



1
00:01:20,330 --> 00:01:11,830

you

2
00:01:22,100 --> 00:01:20,340

fine it's the middle of our work our

3
00:01:23,690 --> 00:01:22,110

work day we realize it's really morning

4
00:01:25,640 --> 00:01:23,700

probably there the United States and

5
00:01:27,470 --> 00:01:25,650

where you're located we've had just

6
00:01:28,970 --> 00:01:27,480

completed lunch or we're gonna looking

7
00:01:30,590 --> 00:01:28,980

forward to it after day of work and then

8
00:01:33,100 --> 00:01:30,600

we'll be going to sleep and the other

9
00:01:35,870 --> 00:01:33,110

ship will be getting awake to carry on

10
00:01:37,850 --> 00:01:35,880

Mars is one of the hottest topics down

11
00:01:39,980 --> 00:01:37,860

here on earth these dates have you folks

12
00:01:43,850 --> 00:01:39,990

in facts photos from the Pathfinder

13
00:01:45,680 --> 00:01:43,860

mission yet yes we have for the very

14

00:01:49,580 --> 00:01:45,690

beginning Mission Control Center sort of

15

00:01:50,930 --> 00:01:49,590

via email electronic photos and I'll go

16

00:01:52,340 --> 00:01:50,940

up here we can't share an all the

17

00:01:55,820 --> 00:01:52,350

experience we do feel like we've had

18

00:01:57,530 --> 00:01:55,830

about five or six photos we know all

19

00:01:59,719 --> 00:01:57,540

about barnacle bill bill and the other

20

00:02:02,420 --> 00:01:59,729

rocks so we we have had the opportunity

21

00:02:05,690 --> 00:02:02,430

to experience and enjoy just like the

22

00:02:07,609 --> 00:02:05,700

rest you've been to me on a previous

23

00:02:09,830 --> 00:02:07,619

shuttle resupply mission to the station

24

00:02:11,810 --> 00:02:09,840

and you're currently on America's oldest

25

00:02:14,690 --> 00:02:11,820

shuttle Columbia the hardware is getting

26

00:02:17,180 --> 00:02:14,700

older for both countries are there more

27

00:02:21,530 --> 00:02:17,190

concerns for problems these days on

28

00:02:24,050 --> 00:02:21,540

flights well certainly as any mechanical

29

00:02:25,220 --> 00:02:24,060

device gets older you have doing improve

30

00:02:29,630 --> 00:02:25,230

and increase the amount of maintenance

31

00:02:31,340 --> 00:02:29,640

but Columbia is the queen of the oldest

32

00:02:32,930 --> 00:02:31,350

vehicle but still that she's got many

33

00:02:34,970 --> 00:02:32,940

priceless dinner these vehicles were

34

00:02:36,710 --> 00:02:34,980

designed according to specification for

35

00:02:39,710 --> 00:02:36,720

100 slides and I think rolling up the

36

00:02:41,449 --> 00:02:39,720

number 23 right now so as long as the

37

00:02:43,940 --> 00:02:41,459

people at the Kennedy Space Center keep

38

00:02:45,440 --> 00:02:43,950

maintaining her to the to the standards

39

00:02:48,830 --> 00:02:45,450

as they have in the past I do a superb

40

00:02:51,080 --> 00:02:48,840

job we'll keep rider uh for a long time

41

00:02:53,600 --> 00:02:51,090

to come what do you see when you look

42

00:02:55,430 --> 00:02:53,610

out the window how far can you see can

43

00:02:59,990 --> 00:02:55,440

you see the Earth's and what we're doing

44

00:03:04,070 --> 00:03:00,000

down here well we can say the earth we

45

00:03:07,240 --> 00:03:04,080

can see roads and cities and runway

46

00:03:10,580 --> 00:03:07,250

stand out really well we've seen

47

00:03:12,920 --> 00:03:10,590

exciting things like Aswan Dam and Egypt

48

00:03:16,070 --> 00:03:12,930

on the Nile River you seeing mountains

49

00:03:18,350 --> 00:03:16,080

you're making bigoted debt that's

50

00:03:18,350 --> 00:03:18,360

unbelievable

51
00:03:30,110 --> 00:03:21,650
what is it like to be in space what does

52
00:03:32,060 --> 00:03:30,120
it feel like like it it is being

53
00:03:35,930 --> 00:03:32,070
underwater where you're coming up

54
00:03:38,930 --> 00:03:35,940
floating underwater it's on your free

55
00:03:43,160 --> 00:03:38,940
floating all the time so you have a good

56
00:03:44,930 --> 00:03:43,170
feel for which ended up but John I mean

57
00:03:47,510 --> 00:03:44,940
so that's kind of physically what it

58
00:03:50,900 --> 00:03:47,520
feels like as far as mentally I just

59
00:03:53,420 --> 00:03:50,910
find it fascinating as I below space

60
00:03:56,120 --> 00:03:53,430
exploration program fascinating and

61
00:04:00,320 --> 00:03:56,130
looking out the window all the world is

62
00:04:09,500 --> 00:04:00,330
it is very exciting for me what does a

63
00:04:11,570 --> 00:04:09,510

typical day like what do you do that's

64

00:04:13,880 --> 00:04:11,580

like a typical day on earth pretty much

65

00:04:16,490 --> 00:04:13,890

we get up in the morning and wash up

66

00:04:18,890 --> 00:04:16,500

shave brush our teeth I have a quick

67

00:04:21,349 --> 00:04:18,900

breakfast and we have about a half an

68

00:04:24,650 --> 00:04:21,359

hour time to do our daily planning or we

69

00:04:26,900 --> 00:04:24,660

review messages mail and kind of get

70

00:04:29,150 --> 00:04:26,910

ready prepared for the day of work we

71

00:04:31,400 --> 00:04:29,160

work in the lab module here about five

72

00:04:33,230 --> 00:04:31,410

hours or so in the morning have an hour

73

00:04:35,060 --> 00:04:33,240

off for lunch where we look out the

74

00:04:37,610 --> 00:04:35,070

window and then it's back for about

75

00:04:39,140 --> 00:04:37,620

another five hour session in the lab at

76
00:04:41,870 --> 00:04:39,150
the conclusion of the day we have about

77
00:04:43,340 --> 00:04:41,880
two hours before we go to bed again you

78
00:04:45,409 --> 00:04:43,350
using that kind of getting ready for bed

79
00:04:47,600 --> 00:04:45,419
brushing your teeth and changing your

80
00:04:51,080 --> 00:04:47,610
clothes and looking out the window just

81
00:04:54,290 --> 00:04:51,090
relaxing a little bit what is that your

82
00:04:56,510 --> 00:04:54,300
favorite part about being in space to

83
00:05:03,230 --> 00:04:56,520
any of you and then the opposite what is

84
00:05:08,990 --> 00:05:06,589
we're at cydia to build two most

85
00:05:11,059 --> 00:05:09,000
favorite parts one is floating floating

86
00:05:13,580 --> 00:05:11,069
is really fascinating because your whole

87
00:05:15,890 --> 00:05:13,590
method of movement is different you just

88
00:05:17,960 --> 00:05:15,900

push yourself Gentiles you try to stop

89

00:05:19,939 --> 00:05:17,970

yourself from rotating you have to watch

90

00:05:21,710 --> 00:05:19,949

that you don't bump into things you

91

00:05:24,379 --> 00:05:21,720

maneuver around people and objects

92

00:05:26,120 --> 00:05:24,389

differently so it's like a fish or

93

00:05:27,740 --> 00:05:26,130

something it's it's like being in a

94

00:05:29,420 --> 00:05:27,750

completely different world because you

95

00:05:31,610 --> 00:05:29,430

move differently the other great thing

96

00:05:35,320 --> 00:05:31,620

is just looking down at the earth I mean

97

00:05:39,409 --> 00:05:35,330

abuser spectacular the way things look

98

00:05:41,059 --> 00:05:39,419

at I'm not taking and it's just one

99

00:05:44,330 --> 00:05:41,069

great you after another one we have a

100

00:05:46,010 --> 00:05:44,340

chance to look out the window speaking

101
00:05:50,779 --> 00:05:46,020
of looking to pick steps to leave

102
00:05:53,300 --> 00:05:50,789
favorites the just as the lack of

103
00:05:55,219 --> 00:05:53,310
gravity of floating is about today they

104
00:05:56,899 --> 00:05:55,229
it's also sometimes to be honest a

105
00:05:58,939 --> 00:05:56,909
little bit of a pain gravity can be good

106
00:06:00,980 --> 00:05:58,949
for a lot of just normal functions

107
00:06:02,420 --> 00:06:00,990
eating food for example you can't set

108
00:06:03,980 --> 00:06:02,430
something down the table and present a

109
00:06:05,899 --> 00:06:03,990
meal to yourself all of us you have to

110
00:06:07,219 --> 00:06:05,909
eat like one entree at a time and eat it

111
00:06:09,620 --> 00:06:07,229
in its entirety and then move on to

112
00:06:10,850 --> 00:06:09,630
something else I think the problems

113
00:06:12,589 --> 00:06:10,860

going to the bathroom might be

114

00:06:14,629 --> 00:06:12,599

immediately obvious thing about who

115

00:06:16,339 --> 00:06:14,639

gives it a thought so are the lack of

116

00:06:20,560 --> 00:06:16,349

gravity is fascinating and also a

117

00:06:32,420 --> 00:06:25,370

any special messages for anyone back at

118

00:06:35,029 --> 00:06:32,430

home here on earth yeah be a

119

00:06:36,439 --> 00:06:35,039

two-year-old son Kai in Houston Texas

120

00:06:37,850 --> 00:06:36,449

she's probably just getting up and

121

00:06:39,469 --> 00:06:37,860

getting ready to go to daycare this

122

00:06:43,100 --> 00:06:39,479

morning and I just want to tell my level

123

00:06:44,959 --> 00:06:43,110

I think on behalf of the whole crew

124

00:06:48,860 --> 00:06:44,969

whole crew we have we have a lot of

125

00:06:51,680 --> 00:06:48,870

people who are watching hopefully this

126

00:06:53,570 --> 00:06:51,690

TV down leg and taller loved ones of

127

00:06:55,219 --> 00:06:53,580

dollars have made all of the fence we'd

128

00:06:57,800 --> 00:06:55,229

let just like to say thanks for hanging

129

00:06:59,120 --> 00:06:57,810

in there with us we love you and we're

130

00:07:00,620 --> 00:06:59,130

going to be back home soon and we

131

00:07:01,879 --> 00:07:00,630

certainly enjoyed this opportunity to be

132

00:07:05,959 --> 00:07:01,889

in space and we're gonna enjoy getting

133

00:07:10,600 --> 00:07:05,969

back home also and I'd like to say how I

134

00:07:17,120 --> 00:07:12,830

yeah and I'd like to say hi to Denver

135

00:07:23,050 --> 00:07:17,130

after New Jersey get a prevalence I was

136

00:07:25,130 --> 00:07:23,060

with her Louisiana hello alrighty

137

00:07:26,450 --> 00:07:25,140

anything else going on with the

138

00:07:32,960 --> 00:07:26,460

experiments that you think we should

139

00:07:35,690 --> 00:07:32,970

know about here on earth the combustion

140

00:07:38,690 --> 00:07:35,700

work is going extremely well we had

141

00:07:40,400 --> 00:07:38,700

planned to do about 150 burns total

142

00:07:42,800 --> 00:07:40,410

combustion experiments up in space we've

143

00:07:45,260 --> 00:07:42,810

completed over 165 already and we're not

144

00:07:47,690 --> 00:07:45,270

done yet so I think we're getting in

145

00:07:50,060 --> 00:07:47,700

over 110 percent of our science output

146

00:07:51,560 --> 00:07:50,070

in the material science word world we're

147

00:07:54,110 --> 00:07:51,570

processing a lot of semiconductor

148

00:07:56,030 --> 00:07:54,120

materials and another new metallic

149

00:07:58,970 --> 00:07:56,040

materials metallic glasses that have

150

00:08:00,290 --> 00:07:58,980

other technological applications so we

151
00:08:01,640 --> 00:08:00,300
have a lot of breakthroughs were working

152
00:08:04,400 --> 00:08:01,650
on here it might be a few years before

153
00:08:06,710 --> 00:08:04,410
they find their way into everyday life

154
00:08:09,500 --> 00:08:06,720
Donna knows but this is a basic research

155
00:08:11,810 --> 00:08:09,510
and we're pioneering out here and a lot

156
00:08:16,730 --> 00:08:11,820
of great science will be performed by

157
00:08:19,340 --> 00:08:16,740
this mission any message for budding

158
00:08:25,010 --> 00:08:19,350
young astronauts especially women trying

159
00:08:26,810 --> 00:08:25,020
to get into the field my biggest message

160
00:08:29,480 --> 00:08:26,820
is there a dream follow your dreams

161
00:08:31,490 --> 00:08:29,490
follow your heart and start to do your

162
00:08:33,320 --> 00:08:31,500
boss and you never know what you might

163
00:08:36,200 --> 00:08:33,330

be able to exceed if you did succeed

164

00:08:37,580 --> 00:08:36,210

with if you just try to go over the tape

165

00:08:41,300 --> 00:08:37,590

here we'll roll it for you and let the

166

00:08:42,950 --> 00:08:41,310

dragon suitor thought about it what I'm

167

00:08:44,840 --> 00:08:42,960

trying to demonstrate here is that

168

00:08:46,040 --> 00:08:44,850

there's no up and down gets very

169

00:08:50,150 --> 00:08:46,050

confusing here i'm sitting here

170

00:08:51,950 --> 00:08:50,160

obviously up is up and up is down but we

171

00:08:54,170 --> 00:08:51,960

can switch that around very quickly and

172

00:08:55,700 --> 00:08:54,180

see that actually i was sitting upside

173

00:08:58,010 --> 00:08:55,710

down i was sitting on the ceiling of the

174

00:08:59,630 --> 00:08:58,020

space lab and it's only when the gym

175

00:09:01,790 --> 00:08:59,640

turn the camera around and we see things

176

00:09:03,770 --> 00:09:01,800

in there more normal configuration for

177

00:09:09,770 --> 00:09:03,780

those customers clear with it that we

178

00:09:13,310 --> 00:09:09,780

can see that i was upside down our Susan

179

00:09:16,310 --> 00:09:13,320

here is looking out the windows and now

180

00:09:18,920 --> 00:09:16,320

we're moving on down to the hatch down

181

00:09:20,570 --> 00:09:18,930

to the mid deck which is on the opposite

182

00:09:21,319 --> 00:09:20,580

side so we see the cheese actually lying

183

00:09:24,049 --> 00:09:21,329

on

184

00:09:25,429 --> 00:09:24,059

against the back of the flight deck

185

00:09:29,229 --> 00:09:25,439

there now we're sitting on down to the

186

00:09:31,569 --> 00:09:29,239

mid deck looks rough normal here my odd

187

00:09:37,340 --> 00:09:31,579

one crew member sitting on the floor

188

00:09:41,329 --> 00:09:37,350

gallery see Roger upside down which is

189

00:09:49,669 --> 00:09:41,339

the ceiling in which 40 take its way

190

00:09:53,359 --> 00:09:49,679

you're facing at that moment dance

191

00:09:55,669 --> 00:09:53,369

assisted me with a I not really an

192

00:09:58,699 --> 00:09:55,679

experiment what we're doing is we've

193

00:10:03,229 --> 00:09:58,709

drawn water out of the Gally it's called

194

00:10:07,039 --> 00:10:03,239

microbial capture device we are shooting

195

00:10:10,189 --> 00:10:07,049

the galley water through a little filter

196

00:10:12,169 --> 00:10:10,199

and we're going to let that filter sit

197

00:10:15,199 --> 00:10:12,179

around for a few days we've added a

198

00:10:16,910 --> 00:10:15,209

little agent to it in every 48 hours i'm

199

00:10:19,069 --> 00:10:16,920

going to take a look at the filter to

200

00:10:23,269 --> 00:10:19,079

see if things are growing in our galley

201
00:10:25,100 --> 00:10:23,279
water this would be easy if this one of

202
00:10:27,379 --> 00:10:25,110
us were to get sick or something they

203
00:10:32,389 --> 00:10:27,389
would be able to tell whether the water

204
00:10:35,059 --> 00:10:32,399
has been good to drink it's difficult

205
00:10:37,489 --> 00:10:35,069
zero gravity to get all the water out of

206
00:10:39,319 --> 00:10:37,499
the filter so I'm having to use my

207
00:10:42,350 --> 00:10:39,329
imagination and trying to get the water

208
00:10:45,139 --> 00:10:42,360
to go where it's supposed to go and now

209
00:10:48,559 --> 00:10:45,149
white g it just sucks all out normally

210
00:10:50,689 --> 00:10:48,569
because of the gravity we got one

211
00:10:52,989 --> 00:10:50,699
internet question today who's from from

212
00:10:55,609 --> 00:10:52,999
John Michaels is from bay village ohio

213
00:10:57,859 --> 00:10:55,619

to one of our suburbs just west of

214

00:10:59,509 --> 00:10:57,869

Cleveland where my hometown is and he

215

00:11:01,039 --> 00:10:59,519

has two zero gravity have any direct

216

00:11:04,429 --> 00:11:01,049

effect on the principles of magnetism

217

00:11:06,669 --> 00:11:04,439

and wants to know if steel is more drawn

218

00:11:09,799 --> 00:11:06,679

to a magnet in space and on earth and

219

00:11:11,239 --> 00:11:09,809

general I got two spherical magnets here

220

00:11:13,699 --> 00:11:11,249

on board and i want to show you it

221

00:11:14,780 --> 00:11:13,709

really has no effect i will separate

222

00:11:22,370 --> 00:11:14,790

them and let you see how they flow

223

00:11:28,200 --> 00:11:25,410

it's very similar to what you would

224

00:11:30,210 --> 00:11:28,210

expect if you put to Magnus spheres like

225

00:11:32,340 --> 00:11:30,220

this on a flat plate they would probably

226

00:11:35,820 --> 00:11:32,350

be drawn together but in zero gravity

227

00:11:37,950 --> 00:11:35,830

without any friction it's very visible

228

00:11:39,660 --> 00:11:37,960

but essentially zero gravity has no

229

00:11:46,710 --> 00:11:39,670

effect on magnetism it's a totally

230

00:11:49,350 --> 00:11:46,720

separate force okay that's it for this

231

00:11:51,870 --> 00:11:49,360

our afternoon once again thanks to

232

00:11:53,730 --> 00:11:51,880

Mission Control for IBNS were sent to us

233

00:11:55,560 --> 00:11:53,740

fill to the payload operations control

234

00:11:57,270 --> 00:11:55,570

center to great flight so far we're

235

00:14:03,680 --> 00:11:57,280

looking for a few more days of science

236

00:14:09,300 --> 00:14:06,330

next question I it is is there any

237

00:14:11,760 --> 00:14:09,310

reason to wait on the peacock time for

238

00:14:26,600 --> 00:14:11,770

starting this next few cm one bird or

239

00:14:31,790 --> 00:14:29,690

I thought Huntsville or Greg looked like

240

00:14:33,860 --> 00:14:31,800

we would like to wait till 1400 hours

241

00:14:40,519 --> 00:14:33,870

that would get started about ten minutes

242

00:14:44,420 --> 00:14:40,529

early but not yet okay copy that i'll

243

00:14:45,650 --> 00:14:44,430

come back about that copy that now i'll