1
00:00:14,639 --> 00:00:19,109
start

2
00:00:22,950 --> 00:00:21,349
the engine's igniting the launch command

3
00:00:25,269 --> 00:00:22,960
issued

4
00:00:28,870 --> 00:00:25,279
again the engines will fire ramping up

5
00:00:34,069 --> 00:00:31,750
and liftoff peggy whitson oleg novitskiy

6
00:00:42,869 --> 00:00:34,079
and tomah pesquet rocketing towards the

7
00:00:46,790 --> 00:00:44,790
the rocket lighting up the night sky

8
00:00:48,630 --> 00:00:46,800
there in baikonur all initial

9
00:00:51,510 --> 00:00:48,640
performance calls indicate everything

10
00:00:55,029 --> 00:00:51,520
nominal or normal

11
00:00:56,630 --> 00:00:55,039
first stage delivering 930 000 pounds of

12
00:00:58,470 --> 00:00:56,640
thrust through those four boosters in

13
00:01:00,790 --> 00:00:58,480

the single core engine

14
00:01:02,950 --> 00:01:00,800
first stage measuring 68 feet in length

15
00:01:04,869 --> 00:01:02,960
and 24 feet in diameter it's gonna burn

16
00:01:16,310 --> 00:01:04,879
liquid fuel for the first two minutes

17
00:01:20,149 --> 00:01:18,390
everything continuing to look steady

18
00:01:22,630 --> 00:01:20,159
straight as an arrow for the soyuz as it

19
00:01:25,830 --> 00:01:22,640
continues to rock it off again launched

20
00:01:27,429 --> 00:01:25,840
right on time at 2 20 p.m central 3 20

21
00:01:41,590 --> 00:01:27,439
p.m eastern

22
00:01:46,310 --> 00:01:44,389
over 70 seconds one minute 10 seconds

23
00:02:02,389 --> 00:01:46,320
into the flight velocity of the soyuz

24
00:02:02,399 --> 00:02:20,710
working dominantly

25
00:02:26,309 --> 00:02:23,670
all performance calls with the

26
00:02:29,110 --> 00:02:26,319
booster continuing to look great so he's

27
00:02:31,030 --> 00:02:29,120
continuing to fly straight and true

28
00:02:33,830 --> 00:02:31,040
there you see the four strap-ons

29
00:02:36,949 --> 00:02:33,840
breaking away in the night sky there

30
00:02:40,869 --> 00:02:36,959
the first four stage uh the first stage

31
00:02:45,670 --> 00:02:43,190
their job complete they drop away at an

32
00:02:48,790 --> 00:02:45,680
altitude of about 28 statute miles so

33
00:02:53,030 --> 00:02:48,800
he's traveling at over 3 300 miles per

34
00:02:54,470 --> 00:02:53,040
hour now powered by the second stage

35
00:02:57,030 --> 00:02:54,480
structure

36
00:02:59,190 --> 00:02:57,040
and the engines are nominal

37
00:03:18,790 --> 00:02:59,200
with the clear ceiling final we copy and

38
00:03:23,030 --> 00:03:20,390

and so at this point the launch shroud

39
00:03:26,550 --> 00:03:23,040
has been jettisoned the soyuz now

40
00:03:29,430 --> 00:03:26,560
exposed to the air and soon to space

41
00:03:31,670 --> 00:03:29,440
rocket in an altitude about 48 miles

42
00:03:34,149 --> 00:03:31,680
high

43
00:03:35,910 --> 00:03:34,159
on the second video camera is the

44
00:03:38,229 --> 00:03:35,920
descent in a wave there from nasa

45
00:03:39,750 --> 00:03:38,239
astronaut peggy whitson making her third

46
00:03:42,070 --> 00:03:39,760
journey to the international space

47
00:03:43,830 --> 00:03:42,080
station

48
00:03:48,550 --> 00:03:43,840
seated just next to russian cosmonaut

49
00:04:07,910 --> 00:03:50,309
at this point the soyuz traveling at a

50
00:04:12,710 --> 00:04:10,149
so the second stage continuing to burn

51
00:04:15,270 --> 00:04:12,720
uh that core stage that also flies

52
00:04:17,909 --> 00:04:15,280
during the the first stage performing as

53
00:04:20,229 --> 00:04:17,919
expected that core stage 56 feet in

54
00:04:22,310 --> 00:04:20,239
length 13 and a half feet in diameter

55
00:04:23,830 --> 00:04:22,320
has a single engine with four fuel

56
00:04:27,270 --> 00:04:23,840
chambers and it's

57
00:04:29,510 --> 00:04:27,280
providing between 178 thousand and 222

58
00:04:30,790 --> 00:04:29,520
000 pounds of thrust depending on the

59
00:04:32,870 --> 00:04:30,800
altitude

60
00:04:33,990 --> 00:04:32,880
for its 3 minutes and 28 seconds of

61
00:04:35,830 --> 00:04:34,000
operation

62
00:04:39,030 --> 00:04:35,840
it will continue to burn until the 4

63
00:04:41,030 --> 00:04:39,040

minute 43 second mark to when the soyuz

64
00:04:42,950 --> 00:04:41,040
uses what's known as a hot stage

65
00:04:44,790 --> 00:04:42,960
technique and that's the third stage

66
00:04:45,749 --> 00:04:44,800
will ignite while the second's still

67
00:04:47,670 --> 00:04:45,759
burning

68
00:04:50,150 --> 00:04:47,680
this is why the soyuz has that small

69
00:04:52,070 --> 00:04:50,160
open grading area between the second and

70
00:04:55,189 --> 00:04:52,080
the third stages the second stage

71
00:04:57,590 --> 00:04:55,199
performing flawlessly so far we are four

72
00:05:22,469 --> 00:04:57,600
minutes and 30 seconds since launch

73
00:05:22,479 --> 00:05:31,909
engine

74
00:05:36,310 --> 00:05:33,670
getting confirmation the second stage

75
00:05:39,909 --> 00:05:36,320
has dropped away separating at an

76
00:05:42,150 --> 00:05:39,919
altitude of about 105 miles

77
00:05:45,029 --> 00:05:42,160
soyuz now being propelled by the single

78
00:05:47,110 --> 00:05:45,039
engine of the third stage providing 67

79
00:05:52,230 --> 00:05:47,120
000 pounds of thrust going to burn burn

80
00:05:56,070 --> 00:05:54,070
again this is the third and final stage

81
00:05:58,629 --> 00:05:56,080
it's going to continue burning until

82
00:06:00,710 --> 00:05:58,639
about eight minutes and 45 seconds since

83
00:06:12,950 --> 00:06:00,720
liftoff at which point the soyuz will

84
00:06:18,710 --> 00:06:16,309
all motion control systems are nominal

85
00:06:32,070 --> 00:06:18,720
everything's fine on board

86
00:06:36,950 --> 00:06:34,550
another look inside the capsule again

87
00:06:39,350 --> 00:06:36,960
oleg novitskiy in the center seat tomah

88
00:06:41,270 --> 00:06:39,360

pesquet the european astronaut at the

89
00:06:43,270 --> 00:06:41,280
top of your screen

90
00:06:47,270 --> 00:06:43,280
this pesky's first flight the second

91
00:06:49,110 --> 00:06:47,280
soyuz ride uphill for oleg novitskiy

92
00:06:50,629 --> 00:06:49,120
everything continuing to go smoothly

93
00:06:53,270 --> 00:06:50,639
with the launch which

94
00:06:57,589 --> 00:06:53,280
rocketed off and on time at

95
00:06:57,599 --> 00:07:42,950
six minutes 30 seconds since liftoff

96
00:07:42,960 --> 00:08:06,950
camera

97
00:08:10,950 --> 00:08:08,710
so over seven and a half minutes of

98
00:08:12,790 --> 00:08:10,960
flight at this point the soyuz traveling

99
00:08:15,749 --> 00:08:12,800
at a velocity of almost thirteen

100
00:08:18,070 --> 00:08:15,759
thousand five hundred miles an hour

101
00:08:19,909 --> 00:08:18,080
so there's just a little under a minute

102
00:08:21,749 --> 00:08:19,919
left in powered flight

103
00:08:23,990 --> 00:08:21,759
once the third stage delivers the soyuz

104
00:08:26,230 --> 00:08:24,000
to orbit and the module separated those

105
00:08:27,830 --> 00:08:26,240
pre-programmed commands will be executed

106
00:08:29,510 --> 00:08:27,840
preparing the soyuz for orbital

107
00:08:31,350 --> 00:08:29,520
operations

108
00:08:33,909 --> 00:08:31,360
all of these allowing the soyuz systems

109
00:08:36,070 --> 00:08:33,919
to be automatically activated by on

110
00:08:38,949 --> 00:08:36,080
onboard computers at precise times

111
00:08:41,190 --> 00:08:38,959
stored inside some of those maneuvers

112
00:08:43,190 --> 00:08:41,200
will include deploying again those

113
00:08:45,430 --> 00:08:43,200

critical navigation antennas and the

114
00:08:47,350 --> 00:08:45,440
solar arrays that will power batteries

115
00:08:58,470 --> 00:08:47,360
providing electricity to the various

116
00:08:58,480 --> 00:09:16,070
affirmative

117
00:09:20,710 --> 00:09:18,310
and seeing the telltale jolt there that

118
00:09:24,070 --> 00:09:20,720
means the third stage has cut off and

119
00:09:27,110 --> 00:09:25,990
the confirmation coming from the folks

120
00:09:29,670 --> 00:09:27,120
in

121
00:09:31,509 --> 00:09:29,680
mission control moscow third stage has

122
00:09:33,269 --> 00:09:31,519
separated successfully that single

123
00:09:35,710 --> 00:09:33,279
liquid fueled engine shutting down and

124
00:09:47,670 --> 00:09:35,720
dropping it away at an altitude of about

125
00:09:52,389 --> 00:09:49,910
already getting confirmation from the

126
00:09:53,590 --> 00:09:52,399
visiting vehicle officer here in houston

127
00:09:55,190 --> 00:09:53,600
all of the

128
00:09:57,670 --> 00:09:55,200
different uh communication and

129
00:09:59,430 --> 00:09:57,680
navigation antennas have deployed along

130
00:10:01,829 --> 00:09:59,440
with those two solar arrays so we have

131
00:10:04,230 --> 00:10:01,839
confirmation of spacecraft separation

132
00:10:08,550 --> 00:10:04,240
deployment the soyuz now orbiting at an

133
00:10:09,670 --> 00:10:08,560
altitude of about 143 by 118 miles and

134
00:10:11,509 --> 00:10:09,680
that orbit is going to be raised

135
00:10:13,509 --> 00:10:11,519
systematically over the next two days as

136
00:10:15,269 --> 00:10:13,519
they chase down the international space

137
00:10:17,190 --> 00:10:15,279
station

138
00:10:18,949 --> 00:10:17,200

control of the spacecraft from here on

139
00:10:20,870 --> 00:10:18,959
out will be overseen by the russian

140
00:10:25,030 --> 00:10:20,880
mission control center just outside of

141
00:10:27,030 --> 00:10:25,040
moscow but for now safely in orbit

142
00:10:28,949 --> 00:10:27,040
nasa's peggy whitson issa's tomah

143
00:10:31,350 --> 00:10:28,959
pesquet and rose cosmos is oleg

144
00:10:34,150 --> 00:10:31,360
novitskiy following a successful on a

145
00:10:37,269 --> 00:10:34,160
flawless launch in the early morning sky

146
00:10:40,470 --> 00:10:37,279
over baikonur so everything going very

147
00:10:43,350 --> 00:10:40,480
well with this soyuz ms-03 vehicle so

148
00:10:45,350 --> 00:10:43,360
far vehicle in orbit all of the antennas

149
00:10:46,949 --> 00:10:45,360
and the solar arrays deployed and the