



Space Shuttle Flight Control Room



1
00:00:52,389 --> 00:00:21,470
hi i'm nasa astronaut mike good of the

2
00:01:19,990 --> 00:00:55,430
but we have seen the rising sun

3
00:01:37,350 --> 00:01:22,550
rise up with a cry

4
00:01:37,360 --> 00:01:45,830
is

5
00:01:45,840 --> 00:01:56,389
jesus

6
00:02:03,270 --> 00:01:58,230
good morning atlantis and a special good

7
00:02:06,870 --> 00:02:05,109
hey good morning houston that was a

8
00:02:08,869 --> 00:02:06,880
great way to wake up

9
00:02:11,029 --> 00:02:08,879
thanks to uh matt robbins for that song

10
00:02:12,710 --> 00:02:11,039
and matt walton for uh

11
00:02:15,670 --> 00:02:12,720
helping to put all those together for me

12
00:02:19,190 --> 00:02:15,680
help me pick out my uh wake up song

13
00:02:20,070 --> 00:02:19,200

and uh good morning to my uh family

14

00:02:21,910 --> 00:02:20,080

um

15

00:02:23,670 --> 00:02:21,920

it was great to be outside again with uh

16

00:02:25,190 --> 00:02:23,680

garrett on an eva yesterday we had a

17

00:02:26,869 --> 00:02:25,200

great time the whole team did a great

18

00:02:31,509 --> 00:02:26,879

job and uh

19

00:02:35,589 --> 00:02:32,949

this is mission control houston you're

20

00:02:38,150 --> 00:02:35,599

looking at a view inside the space

21

00:02:39,589 --> 00:02:38,160

shuttle atlantis payload bay

22

00:02:41,430 --> 00:02:39,599

atlantis is

23

00:02:44,390 --> 00:02:41,440

in a daytime orbit but it's crossing

24

00:02:46,710 --> 00:02:44,400

over into a nighttime orbit very soon

25

00:02:48,550 --> 00:02:46,720

uh it is out over the northern pacific

26

00:02:50,390 --> 00:02:48,560

ocean on an orbit that's uh going to

27

00:02:52,710 --> 00:02:50,400

take it just to the very west of

28

00:02:53,830 --> 00:02:52,720

california and mexico

29

00:02:57,430 --> 00:02:53,840

and then

30

00:03:00,070 --> 00:02:57,440

down over the very tip of south america

31

00:03:01,670 --> 00:03:00,080

the space shuttle is 220 miles above the

32

00:03:04,309 --> 00:03:01,680

earth at this time

33

00:03:06,550 --> 00:03:04,319

and the crew members on board atlantis

34

00:03:09,589 --> 00:03:06,560

the six-member crew are awake they were

35

00:03:13,830 --> 00:03:09,599

awakened this morning at 12 20 a.m

36

00:03:17,750 --> 00:03:15,350

this is mission control houston you're

37

00:03:19,350 --> 00:03:17,760

looking at the japanese kibo module

38

00:03:22,070 --> 00:03:19,360

along with the

39

00:03:24,710 --> 00:03:22,080

spatial robotic arm

40

00:03:26,949 --> 00:03:24,720

today that robotic arm will be used to

41

00:03:29,589 --> 00:03:26,959

move that carrier

42

00:03:35,190 --> 00:03:29,599

cargo carrier back into the

43

00:03:40,470 --> 00:03:38,070

the integrated cargo carrier has now

44

00:03:43,509 --> 00:03:40,480

been released from the payload

45

00:03:46,070 --> 00:03:43,519

oru accommodation which is basically a

46

00:03:47,670 --> 00:03:46,080

docking port on the station's mobile

47

00:03:50,630 --> 00:03:47,680

base system

48

00:03:52,789 --> 00:03:50,640

the integrated cargo carrier

49

00:03:55,270 --> 00:03:52,799

uniquely designed to carry orbital

50

00:03:57,670 --> 00:03:55,280

replacement units to the international

51
00:03:59,589 --> 00:03:57,680
space station it can be

52
00:04:02,149 --> 00:03:59,599
removed from the shuttle's payload bay

53
00:04:04,710 --> 00:04:02,159
and temporarily stowed

54
00:04:07,589 --> 00:04:04,720
on the state outside the station it can

55
00:04:10,470 --> 00:04:07,599
also remain on the robotic arm and

56
00:04:13,030 --> 00:04:10,480
moved to various work sites so that it

57
00:04:15,509 --> 00:04:13,040
provides easy access for astronauts

58
00:04:19,430 --> 00:04:15,519
performing maintenance tasks on the

59
00:04:25,430 --> 00:04:21,670
and the station's a robotic arm under

60
00:04:28,629 --> 00:04:25,440
control of astronaut piers sellers

61
00:04:30,070 --> 00:04:28,639
stationed in the cupola at the robotic

62
00:04:31,590 --> 00:04:30,080
workstation

63
00:04:34,310 --> 00:04:31,600

and

64

00:04:54,790 --> 00:04:34,320

process of relocating the integrated

65

00:09:13,670 --> 00:04:56,550

station houston space to ground too for

66

00:09:18,389 --> 00:09:16,150

and the integrated cargo carrier on the

67

00:09:21,110 --> 00:09:18,399

end of the station's robotic arm now at

68

00:09:24,070 --> 00:09:21,120

uh what's known as the high hover

69

00:09:26,070 --> 00:09:24,080

position above the location

70

00:09:28,550 --> 00:09:26,080

where it will be stowed in atlanta's

71

00:09:29,590 --> 00:09:28,560

payload bay for the remainder of the

72

00:09:30,949 --> 00:09:29,600

flight

73

00:09:33,430 --> 00:09:30,959

atlantis is

74

00:09:35,990 --> 00:09:33,440

slated to undock from the international

75

00:09:46,230 --> 00:09:36,000

space station sunday morning shortly

76
00:09:52,949 --> 00:09:50,150
crew setting up the split screen to be

77
00:09:55,829 --> 00:09:52,959
able to watch as the

78
00:09:57,430 --> 00:09:55,839
icc the integrated cargo carrier is

79
00:10:00,070 --> 00:09:57,440
lowered into its

80
00:10:02,550 --> 00:10:00,080
latches the payload retention latch

81
00:10:05,430 --> 00:10:02,560
assemblies known as perlas will be

82
00:10:08,630 --> 00:10:05,440
closed to secure the icc

83
00:10:09,509 --> 00:10:08,640
in the payload bay as it has completed

84
00:10:12,389 --> 00:10:09,519
its

85
00:10:14,310 --> 00:10:12,399
mission to deliver a new set of

86
00:11:18,630 --> 00:10:14,320
batteries to the international space

87
00:11:22,069 --> 00:11:19,590
and the

88
00:11:23,910 --> 00:11:22,079

integrated cargo carrier being guided

89

00:11:28,870 --> 00:11:23,920

into its

90

00:11:32,470 --> 00:11:31,190

mechanical uh systems officer here in

91

00:11:35,030 --> 00:11:32,480

the shuttle flight control room

92

00:11:36,389 --> 00:11:35,040

reporting ready to latch indications on

93

00:11:50,790 --> 00:11:36,399

all four

94

00:11:55,829 --> 00:11:52,790

when you're ready

95

00:11:58,550 --> 00:11:55,839

okay we are ready you have a go prize

96

00:12:00,230 --> 00:11:58,560

you see aka and app

97

00:12:06,069 --> 00:12:00,240

latches

98

00:12:11,350 --> 00:12:08,870

garrett riesman and

99

00:12:13,430 --> 00:12:11,360

tony antonelli talking to one another

100

00:12:15,990 --> 00:12:13,440

uh tony antonelli on the shuttle he's

101

00:12:18,230 --> 00:12:16,000

the pilot of sts-132

102

00:12:19,910 --> 00:12:18,240

garrett riesman over in the cupola of

103

00:12:21,829 --> 00:12:19,920

the international space station you see

104

00:12:24,629 --> 00:12:21,839

in the far distance in this view looking

105

00:12:26,310 --> 00:12:24,639

straight up out of the payload bay as

106

00:12:27,990 --> 00:12:26,320

the go has been given to close the

107

00:12:29,910 --> 00:12:28,000

latches the four

108

00:12:31,430 --> 00:12:29,920

latches around the

109

00:12:45,430 --> 00:12:31,440

trunnion pins

110

00:12:50,389 --> 00:12:48,310

uh atlantis and houston

111

00:12:52,230 --> 00:12:50,399

tony you've got to go to do the forward

112

00:13:02,710 --> 00:12:52,240

latches

113

00:13:08,550 --> 00:13:04,550

and houston from the interlock on space

114

00:13:08,560 --> 00:13:12,550

go ahead

115

00:13:19,269 --> 00:13:16,150

yeah procedure 3.103 that's the nitrogen

116

00:13:23,910 --> 00:13:19,279

transfer term i'm complete through 5.2

117

00:13:39,829 --> 00:13:25,910

and how can we concur we'll put the

118

00:13:44,790 --> 00:13:42,870

and cupola from atlantis on the big loop

119

00:13:53,829 --> 00:13:44,800

were completely latched you have a go

120

00:13:53,839 --> 00:13:57,430

and houston copies

121

00:14:05,910 --> 00:13:58,949

tom is saved and we're going to be

122

00:14:05,920 --> 00:14:13,269

copy step 15.

123

00:14:19,110 --> 00:14:15,829

and houston

124

00:14:20,710 --> 00:14:19,120

robo could you do the icc release step

125

00:14:25,509 --> 00:14:20,720

15 for us

126
00:14:25,519 --> 00:14:31,750
and peers will put 15.1 in work

127
00:14:37,269 --> 00:14:34,470
that call a moment ago from pilot tony

128
00:14:39,269 --> 00:14:37,279
antonelli aboard atlantis

129
00:14:41,509 --> 00:14:39,279
indicating the integrated cargo carrier

130
00:14:44,790 --> 00:14:41,519
is latched back in atlantis's payload

131
00:14:46,629 --> 00:14:44,800
bay that call coming at 4 50 a.m

132
00:14:49,350 --> 00:14:46,639
central time

133
00:14:51,269 --> 00:14:49,360
seven days 15 hours 30 minutes into

134
00:14:52,629 --> 00:14:51,279
atlantis mission to the international

135
00:14:53,430 --> 00:14:52,639
space station

136
00:16:33,749 --> 00:14:53,440
the

137
00:16:37,749 --> 00:16:35,030
an orbital

138
00:16:40,230 --> 00:16:37,759

sunset

139

00:16:43,350 --> 00:16:40,240

breaking over space shuttle atlantis and

140

00:16:44,790 --> 00:16:43,360

the international space station as the

141

00:16:48,389 --> 00:16:44,800

complex

142

00:16:54,150 --> 00:16:48,399

tracks just to the north northeast of uh

143

00:16:59,590 --> 00:16:56,629

i've been practicing that one

144

00:17:01,829 --> 00:16:59,600

atlantis iss this is houston acr please

145

00:17:08,710 --> 00:17:01,839

stand by for the nasa explorer school

146

00:17:13,270 --> 00:17:11,429

my name is evan and i go to john v carey

147

00:17:15,429 --> 00:17:13,280

in richmond virginia

148

00:17:26,710 --> 00:17:15,439

i would like to know why do you wear the

149

00:17:30,390 --> 00:17:29,270

well the purple ones kind of clash with

150

00:17:32,230 --> 00:17:30,400

my eyes

151

00:17:34,549 --> 00:17:32,240

i think i look a lot better in orange

152

00:17:37,669 --> 00:17:34,559

actually the orange color

153

00:17:39,430 --> 00:17:37,679

is uh for uh make us more visible in

154

00:17:41,669 --> 00:17:39,440

case people need to find us

155

00:17:43,590 --> 00:17:41,679

and the reason we wear the suits is to

156

00:17:45,029 --> 00:17:43,600

protect us

157

00:17:46,710 --> 00:17:45,039

in the event that

158

00:17:49,029 --> 00:17:46,720

something happens that we're not

159

00:17:58,870 --> 00:17:49,039

expecting going either uphill or

160

00:18:03,270 --> 00:18:01,350

my name is chyna williams and i go to

161

00:18:05,909 --> 00:18:03,280

fort hikes elementary school in columbia

162

00:18:08,470 --> 00:18:05,919

south carolina i would like to know what

163

00:18:10,390 --> 00:18:08,480

are differences in living in the space

164

00:18:15,510 --> 00:18:10,400

station from living in your home on

165

00:18:19,270 --> 00:18:17,190

that's a good question i can tell you

166

00:18:20,470 --> 00:18:19,280

for starters nothing stays where you put

167

00:18:22,390 --> 00:18:20,480

it

168

00:18:23,750 --> 00:18:22,400

everything floats

169

00:18:25,909 --> 00:18:23,760

including

170

00:18:27,669 --> 00:18:25,919

yourself your food your clothes

171

00:18:29,270 --> 00:18:27,679

everything that you're working on so you

172

00:18:31,190 --> 00:18:29,280

have to strap everything down you can't

173

00:18:32,549 --> 00:18:31,200

lay it down on the table and you can't

174

00:18:38,870 --> 00:18:32,559

keep your eyes off of it unless it's

175

00:18:43,350 --> 00:18:41,110

hi my name is samantha swann and i go to

176
00:18:45,590 --> 00:18:43,360
dr rodriguez elementary in heart engine

177
00:18:53,190 --> 00:18:45,600
texas i would like to know what is the

178
00:18:57,270 --> 00:18:55,190
hey great question there's a lot of

179
00:19:00,390 --> 00:18:57,280
really great parts about uh about the

180
00:19:03,430 --> 00:19:00,400
job uh being up here floating turns out

181
00:19:06,150 --> 00:19:03,440
to be amazingly fun and you can see a

182
00:19:08,870 --> 00:19:06,160
couple of my crewmates here upside down

183
00:19:10,950 --> 00:19:08,880
and then the the other great part is

184
00:19:13,669 --> 00:19:10,960
looking out the window

185
00:19:22,470 --> 00:19:13,679
the views looking down at the earth are

186
00:19:26,870 --> 00:19:24,870
hi i'm kalia and i'm in the sixth grade

187
00:19:29,590 --> 00:19:26,880
at hop good elementary in murfreesboro

188
00:19:31,110 --> 00:19:29,600

tennessee my question is what do you do

189

00:19:37,110 --> 00:19:31,120

in your free time and how much free time

190

00:19:40,390 --> 00:19:39,350

hey what i like to do is to look out the

191

00:19:42,470 --> 00:19:40,400

window

192

00:19:43,750 --> 00:19:42,480

and watch the earth go by it's just

193

00:19:45,430 --> 00:19:43,760

beautiful

194

00:19:47,430 --> 00:19:45,440

uh we don't get any free time so i have

195

00:19:49,350 --> 00:19:47,440

to steal it from the bus

196

00:19:50,549 --> 00:19:49,360

pretty much but uh the most i think

197

00:19:51,830 --> 00:19:50,559

everybody does that when they get a

198

00:19:53,669 --> 00:19:51,840

moment off they kind of look out the

199

00:19:55,510 --> 00:19:53,679

window and just see the whole world go

200

00:20:03,430 --> 00:19:55,520

by it's like a geography lesson it's

201

00:20:08,470 --> 00:20:05,430

hi my name is yvette i am a fourth

202

00:20:10,630 --> 00:20:08,480

grader in harlingen texas i am bilingual

203

00:20:12,549 --> 00:20:10,640

and i was wondering how many languages

204

00:20:18,070 --> 00:20:12,559

you need to speak to work on the

205

00:20:21,990 --> 00:20:20,470

i don't speak anything i think i think

206

00:20:22,870 --> 00:20:22,000

we all agree that's a pretty good

207

00:20:25,510 --> 00:20:22,880

question

208

00:20:27,430 --> 00:20:25,520

uh well the the official main language

209

00:20:29,190 --> 00:20:27,440

on the space station one that we all

210

00:20:30,310 --> 00:20:29,200

understand is english

211

00:20:31,990 --> 00:20:30,320

however

212

00:20:33,750 --> 00:20:32,000

it's very essential that you learn

213

00:20:37,110 --> 00:20:33,760

russian as well since

214

00:20:39,830 --> 00:20:37,120

we tend to operate uh in the soyuz or we

215

00:20:41,750 --> 00:20:39,840

do operate in the soyuz spacecraft

216

00:20:44,310 --> 00:20:41,760

solely in russian

217

00:20:46,070 --> 00:20:44,320

but we have a lot of talented very

218

00:20:50,070 --> 00:20:46,080

bright people on board and some of them

219

00:20:54,230 --> 00:20:50,080

know several languages such as japanese

220

00:20:56,230 --> 00:20:54,240

got suici on board and uh french german

221

00:20:57,750 --> 00:20:56,240

tj knows german so

222

00:20:59,990 --> 00:20:57,760

it's uh when you have an international

223

00:21:07,430 --> 00:21:00,000

space station it's almost endless uh the

224

00:21:11,990 --> 00:21:09,510

my name is paige and i go to laid to

225

00:21:14,630 --> 00:21:12,000

middle school and lived in kentucky my

226

00:21:17,110 --> 00:21:14,640

question is what does it feel like after

227

00:21:22,549 --> 00:21:17,120

being on the space station when you come

228

00:21:27,830 --> 00:21:24,710

i can answer that

229

00:21:32,470 --> 00:21:29,909

well uh when you come back to earth

230

00:21:35,430 --> 00:21:32,480

things feel really really heavy

231

00:21:36,870 --> 00:21:35,440

um i remember taking off my helmet and

232

00:21:38,950 --> 00:21:36,880

feeling like i was holding a pickup

233

00:21:40,310 --> 00:21:38,960

truck in my hand it felt so incredibly i

234

00:21:42,149 --> 00:21:40,320

was like oh my goodness how am i ever

235

00:21:44,710 --> 00:21:42,159

going to brush my teeth my toothbrush is

236

00:21:47,029 --> 00:21:44,720

going to feel like a ton of bricks but

237

00:21:49,190 --> 00:21:47,039

um turns out that you get really used to

238

00:21:51,669 --> 00:21:49,200

gravity again pretty quickly within like

239

00:21:53,830 --> 00:21:51,679

an hour or so and uh

240

00:21:56,230 --> 00:21:53,840

you uh after it takes a little while for

241

00:21:57,669 --> 00:21:56,240

you to get all your senses back uh and

242

00:22:00,149 --> 00:21:57,679

they won't let you drive a car usually

243

00:22:01,590 --> 00:22:00,159

for about a month but uh other than that

244

00:22:09,590 --> 00:22:01,600

uh after about a month you're pretty

245

00:22:13,750 --> 00:22:11,830

my name is antonio and i go to

246

00:22:16,230 --> 00:22:13,760

elementary learning center in cudahy

247

00:22:26,470 --> 00:22:16,240

california and my question is is there

248

00:22:29,669 --> 00:22:27,510

hey

249

00:22:32,070 --> 00:22:29,679

well we're going very very fast up here

250

00:22:33,990 --> 00:22:32,080

five miles per second but we're out of

251
00:22:35,590 --> 00:22:34,000
the atmosphere but there's a little bit

252
00:22:37,510 --> 00:22:35,600
of atmosphere left there so there are a

253
00:22:39,750 --> 00:22:37,520
few atoms i guess hitting the front of

254
00:22:41,990 --> 00:22:39,760
station at five miles per second so

255
00:22:44,230 --> 00:22:42,000
that's a very weak wind but it's enough

256
00:22:45,909 --> 00:22:44,240
to slow the space station down and make

257
00:22:48,070 --> 00:22:45,919
it slowly fall back to earth so every so

258
00:22:49,990 --> 00:22:48,080
often we have to boost it back up again

259
00:22:57,830 --> 00:22:50,000
using a rocket motor on the back of the

260
00:23:02,310 --> 00:23:00,310
my name is aaron smith and i go to

261
00:23:04,789 --> 00:23:02,320
orleans elementary school

262
00:23:07,270 --> 00:23:04,799
in orleans vermont my question is what

263
00:23:14,390 --> 00:23:07,280

is the temperature at the international

264

00:23:18,310 --> 00:23:16,470

inside here it's

265

00:23:19,990 --> 00:23:18,320

just like it is at school for you it's

266

00:23:22,630 --> 00:23:20,000

room temperature very comfortable we're

267

00:23:24,390 --> 00:23:22,640

just working out here in shirt sleeves

268

00:23:25,430 --> 00:23:24,400

but when we go outside on our space

269

00:23:27,750 --> 00:23:25,440

walks

270

00:23:30,710 --> 00:23:27,760

the temperatures can vary plus or minus

271

00:23:39,909 --> 00:23:30,720

200 degrees depending on whether the

272

00:23:44,149 --> 00:23:41,990

hi my name is jackson i am a sixth

273

00:23:46,630 --> 00:23:44,159

grader at hollywood elementary in

274

00:23:48,230 --> 00:23:46,640

murfreesboro tennessee my question is

275

00:23:49,990 --> 00:23:48,240

what is one of the worst and best

276

00:23:55,669 --> 00:23:50,000

effects of being in a microgravity

277

00:24:01,430 --> 00:23:56,789

for

278

00:24:02,789 --> 00:24:01,440

it's very nice to be able to float

279

00:24:05,190 --> 00:24:02,799

that's probably the best effect you get

280

00:24:08,149 --> 00:24:05,200

to hang around and float and you can

281

00:24:09,430 --> 00:24:08,159

become an expert gymnast in seconds you

282

00:24:11,110 --> 00:24:09,440

can do all sorts of things you can't do

283

00:24:13,029 --> 00:24:11,120

on the ground

284

00:24:15,029 --> 00:24:13,039

one of the long-term problems with being

285

00:24:17,669 --> 00:24:15,039

in this environment however is

286

00:24:19,190 --> 00:24:17,679

bone loss muscle deconditioning and

287

00:24:21,110 --> 00:24:19,200

over time we're starting to learn how to

288

00:24:22,870 --> 00:24:21,120

deal with that on board tracy here works

289

00:24:24,390 --> 00:24:22,880

out several hours a day trying to stay

290

00:24:26,789 --> 00:24:24,400

strong so when she gets home in six

291

00:24:33,590 --> 00:24:26,799

months she can

292

00:24:37,909 --> 00:24:35,990

my name is sammy and i am a senior at

293

00:24:39,990 --> 00:24:37,919

wendover high school my question is how

294

00:24:51,190 --> 00:24:40,000

do you feel about flying on the last

295

00:24:55,750 --> 00:24:53,990

well we're not exactly sure that this is

296

00:24:58,230 --> 00:24:55,760

in fact the last space shuttle flight of

297

00:25:00,230 --> 00:24:58,240

atlantis uh if it is though we all

298

00:25:02,149 --> 00:25:00,240

consider it just as important as any of

299

00:25:04,789 --> 00:25:02,159

the other flights this was the 30-second

300

00:25:06,390 --> 00:25:04,799

flight 30-second time that atlantis has

301

00:25:08,070 --> 00:25:06,400

launched into space

302

00:25:09,669 --> 00:25:08,080

and flown around the earth many many

303

00:25:12,070 --> 00:25:09,679

times so we're just another crew to be

304

00:25:14,549 --> 00:25:12,080

lucky enough to be part of that program

305

00:25:21,750 --> 00:25:14,559

and uh if it's the last flight

306

00:25:27,909 --> 00:25:24,549

my name is charles and i go to john b

307

00:25:29,990 --> 00:25:27,919

carey in richmond virginia my question

308

00:25:36,149 --> 00:25:30,000

is did you like training to be an

309

00:25:39,430 --> 00:25:37,669

yeah well that's a great question

310

00:25:41,190 --> 00:25:39,440

actually training to be an astronaut is

311

00:25:44,070 --> 00:25:41,200

a lot of fun

312

00:25:45,590 --> 00:25:44,080

we get to fly airplanes around work in

313

00:25:48,549 --> 00:25:45,600

the simulator

314

00:25:50,230 --> 00:25:48,559

and go to class all the things that you

315

00:25:53,190 --> 00:25:50,240

would learn in school

316

00:25:54,950 --> 00:25:53,200

we've been training uh the sts-132 crew

317

00:25:57,190 --> 00:25:54,960

has been training about eight months so

318

00:25:58,630 --> 00:25:57,200

just about a school year getting ready

319

00:26:05,269 --> 00:25:58,640

for this mission but

320

00:26:10,149 --> 00:26:07,830

my name is serena anderson and i go to

321

00:26:13,750 --> 00:26:10,159

cumberland middle school in cumberland

322

00:26:15,190 --> 00:26:13,760

wisconsin my question is when you go up

323

00:26:16,950 --> 00:26:15,200

into space

324

00:26:24,549 --> 00:26:16,960

like how much pressure is it and how

325

00:26:29,669 --> 00:26:27,510

right so um here on the space station

326

00:26:34,070 --> 00:26:29,679

the uh the atmospheric pressure in here

327

00:26:36,390 --> 00:26:34,080

is just like sea level uh 14.7 psi

328

00:26:37,269 --> 00:26:36,400

um as far as like during launch we feel

329

00:26:39,590 --> 00:26:37,279

a lot of

330

00:26:42,710 --> 00:26:39,600

forces acceleration as we're going up in

331

00:26:44,950 --> 00:26:42,720

the space shuttle up to three times our

332

00:26:47,190 --> 00:26:44,960

normal body weight so it feels like

333

00:26:48,789 --> 00:26:47,200

there's three of your friends standing

334

00:26:50,950 --> 00:26:48,799

on your chest

335

00:26:52,630 --> 00:26:50,960

as you're launching into space and

336

00:26:54,310 --> 00:26:52,640

sometimes it's a little bit of work just

337

00:26:57,350 --> 00:26:54,320

to raise your

338

00:26:59,909 --> 00:26:57,360

chest up to get some air into your lungs

339

00:27:02,549 --> 00:26:59,919

but after a couple days here on uh on

340

00:27:09,830 --> 00:27:02,559

station you really adapt to all this and

341

00:27:13,750 --> 00:27:12,149

hi my name is megan and i'm from orangey

342

00:27:15,669 --> 00:27:13,760

hardy middle school in des moines iowa

343

00:27:17,350 --> 00:27:15,679

and my question is is how long does it

344

00:27:22,789 --> 00:27:17,360

take for

345

00:27:26,549 --> 00:27:25,269

now this is a tricky question

346

00:27:28,389 --> 00:27:26,559

how long does it take for water for

347

00:27:30,310 --> 00:27:28,399

evaporating space if you put some water

348

00:27:31,990 --> 00:27:30,320

out of space if you're on the night side

349

00:27:35,590 --> 00:27:32,000

of the earth it'll just freeze solid in

350

00:27:38,070 --> 00:27:35,600

a like a rock-hard iceberg immediately

351

00:27:40,950 --> 00:27:38,080

if you're on the

352

00:27:42,389 --> 00:27:40,960

on the sun side it'll flash and boil

353

00:27:44,630 --> 00:27:42,399

almost immediately and you'll just get

354

00:27:45,909 --> 00:27:44,640

water vapor and sometimes there's some

355

00:27:48,149 --> 00:27:45,919

places where the water doesn't know

356

00:27:50,149 --> 00:27:48,159

whether to freeze or boil and it kind of

357

00:27:57,430 --> 00:27:50,159

does both at the same time

358

00:28:01,669 --> 00:27:59,029

my name is charles wallace and i go to

359

00:28:03,269 --> 00:28:01,679

cairo's middle school in conyers georgia

360

00:28:05,269 --> 00:28:03,279

i would like to know

361

00:28:20,070 --> 00:28:05,279

are there any concerns about the closure

362

00:28:24,230 --> 00:28:21,430

well the end of the space shuttle

363

00:28:27,350 --> 00:28:24,240

program is essentially inevitable uh and

364

00:28:30,070 --> 00:28:27,360

that is because the space shuttle can't

365

00:28:33,350 --> 00:28:30,080

travel outside of low earth orbit and if

366

00:28:35,990 --> 00:28:33,360

we as humans want to explore deeper into

367

00:28:37,510 --> 00:28:36,000

the universe

368

00:28:39,669 --> 00:28:37,520

it's starting with maybe the moon moving

369

00:28:41,110 --> 00:28:39,679

on to asteroids and mars

370

00:28:43,669 --> 00:28:41,120

the space shuttle is not the machine

371

00:28:45,669 --> 00:28:43,679

that can do it so we simply don't have

372

00:28:47,590 --> 00:28:45,679

enough money to continue to operate the

373

00:28:49,750 --> 00:28:47,600

space shuttle and develop a whole new

374

00:28:50,870 --> 00:28:49,760

spacecraft that can go beyond low earth

375

00:28:53,029 --> 00:28:50,880

orbit

376

00:28:55,990 --> 00:28:53,039

so it's a it's a decision of

377

00:28:57,669 --> 00:28:56,000

national will you know if we want to

378

00:28:59,190 --> 00:28:57,679

explore the universe we've got to stop

379

00:29:00,630 --> 00:28:59,200

flying the space shuttle and it's a

380

00:29:06,310 --> 00:29:00,640

simple reality

381

00:29:10,149 --> 00:29:08,870

my name is william

382

00:29:15,430 --> 00:29:10,159

and

383

00:29:19,110 --> 00:29:15,440

in first grade in forest lake elementary

384

00:29:21,269 --> 00:29:19,120

in columbia south carolina my question

385

00:29:31,110 --> 00:29:21,279

is

386

00:29:34,310 --> 00:29:33,510

hey william uh thanks for asking that

387

00:29:36,149 --> 00:29:34,320

question

388

00:29:37,830 --> 00:29:36,159

um it's a good one

389

00:29:39,750 --> 00:29:37,840

the reason that there's not as much you

390

00:29:42,310 --> 00:29:39,760

don't feel as much gravity on the moon

391

00:29:44,070 --> 00:29:42,320

is because it's smaller than the earth

392

00:29:45,350 --> 00:29:44,080

the amount of gravity that a given

393

00:29:47,590 --> 00:29:45,360

planet

394

00:29:49,909 --> 00:29:47,600

or any anything for that matter pulls on

395

00:29:52,070 --> 00:29:49,919

everything else has is

396

00:29:54,789 --> 00:29:52,080

related to how big it is how much mass

397

00:29:57,510 --> 00:29:54,799

it has so the moon has a lot less mass

398

00:29:59,430 --> 00:29:57,520

than the earth so there's less gravity

399

00:30:01,669 --> 00:29:59,440

and if you go to jupiter which has got a

400

00:30:04,070 --> 00:30:01,679

lot more mass than the earth then you'd

401
00:30:06,549 --> 00:30:04,080

feel a lot of gravity and

402
00:30:12,789 --> 00:30:06,559

you'd feel really really heavy so that's

403
00:30:17,269 --> 00:30:14,710

hi my name is michelle i'm a junior

404
00:30:19,269 --> 00:30:17,279

winover high my question is what is it

405
00:30:29,750 --> 00:30:19,279

like seeing the sunset or sun rise every

406
00:30:29,760 --> 00:30:33,669

well i'm starting to answer the question

407
00:30:36,789 --> 00:30:34,950

no because you get to go around the

408
00:30:39,029 --> 00:30:36,799

earth every 90 minutes or so you

409
00:30:41,110 --> 00:30:39,039

naturally see a sunset in the sunrise

410
00:30:42,710 --> 00:30:41,120

every 90 minutes and it's really amazing

411
00:30:44,549 --> 00:30:42,720

because you get to watch

412
00:30:46,230 --> 00:30:44,559

you know the earth below you both at

413
00:30:47,269 --> 00:30:46,240

night and during the day in just an hour

414

00:30:49,110 --> 00:30:47,279

and a half

415

00:30:50,470 --> 00:30:49,120

which is really really exciting the

416

00:30:51,510 --> 00:30:50,480

problem becomes when you're trying to go

417

00:30:52,870 --> 00:30:51,520

to sleep

418

00:30:54,310 --> 00:30:52,880

for some people

419

00:30:56,310 --> 00:30:54,320

because you have to have to shut the

420

00:30:57,430 --> 00:30:56,320

windows and seal yourself off inside and

421

00:30:58,470 --> 00:30:57,440

turn out the lights because otherwise

422

00:31:00,389 --> 00:30:58,480

you'd have the light coming through the

423

00:31:04,070 --> 00:31:00,399

windows every 45 minutes and that might

424

00:31:06,710 --> 00:31:04,080

keep some people awake

425

00:31:08,549 --> 00:31:06,720

oh outside oh going outside is eva

426

00:31:10,230 --> 00:31:08,559

that's a lot more fun because you're not

427

00:31:12,630 --> 00:31:10,240

constrained by the windows and you have

428

00:31:13,830 --> 00:31:12,640

the opportunity to uh look down and see

429

00:31:15,669 --> 00:31:13,840

the earth

430

00:31:17,430 --> 00:31:15,679

pass below your feet

431

00:31:19,669 --> 00:31:17,440

in darkness and in light and it's

432

00:31:21,029 --> 00:31:19,679

amazing what you can see at night uh not

433

00:31:23,350 --> 00:31:21,039

on this mission on a previous mission i

434

00:31:25,029 --> 00:31:23,360

saw a meteorite pass below me into the

435

00:31:28,389 --> 00:31:25,039

atmosphere and glow and that was pretty

436

00:31:30,310 --> 00:31:28,399

amazing lightning storms the aurora we

437

00:31:32,310 --> 00:31:30,320

saw the other day all sorts of amazing

438

00:31:33,990 --> 00:31:32,320

things you get to see outside at night

439

00:31:38,630 --> 00:31:34,000

that you don't necessarily think of you

440

00:31:41,430 --> 00:31:39,990

let me just add something to that real

441

00:31:43,190 --> 00:31:41,440

quick the other interesting thing about

442

00:31:45,909 --> 00:31:43,200

sunrises and sunsets up here though is

443

00:31:47,350 --> 00:31:45,919

that they happen really fast so it's not

444

00:31:49,269 --> 00:31:47,360

like at home when you're sitting on the

445

00:31:51,750 --> 00:31:49,279

beach and just enjoying the sunset go

446

00:31:53,750 --> 00:31:51,760

down into the ocean very slowly here it

447

00:31:55,350 --> 00:31:53,760

just happens uh so fast because we're

448

00:31:56,470 --> 00:31:55,360

traveling around the world so fast so

449

00:31:57,430 --> 00:31:56,480

you're out there and you're looking at

450

00:31:59,909 --> 00:31:57,440

the sun

451
00:32:08,789 --> 00:31:59,919
and it's bright bright bright bright

452
00:32:12,710 --> 00:32:10,630
hi my name is hannah i'm a fourth grader

453
00:32:15,590 --> 00:32:12,720
in highland in texas in comparison to

454
00:32:17,430 --> 00:32:15,600
plant life on earth to the plants grown

455
00:32:22,630 --> 00:32:17,440
on the international space station grow

456
00:32:25,590 --> 00:32:24,870
selena that's a really mature question

457
00:32:27,269 --> 00:32:25,600
and

458
00:32:28,470 --> 00:32:27,279
you're ahead of your time the space

459
00:32:29,830 --> 00:32:28,480
station

460
00:32:31,990 --> 00:32:29,840
science

461
00:32:35,190 --> 00:32:32,000
on board here really is looking at that

462
00:32:37,269 --> 00:32:35,200
very question itself we're looking at

463
00:32:39,269 --> 00:32:37,279

arabidopsis seeds and trying to

464

00:32:42,310 --> 00:32:39,279

understand because we see that the roots

465

00:32:44,230 --> 00:32:42,320

grow in a different way here on orbit

466

00:32:46,070 --> 00:32:44,240

with the lack of gravity than they do on

467

00:32:48,630 --> 00:32:46,080

earth and we're hoping that that will

468

00:32:51,269 --> 00:32:48,640

help us to understand plant growth on

469

00:32:52,470 --> 00:32:51,279

earth a little better so i can tell you

470

00:32:54,070 --> 00:32:52,480

that

471

00:32:55,590 --> 00:32:54,080

they do grow a little differently but

472

00:32:56,470 --> 00:32:55,600

how that's something that we're studying

473

00:32:57,909 --> 00:32:56,480

right now

474

00:33:00,710 --> 00:32:57,919

it's kind of interesting to see plants

475

00:33:06,230 --> 00:33:00,720

growing up here in the space station

476

00:33:10,070 --> 00:33:07,990

my name is jackie black and i go to

477

00:33:11,509 --> 00:33:10,080

arapahoe middle school in

478

00:33:13,110 --> 00:33:11,519

arapahoe

479

00:33:15,269 --> 00:33:13,120

my question is do you take any

480

00:33:23,590 --> 00:33:15,279

medication for the function of your bone

481

00:33:29,509 --> 00:33:26,389

actually i'd have to say no we don't

482

00:33:32,389 --> 00:33:29,519

take any medications uh that i know of

483

00:33:35,350 --> 00:33:32,399

but we are trying to understand

484

00:33:37,669 --> 00:33:35,360

better how to preserve bone mass up here

485

00:33:38,710 --> 00:33:37,679

on orbit for long duration and so one of

486

00:33:49,669 --> 00:33:38,720

the

487

00:33:51,990 --> 00:33:49,679

more exercise we do before we launch

488

00:33:54,470 --> 00:33:52,000

into space as well as while we're on

489

00:33:56,310 --> 00:33:54,480

orbit helps to maintain

490

00:33:58,470 --> 00:33:56,320

our bone mass which is extremely

491

00:34:00,470 --> 00:33:58,480

important and we're trying to study that

492

00:34:01,830 --> 00:34:00,480

right now to see how much we need to do

493

00:34:04,230 --> 00:34:01,840

and for

494

00:34:06,870 --> 00:34:04,240

how frequent we need to do that in order

495

00:34:09,030 --> 00:34:06,880

to maintain and possibly even grow

496

00:34:10,950 --> 00:34:09,040

stronger bones on orbit and that will

497

00:34:11,829 --> 00:34:10,960

also help us to understand our own bone

498

00:34:14,069 --> 00:34:11,839

growth

499

00:34:20,470 --> 00:34:14,079

back at home on earth great questions

500

00:34:28,869 --> 00:34:23,589

atlantis iss this is houston acr thank

501
00:34:32,230 --> 00:34:30,389
thank you atlanta station and nasa

502
00:34:33,750 --> 00:34:32,240
explorer schools

503
00:34:37,430 --> 00:34:33,760
atlantis station we're now resuming

504
00:34:40,869 --> 00:34:38,869
there is the very southern tip of

505
00:34:42,310 --> 00:34:40,879
ireland coming into view uh here soon

506
00:34:43,990 --> 00:34:42,320
you will see

507
00:34:45,829 --> 00:34:44,000
parts of england and then a few seconds

508
00:34:53,589 --> 00:34:45,839
you'll see the very western edge of

509
00:34:57,109 --> 00:34:55,430
the station's cameras had been pointed

510
00:34:58,310 --> 00:34:57,119
toward the north since uh this

511
00:34:59,910 --> 00:34:58,320
particular

512
00:35:02,950 --> 00:34:59,920
part of the orbit was taking the station

513
00:35:05,270 --> 00:35:02,960

and the shuttle fairly close within the

514

00:35:06,870 --> 00:35:05,280

vicinity of where that icelandic volcano

515

00:35:08,310 --> 00:35:06,880

ash cloud has been impacting the

516

00:35:09,750 --> 00:35:08,320

atmosphere

517

00:35:11,190 --> 00:35:09,760

of course it's a very cloudy day right

518

00:35:14,230 --> 00:35:11,200

now over the atlantic so it's a bit hard

519

00:35:18,710 --> 00:35:14,240

to tell what are clouds and what is

520

00:35:22,230 --> 00:35:19,990

while the station and the shuttle

521

00:35:24,790 --> 00:35:22,240

continue to orbit the crews on board

522

00:35:26,950 --> 00:35:24,800

enjoying some off-duty time

523

00:35:50,630 --> 00:35:26,960

they've fairly much wrapped up their

524

00:35:54,310 --> 00:35:52,790

this is mission control houston this is

525

00:35:55,990 --> 00:35:54,320

a look at the current position of the

526
00:35:57,910 --> 00:35:56,000
international space station and space

527
00:35:59,750 --> 00:35:57,920
shuttle atlantis docked in their final

528
00:36:01,109 --> 00:35:59,760
hours the two vehicles are just making

529
00:36:02,950 --> 00:36:01,119
their way off the

530
00:36:07,349 --> 00:36:02,960
northwest coast of the united states

531
00:36:11,190 --> 00:36:08,710
on a track that will take them over

532
00:36:13,030 --> 00:36:11,200
montana and wyoming and nebraska on

533
00:36:15,109 --> 00:36:13,040
their next orbit they will be crossing

534
00:36:16,550 --> 00:36:15,119
over california and arizona where there

535
00:36:18,069 --> 00:36:16,560
will be sighting opportunities so we

536
00:36:19,109 --> 00:36:18,079
encourage you to check out our nasa

537
00:36:20,710 --> 00:36:19,119
website

538
00:36:22,550 --> 00:36:20,720

for that information where you can see

539

00:36:28,710 --> 00:36:22,560

the docked complex as it's traveling

540

00:36:32,710 --> 00:36:30,550

that will be a relatively good setting

541

00:36:34,630 --> 00:36:32,720

opportunity for some of those areas

542

00:36:37,750 --> 00:36:34,640

again you can find the information at

543

00:36:39,030 --> 00:36:37,760

our website www.nasa.gov

544

00:36:40,870 --> 00:36:39,040

where it will provide you with

545

00:36:44,790 --> 00:36:40,880

information on the direction of flight

546

00:36:48,230 --> 00:36:46,550

on board the crew members are in their

547

00:36:49,990 --> 00:36:48,240

crew sleep period were

548

00:36:52,550 --> 00:36:50,000

about a little more than five hours from

549

00:36:53,670 --> 00:36:52,560

their expected wake up at 11 50 pm

550

00:36:54,790 --> 00:36:53,680

central time

551
00:36:56,870 --> 00:36:54,800
then they'll have some personal and

552
00:36:58,470 --> 00:36:56,880
hygiene time before the joint crews turn

553
00:37:00,870 --> 00:36:58,480
their focus to the undocking of the two

554
00:37:03,030 --> 00:37:00,880
spacecraft they'll have some early tool

555
00:37:04,790 --> 00:37:03,040
checkout activity to support that

556
00:37:06,550 --> 00:37:04,800
undocking then all the crew members will

557
00:37:08,150 --> 00:37:06,560
gather on the international space

558
00:37:09,750 --> 00:37:08,160
station for a news conference with

559
00:37:12,470 --> 00:37:09,760
members of the media both in the united

560
00:37:13,990 --> 00:37:12,480
states as well as japan

561
00:37:16,550 --> 00:37:14,000
they'll have the farewell and hatch

562
00:37:18,390 --> 00:37:16,560
closure at 7 10 am central time they'll

563
00:37:20,790 --> 00:37:18,400

need a little time for leak checks and

564

00:37:23,190 --> 00:37:20,800

some camera installations but the

565

00:37:25,589 --> 00:37:23,200

undocking is expected to occur at 10 22

566

00:37:27,270 --> 00:37:25,599

am and then atlantis will perform a fly

567

00:37:29,510 --> 00:37:27,280

around of the orbiting complex before

568

00:37:30,870 --> 00:37:29,520

distancing itself

569

00:37:33,270 --> 00:37:30,880

all that coming up on the next day's

570

00:37:34,950 --> 00:37:33,280

activities we're now switching to a live

571

00:37:36,390 --> 00:37:34,960

view from the international space

572

00:37:38,349 --> 00:37:36,400

station looking down

573

00:37:41,430 --> 00:37:38,359

again this is a view from an altitude of

574

00:37:43,270 --> 00:37:41,440

221 statute miles looking down at the

575

00:37:44,470 --> 00:37:43,280

united states as the vehicle is just

576
00:37:45,829 --> 00:37:44,480
crossing over

577
00:37:48,310 --> 00:37:45,839
the northern

578
00:37:50,390 --> 00:37:48,320
border of wyoming it will continue on a

579
00:37:52,150 --> 00:37:50,400
southeasterly track taking it

580
00:37:54,870 --> 00:37:52,160
over nebraska

581
00:37:56,870 --> 00:37:54,880
kansas missouri alabama georgia and

582
00:37:58,710 --> 00:37:56,880
florida

583
00:37:59,829 --> 00:37:58,720
tracking almost down the entire state of

584
00:38:01,670 --> 00:37:59,839
florida

585
00:38:03,670 --> 00:38:01,680
before crossing over cuba and then south

586
00:38:05,109 --> 00:38:03,680
america

587
00:38:06,710 --> 00:38:05,119
we'll stay with this view as it's

588
00:38:08,710 --> 00:38:06,720

available

589

00:38:10,550 --> 00:38:08,720

here in the flight control team the

590

00:38:12,470 --> 00:38:10,560

team is continuing to monitor systems

591

00:38:14,069 --> 00:38:12,480

and review the procedures for tomorrow's

592

00:38:15,510 --> 00:38:14,079

activities but everything going smoothly

593

00:38:17,190 --> 00:38:15,520

in both the space shuttle and space

594

00:56:44,309 --> 00:38:17,200

station flight control rooms this is

595

00:56:48,549 --> 00:56:46,309

this is mission control houston we're a

596

00:56:49,990 --> 00:56:48,559

few minutes out from the

597

00:56:51,990 --> 00:56:50,000

flight day highlights a look at today's

598

00:56:53,670 --> 00:56:52,000

on-orbit activities including an

599

00:56:55,510 --> 00:56:53,680

education event that was conducted by

600

00:56:57,589 --> 00:56:55,520

some of the crew members with flight day

601
00:56:59,589 --> 00:56:57,599
highlights coming up at 7 00 pm central

602
00:57:00,789 --> 00:56:59,599
time 8 pm eastern

603
00:57:02,549 --> 00:57:00,799
here in the flight control room the

604
00:57:04,789 --> 00:57:02,559
orbit 3 team is in the early part of

605
00:57:07,430 --> 00:57:04,799
their crew shift and supporting the

606
00:57:09,190 --> 00:57:07,440
vehicle as well as a final review of the

607
00:57:11,190 --> 00:57:09,200
timeline procedures for tomorrow's

608
00:57:12,470 --> 00:57:11,200
activities including the undocking of

609
00:57:16,630 --> 00:57:12,480
space shuttle atlantis from the

610
00:57:19,430 --> 00:57:18,150
the team here is continuing to work

611
00:57:21,910 --> 00:57:19,440
closely with their space station

612
00:57:24,710 --> 00:57:21,920
counterparts as the two prepare for the

613
00:57:26,630 --> 00:57:24,720

final hours of docked operations their

614

00:57:28,870 --> 00:57:26,640

docked phase included three successful

615

00:57:31,510 --> 00:57:28,880

spacewalks in the installation of a new

616

00:57:32,990 --> 00:57:31,520

module onto the russian segment that uh

617

00:57:37,030 --> 00:57:33,000

module known as

618

00:57:38,789 --> 00:57:37,040

nrm1 or rasviet

619

00:57:40,309 --> 00:57:38,799

tomorrow's activities will kick off with

620

00:57:43,430 --> 00:57:40,319

the

621

00:57:45,030 --> 00:57:43,440

undocking at 12 22 am and atlantis will

622

00:57:46,789 --> 00:57:45,040

take the opportunity to perform a fly

623

00:57:48,710 --> 00:57:46,799

around at the complex all of that of

624

00:57:50,549 --> 00:57:48,720

course here on nasa television

625

00:57:52,230 --> 00:57:50,559

coming up next the flight day nine

