1
00:00:04,470 --> 00:00:02,070
there on the ground in baikonur a crowd

2
00:00:06,309 --> 00:00:04,480
of family and friends and nasa officials

3
00:00:07,590 --> 00:00:06,319
as well as cosmos officials are watching

4
00:00:09,350 --> 00:00:07,600
tonight's launch

5
00:00:14,629 --> 00:00:09,360
less than a mile away

6
00:00:14,639 --> 00:00:20,310
t-minus 30 seconds and counting

7
00:00:25,990 --> 00:00:24,470
dmitry we have 24 seconds

8
00:00:29,189 --> 00:00:26,000
yes antonio college we're ready for the

9
00:00:31,029 --> 00:00:29,199
lunch okay i will stay

10
00:00:35,590 --> 00:00:31,039
with you and i will continue

11
00:00:35,600 --> 00:00:39,190
ten seconds

12
00:00:39,200 --> 00:00:42,069
preliminary

13
00:00:42,079 --> 00:00:47,990

five seconds

14
00:00:52,310 --> 00:00:50,150
engines at maximum thrust and liftoff of

15
00:00:54,549 --> 00:00:52,320
the soyuz tma-20

16
00:00:56,150 --> 00:00:54,559
as katie coleman palo nespoli and

17
00:01:05,189 --> 00:00:56,160
dimitri candrativ head toward the

18
00:01:11,350 --> 00:01:06,630
all the parameters of the control

19
00:01:12,950 --> 00:01:11,360
systems are within the norm okay we copy

20
00:01:14,550 --> 00:01:12,960
this will use lighting up the night sky

21
00:01:15,990 --> 00:01:14,560
there at the baikonur cosmodrome it's a

22
00:01:18,789 --> 00:01:16,000
good pitch program according to flight

23
00:01:18,799 --> 00:01:21,429
functioning

24
00:01:25,590 --> 00:01:23,350
thrusters are stable this will use

25
00:01:27,830 --> 00:01:25,600
delivering 102 tons of thrust from his

26
00:01:29,910 --> 00:01:27,840
four boosters in single engine the first

27
00:01:32,230 --> 00:01:29,920
stage of the soyuz measures 68 feet in

28
00:01:33,830 --> 00:01:32,240
length and 24 feet in diameter is

29
00:01:44,550 --> 00:01:33,840
burning liquid fuel for the first two

30
00:01:44,560 --> 00:01:49,990
pressure is normal

31
00:01:55,510 --> 00:01:52,710
60 seconds

32
00:01:56,950 --> 00:01:55,520
your pitch and roll are within the norm

33
00:01:59,350 --> 00:01:56,960
one minute and 10 seconds into the

34
00:02:01,030 --> 00:01:59,360
flight the velocity is at 1 100 miles

35
00:02:07,590 --> 00:02:01,040
per hour

36
00:02:10,949 --> 00:02:09,270
dmitry

37
00:02:12,229 --> 00:02:10,959
how's the g load

38
00:02:16,390 --> 00:02:12,239

increasing

39
00:02:17,750 --> 00:02:16,400
crew talking with the russian

40
00:02:19,670 --> 00:02:17,760
ground controllers they're reporting

41
00:02:22,070 --> 00:02:19,680
that the g-force is building up on them

42
00:02:24,150 --> 00:02:22,080
as the soyuz continues to speed up we're

43
00:02:26,309 --> 00:02:24,160
now at one minute and 37 seconds into

44
00:02:28,229 --> 00:02:26,319
the flight

45
00:02:29,910 --> 00:02:28,239
katie coleman palo nespoli and dimitri

46
00:02:31,270 --> 00:02:29,920
kondraty have now officially on their

47
00:02:33,350 --> 00:02:31,280
way toward the international space

48
00:02:34,790 --> 00:02:33,360
station once again docking will take

49
00:02:42,790 --> 00:02:34,800
place on friday and of course we'll have

50
00:02:46,630 --> 00:02:45,030
110 seconds so

51
00:02:48,309 --> 00:02:46,640
one minute 58 seconds into the flight

52
00:02:49,750 --> 00:02:48,319
jettison of the four strap-on boosters

53
00:02:52,309 --> 00:02:49,760
will take place these have completed

54
00:02:54,470 --> 00:02:52,319
their job and have dropped away

55
00:02:57,509 --> 00:02:54,480
at an altitude of 28 statute miles the

56
00:03:03,110 --> 00:02:57,519
soyuz now traveling at about 3 350 miles

57
00:03:06,070 --> 00:03:04,630
there are a live view inside the soyuz

58
00:03:07,990 --> 00:03:06,080
palo nespoli there on the right-hand

59
00:03:09,670 --> 00:03:08,000
side dimitri kandrativ there in the

60
00:03:11,670 --> 00:03:09,680
middle seat he is the commander of the

61
00:03:13,910 --> 00:03:11,680
spacecraft and on the left-hand side

62
00:03:15,910 --> 00:03:13,920
just out of view is katie coleman

63
00:03:18,390 --> 00:03:15,920

parameters of the launch vehicle are

64
00:03:21,750 --> 00:03:18,400
normal okay copy everything is nominal

65
00:03:24,550 --> 00:03:21,760
on board 150 seconds

66
00:03:26,869 --> 00:03:24,560
all stages are functioning nominally

67
00:03:29,110 --> 00:03:26,879
have you noticed when you switched over

68
00:03:31,270 --> 00:03:29,120
to the second stage yes a little bit

69
00:03:42,789 --> 00:03:31,280
bump and the change in the load

70
00:03:46,309 --> 00:03:44,390
now almost three minutes into the flight

71
00:03:47,990 --> 00:03:46,319
the visiting vehicle officer here in

72
00:03:50,149 --> 00:03:48,000
time mission control has confirmed that

73
00:03:51,910 --> 00:03:50,159
the launch shroud has been jettisoned

74
00:03:54,390 --> 00:03:51,920
there is katie coleman on the left-hand

75
00:03:57,670 --> 00:03:56,070
she and her colleagues about to begin a

76
00:03:59,589 --> 00:03:57,680
five or six month trip to the

77
00:04:02,949 --> 00:03:59,599
international space station

78
00:04:04,550 --> 00:04:02,959
to join the in progress expedition 26

79
00:04:06,229 --> 00:04:04,560
180

80
00:04:08,550 --> 00:04:06,239
seconds

81
00:04:09,429 --> 00:04:08,560
the soyuz now traveling 4 700 miles an

82
00:04:10,869 --> 00:04:09,439
hour

83
00:04:14,550 --> 00:04:10,879
just fight

84
00:04:17,189 --> 00:04:15,429
no

85
00:04:19,590 --> 00:04:17,199
the sole user's core stage is performing

86
00:04:20,870 --> 00:04:19,600
as expected the core stage is about 56

87
00:04:22,550 --> 00:04:20,880
feet in length

88
00:04:24,550 --> 00:04:22,560

13 and a half feet in diameter with a

89
00:04:26,950 --> 00:04:24,560
single engine that has four fuel

90
00:04:28,390 --> 00:04:26,960
chambers providing 96 tons of thrust for

91
00:04:29,590 --> 00:04:28,400
its three minutes and 28 seconds of

92
00:04:31,590 --> 00:04:29,600
operation

93
00:04:34,950 --> 00:04:31,600
on the shuttle when you flew

94
00:04:40,710 --> 00:04:39,110
higher or lower well i have experienced

95
00:04:43,350 --> 00:04:40,720
the loads

96
00:04:46,390 --> 00:04:43,360
inside the centrifuge many times

97
00:04:53,350 --> 00:04:46,400
okay the stabilization is stable okay

98
00:04:59,030 --> 00:04:55,189
we see you

99
00:05:00,629 --> 00:04:59,040
katie coleman they're waving to the

100
00:05:01,830 --> 00:05:00,639
camera and everybody that's uh watching

101
00:05:03,590 --> 00:05:01,840
her and the rest of the crew head

102
00:05:05,189 --> 00:05:03,600
towards space

103
00:05:07,510 --> 00:05:05,199
the ground team they're talking with

104
00:05:09,749 --> 00:05:07,520
katie about her experiences onboard the

105
00:05:11,990 --> 00:05:09,759
space shuttle and she flew aboard space

106
00:05:15,270 --> 00:05:12,000
shuttle columbia and comparing it to the

107
00:05:18,629 --> 00:05:15,280
soyuz flight that she is now undertaking

108
00:05:20,310 --> 00:05:18,639
260 seconds the parameters

109
00:05:25,749 --> 00:05:20,320
are within the norm

110
00:05:30,469 --> 00:05:27,510
we're now four minutes and 40 seconds

111
00:05:33,670 --> 00:05:32,230
coming up here shortly the core booster

112
00:05:36,310 --> 00:05:33,680
will burn out and separate at an

113
00:05:37,990 --> 00:05:36,320

altitude of 105 miles

114
00:05:40,790 --> 00:05:38,000
the third stage will then ignite for the

115
00:05:47,029 --> 00:05:44,070
third stage thruster activation

116
00:05:50,230 --> 00:05:48,390
we have confirmation that the second

117
00:05:53,350 --> 00:05:50,240
stage has separated

118
00:05:57,189 --> 00:05:53,360
the separation of the third stage

119
00:05:58,950 --> 00:05:57,199
yes anatoly nikolaevich we felt it

120
00:06:01,430 --> 00:05:58,960
the soyuz is now being propelled by the

121
00:06:03,029 --> 00:06:01,440
single engine of the soyuz's third stage

122
00:06:04,469 --> 00:06:03,039
this engine is providing 30 tons of

123
00:06:11,430 --> 00:06:04,479
thrust and will burn for four minutes

124
00:06:11,440 --> 00:06:17,469
send the command r1 okay we copy

125
00:06:17,479 --> 00:06:22,150
330 seconds

126
00:06:27,270 --> 00:06:24,950
third stage thruster is

127
00:06:32,150 --> 00:06:27,280
functioning stay in a stable manner okay

128
00:06:41,870 --> 00:06:34,550
340 seconds

129
00:06:48,390 --> 00:06:45,830
350 seconds nominal flight

130
00:06:50,390 --> 00:06:48,400
now six minutes into the flight paolo

131
00:06:52,070 --> 00:06:50,400
nespoli dimitri kondratyev and katie

132
00:06:54,309 --> 00:06:52,080
coleman

133
00:06:55,270 --> 00:06:54,319
are faring very well during today's uh

134
00:06:57,110 --> 00:06:55,280
launch

135
00:06:59,189 --> 00:06:57,120
the systems onboard the soyuz are also

136
00:07:01,589 --> 00:06:59,199
performing well

137
00:07:03,189 --> 00:07:01,599
the ground teams in moscow and also here

138
00:07:04,870 --> 00:07:03,199

in houston are continuing to monitor the

139
00:07:06,790 --> 00:07:04,880
flight

140
00:07:08,550 --> 00:07:06,800
the launch vehicle parameters are within

141
00:07:17,430 --> 00:07:08,560
the norm okay

142
00:07:32,710 --> 00:07:20,710
390 seconds

143
00:07:32,720 --> 00:07:36,390
400 seconds

144
00:08:05,670 --> 00:07:38,950
stabilization

145
00:08:09,110 --> 00:08:07,430
now seven minutes and 20 seconds into

146
00:08:12,150 --> 00:08:09,120
the flight once again the soyuz is

147
00:08:13,909 --> 00:08:12,160
flying under the call sign of varangian

148
00:08:15,270 --> 00:08:13,919
it was selected by the commander dmitry

149
00:08:16,629 --> 00:08:15,280
kandrativ

150
00:08:18,469 --> 00:08:16,639
it is named for the vikings who came

151
00:08:20,790 --> 00:08:18,479
across eastern europe back in the 9th

152
00:08:23,110 --> 00:08:20,800
century

153
00:08:29,990 --> 00:08:23,120
nominal flight the velocity of the soyuz

154
00:08:33,430 --> 00:08:31,749
once the third stage delivers the soyuz

155
00:08:35,269 --> 00:08:33,440
to orbit and the module is separated a

156
00:08:36,949 --> 00:08:35,279
series of pre-programmed commands will

157
00:08:39,430 --> 00:08:36,959
be executed to prepare the soyuz for

158
00:08:41,589 --> 00:08:39,440
orbital operations

159
00:08:42,709 --> 00:08:41,599
stored commands called time tagged

160
00:08:44,470 --> 00:08:42,719
commands

161
00:08:46,150 --> 00:08:44,480
allow many of the soyuz systems to be

162
00:08:48,870 --> 00:08:46,160
automatically activated by onboard

163
00:08:53,509 --> 00:08:48,880

computers at precise times stored in

164
00:09:02,910 --> 00:08:55,350
control system parameters are within the

165
00:09:06,829 --> 00:09:04,710
490

166
00:09:10,150 --> 00:09:06,839
seconds the vehicle is