
CHRIS CASSIDY
EXPEDITION 36 FLIGHT ENGINEER

1
00:00:17,189 --> 00:00:15,110
good morning this is mission control

2
00:00:18,950 --> 00:00:17,199
houston welcome and thank you for

3
00:00:22,710 --> 00:00:18,960
joining us for today's edition of space

4
00:00:24,310 --> 00:00:22,720
station live this friday august 23rd

5
00:00:25,990 --> 00:00:24,320
those of you joining us now we are

6
00:00:28,710 --> 00:00:26,000
inside the international space station

7
00:00:30,550 --> 00:00:28,720
flight control room where the team

8
00:00:32,310 --> 00:00:30,560
has been keeping track of the systems

9
00:00:34,950 --> 00:00:32,320
aboard the station and supporting the

10
00:00:36,950 --> 00:00:34,960
day's activities of the expedition 36

11
00:00:38,709 --> 00:00:36,960
crew members

12
00:00:40,790 --> 00:00:38,719
leading the orbit 2 team here in the

13
00:00:43,190 --> 00:00:40,800

station flight control room today his

14
00:00:45,670 --> 00:00:43,200
flight director matt abbott and that

15
00:00:47,510 --> 00:00:45,680
serving as capcom nasa astronaut jack

16
00:00:50,470 --> 00:00:47,520
fisher who is relaying all ground

17
00:00:52,069 --> 00:00:50,480
messages up to the crew

18
00:00:53,990 --> 00:00:52,079
and now aboard the international space

19
00:00:56,389 --> 00:00:54,000
station his commander of the complex

20
00:00:58,310 --> 00:00:56,399
russian cosmonaut pavel vinogradov

21
00:01:01,349 --> 00:00:58,320
flight engineers russian cosmonaut

22
00:01:02,549 --> 00:01:01,359
alexander misurkin nasa astronaut chris

23
00:01:04,070 --> 00:01:02,559
cassidy

24
00:01:05,750 --> 00:01:04,080
here on the left-hand side and then

25
00:01:08,630 --> 00:01:05,760
joining them there on the right are

26
00:01:10,830 --> 00:01:08,640
russian cosmonaut vyoto yurichikan

27
00:01:13,350 --> 00:01:10,840
european space agency astronaut luca

28
00:01:18,230 --> 00:01:13,360
parmitano and nasa astronaut karen

29
00:01:23,749 --> 00:01:19,990
and now let's have a look back at this

30
00:01:28,390 --> 00:01:26,390
on monday following their seven hour 29

31
00:01:30,630 --> 00:01:28,400
minute space walk last friday the

32
00:01:33,109 --> 00:01:30,640
longest ever conducted by a pair of

33
00:01:36,149 --> 00:01:33,119
russian cosmonauts flight engineers

34
00:01:38,469 --> 00:01:36,159
fiore yurichikan and alexander misurkin

35
00:01:40,390 --> 00:01:38,479
spent their day on monday reviewing

36
00:01:42,389 --> 00:01:40,400
procedures and installing equipment on

37
00:01:44,789 --> 00:01:42,399
their orlan spacesuits to get ready for

38
00:01:45,830 --> 00:01:44,799

a second excursion excursion later in

39
00:01:48,310 --> 00:01:45,840
the week

40
00:01:50,230 --> 00:01:48,320
eurocheek and misurkin also participated

41
00:01:52,389 --> 00:01:50,240
in a debriefing with russian spacewalk

42
00:01:54,870 --> 00:01:52,399
specialists to discuss last friday's

43
00:01:57,109 --> 00:01:54,880
spacewalk

44
00:01:59,109 --> 00:01:57,119
then on monday flight engineer

45
00:02:01,990 --> 00:01:59,119
karen nyberg had spent her morning

46
00:02:04,630 --> 00:02:02,000
working in the japanese kibo laboratory

47
00:02:07,429 --> 00:02:04,640
removing the nanostep experiment from

48
00:02:09,990 --> 00:02:07,439
the solution crystallization observation

49
00:02:12,390 --> 00:02:10,000
facility and replacing it with the ice

50
00:02:14,630 --> 00:02:12,400
crystal 2 experiment

51
00:02:17,350 --> 00:02:14,640
nyberg had also prepared new test

52
00:02:19,990 --> 00:02:17,360
samples for the advanced colloids

53
00:02:22,070 --> 00:02:20,000
experiment also known as ace that is

54
00:02:24,150 --> 00:02:22,080
housed inside the microgravity science

55
00:02:27,190 --> 00:02:24,160
glove box of the station's destiny

56
00:02:29,430 --> 00:02:27,200
laboratory results from ace will help

57
00:02:32,150 --> 00:02:29,440
researchers understand how to optimize

58
00:02:35,190 --> 00:02:32,160
stabilizers to extend the shelf life of

59
00:02:39,030 --> 00:02:35,200
products like laundry detergent paint

60
00:02:42,869 --> 00:02:40,869
and on monday flight engineers chris

61
00:02:43,990 --> 00:02:42,879
cassidy and luca parmitano have began

62
00:02:46,229 --> 00:02:44,000
their day

63
00:02:48,710 --> 00:02:46,239

by weighing themselves with the space

64
00:02:51,750 --> 00:02:48,720
linear acceleration mass measurement

65
00:02:53,990 --> 00:02:51,760
device also known as the slam-d

66
00:02:55,270 --> 00:02:54,000
palmitano then had moved on

67
00:02:57,430 --> 00:02:55,280
to routine

68
00:02:59,270 --> 00:02:57,440
environmental health monitoring work as

69
00:03:02,710 --> 00:02:59,280
he measured sound levels throughout the

70
00:03:08,710 --> 00:03:05,350
cassidy meanwhile on monday had set up a

71
00:03:12,149 --> 00:03:08,720
trio of bowling ball sized free-flying

72
00:03:15,350 --> 00:03:12,159
satellites known as synchronize position

73
00:03:16,550 --> 00:03:15,360
hold engage reorient experimental

74
00:03:20,630 --> 00:03:16,560
satellites

75
00:03:22,790 --> 00:03:20,640
or spheres for another round of tests

76
00:03:25,190 --> 00:03:22,800
working inside the kibo lab cassidy had

77
00:03:27,509 --> 00:03:25,200
put the robots through their paces for a

78
00:03:29,830 --> 00:03:27,519
checkout of a new graphical user

79
00:03:32,390 --> 00:03:29,840
interface to enable human supervised

80
00:03:34,470 --> 00:03:32,400
control of those satellites

81
00:03:37,270 --> 00:03:34,480
cassidy also later

82
00:03:39,270 --> 00:03:37,280
had observed another free-flying object

83
00:03:40,390 --> 00:03:39,280
this one floating outside the orbiting

84
00:03:44,149 --> 00:03:40,400
complex

85
00:03:46,149 --> 00:03:44,159
near a docked progress cargo vehicle he

86
00:03:48,390 --> 00:03:46,159
reported the unidentified item to

87
00:03:50,550 --> 00:03:48,400
mission control in houston captured

88
00:03:52,710 --> 00:03:50,560

video of it as well russian ground

89
00:03:55,110 --> 00:03:52,720
controllers had identified it as an

90
00:03:58,470 --> 00:03:55,120
antenna cover from the zvezda service

91
00:04:02,710 --> 00:04:00,229
then on tuesday flight engineer chris

92
00:04:05,190 --> 00:04:02,720
cassidy had collected water samples from

93
00:04:07,030 --> 00:04:05,200
condensate line and the tranquility node

94
00:04:10,949 --> 00:04:07,040
and packaged the samples for return to

95
00:04:14,710 --> 00:04:12,789
flight engineer luca parmitano of the

96
00:04:16,150 --> 00:04:14,720
european space agency had spent some

97
00:04:19,189 --> 00:04:16,160
time on tuesday with a couple of

98
00:04:22,150 --> 00:04:19,199
cleaning tasks of the crew quarters

99
00:04:25,030 --> 00:04:22,160
and also on board air intake and exhaust

100
00:04:27,510 --> 00:04:25,040
ducts as well as the fan and air flow

101
00:04:32,230 --> 00:04:29,830
parmitano then performed an ultrasound

102
00:04:33,590 --> 00:04:32,240
on cassidy for the spinal ultrasound

103
00:04:35,909 --> 00:04:33,600
investigation

104
00:04:38,390 --> 00:04:35,919
medical researchers have observed that

105
00:04:40,550 --> 00:04:38,400
astronauts grow up to 3 percent taller

106
00:04:42,790 --> 00:04:40,560
during their long duration missions

107
00:04:45,510 --> 00:04:42,800
aboard the station and return to the

108
00:04:47,590 --> 00:04:45,520
normal height when back on earth that

109
00:04:49,510 --> 00:04:47,600
spinal ultrasound investigation seeks to

110
00:04:51,670 --> 00:04:49,520
understand the mechanism and impact of

111
00:04:53,990 --> 00:04:51,680
this change while advancing medical

112
00:04:55,749 --> 00:04:54,000
imaging technology by testing a smaller

113
00:04:59,590 --> 00:04:55,759

and more portable ultrasound device

114
00:05:03,670 --> 00:05:02,230
on tuesday cassidy also took a break to

115
00:05:08,150 --> 00:05:03,680
talk with the reporters from the

116
00:05:10,790 --> 00:05:08,160
military times and wbur fm in boston

117
00:05:13,110 --> 00:05:10,800
cassidy had discussed discussed at life

118
00:05:15,029 --> 00:05:13,120
and work aboard the orbiting complex and

119
00:05:18,150 --> 00:05:15,039
described the career path to becoming an

120
00:05:23,189 --> 00:05:19,990
then tuesday working inside the japanese

121
00:05:24,629 --> 00:05:23,199
kibo module flight engineer karen nyberg

122
00:05:27,270 --> 00:05:24,639
spent her time

123
00:05:30,310 --> 00:05:27,280
replacing the infrared imager of the

124
00:05:32,310 --> 00:05:30,320
fluid physics experiment facility

125
00:05:34,550 --> 00:05:32,320
she then rounded out her day with the

126
00:05:37,029 --> 00:05:34,560
surface telerobotics experiment as she

127
00:05:39,749 --> 00:05:37,039
remotely controlled the k-10 rover at

128
00:05:41,590 --> 00:05:39,759
the ames research center in california

129
00:05:43,350 --> 00:05:41,600
using a special program on a laptop

130
00:05:45,189 --> 00:05:43,360
computer that provided

131
00:05:48,150 --> 00:05:45,199
live video from the rover and virtual

132
00:05:50,310 --> 00:05:48,160
terrain nyebrog downlink task plans to

133
00:05:55,029 --> 00:05:50,320
the rover monitor the execution of those

134
00:05:59,590 --> 00:05:57,350
meanwhile back on earth on tuesday nasa

135
00:06:01,990 --> 00:05:59,600
introduced its new class of space

136
00:06:03,909 --> 00:06:02,000
explorers that has officially reported

137
00:06:04,870 --> 00:06:03,919
for duty here at the johnson space

138
00:06:06,710 --> 00:06:04,880

center

139
00:06:10,309 --> 00:06:06,720
four men and four women recently

140
00:06:13,189 --> 00:06:10,319
selected as the 2013 astronaut class

141
00:06:15,590 --> 00:06:13,199
took center stage on tuesday as nasa

142
00:06:17,510 --> 00:06:15,600
administrator charlie bolden introduced

143
00:06:19,189 --> 00:06:17,520
the eight astronaut candidates and

144
00:06:21,350 --> 00:06:19,199
answered questions from media about

145
00:06:27,350 --> 00:06:21,360
their selection and training as well as

146
00:06:31,270 --> 00:06:28,950
then on wednesday flight engineers

147
00:06:33,350 --> 00:06:31,280
fiordo yurochikin and alexander misurkin

148
00:06:35,430 --> 00:06:33,360
had completed a final timeline review of

149
00:06:38,070 --> 00:06:35,440
the task they would perform during

150
00:06:41,350 --> 00:06:38,080
thursday's spacewalk

151
00:06:43,590 --> 00:06:41,360
meanwhile flight engineer chris cassidy

152
00:06:45,909 --> 00:06:43,600
worked on a wednesday to replace the

153
00:06:48,309 --> 00:06:45,919
multi-filtration units inside the water

154
00:06:50,950 --> 00:06:48,319
recovery system the water recovery

155
00:06:53,350 --> 00:06:50,960
system recycles condensation and urine

156
00:06:55,670 --> 00:06:53,360
into drinkable water for the crew

157
00:06:57,029 --> 00:06:55,680
this reducing the amount of fresh water

158
00:06:59,309 --> 00:06:57,039
that

159
00:07:02,469 --> 00:06:59,319
might need to be sent to the crew aboard

160
00:07:04,390 --> 00:07:02,479
resupply ships

161
00:07:05,990 --> 00:07:04,400
cassidy then performed another

162
00:07:08,710 --> 00:07:06,000
ultrasound on flight engineer luca

163
00:07:12,070 --> 00:07:08,720

parmitano for the spinal ultrasound

164
00:07:16,790 --> 00:07:13,909
and with an eye toward the return to

165
00:07:19,830 --> 00:07:16,800
earth in just three weeks cassidy joined

166
00:07:21,990 --> 00:07:19,840
misurkin and commander pavo vinogradov

167
00:07:25,990 --> 00:07:22,000
for a fit check at the cospec

168
00:07:28,870 --> 00:07:26,000
seat liners of their soyuz tma-08m

169
00:07:30,950 --> 00:07:28,880
spacecraft they will ride home in for a

170
00:07:32,390 --> 00:07:30,960
parachute assisted landing on the step

171
00:07:34,550 --> 00:07:32,400
of kazakhstan

172
00:07:38,790 --> 00:07:34,560
on the morning of september 11

173
00:07:43,350 --> 00:07:40,790
also on wednesday flight engineer karen

174
00:07:45,270 --> 00:07:43,360
nyberg spent part of her day in the

175
00:07:47,589 --> 00:07:45,280
japanese kibo module setting up a

176
00:07:49,990 --> 00:07:47,599
commercial payload she also replaced a

177
00:07:51,430 --> 00:07:50,000
rope on the advanced resistive exercise

178
00:07:56,390 --> 00:07:51,440
device

179
00:07:58,950 --> 00:07:56,400
station's residents can use for their

180
00:08:01,350 --> 00:07:58,960
daily two-hour exercise regimen to

181
00:08:03,430 --> 00:08:01,360
combat the loss of muscle mass and bone

182
00:08:08,150 --> 00:08:03,440
density experienced by long-duration

183
00:08:12,469 --> 00:08:09,749
last but not least on wednesday

184
00:08:14,629 --> 00:08:12,479
parmitano had exchanged a test sample

185
00:08:17,430 --> 00:08:14,639
cartridge and the solidification and

186
00:08:19,589 --> 00:08:17,440
quench furnace for another round of data

187
00:08:21,909 --> 00:08:19,599
collection

188
00:08:24,550 --> 00:08:21,919

this research

189
00:08:26,950 --> 00:08:24,560
furnace provides three heater zones to

190
00:08:29,589 --> 00:08:26,960
ensure accurate temperature profiles and

191
00:08:31,670 --> 00:08:29,599
maintain a sample's required temperature

192
00:08:33,110 --> 00:08:31,680
variations throughout the solidification

193
00:08:35,670 --> 00:08:33,120
process

194
00:08:38,870 --> 00:08:35,680
it is one part of the materials science

195
00:08:40,550 --> 00:08:38,880
research rack that allows for on-orbit

196
00:08:43,829 --> 00:08:40,560
study of a variety of materials

197
00:08:48,630 --> 00:08:43,839
including metals ceramics semiconductor

198
00:08:53,829 --> 00:08:50,949
then yesterday on thursday two russian

199
00:08:56,070 --> 00:08:53,839
cosmonauts wrapped up a five-hour

200
00:08:59,030 --> 00:08:56,080
minute spacewalk

201
00:09:02,949 --> 00:08:59,040
completing that spacewalk at 12 32 pm

202
00:09:08,070 --> 00:09:03,670
the

203
00:09:10,949 --> 00:09:08,080
laser communications experiment with a

204
00:09:13,350 --> 00:09:10,959
new platform for a small optical camera

205
00:09:15,110 --> 00:09:13,360
system the installation of new spacewalk

206
00:09:20,710 --> 00:09:15,120
aids and

207
00:09:24,550 --> 00:09:22,470
meanwhile for the duration of thursday's

208
00:09:27,509 --> 00:09:24,560
spacewalk cassidy and station commander

209
00:09:30,110 --> 00:09:27,519
pavel vinogradov were isolated

210
00:09:33,190 --> 00:09:30,120
to the poisk module and their soyuz

211
00:09:35,430 --> 00:09:33,200
tma-08m spacecraft

212
00:09:38,150 --> 00:09:35,440
while flight engineers karen nyberg of

213
00:09:40,710 --> 00:09:38,160

nasa and luca parmitano of the european

214
00:09:45,590 --> 00:09:40,720
space agency were free to move about the

215
00:09:50,790 --> 00:09:47,590
nyberg on thursday had spent much of her

216
00:09:52,710 --> 00:09:50,800
day working with the space 3 experiment

217
00:09:54,389 --> 00:09:52,720
which examines colloidal fluids

218
00:09:57,350 --> 00:09:54,399
classified as smart materials

219
00:09:59,509 --> 00:09:57,360
transitioning to a solid-like state in

220
00:10:01,030 --> 00:09:59,519
the presence of a magnetic field

221
00:10:04,470 --> 00:10:01,040
parmitano

222
00:10:06,949 --> 00:10:04,480
meanwhile had rerouted an exhaust port

223
00:10:08,790 --> 00:10:06,959
on the amine swingbed this

224
00:10:12,310 --> 00:10:08,800
technology demonstration is testing a

225
00:10:19,590 --> 00:10:12,320
smaller more efficient carbon dioxide

226
00:10:23,389 --> 00:10:21,750
and today on friday eurochicken and

227
00:10:25,750 --> 00:10:23,399
misurkin had participated in a

228
00:10:28,150 --> 00:10:25,760
post-spacewalk debrief with specialists

229
00:10:31,269 --> 00:10:28,160
on the ground they are performing

230
00:10:33,590 --> 00:10:31,279
several post spacewalk tasks to properly

231
00:10:35,350 --> 00:10:33,600
stow away their orlon spacesuits

232
00:10:37,430 --> 00:10:35,360
equipment and tools that were used in

233
00:10:39,430 --> 00:10:37,440
yesterday's excursion

234
00:10:42,710 --> 00:10:39,440
they had also opened the hatch to the

235
00:10:44,630 --> 00:10:42,720
european atv4 cargo ship that had been

236
00:10:46,310 --> 00:10:44,640
closed to support yesterday's spacewalk

237
00:10:48,870 --> 00:10:46,320
out of the piers docking compartment

238
00:10:50,949 --> 00:10:48,880

airlock

239
00:10:52,790 --> 00:10:50,959
nyberg meanwhile today had spent much of

240
00:10:54,870 --> 00:10:52,800
her day working with the inspace 3

241
00:10:59,269 --> 00:10:54,880
experiment

242
00:11:01,670 --> 00:10:59,279
fluids classified as smart materials

243
00:11:08,550 --> 00:11:01,680
transitioning to a solid-like state in

244
00:11:11,509 --> 00:11:10,069
also

245
00:11:13,190 --> 00:11:11,519
today on friday flight engineer

246
00:11:16,150 --> 00:11:13,200
parmitano had been busy with the

247
00:11:18,790 --> 00:11:16,160
recycled tank transfers to tanks in the

248
00:11:20,710 --> 00:11:18,800
docked european space agency cargo ship

249
00:11:22,630 --> 00:11:20,720
atv4

250
00:11:24,310 --> 00:11:22,640
here

251
00:11:26,230 --> 00:11:24,320
then spent some time in columbus to

252
00:11:30,069 --> 00:11:26,240
collect saliva examples as part of

253
00:11:32,949 --> 00:11:31,590
while flight engineer chris cassidy

254
00:11:34,630 --> 00:11:32,959
performs some maintenance to the water

255
00:11:38,230 --> 00:11:34,640
recovery system

256
00:11:40,389 --> 00:11:38,240
with the recycle tank change out

257
00:11:42,230 --> 00:11:40,399
again the water recovery system converts

258
00:11:45,750 --> 00:11:42,240
urine sweat and condensation into

259
00:11:49,509 --> 00:11:47,350
and each of the crew members will put in

260
00:11:51,350 --> 00:11:49,519
their daily two hours of exercise using

261
00:11:52,790 --> 00:11:51,360
onboard gym equipment that includes a

262
00:11:55,269 --> 00:11:52,800
station bicycle

263
00:11:57,110 --> 00:11:55,279

a treadmill and an advanced resistive

264
00:11:58,870 --> 00:11:57,120
exercise device that simulates

265
00:12:00,550 --> 00:11:58,880
weightlifting here on earth

266
00:12:02,550 --> 00:12:00,560
the crew will then wrap up their day

267
00:12:04,230 --> 00:12:02,560
with a final daily planning conference

268
00:12:06,870 --> 00:12:04,240
with the ground

269
00:12:08,829 --> 00:12:06,880
and is scheduled to go to bed at 4 30 pm

270
00:12:11,110 --> 00:12:08,839
central

271
00:12:13,030 --> 00:12:11,120
time after the crew goes to sleep

272
00:12:15,030 --> 00:12:13,040
tonight robotic ground controllers at

273
00:12:17,910 --> 00:12:15,040
mission control houston will send

274
00:12:20,230 --> 00:12:17,920
commands to move the mobile transporter

275
00:12:23,190 --> 00:12:20,240
rail car to the correct work site for

276
00:12:25,350 --> 00:12:23,200
the walk-off of the canada arm 2 robotic

277
00:12:27,829 --> 00:12:25,360
arm from harmony's power and data

278
00:12:31,590 --> 00:12:27,839
grapple fixture to a small fixture on

279
00:12:34,710 --> 00:12:33,190
this work comes in advance of

280
00:12:37,350 --> 00:12:34,720
preparations for the ground commanded

281
00:12:39,190 --> 00:12:37,360
robotic movement of space parts from the

282
00:12:42,710 --> 00:12:39,200
exposed pallet brought to the station

283
00:12:44,550 --> 00:12:42,720
back on the htv-4 cargo ship

284
00:12:47,350 --> 00:12:44,560
and which now reside on the front porch

285
00:12:49,269 --> 00:12:47,360
of the japanese kibo module to the

286
00:12:51,190 --> 00:12:49,279
proper locations on the truss of the

287
00:12:53,350 --> 00:12:51,200
station