1
00:00:28,720 --> 00:00:16,900
[Music]

2
00:00:28,730 --> 00:01:15,350
[Applause]

3
00:01:20,230 --> 00:01:17,910
well it's a mild afternoon a slight

4
00:01:21,830 --> 00:01:20,240
breeze over at the baikonur cosmodrome

5
00:01:25,109 --> 00:01:21,840
in kazakhstan

6
00:01:27,109 --> 00:01:25,119
and sitting atop the soyuz booster 160

7
00:01:28,469 --> 00:01:27,119
feet high it's the next crew set to

8
00:01:31,510 --> 00:01:28,479
launch to the international space

9
00:01:33,749 --> 00:01:31,520
station they are nasa's chris cassidy

10
00:01:36,550 --> 00:01:33,759
and rose cosmos cosmonauts anatoly

11
00:01:39,350 --> 00:01:36,560
ivanishin and yvonne wagner and they are

12
00:01:44,149 --> 00:01:39,360
set to blast off in just under an hour

13
00:01:46,630 --> 00:01:44,159

from now at 305 a.m central time 405 a.m

14
00:01:48,069 --> 00:01:46,640
eastern time here in the us

15
00:01:51,350 --> 00:01:48,079
this is going to be the first crude

16
00:01:53,350 --> 00:01:51,360
launch on the new soyuz 2.1 a booster

17
00:01:54,469 --> 00:01:53,360
launching from site 31 at the baikonur

18
00:01:55,910 --> 00:01:54,479
cosmodrome

19
00:01:57,670 --> 00:01:55,920
this type of booster was first launched

20
00:01:59,990 --> 00:01:57,680
during an unmanned mission last summer

21
00:02:01,350 --> 00:02:00,000
in preparation for today and also

22
00:02:04,069 --> 00:02:01,360
notable this is going to be the first

23
00:02:06,709 --> 00:02:04,079
launch from site 31 since october of

24
00:02:09,270 --> 00:02:06,719
2016 when nasa's shane kimbrough

25
00:02:11,589 --> 00:02:09,280
launched on soyuz ms-02 as part of

26
00:02:13,589 --> 00:02:11,599
expedition 49.

27
00:02:15,030 --> 00:02:13,599
i do want to start off with a good

28
00:02:16,710 --> 00:02:15,040
morning good afternoon good evening

29
00:02:18,869 --> 00:02:16,720
anywhere you're tuning in from all over

30
00:02:20,949 --> 00:02:18,879
the world i'm nasa's dan hewitt coming

31
00:02:23,030 --> 00:02:20,959
to you live from nasa's johnson space

32
00:02:24,710 --> 00:02:23,040
center here in houston we're going to be

33
00:02:26,949 --> 00:02:24,720
taking you through the countdown of the

34
00:02:29,190 --> 00:02:26,959
launch today the ride uphill and these

35
00:02:31,190 --> 00:02:29,200
three's journey to the international

36
00:02:33,589 --> 00:02:31,200
space station over the next several

37
00:02:35,589 --> 00:02:33,599
hours ultimately docking and arriving

38
00:02:37,830 --> 00:02:35,599

and getting the crew on board back up to

39
00:02:39,270 --> 00:02:37,840
a full six-person strength

40
00:02:41,430 --> 00:02:39,280
and right now teams of launch

41
00:02:43,670 --> 00:02:41,440
controllers are watching all the systems

42
00:02:45,350 --> 00:02:43,680
on the rocket on the spacecraft talking

43
00:02:46,710 --> 00:02:45,360
to the crew and also looking at

44
00:02:48,790 --> 00:02:46,720
everything on the international space

45
00:02:51,190 --> 00:02:48,800
station their ultimate generation their

46
00:02:53,350 --> 00:02:51,200
ultimate destination no issues being

47
00:02:55,509 --> 00:02:53,360
tracked right now fuel and oxidizer

48
00:02:56,949 --> 00:02:55,519
loading for the soyuz began just a few

49
00:02:58,949 --> 00:02:56,959
hours ago

50
00:03:01,350 --> 00:02:58,959
and one of those teams on the left there

51
00:03:03,509 --> 00:03:01,360
that you're looking at is over in russia

52
00:03:05,990 --> 00:03:03,519
the control center just outside of

53
00:03:07,350 --> 00:03:06,000
moscow in a town called coryoff and then

54
00:03:08,949 --> 00:03:07,360
on the right the international space

55
00:03:10,790 --> 00:03:08,959
station flight control room here in

56
00:03:13,430 --> 00:03:10,800
houston we're coming to you from the

57
00:03:15,509 --> 00:03:13,440
white flight control room today as part

58
00:03:18,149 --> 00:03:15,519
of the current situation we're hopping

59
00:03:19,990 --> 00:03:18,159
between control rooms the white ficker

60
00:03:21,750 --> 00:03:20,000
and the flight control room number one

61
00:03:22,630 --> 00:03:21,760
the usual space station flight control

62
00:03:24,710 --> 00:03:22,640
room

63
00:03:26,550 --> 00:03:24,720

uh here in mission control the team

64
00:03:27,430 --> 00:03:26,560
watching over the current expedition

65
00:03:29,030 --> 00:03:27,440
crew

66
00:03:31,910 --> 00:03:29,040
who are going to be preparing to support

67
00:03:34,229 --> 00:03:31,920
the arrival of the soyuz ms-16 later

68
00:03:36,309 --> 00:03:34,239
today right now our flight director is

69
00:03:38,949 --> 00:03:36,319
anthony varya he's going to be leading

70
00:03:40,869 --> 00:03:38,959
the orbit one team on for this morning

71
00:03:43,190 --> 00:03:40,879
and just next to him is european

72
00:03:46,070 --> 00:03:43,200
astronaut andreas mogensen he's serving

73
00:03:48,390 --> 00:03:46,080
as the capcom or the voice of voice

74
00:03:50,229 --> 00:03:48,400
communication between everyone down here

75
00:03:51,589 --> 00:03:50,239
in houston and the crew on board the

76
00:03:53,750 --> 00:03:51,599
station

77
00:03:55,750 --> 00:03:53,760
and that crew on board right now are

78
00:03:56,710 --> 00:03:55,760
nasa astronauts jess kamir and drew

79
00:03:58,390 --> 00:03:56,720
morgan

80
00:04:00,070 --> 00:03:58,400
they're up there with russian cosmonaut

81
00:04:01,270 --> 00:04:00,080
and space station commander alex

82
00:04:04,149 --> 00:04:01,280
krapochka

83
00:04:06,470 --> 00:04:04,159
morgan launched last summer on july 20th

84
00:04:08,869 --> 00:04:06,480
the 50th anniversary of humanity's first

85
00:04:11,030 --> 00:04:08,879
steps on the moon miuron skripochka

86
00:04:12,789 --> 00:04:11,040
followed shortly after launching last

87
00:04:14,630 --> 00:04:12,799
september

88
00:04:16,550 --> 00:04:14,640

and then once the crew gets there today

89
00:04:18,229 --> 00:04:16,560
the compliment will be up to six but

90
00:04:20,150 --> 00:04:18,239
only for about a week it's going to be a

91
00:04:22,150 --> 00:04:20,160
quick handover as mir morgan and

92
00:04:24,390 --> 00:04:22,160
squarepoachgov will make their way back

93
00:04:26,629 --> 00:04:24,400
here to planet earth coming up on april

94
00:04:29,189 --> 00:04:26,639
17th bringing the space station back

95
00:04:30,629 --> 00:04:29,199
down to just three

96
00:04:32,230 --> 00:04:30,639
and as i mentioned just a little bit

97
00:04:34,550 --> 00:04:32,240
earlier docking for the new crew will

98
00:04:36,790 --> 00:04:34,560
occur several hours from now later today

99
00:04:38,790 --> 00:04:36,800
after they complete the plan for orbit

100
00:04:40,870 --> 00:04:38,800
space flight we're going to be bringing

101
00:04:42,550 --> 00:04:40,880
you live coverage of all of that later

102
00:04:44,870 --> 00:04:42,560
on this morning

103
00:04:47,189 --> 00:04:44,880
right here on nasa tv at 8 30 a.m

104
00:04:49,430 --> 00:04:47,199
central time for docking 9 30 a.m

105
00:04:51,430 --> 00:04:49,440
eastern time they're scheduled to dock

106
00:04:54,070 --> 00:04:51,440
with the poisk module that's up on the

107
00:04:56,629 --> 00:04:54,080
space facing side we call it zenith of

108
00:05:00,310 --> 00:04:56,639
the russian service module also known as

109
00:05:01,670 --> 00:05:00,320
zvezda and then about 45 minutes after

110
00:05:03,830 --> 00:05:01,680
that

111
00:05:05,510 --> 00:05:03,840
or about 45 minutes after we begin our

112
00:05:09,350 --> 00:05:05,520
coverage we'll see that docking at about

113
00:05:12,230 --> 00:05:10,550

on the journey

114
00:05:13,670 --> 00:05:12,240
up there though the soyuz tracking and

115
00:05:15,830 --> 00:05:13,680
telemetry is going to be downlinked to

116
00:05:17,510 --> 00:05:15,840
ground stations along the flight path

117
00:05:19,830 --> 00:05:17,520
routed to the russian mission control

118
00:05:20,950 --> 00:05:19,840
center again in korea just outside of

119
00:05:22,629 --> 00:05:20,960
moscow

120
00:05:24,230 --> 00:05:22,639
throughout our coverage today both for

121
00:05:26,070 --> 00:05:24,240
launch and for the docking and the hatch

122
00:05:27,830 --> 00:05:26,080
opening later if you have any questions

123
00:05:29,909 --> 00:05:27,840
that you want to ask we'll be trying to

124
00:05:33,189 --> 00:05:29,919
take a couple on twitter that you can

125
00:05:34,310 --> 00:05:33,199
ask using the hashtag asknasa and we'll

126
00:05:35,830 --> 00:05:34,320
try to get through a bunch of those

127
00:05:38,550 --> 00:05:35,840
throughout our coverage this morning and

128
00:05:41,830 --> 00:05:38,560
then later on when we get to the docking

129
00:05:46,790 --> 00:05:44,629
today's launch is pretty notable for

130
00:05:49,029 --> 00:05:46,800
several reasons the first uh being that

131
00:05:51,029 --> 00:05:49,039
this crew went underwent their final

132
00:05:52,710 --> 00:05:51,039
weeks of spaceflight preparations during

133
00:05:55,990 --> 00:05:52,720
the current international health

134
00:05:58,150 --> 00:05:56,000
emergency the covet 19 pandemic changing

135
00:05:59,990 --> 00:05:58,160
things for people all around the globe

136
00:06:01,430 --> 00:06:00,000
and this crew and their preparation no

137
00:06:02,629 --> 00:06:01,440
different

138
00:06:04,309 --> 00:06:02,639

so things will look a little bit

139
00:06:06,629 --> 00:06:04,319
different this time compared to typical

140
00:06:08,950 --> 00:06:06,639
soyuz launch preparations mainly just

141
00:06:11,430 --> 00:06:08,960
like a lot of other things

142
00:06:14,230 --> 00:06:11,440
you're seeing personnel kind of trimmed

143
00:06:16,309 --> 00:06:14,240
down to just the bare necessities but of

144
00:06:17,749 --> 00:06:16,319
course nasa all of our international and

145
00:06:19,590 --> 00:06:17,759
commercial partners

146
00:06:21,830 --> 00:06:19,600
even always taking steps to prevent the

147
00:06:23,510 --> 00:06:21,840
crew from getting any sickness

148
00:06:25,990 --> 00:06:23,520
or illness how they go through something

149
00:06:28,309 --> 00:06:26,000
called health stabilization

150
00:06:30,070 --> 00:06:28,319
spending about two weeks in quarantine

151
00:06:32,070 --> 00:06:30,080
before their launch

152
00:06:33,830 --> 00:06:32,080
so this crew on board has been kept in

153
00:06:36,870 --> 00:06:33,840
that strict quarantine for the last two

154
00:06:38,230 --> 00:06:36,880
weeks limiting contact with anybody

155
00:06:39,909 --> 00:06:38,240
outside of

156
00:06:41,430 --> 00:06:39,919
flight surgeons and those already

157
00:06:43,670 --> 00:06:41,440
cleared and also in quarantine

158
00:06:44,710 --> 00:06:43,680
themselves before they launch that's

159
00:06:47,189 --> 00:06:44,720
actually

160
00:06:48,870 --> 00:06:47,199
standard operating procedure for space

161
00:06:50,390 --> 00:06:48,880
station missions is we obviously want to

162
00:06:51,589 --> 00:06:50,400
keep these astronauts healthy before

163
00:06:52,629 --> 00:06:51,599

they

164
00:06:54,550 --> 00:06:52,639
leave

165
00:06:56,230 --> 00:06:54,560
any medical assistance or anything like

166
00:06:58,150 --> 00:06:56,240
that that you have down here on the

167
00:06:59,909 --> 00:06:58,160
ground don't want to bring a cold or

168
00:07:01,909 --> 00:06:59,919
anything more severe up to the space

169
00:07:03,990 --> 00:07:01,919
station so thanks to that thorough

170
00:07:05,990 --> 00:07:04,000
protocol that we already have in place

171
00:07:09,270 --> 00:07:06,000
the crew safe and healthy and ready to

172
00:07:11,430 --> 00:07:09,280
launch today on board this soyuz

173
00:07:14,309 --> 00:07:11,440
another fairly noteworthy aspect of

174
00:07:17,110 --> 00:07:14,319
their upcoming expedition is during

175
00:07:19,589 --> 00:07:17,120
their stay we're anticipating the first

176
00:07:20,870 --> 00:07:19,599
ever crude launch from nasa's commercial

177
00:07:23,510 --> 00:07:20,880
crew program

178
00:07:25,270 --> 00:07:23,520
on the spacex demo 2 flight test that's

179
00:07:26,870 --> 00:07:25,280
going to be nasa astronauts doug hurley

180
00:07:28,950 --> 00:07:26,880
and bob bankin

181
00:07:31,270 --> 00:07:28,960
launching in that spacex dragon they're

182
00:07:33,749 --> 00:07:31,280
expected right now to launch from

183
00:07:35,270 --> 00:07:33,759
somewhere between mid to late may

184
00:07:36,870 --> 00:07:35,280
and all the teams down here on the

185
00:07:38,790 --> 00:07:36,880
ground continuing with the training for

186
00:07:40,550 --> 00:07:38,800
that mission also in light of all the

187
00:07:42,070 --> 00:07:40,560
circumstances right now

188
00:07:44,469 --> 00:07:42,080

the crew finishing up their final

189
00:07:46,070 --> 00:07:44,479
training and everyone very excited to

190
00:07:47,189 --> 00:07:46,080
see these space flights once again

191
00:07:49,270 --> 00:07:47,199
return

192
00:07:51,909 --> 00:07:49,280
to america here

193
00:07:54,550 --> 00:07:51,919
so that expected to take place during

194
00:07:56,230 --> 00:07:54,560
expedition 63 while the crew is on board

195
00:07:58,950 --> 00:07:56,240
the station

196
00:08:01,189 --> 00:07:58,960
so really getting excited for that now

197
00:08:03,589 --> 00:08:01,199
the crew's also going to be on board for

198
00:08:05,029 --> 00:08:03,599
a big chunk of this year where we are

199
00:08:06,550 --> 00:08:05,039
celebrating

200
00:08:08,390 --> 00:08:06,560
a year-long celebration of the

201
00:08:10,869 --> 00:08:08,400
international space station's 20th

202
00:08:12,869 --> 00:08:10,879
anniversary you'll see that little iss

203
00:08:14,309 --> 00:08:12,879
20 and a whole bunch of stuff all over

204
00:08:15,749 --> 00:08:14,319
nasa tv

205
00:08:18,469 --> 00:08:15,759
we're marking

206
00:08:20,469 --> 00:08:18,479
20 years of human beings living on board

207
00:08:21,909 --> 00:08:20,479
the international space station so every

208
00:08:25,670 --> 00:08:21,919
single day

209
00:08:28,469 --> 00:08:25,680
since november of 1990 or november of

210
00:08:30,150 --> 00:08:28,479
2000 we've had men and women living on

211
00:08:32,550 --> 00:08:30,160
board the international space station

212
00:08:34,469 --> 00:08:32,560
there is an entire generation on planet

213
00:08:36,630 --> 00:08:34,479

earth that as long as they have been

214
00:08:37,909 --> 00:08:36,640
alive not every single human has been on

215
00:08:39,829 --> 00:08:37,919
earth with them

216
00:08:42,149 --> 00:08:39,839
and so we're just really celebrating

217
00:08:44,070 --> 00:08:42,159
that accomplishment uh that takes a lot

218
00:08:46,470 --> 00:08:44,080
of work from a lot of different teams

219
00:08:48,710 --> 00:08:46,480
organizations governments and dedicated

220
00:08:51,110 --> 00:08:48,720
professionals all over the globe

221
00:08:54,470 --> 00:08:51,120
and they've been supporting them 24

222
00:08:58,550 --> 00:08:54,480
hours a day 365 days a year and we'll

223
00:09:00,630 --> 00:08:58,560
hit that 20-year mark later in november

224
00:09:03,670 --> 00:09:00,640
that milestone really meant something

225
00:09:06,070 --> 00:09:03,680
special to someone part of this mission

226
00:09:07,710 --> 00:09:06,080
nasa's chris cassidy and he had a couple

227
00:09:10,470 --> 00:09:07,720
of words to share

228
00:09:11,269 --> 00:09:10,480
[Music]

229
00:09:13,350 --> 00:09:11,279
well

230
00:09:15,190 --> 00:09:13,360
it's it's significant for the space

231
00:09:18,230 --> 00:09:15,200
station's been operating brilliantly for

232
00:09:20,230 --> 00:09:18,240
those 20 years but for me personally

233
00:09:23,030 --> 00:09:20,240
uh bill shepard was the commander of

234
00:09:26,310 --> 00:09:23,040
expedition one and i'll be the commander

235
00:09:28,790 --> 00:09:26,320
of expedition 63 at the 20-year mark we

236
00:09:31,750 --> 00:09:28,800
both were have our roots in the navy

237
00:09:32,870 --> 00:09:31,760
seal teams and so so

238
00:09:35,670 --> 00:09:32,880

i i

239
00:09:38,230 --> 00:09:35,680
have a particularly fond uh thoughts

240
00:09:39,670 --> 00:09:38,240
about how the the navy guys uh

241
00:09:42,150 --> 00:09:39,680
particularly still team guys are in

242
00:09:44,870 --> 00:09:42,160
command and uh in the beginning and end

243
00:09:46,230 --> 00:09:44,880
of that 20-year period but it also shows

244
00:09:49,030 --> 00:09:46,240
that

245
00:09:52,790 --> 00:09:49,040
we as a collection of nations have been

246
00:09:55,110 --> 00:09:52,800
able to build sustain operate this

247
00:09:57,190 --> 00:09:55,120
amazing thing called the space station

248
00:09:58,870 --> 00:09:57,200
and uh and all that we're learning is

249
00:10:01,030 --> 00:09:58,880
going to help us go to the moon into

250
00:10:03,350 --> 00:10:01,040
mars so the space station's a marvelous

251
00:10:05,509 --> 00:10:03,360
piece of machinery and

252
00:10:07,670 --> 00:10:05,519
i just imagine your car working for 20

253
00:10:10,069 --> 00:10:07,680
years you know it it it you'd be very

254
00:10:11,430 --> 00:10:10,079
happy when you get to that 20th year uh

255
00:10:14,870 --> 00:10:11,440
and the space station is doing much

256
00:10:18,230 --> 00:10:16,630
those are just some quick ports from him

257
00:10:20,069 --> 00:10:18,240
obviously we want to get to know our

258
00:10:21,670 --> 00:10:20,079
crew members on board this soyuz a

259
00:10:23,350 --> 00:10:21,680
little bit more so why don't we first

260
00:10:26,069 --> 00:10:23,360
learn a little bit more about nasa's

261
00:10:27,990 --> 00:10:26,079
chris cassidy

262
00:10:30,230 --> 00:10:28,000
in the soyuz's right-hand seat for

263
00:10:32,389 --> 00:10:30,240

today's space flight is nasa astronaut

264
00:10:33,509 --> 00:10:32,399
and united states navy captain chris

265
00:10:38,790 --> 00:10:33,519
cassidy

266
00:10:41,110 --> 00:10:38,800
astronaut class and to date has two

267
00:10:44,069 --> 00:10:41,120
space flights and six spacewalks on his

268
00:10:46,310 --> 00:10:44,079
resume he's also a decorated navy seal

269
00:10:47,430 --> 00:10:46,320
and calls the city of york maine his

270
00:10:49,750 --> 00:10:47,440
home

271
00:10:51,910 --> 00:10:49,760
he was born in 1970 in salem

272
00:10:53,670 --> 00:10:51,920
massachusetts and later attended york

273
00:10:55,670 --> 00:10:53,680
high school in maine

274
00:10:57,750 --> 00:10:55,680
cassidy holds degrees from several

275
00:10:59,590 --> 00:10:57,760
institutions including a bachelor of

276
00:11:01,910 --> 00:10:59,600
science and mathematics from the united

277
00:11:03,750 --> 00:11:01,920
states naval academy and a master of

278
00:11:06,870 --> 00:11:03,760
science in ocean engineering from the

279
00:11:09,430 --> 00:11:06,880
massachusetts institute of technology

280
00:11:11,269 --> 00:11:09,440
cassidy served as a navy seal for 11

281
00:11:13,430 --> 00:11:11,279
years before being selected as an

282
00:11:15,670 --> 00:11:13,440
astronaut deploying for a total of four

283
00:11:18,230 --> 00:11:15,680
times to areas in afghanistan and the

284
00:11:19,990 --> 00:11:18,240
mediterranean and was awarded two bronze

285
00:11:22,870 --> 00:11:20,000
stars along with other military

286
00:11:25,670 --> 00:11:22,880
recognitions for his service he became a

287
00:11:27,670 --> 00:11:25,680
navy captain in 2014 and never one to

288
00:11:30,310 --> 00:11:27,680

back down from a challenge completed the

289
00:11:31,110 --> 00:11:30,320
ironman triathlon in hawaii that same

290
00:11:32,710 --> 00:11:31,120
year

291
00:11:35,670 --> 00:11:32,720
as an astronaut he made his first

292
00:11:37,509 --> 00:11:35,680
journey into space in july of 2009

293
00:11:39,509 --> 00:11:37,519
launching from cape canaveral florida

294
00:11:41,110 --> 00:11:39,519
aboard the shuttle endeavour

295
00:11:42,710 --> 00:11:41,120
while there he and the rest of the crew

296
00:11:45,110 --> 00:11:42,720
assembled the final parts of the

297
00:11:46,870 --> 00:11:45,120
japanese experiment module installed

298
00:11:48,949 --> 00:11:46,880
additional science experiments and

299
00:11:51,190 --> 00:11:48,959
safely delivered and stored away parts

300
00:11:53,269 --> 00:11:51,200
and batteries for future use on the

301
00:11:55,990 --> 00:11:53,279
international space station and this

302
00:11:59,030 --> 00:11:56,000
mission made cassidy the 500th person in

303
00:12:01,509 --> 00:11:59,040
history to fly into space cassidy flew

304
00:12:03,030 --> 00:12:01,519
for the second time in 2013 and it was

305
00:12:06,629 --> 00:12:03,040
his first launch from the baikonur

306
00:12:09,509 --> 00:12:06,639
cosmodrome he has logged 182 days in

307
00:12:11,670 --> 00:12:09,519
space and 31 hours and 14 minutes total

308
00:12:13,910 --> 00:12:11,680
spacewalking time over these two space

309
00:12:17,509 --> 00:12:13,920
flights back on earth he served as

310
00:12:19,430 --> 00:12:17,519
nasa's chief astronaut 2015-2017

311
00:12:21,110 --> 00:12:19,440
and was awarded the nasa exceptional

312
00:12:22,870 --> 00:12:21,120
achievement medal

313
00:12:24,629 --> 00:12:22,880

he will take over as the international

314
00:12:26,790 --> 00:12:24,639
space station commander next week when

315
00:12:28,550 --> 00:12:26,800
the current commander alex krapochka

316
00:12:32,949 --> 00:12:28,560
hands over the keys in the station's

317
00:12:36,629 --> 00:12:34,550
and he's obviously joined by two

318
00:12:39,110 --> 00:12:36,639
cosmonauts inside that soyuz spacecraft

319
00:12:41,030 --> 00:12:39,120
anatoly ivanishin annie von wagner let's

320
00:12:42,790 --> 00:12:41,040
take a moment to get to know them a

321
00:12:45,350 --> 00:12:42,800
little bit better as we are right now

322
00:12:48,550 --> 00:12:45,360
just about 52 minutes and 35 seconds

323
00:12:53,430 --> 00:12:50,629
seated in the capsule center seat is

324
00:12:56,629 --> 00:12:53,440
today's soyuz ms-16 commander and rose

325
00:12:59,030 --> 00:12:56,639
cosmos cosmonaut anatoly ivanishin

326
00:13:00,710 --> 00:12:59,040
ivanishin is a decorated retired russian

327
00:13:03,509 --> 00:13:00,720
air force colonel who was assigned to

328
00:13:06,949 --> 00:13:03,519
the cosmonaut corps in 2003 completing

329
00:13:10,230 --> 00:13:06,959
his training and examinations in 2005.

330
00:13:13,190 --> 00:13:10,240
he was born in 1969 in acoust russia

331
00:13:15,829 --> 00:13:13,200
located in siberia he would go on to

332
00:13:17,829 --> 00:13:15,839
graduate high school in 1986 and then

333
00:13:19,350 --> 00:13:17,839
air force pilot school in russia in

334
00:13:21,509 --> 00:13:19,360
1991.

335
00:13:24,470 --> 00:13:21,519
he holds several pilot licenses and

336
00:13:26,550 --> 00:13:24,480
logged a total of 550 hours of flying

337
00:13:28,150 --> 00:13:26,560
during his military career his flight

338
00:13:30,150 --> 00:13:28,160

aboard the soyuz today will mark the

339
00:13:32,310 --> 00:13:30,160
third space flight of his cosmonaut

340
00:13:34,949 --> 00:13:32,320
career he first traveled to space in

341
00:13:37,990 --> 00:13:34,959
november of 2011 as part of space

342
00:13:40,870 --> 00:13:38,000
station expeditions 29 and 30. he

343
00:13:43,030 --> 00:13:40,880
returned to the station in july of 2016

344
00:13:45,350 --> 00:13:43,040
serving in soyuz commander aboard the

345
00:13:47,590 --> 00:13:45,360
very first flight of the ms series soyuz

346
00:13:50,550 --> 00:13:47,600
spacecraft uc today

347
00:13:52,470 --> 00:13:50,560
to date anatoly ivanishin has 280 days

348
00:13:54,389 --> 00:13:52,480
of space flight under his belt and

349
00:13:56,790 --> 00:13:54,399
several space-related recognitions

350
00:13:59,189 --> 00:13:56,800
including the 50th anniversary of manned

351
00:14:01,350 --> 00:13:59,199
space flight medal the nasa space flight

352
00:14:03,189 --> 00:14:01,360
medal and the nasa distinguished public

353
00:14:05,110 --> 00:14:03,199
service medal

354
00:14:07,430 --> 00:14:05,120
seated to the left of ivanishin today

355
00:14:10,870 --> 00:14:07,440
and prepared for his first ever journey

356
00:14:12,629 --> 00:14:10,880
into space is cosmonaut yvonne wagner

357
00:14:15,590 --> 00:14:12,639
he was assigned to the cosmonaut corps

358
00:14:18,870 --> 00:14:15,600
in october of 2010 and was certified as

359
00:14:21,829 --> 00:14:18,880
a test cosmonaut by august 2012.

360
00:14:24,790 --> 00:14:21,839
wagner comes from a town called several

361
00:14:26,629 --> 00:14:24,800
located in the western region of russia

362
00:14:29,350 --> 00:14:26,639
he graduated from his hometown high

363
00:14:31,189 --> 00:14:29,360

school in 2002 and went on to baltic

364
00:14:33,269 --> 00:14:31,199
state technical university in st

365
00:14:36,069 --> 00:14:33,279
petersburg russia where he would earn a

366
00:14:38,069 --> 00:14:36,079
master of science in space rocketry he

367
00:14:40,230 --> 00:14:38,079
held several positions in the space

368
00:14:42,069 --> 00:14:40,240
industry before becoming a cosmonaut

369
00:14:44,230 --> 00:14:42,079
including working as an engineer on the

370
00:14:45,430 --> 00:14:44,240
flight control team in mission control

371
00:14:47,430 --> 00:14:45,440
moscow

372
00:14:49,430 --> 00:14:47,440
having spent the past few years as a

373
00:14:51,590 --> 00:14:49,440
trained backup crew member for various

374
00:14:53,750 --> 00:14:51,600
expeditions wagner is set to start

375
00:14:57,330 --> 00:14:53,760
logging his own total time and space in

376
00:15:03,910 --> 00:14:57,340
just a few hours

377
00:15:08,710 --> 00:15:06,389
and that music that you're now hearing

378
00:15:11,189 --> 00:15:08,720
is actively being pumped into the soyuz

379
00:15:13,829 --> 00:15:11,199
spacecraft it's common for uh the flight

380
00:15:15,910 --> 00:15:13,839
controllers to pump in some music

381
00:15:17,990 --> 00:15:15,920
to the crew while they're strapped in

382
00:15:19,430 --> 00:15:18,000
they've been on board the soyuz now for

383
00:15:20,870 --> 00:15:19,440
a couple hours

384
00:15:23,590 --> 00:15:20,880
and now we're going to take a look at

385
00:15:26,230 --> 00:15:23,600
what their path was like to get there

386
00:15:27,829 --> 00:15:26,240
the day's activities in baikonur began a

387
00:15:31,110 --> 00:15:27,839
couple of hours ago as the crew was

388
00:15:33,030 --> 00:15:31,120

awakened about 6 p.m central time on

389
00:15:34,949 --> 00:15:33,040
april 8th it was four in the morning

390
00:15:36,949 --> 00:15:34,959
over there in baikonur

391
00:15:38,230 --> 00:15:36,959
the prime crew in front the backup crew

392
00:15:40,069 --> 00:15:38,240
just behind them you can see chris

393
00:15:41,990 --> 00:15:40,079
cassidy there they walked out of the

394
00:15:43,430 --> 00:15:42,000
cosmonaut hotel

395
00:15:45,189 --> 00:15:43,440
before leaving they went through a

396
00:15:46,310 --> 00:15:45,199
time-honored tradition of signing some

397
00:15:48,069 --> 00:15:46,320
doors

398
00:15:49,829 --> 00:15:48,079
which is

399
00:15:51,350 --> 00:15:49,839
there are a lot of traditions in russian

400
00:15:53,430 --> 00:15:51,360
space flight that

401
00:15:54,870 --> 00:15:53,440
you'll hear about you'll see several of

402
00:15:55,990 --> 00:15:54,880
those today

403
00:15:57,350 --> 00:15:56,000
but the crew

404
00:16:00,310 --> 00:15:57,360
signed some doors and then they did the

405
00:16:01,509 --> 00:16:00,320
walk out usually a lot more crowds

406
00:16:03,910 --> 00:16:01,519
packed there

407
00:16:07,110 --> 00:16:03,920
but again just in light of the situation

408
00:16:08,790 --> 00:16:07,120
a few fewer people there to see them off

409
00:16:10,870 --> 00:16:08,800
on their way uh they departed the

410
00:16:14,230 --> 00:16:10,880
cosmonaut hotel and then ordered this

411
00:16:15,829 --> 00:16:14,240
bus for 40 minute ride from the uh town

412
00:16:18,389 --> 00:16:15,839
of baikonur out of the baikonur

413
00:16:20,550 --> 00:16:18,399

cosmodrome their destination was the

414
00:16:22,710 --> 00:16:20,560
integration and suit-up facility also

415
00:16:26,150 --> 00:16:22,720
called building 254

416
00:16:27,910 --> 00:16:26,160
on the cosmodrome grounds

417
00:16:28,870 --> 00:16:27,920
see a russian orthodox priest there on

418
00:16:30,550 --> 00:16:28,880
the left

419
00:16:31,590 --> 00:16:30,560
another tradition with these space

420
00:16:33,670 --> 00:16:31,600
flights he's

421
00:16:35,670 --> 00:16:33,680
there to bless the crews in the morning

422
00:16:37,590 --> 00:16:35,680
also blesses the rocket

423
00:16:39,590 --> 00:16:37,600
typically one or two days before the

424
00:16:41,620 --> 00:16:39,600
launch after it's been erected on the

425
00:17:02,949 --> 00:16:41,630
pad

426
00:17:07,110 --> 00:17:05,510
here we see them arriving at their

427
00:17:09,189 --> 00:17:07,120
destination their first destination of

428
00:17:11,750 --> 00:17:09,199
the day that's the integration and sudo

429
00:17:14,069 --> 00:17:11,760
facility also known as building 254 on

430
00:17:15,829 --> 00:17:14,079
the bike in our cosmodrome uh once they

431
00:17:18,150 --> 00:17:15,839
get there each of the crew member

432
00:17:19,510 --> 00:17:18,160
undergoes a final medical exam and then

433
00:17:21,750 --> 00:17:19,520
they get into their social launch and

434
00:17:23,750 --> 00:17:21,760
entry suits this is the suit you can see

435
00:17:25,590 --> 00:17:23,760
ivanishin getting in here

436
00:17:27,829 --> 00:17:25,600
these are suits that can be pressurized

437
00:17:31,830 --> 00:17:27,839
in the event of a loss of cabin pressure

438
00:17:34,470 --> 00:17:31,840

inside of the soyuz spacecraft providing

439
00:17:36,070 --> 00:17:34,480
breathing gases for the crew members

440
00:17:37,909 --> 00:17:36,080
they're assisted by a number of suit

441
00:17:39,830 --> 00:17:37,919
techs some of the more interesting parts

442
00:17:42,390 --> 00:17:39,840
like that blue knob on his front is how

443
00:17:45,190 --> 00:17:42,400
they can actually adjust the pressure

444
00:17:47,110 --> 00:17:45,200
inside of the suit itself

445
00:17:49,430 --> 00:17:47,120
each crew member also fitted with a com

446
00:17:51,830 --> 00:17:49,440
cap commonly referred to as the snoopy

447
00:17:54,789 --> 00:17:51,840
cap that has microphones and also

448
00:17:56,549 --> 00:17:54,799
earpieces inside for them to communicate

449
00:17:58,549 --> 00:17:56,559
with each other and also with the launch

450
00:18:00,870 --> 00:17:58,559
conductors down there at baikonur and

451
00:18:02,950 --> 00:18:00,880
then once in orbit with the flight

452
00:18:05,029 --> 00:18:02,960
controllers down on the ground

453
00:18:06,630 --> 00:18:05,039
uh ivanishin was suited up first and

454
00:18:08,710 --> 00:18:06,640
then he was joined by von wagner who

455
00:18:10,710 --> 00:18:08,720
again is making his first flight into

456
00:18:28,150 --> 00:18:10,720
space today and this is going to be

457
00:18:28,160 --> 00:18:59,270
um

458
00:19:03,190 --> 00:19:00,950
and last but not least they were joined

459
00:19:05,590 --> 00:19:03,200
by nasa's chris cassidy again getting

460
00:19:07,830 --> 00:19:05,600
into his soka launch and entry suit this

461
00:19:09,029 --> 00:19:07,840
all taking place in the suit up and

462
00:19:11,190 --> 00:19:09,039
integration

463
00:19:13,430 --> 00:19:11,200

building on the baikonur cosmodrome they

464
00:19:15,669 --> 00:19:13,440
undergo that final medical exam

465
00:19:17,190 --> 00:19:15,679
and then train suit technicians help

466
00:19:18,470 --> 00:19:17,200
them get into these circle suits they're

467
00:19:20,950 --> 00:19:18,480
going to wear these for all of the

468
00:19:23,029 --> 00:19:20,960
dynamic phases of flight

469
00:19:24,710 --> 00:19:23,039
and for these short trips to the

470
00:19:27,430 --> 00:19:24,720
international space station relatively

471
00:19:29,270 --> 00:19:27,440
short six hours instead of the two days

472
00:19:31,430 --> 00:19:29,280
that it was

473
00:19:33,029 --> 00:19:31,440
several years ago they'll stay in these

474
00:19:35,110 --> 00:19:33,039
suits pretty much the entire time

475
00:19:37,510 --> 00:19:35,120
eventually doffing or getting out of

476
00:19:39,510 --> 00:19:37,520
their suits after they dock to the space

477
00:19:46,470 --> 00:19:39,520
station and before they open up the

478
00:19:50,630 --> 00:19:48,950
then after the suit up they move into

479
00:19:52,549 --> 00:19:50,640
this next room

480
00:19:53,669 --> 00:19:52,559
which has a pane of glass this is

481
00:19:56,549 --> 00:19:53,679
typically

482
00:19:58,549 --> 00:19:56,559
where we would see crew members

483
00:20:00,870 --> 00:19:58,559
after going through a

484
00:20:02,230 --> 00:20:00,880
pressure check get a chance to

485
00:20:03,990 --> 00:20:02,240
speak with

486
00:20:07,110 --> 00:20:04,000
a friend's family that were able to

487
00:20:08,950 --> 00:20:07,120
travel to the launch site and also

488
00:20:10,630 --> 00:20:08,960

some personnel we do see some nasa

489
00:20:13,029 --> 00:20:10,640
personnel there is tricia mack and john

490
00:20:15,990 --> 00:20:13,039
mcbride trisha mack the head of

491
00:20:17,750 --> 00:20:16,000
the nasa office in moscow coordinating

492
00:20:20,789 --> 00:20:17,760
all of the activities

493
00:20:23,190 --> 00:20:20,799
for crews flying and returning in soyuz

494
00:20:25,029 --> 00:20:23,200
spacecraft john mcbride helping out with

495
00:20:29,190 --> 00:20:25,039
the astronaut office

496
00:20:33,750 --> 00:20:31,750
and those are two of really the main

497
00:20:35,350 --> 00:20:33,760
individuals that are there at the launch

498
00:20:37,029 --> 00:20:35,360
and typically you see a larger

499
00:20:39,750 --> 00:20:37,039
contingent family

500
00:20:41,270 --> 00:20:39,760
friends able to travel to baikonur not

501
00:20:43,190 --> 00:20:41,280
able to do it

502
00:20:46,390 --> 00:20:43,200
this time around with all of the travel

503
00:20:49,990 --> 00:20:48,549
but this room still serves a very

504
00:20:51,909 --> 00:20:50,000
important purpose this is where they

505
00:20:53,669 --> 00:20:51,919
actually go through a pressure check of

506
00:20:54,549 --> 00:20:53,679
the suit itself so you'll actually see

507
00:20:57,909 --> 00:20:54,559
it

508
00:21:00,630 --> 00:20:57,919
that's a

509
00:21:03,590 --> 00:21:00,640
mold essentially or a mock-up of the so

510
00:21:05,110 --> 00:21:03,600
you see itself and you can see venetian

511
00:21:06,789 --> 00:21:05,120
in there and his suit actually puffs up

512
00:21:09,750 --> 00:21:06,799
a little bit they're pressurizing it so

513
00:21:12,549 --> 00:21:09,760

they're feeding breathing gas typically

514
00:21:16,390 --> 00:21:12,559
by using a nitrox mixture

515
00:21:18,870 --> 00:21:16,400
so a similar composition of what we have

516
00:21:21,110 --> 00:21:18,880
in our atmosphere down here on earth

517
00:21:22,549 --> 00:21:21,120
getting fed into the suits and they it's

518
00:21:24,390 --> 00:21:22,559
able to provide pressure as well and

519
00:21:26,230 --> 00:21:24,400
again these suits worn for all of the

520
00:21:28,070 --> 00:21:26,240
dynamic phases

521
00:21:29,110 --> 00:21:28,080
of a flight so all of the launch and

522
00:21:31,029 --> 00:21:29,120
asset

523
00:21:33,350 --> 00:21:31,039
all of the rendezvous operations with

524
00:21:35,669 --> 00:21:33,360
the station and then they will be in

525
00:21:37,110 --> 00:21:35,679
these exact same suits when they make

526
00:21:39,990 --> 00:21:37,120
their way home at the end of their

527
00:21:41,830 --> 00:21:40,000
mission for a deorbit and landing

528
00:21:44,230 --> 00:21:41,840
one interesting note about the suits

529
00:21:46,149 --> 00:21:44,240
this is a mocker of the seats this is a

530
00:21:48,070 --> 00:21:46,159
mock-up of the seat each of the crew

531
00:21:50,310 --> 00:21:48,080
members on board the soyuz has a

532
00:21:52,230 --> 00:21:50,320
specially molded seat liner

533
00:21:54,310 --> 00:21:52,240
they actually sit in

534
00:21:56,710 --> 00:21:54,320
basically a gutted out version of what

535
00:21:59,430 --> 00:21:56,720
you can see wagner in right now

536
00:22:01,669 --> 00:21:59,440
and a plaster mold is poured all around

537
00:22:03,430 --> 00:22:01,679
them to conform to their body and they

538
00:22:05,110 --> 00:22:03,440

get a special seat liner that is then

539
00:22:06,710 --> 00:22:05,120
installed in the seat

540
00:22:09,669 --> 00:22:06,720
and that's why every single crew member

541
00:22:12,710 --> 00:22:09,679
also has a very they have assigned seats

542
00:22:15,430 --> 00:22:12,720
chris cassidy's in the right seat today

543
00:22:17,510 --> 00:22:15,440
the left seater also known as the board

544
00:22:19,350 --> 00:22:17,520
engineer in the soyuz spacecraft is

545
00:22:21,669 --> 00:22:19,360
essentially the backup for the center

546
00:22:24,070 --> 00:22:21,679
seat where the soyuz commander sits so

547
00:22:25,830 --> 00:22:24,080
use commander prime for

548
00:22:28,070 --> 00:22:25,840
all of the vehicles operations for

549
00:22:30,149 --> 00:22:28,080
manual control of the vehicle should

550
00:22:32,149 --> 00:22:30,159
they have to take over for

551
00:22:36,820 --> 00:22:32,159
the rendezvous docking

552
00:22:43,669 --> 00:22:36,830
or any of the other phases of the flight

553
00:22:47,750 --> 00:22:45,350
and again one by one the crew is going

554
00:22:49,750 --> 00:22:47,760
through getting a chance to do these

555
00:22:53,669 --> 00:22:49,760
pressure checks

556
00:22:55,510 --> 00:22:53,679
we won't be seeing again the

557
00:22:57,750 --> 00:22:55,520
interaction through the glass pretty

558
00:22:58,710 --> 00:22:57,760
much all of the media most of the crew

559
00:23:00,950 --> 00:22:58,720
family

560
00:23:03,830 --> 00:23:00,960
spouse's children and even a lot of the

561
00:23:06,710 --> 00:23:03,840
industry officials weren't uh permitted

562
00:23:09,029 --> 00:23:06,720
to travel to the launch zone for this

563
00:23:11,430 --> 00:23:09,039

not just again always keeping the health

564
00:23:16,789 --> 00:23:11,440
and safety of the crew paramount in all

565
00:23:21,190 --> 00:23:19,190
again those individuals in the room

566
00:23:23,029 --> 00:23:21,200
are required to

567
00:23:25,669 --> 00:23:23,039
either maintain the exact same

568
00:23:27,750 --> 00:23:25,679
quarantine as the crew or where a lot of

569
00:23:29,029 --> 00:23:27,760
the ppe the personal protective

570
00:23:30,789 --> 00:23:29,039
equipment

571
00:23:33,110 --> 00:23:30,799
in order to interact with them this is

572
00:23:34,870 --> 00:23:33,120
the standard procedure for every single

573
00:23:36,470 --> 00:23:34,880
space station crew

574
00:23:39,190 --> 00:23:36,480
launching to the international space

575
00:23:40,710 --> 00:23:39,200
station it's called health stabilization

576
00:24:08,870 --> 00:23:40,720
it's been around as long as we've been

577
00:24:08,880 --> 00:24:31,430
[Music]

578
00:24:34,549 --> 00:24:33,269
i wish you a successful

579
00:24:37,029 --> 00:24:34,559
launch

580
00:24:39,190 --> 00:24:37,039
and good luck

581
00:24:41,669 --> 00:24:39,200
you've done everything you could during

582
00:24:43,350 --> 00:24:41,679
your training

583
00:24:44,870 --> 00:24:43,360
everything's not been on board

584
00:24:53,990 --> 00:24:44,880
everything's nominal with the launch

585
00:24:54,000 --> 00:25:12,070
please don't break anything on board

586
00:25:12,080 --> 00:25:25,350
keeping you cool

587
00:25:29,190 --> 00:25:27,590
you worked so hard to get here and i

588
00:25:31,909 --> 00:25:29,200

hope everything goes absolutely

589
00:25:32,870 --> 00:25:31,919
perfectly enjoy every moment enjoy your

590
00:25:34,710 --> 00:25:32,880
new home

591
00:25:36,870 --> 00:25:34,720
station and know that we are all here on

592
00:25:38,710 --> 00:25:36,880
the ground supporting you and welcoming

593
00:25:51,669 --> 00:25:38,720
you home in october

594
00:25:51,679 --> 00:26:02,149
adjust your shoulder straps and lower

595
00:26:05,269 --> 00:26:03,750
and after those league checks i'm

596
00:26:08,390 --> 00:26:05,279
getting a chance to talk to a number of

597
00:26:11,750 --> 00:26:08,400
officials among them dimitri virgos

598
00:26:14,710 --> 00:26:11,760
sergey krikalov and nasa's trisha mack

599
00:26:16,310 --> 00:26:14,720
the crew is ready to walk out

600
00:26:18,549 --> 00:26:16,320
individuals gathered

601
00:26:20,470 --> 00:26:18,559
before the final walk down they

602
00:26:26,070 --> 00:26:20,480
come up and salute

603
00:26:32,070 --> 00:26:28,950
at the head of wisconsin

604
00:26:36,789 --> 00:26:34,710
to the head of the state commission

605
00:26:39,190 --> 00:26:36,799
the commander of the soyuz crew

606
00:26:42,149 --> 00:26:39,200
reporting we are ready

607
00:26:45,750 --> 00:26:43,830
again maintaining the tradition one

608
00:26:47,269 --> 00:26:45,760
final time declaring they're ready for

609
00:26:49,430 --> 00:26:47,279
launch and then they're

610
00:26:51,909 --> 00:26:49,440
on their way to the bus i'm waving a

611
00:27:26,470 --> 00:26:51,919
thumbs up there from chris cassidy and

612
00:27:26,480 --> 00:28:10,870
oh

613
00:28:14,070 --> 00:28:12,789

and then once the crew arrived at path

614
00:28:16,070 --> 00:28:14,080
31

615
00:28:18,870 --> 00:28:16,080
and officials from their respective

616
00:28:21,110 --> 00:28:18,880
space agencies able to lead them to the

617
00:28:23,110 --> 00:28:21,120
final steps before they make their way

618
00:28:25,990 --> 00:28:23,120
up to the elevator taking them to the

619
00:28:28,070 --> 00:28:26,000
top of the soyuz booster and about 160

620
00:28:30,149 --> 00:28:28,080
feet tall the soyuz spacecraft sitting

621
00:28:50,710 --> 00:28:30,159
on top inside of a protective launch

622
00:28:53,350 --> 00:28:51,909
and they were

623
00:28:54,789 --> 00:28:53,360
able to climb up those stairs wave

624
00:28:57,990 --> 00:28:54,799
goodbye to

625
00:28:59,669 --> 00:28:58,000
the final well wishers there at the pad

626
00:29:01,909 --> 00:28:59,679
right of the elevator up to the top of

627
00:29:03,430 --> 00:29:01,919
the soyuz to board the capsule and as of

628
00:29:06,710 --> 00:29:03,440
this moment they've been on board for

629
00:29:09,510 --> 00:29:06,720
about two hours

630
00:29:12,310 --> 00:29:09,520
in fact just before we came on the air

631
00:29:14,310 --> 00:29:12,320
at about 1 53 a.m they were getting

632
00:29:16,549 --> 00:29:14,320
ready to step through their league

633
00:29:18,470 --> 00:29:16,559
checks on their spacesuits

634
00:29:20,070 --> 00:29:18,480
they about five minutes later reported

635
00:29:21,990 --> 00:29:20,080
that they completed all the leak checks

636
00:29:23,430 --> 00:29:22,000
on the hatches of the soyuz spacecraft

637
00:29:25,190 --> 00:29:23,440
and the crew kicked off those leak

638
00:29:27,269 --> 00:29:25,200

checks closing their visors and

639
00:29:29,190 --> 00:29:27,279
pressurizing their suits and we'll be

640
00:29:30,230 --> 00:29:29,200
getting a couple of views inside the

641
00:29:32,070 --> 00:29:30,240
cabin

642
00:29:35,269 --> 00:29:32,080
throughout our coverage and the ride

643
00:29:37,190 --> 00:29:35,279
uphill this morning

644
00:29:38,789 --> 00:29:37,200
right now the crew last time we checked

645
00:29:40,470 --> 00:29:38,799
in have their visors back open but we'll

646
00:30:08,310 --> 00:29:40,480
see those get closed

647
00:30:12,950 --> 00:30:10,310
and as mentioned earlier the road to

648
00:30:16,070 --> 00:30:12,960
this launch has been anything but normal

649
00:30:18,389 --> 00:30:16,080
a little unusual and it began with uh

650
00:30:20,789 --> 00:30:18,399
our cosmonauts ivanishin and wagner who

651
00:30:22,470 --> 00:30:20,799
were previously the backup crew finding

652
00:30:24,630 --> 00:30:22,480
out that they were launching on this

653
00:30:26,789 --> 00:30:24,640
soyuz spacecraft and that occurred just

654
00:30:29,990 --> 00:30:26,799
a few weeks before the final training

655
00:30:32,630 --> 00:30:30,000
began or the final training exams began

656
00:30:37,909 --> 00:30:32,640
which ended up turning out to be pretty

657
00:30:43,510 --> 00:30:41,510
of course it was a surprise

658
00:30:47,750 --> 00:30:43,520
we thought that we would be flying in

659
00:30:50,230 --> 00:30:47,760
october 2020 but life happens

660
00:30:51,990 --> 00:30:50,240
and any backup crew is ready to become

661
00:30:54,389 --> 00:30:52,000
prime

662
00:30:56,389 --> 00:30:54,399
and sometimes it actually happened at

663
00:30:58,950 --> 00:30:56,399

baikonur

664
00:31:00,789 --> 00:30:58,960
but we were lucky we had some time for

665
00:31:05,820 --> 00:31:00,799
the news to actually

666
00:31:10,630 --> 00:31:08,470
[Music]

667
00:31:12,389 --> 00:31:10,640
and just like ivanishin mentioned they

668
00:31:14,789 --> 00:31:12,399
along with chris cassidy been training

669
00:31:16,870 --> 00:31:14,799
for this mission for a few years now and

670
00:31:19,350 --> 00:31:16,880
they were very prepared ready to fill in

671
00:31:20,870 --> 00:31:19,360
these roles even under the unusual

672
00:31:22,070 --> 00:31:20,880
circumstances

673
00:31:23,350 --> 00:31:22,080
there were

674
00:31:25,110 --> 00:31:23,360
some increased health and safety

675
00:31:27,509 --> 00:31:25,120
precautions that were put in place over

676
00:31:29,430 --> 00:31:27,519
the last several weeks again though

677
00:31:31,669 --> 00:31:29,440
thankfully we have a very robust health

678
00:31:33,269 --> 00:31:31,679
stabilization plan in place so not too

679
00:31:34,789 --> 00:31:33,279
much needed to change with the crew

680
00:31:37,029 --> 00:31:34,799
themselves

681
00:31:38,950 --> 00:31:37,039
but some of the traditional pre-launch

682
00:31:41,350 --> 00:31:38,960
activities had to be restructured

683
00:31:43,430 --> 00:31:41,360
shortened or even replaced all just to

684
00:31:51,830 --> 00:31:43,440
ensure that we had a very thorough

685
00:31:56,950 --> 00:31:54,630
well it's been interesting uh life for

686
00:31:58,870 --> 00:31:56,960
us in the pre-launch period is is always

687
00:32:00,149 --> 00:31:58,880
in quarantine so for me i knew i was

688
00:32:02,870 --> 00:32:00,159

going to be in quarantine these two

689
00:32:04,870 --> 00:32:02,880
weeks but what's really different is

690
00:32:07,669 --> 00:32:04,880
everybody else around us is in

691
00:32:10,310 --> 00:32:07,679
quarantine too just like the rest of the

692
00:32:12,789 --> 00:32:10,320
world and and to see the impacts on that

693
00:32:15,590 --> 00:32:12,799
in in terms of who from nasa can come

694
00:32:17,350 --> 00:32:15,600
over to support launch even which uh the

695
00:32:20,310 --> 00:32:17,360
russian operational support team will be

696
00:32:22,310 --> 00:32:20,320
much smaller my family and launch guests

697
00:32:24,549 --> 00:32:22,320
uh will not be able to come so it'll be

698
00:32:27,190 --> 00:32:24,559
a really really skeletal crew there in

699
00:32:37,080 --> 00:32:27,200
the baikonur cosmodrome uh which will be

700
00:33:15,110 --> 00:33:03,510
[Music]

701
00:33:26,610 --> 00:33:17,800
so

702
00:33:35,530 --> 00:33:31,909
[Music]

703
00:33:39,430 --> 00:33:35,540
look at you once in a day

704
00:33:41,470 --> 00:33:39,440
[Music]

705
00:33:59,510 --> 00:33:41,480
know

706
00:34:03,669 --> 00:34:01,509
[Music]

707
00:34:13,879 --> 00:34:03,679
something inside that you've got your

708
00:34:13,889 --> 00:34:17,829
[Music]

709
00:34:17,839 --> 00:34:32,829
she

710
00:34:32,839 --> 00:34:41,439
touch that one girl in life

711
00:34:41,449 --> 00:34:51,990
[Music]

712
00:34:55,510 --> 00:34:53,589
all right and we're back the launch pad

713
00:34:57,829 --> 00:34:55,520

now you can see the gantry arms

714
00:34:59,990 --> 00:34:57,839
beginning to pull back that service

715
00:35:00,950 --> 00:35:00,000
structure providing access to the rocket

716
00:35:02,870 --> 00:35:00,960
itself

717
00:35:05,190 --> 00:35:02,880
one of the final tasks down there at the

718
00:35:07,190 --> 00:35:05,200
pad before we're ready for launch

719
00:35:09,349 --> 00:35:07,200
uh the rocket that you're looking at

720
00:35:11,190 --> 00:35:09,359
right now went through all the standard

721
00:35:12,950 --> 00:35:11,200
preparations earlier this week the

722
00:35:15,109 --> 00:35:12,960
spacecraft itself was mated to the

723
00:35:16,390 --> 00:35:15,119
booster the three main stages were all

724
00:35:18,550 --> 00:35:16,400
joined together

725
00:35:21,109 --> 00:35:18,560
and then on monday the soyuz rocket

726
00:35:23,829 --> 00:35:21,119
began its trek to the launch pad where

727
00:35:26,950 --> 00:35:23,839
it was raised to its vertical position

728
00:35:28,870 --> 00:35:26,960
for final pre-launch preparations

729
00:35:30,950 --> 00:35:28,880
this is some video from again earlier

730
00:35:33,990 --> 00:35:30,960
this week on monday

731
00:35:36,470 --> 00:35:34,000
the soyuz going out business end first

732
00:35:39,430 --> 00:35:36,480
from the integration and mating facility

733
00:35:41,349 --> 00:35:39,440
and it's a much shorter path than

734
00:35:43,190 --> 00:35:41,359
uh you might have seen from previous

735
00:35:45,910 --> 00:35:43,200
launches that went from pad number one

736
00:35:48,710 --> 00:35:45,920
bugaran's start as we are again using

737
00:35:50,870 --> 00:35:48,720
pad 31 this time for the first time

738
00:35:53,030 --> 00:35:50,880

since a crew including astronaut gene

739
00:35:58,630 --> 00:35:53,040
kimbrough launched from it back in

740
00:36:03,910 --> 00:36:00,550
all this because we are on this new

741
00:36:06,550 --> 00:36:03,920
soyuz 2.18 booster it's a just an

742
00:36:08,230 --> 00:36:06,560
upgraded version of the soyuz rocket

743
00:36:09,910 --> 00:36:08,240
that's been used to

744
00:36:13,510 --> 00:36:09,920
carry crew members

745
00:36:15,750 --> 00:36:13,520
into space for over 50 years now

746
00:36:18,150 --> 00:36:15,760
the soyuz itself sits high above the

747
00:36:20,470 --> 00:36:18,160
three stages of that soyuz booster which

748
00:36:23,030 --> 00:36:20,480
uses kerosene

749
00:36:25,109 --> 00:36:23,040
of highly reformed or highly refined

750
00:36:27,829 --> 00:36:25,119
version of kerosene commonly referred to

751
00:36:30,550 --> 00:36:27,839
as rocket fuel and liquid oxygen as the

752
00:36:32,990 --> 00:36:30,560
propellant the first stage itself has

753
00:36:37,030 --> 00:36:33,000
four liquid engines

754
00:36:41,030 --> 00:36:39,109
now the first stage itself has four

755
00:36:43,670 --> 00:36:41,040
liquid engines that are strapped to the

756
00:36:45,750 --> 00:36:43,680
side of the core vehicle

757
00:36:48,550 --> 00:36:45,760
each one of those is going to burn for

758
00:36:51,510 --> 00:36:48,560
about one minute and 58 seconds before

759
00:36:55,589 --> 00:36:53,349
and then the core engine itself also

760
00:37:00,470 --> 00:36:55,599
serves as the second stage

761
00:37:05,109 --> 00:37:02,150
we'll see that core stage continue to

762
00:37:06,790 --> 00:37:05,119
burn until about four minutes 37 seconds

763
00:37:09,349 --> 00:37:06,800

into today's flight

764
00:37:11,190 --> 00:37:09,359
in the third stage has a single engine

765
00:37:13,190 --> 00:37:11,200
we'll see that ignite just before it

766
00:37:15,190 --> 00:37:13,200
separates from the second stage they do

767
00:37:16,710 --> 00:37:15,200
something called hot staging there's

768
00:37:19,750 --> 00:37:16,720
actually a lattice work structure

769
00:37:22,470 --> 00:37:19,760
between the second and third stages that

770
00:37:25,030 --> 00:37:22,480
allows the exhaust from the

771
00:37:26,950 --> 00:37:25,040
rocket itself to expel out as it's

772
00:37:29,190 --> 00:37:26,960
igniting still attached to the second

773
00:37:31,109 --> 00:37:29,200
stage the third stage will help push it

774
00:37:33,829 --> 00:37:31,119
away safely and then that will burn

775
00:37:35,910 --> 00:37:33,839
until eight minutes and 46 seconds into

776
00:37:37,829 --> 00:37:35,920
today's flight at that point the soyuz

777
00:37:40,150 --> 00:37:37,839
spacecraft will separate from the third

778
00:37:43,990 --> 00:37:40,160
stage and it will be in its preliminary

779
00:37:47,589 --> 00:37:46,069
and as mentioned at the start of our

780
00:37:49,349 --> 00:37:47,599
show we did say we were going to try and

781
00:37:51,990 --> 00:37:49,359
get to some of your questions so we can

782
00:37:53,910 --> 00:37:52,000
go through a couple of those right now

783
00:37:56,069 --> 00:37:53,920
again if you do have a question for

784
00:37:57,589 --> 00:37:56,079
today's launch docking

785
00:38:00,069 --> 00:37:57,599
or hatch opening coverage you can send

786
00:38:01,430 --> 00:38:00,079
it in on twitter using the hashtag ask

787
00:38:04,150 --> 00:38:01,440
nasa

788
00:38:06,550 --> 00:38:04,160

so first we'll start off with one from

789
00:38:08,710 --> 00:38:06,560
vishnu sarath who wanted to know at what

790
00:38:10,630 --> 00:38:08,720
time after the launch will the abort

791
00:38:13,109 --> 00:38:10,640
tower be ejected

792
00:38:16,230 --> 00:38:13,119
that launch escape tower is jettisoned

793
00:38:18,470 --> 00:38:16,240
at one minute 54 seconds into the flight

794
00:38:22,390 --> 00:38:18,480
but that is not the only piece of the

795
00:38:24,470 --> 00:38:22,400
launch escape system there are also

796
00:38:27,270 --> 00:38:24,480
solid rocket motors on the capsule

797
00:38:29,750 --> 00:38:27,280
fairing itself that can be used after

798
00:38:31,750 --> 00:38:29,760
the towers jettison to still pull the

799
00:38:35,510 --> 00:38:31,760
vehicle away in fact those were the ones

800
00:38:37,750 --> 00:38:35,520
that were used back on october 11 2018

801
00:38:41,030 --> 00:38:37,760
when the soyuz ms-10 spacecraft carrying

802
00:38:44,390 --> 00:38:41,040
nick hague and alexi ochenin

803
00:38:46,870 --> 00:38:44,400
encountered a launch escape and so

804
00:38:48,820 --> 00:38:46,880
again just to answer your one minute 54

805
00:38:50,230 --> 00:38:48,830
seconds

806
00:38:52,069 --> 00:38:50,240
[Music]

807
00:38:53,829 --> 00:38:52,079
uh our next one comes from psy who

808
00:38:56,390 --> 00:38:53,839
wanted to know if the station crew get

809
00:38:57,670 --> 00:38:56,400
to keep their phones on board the iss

810
00:38:59,510 --> 00:38:57,680
how they don't bring their phones with

811
00:39:02,470 --> 00:38:59,520
them your cell phone here on planet

812
00:39:04,710 --> 00:39:02,480
earth relies on ground station towers

813
00:39:06,710 --> 00:39:04,720

in order to communicate and

814
00:39:10,310 --> 00:39:06,720
they're a little too high up for those

815
00:39:13,430 --> 00:39:10,320
to work they do have

816
00:39:15,190 --> 00:39:13,440
basically a voice over ip phone so a

817
00:39:17,109 --> 00:39:15,200
phone that uses data

818
00:39:19,589 --> 00:39:17,119
using the data streams that also send

819
00:39:21,030 --> 00:39:19,599
telemetry data video everything from the

820
00:39:23,030 --> 00:39:21,040
international space station and they're

821
00:39:24,310 --> 00:39:23,040
able to call people here on earth it

822
00:39:26,790 --> 00:39:24,320
actually

823
00:39:28,550 --> 00:39:26,800
works just like voice over ip

824
00:39:30,470 --> 00:39:28,560
and they can just dial cell phone

825
00:39:37,510 --> 00:39:30,480
numbers here on earth and they can call

826
00:39:41,750 --> 00:39:39,109
and so we'll just do those two for now

827
00:39:44,150 --> 00:39:41,760
and we will get to a little bit more

828
00:39:46,950 --> 00:39:44,160
a little bit later

829
00:39:48,790 --> 00:39:46,960
in today's launch

830
00:39:51,030 --> 00:39:48,800
for now though let's keep on going

831
00:39:53,670 --> 00:39:51,040
through let's take a look at the soyuz

832
00:39:56,230 --> 00:39:53,680
spacecraft which uh it's still encased

833
00:39:58,230 --> 00:39:56,240
in that shroud we'll see it in space a

834
00:40:00,150 --> 00:39:58,240
little bit later when it arrives at the

835
00:40:01,910 --> 00:40:00,160
international space station

836
00:40:04,390 --> 00:40:01,920
but going through some quick facts the

837
00:40:05,870 --> 00:40:04,400
soyuz 23 and a half feet long weighing

838
00:40:08,790 --> 00:40:05,880

in at 15

839
00:40:11,349 --> 00:40:08,800
650 pounds and is comprised of three

840
00:40:13,589 --> 00:40:11,359
different modules the one right in the

841
00:40:15,349 --> 00:40:13,599
middle that's the descent module and

842
00:40:17,109 --> 00:40:15,359
that contains all the customized seats

843
00:40:19,510 --> 00:40:17,119
for the crew all the controls and

844
00:40:20,390 --> 00:40:19,520
displays necessary for the flight should

845
00:40:25,829 --> 00:40:20,400
the

846
00:40:28,309 --> 00:40:25,839
insight into all of its systems

847
00:40:30,309 --> 00:40:28,319
both on the spacecraft and the rocket

848
00:40:32,150 --> 00:40:30,319
also has all of the life support systems

849
00:40:34,309 --> 00:40:32,160
batteries for re-entry and landing and

850
00:40:36,390 --> 00:40:34,319
the parachutes and the soft landing

851
00:40:38,790 --> 00:40:36,400
rocket engines that are used to slowly

852
00:40:41,030 --> 00:40:38,800
slow the soyuz just before touchdown

853
00:40:42,430 --> 00:40:41,040
when they land in kazakhstan the descent

854
00:40:46,230 --> 00:40:42,440
module weighs

855
00:40:47,750 --> 00:40:46,240
6393 pounds and can carry about 110

856
00:40:49,910 --> 00:40:47,760
pounds of payload

857
00:40:51,829 --> 00:40:49,920
that can be returned back down to earth

858
00:40:53,829 --> 00:40:51,839
with the module usually bringing down

859
00:40:56,390 --> 00:40:53,839
some cold samples blood samples things

860
00:40:58,550 --> 00:40:56,400
like that with the crew when they return

861
00:41:00,870 --> 00:40:58,560
and that is most importantly the only

862
00:41:03,670 --> 00:41:00,880
portion of the soyuz that has a heat

863
00:41:06,470 --> 00:41:03,680

shield so it's able to survive the fiery

864
00:41:09,109 --> 00:41:06,480
reentry through earth's atmosphere the

865
00:41:11,030 --> 00:41:09,119
orbital modules up on top that connects

866
00:41:12,950 --> 00:41:11,040
to the descent module via pressurized

867
00:41:14,950 --> 00:41:12,960
hatch there's a hatchway between it and

868
00:41:17,270 --> 00:41:14,960
the descent module that the crew can get

869
00:41:19,030 --> 00:41:17,280
through it has a small amount of room

870
00:41:20,710 --> 00:41:19,040
inside that they can move around during

871
00:41:22,470 --> 00:41:20,720
the flight to station

872
00:41:24,230 --> 00:41:22,480
on the very top it has that docking

873
00:41:26,230 --> 00:41:24,240
mechanism the hatch and also the

874
00:41:28,550 --> 00:41:26,240
rendezvous antennas located at the very

875
00:41:30,150 --> 00:41:28,560
front end there's also a forward-looking

876
00:41:32,390 --> 00:41:30,160
window they're able to look out and they

877
00:41:34,150 --> 00:41:32,400
can take manual measurements as their on

878
00:41:36,309 --> 00:41:34,160
final approach to the international

879
00:41:38,069 --> 00:41:36,319
space station they can use a laser

880
00:41:39,910 --> 00:41:38,079
rangefinder in the event that they have

881
00:41:41,670 --> 00:41:39,920
any issues with their automated

882
00:41:43,109 --> 00:41:41,680
rendezvous system

883
00:41:45,190 --> 00:41:43,119
then on the bottom there is the

884
00:41:47,349 --> 00:41:45,200
propulsion of the instrumentation module

885
00:41:49,190 --> 00:41:47,359
that has all of the oxygen storage tanks

886
00:41:51,589 --> 00:41:49,200
the main engine the attitude control

887
00:41:54,309 --> 00:41:51,599
thrusters avionics and communications

888
00:41:56,550 --> 00:41:54,319

and control equipment

889
00:41:58,470 --> 00:41:56,560
the propulsion portion of the module

890
00:42:00,390 --> 00:41:58,480
handles all the orbital maneuvers so it

891
00:42:02,710 --> 00:42:00,400
has those engines that are needed for

892
00:42:04,790 --> 00:42:02,720
the rendezvous with the space station

893
00:42:07,030 --> 00:42:04,800
also the deorbit burn at the end of the

894
00:42:09,030 --> 00:42:07,040
spacecraft's mission

895
00:42:11,190 --> 00:42:09,040
and then before they are deployed there

896
00:42:13,910 --> 00:42:11,200
are two solar arrays which give the

897
00:42:15,670 --> 00:42:13,920
soyuz a wingspan of about 35 feet right

898
00:42:17,750 --> 00:42:15,680
now they're folded against the body of

899
00:42:21,510 --> 00:42:17,760
the propulsion module once they get into

900
00:42:23,589 --> 00:42:21,520
space i will see them unfurl

901
00:42:25,750 --> 00:42:23,599
and start providing electrical power to

902
00:42:27,990 --> 00:42:25,760
the station's systems

903
00:42:30,470 --> 00:42:28,000
the both the

904
00:42:31,910 --> 00:42:30,480
propulsion module and the orbital module

905
00:42:33,990 --> 00:42:31,920
actually separate from the descent

906
00:42:35,670 --> 00:42:34,000
module after the deorbit burn at the end

907
00:42:37,190 --> 00:42:35,680
of a mission and they burn up in the

908
00:42:39,750 --> 00:42:37,200
earth's atmosphere

909
00:42:41,589 --> 00:42:39,760
the entire spacecraft serving not only

910
00:42:43,750 --> 00:42:41,599
is the transport vehicle to and from the

911
00:42:45,430 --> 00:42:43,760
station but it actually acts as their

912
00:42:47,270 --> 00:42:45,440
emergency return vehicle so they're

913
00:42:48,390 --> 00:42:47,280

lifeboat essentially

914
00:42:50,550 --> 00:42:48,400
should the crew need to leave the

915
00:42:52,309 --> 00:42:50,560
station unexpectedly for every crew

916
00:42:54,950 --> 00:42:52,319
member on board you always have a seat

917
00:42:59,670 --> 00:42:54,960
in a spacecraft for them uh docked to

918
00:43:03,990 --> 00:43:01,750
just checking in we are 22 minutes 20

919
00:43:05,990 --> 00:43:04,000
seconds and counting to today's launch

920
00:43:08,630 --> 00:43:06,000
the crew at this point again had already

921
00:43:10,630 --> 00:43:08,640
conducted their suit leak checks

922
00:43:13,430 --> 00:43:10,640
they're just standing by now at this

923
00:43:14,950 --> 00:43:13,440
point until we get to that launch point

924
00:43:17,349 --> 00:43:14,960
uh the crew going through all those

925
00:43:19,430 --> 00:43:17,359
pre-launch procedures inside the capsule

926
00:43:20,950 --> 00:43:19,440
we're still continuing on

927
00:43:23,589 --> 00:43:20,960
uh with this

928
00:43:25,910 --> 00:43:23,599
countdown for today um once they leave

929
00:43:27,910 --> 00:43:25,920
the earth's atmosphere a little bit

930
00:43:30,710 --> 00:43:27,920
later this morning this is going to be

931
00:43:32,150 --> 00:43:30,720
the third trip into space for nasa's

932
00:43:34,309 --> 00:43:32,160
chris cassidy

933
00:43:36,710 --> 00:43:34,319
and before heading back into orbit he

934
00:43:38,390 --> 00:43:36,720
spent a moment just sharing with us

935
00:43:41,670 --> 00:43:38,400
the special perspective that he's been

936
00:43:43,430 --> 00:43:41,680
able to gain about the

937
00:43:46,230 --> 00:43:43,440
international space station the place

938
00:43:54,000 --> 00:43:46,240

that he's very soon going to be calling

939
00:43:54,010 --> 00:44:01,670
[Music]

940
00:44:05,030 --> 00:44:03,349
the space station is much bigger than

941
00:44:06,630 --> 00:44:05,040
people think you know when you tell

942
00:44:09,990 --> 00:44:06,640
people i'm gonna go live in space

943
00:44:12,150 --> 00:44:10,000
they're picturing this tiny thing where

944
00:44:13,990 --> 00:44:12,160
you've got to turn your shoulders excuse

945
00:44:16,710 --> 00:44:14,000
me excuse me to to pass each other in

946
00:44:19,030 --> 00:44:16,720
the hallway like a cramped submarine

947
00:44:20,710 --> 00:44:19,040
but it's big

948
00:44:23,910 --> 00:44:20,720
and you can spend

949
00:44:27,589 --> 00:44:23,920
a whole day and never see a crewmate

950
00:44:32,150 --> 00:44:29,270
the other thing people

951
00:44:34,309 --> 00:44:32,160
don't realize it's a machine just like

952
00:44:36,790 --> 00:44:34,319
your car or your house

953
00:44:38,710 --> 00:44:36,800
or your air conditioner it's gonna break

954
00:44:41,030 --> 00:44:38,720
and stuff does it's just the nature of

955
00:44:43,109 --> 00:44:41,040
machinery because people sometimes what

956
00:44:44,870 --> 00:44:43,119
it broke what do you mean nasa has a

957
00:44:47,190 --> 00:44:44,880
thing that's broken in space well yeah

958
00:44:48,630 --> 00:44:47,200
it's it's a machine it's gonna break and

959
00:44:50,630 --> 00:44:48,640
that's what we need to do is keep it

960
00:44:52,230 --> 00:44:50,640
running

961
00:44:54,470 --> 00:44:52,240
at the end of the day

962
00:44:56,550 --> 00:44:54,480
there's several things in a mission that

963
00:44:59,430 --> 00:44:56,560

requires a person to turn a wrench and

964
00:45:02,550 --> 00:45:01,109
on my first mission i was a shuttle crew

965
00:45:04,870 --> 00:45:02,560
member and we're helping construct the

966
00:45:06,790 --> 00:45:04,880
space station my second mission as a

967
00:45:09,109 --> 00:45:06,800
space station crew member we were just

968
00:45:12,309 --> 00:45:09,119
kind of getting up on step on really

969
00:45:14,309 --> 00:45:12,319
pushing the science systems of the space

970
00:45:16,790 --> 00:45:14,319
station and getting the most out of all

971
00:45:19,270 --> 00:45:16,800
of the assets that the space station has

972
00:45:22,550 --> 00:45:19,280
to give for science and research now i

973
00:45:24,790 --> 00:45:22,560
think we are just humming along with the

974
00:45:26,550 --> 00:45:24,800
science and and research the greater

975
00:45:28,470 --> 00:45:26,560
community and and particularly the

976
00:45:30,390 --> 00:45:28,480
specialists in building 30 and mission

977
00:45:32,309 --> 00:45:30,400
control really know how to run the space

978
00:45:34,790 --> 00:45:32,319
station and keep it going well so that

979
00:45:38,160 --> 00:45:34,800
we can devote tons of astronaut hours to

980
00:45:47,990 --> 00:45:46,069
[Music]

981
00:45:50,630 --> 00:45:48,000
that anniversary is kind of

982
00:45:52,710 --> 00:45:50,640
special to me in the sense that bill

983
00:45:53,990 --> 00:45:52,720
shepard was the commander of expedition

984
00:45:55,430 --> 00:45:54,000
one

985
00:45:56,950 --> 00:45:55,440
united states

986
00:45:58,470 --> 00:45:56,960
navy seal

987
00:46:00,550 --> 00:45:58,480
and i will be the commander of

988
00:46:01,990 --> 00:46:00,560

expedition 63

989
00:46:04,470 --> 00:46:02,000
20 years later

990
00:46:06,230 --> 00:46:04,480
the united states navy seal so

991
00:46:08,950 --> 00:46:06,240
there's been three of us

992
00:46:11,589 --> 00:46:08,960
shep myself and now johnny kim who have

993
00:46:13,030 --> 00:46:11,599
come from the seal community to to be

994
00:46:14,550 --> 00:46:13,040
astronauts and

995
00:46:16,550 --> 00:46:14,560
i think it's really

996
00:46:18,470 --> 00:46:16,560
pretty cool that there's

997
00:46:20,630 --> 00:46:18,480
the book ends of of the 20 years of

998
00:46:21,910 --> 00:46:20,640
station will be commanded by chef and

999
00:46:23,750 --> 00:46:21,920
myself

1000
00:46:26,230 --> 00:46:23,760
what am i looking forward to

1001
00:46:29,670 --> 00:46:26,240
most on this mission this is my third

1002
00:46:31,349 --> 00:46:29,680
one and i am going into it with the

1003
00:46:33,030 --> 00:46:31,359
mindset of i'm going to cherish every

1004
00:46:35,349 --> 00:46:33,040
single day that i'm there

1005
00:46:37,270 --> 00:46:35,359
because it might be the last days that i

1006
00:46:39,670 --> 00:46:37,280
get to look out the cupola window and

1007
00:46:40,710 --> 00:46:39,680
see earth so i'm really looking forward

1008
00:46:43,270 --> 00:46:40,720
to

1009
00:46:45,589 --> 00:46:43,280
appreciating every one of those days

1010
00:46:48,150 --> 00:46:45,599
i'll be happy to get back to earth to be

1011
00:46:50,309 --> 00:46:48,160
with my family but i'm really looking

1012
00:46:54,309 --> 00:46:50,319
forward to valuing each of those days on

1013
00:47:15,589 --> 00:46:56,309

i'm astronaut chris cassidy thanks for

1014
00:47:20,230 --> 00:47:17,190
back now with the live view of that

1015
00:47:21,589 --> 00:47:20,240
soyuz rocket just reiterating that final

1016
00:47:23,990 --> 00:47:21,599
scene you saw there if you want to

1017
00:47:25,349 --> 00:47:24,000
follow chris in his mission see spending

1018
00:47:26,950 --> 00:47:25,359
about six months on board the

1019
00:47:29,109 --> 00:47:26,960
international space station get an

1020
00:47:31,750 --> 00:47:29,119
inside look at what it's like to live

1021
00:47:36,309 --> 00:47:31,760
work in space follow him on instagram

1022
00:47:41,430 --> 00:47:38,870
but just with a quick check in we are 17

1023
00:47:43,589 --> 00:47:41,440
minutes 40 seconds away from today's

1024
00:47:45,190 --> 00:47:43,599
launch let's take a couple more minutes

1025
00:47:47,190 --> 00:47:45,200
now and answer a few more of your ask

1026
00:47:50,069 --> 00:47:47,200
nasa questions again if you have any use

1027
00:47:51,910 --> 00:47:50,079
the hashtag ask nasa send them in and we

1028
00:47:54,069 --> 00:47:51,920
will go through them first off we have

1029
00:47:56,069 --> 00:47:54,079
one from andrew borger who

1030
00:47:57,430 --> 00:47:56,079
asked a question about the training that

1031
00:47:59,190 --> 00:47:57,440
they've gone through how long have they

1032
00:48:01,349 --> 00:47:59,200
been waiting for this day

1033
00:48:03,109 --> 00:48:01,359
and also how much thrust has this rocket

1034
00:48:04,549 --> 00:48:03,119
let out

1035
00:48:07,349 --> 00:48:04,559
crews for the space station typically

1036
00:48:09,510 --> 00:48:07,359
train for about two years and that's to

1037
00:48:10,790 --> 00:48:09,520
get familiarization on

1038
00:48:12,150 --> 00:48:10,800

all of the systems on board the

1039
00:48:13,510 --> 00:48:12,160
international space station that they'll

1040
00:48:14,630 --> 00:48:13,520
be interacting with whether they're

1041
00:48:16,710 --> 00:48:14,640
fixing it

1042
00:48:18,390 --> 00:48:16,720
working on experiments if they're doing

1043
00:48:20,390 --> 00:48:18,400
space walks there's just a lot of

1044
00:48:22,549 --> 00:48:20,400
knowledge to try and gather

1045
00:48:23,510 --> 00:48:22,559
and train and it takes about two years

1046
00:48:25,670 --> 00:48:23,520
to do that

1047
00:48:27,910 --> 00:48:25,680
they're also going through spacecraft

1048
00:48:30,230 --> 00:48:27,920
specific training so this crew

1049
00:48:31,910 --> 00:48:30,240
had to train on the soyuz spacecraft

1050
00:48:33,990 --> 00:48:31,920
systems be able to respond in the event

1051
00:48:35,750 --> 00:48:34,000
of an emergency be able to fly the

1052
00:48:37,990 --> 00:48:35,760
vehicle if you're the soyuz commander or

1053
00:48:39,589 --> 00:48:38,000
the backup and they actually do final

1054
00:48:41,990 --> 00:48:39,599
exams it's almost like going back to

1055
00:48:44,390 --> 00:48:42,000
college for a lot of these crew members

1056
00:48:45,910 --> 00:48:44,400
so about two years of training and then

1057
00:48:48,150 --> 00:48:45,920
how much thrust does the rocket let out

1058
00:48:54,680 --> 00:48:48,160
the first stage of the soyuz spacecraft

1059
00:48:59,030 --> 00:48:57,030
[Music]

1060
00:49:01,190 --> 00:48:59,040
and then our next one comes from robert

1061
00:49:02,790 --> 00:49:01,200
guzman who asked when the astronauts

1062
00:49:05,270 --> 00:49:02,800
come back to earth is their immune

1063
00:49:06,630 --> 00:49:05,280

system weakened by their stay in space

1064
00:49:07,910 --> 00:49:06,640
it's a really interesting question and

1065
00:49:09,990 --> 00:49:07,920
that's something that we actually have a

1066
00:49:11,750 --> 00:49:10,000
lot of different research studies taking

1067
00:49:14,870 --> 00:49:11,760
place

1068
00:49:16,790 --> 00:49:14,880
the human body adapts extremely quickly

1069
00:49:19,190 --> 00:49:16,800
to new environments it's both a blessing

1070
00:49:21,190 --> 00:49:19,200
and a curse with stuff like space flight

1071
00:49:23,510 --> 00:49:21,200
it starts to affect a lot of things like

1072
00:49:25,030 --> 00:49:23,520
bones muscles and even immune systems in

1073
00:49:26,150 --> 00:49:25,040
these astronauts

1074
00:49:28,230 --> 00:49:26,160
they've

1075
00:49:29,829 --> 00:49:28,240
seen that it can actually affect your

1076
00:49:31,910 --> 00:49:29,839
immune system it can even weaken your

1077
00:49:33,510 --> 00:49:31,920
immune system a little bit

1078
00:49:35,750 --> 00:49:33,520
and that's just one of the the many

1079
00:49:38,150 --> 00:49:35,760
things that we have to really understand

1080
00:49:41,030 --> 00:49:38,160
as we look to not only send humans

1081
00:49:43,030 --> 00:49:41,040
further than we've ever gone before

1082
00:49:46,790 --> 00:49:43,040
going forward to the moon eventually on

1083
00:49:48,790 --> 00:49:46,800
to mars just to keep people safe

1084
00:49:50,549 --> 00:49:48,800
when they're in space but also very

1085
00:49:52,309 --> 00:49:50,559
importantly when they come home

1086
00:49:53,750 --> 00:49:52,319
we've also found that a lot of stuff

1087
00:49:55,109 --> 00:49:53,760
that happens to your body when you're on

1088
00:49:57,349 --> 00:49:55,119

the space station

1089
00:49:59,750 --> 00:49:57,359
has a lot of parallels for

1090
00:50:01,670 --> 00:49:59,760
ailments here on earth

1091
00:50:03,109 --> 00:50:01,680
a lot of things that happen to your body

1092
00:50:05,190 --> 00:50:03,119
like bone

1093
00:50:06,549 --> 00:50:05,200
wasting and muscle loss and things of

1094
00:50:08,630 --> 00:50:06,559
that nature

1095
00:50:10,309 --> 00:50:08,640
mimic a lot of the effects of aging

1096
00:50:13,349 --> 00:50:10,319
and so we're able to use these

1097
00:50:15,190 --> 00:50:13,359
astronauts and while we're

1098
00:50:17,190 --> 00:50:15,200
trying to really understand what happens

1099
00:50:19,990 --> 00:50:17,200
to them while they're in outer space and

1100
00:50:21,670 --> 00:50:20,000
how to best take care of them

1101
00:50:23,190 --> 00:50:21,680
a lot of those lessons can actually

1102
00:50:26,870 --> 00:50:23,200
translate to making life better for

1103
00:50:28,069 --> 00:50:26,880
humans back down here on the ground

1104
00:50:29,750 --> 00:50:28,079
we're gonna keep moving on but again

1105
00:50:31,430 --> 00:50:29,760
keep sending those questions in we'll be

1106
00:50:33,109 --> 00:50:31,440
doing a whole bunch later today when we

1107
00:50:38,230 --> 00:50:33,119
get to the docking show so just keep

1108
00:50:41,190 --> 00:50:39,430
and we've talked about it a couple of

1109
00:50:43,270 --> 00:50:41,200
times here today space flight it's all

1110
00:50:46,390 --> 00:50:43,280
about traditions and in keeping with

1111
00:50:48,790 --> 00:50:46,400
that uh every single expedition mission

1112
00:50:50,630 --> 00:50:48,800
just like every nasa program every crew

1113
00:50:53,270 --> 00:50:50,640

has given their very own patch with

1114
00:50:55,510 --> 00:50:53,280
unique design that helps to commemorate

1115
00:50:58,230 --> 00:50:55,520
their mission and their crew members

1116
00:50:59,670 --> 00:50:58,240
and this is a look at the expedition 63

1117
00:51:01,510 --> 00:50:59,680
patch it's

1118
00:51:03,910 --> 00:51:01,520
definitely one of my personal favorites

1119
00:51:05,589 --> 00:51:03,920
it's a very cool interesting looking one

1120
00:51:07,349 --> 00:51:05,599
it's an intersection of both the past

1121
00:51:10,470 --> 00:51:07,359
the beginning of a new dawn in human

1122
00:51:12,950 --> 00:51:10,480
spaceflight as we not only continue to

1123
00:51:14,950 --> 00:51:12,960
stay on board the station we're about to

1124
00:51:17,510 --> 00:51:14,960
commemorate 20 years

1125
00:51:19,910 --> 00:51:17,520
of continuous flight but also look at

1126
00:51:21,510 --> 00:51:19,920
putting humans once more on the moon and

1127
00:51:23,270 --> 00:51:21,520
then getting ready

1128
00:51:25,990 --> 00:51:23,280
to not soon

1129
00:51:27,910 --> 00:51:26,000
not too far after head on to mars

1130
00:51:30,069 --> 00:51:27,920
13 of the stars in the patch along the

1131
00:51:32,230 --> 00:51:30,079
top commemorate the apollo 13th which is

1132
00:51:34,870 --> 00:51:32,240
celebrating its 50th anniversary during

1133
00:51:36,309 --> 00:51:34,880
expedition 63 and then that swoosh

1134
00:51:38,390 --> 00:51:36,319
orbiting around the earth and the moon

1135
00:51:39,910 --> 00:51:38,400
honors the apollo program in future

1136
00:51:42,630 --> 00:51:39,920
emissions that will go

1137
00:51:44,630 --> 00:51:42,640
beyond low earth orbit once again

1138
00:51:47,190 --> 00:51:44,640

then the atom is the cruise call sign

1139
00:51:49,829 --> 00:51:47,200
symbolizing the energy to resolve orbit

1140
00:51:52,710 --> 00:51:49,839
around a nucleus or in their case planet

1141
00:51:55,589 --> 00:51:53,910
and another tradition that the

1142
00:51:57,430 --> 00:51:55,599
astronauts and cosmonauts like to take

1143
00:51:59,670 --> 00:51:57,440
part in is selecting what's known as a

1144
00:52:01,190 --> 00:51:59,680
zero-g indicator to hang above them in

1145
00:52:03,430 --> 00:52:01,200
the ceiling of the capsule so we'll see

1146
00:52:05,349 --> 00:52:03,440
this floating just above the center seat

1147
00:52:07,510 --> 00:52:05,359
for anatoly venetian

1148
00:52:10,549 --> 00:52:07,520
sometimes each crew member has their own

1149
00:52:11,829 --> 00:52:10,559
for this one in particular

1150
00:52:13,829 --> 00:52:11,839
the

1151
00:52:16,230 --> 00:52:13,839
anatoly ivanishin is taking what he's

1152
00:52:18,230 --> 00:52:16,240
just calling space bear it's a toy

1153
00:52:19,990 --> 00:52:18,240
that will become very symbolic for him

1154
00:52:22,630 --> 00:52:20,000
and is going to be a significant gift

1155
00:52:24,309 --> 00:52:22,640
for his future grandchildren one day so

1156
00:52:26,630 --> 00:52:24,319
that'll be hanging inside the soyuz

1157
00:52:28,230 --> 00:52:26,640
capsule when we get those in cabin views

1158
00:52:30,069 --> 00:52:28,240
and uh it's

1159
00:52:32,230 --> 00:52:30,079
called a zero g indicator we literally

1160
00:52:33,750 --> 00:52:32,240
use that just to see when you start to

1161
00:52:34,710 --> 00:52:33,760
see that float

1162
00:52:36,470 --> 00:52:34,720
and that

1163
00:52:38,549 --> 00:52:36,480

happens right after they separate from

1164
00:52:40,950 --> 00:52:38,559
that third stage you'll see the crew

1165
00:52:42,549 --> 00:52:40,960
exposed to microgravity that'll be one

1166
00:52:44,390 --> 00:52:42,559
of your best indications because the

1167
00:52:46,390 --> 00:52:44,400
crew themselves obviously strapped into

1168
00:52:51,109 --> 00:52:46,400
those seats i won't be floating around

1169
00:52:55,270 --> 00:52:52,870
but another system check-in we're not

1170
00:52:57,829 --> 00:52:55,280
tracking any issues with the vehicle

1171
00:53:04,090 --> 00:52:57,839
right now we're 12 minutes 25 seconds

1172
00:53:42,990 --> 00:53:39,290
[Music]

1173
00:53:45,310 --> 00:53:43,000
hey

1174
00:53:48,870 --> 00:53:45,320
[Applause]

1175
00:53:50,950 --> 00:53:48,880
[Music]

1176
00:53:52,630 --> 00:53:50,960
all right so we are getting closer here

1177
00:53:54,390 --> 00:53:52,640
eleven and a half minutes away from

1178
00:53:56,390 --> 00:53:54,400
launch right now

1179
00:53:58,790 --> 00:53:56,400
all told it'll be just under a nine

1180
00:54:01,910 --> 00:53:58,800
minute ride to orbit for the crew today

1181
00:54:05,190 --> 00:54:01,920
they're going to be launching at 305 a.m

1182
00:54:06,549 --> 00:54:05,200
central time 405 a.m eastern

1183
00:54:08,870 --> 00:54:06,559
we'll be looking for a number of

1184
00:54:10,710 --> 00:54:08,880
milestones on the ride uphill one of the

1185
00:54:12,790 --> 00:54:10,720
first major ones is going to be the

1186
00:54:15,109 --> 00:54:12,800
launch escape system jettison that comes

1187
00:54:16,069 --> 00:54:15,119
about one minute 54 seconds into the

1188
00:54:17,670 --> 00:54:16,079

flight

1189
00:54:19,990 --> 00:54:17,680
the first stage will cut off and

1190
00:54:23,030 --> 00:54:20,000
separate those four strap on liquid fuel

1191
00:54:24,470 --> 00:54:23,040
boosters at one minute 58 seconds

1192
00:54:27,910 --> 00:54:24,480
after that's done successfully the

1193
00:54:29,750 --> 00:54:27,920
launch shroud so that area on top

1194
00:54:31,589 --> 00:54:29,760
actually protecting the soyuz spacecraft

1195
00:54:33,829 --> 00:54:31,599
from aerodynamic forces on the ride

1196
00:54:36,950 --> 00:54:33,839
uphill will next separate at two minutes

1197
00:54:38,870 --> 00:54:36,960
and 33 seconds into flight

1198
00:54:41,910 --> 00:54:38,880
the second stage will shut down at four

1199
00:54:45,109 --> 00:54:41,920
minutes 37 seconds separating that four

1200
00:54:47,349 --> 00:54:45,119
minutes and 48 seconds as that happens

1201
00:54:50,069 --> 00:54:47,359
uh the third stage will begin firing

1202
00:54:51,349 --> 00:54:50,079
doing what's called a hot fire technique

1203
00:54:53,190 --> 00:54:51,359
and again we get a close-up on the

1204
00:54:55,349 --> 00:54:53,200
rocket you'll be able to see

1205
00:54:57,990 --> 00:54:55,359
uh the latticework-like structure

1206
00:54:59,750 --> 00:54:58,000
between the second and third stages

1207
00:55:01,589 --> 00:54:59,760
of the soyuz spacecraft allowing that

1208
00:55:03,910 --> 00:55:01,599
engine to fire while they're still

1209
00:55:06,230 --> 00:55:03,920
attached now the third stage lower skirt

1210
00:55:08,630 --> 00:55:06,240
jettison coming four minutes 56 seconds

1211
00:55:09,829 --> 00:55:08,640
and then the final thing that we'll be

1212
00:55:13,030 --> 00:55:09,839
looking for

1213
00:55:14,549 --> 00:55:13,040

is going to be that third stage shutdown

1214
00:55:17,829 --> 00:55:14,559
launch lead

1215
00:55:22,069 --> 00:55:17,839
please close your visors l minus five

1216
00:55:25,510 --> 00:55:23,750
and you just heard the crew told five

1217
00:55:27,030 --> 00:55:25,520
minutes readiness we are ten minutes

1218
00:55:28,789 --> 00:55:27,040
away from launch they're going to close

1219
00:55:45,589 --> 00:55:28,799
their visors now in their soca launch

1220
00:55:45,599 --> 00:55:58,030
and you are ready

1221
00:56:54,390 --> 00:56:11,810
[Music]

1222
00:56:58,309 --> 00:56:54,400
and we are under 8 minutes and 30

1223
00:57:00,309 --> 00:56:58,319
seconds away from launch

1224
00:57:02,309 --> 00:57:00,319
once we hit that seven minute seven

1225
00:57:04,390 --> 00:57:02,319
minute mark the pre-launch operations

1226
00:57:05,990 --> 00:57:04,400
will be complete

1227
00:57:07,910 --> 00:57:06,000
pretty much get into game time that's

1228
00:57:10,710 --> 00:57:07,920
when things will start to pick up

1229
00:57:12,870 --> 00:57:10,720
we'll go through a couple more uh manual

1230
00:57:15,270 --> 00:57:12,880
steps including inserting the launch key

1231
00:57:17,589 --> 00:57:15,280
into the launch bunker something that

1232
00:57:20,069 --> 00:57:17,599
never gets old saying and is one of my

1233
00:57:21,670 --> 00:57:20,079
favorite little tidbits about the space

1234
00:57:22,789 --> 00:57:21,680
flight that they have an actual launch

1235
00:57:24,870 --> 00:57:22,799
key

1236
00:57:26,870 --> 00:57:24,880
and they'll get that inserted at about t

1237
00:57:29,109 --> 00:57:26,880
minus six seconds so we'll hear the the

1238
00:57:30,870 --> 00:57:29,119

call out launch key inserted you will be

1239
00:57:33,109 --> 00:57:30,880
continually hearing

1240
00:57:35,109 --> 00:57:33,119
uh an interpretation of the chatter

1241
00:57:37,349 --> 00:57:35,119
between uh the launch conductors there

1242
00:57:39,270 --> 00:57:37,359
in baikonur the team in mission control

1243
00:57:41,349 --> 00:57:39,280
moscow and the crew

1244
00:57:43,510 --> 00:57:41,359
so you'll hear one voice that's our

1245
00:57:45,430 --> 00:57:43,520
interpreter's voice so if it sounds like

1246
00:57:47,109 --> 00:57:45,440
someone is talking to themselves that is

1247
00:57:49,750 --> 00:57:47,119
one person having both sides of the

1248
00:57:52,230 --> 00:57:49,760
conversation

1249
00:57:53,670 --> 00:57:52,240
here's a view of chris cassidy again

1250
00:57:56,150 --> 00:57:53,680
he's in the right seat today this is

1251
00:57:58,230 --> 00:57:56,160
going to be his third trip into outer

1252
00:58:00,069 --> 00:57:58,240
space

1253
00:58:02,069 --> 00:58:00,079
we heard the crew call that their visors

1254
00:58:08,870 --> 00:58:02,079
are closed and you can see them there

1255
00:58:13,349 --> 00:58:10,309
launch lead

1256
00:58:15,270 --> 00:58:13,359
we are at l minus one

1257
00:58:19,510 --> 00:58:15,280
minute

1258
00:58:29,829 --> 00:58:23,589
numbers to you guys copy we confirm l

1259
00:58:33,430 --> 00:58:31,349
and throughout the operations today

1260
00:58:37,109 --> 00:58:33,440
you're going to be here in the soyuz

1261
00:58:38,950 --> 00:58:37,119
referred to as acute i-r-k-u-t

1262
00:58:40,549 --> 00:58:38,960
and that is anatoly ivanishin's call

1263
00:58:43,349 --> 00:58:40,559

sign paying

1264
00:58:45,670 --> 00:58:43,359
tribute to his birthplace of irkutsk

1265
00:58:47,270 --> 00:58:45,680
good one everything's nominal on board

1266
00:58:48,630 --> 00:58:47,280
and we're ready

1267
00:58:52,470 --> 00:58:48,640
for launch

1268
00:58:56,390 --> 00:58:54,630
reporting everything nominal or normal

1269
00:58:59,030 --> 00:58:56,400
on board the spacecraft and they are

1270
00:59:14,470 --> 00:58:59,040
ready for launch we are six minutes 22

1271
00:59:14,480 --> 00:59:22,950
crucial

1272
00:59:22,960 --> 00:59:29,829
key to start

1273
00:59:33,430 --> 00:59:31,430
and we have confirmation the launch key

1274
00:59:35,510 --> 00:59:33,440
has been inserted in the launch bunker

1275
00:59:38,309 --> 00:59:35,520
that transitions the launch sequence

1276
00:59:40,230 --> 00:59:38,319
into its automatic mode so computers

1277
00:59:41,829 --> 00:59:40,240
on the soyuz rocket now taking command

1278
01:00:07,190 --> 00:59:41,839
and stepping through pre-programmed

1279
01:00:10,710 --> 01:00:08,950
and just as a reminder it's anatoly

1280
01:00:12,870 --> 01:00:10,720
ivanishin in the center seat he's the

1281
01:00:14,710 --> 01:00:12,880
soyuz commander

1282
01:00:16,950 --> 01:00:14,720
and then at the top of your screen is

1283
01:00:19,510 --> 01:00:16,960
yvonne wagner he's in the left seat he's

1284
01:00:21,670 --> 01:00:19,520
the board engineer for today essentially

1285
01:00:23,829 --> 01:00:21,680
the backup role for the commander on

1286
01:00:25,750 --> 01:00:23,839
board the spacecraft and we'll also get

1287
01:00:28,069 --> 01:00:25,760
views of chris cassidy he's seated to

1288
01:00:30,390 --> 01:00:28,079

ivanishin's right

1289
01:00:32,069 --> 01:00:30,400
lions purge

1290
01:00:38,710 --> 01:00:32,079
we are under five minutes away from

1291
01:00:42,150 --> 01:00:40,309
combustion chamber of the engines being

1292
01:00:44,309 --> 01:00:42,160
purged with nitrogen that helps to fire

1293
01:01:23,910 --> 01:00:44,319
proof them or removing any vapors of

1294
01:01:26,870 --> 01:01:25,510
and we are now under four minutes away

1295
01:01:28,710 --> 01:01:26,880
from launch there will be a couple of

1296
01:01:29,910 --> 01:01:28,720
visual indicators that can help you

1297
01:01:31,990 --> 01:01:29,920
count down

1298
01:01:34,390 --> 01:01:32,000
uh the first umbilical tower will be

1299
01:01:36,069 --> 01:01:34,400
separated from the booster at about 35

1300
01:01:37,910 --> 01:01:36,079
seconds before launch

1301
01:01:40,069 --> 01:01:37,920
but the second and final one separates

1302
01:01:42,150 --> 01:01:40,079
at 15 seconds before launch so once you

1303
01:02:39,910 --> 01:01:42,160
see that second one separate begin

1304
01:02:39,920 --> 01:02:48,789
is

1305
01:02:51,510 --> 01:02:50,470
and as we come up on two minutes and 30

1306
01:02:53,990 --> 01:02:51,520
seconds you just heard the ground

1307
01:02:56,069 --> 01:02:54,000
propellant feed has been terminated so

1308
01:02:57,910 --> 01:02:56,079
fuel and oxidizer no longer being loaded

1309
01:03:00,150 --> 01:02:57,920
into the vehicle

1310
01:03:14,390 --> 01:03:00,160
venting confirmed

1311
01:03:18,309 --> 01:03:15,990
right now the boosters fuel tanks are

1312
01:03:20,309 --> 01:03:18,319
being pressurized this helps to

1313
01:03:22,870 --> 01:03:20,319

just optimize and really facilitate the

1314
01:03:24,630 --> 01:03:22,880
flow of the fuel also helps add a little

1315
01:03:27,029 --> 01:03:24,640
bit of structural support to the rocket

1316
01:03:27,039 --> 01:03:33,910
we are inside two minutes to launch

1317
01:03:37,270 --> 01:03:35,029
and at this very moment the

1318
01:03:44,630 --> 01:03:37,280
international space station passing just

1319
01:03:48,789 --> 01:03:46,069
at the moment of launch though it'll

1320
01:03:51,190 --> 01:03:48,799
already be 587 statute miles ahead of

1321
01:03:53,109 --> 01:03:51,200
the soyuz spacecraft flying just over

1322
01:03:55,510 --> 01:03:53,119
northeast kazakhstan

1323
01:03:58,549 --> 01:03:55,520
but just passed right over pad 31 there

1324
01:04:22,150 --> 01:03:58,559
at the baikonur cosmodrome

1325
01:04:22,160 --> 01:04:38,549
t minus one minute

1326
01:04:38,559 --> 01:04:44,710
confirm

1327
01:04:44,720 --> 01:04:48,470
space to ground

1328
01:04:52,069 --> 01:04:50,069
and we see that first umbilical tower

1329
01:05:04,710 --> 01:04:52,079
separating that means we're 35 seconds

1330
01:05:07,910 --> 01:05:06,309
launch

1331
01:05:12,870 --> 01:05:07,920
and there goes the second tower so we

1332
01:05:16,150 --> 01:05:14,230
we're gonna see the boosters at the

1333
01:05:17,589 --> 01:05:16,160
bottom light up

1334
01:05:28,390 --> 01:05:17,599
and as their

1335
01:05:53,589 --> 01:05:30,230
on their way to the international space

1336
01:05:59,349 --> 01:05:55,750
the crew is feeling fine

1337
01:06:03,670 --> 01:06:00,950
all parameters for the vehicle are

1338
01:06:08,150 --> 01:06:06,960

the crew is feeling fine 40 seconds into

1339
01:06:08,550 --> 01:06:08,160
[Music]

1340
01:06:11,589 --> 01:06:08,560
flight

1341
01:06:13,190 --> 01:06:11,599
[Music]

1342
01:06:15,510 --> 01:06:13,200
thrusters are working nominally and the

1343
01:06:17,270 --> 01:06:15,520
vehicle is nominal getting good

1344
01:06:18,470 --> 01:06:17,280
continuous calls from the crew and the

1345
01:06:20,950 --> 01:06:18,480
ground everything with the vehicle

1346
01:06:24,630 --> 01:06:20,960
looking nominal the first stage powering

1347
01:06:26,470 --> 01:06:24,640
the soyuz upward delivering 930 000

1348
01:06:28,549 --> 01:06:26,480
pounds of thrust from the four strap on

1349
01:06:30,069 --> 01:06:28,559
boosters in that single core engine

1350
01:06:34,390 --> 01:06:30,079
roll

1351
01:06:36,309 --> 01:06:34,400
the attitude or which way it's pointing

1352
01:06:38,549 --> 01:06:36,319
hearing all those parameters or the

1353
01:06:40,630 --> 01:06:38,559
status of it nominal 70 seconds into

1354
01:06:42,069 --> 01:06:40,640
flight

1355
01:06:45,029 --> 01:06:42,079
everything's fine with the vehicle on

1356
01:06:46,390 --> 01:06:45,039
our side we confirm we're feeling good

1357
01:06:48,150 --> 01:06:46,400
again this first stage is going to

1358
01:06:50,150 --> 01:06:48,160
continue to burn for just about two

1359
01:06:51,750 --> 01:06:50,160
minutes into the flight

1360
01:06:57,430 --> 01:06:51,760
so just under a minute to go on the

1361
01:07:01,349 --> 01:06:59,109
90 seconds

1362
01:07:04,789 --> 01:07:01,359
in the flight thrust is

1363
01:07:15,829 --> 01:07:06,710

we confirm and we are feeling well on

1364
01:07:20,190 --> 01:07:17,750
so he's continuing to retreat from view

1365
01:07:23,829 --> 01:07:20,200
already traveling well in excess of 100

1366
01:07:25,990 --> 01:07:23,839
100 miles per hour

1367
01:07:27,910 --> 01:07:26,000
and seeing the coryoff cross there as

1368
01:07:32,069 --> 01:07:27,920
those strap-on boosters separate the

1369
01:07:34,390 --> 01:07:32,079
first stage separating right on time

1370
01:07:35,829 --> 01:07:34,400
we also confirm lateral units their job

1371
01:07:37,670 --> 01:07:35,839
done they drop weight an altitude of

1372
01:07:40,390 --> 01:07:37,680
about 28 statute miles the soyuz

1373
01:07:43,109 --> 01:07:40,400
traveling about 3 300 miles an hour

1374
01:07:52,470 --> 01:07:43,119
vehicle stabilization is nominal

1375
01:07:56,470 --> 01:07:53,910
and with the first stage in the launch

1376
01:07:59,770 --> 01:07:56,480
escape tower now jettison being powered

1377
01:08:01,349 --> 01:07:59,780
by that second stage the core stage

1378
01:08:05,029 --> 01:08:01,359
[Music]

1379
01:08:06,789 --> 01:08:05,039
we confirm the jettisoning of the

1380
01:08:09,510 --> 01:08:06,799
shroud jettison and getting some views

1381
01:08:11,829 --> 01:08:09,520
now from the soyuz spacecraft itself

1382
01:08:13,510 --> 01:08:11,839
looking back towards the soyuz rocket

1383
01:08:15,349 --> 01:08:13,520
you have a solar array right in front of

1384
01:08:17,189 --> 01:08:15,359
your view there

1385
01:08:19,669 --> 01:08:17,199
the launch route has been jettisoned so

1386
01:08:21,749 --> 01:08:19,679
the soyuz spacecraft now exposed 70

1387
01:08:23,510 --> 01:08:21,759
seconds into flight

1388
01:08:25,669 --> 01:08:23,520

the vehicle is fine

1389
01:08:27,749 --> 01:08:25,679
and we are

1390
01:08:33,269 --> 01:08:27,759
feeling well on board

1391
01:08:37,590 --> 01:08:34,870
everything looking good with that core

1392
01:08:39,749 --> 01:08:37,600
stage the second stage

1393
01:08:41,910 --> 01:08:39,759
minute 56 feet in length 13 and a half

1394
01:08:45,189 --> 01:08:41,920
in diameter has a single engine with

1395
01:08:47,590 --> 01:08:45,199
four fuel chambers provides between 178

1396
01:08:49,669 --> 01:08:47,600
thousand and 222 000 pounds of thrust

1397
01:08:51,430 --> 01:08:49,679
depending on their altitude

1398
01:08:53,910 --> 01:08:51,440
first three minutes and 28 seconds of

1399
01:08:56,550 --> 01:08:55,349
again the second stage is going to

1400
01:08:58,709 --> 01:08:56,560
continue to burn we're looking for

1401
01:09:00,630 --> 01:08:58,719
second stage shutdown about 4 minutes 30

1402
01:09:03,189 --> 01:09:00,640
seconds after launch

1403
01:09:15,349 --> 01:09:03,199
parameters of the vehicle are nominal we

1404
01:09:20,789 --> 01:09:18,149
230

1405
01:09:23,030 --> 01:09:20,799
seconds into flight

1406
01:09:25,510 --> 01:09:23,040
the vehicle is stable

1407
01:09:31,829 --> 01:09:25,520
we copy and we confirm everything is um

1408
01:09:35,990 --> 01:09:33,510
so we're a little over four minutes

1409
01:09:37,269 --> 01:09:36,000
since launch again we'll be looking for

1410
01:09:39,030 --> 01:09:37,279
that shutdown

1411
01:09:40,630 --> 01:09:39,040
and separation coming up in about 20

1412
01:09:42,149 --> 01:09:40,640
seconds

1413
01:09:43,749 --> 01:09:42,159

as that separation occurs the third

1414
01:09:46,390 --> 01:09:43,759
stage will begin firing it's called a

1415
01:09:48,149 --> 01:09:46,400
hot stage technique and that third stage

1416
01:09:57,110 --> 01:09:48,159
will ignite while the second is still

1417
01:10:23,830 --> 01:09:58,950
and standing by for second stage

1418
01:10:28,830 --> 01:10:25,830
we see it as well everything is nominal

1419
01:10:33,189 --> 01:10:31,430
copy and we have confirmation second

1420
01:10:35,189 --> 01:10:33,199
stage shut down and separated and you

1421
01:10:37,750 --> 01:10:35,199
saw a piece fly off that was the third

1422
01:10:39,110 --> 01:10:37,760
stage's lower skirt jettison

1423
01:10:41,270 --> 01:10:39,120
that was targeted to come off at four

1424
01:10:44,149 --> 01:10:41,280
minutes 56 seconds into launch we're

1425
01:10:45,910 --> 01:10:44,159
already past five minutes and 20 seconds

1426
01:10:47,430 --> 01:10:45,920
third stage now going to continue to

1427
01:10:49,270 --> 01:10:47,440
burn until we're at our orbital

1428
01:10:51,590 --> 01:10:49,280
insertion so the initial orbit of the

1429
01:10:54,550 --> 01:10:51,600
soyuz spacecraft that's expected to come

1430
01:10:56,630 --> 01:10:54,560
in about eight minutes and 46 seconds of

1431
01:11:00,070 --> 01:10:56,640
add shutdown and then the separation

1432
01:11:04,790 --> 01:11:01,510
into flight

1433
01:11:07,189 --> 01:11:04,800
and the thrusters are working nominally

1434
01:11:10,550 --> 01:11:07,199
we confirm and everything's

1435
01:11:13,430 --> 01:11:11,830
so right now the sodium is being

1436
01:11:16,229 --> 01:11:13,440
propelled into orbit by the single

1437
01:11:17,910 --> 01:11:16,239
engine of the third stage providing 67

1438
01:11:20,070 --> 01:11:17,920

000 pounds of thrust

1439
01:11:23,590 --> 01:11:20,080
going to continue to burn until shut

1440
01:11:27,510 --> 01:11:25,189
coming in just under three minutes from

1441
01:11:30,630 --> 01:11:27,520
now

1442
01:11:34,070 --> 01:11:30,640
360 seconds into flight

1443
01:11:37,510 --> 01:11:34,080
your pitch and roll are all nominal

1444
01:11:39,030 --> 01:11:37,520
copy and we are feeling well on board

1445
01:11:41,030 --> 01:11:39,040
still getting great updates from the

1446
01:11:43,830 --> 01:11:41,040
crew anatoly venetian talking to the

1447
01:11:45,750 --> 01:11:43,840
ground everyone feeling well on board

1448
01:11:47,430 --> 01:11:45,760
yaw pitch roll the engines all

1449
01:11:49,510 --> 01:11:47,440
performing nominally that's the word we

1450
01:11:53,510 --> 01:11:49,520
want to keep hearing means everything's

1451
01:11:53,520 --> 01:11:59,189
six minutes 35 seconds since liftoff

1452
01:11:59,199 --> 01:12:03,350
seconds into flight

1453
01:12:06,830 --> 01:12:04,870
control systems

1454
01:12:09,510 --> 01:12:06,840
for the vehicle are working

1455
01:12:10,709 --> 01:12:09,520
nominally and we confirm we are fine on

1456
01:12:26,030 --> 01:12:10,719
board

1457
01:12:31,510 --> 01:12:28,950
420 seconds into flight

1458
01:12:33,030 --> 01:12:31,520
your pitch and roll parameters are all

1459
01:12:50,550 --> 01:12:33,040
nominal

1460
01:12:56,070 --> 01:12:52,470
and we just passed seven minutes and 30

1461
01:12:59,189 --> 01:12:56,080
seconds into this flight 150 spacecraft

1462
01:13:01,669 --> 01:12:59,199
velocity right around 13 500 miles an

1463
01:13:01,679 --> 01:13:15,950

confirmed

1464
01:13:20,149 --> 01:13:18,870
470 seconds

1465
01:13:21,830 --> 01:13:20,159
into flight

1466
01:13:23,350 --> 01:13:21,840
third stage thrusters are working

1467
01:13:35,070 --> 01:13:23,360
nominally

1468
01:13:39,270 --> 01:13:37,990
490 seconds

1469
01:13:41,350 --> 01:13:39,280
in the flight

1470
01:13:43,350 --> 01:13:41,360
the vehicle is stable yeah we're

1471
01:13:44,790 --> 01:13:43,360
standing by our next major milestone is

1472
01:13:46,950 --> 01:13:44,800
going to be the shutdown of that third

1473
01:13:52,790 --> 01:13:46,960
stage coming in about 20 seconds from

1474
01:13:57,510 --> 01:13:53,709
by

1475
01:13:59,990 --> 01:13:57,520
510 seconds in the flight

1476
01:14:01,189 --> 01:14:00,000
your pitch and roll are all nominal get

1477
01:14:05,510 --> 01:14:01,199
ready for

1478
01:14:09,110 --> 01:14:07,350
so we'll see the engines cut off and

1479
01:14:11,510 --> 01:14:09,120
once the vehicle separates it usually

1480
01:14:13,270 --> 01:14:11,520
gives the crew a bit of a jolt

1481
01:14:17,110 --> 01:14:13,280
then the soyuz will be flying free we

1482
01:14:20,310 --> 01:14:17,120
see the third stage separating there

1483
01:14:22,709 --> 01:14:20,320
and we can see it dropping away now

1484
01:14:25,030 --> 01:14:22,719
third stage separation confirmed

1485
01:14:26,470 --> 01:14:25,040
and congratulations guys you are in

1486
01:14:28,709 --> 01:14:26,480
orbit

1487
01:14:44,310 --> 01:14:28,719
i am handing you over to the mission

1488
01:14:47,669 --> 01:14:46,470

and as we can see on the video here that

1489
01:14:49,430 --> 01:14:47,679
solar array deployed we have

1490
01:14:50,790 --> 01:14:49,440
confirmation the one on the other side

1491
01:14:51,830 --> 01:14:50,800
also deployed

1492
01:14:53,990 --> 01:14:51,840
along with what's known as the

1493
01:14:55,510 --> 01:14:54,000
advantages all of the antennas so the

1494
01:14:57,189 --> 01:14:55,520
rendezvous and the communication

1495
01:14:59,669 --> 01:14:57,199
antennas all deployed on the soyuz

1496
01:15:00,950 --> 01:14:59,679
spacecraft

1497
01:15:04,070 --> 01:15:00,960
then

1498
01:15:05,830 --> 01:15:04,080
we will be standing by

1499
01:15:08,149 --> 01:15:05,840
for

1500
01:15:17,510 --> 01:15:08,159
the first measurement and then please

1501
01:15:17,520 --> 01:15:37,030
mcc moscow this is

1502
01:15:39,990 --> 01:15:38,550
out of the range of the ground stations

1503
01:15:42,950 --> 01:15:40,000
where we're able to get this video

1504
01:15:44,550 --> 01:15:42,960
transmitted down eventually

1505
01:15:46,550 --> 01:15:44,560
but everything looking like they're good

1506
01:15:49,030 --> 01:15:46,560
in a good initial orbit the orbital

1507
01:15:51,189 --> 01:15:49,040
parameters so looking at both speed and

1508
01:15:53,350 --> 01:15:51,199
then their apogee perigee the orbit that

1509
01:15:55,110 --> 01:15:53,360
they're in looking good after a

1510
01:15:56,390 --> 01:15:55,120
successful separation from that third

1511
01:15:58,550 --> 01:15:56,400
stage

1512
01:16:01,030 --> 01:15:58,560
so with that chris cassidy anatoly

1513
01:16:04,070 --> 01:16:01,040

ivanishin and ivan wagner are in outer

1514
01:16:08,470 --> 01:16:06,070
for cassidy and ivanishin this is their

1515
01:16:09,830 --> 01:16:08,480
third trip for wagner his first the crew

1516
01:16:11,990 --> 01:16:09,840
now going through a number of their

1517
01:16:13,990 --> 01:16:12,000
initial oral checkouts

1518
01:16:15,430 --> 01:16:14,000
again the one of the major things that

1519
01:16:17,830 --> 01:16:15,440
we always look for is getting those

1520
01:16:19,590 --> 01:16:17,840
solar arrays out which provide all the

1521
01:16:21,430 --> 01:16:19,600
electrical power to the systems onboard

1522
01:16:23,189 --> 01:16:21,440
the sodium spacecraft also the antennas

1523
01:16:24,950 --> 01:16:23,199
being deployed

1524
01:16:26,390 --> 01:16:24,960
and those were all confirmed to be done

1525
01:16:28,310 --> 01:16:26,400
successfully and we were able to get a

1526
01:16:30,229 --> 01:16:28,320
view of one of those solar arrays

1527
01:16:36,790 --> 01:16:30,239
popping out just shortly after that

1528
01:16:41,030 --> 01:16:39,910
and we confirm that we are ready to

1529
01:16:43,110 --> 01:16:41,040
activate

1530
01:16:45,430 --> 01:16:43,120
control panel 2.

1531
01:16:49,189 --> 01:16:45,440
you have our go control panel 2 is

1532
01:16:54,709 --> 01:16:51,590
and we are

1533
01:17:00,149 --> 01:16:54,719
starting with course two tests

1534
01:17:03,270 --> 01:17:01,430
and one of the first tests that they're

1535
01:17:05,830 --> 01:17:03,280
going to be carrying out is

1536
01:17:07,510 --> 01:17:05,840
a test of the core system the cores is

1537
01:17:09,750 --> 01:17:07,520
the automated rendezvous and docking

1538
01:17:11,350 --> 01:17:09,760

system that the soyuz uses it's able to

1539
01:17:13,510 --> 01:17:11,360
fly autonomously all the way to the

1540
01:17:15,030 --> 01:17:13,520
space station and then autonomously dock

1541
01:17:16,630 --> 01:17:15,040
to the international space station

1542
01:17:17,510 --> 01:17:16,640
itself

1543
01:17:18,870 --> 01:17:17,520
and so they're running through a

1544
01:17:20,790 --> 01:17:18,880
checkout of that system once they get

1545
01:17:23,030 --> 01:17:20,800
closer they'll do system checks between

1546
01:17:25,270 --> 01:17:23,040
the soyuz and the station itself

1547
01:17:27,110 --> 01:17:25,280
before they get in close for the

1548
01:17:29,350 --> 01:17:27,120
eventual station keeping and then

1549
01:17:30,709 --> 01:17:29,360
docking to the station they're in their

1550
01:17:32,550 --> 01:17:30,719
destination today is going to be the

1551
01:17:34,790 --> 01:17:32,560
poisk module also known as the mini

1552
01:17:37,110 --> 01:17:34,800
research module number two it's on the

1553
01:17:41,990 --> 01:17:37,120
space-facing side of the zvezda service

1554
01:17:47,590 --> 01:17:45,750
and uh please turn on the input panel

1555
01:17:51,510 --> 01:17:47,600
at 12 36

1556
01:17:55,750 --> 01:17:54,470
we wanted to confirm mcc moscow that

1557
01:17:58,229 --> 01:17:55,760
course 2

1558
01:18:03,510 --> 01:17:58,239
test was successful and we are

1559
01:18:09,189 --> 01:18:06,229
all category sections

1560
01:18:09,199 --> 01:18:21,990
it should be done for page 52 irkuta

1561
01:18:33,750 --> 01:18:25,510
and they switch always at 12 10. we copy

1562
01:18:39,350 --> 01:18:36,870
and the next times for the asset

1563
01:18:43,750 --> 01:18:39,360

attitude is 11 52

1564
01:18:43,760 --> 01:18:46,790
copy

1565
01:18:50,070 --> 01:18:47,510
and

1566
01:18:52,470 --> 01:18:50,080
course one

1567
01:19:12,630 --> 01:18:52,480
activation went successful

1568
01:19:20,550 --> 01:19:14,709
during our next com session we are going

1569
01:19:24,790 --> 01:19:22,950
and please send command

1570
01:19:26,790 --> 01:19:24,800
igave inhibits

1571
01:19:29,189 --> 01:19:26,800
at 12 39

1572
01:19:32,070 --> 01:19:29,199
0 0

1573
01:19:43,270 --> 01:19:32,080
copy ekawa inhibits at 12

1574
01:19:55,590 --> 01:19:46,070
i have verified that all displays are

1575
01:20:16,629 --> 01:19:58,310
we're also standing by for a five-minute

1576
01:20:16,639 --> 01:20:19,669
built

1577
01:20:19,679 --> 01:20:23,669
mcc moscow this is

1578
01:20:28,709 --> 01:20:26,149
five minutes measurement we are ready

1579
01:20:31,669 --> 01:20:28,719
sr05

1580
01:20:34,070 --> 01:20:31,679
bill 827

1581
01:20:37,430 --> 01:20:34,080
instrumentation compartment

1582
01:20:50,070 --> 01:20:38,950
two nine em

1583
01:20:54,149 --> 01:20:52,229
and this is mission control houston if

1584
01:20:55,830 --> 01:20:54,159
you're just now joining us you've missed

1585
01:20:57,750 --> 01:20:55,840
the best part

1586
01:20:58,950 --> 01:20:57,760
the launch was done successfully on time

1587
01:21:01,590 --> 01:20:58,960
we'll be bringing you some launch

1588
01:21:03,910 --> 01:21:01,600

replays in just a little bit

1589
01:21:05,830 --> 01:21:03,920
but for right now the crew on orbit in

1590
01:21:07,590 --> 01:21:05,840
outer space in their soyuz spacecraft

1591
01:21:09,350 --> 01:21:07,600
they're again stepping through

1592
01:21:10,950 --> 01:21:09,360
all the initial checkouts of the various

1593
01:21:13,510 --> 01:21:10,960
systems doing a check of the coors

1594
01:21:16,070 --> 01:21:13,520
automated rendezvous and docking system

1595
01:21:18,149 --> 01:21:16,080
doing a leak check on the spacecraft

1596
01:21:19,910 --> 01:21:18,159
itself and they're monitoring all these

1597
01:22:03,350 --> 01:21:19,920
tests using those computer displays

1598
01:22:07,110 --> 01:22:05,110
we read you loud and clear

1599
01:22:14,709 --> 01:22:07,120
congratulations to you with such a

1600
01:22:21,910 --> 01:22:18,149
and we see it on our side on

1601
01:22:26,550 --> 01:22:24,149
it was a success and i would like to

1602
01:22:30,390 --> 01:22:26,560
confirm that we are going to stay with

1603
01:22:30,400 --> 01:22:33,750
docking plan

1604
01:22:37,350 --> 01:22:34,950
all in all

1605
01:22:39,430 --> 01:22:37,360
everything's looking good

1606
01:22:42,229 --> 01:22:39,440
just

1607
01:22:47,350 --> 01:22:42,239
slow and steady makes it

1608
01:23:01,270 --> 01:22:51,990
and please do as i taught you to

1609
01:23:04,470 --> 01:23:02,870
and one

1610
01:23:06,470 --> 01:23:04,480
important part from that conversation we

1611
01:23:09,110 --> 01:23:06,480
were just listening on they are still

1612
01:23:10,709 --> 01:23:09,120
continuing with this six hour rendezvous

1613
01:23:11,590 --> 01:23:10,719

with the international space station so

1614
01:23:13,750 --> 01:23:11,600
everything looking good with the

1615
01:23:15,510 --> 01:23:13,760
spacecraft and those initial checkouts

1616
01:23:17,430 --> 01:23:15,520
meaning they should be on time for a

1617
01:23:18,470 --> 01:23:17,440
docking today which we're currently

1618
01:23:19,669 --> 01:23:18,480
tracking

1619
01:23:47,110 --> 01:23:19,679
to 9

1620
01:23:47,120 --> 01:23:51,350
to open your visors

1621
01:23:59,510 --> 01:23:54,550
deactivate thermal sensors and perform

1622
01:24:06,870 --> 01:24:03,110
block on page 37. copy we'll put it on

1623
01:24:06,880 --> 01:24:12,070
this is it

1624
01:24:17,830 --> 01:24:14,310
congratulations guys on such a

1625
01:24:19,030 --> 01:24:17,840
successful launch good luck

1626
01:24:29,590 --> 01:24:19,040
that's it

1627
01:24:33,110 --> 01:24:31,189
and the crew just getting some final

1628
01:24:35,270 --> 01:24:33,120
congratulations from flight controllers

1629
01:24:37,189 --> 01:24:35,280
in korea just outside of moscow at the

1630
01:24:39,510 --> 01:24:37,199
russian mission control center

1631
01:24:41,430 --> 01:24:39,520
we're going to be taking the lead for

1632
01:24:44,470 --> 01:24:41,440
overseeing the operations of the soyuz

1633
01:24:46,149 --> 01:24:44,480
spacecraft for the rest of its journey

1634
01:24:47,990 --> 01:24:46,159
while we stand by for those launch

1635
01:24:50,229 --> 01:24:48,000
replays we do have some replays of the

1636
01:24:53,189 --> 01:24:50,239
in-cabin views that we weren't able to

1637
01:24:54,390 --> 01:24:53,199
show during that initial ascent so

1638
01:24:57,430 --> 01:24:54,400

this again

1639
01:25:00,310 --> 01:24:57,440
just moments ago as they lift it off

1640
01:25:03,030 --> 01:25:00,320
it's already been almost 20 minutes uh

1641
01:25:04,629 --> 01:25:03,040
since liftoff it's ivanishin anatoly

1642
01:25:06,070 --> 01:25:04,639
ivanishin the soyuz commander in the

1643
01:25:08,470 --> 01:25:06,080
center seat there at the top of your

1644
01:25:10,310 --> 01:25:08,480
screen yvonne wagner making his first

1645
01:25:11,750 --> 01:25:10,320
ride into orbit

1646
01:25:14,629 --> 01:25:11,760
at the time of this replay they were

1647
01:25:17,830 --> 01:25:14,639
actually under the full power of the

1648
01:25:19,669 --> 01:25:17,840
soyuz first stage

1649
01:25:21,750 --> 01:25:19,679
and you can see just

1650
01:25:25,590 --> 01:25:21,760
how smooth the ride is uphill for these

1651
01:25:29,830 --> 01:25:27,270
and again just out of view nasa

1652
01:26:32,070 --> 01:25:29,840
astronaut chris cassidy in space for the

1653
01:26:36,629 --> 01:26:33,830
if you're just now joining us this is

1654
01:26:39,430 --> 01:26:36,639
video from just minutes ago uh when they

1655
01:26:41,510 --> 01:26:39,440
did launch that launch came 21 minutes

1656
01:26:43,590 --> 01:26:41,520
and 20 seconds ago this is the in cabin

1657
01:26:45,750 --> 01:26:43,600
view looking in i told the ivanishin

1658
01:26:47,910 --> 01:26:45,760
there at the bottom left corner and

1659
01:26:49,910 --> 01:26:47,920
yvonne wagner big smile on his face as

1660
01:26:54,149 --> 01:26:49,920
he made his first ride uphill into outer

1661
01:26:57,990 --> 01:26:56,390
right now the crew is still inside the

1662
01:27:00,229 --> 01:26:58,000
soyuz capsule performing all those

1663
01:27:02,229 --> 01:27:00,239

initial on-orbit checkouts

1664
01:27:03,430 --> 01:27:02,239
at this point they've been given the go

1665
01:27:06,310 --> 01:27:03,440
to

1666
01:27:08,310 --> 01:27:06,320
open up their visors on their suits

1667
01:27:10,229 --> 01:27:08,320
also getting reminders to deactivate

1668
01:27:12,550 --> 01:27:10,239
some thermal sensors on the soyuz

1669
01:27:14,950 --> 01:27:12,560
spacecraft itself then getting ready to

1670
01:27:16,950 --> 01:27:14,960
extend the docking probe and doing a

1671
01:27:18,709 --> 01:27:16,960
hand controller test they have a hand

1672
01:27:20,950 --> 01:27:18,719
controller in front of the commander

1673
01:27:22,470 --> 01:27:20,960
seat able to actually control the soyuz

1674
01:27:24,790 --> 01:27:22,480
spacecraft itself

1675
01:27:25,990 --> 01:27:24,800
although if we go per the nominal plan

1676
01:27:28,550 --> 01:27:26,000
everything's just going to be done

1677
01:27:30,149 --> 01:27:28,560
automated using that cores rendezvous

1678
01:27:31,750 --> 01:27:30,159
and docking system

1679
01:27:33,669 --> 01:27:31,760
that antenna was confirmed to have

1680
01:27:36,149 --> 01:27:33,679
deployed shortly after the vehicle

1681
01:27:41,590 --> 01:27:36,159
separated from the soyuz rocket

1682
01:27:45,669 --> 01:27:43,830
so again just standing by for a few

1683
01:27:59,270 --> 01:27:45,679
moments for those launch replays we

1684
01:28:04,070 --> 01:28:02,070
and here we go these are replays that

1685
01:28:08,709 --> 01:28:04,080
launch came right on time

1686
01:28:11,830 --> 01:28:08,719
at 305 a.m central time 405 a.m eastern

1687
01:28:24,470 --> 01:28:11,840
soyuz ms 16 spacecraft taking off on the

1688
01:28:28,470 --> 01:28:26,149

and these replays will cycle through a

1689
01:30:15,669 --> 01:28:28,480
few different views of the rocket for

1690
01:30:19,430 --> 01:30:17,270
that another replay will stand by we

1691
01:30:21,830 --> 01:30:19,440
should have it hopefully at least one

1692
01:30:25,350 --> 01:30:21,840
more replay of that launch which again

1693
01:30:27,910 --> 01:30:25,360
came right on time 305 a.m central just

1694
01:30:29,270 --> 01:30:27,920
about 25 minutes ago

1695
01:30:31,750 --> 01:30:29,280
while we do stand by we did get

1696
01:30:33,350 --> 01:30:31,760
confirmation that the docking probe

1697
01:30:35,430 --> 01:30:33,360
so that

1698
01:30:37,430 --> 01:30:35,440
extends from the very top of the soyuz

1699
01:30:39,910 --> 01:30:37,440
spacecraft out of the orbital module

1700
01:30:41,750 --> 01:30:39,920
that's used to do the final

1701
01:30:43,510 --> 01:30:41,760
alignment into the the docking

1702
01:30:45,510 --> 01:30:43,520
compartment on the poisk module where

1703
01:30:47,750 --> 01:30:45,520
they're going to be headed today

1704
01:30:49,590 --> 01:30:47,760
that was extended successfully so all

1705
01:30:51,990 --> 01:30:49,600
the out-of-orbit checkouts continuing to

1706
01:30:54,070 --> 01:30:52,000
go per the plan

1707
01:30:56,390 --> 01:30:54,080
we should be just under 20 minutes away

1708
01:30:57,590 --> 01:30:56,400
from one of the first major firings of

1709
01:30:58,629 --> 01:30:57,600
the engines

1710
01:31:00,229 --> 01:30:58,639
on the

1711
01:31:02,310 --> 01:31:00,239
instrumentation or the propulsion module

1712
01:31:06,149 --> 01:31:02,320
of the soyuz spacecraft known as the dv1

1713
01:31:08,470 --> 01:31:06,159

vernon delta velocity number one burn

1714
01:31:10,790 --> 01:31:08,480
and that'll be the first in a series of

1715
01:31:13,110 --> 01:31:10,800
firings to gradually raise the soyuz's

1716
01:31:15,110 --> 01:31:13,120
orbit until it gets on the same level as

1717
01:31:19,110 --> 01:31:15,120
the space station currently orbiting an

1718
01:31:21,510 --> 01:31:19,120
altitude of about 257 statute miles

1719
01:32:02,149 --> 01:31:21,520
here we go one more launch replay

1720
01:32:06,870 --> 01:32:04,790
sensation on two for soyuz launch uh

1721
01:32:08,550 --> 01:32:06,880
looked like a perfect launch and orbital

1722
01:33:39,430 --> 01:32:08,560
insertion to us we got a little beak out

1723
01:33:44,310 --> 01:33:41,830
all right that'll do it for our replays

1724
01:33:45,750 --> 01:33:44,320
of today's successful launch while we're

1725
01:33:47,510 --> 01:33:45,760
going into that third one though we

1726
01:33:49,510 --> 01:33:47,520
actually did get a call down from the

1727
01:33:51,590 --> 01:33:49,520
international space station as astronaut

1728
01:33:53,510 --> 01:33:51,600
drew morgan one of the current residents

1729
01:33:55,270 --> 01:33:53,520
on board reported that they just watched

1730
01:33:56,870 --> 01:33:55,280
the launch and with everything looking

1731
01:33:58,790 --> 01:33:56,880
good they were ready to receive the crew

1732
01:34:01,110 --> 01:33:58,800
members and did mention that he's going

1733
01:34:03,910 --> 01:34:01,120
to have dinner waiting for them so both

1734
01:34:05,990 --> 01:34:03,920
he and jessica meer and alex corporate

1735
01:34:07,669 --> 01:34:06,000
just coming out of their sleep period so

1736
01:34:10,310 --> 01:34:07,679
this is bright and early in the morning

1737
01:34:11,750 --> 01:34:10,320
for them and in just about six hours

1738
01:34:12,950 --> 01:34:11,760

from now they're gonna have three new

1739
01:34:15,910 --> 01:34:12,960
crew members

1740
01:34:17,990 --> 01:34:15,920
that they're gonna be welcoming on board

1741
01:34:20,310 --> 01:34:18,000
but with that we are going to take a

1742
01:34:21,750 --> 01:34:20,320
break for now while the soyuz continues

1743
01:34:23,189 --> 01:34:21,760
to fine-tune its path towards the

1744
01:34:25,430 --> 01:34:23,199
international space station over the

1745
01:34:27,510 --> 01:34:25,440
next several hours but we will of course

1746
01:34:30,149 --> 01:34:27,520
be back for live coverage once we're

1747
01:34:32,310 --> 01:34:30,159
here and ready for docking so just

1748
01:34:34,310 --> 01:34:32,320
coming up on nasa tv we'll do a video

1749
01:34:36,390 --> 01:34:34,320
file of the post launch just giving you

1750
01:34:38,709 --> 01:34:36,400
again some more views of the launch and

1751
01:34:40,950 --> 01:34:38,719
all the major events from this morning's

1752
01:34:42,870 --> 01:34:40,960
activity so far and then we'll be back

1753
01:34:45,430 --> 01:34:42,880
with our live coverage at 8 30 a.m

1754
01:34:48,149 --> 01:34:45,440
central time 9 30 a.m eastern for

1755
01:34:50,229 --> 01:34:48,159
planned docking at 9 16 a.m

1756
01:34:52,470 --> 01:34:50,239
the hatch opening coverage will come

1757
01:34:53,830 --> 01:34:52,480
just a few hours after docking after

1758
01:34:54,950 --> 01:34:53,840
they dock they do a series of leak

1759
01:34:56,870 --> 01:34:54,960
checks and then they get ready to open

1760
01:34:58,310 --> 01:34:56,880
the hatches and move into the station so

1761
01:35:00,390 --> 01:34:58,320
we'll begin that hatch opening coverage

1762
01:35:03,030 --> 01:35:00,400
at 11 am central hatch opening targeted

1763
01:35:05,030 --> 01:35:03,040

to come right around 11 30 a.m then we

1764
01:35:07,590 --> 01:35:05,040
will wrap up today's coverage with a

1765
01:35:09,590 --> 01:35:07,600
video file showing all of the highlights

1766
01:35:13,189 --> 01:35:09,600
from docking and the hatch opening at 2

1767
01:35:15,910 --> 01:35:13,199
pm central 3 pm eastern

1768
01:35:17,510 --> 01:35:15,920
so be sure to tune back in then

1769
01:35:19,910 --> 01:35:17,520
keep sending those questions using the

1770
01:35:21,990 --> 01:35:19,920
hashtag asknasa on twitter we'll have

1771
01:35:23,590 --> 01:35:22,000
plenty of time to answer those as we

1772
01:35:25,189 --> 01:35:23,600
move through the docking and the hatch

1773
01:35:27,669 --> 01:35:25,199
opening show a little bit later this

1774
01:35:29,590 --> 01:35:27,679
morning and i do want to thank everyone

1775
01:35:31,750 --> 01:35:29,600
for either staying up late or waking up

1776
01:35:33,830 --> 01:35:31,760
early to tune in and watch this launch

1777
01:35:36,790 --> 01:35:33,840
today it was a rough time for everyone

1778
01:35:38,310 --> 01:35:36,800
so we truly appreciate it so with that

1779
01:35:40,709 --> 01:35:38,320
we will go ahead and sign off we'll be

1780
01:35:59,830 --> 01:35:40,719
back in a few hours this is mission

1781
01:36:03,590 --> 01:36:02,070
it was plagued by

1782
01:36:05,189 --> 01:36:03,600
bad omens

1783
01:36:06,790 --> 01:36:05,199
and bad luck

1784
01:36:08,629 --> 01:36:06,800
from the very beginning

1785
01:36:10,870 --> 01:36:08,639
13 we've got one more item for you when

1786
01:36:13,270 --> 01:36:10,880
you get a chance we'd like it to uh stir

1787
01:36:15,350 --> 01:36:13,280
up your cryotanks it never really

1788
01:36:17,750 --> 01:36:15,360

converged to the point where you felt

1789
01:36:22,610 --> 01:36:17,760
you really had total control of what was