



1  
00:00:04,870 --> 00:00:03,189  
t-minus ten first stage engines are at

2  
00:00:06,070 --> 00:00:04,880  
flight speed

3  
00:00:07,749 --> 00:00:06,080  
sit five

4  
00:00:08,870 --> 00:00:07,759  
four three

5  
00:00:13,110 --> 00:00:08,880  
two

6  
00:00:19,429 --> 00:00:16,390  
and lift off lift of the soyuz rocket as

7  
00:00:21,429 --> 00:00:19,439  
ron garan andrew alexander sama kutiaya

8  
00:00:43,030 --> 00:00:21,439  
and andre borisenko begin their journey

9  
00:00:47,830 --> 00:00:44,389  
30 seconds

10  
00:00:47,840 --> 00:00:53,029  
all fine launch vehicle fine

11  
00:00:56,630 --> 00:00:54,229  
as you're hearing everything looking

12  
00:00:58,630 --> 00:00:56,640  
good so far in the first 45 seconds of

13  
00:01:00,389 --> 00:00:58,640

the soyuz tma-21s

14

00:01:01,750 --> 00:01:00,399

flight the soyuz is now heading toward a

15

00:01:07,990 --> 00:01:01,760

link up with the international space

16

00:01:12,550 --> 00:01:10,789

the pressure is within norm and we are

17

00:01:21,510 --> 00:01:12,560

doing well on board

18

00:01:25,830 --> 00:01:23,990

rotation norm one minute and 12 seconds

19

00:01:28,630 --> 00:01:25,840

into flight the velocity of the soyuz is

20

00:01:30,390 --> 00:01:28,640

now 1100 miles per hour we've had good

21

00:01:32,390 --> 00:01:30,400

first stage performance and the soyuz is

22

00:01:34,149 --> 00:01:32,400

delivering 102 tons of thrust from its

23

00:01:36,149 --> 00:01:34,159

four boosters

24

00:01:40,630 --> 00:01:36,159

single engine

25

00:01:44,710 --> 00:01:42,550

first stage of the soyuz measured 68

26  
00:01:46,550 --> 00:01:44,720  
feet in length and 24 feet in diameter

27  
00:01:48,550 --> 00:01:46,560  
and it's burning liquid fuel for the

28  
00:02:19,910 --> 00:01:48,560  
first two minutes and six seven six

29  
00:02:22,949 --> 00:02:21,270  
these completed their job and have

30  
00:02:24,309 --> 00:02:22,959  
dropped away at an altitude of 28

31  
00:02:26,710 --> 00:02:24,319  
statute miles

32  
00:02:30,150 --> 00:02:26,720  
so he uses traveling at about

33  
00:02:32,350 --> 00:02:30,160  
3 350 miles per hour now 2 minutes and

34  
00:02:47,110 --> 00:02:32,360  
20 seconds into its flight

35  
00:02:51,430 --> 00:02:49,830  
here inside the capsule as the crew is

36  
00:02:53,430 --> 00:02:51,440  
making their way into orbit again you

37  
00:02:56,710 --> 00:02:53,440  
can see here on the bottom of the screen

38  
00:02:59,509 --> 00:02:56,720

alexander sama coutive and next to him

39

00:03:01,110 --> 00:02:59,519

alex uh andre warsenko out of euron

40

00:03:04,550 --> 00:03:01,120

guerin i don't think we can say but

41

00:03:06,550 --> 00:03:04,560

we've spelled it

42

00:03:08,309 --> 00:03:06,560

two minutes and 55 seconds now into the

43

00:03:10,229 --> 00:03:08,319

fight in the escape tower and launch

44

00:03:14,229 --> 00:03:10,239

shroud have by now been jettisoned

45

00:03:16,149 --> 00:03:14,239

performance of control distance on three

46

00:03:18,229 --> 00:03:16,159

minutes and three seconds soyuz is

47

00:03:22,869 --> 00:03:18,239

traveling at a speed of about 4 700

48

00:03:27,430 --> 00:03:25,110

turn on the camera

49

00:03:29,430 --> 00:03:27,440

and there is a view of nasa astronaut

50

00:03:33,750 --> 00:03:29,440

juan garan making his way into space for

51  
00:03:37,589 --> 00:03:35,589  
performing as expected

52  
00:03:39,830 --> 00:03:37,599  
of course stage of the soyuz is 56 feet

53  
00:03:41,509 --> 00:03:39,840  
in length 13 and a half feet in diameter

54  
00:03:43,670 --> 00:03:41,519  
with a single engine with four fuel

55  
00:03:45,270 --> 00:03:43,680  
chambers providing 96 tons of thrust for

56  
00:03:46,470 --> 00:03:45,280  
its three minutes and 28 seconds of

57  
00:03:49,030 --> 00:03:46,480  
operation

58  
00:03:52,070 --> 00:03:49,040  
now three minutes and 37 seconds into

59  
00:03:55,589 --> 00:03:53,990  
again view here of ron garan in the

60  
00:03:57,429 --> 00:03:55,599  
center of the screen and just in the

61  
00:03:59,110 --> 00:03:57,439  
corner of the view also

62  
00:04:07,190 --> 00:03:59,120  
the soyuz commander alexander

63  
00:04:11,589 --> 00:04:09,830

nominal stable

64

00:04:13,910 --> 00:04:11,599

civilization nominal and we are doing

65

00:04:19,430 --> 00:04:13,920

well on board and feeling great 40

66

00:04:25,270 --> 00:04:22,629

the second stage thrusters are operating

67

00:04:30,150 --> 00:04:26,629

copy

68

00:04:33,350 --> 00:04:31,749

four minutes and 20 seconds into the

69

00:04:42,430 --> 00:04:33,360

fight as you hear everything continuing

70

00:04:52,590 --> 00:04:45,590

270 seconds in flight nominal flight

71

00:04:52,600 --> 00:05:07,189

480 280

72

00:05:11,749 --> 00:05:09,990

we have separation on the second side

73

00:05:13,749 --> 00:05:11,759

five minutes now into the flight and as

74

00:05:16,550 --> 00:05:13,759

you heard the core boosters have burned

75

00:05:17,670 --> 00:05:16,560

out and separated at an altitude of 105

76

00:05:19,350 --> 00:05:17,680

miles

77

00:05:22,950 --> 00:05:19,360

third stage uh

78

00:05:25,590 --> 00:05:22,960

now ignite a r11 command dispute copy

79

00:05:27,110 --> 00:05:25,600

that

80

00:05:29,830 --> 00:05:27,120

core stage engine has now filled its

81

00:05:31,350 --> 00:05:29,840

role for today and dropping away

82

00:05:33,270 --> 00:05:31,360

about four minutes of power now

83

00:05:35,670 --> 00:05:33,280

remaining soyuz is being propelled by a

84

00:05:37,270 --> 00:05:35,680

single engine of the soyuz third stage

85

00:05:38,790 --> 00:05:37,280

that engine is providing 30 tons of

86

00:05:42,790 --> 00:05:38,800

thrust and will burn for four minutes

87

00:05:52,710 --> 00:05:44,870

so right now right before the separation

88

00:05:52,720 --> 00:05:57,430

340 seconds in flight

89

00:06:11,990 --> 00:05:59,110

no issues

90

00:06:15,909 --> 00:06:14,790

six minutes now until into the flight of

91

00:06:18,070 --> 00:06:15,919

uh

92

00:06:27,350 --> 00:06:18,080

ron guerin alexander sama kutiaya and

93

00:06:27,360 --> 00:06:32,590

everything continuing to go well

94

00:06:32,600 --> 00:06:39,189

380 seconds

95

00:06:45,110 --> 00:06:41,350

you can also see they're in view the uh

96

00:06:47,590 --> 00:06:45,120

nominal flight toy dog which is uh

97

00:06:49,909 --> 00:06:47,600

being used as a operating

98

00:06:51,189 --> 00:06:49,919

indication of when the crew reaches zero

99

00:06:53,749 --> 00:06:51,199

gravity

100

00:06:56,230 --> 00:06:53,759

that dog was a given to commander swedes

101  
00:07:12,469 --> 00:06:56,240  
commander alexander simakoutiev by his

102  
00:07:12,479 --> 00:07:19,510  
120 seconds 220 seconds in flight

103  
00:07:42,070 --> 00:07:21,189  
thank you

104  
00:07:46,230 --> 00:07:44,469  
seven minutes and 32 seconds velocity of

105  
00:07:49,430 --> 00:07:46,240  
the soyuz now almost

106  
00:07:51,110 --> 00:07:49,440  
13 500 miles an hour

107  
00:07:53,589 --> 00:07:51,120  
once the third stage

108  
00:07:55,830 --> 00:07:53,599  
delivers the soyuz to an orbit uh to

109  
00:07:57,670 --> 00:07:55,840  
orbit and the module is separated series

110  
00:07:59,749 --> 00:07:57,680  
of pre-programmed commands will be

111  
00:08:01,909 --> 00:07:59,759  
executed to prepare the soyuz for

112  
00:08:03,510 --> 00:08:01,919  
orbital operations

113  
00:08:05,589 --> 00:08:03,520

these stored commands

114

00:08:06,950 --> 00:08:05,599

are called time tag commands and allow

115

00:08:09,430 --> 00:08:06,960

many of the soyuz systems to

116

00:08:11,350 --> 00:08:09,440

automatically activate

117

00:08:13,909 --> 00:08:11,360

using onboard computers at the precise

118

00:08:16,469 --> 00:08:13,919

times stored in those computers in the

119

00:08:22,710 --> 00:08:16,479

right window we can see the sun

120

00:08:37,750 --> 00:08:24,710

four hundred ninety seconds nine minutes

121

00:08:43,190 --> 00:08:40,469

always nominal on flight eight and a

122

00:08:45,590 --> 00:08:43,200

half minutes now into flight all right

123

00:08:47,910 --> 00:08:45,600

andre ronald

124

00:08:50,870 --> 00:08:47,920

i wish you luck

125

00:08:52,150 --> 00:08:50,880

i will have separation now

126  
00:08:54,389 --> 00:08:52,160  
uh and

127  
00:08:58,230 --> 00:08:54,399  
this is a great

128  
00:09:00,870 --> 00:08:58,240  
great anniversary plate and

129  
00:09:02,710 --> 00:09:00,880  
have a great one

130  
00:09:03,750 --> 00:09:02,720  
more well which is there by the team on

131  
00:09:05,990 --> 00:09:03,760  
the ground

132  
00:09:08,430 --> 00:09:06,000  
we are weightless

133  
00:09:11,190 --> 00:09:08,440  
right separation

134  
00:09:13,670 --> 00:09:11,200  
transforming separation confirming

135  
00:09:16,470 --> 00:09:13,680  
weightlessness

136  
00:09:20,790 --> 00:09:16,480  
very good and we are handed over to the

137  
00:09:23,829 --> 00:09:22,470  
nine minutes and ten seconds into the

138  
00:09:25,829 --> 00:09:23,839

flight and as you heard there the nine

139

00:09:31,670 --> 00:09:25,839

minute mark with the third stage cut off

140

00:09:39,509 --> 00:09:33,750

loud and clear

141

00:09:43,110 --> 00:09:41,590

and we're feeling great

142

00:09:45,910 --> 00:09:43,120

thank you

143

00:09:51,670 --> 00:09:45,920

and we're waiting for you

144

00:09:52,949 --> 00:09:51,680

report on the separation parameters and

145

00:09:56,790 --> 00:09:52,959

keep

146

00:10:08,630 --> 00:09:56,800

monitoring as kazoo purge

147

00:10:13,030 --> 00:10:10,150

still seeing a view here inside the

148

00:10:15,350 --> 00:10:13,040

soyuz capsule with that uh toy donk used

149

00:10:17,910 --> 00:10:15,360

to indicate the entrance into zero

150

00:10:20,310 --> 00:10:17,920

gravity now floating rather than hanging

151  
00:10:23,190 --> 00:10:20,320  
and you can see in this view the soyuz

152  
00:10:24,870 --> 00:10:23,200  
commander alexander semakudiya

153  
00:10:26,949 --> 00:10:24,880  
who was given that toy dong by his

154  
00:10:29,110 --> 00:10:26,959  
daughter and just sitting next to him

155  
00:10:39,590 --> 00:10:29,120  
and this view

156  
00:10:45,190 --> 00:10:42,389  
and again we did have the

157  
00:10:46,870 --> 00:10:45,200  
separation confirmed at nine minutes

158  
00:10:49,590 --> 00:10:46,880  
which means the soyuz capsule and crew

159  
00:10:51,430 --> 00:10:49,600  
are now safely in orbit

160  
00:10:53,509 --> 00:10:51,440  
spacecraft is automatically executing

161  
00:10:56,310 --> 00:10:53,519  
its pre-programmed commands to deploy

162  
00:10:57,829 --> 00:10:56,320  
the antennas and solar arrays ipv1 and

163  
00:11:00,630 --> 00:10:57,839

two are closed

164

00:11:03,110 --> 00:11:00,640

for their has been completed

165

00:11:04,550 --> 00:11:03,120

and the construction indicator is on uh

166

00:11:06,949 --> 00:11:04,560

go to page

167

00:11:09,590 --> 00:11:06,959

45 and

168

00:11:11,190 --> 00:11:09,600

on your goal we are ready to copy the

169

00:11:12,949 --> 00:11:11,200

parameters

170

00:11:16,389 --> 00:11:12,959

soyuz is orbiting at an altitude of

171

00:11:17,590 --> 00:11:16,399

about 143 miles by 118 miles and then

172

00:11:19,430 --> 00:11:17,600

orbit is going to be raised

173

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

systematically over the course the next

174

00:11:23,829 --> 00:11:21,839

two days placing it in close proximity

175

00:11:25,430 --> 00:11:23,839

to the international space station

176

00:11:27,670 --> 00:11:25,440

for the final rendezvous and docking

177

00:11:32,389 --> 00:11:27,680

which is set for 6 18 pm central time on

178

00:11:32,399 --> 00:11:48,230

i'm ready with the times ready to copy

179

00:11:53,350 --> 00:11:49,509

you also heard right after that

180

00:11:55,269 --> 00:11:53,360

separation the handover of control

181

00:11:57,509 --> 00:11:55,279

to the russian mission control center

182

00:11:59,590 --> 00:11:57,519

outside of moscow and again

183

00:12:00,870 --> 00:11:59,600

congratulations to the crew from the

184

00:12:03,110 --> 00:12:00,880

team on the ground

185

00:12:04,389 --> 00:12:03,120

of their flight which comes just a week

186

00:12:07,030 --> 00:12:04,399

before

187

00:12:08,629 --> 00:12:07,040

the 50th anniversary of human space

188

00:12:23,190 --> 00:12:08,639

flight on uh

189

00:12:26,710 --> 00:12:25,750

and the final separation one twenty

190

00:12:44,230 --> 00:12:26,720

seven

191

00:12:47,509 --> 00:12:45,750

again we're a little over 12 and a half

192

00:12:50,550 --> 00:12:47,519

minutes now into

193

00:12:52,150 --> 00:12:50,560

the fine of the soyuz tma-21 now on its

194

00:12:54,310 --> 00:12:52,160

way to the international space station

195

00:12:55,190 --> 00:12:54,320

and safely in orbit with its crew of

196

00:12:57,990 --> 00:12:55,200

three

197

00:13:03,750 --> 00:12:58,000

ron guerin alexander simakuchi and andre

198

00:13:06,389 --> 00:13:05,030

okay we can give you the first

199

00:13:09,269 --> 00:13:06,399

measurement