



1  
00:00:18,150 --> 00:00:15,749  
good day for mission control houston and

2  
00:00:19,670 --> 00:00:18,160  
welcome to space station live

3  
00:00:21,590 --> 00:00:19,680  
you're looking inside the international

4  
00:00:23,269 --> 00:00:21,600  
space station flight control room here

5  
00:00:25,349 --> 00:00:23,279  
at the johnson space center in houston

6  
00:00:28,870 --> 00:00:25,359  
texas

7  
00:00:30,790 --> 00:00:28,880  
it's friday november 22nd 2013

8  
00:00:33,030 --> 00:00:30,800  
inside the room right now the orbit 2

9  
00:00:36,069 --> 00:00:33,040  
team monitoring systems and controlling

10  
00:00:38,069 --> 00:00:36,079  
the orbiting laboratory as it flies 260

11  
00:00:39,750 --> 00:00:38,079  
miles over the earth's surface

12  
00:00:41,510 --> 00:00:39,760  
inside the room leading the team today

13  
00:00:43,110 --> 00:00:41,520

is flight director emily nelson there on

14

00:00:44,790 --> 00:00:43,120

the right and right next to her at the

15

00:00:46,630 --> 00:00:44,800

capcom position serving his

16

00:00:48,950 --> 00:00:46,640

communication link with the astronauts

17

00:00:50,869 --> 00:00:48,960

is hal getzelman

18

00:00:53,990 --> 00:00:50,879

and those astronauts on board the crew

19

00:00:56,150 --> 00:00:54,000

of expedition 38 six-man crew from

20

00:00:58,470 --> 00:00:56,160

countries around the globe they are led

21

00:01:00,150 --> 00:00:58,480

by russian cosmonaut oleg kotov there in

22

00:01:02,069 --> 00:01:00,160

the front row on the right

23

00:01:05,109 --> 00:01:02,079

seated on the left there in the front

24

00:01:06,789 --> 00:01:05,119

row jaxa astronaut koichi wakata going

25

00:01:09,109 --> 00:01:06,799

across the back row russian cosmonaut

26

00:01:11,910 --> 00:01:09,119

mikhail turin there on the left next to

27

00:01:13,670 --> 00:01:11,920

him nasa astronaut rick mastracchio and

28

00:01:14,870 --> 00:01:13,680

russian cosmonaut sergey ryazanskiy and

29

00:01:19,109 --> 00:01:14,880

finally all the way on the right there

30

00:01:23,990 --> 00:01:21,190

busy week on board the international

31

00:01:26,310 --> 00:01:24,000

space station for the crew dominated by

32

00:01:27,670 --> 00:01:26,320

a range of biological experiments uh

33

00:01:29,910 --> 00:01:27,680

taking place with the astronauts

34

00:01:32,069 --> 00:01:29,920

themselves as the subjects

35

00:01:34,069 --> 00:01:32,079

starting off with expedition 38

36

00:01:36,789 --> 00:01:34,079

commander oleg kotov who

37

00:01:38,830 --> 00:01:36,799

back on monday started a 24-hour

38

00:01:41,270 --> 00:01:38,840

recording using an

39

00:01:43,270 --> 00:01:41,280

electrocardiogram also doing some

40

00:01:45,830 --> 00:01:43,280

routine maintenance throughout the

41

00:01:47,670 --> 00:01:45,840

russian zvezda service module on some of

42

00:01:49,190 --> 00:01:47,680

the ventilation equipment and also the

43

00:01:51,590 --> 00:01:49,200

intercom system

44

00:01:53,910 --> 00:01:51,600

on tuesday kotov got to

45

00:01:55,670 --> 00:01:53,920

try his hand at the moto card experiment

46

00:01:57,990 --> 00:01:55,680

which looks to study the nature of

47

00:01:59,749 --> 00:01:58,000

locomotion disturbances in long-term

48

00:02:01,510 --> 00:01:59,759

space flights uh the astronauts and

49

00:02:02,870 --> 00:02:01,520

cosmonauts using a treadmill for this

50

00:02:05,270 --> 00:02:02,880

study

51  
00:02:07,990 --> 00:02:05,280  
also on tuesday kotov doing the russian

52  
00:02:10,309 --> 00:02:08,000  
signer experiment

53  
00:02:13,270 --> 00:02:10,319  
which uses the station's vantage point

54  
00:02:15,270 --> 00:02:13,280  
to track and monitor bioproductive areas

55  
00:02:17,830 --> 00:02:15,280  
of the earth's ocean

56  
00:02:19,750 --> 00:02:17,840  
on wednesday kotov participating in

57  
00:02:22,869 --> 00:02:19,760  
another earth observation activity known

58  
00:02:24,470 --> 00:02:22,879  
as albedo which uses specialized cameras

59  
00:02:27,030 --> 00:02:24,480  
on board the international space station

60  
00:02:29,030 --> 00:02:27,040  
to measure the earth's albedo or

61  
00:02:31,990 --> 00:02:29,040  
the amount of solar radiation that is

62  
00:02:33,670 --> 00:02:32,000  
reflected back from the earth's surface

63  
00:02:35,589 --> 00:02:33,680

controllers and engineers hoping to

64

00:02:37,589 --> 00:02:35,599

develop ways to generate electrical

65

00:02:39,750 --> 00:02:37,599

power for the station

66

00:02:42,309 --> 00:02:39,760

under uh from that solar radiation being

67

00:02:44,949 --> 00:02:42,319

reflected from the earth

68

00:02:46,869 --> 00:02:44,959

on thursday kotov i was installing some

69

00:02:49,430 --> 00:02:46,879

more communication equipment inside of

70

00:02:51,910 --> 00:02:49,440

zvezda also doing some ventilation work

71

00:02:53,350 --> 00:02:51,920

in the mini research module two also

72

00:02:55,350 --> 00:02:53,360

known as poisk

73

00:02:57,830 --> 00:02:55,360

and then today on friday kotov will be

74

00:02:59,990 --> 00:02:57,840

uh participating in a drill on the toru

75

00:03:02,390 --> 00:03:00,000

system which is the telerobotically

76  
00:03:04,630 --> 00:03:02,400  
operated rendezvous system located

77  
00:03:06,149 --> 00:03:04,640  
inside of the zvezda service module

78  
00:03:08,470 --> 00:03:06,159  
they'll be rehearsing the techniques

79  
00:03:11,190 --> 00:03:08,480  
that are used to manually take control

80  
00:03:13,030 --> 00:03:11,200  
and fly visiting progress vehicles

81  
00:03:14,710 --> 00:03:13,040  
in the unlikely event that they

82  
00:03:16,070 --> 00:03:14,720  
experience a

83  
00:03:18,790 --> 00:03:16,080  
failure of their

84  
00:03:20,309 --> 00:03:18,800  
automated coors docking system one such

85  
00:03:23,910 --> 00:03:20,319  
progress scheduled to come up to the

86  
00:03:28,390 --> 00:03:25,589  
fellow russian cosmonaut sergey

87  
00:03:30,149 --> 00:03:28,400  
ryazanskiy back on monday was

88  
00:03:32,309 --> 00:03:30,159

in the russian segment doing a checkout

89

00:03:34,070 --> 00:03:32,319

of many of the plug-in systems also

90

00:03:36,470 --> 00:03:34,080

doing some initial

91

00:03:38,789 --> 00:03:36,480

acoustic sound level checks throughout

92

00:03:41,190 --> 00:03:38,799

the station the russian segment on board

93

00:03:43,430 --> 00:03:41,200

the station as on tuesday and wednesday

94

00:03:45,350 --> 00:03:43,440

ruzanski was responsible for replacing a

95

00:03:48,229 --> 00:03:45,360

number of fans throughout the russian

96

00:03:49,110 --> 00:03:48,239

segment with newer low noise models than

97

00:03:49,830 --> 00:03:49,120

doing

98

00:03:53,910 --> 00:03:49,840

no

99

00:03:56,789 --> 00:03:53,920

those replacements

100

00:03:59,190 --> 00:03:56,799

also on tuesday ryzanski participated in

101  
00:04:01,830 --> 00:03:59,200  
some crew medical officer proficiency

102  
00:04:04,229 --> 00:04:01,840  
training each of the crew trained in

103  
00:04:05,990 --> 00:04:04,239  
emergency response for for themselves

104  
00:04:08,229 --> 00:04:06,000  
and their fellow astronauts and

105  
00:04:10,949 --> 00:04:08,239  
cosmonauts on board

106  
00:04:13,429 --> 00:04:10,959  
back on thursday ryzanski doing what's

107  
00:04:16,310 --> 00:04:13,439  
known as fungustat treatment to various

108  
00:04:18,550 --> 00:04:16,320  
areas behind panels on the russian zarya

109  
00:04:21,590 --> 00:04:18,560  
module which back on wednesday

110  
00:04:24,629 --> 00:04:21,600  
celebrated it 15th anniversary of his of

111  
00:04:27,590 --> 00:04:24,639  
its launch as the first

112  
00:04:29,110 --> 00:04:27,600  
element uh to launch into space to begin

113  
00:04:32,070 --> 00:04:29,120

construction of the international space

114

00:04:33,670 --> 00:04:32,080

station then today on friday ryzanski

115

00:04:36,310 --> 00:04:33,680

doing some

116

00:04:38,629 --> 00:04:36,320

routine filter replacement on the dust

117

00:04:40,629 --> 00:04:38,639

filtering ventilation system inside of

118

00:04:43,110 --> 00:04:40,639

rossfield or the mini mini research

119

00:04:45,270 --> 00:04:43,120

module 1 they'll also be taking some

120

00:04:47,350 --> 00:04:45,280

measurements from the russian matroyska

121

00:04:49,350 --> 00:04:47,360

experiment which looks to study the

122

00:04:50,950 --> 00:04:49,360

radiation dosages that these astronauts

123

00:04:54,790 --> 00:04:50,960

are exposed to during their

124

00:05:00,469 --> 00:04:57,749

nasa astronaut mike hopkins a lot of his

125

00:05:02,310 --> 00:05:00,479

work this week dedicated to those

126

00:05:04,870 --> 00:05:02,320

various crew health and biological

127

00:05:07,830 --> 00:05:04,880

experiments starting off on monday

128

00:05:10,390 --> 00:05:07,840

hopkins was busy operating the station's

129

00:05:12,150 --> 00:05:10,400

ultrasound for the cardio ox experiment

130

00:05:13,990 --> 00:05:12,160

which looks to provide a better

131

00:05:16,469 --> 00:05:14,000

understanding of space-related

132

00:05:19,029 --> 00:05:16,479

cardiovascular disease risk

133

00:05:21,189 --> 00:05:19,039

as these astronauts are exposed to a

134

00:05:22,629 --> 00:05:21,199

number of identified risk

135

00:05:25,270 --> 00:05:22,639

increasers

136

00:05:28,629 --> 00:05:25,280

so this cardio ox experiment looking to

137

00:05:31,029 --> 00:05:28,639

uh study those identity markers

138

00:05:32,629 --> 00:05:31,039

as they continue to track health changes

139

00:05:35,510 --> 00:05:32,639

in astronauts during long-duration

140

00:05:37,749 --> 00:05:35,520

missions and look to develop better

141

00:05:39,830 --> 00:05:37,759

counter measures as well

142

00:05:42,070 --> 00:05:39,840

also on monday hopkins was

143

00:05:44,710 --> 00:05:42,080

replacing an air filter inside of the

144

00:05:46,150 --> 00:05:44,720

station's waste and hygiene compartment

145

00:05:47,909 --> 00:05:46,160

basically the toilet on board the

146

00:05:50,150 --> 00:05:47,919

station that air filter

147

00:05:51,909 --> 00:05:50,160

due for some routine replacement

148

00:05:54,950 --> 00:05:51,919

the waste and hygiene compartment of the

149

00:05:57,189 --> 00:05:54,960

whc feeds directly into the station's

150

00:05:59,830 --> 00:05:57,199

water recovery system a part of the

151  
00:06:01,670 --> 00:05:59,840  
complex water recycling system on board

152  
00:06:03,909 --> 00:06:01,680  
able to turn wastewater from the

153  
00:06:06,150 --> 00:06:03,919  
astronauts into potable and reusable

154  
00:06:08,870 --> 00:06:06,160  
drinking water

155  
00:06:11,430 --> 00:06:08,880  
also on monday hopkins was doing some

156  
00:06:14,950 --> 00:06:11,440  
leak checks inside of the gem

157  
00:06:17,510 --> 00:06:14,960  
the japanese experiment module

158  
00:06:19,110 --> 00:06:17,520  
for in preparation for some satellite

159  
00:06:21,909 --> 00:06:19,120  
deployments that would take place later

160  
00:06:23,350 --> 00:06:21,919  
on here we see some video from tuesday

161  
00:06:26,469 --> 00:06:23,360  
as hopkins was

162  
00:06:28,150 --> 00:06:26,479  
doing some final leak checks on one of

163  
00:06:30,550 --> 00:06:28,160

the station's emu's at the extra

164

00:06:33,270 --> 00:06:30,560

vehicular mobility units this was the

165

00:06:35,110 --> 00:06:33,280

suit worn by luca parmitano back in july

166

00:06:37,029 --> 00:06:35,120

during a spacewalk which was terminated

167

00:06:39,029 --> 00:06:37,039

prematurely when

168

00:06:40,390 --> 00:06:39,039

parmitano discovered water building up

169

00:06:42,309 --> 00:06:40,400

in his helmet

170

00:06:44,469 --> 00:06:42,319

the final leak checks were done on

171

00:06:47,270 --> 00:06:44,479

tuesday following months of repair and

172

00:06:49,749 --> 00:06:47,280

analysis work as teams here at nasa

173

00:06:52,469 --> 00:06:49,759

continue to do some final checks on the

174

00:06:55,830 --> 00:06:52,479

suit before getting ready to return it

175

00:06:58,150 --> 00:06:55,840

to service and bring the capability for

176  
00:07:00,710 --> 00:06:58,160  
spacewalks through the u.s segment back

177  
00:07:03,110 --> 00:07:00,720  
online

178  
00:07:05,189 --> 00:07:03,120  
on wednesday hopkins continued with the

179  
00:07:07,189 --> 00:07:05,199  
biological studies doing taking some

180  
00:07:08,950 --> 00:07:07,199  
samples for the pro k experiment which

181  
00:07:12,790 --> 00:07:08,960  
would he would do on for the next few

182  
00:07:14,710 --> 00:07:12,800  
days uh pro k uh a special diet that the

183  
00:07:18,150 --> 00:07:14,720  
astronauts are put on

184  
00:07:20,469 --> 00:07:18,160  
that proposes a way to

185  
00:07:22,150 --> 00:07:20,479  
lead to a decreased loss of bone mineral

186  
00:07:24,230 --> 00:07:22,160  
in the astronauts body

187  
00:07:25,909 --> 00:07:24,240  
by decreasing the ratio of protein to

188  
00:07:28,150 --> 00:07:25,919

potassium that they get on through their

189

00:07:30,150 --> 00:07:28,160

natural dietary intake

190

00:07:32,150 --> 00:07:30,160

also on wednesday hopkins doing the

191

00:07:34,469 --> 00:07:32,160

first experiment run of the week on the

192

00:07:36,710 --> 00:07:34,479

capillary flow experiment

193

00:07:38,629 --> 00:07:36,720

fluid physics research project on board

194

00:07:41,110 --> 00:07:38,639

investigating capillary flows and the

195

00:07:43,430 --> 00:07:41,120

flows of fluids in complex geometric

196

00:07:46,230 --> 00:07:43,440

containers

197

00:07:48,869 --> 00:07:46,240

back on thursday hopkins was taking some

198

00:07:50,950 --> 00:07:48,879

more blood and saliva samples for the

199

00:07:53,749 --> 00:07:50,960

human research facility and that pro-k

200

00:07:55,830 --> 00:07:53,759

experiment was also doing some ocular

201  
00:07:57,909 --> 00:07:55,840  
health scans or the eye health scans

202  
00:07:59,909 --> 00:07:57,919  
alongside nasa astronaut rick

203  
00:08:02,309 --> 00:07:59,919  
mastracchio and japanese astronaut

204  
00:08:05,189 --> 00:08:02,319  
koichi okada

205  
00:08:07,350 --> 00:08:05,199  
today hopkins will be back at the

206  
00:08:09,749 --> 00:08:07,360  
operational controls of the ultrasound 2

207  
00:08:12,150 --> 00:08:09,759  
machine doing some cardiac scans and

208  
00:08:14,950 --> 00:08:12,160  
also taking a few more samples for that

209  
00:08:17,189 --> 00:08:14,960  
human research facility

210  
00:08:19,589 --> 00:08:17,199  
carl turin the third russian cosmonaut

211  
00:08:21,350 --> 00:08:19,599  
on board the international space station

212  
00:08:24,309 --> 00:08:21,360  
doing a lot of maintenance work on board

213  
00:08:26,230 --> 00:08:24,319

today this week back on monday was doing

214

00:08:28,150 --> 00:08:26,240

some software upgrades on russian

215

00:08:29,990 --> 00:08:28,160

control computers and also doing a quick

216

00:08:32,469 --> 00:08:30,000

check out of the toru system that's

217

00:08:33,829 --> 00:08:32,479

being used for that simulation today

218

00:08:34,949 --> 00:08:33,839

on tuesday he was doing some

219

00:08:37,589 --> 00:08:34,959

preventative maintenance to the

220

00:08:38,870 --> 00:08:37,599

ventilation systems inside at the zvezda

221

00:08:39,990 --> 00:08:38,880

service module

222

00:08:41,589 --> 00:08:40,000

before

223

00:08:42,790 --> 00:08:41,599

doing some more maintenance on wednesday

224

00:08:44,630 --> 00:08:42,800

and also

225

00:08:46,470 --> 00:08:44,640

doing some quick work on the

226

00:08:49,110 --> 00:08:46,480

russian electron

227

00:08:51,030 --> 00:08:49,120

device oxygen generating equipment on

228

00:08:53,110 --> 00:08:51,040

board the station

229

00:08:54,630 --> 00:08:53,120

on thursday turin

230

00:08:56,310 --> 00:08:54,640

engaged in a

231

00:08:58,230 --> 00:08:56,320

range of experiment work starting off

232

00:09:00,470 --> 00:08:58,240

with the russian virtual experiment

233

00:09:02,710 --> 00:09:00,480

which looks to obtain new data on the

234

00:09:04,470 --> 00:09:02,720

mechanisms of sensory interaction and

235

00:09:07,190 --> 00:09:04,480

sensory adaptation

236

00:09:09,430 --> 00:09:07,200

how sensory ada sensory interactions

237

00:09:10,949 --> 00:09:09,440

change over the course of long-term

238

00:09:12,870 --> 00:09:10,959

space missions

239

00:09:15,110 --> 00:09:12,880

taran also engaged in that signer

240

00:09:17,670 --> 00:09:15,120

activity and also another earth obs

241

00:09:20,230 --> 00:09:17,680

activity known as eurogan which uses the

242

00:09:22,070 --> 00:09:20,240

iss as a monitoring device

243

00:09:24,790 --> 00:09:22,080

for areas where natural and man-made

244

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

disasters are forecasted and relaying

245

00:09:30,070 --> 00:09:26,880

information and helpful

246

00:09:32,470 --> 00:09:30,080

tools down to responders on the ground

247

00:09:34,949 --> 00:09:32,480

and then today friday

248

00:09:38,470 --> 00:09:34,959

taran will be engaged in that toru drill

249

00:09:43,350 --> 00:09:40,389

nasa astronaut rick mastracchio this

250

00:09:45,430 --> 00:09:43,360

week starting off on monday collecting

251  
00:09:47,190 --> 00:09:45,440  
samples for the human research facility

252  
00:09:49,509 --> 00:09:47,200  
and storing them in melfi or the minus

253  
00:09:52,230 --> 00:09:49,519  
80 degree laboratory freezer

254  
00:09:55,110 --> 00:09:52,240  
he also installed a torque analyzer kit

255  
00:09:56,949 --> 00:09:55,120  
on the pistol grip tool or the pgt it's

256  
00:09:59,670 --> 00:09:56,959  
basically a drill that the astronauts

257  
00:10:01,990 --> 00:09:59,680  
use during their spacewalks

258  
00:10:04,790 --> 00:10:02,000  
for he was installing that analyzer kit

259  
00:10:06,550 --> 00:10:04,800  
for a ground analysis just some routine

260  
00:10:08,790 --> 00:10:06,560  
analysis of the tool

261  
00:10:11,509 --> 00:10:08,800  
on tuesday he was engaged in the

262  
00:10:13,750 --> 00:10:11,519  
microbiome experiment which investigates

263  
00:10:15,990 --> 00:10:13,760

the impact of space travel on both the

264

00:10:18,389 --> 00:10:16,000

human immune system and also on the

265

00:10:20,310 --> 00:10:18,399

individual's microbiome which is the

266

00:10:24,790 --> 00:10:20,320

collection of microbes that live both in

267

00:10:26,790 --> 00:10:24,800

and on the human body at any given time

268

00:10:29,269 --> 00:10:26,800

on wednesday mastracchio some routine

269

00:10:30,949 --> 00:10:29,279

work inside of the destiny lab cleaning

270

00:10:32,470 --> 00:10:30,959

out the ventilation system and doing a

271

00:10:34,870 --> 00:10:32,480

quarterly inspection on the station

272

00:10:36,790 --> 00:10:34,880

treadmill before moving on to thursday

273

00:10:38,870 --> 00:10:36,800

when he was doing a photo survey of the

274

00:10:41,269 --> 00:10:38,880

station's external structure and also

275

00:10:43,030 --> 00:10:41,279

doing some ocular checkouts along with

276

00:10:45,750 --> 00:10:43,040

hopkins and wakata

277

00:10:48,550 --> 00:10:45,760

today mastracchio will end his week with

278

00:10:50,550 --> 00:10:48,560

the periodic fitness evaluation and also

279

00:10:53,670 --> 00:10:50,560

taking a few more samples for that human

280

00:10:57,829 --> 00:10:55,670

and the final crew member on board from

281

00:11:00,790 --> 00:10:57,839

the japanese aerospace exploration

282

00:11:02,870 --> 00:11:00,800

agency koichi wakata back on monday was

283

00:11:04,949 --> 00:11:02,880

the subject for that cardio ox

284

00:11:07,269 --> 00:11:04,959

experiment being scanned by mike hopkins

285

00:11:10,230 --> 00:11:07,279

with the station's ultrasound system

286

00:11:13,030 --> 00:11:10,240

he was also setting up and doing a few

287

00:11:14,470 --> 00:11:13,040

checkouts on the new 4k high definition

288

00:11:16,470 --> 00:11:14,480

camera that was flown to the

289

00:11:18,310 --> 00:11:16,480

international space station setting that

290

00:11:20,630 --> 00:11:18,320

up in the the cupola

291

00:11:22,870 --> 00:11:20,640

that camera will be used to record super

292

00:11:25,430 --> 00:11:22,880

high resolution earth views and a few

293

00:11:28,389 --> 00:11:25,440

celestial views as well for the japanese

294

00:11:31,590 --> 00:11:28,399

aerospace exploration agency among them

295

00:11:33,750 --> 00:11:31,600

including the comet isons transit as it

296

00:11:35,430 --> 00:11:33,760

makes its closest path to the earth

297

00:11:37,350 --> 00:11:35,440

later on this month and in early

298

00:11:41,269 --> 00:11:37,360

december

299

00:11:43,030 --> 00:11:41,279

on tuesday avocado started off with the

300

00:11:45,670 --> 00:11:43,040

deployment of a number of micro

301  
00:11:48,150 --> 00:11:45,680  
satellites from the japanese airlock

302  
00:11:49,350 --> 00:11:48,160  
three were deployed on tuesday

303  
00:11:50,310 --> 00:11:49,360  
he set up

304  
00:11:55,750 --> 00:11:50,320  
the

305  
00:11:56,870 --> 00:11:55,760  
small satellite orbital deployment

306  
00:11:59,110 --> 00:11:56,880  
system

307  
00:12:00,870 --> 00:11:59,120  
three of those going out of the station

308  
00:12:03,030 --> 00:12:00,880  
airlock into the vacuum of space on

309  
00:12:04,790 --> 00:12:03,040  
tuesday and then one more going out on

310  
00:12:06,949 --> 00:12:04,800  
wednesday

311  
00:12:09,750 --> 00:12:06,959  
wakata deploying that fourth cubesat at

312  
00:12:12,230 --> 00:12:09,760  
about 1 58 a.m central time on wednesday

313  
00:12:13,910 --> 00:12:12,240

you can see a pretty spectacular shot as

314

00:12:15,430 --> 00:12:13,920

the satellite passes in front of one of

315

00:12:17,590 --> 00:12:15,440

the solar arrays

316

00:12:19,030 --> 00:12:17,600

those cubesats a small experimental

317

00:12:20,470 --> 00:12:19,040

satellites that are flown up to the

318

00:12:22,790 --> 00:12:20,480

station and then

319

00:12:25,110 --> 00:12:22,800

released into space through that airlock

320

00:12:26,310 --> 00:12:25,120

in the japanese experiment module

321

00:12:28,069 --> 00:12:26,320

flown

322

00:12:31,110 --> 00:12:28,079

by a number of commercial agencies and

323

00:12:33,269 --> 00:12:31,120

also educational providing a fairly

324

00:12:35,509 --> 00:12:33,279

inexpensive and easy access

325

00:12:38,230 --> 00:12:35,519

path to space and flying small

326

00:12:40,790 --> 00:12:38,240

satellites

327

00:12:42,870 --> 00:12:40,800

on the thursday avocado

328

00:12:45,030 --> 00:12:42,880

had been engaged in the circadian

329

00:12:46,710 --> 00:12:45,040

rhythms experiment which

330

00:12:48,790 --> 00:12:46,720

looks to track

331

00:12:50,629 --> 00:12:48,800

how the sleep patterns of the astronauts

332

00:12:52,470 --> 00:12:50,639

changes over time

333

00:12:54,790 --> 00:12:52,480

actually using their body temperature

334

00:12:56,629 --> 00:12:54,800

and the amount of heat they're radiating

335

00:13:00,389 --> 00:12:56,639

in order to track that out through known

336

00:13:01,990 --> 00:13:00,399

mechanisms of the human body

337

00:13:03,910 --> 00:13:02,000

wakata was also

338

00:13:05,990 --> 00:13:03,920

doing some more experiment runs with the

339

00:13:08,310 --> 00:13:06,000

capillary flow experiment he had gotten

340

00:13:10,069 --> 00:13:08,320

his first shot at it on wednesday along

341

00:13:13,110 --> 00:13:10,079

with hopkins and then thursday was

342

00:13:15,910 --> 00:13:13,120

operating now the experiment on his own

343

00:13:17,829 --> 00:13:15,920

uh that capillary flow again

344

00:13:19,750 --> 00:13:17,839

fluid physics experiment on board that

345

00:13:22,550 --> 00:13:19,760

studies on the

346

00:13:23,509 --> 00:13:22,560

force known as capillary flow capillary

347

00:13:26,710 --> 00:13:23,519

force

348

00:13:28,389 --> 00:13:26,720

which relies on surface adhesion to

349

00:13:31,350 --> 00:13:28,399

move

350

00:13:33,590 --> 00:13:31,360

liquids along in the absence of gravity

351  
00:13:35,509 --> 00:13:33,600  
an important tool for a fuel delivery

352  
00:13:37,750 --> 00:13:35,519  
systems and also other liquid delivery

353  
00:13:39,189 --> 00:13:37,760  
systems such as the potable water

354  
00:13:40,790 --> 00:13:39,199  
devices for these astronauts in

355  
00:13:42,389 --> 00:13:40,800  
supplying water

356  
00:13:45,590 --> 00:13:42,399  
and other liquids such as fuels to

357  
00:13:48,230 --> 00:13:45,600  
various experiments on board the station

358  
00:13:49,670 --> 00:13:48,240  
and then wakata will round out his week

359  
00:13:50,790 --> 00:13:49,680  
today

360  
00:13:52,470 --> 00:13:50,800  
with a

361  
00:13:54,470 --> 00:13:52,480  
bit of light maintenance work and also

362  
00:13:56,870 --> 00:13:54,480  
the sprint experiment

363  
00:13:58,870 --> 00:13:56,880

which is evaluating the use of high

364

00:14:01,189 --> 00:13:58,880

intensity and low volume exercise

365

00:14:03,110 --> 00:14:01,199

training in order to minimize the loss

366

00:14:05,509 --> 00:14:03,120

of both

367

00:14:07,990 --> 00:14:05,519

both muscle and bone mass also to

368

00:14:09,269 --> 00:14:08,000

maintain cardiovascular function

369

00:14:12,389 --> 00:14:09,279

in these astronauts during their

370

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

long-duration missions again a long week

371

00:14:16,470 --> 00:14:14,560

filled with a lot of biological research

372

00:14:18,870 --> 00:14:16,480

studies taking place and some

373

00:14:21,030 --> 00:14:18,880

maintenance tasks for the crew

374

00:14:23,269 --> 00:14:21,040

but rounding out the week and

375

00:14:25,910 --> 00:14:23,279

looking forward to uh the following when

376

00:14:27,829 --> 00:14:25,920

they'll see a new visiting vehicle a new