 00:53:51,119

it would be intolerable to stay in the

1522

00:53:55,589 --> 00:53:52,240

capsule

1523

00:53:57,190 --> 00:53:55,599

uh for for more than a few hours at the

1524

00:53:58,870 --> 00:53:57,200

end of the time we were in there my

1525

00:53:59,589 --> 00:53:58,880

knees are screaming i need to stretch

1526

00:54:01,270 --> 00:53:59,599

out

1527

00:54:03,190 --> 00:54:01,280

because you're you're in there on your

1528

00:54:05,510 --> 00:54:03,200

back with your knees pulled towards your

1529

00:54:08,230 --> 00:54:05,520

chest and then strapped down just to

1530

00:54:09,109 --> 00:54:08,240

keep everything nice and stable just in

1531

00:54:11,190 --> 00:54:09,119

case

1532

00:54:12,950 --> 00:54:11,200

because every launch could turn into an

1533

00:54:15,109 --> 00:54:12,960

immediate landing and you're prepared

1534

00:54:17,109 --> 00:54:15,119

for that possibility

1535

00:54:18,630 --> 00:54:17,119

so you get a chance to stretch out one

1536

00:54:20,950 --> 00:54:18,640

of the neat things or strange things

1537

00:54:22,470 --> 00:54:20,960

about the soyuz 2 is they put it in a

1538

00:54:24,710 --> 00:54:22,480

spin

1539

00:54:26,470 --> 00:54:24,720

it's a very simple way to keep the solar

1540

00:54:28,470 --> 00:54:26,480

rays pointed at the sun

1541

00:54:30,549 --> 00:54:28,480

and so that you get in and you get the

1542

00:54:32,950 --> 00:54:30,559

arrays pointed at the sun and then you

1543

00:54:35,510 --> 00:54:32,960

put the whole thing into a spin about

1544

00:54:37,349 --> 00:54:35,520

one revolution every two minutes

1545

00:54:39,829 --> 00:54:37,359

and and so you're watching out of the

1546

00:54:42,230 --> 00:54:39,839

window and and just kind of watching as

1547

00:54:44,390 --> 00:54:42,240

your spacecraft is summer salting around

1548

00:54:45,829 --> 00:54:44,400

the planet

1549

00:54:48,230 --> 00:54:45,839

it almost feels like you're on a leaf

1550

00:54:49,910 --> 00:54:48,240

tumbling around the planet for two days

1551
00:54:51,750 --> 00:54:49,920
just really really neat experience it

1552
00:54:52,950 --> 00:54:51,760
was very comfortable it was it was not

1553
00:54:53,829 --> 00:54:52,960
bad

1554
00:54:56,309 --> 00:54:53,839
okay

1555
00:54:58,789 --> 00:54:56,319
well i hope you all see that the human

1556
00:55:01,349 --> 00:54:58,799
space flip flight program is alive and

1557
00:55:04,069 --> 00:55:01,359
well at nasa uh incidentally on our

1558
00:55:06,309 --> 00:55:04,079
recent astronaut application opportunity

1559
00:55:08,230 --> 00:55:06,319
we had the second highest number of

1560
00:55:09,349 --> 00:55:08,240
applicants that we've ever had over 6

1561
00:55:11,030 --> 00:55:09,359
000

1562
00:55:12,470 --> 00:55:11,040
applicants so somebody thinks we're

1563
00:55:14,789 --> 00:55:12,480

still doing stuff and i think that's

1564

00:55:16,549 --> 00:55:14,799

great i want to give a shout out to our

1565

00:55:18,390 --> 00:55:16,559

colleagues at nasa tv who have been

1566

00:55:19,990 --> 00:55:18,400

filming this today so that you can enjoy

1567

00:55:22,549 --> 00:55:20,000

it again later they'll use some of this

1568

00:55:24,549 --> 00:55:22,559

footage in this week at nasa if you've

1569

00:55:26,150 --> 00:55:24,559

not watched that show you should and you

1570

00:55:28,069 --> 00:55:26,160

should tell your friends about it

1571

00:55:30,549 --> 00:55:28,079

because you start to see the incredible

1572

00:55:32,309 --> 00:55:30,559

range of things the agency does at all

1573

00:55:34,630 --> 00:55:32,319

of our centers across the country and

1574

00:55:35,750 --> 00:55:34,640

how we bring value to the public

1575

00:55:37,430 --> 00:55:35,760

um

1576

00:55:39,589 --> 00:55:37,440

we'll look forward to seeing you back

1577

00:55:41,829 --> 00:55:39,599

here when don pettit returns later this

1578

00:55:44,870 --> 00:55:41,839

year for uh to hear about what he did on

1579

00:55:47,109 --> 00:55:44,880

the space station and uh so let's give a

1580

00:55:52,390 --> 00:55:47,119

final round of applause to mike fossum