



1
00:00:08,710 --> 00:00:06,470

[Music]

2
00:00:11,270 --> 00:00:08,720

it is early evening right now at the

3
00:00:13,509 --> 00:00:11,280

baikonur cosmodrome in kazakhstan where

4
00:00:15,430 --> 00:00:13,519

at this very moment an american

5
00:00:17,349 --> 00:00:15,440

astronaut a russian cosmonaut and the

6
00:00:19,670 --> 00:00:17,359

first ever astronaut from the united

7
00:00:21,029 --> 00:00:19,680

arab emirates are sitting aboard a soyuz

8
00:00:24,310 --> 00:00:21,039

spacecraft

9
00:00:26,230 --> 00:00:24,320

perched 160 feet above a soyuz booster

10
00:00:30,310 --> 00:00:26,240

and ready to launch less than an hour

11
00:00:33,670 --> 00:00:30,320

from now at 8 57 a.m central time 6 57

12
00:00:35,270 --> 00:00:33,680

p.m in the evening over in baikonur

13
00:00:37,190 --> 00:00:35,280

right now we're going to get you a live

14

00:00:38,549 --> 00:00:37,200

view or we'll get it to you very soon

15

00:00:39,430 --> 00:00:38,559

you can see in the top right of that

16

00:00:41,830 --> 00:00:39,440

board

17

00:00:43,910 --> 00:00:41,840

and they're sitting on soyuz rocket on

18

00:00:46,549 --> 00:00:43,920

site number one the launch pad in

19

00:00:48,790 --> 00:00:46,559

baikonur and that's the historic 1961

20

00:00:51,590 --> 00:00:48,800

launch site of yuri gagarin the first

21

00:00:53,590 --> 00:00:51,600

human to ever travel into space this is

22

00:00:55,510 --> 00:00:53,600

going to be the last launch of a crew

23

00:00:57,670 --> 00:00:55,520

from bugaran's launch pad for the next

24

00:01:00,069 --> 00:00:57,680

couple of months while engineers down

25

00:01:02,950 --> 00:01:00,079

there renovate site one for future crude

26

00:01:04,950 --> 00:01:02,960

launches on an upgraded soyuz 2.1a

27

00:01:07,510 --> 00:01:04,960

booster that actually made its first

28

00:01:09,350 --> 00:01:07,520

flight with an uncrewed soyuz a little

29

00:01:11,190 --> 00:01:09,360

bit later or a little bit earlier this

30

00:01:13,109 --> 00:01:11,200

summer traveling all the way up to the

31

00:01:15,109 --> 00:01:13,119

international space station and back

32

00:01:17,429 --> 00:01:15,119

down to kazakhstan

33

00:01:19,190 --> 00:01:17,439

the next soyuz launch to the station in

34

00:01:21,830 --> 00:01:19,200

spring of 2020 is going to be the first

35

00:01:23,030 --> 00:01:21,840

crude flight on that soyuz 2.18 booster

36

00:01:26,230 --> 00:01:23,040

and that's going to be launching from

37

00:01:27,910 --> 00:01:26,240

site 31 down in baikonur today though a

38

00:01:29,749 --> 00:01:27,920

team of launch controllers are watching

39

00:01:31,749 --> 00:01:29,759

over the systems aboard the rocket which

40

00:01:34,069 --> 00:01:31,759

at this very moment is fully fueled and

41

00:01:36,550 --> 00:01:34,079

ready for launch not tracking any issues

42

00:01:38,550 --> 00:01:36,560

so far throughout the day and that day

43

00:01:41,510 --> 00:01:38,560

began with fuel and oxidizer loading all

44

00:01:43,990 --> 00:01:41,520

the way back at 5 52 a.m central time 3

45

00:01:45,749 --> 00:01:44,000

52 p.m in the afternoon out at the

46

00:01:48,710 --> 00:01:45,759

launch site in baikonur and that was

47

00:01:50,469 --> 00:01:48,720

completed just about two hours later i

48

00:01:52,469 --> 00:01:50,479

do want to say good morning and welcome

49

00:01:53,910 --> 00:01:52,479

you here to mission control houston i'm

50

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

nasa's dan hewitt and i'm going to be

51
00:01:58,069 --> 00:01:55,680
taking you through today's launch and

52
00:01:59,670 --> 00:01:58,079
all the subsequent phases as the soyuz

53
00:02:02,069 --> 00:01:59,680
arrives at the international space

54
00:02:03,429 --> 00:02:02,079
station a little bit later this evening

55
00:02:04,870 --> 00:02:03,439
again we're going to be here in the

56
00:02:06,789 --> 00:02:04,880
international space station flight

57
00:02:08,869 --> 00:02:06,799
control room where the team's going to

58
00:02:10,710 --> 00:02:08,879
be watching over the expedition 60 crew

59
00:02:12,150 --> 00:02:10,720
and all the station systems and they're

60
00:02:15,670 --> 00:02:12,160
going to be preparing to support the

61
00:02:17,430 --> 00:02:15,680
arrival of this soyuz ms-15 vehicle

62
00:02:19,670 --> 00:02:17,440
station population is going to increase

63
00:02:21,190 --> 00:02:19,680

from six all the way up to nine with the

64

00:02:23,190 --> 00:02:21,200

addition of our three new crew members

65

00:02:25,830 --> 00:02:23,200

it's nasa astronaut jessica mirror over

66

00:02:27,830 --> 00:02:25,840

there on the right in the middle is

67

00:02:29,750 --> 00:02:27,840

russian cosmonaut alex grapochka he's

68

00:02:31,910 --> 00:02:29,760

the commander of the soyuz mission today

69

00:02:34,150 --> 00:02:31,920

and on the left there is huzzah ali

70

00:02:36,150 --> 00:02:34,160

amman suri he's an astronaut from the

71

00:02:38,710 --> 00:02:36,160

united arab emirates and a space flight

72

00:02:41,350 --> 00:02:38,720

participant making a short taxi flight

73

00:02:42,949 --> 00:02:41,360

up to the station

74

00:02:45,110 --> 00:02:42,959

once they arrive it's going to mark the

75

00:02:47,750 --> 00:02:45,120

largest the station crew has been since

76
00:02:50,229 --> 00:02:47,760
september of 2015 when we actually had

77
00:02:52,229 --> 00:02:50,239
nine crew members on board during a

78
00:02:55,270 --> 00:02:52,239
seven day period during scott kelly

79
00:02:56,949 --> 00:02:55,280
mikhail kornigenko's year-long mission

80
00:02:58,790 --> 00:02:56,959
these three are about to begin a plan

81
00:03:00,630 --> 00:02:58,800
for orbit flight to the international

82
00:03:03,430 --> 00:03:00,640
space station set to dock at

83
00:03:06,070 --> 00:03:03,440
approximately six hours after launch at

84
00:03:07,589 --> 00:03:06,080
2 45 pm central time

85
00:03:10,710 --> 00:03:07,599
today or

86
00:03:13,350 --> 00:03:10,720
12 45 in the morning on september 25th

87
00:03:14,790 --> 00:03:13,360
thursday over there in baikonur where

88
00:03:16,149 --> 00:03:14,800

their colleagues friends and family

89

00:03:18,149 --> 00:03:16,159

members of the soyuz crew are going to

90

00:03:19,350 --> 00:03:18,159

be watching the events unfold right now

91

00:03:21,589 --> 00:03:19,360

standing out

92

00:03:24,229 --> 00:03:21,599

at a site just about a mile away from

93

00:03:26,070 --> 00:03:24,239

the launch pad ready to watch them ride

94

00:03:27,910 --> 00:03:26,080

into orbit

95

00:03:29,350 --> 00:03:27,920

the spacecraft is going to be docking

96

00:03:30,710 --> 00:03:29,360

with the russian segment it's actually

97

00:03:32,550 --> 00:03:30,720

going to go to the very back of the

98

00:03:34,229 --> 00:03:32,560

station to the aft port of what's known

99

00:03:35,350 --> 00:03:34,239

as the zvezda module you can see in the

100

00:03:37,589 --> 00:03:35,360

lower right

101
00:03:40,309 --> 00:03:37,599
of the station here on this shot it's

102
00:03:42,630 --> 00:03:40,319
that soyuz ms-15 and they're going to be

103
00:03:45,509 --> 00:03:42,640
joining the current station residents on

104
00:03:47,350 --> 00:03:45,519
board there's some nasa astronauts

105
00:03:49,110 --> 00:03:47,360
christina cook and nick hague and

106
00:03:51,830 --> 00:03:49,120
russian cosmonaut and space station

107
00:03:54,630 --> 00:03:51,840
commander alexei of chenan they arrived

108
00:03:57,509 --> 00:03:54,640
aboard the soyuz ms-12 spacecraft back

109
00:03:59,429 --> 00:03:57,519
in february also on board nasa astronaut

110
00:04:01,509 --> 00:03:59,439
drew morgan and russian cosmonaut

111
00:04:03,830 --> 00:04:01,519
alexander schwartzoff and then european

112
00:04:05,990 --> 00:04:03,840
space agency astronaut luca parmitano

113
00:04:07,110 --> 00:04:06,000

those three have been on board since

114

00:04:09,110 --> 00:04:07,120

july

115

00:04:10,869 --> 00:04:09,120

parmitano who's in the top left of that

116

00:04:13,750 --> 00:04:10,879

picture there is going to be taking over

117

00:04:15,910 --> 00:04:13,760

as the expedition 61 commander on

118

00:04:18,550 --> 00:04:15,920

october 3rd when hague of chenen and

119

00:04:22,310 --> 00:04:18,560

almond surrey undock and make the trip

120

00:04:24,230 --> 00:04:22,320

back home aboard the soyuz ms-12 vehicle

121

00:04:25,430 --> 00:04:24,240

for now though here in houston the team

122

00:04:27,189 --> 00:04:25,440

in mission control are going to be

123

00:04:29,350 --> 00:04:27,199

monitoring today's launch getting

124

00:04:30,550 --> 00:04:29,360

updates on the flight from the ground to

125

00:04:32,310 --> 00:04:30,560

the station from their russian

126

00:04:34,070 --> 00:04:32,320

counterparts and it's going to be flight

127

00:04:35,909 --> 00:04:34,080

director advance ice you can see a few

128

00:04:37,350 --> 00:04:35,919

more people in the room than normal the

129

00:04:39,510 --> 00:04:37,360

gentleman standing up there is royce

130

00:04:41,990 --> 00:04:39,520

renfrew the outgoing orbit one flight

131

00:04:44,469 --> 00:04:42,000

director on the very bottom is advanced

132

00:04:46,469 --> 00:04:44,479

zeiss in the blue shirt he's going to be

133

00:04:48,310 --> 00:04:46,479

the flight director for this trip today

134

00:04:50,469 --> 00:04:48,320

and just above them the red that's don

135

00:04:53,110 --> 00:04:50,479

pettit the off-going capcom and diane

136

00:04:54,629 --> 00:04:53,120

daly the nasa capcom for orbit two we

137

00:04:56,870 --> 00:04:54,639

should be hearing her voice a little bit

138

00:04:59,189 --> 00:04:56,880

later this evening

139

00:05:00,710 --> 00:04:59,199

during the so uses climb to orbit

140

00:05:02,870 --> 00:05:00,720

tracking and telemetry is going to be

141

00:05:04,070 --> 00:05:02,880

down link two ground stations along the

142

00:05:06,310 --> 00:05:04,080

flight path

143

00:05:07,670 --> 00:05:06,320

and then actually routed over to the

144

00:05:09,590 --> 00:05:07,680

russian mission control center we're

145

00:05:12,390 --> 00:05:09,600

getting a live view from a camera right

146

00:05:13,830 --> 00:05:12,400

here that's located just outside of

147

00:05:15,350 --> 00:05:13,840

moscow

148

00:05:17,670 --> 00:05:15,360

one quick fun note though we are going

149

00:05:19,830 --> 00:05:17,680

to try and stop and take a few questions

150

00:05:21,749 --> 00:05:19,840

during today's launch broadcast but also

151

00:05:23,189 --> 00:05:21,759

during the phases a little bit later

152

00:05:24,629 --> 00:05:23,199

when we get to the docking in the hatch

153

00:05:26,629 --> 00:05:24,639

opening show so if you have any

154

00:05:28,550 --> 00:05:26,639

questions you want to ask go ahead and

155

00:05:30,469 --> 00:05:28,560

hop onto twitter and use that hashtag

156

00:05:35,670 --> 00:05:30,479

ask nasa we'll try to get through as

157

00:05:39,990 --> 00:05:37,909

today's launch actually marks the first

158

00:05:42,790 --> 00:05:40,000

flight into space for nasa astronaut

159

00:05:44,790 --> 00:05:42,800

jess kamir and the first for

160

00:05:47,029 --> 00:05:44,800

spaceflight participant

161

00:05:48,950 --> 00:05:47,039

ali al-mansuri of the united arab

162

00:05:51,749 --> 00:05:48,960

emirates this is actually the third

163

00:05:54,469 --> 00:05:51,759

flight for a russian cosmonaut and soyuz

164

00:05:56,150 --> 00:05:54,479

ms-15 commander alex krapochka

165

00:05:57,909 --> 00:05:56,160

for now why don't we get to know our

166

00:06:00,710 --> 00:05:57,919

crew a little bit better we'll start off

167

00:06:03,060 --> 00:06:00,720

with jess kamir nasa's next astronaut to

168

00:06:06,710 --> 00:06:03,070

fly into space

169

00:06:08,150 --> 00:06:06,720

[Music]

170

00:06:10,629 --> 00:06:08,160

the thing that's always driven and

171

00:06:12,309 --> 00:06:10,639

excited me is exploration in general so

172

00:06:14,230 --> 00:06:12,319

i think i've always been attracted to

173

00:06:15,670 --> 00:06:14,240

these extreme environments

174

00:06:17,990 --> 00:06:15,680

places where

175

00:06:19,990 --> 00:06:18,000

fewer people have been where conditions

176

00:06:23,350 --> 00:06:20,000

are a little bit more harsh a little bit

177

00:06:25,670 --> 00:06:23,360

more rare and really extreme in general

178

00:06:28,870 --> 00:06:25,680

i went to the antarctic five times four

179

00:06:30,469 --> 00:06:28,880

times was for my phd research

180

00:06:32,390 --> 00:06:30,479

and the work that we were pursuing then

181

00:06:35,990 --> 00:06:32,400

in the antarctic was looking at the

182

00:06:38,629 --> 00:06:36,000

diving physiology of emperor penguins

183

00:06:40,790 --> 00:06:38,639

they use this really big drill to create

184

00:06:43,189 --> 00:06:40,800

a hole in the ice and so you enter the

185

00:06:45,909 --> 00:06:43,199

water through that hole in the ice

186

00:06:48,230 --> 00:06:45,919

the first time you go diving through the

187

00:06:50,469 --> 00:06:48,240

sea ice hole you really never forget the

188

00:06:53,029 --> 00:06:50,479

feeling the water down there is a

189

00:06:55,830 --> 00:06:53,039

constant negative two celsius so 28

190

00:06:58,950 --> 00:06:55,840

degrees fahrenheit and you can see

191

00:07:01,749 --> 00:06:58,960

rays of light coming in from any crack

192

00:07:03,990 --> 00:07:01,759

or hole anywhere around the area and

193

00:07:05,510 --> 00:07:04,000

that's where you start realizing all of

194

00:07:07,670 --> 00:07:05,520

the color and the beauty in the

195

00:07:09,510 --> 00:07:07,680

antarctic is it's just an extraordinary

196

00:07:11,589 --> 00:07:09,520

experience and the things that i saw

197

00:07:13,670 --> 00:07:11,599

underwater there is definitely the most

198

00:07:16,230 --> 00:07:13,680

remarkable and exceptional diving i've

199

00:07:17,749 --> 00:07:16,240

ever had

200

00:07:19,749 --> 00:07:17,759

one of the things that we use for

201
00:07:22,070 --> 00:07:19,759
training for space flight for astronauts

202
00:07:24,150 --> 00:07:22,080
from all of our partner agencies is

203
00:07:25,990 --> 00:07:24,160
training in analogs so if you try to

204
00:07:28,150 --> 00:07:26,000
think what what are useful training

205
00:07:29,909 --> 00:07:28,160
platforms on the earth how do we

206
00:07:31,430 --> 00:07:29,919
replicate all the characteristics of a

207
00:07:33,430 --> 00:07:31,440
space mission

208
00:07:35,749 --> 00:07:33,440
one of the analogs that the european

209
00:07:38,070 --> 00:07:35,759
space agency developed is called caves

210
00:07:40,710 --> 00:07:38,080
and it's a technical caving mission so

211
00:07:43,189 --> 00:07:40,720
the caves training mission was in this

212
00:07:45,110 --> 00:07:43,199
very extraordinary cave in sardinia so

213
00:07:46,790 --> 00:07:45,120

you would sometimes be crawling through

214

00:07:48,629 --> 00:07:46,800

a hole that when you see it in the

215

00:07:50,070 --> 00:07:48,639

distance you don't think there's no way

216

00:07:51,830 --> 00:07:50,080

that you could even fit through that you

217

00:07:54,070 --> 00:07:51,840

know one at a time we would take off our

218

00:07:56,469 --> 00:07:54,080

packs and sort of shimmy like a snake

219

00:07:58,309 --> 00:07:56,479

through these tiny tiny little holes and

220

00:08:01,749 --> 00:07:58,319

then all of a sudden you would come out

221

00:08:04,390 --> 00:08:01,759

into this room this cathedral with a

222

00:08:06,150 --> 00:08:04,400

hundred meter granite wall i mean it was

223

00:08:08,629 --> 00:08:06,160

really just extraordinary and then we

224

00:08:11,430 --> 00:08:08,639

would go on daily excursions doing

225

00:08:13,589 --> 00:08:11,440

scientific experiments exploring mapping

226

00:08:15,510 --> 00:08:13,599

the cave so all really similar things

227

00:08:18,150 --> 00:08:15,520

that we would do when we finally get to

228

00:08:20,469 --> 00:08:18,160

the point of exploring another planet

229

00:08:22,070 --> 00:08:20,479

for example as astronauts and then also

230

00:08:24,790 --> 00:08:22,080

emphasizing all the other skills that we

231

00:08:26,230 --> 00:08:24,800

use on the international space station

232

00:08:27,670 --> 00:08:26,240

the other connection that's really

233

00:08:30,390 --> 00:08:27,680

important to me is that all of these

234

00:08:32,230 --> 00:08:30,400

environments involve natural phenomenon

235

00:08:34,469 --> 00:08:32,240

on our planet so it all goes back to my

236

00:08:36,149 --> 00:08:34,479

interest in biology looking at this

237

00:08:38,149 --> 00:08:36,159

remarkable diversity in the animal

238

00:08:40,389 --> 00:08:38,159

kingdom with my previous research

239

00:08:43,909 --> 00:08:40,399

exploring all of these amazing

240

00:08:45,990 --> 00:08:43,919

landscapes and ecosystems on our planet

241

00:08:47,829 --> 00:08:46,000

and then eventually when i have the most

242

00:08:49,829 --> 00:08:47,839

extraordinary of any view when i'll be

243

00:08:52,389 --> 00:08:49,839

on the space station in a couple months

244

00:08:54,470 --> 00:08:52,399

looking down and seeing this magnificent

245

00:08:56,230 --> 00:08:54,480

planet earth and seeing the beauty of

246

00:08:58,310 --> 00:08:56,240

our planet and really

247

00:09:00,790 --> 00:08:58,320

understanding how special it is and how

248

00:09:02,710 --> 00:09:00,800

fragile it is and how important it is to

249

00:09:05,030 --> 00:09:02,720

protect it to take good care of our home

250

00:09:07,670 --> 00:09:05,040

planet to protect our oceans to protect

251
00:09:08,910 --> 00:09:07,680
the land and to be really a good steward

252
00:09:16,550 --> 00:09:08,920
in our universe

253
00:09:20,530 --> 00:09:19,110
i'm jessica meer i'm a scientist and a

254
00:09:34,389 --> 00:09:20,540
nasa astronaut

255
00:09:39,350 --> 00:09:37,110
born and raised in caribou maine nasa

256
00:09:41,990 --> 00:09:39,360
astronaut jessica meer holds a bachelor

257
00:09:44,070 --> 00:09:42,000
of arts in biology from brown university

258
00:09:46,230 --> 00:09:44,080
a master of science and space studies

259
00:09:48,389 --> 00:09:46,240
from the international space university

260
00:09:51,350 --> 00:09:48,399
and a doctorate in marine biology from

261
00:09:54,790 --> 00:09:51,360
scripps institution of oceanography

262
00:09:56,470 --> 00:09:54,800
from 2000 to 2003 dr mir worked for

263
00:09:58,949 --> 00:09:56,480

lockheed martin's human research

264

00:10:01,030 --> 00:09:58,959

facility supporting human physiology

265

00:10:03,269 --> 00:10:01,040

research on the space shuttle and

266

00:10:05,509 --> 00:10:03,279

international space station at nasa's

267

00:10:07,670 --> 00:10:05,519

johnson space center during this time

268

00:10:09,590 --> 00:10:07,680

she also participated in research

269

00:10:12,150 --> 00:10:09,600

flights on nasa's reduced gravity

270

00:10:14,310 --> 00:10:12,160

aircraft and served as an aquanaut crew

271

00:10:16,630 --> 00:10:14,320

member in the aquarius underwater

272

00:10:19,350 --> 00:10:16,640

habitat for the fourth nasa extreme

273

00:10:20,550 --> 00:10:19,360

environment mission operations or nemo

274

00:10:22,710 --> 00:10:20,560

mission

275

00:10:24,949 --> 00:10:22,720

afterward mir's research focused on the

276

00:10:27,509 --> 00:10:24,959

physiology of animals in extreme

277

00:10:30,150 --> 00:10:27,519

environments with her phd research

278

00:10:33,030 --> 00:10:30,160

studying oxygen depletion and diving

279

00:10:34,790 --> 00:10:33,040

emperor penguins in the antarctic and in

280

00:10:37,430 --> 00:10:34,800

diving elephant seals in northern

281

00:10:39,190 --> 00:10:37,440

california and then her postdoctoral

282

00:10:41,750 --> 00:10:39,200

research at the university of british

283

00:10:44,389 --> 00:10:41,760

columbia investigated the high-flying

284

00:10:46,550 --> 00:10:44,399

bar-headed goose by training geese to

285

00:10:48,550 --> 00:10:46,560

fly in a wind tunnel while obtaining

286

00:10:49,910 --> 00:10:48,560

measurements in reduced oxygen

287

00:10:53,110 --> 00:10:49,920

conditions

288

00:10:55,430 --> 00:10:53,120

in 2012 dr mir accepted a position at

289

00:10:57,829 --> 00:10:55,440

the harvard medical school massachusetts

290

00:10:59,910 --> 00:10:57,839

general hospital where she continued her

291

00:11:02,630 --> 00:10:59,920

research on the physiology of animals in

292

00:11:04,710 --> 00:11:02,640

extreme environments she also took part

293

00:11:08,230 --> 00:11:04,720

in smithsonian institution diving

294

00:11:11,110 --> 00:11:08,240

expeditions to the antarctic and belize

295

00:11:13,990 --> 00:11:11,120

selected in 2013 to become an astronaut

296

00:11:17,509 --> 00:11:14,000

as part of nasa's 21st astronaut class

297

00:11:19,430 --> 00:11:17,519

we are completed her training in 2015.

298

00:11:21,829 --> 00:11:19,440

she'll be in familiar company when she

299

00:11:24,230 --> 00:11:21,839

arrives at the station joining three of

300

00:11:26,470 --> 00:11:24,240

her former astronaut classmates current

301
00:11:30,069 --> 00:11:26,480
station residents nick hague christina

302
00:11:33,509 --> 00:11:31,750
and that was a little bit more about

303
00:11:35,190 --> 00:11:33,519
jessica mir the nasa astronaut flying

304
00:11:37,110 --> 00:11:35,200
today she's going to be seated to the

305
00:11:40,230 --> 00:11:37,120
left of the soyuz commander and the

306
00:11:42,870 --> 00:11:40,240
russian cosmonaut on today's flight

307
00:11:45,030 --> 00:11:42,880
rose cosbos cosmonaut alex krapochka is

308
00:11:46,150 --> 00:11:45,040
returning to space for the third time

309
00:11:48,790 --> 00:11:46,160
today

310
00:11:51,030 --> 00:11:48,800
born into venomous russia scrupochka was

311
00:11:52,949 --> 00:11:51,040
a member of the young cosmonauts group

312
00:11:54,710 --> 00:11:52,959
while he was a student at zaporos

313
00:11:58,629 --> 00:11:54,720

physics and mathematics high school

314

00:12:00,710 --> 00:11:58,639
number 28 graduating in 1987.

315

00:12:02,629 --> 00:12:00,720
afterward he attended bauman state

316

00:12:04,230 --> 00:12:02,639
technical university and while an

317

00:12:05,829 --> 00:12:04,240
undergraduate he obtained work

318

00:12:08,470 --> 00:12:05,839
experience at the russian space

319

00:12:10,230 --> 00:12:08,480
corporation inergia as a test subject

320

00:12:13,110 --> 00:12:10,240
and as a mechanic in the project

321

00:12:14,710 --> 00:12:13,120
department graduating in 1993 with a

322

00:12:16,870 --> 00:12:14,720
bachelor's degree in mechanical

323

00:12:19,829 --> 00:12:16,880
engineering with a specialization in

324

00:12:23,750 --> 00:12:19,839
rocket engineering scrapocho worked at

325

00:12:25,509 --> 00:12:23,760
rsc inarguia from 1993 to 1997 as an

326

00:12:27,829 --> 00:12:25,519

engineer at the transport and cargo

327

00:12:30,949 --> 00:12:27,839

vehicles ground hardware development and

328

00:12:33,829 --> 00:12:30,959

testing project department oleg is also

329

00:12:37,509 --> 00:12:33,839

a first class skydiver with over 300

330

00:12:40,470 --> 00:12:37,519

parachute jumps selected in july of 1997

331

00:12:42,710 --> 00:12:40,480

as an rsc inergia cosmonaut candidate

332

00:12:44,629 --> 00:12:42,720

skripochka completed basic space flight

333

00:12:47,750 --> 00:12:44,639

training at the gagarin cosmonaut

334

00:12:50,550 --> 00:12:47,760

training center in 1999 qualifying as a

335

00:12:53,269 --> 00:12:50,560

test cosmonaut his first trip into space

336

00:12:54,790 --> 00:12:53,279

was in october of 2010 as a flight

337

00:12:57,910 --> 00:12:54,800

engineer during space station

338

00:13:00,389 --> 00:12:57,920

expeditions 25 and 26 and while aboard

339

00:13:03,790 --> 00:13:00,399

he performed two spacewalks his second

340

00:13:06,470 --> 00:13:03,800

flight began in march of 2016 on soyuz

341

00:13:09,590 --> 00:13:06,480

tma-20m as part of the space station

342

00:13:12,150 --> 00:13:09,600

expeditions 47 and 48 during which he

343

00:13:14,150 --> 00:13:12,160

completed his third spacewalk to date

344

00:13:17,269 --> 00:13:14,160

scarpochka's cumulative spacewalking

345

00:13:19,910 --> 00:13:17,279

total is 16 hours and 41 minutes spent

346

00:13:22,870 --> 00:13:19,920

outside the space station scrappock is

347

00:13:24,389 --> 00:13:22,880

-serving as the soyuz ms-15 commander and

348

00:13:27,030 --> 00:13:24,399

will serve aboard the international

349

00:13:29,910 --> 00:13:27,040

space station as an expedition 61 flight

350

00:13:30,949 --> 00:13:29,920

engineer and later as the expedition 62

351

00:13:33,590 --> 00:13:30,959

commander

352

00:13:35,509 --> 00:13:33,600

seated to his right is first-time flyer

353

00:13:39,110 --> 00:13:35,519

united arab emirates space flight

354

00:13:41,509 --> 00:13:39,120

participant haza ali al-mansuri born in

355

00:13:43,750 --> 00:13:41,519

all without and spending his early years

356

00:13:46,790 --> 00:13:43,760

living and going to school in al-dafra

357

00:13:49,030 --> 00:13:46,800

in western abu dhabi ahmansiri's passion

358

00:13:53,110 --> 00:13:49,040

for astronomy led him to join the armed

359

00:13:55,030 --> 00:13:53,120

forces and later become a military pilot

360

00:13:57,590 --> 00:13:55,040

he became a functional check flight

361

00:13:59,590 --> 00:13:57,600

pilot for the f-16b60

362

00:14:02,710 --> 00:13:59,600

and spent three years training on this

363

00:14:04,790 --> 00:14:02,720

aircraft in the united states in arizona

364

00:14:07,189 --> 00:14:04,800

afterward he returned to the uae to

365

00:14:09,509 --> 00:14:07,199

complete his training four years after

366

00:14:12,870 --> 00:14:09,519

his return azad became the youngest

367

00:14:14,949 --> 00:14:12,880

emirati military f-16 pilot qualifying

368

00:14:16,550 --> 00:14:14,959

to be a flight testing and aircraft

369

00:14:18,949 --> 00:14:16,560

assessment pilot

370

00:14:22,069 --> 00:14:18,959

the uae astronaut program launched in

371

00:14:24,470 --> 00:14:22,079

2017 to train and prepare a team of

372

00:14:27,189 --> 00:14:24,480

emirati astronauts and send them to

373

00:14:28,870 --> 00:14:27,199

space for various scientific missions

374

00:14:31,590 --> 00:14:28,880

following a series of mental and

375

00:14:33,590 --> 00:14:31,600

physical tests in the uae and abroad

376

00:14:36,389 --> 00:14:33,600

almond surrey was selected from a field

377

00:14:39,509 --> 00:14:36,399

of over four thousand candidates

378

00:14:41,110 --> 00:14:39,519

in september 2018 almonziri started

379

00:14:43,269 --> 00:14:41,120

training with the russian space agency

380

00:14:45,910 --> 00:14:43,279

rose cosmos at the guerin cosmonaut

381

00:14:48,629 --> 00:14:45,920

training center in star city russia he

382

00:14:59,509 --> 00:14:48,639

will be the very first member of the uae

383

00:15:05,269 --> 00:15:02,069

and this is some recorded video from a

384

00:15:07,670 --> 00:15:05,279

little bit earlier today as the three

385

00:15:09,350 --> 00:15:07,680

crew members got prepared woke up in the

386

00:15:11,670 --> 00:15:09,360

cosmonaut hotel and got ready to make

387

00:15:14,389 --> 00:15:11,680

their way out to the launch site the

388

00:15:17,030 --> 00:15:14,399

crews were woken up at about 11 57 pm

389

00:15:19,430 --> 00:15:17,040

tuesday night central time 9 57 a.m in

390

00:15:22,150 --> 00:15:19,440

the morning over in baikonur which is

391

00:15:24,629 --> 00:15:22,160

about nine hours prior to the launch

392

00:15:26,629 --> 00:15:24,639

they participated in all of their final

393

00:15:28,710 --> 00:15:26,639

pre-launch activities and all that

394

00:15:31,189 --> 00:15:28,720

begins at crew quarters what you're

395

00:15:33,030 --> 00:15:31,199

seeing here is a pretty old tradition of

396

00:15:34,470 --> 00:15:33,040

before departing for the launch pad the

397

00:15:36,629 --> 00:15:34,480

crew members

398

00:15:38,389 --> 00:15:36,639

go through a ritual of autographing some

399

00:15:40,230 --> 00:15:38,399

of the doors on the rooms that they

400

00:15:42,550 --> 00:15:40,240

occupied at the cosmonaut hotel in

401
00:15:44,230 --> 00:15:42,560
baikonur you can see just one set aside

402
00:15:46,069 --> 00:15:44,240
here all three crew members getting the

403
00:15:48,790 --> 00:15:46,079
chance to sign their names and all those

404
00:15:50,470 --> 00:15:48,800
other signatures are from crew members

405
00:15:52,069 --> 00:15:50,480
both nasa rose cosmos and all the

406
00:15:54,790 --> 00:15:52,079
international partners from over the

407
00:15:57,189 --> 00:15:54,800
years they also get a blessing here

408
00:15:59,430 --> 00:15:57,199
before they depart from a priest of the

409
00:16:01,110 --> 00:15:59,440
russian orthodox church who earlier in

410
00:16:03,509 --> 00:16:01,120
the week also takes time to go out and

411
00:16:05,189 --> 00:16:03,519
bless the rocket itself at the pad and

412
00:16:06,629 --> 00:16:05,199
the various pad workers and even some of

413
00:16:09,030 --> 00:16:06,639

the members of the media that will

414

00:16:10,629 --> 00:16:09,040

generally gather to document these

415

00:16:12,069 --> 00:16:10,639

launches

416

00:16:14,949 --> 00:16:12,079

following that they stroll out from the

417

00:16:16,790 --> 00:16:14,959

cosmonaut hotel down a line

418

00:16:17,749 --> 00:16:16,800

down a sidewalk lined with friends

419

00:16:20,389 --> 00:16:17,759

family

420

00:16:22,710 --> 00:16:20,399

well-wishers program officials from the

421

00:16:25,030 --> 00:16:22,720

various space agencies before they make

422

00:16:27,269 --> 00:16:25,040

their way onto a bus

423

00:16:29,350 --> 00:16:27,279

this is one of the last

424

00:16:31,110 --> 00:16:29,360

several times that they get a chance to

425

00:16:33,269 --> 00:16:31,120

see all these folks before they load

426

00:16:35,590 --> 00:16:33,279

into the rocket they walk out to a

427

00:16:37,749 --> 00:16:35,600

traditional song that's played every

428

00:16:39,910 --> 00:16:37,759

single time and the russian name for it

429

00:16:41,910 --> 00:16:39,920

escapes me at this moment but a lot of

430

00:16:43,910 --> 00:16:41,920

tradition surrounding all of these

431

00:16:45,910 --> 00:16:43,920

launches in baikonur is they have again

432

00:16:48,550 --> 00:16:45,920

been launching from this area since the

433

00:16:51,509 --> 00:16:48,560

60s when gagarin made that first leap

434

00:16:53,749 --> 00:16:51,519

into space so for the prime crew it's on

435

00:16:55,590 --> 00:16:53,759

to one bus the purple one here and then

436

00:16:58,230 --> 00:16:55,600

the backup crew follows behind in

437

00:16:59,910 --> 00:16:58,240

another large bus they're accompanied by

438

00:17:02,230 --> 00:16:59,920

a lot of the flight surgeons and doctors

439

00:17:04,230 --> 00:17:02,240

again you can see a large mass of people

440

00:17:05,189 --> 00:17:04,240

there gathered outside of the cosmonaut

441

00:17:06,630 --> 00:17:05,199

hotel

442

00:17:09,429 --> 00:17:06,640

this all taking place a little bit

443

00:17:13,110 --> 00:17:09,439

earlier this morning at about 2 57 a.m

444

00:17:15,990 --> 00:17:13,120

central time 12 57 p.m over in baikonur

445

00:17:18,549 --> 00:17:16,000

it's about a 40 minute ride from this

446

00:17:20,630 --> 00:17:18,559

hotel actually on to the cosmodrome

447

00:17:23,350 --> 00:17:20,640

itself where they head over to what's

448

00:17:25,429 --> 00:17:23,360

known as building 254 inside the

449

00:17:27,270 --> 00:17:25,439

cosmodrome and that's the integration

450

00:17:30,150 --> 00:17:27,280

and pseudo facility so getting a chance

451
00:17:32,230 --> 00:17:30,160
to wave a pose there from huzzah

452
00:17:33,990 --> 00:17:32,240
again you can see a pretty large crowd

453
00:17:35,990 --> 00:17:34,000
gathered there nasa public affairs

454
00:17:37,350 --> 00:17:36,000
officer rob navy is sneaking into view

455
00:17:39,590 --> 00:17:37,360
real quick there

456
00:17:41,830 --> 00:17:39,600
but getting their first departure from

457
00:17:43,990 --> 00:17:41,840
this hotel again it's about 40 minutes

458
00:17:45,590 --> 00:17:44,000
from the hotel onto the cosmodrome it's

459
00:17:46,630 --> 00:17:45,600
very sparse

460
00:17:48,390 --> 00:17:46,640
area

461
00:17:50,230 --> 00:17:48,400
as obviously you're launching rockets

462
00:17:53,110 --> 00:17:50,240
you don't want a lot in that area it's a

463
00:17:56,549 --> 00:17:53,120

very vast and open kazakh step then they

464

00:17:59,190 --> 00:17:56,559

arrive here in building 254 once they

465

00:18:01,190 --> 00:17:59,200

get to the actual suit up in integration

466

00:18:02,789 --> 00:18:01,200

facility it's time to get into these

467

00:18:04,630 --> 00:18:02,799

launch and entry suits and this is

468

00:18:05,510 --> 00:18:04,640

called the sokol it's the white suit you

469

00:18:08,310 --> 00:18:05,520

can see

470

00:18:10,070 --> 00:18:08,320

alex groposhka getting into it here this

471

00:18:11,510 --> 00:18:10,080

is worn throughout all the different

472

00:18:13,270 --> 00:18:11,520

dynamic phases of flight so they're

473

00:18:14,870 --> 00:18:13,280

going to wear it for today's launch and

474

00:18:16,630 --> 00:18:14,880

the eventual docking with the

475

00:18:18,310 --> 00:18:16,640

international space station then the

476
00:18:20,310 --> 00:18:18,320
suits get put away and they get brought

477
00:18:22,549 --> 00:18:20,320
back out if they're ever flying in that

478
00:18:24,950 --> 00:18:22,559
soyuz either for a relocation or when

479
00:18:27,430 --> 00:18:24,960
they actually come back down to earth

480
00:18:29,110 --> 00:18:27,440
and these suits just act just like the

481
00:18:30,950 --> 00:18:29,120
large orange ones that you might

482
00:18:32,470 --> 00:18:30,960
remember from the shuttle era that

483
00:18:35,750 --> 00:18:32,480
astronauts wear they're able to be

484
00:18:37,590 --> 00:18:35,760
pressurized and provide additional

485
00:18:39,510 --> 00:18:37,600
breathing gases and a safe atmosphere

486
00:18:41,909 --> 00:18:39,520
for the crew members should the capsule

487
00:18:43,830 --> 00:18:41,919
itself become unpressurized they also

488
00:18:45,669 --> 00:18:43,840

get a communications cap so they're able

489

00:18:47,430 --> 00:18:45,679

to not only speak with each other but

490

00:18:49,590 --> 00:18:47,440

also the flight controllers down on the

491

00:18:52,150 --> 00:18:49,600

ground who oversee their flight all the

492

00:18:53,990 --> 00:18:52,160

way up to the space station

493

00:18:54,950 --> 00:18:54,000

there are several specialists you'll see

494

00:18:56,470 --> 00:18:54,960

a lot of

495

00:18:58,390 --> 00:18:56,480

individuals wearing

496

00:19:00,950 --> 00:18:58,400

masks and other items as the crew are

497

00:19:02,150 --> 00:19:00,960

kept in a quarantine prior to their

498

00:19:03,350 --> 00:19:02,160

mission

499

00:19:06,150 --> 00:19:03,360

to help

500

00:19:08,070 --> 00:19:06,160

reduce the chance of any dis infectious

501
00:19:09,510 --> 00:19:08,080
diseases or anything making its way up

502
00:19:11,430 --> 00:19:09,520
to the space station they're kept in a

503
00:19:13,669 --> 00:19:11,440
strict quarantine for about two weeks

504
00:19:16,310 --> 00:19:13,679
prior to their flight very controlled

505
00:19:19,270 --> 00:19:16,320
access to the crew themselves and then

506
00:19:20,870 --> 00:19:19,280
any not also in quarantine like the

507
00:19:22,310 --> 00:19:20,880
backup crew

508
00:19:24,070 --> 00:19:22,320
we'll have to go through some

509
00:19:27,190 --> 00:19:24,080
preventative measures usually wearing

510
00:19:28,789 --> 00:19:27,200
masks or different protective gear

511
00:19:30,789 --> 00:19:28,799
here you can see nasa's just come here

512
00:19:32,710 --> 00:19:30,799
also getting suited up first all three

513
00:19:34,950 --> 00:19:32,720

crew members get suited up and then

514

00:19:36,470 --> 00:19:34,960

we'll see them move into another room

515

00:19:38,549 --> 00:19:36,480

where they actually do

516

00:19:40,310 --> 00:19:38,559

some pressure checks on the spacesuits

517

00:19:42,230 --> 00:19:40,320

themselves you can see jessica mirror

518

00:19:44,630 --> 00:19:42,240

playing with the small blue knob that

519

00:19:46,789 --> 00:19:44,640

actually is used by the astronauts to

520

00:20:01,750 --> 00:19:46,799

control the pressure level inside of

521

00:20:05,110 --> 00:20:03,110

the backup crew

522

00:20:07,190 --> 00:20:05,120

right behind them tom marshburn on the

523

00:20:08,710 --> 00:20:07,200

right there in the blue suit he's been

524

00:20:10,789 --> 00:20:08,720

the backup for the last two flights the

525

00:20:12,549 --> 00:20:10,799

backup crew helping the uh the prime

526

00:20:14,630 --> 00:20:12,559

crew get ready for their flight and

527

00:20:16,149 --> 00:20:14,640

they're also on deck to step in should

528

00:20:18,630 --> 00:20:16,159

the prime crew or any of the prime crew

529

00:20:20,470 --> 00:20:18,640

members not be able to make the trip

530

00:20:22,070 --> 00:20:20,480

but again after that initial suit up

531

00:20:24,230 --> 00:20:22,080

they move over here and then they get

532

00:20:26,870 --> 00:20:24,240

into actually a mock-up of an actual

533

00:20:28,149 --> 00:20:26,880

soyuz seat and they go through and take

534

00:20:29,750 --> 00:20:28,159

turns having their suits actually

535

00:20:32,149 --> 00:20:29,760

pressurized so they'll you'll see them

536

00:20:33,909 --> 00:20:32,159

close the visor and the suits themselves

537

00:20:35,190 --> 00:20:33,919

will actually start to puff up and that

538

00:20:37,190 --> 00:20:35,200

means they're being pressurized and

539

00:20:39,510 --> 00:20:37,200

filled with air they do this to get a

540

00:20:41,990 --> 00:20:39,520

good leak check on the suit make sure

541

00:20:43,510 --> 00:20:42,000

all of the seals are acting correctly

542

00:20:45,270 --> 00:20:43,520

and this is one of the final steps

543

00:20:47,830 --> 00:20:45,280

before they actually make their way out

544

00:20:50,230 --> 00:20:47,840

to the rocket you can see alex graposca

545

00:20:52,230 --> 00:20:50,240

there in the seat his suit a little bit

546

00:20:57,110 --> 00:20:52,240

puffed up that means it's going through

547

00:21:00,310 --> 00:20:58,549

they do this again to make sure that

548

00:21:02,710 --> 00:21:00,320

their shoes are free from leaks this is

549

00:21:04,710 --> 00:21:02,720

also one of the the final chances that

550

00:21:07,350 --> 00:21:04,720

the crew members get to speak to friends

551
00:21:09,190 --> 00:21:07,360
and family that have gathered they're on

552
00:21:11,029 --> 00:21:09,200
the other side of this protective pane

553
00:21:13,190 --> 00:21:11,039
of glass again to help maintain that

554
00:21:14,710 --> 00:21:13,200
quarantine and you'll see them one by

555
00:21:16,470 --> 00:21:14,720
one do the pressure check and then make

556
00:21:18,789 --> 00:21:16,480
their way over to the pane of glass

557
00:21:20,789 --> 00:21:18,799
where they're able to speak

558
00:21:22,310 --> 00:21:20,799
to friends and family and also program

559
00:21:24,549 --> 00:21:22,320
officials

560
00:21:27,110 --> 00:21:24,559
from their respective space agencies so

561
00:21:28,870 --> 00:21:27,120
with alex for approaches job done in the

562
00:21:30,950 --> 00:21:28,880
chair there was next up to jess kamir

563
00:21:32,310 --> 00:21:30,960

you can see her again using that knob in

564

00:21:34,310 --> 00:21:32,320

the front of the suit to adjust the

565

00:21:35,350 --> 00:21:34,320

pressurization inside you can see how

566

00:21:39,029 --> 00:21:35,360

it's

567

00:21:41,029 --> 00:21:39,039

like a balloon that just means the

568

00:21:43,190 --> 00:21:41,039

suit's been pressurized doing this to

569

00:21:44,950 --> 00:21:43,200

check again those seals make sure no

570

00:21:47,350 --> 00:21:44,960

leaks in the suit as

571

00:21:49,430 --> 00:21:47,360

these suits act as pretty much the last

572

00:21:51,270 --> 00:21:49,440

line of defense for the crew members if

573

00:21:52,470 --> 00:21:51,280

the castle were to be unpressurized for

574

00:21:55,190 --> 00:21:52,480

any reason

575

00:21:57,669 --> 00:21:55,200

there's huzzah ali al-mansuri and he's

576

00:21:59,590 --> 00:21:57,679

the first united arab emirates astronaut

577

00:22:01,510 --> 00:21:59,600

set to fly into space he'll be a space

578

00:22:03,430 --> 00:22:01,520

flight participant

579

00:22:04,310 --> 00:22:03,440

on this trip you might see that word

580

00:22:06,630 --> 00:22:04,320

used

581

00:22:10,149 --> 00:22:06,640

that just differentiates him from

582

00:22:12,070 --> 00:22:10,159

an expedition crew member like oleg and

583

00:22:14,390 --> 00:22:12,080

jessica who are going to be spending

584

00:22:16,390 --> 00:22:14,400

several months on board the station i'm

585

00:22:18,149 --> 00:22:16,400

on surrey's first flight only going to

586

00:22:20,630 --> 00:22:18,159

last about eight days

587

00:22:22,630 --> 00:22:20,640

but he'll have a schedule jam-packed of

588

00:22:24,149 --> 00:22:22,640

a couple of different science

589

00:22:27,190 --> 00:22:24,159

experiments that he's going to be taking

590

00:22:28,870 --> 00:22:27,200

part in both u.s and russian

591

00:22:31,350 --> 00:22:28,880

and also doing some

592

00:22:41,510 --> 00:22:31,360

outreach to his home country the united

593

00:22:44,630 --> 00:22:43,190

and again with all three crew members

594

00:22:46,870 --> 00:22:44,640

able to go through those leak checks

595

00:22:48,710 --> 00:22:46,880

they make their way over to the chairs

596

00:22:50,870 --> 00:22:48,720

which have microphones in front of them

597

00:22:53,029 --> 00:22:50,880

this is again one of those last few

598

00:22:55,830 --> 00:22:53,039

chances for them to talk

599

00:23:01,340 --> 00:22:55,840

to their family members prior to making

600

00:23:28,070 --> 00:23:17,170

[Music]

601
00:23:37,510 --> 00:23:30,549
for each flight we have a

602
00:23:37,520 --> 00:23:41,029
but i was thinking

603
00:23:43,909 --> 00:23:42,870
you would have a completely different

604
00:23:46,230 --> 00:23:43,919
theme

605
00:23:52,070 --> 00:23:46,240
for your new flight well it's a bit

606
00:23:52,080 --> 00:23:57,190
and the border is different too

607
00:24:12,470 --> 00:24:04,110
[Music]

608
00:24:12,480 --> 00:24:24,630
okay

609
00:24:24,640 --> 00:24:29,430
is this something special

610
00:24:58,390 --> 00:24:31,269
no this is our

611
00:24:58,400 --> 00:25:06,650
foreign

612
00:25:10,870 --> 00:25:08,870
[Music]

613
00:25:12,630 --> 00:25:10,880

again also joining friends and family

614

00:25:15,269 --> 00:25:12,640

our program officials you can see the

615

00:25:16,870 --> 00:25:15,279

delegation from the united arab emirates

616

00:25:19,029 --> 00:25:16,880

and this dimitra goes in the head of

617

00:25:20,710 --> 00:25:19,039

rose cosmos everything is going

618

00:25:22,470 --> 00:25:20,720

according to plan

619

00:25:25,590 --> 00:25:22,480

so as usual

620

00:25:26,950 --> 00:25:25,600

i wish you a successful launch

621

00:25:33,909 --> 00:25:26,960

and

622

00:25:36,230 --> 00:25:33,919

successful return to the ground

623

00:25:37,669 --> 00:25:36,240

we know you and we are sure that you

624

00:25:41,430 --> 00:25:37,679

will find

625

00:25:43,830 --> 00:25:41,440

correct solutions for any situation

626

00:25:45,909 --> 00:25:43,840

the main thing is for you to

627

00:25:48,630 --> 00:25:45,919

be a team

628

00:25:50,390 --> 00:25:48,640

and support one another

629

00:25:53,029 --> 00:25:50,400

showing us what we can do when we work

630

00:25:56,070 --> 00:25:53,039

together and thank you for your service

631

00:25:57,430 --> 00:25:56,080

when you get up there down to the

632

00:25:59,990 --> 00:25:57,440

the whole world's looking up there and

633

00:26:01,269 --> 00:26:00,000

thinking about you have a great time do

634

00:26:03,430 --> 00:26:01,279

a little bit of work but have a great

635

00:26:05,430 --> 00:26:03,440

time while you're up there and we'll see

636

00:26:07,430 --> 00:26:05,440

you back here on the planet uh when you

637

00:26:08,310 --> 00:26:07,440

come back for a soft landing call the

638

00:26:11,750 --> 00:26:08,320

best

639

00:26:13,669 --> 00:26:11,760

we are proud of you and we'll be we will

640

00:26:16,310 --> 00:26:13,679

be with you in this mission

641

00:26:18,710 --> 00:26:16,320

we hope you all the

642

00:26:21,830 --> 00:26:18,720

good wish in this mission

643

00:26:24,310 --> 00:26:21,840

and uh thanks for the backup crew also

644

00:26:26,149 --> 00:26:24,320

you did a very good job and we believe

645

00:26:29,269 --> 00:26:26,159

that all of you is prepared for this

646

00:26:32,149 --> 00:26:29,279

mission i would like to thank also the

647

00:26:36,830 --> 00:26:32,159

two astronauts also and thank you for

648

00:26:40,870 --> 00:26:39,269

support and two of those last three to

649

00:26:42,549 --> 00:26:40,880

speaking were kirk shimon the international

650

00:26:45,029 --> 00:26:42,559

space station program manager and ken

651
00:26:46,630 --> 00:26:45,039
bowersox the nasa acting associate

652
00:26:48,549 --> 00:26:46,640
administrator for human exploration

653
00:26:50,310 --> 00:26:48,559
operations but with that done it was

654
00:26:52,310 --> 00:26:50,320
time to do the walk out you can see the

655
00:26:53,750 --> 00:26:52,320
crew and they you'll see that they're

656
00:26:56,149 --> 00:26:53,760
usually in this configuration with the

657
00:26:58,149 --> 00:26:56,159
commander in the middle jessica to his

658
00:26:59,909 --> 00:26:58,159
left and huzzah to his right that is how

659
00:27:02,549 --> 00:26:59,919
they will actually be seated inside the

660
00:27:03,909 --> 00:27:02,559
soyuz so once the final suit up and

661
00:27:06,950 --> 00:27:03,919
pressure checks are done they walk out

662
00:27:08,390 --> 00:27:06,960
of that suit up integration facility and

663
00:27:09,909 --> 00:27:08,400

then once again make their way over to

664

00:27:12,549 --> 00:27:09,919

the buses you can see again a large

665

00:27:14,390 --> 00:27:12,559

crowd gathered to see them on their way

666

00:27:16,310 --> 00:27:14,400

and at this point they load back up into

667

00:27:19,269 --> 00:27:16,320

the same buses that took them from the

668

00:27:21,430 --> 00:27:19,279

cosmonaut hotel to this building to now

669

00:27:22,789 --> 00:27:21,440

head out to the pad so they get a final

670

00:27:25,029 --> 00:27:22,799

opportunity to

671

00:27:27,990 --> 00:27:25,039

wave farewell to friends and family and

672

00:27:31,029 --> 00:27:28,000

then make their way from site 254 that

673

00:27:32,149 --> 00:27:31,039

integration building over to the launch

674

00:27:34,389 --> 00:27:32,159

pad

675

00:27:37,350 --> 00:27:34,399

they boarded that bus at about 5 57 a.m

676
00:27:39,350 --> 00:27:37,360
central time 3 57 p.m baikonur heading

677
00:27:41,909 --> 00:27:39,360
over to launch pad number one also known

678
00:27:44,470 --> 00:27:41,919
as gagarin start that drive takes about

679
00:27:47,830 --> 00:27:44,480
25 minutes they arrived at the pad about

680
00:27:50,149 --> 00:27:47,840
6 22 a.m central time 4 22 p.m in

681
00:27:51,190 --> 00:27:50,159
baikonur once there they're helped off

682
00:27:52,870 --> 00:27:51,200
the bus

683
00:27:55,430 --> 00:27:52,880
by again

684
00:27:57,590 --> 00:27:55,440
several officials both from roscosmos

685
00:27:59,430 --> 00:27:57,600
and also nasa and the united arab

686
00:28:00,870 --> 00:27:59,440
emirates space agency there in

687
00:28:13,830 --> 00:28:00,880
attendance with their first ever

688
00:28:19,430 --> 00:28:16,710

reporting to the panel the crew is ready

689

00:28:22,470 --> 00:28:20,789

again you can see in the middle there

690

00:28:24,310 --> 00:28:22,480

that's the head of rose cosmos dimitri

691

00:28:26,870 --> 00:28:24,320

ragozin he's the one

692

00:28:29,909 --> 00:28:26,880

on the on oleg's left helping screw

693

00:28:31,430 --> 00:28:29,919

poacher get to the pad traditional for

694

00:28:33,190 --> 00:28:31,440

the different managers to help the crew

695

00:28:36,389 --> 00:28:33,200

members the last leg of their journey

696

00:28:38,630 --> 00:28:36,399

into the actual rocket itself

697

00:28:41,269 --> 00:28:38,640

they'll lead them over to a stairway

698

00:28:43,669 --> 00:28:41,279

where the crews will get up do one final

699

00:28:45,750 --> 00:28:43,679

wave and then ride up the elevator to

700

00:28:47,830 --> 00:28:45,760

the top of the soyuz booster to board

701
00:28:50,950 --> 00:28:47,840
their capsule which they've actually

702
00:28:52,870 --> 00:28:50,960
been aboard now for about two hours so

703
00:28:54,230 --> 00:28:52,880
you can see them one at a time going up

704
00:28:55,750 --> 00:28:54,240
the stairway

705
00:28:57,350 --> 00:28:55,760
the final

706
00:28:59,269 --> 00:28:57,360
pad integration engineers will be

707
00:29:02,549 --> 00:28:59,279
waiting for them at the top to make the

708
00:29:08,070 --> 00:29:02,559
elevator ride up and for now they are

709
00:29:08,080 --> 00:29:12,470
be careful here

710
00:29:12,480 --> 00:29:21,909
wave your hand carefully

711
00:29:47,269 --> 00:29:22,789
turn

712
00:29:47,279 --> 00:29:58,070
myself

713
00:30:02,710 --> 00:30:00,310

and with that we are back to a live view

714

00:30:05,029 --> 00:30:02,720

getting your first view now of the soyuz

715

00:30:12,950 --> 00:30:05,039

spacecraft out there on the launch pad

716

00:30:17,110 --> 00:30:15,510

right now we are 27 minutes 22 seconds

717

00:30:20,310 --> 00:30:17,120

and counting away from the planned

718

00:30:21,750 --> 00:30:20,320

launch today of these three crew members

719

00:30:22,389 --> 00:30:21,760

heading to the international space

720

00:30:24,870 --> 00:30:22,399

station

721

00:30:28,230 --> 00:30:24,880

getting that liftoff scheduled for 8 57

722

00:30:32,860 --> 00:30:28,240

am central time 6 57 pm in the evening

723

00:30:32,870 --> 00:30:44,470

[Music]

724

00:30:47,750 --> 00:30:46,389

and again we're going to be taking your

725

00:30:49,669 --> 00:30:47,760

questions on twitter throughout the

726

00:30:52,389 --> 00:30:49,679

day's events again just jump over and

727

00:30:54,149 --> 00:30:52,399

use the hashtag ask nasa if you have a

728

00:30:55,669 --> 00:30:54,159

question about anything taking place

729

00:30:57,830 --> 00:30:55,679

we'll go ahead and jump through a couple

730

00:30:59,750 --> 00:30:57,840

of them right now our first one comes

731

00:31:02,070 --> 00:30:59,760

from jack who wanted to know how many

732

00:31:05,430 --> 00:31:02,080

minutes does it take to dock with the

733

00:31:08,149 --> 00:31:05,440

space station well the timeline right

734

00:31:10,230 --> 00:31:08,159

now has them again lifting off at 8 57

735

00:31:11,269 --> 00:31:10,240

a.m central time and they are set to

736

00:31:18,310 --> 00:31:11,279

dock

737

00:31:24,230 --> 00:31:21,509

at 2 45 p.m sorry doing some quick time

738

00:31:26,710 --> 00:31:24,240

zone calculations in my head uh but from

739

00:31:29,029 --> 00:31:26,720

there it's about five hours and

740

00:31:32,149 --> 00:31:29,039

48 minutes and four seconds per the

741

00:31:34,389 --> 00:31:32,159

timeline so that translates to 348

742

00:31:36,950 --> 00:31:34,399

minutes from launch to docking thanks

743

00:31:39,110 --> 00:31:36,960

for the question jack

744

00:31:41,509 --> 00:31:39,120

our next question comes from miss

745

00:31:43,110 --> 00:31:41,519

whitaker's science class she wants to

746

00:31:45,590 --> 00:31:43,120

know or they want to know if each

747

00:31:47,110 --> 00:31:45,600

astronaut has their own bedroom

748

00:31:49,110 --> 00:31:47,120

so there are

749

00:31:50,389 --> 00:31:49,120

currently six crew quarters aboard the

750

00:31:51,830 --> 00:31:50,399

international space station you can

751
00:31:53,110 --> 00:31:51,840
think of that as their bedroom they're

752
00:31:55,269 --> 00:31:53,120
about the size

753
00:31:57,750 --> 00:31:55,279
of a phone booth or a very small closet

754
00:32:00,710 --> 00:31:57,760
and they have doors there are four right

755
00:32:03,029 --> 00:32:00,720
now in node two the harmony module and

756
00:32:05,190 --> 00:32:03,039
also two over on the russian segment and

757
00:32:07,029 --> 00:32:05,200
that's what acts as the kind of crew

758
00:32:08,789 --> 00:32:07,039
members bedrooms i know a lot of people

759
00:32:10,149 --> 00:32:08,799
have been asking well where are the

760
00:32:11,909 --> 00:32:10,159
other people going to sleep there are

761
00:32:14,310 --> 00:32:11,919
nine of them they do have additional

762
00:32:16,070 --> 00:32:14,320
sleeping bags and all of the crew sleeps

763
00:32:17,750 --> 00:32:16,080

on the same schedule so lights can be

764

00:32:19,430 --> 00:32:17,760

turned off in some of the modules and

765

00:32:22,070 --> 00:32:19,440

you'll just have different crew members

766

00:32:24,470 --> 00:32:22,080

in those modules for the short duration

767

00:32:27,430 --> 00:32:24,480

that we do have nine crew members on

768

00:32:32,710 --> 00:32:30,389

our next question comes from renee uh

769

00:32:35,110 --> 00:32:32,720

who's asked in previous crew changes the

770

00:32:36,710 --> 00:32:35,120

crew left before a new crew launch uh

771

00:32:38,630 --> 00:32:36,720

but now we're gonna be extended to nine

772

00:32:40,710 --> 00:32:38,640

for over a week is this a one-time thing

773

00:32:41,750 --> 00:32:40,720

or is this going to be standard that's

774

00:32:43,669 --> 00:32:41,760

actually

775

00:32:45,590 --> 00:32:43,679

we're doing something that is known

776

00:32:48,149 --> 00:32:45,600

inside of the space industry is direct

777

00:32:49,909 --> 00:32:48,159

handover so that's when you have a

778

00:32:52,070 --> 00:32:49,919

vehicle arrive while there are still

779

00:32:53,509 --> 00:32:52,080

crew on board it has been done in the

780

00:32:55,509 --> 00:32:53,519

past it was

781

00:32:57,269 --> 00:32:55,519

the common practice every single time

782

00:32:59,029 --> 00:32:57,279

when we only had three crew members

783

00:33:00,549 --> 00:32:59,039

aboard the station because you would

784

00:33:02,310 --> 00:33:00,559

have three new crew members arrive

785

00:33:04,789 --> 00:33:02,320

before the other three left to maintain

786

00:33:06,470 --> 00:33:04,799

that constant habitation which again if

787

00:33:08,149 --> 00:33:06,480

you've been keeping track we've had

788

00:33:10,950 --> 00:33:08,159

people on board the international space

789

00:33:12,630 --> 00:33:10,960

station every single day since november

790

00:33:14,870 --> 00:33:12,640

2nd of 2000 we're going to be

791

00:33:17,029 --> 00:33:14,880

celebrating the 20th straight year of

792

00:33:18,389 --> 00:33:17,039

humans on board starting next year in

793

00:33:20,230 --> 00:33:18,399

2020

794

00:33:22,470 --> 00:33:20,240

and during then these direct handovers

795

00:33:25,029 --> 00:33:22,480

were much more common it's been a little

796

00:33:27,909 --> 00:33:25,039

bit more uncommon since we went up to

797

00:33:29,590 --> 00:33:27,919

six where you have one crew land and

798

00:33:31,990 --> 00:33:29,600

then another one launched so you have a

799

00:33:33,430 --> 00:33:32,000

short period of time we only have three

800

00:33:35,029 --> 00:33:33,440

crew members

801
00:33:37,590 --> 00:33:35,039
for now though we are going to be up to

802
00:33:40,070 --> 00:33:37,600
nine it's possible you will see more of

803
00:33:42,630 --> 00:33:40,080
these direct handovers once we start

804
00:33:44,630 --> 00:33:42,640
flying new commercial vehicles also

805
00:33:47,029 --> 00:33:44,640
known as the commercial crew capsules

806
00:33:55,269 --> 00:33:47,039
launching astronauts once again from the

807
00:33:57,830 --> 00:33:56,630
and then we'll do one more for right now

808
00:33:59,430 --> 00:33:57,840
this one comes from matt who wants to

809
00:34:01,190 --> 00:33:59,440
know what's the top speed in the g-force

810
00:34:03,110 --> 00:34:01,200
the crew is going to experience or

811
00:34:04,549 --> 00:34:03,120
actually this one's from chelsea sorry

812
00:34:06,789 --> 00:34:04,559
how long is the crew going to be staying

813
00:34:08,310 --> 00:34:06,799

at the international space station once

814

00:34:09,589 --> 00:34:08,320

they arrive

815

00:34:11,669 --> 00:34:09,599

thank you chelsea it's going to be

816

00:34:12,790 --> 00:34:11,679

different for all of these different

817

00:34:14,950 --> 00:34:12,800

crew members

818

00:34:16,470 --> 00:34:14,960

for huzzah ali al-mansuri he's only

819

00:34:18,230 --> 00:34:16,480

going to be up there for about nine days

820

00:34:20,470 --> 00:34:18,240

he's set to come home

821

00:34:23,109 --> 00:34:20,480

on october 3rd with two other crew

822

00:34:25,510 --> 00:34:23,119

members nasa astronaut nick Hague and

823

00:34:27,430 --> 00:34:25,520

russian cosmonaut alexei of chenan uh

824

00:34:29,270 --> 00:34:27,440

for jess kamir and alex grapochka

825

00:34:32,230 --> 00:34:29,280

they're going to be staying up to about

826
00:34:33,750 --> 00:34:32,240
200 days or a little bit over six months

827
00:34:36,710 --> 00:34:33,760
on board they're going to be up there

828
00:34:38,790 --> 00:34:36,720
for a long duration it's common for long

829
00:34:41,030 --> 00:34:38,800
duration expeditions to be about six

830
00:34:43,669 --> 00:34:41,040
months in length

831
00:34:45,190 --> 00:34:43,679
that's been the the common practice

832
00:34:47,270 --> 00:34:45,200
throughout the life of the international

833
00:34:49,349 --> 00:34:47,280
space station you do have a couple of

834
00:34:51,909 --> 00:34:49,359
different or a couple of different

835
00:34:54,310 --> 00:34:51,919
durations sprinkled in there throughout

836
00:34:57,109 --> 00:34:54,320
nowadays or over about the last year

837
00:34:59,589 --> 00:34:57,119
about 200 days is the common length but

838
00:35:01,589 --> 00:34:59,599

some are even starting to surpass that

839

00:35:02,630 --> 00:35:01,599

for example nasa astronaut christina

840

00:35:04,390 --> 00:35:02,640

cook

841

00:35:05,990 --> 00:35:04,400

thanks to some seat swapping is going to

842

00:35:08,630 --> 00:35:06,000

be staying on board the international

843

00:35:10,470 --> 00:35:08,640

space station over 300 days

844

00:35:12,069 --> 00:35:10,480

doing a very long duration mission she's

845

00:35:14,150 --> 00:35:12,079

actually going to be setting the record

846

00:35:16,470 --> 00:35:14,160

for the longest single space flight by a

847

00:35:19,270 --> 00:35:16,480

female astronaut and she's going to be

848

00:35:21,349 --> 00:35:19,280

getting very close to the u.s record for

849

00:35:23,109 --> 00:35:21,359

a continuous space flight which scott

850

00:35:34,470 --> 00:35:23,119

kelly set back during the year-long

851
00:35:37,910 --> 00:35:36,470
and one more for right now this one does

852
00:35:39,589 --> 00:35:37,920
come from matt he wanted to know what's

853
00:35:41,109 --> 00:35:39,599
the top speed in g-force the crew is

854
00:35:43,510 --> 00:35:41,119
going to experience

855
00:35:45,670 --> 00:35:43,520
the ride uphill isn't too g-force

856
00:35:48,069 --> 00:35:45,680
intense they'll usually get up to about

857
00:35:49,750 --> 00:35:48,079
three g's on the ascent uh but the

858
00:35:52,150 --> 00:35:49,760
eventual speed they're going to reach is

859
00:35:53,990 --> 00:35:52,160
that orbital velocity that's the

860
00:35:56,390 --> 00:35:54,000
amount of speed they need to maintain an

861
00:35:58,069 --> 00:35:56,400
orbit or a circle around the earth and

862
00:35:59,829 --> 00:35:58,079
that'll eventually match up with that of

863
00:36:01,510 --> 00:35:59,839

the international space station which is

864

00:36:36,390 --> 00:36:01,520

right around 17

865

00:36:40,790 --> 00:36:38,230

well right now we are 21 minutes and

866

00:36:42,790 --> 00:36:40,800

counting away from the launch of these

867

00:36:44,710 --> 00:36:42,800

three crew members jess kamir and our

868

00:36:47,270 --> 00:36:44,720

crewmates did describe the significance

869

00:36:49,430 --> 00:36:47,280

and the symbolism of their soyuz ms-15

870

00:36:51,109 --> 00:36:49,440

patch which you can see here during a

871

00:36:59,510 --> 00:36:51,119

recent crew news conference why don't we

872

00:37:04,550 --> 00:37:01,750

well there were some of the key feature

873

00:37:09,349 --> 00:37:04,560

features for the soyuz patch are the

874

00:37:13,030 --> 00:37:10,950

and this is the

875

00:37:15,349 --> 00:37:13,040

a bird that makes an incredibly

876

00:37:17,190 --> 00:37:15,359

um far-ranging duration for me it's

877

00:37:19,510 --> 00:37:17,200

extra special because in my previous

878

00:37:21,510 --> 00:37:19,520

life as a physiologist i studied birds

879

00:37:23,430 --> 00:37:21,520

and some migrations of birds so i really

880

00:37:25,990 --> 00:37:23,440

like that element of the patch

881

00:37:27,750 --> 00:37:26,000

and of course that long duration flying

882

00:37:29,750 --> 00:37:27,760

bird represents

883

00:37:31,829 --> 00:37:29,760

our long duration mission and how

884

00:37:36,069 --> 00:37:31,839

special that is

885

00:37:41,670 --> 00:37:38,710

yes and also the colors on the edge of

886

00:37:44,790 --> 00:37:41,680

our batch is the resulting the also the

887

00:37:47,990 --> 00:37:44,800

50th anniversary of apollo landing

888

00:37:49,109 --> 00:37:48,000

yes the colors at the edge

889

00:37:52,230 --> 00:37:49,119

and also

890

00:37:54,390 --> 00:37:52,240

you can see also uh uh ua flag with my

891

00:37:56,069 --> 00:37:54,400

name in arabic that's in arabic so if

892

00:37:58,150 --> 00:37:56,079

you're just wondering what's written

893

00:38:00,710 --> 00:37:58,160

there so it's my last name al-mansouri

894

00:38:02,630 --> 00:38:00,720

it's written in arabic and also this

895

00:38:10,260 --> 00:38:02,640

patch is also the same batch

896

00:38:10,270 --> 00:38:16,470

[Music]

897

00:38:29,510 --> 00:38:17,910

words

898

00:38:33,670 --> 00:38:32,470

and my second also had a bird on it and

899

00:38:35,030 --> 00:38:33,680

this time

900

00:38:37,910 --> 00:38:35,040

we have uh

901
00:38:38,710 --> 00:38:37,920
this bird that jessica mentioned also we

902
00:38:40,390 --> 00:38:38,720
have

903
00:38:42,870 --> 00:38:40,400
a ship

904
00:38:44,069 --> 00:38:42,880
station that we're going to work on then

905
00:38:46,790 --> 00:38:44,079
the moon

906
00:38:50,069 --> 00:38:46,800
which is our subsequent goal

907
00:38:53,190 --> 00:38:50,079
as our next stage

908
00:38:55,349 --> 00:38:53,200
one flying in deep space

909
00:39:00,550 --> 00:38:55,359
interstellar area that's it i think

910
00:39:05,589 --> 00:39:03,190
back right now with a live look at that

911
00:39:07,190 --> 00:39:05,599
soyuz rocket on the pad

912
00:39:09,510 --> 00:39:07,200
we are still counting down we are 18

913
00:39:12,790 --> 00:39:09,520

minutes 30 seconds away from liftoff

914

00:39:16,069 --> 00:39:12,800

again scheduled at 8 57 a.m central time

915

00:39:17,270 --> 00:39:16,079

6 57 pm in the evening over there in

916

00:39:20,710 --> 00:39:17,280

baikonur

917

00:39:24,630 --> 00:39:20,720

the soyuz rocket itself stands 162 feet

918

00:39:27,589 --> 00:39:24,640

tall weighing in at 680 000 pounds and

919

00:39:29,510 --> 00:39:27,599

consists of the soyuz ms-15 spacecraft

920

00:39:32,230 --> 00:39:29,520

inside of a protective shroud up at the

921

00:39:34,069 --> 00:39:32,240

very top and the three-stage soyuz fg

922

00:39:36,150 --> 00:39:34,079

booster below

923

00:39:37,990 --> 00:39:36,160

the spacecraft itself was made into the

924

00:39:39,750 --> 00:39:38,000

booster and the three main stages were

925

00:39:42,550 --> 00:39:39,760

joined together earlier this week on

926
00:39:44,550 --> 00:39:42,560
sunday and then just 24 hours later on

927
00:39:46,630 --> 00:39:44,560
monday the soyuz rocket began its track

928
00:39:48,630 --> 00:39:46,640
actually from that integration facility

929
00:39:50,790 --> 00:39:48,640
out to the pad always opening the door

930
00:39:53,109 --> 00:39:50,800
and starting that trip right at 7 00 a.m

931
00:39:54,950 --> 00:39:53,119
baikonur time arriving less than two

932
00:39:57,190 --> 00:39:54,960
hours later where it gets raised to its

933
00:39:59,510 --> 00:39:57,200
vertical position for final pre-launch

934
00:40:01,349 --> 00:39:59,520
preparations it moves out on a rail car

935
00:40:03,750 --> 00:40:01,359
from that building out to the pad number

936
00:40:06,069 --> 00:40:03,760
one and then these large clamshell

937
00:40:08,230 --> 00:40:06,079
gantry arms swing up to secure it in

938
00:40:10,309 --> 00:40:08,240

place and also offer access to the

939

00:40:12,470 --> 00:40:10,319

actual spacecraft including that

940

00:40:16,150 --> 00:40:12,480

elevator that the crew rides up to to

941

00:40:19,589 --> 00:40:16,160

board the soyuz prior to launch

942

00:40:21,589 --> 00:40:19,599

the first stage of the soyuz rocket has

943

00:40:23,349 --> 00:40:21,599

four liquid

944

00:40:26,069 --> 00:40:23,359

liquid-fueled engines that are strapped

945

00:40:27,910 --> 00:40:26,079

to the side of the core vehicle and each

946

00:40:30,230 --> 00:40:27,920

of those is going to burn

947

00:40:33,030 --> 00:40:30,240

for about 1 minute and 58 seconds before

948

00:40:34,150 --> 00:40:33,040

they drop away you can see those engines

949

00:40:35,510 --> 00:40:34,160

in this

950

00:40:37,750 --> 00:40:35,520

shot of that

951
00:40:38,470 --> 00:40:37,760
video from a little bit earlier this

952
00:40:40,309 --> 00:40:38,480
week

953
00:40:42,470 --> 00:40:40,319
they're the the small parts at the

954
00:40:44,309 --> 00:40:42,480
bottom that actually protrude out from

955
00:40:46,710 --> 00:40:44,319
the soyuz spacecraft and we'll see them

956
00:40:48,950 --> 00:40:46,720
light up just a few seconds prior to the

957
00:40:50,150 --> 00:40:48,960
liftoff and begin carrying the soyuz

958
00:40:52,150 --> 00:40:50,160
into orbit

959
00:40:53,910 --> 00:40:52,160
here's a quick animation of how this

960
00:40:55,829 --> 00:40:53,920
ride is going to look so those engines

961
00:40:58,069 --> 00:40:55,839
will actually start firing for several

962
00:41:00,630 --> 00:40:58,079
seconds before liftoff eventually their

963
00:41:02,230 --> 00:41:00,640

power overwhelming the uh the grapple

964

00:41:03,910 --> 00:41:02,240

arms that are holding it in place and

965

00:41:05,750 --> 00:41:03,920

they're actually only held in place by

966

00:41:07,670 --> 00:41:05,760

gravity so once the thrust of the

967

00:41:09,910 --> 00:41:07,680

vehicle is strong enough it will like

968

00:41:12,550 --> 00:41:09,920

it'll make those break away and the

969

00:41:14,870 --> 00:41:12,560

soyuz will leap away from the pad

970

00:41:17,510 --> 00:41:14,880

again four strap-on liquid fuel boosters

971

00:41:21,109 --> 00:41:17,520

help power the first stage and they burn

972

00:41:24,230 --> 00:41:21,119

for just about one minute and 58 seconds

973

00:41:26,230 --> 00:41:24,240

first the escape tower will jettison

974

00:41:28,230 --> 00:41:26,240

followed by those four

975

00:41:29,750 --> 00:41:28,240

boosters depending on if it's a clear

976
00:41:31,349 --> 00:41:29,760
enough day we may be able to get some

977
00:41:34,150 --> 00:41:31,359
video making something called the

978
00:41:35,589 --> 00:41:34,160
coryoff cross when they break away the

979
00:41:37,109 --> 00:41:35,599
launch shroud once the vehicle is high

980
00:41:39,030 --> 00:41:37,119
enough will

981
00:41:40,870 --> 00:41:39,040
depart and then the

982
00:41:43,589 --> 00:41:40,880
core stage continues burning until it's

983
00:41:45,349 --> 00:41:43,599
time for the third stage that core stage

984
00:41:47,910 --> 00:41:45,359
serving his second burning until four

985
00:41:49,670 --> 00:41:47,920
minutes 57 seconds into the flight the

986
00:41:51,990 --> 00:41:49,680
third stage lights and actually starts

987
00:41:54,470 --> 00:41:52,000
firing before the second or the before

988
00:41:56,710 --> 00:41:54,480

that first stage core stage drops away

989

00:41:58,710 --> 00:41:56,720

something called a hot staging technique

990

00:42:01,190 --> 00:41:58,720

that'll continue to burn until about 8

991

00:42:02,870 --> 00:42:01,200

minutes and 45 seconds in a flight and

992

00:42:05,030 --> 00:42:02,880

then after that it's time for vehicle

993

00:42:07,109 --> 00:42:05,040

separation soyuz will separate from the

994

00:42:09,430 --> 00:42:07,119

top of that third stage and it will be

995

00:42:14,150 --> 00:42:09,440

flying free and ready to make its chase

996

00:42:18,950 --> 00:42:15,990

we're still counting down though right

997

00:42:21,670 --> 00:42:18,960

now we are 15 minutes 20 seconds away

998

00:42:24,309 --> 00:42:21,680

from liftoff atop the rocket jessica

999

00:42:25,750 --> 00:42:24,319

muir nasa astronaut hazar ali al-mansuri

1000

00:42:28,150 --> 00:42:25,760

the astronaut for the united arab

1001
00:42:30,390 --> 00:42:28,160
emirates and alex gropochka the russian

1002
00:42:35,190 --> 00:42:30,400
cosmonaut just strapped in and counting

1003
00:42:39,750 --> 00:42:37,829
and again a reminder we are taking those

1004
00:42:42,390 --> 00:42:39,760
questions if you have any hop over to

1005
00:42:44,309 --> 00:42:42,400
twitter and use that hashtag ask nasa

1006
00:42:45,430 --> 00:42:44,319
we'll be using that a little we'll

1007
00:42:47,430 --> 00:42:45,440
answer those questions throughout

1008
00:42:48,870 --> 00:42:47,440
today's broadcast we won't get as many

1009
00:42:50,470 --> 00:42:48,880
today during this pre-launch but we'll

1010
00:42:52,550 --> 00:42:50,480
have plenty of time later on when we're

1011
00:42:54,870 --> 00:42:52,560
in the docking and hatch opening shows

1012
00:42:56,069 --> 00:42:54,880
should so be sure to keep on sending

1013
00:42:57,990 --> 00:42:56,079

those in

1014

00:43:00,710 --> 00:42:58,000

now though let's learn a little bit more

1015

00:43:02,550 --> 00:43:00,720

about the soyuz spacecraft itself

1016

00:43:04,390 --> 00:43:02,560

which measures in at twenty three and a

1017

00:43:06,470 --> 00:43:04,400

half feet long tipping the scales at

1018

00:43:07,990 --> 00:43:06,480

fifteen thousand six hundred and fifty

1019

00:43:10,870 --> 00:43:08,000

pounds and the soyuz itself the

1020

00:43:13,349 --> 00:43:10,880

spacecraft is also comprised of three

1021

00:43:14,950 --> 00:43:13,359

different modules

1022

00:43:16,390 --> 00:43:14,960

at the very top you see the orbital in

1023

00:43:18,069 --> 00:43:16,400

the middle the descent where the crew

1024

00:43:20,790 --> 00:43:18,079

actually is now on the bottom the

1025

00:43:22,630 --> 00:43:20,800

propulsion module the descent module

1026

00:43:24,950 --> 00:43:22,640

situated in the middle of the soyuz

1027

00:43:27,349 --> 00:43:24,960

vehicles that has a customized seat

1028

00:43:28,710 --> 00:43:27,359

liner inside each of the seats for these

1029

00:43:30,950 --> 00:43:28,720

crew members that they're seated in

1030

00:43:32,790 --> 00:43:30,960

during launch entry and landing it

1031

00:43:35,829 --> 00:43:32,800

contains all of the different controls

1032

00:43:38,230 --> 00:43:35,839

and displays necessary for the flight it

1033

00:43:40,710 --> 00:43:38,240

has life support systems batteries for

1034

00:43:42,390 --> 00:43:40,720

re-entry and landing also the parachutes

1035

00:43:44,710 --> 00:43:42,400

are tucked away right behind the crew

1036

00:43:46,470 --> 00:43:44,720

members heads it also has soft landing

1037

00:43:48,630 --> 00:43:46,480

rocket engines in the very bottom

1038

00:43:51,109 --> 00:43:48,640

beneath the heat shield that fire to

1039

00:43:53,430 --> 00:43:51,119

slow the soyuz right before it touches

1040

00:43:55,910 --> 00:43:53,440

down in kazakhstan there's also eight

1041

00:43:57,829 --> 00:43:55,920

hydrogen peroxide thrusters located on

1042

00:44:00,390 --> 00:43:57,839

the module that are used to control its

1043

00:44:02,150 --> 00:44:00,400

orientation or its attitude uh during

1044

00:44:04,150 --> 00:44:02,160

the actual descent until parachute

1045

00:44:05,829 --> 00:44:04,160

deployment deployment it also has

1046

00:44:07,430 --> 00:44:05,839

guidance navigation and control system

1047

00:44:09,670 --> 00:44:07,440

to maneuver the vehicle during that

1048

00:44:12,790 --> 00:44:09,680

descent phase of the mission

1049

00:44:15,270 --> 00:44:12,800

weighs 6 393 pounds has a habitable

1050

00:44:17,589 --> 00:44:15,280

volume of about 141 cubic feet so it's a

1051
00:44:19,990 --> 00:44:17,599
bit of a tight fit just overhead and

1052
00:44:22,230 --> 00:44:20,000
through a hatchway though is the orbital

1053
00:44:24,390 --> 00:44:22,240
module at the very top and this is the

1054
00:44:26,390 --> 00:44:24,400
part that not only can connect to the

1055
00:44:27,589 --> 00:44:26,400
descent module via a pressurized hatch

1056
00:44:29,190 --> 00:44:27,599
but is the part that will actually

1057
00:44:31,190 --> 00:44:29,200
connect to the international space

1058
00:44:32,870 --> 00:44:31,200
station it's got a small amount of room

1059
00:44:34,790 --> 00:44:32,880
for the crew to move around during the

1060
00:44:36,710 --> 00:44:34,800
flight to station was

1061
00:44:38,230 --> 00:44:36,720
much more important space when they were

1062
00:44:39,829 --> 00:44:38,240
taking two days which is still the

1063
00:44:41,589 --> 00:44:39,839

default if there are any issues during

1064

00:44:45,190 --> 00:44:41,599

that initial trip

1065

00:44:46,790 --> 00:44:45,200

but it has about 230 cubic feet of space

1066

00:44:48,790 --> 00:44:46,800

as the docking mechanism hatch

1067

00:44:51,030 --> 00:44:48,800

rendezvous antennas all the very front

1068

00:44:52,950 --> 00:44:51,040

end and that docking mechanism again is

1069

00:44:55,270 --> 00:44:52,960

what's actually used to connect this

1070

00:44:57,510 --> 00:44:55,280

spacecraft to the international space

1071

00:44:59,270 --> 00:44:57,520

station and then the rendezvous antennas

1072

00:45:01,589 --> 00:44:59,280

which are on the very top that are used

1073

00:45:03,430 --> 00:45:01,599

by the automated docking system

1074

00:45:05,109 --> 00:45:03,440

which actually use radar will maneuver

1075

00:45:06,870 --> 00:45:05,119

it towards the station for docking

1076

00:45:09,030 --> 00:45:06,880

there's also a forward-looking window on

1077

00:45:11,030 --> 00:45:09,040

the module for the crew to take manual

1078

00:45:12,630 --> 00:45:11,040

measurements of distance

1079

00:45:14,870 --> 00:45:12,640

all the way on the bottom of the

1080

00:45:16,950 --> 00:45:14,880

spacecraft is the propulsion module that

1081

00:45:18,630 --> 00:45:16,960

has all the oxygen storage tanks the

1082

00:45:20,950 --> 00:45:18,640

main engine the attitude control

1083

00:45:24,230 --> 00:45:20,960

thrusters avionics and communications

1084

00:45:25,910 --> 00:45:24,240

and control equipment propulsion module

1085

00:45:27,589 --> 00:45:25,920

propulsion portion

1086

00:45:29,109 --> 00:45:27,599

of the module handles all the orbital

1087

00:45:30,950 --> 00:45:29,119

maneuvers including those actually

1088

00:45:32,870 --> 00:45:30,960

needed to rendezvous with the action

1089

00:45:34,630 --> 00:45:32,880

with the international space station but

1090

00:45:37,589 --> 00:45:34,640

also perform the deorbit burn at the

1091

00:45:39,270 --> 00:45:37,599

very end of the spacecraft's mission

1092

00:45:41,270 --> 00:45:39,280

and before they're deployed the two

1093

00:45:43,510 --> 00:45:41,280

solar arrays which gather electrical

1094

00:45:44,950 --> 00:45:43,520

energy for the systems on board are

1095

00:45:46,470 --> 00:45:44,960

folded against the body of the

1096

00:45:48,470 --> 00:45:46,480

spacecraft

1097

00:45:50,870 --> 00:45:48,480

and those will actually unfold right

1098

00:45:52,790 --> 00:45:50,880

after we get into orbit the propulsion

1099

00:45:55,109 --> 00:45:52,800

module itself though detaches during

1100

00:45:56,710 --> 00:45:55,119

that final descent and burns up in the

1101
00:45:58,710 --> 00:45:56,720
earth's atmosphere along with the

1102
00:46:00,230 --> 00:45:58,720
orbital module that is sent modules to

1103
00:46:02,309 --> 00:46:00,240
that middle part which has the heat

1104
00:46:06,069 --> 00:46:02,319
shield the only piece of the soyuz that

1105
00:46:08,550 --> 00:46:06,079
actually survives that fiery re-entry

1106
00:46:10,390 --> 00:46:08,560
the entire spacecraft not only serving

1107
00:46:12,150 --> 00:46:10,400
as a crew transport vehicle so getting

1108
00:46:14,870 --> 00:46:12,160
the crew up into space and then getting

1109
00:46:17,349 --> 00:46:14,880
them back home at the end also serves as

1110
00:46:20,150 --> 00:46:17,359
basically their escape capsule so these

1111
00:46:22,069 --> 00:46:20,160
are used in the event that they need to

1112
00:46:24,069 --> 00:46:22,079
get off of the space station in a hurry

1113
00:46:26,550 --> 00:46:24,079

for any reason they use their soyuz

1114

00:46:28,870 --> 00:46:26,560

spacecraft as that emergency descent and

1115

00:46:30,950 --> 00:46:28,880

landing so there is always at least one

1116

00:46:33,109 --> 00:46:30,960

soyu spacecraft for each of the three

1117

00:46:35,030 --> 00:46:33,119

crew members on board or rather there's

1118

00:46:37,190 --> 00:46:35,040

at least a seat in a so used at all

1119

00:46:52,630 --> 00:46:37,200

times for any crew members on board the

1120

00:46:56,710 --> 00:46:54,950

we are 10 minutes and 42 seconds and

1121

00:46:58,950 --> 00:46:56,720

counting down to launch

1122

00:47:00,790 --> 00:46:58,960

representatives from nasa roscosmos and

1123

00:47:02,710 --> 00:47:00,800

the united arab emirates along with

1124

00:47:04,790 --> 00:47:02,720

friends family are all watching just a

1125

00:47:06,710 --> 00:47:04,800

short distance away from the launch pad

1126

00:47:09,670 --> 00:47:06,720

that we're getting a live look at right

1127

00:47:11,750 --> 00:47:09,680

now over in baikonur for a quick update

1128

00:47:13,750 --> 00:47:11,760

on all the activities there why don't we

1129

00:47:17,270 --> 00:47:13,760

go to baikonur veteran and nasa public

1130

00:47:19,430 --> 00:47:17,280

affairs officer rob navies

1131

00:47:21,510 --> 00:47:19,440

dan it is sunset here in the central

1132

00:47:23,829 --> 00:47:21,520

asian desert and the multinational crew

1133

00:47:26,390 --> 00:47:23,839

strapped inside the soyuz ms-15

1134

00:47:27,910 --> 00:47:26,400

spacecraft is set to begin its six-hour

1135

00:47:29,109 --> 00:47:27,920

journey to the international space

1136

00:47:31,109 --> 00:47:29,119

station

1137

00:47:33,109 --> 00:47:31,119

fall is in the air here in baikonur with

1138

00:47:35,829 --> 00:47:33,119

the start of this mission in the offing

1139

00:47:37,589 --> 00:47:35,839

escropeche amir and al-mansuri are

1140

00:47:39,990 --> 00:47:37,599

minutes away from blasting off in their

1141

00:47:41,750 --> 00:47:40,000

soyuz spacecraft in the final crude

1142

00:47:44,630 --> 00:47:41,760

launch of this year

1143

00:47:46,950 --> 00:47:44,640

after today's liftoff the legendary site

1144

00:47:48,790 --> 00:47:46,960

one where yuri gagarin began his journey

1145

00:47:51,349 --> 00:47:48,800

into the history books more than 58

1146

00:47:53,670 --> 00:47:51,359

years ago will be temporarily closed for

1147

00:47:55,510 --> 00:47:53,680

renovation and modernization to

1148

00:47:57,670 --> 00:47:55,520

accommodate future human spaceflight

1149

00:48:00,790 --> 00:47:57,680

launches of the soyuz spacecraft on the

1150

00:48:02,790 --> 00:48:00,800

upgraded 2.1a soyuz booster

1151
00:48:04,549 --> 00:48:02,800
the nasa delegation for this launch is

1152
00:48:06,950 --> 00:48:04,559
led by the acting administrator for

1153
00:48:08,309 --> 00:48:06,960
human exploration former astronaut ken

1154
00:48:10,549 --> 00:48:08,319
bowersox

1155
00:48:12,790 --> 00:48:10,559
about a thousand people from the united

1156
00:48:15,510 --> 00:48:12,800
arab emirates are here to watch their

1157
00:48:17,670 --> 00:48:15,520
native son al-mansuri ride into their

1158
00:48:19,829 --> 00:48:17,680
history books as the first emirati

1159
00:48:21,990 --> 00:48:19,839
citizen to fly in space

1160
00:48:23,829 --> 00:48:22,000
against that backdrop as we near the

1161
00:48:25,430 --> 00:48:23,839
19th anniversary of the start of a

1162
00:48:27,670 --> 00:48:25,440
permanent human occupancy of the

1163
00:48:29,430 --> 00:48:27,680

international space station everything

1164

00:48:32,630 --> 00:48:29,440

is in readiness for a ride into the

1165

00:48:34,549 --> 00:48:32,640

sunset skies from this historic venue

1166

00:48:36,870 --> 00:48:34,559

that's it from the baikonur cosmodrome

1167

00:48:40,150 --> 00:48:36,880

in kazakhstan now back to you at mission

1168

00:48:45,349 --> 00:48:42,309

and thank you rob getting some in cap

1169

00:48:46,710 --> 00:48:45,359

and views now of the soyuz in this view

1170

00:48:49,109 --> 00:48:46,720

in the bottom right corner you're seeing

1171

00:48:51,030 --> 00:48:49,119

the center seat that's alex grapochka

1172

00:48:51,990 --> 00:48:51,040

and then in the center of your screen

1173

00:48:54,630 --> 00:48:52,000

that is

1174

00:48:55,510 --> 00:48:54,640

ali al-mansuri he's seated in the right

1175

00:48:57,589 --> 00:48:55,520

seat

1176
00:49:01,030 --> 00:48:57,599
for today's launch making his first trip

1177
00:49:02,630 --> 00:49:01,040
into space the third for skrapochka

1178
00:49:05,109 --> 00:49:02,640
we're about eight and a half minutes

1179
00:49:07,349 --> 00:49:05,119
away from the planned launch time why

1180
00:49:09,750 --> 00:49:07,359
don't we sneak in a few more ask nasa

1181
00:49:10,950 --> 00:49:09,760
questions our first one

1182
00:49:12,870 --> 00:49:10,960
comes from

1183
00:49:14,549 --> 00:49:12,880
zyriel wanted to know when's the last

1184
00:49:16,710 --> 00:49:14,559
time nine people were aboard the

1185
00:49:19,030 --> 00:49:16,720
international space station great

1186
00:49:21,750 --> 00:49:19,040
question it hasn't actually been that

1187
00:49:23,510 --> 00:49:21,760
long it was september of 2015

1188
00:49:26,630 --> 00:49:23,520

when there was a short taxi flight that

1189

00:49:29,430 --> 00:49:26,640

brought up kozak

1190

00:49:32,230 --> 00:49:29,440

kazakh cosmonaut and that was during the

1191

00:49:34,309 --> 00:49:32,240

one-year mission uh for scott kelly uh

1192

00:49:36,069 --> 00:49:34,319

and mikhail korininko so again it was

1193

00:49:37,510 --> 00:49:36,079

another really long duration flight and

1194

00:49:39,829 --> 00:49:37,520

we had a crew member going up for a

1195

00:49:42,630 --> 00:49:39,839

short we call it a taxi flight just

1196

00:49:44,470 --> 00:49:42,640

about an eight day mission

1197

00:49:45,670 --> 00:49:44,480

our next question comes from good hope

1198

00:49:47,510 --> 00:49:45,680

who wanted to know is there a

1199

00:49:49,589 --> 00:49:47,520

possibility their flight path will be

1200

00:49:52,150 --> 00:49:49,599

affected by the htv-8 launch that just

1201
00:49:53,750 --> 00:49:52,160
happened yesterday no it won't uh this

1202
00:49:55,190 --> 00:49:53,760
is something as you can imagine all the

1203
00:49:57,270 --> 00:49:55,200
different flight controllers look at

1204
00:49:59,030 --> 00:49:57,280
very carefully there's usually some

1205
00:50:00,950 --> 00:49:59,040
constraints around when vehicles are

1206
00:50:03,270 --> 00:50:00,960
arriving but these won't be arriving at

1207
00:50:06,309 --> 00:50:03,280
the same time the soyuz going to launch

1208
00:50:08,710 --> 00:50:06,319
and dock today the hdv8 not set to

1209
00:50:11,430 --> 00:50:08,720
actually get really close to the space

1210
00:50:13,750 --> 00:50:11,440
station until saturday

1211
00:50:15,510 --> 00:50:13,760
and then we'll do one more this one from

1212
00:50:16,630 --> 00:50:15,520
cassidy who wants to know what do they

1213
00:50:20,309 --> 00:50:16,640

eat

1214

00:50:22,309 --> 00:50:20,319

different things each of the crew

1215

00:50:24,390 --> 00:50:22,319

members before they go up at least on

1216

00:50:26,710 --> 00:50:24,400

the nasa side get a chance to sit down

1217

00:50:28,390 --> 00:50:26,720

with nasa food scientists to map out all

1218

00:50:29,670 --> 00:50:28,400

of their likes and dislikes for their

1219

00:50:32,710 --> 00:50:29,680

menu items

1220

00:50:34,470 --> 00:50:32,720

it's much more diverse of a menu than

1221

00:50:36,549 --> 00:50:34,480

you might imagine

1222

00:50:37,349 --> 00:50:36,559

getting everything from shrimp cocktail

1223

00:50:39,430 --> 00:50:37,359

to

1224

00:50:40,470 --> 00:50:39,440

different pork chops things of that

1225

00:50:43,349 --> 00:50:40,480

nature

1226
00:50:44,870 --> 00:50:43,359
food in space not as you might imagine

1227
00:50:45,670 --> 00:50:44,880
they don't have the freeze-dried ice

1228
00:50:47,430 --> 00:50:45,680
cream

1229
00:50:48,790 --> 00:50:47,440
we actually are able to send real ice

1230
00:50:50,549 --> 00:50:48,800
cream sometimes

1231
00:50:52,710 --> 00:50:50,559
and most of their food not coming in

1232
00:50:54,950 --> 00:50:52,720
tubes it's dehydrated and so it actually

1233
00:50:57,270 --> 00:50:54,960
has a we call it a shelf stable life so

1234
00:51:01,510 --> 00:50:57,280
it'll maintain taste and nutrition for

1235
00:51:07,030 --> 00:51:03,670
right now though we are just under six

1236
00:51:09,270 --> 00:51:07,040
and a half minutes away from launch we

1237
00:51:11,190 --> 00:51:09,280
have teams here in mission control

1238
00:51:12,150 --> 00:51:11,200

houston standing by to monitor they'll

1239

00:51:14,230 --> 00:51:12,160

be

1240

00:51:16,150 --> 00:51:14,240

much more involved once the vehicle

1241

00:51:18,230 --> 00:51:16,160

actually approaches the space station

1242

00:51:20,870 --> 00:51:18,240

and then overseeing today's mission

1243

00:51:22,150 --> 00:51:20,880

mission control moscow out and coryoff

1244

00:51:24,630 --> 00:51:22,160

they're going to be talking directly to

1245

00:51:26,390 --> 00:51:24,640

the crew during their flight up to orbit

1246

00:51:29,190 --> 00:51:26,400

and on the right there a continuing look

1247

00:51:31,270 --> 00:51:29,200

at a live view of the soyuz rocket on

1248

00:51:33,750 --> 00:51:31,280

the launch pad we are just six minutes

1249

00:51:36,150 --> 00:51:33,760

away at this point all of the pre-launch

1250

00:51:37,990 --> 00:51:36,160

operations are complete and the

1251
00:51:39,670 --> 00:51:38,000
countdown the first and second stage

1252
00:51:41,270 --> 00:51:39,680
engines are ready for launch they've

1253
00:51:43,510 --> 00:51:41,280
confirmed that they've gotten telemetry

1254
00:51:45,510 --> 00:51:43,520
from the rocket indicating that all the

1255
00:51:58,150 --> 00:51:45,520
primary backup systems are ready to

1256
00:51:58,160 --> 00:52:04,309
great

1257
00:52:07,910 --> 00:52:05,829
and we just heard the call that the

1258
00:52:10,309 --> 00:52:07,920
launch key has been inserted in the

1259
00:52:11,670 --> 00:52:10,319
launch bunker that's probably one of the

1260
00:52:13,589 --> 00:52:11,680
coolest things

1261
00:52:15,589 --> 00:52:13,599
about one of these launches is they do

1262
00:52:17,430 --> 00:52:15,599
use an actual key

1263
00:52:19,750 --> 00:52:17,440

that transitions the launch sequence

1264

00:52:22,470 --> 00:52:19,760

into its automatic mode so we are t

1265

00:52:24,069 --> 00:52:22,480

minus five minutes 15 seconds away from

1266

00:52:25,829 --> 00:52:24,079

launch

1267

00:52:27,910 --> 00:52:25,839

and at this point the range at baikonur

1268

00:52:51,990 --> 00:52:27,920

has been cleared the soyuz rocket ready

1269

00:52:55,670 --> 00:52:53,829

measurement system is activated by run

1270

00:53:04,309 --> 00:52:55,680

one command

1271

00:53:08,069 --> 00:53:06,309

we are t minus four minutes 30 seconds

1272

00:53:10,630 --> 00:53:08,079

at this point fuel lines the combustion

1273

00:53:13,589 --> 00:53:10,640

chamber being purged with nitrogen so

1274

00:53:15,750 --> 00:53:13,599

using a nitrogen gas to blow out any

1275

00:53:19,589 --> 00:53:15,760

remaining vapors of fuel or oxidizer

1276

00:53:20,950 --> 00:53:19,599

that may be in those fuel lines

1277

00:53:23,190 --> 00:53:20,960

at this point the crew member have their

1278

00:53:26,150 --> 00:53:23,200

helmets closed inside the cabin they're

1279

00:53:29,430 --> 00:53:26,160

strapped in and ready for launch

1280

00:53:31,430 --> 00:53:29,440

sorry how do you read me

1281

00:53:33,589 --> 00:53:31,440

uh hello

1282

00:53:36,150 --> 00:53:33,599

loud and clear everything is fine on

1283

00:53:37,910 --> 00:53:36,160

board copy

1284

00:53:40,150 --> 00:53:37,920

you're hearing a translation between the

1285

00:53:41,510 --> 00:53:40,160

commander alex grapochka

1286

00:53:43,430 --> 00:53:41,520

and the actual

1287

00:53:45,030 --> 00:53:43,440

launch engineers there in baikonur

1288

00:53:56,950 --> 00:53:45,040

reporting everything good on board the

1289

00:54:14,390 --> 00:53:58,630

ground measurement system is activated

1290

00:54:14,400 --> 00:54:36,789

safety valves of launch vehicles

1291

00:54:40,950 --> 00:54:38,470

and just passing the three minute mark

1292

00:54:43,430 --> 00:54:40,960

now away from launch all the cockpit

1293

00:54:46,549 --> 00:54:43,440

displays inside the soyuz are lit up and

1294

00:54:49,990 --> 00:54:46,559

ready for cosmonaut alex korpochka

1295

00:54:51,750 --> 00:54:50,000

to keep an eye on during today's flight

1296

00:54:54,470 --> 00:54:51,760

all the onboard systems are switched

1297

00:54:56,390 --> 00:54:54,480

over to onboard control continuing to

1298

00:54:59,829 --> 00:54:56,400

march down two minutes 40 seconds away

1299

00:54:59,839 --> 00:55:07,829

refresh

1300

00:55:13,030 --> 00:55:10,309

and keep an eye on the videos you'll see

1301
00:55:15,270 --> 00:55:13,040
two large umbilical towers or arms kind

1302
00:55:17,349 --> 00:55:15,280
of connected to the rocket still

1303
00:55:19,030 --> 00:55:17,359
the taller one is the first umbilical

1304
00:55:21,109 --> 00:55:19,040
tower that'll separate the booster and

1305
00:55:23,270 --> 00:55:21,119
that will initiate auto sequence start

1306
00:55:24,950 --> 00:55:23,280
that coming right around t minus 35

1307
00:55:26,950 --> 00:55:24,960
seconds and when you see the smaller

1308
00:55:30,230 --> 00:55:26,960
umbilical detach

1309
00:55:37,510 --> 00:55:30,240
that means we are 15 seconds away from

1310
00:55:37,520 --> 00:56:06,710
and t minus two minutes from launch

1311
00:56:10,950 --> 00:56:08,870
one minute 30 seconds away it does look

1312
00:56:13,030 --> 00:56:10,960
like we have some cloud cover there in

1313
00:56:15,270 --> 00:56:13,040

baikonur so you may see it disappear

1314

00:56:16,630 --> 00:56:15,280

into the cloud deck pretty quickly

1315

00:56:18,630 --> 00:56:16,640

that first stage going to light up the

1316

00:56:20,549 --> 00:56:18,640

night sky though it's going to burn for

1317

00:56:22,789 --> 00:56:20,559

the first several minutes

1318

00:56:23,990 --> 00:56:22,799

before those four strap-on boosters

1319

00:56:26,470 --> 00:56:24,000

break away

1320

00:56:36,390 --> 00:56:26,480

at just about one minute and 58 seconds

1321

00:56:36,400 --> 00:56:40,789

one minute and counting

1322

00:56:47,030 --> 00:56:44,549

one minute to lift off contact

1323

00:56:47,829 --> 00:56:47,040

everything is fine on board we're doing

1324

00:56:52,150 --> 00:56:47,839

well

1325

00:56:59,829 --> 00:56:54,710

we go to internal power and you see that

1326
00:57:03,430 --> 00:57:01,349
and now keep an eye on the one a little

1327
00:57:23,670 --> 00:57:03,440
bit lower down once that separates you

1328
00:57:27,829 --> 00:57:25,589
auto sequence start second umbilical

1329
00:57:31,270 --> 00:57:27,839
separating t minus 15 seconds you can

1330
00:57:36,230 --> 00:57:31,280
see the engine's starting to fire

1331
00:57:36,240 --> 00:57:49,030
engine turbo pumps at twice these

1332
00:58:06,789 --> 00:57:51,109
start on their way to the international

1333
00:58:11,829 --> 00:58:09,190
everything is fine on board the soyuz

1334
00:58:13,190 --> 00:58:11,839
where you're feeling great coffee

1335
00:58:14,630 --> 00:58:13,200
we're going to continue to get these

1336
00:58:16,069 --> 00:58:14,640
translations throughout the flight

1337
00:58:18,069 --> 00:58:16,079
everything's still sounding good with

1338
00:58:19,670 --> 00:58:18,079

that first stage

1339

00:58:22,630 --> 00:58:19,680

you can see the four strap on boosters

1340

00:58:25,430 --> 00:58:22,640

lighting up the night sky

1341

00:58:27,109 --> 00:58:25,440

so he's delivering 930 000 pounds of

1342

00:58:29,109 --> 00:58:27,119

thrust with that first stage the ford

1343

00:58:30,710 --> 00:58:29,119

boosters and the single core engine you

1344

00:58:33,589 --> 00:58:30,720

can see them punching through the cloud

1345

00:58:37,190 --> 00:58:35,430

the first stage measures 68 feet in

1346

00:58:38,870 --> 00:58:37,200

length 24 feet in diameter burning

1347

00:58:40,950 --> 00:58:38,880

liquid fuel for the first two minutes of

1348

00:58:41,910 --> 00:58:40,960

the flight

1349

00:58:43,829 --> 00:58:41,920

page

1350

00:58:45,510 --> 00:58:43,839

are nominal

1351
00:58:47,430 --> 00:58:45,520
it's a pitchy on roll referring to the

1352
00:58:49,430 --> 00:58:47,440
orientation of the vehicle nominal a

1353
00:58:51,829 --> 00:58:49,440
word you'll hear a lot that just means

1354
00:58:54,549 --> 00:58:51,839
everything is proceeding normally

1355
00:59:05,510 --> 00:58:54,559
continuing to get for good first stage

1356
00:59:08,710 --> 00:59:07,190
things looking good inside the cabin you

1357
00:59:10,950 --> 00:59:08,720
can see jessica mirror at the top of

1358
00:59:12,789 --> 00:59:10,960
your screen alex corporate at the bottom

1359
00:59:15,430 --> 00:59:12,799
there in the commander seat

1360
00:59:18,630 --> 00:59:15,440
first and second stage thrusters are

1361
00:59:20,390 --> 00:59:18,640
operating nominally

1362
00:59:21,910 --> 00:59:20,400
a little over a minute and a half into

1363
00:59:26,150 --> 00:59:21,920

the flight everything continuing to go

1364

00:59:30,309 --> 00:59:28,470

we've already well exceeded over 1100

1365

00:59:32,390 --> 00:59:30,319

miles an hour the next things we're

1366

00:59:34,870 --> 00:59:32,400

going to be looking for is the escape

1367

00:59:36,549 --> 00:59:34,880

tower jettison

1368

00:59:39,510 --> 00:59:36,559

and then the first stage

1369

00:59:41,349 --> 00:59:39,520

strap-on boosters separating

1370

00:59:43,750 --> 00:59:41,359

and they're getting a great view you can

1371

00:59:46,549 --> 00:59:43,760

see that coryoff cross the first stage

1372

00:59:48,549 --> 00:59:46,559

strap-on boosters have separated along

1373

00:59:51,349 --> 00:59:48,559

with that tower now the core engine

1374

00:59:55,510 --> 00:59:51,359

continuing to fire the soyuz already at

1375

00:59:59,349 --> 00:59:55,520

an altitude of about 28 statute miles

1376

01:00:05,829 --> 01:00:01,190

everything is nominal on board

1377

01:00:10,549 --> 01:00:07,589

so at this point the soyuz traveling in

1378

01:00:12,789 --> 01:00:10,559

excess of 3 300 miles per hour

1379

01:00:14,630 --> 01:00:12,799

you can see those four strap-on boosters

1380

01:00:16,789 --> 01:00:14,640

continuing to descend

1381

01:00:18,950 --> 01:00:16,799

the soyuz power now by that core stage

1382

01:00:22,950 --> 01:00:18,960

engine

1383

01:00:26,470 --> 01:00:25,109

we

1384

01:00:28,470 --> 01:00:26,480

see that the launch route jettison is

1385

01:00:30,549 --> 01:00:28,480

also confirmed permitted the launch

1386

01:00:32,230 --> 01:00:30,559

round protecting the soyuz during that

1387

01:00:33,829 --> 01:00:32,240

initial climb through the atmosphere has

1388

01:00:37,510 --> 01:00:33,839

been jettisoned this is actually a view

1389

01:00:39,109 --> 01:00:37,520

from on on the soyuz spacecraft itself

1390

01:00:43,990 --> 01:00:39,119

you're looking down at one of the folded

1391

01:00:49,589 --> 01:00:47,190

we're over three minutes now inside

1392

01:00:53,109 --> 01:00:49,599

rockets altitude already 48 miles in

1393

01:00:58,630 --> 01:00:55,109

at this point traveling in excess of 4

1394

01:01:02,630 --> 01:00:58,640

700 miles per hour

1395

01:01:07,109 --> 01:01:05,430

second stage uh thrusters are operating

1396

01:01:08,549 --> 01:01:07,119

nominally

1397

01:01:10,549 --> 01:01:08,559

so everything continuing to go well with

1398

01:01:12,950 --> 01:01:10,559

that core stage the corsage booster of

1399

01:01:15,109 --> 01:01:12,960

the soyuz 56 feet in length 13 and a

1400

01:01:17,270 --> 01:01:15,119

half feet in diameter has a single

1401

01:01:20,950 --> 01:01:17,280

engine with four fuel chambers it

1402

01:01:23,430 --> 01:01:20,960

provides between 178 and 220 000 pounds

1403

01:01:25,430 --> 01:01:23,440

of thrust depending on the altitude for

1404

01:01:26,789 --> 01:01:25,440

3 minutes and 28 seconds of operation

1405

01:01:28,630 --> 01:01:26,799

that's required this is going to

1406

01:01:31,510 --> 01:01:28,640

continue to burn until about 4 minutes

1407

01:01:33,670 --> 01:01:31,520

43 seconds into the flight and soyuz is

1408

01:01:35,589 --> 01:01:33,680

going to use what's called a hot stage

1409

01:01:37,030 --> 01:01:35,599

technique

1410

01:01:39,510 --> 01:01:37,040

everything is nominal involved we're

1411

01:01:41,270 --> 01:01:39,520

feeling great coffee

1412

01:01:42,950 --> 01:01:41,280

reports everyone doing well on board

1413

01:01:44,390 --> 01:01:42,960

everything continuing to go well again

1414

01:01:46,630 --> 01:01:44,400

that hot stage technique will actually

1415

01:01:48,870 --> 01:01:46,640

see the third stage start to fire while

1416

01:01:51,190 --> 01:01:48,880

the second stage is still connected has

1417

01:01:53,589 --> 01:01:51,200

a lattice like structure between the two

1418

01:01:55,589 --> 01:01:53,599

stages allowing the exhaust to escape

1419

01:01:57,829 --> 01:01:55,599

and that allows then the core stage to

1420

01:01:59,750 --> 01:01:57,839

drop away with the third stage already

1421

01:02:03,190 --> 01:01:59,760

powering the soyuz into its initial

1422

01:02:06,789 --> 01:02:04,710

your launch vehicle control system

1423

01:02:09,430 --> 01:02:06,799

parameters are nominal we are standing

1424

01:02:18,829 --> 01:02:09,440

by for rogue two

1425

01:02:30,630 --> 01:02:21,190

shutdown and standing by for that third

1426
01:02:35,190 --> 01:02:32,950
and confirmation second stage has shut

1427
01:02:42,549 --> 01:02:35,200
down and separated the soyuz now being

1428
01:02:46,630 --> 01:02:44,630
command cutoff command

1429
01:02:50,150 --> 01:02:46,640
went through and everything is nominal

1430
01:02:54,390 --> 01:02:52,309
everything continuing to proceed

1431
01:02:57,670 --> 01:02:54,400
smoothly the core booster separating an

1432
01:03:00,230 --> 01:02:57,680
altitude of about 105 miles in

1433
01:03:02,390 --> 01:03:00,240
height it's about 170 kilometers now

1434
01:03:05,589 --> 01:03:02,400
being propelled by the single engine of

1435
01:03:07,029 --> 01:03:05,599
the third stage it provides about 67 000

1436
01:03:09,430 --> 01:03:07,039
pounds of thrust and is going to burn

1437
01:03:11,510 --> 01:03:09,440
for a little over four minutes it will

1438
01:03:14,069 --> 01:03:11,520

be the final phase of the rocket's

1439

01:03:28,309 --> 01:03:14,079

journey into orbit stage thrusters are

1440

01:03:32,870 --> 01:03:30,309

again this is a view looking back

1441

01:03:35,109 --> 01:03:32,880

towards the end and that'll be cutting

1442

01:03:36,870 --> 01:03:35,119

in and out this an animation of what's

1443

01:03:38,789 --> 01:03:36,880

taking place right now that third stage

1444

01:03:40,710 --> 01:03:38,799

engine going to continue to fire and

1445

01:03:42,069 --> 01:03:40,720

carry the vehicle into orbit it's

1446

01:03:45,270 --> 01:03:42,079

actually a view you're seeing one of the

1447

01:03:47,589 --> 01:03:45,280

folded up solar arrays that along with a

1448

01:03:55,510 --> 01:03:47,599

series of antennas will deploy shortly

1449

01:04:00,390 --> 01:03:57,430

we're still about two and a half minutes

1450

01:04:02,549 --> 01:04:00,400

away from the shutdown and separation

1451
01:04:05,029 --> 01:04:02,559
of the third stage everything continuing

1452
01:04:08,710 --> 01:04:05,039
to go smoothly for this ride

1453
01:04:10,069 --> 01:04:08,720
taking off right on time at 8 57 a.m

1454
01:04:11,990 --> 01:04:10,079
central time

1455
01:04:14,789 --> 01:04:12,000
everything looking good so far with the

1456
01:04:17,430 --> 01:04:14,799
crew alex corporal jess kamir and huzzah

1457
01:04:19,190 --> 01:04:17,440
ali al-mansari inside the spacecraft

1458
01:04:21,670 --> 01:04:19,200
well on their way to orbit

1459
01:05:10,549 --> 01:04:21,680
400 seconds into the flight

1460
01:05:27,190 --> 01:05:13,029
450 seconds into the flight the flight is

1461
01:05:30,950 --> 01:05:28,870
we're approaching eight minutes since

1462
01:05:33,430 --> 01:05:30,960
liftoff at this point the vehicle

1463
01:05:35,109 --> 01:05:33,440

traveling at a velocity of over

1464

01:05:37,430 --> 01:05:35,119

almost thirteen thousand five hundred

1465

01:05:39,829 --> 01:05:37,440

miles an hour we're just under a minute

1466

01:05:41,349 --> 01:05:39,839

away from third stage shutdown and

1467

01:05:43,270 --> 01:05:41,359

separation we'll see the engine on the

1468

01:05:45,349 --> 01:05:43,280

third stage cut off and separate

1469

01:05:48,549 --> 01:05:45,359

delivering the soyuz spacecraft into its

1470

01:05:48,559 --> 01:06:01,190

490

1471

01:06:01,200 --> 01:06:30,150

500 seconds everything is nominal

1472

01:06:34,950 --> 01:06:32,630

look at three commands

1473

01:06:37,750 --> 01:06:34,960

getting a spectacular view there you see

1474

01:06:39,349 --> 01:06:37,760

the third stage separate and fly away

1475

01:06:47,930 --> 01:06:39,359

and sermons congratulations we are

1476

01:06:58,950 --> 01:06:53,500

[Music]

1477

01:07:01,910 --> 01:07:01,029

everything was vulnerable

1478

01:07:05,510 --> 01:07:01,920

and

1479

01:07:07,829 --> 01:07:05,520

we are working from pages 35 through 39

1480

01:07:14,069 --> 01:07:07,839

copyhole and we are standing by for the

1481

01:07:18,150 --> 01:07:15,910

and just like that three new crew

1482

01:07:19,910 --> 01:07:18,160

members now in outer space the third

1483

01:07:22,230 --> 01:07:19,920

stage separating and we did get a good

1484

01:07:24,710 --> 01:07:22,240

report that all the solar arrays and

1485

01:07:27,349 --> 01:07:24,720

antennas have deployed so a spacecraft

1486

01:07:29,589 --> 01:07:27,359

in good health now in orbit around

1487

01:07:31,990 --> 01:07:29,599

planet earth russian cosmonaut alex

1488

01:07:34,390 --> 01:07:32,000

grapochka nasa astronaut jess kamir

1489

01:07:37,510 --> 01:07:34,400

and your united arab emirates astronaut

1490

01:07:39,270 --> 01:07:37,520

hazar ali al-mansuri now in outer space

1491

01:07:49,349 --> 01:07:39,280

beginning their chase down of the

1492

01:07:53,910 --> 01:07:51,589

one and two flow centers are closed copy

1493

01:07:54,789 --> 01:07:53,920

all that's wonderful

1494

01:07:56,549 --> 01:07:54,799

and

1495

01:07:58,230 --> 01:07:56,559

oversight of the spacecraft now i'm

1496

01:07:59,829 --> 01:07:58,240

going to be transferring over to the

1497

01:08:02,390 --> 01:07:59,839

russian mission control center just

1498

01:08:04,789 --> 01:08:02,400

outside of moscow

1499

01:08:06,710 --> 01:08:04,799

it'll be this team right there in the

1500

01:08:08,549 --> 01:08:06,720

room

1501
01:08:10,549 --> 01:08:08,559
again we did get confirmation that both

1502
01:08:13,349 --> 01:08:10,559
solar arrays and all of the

1503
01:08:16,470 --> 01:08:13,359
rendezvous and docking antennas have

1504
01:08:18,789 --> 01:08:16,480
deployed so a spacecraft in good health

1505
01:08:20,550 --> 01:08:18,799
along with the crew now ready to make

1506
01:08:47,510 --> 01:08:20,560
the six hour journey towards the space

1507
01:08:51,590 --> 01:08:49,669
and we're standing by

1508
01:09:30,870 --> 01:08:51,600
for the first measurement for page 36

1509
01:09:30,880 --> 01:09:44,470
copy

1510
01:09:50,400 --> 01:09:45,669
zero eight

1511
01:09:50,410 --> 01:10:00,830
[Music]

1512
01:10:12,630 --> 01:10:02,390
18

1513
01:10:15,430 --> 01:10:13,830

three

1514

01:10:18,630 --> 01:10:15,440

two one

1515

01:10:20,630 --> 01:10:18,640

three two seven

1516

01:10:21,830 --> 01:10:20,640

nineteen decimals six

1517

01:10:24,470 --> 01:10:21,840

eighteen

1518

01:10:25,910 --> 01:10:24,480

decimal one

1519

01:10:28,390 --> 01:10:25,920

nine

1520

01:10:30,670 --> 01:10:28,400

eight hundred and

1521

01:10:44,310 --> 01:10:30,680

inaudible

1522

01:10:50,390 --> 01:10:46,709

we're underway copy all

1523

01:11:10,950 --> 01:10:50,400

and so then test was also underway copy

1524

01:11:18,950 --> 01:11:12,630

what we'll do during the next compass

1525

01:11:18,960 --> 01:11:24,870

deactivate and activate all home assets

1526
01:11:27,510 --> 01:11:26,550
and don't forget to

1527
01:11:33,110 --> 01:11:27,520
send

1528
01:11:37,189 --> 01:11:34,870
control test

1529
01:11:40,470 --> 01:11:37,199
will be performed during

1530
01:11:44,229 --> 01:11:40,480
the next compass that is page 45 step

1531
01:11:51,110 --> 01:11:46,070
and

1532
01:11:55,510 --> 01:11:51,120
inhibit on the same page is at 18 32 0 0

1533
01:11:55,520 --> 01:12:00,310
also for your information for page 41

1534
01:12:05,750 --> 01:12:01,990
satellite attitude

1535
01:12:07,570 --> 01:12:05,760
for satellite time is 18 41

1536
01:12:16,400 --> 01:12:07,580
through 8

1537
01:12:29,830 --> 01:12:18,470
[Music]

1538
01:13:04,100 --> 01:12:31,830

and we're standing by for

1539

01:13:09,270 --> 01:13:07,110

[Applause]

1540

01:13:10,630 --> 01:13:09,280

i'm ready to report the next measurement

1541

01:13:30,550 --> 01:13:10,640

for you

1542

01:13:30,560 --> 01:13:41,189

inaudible

1543

01:13:41,199 --> 01:13:51,189

everything is nominal copy

1544

01:13:54,950 --> 01:13:52,790

so again the crew

1545

01:13:56,630 --> 01:13:54,960

now in space you can hear them running

1546

01:13:59,030 --> 01:13:56,640

through a number of different system

1547

01:14:01,350 --> 01:13:59,040

checks on board the soyuz uh

1548

01:14:03,430 --> 01:14:01,360

we are going to take a couple more

1549

01:14:05,750 --> 01:14:03,440

ask nasa questions this one from german

1550

01:14:07,990 --> 01:14:05,760

wanted to know does nasa ever answer the

1551
01:14:11,110 --> 01:14:08,000
hashtag ask nasa questions and i can

1552
01:14:13,110 --> 01:14:11,120
definitively say yes german yes we do

1553
01:14:15,510 --> 01:14:13,120
our next one comes from harvard

1554
01:14:17,030 --> 01:14:15,520
elementary some fourth grade students

1555
01:14:19,270 --> 01:14:17,040
wanted to know what do astronauts do for

1556
01:14:20,709 --> 01:14:19,280
entertainment while in space it's

1557
01:14:23,270 --> 01:14:20,719
actually

1558
01:14:25,030 --> 01:14:23,280
much cushier now to be an astronaut than

1559
01:14:26,229 --> 01:14:25,040
it was even years ago the astronauts

1560
01:14:27,990 --> 01:14:26,239
have access

1561
01:14:29,270 --> 01:14:28,000
to internet while they're up there so

1562
01:14:32,070 --> 01:14:29,280
they also have books they can read

1563
01:14:34,070 --> 01:14:32,080

things online we have tv and movies made

1564

01:14:35,910 --> 01:14:34,080

available for them they also have

1565

01:14:38,390 --> 01:14:35,920

several instruments usually on board the

1566

01:14:40,630 --> 01:14:38,400

space station so plenty of ways to stay

1567

01:14:43,270 --> 01:14:40,640

entertained while they're spending very

1568

01:14:45,270 --> 01:14:43,280

long durations in space

1569

01:14:46,630 --> 01:14:45,280

our next question comes from chris

1570

01:14:49,110 --> 01:14:46,640

wanted to know how long does it take to

1571

01:14:50,229 --> 01:14:49,120

train to go to space it depends on the

1572

01:14:52,070 --> 01:14:50,239

mission

1573

01:14:54,709 --> 01:14:52,080

for most of these astronauts that are

1574

01:14:56,870 --> 01:14:54,719

going up to do about six months to a

1575

01:14:59,750 --> 01:14:56,880

year in space they'll spend about two

1576

01:15:01,270 --> 01:14:59,760

years training just for that mission

1577

01:15:03,270 --> 01:15:01,280

so to become an astronaut you'll go

1578

01:15:05,590 --> 01:15:03,280

through a few years of kind of astronaut

1579

01:15:07,750 --> 01:15:05,600

101 basic training and then once you do

1580

01:15:09,189 --> 01:15:07,760

get assigned it takes about two years

1581

01:15:10,630 --> 01:15:09,199

and that's training

1582

01:15:12,790 --> 01:15:10,640

not only here

1583

01:15:14,870 --> 01:15:12,800

in houston but all over the world

1584

01:15:16,709 --> 01:15:14,880

they'll spend a lot of time over in

1585

01:15:18,149 --> 01:15:16,719

russia training on the russian systems

1586

01:15:20,310 --> 01:15:18,159

especially if they're going to fly on

1587

01:15:22,630 --> 01:15:20,320

one of these soyuz spacecraft

1588

01:15:24,390 --> 01:15:22,640

but also in places like japan and

1589

01:15:25,910 --> 01:15:24,400

different countries in europe

1590

01:15:28,149 --> 01:15:25,920

for the different systems onboard the

1591

01:15:29,590 --> 01:15:28,159

station managed by those different

1592

01:15:31,430 --> 01:15:29,600

countries

1593

01:15:33,590 --> 01:15:31,440

mrs melcher's class wanted to know why

1594

01:15:35,910 --> 01:15:33,600

is the launch in kazakhstan and not uae

1595

01:15:38,630 --> 01:15:35,920

russia or usa

1596

01:15:41,030 --> 01:15:38,640

well it goes back to where the former

1597

01:15:42,870 --> 01:15:41,040

soviet union built all of their launch

1598

01:15:44,950 --> 01:15:42,880

facilities it was actually built in

1599

01:15:46,950 --> 01:15:44,960

kazakhstan while it was still part of

1600

01:15:48,470 --> 01:15:46,960

that country and

1601
01:15:50,149 --> 01:15:48,480
after that when it became the russian

1602
01:15:52,790 --> 01:15:50,159
federation they still use all of the

1603
01:15:55,110 --> 01:15:52,800
same infrastructure and they work with

1604
01:15:57,270 --> 01:15:55,120
the government of kazakhstan to use it

1605
01:15:59,189 --> 01:15:57,280
and that's where the soyuz launches from

1606
01:16:01,110 --> 01:15:59,199
we don't currently have

1607
01:16:03,750 --> 01:16:01,120
human capable vehicles launching from

1608
01:16:05,510 --> 01:16:03,760
the usa but that's all about the change

1609
01:16:08,790 --> 01:16:05,520
once our commercial crew vehicles come

1610
01:16:10,950 --> 01:16:08,800
online from providers boeing and spacex

1611
01:16:12,470 --> 01:16:10,960
within the next year so you'll be seeing

1612
01:16:13,910 --> 01:16:12,480
more launches of people to the

1613
01:16:17,750 --> 01:16:13,920

international space station from

1614

01:16:19,990 --> 01:16:17,760

different locations than ever before

1615

01:16:21,990 --> 01:16:20,000

next up we have one from sophia who

1616

01:16:24,310 --> 01:16:22,000

wanted to know what memorable items are

1617

01:16:25,830 --> 01:16:24,320

the astronauts bringing into space

1618

01:16:27,990 --> 01:16:25,840

it differs from each of them they do get

1619

01:16:29,910 --> 01:16:28,000

a small allotment typically to bring

1620

01:16:31,510 --> 01:16:29,920

some items up with them to the

1621

01:16:34,149 --> 01:16:31,520

international space station most of

1622

01:16:36,149 --> 01:16:34,159

those are kept private but we do know

1623

01:16:39,110 --> 01:16:36,159

that inside of the soyuz spacecraft

1624

01:16:41,669 --> 01:16:39,120

today there was a zero-g indicator so

1625

01:16:43,750 --> 01:16:41,679

basically a small

1626
01:16:45,750 --> 01:16:43,760
toy hung above the crew members that

1627
01:16:48,070 --> 01:16:45,760
indicates when they're in microgravity

1628
01:16:50,630 --> 01:16:48,080
and it was a plush sparkly unicorn from

1629
01:16:52,870 --> 01:16:50,640
the commander alex krapochka's daughter

1630
01:16:54,630 --> 01:16:52,880
and ahaza ali al-mansuri making his

1631
01:16:56,709 --> 01:16:54,640
first trip into space

1632
01:16:59,030 --> 01:16:56,719
also was able to tell reporters that he

1633
01:17:00,950 --> 01:16:59,040
had a small plush camel from his

1634
01:17:02,870 --> 01:17:00,960
children that he's carrying up into

1635
01:17:05,270 --> 01:17:02,880
space as well so they do get a small

1636
01:17:08,149 --> 01:17:05,280
allotment not a lot as you can imagine

1637
01:17:10,390 --> 01:17:08,159
as it is fairly

1638
01:17:12,630 --> 01:17:10,400

difficult to pack everything into a

1639

01:17:15,030 --> 01:17:12,640

tight space and all of the important

1640

01:17:17,270 --> 01:17:15,040

stuff goes first

1641

01:17:18,790 --> 01:17:17,280

our next question comes from eric wanted

1642

01:17:20,709 --> 01:17:18,800

to know where along the journey did the

1643

01:17:23,189 --> 01:17:20,719

rockets falling debris disintegrate is

1644

01:17:25,350 --> 01:17:23,199

it upon entering the earth's atmosphere

1645

01:17:27,030 --> 01:17:25,360

not all of the pieces of the rockets

1646

01:17:29,590 --> 01:17:27,040

typically disintegrate some will

1647

01:17:31,910 --> 01:17:29,600

actually make the re-entry back down to

1648

01:17:33,189 --> 01:17:31,920

earth's ground that's one of the main

1649

01:17:35,430 --> 01:17:33,199

reasons why

1650

01:17:37,430 --> 01:17:35,440

why the russians chose kazakhstan as

1651

01:17:39,270 --> 01:17:37,440

there are very vast stretches of

1652

01:17:41,430 --> 01:17:39,280

uninhabited land where you're not going

1653

01:17:43,830 --> 01:17:41,440

to have to worry about those rockets

1654

01:17:47,590 --> 01:17:43,840

coming down in anyone's backyard that's

1655

01:17:49,590 --> 01:17:47,600

also why in america we typically launch

1656

01:17:51,510 --> 01:17:49,600

over bodies of water

1657

01:17:53,590 --> 01:17:51,520

right now either from the kennedy space

1658

01:17:55,270 --> 01:17:53,600

center on the coast of florida or even

1659

01:17:57,750 --> 01:17:55,280

from the wallops flight facility in

1660

01:18:00,149 --> 01:17:57,760

virginia as you can keep that water

1661

01:18:02,630 --> 01:18:00,159

clear and then it's just going to fall

1662

01:18:05,350 --> 01:18:02,640

down into the ocean

1663

01:18:07,189 --> 01:18:05,360

our next one comes from matt who wanted

1664

01:18:08,709 --> 01:18:07,199

to know with the station crew about to

1665

01:18:10,550 --> 01:18:08,719

have a crew of nine what are the chances

1666

01:18:12,310 --> 01:18:10,560

of a for a side space football game

1667

01:18:14,550 --> 01:18:12,320

going on with the ninth acting as a

1668

01:18:17,510 --> 01:18:14,560

referee i would say the chances are

1669

01:18:19,110 --> 01:18:17,520

pretty slim but they do have some balls

1670

01:18:20,229 --> 01:18:19,120

on board the station i know they have a

1671

01:18:22,229 --> 01:18:20,239

soccer ball

1672

01:18:24,070 --> 01:18:22,239

and typically have a football so you

1673

01:18:27,270 --> 01:18:24,080

never know sometimes what these

1674

01:18:29,030 --> 01:18:27,280

astronauts will get up to so stay tuned

1675

01:18:31,350 --> 01:18:29,040

i will say follow their social media

1676

01:18:33,110 --> 01:18:31,360

accounts if you want to get really deep

1677

01:18:34,229 --> 01:18:33,120

insights into what it's like to live in

1678

01:18:35,669 --> 01:18:34,239

space

1679

01:18:37,110 --> 01:18:35,679

all of the astronauts most of the

1680

01:18:39,510 --> 01:18:37,120

cosmonauts and the international crew

1681

01:18:41,590 --> 01:18:39,520

members like luca parmitano very active

1682

01:18:43,510 --> 01:18:41,600

on twitter when they have some free time

1683

01:18:47,430 --> 01:18:43,520

bringing the entire world along for

1684

01:18:50,149 --> 01:18:47,440

these journeys while they are up there

1685

01:18:52,470 --> 01:18:50,159

our next question comes from m7 mds 91

1686

01:18:55,750 --> 01:18:52,480

wanted to know is there any future plans

1687

01:18:57,350 --> 01:18:55,760

to increase the number of crew on soyuz

1688

01:18:59,669 --> 01:18:57,360

there's no plans to increase the number

1689

01:19:01,990 --> 01:18:59,679

of crew on soyuz it is a three seater

1690

01:19:03,430 --> 01:19:02,000

and that's what it's going to remain uh

1691

01:19:05,750 --> 01:19:03,440

but once we start flying those

1692

01:19:08,870 --> 01:19:05,760

commercial crew vehicles i talked about

1693

01:19:11,030 --> 01:19:08,880

those hold four so you will see an

1694

01:19:12,630 --> 01:19:11,040

increase in the total size of the

1695

01:19:14,870 --> 01:19:12,640

population onboard the international

1696

01:19:17,590 --> 01:19:14,880

space station from six all the way up to

1697

01:19:19,430 --> 01:19:17,600

seven and we're also working on finding

1698

01:19:21,990 --> 01:19:19,440

a new permanent place for that seventh

1699

01:19:23,189 --> 01:19:22,000

crew member to sleep once they are on

1700

01:19:25,270 --> 01:19:23,199

board so i know we had a lot of

1701

01:19:27,430 --> 01:19:25,280

questions earlier about sleep quarters

1702

01:19:28,950 --> 01:19:27,440

with the nine people today uh six of

1703

01:19:30,709 --> 01:19:28,960

them will have their own sleep quarters

1704

01:19:32,709 --> 01:19:30,719

three will be kind of temporarily

1705

01:19:34,550 --> 01:19:32,719

camping out in different modules but

1706

01:19:36,630 --> 01:19:34,560

eventually once we head up to seven crew

1707

01:19:39,910 --> 01:19:36,640

members there will be a seventh crew

1708

01:19:41,910 --> 01:19:39,920

cabin added on board the station

1709

01:19:43,669 --> 01:19:41,920

our next one comes from cassidy who

1710

01:19:45,350 --> 01:19:43,679

wanted to know do they all speak the

1711

01:19:47,189 --> 01:19:45,360

same language

1712

01:19:48,709 --> 01:19:47,199

on board with or is there a language

1713

01:19:49,990 --> 01:19:48,719

that they speak where they can all

1714

01:19:52,070 --> 01:19:50,000

communicate

1715

01:19:54,470 --> 01:19:52,080

yes there is while they're onboard the

1716

01:19:56,709 --> 01:19:54,480

soyuz spacecraft they all speak russian

1717

01:19:58,470 --> 01:19:56,719

so all of our crew members go through

1718

01:20:01,270 --> 01:19:58,480

some pretty intensive russian language

1719

01:20:03,430 --> 01:20:01,280

training along with the international

1720

01:20:06,709 --> 01:20:03,440

astronauts riding aboard

1721

01:20:10,149 --> 01:20:08,550

they're having to talk directly to

1722

01:20:12,390 --> 01:20:10,159

russian flight controllers most of the

1723

01:20:15,350 --> 01:20:12,400

crew members will also speak english but

1724

01:20:16,790 --> 01:20:15,360

there's usually a bevy of language spoke

1725

01:20:18,950 --> 01:20:16,800

languages spoken onboard the

1726

01:20:21,510 --> 01:20:18,960

international space station the primary

1727

01:20:23,030 --> 01:20:21,520

two are russian and english

1728

01:20:24,870 --> 01:20:23,040

and then our last one for right now

1729

01:20:27,110 --> 01:20:24,880

comes from bubbles wanted to know how to

1730

01:20:28,390 --> 01:20:27,120

astronauts remain fit in space asked by

1731

01:20:29,510 --> 01:20:28,400

an eight-year-old well eight-year-old

1732

01:20:31,350 --> 01:20:29,520

bubbles

1733

01:20:33,750 --> 01:20:31,360

it comes from working out two and a half

1734

01:20:34,790 --> 01:20:33,760

hours every single day for now though

1735

01:20:37,189 --> 01:20:34,800

we're getting the treat we're getting

1736

01:20:39,750 --> 01:20:37,199

some replays from that launch again the

1737

01:20:41,189 --> 01:20:39,760

soyuz lifted off today at 8 57 a.m

1738

01:20:43,830 --> 01:20:41,199

central time

1739

01:20:45,990 --> 01:20:43,840

this morning at 9 57 a.m over on the

1740

01:20:47,990 --> 01:20:46,000

east coast we're actually over in the

1741

01:20:50,110 --> 01:20:48,000

next day

1742

01:21:27,740 --> 01:20:50,120

in baikonur

1743

01:22:07,990 --> 01:21:33,220

[Music]

1744

01:22:08,000 --> 01:22:18,550

this

1745

01:22:18,560 --> 01:23:36,629

so

1746

01:25:22,540 --> 01:24:05,110

foreign

1747

01:25:22,550 --> 01:25:43,350

[Music]

1748

01:25:43,360 --> 01:25:56,390

foreign

1749

01:25:56,400 --> 01:26:12,910

oh

1750

01:26:12,920 --> 01:29:11,750

[Music]

1751

01:29:14,550 --> 01:29:13,030

all right and those were all of our

1752

01:29:16,550 --> 01:29:14,560

launch replays again though the day is

1753

01:29:18,550 --> 01:29:16,560

not done so be sure to continue to tune

1754

01:29:20,470 --> 01:29:18,560

into nasa tv as they make their way to

1755

01:29:22,070 --> 01:29:20,480

the international space station here's a

1756

01:29:24,470 --> 01:29:22,080

quick rundown of all of our upcoming

1757

01:29:26,149 --> 01:29:24,480

events with starting at 11 30 all-time

1758

01:29:27,669 --> 01:29:26,159

central we're going to have a video file

1759

01:29:29,510 --> 01:29:27,679

all of the post-launch views and some

1760

01:29:31,830 --> 01:29:29,520

post-launch interviews with people down

1761

01:29:33,669 --> 01:29:31,840

there at baikonur we will be back at 2

1762

01:29:37,189 --> 01:29:33,679

p.m central time for docking coverage

1763

01:29:39,350 --> 01:29:37,199

docking expected at 2 45 pm central 3 45

1764

01:29:41,110 --> 01:29:39,360

pm eastern with the three crew members

1765

01:29:42,790 --> 01:29:41,120

arriving to the station after that we'll

1766

01:29:44,070 --> 01:29:42,800

break for a few hours while they do leak

1767

01:29:46,310 --> 01:29:44,080

checks and get ready to open up the

1768

01:29:47,750 --> 01:29:46,320

hatches coming back at 4 pm central time

1769

01:29:50,310 --> 01:29:47,760

for hatch opening coverage with hatch

1770

01:29:51,669 --> 01:29:50,320

opening itself at 4 45 at which time the

1771

01:29:53,750 --> 01:29:51,679

three crew members will make their way

1772

01:29:55,590 --> 01:29:53,760

on board we'll have nine people on board

1773

01:29:56,950 --> 01:29:55,600

the international space station all that

1774

01:29:59,189 --> 01:29:56,960

will be wrapped up at the end of the day

1775

01:30:01,030 --> 01:29:59,199

at 7 30 pm central time with a video

1776

01:30:03,189 --> 01:30:01,040

file showing all the docking and hatch

1777

01:30:04,870 --> 01:30:03,199

opening activities i do want to thank

1778

01:30:06,629 --> 01:30:04,880

you for tuning in this morning this is

1779

01:30:08,310 --> 01:30:06,639

just step one in our journey to the

1780

01:30:10,070 --> 01:30:08,320

international space station so be sure

1781

01:30:12,229 --> 01:30:10,080

to come back a little bit later this

1782

01:30:13,669 --> 01:30:12,239

afternoon as we get ready to add three

1783

01:30:15,270 --> 01:30:13,679

new crew members to the international

1784

01:30:17,270 --> 01:30:15,280

space station for now though we are

1785

01:30:24,629 --> 01:30:17,280

going to go ahead and sign off this is

1786

01:30:31,030 --> 01:30:27,830

hey you're watching nasa tv on the air